



## Appendix A for BT LE Test Data

Product Name: mentech Passion

Test Model: HRM 01

### Environmental Conditions

|                    |            |
|--------------------|------------|
| Temperature:       | 21.8°C     |
| Relative Humidity: | 52.6%      |
| ATM Pressure:      | 100.0 kPa  |
| Test Engineer:     | Jerry Chu  |
| Supervised by:     | Paddi Chen |



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## A.1 Frequency Error

### Test Result

| TestCondition | TestMode        | Antenna | Frequency[MHz] | Result[ppm] | Limit[ppm] | Verdict |
|---------------|-----------------|---------|----------------|-------------|------------|---------|
| NTNV          | Frequency Error | Ant1    | 2402           | -0.41632    | ±50        | PASS    |
|               |                 |         | 2440           | -0.40984    | ±50        | PASS    |
|               |                 |         | 2480           | -0.40323    | ±50        | PASS    |



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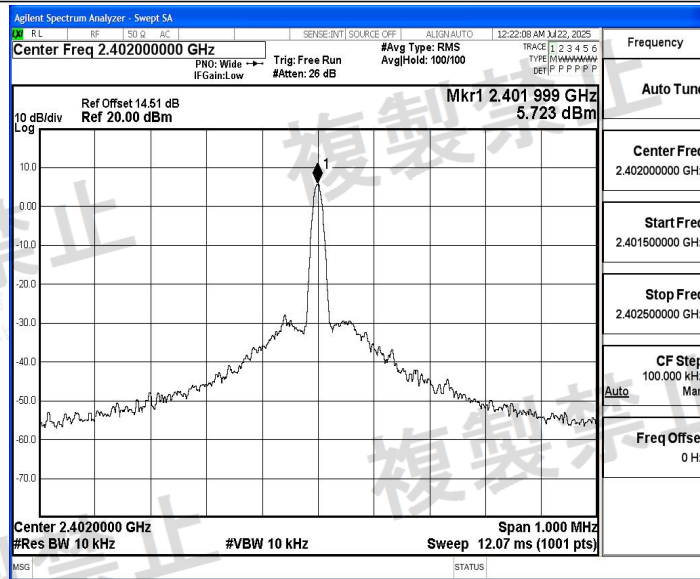
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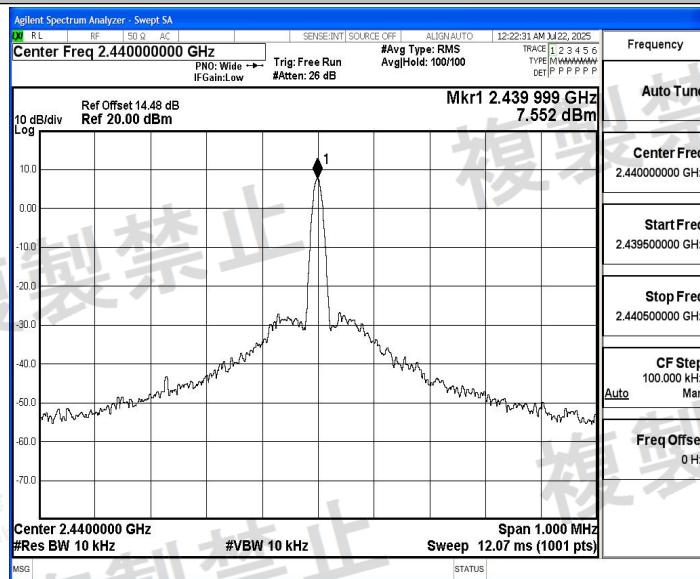


## Test Graphs

NTNV\_Ant1\_2402



NTNV\_Ant1\_2440



NTNV\_Ant1\_2480

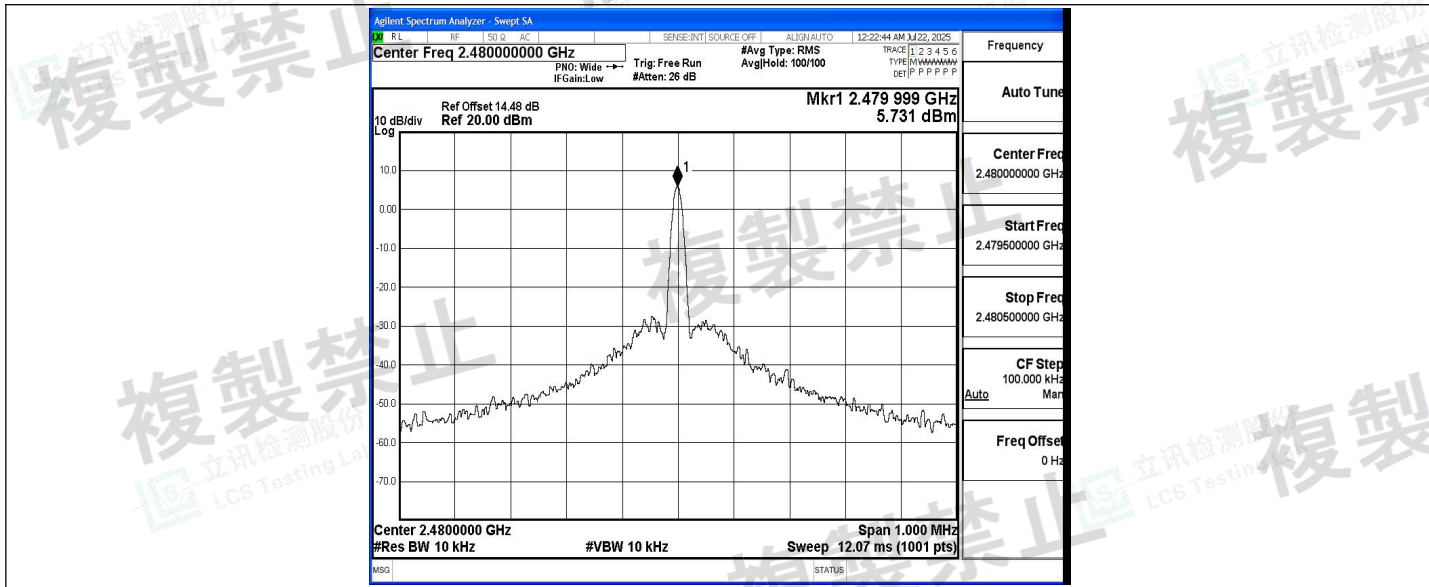


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## A.2 Antenna Power

### Test Result

| Antenna Power |          |         |                    |                 |                |               |         |
|---------------|----------|---------|--------------------|-----------------|----------------|---------------|---------|
| TestCondition | TestMode | Antenna | Frequency<br>[MHz] | Result<br>[dBm] | Result<br>[mW] | Limit<br>[mW] | Verdict |
| NTNV          | BLE_2M   | Ant     | 2402               | -2.61           | 0.55           | ≤10           | PASS    |
|               |          |         | 2440               | 0.22            | 1.05           | ≤10           | PASS    |
|               |          |         | 2480               | -1.30           | 0.74           | ≤10           | PASS    |

| Tolerance         |              |         |                    |               |                    |            |           |         |
|-------------------|--------------|---------|--------------------|---------------|--------------------|------------|-----------|---------|
| Test<br>Condition | Test<br>Mode | Antenna | Frequency<br>[MHz] | Power<br>(mW) | RatedPower<br>(mW) | Result (%) | Limit (%) | Verdict |
| NTNV              | BLE_2M       | Ant     | 2402               | 0.55          | 1.0                | -45.00     | +20       | PASS    |
|                   |              |         | 2440               | 1.05          | 1.0                | 5.00       | +20       | PASS    |
|                   |              |         | 2480               | 0.74          | 1.0                | -26.00     | +20       | PASS    |



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### A.3 Occupied Bandwidth

#### Test Result

| TestCondition | TestMode | Antenna | Frequency[MHz] | Result [MHz] | Limit [MHz] | Verdict |
|---------------|----------|---------|----------------|--------------|-------------|---------|
| NTNV          | BLE_2M   | Ant1    | 2402           | 2.032        | ≤26         | PASS    |
|               |          |         | 2440           | 2.030        | ≤26         | PASS    |
|               |          |         | 2480           | 2.036        | ≤26         | PASS    |



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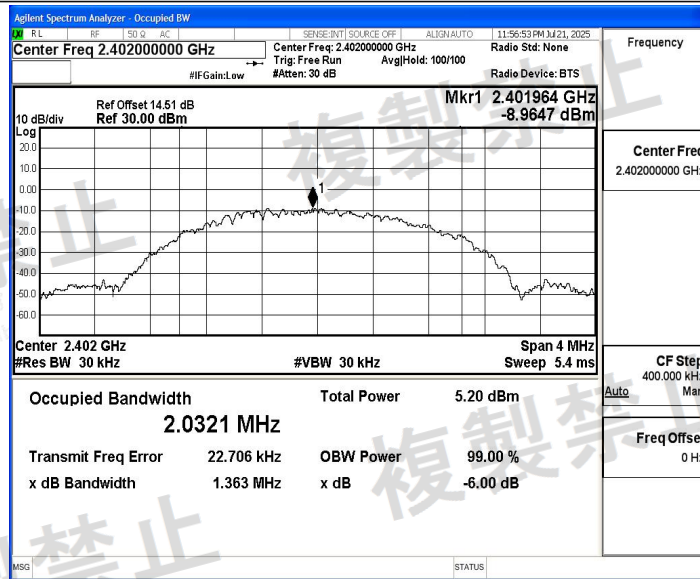
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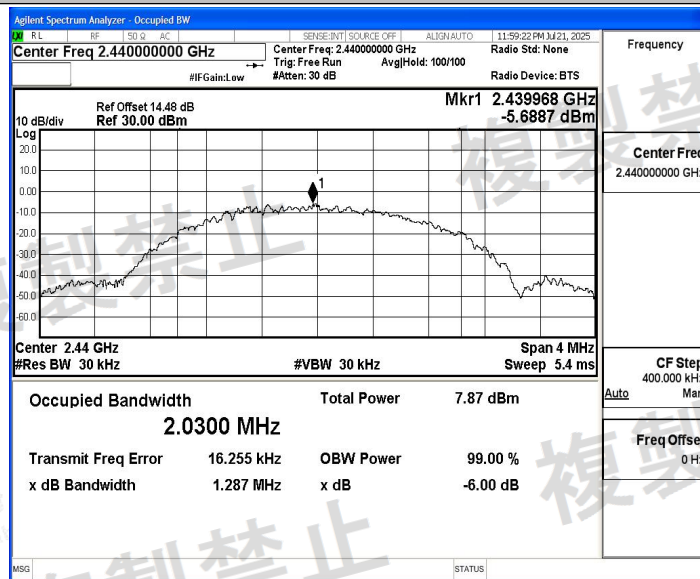


