



## Appendix A

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

**Product Name:** Breast Pump

**Test Model:** Perifit Pump

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 23.5° C   |
| Relative Humidity: | 52.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Mening Su |
| Supervised by:     | Ling Zhu  |



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## A.1 DTS Bandwidth

### Test Result

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|--------------|----------|----------|------------|---------|
| BLE      | Ant     | 2402    | 0.712        | 2401.632 | 2402.344 | 0.5        | PASS    |
|          |         | 2440    | 0.712        | 2439.632 | 2440.344 | 0.5        | PASS    |
|          |         | 2480    | 0.716        | 2479.632 | 2480.348 | 0.5        | PASS    |



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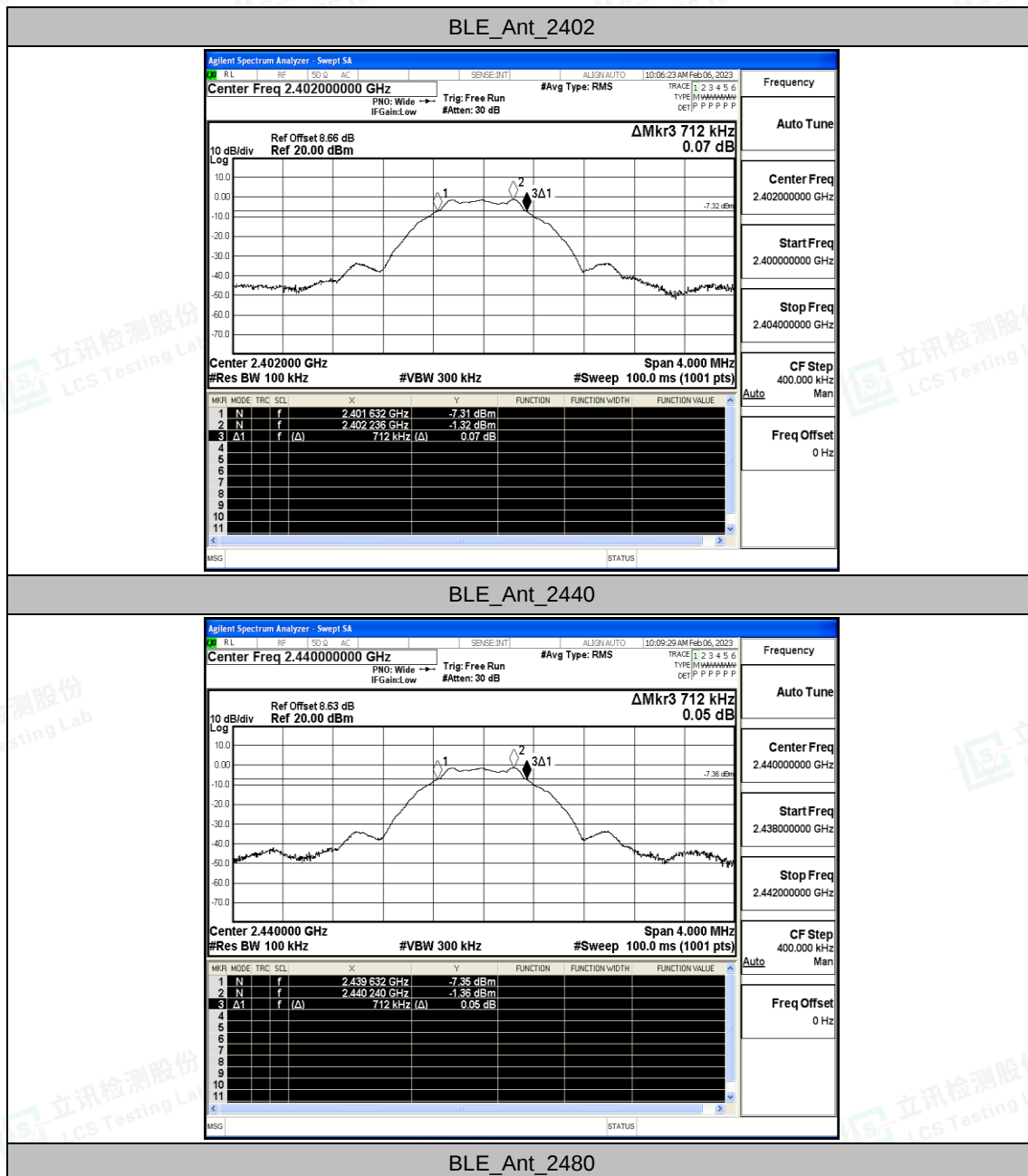
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## Test Graphs

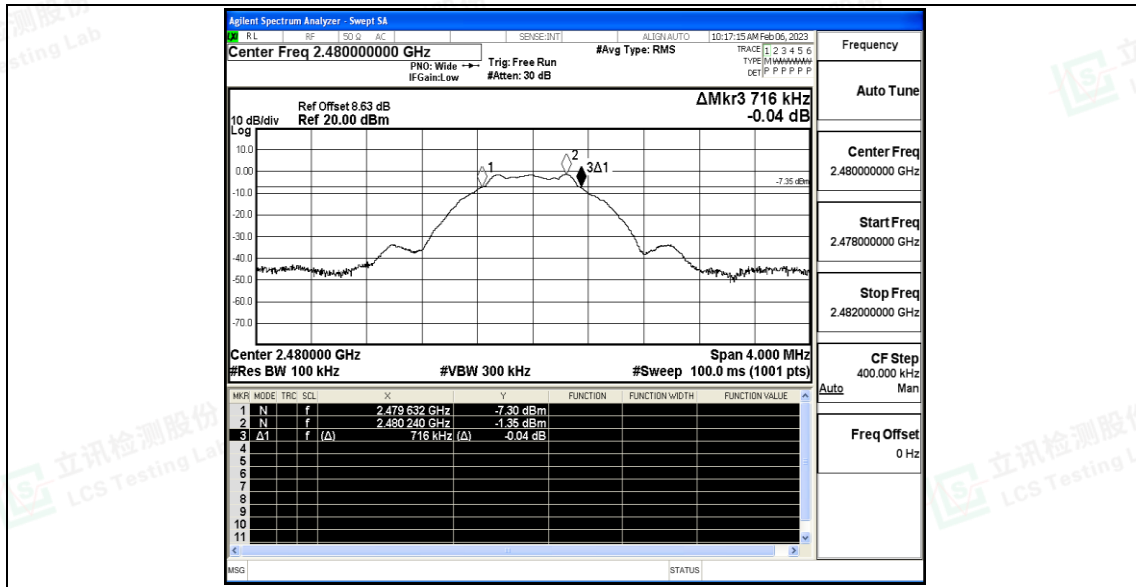


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## A.2 Occupied Channel Bandwidth

### Test Result

| TestMode | Antenna | Channel | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|----------|---------|---------|-----------|-----------|-----------|------------|---------|
| BLE      | Ant     | 2402    | 1.0608    | 2401.4732 | 2402.5340 | ---        | PASS    |
|          |         | 2440    | 1.0550    | 2439.4758 | 2440.5308 | ---        | PASS    |
|          |         | 2480    | 1.0614    | 2479.4715 | 2480.5329 | ---        | PASS    |



