



# FCC RADIO TEST REPORT

**FCC ID** : A4RG1MNW  
**Equipment** : Phone  
**Model Name** : G1MNW  
**Applicant** : Google LLC  
1600 Amphitheatre Parkway,  
Mountain View, California, 94043 USA  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on Feb. 06, 2023 and testing was performed from Apr. 11, 2023 to Jun. 02, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

**Sporton International Inc. Wensan Laboratory**

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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## History of this test report

| Report No.   | Version | Description   | Issue Date    |
|--------------|---------|---|---------------|
| FR2D0206-01B | 01      | Initial issue of report   | Jun. 19, 2023 |
| FR2D0206-01B | 02      | Revise Appendix A, Appendix D and Summary<br>This report is an updated version, replacing the report issued on Jun. 19, 2023. | Jun. 28, 2023 |
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## Summary of Test Result

| Report Clause | Ref Std. Clause              | Test Items                                 | Result (PASS/FAIL) | Remark                                 |
|---------------|------------------------------|--|--------------------|--|
| 3.1           | 15.247(a)(2)                 | 6dB Bandwidth                              | Pass               | -                                      |
| 3.1           | 2.1049                       | 99% Occupied Bandwidth                     | Reporting only     | -                                      |
| 3.2           | 15.247(b)(3)<br>15.247(b)(4) | Output Power                               | Pass               | -                                      |
| 3.3           | 15.247(e)                    | Power Spectral Density                     | Pass               | -                                      |
| 3.4           | 15.247(d)                    | Conducted Band Edges and Spurious Emission | Pass               | -                                      |
| 3.5           | 15.247(d)                    | Radiated Band Edges and Spurious Emission  | Pass               | 1.64 dB under the limit at 2483.52 MHz |
| 3.6           | 15.207                       | AC Conducted Emission                      | Pass               | 10.52 dB under the limit at 1.55 MHz   |
| 3.7           | 15.203                       | Antenna Requirement                        | Pass               | -                                      |

**Conformity Assessment Condition:**

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

**Disclaimer:**

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

**Reviewed by: William Chen**

**Report Producer: Lea Yu**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |  |
|---------------------------------|--|
| Equipment                       | Phone  |
| Model Name                      | G1MNV  |
| FCC ID                          | A4RG1MNV   |
| EUT supports Radios application | GSM/EGPRS/WCDMA/HSPA/LTE/5G NR/NFC/GNSS/<br>UWB/WPT<br>WLAN 11b/g/n HT20<br>WLAN 11a/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80/VHT160<br>WLAN 11ax HE20/HE40/HE80/HE160<br>WLAN 11be EHT20/EHT40/EHT80/EHT160<br>Bluetooth BR/EDR/LE/HR |

**Remark:** The EUT's information above is declared by manufacturer.

| EUT Information List |                            |
|----------------------|----------------------------|
| S/N                  | Performed Test Item        |
| 33141FDJG000Z1       | RF Conducted Measurement   |
| 33141FDJG0003F       | Radiated Spurious Emission |
| 31101FDJG0003F       | Conducted Emission         |

## 1.2 Product Specification of Equipment Under Test

| Product Specification is subject to this standard             |  |
|---|--|
| <b>Tx/Rx Frequency Range</b>                                  | 2402 MHz ~ 2480 MHz  |
| <b>Number of Channels</b>                                     | Bluetooth – LE: 40<br>Bluetooth HR : 75  |
| <b>Carrier Frequency of Each Channel</b>                      | Bluetooth – LE : 40 Channel<br>(37 hopping + 3 advertising channel)<br>Bluetooth HR : 75 Channel   |
| <b>Maximum Output Power to Antenna</b>                        | <b>&lt;Ant. 3&gt;</b><br>Bluetooth – LE (1Mbps): 19.20 dBm / 0.0832 W<br>Bluetooth – LE (2Mbps): 19.20 dBm / 0.0832 W<br>Bluetooth HR (4Mbps): 20.54 dBm / 0.1132 W<br>Bluetooth HR (8Mbps): 20.55 dBm / 0.1135 W<br><b>&lt;Ant. 4&gt;</b><br>Bluetooth – LE (1Mbps): 19.00 dBm / 0.0794 W<br>Bluetooth – LE (2Mbps): 19.00 dBm / 0.0794 W<br>Bluetooth HR (4Mbps): 20.70 dBm / 0.1175 W<br>Bluetooth HR (8Mbps): 20.71 dBm / 0.1178 W |
| <b>Maximum Output Power to Antenna<br/>&lt;TXBF Modes&gt;</b> | <b>MIMO &lt;Ant. 3+4&gt;</b><br>Bluetooth – LE (1Mbps): 20.96 dBm / 0.1247 W<br>Bluetooth – LE (2Mbps): 21.31 dBm / 0.1352 W<br>Bluetooth HR (4Mbps): 20.82 dBm / 0.1208 W<br>Bluetooth HR (8Mbps): 20.76 dBm / 0.1191 W   |
| <b>99% Occupied Bandwidth</b>                                 | <b>&lt;Ant. 3&gt;</b><br>Bluetooth – LE (1Mbps): 1.055 MHz<br>Bluetooth – LE (2Mbps): 2.098 MHz<br>Bluetooth HR (4Mbps): 2.414 MHz<br>Bluetooth HR (8Mbps): 4.699 MHz<br><b>&lt;Ant. 4&gt;</b><br>Bluetooth – LE (1Mbps): 1.053 MHz<br>Bluetooth – LE (2Mbps): 2.094 MHz<br>Bluetooth HR (4Mbps): 2.406 MHz<br>Bluetooth HR (8Mbps): 4.699 MHz   |
| <b>99% Occupied Bandwidth<br/>&lt;TXBF Mode&gt;</b>           | <b>MIMO &lt;Ant. 3+4&gt;</b><br>Bluetooth – LE (1Mbps): 1.053 MHz<br>Bluetooth – LE (2Mbps): 2.098 MHz<br>Bluetooth HR (4Mbps): 2.406 MHz<br>Bluetooth HR (8Mbps): 4.699 MHz   |
| <b>Antenna Type / Gain</b>                                    | <b>&lt;Ant. 3&gt;</b> : PIFA Antenna with gain -1.90 dBi<br><b>&lt;Ant. 4&gt;</b> : IFA Antenna with gain 1.10 dBi   |
| <b>Type of Modulation</b>                                     | Bluetooth - LE : GFSK<br>Bluetooth HR: 8PSK  |

| Product Specification is subject to this standard |                    |        |        |
|---|--------------------|--------|--------|
| Antenna Function Description                      |                    | Ant. 3 | Ant. 4 |
|   | Bluetooth - LE     | V      | V      |
|   | Bluetooth- LE TXBF | V      | V      |
|   | Bluetooth HR       | V      | V      |
|   | Bluetooth HR TXBF  | V      | V      |

**Remark:**

1. MIMO Ant. 3+4 Directional Gain is a calculated result from MIMO Ant. 3 and MIMO Ant. 4. The formula used in calculation is documented in section 1.2.1.
2. Power of MIMO Ant. 3 + Ant. 4 is a calculated result from sum of the power MIMO Ant. 3 and MIMO Ant. 4.
3. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

### 1.2.1 Antenna Directional Gain

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)e)i)

Directional gain =  $G_{ANT} + 10 \log(N_{ANT}/N_{SS})$  dBi, where  $N_{SS}$  = the number of independent spatial streams of data and  $G_{ANT}$  is the antenna gain in dBi. (This formula can also be applied when antennas have different gains if the highest antenna gain is substituted for  $G_{ANT}$ .)

The directional gain "DG" is calculated as following table.

|           |       |       | DG    | DG    | Power     | PSD       |
|-----------|-------|-------|-------|-------|-----------|-----------|
|           |       |       | for   | for   | Limit     | Limit     |
|           | Ant 3 | Ant 4 | Power | PSD   | Reduction | Reduction |
|           | (dBi) | (dBi) | (dBi) | (dBi) | (dB)      | (dB)      |
| Bluetooth | -1.90 | 1.10  | 1.10  | 1.10  | 0.00      | 0.00      |

Calculation example:

If a device has two antenna,  $G_{ANT1} = -1.90$  dBi;  $G_{ANT2} = 1.10$  dBi

$1.1 \text{ dBi} + 10 \times \log(2 / 2)$

$= 1.10 \text{ dBi}$

Power and PSD limit reduction = Composite gain – 6dBi, ( min = 0 )

### 1.3 Modification of EUT

No modifications made to the EUT during the testing.

## 1.4 Testing Location

|                           |   |
|---------------------------|---|
| <b>Test Site</b>          | Sporton International Inc. EMC & Wireless Communications Laboratory   |
| <b>Test Site Location</b> | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City 333, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b><br>CO05-HY (TAF Code: 1190)   |
| <b>Remark</b>             | The AC Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

|                           |  |
|---------------------------|--|
| <b>Test Site</b>          | Sporton International Inc. Wensan Laboratory   |
| <b>Test Site Location</b> | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist.,<br>Taoyuan City 333010, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b><br>TH05-HY, 03CH22-HY  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

## 1.5 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

**Remark:**

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.





## 2 Test Configuration of Equipment Under Test

### 2.1 Carrier Frequency Channel

<Bluetooth - LE>

| Frequency Band  | Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) |
|-----------------|---------|----------------|---------|----------------|
| 2400-2483.5 MHz | 0       | 2402           | 21      | 2444           |
|                 | 1       | 2404           | 22      | 2446           |
|                 | 2       | 2406           | 23      | 2448           |
|                 | 3       | 2408           | 24      | 2450           |
|                 | 4       | 2410           | 25      | 2452           |
|                 | 5       | 2412           | 26      | 2454           |
|                 | 6       | 2414           | 27      | 2456           |
|                 | 7       | 2416           | 28      | 2458           |
|                 | 8       | 2418           | 29      | 2460           |
|                 | 9       | 2420           | 30      | 2462           |
|                 | 10      | 2422           | 31      | 2464           |
|                 | 11      | 2424           | 32      | 2466           |
|                 | 12      | 2426           | 33      | 2468           |
|                 | 13      | 2428           | 34      | 2470           |
|                 | 14      | 2430           | 35      | 2472           |
|                 | 15      | 2432           | 36      | 2474           |
|                 | 16      | 2434           | 37      | 2476           |
|                 | 17      | 2436           | 38      | 2478           |
|                 | 18      | 2438           | 39      | 2480           |
|                 | 19      | 2440           | -       | -              |
|                 | 20      | 2442           | -       | -              |

**<Bluetooth HR>**

| Frequency Band  | Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) |
|-----------------|---------|----------------|---------|----------------|---------|----------------|
| 2400-2483.5 MHz | 2       | 2404           | 27      | 2429           | 52      | 2454           |
|                 | 3       | 2405           | 28      | 2430           | 53      | 2455           |
|                 | 4       | 2406           | 29      | 2431           | 54      | 2456           |
|                 | 5       | 2407           | 30      | 2432           | 55      | 2457           |
|                 | 6       | 2408           | 31      | 2433           | 56      | 2458           |
|                 | 7       | 2409           | 32      | 2434           | 57      | 2459           |
|                 | 8       | 2410           | 33      | 2435           | 58      | 2460           |
|                 | 9       | 2411           | 34      | 2436           | 59      | 2461           |
|                 | 10      | 2412           | 35      | 2437           | 60      | 2462           |
|                 | 11      | 2413           | 36      | 2438           | 61      | 2463           |
|                 | 12      | 2414           | 37      | 2439           | 62      | 2464           |
|                 | 13      | 2415           | 38      | 2440           | 63      | 2465           |
|                 | 14      | 2416           | 39      | 2441           | 64      | 2466           |
|                 | 15      | 2417           | 40      | 2442           | 65      | 2467           |
|                 | 16      | 2418           | 41      | 2443           | 66      | 2468           |
|                 | 17      | 2419           | 42      | 2444           | 67      | 2469           |
|                 | 18      | 2420           | 43      | 2445           | 68      | 2470           |
|                 | 19      | 2421           | 44      | 2446           | 69      | 2471           |
|                 | 20      | 2422           | 45      | 2447           | 70      | 2472           |
|                 | 21      | 2423           | 46      | 2448           | 71      | 2473           |
|                 | 22      | 2424           | 47      | 2449           | 72      | 2474           |
|                 | 23      | 2425           | 48      | 2450           | 73      | 2475           |
|                 | 24      | 2426           | 49      | 2451           | 74      | 2476           |
|                 | 25      | 2427           | 50      | 2452           | 75      | 2477           |
|                 | 26      | 2428           | 51      | 2453           | 76      | 2478           |



## **2.2 Test Mode**

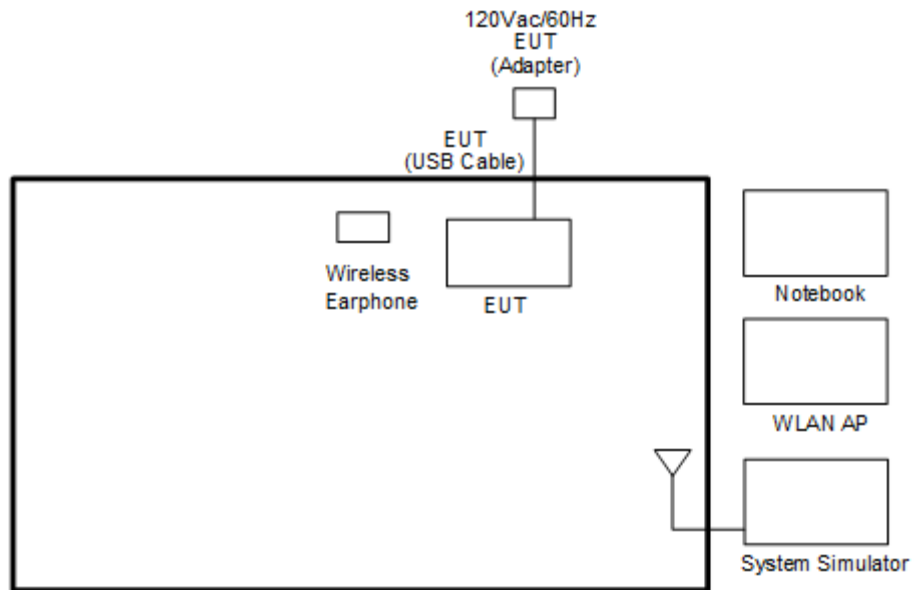
- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.
  
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

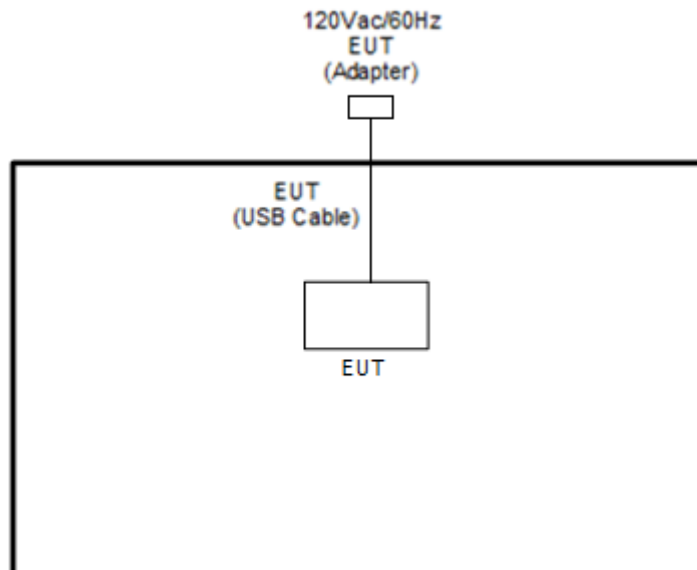
| <b>Summary table of Test Cases</b>  |  |
|---|--|
| <b>Test Item</b>  | <b>Data Rate / Modulation</b>  |
| <b>Conducted Test Cases</b>   | <b>Bluetooth – LE / GFSK</b>   |
|   | Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps   |
|   | Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps   |
|   | Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps   |
|   | Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps   |
|   | Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps   |
|   | Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps   |
|   | Mode 7: Bluetooth HR CH02_2404 MHz_4Mbps   |
|   | Mode 8: Bluetooth HR CH39_2441 MHz_4Mbps   |
|   | Mode 9: Bluetooth HR CH76_2478 MHz_4Mbps   |
|   | Mode 10: Bluetooth HR CH02_2404 MHz_8Mbps  |
|   | Mode 11: Bluetooth HR CH39_2441 MHz_8Mbps  |
|   | Mode 12: Bluetooth HR CH76_2478 MHz_8Mbps  |
| <b>Radiated Test Cases</b>  | Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps   |
|   | Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps   |
|   | Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps   |
|   | Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps   |
|   | Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps   |
|   | Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps   |
|   | Mode 7: Bluetooth HR CH02_2404 MHz_4Mbps   |
|   | Mode 8: Bluetooth HR CH39_2441 MHz_4Mbps   |
|   | Mode 9: Bluetooth HR CH76_2478 MHz_4Mbps   |
|   | Mode 10: Bluetooth HR CH02_2404 MHz_8Mbps  |
|   | Mode 11: Bluetooth HR CH39_2441 MHz_8Mbps  |
|   | Mode 12: Bluetooth HR CH76_2478 MHz_8Mbps  |
| <b>AC Conducted Emission</b>  | Mode 1: GSM850 Idle + WLAN (2.4GHz) Link + Bluetooth Link + USB cable 1<br>(Charging from Adapter 2) |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>For Radiated Test Cases, the tests were performed with Adapter 1 and USB Cable 1.</li> <li>During the preliminary test, both charging modes (Adapter mode and WPT Charging mode) were verified. It is determined that the adaptor mode is the worst case for official test.</li> <li>For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.</li> </ol> |  |

## 2.3 Connection Diagram of Test System

### <AC Conducted Emission Mode>



### <Bluetooth Tx Mode>



## 2.4 Support Unit used in test configuration and system

| Item | Equipment         | Brand Name | Model Name    | FCC ID                | Data Cable | Power Cord   |
|------|-------------------|------------|---------------|-----------------------|------------|--|
| 1.   | System Simulator  | Anritsu    | MT8820C       | N/A                   | N/A        | Unshielded, 1.8 m  |
| 2.   | Wireless Earphone | Google     | G1007/G1008   | A4RG1007/<br>A4RG1008 | N/A        | N/A  |
| 3.   | WLAN AP           | ASUS       | RT-AC66U      | MSQ-RTAC66U           | N/A        | Unshielded, 1.8 m  |
| 4.   | Notebook          | DELL       | Latitude 3420 | FCC DoC               | N/A        | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |

## 2.5 EUT Operation Test Setup

The RF test items, utility "CMD v.10.0.18362.1256" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

### 3 Test Result

#### 3.1 6dB and 99% Bandwidth Measurement

##### 3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

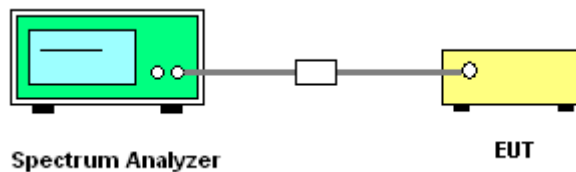
##### 3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

##### 3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW)  $\geq 3 * RBW$ .
6. Measure and record the results in the test report.

##### 3.1.4 Test Setup



##### 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

##### 3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

## **3.2 Output Power Measurement**

### **3.2.1 Limit of Output Power**

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

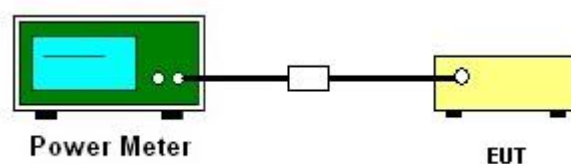
### **3.2.2 Measuring Instruments**

Please refer to the measuring equipment list in this test report.

### **3.2.3 Test Procedures**

1. For BT HR modes, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1 Peak power meter method.
2. For BLE modes Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G.
3. The RF output of EUT is connected to the power meter by RF cable and attenuator.
4. The path loss is compensated to the results for each measurement.
5. Set the maximum power setting and enable the EUT to transmit continuously.
6. Measure the conducted output power and record the results in the test report.

### **3.2.4 Test Setup**



### **3.2.5 Test Result of Peak Output Power**

Please refer to Appendix A.

### **3.2.6 Test Result of Average Output Power**

Please refer to Appendix A.



### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band at any time interval of continuous transmission.

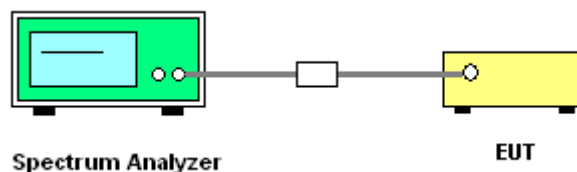
#### 3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

#### 3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth (VBW) = 10 kHz. In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6 dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100 kHz is a reference level and is used as 20 dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

### 3.4 Conducted Band Edges and Spurious Emission Measurement

#### 3.4.1 Limit of Conducted Band Edges and Spurious Emission

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

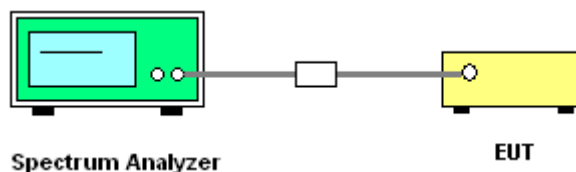
#### 3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

#### 3.4.3 Test Procedure

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Set RBW = 100 kHz, VBW = 300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

#### 3.4.4 Test Setup



#### 3.4.5 Test Result of Conducted Band Edges Plots

Please refer to Appendix A.

