



## **FCC 47 CFR PART 15 SUBPART C 15.247**

### **TEST REPORT**

### **FOR**

Embedded computer

Model : EC3310, SBC3300, NSD3305, NSD3307, NSD3310,  
EC3305, EC3307, K920, K330, POE-MB-A01(RT7402D),  
WLS-020

Issued to

IC NEXUS CO., LTD.

6F-1, No. 3-2 Park Street, Nan-Kang Dist., Taipei, Taiwan Post Code: 11503

Issued by

WH Technology Corp.



|                                                      |                             |                                                                                           |
|------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------|
| <b>Open Site</b>                                     |                             | <b>No.120, Ln. 5, Hudong St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)</b>       |
| <b>EMC Test Site</b>                                 | <b>Xizhi Office and Lab</b> | <b>7F., No.262, Sec. 3, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)</b> |
| <b>Tel.: +886-2-7729-7707 Fax: +886-2- 8648-1311</b> |                             |                                                                                           |

*Note: This test refers exclusively to the test presented test model and sample. This report shall not be reproduced except in full, without the written approval of WH Technology Corp. This document may be altered or revised by WH Technology Corp. Personnel only, and shall be noted in the revision section of the document.*



## Contents

|                                                                      |           |
|----------------------------------------------------------------------|-----------|
| <b>PHOTOS OF EUT 1. General Information .....</b>                    | <b>3</b>  |
| <b>2. Report of Measurements and Examinations .....</b>              | <b>5</b>  |
| 2.1 List of Measurements and Examinations .....                      | 5         |
| <b>3. Test Configuration of Equipment under Test .....</b>           | <b>6</b>  |
| 3.1 Description of the tested samples .....                          | 6         |
| 3.2 Carrier Frequency of Channels .....                              | 7         |
| 3.3 Test Mode and Test Software .....                                | 8         |
| 3.4 TEST Methodology & General Test Procedures .....                 | 9         |
| 3.5 Measurement Uncertainty .....                                    | 10        |
| 3.6 Description of the Support Equipments .....                      | 10        |
| <b>4. Test and measurement equipment .....</b>                       | <b>12</b> |
| 4.1 calibration .....                                                | 12        |
| 4.2 equipment .....                                                  | 12        |
| <b>5. Antenna Requirements .....</b>                                 | <b>15</b> |
| 5.1 Standard Applicable .....                                        | 15        |
| 5.2 Antenna Construction and Directional Gain .....                  | 15        |
| <b>6. Test of Conducted Emission .....</b>                           | <b>16</b> |
| 6.1 Test Limit .....                                                 | 16        |
| 6.2 Test Procedures .....                                            | 16        |
| 6.3 Typical Test Setup .....                                         | 17        |
| 6.4 Test Result and Data .....                                       | 18        |
| <b>7. Test of Radiated Emission .....</b>                            | <b>20</b> |
| 7.1 Test Limit .....                                                 | 20        |
| 7.2 Test Procedures .....                                            | 20        |
| 7.3 Typical Test Setup .....                                         | 22        |
| 7.4 Test Result and Data (9kHz ~ 30MHz) .....                        | 23        |
| 7.5 Test Result and Data (30MHz ~ 1GHz, worst emissions found) ..... | 23        |
| 7.6 Test Result and Data (Above 1GHz) .....                          | 25        |
| <b>8. 6dB Bandwidth Measurement Data .....</b>                       | <b>31</b> |
| 8.1 Test Limit .....                                                 | 31        |
| 8.2 Test Procedures .....                                            | 31        |
| 8.3 Test Setup Layout .....                                          | 31        |
| 8.4 Test Result and Data .....                                       | 32        |
| <b>9. Maximum Output Power .....</b>                                 | <b>42</b> |
| 9.1 Test Limit .....                                                 | 42        |
| 9.2 Test Procedures .....                                            | 42        |
| 9.3 Test Setup Layout .....                                          | 42        |



---

|            |                                               |           |
|------------|-----------------------------------------------|-----------|
| 9.4        | Test Result and Data .....                    | 43        |
| <b>10.</b> | <b>Power Spectral Density .....</b>           | <b>53</b> |
| 10.1       | Test Limit .....                              | 53        |
| 10.2       | Test Procedures .....                         | 53        |
| 10.3       | Test Setup Layout .....                       | 53        |
| 10.4       | Test Result and Data .....                    | 54        |
| <b>11.</b> | <b>Band Edges Measurement .....</b>           | <b>64</b> |
| 11.1       | Test Limit .....                              | 64        |
| 11.2       | Test Procedure .....                          | 64        |
| 11.3       | Test Setup Layout .....                       | 64        |
| 11.4       | Test Result and Data .....                    | 65        |
| 11.5       | Restrict Band Emission Measurement Data ..... | 72        |
| <b>12.</b> | <b>Restricted Bands of Operation .....</b>    | <b>78</b> |
| 12.1       | Labeling Requirement .....                    | 78        |

**APPENDIX 1 PHOTOS OF TEST CONFIGURATION  
PHOTOS OF EUT**



## 1. General Information

**Applicant** : IC NEXUS CO., LTD.

**Address** : 6F-1, No. 3-2 Park Street, Nan-Kang Dist., Taipei 11503, Taiwan

**Manufacturer** : IC NEXUS CO., LTD.

**Address** : 6F-1, No. 3-2 Park Street, Nan-Kang Dist., Taipei, Taiwan  
Post Code: 11503

**EUT** : Embedded computer

**Model Name** : EC3310, SBC3300, NSD3305, NSD3307, NSD3310, EC3305, EC3307, K920, K330, POE-MB-A01(RT7402D), WLS-020

**Model Differences** : Panel of EC3310, SBC3300, NSD3310, K920, K330, POE-MB-A01(RT7402D) and WLS-020 are 10.1 inch. There is no difference among EC3310, SBC3300, NSD3310, K920, K330, POE-MB-A01(RT7402D) and WLS-020.

Panel of NSD3305 and EC3305 are 5 inch. There is no difference between NSD3305 and EC3305.

Panel of NSD3307 and EC3307 is 7 inch. There is no difference between NSD3307 and EC3307

There is no schematics and layout difference for above models.

**Worst case of EMI is model EC3310 so testing model is EC3310.**

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.10. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

### FCC part 15 subpart C

Receipt Date : 03/23/2022

Final Test Date : 07/07/2022

**Tested By:****Reviewed by:**

Jul. 07, 2022

**Date**

Bing Zhang / Project Engineer

Jul. 07, 2022

**Date**

Bell Wei / Manager

Designation Number: TW2954

Test Firm Registration Number: 749714



## 2. Report of Measurements and Examinations

### 2.1 List of Measurements and Examinations

| FCC Rule            | Description of Test                      | Result |
|---------------------|------------------------------------------|--------|
| 15.203              | Antenna Requirement                      | Pass   |
| 15.207              | Conducted Emission                       | Pass   |
| 15.209<br>15.247(d) | Radiated Emission                        | Pass   |
| 15.247(a)(2)        | 6dB Bandwidth                            | Pass   |
| 15.247(b)           | Maximum Output Power                     | Pass   |
| 15.247(d)           | 100kHz Bandwidth of Frequency Band Edges | Pass   |
| 15.247(e)           | Power Spectral Density                   | Pass   |



## 3. Test Configuration of Equipment under Test

### 3.1 Description of the tested samples

EUT Name : Embedded computer

Model Number : EC3310

FCCID : 2ACLCECNSDSBC330J60

Receipt Date : 03/23/2022

Input Voltage : DC 12V

Power From : ☐Inside ☒Outside  
☒Adaptor ☐Battery ☐AC Power Source ☐DC Power Source  
☐Support Unit PC

Operate Frequency : Refer to the channel list as described below (2.412 ~2.462 GHz)

Modulation Technique : 802.11b : 11 Mbps  
802.11g : 6 Mbps  
802.11n HT20 : 6.5 Mbps

Number of Channels : 802.11b, 802.11g, 802.11n, HT20 : 11

Channel spacing : ☐N/A ☒ 5 MHz

Operating Mode : ☐Simplex ☒Half Duplex

Antenna Type : Dipole Antenna

Channel bandwidth : 5 MHz

Antenna gain : 2.7 dBi



## 3.2 Carrier Frequency of Channels

802.11b, 802.11g, 802.11n HT 20 (2412MHz~2462MHz)

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 01      | 2412           | 07      | 2442           |
| 02      | 2417           | 08      | 2447           |
| 03      | 2422           | 09      | 2452           |
| 04      | 2427           | 10      | 2457           |
| 05      | 2432           | 11      | 2462           |
| 06      | 2437           | ---     | ---            |



### **3.3 Test Mode and Test Software**

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- b. The complete test system included Notebook and EUT for RF test.
- c. An executive "QATEST" under XP was executed to keep transmitting and receiving data via Wireless.
- d. The following test modes were performed for test:
  - 802.11b/g/n HT20: CH01: 2412MHz, CH06: 2437MHz, CH11: 2462MHz
- e. Keep transmitting and receiving data via Wireless. Duty cycle is 100%.



## 3.4 TEST Methodology & General Test Procedures

All testing as described bellowed were performed in accordance with ANSI C63.10 and FCC CFR 47 Part 15 Subpart C.

### Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.10. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

### Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

- 1) Putting the EUT on the platform and turning on the EUT (on/off button on the bottom of the EUT).
- 2) Setting test channel described as "Channel setting and operating condition", and testing channel by channel.
- 3) For the maximum output power measurement, we followed the method of measurement KDB558074 D01.
- 4) For the spurious emission test based on ANSI(2014), at the frequency where below 1GHz used quasi-peak detector mode; where above 1GHz used the peak and average detector mode. IF the peak value may be under average limit, the average mode will not be performed.

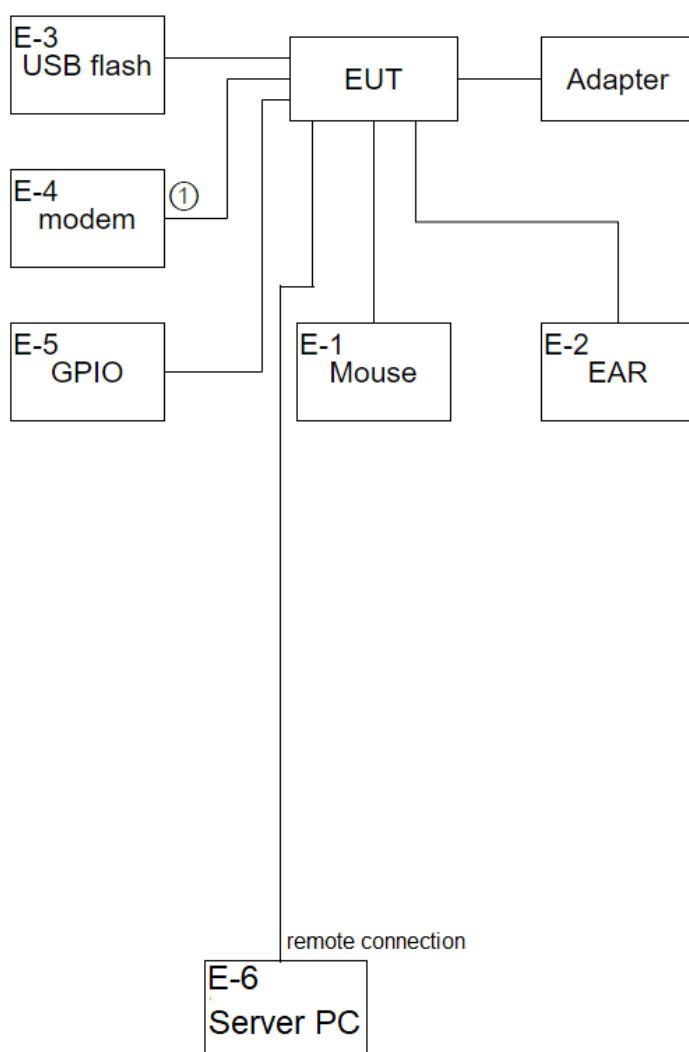


## 3.5 Measurement Uncertainty

| Measurement Item             | Uncertainty         |
|------------------------------|---------------------|
| Radiated emission            | $\pm 4.11\text{dB}$ |
| Peak Output Power(conducted) | $\pm 1.38\text{dB}$ |
| Peak Output Power(Radiated)  | $\pm 1.70\text{dB}$ |
| Power Spectral Density       | $\pm 1.39\text{dB}$ |
| Radiated emission(3m)        | $\pm 4.11\text{dB}$ |
| Radiated emission(10m)       | $\pm 3.89\text{dB}$ |

## 3.6 Description of the Support Equipments

### Setup Diagram





## Support Equipment

Peripherals Devices:

| OUTSIDE SUPPORT EQUIPMENT |                           |                 |                                  |                    |               |                        |                             |
|---------------------------|---------------------------|-----------------|----------------------------------|--------------------|---------------|------------------------|-----------------------------|
| No.                       | Equipment                 | Model           | Serial No.                       | FCC ID/<br>BSMI ID | Trade<br>name | Data Cable             | Power<br>Cord/ LAN<br>Cable |
| ①                         | RS232 cable               | N/A             | N/A                              | N/A                | N/A           | Unshielded<br>1.5m     | N/A                         |
| E-1                       | Mouse                     | MS116p          | CN-04DW<br>DN-73826-<br>5CM-0120 | R41108             | DELL          | Shielded<br>1.8m / USB | N/A                         |
| E-2                       | Ear-Phone+<br>Micro-Phone | EM-1120M<br>V   | N/A                              | N/A                | i-gota        | Unshielded<br>1m*2     | N/A                         |
| E-3                       | USB 3.0                   | 32G             | AUC350-3<br>2G-CGD               | D33A23             | ADATA         | Shielded<br>1m / USB   | N/A                         |
| E-4                       | Modem                     | 2FXS/2FX<br>O   | F09NH591<br>0                    | N/A                | NA            | Unshielded<br>1.8m     | Unshielded<br>1.8m          |
| E-5                       | GPIO                      | N/A             | N/A                              | N/A                | N/A           | N/A                    | N/A                         |
| E-6                       | Server PC                 | D19M            | CYY7Y<br>A00 DC4                 | R33002             | DELL          | N/A                    | Unshielded<br>1.8m          |
| INSIDE SUPPORT EQUIPMENT  |                           |                 |                                  |                    |               |                        |                             |
| No.                       | Equipment                 | Model           | Serial No.                       | FCC ID/<br>BSMI ID | Trade<br>name | Data Cable             | Power Cord                  |
| 1.                        | ADAPTER                   | LTE36E-S2<br>-1 | N/A                              | N/A                | LTE           | N/A                    | N/A                         |

**Note:** All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

**Grounding:** Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.



## **4. Test and measurement equipment**

### **4.1 calibration**

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### **4.2 equipment**

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

**TABLELIST OF TEST AND MEASUREMENT EQUIPMENT**

| Conducted emission           |                   |                                          |                          |               |
|------------------------------|-------------------|------------------------------------------|--------------------------|---------------|
| Instrument                   | Manufacturer      | Model No.                                | Serial No.               | Cali Due Date |
| EMI Test Receiver            | R&S               | ESHS10                                   | 830223/008               | 2022/09/14    |
| Spectrum Analyzer            | R&S               | FSP3                                     | 833387/010               | 2023/02/14    |
| Two-Line V-Network           | R&S               | NNB-2/16z                                | 98062                    | 2022/09/23    |
| Test Cable                   | N/A               | N/A                                      | WH-CON03                 | 2022/10/19    |
| Measurement Software         | AUDIX             | e3                                       | V6.101222a               | N/A           |
| Radiated emission Below 1GHz |                   |                                          |                          |               |
| Instrument                   | Manufacturer      | Model No.                                | Serial No.               | Cali Due Date |
| Bilog antenna                | ETC               | MCTD2786B                                | BLB19O04027/J<br>B-5-027 | 2022/11/10    |
| LOOP Antenna                 | EMCO              | 6507                                     | 9301-1298                | 2023/02/16    |
| Pre-amplifier                | EMCI              | EMC9135                                  | 980334                   | 2022/07/15    |
| Cable                        | EMCI              | N male on end<br>of both sides<br>(EMI4) | 30m                      | 2023/03/20    |
| Receiver                     | R&S               | ESVS30                                   | 826006/002               | 2023/02/15    |
| Spectrum Analyzer            | R&S               | FSP7                                     | 830180/006               | 2023/05/11    |
| Measurement Software         | AUDIX             | e3                                       | V6.101222a               | N/A           |
| Radiated emission Above 1GHz |                   |                                          |                          |               |
| Instrument                   | Manufacturer      | Model No.                                | Serial No.               | Cali Due Date |
| Horn antenna                 | ETS<br>LINDGREN   | 3117                                     | 00114397                 | 2022/07/28    |
| Horn antenna                 | com-power         | AH-826                                   | 81000                    | 2022/10/03    |
| Horn antenna                 | Schwarzbeck       | BBHA9170                                 | #687                     | 2023/05/12    |
| Pre-amplifier                | EMCI              | EMC051845                                | 980108                   | 2023/03/30    |
| Pre-amplifier                | MITEQ             | JS4-18002600-3<br>0-5A                   | 808329                   | 2022/09/15    |
| Pre-amplifier                | EMC<br>INSTRUMENT | EMC264035SE                              | 980288                   | 2023/05/12    |
| RF CABLE                     | SUCOFLEX          | 104PEA                                   | 27348/4PEA               | 2022/09/06    |
| RF CABLE                     | AGILENT           | EMC102-KM-K<br>M-3000                    | 160101                   | 2022/09/14    |
| RF CABLE                     | AGILENT           | EMC102-KM-K<br>M-600                     | 160102                   | 2022/09/14    |



---

|                      |           |        |            |            |
|----------------------|-----------|--------|------------|------------|
| Spectrum Analyzer    | R&S       | FSP7   | 830180/006 | 2023/05/11 |
| Spectrum Analyzer    | AGILENT   | N9010A | MY51280195 | 2022/09/15 |
| Spectrum Analyzer    | ADVANTEST | R3182  | 150900201  | 2023/04/13 |
| Measurement Software | AUDIX     | e3     | V6.101222a | N/A        |

**\*CALIBRATION INTERVAL OF INSTRUMENTS LISTED ABOVE IS ONE YEAR**



## **5. Antenna Requirements**

### **5.1 Standard Applicable**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### **5.2 Antenna Construction and Directional Gain**

#### **802.11b/g/n:**

Antenna Type: Dipole Antenna

Antenna Gain: 2.7 dBi



## 6. Test of Conducted Emission

### 6.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.10. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

| Frequency<br>(MHz) | Quasi Peak<br>(dB $\mu$ V) | Average<br>(dB $\mu$ V) |
|--------------------|----------------------------|-------------------------|
| 0.15 – 0.5         | 66-56*                     | 56-46*                  |
| 0.5 – 5.0          | 56                         | 46                      |
| 5.0 – 30.0         | 60                         | 50                      |

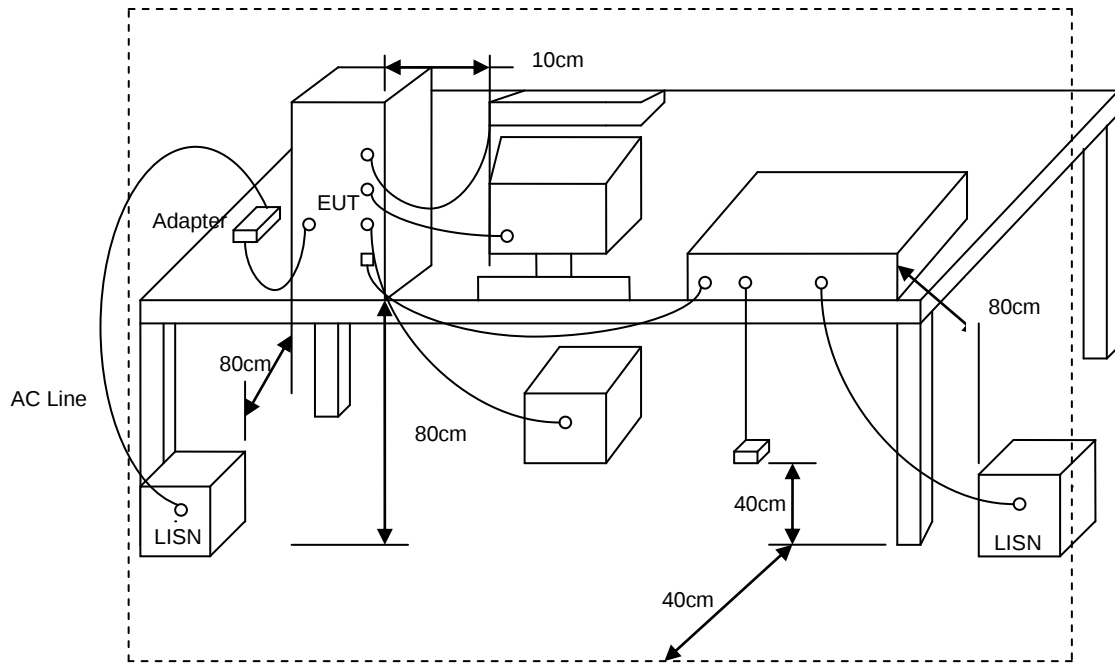
\*Decreases with the logarithm of the frequency.

### 6.2 Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system and using CISPR Quasi-Peak / Average detectors and Specified Bandwidth with Maximum Hold Mode.
- RBW=9kHz. VBW=30kHz.



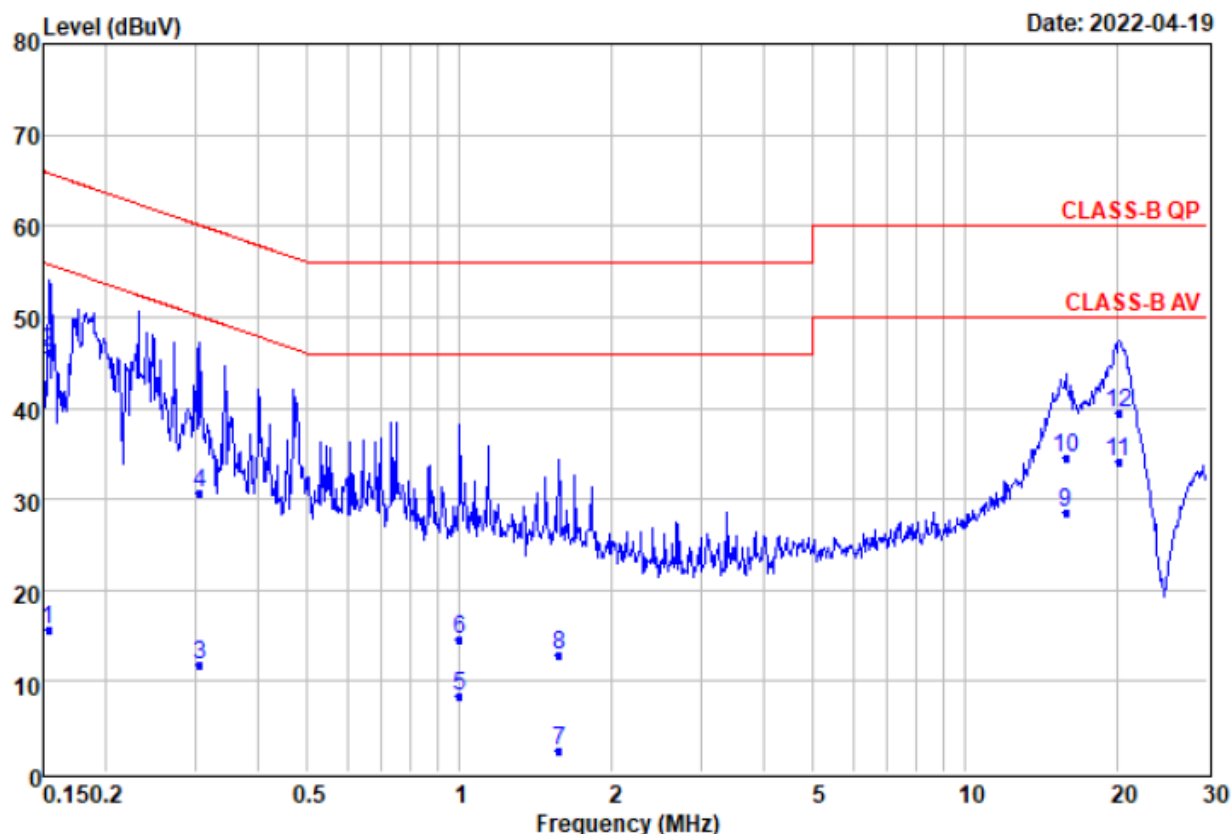
### 6.3 Typical Test Setup





## 6.4 Test Result and Data

|             |           |           |        |
|-------------|-----------|-----------|--------|
| Power       | : DC 12V  | Pol/Phase | : LINE |
| Temperature | : 26.3 °C | Humidity  | : 52 % |