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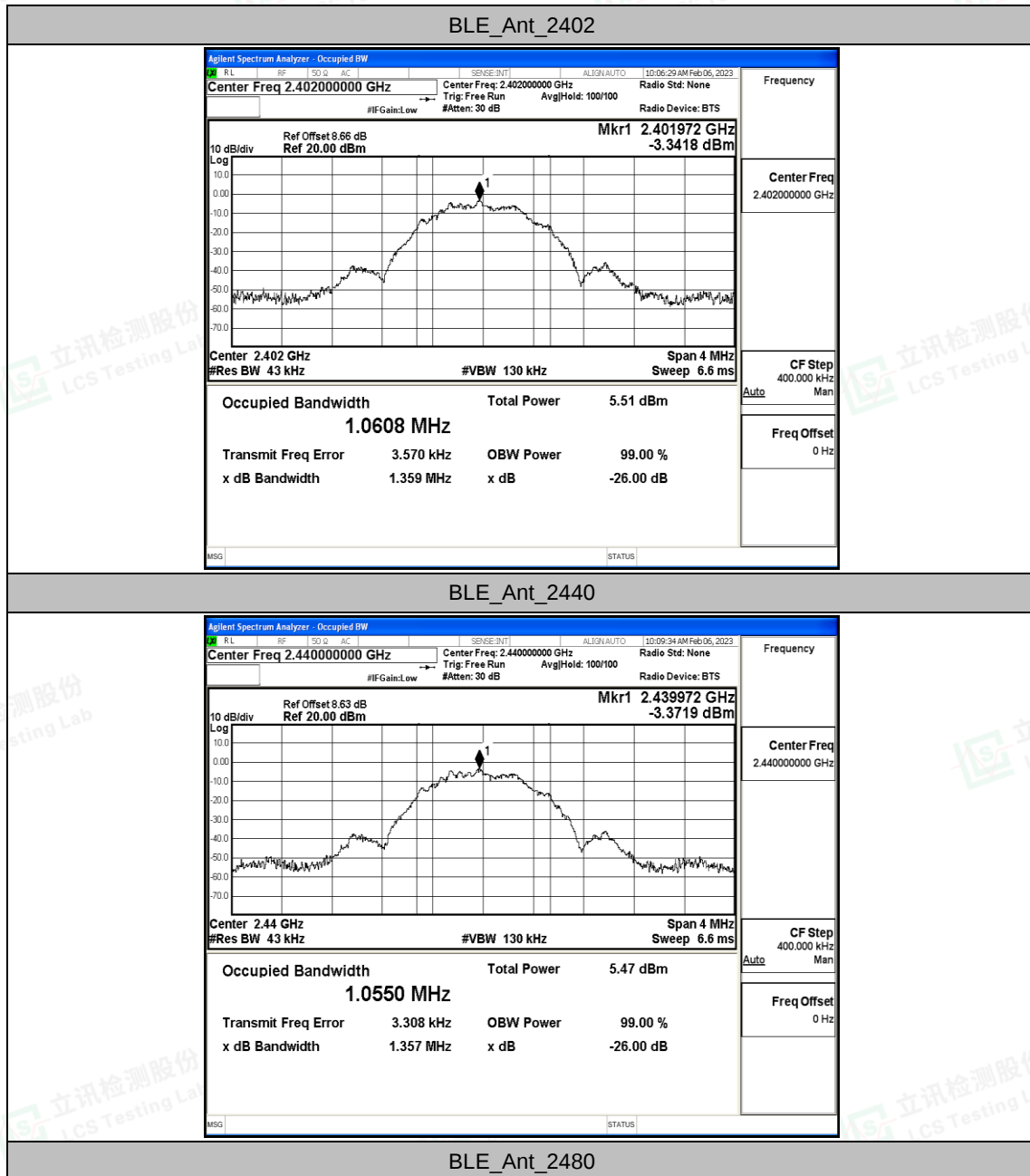
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## Test Graphs

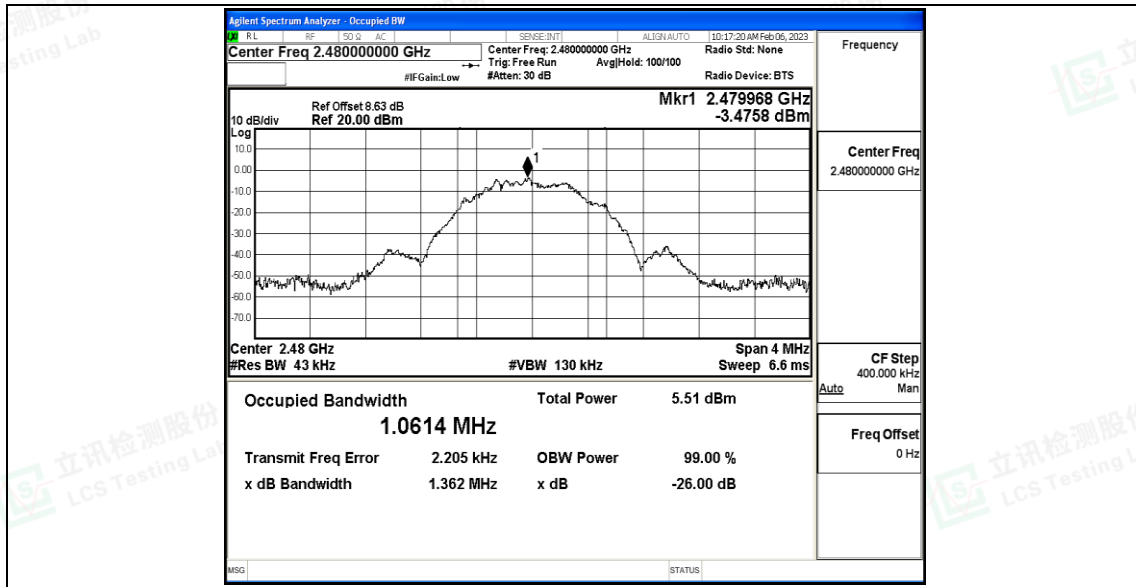


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### A.3 Maximum conducted output power and e.i.r.p.

#### Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE      | Ant     | 2402    | -0.33       | ≤30        | PASS    |
|          |         | 2440    | -0.40       | ≤30        | PASS    |
|          |         | 2480    | -0.39       | ≤30        | PASS    |

#### EIRP

| Condition | Mode | Frequency (MHz) | Maximum Peak Output Power [dBm] | Antenna Gain | Report EIRP Power(dBm) | Limit[dBm] | Verdict |
|-----------|------|-----------------|---------------------------------|--------------|------------------------|------------|---------|
| NVNT      | BLE  | 2402            | -0.33                           | 2.99         | 2.66                   | ≤36        | PASS    |
| NVNT      | BLE  | 2440            | -0.40                           | 2.99         | 2.59                   | ≤36        | PASS    |
| NVNT      | BLE  | 2480            | -0.39                           | 2.99         | 2.60                   | ≤36        | PASS    |



