



## **FCC TEST REPORT**

**FCC ID: 2ADMF-ESP32PLUS**

On Behalf of

Shenzhen KEYES DIY Robot Co., Ltd

Keyestudio ESP32 PLUS Development Board

Model No.: ESP32 PLUS Development Board

Prepared for : Shenzhen KEYES DIY Robot Co., Ltd  
Address : Room9A Jingxing Building, Changyong Road, Long Hua Xin Qu  
District, Shenzhen, China.

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.  
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Shenzhen, Guangdong, China

Report Number : A2311132-C01-R03  
Date of Receipt : December 11, 2023  
Date of Test : December 11-19, 2023  
Date of Report : December 19, 2023  
Version Number : V0

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## TEST REPORT DECLARATION

Applicant : Shenzhen KEYES DIY Robot Co., Ltd  
Address : Room9A Jingxing Building, Changyong Road, Long Hua Xin Qu District,  
Shenzhen, China.  
Manufacturer : Shenzhen KEYES DIY Robot Co., Ltd  
Address : Room9A Jingxing Building, Changyong Road, Long Hua Xin Qu District,  
Shenzhen, China.  
EUT Description : Keyestudio ESP32 PLUS Development Board  
(A) Model No. : ESP32 PLUS Development Board  
(B) Trademark : **Keyestudio, Keyes**

Measurement Standard Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**

**ANSI C63.10-2013**

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:

Yannis Wen  
Project Engineer



Approved by (name + signature).....:

Reak Yang  
Project Manager



Date of issue.....:

December 19, 2023

**Revision History**

| Revision | Issue Date        | Revisions              | Revised By |
|----------|-------------------|------------------------|------------|
| V0       | December 19, 2023 | Initial released Issue | Yannis Wen |

## 1. Summary Of Standards And Results

### 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Test Item                                                                                                                                                                                                                                                                                                                    | Standards Paragraph                           | Result |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------|
| Conducted Emission                                                                                                                                                                                                                                                                                                           | FCC Part 15: 15.207                           | P      |
| 6dB Bandwidth                                                                                                                                                                                                                                                                                                                | FCC PART 15:15.247(a)(2)                      | P      |
| Conducted Maximum Peak Output Power                                                                                                                                                                                                                                                                                          | FCC Part 15: 15.247(b)(3)                     | P      |
| Radiated Spurious Emission                                                                                                                                                                                                                                                                                                   | FCC Part 15: 15.209<br>FCC Part 15: 15.247(d) | P      |
| Conducted Spurious & Band Edge Emission                                                                                                                                                                                                                                                                                      | FCC Part 15: 15.247(d)                        | P      |
| Power Spectral Density                                                                                                                                                                                                                                                                                                       | FCC PART 15:15.247(e)                         | P      |
| Radiated Band Edge Emission                                                                                                                                                                                                                                                                                                  | FCC Part 15: 15.247(d)                        | P      |
| Antenna Requirement                                                                                                                                                                                                                                                                                                          | FCC Part 15: 15.203                           | P      |
| <p>Note:</p> <ol style="list-style-type: none"> <li>1. P is an abbreviation for Pass.</li> <li>2. F is an abbreviation for Fail.</li> <li>3. N/A is an abbreviation for Not Applicable.</li> <li>4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.</li> </ol> |                                               |        |

## 2. General Information

### 2.1. Description of Device (EUT)

Description/PMN : Keyestudio ESP32 PLUS Development Board

Model : ESP32 PLUS Development Board  
Number :  
Diff. : N/A

Test Voltage : DC 5V from USB and DC 12V from DC Power.

Operation frequency : 2412MHz-2462MHz for IEEE 802.11 b, g, n20  
2422MHz-2452MHz for IEEE 802.11 n40  
IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)

Modulation type : IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)  
IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)  
802.11b/802.11g /802.11n(HT20): 11

Channel No. : 802.11n(HT40): 7

Antenna Type : Internal antenna, max gain 3.42dBi  
(Antenna information is provided by applicant.)

Software version : V1.0

Hardware : V1.0  
version

#### Remark:

1. The worst-case simultaneous transmission configuration was evaluated with no non-compliance found. Results in this report are only for 2.4G WIFI function, and there is no other transmitter involved.

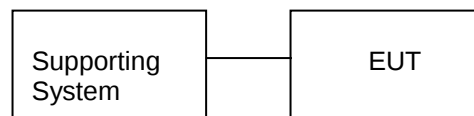
## 2.2. Accessories of Device (EUT)

Accessories : /  
Manufacturer : /  
Model : /  
Ratings : /

## 2.3. Tested Supporting System Details

| No. | Description | Manufacturer | Model        | Serial Number | Certification or SDOC |
|-----|-------------|--------------|--------------|---------------|-----------------------|
| 1.  | Notebook PC | Lenovo       | ThinkPad E14 | N/A           | SDOC                  |

## 2.4. Block Diagram of connection between EUT and simulators



## 2.5. Test Mode Description

| Mode                                                                                                                                | data rate (Mbps)(see Note) | Channel     | Frequency (MHz) |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|-----------------|
| IEEE 802.11b                                                                                                                        | 1                          | Low :CH1    | 2412            |
|                                                                                                                                     | 1                          | Middle: CH6 | 2437            |
|                                                                                                                                     | 1                          | High: CH11  | 2462            |
| IEEE 802.11g                                                                                                                        | 6                          | Low :CH1    | 2412            |
|                                                                                                                                     | 6                          | Middle: CH6 | 2437            |
|                                                                                                                                     | 6                          | High: CH11  | 2462            |
| IEEE 802.11 n/HT20                                                                                                                  | 6.5                        | Low :CH1    | 2412            |
|                                                                                                                                     | 6.5                        | Middle: CH6 | 2437            |
|                                                                                                                                     | 6.5                        | High: CH11  | 2462            |
| IEEE 802.11 n/HT40                                                                                                                  | 13.5                       | Low :CH3    | 2422            |
|                                                                                                                                     | 13.5                       | Middle: CH6 | 2437            |
|                                                                                                                                     | 13.5                       | High: CH9   | 2452            |
| Note: According exploratory test, EUT will have maximum output power in those data rate. so those data rate were used for all test. |                            |             |                 |

| Channel list:                           |                 |         |                 |         |                 |
|-----------------------------------------|-----------------|---------|-----------------|---------|-----------------|
| For IEEE 802.11b, g, n20, n40 with 2.4G |                 |         |                 |         |                 |
| Channel                                 | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| CH1                                     | 2412            | CH5     | 2432            | CH9     | 2452            |
| CH2                                     | 2417            | CH6     | 2437            | CH10    | 2457            |
| CH3                                     | 2422            | CH7     | 2442            | CH11    | 2462            |
| CH4                                     | 2427            | CH8     | 2447            |         |                 |

## 2.6. Test Conditions

| Items              | Required  | Actual |
|--------------------|-----------|--------|
| Temperature range: | 15-35°C   | 24°C   |
| Humidity range:    | 25-75%    | 56%    |
| Pressure range:    | 86-106kPa | 98kPa  |

## 2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,  
Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

Designation Number: CN1236

July 15, 2019 Certificated by IC

Registration Number: 12135A

## 2.8. Measurement Uncertainty

(95% confidence levels, k=2)

| Item                                                                   | Uncertainty               |
|------------------------------------------------------------------------|---------------------------|
| Uncertainty for Power point Conducted Emissions Test                   | 1.63dB                    |
| Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)    | 3.5dB                     |
| Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)  | 3.74dB(Polarize: V)       |
|                                                                        | 3.76dB(Polarize: H)       |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)  | 3.77dB(Polarize: V)       |
|                                                                        | 3.80dB(Polarize: H)       |
| Uncertainty for Radiation Emission test in 3m chamber (25GHz to 40GHz) | 4.31dB(Polarize: V)       |
|                                                                        | 4.30dB(Polarize: H)       |
| Uncertainty for radio frequency                                        | $5.06 \times 10^{-8}$ GHz |
| Uncertainty for conducted RF Power                                     | 0.40dB                    |
| Uncertainty for temperature                                            | 0.2°C                     |
| Uncertainty for humidity                                               | 1%                        |
| Uncertainty for DC and low frequency voltages                          | 0.06%                     |

## 2.9. Test Equipment List

| Equipment                   | Manufacture   | Model No.            | Firmware version | Serial No.                 | Last cal.  | Cal Interval |
|-----------------------------|---------------|----------------------|------------------|----------------------------|------------|--------------|
| 9*6*6 anechoic chamber      | CHENYU        | 9*6*6                | /                | N/A                        | 2022.05.18 | 3Year        |
| Spectrum analyzer           | ROHDE&SCHWARZ | FSV40-N              | 2.3              | 102137                     | 2023.08.16 | 1Year        |
| Spectrum analyzer           | Agilent       | N9020A               | A.14.16          | MY499100060                | 2023.08.16 | 1Year        |
| Receiver                    | ROHDE&SCHWARZ | ESR                  | 2.28 SP1         | 1316.3003K03-10<br>2082-Wa | 2023.08.16 | 1Year        |
| Receiver                    | R&S           | ESCI                 | 4.42 SP1         | 101165                     | 2023.08.16 | 1Year        |
| Bilog Antenna               | Schwarzbeck   | VULB 9168            | /                | VULB 9168#627              | 2023.08.28 | 2Year        |
| Horn Antenna                | SCHWARZBECK   | BBHA 9120<br>D       | /                | 2106                       | 2023.08.19 | 2Year        |
| Active Loop Antenna         | SCHWARZBECK   | FMZB<br>1519B        | /                | 00059                      | 2023.08.19 | 2Year        |
| RF Cable                    | Resenberger   | Cable 1              | /                | RE1                        | 2023.08.16 | 1Year        |
| RF Cable                    | Resenberger   | Cable 2              | /                | RE2                        | 2023.08.16 | 1Year        |
| RF Cable                    | Resenberger   | Cable 3              | /                | CE1                        | 2023.08.16 | 1Year        |
| Pre-amplifier               | HP            | HP8347A              | /                | 2834A00455                 | 2023.08.16 | 1Year        |
| Pre-amplifier               | Agilent       | 8449B                | /                | 3008A02664                 | 2023.08.16 | 1Year        |
| L.I.S.N.#1                  | Schwarzbeck   | NSLK8126             | /                | 8126-466                   | 2023.08.16 | 1Year        |
| L.I.S.N.#2                  | ROHDE&SCHWARZ | ENV216               | /                | 101043                     | 2023.08.16 | 1 Year       |
| Horn Antenna                | SCHWARZBECK   | BBHA9170             | /                | 00946                      | 2023.08.19 | 2 Year       |
| Preamplifier                | SKET          | LNPA_1840<br>-50     | /                | SK2018101801               | 2023.08.16 | 1 Year       |
| Power Meter                 | Agilent       | E9300A               | /                | MY41496628                 | 2023.08.16 | 1 Year       |
| Power Sensor                | DARE          | RPR3006W             | /                | 15100041SNO91              | 2023.08.16 | 1 Year       |
| Temp. & Humid. Chamber      | Teelong       | WHTH-1000<br>-40-880 | /                | TL-20191205-01             | 2023.08.16 | 1 Year       |
| Switching Mode Power Supply | JUNKE         | JK12010S             | /                | 20140927-6                 | 2023.08.16 | 1 Year       |
| Adjustable attenuator       | MWRFtest      | N/A                  | /                | N/A                        | N/A        | N/A          |
| 10dB Attenuator             | Mini-Circuits | DC-6G                | /                | N/A                        | N/A        | N/A          |

| Software Information |               |              |           |
|----------------------|---------------|--------------|-----------|
| Test Item            | Software Name | Manufacturer | Version   |
| RE                   | EZ-EMC        | Farad        | Alpha-3A1 |
| CE                   | EZ-EMC        | Farad        | Alpha-3A1 |
| RF-CE                | MTS 8310      | MW           | V2.0.0.0  |

### 3. Spurious Emission

#### 3.1. Test Limits

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

| 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> ) |

## 15.209 Limit

| FREQUENCY<br>MHz                                                              | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT                           |          |
|-------------------------------------------------------------------------------|--------------------|-------------------------------------------------|----------|
|                                                                               |                    | μV/m                                            | dB(μV)/m |
| 0.009-0.490                                                                   | 300                | 2400/F(KHz)                                     | /        |
| 0.490-1.705                                                                   | 30                 | 24000/F(KHz)                                    | /        |
| 1.705-30                                                                      | 30                 | 30                                              | 29.5     |
| 30 ~ 88                                                                       | 3                  | 100                                             | 40.0     |
| 88 ~ 216                                                                      | 3                  | 150                                             | 43.5     |
| 216 ~ 960                                                                     | 3                  | 200                                             | 46.0     |
| 960 ~ 1000                                                                    | 3                  | 500                                             | 54.0     |
| Above 1000                                                                    | 3                  | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) |          |
| Note 1: The peak limit is 20 dB higher than the average limit                 |                    |                                                 |          |
| Note 2: Peak limit applies (AVG limit + 20 dB) as well as RSS-247 Section 5.5 |                    |                                                 |          |

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Table 5 – General field strength limits at frequencies above 30 MHz

| Frequency (MHz) | Field strength ( $\mu\text{V}/\text{m}$ at 3 m) |
|-----------------|-------------------------------------------------|
| 30 – 88         | 100                                             |
| 88 – 216        | 150                                             |
| 216 – 960       | 200                                             |
| Above 960       | 500                                             |

Table 6 – General field strength limits at frequencies below 30 MHz

| Frequency                     | Magnetic field strength (H-Field) ( $\mu\text{A}/\text{m}$ ) | Measurement distance (m) |
|-------------------------------|--------------------------------------------------------------|--------------------------|
| 9 - 490 kHz <sup>Note 1</sup> | $6.37/\text{F}$ (F in kHz)                                   | 300                      |
| 490 - 1705 kHz                | $63.7/\text{F}$ (F in kHz)                                   | 30                       |
| 1.705 - 30 MHz                | 0.08                                                         | 30                       |

**Note 1:** The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

### 3.2. Test Procedure

The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz.

The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above 1GHz testing, the table was rotated 360 degrees to determine the position of the highest radiation

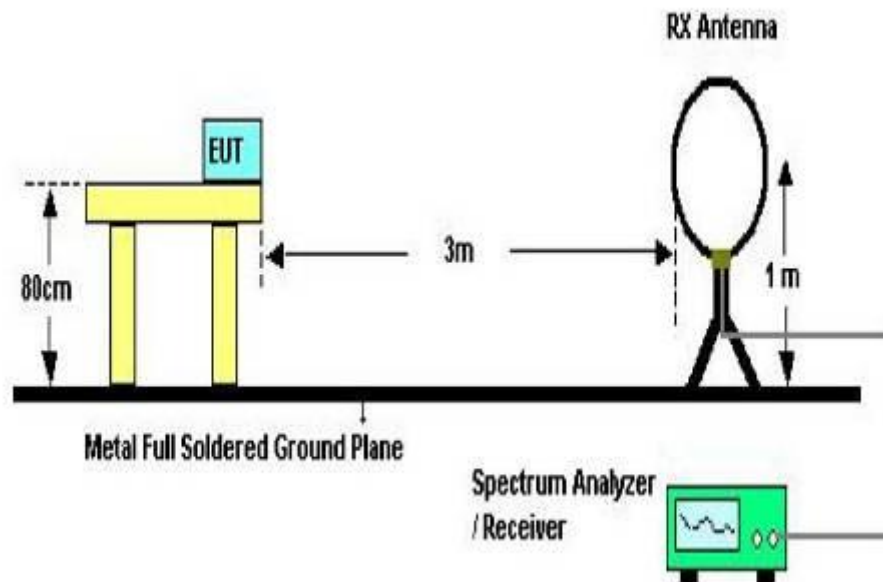
The Test antenna shall vary between 1m and 4m, both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting radiated emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Quasi Peak Detector mode premeasured

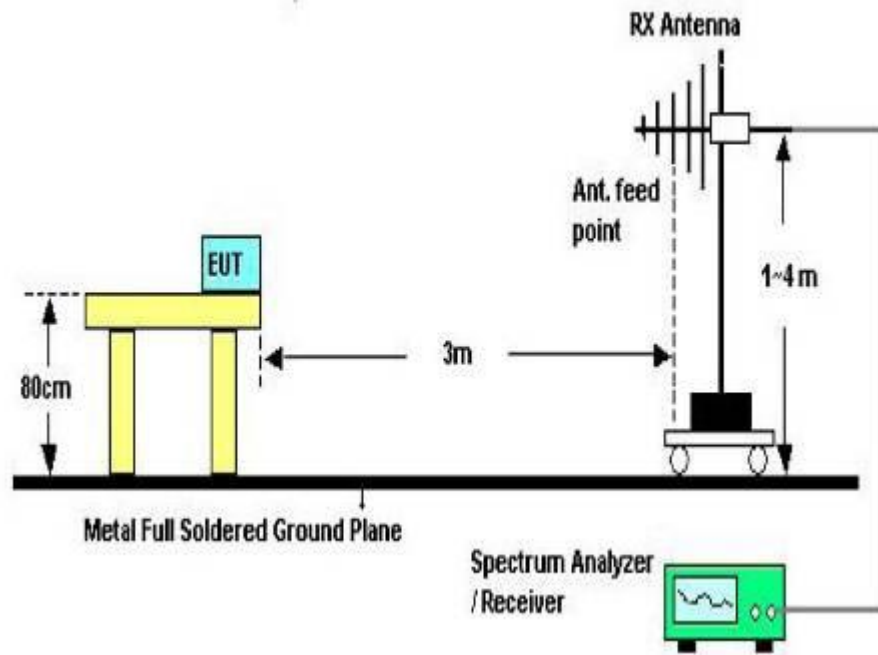
If Peak value comply with QP limit below 1GHz, the EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test configuration, please see the test setup photo.