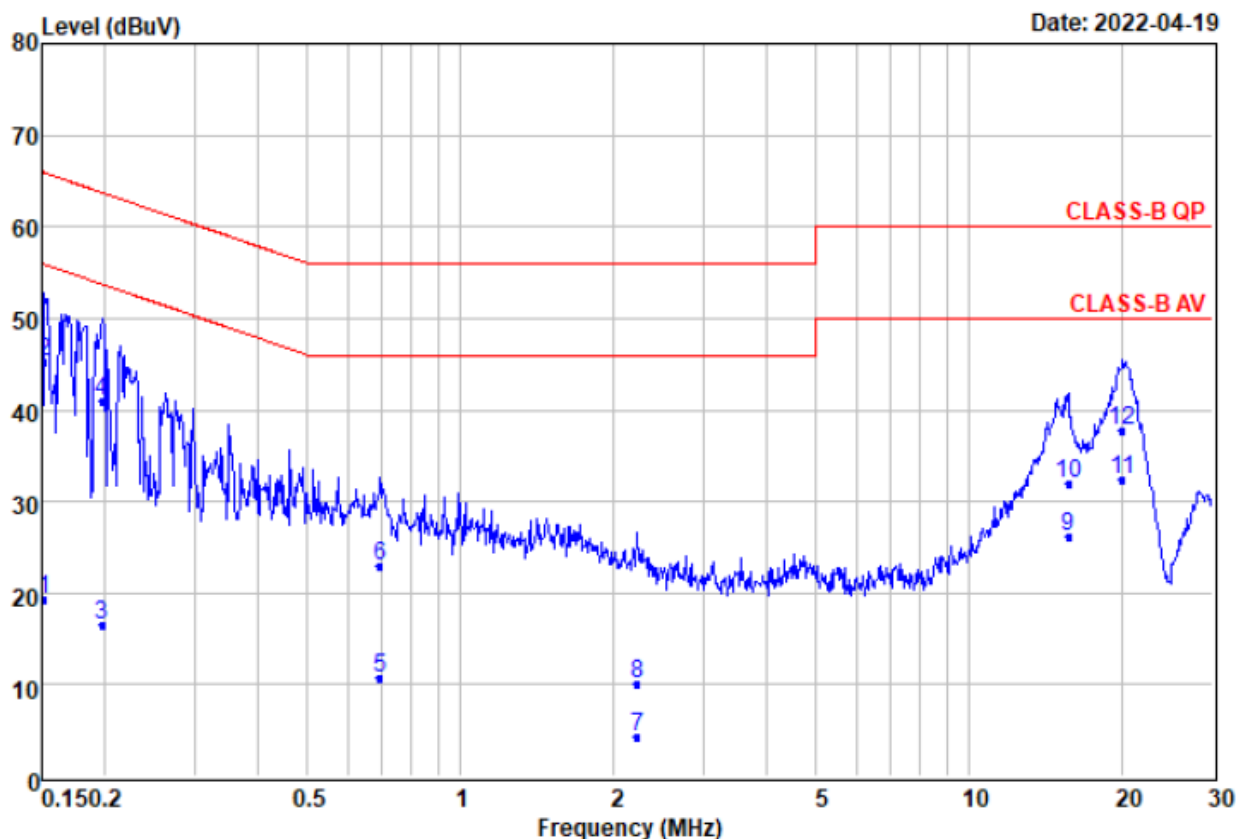
Remarks

: Factor=Insertion loss+Cable loss

|    | Freq  | Read Level | Level | Factor | Over Limit | Limit | Line    | Remark |
|----|-------|------------|-------|--------|------------|-------|---------|--------|
|    | MHz   | dBuV       | dBuV  | dB     | dB         | dBuV  |         |        |
| 1  | 0.15  | 5.53       | 15.64 | 10.11  | -40.14     | 55.78 | Average |        |
| 2  | 0.15  | 36.04      | 46.15 | 10.11  | -19.63     | 65.78 | QP      |        |
| 3  | 0.31  | 1.75       | 11.86 | 10.11  | -38.20     | 50.06 | Average |        |
| 4  | 0.31  | 20.56      | 30.67 | 10.11  | -29.39     | 60.06 | QP      |        |
| 5  | 1.00  | -1.84      | 8.31  | 10.15  | -37.69     | 46.00 | Average |        |
| 6  | 1.00  | 4.44       | 14.59 | 10.15  | -41.41     | 56.00 | QP      |        |
| 7  | 1.57  | -7.72      | 2.45  | 10.17  | -43.55     | 46.00 | Average |        |
| 8  | 1.57  | 2.78       | 12.95 | 10.17  | -43.05     | 56.00 | QP      |        |
| 9  | 15.80 | 18.09      | 28.54 | 10.45  | -21.46     | 50.00 | Average |        |
| 10 | 15.80 | 24.12      | 34.57 | 10.45  | -25.43     | 60.00 | QP      |        |
| 11 | 20.06 | 23.70      | 34.20 | 10.50  | -15.80     | 50.00 | Average |        |
| 12 | 20.06 | 29.04      | 39.54 | 10.50  | -20.46     | 60.00 | QP      |        |



|             |           |           |          |
|-------------|-----------|-----------|----------|
| Power       | : DC 12V  | Pol/Phase | : NEUTRL |
| Temperature | : 26.3 °C | Humidity  | : 52 %   |



## Remarks

: Factor=Insertion loss+Cable loss

|      | Freq  | Read Level | Level | Factor | Over Limit | Limit Line | Remark  |
|------|-------|------------|-------|--------|------------|------------|---------|
|      | MHz   | dBuV       | dBuV  | dB     | dB         | dBuV       |         |
| 1    | 0.15  | 9.32       | 19.41 | 10.09  | -36.50     | 55.91      | Average |
| 2    | 0.15  | 35.20      | 45.29 | 10.09  | -20.62     | 65.91      | QP      |
| 3    | 0.20  | 6.43       | 16.52 | 10.09  | -37.19     | 53.71      | Average |
| 4    | 0.20  | 30.92      | 41.01 | 10.09  | -22.70     | 63.71      | QP      |
| 5    | 0.69  | 0.57       | 10.69 | 10.12  | -35.31     | 46.00      | Average |
| 6    | 0.69  | 12.84      | 22.96 | 10.12  | -33.04     | 56.00      | QP      |
| 7    | 2.22  | -5.93      | 4.23  | 10.16  | -41.77     | 46.00      | Average |
| 8    | 2.22  | -0.15      | 10.01 | 10.16  | -45.99     | 56.00      | QP      |
| 9    | 15.63 | 15.82      | 26.24 | 10.42  | -23.76     | 50.00      | Average |
| 10   | 15.63 | 21.60      | 32.02 | 10.42  | -27.98     | 60.00      | QP      |
| 11 @ | 19.95 | 21.90      | 32.36 | 10.46  | -17.64     | 50.00      | Average |
| 12   | 19.95 | 27.28      | 37.74 | 10.46  | -22.26     | 60.00      | QP      |



## 7. Test of Radiated Emission

### 7.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

| Frequency (MHz) | Field Strength (microvolt/meter) | Measurement Distance (meters) |
|-----------------|----------------------------------|-------------------------------|
| 0.009 ~ 0.490   | 2400/F(kHz)                      | 300                           |
| 0.490 ~ 1.705   | 24000/F(kHz)                     | 30                            |
| 1.705 ~ 30.0    | 30                               | 30                            |
| 30 ~ 88         | 100                              | 3                             |
| 88 ~ 216        | 150                              | 3                             |
| 216 ~ 960       | 200                              | 3                             |
| Above 960       | 500                              | 3                             |

### 7.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than



average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

i. "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

j. Use the following spectrum analyzer settings:

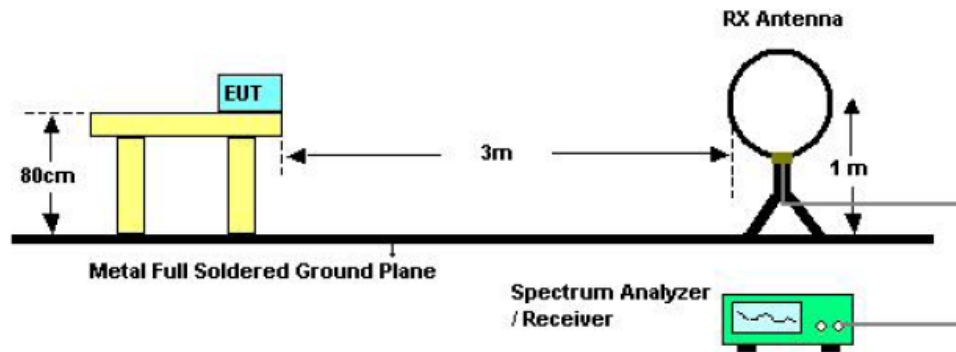
| Spectrum Parameter                    | Setting                                          |
|---------------------------------------|--------------------------------------------------|
| Attenuation                           | Auto                                             |
| Start Frequency                       | 1000 MHz                                         |
| Stop Frequency                        | 10 <sup>th</sup> carrier harmonic                |
| RB / VB (emission in restricted band) | 1 MHz / 3 MHz for Peak, 1 MHz / 10Hz for Average |

| Receiver Parameter     | Setting                          |
|------------------------|----------------------------------|
| Attenuation            | Auto                             |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP    |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP    |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

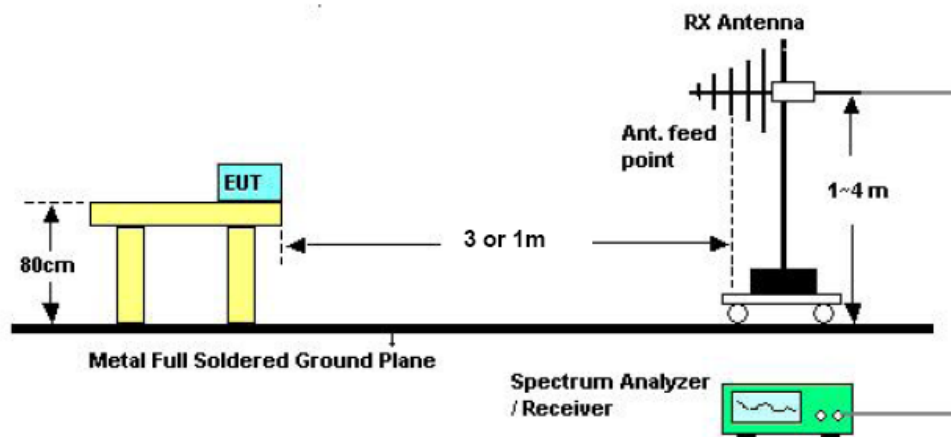


## 7.3 Typical Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor =  $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

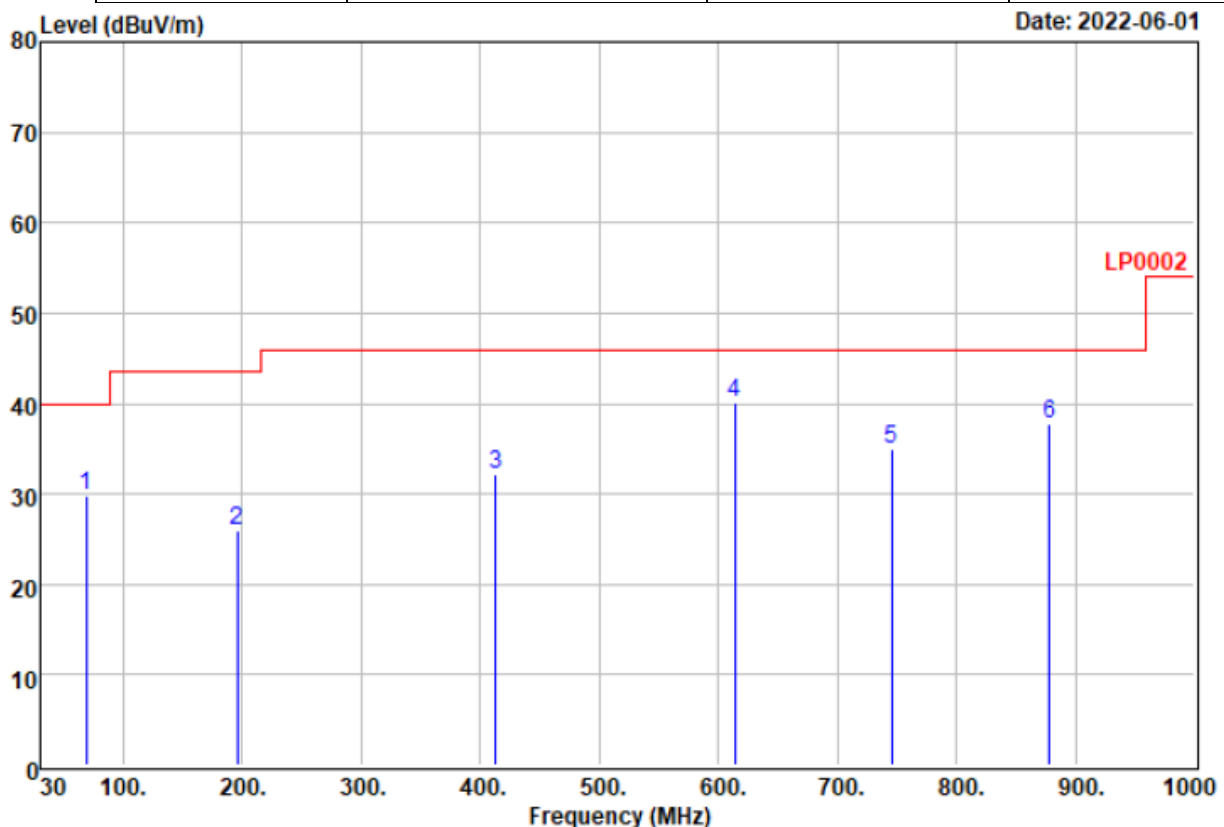


## 7.4 Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

## 7.5 Test Result and Data (30MHz ~ 1GHz, worst emissions found)

|             |                    |             |            |
|-------------|--------------------|-------------|------------|
| Test Mode 1 | : TX g CH6 2437MHz | Pol/Phase   | : VERTICAL |
| Humidity    | : 70 %             | Temperature | : 31 °C    |

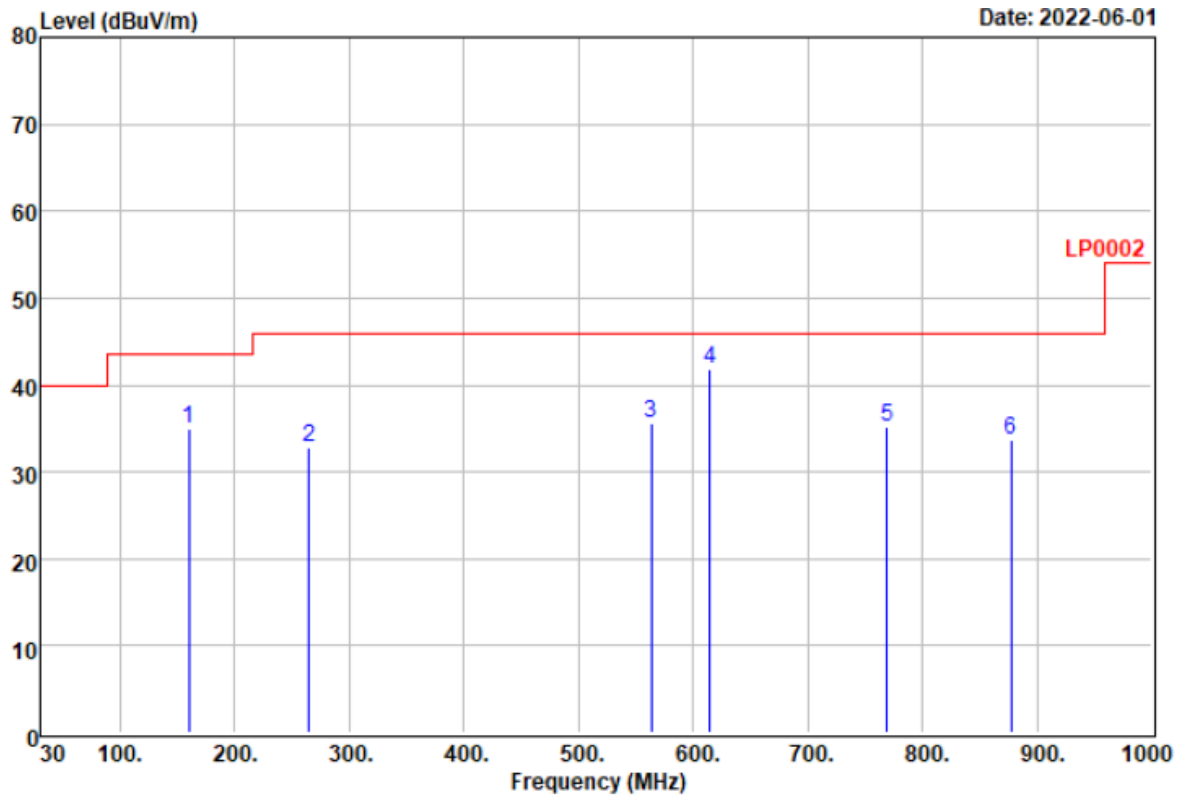


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |         | Read  |        |        | Limit  | Over   |        |
|-----|---------|-------|--------|--------|--------|--------|--------|
|     | Freq    | Level | Factor | Level  | Line   | Limit  | Remark |
|     | MHz     | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |        |
| 1   | 68.960  | 51.96 | -22.13 | 29.83  | 40.00  | -10.17 | QP     |
| 2   | 195.700 | 44.86 | -18.99 | 25.87  | 43.50  | -17.63 | QP     |
| 3   | 412.880 | 42.98 | -10.80 | 32.18  | 46.00  | -13.82 | QP     |
| 4 @ | 614.020 | 48.63 | -8.44  | 40.19  | 46.00  | -5.81  | QP     |
| 5   | 745.670 | 40.88 | -6.02  | 34.86  | 46.00  | -11.14 | QP     |
| 6   | 878.140 | 41.46 | -3.71  | 37.75  | 46.00  | -8.25  | QP     |



|             |   |                  |             |   |            |
|-------------|---|------------------|-------------|---|------------|
| Test Mode 1 | : | TX g CH6 2437MHz | Pol/Phase   | : | HORIZONTAL |
| Humidity    | : | 70 %             | Temperature | : | 31 °C      |



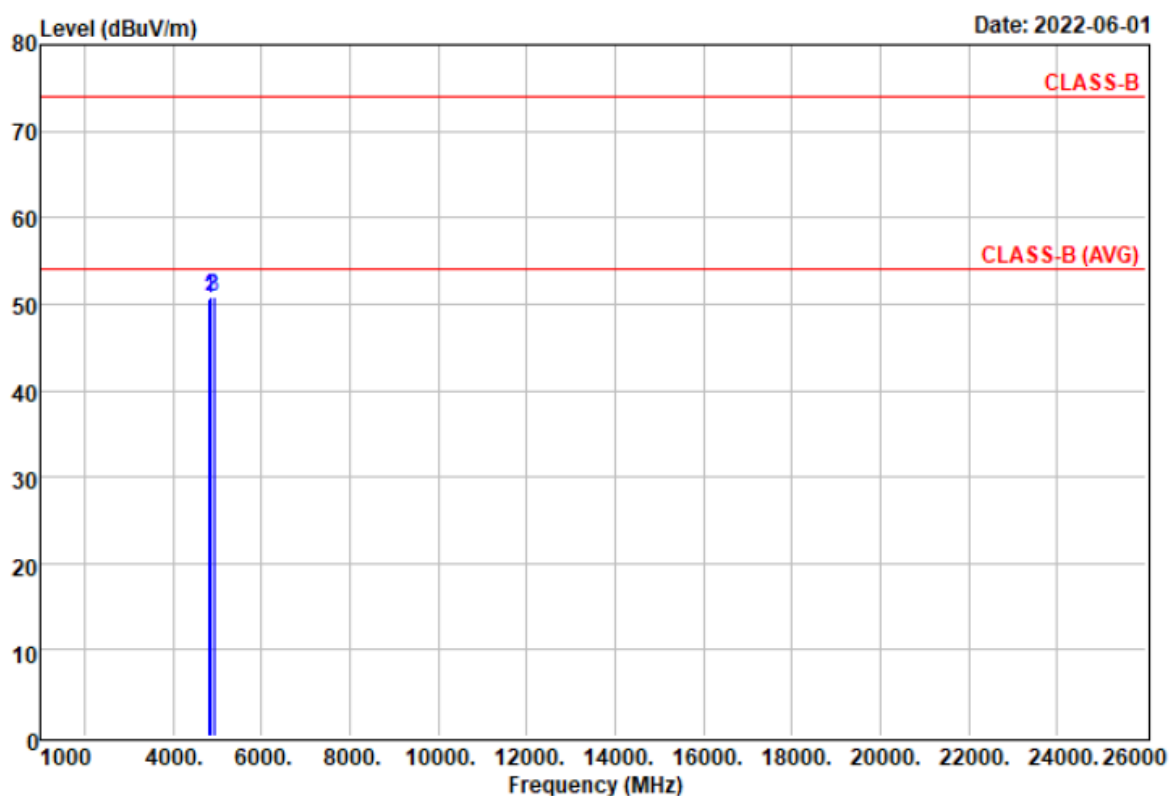
Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |         | Read  |        |        | Limit  | Over   |        |
|-----|---------|-------|--------|--------|--------|--------|--------|
|     | Freq    | Level | Factor | Level  | Line   | Limit  | Remark |
|     | MHz     | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |        |
| 1   | 159.860 | 52.36 | -17.38 | 34.98  | 43.50  | -8.52  | QP     |
| 2   | 265.050 | 47.27 | -14.56 | 32.71  | 46.00  | -13.29 | QP     |
| 3   | 563.780 | 44.38 | -8.85  | 35.53  | 46.00  | -10.47 | QP     |
| 4 @ | 614.600 | 50.33 | -8.42  | 41.91  | 46.00  | -4.09  | QP     |
| 5   | 768.960 | 40.78 | -5.61  | 35.17  | 46.00  | -10.83 | QP     |
| 6   | 877.470 | 37.50 | -3.72  | 33.78  | 46.00  | -12.22 | QP     |



## 7.6 Test Result and Data (Above 1GHz)

|             |                        |             |              |
|-------------|------------------------|-------------|--------------|
| Test Mode 1 | : b - CH1 - CH6 - CH11 | Pol/Phase   | : HORIZONTAL |
| Humidity    | : 70 %                 | Temperature | : 31 °C      |

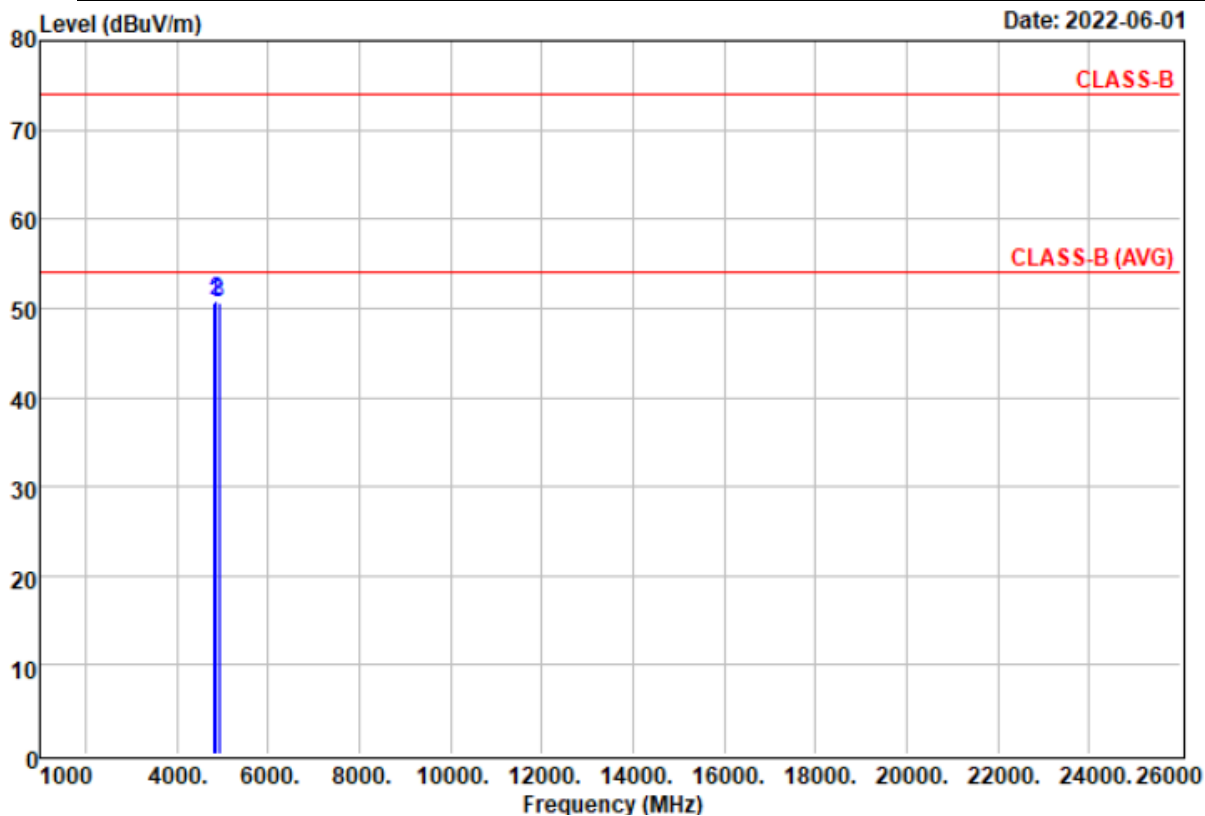


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |          | Read  |        | Limit  | Over   |              |
|-----|----------|-------|--------|--------|--------|--------------|
|     | Freq     | Level | Factor | Level  | Line   | Limit Remark |
|     | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB           |
| 1   | 4824.000 | 54.72 | -4.10  | 50.62  | 74.00  | -23.38 Peak  |
| 2 @ | 4874.000 | 54.87 | -4.00  | 50.87  | 74.00  | -23.13 Peak  |
| 3   | 4924.000 | 54.64 | -3.89  | 50.75  | 74.00  | -23.25 Peak  |



|             |                        |             |            |
|-------------|------------------------|-------------|------------|
| Test Mode 1 | : b - CH1 - CH6 - CH11 | Pol/Phase   | : VERTICAL |
| Humidity    | : 70 %                 | Temperature | : 31 °C    |