## Test Graphs

NTNV\_BLE\_2M\_Ant1\_2402



NTNV\_BLE\_2M\_Ant1\_2440



NTNV\_BLE\_2M\_Ant1\_2480

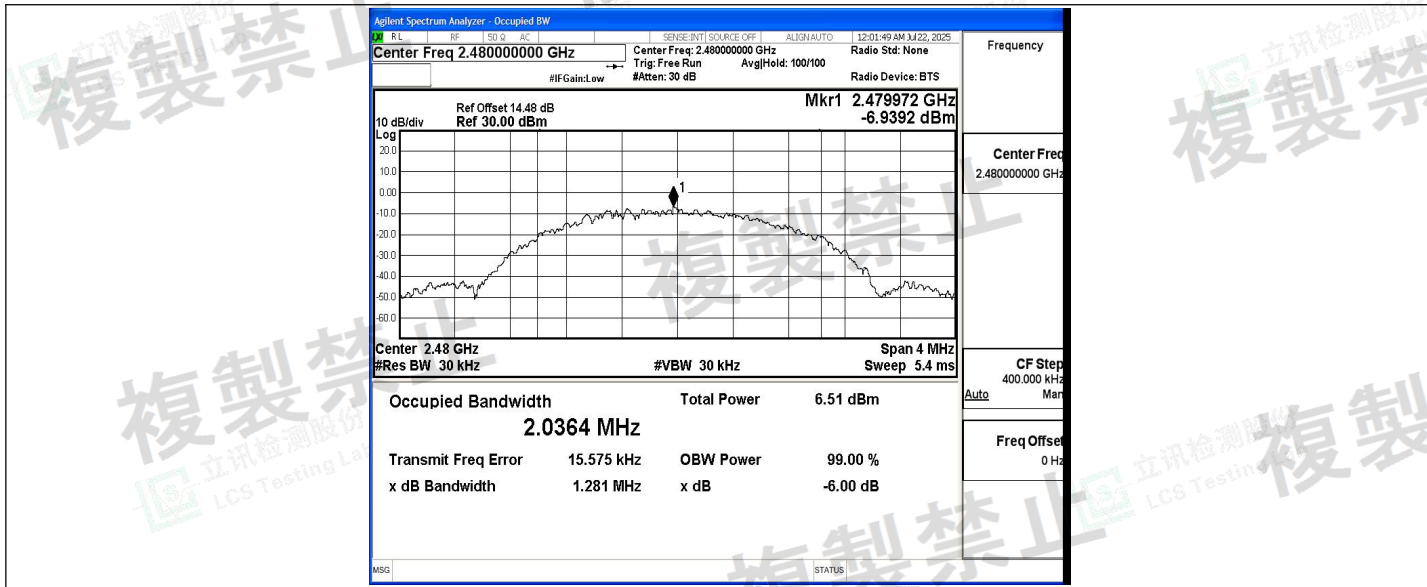


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## A.4 Spread Bandwidth

### Test Result

| TestCondition | TestMode | Antenna | Frequency[MHz] | Result [MHz] | Limit [MHz] | Verdict |
|---------------|----------|---------|----------------|--------------|-------------|---------|
| NTNV          | BLE_2M   | Ant1    | 2402           | 1.359        | ---         | PASS    |
|               |          |         | 2440           | 1.350        | ---         | PASS    |
|               |          |         | 2480           | 1.341        | ---         | PASS    |



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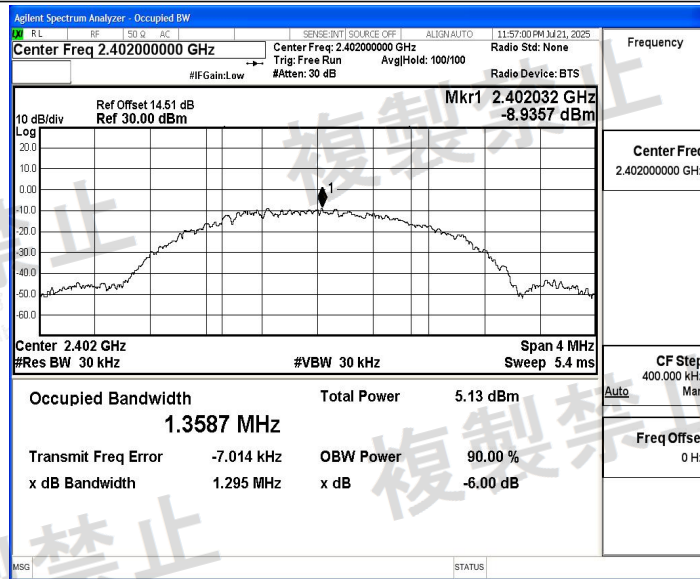
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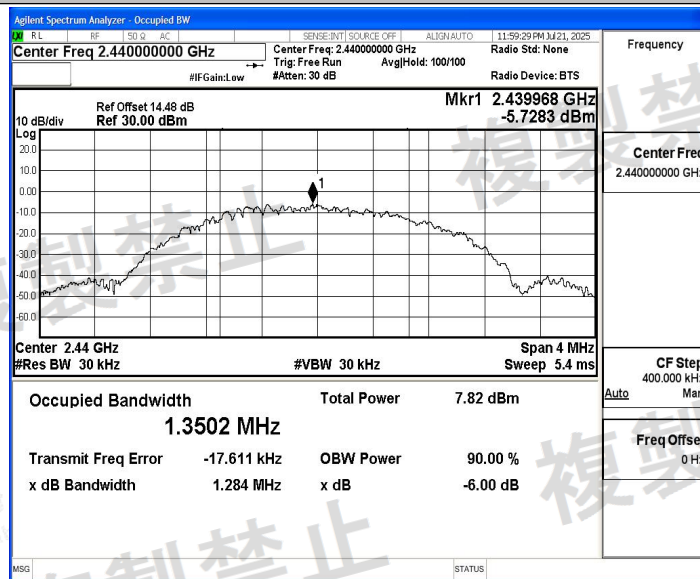


## Test Graphs

NTNV\_BLE\_2M\_Ant1\_2402



NTNV\_BLE\_2M\_Ant1\_2440



NTNV\_BLE\_2M\_Ant1\_2480

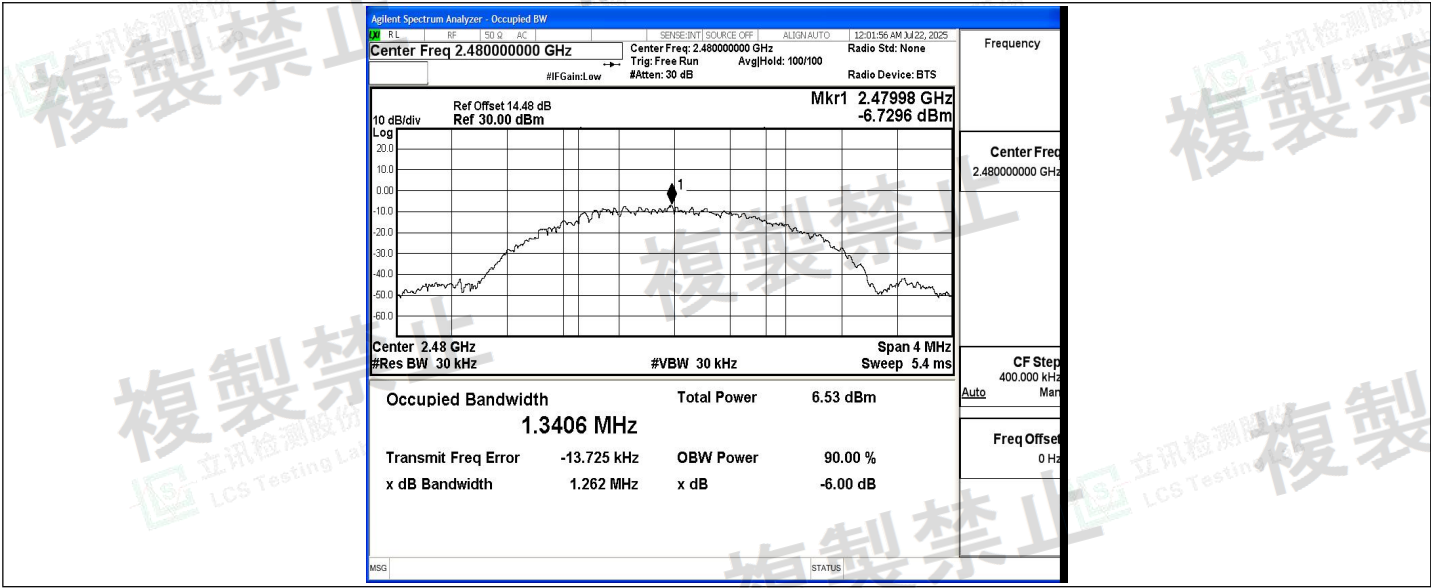


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## A.5 Spurious Emission of TX