#### 3.4.6 Test Result of Conducted Spurious Emission Plots

Please refer to Appendix A.



### **3.5 Radiated Band Edges and Spurious Emission Measurement**

#### **3.5.1 Limit of Radiated Band Edges and Spurious Emission**

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

| <b>Frequency<br/>(MHz)</b> | <b>Field Strength<br/>(microvolts/meter)</b> | <b>Measurement Distance<br/>(meters)</b> |
|----------------------------|--|--|
| 0.009 – 0.490              | 2400/F(kHz)                                  | 300                                      |
| 0.490 – 1.705              | 24000/F(kHz)                                 | 30                                       |
| 1.705 – 30.0               | 30   | 30                                       |
| 30 – 88                    | 100  | 3  |
| 88 – 216                   | 150  | 3  |
| 216 - 960                  | 200  | 3  |
| Above 960                  | 500  | 3  |

#### **3.5.2 Measuring Instruments**

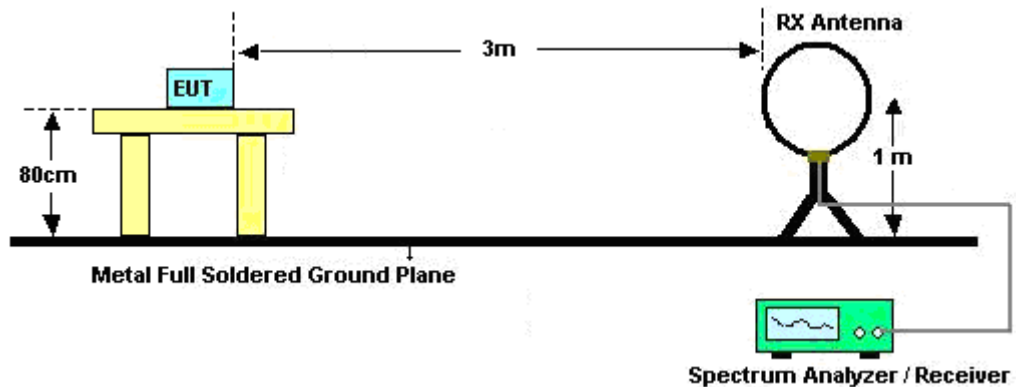
Please refer to the measuring equipment list in this test report.

### 3.5.3 Test Procedures

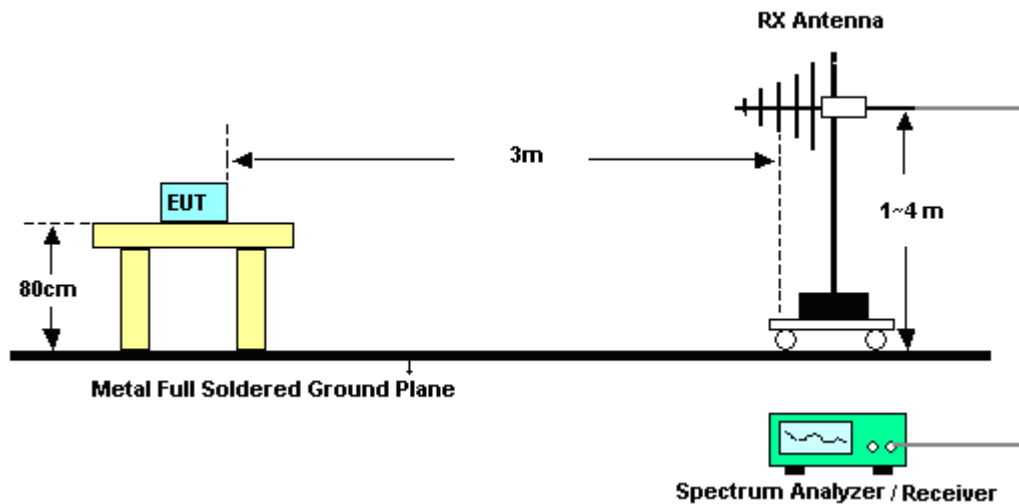
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.
8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW = 100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW = 3 MHz for  $f \geq 1$  GHz for peak measurement.For average measurement:
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.5.4 Test Setup

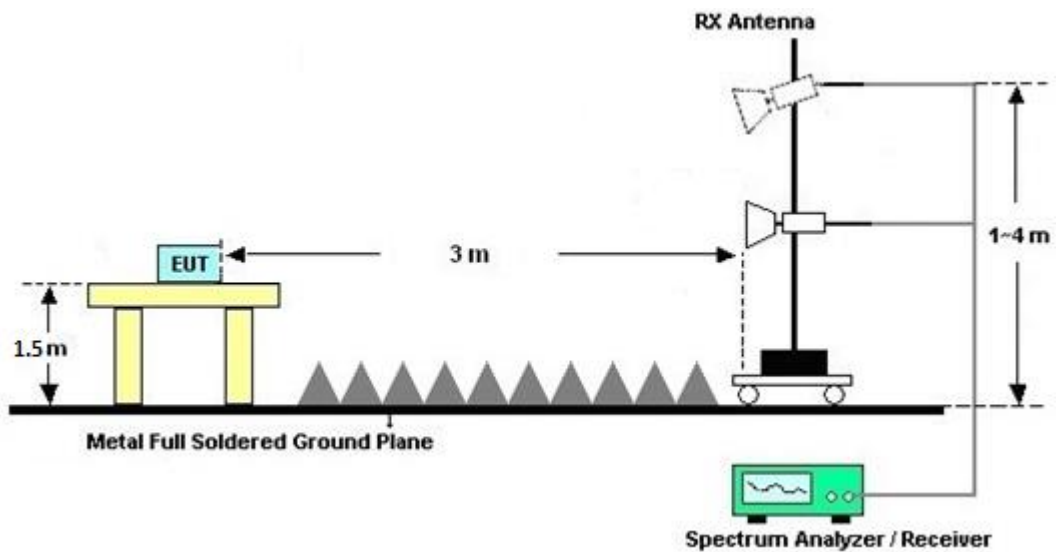
For radiated test below 30MHz



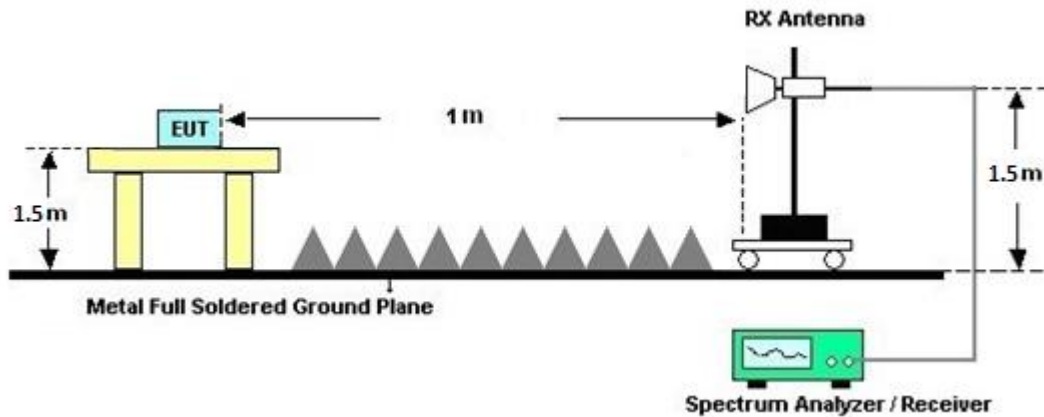
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



### 3.5.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

### 3.5.7 Duty Cycle

Please refer to Appendix E.

### 3.5.8 Test Result of Radiated Spurious Emission (30 MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

### 3.6 AC Conducted Emission Measurement

#### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

#### 3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

#### 3.6.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.





## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

### **3.7.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.



## 4 List of Measuring Equipment

| Instrument                       | Brand Name      | Model No.               | Serial No.                 | Characteristics               | Calibration Date | Test Date                       | Due Date      | Remark                |
|----------------------------------|-----------------|-------------------------|----------------------------|-------------------------------|------------------|---------------------------------|---------------|-----------------------|
| AC Power Source                  | ChainTek        | APC-1000W               | N/A                        | N/A                           | N/A              | May 17, 2023                    | N/A           | Conduction (CO05-HY)  |
| EMI Test Receiver                | Rohde & Schwarz | ESR3                    | 102388                     | 9kHz~3.6GHz                   | Dec. 01, 2022    | May 17, 2023                    | Nov. 30, 2023 | Conduction (CO05-HY)  |
| Hygrometer                       | Testo           | 608-H1                  | 34913912                   | N/A                           | Nov. 17, 2022    | May 17, 2023                    | Nov. 16, 2023 | Conduction (CO05-HY)  |
| LISN                             | Rohde & Schwarz | ENV216                  | 100081                     | 9kHz~30MHz                    | Nov. 17, 2022    | May 17, 2023                    | Nov. 16, 2023 | Conduction (CO05-HY)  |
| Software                         | Rohde & Schwarz | EMC32                   | N/A                        | N/A                           | N/A              | May 17, 2023                    | N/A           | Conduction (CO05-HY)  |
| Pulse Limiter                    | SCHWARZBECK     | VTSD 9561-F N           | 00691                      | N/A                           | Aug. 01, 2022    | May 17, 2023                    | Jul. 31, 2023 | Conduction (CO05-HY)  |
| LISN Cable                       | MVE             | RG-400                  | 260260                     | N/A                           | Dec. 29, 2022    | May 17, 2023                    | Dec. 28, 2023 | Conduction (CO05-HY)  |
| Loop Antenna                     | Rohde & Schwarz | HFH2-Z2                 | 100488                     | 9 kHz~30 MHz                  | Sep. 20, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Sep. 19, 2023 | Radiation (03CH22-HY) |
| Bilog Antenna with 6dB pad       | TESEQ & WOKEN   | CBL 6111D & 00802N1D-06 | 63304 & 002                | N/A                           | Oct. 04, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Oct. 03, 2023 | Radiation (03CH22-HY) |
| Amplifier                        | SONOMA          | 310N                    | 421581                     | N/A                           | Jul. 16, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Jul. 15, 2023 | Radiation (03CH22-HY) |
| Double Ridged Guide Horn Antenna | RFSPIN          | DRH18-E                 | LE2C05A18EN                | 1GHz~18GHz                    | Jul. 06, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Jul. 05, 2023 | Radiation (03CH22-HY) |
| SHF-EHF Horn Antenna             | SCHWARZBECK     | BBHA9170                | 00991                      | 18GHz~40GHz                   | May 14, 2022     | Apr. 11, 2023~<br>Apr. 29, 2023 | May 13, 2023  | Radiation (03CH22-HY) |
| Amplifier                        | EMEC            | EM01G18GA               | 060877                     | N/A                           | Sep. 29, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Sep. 28, 2023 | Radiation (03CH22-HY) |
| Preamplifier                     | EMEC            | EM18G40G                | 060872                     | 18-40GHz                      | Sep. 28, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Sep. 27, 2023 | Radiation (03CH22-HY) |
| Signal Analyzer                  | Keysight        | N9010B                  | MY60241058                 | N/A                           | Jul. 07, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Jul. 06, 2023 | Radiation (03CH22-HY) |
| Hygrometer                       | TECPEL          | DTM-303B                | TP140325                   | N/A                           | Nov. 07, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Nov. 06, 2023 | Radiation (03CH22-HY) |
| Controller                       | EMEC            | EM1000                  | N/A                        | Control Turn table & Ant Mast | N/A              | Apr. 11, 2023~<br>Apr. 29, 2023 | N/A           | Radiation (03CH22-HY) |
| Antenna Mast                     | ChainTek        | MBS-520-1               | N/A                        | 1m~4m                         | N/A              | Apr. 11, 2023~<br>Apr. 29, 2023 | N/A           | Radiation (03CH22-HY) |
| Turn Table                       | ChainTek        | T-200-S-1               | N/A                        | 0~360 Degree                  | N/A              | Apr. 11, 2023~<br>Apr. 29, 2023 | N/A           | Radiation (03CH22-HY) |
| Software                         | Audix           | E3<br>6.09824_2019122   | RK-002347                  | N/A                           | N/A              | Apr. 11, 2023~<br>Apr. 29, 2023 | N/A           | Radiation (03CH22-HY) |
| RF Cable                         | HUBER + SUHNER  | SUCOFLEX 102            | 803951/2                   | 9kHz~30MHz                    | Mar. 07, 2023    | Apr. 11, 2023~<br>Apr. 29, 2023 | Mar. 06, 2024 | Radiation (03CH22-HY) |
| RF Cable                         | HUBER + SUHNER  | SUCOFLEX 102            | 804390/2,804611/2,804615/2 | N/A                           | Oct. 25, 2022    | Apr. 11, 2023~<br>Apr. 29, 2023 | Oct. 24, 2023 | Radiation (03CH22-HY) |



| Instrument         | Brand Name         | Model No. | Serial No.                 | Characteristics      | Calibration Date | Test Date                      | Due Date      | Remark                 |
|--------------------|--------------------|-----------|----------------------------|----------------------|------------------|--------------------------------|---------------|------------------------|
| Hygrometer         | TECPEL             | DTM-303A  | TP201996                   | N/A                  | Nov. 17, 2022    | May 16 ,2023~<br>May 22, 2023  | Nov. 16, 2023 | Conducted<br>(TH05-HY) |
| Power Sensor       | DARE               | RPR3006W  | 16I00054SNO<br>12 (NO:113) | 10MHz~6GHz           | Dec. 13, 2022    | May 16 ,2023~<br>May 22, 2023  | Dec. 12, 2023 | Conducted<br>(TH05-HY) |
| Signal<br>Analyzer | Rohde &<br>Schwarz | FSV40     | 101905                     | 10Hz -<br>40GHz(amp) | Aug. 03, 2022    | May 16 ,2023~<br>May 22, 2023  | Aug. 02, 2023 | Conducted<br>(TH05-HY) |
| Hygrometer         | TECPEL             | DTM-303A  | TP201996                   | N/A                  | Nov. 17. 2022    | May 16, 2023~<br>Jun. 02, 2023 | Nov. 16. 2023 | Conducted<br>(TH05-HY) |
| Power Meter        | Anritsu            | ML2495A   | 1036004                    | N/A                  | Aug. 08,2022     | May 16, 2023~<br>Jun. 02, 2023 | Aug. 07,2023  | Conducted<br>(TH05-HY) |
| Power Sensor       | Anritsu            | MA2411B   | 1027253                    | 300MHz~40GH<br>z     | Aug. 08,2022     | May 16, 2023~<br>Jun. 02, 2023 | Aug. 07,2023  | Conducted<br>(TH05-HY) |
| Signal<br>Analyzer | Rohde &<br>Schwarz | FSV40     | 101905                     | 10Hz -<br>40GHz(amp) | Aug. 03, 2022    | May 16, 2023~<br>Jun. 02, 2023 | Aug. 02, 2023 | Conducted<br>(TH05-HY) |

## 5 Measurement Uncertainty

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.50 dB |
|---|---------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.92 dB |
|---|---------|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.42 dB |
|---|---------|

### Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.40 dB |
|---|---------|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.38 dB |
|---|---------|

**Appendix A. Test Result of Conducted Test Items**

|                |                       |                    |       |    |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Derek Hsu             | Temperature:       | 21~25 | °C |
| Test Date:     | 2023/05/16~2023/06/02 | Relative Humidity: | 51~54 | %  |

&lt;Ant. 3&gt;

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 1.051                 | 0.722        | 0.50               | Pass      |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 1.055                 | 0.724        | 0.50               | Pass      |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 1.055                 | 0.726        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 19.20                         | 30.00                       | -1.90    | 17.30            | 36.00                  | Pass       |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 19.00                         | 30.00                       | -1.90    | 17.10            | 36.00                  | Pass       |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 19.10                         | 30.00                       | -1.90    | 17.20            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 17.30                  | 2.48                 | -1.90    | 8.00                       | Pass      |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 17.43                  | 2.57                 | -1.90    | 8.00                       | Pass      |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 17.70                  | 2.92                 | -1.90    | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 2.090                 | 1.264        | 0.50               | Pass      |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 2.098                 | 1.264        | 0.50               | Pass      |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 2.094                 | 1.264        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 19.20                         | 30.00                       | -1.90    | 17.30            | 36.00                  | Pass       |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 19.00                         | 30.00                       | -1.90    | 17.10            | 36.00                  | Pass       |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 19.10                         | 30.00                       | -1.90    | 17.20            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 17.66                  | -0.84                | -1.90    | 8.00                       | Pass      |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 17.41                  | -1.10                | -1.90    | 8.00                       | Pass      |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 17.76                  | -0.68                | -1.90    | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 2.406                 | 1.624        | 0.50               | Pass      |
| BT   | 4Mbps     | 1   | 39  | 2441        | 2.414                 | 1.608        | 0.50               | Pass      |
| BT   | 4Mbps     | 1   | 76  | 2478        | 2.406                 | 1.656        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 20.49                      | 30.00                       | -1.90    | 18.59            | 36.00                  | Pass       |
| BT   | 4Mbps     | 1   | 39  | 2441        | 20.54                      | 30.00                       | -1.90    | 18.64            | 36.00                  | Pass       |
| BT   | 4Mbps     | 1   | 76  | 2478        | 20.32                      | 30.00                       | -1.90    | 18.42            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 16.95                  | 1.16                 | -1.90    | 8.00                       | Pass      |
| BT   | 4Mbps     | 1   | 39  | 2441        | 16.93                  | 1.18                 | -1.90    | 8.00                       | Pass      |
| BT   | 4Mbps     | 1   | 76  | 2478        | 16.83                  | 1.04                 | -1.90    | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 4.699                 | 0.688        | 0.50               | Pass      |
| BT   | 8Mbps     | 1   | 39  | 2441        | 4.683                 | 0.688        | 0.50               | Pass      |
| BT   | 8Mbps     | 1   | 76  | 2478        | 4.683                 | 0.688        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 20.45                      | 30.00                       | -1.90    | 18.55            | 36.00                  | Pass       |
| BT   | 8Mbps     | 1   | 39  | 2441        | 20.55                      | 30.00                       | -1.90    | 18.65            | 36.00                  | Pass       |
| BT   | 8Mbps     | 1   | 76  | 2478        | 20.42                      | 30.00                       | -1.90    | 18.52            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 16.84                  | 2.06                 | -1.90    | 8.00                       | Pass      |
| BT   | 8Mbps     | 1   | 39  | 2441        | 16.71                  | 1.85                 | -1.90    | 8.00                       | Pass      |
| BT   | 8Mbps     | 1   | 76  | 2478        | 16.70                  | 1.76                 | -1.90    | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.