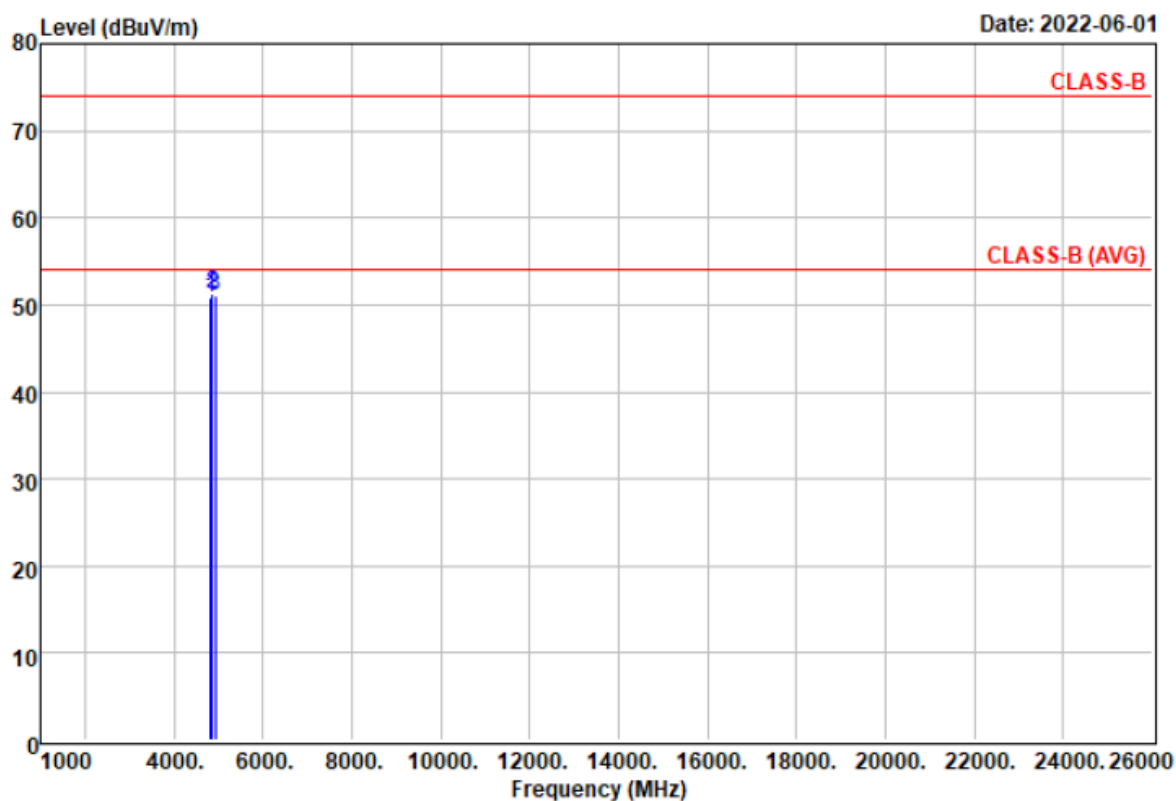


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|      |          | Read   |        | Limit  | Over  |             |
|------|----------|--------|--------|--------|-------|-------------|
| Freq | Level    | Factor | Level  | Line   | Limit | Remark      |
| MHz  | dBuV     | dB/m   | dBuV/m | dBuV/m | dB    |             |
| 1    | 4824.000 | 54.67  | -4.10  | 50.57  | 74.00 | -23.43 Peak |
| 2 @  | 4874.000 | 54.84  | -4.00  | 50.84  | 74.00 | -23.16 Peak |
| 3    | 4924.000 | 54.59  | -3.89  | 50.70  | 74.00 | -23.30 Peak |



|             |   |                      |             |   |            |
|-------------|---|----------------------|-------------|---|------------|
| Test Mode 1 | : | g - CH1 - CH6 - CH11 | Pol/Phase   | : | HORIZONTAL |
| Humidity    | : | 70 %                 | Temperature | : | 31 °C      |
| Memo        | : |                      | Humidity    | : | 63 %       |

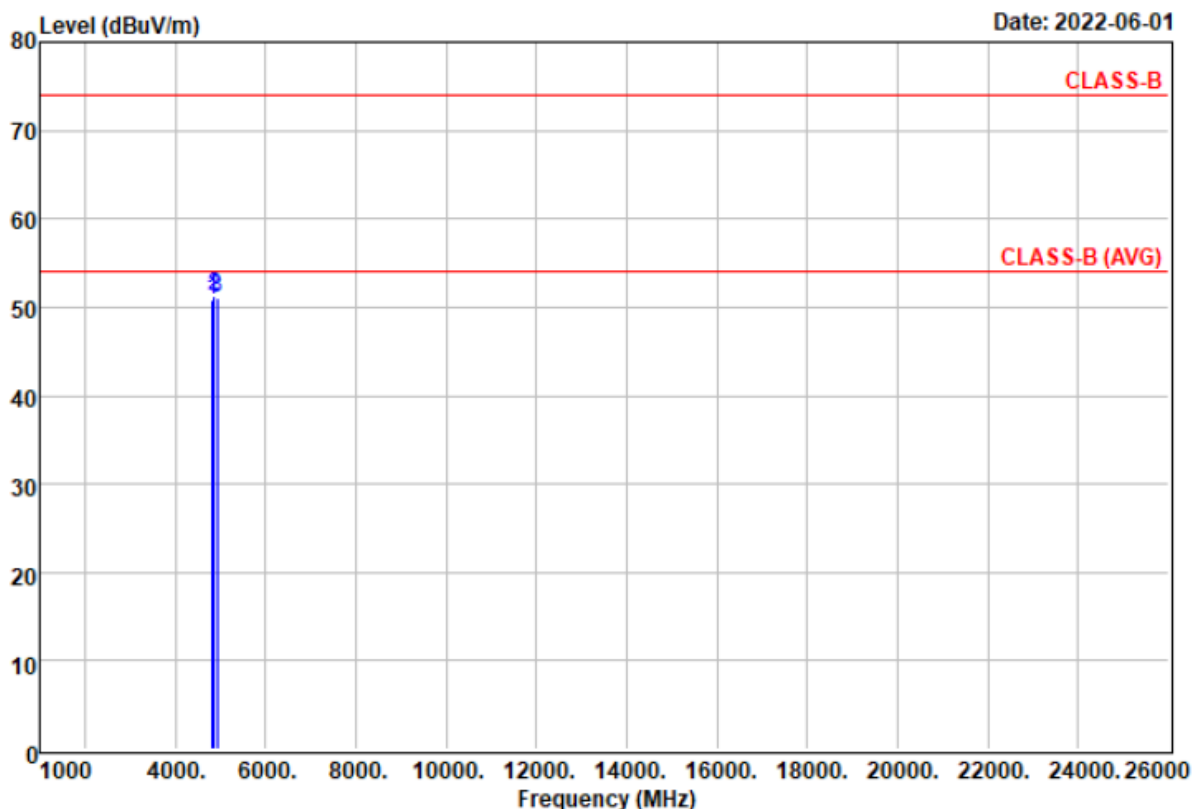


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |          | Read  |        | Limit  | Over   |              |
|-----|----------|-------|--------|--------|--------|--------------|
|     | Freq     | Level | Factor | Level  | Line   | Limit Remark |
|     | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB           |
| 1   | 4824.000 | 55.03 | -4.10  | 50.93  | 74.00  | -23.07 Peak  |
| 2 @ | 4874.000 | 55.20 | -4.00  | 51.20  | 74.00  | -22.80 Peak  |
| 3   | 4924.000 | 54.98 | -3.89  | 51.09  | 74.00  | -22.91 Peak  |



|             |                        |             |            |
|-------------|------------------------|-------------|------------|
| Test Mode 1 | : g - CH1 - CH6 - CH11 | Pol/Phase   | : VERTICAL |
| Humidity    | : 70 %                 | Temperature | : 31 °C    |

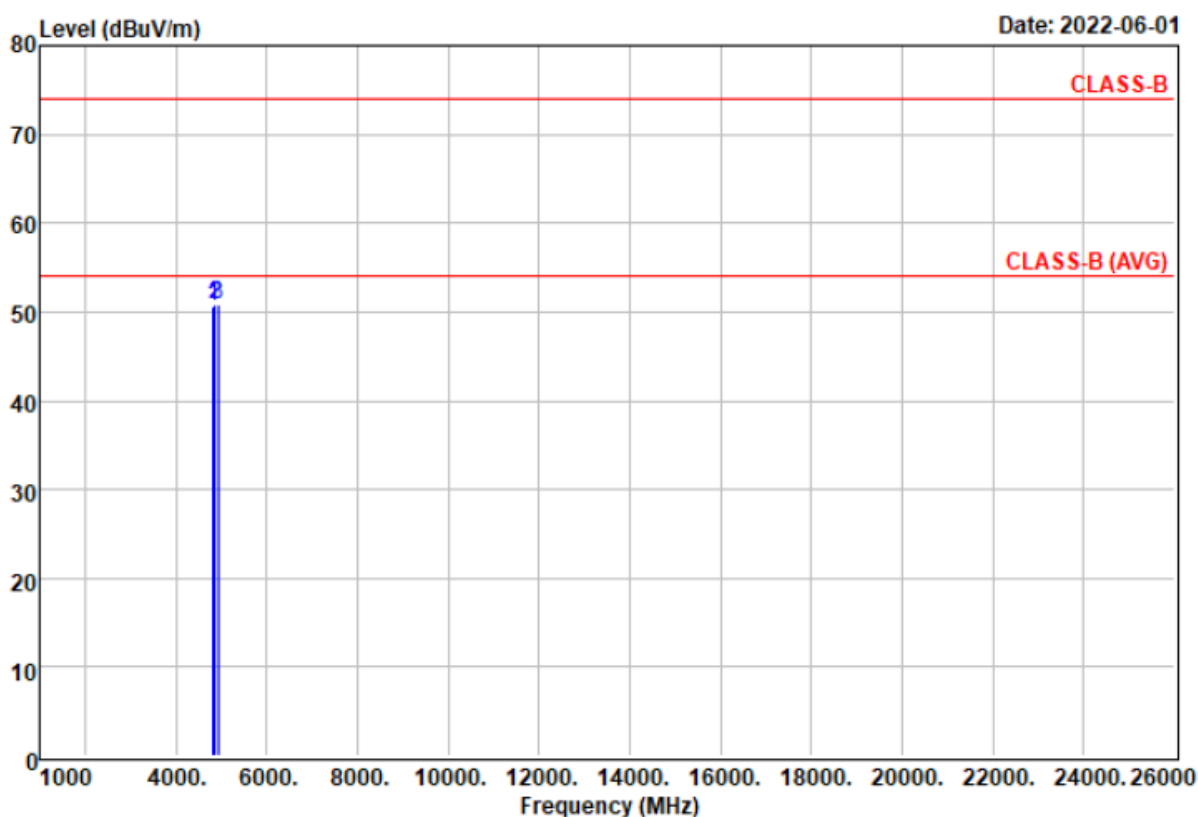


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     | Freq     | Read Level | Factor | Level  | Limit Line | Over Limit | Remark |
|-----|----------|------------|--------|--------|------------|------------|--------|
|     | MHz      | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |
| 1   | 4824.000 | 54.99      | -4.10  | 50.89  | 74.00      | -23.11     | Peak   |
| 2 @ | 4874.000 | 55.16      | -4.00  | 51.16  | 74.00      | -22.84     | Peak   |
| 3   | 4924.000 | 54.94      | -3.89  | 51.05  | 74.00      | -22.95     | Peak   |



|             |                           |             |              |
|-------------|---------------------------|-------------|--------------|
| Test Mode 1 | : HT20 - CH1 - CH6 - CH11 | Pol/Phase   | : HORIZONTAL |
| Humidity    | : 70 %                    | Temperature | : 31 °C      |



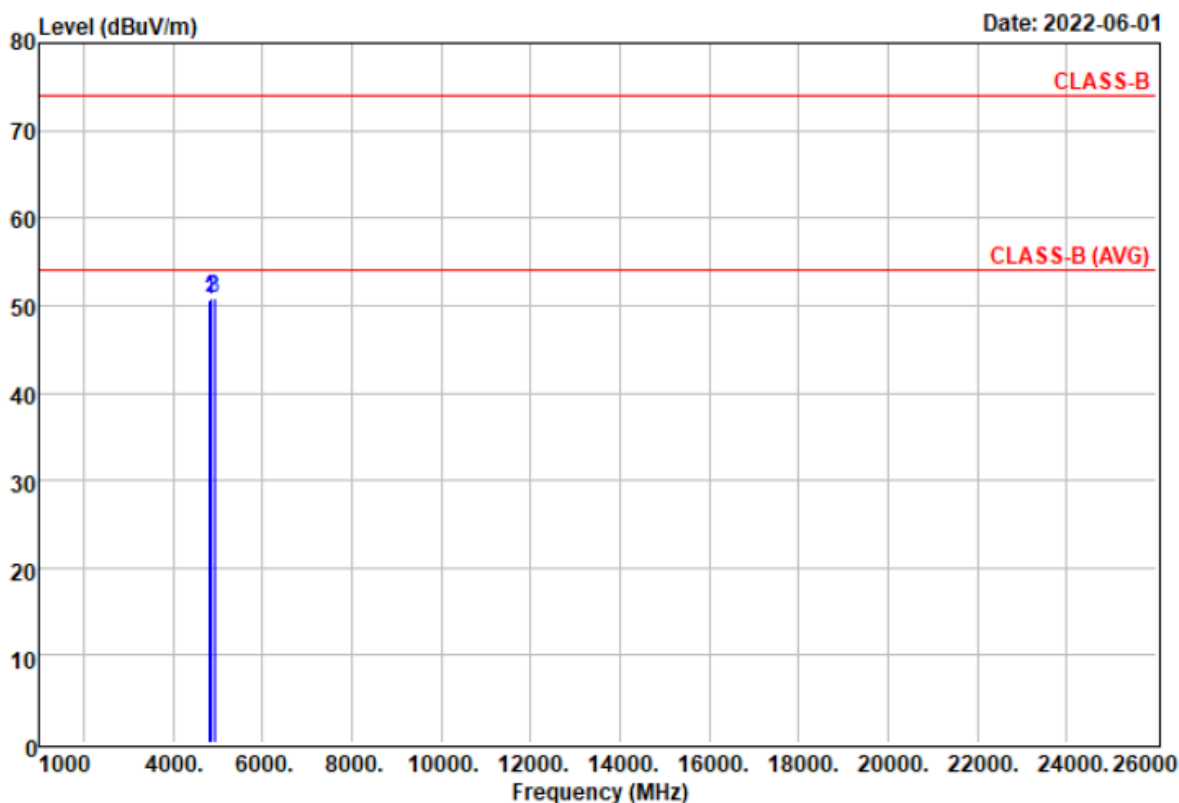
Remarks

: 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|   |            | Read  |        | Limit  | Over   |              |
|---|------------|-------|--------|--------|--------|--------------|
|   | Freq       | Level | Factor | Level  | Line   | Limit Remark |
|   | MHz        | dBuV  | dB/m   | dBuV/m | dBuV/m | dB           |
| 1 | 4824.000   | 54.78 | -4.10  | 50.68  | 74.00  | -23.32 Peak  |
| 2 | @ 4874.000 | 54.90 | -4.00  | 50.90  | 74.00  | -23.10 Peak  |
| 3 | 4924.000   | 54.70 | -3.89  | 50.81  | 74.00  | -23.19 Peak  |



|             |                           |             |            |
|-------------|---------------------------|-------------|------------|
| Test Mode 1 | : HT20 - CH1 - CH6 - CH11 | Pol/Phase   | : VERTICAL |
| Humidity    | : 70 %                    | Temperature | : 31 °C    |



Remarks

: 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     | Freq     | Read Level | Factor | Level  | Limit Line | Over Limit | Remark |
|-----|----------|------------|--------|--------|------------|------------|--------|
|     | MHz      | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |
| 1   | 4824.000 | 54.73      | -4.10  | 50.63  | 74.00      | -23.37     | Peak   |
| 2 @ | 4874.000 | 54.87      | -4.00  | 50.87  | 74.00      | -23.13     | Peak   |
| 3   | 4924.000 | 54.66      | -3.89  | 50.77  | 74.00      | -23.23     | Peak   |



## **8. 6dB Bandwidth Measurement Data**

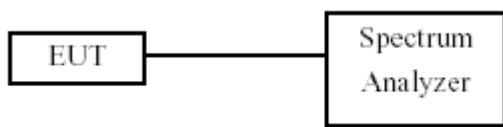
### **8.1 Test Limit**

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

### **8.2 Test Procedures**

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and VBW  $\geq 3 \times$  RBW.
- c. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
- d. The 6dB Bandwidth was measured and recorded.

### **8.3 Test Setup Layout**





## 8.4 Test Result and Data

Test Date: May 26, 2022

Temperature: 27°C

Atmospheric pressure: 1000 hPa

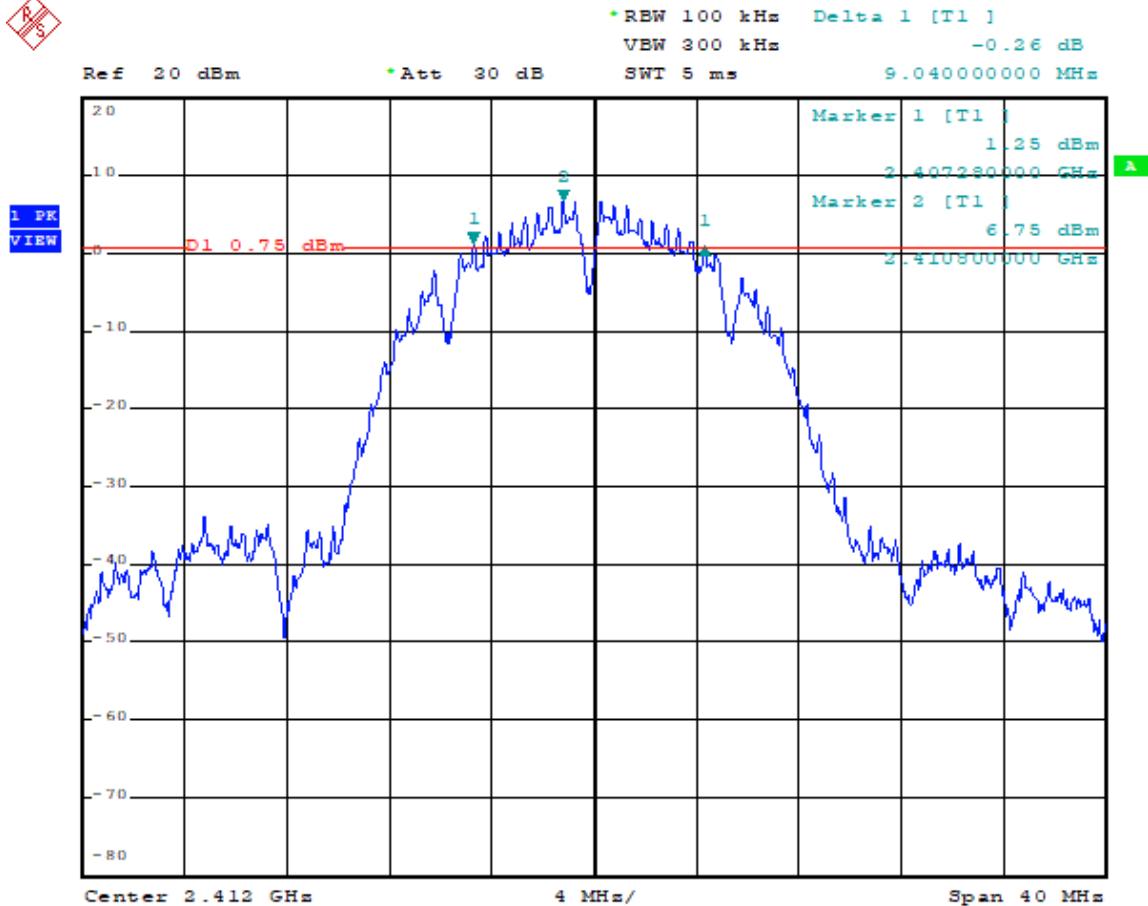
Humidity: 55%

| Modulation Standard    | Channel | Frequency (MHz) | 6dB Bandwidth (MHz) |
|------------------------|---------|-----------------|---------------------|
| 802.11b (11Mbps)       | 01      | 2412            | 9.04                |
|                        | 06      | 2437            | 9.04                |
|                        | 11      | 2462            | 9.00                |
| 802.11g (6Mbps)        | 01      | 2412            | 15.12               |
|                        | 06      | 2437            | 15.08               |
|                        | 11      | 2462            | 15.12               |
| 802.11n HT20 (6.5Mbps) | 01      | 2412            | 15.12               |
|                        | 06      | 2437            | 15.08               |
|                        | 11      | 2462            | 15.12               |



Modulation Standard: 802.11b (11Mbps)

Channel: 01

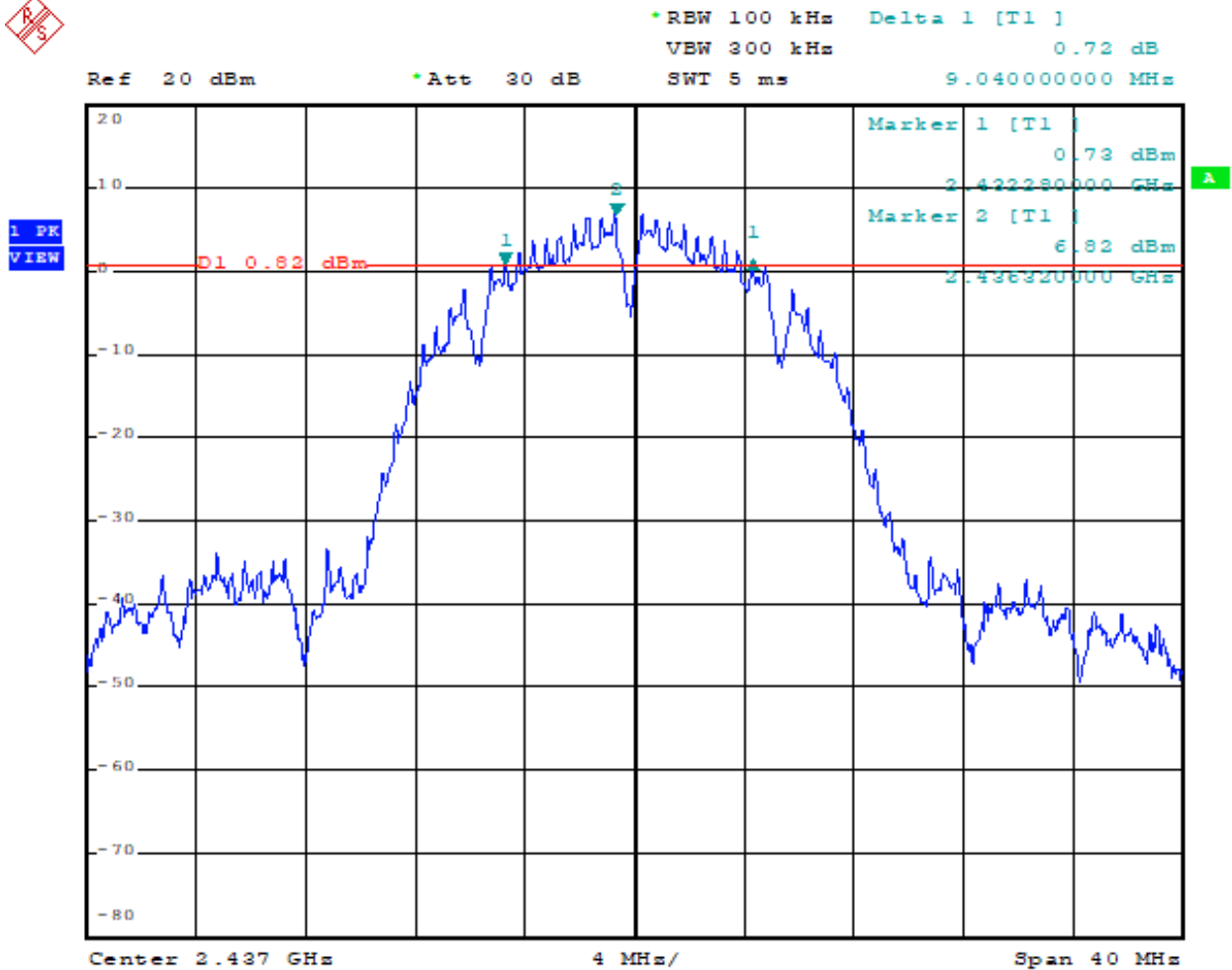


Date: 26.MAY.2022 12:34:40



Modulation Standard: 802.11b (11Mbps)

