

# TEST REPORT

|                                                    |                                                                                                                                                        |                                                                                       |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Report Reference No. ....:                         | 80260100005001                                                                                                                                         |                                                                                       |
| Sample ID.....:                                    | BLC-01-0972722-009                                                                                                                                     |                                                                                       |
| Date of issue .....                                | 20/01/2026                                                                                                                                             |                                                                                       |
| Total number of pages .....                        | 52                                                                                                                                                     |                                                                                       |
| Testing Laboratory .....                           | TUV SUD South Asia Pvt Ltd                                                                                                                             |                                                                                       |
| Address .....                                      | Plot No. 3-P1-B, Hitech Defence & Aerospace Park,<br>KIADB Industrial Area, BK Palya, Bengaluru,<br>Bengaluru North Taluk   Pin code – 562149<br>India |                                                                                       |
| Applicant's name .....                             | Ultrahuman Healthcare Private Limited                                                                                                                  |                                                                                       |
| Address .....                                      | No. 4088/799, Third Floor, V K Paradise Sector-2, HSR Layout, Bangalore,<br>Karnataka, India - 560102                                                  |                                                                                       |
| Client Representative.....:                        | Mr. Adhit Shet                                                                                                                                         |                                                                                       |
| Test specification Standard.....:                  | FCC Part 15 Subpart C 15.203, 15.205, 15.209 & 15.247<br>RSS 247 Issue 4, RSS Gen Issue 5                                                              |                                                                                       |
| Test Method .....                                  | ANSI C63.10-2020                                                                                                                                       |                                                                                       |
| Non-standard test method.....:                     | NA                                                                                                                                                     |                                                                                       |
| Test Report Form Number.....:                      | LAB_F(EE)_138-51                                                                                                                                       |                                                                                       |
| Product Name.....:                                 | Ring Pro                                                                                                                                               |                                                                                       |
| Test Item Description.....:                        | Smart health and fitness wearable in the form factor of a ring worn by a user<br>on his/her Finger                                                     |                                                                                       |
| Manufacturer .....                                 | Ultrahuman Healthcare Private Limited                                                                                                                  |                                                                                       |
| Model Number.....:                                 | RP-XX-XX                                                                                                                                               |                                                                                       |
| Serial Number.....:                                | RP-PS-08-INB-WB-ES01                                                                                                                                   |                                                                                       |
| Ratings.....:                                      | 5V DC, 60mA(max)                                                                                                                                       |                                                                                       |
| FCC ID.....:                                       | 2A99X-UHRINGPRO01                                                                                                                                      |                                                                                       |
| IC ID.....:                                        | 30138-UHRINGPRO01                                                                                                                                      |                                                                                       |
| Tested by<br>(Name + Signature) .....              | Nikhil G                                                                                                                                               |  |
| Reviewed & Approved by<br>(Name + Signature) ..... | Raghunath M N                                                                                                                                          |  |
|                                                    |                                                                                                                                                        |                                                                                       |

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## Possible test case verdicts:

- test case does not apply to the test object.... : N/A
- test object does meet the requirement ..... : Pass
- test object does not meet the requirement ... : Fail

## Testing:

Condition of the EUT on Receipt.....: Good  
 Date of receipt of test item.....: 31/10/2025  
 Date (s) of performance of tests.....: 14/11/2025 to 17/11/2025

## General remarks:

1. The submitted sample(s) were not drawn by laboratory.
2. The test results presented in this report relate only to the object tested.
3. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.
4. The correctness of the information related to sample(s) in the Test Request Form/Customer letterhead/E-mail is the customer's responsibility. The laboratory reports the said information in the test report and is not liable for the same.
5. The laboratory will retain the sample(s) for 45 days except for the mandatory retention period specified by the Regulatory Bodies and unless otherwise specified by the client.
6. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.  
 "(see Enclosure #)" refers to additional information appended to the report.  
 "(see appended table)" refers to a table appended to the report.
7. Throughout this report a point is used as the decimal separator.

## Use of uncertainty of measurement for decisions on conformity (decision rule): Yes/No

☒ No decision rule is specified by the IEC/EN standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other: (to be specified)

**Decisions on conformity:** Decision on conformity of results is based on as per standard limits or criteria.

**Summary of compliance:** The Product comply with the requirements of FCC Part 15 Subpart C 15.203, 15.205, 15.209 & 15.247 / RSS 247 Issue 4, RSS Gen Issue 5

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## Revision History of Records

| Test Report Number | Version | Reason for Change | Date Issued |
|--------------------|---------|-------------------|-------------|
| 80260100005001     | 01      | Initial Report    | 20/01/2026  |

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## **1 GENERAL INFORMATION**

### **1.1 Appendices**

The following documents are appended to this report as separate attachments:

Test Setup Photographs, External and Internal Photographs of the EUT, Label and its Location, Block Diagram, EUT Specifications, Schematic Diagrams, Bill of Materials, User Manual, and Maximum Permissible Exposure (MPE) information.

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## 2 TEST SUMMARY

| Sl.no | Requirement – Test                                            | Basic Standard                   |                                    | Result |
|-------|---------------------------------------------------------------|----------------------------------|------------------------------------|--------|
|       |                                                               | FCC                              | ISED                               |        |
| 1.    | Maximum conducted (Peak) output power                         | FCC 15.247 (b)(3)                | RSS 247 Issue 4, Section 6.3.2     | Pass   |
| 2.    | Maximum Power Spectral Density                                | FCC 15.247(e)                    | RSS 247 Issue 4, Section 6.3.1     | Pass   |
| 3.    | DTS Bandwidth & 99% Bandwidth                                 | FCC 15.247(a)(2)                 | RSS 247 Issue 4, Section 6.3.1     | Pass   |
| 4.    | Emissions in non-restricted frequency bands                   | FCC 15.247(d)                    | RSS 247 Issue 4, Section 6.6       | Pass   |
| 5.    | Spurious Radiated Emissions and Restricted Bands of Operation | FCC 15.247 (d) / 15.209 / 15.205 | RSS-Gen Issue 5, Section 8.9 /8.10 | Pass   |
| 6.    | Conducted Emissions on AC Power Lines                         | FCC 15.207                       | RSS-Gen Issue 5, Section 8.8       | NA     |
| 7.    | Antenna Requirement                                           | FCC 15.203                       | RSS-Gen Issue 5, Section 6.8       | Pass   |

### Note:

#### 1. Antenna Requirement:

The RF module uses a permanently attached antenna and does not provide any standard antenna connector. This prevents end-user replacement or modification of the antenna. Therefore, the antenna configuration meets the requirements of FCC 47 CFR §15.203 as well as RSS-Gen Issue 5, Section 6.8, and the equipment is considered compliant with the applicable antenna restrictions.

\*NA - Not Applicable

\*N/T - Not Tested

#### 2. Model number: **RP-XX-XX**, where 'XX' refers to the Ring Pro model number system for the detailed model number definition.

Testing and reporting were conducted on model **RP-PS-10**.

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### 3 MEASUREMENT UNCERTAINTY

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$

**Table 1: Measurement Uncertainty**

| No. | Item                    | Uncertainty |
|-----|-------------------------|-------------|
| 1   | Conducted Emission Test | 2.25dB      |
| 2   | Radiated Emission Test  | 4.71 dB     |

### 4 TEST EQUIPMENT USED

**Table 2: Test Equipment Used**

| Sl. No | Test Equipment                      | Manufacturer                | Model No     | Serial No | Calibration Due Date |
|--------|-------------------------------------|-----------------------------|--------------|-----------|----------------------|
| 1.     | Active Loop Antenna                 | Schwarzbeck Mess-Elektronik | FMZB 1519C   | 43        | 07/04/2026           |
| 2.     | Biconical Antenna                   | Schwarzbeck Mess-Elektronik | VHBB 9124    | 1940      | 17/02/2026           |
| 3.     | Log-Periodic Antenna                | Schwarzbeck Mess-Elektronik | VUSLP 9111 B | 735       | 18/02/2026           |
| 4.     | Double Ridge Horn Antenna           | Schwarzbeck Mess-Elektronik | BBHA 9120D   | 2733      | 31/03/2026           |
| 5.     | Double Ridge Broadband Horn Antenna | Schwarzbeck Mess-Elektronik | BBHA 9120L   | 18        | 15/05/2026           |
| 6.     | EMI Test Receiver                   | ROHDE & SCHWARZ             | ESR26        | 101821    | 05/02/2026           |
| 7.     | Open Switch and Control Platform    | ROHDE & SCHWARZ             | OSP150       | 101158    | 27/02/2026           |
| 8.     | EMI Test Receiver                   | ROHDE & SCHWARZ             | ESW44        | 103295    | 10/03/2026           |
| 9.     | Signal controlling unit             | ROHDE & SCHWARZ             | SCU01F       | 100507    | --                   |
| 10.    | Signal Conditioning Unit            | ROHDE & SCHWARZ             | SCU18F       | 101037    | --                   |
| 11.    | Signal controlling unit             | ROHDE & SCHWARZ             | SCU40F1      | 100653    | --                   |

**Table 3: Instrument application Software versions**

| Sl. No | Test Type                                                              | Application software and version |
|--------|------------------------------------------------------------------------|----------------------------------|
| 1      | Antenna Port conducted measurement: TS8997 system                      | WMS 32 V11.60.00                 |
| 2      | Radiated spurious emission measurement- 10-meter Semi Anechoic Chamber | Elektra V5.03.0                  |

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## 5 EQUIPMENT INFORMATION

### 5.1 Product Function

Smart health and fitness wearable in the form factor of a ring worn by a user on his/her Finger.

### 5.2 Ring Pro model number system

| Code        | Code type    | Length | Options                                                                                                  | Description                                                                                                                              |
|-------------|--------------|--------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| RP          | Alphanumeric | 2      | RP                                                                                                       | Product name, RP- Ring Pro                                                                                                               |
| (sku_color) | Alphanumeric | 2      | PG - Pro Gold<br>PS - Pro Silver<br>PA - Pro Aster black<br>PM - Pro Matte Gray<br>PR - Pro Raw Titanium | sku-color defines aesthetic finish and color for the product. XX can be A to Z                                                           |
| (sku_size)  | Numeric      | 2      | Size range: [05-14]<br>Where ID range:<br>[16.17mm to 24.91mm]                                           | Size is defined based on Internal diameter of rings where smallest size-05 represent 16.17mm ID and largest size-14 represent 24.91mm ID |

### 5.3 General Information of EUT

Table 4: EUT details as declared by client\*

|                                        |                      |                |
|----------------------------------------|----------------------|----------------|
| EUT Name                               | Ring Pro             |                |
| Protocol                               | BLE                  |                |
| Operating Frequency Range              | 2402MHz – 2480MHz    |                |
| Channel Spacing                        | 2MHz                 |                |
| Environmental conditions               | Storage              | -20°C to +60°C |
|                                        | Operating            | 0°C to +45°C   |
| Supply Voltage                         | 5V DC                |                |
| Maximum Measured Power (e.i.r.p) (dBm) | -2.22 dBm            |                |
| Modulation                             | GFSK                 |                |
| Number of antennas                     | 01                   |                |
| Antenna Type                           | Chip Antenna         |                |
| Antenna Gain                           | 0.5 dBi              |                |
| EUT Dimension (LxWxH)                  | 24.5mm x 24mm x8.2mm |                |

\*Disclaimer: The TÜV SÜD is not responsible for the accuracy of the customer declared specification.

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## 6 TEST DESCRIPTION

### 6.1 Test Operation and software mode

Hardware Version Identification Number (HVIN): UH\_RING\_PRO\_REV3\_2  
Software Version: 05.10.06.00

### 6.2 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle on low, mid and high channels

### 6.3 Accessories and Auxiliary Equipment

Auxiliary Equipment: nRF5340 development kit, Micro USB cable and Dell Laptop.

### 6.4 List of frequencies

**Table 5: List of BLE Centre frequencies:**

| Frequency Band (MHz) | Channel No. | Frequency (MHz) |
|----------------------|-------------|-----------------|
| BLE (2402-2483.5)    | <b>0</b>    | <b>2402</b>     |
|                      | 1           | 2404            |
|                      | 2           | 2406            |
|                      | 3           | 2408            |
|                      | :           | :               |
|                      | :           | :               |
|                      | 18          | 2438            |
|                      | <b>19</b>   | <b>2440</b>     |
|                      | 20          | 2442            |
|                      | :           | :               |
|                      | :           | :               |
|                      | 36          | 2474            |
|                      | 37          | 2476            |
|                      | 38          | 2478            |
|                      | <b>39</b>   | <b>2480</b>     |

#### Channel used for BLE testing:

Channel low: 2402MHz  
Channel mid: 2440MHz  
Channel High: 2480MHz

## 7 OPERATIONAL DESCRIPTION

The Ring Pro is a smart health and fitness wearable in the form factor of a ring worn by a user on his/her finger. The Equipment Under Test (EUT) operates at frequency range of 2402MHz to 2480MHz.

The EUT is powered by 5V DC, Internal rechargeable battery.

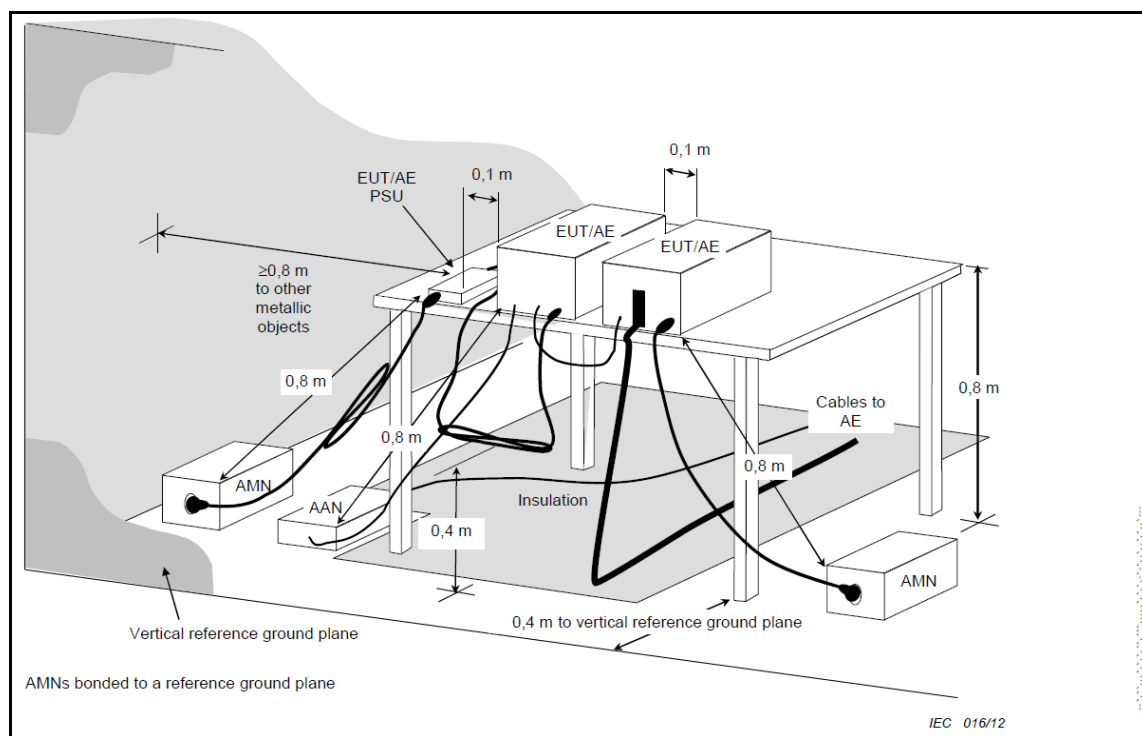
Report Reference. No.: 80260100005001

## 8 TEST METHODOLOGY

## 8.1 Conducted Spurious Emission Test on AC Power Lines

AC powerline conducted emissions were measured across the 50Ω LISN port connected to the Equipment Under Test (EUT). Emission voltage and current measurements were performed on each current-carrying conductor at the EUT power cord plug using mating plugs and receptacles on the LISN. The EUT was tested using manufacturer-supplied or recommended power cords, ensuring equivalent electrical and shielding characteristics. The device will be positioned on a test table 80cm above the reference ground plane, with a vertical conducting plane located 40cm to its rear. AC conducted emission measurements were conducted over a frequency range of 150kHz to 30MHz, utilizing an AC adapter with a 110V AC 60Hz supply.

### 8.1.1 Test Setup Configuration



### Figure 1: Conducted Spurious Emission Test on AC Power Lines

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## 8.2 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2020. The equipment under test (EUT) was placed at the middle of the 1mtr high turntable for below 1 GHz and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360 ° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1GHz was performed by Horn Antenna, the measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 1000 MHz was performed by Broadband Trilog Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

### 8.2.1 Test Setup Configuration

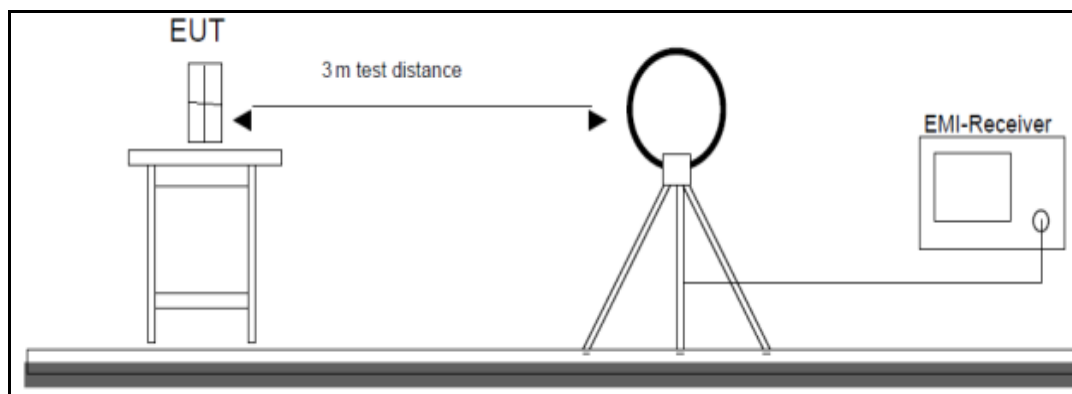


Figure 2: Frequency Range 9kHz- 30MHz

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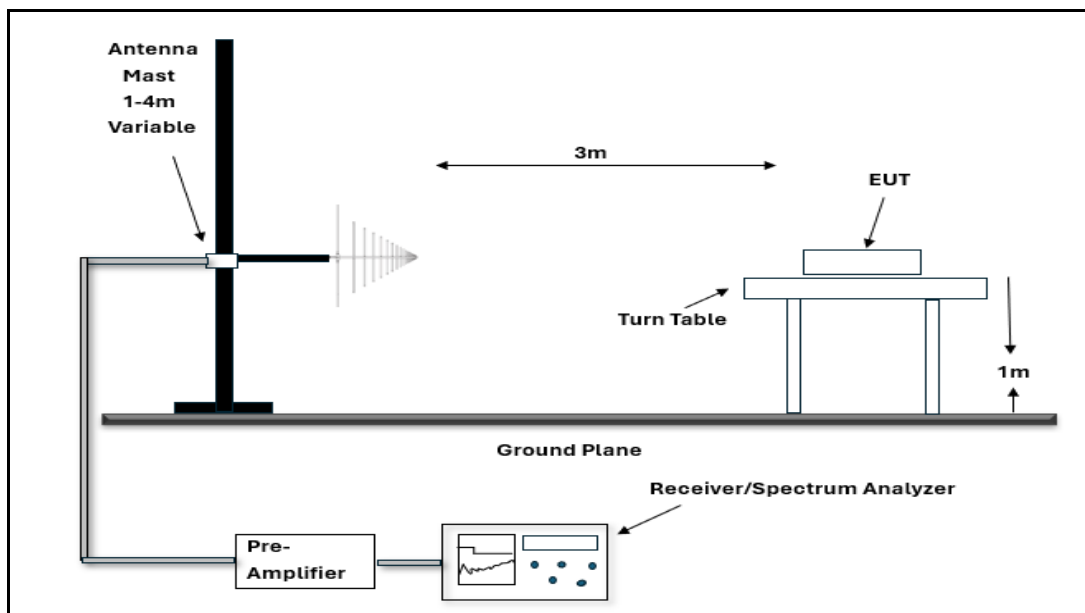