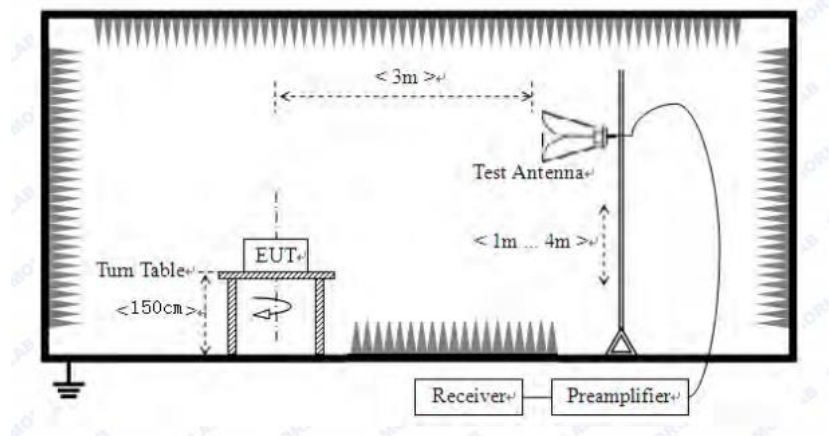
### 3.3. Test Setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

### 3.4. Test Results

Test Condition

Continual Transmitting in maximum power.

|              |           |            |
|--------------|-----------|------------|
| 9KHz~150KHz  | RBW200Hz  | VBW1KHz    |
| 150KHz~30MHz | RBW9KHz   | VBW 30KHz  |
| 30MHz~1GHz   | RBW120KHz | VBW 300KHz |
| Above1GHz    | RBW1MHz   | VBW 3MHz   |

We have scanned the EUT from 9kHz up to the 10th harmonic of the fundamental.

Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

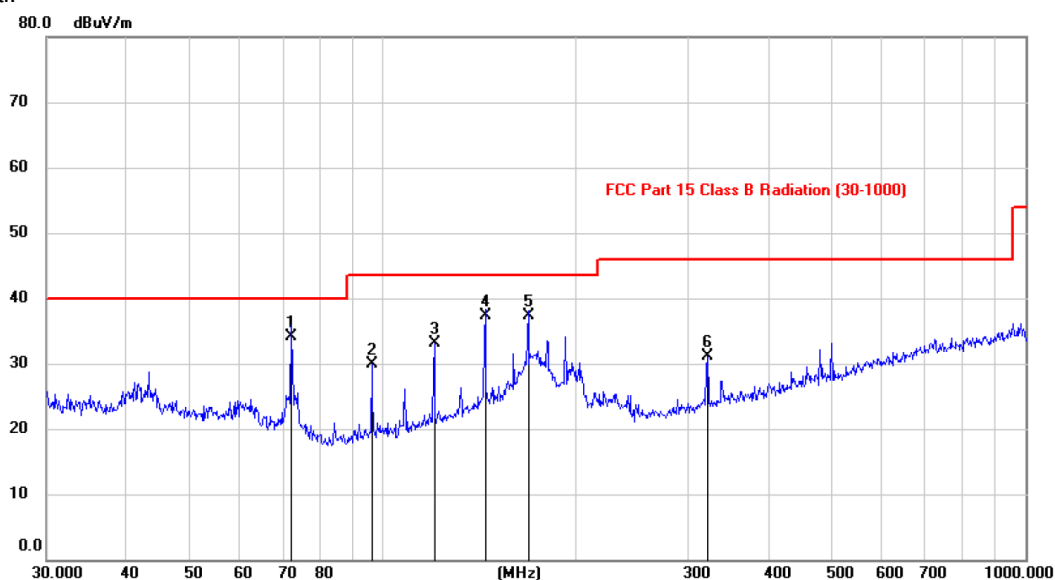
Note:1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

2.Only show the test data of the worst Channel in this report.

3. Except for mode b/g, other modes test the MIMO status

From 30MHz to 1000MHz: Conclusion: PASS

Vertical:

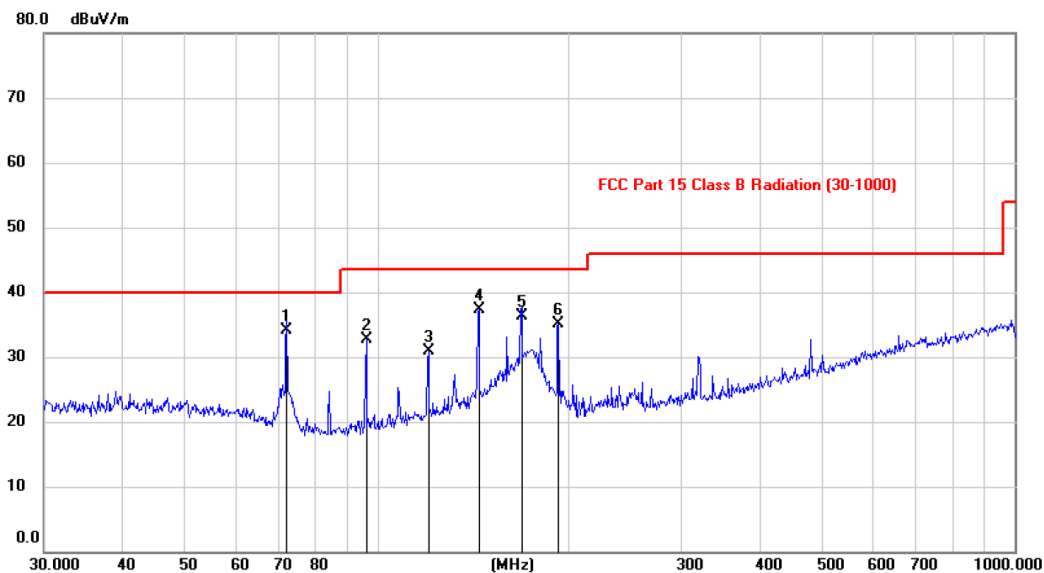


| No. | Mk. | Freq.    | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit  | Margin | Antenna<br>Height | Table<br>Degree |        |
|-----|-----|----------|------------------|-------------------|------------------|--------|--------|-------------------|-----------------|--------|
|     |     | MHz      | dBuV             | dB                | dBuV/m           | dBuV/m | dB     | Detector          | cm              | degree |
| 1   | *   | 72.2446  | 23.07            | 11.04             | 34.11            | 40.00  | -5.89  | QP                |                 |        |
| 2   |     | 96.3348  | 19.36            | 10.58             | 29.94            | 43.50  | -13.56 | peak              |                 |        |
| 3   |     | 120.3751 | 20.03            | 13.06             | 33.09            | 43.50  | -10.41 | peak              |                 |        |
| 4   |     | 144.5373 | 22.60            | 14.65             | 37.25            | 43.50  | -6.25  | QP                |                 |        |
| 5   |     | 168.6107 | 23.01            | 14.21             | 37.22            | 43.50  | -6.28  | QP                |                 |        |
| 6   |     | 320.0492 | 16.50            | 14.63             | 31.13            | 46.00  | -14.87 | peak              |                 |        |

Note:1. \*:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Horizontal:



| No. | Mk. | Freq.    | Reading | Correct | Measure- | Limit  | Margin | Antenna | Table  |         |
|-----|-----|----------|---------|---------|----------|--------|--------|---------|--------|---------|
|     |     | MHz      | Level   | Factor  | ment     |        |        | Height  | Degree |         |
|     |     |          | dBuV    | dB      | dBuV/m   | dBuV/m | dB     | cm      | degree | Comment |
| 1   | *   | 72.1770  | 23.05   | 11.06   | 34.11    | 40.00  | -5.89  | QP      |        |         |
| 2   |     | 96.2897  | 22.20   | 10.57   | 32.77    | 43.50  | -10.73 | peak    |        |         |
| 3   |     | 120.3047 | 17.76   | 13.06   | 30.82    | 43.50  | -12.68 | peak    |        |         |
| 4   |     | 144.4360 | 22.66   | 14.64   | 37.30    | 43.50  | -6.20  | peak    |        |         |
| 5   |     | 168.5515 | 21.99   | 14.22   | 36.21    | 43.50  | -7.29  | QP      |        |         |
| 6   |     | 192.5536 | 23.88   | 11.32   | 35.20    | 43.50  | -8.30  | peak    |        |         |

Note:1. \*:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Remark: All modes have been tested, and only worst data of n20 mode, Channel 2437MHz was listed in this report.

| Test Mode: IEEE 802.11b TX Low  |                     |             |                       |                |                 |                 |                |             |        |
|---------------------------------|---------------------|-------------|-----------------------|----------------|-----------------|-----------------|----------------|-------------|--------|
| Freq (MHz)                      | Read Level (dBuV/m) | Polar (H/V) | Antenna Factor (dB/m) | Cable loss(dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
| 4824                            | 42.71               | V           | 33.95                 | 10.18          | 34.26           | 52.58           | 74             | -21.42      | PK     |
| 4824                            | 35.89               | V           | 33.95                 | 10.18          | 34.26           | 45.76           | 54             | -8.24       | AV     |
| 7236                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9648                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 4824                            | 42.65               | H           | 33.95                 | 10.18          | 34.26           | 52.52           | 74             | -21.48      | PK     |
| 4824                            | 36.63               | H           | 33.95                 | 10.18          | 34.26           | 46.50           | 54             | -7.50       | AV     |
| 7236                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9648                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| Test Mode: IEEE 802.11b TX Mid  |                     |             |                       |                |                 |                 |                |             |        |
| 4874                            | 44.27               | V           | 33.93                 | 10.2           | 34.29           | 54.11           | 74             | -19.89      | PK     |
| 4874                            | 31.16               | V           | 33.93                 | 10.2           | 34.29           | 41.00           | 54             | -13.00      | AV     |
| 7311                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9748                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 4874                            | 45.10               | H           | 33.93                 | 10.2           | 34.29           | 54.94           | 74             | -19.06      | PK     |
| 4874                            | 34.83               | H           | 33.93                 | 10.2           | 34.29           | 44.67           | 54             | -9.33       | AV     |
| 7311                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9748                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| Test Mode: IEEE 802.11b TX High |                     |             |                       |                |                 |                 |                |             |        |
| 4924                            | 47.78               | V           | 33.98                 | 10.22          | 34.25           | 57.73           | 74             | -16.27      | PK     |
| 4924                            | 35.42               | V           | 33.98                 | 10.22          | 34.25           | 45.37           | 54             | -8.63       | AV     |
| 7386                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9848                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 4924                            | 47.91               | H           | 33.98                 | 10.22          | 34.25           | 57.86           | 74             | -16.14      | PK     |
| 4924                            | 35.02               | H           | 33.98                 | 10.22          | 34.25           | 44.97           | 54             | -9.03       | AV     |
| 7386                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9848                            | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |

Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

## Test Mode: IEEE 802.11g TX Low

| Freq (MHz) | Read Level (dBuV/m) | Polar (H/V) | Antenna Factor (dB/m) | Cable loss(dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|------------|---------------------|-------------|-----------------------|----------------|-----------------|-----------------|----------------|-------------|--------|
| 4824       | 45.40               | V           | 33.95                 | 10.18          | 34.26           | 55.27           | 74             | -18.73      | PK     |
| 4824       | 35.78               | V           | 33.95                 | 10.18          | 34.26           | 45.65           | 54             | -8.35       | AV     |
| 7236       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9648       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 4824       | 46.37               | H           | 33.95                 | 10.18          | 34.26           | 56.24           | 74             | -17.76      | PK     |
| 4824       | 36.92               | H           | 33.95                 | 10.18          | 34.26           | 46.79           | 54             | -7.21       | AV     |
| 7236       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9648       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |

## Test Mode: IEEE 802.11g TX Mid

|      |       |   |       |      |       |       |    |        |    |
|------|-------|---|-------|------|-------|-------|----|--------|----|
| 4874 | 44.26 | V | 33.93 | 10.2 | 34.29 | 54.10 | 74 | -19.90 | PK |
| 4874 | 34.35 | V | 33.93 | 10.2 | 34.29 | 44.19 | 54 | -9.81  | AV |
| 7311 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9748 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 4874 | 46.26 | H | 33.93 | 10.2 | 34.29 | 56.10 | 74 | -17.90 | PK |
| 4874 | 34.83 | H | 33.93 | 10.2 | 34.29 | 44.67 | 54 | -9.33  | AV |
| 7311 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9748 | /     | / | /     | /    | /     | /     | /  | /      | /  |

## Test Mode: IEEE 802.11g TX High

|      |       |   |       |       |       |       |    |        |    |
|------|-------|---|-------|-------|-------|-------|----|--------|----|
| 4924 | 47.05 | V | 33.98 | 10.22 | 34.25 | 57.00 | 74 | -17.00 | PK |
| 4924 | 37.57 | V | 33.98 | 10.22 | 34.25 | 47.52 | 54 | -6.48  | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 4924 | 47.04 | H | 33.98 | 10.22 | 34.25 | 56.99 | 74 | -17.01 | PK |
| 4924 | 33.19 | H | 33.98 | 10.22 | 34.25 | 43.14 | 54 | -10.86 | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |

Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

## Test Mode: IEEE 802.11n HT20 TX Low

| Freq (MHz) | Read Level (dBuV/m) | Polar (H/V) | Antenna Factor (dB/m) | Cable loss (dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|------------|---------------------|-------------|-----------------------|-----------------|-----------------|-----------------|----------------|-------------|--------|
| 4824       | 44.46               | V           | 33.95                 | 10.18           | 34.26           | 54.33           | 74             | -19.67      | PK     |
| 4824       | 36.98               | V           | 33.95                 | 10.18           | 34.26           | 46.85           | 54             | -7.15       | AV     |
| 7236       | /                   | /           | /                     | /               | /               | /               | /              | /           | /      |
| 9648       | /                   | /           | /                     | /               | /               | /               | /              | /           | /      |
| 4824       | 45.33               | H           | 33.95                 | 10.18           | 34.26           | 55.20           | 74             | -18.80      | PK     |
| 4824       | 35.30               | H           | 33.95                 | 10.18           | 34.26           | 45.17           | 54             | -8.83       | AV     |
| 7236       | /                   | /           | /                     | /               | /               | /               | /              | /           | /      |
| 9648       | /                   | /           | /                     | /               | /               | /               | /              | /           | /      |

## Test Mode: IEEE 802.11n HT20 TX Mid

|      |       |   |       |      |       |       |    |        |    |
|------|-------|---|-------|------|-------|-------|----|--------|----|
| 4874 | 46.00 | V | 33.93 | 10.2 | 34.29 | 55.84 | 74 | -18.16 | PK |
| 4874 | 31.07 | V | 33.93 | 10.2 | 34.29 | 40.91 | 54 | -13.09 | AV |
| 7311 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9748 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 4874 | 44.24 | H | 33.93 | 10.2 | 34.29 | 54.08 | 74 | -19.92 | PK |
| 4874 | 32.32 | H | 33.93 | 10.2 | 34.29 | 42.16 | 54 | -11.84 | AV |
| 7311 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9748 | /     | / | /     | /    | /     | /     | /  | /      | /  |

