



# MEASUREMENT REPORT

## FCC PART 15C / WLAN 802.11b/g/n

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**FCC ID:** P27ME221

**Applicant:** Sercomm Corporation

**Application Type:** Certification

**Product:** Subscriber End Equipment HGW

**Model No.:** AME-4221SR

**Brand Name:** Airtel

**FCC Classification:** Digital Transmission System (DTS)

**FCC Rule Part(s):** Part 15 Subpart C (Section 15.247)

**Test Procedure(s):** ANSI C63.10-2013, KDB 662911 D01v02r01

**Test Date:** August 17 ~ September 08, 2020

Reviewed By:

*oscar shi*

(Oscar Shi)

Approved By:

*Robin Wu*

(Robin Wu)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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## Revision History

| Report No.    | Version | Description    | Issue Date | Note  |
|---------------|---------|----------------|------------|-------|
| 2008RSU023-U1 | Rev. 01 | Initial Report | 09-24-2020 | Valid |
|               |         |                |            |       |

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## General Information

|                              |                                                                                    |
|------------------------------|------------------------------------------------------------------------------------|
| <b>Applicant:</b>            | Sercomm Corporation                                                                |
| <b>Applicant Address:</b>    | 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.                       |
| <b>Manufacturer:</b>         | Sercomm Corporation                                                                |
| <b>Manufacturer Address:</b> | 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.                       |
| <b>Test Site:</b>            | MRT Technology (Suzhou) Co., Ltd                                                   |
| <b>Test Site Address:</b>    | D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China |

## Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is an FCC accredited testing laboratory (MRT Designation No. CN1166) on the FCC website.
- MRT facility is an ISED recognized testing laboratory (MRT Reg. No. CN0001) on the ISED website.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the A2LA under the A2LA Program (Cert. No. 3628.01) and CNAS under the CNAS Program (Cert. No. L10551) in EMC, Safety, Radio, Telecommunications and SAR testing.

## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The measurement facility compliant with the test site requirements specified in ANSI C63.4-2014.



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

|                     |                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------|
| Product Name        | Subscriber End Equipment HGW                                                                                |
| Model No.           | AME-4221SR                                                                                                  |
| Wi-Fi Specification | 802.11a/b/g/n/ac                                                                                            |
| Serial Number       | SRMEGA000044                                                                                                |
| <b>Accessories</b>  |                                                                                                             |
| Adapter             | Model No.: MSA-C2000IS12.0-24W-IN<br>Input Power: 90 - 270V ~ 50/60Hz, 0.7A max<br>Output Power: 12Vdc 2.0A |

### 2.2. Product Specification Subjective to this Report

|                      |                                                                                            |
|----------------------|--------------------------------------------------------------------------------------------|
| Frequency Range      | 802.11b/g/n-HT20: 2412 ~ 2462 MHz<br>802.11n-HT40: 2422 ~ 2452 MHz                         |
| Channel Number       | 802.11b/g/n-HT20: 11<br>802.11b/g/n-HT40: 7                                                |
| Type of Modulation   | 802.11b: DSSS<br>802.11g/n: OFDM                                                           |
| Data Rate            | 802.11b: 1/2/5.5/11Mbps<br>802.11g: 6/9/12/18/24/36/48/54Mbps<br>802.11n: up to 300Mbps    |
| Maximum Output Power | 802.11b: 26.39dBm<br>802.11g: 28.95dBm<br>802.11n-HT20: 29.57dBm<br>802.11n-HT40: 26.49dBm |

Note: For other features of this EUT, test report will be issued separately.

### 2.3. Working Frequencies for this report

802.11b/g/n-HT20

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

802.11n-HT40

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|---------|-----------|
| 03      | 2422 MHz  | 04      | 2427 MHz  | 05      | 2432 MHz  |
| 06      | 2437 MHz  | 07      | 2442 MHz  | 08      | 2447 MHz  |
| 09      | 2452 MHz  | --      | --        | --      | --        |

### 2.4. Description of Available Antennas

| Antenna Type | Frequency Band (GHz) | Antenna Gain (dBi) |       | Directional Gain (dBi) |         |
|--------------|----------------------|--------------------|-------|------------------------|---------|
|              |                      | Ant 0              | Ant 1 | For Power              | For PSD |
| PIFA Antenna | 2.4~2.5              | 3.30               | 2.70  | 3.30                   | 6.31    |
|              | 5.1~5.85             | 3.40               | 3.40  | 3.40                   | 6.41    |

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode.

Note 2: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB} = 3.01;$$

- For power measurements on IEEE 802.11 devices,

$$\text{Array Gain} = 0 \text{ dB for } N_{ANT} \leq 4;$$

If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with  $G_{ANT}$  set equal to the gain of the antenna having the highest gain.

Note 3: The antenna gain is declared by manufacture.

### 2.5. Test Mode

|           |                                         |
|-----------|-----------------------------------------|
| Test Mode | Mode 1: Transmit by 802.11b (1Mbps)     |
|           | Mode 2: Transmit by 802.11g (6Mbps)     |
|           | Mode 3: Transmit by 802.11n-HT20 (MCS0) |
|           | Mode 4: Transmit by 802.11n-HT40 (MCS0) |



## 2.6. Description of Test Software

The test utility software used during testing was “QATool\_Dbg.exe”, and the version was v3.37. Power parameter value refers to operation description.

## 2.7. Power setting for 2.4GHZ WLAN

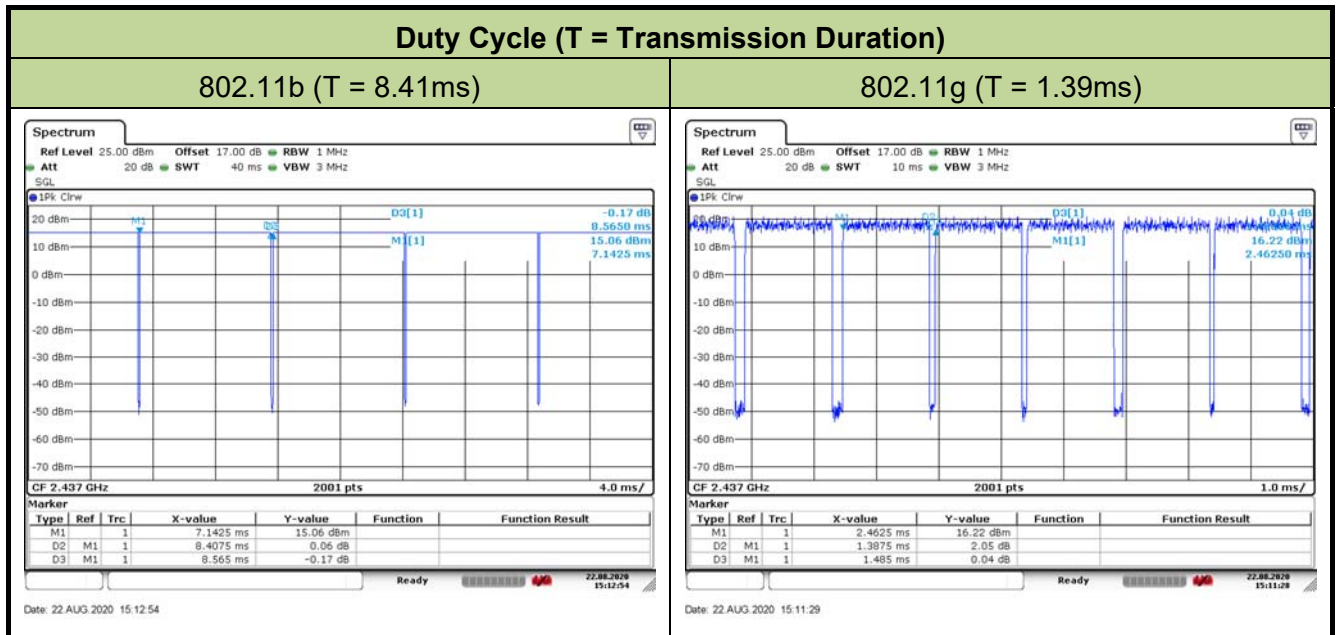
| Model  | Ch. | Freq.<br>(MHz) | Power Setting (Hex) | Power Setting (Dec) |
|--------|-----|----------------|---------------------|---------------------|
| b      | 1   | 2412           | 24                  | 18.0                |
|        | 6   | 2437           | 28                  | 20.0                |
|        | 11  | 2462           | 26                  | 19.0                |
| g      | 1   | 2412           | 26                  | 19.0                |
|        | 2   | 2417           | 29                  | 20.5                |
|        | 6   | 2437           | 2B                  | 21.5                |
|        | 10  | 2457           | 2B                  | 21.5                |
|        | 11  | 2462           | 26                  | 19.0                |
| n-HT20 | 1   | 2412           | 2B                  | 21.5                |
|        | 2   | 2417           | 2E                  | 23.0                |
|        | 6   | 2437           | 36                  | 27.0                |
|        | 10  | 2457           | 30                  | 24.0                |
|        | 11  | 2462           | 2B                  | 21.5                |
| n-HT40 | 3   | 2422           | 26                  | 19.0                |
|        | 4   | 2427           | 2B                  | 21.5                |
|        | 6   | 2437           | 2F                  | 23.5                |
|        | 8   | 2447           | 2D                  | 22.5                |
|        | 9   | 2452           | 2A                  | 21.0                |

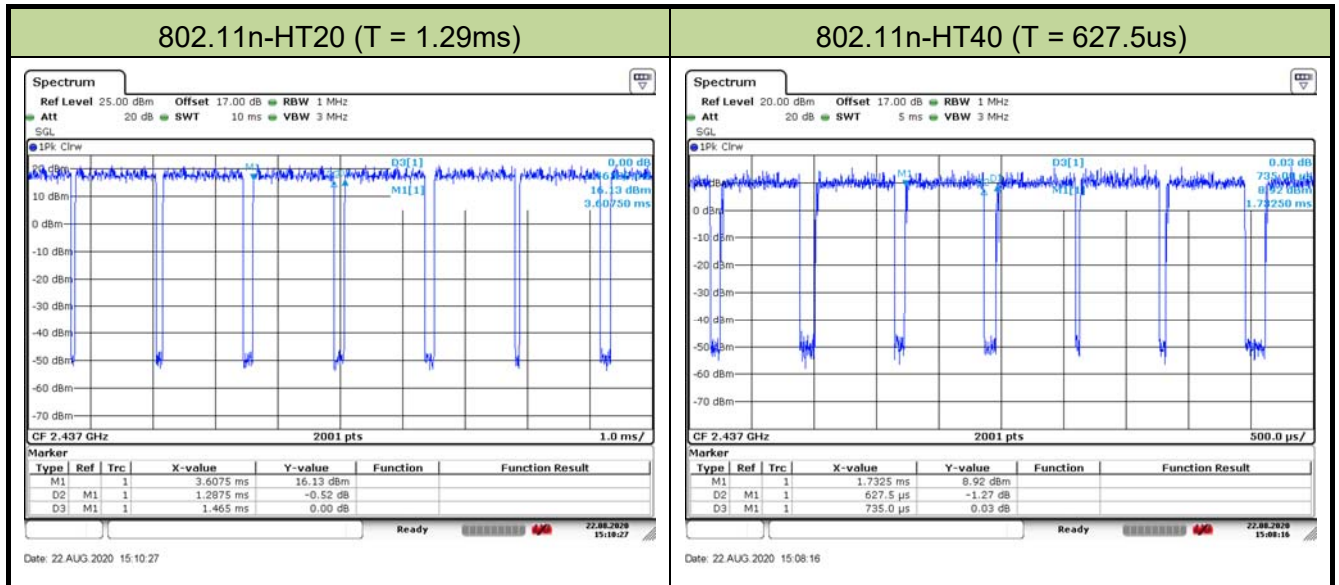
## 2.8. Duty Cycle

2.4GHz WLAN (DTS) operation is possible in 20MHz and 40MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than  $50/T$ , where  $T$  is the minimum transmission duration, and the number of sweep points across  $T$  was greater than 100. The duty cycles are as follows:

| Test Mode | Duty Cycle |
|-----------|------------|
| 802.11b   | 98.16%     |
| 802.11g   | 93.43%     |

|              |        |
|--------------|--------|
| 802.11n-HT20 | 87.88% |
| 802.11n-HT40 | 85.37% |





## 2.9. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.10. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

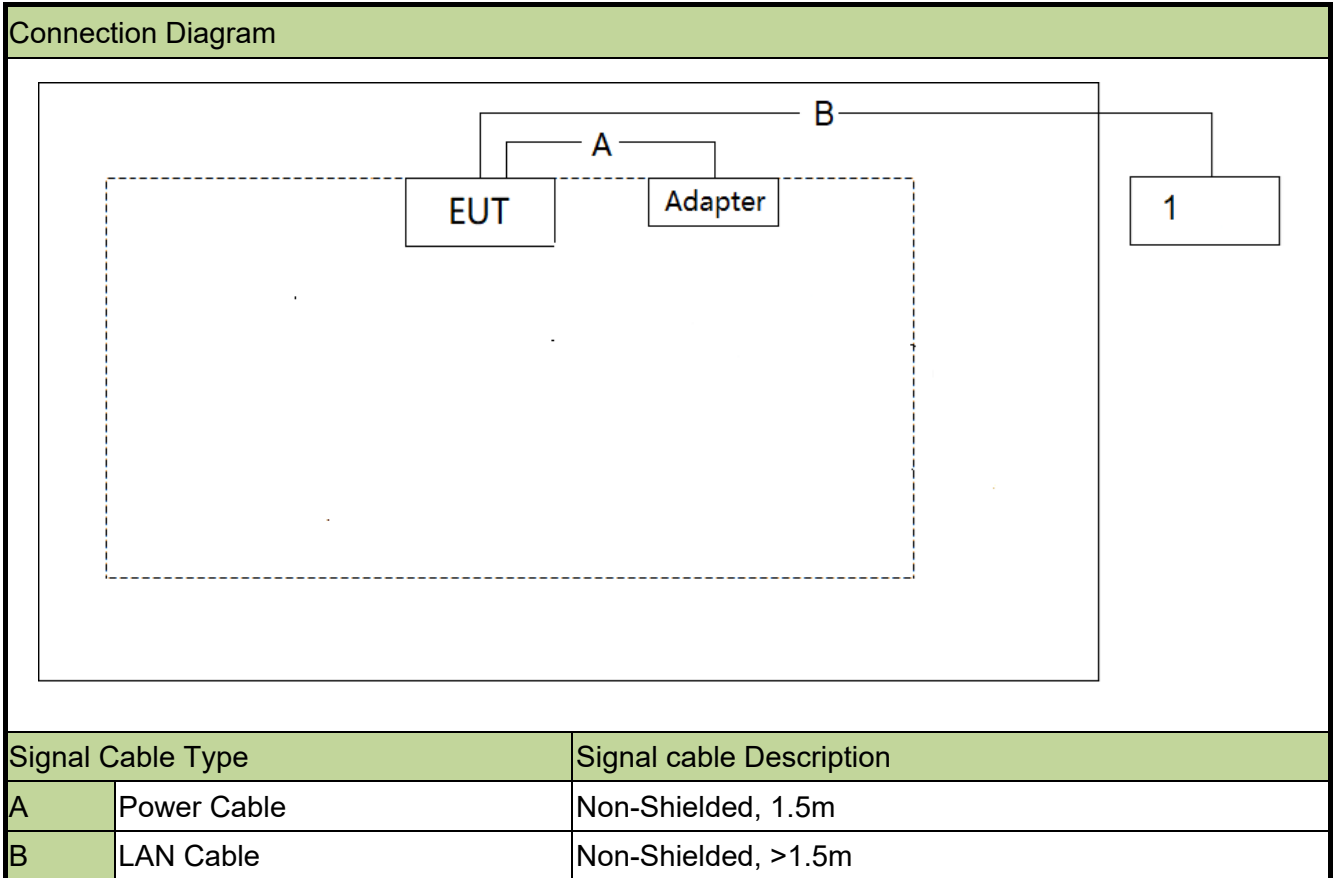
However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

## 2.11. Test Environment Condition

|                     |              |
|---------------------|--------------|
| Ambient Temperature | 15°C ~ 35°C  |
| Relative Humidity   | 20%RH ~75%RH |

## 2.12. Description of Test Configuration

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.



## 2.13. Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product |          | Manufacturer | Model No. | Serial No. | Power Cord         |
|---------|----------|--------------|-----------|------------|--------------------|
| 1       | Notebook | Lenovo       | E495      | N/A        | Non-Shielded, 1.8m |

### 3. ANTENNA REQUIREMENTS

#### **Excerpt from §15.203 of the FCC Rules/Regulations:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the device is **permanently attached**.
- There are no provisions for connection to an external antenna.

#### **Conclusion:**

The unit complies with the requirement of §15.203.

#### 4. TEST EQUIPMENT CALIBRATION DATE

##### Conducted Emissions - SR2

| Instrument                      | Manufacturer | Type No.    | Asset No.   | Cali. Interval | Cali. Due Date |
|---------------------------------|--------------|-------------|-------------|----------------|----------------|
| EMI Test Receiver               | R&S          | ESR3        | MRTSUE06185 | 1 year         | 2021/01/18     |
| Two-Line V-Network              | R&S          | ENV216      | MRTSUE06002 | 1 year         | 2021/06/11     |
| Four-Line V-Network             | R&S          | ENV432      | MRTSUE06615 | 1 year         | 2020/11/11     |
| Impedance Stabilization Network | TESEQ        | ISN T200A   | MRTSUE06004 | 1 year         | 2021/01/04     |
| Impedance Stabilization Network | TESEQ        | ISN T800    | MRTSUE06005 | 1 year         | 2021/01/04     |
| Impedance Stabilization Network | TESEQ        | ISN T8-CAT6 | MRTSUE06006 | 1 year         | 2021/01/04     |
| V-Network                       | R&S          | ESH3-Z6     | MRTSUE06187 | 1 year         | 2021/04/14     |
| V-Network                       | R&S          | ESH3-Z6     | MRTSUE06188 | 1 year         | 2021/04/14     |
| RF Current Probe                | R&S          | EZ-17       | MRTSUE06190 | 1 year         | 2021/04/14     |
| Thermal Hygrometer              | testo        | 608-H1      | MRTSUE06404 | 1 year         | 2021/07/26     |

##### Radiated Emissions - AC1

| Instrument                 | Manufacturer                | Type No.     | Asset No.   | Cali. Interval | Cali. Due Date |
|----------------------------|-----------------------------|--------------|-------------|----------------|----------------|
| EMI Test Receiver          | R&S                         | ESR7         | MRTSUE06001 | 1 year         | 2021/01/18     |
| PXA Signal Analyzer        | Keysight                    | 9030B        | MRTSUE06395 | 1 year         | 2021/08/30     |
| Loop Antenna               | Schwarzbeck                 | FMZB 1519    | MRTSUE06025 | 1 year         | 2020/11/13     |
| Bilog Period Antenna       | Schwarzbeck                 | VULB 9168    | MRTSUE06172 | 1 year         | 2021/04/03     |
| Broad Band Horn Antenna    | Schwarzbeck                 | BBHA 9120D   | MRTSUE06023 | 1 year         | 2020/10/13     |
| Broad Band Horn Antenna    | Schwarzbeck                 | BBHA 9170    | MRTSUE06024 | 1 year         | 2020/12/29     |
| Microwave System Amplifier | Agilent                     | 83017A       | MRTSUE06076 | 1 year         | 2020/11/15     |
| Preamplifier               | EMC Instruments corporation | EMC051845S E | MRTSUE06602 | 1 year         | 2020/10/07     |
| Thermohygrometer           | Testo                       | 608-H1       | MRTSUE06403 | 1 year         | 2021/07/26     |
| Anechoic Chamber           | TDK                         | Chamber-AC1  | MRTSUE06213 | 1 year         | 2021/04/30     |

## Radiated Emission - AC2

| Instrument                     | Manufacturer                | Type No.    | Asset No.   | Cali. Interval | Cali. Due Date |
|--------------------------------|-----------------------------|-------------|-------------|----------------|----------------|
| Spectrum Analyzer              | Keysight                    | N9038A      | MRTSUE06125 | 1 year         | 2021/07/02     |
| Loop Antenna                   | Schwarzbeck                 | FMZB 1519   | MRTSUE06025 | 1 year         | 2020/11/13     |
| Bilog Period Antenna           | Schwarzbeck                 | VULB 9162   | MRTSUE06022 | 1 year         | 2020/10/13     |
| Horn Antenna                   | Schwarzbeck                 | BBHA9120D   | MRTSUE06171 | 1 year         | 2020/10/27     |
| Broad Band Horn Antenna        | Schwarzbeck                 | BBHA 9170   | MRTSUE06024 | 1 year         | 2020/12/29     |
| Broadband Coaxial Preamplifier | Schwarzbeck                 | BBV 9718    | MRTSUE06176 | 1 year         | 2020/12/29     |
| Preamplifier                   | EMC Instruments corporation | EMC051845SE | MRTSUE06602 | 1 year         | 2020/10/07     |
| Temperature/Humidity Meter     | Minggao                     | ETH529      | MRTSUE06170 | 1 year         | 2020/12/15     |
| Anechoic Chamber               | RIKEN                       | Chamber-AC2 | MRTSUE06213 | 1 year         | 2021/04/30     |

## Conducted Test Equipment - TR3

| Instrument                          | Manufacturer | Type No.    | Asset No.   | Cali. Interval | Cali. Due Date |
|-------------------------------------|--------------|-------------|-------------|----------------|----------------|
| EXA Signal Analyzer                 | Agilent      | N9020A      | MRTSUE06106 | 1 year         | 2021/04/14     |
| EXA Signal Analyzer                 | Keysight     | N9010B      | MRTSUE06607 | 1 year         | 2021/01/08     |
| Signal Analyzer                     | R&S          | FSV40       | MRTSUE06218 | 1 year         | 2021/04/14     |
| Power Meter                         | Agilent      | U2021XA     | MRTSUE06030 | 1 year         | 2020/11/18     |
| USB wideband power sensor           | Keysight     | U2021XA     | MRTSUE06446 | 1 year         | 2021/06/11     |
| USB wideband power sensor           | Keysight     | U2021XA     | MRTSUE06447 | 1 year         | 2021/06/11     |
| Bluetooth Test Set                  | Anritsu      | MT8852B-042 | MRTSUE06389 | 1 year         | 2021/06/11     |
| Audio Analyzer                      | Agilent      | U8903B      | MRTSUE06143 | 1 year         | 2021/06/11     |
| Modulation Analyzer                 | HP           | HP8901A     | MRTSUE06098 | 1 year         | 2020/10/10     |
| Attenuator                          | MVE          | 6dB         | MRTSUE06534 | 1 year         | 2020/12/12     |
| Attenuator                          | MVE          | 10dB        | MRTSUE06543 | 1 year         | 2020/12/12     |
| Wideband Radio Communication Tester | R&S          | CMW 500     | MRTSUE06243 | 1 year         | 2020/11/07     |
| DC Power Supply                     | GWINSTEK     | DPS-3303C   | MRTSUE06064 | N/A            | N/A            |
| Temperature & Humidity Chamber      | BAOYT        | BYH-150CL   | MRTSUE06051 | 1 year         | 2020/11/07     |
| Thermal Hygrometer                  | testo        | 608-H1      | MRTSUE06401 | 1 year         | 2021/07/26     |

| Software     | Version | Function          |
|--------------|---------|-------------------|
| EMI Software | V3      | EMI Test Software |

## 5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

|                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC Conducted Emission Measurement</b>                                                                                                                                                                                                 |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>9kHz~150kHz: 3.74dB<br>150kHz~30MHz: 3.44dB                                                                                                                  |
| <b>Radiated Disturbance</b>                                                                                                                                                                                                              |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>Horizontal: 30MHz~300MHz: 5.04dB<br>300MHz~1GHz: 4.95dB<br>1GHz~40GHz: 6.40dB<br>Vertical: 30MHz~300MHz: 5.24dB<br>300MHz~1GHz: 6.03dB<br>1GHz~40GHz: 6.40dB |
| <b>Spurious Emissions, Conducted</b>                                                                                                                                                                                                     |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>0.78dB                                                                                                                                                       |
| <b>Output Power</b>                                                                                                                                                                                                                      |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>1.13dB                                                                                                                                                       |
| <b>Power Spectrum Density</b>                                                                                                                                                                                                            |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>1.15dB                                                                                                                                                       |
| <b>Occupied Bandwidth</b>                                                                                                                                                                                                                |
| Measurement Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ):<br>0.28%                                                                                                                                                        |



## 6. TEST RESULT

### 6.1. Summary

| FCC Part Section(s) | Test Description                                                              | Test Limit                                                                     | Test Condition | Test Result | Reference         |
|---------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------|-------------|-------------------|
| 15.247(a)(2)        | 6dB Bandwidth                                                                 | $\geq 500\text{kHz}$                                                           | Conducted      | Pass        | Section 6.2       |
| 15.247(b)(3)        | Output Power                                                                  | $\leq 1\text{Watt}$                                                            |                | Pass        | Section 6.3       |
| 15.247(e)           | Power Spectral Density                                                        | $\leq 8\text{dBm} / 3\text{kHz}$                                               |                | Pass        | Section 6.4       |
| 15.247(d)           | Band Edge / Out-of-Band Emissions                                             | $\geq 30\text{dBc}$ (Average)                                                  |                | Pass        | Section 6.5       |
| 15.205<br>15.209    | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 | Radiated       | Pass        | Section 6.6 & 6.7 |
| 15.207              | AC Conducted Emissions<br>150kHz - 30MHz                                      | $< \text{FCC } 15.207$ limits                                                  | Line Conducted | Pass        | Section 6.8       |

#### Notes:

- 1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) The test results shown in the following sections represent the worst case emissions.