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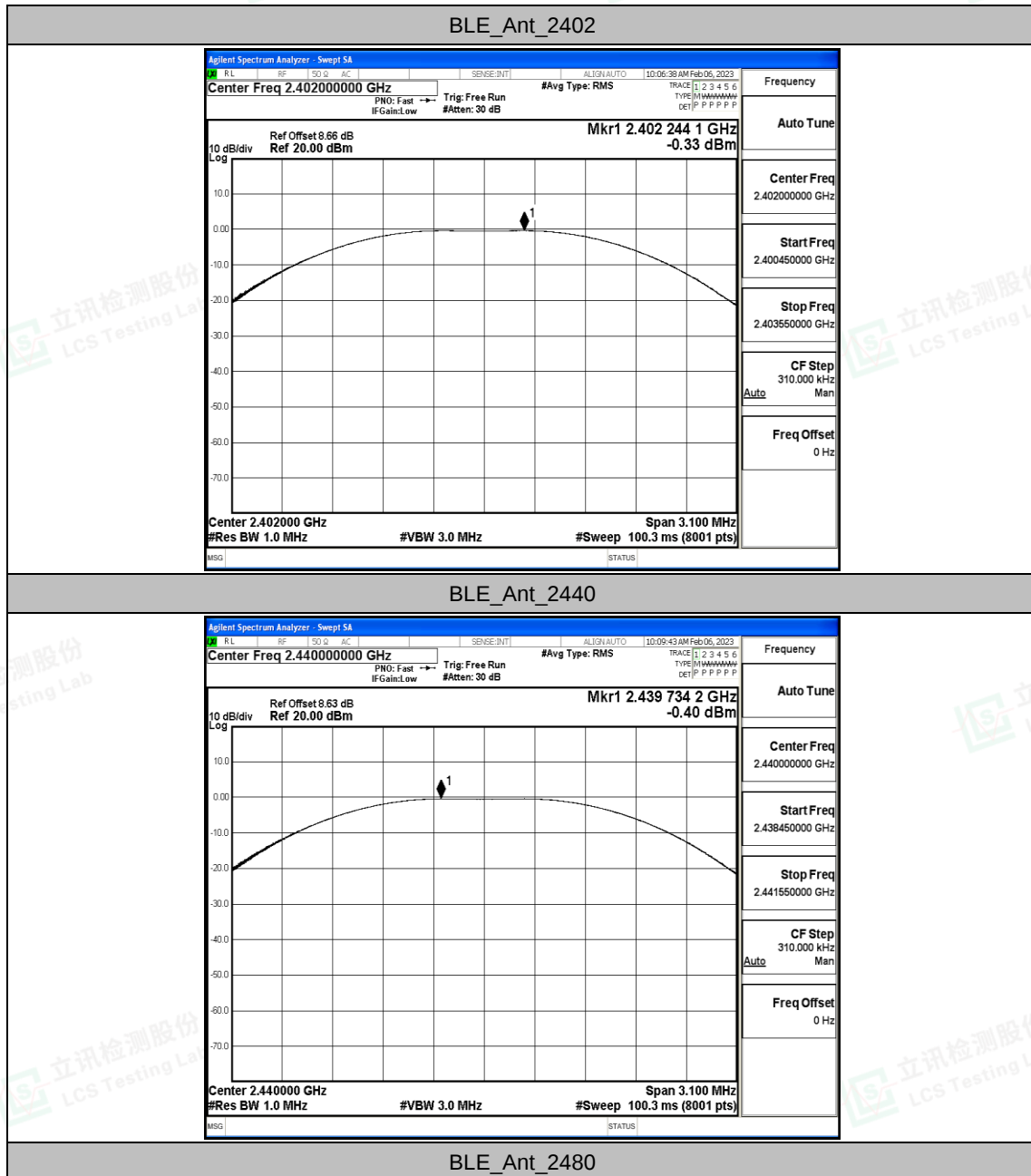
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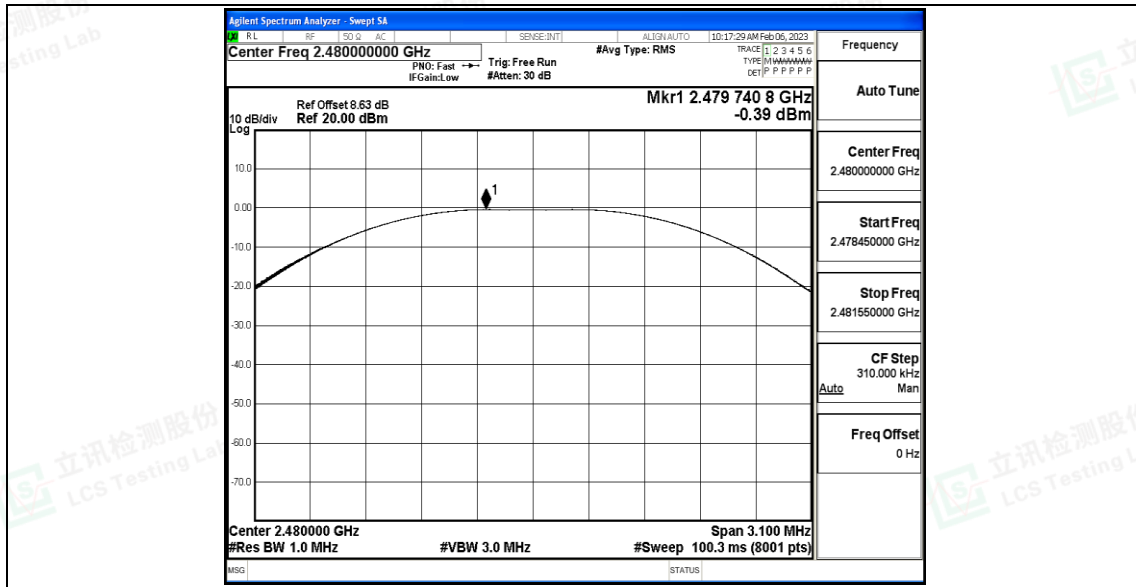


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## A.4 Maximum power spectral density

### Test Result

| TestMode | Antenna | Channel | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|------------------|-----------------|---------|
| BLE      | Ant     | 2402    | -15.48           | ≤8.00           | PASS    |
|          |         | 2440    | -15.47           | ≤8.00           | PASS    |
|          |         | 2480    | -15.52           | ≤8.00           | PASS    |



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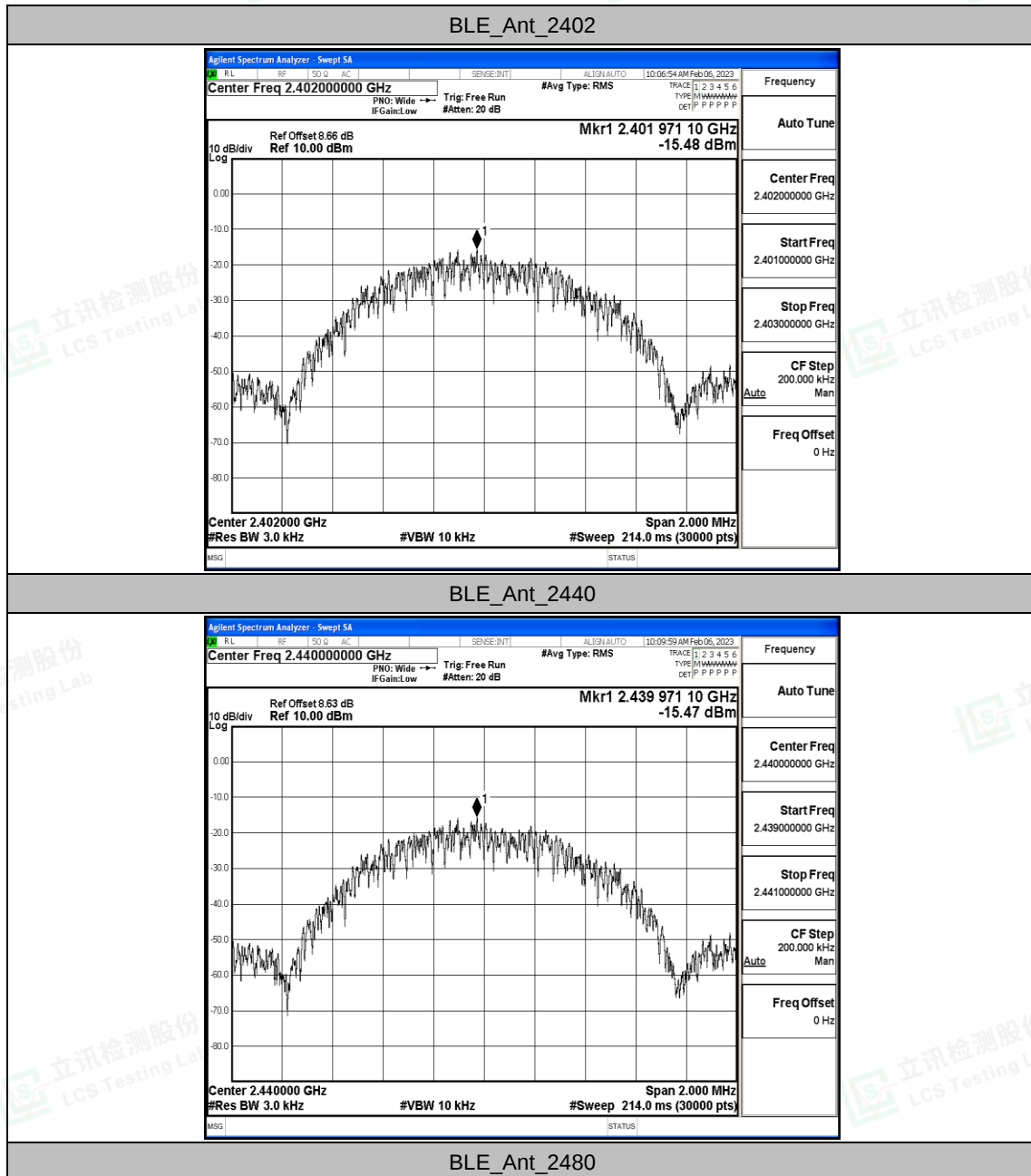
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## Test Graphs

