

# RF TEST REPORT

**Applicant**      Positec Technology (China) Co., Ltd.

**FCC ID**          2ASC3RBT202504

**Product**        Robotic Lawnmower

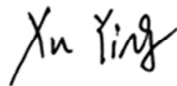
**Brand**            WORX

**Model**            WR341; WR342

**Report No.**      EFTA25100027-IE-05-R5

**Issue Date**      December 29, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2025)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.



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## Summary of Measurement Results

| Number                                                                                                                                                                                                                                                                                         | Test Case                       | Clause in FCC rules       | Verdict |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------|---------|
| 1                                                                                                                                                                                                                                                                                              | Maximum output power            | 15.247(b)(3)              | PASS    |
| 2                                                                                                                                                                                                                                                                                              | 99% Bandwidth and 6dB Bandwidth | 15.247(a)(2)              | PASS    |
| 3                                                                                                                                                                                                                                                                                              | Power spectral density          | 15.247(e)                 | PASS    |
| 4                                                                                                                                                                                                                                                                                              | Band Edge                       | 15.247(d)                 | PASS    |
| 5                                                                                                                                                                                                                                                                                              | Spurious RF Conducted Emissions | 15.247(d)                 | PASS    |
| 6                                                                                                                                                                                                                                                                                              | Unwanted Emissions              | 15.247(d), 15.205, 15.209 | PASS    |
| 7                                                                                                                                                                                                                                                                                              | Conducted Emissions             | 15.207                    | PASS    |
| Date of Testing: (Original) November 3, 2025 ~November 12, 2025<br>(Variant) December 5, 2025 ~ December 9, 2025<br>Date of Sample Received: (Original) October 10, 2025<br>(Variant) October 10, 2025                                                                                         |                                 |                           |         |
| Note: All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. |                                 |                           |         |

**WR341; WR342 (Report No.: EFTA25100027-IE-05-R5) is a variant model of KR282; KR284; KR286 (Report No.: EFTA25100027-IE-05-R1).**

**The differences between variant and original is as below:**

| Description |                | FCC ID         | IC              | Structural appearance | Button              | 4G Module | GNSS             | Adapter | Battery |
|-------------|----------------|----------------|-----------------|-----------------------|---------------------|-----------|------------------|---------|---------|
| KR282       | Configuration1 | 2ASC3RBT202502 | 24992-RBT202502 | Appearance 1          | Film coated buttons | Y         | UM960E           | KA3733  | KA3006  |
| KR284       | Configuration1 | 2ASC3RBT202502 | 24992-RBT202502 |                       |                     | Y         | UM960E           | KA3725  | KA3006  |
| KR286       | Configuration1 | 2ASC3RBT202502 | 24992-RBT202502 |                       |                     | Y         | UM960E           | KA3727  | KA3010  |
| WR341       | Configuration2 | 2ASC3RBT202504 | 24992-RBT202504 | Appearance 2          | Touch buttons       | N         | UM960E or LG290P | WA3752  | WA3674  |
| WR342       | Configuration2 | 2ASC3RBT202504 | 24992-RBT202504 |                       |                     | N         | UM960E or LG290P | WA3752  | WA3675  |

**The detailed product change description please refers to the *Difference Declaration Letter*.**

Tested Cases refer to the following table:

| Test Case                           | Original | Variant                                 |
|-------------------------------------|----------|-----------------------------------------|
| Maximum output power                | Pass     | Only tested with worst case of Original |
| 99% Bandwidth and 6dB Bandwidth     | Pass     | Only tested with worst case of Original |
| Power spectral density              | Pass     | Only tested with worst case of Original |
| Band Edge                           | Pass     | Only tested with worst case of Original |
| Spurious RF Conducted Emissions     | Pass     | Only tested with worst case of Original |
| Unwanted Emissions                  | Pass     | Only tested with worst case of Original |
| Conducted Emissions                 | Pass     | Full Test                               |
| Note: This report only tests WR341. |          |                                         |

## 1. Test Laboratory

### 1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

### 1.2. Test Facility

#### **FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

#### **A2LA (Certificate Number: 3857.01)**

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

### 1.3. Testing Location

Company: Eurofins TA Technology (Shanghai) Co., Ltd.  
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## 2. General Description of Equipment Under Test

### 2.1. Applicant and Manufacturer Information

|                      |                                                                      |
|----------------------|----------------------------------------------------------------------|
| Applicant            | Positec Technology (China) Co., Ltd.                                 |
| Applicant address    | 18, Dongwang Road, Suzhou Industrial Park, Jiangsu 215123, P.R.China |
| Manufacturer         | Positec Technology (China) Co., Ltd.                                 |
| Manufacturer address | 18, Dongwang Road, Suzhou Industrial Park, Jiangsu 215123, P.R.China |

### 2.2. General Information

| EUT Description              |                                                                                                                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Model                        | WR341; WR342                                                                                                       |
| Lab internal SN              | Original: 251011-17-001<br>Variant: 251011-17-012                                                                  |
| Hardware Version             | PLS103.2.10                                                                                                        |
| Software Version             | 2.4.4+1                                                                                                            |
| Power Supply                 | Battery / AC adapter                                                                                               |
| Antenna Type                 | Internal Antenna                                                                                                   |
| Antenna Connector            | A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)                                |
| Antenna Gain                 | 4.50 dBi                                                                                                           |
| Additional Beamforming Gain  | NA                                                                                                                 |
| Operating Frequency Range(s) | 802.11b/g/n(HT20)/ax(HE20): 2412 ~ 2462 MHz<br>802.11n(HT40): 2422 ~ 2452 MHz<br>Bluetooth LE V5.0: 2402 ~2480 MHz |
| Modulation Type              | 802.11b: DSSS<br>802.11g/n: OFDM<br>802.11ax SU: OFDMA<br>Bluetooth LE: GFSK                                       |
| Max. Output Power            | Wi-Fi 2.4GHz: 20.28 dBm<br>Bluetooth LE: 5.95 dBm                                                                  |
| Operating voltage range      | 15 Vdc to 21 Vdc                                                                                                   |
| State voltage                | 18.5 Vdc                                                                                                           |
| EUT Accessory                |                                                                                                                    |
| Adapter 1                    | Manufacturer: Positec Technology (China) Co., Ltd.<br>Model: WA3752                                                |
| Battery 1                    | Manufacturer: Positec Technology (China) Co., Ltd.<br>Model: WA3675                                                |

Battery 2

Manufacturer: Positec Technology (China) Co., Ltd.

Model: WA3674

Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.

### 3. Applied Standards

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

**Test standards:**

**FCC CFR47 Part 15C (2025) Radio Frequency Devices**

**ANSI C63.10-2020**

**Reference standard:**

**KDB 558074 D01 15.247 Meas Guidance v05r02**

## 4. Test Configuration

### Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

**The test software is used adb PowerShell.**

Worst-case data rates are shown as following table.

| Test Mode              | Data Rate    |
|------------------------|--------------|
| Bluetooth (Low Energy) | 1Mbps; 2Mbps |
| 802.11b                | 1 Mbps       |
| 802.11g                | 6 Mbps       |
| 802.11n HT20           | MCS0         |
| 802.11n HT40           | MCS0         |
| 802.11ax HE20          | MCS0         |

## 5. Test Case

### 5.1. Maximum output power

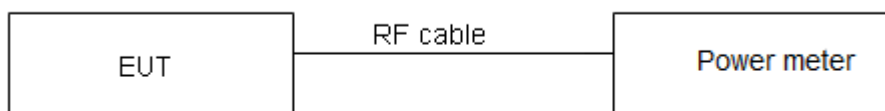
#### Ambient Condition

| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

#### Methods of Measurement

During the process of the testing, The EUT was connected to Power meter with a known loss. The EUT is max power transmission with proper modulation.

#### Test Setup



#### Limits

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz: 1 Watt."

| Average Output Power | $\leq 1\text{W (30dBm)}$ |
|----------------------|--------------------------|
|----------------------|--------------------------|

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.44$  dB.

## 5.2. 99% Bandwidth and 6dB Bandwidth

### Ambient Condition

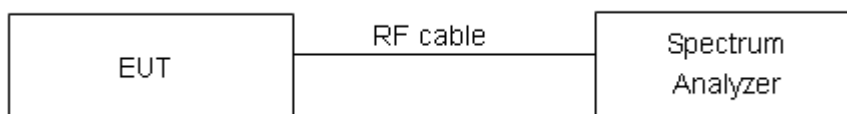
| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer. Detector=Peak, Trace mode=max hold.

The EUT was connected to the spectrum analyzer through a known loss cable. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value.

### Test Setup



### Limits

Rule Part 15.247 (a) (2) specifies that "Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz."

|                        |           |
|------------------------|-----------|
| minimum 6 dB bandwidth | ≥ 500 kHz |
|------------------------|-----------|

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

### 5.3. Band Edge

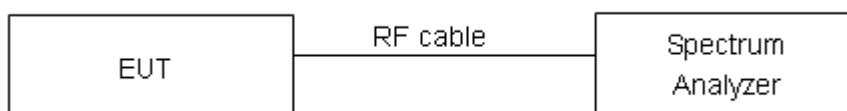
#### Ambient Condition

| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

#### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

#### Test Setup



#### Limits

Rule Part 15.247(d) specifies that “In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.” If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.”

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

| Frequency | Uncertainty |
|-----------|-------------|
| 2GHz-3GHz | 1.407 dB    |

## 5.4. Power Spectral Density

### Ambient Condition

| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

### Method of Measurement

During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation.

Method AVGPS-1 was used for this test.

- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to:  $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- Set VBW  $\geq [3 \times \text{RBW}]$
- Detector=power averaging (rms) or sample detector (when rms not available)
- Ensure that the number of measurement points in the sweep  $\geq [2 \times \text{span}/\text{RBW}]$
- Sweep time auto couple
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level.
- If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

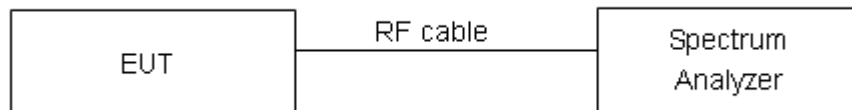
Method AVGPS-2 was used for this test.

- Measure the duty cycle (D) of the transmitter output signal as described in 11.6
- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to:  $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- Set VBW  $\geq [3 \times \text{RBW}]$
- Detector= power averaging (rms) or sample detector (when rms not available)
- Ensure that the number of measurement points in the sweep  $\geq [2 \times \text{span}/\text{RBW}]$
- Sweep time =auto couple
- Do not use sweep triggering; allow sweep to "free run"
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level

l) Add  $[10 \log(1/D)]$ , where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time

m) If measured value exceeds requirement specified by regulatory agency then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

### Test setup



### Limits

Rule Part 15.247(e) specifies that "For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. "

|        |                                    |
|--------|------------------------------------|
| Limits | $\leq 8 \text{ dBm} / 3\text{kHz}$ |
|--------|------------------------------------|

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.75\text{dB}$ .

## 5.5. Spurious RF Conducted Emissions

### Ambient Condition

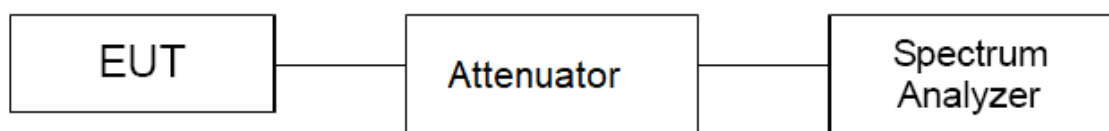
| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

### Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to 100 kHz and VBW to 300 kHz, Sweep is set to AUTO.

The test is in transmitting mode.

### Test Setup



### Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. ”

### Original

| Test Mode       | Carrier frequency (MHz) | Reference value (dBm) | Limit  |
|-----------------|-------------------------|-----------------------|--------|
| 802.11b         | 2412                    | 11.19                 | -18.81 |
|                 | 2437                    | 10.91                 | -19.09 |
|                 | 2462                    | 11.37                 | -18.63 |
| 802.11g         | 2412                    | 4.58                  | -25.42 |
|                 | 2437                    | 4.51                  | -25.49 |
|                 | 2462                    | 3.75                  | -26.25 |
| 802.11n<br>HT20 | 2412                    | 3.82                  | -26.18 |
|                 | 2437                    | 3.76                  | -26.24 |

|                                   |      |      |        |
|-----------------------------------|------|------|--------|
|                                   | 2462 | 4.20 | -25.80 |
| 802.11n<br>HT40                   | 2422 | 1.29 | -28.71 |
|                                   | 2437 | 1.49 | -28.51 |
|                                   | 2452 | 1.54 | -28.46 |
|                                   |      |      |        |
| 802.11ax<br>HE20                  | 2412 | 3.30 | -26.70 |
|                                   | 2437 | 2.39 | -27.61 |
|                                   | 2462 | 3.75 | -26.25 |
|                                   |      |      |        |
| Bluetooth<br>(Low Energy)<br>(1M) | 2402 | 5.84 | -24.16 |
|                                   | 2440 | 4.46 | -25.54 |
|                                   | 2480 | 4.67 | -25.33 |
|                                   |      |      |        |
| Bluetooth<br>(Low Energy)<br>(2M) | 2402 | 5.40 | -24.60 |
|                                   | 2440 | 4.87 | -25.13 |
|                                   | 2480 | 4.34 | -25.66 |
|                                   |      |      |        |

#### Variant

| Test Mode | Carrier frequency<br>(MHz) | Reference value (dBm) | Limit  |
|-----------|----------------------------|-----------------------|--------|
| 802.11b   | 2462                       | 11.39                 | -18.61 |
| Bluetooth | 2402                       | 3.96                  | -26.04 |

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

| Frequency   | Uncertainty |
|-------------|-------------|
| 100kHz-2GHz | 0.684 dB    |
| 2GHz-26GHz  | 1.407 dB    |

## 5.6. Unwanted Emission

### Ambient Condition

| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

### Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10.

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m/10m below 1GHz, 3m above 1GHz between the EUT and the receiving antenna.

The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. Sweep the Restricted Band and the emissions less than 20 dB below the permissible value are reported.

The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

This method refer to ANSI C63.10.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:

Set the spectrum analyzer in the following:

9kHz~150 kHz

RBW=200Hz, VBW=1kHz/ Sweep=AUTO

150 kHz~30MHz

RBW=9kHz, VBW=30kHz,/ Sweep=AUTO

Below 1GHz

RBW=100kHz / VBW=300kHz / Sweep=AUTO

a) Peak emission levels are measured by setting the instrument as follows:

Above 1GHz

PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

b) Average emission levels are measured by setting the instrument as follows:

Above 1GHz

AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

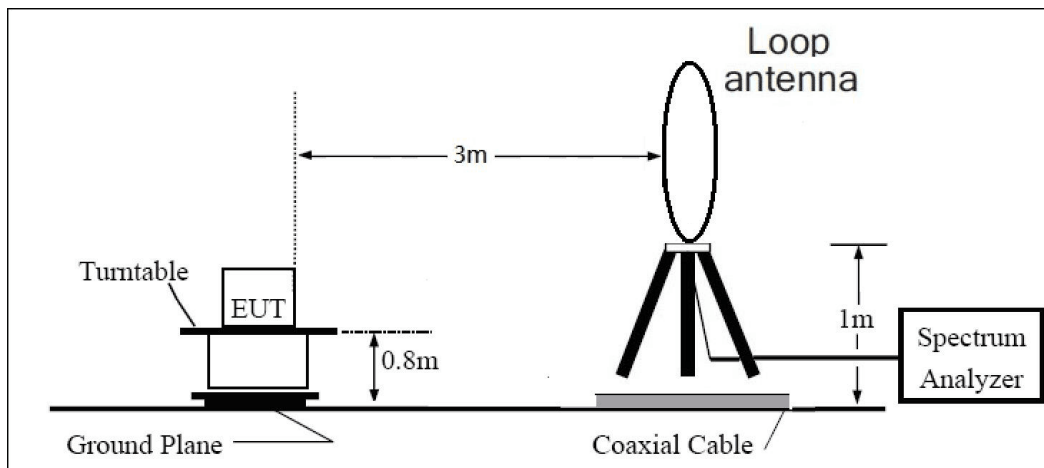
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)

- e) Sweep time = auto.
- f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of  $1 / D$ , where  $D$  is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
- g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
- 1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is  $[10 \log (1 / D)]$ , where  $D$  is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.
  - 2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is  $[20 \log (1 / D)]$ , where  $D$  is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.
  - 3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

The test is in transmitting mode.

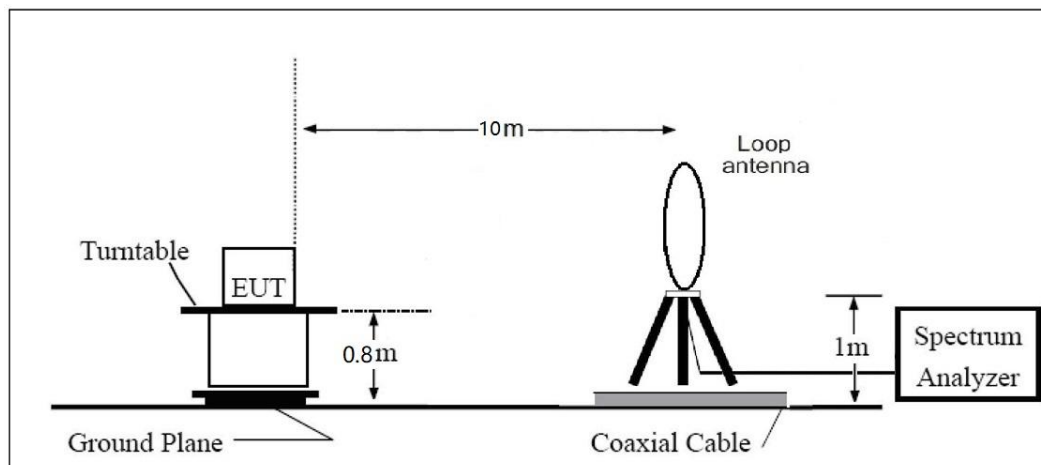
# Test Setup

9kHz~ 30MHz



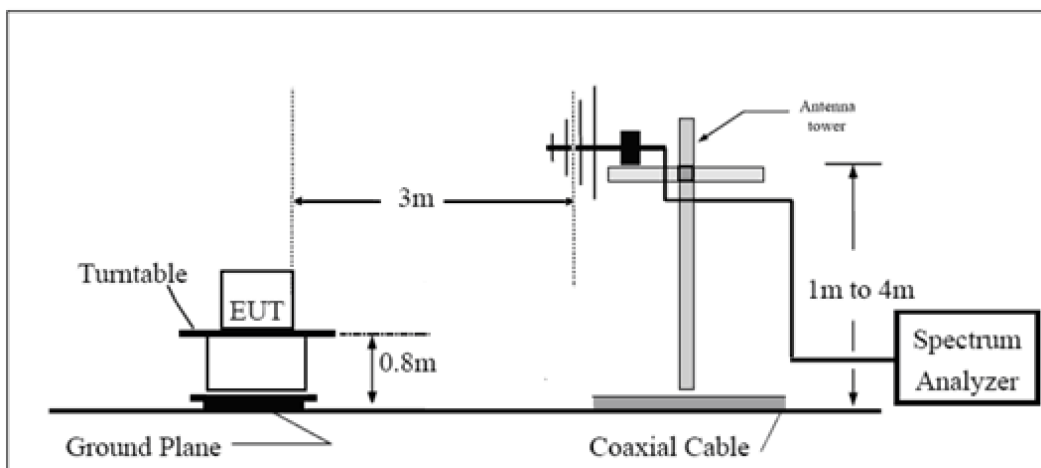
Note: Area side:2.4mX3.6m

## Distance 10m



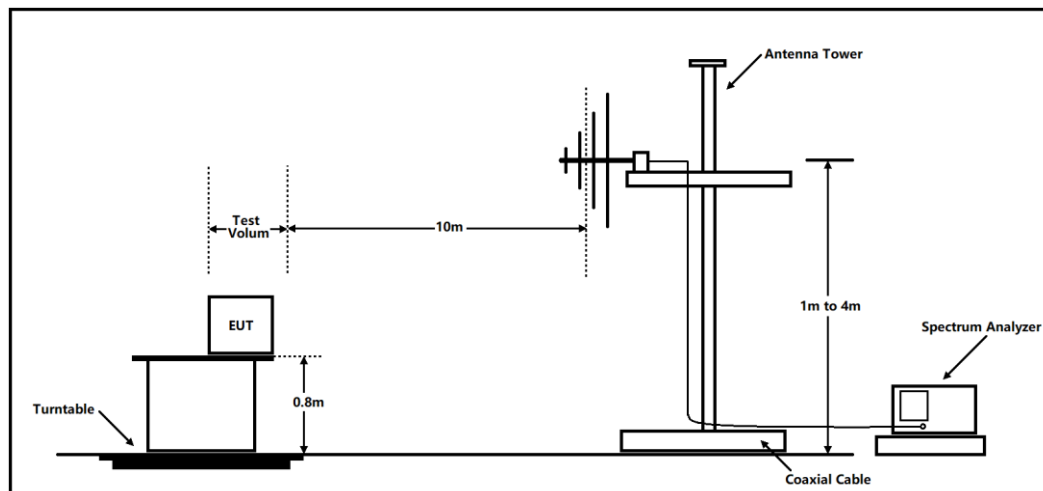
Note: Area side: 21m x 12m

30MHz~ 1GHz



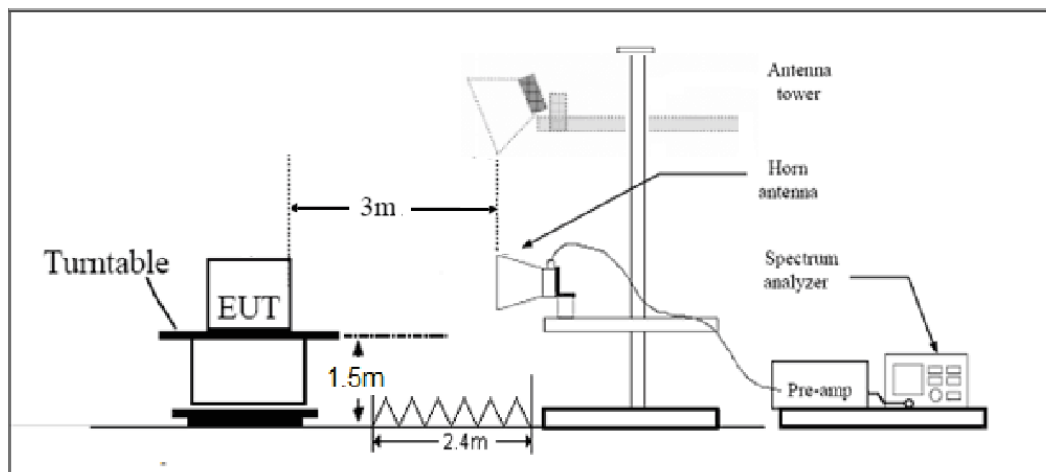
Note: Area side:2.4mX3.6m

### Distance 10m



Note: Area side: 21m x 12m

### Above 1GHz



Note: Area side:2.4mX3.6m

## Limits

Rule Part 15.247(d) specifies that “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) (see § 15.205(c)).”

Limit in restricted band

| Frequency of emission (MHz) | Field strength (μV/m) | Field strength (dBμV/m) @ 3 m | Field strength (dBμV/m) @ 10 m |
|-----------------------------|-----------------------|-------------------------------|--------------------------------|
| 0.009–0.490                 | 2400/F(kHz)           | /                             | /                              |
| 0.490–1.705                 | 24000/F(kHz)          | /                             | /                              |
| 1.705–30.0                  | 30                    | /                             | /                              |
| 30-88                       | 100                   | 40                            | 30                             |
| 88-216                      | 150                   | 43.5                          | 33.5                           |
| 216-960                     | 200                   | 46                            | 36                             |
| 960 -1000                   | 500                   | 54                            | 44                             |
| Above 1000                  | 500                   | 54                            | --                             |

## §15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBμV/m

Average Limit=54 dBμV/m

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

| MHz                      | MHz                 | MHz           | GHz              |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110              | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| <sup>1</sup> 0.495-0.505 | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905            | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128              | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.17725-4.17775          | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.20725-4.20775          | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218              | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825          | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225          | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294              | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366              | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37625-8.38675          | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475          | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293             | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025        | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725        | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41              |                     |               |                  |

## Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

| Frequency      | Uncertainty for 3m  |
|----------------|---------------------|
| 9kHz-30MHz     | 3.55 dB             |
| 30MHz-200MHz   | 4.17 dB             |
| 200MHz-1GHz    | 4.84 dB             |
| 1-18GHz        | 4.35 dB             |
| 18-26.5GHz     | 5.90 dB             |
| 26.5GHz~40GHz  | 5.92 dB             |
| Frequency      | Uncertainty for 10m |
| 30MHz – 200MHz | 3.39 dB             |
| 200MHz – 1GHz  | 3.82 dB             |
| 1GHz – 18GHz   | 6.51 dB             |
| 18GHz – 40GHz  | 6.31 dB             |

## 5.7. Conducted Emission

### Ambient Condition

| Temperature | Relative humidity |
|-------------|-------------------|
| 15°C ~ 35°C | 20% ~ 80%         |

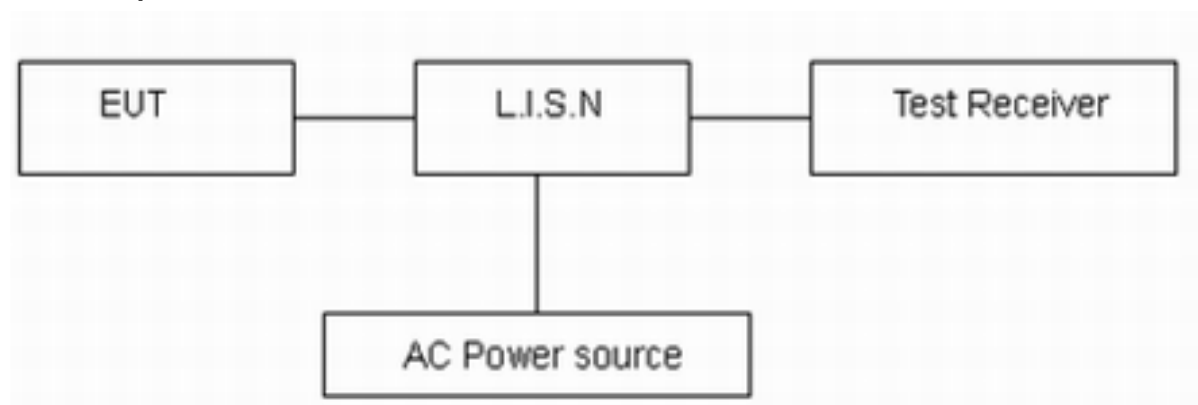
### Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz.

The measurement result should include both L line and N line.

The test is in transmitting mode.

### Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

### Limits

| Frequency<br>(MHz)                                | Conducted Limits(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. |                              |           |

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 2.69$  dB.

