



## FCC CERTIFICATION TEST REPORT

|                                |   |                                                                                                                                                           |
|--------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>               | : | PEAG, LLC dba Jlab Audio                                                                                                                                  |
| <b>Address of Applicant</b>    | : | 5927 LANDAU CT, Carlsbad, CA 92008, United States                                                                                                         |
| <b>Manufacturer</b>            | : | GuangDong Simpreal Intelligent Technology Co., Ltd                                                                                                        |
| <b>Address of Manufacturer</b> | : | Room 2408, JiaHong ZhenXing DaSha, DongGuan Avenue #13, DongCheng District, DongGuan City, GuangDong Province, P.R. China                                 |
| <b>Equipment under Test</b>    | : | JLAB True Wireless Earbuds                                                                                                                                |
| <b>Model No.</b>               | : | JBuds Sport ANC 4                                                                                                                                         |
| <b>FCC ID</b>                  | : | 2AHYV-JBASP4                                                                                                                                              |
| <b>Test Standard(s)</b>        | : | FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10:2013,                                                                                            |
| <b>Report No.</b>              | : | DDT-RE24031401-1E02                                                                                                                                       |
| <b>Issue Date</b>              | : | 2024/05/24                                                                                                                                                |
| <b>Issue By</b>                | : | Guangdong Dongdian Testing Service Co., Ltd.<br>Unit 2, Building 1, No. 17, Zongbu 2nd Road,<br>Songshan Lake Park, Dongguan, Guangdong, China,<br>523808 |

# REPORT

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## Test Report Declare

|                                |   |                                                                                                                           |
|--------------------------------|---|---------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>               | : | PEAG, LLC dba Jlab Audio                                                                                                  |
| <b>Address of Applicant</b>    | : | 5927 LANDAU CT, Carlsbad, CA 92008, United States                                                                         |
| <b>Equipment under Test</b>    | : | JLAB True Wireless Earbuds                                                                                                |
| <b>Model No.</b>               | : | JBuds Sport ANC 4                                                                                                         |
| <b>Manufacturer</b>            | : | GuangDong Simpreal Intelligent Technology Co., Ltd                                                                        |
| <b>Address of Manufacturer</b> | : | Room 2408, JiaHong ZhenXing DaSha, DongGuan Avenue #13, DongCheng District, DongGuan City, GuangDong Province, P.R. China |

**Test Standard Used:**

FCC Rules and Regulations Part 15 Subpart C,  
ANSI C63.10:2013,

**We Declare:**

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

|                         |                     |                      |                       |
|-------------------------|---------------------|----------------------|-----------------------|
| <b>Report No.:</b>      | DDT-RE24031401-1E02 |                      |                       |
| <b>Date of Receipt:</b> | 2024/04/12          | <b>Date of Test:</b> | 2024/04/12~2024/05/24 |

**Prepared By:****Ziqin Chen/Engineer****Approved By:****Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

| Rev. | Revisions     | Issue Date | Revised By |
|------|---------------|------------|------------|
| ---  | Initial issue | 2024/05/24 |            |
|      |               |            |            |

## 1. Summary of Test Results

| No.                                                                                                                                              | Test Parameter                   | Clause No.                                                             | Condition | Result |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------|-----------|--------|
| 1                                                                                                                                                | 6 dB Bandwidth and 99% Bandwidth | FCC Part 15: 15.247(a)(2),                                             | /         | Pass   |
| 2                                                                                                                                                | Peak Output Power                | FCC Part 15: 15.247(b)(3)                                              | /         | Pass   |
| 3                                                                                                                                                | Power Spectral Density           | FCC Part 15:15.247(e)                                                  | /         | Pass   |
| 4                                                                                                                                                | RF Conducted Spurious Emissions  | FCC Part 15: 15.247(d)                                                 | /         | Pass   |
| 5                                                                                                                                                | Radiated Emission                | FCC Part 15: 15.205,<br>FCC Part 15: 15.209,<br>FCC Part 15: 15.247(d) | /         | Pass   |
| 6                                                                                                                                                | Band Edge Compliance             | FCC Part 15: 15.205,<br>FCC Part 15: 15.209,<br>FCC Part 15: 15.247(d) | /         | Pass   |
| 7                                                                                                                                                | Antenna Requirement              | FCC Part 15: 15.203                                                    | /         | Pass   |
| 8                                                                                                                                                | Power Line Conducted Emissions   | FCC Part 15: 15.207(a)                                                 | /         | Pass   |
| Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard. |                                  |                                                                        |           |        |

## 2. General Test Information

### 2.1. Description of EUT

|                            |                                                                    |
|----------------------------|--------------------------------------------------------------------|
| EUT Name                   | : JLAB True Wireless Earbuds                                       |
| Model Number               | : JBuds Sport ANC 4                                                |
| Difference of model number | : /                                                                |
| EUT Function Description   | : Please reference user manual of this device                      |
| Power Supply               | : DC 5V by an external adapter or DC 3.7V built-in lithium battery |
| Hardware Version           | : V1.7                                                             |
| Software Version           | : V3.9.0                                                           |

Note: This EUT support Bluetooth BR/EDR/LE, this report only for Bluetooth LE.

|                     |                       |
|---------------------|-----------------------|
| Radio Specification | : Bluetooth LE        |
| Operation Frequency | : 2402 MHz - 2480 MHz |
| Modulation          | : GFSK                |

|                       |                         |
|-----------------------|-------------------------|
| Antenna information   |                         |
| Antenna Type          | : FPC                   |
| Max Antenna Gain(dBi) | : L:-0.13dBi R:-0.16dBi |

| Bluetooth LE 1Mbps Channel information |                 |         |                 |         |                 |
|----------------------------------------|-----------------|---------|-----------------|---------|-----------------|
| Channel                                | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0                                      | 2402            | 14      | 2430            | 28      | 2458            |
| 1                                      | 2404            | 15      | 2432            | 29      | 2460            |
| 2                                      | 2406            | 16      | 2434            | 30      | 2462            |
| 3                                      | 2408            | 17      | 2436            | 31      | 2464            |
| 4                                      | 2410            | 18      | 2438            | 32      | 2466            |
| 5                                      | 2412            | 19      | 2440            | 33      | 2468            |
| 6                                      | 2414            | 20      | 2442            | 34      | 2470            |
| 7                                      | 2416            | 21      | 2444            | 35      | 2472            |
| 8                                      | 2418            | 22      | 2446            | 36      | 2474            |
| 9                                      | 2420            | 23      | 2448            | 37      | 2476            |
| 10                                     | 2422            | 24      | 2450            | 38      | 2478            |
| 11                                     | 2424            | 25      | 2452            | 39      | 2480            |
| 12                                     | 2426            | 26      | 2454            |         |                 |
| 13                                     | 2428            | 27      | 2456            |         |                 |
| Bluetooth LE 2Mbps Channel information |                 |         |                 |         |                 |
| Channel                                | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0                                      | 2402            | 14      | 2430            | 28      | 2458            |
| 1                                      | 2404            | 15      | 2432            | 29      | 2460            |

|                                                                                                                                                                                         |      |    |      |    |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|------|----|------|
| 2                                                                                                                                                                                       | 2406 | 16 | 2434 | 30 | 2462 |
| 3                                                                                                                                                                                       | 2408 | 17 | 2436 | 31 | 2464 |
| 4                                                                                                                                                                                       | 2410 | 18 | 2438 | 32 | 2466 |
| 5                                                                                                                                                                                       | 2412 | 19 | 2440 | 33 | 2468 |
| 6                                                                                                                                                                                       | 2414 | 20 | 2442 | 34 | 2470 |
| 7                                                                                                                                                                                       | 2416 | 21 | 2444 | 35 | 2472 |
| 8                                                                                                                                                                                       | 2418 | 22 | 2446 | 36 | 2474 |
| 9                                                                                                                                                                                       | 2420 | 23 | 2448 | 37 | 2476 |
| 10                                                                                                                                                                                      | 2422 | 24 | 2450 | 38 | 2478 |
| 11                                                                                                                                                                                      | 2424 | 25 | 2452 | 39 | 2480 |
| 12                                                                                                                                                                                      | 2426 | 26 | 2454 |    |      |
| 13                                                                                                                                                                                      | 2428 | 27 | 2456 |    |      |
| The channels denoted with the grey background are excluded, because they are primary advertising channel only for the Bluetooth LE 1Mbps according to the Bluetooth Core Specification. |      |    |      |    |      |

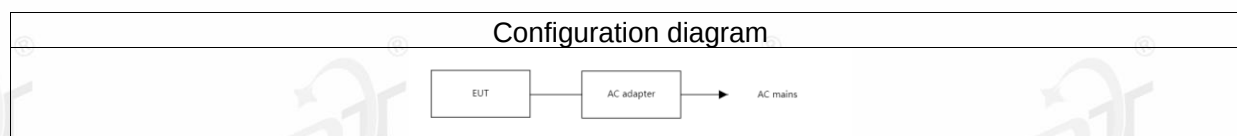
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

“☒” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.

## 2.2. Accessories of EUT

| Accessories | Manufacturer | Model number | Description |
|-------------|--------------|--------------|-------------|
| /           | /            | /            | /           |

## 2.3. Block diagram of EUT configuration for test



## 2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: BQB.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table:

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

| Tested mode, channel, information |                  |         |                 |
|-----------------------------------|------------------|---------|-----------------|
| Mode                              | Setting Tx Power | Channel | Frequency (MHz) |
| GFSK 1M                           | Default          | CH0     | 2402            |
|                                   | Default          | CH19    | 2440            |
|                                   | Default          | CH39    | 2480            |
| GFSK 2M                           | Default          | CH1     | 2404            |
|                                   | Default          | CH19    | 2440            |
|                                   | Default          | CH38    | 2478            |

## 2.5. Deviations of test standard

No deviation.

## 2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |                   |
|--------------------|-------------------|
| Temperature range: | +15°C to +35 °C   |
| Humidity range:    | 20% to 75%        |
| Pressure range:    | 86 kPa to 106 kPa |

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

## 2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: [ddt@dgddt.com](mailto:ddt@dgddt.com).

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

## 2.8. Measurement uncertainty

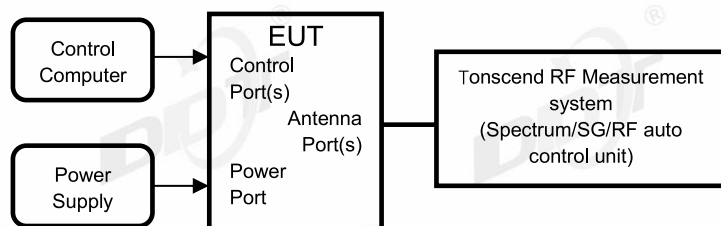
| Test Item                                                                                                                                     | Uncertainty                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bandwidth                                                                                                                                     | 1.1%                                                                                                                                                                    |
| Peak Output Power (Conducted) (Spectrum analyzer)                                                                                             | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )                                                          |
| Peak Output Power (Conducted) (Power Sensor)                                                                                                  | 0.74 dB                                                                                                                                                                 |
| Power Spectral Density                                                                                                                        | 0.74 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )                                                          |
| Frequencies Stability                                                                                                                         | $6.7 \times 10^{-8}$ (Antenna couple method)<br>$5.5 \times 10^{-8}$ (Conducted method)                                                                                 |
| Conducted spurious emissions                                                                                                                  | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.40 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )<br>1.66 dB ( $8 \text{ GHz} \leq f < 26.5 \text{ GHz}$ ) |
| Uncertainty for radio frequency (RBW < 20 kHz)                                                                                                | $3 \times 10^{-8}$                                                                                                                                                      |
| Temperature                                                                                                                                   | 0.4 °C                                                                                                                                                                  |
| Humidity                                                                                                                                      | 2 %                                                                                                                                                                     |
| Uncertainty for Radiation Emission test<br>(9 kHz – 30 MHz)                                                                                   | 3.44 dB                                                                                                                                                                 |
| Uncertainty for Radiation Emission test<br>(30 MHz - 1 GHz)                                                                                   | 4.70 dB (Antenna Polarize: V)<br>4.84 dB (Antenna Polarize: H)                                                                                                          |
| Uncertainty for Radiation Emission test<br>(1 GHz - 40 GHz)                                                                                   | 4.10 dB (1 - 6 GHz)<br>4.40 dB (6 GHz - 18 GHz)<br>3.54 dB (18 GHz - 26 GHz)<br>4.30 dB (26 GHz - 40 GHz)                                                               |
| Uncertainty for Power line conduction emission test                                                                                           | 3.34dB (150KHz-30MHz)<br>3.72dB (9KHz-150KHz)                                                                                                                           |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. |                                                                                                                                                                         |

3. Equipment Used During Conductive Test

| Equipment                                     | Manufacturer | Model No.   | Serial Number | Due Date   |
|-----------------------------------------------|--------------|-------------|---------------|------------|
| ☑RF Connected Test (RF Measurement System 4#) |              |             |               |            |
| Signal &Spectrum Analyzer                     | R&S          | FSV3044     | 101173        | 2025/03/31 |
| Wideband Radio Communication Tester           | R&S          | CMW500      | 168801        | 2025/03/31 |
| MXG Vector Signal Generator                   | Agilent      | N5182A      | MY48180737    | 2025/03/31 |
| PSG Vector Signal Generator                   | Agilent      | E8267D      | US49060192    | 2024/09/05 |
| RF Control Unit                               | Tonsend      | JS0806-2    | 21I8060485    | 2025/03/31 |
| TEMP&HUMI Programmable Chamber                | ZHIXIANG     | ZXGDJS-150L | ZX170110-A    | 2025/04/22 |
| Test Software                                 | Tonscend     | JS1120-3    | Ver.3.2.22    | N/A        |

## 4. 6 dB Bandwidth

### 4.1. Block diagram of test setup



### 4.2. Limits

For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz

### 4.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.8.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously
- (4) Use the following spectrum analyzer settings for 6 dB Bandwidth:

|                |                              |
|----------------|------------------------------|
| RBW:           | 100 kHz                      |
| VBW:           | $\geq [3 \times \text{RBW}]$ |
| Detector Mode: | Peak                         |
| Sweep time:    | Auto                         |
| Trace mode     | Max hold                     |
- (5) Allow the trace to stabilize, measure the 6 dB bandwidth of signal, and record the results in the report.

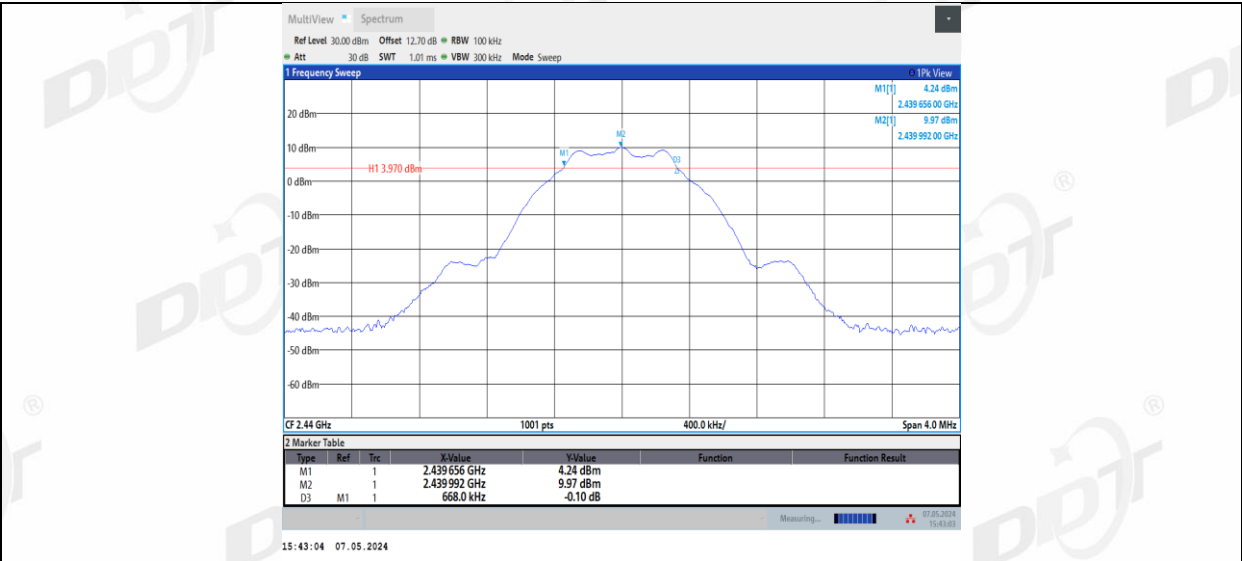
4.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