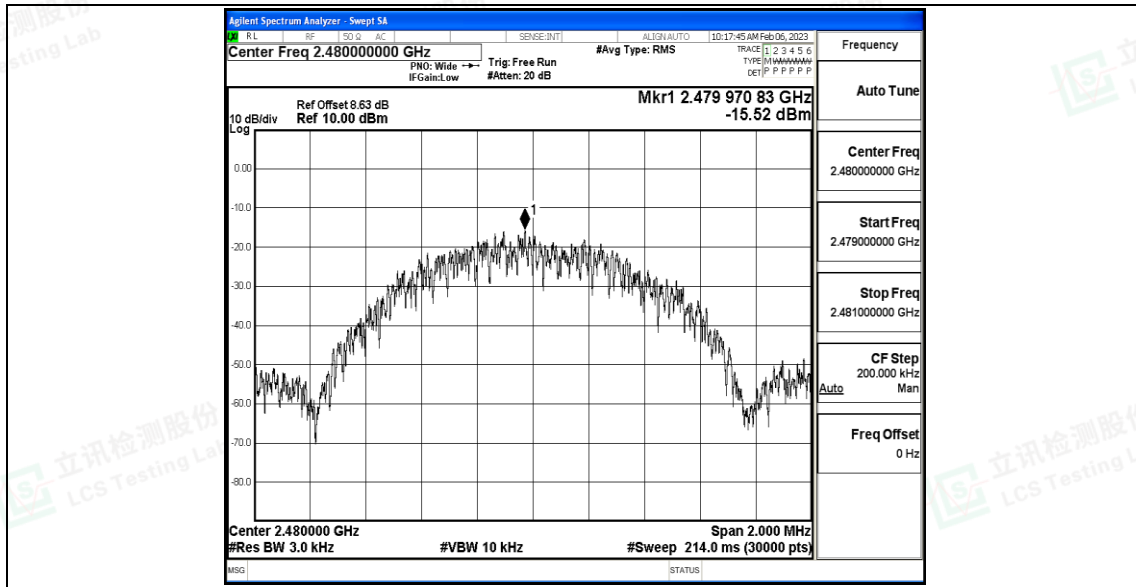


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## A.5 Band edge measurements

### Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm]    | Verdict |
|----------|---------|--------|---------|---------------|-------------|---------------|---------|
| BLE      | Ant     | Low    | 2402    | -1.30         | -48.99      | $\leq -21.3$  | PASS    |
|          |         | High   | 2480    | -1.32         | -54.47      | $\leq -21.32$ | PASS    |



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## Test Graphs



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## A.6 Conducted Spurious Emission

### Test Result

| TestMode | Antenna | Channel | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|--------------------|-------------------|-------------|------------|---------|
| BLE      | Ant     | 2402    | Reference          | -1.28             | -1.28       | ---        | PASS    |
|          |         |         | 30~1000            | -1.28             | -60.42      | ≤-21.28    | PASS    |
|          |         |         | 1000~26500         | -1.28             | -46.2       | ≤-21.28    | PASS    |
|          |         | 2440    | Reference          | -1.93             | -1.93       | ---        | PASS    |
|          |         |         | 30~1000            | -1.93             | -60.69      | ≤-21.93    | PASS    |
|          |         |         | 1000~26500         | -1.93             | -46.46      | ≤-21.93    | PASS    |
|          |         | 2480    | Reference          | -1.44             | -1.44       | ---        | PASS    |
|          |         |         | 30~1000            | -1.44             | -61         | ≤-21.44    | PASS    |
|          |         |         | 1000~26500         | -1.44             | -46.36      | ≤-21.44    | PASS    |