## Test Mode: IEEE 802.11n HT20 TX High

|      |       |   |       |       |       |       |    |        |    |
|------|-------|---|-------|-------|-------|-------|----|--------|----|
| 4924 | 48.31 | V | 33.98 | 10.22 | 34.25 | 58.26 | 74 | -15.74 | PK |
| 4924 | 35.57 | V | 33.98 | 10.22 | 34.25 | 45.52 | 54 | -8.48  | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 4924 | 45.53 | H | 33.98 | 10.22 | 34.25 | 55.48 | 74 | -18.52 | PK |
| 4924 | 34.36 | H | 33.98 | 10.22 | 34.25 | 44.31 | 54 | -9.69  | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |

Note:

1, Result = Read level + Antenna factor + cable loss - Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

## Test Mode:IEEE 802.11n40 HT40 TX Low

| Freq (MHz) | Read Level (dBuV/m) | Polar (H/V) | Antenna Factor (dB/m) | Cable loss(dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|------------|---------------------|-------------|-----------------------|----------------|-----------------|-----------------|----------------|-------------|--------|
| 4844       | 45.02               | V           | 33.95                 | 10.18          | 34.26           | 54.89           | 74             | -19.11      | PK     |
| 4844       | 35.73               | V           | 33.95                 | 10.18          | 34.26           | 45.60           | 54             | -8.40       | AV     |
| 7266       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9688       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 4844       | 45.46               | H           | 33.95                 | 10.18          | 34.26           | 55.33           | 74             | -18.67      | PK     |
| 4844       | 34.56               | H           | 33.95                 | 10.18          | 34.26           | 44.43           | 54             | -9.57       | AV     |
| 7266       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |
| 9688       | /                   | /           | /                     | /              | /               | /               | /              | /           | /      |

## Test Mode:IEEE 802.11n40 HT40 TX Mid

|      |       |   |       |      |       |       |    |        |    |
|------|-------|---|-------|------|-------|-------|----|--------|----|
| 4884 | 43.77 | V | 33.93 | 10.2 | 34.29 | 53.61 | 74 | -20.39 | PK |
| 4884 | 34.06 | V | 33.93 | 10.2 | 34.29 | 43.90 | 54 | -10.10 | AV |
| 7326 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9768 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 4884 | 45.61 | H | 33.93 | 10.2 | 34.29 | 55.45 | 74 | -18.55 | PK |
| 4884 | 32.07 | H | 33.93 | 10.2 | 34.29 | 41.91 | 54 | -12.09 | AV |
| 7326 | /     | / | /     | /    | /     | /     | /  | /      | /  |
| 9768 | /     | / | /     | /    | /     | /     | /  | /      | /  |

## Test Mode:IEEE 802.11n40 HT40 TX High

|      |       |   |       |       |       |       |    |        |    |
|------|-------|---|-------|-------|-------|-------|----|--------|----|
| 4924 | 47.46 | V | 33.98 | 10.22 | 34.25 | 57.41 | 74 | -16.59 | PK |
| 4924 | 37.27 | V | 33.98 | 10.22 | 34.25 | 47.22 | 54 | -6.78  | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 4924 | 46.64 | H | 33.98 | 10.22 | 34.25 | 56.59 | 74 | -17.41 | PK |
| 4924 | 33.87 | H | 33.98 | 10.22 | 34.25 | 43.82 | 54 | -10.18 | AV |
| 7386 | /     | / | /     | /     | /     | /     | /  | /      | /  |
| 9848 | /     | / | /     | /     | /     | /     | /  | /      | /  |

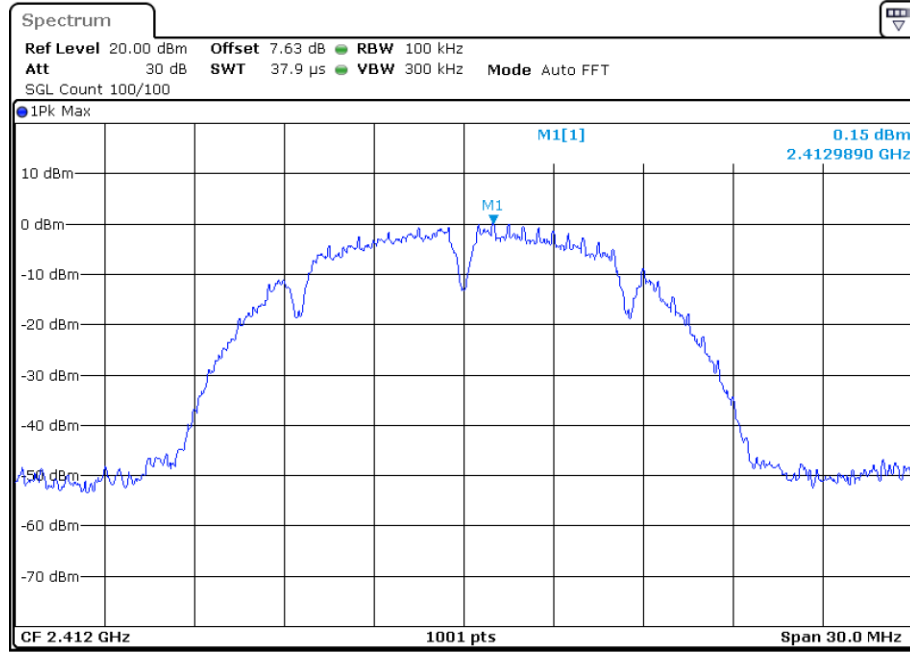
Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

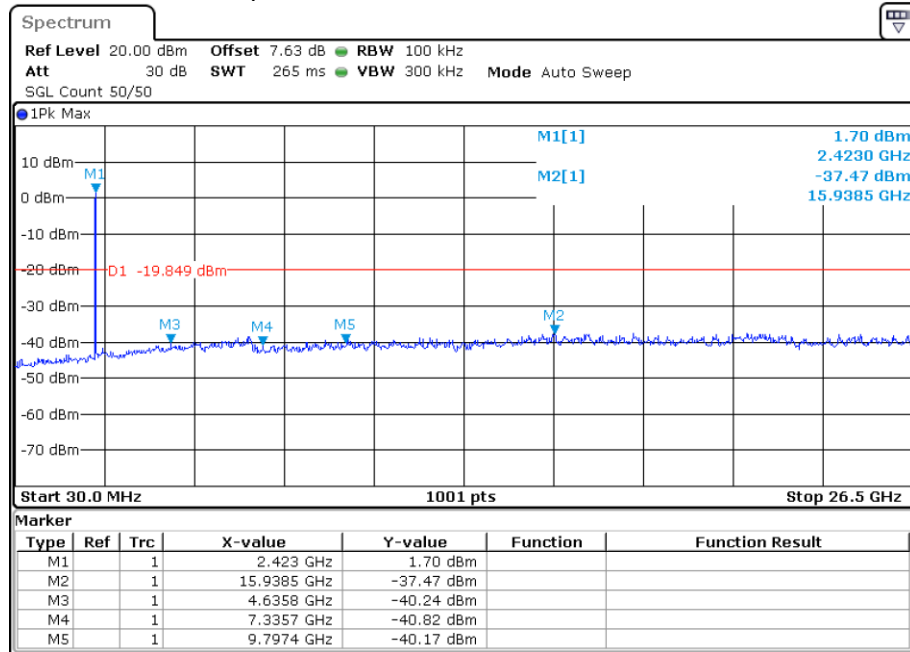
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

## Conducted RF Spurious Emission

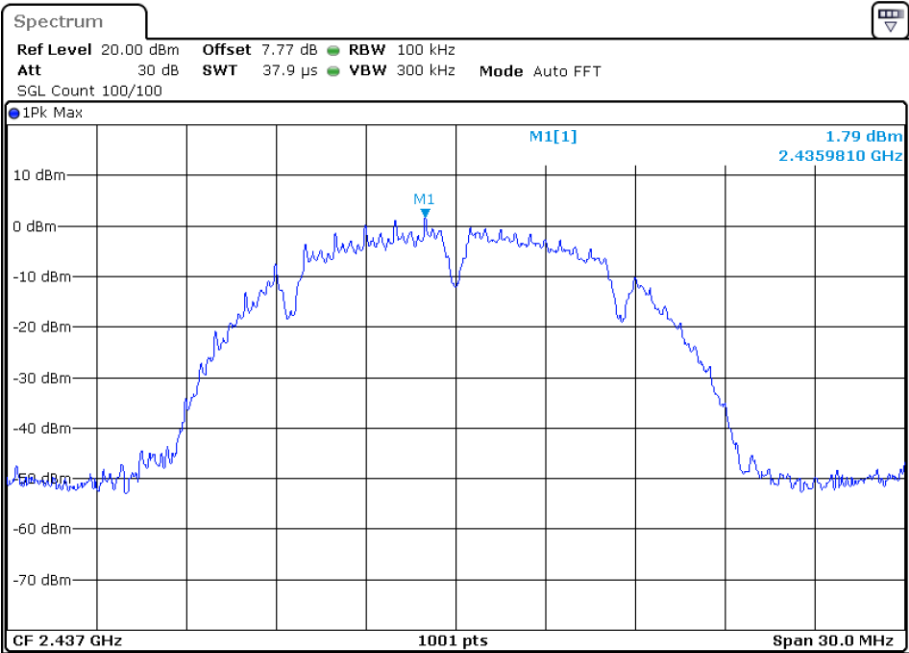
## Tx. Spurious NVNT b 2412MHz Ant1 Ref



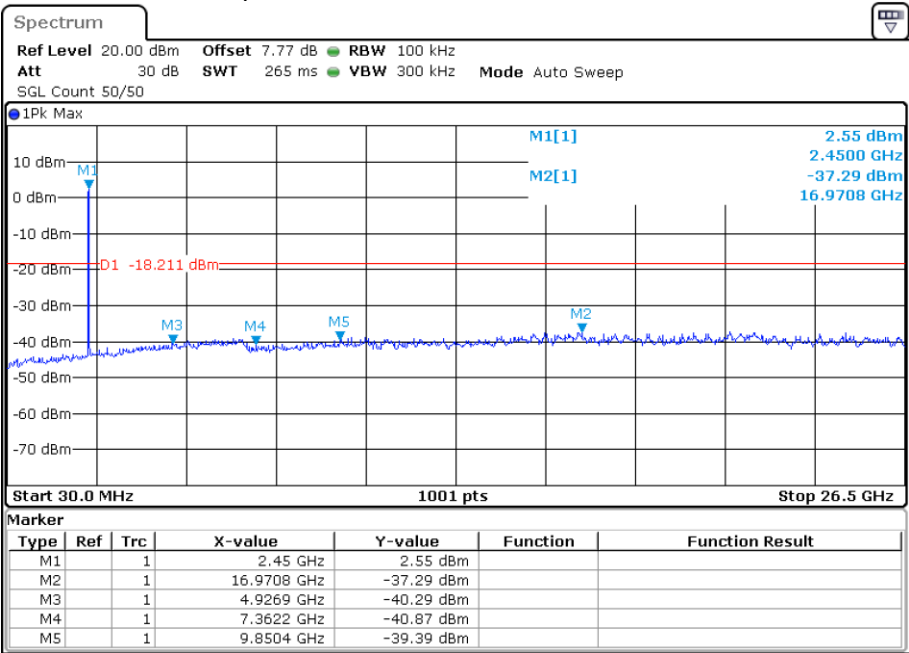
## Tx. Spurious NVNT b 2412MHz Ant1 Emission



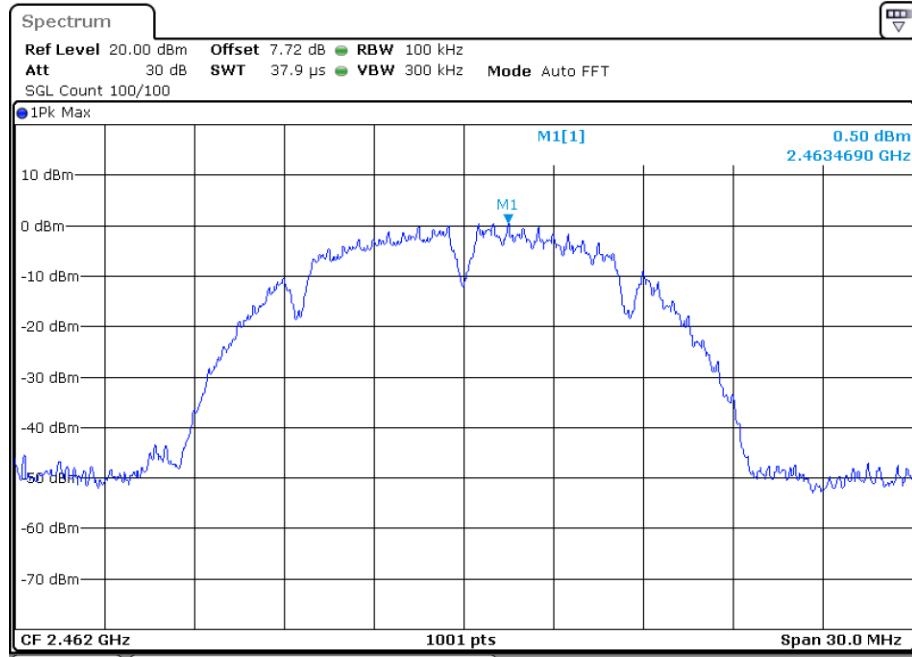
Tx. Spurious NVNT b 2437MHz Ant1 Ref



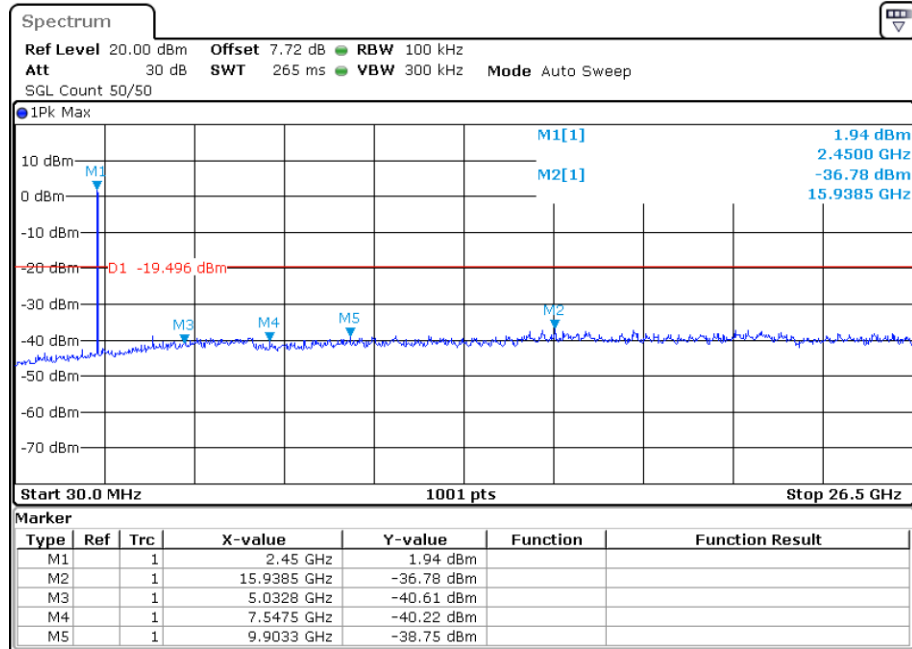
Tx. Spurious NVNT b 2437MHz Ant1 Emission