### Test Result

| TestCondition | TestMode | Antenna | Frequency[MHz] | Freq.Range [MHz] | Result [dBm] | Limit [dBm] | Result [μW] | Limit [μW] | Verdict |
|---------------|----------|---------|----------------|------------------|--------------|-------------|-------------|------------|---------|
| NTNV          | BLE_2M   | Ant1    | 2402           | 30~1000          | -53.68       | ≤-26        | 0.00429     | ≤2.5       | PASS    |
|               |          |         |                | 1000~2387        | -52.71       | ≤-26        | 0.00536     | ≤2.5       | PASS    |
|               |          |         |                | 2387~2400        | -28.15       | ≤-16        | 1.53109     | ≤25        | PASS    |
|               |          |         |                | 2483.5~2496.5    | -42.97       | ≤-16        | 0.05047     | ≤25        | PASS    |
|               |          |         |                | 2496.5~13000     | -45.15       | ≤-26        | 0.03055     | ≤2.5       | PASS    |
|               |          |         | 2440           | 30~1000          | -53.81       | ≤-26        | 0.00416     | ≤2.5       | PASS    |
|               |          |         |                | 1000~2387        | -52.62       | ≤-26        | 0.00547     | ≤2.5       | PASS    |
|               |          |         |                | 2387~2400        | -43.13       | ≤-16        | 0.04864     | ≤25        | PASS    |
|               |          |         |                | 2483.5~2496.5    | -43.23       | ≤-16        | 0.04753     | ≤25        | PASS    |
|               |          |         |                | 2496.5~13000     | -45.59       | ≤-26        | 0.02761     | ≤2.5       | PASS    |
|               |          |         | 2480           | 30~1000          | -53.91       | ≤-26        | 0.00406     | ≤2.5       | PASS    |
|               |          |         |                | 1000~2387        | -52.70       | ≤-26        | 0.00537     | ≤2.5       | PASS    |
|               |          |         |                | 2387~2400        | -43.39       | ≤-16        | 0.04581     | ≤25        | PASS    |
|               |          |         |                | 2483.5~2496.5    | -43.10       | ≤-16        | 0.04898     | ≤25        | PASS    |
|               |          |         |                | 2496.5~13000     | -45.73       | ≤-26        | 0.02673     | ≤2.5       | PASS    |



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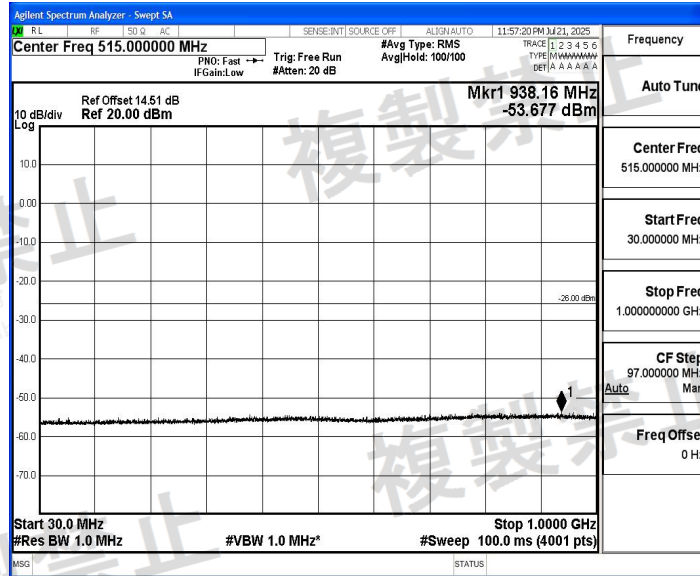
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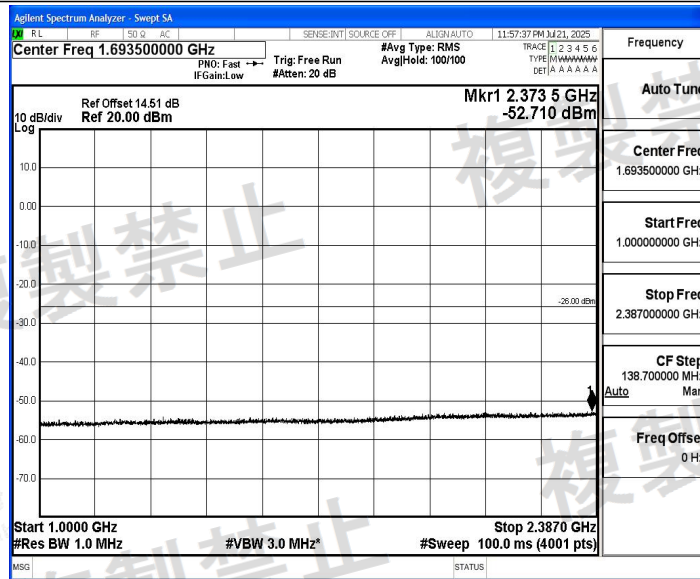


## Test Graphs

NTNV\_BLE\_2M\_Ant1\_2402\_30~1000



NTNV\_BLE\_2M\_Ant1\_2402\_1000~2387



NTNV\_BLE\_2M\_Ant1\_2402\_2387~2400

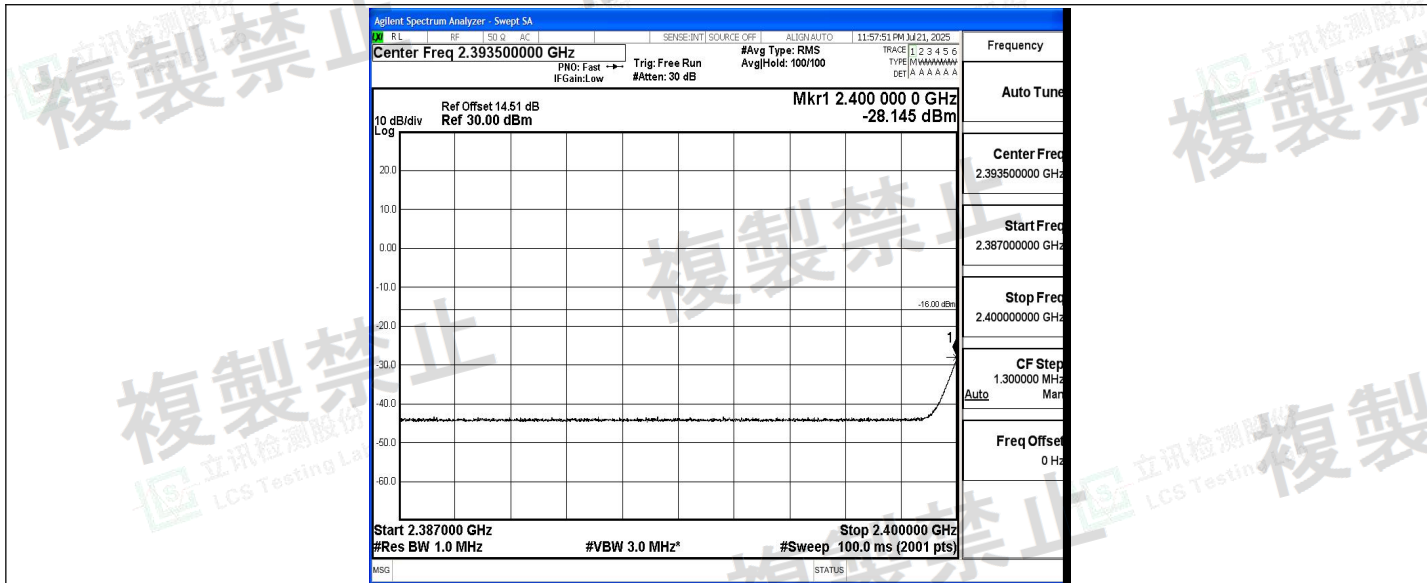


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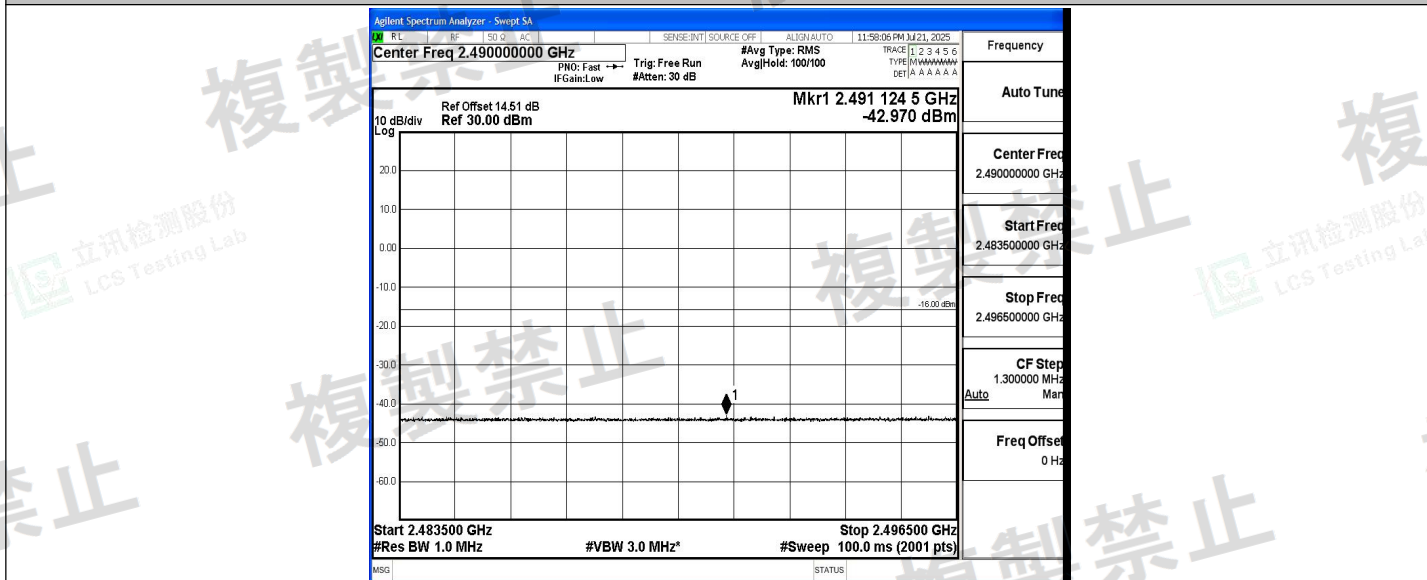
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NTNV\_BLE\_2M\_Ant1\_2402\_2483.5~2496.5