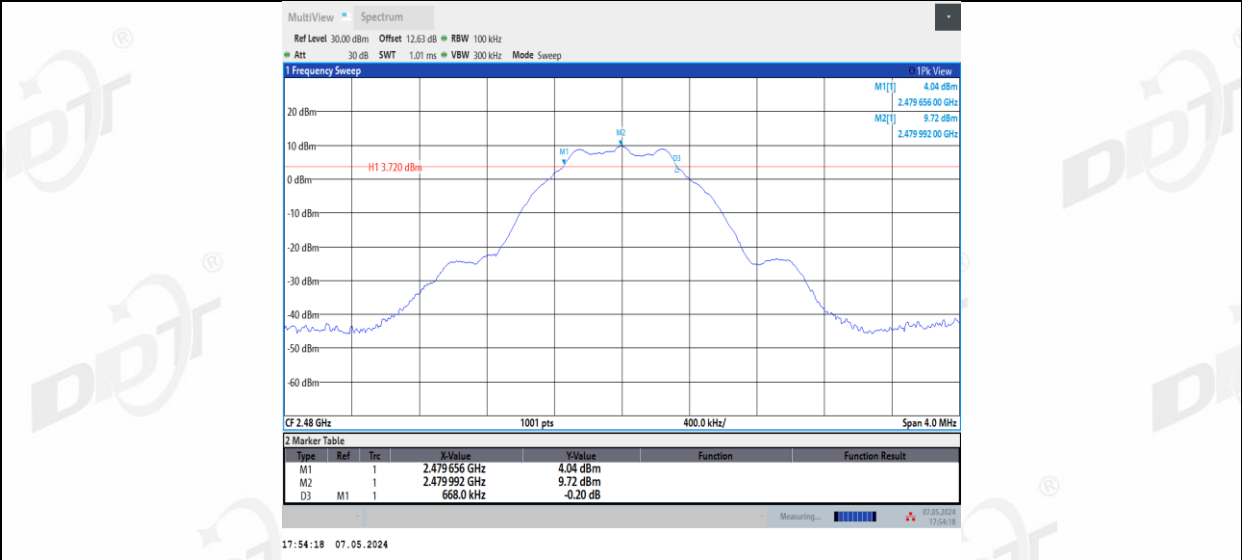
| Test Mode | Antenna | Frequency [MHz] | DTS BW [MHz] | FL[MHz] | FH[MHz] | Limit [MHz] | Verdict |
|-----------|---------|-----------------|--------------|---------|---------|-------------|---------|
| BLE_1M    | Ant1_L  | 2402            | 0.67         | 2401.65 | 2402.32 | 0.5         | PASS    |
|           | Ant2_R  | 2402            | 0.67         | 2401.66 | 2402.32 | 0.5         | PASS    |
|           | Ant1_L  | 2440            | 0.67         | 2439.65 | 2440.32 | 0.5         | PASS    |
|           | Ant2_R  | 2440            | 0.67         | 2439.66 | 2440.32 | 0.5         | PASS    |
|           | Ant1_L  | 2480            | 0.67         | 2479.66 | 2480.32 | 0.5         | PASS    |
|           | Ant2_R  | 2480            | 0.67         | 2479.65 | 2480.32 | 0.5         | PASS    |
| BLE_2M    | Ant1_L  | 2404            | 1.13         | 2403.43 | 2404.56 | 0.5         | PASS    |
|           | Ant2_R  | 2404            | 1.13         | 2403.44 | 2404.56 | 0.5         | PASS    |
|           | Ant1_L  | 2440            | 1.13         | 2439.44 | 2440.56 | 0.5         | PASS    |
|           | Ant2_R  | 2440            | 1.13         | 2439.44 | 2440.57 | 0.5         | PASS    |
|           | Ant1_L  | 2478            | 1.13         | 2477.44 | 2478.57 | 0.5         | PASS    |
|           | Ant2_R  | 2478            | 1.13         | 2477.44 | 2478.56 | 0.5         | PASS    |

4.5. Test graphs

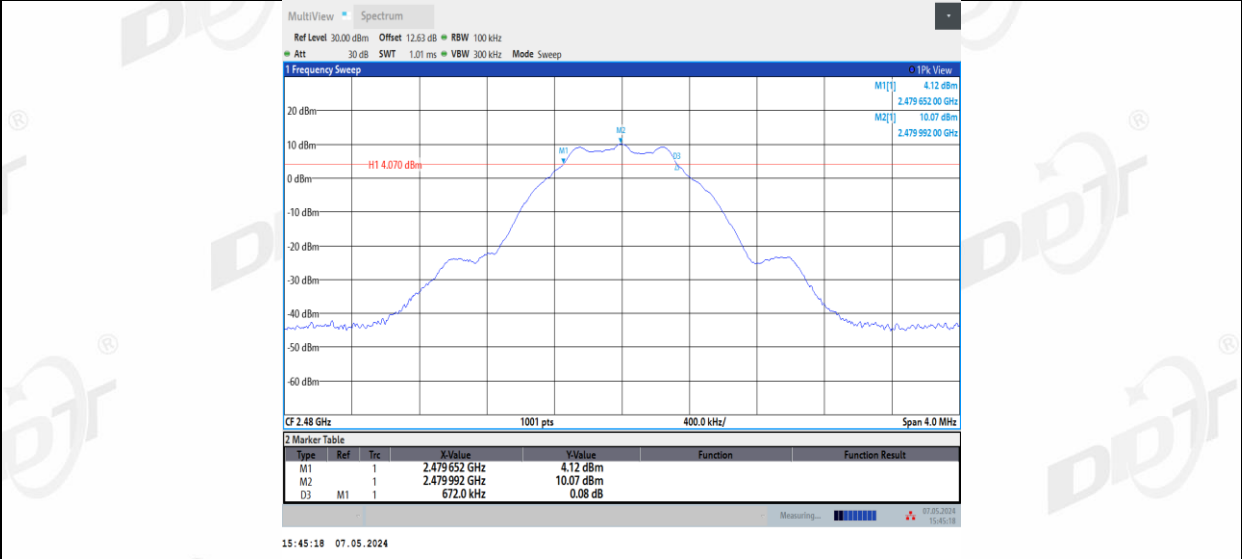




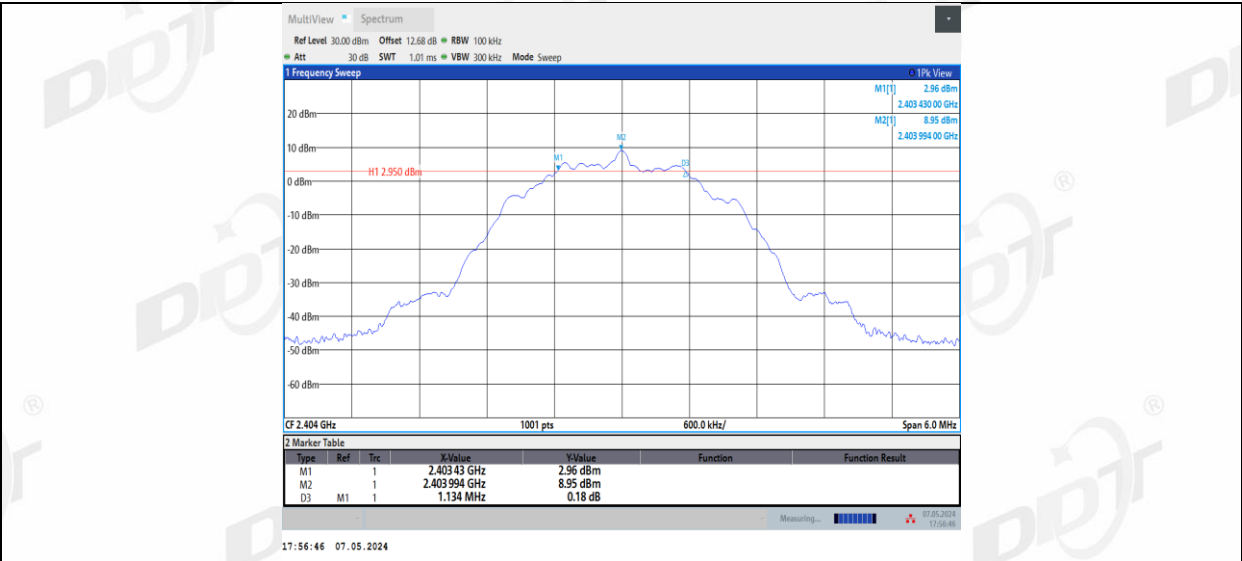
BLE\_1M\_Ant1\_L\_2480



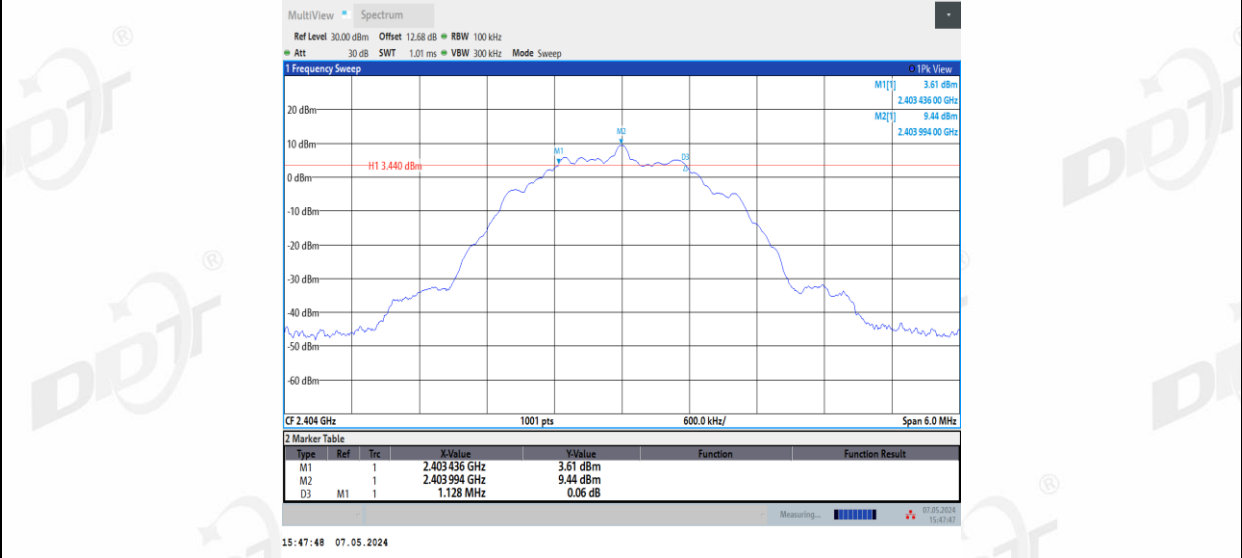
BLE\_1M\_Ant2\_R\_2480



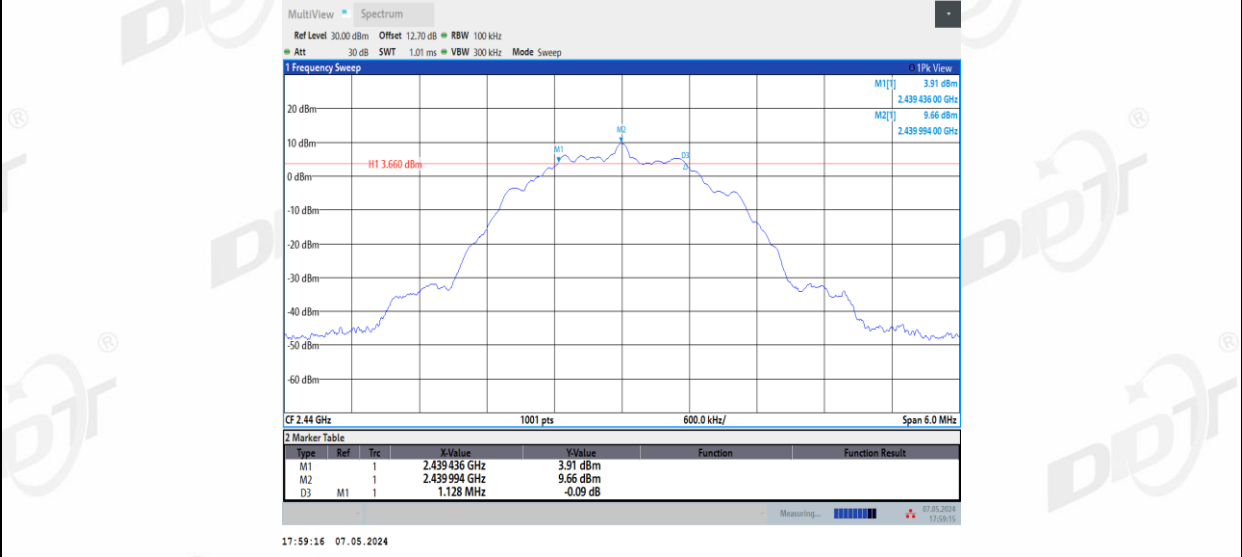
BLE\_2M\_Ant1\_L\_2404



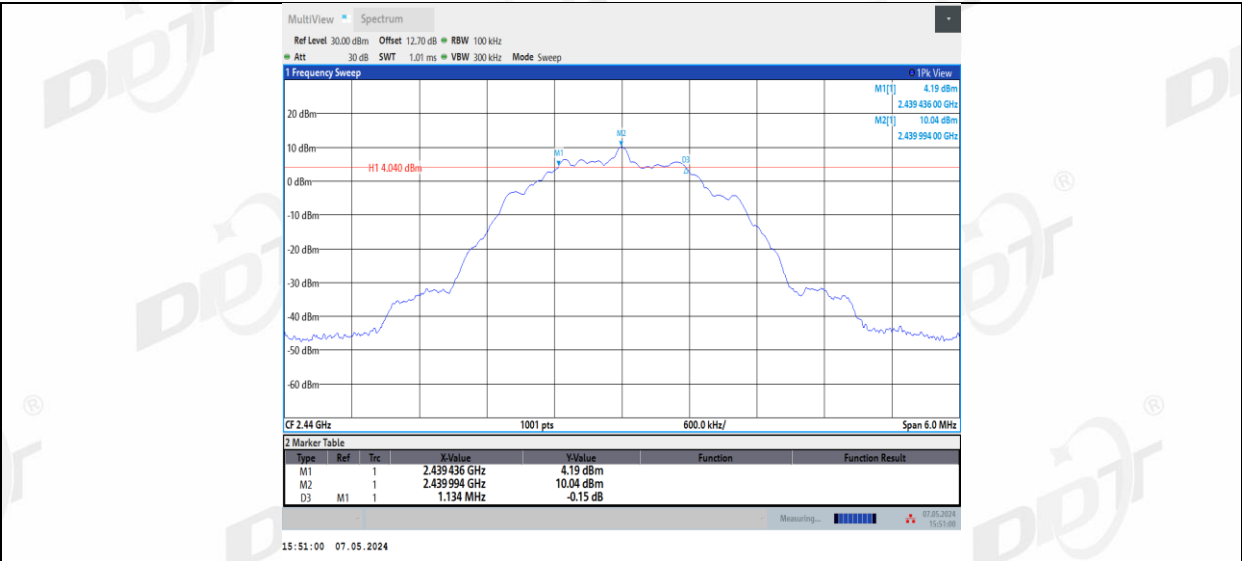
BLE\_2M\_Ant2\_R\_2404



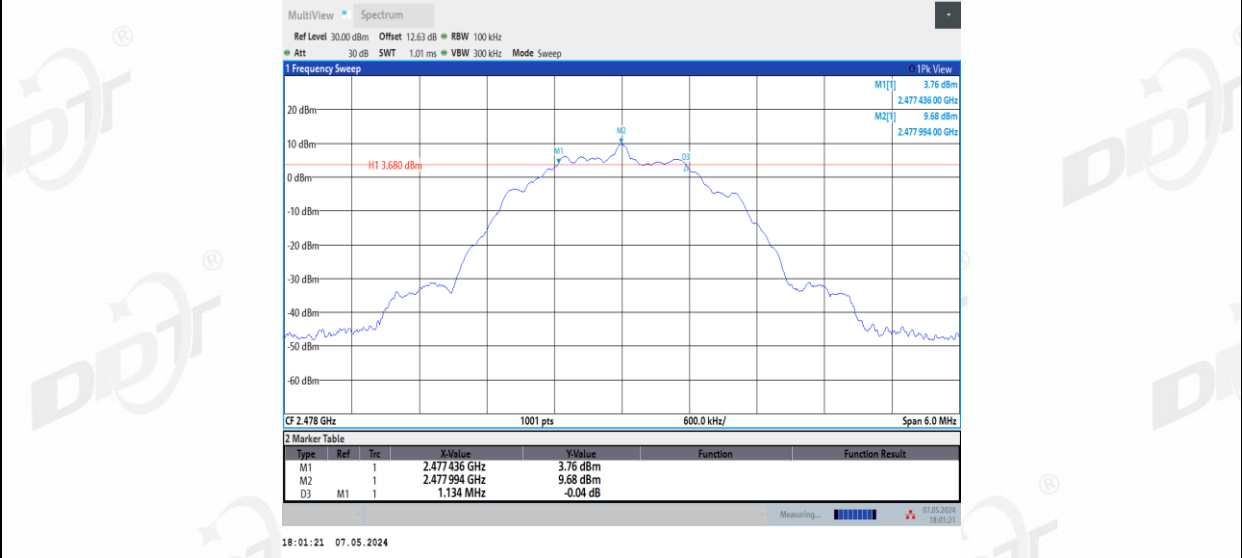
BLE\_2M\_Ant1\_L\_2440



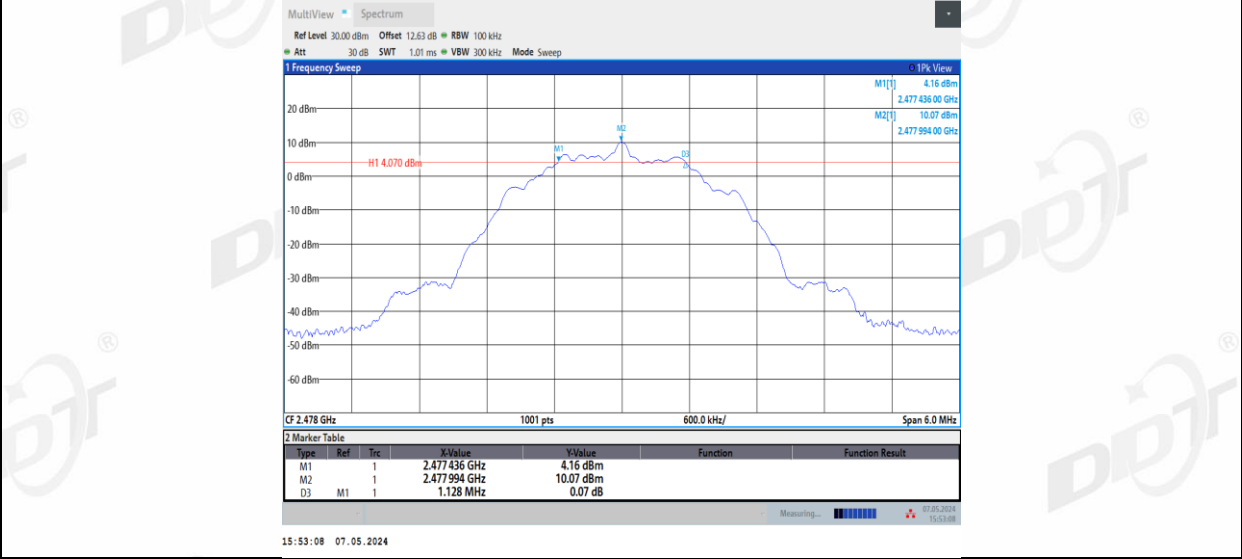
BLE\_2M\_Ant2\_R\_2440



BLE\_2M\_Ant1\_L\_2478

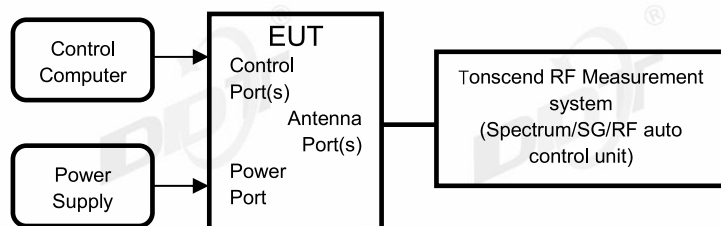


BLE\_2M\_Ant2\_R\_2478



## 5. 99% Bandwidth

### 5.1. Block diagram of test setup



### 5.2. Limits

Just for Report.