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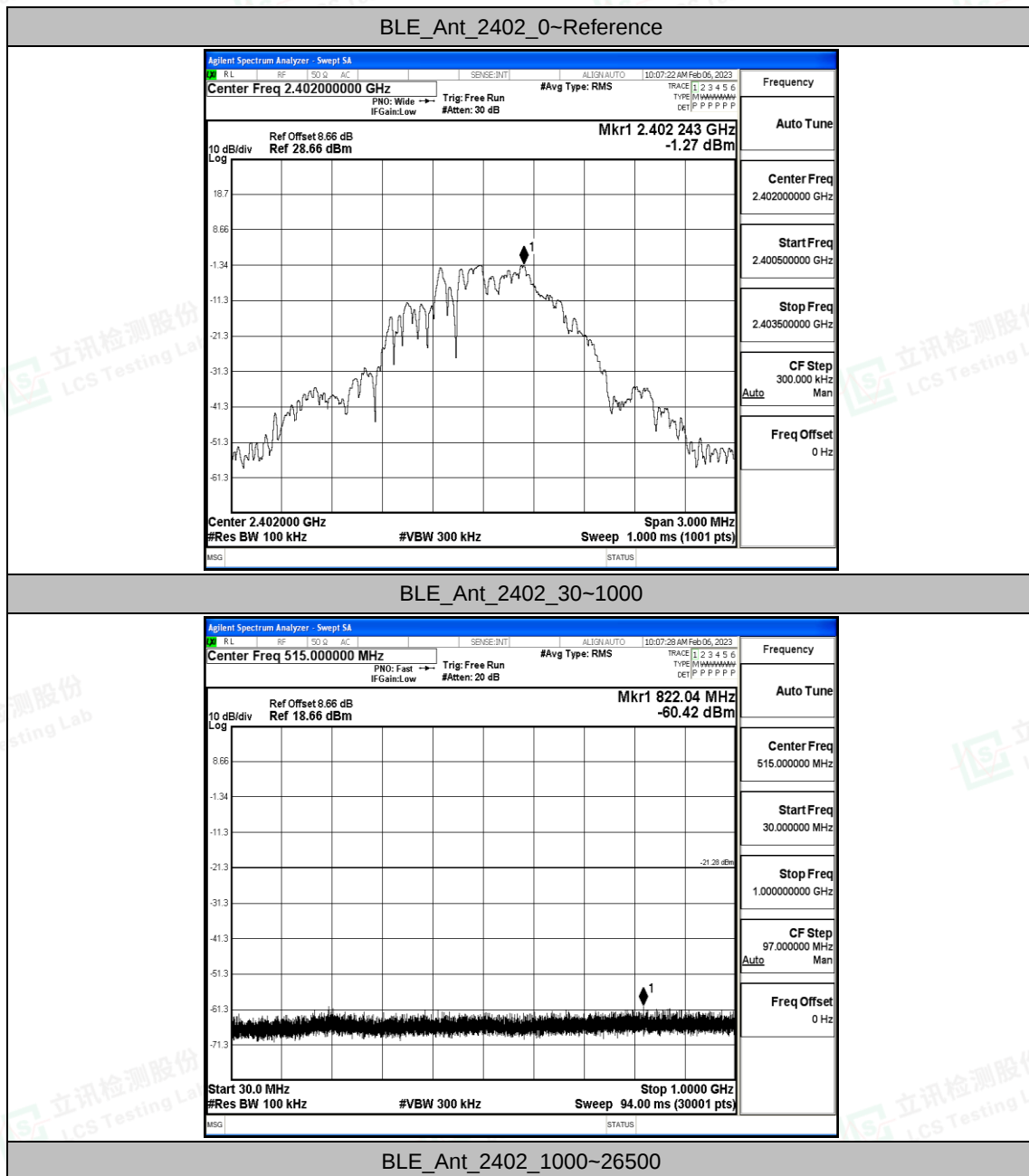
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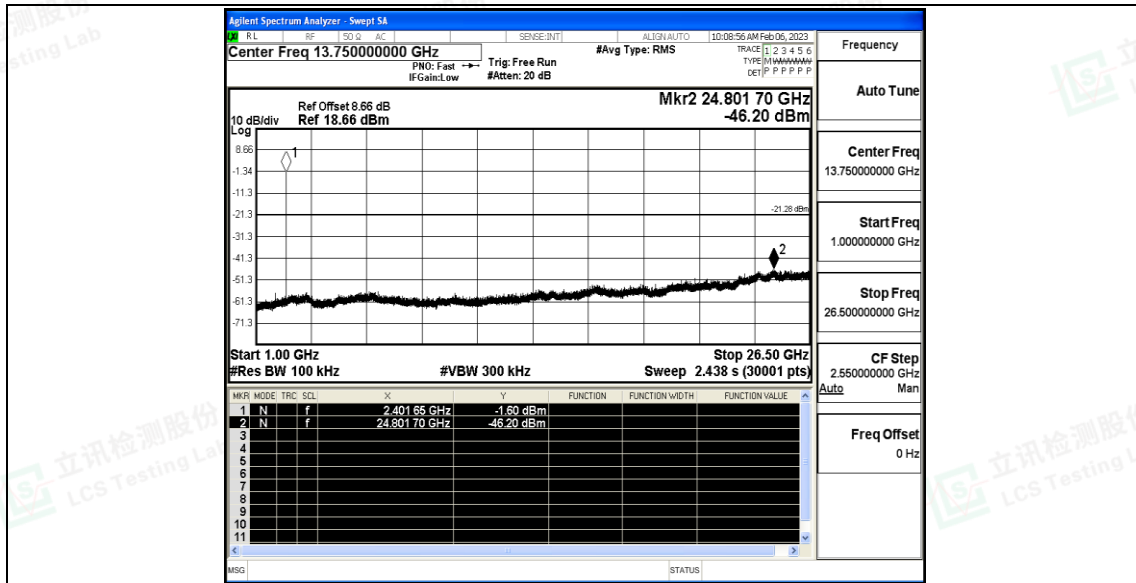


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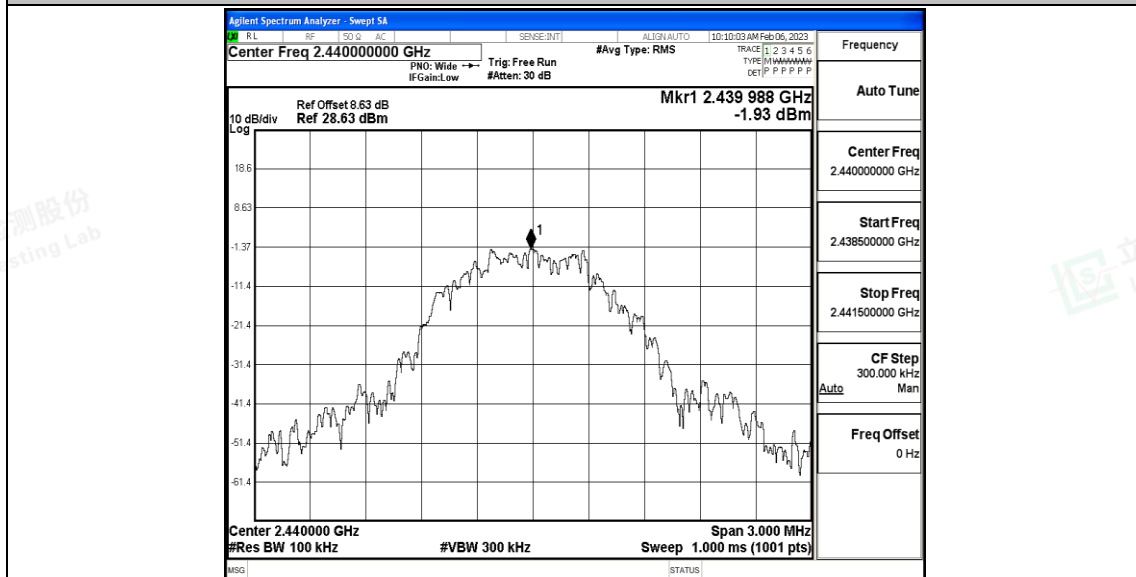
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BLE\_Ant\_2440\_0~Reference