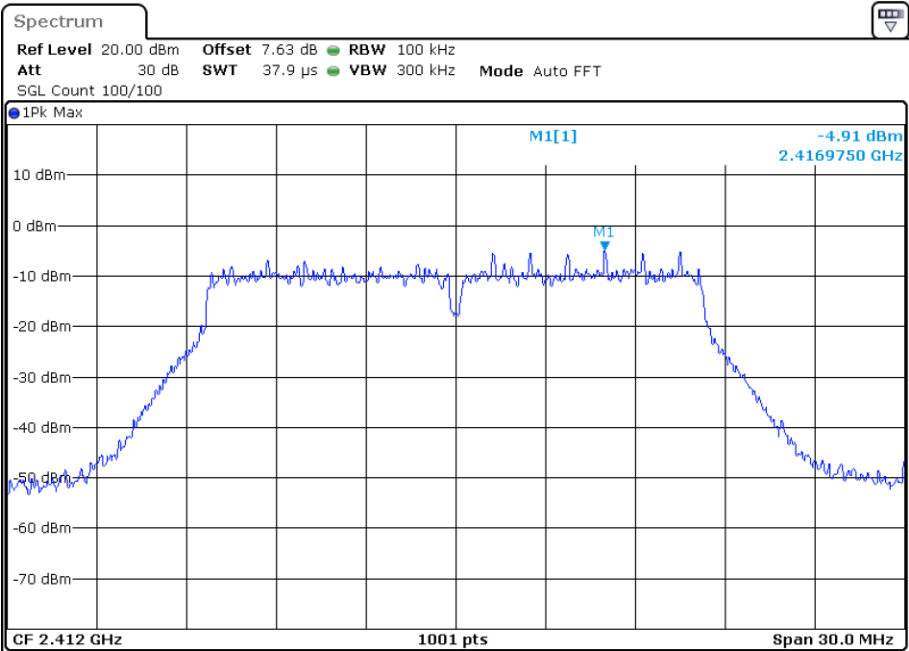
## Tx. Spurious NVNT b 2462MHz Ant1 Ref



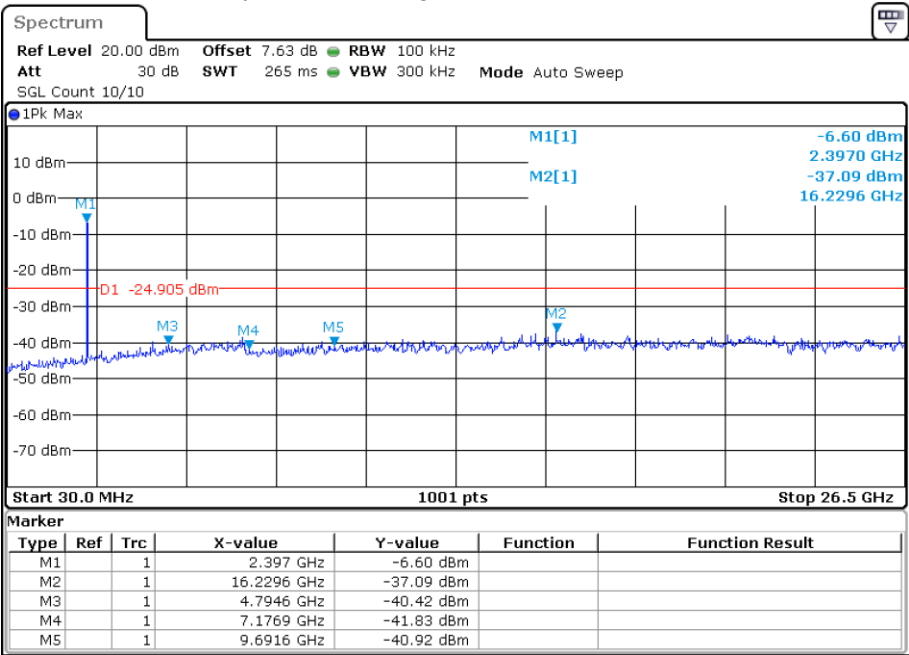
## Tx. Spurious NVNT b 2462MHz Ant1 Emission



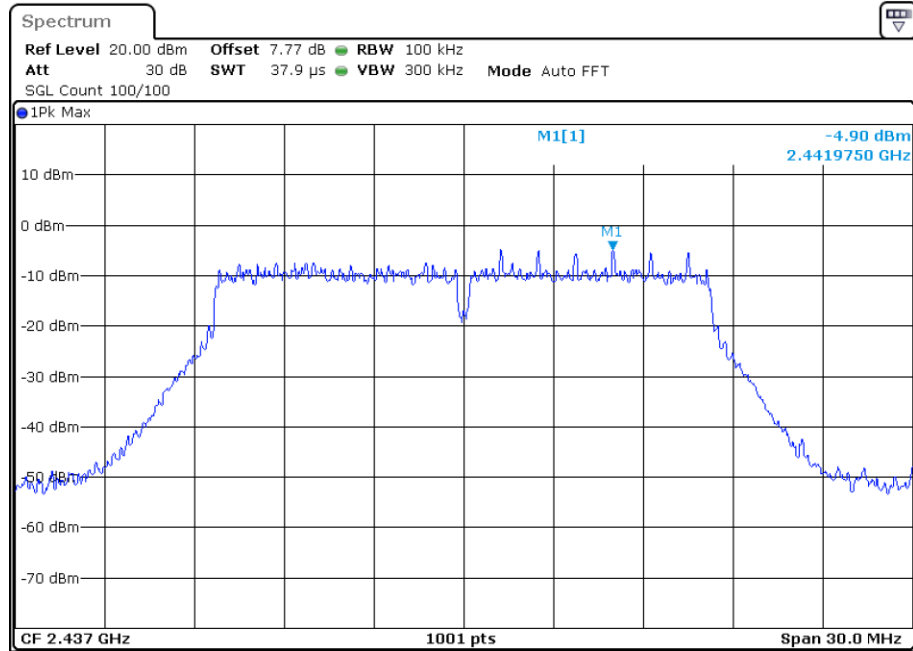
Tx. Spurious NVNT g 2412MHz Ant1 Ref



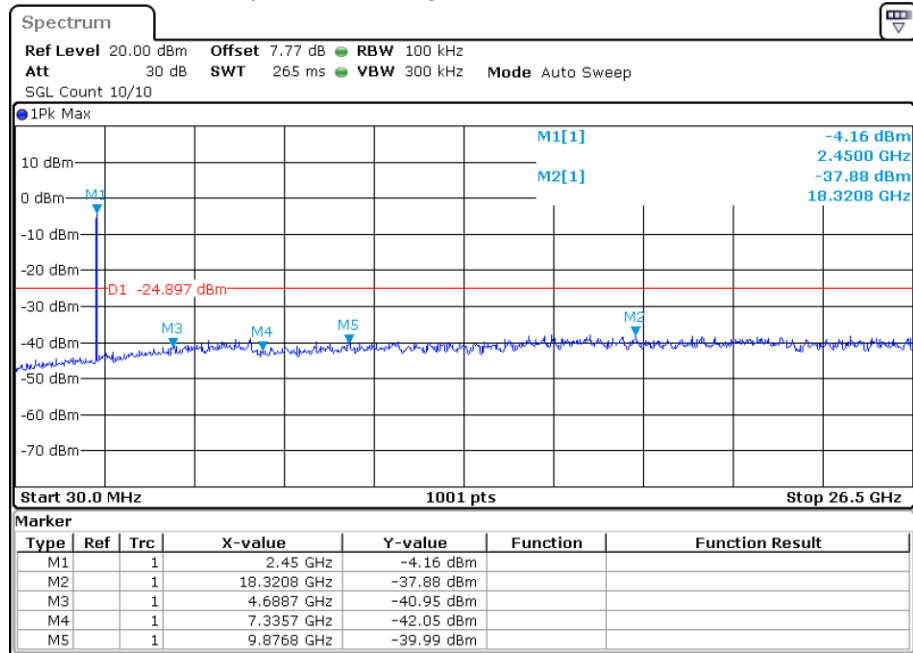
Tx. Spurious NVNT g 2412MHz Ant1 Emission



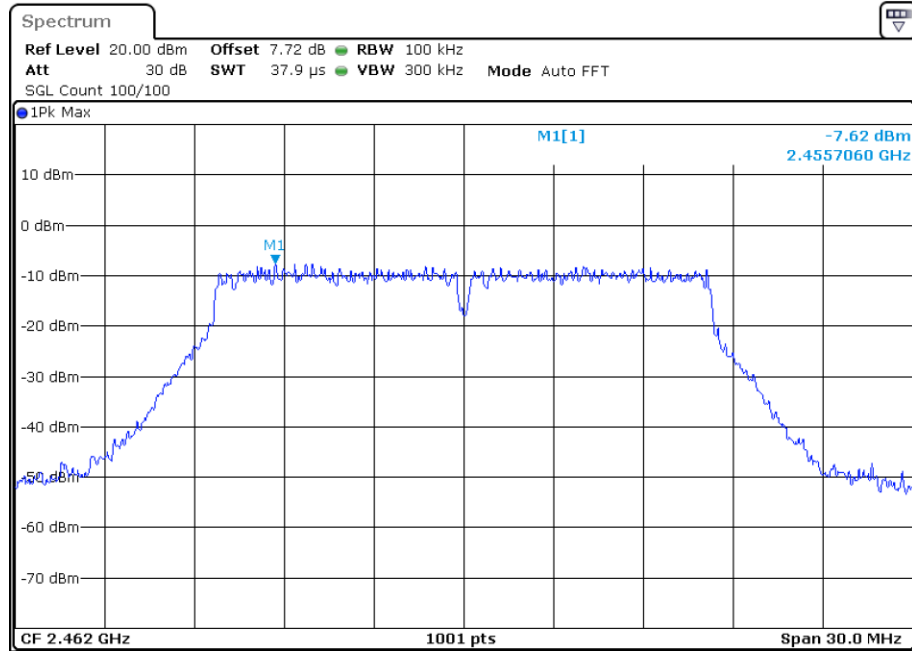
## Tx. Spurious NVNT g 2437MHz Ant1 Ref



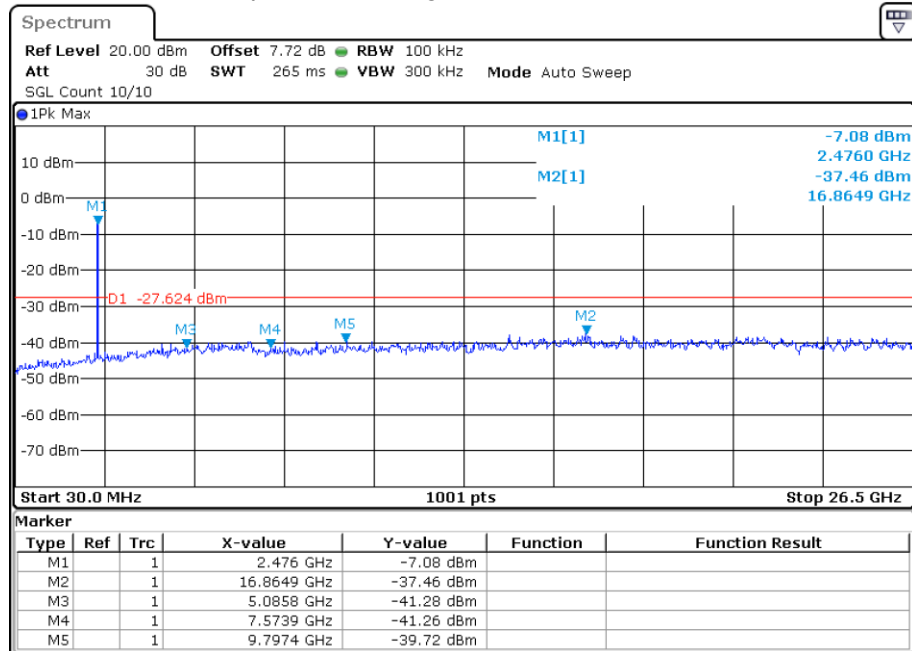
## Tx. Spurious NVNT g 2437MHz Ant1 Emission



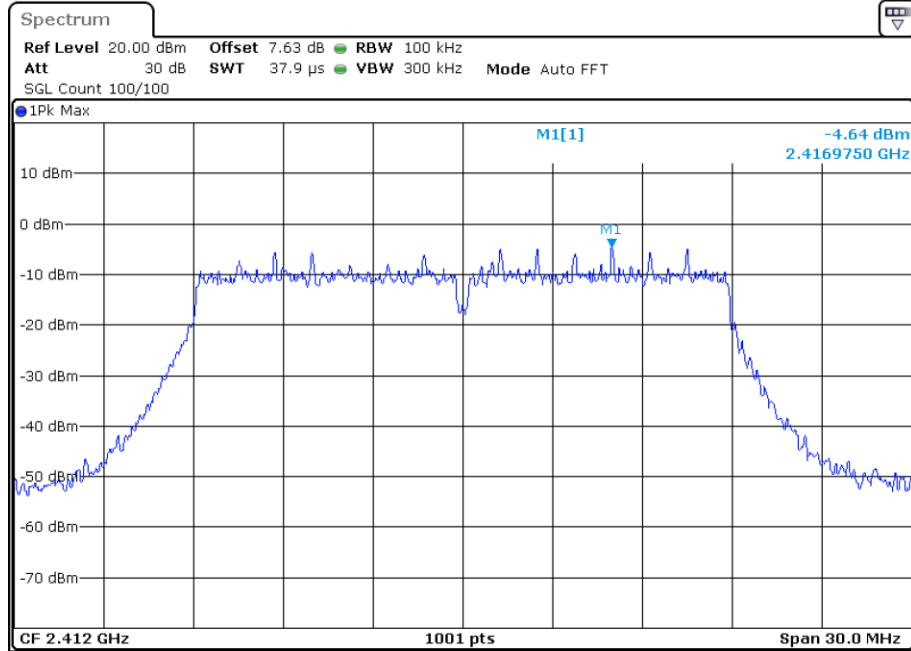
## Tx. Spurious NVNT g 2462MHz Ant1 Ref



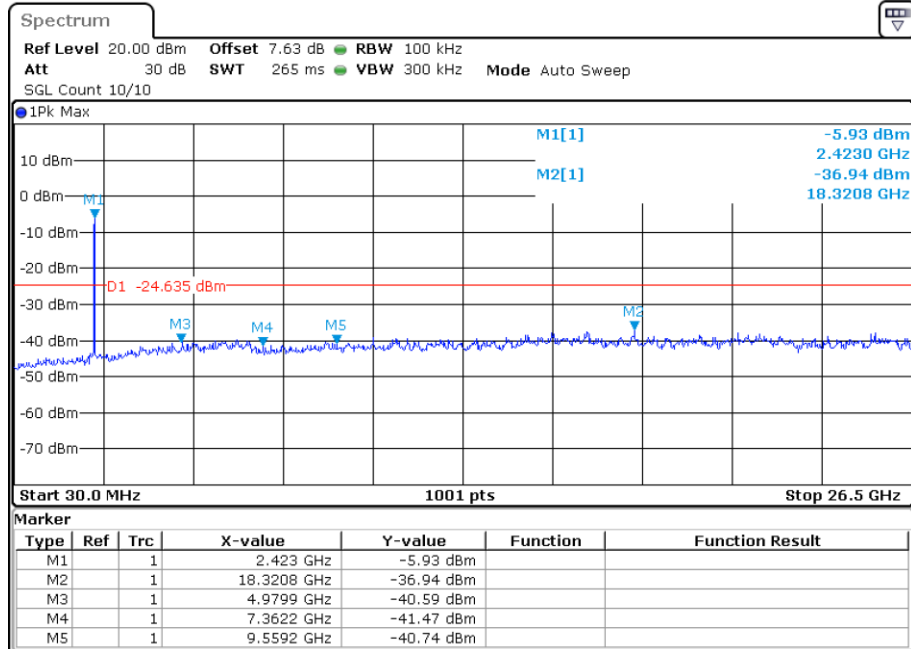
## Tx. Spurious NVNT g 2462MHz Ant1 Emission



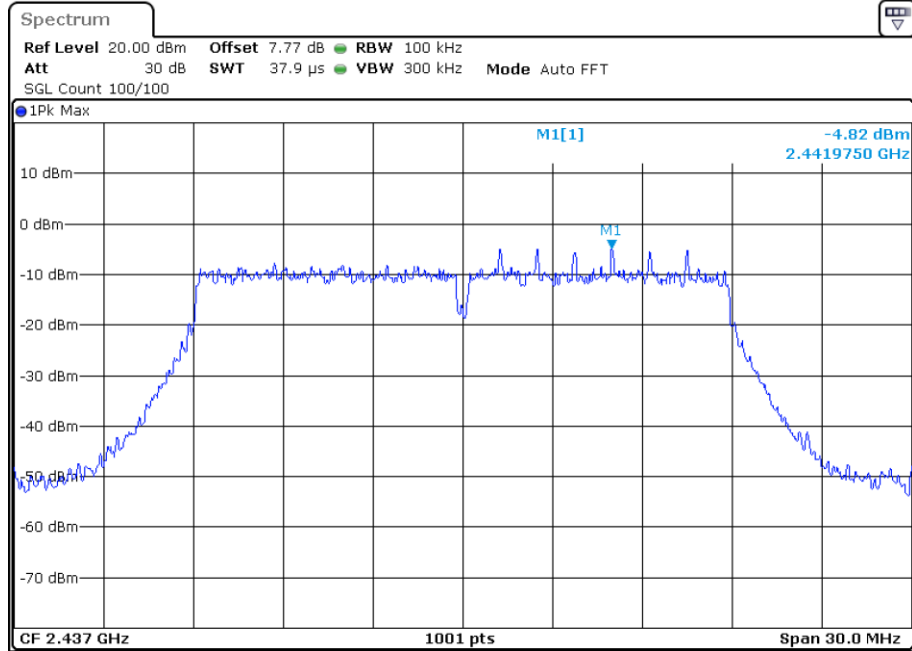
## Tx. Spurious NVNT n20 2412MHz Ant1 Ref