Channel: 06



Date: 26.MAY.2022 12:41:05

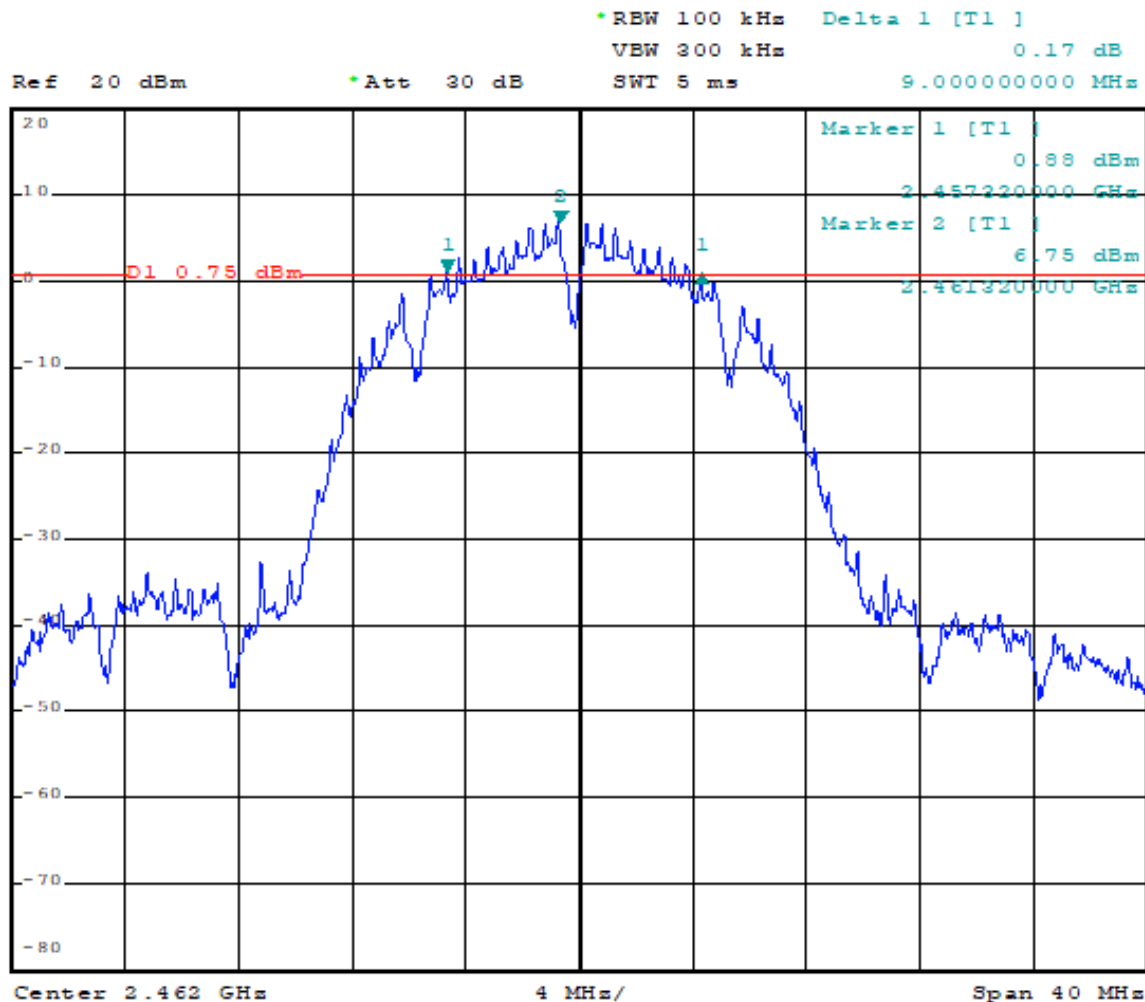


Modulation Standard: 802.11b (11Mbps)

Channel: 11



1 PK  
VIEW

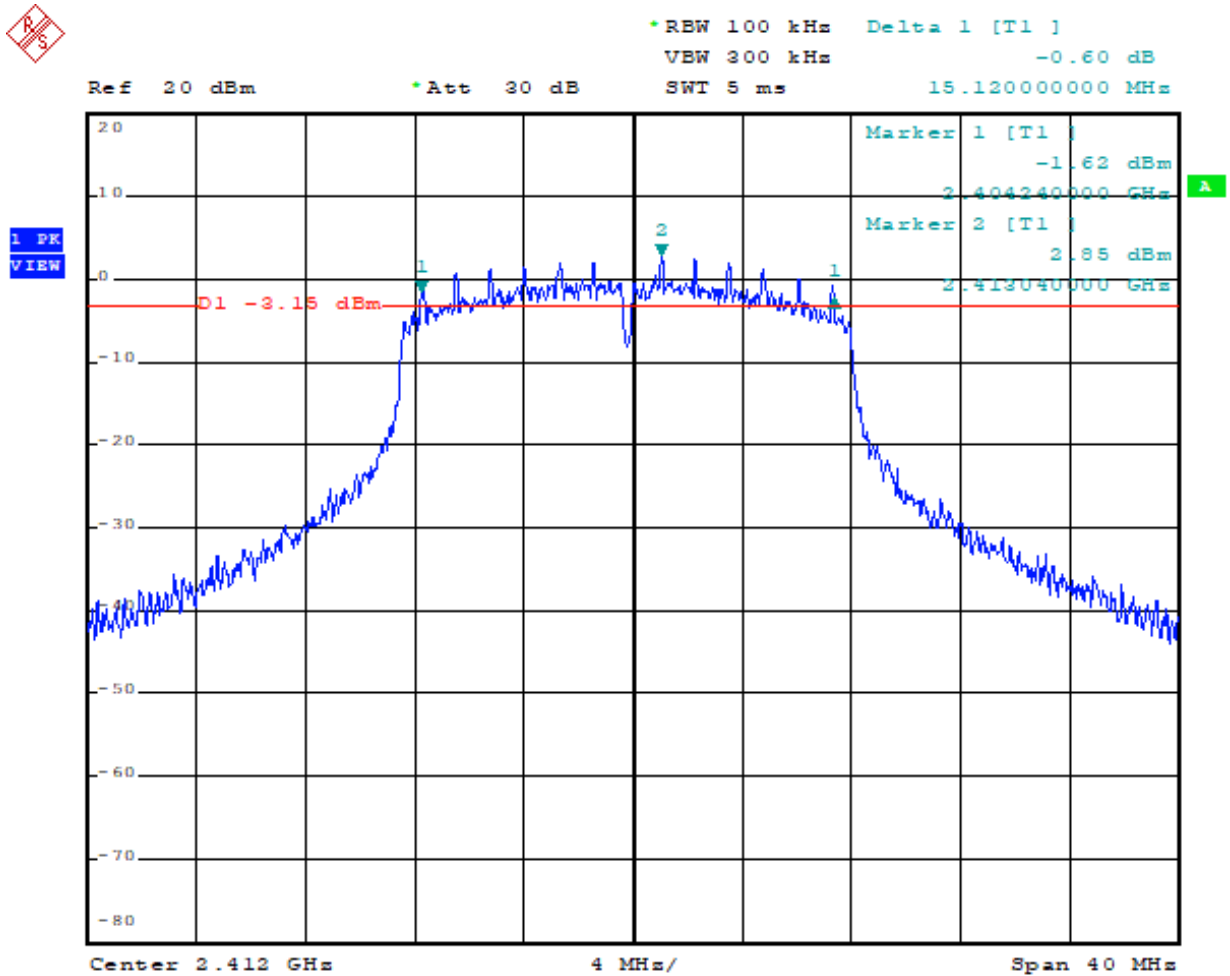


Date: 26.MAY.2022 12:44:38



Modulation Standard: 802.11g (6Mbps)

Channel: 01



Date: 26.MAY.2022 12:46:21



Modulation Standard: 802.11g (6Mbps)

Channel: 06

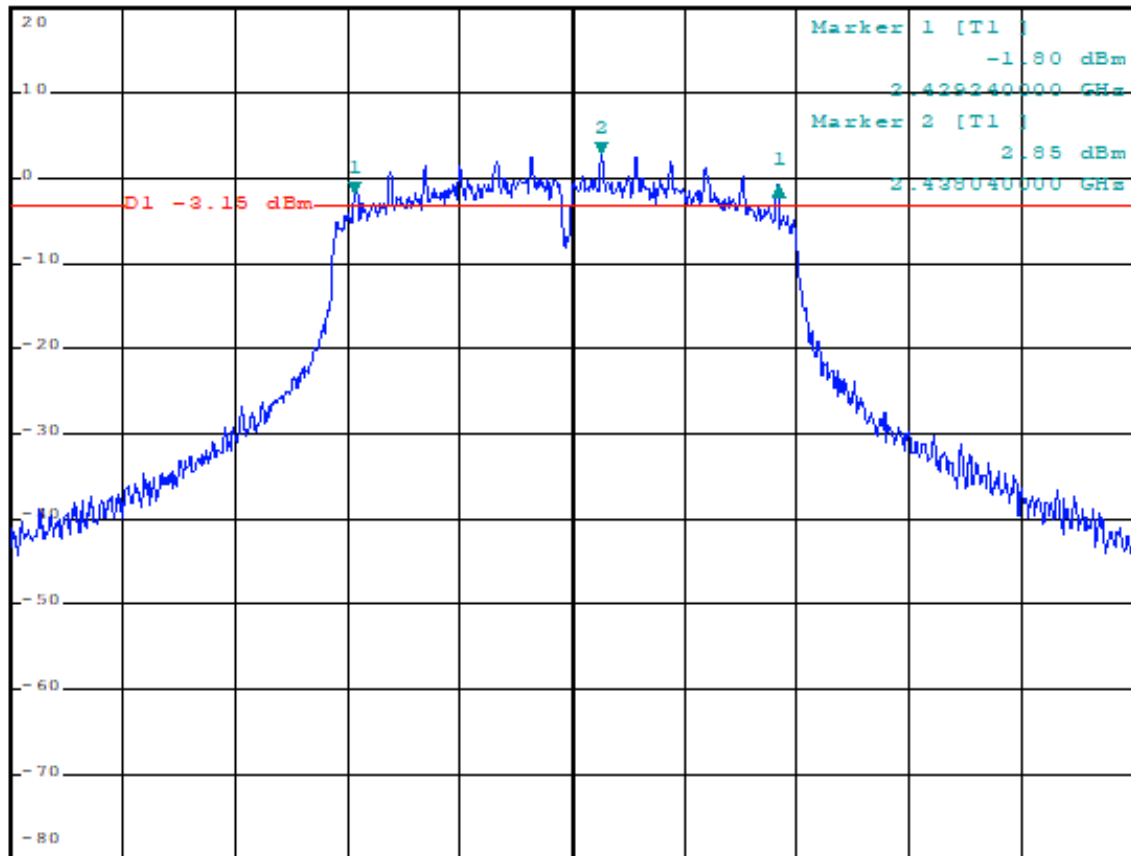


\*RBW 100 kHz Delta 1 [T1 ]  
VBW 300 kHz 1.03 dB  
SWT 5 ms 15.080000000 MHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.437 GHz

4 MHz/

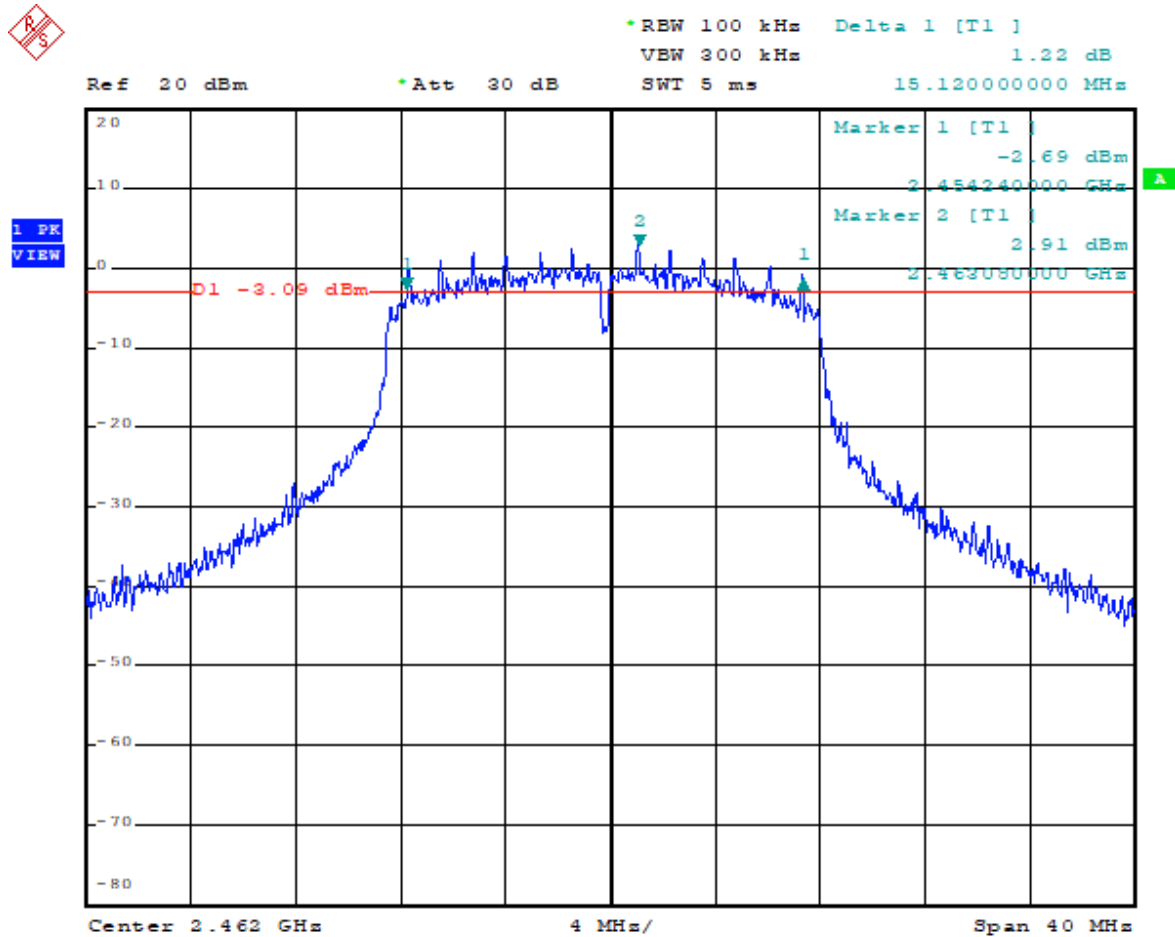
Span 40 MHz

Date: 26.MAY.2022 12:47:48



Modulation Standard: 802.11g (6Mbps)

Channel: 11

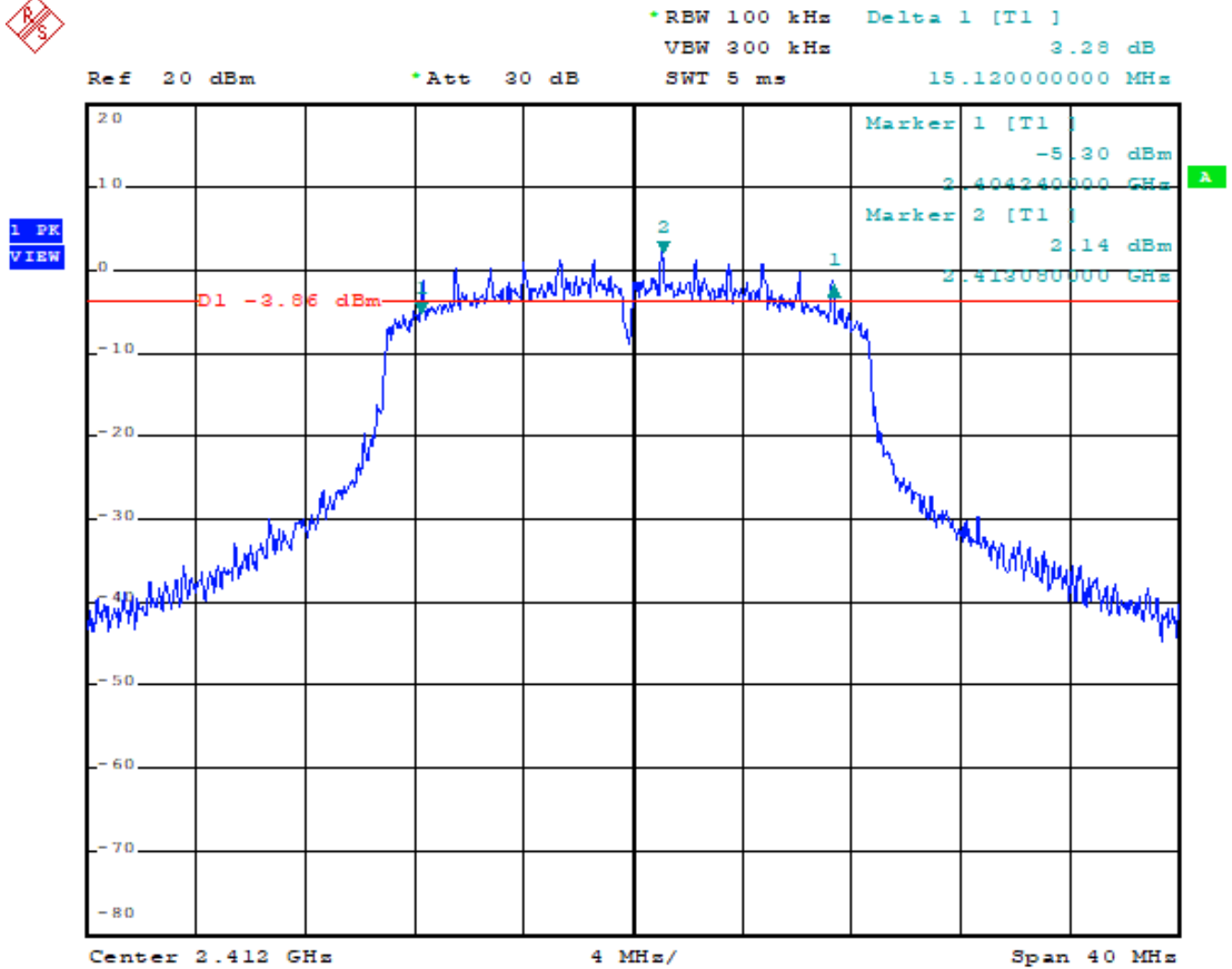


Date: 26.MAY.2022 12:49:20



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 01

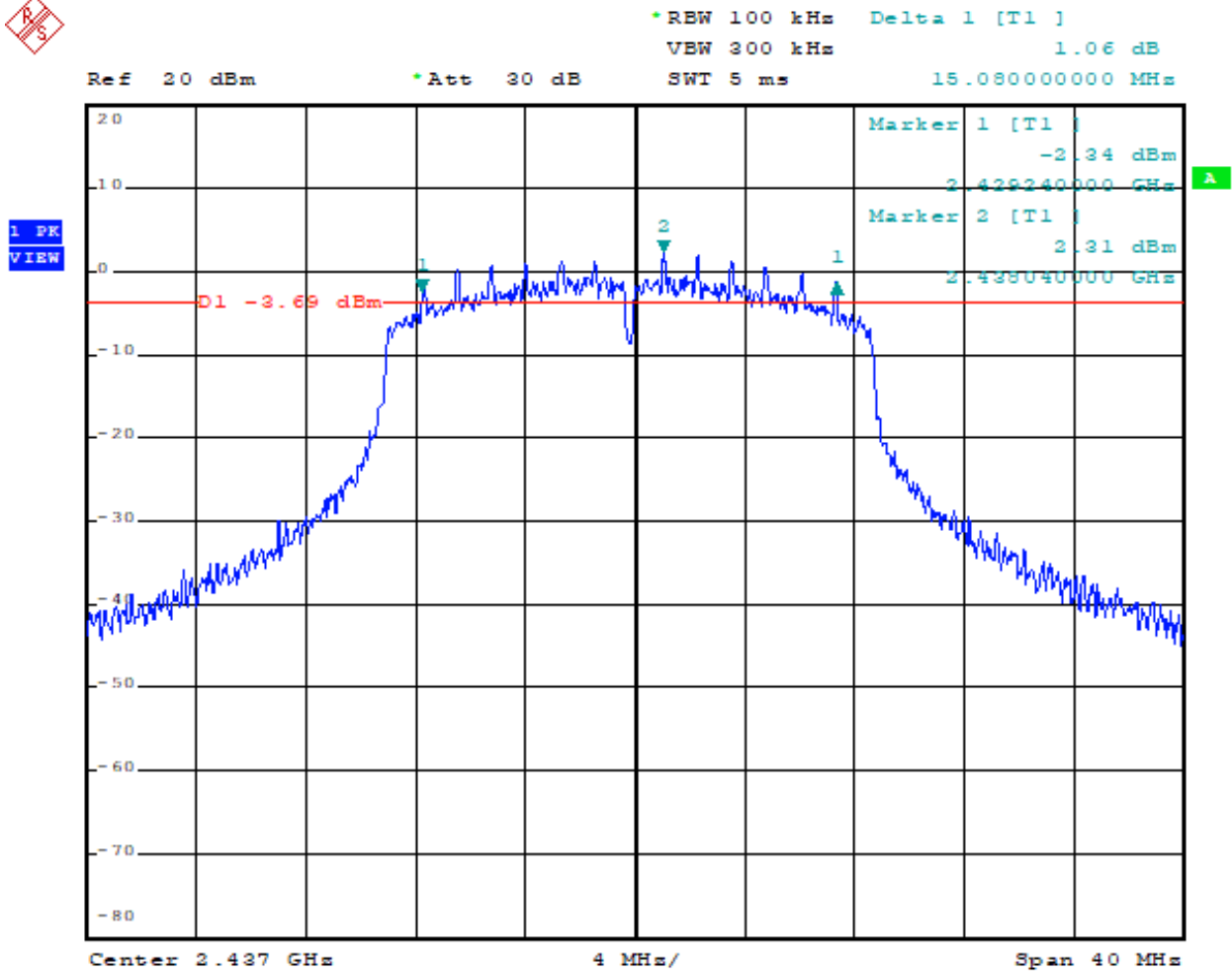


Date: 26.MAY.2022 12:50:51



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 06



Date: 26.MAY.2022 12:52:15

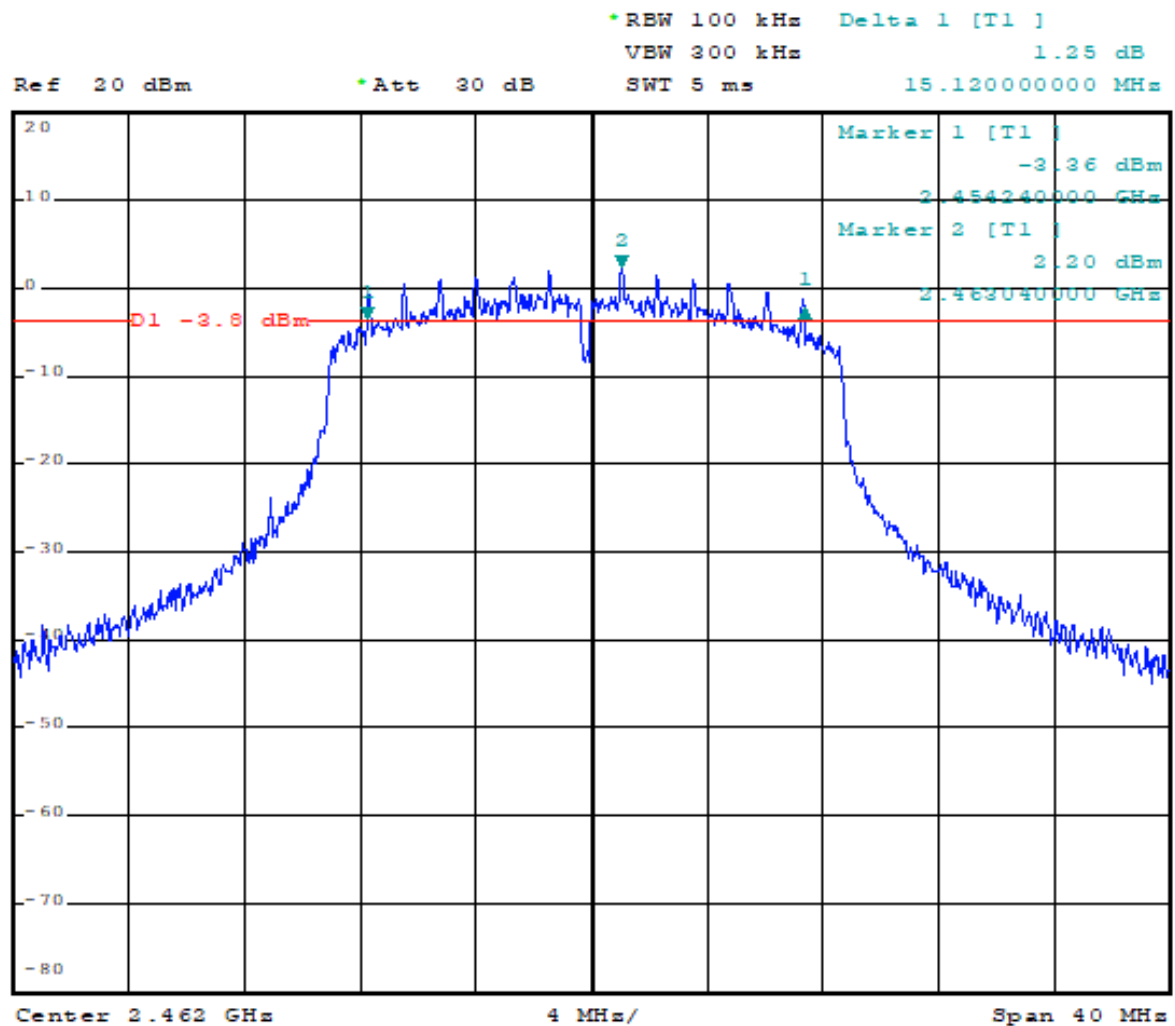


Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 11



1 PK  
VIEW



Date: 26.MAY.2022 12:53:36



## 9. Maximum Output Power

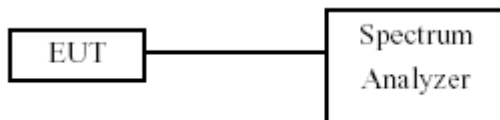
### 9.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.

### 9.2 Test Procedures

- The transmitter output was connected to spectrum analyzer.
- The spectrum analyzer's resolution bandwidth were set at 1MHz RBW and 3MHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- Use the spectrum analyzer's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some analyzers, this may require a manual override to ensure use of peak detector).
- Employ trace averaging in power averaging (RMS) mode over a minimum of 100 traces.
- Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges.
- The peak and average output power was measured and recorded.

