# TEST REPORT

| | | |
|---|---|---|
| **APPLICANT** | : | CHIPSEA TECHNOLOGIES (SHENZHEN) CORP. |
| **PRODUCT NAME** | : | Bluetooth Module |
| **MODEL NAME** | : | CSM92F40NCC |
| **BRAND NAME** | : | CHIPSEA |
| **FCC ID** | : | 2AGM5240292F40 |
| **STANDARD(S)** | : | 47 CFR Part 15 Subpart C |
| **RECEIPT DATE** | : | 2024-04-16 |
| **TEST DATE** | : | 2024-04-22 to 2024-04-27 |
| **ISSUE DATE** | : | 2024-05-09 |

Edited by: Zeng Xiaoying (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

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MORLAB

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| Change History | | |
|---|---|---|
| **Version** | **Date** | **Reason for change** |
| 1.0 | 2024-05-09 | First edition |
| | | |

# 1. Summary of Test Result

| No. | Section | Description | Test Date | Test Engineer | Result | Method Determination /Remark |
|---|---|---|---|---|---|---|
| 1 | 15.203 | Antenna Requirement | N/A | N/A | PASS | No deviation |
| 2 | N/A | Duty Cycle of Test Signal | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 3 | 15.247(b) | Maximum Peak Conducted Output Power | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 4 | 15.247(b) | Maximum Average Conducted Output Power | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 5 | 15.247(a) | Bandwidth | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 6 | 15.247(d) | Conducted Spurious Emission and Band Edge | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 7 | 15.247(e) | Power Spectral Density | Apr. 23, 2024 | Su Xiaoxian | PASS | No deviation |
| 8 | 15.207 | Conducted Emission | Apr. 22, 2024 | Wang Deyong | PASS | No deviation |
| 9 | 15.247(d) | Restricted Frequency Bands | Apr. 26, 2024 | Gao Jianrou | PASS | No deviation |
| 10 | 15.209, 15.247(d) | Radiated Emission | Apr. 27, 2024 | Gao Jianrou | PASS | No deviation |

**Note 1:** The tests were performed according to the method of measurements prescribed in ANSIC63.10-2013 and KDB558074 D01 v05r02.

**Note 2:** Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

**Note 3:** When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

## 1.1. Testing Applied Standards

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

• 47 CFR Part 15 Subpart C Radio Frequency Devices

## 1.2. Test Equipment List

### 1.2.1 Conducted Test Equipment

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Due Date |
|---|---|---|---|---|---|
| EXA Signal Analzyer | MY53470836 | N9010A | Agilent | 2024.02.19 | 2025.02.18 |
| RF Cable (30MHz-26GHz) | CB01 | RF01 | Morlab | N/A | N/A |
| Coaxial Cable | CB02 | RF02 | Morlab | N/A | N/A |
| SMA Connector | CN01 | RF03 | HUBER-SUHNER | N/A | N/A |

### 1.2.2 Conducted Emission Test Equipment

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Due Date |
|---|---|---|---|---|---|
| Receiver | MY56400093 | N9038A | KEYSIGHT | 2024.02.19 | 2025.02.18 |
| LISN | 8127449 | NSLK 8127 | Schwarzbeck | 2024.02.19 | 2025.02.18 |
| Pulse Limiter (10dB) | VTSD 9561 F-B #206 | VTSD 9561-F | Schwarzbeck | 2024.02.19 | 2025.02.18 |
| RF Coaxial Cable (DC-100MHz) | BNC | MRE04 | Qualwave | N/A | N/A |

### 1.2.3 List of Software Used

| Description | Manufacturer | Software Version |
|---|---|---|
| Test System | MaiWei | 2.0.0.0 |
| Morlab EMCR | Morlab | V1.2 |
| TS+ -[JS32-CE] | Tonscend | V2.5.0.0 |

### 1.2.4 Radiated Test Equipment

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Due Date |
|---|---|---|---|---|---|
| Receiver | MY54130016 | N9038A | Agilent | 2023.06.21 | 2024.06.20 |
| Test Antenna – Bi-Log | 9163-519 | VULB 9163 | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Test Antenna – Loop | 1519-022 | FMZB1519 | Schwarzbeck | 2023.06.26 | 2024.06.25 |
| Test Antenna – Horn | 01774 | BBHA 9120D | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Test Antenna – Horn | BBHA9170 #773 | BBHA9170 | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Preamplifier (10MHz-6GHz) | 46732 | S10M100L3802 | LUCIX CORP. | 2023.06.27 | 2024.06.26 |
| Preamplifier (2GHz-18GHz) | 61171/61172 | S020180L3203 | LUCIX CORP. | 2023.06.27 | 2024.06.26 |
| Preamplifier (18GHz-40GHz) | DS77209 | DCLNA0118-40C-S | Decentest | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-18GHz) | MRE001 | PE330 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-18GHz) | MRE002 | CLU18 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-18GHz) | MRE003 | CLU18 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-40GHz) | 22290045 | QA360-40-KK-0.5 | Qualwave | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-40GHz) | 22290046 | QA360-40-KKF-2 | Qualwave | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-18GHz) | 22120181 | QA500-18-NN-5 | Qualwave | 2023.07.04 | 2024.07.03 |
| Notch Filter | N/A | WRCG-2400-2483.5-60SS | Wainwright | N/A | N/A |
| Anechoic Chamber | N/A | 9m*6m*6m | CRT | 2022.05.10 | 2025.05.09 |

## 1.3. Measurement Uncertainty

| Test Items | Uncertainty | Remark |
|---|---|---|
| Peak Output Power | ±2.22dB | Confidence levels of 95% |
| Power Spectral Density | ±2.22dB | Confidence levels of 95% |
| Bandwidth | ±5% | Confidence levels of 95% |
| Conducted Spurious Emission | ±2.77dB | Confidence levels of 95% |
| Restricted Frequency Bands | ±5% | Confidence levels of 95% |
| Radiated Emission | ±2.95dB | Confidence levels of 95% |
| Conducted Emission | ±2.44dB | Confidence levels of 95% |

## 1.4. Testing Laboratory

| | |
|---|---|
| **Laboratory Name** | Shenzhen Morlab Communications Technology Co., Ltd. |
| **Laboratory Address** | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| **Telephone** | +86 755 36698555 |
| **Facsimile** | +86 755 36698525 |
| **FCC Designation Number** | CN1192 |
| **FCC Test Firm Registration Number** | 226174 |

# 2. General Description

## 2.1. Information of Applicant and Manufacturer

| | |
|---|---|
| **Applicant** | CHIPSEA TECHNOLOGIES (SHENZHEN) CORP. |
| **Applicant Address** | 3F, Podium of Shenzhen Bay Innovation and Technology Center, Yuehai Sub-district, Nanshan District, Shenzhen, China |
| **Manufacturer** | CHIPSEA TECHNOLOGIES (SHENZHEN) CORP. |
| **Manufacturer Address** | 3F, Podium of Shenzhen Bay Innovation and Technology Center, Yuehai Sub-district, Nanshan District, Shenzhen, China |

## 2.2. Information of EUT

| | |
|---|---|
| **Product Name:** | Bluetooth Module |
| **Sample No.:** | 1# |
| **Hardware Version:** | 1.0 |
| **Software Version:** | 1.0 |
| **Equipment Type:** | Bluetooth LE |
| **Bluetooth Version:** | 5.1 |
| **Modulation Type:** | GFSK |
| **Data Rate:** | 1Mbps, 2Mbps |
| **Operating Frequency Range:** | 2402MHz-2480MHz |
| **Antenna Type:** | Ceramic Antenna |
| **Antenna Gain:** | 3.43dBi |

**Note 1:** We use the dedicated software to control the EUT continuous transmission.

**Note 2:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 2.3. Channel List of EUT

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

**Note 1:** The black bold channels were selected for test.

## 2.4. Test Configuration of EUT

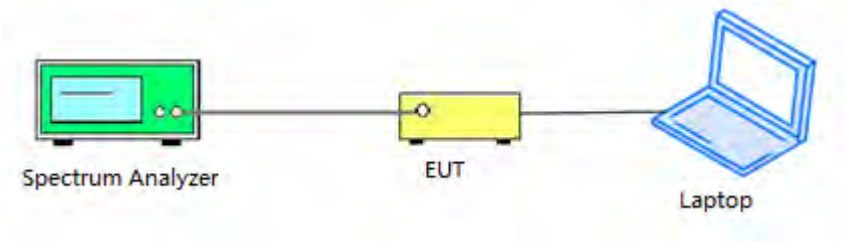
Test mode is used to control the EUT under the maximum power level during test.

## 2.5. Test Conditions

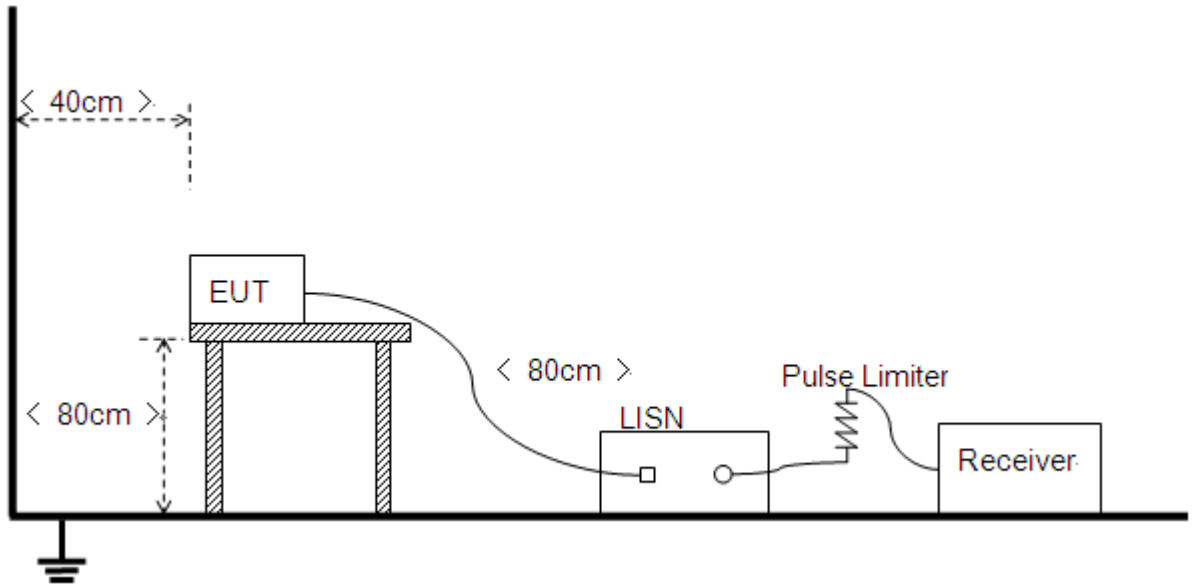
| | |
|---|---|
| **Temperature (°C)** | 15-35 |
| **Relative Humidity (%)** | 30-60 |
| **Atmospheric Pressure (kPa)** | 86-106 |

## 2.6. Test Setup Layout Diagram

### 2.6.1.Conducted Measurement

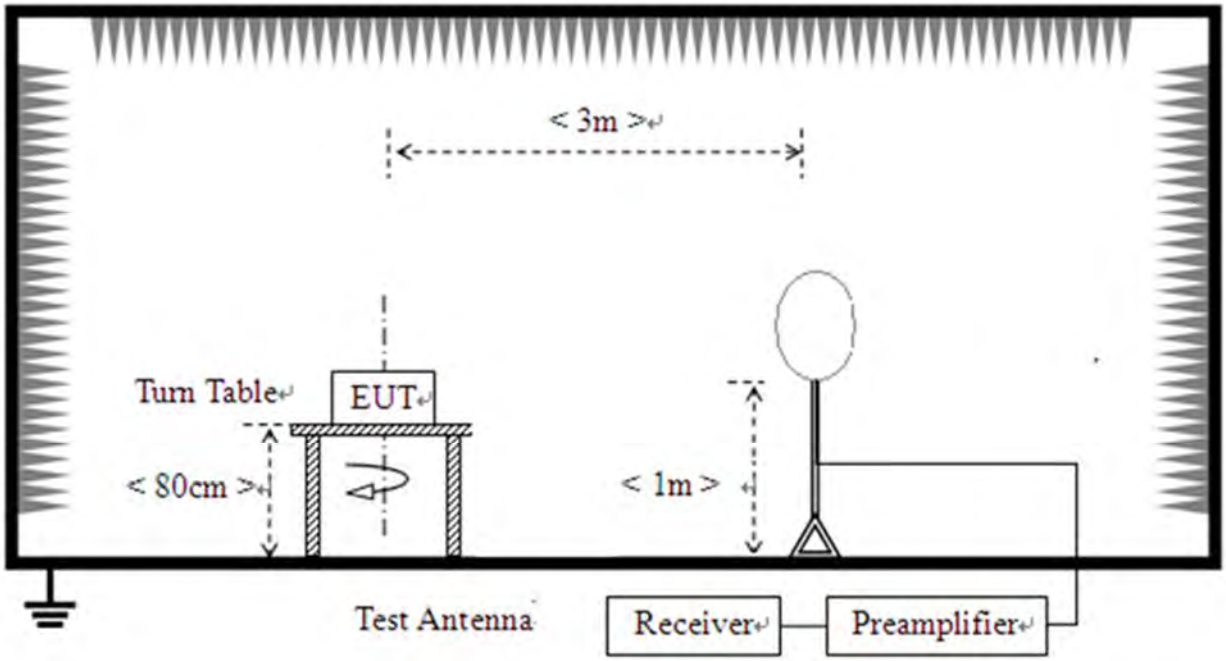



### 2.6.2.Conducted Emission Measurement

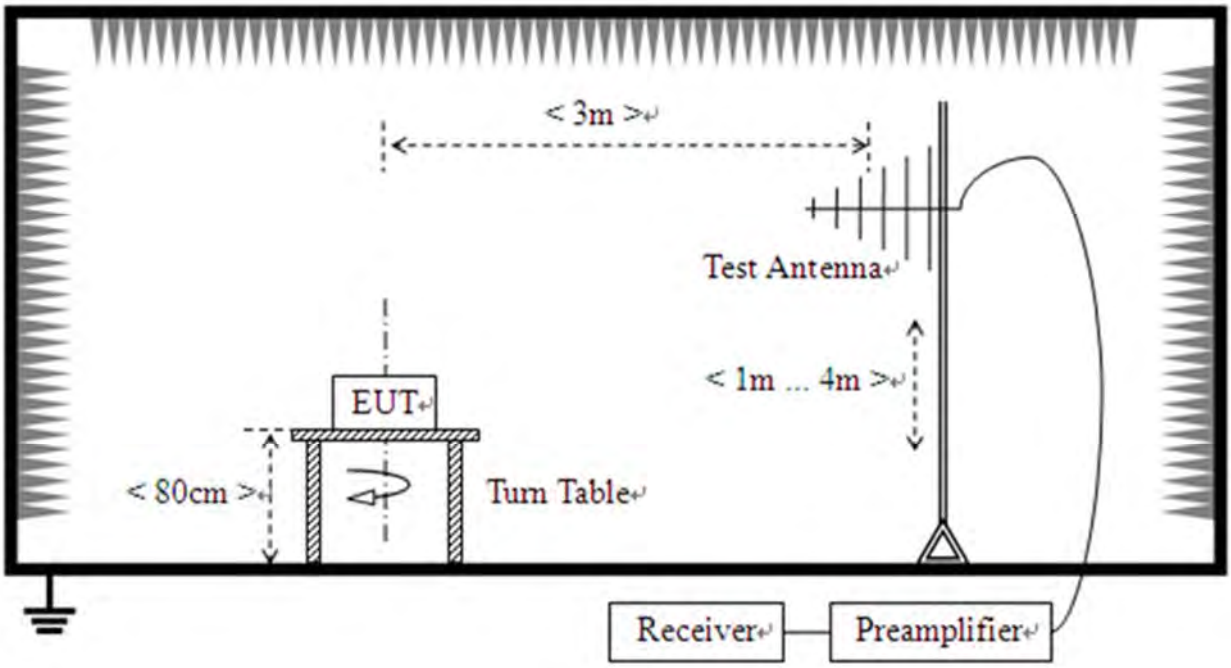


### 2.6.3.Radiation Measurement

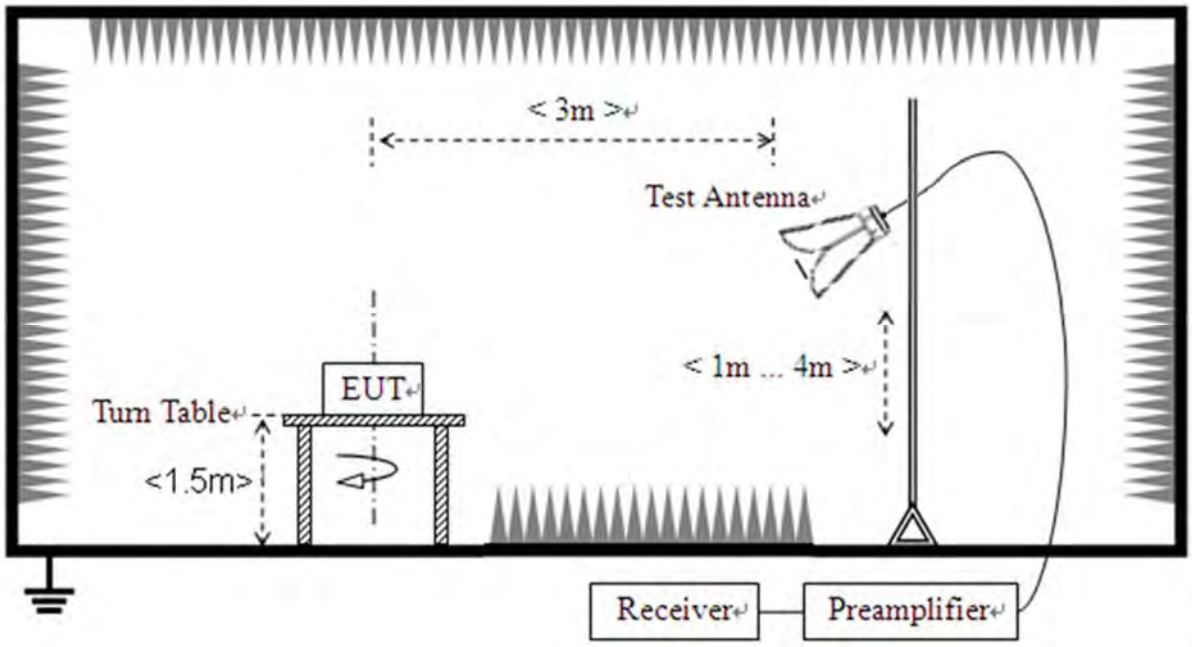
1) For radiated emissions from 9kHz to 30MHz




2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



# 3. Test Results

## 3.1. Antenna Requirement

### 3.1.1.Requirement

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section.