## 6. Test Results

### 6.1. Maximum output power

Original

| Power Index |                   |                   |
|-------------|-------------------|-------------------|
| Channel     | Bluetooth LE (1M) | Bluetooth LE (2M) |
| CH0         | default           | default           |
| CH19        | default           | default           |
| CH39        | default           | default           |

| Test Mode     | Power Index |
|---------------|-------------|
| 802.11b       | 6           |
|               | 6           |
|               | 6           |
| 802.11g       | 14          |
|               | 14          |
|               | 14          |
| 802.11n HT20  | 14          |
|               | 14          |
|               | 14          |
| 802.11n HT40  | 14          |
|               | 14          |
|               | 14          |
| 802.11ax HE20 | 15          |
|               | 15          |
|               | 15          |

| Test Mode                                                                      | Duty cycle | Duty cycle correction Factor (dB) |
|--------------------------------------------------------------------------------|------------|-----------------------------------|
| 802.11b                                                                        | 0.99       | 0.00                              |
| 802.11g                                                                        | 0.95       | 0.23                              |
| 802.11n HT20                                                                   | 0.95       | 0.23                              |
| 802.11n HT40                                                                   | 0.90       | 0.44                              |
| 802.11ax HE20                                                                  | 0.96       | 0.16                              |
| Bluetooth LE (1M)                                                              | 0.851      | 0.70                              |
| Bluetooth LE (2M)                                                              | 0.571      | 2.44                              |
| Note: when Duty cycle $\geq 0.98$ , Duty cycle correction Factor not required. |            |                                   |

| Test Mode                   | Carrier frequency (MHz)/ Channel | Average Power Measured (dBm) | Average Power with duty factor (dBm) | Limit (dBm) | Conclusion |
|-----------------------------|----------------------------------|------------------------------|--------------------------------------|-------------|------------|
| 802.11b                     | 2412/CH 1                        | 20.13                        | 20.13                                | 30          | PASS       |
|                             | 2437/CH 6                        | 19.91                        | 19.91                                | 30          | PASS       |
|                             | 2462/CH11                        | 20.28                        | 20.28                                | 30          | PASS       |
| 802.11g                     | 2412/CH 1                        | 15.75                        | 15.98                                | 30          | PASS       |
|                             | 2437/CH 6                        | 15.78                        | 16.01                                | 30          | PASS       |
|                             | 2462/CH11                        | 15.07                        | 15.30                                | 30          | PASS       |
| 802.11n HT20                | 2412/CH 1                        | 15.02                        | 15.25                                | 30          | PASS       |
|                             | 2437/CH 6                        | 15.06                        | 15.29                                | 30          | PASS       |
|                             | 2462/CH11                        | 14.89                        | 15.12                                | 30          | PASS       |
| 802.11n HT40                | 2422/CH3                         | 14.92                        | 15.36                                | 30          | PASS       |
|                             | 2437/CH6                         | 14.84                        | 15.28                                | 30          | PASS       |
|                             | 2452/CH9                         | 14.55                        | 14.99                                | 30          | PASS       |
| 802.11ax HE20               | 2412/CH 1                        | 14.66                        | 14.82                                | 30          | PASS       |
|                             | 2437/CH 6                        | 14.48                        | 14.64                                | 30          | PASS       |
|                             | 2462/CH11                        | 14.15                        | 14.31                                | 30          | PASS       |
| Bluetooth (Low Energy) (1M) | 2402/CH0                         | 5.08                         | 5.78                                 | 30          | PASS       |
|                             | 2440/CH19                        | 4.67                         | 5.37                                 | 30          | PASS       |
|                             | 2480/CH39                        | 4.00                         | 4.70                                 | 30          | PASS       |
| Bluetooth (Low Energy) (2M) | 2402/CH0                         | 3.51                         | 5.95                                 | 30          | PASS       |
|                             | 2440/CH19                        | 3.14                         | 5.58                                 | 30          | PASS       |
|                             | 2480/CH39                        | 2.46                         | 4.90                                 | 30          | PASS       |

Note:

1. Average Power with duty factor = Average Power Measured +Duty cycle correction factor.

**Variant**

| Test Mode                                                                                   | Carrier frequency (MHz)/ Channel | Average Power Measured (dBm) | Average Power with duty factor (dBm) | Limit (dBm) | Conclusion |
|---------------------------------------------------------------------------------------------|----------------------------------|------------------------------|--------------------------------------|-------------|------------|
| 802.11b                                                                                     | 2462/CH11                        | 20.32                        | 20.32                                | 30          | PASS       |
| Bluetooth (Low Energy) (2M)                                                                 | 2402/CH0                         | 2.62                         | 5.06                                 | 30          | PASS       |
| Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor |                                  |                              |                                      |             |            |

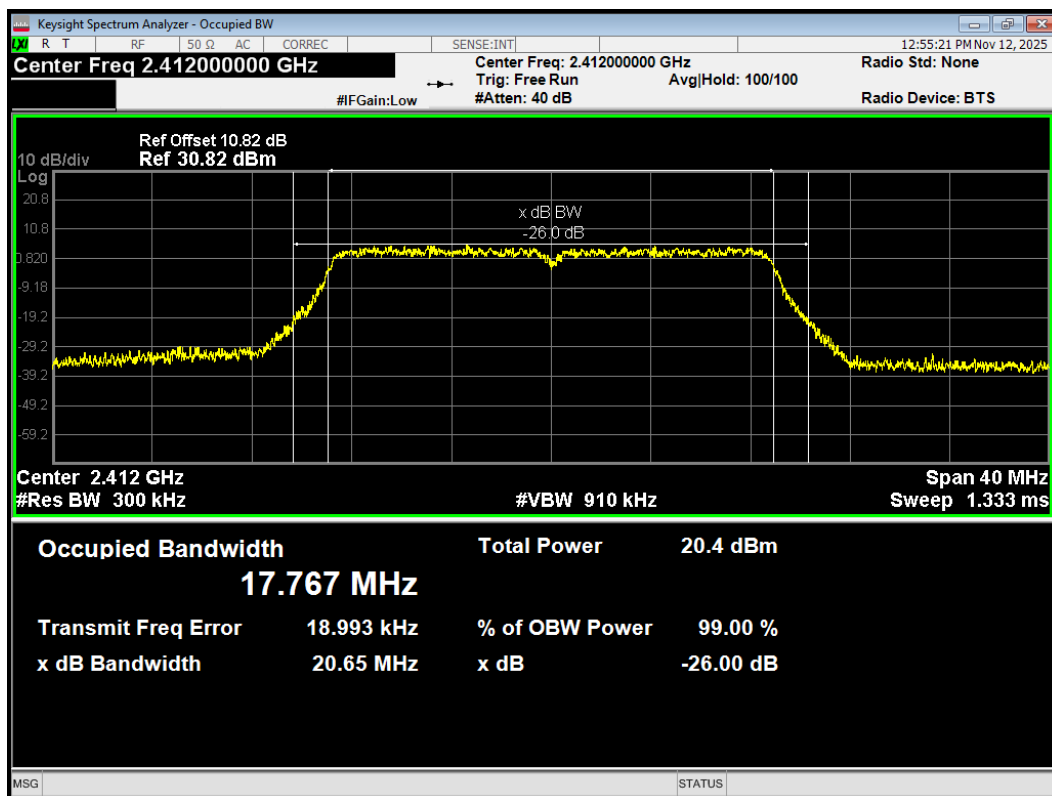
## 6.2. 99% Bandwidth and 6dB Bandwidth

### Original

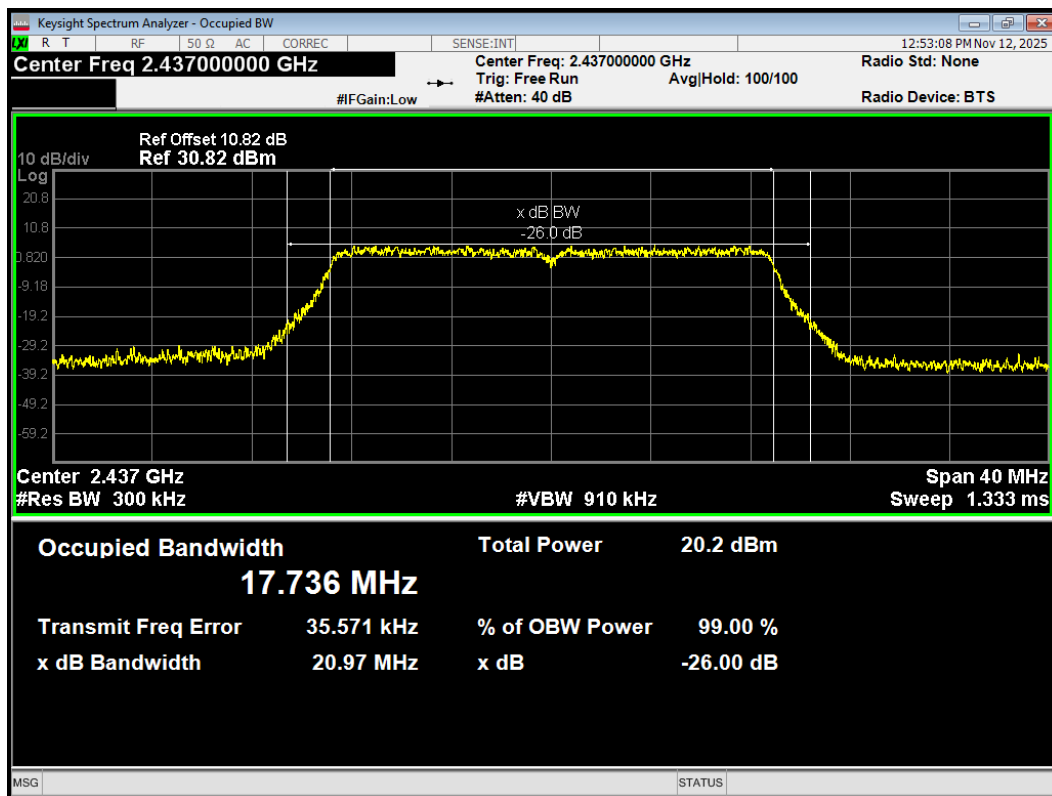
| Test Mode                   | Carrier frequency (MHz) | 99% bandwidth (MHz) | Minimum 6 dB bandwidth (MHz) | Limit (kHz) | Conclusion |
|-----------------------------|-------------------------|---------------------|------------------------------|-------------|------------|
| 802.11b                     | 2412                    | 11.966              | 9.893                        | 500         | PASS       |
|                             | 2437                    | 11.958              | 9.859                        | 500         | PASS       |
|                             | 2462                    | 11.969              | 9.887                        | 500         | PASS       |
| 802.11g                     | 2412                    | 16.691              | 16.384                       | 500         | PASS       |
|                             | 2437                    | 16.742              | 16.475                       | 500         | PASS       |
|                             | 2462                    | 16.731              | 16.443                       | 500         | PASS       |
| 802.11n HT20                | 2412                    | 17.773              | 17.600                       | 500         | PASS       |
|                             | 2437                    | 17.779              | 17.630                       | 500         | PASS       |
|                             | 2462                    | 17.754              | 17.580                       | 500         | PASS       |
| 802.11n HT40                | 2422                    | 35.837              | 35.567                       | 500         | PASS       |
|                             | 2437                    | 35.868              | 35.724                       | 500         | PASS       |
|                             | 2452                    | 35.839              | 35.581                       | 500         | PASS       |
| 802.11ax HE20               | 2412                    | 17.767              | 17.604                       | 500         | PASS       |
|                             | 2437                    | 17.736              | 17.661                       | 500         | PASS       |
|                             | 2462                    | 17.750              | 17.643                       | 500         | PASS       |
| Bluetooth (Low Energy) (1M) | 2402                    | 1.034               | 0.655                        | 500         | PASS       |
|                             | 2440                    | 1.029               | 0.655                        | 500         | PASS       |
|                             | 2480                    | 1.030               | 0.663                        | 500         | PASS       |
| Bluetooth (Low Energy) (2M) | 2402                    | 2.054               | 1.147                        | 500         | PASS       |
|                             | 2440                    | 2.053               | 1.122                        | 500         | PASS       |
|                             | 2480                    | 2.058               | 1.245                        | 500         | PASS       |