&lt;Ant. 4&gt;

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 1.051                 | 0.722        | 0.50               | Pass      |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 1.053                 | 0.728        | 0.50               | Pass      |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 1.053                 | 0.726        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 19.00                         | 30.00                       | 1.10     | 20.10            | 36.00                  | Pass       |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 18.80                         | 30.00                       | 1.10     | 19.90            | 36.00                  | Pass       |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 18.80                         | 30.00                       | 1.10     | 19.90            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BLE  | 1Mbps     | 1   | 0   | 2402        | 17.73                  | 2.92                 | 1.10     | 8.00                       | Pass      |
| BLE  | 1Mbps     | 1   | 19  | 2440        | 17.38                  | 2.59                 | 1.10     | 8.00                       | Pass      |
| BLE  | 1Mbps     | 1   | 39  | 2480        | 17.41                  | 2.65                 | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 2.090                 | 1.256        | 0.50               | Pass      |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 2.094                 | 1.264        | 0.50               | Pass      |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 2.094                 | 1.260        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 19.00                         | 30.00                       | 1.10     | 20.10            | 36.00                  | Pass       |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 18.80                         | 30.00                       | 1.10     | 19.90            | 36.00                  | Pass       |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 18.80                         | 30.00                       | 1.10     | 19.90            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BLE  | 2Mbps     | 1   | 0   | 2402        | 17.70                  | -0.85                | 1.10     | 8.00                       | Pass      |
| BLE  | 2Mbps     | 1   | 19  | 2440        | 17.22                  | -1.26                | 1.10     | 8.00                       | Pass      |
| BLE  | 2Mbps     | 1   | 39  | 2480        | 17.40                  | -1.05                | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 2.406                 | 1.616        | 0.50               | Pass      |
| BT   | 4Mbps     | 1   | 39  | 2441        | 2.406                 | 1.664        | 0.50               | Pass      |
| BT   | 4Mbps     | 1   | 76  | 2478        | 2.406                 | 1.672        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 20.70                      | 30.00                       | 1.10     | 21.80            | 36.00                  | Pass       |
| BT   | 4Mbps     | 1   | 39  | 2441        | 20.54                      | 30.00                       | 1.10     | 21.64            | 36.00                  | Pass       |
| BT   | 4Mbps     | 1   | 76  | 2478        | 20.34                      | 30.00                       | 1.10     | 21.44            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BT   | 4Mbps     | 1   | 2   | 2404        | 17.23                  | 1.51                 | 1.10     | 8.00                       | Pass      |
| BT   | 4Mbps     | 1   | 39  | 2441        | 16.99                  | 1.22                 | 1.10     | 8.00                       | Pass      |
| BT   | 4Mbps     | 1   | 76  | 2478        | 16.94                  | 1.21                 | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 4.683                 | 0.672        | 0.50               | Pass      |
| BT   | 8Mbps     | 1   | 39  | 2441        | 4.683                 | 0.688        | 0.50               | Pass      |
| BT   | 8Mbps     | 1   | 76  | 2478        | 4.699                 | 0.688        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------|-----------------------------|----------|------------------|------------------------|------------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 20.71                      | 30.00                       | 1.10     | 21.81            | 36.00                  | Pass       |
| BT   | 8Mbps     | 1   | 39  | 2441        | 20.55                      | 30.00                       | 1.10     | 21.65            | 36.00                  | Pass       |
| BT   | 8Mbps     | 1   | 76  | 2478        | 20.38                      | 30.00                       | 1.10     | 21.48            | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------|----------------------------|-----------|
| BT   | 8Mbps     | 1   | 2   | 2404        | 17.05                  | 2.18                 | 1.10     | 8.00                       | Pass      |
| BT   | 8Mbps     | 1   | 39  | 2441        | 16.93                  | 1.99                 | 1.10     | 8.00                       | Pass      |
| BT   | 8Mbps     | 1   | 76  | 2478        | 16.62                  | 1.88                 | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 1Mbps     | 2   | 0   | 2402        | 1.051                 | 0.720        | 0.50               | Pass      |
| BLE  | 1Mbps     | 2   | 19  | 2440        | 1.053                 | 0.726        | 0.50               | Pass      |
| BLE  | 1Mbps     | 2   | 39  | 2480        | 1.053                 | 0.726        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power Ant 3 (dBm) | Average Conducted Power Ant 4 (dBm) | Total Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | Total EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|----------|------------------------|------------------------|------------|
| BLE  | 1Mbps     | 2   | 0   | 2402        | 18.00                               | 17.80                               | 20.91                       | 30.00                       | 1.10     | 22.01                  | 36.00                  | Pass       |
| BLE  | 1Mbps     | 2   | 19  | 2440        | 18.00                               | 17.90                               | 20.96                       | 30.00                       | 1.10     | 22.06                  | 36.00                  | Pass       |
| BLE  | 1Mbps     | 2   | 39  | 2480        | 18.10                               | 17.80                               | 20.96                       | 30.00                       | 1.10     | 22.06                  | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | Peak PSD Worst +3.01 (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------------------------------|----------|----------------------------|-----------|
| BLE  | 1Mbps     | 2   | 0   | 2402        | 17.72                  | 2.83                 | 5.84                             | 1.10     | 8.00                       | Pass      |
| BLE  | 1Mbps     | 2   | 19  | 2440        | 17.69                  | 2.78                 | 5.79                             | 1.10     | 8.00                       | Pass      |
| BLE  | 1Mbps     | 2   | 39  | 2480        | 17.93                  | 3.09                 | 6.10                             | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BLE  | 2Mbps     | 2   | 0   | 2402        | 2.086                 | 1.260        | 0.50               | Pass      |
| BLE  | 2Mbps     | 2   | 19  | 2440        | 2.098                 | 1.260        | 0.50               | Pass      |
| BLE  | 2Mbps     | 2   | 39  | 2480        | 2.090                 | 1.260        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Average Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power Ant 3 (dBm) | Average Conducted Power Ant 4 (dBm) | Total Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | Total EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|----------|------------------------|------------------------|------------|
| BLE  | 2Mbps     | 2   | 0   | 2402        | 18.40                               | 18.00                               | 21.21                       | 30.00                       | 1.10     | 22.31                  | 36.00                  | Pass       |
| BLE  | 2Mbps     | 2   | 19  | 2440        | 18.00                               | 18.00                               | 21.01                       | 30.00                       | 1.10     | 22.11                  | 36.00                  | Pass       |
| BLE  | 2Mbps     | 2   | 39  | 2480        | 18.50                               | 18.10                               | 21.31                       | 30.00                       | 1.10     | 22.41                  | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | Peak PSD Worst +3.01 (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------------------------------|----------|----------------------------|-----------|
| BLE  | 2Mbps     | 2   | 0   | 2402        | 17.88                  | -0.61                | 2.40                             | 1.10     | 8.00                       | Pass      |
| BLE  | 2Mbps     | 2   | 19  | 2440        | 17.49                  | -1.03                | 1.98                             | 1.10     | 8.00                       | Pass      |
| BLE  | 2Mbps     | 2   | 39  | 2480        | 18.08                  | -0.35                | 2.66                             | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 4Mbps     | 2   | 2   | 2404        | 2.406                 | 1.656        | 0.50               | Pass      |
| BT   | 4Mbps     | 2   | 39  | 2441        | 2.406                 | 1.664        | 0.50               | Pass      |
| BT   | 4Mbps     | 2   | 76  | 2478        | 2.406                 | 1.632        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power Ant 3 (dBm) | Peak Conducted Power Ant 4 (dBm) | Total Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | Total EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------------|----------------------------------|-----------------------------|-----------------------------|----------|------------------------|------------------------|------------|
| BT   | 4Mbps     | 2   | 2   | 2404        | 17.84                            | 17.77                            | 20.82                       | 30.00                       | 1.10     | 21.92                  | 36.00                  | Pass       |
| BT   | 4Mbps     | 2   | 39  | 2441        | 17.60                            | 17.59                            | 20.61                       | 30.00                       | 1.10     | 21.71                  | 36.00                  | Pass       |
| BT   | 4Mbps     | 2   | 76  | 2478        | 17.59                            | 17.45                            | 20.53                       | 30.00                       | 1.10     | 21.63                  | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | Peak PSD Worst +3.01 (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------------------------------|----------|----------------------------|-----------|
| BT   | 4Mbps     | 2   | 2   | 2404        | 13.86                  | -2.32                | 0.69                             | 1.10     | 8.00                       | Pass      |
| BT   | 4Mbps     | 2   | 39  | 2441        | 13.50                  | -2.27                | 0.74                             | 1.10     | 8.00                       | Pass      |
| BT   | 4Mbps     | 2   | 76  | 2478        | 12.84                  | -2.87                | 0.14                             | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | 6dB BW (MHz) | 6dB BW Limit (MHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|-----------------------|--------------|--------------------|-----------|
| BT   | 8Mbps     | 2   | 2   | 2404        | 4.683                 | 0.688        | 0.50               | Pass      |
| BT   | 8Mbps     | 2   | 39  | 2441        | 4.699                 | 0.672        | 0.50               | Pass      |
| BT   | 8Mbps     | 2   | 76  | 2478        | 4.699                 | 0.672        | 0.50               | Pass      |

**TEST RESULTS DATA**  
**Peak Power Table**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power Ant 3 (dBm) | Peak Conducted Power Ant 4 (dBm) | Total Conducted Power (dBm) | Conducted Power Limit (dBm) | DG (dBi) | Total EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
|------|-----------|-----|-----|-------------|----------------------------------|----------------------------------|-----------------------------|-----------------------------|----------|------------------------|------------------------|------------|
| BT   | 8Mbps     | 2   | 2   | 2404        | 17.85                            | 17.61                            | 20.74                       | 30.00                       | 1.10     | 21.84                  | 36.00                  | Pass       |
| BT   | 8Mbps     | 2   | 39  | 2441        | 17.71                            | 17.68                            | 20.71                       | 30.00                       | 1.10     | 21.81                  | 36.00                  | Pass       |
| BT   | 8Mbps     | 2   | 76  | 2478        | 17.95                            | 17.55                            | 20.76                       | 30.00                       | 1.10     | 21.86                  | 36.00                  | Pass       |

**TEST RESULTS DATA**  
**Peak Power Density**

| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm /100kHz) | Peak PSD (dBm /3kHz) | Peak PSD Worst +3.01 (dBm /3kHz) | DG (dBi) | Peak PSD Limit (dBm /3kHz) | Pass/Fail |
|------|-----------|-----|-----|-------------|------------------------|----------------------|----------------------------------|----------|----------------------------|-----------|
| BT   | 8Mbps     | 2   | 2   | 2404        | 13.50                  | -1.36                | 1.65                             | 1.10     | 8.00                       | Pass      |
| BT   | 8Mbps     | 2   | 39  | 2441        | 13.51                  | -1.67                | 1.34                             | 1.10     | 8.00                       | Pass      |
| BT   | 8Mbps     | 2   | 76  | 2478        | 12.59                  | -2.19                | 0.82                             | 1.10     | 8.00                       | Pass      |

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.



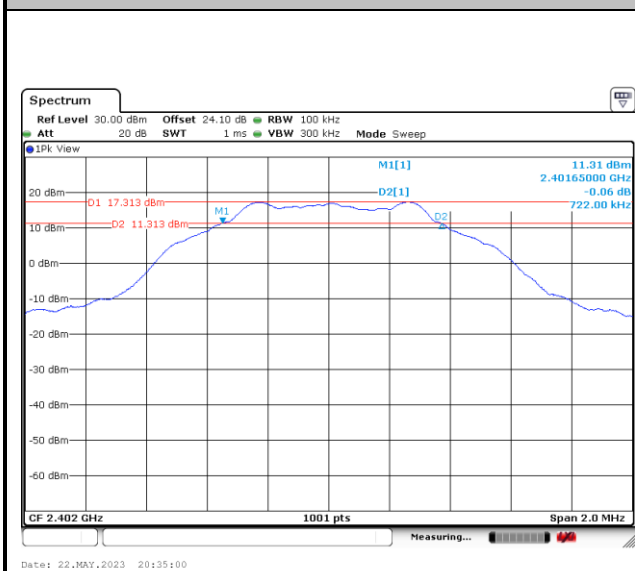


&lt;Ant. 3&gt;

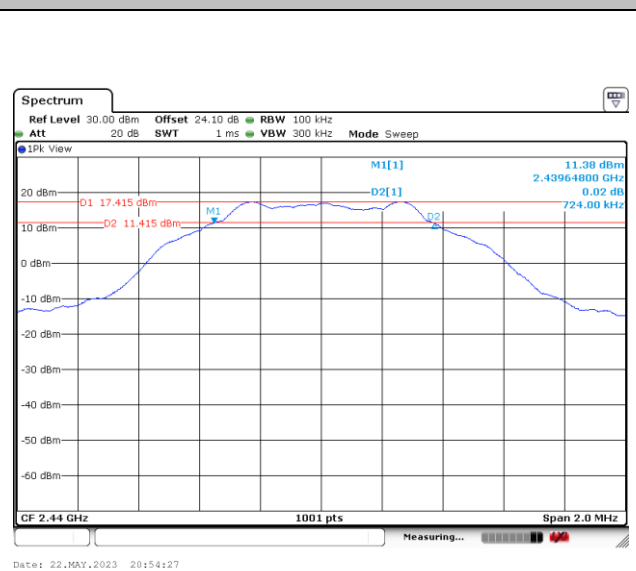
**6dB Bandwidth**

&lt;1Mbps&gt;

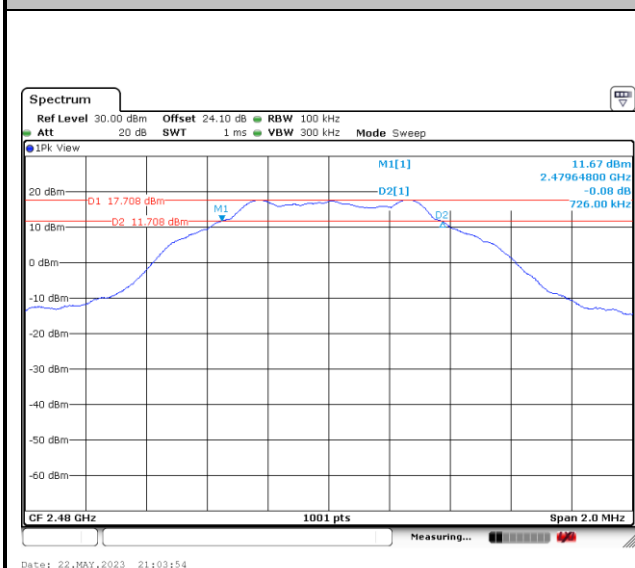
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



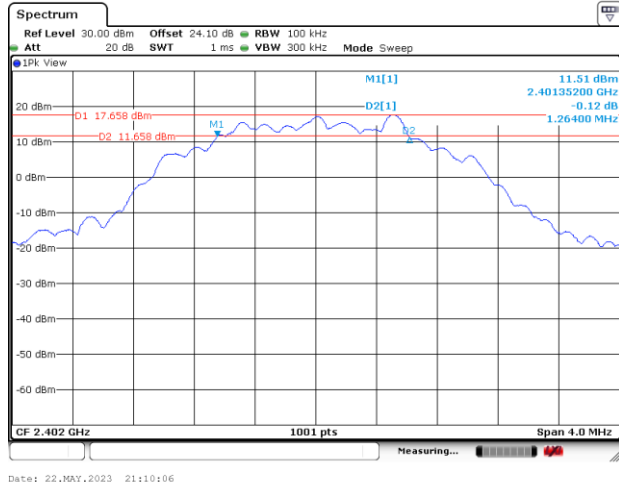
6 dB Bandwidth Plot on Channel 39



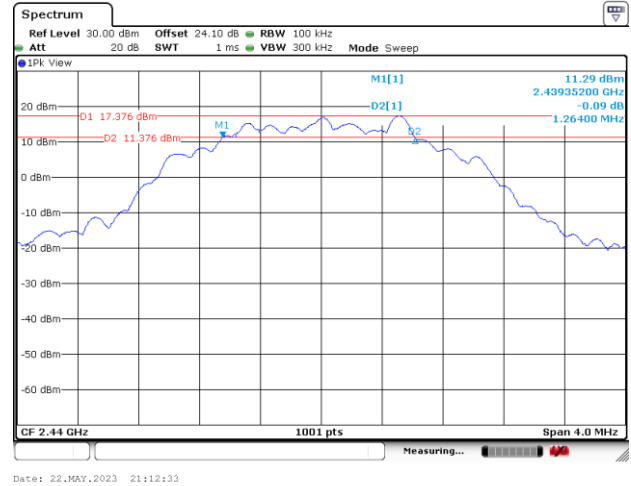


&lt;2Mbps&gt;

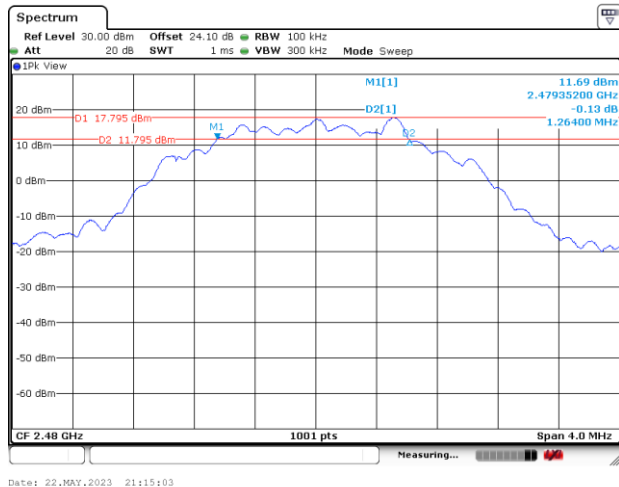
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



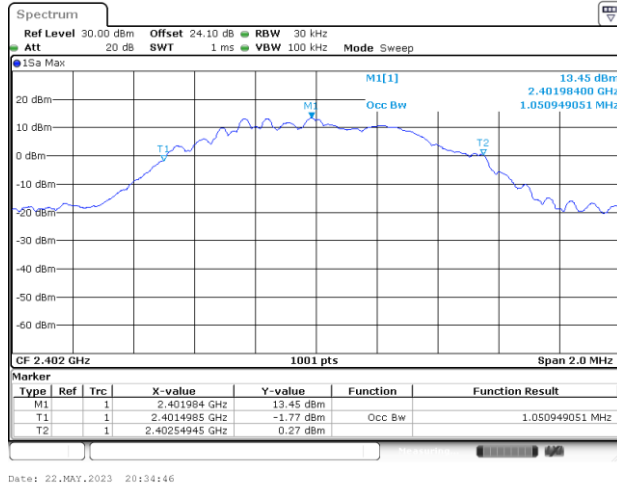
6 dB Bandwidth Plot on Channel 39



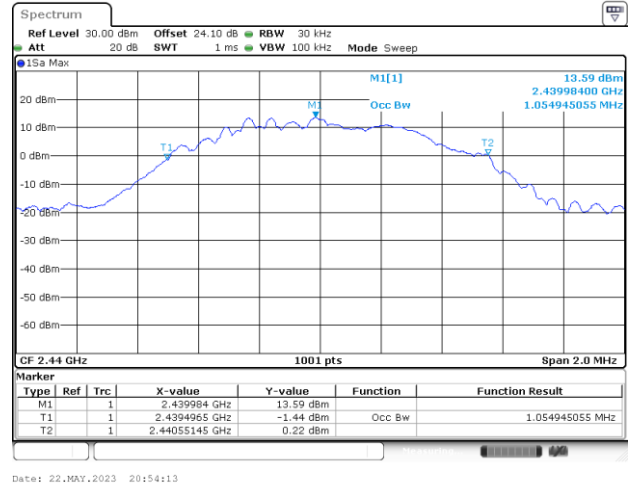
## 99% Occupied Bandwidth

<1Mbps>

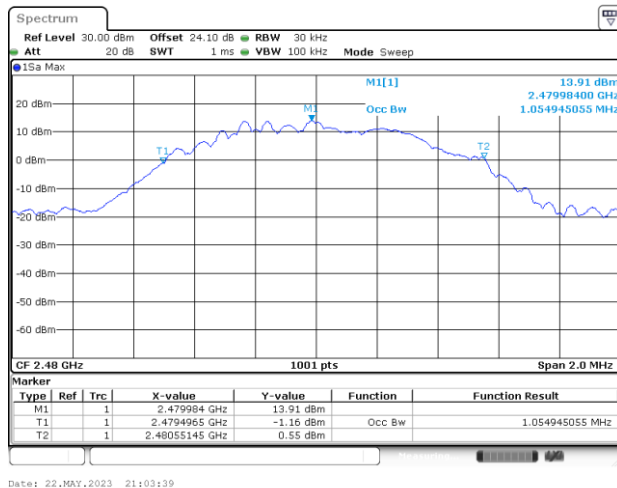
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Plot Bandwidth on Channel 19



99% Occupied Bandwidth Plot on Channel 39

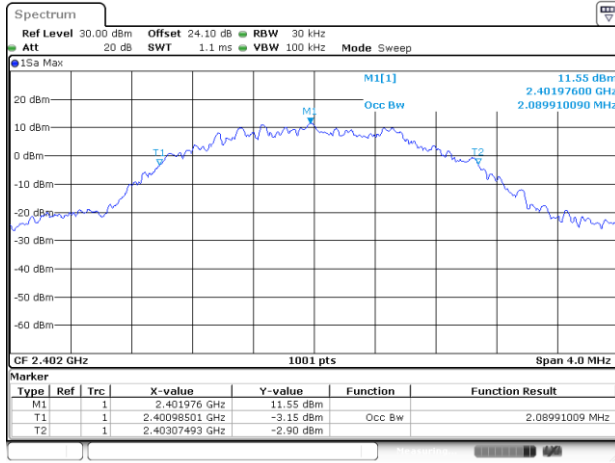


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

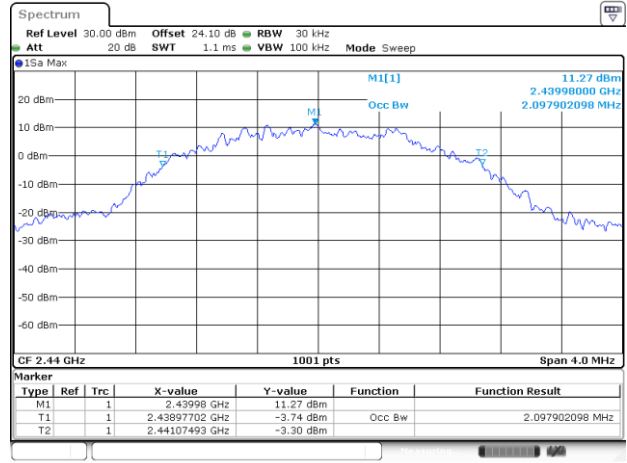


&lt;2Mbps&gt;