## 6.2. 6dB Bandwidth Measurement

### 6.2.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

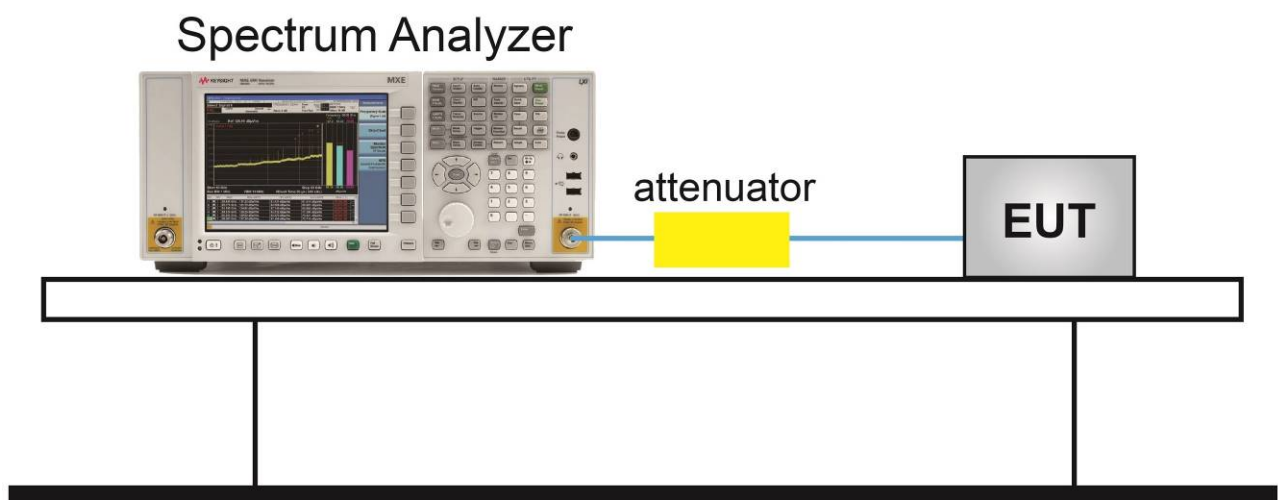
### 6.2.2. Test Procedure used

ANSI C63.10-2013 - Section 11.8.1

### 6.2.3. Test Setting

1. Set RBW = 100 kHz
2. VBW  $\geq 3 \times$  RBW
3. Detector = Peak
4. Trace mode = Max hold
5. Sweep = Auto couple
6. Allow the trace was allowed to stabilize
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

### 6.2.4. Test Setup



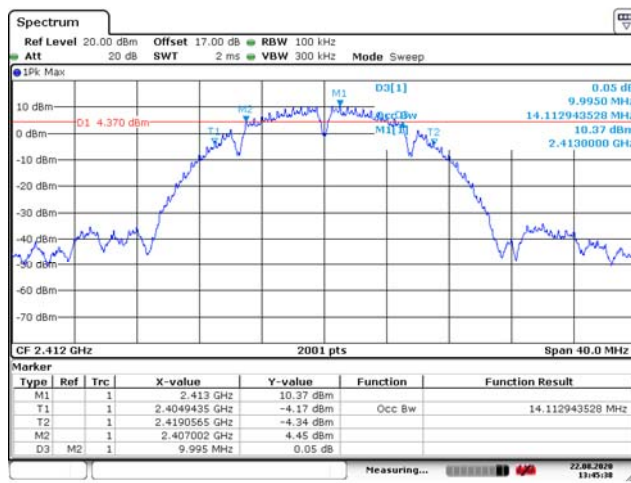
### 6.2.5. Test Result

|           |                                 |               |            |
|-----------|---------------------------------|---------------|------------|
| Product   | Subscriber End Equipment<br>HGW | Test Engineer | Milo Li    |
| Test Site | TR3                             | Test Date     | 2020/08/22 |

| Test Mode        | Data Rate /<br>MCS | Channel No. | Frequency<br>(MHz) | 6dB<br>Bandwidth<br>(MHz) | Limit<br>(MHz) | Result |
|------------------|--------------------|-------------|--------------------|---------------------------|----------------|--------|
| Ant 0/ Ant 0 + 1 |                    |             |                    |                           |                |        |
| 802.11b          | 1Mbps              | 01          | 2412               | 10.00                     | ≥ 0.5          | Pass   |
| 802.11b          | 1Mbps              | 06          | 2437               | 10.02                     | ≥ 0.5          | Pass   |
| 802.11b          | 1Mbps              | 11          | 2462               | 10.00                     | ≥ 0.5          | Pass   |
| 802.11g          | 6Mbps              | 01          | 2412               | 15.11                     | ≥ 0.5          | Pass   |
| 802.11g          | 6Mbps              | 06          | 2437               | 15.11                     | ≥ 0.5          | Pass   |
| 802.11g          | 6Mbps              | 11          | 2462               | 15.11                     | ≥ 0.5          | Pass   |
| 802.11n-HT20     | MCS0               | 01          | 2412               | 15.11                     | ≥ 0.5          | Pass   |
| 802.11n-HT20     | MCS0               | 06          | 2437               | 15.11                     | ≥ 0.5          | Pass   |
| 802.11n-HT20     | MCS0               | 11          | 2462               | 15.13                     | ≥ 0.5          | Pass   |
| 802.11n-HT40     | MCS0               | 03          | 2422               | 35.02                     | ≥ 0.5          | Pass   |
| 802.11n-HT40     | MCS0               | 06          | 2437               | 34.98                     | ≥ 0.5          | Pass   |
| 802.11n-HT40     | MCS0               | 09          | 2452               | 35.09                     | ≥ 0.5          | Pass   |

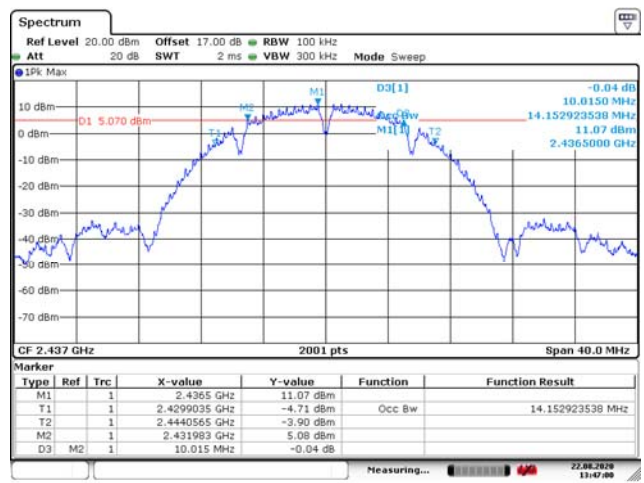
## 802.11b 6dB Bandwidth

### Channel 01 (2412MHz)



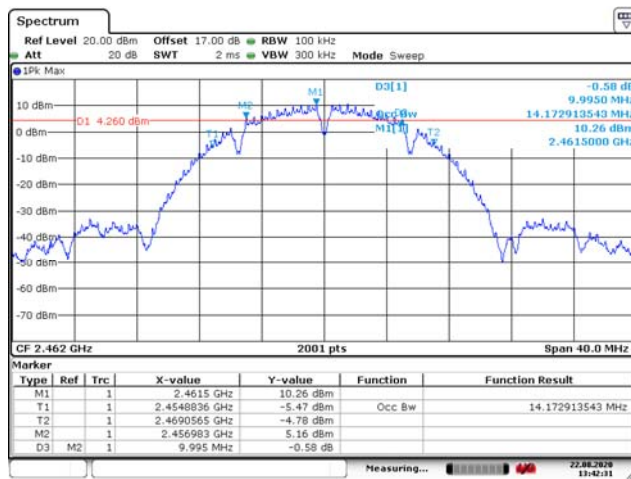
Date: 22 AUG 2020 13:45:38

### Channel 06 (2437MHz)



Date: 22 AUG 2020 13:47:01

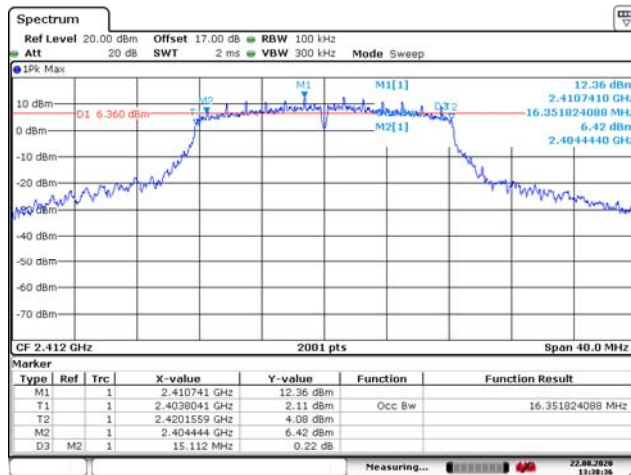
### Channel 11 (2462MHz)



Date: 22 AUG 2020 13:42:31

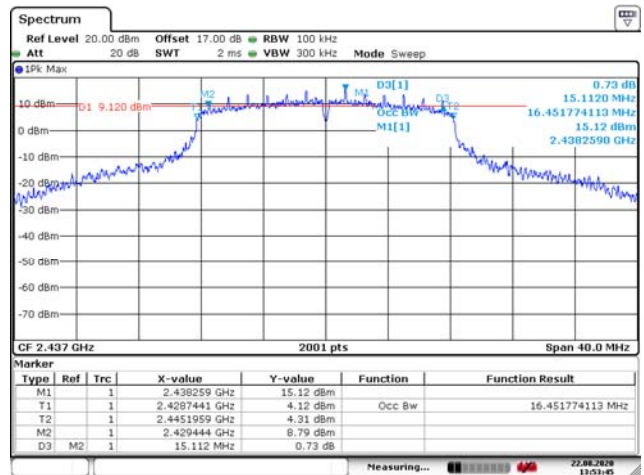
## 802.11g 6dB Bandwidth

### Channel 01 (2412MHz)



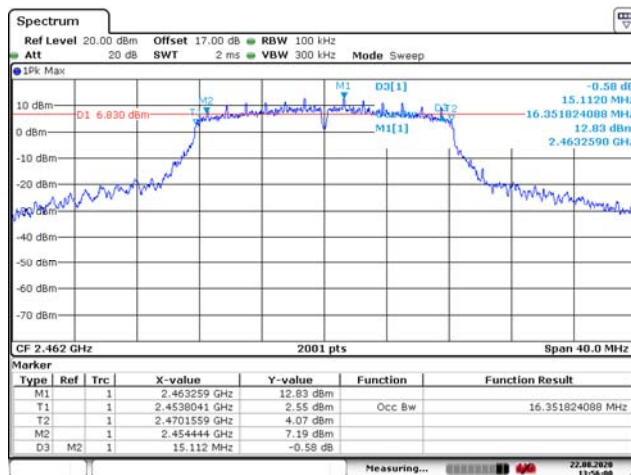
Date: 22 AUG 2020 13:38:37

### Channel 06 (2437MHz)



Date: 22 AUG 2020 13:53:45

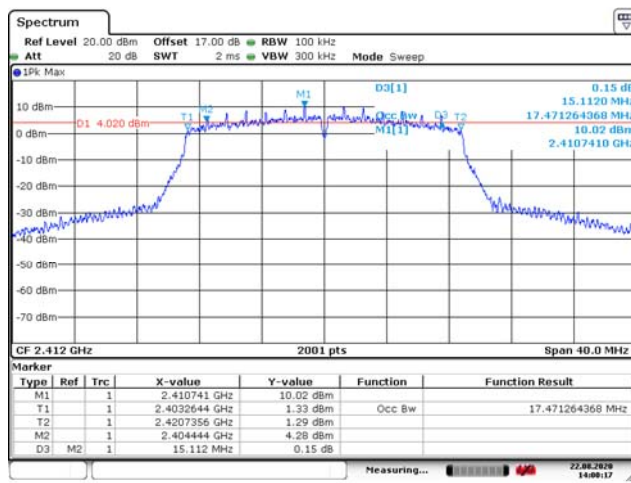
### Channel 11 (2462MHz)



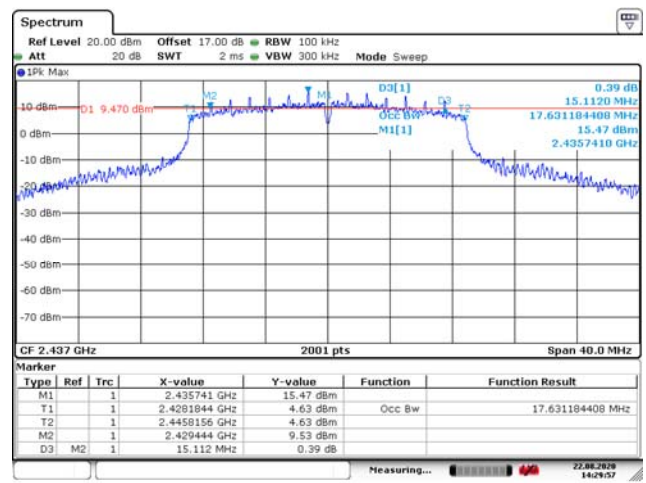
Date: 22 AUG 2020 13:56:00

## 802.11n-HT20 6dB Bandwidth

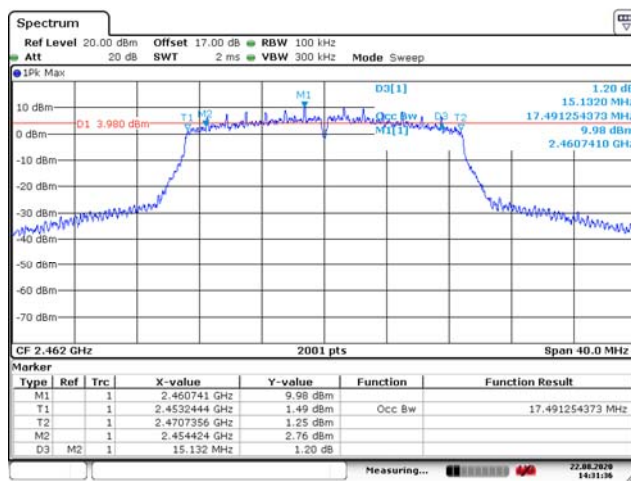
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)

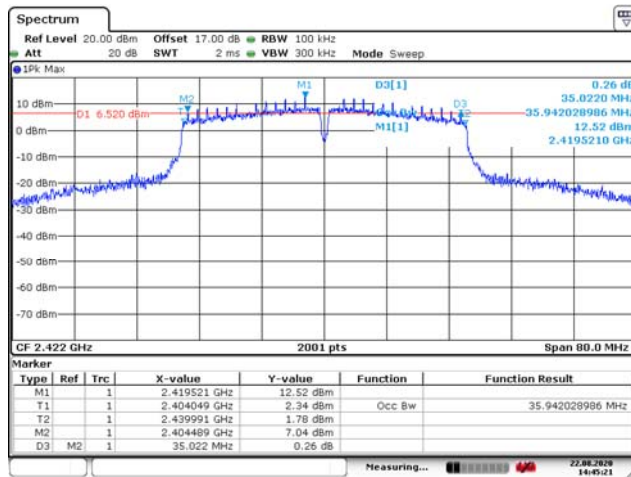


### Channel 11 (2462MHz)



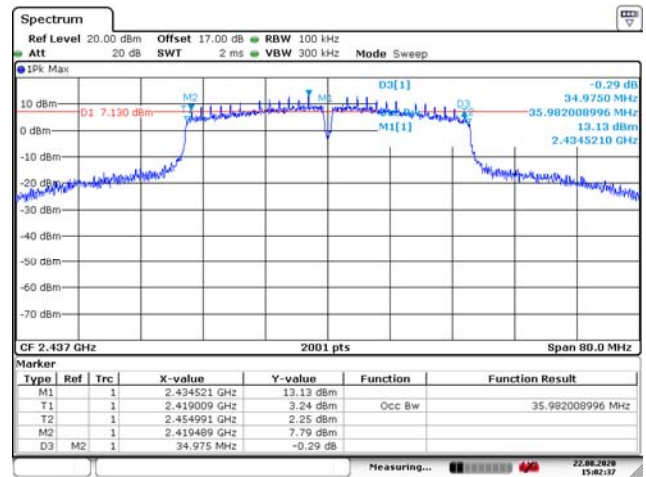
## 802.11n-HT40 6dB Bandwidth

### Channel 03 (2422MHz)



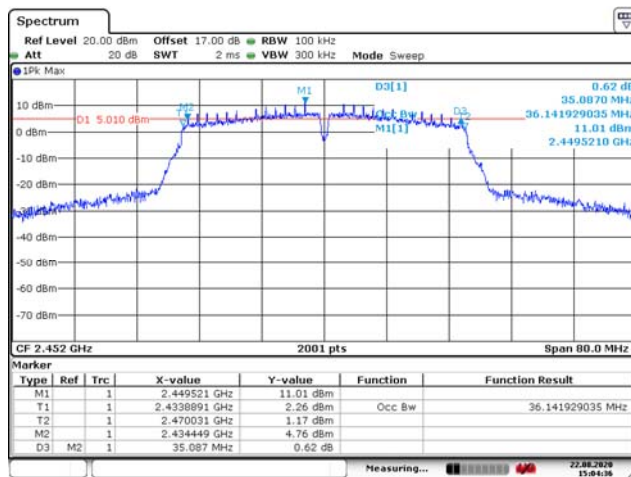
Date: 22 AUG 2020 14:45:21

### Channel 06 (2437MHz)



Date: 22 AUG 2020 15:02:38

### Channel 09 (2452MHz)



Date: 22 AUG 2020 15:04:36

### 6.3. Output Power Measurement

#### 6.3.1. Test Limit

The maximum conducted output power shall not exceed 1 Watt (30dBm).