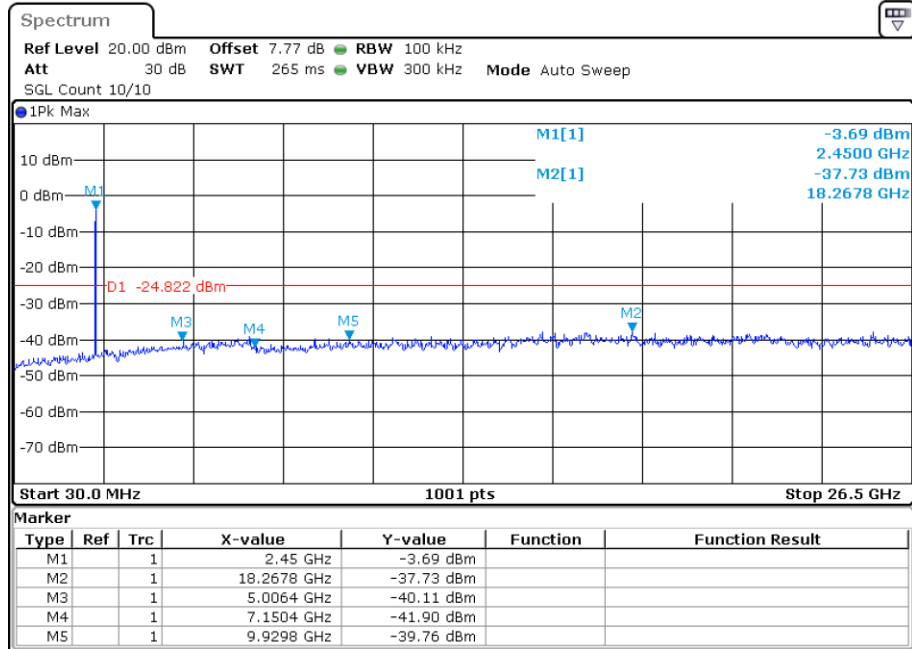
## Tx. Spurious NVNT n20 2412MHz Ant1 Emission



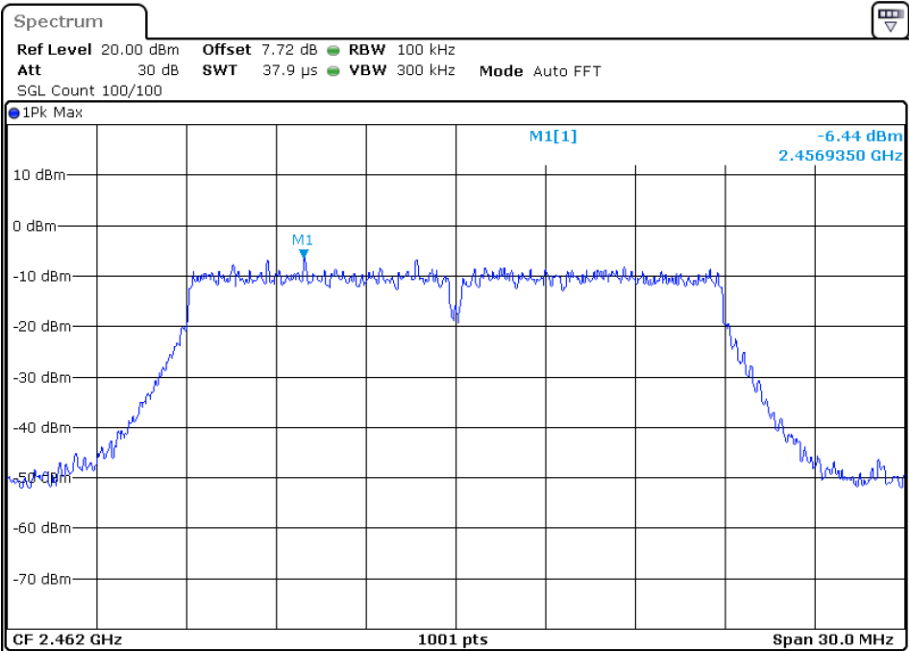
## Tx. Spurious NVNT n20 2437MHz Ant1 Ref



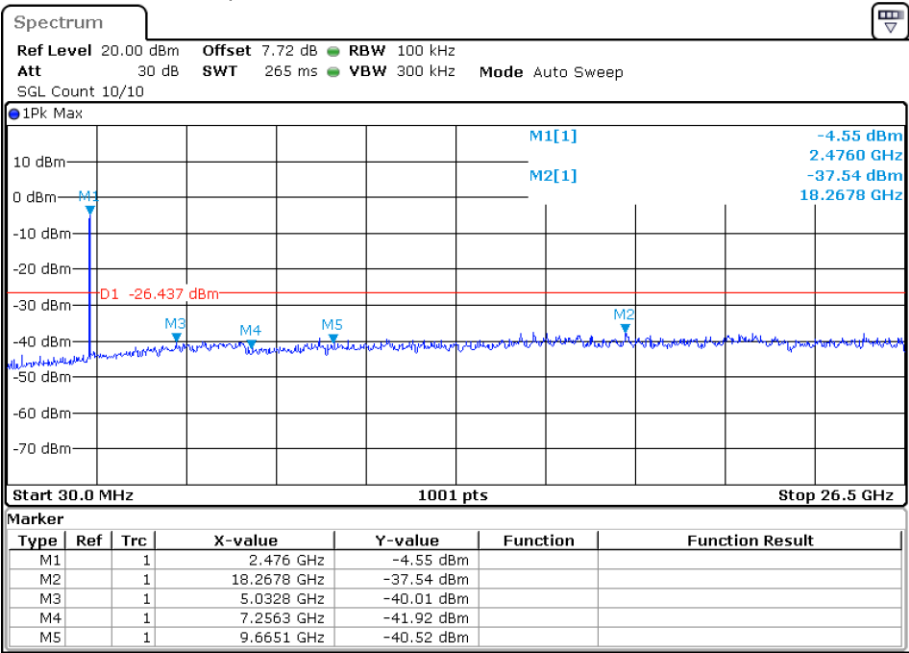
## Tx. Spurious NVNT n20 2437MHz Ant1 Emission



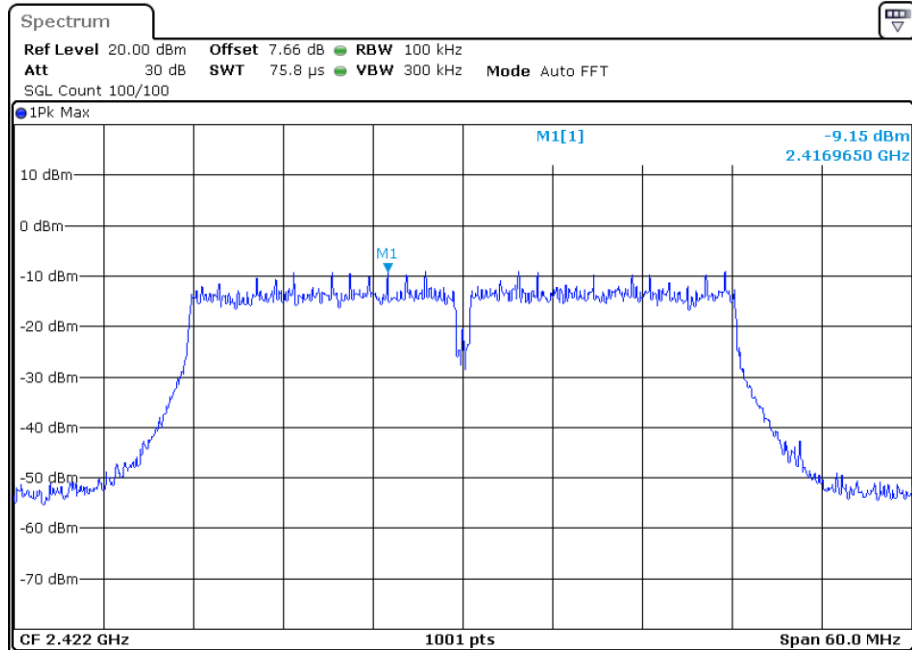
Tx. Spurious NVNT n20 2462MHz Ant1 Ref



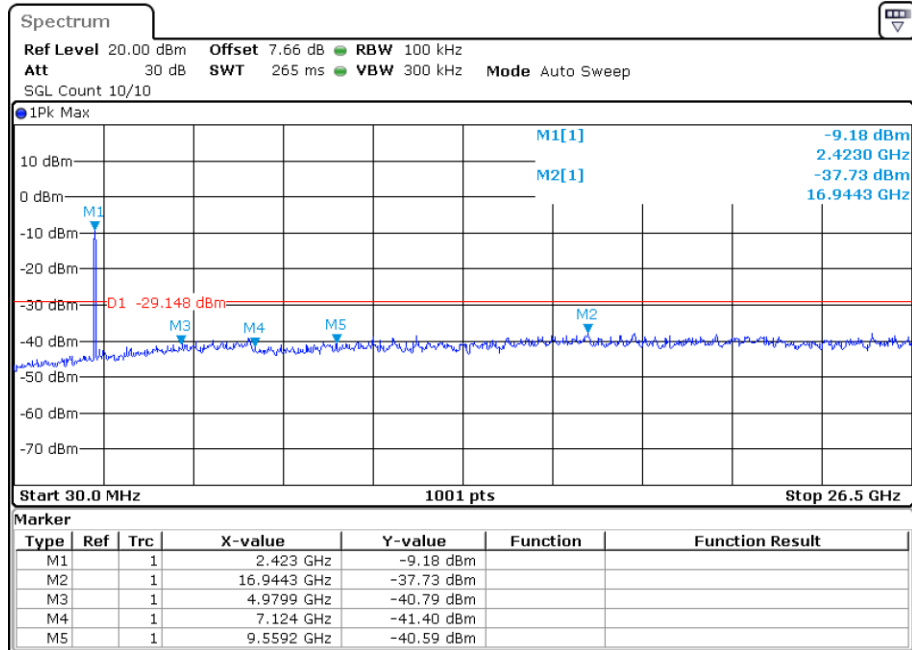
Tx. Spurious NVNT n20 2462MHz Ant1 Emission



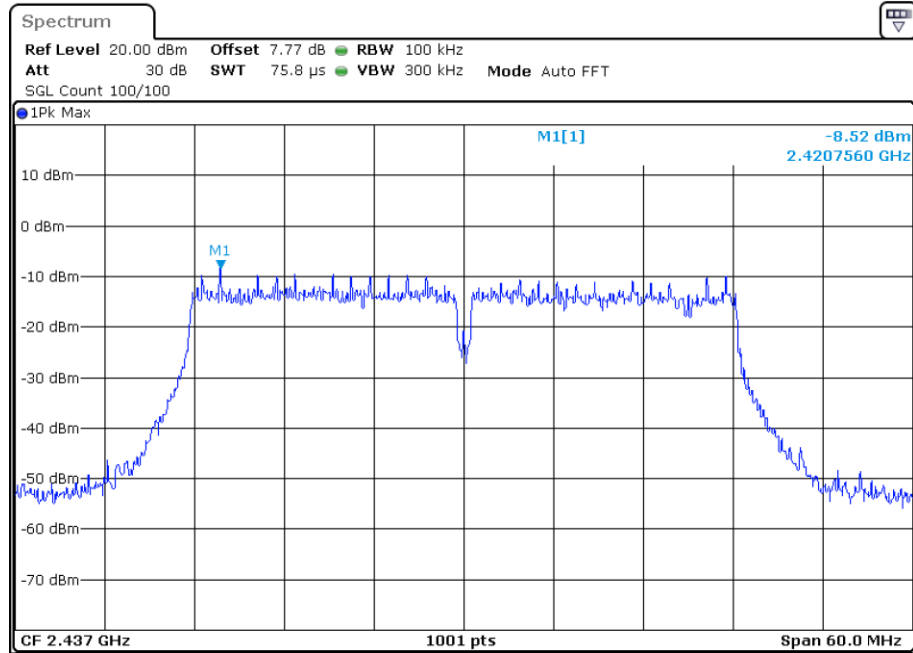
## Tx. Spurious NVNT n40 2422MHz Ant1 Ref



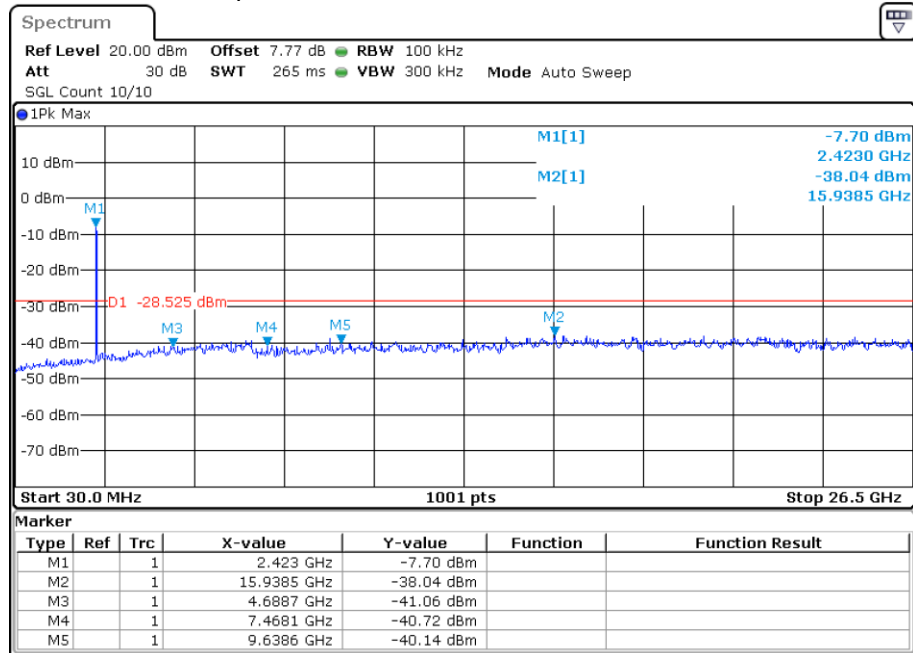
## Tx. Spurious NVNT n40 2422MHz Ant1 Emission



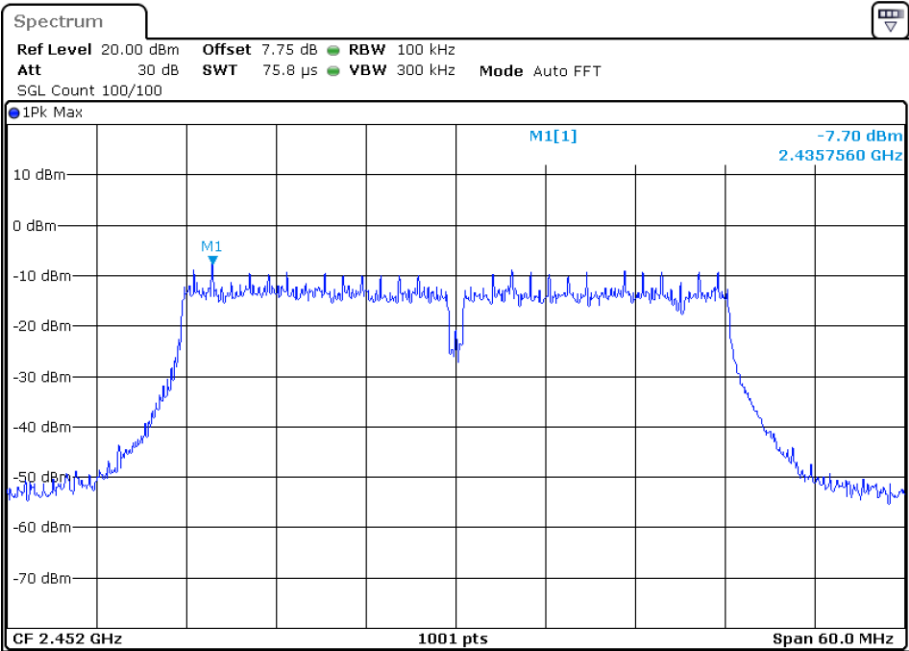
## Tx. Spurious NVNT n40 2437MHz Ant1 Ref