### 9.3 Test Setup Layout





## 9.4 Test Result and Data

Test Date: May 24, 2022

Temperature: 27°C

Atmospheric pressure: 1000 hPa

Humidity: 55%

| Modulation Standard | Channel | Frequency (MHz) | Peak Power Output (dBm) |
|---------------------|---------|-----------------|-------------------------|
| 802.11b (11Mbps)    | 01      | 2412            | 22.08                   |
|                     | 06      | 2437            | 22.17                   |
|                     | 11      | 2462            | 21.99                   |
| 802.11g (6Mbps)     | 01      | 2412            | 23.05                   |
|                     | 06      | 2437            | 23.37                   |
|                     | 11      | 2462            | 23.11                   |

| Modulation Standard    | Channel | Frequency (MHz) | Peak Power Output (dBm) |
|------------------------|---------|-----------------|-------------------------|
| 802.11n HT20 (6.5Mbps) | 01      | 2412            | 22.13                   |
|                        | 06      | 2437            | 22.39                   |
|                        | 11      | 2462            | 22.19                   |

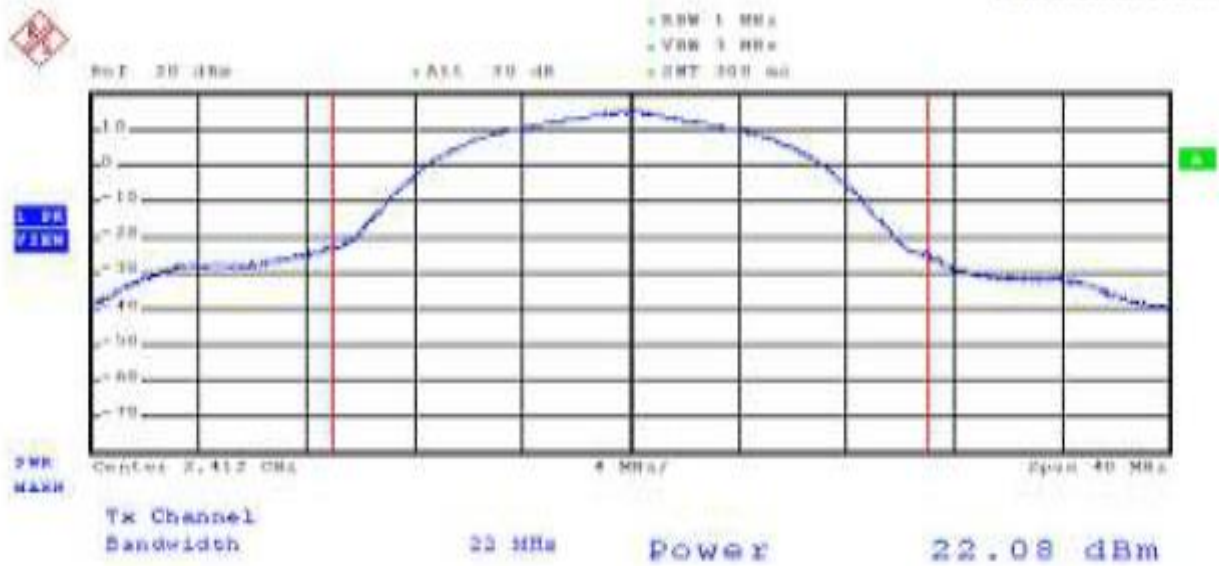


## Output Power

Modulation Standard: 802.11b (11Mbps)

Channel: 01

Date: 2022-05-24



Date: 24.MAY.2022 17:40:55

Modulation Standard: 802.11b (11Mbps)

Channel: 06

Date: 2022-05-24

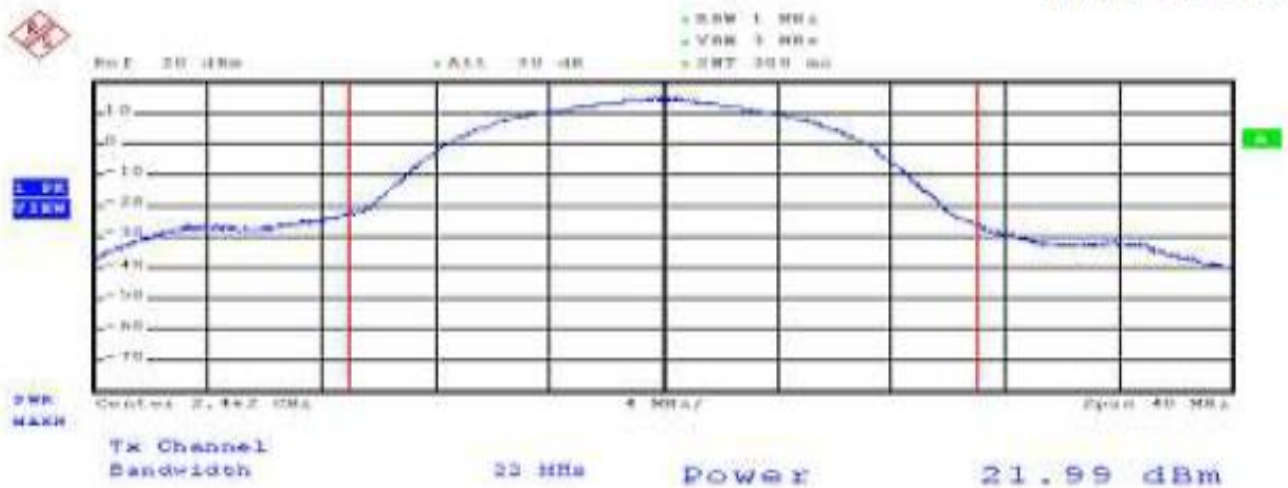


Date: 24.MAY.2022 17:42:06

Modulation Standard: 802.11b (11Mbps)

Channel: 11

Date: 2022-05-24

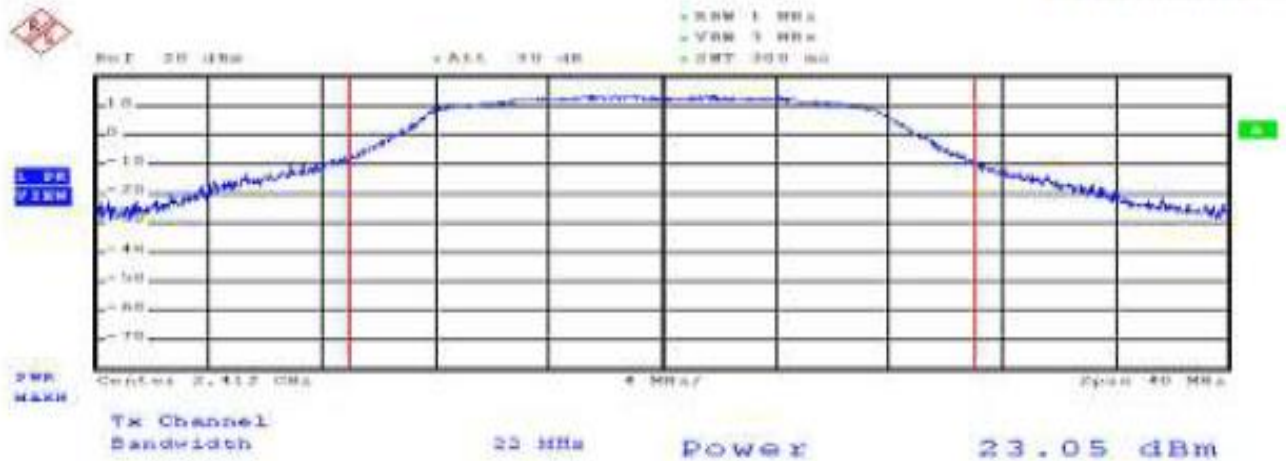


Date: 24.MAY.2022 17:49:15

Modulation Standard: 802.11g (6Mbps)

Channel: 01

Date: 2022-05-24

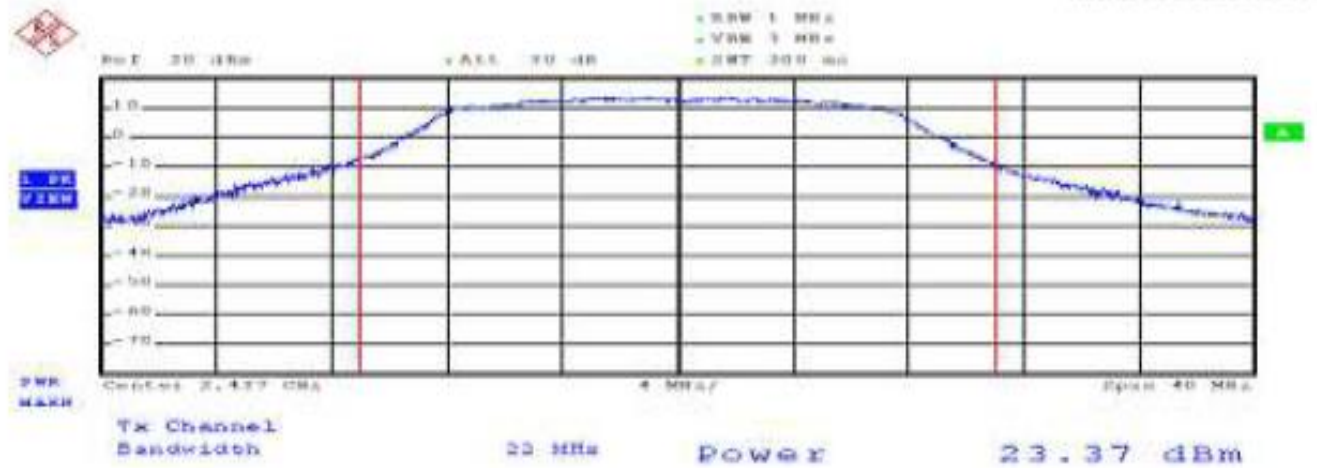


Date: 24.MAY.2022 17:44:06



Modulation Standard: 802.11g (6Mbps)  
Channel: 06

Date: 2022-05-24



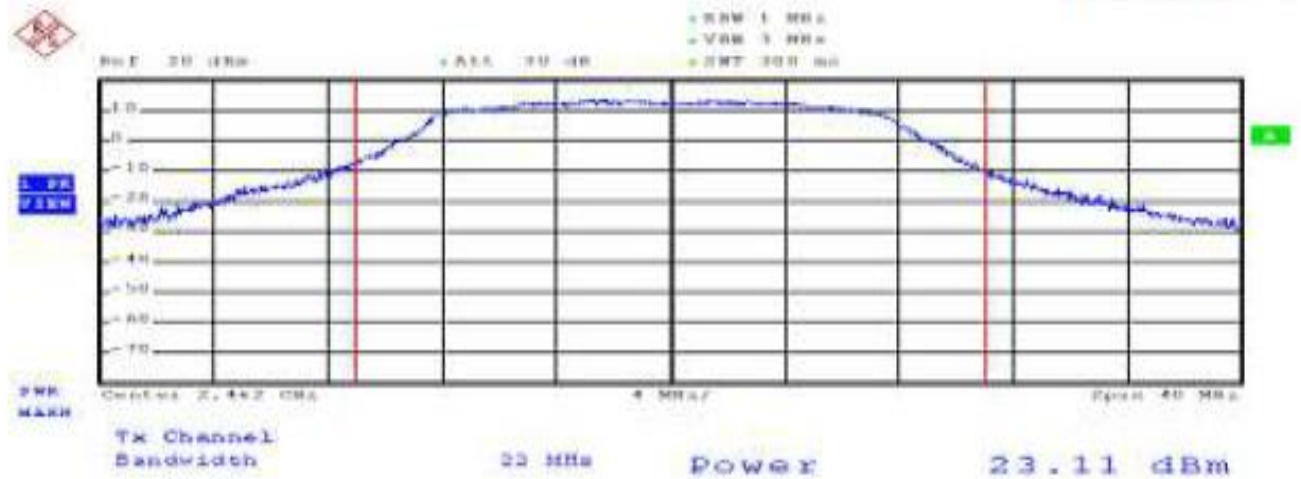
Date: 24.MAY.2022 17:45:42



Modulation Standard: 802.11g (6Mbps)

Channel: 11

Date: 2022-05-24



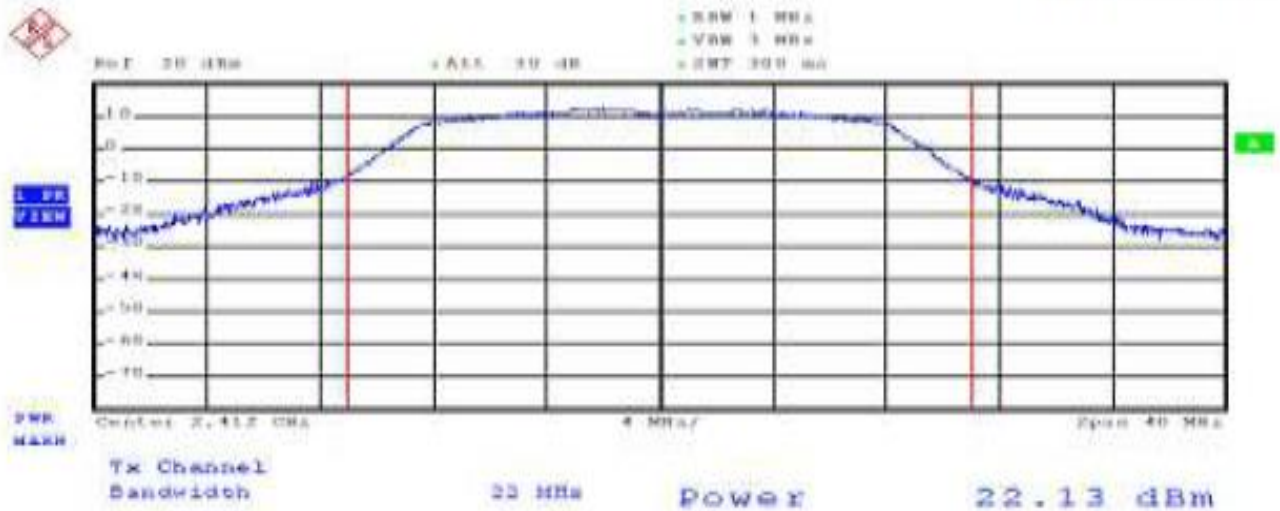
Date: 24.MAY.2022 17:46:41



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 01

Date: 2022-05-24



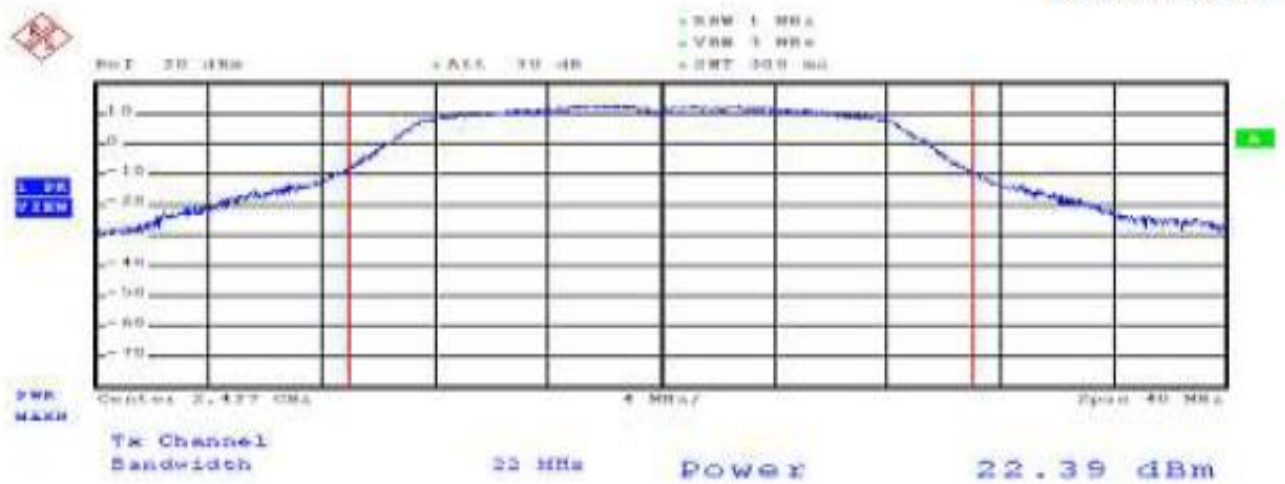
Date: 24.MAY.2022 17:52:40



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 06

Date: 2022-05-24



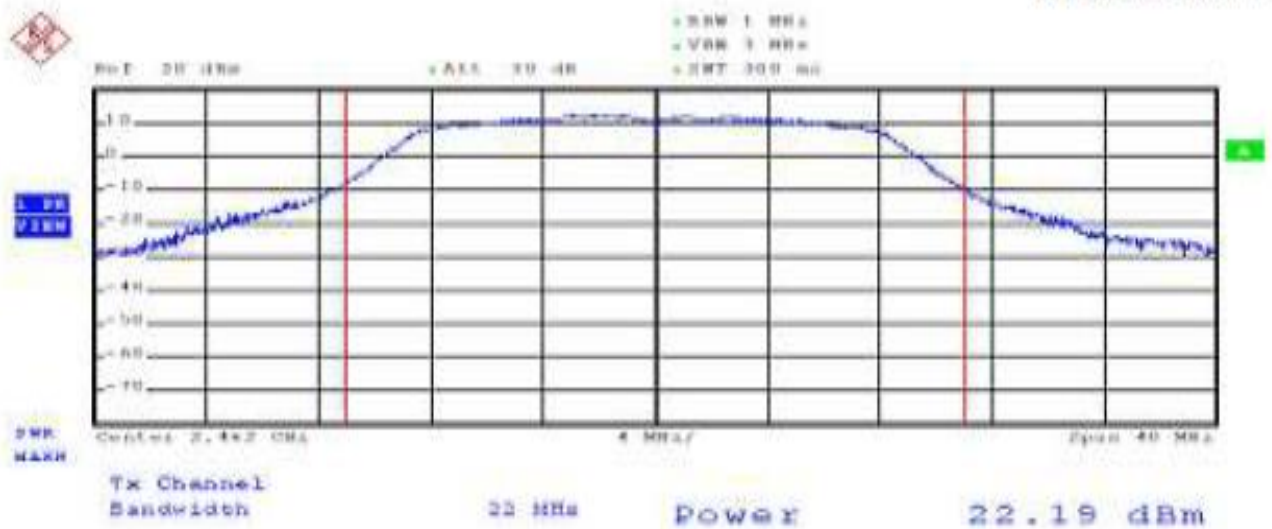
Date: 24.MAY.2022 17:54:42



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 11

Date: 2022-05-24



Date: 24.MAY.2022 17:55:54



## **10. Power Spectral Density**

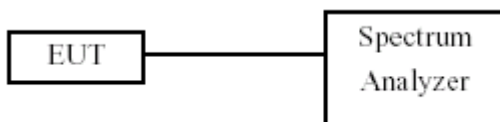
### **10.1 Test Limit**

The Maximum of Power Spectral Density Measurement is 8dBm

### **10.2 Test Procedures**

- g. The transmitter output was connected to spectrum analyzer.
- h. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- i. The power spectral density was measured and recorded.

### **10.3 Test Setup Layout**





## 10.4 Test Result and Data

Test Date: May 26, 2022

Temperature: 27°C

Atmospheric pressure: 1000 hPa

Humidity: 55%

| Modulation Standard | Channel | Frequency (MHz) | Measured Power Density (dBm) |
|---------------------|---------|-----------------|------------------------------|
| 802.11b (11Mbps)    | 01      | 2412            | -8.14                        |
|                     | 06      | 2437            | -7.44                        |
|                     | 11      | 2462            | -7.14                        |
| 802.11g (6Mbps)     | 01      | 2412            | -11.01                       |
|                     | 06      | 2437            | -11.62                       |
|                     | 11      | 2462            | -11.14                       |

| Modulation Standard    | Channel | Frequency (MHz) | Measured Power Density (dBm) |
|------------------------|---------|-----------------|------------------------------|
| 802.11n HT20 (6.5Mbps) | 01      | 2412            | -11.64                       |
|                        | 06      | 2437            | -11.63                       |
|                        | 11      | 2462            | -11.67                       |



Modulation Standard: 802.11b (11Mbps)

Channel: 01

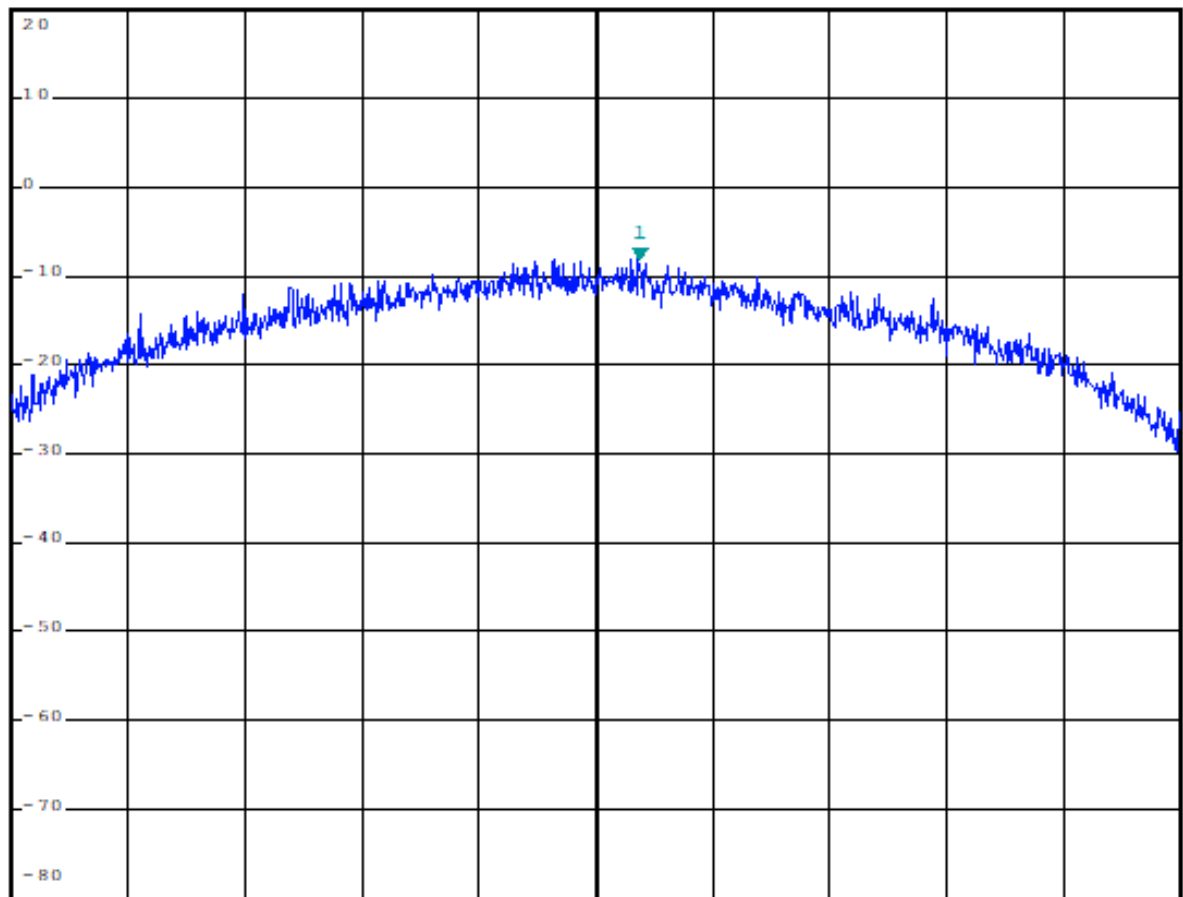


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -8.14 dBm  
SWT 1.7 s      2.412555000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.412 GHz

1.5 MHz/

Span 15 MHz

Date: 26.MAY.2022 12:55:44



Modulation Standard: 802.11b (11Mbps)

Channel: 06

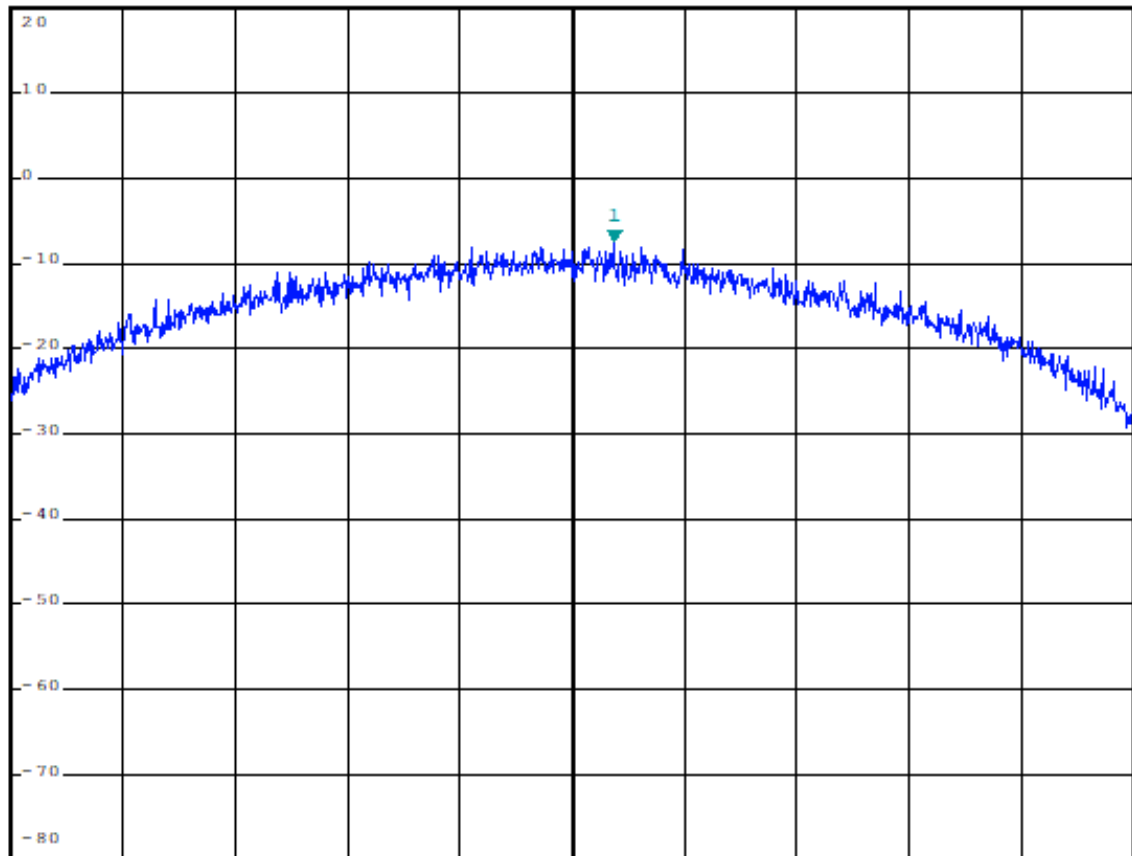


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -7.44 dBm  
SWT 1.7 s      2.437570000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.437 GHz