### 3.1.2.Test Result

Inside of the EUT has a permanently attached ceramic antenna fixed to PCB with solder. Please refer to the EUT internal photos.

## 3.2. Duty Cycle of Test Signal

### 3.2.1.Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%).When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration(T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e.,no transmitter OFF-time is to be considered).
When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than ±2%; otherwise, the duty cycle is considered to be non constant.

### 3.2.2.Test Result

Refer to Annex A.1 in this report.

## 3.3. Maximum Peak Conducted Output Power

### 3.3.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

### 3.3.2. Test Procedures

KDB 558074 Section 8.3.1 was used in order to prove compliance.

### 3.3.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

### 3.3.4. Test Result

Refer to Annex A.2 in this report.

## 3.4. Maximum Average Conducted Output Power

### 3.4.1. Requirement

According to FCC section 15.247(b)(3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum average conducted output power of the intentional radiator shall not exceed 1 Watt.

### 3.4.2. Test Procedures

KDB 558074 Section 8.3.2 was used in order to prove compliance.

### 3.4.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

### 3.4.4. Test Result

Refer to Annex A.3 in this report.

# 3.5.6 dB Bandwidth

### 3.5.1.Requirement

According to FCC section 15.247(a) (2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

### 3.5.1.Test Procedures

The steps for the first option are as follows:
a) Set analyzer center frequency to channel center frequency
b) Set RBW to100kHz
c) Set VBW to 300kHz
d) Detector = peak.
e) Trace mode = max hold
f) Sweep time = auto couple
g) Allow the trace to fully stabilize
h) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by6 dB relative to the maximum level measured in the fundamental emission
The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 ×RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

### 3.5.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

### 3.5.3.Test Result

Refer to Annex A.4 in this report.

# 3.6. Conducted Spurious Emissions and Band Edge

### 3.6.1. Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 3.6.2. Test Procedures

KDB 558074 Section 8.5 and 8.7 was used in order to prove compliance.

### 3.6.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

### 3.6.4. Test Result

Refer to Annex A.5 and A.6 in this report.

# 3.7. Power Spectral Density

### 3.7.1.Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 3.7.2.Test Procedures

The measured power spectral density was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for PSD test:
a) Set analyzer center frequency to channel center frequency
b) Set span to1.5 times DTS
c) Set RBW to 3kHz
d) Set VBW to 10kHz
e) Detector = peak
f) Sweep time = auto couple
g) Trace mode = max hold
h) Allow trace to fully stabilize
i) Use the peak marker function to determine the maximum amplitude level within the RBW

### 3.7.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

### 3.7.4.Test Result

Refer to Annex A.7 in this report.

# 3.8. Conducted Emission

### 3.8.1.Requirement

According to FCC section 15.207, for an intentional radiator 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency Range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

Note:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

### 3.8.2.Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

### 3.8.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

### 3.8.4.Test Result

Refer to Annex A.8 in this report.

# 3.9. Restricted Frequency Bands

### 3.9.1.Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 3.9.2.Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
For the Test Antenna:
Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1GHz
VBW = 3 MHz
Sweep = auto
Detector function = peak/average
Trace = max hold
Allow the trace to stabilize

### 3.9.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

### 3.9.4.Test Result

Refer to Annex A.9 in this report.

# 3.10. Radiated Emission

### 3.10.1.Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (μV/m) | Measurement Distance (m) |
|---|---|---|
| 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 |

**Note1:** For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
**Note2:**For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

### 3.10.2.Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

### 3.10.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

### 3.10.4.Test Result

Refer to Annex A.10 in this report.

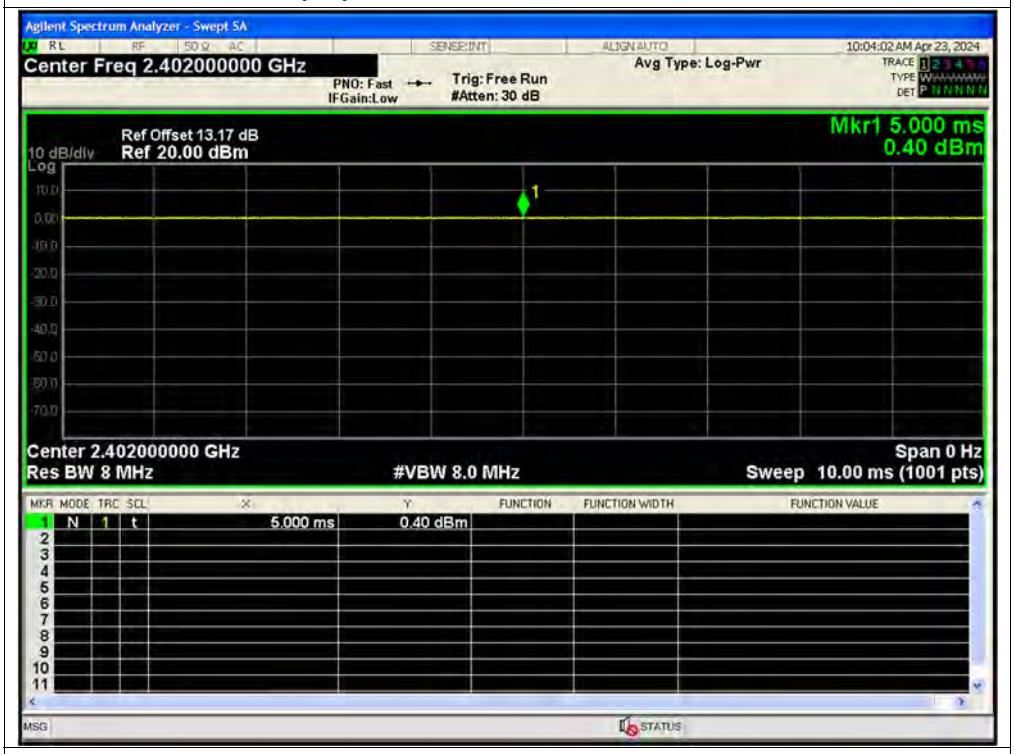
# Annex A Test Data and Result

## A.1. Duty Cycle of Test Signal

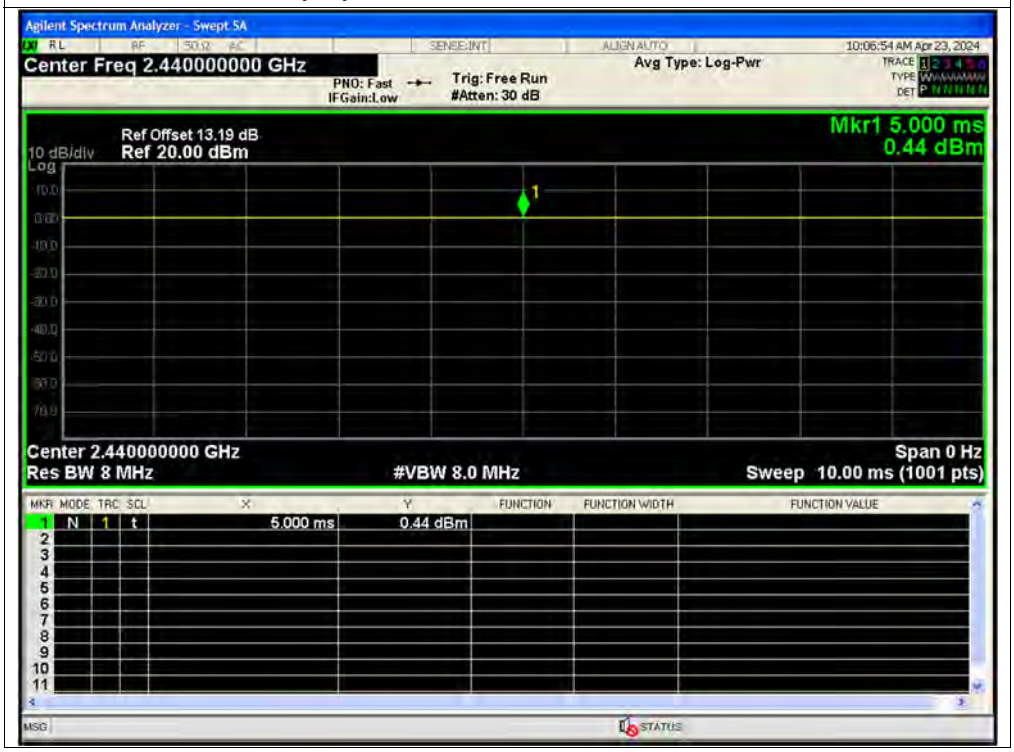
| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 100 | 0 | 0 |
| NVNT | BLE 1M | 2440 | Ant1 | 100 | 0 | 0 |
| NVNT | BLE 1M | 2480 | Ant1 | 100 | 0 | 0 |
| NVNT | BLE 2M | 2402 | Ant1 | 100 | 0 | 0 |
| NVNT | BLE 2M | 2440 | Ant1 | 100 | 0 | 0 |
| NVNT | BLE 2M | 2480 | Ant1 | 100 | 0 | 0 |