NTNV\_BLE\_2M\_Ant1\_2402\_2496.5~13000

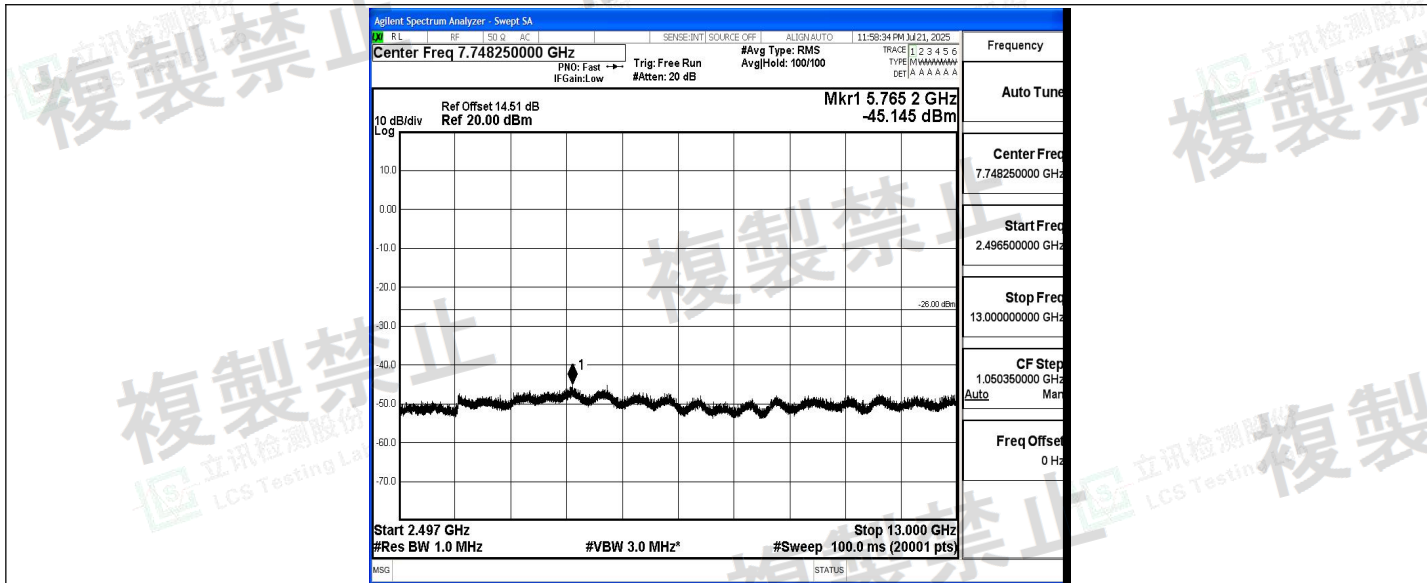


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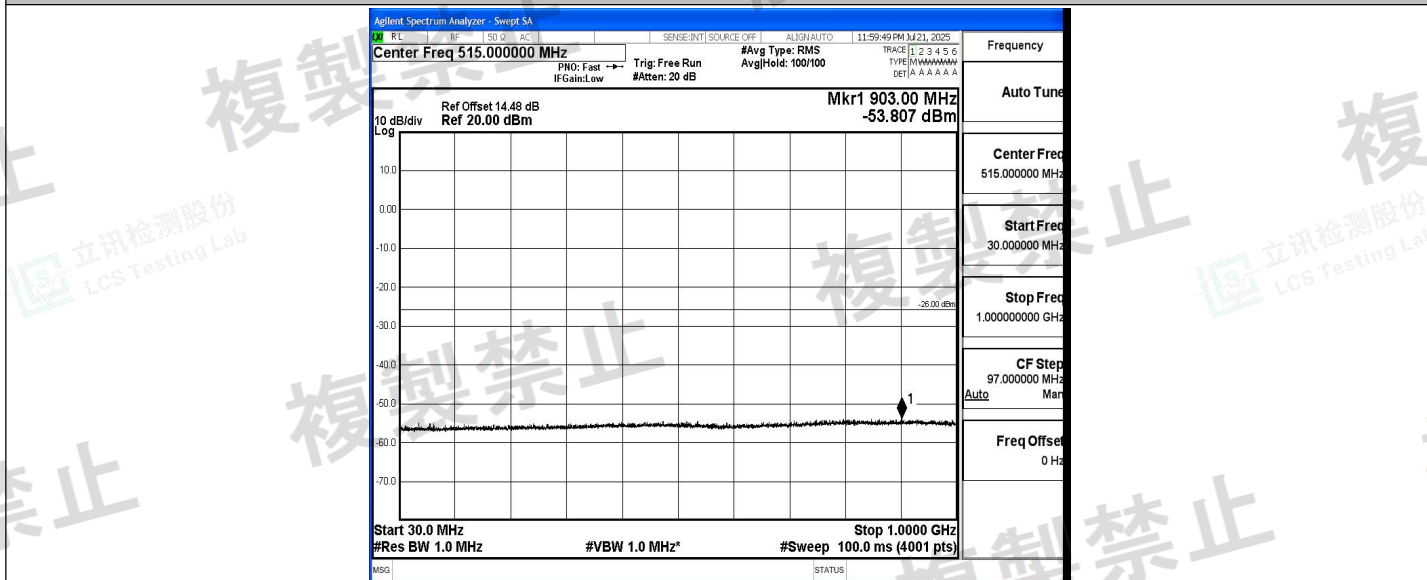
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NTNV\_BLE\_2M\_Ant1\_2440\_30~1000