99%bandwidth

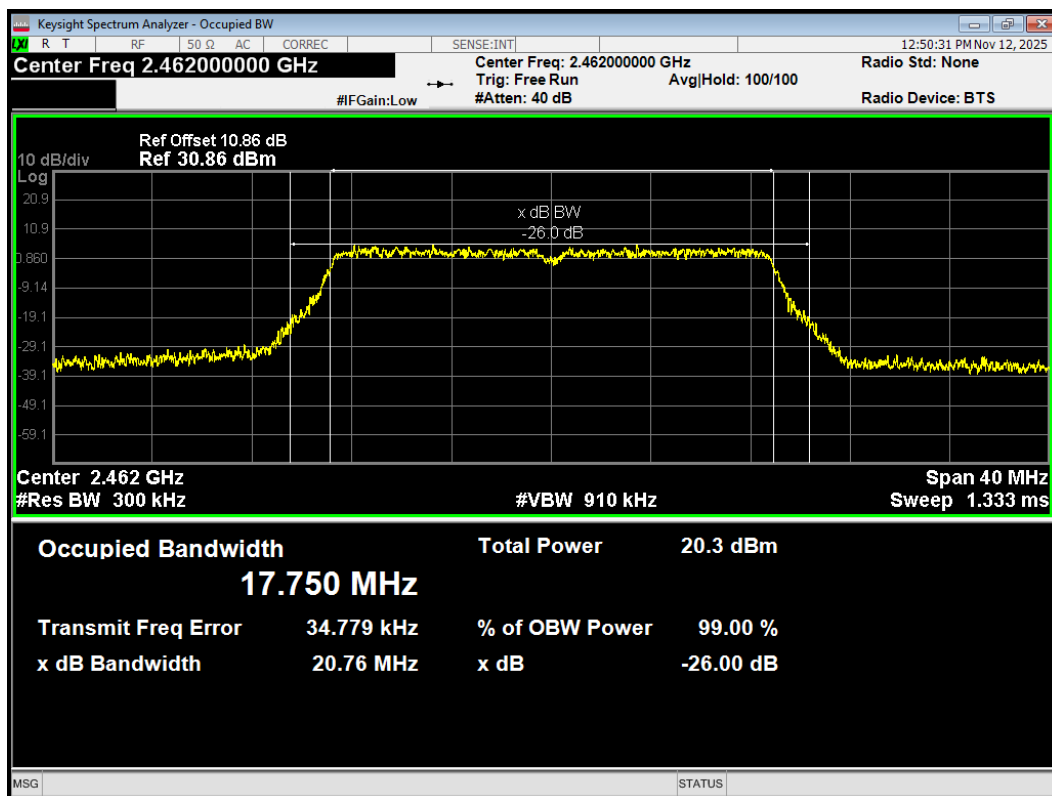
OBW 802.11ax(HE20) 2412MHz



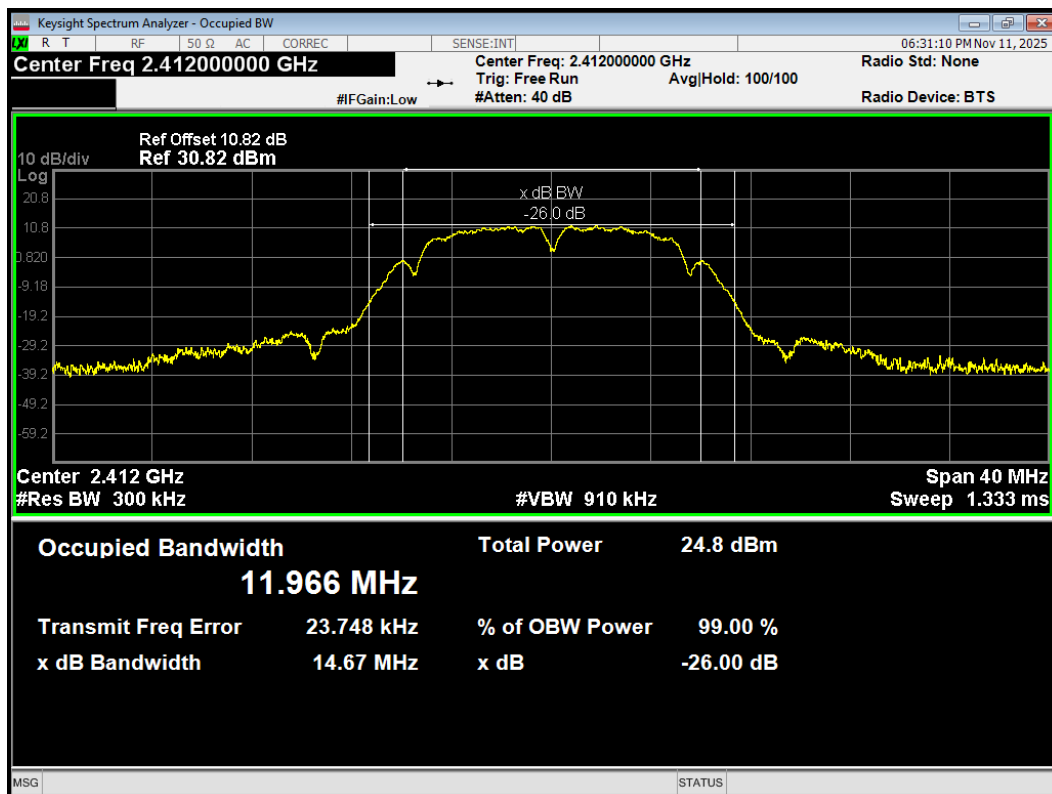
OBW 802.11ax(HE20) 2437MHz



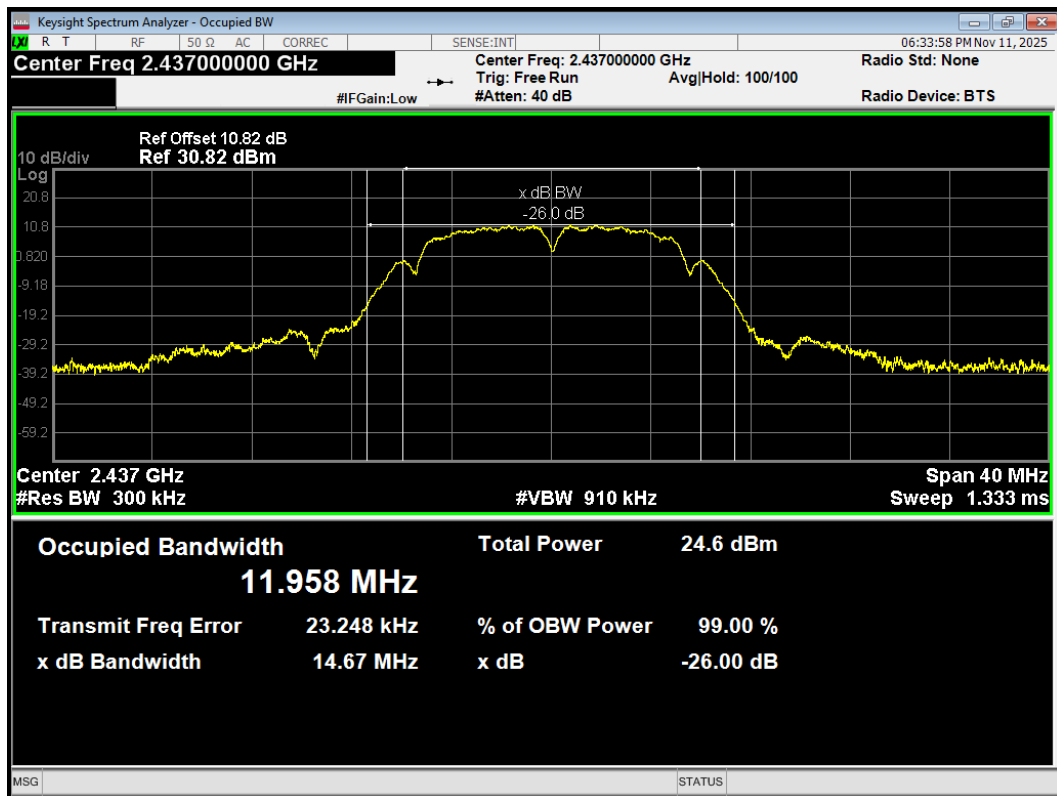
OBW 802.11ax(HE20) 2462MHz



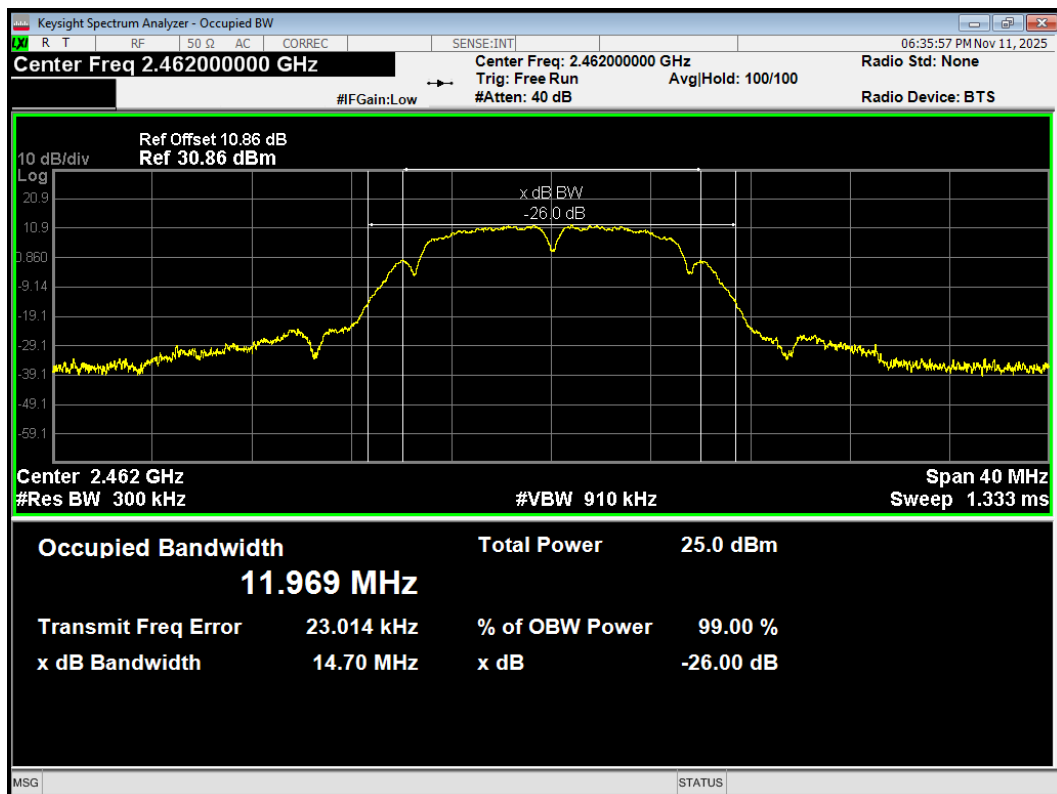
OBW 802.11b 2412MHz



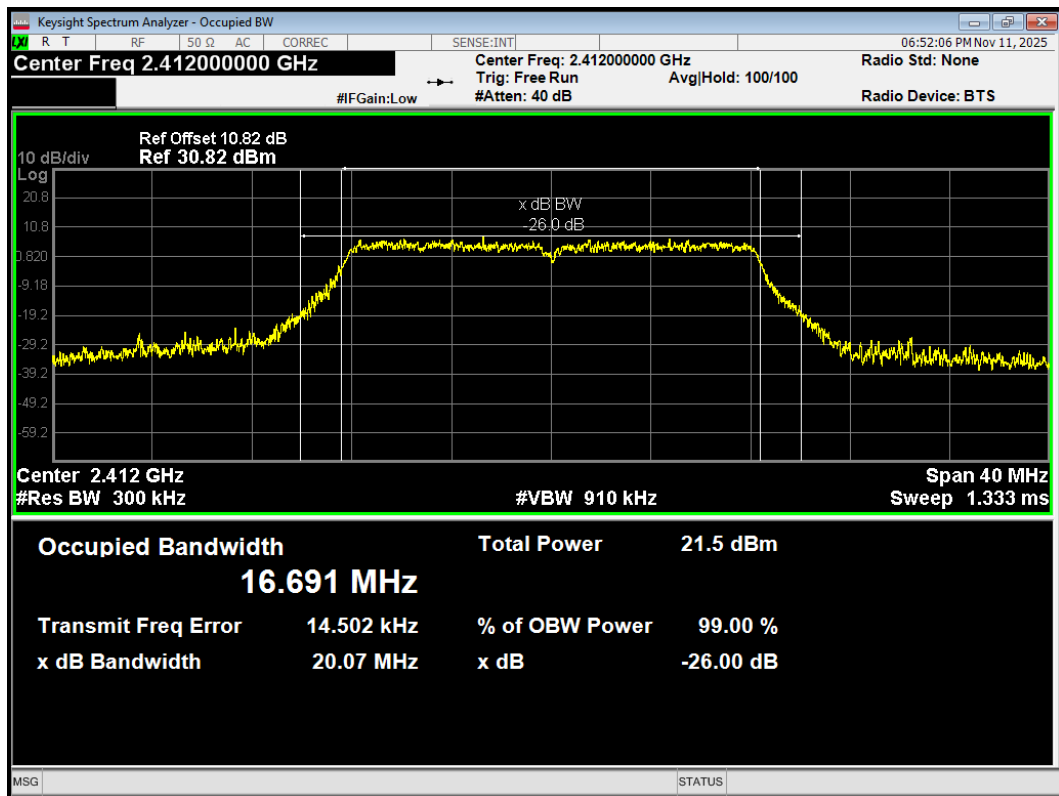
OBW 802.11b 2437MHz



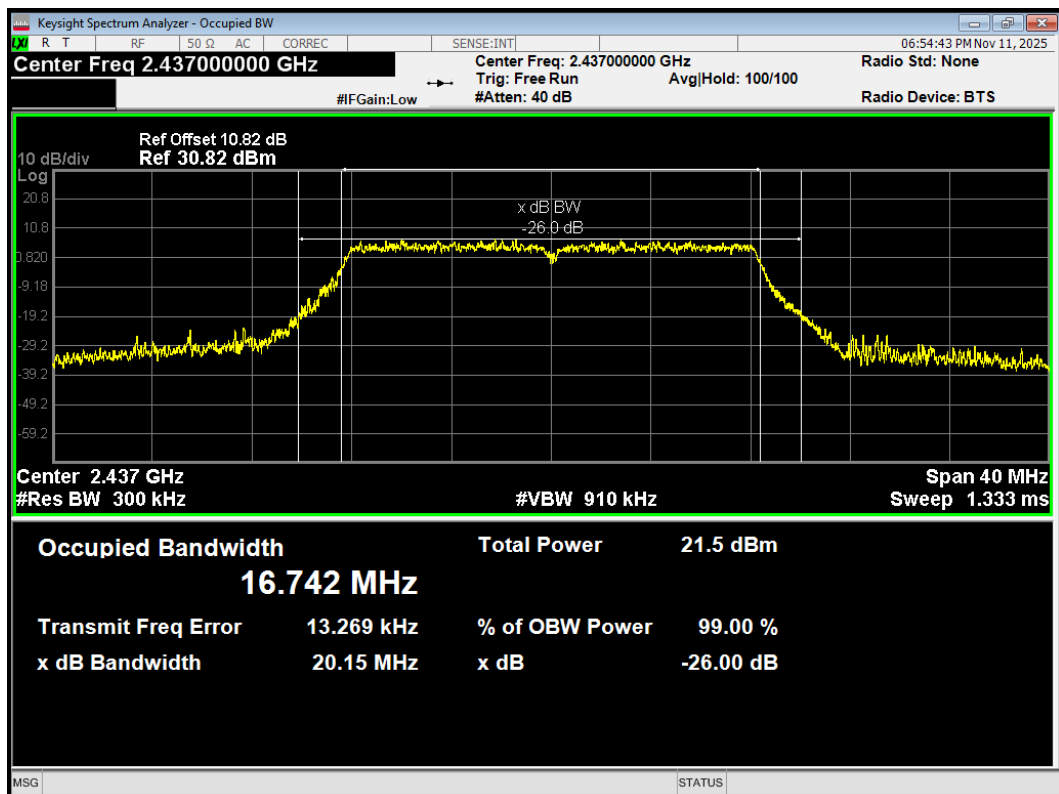
OBW 802.11b 2462MHz



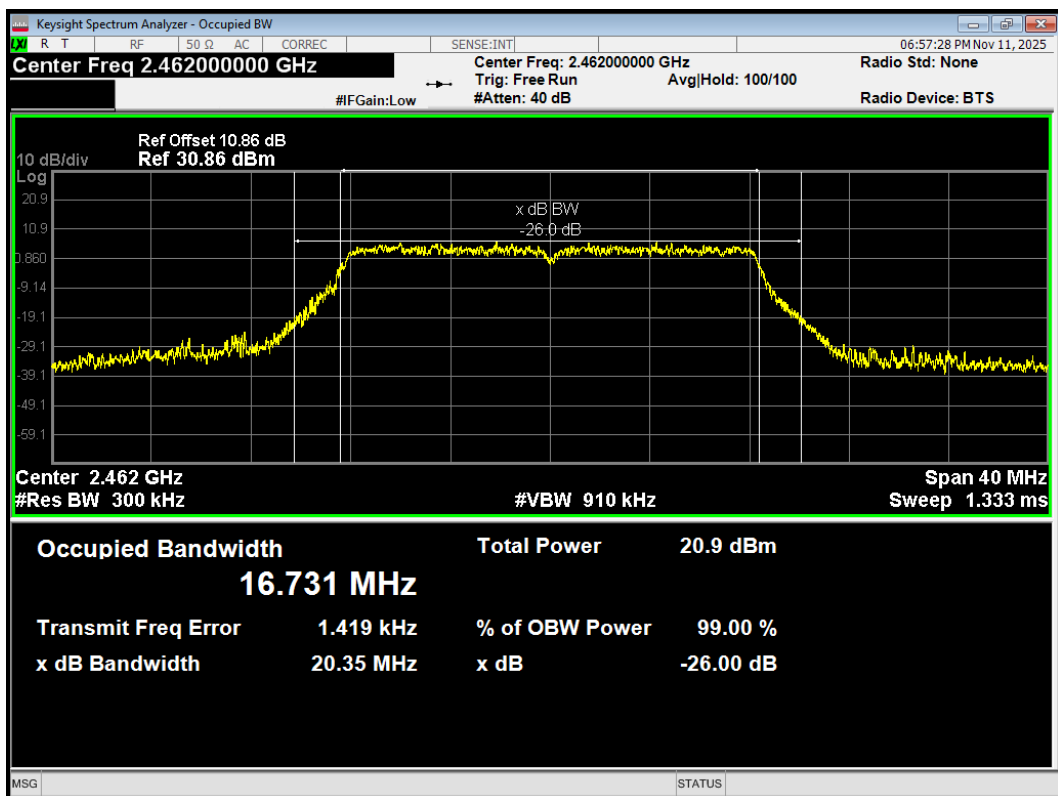
OBW 802.11g 2412MHz



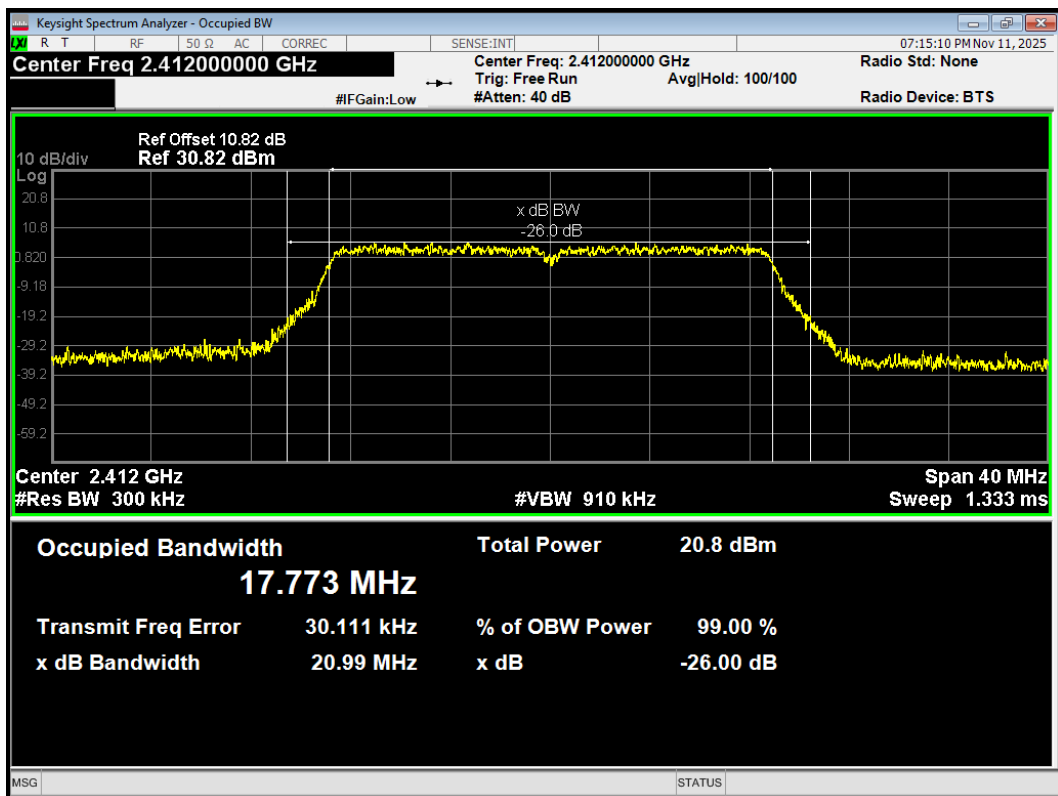
OBW 802.11g 2437MHz



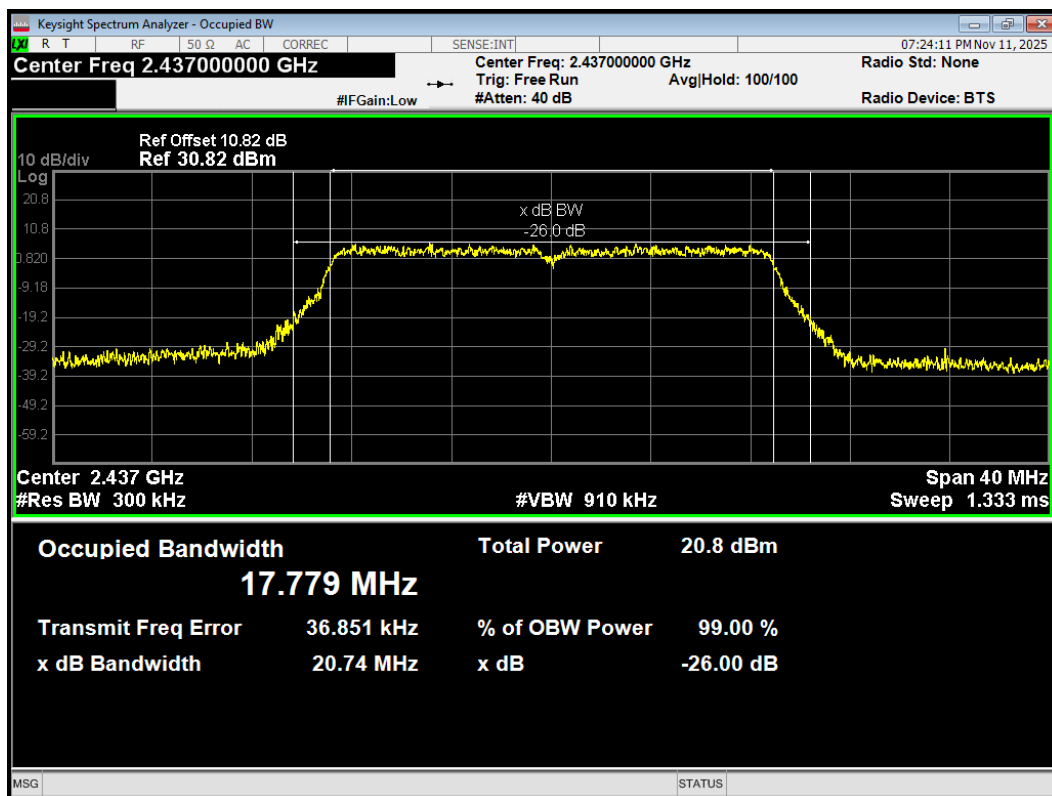
OBW 802.11g 2462MHz



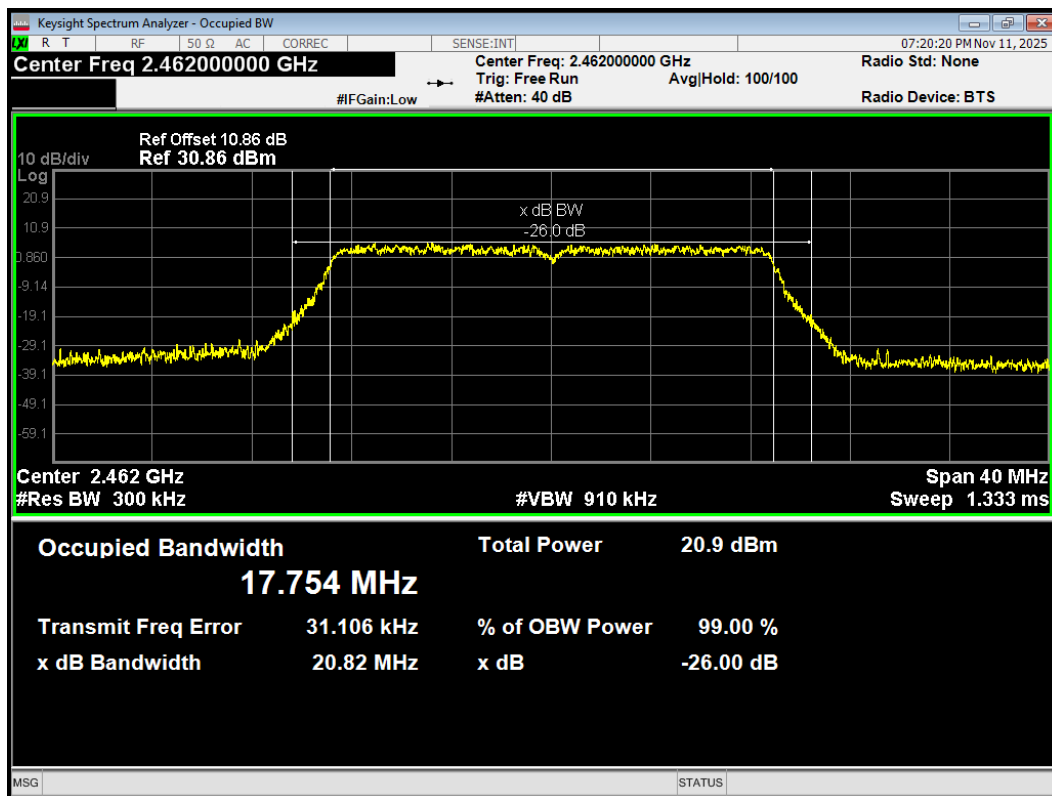
OBW 802.11n(HT20) 2412MHz



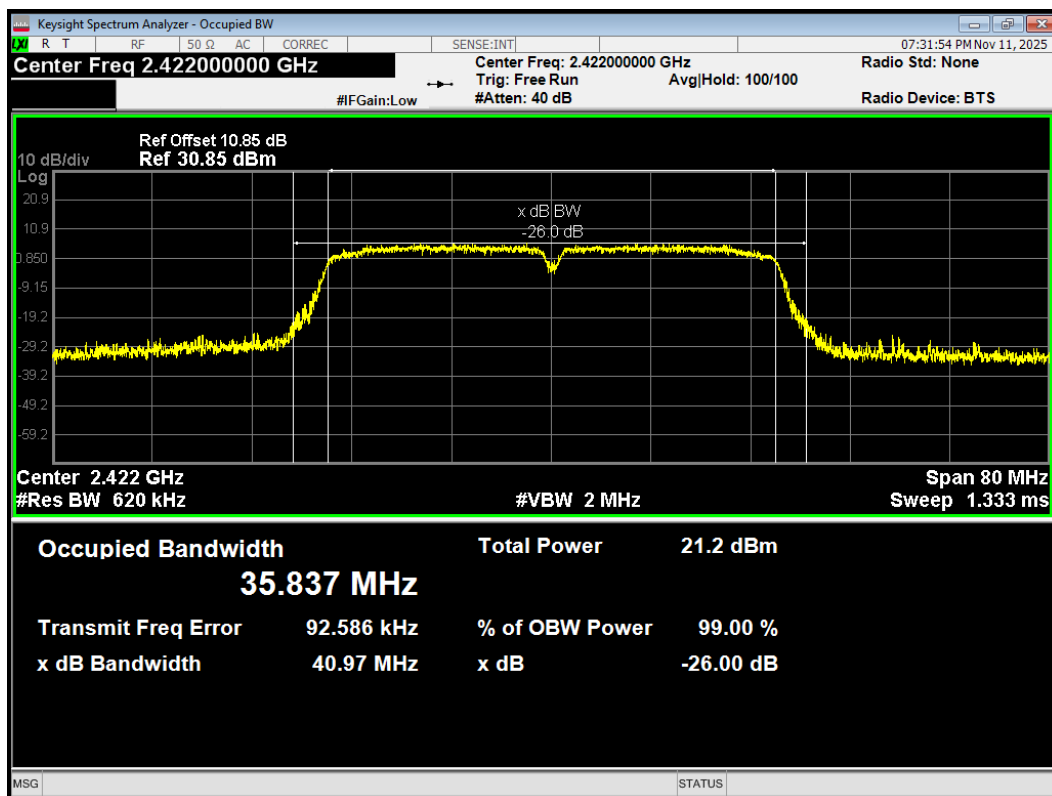
OBW 802.11n(HT20) 2437MHz



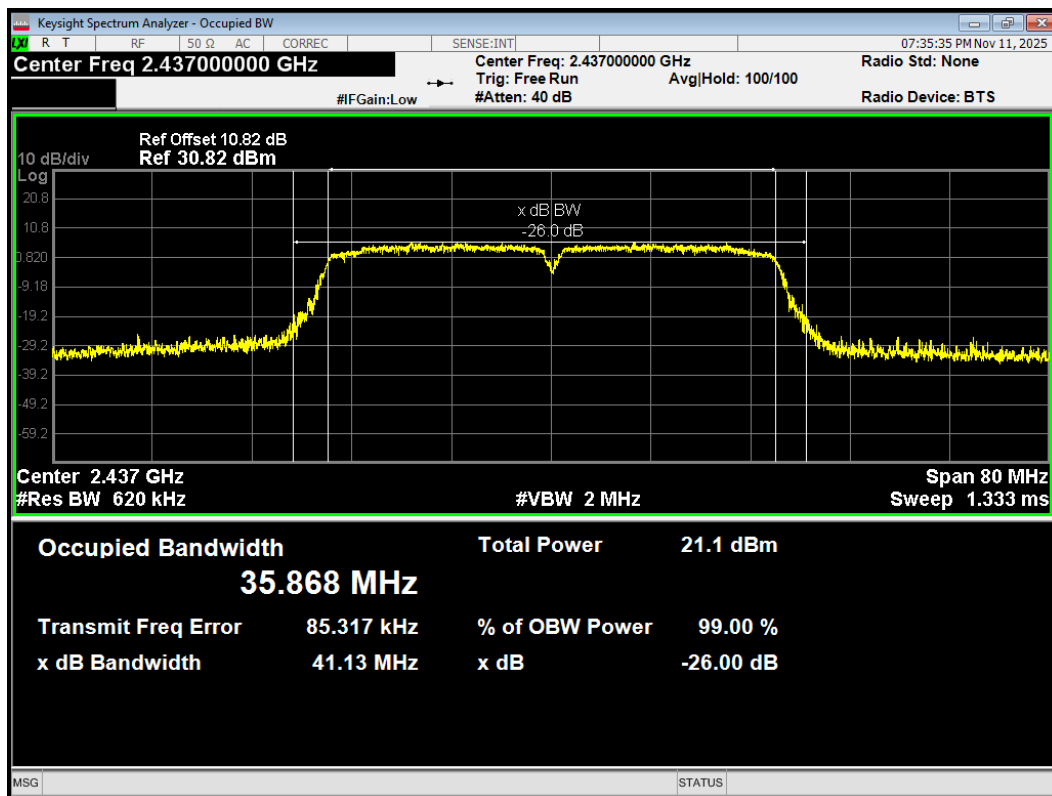
OBW 802.11n(HT20) 2462MHz



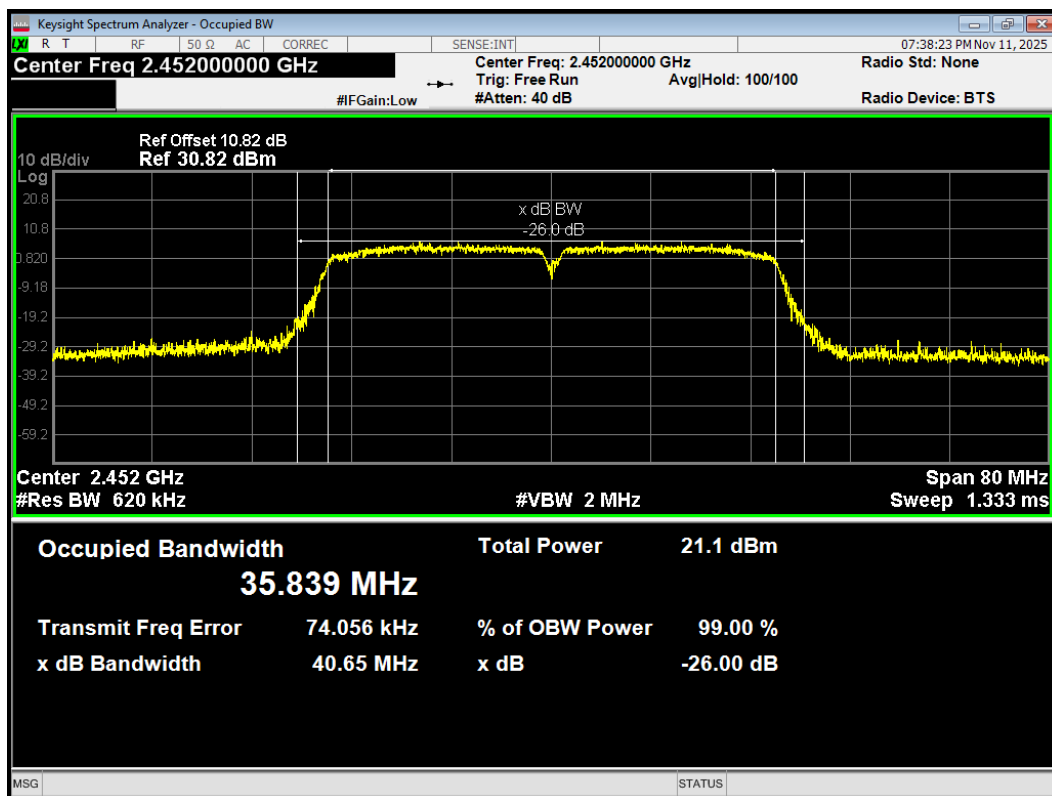
OBW 802.11n(HT40) 2422MHz



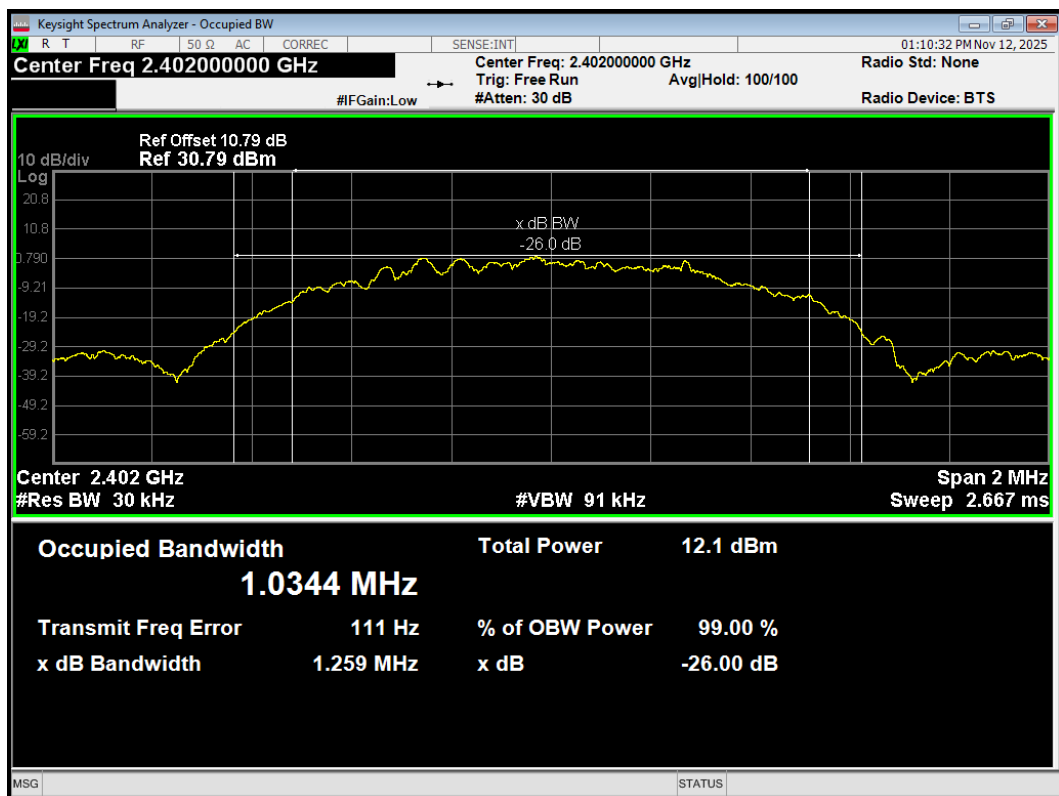
OBW 802.11n(HT40) 2437MHz



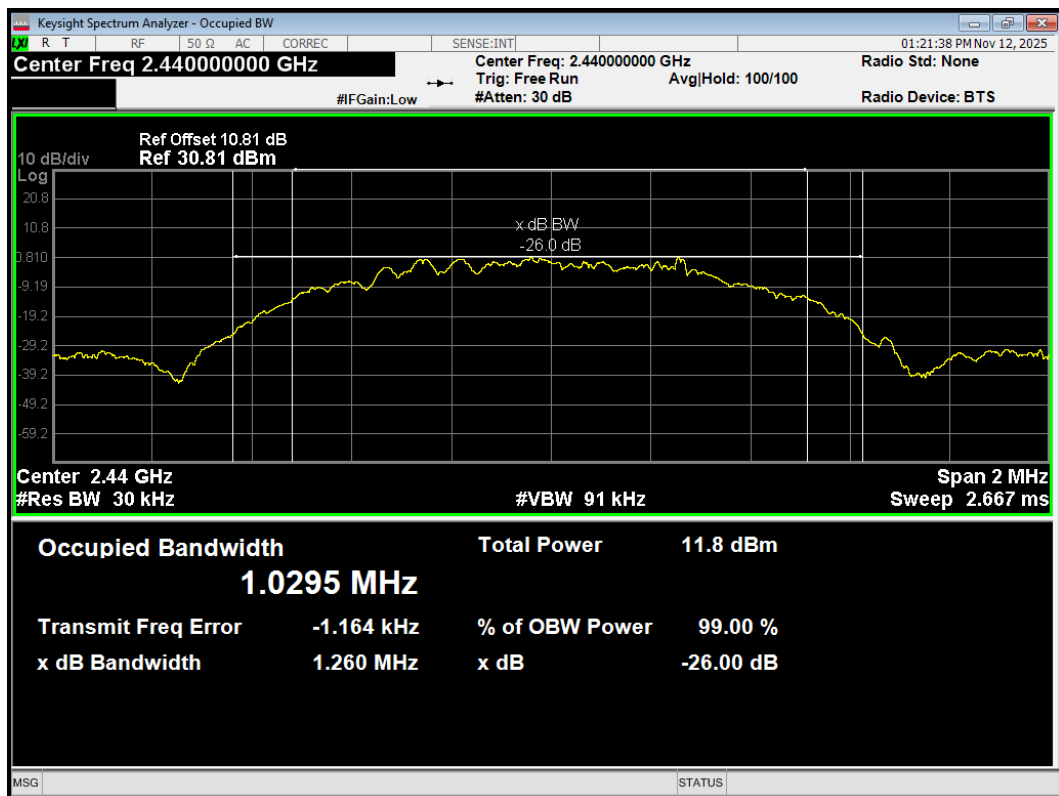
OBW 802.11n(HT40) 2452MHz