Test Graphs

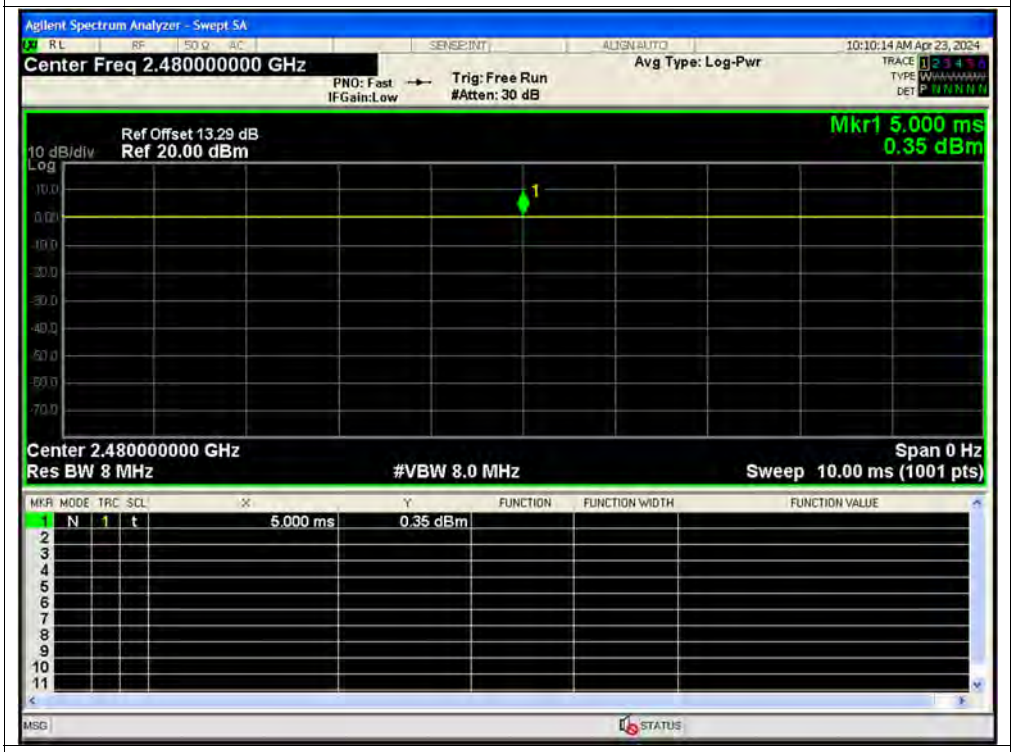
Duty Cycle NVNT BLE 1M 2402MHz Ant1



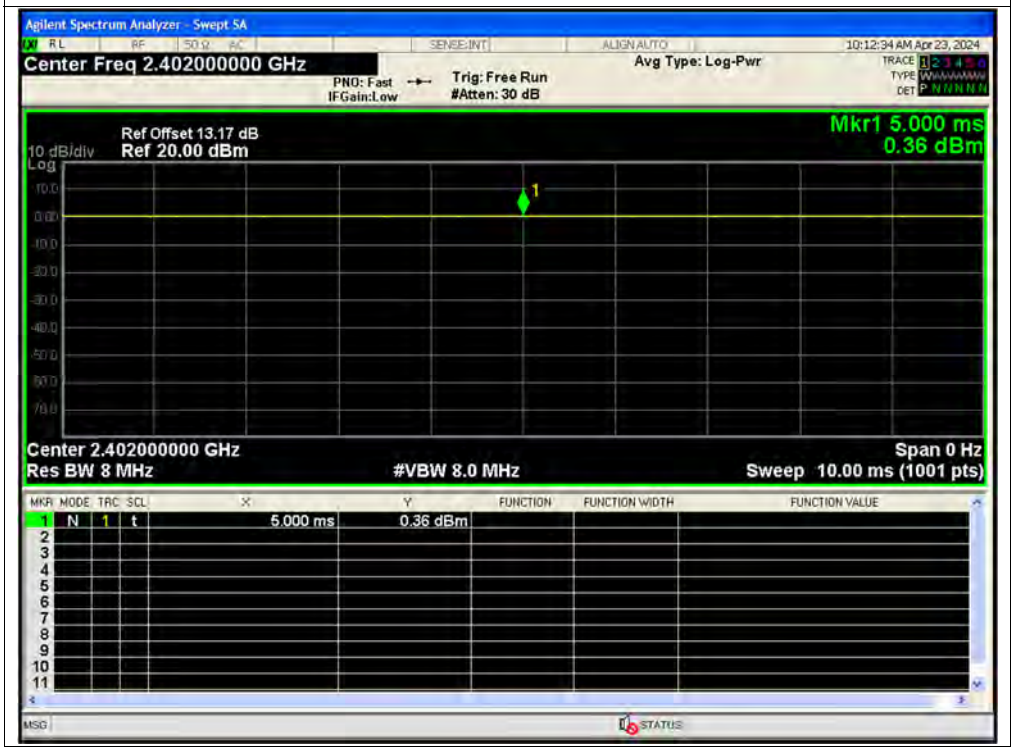

Duty Cycle NVNT BLE 1M 2440MHz Ant1



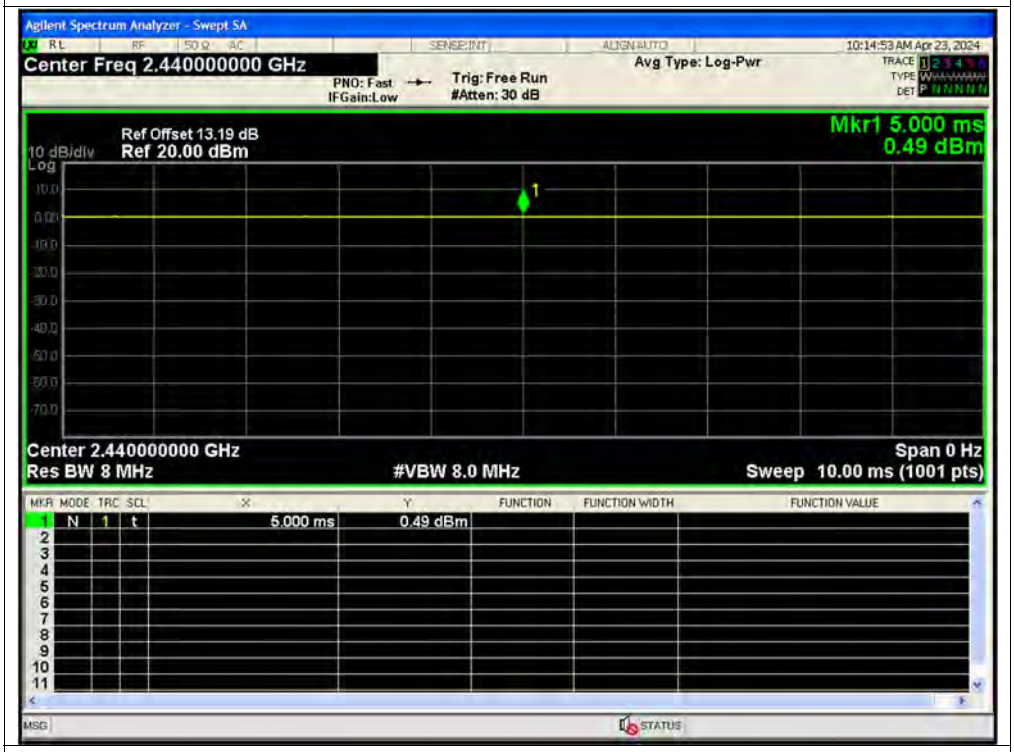
Duty Cycle NVNT BLE 1M 2480MHz Ant1



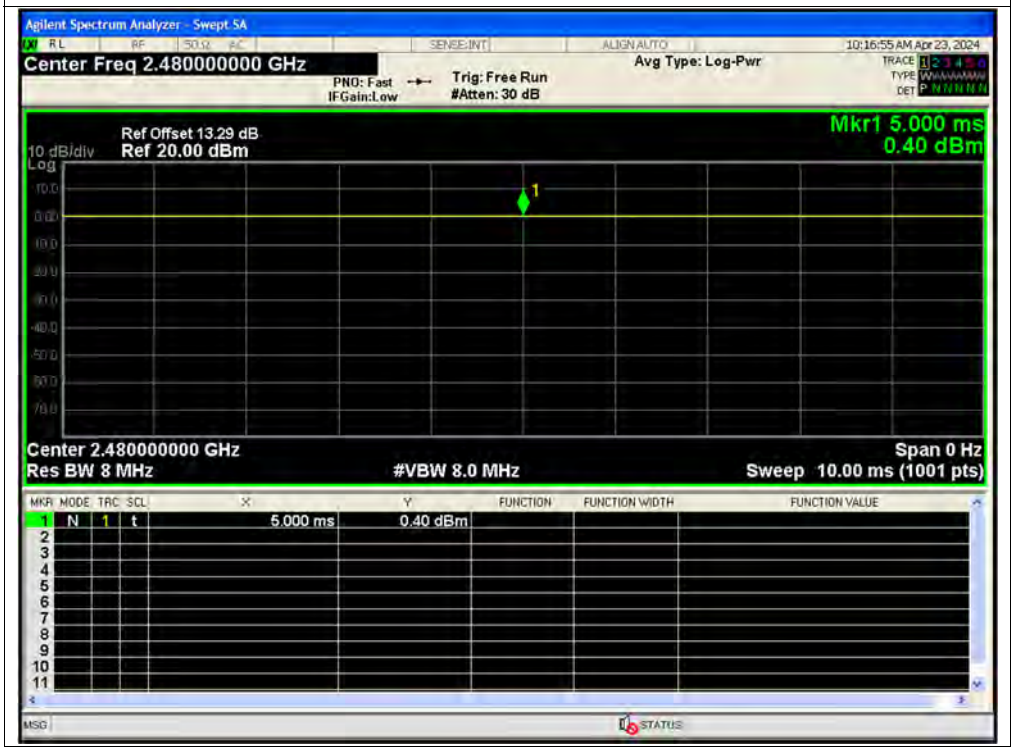

Duty Cycle NVNT BLE 2M 2402MHz Ant1



Duty Cycle NVNT BLE 2M 2440MHz Ant1



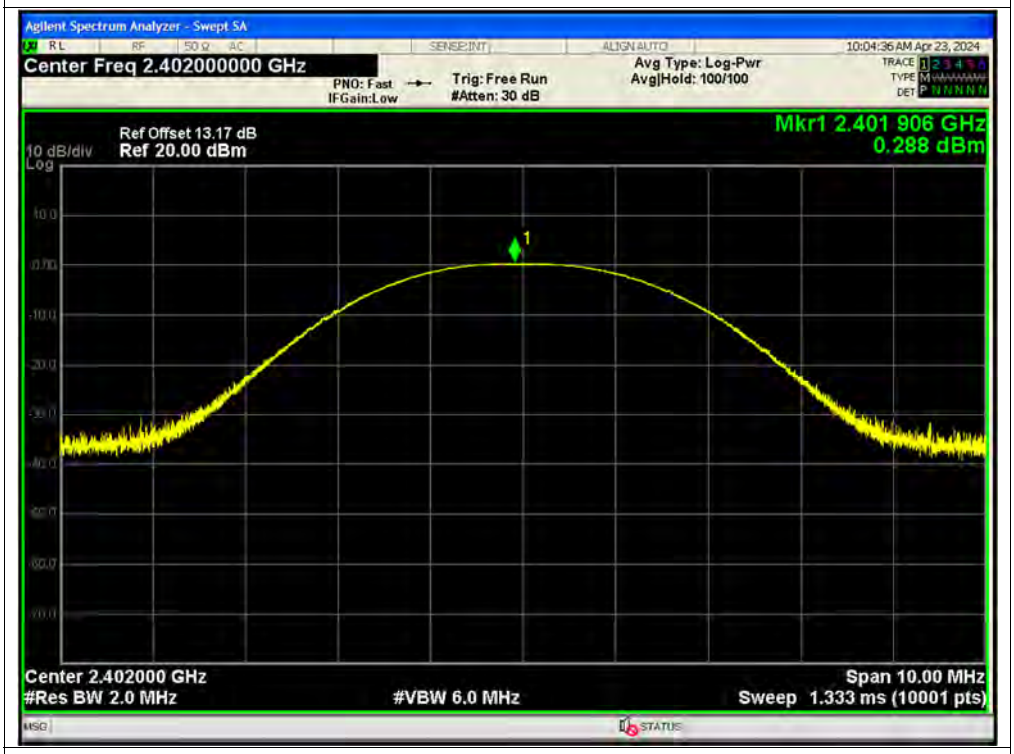

Duty Cycle NVNT BLE 2M 2480MHz Ant1



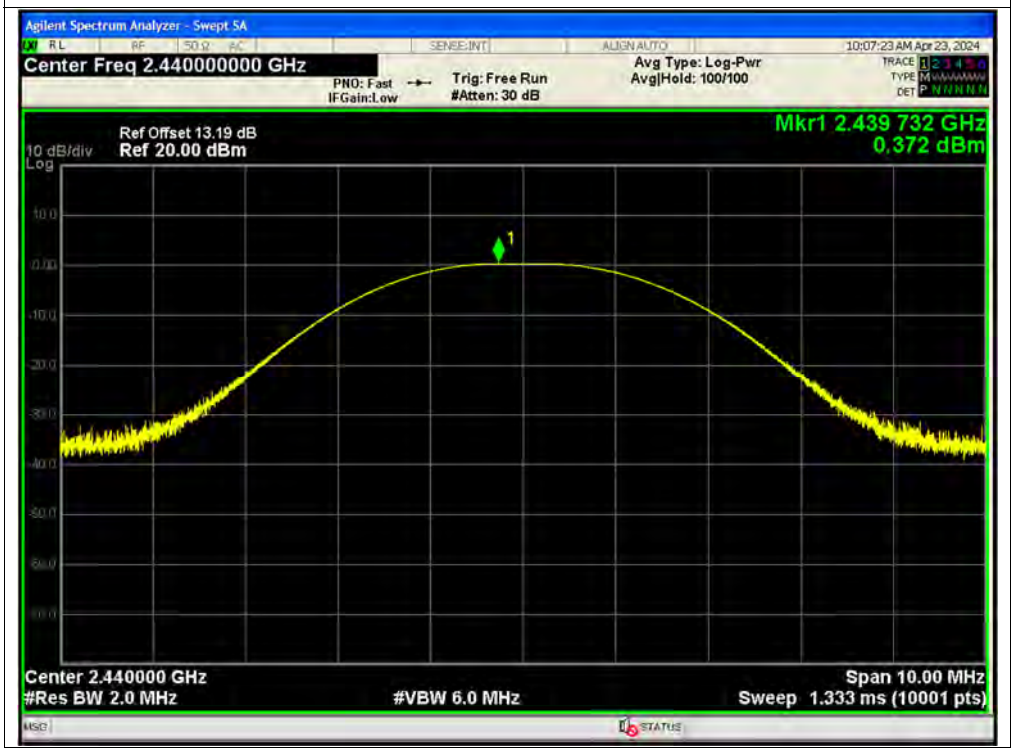
## A.2. Maximum Peak Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Conducted Power (dBm) | Total Conducted Power (W) | Limit Conducted (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 0.29 | 0 | 0.29 | 0.00107 | 30 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 0.37 | 0 | 0.37 | 0.00109 | 30 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 0.32 | 0 | 0.32 | 0.00108 | 30 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 0.2 | 0 | 0.2 | 0.00105 | 30 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 0.33 | 0 | 0.33 | 0.00108 | 30 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 0.31 | 0 | 0.31 | 0.00107 | 30 | Pass |

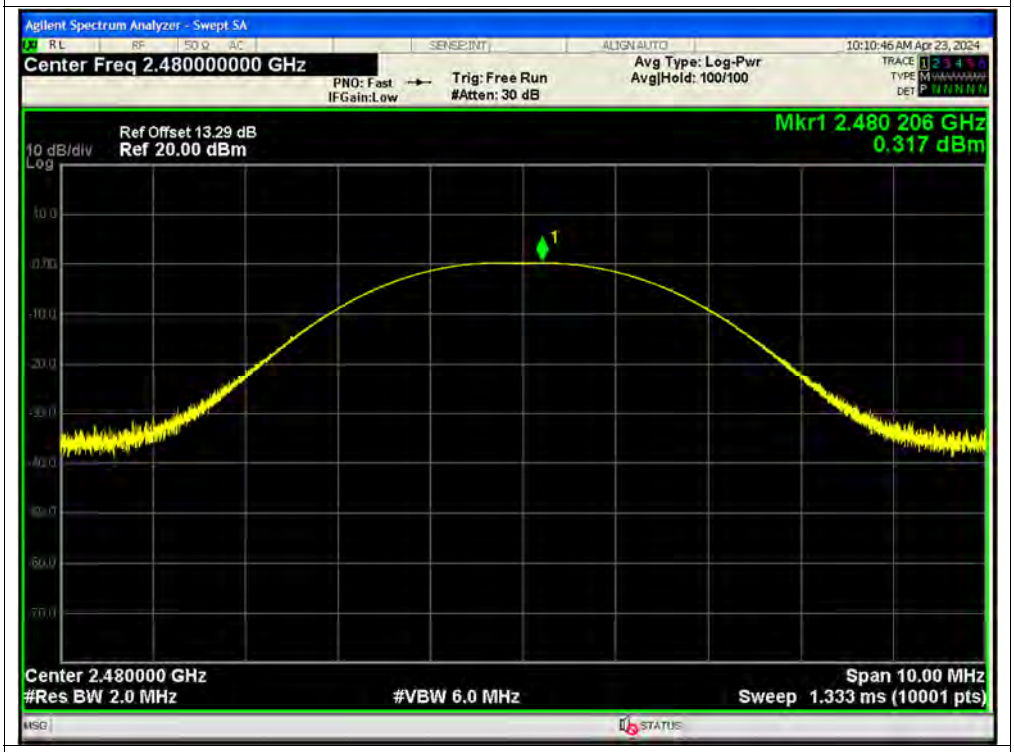
| Test Graphs |
| --- |
| Peak Power NVNT BLE 1M 2402MHz Ant1 |