NTNV\_BLE\_2M\_Ant1\_2440\_1000~2387

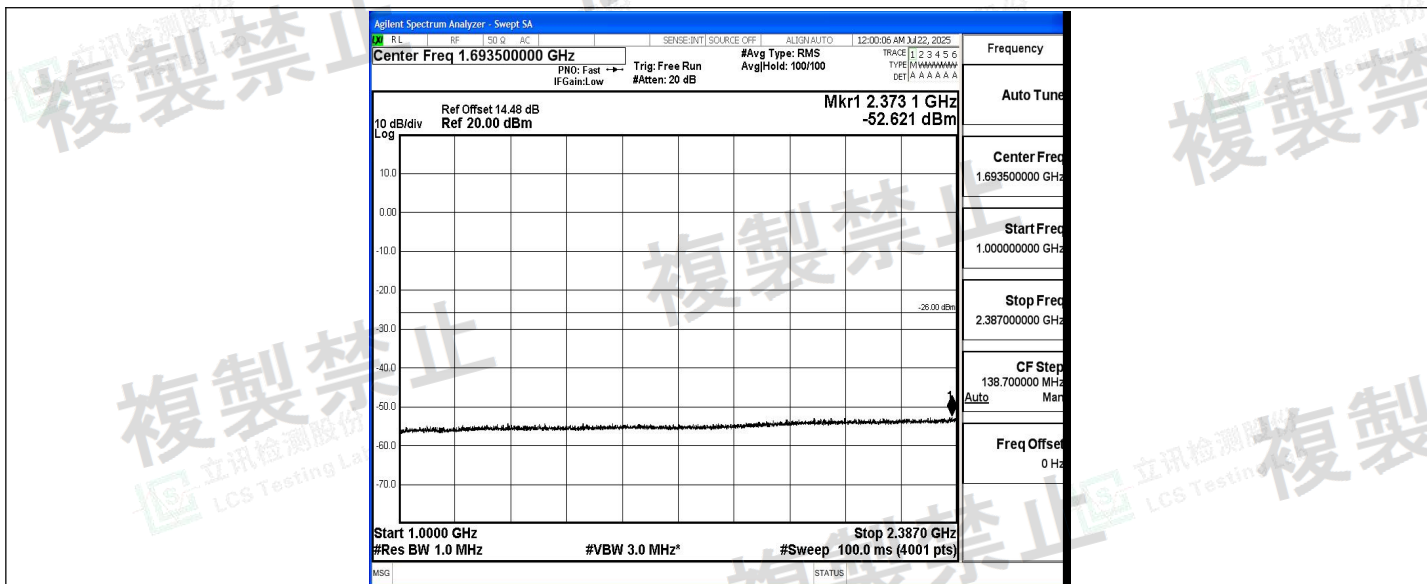


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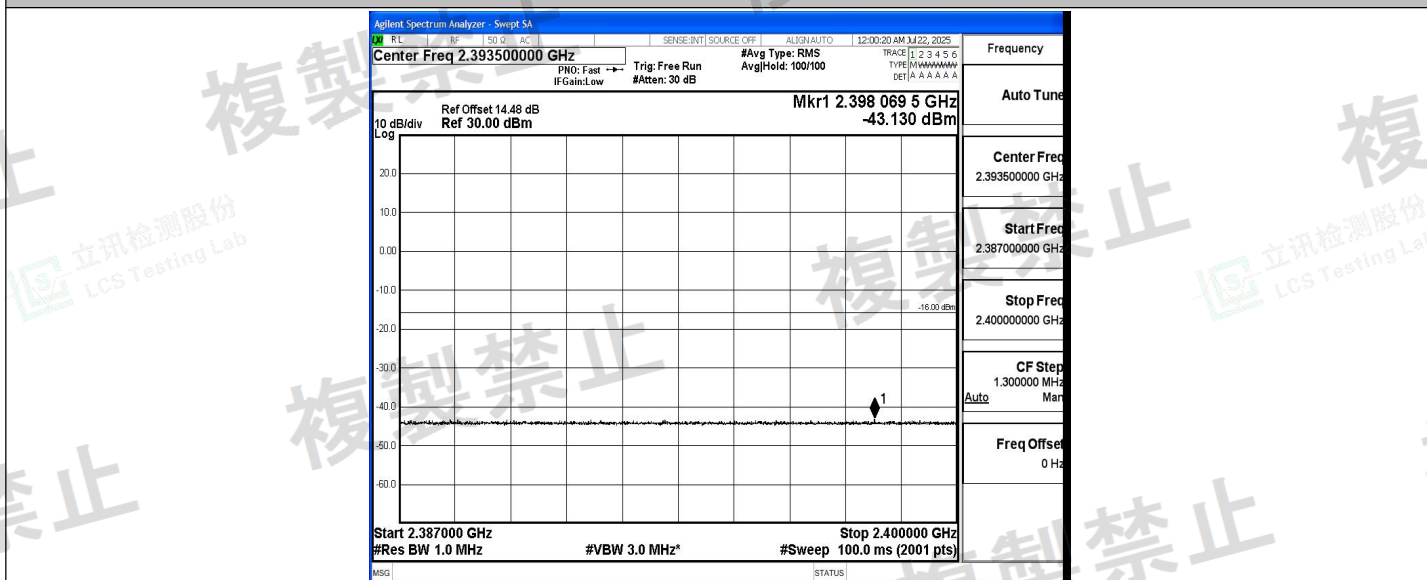
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NTNV\_BLE\_2M\_Ant1\_2440\_2387~2400



NTNV\_BLE\_2M\_Ant1\_2440\_2483.5~2496.5

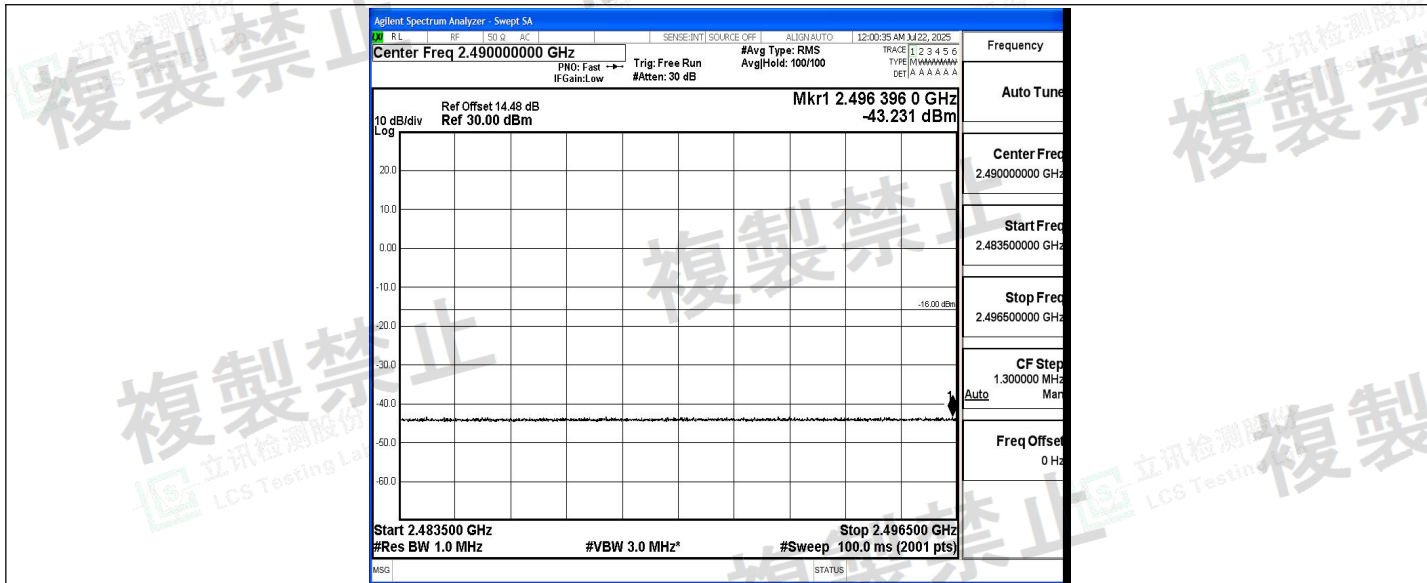


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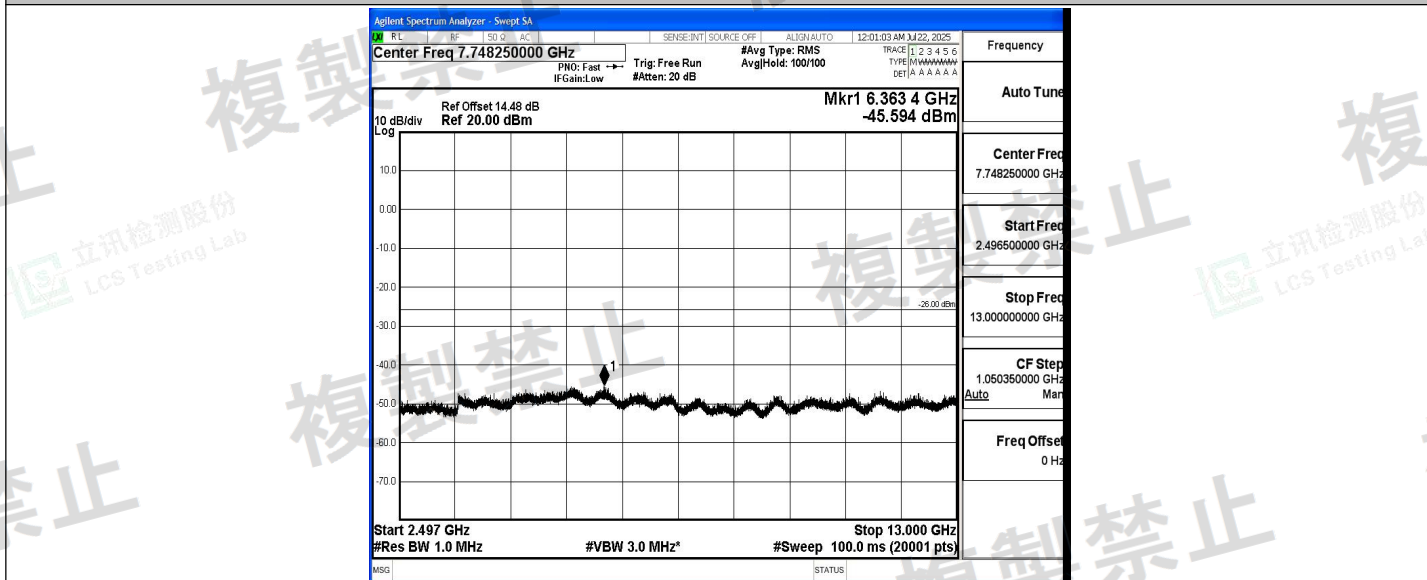
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NTNV\_BLE\_2M\_Ant1\_2440\_2496.5~13000