Figure 3: Frequency Range 30MHz - 1GHz

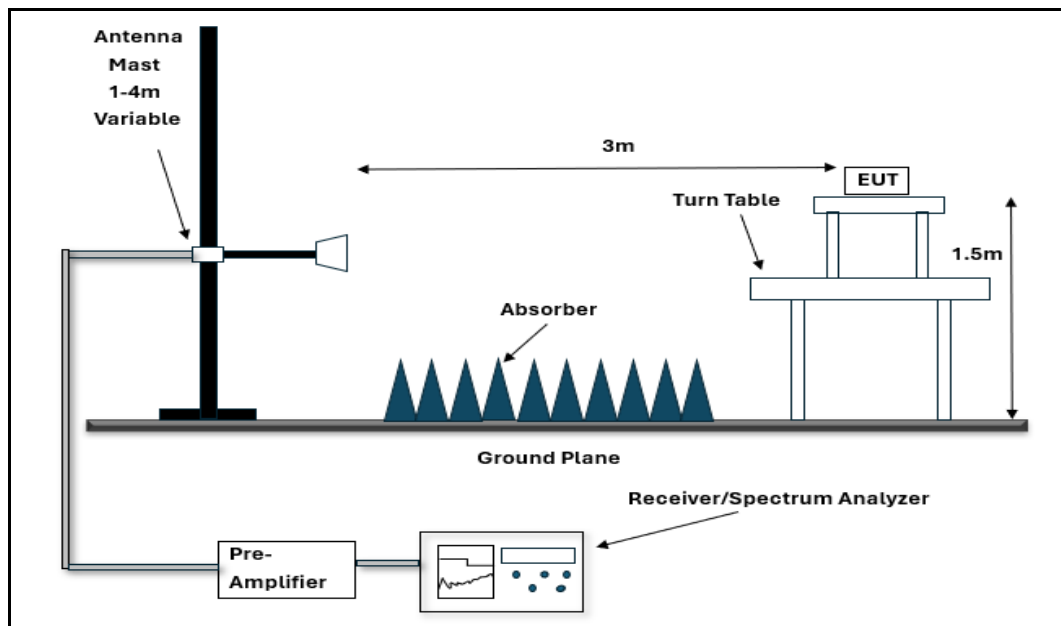


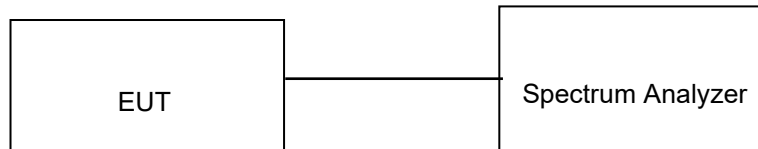
Figure 4: Frequency Range above 1GHz

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## 9 TEST CONDITIONS AND RESULTS – Maximum Peak Conducted Output Power

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Test Specification    | FCC part 15 Subpart C 15.247 (b)(3) / RSS 247 Issue 4, Section 6.3.2 |
| Test Method           | Subclause 11.9.1.1 of ANSI C63.10-2020                               |
| Measurement Bandwidth | 1MHz                                                                 |
| Detector              | Peak                                                                 |
| Port of testing       | Antenna port                                                         |
| Requirement           | Power $\leq 1$ W (30 dBm) & e.i.r.p $\leq 4$ W (36 dBm)              |

### Test Setup:



### 9.1 Laboratory Environmental Conditions

|                     |                  |
|---------------------|------------------|
| Ambient Temperature | : +15°C to +35°C |
| Relative humidity   | : 20% to 75%     |
| Power supply        | : 110V AC, 60Hz  |

### 9.2 EUT Conditions

|              |                     |
|--------------|---------------------|
| Temperature  | : 0 °C to +45 °C    |
| Power supply | : 5V DC, 60mA (Max) |

### 9.3 Test results

**Table 6: Maximum peak conducted output power results**

| Data rate | Channel Frequency (MHz) | RF Output Power (dBm) | Final Power (e.i.r.p) (dBm) | Limit (dBm) | e.i.r.p Limit (dBm) |
|-----------|-------------------------|-----------------------|-----------------------------|-------------|---------------------|
| 1 Mbps    | 2402                    | -2.72                 | -2.22                       | 30.00       | 36.00               |
|           | 2440                    | -2.76                 | -2.26                       | 30.00       | 36.00               |
|           | 2480                    | -2.87                 | -2.37                       | 30.00       | 36.00               |
| 2 Mbps    | 2402                    | -3.19                 | -2.69                       | 30.00       | 36.00               |
|           | 2440                    | -2.78                 | -2.28                       | 30.00       | 36.00               |
|           | 2480                    | -2.83                 | -2.33                       | 30.00       | 36.00               |

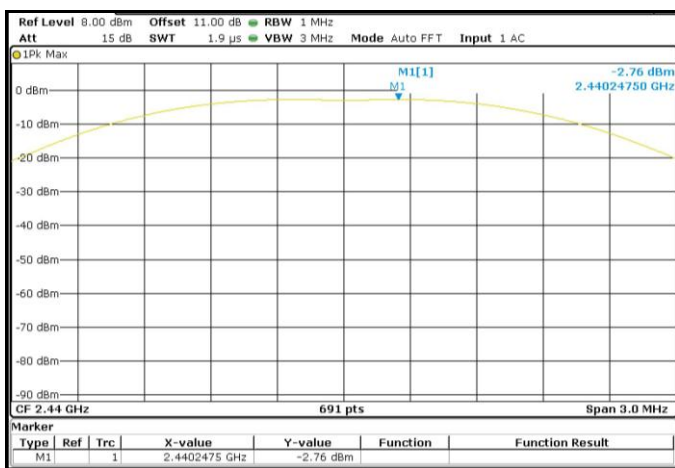
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## Test plots:

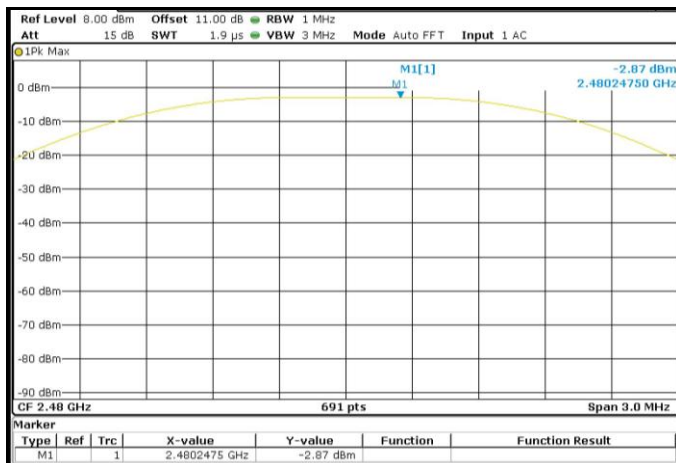
Data rate: 1Mbps



Channel Frequency: 2402MHz



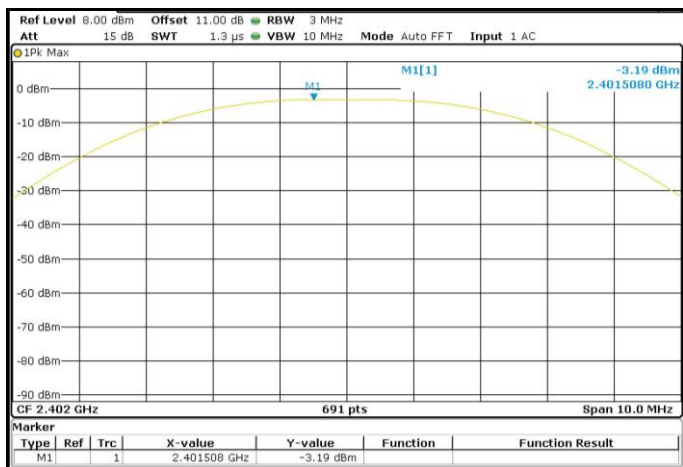
Channel Frequency: 2440MHz



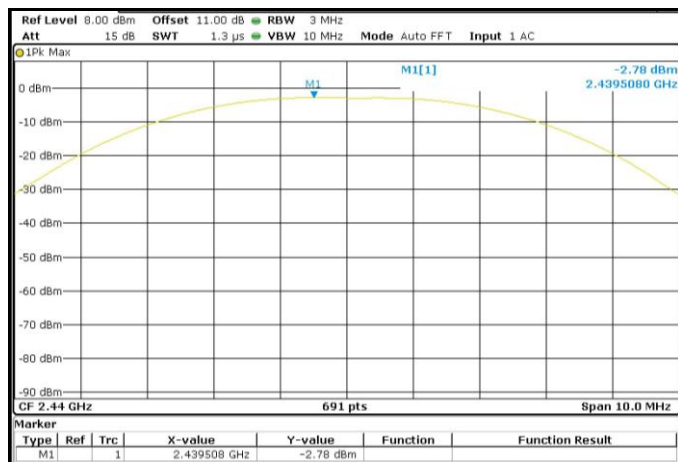
Channel Frequency: 2480MHz

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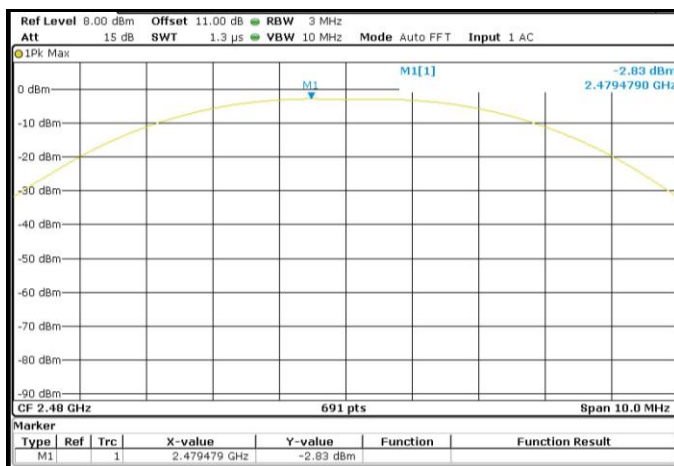
Data rate: 2Mbps



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

## KDB Guidelines applied:

Measurements were made as per section 8.3.1.1 in KDB 558074 D01 15.247(b) Measurement Guidance v05r02.

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## 10 TEST CONDITIONS AND RESULTS – POWER SPECTRAL DENSITY

|                       |                                                                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Specification    | FCC Part 15 Subpart C Section 15.247 (e) / RSS 247 Issue 4, Section 6.3.1                                                                                                                                                   |
| Test Method           | Subclause 11.10.2 of ANSI C63.10-2020                                                                                                                                                                                       |
| Measurement Bandwidth | 3 kHz                                                                                                                                                                                                                       |
| Detector              | Peak                                                                                                                                                                                                                        |
| Port of testing       | Antenna port                                                                                                                                                                                                                |
| Requirement           | 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 100 kHz band during any time interval of continuous transmission. |

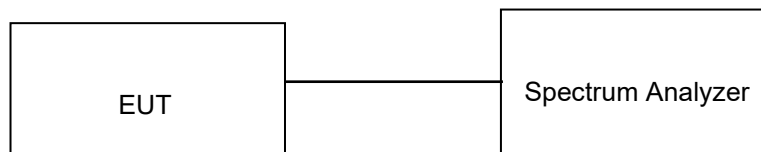
### 10.1 Laboratory Environmental Conditions

|                     |                     |
|---------------------|---------------------|
| Ambient Temperature | : +15° C to +35 ° C |
| Relative humidity   | : 20% to 75%        |
| Power supply        | : 110V AC, 60Hz     |

### 10.2 EUT Conditions

|              |                     |
|--------------|---------------------|
| Temperature  | : 0 °C to +45 °C    |
| Power supply | : 5V DC, 60mA (Max) |

#### Test Setup:



### 10.3 Test results:

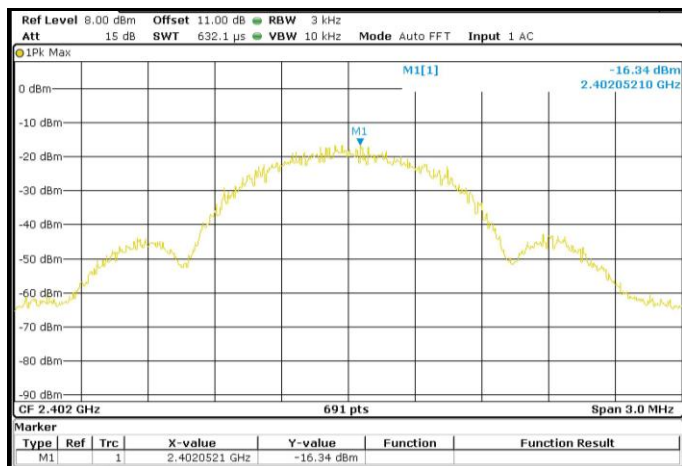
**Table 7: Power spectral density results**

| Data Rate | Channel Frequency (MHz) | Measured PSD (dBm/kHz) | Limit (dBm/kHz) | Margin (dB) |
|-----------|-------------------------|------------------------|-----------------|-------------|
| 1Mbps     | 2402                    | -16.34                 | 8.00            | -24.34      |
|           | 2440                    | -16.03                 | 8.00            | -24.03      |
|           | 2480                    | -16.27                 | 8.00            | -24.27      |
| 2Mbps     | 2402                    | -19.56                 | 8.00            | -27.56      |
|           | 2440                    | -19.65                 | 8.00            | -27.65      |
|           | 2480                    | -18.11                 | 8.00            | -26.11      |

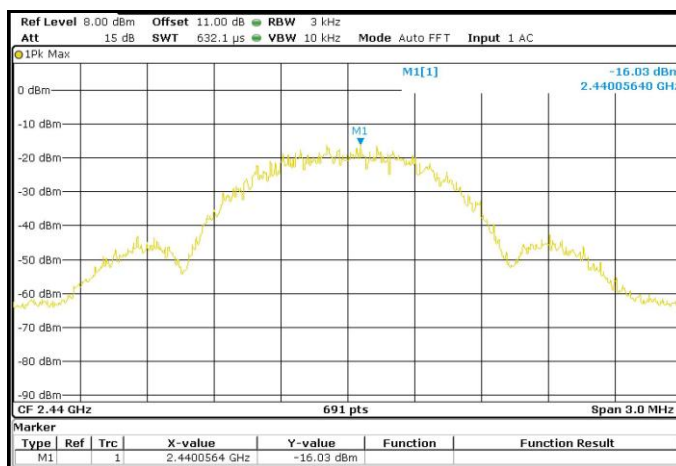
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## Test Plots:

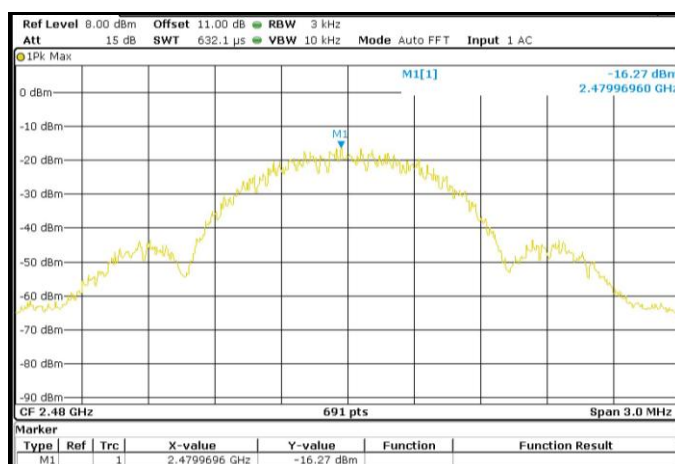
Data rate: 1Mbps



Channel Frequency: 2402MHz



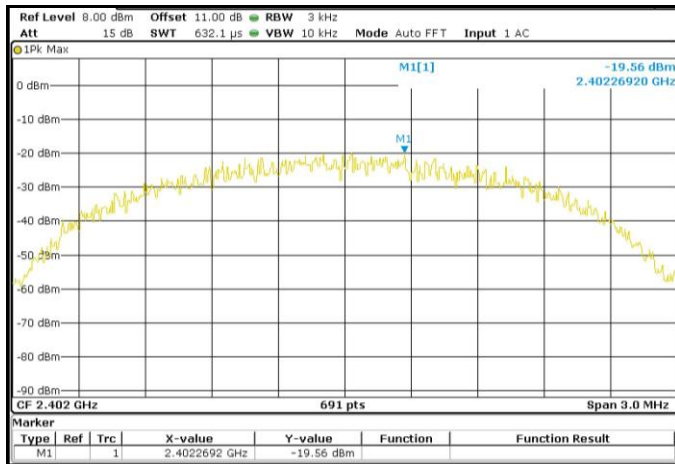
Channel Frequency: 2440MHz



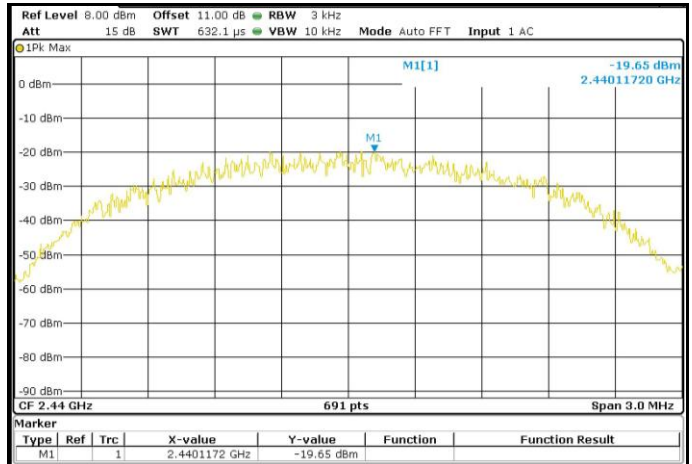
Channel Frequency: 2480MHz

Report Reference. No.: 80260100005001

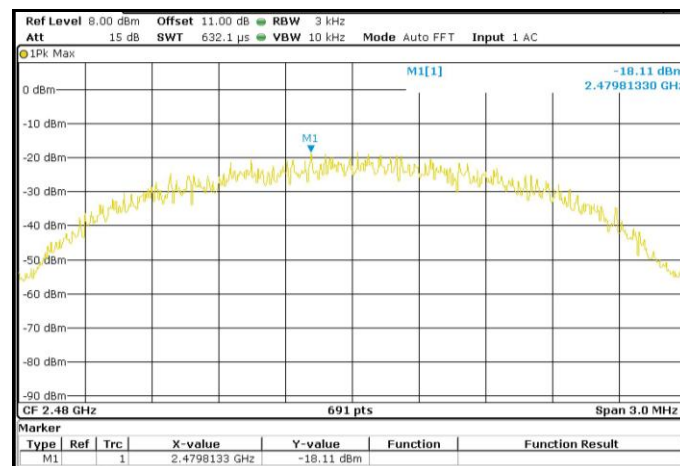
Data rate: 2Mbps



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

## KDB Guidelines applied:

Measurements were made as per section 8.4 in KDB 558074 D01 15.247 (e) Measurement Guidance v05r02

Report Reference. No.: 80260100005001

## 11 TEST CONDITIONS AND RESULTS – DTS BANDWIDTH & OCCUPIED CHANNEL BANDWIDTH

|                       |                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Specification    | FCC part 15 Subpart C 15.247 (a) (2) / RSS 247 Issue 4, Section 6.3.1                                                                                                       |
| Test Method           | Subclause 11.8.2 of ANSI C63.10-2020                                                                                                                                        |
| Measurement Bandwidth | 100 kHz                                                                                                                                                                     |
| Detector              | Peak                                                                                                                                                                        |
| Port of testing       | Antenna port                                                                                                                                                                |
| Requirement           | Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. |

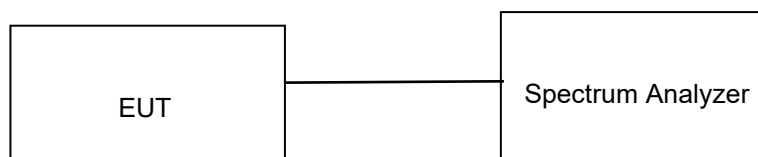
### 11.1 Laboratory Environmental Conditions

|                     |                     |
|---------------------|---------------------|
| Ambient Temperature | : +15° C to +35 ° C |
| Relative humidity   | : 20% to 75%        |
| Power supply        | : 110V AC, 60Hz     |

### 11.2 EUT Conditions

|              |                     |
|--------------|---------------------|
| Temperature  | : 0 °C to +45 °C    |
| Power supply | : 5V DC, 60mA (Max) |