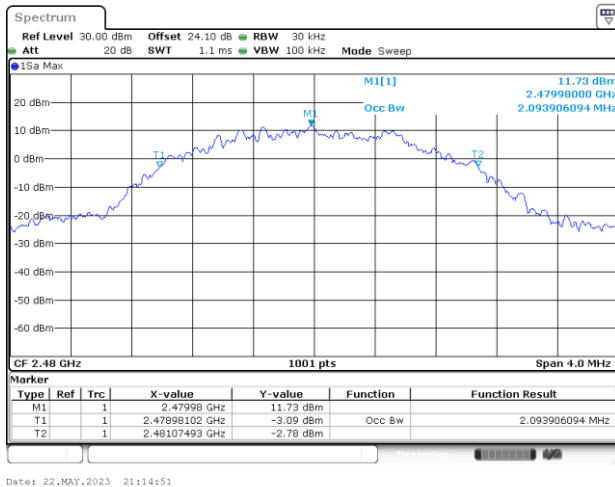
## 99% Occupied Bandwidth Plot on Channel 00



## 99% Occupied Plot Bandwidth on Channel 19

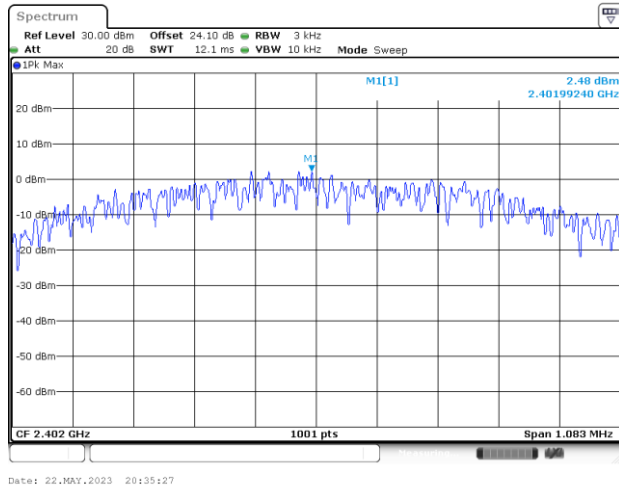
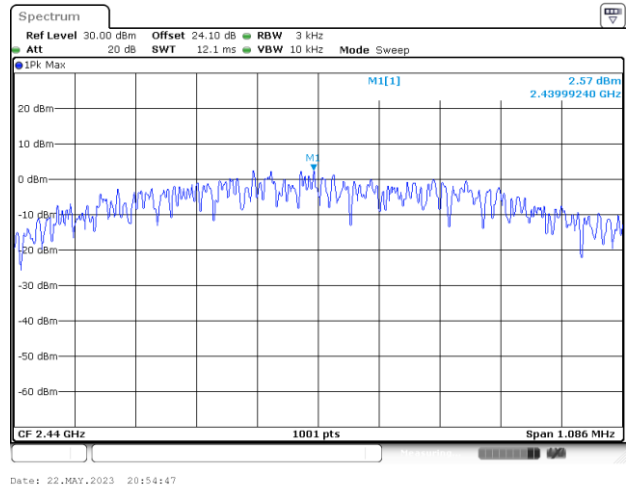
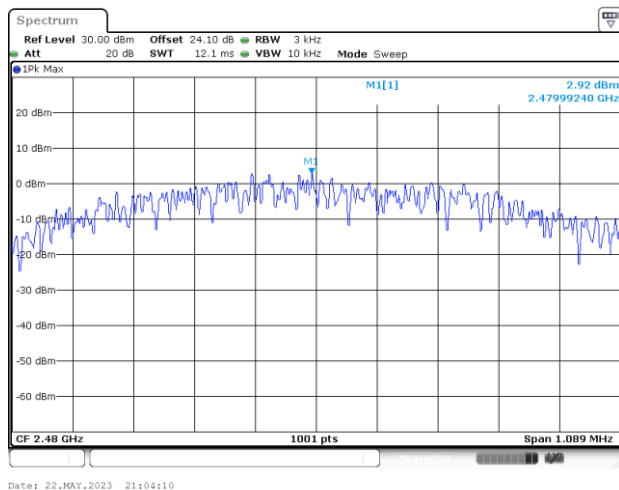


## 99% Occupied Bandwidth Plot on Channel 39



**Power Spectral Density (dBm/3kHz)**

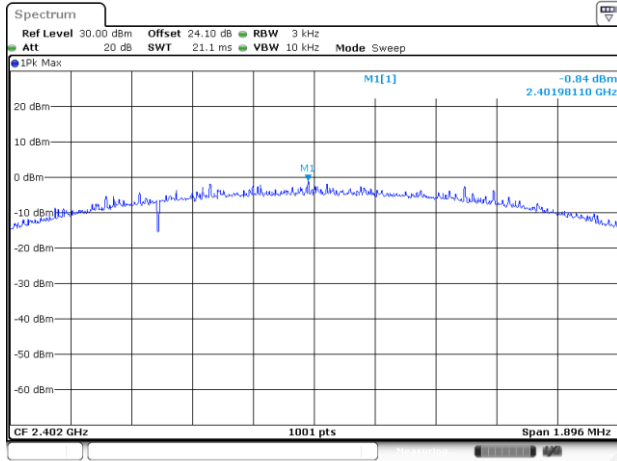
&lt;1Mbps&gt;

**Power Density (dBm/3kHz) Plot Channel 00****Power Density (dBm/3kHz) Plot Channel 19****Power Density (dBm/3kHz) Plot Channel 39**

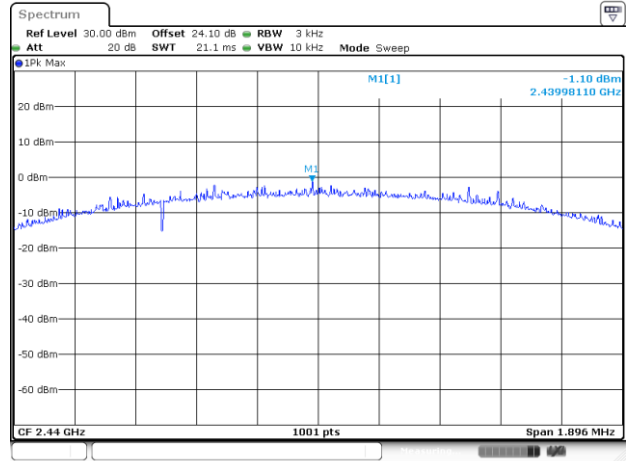


<2Mbps>

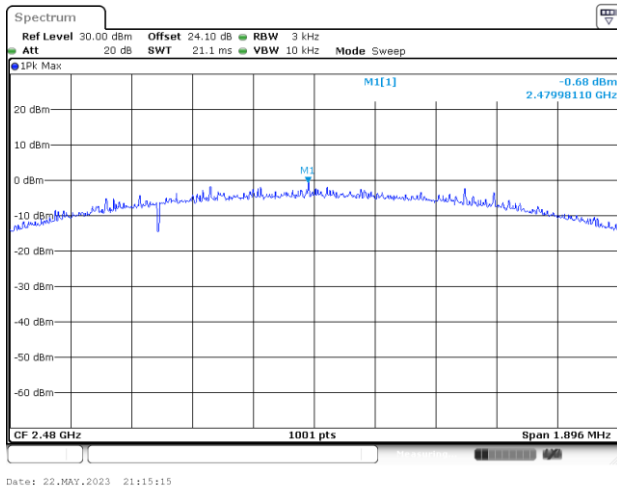
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19

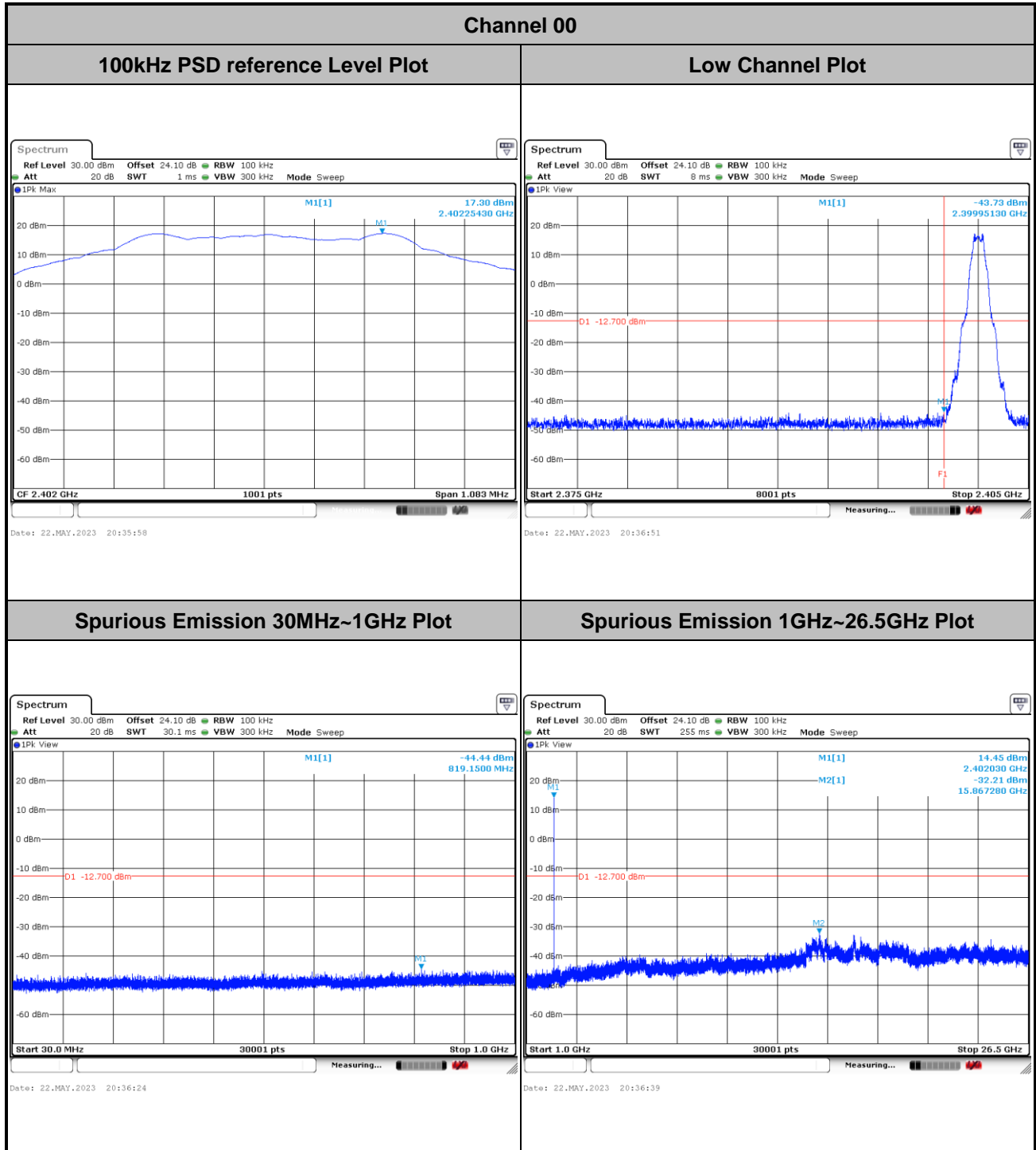


Power Density (dBm/3kHz) Plot Channel 39



# Band Edge and Conducted Spurious Emission

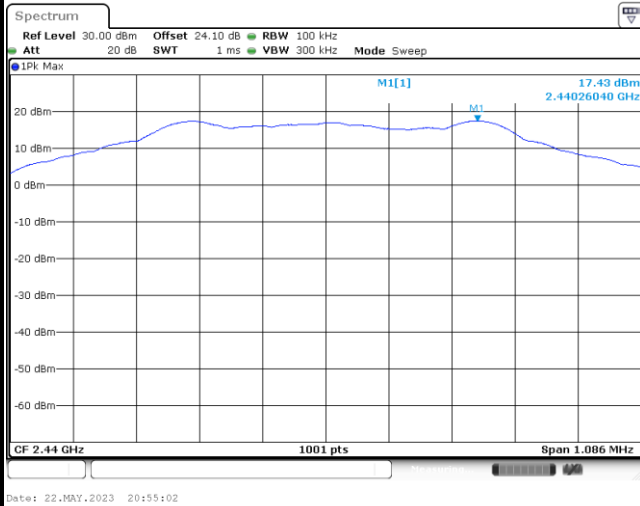
<1Mbps>





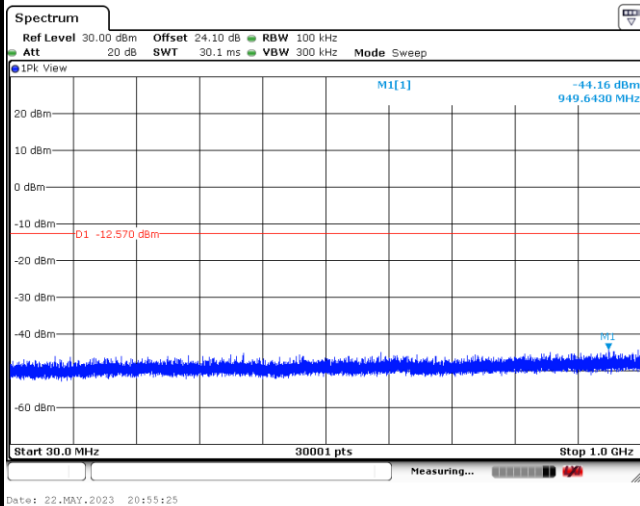
## Channel 19

## 100kHz PSD reference Level Plot

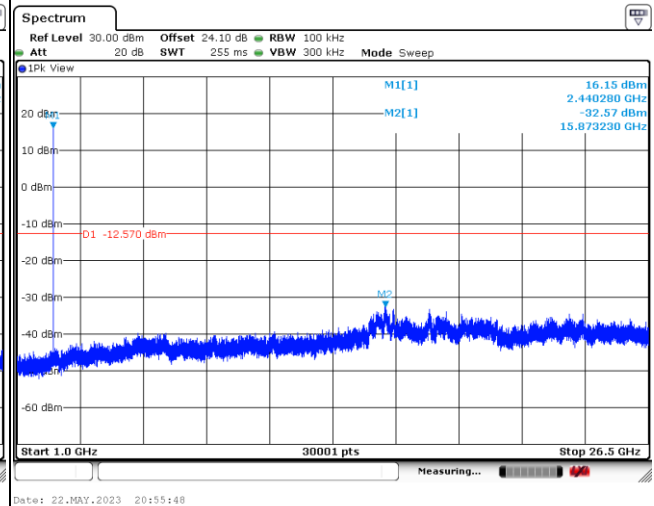


## Low Channel Plot

## Spurious Emission 30MHz~1GHz Plot



## Spurious Emission 1GHz~26.5GHz Plot

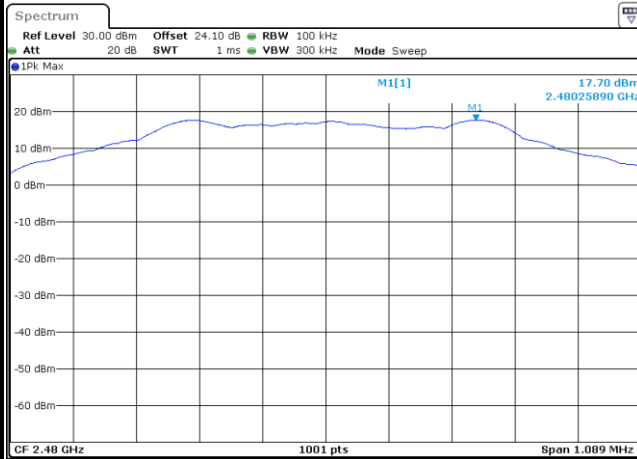




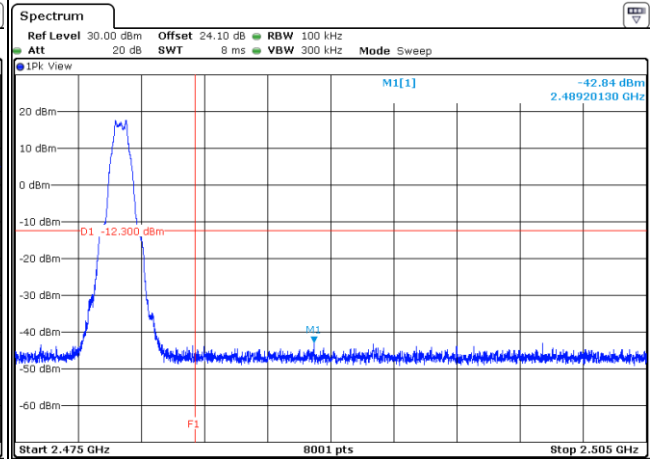


## Channel 39

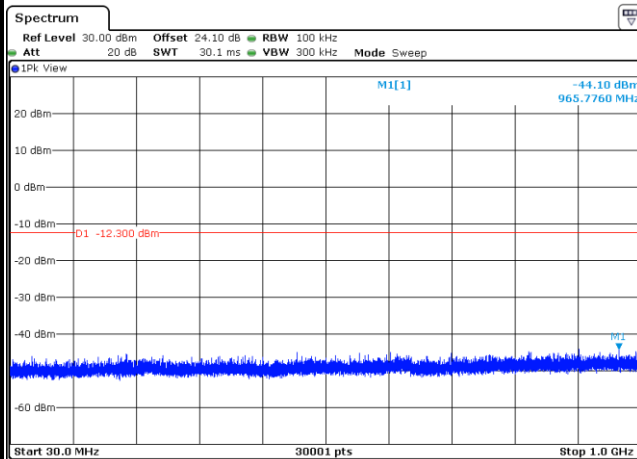
## 100kHz PSD reference Level Plot



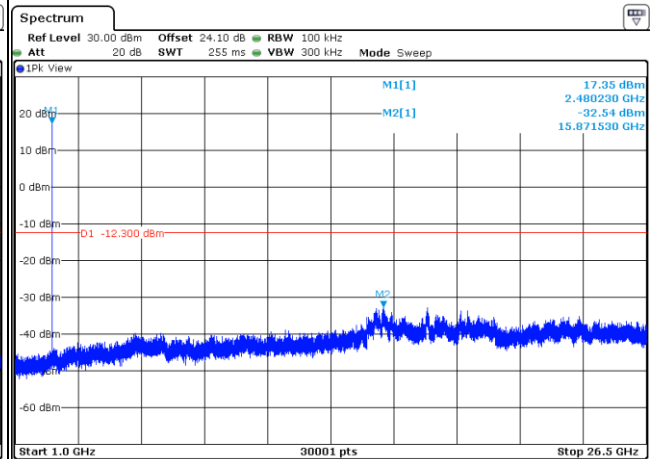
## Low Channel Plot



## Spurious Emission 30MHz~1GHz Plot

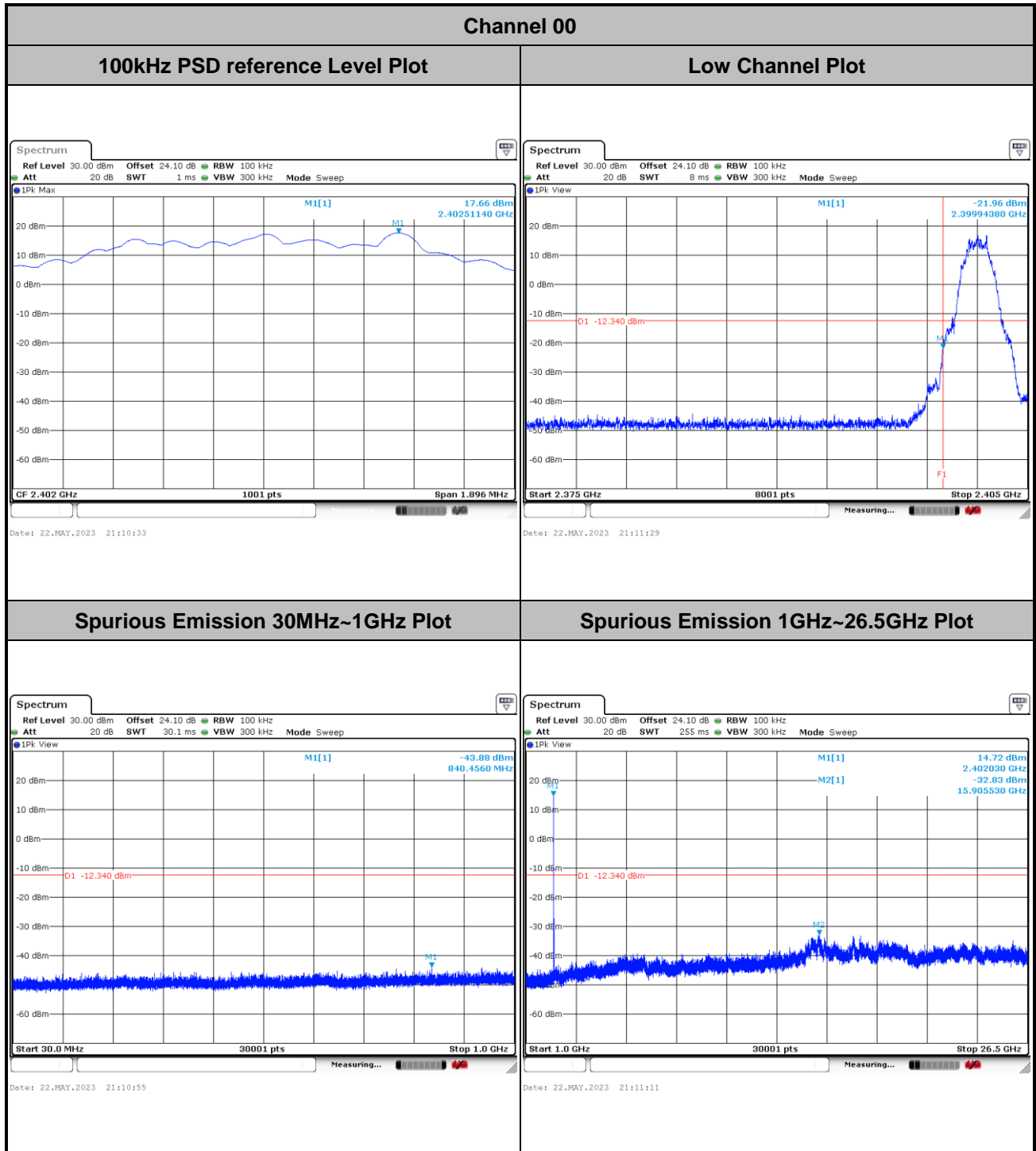


## Spurious Emission 1GHz~26.5GHz Plot





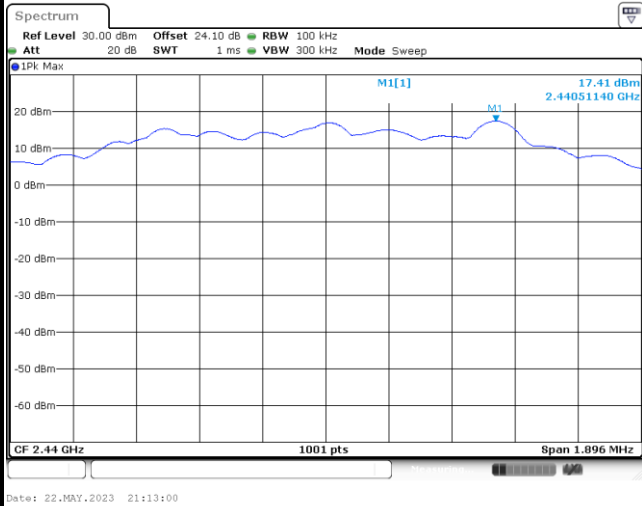
&lt;2Mbps&gt;