BLE\_Ant\_2440\_30~1000

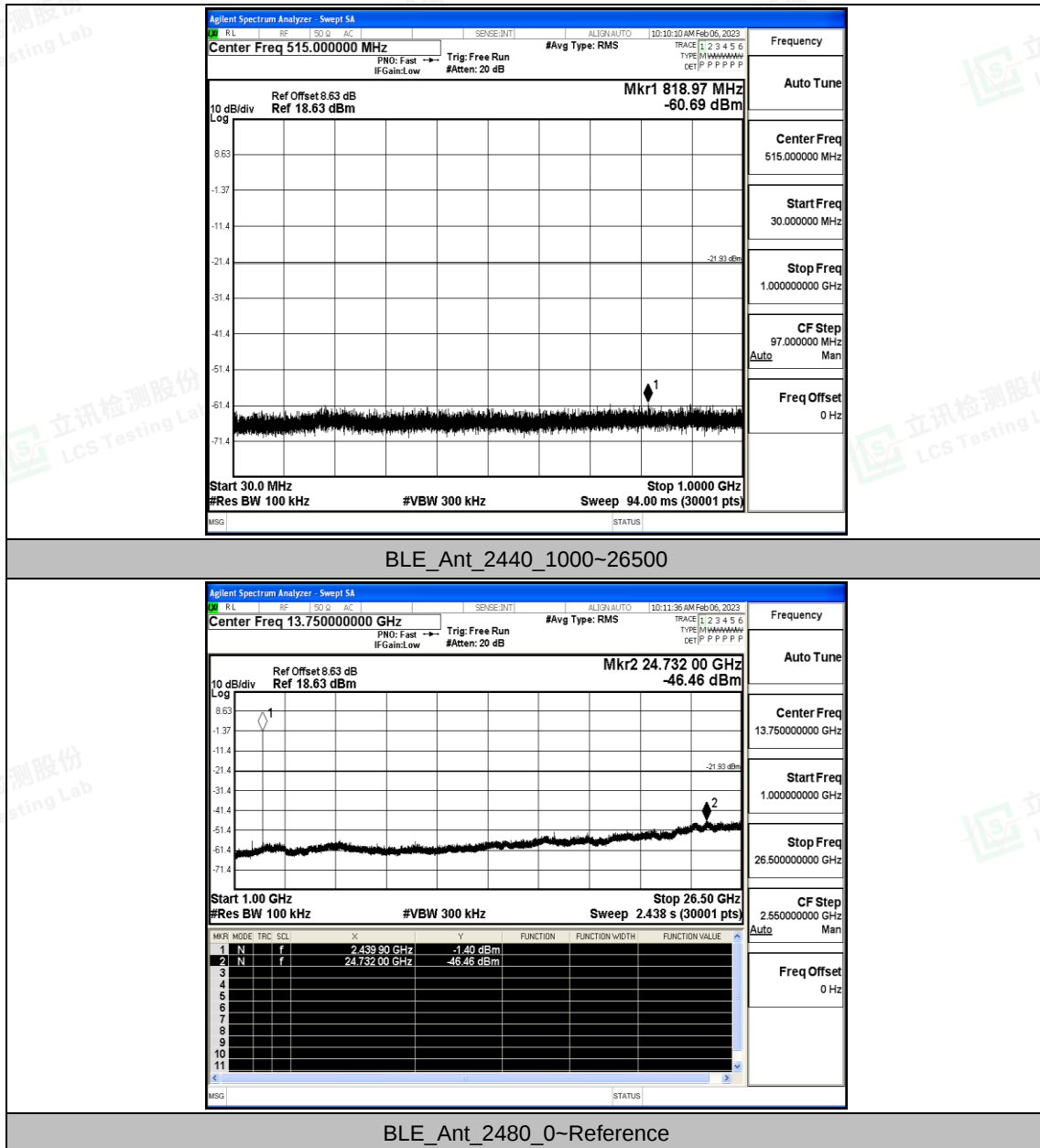


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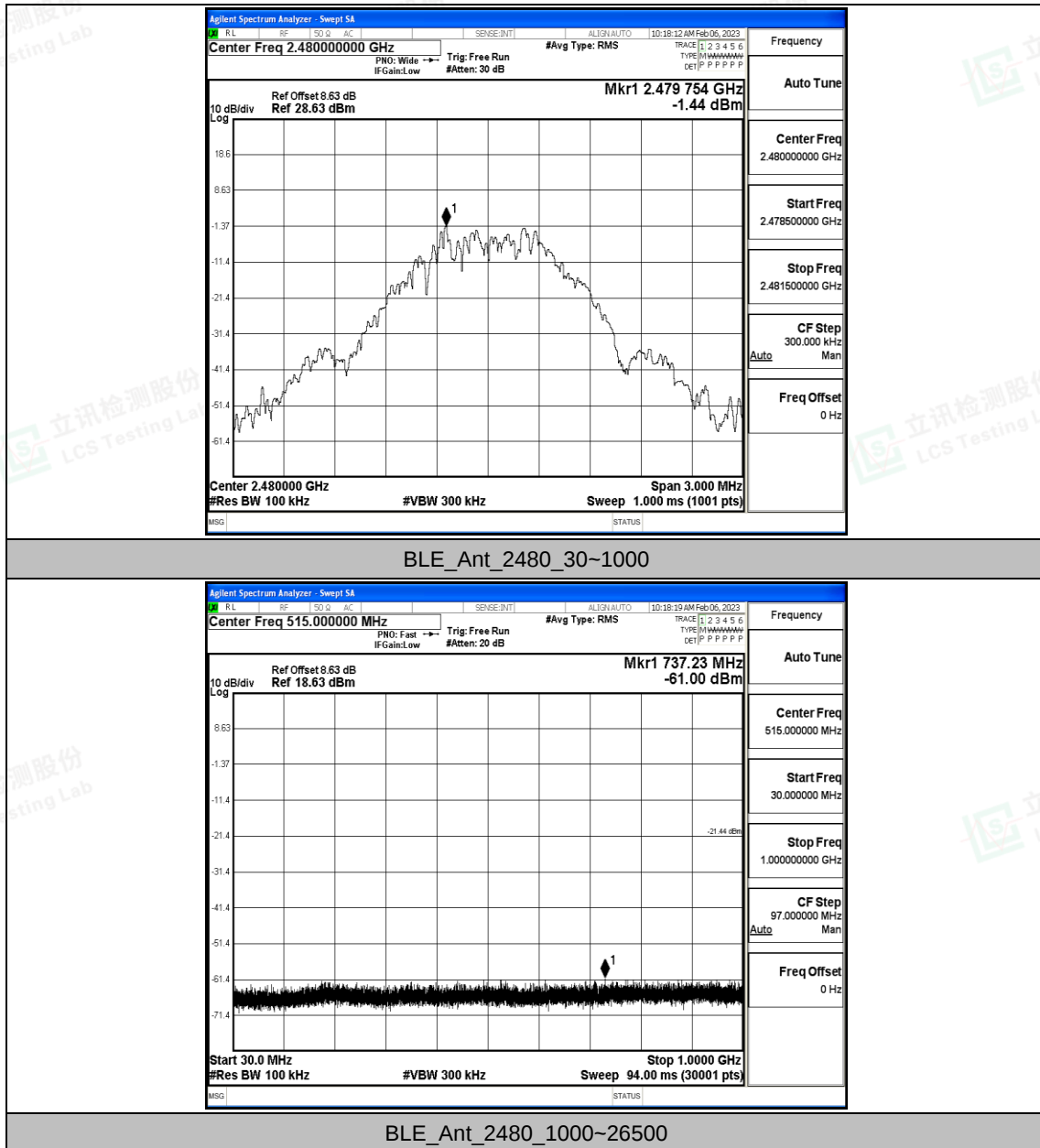


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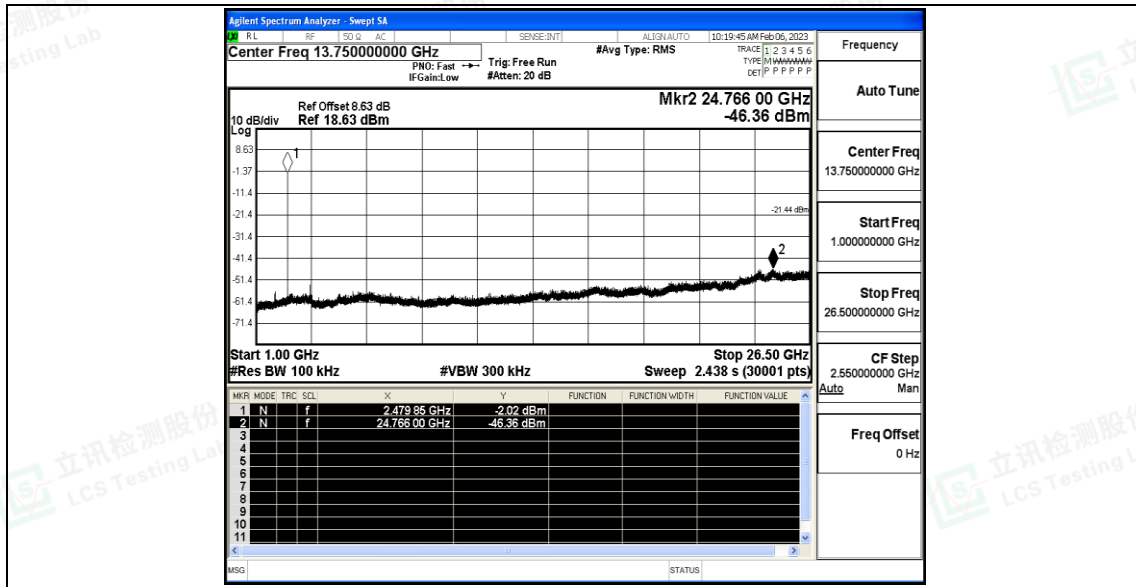