### 5.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 6.9.3.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously
- (4) Use the following spectrum analyzer settings for the 99% Bandwidth:

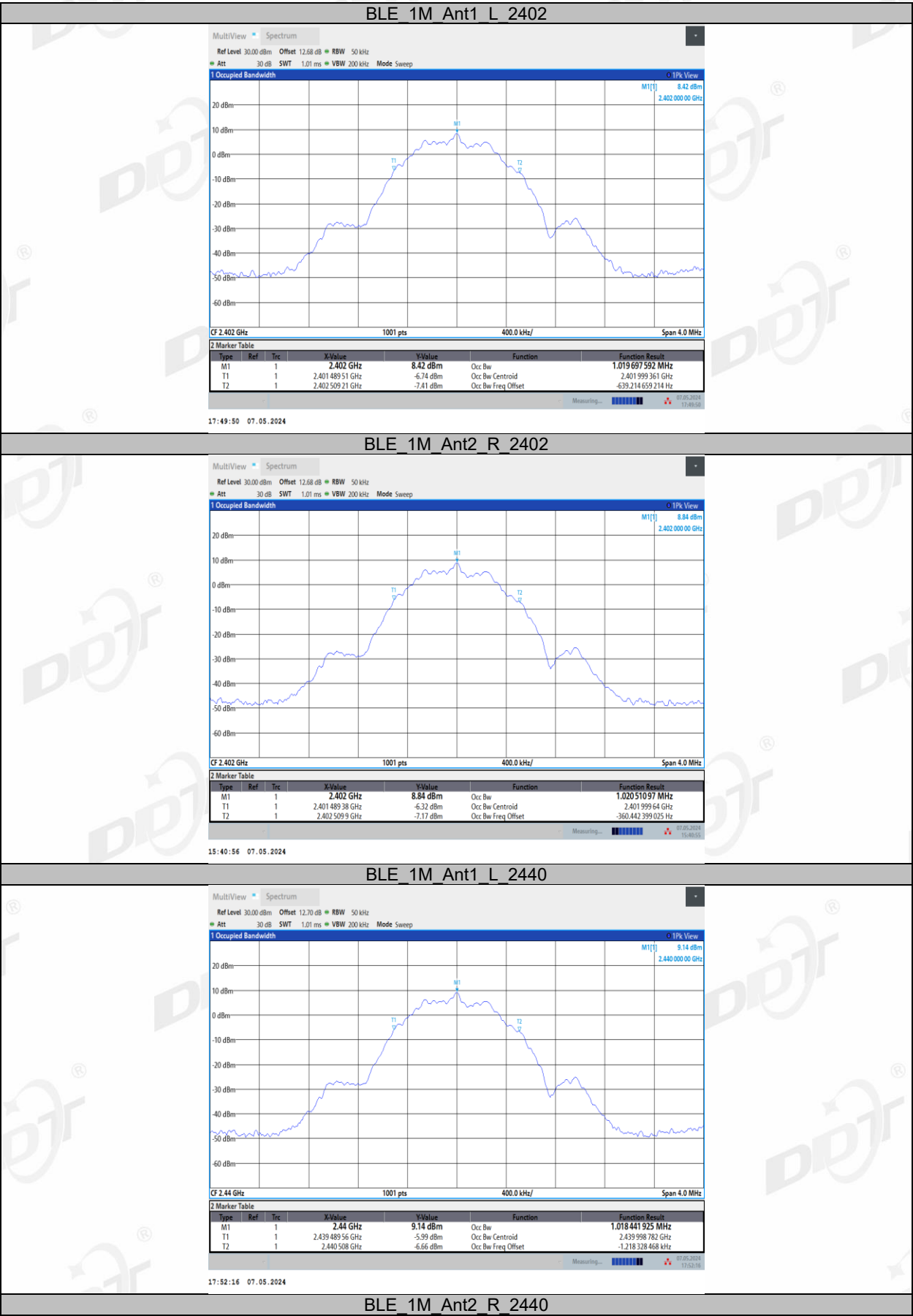
|                |                                         |
|----------------|-----------------------------------------|
| RBW:           | 1% to 5% of the OBW                     |
| VBW:           | approximately three times RBW           |
| Span:          | between 1.5 times and 5.0 times the OBW |
| Detector Mode: | Peak                                    |
| Sweep time:    | Auto                                    |
| Trace mode     | Max hold                                |
- (5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

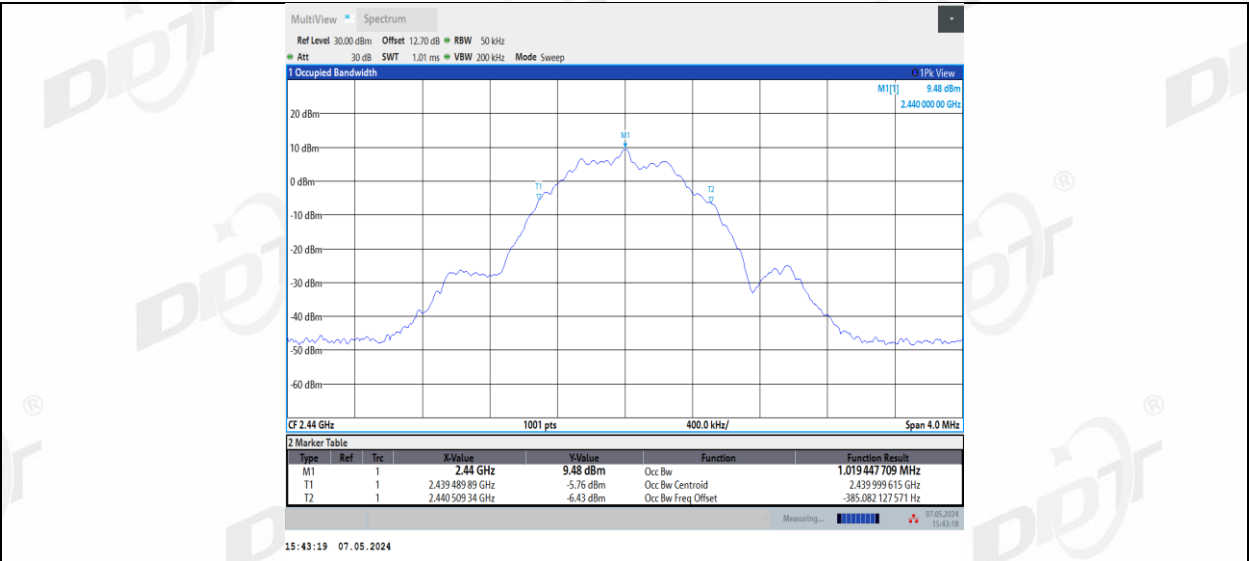
5.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

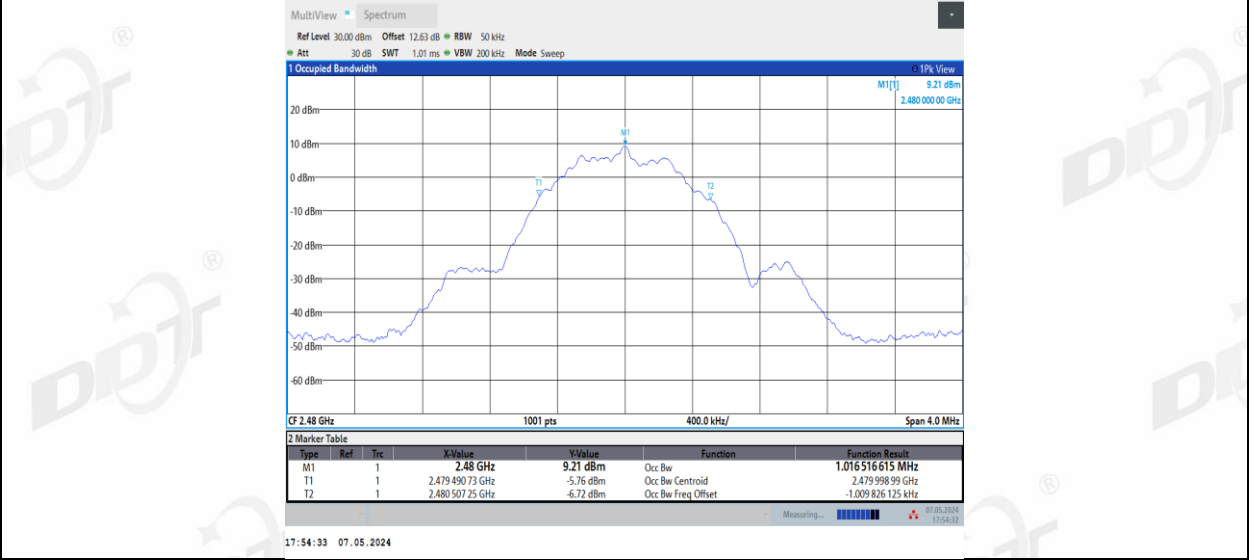
| Test Mode | Antenna | Frequency [MHz] | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit [MHz] | Verdict |
|-----------|---------|-----------------|-----------|-----------|-----------|-------------|---------|
| BLE_1M    | Ant1_L  | 2402            | 1.02      | 2401.4895 | 2402.5092 | ---         | ---     |
|           | Ant2_R  | 2402            | 1.021     | 2401.4894 | 2402.5099 | ---         | ---     |
|           | Ant1_L  | 2440            | 1.018     | 2439.4896 | 2440.5080 | ---         | ---     |
|           | Ant2_R  | 2440            | 1.019     | 2439.4899 | 2440.5093 | ---         | ---     |
|           | Ant1_L  | 2480            | 1.017     | 2479.4907 | 2480.5072 | ---         | ---     |
|           | Ant2_R  | 2480            | 1.018     | 2479.4903 | 2480.5081 | ---         | ---     |
| BLE_2M    | Ant1_L  | 2404            | 2.022     | 2402.9978 | 2405.0201 | ---         | ---     |
|           | Ant2_R  | 2404            | 2.023     | 2402.9978 | 2405.0211 | ---         | ---     |
|           | Ant1_L  | 2440            | 2.021     | 2438.9985 | 2441.0198 | ---         | ---     |
|           | Ant2_R  | 2440            | 2.022     | 2438.9991 | 2441.0215 | ---         | ---     |
|           | Ant1_L  | 2478            | 2.019     | 2476.9995 | 2479.0187 | ---         | ---     |
|           | Ant2_R  | 2478            | 2.021     | 2476.9994 | 2479.0201 | ---         | ---     |

