# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| **FCC ID** | : | **2AXFL-4269** |
| **Equipment** | : | **Digital Media Receiver** |
| **Model Name** | : | **H6Y2A5** |
| **Applicant** | : | **Orthoclase Feldspar LLC<br>1202 NE McClain Road<br>Bentonville, AR 72712** |
| **Standard** | : | **FCC Part 15 Subpart C §15.247** |

**The product was received on May 11, 2021 and testing was started from May 26, 2021 and completed on Jun. 25, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.**

Louis Wu

**Approved by: Louis Wu**

***Sporton International Inc. EMC & Wireless Communications Laboratory***
*No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)*

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR120234-01C | 01 | Initial issue of report | Jul. 07, 2021 |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) |
|---|---|---|---|
| 3.1 | 15.247(a)(2) | 6dB Bandwidth | Pass |
| 3.1 | 2.1049 | 99% Occupied Bandwidth | Reporting only |
| 3.2 | 15.247(b) | Power Output Measurement | Pass |
| 3.3 | 15.247(e) | Power Spectral Density | Pass |
| 3.4 | 15.247(d) | Conducted Band Edges | Pass |
| | | Conducted Spurious Emission | Pass |
| 3.5 | 15.247(d) | Radiated Band Edges and Radiated Spurious Emission | Pass |
| 3.6 | 15.207 | AC Conducted Emission | Pass |
| 3.7 | 15.203 & 15.247(b) | Antenna Requirement | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

**Reviewed by: Alan Liu**

**Report Producer: Ruby Zou**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Digital Media Receiver |
| **Model Name** | H6Y2A5 |
| **FCC ID** | 2AXFL-4269 |
| **EUT supports Radios application** | WLAN 11b/g/n HT20<br>WLAN 11a/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE |

**Remark:** The above EUT's information was declared by manufacturer.

## 1.2 Product Specification of Equipment Under Test

| Product Specification subjective to this standard | |
|---|---|
| **Tx/Rx Frequency Range** | 2412 MHz ~ 2472 MHz |
| **Maximum Average Output Power to antenna** | **MIMO <Ant. 1+2>**<br>802.11b: 19.46 dBm / 0.0883 W<br>802.11g: 22.06 dBm / 0.1607 W<br>802.11n HT20: 21.31 dBm / 0.1352 W |
| **99% Occupied Bandwidth** | **MIMO <Ant. 1>**<br>802.11b: 13.54 MHz<br>802.11g: 16.78 MHz<br>802.11n HT20: 17.73 MHz<br>**MIMO <Ant. 2>**<br>802.11b: 13.44 MHz<br>802.11g: 16.68 MHz<br>802.11n HT20: 17.68 MHz |
| **Antenna Type / Gain** | Ant. 1: PCB Dipole Antenna with gain 3.8 dBi<br>Ant. 2: PCB Dipole Antenna with gain 5.0 dBi |
| **Type of Modulation** | 802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) |
| **Antenna Function Description** | |

| | Ant. 1 | Ant. 2 |
|---|---|---|
| 802.11 b/g/n MIMO | V | V |

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2

## 1.3 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.4 Testing Location

| | |
|---|---|
| **Test Site** | Sporton International Inc. EMC & Wireless Communications Laboratory |
| **Test Site Location** | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City 333, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| **Test Site No.** | **Sporton Site No.** |
| | TH02-HY, CO05-HY |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

| | |
|---|---|
| **Test Site** | Sporton International Inc. Wensan Laboratory |
| **Test Site Location** | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist.,<br>Taoyuan City 333010, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| **Test Site No.** | **Sporton Site No.** |
| | 03CH15-HY (TAF Code: 3786) |
| **Remark** | The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory. |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

## 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find Z plane as worst plane.

b. AC power line Conducted Emission was tested under maximum output power.

## 2.1 Carrier Frequency and Channel

| Frequency Band | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|---|---|---|---|---|
| 2400-2483.5 MHz | 1 | 2412 | 8 | 2447 |
| | 2 | 2417 | 9 | 2452 |
| | 3 | 2422 | 10 | 2457 |
| | 4 | 2427 | 11 | 2462 |
| | 5 | 2432 | 12 | 2467 |
| | 6 | 2437 | 13 | 2472 |
| | 7 | 2442 | | |

## 2.2 Test Mode

**Final test modes are considering the modulation and worse data rates as below table.**

| Modulation | Data Rate |
|---|---|
| 802.11b | 1 Mbps |
| 802.11g | 6 Mbps |
| 802.11n HT20 | MCS0 |

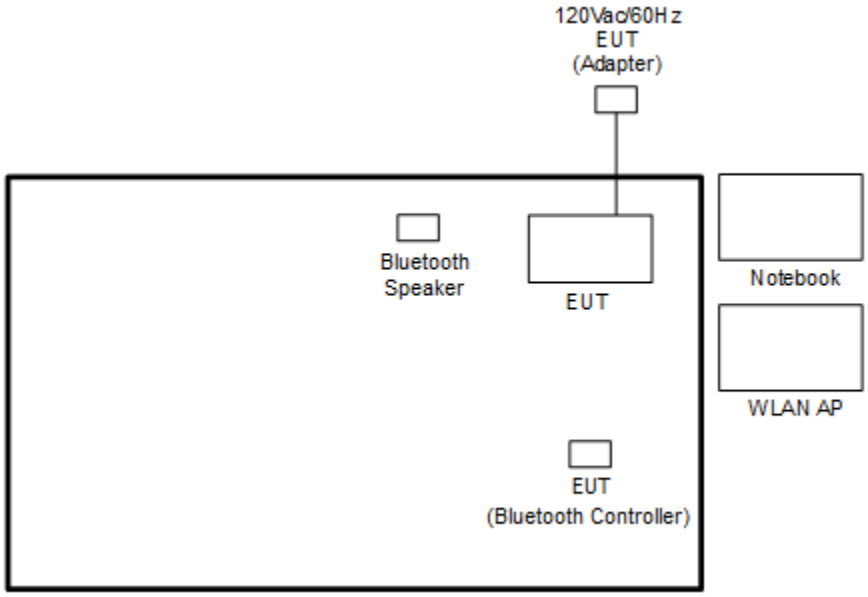
| Test Cases | |
|---|---|
| AC Conducted Emission | Mode 1 :WLAN (2.4GHz) Link + Bluetooth Idle with Controller + MPEG4 + Adapter + Bluetooth Link with Speaker |
| **Remark:** For Radiated Test Cases, the tests were performed with Adapter | |

| Ch. # | 2400-2483.5 MHz | | |
|---|---|---|---|
| | 802.11b | 802.11g | 802.11n HT20 |
| Low | 01 | 01 | 01 |
| Middle | 06 | 06 | 06 |
| High | 11 | 11 | 11 |
| | 12 | 12 | 12 |
| | 13 | 13 | 13 |

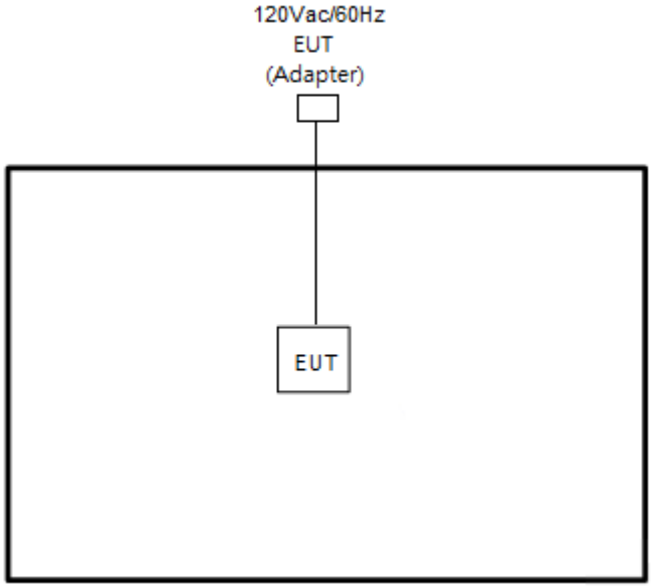
**Remark:** For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

## 2.3 Connection Diagram of Test System

**<AC Conducted Emission Mode>**




**<WLAN Tx Mode>**



## 2.4 Support Unit used in test configuration and system

| Item | Equipment | Brand Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | Bluetooth Speaker | JAWBONE | MINIJAMBOX | N/A | N/A | N/A |
| 2. | WLAN AP | ASUS | RT-AC66U | MSQ-RTAC66U | N/A | Unshielded, 1.8 m |
| 3. | Notebook | Dell | Latitude 3400 | FCC DoC | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 4. | Fixture 1 | N/A | N/A | N/A | N/A | N/A |
| 5. | Fixture 2 | N/A | N/A | N/A | N/A | N/A |
| 6. | Fixture 3 | N/A | N/A | N/A | N/A | N/A |
| 7. | Bluetooth controller | N/A | N/A | 2AVZA-2374 | N/A | N/A |

**Note:** The removable plastic fixtures are used for verification during test.

## 2.5 EUT Operation Test Setup

The RF test items, utility “Compliance tool 1.0.1.4” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
*Offset = RF cable loss + attenuator factor.*
Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

*Offset(dB) = RF cable loss(dB) + attenuator factor(dB).*
= 4.2 + 10 = 14.2 (dB)

# 3 Test Result

## 3.1 6dB and 99% Bandwidth Measurement

### 3.1.1 Limit of 6dB and 99% Bandwidth

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

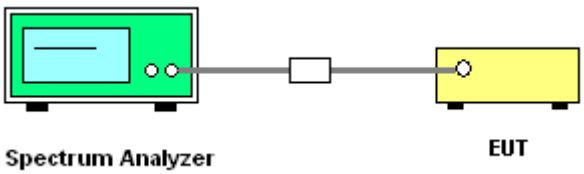
### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.1.3 Test Procedures

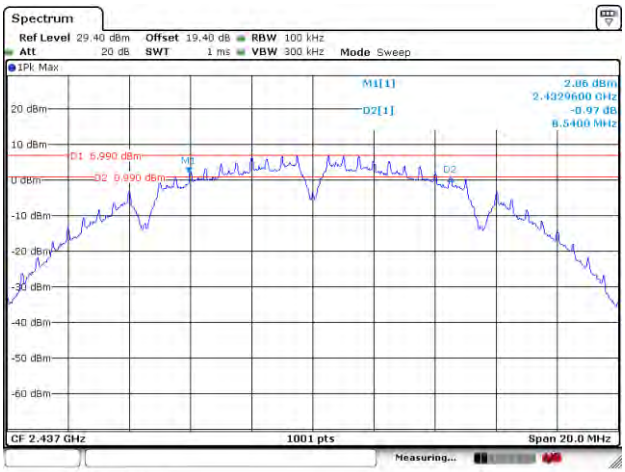
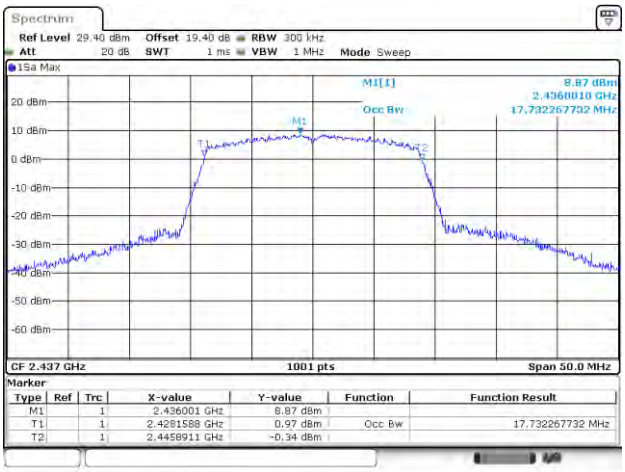
1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
6. Measure and record the results in the test report.

### 3.1.4 Test Setup



### 3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

| Minimum 6dB Bandwidth | Maximum 99% Occupied Bandwidth |
|---|---|
|  |  |





Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna with directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

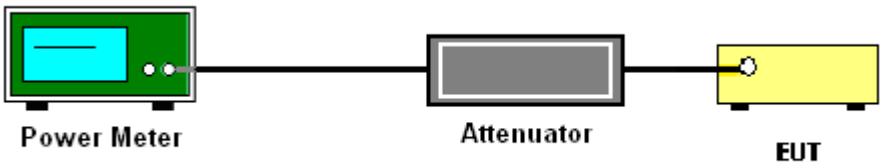
### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

### 3.2.4 Test Setup




### 3.2.5 Test Result of Average Output Power

Please refer to Appendix A.

## 3.3 Power Spectral Density Measurement

### 3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band at any time interval of continuous transmission.

### 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

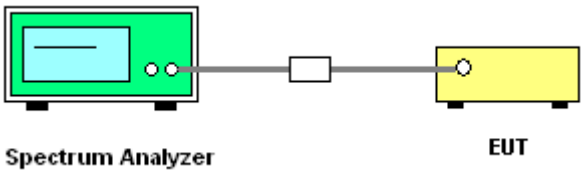
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   Method (1): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

   Method (2): Measure and add 10 log (N) dB, where N is the number of outputs. (N=2)

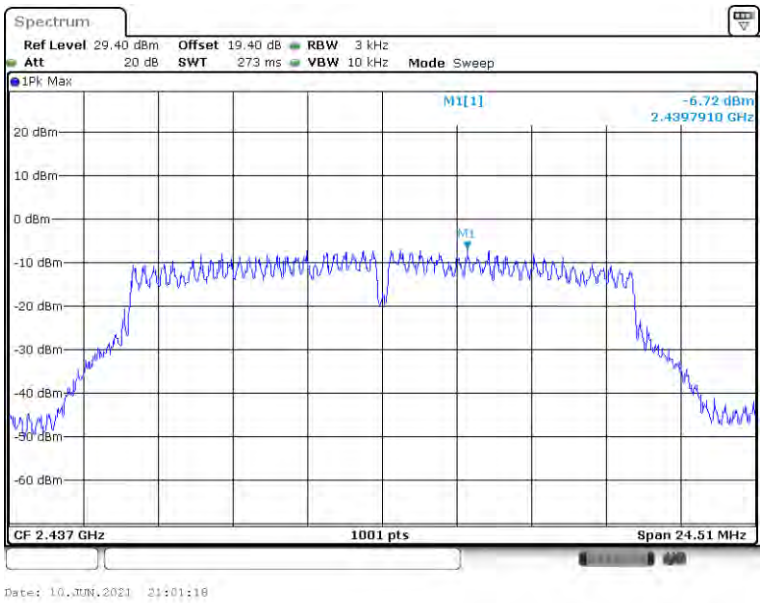
### 3.3.4 Test Setup



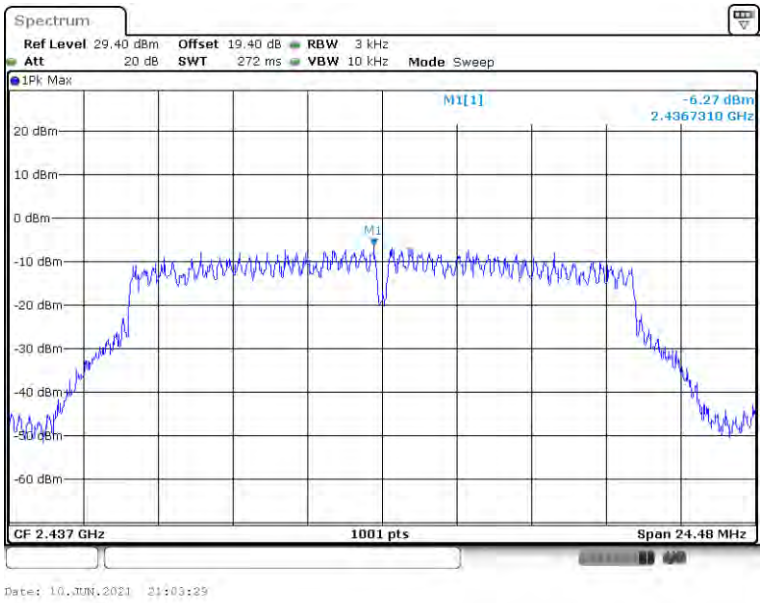
### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

**Worst Case Power Density (dBm/3kHz) for MIMO Ant. 1**




**Worst Case Power Density (dBm/3kHz) for MIMO Ant. 2**



## 3.4 Conducted Band Edges and Spurious Emission Measurement

### 3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

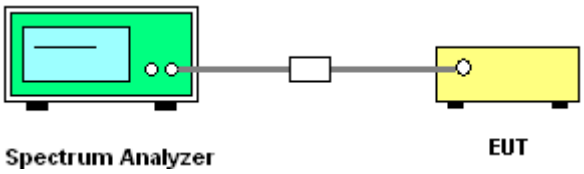
### 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.4.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 3.4.4 Test Setup

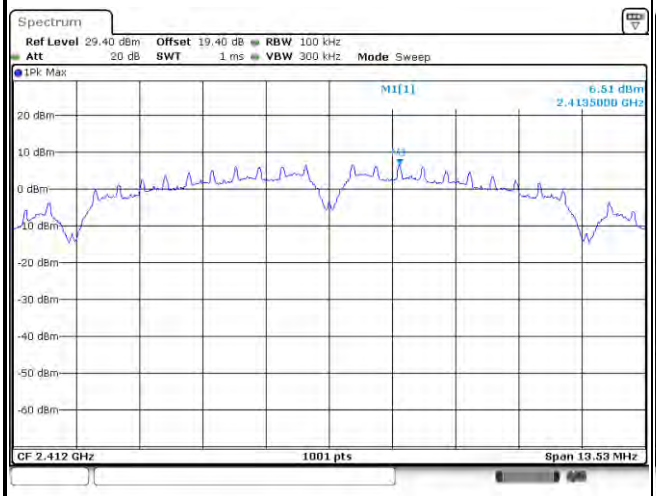
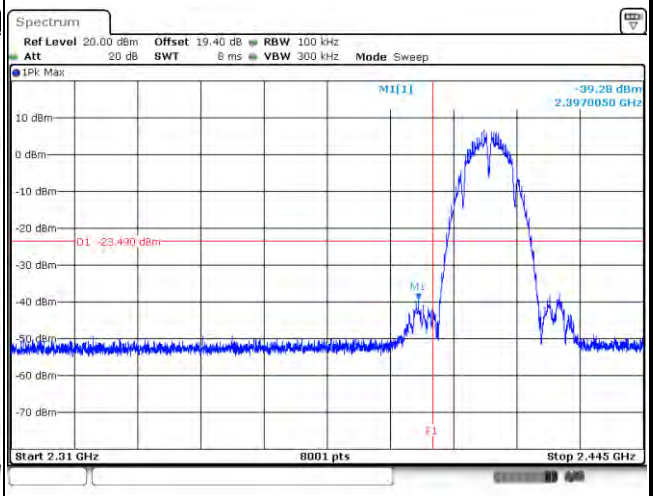
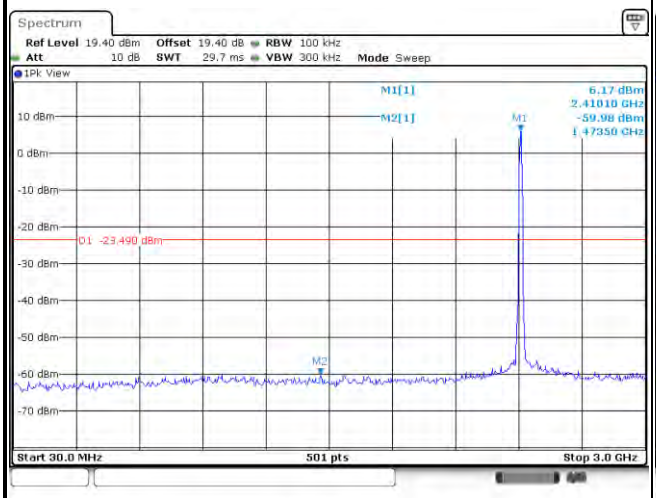
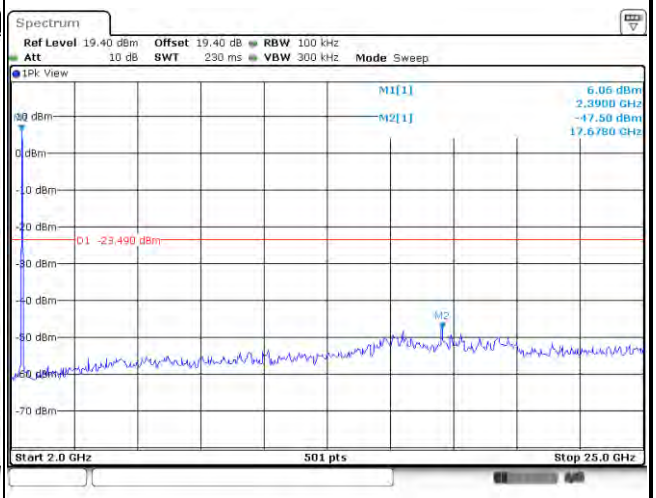


### 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

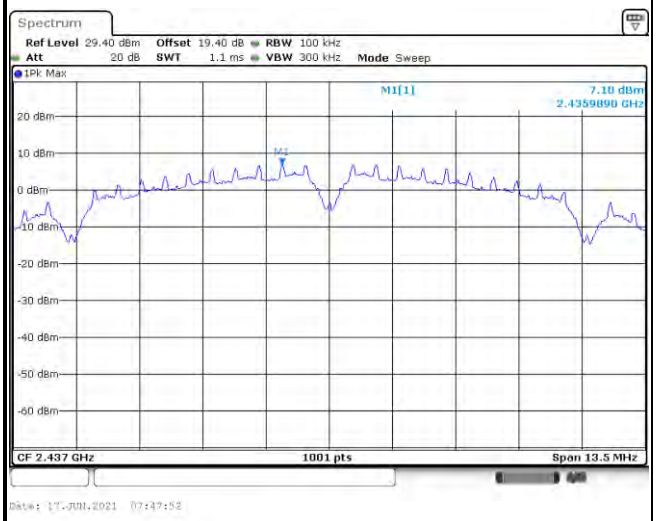
| | | | |
|---|---|---|---|
| **Test Engineer :** | Peter Liao and Hank Hsu | **Temperature :** | 21~25℃ |
| | | **Relative Humidity :** | 51~54% |

**Number of TX = 2, Ant. 1 (Measured)**

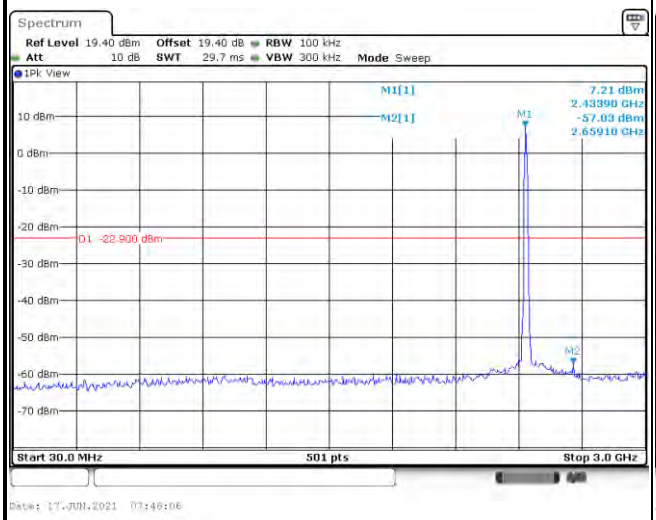
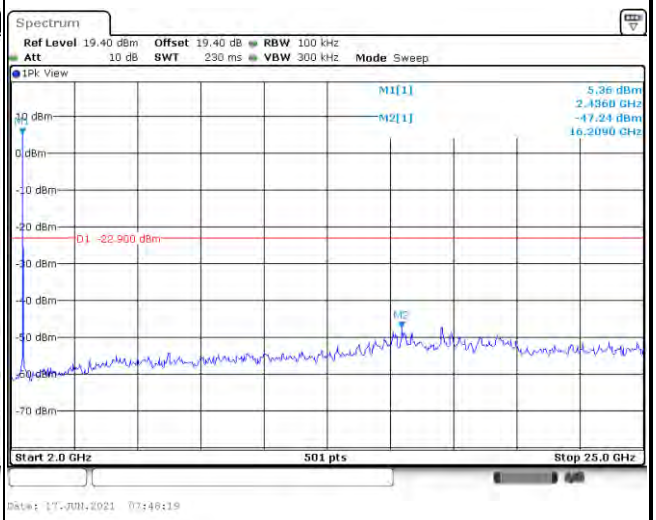
| | | | |
|---|---|---|---|
| **Test Mode :** | 802.11b | **Test Channel :** | 01 |

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

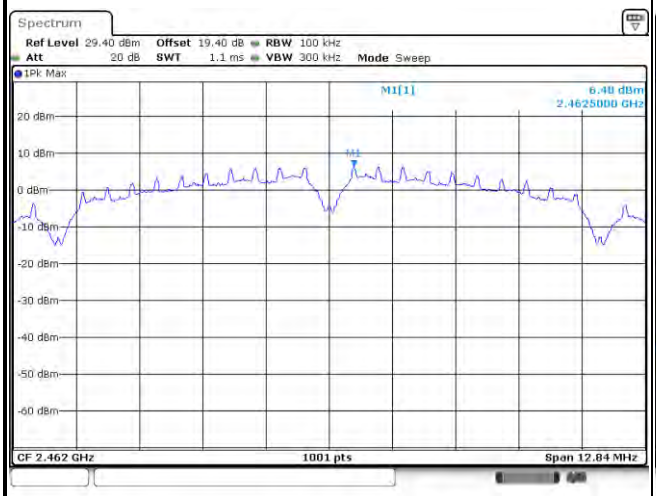
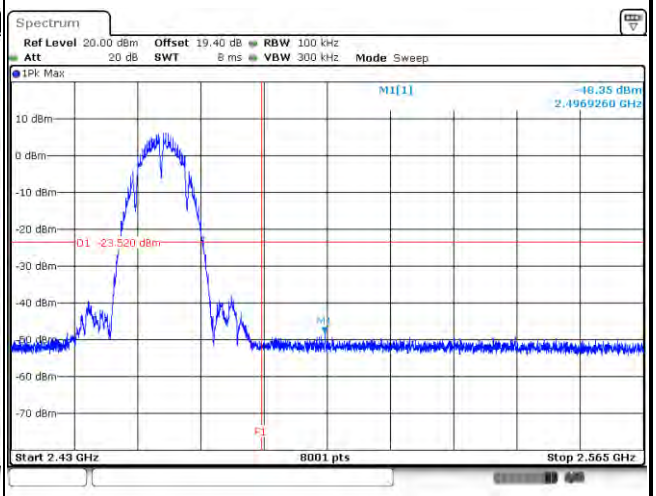
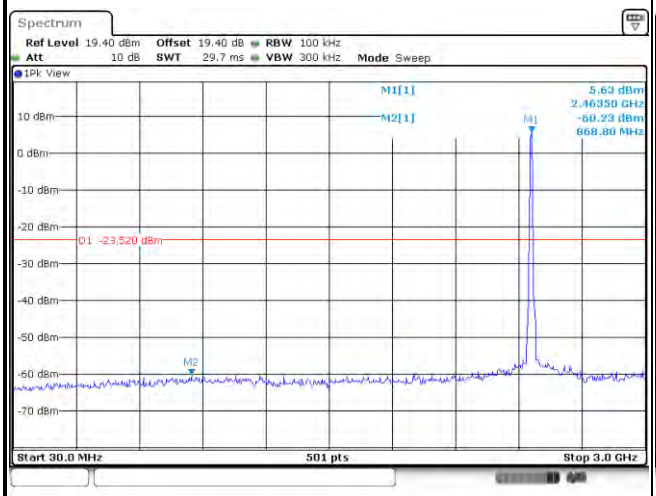
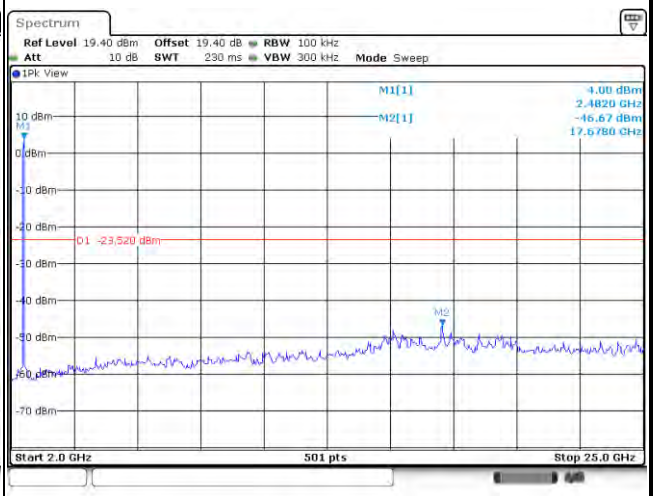
| Test Mode : | 802.11b | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

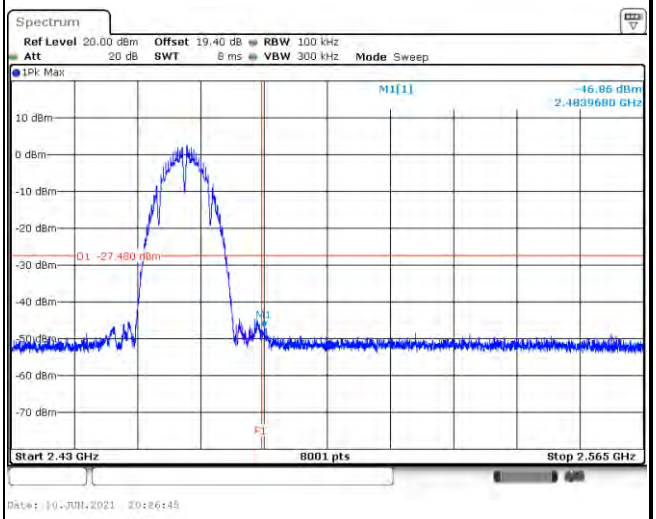
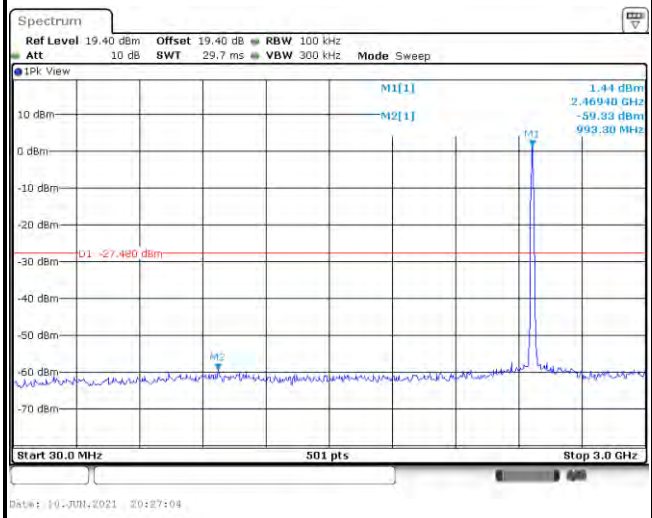
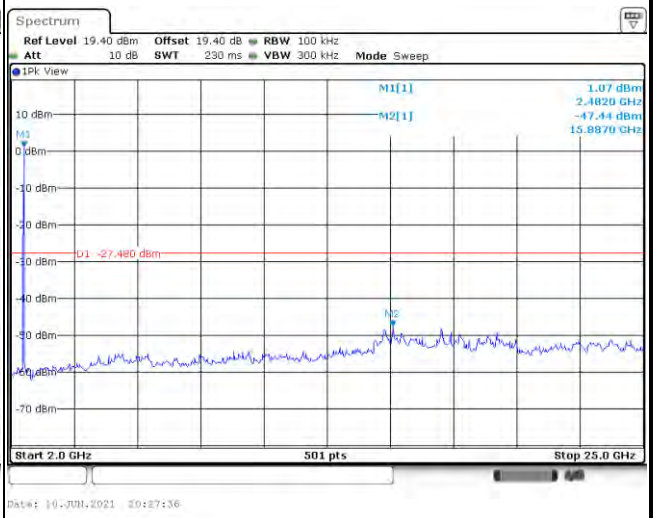


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

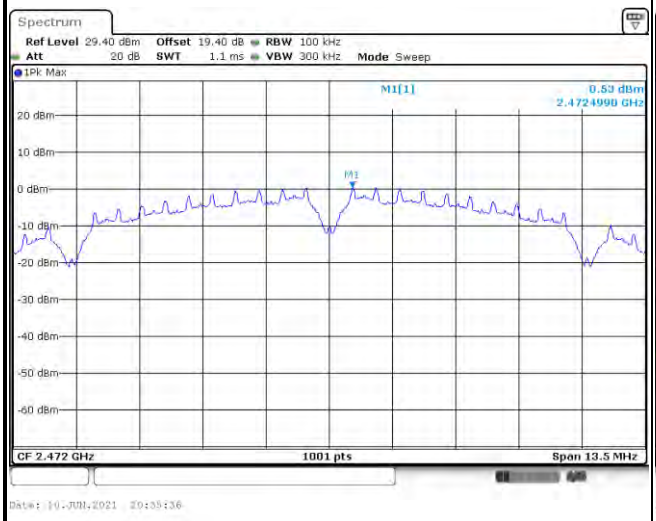
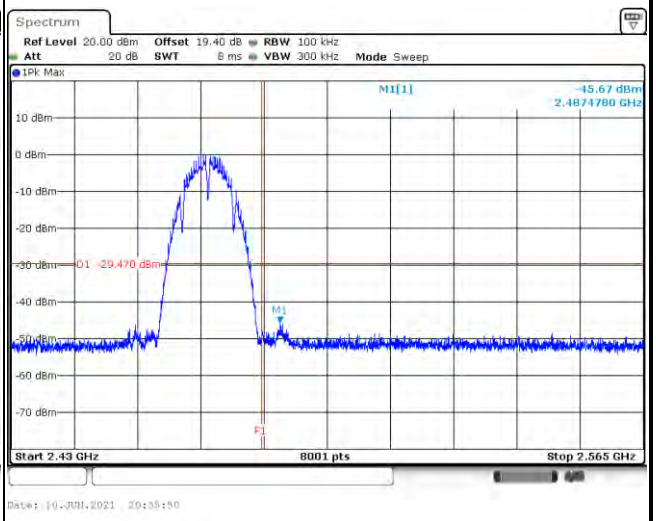
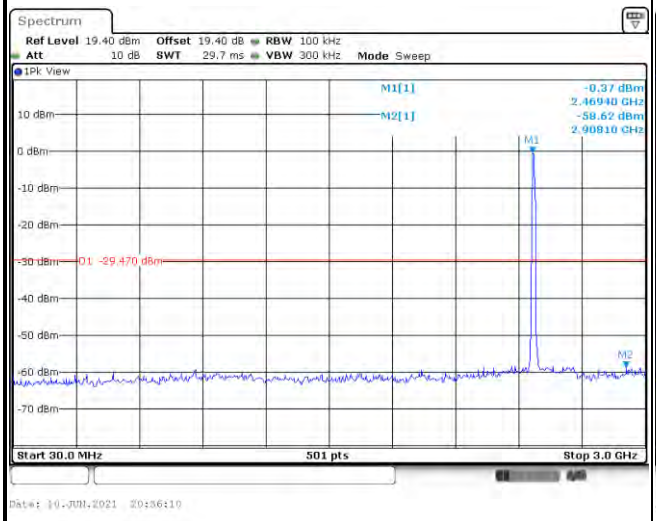
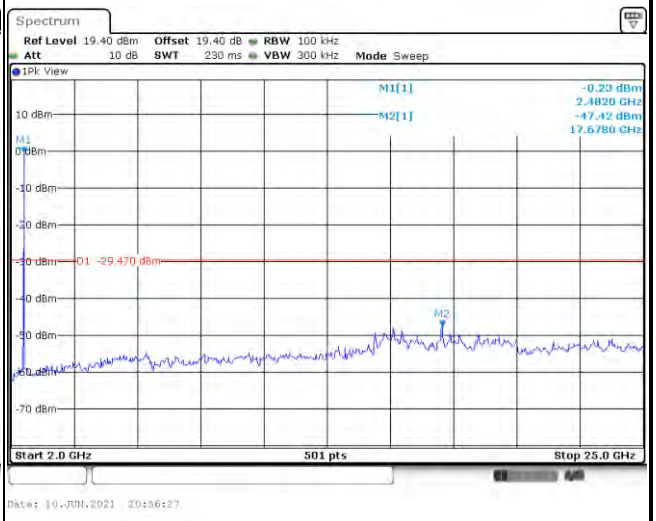
| Test Mode : | 802.11b | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

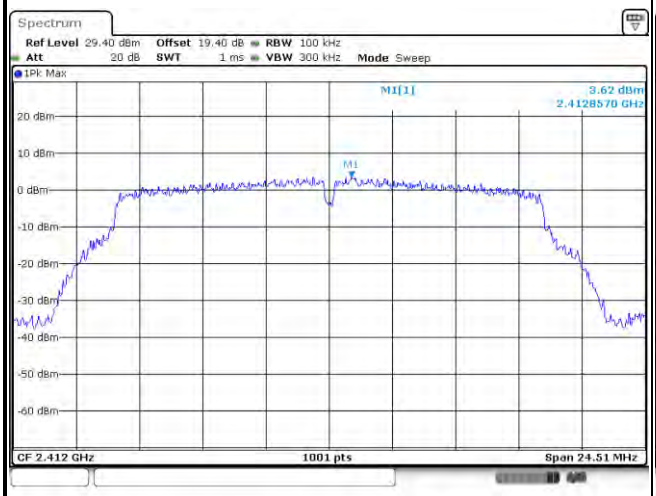
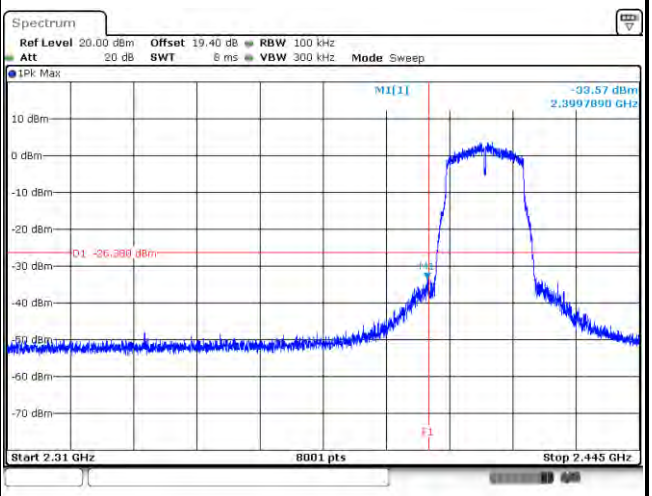
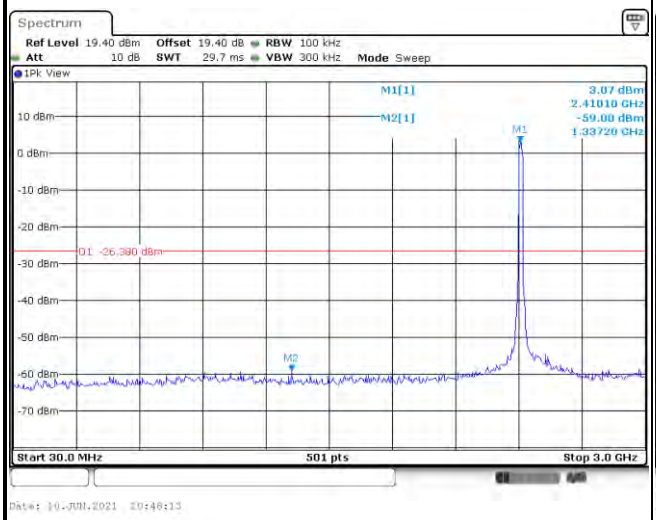
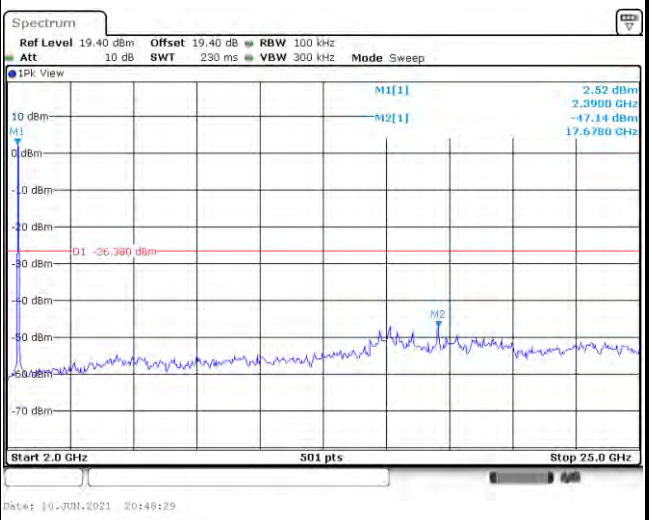
| Test Mode : | 802.11b | Test Channel : | 12 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
| |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

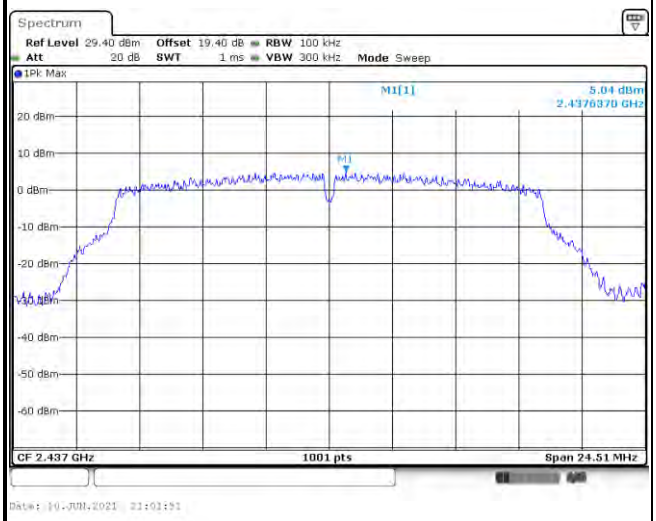
| Test Mode : | 802.11b | Test Channel : | 13 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

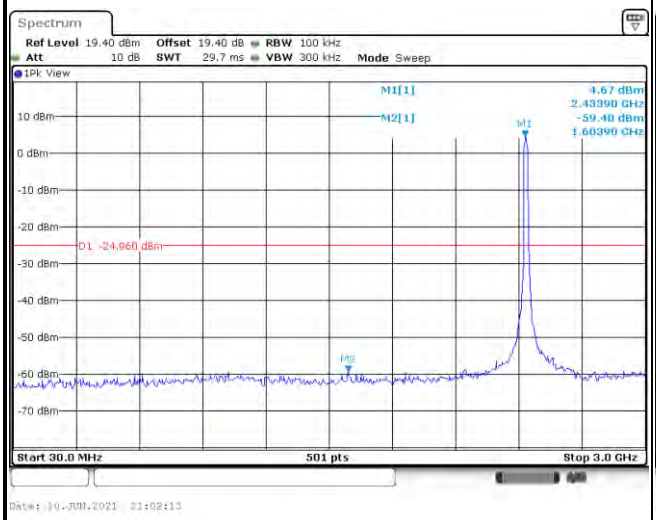
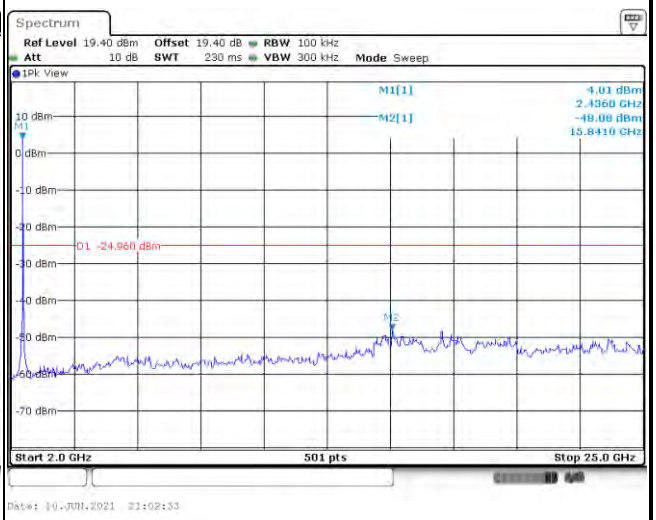
| Test Mode : | 802.11g | Test Channel : | 01 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

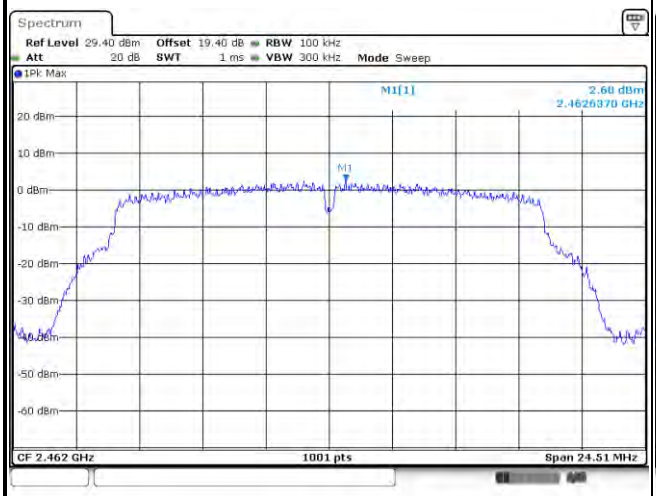
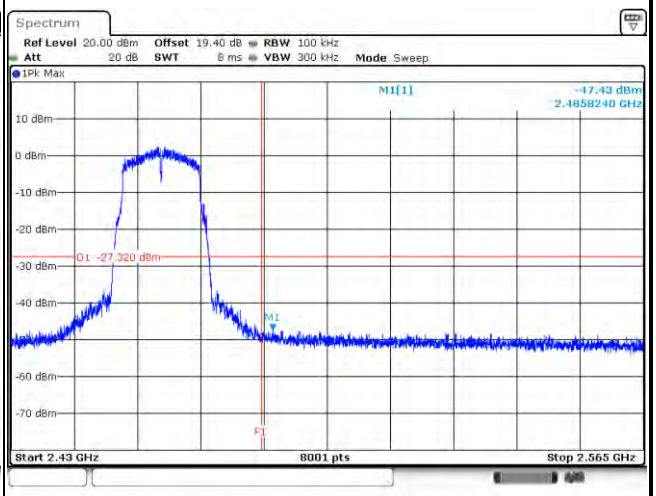
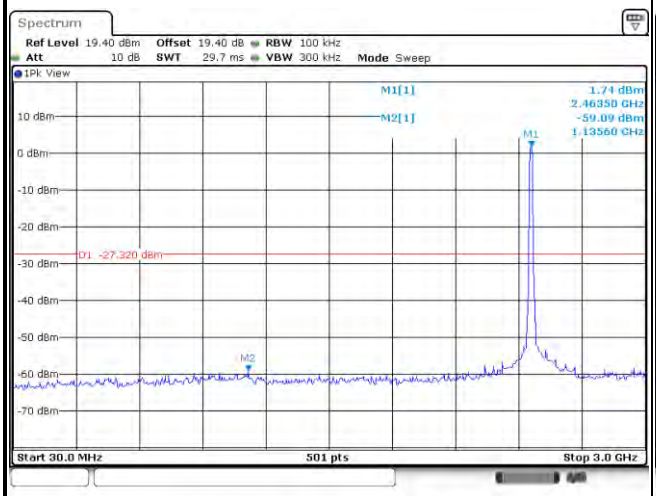
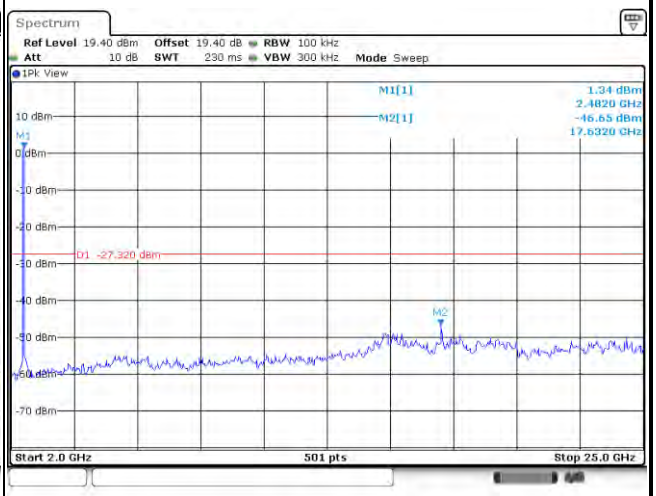
| Test Mode : | 802.11g | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

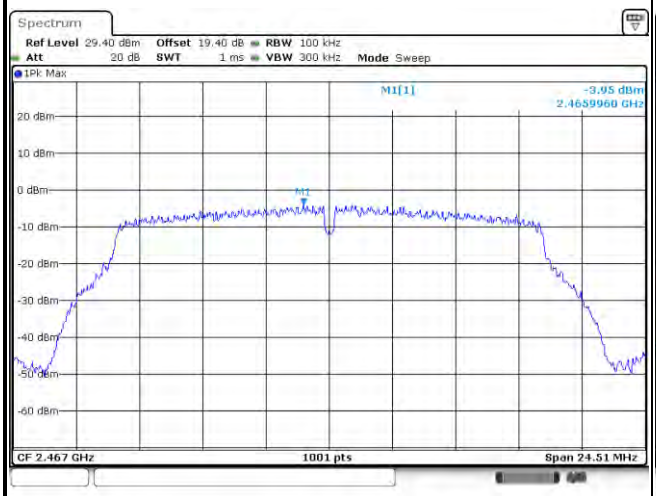
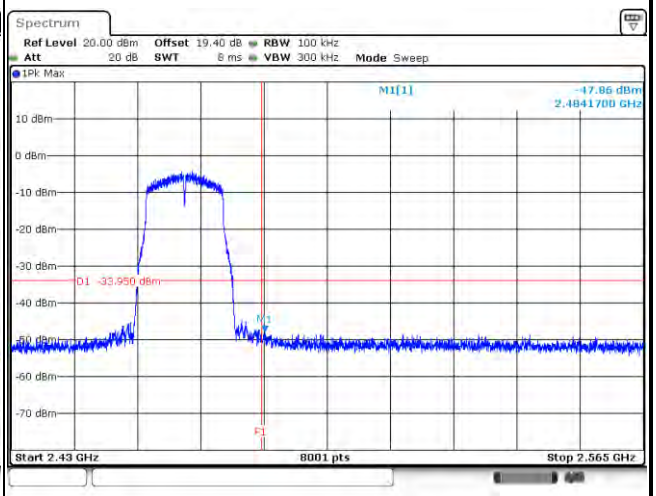
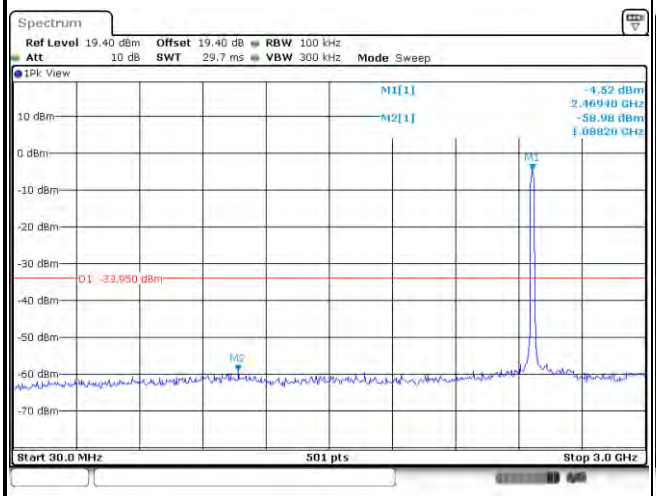
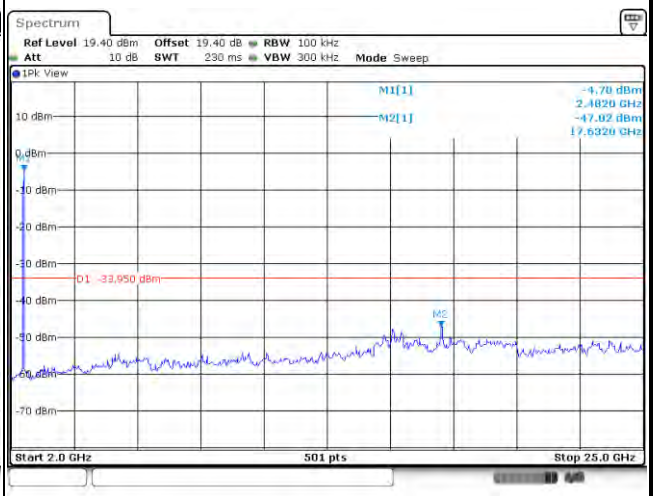


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

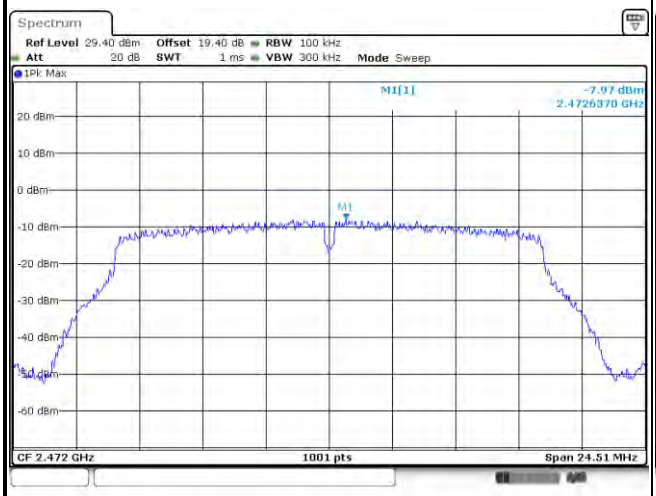
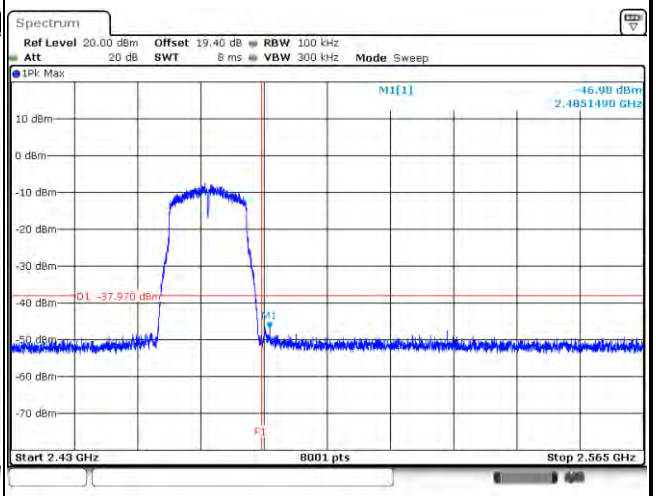
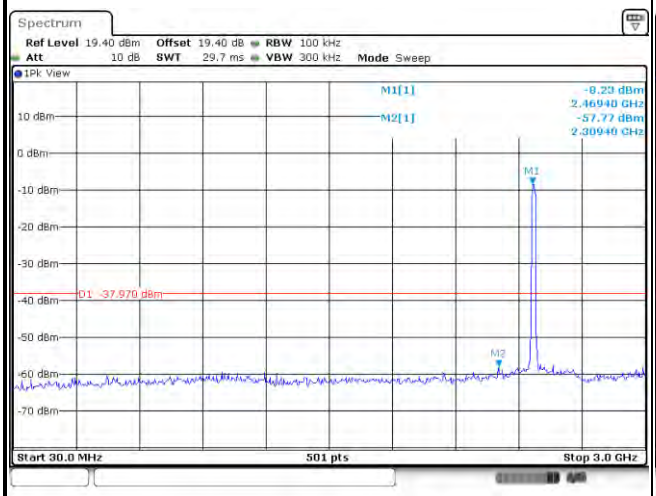
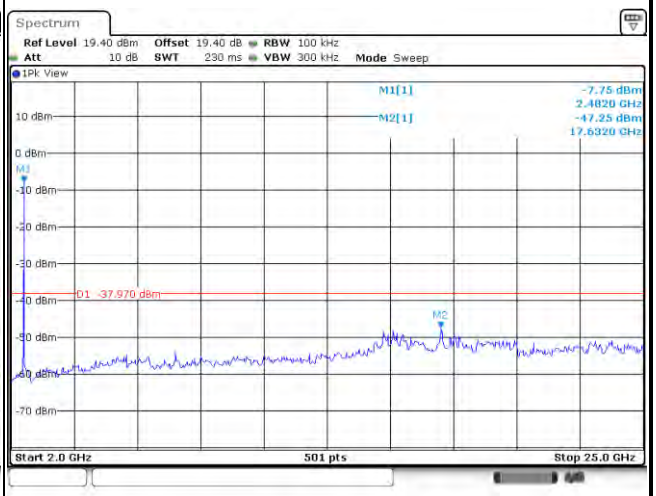
| Test Mode : | 802.11g | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

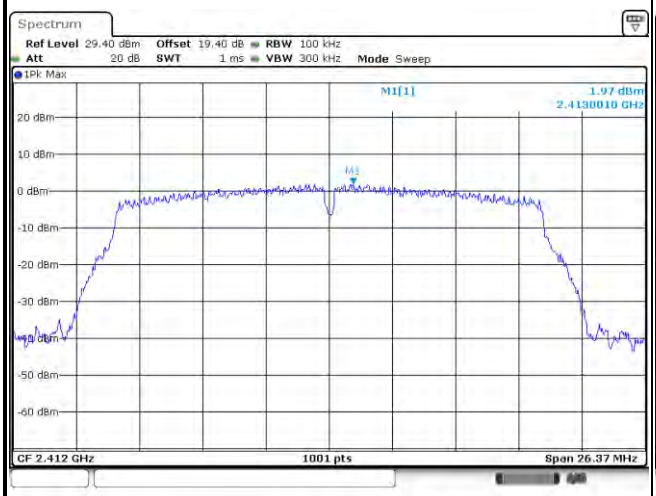
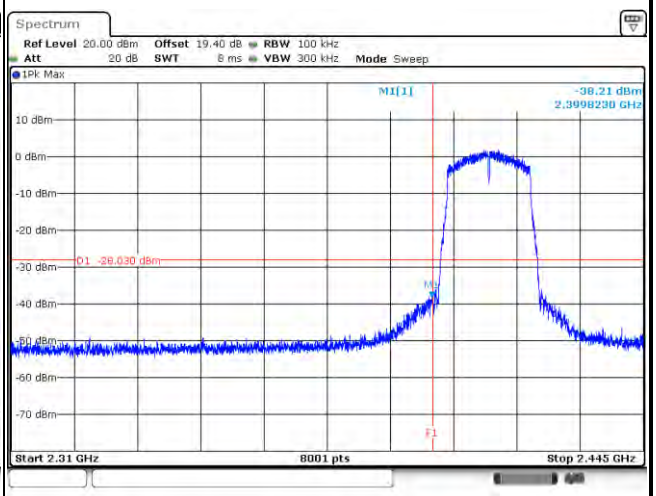
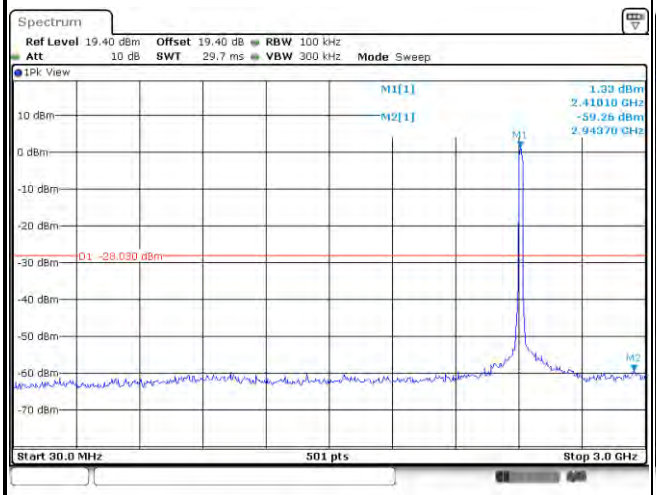
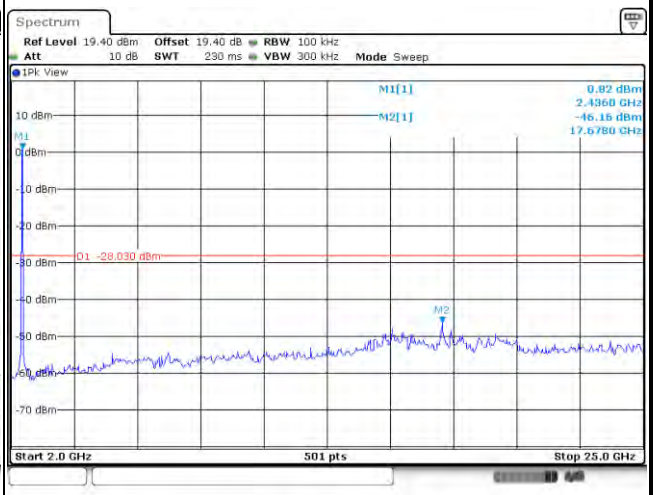
| Test Mode : | 802.11g | Test Channel : | 12 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

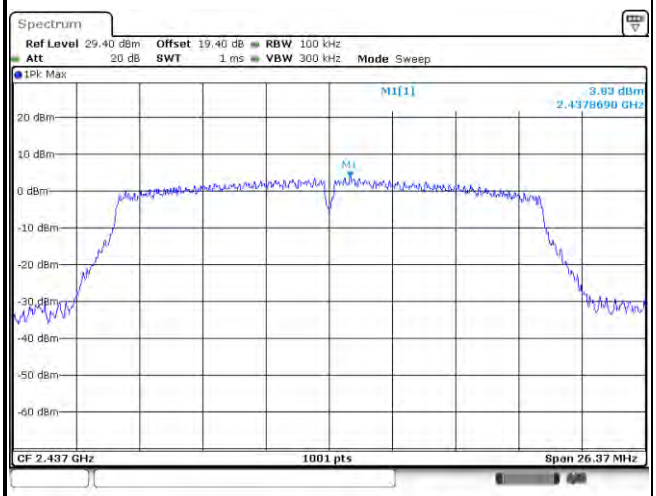
| Test Mode : | 802.11g | Test Channel : | 13 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

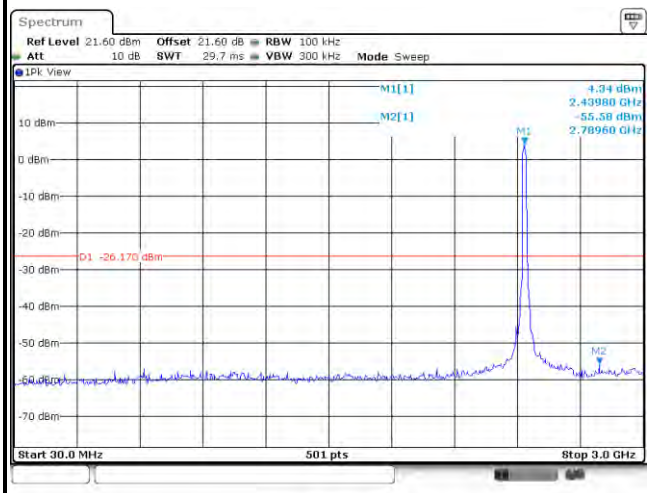
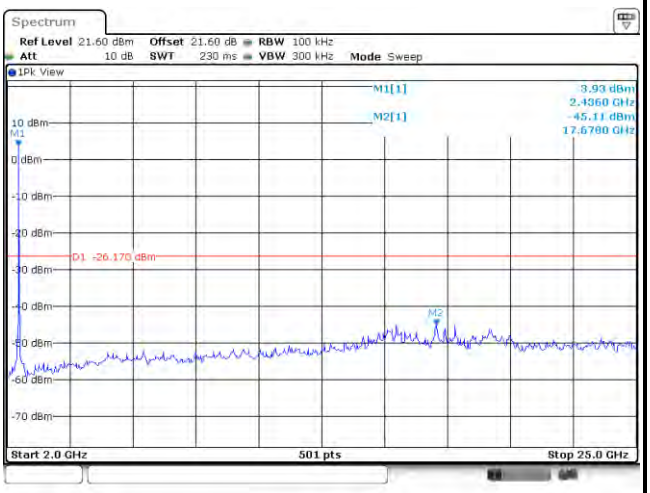
| Test Mode : | 802.11n HT20 | Test Channel : | 01 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

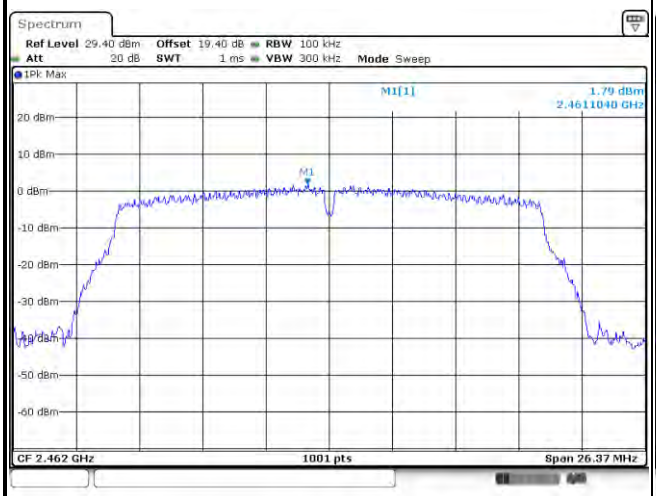
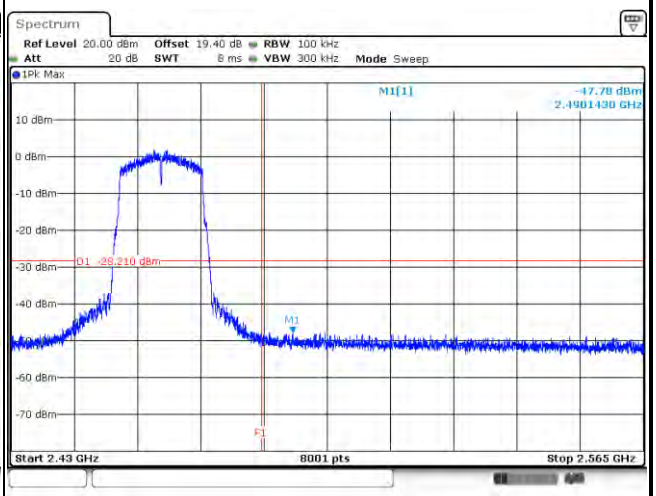
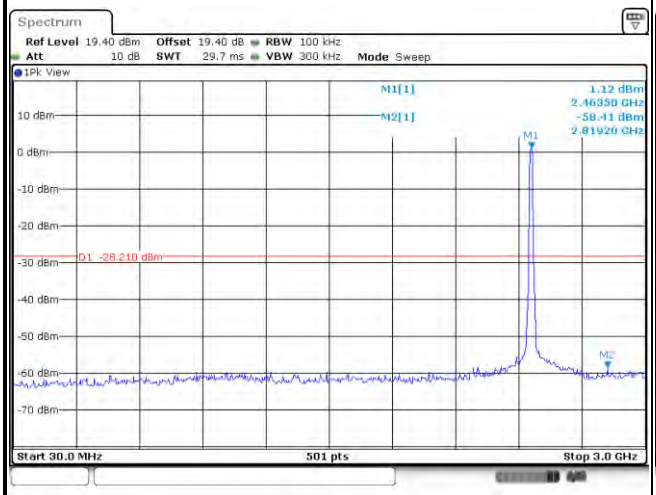
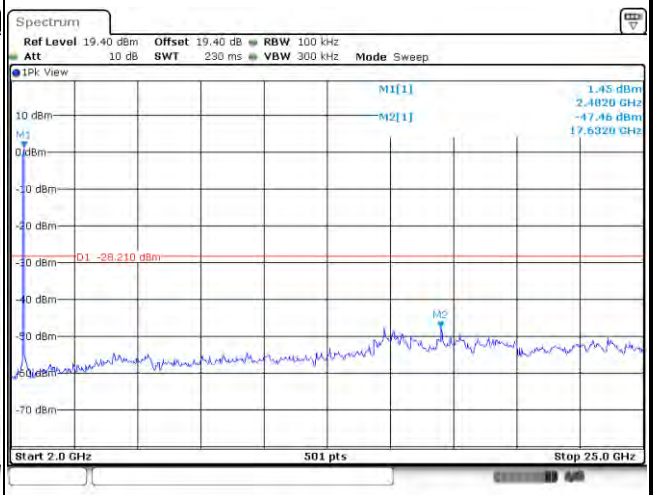
| Test Mode : | 802.11n HT20 | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

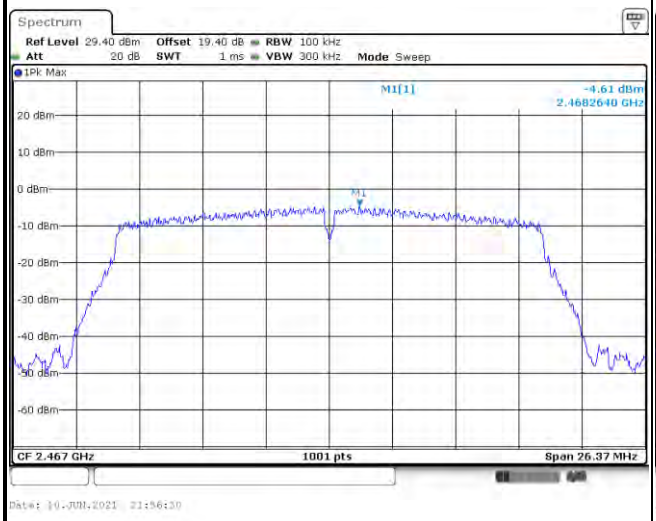
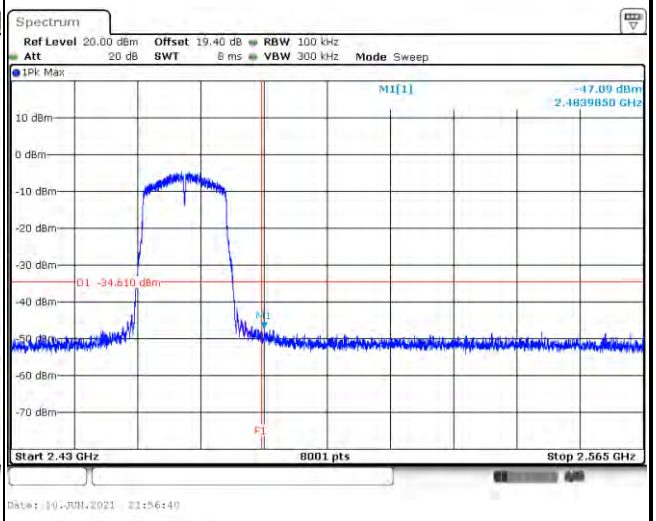
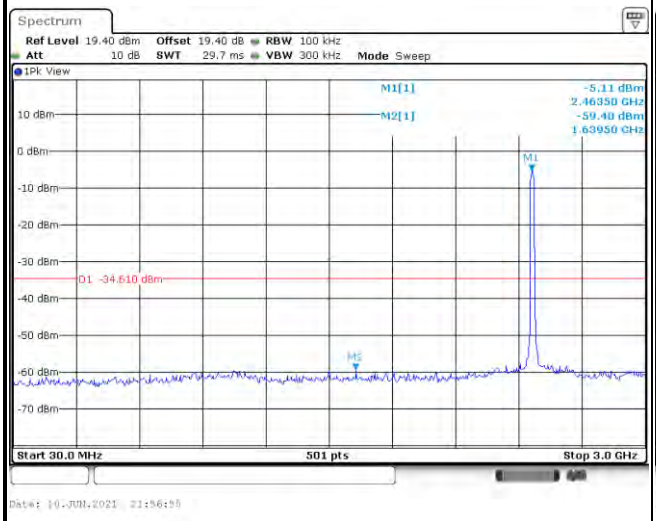
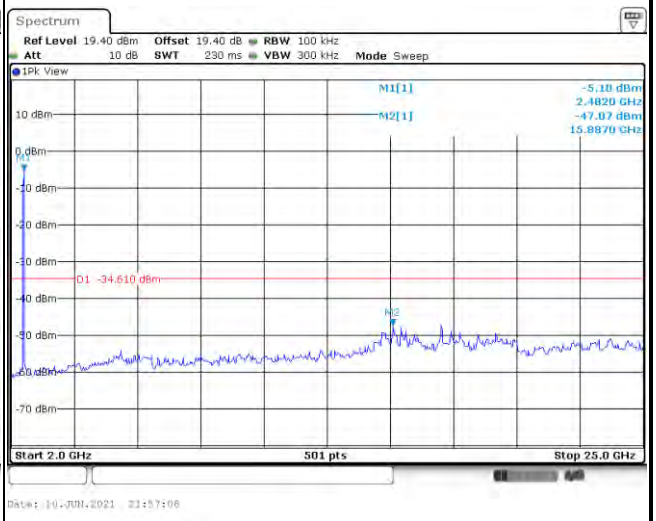


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

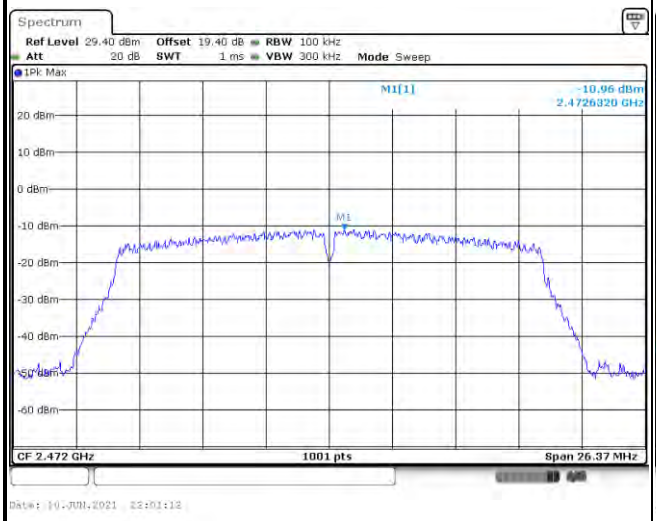
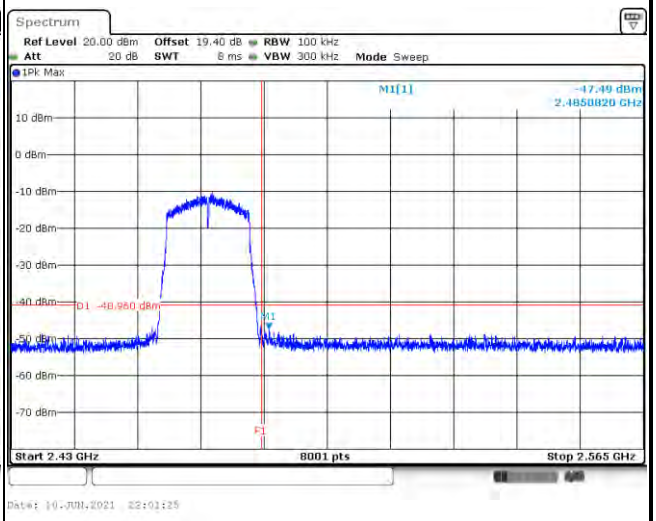
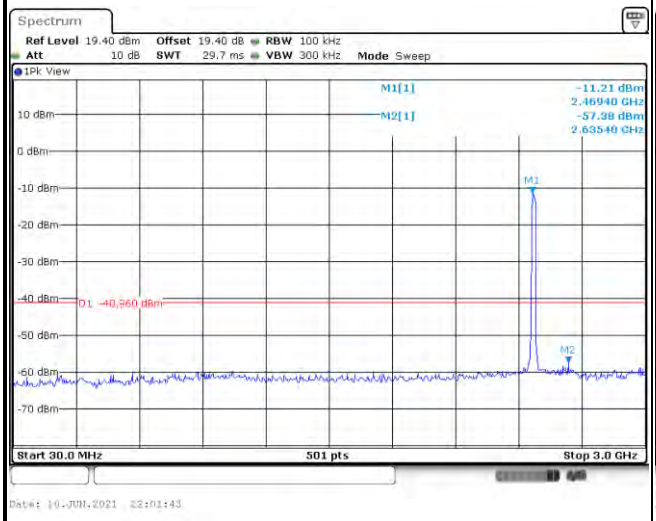
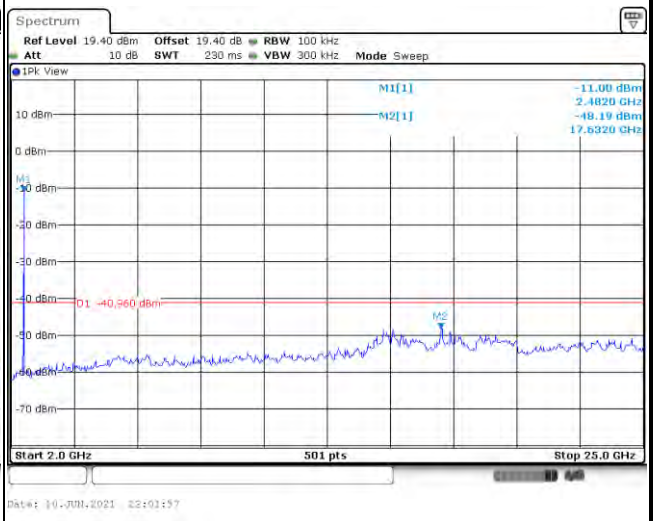
| Test Mode : | 802.11n HT20 | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

| Test Mode : | 802.11n HT20 | Test Channel : | 12 |
|---|---|---|---|

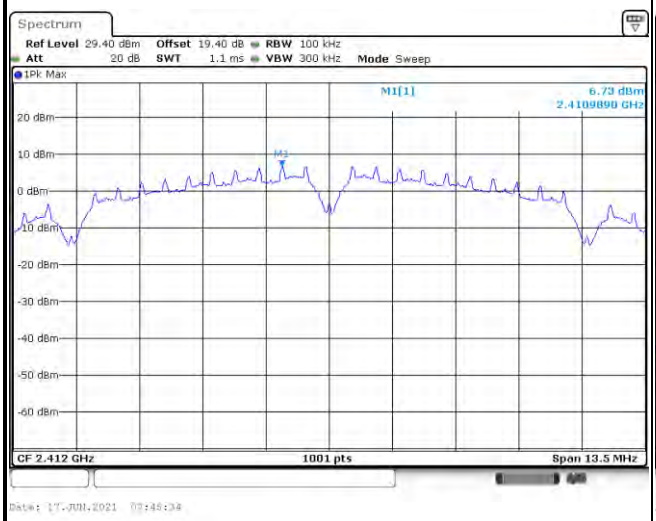
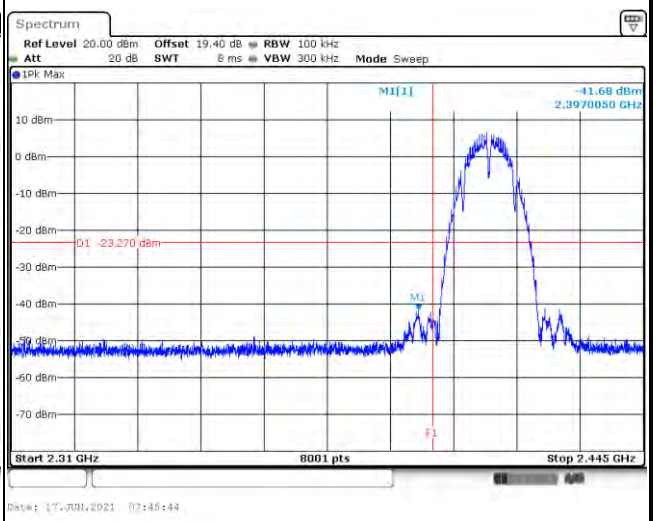
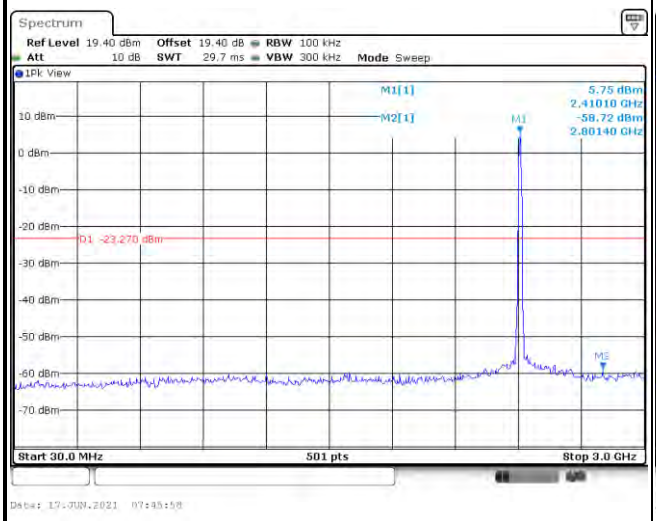
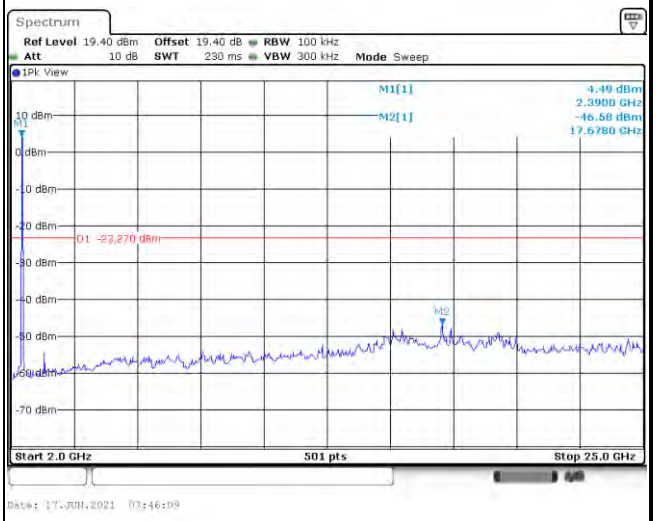
| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

| Test Mode : | 802.11n HT20 | Test Channel : | 13 |
|---|---|---|---|

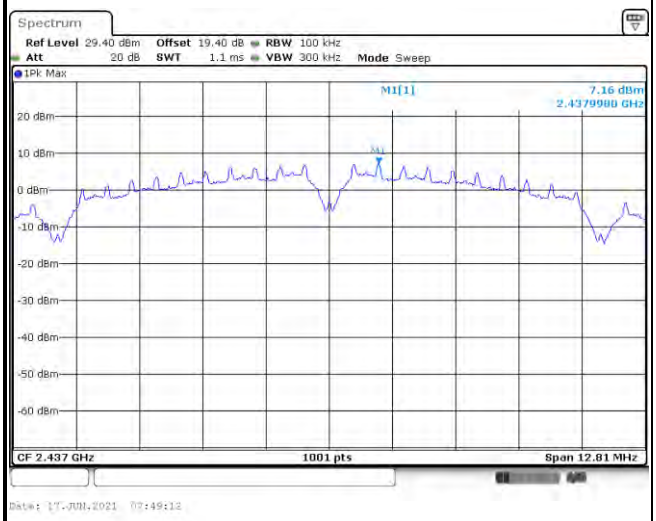
| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

**Number of TX = 2, Ant. 2 (Measured)**

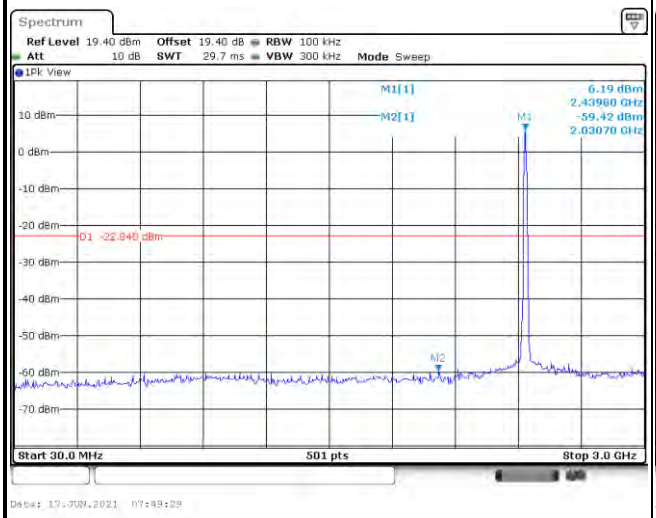
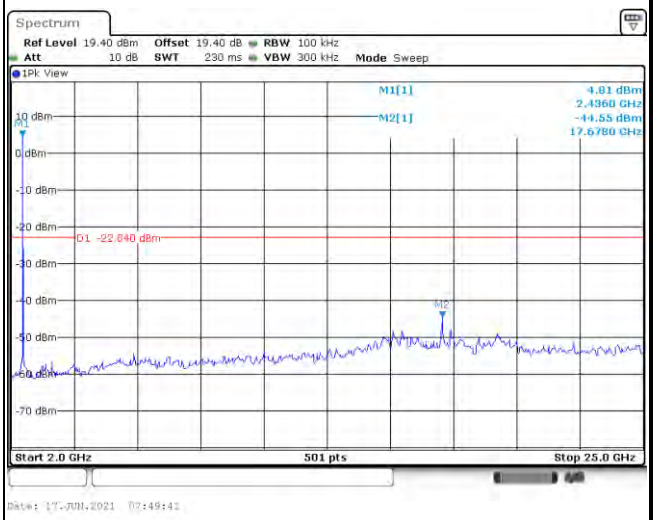
| Test Mode : | 802.11b | Test Channel : | 01 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

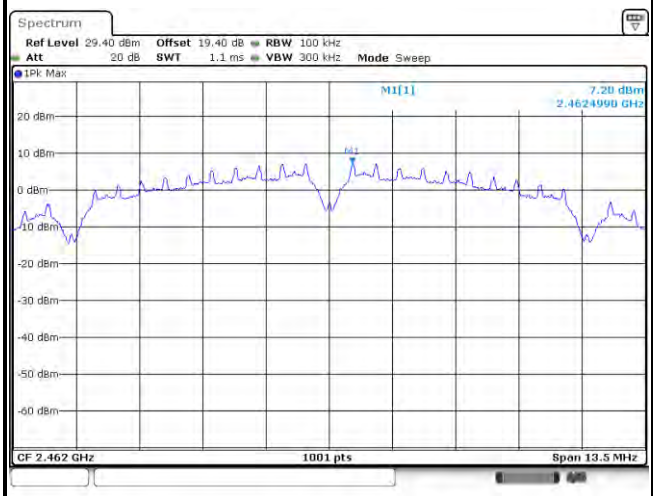
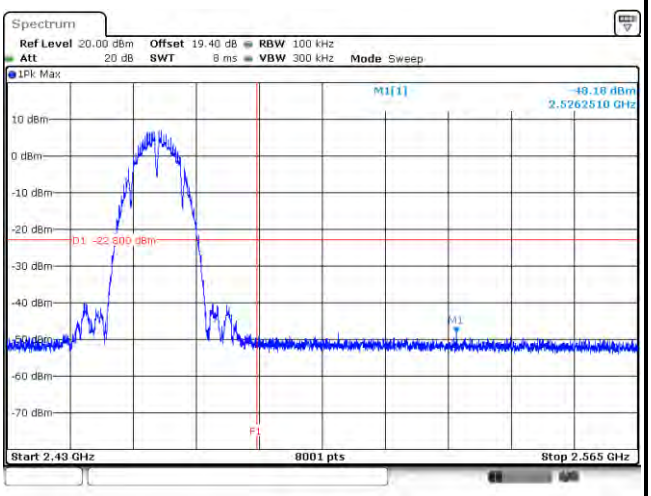
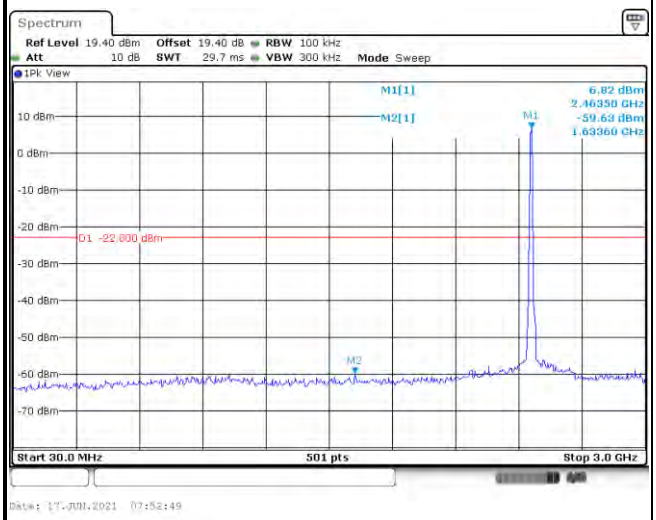
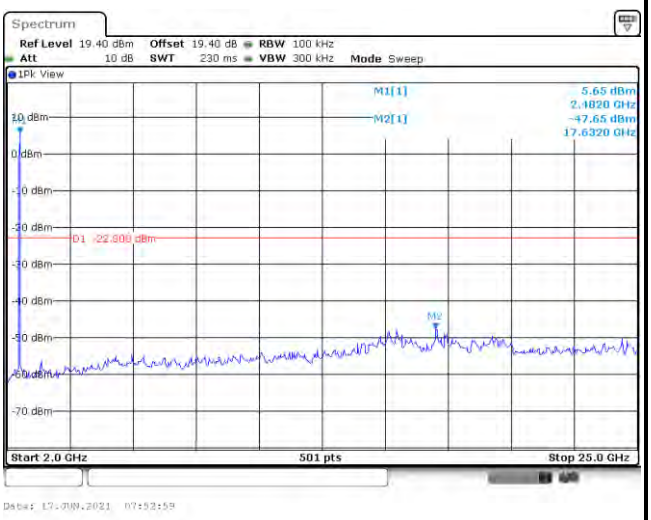
| Test Mode : | 802.11b | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

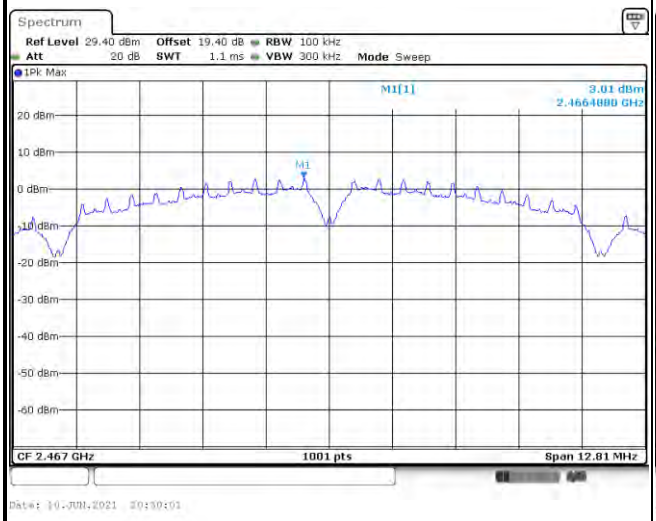
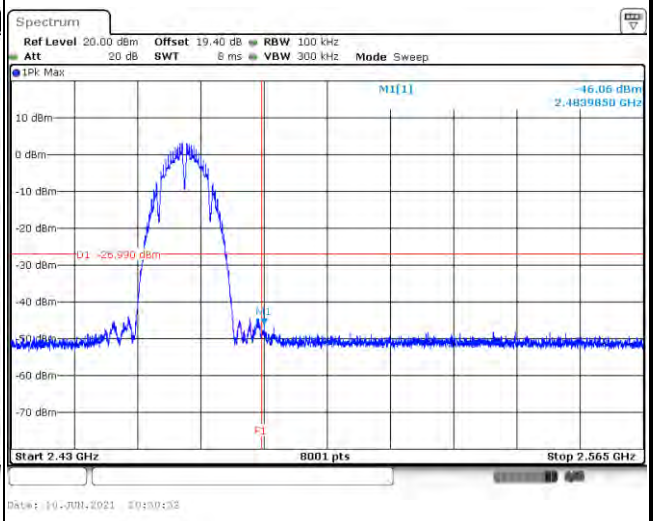
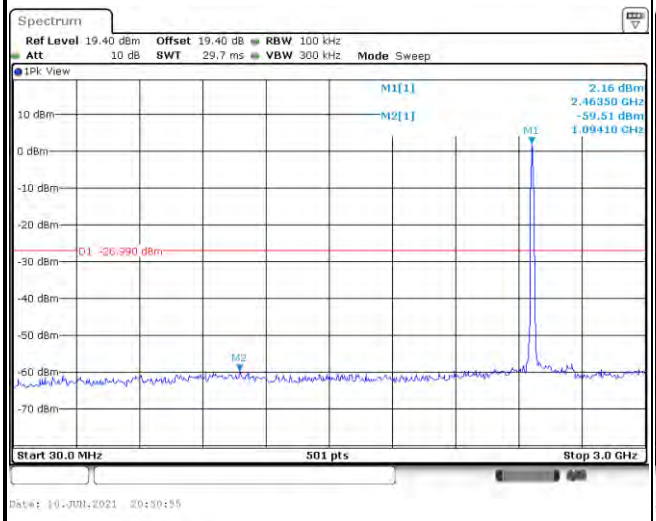
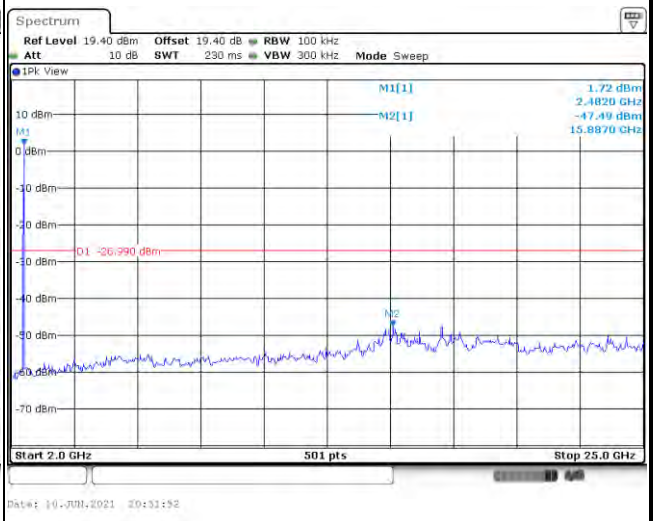


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

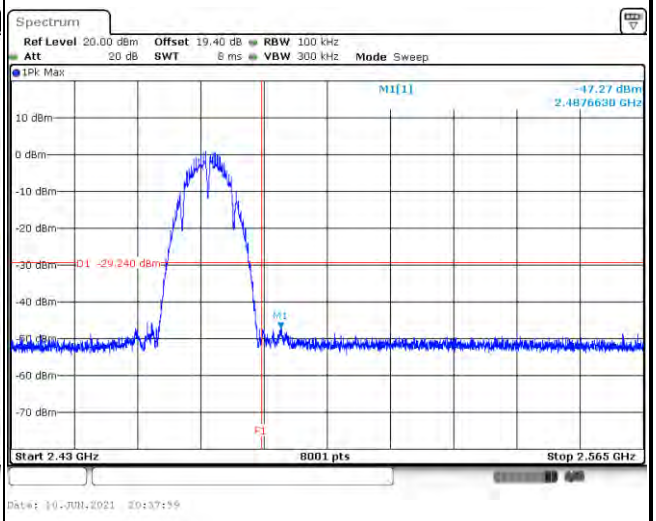
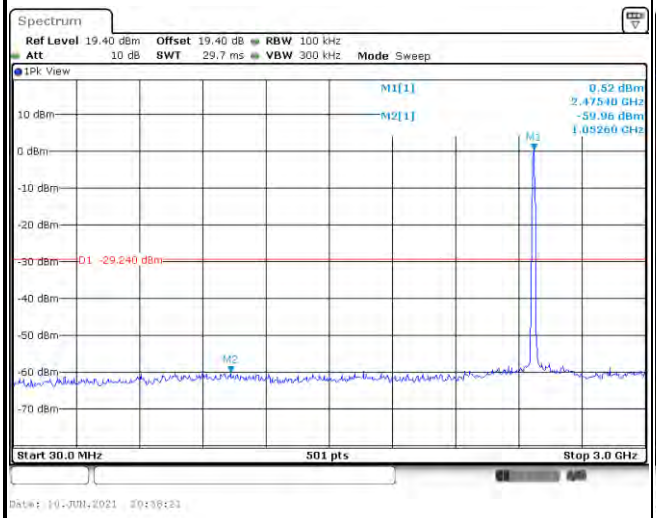
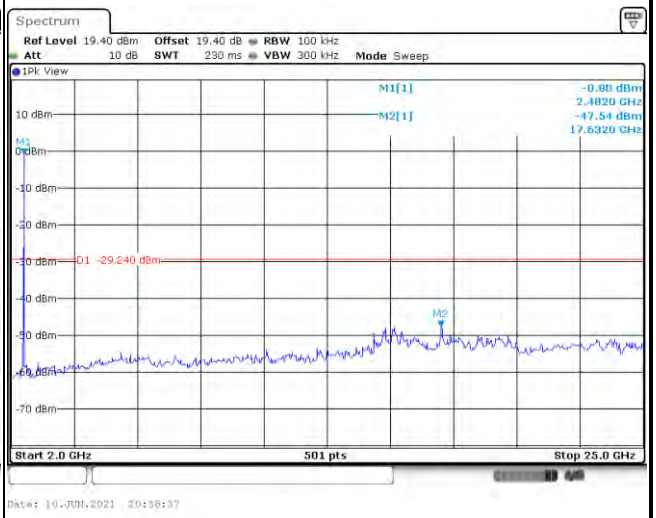
| Test Mode : | 802.11b | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

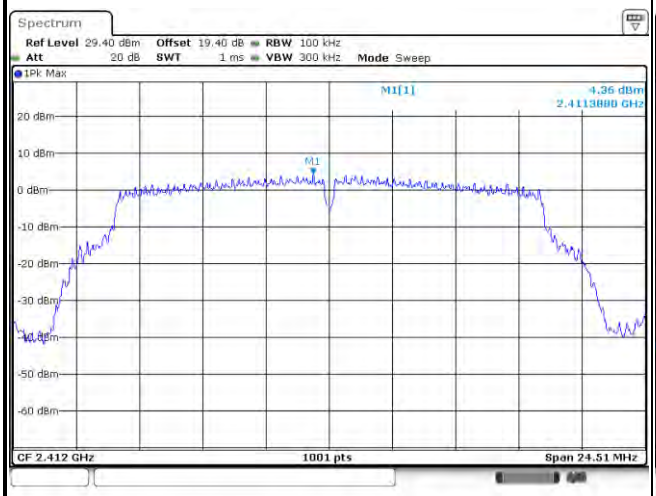
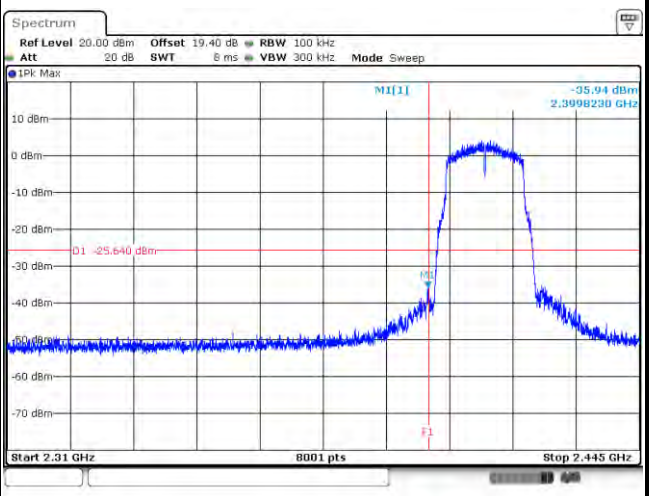
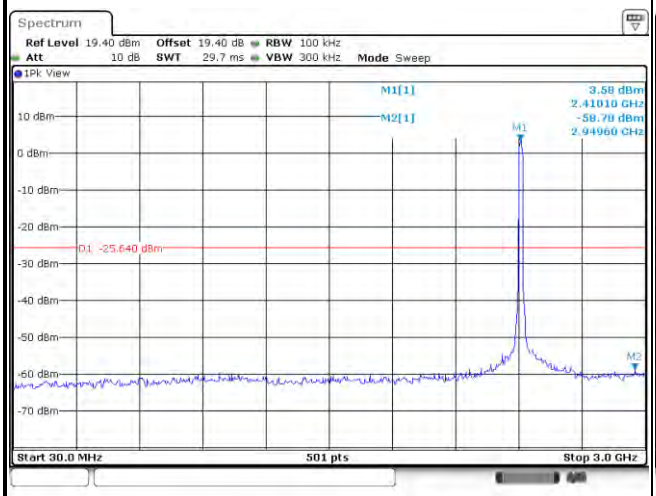
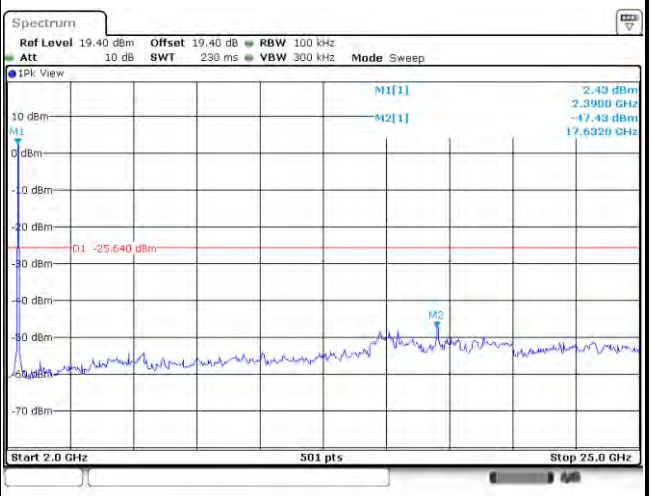
| Test Mode : | 802.11b | Test Channel : | 12 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

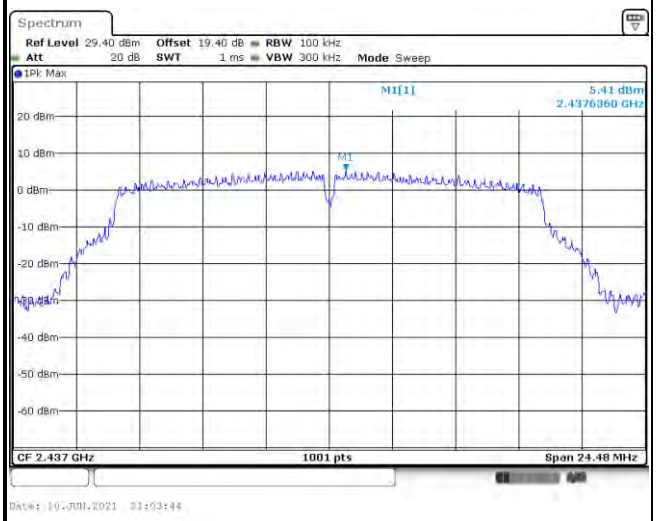
| Test Mode : | 802.11b | Test Channel : | 13 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
| |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

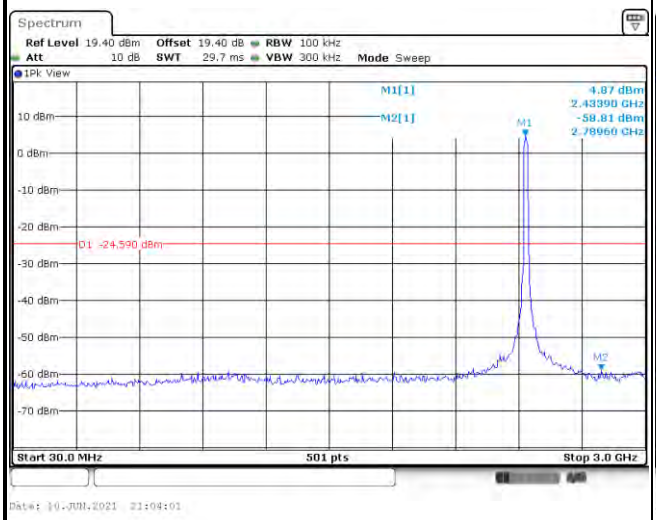
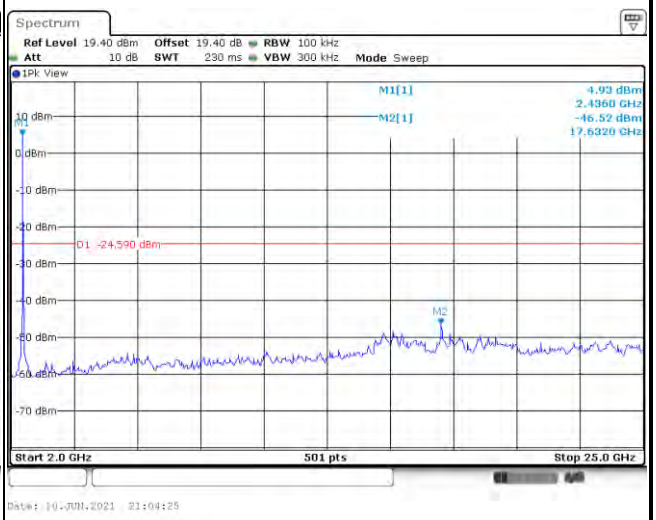
| Test Mode : | 802.11g | Test Channel : | 01 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

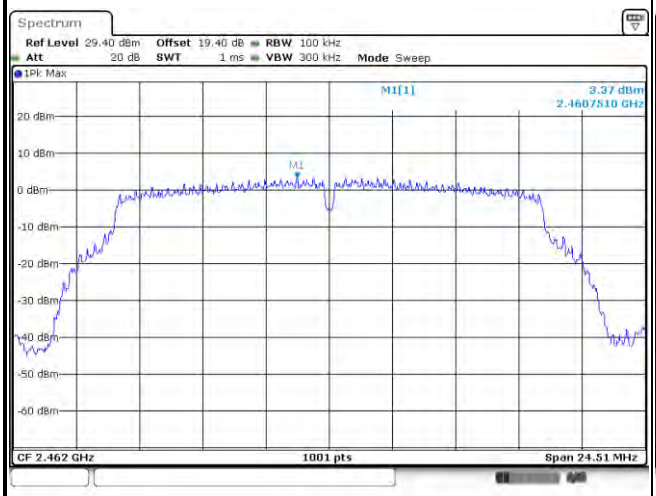
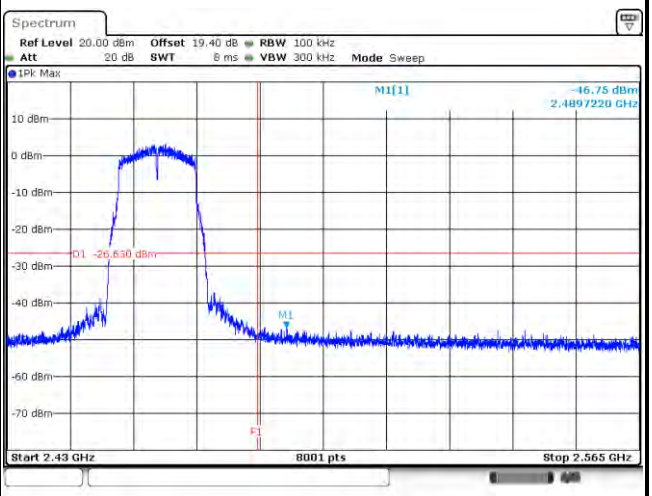
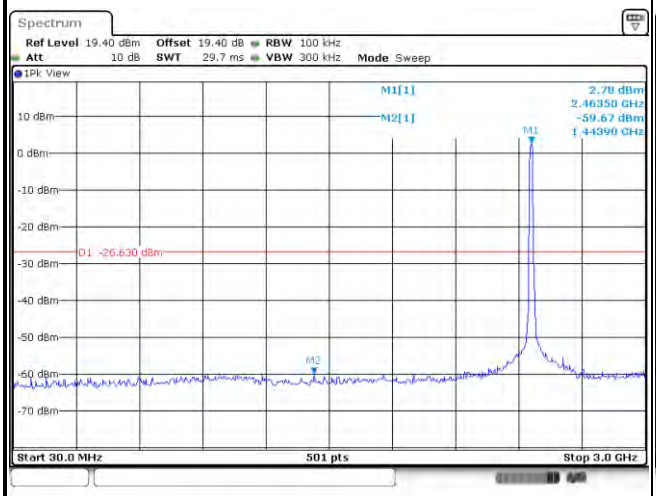
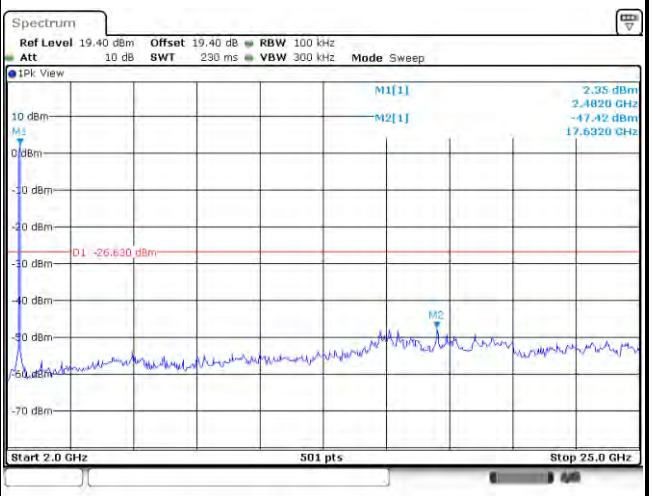
| Test Mode : | 802.11g | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

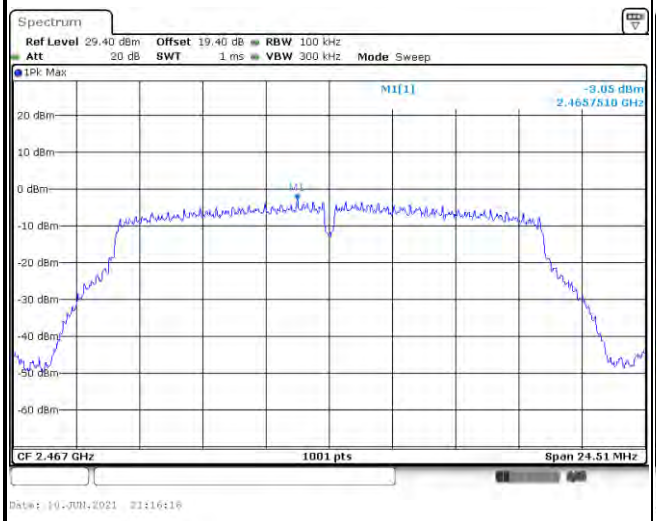
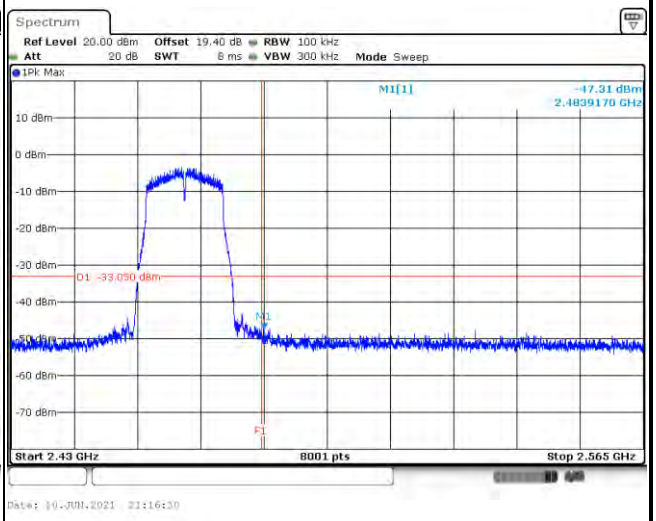
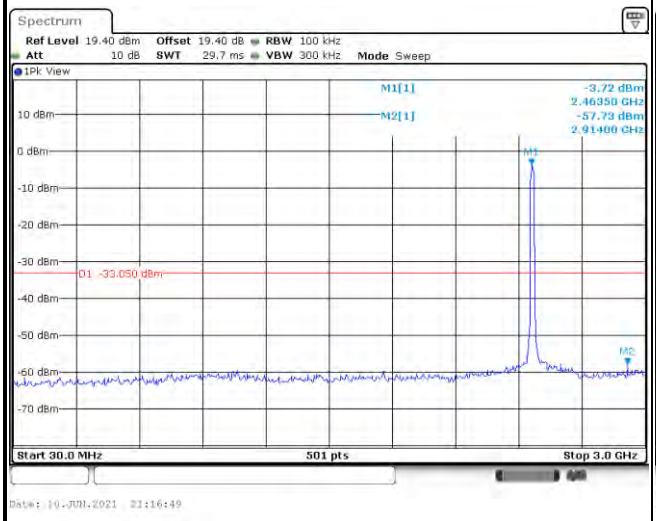
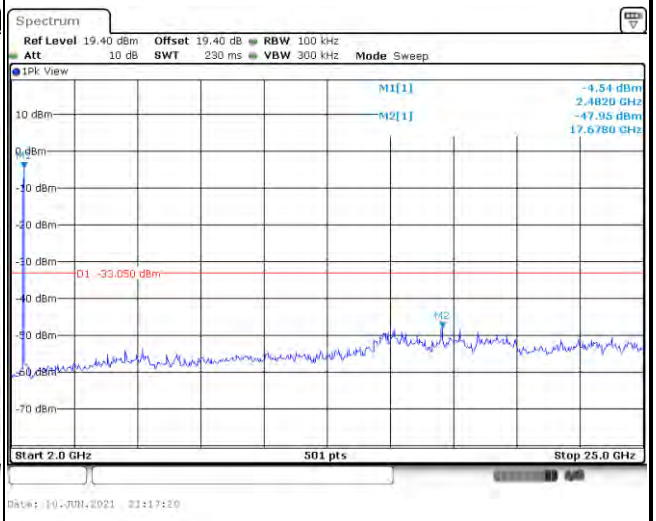


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

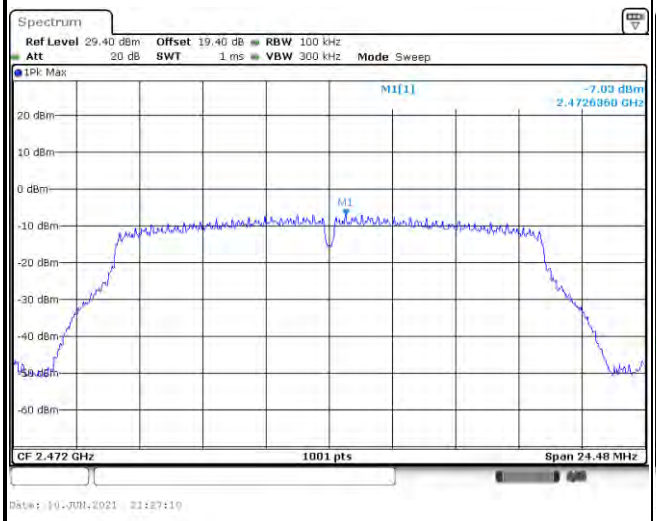
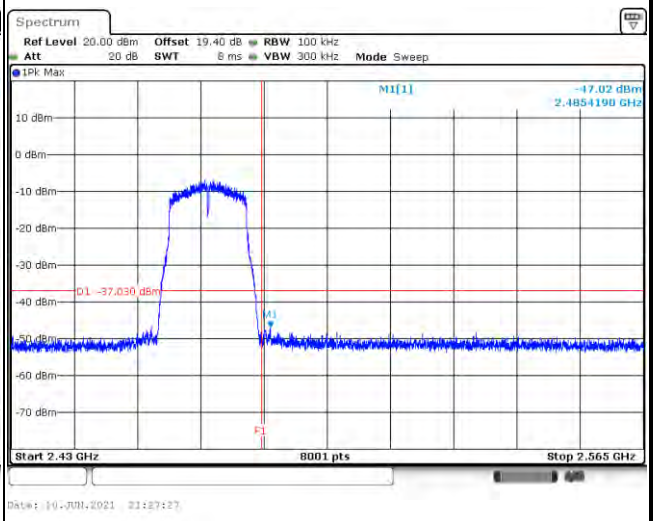
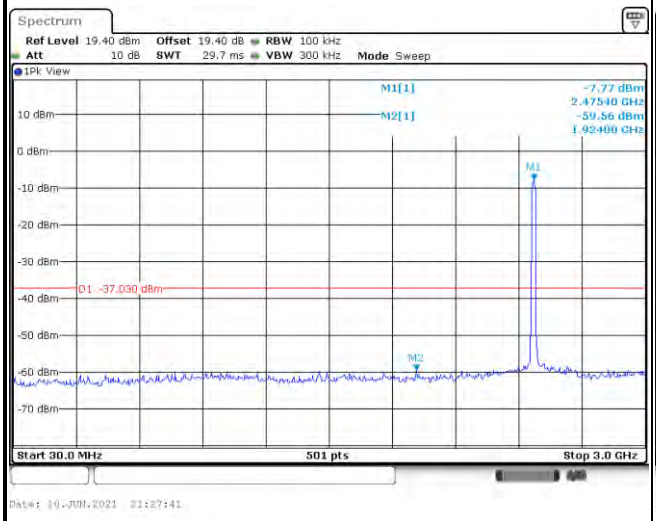
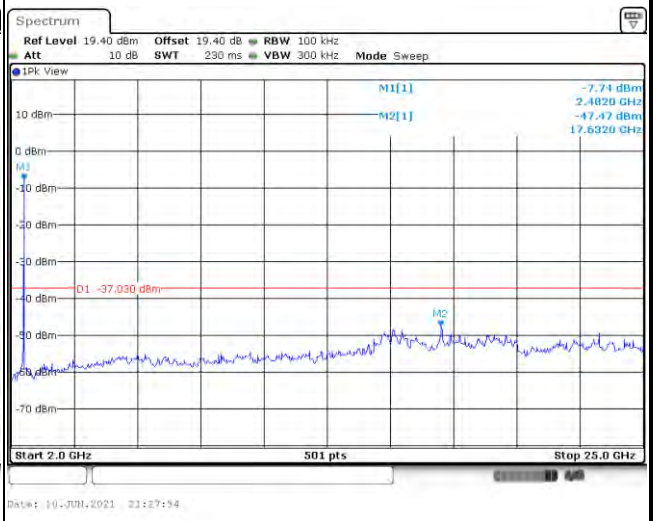
| Test Mode : | 802.11g | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

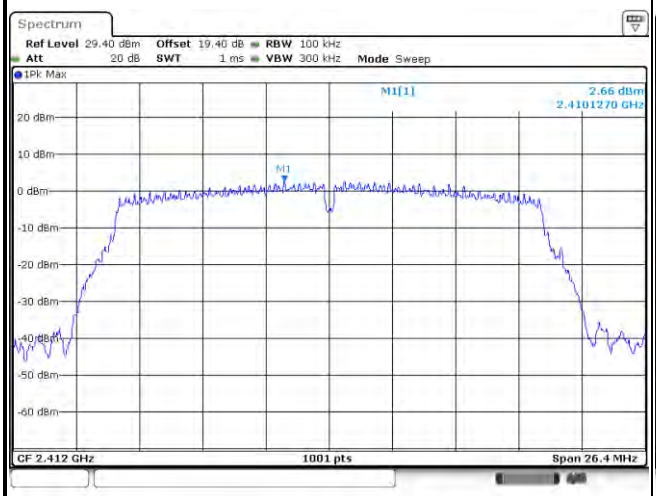
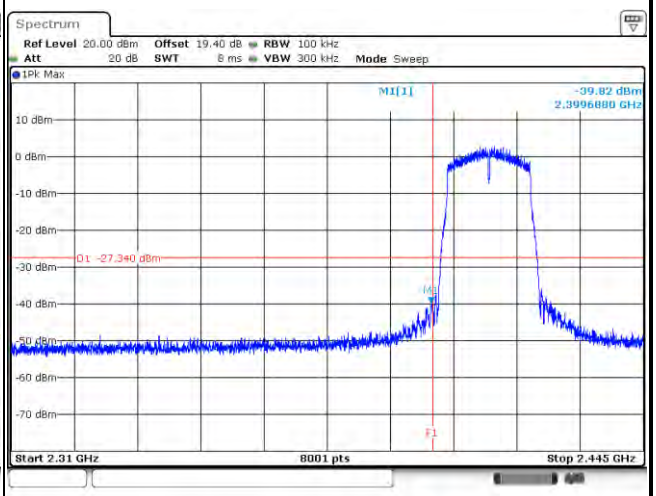
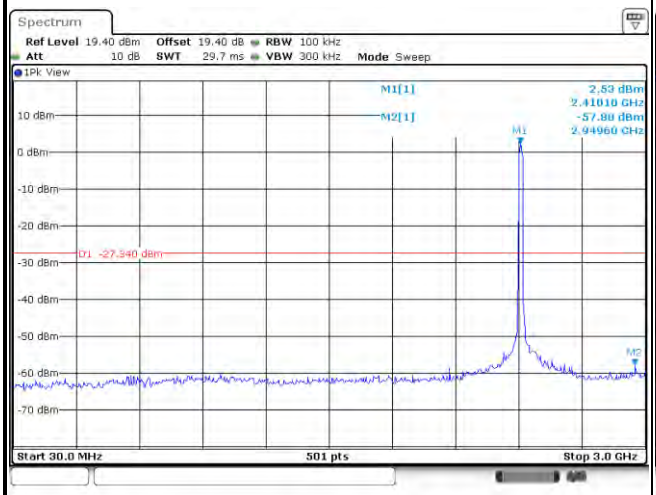
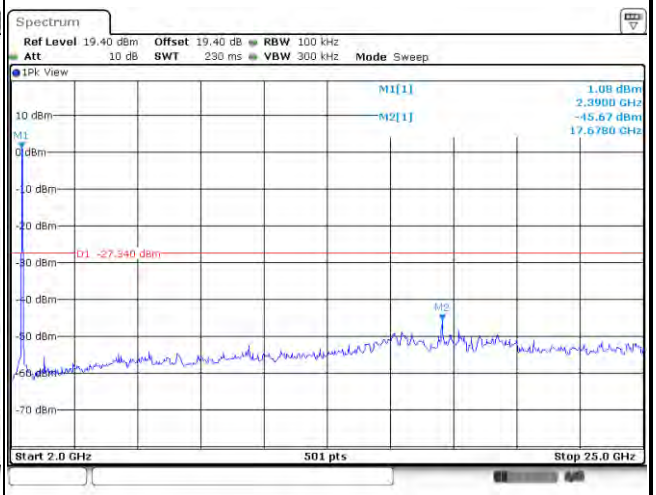
| Test Mode : | 802.11g | Test Channel : | 12 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

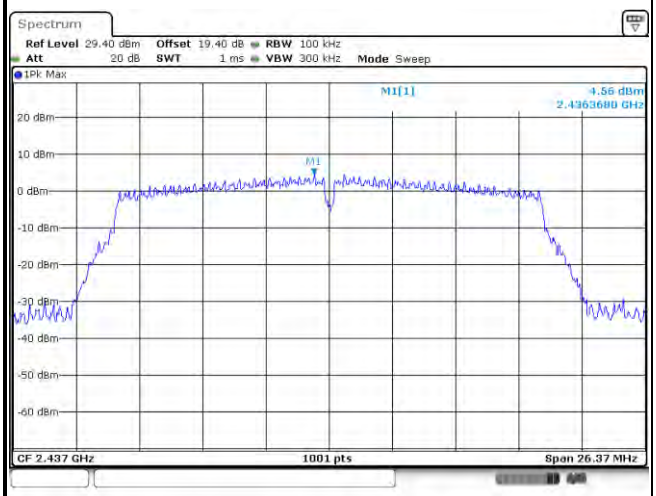
| Test Mode : | 802.11g | Test Channel : | 13 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

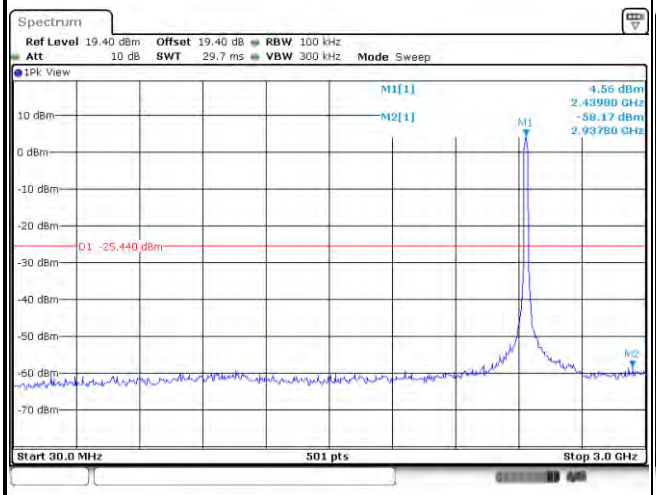
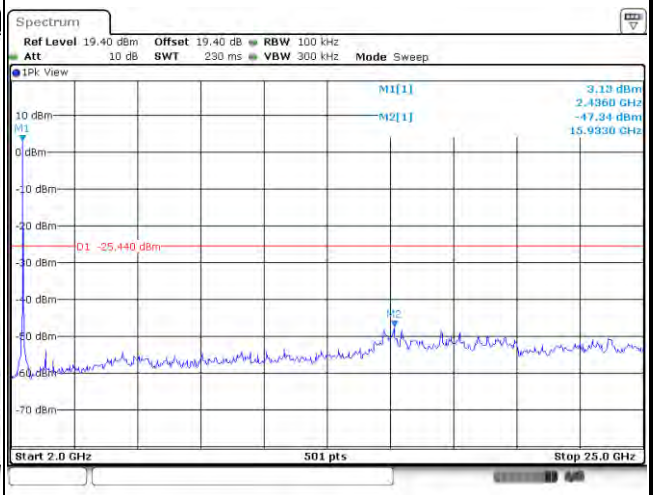
| Test Mode : | 802.11n HT20 | Test Channel : | 01 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

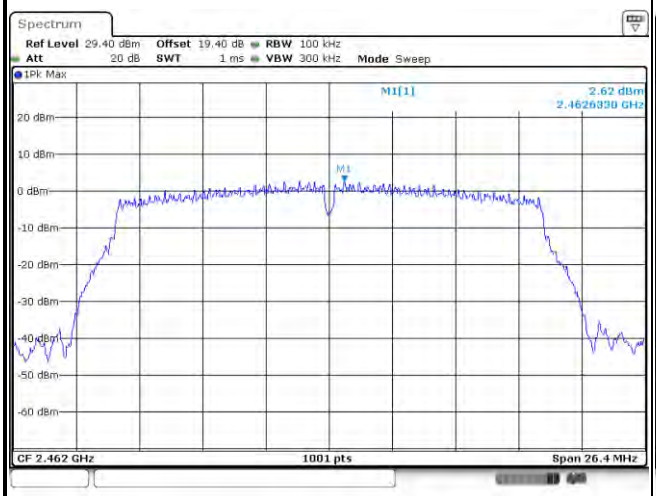
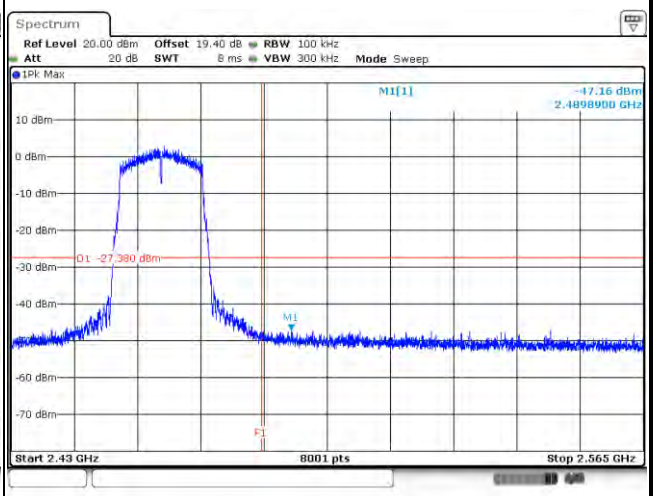
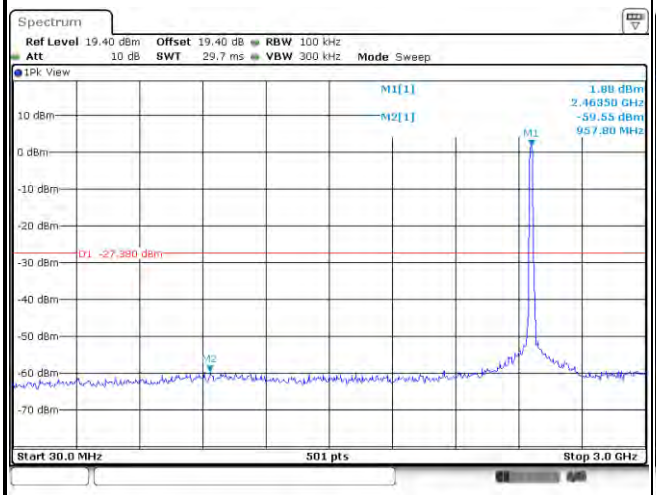
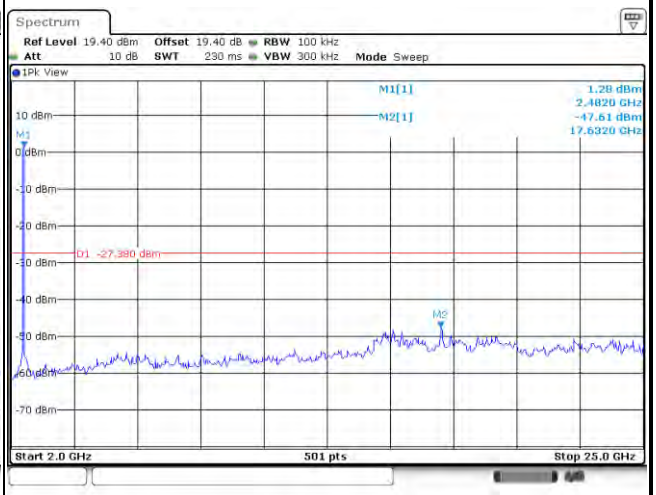
| Test Mode : | 802.11n HT20 | Test Channel : | 06 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  | |

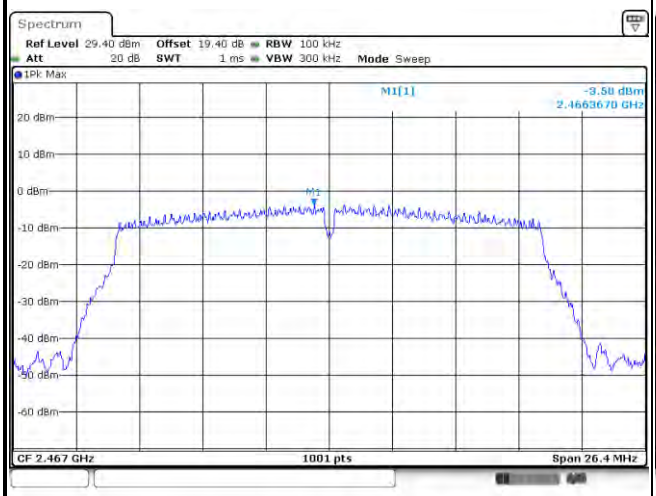
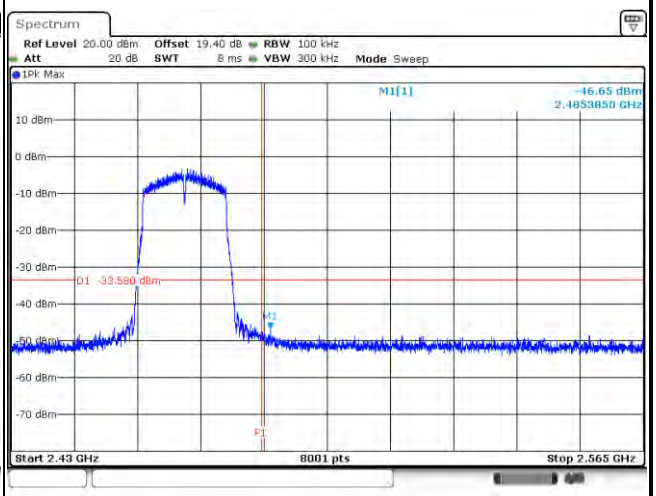
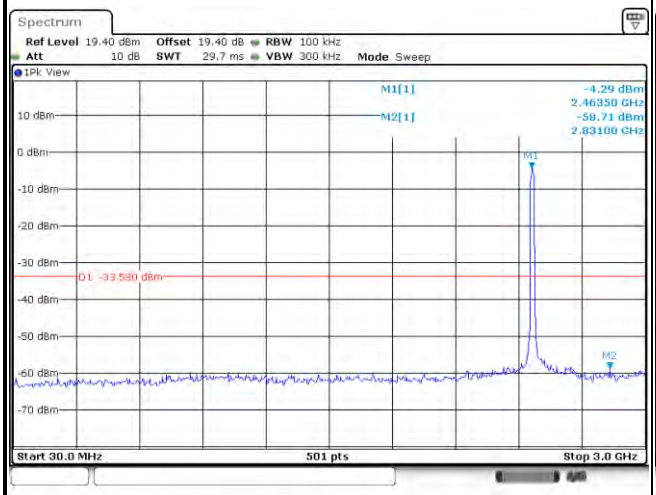
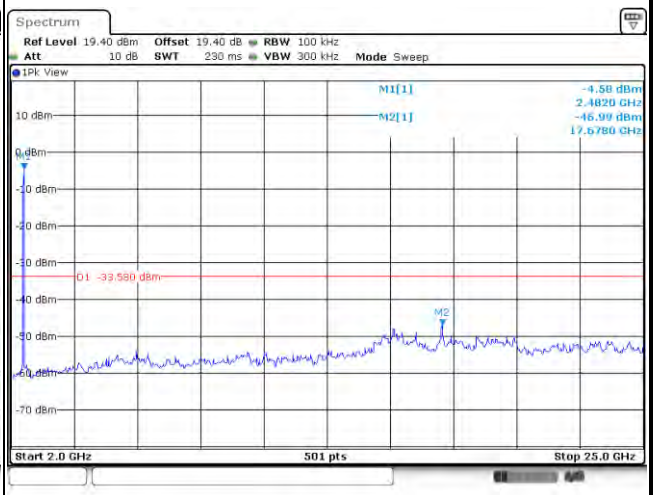


| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

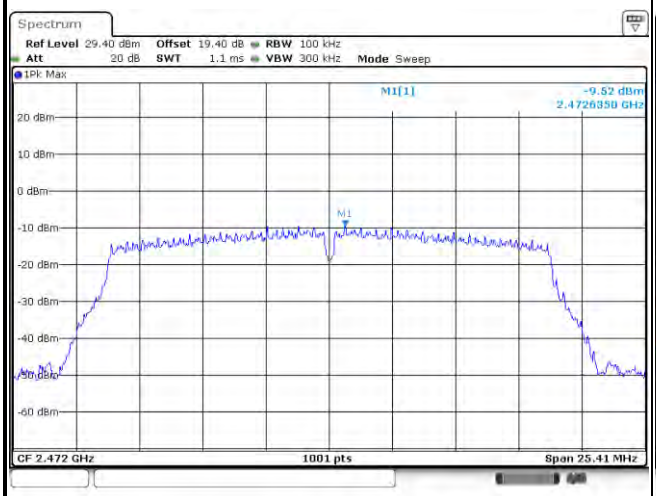
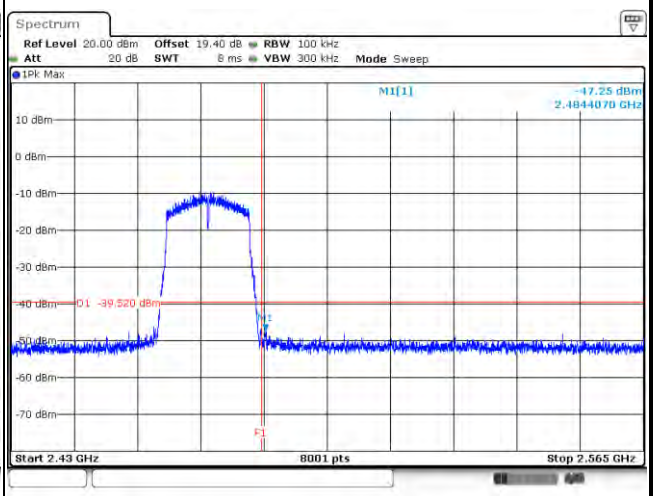
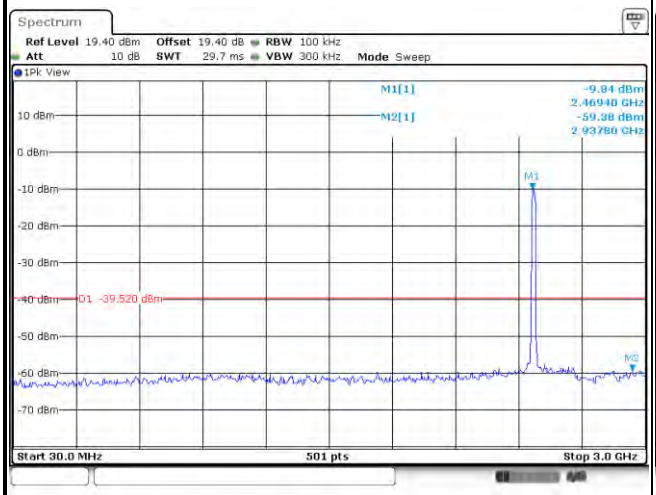
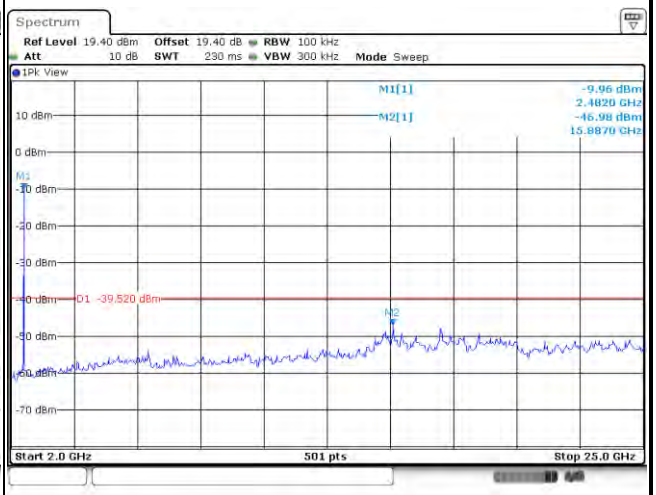
| Test Mode : | 802.11n HT20 | Test Channel : | 11 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

| Test Mode : | 802.11n HT20 | Test Channel : | 12 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

| Test Mode : | 802.11n HT20 | Test Channel : | 13 |
|---|---|---|---|

| 100kHz PSD reference Level | Channel Plot |
|---|---|
|  |  |
| **Spurious Emission 30MHz~3GHz** | **Spurious Emission 2GHz~25GHz** |
|  |  |

## 3.5 Radiated Band Edges and Spurious Emission Measurement

### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

### 3.5.2 Measuring Instruments

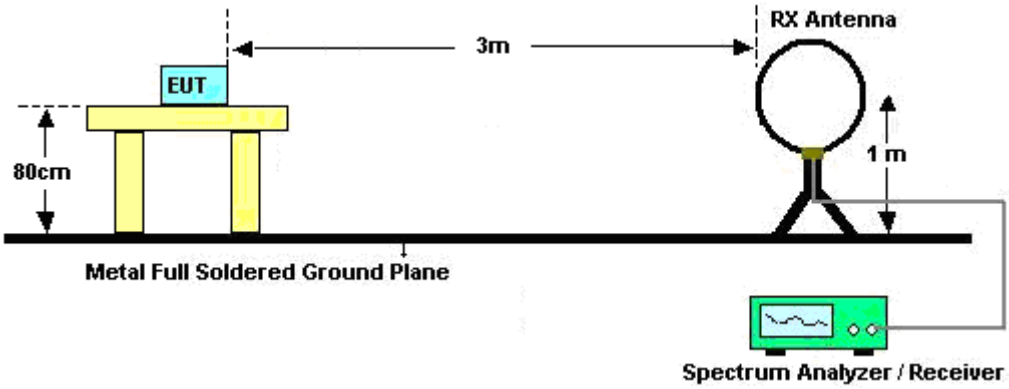
See list of measuring equipment of this test report.

### 3.5.3 Test Procedures

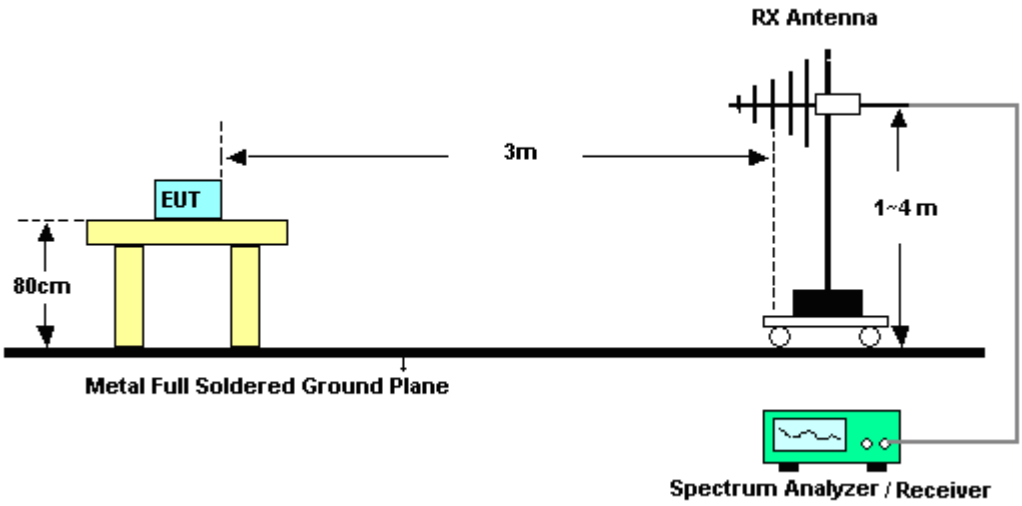
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.5.4 Test Setup

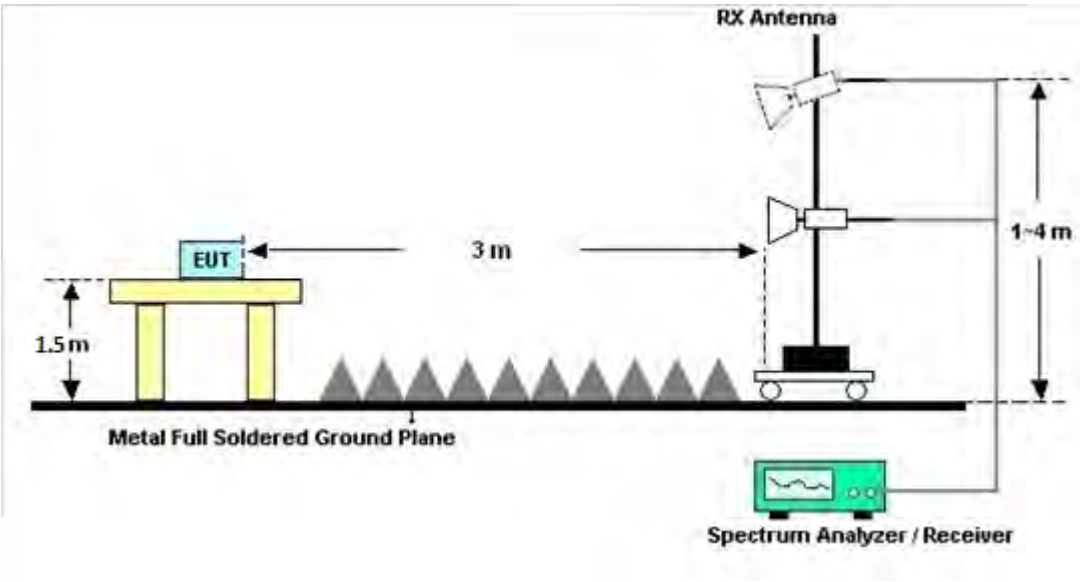
**For radiated emissions below 30MHz**



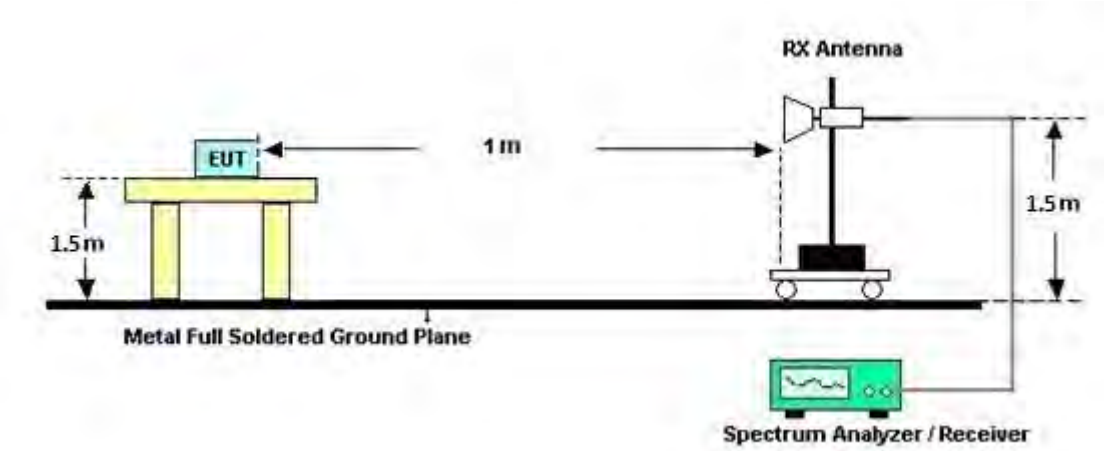

**For radiated emissions from 30MHz to 1GHz**



**For radiated test from 1GHz to 18GHz**




**For radiated test above 18GHz**



### 3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

### 3.5.7 Duty Cycle

Please refer to Appendix E.

### 3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10$^{th}$ Harmonic)

Please refer to Appendix C and D.

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of Emission (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

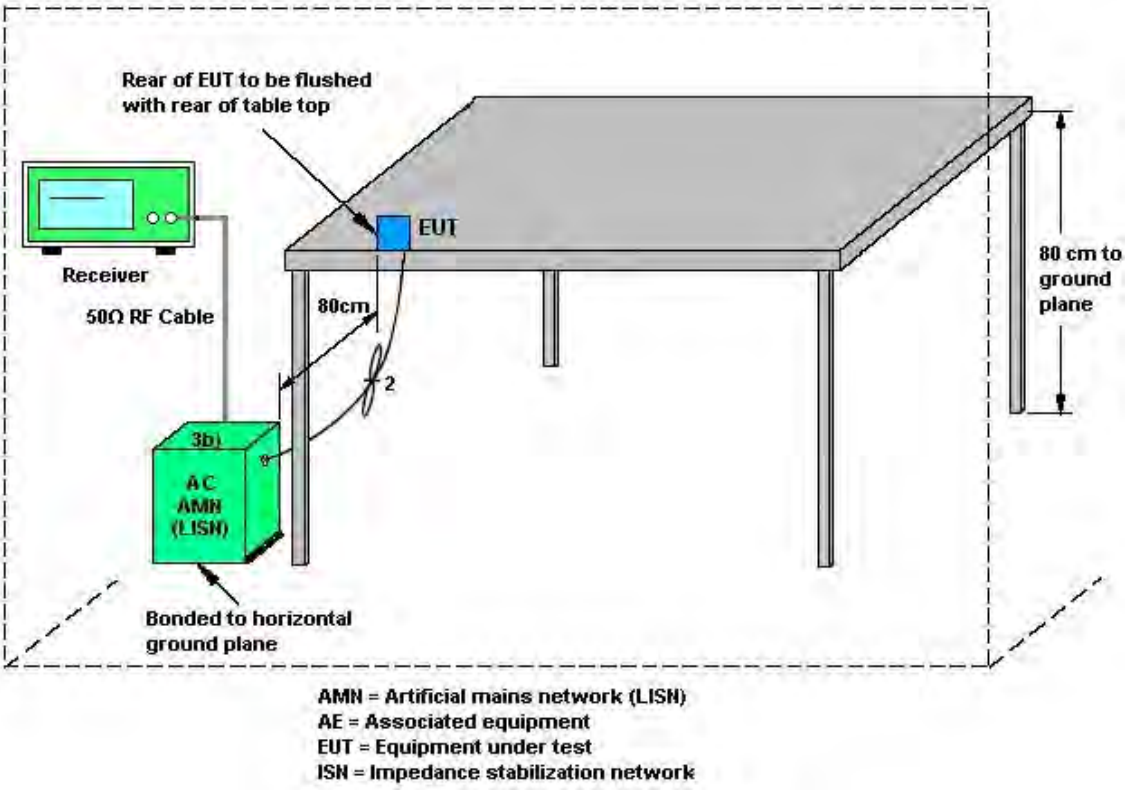
### 3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

### 3.6.4 Test Setup




### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

## 3.7 Antenna Requirements

### 3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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 rule.

### 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

### 3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows.

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

Array Gain = 10 log($N_{ANT}/N_{SS}$=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

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;

The EUT supports CDD mode.

For power, the directional gain $G_{ANT}$ is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

| <CDD Modes> | | | | | | |
|---|---|---|---|---|---|---|
| | Ant. 1 (dBi) | Ant. 2 (dBi) | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
| **2.4 GHz** | 3.80 | 5.00 | 5.00 | 7.43 | 0.00 | 1.43 |

*Power Limit Reduction = DG(Power) – 6dBi, ( min = 0 )*

*PSD Limit Reduction = DG(PSD) – 6dBi, ( min = 0 )*

# 4 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Hygrometer | Testo | 608-H1 | 34893241 | N/A | Mar. 03, 2021 | May 28 2021~ Jun. 25, 2021 | Mar. 02, 2022 | Conducted (TH02-HY) |
| Power Sensor | DARE | RPR3006W | 16I00054S NO10 | 10MHz~6GHz | Dec. 16, 2020 | May 28 2021~ Jun. 25, 2021 | Dec. 15, 2021 | Conducted (TH02-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101566 | 10Hz ~ 40GHz | Jul. 22, 2020 | May 28 2021~ Jun. 25, 2021 | Jul. 21, 2021 | Conducted (TH02-HY) |
| Switch Box & RF Cable | EM Electronics | EMSW18SE | SW200302 | N/A | Mar. 17, 2021 | May 28 2021~ Jun. 25, 2021 | Mar. 16, 2022 | Conducted (TH02-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Jun. 25, 2021 | N/A | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESR3 | 102388 | 9kHz~3.6GHz | Nov. 30, 2020 | Jun. 25, 2021 | Nov. 29, 2021 | Conduction (CO05-HY) |
| Hygrometer | Testo | 608-H1 | 34913912 | N/A | Nov. 18, 2020 | Jun. 25, 2021 | Nov. 17, 2021 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Dec. 01, 2020 | Jun. 25, 2021 | Nov. 30, 2021 | Conduction (CO05-HY) |
| Software | Rohde & Schwarz | EMC32 V10.30 | N/A | N/A | N/A | Jun. 25, 2021 | N/A | Conduction (CO05-HY) |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100851 | N/A | Feb. 25, 2021 | Jun. 25, 2021 | Feb. 24, 2022 | Conduction (CO05-HY) |
| LISN Cable | MVE | RG-400 | 260260 | N/A | Dec. 31, 2020 | Jun. 25, 2021 | Dec. 30, 2021 | Conduction (CO05-HY) |

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100488 | 9 kHz~30 MHz | Jul. 14, 2020 | May 26, 2021~ Jun. 15, 2021 | Jul. 13, 2021 | Radiation (03CH15-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01 N-06 | 41912 & 05 | 30MHz~1GHz | Feb. 08, 2021 | May 26, 2021~ Jun. 15, 2021 | Feb. 07, 2022 | Radiation (03CH15-HY) |
| Amplifier | SONOMA | 310N | 363440 | 9kHz~1GHz | Dec. 28, 2020 | May 26, 2021~ Jun. 15, 2021 | Dec. 27, 2021 | Radiation (03CH15-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-01620 | 1GHz~18GHz | Nov. 03, 2020 | May 26, 2021~ Jun. 15, 2021 | Nov. 02, 2021 | Radiation (03CH15-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170251 | 18GHz~40GHz | Dec. 02, 2020 | May 26, 2021~ Jun. 15, 2021 | Dec. 01, 2021 | Radiation (03CH15-HY) |
| Preamplifier | Jet-Power | JPA0118-55-303 | 1710001800055006 | 1GHz~18GHz | May 06, 2021 | May 26, 2021~ Jun. 15, 2021 | May 05, 2022 | Radiation (03CH15-HY) |
| Preamplifier | Keysight | 83017A | MY53270195 | 1GHz~26.5GHz | Aug. 21, 2020 | May 26, 2021~ Jun. 15, 2021 | Aug. 20, 2021 | Radiation (03CH15-HY) |
| Preamplifier | EMEC | EM18G40G | 0600789 | 18-40GHz | Oct. 27, 2020 | May 26, 2021~ Jun. 15, 2021 | Oct. 26, 2021 | Radiation (03CH15-HY) |
| EMI Test Receiver | Keysight | N9038A(MXE) | MY54130085 | 20MHz~8.4GHz | Nov. 02, 2020 | May 26, 2021~ Jun. 15, 2021 | Nov. 01, 2021 | Radiation (03CH15-HY |
| Spectrum Analyzer | Agilent | E4446A | MY50180136 | 3Hz~44GHz | May 07, 2021 | May 26, 2021~ Jun. 15, 2021 | May 06, 2022 | Radiation (03CH15-HY) |
| Antenna Mast | ChainTek | MBS-520-1 | N/A | 1m~4m | N/A | May 26, 2021~ Jun. 15, 2021 | N/A | Radiation (03CH15-HY) |
| Turn Table | ChainTek | T-200-S-1 | N/A | 0~360 Degree | N/A | May 26, 2021~ Jun. 15, 2021 | N/A | Radiation (03CH15-HY) |
| Software | Audix | E3 6.2009-8-24(k5) | RK-000451 | N/A | N/A | May 26, 2021~ Jun. 15, 2021 | N/A | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104, 102E | MY36980/4, MY9838/4PE,508405/2E | 30MHz~18G | Nov. 16, 2020 | May 26, 2021~ Jun. 15, 2021 | Nov. 15, 2021 | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30MHz-40GHz | Feb. 22, 2021 | May 26, 2021~ Jun. 15, 2021 | Feb. 21, 2022 | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 800740/2 | 30MHz-40GHz | Feb. 22, 2021 | May 26, 2021~ Jun. 15, 2021 | Feb. 21, 2022 | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 11, 2021 | May 26, 2021~ Jun. 15, 2021 | Mar. 10, 2022 | Radiation (03CH15-HY) |
| Filter | Wainwright | WLJ4-1000-1530-6000-40ST | SN4 | 1.53GHz Low Pass Filter | Jul. 03, 2020 | May 26, 2021~ Jun. 15, 2021 | Jul. 02, 2021 | Radiation (03CH15-HY) |
| Filter | Wainwright | WHKX12-2700-3000-18000-60ST | SN4 | 3GHz High Pass Filter | Sep. 16, 2020 | May 26, 2021~ Jun. 15, 2021 | Sep. 15, 2021 | Radiation (03CH15-HY) |

# 5 Uncertainty of Evaluation

**Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 2.3 dB |

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 4.7 dB |

**Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 5.3 dB |

**Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 4.9 dB |

# Appendix A. Test Result of Conducted Test Items

| | | | | |
|---|---|---|---|---|
| Test Engineer: | Peter Liao / Hank Hsu | Temperature: | 21~25 | ℃ |
| Test Date: | 2021/5/28~2021/6/25 | Relative Humidity: | 51~54 | % |

## ***TEST RESULTS DATA***
## ***6dB and 99% Occupied Bandwidth***

| 2.4GHz Band MIMO | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) | | 6dB BW (MHz) | | 6dB BW Limit (MHz) | Pass/Fail |
| | | | | | Ant1 | Ant2 | Ant1 | Ant2 | | |
| 11b | 1Mbps | 2 | 1 | 2412 | 13.54 | 13.34 | 9.02 | 9.00 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 6 | 2437 | 13.39 | 13.44 | 9.00 | 8.54 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 11 | 2462 | 13.49 | 13.39 | 8.56 | 9.00 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 12 | 2467 | 13.29 | 13.29 | 8.56 | 8.54 | 0.50 | Pass |
| 11b | 1Mbps | 2 | 13 | 2472 | 13.39 | 13.34 | 9.00 | 8.56 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | 16.73 | 16.58 | 16.34 | 16.34 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 6 | 2437 | 16.78 | 16.68 | 16.34 | 16.32 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 11 | 2462 | 16.68 | 16.58 | 16.34 | 16.34 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 12 | 2467 | 16.58 | 16.48 | 16.34 | 16.34 | 0.50 | Pass |
| 11g | 6Mbps | 2 | 13 | 2472 | 16.68 | 16.48 | 16.34 | 16.32 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | 17.68 | 17.63 | 17.58 | 17.60 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 6 | 2437 | 17.73 | 17.68 | 17.58 | 17.58 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 11 | 2462 | 17.73 | 17.63 | 17.58 | 17.60 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 12 | 2467 | 17.68 | 17.58 | 17.58 | 17.60 | 0.50 | Pass |
| HT20 | MCS0 | 2 | 13 | 2472 | 17.68 | 17.58 | 17.58 | 16.94 | 0.50 | Pass |

## ***TEST RESULTS DATA***
## ***Average Output Power***

| 2.4GHz Band MIMO | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) | | | Conducted Power Limit (dBm) | | DG (dBi) | | EIRP Power (dBm) | | EIRP Power Limit (dBm) | | Pass /Fail |
| | | | | | Ant1 | Ant2 | SUM | Ant1 | Ant2 | Ant1 | Ant2 | Ant1 | Ant2 | Ant1 | Ant2 | |
| 11b | 1Mbps | 2 | 1 | 2412 | 15.70 | 15.70 | 18.71 | 30.00 | | 5.00 | | 23.71 | | 36.00 | | Pass |
| 11b | 1Mbps | 2 | 6 | 2437 | 16.40 | 16.50 | 19.46 | 30.00 | | 5.00 | | 24.46 | | 36.00 | | Pass |
| 11b | 1Mbps | 2 | 11 | 2462 | 15.60 | 16.10 | 18.87 | 30.00 | | 5.00 | | 23.87 | | 36.00 | | Pass |
| 11b | 1Mbps | 2 | 12 | 2467 | 11.80 | 12.40 | 15.12 | 30.00 | | 5.00 | | 20.12 | | 36.00 | | Pass |
| 11b | 1Mbps | 2 | 13 | 2472 | 9.80 | 10.20 | 13.01 | 30.00 | | 5.00 | | 18.01 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | 17.80 | 18.10 | 20.96 | 30.00 | | 5.00 | | 25.96 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 6 | 2437 | 18.90 | 19.20 | 22.06 | 30.00 | | 5.00 | | 27.06 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 11 | 2462 | 16.40 | 17.20 | 19.83 | 30.00 | | 5.00 | | 24.83 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 12 | 2467 | 10.00 | 10.60 | 13.32 | 30.00 | | 5.00 | | 18.32 | | 36.00 | | Pass |
| 11g | 6Mbps | 2 | 13 | 2472 | 6.40 | 7.00 | 9.72 | 30.00 | | 5.00 | | 14.72 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | 16.20 | 16.60 | 19.41 | 30.00 | | 5.00 | | 24.41 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 6 | 2437 | 18.20 | 18.40 | 21.31 | 30.00 | | 5.00 | | 26.31 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 11 | 2462 | 15.90 | 16.50 | 19.22 | 30.00 | | 5.00 | | 24.22 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 12 | 2467 | 9.90 | 10.50 | 13.22 | 30.00 | | 5.00 | | 18.22 | | 36.00 | | Pass |
| HT20 | MCS0 | 2 | 13 | 2472 | 3.60 | 4.20 | 6.92 | 30.00 | | 5.00 | | 11.92 | | 36.00 | | Pass |

**Note:** Measured power (dBm) has offset with cable loss.

## ***TEST RESULTS DATA***
## ***Peak Power Spectral Density***

| 2.4GHz Band MIMO | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm/3kHz) | | | DG (dBi) | | Peak PSD Limit (dBm/3kHz) | | Pass/Fail |
| | | | | | Ant1 | Ant2 | Worse + 3.01 | Ant1 | Ant2 | Ant1 | Ant2 | |
| 11b | 1Mbps | 2 | 1 | 2412 | -7.22 | -6.43 | -3.42 | 7.43 | | 6.57 | | Pass |
| 11b | 1Mbps | 2 | 6 | 2437 | -6.28 | -7.07 | -3.27 | 7.43 | | 6.57 | | Pass |
| 11b | 1Mbps | 2 | 11 | 2462 | -7.45 | -6.94 | -3.93 | 7.43 | | 6.57 | | Pass |
| 11b | 1Mbps | 2 | 12 | 2467 | -11.27 | -11.13 | -8.12 | 7.43 | | 6.57 | | Pass |
| 11b | 1Mbps | 2 | 13 | 2472 | -12.53 | -13.41 | -9.52 | 7.43 | | 6.57 | | Pass |
| 11g | 6Mbps | 2 | 1 | 2412 | -7.34 | -7.74 | -4.33 | 7.43 | | 6.57 | | Pass |
| 11g | 6Mbps | 2 | 6 | 2437 | -6.72 | -6.27 | -3.26 | 7.43 | | 6.57 | | Pass |
| 11g | 6Mbps | 2 | 11 | 2462 | -8.87 | -8.68 | -5.67 | 7.43 | | 6.57 | | Pass |
| 11g | 6Mbps | 2 | 12 | 2467 | -15.96 | -14.60 | -11.59 | 7.43 | | 6.57 | | Pass |
| 11g | 6Mbps | 2 | 13 | 2472 | -18.79 | -18.27 | -15.26 | 7.43 | | 6.57 | | Pass |
| HT20 | MCS0 | 2 | 1 | 2412 | -6.64 | -8.85 | -3.63 | 7.43 | | 6.57 | | Pass |
| HT20 | MCS0 | 2 | 6 | 2437 | -7.61 | -7.66 | -4.60 | 7.43 | | 6.57 | | Pass |
| HT20 | MCS0 | 2 | 11 | 2462 | -10.22 | -9.54 | -6.53 | 7.43 | | 6.57 | | Pass |
| HT20 | MCS0 | 2 | 12 | 2467 | -14.75 | -14.78 | -11.74 | 7.43 | | 6.57 | | Pass |
| HT20 | MCS0 | 2 | 13 | 2472 | -21.29 | -20.96 | -17.95 | 7.43 | | 6.57 | | Pass |

**Note:** Measured power density (dBm) has offset with cable loss.

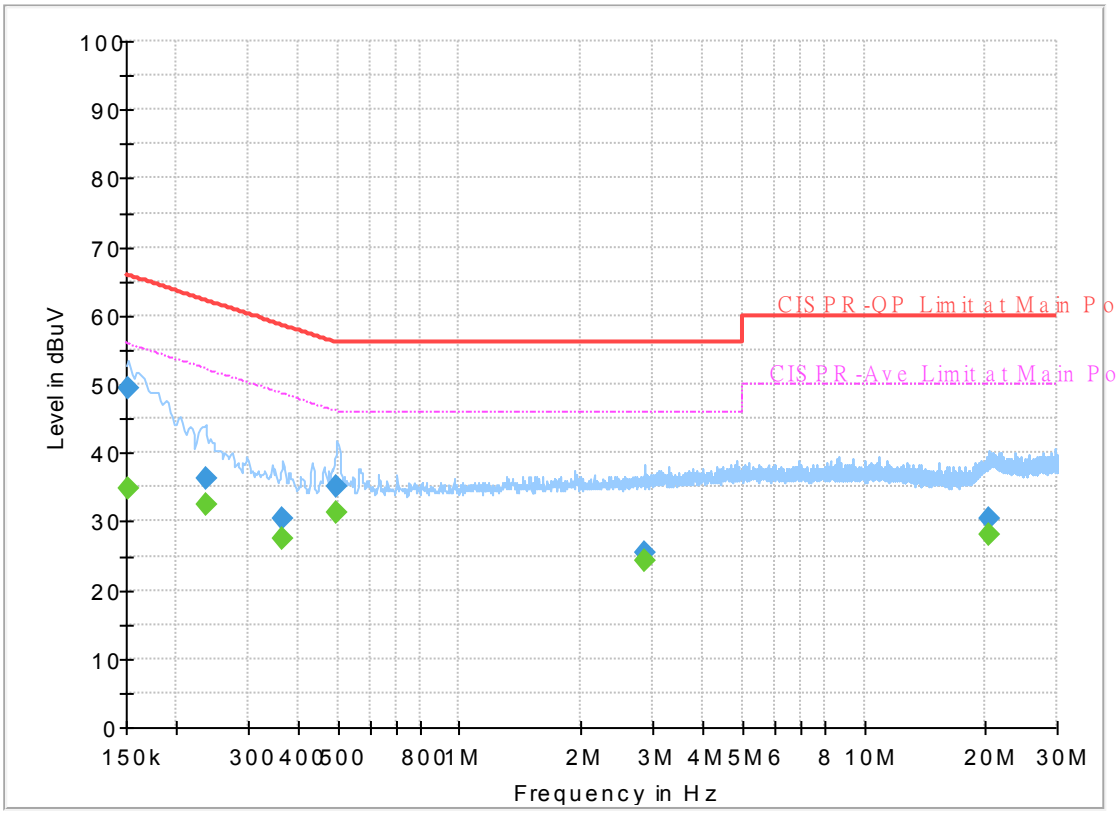
# Appendix B. AC Conducted Emission Test Results

| | | | |
|---|---|---|---|
| **Test Engineer :** | Calvin Wang | **Temperature :** | 23~26℃ |
| | | **Relative Humidity :** | 40~50% |

## EUT Information

| | |
|---|---|
| Report NO : | 120234-01 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Line |

Full Spectrum

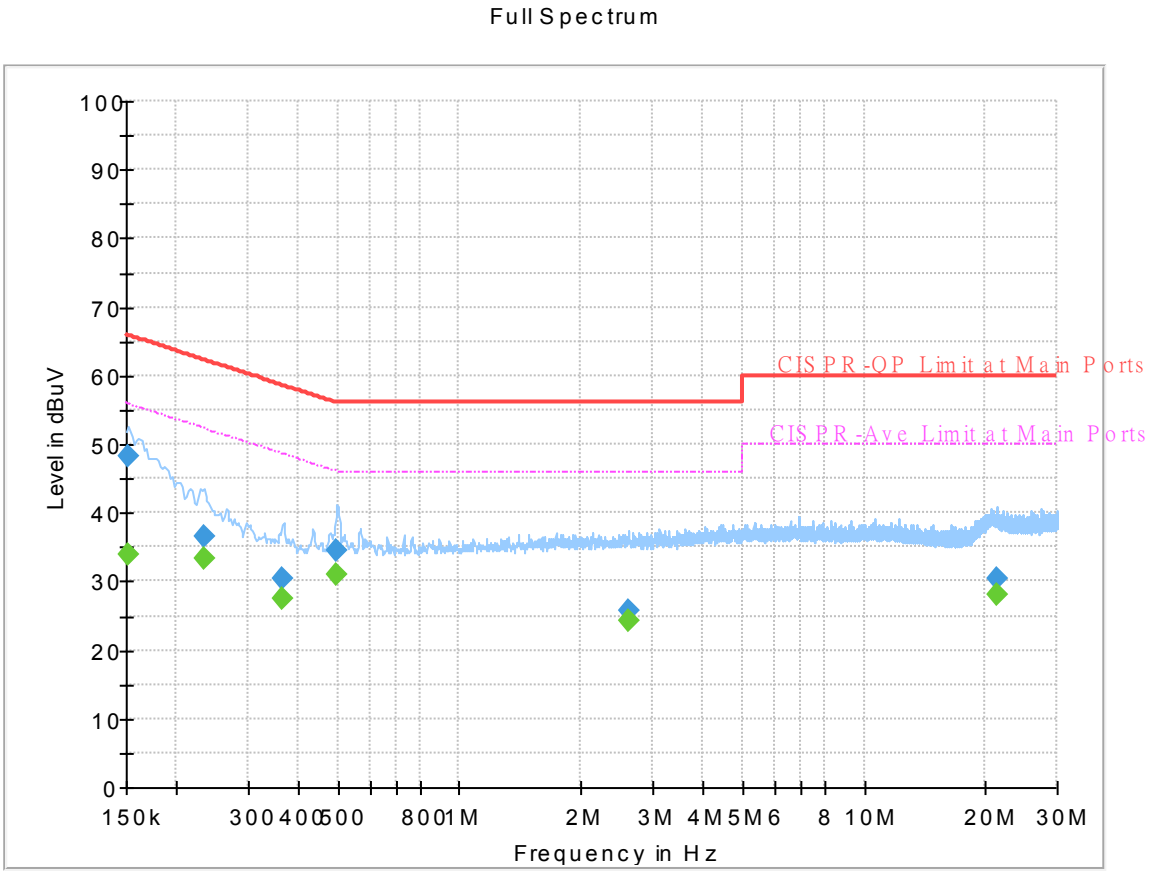



## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.152250 | --- | 34.68 | 55.88 | 21.20 | L1 | OFF | 19.5 |
| 0.152250 | 49.47 | --- | 65.88 | 16.41 | L1 | OFF | 19.5 |
| 0.235500 | --- | 32.42 | 52.25 | 19.83 | L1 | OFF | 19.5 |
| 0.235500 | 36.29 | --- | 62.25 | 25.96 | L1 | OFF | 19.5 |
| 0.366000 | --- | 27.51 | 48.59 | 21.08 | L1 | OFF | 19.5 |
| 0.366000 | 30.41 | --- | 58.59 | 28.18 | L1 | OFF | 19.5 |
| 0.498750 | --- | 31.26 | 46.02 | 14.76 | L1 | OFF | 19.7 |
| 0.498750 | 35.05 | --- | 56.02 | 20.97 | L1 | OFF | 19.7 |
| 2.861250 | --- | 24.19 | 46.00 | 21.81 | L1 | OFF | 19.9 |
| 2.861250 | 25.33 | --- | 56.00 | 30.67 | L1 | OFF | 19.9 |
| 20.343750 | --- | 27.98 | 50.00 | 22.02 | L1 | OFF | 20.4 |
| 20.343750 | 30.32 | --- | 60.00 | 29.68 | L1 | OFF | 20.4 |

## EUT Information

| | |
|---|---|
| Report NO : | 120234-01 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Neutral |




## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.152250 | --- | 33.91 | 55.88 | 21.97 | N | OFF | 19.5 |
| 0.152250 | 48.35 | --- | 65.88 | 17.53 | N | OFF | 19.5 |
| 0.233250 | --- | 33.33 | 52.33 | 19.00 | N | OFF | 19.5 |
| 0.233250 | 36.45 | --- | 62.33 | 25.88 | N | OFF | 19.5 |
| 0.366000 | --- | 27.62 | 48.59 | 20.97 | N | OFF | 19.6 |
| 0.366000 | 30.43 | --- | 58.59 | 28.16 | N | OFF | 19.6 |
| 0.498750 | --- | 31.09 | 46.02 | 14.93 | N | OFF | 19.7 |
| 0.498750 | 34.50 | --- | 56.02 | 21.52 | N | OFF | 19.7 |
| 2.613750 | --- | 24.20 | 46.00 | 21.80 | N | OFF | 20.0 |
| 2.613750 | 25.59 | --- | 56.00 | 30.41 | N | OFF | 20.0 |
| 21.252750 | --- | 27.97 | 50.00 | 22.03 | N | OFF | 20.6 |
| 21.252750 | 30.51 | --- | 60.00 | 29.49 | N | OFF | 20.6 |