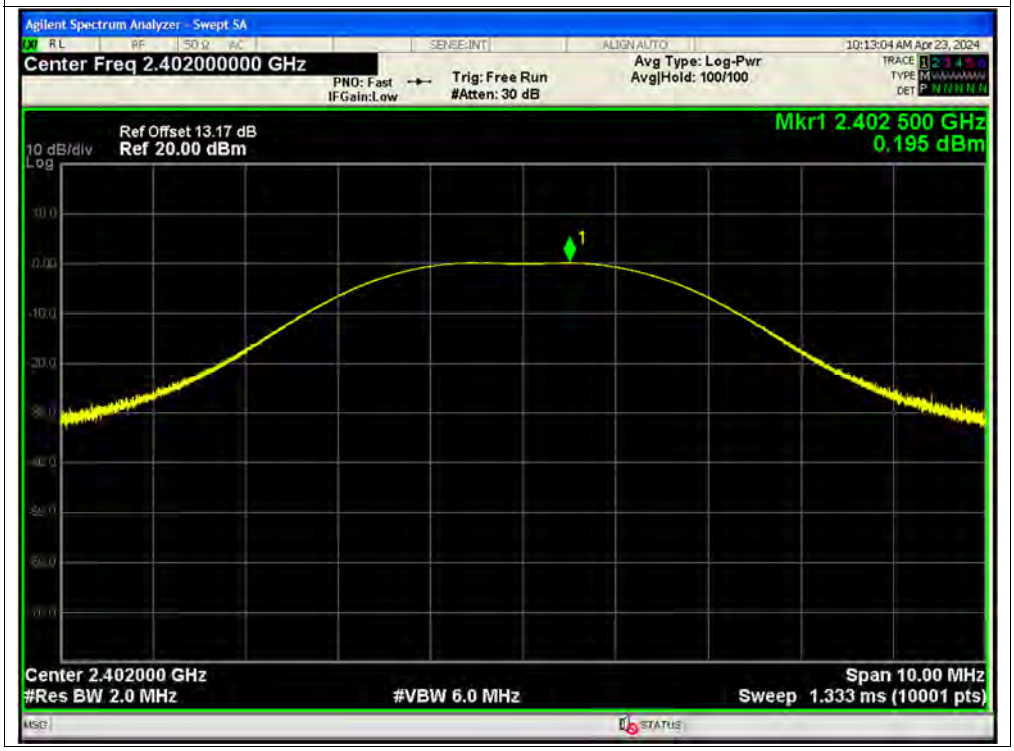

| Peak Power NVNT BLE 1M 2440MHz Ant1 |
| --- |



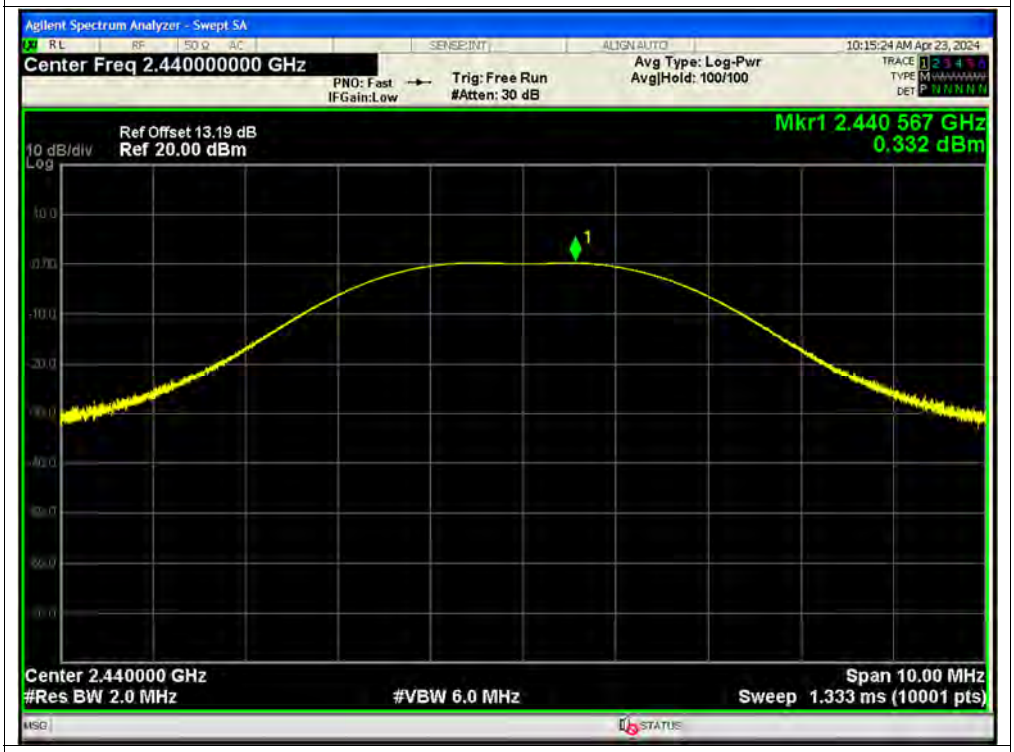
Peak Power NVNT BLE 1M 2480MHz Ant1



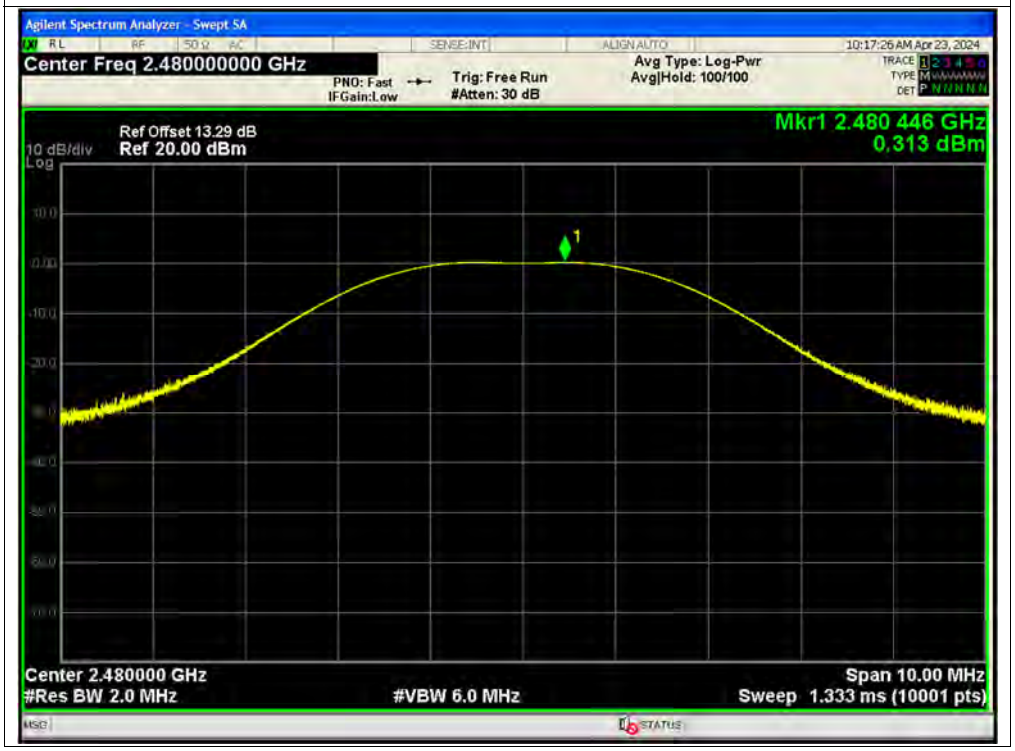

Peak Power NVNT BLE 2M 2402MHz Ant1



Peak Power NVNT BLE 2M 2440MHz Ant1




Peak Power NVNT BLE 2M 2480MHz Ant1

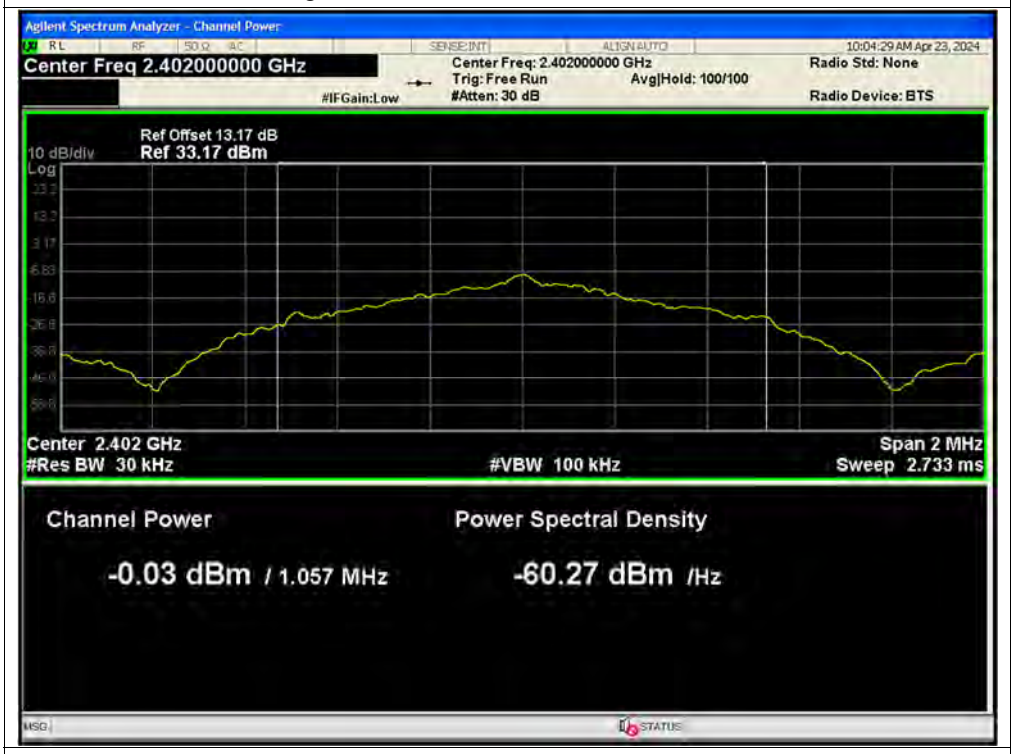


## A.3. Maximum Average Conducted Output Power

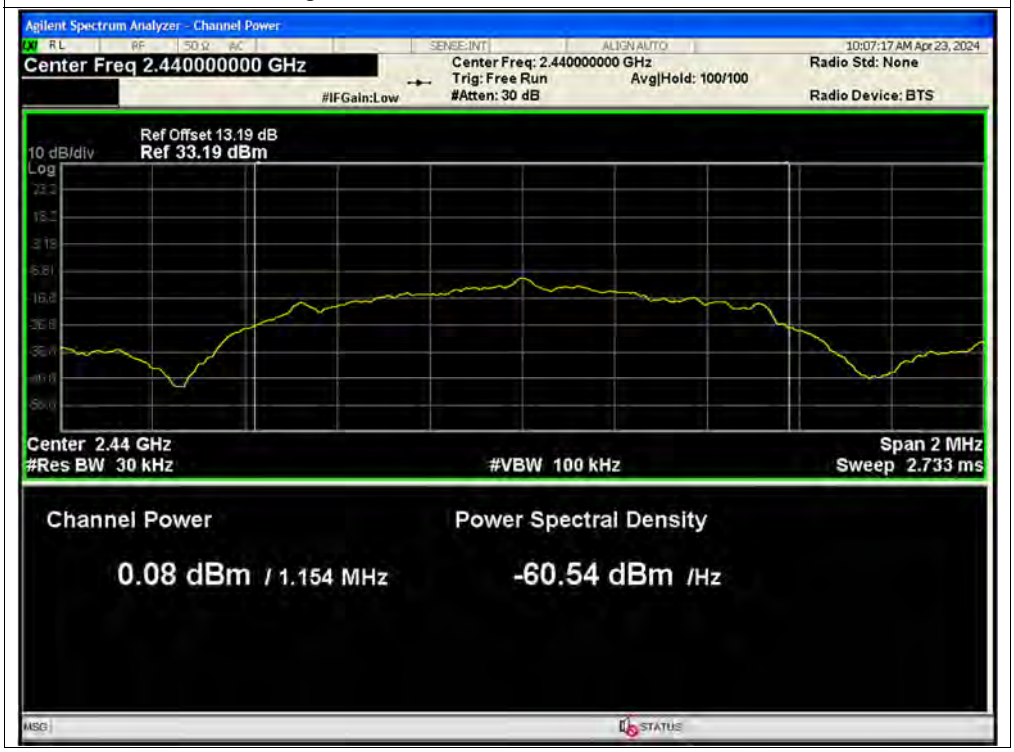
| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Conducted Power (dBm) | Total Conducted Power (W) | Limit Conducted (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | -0.03 | 0 | -0.03 | 0.00099 | 30 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 0.08 | 0 | 0.08 | 0.00102 | 30 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | -0.02 | 0 | -0.02 | 0.001 | 30 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 0 | 0 | 0 | 0.001 | 30 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 0.08 | 0 | 0.08 | 0.00102 | 30 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 0.02 | 0 | 0.02 | 0.001 | 30 | Pass |

Test Graphs

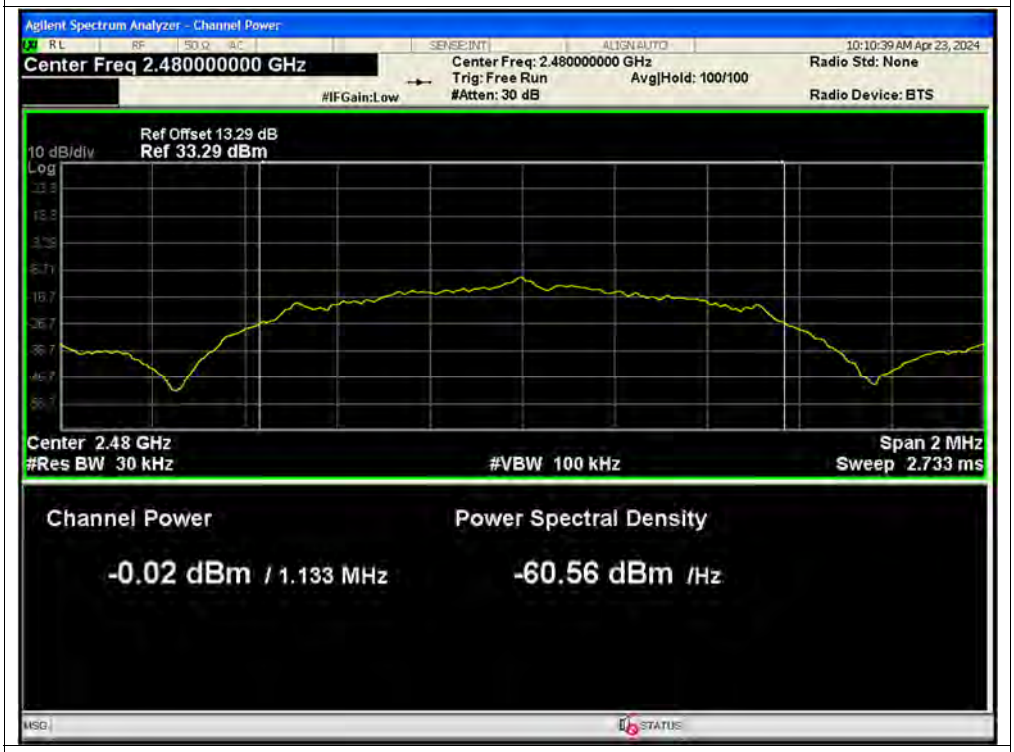
Average Power NVNT BLE 1M 2402MHz Ant1



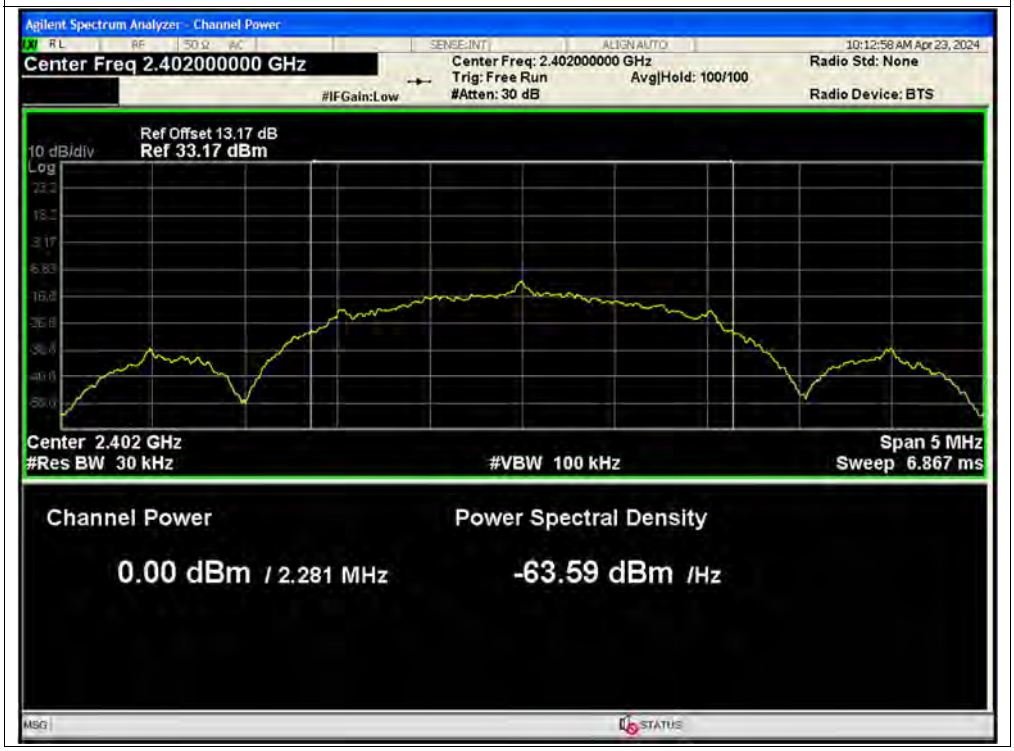

Average Power NVNT BLE 1M 2440MHz Ant1



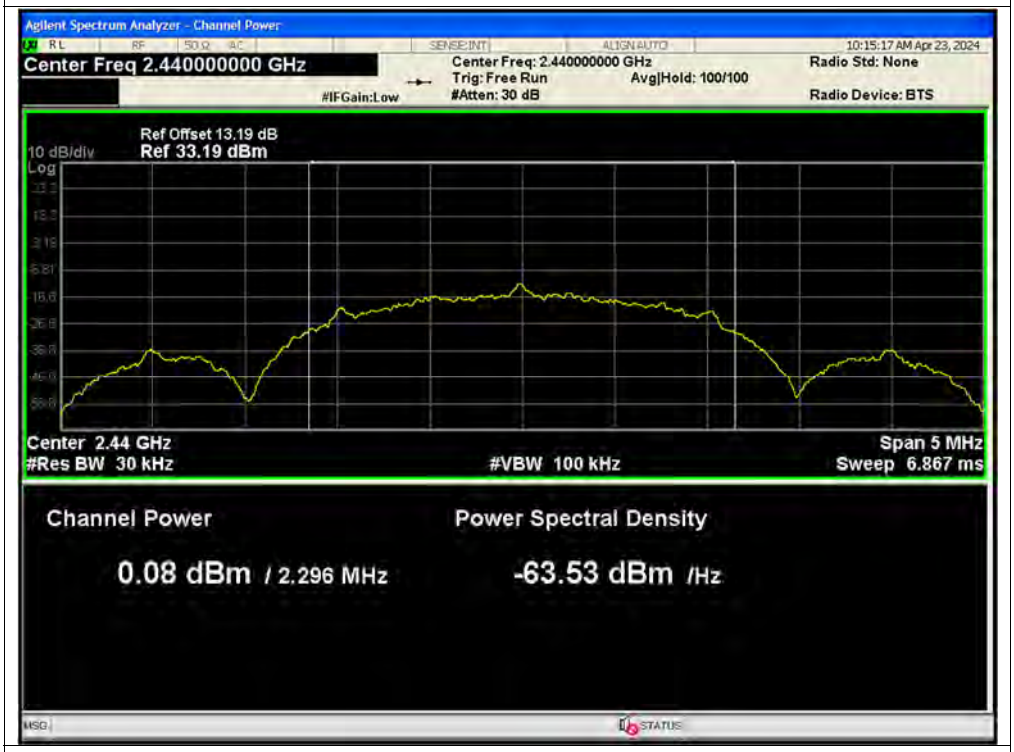
Average Power NVNT BLE 1M 2480MHz Ant1



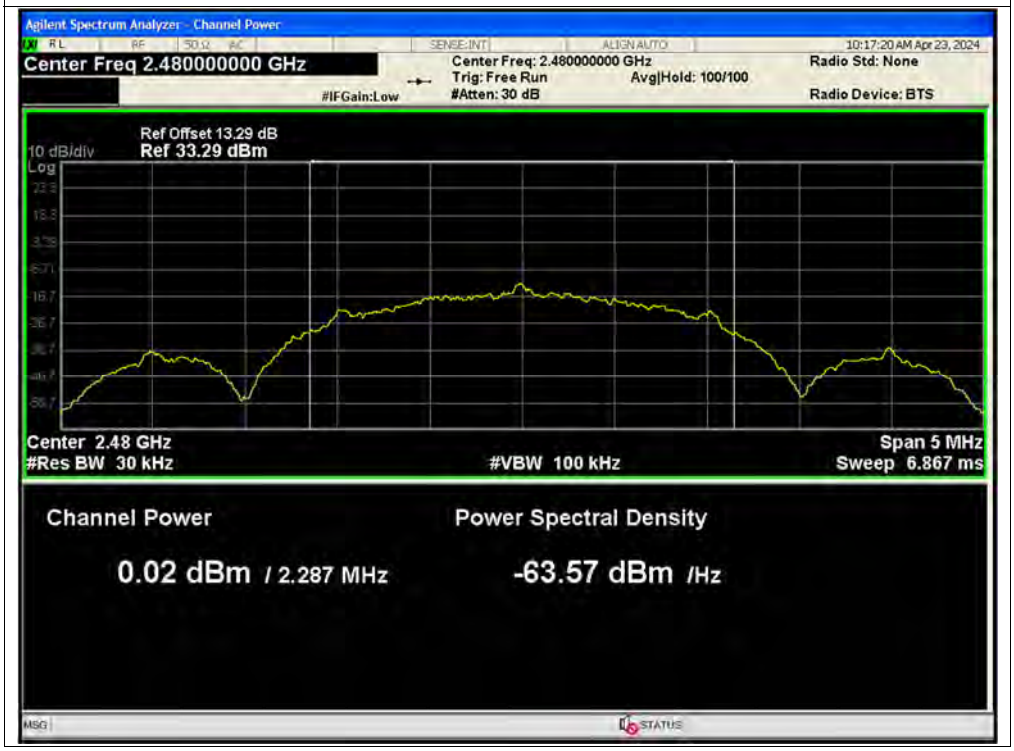

Average Power NVNT BLE 2M 2402MHz Ant1



Average Power NVNT BLE 2M 2440MHz Ant1




Average Power NVNT BLE 2M 2480MHz Ant1



## A.4. 6 dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 0.643 | 0.5 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 0.707 | 0.5 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 0.712 | 0.5 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 1.348 | 0.5 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 1.408 | 0.5 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 1.337 | 0.5 | Pass |

Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1

-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1

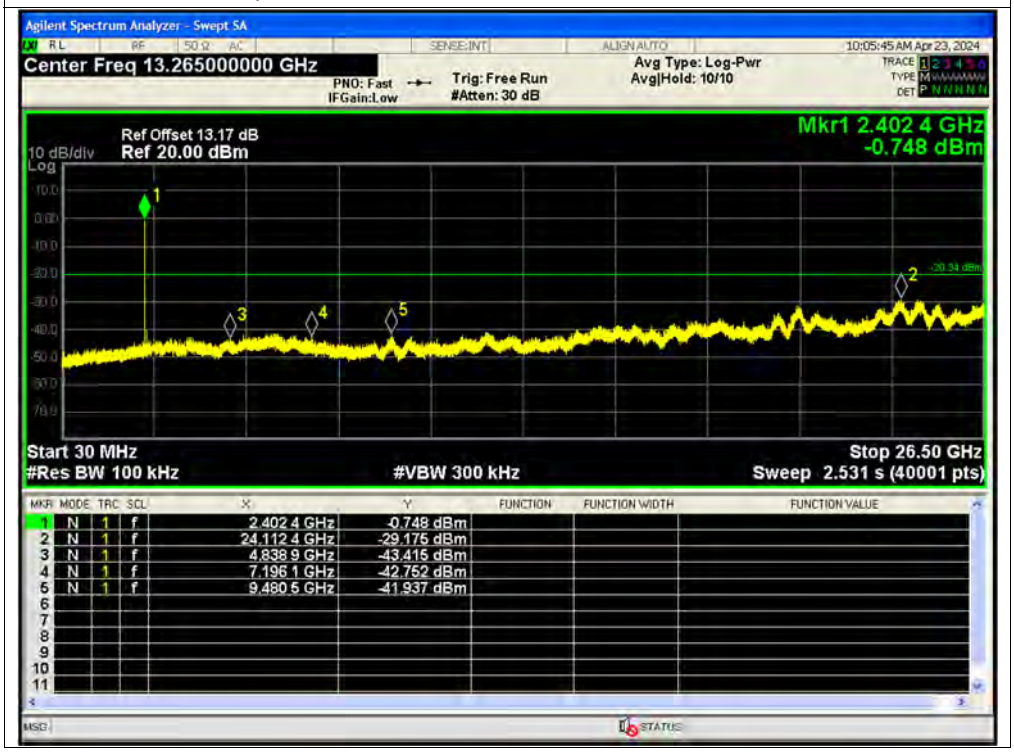
-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1