NTNV\_BLE\_2M\_Ant1\_2480\_30~1000

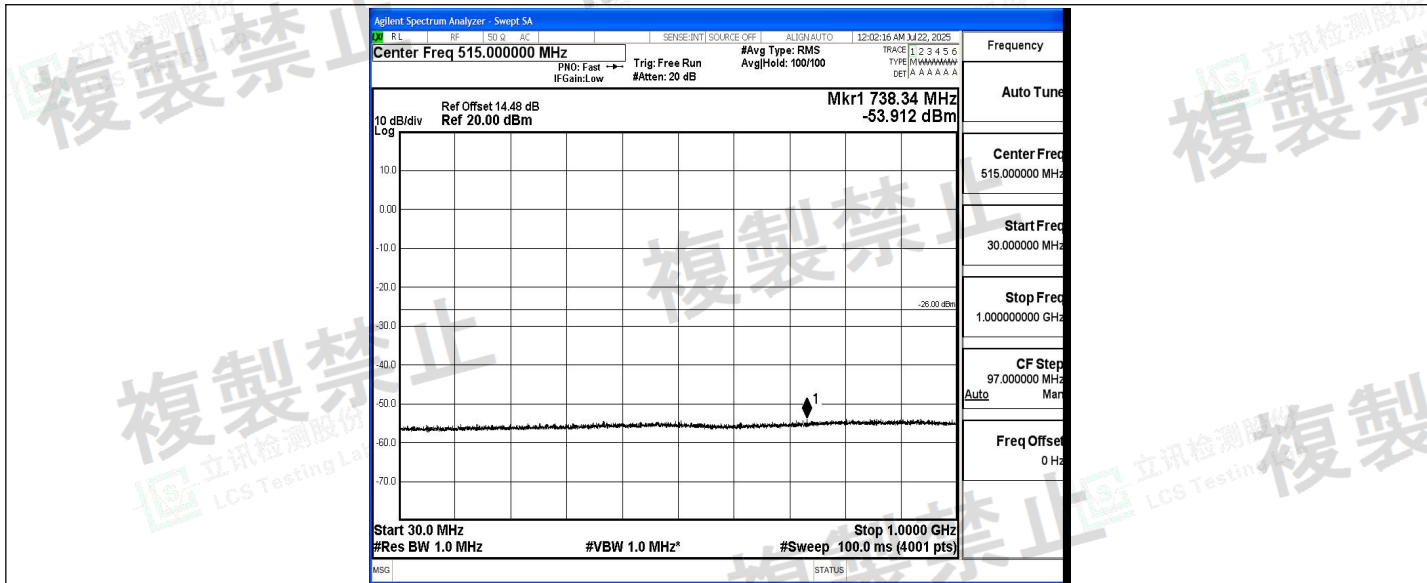


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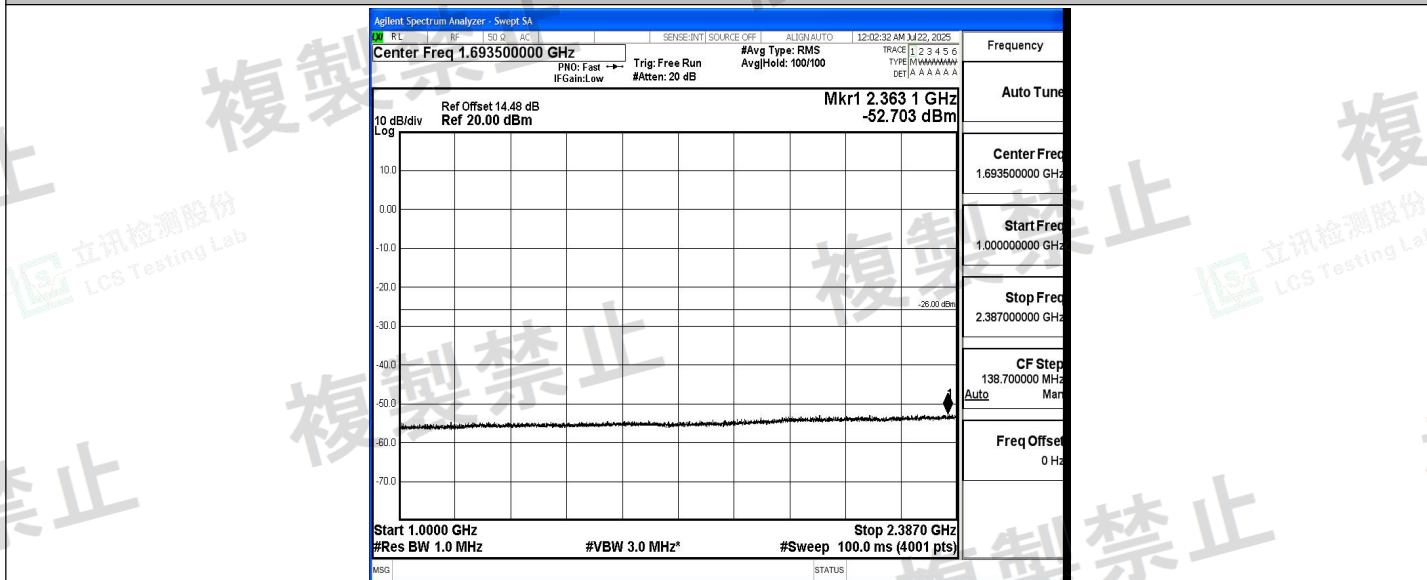
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NTNV\_BLE\_2M\_Ant1\_2480\_1000~2387



NTNV\_BLE\_2M\_Ant1\_2480\_2387~2400

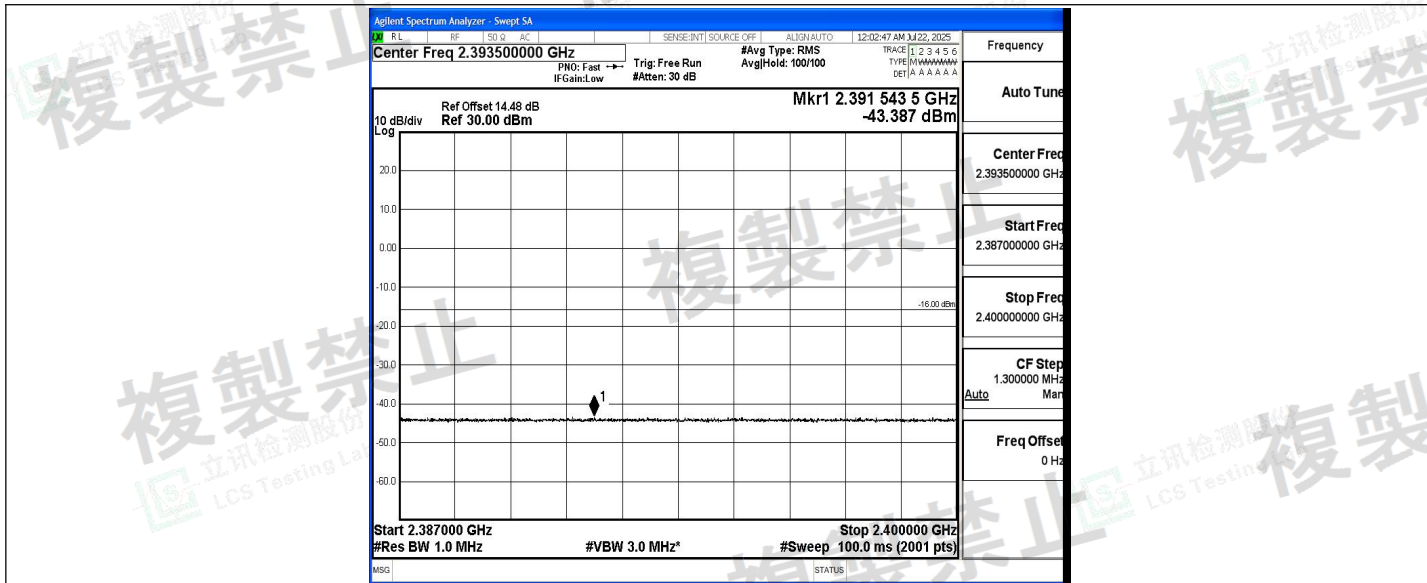


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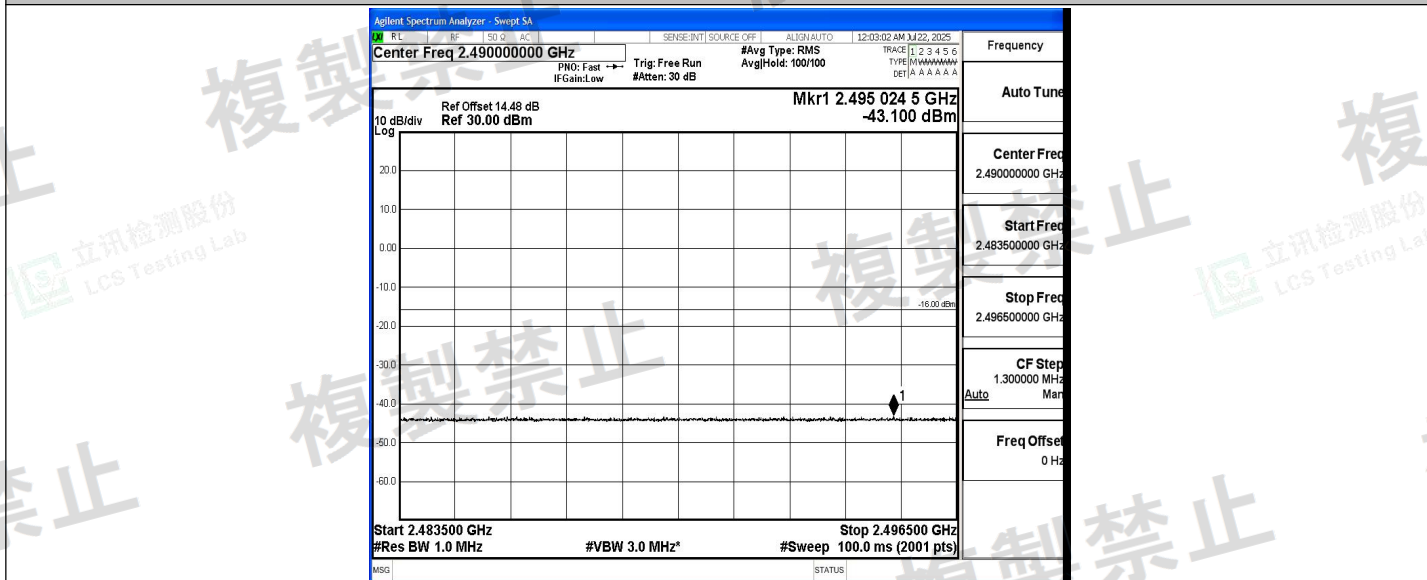
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NTNV\_BLE\_2M\_Ant1\_2480\_2483.5~2496.5