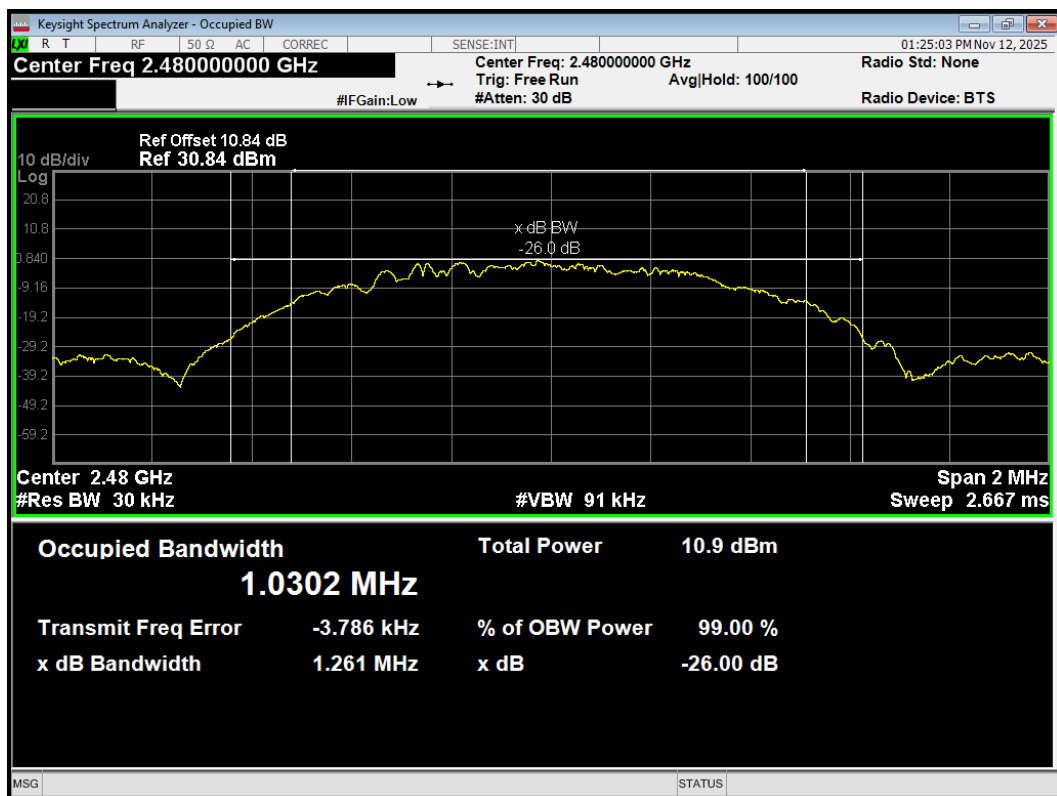
OBW BLE (1M) 2402MHz



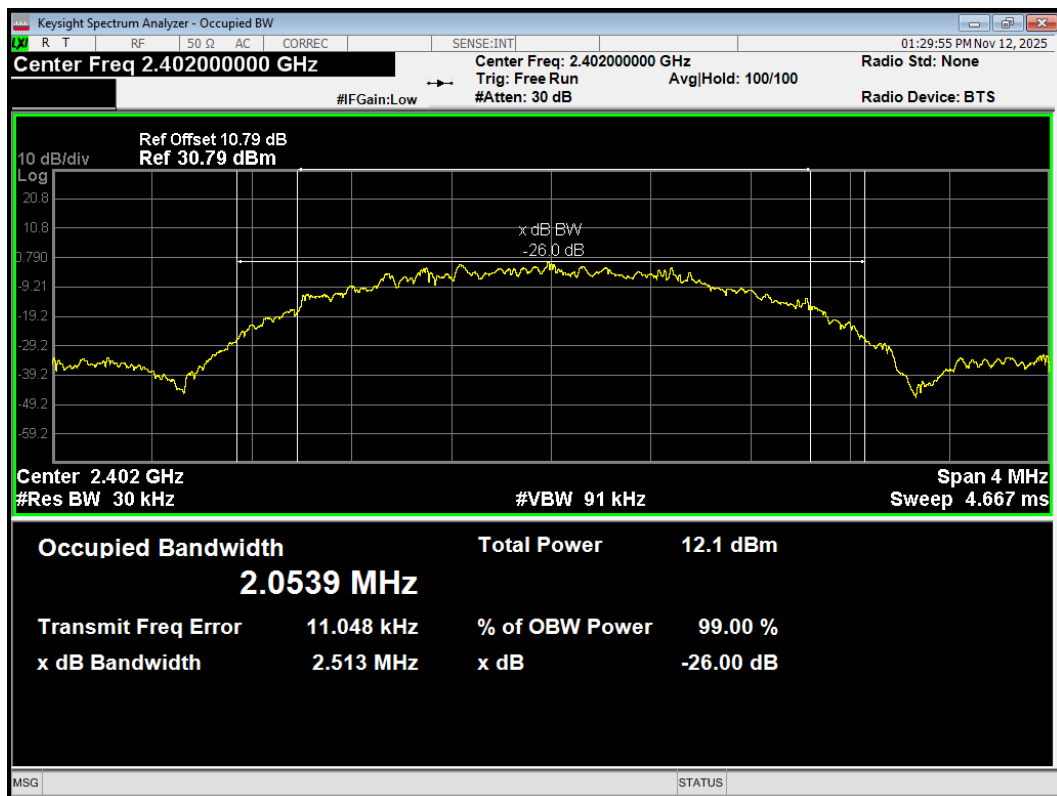
OBW BLE (1M) 2440MHz



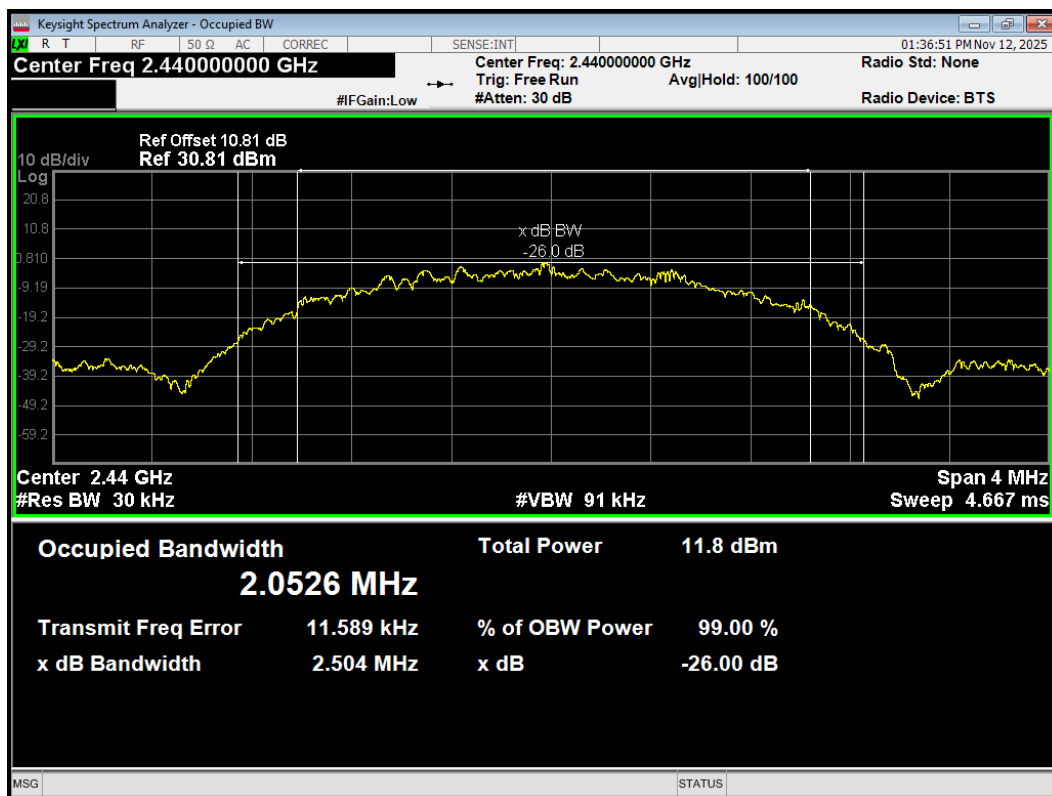
## OBW BLE (1M) 2480MHz



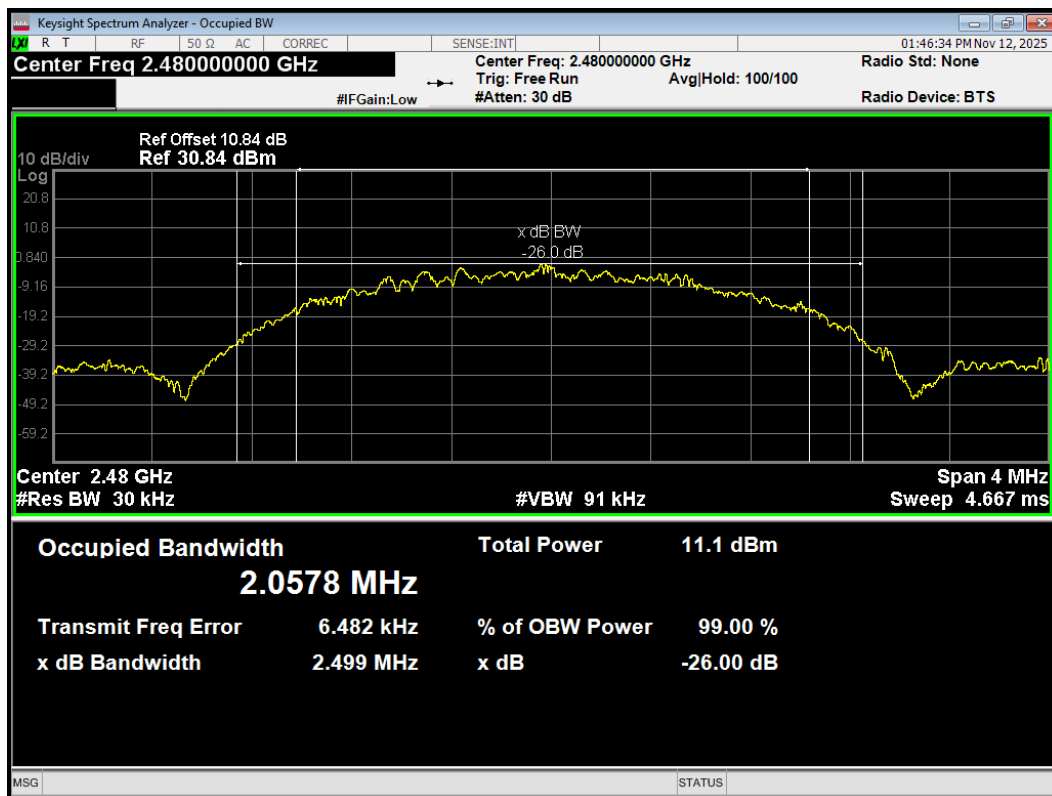
## OBW BLE (2M) 2402MHz



OBW BLE (2M) 2440MHz

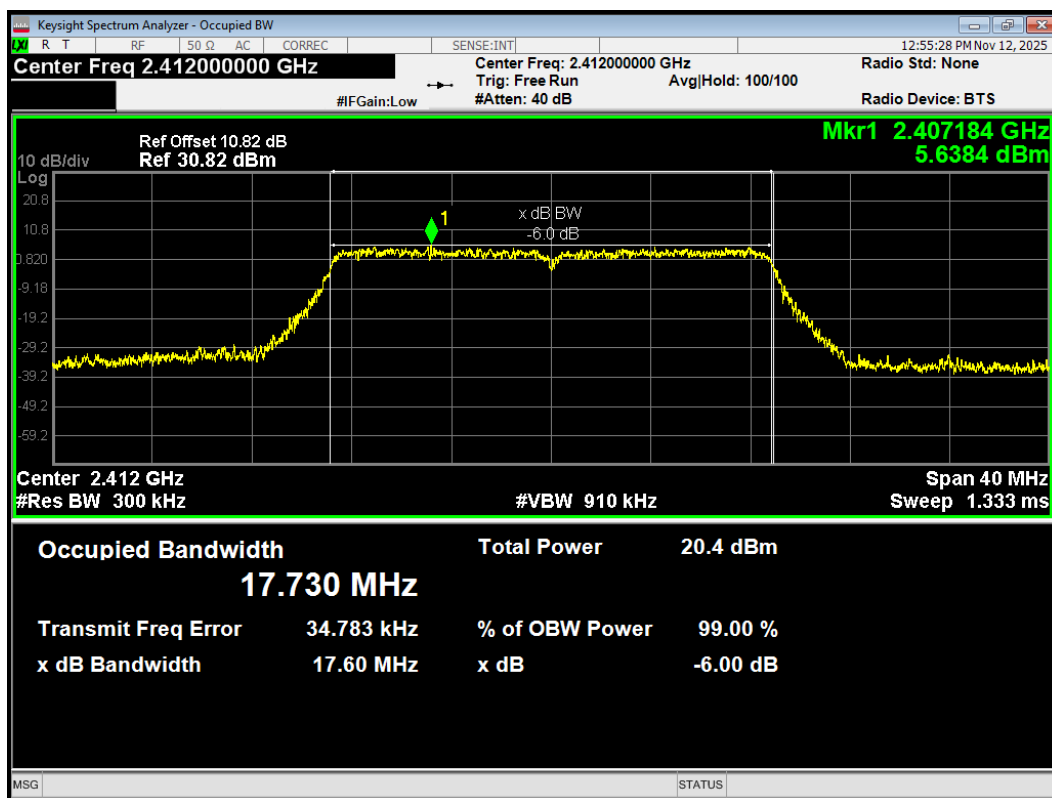


OBW BLE (2M) 2480MHz

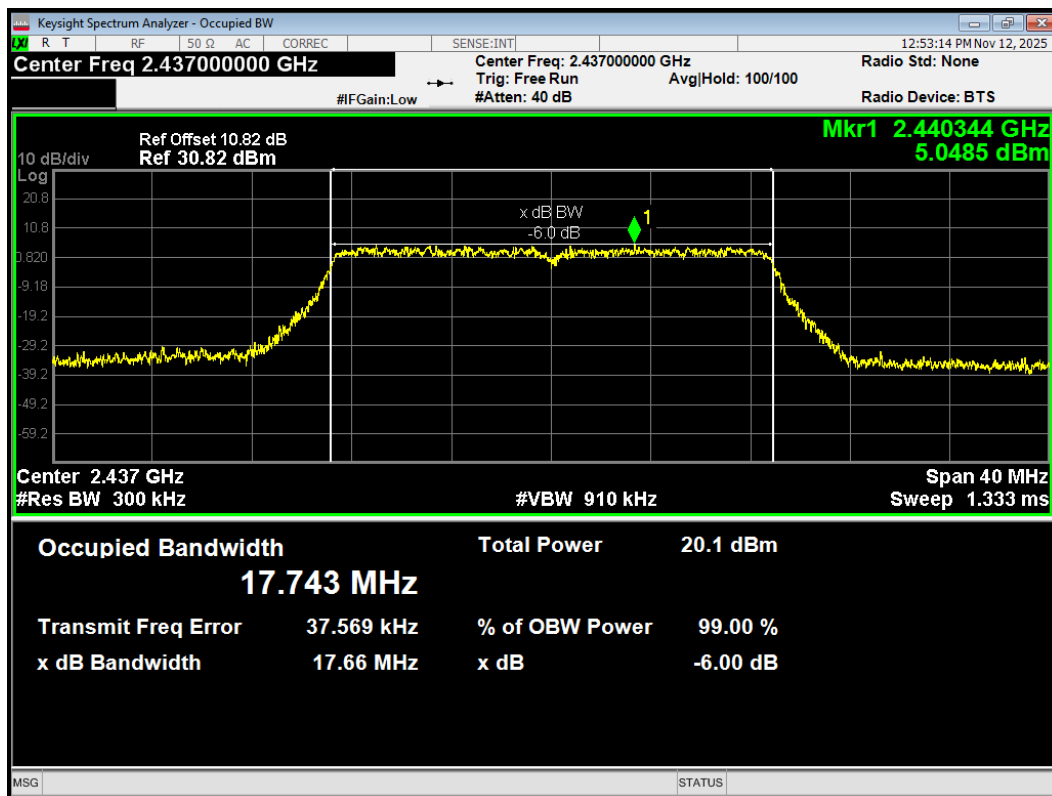


6 dB bandwidth

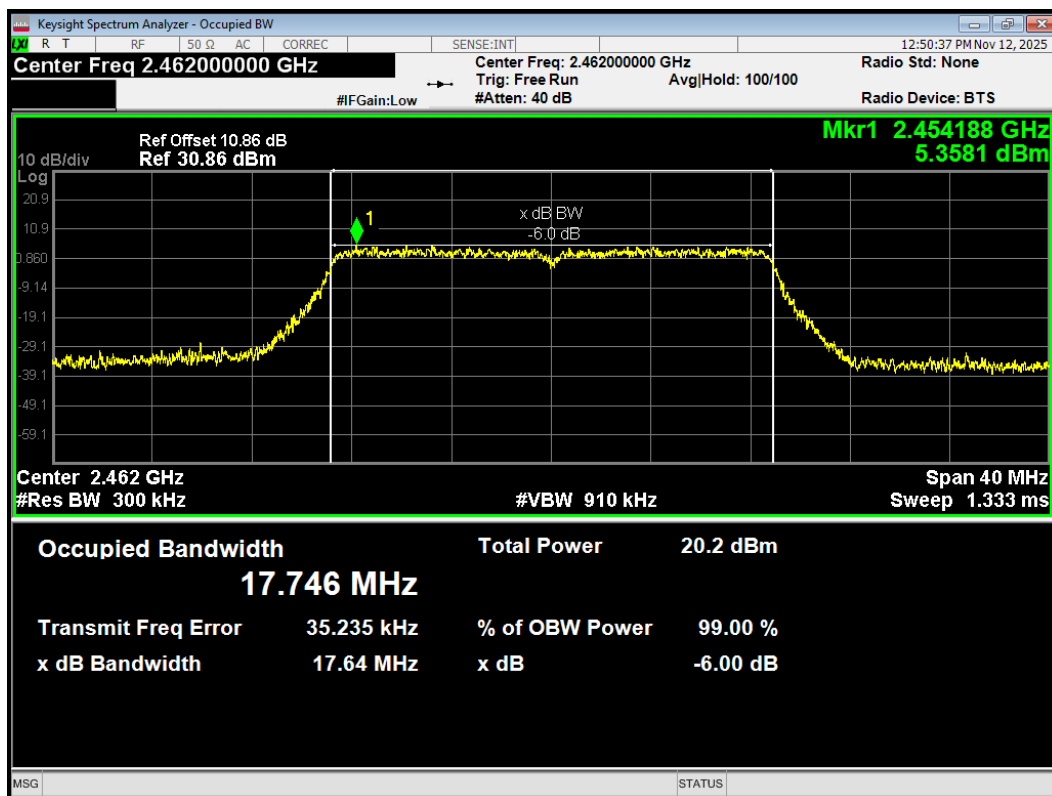
-6dB Bandwidth 802.11ax(HE20) 2412MHz



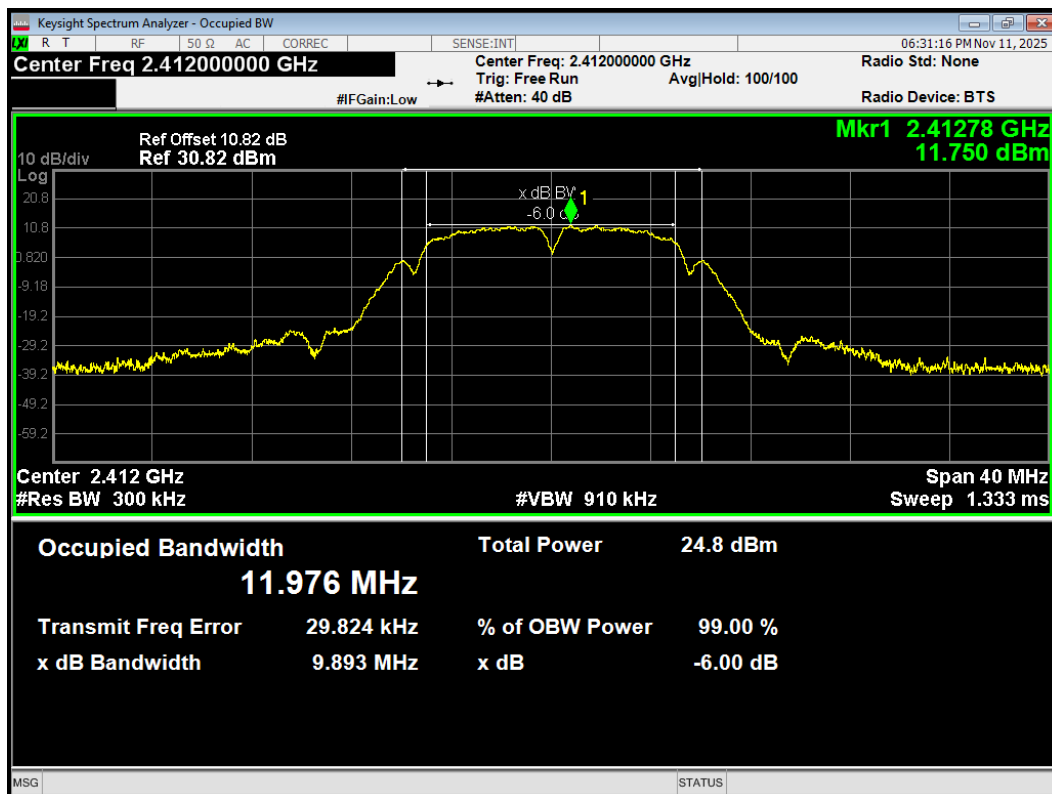
-6dB Bandwidth 802.11ax(HE20) 2437MHz



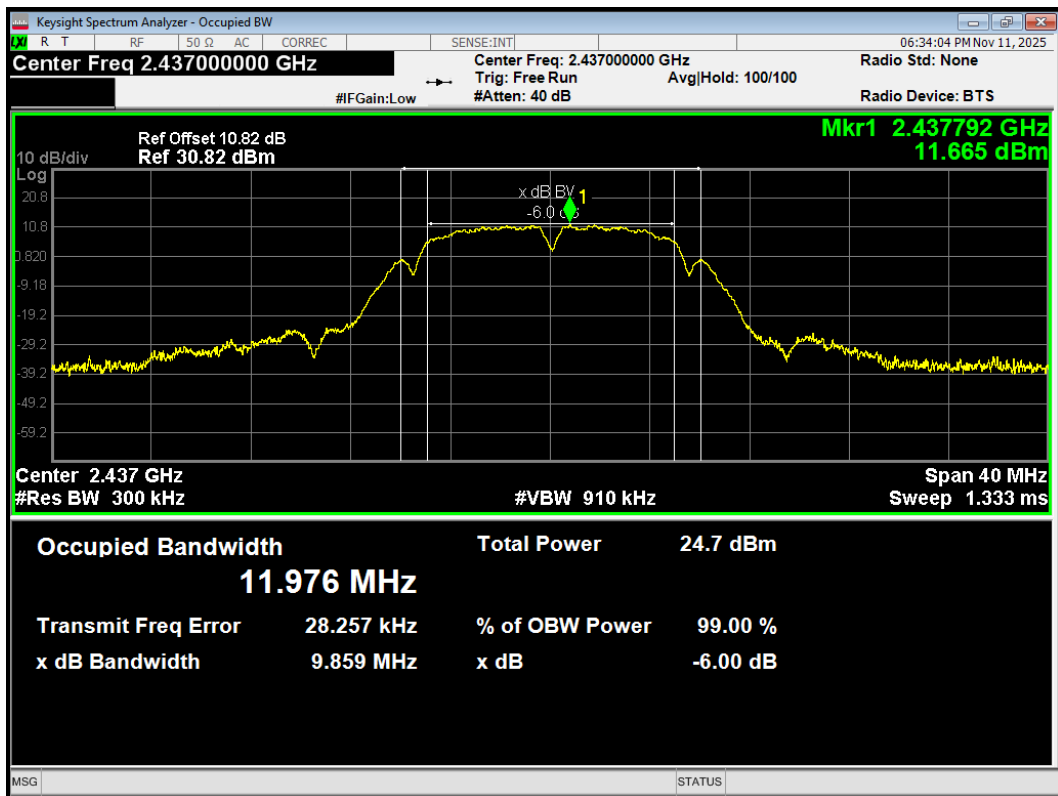
-6dB Bandwidth 802.11ax(HE20) 2462MHz



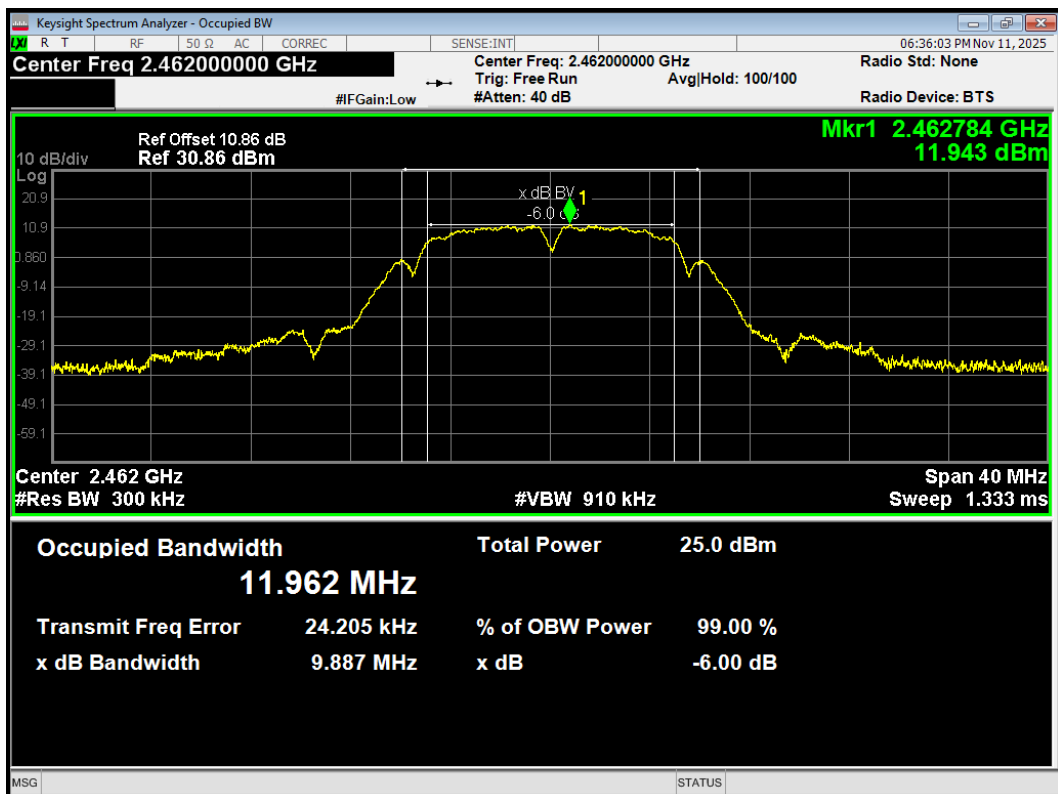
-6dB Bandwidth 802.11b 2412MHz



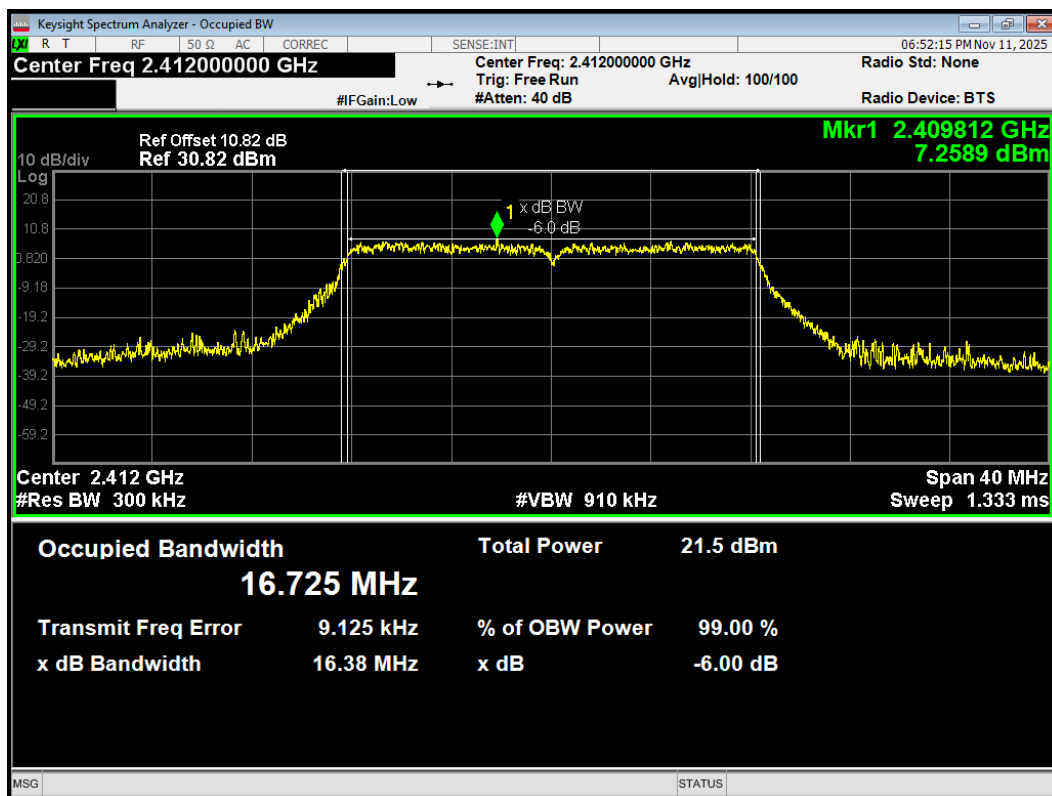
-6dB Bandwidth 802.11b 2437MHz



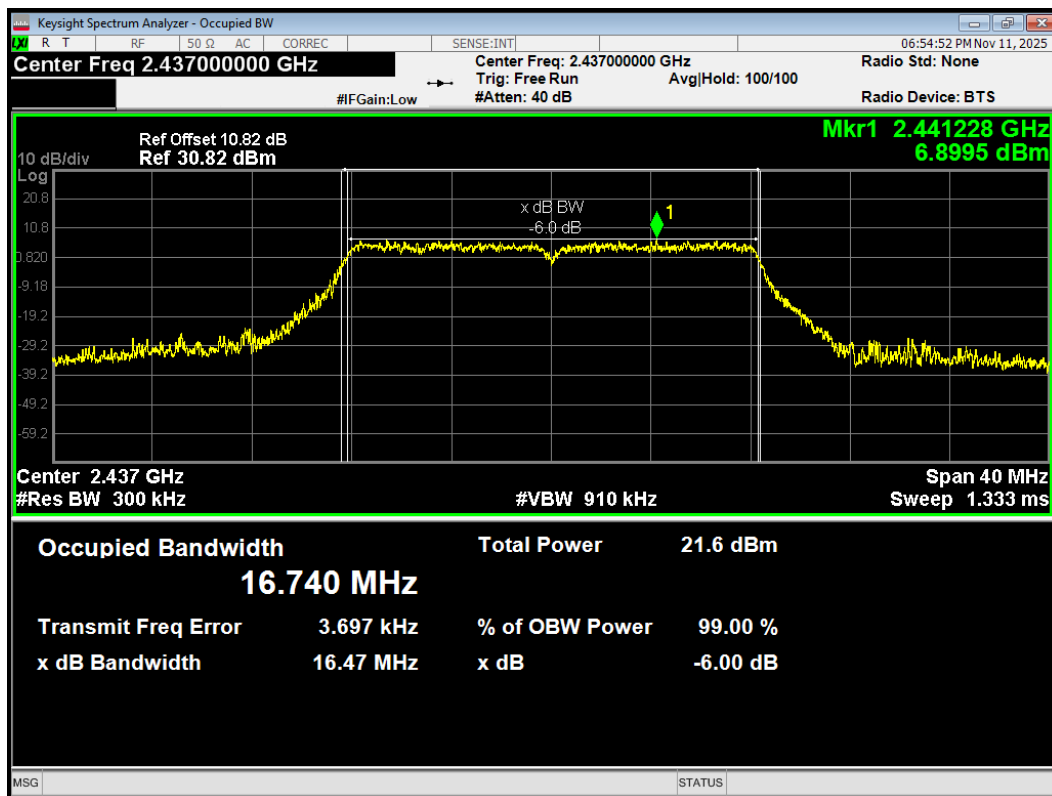
-6dB Bandwidth 802.11b 2462MHz



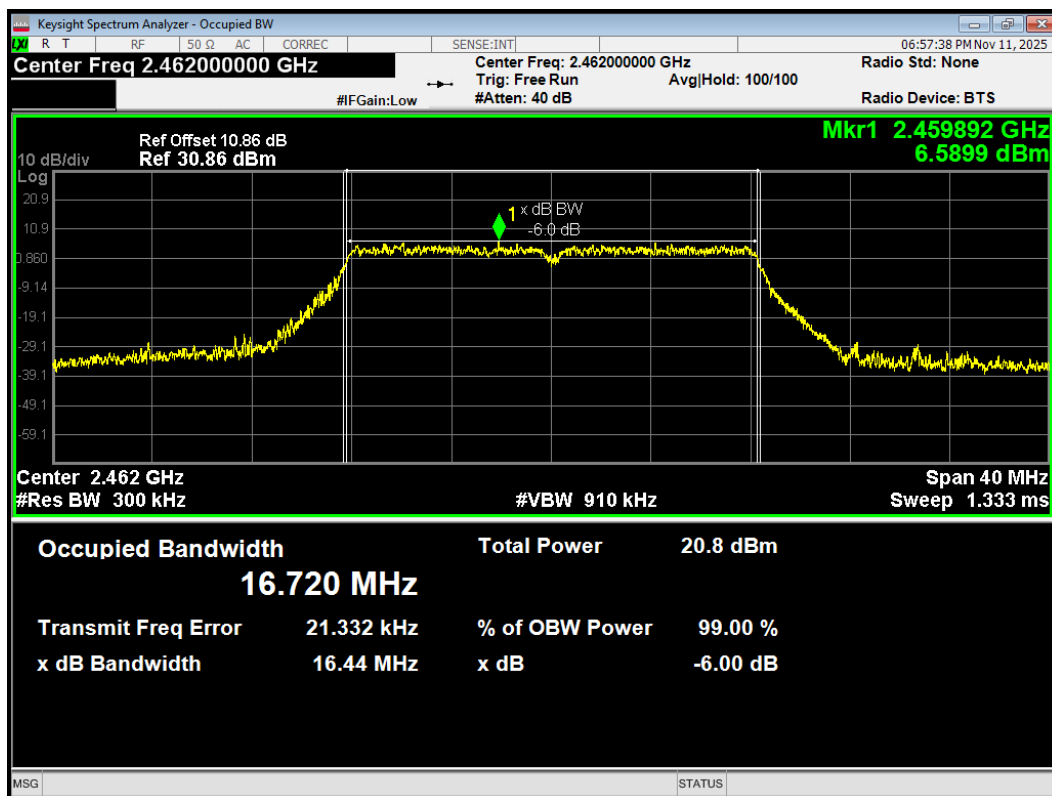
-6dB Bandwidth 802.11g 2412MHz



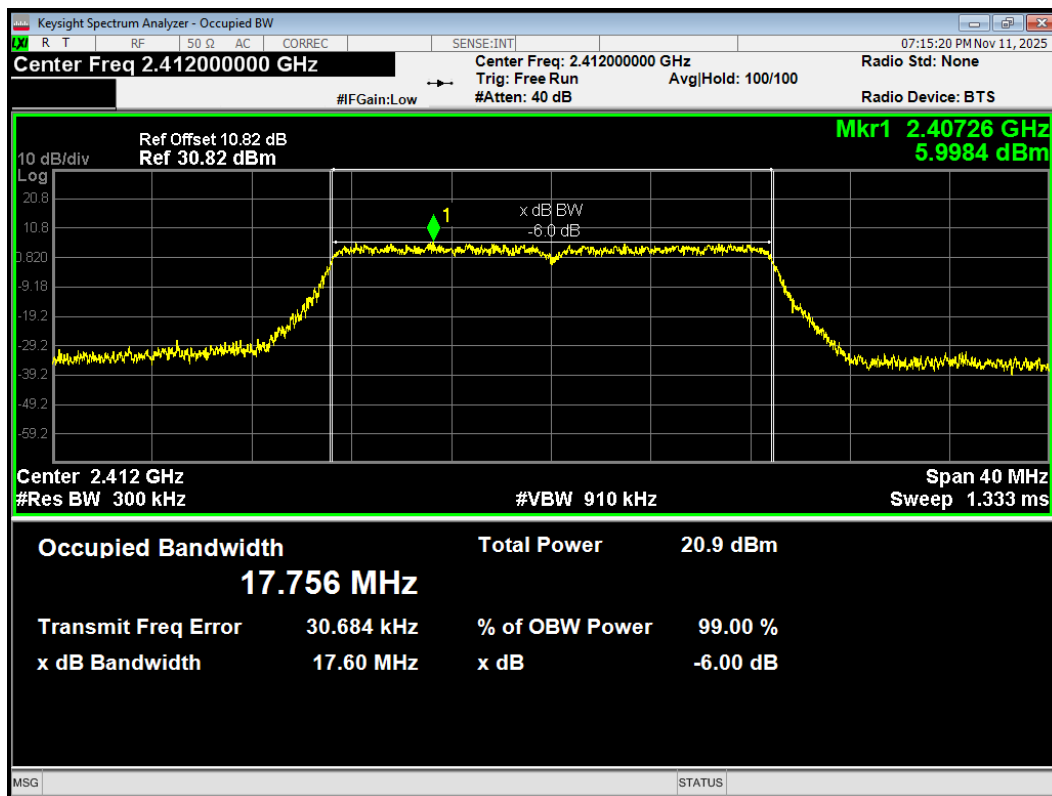
-6dB Bandwidth 802.11g 2437MHz