## A.5. Conducted Spurious Emissions

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | -28.83 | -20 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | -28.51 | -20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | -27.72 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | -27.93 | -20 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | -26.93 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | -27.66 | -20 | Pass |

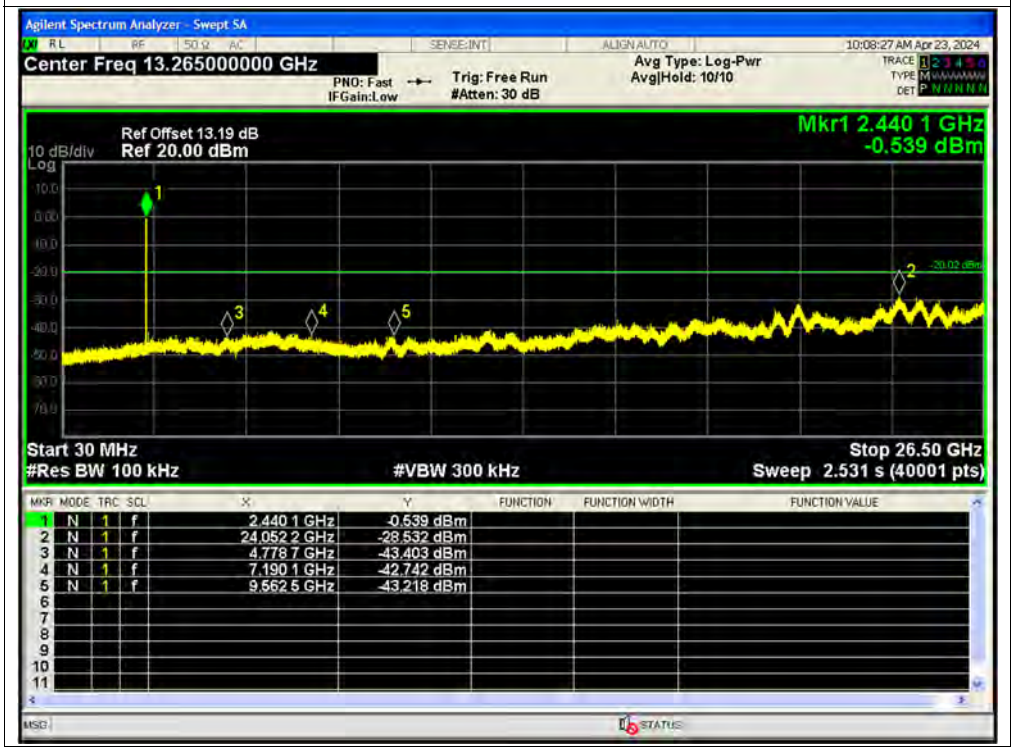
| Test Graphs |
|---|
| Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref |

| Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission |
|---|



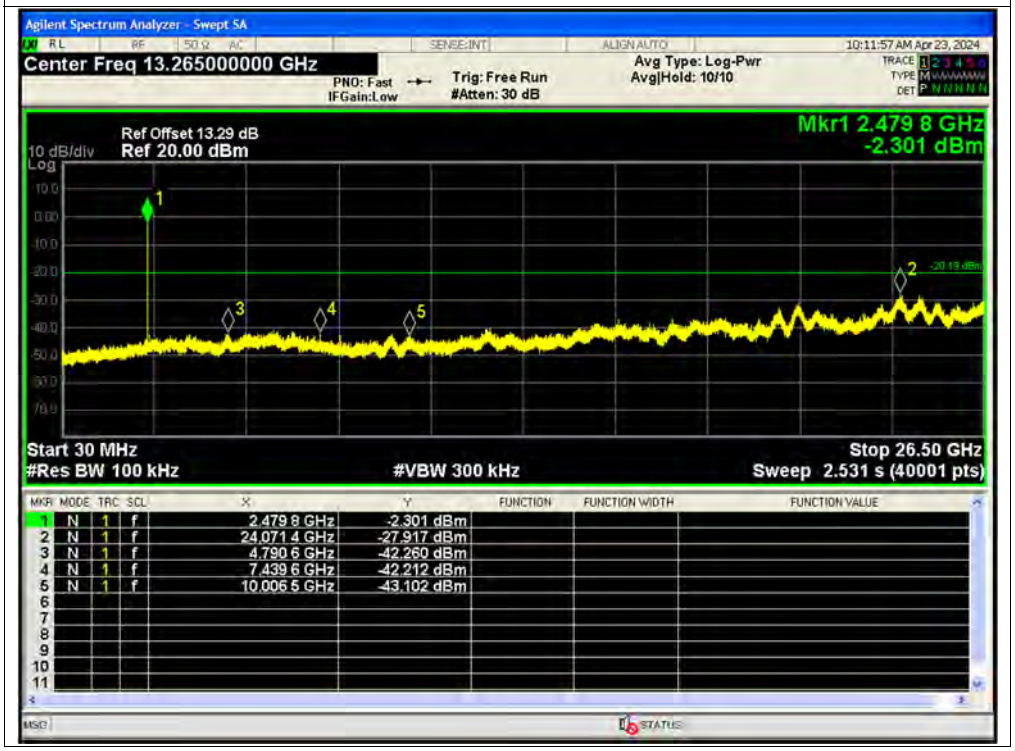
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



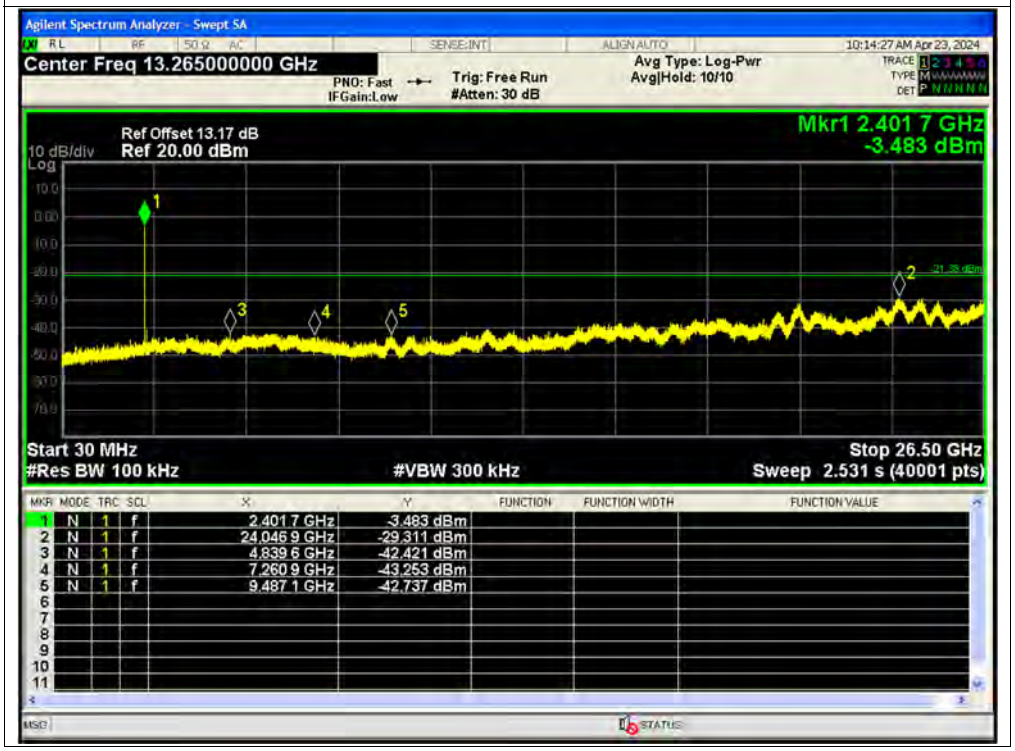
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



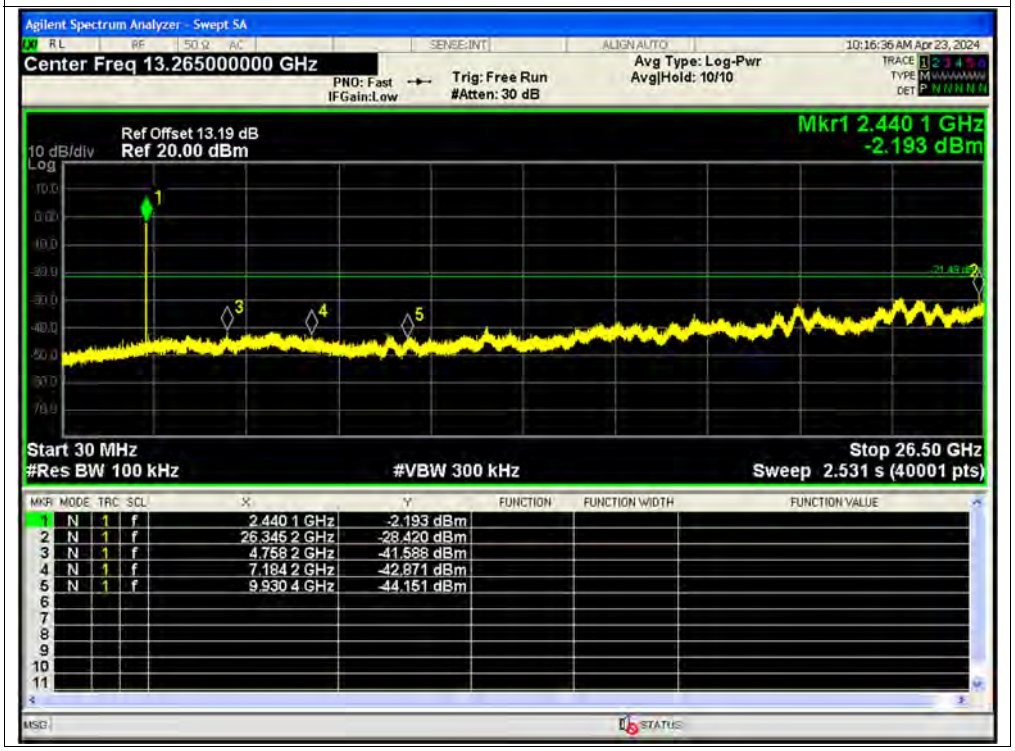
Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



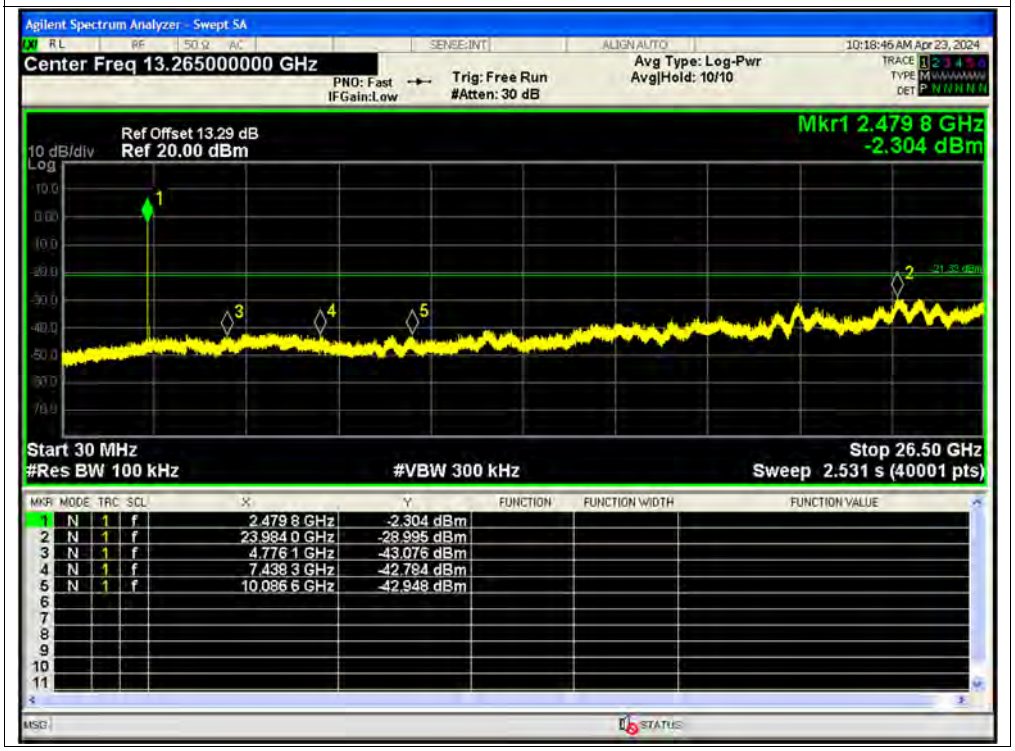
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission



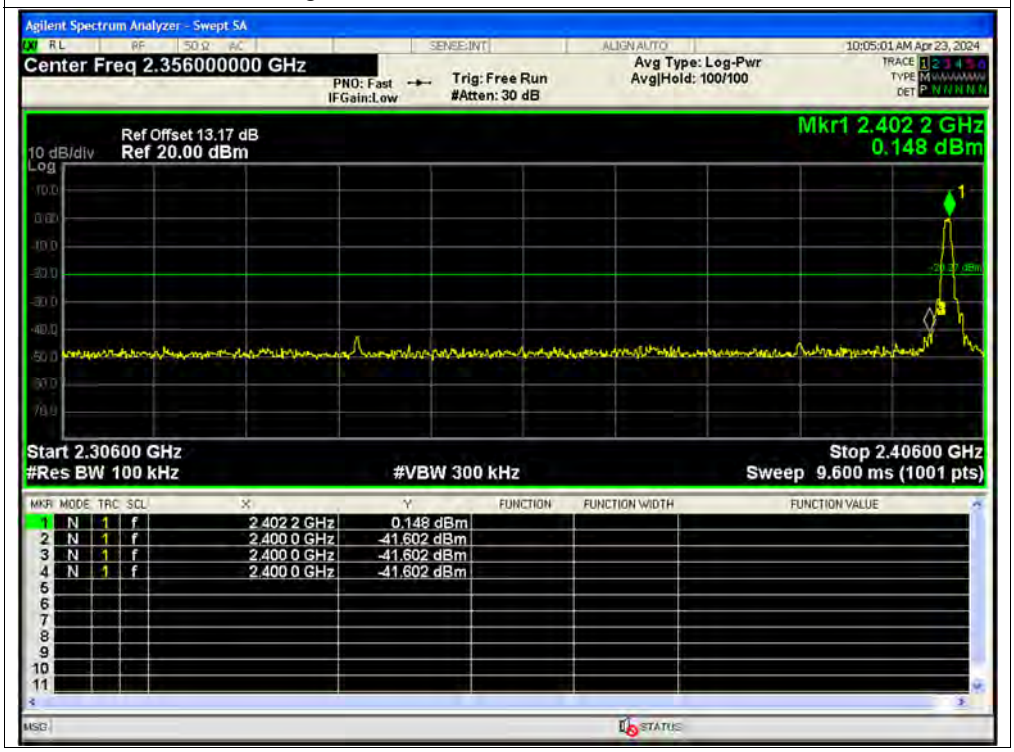
## A.6. Band Edge

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | -41.33 | -20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | -43.40 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | -24.23 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | -37.49 | -20 | Pass |

Test Graphs

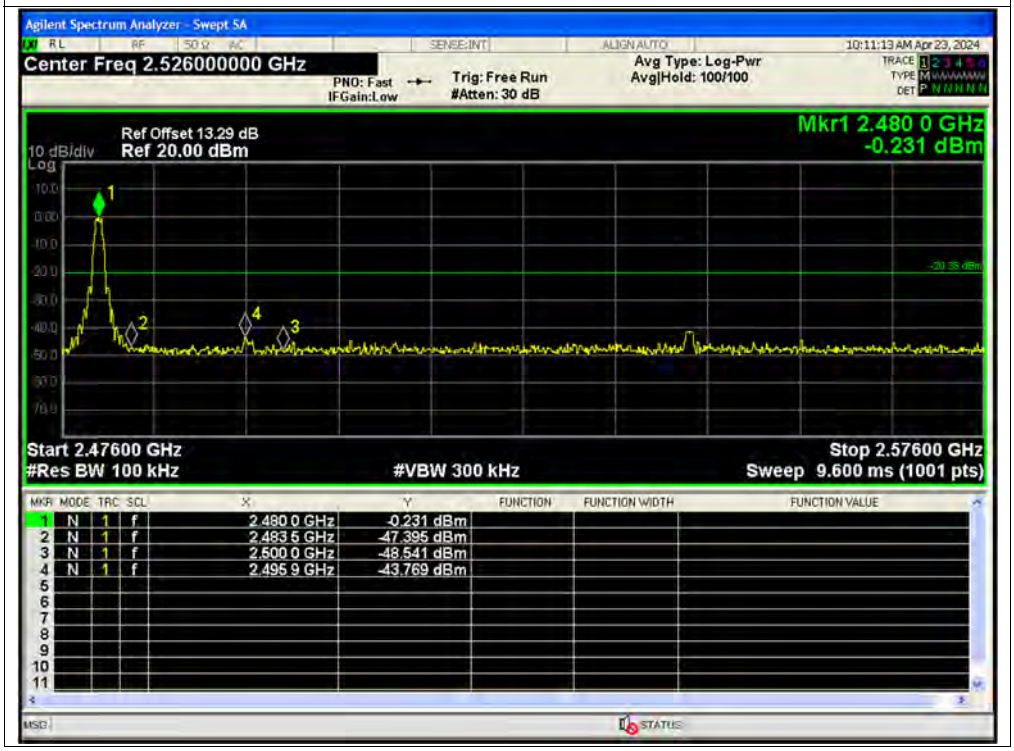
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