#### Test Setup:



### 11.3 Test results

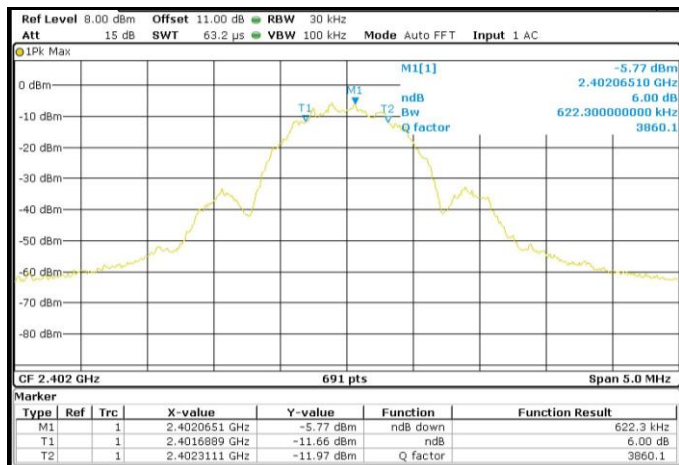
**Table 8: 99% and 6dB Bandwidth results for 1Mbps**

| Data Rate | Channel Frequency (MHz) | Measured 99% Bandwidth (MHz) | Measured 6dB Bandwidth (kHz) | Limit (MHz) |
|-----------|-------------------------|------------------------------|------------------------------|-------------|
| 1Mbps     | 2402                    | 1.099                        | 622.30                       | 0.5         |
|           | 2440                    | 1.114                        | 651.20                       | 0.5         |
|           | 2480                    | 1.107                        | 709.10                       | 0.5         |

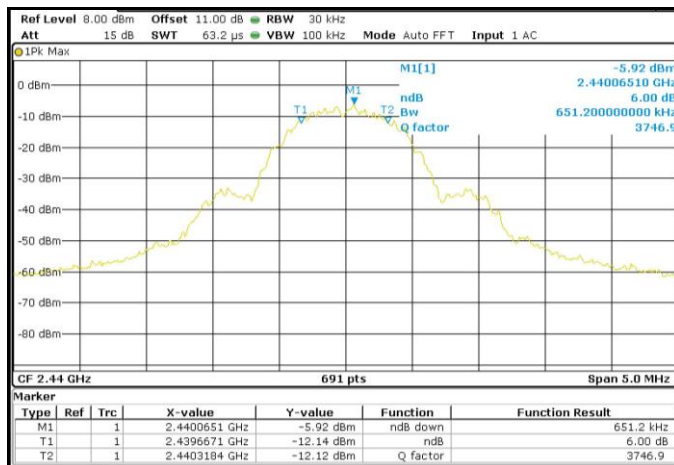
Report Reference. No.: 80260100005001

## Test Plots:

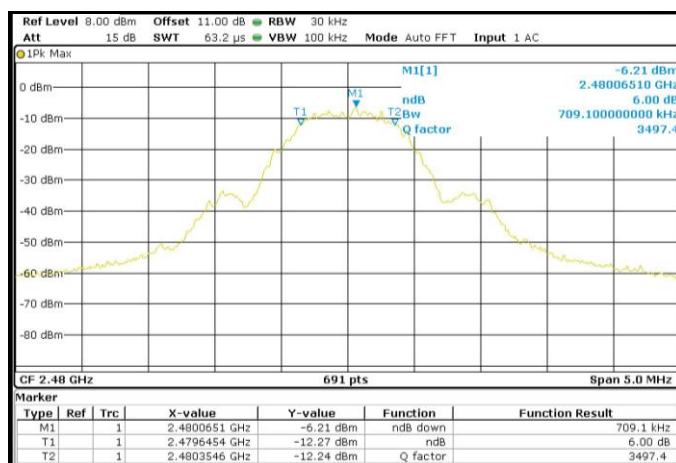
### 6dB DTS Bandwidth



Channel Frequency: 2402MHz



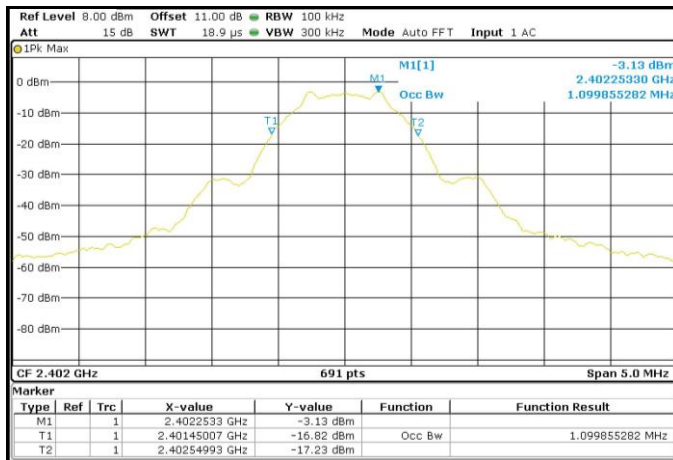
Channel Frequency: 2440MHz



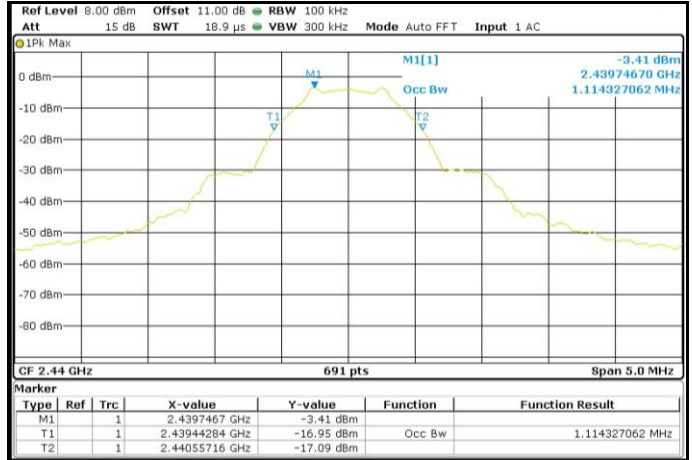
Channel Frequency: 2480MHz

Report Reference. No.: 80260100005001

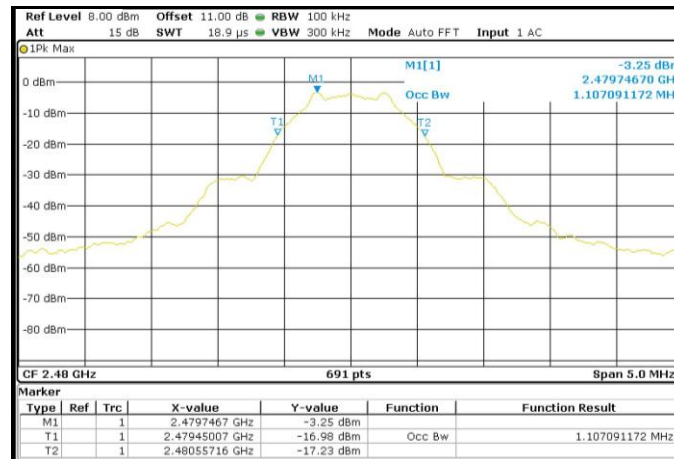
## Occupied Channel Bandwidth



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

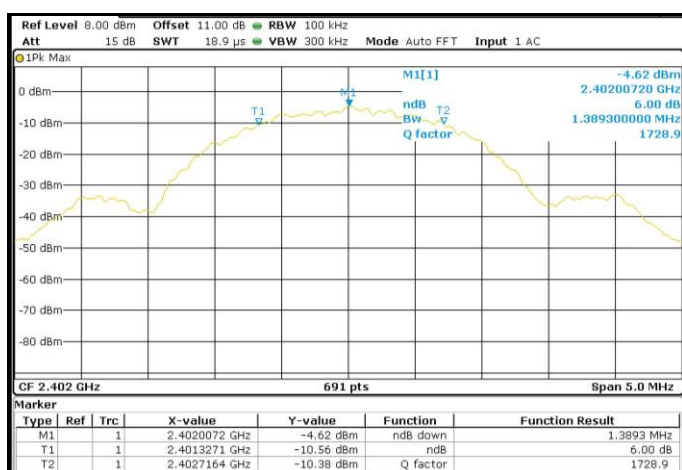
Report Reference. No.: 80260100005001

**Table 9: 99% and 6dB Bandwidth results for 2Mbps**

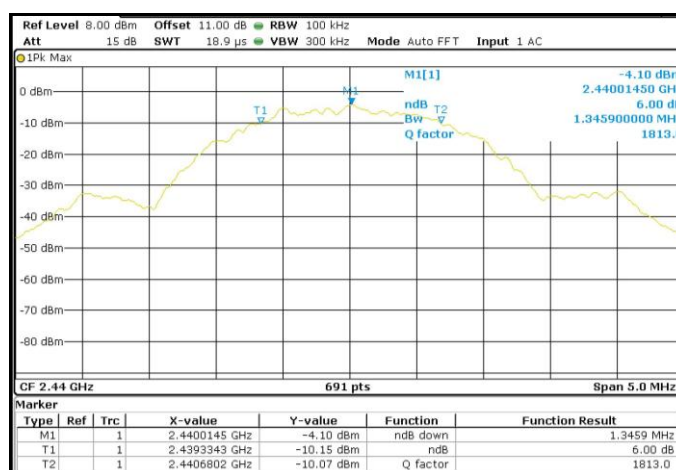
| Data Rate | Channel Frequency (MHz) | Measured 99% Bandwidth (MHz) | Measured 6dB Bandwidth (MHz) | Limit (MHz) |
|-----------|-------------------------|------------------------------|------------------------------|-------------|
| 2Mbps     | 2402                    | 2.163                        | 1.39                         | 0.5         |
|           | 2440                    | 2.163                        | 1.35                         | 0.5         |
|           | 2480                    | 2.156                        | 1.33                         | 0.5         |

## Test Plots:

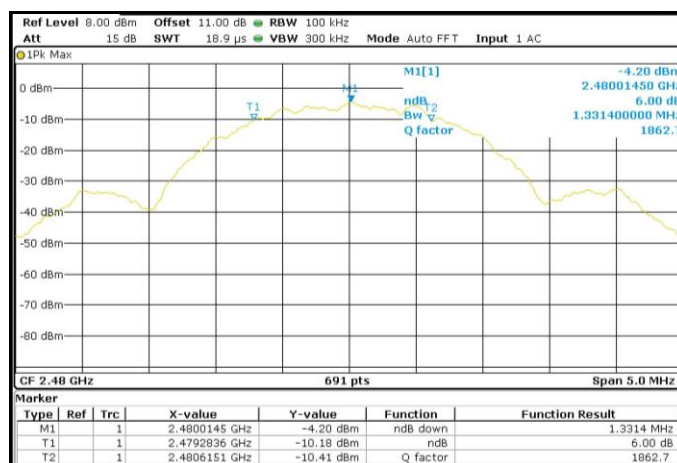
### 6dB DTS Bandwidth



Channel Frequency: 2402MHz



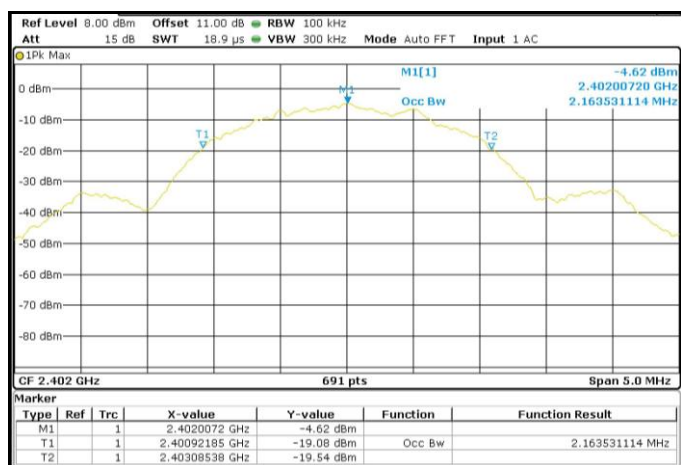
Channel Frequency: 2440MHz



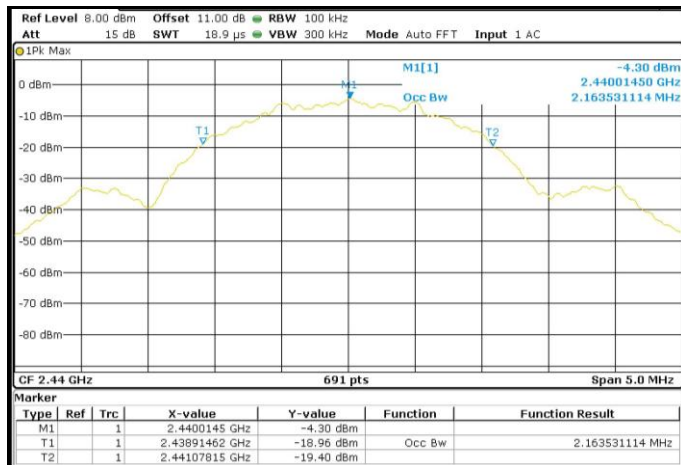
Channel Frequency: 2480MHz

Report Reference. No.: 80260100005001

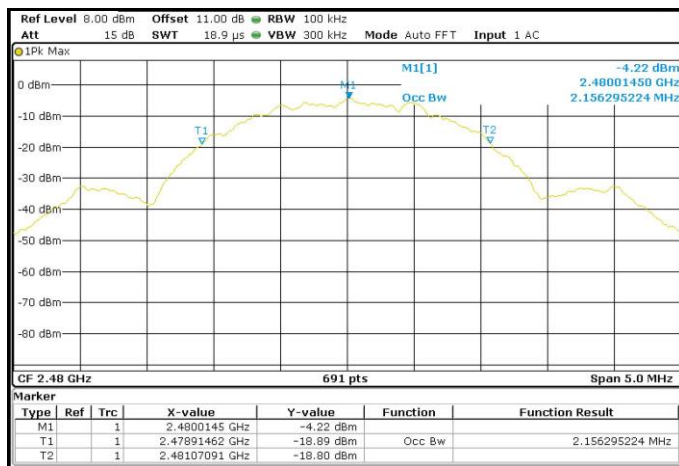
## Occupied Channel Bandwidth



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

## KDB Guidelines applied:

Measurements were made as per section 8.2 in KDB 558074 D01 15.247 (a) (2) Measurement Guidance v05r02

Report Reference. No.: 80260100005001

## 12 TEST CONDITIONS AND RESULTS – EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS AND CONDUCTED SPURIOUS EMISSION

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Specification    | FCC part 15 Subpart C 15.247 (d) / RSS 247 Issue 4, Section 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Method           | Subclause 11.11 of ANSI C63.10-2020                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Measurement Bandwidth | 100 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Detector              | Peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Port of testing       | Antenna port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Requirement           | 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 30dB 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, provided the transmitter demonstrates compliance with the peak conducted power limits |

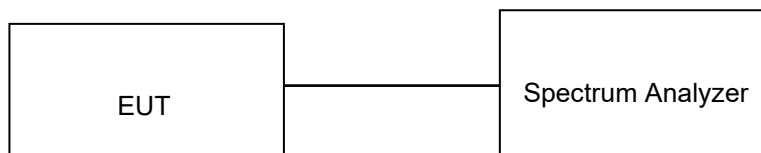
### 12.1 Laboratory Environmental Conditions

|                     |                     |
|---------------------|---------------------|
| Ambient Temperature | : +15° C to +35 ° C |
| Relative humidity   | : 20% to 75%        |
| Power supply        | : 110V AC, 60Hz     |

### 12.2 EUT Conditions

|              |                     |
|--------------|---------------------|
| Temperature  | : 0 °C to +45 °C    |
| Power supply | : 5V DC, 60mA (Max) |

#### Test Setup:

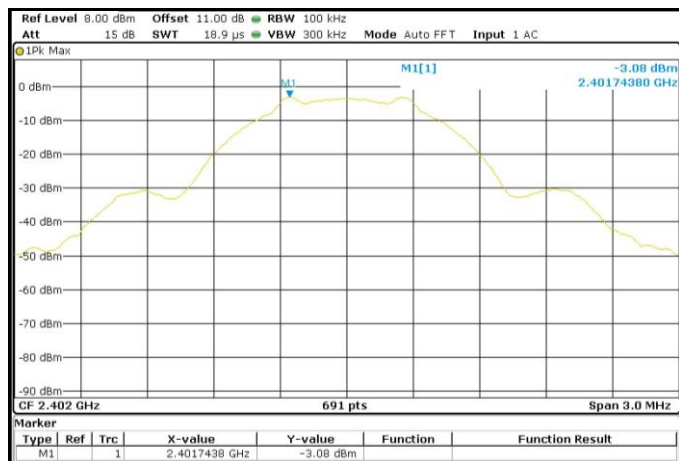


Report Reference. No.: 80260100005001

## 12.3 Test results:

Data rate: 1Mbps

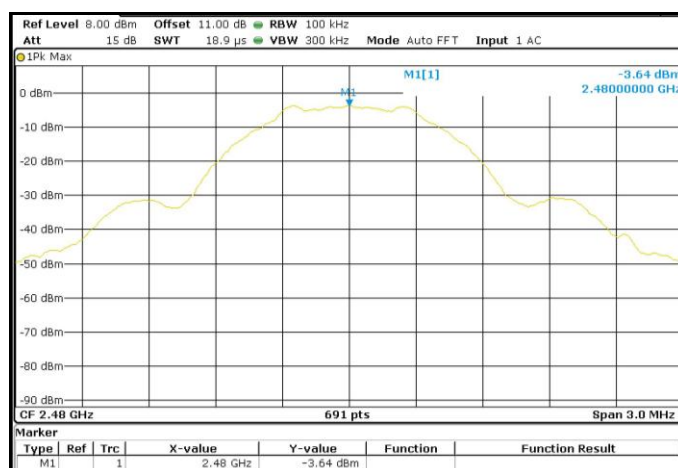
### Reference Plots:



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

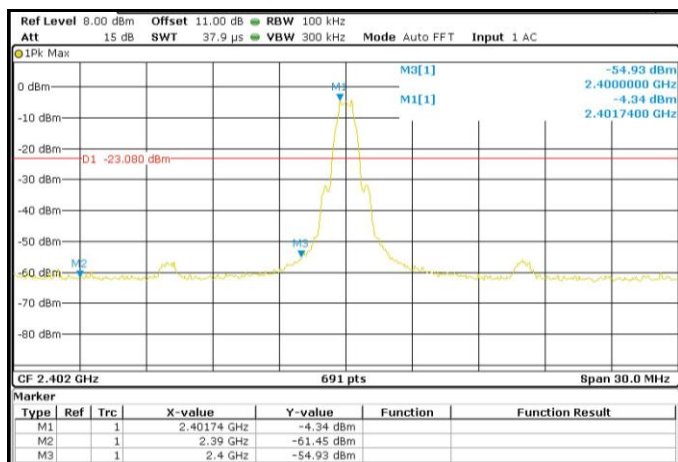
Report Reference. No.: 80260100005001

## 12.3.1 Band edge:

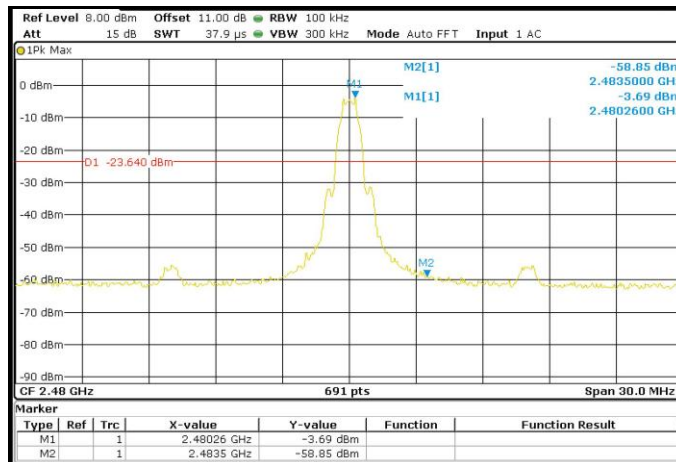
Table 10: Band edge results for 1Mbps

| Channel Frequency (MHz) | Band edge frequency (MHz) | Value at band edge (A) (dBm) | Reference value (B) (dBm) | A-B (dBc) | Minimum Limit (dBc) |
|-------------------------|---------------------------|------------------------------|---------------------------|-----------|---------------------|
| 2402.00                 | 2400.00                   | -54.93                       | -3.08                     | -51.85    | -20                 |
| 2480.00                 | 2483.50                   | -58.85                       | -3.64                     | -55.21    | -20                 |