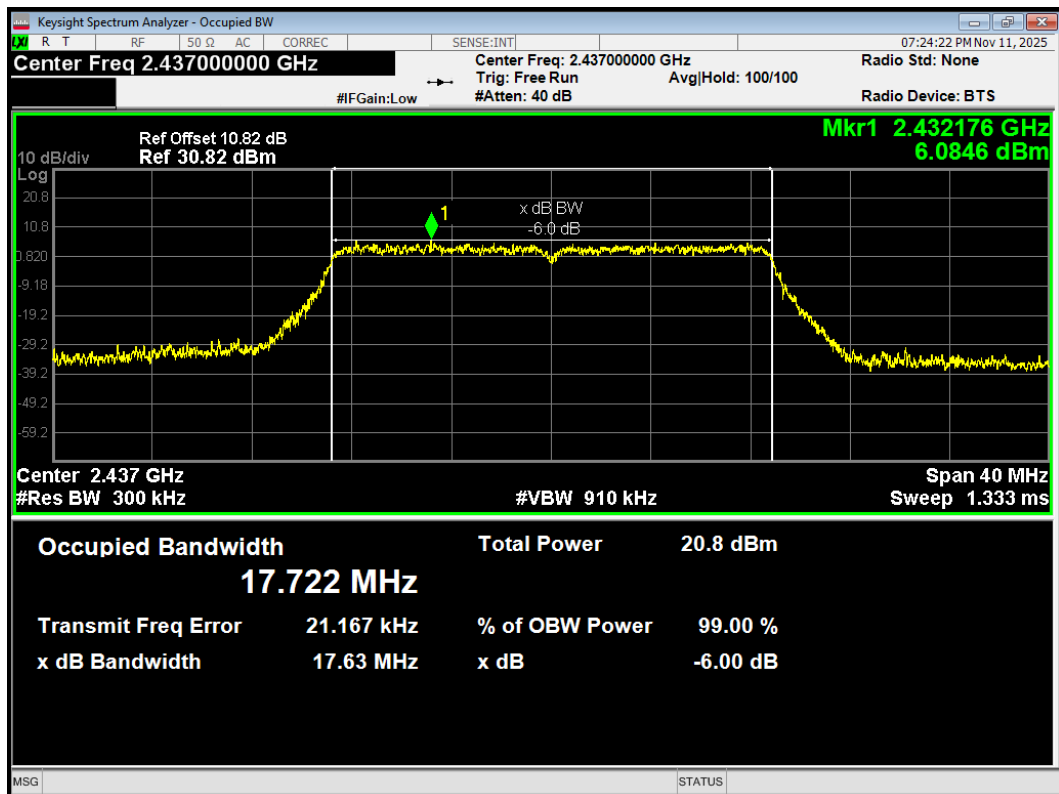
-6dB Bandwidth 802.11g 2462MHz



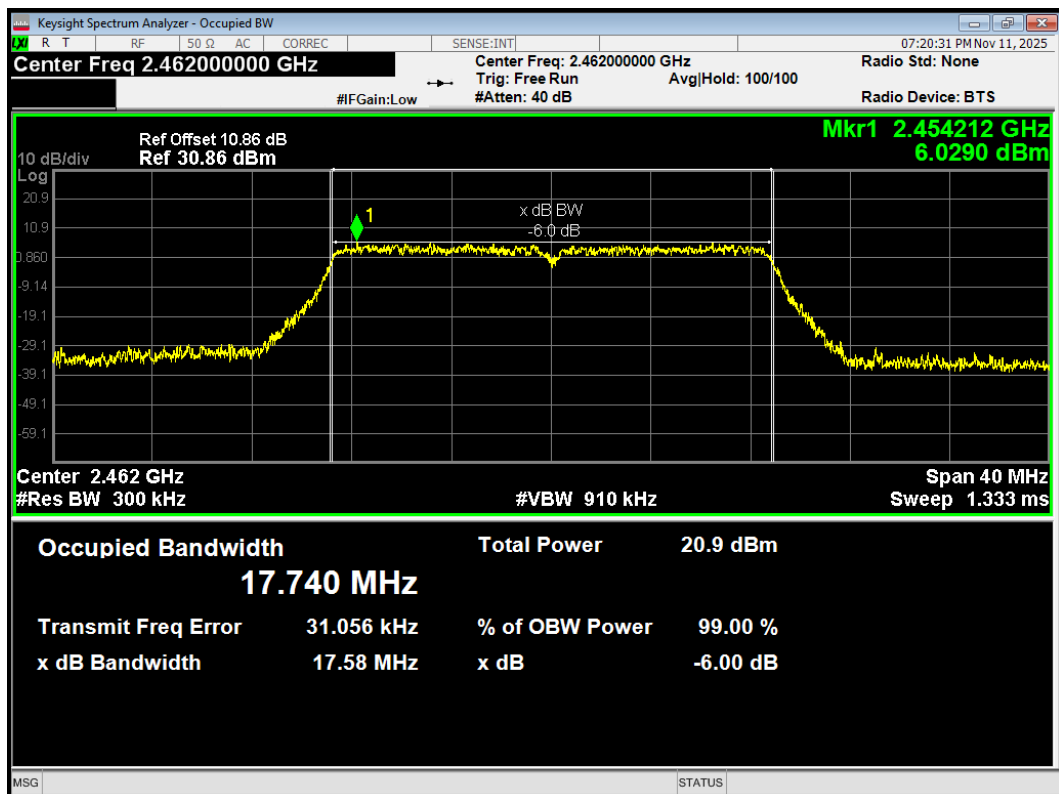
-6dB Bandwidth 802.11n(HT20) 2412MHz



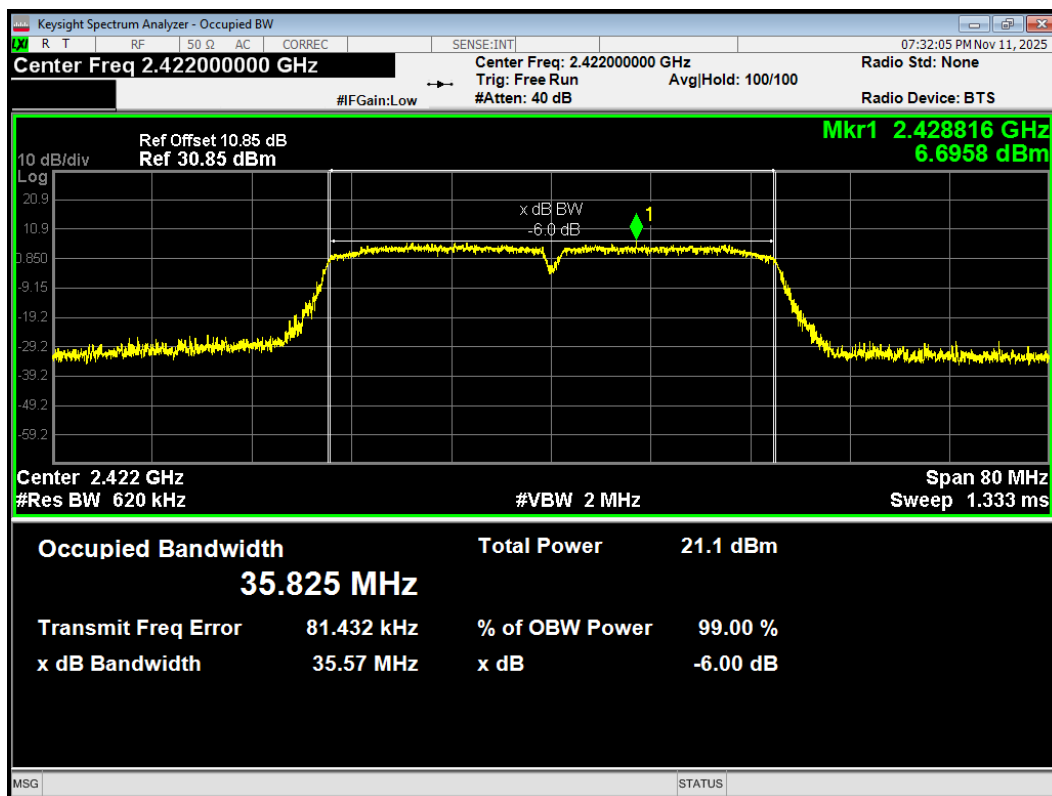
-6dB Bandwidth 802.11n(HT20) 2437MHz



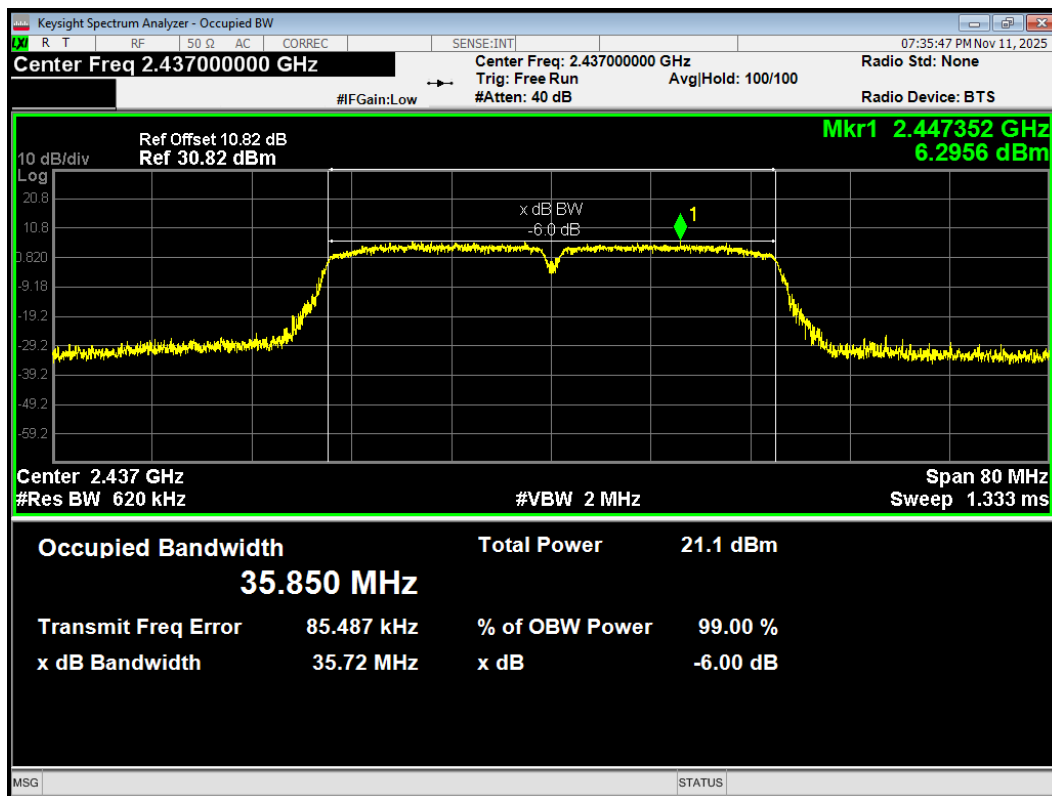
-6dB Bandwidth 802.11n(HT20) 2462MHz



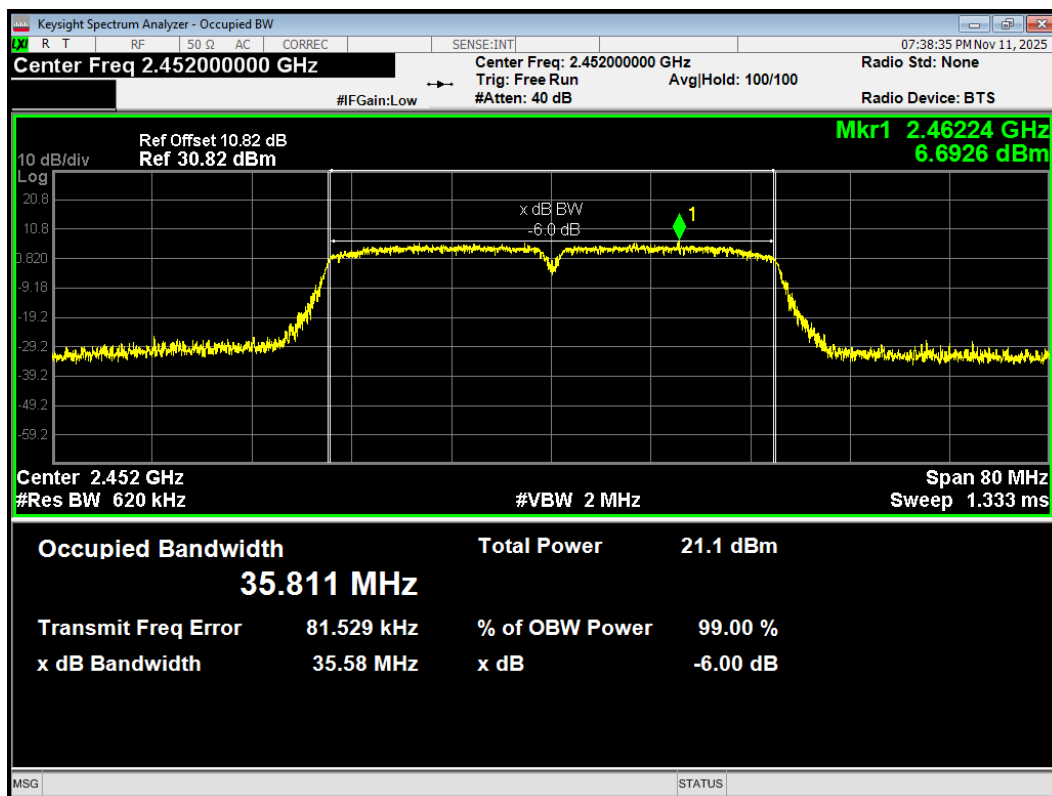
-6dB Bandwidth 802.11n(HT40) 2422MHz



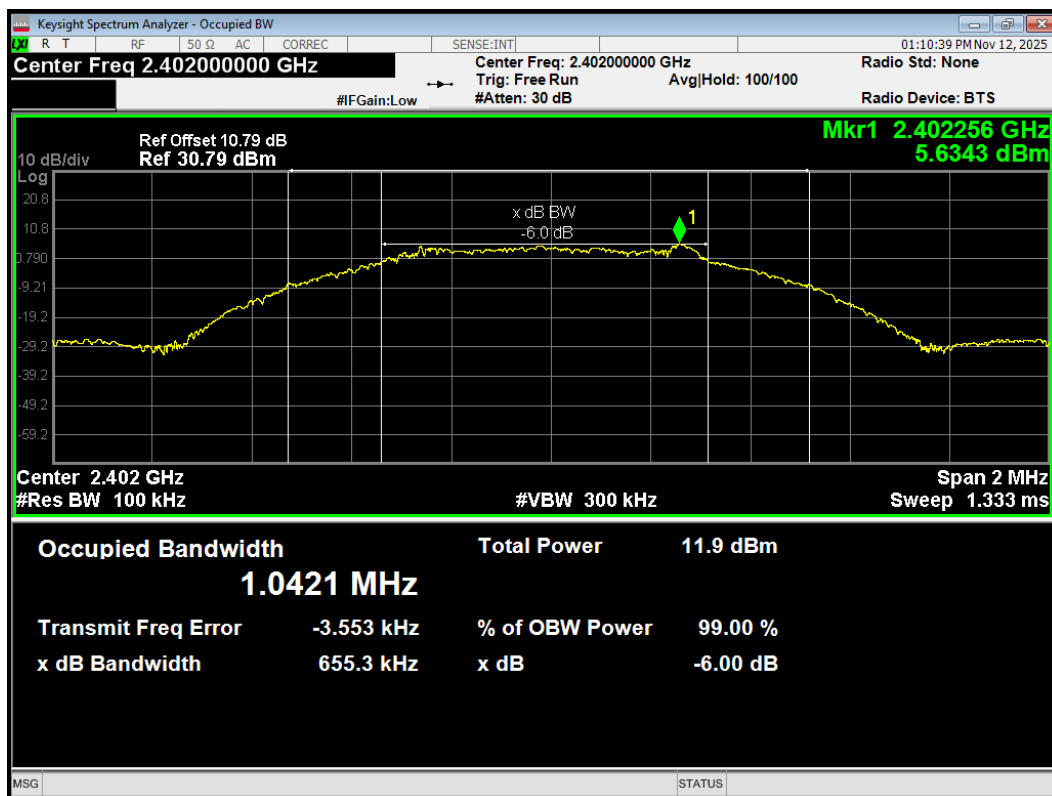
-6dB Bandwidth 802.11n(HT40) 2437MHz



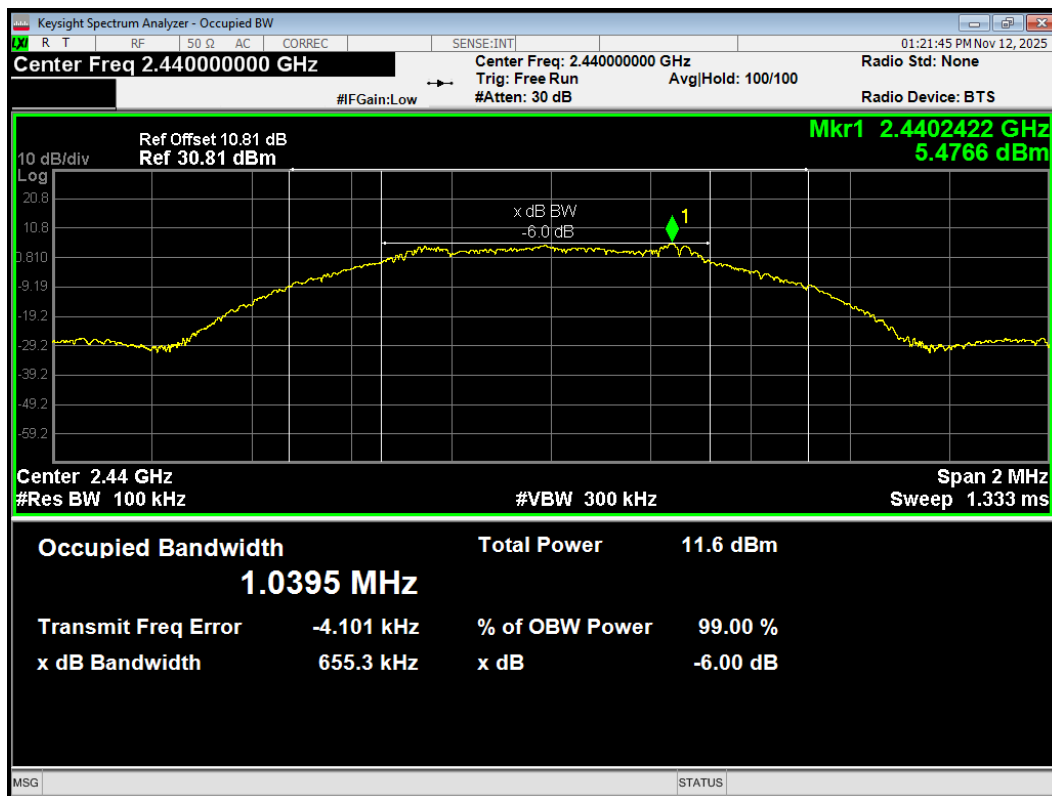
-6dB Bandwidth 802.11n(HT40) 2452MHz



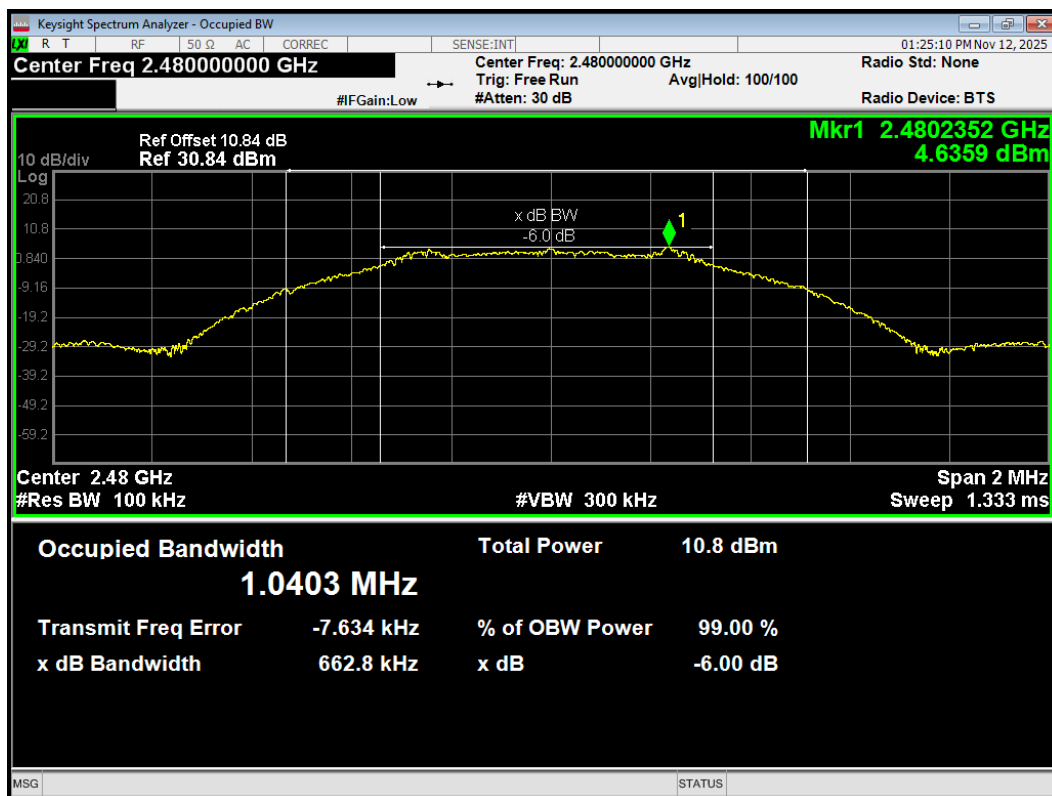
-6dB Bandwidth BLE (1M) 2402MHz



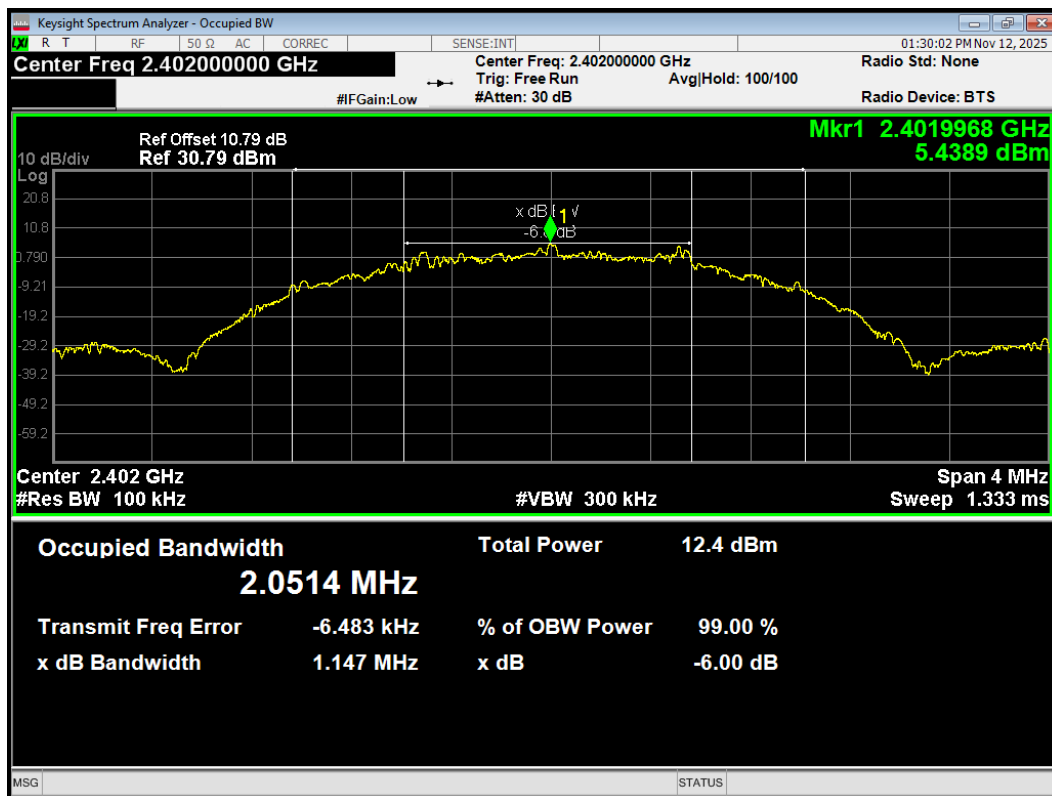
-6dB Bandwidth BLE (1M) 2440MHz



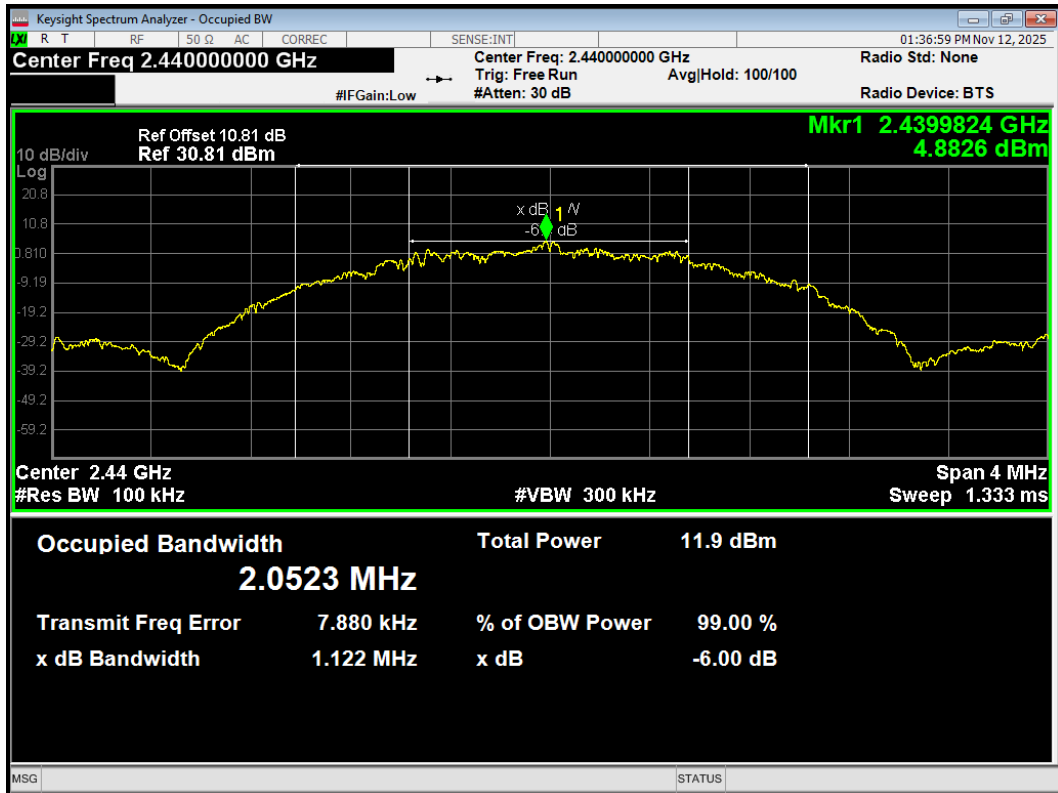
-6dB Bandwidth BLE (1M) 2480MHz



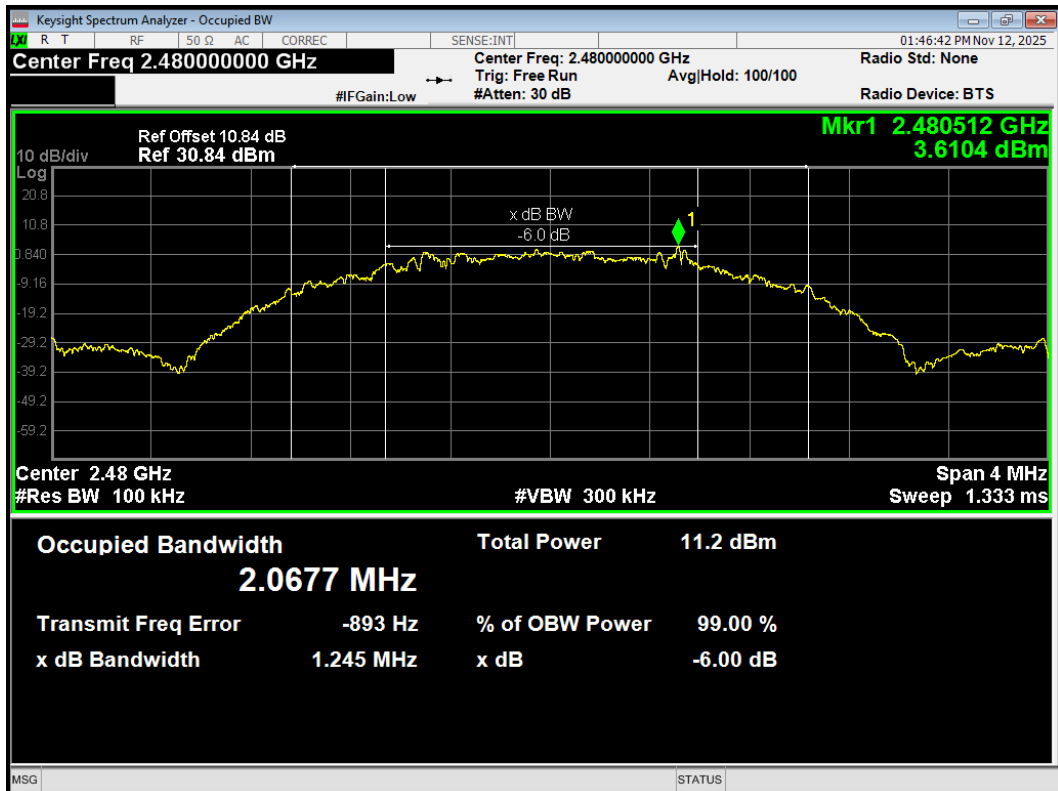
-6dB Bandwidth BLE (2M) 2402MHz



-6dB Bandwidth BLE (2M) 2440MHz



-6dB Bandwidth BLE (2M) 2480MHz

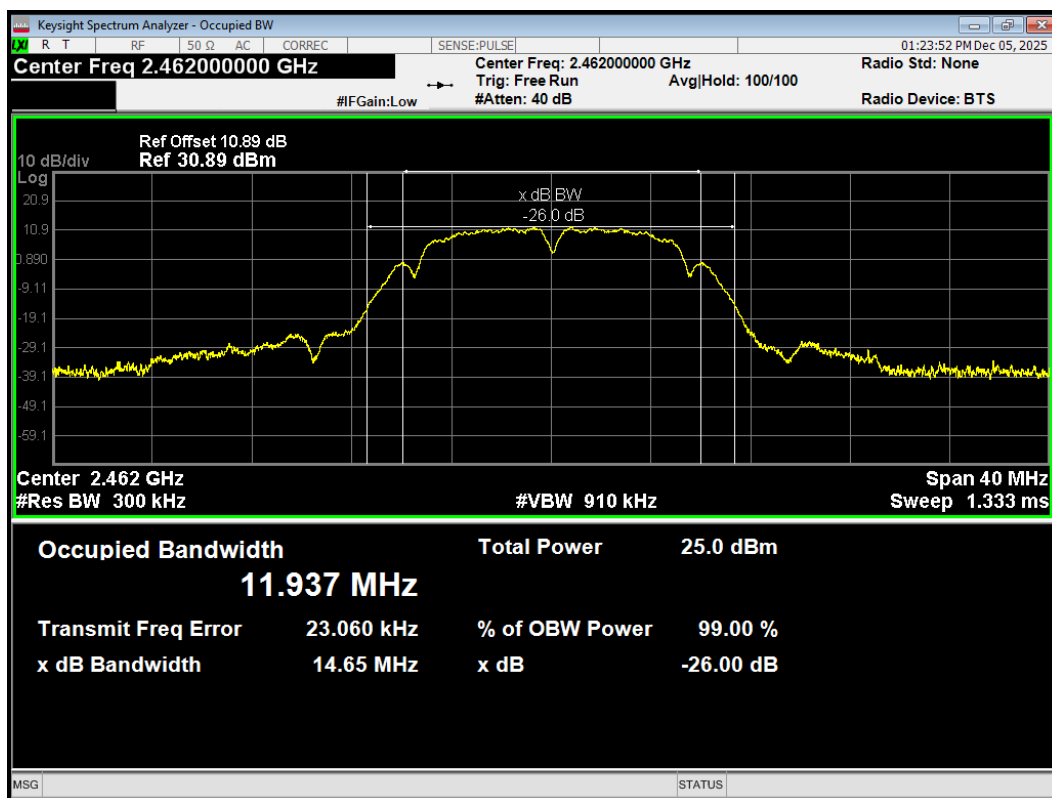


**Variant**

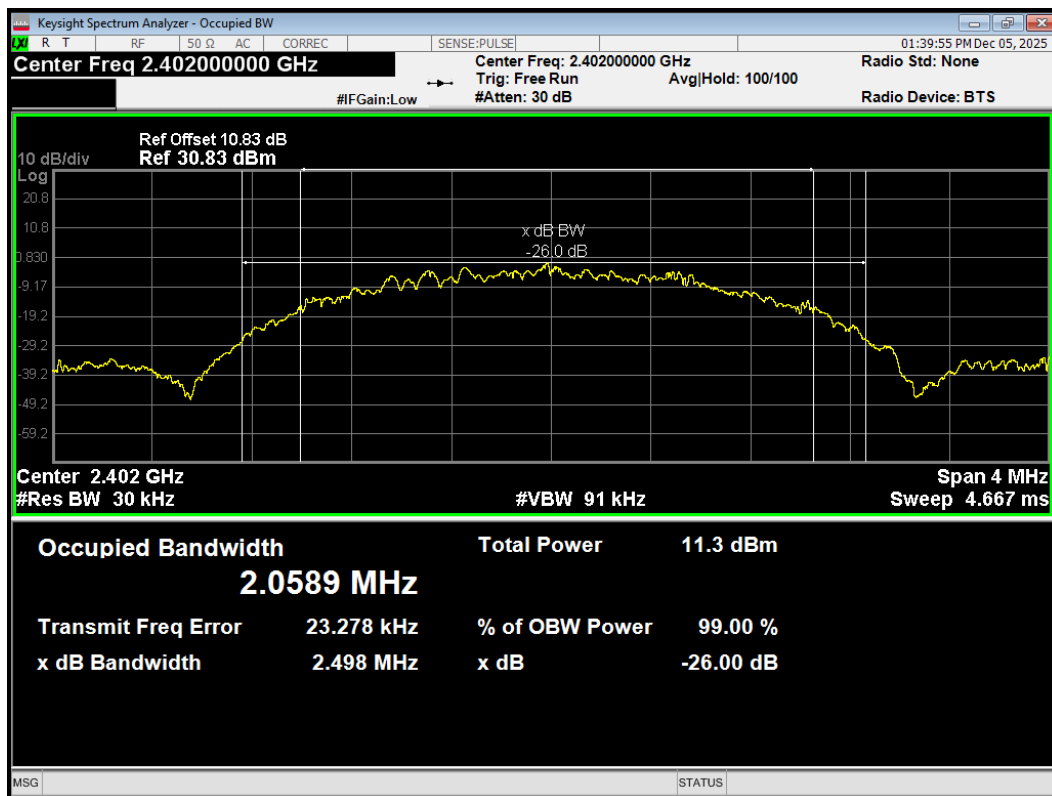