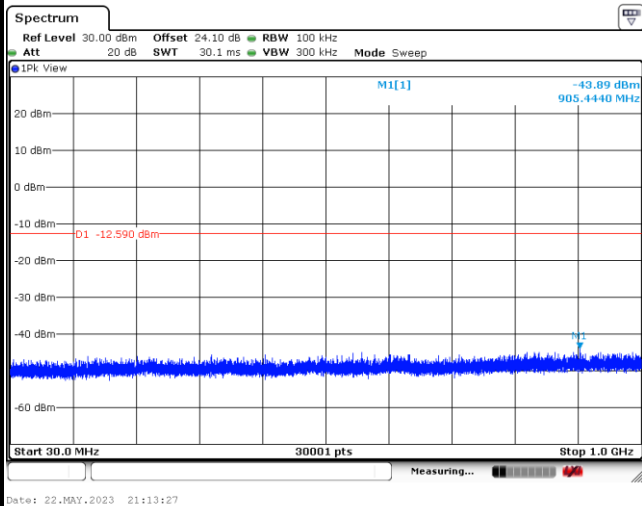
## Channel 19

## 100kHz PSD reference Level Plot

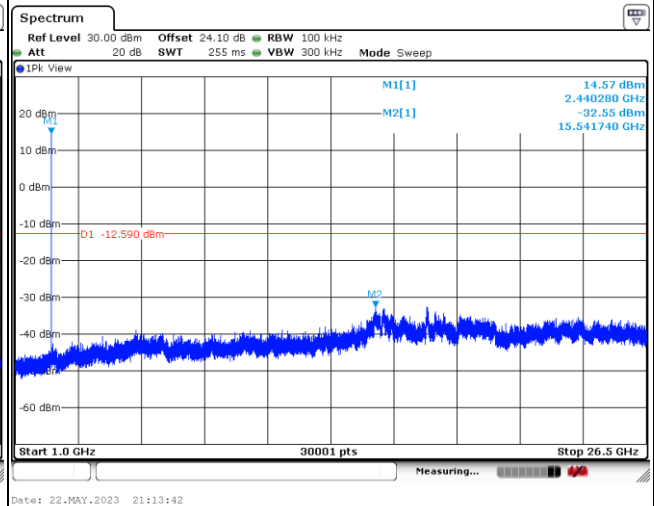


## Low Channel Plot

## Spurious Emission 30MHz~1GHz Plot



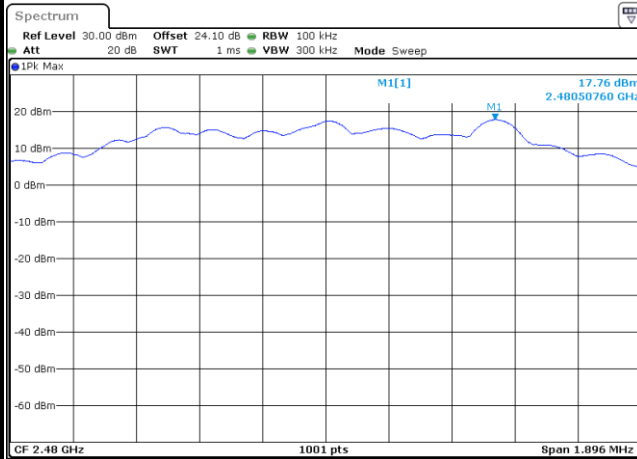
## Spurious Emission 1GHz~26.5GHz Plot





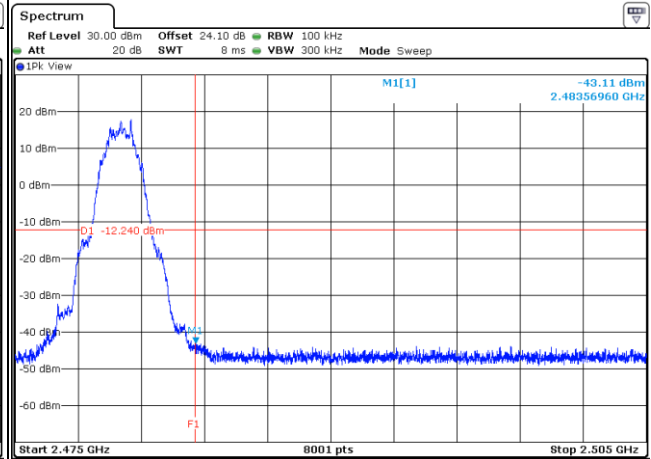
## Channel 39

## 100kHz PSD reference Level Plot



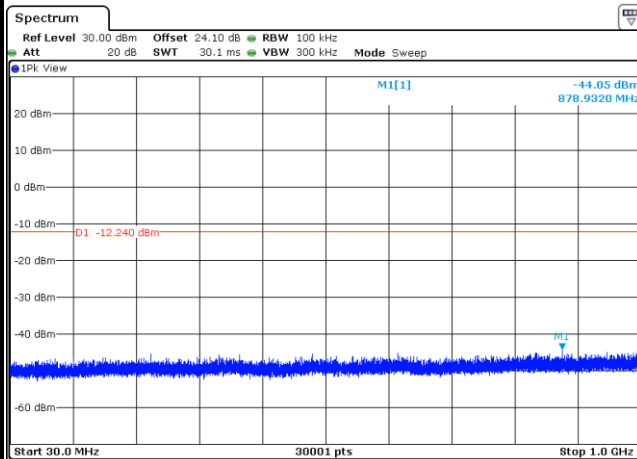
Date: 22.MAY.2023 21:15:32

## Low Channel Plot



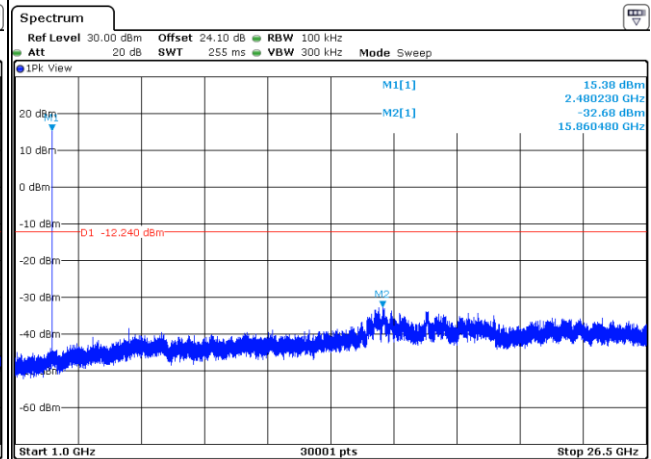
Date: 22.MAY.2023 21:16:21

## Spurious Emission 30MHz~1GHz Plot



Date: 22.MAY.2023 21:15:50

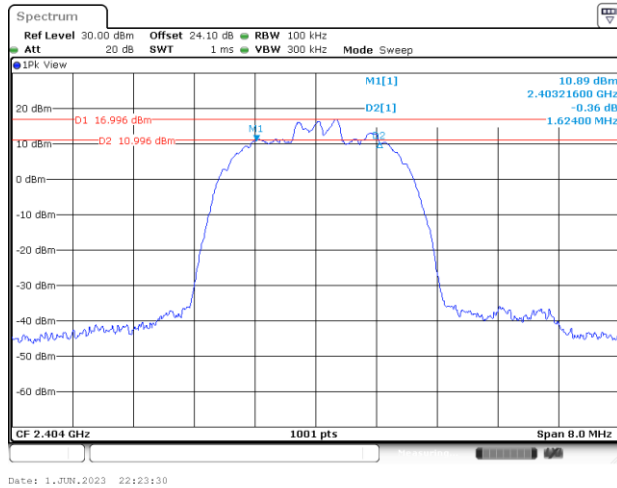
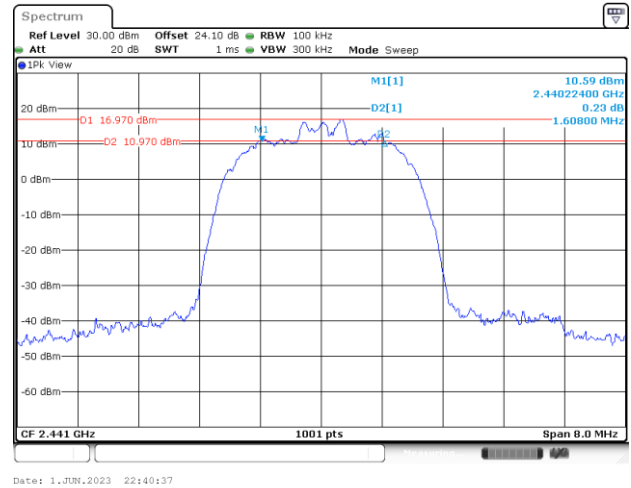
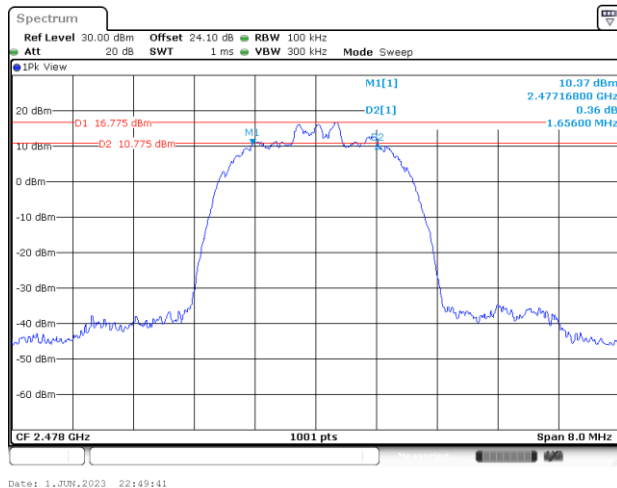
## Spurious Emission 1GHz~26.5GHz Plot



Date: 22.MAY.2023 21:16:06

**6dB Bandwidth**

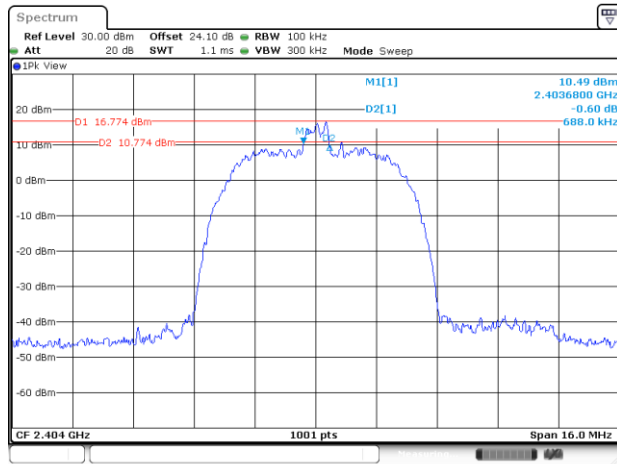
&lt;4Mbps&gt;

**6 dB Bandwidth Plot on Channel 02****6 dB Bandwidth Plot on Channel 39****6 dB Bandwidth Plot on Channel 76**

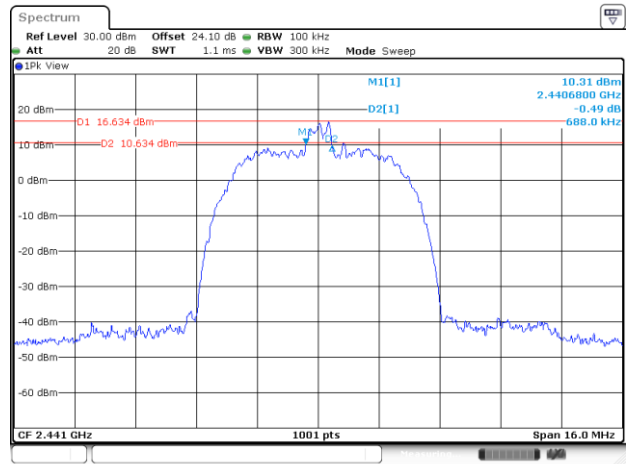


&lt;8Mbps&gt;

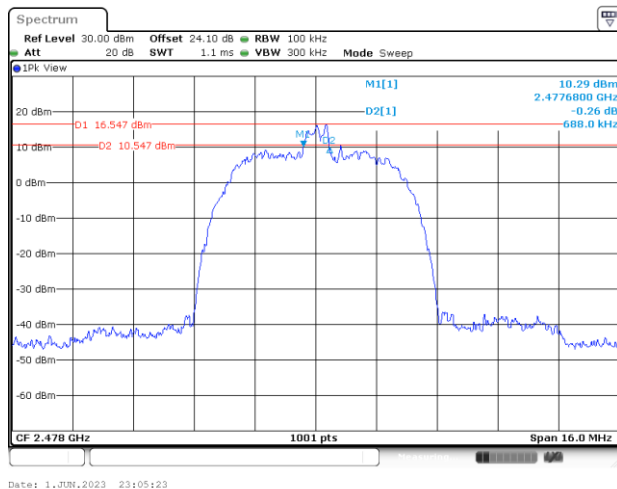
6 dB Bandwidth Plot on Channel 02



6 dB Bandwidth Plot on Channel 39



6 dB Bandwidth Plot on Channel 76

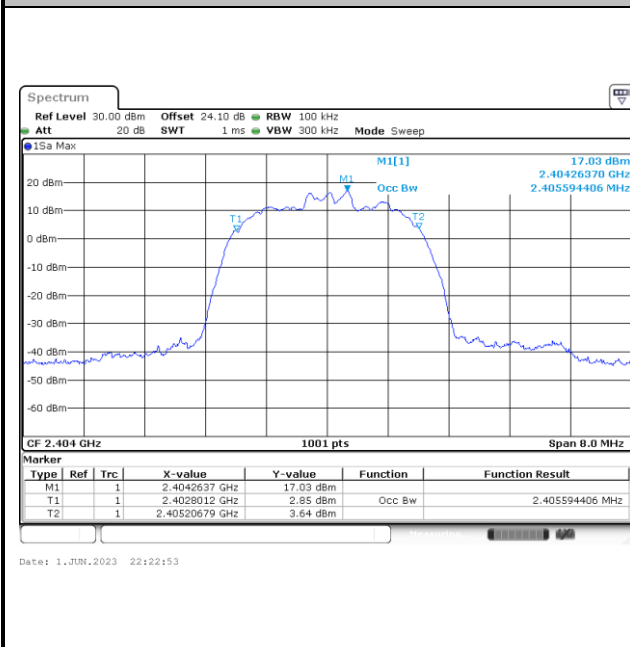




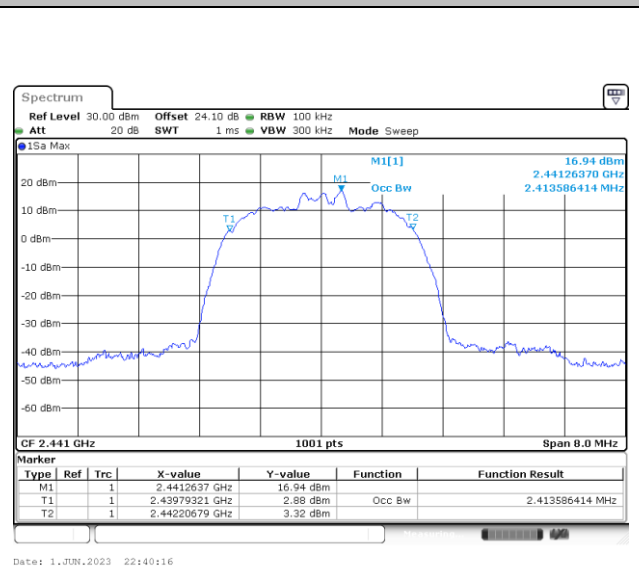
## 99% Occupied Bandwidth

&lt;4Mbps&gt;

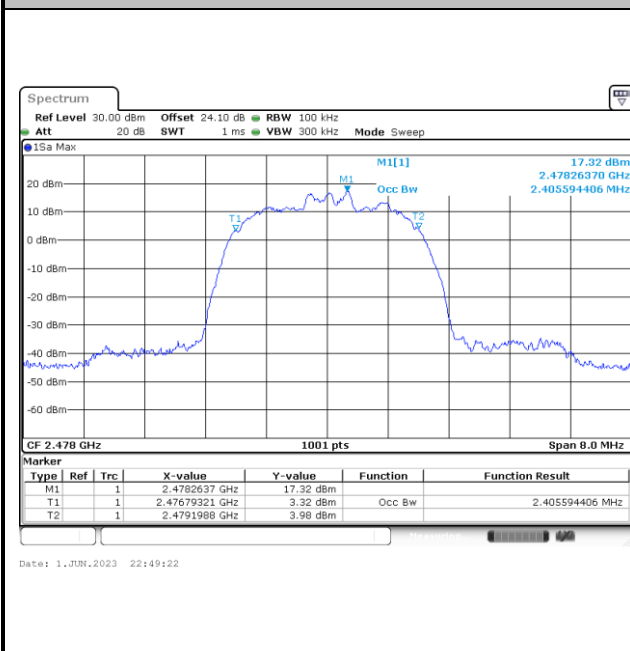
99% Occupied Bandwidth Plot on Channel 02



99% Occupied Plot Bandwidth on Channel 39



99% Occupied Bandwidth Plot on Channel 76

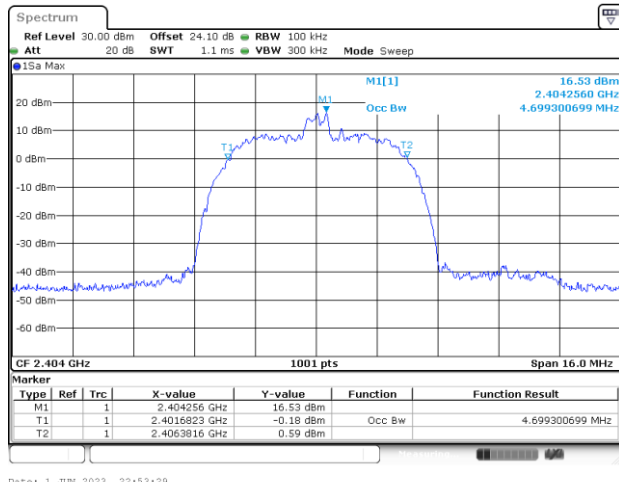


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

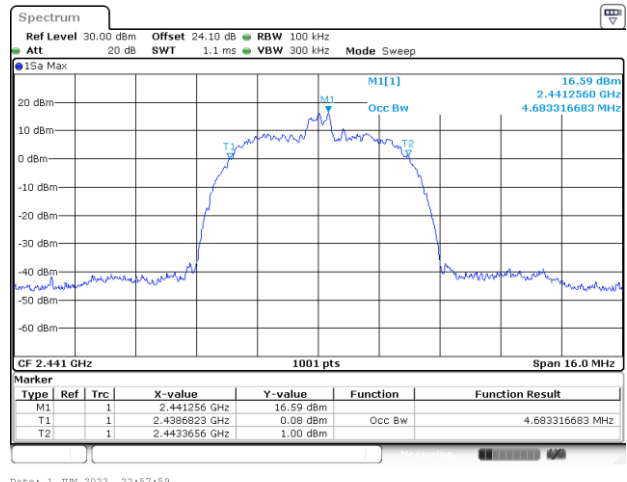


&lt;8Mbps&gt;