## Plots:



Channel Frequency: 2402MHz

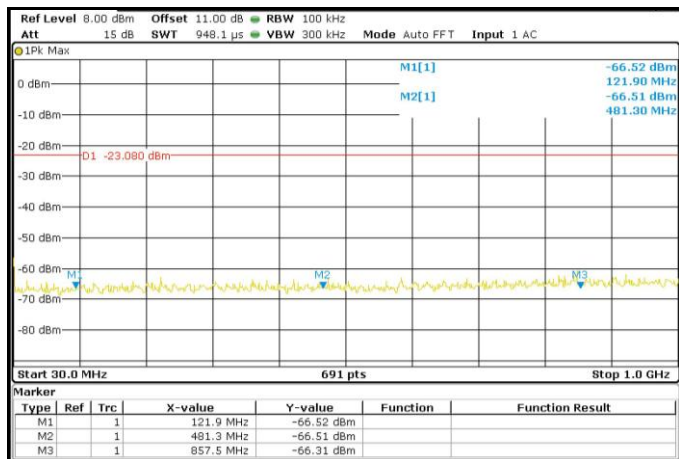


Channel Frequency: 2480MHz

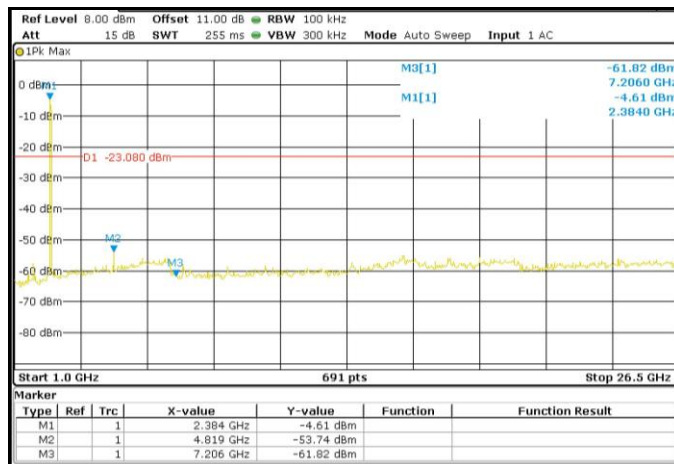
Report Reference. No.: 80260100005001

## 12.3.2 Conducted Spurious:

Channel Frequency: 2402MHz

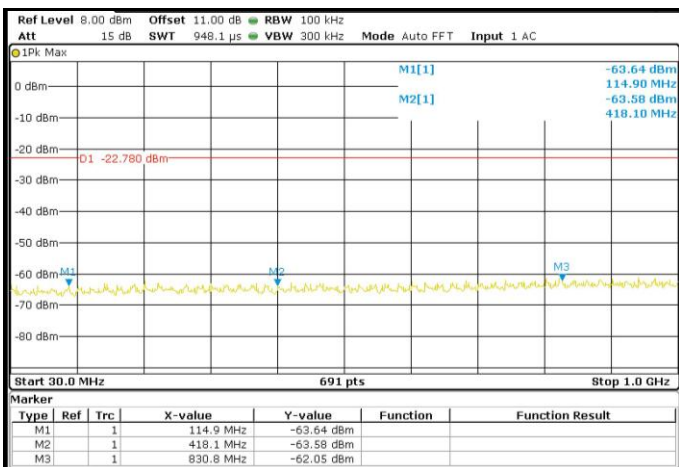


Frequency Range: 30MHz-1GHz

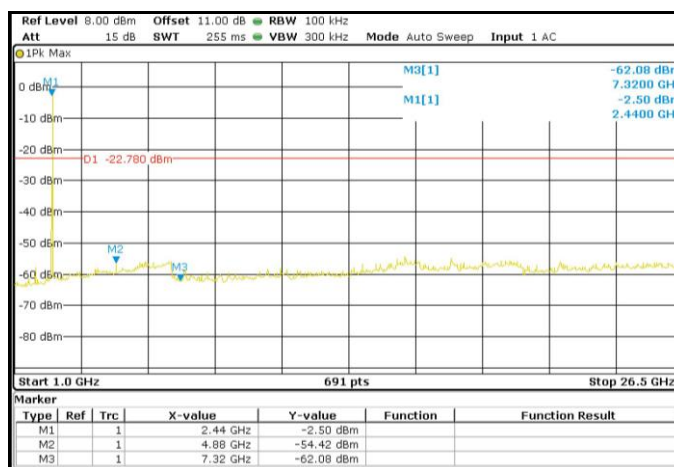


Frequency Range: 1GHz-26.5GHz

Channel Frequency: 2440MHz



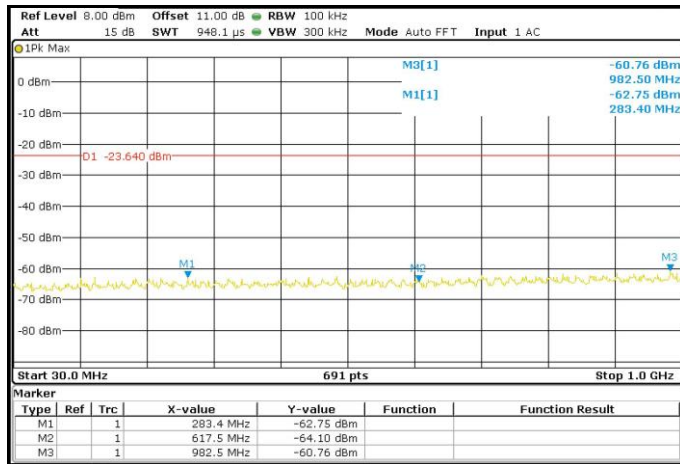
Frequency Range: 30MHz-1GHz



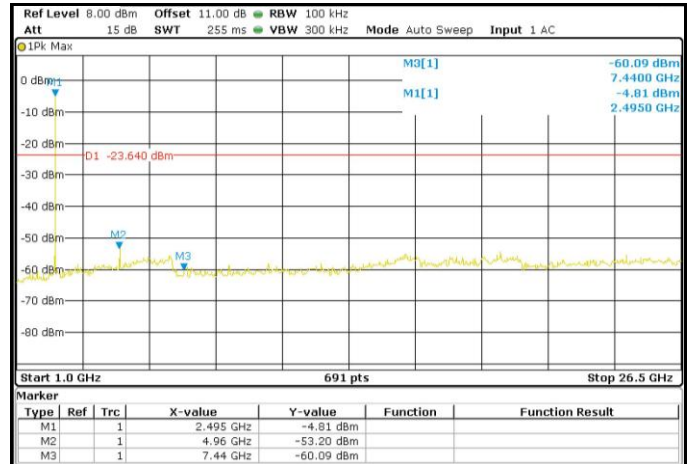
Frequency Range: 1GHz-26.5GHz

Report Reference. No.: 80260100005001

## Channel Frequency: 2480MHz



Frequency Range: 30MHz-1GHz

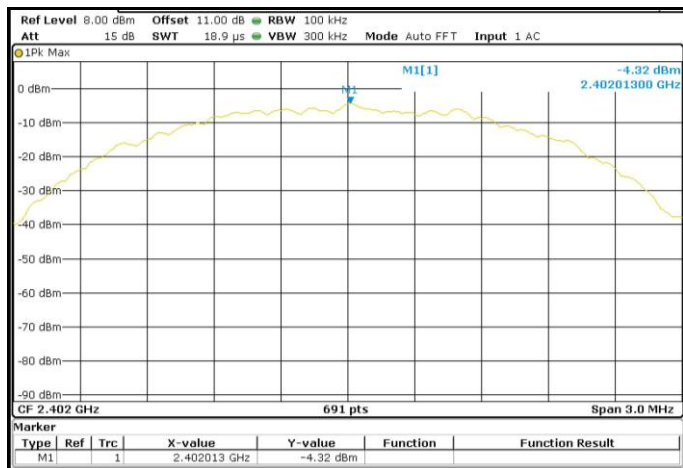


Frequency Range: 1GHz-26.5GHz

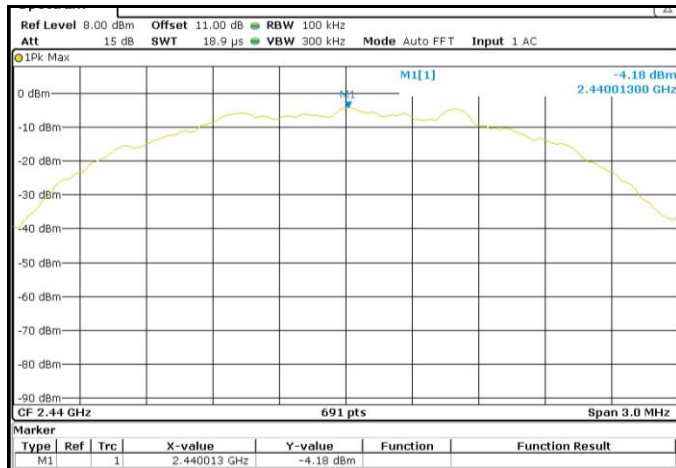
Report Reference. No.: 80260100005001

Data rate: 2Mbps

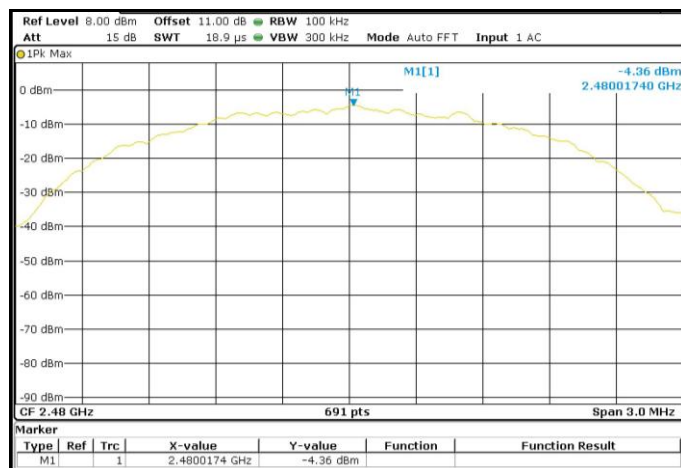
Reference Plots:



Channel Frequency: 2402MHz



Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

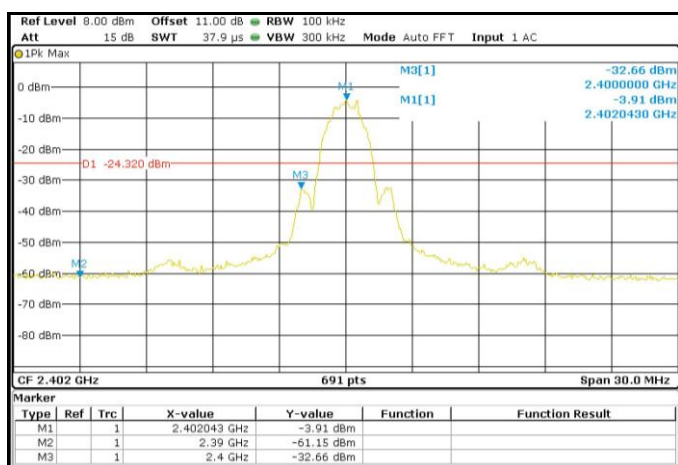
Report Reference. No.: 80260100005001

## 12.3.3 Band edge:

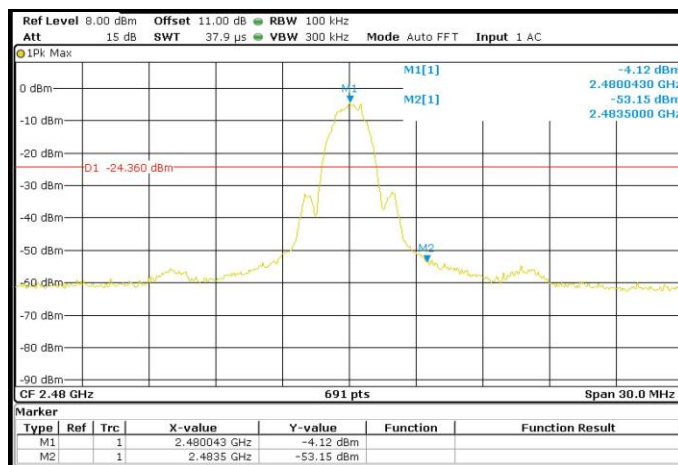
Table 11: Band edge results for 2Mbps

| Channel Frequency (MHz) | Band edge frequency (MHz) | Value at band edge (A) (dBm) | Reference value (B) (dBm) | A-B (dBc) | Minimum Limit (dBc) |
|-------------------------|---------------------------|------------------------------|---------------------------|-----------|---------------------|
| 2402.00                 | 2400.00                   | -32.66                       | -4.32                     | -28.34    | -20                 |
| 2480.00                 | 2483.50                   | -53.15                       | -4.36                     | -48.79    | -20                 |

## Plots:



Channel Frequency: 2402MHz

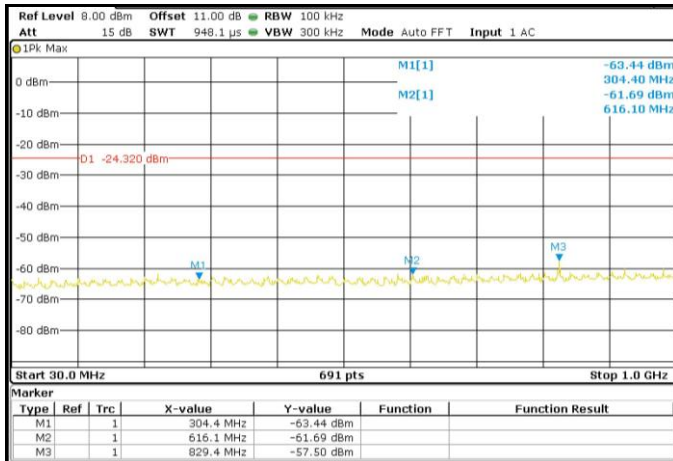


Channel Frequency: 2480MHz

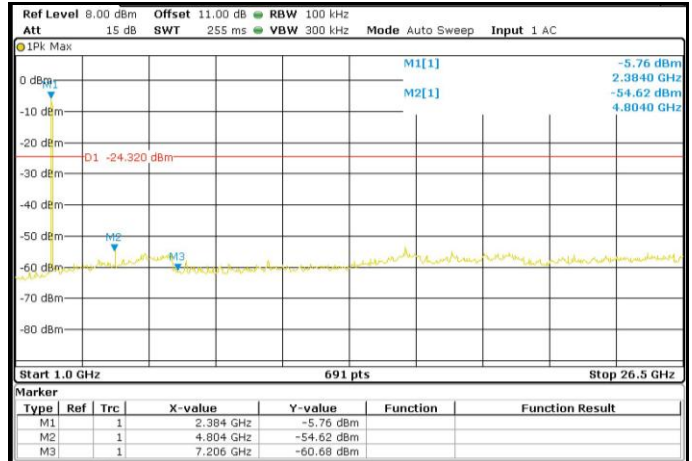
Report Reference. No.: 80260100005001

## 12.3.4 Conducted Spurious:

Channel Frequency: 2402MHz

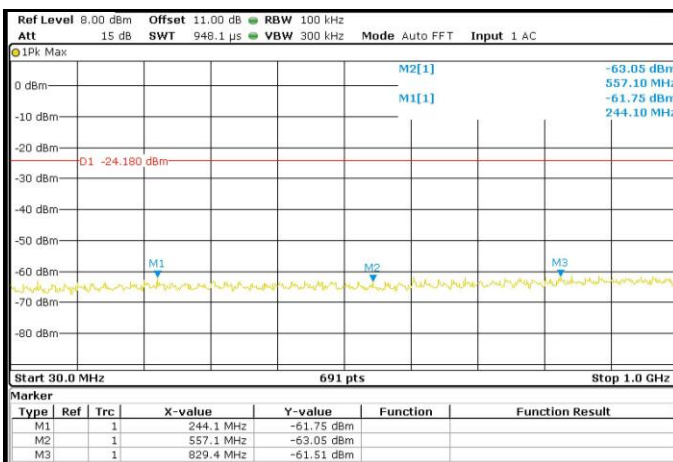


Frequency Range: 30MHz-1GHz

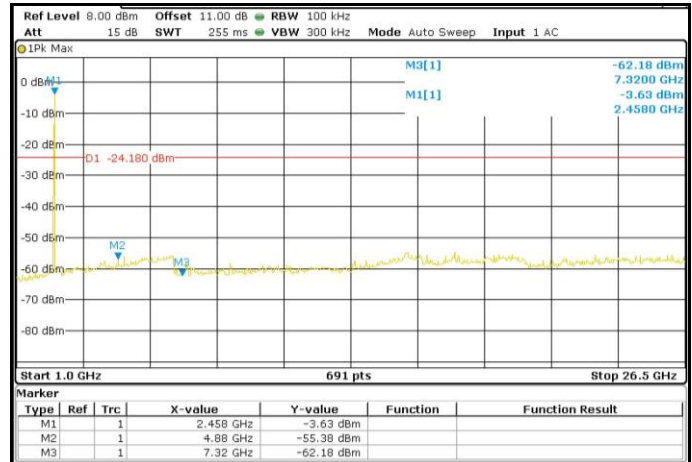


Frequency Range: 1GHz-26.5GHz

Channel Frequency: 2440MHz



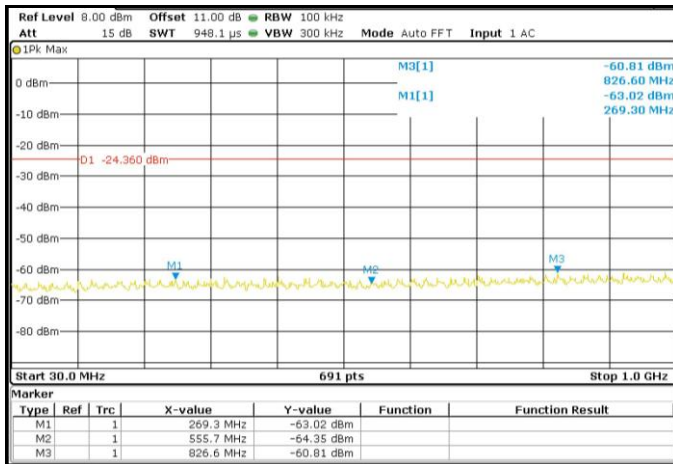
Frequency Range: 30MHz-1GHz



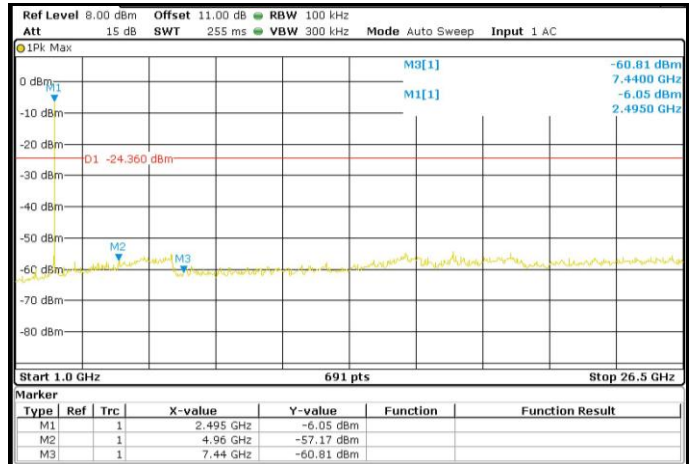
Frequency Range: 1GHz-26.5GHz

Report Reference. No.: 80260100005001

## Channel Frequency: 2480MHz



Frequency Range: 30MHz-1GHz



Frequency Range: 1GHz-26.5GHz

### KDB Guidelines applied:

Measurements were made as per section 8.5 & 8.7 in KDB 558074 D01 15.247 (d) Measurement Guidance v05r02

Report Reference. No.: 80260100005001

## 13 TEST CONDITIONS AND RESULTS – Spurious Radiated Emissions & Restricted Bands of Operation

|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| Test Specification    | FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205) / RSS-Gen Issue 5, Section 8.9 /8.10 |
| Test Method           | ANSI C63.10 - 2020                                                                        |
| Testing Location      | Semi Anechoic Chamber 9kHz - 1 GHz<br>Fully Anechoic Chamber 1 GHz - 26GHz                |
| Measurement Bandwidth | 100 kHz for frequency range < 1GHz<br>1 MHz for Frequency range >1GHz                     |
| Measuring Distance    | 3 m                                                                                       |
| Requirement           | As per the limits mentioned in the below table                                            |
| Test Setup            | Refer <u>TEST METHODOLOGY</u>                                                             |

**Table 12: Transmitter limits for Radiated emission**

| Frequency (MHz) | Field strength ( $\mu\text{V/m}$ ) | Field strength ( $\text{dB}\mu\text{V/m}$ ) | Distance of Measurement (m) |
|-----------------|------------------------------------|---------------------------------------------|-----------------------------|
| 0.009 – 0.490   | 2400/F(kHz)                        | 48.50 – 13.80                               | 300*                        |
| 0.490 – 1.705   | 24000/F(kHz)                       | 33.80 – 23.00                               | 30*                         |
| 1.705 -30       | 30                                 | 29.54                                       | 30*                         |
| 30-88           | 100                                | 40.0                                        | 3                           |
| 88-216          | 150                                | 43.5                                        | 3                           |
| 216-960         | 200                                | 46.0                                        | 3                           |
| Above 960       | 500                                | 54.0                                        | 3                           |

**Remark:** \* The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300-meter, 30-meter and 30-meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54  $\text{dB}\mu\text{V/m}$  at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on 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.