| Test Mode                   | Carrier frequency (MHz) | 99% bandwidth (MHz) | Minimum 6 dB bandwidth (MHz) | Limit (kHz) | Conclusion |
|-----------------------------|-------------------------|---------------------|------------------------------|-------------|------------|
| 802.11b                     | 2462                    | 11.937              | 9.907                        | 500         | PASS       |
| Bluetooth (Low Energy) (2M) | 2402                    | 2.059               | 1.316                        | 500         | PASS       |

99%bandwidth

OBW 802.11b 2462MHz

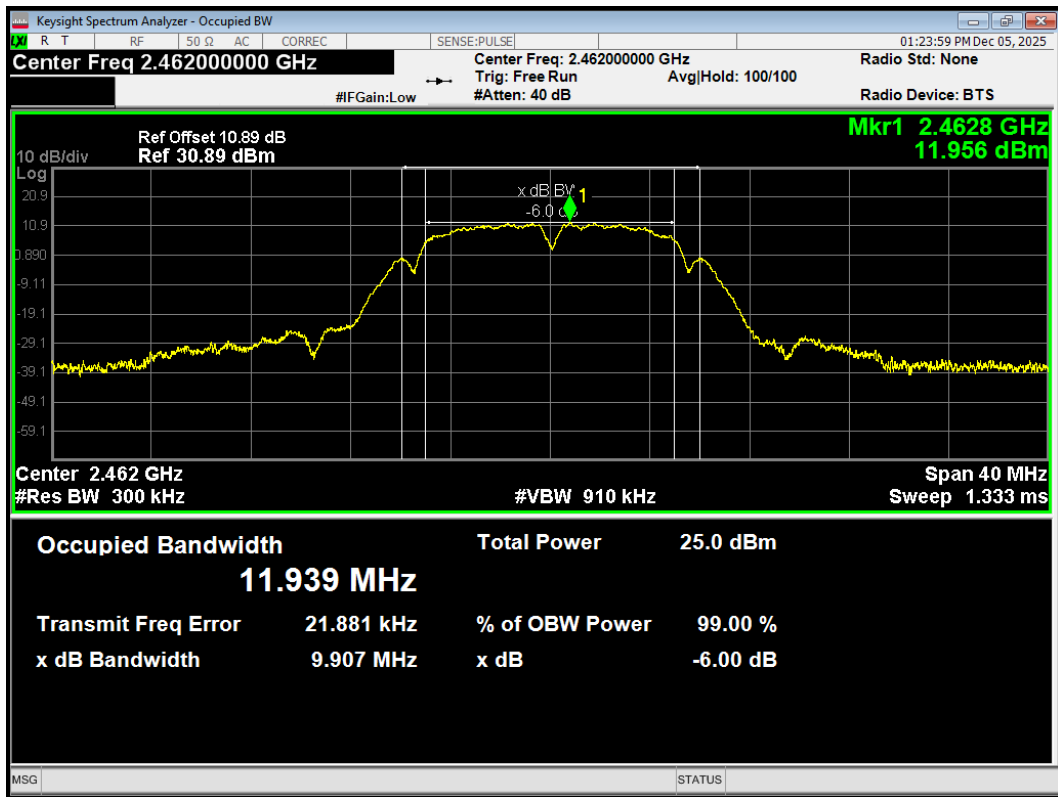


OBW BLE (2M) 2402MHz

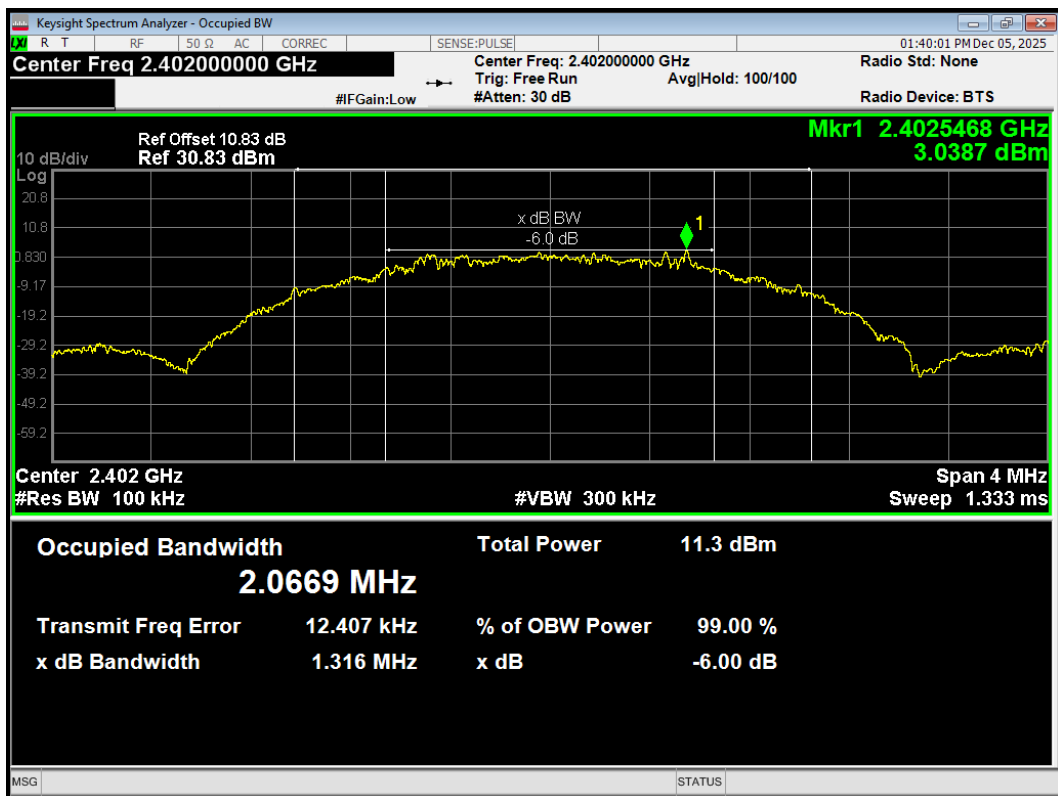


## 6dB Bandwidth

-6dB Bandwidth 802.11b 2462MHz



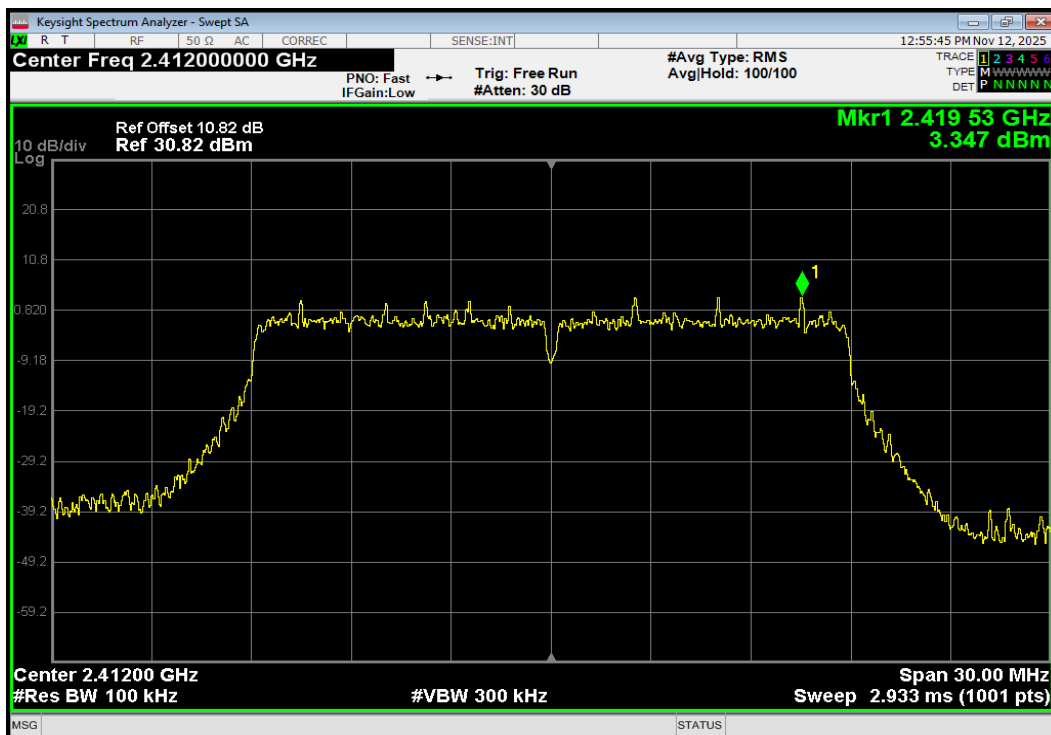
-6dB Bandwidth BLE (2M) 2402MHz



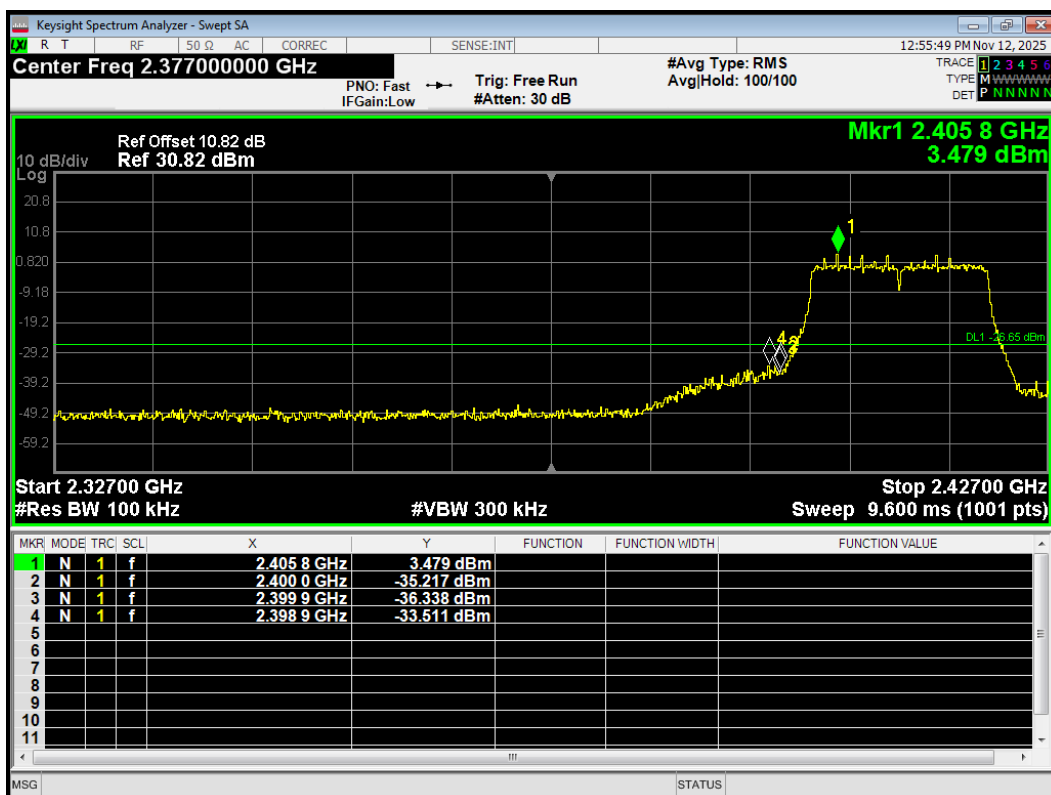
### 6.3. Band Edge

Original

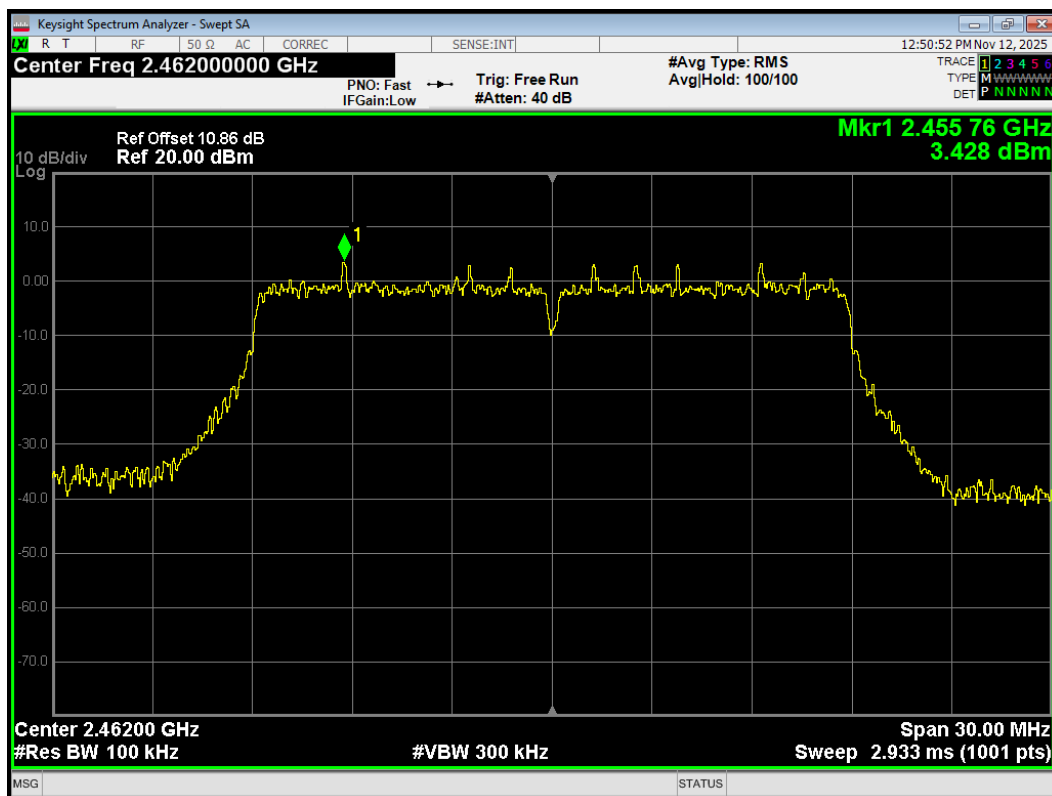
Band Edge 802.11ax(HE20) 2412MHz Ref



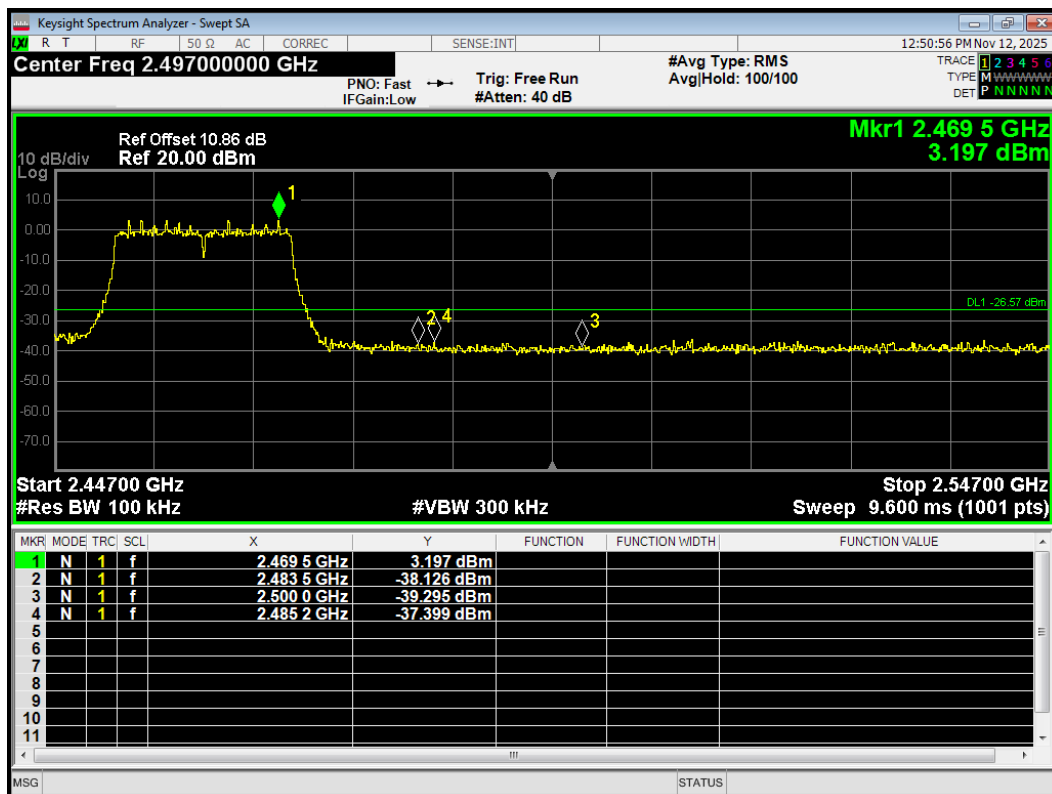
Band Edge 802.11ax(HE20) 2412MHz Emission