1.5 MHz/

Span 15 MHz

Date: 26.MAY.2022 14:03:14



Modulation Standard: 802.11b (11Mbps)

Channel: 11

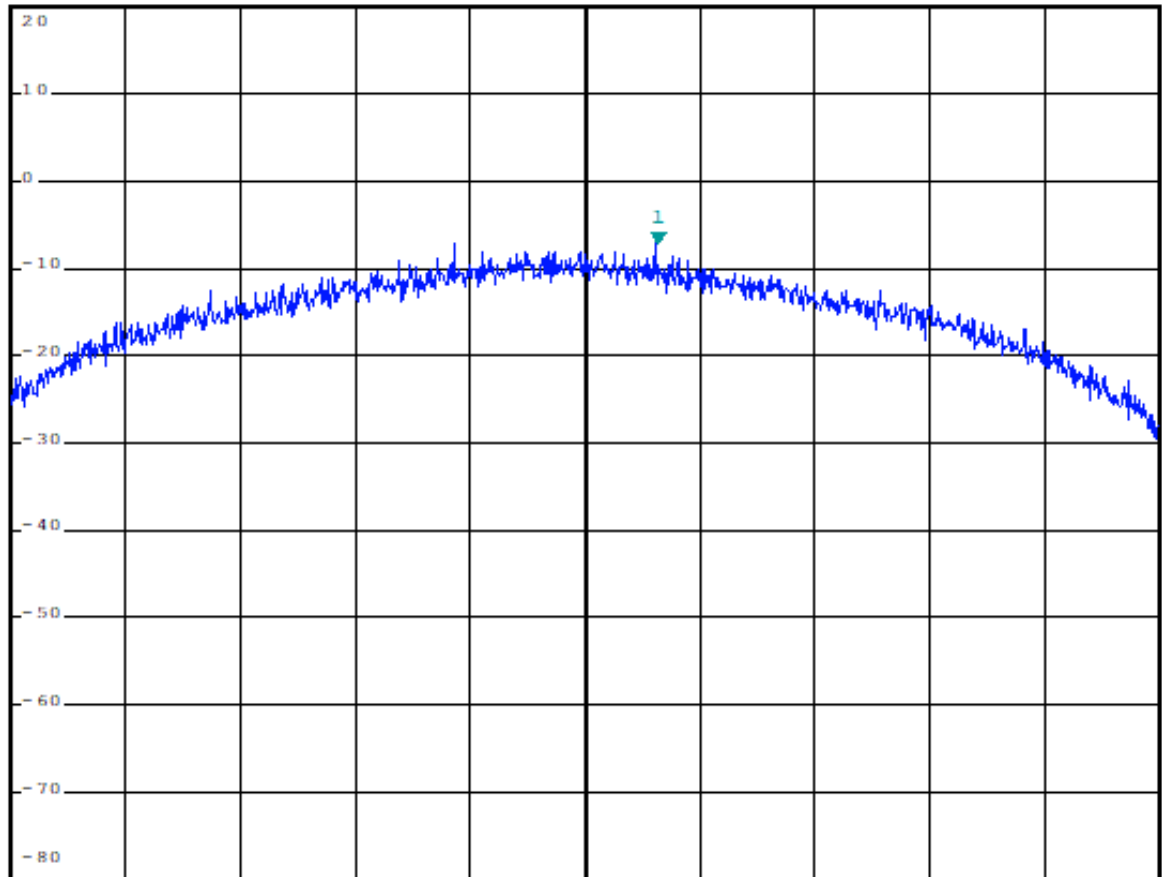


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -7.14 dBm  
SWT 1.7 s      2.462945000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.462 GHz

1.5 MHz/

Span 15 MHz

Date: 26.MAY.2022 14:04:23



Modulation Standard: 802.11g (6Mbps)

Channel: 01

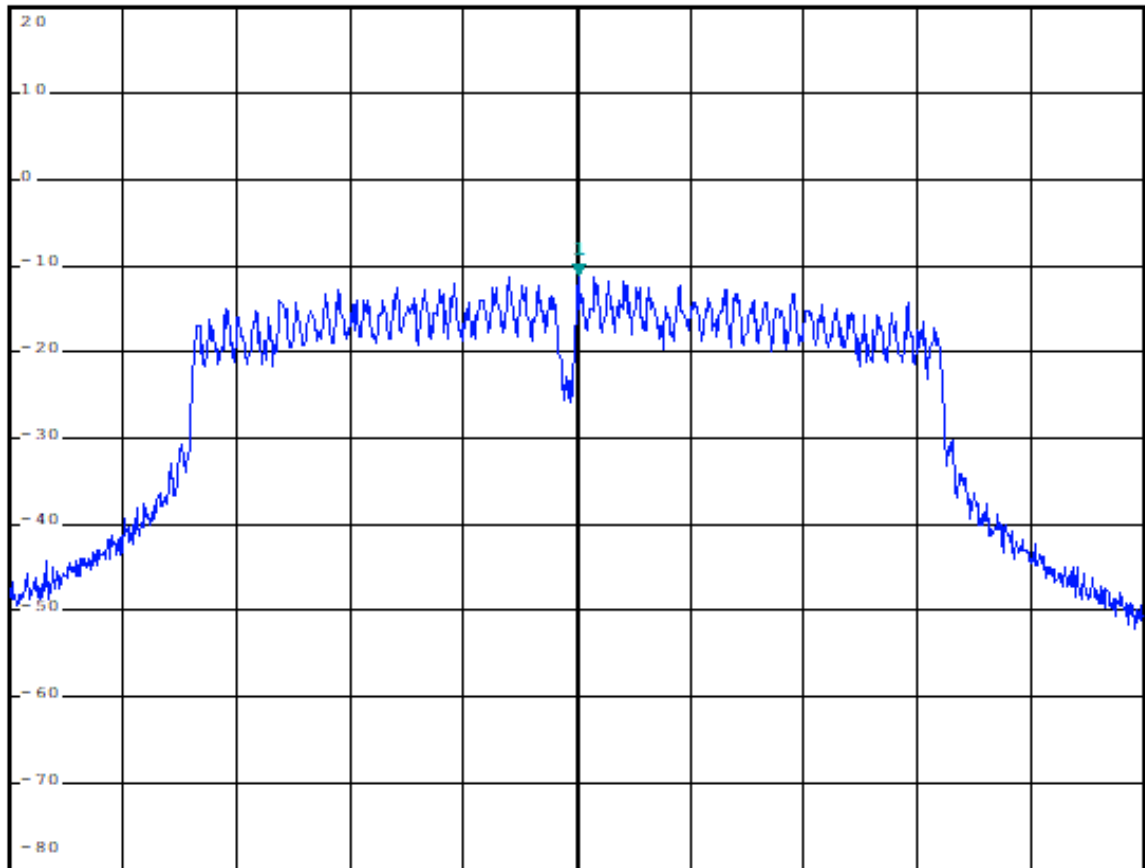


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -11.01 dBm  
SWT 2.8 s      2.412050000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.412 GHz

2.5 MHz/

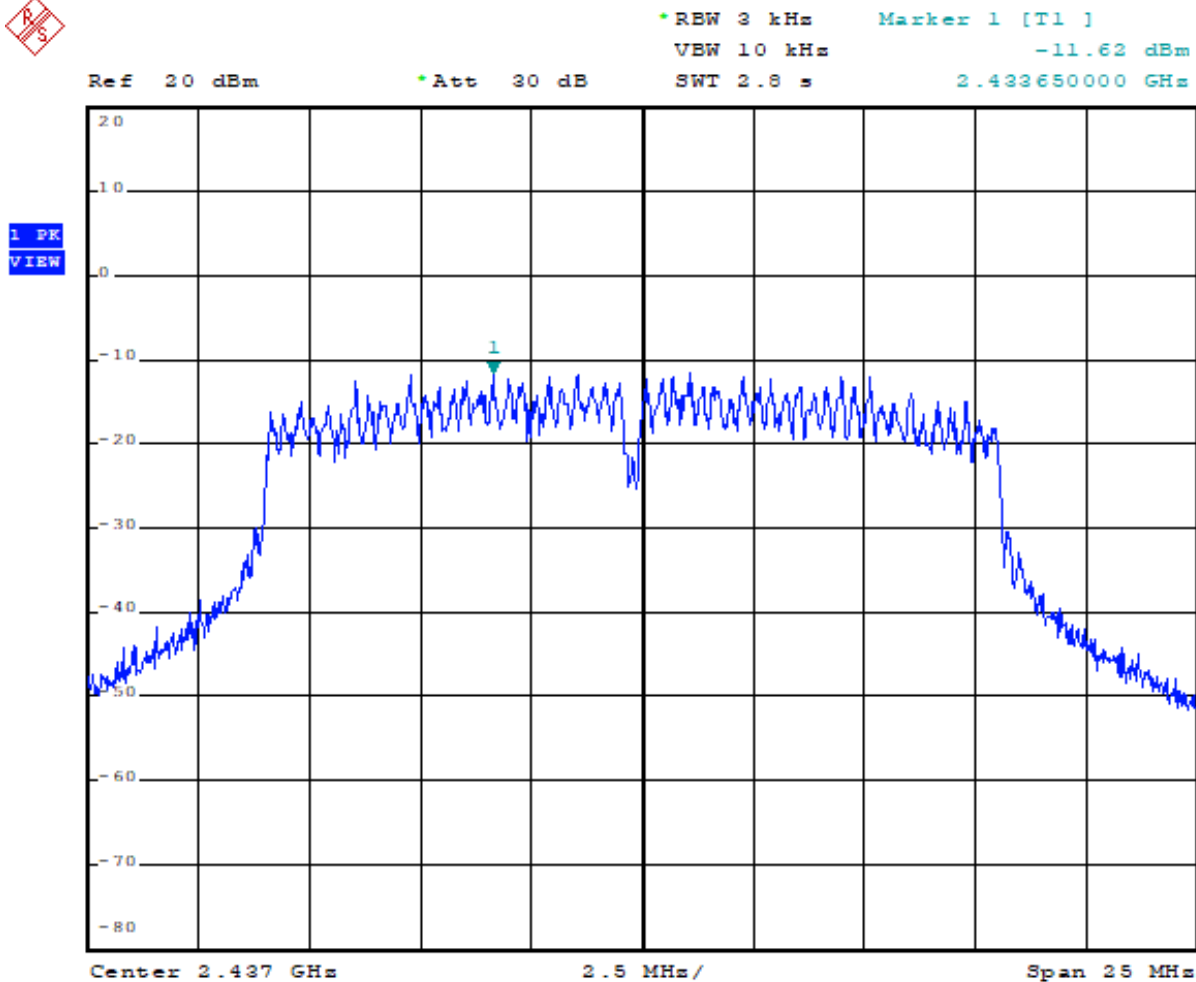
Span 25 MHz

Date: 26.MAY.2022 14:05:56



Modulation Standard: 802.11g (6Mbps)

Channel: 06



Date: 26.MAY.2022 14:07:30



Modulation Standard: 802.11g (6Mbps)

Channel: 11

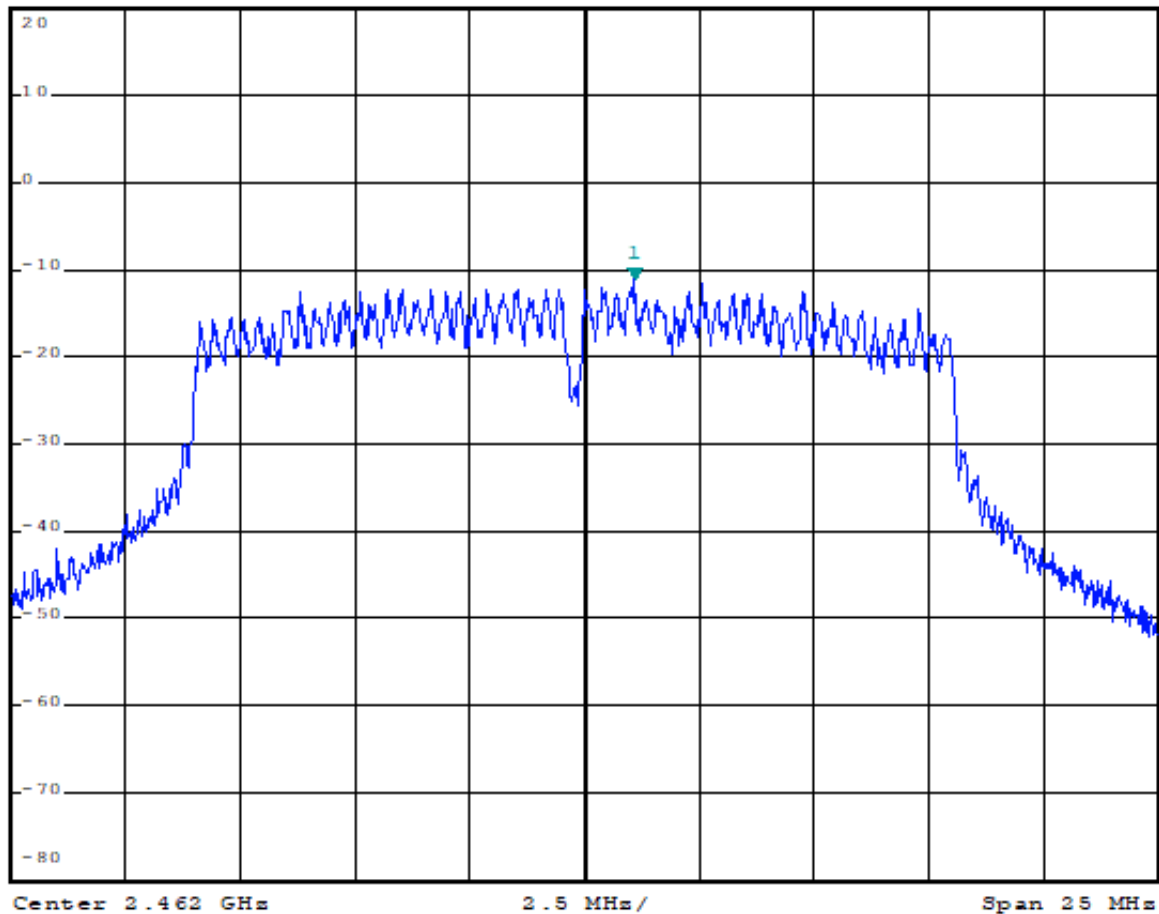


• RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -11.14 dBm  
SWT 2.8 s      2.463075000 GHz

Ref 20 dBm

• Att 30 dB

1 PK  
VIEW



Date: 26.MAY.2022 14:09:15



Modulation Standard: 802.11n HT20 (6.5Mbps)  
Channel: 01

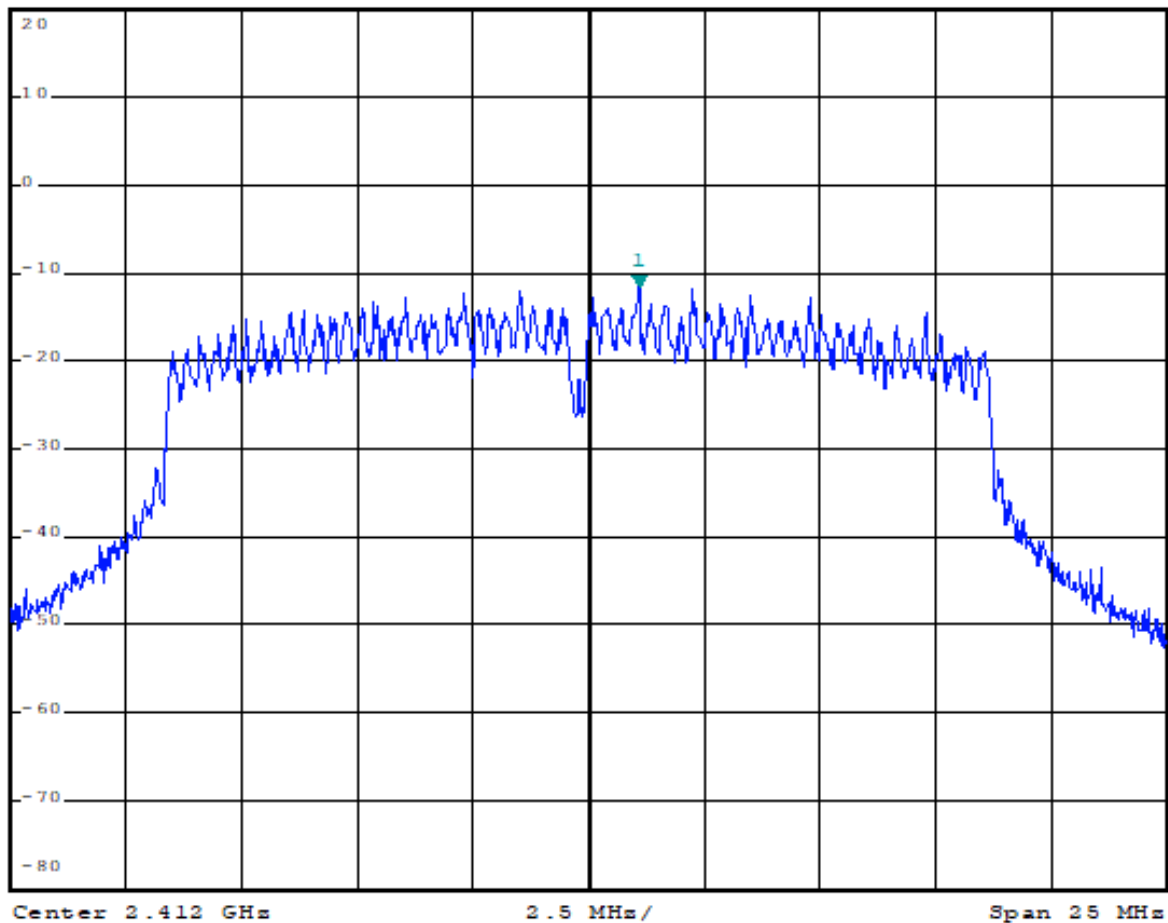


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -11.64 dBm  
SWT 2.8 s      2.413075000 GHz

Ref 20 dBm

\*Att 30 dB

1 PR  
VIEW



Date: 26.MAY.2022 14:10:35



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 06

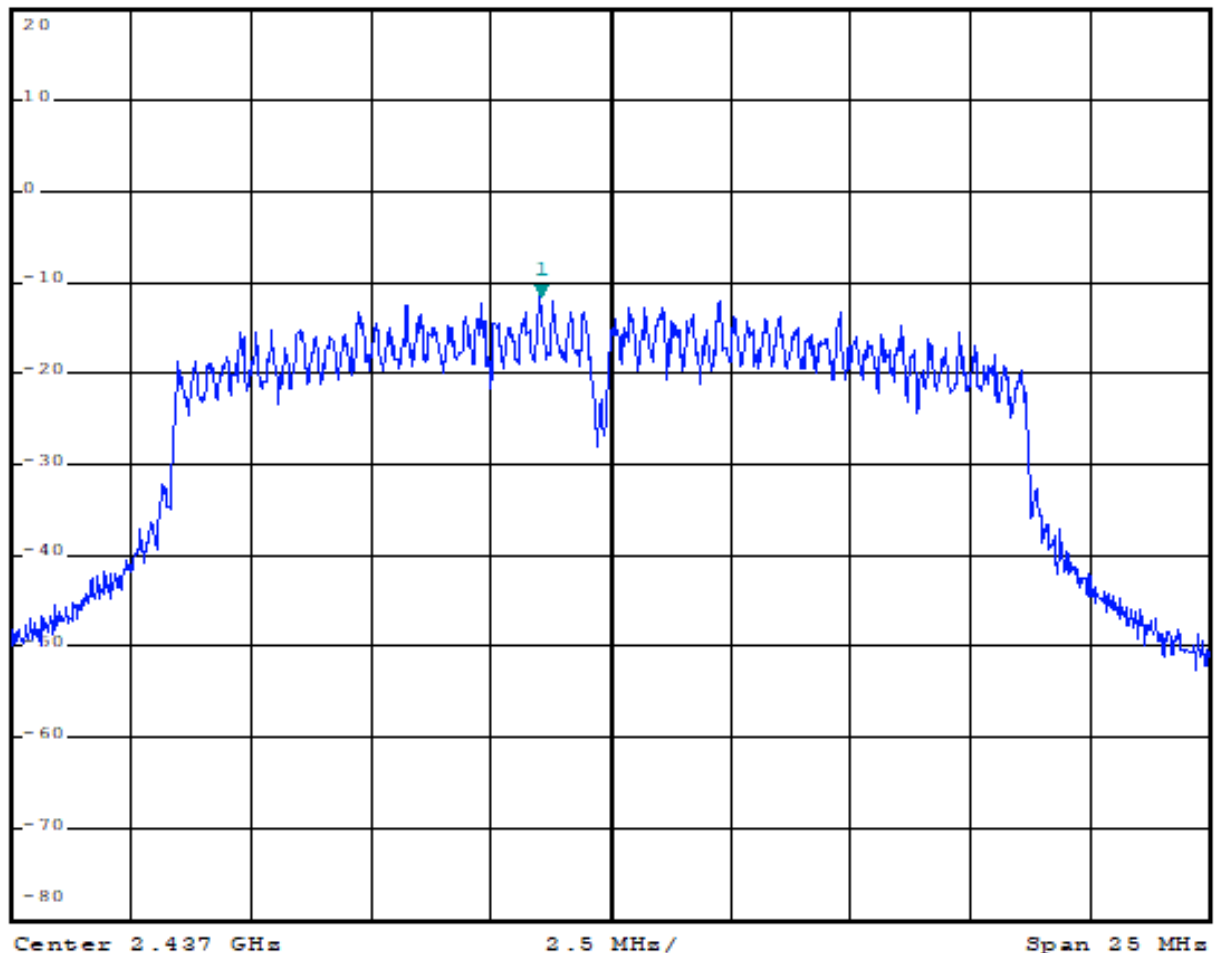


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -11.63 dBm  
SWT 2.8 s      2.435525000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 26.MAY.2022 14:12:10



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 11

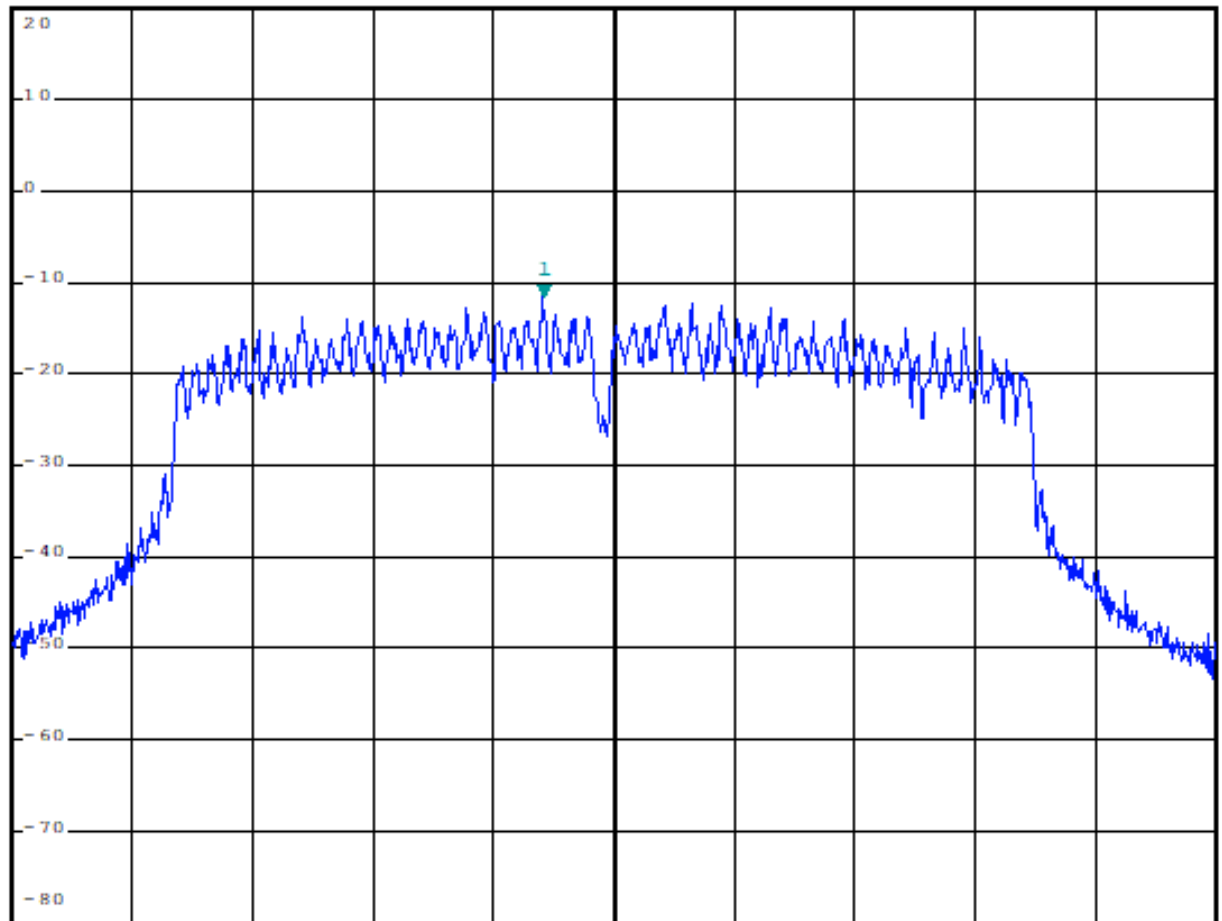


\*RBW 3 kHz      Marker 1 [T1 ]  
VBW 10 kHz      -11.67 dBm  
SWT 2.8 s      2.460525000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.462 GHz

2.5 MHz/

Span 25 MHz

Date: 26.MAY.2022 14:13:15



## **11. Band Edges Measurement**

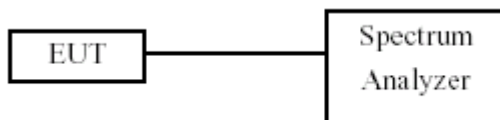
### **11.1 Test Limit**

Below -20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

### **11.2 Test Procedure**

- a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
- b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- c. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20dB relative to the maximum measured in-band peak PSD level.
- d. The band edges was measured and recorded.

### **11.3 Test Setup Layout**





## 11.4 Test Result and Data

Test Date: May 26, 2022

Temperature: 27°C

Atmospheric pressure: 1000 hPa

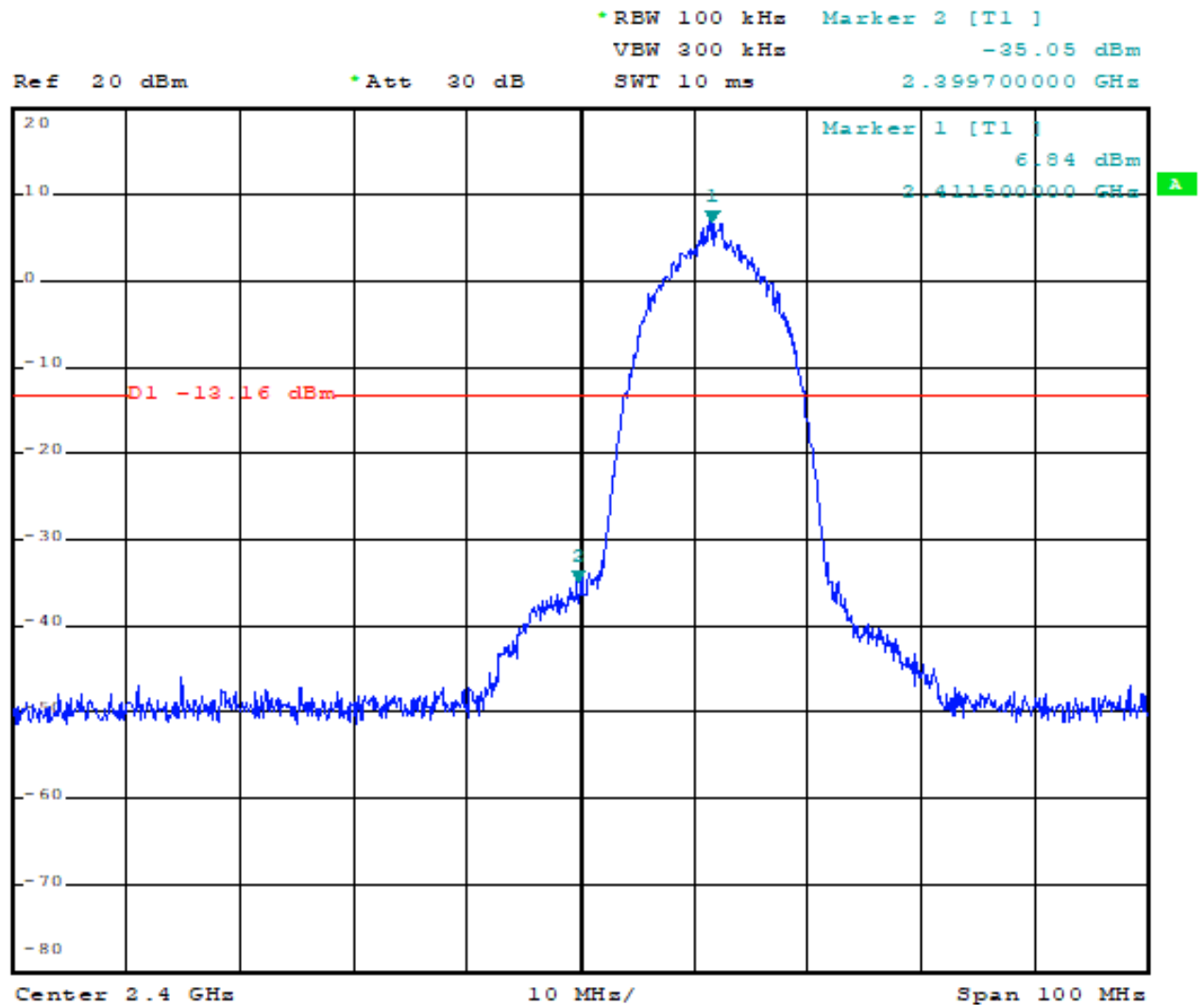
Humidity: 55%

| Modulation Standard    | Channel | Frequency (MHz) | maximum value in frequency (MHz) | maximum value (dBm) |
|------------------------|---------|-----------------|----------------------------------|---------------------|
| 802.11b (11Mbps)       | 01      | 2412            | 2399.7                           | -35.05              |
|                        | 11      | 2462            | 2493.5                           | -45.83              |
| 802.11g (6Mbps)        | 01      | 2412            | 2400.0                           | -31.15              |
|                        | 11      | 2462            | 2490.6                           | -44.74              |
| 802.11n HT20 (6.5Mbps) | 01      | 2412            | 2400.0                           | -29.99              |
|                        | 11      | 2462            | 2483.7                           | -44.78              |



Modulation Standard: 802.11b (11Mbps)

Channel: 01



Date: 26.MAY.2022 14:16:02

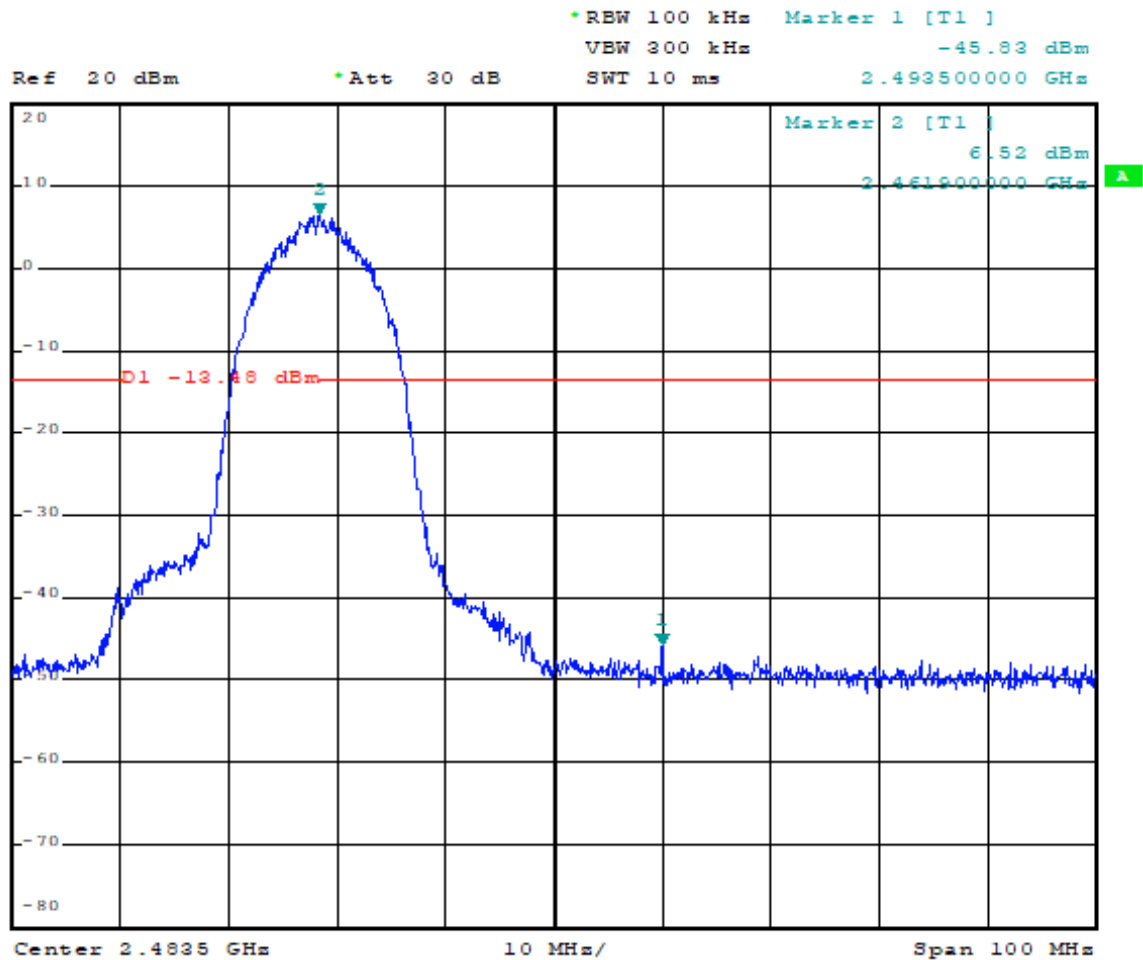


Modulation Standard: 802.11b (11Mbps)

Channel: 11



1 PK  
VIEW



Date: 26.MAY.2022 14:17:30

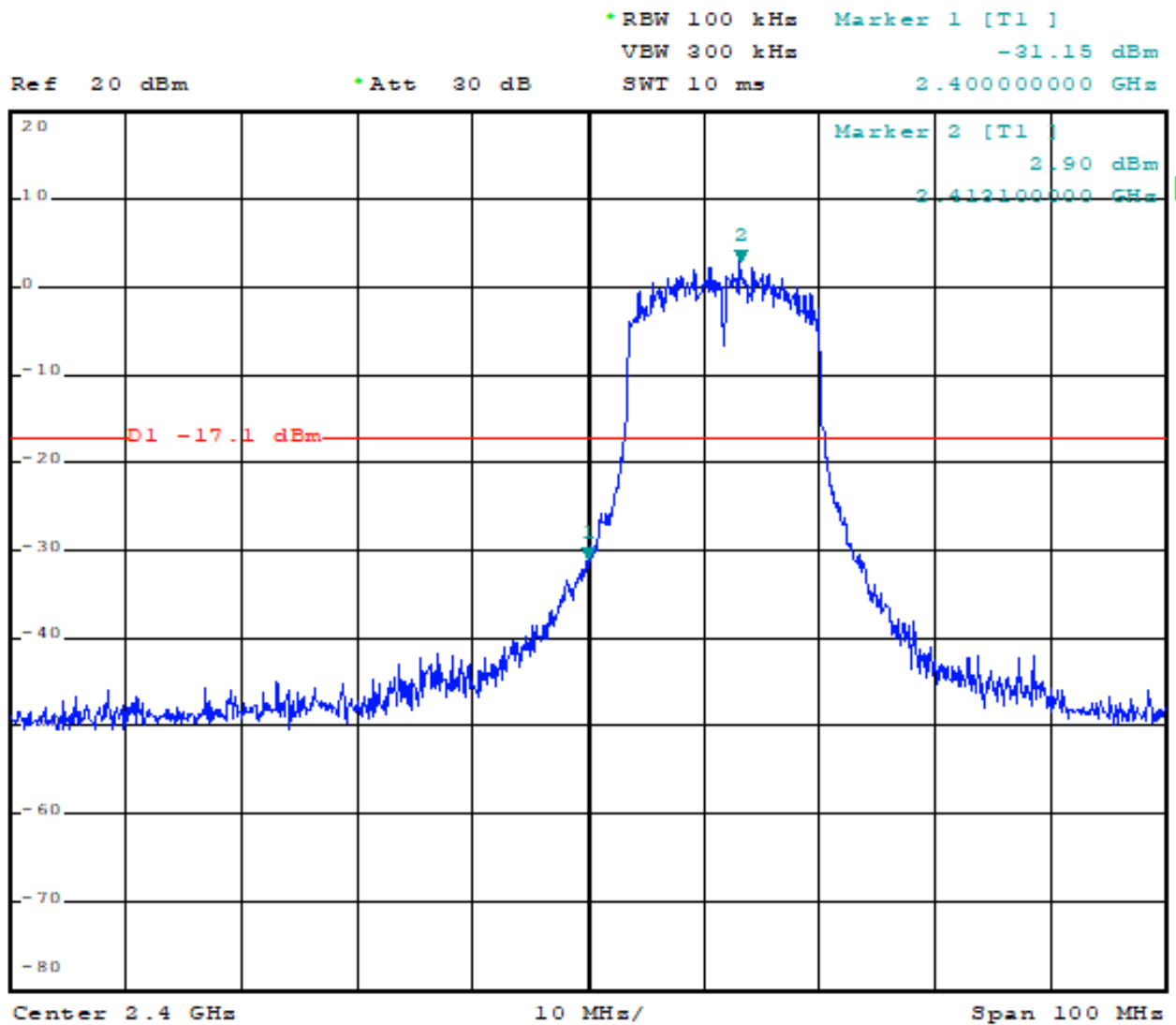


Modulation Standard: 802.11g (6Mbps)

Channel: 01



1 PK  
VIEW

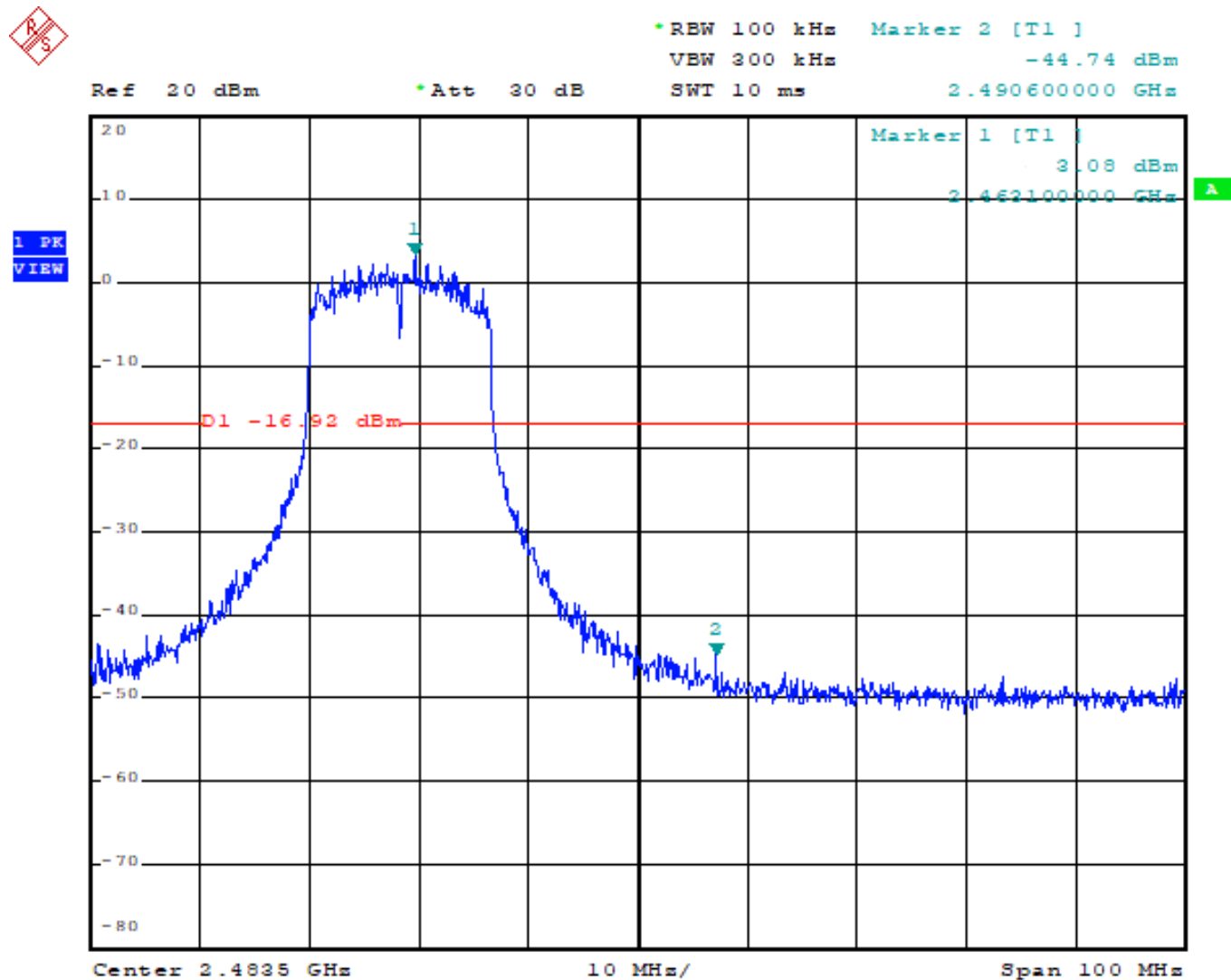


Date: 26.MAY.2022 14:18:55



Modulation Standard: 802.11g (6Mbps)

Channel: 11



Date: 26.MAY.2022 14:20:28



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 01

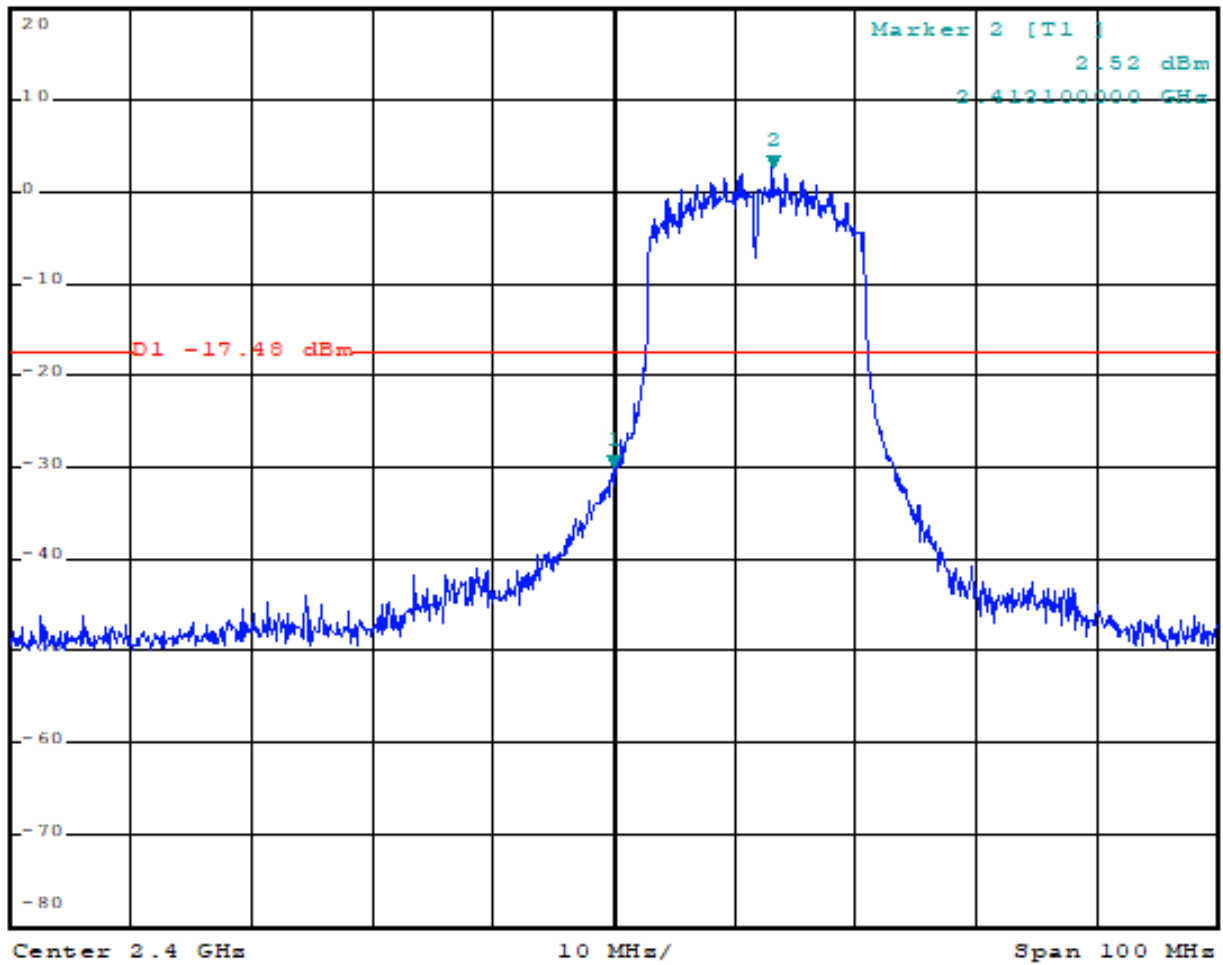


\*RBW 100 kHz Marker 1 [T1 ]  
VBW 300 kHz -29.99 dBm  
SWT 10 ms 2.400000000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW

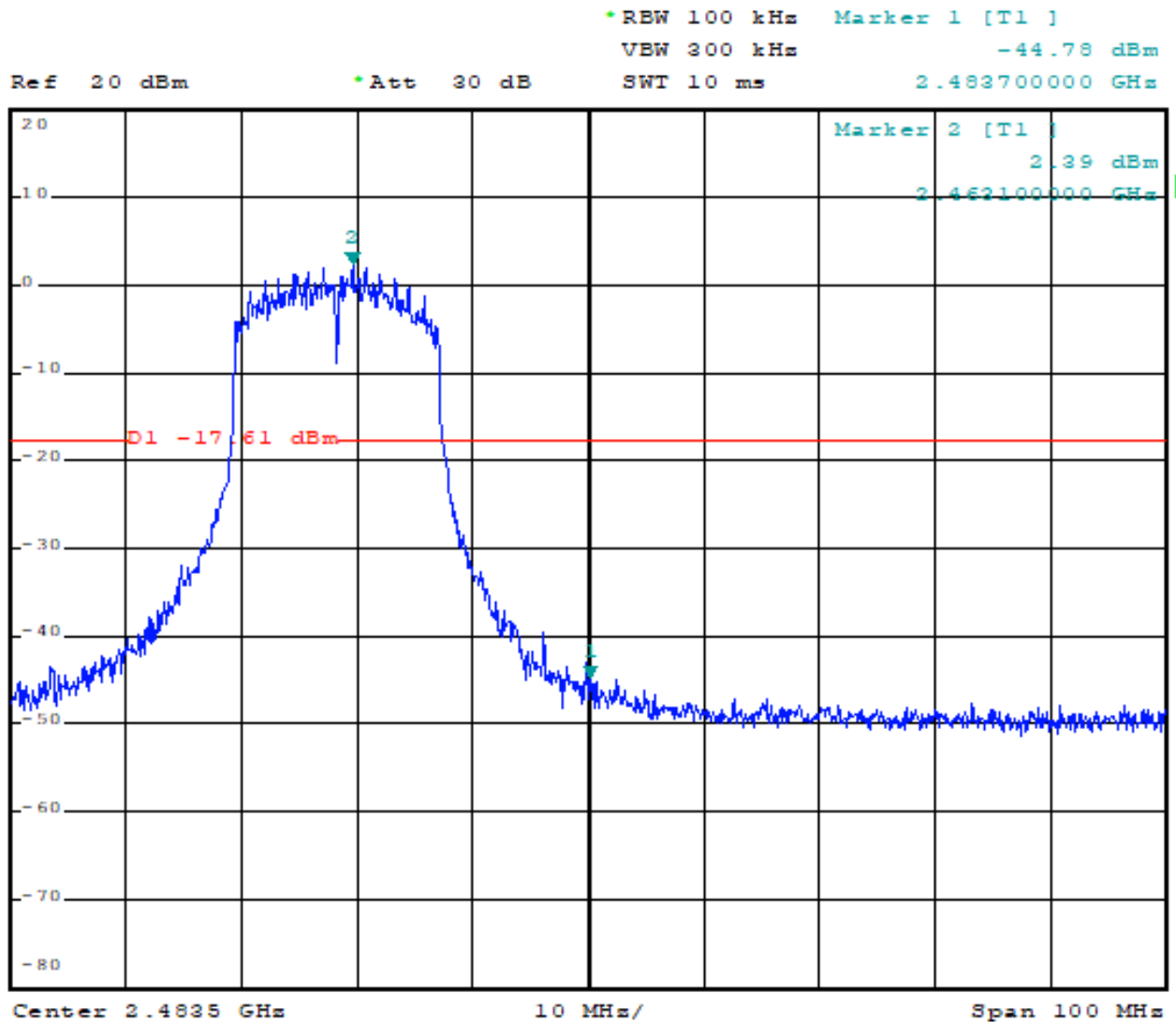


Date: 26.MAY.2022 14:34:34



Modulation Standard: 802.11n HT20 (6.5Mbps)