### 13.1 Laboratory Environmental Conditions

|                     |                  |
|---------------------|------------------|
| Ambient Temperature | : +15°C to +35°C |
| Relative humidity   | : 20% to 75%     |
| Power supply        | : 110V AC, 60Hz  |

### 13.2 EUT Conditions

|              |                     |
|--------------|---------------------|
| Temperature  | : 0 °C to +45 °C    |
| Power supply | : 5V DC, 60mA (Max) |

Report Reference. No.: 80260100005001

## Test result:

### Test results for frequency range 9kHz – 30MHz

No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported.

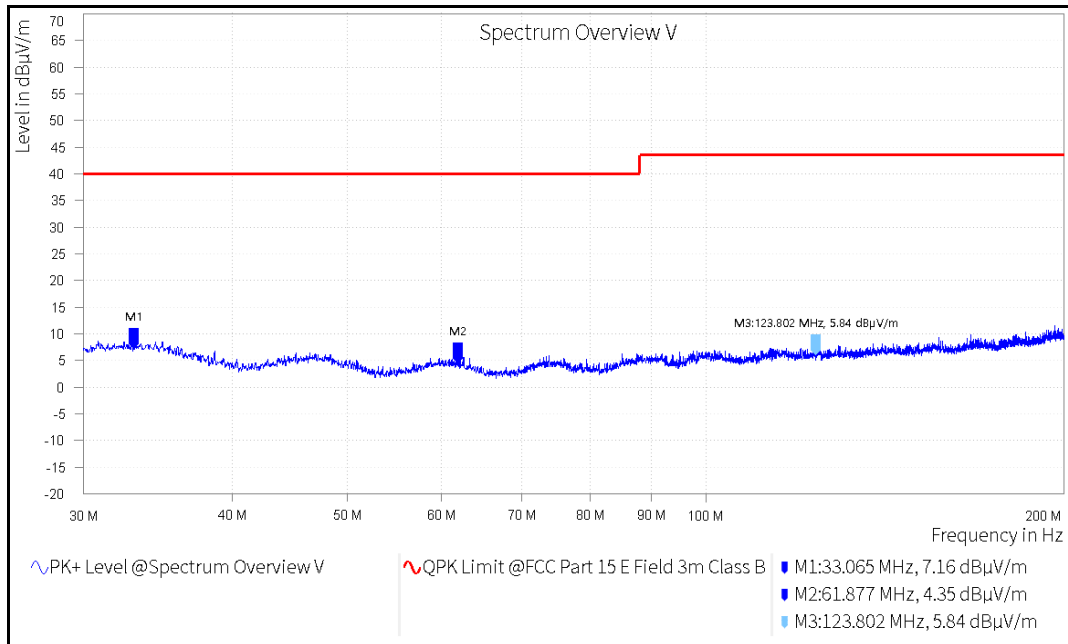
### Test results for frequency range 30MHz – 1GHz

**Table 13: Test results for frequency range 30MHz – 1GHz**

| Antenna Polarization | Measured Frequency (MHz) | Measured Spurious emission (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|----------------------|--------------------------|-------------------------------------|----------------|-------------|
| Vertical             | 33.06                    | 7.16                                | 40.00          | -32.84      |
|                      | 61.87                    | 4.35                                | 40.00          | -35.65      |
|                      | 123.80                   | 5.82                                | 43.50          | -37.68      |
|                      | 376.48                   | 14.95                               | 46.00          | -31.05      |
|                      | 605.63                   | 27.97                               | 46.00          | -18.03      |
|                      | 833.09                   | 23.48                               | 46.00          | -22.52      |
|                      | 903.27                   | 21.76                               | 46.00          | -24.24      |
| Horizontal           | 34.10                    | 10.00                               | 40.00          | -30.00      |
|                      | 72.71                    | 5.13                                | 40.00          | -34.87      |
|                      | 138.28                   | 6.56                                | 43.50          | -36.94      |
|                      | 264.30                   | 12.13                               | 46.00          | -33.87      |
|                      | 606.38                   | 33.33                               | 46.00          | -12.67      |
|                      | 767.99                   | 32.20                               | 46.00          | -13.80      |
|                      | 899.13                   | 22.93                               | 46.00          | -23.07      |

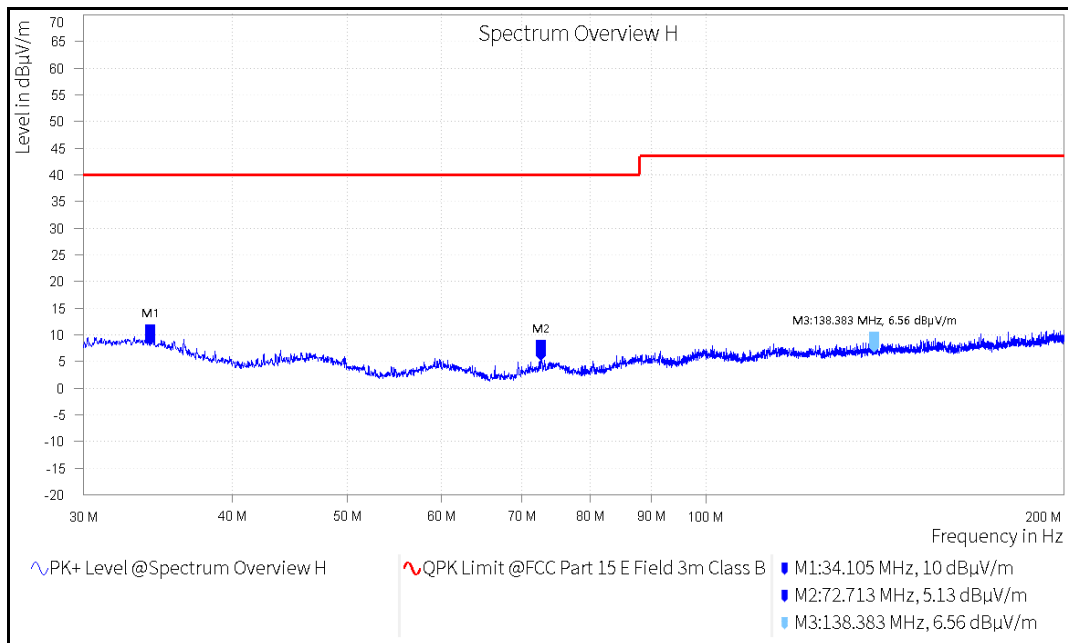
Report Reference. No.: 80260100005001

## Test Plots:



Frequency range: 30MHz -200MHz

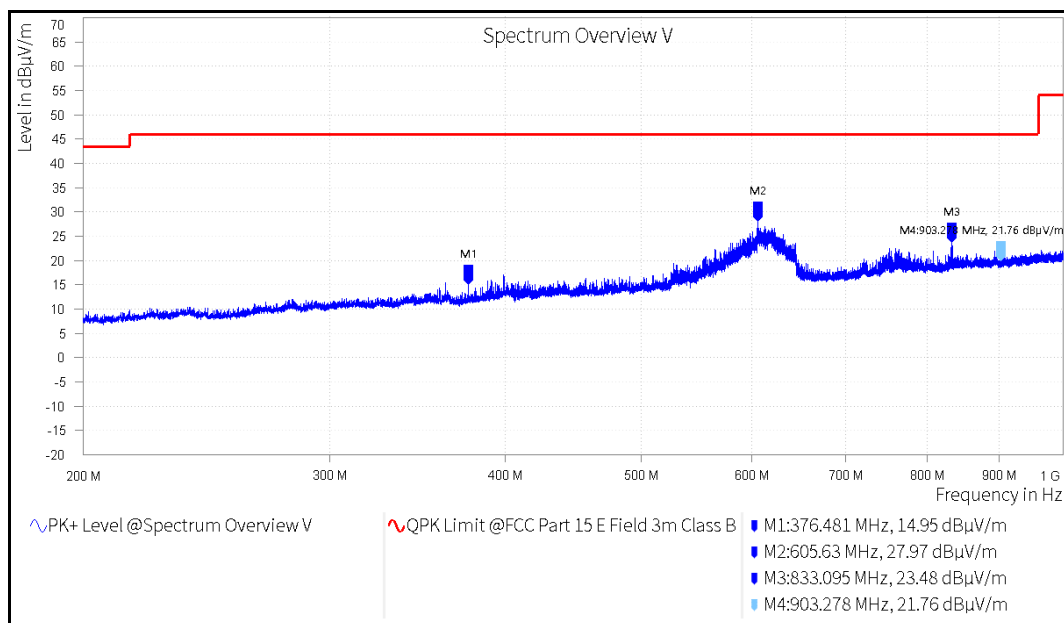
Polarization: Vertical



Frequency range: 30MHz -200MHz

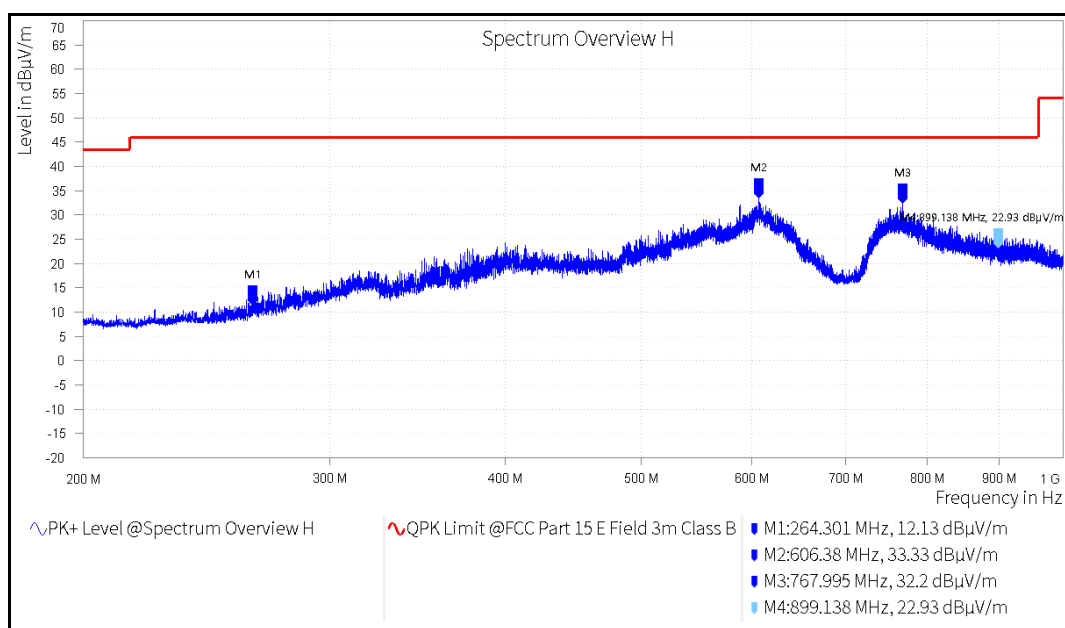
Polarization: Horizontal

Report Reference. No.: 80260100005001



Frequency range: 200MHz – 1GHz

Polarization: Vertical



Frequency range: 200MHz – 1GHz

Polarization: Horizontal

# TEST REPORT

Report Reference. No.: 80260100005001

## Test results for the frequencies above 1GHz:

Data Rate: 1Mbps

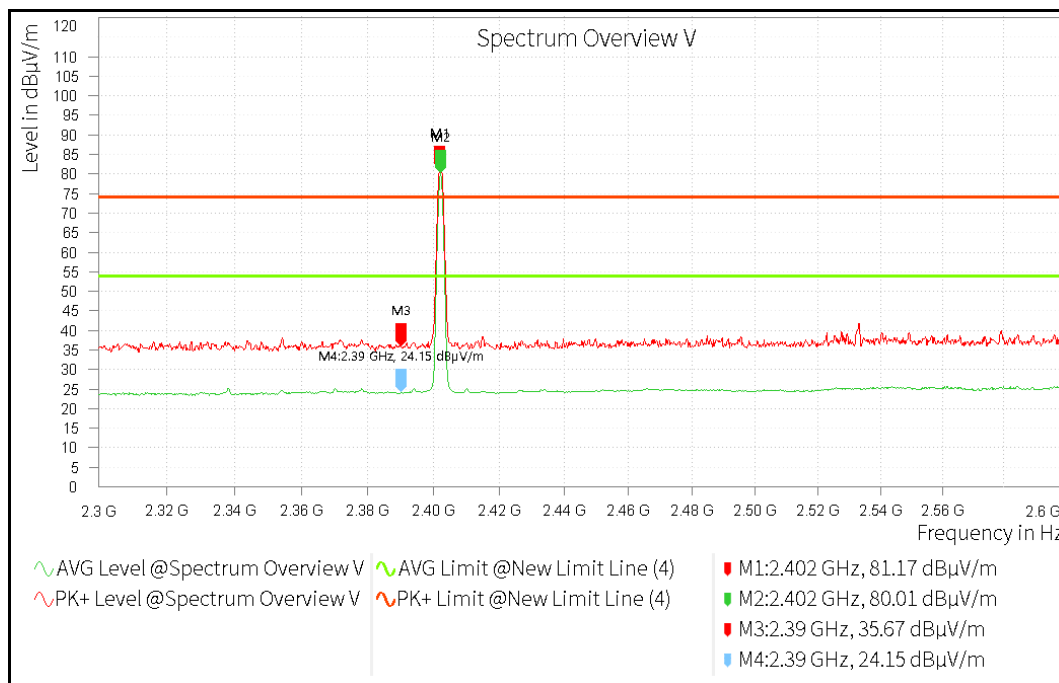
Table 14: 1Mbps Test results

| Channel Frequency (MHz) | Measured Frequency (MHz) | Antenna Polarization | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-------------------------|--------------------------|----------------------|-------------------------|----------------|-------------|
| 2402                    | 2402(Pk)                 | Vertical             | 81.17                   | -              | -           |
|                         | 2402(Av)                 |                      | 80.01                   | -              | -           |
|                         | 2390(Pk)                 |                      | 35.67                   | 74.00          | -38.33      |
|                         | 2390(Av)                 |                      | 24.15                   | 54.00          | -29.85      |
|                         | 4804(Pk)                 |                      | 46.80                   | 74.00          | -27.20      |
|                         | 4804(Av)                 |                      | 38.64                   | 54.00          | -15.36      |
|                         | 7206(Pk)                 |                      | 49.12                   | 74.00          | -24.88      |
|                         | 7206(Av)                 |                      | 36.85                   | 54.00          | -17.15      |
|                         | 2402(Pk)                 | Horizontal           | 78.95                   | -              | -           |
|                         | 2402(Av)                 |                      | 78.04                   | -              | -           |
|                         | 2390(Pk)                 |                      | 36.87                   | 74.00          | -37.13      |
|                         | 2390(Av)                 |                      | 23.80                   | 54.00          | -30.20      |
|                         | 4804(Pk)                 |                      | 44.08                   | 74.00          | -29.92      |
|                         | 4804(Av)                 |                      | 32.92                   | 54.00          | -21.08      |
|                         | 7206(Pk)                 |                      | 48.68                   | 74.00          | -25.32      |
|                         | 7206(Av)                 |                      | 37.17                   | 54.00          | -16.83      |
| 2440                    | 2440(Pk)                 | Vertical             | 79.84                   | -              | -           |
|                         | 2440(Av)                 |                      | 78.79                   | -              | -           |
|                         | 4880(Pk)                 |                      | 44.74                   | 74.00          | -29.26      |
|                         | 4880(Av)                 |                      | 33.87                   | 54.00          | -20.13      |
|                         | 7320(Pk)                 |                      | 48.97                   | 74.00          | -25.03      |
|                         | 7320(Av)                 |                      | 36.84                   | 54.00          | -17.16      |
|                         | 2440(Pk)                 | Horizontal           | 75.97                   | -              | -           |
|                         | 2440(Av)                 |                      | 74.80                   | -              | -           |
|                         | 4880(Pk)                 |                      | 43.80                   | 74.00          | -30.20      |
|                         | 4880(Av)                 |                      | 31.11                   | 54.00          | -22.89      |
|                         | 7320(Pk)                 |                      | 49.64                   | 74.00          | -24.36      |
|                         | 7320(Av)                 |                      | 36.80                   | 54.00          | -17.20      |
| 2480                    | 2480(Pk)                 | Vertical             | 77.58                   | -              | -           |
|                         | 2480(Av)                 |                      | 76.49                   | -              | -           |
|                         | 2483.5(Pk)               |                      | 37.75                   | 74.00          | -36.25      |
|                         | 2483.5(Av)               |                      | 25.12                   | 54.00          | -28.88      |
|                         | 4960(Pk)                 |                      | 45.64                   | 74.00          | -28.36      |
|                         | 4960(Av)                 |                      | 34.48                   | 54.00          | -19.52      |
|                         | 7440(Pk)                 |                      | 47.76                   | 74.00          | -26.24      |
|                         | 7440(Av)                 |                      | 36.49                   | 54.00          | -17.51      |
|                         | 2480(Pk)                 | Horizontal           | 74.22                   | -              | -           |
|                         | 2480(Av)                 |                      | 73.13                   | -              | -           |
|                         | 2483.5(Pk)               |                      | 37.56                   | 74.00          | -36.44      |
|                         | 2483.5(Av)               |                      | 24.97                   | 54.00          | -29.03      |
|                         | 4960(Pk)                 |                      | 43.85                   | 74.00          | -30.15      |
|                         | 4960(Av)                 |                      | 31.69                   | 54.00          | -22.31      |
|                         | 7440(Pk)                 |                      | 47.71                   | 74.00          | -26.29      |
|                         | 7440(Av)                 |                      | 36.28                   | 54.00          | -17.72      |