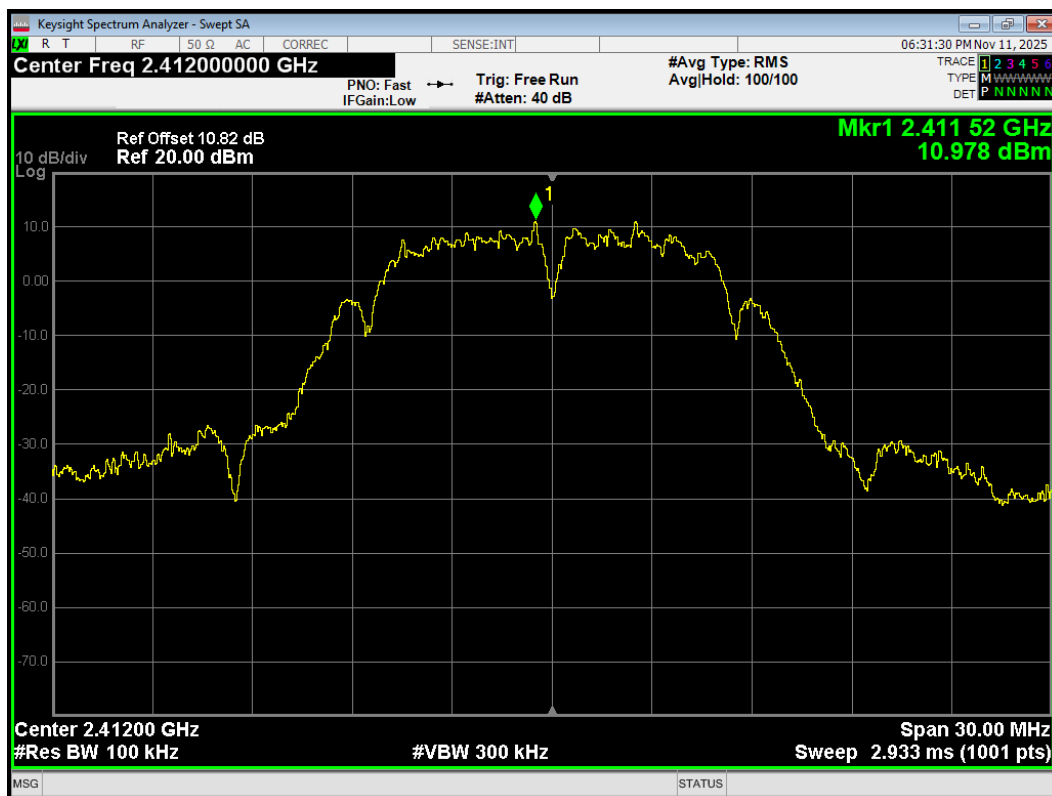
Band Edge 802.11ax(HE20) 2462MHz Ref



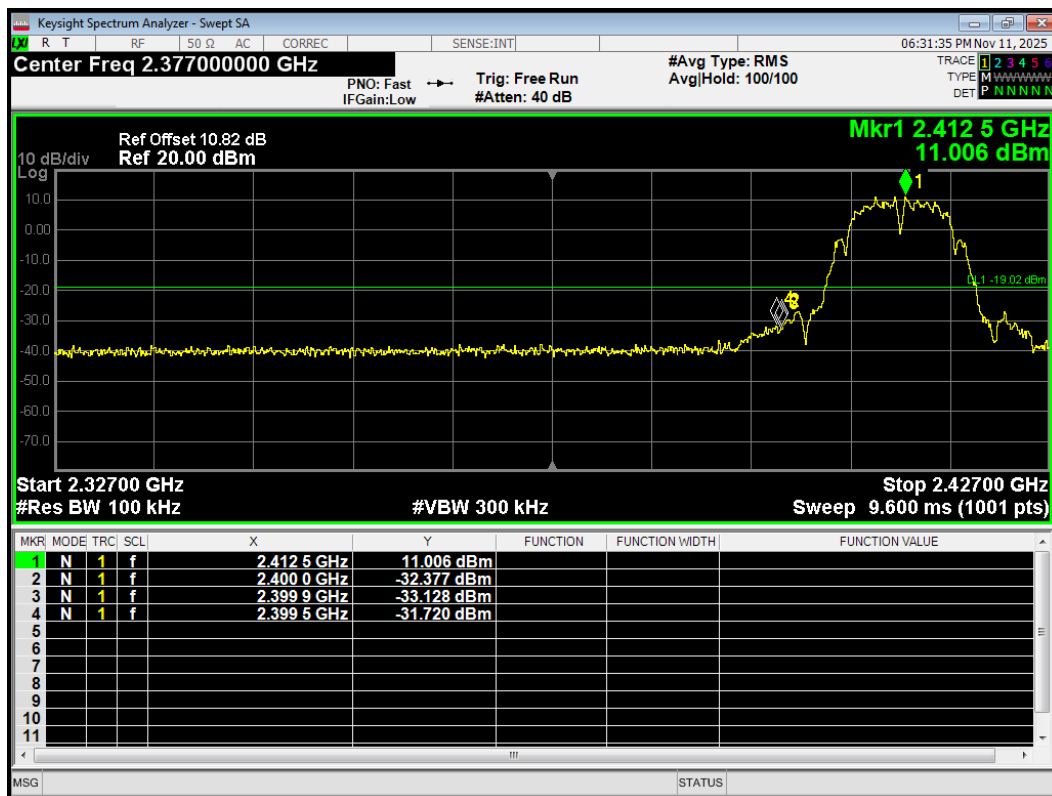
Band Edge 802.11ax(HE20) 2462MHz Emission



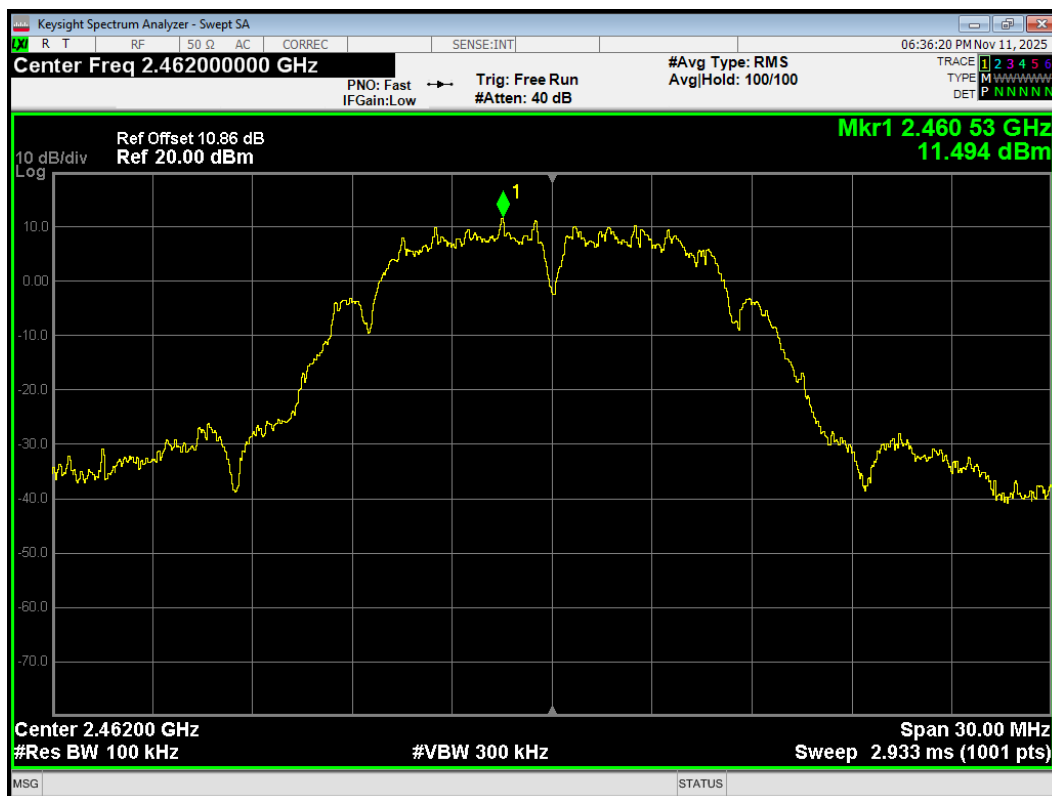
### Band Edge 802.11b 2412MHz Ref



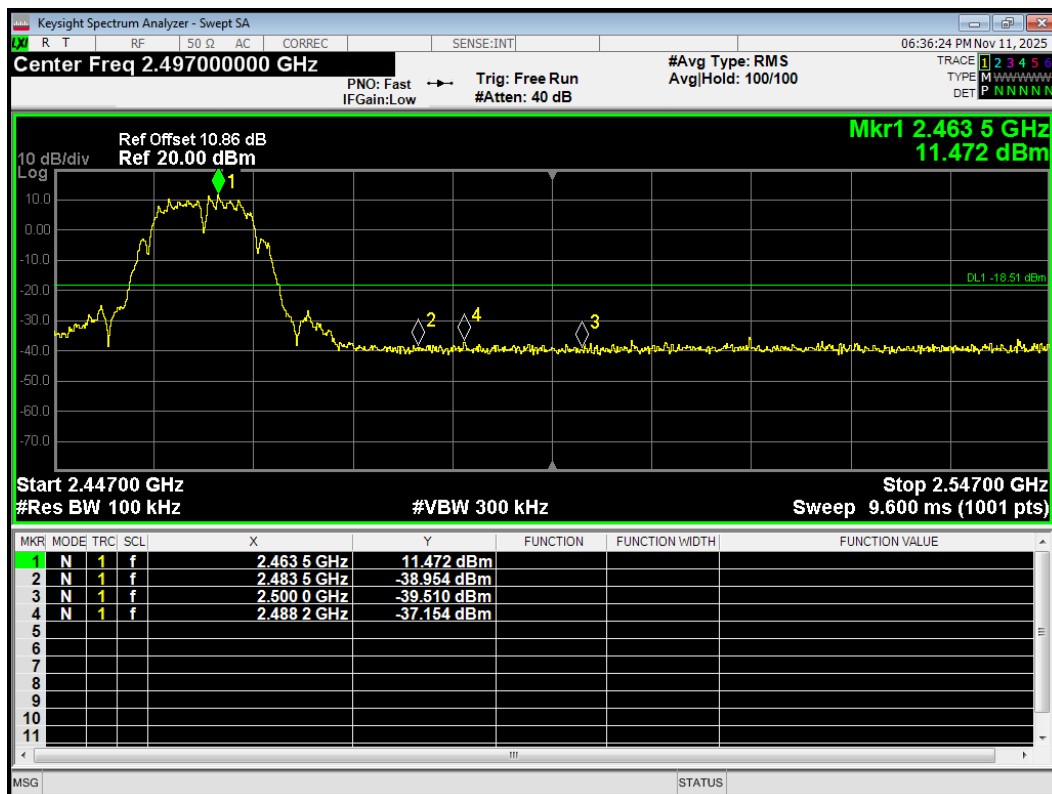
### Band Edge 802.11b 2412MHz Emission



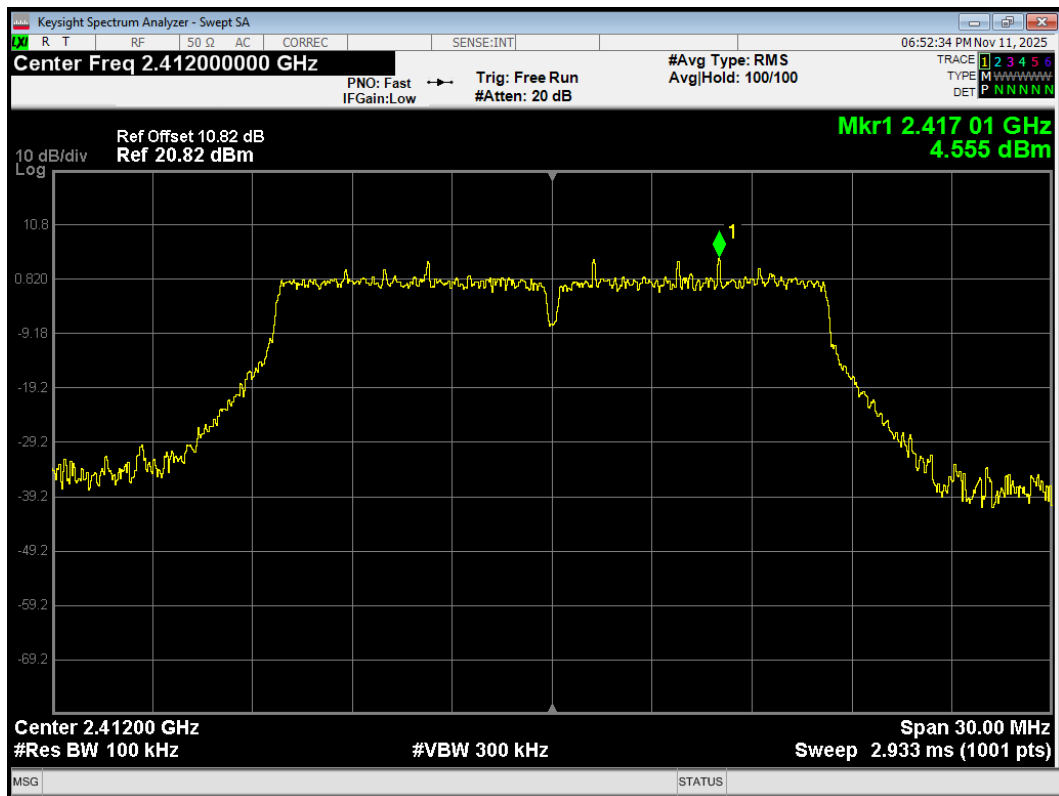
# Band Edge 802.11b 2462MHz Ref



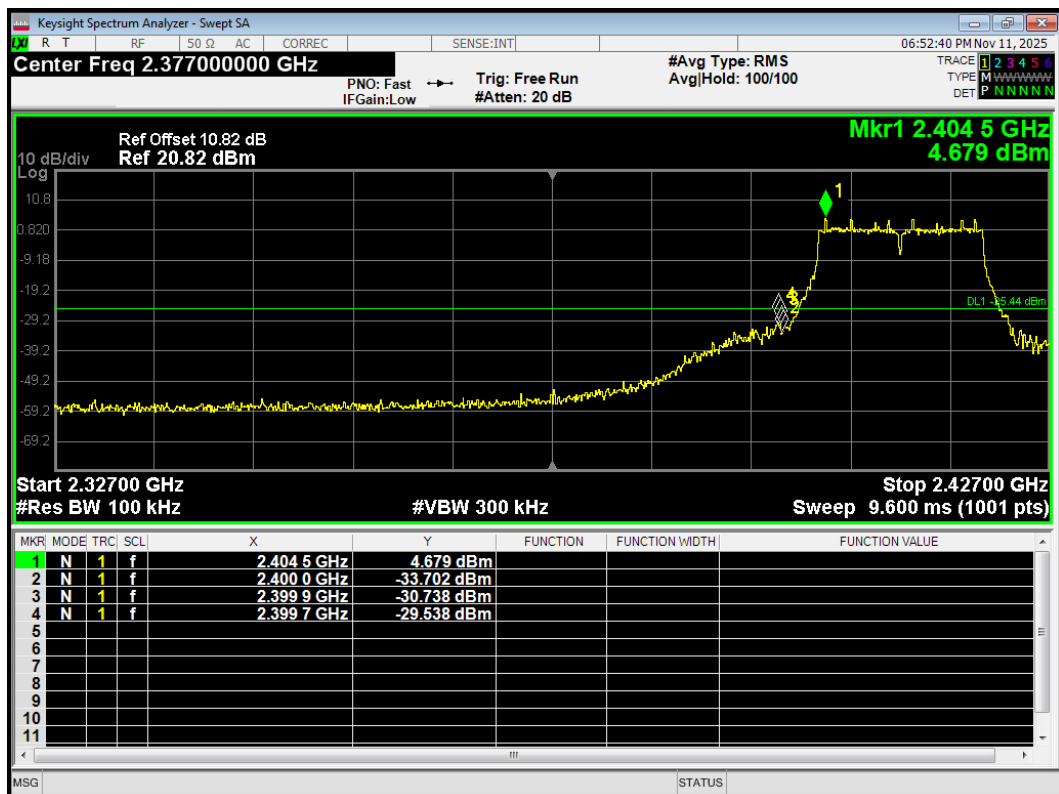
# Band Edge 802.11b 2462MHz Emission



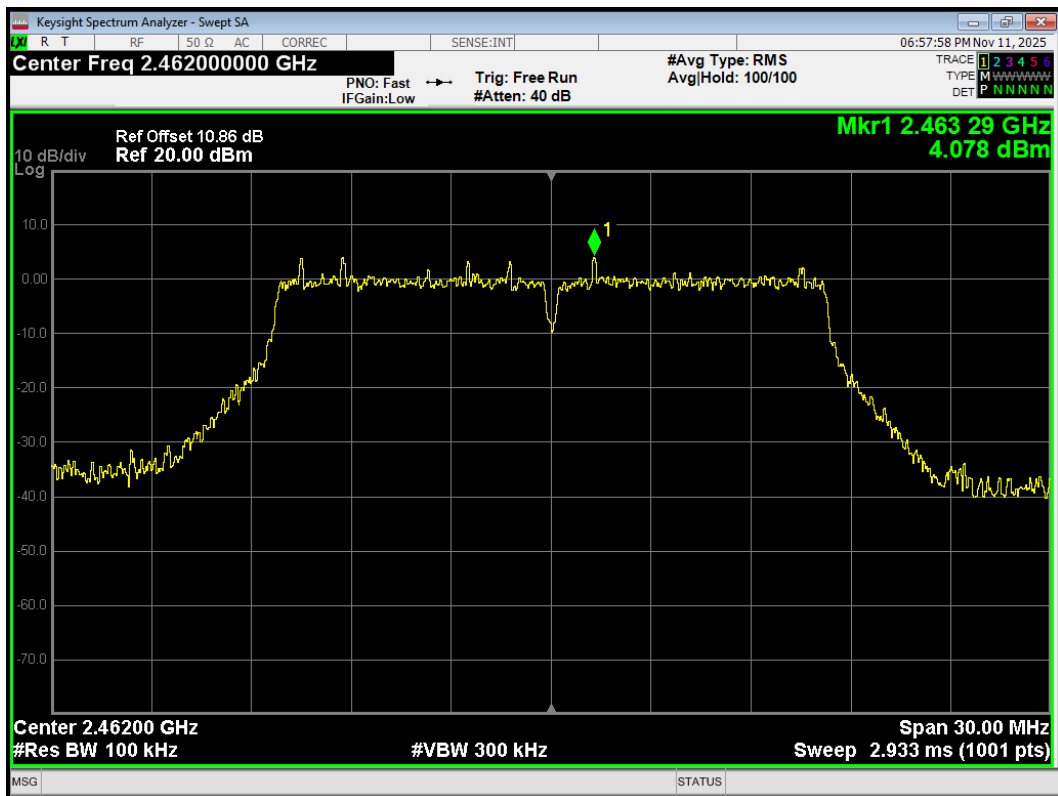
### Band Edge 802.11g 2412MHz Ref



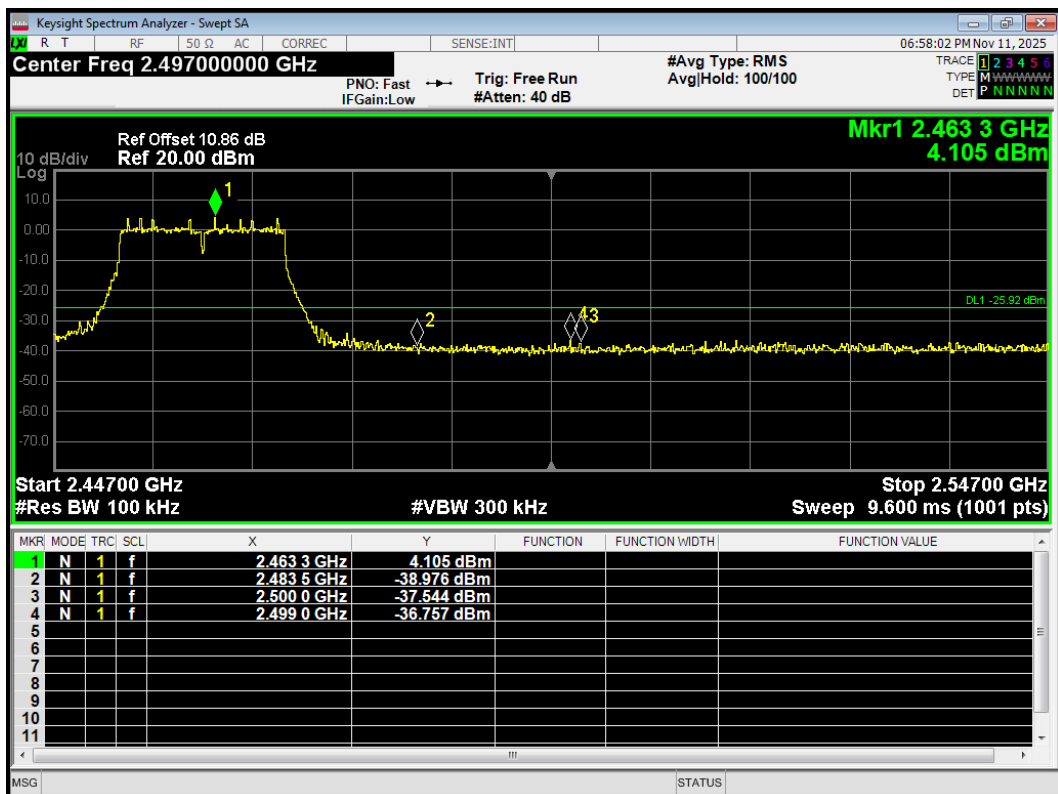
### Band Edge 802.11g 2412MHz Emission



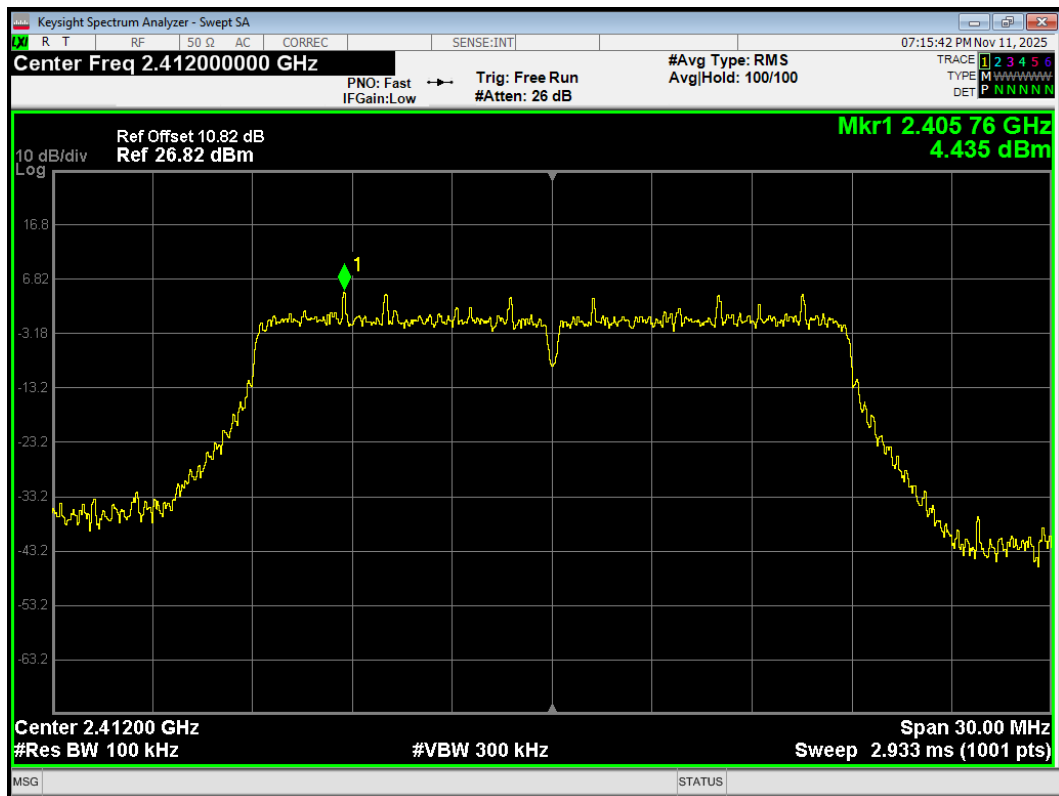
Band Edge 802.11g 2462MHz Ref



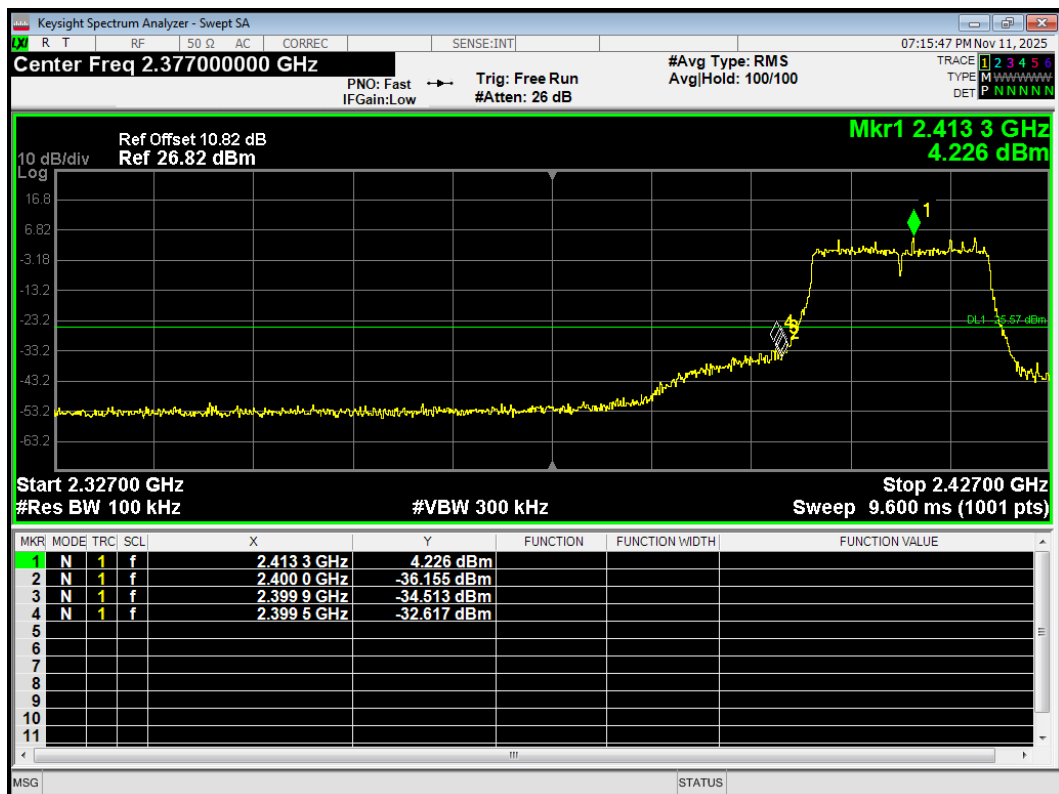
Band Edge 802.11g 2462MHz Emission



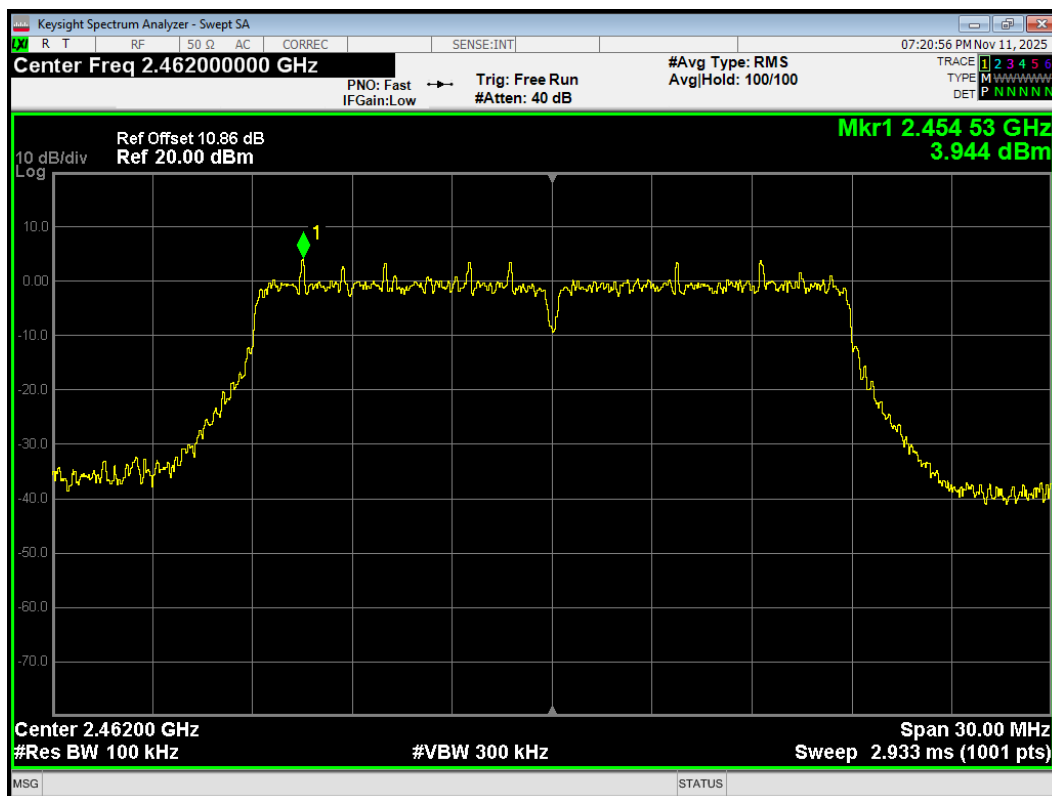
Band Edge 802.11n(HT20) 2412MHz Ref



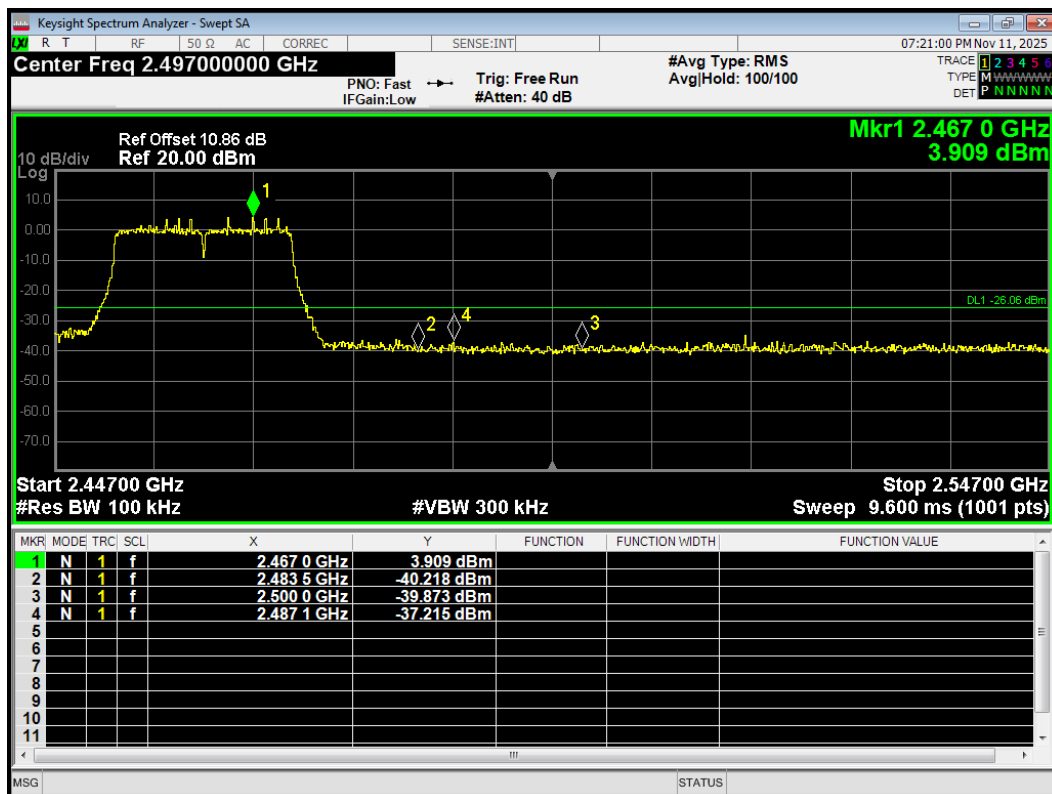
Band Edge 802.11n(HT20) 2412MHz Emission