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## A.7 Duty Cycle

### Test Result

| TestMode | Antenna | Channel | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | 1/T  | Limit | Verdict |
|----------|---------|---------|-----------------|----------------|--------|-----------|---------|------|-------|---------|
| BLE      | Ant     | 2402    | 0.39            | 0.62           | 0.6290 | 62.90     | 2.01    | 2.56 | ---   | PASS    |
|          |         | 2440    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | 2.56 | ---   | PASS    |
|          |         | 2480    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | 2.56 | ---   | PASS    |



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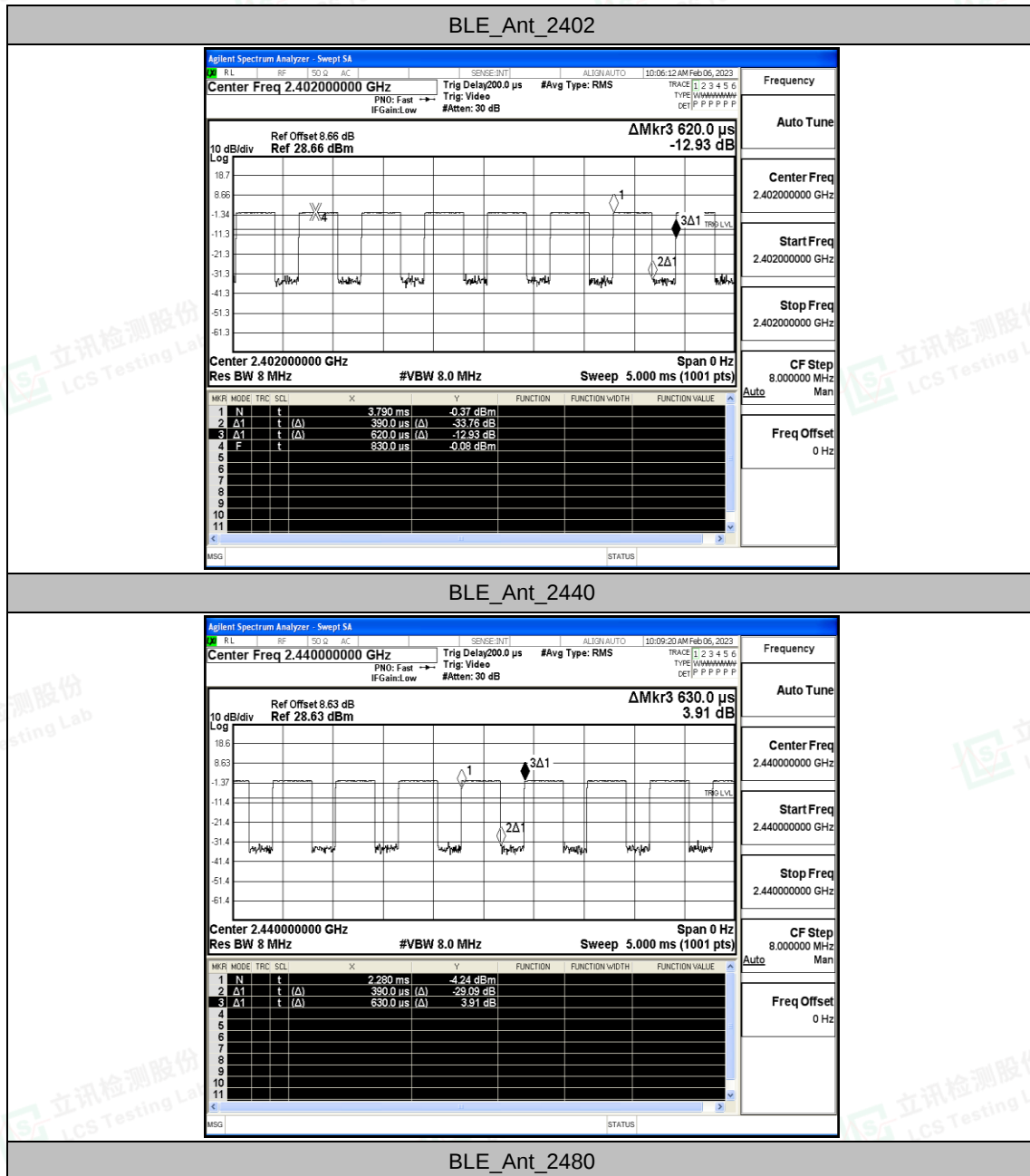
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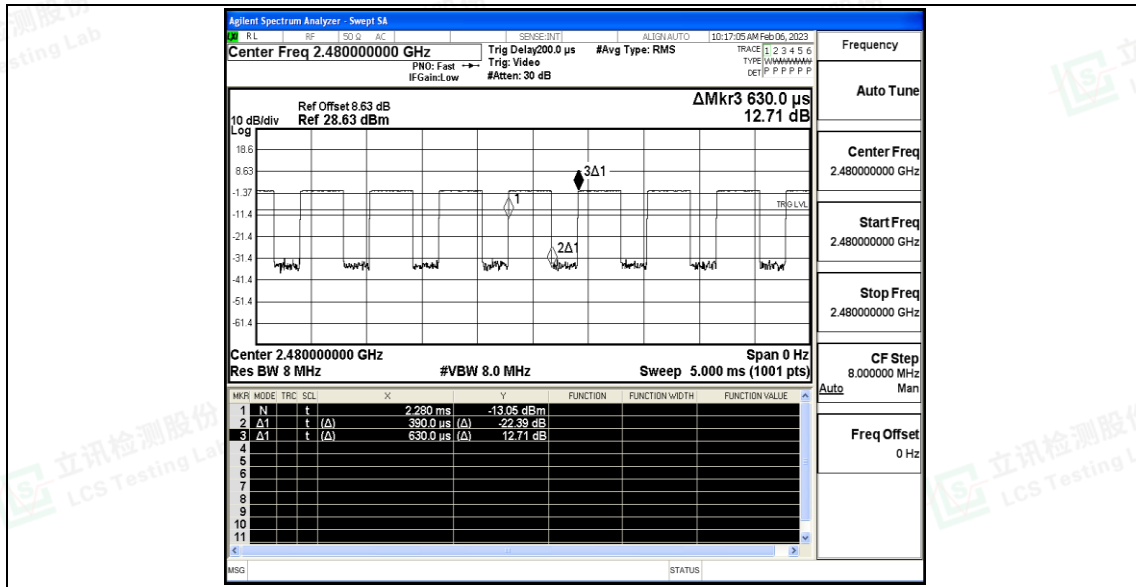


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## A.8 Emissions in Restricted Bands

### 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      | Ant     | Low    | 2402    | AV       | 2310.000       | -57.33          | ≤-41.20        | 37.87              | ≤54               | PASS    |
|          |         |        |         | AV       | 2385.680       | -56.45          | ≤-41.20        | 38.75              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -56.94          | ≤-41.20        | 38.26              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -51.74          | ≤-21.20        | 43.46              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2378.960       | -47.87          | ≤-21.20        | 47.33              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -50.11          | ≤-21.20        | 45.09              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -51.44          | ≤-41.20        | 43.76              | ≤54               | PASS    |
|          |         |        |         | AV       | 2483.520       | -51.43          | ≤-41.20        | 43.77              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -56.35          | ≤-41.20        | 38.85              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -49.88          | ≤-21.20        | 45.32              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2483.920       | -36.31          | ≤-21.20        | 58.89              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -49.13          | ≤-21.20        | 46.07              | ≤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.
3.  $EIRP\ (dBm) = E\ (dBuV/m) + 10\log(3) - 104.77$   
74 dBuV/m @ 3m measurement distance  
54 dBuV/m @ 3m measurement distance = -41.250 dBm (EIRP)  
 $EIRP\ (dBm) = \text{Antenna Port Conducted Power}\ (dBm) + \text{Antenna Gain}\ (dBi)$



