



# SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666

Fax: +86 (0) 21 6191 5678

ee.shanghai@sgs.com

Report No.: SHEM150600191402

Page: 1 of 71

## 1 Cover Page

# RF TEST REPORT

|                                                                                                                               |                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Application No.:                                                                                                              | SHEM1506001914CR                                                                                                                 |
| Applicant:                                                                                                                    | UTC FIRE & SECURITY AMERICAS CORPORATION, INC.                                                                                   |
| FCC ID:                                                                                                                       | 2AENJ-WEDGEIP                                                                                                                    |
| <b>Equipment Under Test (EUT):</b><br><b>NOTE:</b> The following sample(s) was/were submitted and identified by the client as |                                                                                                                                  |
| Product Name:                                                                                                                 | Camera                                                                                                                           |
| Model No.(EUT):                                                                                                               | TVW-1106                                                                                                                         |
| Add Model No.:                                                                                                                | TVW-1103, TVW-3103, TVW-1104, TVW-3104, TVW-1105, TVW-3105, TVW-3106, TVW-1116, TVW-3116, TVW-1120, TVW-3120, TVW-1121, TVW-3121 |
| Standards:                                                                                                                    | FCC PART 15 Subpart C: 2014                                                                                                      |
| Date of Receipt:                                                                                                              | March 16, 2015                                                                                                                   |
| Date of Test:                                                                                                                 | March 25, 2015 to May 12, 2015                                                                                                   |
| Date of Issue:                                                                                                                | July 27, 2015                                                                                                                    |
| Test Result:                                                                                                                  | Pass*                                                                                                                            |

\*In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Parlam Zhan  
E&E Section Manager  
SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

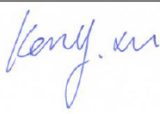
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



## 2 Version

| Revision Record |         |               |          |                                    |
|-----------------|---------|---------------|----------|------------------------------------|
| Version         | Chapter | Date          | Modifier | Remark                             |
| 00              | /       | July 27, 2015 | /        | Copy<br>(Base on SHEM150300065102) |
|                 |         |               |          |                                    |
|                 |         |               |          |                                    |
|                 |         |               |          |                                    |
|                 |         |               |          |                                    |

|                          |                                  |  |                                                                                       |
|--------------------------|----------------------------------|--|---------------------------------------------------------------------------------------|
| Authorized for issue by: |                                  |  |                                                                                       |
| Engineer                 | Eddy Zong<br>_____<br>Print Name |  |  |
| Clerk                    | Susie Liu<br>_____<br>Print Name |  |  |
| Reviewer                 | Keny Xu<br>_____<br>Print Name   |  |  |

### 3 Test Summary

| Test Item                                        | FCC Requirement                                     | Test method                                    | Result |
|--------------------------------------------------|-----------------------------------------------------|------------------------------------------------|--------|
| Antenna Requirement                              | FCC Part 15, Subpart C<br>Section 15.203/15.247 (c) | ---                                            | PASS   |
| AC Power Line<br>Conducted Emission              | FCC Part 15, Subpart C<br>Section 15.207            | ANSI C63.10 (2013)<br>Section 6.2              | PASS   |
| Minimum 6dB Bandwidth                            | FCC Part 15, Subpart C<br>Section 15.247 (a)(2)     | ANSI C63.10 (2013)<br>Section 11.8.1           | PASS   |
| Conducted Peak Output<br>Power                   | FCC Part 15, Subpart C<br>Section 15.247 (b)(3)     | ANSI C63.10 (2013)<br>Section 11.9.1.2         | PASS   |
| Power Spectrum Density                           | FCC Part 15, Subpart C<br>Section 15.247 (e)        | ANSI C63.10 (2013)<br>Section 11.10.2          | PASS   |
| RF Conducted Spurious<br>Emissions and Band-edge | FCC Part 15, Subpart C<br>Section 15.247(d)         | ANSI C63.10 (2013)<br>Section 11.12.2.4        | PASS   |
| Radiated Spurious<br>Emissions and Band-edge     | FCC Part 15, Subpart C<br>Section 15.209&15.205     | ANSI C63.10 (2013)<br>Section 6.4&6.5&6.6&6.10 | PASS   |

Note: This report was an additional report copied from the report SHEM150300065102, just changing the applicant name and address, product name and models.

## 4 Contents

|                                                      | Page      |
|------------------------------------------------------|-----------|
| <b>1 COVER PAGE .....</b>                            | <b>1</b>  |
| <b>2 VERSION .....</b>                               | <b>2</b>  |
| <b>3 TEST SUMMARY .....</b>                          | <b>3</b>  |
| <b>4 CONTENTS.....</b>                               | <b>4</b>  |
| <b>5 GENERAL INFORMATION .....</b>                   | <b>5</b>  |
| 5.1 CLIENT INFORMATION.....                          | 5         |
| 5.2 GENERAL DESCRIPTION OF E.U.T.....                | 5         |
| 5.3 TECHNICAL SPECIFICATIONS.....                    | 5         |
| 5.4 TEST MODE.....                                   | 5         |
| 5.5 DESCRIPTION OF SUPPORT UNITS.....                | 6         |
| 5.6 TEST LOCATION .....                              | 6         |
| 5.7 TEST FACILITY .....                              | 7         |
| 5.8 MEASUREMENT UNCERTAINTY .....                    | 7         |
| <b>6 EQUIPMENTS USED DURING TEST .....</b>           | <b>8</b>  |
| <b>7 TEST RESULTS .....</b>                          | <b>9</b>  |
| 7.1 E.U.T. TEST CONDITIONS .....                     | 9         |
| 7.2 ANTENNA REQUIREMENT.....                         | 10        |
| 7.3 CONDUCTED EMISSIONS ON MAINS TERMINALS .....     | 11        |
| 7.4 6dB OCCUPIED BANDWIDTH.....                      | 15        |
| 7.5 CONDUCTED PEAK OUTPUT POWER .....                | 22        |
| 7.6 PEAK POWER SPECTRAL DENSITY.....                 | 27        |
| 7.7 CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGE ..... | 34        |
| 7.7.1 <i>Conducted spurious emission</i> .....       | 35        |
| 7.7.2 <i>Conducted Band-edge</i> .....               | 47        |
| 7.8 RADIATED SPURIOUS EMISSIONS AND BAND-EDGE.....   | 51        |
| 7.8.1 <i>Radiated Spurious Emissions</i> .....       | 54        |
| 7.8.2 <i>Radiated Band edge</i> .....                | 61        |
| <b>8 TEST SETUP PHOTOGRAPHS.....</b>                 | <b>71</b> |
| <b>9 EUT CONSTRUCTIONAL DETAILS.....</b>             | <b>71</b> |

## 5 General Information

### 5.1 Client Information

Applicant: UTC FIRE & SECURITY AMERICAS CORPORATION, INC.  
 Address of Applicant: 2955 Red Hill Ave., Costa Mesa, CA92626, USA  
 Manufacturer: Hangzhou Hikvision Digital Technology Co., Ltd.  
 Address of Manufacturer: 700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China  
 Factory: Hangzhou Hikvision Digital Technology Co., Ltd.  
 Address of Factory: 700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China

### 5.2 General Description of E.U.T.

Product Description: Fixed product with WiFi function  
 Power Supply: DC 12V 0.5A or PoE 0.15A  
 Adapter: Rated Input: AC 100V-240V 50/60Hz  
 Rated Output: DC 12V 1A  
 Cable Length: AC port: 2 Wires  
 DC port: 140cm

### 5.3 Technical Specifications

Operation Frequency: 802.11 b/g/n20: 2412MHz-2462MHz  
 802.11 n40: 2422MHz-2452MHz  
 Modulation Technique: 802.11 b: DSSS(CCK, DQPSK, DBPSK)  
 802.11 g/n20/n40: OFDM(64QAM, 16QAM, QPSK, BPSK)  
 Number of Channel: 802.11 b/g/n20: 11  
 802.11 n40: 7  
 Data Rate: 802.11b: 1/2/5.5/11Mbps  
 802.11g: 6/9/12/18/24/36/48/54Mbps  
 802.11n20: 13/26/39/52/78/104/117/135Mbps  
 802.11n40: 27/54/81/108/162/216/243/270Mbps  
 Antenna Type: Integral  
 Antenna Gain: 2.24dBi

### 5.4 Test Mode

| Test Mode        | Description of Test Mode                                                 |
|------------------|--------------------------------------------------------------------------|
| Engineering mode | Using test software was control EUT work in continuous transmitter mode. |

## 5.5 Description of Support Units

The EUT has been tested with support equipments as below.

| Description      | Manufacturer | Model No.        | Supplied By |
|------------------|--------------|------------------|-------------|
| Laptop           | Lenovo       | ThinkPad X 100e  | SGS         |
| AC to DC Adapter | Acepower     | BSW0127-1210002W | SGS         |

| Software name     | Manufacturer | Version    | Supplied By |
|-------------------|--------------|------------|-------------|
| Command Processor | Microsoft    | 1.3.3.0881 | SGS         |

## 5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

No.588 West Jindu Road, Songjiang District, Shanghai, China.201612.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

## 5.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

## 5.8 Measurement Uncertainty

| No. | Parameter                     | Measurement Uncertainty                                                  |
|-----|-------------------------------|--------------------------------------------------------------------------|
| 1   | Radio Frequency               | $< \pm 1 \times 10^{-5}$                                                 |
| 2   | Total RF power, conducted     | $< \pm 1.5 \text{ dB}$                                                   |
| 3   | RF power density, conducted   | $< \pm 3 \text{ dB}$                                                     |
| 4   | Spurious emissions, conducted | $< \pm 3 \text{ dB}$                                                     |
| 5   | All emissions, radiated       | $< \pm 6 \text{ dB (30MHz – 1GHz)}$<br>$< \pm 6 \text{ dB (above 1GHz)}$ |
| 6   | Temperature                   | $< \pm 1^{\circ}\text{C}$                                                |
| 7   | Humidity                      | $< \pm 5 \%$                                                             |
| 8   | DC and low frequency voltages | $< \pm 3 \%$                                                             |

## 6 Equipments Used during Test

| Item | Test Equipment                            | Manufacturer                  | Model No.                   | Serial No.    | Cal. Date  | Cal. Due date |
|------|-------------------------------------------|-------------------------------|-----------------------------|---------------|------------|---------------|
| 1    | EMI test receiver                         | Rohde & Schwarz               | ESCS30                      | 100086        | 2015-01-22 | 2016-01-21    |
| 2    | Line impedance stabilization network      | SCHWARZBECK                   | NSLK8127                    | 8127490       | 2015-01-22 | 2016-01-21    |
| 3    | Line impedance stabilization network      | ETS                           | 3816/2                      | 00034161      | 2015-01-22 | 2016-01-21    |
| 4    | Spectrum Analyzer                         | Rohde & Schwarz               | FSP-30                      | 2705121009    | 2015-01-22 | 2016-01-21    |
| 5    | EMI test receiver                         | Rohde & Schwarz               | ESU40                       | 100109        | 2015-02-13 | 2016-02-12    |
| 6    | Active Loop Antenna (9kHz to 30MHz)       | Schwarzbeck - Mess-Elektronik | FMZB 1519                   | 1519-034      | 2015-02-07 | 2016-02-06    |
| 7    | Broadband UHF-VHF ANTENNA (25MHz to 2GHz) | SCHWARZBECK                   | VULB9168                    | 9168-313      | 2015-02-07 | 2016-02-06    |
| 8    | Ultra broadband antenna (25MHz to 3GHz)   | Rohde & Schwarz               | HL562                       | 100227        | 2014-08-30 | 2015-08-29    |
| 9    | Horn Antenna (1GHz to 18GHz)              | Rohde & Schwarz               | HF906                       | 100284        | 2015-02-07 | 2016-02-06    |
| 10   | Horn Antenna (1GHz to 18GHz)              | SCHWARZBECK                   | BBHA9120D                   | 9120D-679     | 2015-02-07 | 2016-02-06    |
| 11   | Horn Antenna (14GHz to 40GHz)             | SCHWARZBECK                   | BBHA 9170                   | BBHA9170373   | 2015-02-13 | 2016-02-12    |
| 12   | Pre-amplifier (9KHz – 2GHz)               | LNA6900                       | TESEQ                       | 71033         | 2014-12-27 | 2015-12-27    |
| 13   | Pre-amplifier (1GHz – 26.5GHz)            | Rohde & Schwarz               | SCU-F0118-G40-BZ4-CSS(F)    | 10001         | 2015-01-22 | 2016-01-21    |
| 14   | Pre-amplifier (14GHz – 40GHz)             | Rohde & Schwarz               | SCU-F1840-G35-BZ3-CSS(F)    | 10001         | 2015-01-22 | 2016-01-21    |
| 15   | Tunable Notch Filter                      | Wainwright instruments GmbH   | WRCT800.0/880.0-0.2/40-5SSK | 9170397       | /          | /             |
| 16   | High pass Filter                          | FSCW                          | HP 12/2800-5AA2             | 19A45-02      | /          | /             |
| 17   | High-low temperature cabinet              | Suzhou Zhihe                  | TL-40                       | 50110050      | 2014-09-11 | 2015-09-10    |
| 18   | AC power stabilizer                       | WOCEN                         | 6100                        | 51122         | 2015-01-02 | 2016-01-01    |
| 19   | DC power                                  | QJE                           | QJ30003SII                  | 611145        | 2015-01-02 | 2016-01-01    |
| 20   | Signal Generator (Interferer)             | Agilent                       | SMR40                       | 100555        | 2014-08-10 | 2015-08-09    |
| 21   | Signal Generator (Blocker)                | Rohde & Schwarz               | SMJ100A                     | 02.20.360.142 | 2015-01-22 | 2016-01-21    |
| 22   | Splitter                                  | Anritsu                       | MA1612A                     | M12265        | /          | /             |
| 23   | Coupler                                   | e-meca                        | 803-S-1                     | 900-M01       | /          | /             |

## 7 Test Results

### 7.1 E.U.T. test conditions

**Test Power:** AC 120V, 60Hz

**Requirements:** 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

**Operating Environment:**

|                       |               |
|-----------------------|---------------|
| Temperature:          | 20.0 -25.0 °C |
| Humidity:             | 35-75 % RH    |
| Atmospheric Pressure: | 99.2 -102 kPa |

**Test frequencies:** According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

| Frequency range over which device operates | Number of frequencies | Location in the range of operation          |
|--------------------------------------------|-----------------------|---------------------------------------------|
| 1 MHz or less                              | 1                     | Middle                                      |
| 1 to 10 MHz                                | 2                     | 1 near top and 1 near bottom                |
| More than 10 MHz                           | 3                     | 1 near top, 1 near middle and 1 near bottom |

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported.

## 7.2 Antenna Requirement

### Standard requirement:

#### 15.203 requirement:

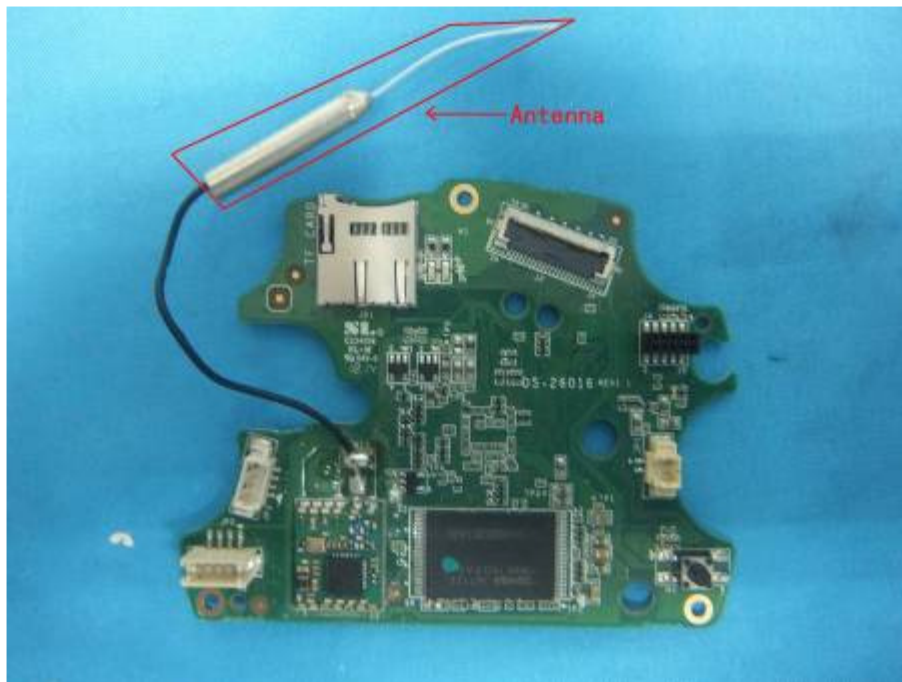
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

#### 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### EUT Antenna:

The antenna is Plug-in antenna. The gain of the antenna is less than 2.24 dBi.



### 7.3 Conducted Emissions on Mains Terminals

**Frequency Range:** 150 KHz to 30 MHz

**Class/Severity:** Class B

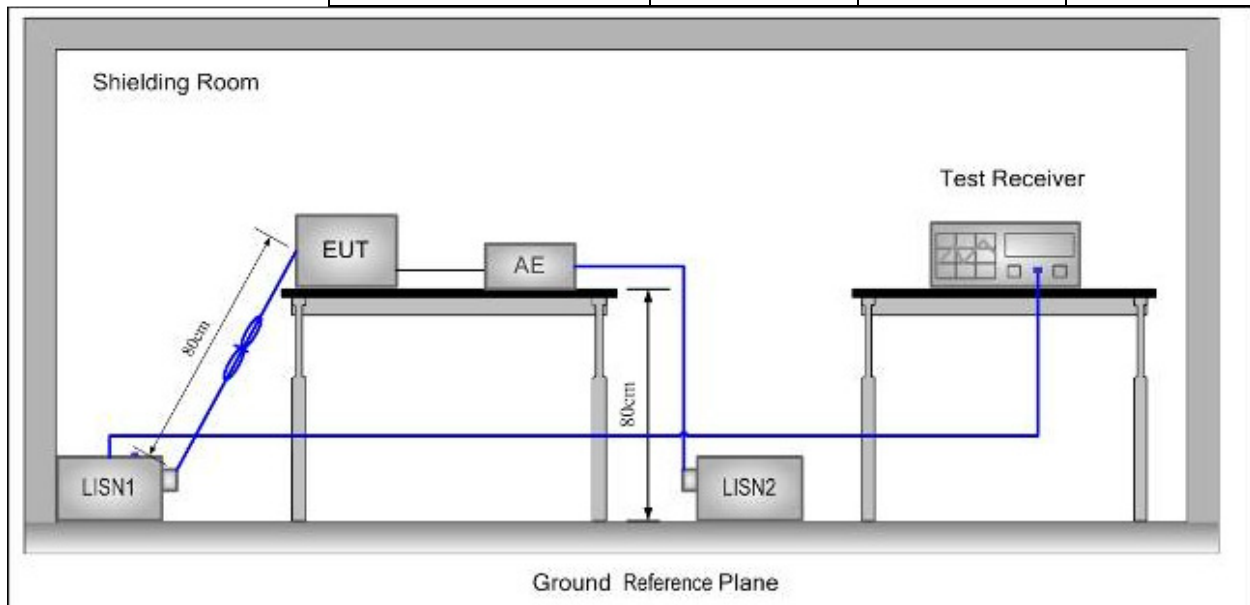
**Limit:**

| Frequency range<br>MHz | Class B Limits: dB (μV) |          |
|------------------------|-------------------------|----------|
|                        | Quasi-peak              | Average  |
| 0.15 to 0.50           | 66 to 56                | 56 to 46 |
| 0.50 to 5              | 56                      | 46       |
| 5 to 30                | 60                      | 50       |

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.  
Note2: The lower limit is applicable at the transition frequency.

**Test site/setup:** Test instrumentation set-up:

| Frequency Range | Detector   | RBW   | VBW   |
|-----------------|------------|-------|-------|
| 9KHz to 150Hz   | Quasi-peak | 200Hz | 500Hz |
| 150KHz to 30MHz | Quasi-peak | 9kHz  | 30kHz |



#### Test Procedure:

1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

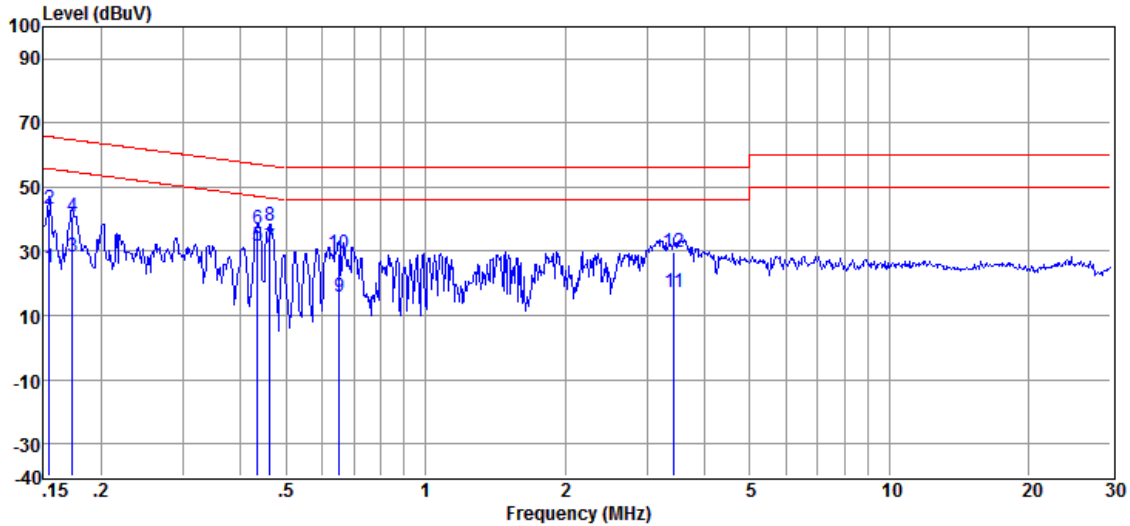
- 
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment were at least 0.8 m from the LISN.

Remark: Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Pretest under all modes; choose the worst case mode (802.11b in Middle channel) record on the report. Please see the attached Quasi-peak and Average test results.

**Test Result:** Pass

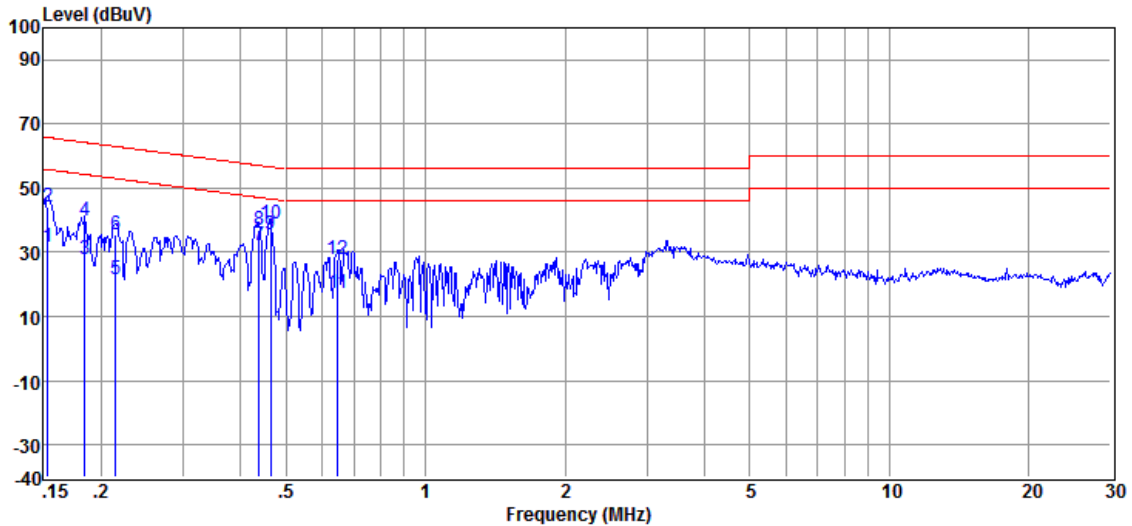
**Test Data:**

|                   |              |                      |        |
|-------------------|--------------|----------------------|--------|
| <b>Test Mode:</b> | 802.11b      | <b>Test Channel:</b> | Middle |
| <b>Test Port:</b> | AC Live Line |                      |        |



| Item   | Freq. | Read Level | LISN Factor | Cable Loss | Level  | Limit Line | Over Limit | Detector |
|--------|-------|------------|-------------|------------|--------|------------|------------|----------|
| (Mark) | (MHz) | (dBμV)     | (dB)        | (dB)       | (dBμV) | (dBμV)     | (dB)       |          |
| 1      | 0.155 | 24.73      | 0.32        | 0.10       | 25.15  | 55.74      | -30.59     | Average  |
| 2      | 0.155 | 42.80      | 0.32        | 0.10       | 43.22  | 65.74      | -22.52     | QP       |
| 3      | 0.173 | 27.77      | 0.30        | 0.10       | 28.17  | 54.81      | -26.64     | Average  |
| 4      | 0.173 | 40.49      | 0.30        | 0.10       | 40.89  | 64.81      | -23.92     | QP       |
| 5      | 0.435 | 31.19      | 0.25        | 0.10       | 31.54  | 47.15      | -15.61     | Average  |
| 6      | 0.435 | 36.79      | 0.25        | 0.10       | 37.14  | 57.15      | -20.01     | QP       |
| 7      | 0.461 | 30.94      | 0.25        | 0.10       | 31.29  | 46.67      | -15.38     | Average  |
| 8      | 0.461 | 37.73      | 0.25        | 0.10       | 38.08  | 56.67      | -18.59     | QP       |
| 9      | 0.651 | 15.58      | 0.23        | 0.10       | 15.91  | 46.00      | -30.09     | Average  |
| 10     | 0.651 | 28.92      | 0.23        | 0.10       | 29.25  | 56.00      | -26.75     | QP       |
| 11     | 3.436 | 16.56      | 0.38        | 0.16       | 17.10  | 46.00      | -28.90     | Average  |
| 12     | 3.436 | 29.13      | 0.38        | 0.16       | 29.67  | 56.00      | -26.33     | QP       |

**Test Port:** AC Neutral Line

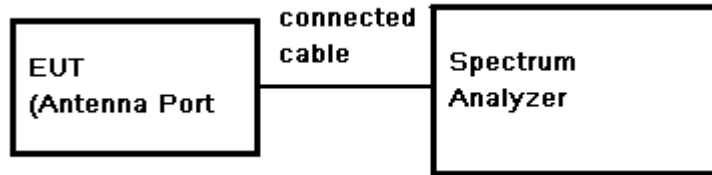


| Item   | Freq. | Read Level | LISN Factor | Cable Loss | Level  | Limit Line | Over Limit | Detector |
|--------|-------|------------|-------------|------------|--------|------------|------------|----------|
| (Mark) | (MHz) | (dBμV)     | (dB)        | (dB)       | (dBμV) | (dBμV)     | (dB)       |          |
| 1      | 0.153 | 31.36      | 0.34        | 0.10       | 31.80  | 55.82      | -24.02     | Average  |
| 2      | 0.153 | 43.94      | 0.34        | 0.10       | 44.38  | 65.82      | -21.44     | QP       |
| 3      | 0.184 | 27.62      | 0.30        | 0.10       | 28.02  | 54.28      | -26.26     | Average  |
| 4      | 0.184 | 39.36      | 0.30        | 0.10       | 39.76  | 64.28      | -24.52     | QP       |
| 5      | 0.215 | 21.16      | 0.29        | 0.10       | 21.55  | 53.01      | -31.46     | Average  |
| 6      | 0.215 | 35.34      | 0.29        | 0.10       | 35.73  | 63.01      | -27.28     | QP       |
| 7      | 0.437 | 31.54      | 0.30        | 0.10       | 31.94  | 47.11      | -15.17     | Average  |
| 8      | 0.437 | 36.66      | 0.30        | 0.10       | 37.06  | 57.11      | -20.05     | QP       |
| 9      | 0.464 | 34.90      | 0.30        | 0.10       | 35.30  | 46.63      | -11.33     | Average  |
| 10     | 0.464 | 38.34      | 0.30        | 0.10       | 38.74  | 56.63      | -17.89     | QP       |
| 11     | 0.647 | 16.70      | 0.22        | 0.10       | 17.02  | 46.00      | -28.98     | Average  |
| 12     | 0.647 | 27.53      | 0.22        | 0.10       | 27.85  | 56.00      | -28.15     | QP       |

Remark: Level = Read Level + LISN/ISN Factor + Cable Loss.

## 7.4 6dB Occupied Bandwidth

### Test Configuration:



### Test Procedure:

- 1). Place the EUT on the table and set it in transmitting mode.
- 2). Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3). Set the spectrum analyzer as RBW=300KHz, VBW≥3\* RBW, Span=30/50MHz, Sweep=auto
- 4). Mark the peak frequency and -6dB (upper and lower) frequency.
- 5). Repeat above procedures until all frequency measured was complete.