Channel: 11

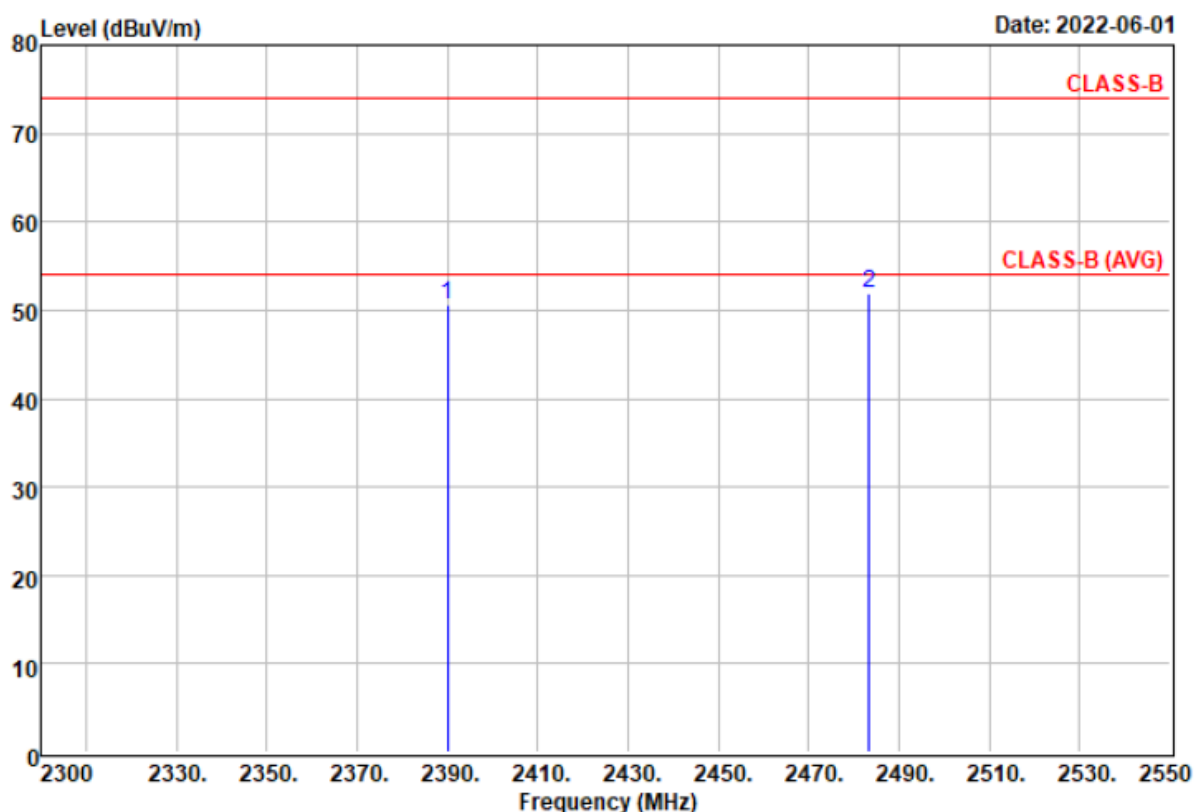


Date: 26.MAY.2022 14:36:01



## 11.5 Restrict Band Emission Measurement Data IEEE 802.11b

|          |           |             |              |
|----------|-----------|-------------|--------------|
| Power    | : AC 110V | Pol/Phase   | : Horizontal |
| Humidity | : 70 %    | Temperature | : 31 °C      |

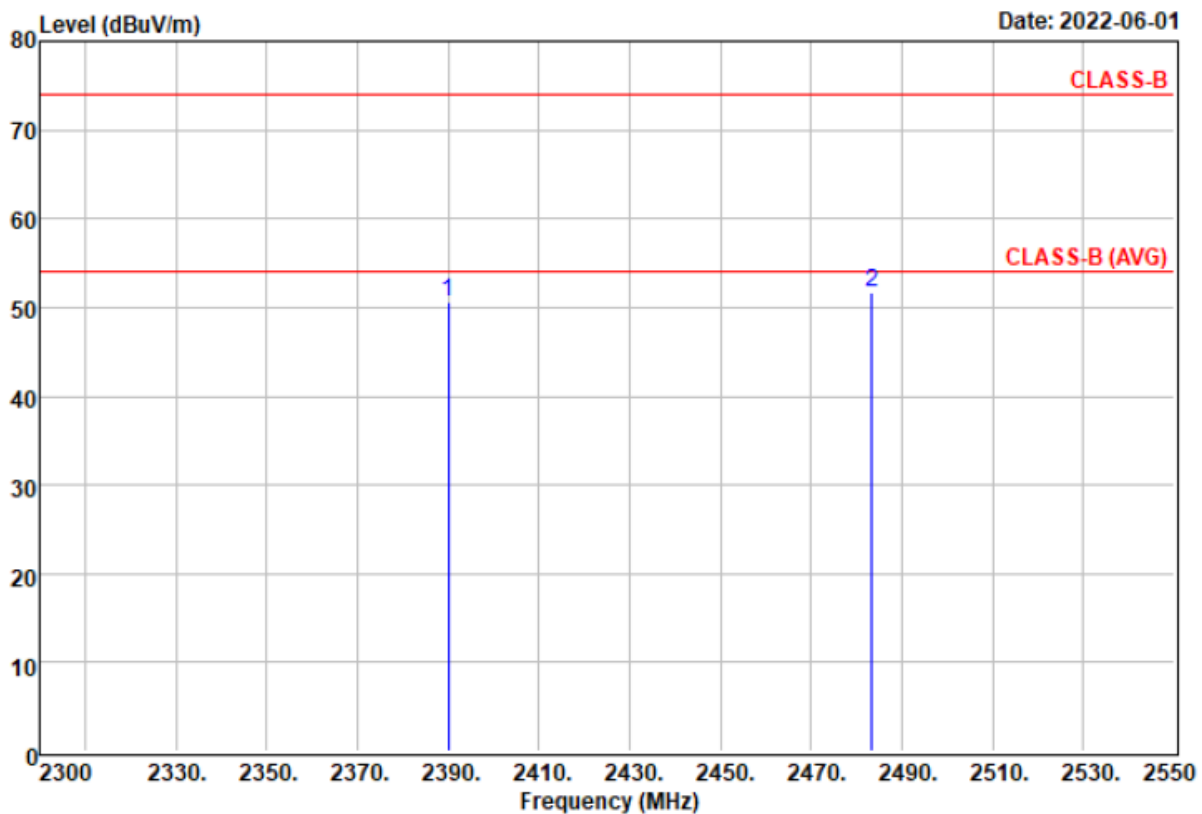


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|   |            | Read  |        | Limit  | Over   |              |
|---|------------|-------|--------|--------|--------|--------------|
|   | Freq       | Level | Factor | Level  | Line   | Limit Remark |
|   | MHz        | dBuV  | dB/m   | dBuV/m | dBuV/m | dB           |
| 1 | 2390.000   | 60.41 | -9.78  | 50.63  | 74.00  | -23.37 Peak  |
| 2 | @ 2483.500 | 61.13 | -9.24  | 51.89  | 74.00  | -22.11 Peak  |



|          |           |             |            |
|----------|-----------|-------------|------------|
| Power    | : AC 110V | Pol/Phase   | : Vertical |
| Humidity | : 70 %    | Temperature | : 31 °C    |



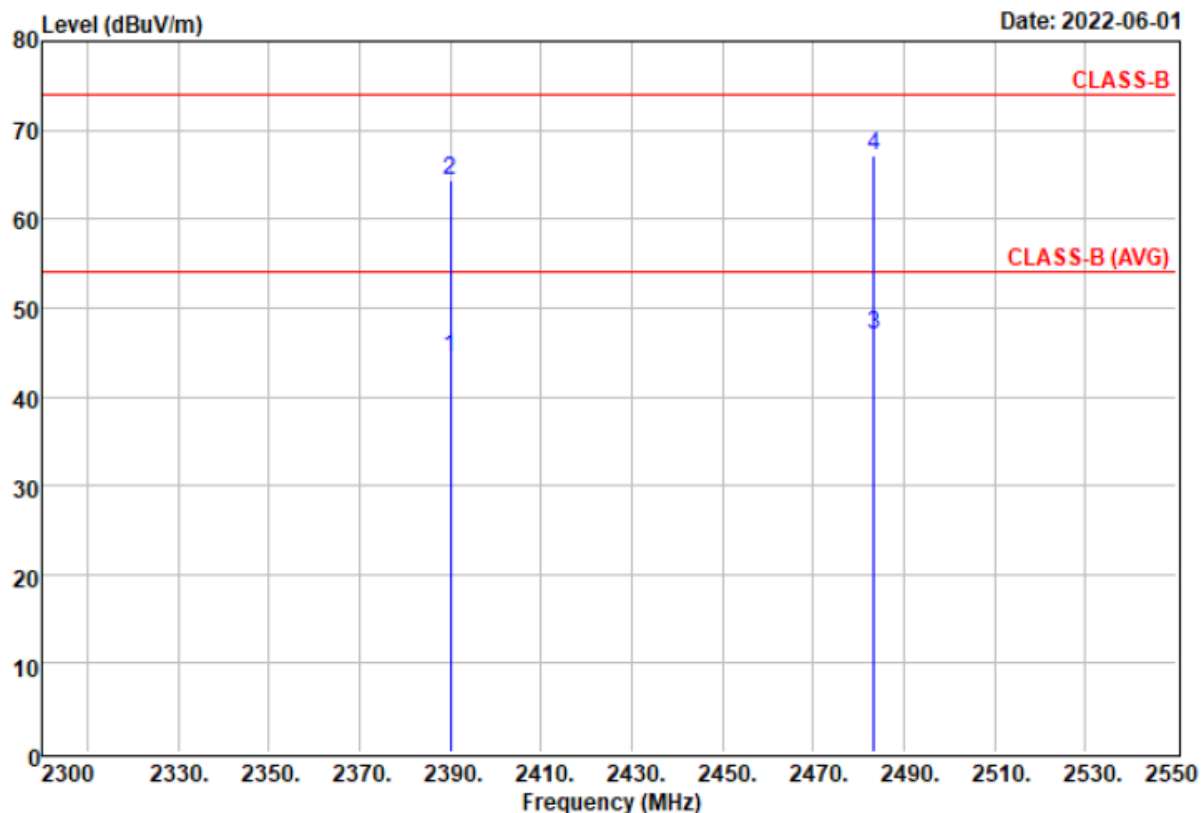
Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |          | Read  |        | Limit  | Over   |              |
|-----|----------|-------|--------|--------|--------|--------------|
|     | Freq     | Level | Factor | Level  | Line   | Limit Remark |
|     | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB           |
| 1   | 2390.000 | 60.33 | -9.78  | 50.55  | 74.00  | -23.45 Peak  |
| 2 @ | 2483.500 | 61.01 | -9.24  | 51.77  | 74.00  | -22.23 Peak  |



## IEEE 802.11g

|          |           |             |              |
|----------|-----------|-------------|--------------|
| Power    | : AC 110V | Pol/Phase   | : Horizontal |
| Humidity | : 70 %    | Temperature | : 31 °C      |

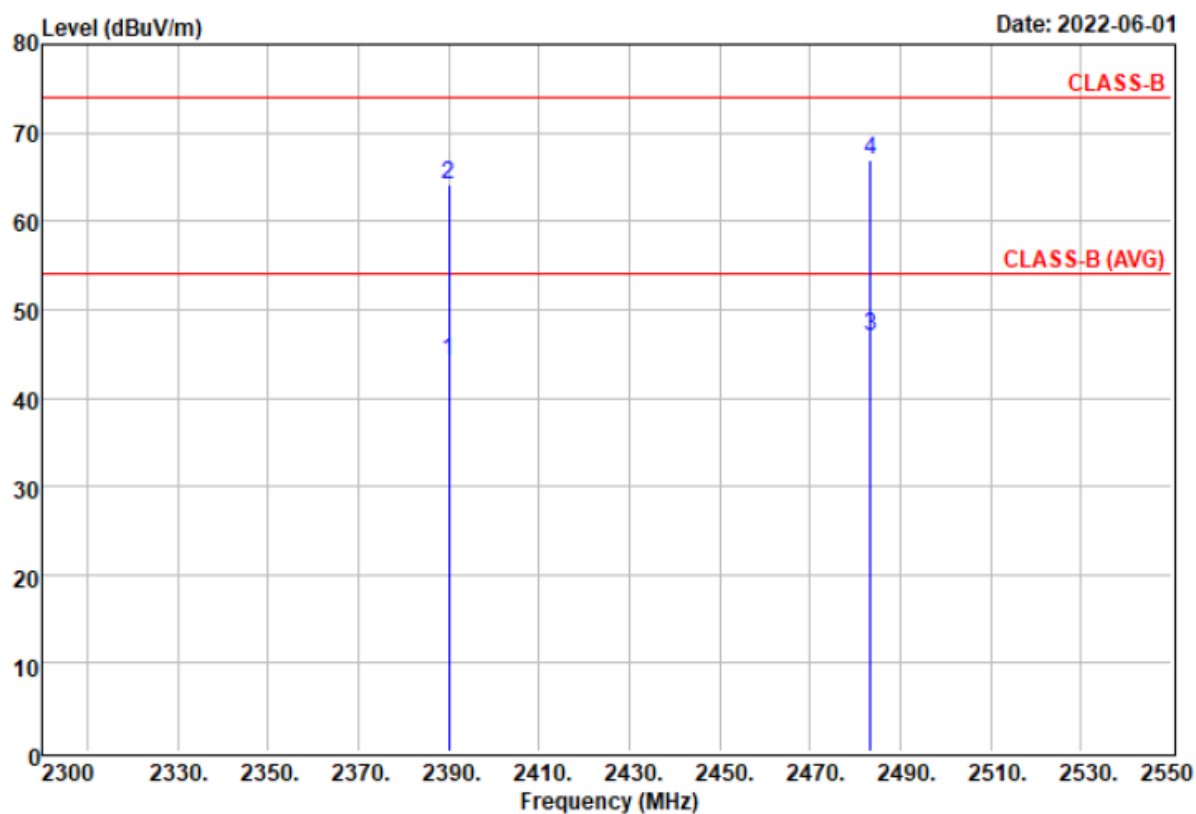


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |          | Read  |        | Limit  | Over   |               |
|-----|----------|-------|--------|--------|--------|---------------|
|     | Freq     | Level | Factor | Level  | Line   | Limit Remark  |
|     | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB            |
| 1   | 2390.000 | 54.11 | -9.78  | 44.33  | 54.00  | -9.67 Average |
| 2   | 2390.000 | 74.15 | -9.78  | 64.37  | 74.00  | -9.63 Peak    |
| 3   | 2483.500 | 56.29 | -9.24  | 47.05  | 54.00  | -6.95 Average |
| 4 @ | 2483.500 | 76.34 | -9.24  | 67.10  | 74.00  | -6.90 Peak    |



|          |           |             |            |
|----------|-----------|-------------|------------|
| Power    | : AC 110V | Pol/Phase   | : Vertical |
| Humidity | : 70 %    | Temperature | : 31 °C    |



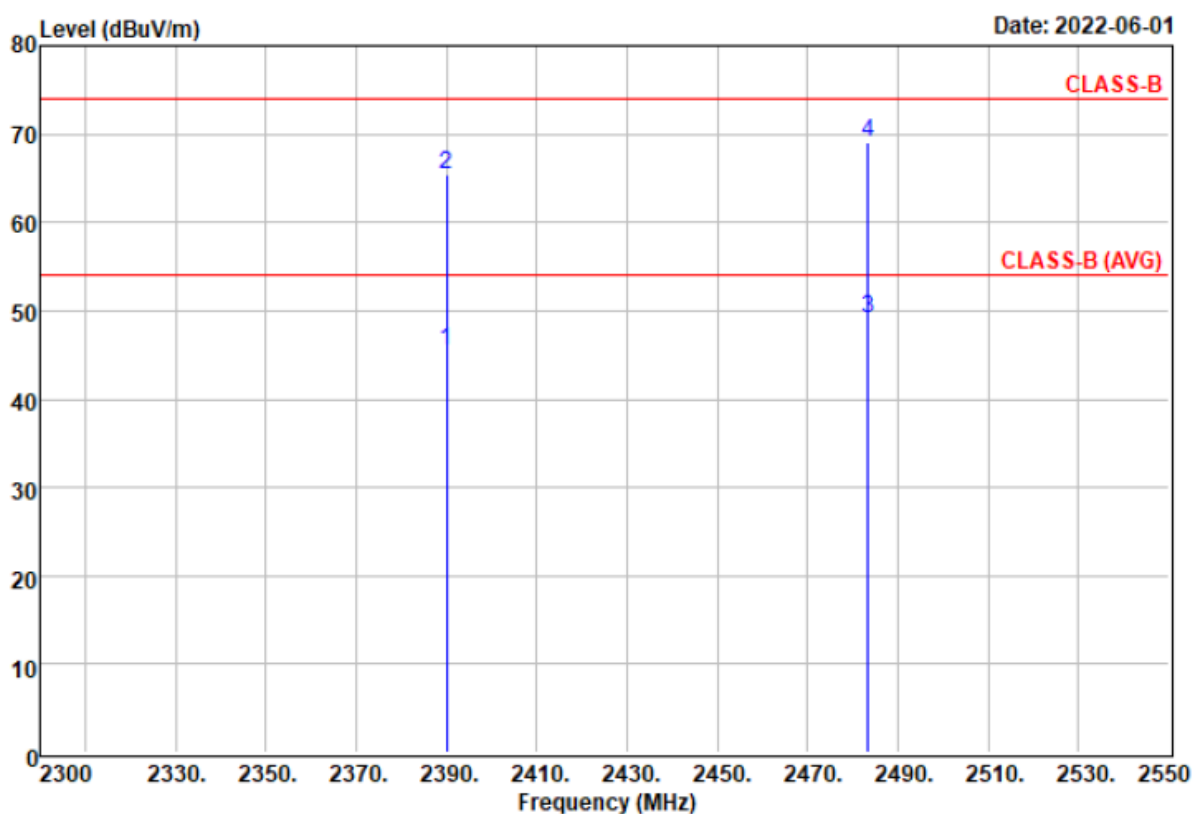
Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     |          | Read  |        | Limit  | Over   |               |
|-----|----------|-------|--------|--------|--------|---------------|
|     | Freq     | Level | Factor | Level  | Line   | Limit Remark  |
|     | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB            |
| 1   | 2390.000 | 53.97 | -9.78  | 44.19  | 54.00  | -9.81 Average |
| 2   | 2390.000 | 74.00 | -9.78  | 64.22  | 74.00  | -9.78 Peak    |
| 3   | 2483.500 | 56.16 | -9.24  | 46.92  | 54.00  | -7.08 Average |
| 4 @ | 2483.500 | 76.19 | -9.24  | 66.95  | 74.00  | -7.05 Peak    |



## IEEE 802.11n HT20

|          |           |             |              |
|----------|-----------|-------------|--------------|
| Power    | : AC 110V | Pol/Phase   | : Horizontal |
| Humidity | : 70 %    | Temperature | : 31 °C      |

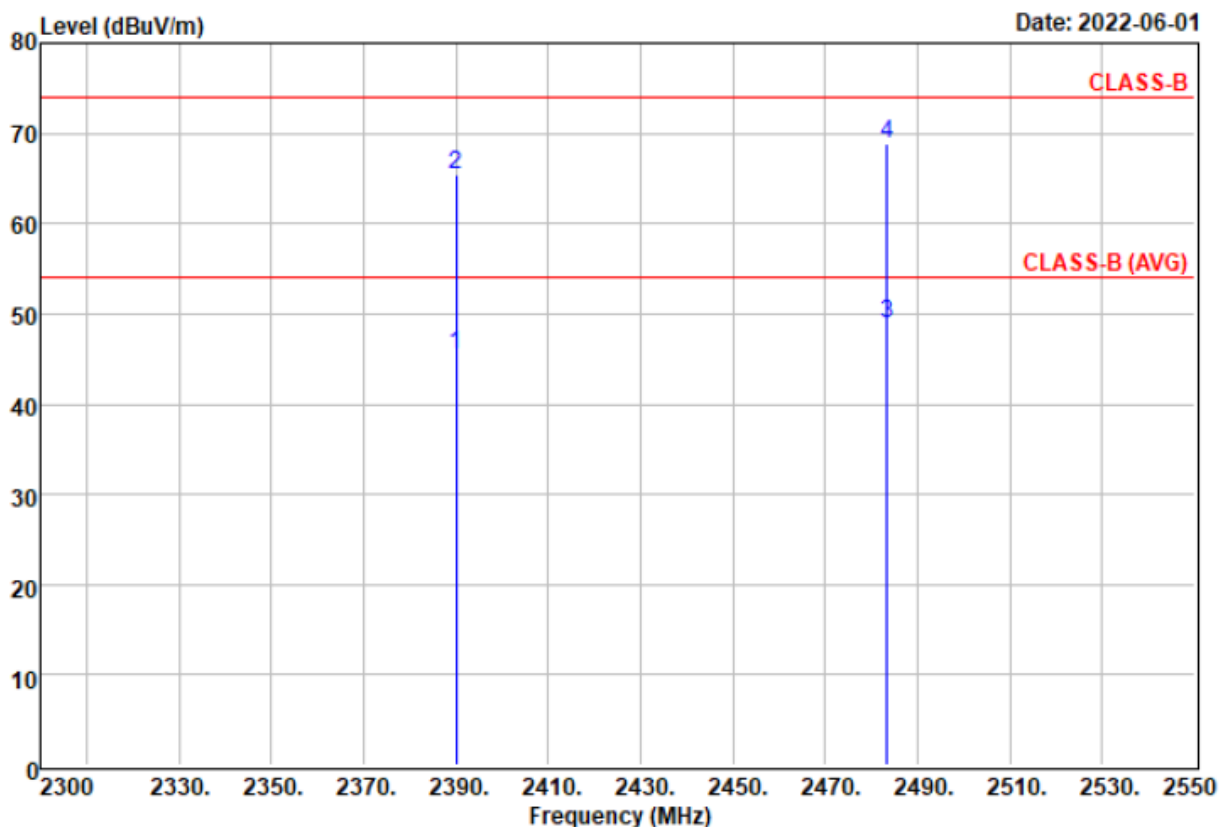


Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     | Freq     | Read Level | Factor | Level  | Limit Line | Over Limit | Remark  |
|-----|----------|------------|--------|--------|------------|------------|---------|
|     | MHz      | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |         |
| 1   | 2390.000 | 55.25      | -9.78  | 45.47  | 54.00      | -8.53      | Average |
| 2   | 2390.000 | 75.29      | -9.78  | 65.51  | 74.00      | -8.49      | Peak    |
| 3   | 2483.500 | 58.25      | -9.24  | 49.01  | 54.00      | -4.99      | Average |
| 4 @ | 2483.500 | 78.27      | -9.24  | 69.03  | 74.00      | -4.97      | Peak    |



|          |           |             |            |
|----------|-----------|-------------|------------|
| Power    | : AC 110V | Pol/Phase   | : Vertical |
| Humidity | : 70 %    | Temperature | : 31 °C    |



Remarks : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor-Cable loss-  
: Amplifier Factor

|     | Freq     | Read Level | Factor | Level  | Limit Line | Over Limit | Remark  |
|-----|----------|------------|--------|--------|------------|------------|---------|
|     | MHz      | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |         |
| 1   | 2390.000 | 55.19      | -9.78  | 45.41  | 54.00      | -8.59      | Average |
| 2   | 2390.000 | 75.22      | -9.78  | 65.44  | 74.00      | -8.56      | Peak    |
| 3   | 2483.500 | 58.16      | -9.24  | 48.92  | 54.00      | -5.08      | Average |
| 4 @ | 2483.500 | 78.18      | -9.24  | 68.94  | 74.00      | -5.06      | Peak    |



## 12. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                 | MHz                   | MHz             | GHz             |
|---------------------|-----------------------|-----------------|-----------------|
| 0.09000 – 0.11000   | 16.42000 – 16.42300   | 399.9 – 410.0   | 4.500 – 5.150   |
| 0.49500 – 0.505**   | 16.69475 – 16.69525   | 608.0 – 614.0   | 5.350 – 5.460   |
| 2.17350 – 2.19050   | 16.80425 – 16.80475   | 960.0 – 1240.0  | 7.250 – 7.750   |
| 4.12500 – 4.12800   | 25.50000 – 25.67000   | 1300.0 – 1427.0 | 8.025 – 8.500   |
| 4.17725 – 4.17775   | 37.50000 – 38.25000   | 1435.0 – 1626.5 | 9.000 – 9.200   |
| 4.20725 – 4.20775   | 73.00000 – 74.60000   | 1645.5 – 1646.5 | 9.300 – 9.500   |
| 6.21500 – 6.21800   | 74.80000 – 75.20000   | 1660.0 – 1710.0 | 10.600 – 12.700 |
| 6.26775 – 6.26825   | 108.00000 – 121.94000 | 1718.8 – 1722.2 | 13.250 – 13.400 |
| 6.31175 – 6.31225   | 123.00000 – 138.00000 | 2200.0 – 2300.0 | 14.470 – 14.500 |
| 8.29100 – 8.29400   | 149.90000 – 150.05000 | 2310.0 – 2390.0 | 15.350 – 16.200 |
| 8.36200 – 8.36600   | 156.52475 – 156.52525 | 2483.5 – 2500.0 | 17.700 – 21.400 |
| 8.37625 – 8.38675   | 156.70000 – 156.90000 | 2655.0 – 2900.0 | 22.010 – 23.120 |
| 8.41425 – 8.41475   | 162.01250 – 167.17000 | 3260.0 – 3267.0 | 23.600 – 24.000 |
| 12.29000 – 12.29300 | 167.72000 – 173.20000 | 3332.0 – 3339.0 | 31.200 – 31.800 |
| 12.51975 – 12.52025 | 240.00000 – 285.00000 | 3345.8 – 3358.0 | 36.430 – 36.500 |
| 12.57675 – 12.57725 | 322.00000 – 335.40000 | 3600.0 – 4400.0 | Above 38.6      |
| 13.36000 – 13.41000 |                       |                 |                 |

\*\* : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

### 12.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.