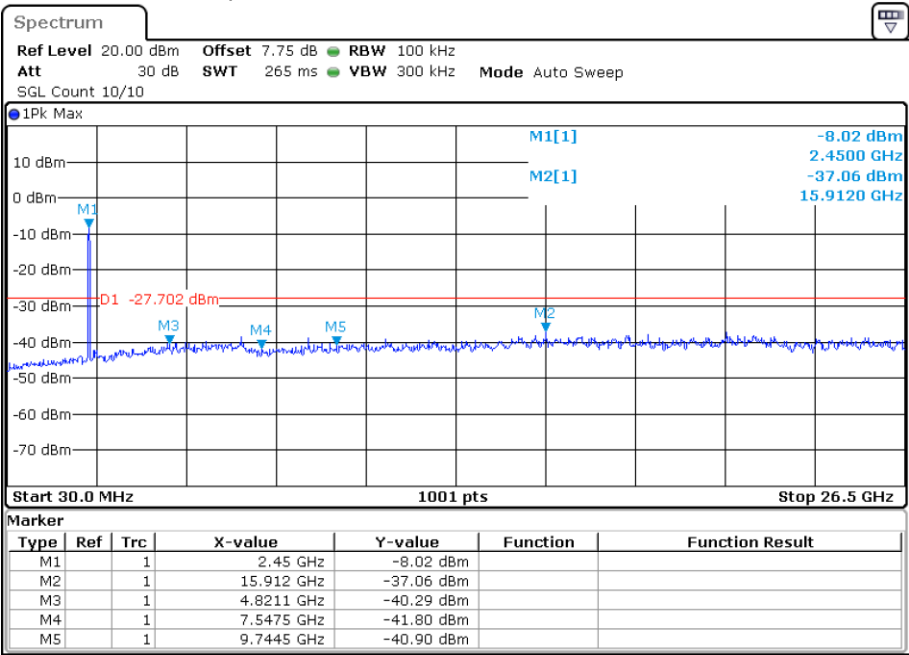
## Tx. Spurious NVNT n40 2437MHz Ant1 Emission



Tx. Spurious NVNT n40 2452MHz Ant1 Ref



Tx. Spurious NVNT n40 2452MHz Ant1 Emission



## 4. Power Line Conducted Emission

### 4.1. Test Limits

| Frequency<br>MHz | Limits dB( $\mu$ V) |               |
|------------------|---------------------|---------------|
|                  | Quasi-peak Level    | Average Level |
| 0.15 -0.50       | 66 -56*             | 56 - 46*      |
| 0.50 -5.00       | 56                  | 46            |
| 5.00 -30.00      | 60                  | 50            |

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3. The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

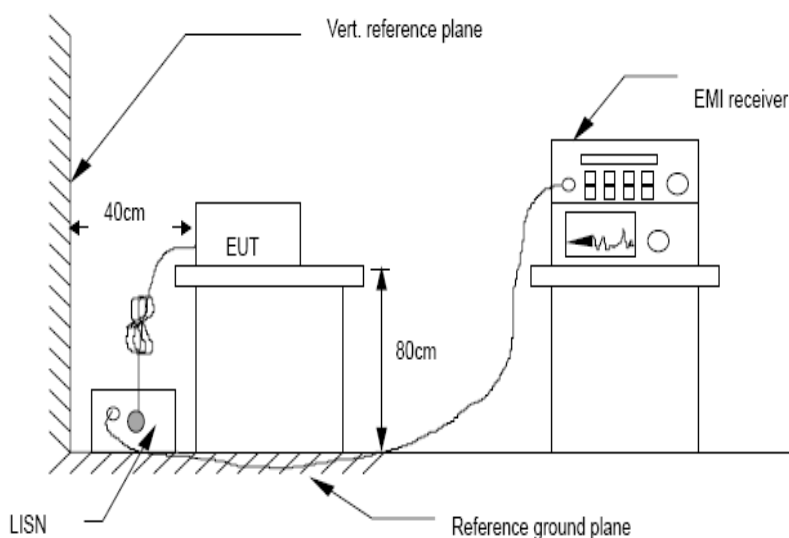
### 4.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs.

Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

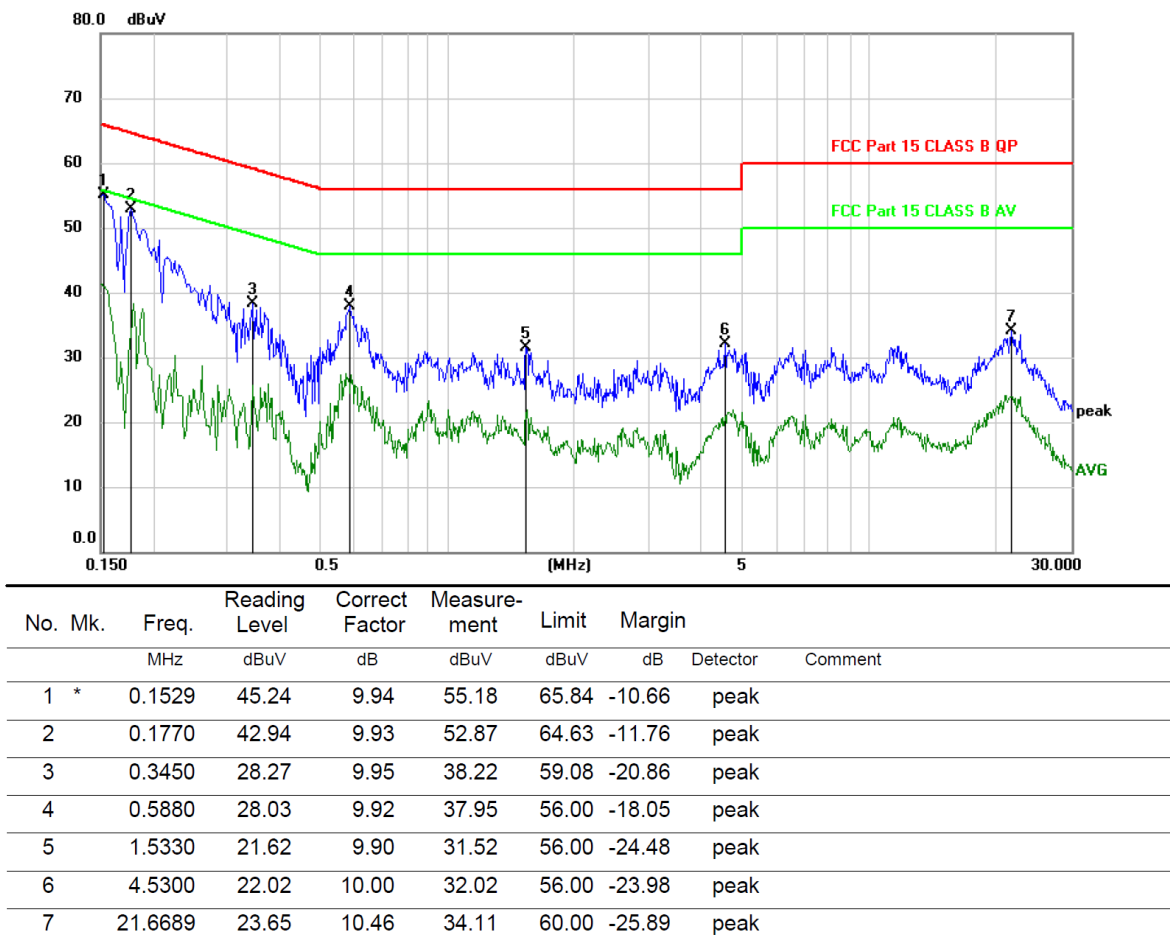
### 4.3. Test Setup



## 4.4. Test Results

Pass

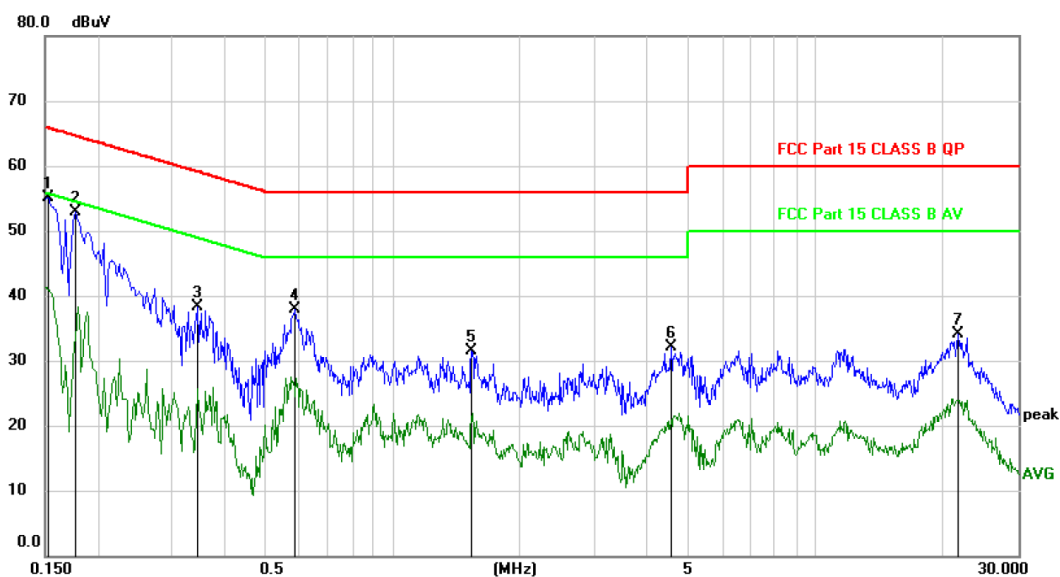
Polarity: L



\*:Maximum data x:Over limit !:over margin

<Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

**Polarity: N**

| No. | Mk. | Freq.   | Reading Level | Correct Factor | Measurement | Limit | Margin |          |         |
|-----|-----|---------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz     | dBuV          | dB             | dBuV        | dBuV  | dB     | Detector | Comment |
| 1   | *   | 0.1529  | 45.24         | 9.94           | 55.18       | 65.84 | -10.66 | peak     |         |
| 2   |     | 0.1770  | 42.94         | 9.93           | 52.87       | 64.63 | -11.76 | peak     |         |
| 3   |     | 0.3450  | 28.27         | 9.95           | 38.22       | 59.08 | -20.86 | peak     |         |
| 4   |     | 0.5880  | 28.03         | 9.92           | 37.95       | 56.00 | -18.05 | peak     |         |
| 5   |     | 1.5330  | 21.62         | 9.90           | 31.52       | 56.00 | -24.48 | peak     |         |
| 6   |     | 4.5300  | 22.02         | 10.00          | 32.02       | 56.00 | -23.98 | peak     |         |
| 7   |     | 21.6689 | 23.65         | 10.46          | 34.11       | 60.00 | -25.89 | peak     |         |

\*:Maximum data x:Over limit !:over margin

&lt;Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Note: All modes and channels have been tested and only the BLE 2402MHz(1Mbps) mode with the worst data is listed.

## 5. Conducted Maximum Peak Output Power

### 5.1. Test limits

Please refer RSS-247 & FCC PART 15: 15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1 W(30dBm)

### 5.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

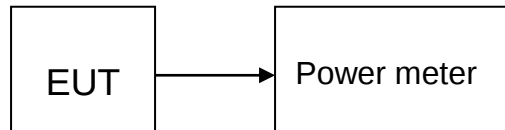
5.2.1 Place the EUT on the table and set it in transmitting mode.

5.2.2 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

5.2.3 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

### 5.3. Test Setup



### 5.4. Test Results

PASS

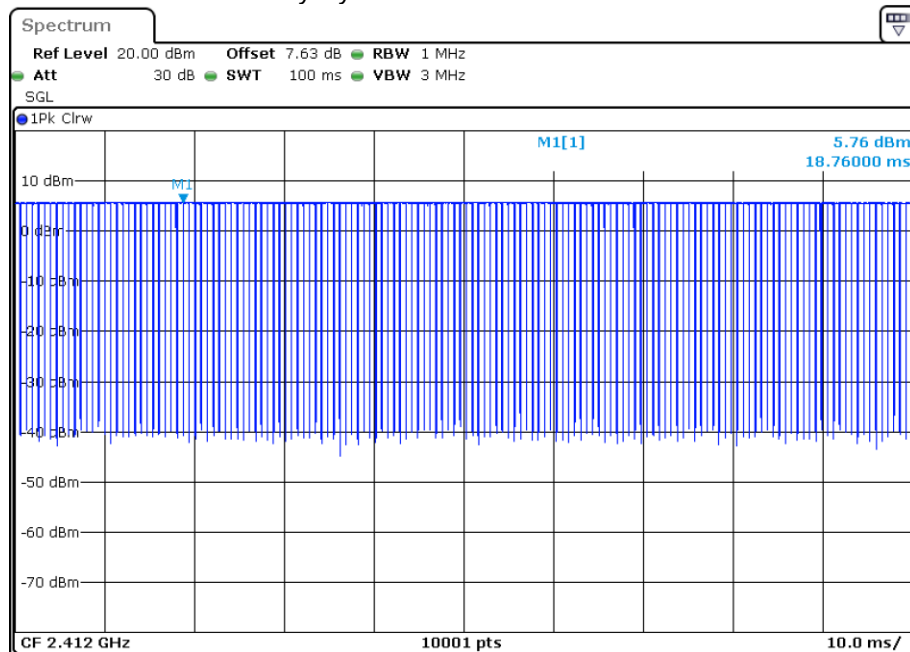
Detailed information please sees the following page.

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| NVNT      | b    | 2412            | Ant1    | 14.884                | 0.11             | 14.994            | 30          | Pass    |
| NVNT      | b    | 2437            | Ant1    | 15.217                | 0.1              | 15.317            | 30          | Pass    |
| NVNT      | b    | 2462            | Ant1    | 14.98                 | 0.1              | 15.08             | 30          | Pass    |
| NVNT      | g    | 2412            | Ant1    | 15.124                | 0.13             | 15.254            | 30          | Pass    |
| NVNT      | g    | 2437            | Ant1    | 14.932                | 0.09             | 15.022            | 30          | Pass    |
| NVNT      | g    | 2462            | Ant1    | 15.057                | 0.09             | 15.147            | 30          | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 15.103                | 0.13             | 15.233            | 30          | Pass    |
| NVNT      | n20  | 2437            | Ant1    | 15.092                | 0.11             | 15.202            | 30          | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 14.969                | 0.09             | 15.059            | 30          | Pass    |
| NVNT      | n40  | 2422            | Ant1    | 14.846                | 0.12             | 14.966            | 30          | Pass    |
| NVNT      | n40  | 2437            | Ant1    | 14.694                | 0.1              | 14.794            | 30          | Pass    |
| NVNT      | n40  | 2452            | Ant1    | 15.118                | 0.09             | 15.208            | 30          | Pass    |

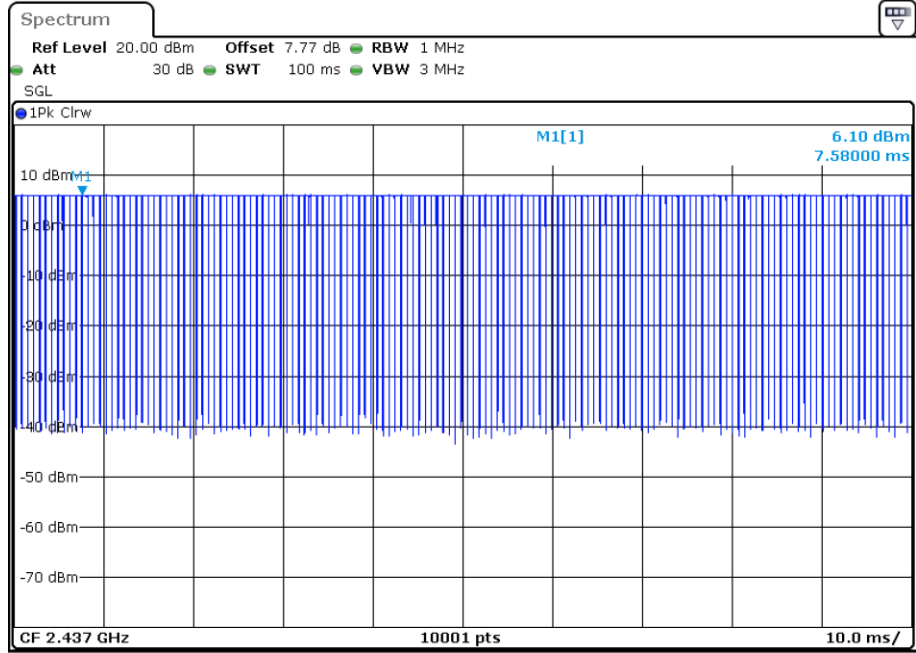
### Duty Cycle

| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) |
|-----------|------|-----------------|---------|----------------|
| NVNT      | b    | 2412            | Ant1    | 97.43          |
| NVNT      | b    | 2437            | Ant1    | 97.83          |
| NVNT      | b    | 2462            | Ant1    | 97.82          |
| NVNT      | g    | 2412            | Ant1    | 97.16          |
| NVNT      | g    | 2437            | Ant1    | 98.04          |
| NVNT      | g    | 2462            | Ant1    | 97.89          |
| NVNT      | n20  | 2412            | Ant1    | 96.98          |
| NVNT      | n20  | 2437            | Ant1    | 97.56          |
| NVNT      | n20  | 2462            | Ant1    | 97.94          |
| NVNT      | n40  | 2422            | Ant1    | 97.24          |
| NVNT      | n40  | 2437            | Ant1    | 97.66          |
| NVNT      | n40  | 2452            | Ant1    | 97.93          |