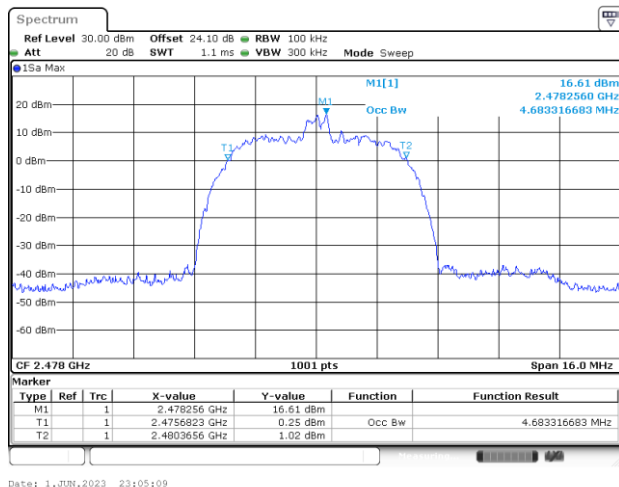
## 99% Occupied Bandwidth Plot on Channel 02



## 99% Occupied Plot Bandwidth on Channel 39



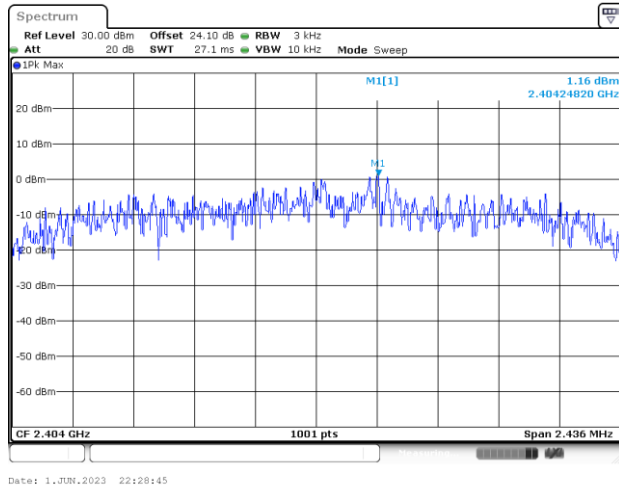
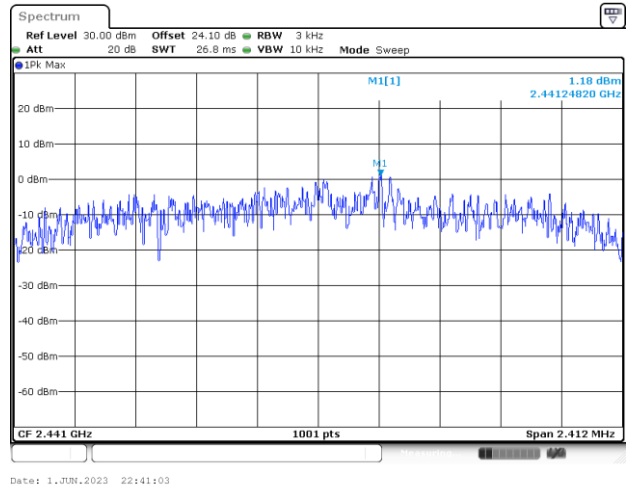
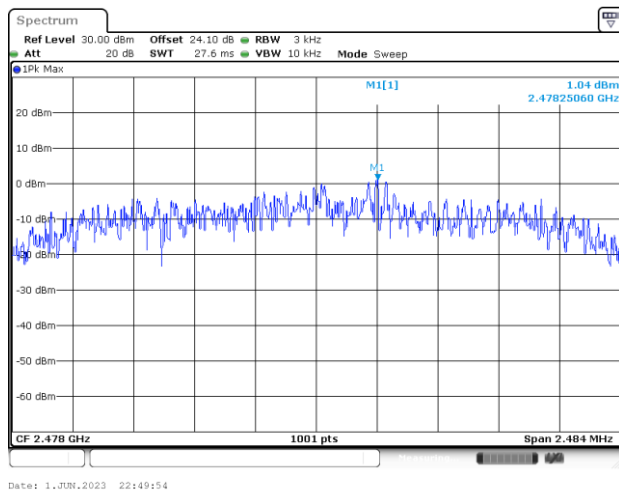
## 99% Occupied Bandwidth Plot on Channel 76





**Power Spectral Density (dBm/3kHz)**

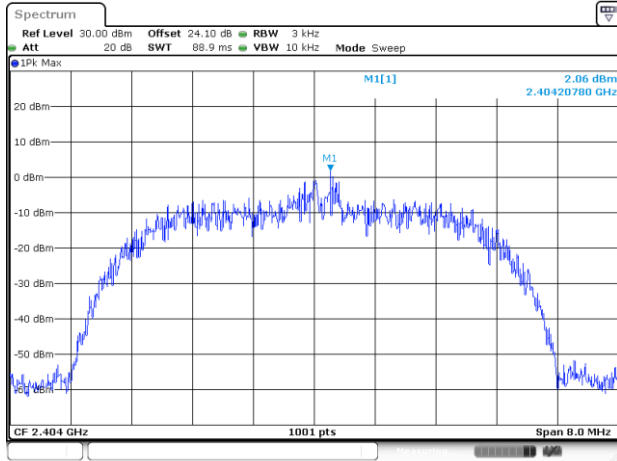
&lt;4Mbps&gt;

**Power Density (dBm/3kHz) Plot Channel 02****Power Density (dBm/3kHz) Plot Channel 39****Power Density (dBm/3kHz) Plot Channel 76**



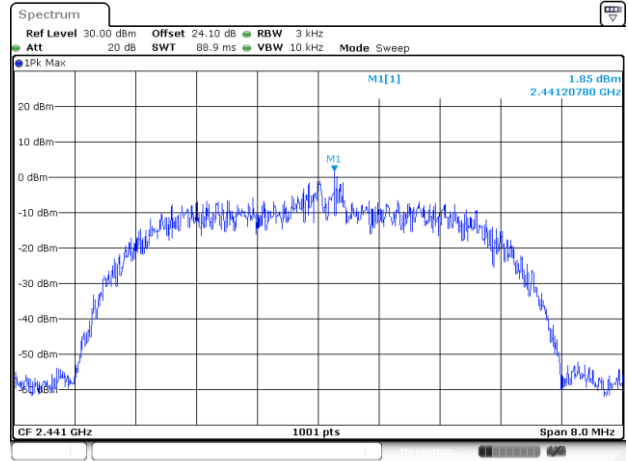
<8Mbps>

Power Density (dBm/3kHz) Plot Channel 02



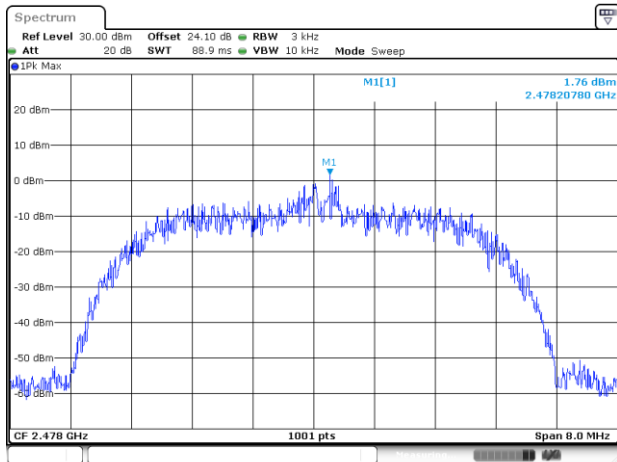
Date: 1.JUN.2023 22:54:25

Power Density (dBm/3kHz) Plot Channel 39



Date: 1.JUN.2023 22:58:53

Power Density (dBm/3kHz) Plot Channel 76

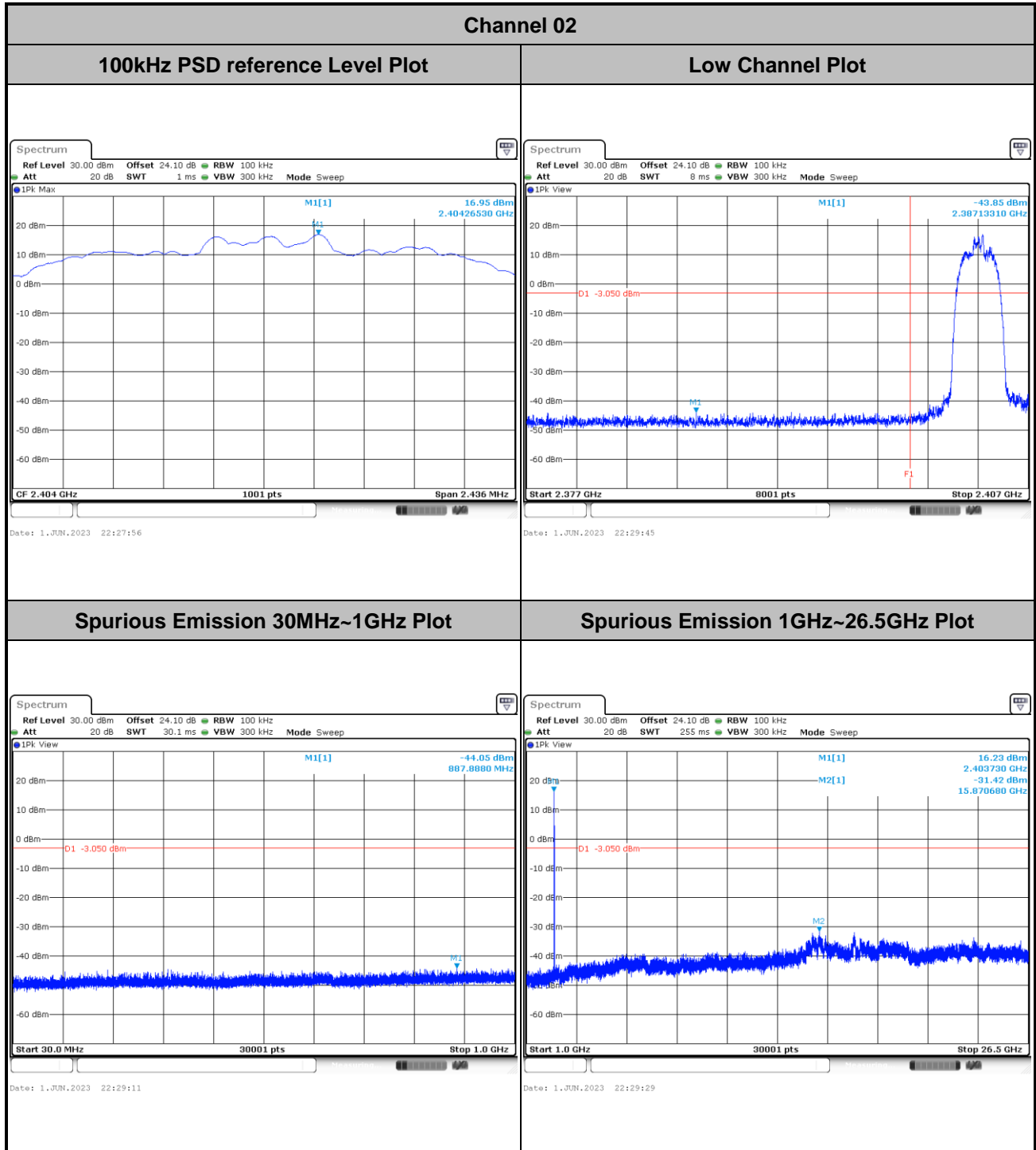


Date: 1.JUN.2023 23:05:41



## Band Edge and Conducted Spurious Emission

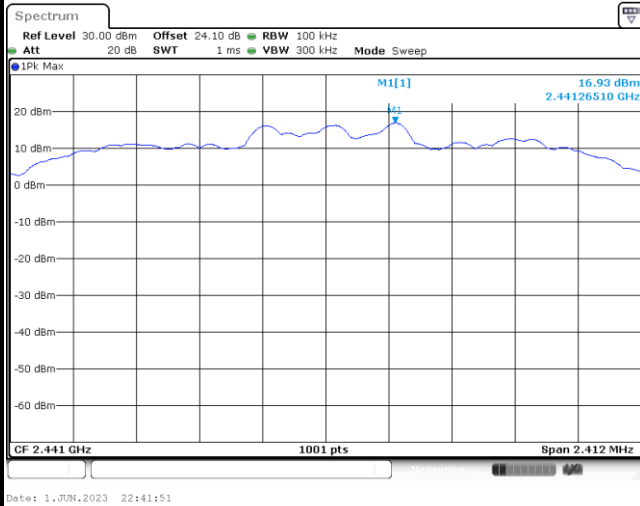
&lt;4Mbps&gt;