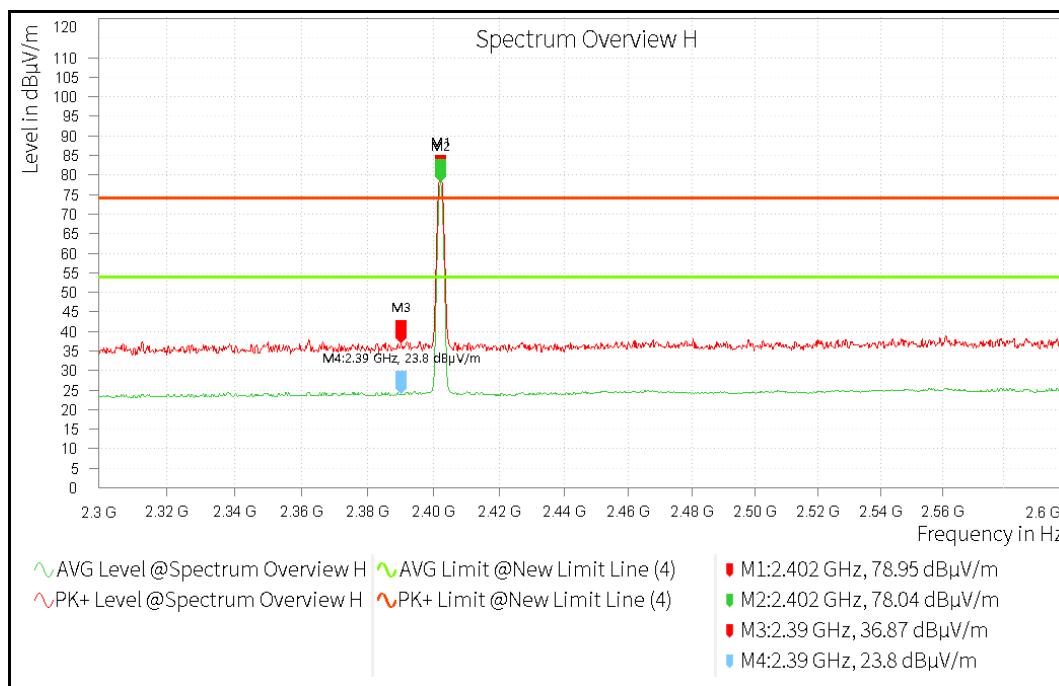
Report Reference. No.: 80260100005001

## Test Plots:

Channel Frequency: 2402MHz

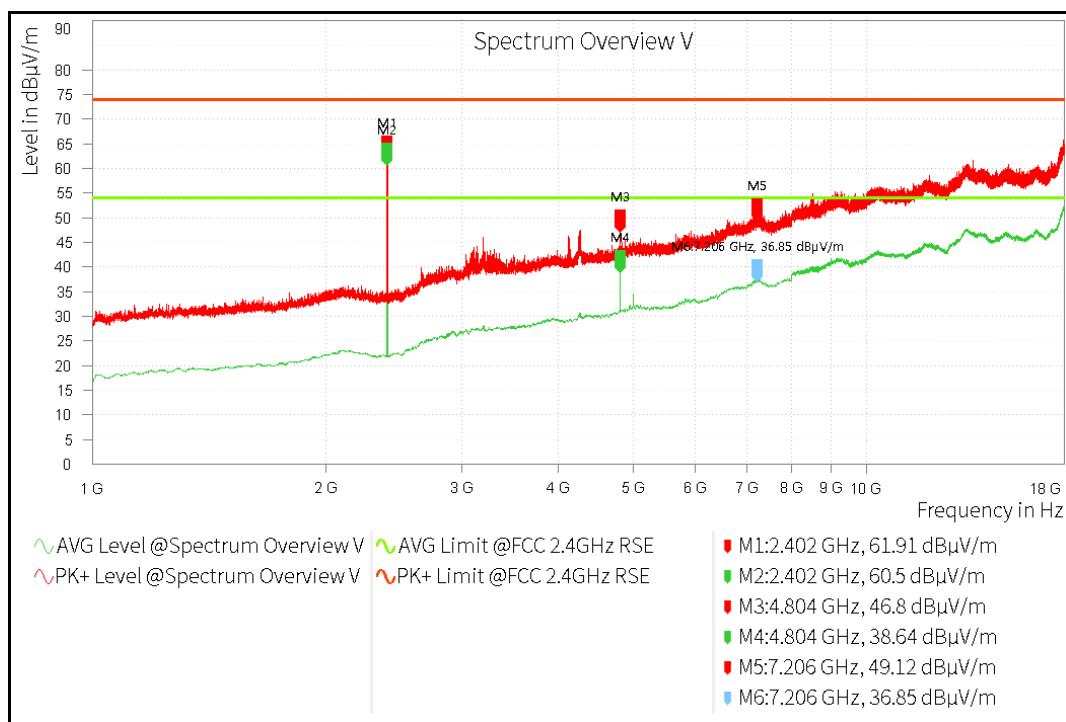


**Polarization: Vertical**



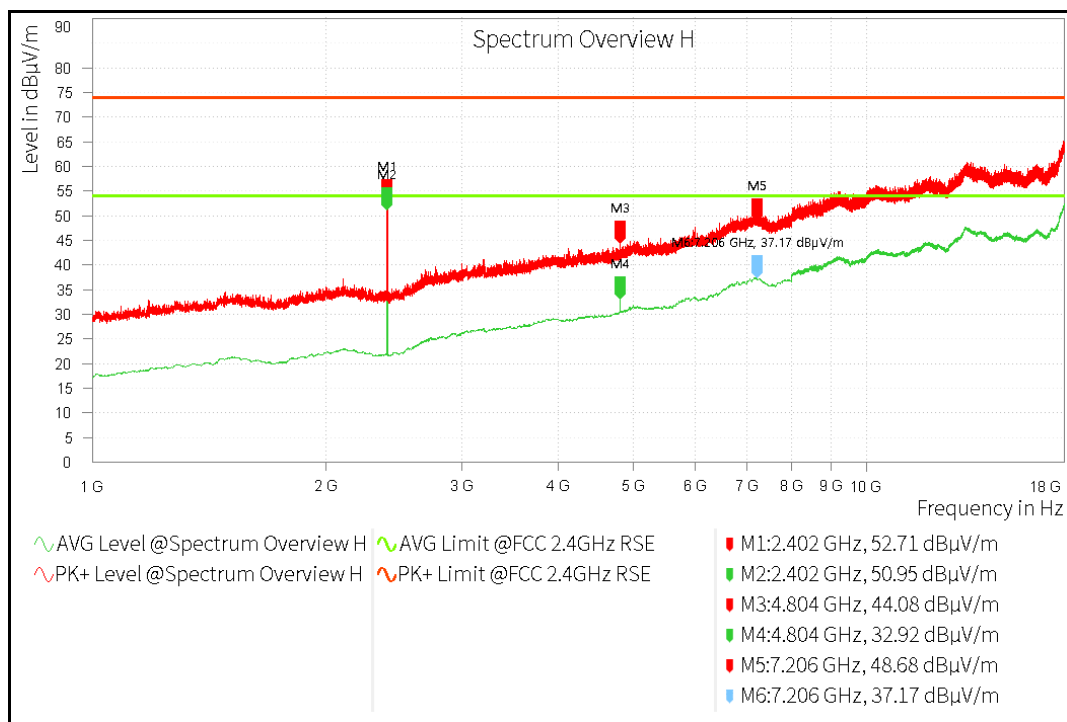
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



**Frequency Range: 1GHz-18GHz**

**Polarization: Vertical**

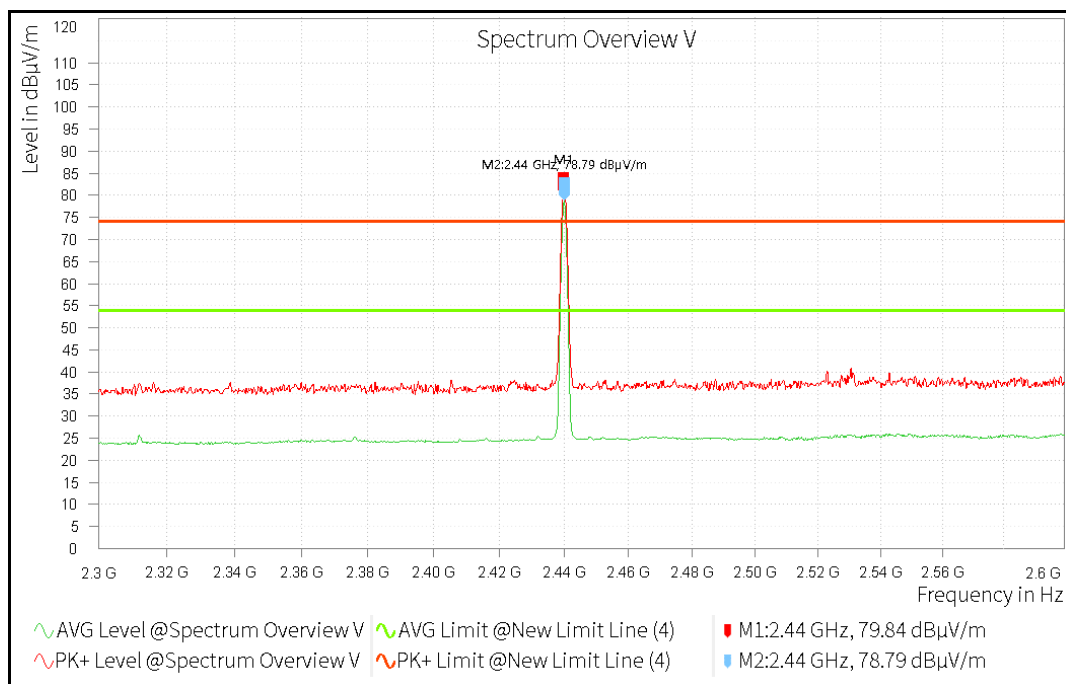


**Frequency Range: 1GHz-18GHz**

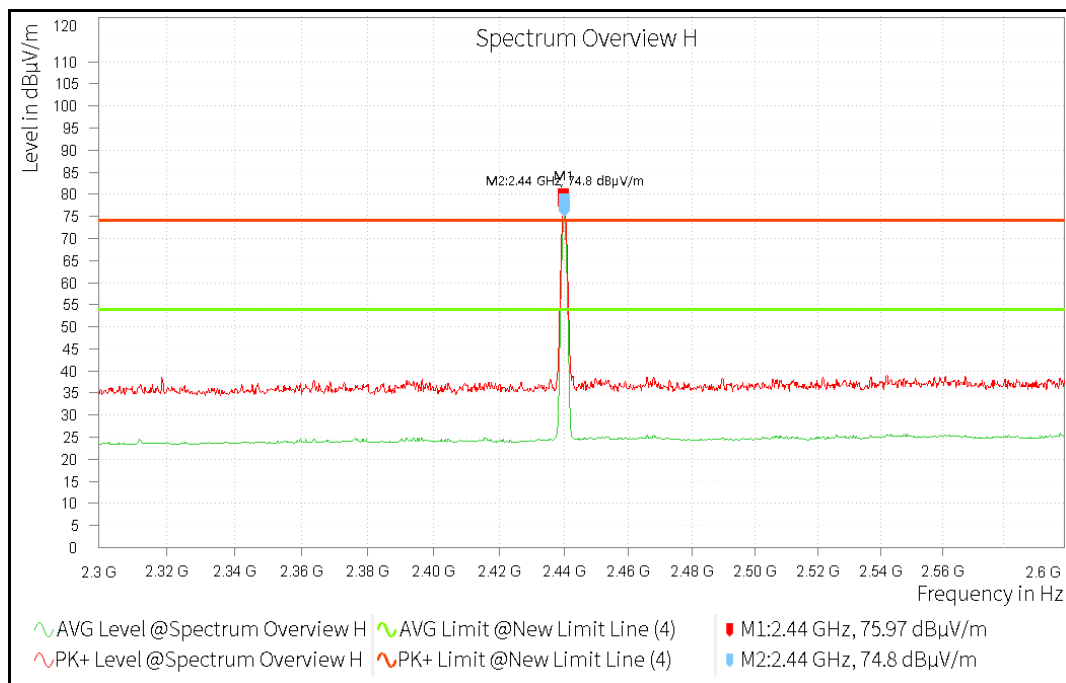
**Polarization: Horizontal**

Report Reference. No.: 80260100005001

## Channel Frequency: 2440MHz

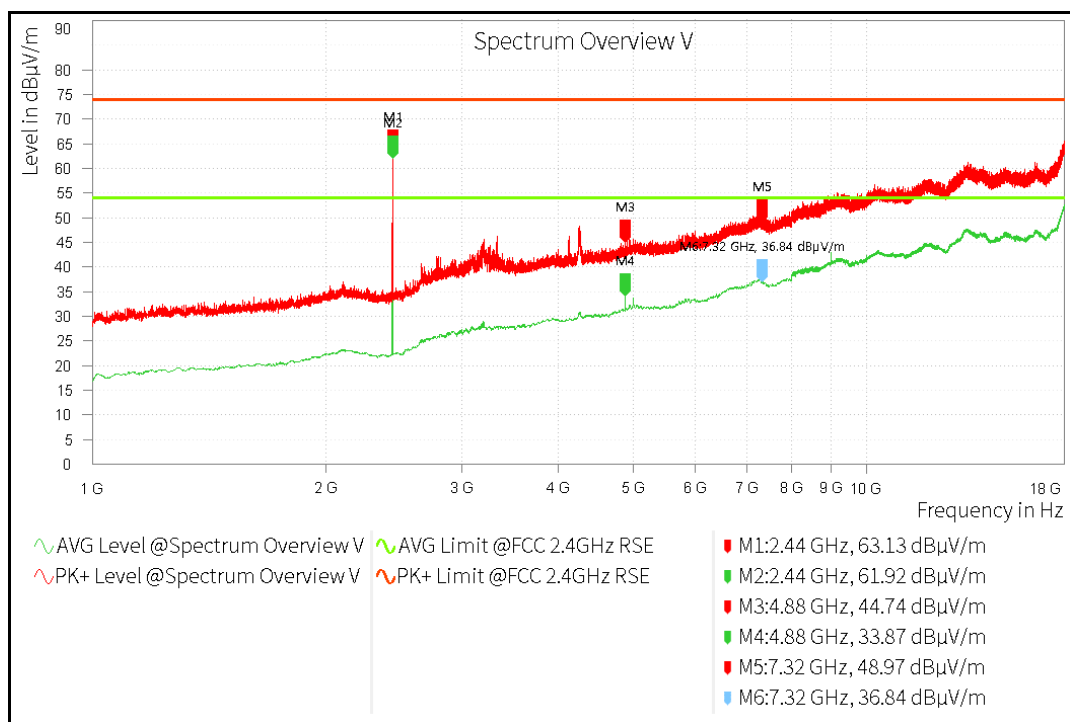


**Polarization: Vertical**



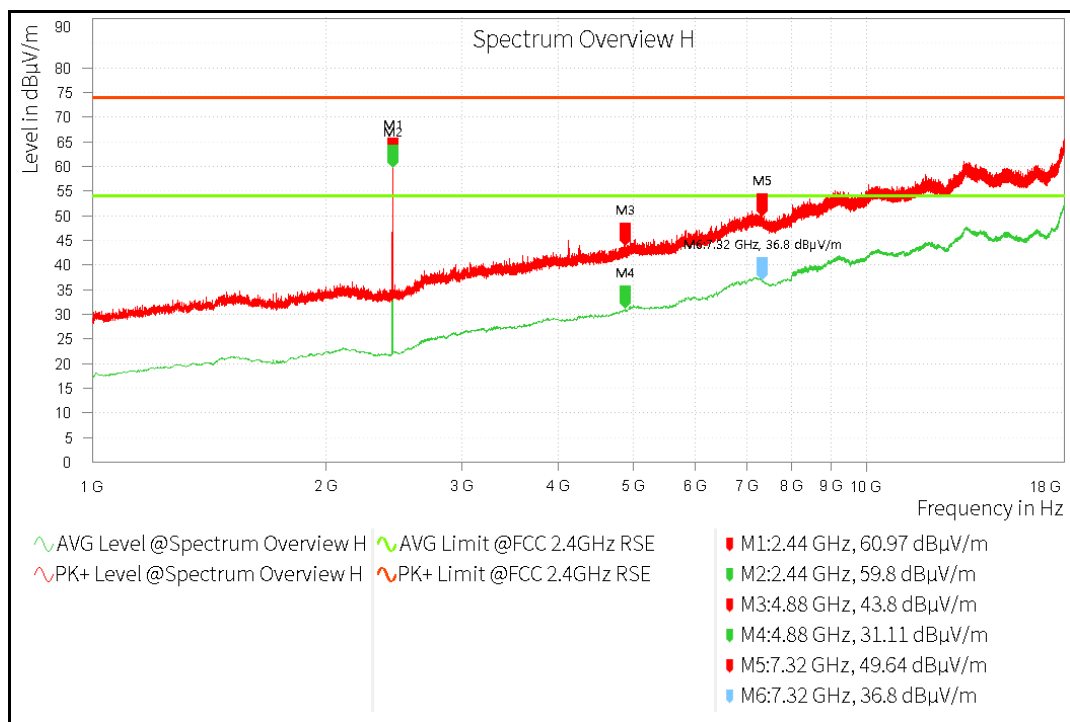
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



**Frequency Range: 1GHz-18GHz**

**Polarization: Vertical**

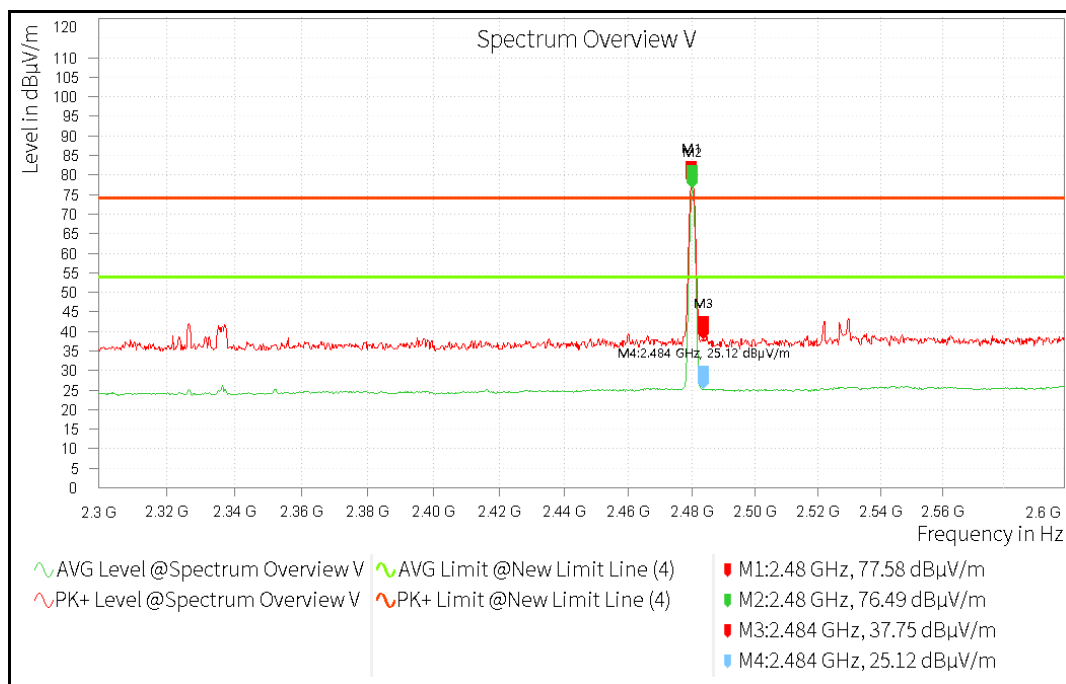


**Frequency Range: 1GHz-18GHz**

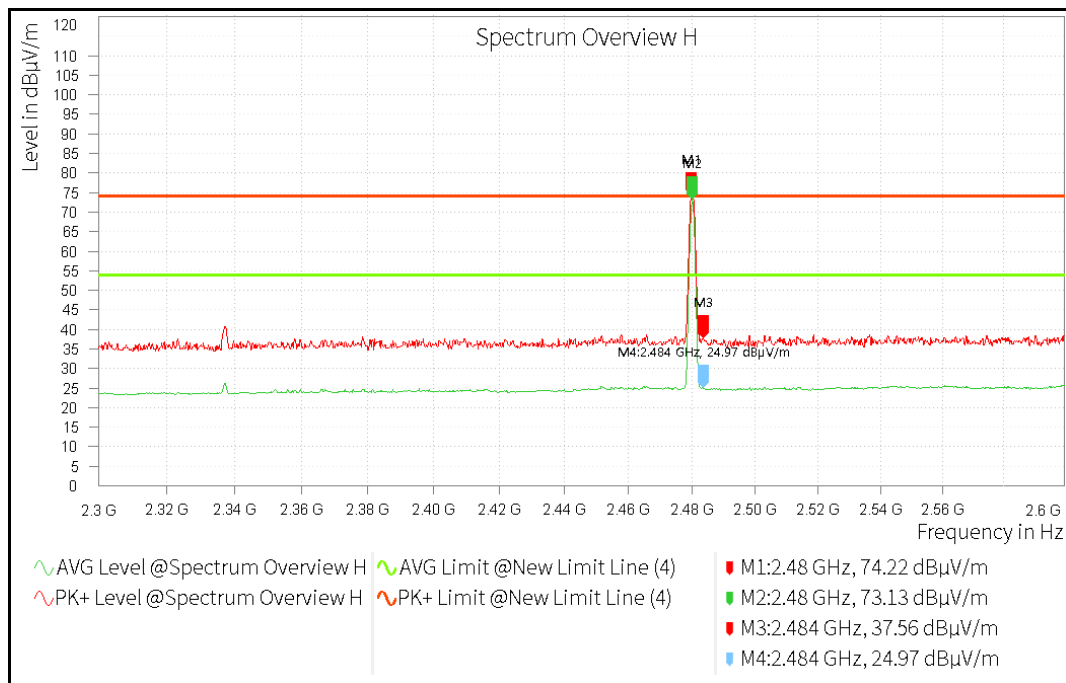
**Polarization: Horizontal**

Report Reference. No.: 80260100005001

## Channel Frequency: 2480MHz

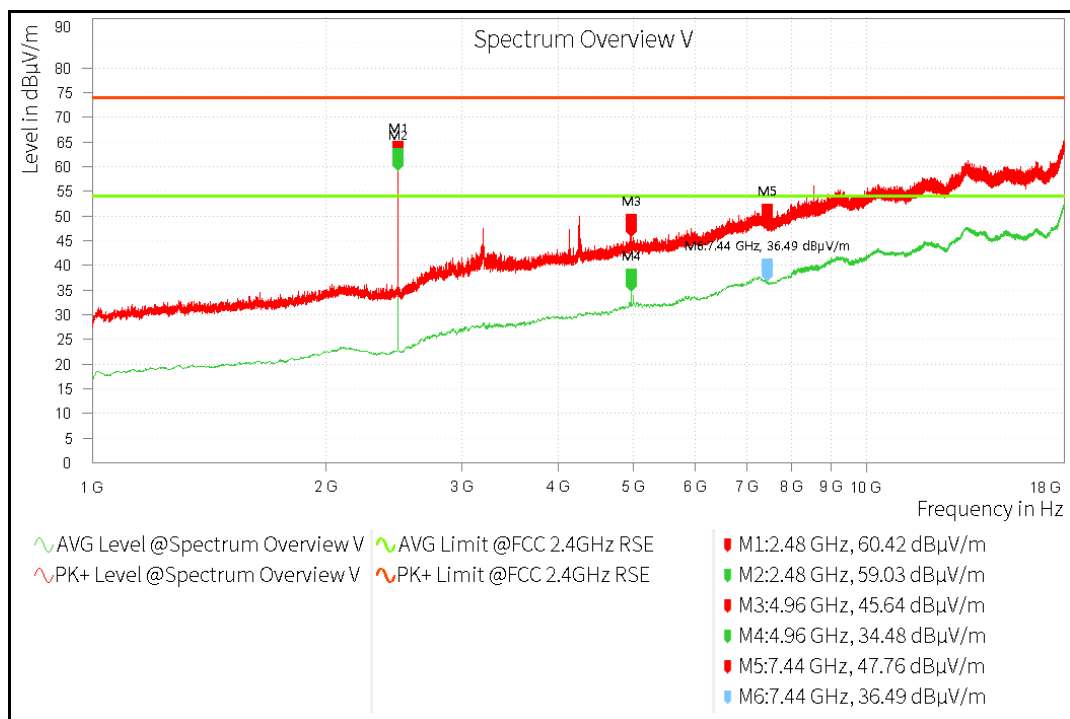


**Polarization: Vertical**



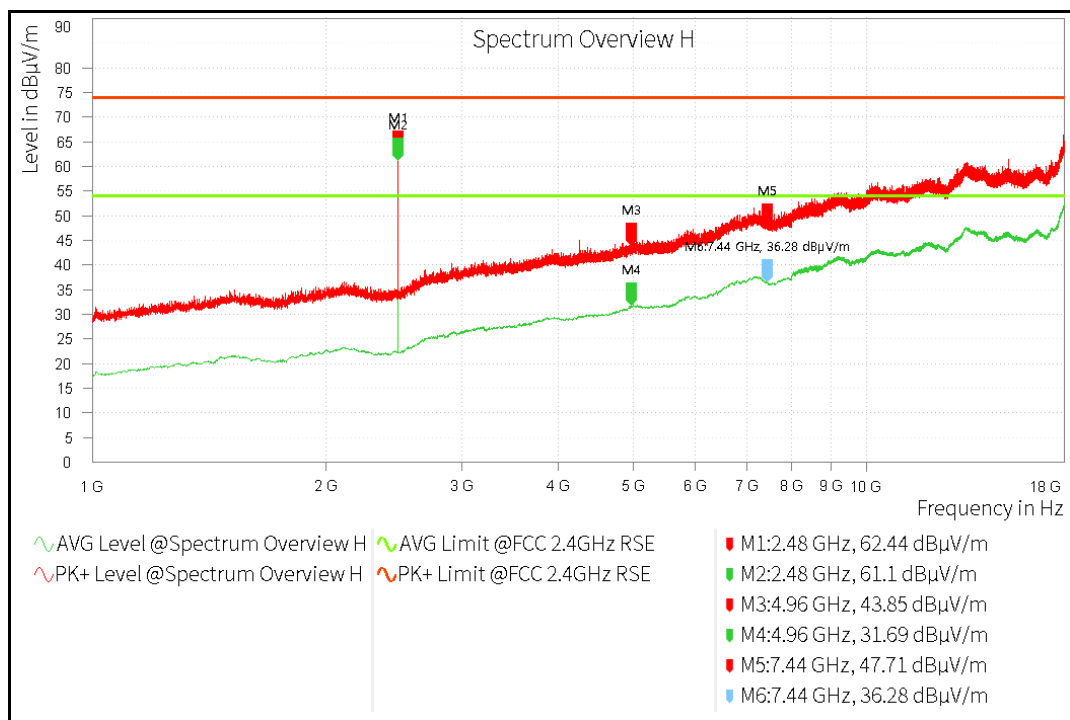
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