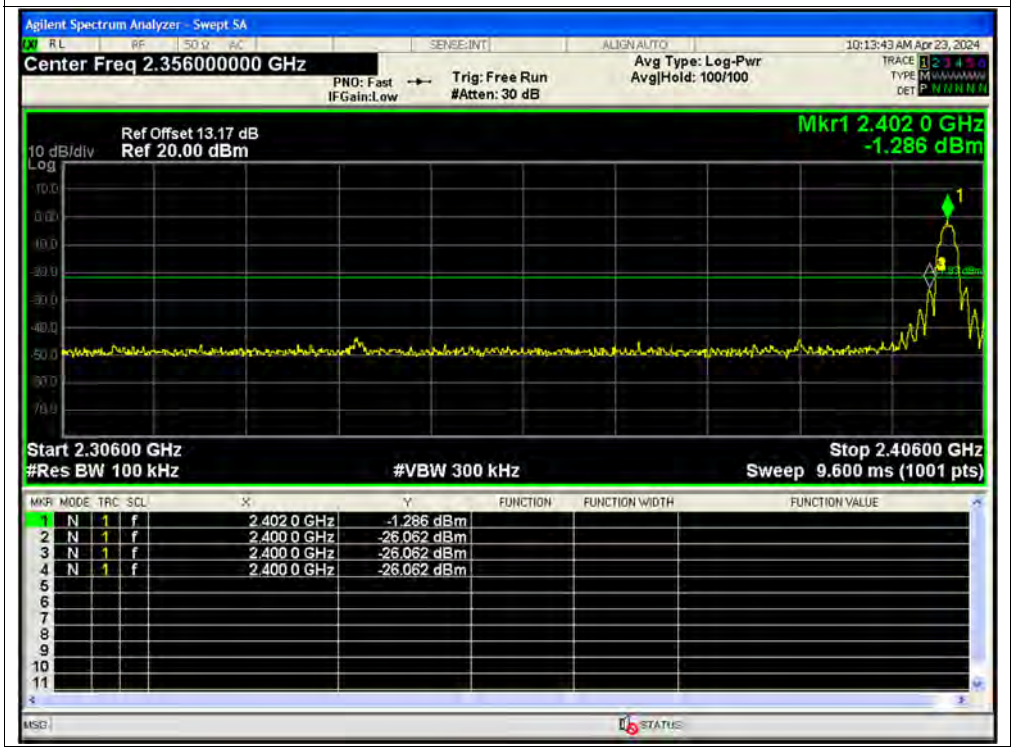
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



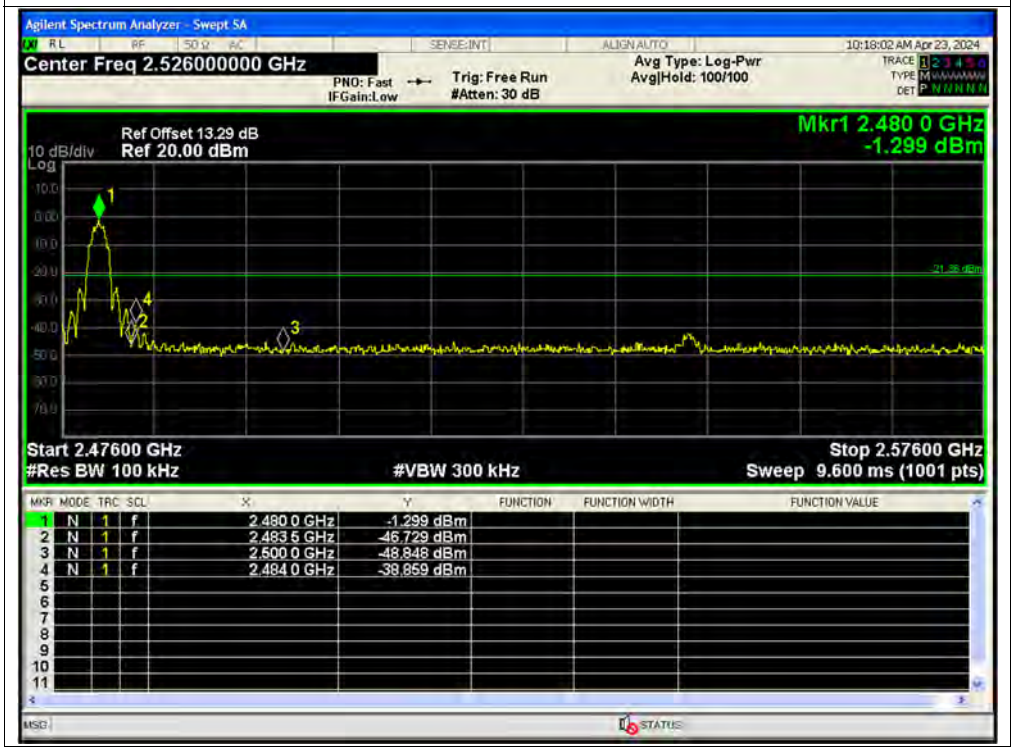
Band Edge NVNT BLE 2M 2402MHz Ant1 Ref

Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



Band Edge NVNT BLE 2M 2480MHz Ant1 Ref

Band Edge NVNT BLE 2M 2480MHz Ant1 Emission



## A.7. Power Spectral Density

| Condition | Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm/3kHz) | Duty Factor (dB) | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | -9.11 | 0 | -9.11 | 8 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | -11.12 | 0 | -11.12 | 8 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | -9.59 | 0 | -9.59 | 8 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | -13.09 | 0 | -13.09 | 8 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | -12.83 | 0 | -12.83 | 8 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | -12.79 | 0 | -12.79 | 8 | Pass |

Test Graphs

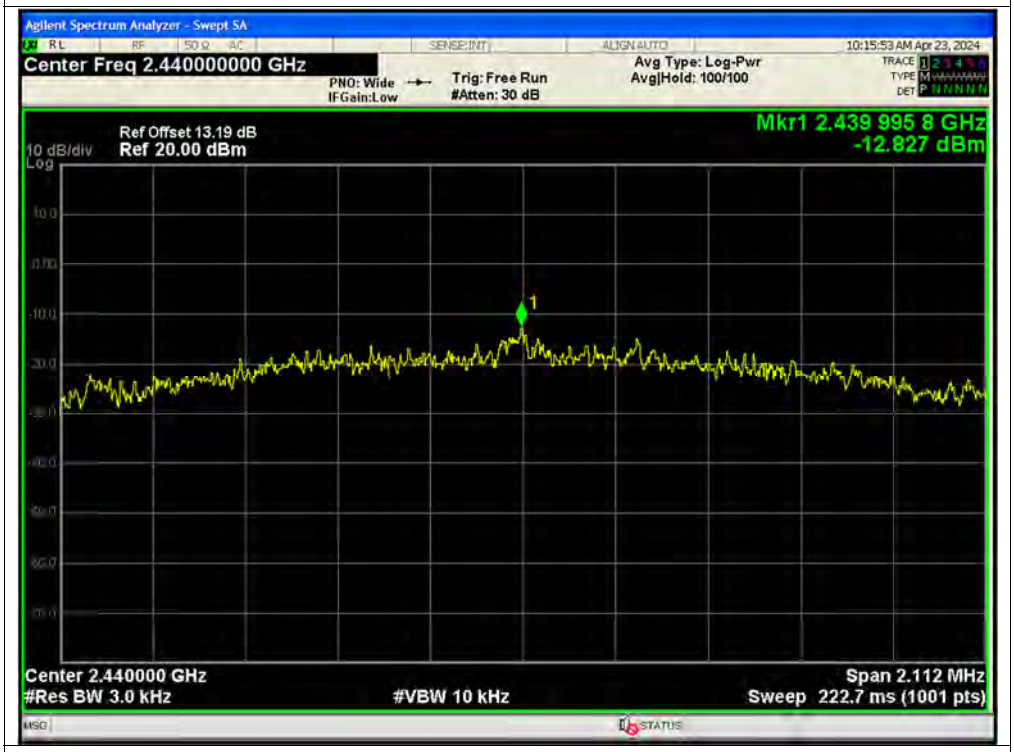
PSD NVNT BLE 1M 2402MHz Ant1

PSD NVNT BLE 1M 2440MHz Ant1

PSD NVNT BLE 1M 2480MHz Ant1

PSD NVNT BLE 2M 2402MHz Ant1

PSD NVNT BLE 2M 2440MHz Ant1




PSD NVNT BLE 2M 2480MHz Ant1

## A.8. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

**Note:** Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

**A. Test Setup:**

Test Mode: EUT + PC + PC Adapter + BT TX

Test voltage: AC 120V/60Hz

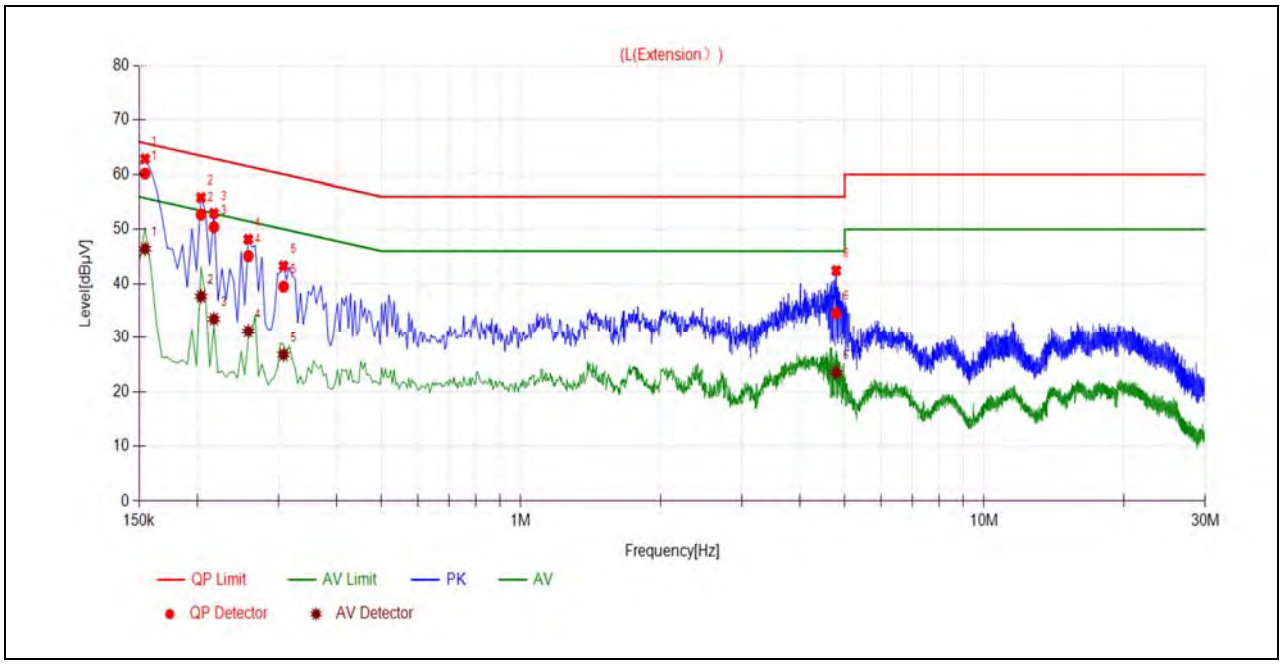
The measurement results are obtained as below:

E [dBμV] $=U_R + L_{Cable\ loss}$ [dB] + $A_{Factor}$

$U_R$: Receiver Reading

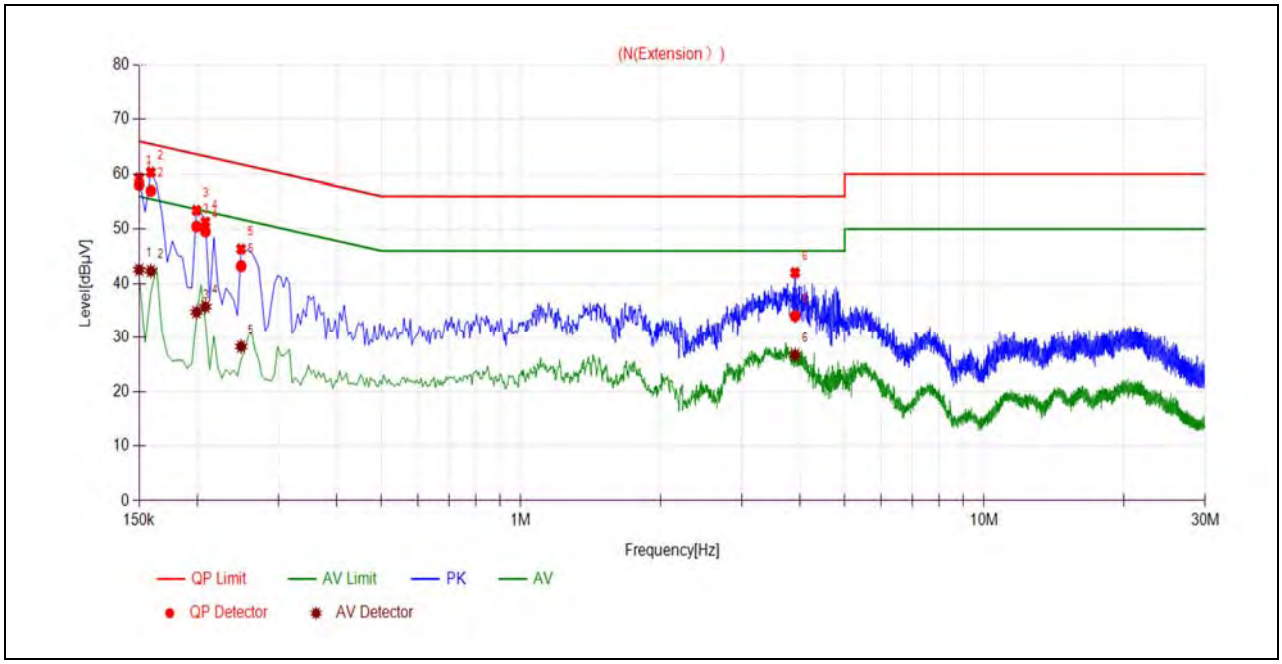
$A_{Factor}$: Voltage division factor of LISN

**B. Test Plot:**




(L Phase)

| No. | Fre. (MHz) | Emission Level (dBμV) | | Limit (dBμV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1545 | 60.16 | 46.42 | 65.75 | 55.75 | Line | PASS |
| 2 | 0.2040 | 52.73 | 37.68 | 63.45 | 53.45 | | PASS |
| 3 | 0.2175 | 50.42 | 33.48 | 62.91 | 52.91 | | PASS |
| 4 | 0.2580 | 45.07 | 31.19 | 61.50 | 51.50 | | PASS |
| 5 | 0.3075 | 39.46 | 26.78 | 60.04 | 50.04 | | PASS |
| 6 | 4.7941 | 34.54 | 23.50 | 56.00 | 46.00 | | PASS |




(N Phase)

| No. | Fre. (MHz) | Emission Level (dBμV) | | Limit (dBμV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1500 | 58.11 | 42.56 | 66.00 | 56.00 | Neutral | PASS |
| 2 | 0.1590 | 57.00 | 42.31 | 65.52 | 55.52 | | PASS |
| 3 | 0.1995 | 50.48 | 34.77 | 63.63 | 53.63 | | PASS |
| 4 | 0.2085 | 49.57 | 35.77 | 63.26 | 53.26 | | PASS |
| 5 | 0.2490 | 43.22 | 28.29 | 61.79 | 51.79 | | PASS |
| 6 | 3.9072 | 34.06 | 26.73 | 56.00 | 46.00 | | PASS |

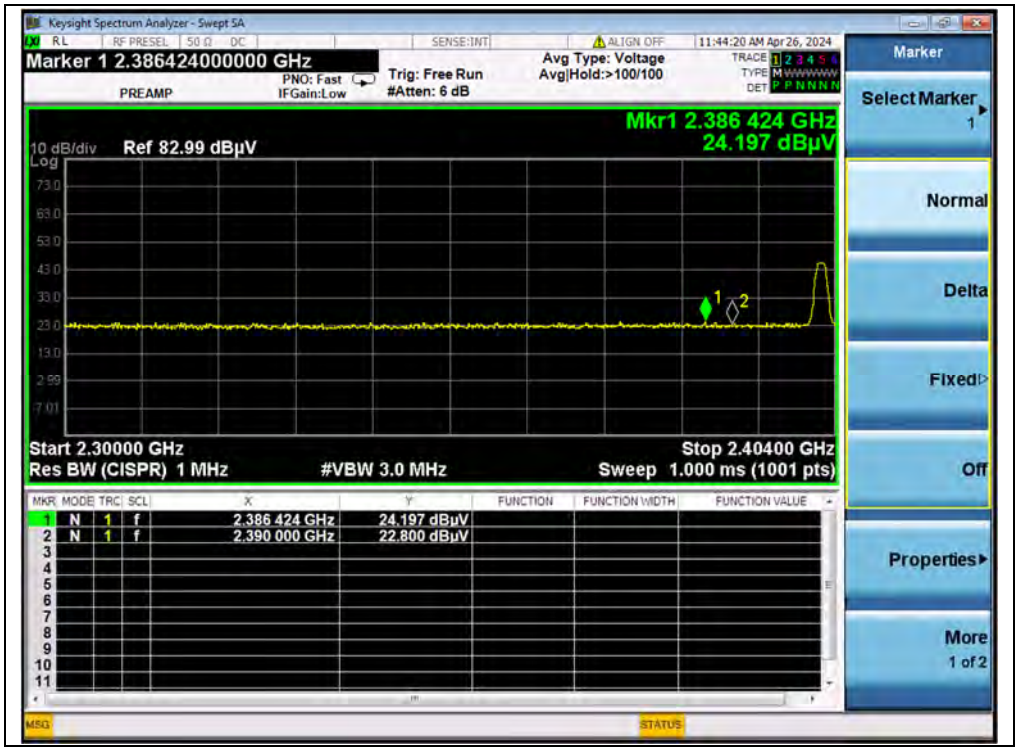
## A.9. Restricted Frequency Bands

The lowest and highest channels are tested to verify the Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]-$G_{preamp}$ [dB]
$A_T$: Total correction Factor except Antenna
$U_R$: Receiver Reading
$G_{preamp}$: Preamplifier Gain
$A_{Factor}$: Antenna Factor at 3m