**Limit:** ≥ 500 kHz

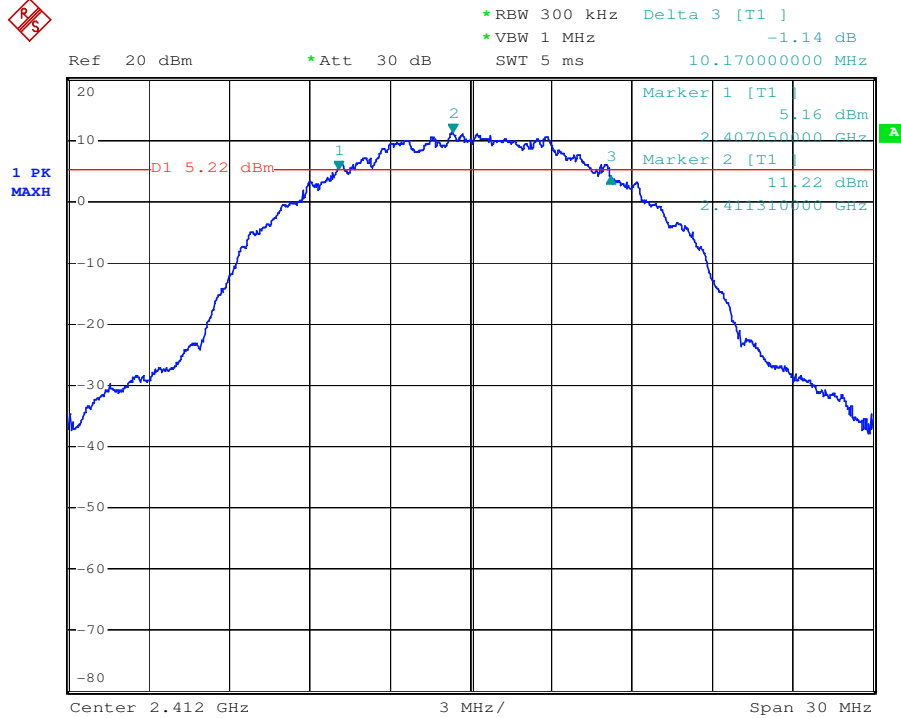
**Test Result:** Pass

### Test Data:

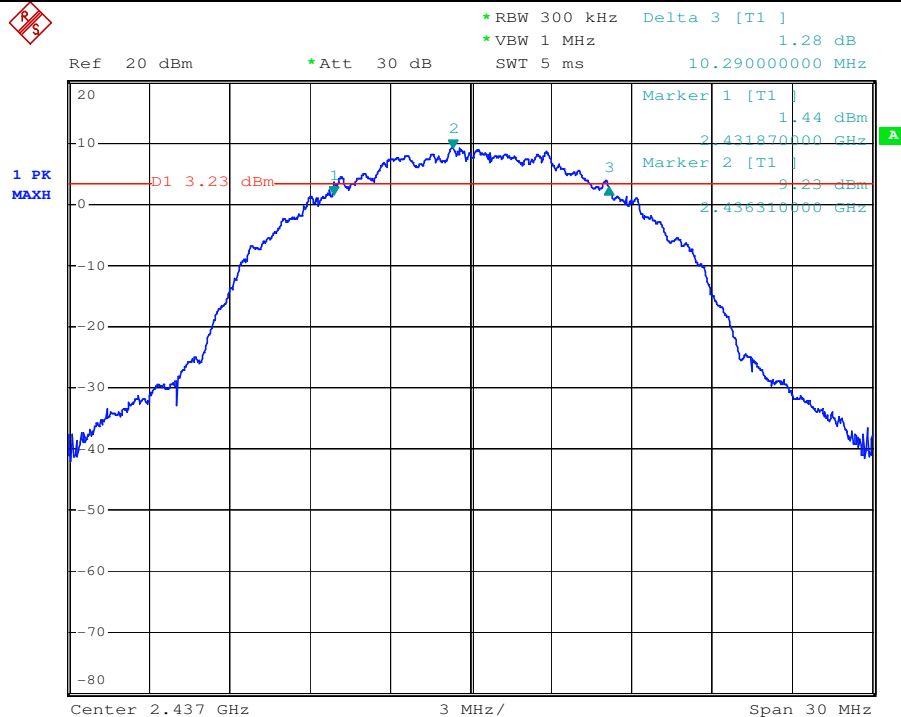
| Test Mode | Test Frequency (MHz) | Bandwidth (MHz) | Limit (KHz) | Result |
|-----------|----------------------|-----------------|-------------|--------|
| 802.11b   | 2412                 | 10.17           | 500         | Pass   |
|           | 2437                 | 10.29           |             | Pass   |
|           | 2462                 | 10.14           |             | Pass   |
| 802.11g   | 2412                 | 16.83           |             | Pass   |
|           | 2437                 | 16.80           |             | Pass   |
|           | 2462                 | 16.77           |             | Pass   |
| 802.11n20 | 2412                 | 17.88           |             | Pass   |
|           | 2437                 | 17.88           |             | Pass   |
|           | 2462                 | 17.94           |             | Pass   |
| 802.11n40 | 2422                 | 36.48           |             | Pass   |
|           | 2437                 | 36.64           |             | Pass   |
|           | 2452                 | 36.48           |             | Pass   |

Test plot as follows:

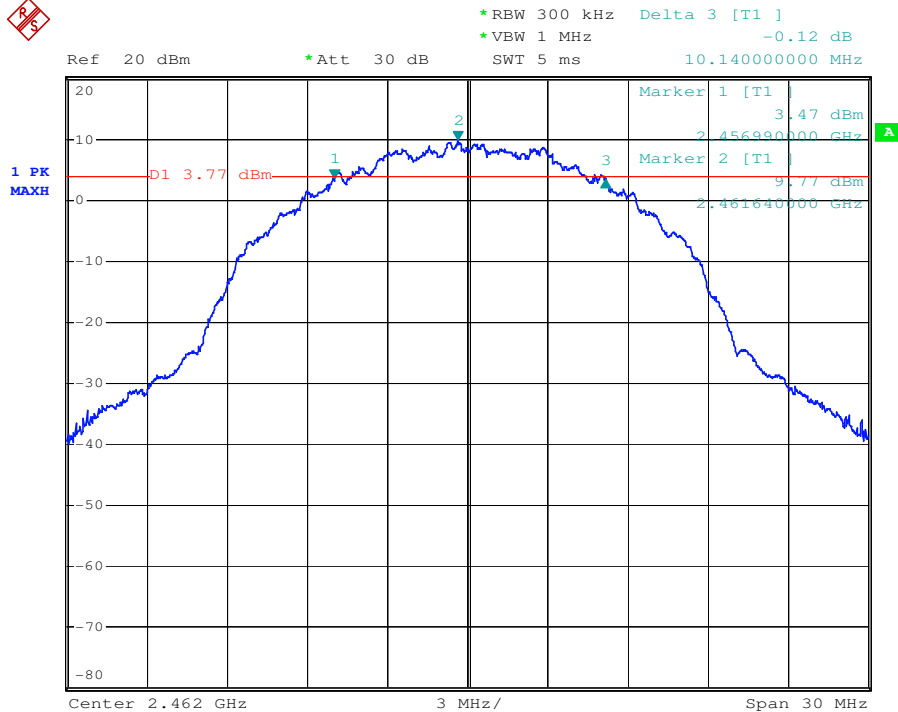
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Lowest |
|------------|---------|----------|--------|



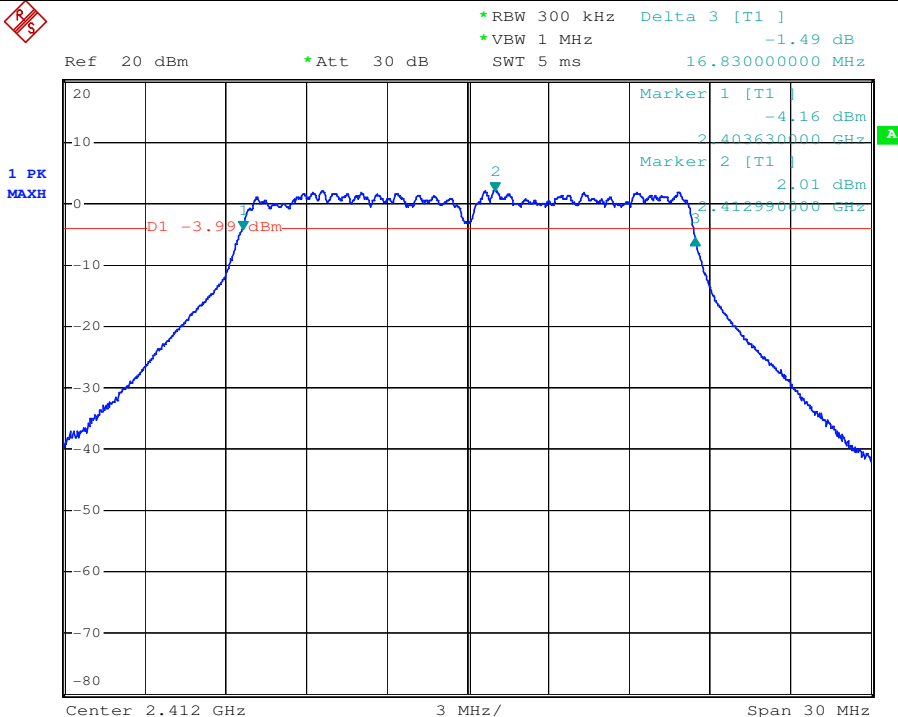
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Middle |
|------------|---------|----------|--------|



|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11b | Channel: | Highest |
|------------|---------|----------|---------|



|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Lowest |
|------------|---------|----------|--------|



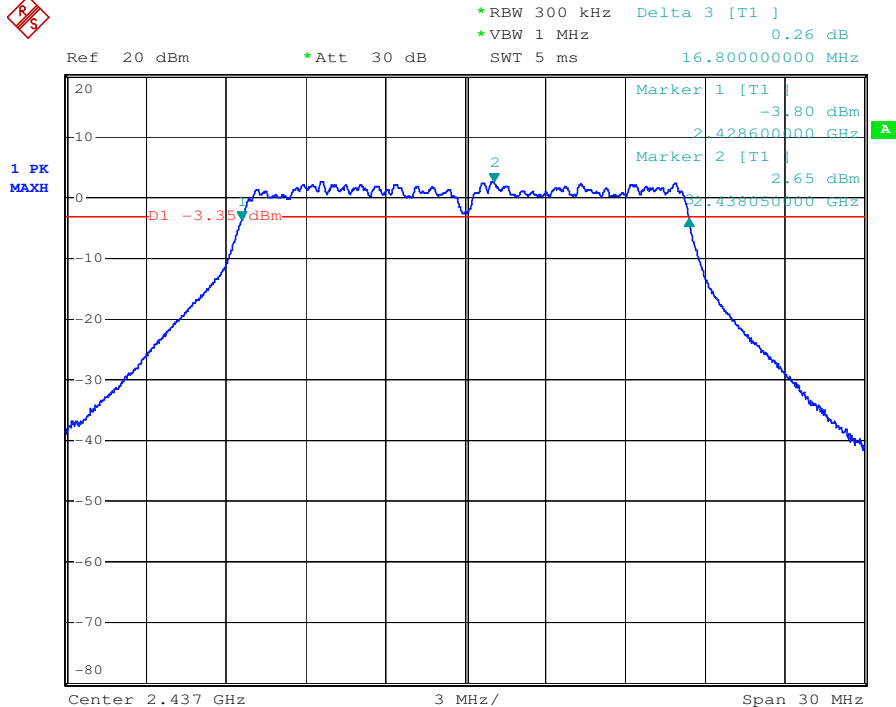


# SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

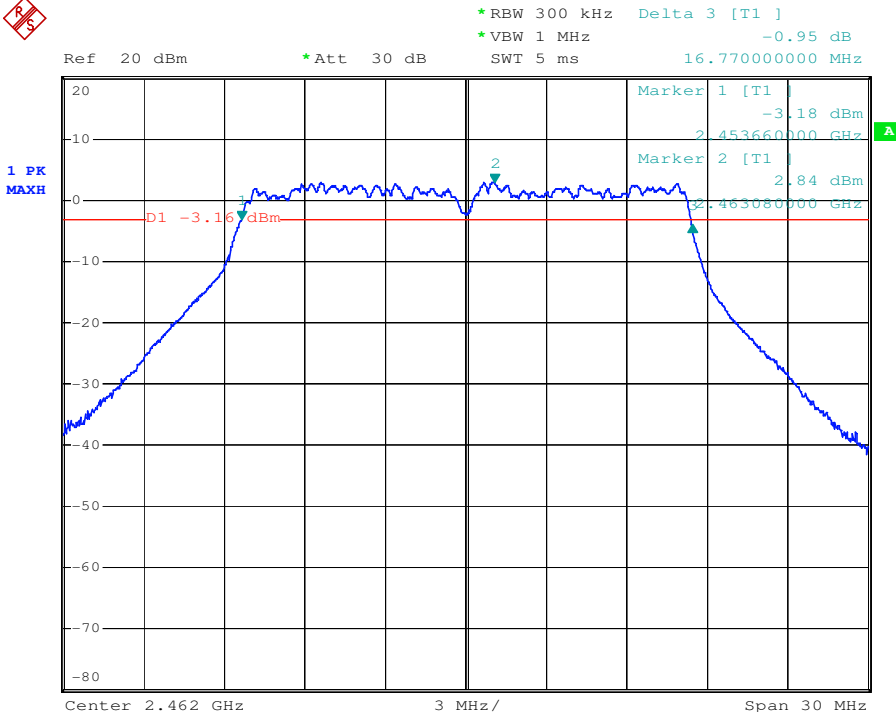
Report No.: SHEM150600191402

Page: 18 of 71

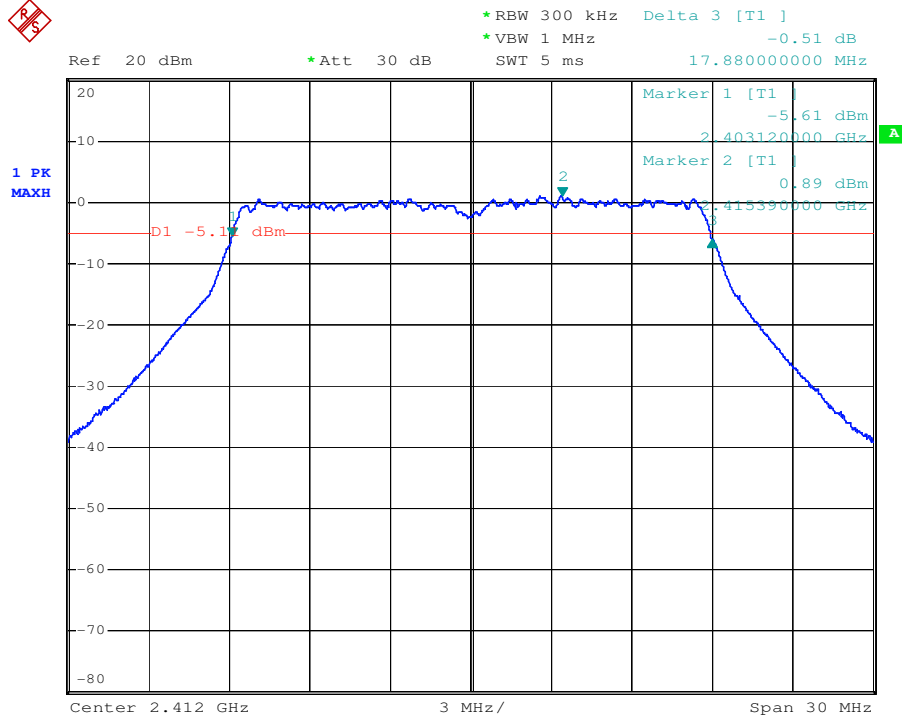
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Middle |
|------------|---------|----------|--------|



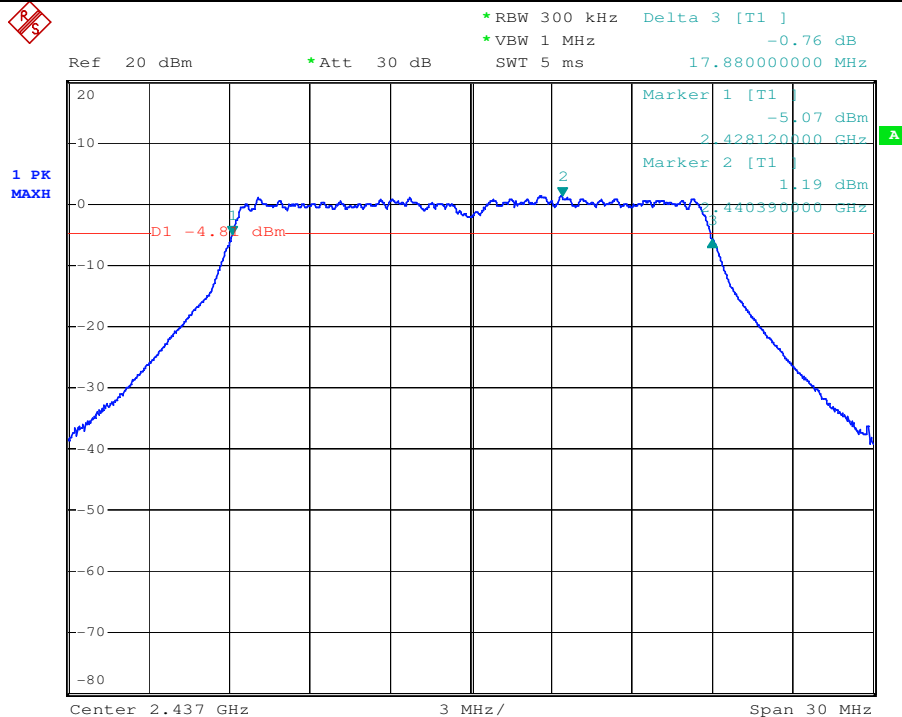
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11g | Channel: | Highest |
|------------|---------|----------|---------|



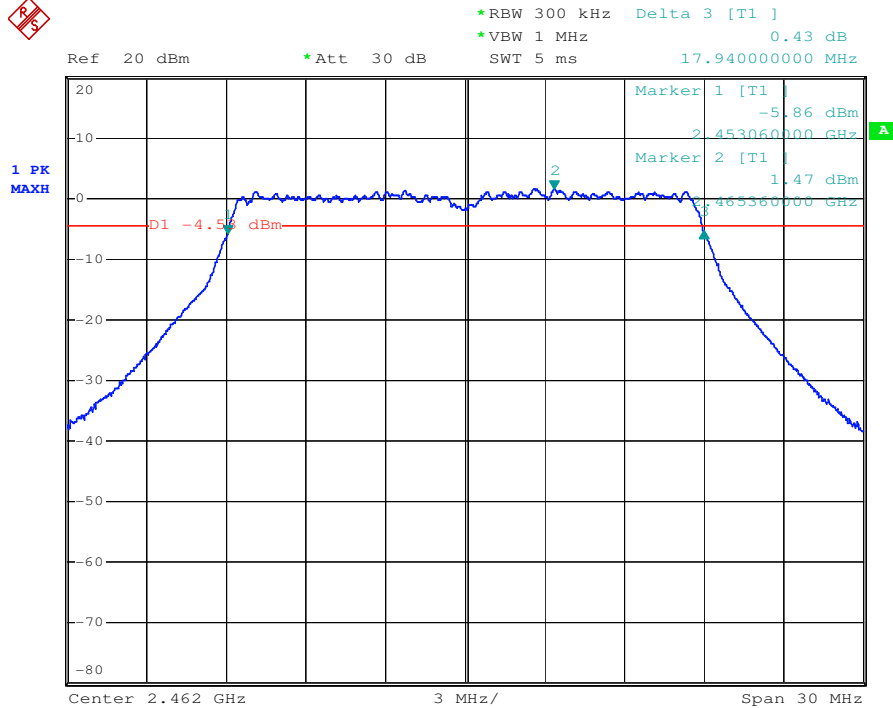
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Lowest |
|------------|-----------|----------|--------|



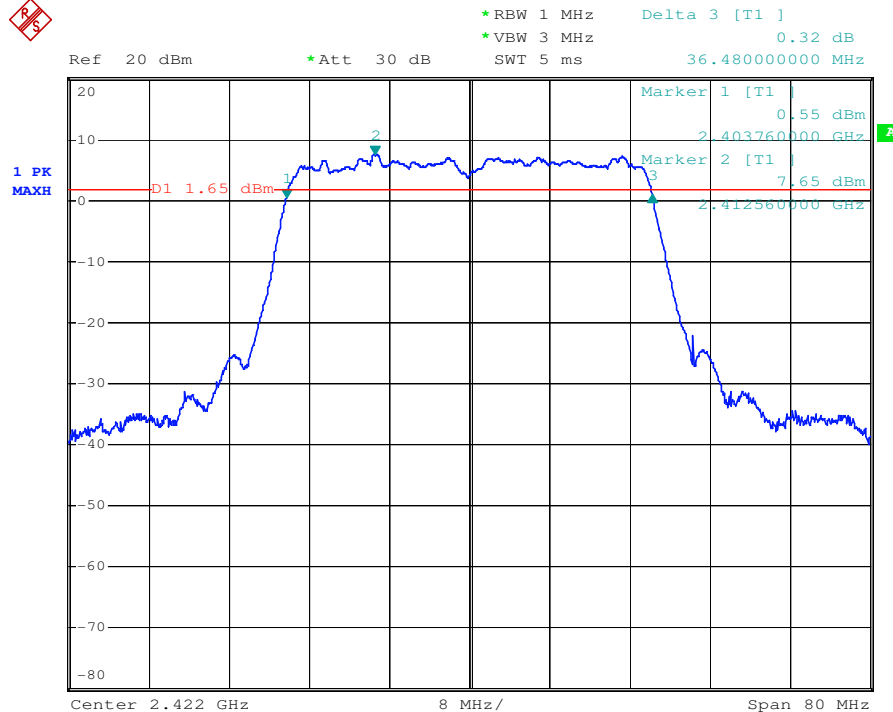
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Middle |
|------------|-----------|----------|--------|



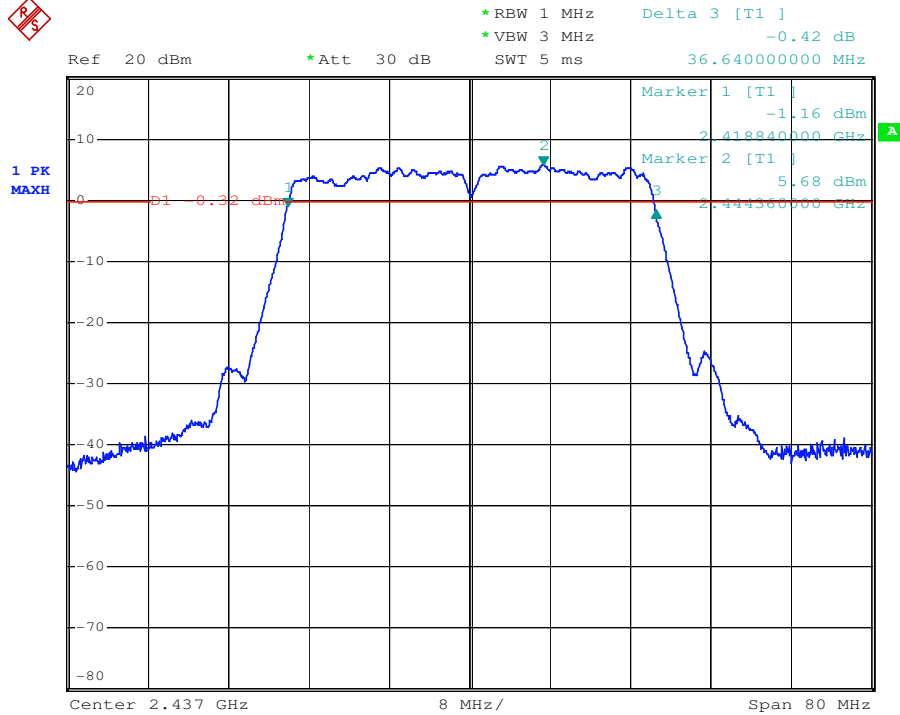
|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n20 | Channel: | Highest |
|------------|-----------|----------|---------|



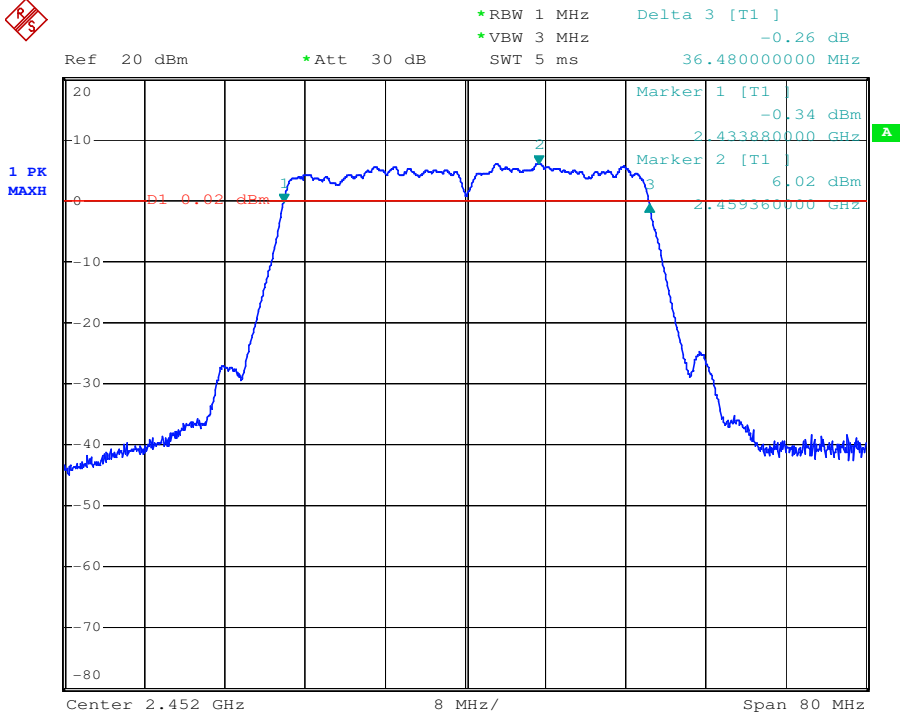
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Lowest |
|------------|-----------|----------|--------|



|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Middle |
|------------|-----------|----------|--------|

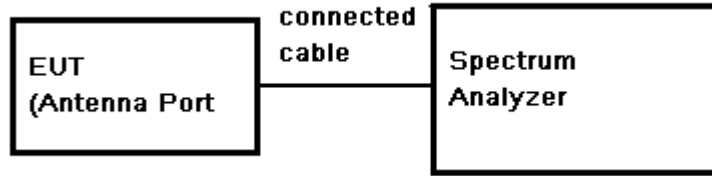


|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n40 | Channel: | Highest |
|------------|-----------|----------|---------|



## 7.5 Conducted Peak Output Power

### Test Configuration:



### Test Procedure:

- 1) Place the EUT on the table and set it in transmitting mode.
- 2) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.
- 3) Set the occur band to the entire emission 6dB bandwidth of the signal.
- 4) Record the max. Power channel reading.
- 5) Repeat above procedures until all the frequency measured were complete.