#### 6.3.2. Test Procedure Used

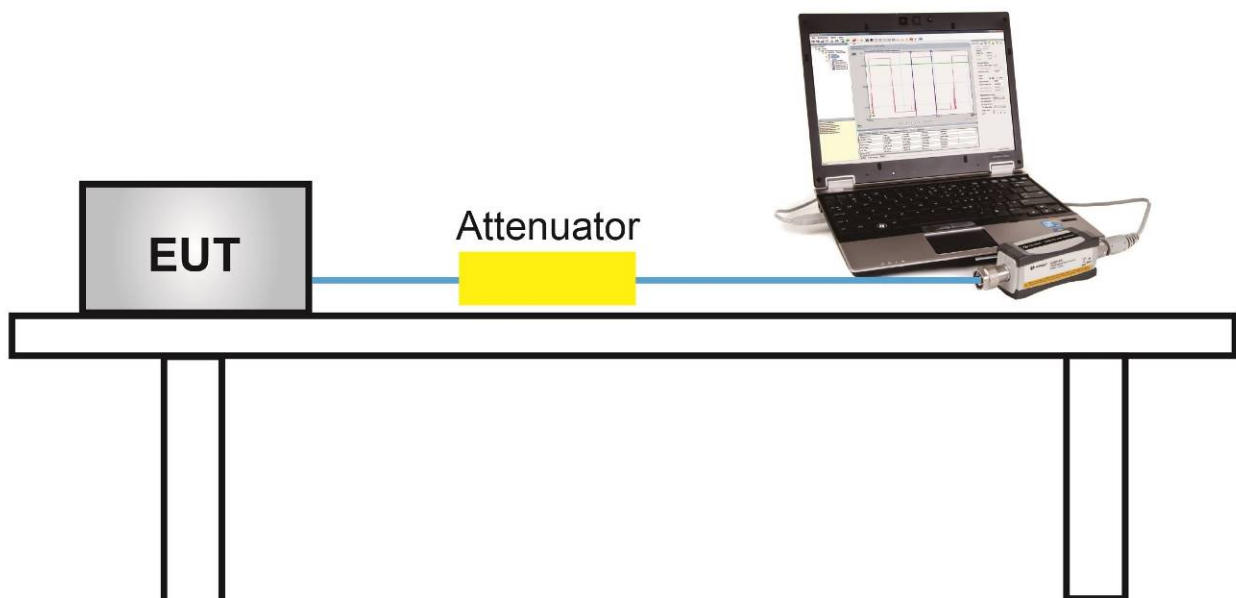
ANSI C63.10-2013 - Section 11.9.2.3.2

#### 6.3.3. Test Setting

##### **Method AVGPM-G (Measurement using a gated RF average-reading power meter)**

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

#### 6.3.4. Test Setup





### 6.3.5.Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (gray marker) for final test of each channel.

Output power at various data rates for Ant 0 / Ant 0+1 port:

| Test Mode | Bandwidth<br>(MHz) | Channel No. | Frequency<br>(MHz) | Data Rate<br>/ MCS | Average Power<br>(dBm) |
|-----------|--------------------|-------------|--------------------|--------------------|------------------------|
| 802.11b   | 20                 | 6           | 2437               | 1Mbps              | 23.21                  |
|           |                    |             |                    | 5.5Mbps            | 23.01                  |
|           |                    |             |                    | 11Mbps             | 22.87                  |
| 802.11g   | 20                 | 6           | 2437               | 6Mbps              | 25.76                  |
|           |                    |             |                    | 24Mbps             | 25.43                  |
|           |                    |             |                    | 54Mbps             | 25.18                  |
| 802.11n   | 20                 | 6           | 2437               | MCS0               | 26.32                  |
|           |                    |             |                    | MCS3               | 26.17                  |
|           |                    |             |                    | MCS7               | 25.97                  |
| 802.11n   | 40                 | 6           | 2437               | MCS0               | 23.31                  |
|           |                    |             |                    | MCS3               | 23.04                  |
|           |                    |             |                    | MCS7               | 22.86                  |

|           |                              |               |            |
|-----------|------------------------------|---------------|------------|
| Product   | Subscriber End Equipment HGW | Test Engineer | Milo Li    |
| Test Site | TR3                          | Test Date     | 2020/08/22 |

| Test Mode | Data Rate/<br>MCS | Channel<br>No. | Freq.<br>(MHz) | Average Power (dBm) |       | Total Average<br>Power (dBm) | Limit<br>(dBm) | Result |
|-----------|-------------------|----------------|----------------|---------------------|-------|------------------------------|----------------|--------|
|           |                   |                |                | Ant 0               | Ant 1 |                              |                |        |
| 11b       | 1Mbps             | 01             | 2412           | 21.83               | 22.01 | 24.93                        | ≤ 30.00        | Pass   |
| 11b       | 1Mbps             | 06             | 2437           | 23.21               | 23.55 | 26.39                        | ≤ 30.00        | Pass   |
| 11b       | 1Mbps             | 11             | 2462           | 22.67               | 22.61 | 25.65                        | ≤ 30.00        | Pass   |
| 11g       | 6Mbps             | 01             | 2412           | 24.71               | 24.52 | 27.63                        | ≤ 30.00        | Pass   |
| 11g       | 6Mbps             | 02             | 2417           | 25.65               | 25.52 | 28.60                        | ≤ 30.00        | Pass   |
| 11g       | 6Mbps             | 06             | 2437           | 25.76               | 26.12 | 28.95                        | ≤ 30.00        | Pass   |
| 11g       | 6Mbps             | 10             | 2457           | 25.39               | 26.01 | 28.72                        | ≤ 30.00        | Pass   |
| 11g       | 6Mbps             | 11             | 2462           | 23.45               | 23.12 | 26.30                        | ≤ 30.00        | Pass   |
| 11n-HT20  | MCS0              | 01             | 2412           | 22.51               | 21.98 | 25.26                        | ≤ 30.00        | Pass   |
| 11n-HT20  | MCS0              | 02             | 2417           | 23.93               | 23.32 | 26.65                        | ≤ 30.00        | Pass   |
| 11n-HT20  | MCS0              | 06             | 2437           | 26.32               | 26.78 | 29.57                        | ≤ 30.00        | Pass   |
| 11n-HT20  | MCS0              | 10             | 2457           | 23.51               | 24.17 | 26.86                        | ≤ 30.00        | Pass   |
| 11n-HT20  | MCS0              | 11             | 2462           | 22.13               | 22.23 | 25.19                        | ≤ 30.00        | Pass   |
| 11n-HT40  | MCS0              | 03             | 2422           | 19.71               | 19.67 | 22.70                        | ≤ 30.00        | Pass   |
| 11n-HT40  | MCS0              | 04             | 2427           | 22.26               | 21.91 | 25.10                        | ≤ 30.00        | Pass   |
| 11n-HT40  | MCS0              | 06             | 2437           | 23.31               | 23.65 | 26.49                        | ≤ 30.00        | Pass   |
| 11n-HT40  | MCS0              | 08             | 2447           | 22.04               | 22.46 | 25.27                        | ≤ 30.00        | Pass   |
| 11n-HT40  | MCS0              | 09             | 2452           | 20.94               | 21.07 | 24.02                        | ≤ 30.00        | Pass   |

Note: Total Average Power (dBm) =  $10 \cdot \log \{10^{(\text{ANT 0 Average Power} / 10)} + 10^{(\text{ANT 1 Average Power} / 10)}\}$  (dBm).

## **6.4. Power Spectral Density Measurement**

### **6.4.1. Test Limit**

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power spectral density.

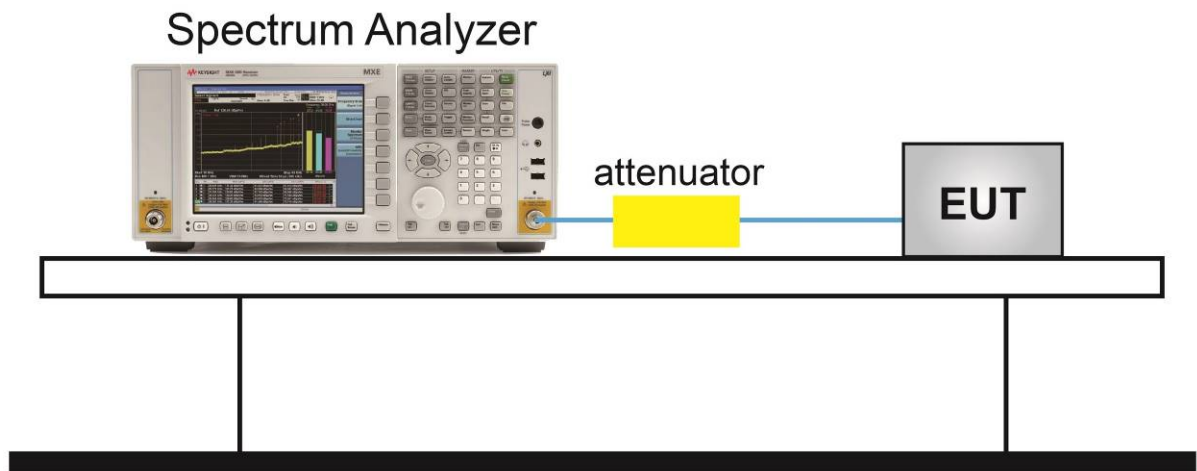
### **6.4.2. Test Procedure Used**

ANSI C63.10-2013 - Section 11.10.3 & 11.10.5

### **6.4.3. Test Setting**

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the OBW
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = RMS
6. Employ trace averaging (rms) mode over a minimum of 100 traces.
7. Sweep time = auto couple
8. Use the peak marker function to determine the maximum amplitude level.
9. Add  $10 \log (1/x)$ , where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.
10. Trace was allowed to stabilize

#### 6.4.4. Test Setup



#### 6.4.5. Test Result

|           |                                 |               |                         |
|-----------|---------------------------------|---------------|-------------------------|
| Product   | Subscriber End Equipment<br>HGW | Test Engineer | Milo Li                 |
| Test Site | TR3                             | Test Date     | 2020/08/22 ~ 2020/08/27 |

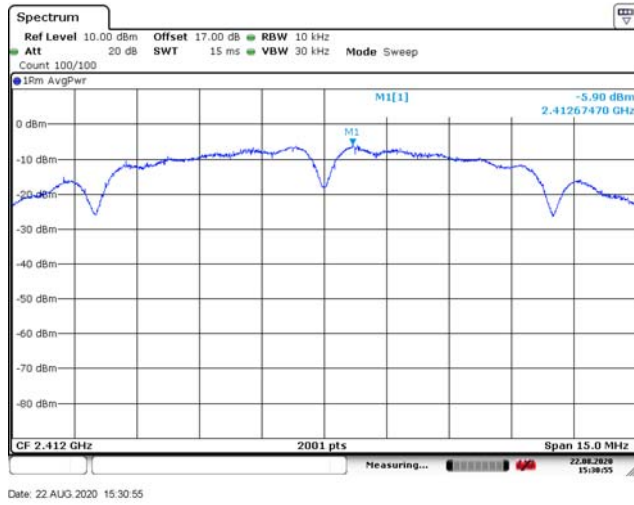
| Test Mode | Data Rate/<br>MCS | Channel<br>No. | Freq.<br>(MHz) | AVG PSD (dBm/10kHz) |        | Duty<br>Cycle(%) | Final PSD<br>(dBm/10kHz) | Limit<br>(dBm/3kHz) | Result |
|-----------|-------------------|----------------|----------------|---------------------|--------|------------------|--------------------------|---------------------|--------|
|           |                   |                |                | Ant 0               | Ant 1  |                  |                          |                     |        |
| 11b       | 1Mbps             | 01             | 2412           | -5.90               | -5.85  | 98.16            | -2.78                    | ≤ 8.00              | Pass   |
| 11b       | 1Mbps             | 06             | 2437           | -5.79               | -4.58  | 98.16            | -2.05                    | ≤ 8.00              | Pass   |
| 11b       | 1Mbps             | 11             | 2462           | -6.28               | -5.24  | 98.16            | -2.64                    | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 01             | 2412           | -4.43               | -4.90  | 93.43            | -1.35                    | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 06             | 2437           | -2.94               | -2.37  | 93.43            | 0.66                     | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 11             | 2462           | -4.91               | -4.72  | 93.43            | -1.51                    | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 01             | 2412           | -7.57               | -6.81  | 87.88            | -3.60                    | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 06             | 2437           | -3.53               | -2.32  | 87.88            | 0.69                     | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 11             | 2462           | -8.10               | -7.12  | 87.88            | -4.01                    | ≤ 8.00              | Pass   |
| 11n-HT40  | MCS0              | 03             | 2422           | -12.52              | -13.27 | 85.37            | -9.18                    | ≤ 8.00              | Pass   |
| 11n-HT40  | MCS0              | 06             | 2437           | -9.36               | -8.53  | 85.37            | -5.23                    | ≤ 8.00              | Pass   |
| 11n-HT40  | MCS0              | 09             | 2452           | -12.34              | -12.05 | 85.37            | -8.50                    | ≤ 8.00              | Pass   |

Note 1: The total AVG PSD =  $10 \cdot \log \{10^{(\text{Ant 0 AVG PSD}/10)} + 10^{(\text{Ant 1 AVG PSD}/10)}\} + 10 \cdot \log (1/\text{Duty cycle})$ .

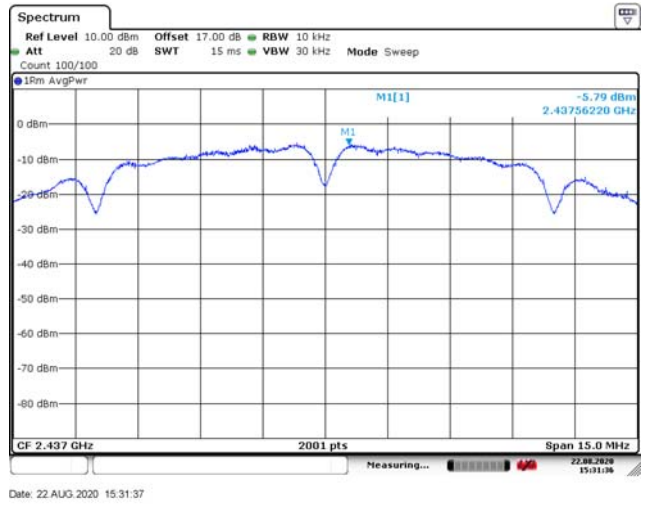
Note 2: Total AVG PSD (dBm / 10kHz) << Limit (dBm / 3kHz), so there is no necessary to conversion unit.

# 802.11b AVGPDS - Ant 0

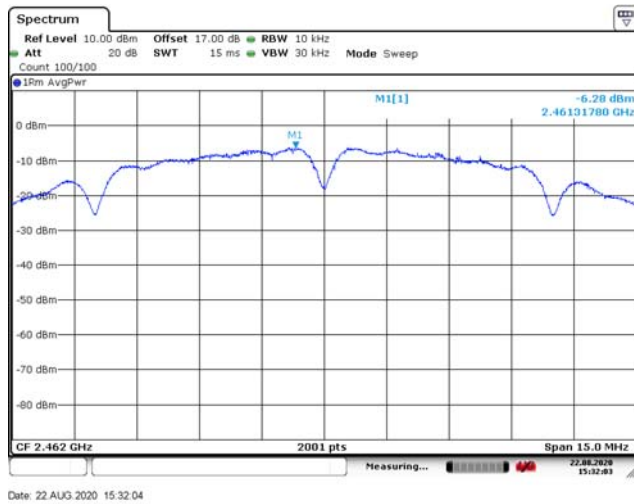
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

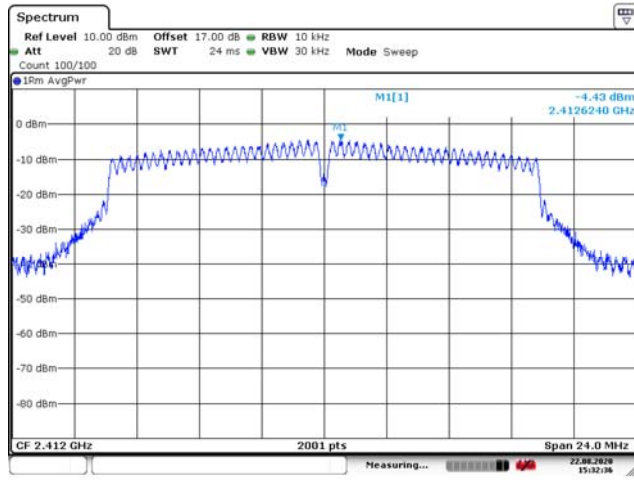


## Channel 11 (2462MHz)

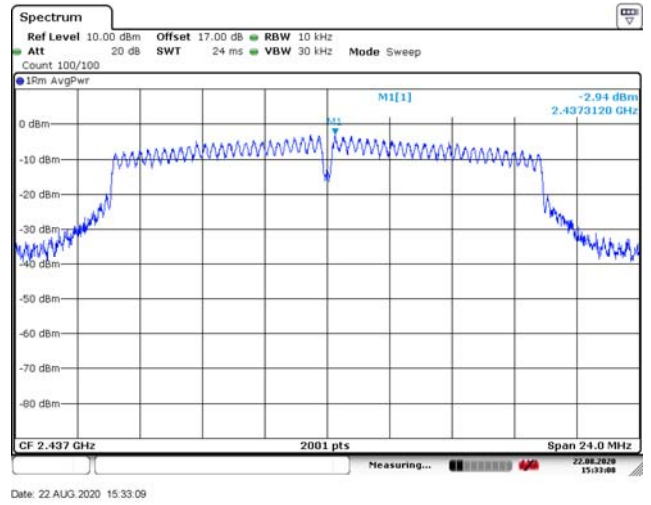


# 802.11g - AVGPST - Ant 0

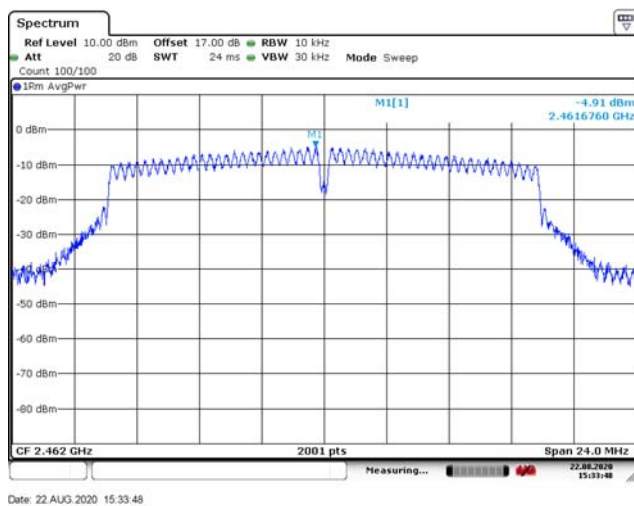
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

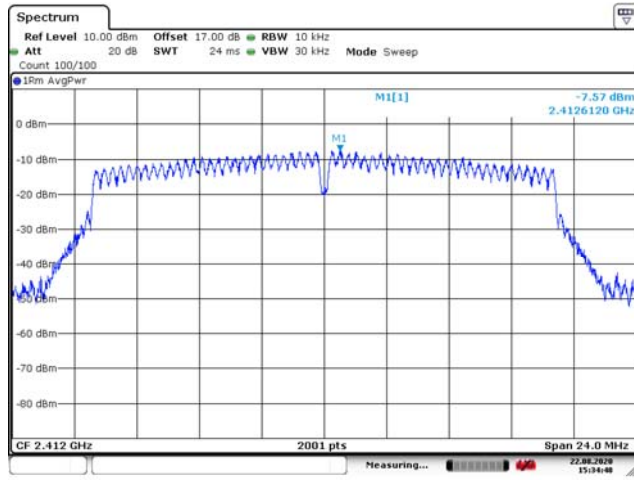


## Channel 11 (2462MHz)

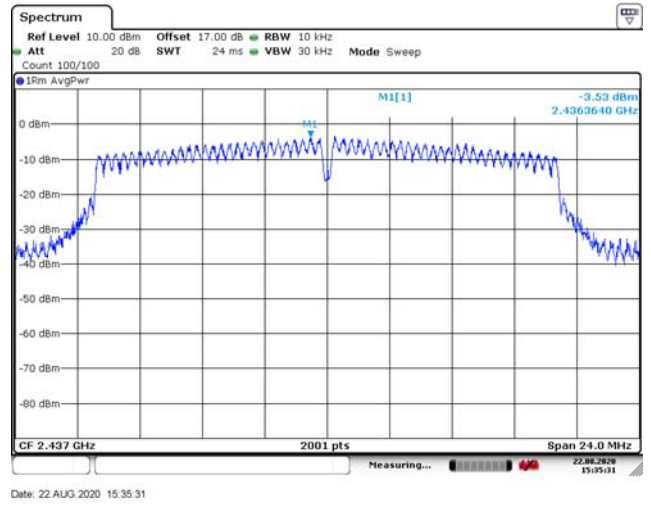


# 802.11n-HT20 - AVGPSD - Ant 0

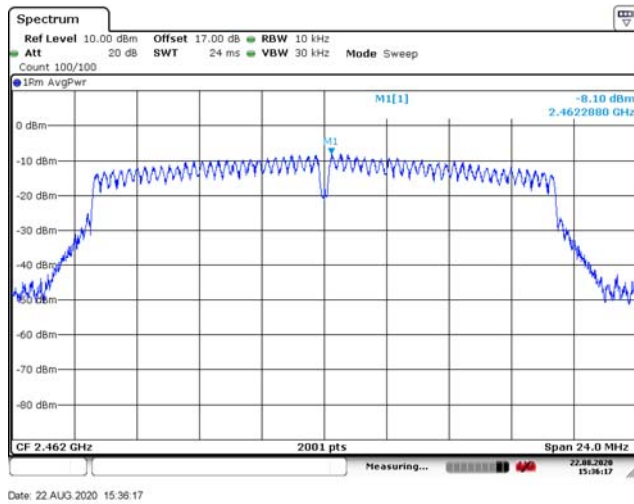
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



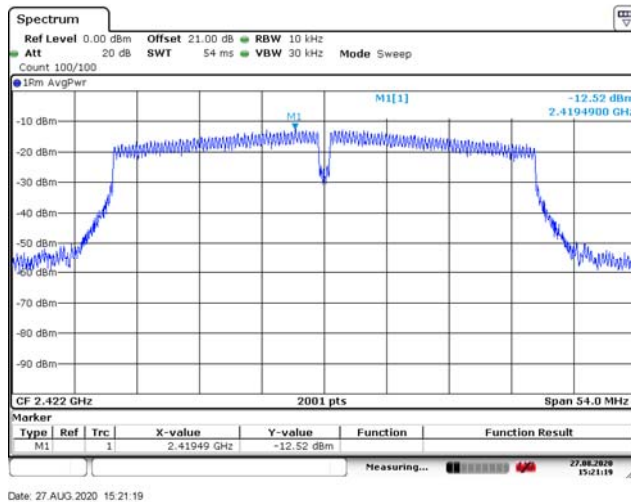
## Channel 11 (2462MHz)



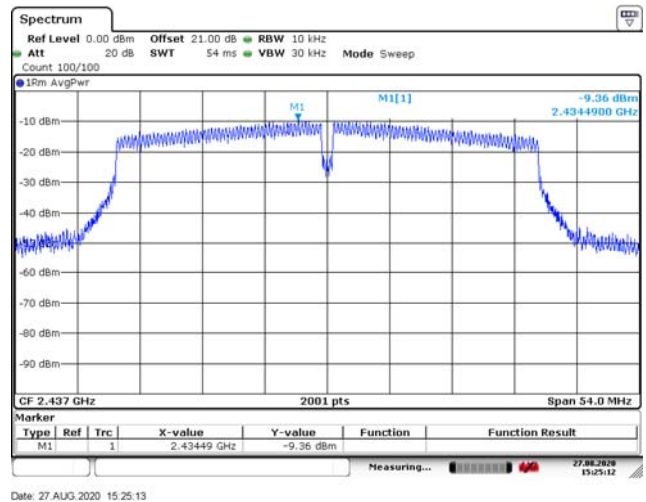


# 802.11n-HT40 - AVGPSD - Ant 0

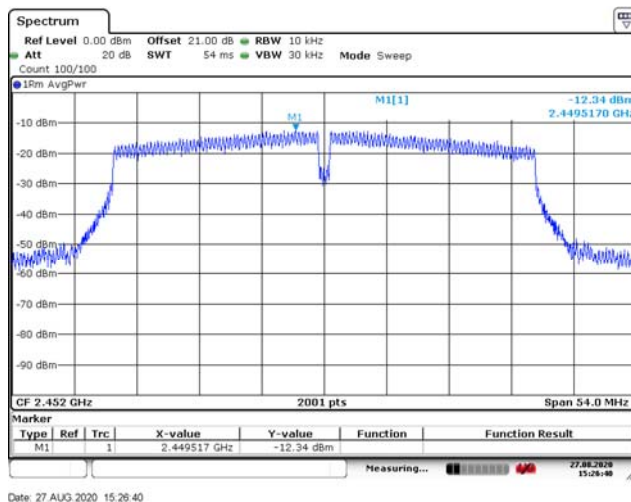
## Channel 03 (2422MHz)