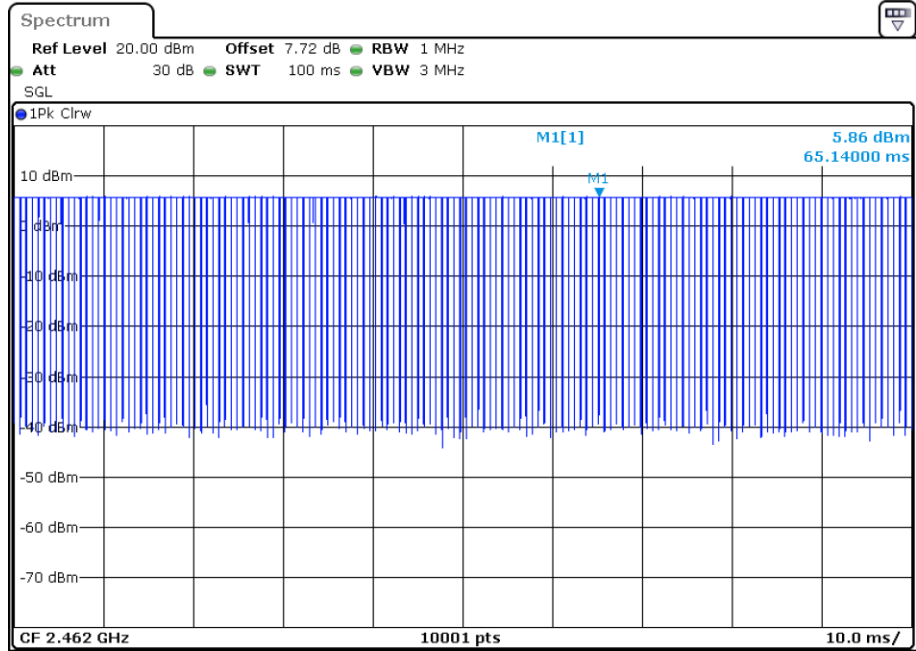
Duty Cycle NVNT b 2412MHz Ant1



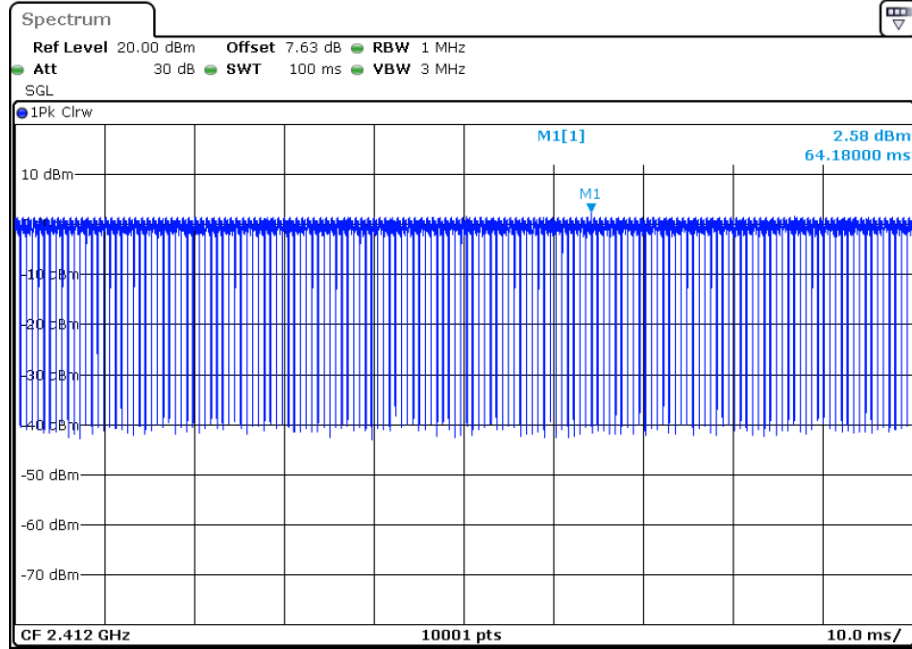
## Duty Cycle NVNT b 2437MHz Ant1



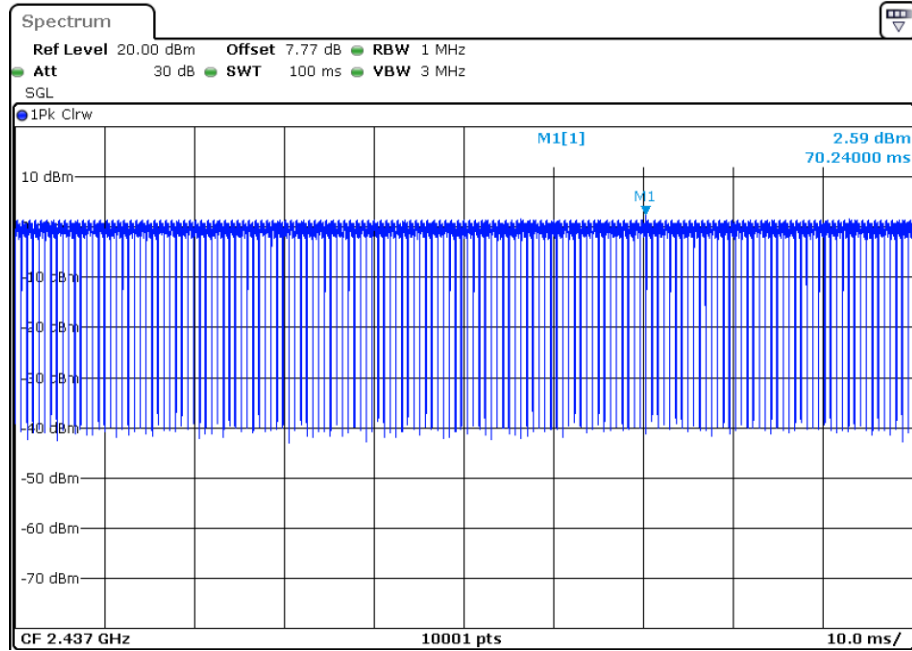
## Duty Cycle NVNT b 2462MHz Ant1



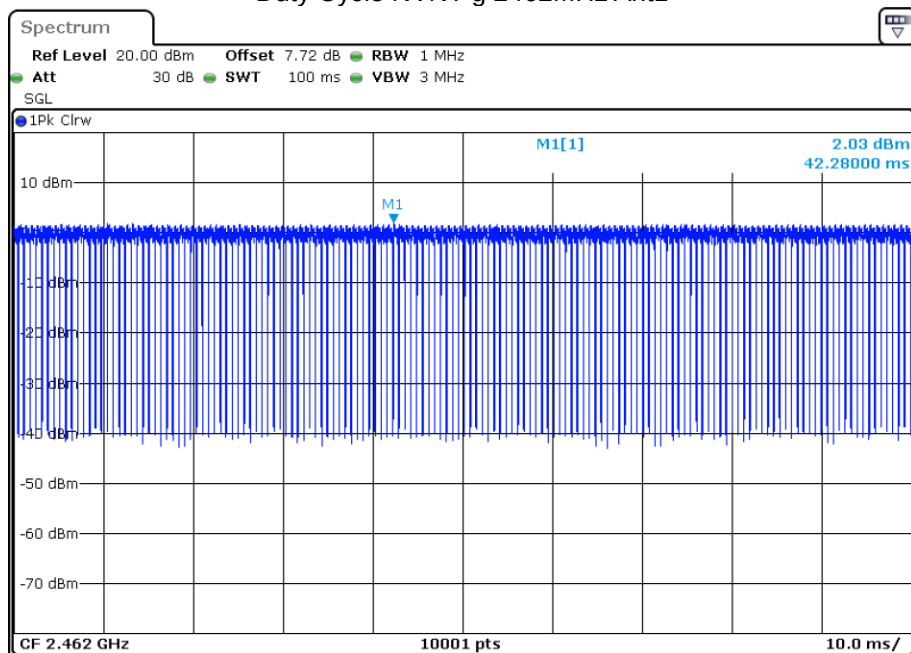
## Duty Cycle NVNT g 2412MHz Ant1



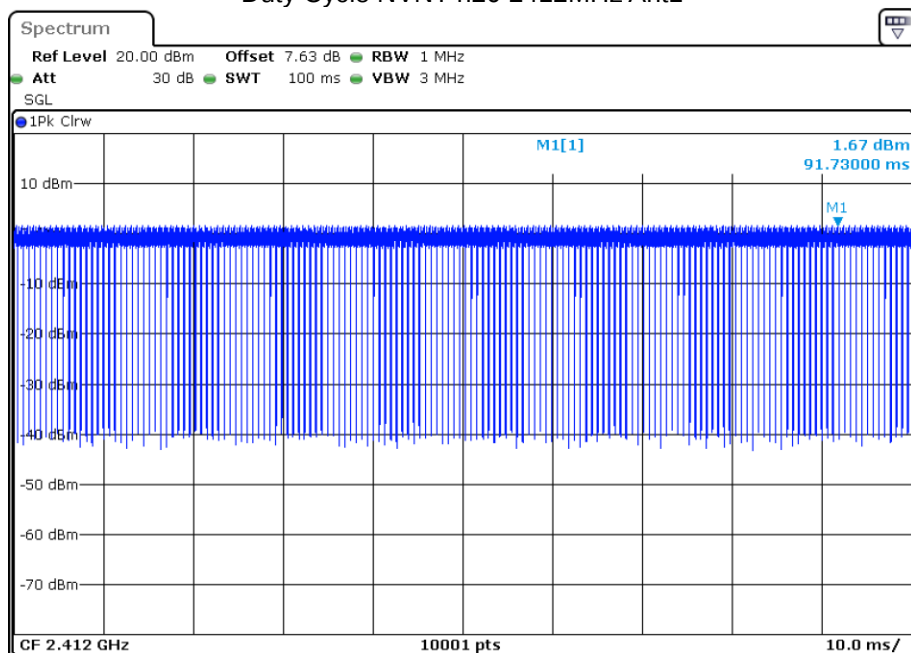
## Duty Cycle NVNT g 2437MHz Ant1



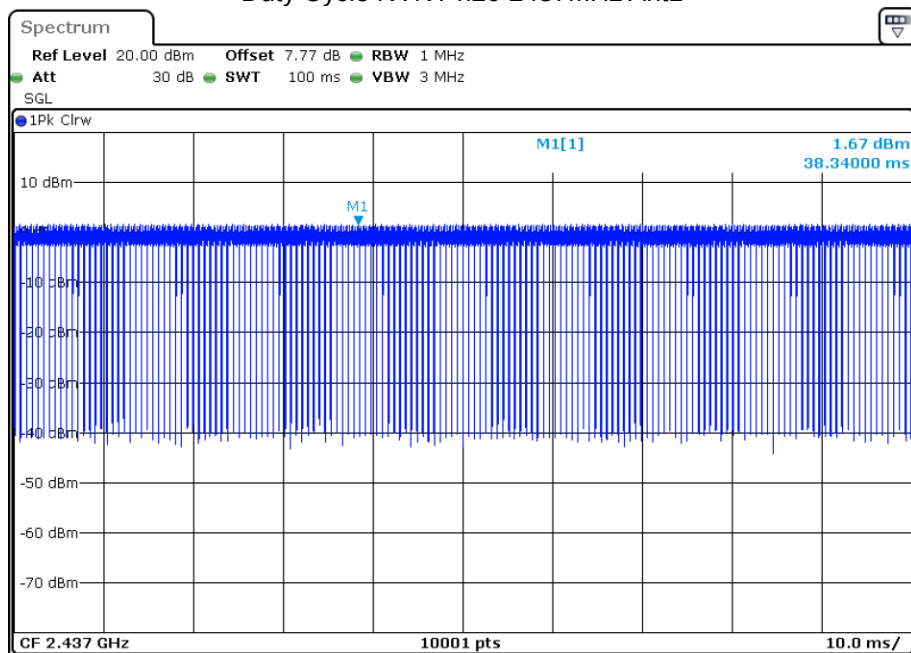
## Duty Cycle NVNT g 2462MHz Ant1



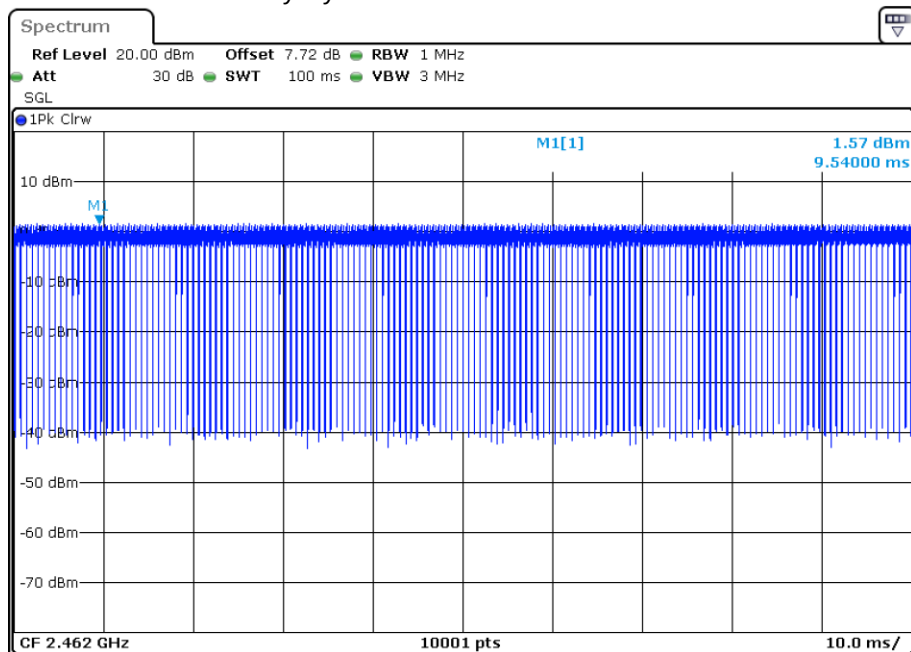
## Duty Cycle NVNT n20 2412MHz Ant1



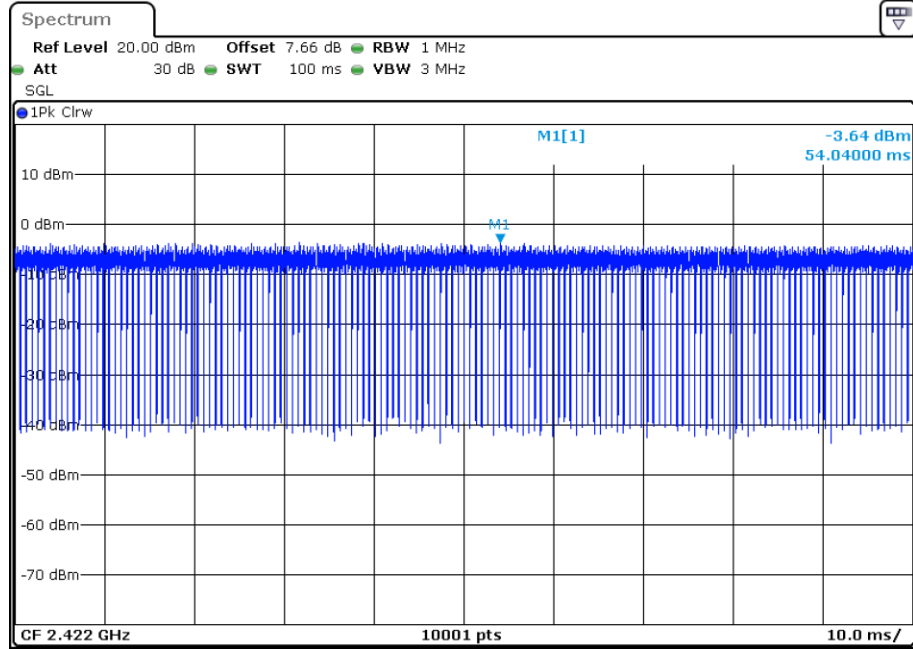
## Duty Cycle NVNT n20 2437MHz Ant1



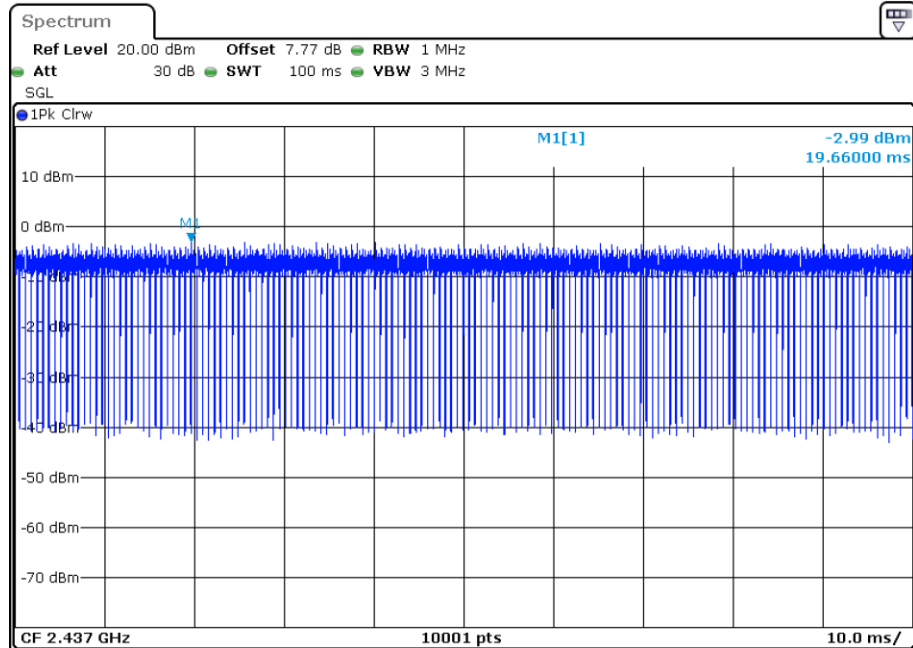
## Duty Cycle NVNT n20 2462MHz Ant1



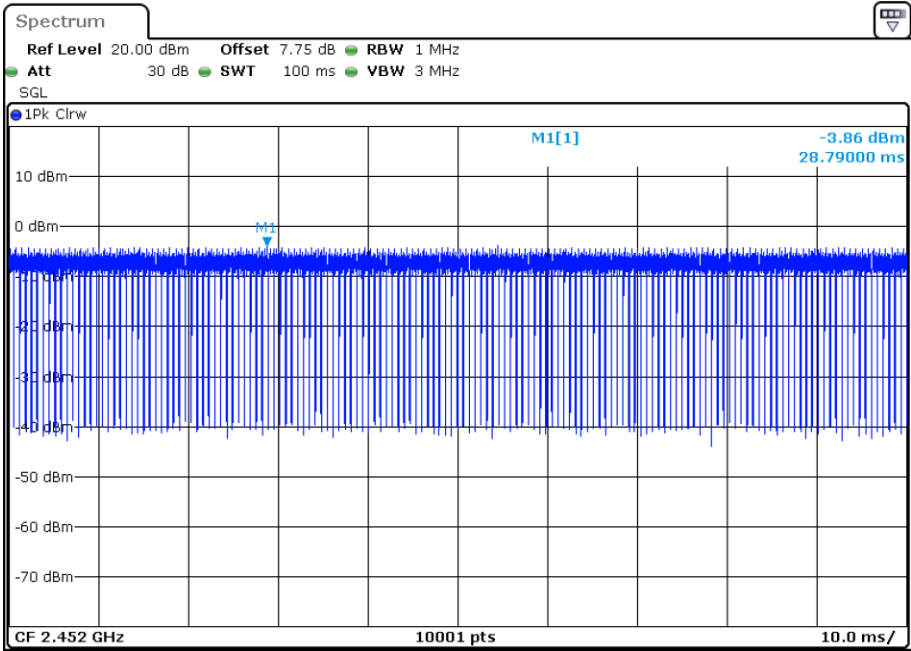
## Duty Cycle NVNT n40 2422MHz Ant1



## Duty Cycle NVNT n40 2437MHz Ant1



Duty Cycle NVNT n40 2452MHz Ant1



## 6. Peak Power Spectral Density

### 6.1. Test limits

6.1.1 Please refer RSS-247 & FCC PART 15: 15.247.

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

6.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

### 6.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

6.2.1 Place the EUT on the table and set it in transmitting mode.

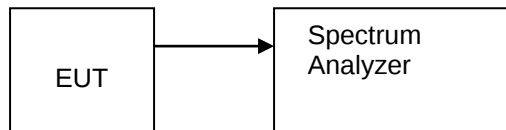
6.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

6.2.3 Set the spectrum analyzer as  $RBW = 100\text{kHz}$  (Set the RBW to:  $3\text{ kHz} \leq RBW \leq 100\text{ kHz}$ ),  $VBW = 300\text{kHz}$  (Set the  $VBW \geq 3 \times RBW$ ),  $\text{span} \geq 1.5 \times \text{DTS bandwidth}$ ., detail see the test plot.

6.2.4 Record the max reading.

6.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