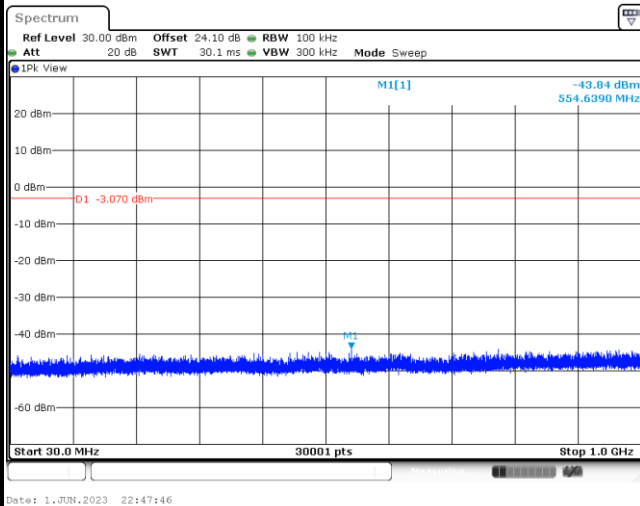
## Channel 39

## 100kHz PSD reference Level Plot

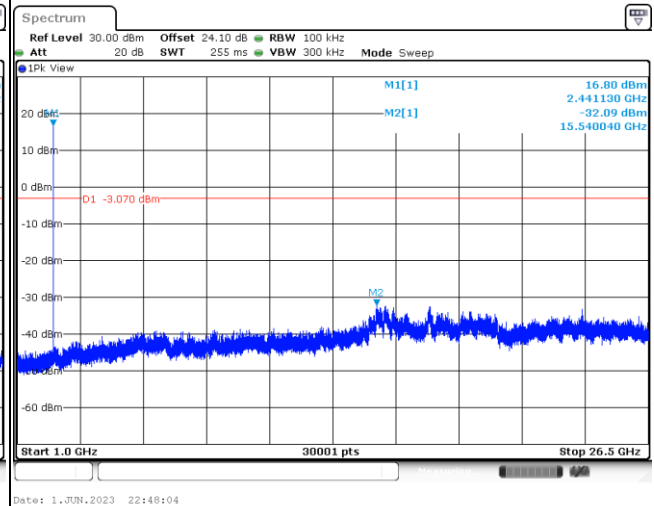


## Middle Channel Plot

## Spurious Emission 30MHz~1GHz Plot



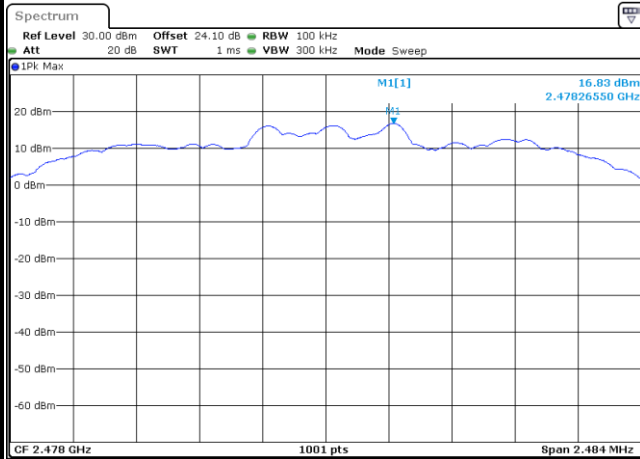
## Spurious Emission 1GHz~26.5GHz Plot





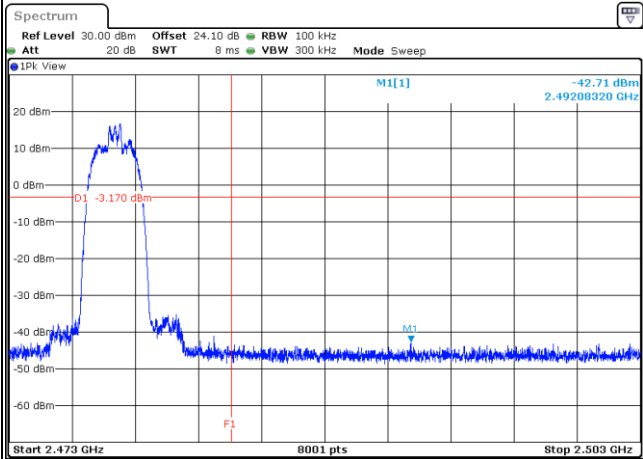
## Channel 76

## 100kHz PSD reference Level Plot



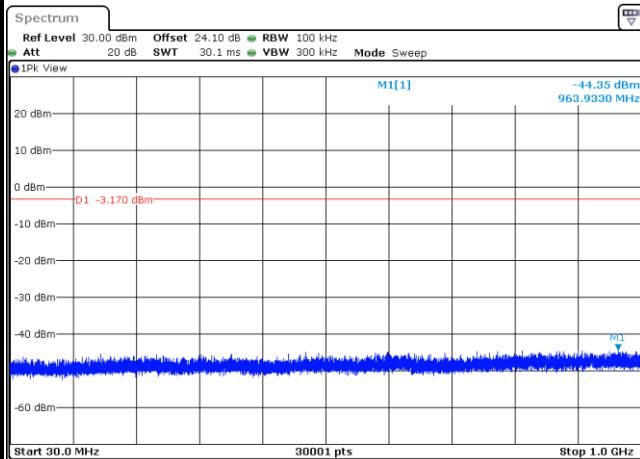
Date: 1.JUN.2023 22:50:09

## High Channel Plot



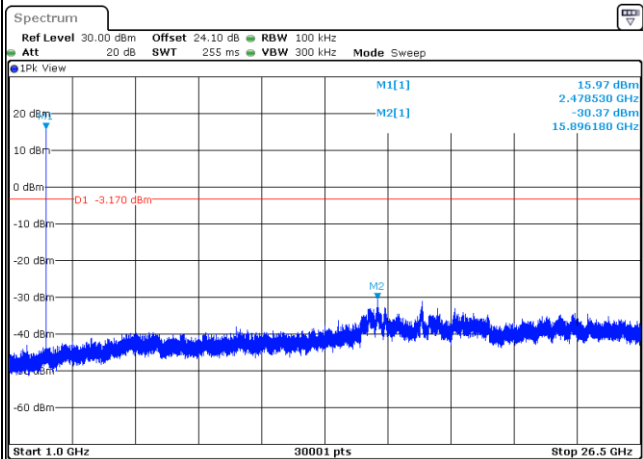
Date: 1.JUN.2023 22:51:58

## Spurious Emission 30MHz~1GHz Plot



Date: 1.JUN.2023 22:51:10

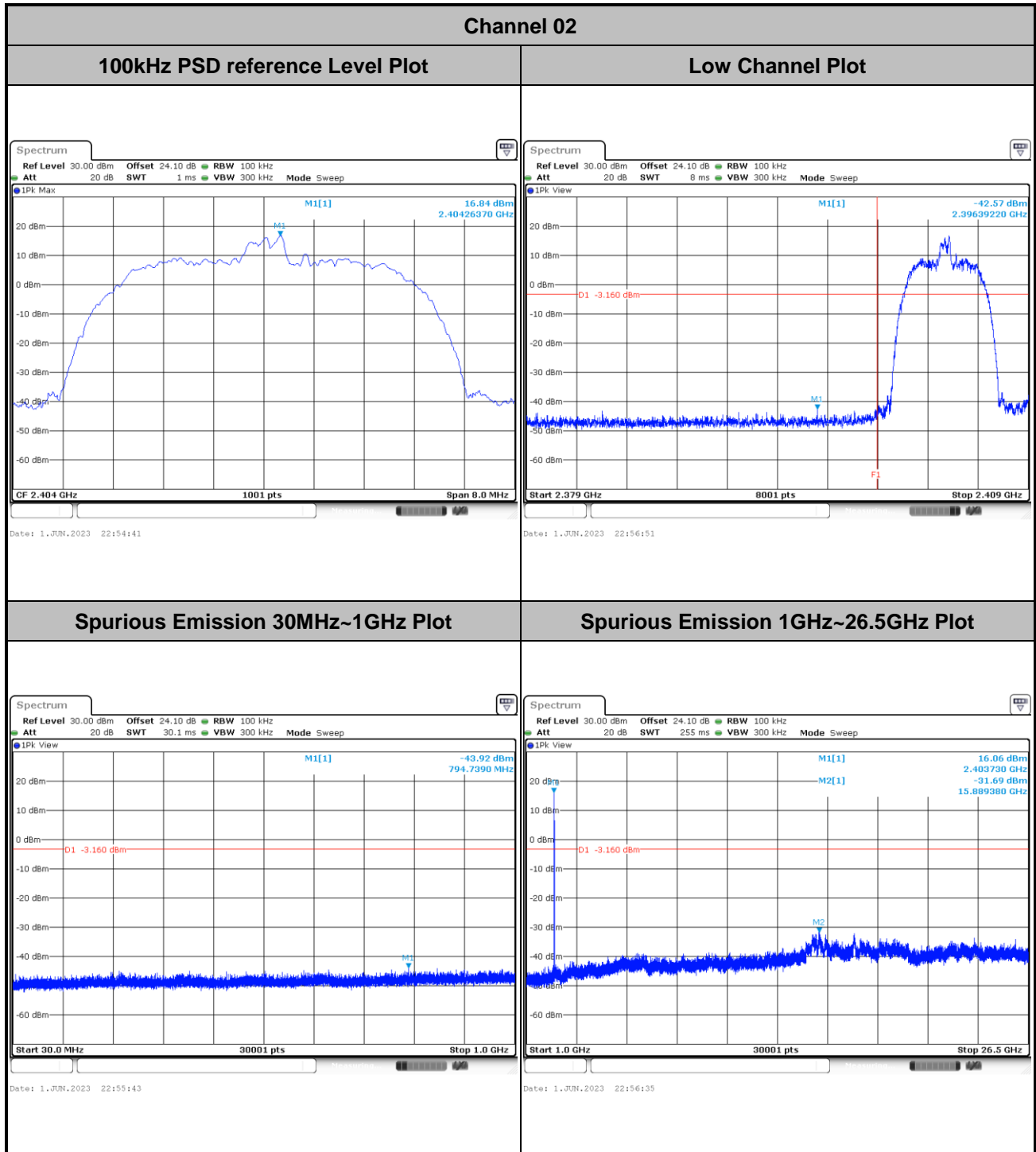
## Spurious Emission 1GHz~26.5GHz Plot



Date: 1.JUN.2023 22:51:29



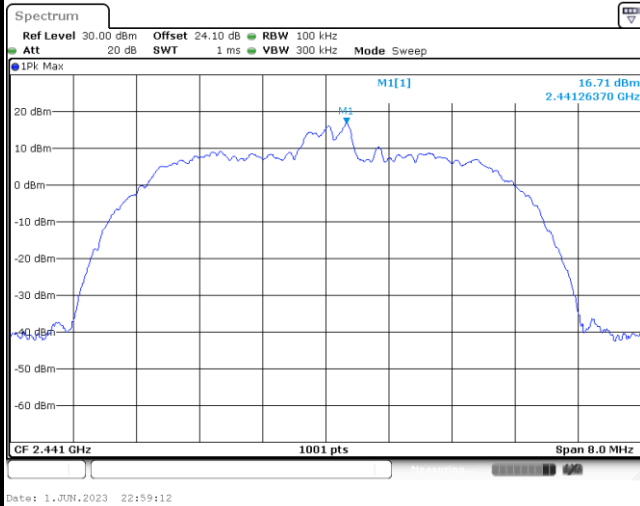
&lt;8Mbps&gt;





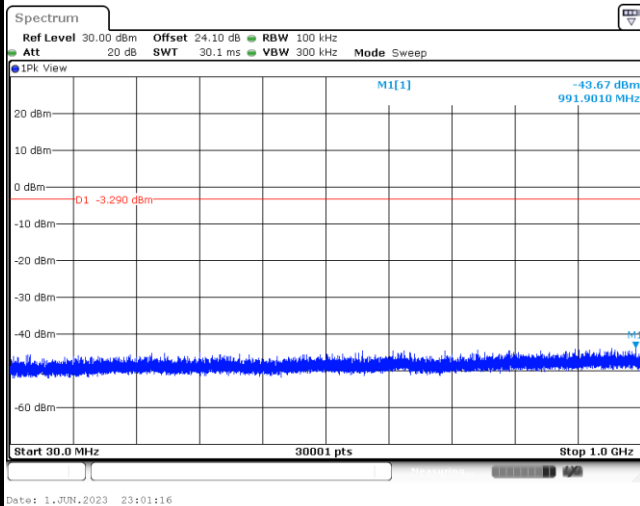
## Channel 39

## 100kHz PSD reference Level Plot

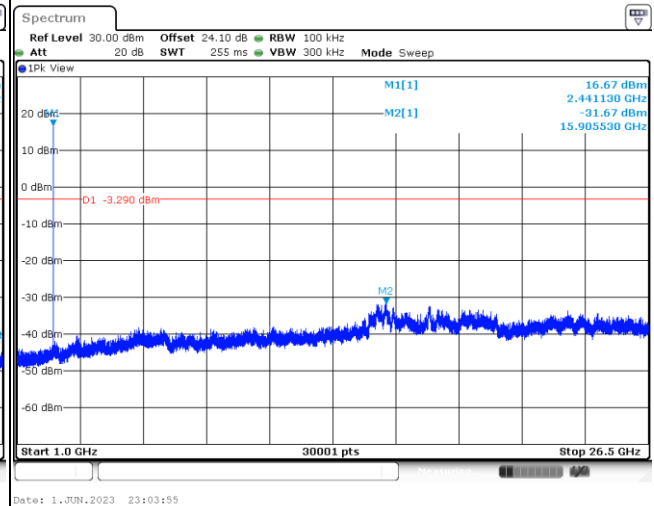


## Middle Channel Plot

## Spurious Emission 30MHz~1GHz Plot



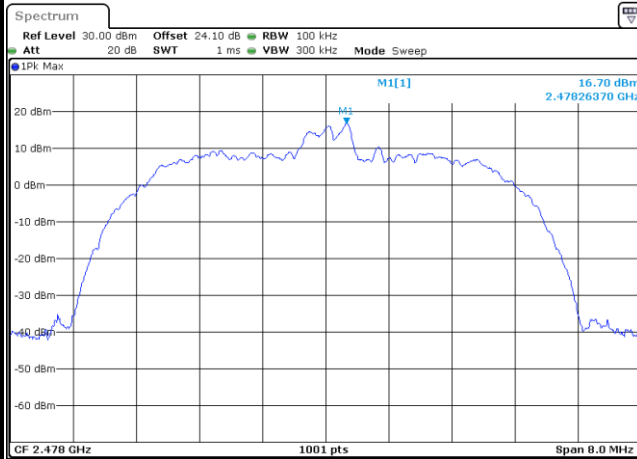
## Spurious Emission 1GHz~26.5GHz Plot





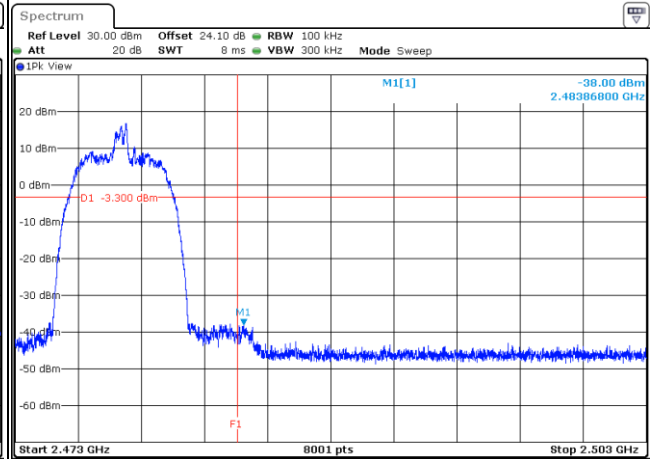
## Channel 76

## 100kHz PSD reference Level Plot



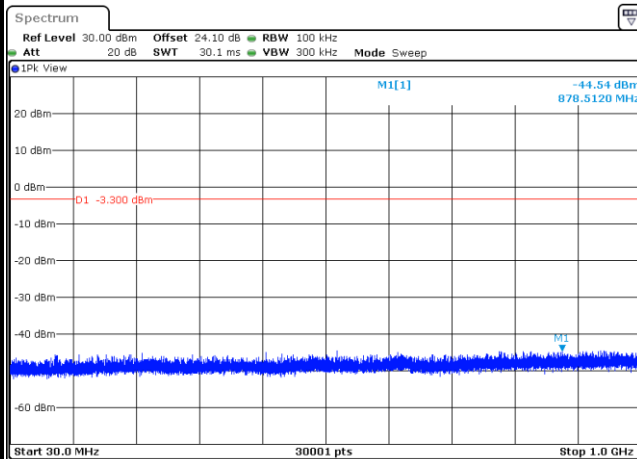
Date: 1.JUN.2023 23:06:00

## High Channel Plot



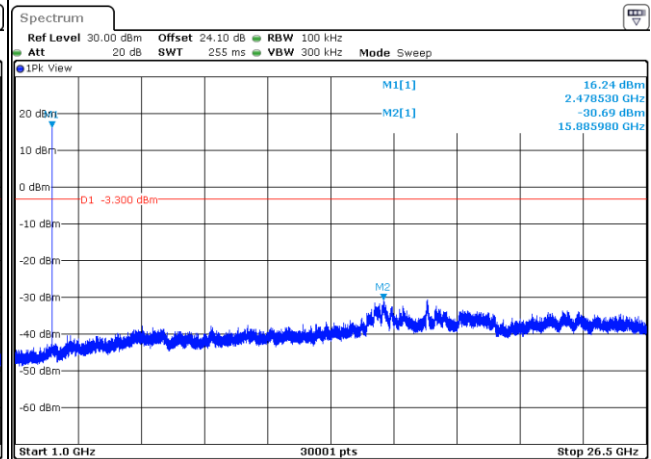
Date: 1.JUN.2023 23:08:49

## Spurious Emission 30MHz~1GHz Plot



Date: 1.JUN.2023 23:06:22

## Spurious Emission 1GHz~26.5GHz Plot



Date: 1.JUN.2023 23:08:35



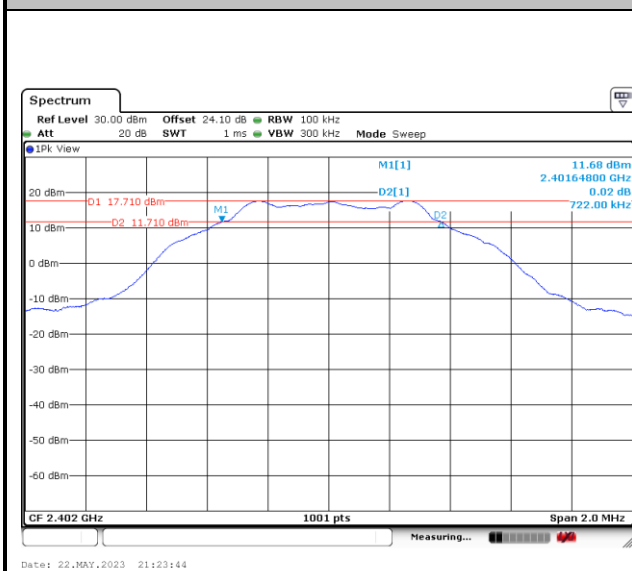


&lt;Ant. 4&gt;

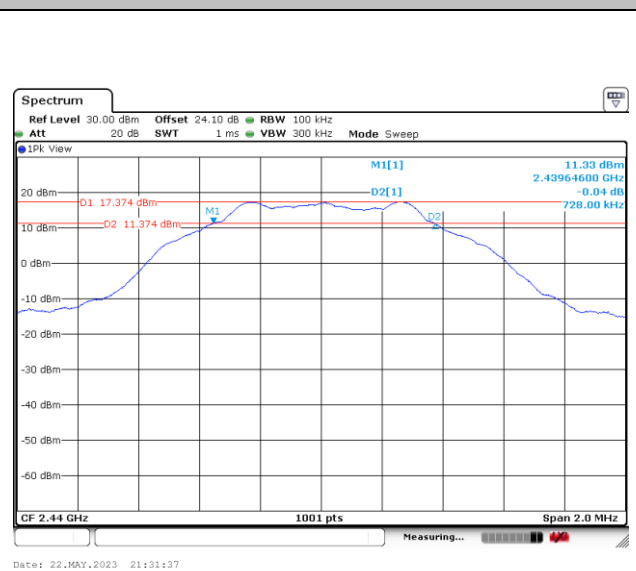
**6dB Bandwidth**

&lt;1Mbps&gt;

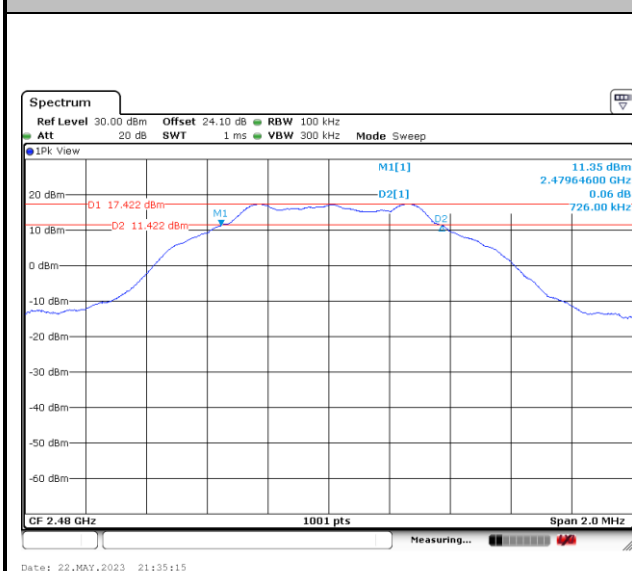
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



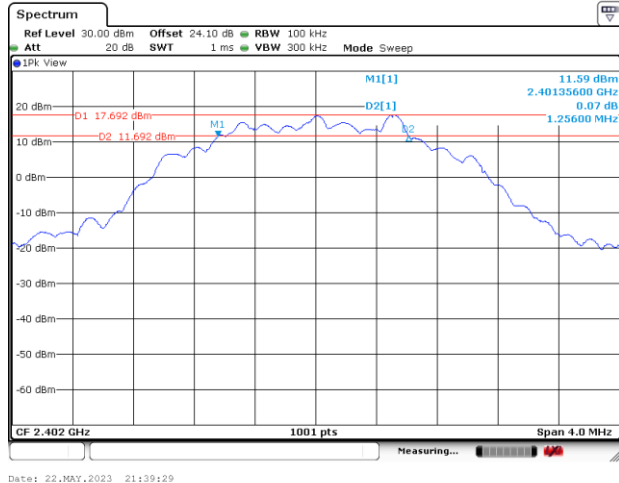
6 dB Bandwidth Plot on Channel 39



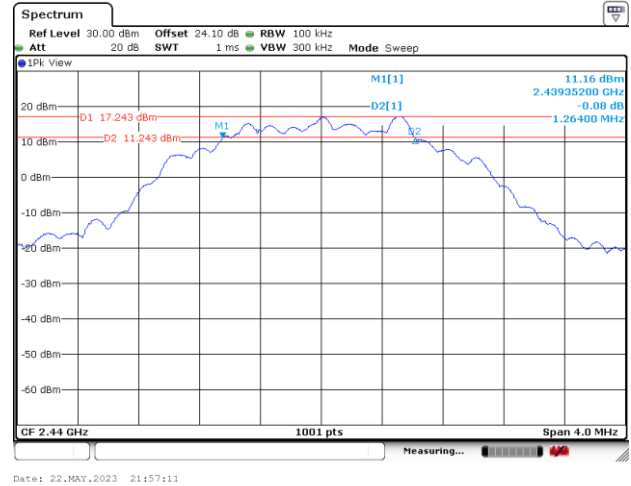


&lt;2Mbps&gt;

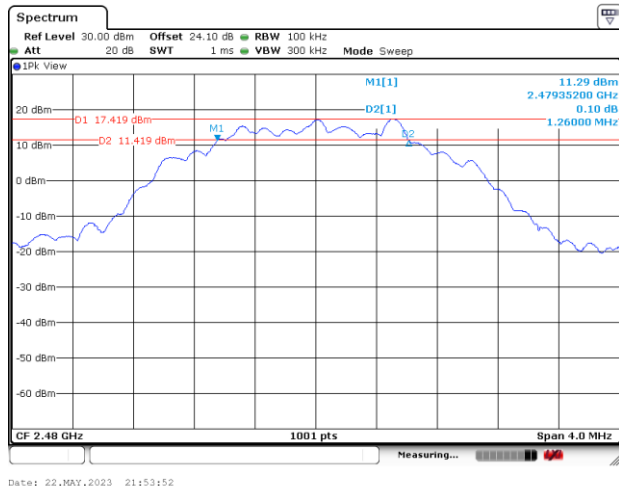
6 dB Bandwidth Plot on Channel 00



6 dB Bandwidth Plot on Channel 19



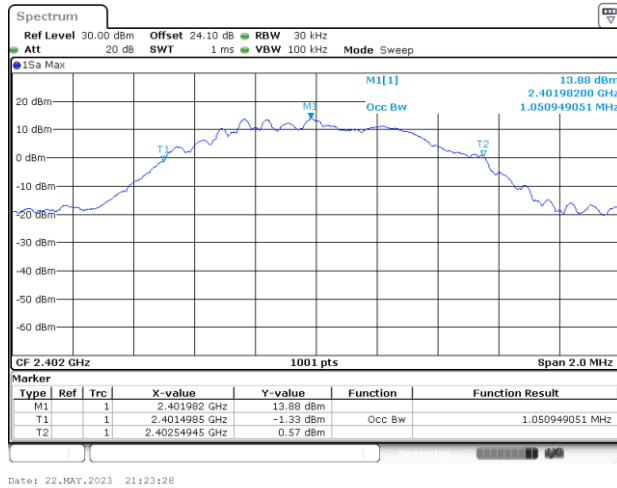
6 dB Bandwidth Plot on Channel 39



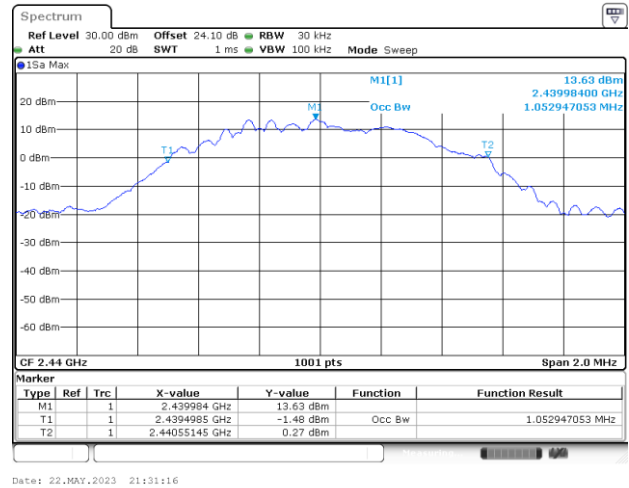
## 99% Occupied Bandwidth

<1Mbps>

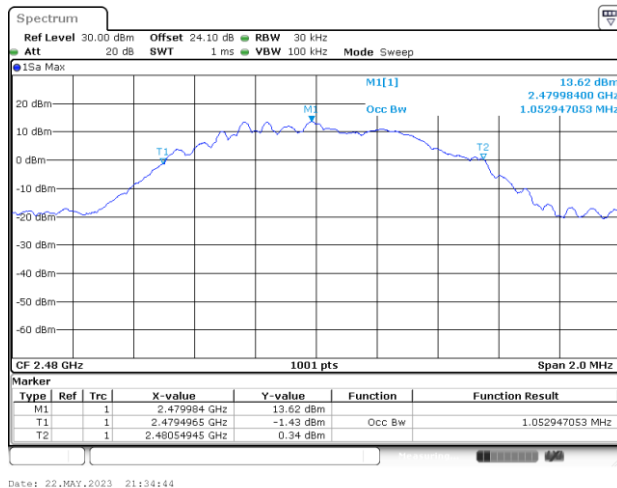
**99% Occupied Bandwidth Plot on Channel 00**