**Test Limit:** 30dBm

**Test Result:** Pass

### Test Data:

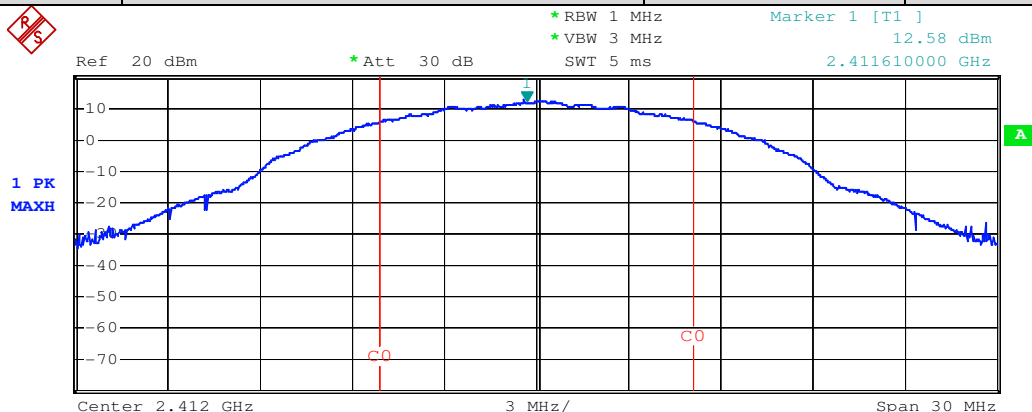
| Test mode | Channel     | Reading Peak Power (dBm) | Cable Loss (dB) | Output Power (dBm) | Output Peak Power (mW) | Peak Power Limit (dBm) | Result |
|-----------|-------------|--------------------------|-----------------|--------------------|------------------------|------------------------|--------|
| 802.11b   | Low         | 19.22                    | 0.5             | 19.72              | 93.76                  | 30                     | PASS   |
|           | Mid         | 19.86                    | 0.5             | 20.36              | 108.64                 |                        | PASS   |
|           | High        | 19.79                    | 0.5             | 20.29              | 106.91                 |                        | PASS   |
| 802.11g   | Low         | 19.32                    | 0.5             | 19.82              | 95.94                  |                        | PASS   |
|           | Mid         | 19.90                    | 0.5             | 20.40              | 109.65                 |                        | PASS   |
|           | <b>High</b> | <b>20.01</b>             | <b>0.5</b>      | <b>20.51</b>       | <b>112.46</b>          |                        | PASS   |
| 802.11n20 | Low         | 18.53                    | 0.5             | 19.03              | 79.98                  |                        | PASS   |
|           | Mid         | 18.47                    | 0.5             | 18.97              | 78.89                  |                        | PASS   |
|           | High        | 18.73                    | 0.5             | 19.23              | 83.75                  |                        | PASS   |
| 802.11n40 | Low         | 18.61                    | 0.5             | 19.11              | 81.47                  |                        | PASS   |
|           | Mid         | 19.04                    | 0.5             | 19.54              | 89.95                  |                        | PASS   |
|           | High        | 19.38                    | 0.5             | 19.88              | 97.27                  |                        | PASS   |

Remark: 1) Output Peak Power = Reading Peak Power + Cable loss

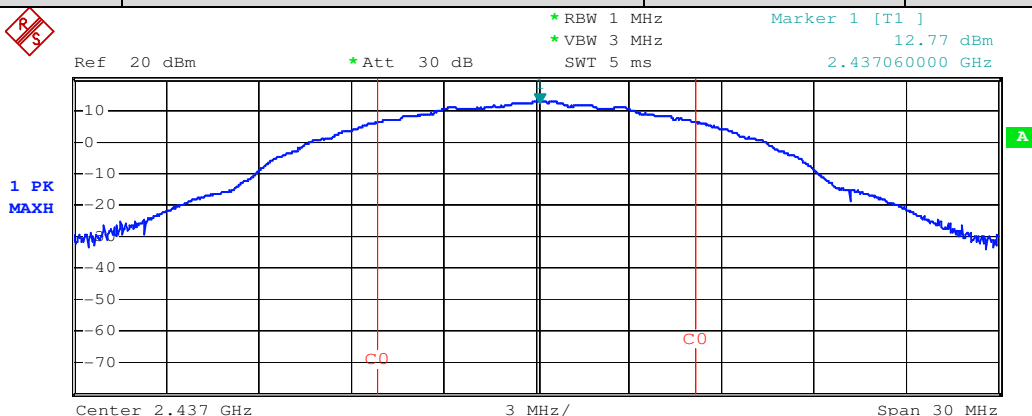
2) Cable loss=0.5dB

Test result plot as follows:

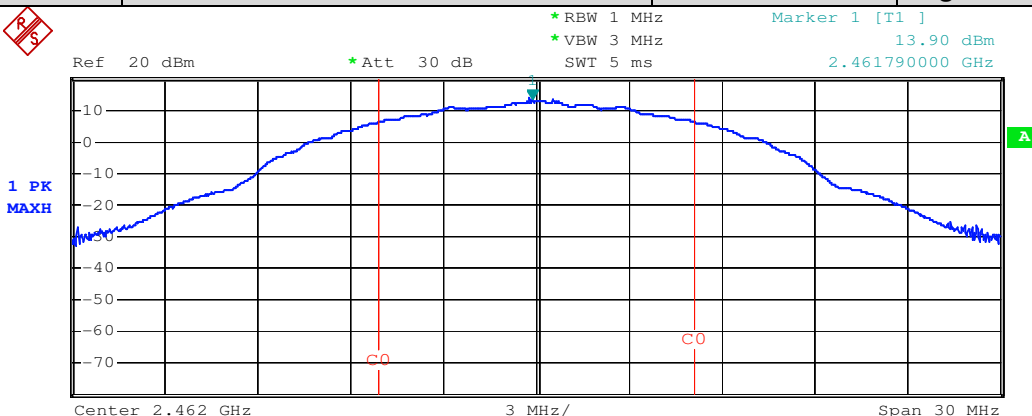
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Lowest |
|------------|---------|----------|--------|



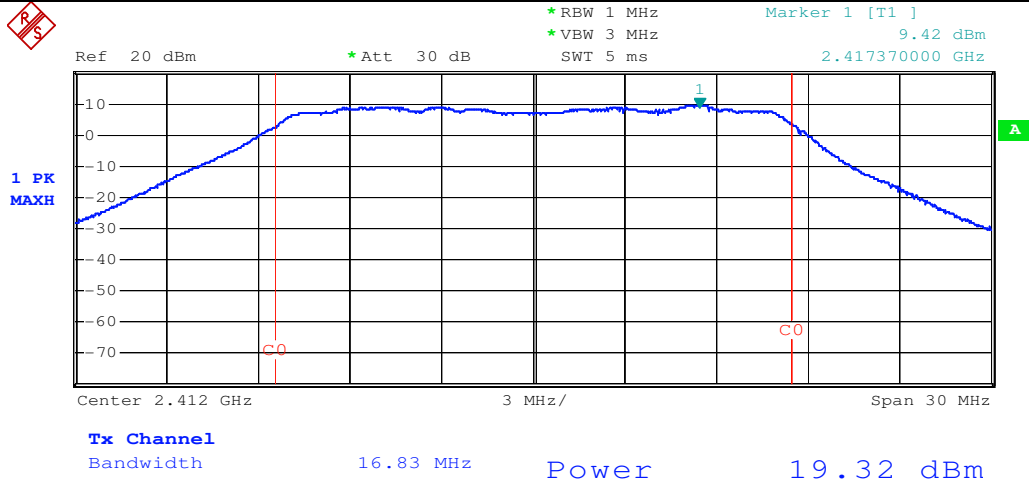
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Middle |
|------------|---------|----------|--------|



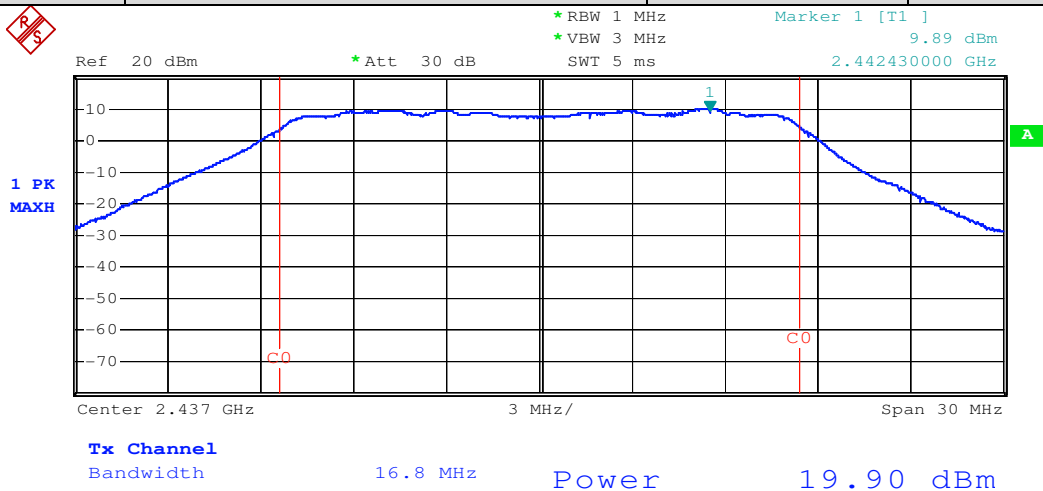
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11b | Channel: | Highest |
|------------|---------|----------|---------|



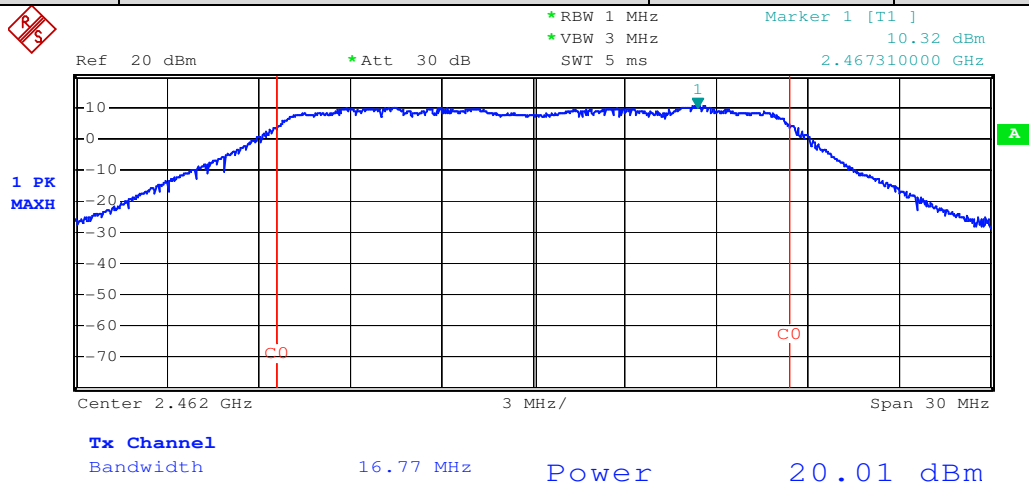
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Lowest |
|------------|---------|----------|--------|



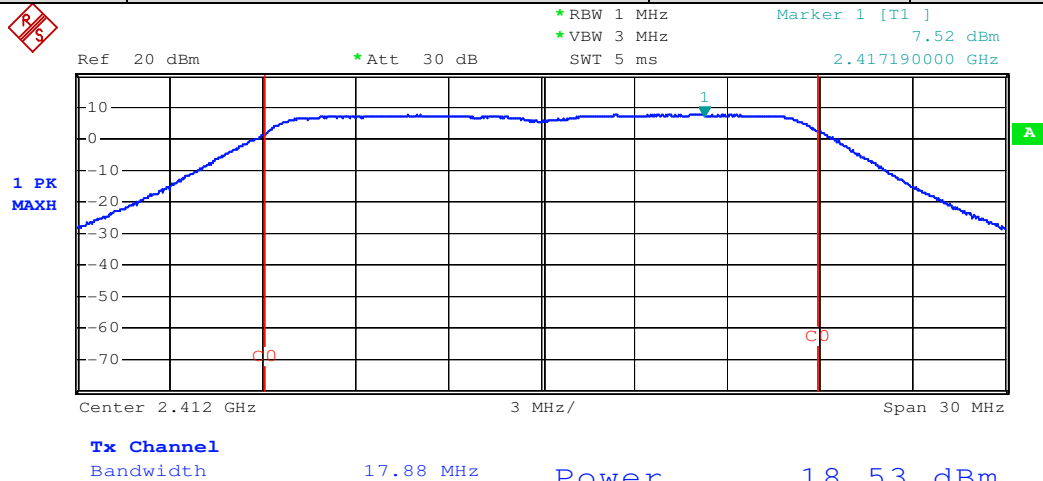
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Middle |
|------------|---------|----------|--------|



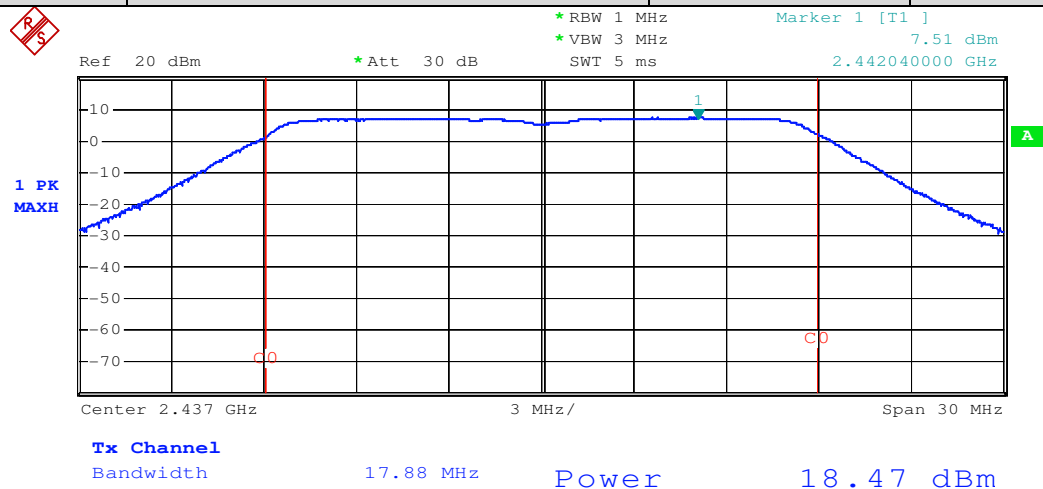
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11g | Channel: | Highest |
|------------|---------|----------|---------|



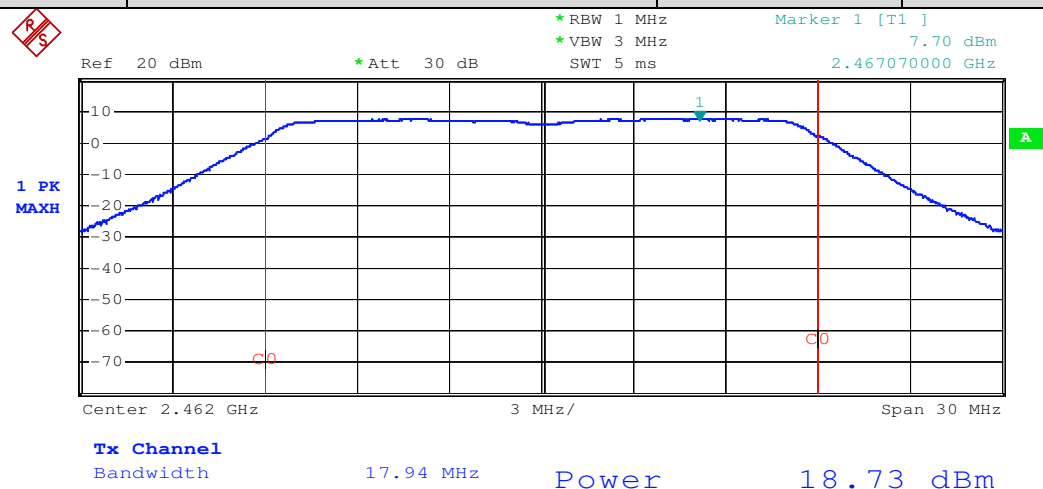
|                   |           |                 |        |
|-------------------|-----------|-----------------|--------|
| <b>Test mode:</b> | 802.11n20 | <b>Channel:</b> | Lowest |
|-------------------|-----------|-----------------|--------|



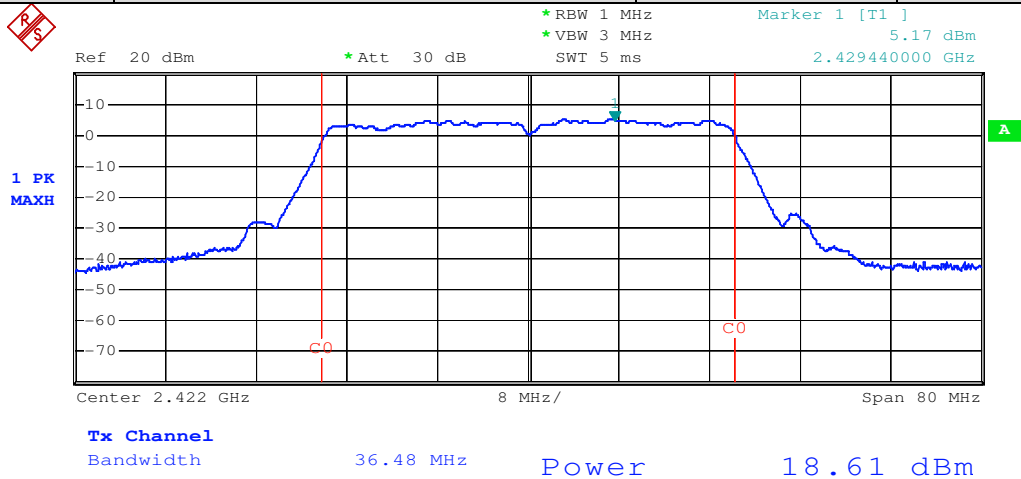
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Middle |
|------------|-----------|----------|--------|



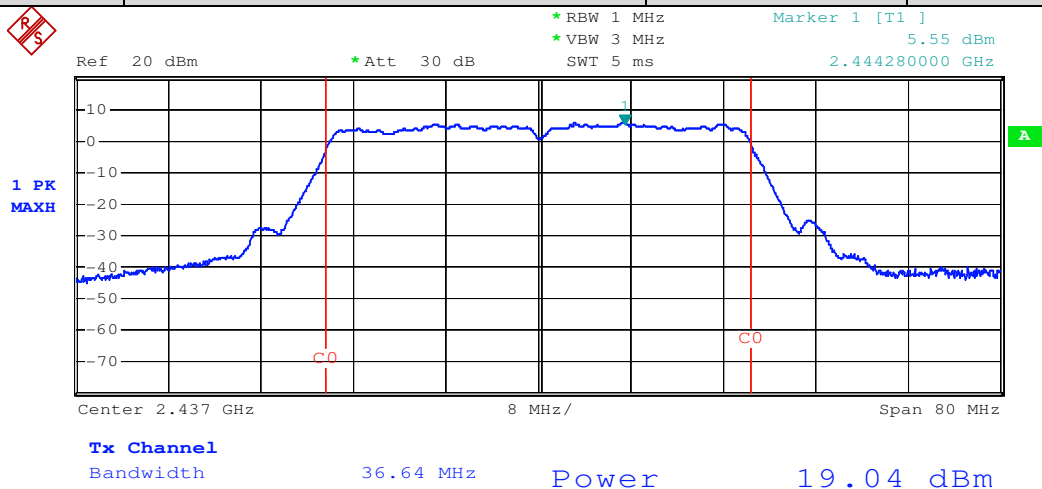
|                   |           |                 |         |
|-------------------|-----------|-----------------|---------|
| <b>Test mode:</b> | 802.11n20 | <b>Channel:</b> | Highest |
|-------------------|-----------|-----------------|---------|



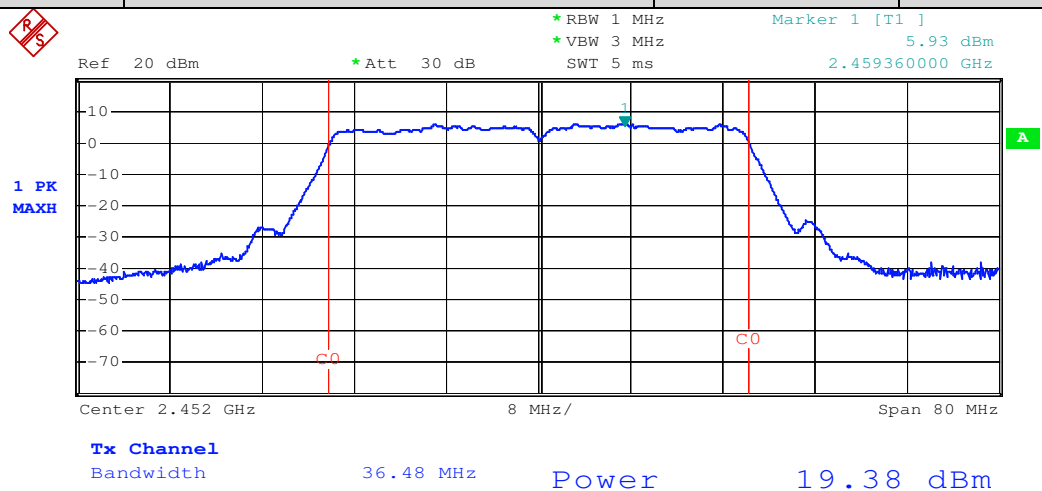
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Lowest |
|------------|-----------|----------|--------|



|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Middle |
|------------|-----------|----------|--------|

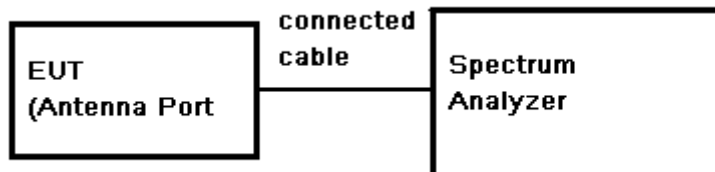


|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n40 | Channel: | Highest |
|------------|-----------|----------|---------|



## 7.6 Peak Power Spectral Density

### Test Configuration:



### Test Procedure:

- 1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: Center Frequency= Channel Frequency, RBW = 3 kHz VBW = 10 kHz. Span= fully encompass the bandwidth, Sweep = auto; Detector Function = Peak; Trace mode=max hold, MKR=Center Frequency, Trace=Clear Write.
- 3) Set the marker on the peak of the signal and then adjust the center frequency of the spectrum analyzer to the marker frequency.
- 4) Adjust the Span = 300 kHz, Sweep Time=100s, Trace=Max Hold, MKR=Peak Search.
- 5) Record the marker level for the particular mode.
- 6) Repeat these steps for other channel and device modes.

### Test Limit:

8dBm/3kHz

### Test Result:

Pass

### Test Data:

| Test Mode | Test Frequency (MHz) | Reading PSD (dBm) | Cable Loss (dB) | PSD (dBm) | Limit (dBm/3KHz) | Result |
|-----------|----------------------|-------------------|-----------------|-----------|------------------|--------|
| 802.11b   | 2412                 | -8.07             | 0.5             | -7.57     | 8                | Pass   |
|           | 2437                 | -7.82             | 0.5             | -7.32     |                  | Pass   |
|           | 2462                 | -7.50             | 0.5             | -7.00     |                  | Pass   |
| 802.11g   | 2412                 | -16.17            | 0.5             | -15.67    |                  | Pass   |
|           | 2437                 | -15.44            | 0.5             | -14.94    |                  | Pass   |
|           | 2462                 | -15.11            | 0.5             | -14.61    |                  | Pass   |
| 802.11n20 | 2412                 | -17.26            | 0.5             | -16.76    |                  | Pass   |
|           | 2437                 | -16.58            | 0.5             | -16.08    |                  | Pass   |
|           | 2462                 | -16.58            | 0.5             | -16.08    |                  | Pass   |
| 802.11n40 | 2412                 | -18.53            | 0.5             | -18.03    |                  | Pass   |
|           | 2437                 | -18.78            | 0.5             | -18.28    |                  | Pass   |
|           | 2462                 | -17.94            | 0.5             | -17.44    |                  | Pass   |

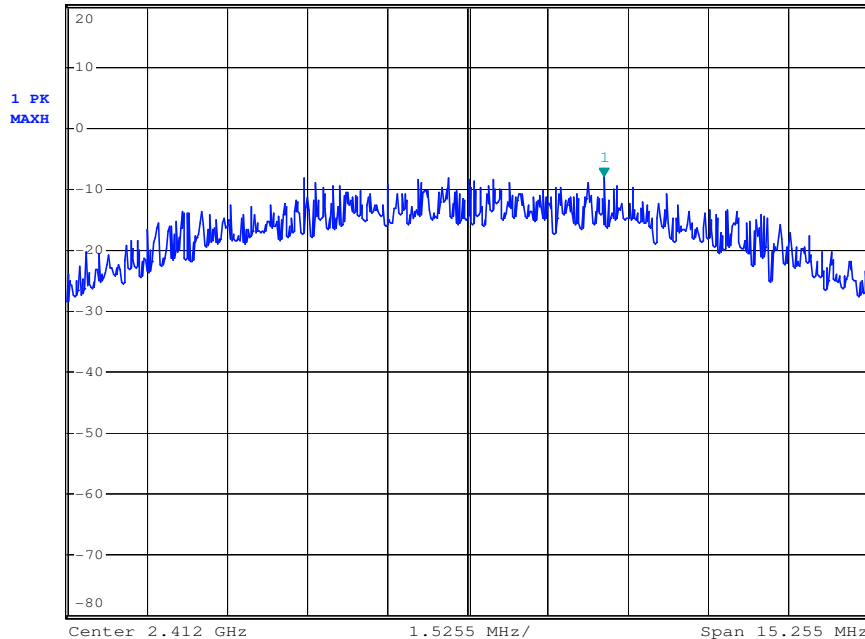
Remark: RF Power Density = Reading + Cable loss  
Cable loss = 0.5dB

Test result plot as follows:

|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Lowest |
|------------|---------|----------|--------|



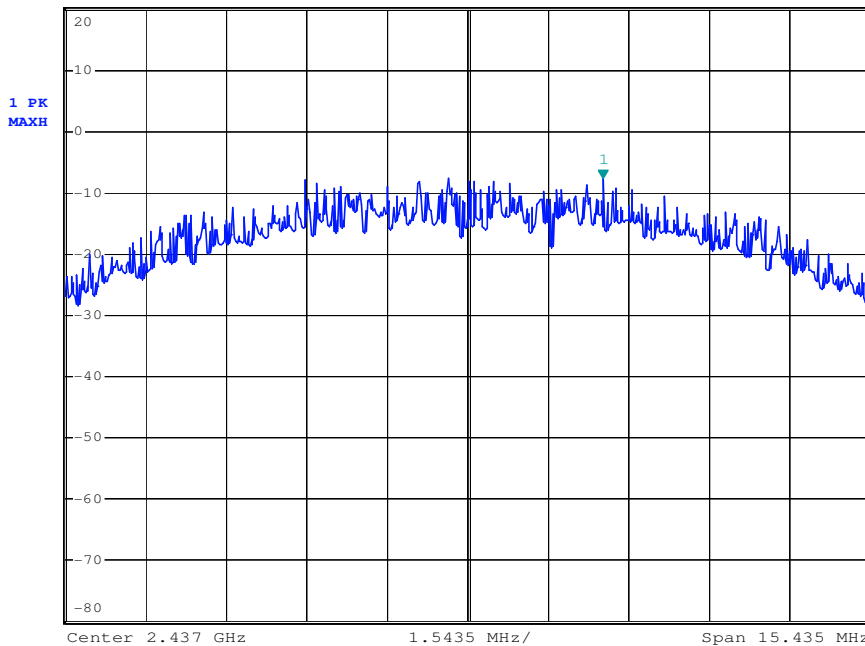
\*RBW 3 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -8.07 dBm  
 Ref 20 dBm      \*Att 30 dB      SWT 1.7 s      2.414593350 GHz



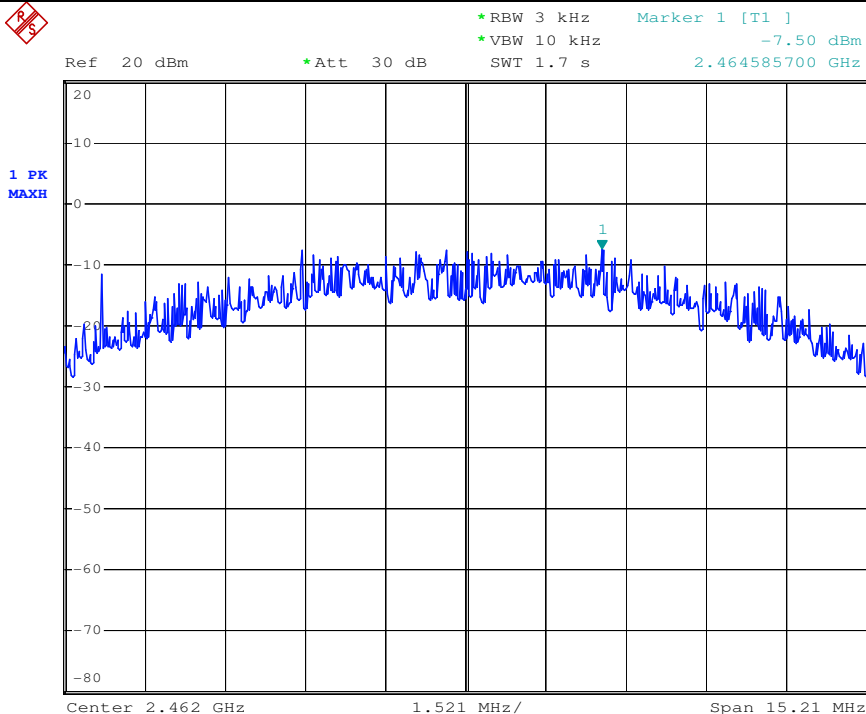
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Middle |
|------------|---------|----------|--------|



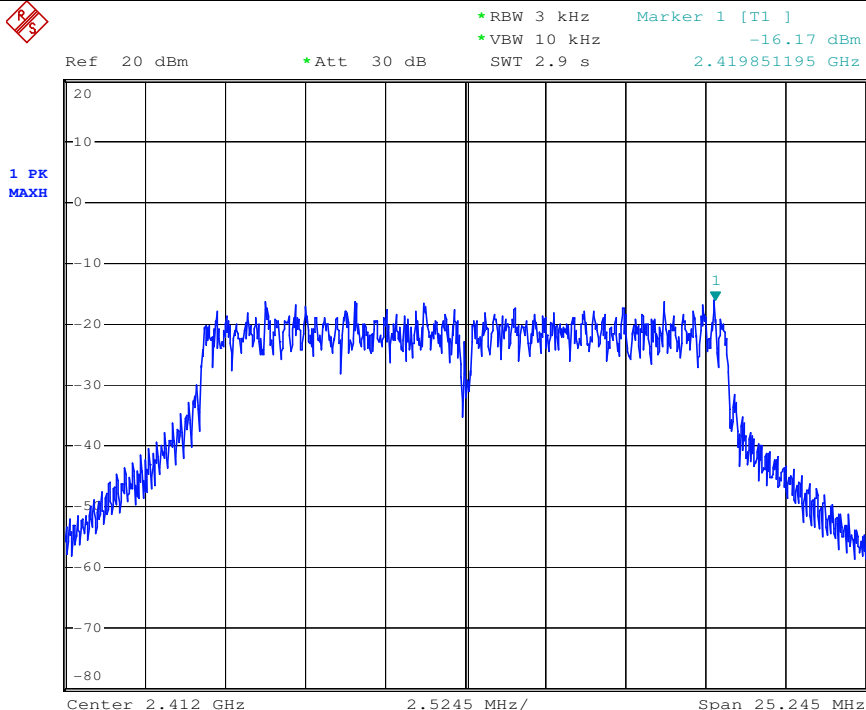
\*RBW 3 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -7.82 dBm  
 Ref 20 dBm      \*Att 30 dB      SWT 1.75 s      2.439593080 GHz



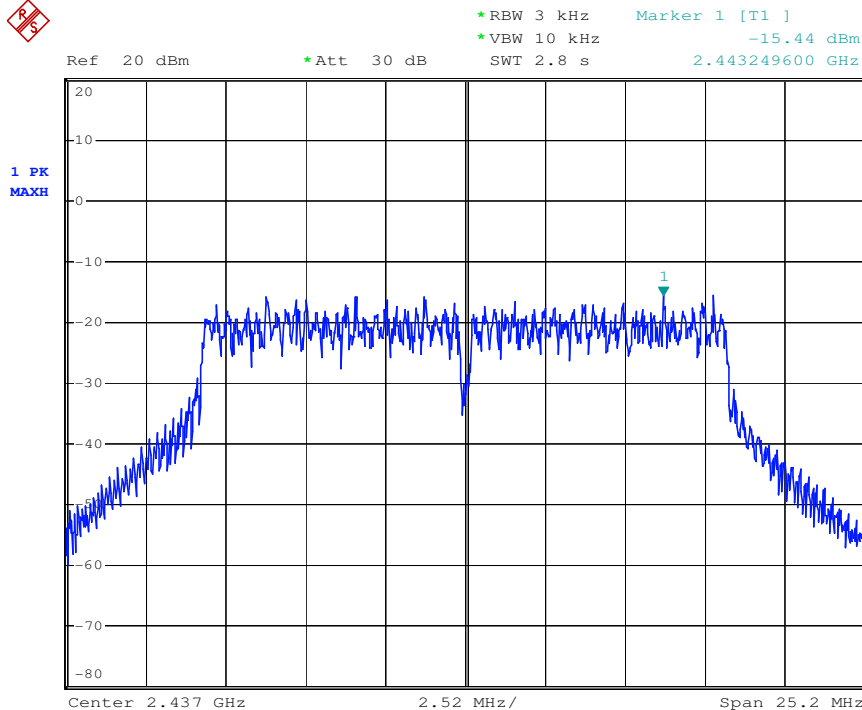
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11b | Channel: | Highest |
|------------|---------|----------|---------|