5.5. Test graphs

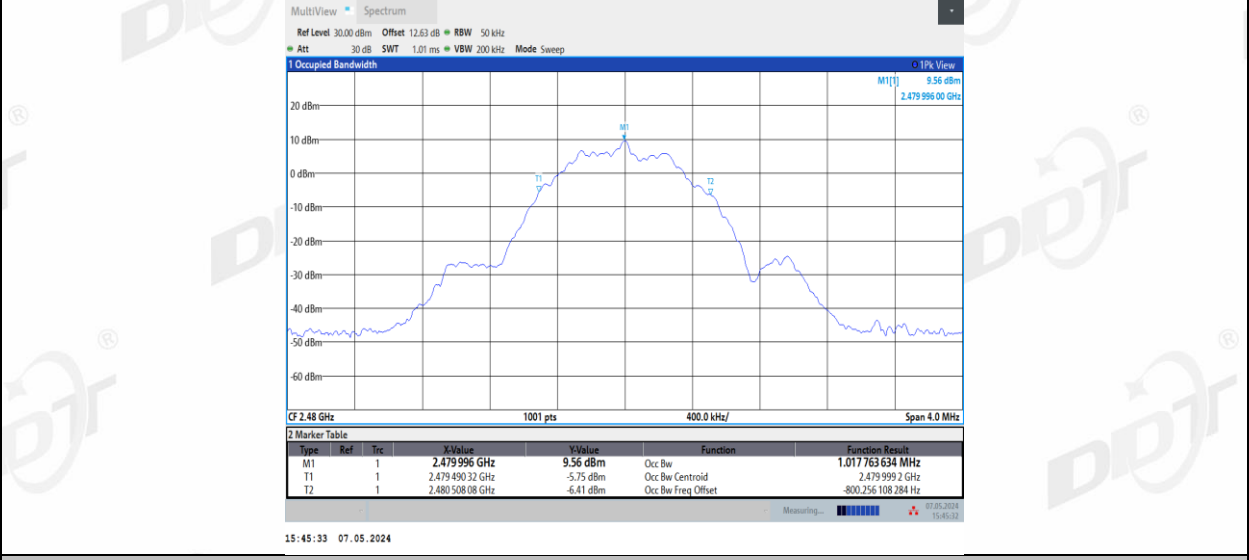




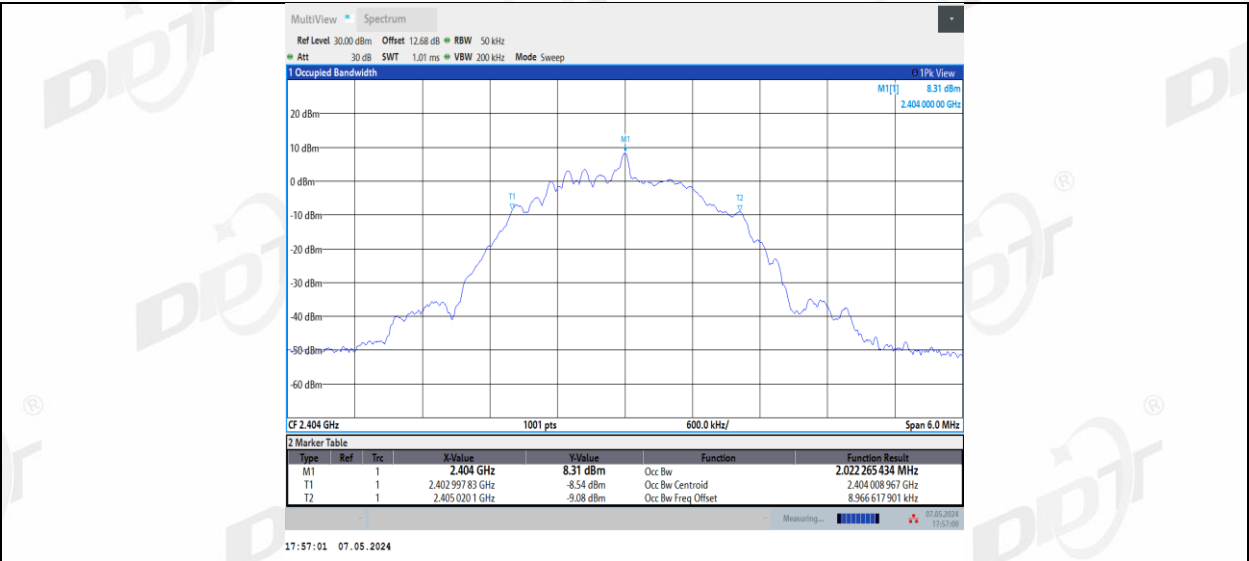
BLE\_1M\_Ant1\_L\_2480



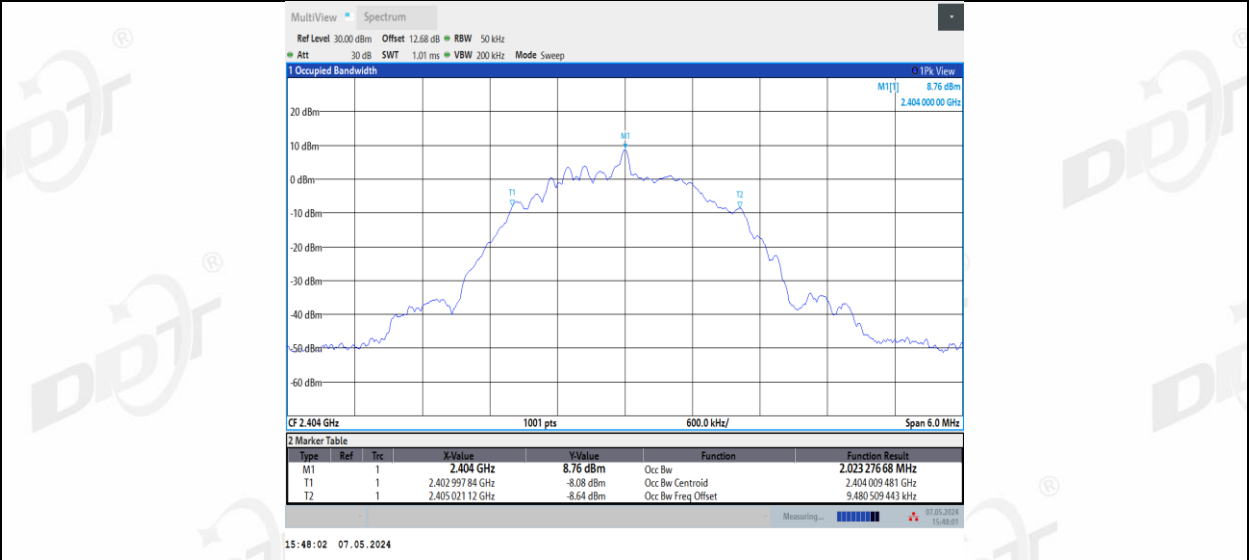
BLE\_1M\_Ant2\_R\_2480



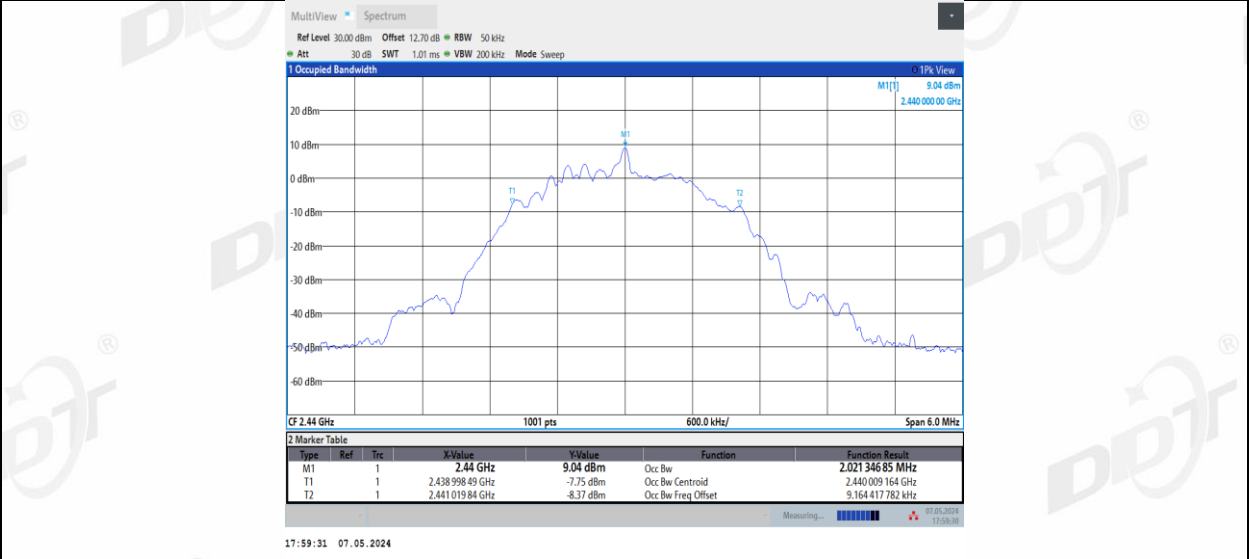
BLE\_2M\_Ant1\_L\_2404



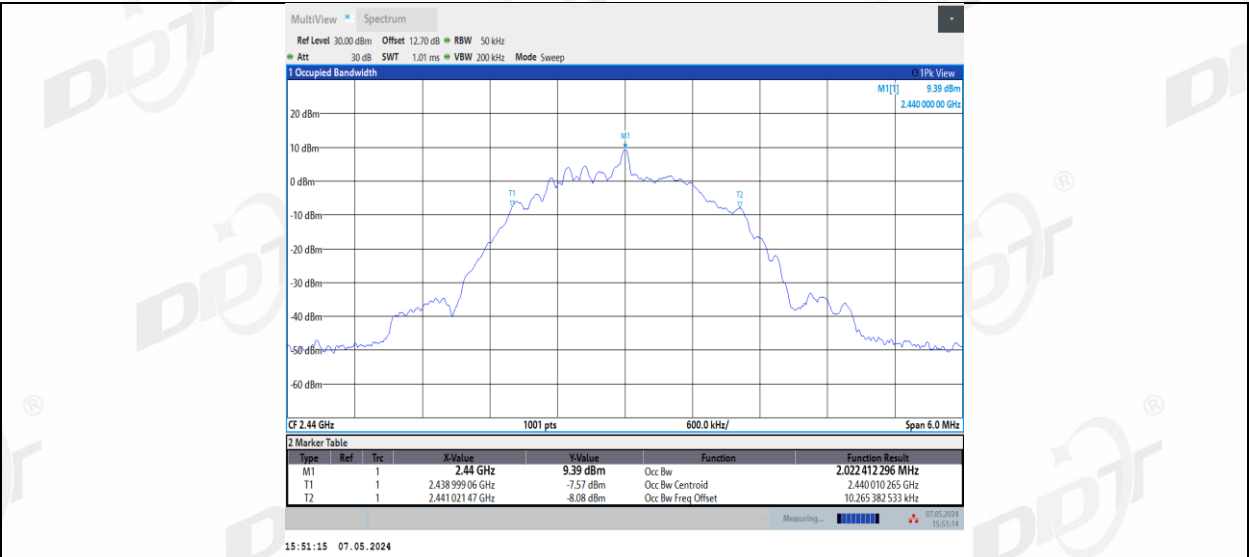
BLE\_2M\_Ant2\_R\_2404



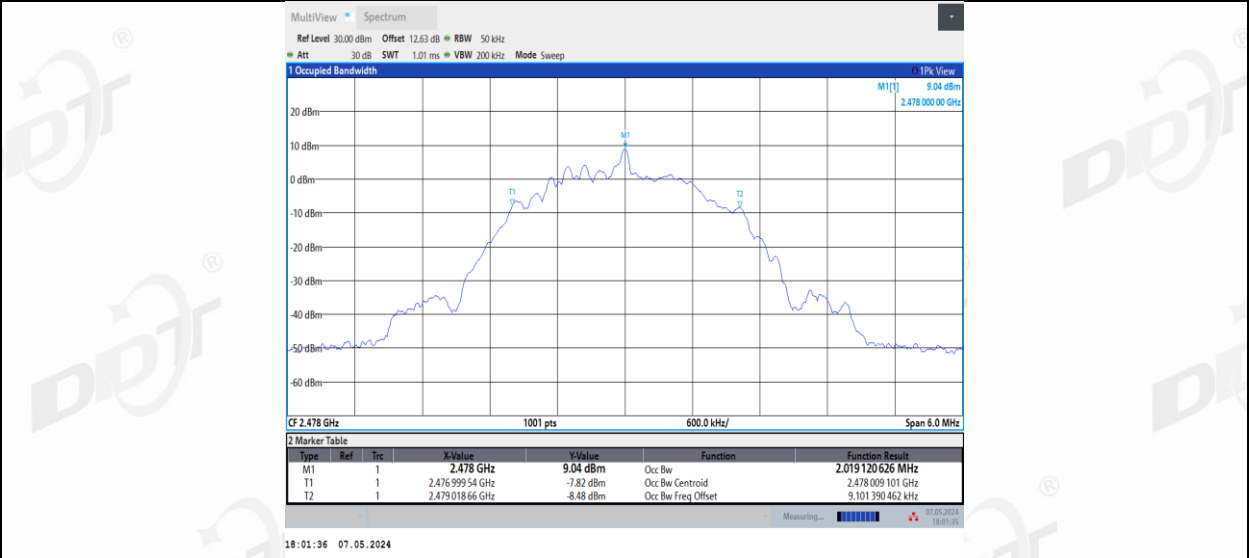
BLE\_2M\_Ant1\_L\_2440



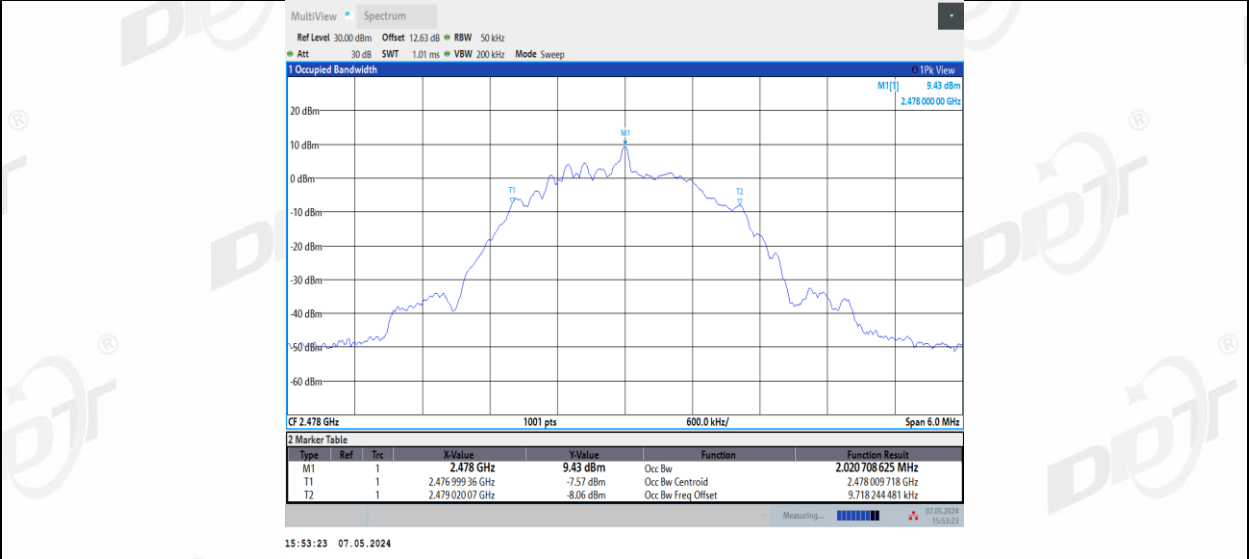
BLE\_2M\_Ant2\_R\_2440



BLE\_2M\_Ant1\_L\_2478

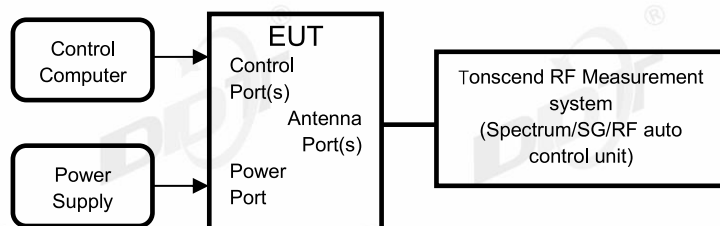


BLE\_2M\_Ant2\_R\_2478



## 6. Maximum Peak Output Power

### 6.1. Block diagram of test setup



### 6.2. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi, the e.i.r.p shall not exceed 4W.

### 6.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.9.1.1.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
- (4) Use the following spectrum analyzer settings for the maximum peak output power measurement:
 

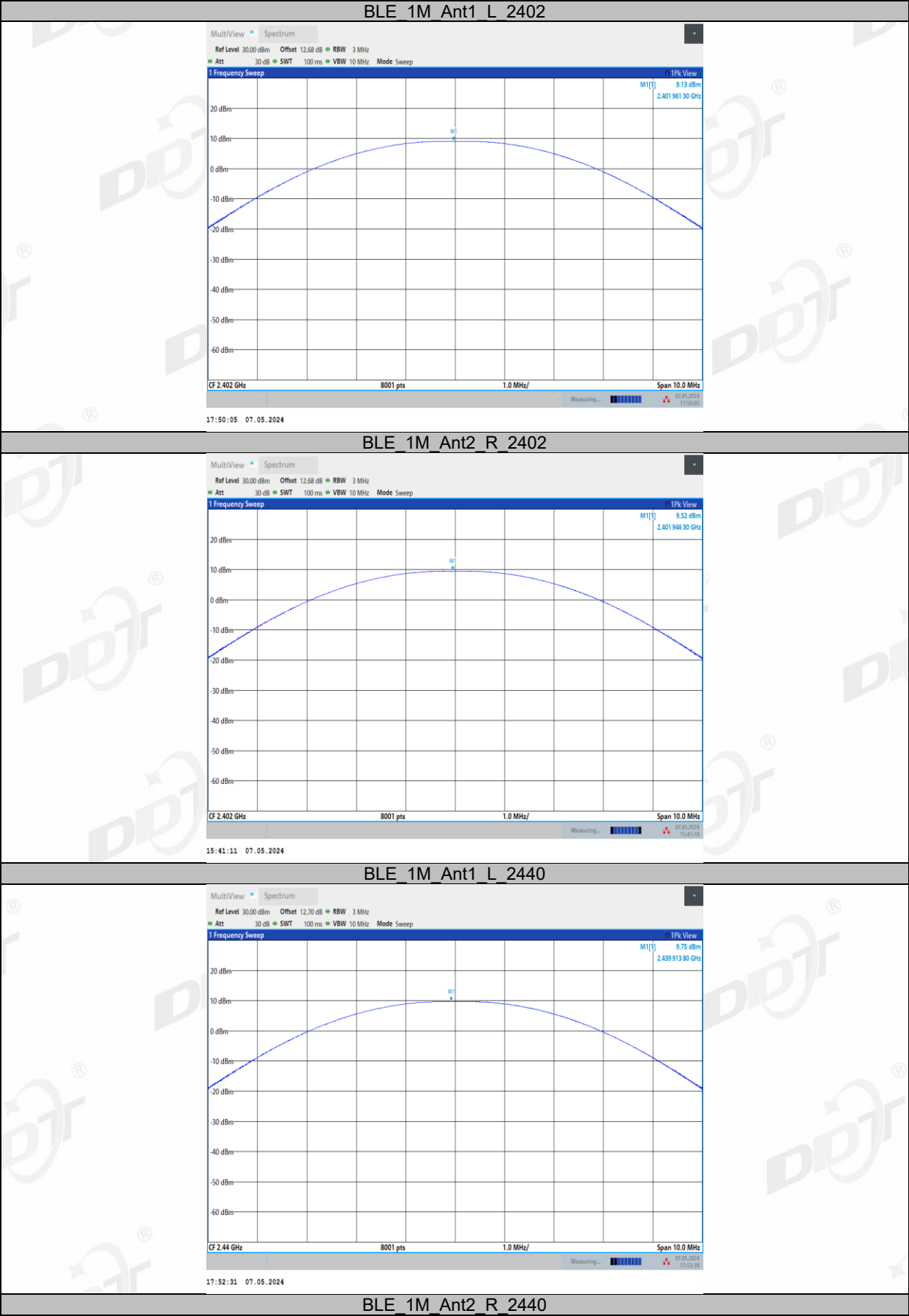
|                |                |
|----------------|----------------|
| RBW:           | ≥DTS bandwidth |
| VBW:           | ≥3 x RBW       |
| Span           | ≥3 x RBW       |
| Detector Mode: | Peak           |
| Sweep time:    | Auto           |
| Trace mode     | Max hold       |
- (5) Allow the trace to stabilize, use peak marker function to determine the peak amplitude level.

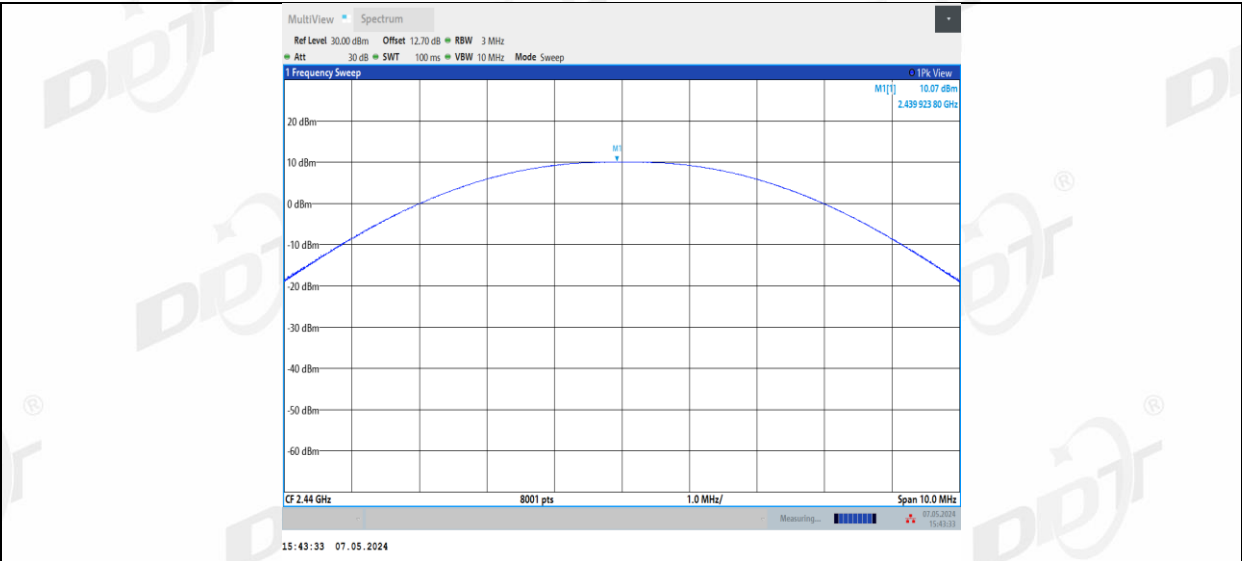
6.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