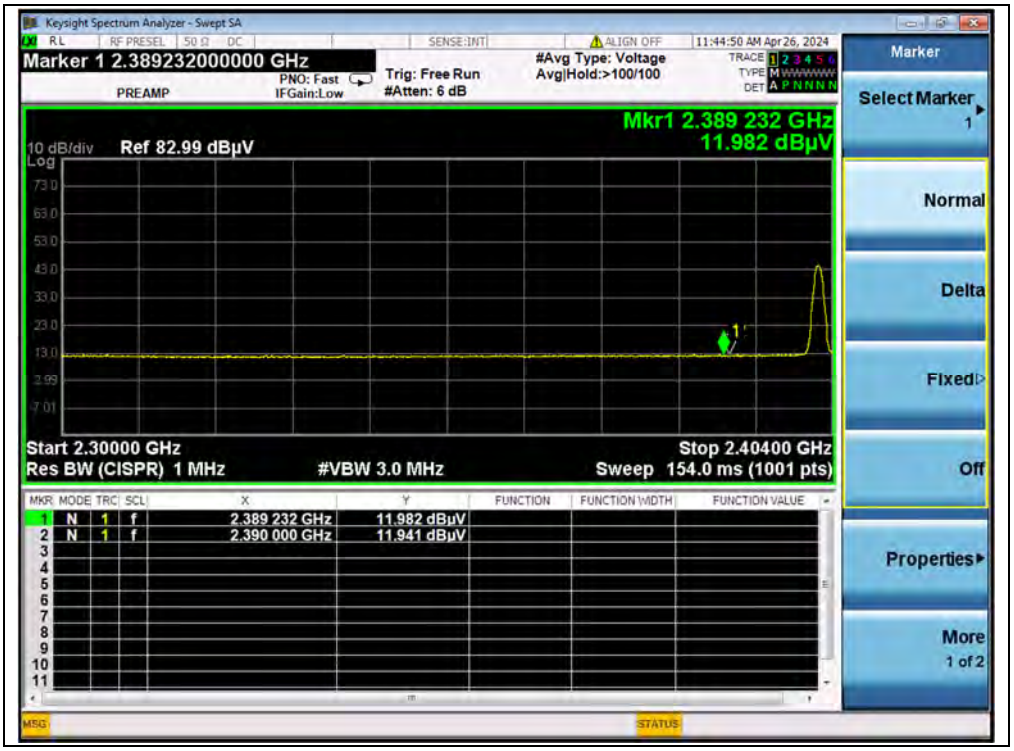
Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

**1Mbps**

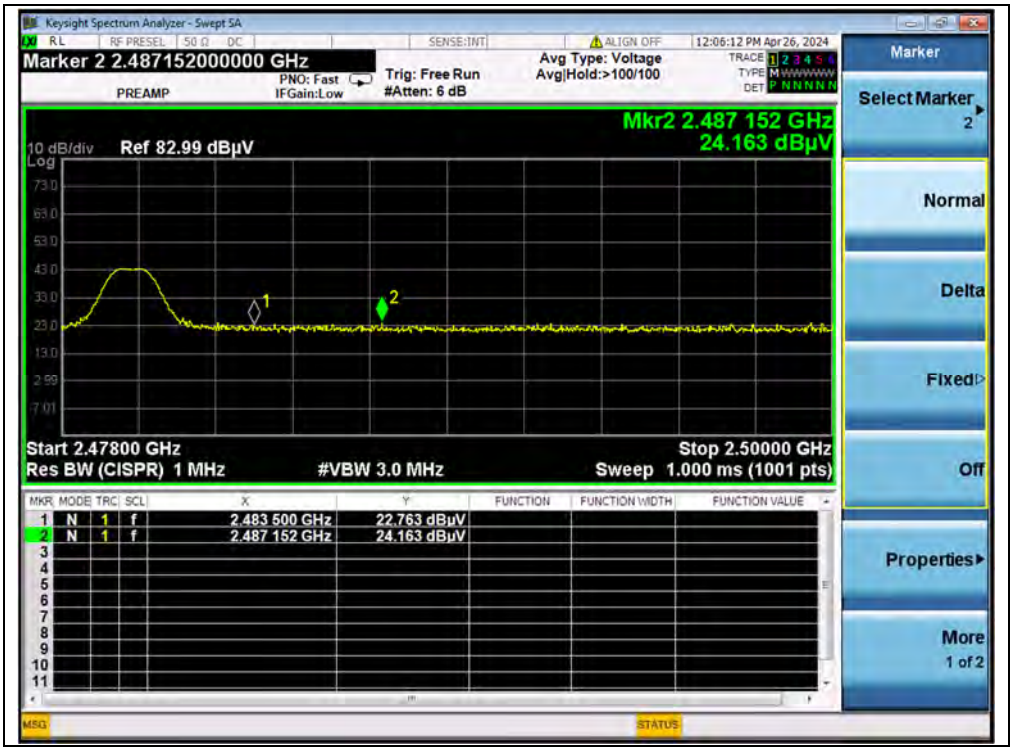
| Channel | Frequency (MHz) | Detector PK/ AV | Receiver Reading $U_R$ (dBμV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| 0 | 2386.42 | PK | 24.20 | 6.74 | 27.20 | 58.14 | 74 | PASS |
| 0 | 2389.23 | AV | 11.98 | 6.74 | 27.20 | 45.92 | 54 | PASS |
| 39 | 2487.15 | PK | 24.16 | 6.74 | 27.20 | 58.10 | 74 | PASS |
| 39 | 2487.59 | AV | 14.24 | 6.74 | 27.20 | 48.18 | 54 | PASS |



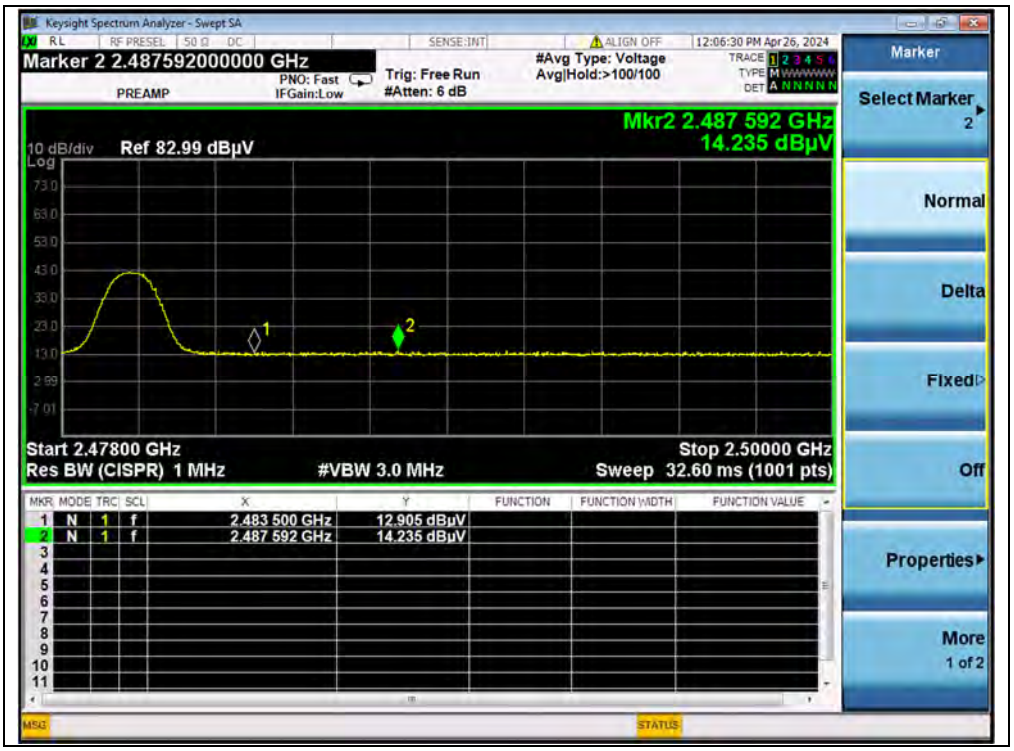

(PEAK, Channel 0)




(AVERAGE, Channel 0)



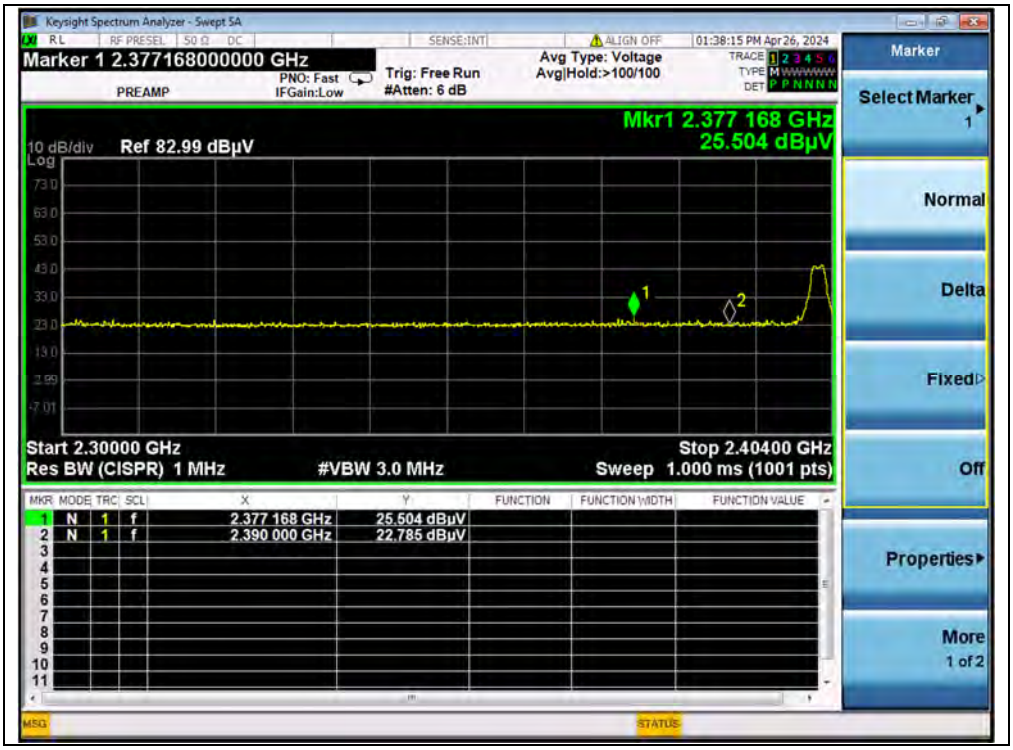

(PEAK, Channel 39)



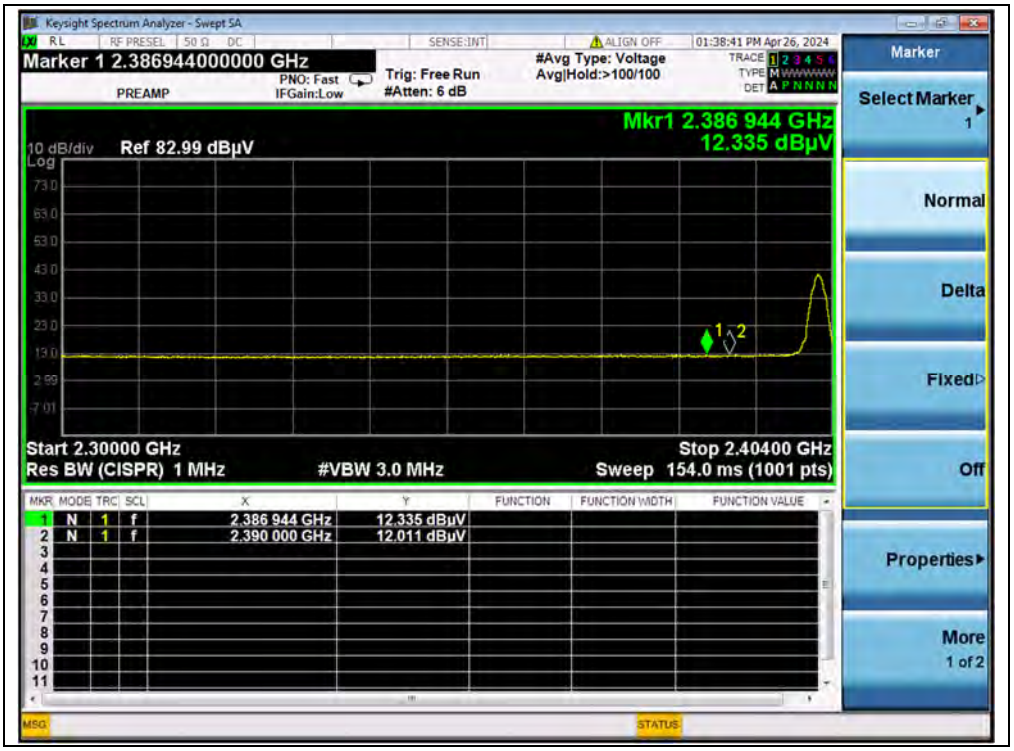

(AVERAGE, Channel 39)

**2Mbps**

| Channel | Frequency (MHz) | Detector PK/ AV | Receiver Reading $U_R$ (dBμV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| 0 | 2377.17 | PK | 25.50 | 6.74 | 27.20 | 59.44 | 74 | PASS |
| 0 | 2386.94 | AV | 12.34 | 6.74 | 27.20 | 46.28 | 54 | PASS |
| 39 | 2490.30 | PK | 24.38 | 6.74 | 27.20 | 58.32 | 74 | PASS |
| 39 | 2485.74 | AV | 14.14 | 6.74 | 27.20 | 48.08 | 54 | PASS |

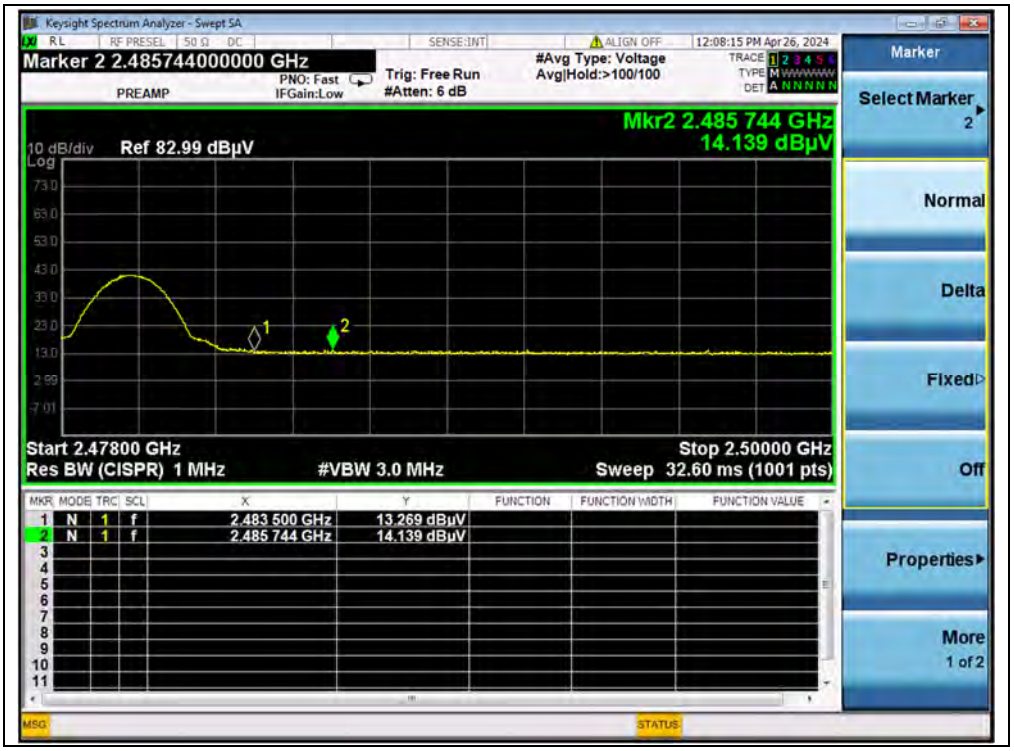



(PEAK, Channel 0)




(AVERAGE, Channel 0)

(PEAK, Channel 39)




(AVERAGE, Channel 39)

## A.10. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

$A_T$: Total correction Factor except Antenna

$U_R$: Receiver Reading

$G_{preamp}$: Preamplifier Gain

$A_{Factor}$: Antenna Factor at 3m

During the test, the total correction Factor $A_T$ and $A_{Factor}$ were built in test software.