## Channel 06 (2437MHz)

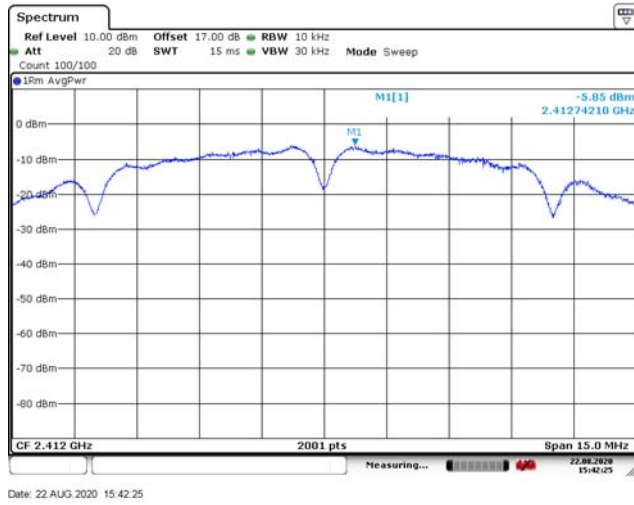


## Channel 09 (2452MHz)

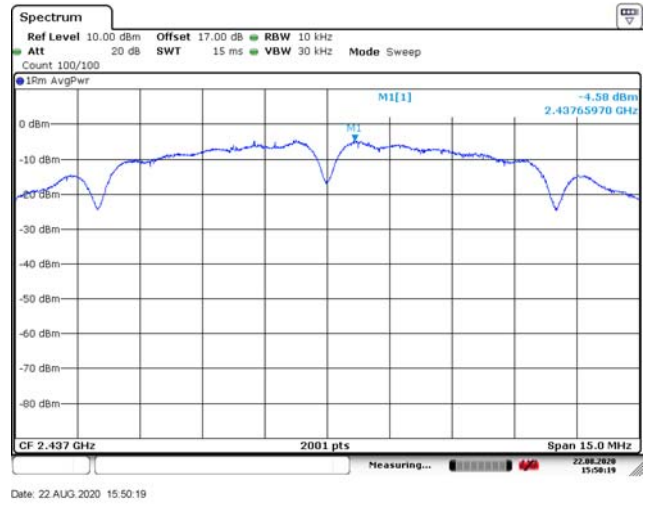


# 802.11b - AVGPSD - Ant 1

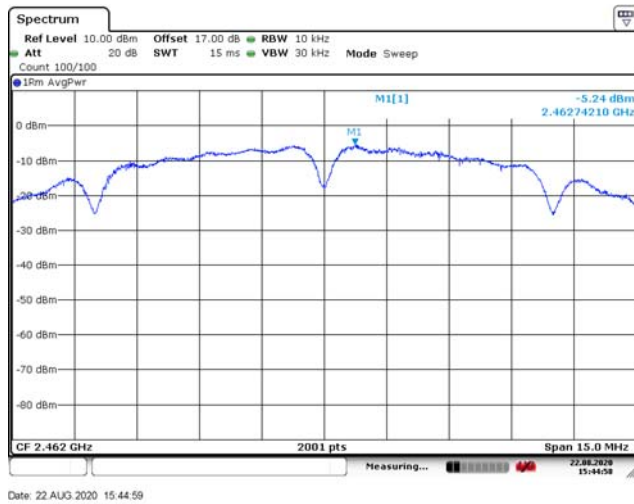
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

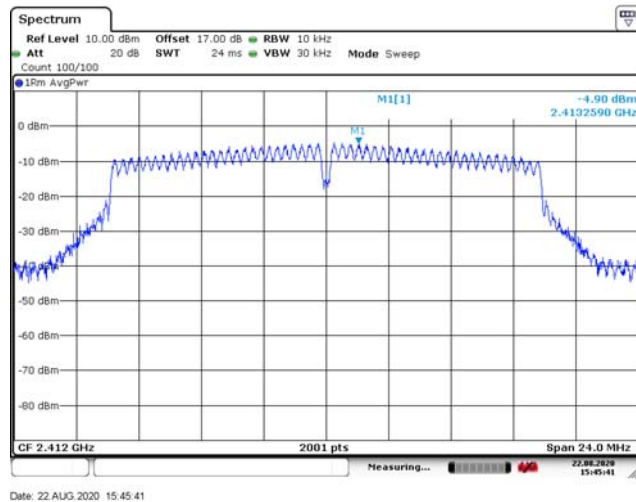


## Channel 11 (2462MHz)

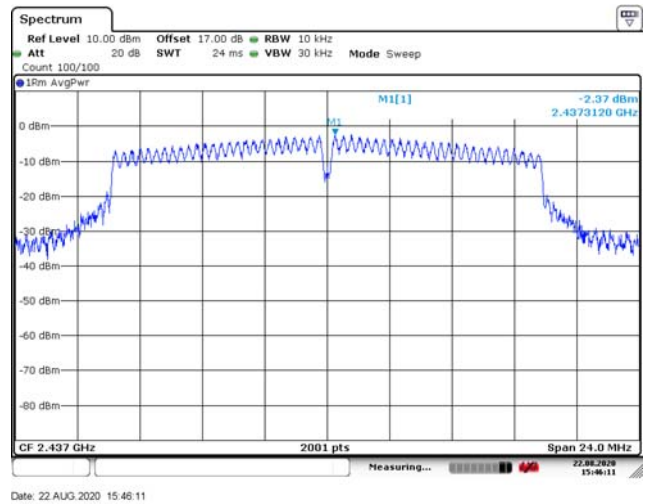


# 802.11g - AVGPDS - Ant 1

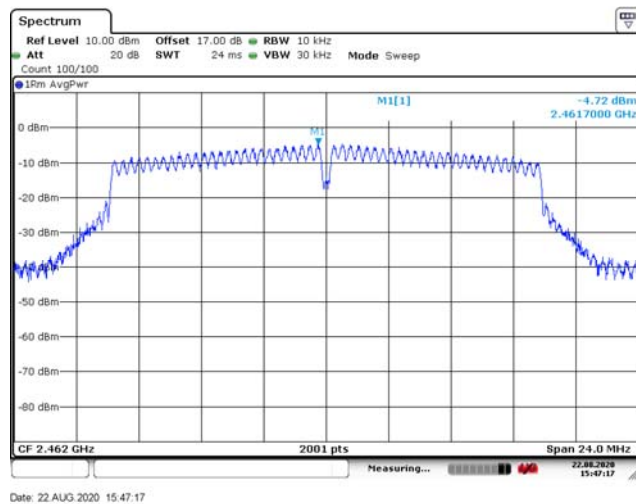
## Channel 03 (2412MHz)



## Channel 06 (2437MHz)

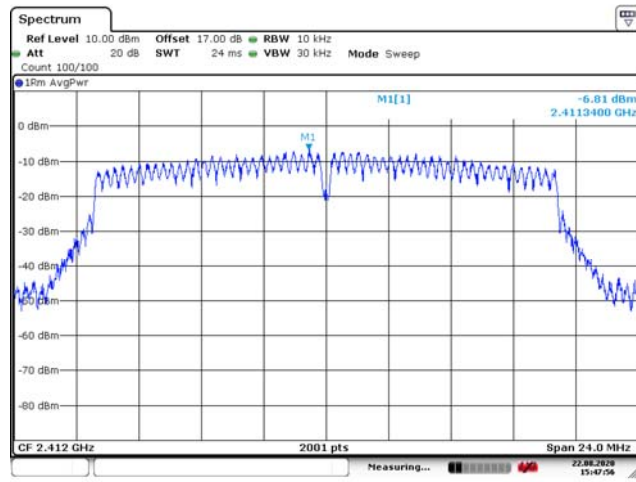


## Channel 09 (2462MHz)

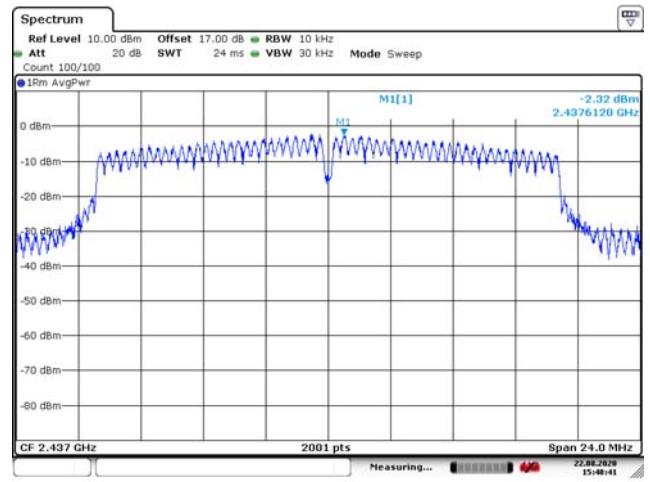


# 802.11n-HT20 - AVGPSD - Ant 1

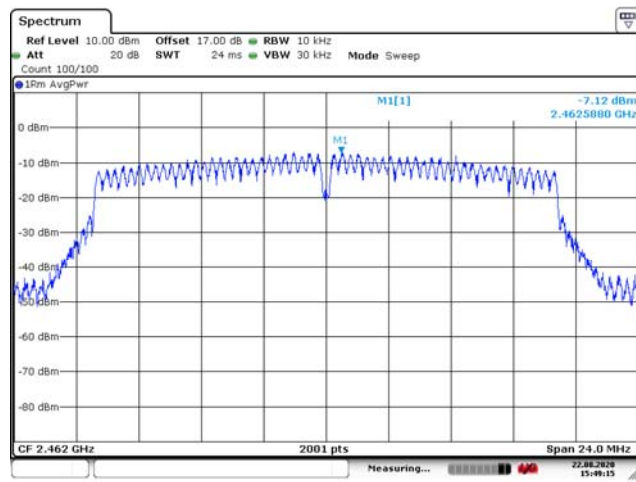
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

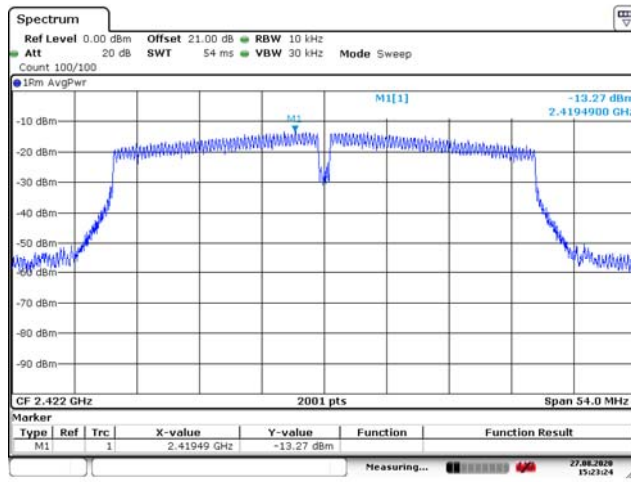


## Channel 11 (2462MHz)

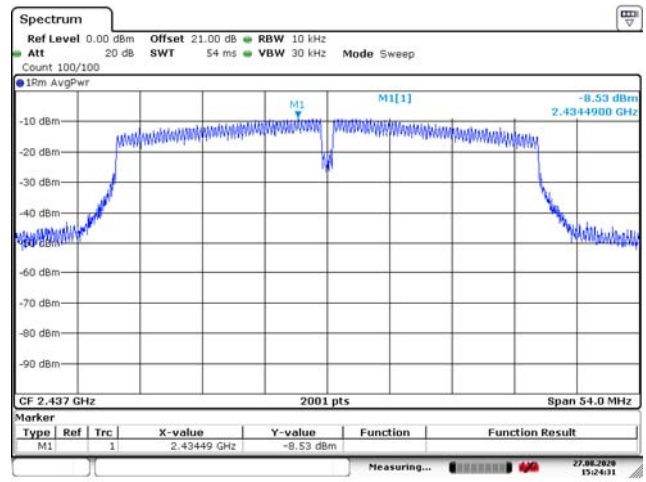


# 802.11n-HT40 - AVGPDS - Ant 1

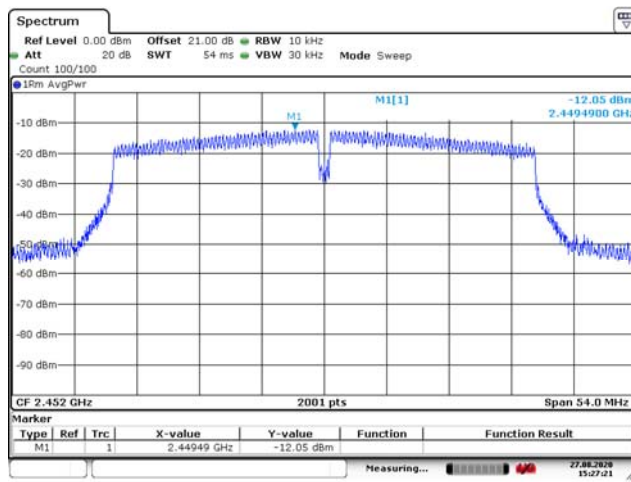
## Channel 03 (2422MHz)



## Channel 06 (2437MHz)



## Channel 09 (2452MHz)



## **6.5. Conducted Band Edge and Out-of-Band Emissions**

### **6.5.1. Test Limit**

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

### **6.5.2. Test Procedure Used**

ANSI C63.10-2013 - Section 11.11

### **6.5.3. Test Setting**

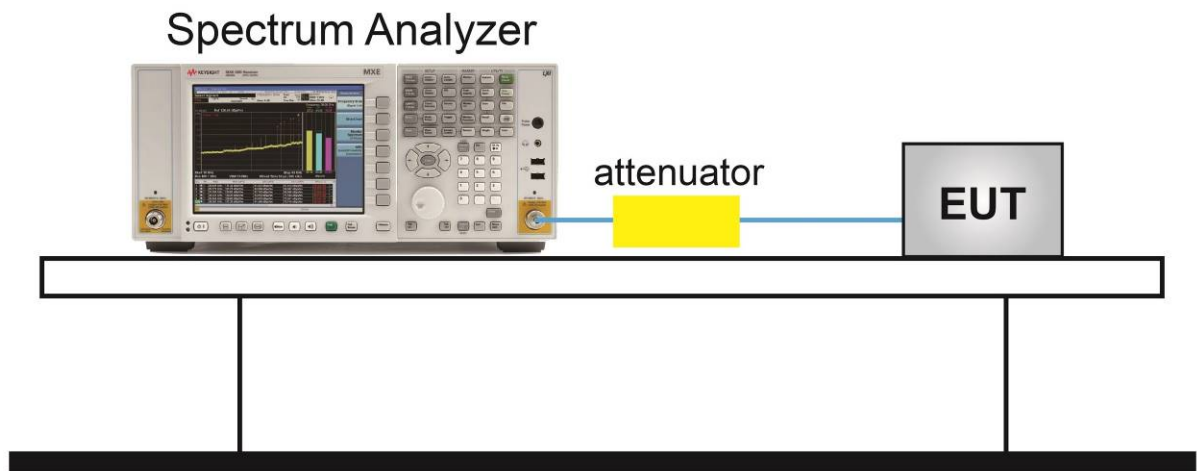
#### **Reference level measurement**

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to  $\geq 1.5$  times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW  $\geq 3 \times$  RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

#### **Emission level measurement**

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

#### 6.5.4. Test Setup



### 6.5.5.Test Result

|           |                                 |               |                       |
|-----------|---------------------------------|---------------|-----------------------|
| Product   | Subscriber End Equipment<br>HGW | Test Engineer | Milo Li               |
| Test Site | TR3                             | Test Date     | 2020/08/24~2020/09/08 |

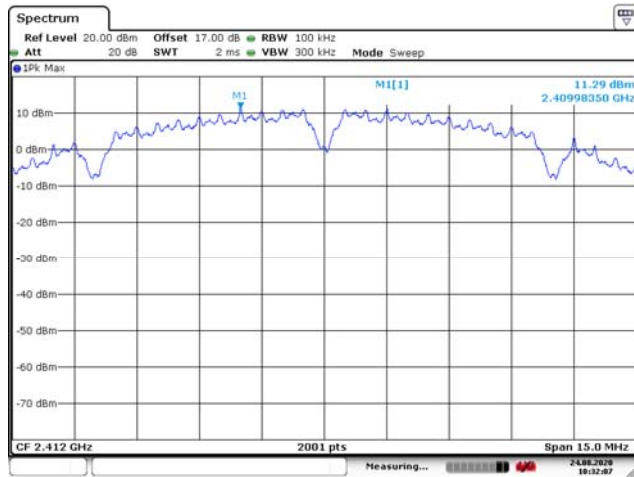
| Test Mode    | Data Rate<br>/ MCS | Channel No. | Frequency<br>(MHz) | Limit | Result |
|--------------|--------------------|-------------|--------------------|-------|--------|
| 802.11b      | 1Mbps              | 01          | 2412               | 30dBc | Pass   |
| 802.11b      | 1Mbps              | 06          | 2437               | 30dBc | Pass   |
| 802.11b      | 1Mbps              | 11          | 2462               | 30dBc | Pass   |
| 802.11g      | 6Mbps              | 01          | 2412               | 30dBc | Pass   |
| 802.11g      | 6Mbps              | 06          | 2437               | 30dBc | Pass   |
| 802.11g      | 6Mbps              | 11          | 2462               | 30dBc | Pass   |
| 802.11n-HT20 | MCS0               | 01          | 2412               | 30dBc | Pass   |
| 802.11n-HT20 | MCS0               | 06          | 2437               | 30dBc | Pass   |
| 802.11n-HT20 | MCS0               | 11          | 2462               | 30dBc | Pass   |
| 802.11n-HT40 | MCS0               | 03          | 2422               | 30dBc | Pass   |
| 802.11n-HT40 | MCS0               | 06          | 2437               | 30dBc | Pass   |
| 802.11n-HT40 | MCS0               | 09          | 2452               | 30dBc | Pass   |



# 802.11b Out-of-Band Emissions - Ant 0 / Ant 0 + 1

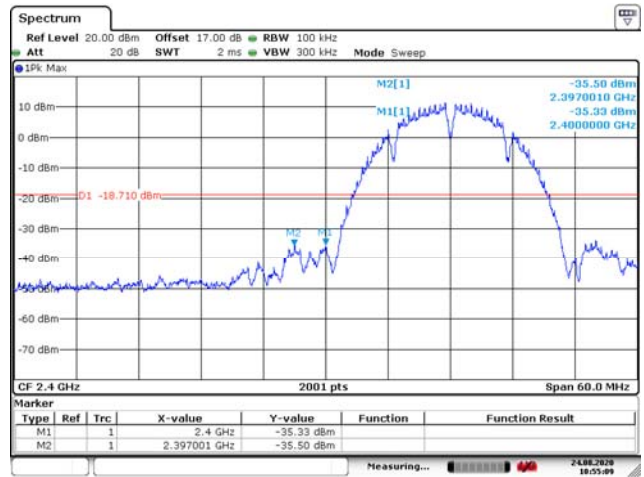
## Channel 01 (2412MHz)

### 100kHz PSD Reference Level



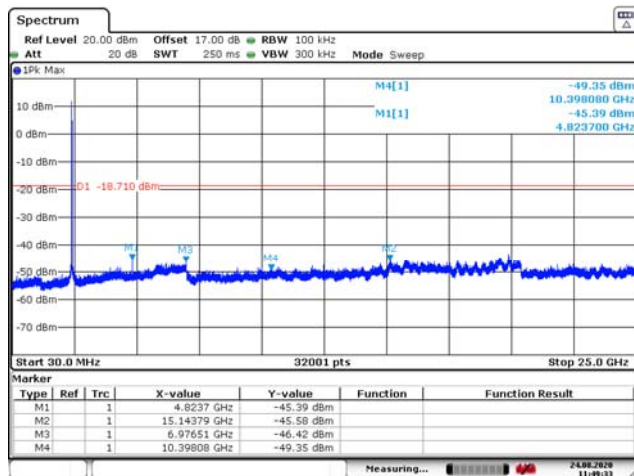
Date: 24 AUG 2020 10:32:07

### Low Band Edge



Date: 24 AUG 2020 10:55:09

### Spurious Emission

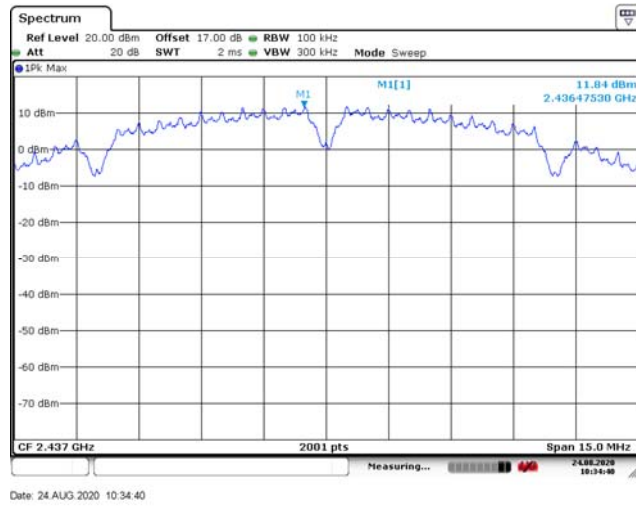


Date: 24 AUG 2020 11:49:34

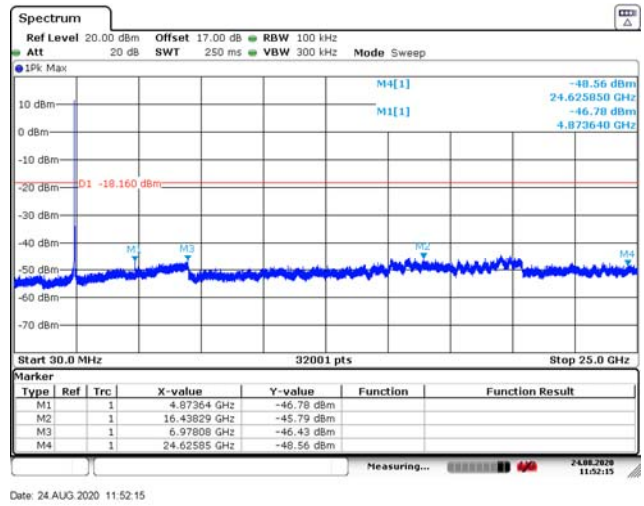
## 802.11b Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



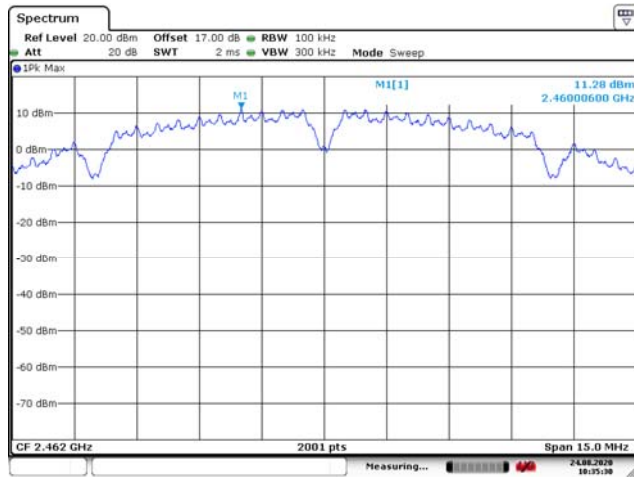
## Spurious Emission



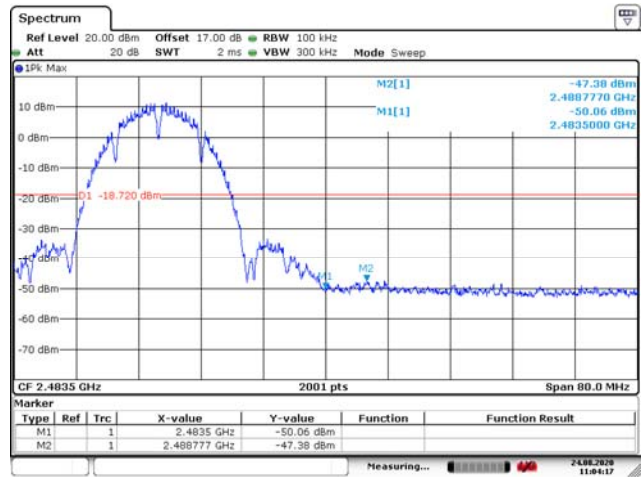
# 802.11b Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 11 (2462MHz)

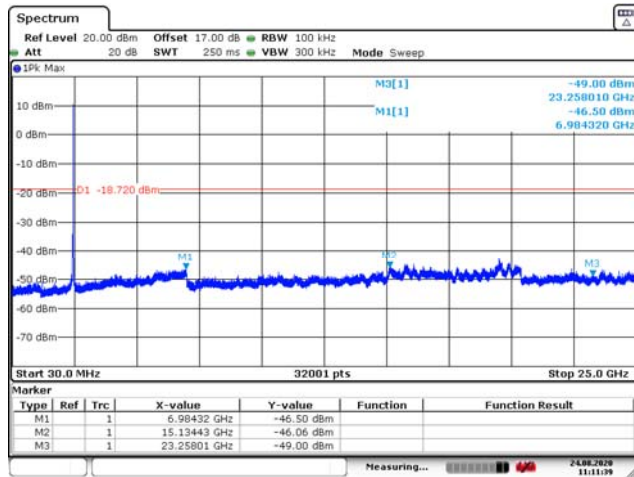
### 100kHz PSD Reference Level



### High Band Edge



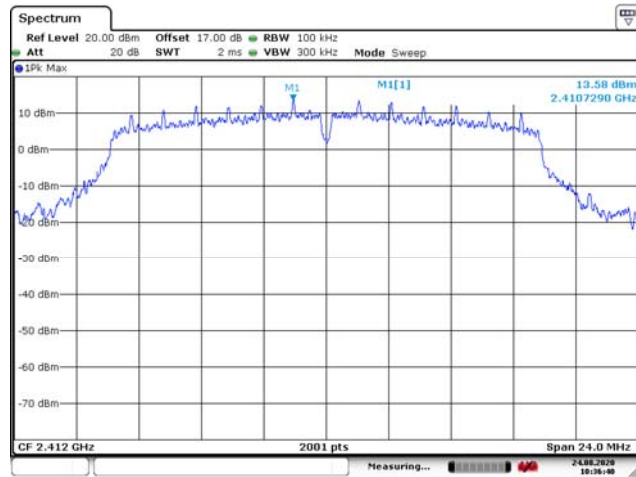
### Spurious Emission



# 802.11g Out-of-Band Emissions - Ant 0 / Ant 0 + 1

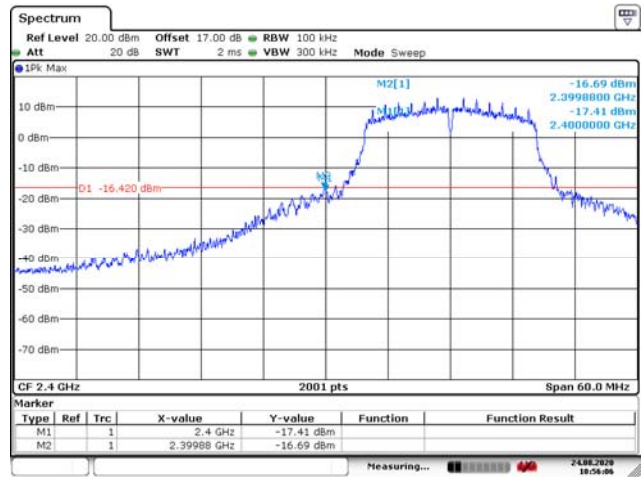
## Channel 01 (2412MHz)

### 100kHz PSD Reference Level



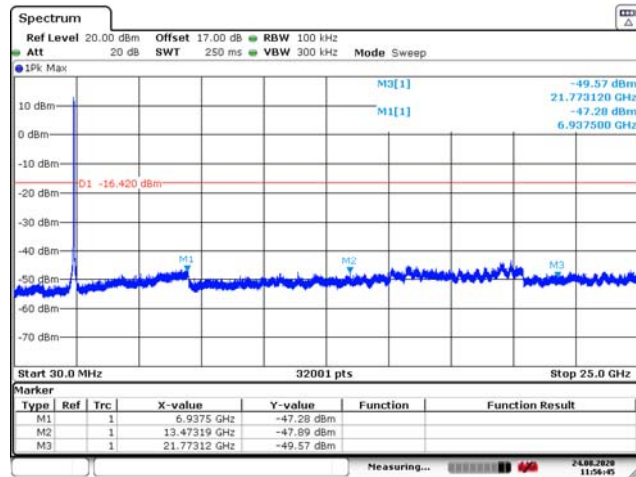
Date: 24 AUG 2020 10:36:40

### Low Band Edge



Date: 24 AUG 2020 10:56:06

### Spurious Emission

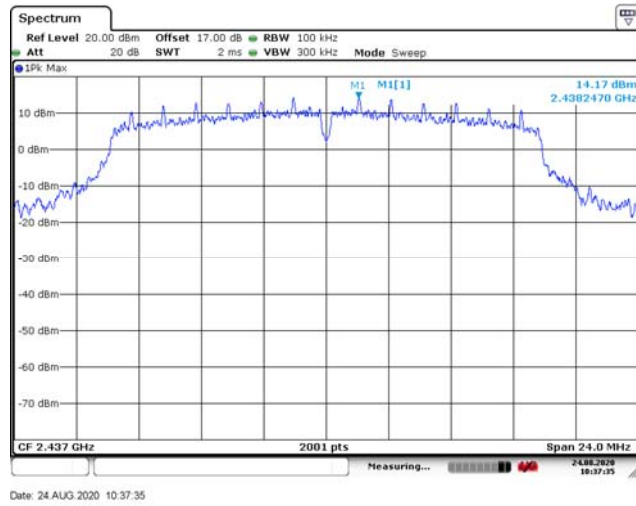


Date: 24 AUG 2020 11:56:45

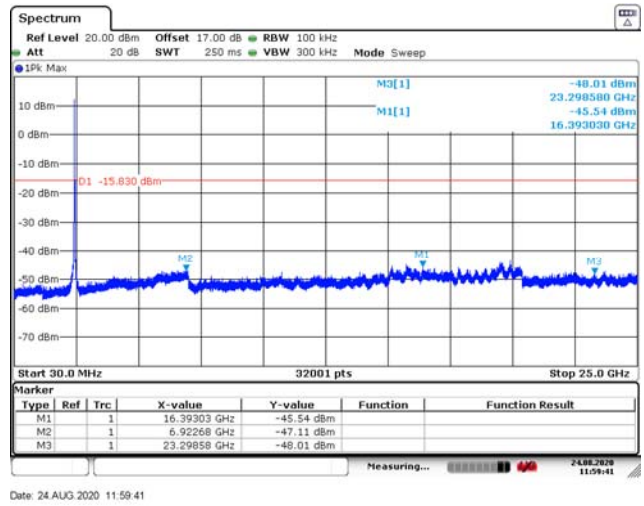
## 802.11g Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



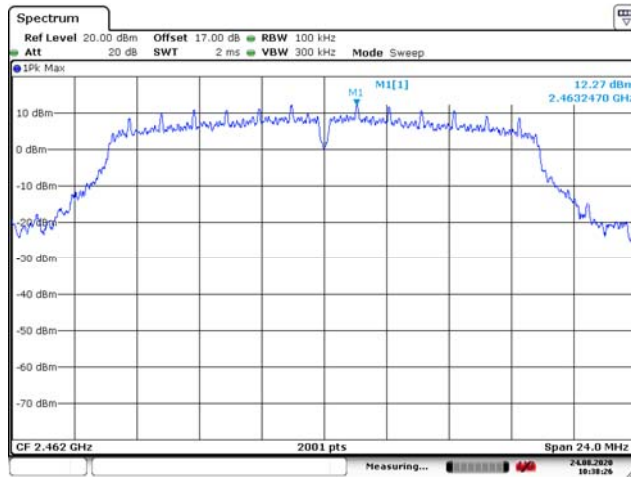
## Spurious Emission



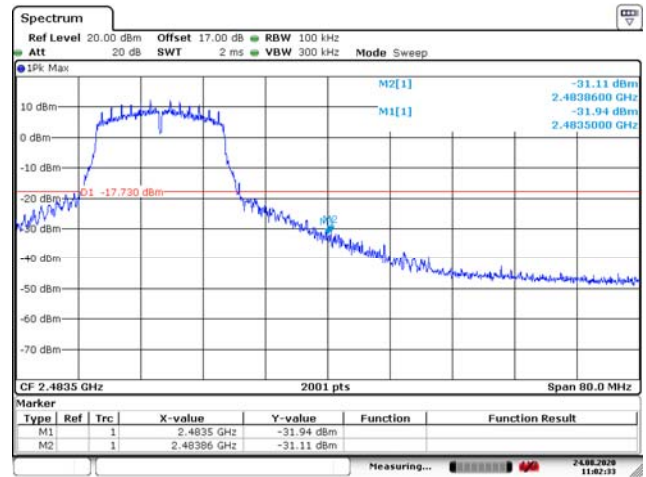
# 802.11g Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 11 (2462MHz)

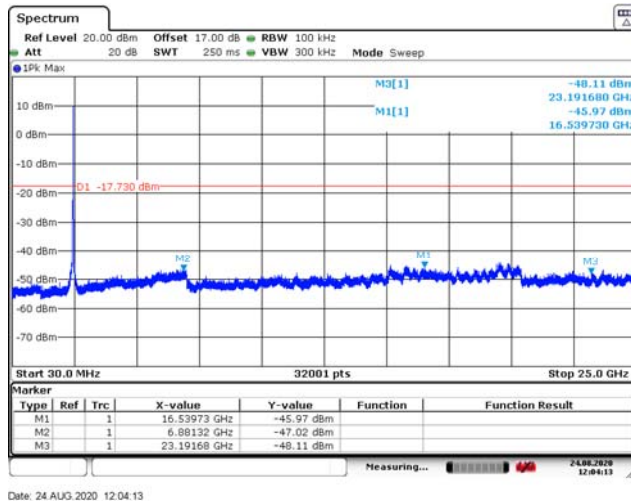
### 100kHz PSD Reference Level



### High Band Edge



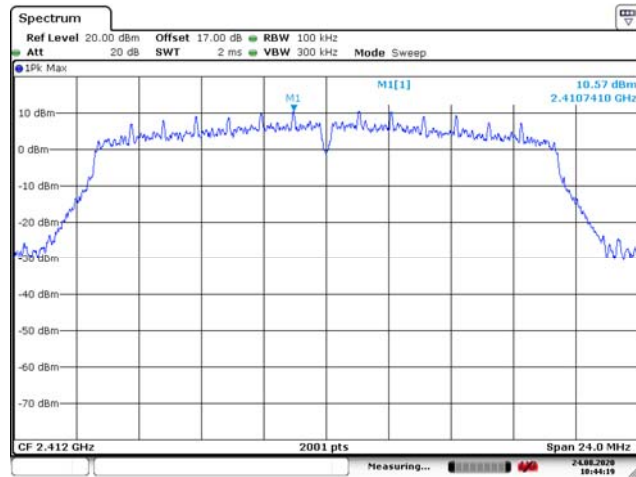
### Spurious Emission



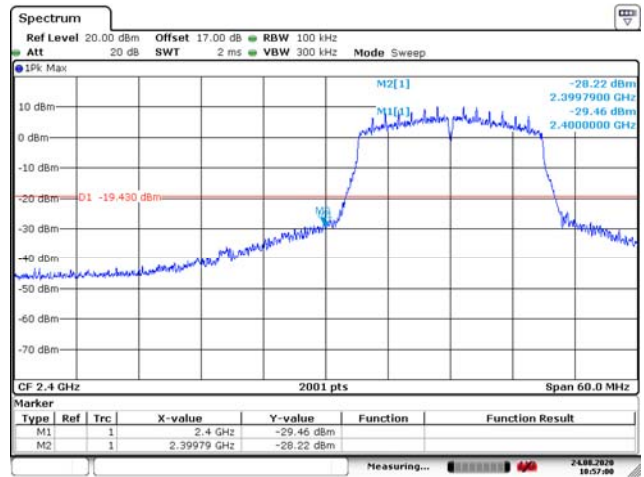
## 802.11n-HT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 01 (2412MHz)

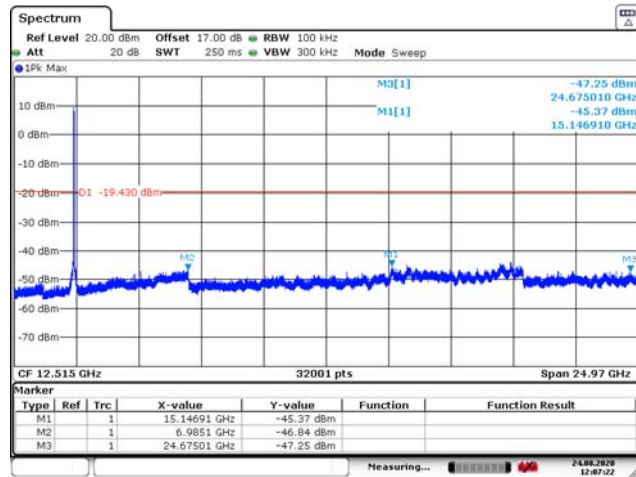
## 100kHz PSD Reference Level



## Low Band Edge



## Spurious Emission

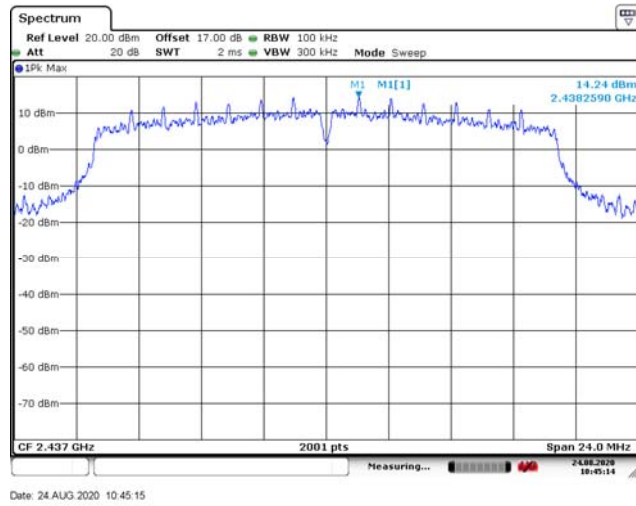




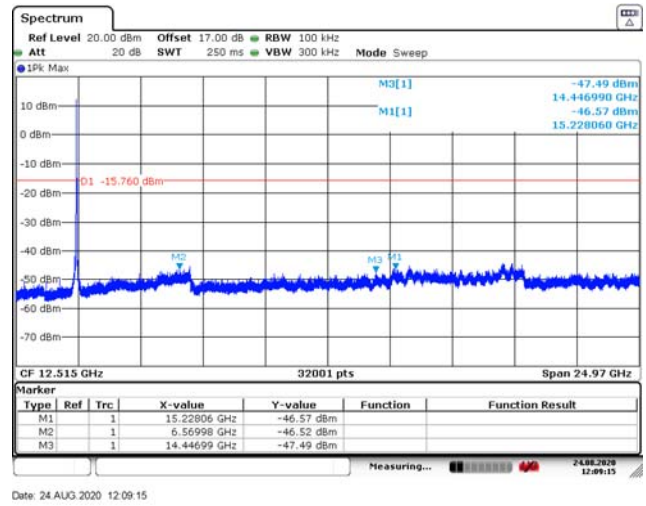
## 802.11n-HT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



## Spurious Emission

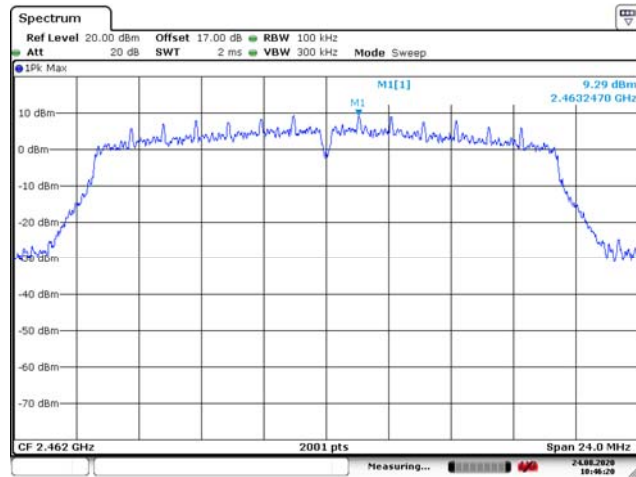




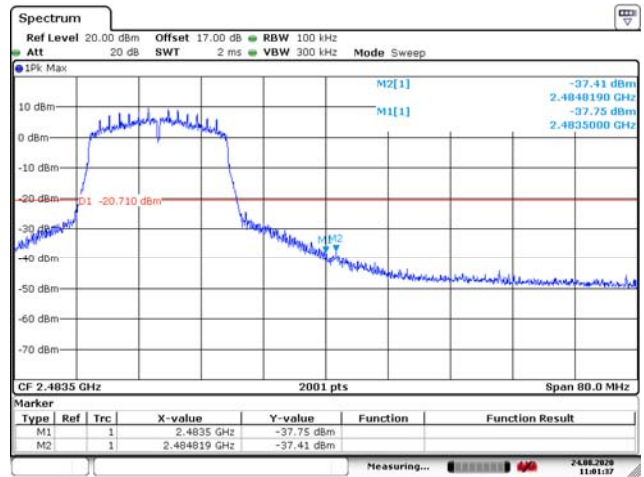
## 802.11n-HT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 11 (2462MHz)

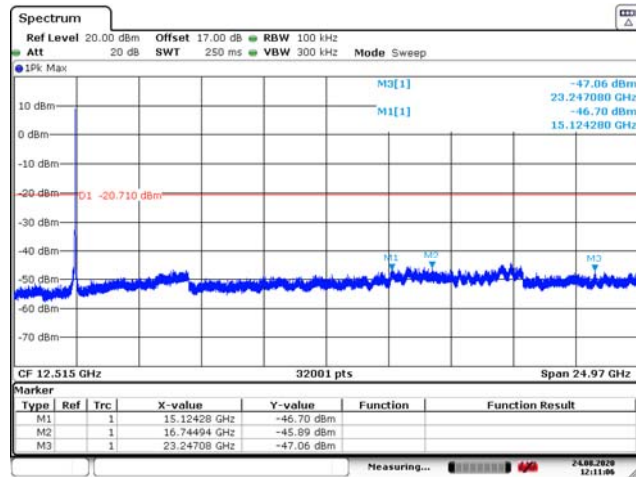
## 100kHz PSD Reference Level



## High Band Edge



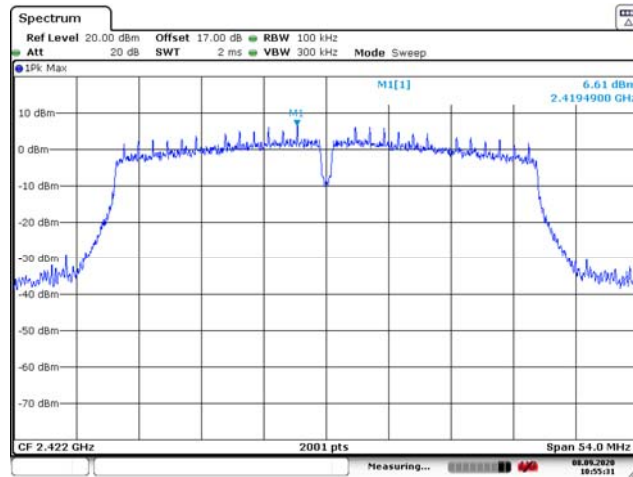
## Spurious Emission



# 802.11n-HT40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

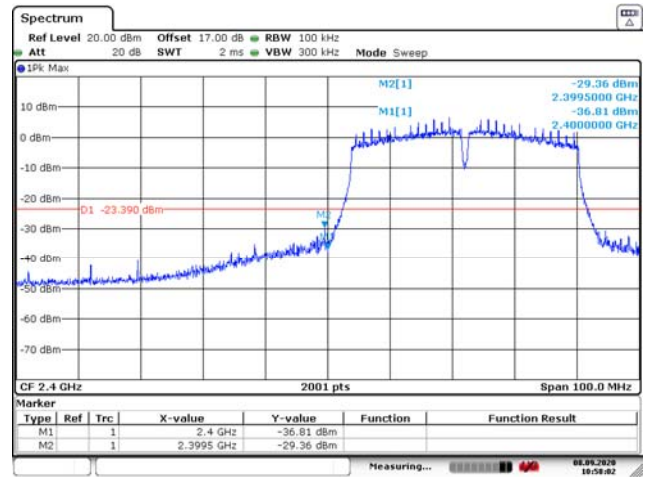
## Channel 03 (2422MHz)