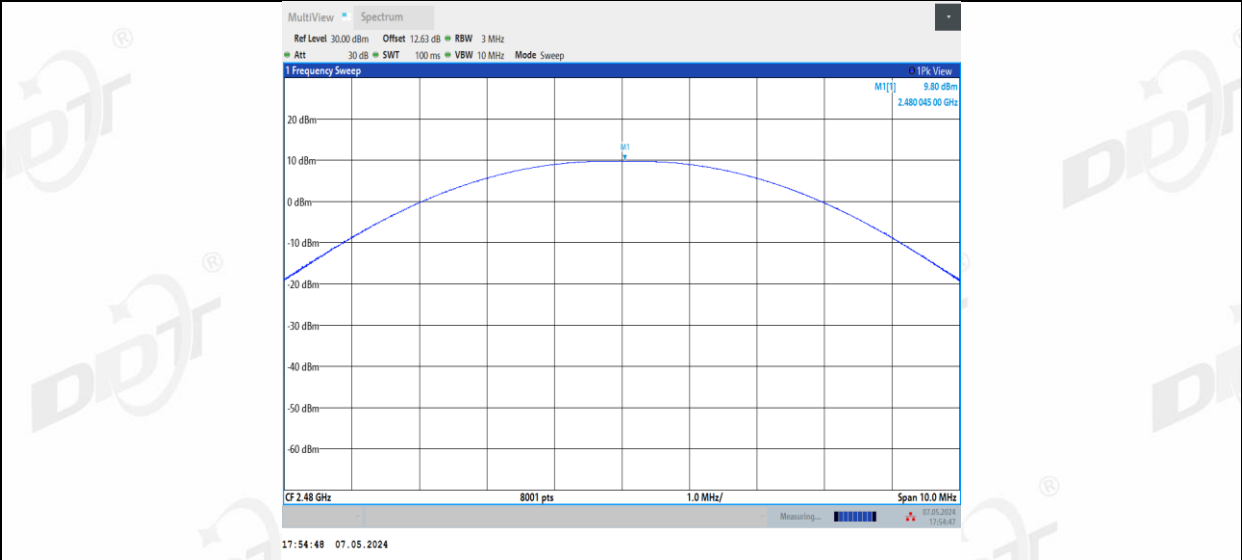
| Test Mode | Antenna | Frequency [MHz] | Conducted Peak Power[dBm] | Conducted Limit[dBm] | EIRP[dBm] | EIRP Limit[dBm] | Verdict |
|-----------|---------|-----------------|---------------------------|----------------------|-----------|-----------------|---------|
| BLE_1M    | Ant1_L  | 2402            | 9.13                      | ≤30                  | 9.00      | ≤36             | PASS    |
|           | Ant2_R  | 2402            | 9.52                      | ≤30                  | 9.36      | ≤36             | PASS    |
|           | Ant1_L  | 2440            | 9.75                      | ≤30                  | 9.62      | ≤36             | PASS    |
|           | Ant2_R  | 2440            | 10.07                     | ≤30                  | 9.91      | ≤36             | PASS    |
|           | Ant1_L  | 2480            | 9.80                      | ≤30                  | 9.67      | ≤36             | PASS    |
|           | Ant2_R  | 2480            | 10.18                     | ≤30                  | 10.02     | ≤36             | PASS    |
| BLE_2M    | Ant1_L  | 2404            | 9.12                      | ≤30                  | 8.99      | ≤36             | PASS    |
|           | Ant2_R  | 2404            | 9.54                      | ≤30                  | 9.38      | ≤36             | PASS    |
|           | Ant1_L  | 2440            | 9.76                      | ≤30                  | 9.63      | ≤36             | PASS    |
|           | Ant2_R  | 2440            | 10.09                     | ≤30                  | 9.93      | ≤36             | PASS    |
|           | Ant1_L  | 2478            | 9.75                      | ≤30                  | 9.62      | ≤36             | PASS    |
|           | Ant2_R  | 2478            | 10.11                     | ≤30                  | 9.95      | ≤36             | PASS    |

6.5. Test graphs

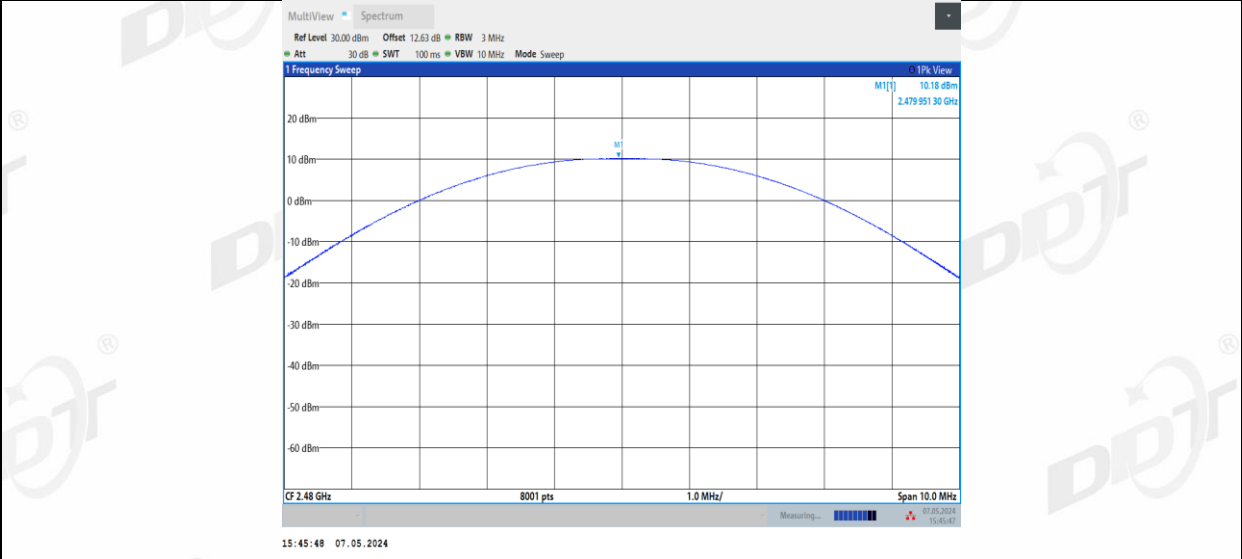




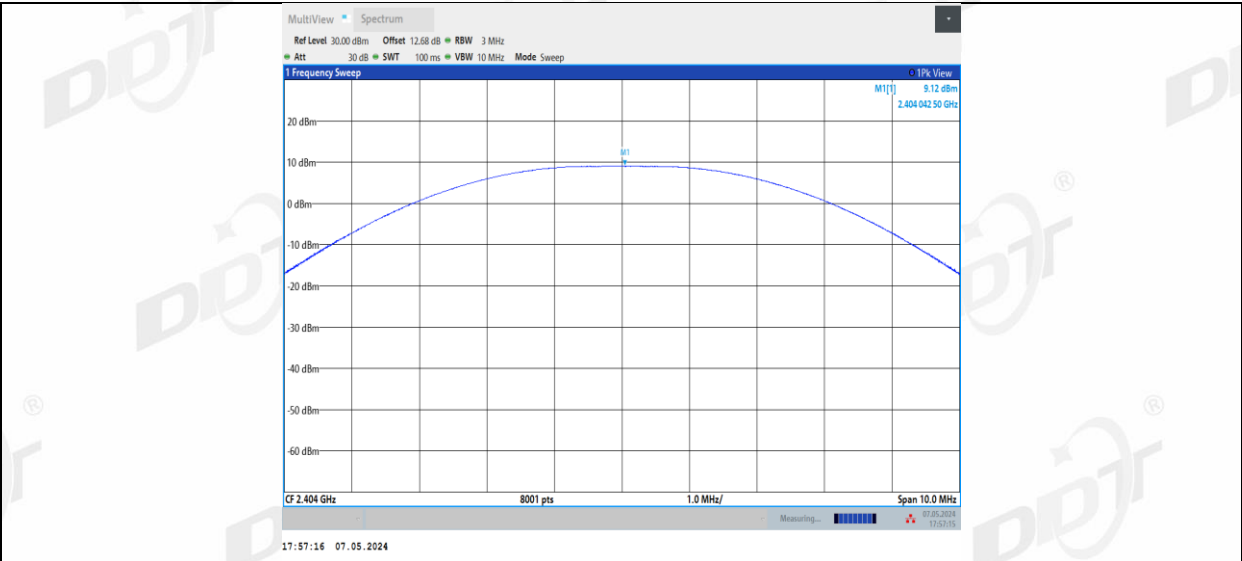
BLE\_1M\_Ant1\_L\_2480



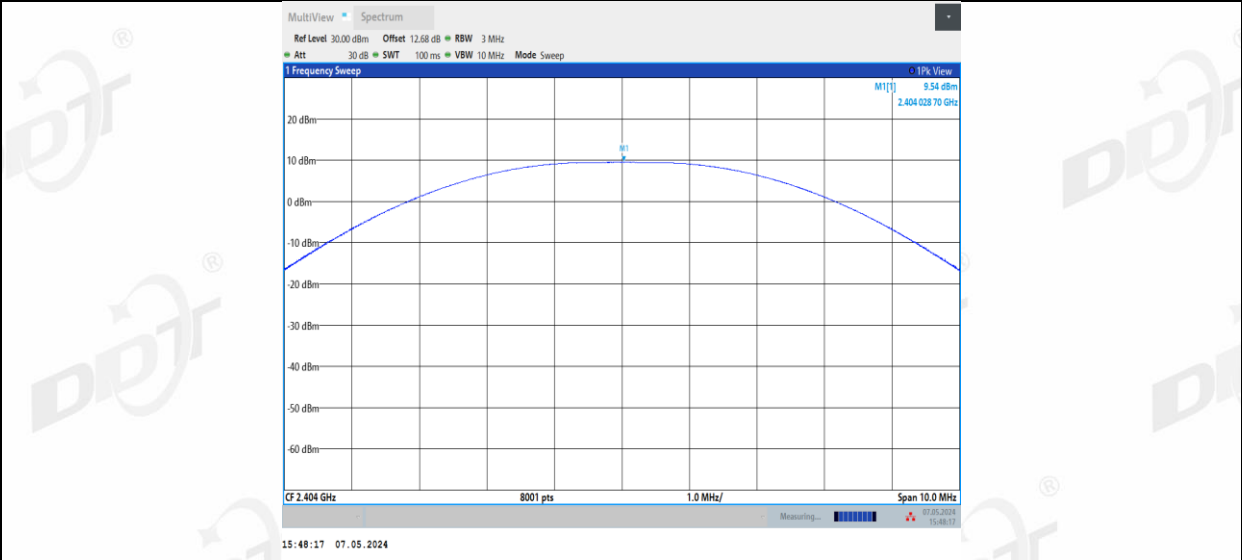
BLE\_1M\_Ant2\_R\_2480



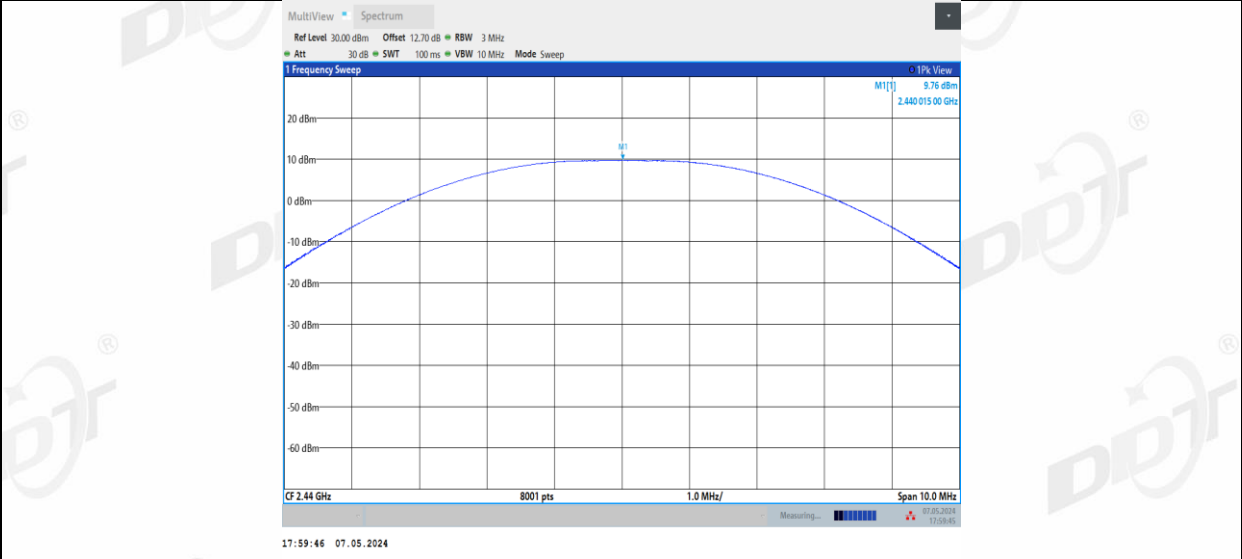
BLE\_2M\_Ant1\_L\_2404



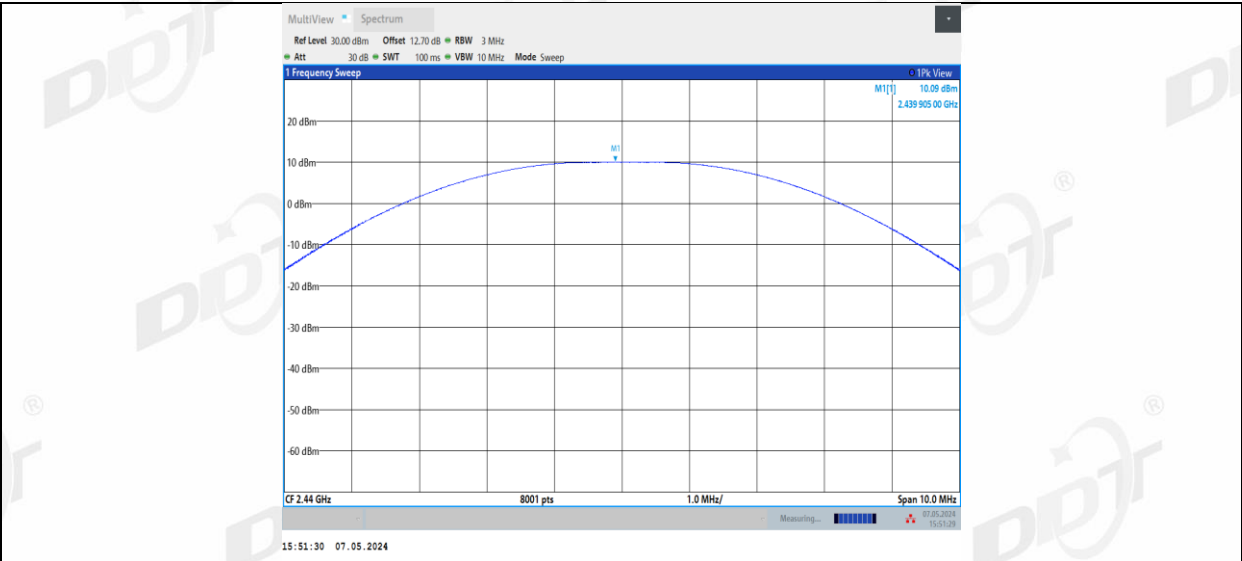
BLE\_2M\_Ant2\_R\_2404



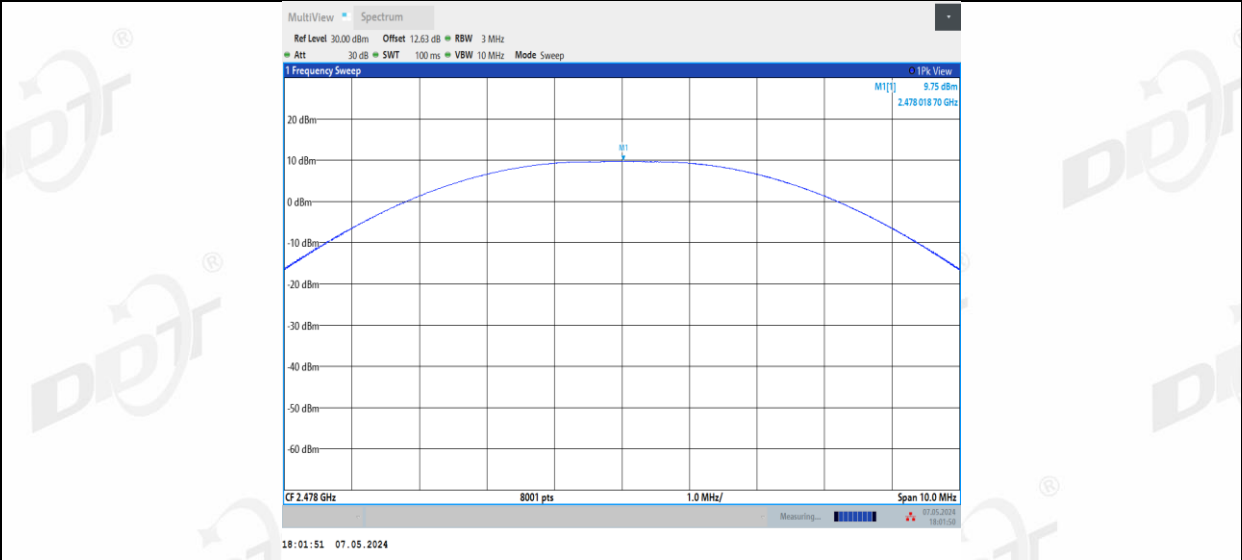
BLE\_2M\_Ant1\_L\_2440



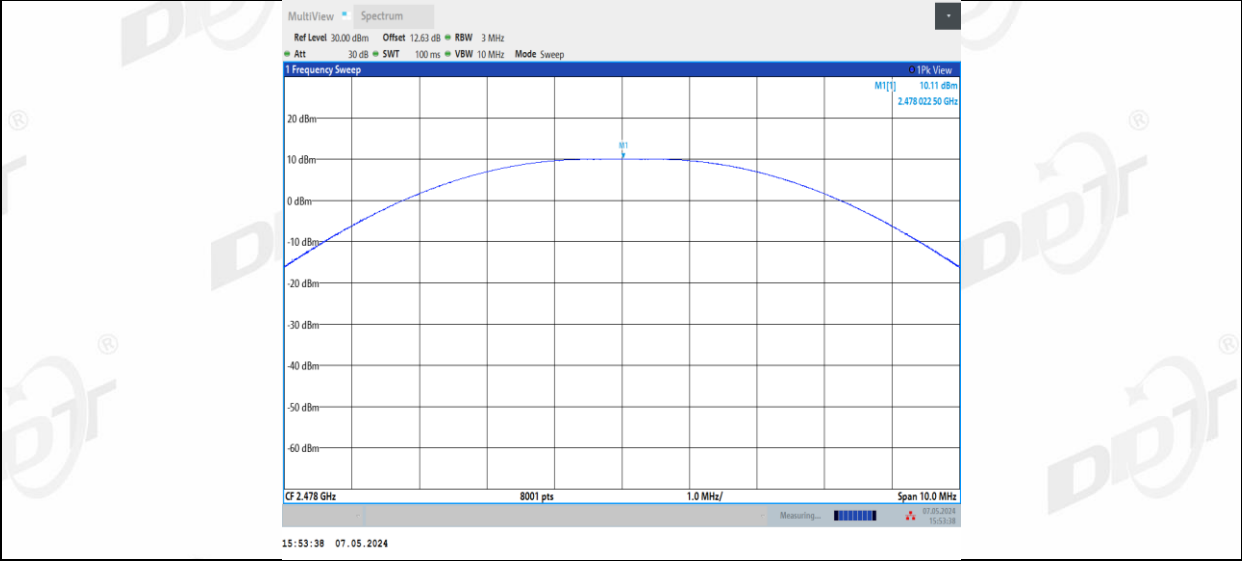
BLE\_2M\_Ant2\_R\_2440



BLE\_2M\_Ant1\_L\_2478

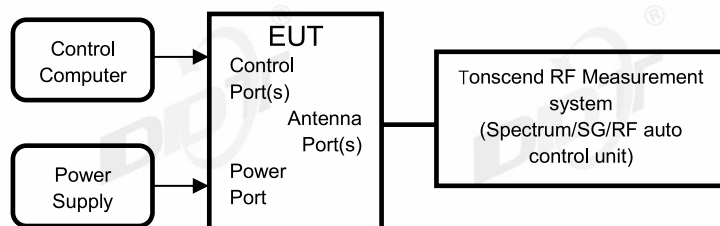


BLE\_2M\_Ant2\_R\_2478



## 7. Power Spectral Density

### 7.1. Block diagram of test setup



### 7.2. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 7.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.10.2.
  - (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
  - (3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
  - (4) Use the following spectrum analyzer settings for Power Spectral Density measurement:
 

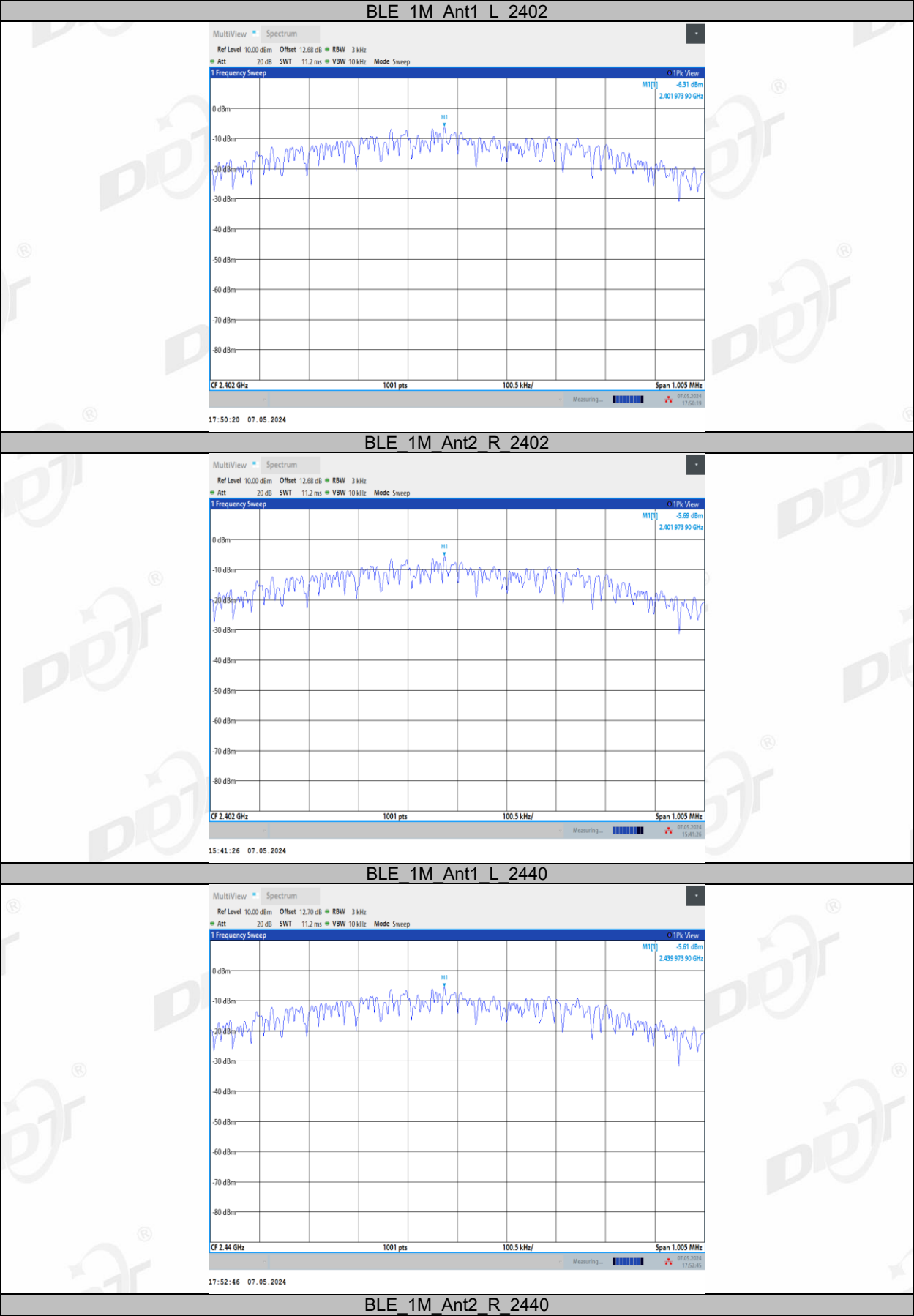
|                  |                                                      |
|------------------|------------------------------------------------------|
| Center frequency | DTS Channel center frequency                         |
| RBW:             | $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ |
| VBW:             | $\geq 3\text{RBW}$                                   |
| Span             | 1.5 times the DTS bandwidth                          |
| Detector Mode:   | Peak                                                 |
| Sweep time:      | Auto                                                 |
| Trace mode       | Max hold                                             |
  - (5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

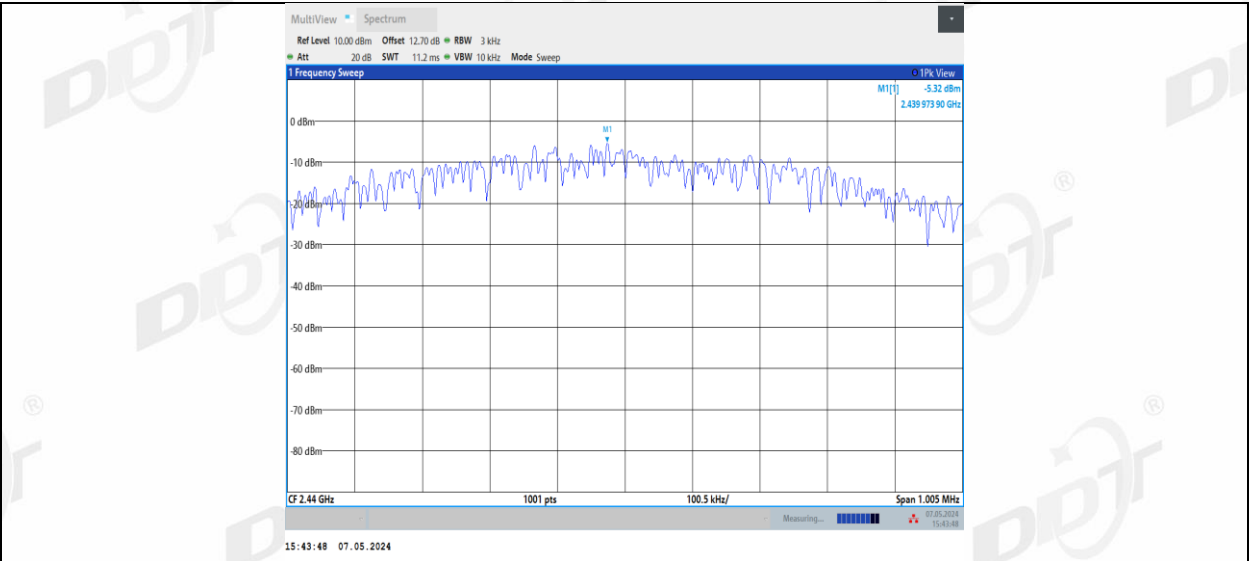
7.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

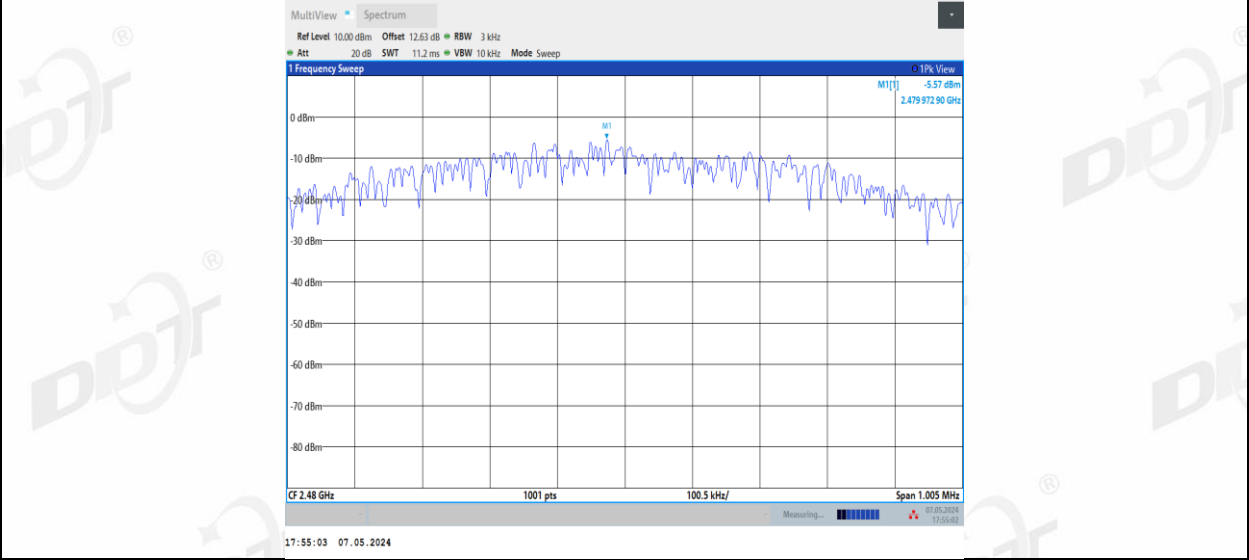
| Test Mode | Antenna | Frequency [MHz] | Result [dBm/3kHz] | Limit [dBm/3kHz] | Verdict |
|-----------|---------|-----------------|-------------------|------------------|---------|
| BLE_1M    | Ant1_L  | 2402            | -6.31             | ≤8.00            | PASS    |
|           | Ant2_R  | 2402            | -5.69             | ≤8.00            | PASS    |
|           | Ant1_L  | 2440            | -5.61             | ≤8.00            | PASS    |
|           | Ant2_R  | 2440            | -5.32             | ≤8.00            | PASS    |
|           | Ant1_L  | 2480            | -5.57             | ≤8.00            | PASS    |
|           | Ant2_R  | 2480            | -5.13             | ≤8.00            | PASS    |
| BLE_2M    | Ant1_L  | 2404            | -8.67             | ≤8.00            | PASS    |
|           | Ant2_R  | 2404            | -8.22             | ≤8.00            | PASS    |
|           | Ant1_L  | 2440            | -7.94             | ≤8.00            | PASS    |
|           | Ant2_R  | 2440            | -7.68             | ≤8.00            | PASS    |
|           | Ant1_L  | 2478            | -7.91             | ≤8.00            | PASS    |
|           | Ant2_R  | 2478            | -7.61             | ≤8.00            | PASS    |

7.5. Test graphs

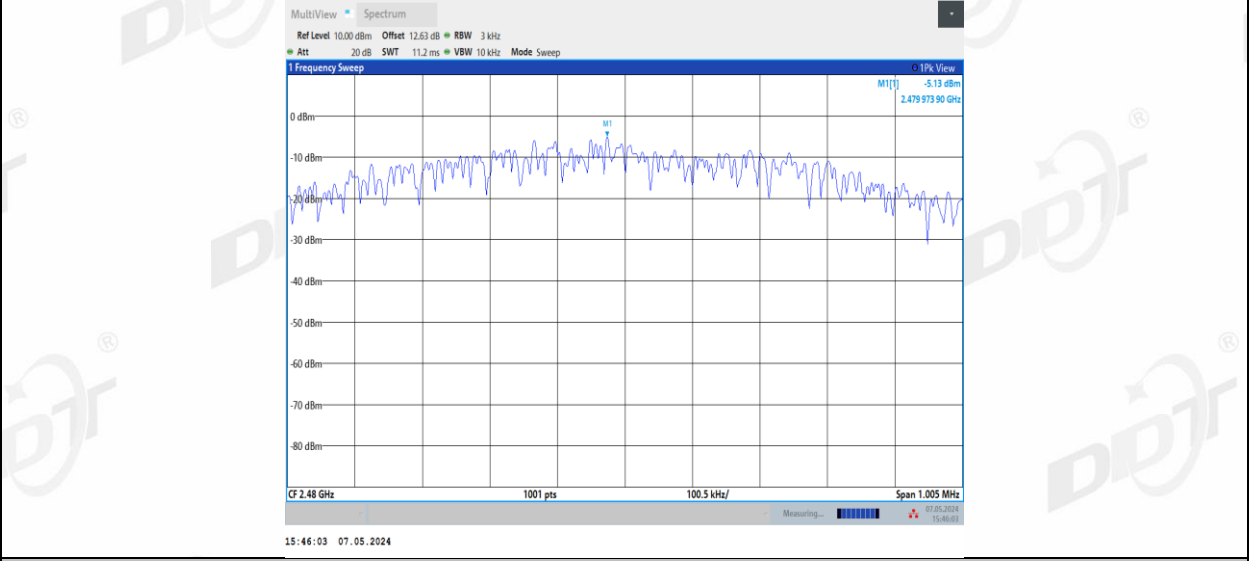




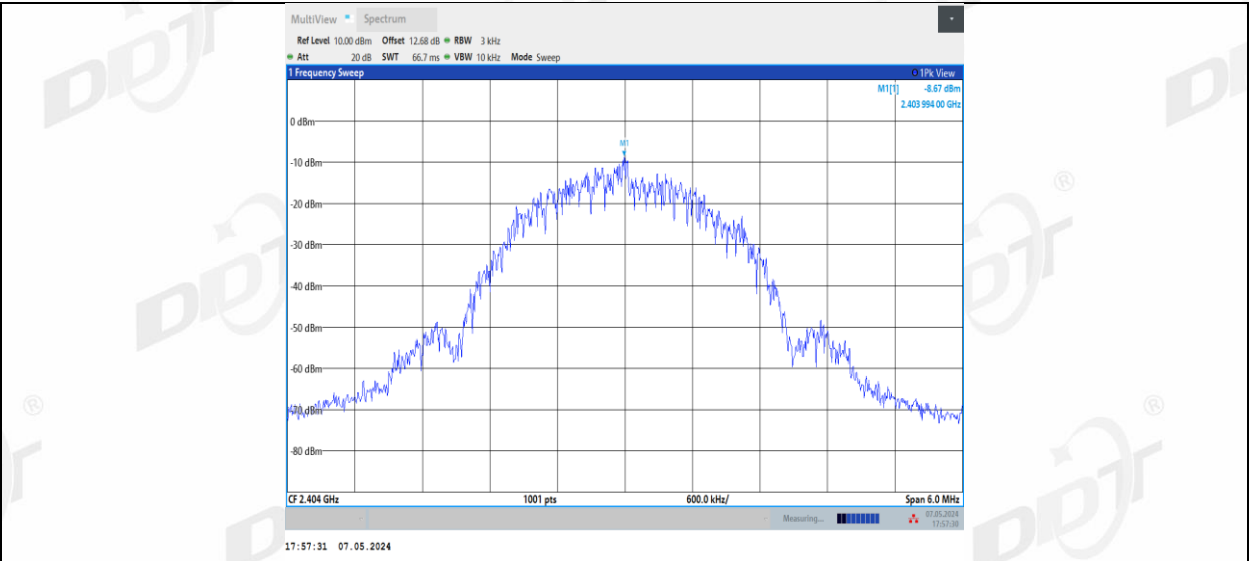
BLE\_1M\_Ant1\_L\_2480



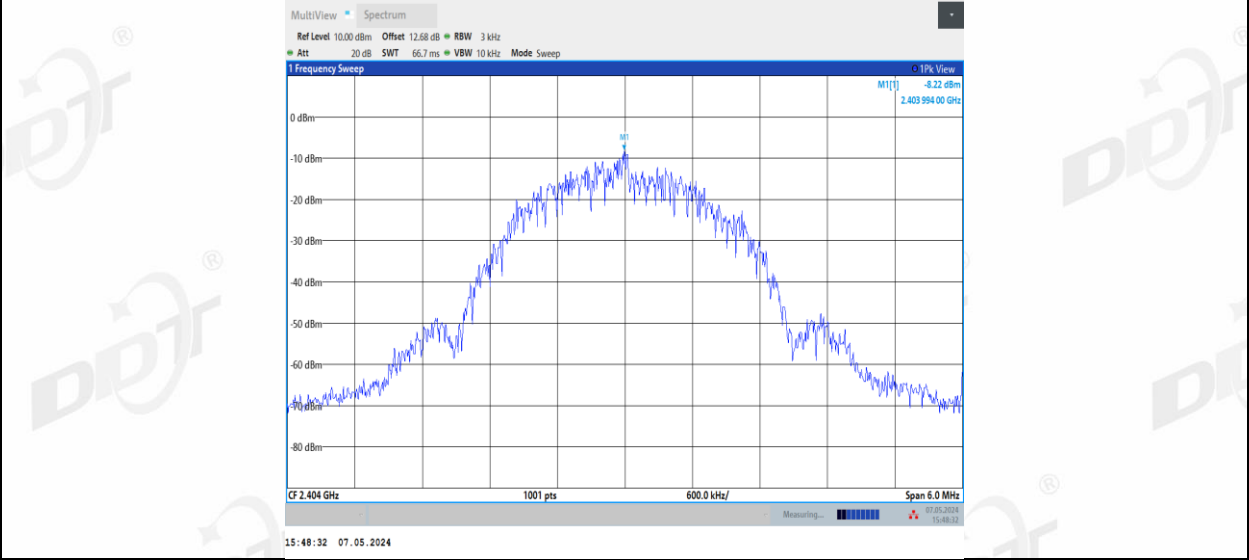
BLE\_1M\_Ant2\_R\_2480



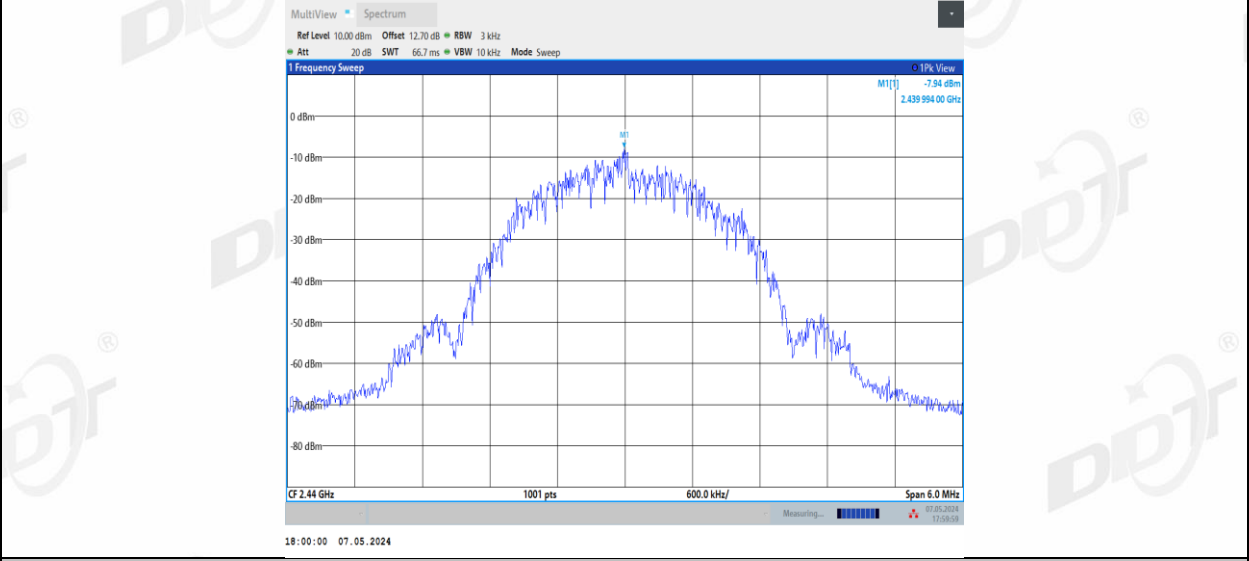
BLE\_2M\_Ant1\_L\_2404



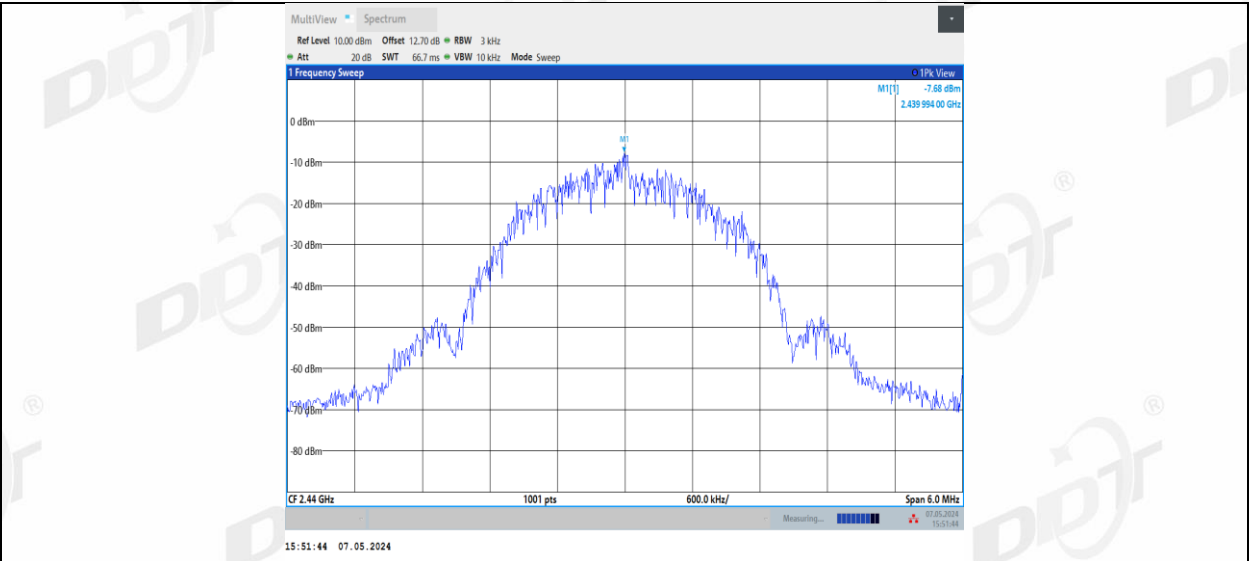
BLE\_2M\_Ant2\_R\_2404



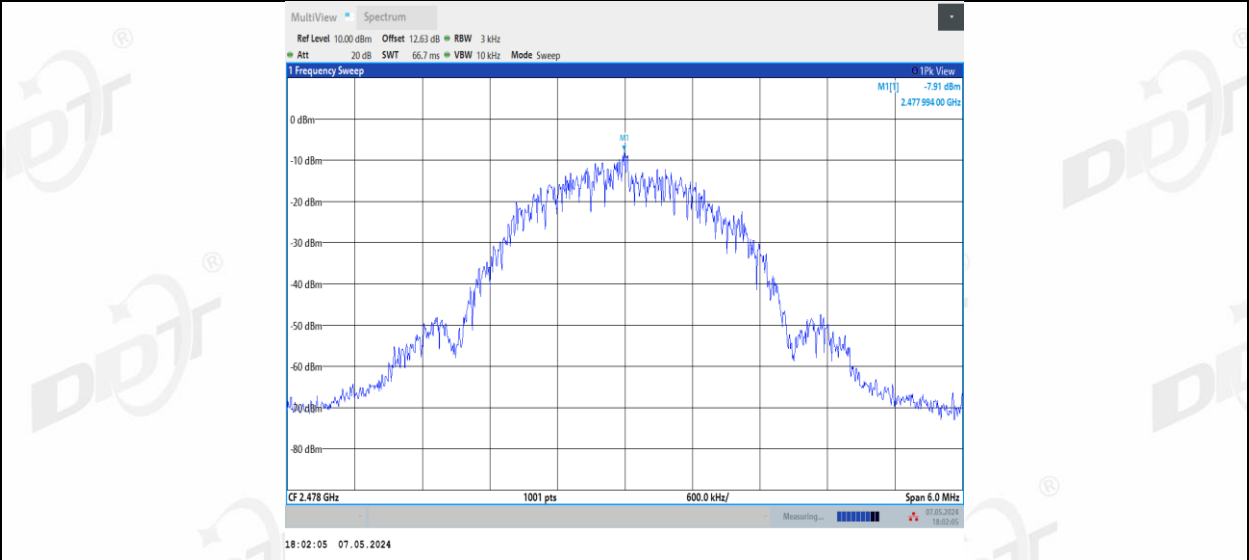
BLE\_2M\_Ant1\_L\_2440



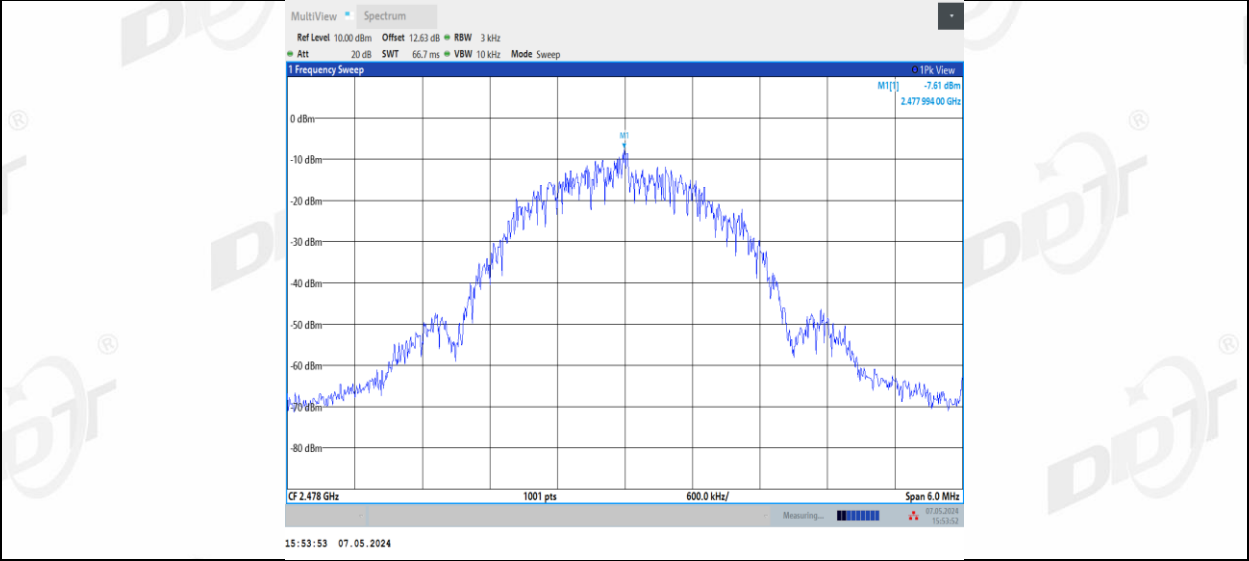
BLE\_2M\_Ant2\_R\_2440



BLE\_2M\_Ant1\_L\_2478

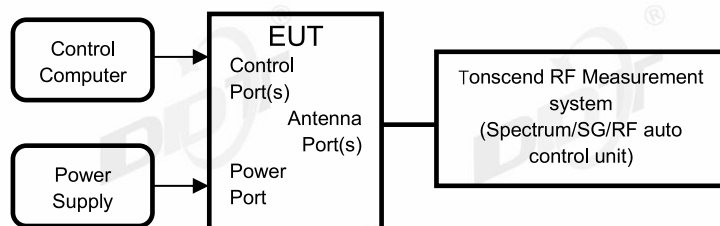


BLE\_2M\_Ant2\_R\_2478



## 8. Band Edge Compliance (Conducted Method)

### 8.1. Block diagram of test setup



### 8.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

### 8.3. Test procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) Establish a reference level by using the following procedure:
 

|                |                                          |
|----------------|------------------------------------------|
| RBW:           | 100 kHz                                  |
| VBW:           | 300 kHz                                  |
| Span           | Encompass frequency range to be measured |
| Detector Mode: | Peak                                     |
| Sweep time:    | Auto                                     |
| Trace mode     | Max hold                                 |
- (3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

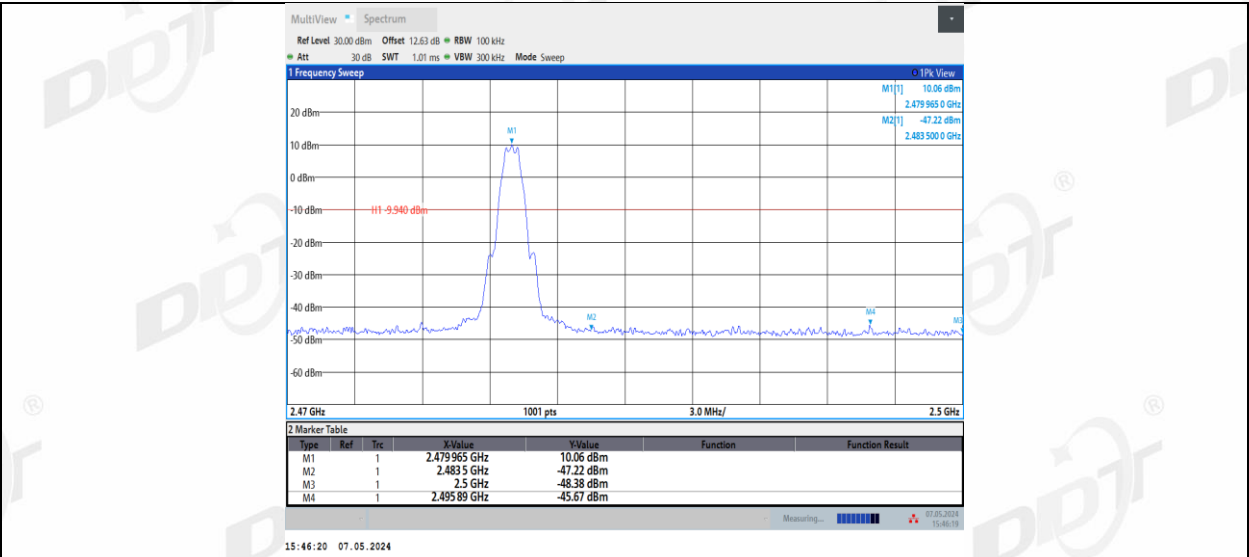
8.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

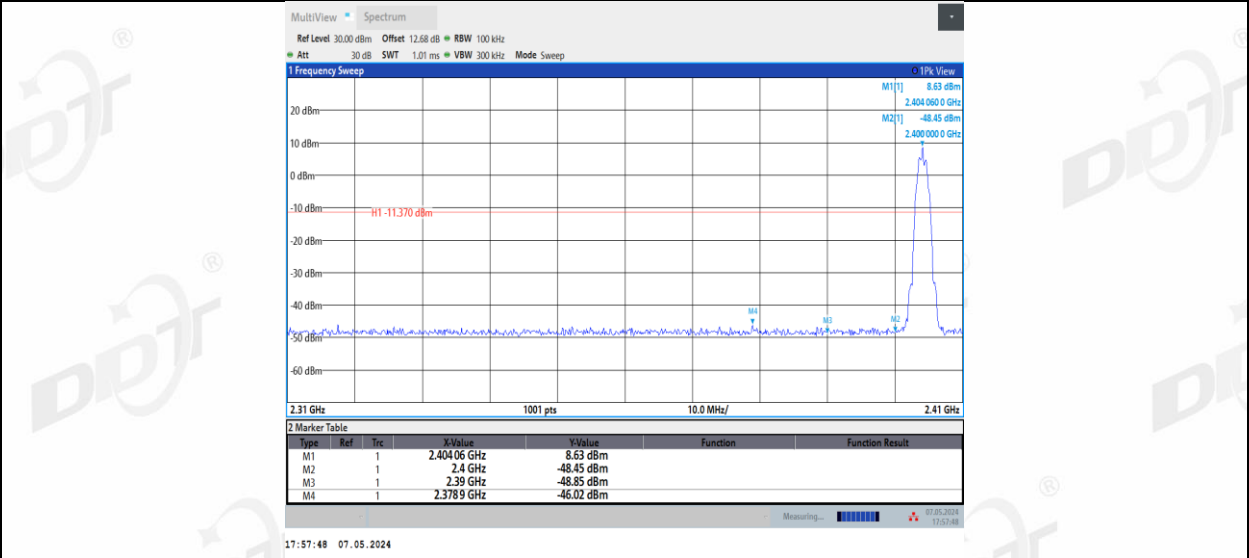
| EUT Set Mode | CH or Frequency | Measured Range        | Verdict |
|--------------|-----------------|-----------------------|---------|
| GFSK 1M      | 2402            | 2.310 GHz - 2.410 GHz | Pass    |
|              | 2480            | 2.470 GHz - 2.500 GHz | Pass    |
| GFSK 2M      | 2404            | 2.310 GHz - 2.410 GHz | Pass    |
|              | 2478            | 2.470 GHz - 2.500 GHz | Pass    |