**Note1:** All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

**Note2:** For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

**Note3:** For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

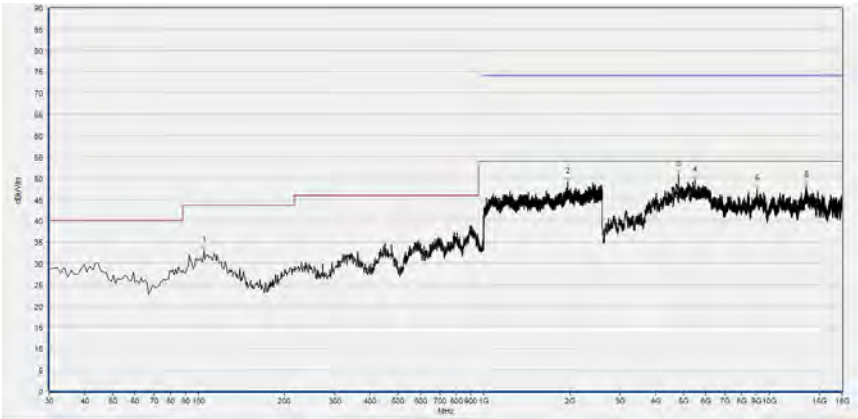
Field strength of fundamental:

| Frequency (MHz) | Reading_Peak (dBμV/m) | Antenna Factor (dB) | Path Loss (dB) | Final_Peak (dBμV/m) | Antenna Polarity |
|---|---|---|---|---|---|
| 2401.84 | 45.47 | 27.20 | 6.74 | 79.41 | Horizontal |

The field strength (the lowest) of fundamenta is more than 20dB higher than the unwanted emissions, in accordance with FCC part 15.215(b).

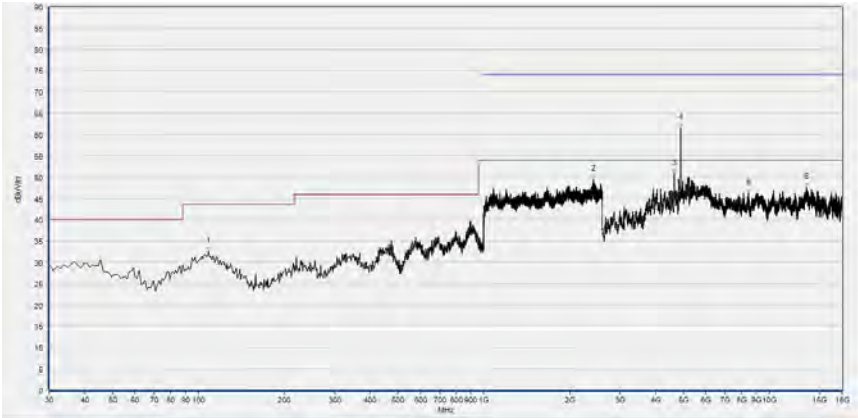
**1Mbps**

Plot for Channel 0



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 104.690 | 32.96 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 1966.400 | 49.07 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4802.200 | 50.72 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 5476.720 | 49.36 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 9080.320 | 47.46 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 13506.280 | 48.26 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

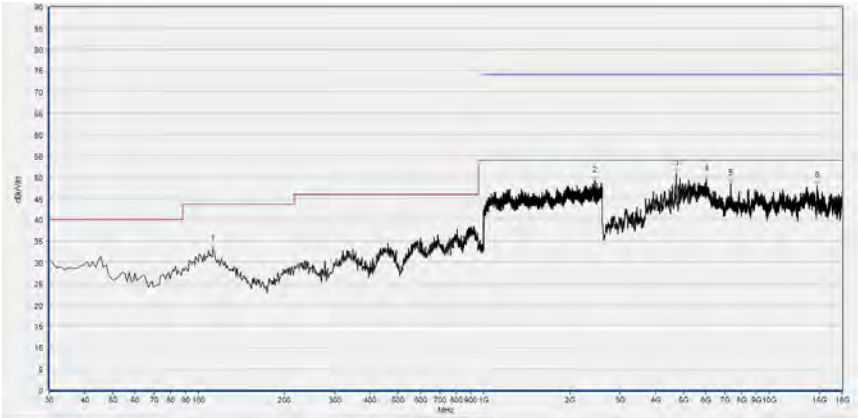
(Antenna Horizontal, 30MHz to 18GHz)



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 108.570 | 32.47 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2419.733 | 49.42 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4642.040 | 50.76 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4891.520 | 61.56 | N/A | 35.67 | 74.00 | N/A | 54.00 | Vertical | PASS |
| 8445.840 | 46.32 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 13469.320 | 47.61 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

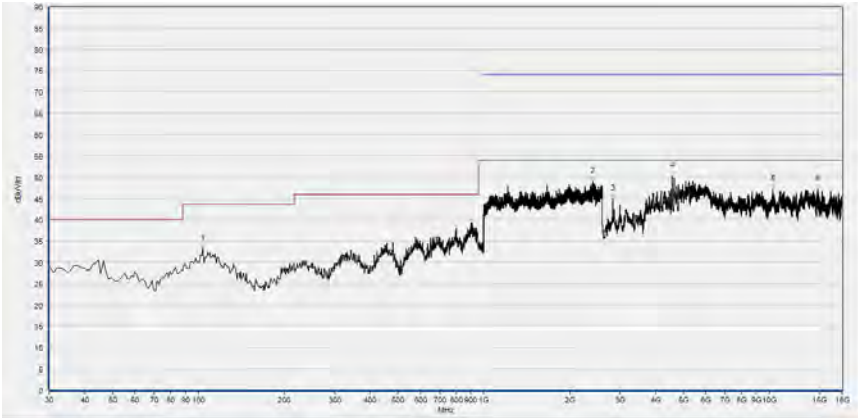
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 19



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 112.450 | 33.26 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 2449.067 | 49.09 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4731.360 | 50.72 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 6031.120 | 49.38 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7318.560 | 48.43 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 14744.440 | 47.94 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

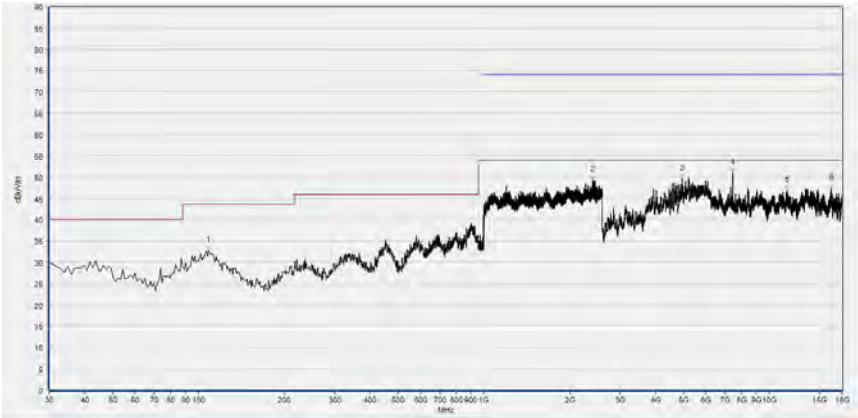
(Antenna Horizontal, 30MHz to 18GHz)



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 103.720 | 33.20 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2410.667 | 48.97 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 2827.920 | 44.91 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4574.280 | 50.33 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 10272.280 | 47.03 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 14772.160 | 47.15 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

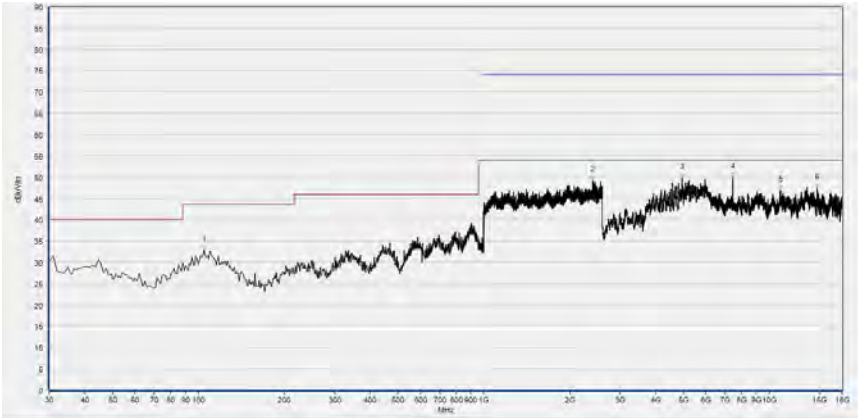
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 39



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 108.570 | 32.61 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 2404.267 | 49.29 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4959.280 | 49.55 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7438.680 | 50.90 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 11535.080 | 46.89 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 16466.160 | 47.40 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

(Antenna Horizontal, 30MHz to 18GHz)

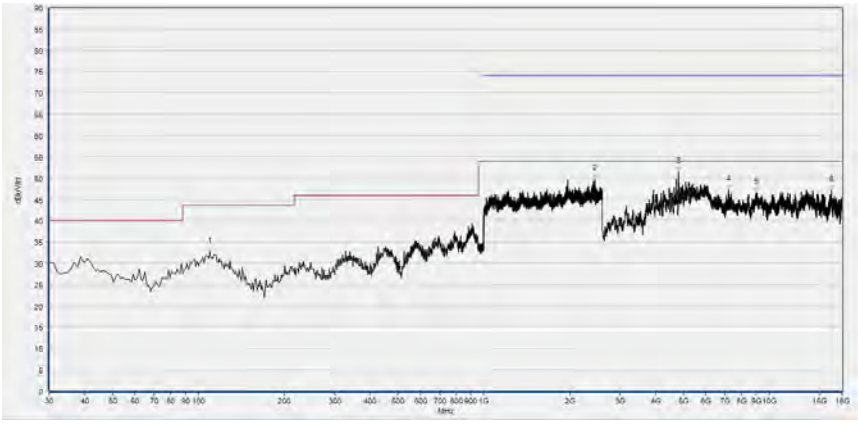


| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 104.690 | 32.84 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2413.333 | 49.34 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4959.280 | 49.82 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 7438.680 | 49.94 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 10980.680 | 46.96 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 14744.440 | 47.40 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

(Antenna Vertical, 30MHz to 18GHz)

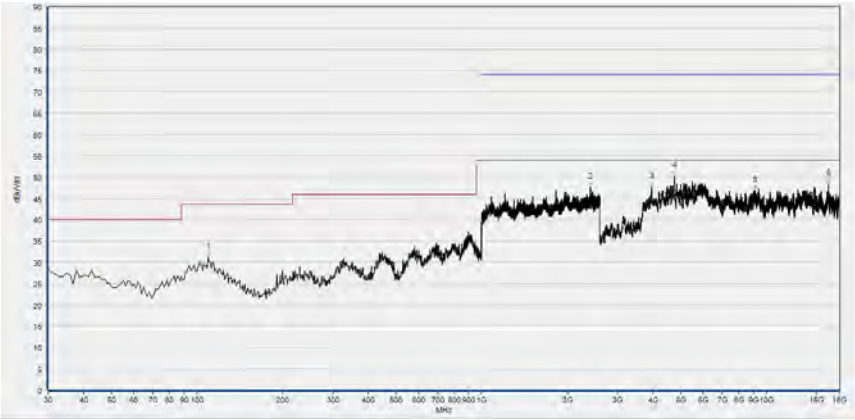
**2Mbps**

Plot for Channel 0



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 109.540 | 32.74 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 2456.533 | 49.81 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4805.280 | 51.50 | N/A | 42.82 | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7204.600 | 47.26 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 9015.640 | 46.60 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 16466.160 | 47.06 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

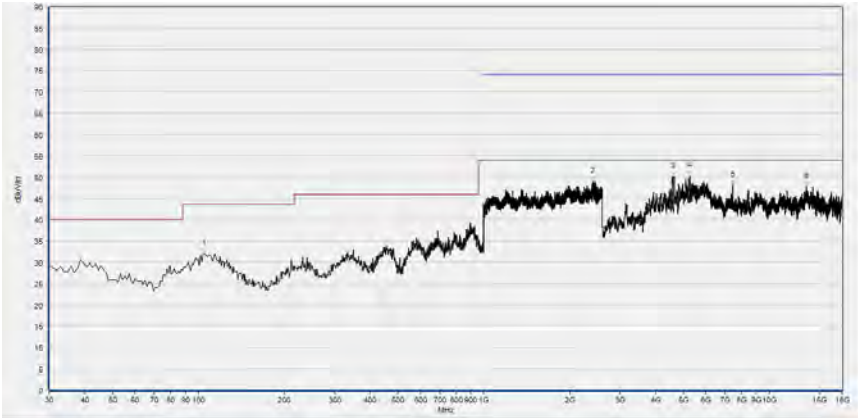
(Antenna Horizontal, 30MHz to 18GHz)



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 109.540 | 31.20 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2412.267 | 47.62 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 3949.040 | 47.73 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4752.920 | 50.24 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 9120.360 | 46.96 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 16478.480 | 48.29 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

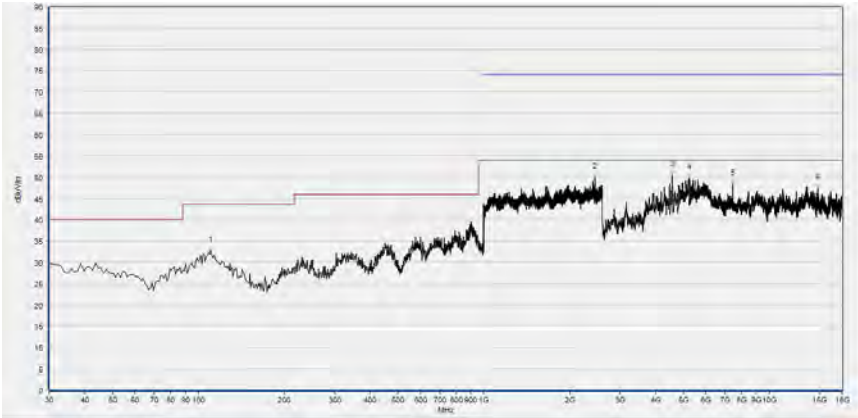
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 19



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 104.690 | 32.09 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 2408.533 | 48.92 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4580.440 | 50.10 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 5285.760 | 50.20 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7441.760 | 48.06 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 13484.720 | 47.75 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

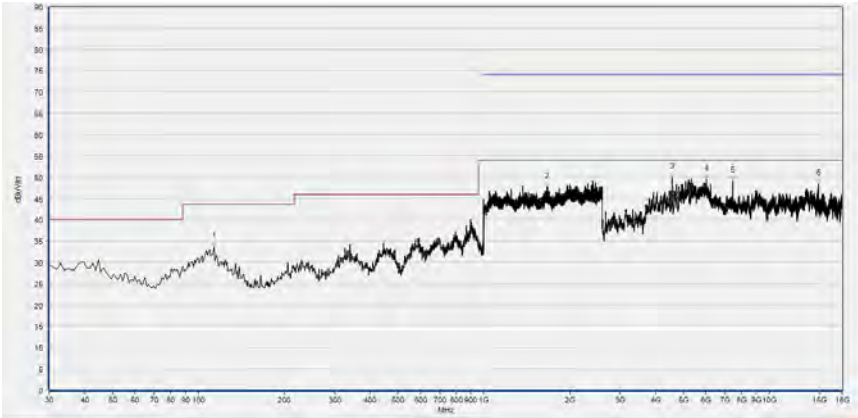
(Antenna Horizontal, 30MHz to 18GHz)



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 110.510 | 32.70 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2451.733 | 49.89 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4574.280 | 50.44 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 5233.400 | 49.73 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 7438.680 | 48.39 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 14762.920 | 47.45 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

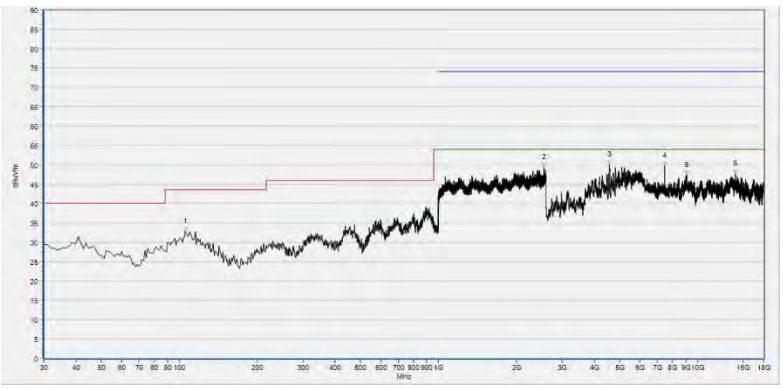
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 39



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 113.420 | 33.65 | N/A | N/A | N/A | 43.50 | N/A | Horizontal | PASS |
| 1664.000 | 47.77 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 4574.280 | 49.88 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 6015.720 | 49.37 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 7438.680 | 49.03 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |
| 14839.920 | 48.37 | N/A | N/A | 74.00 | N/A | 54.00 | Horizontal | PASS |

(Antenna Horizontal, 30MHz to 18GHz)



| Fre. (MHz) | PK (dBμV/m) | QP (dBμV/m) | AV (dBμV/m) | Limit-PK (dBμV/m) | Limit-QP (dBμV/m) | Limit-AV (dBμV/m) | Antenna | Verdict |
|---|---|---|---|---|---|---|---|---|
| 105.660 | 32.84 | N/A | N/A | N/A | 43.50 | N/A | Vertical | PASS |
| 2544.533 | 49.41 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 4574.280 | 50.11 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 7441.760 | 49.81 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 9071.080 | 47.46 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |
| 13952.880 | 47.75 | N/A | N/A | 74.00 | N/A | 54.00 | Vertical | PASS |

(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT