



## MEASUREMENT REPORT

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

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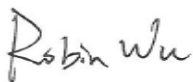
**FCC ID:** 2ANOT-205328  
**IC:** 23166-205328  
**Applicant:** Alliance Laundry Systems LLC  
**Application Type:** Certification  
**Product:** Wireless Network Control  
**Model No.:** 205328  
**Brand Name:** Alliance Laundry Systems  
**FCC Classification:** Digital Transmission System (DTS)  
**FCC Rule Part(s):** Part 15 Subpart C (Section 15.247)  
**ISED Rule(s)** RSS-247 Issue 2, RSS-GEN Issue 5  
**Test Procedure(s):** ANSI C63.10-2013  
**Test Date:** May 19 ~ June 03, 2021

**Reviewed By:**



Vincent Yu

**Approved By:**



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 (Shenzhen) Co., Ltd.

### Revision History

| Report No.    | Version | Description    | Issue Date | Note  |
|---------------|---------|----------------|------------|-------|
| 2105RSZ038-U1 | Rev.01  | Initial Report | 06-05-2021 | Valid |
|               |         |                |            |       |

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## 1. GENERAL INFORMATION

### 1.1. Applicant

Alliance Laundry Systems LLC

221 Shepard Street, PO Box 990, Ripon, WI 54971, United States

## 1.2. Manufacturer

Alliance Laundry Systems LLC

221 Shepard Street, PO Box 990, Ripon, WI 54971, United States

### 1.3. Testing Facility

|                                     |                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | <b>Test Site – MRT Suzhou Laboratory</b>                                                                                                  |
|                                     | <b>Laboratory Location (Suzhou – Wuzhong)</b><br>D8 Building, No.2 Tian’edang Rd., Wuzhong Economic Development Zone, Suzhou, China       |
|                                     | <b>Laboratory Location (Suzhou – SIP)</b><br>4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China |
|                                     | <b>Laboratory Accreditations</b>                                                                                                          |
|                                     | A2LA: 3628.01<br>FCC: CN1166<br>VCCI: R-20025, G-20034, C-20020, T-20020                                                                  |
|                                     | CNAS: L10551<br>ISED: CN0001                                                                                                              |
| <input checked="" type="checkbox"/> | <b>Test Site – MRT Shenzhen Laboratory</b>                                                                                                |
|                                     | <b>Laboratory Location (Shenzhen)</b><br>1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China  |
|                                     | <b>Laboratory Accreditations</b>                                                                                                          |
|                                     | A2LA: 3628.02<br>FCC: CN1284                                                                                                              |
| <input type="checkbox"/>            | <b>Test Site – MRT Taiwan Laboratory</b>                                                                                                  |
|                                     | <b>Laboratory Location (Taiwan)</b><br>No. 38, Fuxing 2 <sup>nd</sup> Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)               |
|                                     | <b>Laboratory Accreditations</b>                                                                                                          |
|                                     | TAF: L3261-190725<br>FCC: 291082, TW3261                                                                                                  |
| <input type="checkbox"/>            |                                                                                                                                           |
|                                     |                                                                                                                                           |

## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

|                     |                          |
|---------------------|--------------------------|
| Product Name        | Wireless Network Control |
| Model No.           | 205328                   |
| Wi-Fi Specification | 802.11a/b/g/n-HT20       |
| Power Supply        | DC 12V                   |

### 2.2. Product Specification Subjective to this Report

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| Frequency Range    | 802.11b/g/n-HT20: 2412 ~ 2462 MHz                                                        |
| Channel Number     | 802.11b/g/n-HT20: 11                                                                     |
| 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 72.2Mbps |

### 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  | --      | --        |

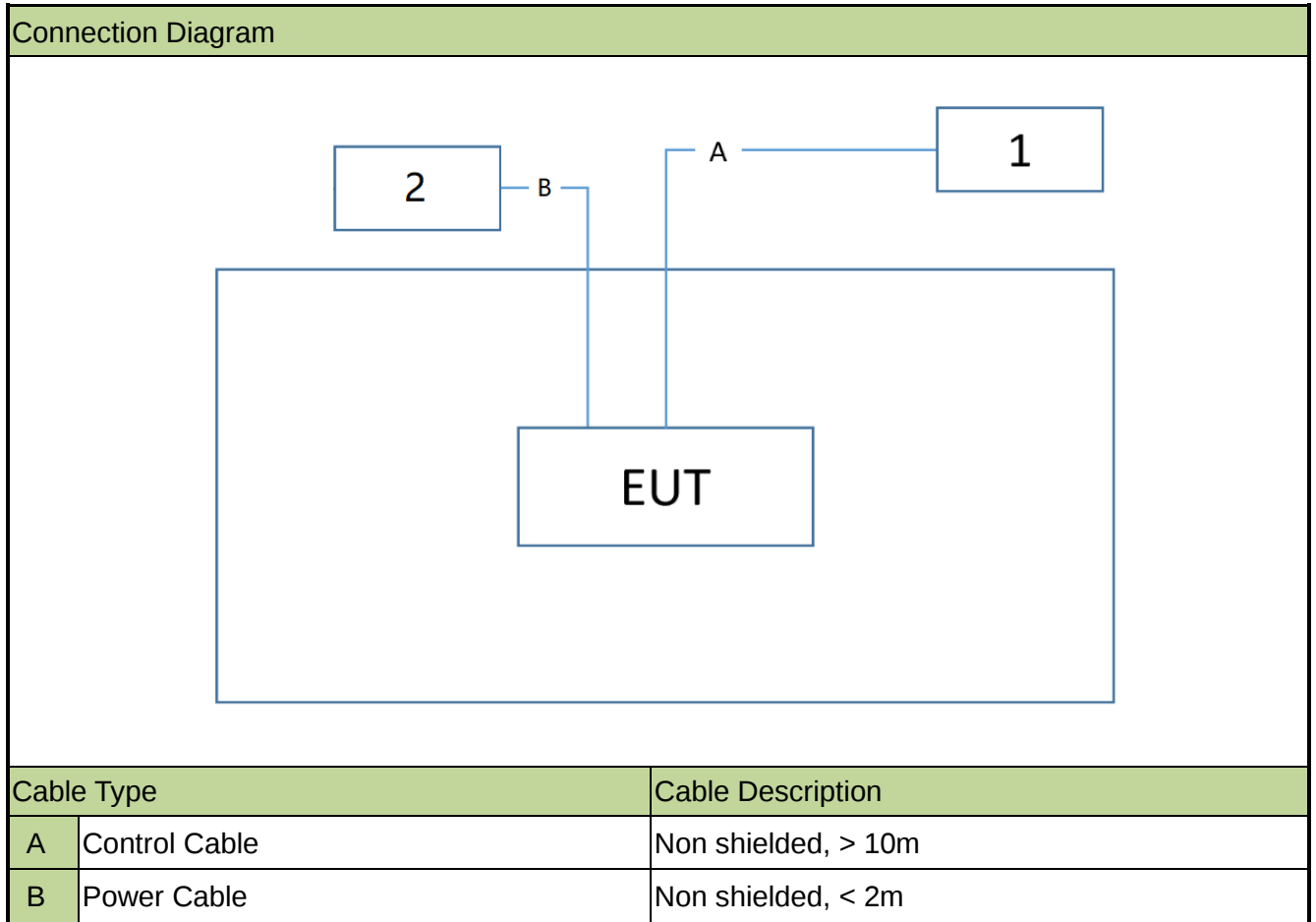
### 2.4. Description of Available Antennas

| Antenna Type   | Frequency Band (MHz) | TX Paths | Max Antenna Gain (dBi) |
|----------------|----------------------|----------|------------------------|
| Dipole Antenna | 2412 ~ 2462          | 1        | 2                      |

### 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) |

## 2.6. Configuration of Test System



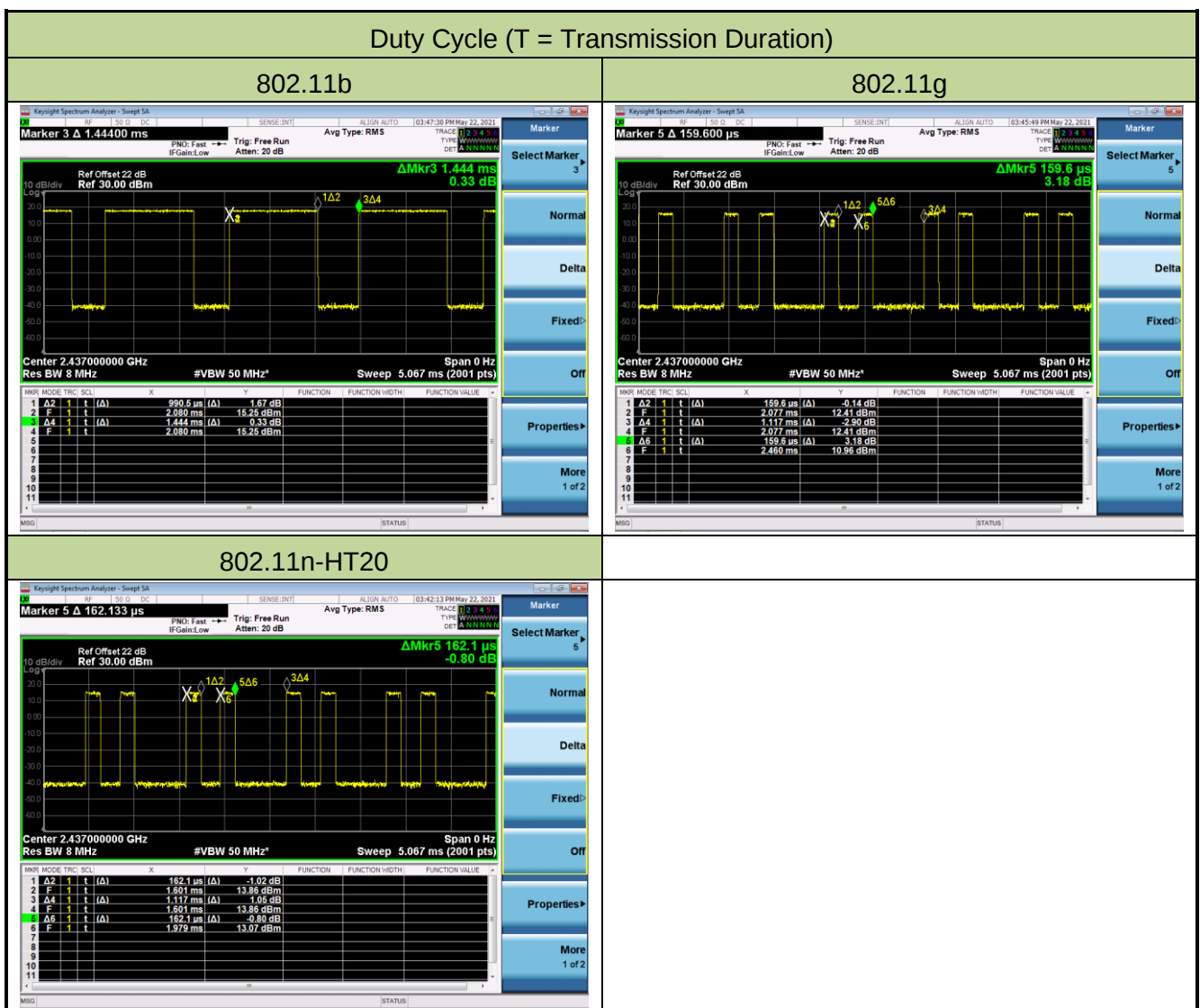
## 2.7. Test System Details

| Product |                 | Manufacturer | Model No.       |
|---------|-----------------|--------------|-----------------|
| 1       | Notebook        | HP           | EliteBook 735G5 |
| 2       | DC Power Supply | GWINSTEK     | DPS-3303C       |

## 2.8. Duty Cycle

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      | 68.59%     |
| 802.11g      | 28.58%     |
| 802.11n-HT20 | 29.02%     |



## 2.9. Description of Test Software

The test utility software used during testing was CC31XX/CC32XX Radio Tool, and the version was 1.0.3.16. Power parameter value refers to operation description.

## 2.10. Test Environment Condition

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

### 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 Emission (NS-SR2)

| Instrument                 | Manufacturer | Type No. | Asset No.   | Cali. Interval | Cali. Due Date |
|----------------------------|--------------|----------|-------------|----------------|----------------|
| EMI Test Receiver          | R&S          | ESL3     | MRTSUE06576 | 1 year         | 2021/07/09     |
| ENV216-LV-NETZNACHB        | R&S          | ENV216   | MRTSUE06577 | 1 year         | 2021/07/09     |
| ENV216-LV-NETZNACHB        | R&S          | ENV216   | MRTSUE06578 | 1 year         | 2021/07/09     |
| Temperature/Humidity Meter | deli         | NO.8813  | MRTSUE06587 | 1 year         | 2021/07/08     |
| Shielding Anechoic Chamber | BOOMWAVE     | SR2      | MRTSUE06551 | 5 year         | 2024/06/04     |

### Radiated Emission (NS-AC1)

| Instrument                     | Manufacturer | Type No.  | Asset No.   | Cali. Interval | Cal. Due Date |
|--------------------------------|--------------|-----------|-------------|----------------|---------------|
| EMI Test Receiver              | R&S          | ESR3      | MRTSUE06575 | 1 year         | 2021/07/09    |
| EXA Signal Analyzer            | Keysight     | N9010A    | MRTSUE06195 | 1 year         | 2022/03/17    |
| Loop Antenna                   | Schwarzbeck  | FMZB 1519 | MRTSUE06025 | 1 year         | 2021/11/08    |
| Horn Antenna                   | Schwarzbeck  | BBHA 9170 | MRTSUE06292 | 1 year         | 2021/10/24    |
| Broad-Band Horn Antenna        | Schwarzbeck  | 9120D     | MRTSUE06572 | 1 year         | 2021/07/03    |
| Bilog Period Antenna           | Schwarzbeck  | VULB 9162 | MRTSUE06573 | 1 year         | 2021/07/03    |
| Preamplifier                   | Schwarzbeck  | BBV 9721  | MRTSUE06121 | 1 year         | 2021/06/11    |
| Broadband Coaxial Preamplifier | Schwarzbeck  | BBV 9718  | MRTSUE06574 | 1 year         | 2021/07/13    |
| Anechoic Chamber               | BOOMWAVE     | AC1       | MRTSUE06496 | 1 year         | 2021/07/25    |
| Temperature/Humidity Meter     | deli         | NO.8813   | MRTSUE06588 | 1 year         | 2021/07/08    |

### Conducted Test Equipment (NS-TR2)

| Instrument                 | Manufacturer | Type No. | Asset No.   | Cali. Interval | Cali. Due Date |
|----------------------------|--------------|----------|-------------|----------------|----------------|
| Temperature/Humidity Meter | deli         | No.8813  | MRTSUE06783 | 1 year         | 2022/05/12     |
| USB wideband power sensor  | Keysight     | U2021XA  | MRTSUE06581 | 1 year         | 2021/08/20     |
| 10dB Attenuator            | MVE          | 10dB     | N/A         | 1 year         | 2021/08/20     |
| EXA Signal Analyzer        | Keysight     | N9010A   | MRTSUE06195 | 1 year         | 2022/03/17     |
| EXA Signal Analyzer        | Keysight     | N9020A   | MRTSUE10065 | 1 year         | 2022/03/17     |

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

## 6. TEST RESULT

### 6.1. Summary

| FCC Part Section(s) | RSS Section(s)   | Test Description                                                | Test Limit                                                                     | Test Condition | Test Result | Reference         |
|---------------------|------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------|----------------|-------------|-------------------|
| 15.247(a)(2)        | RSS-247 [5.2]    | 6dB Bandwidth                                                   | $\geq 500\text{kHz}$                                                           | Conducted      | Pass        | Section 6.2       |
| N/A                 | RSS-Gen [6.7]    | 99% Bandwidth                                                   | N/A                                                                            |                | Pass        |                   |
| 15.247(b)(3)        | RSS-247 [5.4(d)] | Output Power                                                    | $\leq 1\text{Watt}$ & $\text{EIRP} \leq 4\text{Watt}$                          |                | Pass        | Section 6.3       |
| 15.247(e)           | RSS-247 [5.2]    | Power Spectral Density                                          | $\leq 8\text{dBm} / 3\text{kHz}$                                               |                | Pass        | Section 6.4       |
| 15.247(d)           | RSS-247 [5.5]    | Band Edge / Out-of-Band Emissions                               | $\leq 20\text{dBc}$ (Peak)                                                     |                | Pass        | Section 6.5       |
| 15.205<br>15.209    | RSS-247 [5.5]    | General Field Strength (Restricted Bands and Radiated Emission) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 | Radiated       | Pass        | Section 6.6 & 6.7 |
| 15.207              | RSS-Gen [8.8]    | AC Conducted Emissions<br>150kHz - 30MHz                        | < FCC 15.207 limits                                                            | Line Conducted | N/A         | 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) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
- 3) "N/A" means that the test item is not applicable, and the details refer to relevant section.

## **6.2. Occupied 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 (6dB bandwidth)

ANSI C63.10-2013 - Section 6.9.3 (99% bandwidth)

### **6.2.3. Test Setting**

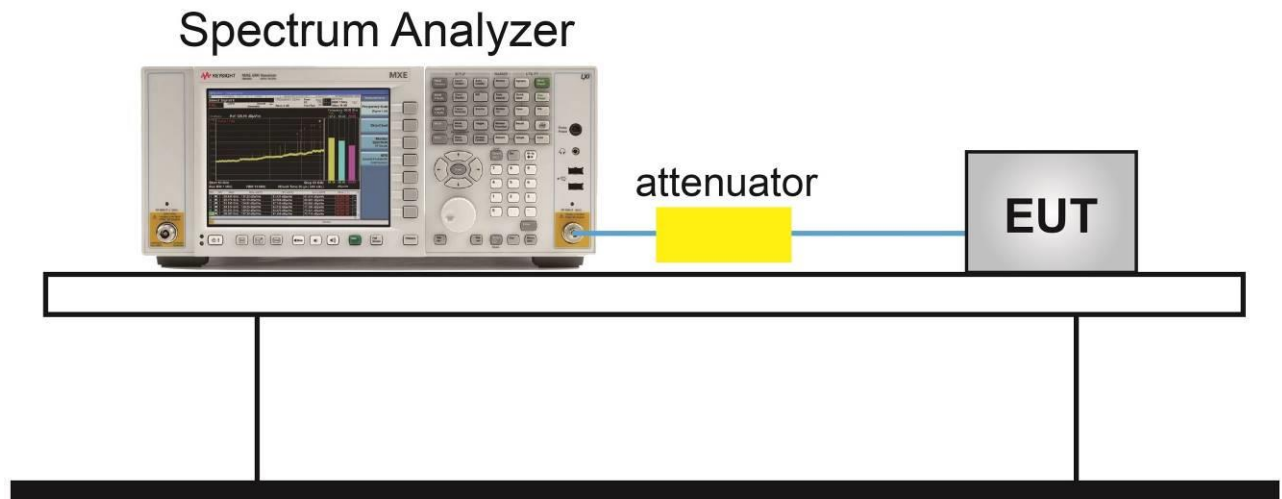
#### **For 6dB bandwidth**

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 to stabilize
7. Use the X dB bandwidth mode with X set to 6 dB

#### **For 99% bandwidth**

1. Span = 1.5 times to 5 times the OBW
2. Set RBW = 1% to 5% the OBW
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

#### 6.2.4. Test Setup



### 6.2.5. Test Result

|           |                         |               |           |
|-----------|-------------------------|---------------|-----------|
| Test Site | NS-TR2                  | Test Engineer | Flay Yang |
| Test Date | 2021/05/22 ~ 2021/06/03 |               |           |

| Test Mode    | Data Rate / MCS | Channel No. | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) | 99% Bandwidth (MHz) | Result |
|--------------|-----------------|-------------|-----------------|---------------------|-------------|---------------------|--------|
| 802.11b      | 1Mbps           | 01          | 2412            | 10.05               | $\geq 0.5$  | 14.03               | Pass   |
| 802.11b      | 1Mbps           | 06          | 2437            | 10.06               | $\geq 0.5$  | 14.07               | Pass   |
| 802.11b      | 1Mbps           | 11          | 2462            | 9.11                | $\geq 0.5$  | 14.02               | Pass   |
| 802.11g      | 6Mbps           | 01          | 2412            | 15.14               | $\geq 0.5$  | 16.36               | Pass   |
| 802.11g      | 6Mbps           | 06          | 2437            | 15.14               | $\geq 0.5$  | 17.11               | Pass   |
| 802.11g      | 6Mbps           | 11          | 2462            | 15.14               | $\geq 0.5$  | 16.29               | Pass   |
| 802.11n-HT20 | MCS0            | 01          | 2412            | 15.13               | $\geq 0.5$  | 17.40               | Pass   |
| 802.11n-HT20 | MCS0            | 06          | 2437            | 15.14               | $\geq 0.5$  | 17.63               | Pass   |
| 802.11n-HT20 | MCS0            | 11          | 2462            | 15.14               | $\geq 0.5$  | 17.42               | Pass   |

## 802.11b 6dB Bandwidth

## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)

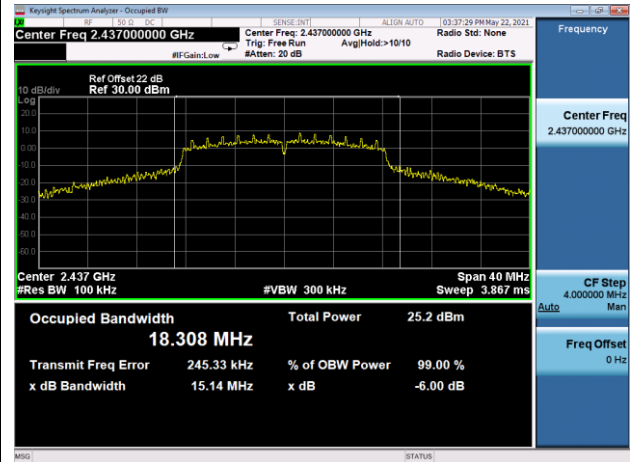


## 802.11g 6dB Bandwidth

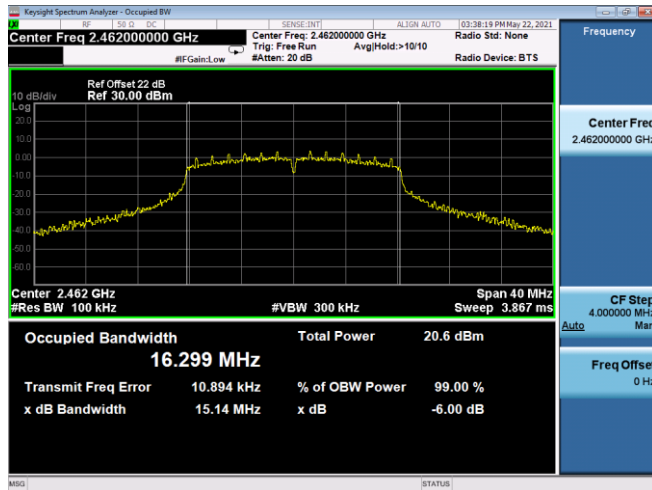
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)

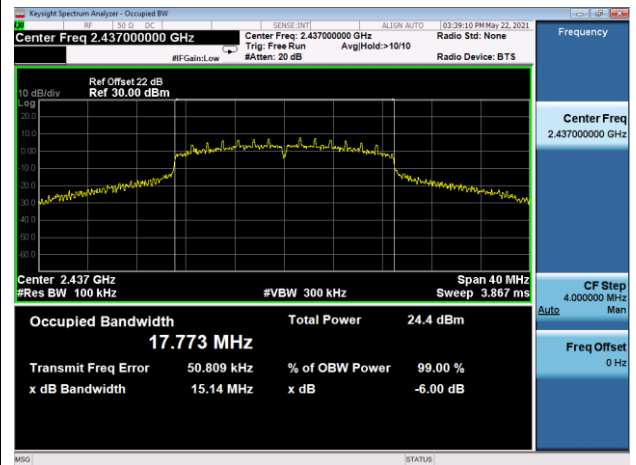


## 802.11n-HT20 6dB Bandwidth

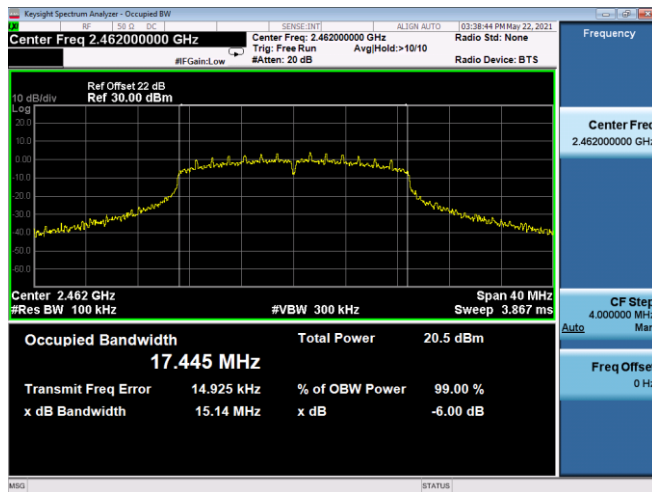
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

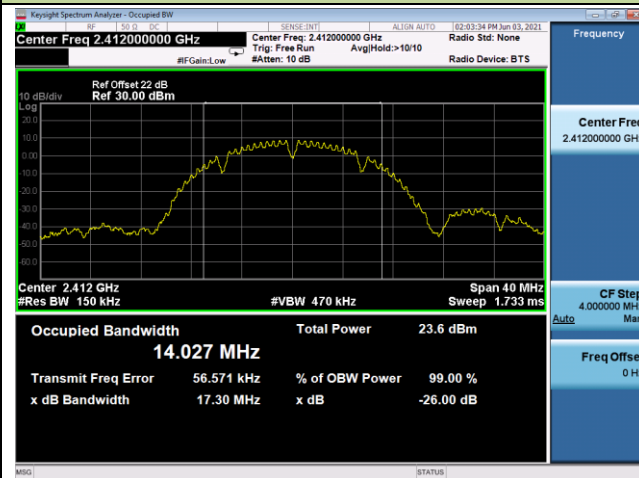


## Channel 11 (2462MHz)



## 802.11b 99% Bandwidth

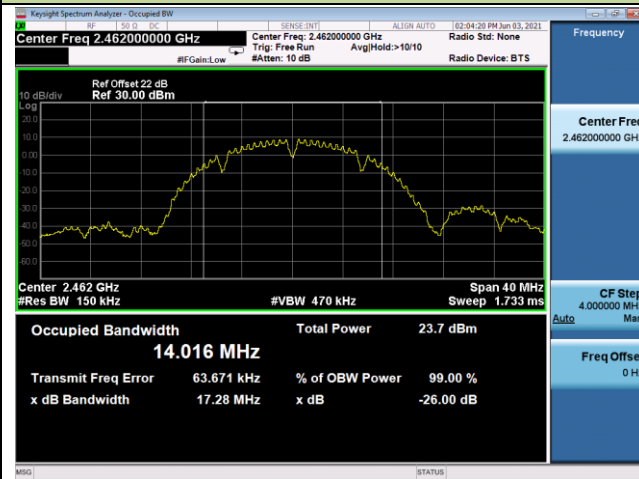
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)

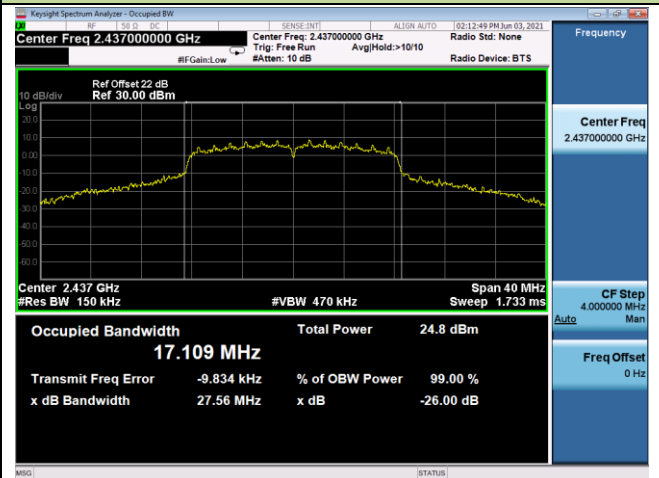


## 802.11g 99% Bandwidth

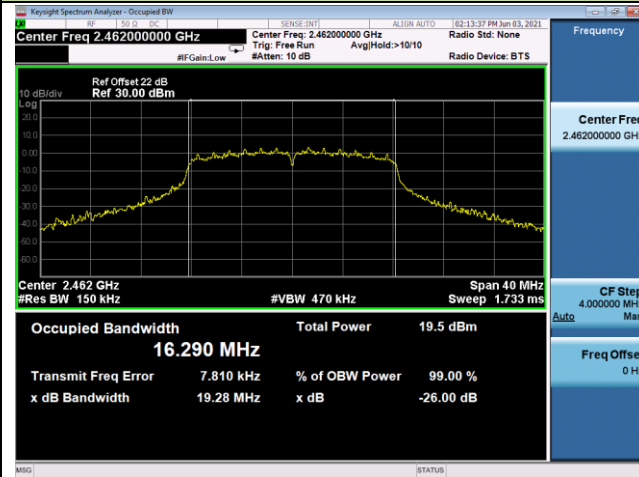
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)

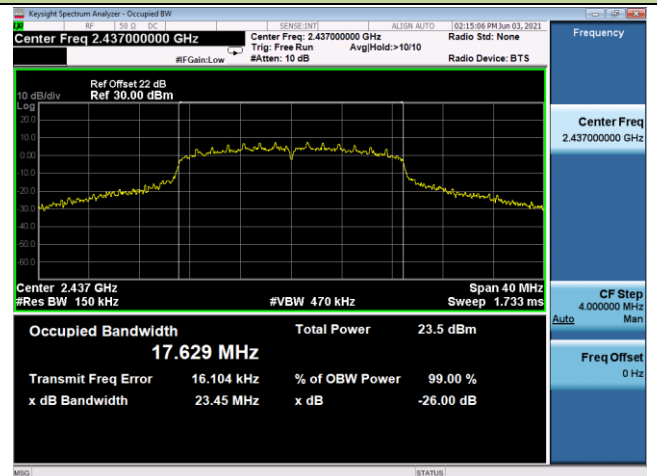


## 802.11n-HT20 99% Bandwidth

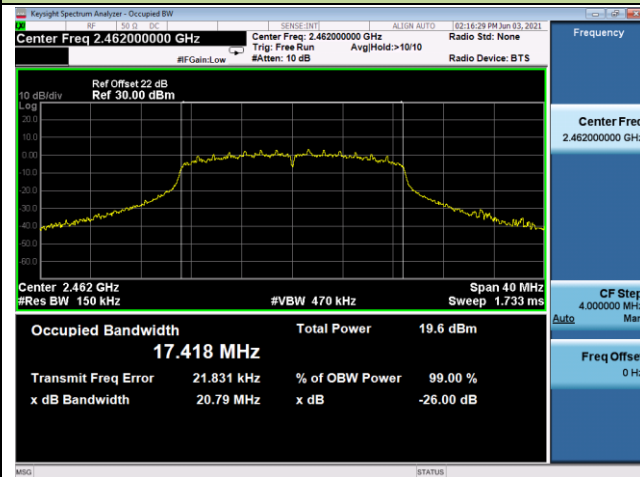
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)



### **6.3. Output Power Measurement**

#### **6.3.1. Test Limit**

The maximum out power shall be less 1 Watt (30dBm) and the E.I.R.P shall not exceed 4 Watt (36.02dBm).

#### **6.3.2. Test Procedure Used**

ANSI C63.10-2013 Section 11.9.1.3

ANSI C63.10-2013 Section 11.9.2.3.2

#### **6.3.3. Test Setting**

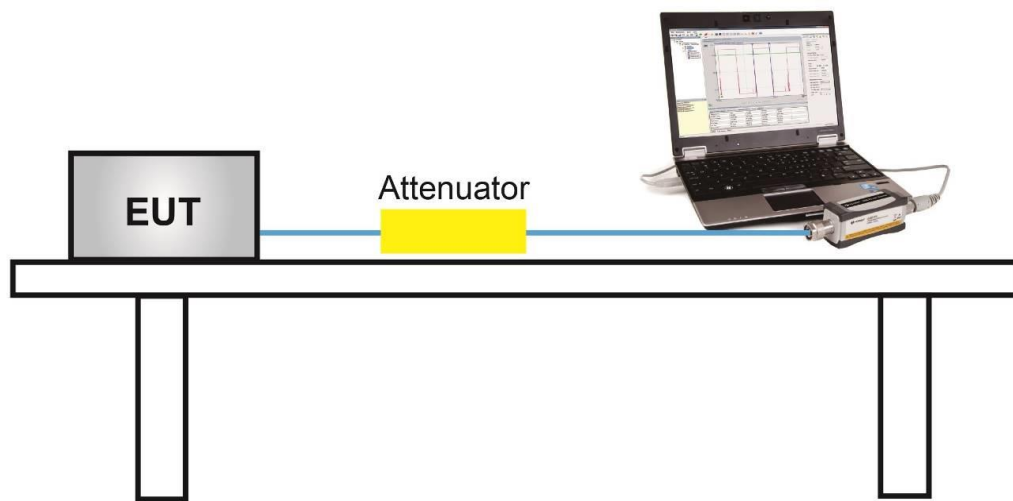
##### **PKPM1 Peak-reading power meter method**

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

##### **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

All modes of operation and data rates were investigated, so all RF test requirements shall be executed at low data rates.

| Test Mode | Bandwidth (MHz) | Channel No. | Frequency (MHz) | Data Rate / MCS | Average Power (dBm) |
|-----------|-----------------|-------------|-----------------|-----------------|---------------------|
| 802.11b   | 20              | 6           | 2437            | 1Mbps           | 17.54               |
|           |                 |             |                 | 5.5Mbps         | 17.31               |
|           |                 |             |                 | 11Mbps          | 17.05               |
| 802.11g   | 20              | 6           | 2437            | 6Mbps           | 17.22               |
|           |                 |             |                 | 24Mbps          | 16.89               |
|           |                 |             |                 | 54Mbps          | 16.43               |
| 802.11n   | 20              | 6           | 2437            | MCS0            | 16.21               |
|           |                 |             |                 | MCS3            | 15.79               |
|           |                 |             |                 | MCS7            | 15.36               |

|           |            |               |           |
|-----------|------------|---------------|-----------|
| Test Site | NS-TR2     | Test Engineer | Flay Yang |
| Test Date | 2021/05/22 |               |           |

### Test Result of Peak Output Power

| Test Mode | Data Rate / MCS | Channel No. | Freq. (MHz) | Peak Power (dBm) | Limit (dBm) | EIRP (dBm) | Limit (dBm) | Result |
|-----------|-----------------|-------------|-------------|------------------|-------------|------------|-------------|--------|
| 11b       | 1Mbps           | 01          | 2412        | 19.47            | ≤ 30.00     | 21.47      | ≤ 36.02     | Pass   |
| 11b       | 1Mbps           | 06          | 2437        | 19.58            | ≤ 30.00     | 21.58      | ≤ 36.02     | Pass   |
| 11b       | 1Mbps           | 11          | 2462        | 17.86            | ≤ 30.00     | 19.86      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 01          | 2412        | 20.41            | ≤ 30.00     | 22.41      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 06          | 2437        | 21.46            | ≤ 30.00     | 23.46      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 11          | 2462        | 20.52            | ≤ 30.00     | 22.52      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 01          | 2412        | 20.61            | ≤ 30.00     | 22.61      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 06          | 2437        | 21.27            | ≤ 30.00     | 23.27      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 11          | 2462        | 20.38            | ≤ 30.00     | 22.38      | ≤ 36.02     | Pass   |

Note: EIRP (dBm) = Peak Power (dBm) + Antenna Gain (dBi), Antenna Gain = 2 dBi.

### Test Result of Average Output Power (Reporting Only)

| Test Mode | Data Rate / MCS | Channel No. | Freq. (MHz) | Average Power (dBm) | Limit (dBm) | EIRP (dBm) | Limit (dBm) | Result |
|-----------|-----------------|-------------|-------------|---------------------|-------------|------------|-------------|--------|
| 11b       | 1Mbps           | 01          | 2412        | 17.34               | ≤ 30.00     | 19.34      | ≤ 36.02     | Pass   |
| 11b       | 1Mbps           | 06          | 2437        | 17.54               | ≤ 30.00     | 19.54      | ≤ 36.02     | Pass   |
| 11b       | 1Mbps           | 11          | 2462        | 15.69               | ≤ 30.00     | 17.69      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 01          | 2412        | 12.55               | ≤ 30.00     | 14.55      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 06          | 2437        | 17.22               | ≤ 30.00     | 19.22      | ≤ 36.02     | Pass   |
| 11g       | 6Mbps           | 11          | 2462        | 12.59               | ≤ 30.00     | 14.59      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 01          | 2412        | 12.32               | ≤ 30.00     | 14.32      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 06          | 2437        | 16.21               | ≤ 30.00     | 18.21      | ≤ 36.02     | Pass   |
| 11n-HT20  | MCS0            | 11          | 2462        | 12.85               | ≤ 30.00     | 14.85      | ≤ 36.02     | Pass   |

Note: EIRP (dBm) = Average Power (dBm) + Antenna Gain (dBi), Antenna Gain = 2 dBi.

## 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.

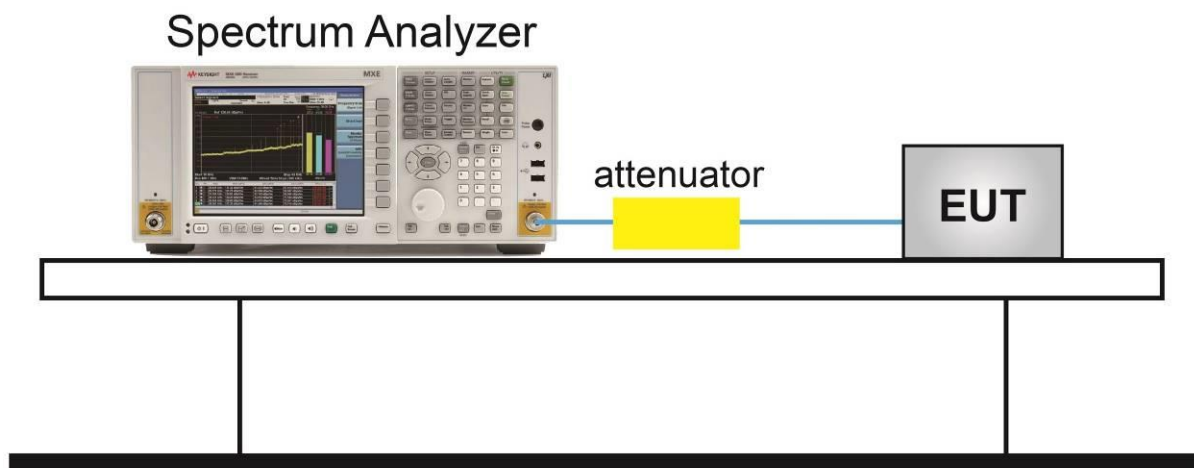
### 6.4.2. Test Procedure Used

ANSI C63.10-2013 Section 11.10.2

### 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 DTS channel bandwidth
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

### 6.4.4. Test Setup



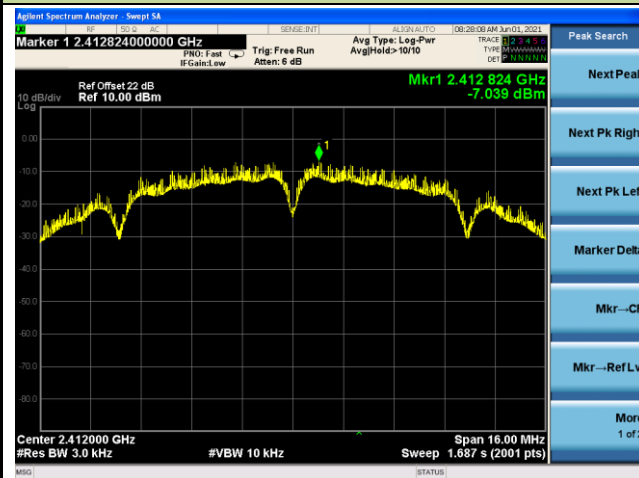
#### 6.4.5. Test Result

|           |            |               |           |
|-----------|------------|---------------|-----------|
| Test Site | NS-TR2     | Test Engineer | Flay Yang |
| Test Date | 2021/06/01 |               |           |

| Test Mode | Data Rate/<br>MCS | Channel<br>No. | Frequency<br>(MHz) | PSD Result<br>(dBm/3kHz) | Limit<br>(dBm/3kHz) | Result |
|-----------|-------------------|----------------|--------------------|--------------------------|---------------------|--------|
| 11b       | 1Mbps             | 01             | 2412               | -7.04                    | ≤ 8.00              | Pass   |
| 11b       | 1Mbps             | 06             | 2437               | -6.08                    | ≤ 8.00              | Pass   |
| 11b       | 1Mbps             | 11             | 2462               | -8.22                    | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 01             | 2412               | -13.58                   | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 06             | 2437               | -8.28                    | ≤ 8.00              | Pass   |
| 11g       | 6Mbps             | 11             | 2462               | -13.45                   | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 01             | 2412               | -13.01                   | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 06             | 2437               | -8.01                    | ≤ 8.00              | Pass   |
| 11n-HT20  | MCS0              | 11             | 2462               | -12.36                   | ≤ 8.00              | Pass   |

## 802.11b PK PSD

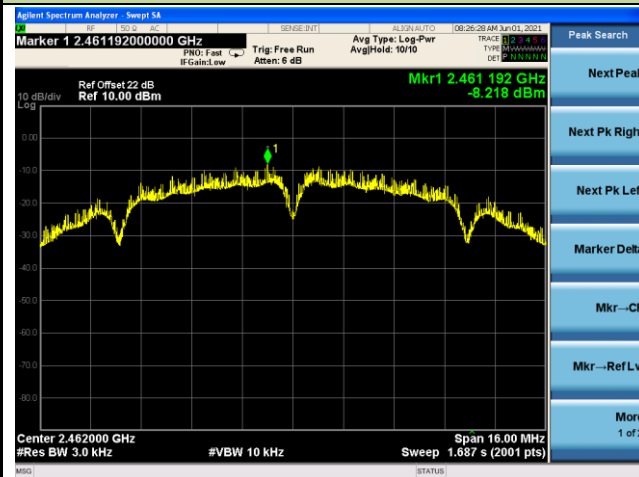
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

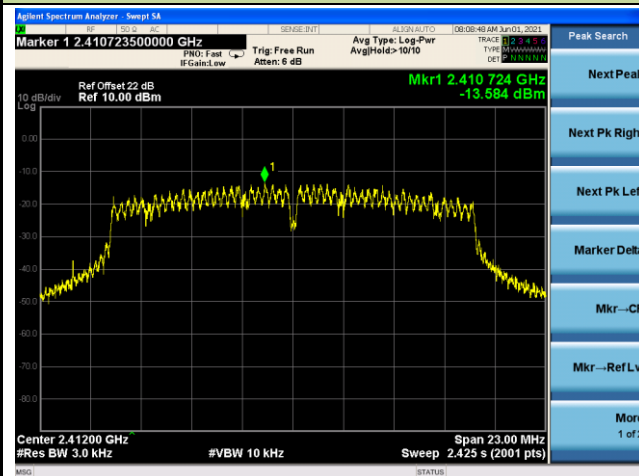


## Channel 11 (2462MHz)

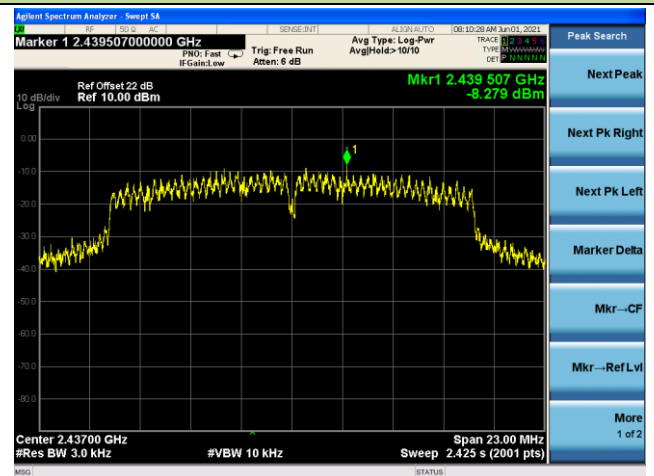


## 802.11g PK PSD

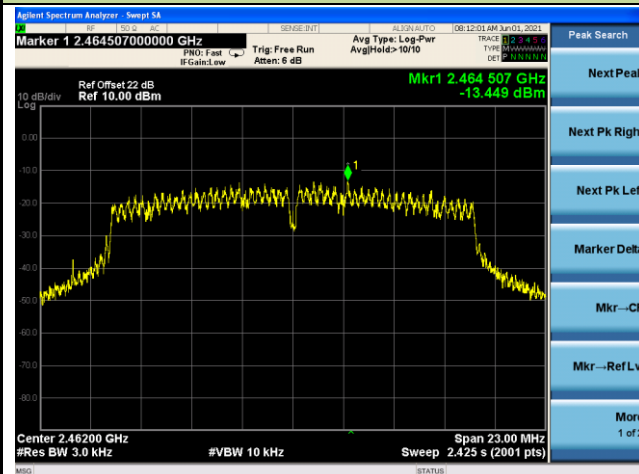
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)

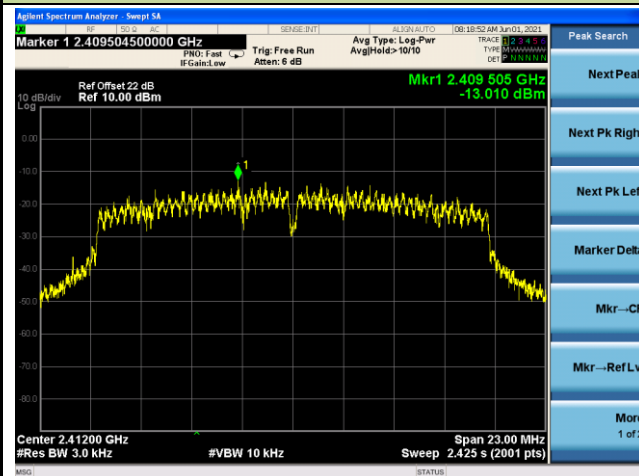


## Channel 11 (2462MHz)

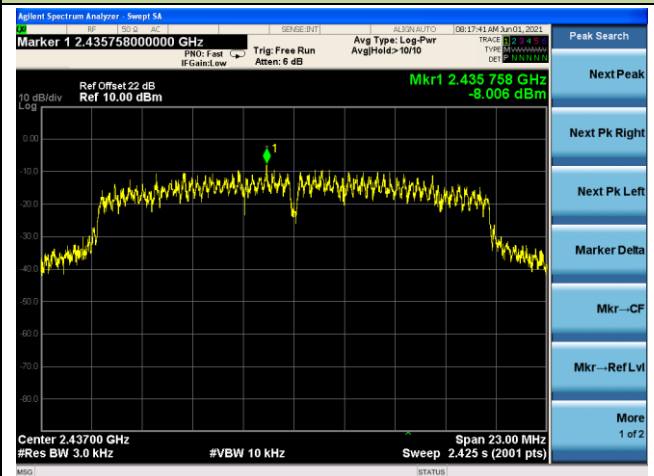


## 802.11n-HT20 PK PSD

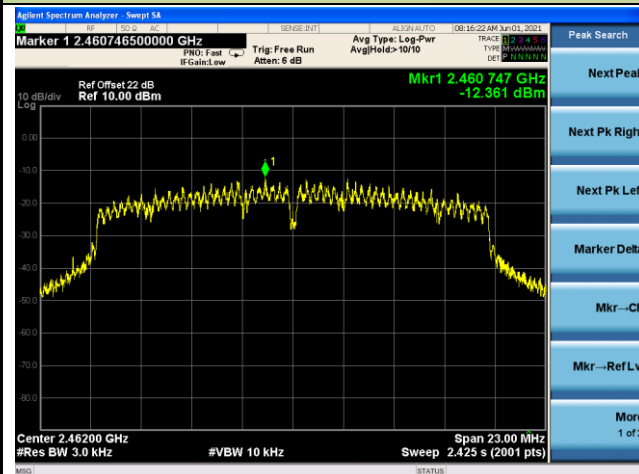
## Channel 01 (2412MHz)



## Channel 06 (2437MHz)



## Channel 11 (2462MHz)



## **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 20dB 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**

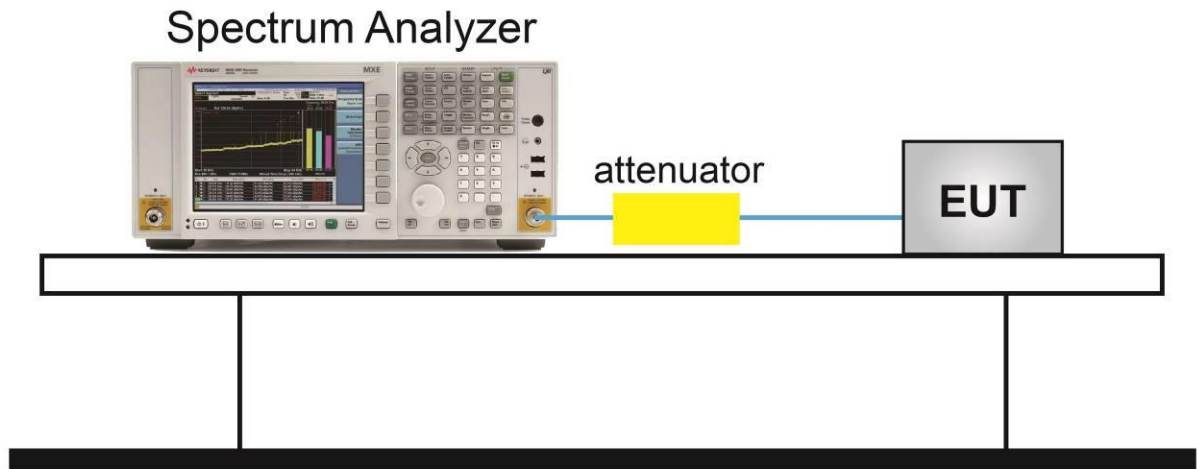
#### **Reference level measurement**

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

|           |            |               |           |
|-----------|------------|---------------|-----------|
| Test Site | NS-TR2     | Test Engineer | Flay Yang |
| Test Date | 2021/06/01 |               |           |

| Test Mode    | Data Rate<br>/ MCS | Channel No. | Frequency<br>(MHz) | Limit | Result |
|--------------|--------------------|-------------|--------------------|-------|--------|
| 802.11b      | 1Mbps              | 01          | 2412               | 20dBc | Pass   |
| 802.11b      | 1Mbps              | 06          | 2437               | 20dBc | Pass   |
| 802.11b      | 1Mbps              | 11          | 2462               | 20dBc | Pass   |
| 802.11g      | 6Mbps              | 01          | 2412               | 20dBc | Pass   |
| 802.11g      | 6Mbps              | 06          | 2437               | 20dBc | Pass   |
| 802.11g      | 6Mbps              | 11          | 2462               | 20dBc | Pass   |
| 802.11n-HT20 | MCS0               | 01          | 2412               | 20dBc | Pass   |
| 802.11n-HT20 | MCS0               | 06          | 2437               | 20dBc | Pass   |
| 802.11n-HT20 | MCS0               | 11          | 2462               | 20dBc | Pass   |

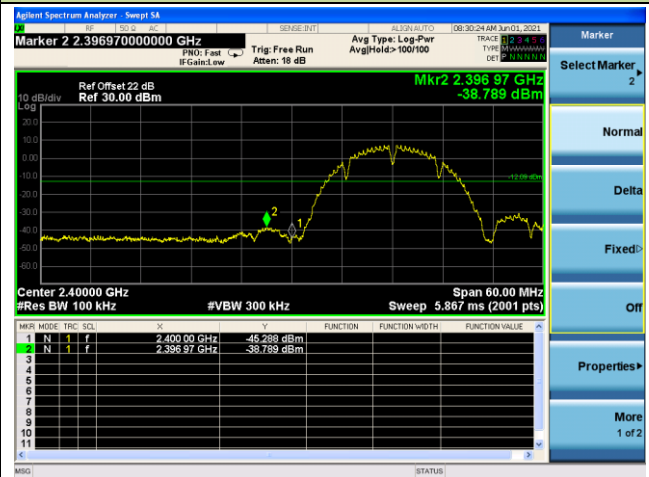
## 802.11b Out-of-Band Emissions

### Channel 01 (2412MHz)

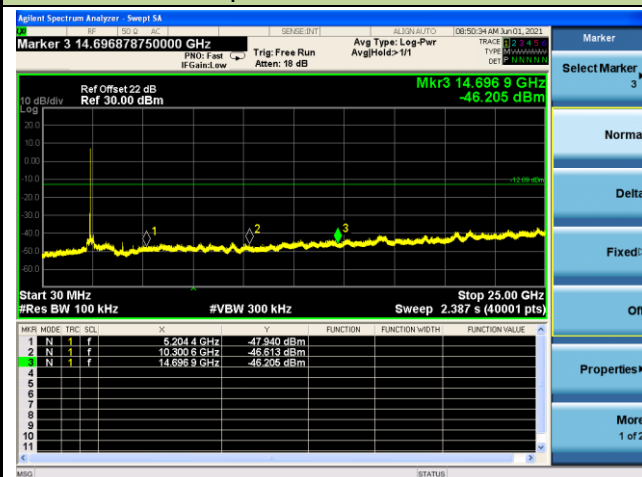
#### 100kHz PSD Reference Level



#### Low Band Edge



#### Spurious Emission

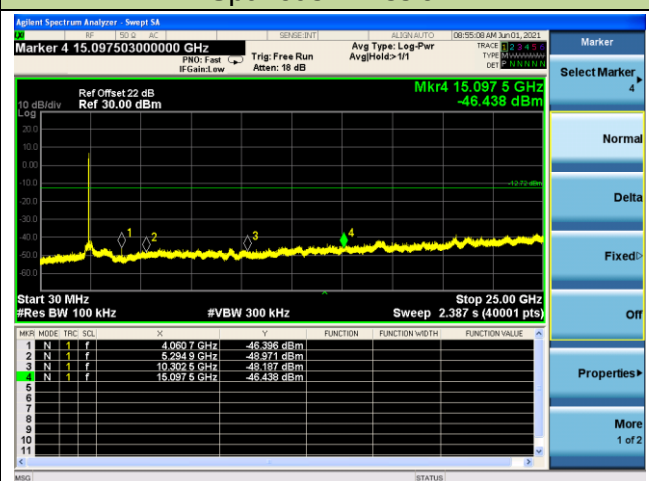


### Channel 06 (2437MHz)

#### 100kHz PSD Reference Level



#### Spurious Emission



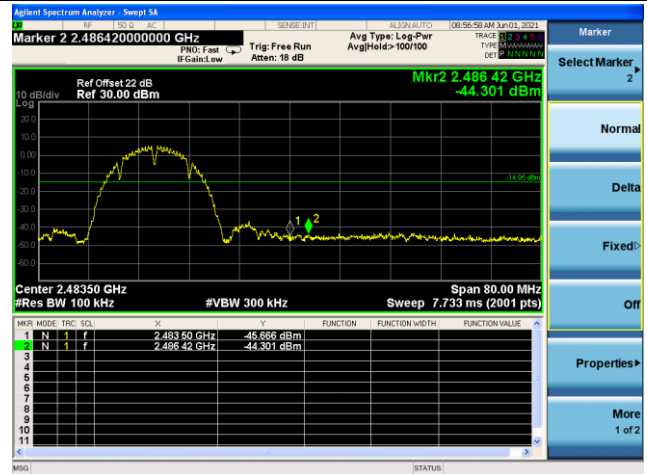
## 802.11b Out-of-Band Emissions

### Channel 11 (2462MHz)

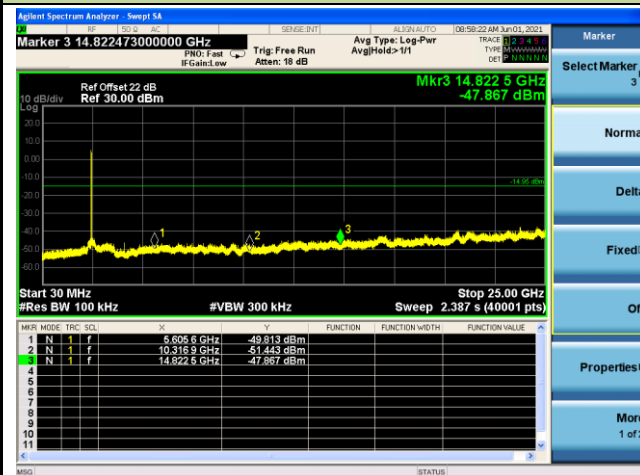
#### 100kHz PSD Reference Level



#### High Band Edge



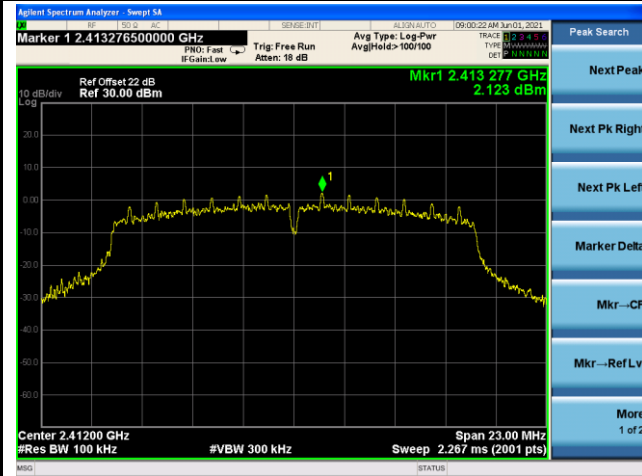
#### Spurious Emission



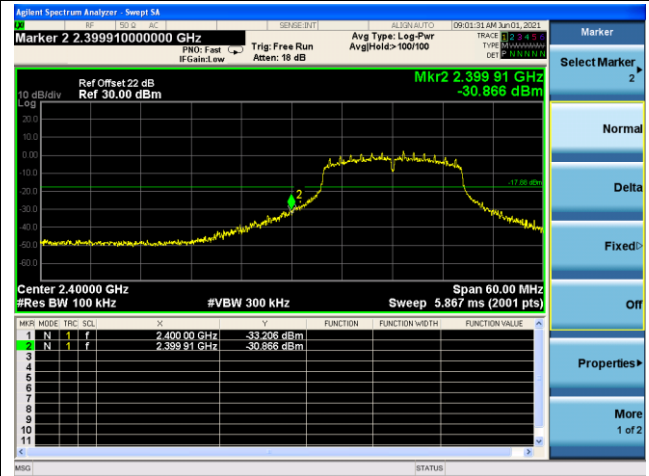
## 802.11g Out-of-Band Emissions

### Channel 01 (2412MHz)

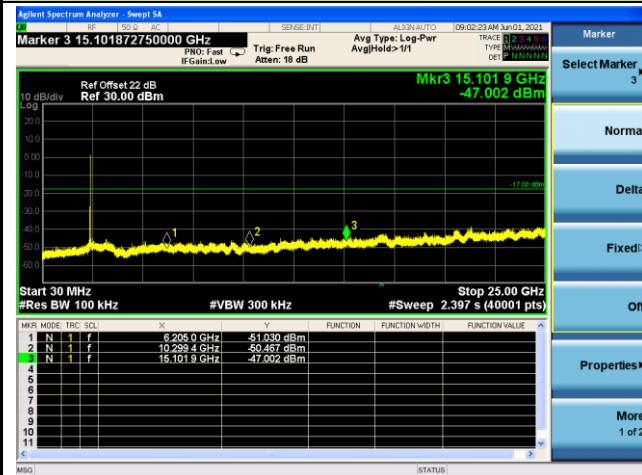