Frequency Range: 1GHz-18GHz

Polarization: Vertical



Frequency Range: 1GHz-18GHz

Polarization: Horizontal

# TEST REPORT

Report Reference. No.: 80260100005001

Data Rate: 2Mbps

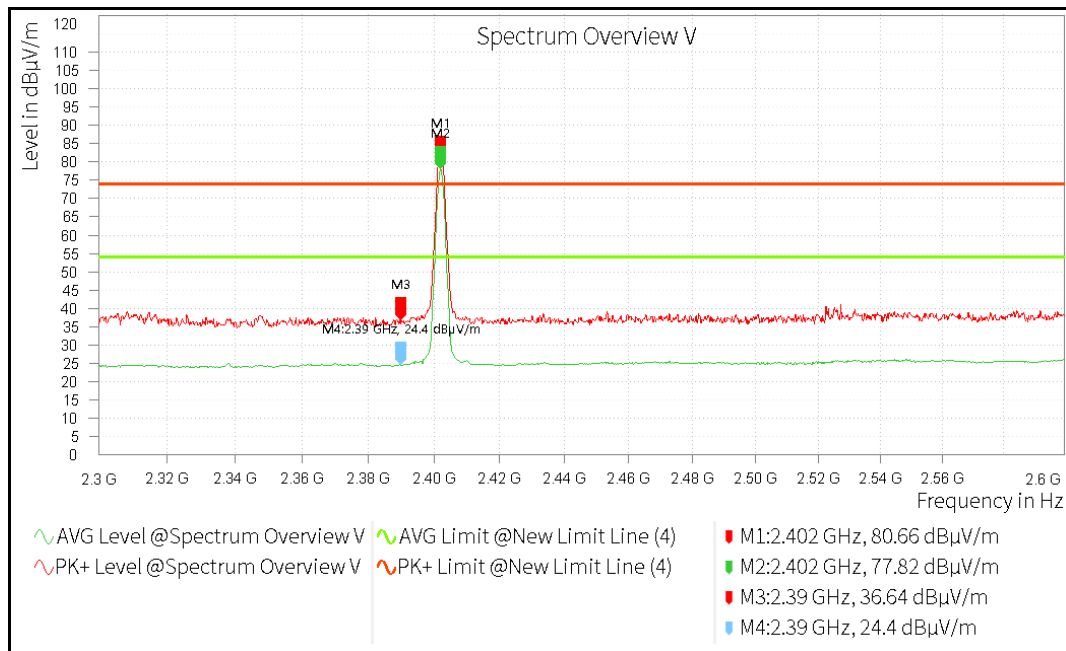
Table 15: 2Mbps Test results

| Channel Frequency (MHz) | Measured Frequency (MHz) | Antenna Polarization | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-------------------------|--------------------------|----------------------|-------------------------|----------------|-------------|
| 2402                    | 2402(Pk)                 | Vertical             | 80.66                   | -              | -           |
|                         | 2402(Av)                 |                      | 77.82                   | -              | -           |
|                         | 2390(Pk)                 |                      | 36.64                   | 74.00          | -37.36      |
|                         | 2390(Av)                 |                      | 24.40                   | 54.00          | -29.60      |
|                         | 4804(Pk)                 |                      | 44.39                   | 74.00          | -29.61      |
|                         | 4804(Av)                 |                      | 32.58                   | 54.00          | -21.42      |
|                         | 7206(Pk)                 |                      | 48.57                   | 74.00          | -25.43      |
|                         | 7206(Av)                 |                      | 37.16                   | 54.00          | -16.84      |
|                         | 2402(Pk)                 | Horizontal           | 78.82                   | -              | -           |
|                         | 2402(Av)                 |                      | 76.48                   | -              | -           |
|                         | 2390(Pk)                 |                      | 36.04                   | 74.00          | -37.96      |
|                         | 2390(Av)                 |                      | 24.20                   | 54.00          | -29.80      |
|                         | 4804(Pk)                 |                      | 43.21                   | 74.00          | -30.79      |
|                         | 4804(Av)                 |                      | 31.92                   | 54.00          | -22.08      |
|                         | 7206(Pk)                 |                      | 49.02                   | 74.00          | -24.98      |
|                         | 7206(Av)                 |                      | 37.45                   | 54.00          | -16.55      |
| 2440                    | 2440(Pk)                 | Vertical             | 79.26                   | -              | -           |
|                         | 2440(Av)                 |                      | 77.08                   | -              | -           |
|                         | 4880(Pk)                 |                      | 44.84                   | 74.00          | -29.16      |
|                         | 4880(Av)                 |                      | 33.90                   | 54.00          | -20.10      |
|                         | 7320(Pk)                 |                      | 48.61                   | 74.00          | -25.39      |
|                         | 7320(Av)                 |                      | 37.09                   | 54.00          | -16.91      |
|                         | 2440(Pk)                 | Horizontal           | 75.52                   | -              | -           |
|                         | 2440(Av)                 |                      | 73.19                   | -              | -           |
|                         | 4880(Pk)                 |                      | 44.85                   | 74.00          | -29.15      |
|                         | 4880(Av)                 |                      | 31.76                   | 54.00          | -22.24      |
|                         | 7320(Pk)                 |                      | 49.92                   | 74.00          | -24.08      |
|                         | 7320(Av)                 |                      | 37.06                   | 54.00          | -16.94      |
| 2480                    | 2480(Pk)                 | Vertical             | 76.86                   | -              | -           |
|                         | 2480(Av)                 |                      | 74.61                   | -              | -           |
|                         | 2483.5(Pk)               |                      | 38.94                   | 74.00          | -35.06      |
|                         | 2483.5(Av)               |                      | 25.31                   | 54.00          | -28.69      |
|                         | 4960(Pk)                 |                      | 44.75                   | 74.00          | -29.25      |
|                         | 4960(Av)                 |                      | 32.38                   | 54.00          | -21.62      |
|                         | 7440(Pk)                 |                      | 47.62                   | 74.00          | -26.38      |
|                         | 7440(Av)                 |                      | 36.50                   | 54.00          | -17.50      |
|                         | 2480(Pk)                 | Horizontal           | 73.93                   | -              | -           |
|                         | 2480(Av)                 |                      | 71.13                   | -              | -           |
|                         | 2483.5(Pk)               |                      | 37.60                   | 74.00          | -36.40      |
|                         | 2483.5(Av)               |                      | 25.88                   | 54.00          | -28.12      |
|                         | 4960(Pk)                 |                      | 43.26                   | 74.00          | -30.74      |
|                         | 4960(Av)                 |                      | 31.73                   | 54.00          | -22.27      |
|                         | 7440(Pk)                 |                      | 48.32                   | 74.00          | -25.68      |
|                         | 7440(Av)                 |                      | 36.35                   | 54.00          | -17.65      |

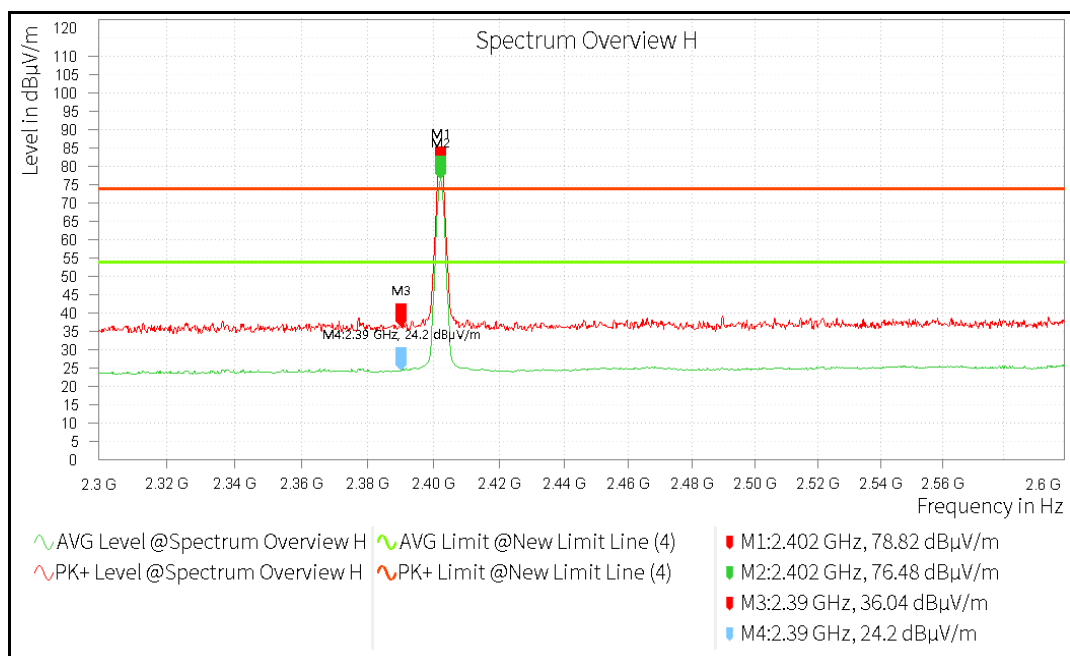
Report Reference. No.: 80260100005001

## Test Plots:

Channel Frequency: 2402MHz

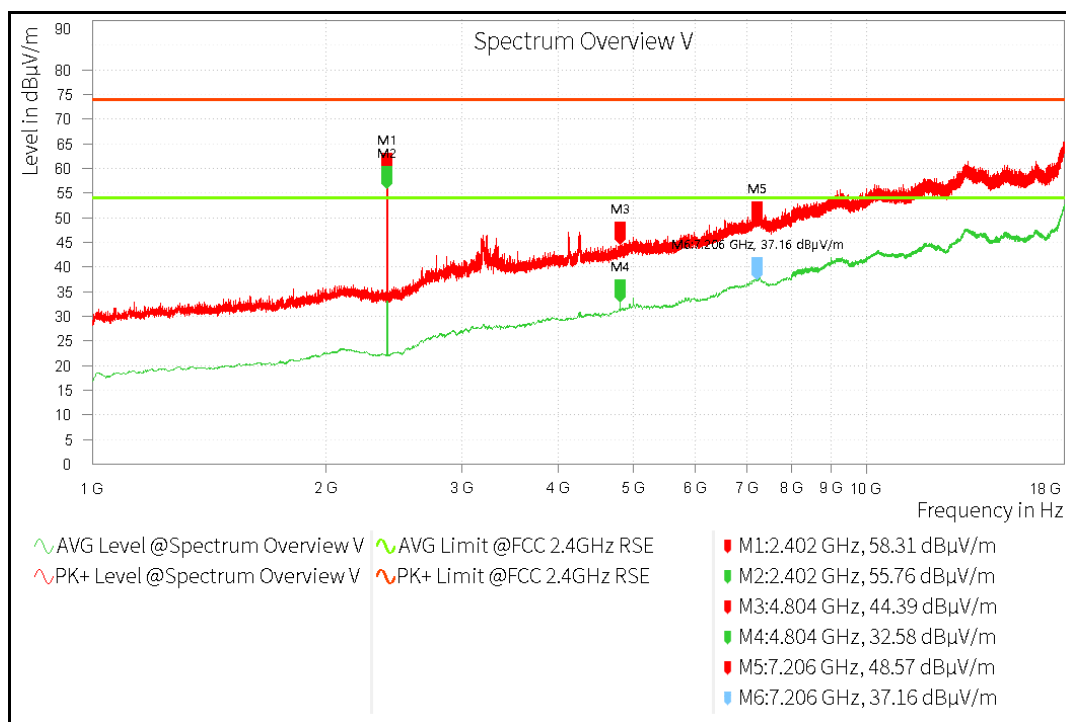


**Polarization: Vertical**



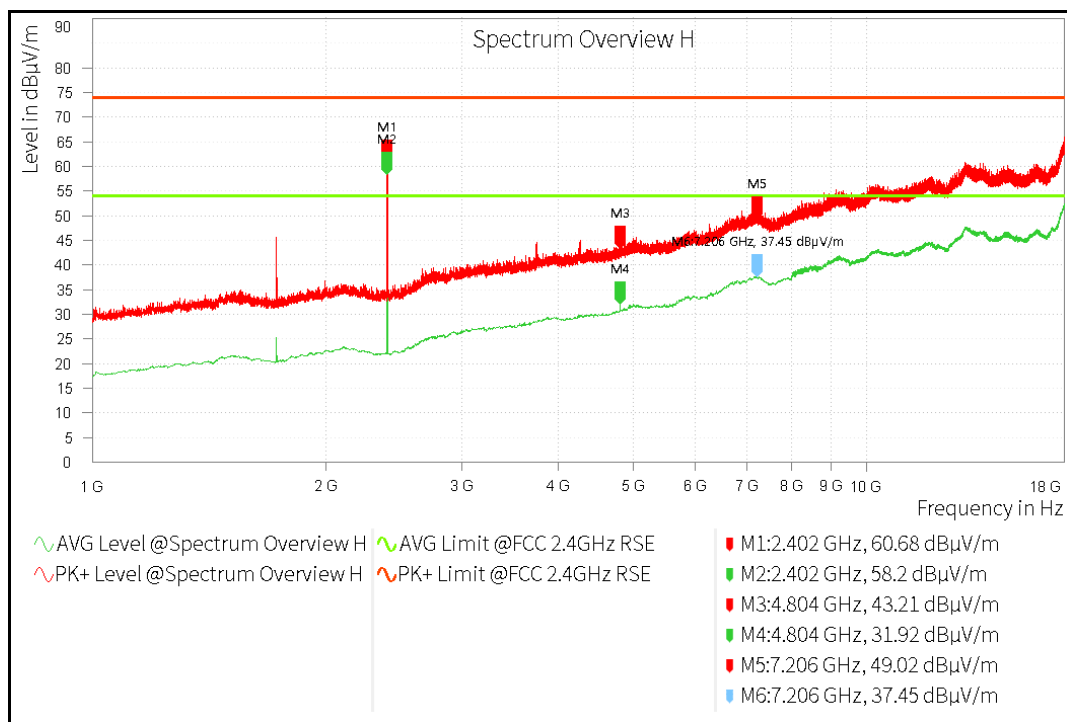
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