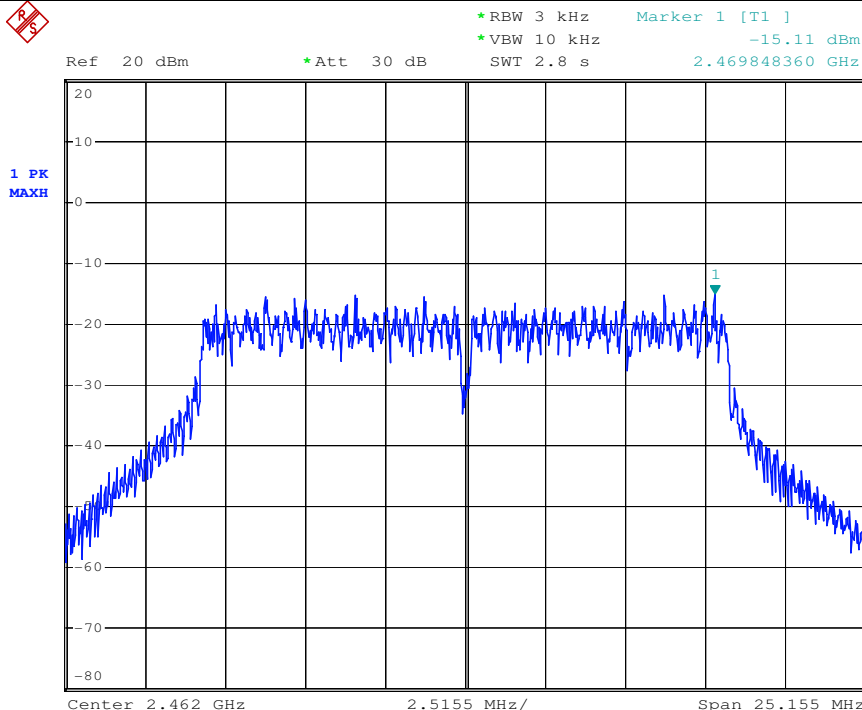
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Lowest |
|------------|---------|----------|--------|



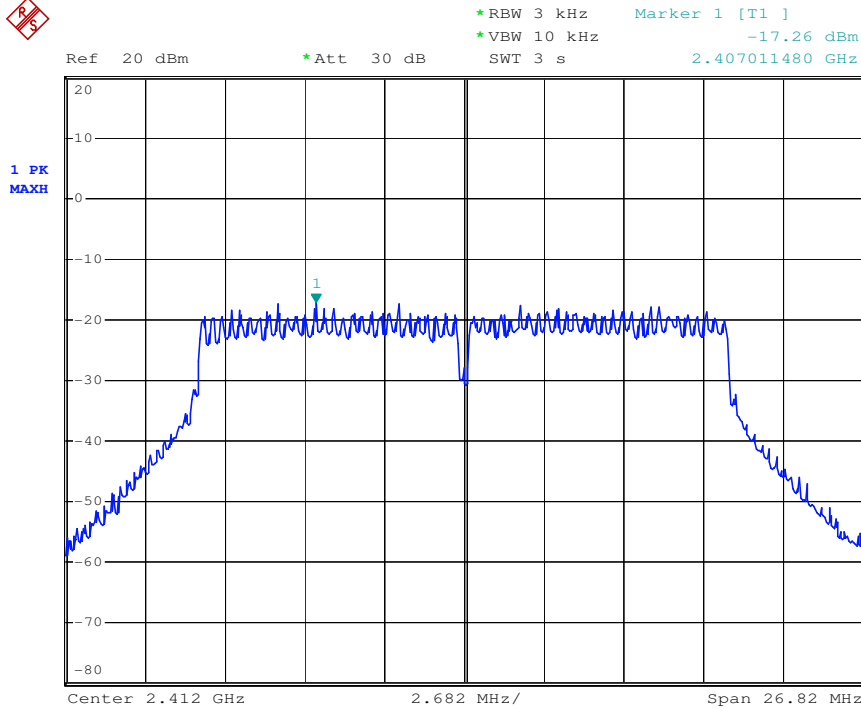
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Middle |
|------------|---------|----------|--------|



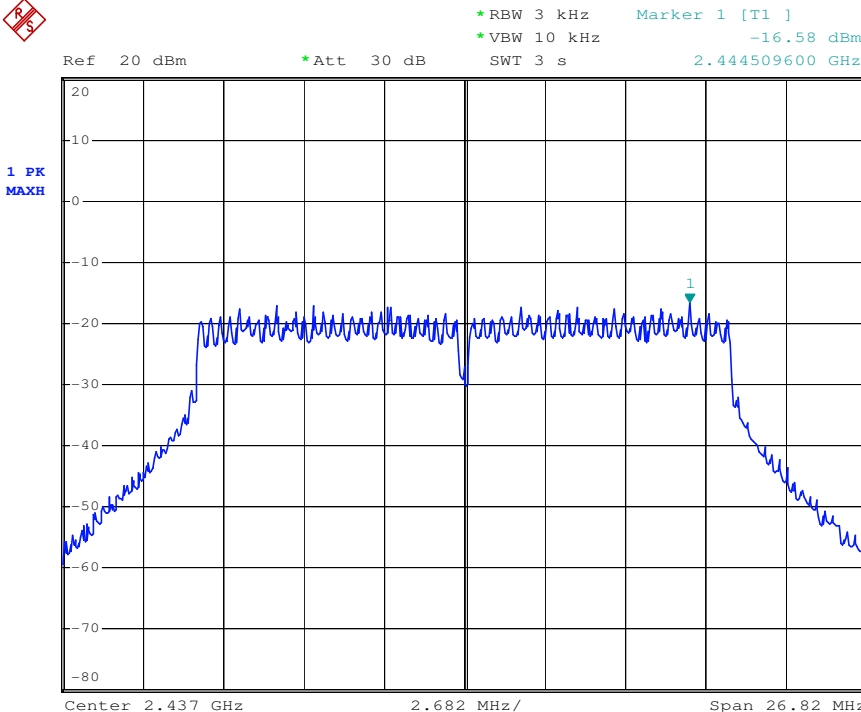
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11g | Channel: | Highest |
|------------|---------|----------|---------|



|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Lowest |
|------------|-----------|----------|--------|

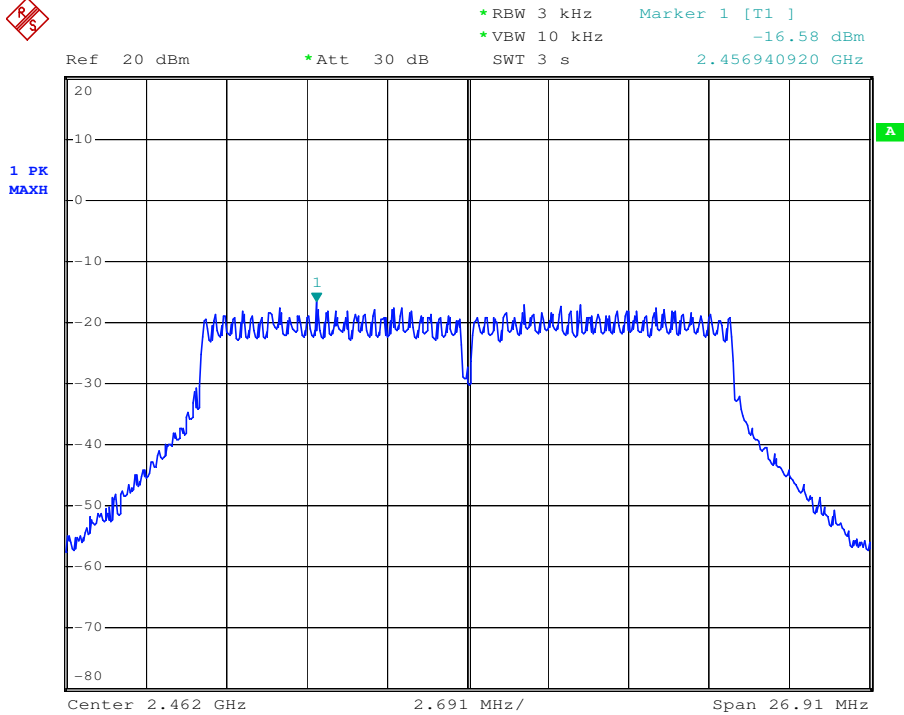


|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Middle |
|------------|-----------|----------|--------|

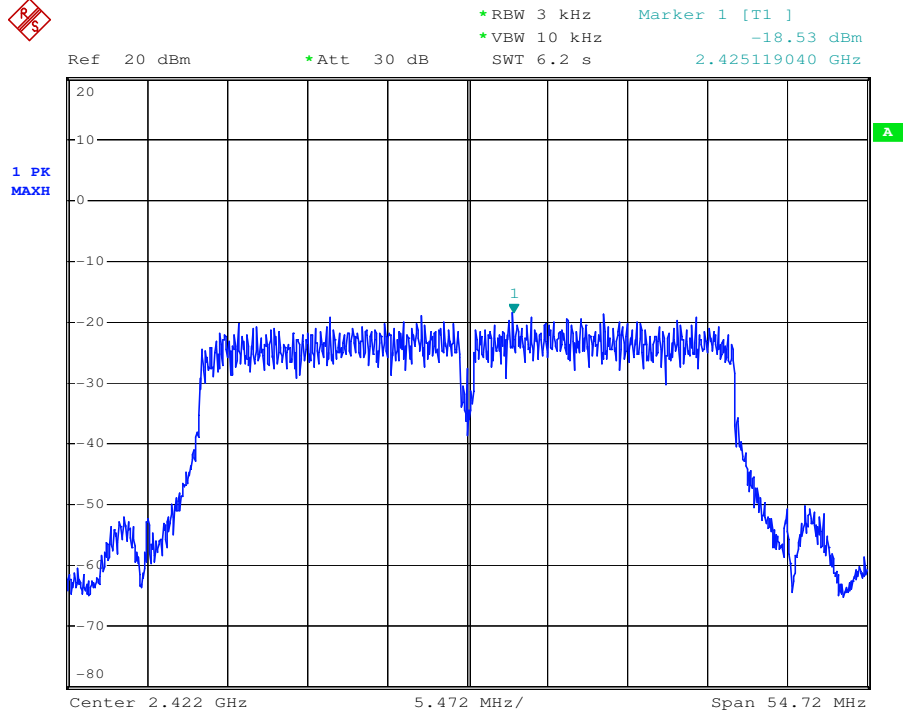




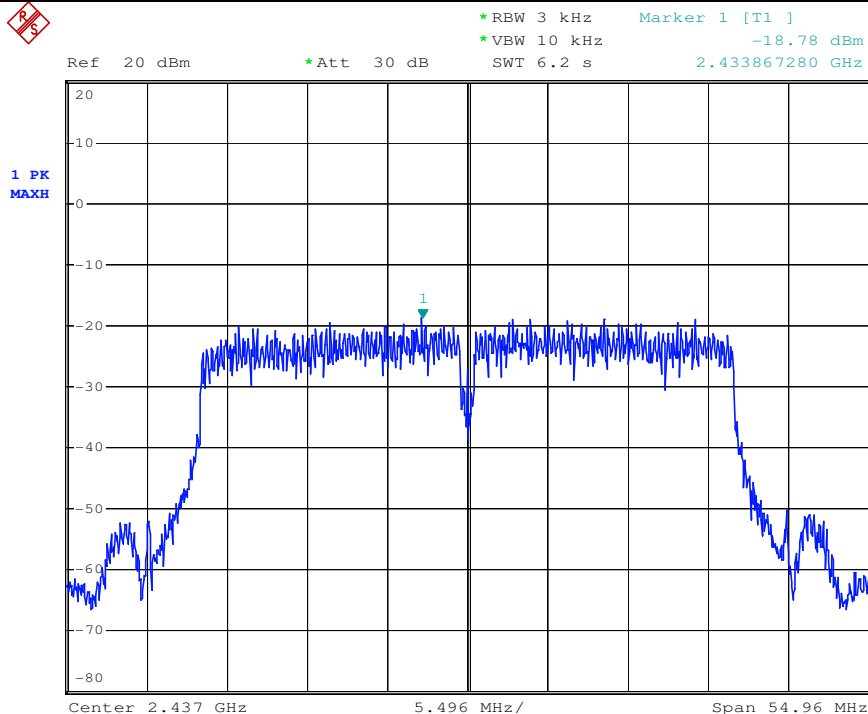
|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n20 | Channel: | Highest |
|------------|-----------|----------|---------|



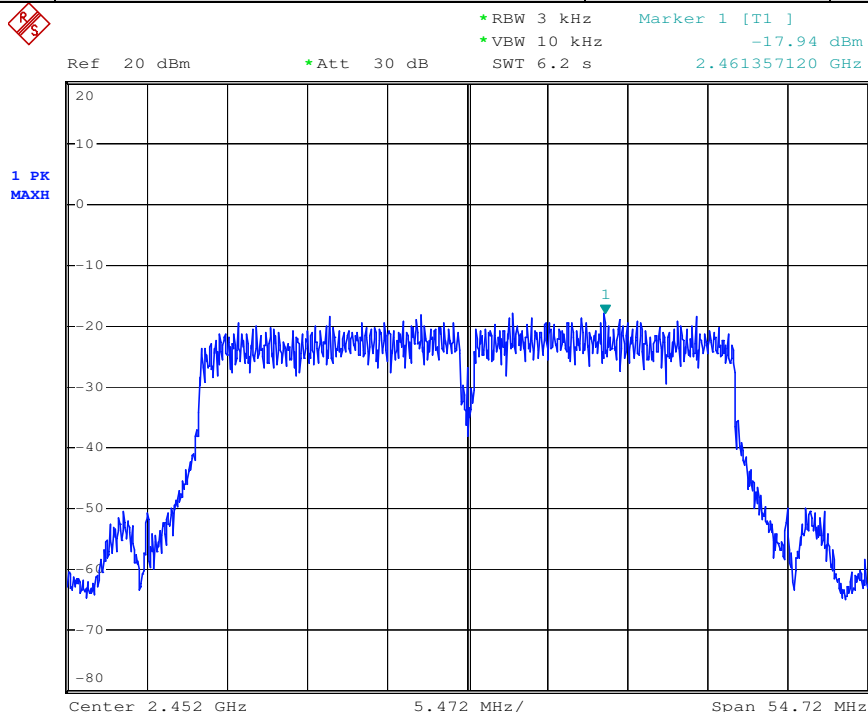
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Lowest |
|------------|-----------|----------|--------|



|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Middle |
|------------|-----------|----------|--------|

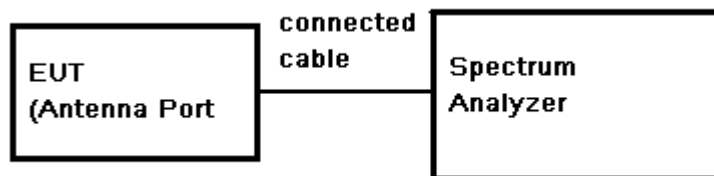


|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n40 | Channel: | Highest |
|------------|-----------|----------|---------|



## 7.7 Conducted Spurious Emissions and Band-edge

**Test Configuration:**



**Test Procedure:**

- 1). Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2). Set the spectrum analyzer: RBW = 100KHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).

**Limit:**

- (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the Highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

**Test Result:**

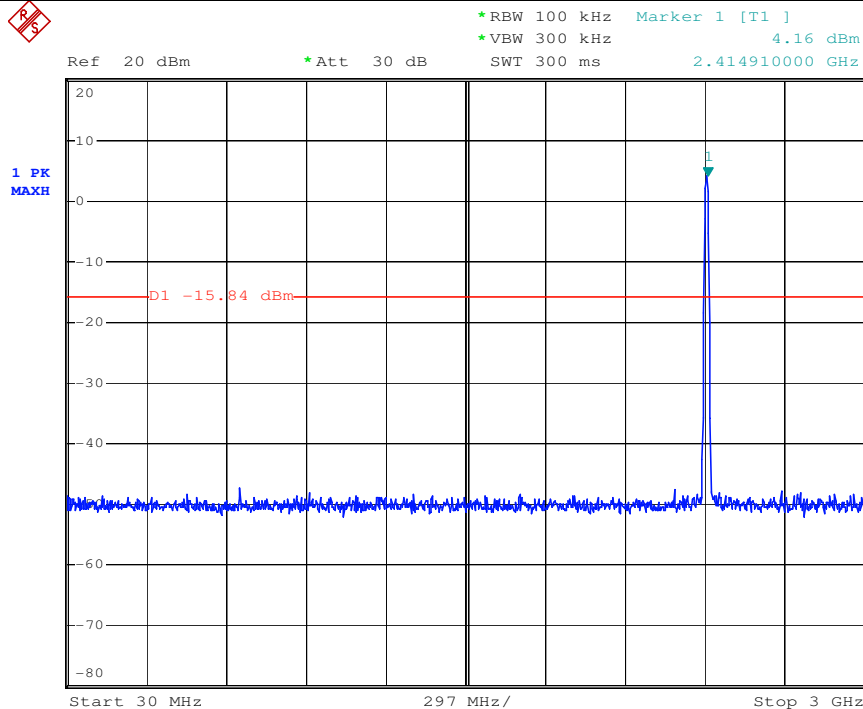
Pass

### 7.7.1 Conducted spurious emission

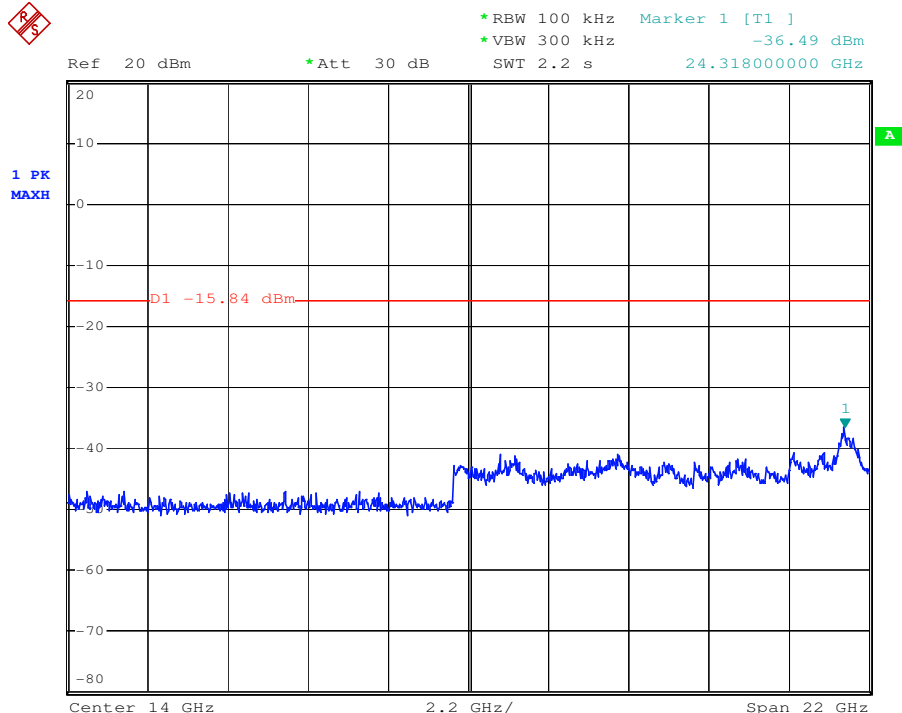
Test plot as follows:

|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11b | Channel: | Lowest |
|------------|---------|----------|--------|

30MHz-3GHz:



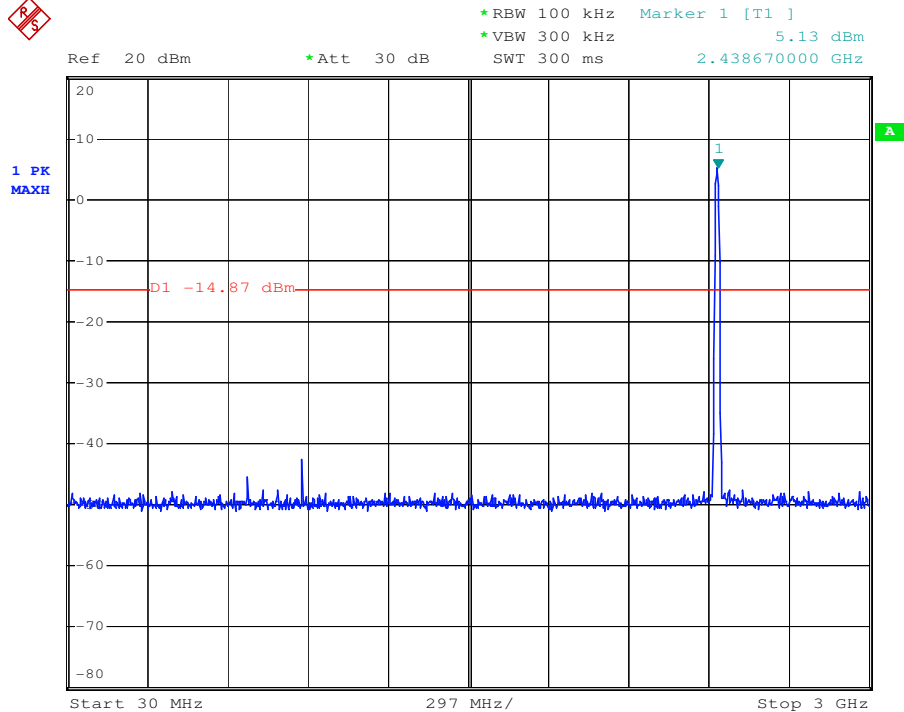
3GHz-25GHz:



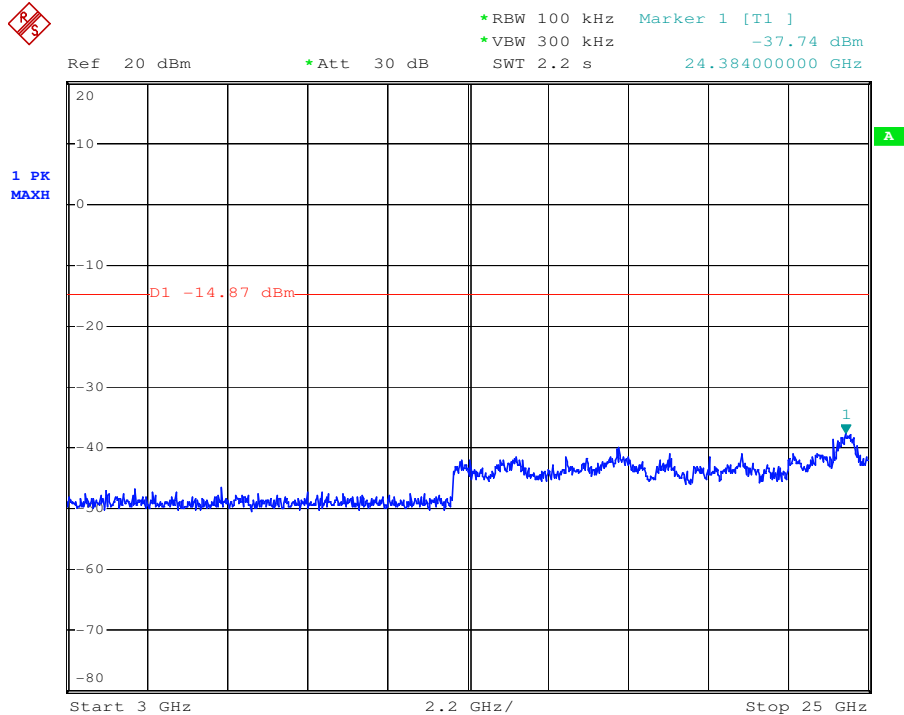
Test mode: 802.11b

Channel: Middle

30MHz-3GHz:

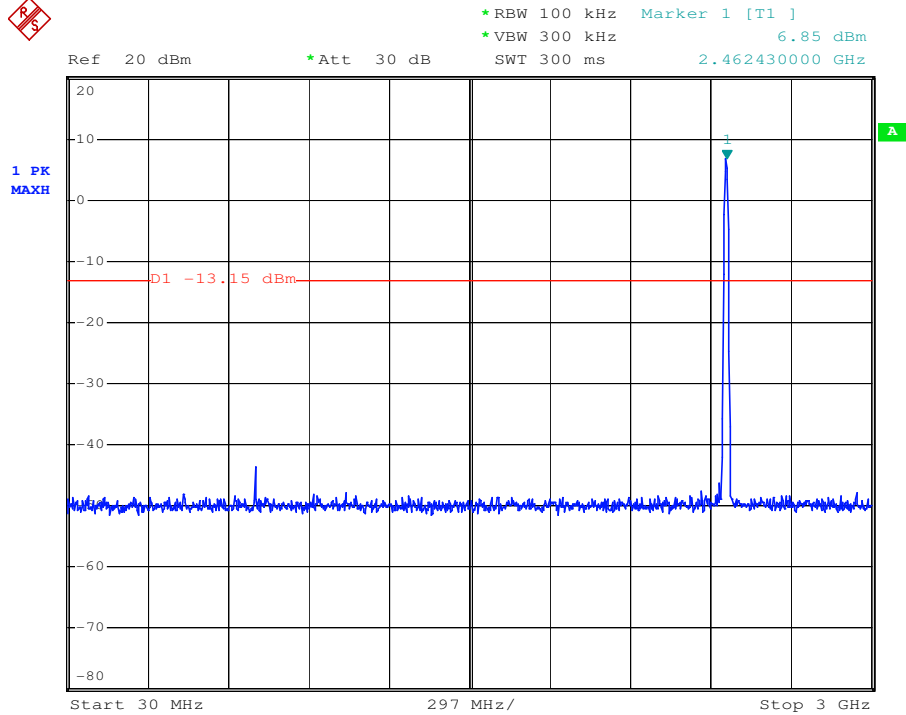


3GHz-25GHz:

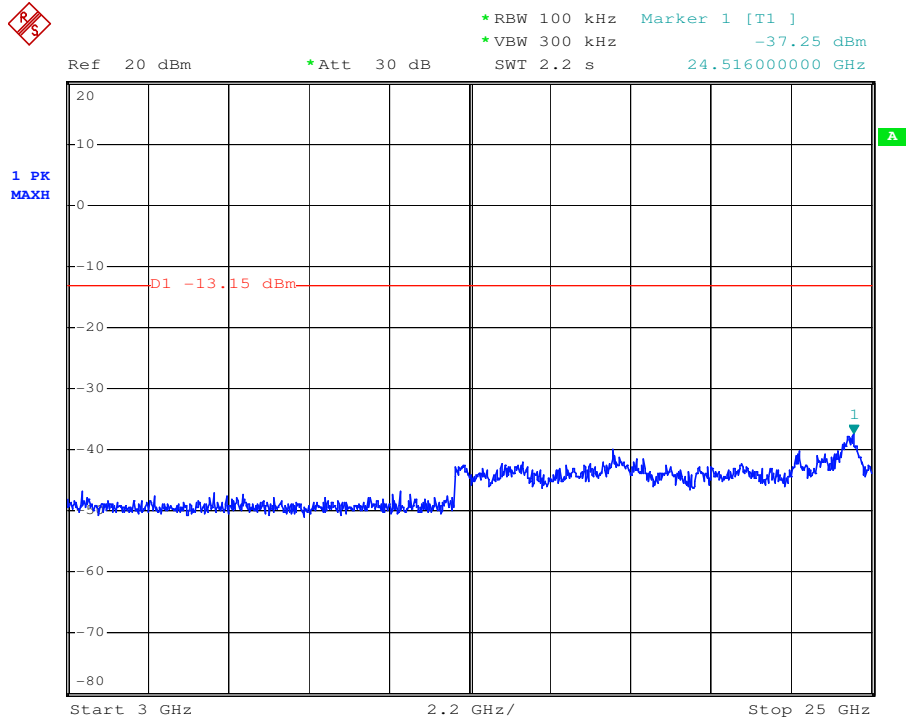


|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11b | Channel: | Highest |
|------------|---------|----------|---------|

30MHz-3GHz:



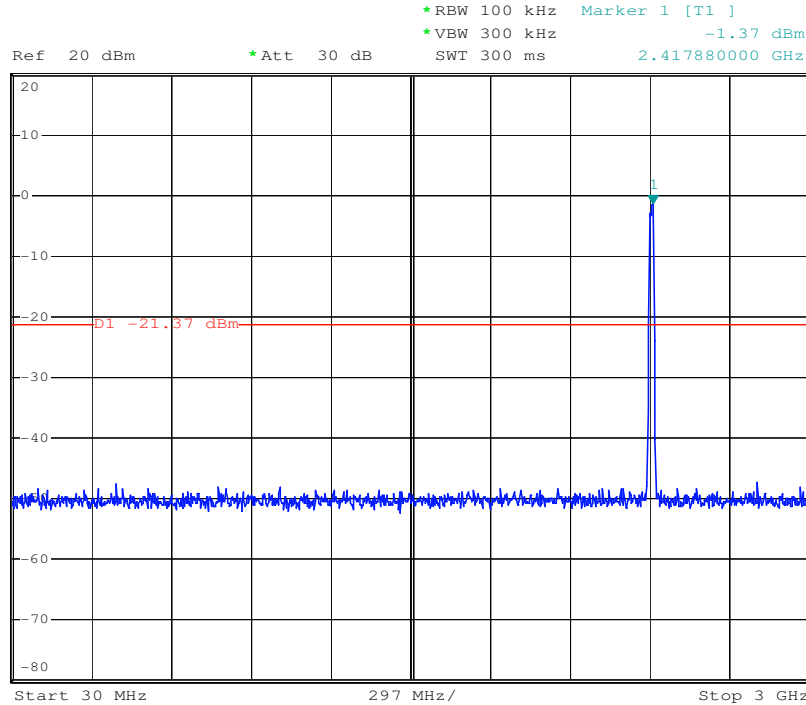
3GHz-25GHz:



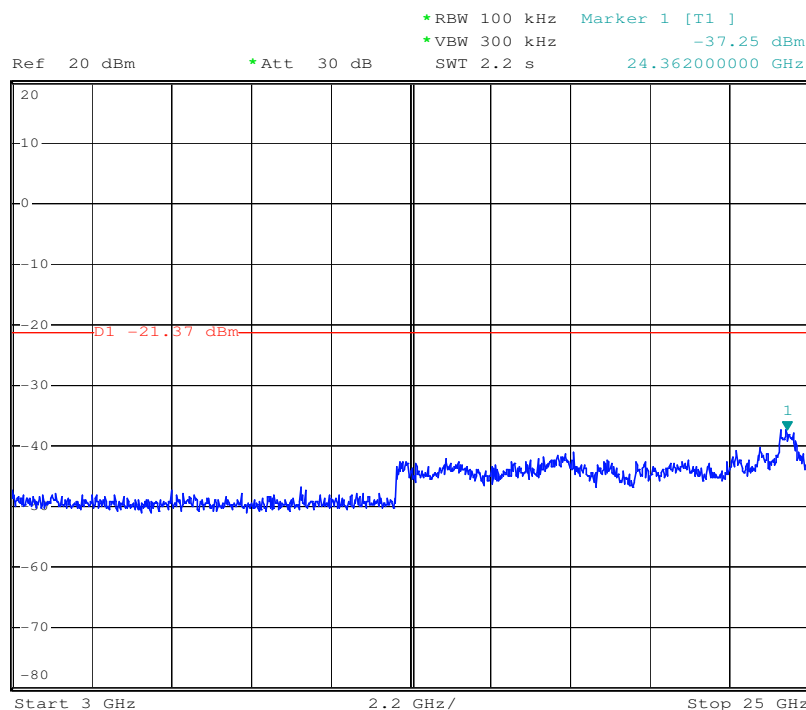
Test mode: 802.11g

Channel: Lowest

30MHz-3GHz:



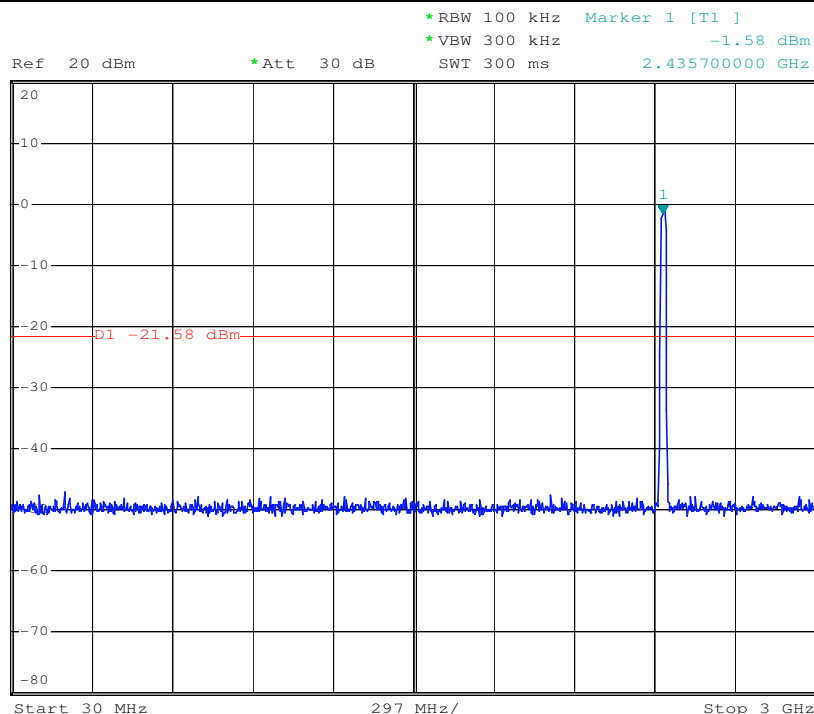
3GHz-25GHz:



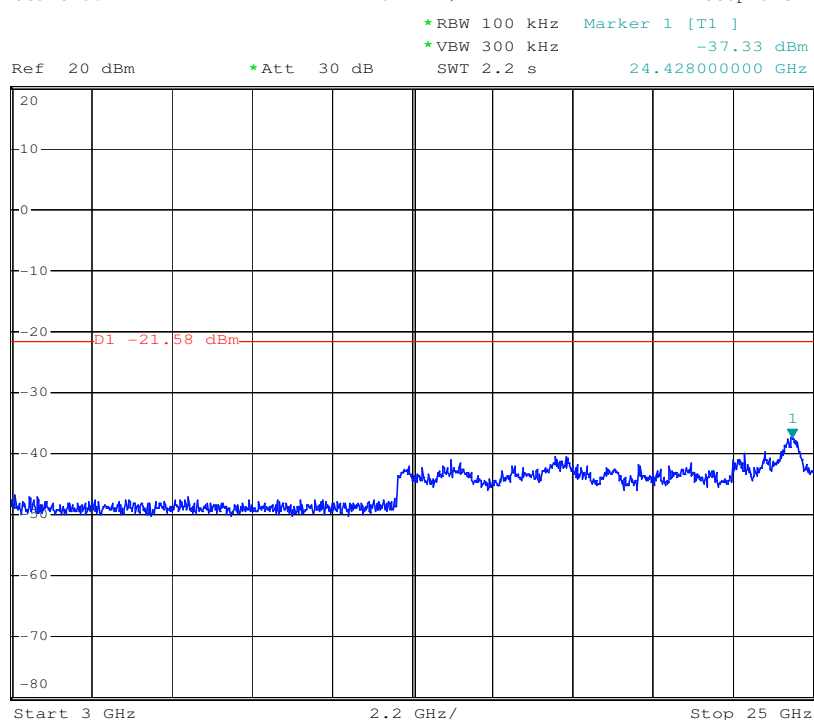
Test mode: 802.11g

Channel: Middle

30MHz-3GHz:



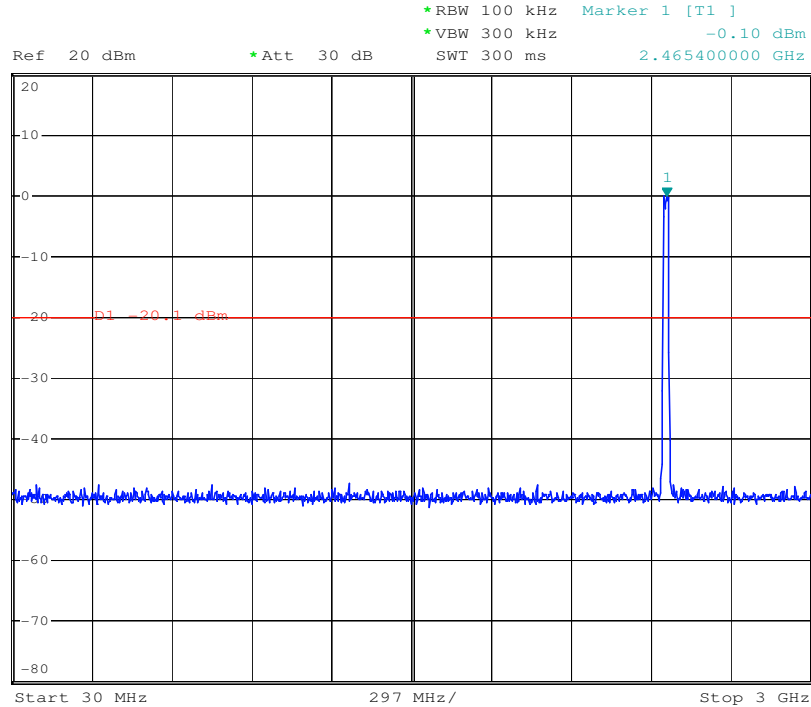
3GHz-25GHz:



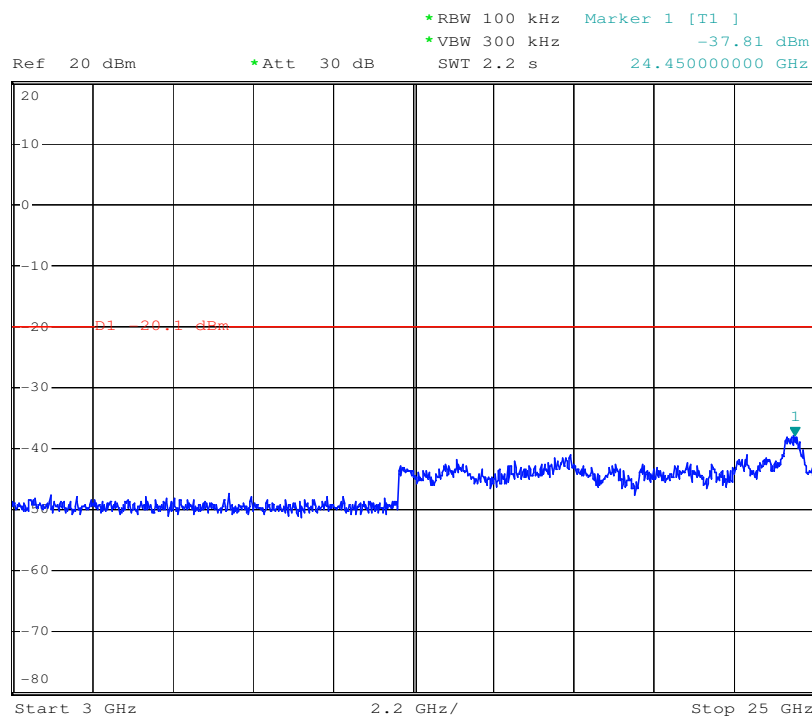
Test mode: 802.11g

Channel: Highest

30MHz-3GHz:



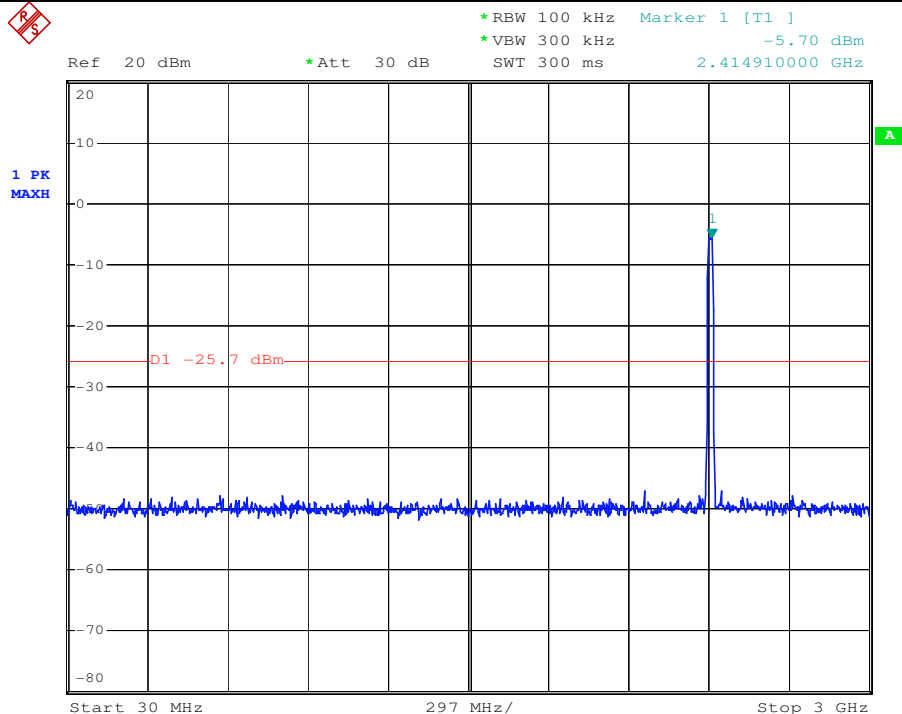
3GHz-25GHz:



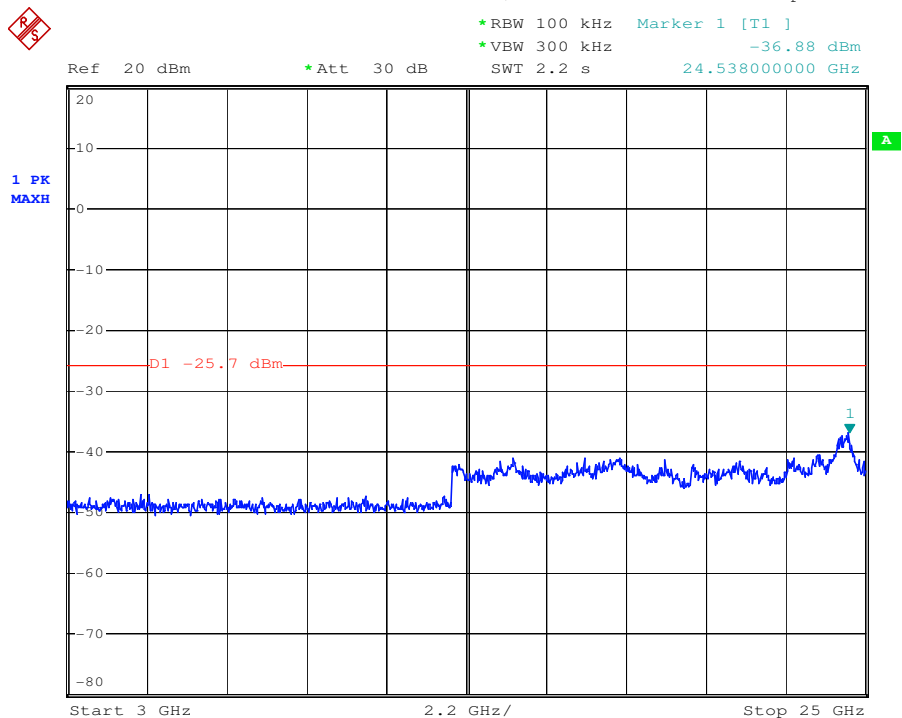
Test mode: 802.11n20

Channel: Lowest

30MHz-3GHz:



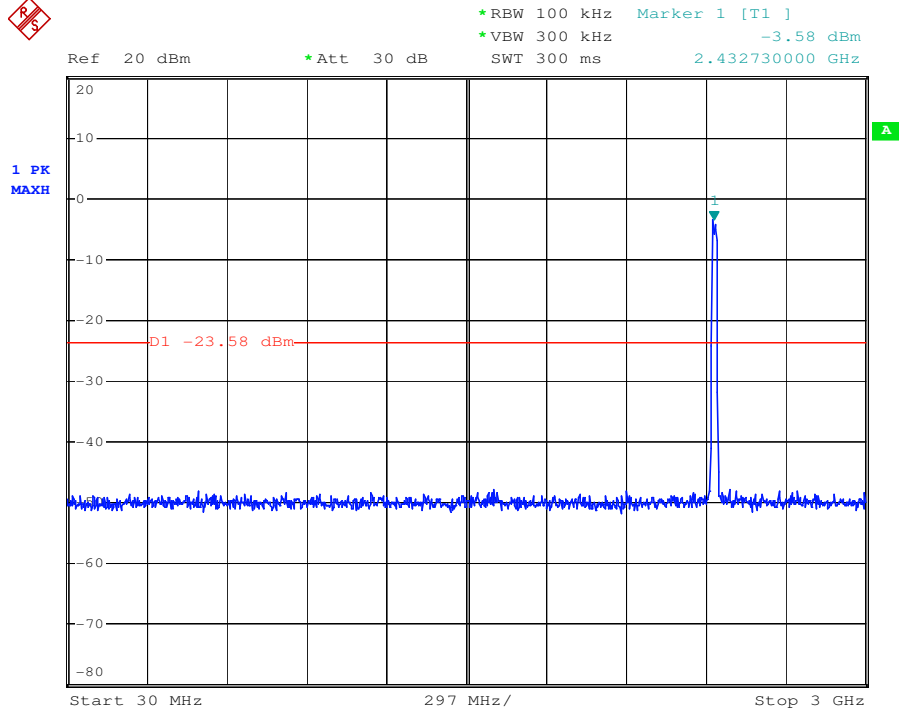
3GHz-25GHz:



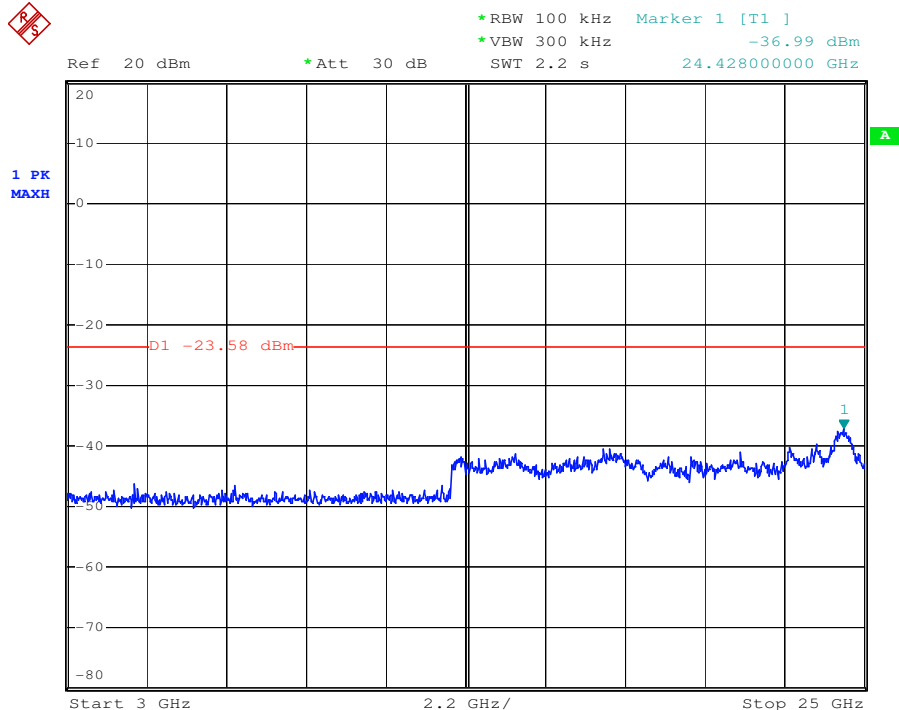
Test mode: 802.11n20

Channel: Middle

30MHz-3GHz:

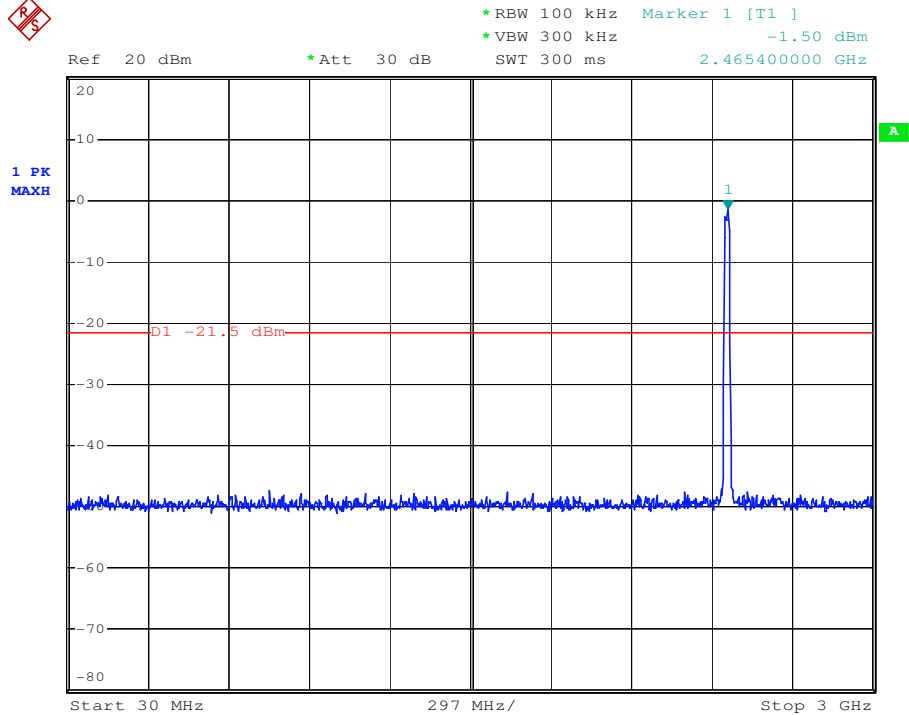


3GHz-25GHz:

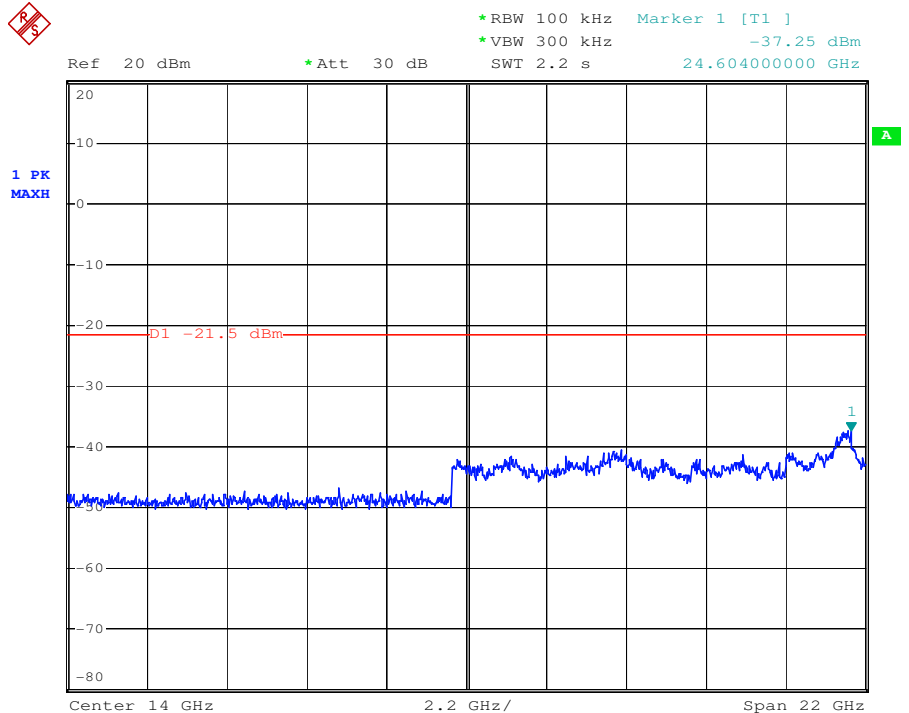


|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n20 | Channel: | Highest |
|------------|-----------|----------|---------|

30MHz-3GHz:



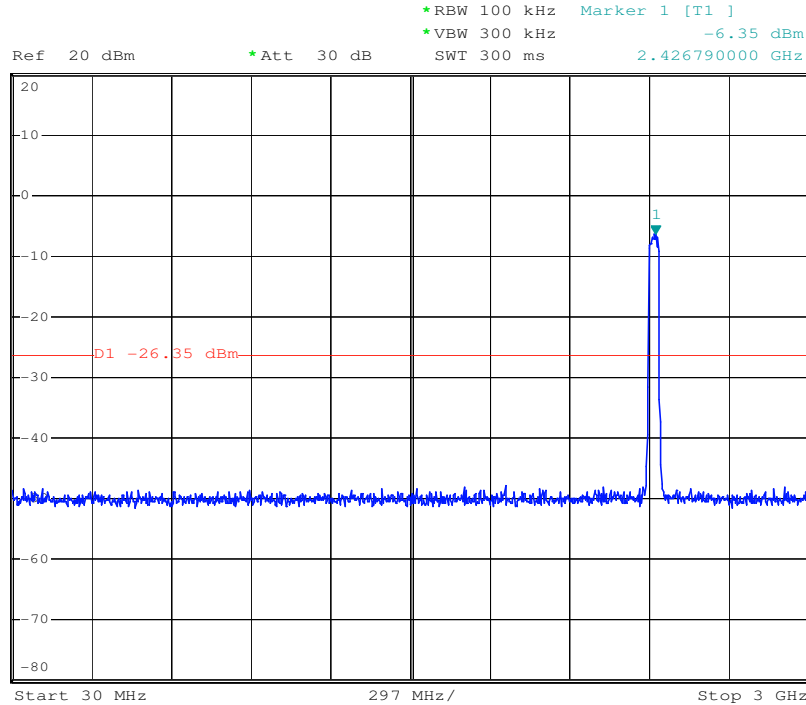
3GHz-25GHz:



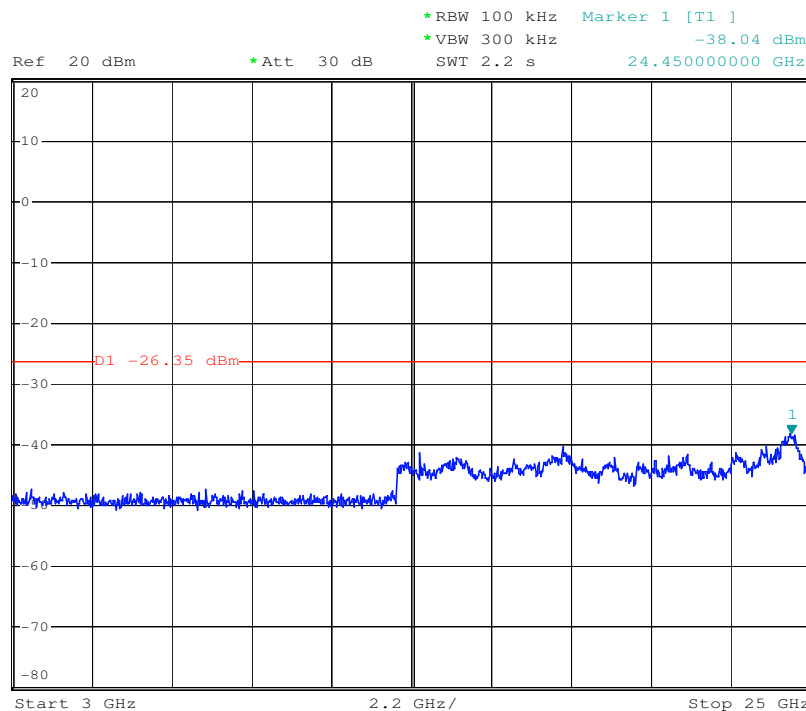
Test mode: 802.11n40

Channel: Lowest

30MHz-3GHz:



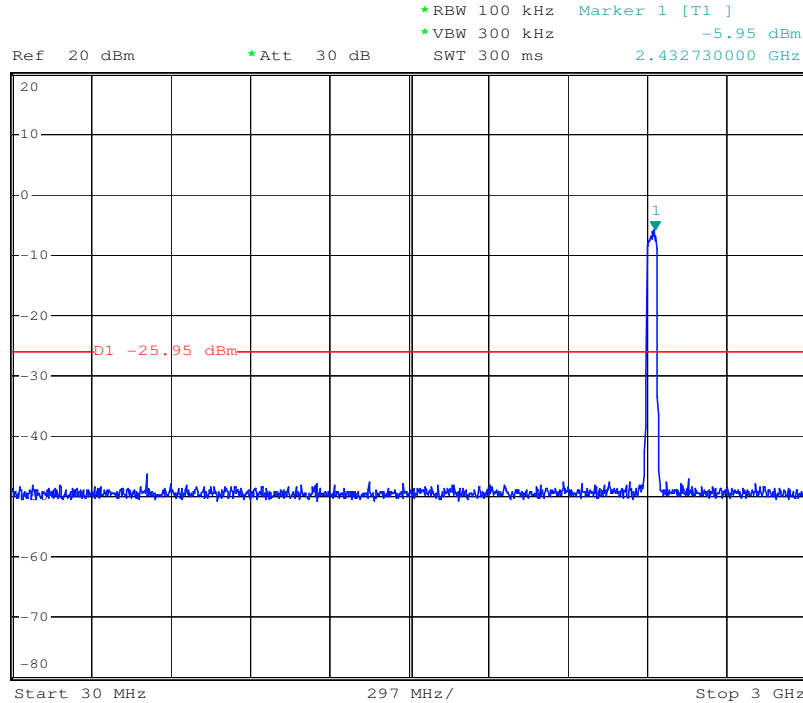
3GHz-25GHz:



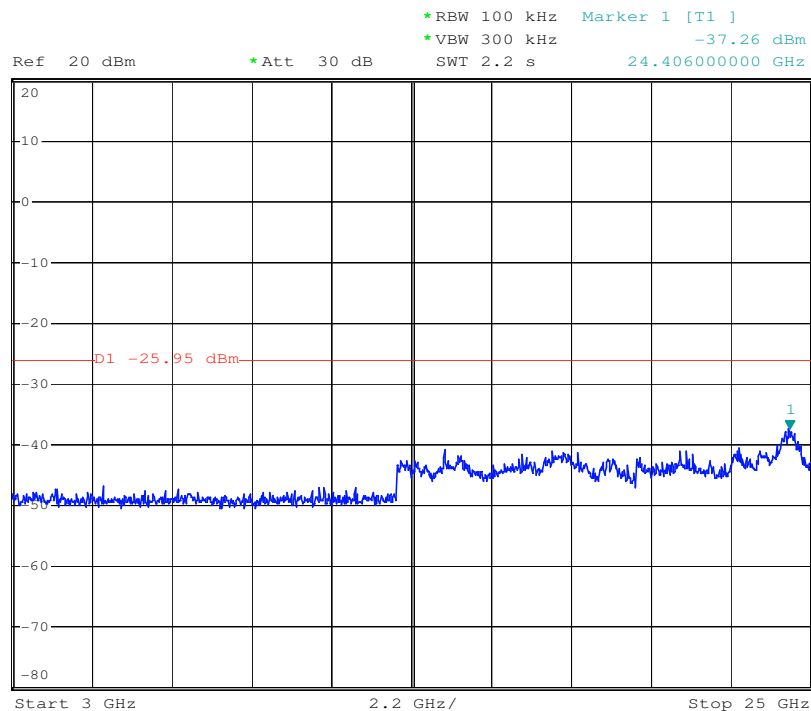
Test mode: 802.11n40

Channel: Middle

30MHz-3GHz:



3GHz-25GHz:



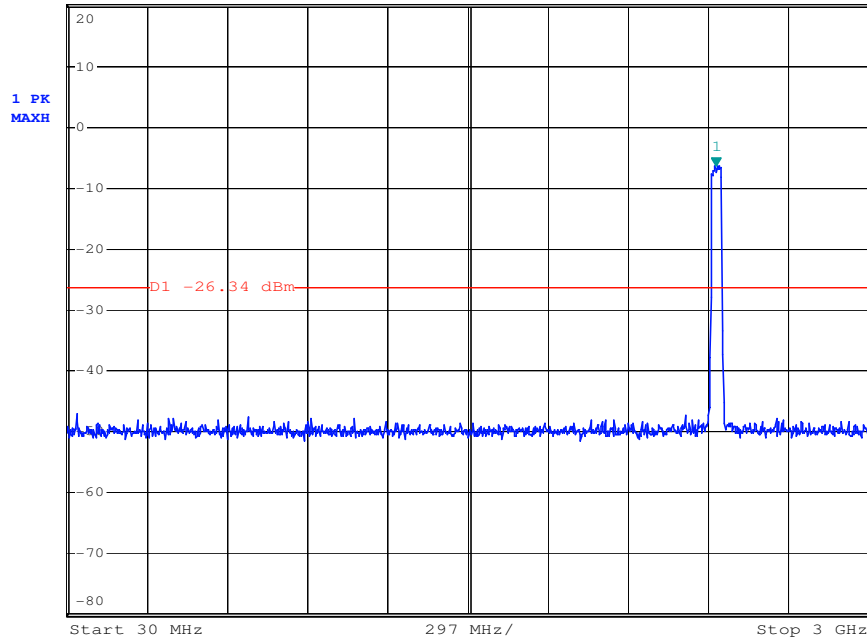
Test mode: 802.11n40

Channel: Highest

30MHz-3GHz:



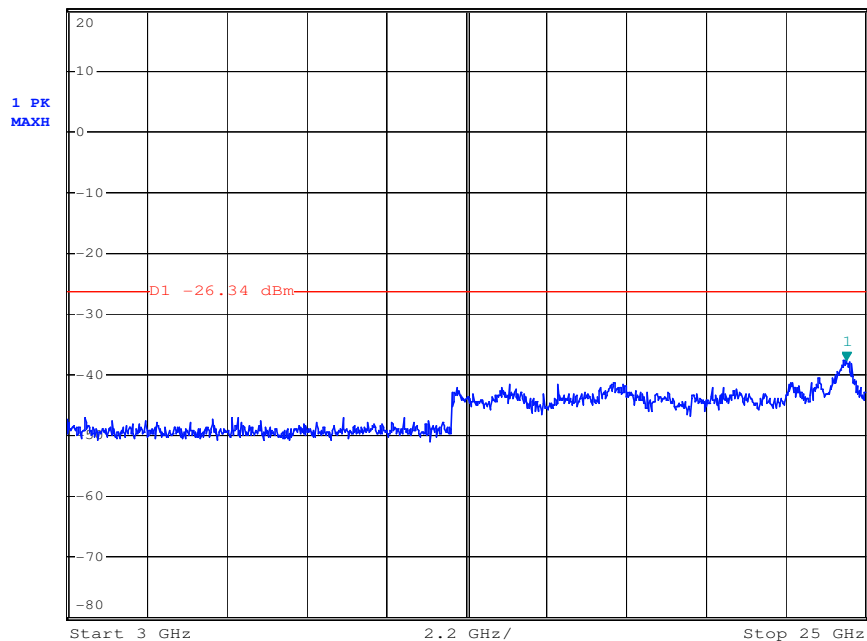
Ref 20 dBm \* Att 30 dB \* RBW 100 kHz Marker 1 [T1] -6.34 dBm  
\* VBW 300 kHz 2.432730000 GHz  
SWT 300 ms



3GHz-25GHz:



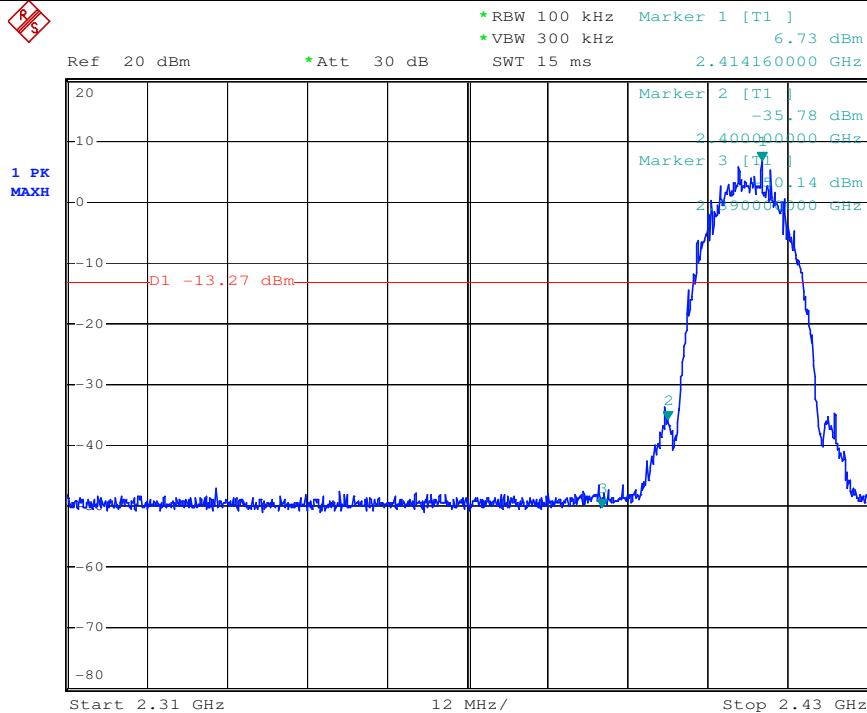
Ref 20 dBm \* Att 30 dB \* RBW 100 kHz Marker 1 [T1] -37.67 dBm  
\* VBW 300 kHz 24.472000000 GHz  
SWT 2.2 s



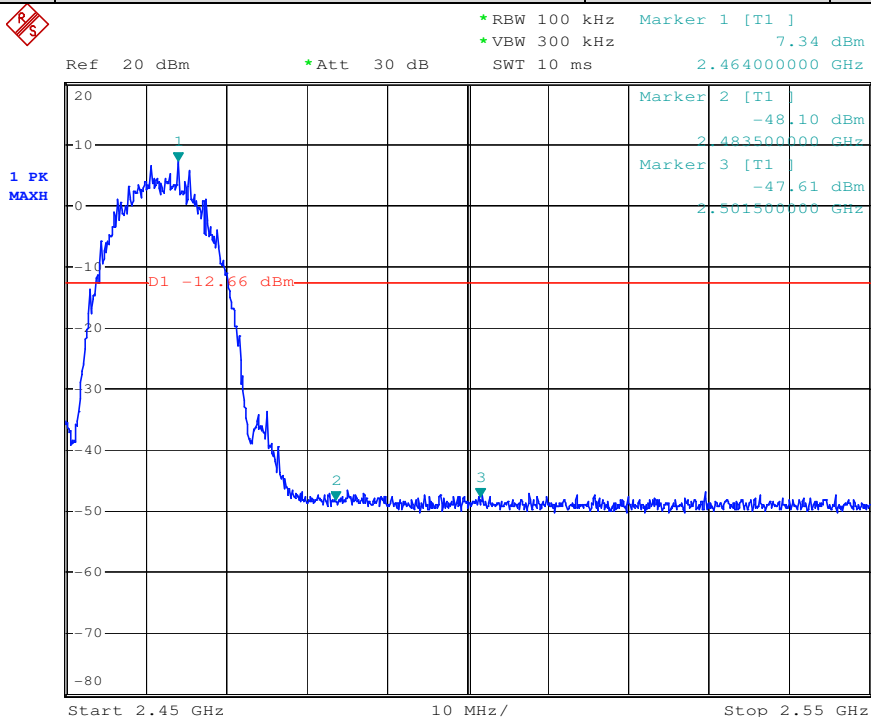
### 7.7.2 Conducted Band-edge

Test plot as follows:

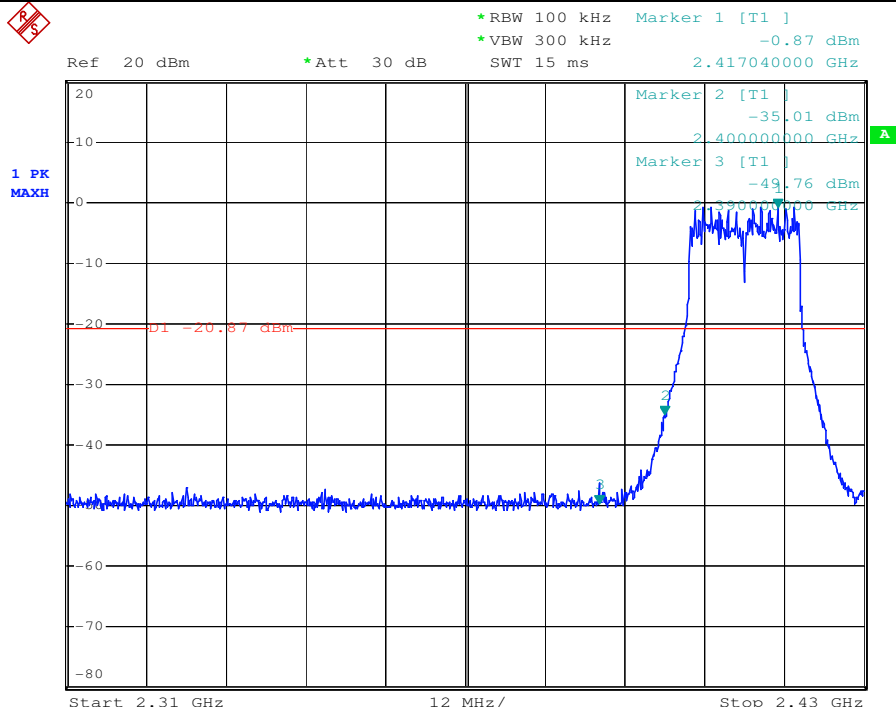
| Test mode: | 802.11b | Channel: | Lowest |
|------------|---------|----------|--------|
|------------|---------|----------|--------|



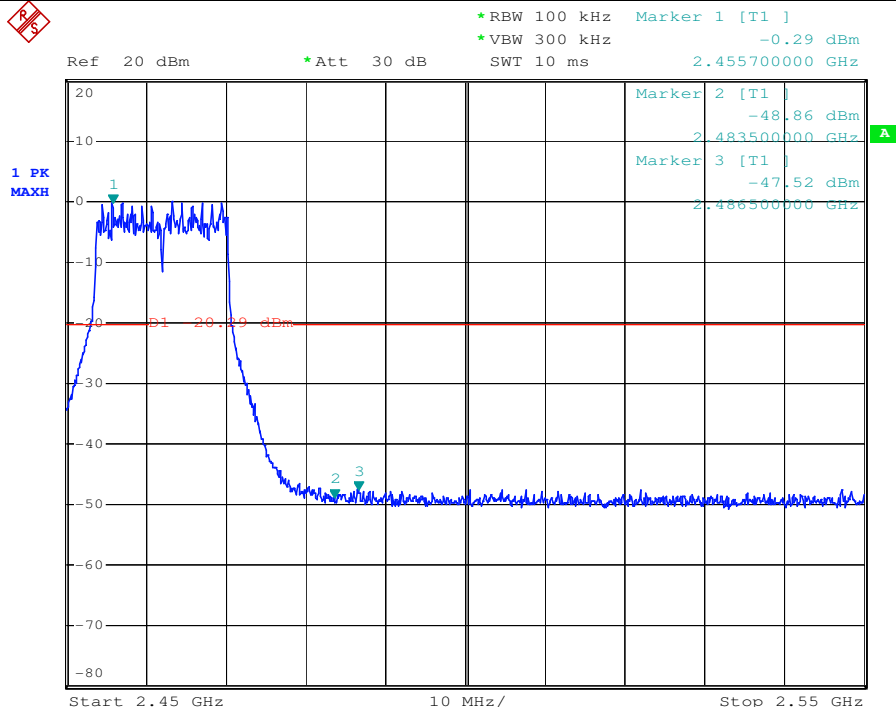
| Test mode: | 802.11b | Channel: | Highest |
|------------|---------|----------|---------|
|------------|---------|----------|---------|



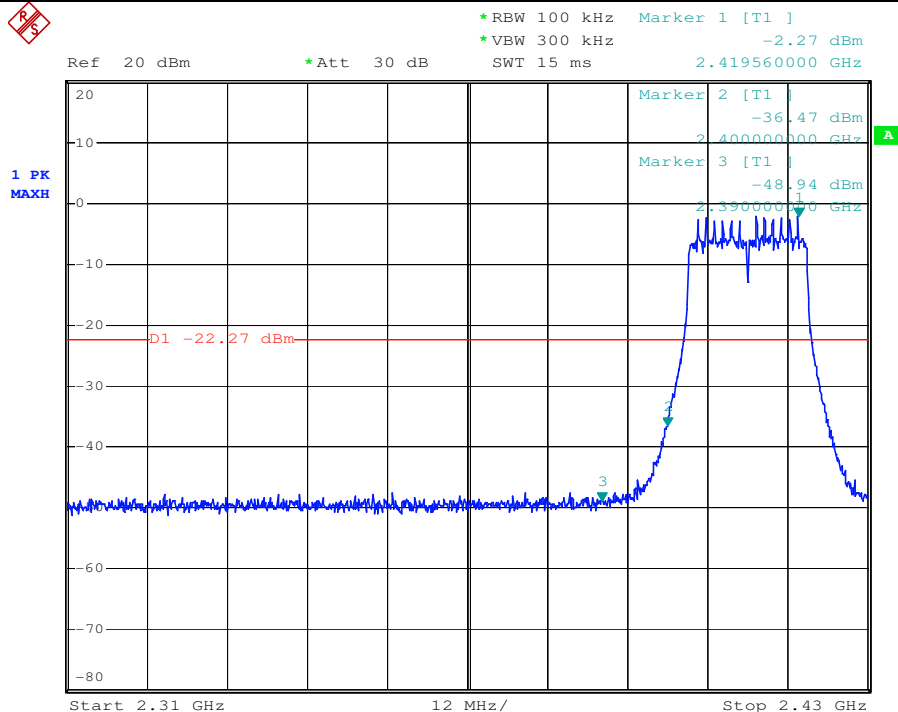
|            |         |          |        |
|------------|---------|----------|--------|
| Test mode: | 802.11g | Channel: | Lowest |
|------------|---------|----------|--------|



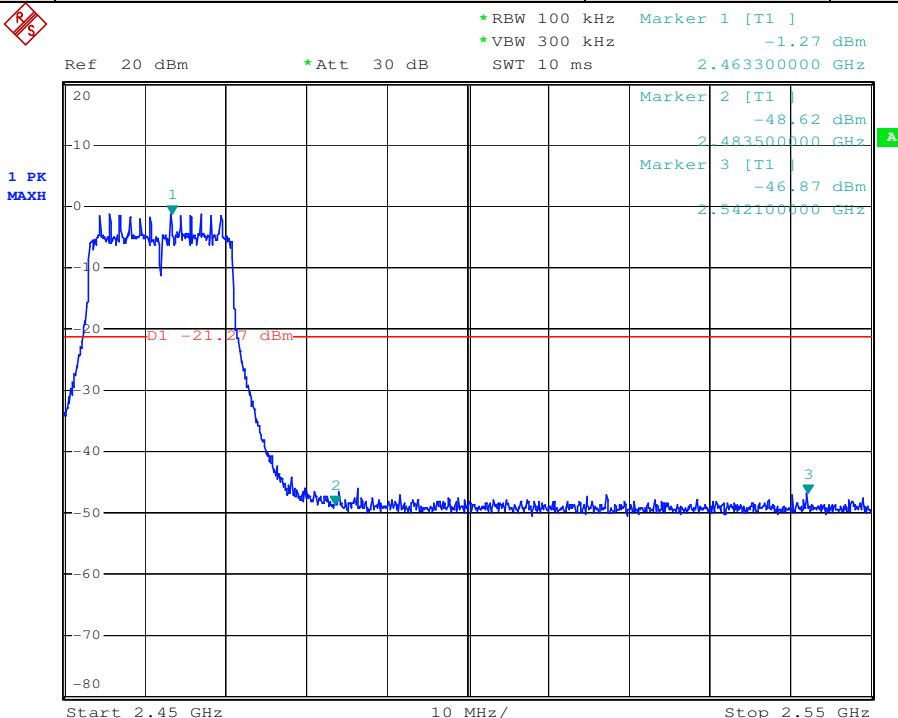
|            |         |          |         |
|------------|---------|----------|---------|
| Test mode: | 802.11g | Channel: | Highest |
|------------|---------|----------|---------|



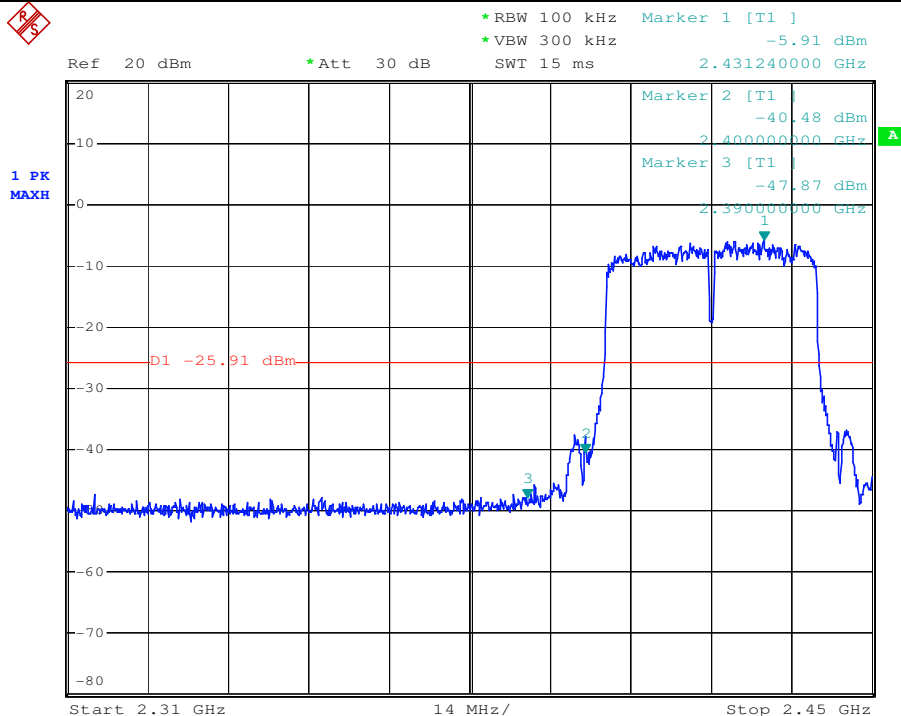
|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n20 | Channel: | Lowest |
|------------|-----------|----------|--------|



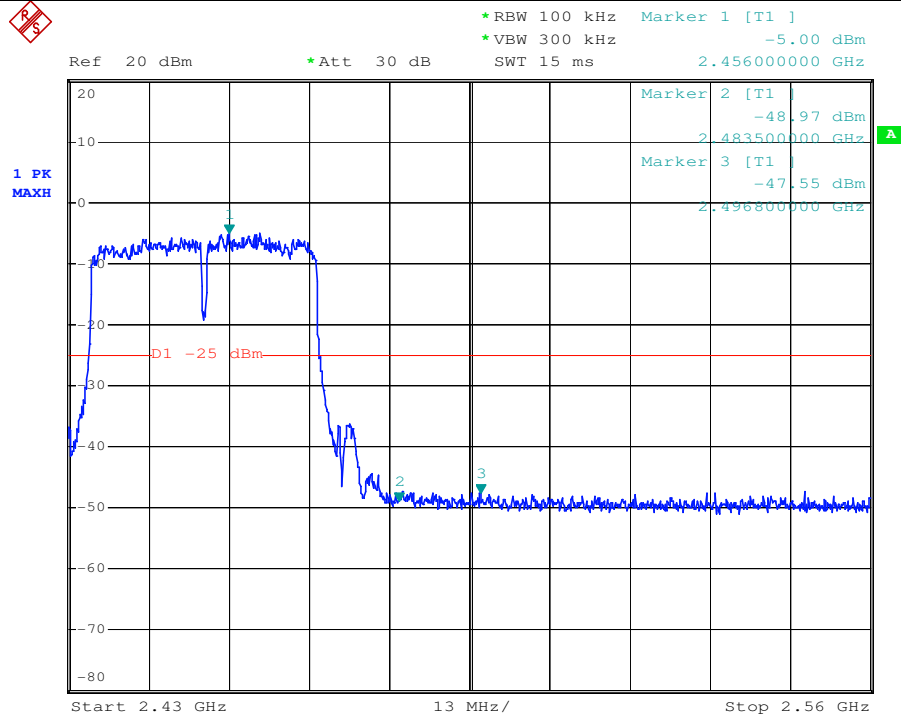
|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n20 | Channel: | Highest |
|------------|-----------|----------|---------|



|            |           |          |        |
|------------|-----------|----------|--------|
| Test mode: | 802.11n40 | Channel: | Lowest |
|------------|-----------|----------|--------|



|            |           |          |         |
|------------|-----------|----------|---------|
| Test mode: | 802.11n40 | Channel: | Highest |
|------------|-----------|----------|---------|



## 7.8 Radiated Spurious Emissions and Band-edge

**Frequency Range:** 9KHz to 25GHz

**Test site/setup:** Measurement Distance: 3m (Semi-Anechoic Chamber)  
Test instrumentation set-up:

| Frequency Range   | Detector   | RBW      | VBW      |
|-------------------|------------|----------|----------|
| 0.009MHz-0.090MHz | Peak       | 10kHz    | 30kHz    |
| 0.009MHz-0.090MHz | Average    | 10kHz    | 30kHz    |
| 0.090MHz-0.110MHz | Quasi-peak | 10kHz    | 30kHz    |
| 0.110MHz-0.490MHz | Peak       | 10kHz    | 30kHz    |
| 0.110MHz-0.490MHz | Average    | 10kHz    | 30kHz    |
| 0.490MHz -30MHz   | Quasi-peak | 10kHz    | 30kHz    |
| 30MHz-1GHz        | Quasi-peak | 100kHz   | 300kHz   |
| Above 1GHz        | Peak       | RBW=1MHz | VBW≥RBW  |
|                   | Average    |          | VBW=10Hz |

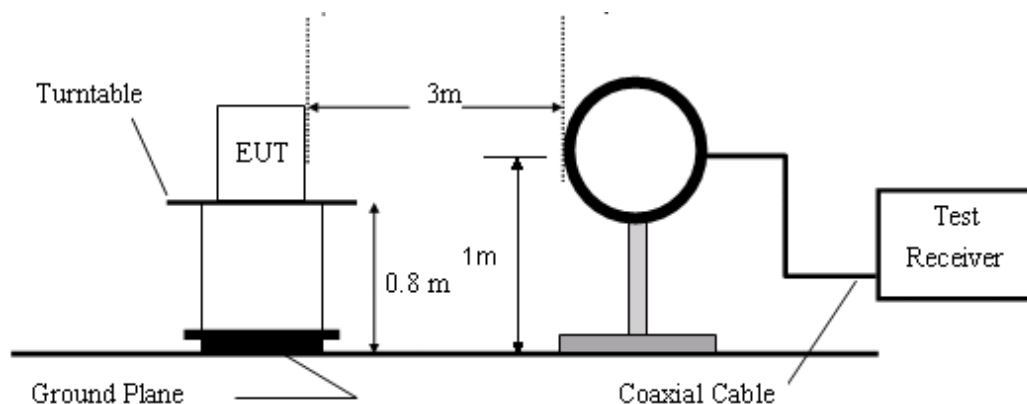
Sweep=Auto

**15.209 Limit:**

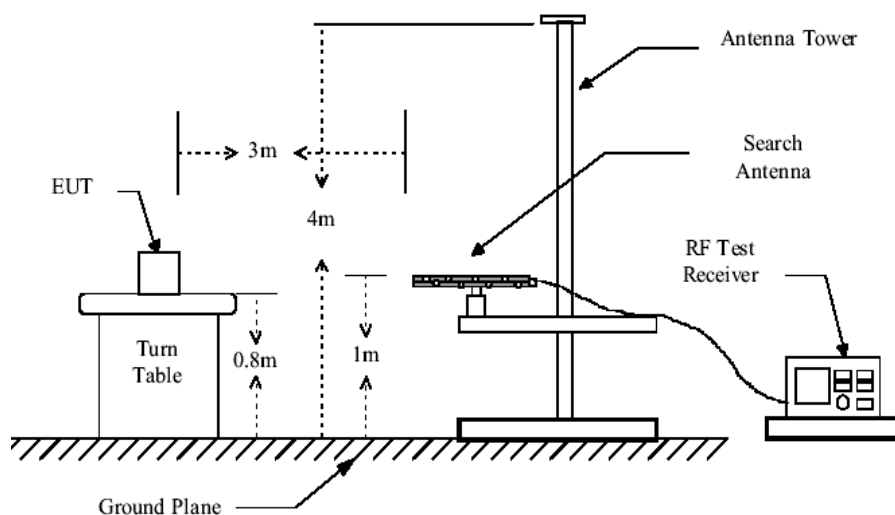
| Frequency         | Limit (dBuV/m) |
|-------------------|----------------|
| 0.009MHz-0.490MHz | 128.5 ~ 93.8   |
| 0.490MHz-1.705MHz | 73.8 ~63.0     |
| 1.705MHz-30MHz    | 69.5           |
| 30MHz-88MHz       | 40.0           |
| 88MHz-216MHz      | 43.5           |
| 216MHz-960MHz     | 46.0           |
| 960MHz-1GHz       | 54.0           |
| Above 1GHz        | 54.0           |

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

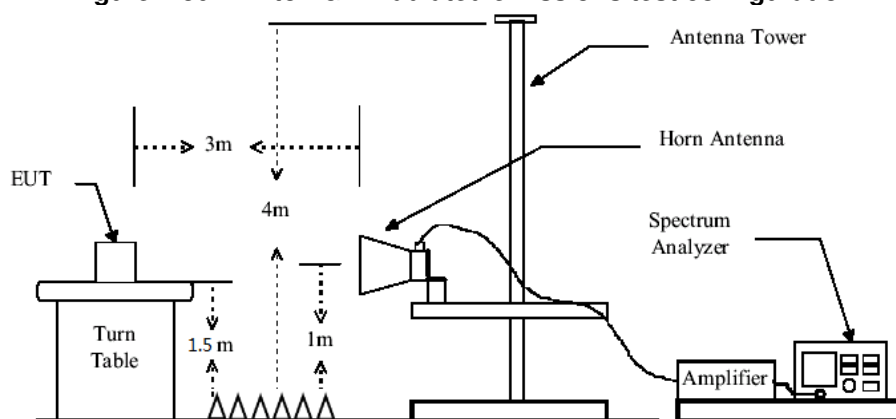
### Test Configuration:



**Figure1. Below 30MHz radiated emissions test configuration**



**Figure2. 30MHz to 1GHz radiated emissions test configuration**



**Figure3. Above 1GHz radiated emissions test configuration**

- Test Procedure:**
- 1) The procedure used was ANSI Standard C63.10. The receiver was scanned from 9 KHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.
  - 2) Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz. We did not use any amplifier or filter between 1G and 3GHz.
  - 3) Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.
    - a) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
    - b) As shown in Section, for frequencies above 1000MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
  - 4) Pretest under all modes on Antenna A and Antenna B below 1GHz; choose the worst case mode (802.11a on Antenna A) record on the report.
  - 5) The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

**Test Result:** Pass

### 7.8.1 Radiated Spurious Emissions

30MHz-1GHz:

#### lowest Channel

| Item   | Freq.   | Read Level | Antenna Factor | Preamplifier Factor | Cable Loss | Result Level | Limit Line | Over Limit | Detector | Polarization |
|--------|---------|------------|----------------|---------------------|------------|--------------|------------|------------|----------|--------------|
| (Mark) | (MHz)   | (dBμV)     | (dB/m)         | (dB)                | (dB)       | (dBμV/m)     | (dBμV/m)   | (dB)       |          |              |
| 1      | 30.530  | 59.70      | 12.51          | 42.80               | 0.11       | 29.52        | 40.00      | -10.48     | QP       | Horizontal   |
| 2      | 56.671  | 58.85      | 12.10          | 42.80               | 0.49       | 28.64        | 40.00      | -11.36     | QP       | Horizontal   |
| 3      | 96.108  | 73.14      | 8.82           | 42.80               | 0.87       | 40.03        | 43.50      | -3.47      | QP       | Horizontal   |
| 4      | 147.877 | 61.97      | 12.19          | 42.80               | 1.16       | 32.52        | 43.50      | -10.98     | QP       | Horizontal   |
| 5      | 783.986 | 52.97      | 22.11          | 42.80               | 3.18       | 35.46        | 46.00      | -10.54     | QP       | Horizontal   |
| 6      | 876.198 | 49.40      | 22.30          | 42.80               | 3.38       | 32.28        | 46.00      | -13.72     | QP       | Horizontal   |
| 1      | 31.384  | 68.65      | 12.53          | 42.80               | 0.13       | 38.51        | 40.00      | -1.49      | QP       | Vertical     |
| 2      | 34.571  | 67.06      | 12.59          | 42.80               | 0.17       | 37.02        | 40.00      | -2.98      | QP       | Vertical     |
| 3      | 36.284  | 65.54      | 12.73          | 42.80               | 0.20       | 35.67        | 40.00      | -4.33      | QP       | Vertical     |
| 4      | 56.849  | 68.87      | 12.10          | 42.80               | 0.49       | 38.66        | 40.00      | -1.34      | QP       | Vertical     |
| 5      | 81.138  | 68.75      | 8.44           | 42.80               | 0.72       | 35.11        | 40.00      | -4.89      | QP       | Vertical     |
| 6      | 94.455  | 71.28      | 8.67           | 42.80               | 0.86       | 38.01        | 43.50      | -5.49      | QP       | Vertical     |