#### 100kHz PSD Reference Level



#### Low Band Edge



#### Spurious Emission

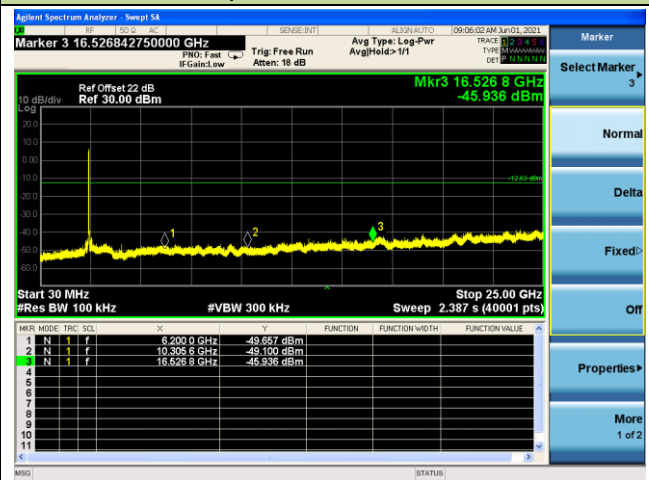


### Channel 06 (2437MHz)

#### 100kHz PSD Reference Level



#### Spurious Emission



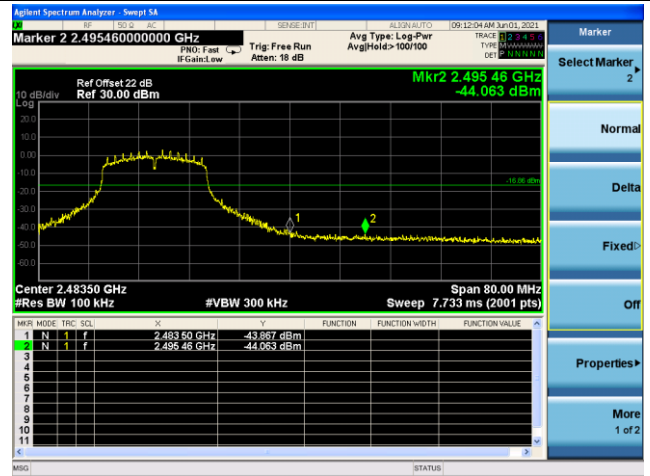
## 802.11g Out-of-Band Emissions

### Channel 11 (2462MHz)

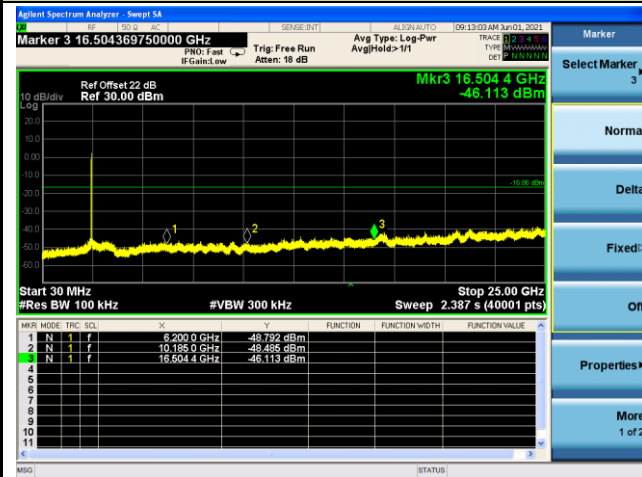
#### 100kHz PSD Reference Level



#### High Band Edge



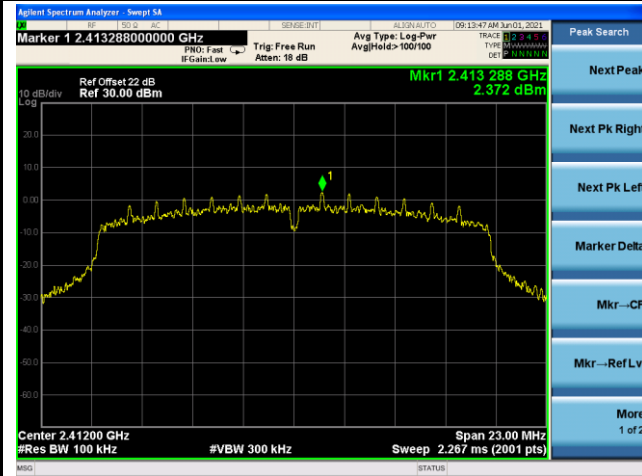
#### Spurious Emission



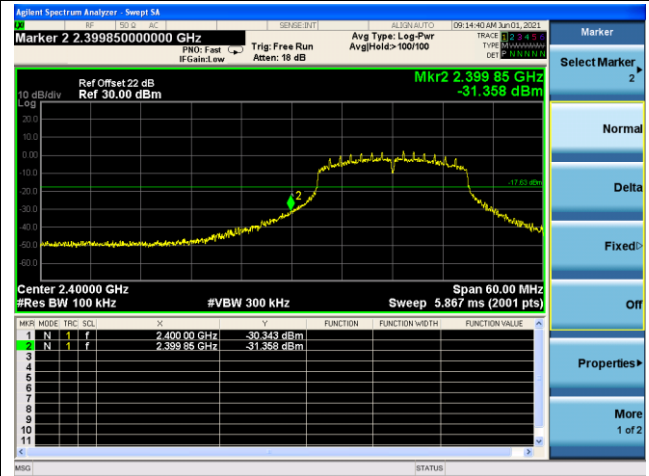
## 802.11n-HT20 Out-of-Band Emissions

## Channel 01 (2412MHz)

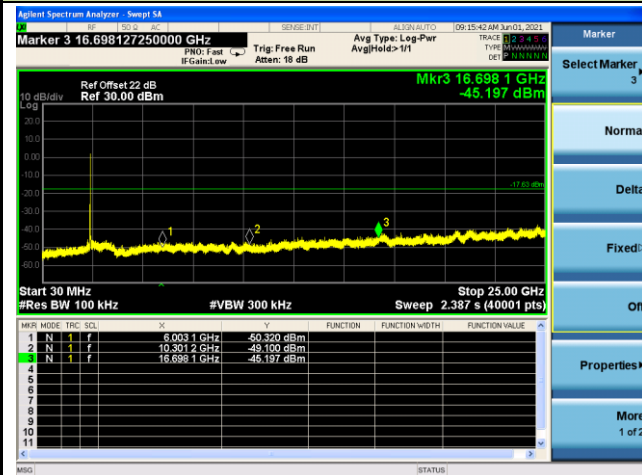
## 100kHz PSD Reference Level



## Low Band Edge

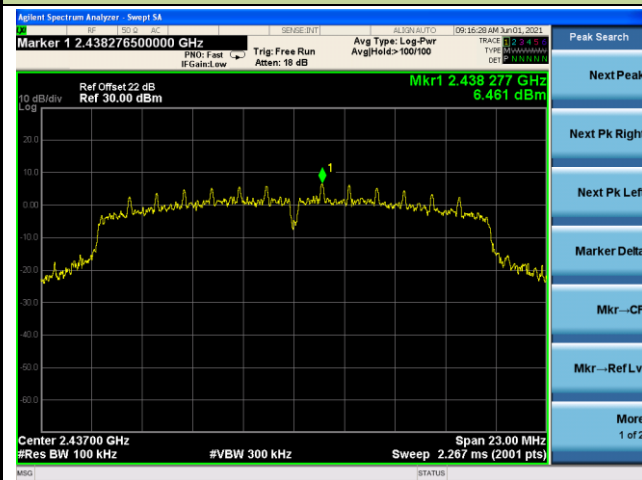


## Spurious Emission



## Channel 06 (2437MHz)

## 100kHz PSD Reference Level



## Spurious Emission