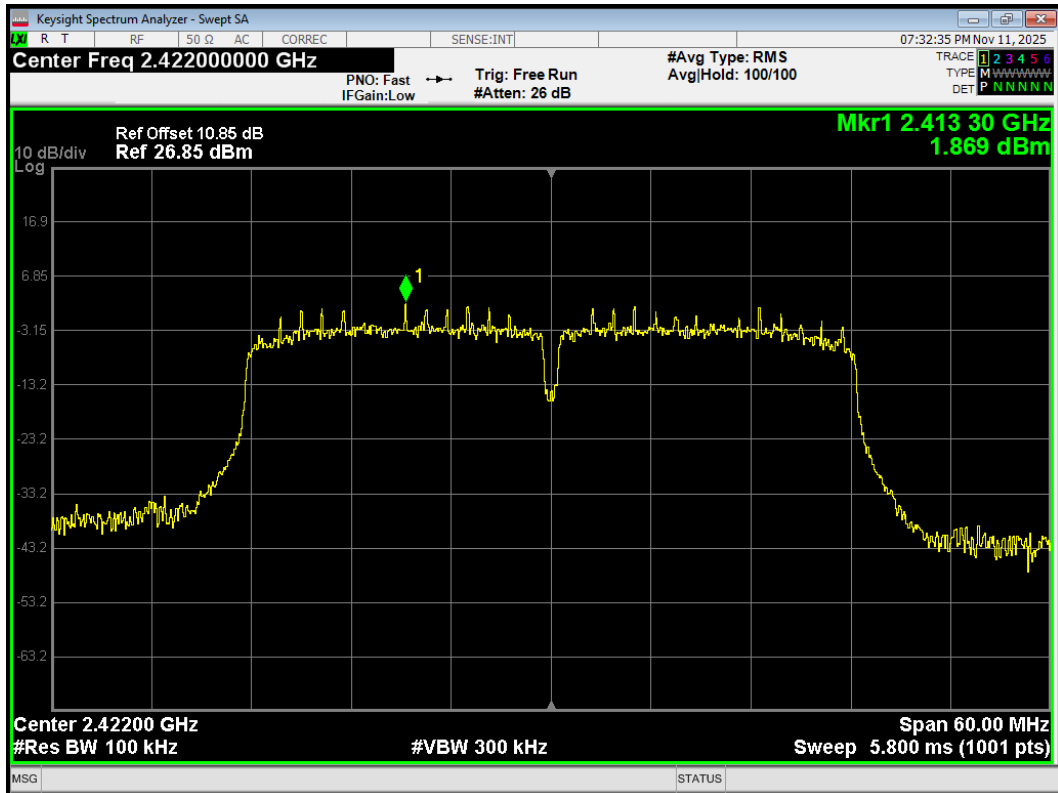
Band Edge 802.11n(HT20) 2462MHz Ref



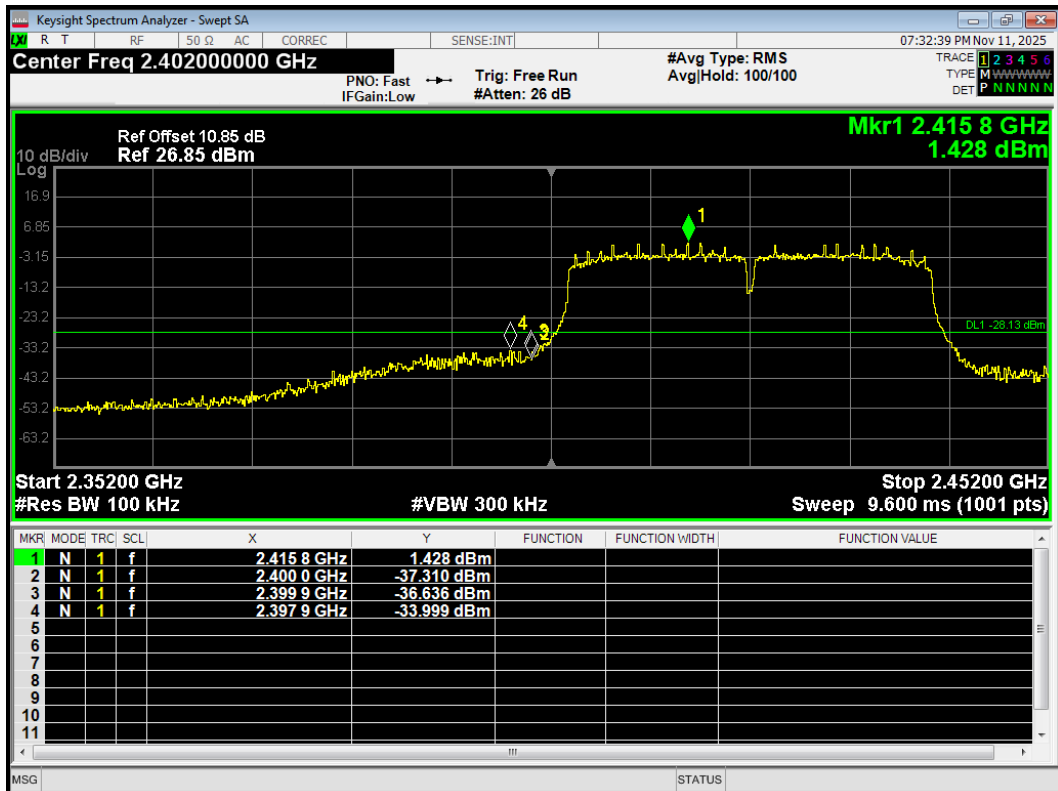
Band Edge 802.11n(HT20) 2462MHz Emission



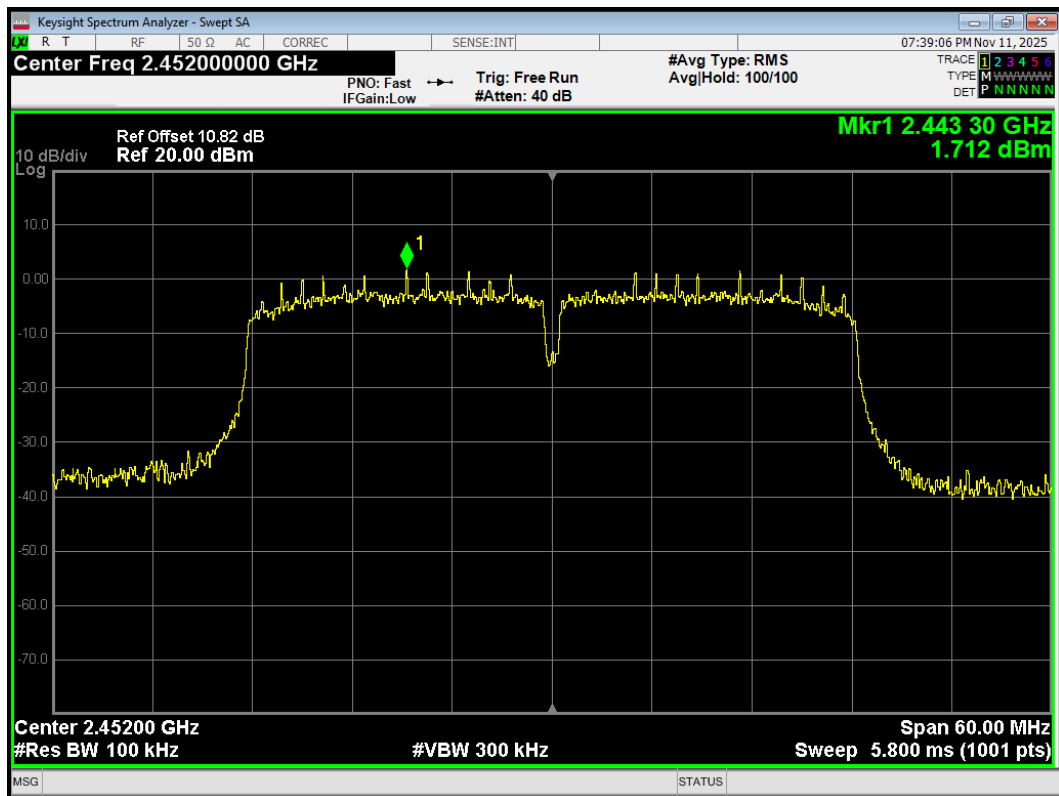
Band Edge 802.11n(HT40) 2422MHz Ref



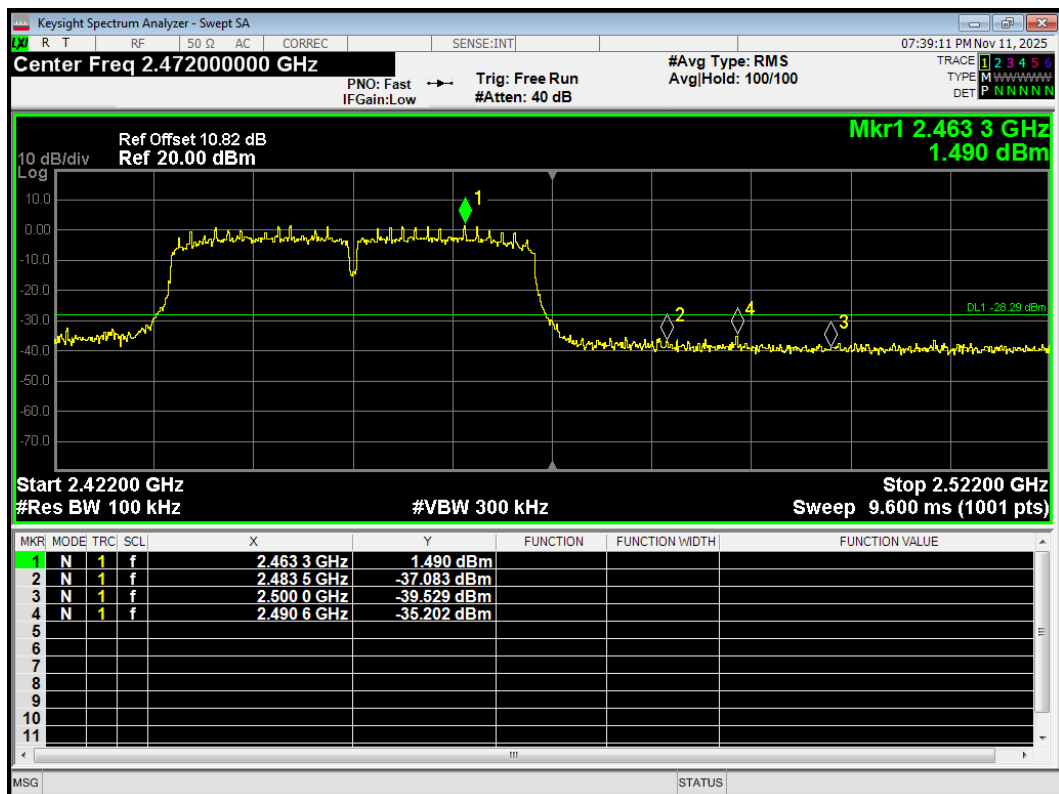
Band Edge 802.11n(HT40) 2422MHz Emission



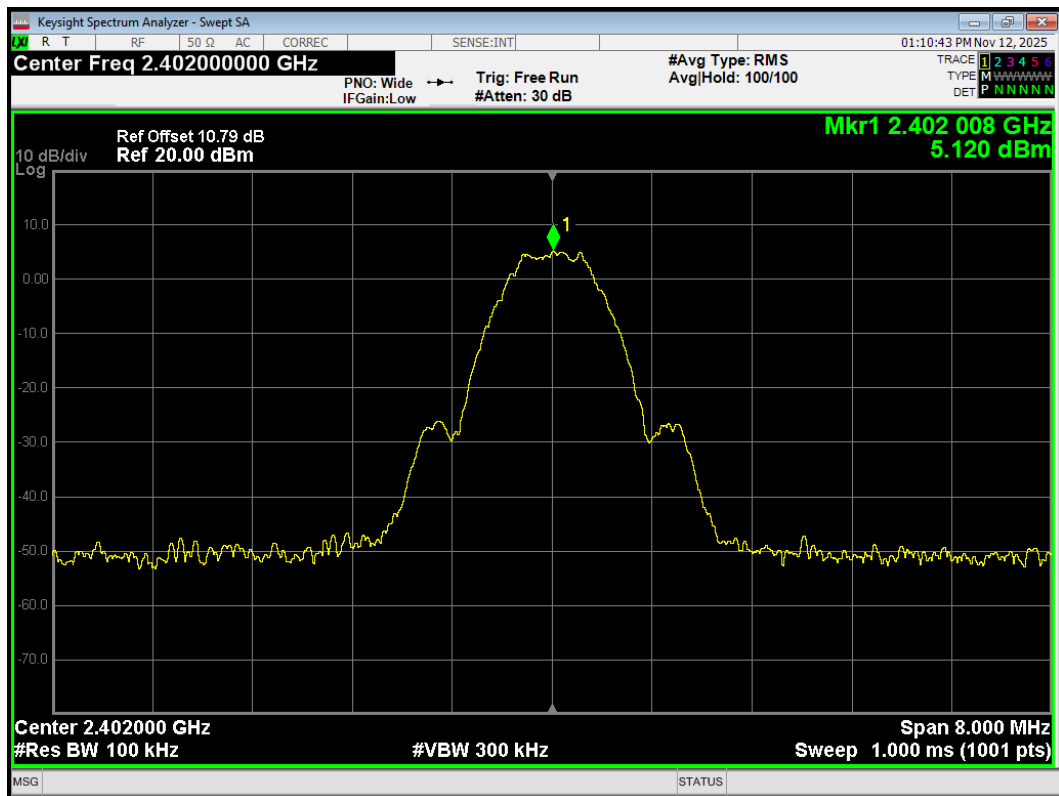
Band Edge 802.11n(HT40) 2452MHz Ref



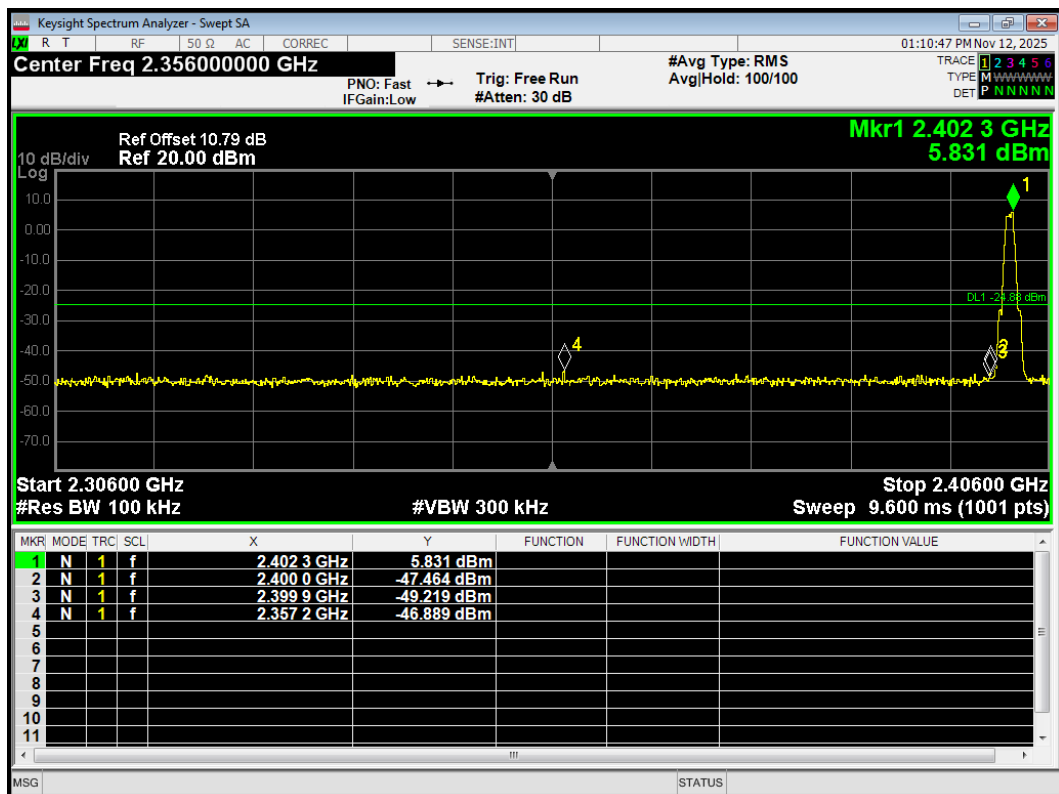
Band Edge 802.11n(HT40) 2452MHz Emission



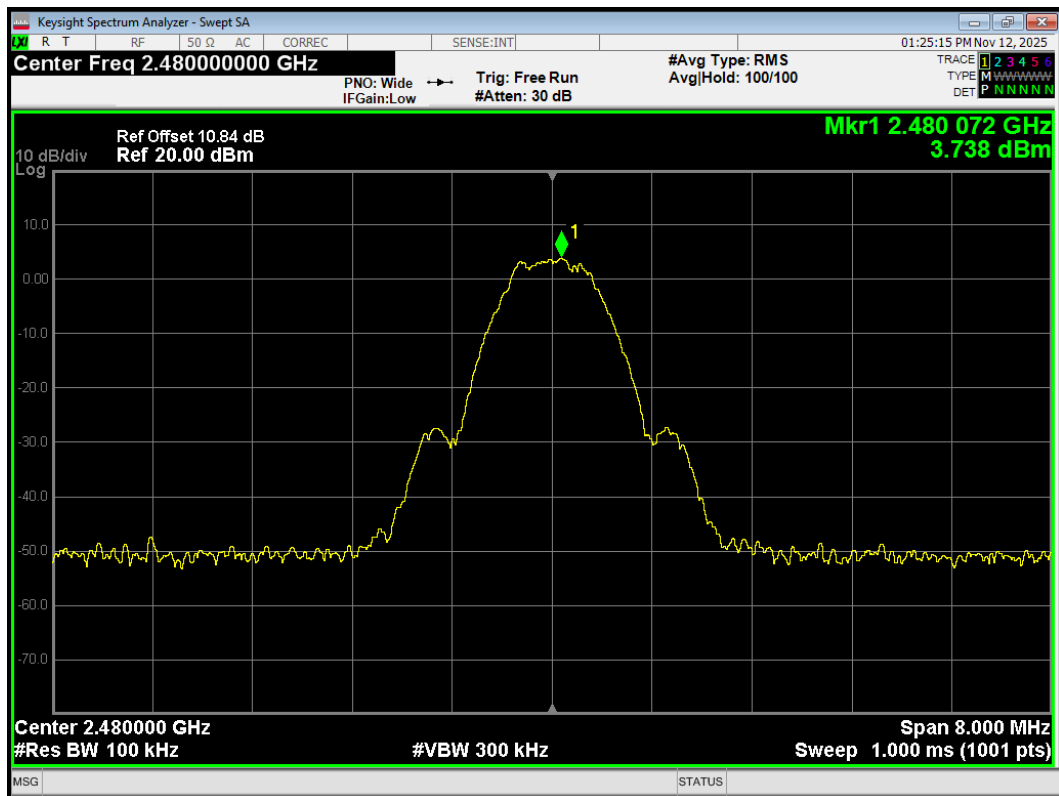
Band Edge BLE (1M) 2402MHz Ref



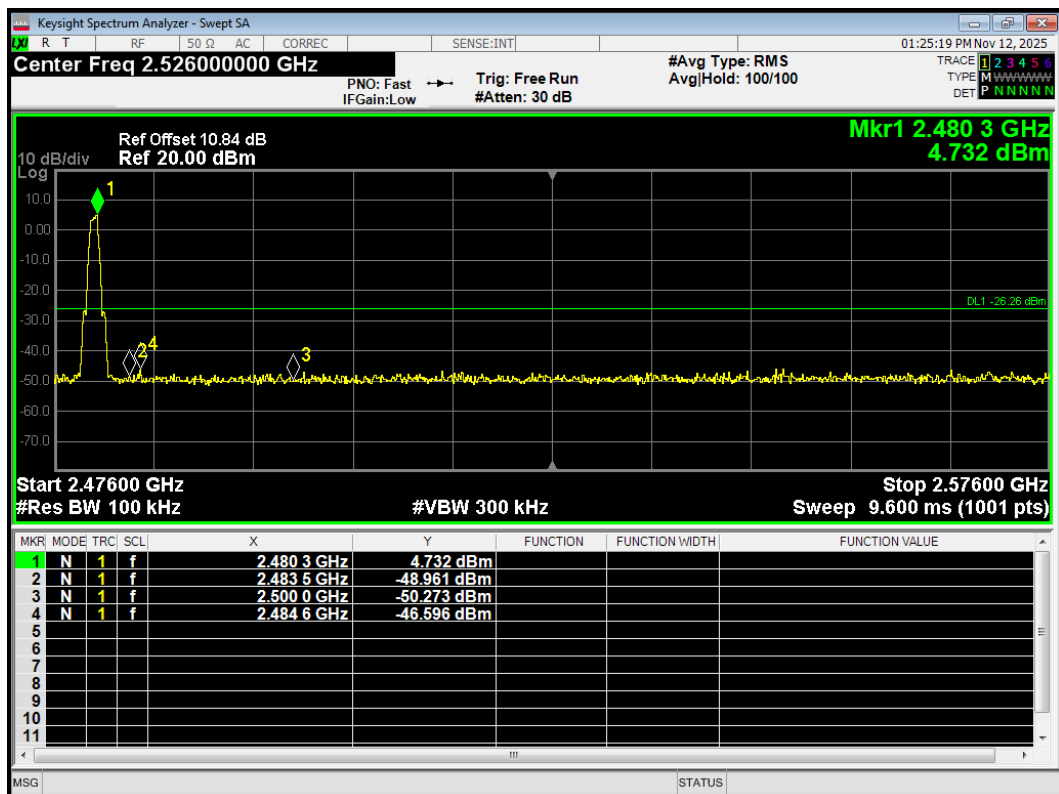
Band Edge BLE (1M) 2402MHz Emission



Band Edge BLE (1M) 2480MHz Ref



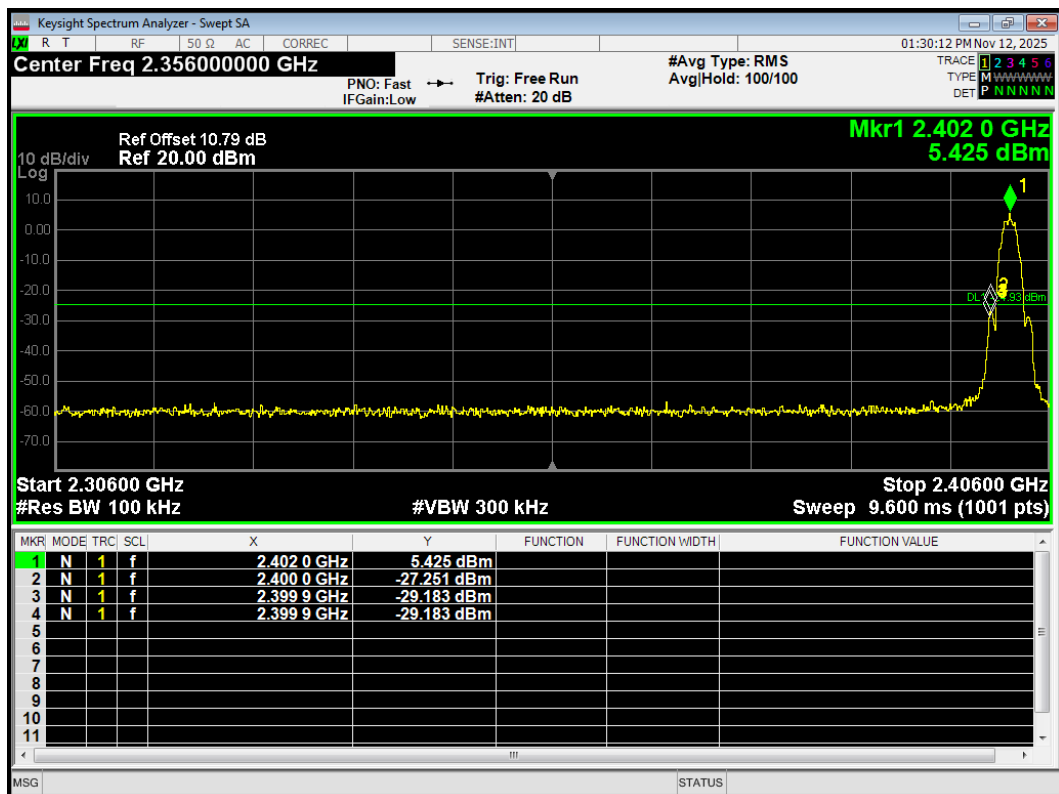
Band Edge BLE (1M) 2480MHz Emission



Band Edge BLE (2M) 2402MHz Ref



Band Edge BLE (2M) 2402MHz Emission



Band Edge BLE (2M) 2480MHz Ref



Band Edge BLE (2M) 2480MHz Emission