8.5. Test graphs

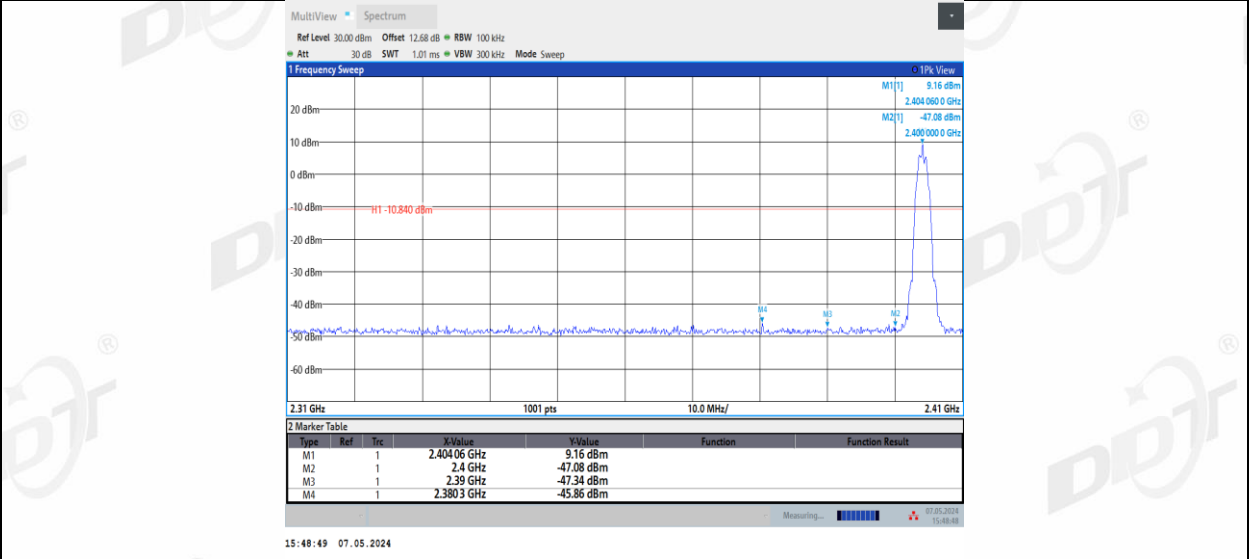




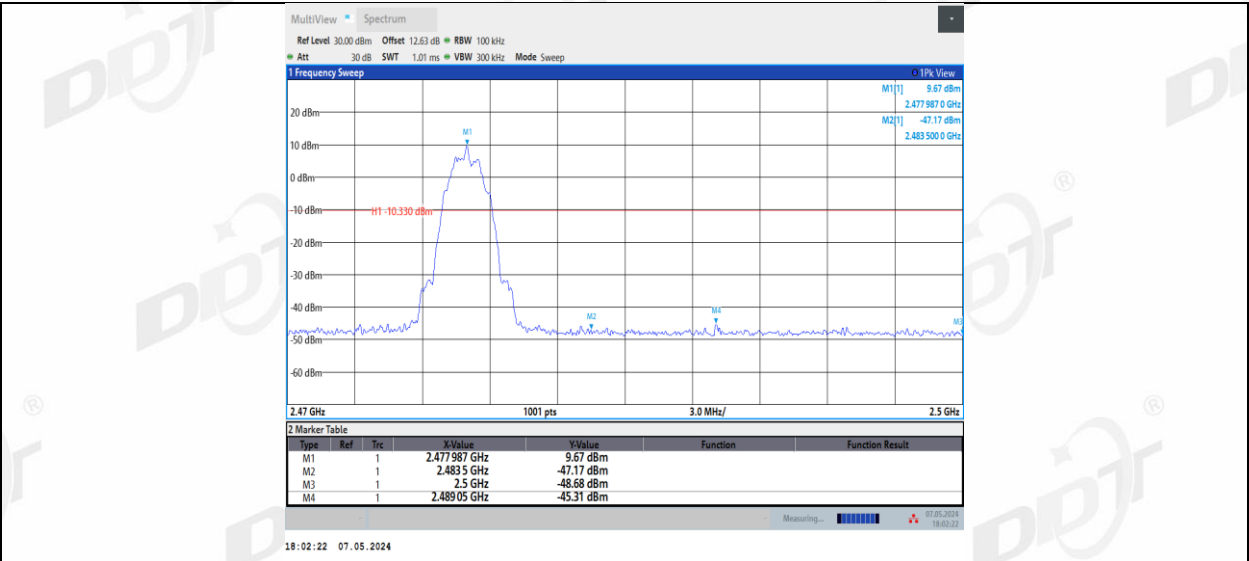
BLE\_2M\_Ant1\_L\_Low\_2404



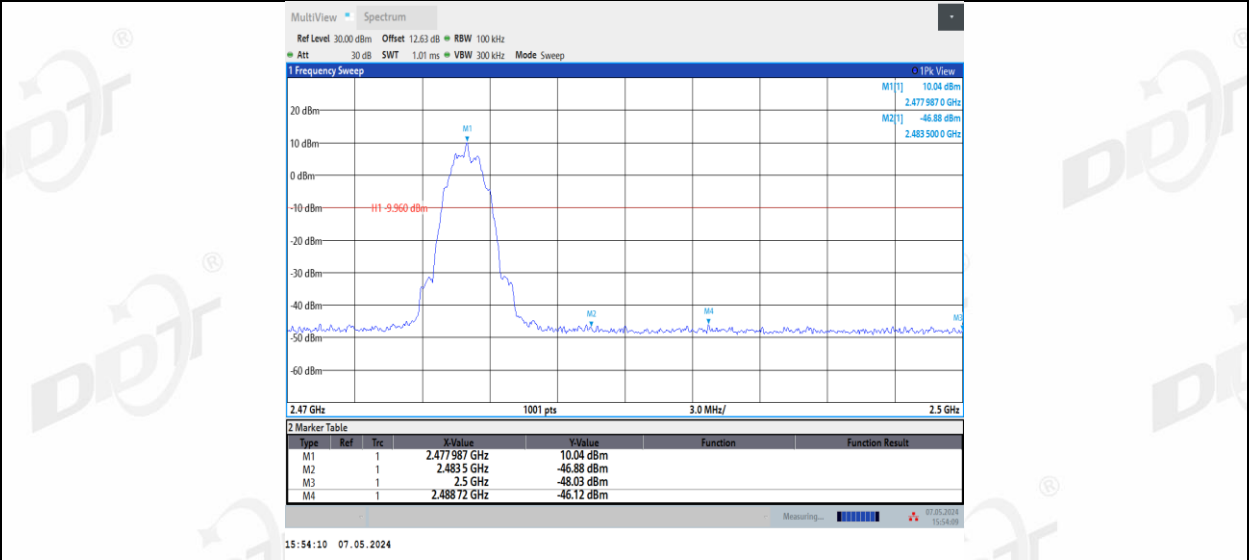
BLE\_2M\_Ant2\_R\_Low\_2404



BLE\_2M\_Ant1\_L\_High\_2478

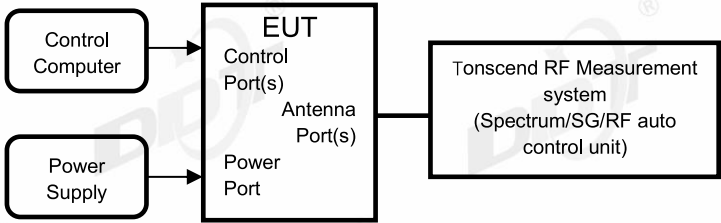


BLE\_2M\_Ant2\_R\_High\_2478



9. RF Conducted Spurious Emissions

9.1. Block diagram of test setup



9.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

9.3. Test procedure

- (1) Connect EUT’s antenna output to spectrum analyzer by RF cable.
- (2) Establish a reference level by using the following procedure:

|                  |                                                               |
|------------------|---------------------------------------------------------------|
| Center frequency | Test frequency                                                |
| RBW:             | 100 kHz                                                       |
| VBW:             | 300 kHz                                                       |
| Span             | Wide enough to capture the peak level of the in-band emission |
| Detector Mode:   | Peak                                                          |
| Sweep time:      | Auto                                                          |
| Trace mode       | Max hold                                                      |
- (3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (4) Set the spectrum analyzer as follows:

|                              |                                          |
|------------------------------|------------------------------------------|
| RBW:                         | 100 kHz                                  |
| VBW:                         | 300 kHz                                  |
| Span                         | Encompass frequency range to be measured |
| Number of measurement points | ≥Span/RBW                                |
| Detector Mode:               | Peak                                     |
| Sweep time:                  | Auto                                     |
| Trace mode                   | Max hold                                 |

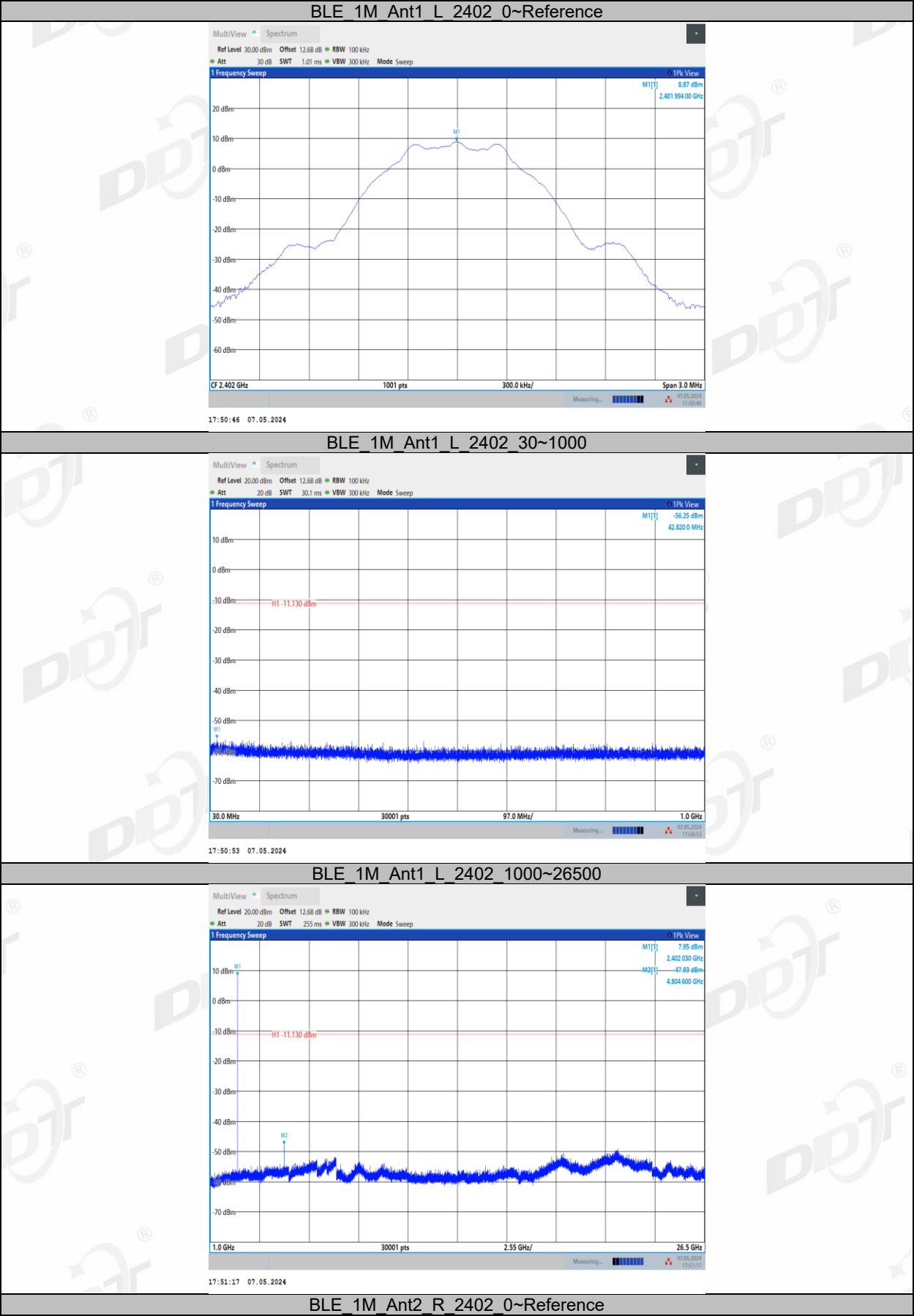
Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

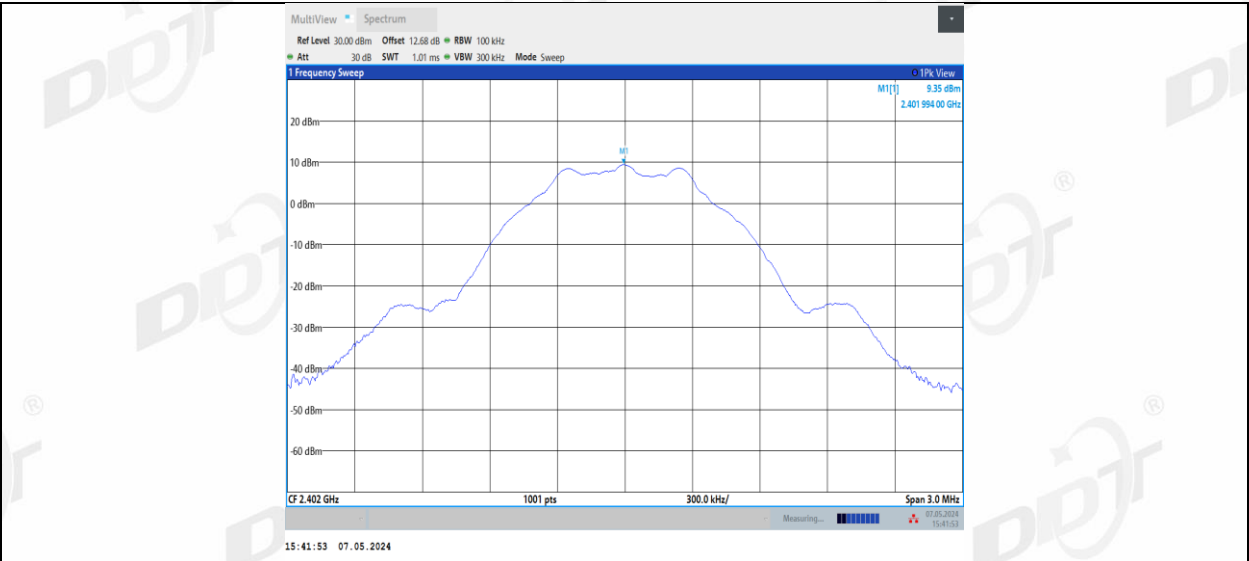
9.4. Test result

|                    |               |                |                          |
|--------------------|---------------|----------------|--------------------------|
| Test Engineer:     | Haofeng       | Test Site:     | RF Measurement System 4# |
| Ambient Condition: | 23.6℃,56.2%RH | Test Date:     | 2024.05.07               |
| Test Power Supply: | Battery       | Sample Number: | S24031401-001            |

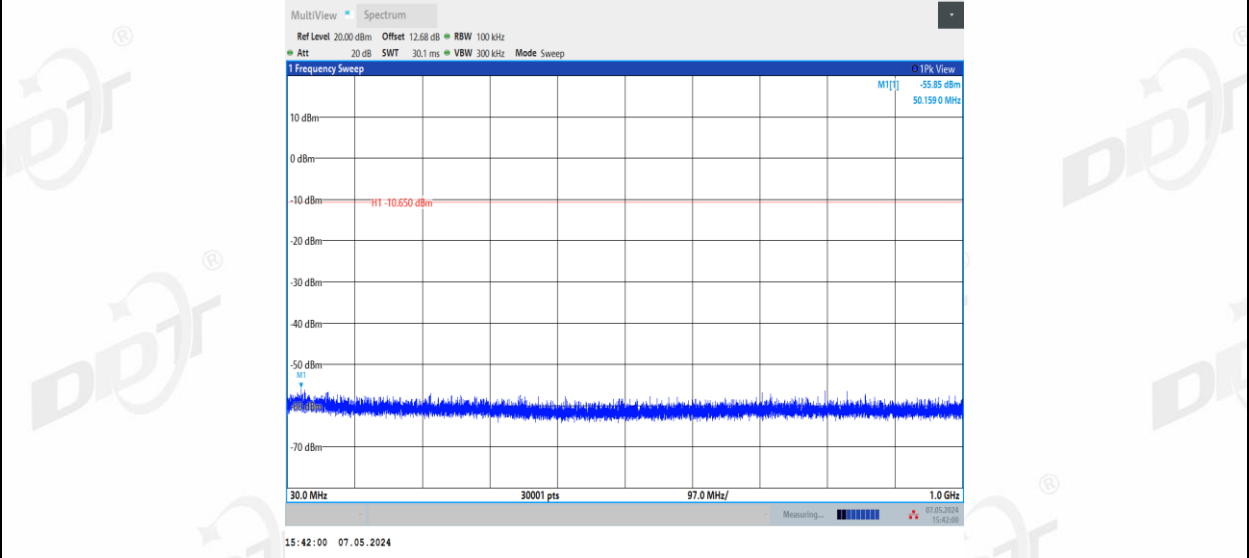
| Mode    | Freq. (MHz) | Verdict |
|---------|-------------|---------|
| GFSK 1M | 2402        | Pass    |
|         | 2440        | Pass    |
|         | 2480        | Pass    |
| GFSK 2M | 2404        | Pass    |
|         | 2440        | Pass    |
|         | 2478        | Pass    |

9.5. Test graphs

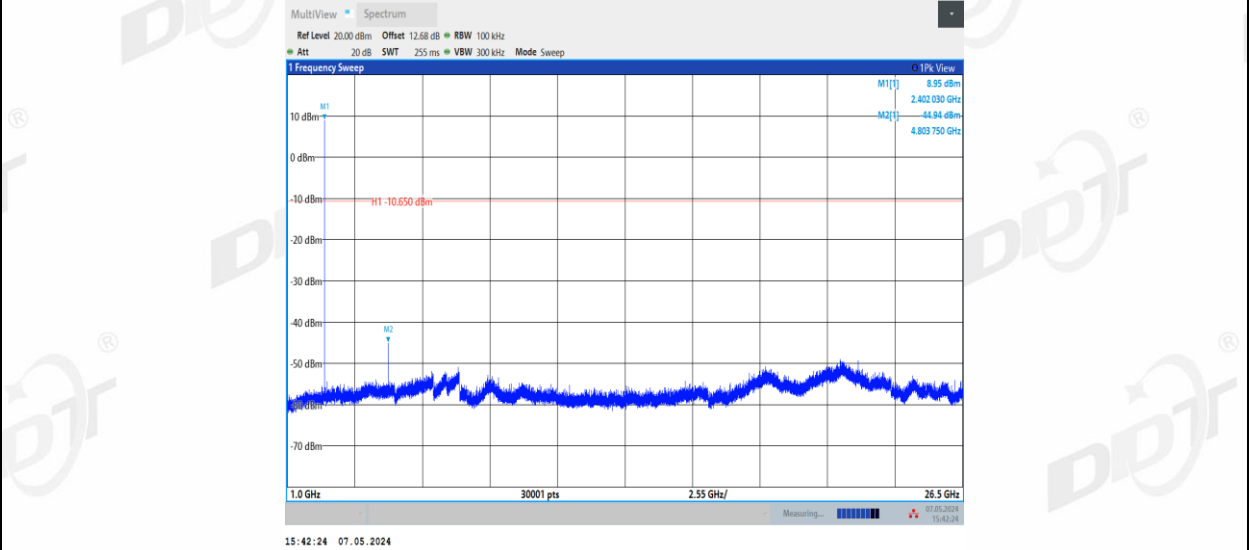




BLE\_1M\_Ant2\_R\_2402\_30~1000



BLE\_1M\_Ant2\_R\_2402\_1000~26500



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