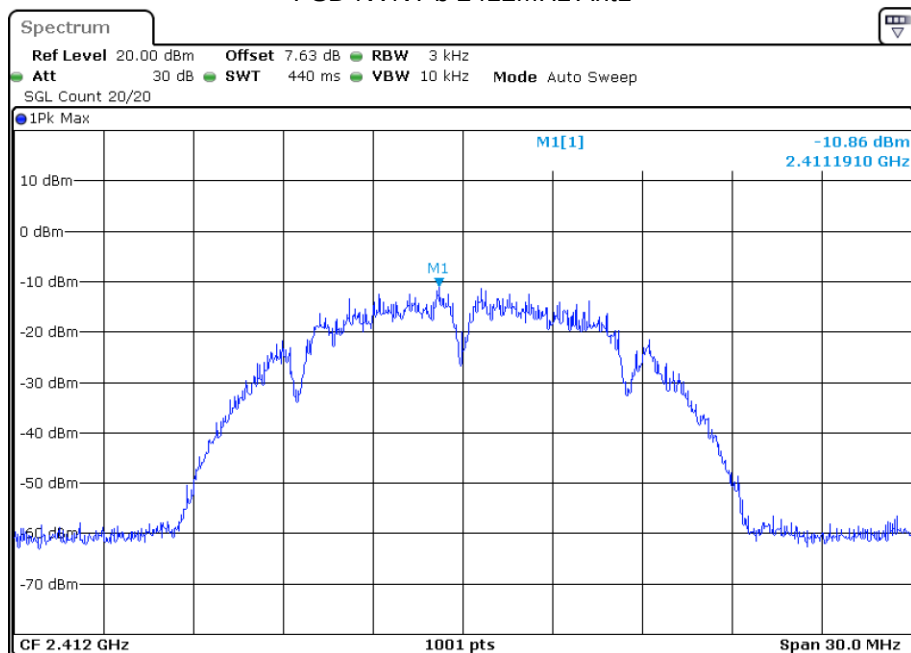
### 6.3. Test Setup



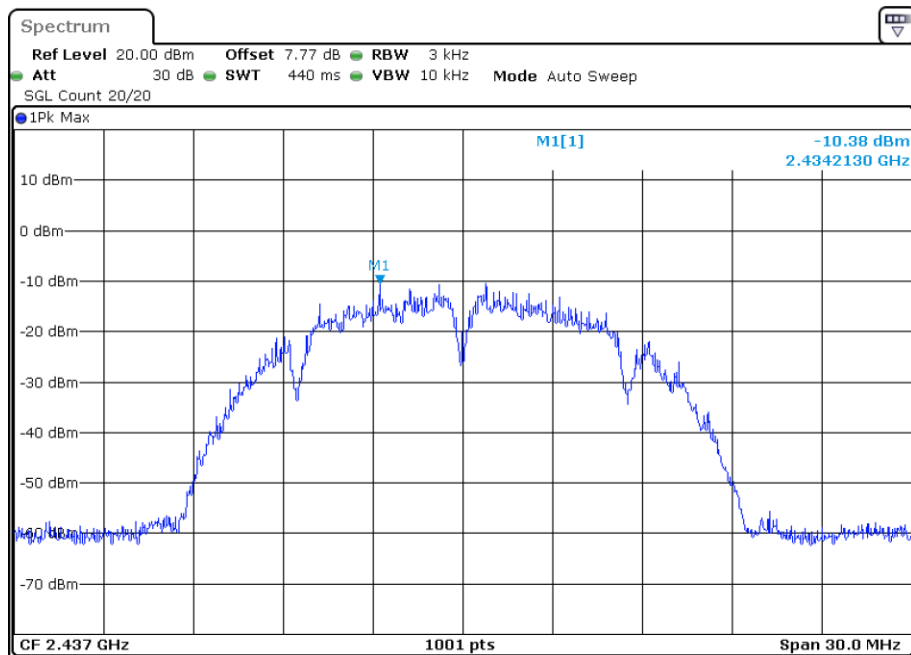
#### 6.4. Test Results

| Condition | Mode | Frequency (MHz) | Antenna | Max PSD (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|---------------|-------------|---------|
| NVNT      | b    | 2412            | Ant1    | -10.863       | 8           | Pass    |
| NVNT      | b    | 2437            | Ant1    | -10.381       | 8           | Pass    |
| NVNT      | b    | 2462            | Ant1    | -8.702        | 8           | Pass    |
| NVNT      | g    | 2412            | Ant1    | -17.706       | 8           | Pass    |
| NVNT      | g    | 2437            | Ant1    | -17.83        | 8           | Pass    |
| NVNT      | g    | 2462            | Ant1    | -18.023       | 8           | Pass    |
| NVNT      | n20  | 2412            | Ant1    | -17.457       | 8           | Pass    |
| NVNT      | n20  | 2437            | Ant1    | -17.213       | 8           | Pass    |
| NVNT      | n20  | 2462            | Ant1    | -17.241       | 8           | Pass    |
| NVNT      | n40  | 2422            | Ant1    | -21.42        | 8           | Pass    |
| NVNT      | n40  | 2437            | Ant1    | -21.296       | 8           | Pass    |
| NVNT      | n40  | 2452            | Ant1    | -20.93        | 8           | Pass    |

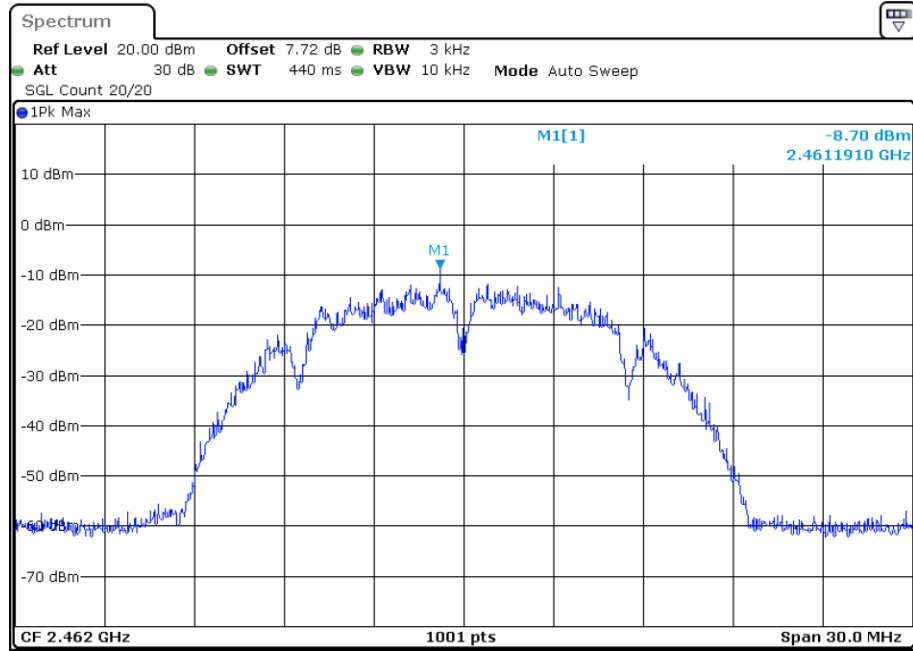
## PSD NVNT b 2412MHz Ant1



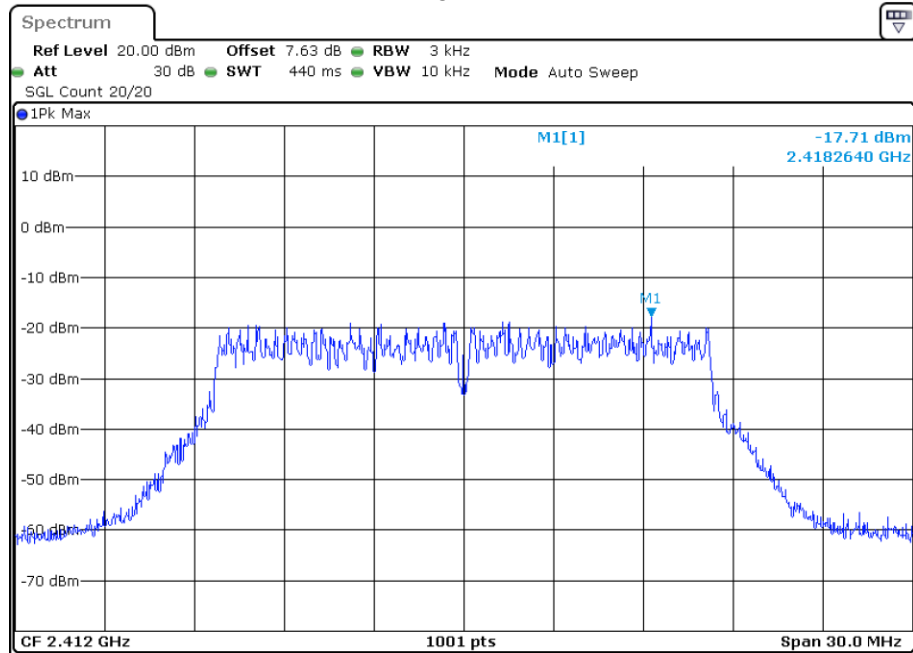
## PSD NVNT b 2437MHz Ant1



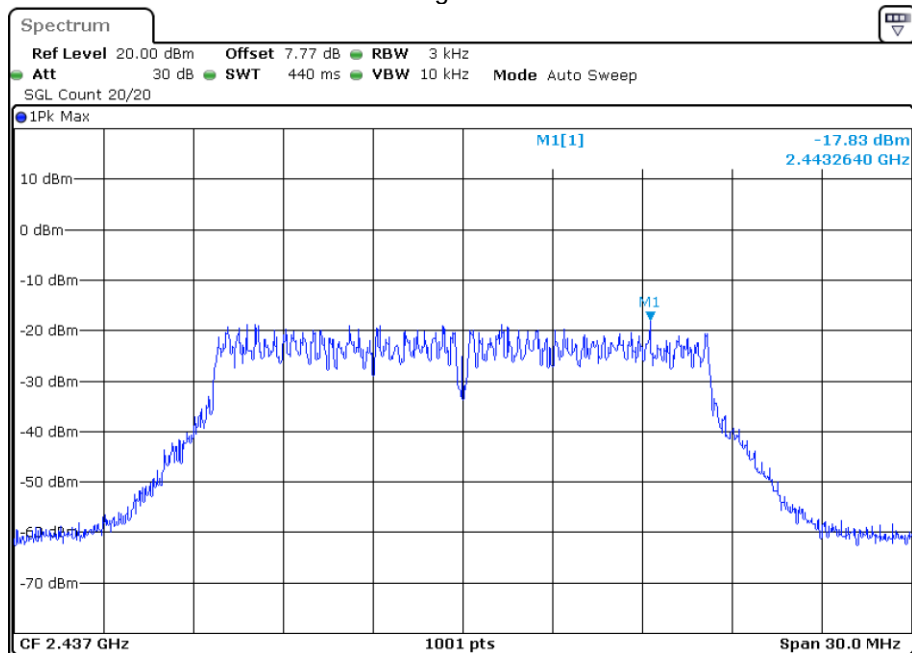
## PSD NVNT b 2462MHz Ant1



## PSD NVNT g 2412MHz Ant1



## PSD NVNT g 2437MHz Ant1



## PSD NVNT g 2462MHz Ant1