### 100kHz PSD Reference Level



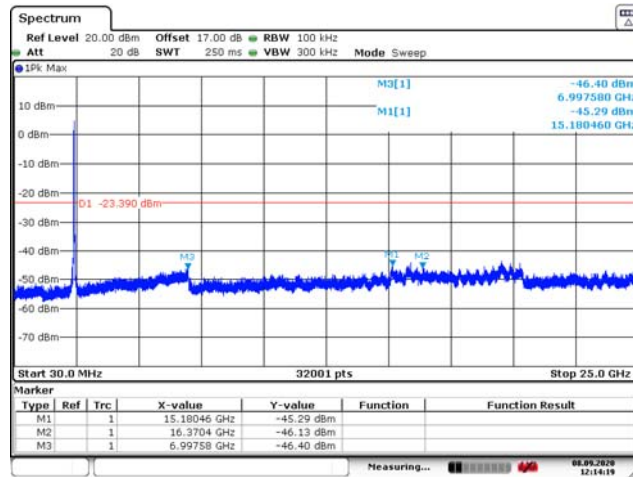
Date: 8 SEP 2020 10:55:31

### Low Band Edge



Date: 8 SEP 2020 10:58:02

### Spurious Emission

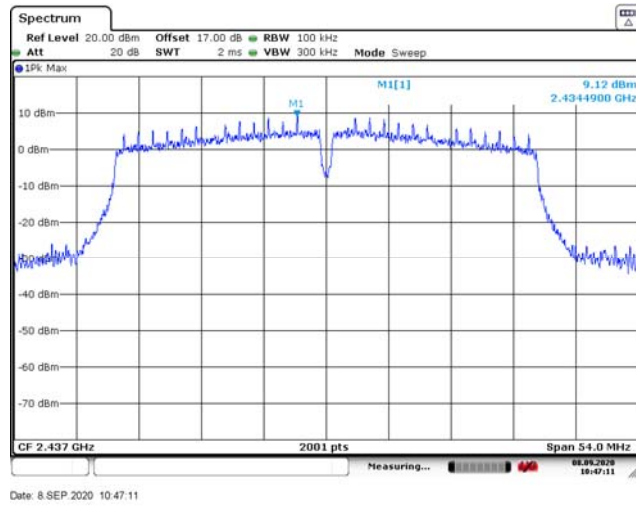


Date: 8 SEP 2020 12:14:19

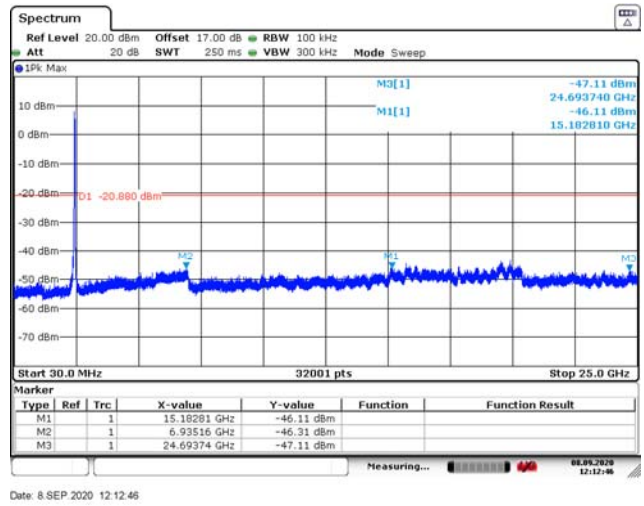
## 802.11n-HT40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



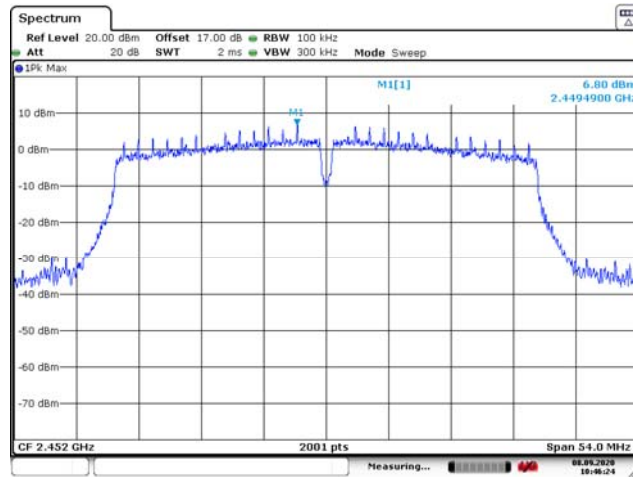
## Spurious Emission



# 802.11n-HT40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

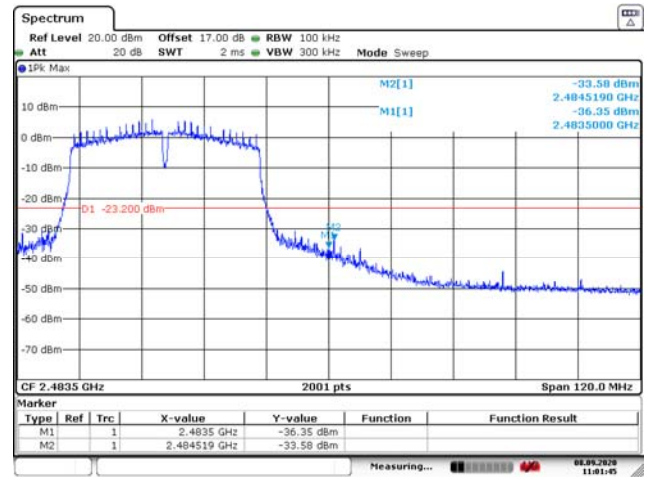
## Channel 09 (2452MHz)

### 100kHz PSD Reference Level



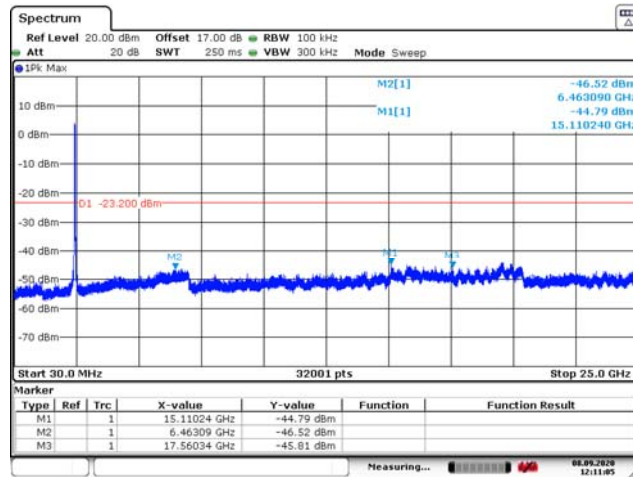
Date: 8 SEP 2020 10:46:25

### High Band Edge



Date: 8 SEP 2020 11:01:45

### Spurious Emission

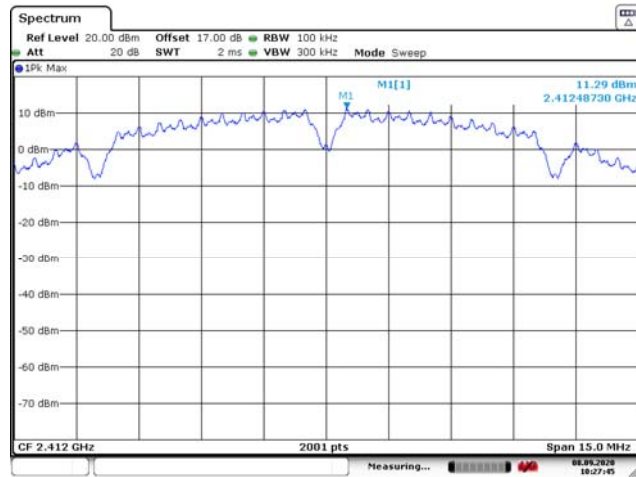


Date: 8 SEP 2020 12:11:06

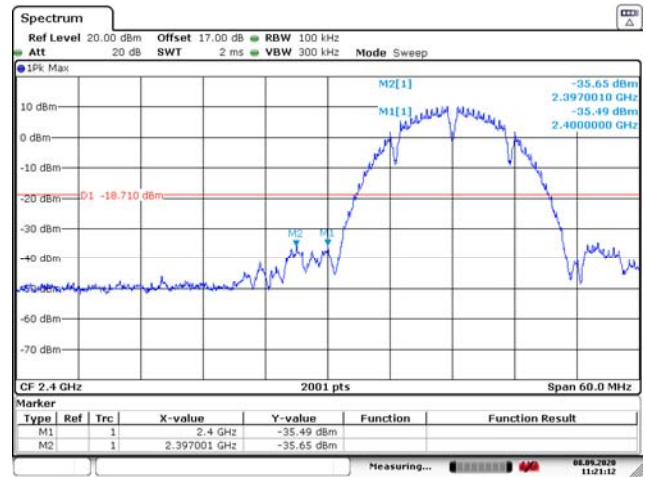
# 802.11b Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 01 (2412MHz)

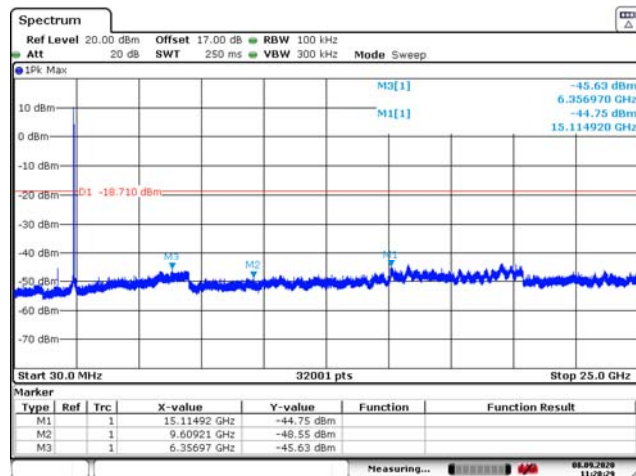
### 100kHz PSD Reference Level



### Low Band Edge



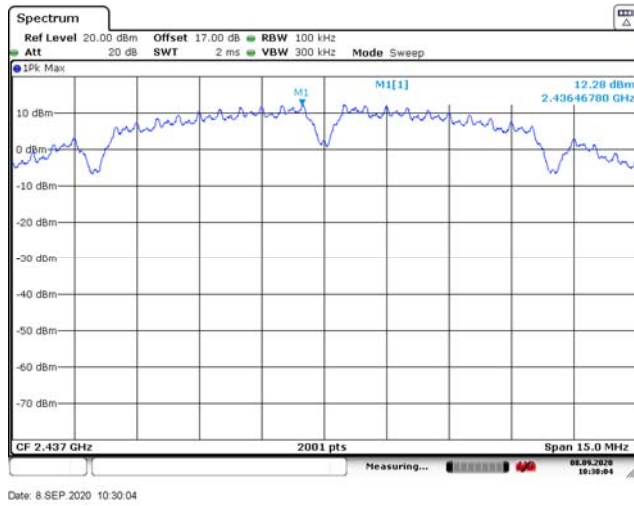
### Spurious Emission



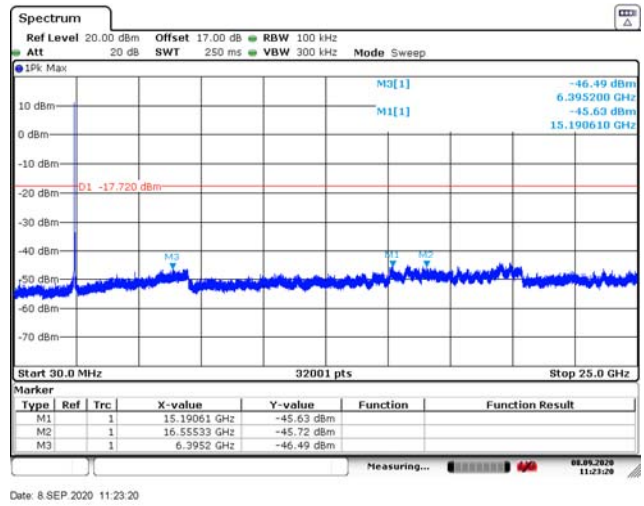
## 802.11b Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



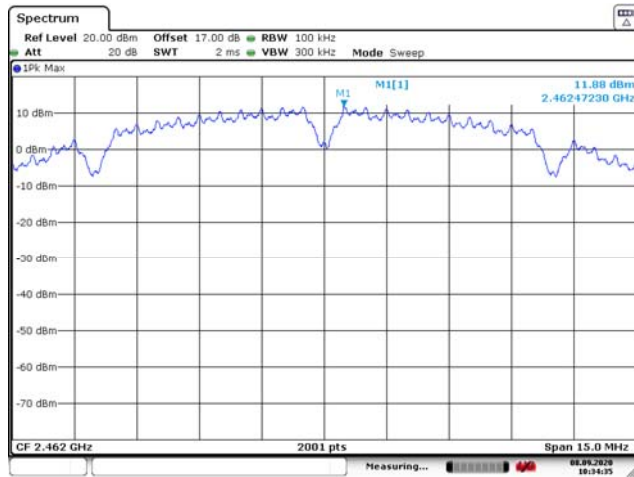
## Spurious Emission



# 802.11b Out-of-Band Emissions - Ant 1 / Ant 0 + 1

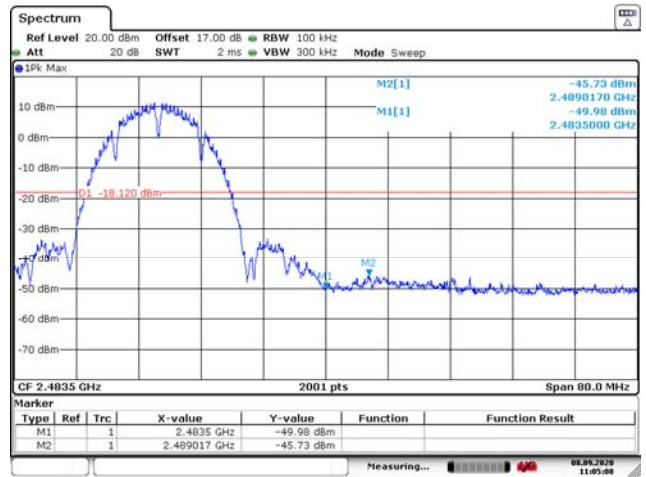
## Channel 11 (2462MHz)

### 100kHz PSD Reference Level



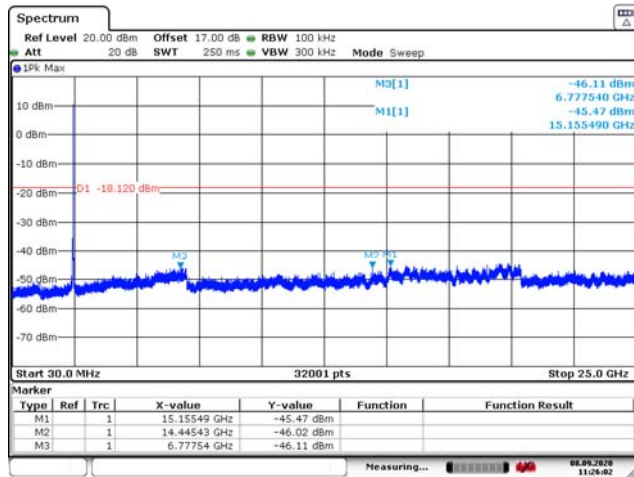
Date: 8 SEP 2020 10:34:35

### High Band Edge



Date: 8 SEP 2020 11:05:08

### Spurious Emission



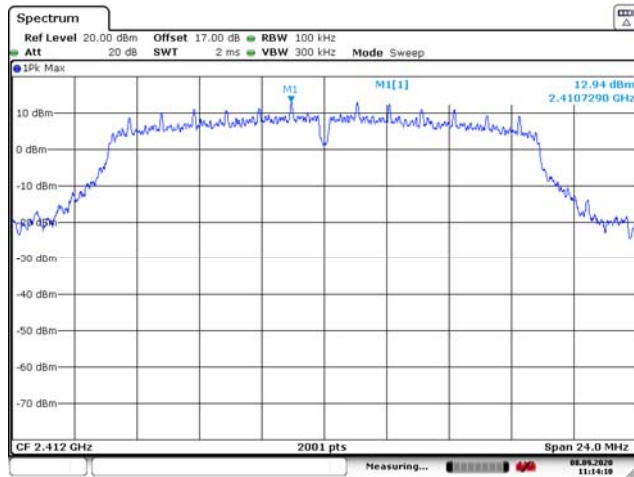
Date: 8 SEP 2020 11:26:02



# 802.11g Out-of-Band Emissions - Ant 1 / Ant 0 + 1

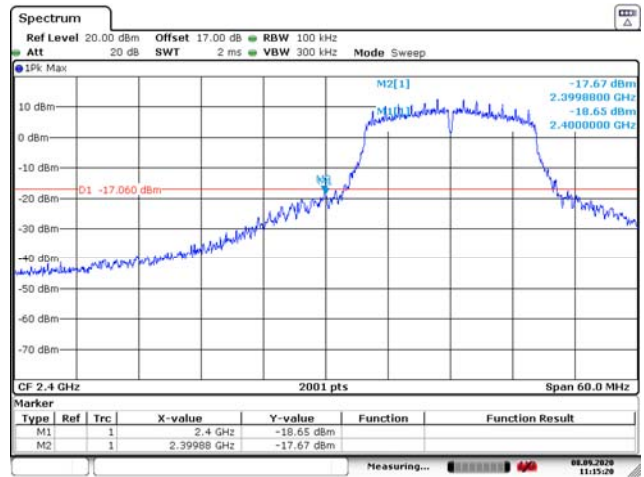
## Channel 01 (2412MHz)

### 100kHz PSD Reference Level



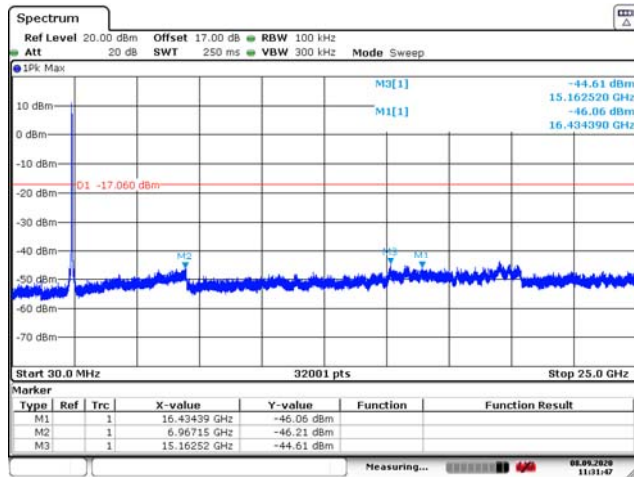
Date: 8 SEP 2020 11:14:11

### Low Band Edge



Date: 8 SEP 2020 11:15:20

### Spurious Emission



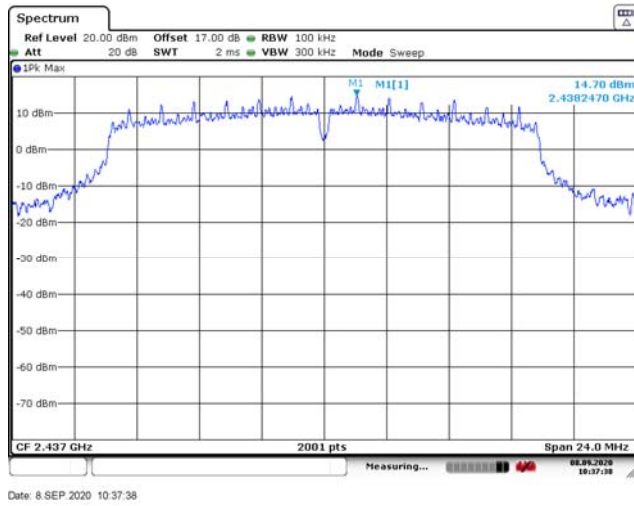
Date: 8 SEP 2020 11:31:47



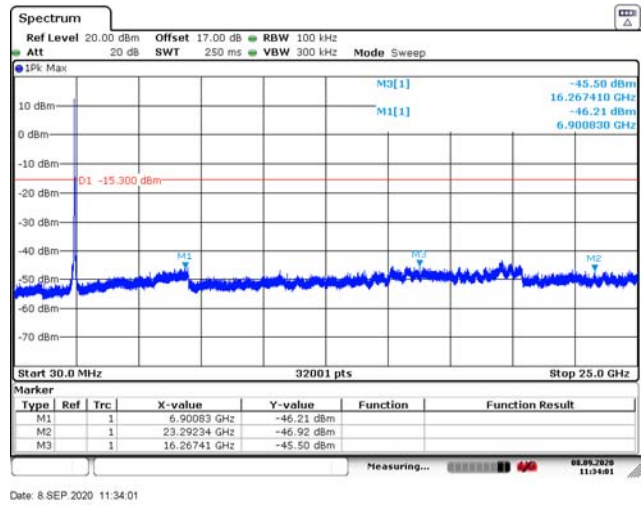
# 802.11g Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 06 (2437MHz)

### 100kHz PSD Reference Level



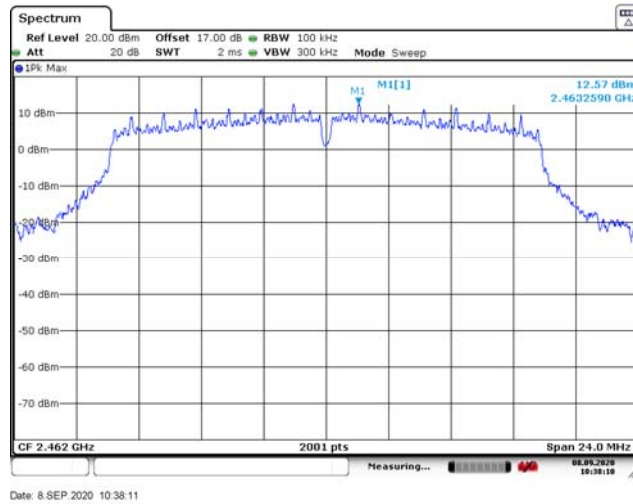
### Spurious Emission



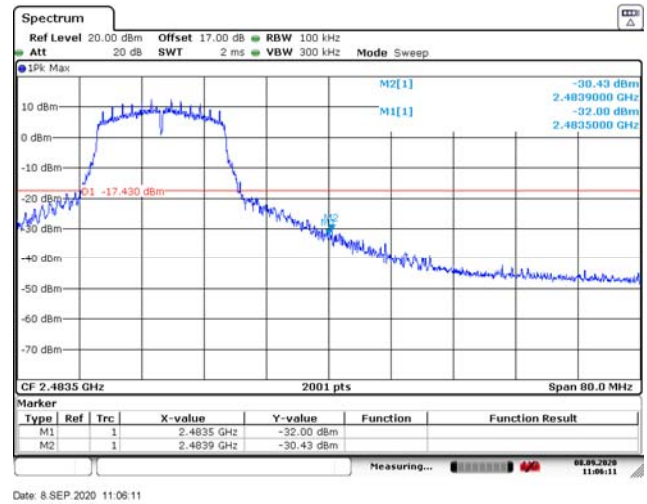
# 802.11g Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 11 (2462MHz)

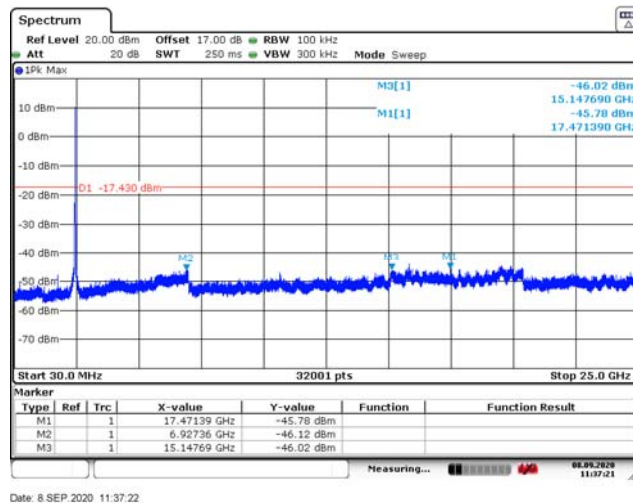
### 100kHz PSD Reference Level



### High Band Edge



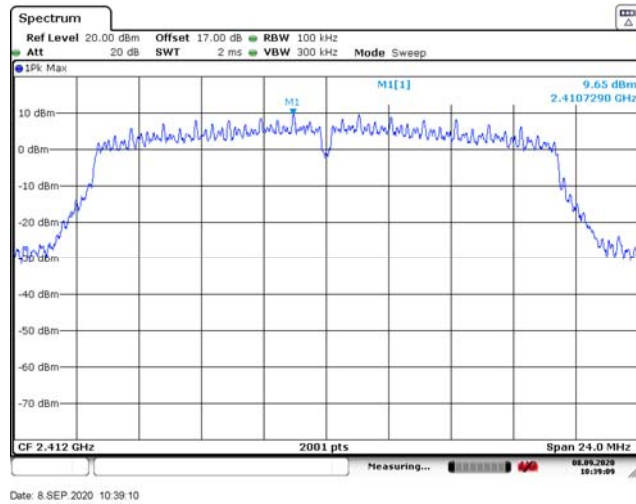
### Spurious Emission



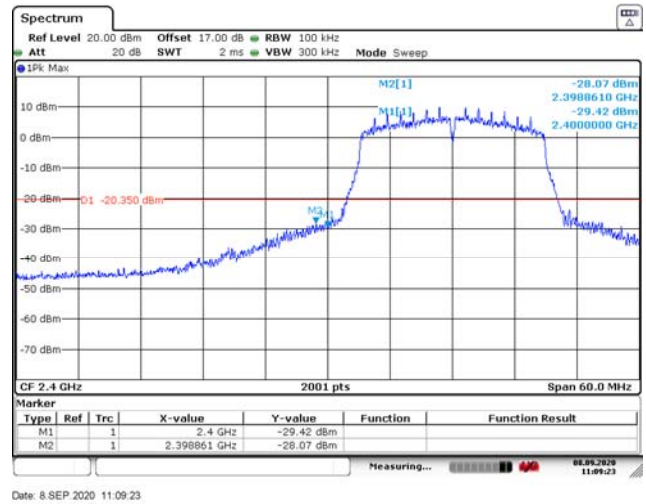
## 802.11n-HT20 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 01 (2412MHz)

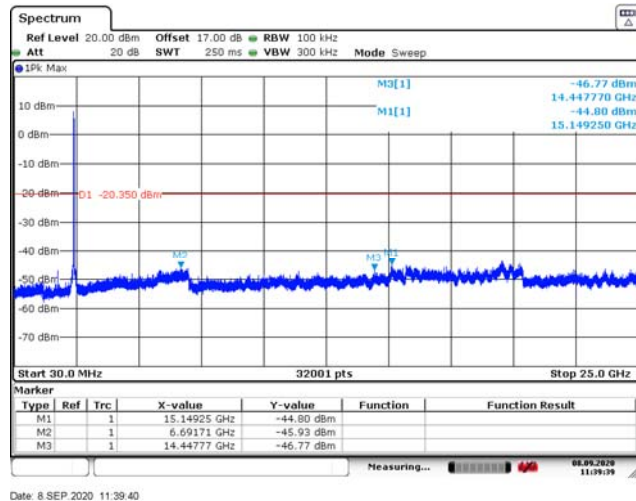
## 100kHz PSD Reference Level



## Low Band Edge



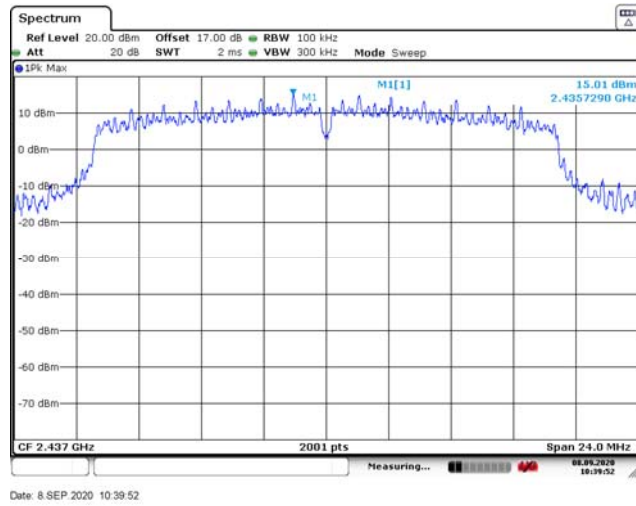
## Spurious Emission



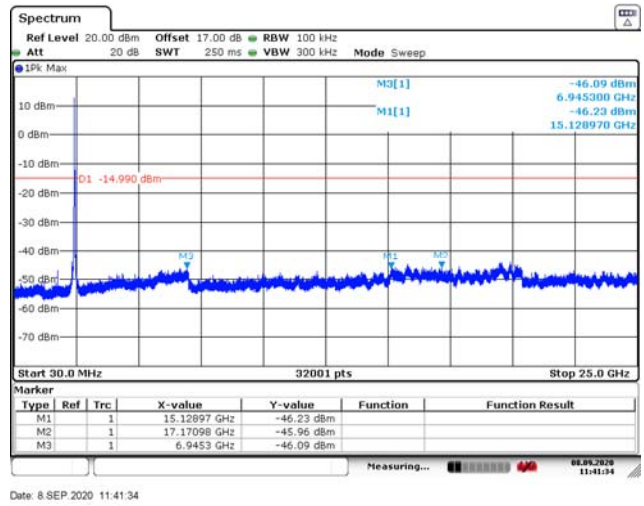
## 802.11n-HT20 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



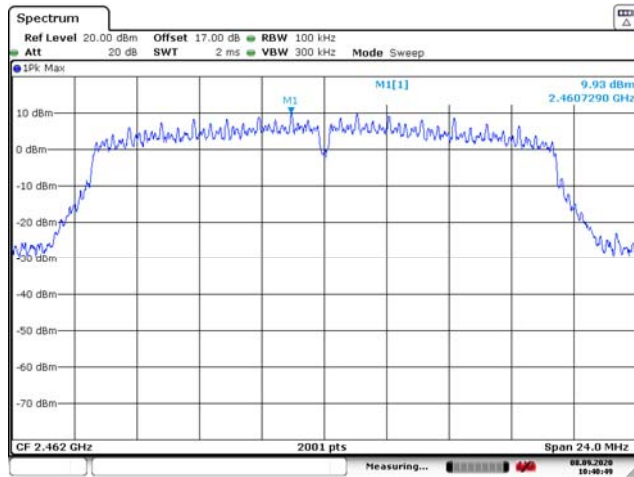
## Spurious Emission



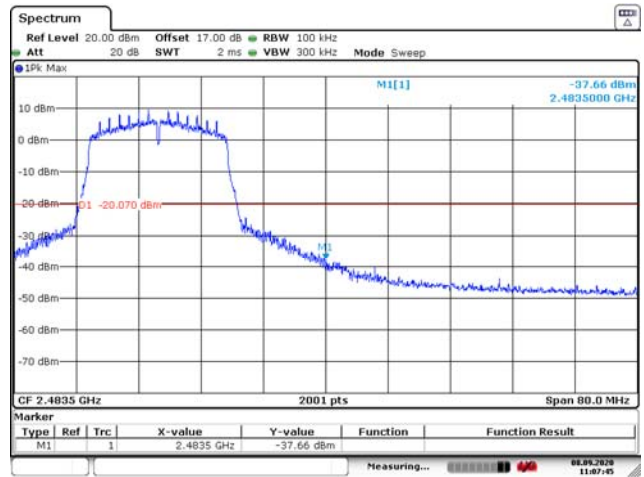
## 802.11n-HT20 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 11 (2462MHz)

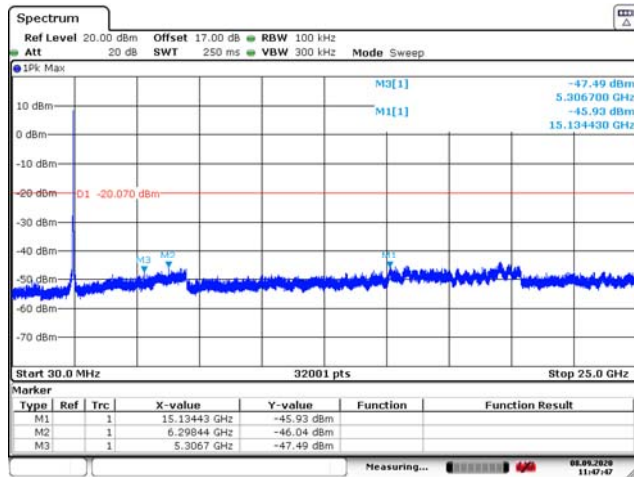
## 100kHz PSD Reference Level



## High Band Edge



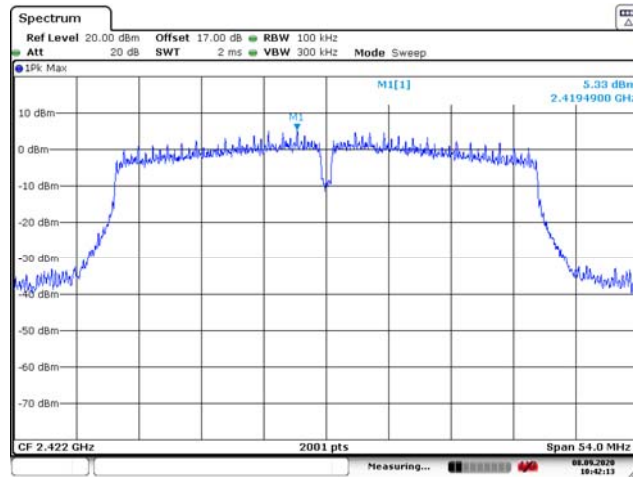
## Spurious Emission



# 802.11n-HT40 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

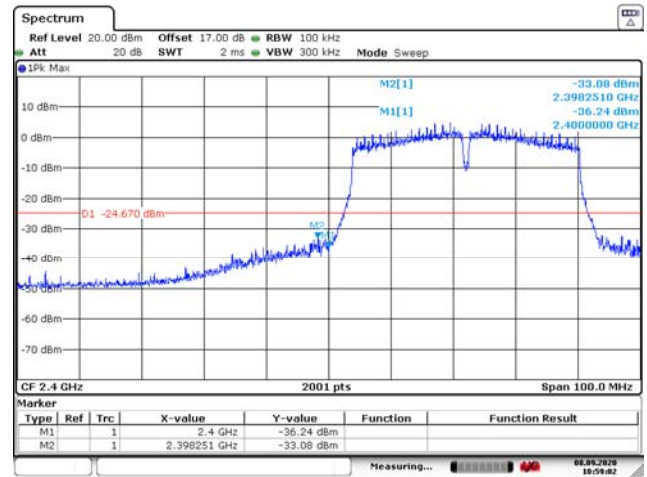
## Channel 03 (2422MHz)

### 100kHz PSD Reference Level



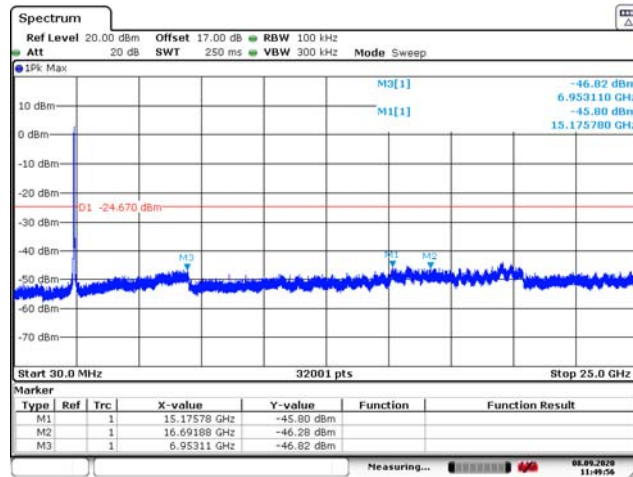
Date: 8 SEP 2020 10:42:13

### Low Band Edge



Date: 8 SEP 2020 10:59:02

### Spurious Emission

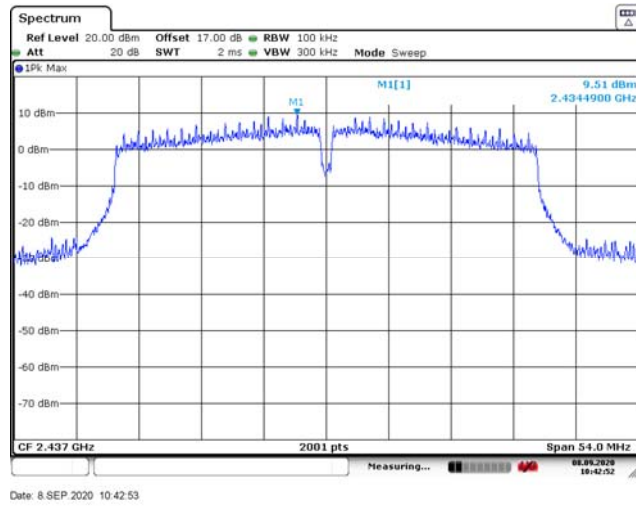


Date: 8 SEP 2020 11:49:56

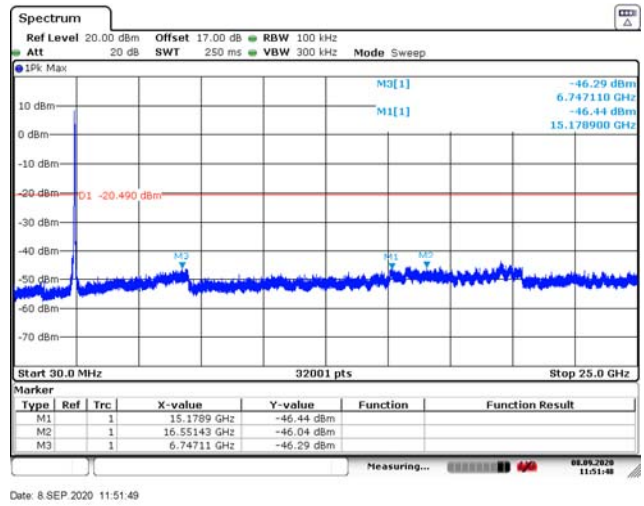
## 802.11n-HT40 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



## Spurious Emission

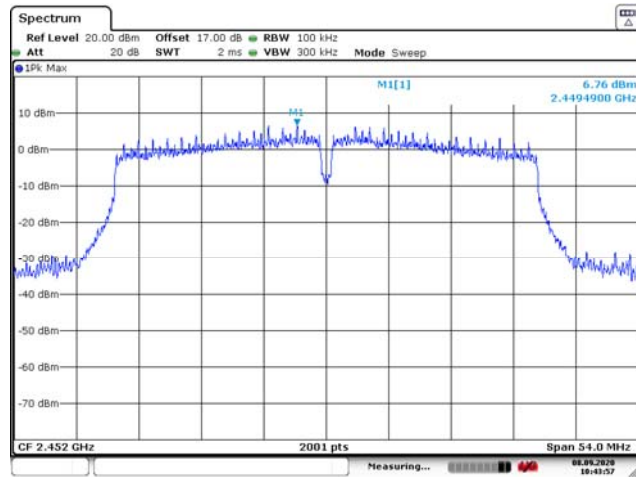




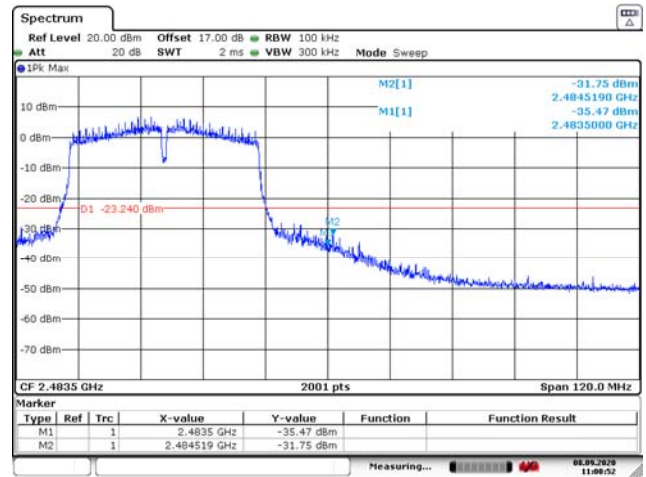
## 802.11n-HT40 Out-of-Band Emissions - Ant 1 / Ant 0 + 1

## Channel 09 (2452MHz)

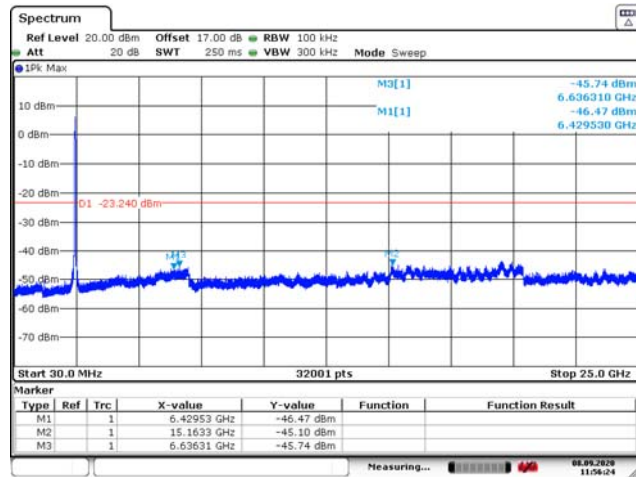
## 100kHz PSD Reference Level



## High Band Edge



## Spurious Emission





## 6.6. Radiated Spurious Emission Measurement

### 6.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

| FCC Part 15 Subpart C Paragraph 15.209 |                          |                               |
|----------------------------------------|--------------------------|-------------------------------|
| Frequency<br>[MHz]                     | Field Strength<br>[uV/m] | Measured Distance<br>[Meters] |
| 0.009 - 0.490                          | 2400/F (kHz)             | 300                           |
| 0.490 - 1.705                          | 24000/F (kHz)            | 30                            |
| 1.705 - 30                             | 30                       | 30                            |
| 30 - 88                                | 100                      | 3                             |
| 88 - 216                               | 150                      | 3                             |
| 216 - 960                              | 200                      | 3                             |
| Above 960                              | 500                      | 3                             |

### 6.6.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3& 6.4

### 6.6.3. Test Setting

**Table 1 - RBW as a function of frequency**

| Frequency     | RBW           |
|---------------|---------------|
| 9 ~ 150 kHz   | 200 ~ 300 Hz  |
| 0.15 ~ 30 MHz | 9 ~ 10 kHz    |
| 30 ~ 1000 MHz | 100 ~ 120 kHz |
| > 1000MHz     | 1MHz          |

**Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

**Peak Measurements above 1GHz**

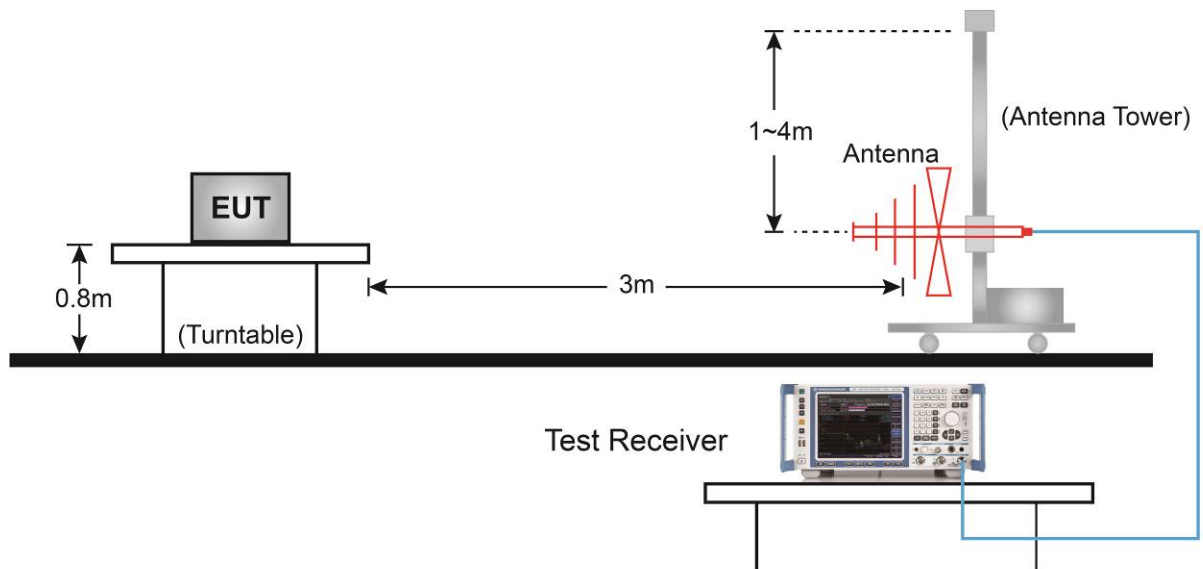
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