#### Middle Channel

| Item   | Freq.   | Read Level | Antenna Factor | Preamplifier Factor | Cable Loss | Result Level | Limit Line | Over Limit | Detector | Polarization |
|--------|---------|------------|----------------|---------------------|------------|--------------|------------|------------|----------|--------------|
| (Mark) | (MHz)   | (dBμV)     | (dB/m)         | (dB)                | (dB)       | (dBμV/m)     | (dBμV/m)   | (dB)       |          |              |
| 1      | 32.265  | 52.99      | 12.55          | 42.80               | 0.14       | 22.88        | 40.00      | -17.12     | QP       | Horizontal   |
| 2      | 114.664 | 58.41      | 10.83          | 42.80               | 1.00       | 27.44        | 43.50      | -16.06     | QP       | Horizontal   |
| 3      | 135.410 | 60.09      | 11.43          | 42.80               | 1.10       | 29.82        | 43.50      | -13.68     | QP       | Horizontal   |
| 4      | 140.670 | 60.02      | 11.74          | 42.80               | 1.13       | 30.09        | 43.50      | -13.41     | QP       | Horizontal   |
| 5      | 148.687 | 60.44      | 12.23          | 42.80               | 1.17       | 31.04        | 43.50      | -12.46     | QP       | Horizontal   |
| 6      | 784.318 | 47.90      | 22.11          | 42.80               | 3.18       | 30.39        | 46.00      | -15.61     | QP       | Horizontal   |
| 1      | 31.602  | 63.53      | 12.53          | 42.80               | 0.13       | 33.39        | 40.00      | -6.61      | QP       | Vertical     |
| 2      | 35.799  | 65.35      | 12.68          | 42.80               | 0.19       | 35.42        | 40.00      | -4.58      | QP       | Vertical     |
| 3      | 57.148  | 61.99      | 12.10          | 42.80               | 0.49       | 31.78        | 40.00      | -8.22      | QP       | Vertical     |
| 4      | 83.658  | 64.15      | 8.54           | 42.80               | 0.74       | 30.63        | 40.00      | -9.37      | QP       | Vertical     |
| 5      | 113.479 | 64.74      | 10.77          | 42.80               | 1.00       | 33.71        | 43.50      | -9.79      | QP       | Vertical     |
| 6      | 140.670 | 63.63      | 11.74          | 42.80               | 1.13       | 33.70        | 43.50      | -9.80      | QP       | Vertical     |

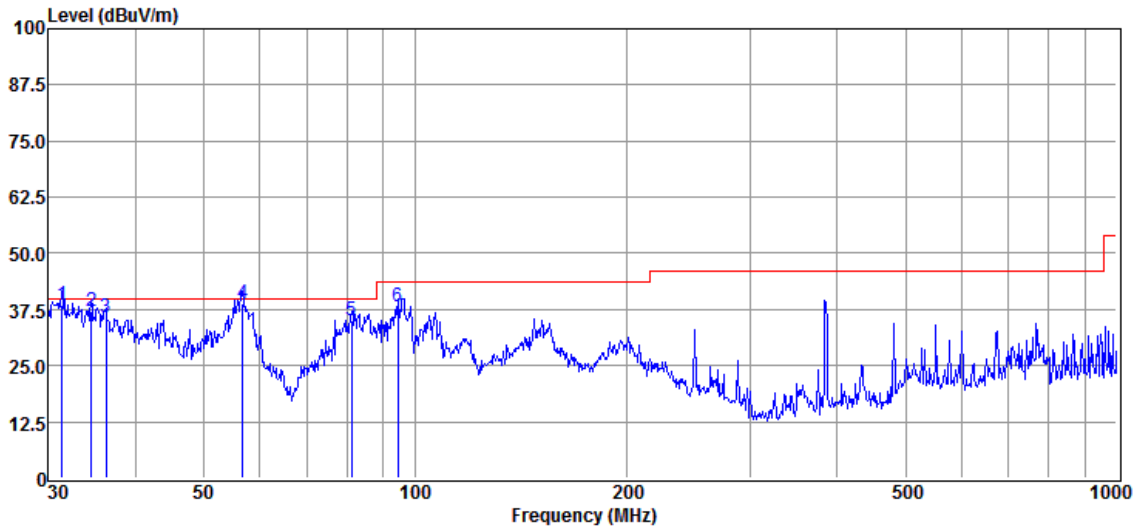


Highest Channel

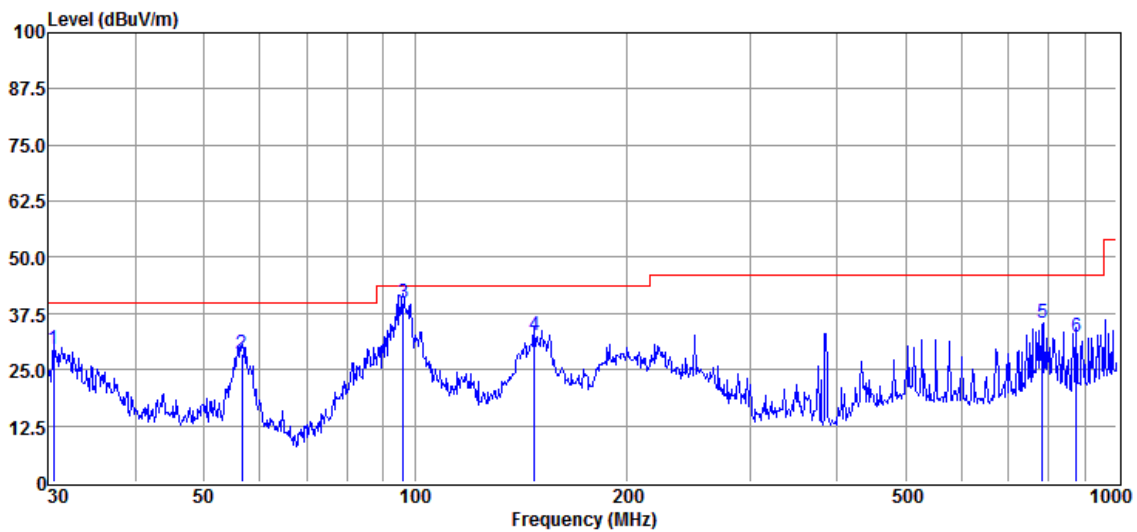
| Item   | Freq.   | Read Level | Antenna Factor | Preamp Factor | Cable Loss | Result Level | Limit Line | Over Limit | Detector | Polarization |
|--------|---------|------------|----------------|---------------|------------|--------------|------------|------------|----------|--------------|
| (Mark) | (MHz)   | (dBμV)     | (dB/m)         | (dB)          | (dB)       | (dBμV/m)     | (dBμV/m)   | (dB)       |          |              |
| 1      | 83.816  | 46.98      | 8.56           | 23.67         | 0.74       | 32.61        | 40.00      | -7.39      | QP       | Horizontal   |
| 2      | 122.404 | 46.22      | 11.17          | 23.65         | 1.04       | 34.78        | 43.50      | -8.72      | QP       | Horizontal   |
| 3      | 264.746 | 48.09      | 10.79          | 23.65         | 1.66       | 36.89        | 46.00      | -9.11      | QP       | Horizontal   |
| 4      | 494.198 | 45.87      | 16.20          | 23.73         | 2.42       | 40.76        | 46.00      | -5.24      | QP       | Horizontal   |
| 5      | 543.274 | 45.67      | 17.25          | 23.77         | 2.56       | 41.71        | 46.00      | -4.29      | QP       | Horizontal   |
| 6      | 711.673 | 41.59      | 20.55          | 23.88         | 2.99       | 41.25        | 46.00      | -4.75      | QP       | Horizontal   |
| 1      | 32.864  | 42.92      | 12.56          | 23.71         | 0.15       | 31.92        | 40.00      | -8.08      | QP       | Vertical     |
| 2      | 195.136 | 39.44      | 10.35          | 23.62         | 1.38       | 27.55        | 43.50      | -15.95     | QP       | Vertical     |
| 3      | 361.714 | 42.36      | 13.65          | 23.69         | 2.01       | 34.33        | 46.00      | -11.67     | QP       | Vertical     |
| 4      | 519.065 | 43.81      | 16.88          | 23.75         | 2.48       | 39.42        | 46.00      | -6.58      | QP       | Vertical     |
| 5      | 663.473 | 44.33      | 19.88          | 23.85         | 2.87       | 43.23        | 46.00      | -2.77      | QP       | Vertical     |
| 6      | 737.071 | 41.66      | 21.00          | 23.89         | 3.06       | 41.83        | 46.00      | -4.17      | QP       | Vertical     |

Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Below is the plot of worst case on lowest channel:  
Vertical:



Horizontal:



Above 1GHz:

**Test mode: 802.11b**

**Channel: lowest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4824            | 41.81          | 6.40        | 48.21             | 54             | -5.79           | peak     | Horizontal   |
| 2    | 7236            | 40.18          | 10.76       | 50.94             | 54             | -3.06           | peak     | Horizontal   |
| 3    | 9648            | 36.46          | 14.37       | 50.83             | 54             | -3.17           | peak     | Horizontal   |
| 4    | 4824            | 41.75          | 6.40        | 48.15             | 54             | -5.85           | peak     | Vertical     |
| 5    | 7236            | 40.39          | 10.76       | 51.15             | 54             | -2.85           | peak     | Vertical     |
| 6    | 9648            | 36.40          | 14.37       | 50.77             | 54             | -3.23           | peak     | Vertical     |

**Test mode: 802.11b**

**Channel: Middle**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4874            | 40.31          | 6.92        | 47.23             | 54             | -6.77           | peak     | Horizontal   |
| 2    | 7311            | 39.24          | 11.08       | 50.32             | 54             | -3.68           | peak     | Horizontal   |
| 3    | 9748            | 37.04          | 14.36       | 51.40             | 54             | -2.60           | peak     | Horizontal   |
| 4    | 4874            | 40.47          | 6.92        | 47.39             | 54             | -6.61           | peak     | Vertical     |
| 5    | 7311            | 39.17          | 11.08       | 50.25             | 54             | -3.75           | peak     | Vertical     |
| 6    | 9748            | 37.20          | 14.36       | 51.56             | 54             | -2.44           | peak     | Vertical     |

**Test mode: 802.11b**

**Channel: Highest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4924            | 41.52          | 7.31        | 48.83             | 54             | -5.17           | peak     | Horizontal   |
| 2    | 7386            | 40.55          | 11.41       | 51.96             | 54             | -2.04           | peak     | Horizontal   |
| 3    | 9848            | 38.37          | 14.38       | 52.75             | 54             | -1.25           | peak     | Horizontal   |
| 4    | 4924            | 41.57          | 7.31        | 48.88             | 54             | -5.12           | peak     | Vertical     |
| 5    | 7386            | 41.79          | 11.41       | 53.20             | 54             | -0.80           | peak     | Vertical     |
| 6    | 9848            | 38.47          | 14.38       | 52.85             | 54             | -1.15           | peak     | Vertical     |

**Test mode: 802.11g**

**Channel: lowest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4824            | 41.25          | 6.4         | 47.65             | 54             | -6.35           | peak     | Horizontal   |
| 2    | 7236            | 39.81          | 10.76       | 50.57             | 54             | -3.43           | peak     | Horizontal   |
| 3    | 9648            | 35.91          | 14.37       | 50.28             | 54             | -3.72           | peak     | Horizontal   |
| 4    | 4824            | 40.16          | 6.40        | 46.56             | 54             | -7.44           | peak     | Vertical     |
| 5    | 7236            | 39.56          | 10.76       | 50.32             | 54             | -3.68           | peak     | Vertical     |
| 6    | 9648            | 35.88          | 14.37       | 50.25             | 54             | -3.75           | peak     | Vertical     |

**Test mode: 802.11g**

**Channel: Middle**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4874            | 40.22          | 6.92        | 47.14             | 54             | -6.86           | peak     | Horizontal   |
| 2    | 7311            | 38.85          | 11.08       | 49.93             | 54             | -4.07           | peak     | Horizontal   |
| 3    | 9748            | 37.72          | 14.36       | 52.08             | 54             | -1.92           | peak     | Horizontal   |
| 4    | 4874            | 39.26          | 6.92        | 46.18             | 54             | -7.82           | peak     | Vertical     |
| 5    | 7311            | 38.27          | 11.08       | 49.35             | 54             | -4.65           | peak     | Vertical     |
| 6    | 9748            | 36.17          | 14.36       | 50.53             | 54             | -3.47           | peak     | Vertical     |

**Test mode: 802.11g**

**Channel: Highest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4924            | 40.78          | 7.31        | 48.09             | 54             | -5.91           | peak     | Horizontal   |
| 2    | 7386            | 40.00          | 11.41       | 51.41             | 54             | -2.59           | peak     | Horizontal   |
| 3    | 9848            | 37.98          | 14.38       | 52.36             | 54             | -1.64           | peak     | Horizontal   |
| 4    | 4924            | 40.34          | 7.31        | 47.65             | 54             | -6.35           | peak     | Vertical     |
| 5    | 7386            | 39.69          | 11.41       | 51.10             | 54             | -2.90           | peak     | Vertical     |
| 6    | 9848            | 36.76          | 14.38       | 51.14             | 54             | -2.86           | peak     | Vertical     |

**Test mode: 802.11n20**

**Channel: lowest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4824            | 38.93          | 6.40        | 45.33             | 54             | -8.67           | peak     | Horizontal   |
| 2    | 7236            | 39.79          | 10.76       | 50.55             | 54             | -3.45           | peak     | Horizontal   |
| 3    | 9648            | 35.80          | 14.37       | 50.17             | 54             | -3.83           | peak     | Horizontal   |
| 4    | 4924            | 39.47          | 7.31        | 46.78             | 54             | -7.22           | peak     | Vertical     |
| 5    | 7386            | 39.88          | 11.41       | 51.29             | 54             | -2.71           | peak     | Vertical     |
| 6    | 9848            | 38.13          | 14.38       | 52.51             | 54             | -1.49           | peak     | Vertical     |

**Test mode: 802.11n20**

**Channel: Middle**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4874            | 37.62          | 6.92        | 44.54             | 54             | -9.46           | peak     | Horizontal   |
| 2    | 7311            | 38.87          | 11.08       | 49.95             | 54             | -4.05           | peak     | Horizontal   |
| 3    | 9748            | 37.07          | 14.36       | 51.43             | 54             | -2.57           | peak     | Horizontal   |
| 4    | 4874            | 38.58          | 6.92        | 45.50             | 54             | -8.5            | peak     | Vertical     |
| 5    | 7311            | 38.92          | 11.08       | 50.00             | 54             | -4.00           | peak     | Vertical     |
| 6    | 9748            | 37.43          | 14.36       | 51.79             | 54             | -2.21           | peak     | Vertical     |

**Test mode: 802.11n20**

**Channel: Highest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4924            | 37.92          | 7.31        | 45.23             | 54             | -8.77           | peak     | Horizontal   |
| 2    | 7386            | 39.86          | 11.41       | 51.27             | 54             | -2.73           | peak     | Horizontal   |
| 3    | 9848            | 37.64          | 14.38       | 52.02             | 54             | -1.98           | peak     | Horizontal   |
| 4    | 4924            | 39.47          | 7.31        | 46.78             | 54             | -7.22           | peak     | Vertical     |
| 5    | 7386            | 39.88          | 11.41       | 51.29             | 54             | -2.71           | peak     | Vertical     |
| 6    | 9848            | 38.13          | 14.38       | 52.51             | 54             | -1.49           | peak     | Vertical     |

**Test mode: 802.11n40**

**Channel: lowest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4844            | 39.67          | 6.60        | 46.27             | 54             | -7.73           | peak     | Horizontal   |
| 2    | 7266            | 38.66          | 10.89       | 49.55             | 54             | -4.45           | peak     | Horizontal   |
| 3    | 9688            | 36.84          | 14.35       | 51.19             | 54             | -2.81           | peak     | Horizontal   |
| 4    | 4844            | 38.30          | 6.60        | 44.90             | 54             | -9.10           | peak     | Vertical     |
| 5    | 7266            | 38.44          | 10.89       | 49.33             | 54             | -4.67           | peak     | Vertical     |
| 6    | 9688            | 35.78          | 14.35       | 50.13             | 54             | -3.87           | peak     | Vertical     |

**Test mode: 802.11n40**

**Channel: Middle**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4874            | 45.48          | 6.92        | 52.4              | 54             | -1.60           | peak     | Horizontal   |
| 2    | 7311            | 38.08          | 11.08       | 49.16             | 54             | -4.84           | peak     | Horizontal   |
| 3    | 9748            | 37.16          | 14.36       | 51.52             | 54             | -2.48           | peak     | Horizontal   |
| 4    | 4874            | 40.74          | 6.92        | 47.66             | 54             | -6.34           | peak     | Vertical     |
| 5    | 7311            | 37.78          | 11.08       | 48.86             | 54             | -5.14           | peak     | Vertical     |
| 6    | 9748            | 36.72          | 14.36       | 51.08             | 54             | -2.92           | peak     | Vertical     |

**Test mode: 802.11n40**

**Channel: Highest**

| Mark | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|------|-----------------|----------------|-------------|-------------------|----------------|-----------------|----------|--------------|
| 1    | 4904            | 42.42          | 7.22        | 49.64             | 54             | -4.36           | peak     | Horizontal   |
| 2    | 7356            | 39.84          | 11.28       | 51.12             | 54             | -2.88           | peak     | Horizontal   |
| 3    | 9808            | 38.38          | 14.37       | 52.75             | 54             | -1.25           | peak     | Horizontal   |
| 4    | 4904            | 41.48          | 7.22        | 48.70             | 54             | -5.30           | peak     | Vertical     |
| 5    | 7356            | 40.29          | 11.28       | 51.57             | 54             | -2.43           | peak     | Vertical     |
| 6    | 9808            | 37.91          | 14.37       | 52.28             | 54             | -1.72           | peak     | Vertical     |

Remark: 1). Test Level = Receiver Reading + Antenna Factor + Cable Loss – Preamplifier Factor.

2). No any other emissions level which are attenuated less than 20dB below the limit. According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.

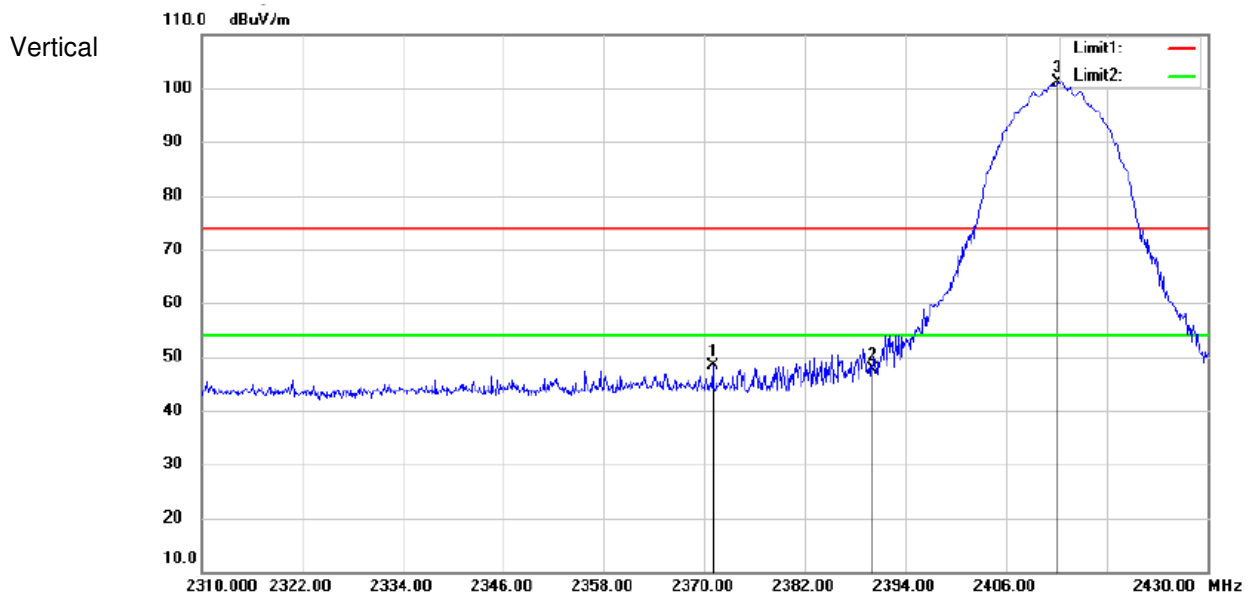
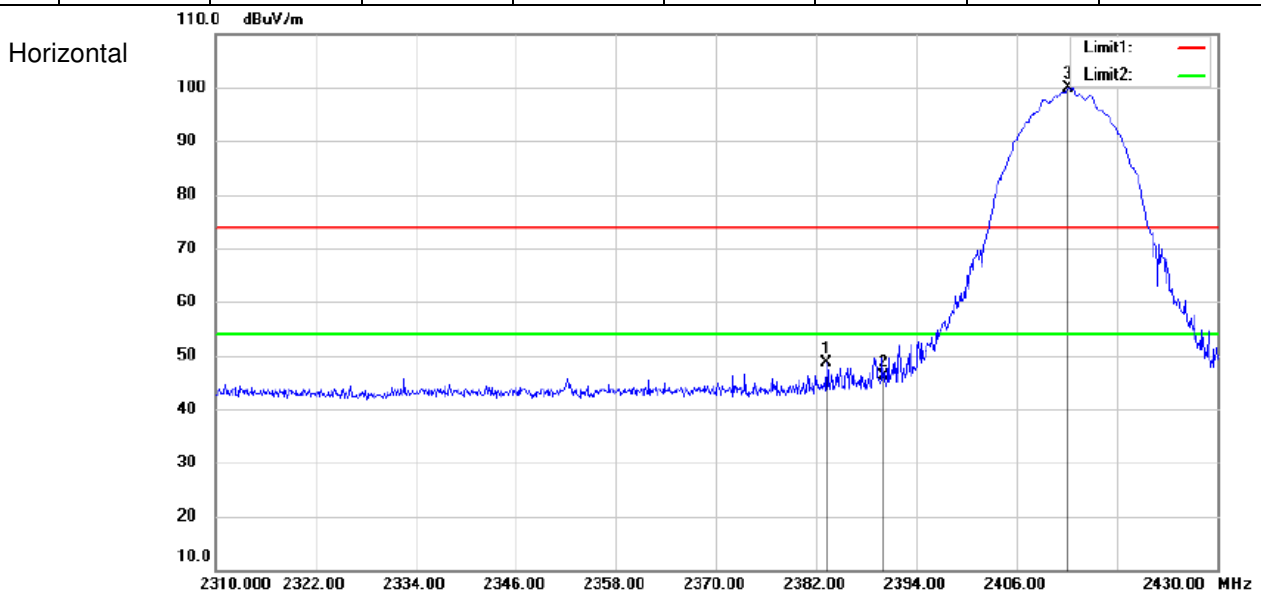
3). If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

## 7.8.2 Radiated Band edge

Test Mode: 802.11b

Channel: lowest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2383.2          | 52.38            | -3.87                | 48.51           | 54             | -5.49           | Peak     | Horizontal   |
| 2   | 2390            | 49.97            | -3.89                | 46.08           | 54             | -7.92           | Peak     | Horizontal   |
| 3   | 2412.12         | 103.91           | -3.93                | 99.98           | 54             | 45.98           | Peak     | Horizontal   |
| 1   | 2370.96         | 52.29            | -3.83                | 48.46           | 54             | -5.54           | Peak     | Vertical     |
| 2   | 2390            | 51.41            | -3.89                | 47.52           | 54             | -6.48           | Peak     | Vertical     |
| 3   | 2412.12         | 105.11           | -3.93                | 101.18          | 54             | 47.18           | Peak     | Vertical     |

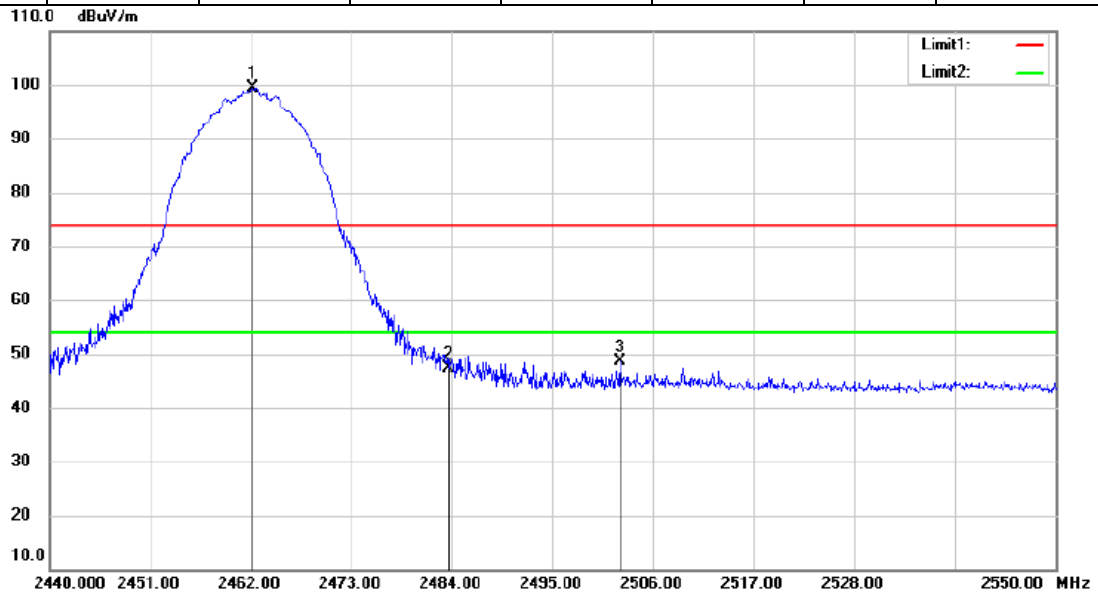


Test Mode: 802.11b

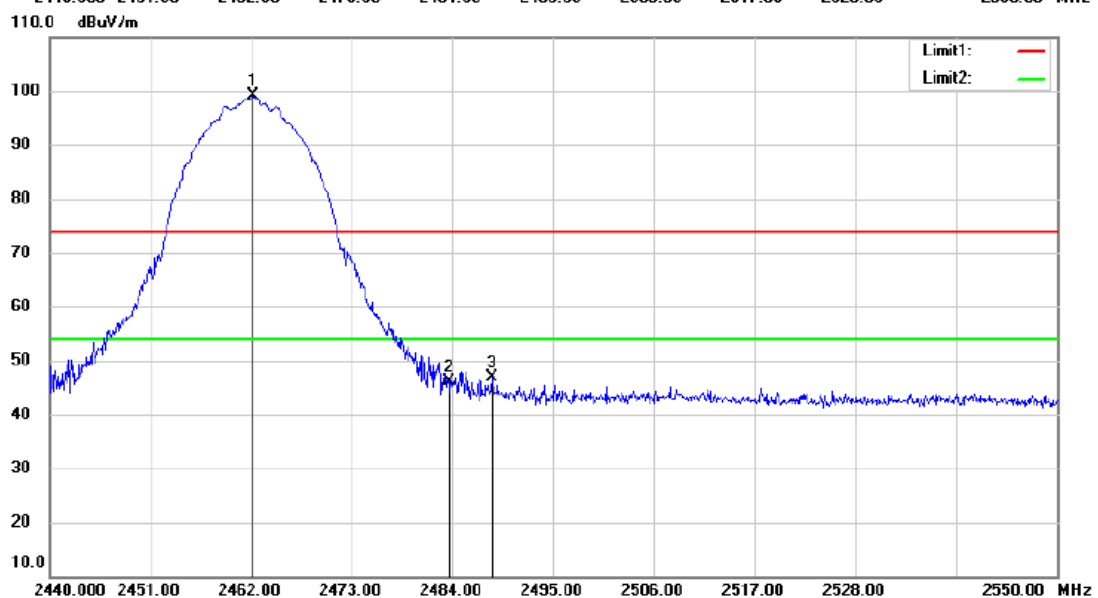
Channel: Highest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2462.22         | 103.39           | -3.99                | 99.40           | 54             | 45.40           | Peak     | Horizontal   |
| 2   | 2483.5          | 51.45            | -4.01                | 47.44           | 54             | -6.56           | Peak     | Horizontal   |
| 3   | 2502.37         | 52.71            | -4.00                | 48.71           | 54             | -5.29           | Peak     | Horizontal   |
| 1   | 2462.22         | 103.03           | -3.99                | 99.04           | 54             | 45.04           | Peak     | Vertical     |
| 2   | 2483.5          | 50.11            | -4.01                | 46.10           | 54             | -7.90           | Peak     | Vertical     |
| 3   | 2488.29         | 50.94            | -4.02                | 46.92           | 54             | -7.08           | Peak     | Vertical     |

Horizontal



Vertical

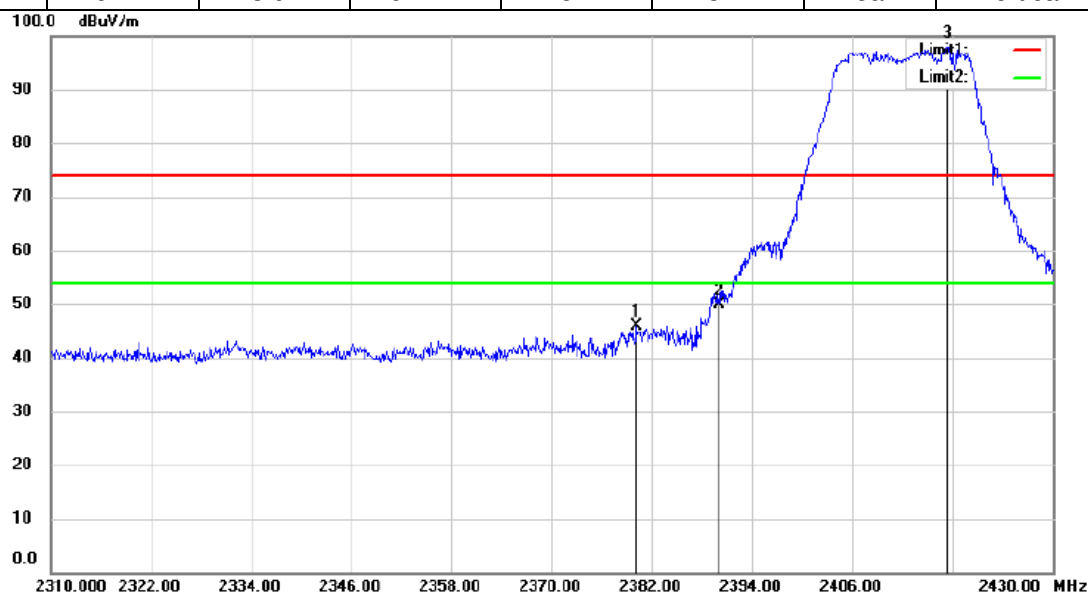


Test Mode: 802.11g

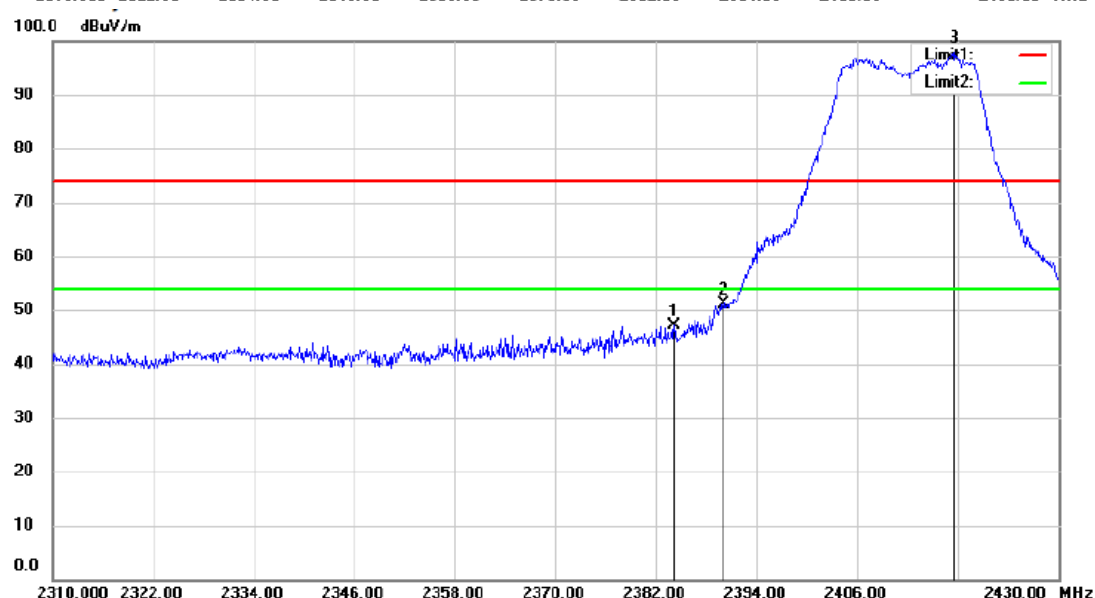
Channel: lowest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2380.2          | 49.83            | -3.86                | 45.97           | 54             | -8.03           | Peak     | Horizontal   |
| 2   | 2390            | 53.70            | -3.89                | 49.81           | 54             | -4.19           | Peak     | Horizontal   |
| 3   | 2417.4          | 101.86           | -3.94                | 97.92           | 54             | 43.92           | Peak     | Horizontal   |
| 1   | 2384.16         | 51.01            | -3.88                | 47.13           | 54             | -6.87           | Peak     | Vertical     |
| 2   | 2390            | 55.02            | -3.89                | 51.13           | 54             | -2.87           | Peak     | Vertical     |
| 3   | 2417.52         | 101.71           | -3.94                | 97.77           | 54             | 43.77           | Peak     | Vertical     |