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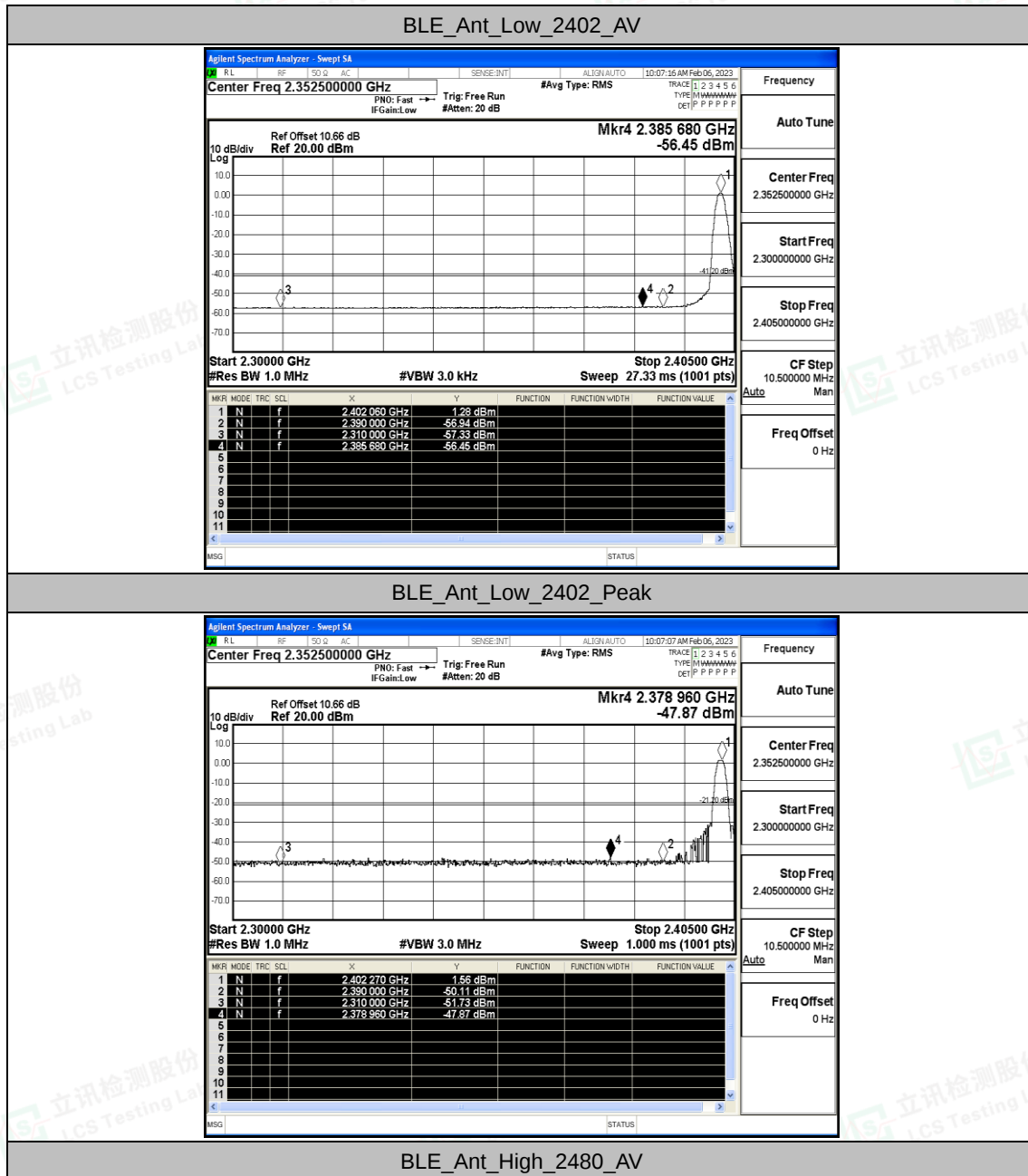
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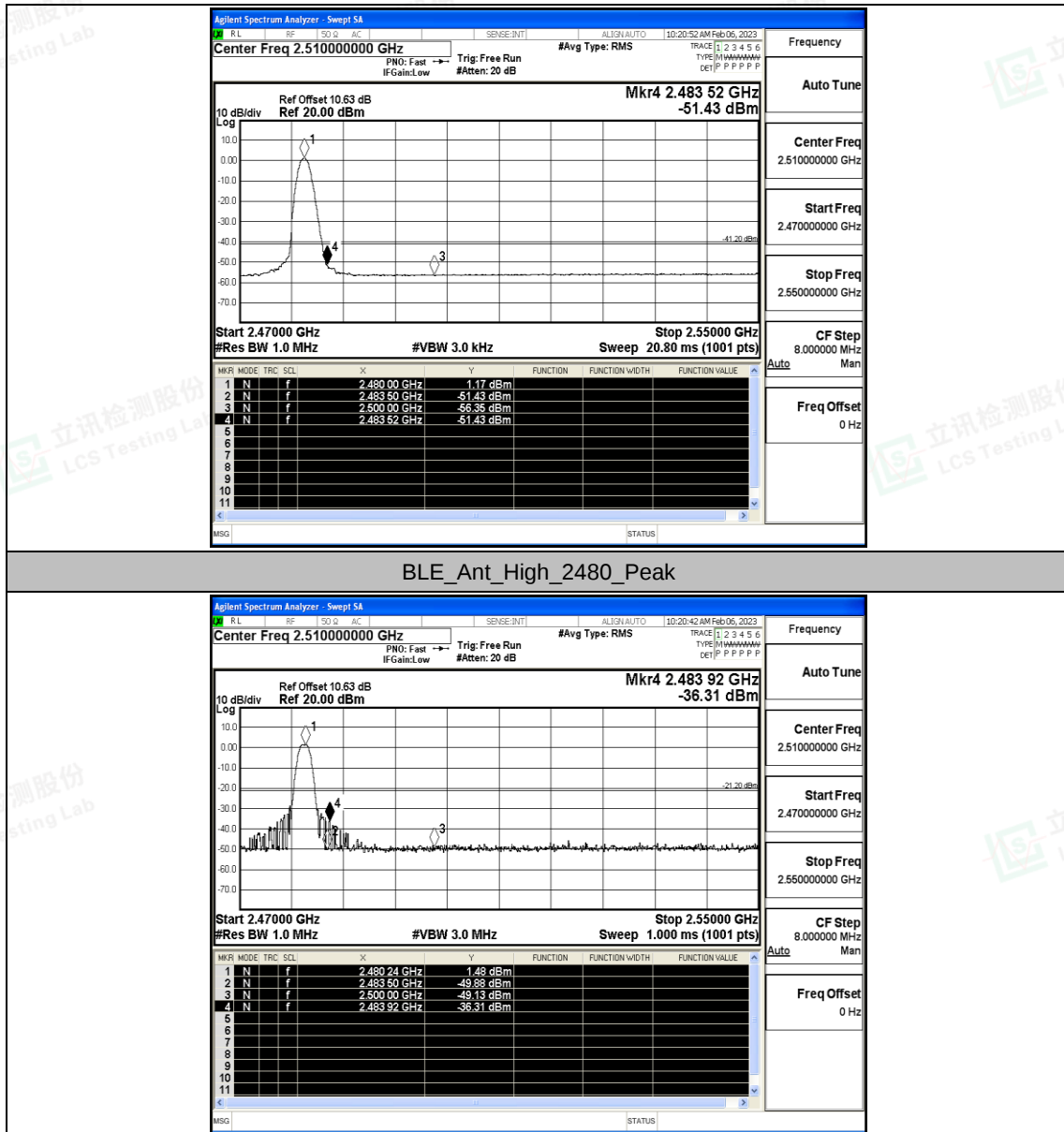


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