**Average Measurements above 1GHz (Method VB)**

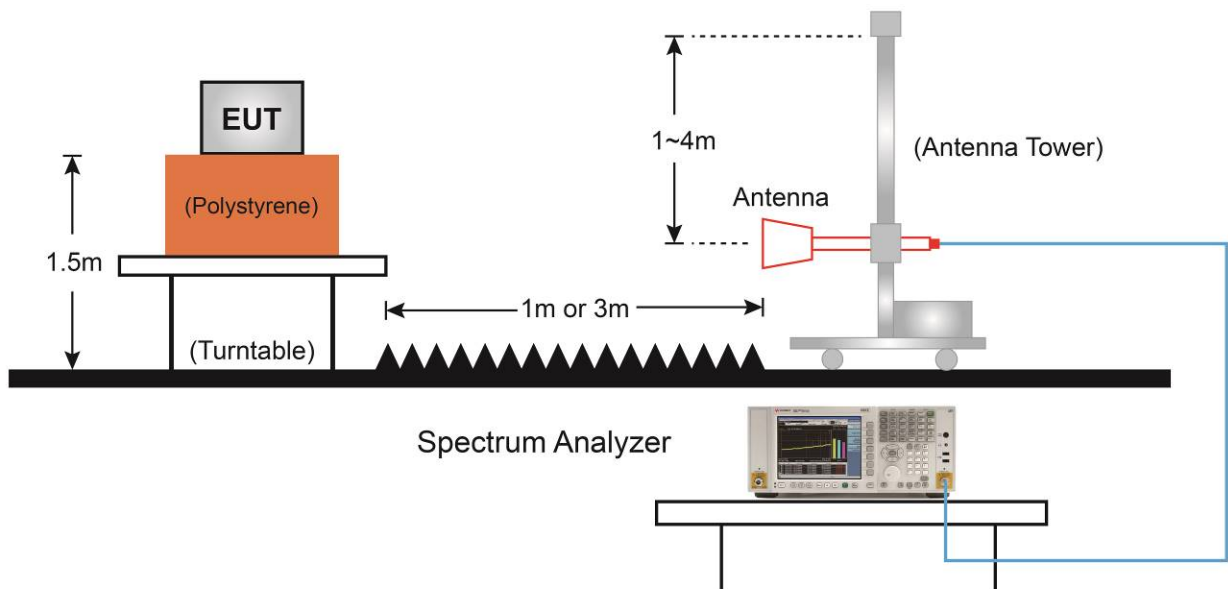
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle  $\geq 98\%$ , set VBW = 10 Hz.  
If the EUT duty cycle is  $< 98\%$ , set  $\text{VBW} \geq 1/T$ . T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

#### 6.6.4. Test Setup

##### Below 1GHz Test Setup:



##### Above 1GHz Test Setup:



### 6.6.5. Test Result

|            |                                                                                                                                                                                   |               |             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Antony Yang |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/20  |
| Test Mode: | 802.11b (CDD Mode)                                                                                                                                                                | Test Channel: | 01          |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |             |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4825.0          | 43.7                 | 5.8         | 49.5                   | 74.0           | -24.5       | Peak     | Horizontal   |
| *    | 7885.0          | 38.6                 | 11.1        | 49.7                   | 74.0           | -24.3       | Peak     | Horizontal   |
|      | 8335.5          | 36.4                 | 11.0        | 47.4                   | 74.0           | -26.6       | Peak     | Horizontal   |
| *    | 8803.0          | 38.2                 | 13.0        | 51.2                   | 74.0           | -22.8       | Peak     | Horizontal   |
|      | 4824.1          | 50.2                 | 5.7         | 55.9                   | 74.0           | -18.1       | Peak     | Vertical     |
|      | 4824.1          | 47.8                 | 5.7         | 53.5                   | 54.0           | -0.5        | Average  | Vertical     |
|      | 7519.5          | 37.5                 | 10.9        | 48.4                   | 74.0           | -25.6       | Peak     | Vertical     |
| *    | 7919.0          | 37.9                 | 11.3        | 49.2                   | 74.0           | -24.8       | Peak     | Vertical     |
| *    | 8709.5          | 36.3                 | 12.9        | 49.2                   | 74.0           | -24.8       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Antony Yang |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/20  |
| Test Mode: | 802.11b (CDD Mode)                                                                                                                                                                | Test Channel: | 06          |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |             |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4876.0          | 40.8                 | 5.5         | 46.3                   | 74.0           | -27.7       | Peak     | Horizontal   |
| *    | 6346.5          | 37.8                 | 8.1         | 45.9                   | 74.0           | -28.1       | Peak     | Horizontal   |
|      | 7366.5          | 38.5                 | 10.9        | 49.4                   | 74.0           | -24.6       | Peak     | Horizontal   |
| *    | 7893.5          | 35.9                 | 11.0        | 46.9                   | 74.0           | -27.1       | Peak     | Horizontal   |
|      | 4874.0          | 49.7                 | 5.5         | 55.2                   | 74.0           | -18.8       | Peak     | Vertical     |
|      | 4874.0          | 47.6                 | 5.5         | 53.1                   | 54.0           | -0.9        | Average  | Vertical     |
| *    | 6508.0          | 36.4                 | 8.6         | 45.0                   | 74.0           | -29.0       | Peak     | Vertical     |
|      | 7307.0          | 40.4                 | 10.6        | 51.0                   | 74.0           | -23.0       | Peak     | Vertical     |
| *    | 8607.5          | 35.8                 | 12.2        | 48.0                   | 74.0           | -26.0       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Antony Yang |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/20  |
| Test Mode: | 802.11b (CDD Mode)                                                                                                                                                                | Test Channel: | 11          |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |             |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4927.0          | 43.1                 | 6.2         | 49.3                   | 74.0           | -24.7       | Peak     | Horizontal   |
| *    | 6346.5          | 37.2                 | 8.1         | 45.3                   | 74.0           | -28.7       | Peak     | Horizontal   |
|      | 7451.5          | 37.4                 | 11.0        | 48.4                   | 74.0           | -25.6       | Peak     | Horizontal   |
| *    | 8794.5          | 35.9                 | 12.9        | 48.8                   | 74.0           | -25.2       | Peak     | Horizontal   |
|      | 4924.1          | 47.5                 | 6.1         | 53.6                   | 74.0           | -20.4       | Peak     | Vertical     |
|      | 4924.1          | 46.3                 | 6.1         | 52.4                   | 54.0           | -1.6        | Average  | Vertical     |
| *    | 7171.0          | 37.1                 | 10.7        | 47.8                   | 74.0           | -26.2       | Peak     | Vertical     |
|      | 7502.5          | 36.5                 | 10.8        | 47.3                   | 74.0           | -26.7       | Peak     | Vertical     |
| *    | 8871.0          | 35.1                 | 12.9        | 48.0                   | 74.0           | -26.0       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11g (CDD Mode)                                                                                                                                                                | Test Channel: | 01         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4825.0          | 42.8                 | 5.8         | 48.6                   | 74.0           | -25.4       | Peak     | Horizontal   |
| *    | 6380.5          | 37.4                 | 7.9         | 45.3                   | 74.0           | -28.7       | Peak     | Horizontal   |
|      | 7443.0          | 36.8                 | 11.0        | 47.8                   | 74.0           | -26.2       | Peak     | Horizontal   |
| *    | 8820.0          | 35.4                 | 13.2        | 48.6                   | 74.0           | -25.4       | Peak     | Horizontal   |
|      | 4825.0          | 47.5                 | 5.8         | 53.3                   | 74.0           | -20.7       | Peak     | Vertical     |
| *    | 6431.5          | 40.1                 | 8.3         | 48.4                   | 74.0           | -25.6       | Peak     | Vertical     |
|      | 7596.0          | 37.0                 | 10.8        | 47.8                   | 74.0           | -26.2       | Peak     | Vertical     |
| *    | 9797.5          | 35.2                 | 15.2        | 50.4                   | 74.0           | -23.6       | Peak     | Vertical     |

Note 1: “\*” means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11g (CDD Mode)                                                                                                                                                                | Test Channel: | 06         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4876.0          | 47.1                 | 5.5         | 52.6                   | 74.0           | -21.4       | Peak     | Horizontal   |
| *    | 5930.0          | 37.3                 | 7.2         | 44.5                   | 74.0           | -29.5       | Peak     | Horizontal   |
|      | 7536.5          | 37.0                 | 10.8        | 47.8                   | 74.0           | -26.2       | Peak     | Horizontal   |
| *    | 8607.5          | 36.8                 | 12.2        | 49.0                   | 74.0           | -25.0       | Peak     | Horizontal   |
|      | 4872.9          | 51.3                 | 5.6         | 56.9                   | 74.0           | -17.1       | Peak     | Vertical     |
|      | 4872.9          | 38.7                 | 5.6         | 44.3                   | 54.0           | -9.7        | Average  | Vertical     |
| *    | 6431.5          | 39.6                 | 8.3         | 47.9                   | 74.0           | -26.1       | Peak     | Vertical     |
|      | 7315.5          | 41.1                 | 10.6        | 51.7                   | 74.0           | -22.3       | Peak     | Vertical     |
| *    | 9670.0          | 35.9                 | 14.5        | 50.4                   | 74.0           | -23.6       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)



|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11g (CDD Mode)                                                                                                                                                                | Test Channel: | 11         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4825.0          | 37.8                 | 5.8         | 43.6                   | 74.0           | -30.4       | Peak     | Horizontal   |
| *    | 5913.0          | 36.6                 | 7.1         | 43.7                   | 74.0           | -30.3       | Peak     | Horizontal   |
|      | 7400.5          | 35.0                 | 10.7        | 45.7                   | 74.0           | -28.3       | Peak     | Horizontal   |
| *    | 9712.5          | 35.2                 | 15.0        | 50.2                   | 74.0           | -23.8       | Peak     | Horizontal   |
|      | 4927.0          | 39.6                 | 6.2         | 45.8                   | 74.0           | -28.2       | Peak     | Vertical     |
| *    | 6431.5          | 38.5                 | 8.3         | 46.8                   | 74.0           | -27.2       | Peak     | Vertical     |
|      | 7426.0          | 36.6                 | 10.8        | 47.4                   | 74.0           | -26.6       | Peak     | Vertical     |
| *    | 9874.0          | 36.0                 | 15.6        | 51.6                   | 74.0           | -22.4       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT20 (CDD Mode)                                                                                                                                                           | Test Channel: | 01         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4816.5          | 38.9                 | 5.8         | 44.7                   | 74.0           | -29.3       | Peak     | Horizontal   |
| *    | 5879.0          | 37.1                 | 6.9         | 44.0                   | 74.0           | -30.0       | Peak     | Horizontal   |
|      | 7341.0          | 37.0                 | 10.9        | 47.9                   | 74.0           | -26.1       | Peak     | Horizontal   |
| *    | 8675.5          | 36.7                 | 12.6        | 49.3                   | 74.0           | -24.7       | Peak     | Horizontal   |
|      | 4825.0          | 41.9                 | 5.8         | 47.7                   | 74.0           | -26.3       | Peak     | Vertical     |
| *    | 6431.5          | 39.7                 | 8.3         | 48.0                   | 74.0           | -26.0       | Peak     | Vertical     |
|      | 7519.5          | 37.6                 | 10.9        | 48.5                   | 74.0           | -25.5       | Peak     | Vertical     |
| *    | 8650.0          | 36.5                 | 12.9        | 49.4                   | 74.0           | -24.6       | Peak     | Vertical     |

Note 1: “\*” means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT20 (CDD Mode)                                                                                                                                                           | Test Channel: | 06         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4876.0          | 46.9                 | 5.5         | 52.4                   | 74.0           | -21.6       | Peak     | Horizontal   |
| *    | 6754.5          | 37.3                 | 8.9         | 46.2                   | 74.0           | -27.8       | Peak     | Horizontal   |
|      | 7349.5          | 37.6                 | 10.9        | 48.5                   | 74.0           | -25.5       | Peak     | Horizontal   |
| *    | 8565.0          | 37.2                 | 12.0        | 49.2                   | 74.0           | -24.8       | Peak     | Horizontal   |
|      | 4876.1          | 48.5                 | 5.5         | 54.0                   | 74.0           | -20.0       | Peak     | Vertical     |
|      | 4876.1          | 34.7                 | 5.5         | 40.2                   | 54.0           | -13.8       | Average  | Vertical     |
| *    | 6431.5          | 38.6                 | 8.3         | 46.9                   | 74.0           | -27.1       | Peak     | Vertical     |
|      | 7307.0          | 39.0                 | 10.6        | 49.6                   | 74.0           | -24.4       | Peak     | Vertical     |
| *    | 8692.5          | 36.2                 | 13.1        | 49.3                   | 74.0           | -24.7       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT20 (CDD Mode)                                                                                                                                                           | Test Channel: | 11         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4825.0          | 38.2                 | 5.8         | 44.0                   | 74.0           | -30.0       | Peak     | Horizontal   |
| *    | 5921.5          | 37.2                 | 7.1         | 44.3                   | 74.0           | -29.7       | Peak     | Horizontal   |
|      | 7502.5          | 36.7                 | 10.8        | 47.5                   | 74.0           | -26.5       | Peak     | Horizontal   |
| *    | 9848.5          | 35.8                 | 15.4        | 51.2                   | 74.0           | -22.8       | Peak     | Horizontal   |
|      | 4927.0          | 40.2                 | 6.2         | 46.4                   | 74.0           | -27.6       | Peak     | Vertical     |
| *    | 6431.5          | 38.8                 | 8.3         | 47.1                   | 74.0           | -26.9       | Peak     | Vertical     |
|      | 7392.0          | 36.8                 | 10.7        | 47.5                   | 74.0           | -26.5       | Peak     | Vertical     |
| *    | 9882.5          | 34.6                 | 15.4        | 50.0                   | 74.0           | -24.0       | Peak     | Vertical     |

Note 1: "\*" means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT40 (CDD Mode)                                                                                                                                                           | Test Channel: | 03         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4842.0          | 40.6                 | 5.9         | 46.5                   | 74.0           | -27.5       | Peak     | Horizontal   |
| *    | 6431.5          | 37.8                 | 8.3         | 46.1                   | 74.0           | -27.9       | Peak     | Horizontal   |
|      | 7349.5          | 36.8                 | 10.9        | 47.7                   | 74.0           | -26.3       | Peak     | Horizontal   |
| *    | 8947.5          | 36.8                 | 13.0        | 49.8                   | 74.0           | -24.2       | Peak     | Horizontal   |
|      | 4842.0          | 42.9                 | 5.9         | 48.8                   | 74.0           | -25.2       | Peak     | Vertical     |
| *    | 6431.5          | 39.5                 | 8.3         | 47.8                   | 74.0           | -26.2       | Peak     | Vertical     |
|      | 7443.0          | 36.5                 | 11.0        | 47.5                   | 74.0           | -26.5       | Peak     | Vertical     |
| *    | 8709.5          | 36.4                 | 12.9        | 49.3                   | 74.0           | -24.7       | Peak     | Vertical     |

Note 1: “\*” means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT40 (CDD Mode)                                                                                                                                                           | Test Channel: | 06         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4867.5          | 43.3                 | 5.6         | 48.9                   | 74.0           | -25.1       | Peak     | Horizontal   |
| *    | 6346.5          | 37.3                 | 8.1         | 45.4                   | 74.0           | -28.6       | Peak     | Horizontal   |
|      | 7519.5          | 35.1                 | 10.9        | 46.0                   | 74.0           | -28.0       | Peak     | Horizontal   |
| *    | 8573.5          | 36.8                 | 12.2        | 49.0                   | 74.0           | -25.0       | Peak     | Horizontal   |
|      | 4876.0          | 46.2                 | 5.5         | 51.7                   | 74.0           | -22.3       | Peak     | Vertical     |
| *    | 6431.5          | 38.8                 | 8.3         | 47.1                   | 74.0           | -26.9       | Peak     | Vertical     |
|      | 7315.5          | 38.6                 | 10.6        | 49.2                   | 74.0           | -24.8       | Peak     | Vertical     |
| *    | 8709.5          | 35.5                 | 12.9        | 48.4                   | 74.0           | -25.6       | Peak     | Vertical     |

Note 1: “\*” means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

|            |                                                                                                                                                                                   |               |            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Product    | Subscriber End Equipment HGW                                                                                                                                                      | Test Engineer | Buter Shi  |
| Test Site  | AC1                                                                                                                                                                               | Test Date     | 2020/08/18 |
| Test Mode: | 802.11n-HT40 (CDD Mode)                                                                                                                                                           | Test Channel: | 09         |
| Remark:    | 1. Average measurement was not performed if peak level lower than average limit.<br>2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report. |               |            |

| Mark | Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|------|-----------------|----------------------|-------------|------------------------|----------------|-------------|----------|--------------|
|      | 4901.5          | 39.6                 | 5.8         | 45.4                   | 74.0           | -28.6       | Peak     | Horizontal   |
| *    | 6431.5          | 39.7                 | 8.3         | 48.0                   | 74.0           | -26.0       | Peak     | Horizontal   |
|      | 7502.5          | 37.1                 | 10.8        | 47.9                   | 74.0           | -26.1       | Peak     | Horizontal   |
| *    | 8641.5          | 37.6                 | 12.5        | 50.1                   | 74.0           | -23.9       | Peak     | Horizontal   |
|      | 4901.5          | 39.6                 | 5.8         | 45.4                   | 74.0           | -28.6       | Peak     | Vertical     |
| *    | 6431.5          | 39.7                 | 8.3         | 48.0                   | 74.0           | -26.0       | Peak     | Vertical     |
|      | 7502.5          | 37.1                 | 10.8        | 47.9                   | 74.0           | -26.1       | Peak     | Vertical     |
| *    | 8709.5          | 35.3                 | 12.9        | 48.2                   | 74.0           | -25.8       | Peak     | Vertical     |

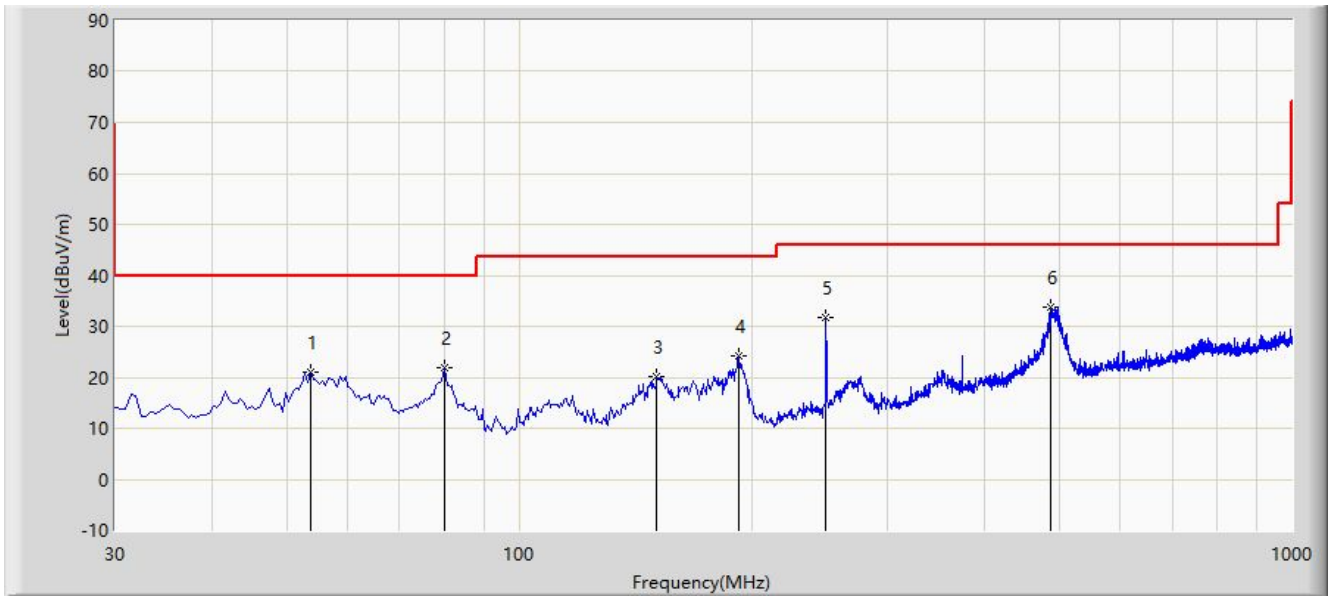
Note 1: “\*” means test frequency did not fall into restricted band.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

### The Result of Radiated Emission below 1GHz:

|                                                                     |                          |
|---------------------------------------------------------------------|--------------------------|
| Site: AC1                                                           | Time: 2020/08/16 - 12:51 |
| Limit: FCC_Part15.209_RSE(3m)                                       | Engineer: Antony Yang    |
| Probe: AC1_VULB 9168 _30-1000MHz                                    | Polarity: Horizontal     |
| EUT: Subscriber End Equipment HGW                                   | Power: AC 120V/60Hz      |
| <b>Worst Case Mode:</b> Transmit by 802.11n-HT20 at Channel 2412MHz |                          |



| No | Flag | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Margin (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|------|-----------------|------------------------|----------------------|-------------|----------------|-------------|------|
| 1  |      |      | 53.765          | 21.064                 | 6.609                | -18.936     | 40.000         | 14.456      | PK   |
| 2  |      |      | 79.955          | 21.960                 | 11.875               | -18.040     | 40.000         | 10.084      | PK   |
| 3  |      |      | 150.765         | 20.243                 | 5.847                | -23.257     | 43.500         | 14.396      | PK   |
| 4  |      |      | 192.475         | 24.271                 | 12.736               | -19.229     | 43.500         | 11.535      | PK   |
| 5  |      |      | 249.705         | 31.761                 | 18.756               | -14.239     | 46.000         | 13.005      | PK   |
| 6  |      | *    | 488.325         | 33.706                 | 14.353               | -12.294     | 46.000         | 19.352      | PK   |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of radiated emissions (frequency range from 9kHz ~ 30MHz, 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.