Horizontal



Vertical

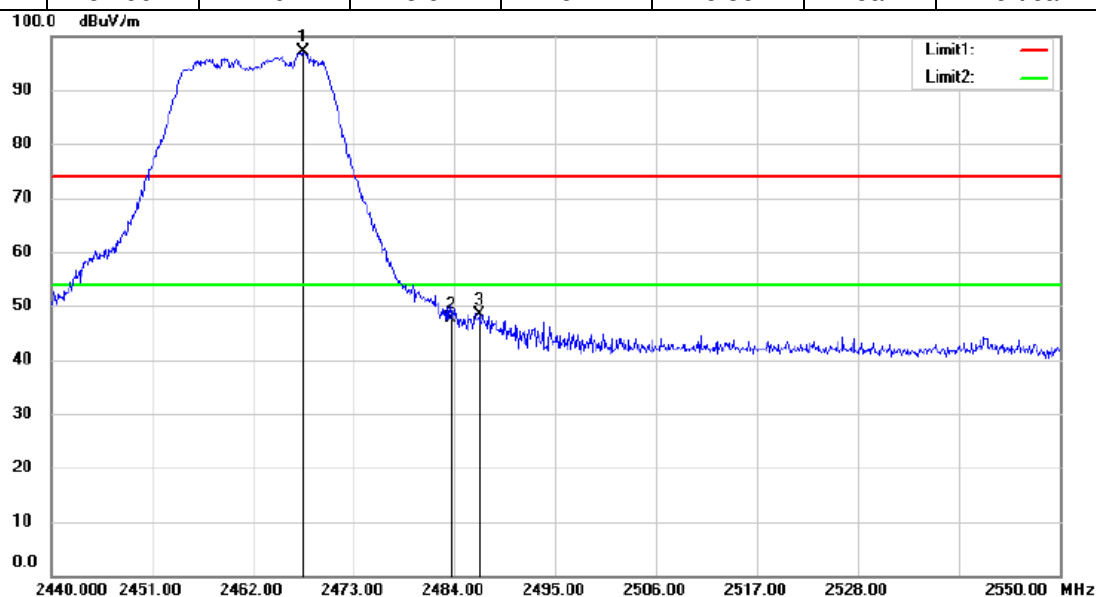


Test Mode: 802.11g

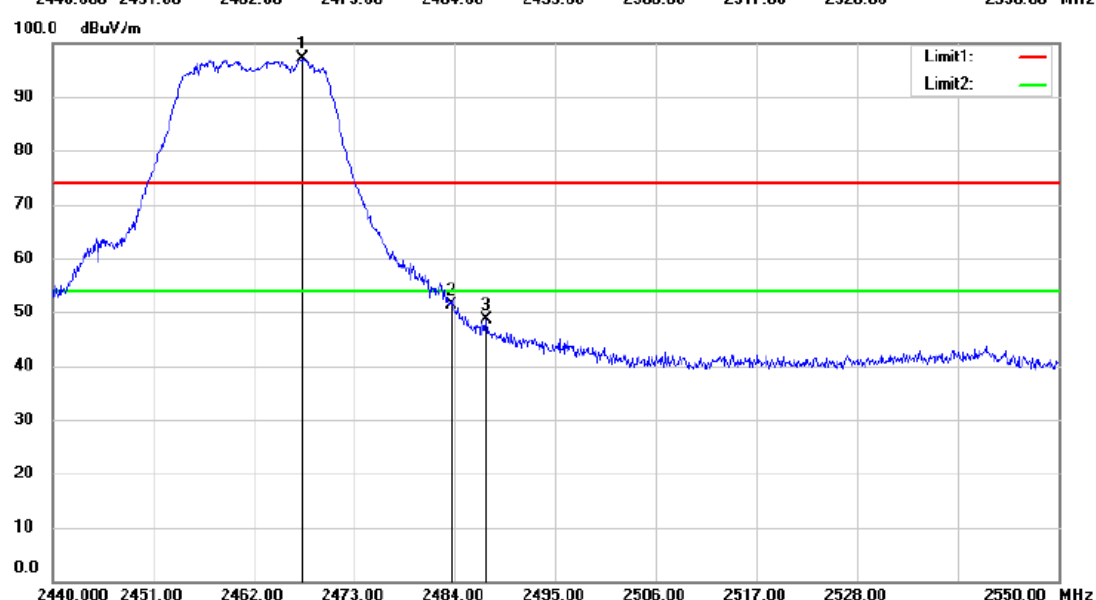
Channel: Highest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2467.5          | 101.01           | -4.00                | 97.01           | 54             | 43.01           | Peak     | Horizontal   |
| 2   | 2483.5          | 51.74            | -4.01                | 47.73           | 54             | -6.27           | Peak     | Horizontal   |
| 3   | 2486.64         | 52.49            | -4.02                | 48.47           | 54             | -5.53           | Peak     | Horizontal   |
| 1   | 2467.39         | 101.2            | -4.00                | 97.20           | 54             | 43.20           | Peak     | Vertical     |
| 2   | 2483.5          | 55.31            | -4.01                | 51.30           | 54             | -2.70           | Peak     | Vertical     |
| 3   | 2487.41         | 52.66            | -4.02                | 48.64           | 54             | -5.36           | Peak     | Vertical     |

Horizontal



Vertical

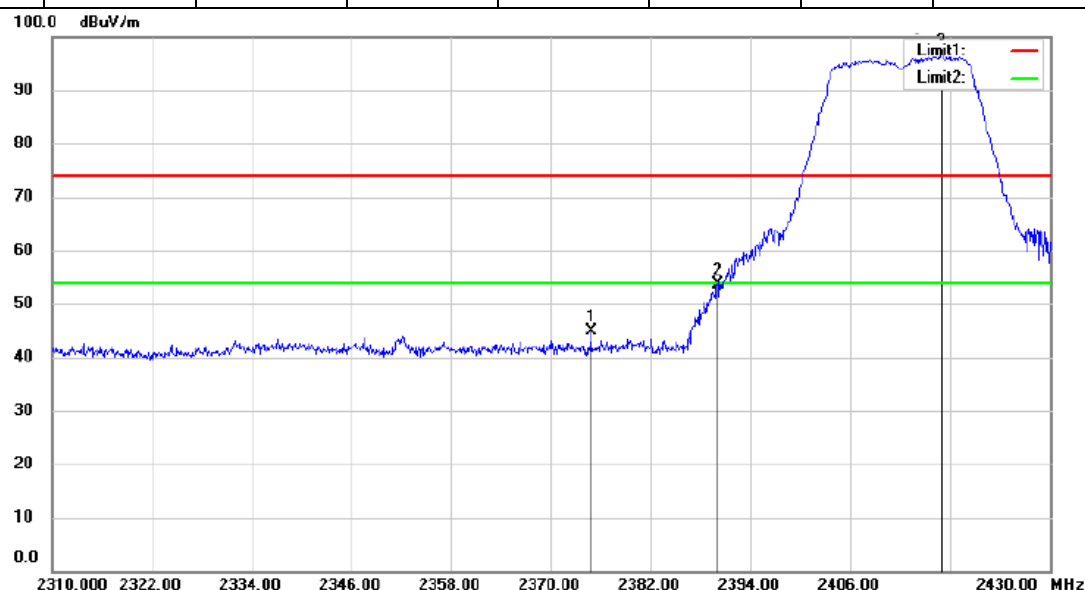


Test Mode: 802.11n20

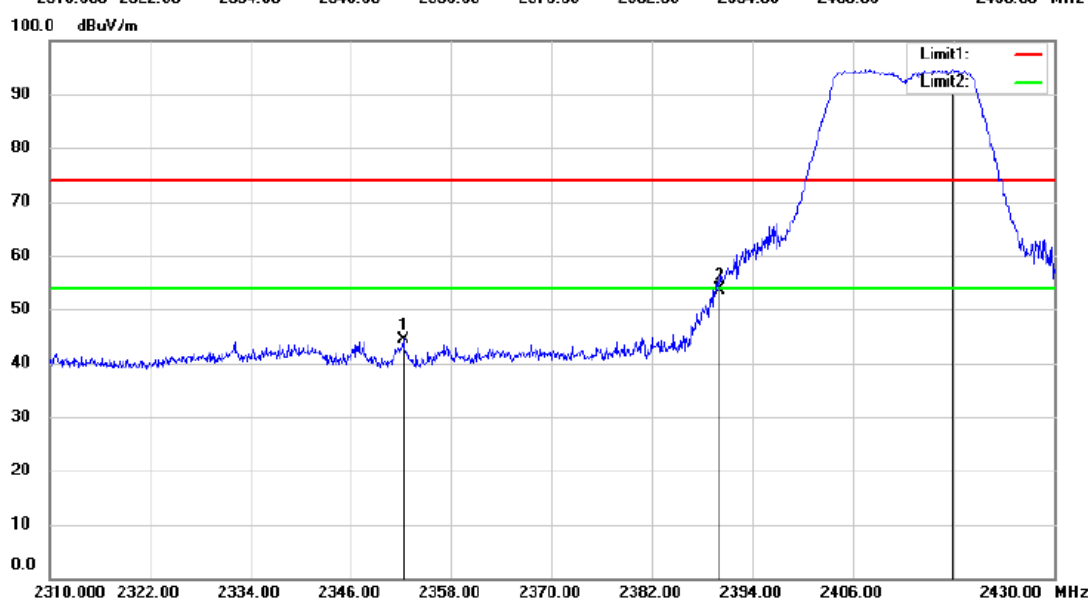
Channel: Lowest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2374.8          | 48.69            | -3.85                | 44.84           | 54             | -9.16           | Peak     | Horizontal   |
| 2   | 2390            | 57.40            | -3.89                | 53.51           | 54             | -0.49           | Peak     | Horizontal   |
| 3   | 2416.92         | 100.50           | -3.94                | 96.56           | 54             | 42.56           | Peak     | Horizontal   |
| 1   | 2352.24         | 48.11            | -3.78                | 44.33           | 54             | -9.67           | Peak     | Vertical     |
| 2   | 2390            | 57.52            | -3.89                | 53.63           | 54             | -0.37           | Peak     | Vertical     |
| 3   | 2417.88         | 98.50            | -3.94                | 94.56           | 54             | 40.56           | Peak     | Vertical     |

Horizontal



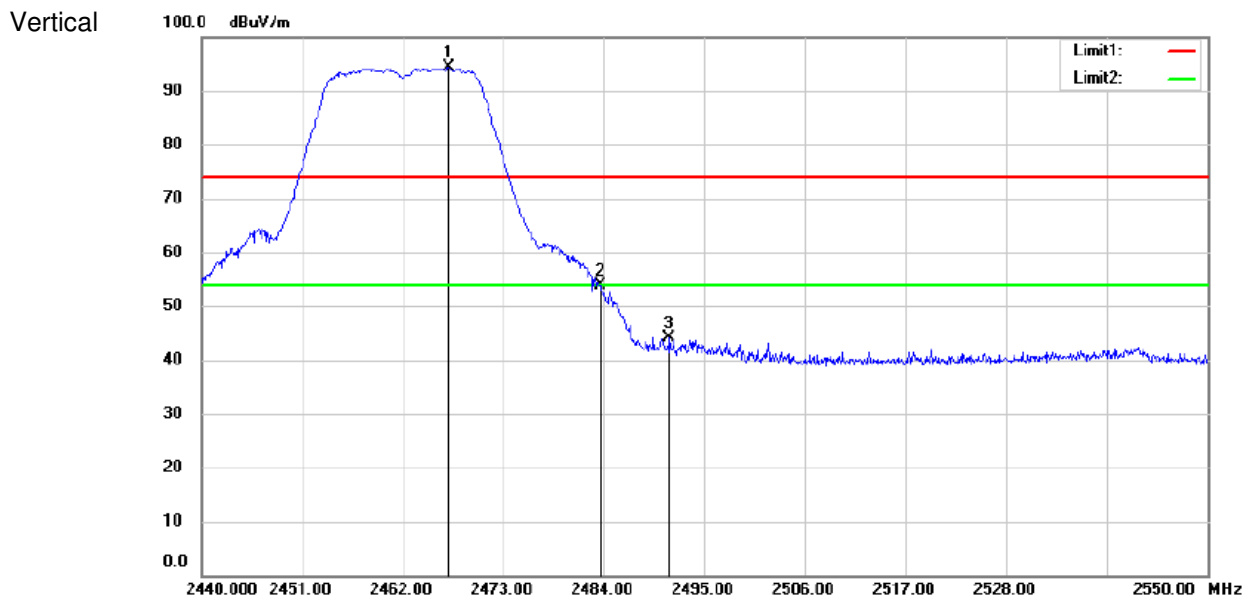
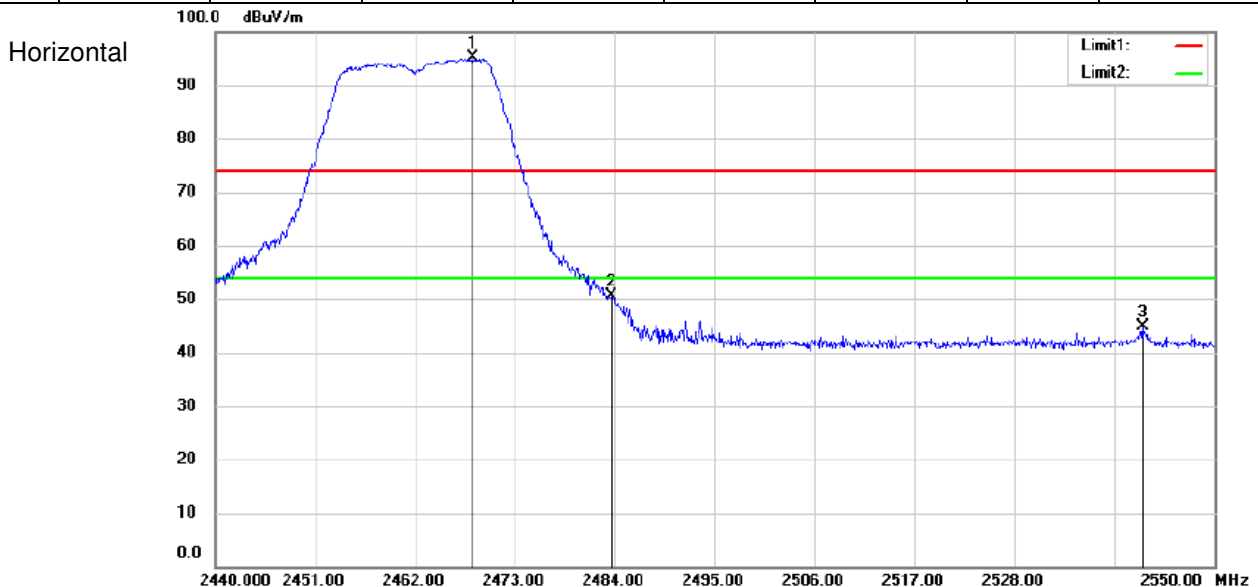
Vertical



Test Mode: 802.11n20

Channel: Highest

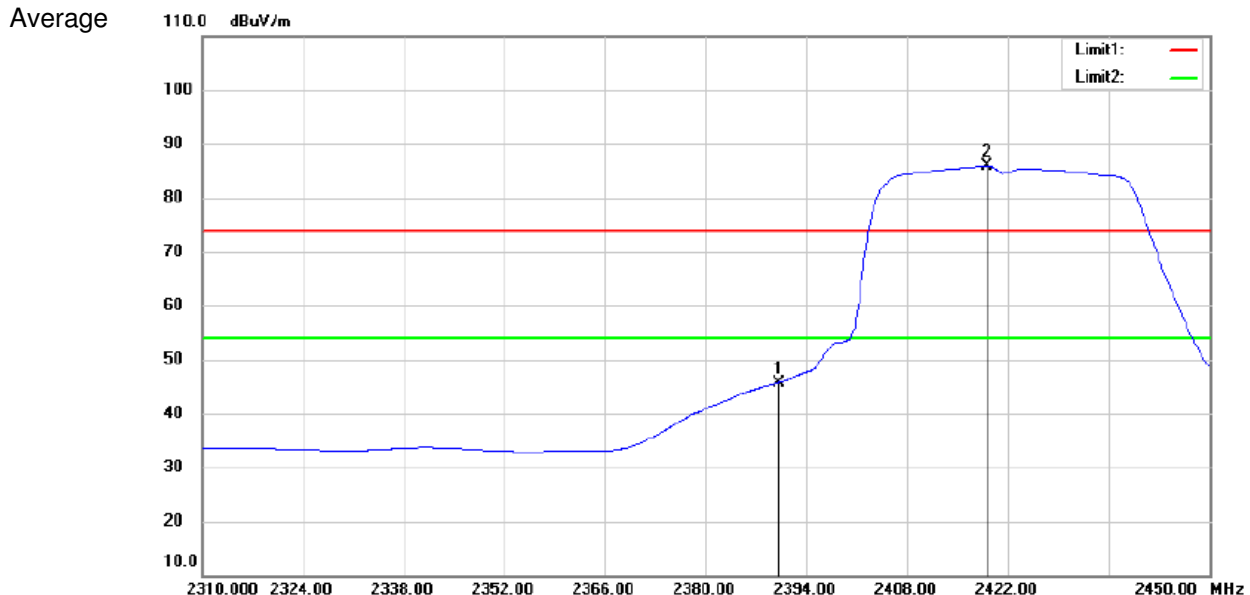
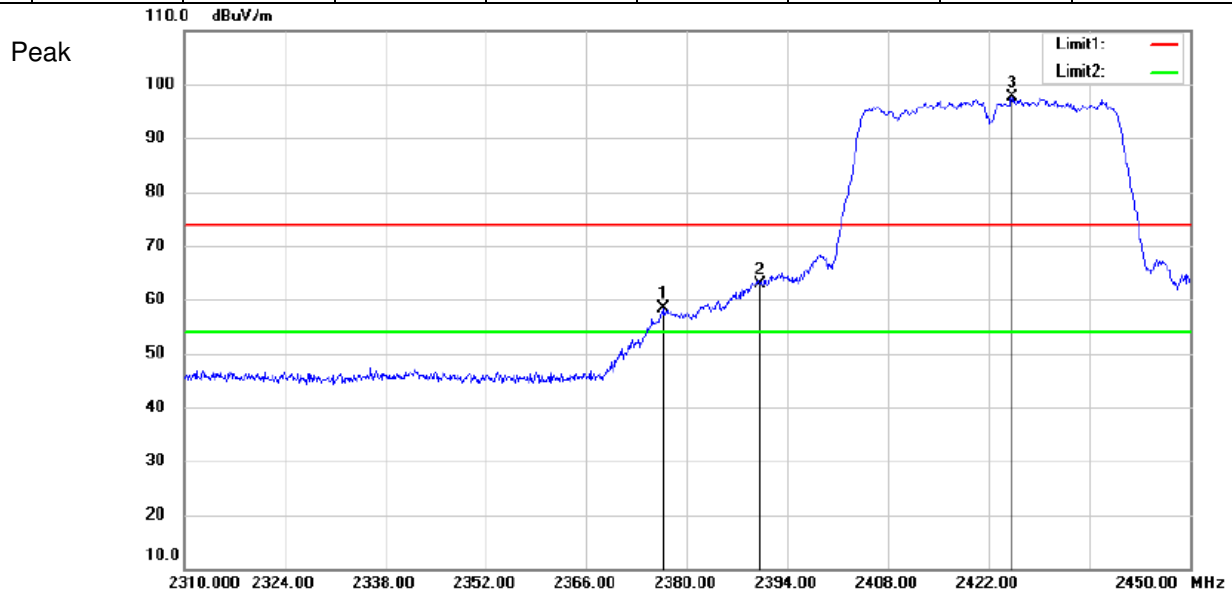
| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2468.38         | 99.02            | -3.99                | 95.03           | 54             | 41.03           | Peak     | Horizontal   |
| 2   | 2483.5          | 54.56            | -4.01                | 50.55           | 54             | -3.45           | Peak     | Horizontal   |
| 3   | 2542.08         | 48.39            | -3.55                | 44.84           | 54             | -9.16           | Peak     | Horizontal   |
| 1   | 2467.06         | 98.33            | -4.00                | 94.33           | 54             | 40.33           | Peak     | Vertical     |
| 2   | 2483.5          | 57.92            | -4.01                | 53.91           | 54             | -0.09           | Peak     | Vertical     |
| 3   | 2491.15         | 48.14            | -4.02                | 44.12           | 54             | -9.88           | Peak     | Vertical     |



Test Mode: 802.11n40

Channel: lowest

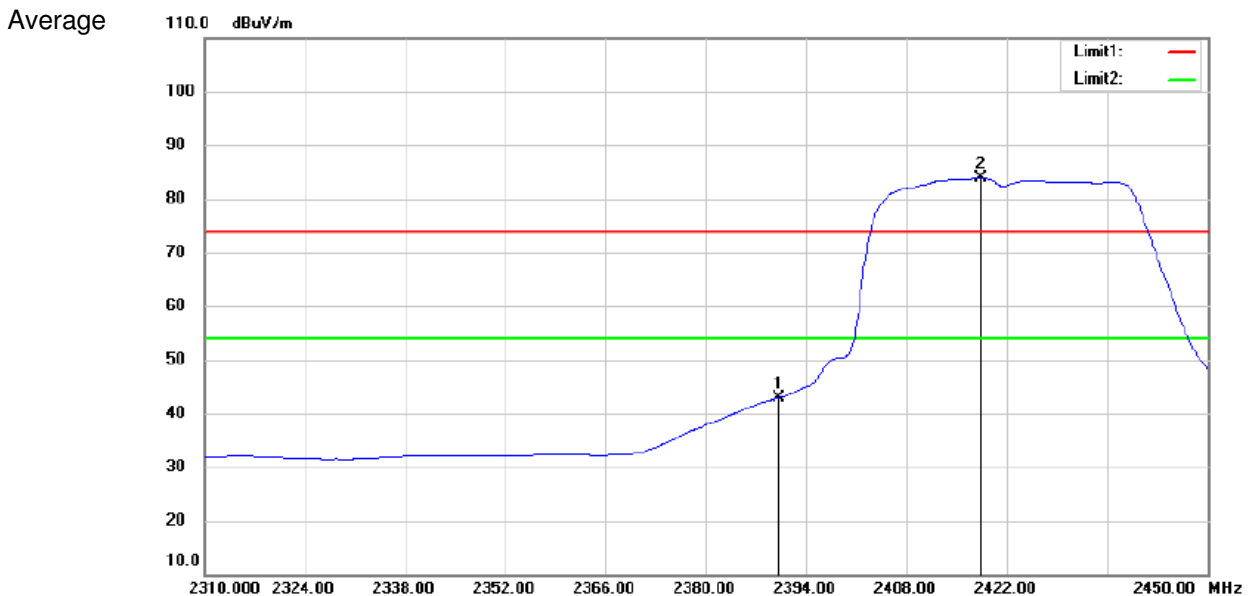
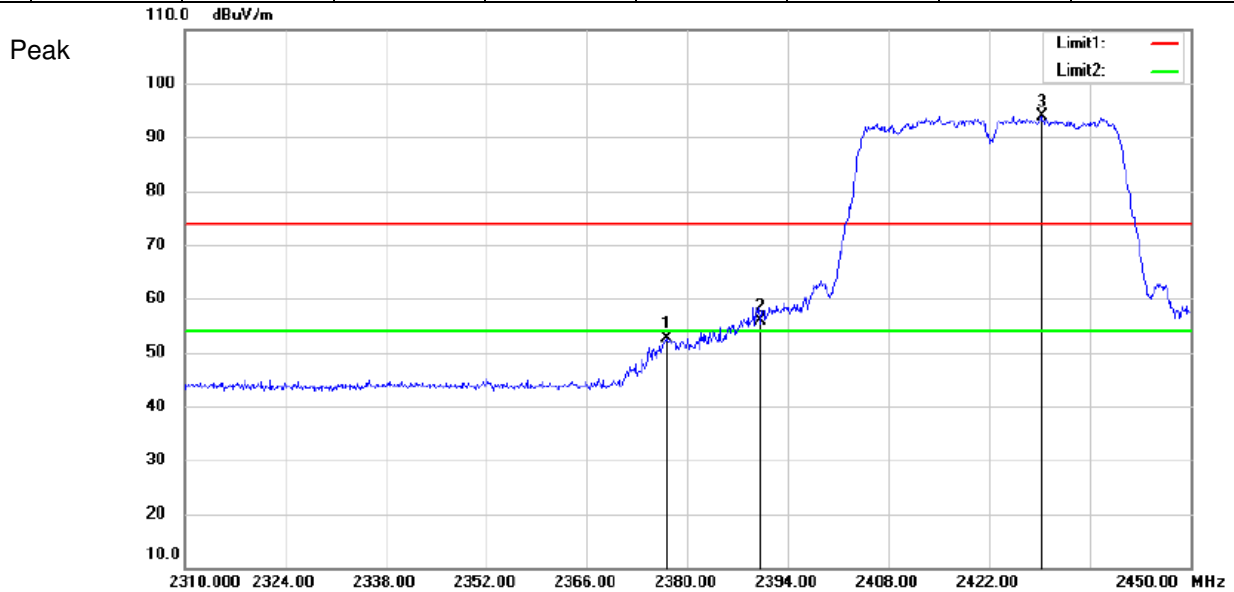
| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2376.78         | 62.27            | -3.85                | 58.42           | 74             | -15.58          | Peak     | Horizontal   |
| 2   | 2390            | 66.75            | -3.89                | 62.86           | 74             | -11.14          | Peak     | Horizontal   |
| 3   | 2425.22         | 101.58           | -3.94                | 97.64           | 74             | 23.64           | Peak     | Horizontal   |
| 1   | 2390            | 49.61            | -3.89                | 45.72           | 54             | -8.28           | Average  | Horizontal   |
| 2   | 2419.06         | 89.83            | -3.94                | 85.89           | 54             | 31.89           | Average  | Horizontal   |



Test Mode: 802.11n40

Channel: Lowest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2377.06         | 56.42            | -3.85                | 52.57           | 74             | -21.43          | Peak     | Vertical     |
| 2   | 2390            | 59.70            | -3.89                | 55.81           | 74             | -18.19          | Peak     | Vertical     |
| 3   | 2429.28         | 97.82            | -3.95                | 93.87           | 74             | 19.87           | Peak     | Vertical     |
| 1   | 2390            | 46.82            | -3.89                | 42.93           | 54             | -11.07          | Average  | Vertical     |
| 2   | 2418.36         | 87.77            | -3.93                | 83.84           | 54             | 29.84           | Average  | Vertical     |



Test Mode: 802.11n40

Channel: Highest

| MK. | Frequency (MHz) | Reading (dBuV/m) | Corrected factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------|--------------|
| 1   | 2445.12         | 98.28            | -3.97                | 94.31           | 74             | 20.31           | Peak     | Horizontal   |
| 2   | 2483.5          | 54.79            | -4.01                | 50.78           | 74             | -23.22          | Peak     | Horizontal   |
| 1   | 2467.68         | 98.71            | -4.00                | 94.71           | 74             | 20.71           | Peak     | Vertical     |
| 2   | 2483.5          | 57.26            | -4.01                | 53.25           | 74             | -20.75          | Peak     | Vertical     |
| 3   | 2484.24         | 57.00            | -4.02                | 52.98           | 74             | -21.02          | Peak     | Vertical     |



- Remark: 1. Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor
2. No any other emission which falls in restricted bands can be detected and be reported.
3. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205

Restricted bands of operation.

Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

FCC Part 15, Subpart C Section 15.205 Restricted bands of operation.

| 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     | 10.5 - 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         | 2655 - 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     |               |
| 13.36 - 13.41              |                       |                 |               |

## **8 Test Setup Photographs**

Refer to the < TVW-1106\_Test Setup photos-FCC>.

## **9 EUT Constructional Details**

Refer to the < TVW-1106\_External Photos-FCC > & < TVW-1106\_Internal Photos-FCC>.

**--End of the Report--**