**Frequency Range: 1GHz-18GHz**

**Polarization: Vertical**

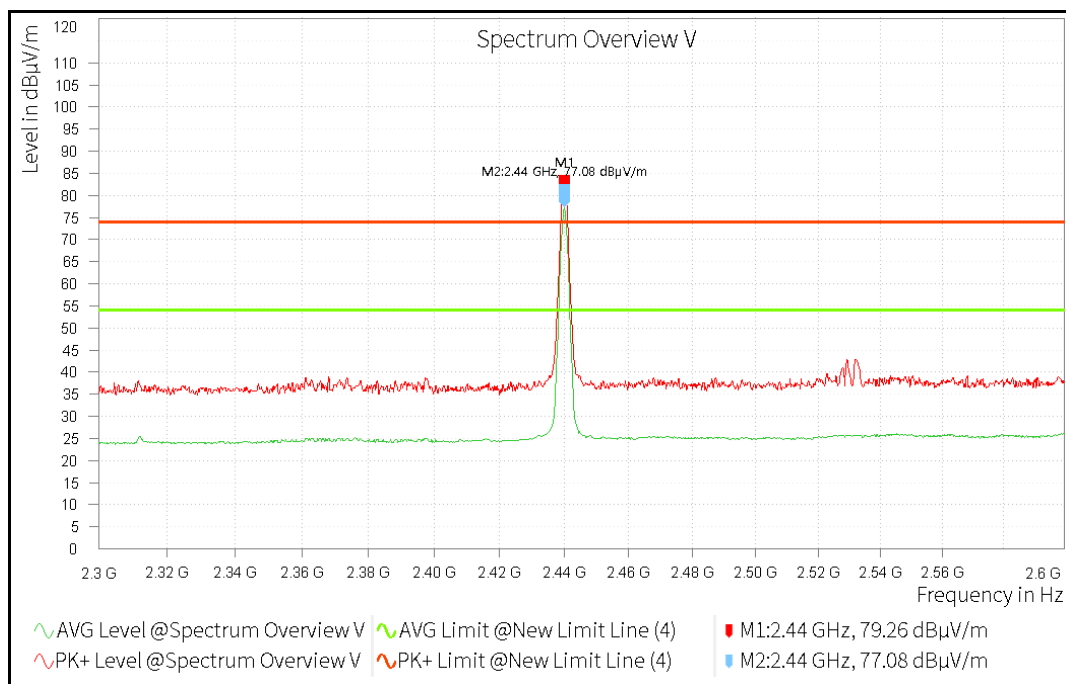


**Frequency Range: 1GHz-18GHz**

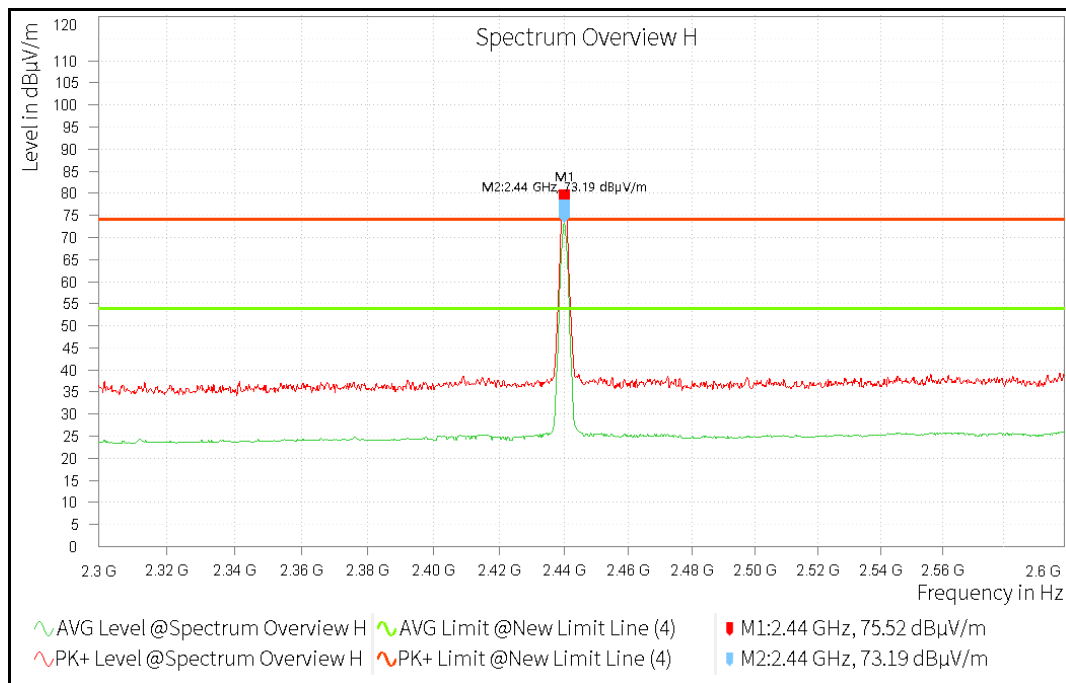
**Polarization: Horizontal**

Report Reference. No.: 80260100005001

## Channel Frequency: 2440MHz

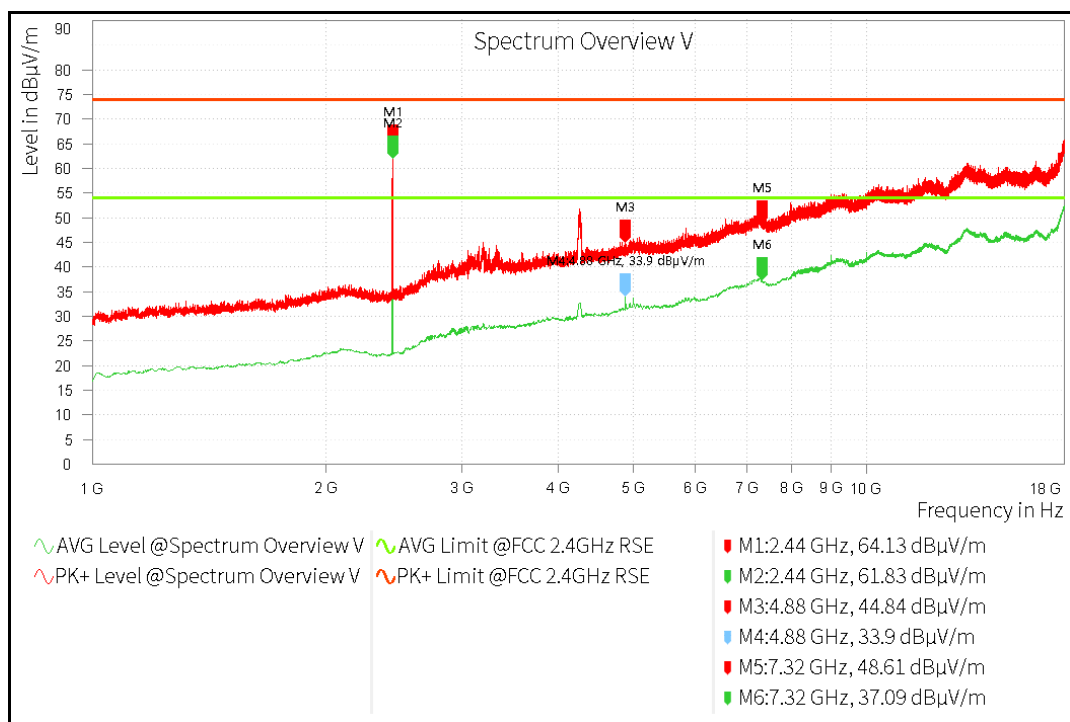


**Polarization: Vertical**



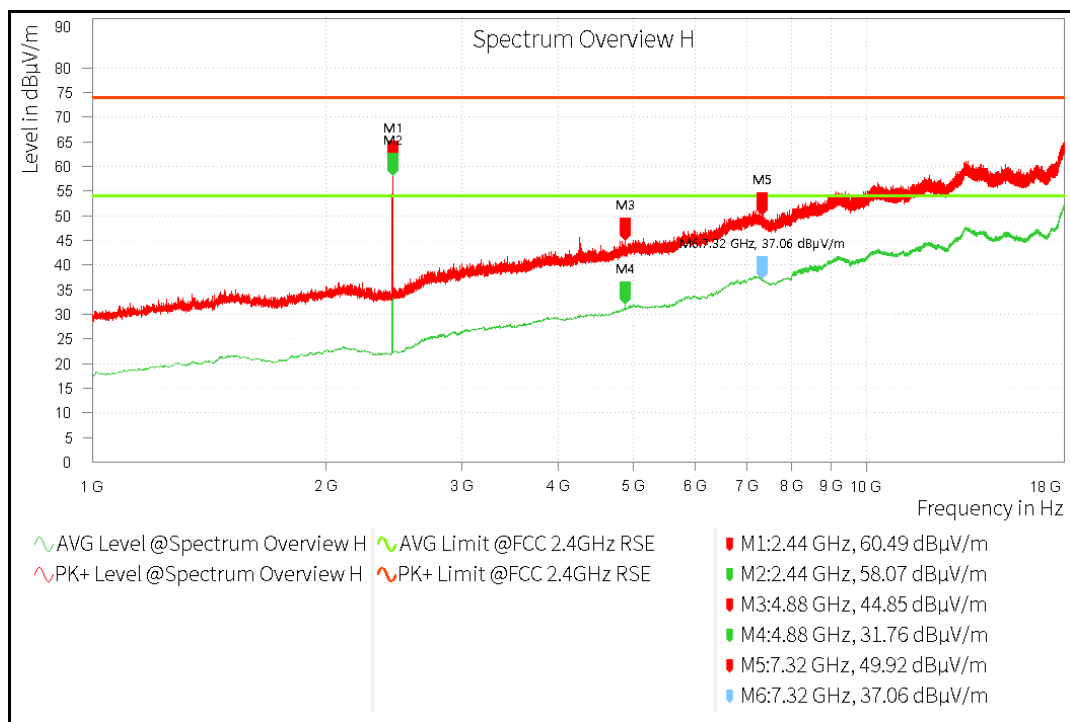
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



**Frequency Range: 1GHz-18GHz**

**Polarization: Vertical**

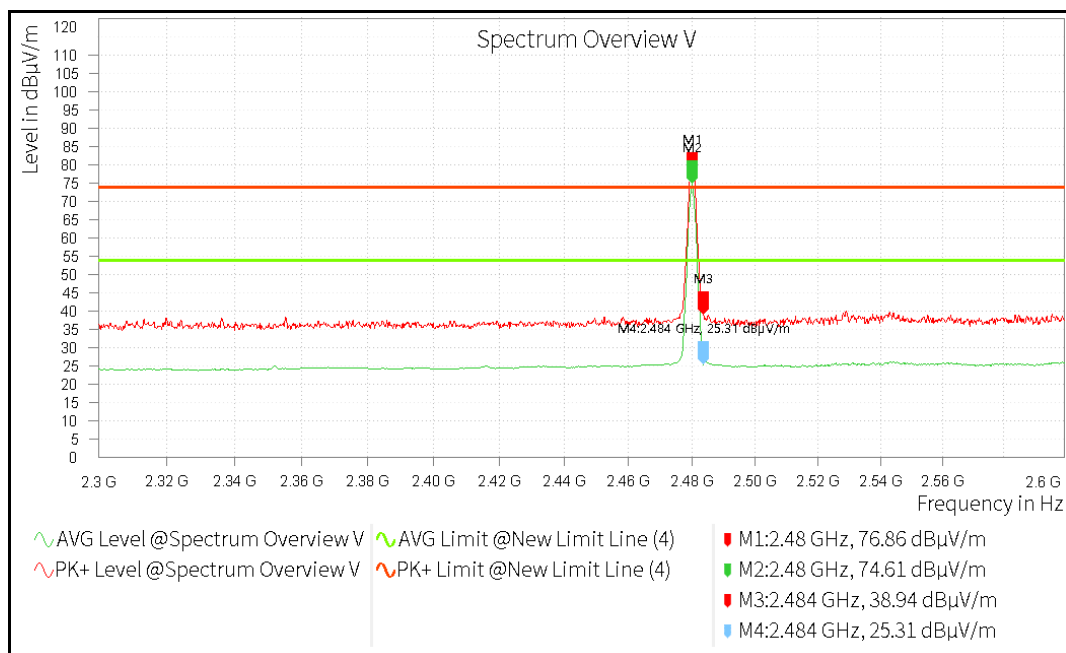


**Frequency Range: 1GHz-18GHz**

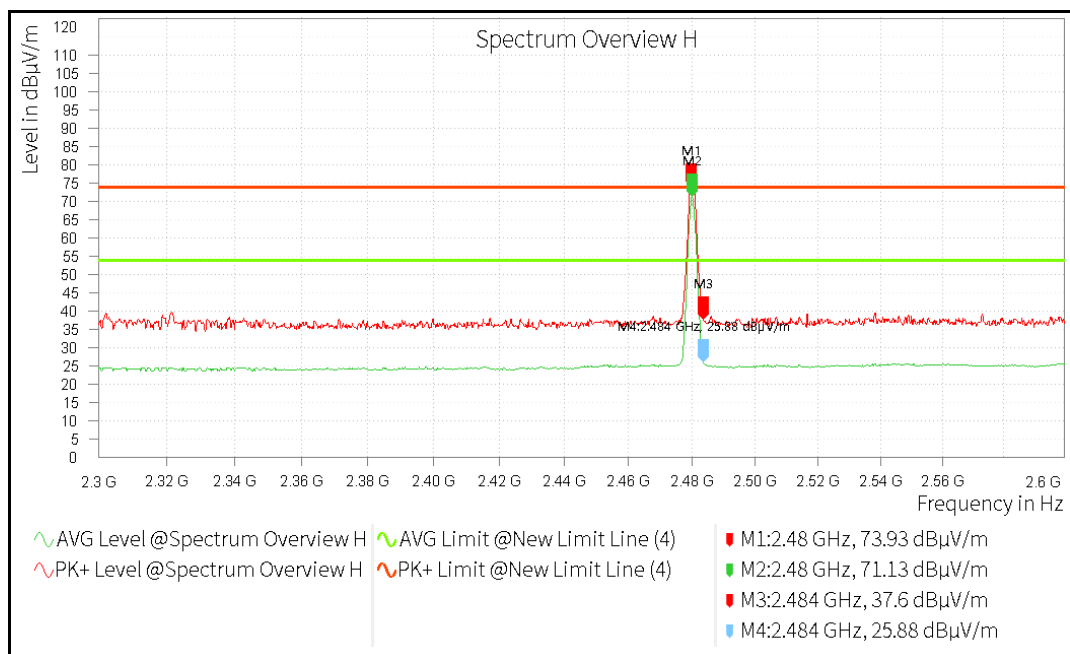
**Polarization: Horizontal**

Report Reference. No.: 80260100005001

## Channel Frequency: 2480MHz

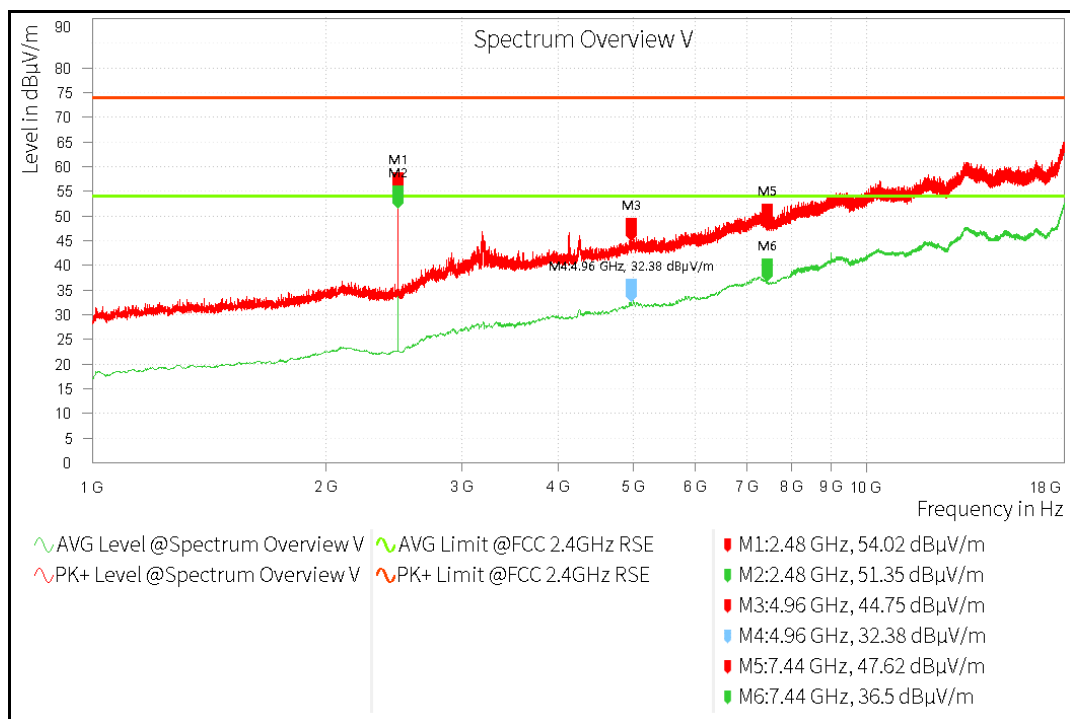


**Polarization: Vertical**



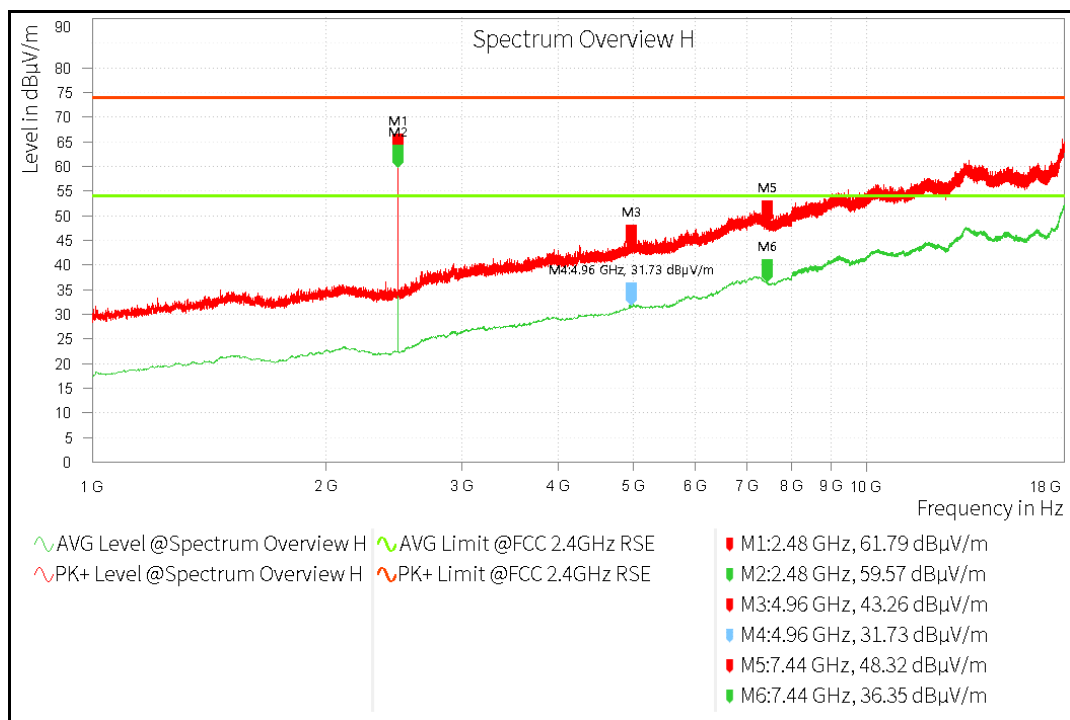
**Polarization: Horizontal**

Report Reference. No.: 80260100005001



**Frequency Range: 1GHz-18GHz**

**Polarization: Vertical**



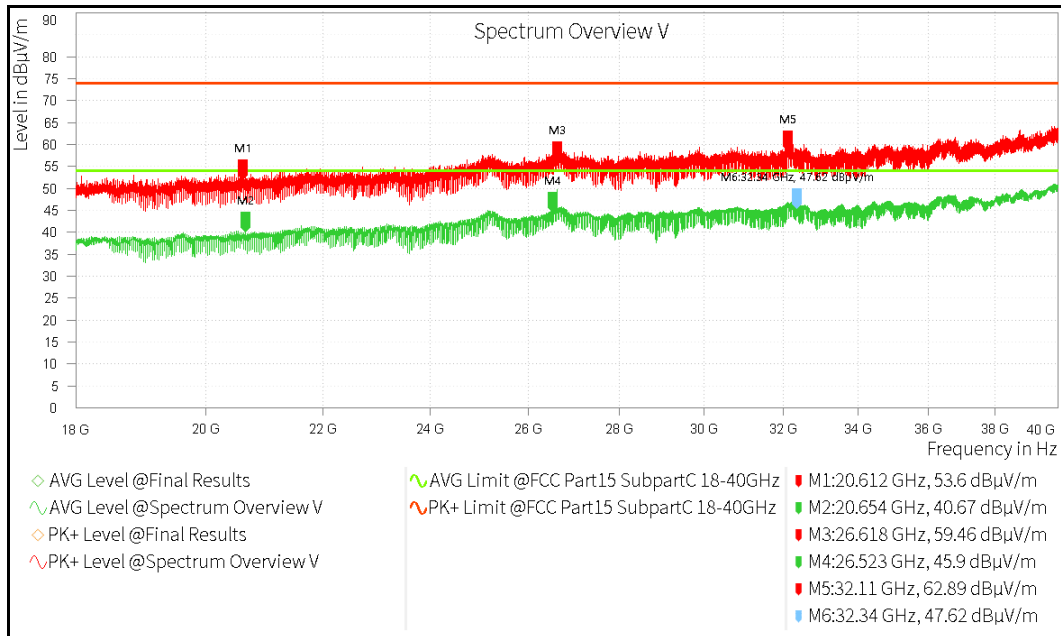
**Frequency Range: 1GHz-18GHz**

**Polarization: Horizontal**

Report Reference. No.: 80260100005001

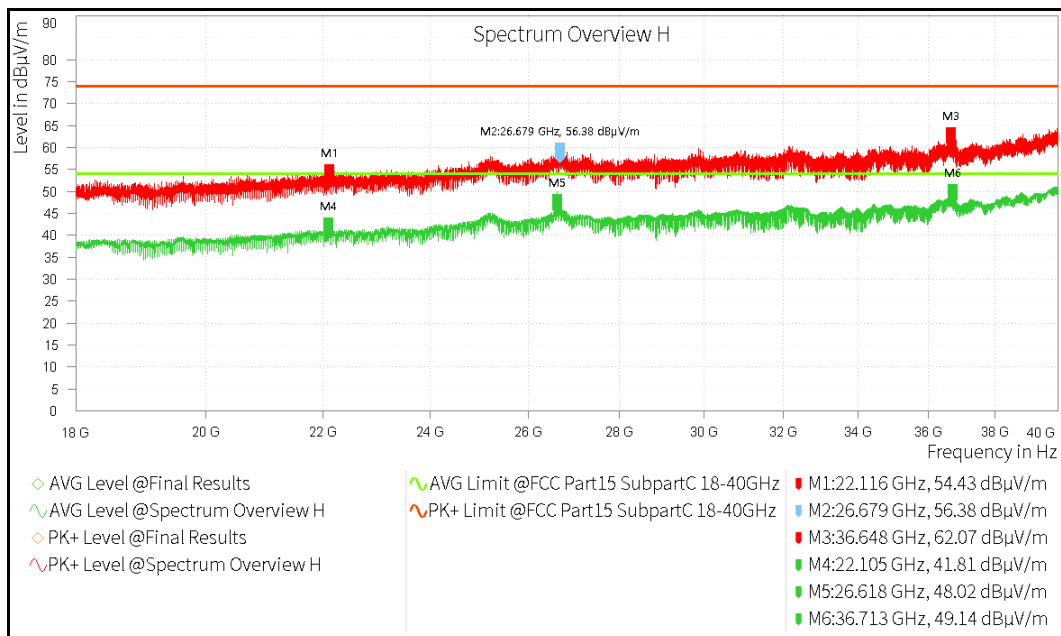
## Test Plots for above 18GHz:

Channel Frequency: 2402MHz



Frequency Range: 18GHz-40GHz

Polarization: Vertical



Frequency Range: 18GHz-40GHz

Polarization: Horizontal

Report Reference. No.: 80260100005001

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-----End of Report-----