NTNV\_BLE\_2M\_Ant1\_2480\_2496.5~13000

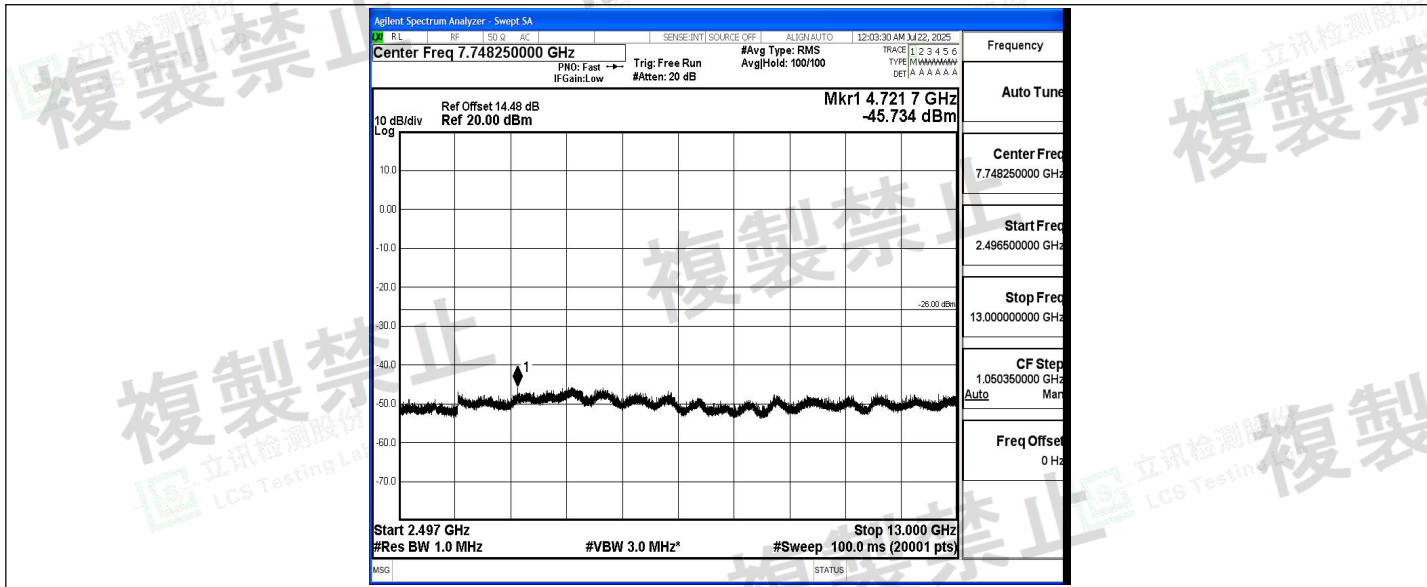


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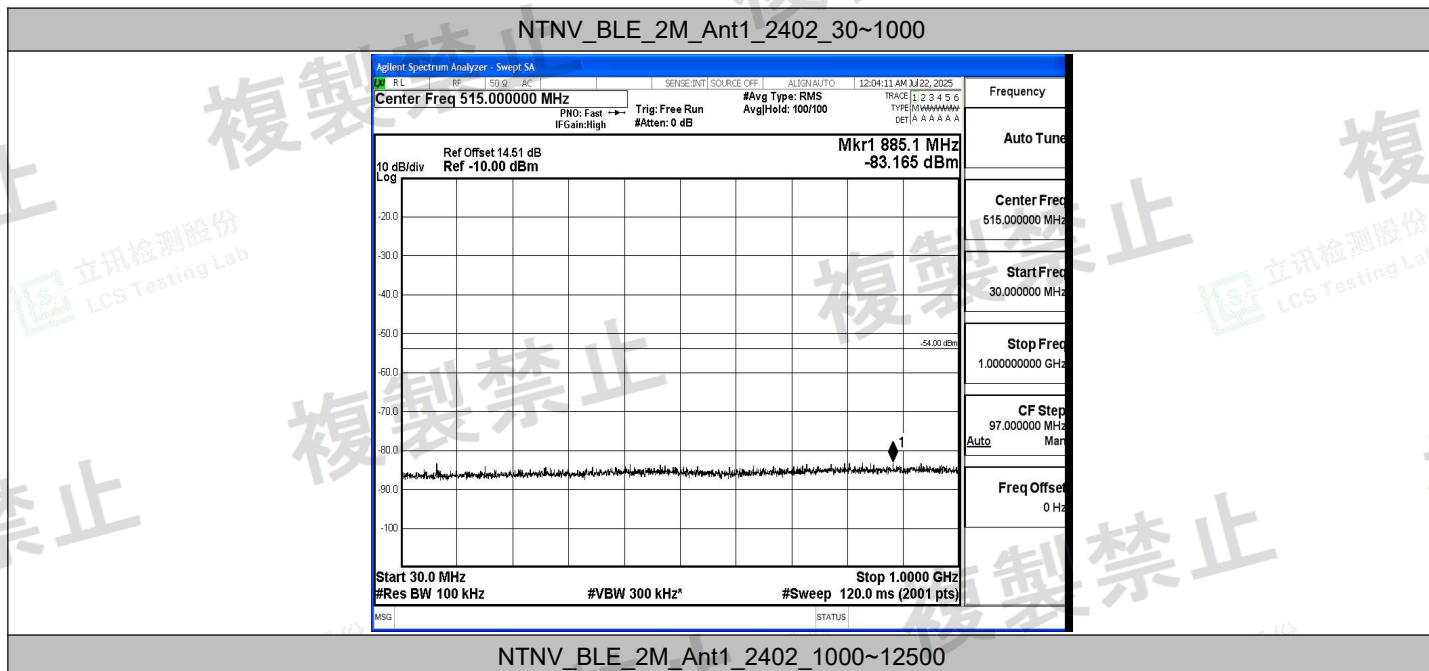


## A.6 Spurious Emission of RX

### Test Result

| TestCondition | TestMode | Antenna | Frequency[MHz] | Freq.Range [MHz] | Result [dBm] | Limit [dBm] | Result [nW] | Limit [nW] | Verdict |
|---------------|----------|---------|----------------|------------------|--------------|-------------|-------------|------------|---------|
| NTNV          | BLE_2M   | Ant1    | 2402           | 30~1000          | -83.17       | ≤-54        | 0.00482     | ≤4         | PASS    |
|               |          |         |                | 1000~12500       | -67.08       | ≤-47        | 0.19588     | ≤20        | PASS    |
|               |          |         | 2440           | 30~1000          | -82.77       | ≤-54        | 0.00528     | ≤4         | PASS    |
|               |          |         |                | 1000~12500       | -67.2        | ≤-47        | 0.19055     | ≤20        | PASS    |
|               |          |         | 2480           | 30~1000          | -83.22       | ≤-54        | 0.00476     | ≤4         | PASS    |
|               |          |         |                | 1000~12500       | -66.88       | ≤-47        | 0.20512     | ≤20        | PASS    |

### Test Graphs

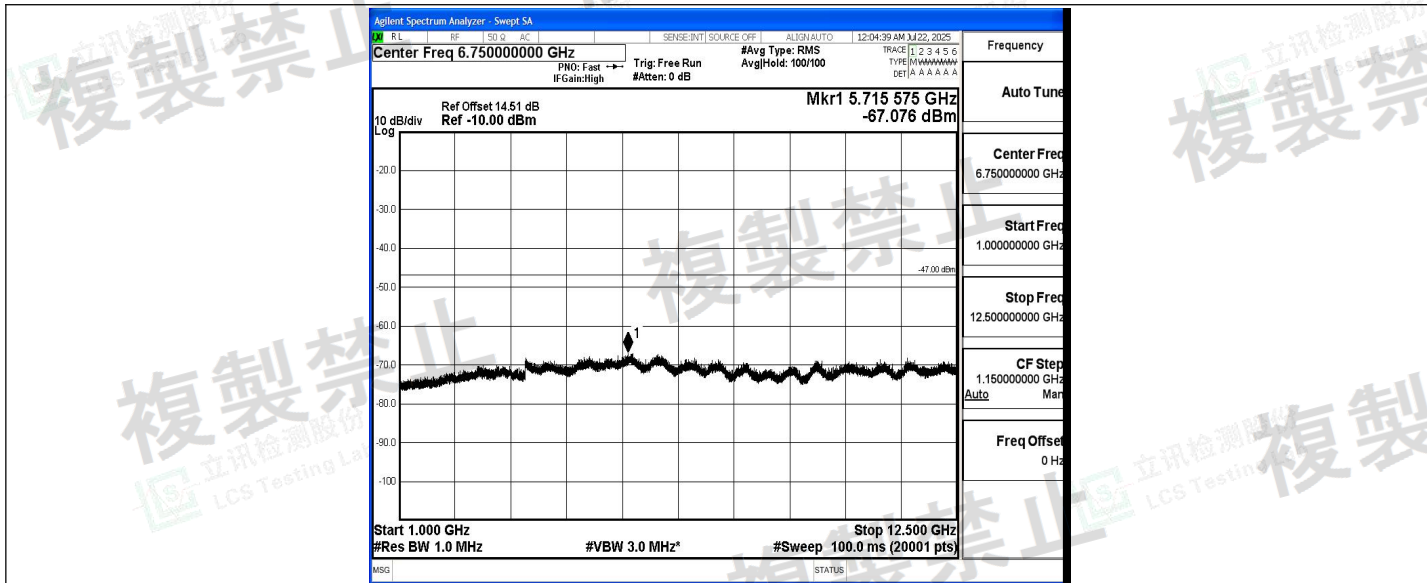


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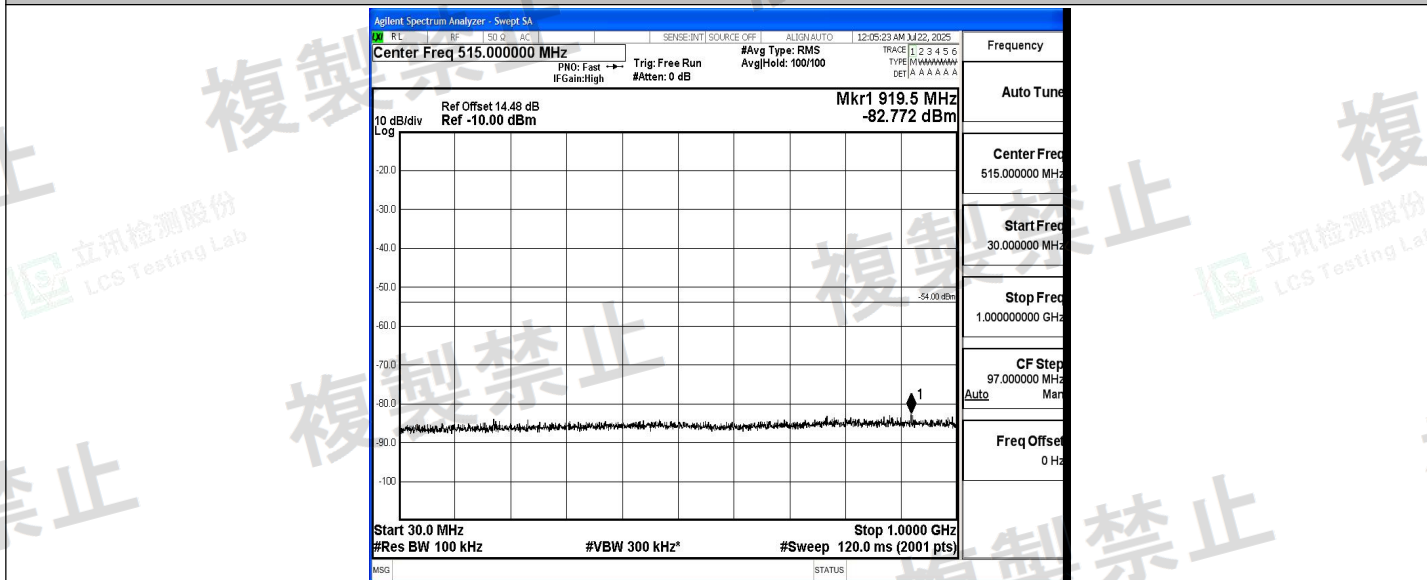
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NTNV\_BLE\_2M\_Ant1\_2440\_30~1000