**99% Occupied Plot Bandwidth on Channel 19**



**99% Occupied Bandwidth Plot on Channel 39**

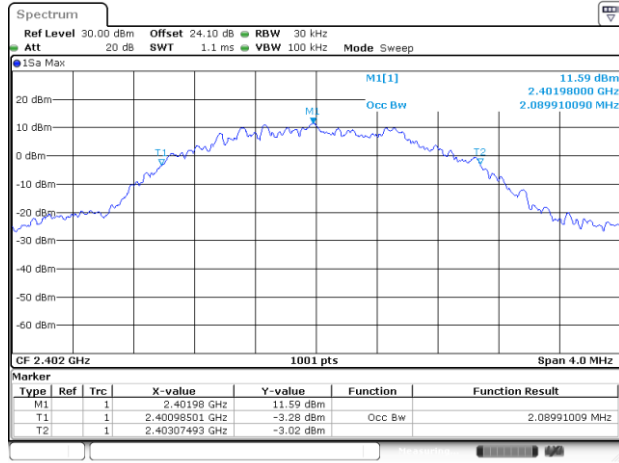


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

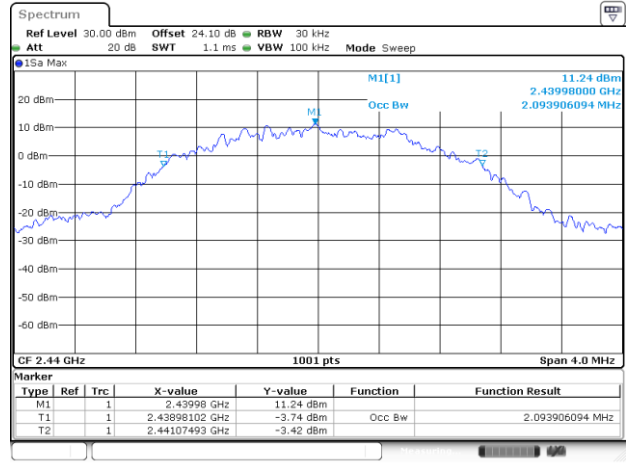


&lt;2Mbps&gt;

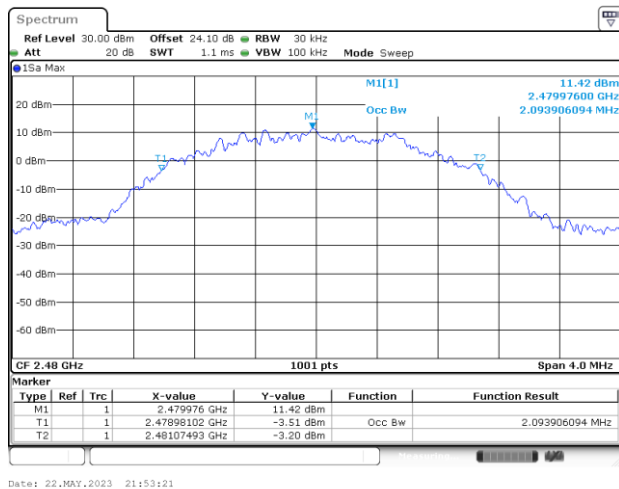
## 99% Occupied Bandwidth Plot on Channel 00



## 99% Occupied Plot Bandwidth on Channel 19

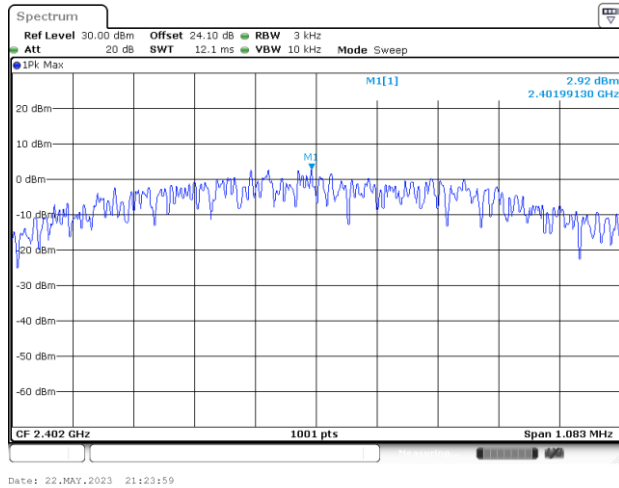
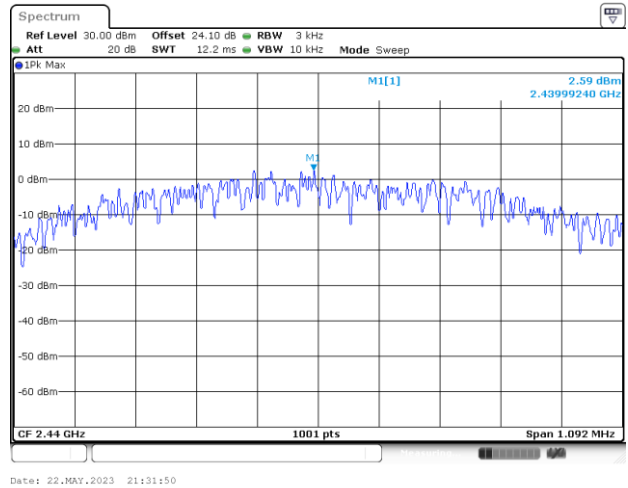
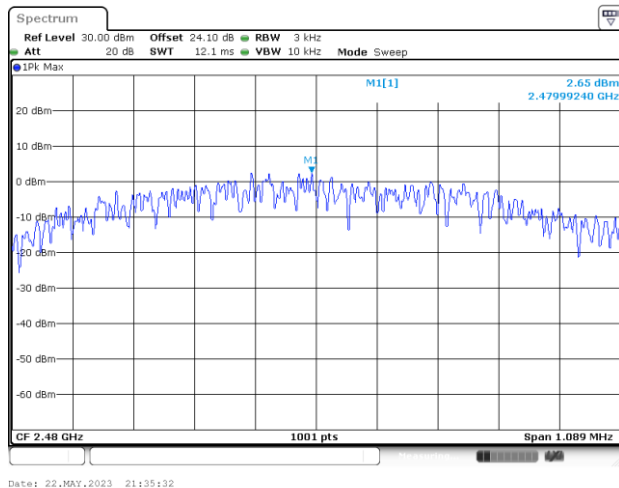


## 99% Occupied Bandwidth Plot on Channel 39



**Power Spectral Density (dBm/3kHz)**

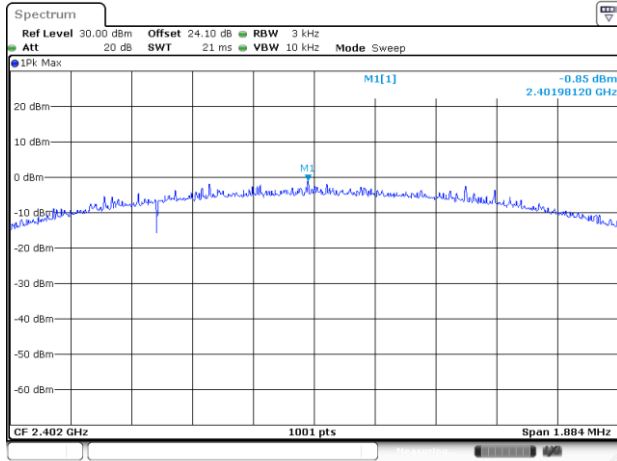
&lt;1Mbps&gt;

**Power Density (dBm/3kHz) Plot Channel 00****Power Density (dBm/3kHz) Plot Channel 19****Power Density (dBm/3kHz) Plot Channel 39**

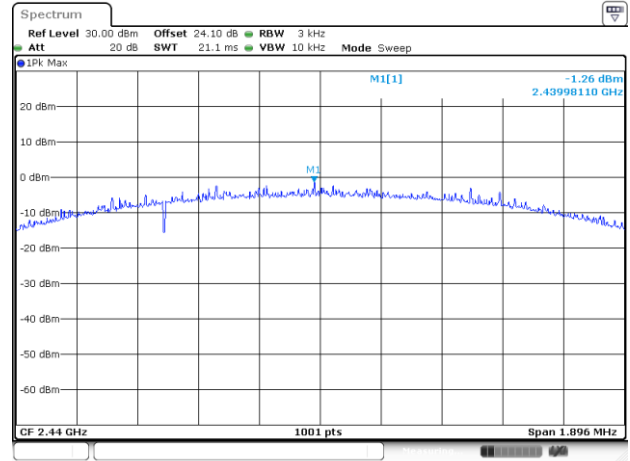


<2Mbps>

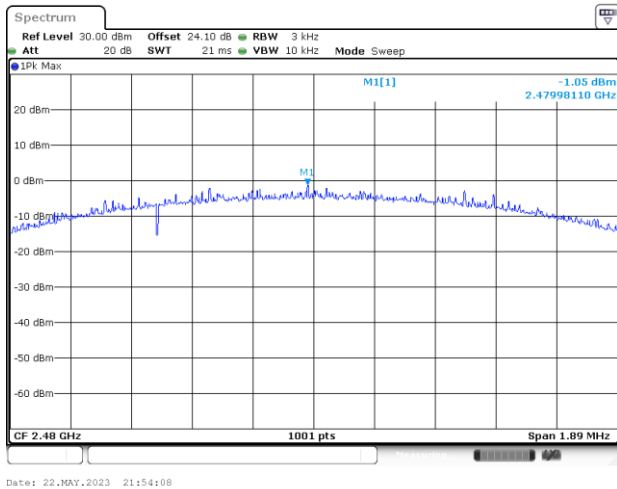
Power Density (dBm/3kHz) Plot Channel 00



Power Density (dBm/3kHz) Plot Channel 19

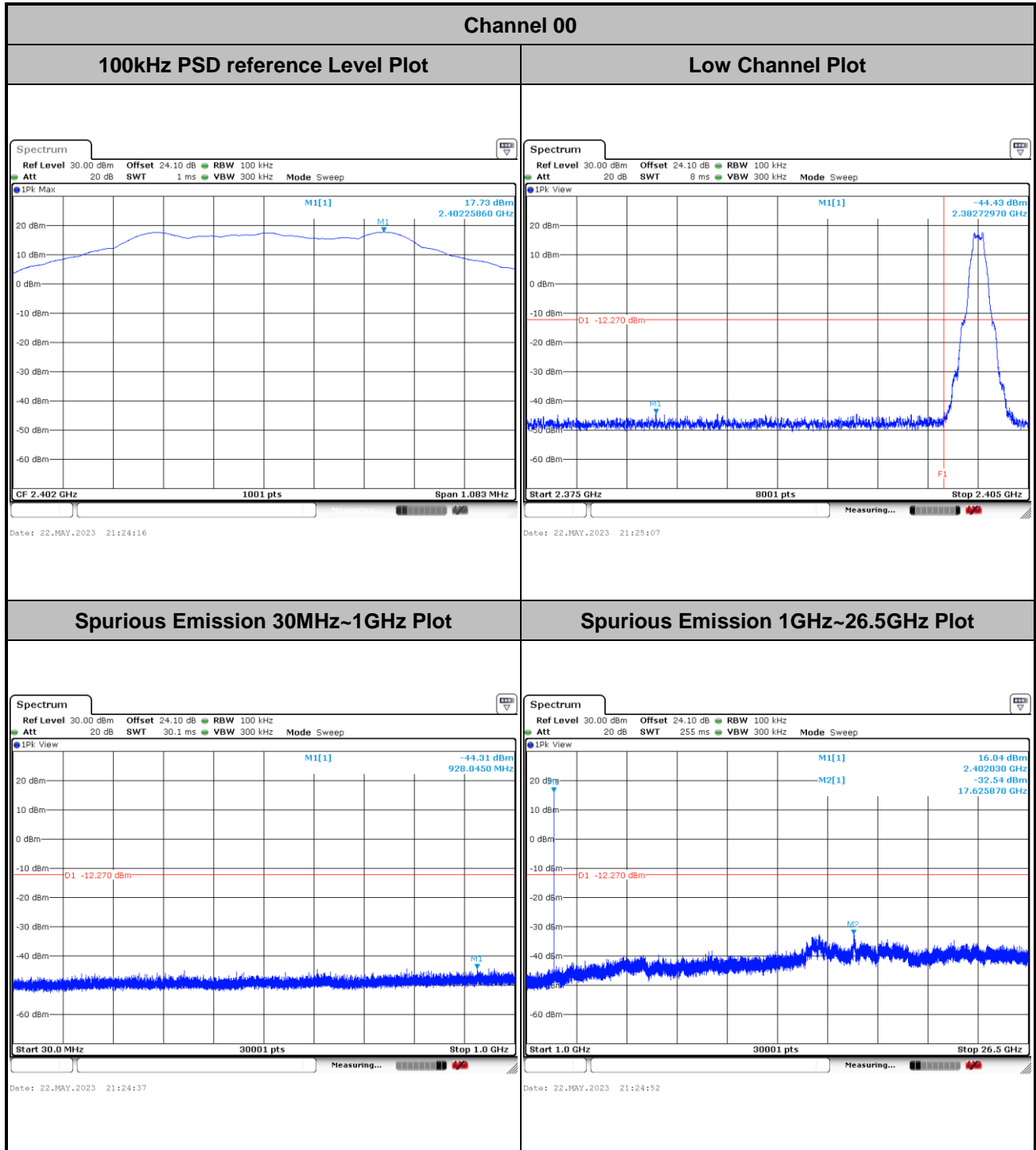


Power Density (dBm/3kHz) Plot Channel 39



# Band Edge and Conducted Spurious Emission

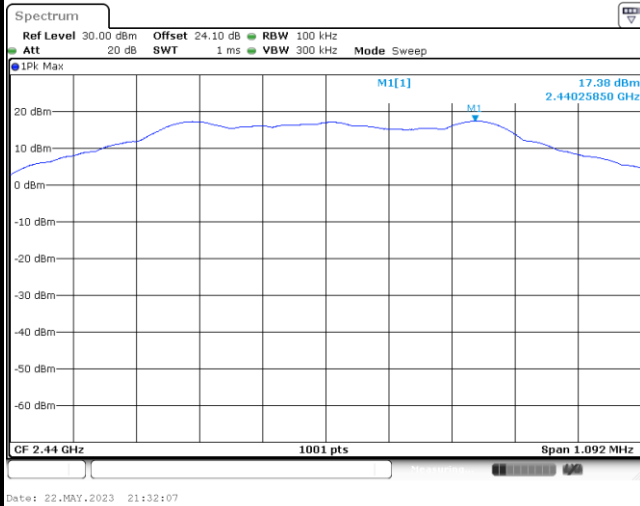
<1Mbps>





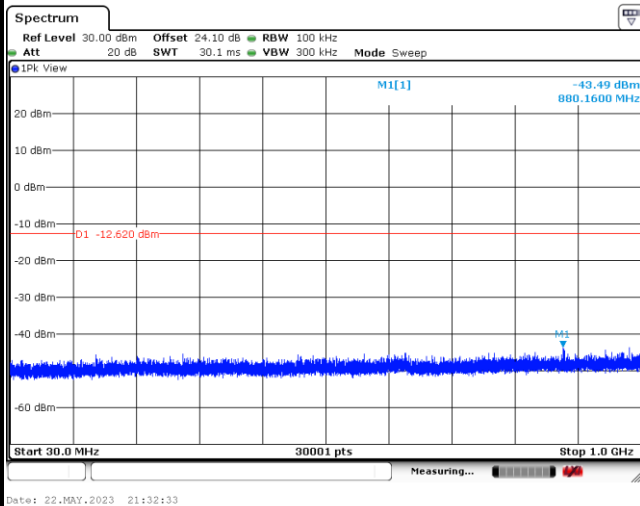
## Channel 19

## 100kHz PSD reference Level Plot

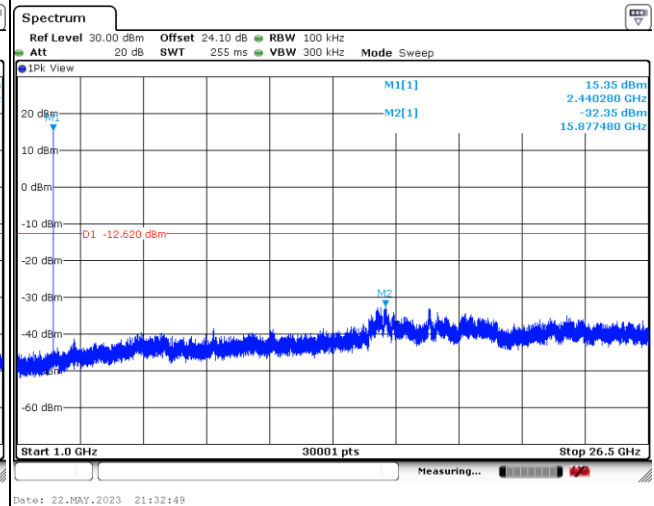


## Low Channel Plot

## Spurious Emission 30MHz~1GHz Plot



## Spurious Emission 1GHz~26.5GHz Plot

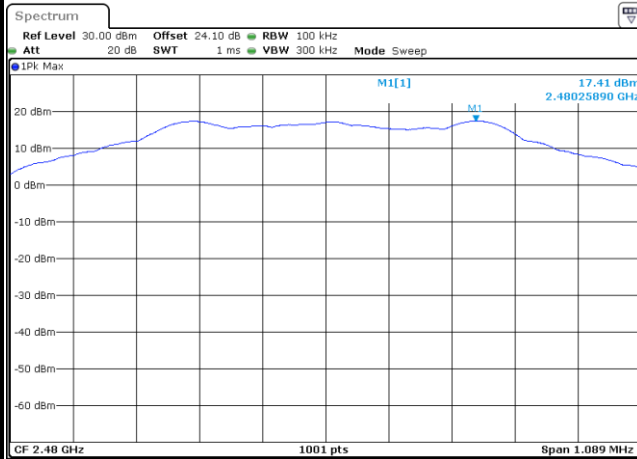






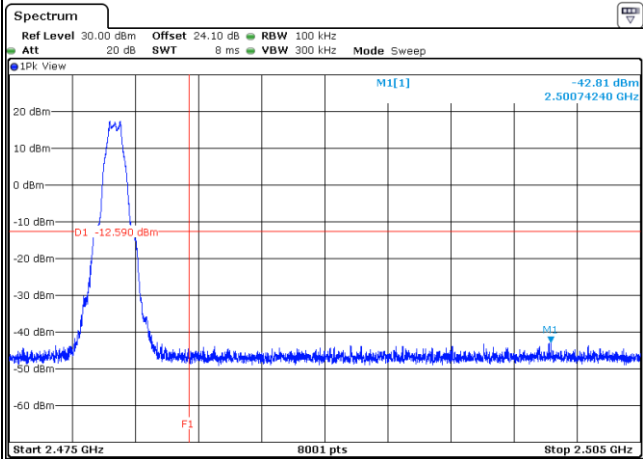
## Channel 39

## 100kHz PSD reference Level Plot



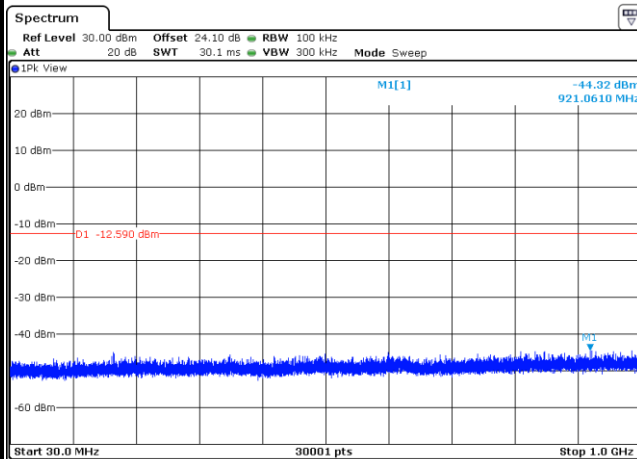
Date: 22.MAY.2023 21:35:52

## Low Channel Plot



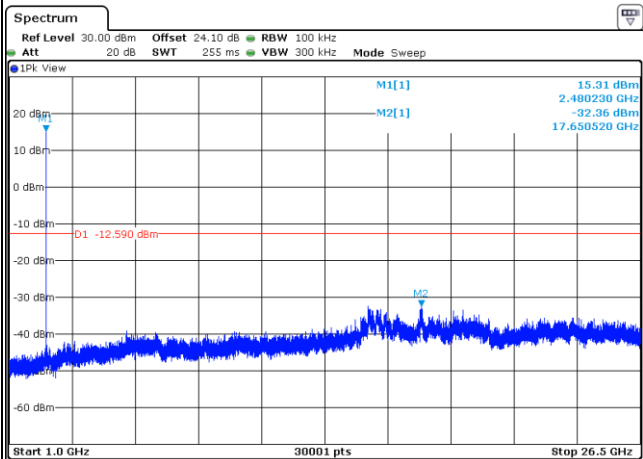
Date: 22.MAY.2023 21:37:10

## Spurious Emission 30MHz~1GHz Plot



Date: 22.MAY.2023 21:36:37

## Spurious Emission 1GHz~26.5GHz Plot



Date: 22.MAY.2023 21:36:53