NTNV\_BLE\_2M\_Ant1\_2440\_1000~12500

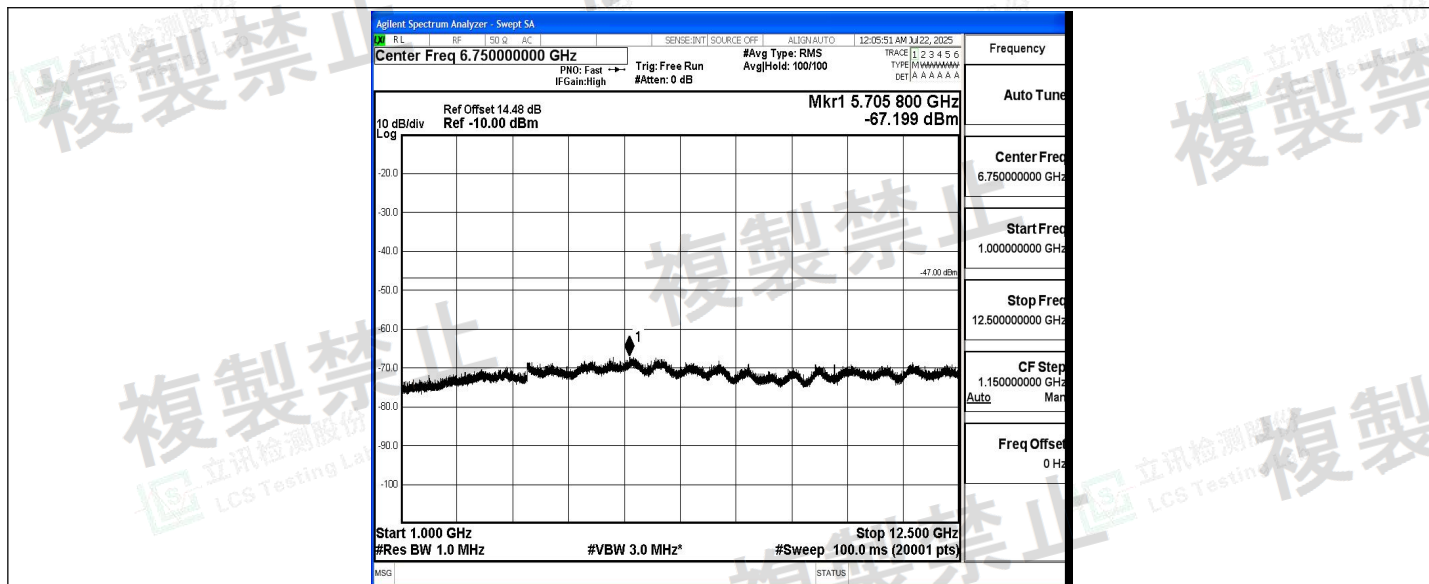


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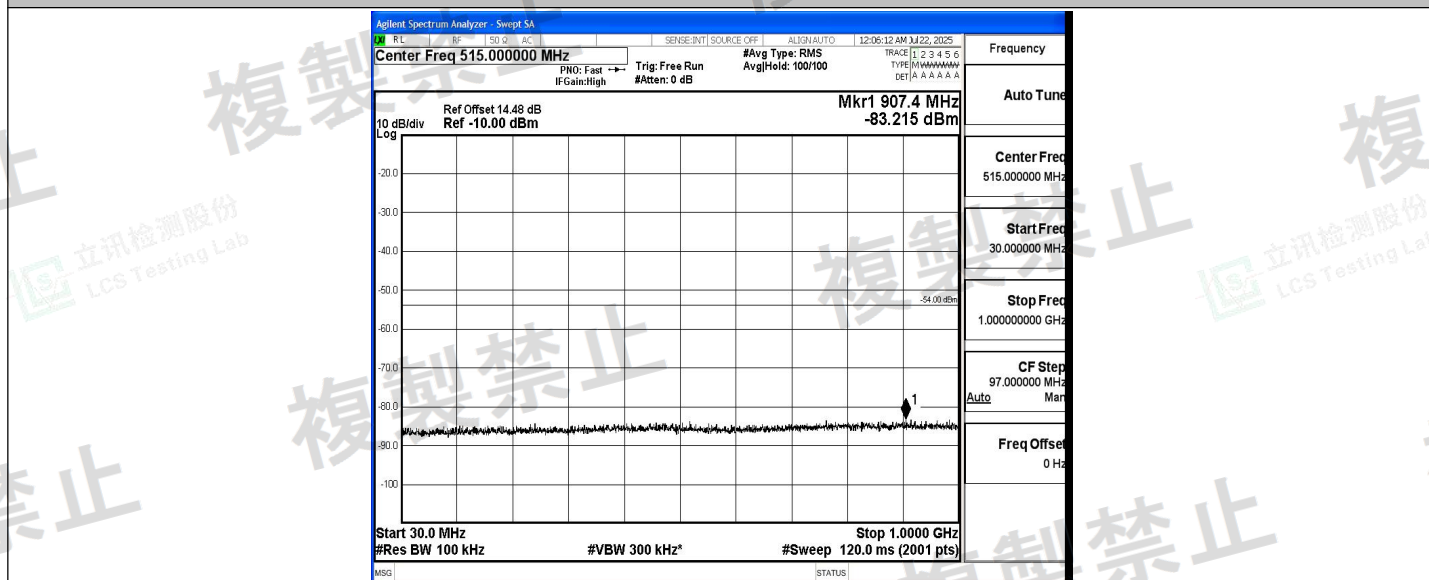
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NTNV\_BLE\_2M\_Ant1\_2480\_30~1000



NTNV\_BLE\_2M\_Ant1\_2480\_1000~12500

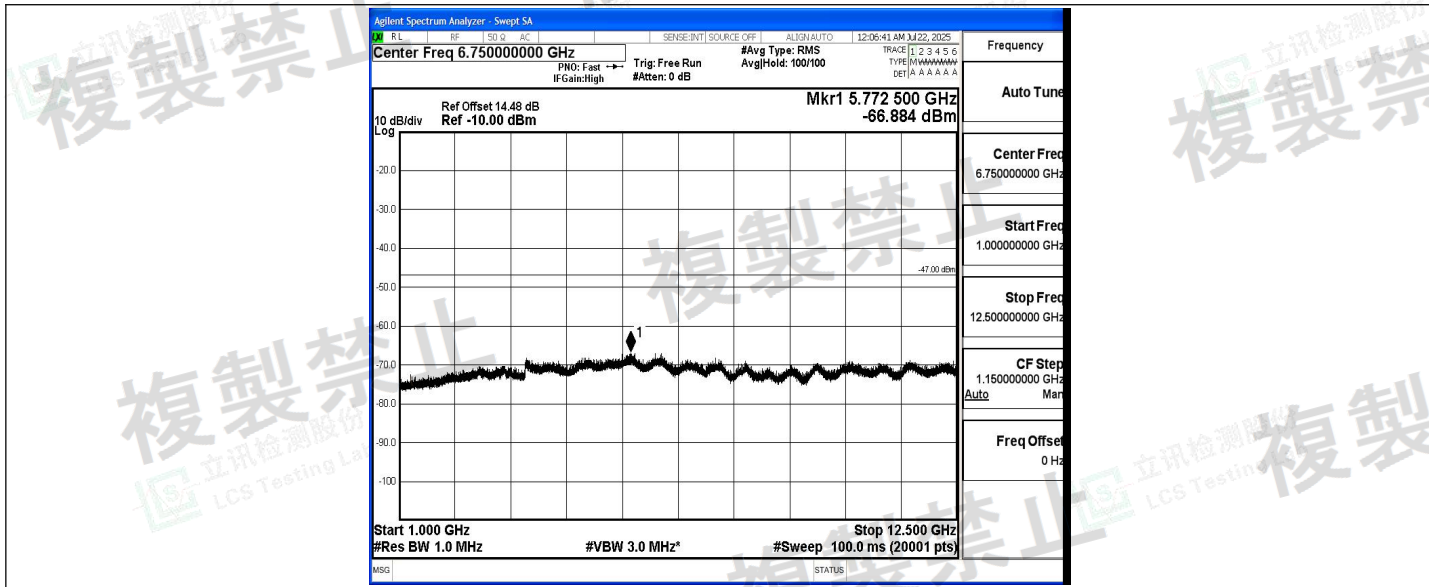


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