# Appendix C. Radiated Spurious Emission

| | | | |
|---|---|---|---|
| **Test Engineer :** | Leo Lee, Mancy Chou and Bigshow Wang | **Temperature :** | 22.1~25.6℃ |
| | | **Relative Humidity :** | 46~64% |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 01 2412MHz | | 2385.6 | 57.32 | -16.68 | 74 | 44.12 | 27.56 | 16.56 | 30.92 | 289 | 51 | P | H |
| | | 2387.07 | 47.45 | -6.55 | 54 | 34.26 | 27.55 | 16.56 | 30.92 | 289 | 51 | A | H |
| | * | 2412 | 114.86 | - | - | 101.67 | 27.5 | 16.6 | 30.91 | 289 | 51 | P | H |
| | * | 2412 | 111.95 | - | - | 98.76 | 27.5 | 16.6 | 30.91 | 289 | 51 | A | H |
| | | 2386.965 | 57.74 | -16.26 | 74 | 44.55 | 27.55 | 16.56 | 30.92 | 246 | 5 | P | V |
| | | 2387.07 | 46.35 | -7.65 | 54 | 33.16 | 27.55 | 16.56 | 30.92 | 246 | 5 | A | V |
| | * | 2412 | 115.4 | - | - | 102.21 | 27.5 | 16.6 | 30.91 | 246 | 5 | P | V |
| | * | 2412 | 112.43 | - | - | 99.24 | 27.5 | 16.6 | 30.91 | 246 | 5 | A | V |
| 802.11b CH 06 2437MHz | | 2388.71 | 56.06 | -17.94 | 74 | 42.87 | 27.55 | 16.56 | 30.92 | 221 | 22 | P | H |
| | | 2356.24 | 45.01 | -8.99 | 54 | 31.75 | 27.68 | 16.51 | 30.93 | 221 | 22 | A | H |
| | * | 2437 | 113.99 | - | - | 100.75 | 27.5 | 16.64 | 30.9 | 221 | 22 | P | H |
| | * | 2437 | 111 | - | - | 97.76 | 27.5 | 16.64 | 30.9 | 221 | 22 | A | H |
| | | 2497.93 | 56.33 | -17.67 | 74 | 43.07 | 27.4 | 16.73 | 30.87 | 221 | 22 | P | H |
| | | 2491.99 | 45.15 | -8.85 | 54 | 31.88 | 27.42 | 16.72 | 30.87 | 221 | 22 | A | H |
| | | 2383.27 | 55.24 | -18.76 | 74 | 42.04 | 27.57 | 16.55 | 30.92 | 297 | 357 | P | V |
| | | 2381.91 | 45.21 | -8.79 | 54 | 32.01 | 27.57 | 16.55 | 30.92 | 297 | 357 | A | V |
| | * | 2437 | 114.4 | - | - | 101.16 | 27.5 | 16.64 | 30.9 | 297 | 357 | P | V |
| | * | 2437 | 111.32 | - | - | 98.08 | 27.5 | 16.64 | 30.9 | 297 | 357 | A | V |
| | | 2497.03 | 55.57 | -18.43 | 74 | 42.3 | 27.41 | 16.73 | 30.87 | 297 | 357 | P | V |
| | | 2492.08 | 45.47 | -8.53 | 54 | 32.2 | 27.42 | 16.72 | 30.87 | 297 | 357 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 11 2462MHz | * | 2462 | 114.82 | - | - | 101.55 | 27.48 | 16.68 | 30.89 | 247 | 51 | P | H |
| | * | 2462 | 111.77 | - | - | 98.5 | 27.48 | 16.68 | 30.89 | 247 | 51 | A | H |
| | | 2485.96 | 57.1 | -16.9 | 74 | 43.84 | 27.43 | 16.71 | 30.88 | 247 | 51 | P | H |
| | | 2486.96 | 46.86 | -7.14 | 54 | 33.6 | 27.43 | 16.71 | 30.88 | 247 | 51 | A | H |
| | * | 2462 | 115.92 | - | - | 102.65 | 27.48 | 16.68 | 30.89 | 321 | 330 | P | V |
| | * | 2462 | 112.97 | - | - | 99.7 | 27.48 | 16.68 | 30.89 | 321 | 330 | A | V |
| | | 2486.48 | 58.13 | -15.87 | 74 | 44.87 | 27.43 | 16.71 | 30.88 | 321 | 330 | P | V |
| | | 2487.04 | 48.05 | -5.95 | 54 | 34.79 | 27.43 | 16.71 | 30.88 | 321 | 330 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 12 2467MHz | * | 2467 | 108.13 | - | - | 94.86 | 27.47 | 16.68 | 30.88 | 250 | 23 | P | H |
| | * | 2467 | 105.19 | - | - | 91.92 | 27.47 | 16.68 | 30.88 | 250 | 23 | A | H |
| | | 2484.4 | 58.2 | -15.8 | 74 | 44.94 | 27.43 | 16.71 | 30.88 | 250 | 23 | P | H |
| | | 2483.84 | 50.6 | -3.4 | 54 | 37.34 | 27.43 | 16.71 | 30.88 | 250 | 23 | A | H |
| | * | 2467 | 108.5 | - | - | 95.23 | 27.47 | 16.68 | 30.88 | 239 | 352 | P | V |
| | * | 2467 | 105.41 | - | - | 92.14 | 27.47 | 16.68 | 30.88 | 239 | 352 | A | V |
| | | 2483.92 | 58.32 | -15.68 | 74 | 45.06 | 27.43 | 16.71 | 30.88 | 239 | 352 | P | V |
| | | 2483.52 | 50.97 | -3.03 | 54 | 37.71 | 27.43 | 16.71 | 30.88 | 239 | 352 | P | V |
| 802.11b CH 13 2472MHz | * | 2472 | 104.98 | - | - | 91.71 | 27.46 | 16.69 | 30.88 | 250 | 24 | P | H |
| | * | 2472 | 102.04 | - | - | 88.77 | 27.46 | 16.69 | 30.88 | 250 | 24 | A | H |
| | | 2487.88 | 57.37 | -16.63 | 74 | 44.11 | 27.42 | 16.72 | 30.88 | 250 | 24 | P | H |
| | | 2487.68 | 49.1 | -4.9 | 54 | 35.84 | 27.42 | 16.72 | 30.88 | 250 | 24 | A | H |
| | * | 2472 | 106.63 | - | - | 93.36 | 27.46 | 16.69 | 30.88 | 240 | 353 | P | V |
| | * | 2472 | 103.54 | - | - | 90.27 | 27.46 | 16.69 | 30.88 | 240 | 353 | A | V |
| | | 2487.84 | 58.02 | -15.98 | 74 | 44.76 | 27.42 | 16.72 | 30.88 | 240 | 353 | P | V |
| | | 2487.68 | 50.4 | -3.6 | 54 | 37.14 | 27.42 | 16.72 | 30.88 | 240 | 353 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 01 2412MHz | | 4824 | 44.53 | -29.47 | 74 | 62.22 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | H |
| | | 17985 | 59.74 | -14.26 | 74 | 49.4 | 48.73 | 18.88 | 57.27 | 300 | 241 | P | H |
| | | 17985 | 49.79 | -4.21 | 54 | 39.45 | 48.73 | 18.88 | 57.27 | 300 | 241 | A | H |
| | | 4824 | 44.69 | -29.31 | 74 | 62.38 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | V |
| | | 18000 | 60 | -14 | 74 | 49.35 | 49 | 18.89 | 57.24 | 100 | 129 | P | V |
| | | 18000 | 50.18 | -3.82 | 54 | 39.53 | 49 | 18.89 | 57.24 | 100 | 129 | A | V |
| 802.11b CH 06 2437MHz | | 4874 | 45.6 | -28.4 | 74 | 63.34 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | H |
| | | 7311 | 49.24 | -24.76 | 74 | 59.06 | 36.3 | 12.31 | 58.43 | 100 | 0 | P | H |
| | | 18000 | 60.39 | -13.61 | 74 | 49.74 | 49 | 18.89 | 57.24 | 100 | 29 | P | H |
| | | 18000 | 50.31 | -3.69 | 54 | 39.66 | 49 | 18.89 | 57.24 | 100 | 29 | A | H |
| | | 4874 | 43.7 | -30.3 | 74 | 61.44 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | V |
| | | 7311 | 48.93 | -25.07 | 74 | 58.75 | 36.3 | 12.31 | 58.43 | 100 | 0 | P | V |
| | | 18000 | 59.6 | -14.4 | 74 | 48.95 | 49 | 18.89 | 57.24 | 100 | 19 | P | V |
| | | 18000 | 49.51 | -4.49 | 54 | 38.86 | 49 | 18.89 | 57.24 | 100 | 19 | A | V |
| 802.11b CH 11 2462MHz | | 4924 | 47.19 | -26.81 | 74 | 64.9 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | H |
| | | 7386 | 48.91 | -25.09 | 74 | 58.55 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | H |
| | | 17985 | 59.55 | -14.45 | 74 | 49.21 | 48.73 | 18.88 | 57.27 | 300 | 263 | P | H |
| | | 17985 | 49.74 | -4.26 | 54 | 39.4 | 48.73 | 18.88 | 57.27 | 300 | 263 | A | H |
| | | 4924 | 45.25 | -28.75 | 74 | 62.96 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | V |
| | | 7386 | 47.98 | -26.02 | 74 | 57.62 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | V |
| | | 18000 | 60.01 | -13.99 | 74 | 49.36 | 49 | 18.89 | 57.24 | 100 | 123 | P | V |
| | | 18000 | 50.22 | -3.78 | 54 | 39.57 | 49 | 18.89 | 57.24 | 100 | 123 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 12 2467MHz | | 4934 | 42.26 | -31.74 | 74 | 59.92 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 46.52 | -27.48 | 74 | 56.13 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 17970 | 59.86 | -14.14 | 74 | 49.84 | 48.46 | 18.87 | 57.31 | 300 | 231 | P | H |
| | | 17970 | 49.97 | -4.03 | 54 | 39.95 | 48.46 | 18.87 | 57.31 | 300 | 231 | A | H |
| | | 4934 | 40.18 | -33.82 | 74 | 57.84 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 47.29 | -26.71 | 74 | 56.9 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 18000 | 60.2 | -13.8 | 74 | 49.55 | 49 | 18.89 | 57.24 | 100 | 147 | P | V |
| | | 18000 | 50.38 | -3.62 | 54 | 39.73 | 49 | 18.89 | 57.24 | 100 | 147 | A | V |
| 802.11b CH 13 2472MHz | | 4944 | 42.42 | -31.58 | 74 | 60.04 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | H |
| | | 7416 | 45.54 | -28.46 | 74 | 55.11 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | H |
| | | 18000 | 60.07 | -13.93 | 74 | 49.42 | 49 | 18.89 | 57.24 | 300 | 265 | P | H |
| | | 18000 | 50.16 | -3.84 | 54 | 39.51 | 49 | 18.89 | 57.24 | 300 | 265 | A | H |
| | | 4944 | 39.68 | -34.32 | 74 | 57.3 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | V |
| | | 7416 | 45.22 | -28.78 | 74 | 54.79 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | V |
| | | 17985 | 59.84 | -14.16 | 74 | 49.5 | 48.73 | 18.88 | 57.27 | 100 | 146 | P | V |
| | | 17985 | 49.94 | -4.06 | 54 | 39.6 | 48.73 | 18.88 | 57.27 | 100 | 146 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 2386.23 | 60.42 | -13.58 | 74 | 47.22 | 27.56 | 16.56 | 30.92 | 261 | 57 | P | H |
| | | 2386.23 | 48.98 | -5.02 | 54 | 35.78 | 27.56 | 16.56 | 30.92 | 261 | 57 | A | H |
| | * | 2412 | 114.75 | - | - | 101.56 | 27.5 | 16.6 | 30.91 | 261 | 57 | P | H |
| | * | 2412 | 107.48 | - | - | 94.29 | 27.5 | 16.6 | 30.91 | 261 | 57 | A | H |
| | | 2389.695 | 61.26 | -12.74 | 74 | 48.08 | 27.54 | 16.56 | 30.92 | 276 | 360 | P | V |
| | | 2390 | 49.95 | -4.05 | 54 | 36.77 | 27.54 | 16.56 | 30.92 | 276 | 360 | A | V |
| | * | 2412 | 115.41 | - | - | 102.22 | 27.5 | 16.6 | 30.91 | 276 | 360 | P | V |
| | * | 2412 | 107.67 | - | - | 94.48 | 27.5 | 16.6 | 30.91 | 276 | 360 | A | V |
| 802.11g CH 06 2437MHz | | 2388.03 | 59.89 | -14.11 | 74 | 46.7 | 27.55 | 16.56 | 30.92 | 257 | 57 | P | H |
| | | 2387.69 | 49.17 | -4.83 | 54 | 35.98 | 27.55 | 16.56 | 30.92 | 257 | 57 | A | H |
| | * | 2438 | 116.22 | - | - | 102.98 | 27.5 | 16.64 | 30.9 | 257 | 57 | P | H |
| | * | 2438 | 109.02 | - | - | 95.78 | 27.5 | 16.64 | 30.9 | 257 | 57 | A | H |
| | | 2486.77 | 59.27 | -14.73 | 74 | 46.01 | 27.43 | 16.71 | 30.88 | 257 | 57 | P | H |
| | | 2483.53 | 49.15 | -4.85 | 54 | 35.89 | 27.43 | 16.71 | 30.88 | 257 | 57 | A | H |
| | | 2388.03 | 59.41 | -14.59 | 74 | 46.22 | 27.55 | 16.56 | 30.92 | 336 | 327 | P | V |
| | | 2387.01 | 48.31 | -5.69 | 54 | 35.12 | 27.55 | 16.56 | 30.92 | 336 | 327 | A | V |
| | * | 2436 | 116.69 | - | - | 103.45 | 27.5 | 16.64 | 30.9 | 336 | 327 | P | V |
| | * | 2436 | 109.81 | - | - | 96.57 | 27.5 | 16.64 | 30.9 | 336 | 327 | A | V |
| | | 2486.32 | 59.49 | -14.51 | 74 | 46.23 | 27.43 | 16.71 | 30.88 | 336 | 327 | P | V |
| | | 2485.33 | 49.01 | -4.99 | 54 | 35.75 | 27.43 | 16.71 | 30.88 | 336 | 327 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 11 2462MHz | * | 2462 | 114.4 | - | - | 101.13 | 27.48 | 16.68 | 30.89 | 248 | 58 | P | H |
| | * | 2462 | 107.31 | - | - | 94.04 | 27.48 | 16.68 | 30.89 | 248 | 58 | A | H |
| | | 2483.8 | 63.67 | -10.33 | 74 | 50.41 | 27.43 | 16.71 | 30.88 | 248 | 58 | P | H |
| | | 2483.56 | 50.44 | -3.56 | 54 | 37.18 | 27.43 | 16.71 | 30.88 | 248 | 58 | A | H |
| | * | 2460 | 114.84 | - | - | 101.58 | 27.48 | 16.67 | 30.89 | 238 | 359 | P | V |
| | * | 2460 | 107.19 | - | - | 93.93 | 27.48 | 16.67 | 30.89 | 238 | 359 | A | V |
| | | 2483.8 | 61.94 | -12.06 | 74 | 48.68 | 27.43 | 16.71 | 30.88 | 238 | 359 | P | V |
| | | 2485.96 | 49.04 | -4.96 | 54 | 35.78 | 27.43 | 16.71 | 30.88 | 238 | 359 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 12 2467MHz | * | 2467 | 108.11 | - | - | 94.84 | 27.47 | 16.68 | 30.88 | 248 | 57 | P | H |
| | * | 2467 | 100.65 | - | - | 87.38 | 27.47 | 16.68 | 30.88 | 248 | 57 | A | H |
| | | 2484.9 | 64.47 | -9.53 | 74 | 51.21 | 27.43 | 16.71 | 30.88 | 248 | 57 | P | H |
| | | 2483.95 | 50.64 | -3.36 | 54 | 37.38 | 27.43 | 16.71 | 30.88 | 248 | 57 | A | H |
| | * | 2467 | 108.82 | - | - | 95.55 | 27.47 | 16.68 | 30.88 | 237 | 356 | P | V |
| | * | 2467 | 100.81 | - | - | 87.54 | 27.47 | 16.68 | 30.88 | 237 | 356 | A | V |
| | | 2483.55 | 60.55 | -13.45 | 74 | 47.29 | 27.43 | 16.71 | 30.88 | 237 | 356 | P | V |
| | | 2483.5 | 49.32 | -4.68 | 54 | 36.06 | 27.43 | 16.71 | 30.88 | 237 | 356 | A | V |
| 802.11g CH 13 2472MHz | * | 2472 | 104.59 | - | - | 91.32 | 27.46 | 16.69 | 30.88 | 250 | 53 | P | H |
| | * | 2472 | 97.1 | - | - | 83.83 | 27.46 | 16.69 | 30.88 | 250 | 53 | A | H |
| | | 2483.64 | 61.94 | -12.06 | 74 | 48.68 | 27.43 | 16.71 | 30.88 | 250 | 53 | P | H |
| | | 2484.08 | 50.47 | -3.53 | 54 | 37.21 | 27.43 | 16.71 | 30.88 | 250 | 53 | A | H |
| | * | 2472 | 104.68 | - | - | 91.41 | 27.46 | 16.69 | 30.88 | 239 | 358 | P | V |
| | * | 2472 | 97.04 | - | - | 83.77 | 27.46 | 16.69 | 30.88 | 239 | 358 | A | V |
| | | 2485.28 | 58.66 | -15.34 | 74 | 45.4 | 27.43 | 16.71 | 30.88 | 239 | 358 | P | V |
| | | 2485.24 | 48.92 | -5.08 | 54 | 35.66 | 27.43 | 16.71 | 30.88 | 239 | 358 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 4824 | 42.02 | -31.98 | 74 | 59.71 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | H |
| | | 18000 | 59.73 | -14.27 | 74 | 49.08 | 49 | 18.89 | 57.24 | 100 | 35 | P | H |
| | | 18000 | 50.35 | -3.65 | 54 | 39.7 | 49 | 18.89 | 57.24 | 100 | 35 | A | H |
| | | 4824 | 42.57 | -31.43 | 74 | 60.26 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | V |
| | | 17985 | 59.12 | -14.88 | 74 | 48.78 | 48.73 | 18.88 | 57.27 | 100 | 58 | P | V |
| | | 17985 | 50.03 | -3.97 | 54 | 39.69 | 48.73 | 18.88 | 57.27 | 100 | 58 | A | V |
| 802.11g CH 06 2437MHz | | 4874 | 41.39 | -32.61 | 74 | 59.13 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | H |
| | | 7311 | 55.96 | -18.04 | 74 | 65.78 | 36.3 | 12.31 | 58.43 | 300 | 5 | P | H |
| | | 7311 | 40.37 | -13.63 | 54 | 50.19 | 36.3 | 12.31 | 58.43 | 300 | 5 | A | H |
| | | 18000 | 60.03 | -13.97 | 74 | 49.38 | 49 | 18.89 | 57.24 | 100 | 44 | P | H |
| | | 18000 | 50.53 | -3.47 | 54 | 39.88 | 49 | 18.89 | 57.24 | 100 | 44 | A | H |
| | | 4875 | 43.04 | -30.96 | 74 | 60.78 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | V |
| | | 7311 | 53.99 | -20.01 | 74 | 63.81 | 36.3 | 12.31 | 58.43 | 145 | 353 | P | V |
| | | 7311 | 40.54 | -13.46 | 54 | 50.36 | 36.3 | 12.31 | 58.43 | 145 | 353 | A | V |
| | | 18000 | 59.99 | -14.01 | 74 | 49.34 | 49 | 18.89 | 57.24 | 100 | 35 | P | V |
| | | 18000 | 50.33 | -3.67 | 54 | 39.68 | 49 | 18.89 | 57.24 | 100 | 35 | A | V |
| 802.11g CH 11 2462MHz | | 4924 | 43.8 | -30.2 | 74 | 61.51 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | H |
| | | 7386 | 48.41 | -25.59 | 74 | 58.05 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | H |
| | | 18000 | 59.02 | -14.98 | 74 | 48.37 | 49 | 18.89 | 57.24 | 100 | 35 | P | H |
| | | 18000 | 50.53 | -3.47 | 54 | 39.88 | 49 | 18.89 | 57.24 | 100 | 35 | A | H |
| | | 4924 | 42.55 | -31.45 | 74 | 60.26 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | V |
| | | 7386 | 49.88 | -24.12 | 74 | 59.52 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | V |
| | | 18000 | 59.98 | -14.02 | 74 | 49.33 | 49 | 18.89 | 57.24 | 100 | 28 | P | V |
| | | 18000 | 50.55 | -3.45 | 54 | 39.9 | 49 | 18.89 | 57.24 | 100 | 28 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 12 2467MHz | | 4934 | 39.77 | -34.23 | 74 | 57.43 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 44.73 | -29.27 | 74 | 54.34 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 17985 | 58.74 | -15.26 | 74 | 48.4 | 48.73 | 18.88 | 57.27 | 100 | 28 | P | H |
| | | 17985 | 49.3 | -4.7 | 54 | 38.96 | 48.73 | 18.88 | 57.27 | 100 | 28 | A | H |
| | | 4934 | 39.7 | -34.3 | 74 | 57.36 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 45.6 | -28.4 | 74 | 55.21 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 17985 | 59.29 | -14.71 | 74 | 48.95 | 48.73 | 18.88 | 57.27 | 100 | 35 | P | V |
| | | 17985 | 50.21 | -3.79 | 54 | 39.87 | 48.73 | 18.88 | 57.27 | 100 | 35 | A | V |
| 802.11g CH 13 2472MHz | | 4944 | 39.98 | -34.02 | 74 | 57.6 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | H |
| | | 7416 | 45.97 | -28.03 | 74 | 55.54 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | H |
| | | 18000 | 59.69 | -14.31 | 74 | 49.04 | 49 | 18.89 | 57.24 | 300 | 247 | P | H |
| | | 18000 | 49.86 | -4.14 | 54 | 39.21 | 49 | 18.89 | 57.24 | 300 | 247 | A | H |
| | | 4944 | 39.84 | -34.16 | 74 | 57.46 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | V |
| | | 7416 | 45.61 | -28.39 | 74 | 55.18 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | V |
| | | 18000 | 59.18 | -14.82 | 74 | 48.53 | 49 | 18.89 | 57.24 | 100 | 159 | P | V |
| | | 18000 | 49.4 | -4.6 | 54 | 38.75 | 49 | 18.89 | 57.24 | 100 | 159 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 01 2412MHz | | 2389.905 | 61.48 | -12.52 | 74 | 48.3 | 27.54 | 16.56 | 30.92 | 226 | 60 | P | H |
| | | 2390 | 50.58 | -3.42 | 54 | 37.4 | 27.54 | 16.56 | 30.92 | 226 | 60 | A | H |
| | * | 2412 | 115.38 | - | - | 102.19 | 27.5 | 16.6 | 30.91 | 226 | 60 | P | H |
| | * | 2412 | 107.74 | - | - | 94.55 | 27.5 | 16.6 | 30.91 | 226 | 60 | A | H |
| | | 2389.275 | 59.32 | -14.68 | 74 | 46.14 | 27.54 | 16.56 | 30.92 | 246 | 359 | P | V |
| | | 2388.96 | 49.12 | -4.88 | 54 | 35.94 | 27.54 | 16.56 | 30.92 | 246 | 359 | A | V |
| | * | 2412 | 114.6 | - | - | 101.41 | 27.5 | 16.6 | 30.91 | 246 | 359 | P | V |
| | * | 2412 | 107.22 | - | - | 94.03 | 27.5 | 16.6 | 30.91 | 246 | 359 | A | V |
| 802.11n HT20 CH 06 2437MHz | | 2385.65 | 58.65 | -15.35 | 74 | 45.45 | 27.56 | 16.56 | 30.92 | 114 | 53 | P | H |
| | | 2390 | 48.34 | -5.66 | 54 | 35.16 | 27.54 | 16.56 | 30.92 | 114 | 53 | A | H |
| | * | 2437 | 114.95 | - | - | 101.71 | 27.5 | 16.64 | 30.9 | 114 | 53 | P | H |
| | * | 2437 | 107.69 | - | - | 94.45 | 27.5 | 16.64 | 30.9 | 114 | 53 | A | H |
| | | 2495.14 | 58.54 | -15.46 | 74 | 45.27 | 27.41 | 16.73 | 30.87 | 114 | 53 | P | H |
| | | 2483.53 | 47.7 | -6.3 | 54 | 34.44 | 27.43 | 16.71 | 30.88 | 114 | 53 | A | H |
| | | 2389.9 | 58.85 | -15.15 | 74 | 45.67 | 27.54 | 16.56 | 30.92 | 211 | 3 | P | V |
| | | 2389.56 | 48.33 | -5.67 | 54 | 35.15 | 27.54 | 16.56 | 30.92 | 211 | 3 | A | V |
| | * | 2437 | 115.06 | - | - | 101.82 | 27.5 | 16.64 | 30.9 | 211 | 3 | P | V |
| | * | 2437 | 108.31 | - | - | 95.07 | 27.5 | 16.64 | 30.9 | 211 | 3 | A | V |
| | | 2484.07 | 61.22 | -12.78 | 74 | 47.96 | 27.43 | 16.71 | 30.88 | 211 | 3 | P | V |
| | | 2483.98 | 48.76 | -5.24 | 54 | 35.5 | 27.43 | 16.71 | 30.88 | 211 | 3 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 11 2462MHz | * | 2462 | 113.55 | - | - | 100.28 | 27.48 | 16.68 | 30.89 | 243 | 56 | P | H |
| | * | 2462 | 106.68 | - | - | 93.41 | 27.48 | 16.68 | 30.89 | 243 | 56 | A | H |
| | | 2486.24 | 62.97 | -11.03 | 74 | 49.71 | 27.43 | 16.71 | 30.88 | 243 | 56 | P | H |
| | | 2484.84 | 48.99 | -5.01 | 54 | 35.73 | 27.43 | 16.71 | 30.88 | 243 | 56 | A | H |
| | * | 2462 | 115.52 | - | - | 102.25 | 27.48 | 16.68 | 30.89 | 236 | 358 | P | V |
| | * | 2462 | 108.16 | - | - | 94.89 | 27.48 | 16.68 | 30.89 | 236 | 358 | A | V |
| | | 2483.84 | 64.37 | -9.63 | 74 | 51.11 | 27.43 | 16.71 | 30.88 | 236 | 358 | P | V |
| | | 2483.52 | 50.07 | -3.93 | 54 | 36.81 | 27.43 | 16.71 | 30.88 | 236 | 358 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 12 2467MHz | * | 2467 | 107.15 | - | - | 93.88 | 27.47 | 16.68 | 30.88 | 250 | 55 | P | H |
| | * | 2467 | 100.17 | - | - | 86.9 | 27.47 | 16.68 | 30.88 | 250 | 55 | A | H |
| | | 2485.16 | 63 | -11 | 74 | 49.74 | 27.43 | 16.71 | 30.88 | 250 | 55 | P | H |
| | | 2484.92 | 50.83 | -3.17 | 54 | 37.57 | 27.43 | 16.71 | 30.88 | 250 | 55 | A | H |
| | * | 2467 | 109.06 | - | - | 95.79 | 27.47 | 16.68 | 30.88 | 239 | 358 | P | V |
| | * | 2467 | 100.27 | - | - | 87 | 27.47 | 16.68 | 30.88 | 239 | 358 | A | V |
| | | 2483.64 | 62.8 | -11.2 | 74 | 49.54 | 27.43 | 16.71 | 30.88 | 239 | 358 | P | V |
| | | 2483.52 | 50.74 | -3.26 | 54 | 37.48 | 27.43 | 16.71 | 30.88 | 239 | 358 | A | V |
| 802.11n HT20 CH 13 2472MHz | * | 2472 | 101.13 | - | - | 87.86 | 27.46 | 16.69 | 30.88 | 250 | 57 | P | H |
| | * | 2472 | 94.01 | - | - | 80.74 | 27.46 | 16.69 | 30.88 | 250 | 57 | A | H |
| | | 2483.72 | 60.52 | -13.48 | 74 | 47.26 | 27.43 | 16.71 | 30.88 | 250 | 57 | P | H |
| | | 2483.52 | 50.74 | -3.26 | 54 | 37.48 | 27.43 | 16.71 | 30.88 | 250 | 57 | A | H |
| | * | 2472 | 101.41 | - | - | 88.14 | 27.46 | 16.69 | 30.88 | 239 | 355 | P | V |
| | * | 2472 | 93.95 | - | - | 80.68 | 27.46 | 16.69 | 30.88 | 239 | 355 | A | V |
| | | 2483.76 | 60.09 | -13.91 | 74 | 46.83 | 27.43 | 16.71 | 30.88 | 239 | 355 | P | V |
| | | 2484.16 | 48.58 | -5.42 | 54 | 35.32 | 27.43 | 16.71 | 30.88 | 239 | 355 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 01 2412MHz | | 4824 | 40.7 | -33.3 | 74 | 58.39 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | H |
| | | 18000 | 59.32 | -14.68 | 74 | 48.67 | 49 | 18.89 | 57.24 | 100 | 22 | P | H |
| | | 18000 | 50.51 | -3.49 | 54 | 39.86 | 49 | 18.89 | 57.24 | 100 | 22 | A | H |
| | | 4824 | 40.11 | -33.89 | 74 | 57.8 | 31.1 | 10.07 | 58.86 | 100 | 0 | P | V |
| | | 18000 | 59.24 | -14.76 | 74 | 48.59 | 49 | 18.89 | 57.24 | 100 | 62 | P | V |
| | | 18000 | 50.55 | -3.45 | 54 | 39.9 | 49 | 18.89 | 57.24 | 100 | 62 | A | V |
| 802.11n HT20 CH 06 2437MHz | | 4874 | 40.14 | -33.86 | 74 | 57.88 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | H |
| | | 7311 | 48.86 | -25.14 | 74 | 58.68 | 36.3 | 12.31 | 58.43 | 100 | 0 | P | H |
| | | 18000 | 60.13 | -13.87 | 74 | 49.48 | 49 | 18.89 | 57.24 | 100 | 55 | P | H |
| | | 18000 | 50.24 | -3.76 | 54 | 39.59 | 49 | 18.89 | 57.24 | 100 | 55 | A | H |
| | | 4874 | 41.82 | -32.18 | 74 | 59.56 | 31.05 | 10.11 | 58.9 | 100 | 0 | P | V |
| | | 7311 | 52.59 | -21.41 | 74 | 62.41 | 36.3 | 12.31 | 58.43 | 153 | 354 | P | V |
| | | 7311 | 41.54 | -12.46 | 54 | 51.36 | 36.3 | 12.31 | 58.43 | 153 | 354 | A | V |
| | | 17985 | 59.03 | -14.97 | 74 | 48.69 | 48.73 | 18.88 | 57.27 | 100 | 47 | P | V |
| | | 17985 | 50 | -4 | 54 | 39.66 | 48.73 | 18.88 | 57.27 | 100 | 47 | A | V |
| 802.11n HT20 CH 11 2462MHz | | 4924 | 40.15 | -33.85 | 74 | 57.86 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | H |
| | | 7386 | 47.07 | -26.93 | 74 | 56.71 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | H |
| | | 18000 | 59.58 | -14.42 | 74 | 48.93 | 49 | 18.89 | 57.24 | 300 | 236 | P | H |
| | | 18000 | 49.96 | -4.04 | 54 | 39.31 | 49 | 18.89 | 57.24 | 300 | 236 | A | H |
| | | 4924 | 40.12 | -33.88 | 74 | 57.83 | 31.1 | 10.14 | 58.95 | 100 | 0 | P | V |
| | | 7386 | 45.29 | -28.71 | 74 | 54.93 | 36.3 | 12.35 | 58.29 | 100 | 0 | P | V |
| | | 18000 | 60.03 | -13.97 | 74 | 49.38 | 49 | 18.89 | 57.24 | 100 | 135 | P | V |
| | | 18000 | 50.21 | -3.79 | 54 | 39.56 | 49 | 18.89 | 57.24 | 100 | 135 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 12 2467MHz | | 4934 | 40.51 | -33.49 | 74 | 58.17 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 45.66 | -28.34 | 74 | 55.27 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 17985 | 60.07 | -13.93 | 74 | 49.73 | 48.73 | 18.88 | 57.27 | 100 | 28 | P | H |
| | | 17985 | 50.08 | -3.92 | 54 | 39.74 | 48.73 | 18.88 | 57.27 | 100 | 28 | A | H |
| | | 4934 | 40.61 | -33.39 | 74 | 58.27 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 45.21 | -28.79 | 74 | 54.82 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 18000 | 59.44 | -14.56 | 74 | 48.79 | 49 | 18.89 | 57.24 | 100 | 18 | P | V |
| | | 18000 | 49.41 | -4.59 | 54 | 38.76 | 49 | 18.89 | 57.24 | 100 | 18 | A | V |
| 802.11n HT20 CH 13 2472MHz | | 4944 | 39.83 | -34.17 | 74 | 57.45 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | H |
| | | 7416 | 45.39 | -28.61 | 74 | 54.96 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | H |
| | | 18000 | 59.37 | -14.63 | 74 | 48.72 | 49 | 18.89 | 57.24 | 100 | 31 | P | H |
| | | 18000 | 49.41 | -4.59 | 54 | 38.76 | 49 | 18.89 | 57.24 | 100 | 31 | A | H |
| | | 4944 | 39.53 | -34.47 | 74 | 57.15 | 31.18 | 10.16 | 58.96 | 100 | 0 | P | V |
| | | 7416 | 45.17 | -28.83 | 74 | 54.74 | 36.3 | 12.37 | 58.24 | 100 | 0 | P | V |
| | | 18000 | 58.62 | -15.38 | 74 | 47.97 | 49 | 18.89 | 57.24 | 100 | 21 | P | V |
| | | 18000 | 48.61 | -5.39 | 54 | 37.96 | 49 | 18.89 | 57.24 | 100 | 21 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Emission above 18GHz

## 2.4GHz WIFI 802.11b (SHF)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level (dBμV) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4GHz 802.11b CH 12 2467MHz SHF | | 21640 | 38.63 | -35.37 | 74 | 43.18 | 38.33 | 11.82 | 54.7 | 150 | 0 | P | H |
| | | 20528 | 37.09 | -36.91 | 74 | 41.9 | 38.86 | 11.22 | 54.89 | 150 | 0 | P | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against limit line.<br>3. Super High Frequency (SHF) | | | | | | | | | | | | |

## Emission below 1GHz

## 2.4GHz WIFI 802.11b (LF)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level (dBμV) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4GHz 802.11b LF | | 114.39 | 29.13 | -14.37 | 43.5 | 43.08 | 17.06 | 1.53 | 32.54 | - | - | P | H |
| | | 169.68 | 25 | -18.5 | 43.5 | 39.98 | 15.64 | 1.87 | 32.49 | - | - | P | H |
| | | 263.77 | 22.25 | -23.75 | 46 | 32.4 | 19.95 | 2.32 | 32.42 | - | - | P | H |
| | | 455.83 | 28.35 | -17.65 | 46 | 34.63 | 23.27 | 2.88 | 32.43 | - | - | P | H |
| | | 576.11 | 33.08 | -12.92 | 46 | 36.49 | 25.82 | 3.31 | 32.54 | - | - | P | H |
| | | 711.91 | 38.23 | -7.77 | 46 | 40.5 | 26.56 | 3.62 | 32.45 | 100 | 0 | P | H |
| | | 112.45 | 26.07 | -17.43 | 43.5 | 40.02 | 17.06 | 1.52 | 32.53 | - | - | P | V |
| | | 171.62 | 23.55 | -19.95 | 43.5 | 38.67 | 15.48 | 1.89 | 32.49 | - | - | P | V |
| | | 483.96 | 38.93 | -7.07 | 46 | 44.75 | 23.7 | 3.01 | 32.53 | - | - | P | V |
| | | 712.88 | 39.54 | -6.46 | 46 | 41.79 | 26.58 | 3.62 | 32.45 | 100 | 0 | P | V |
| | | 742.95 | 39.23 | -6.77 | 46 | 40.16 | 27.82 | 3.7 | 32.45 | - | - | P | V |
| | | 896.21 | 35.37 | -10.63 | 46 | 34 | 28.87 | 4.15 | 31.65 | - | - | P | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against limit line. | | | | | | | | | | | | |

**<EUT with Fixture 1>**

**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Band Edge @ 3m)**

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1+2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 12 2467MHz | * | 2467 | 106.16 | - | - | 92.89 | 27.47 | 16.68 | 30.88 | 307 | 49 | P | H |
| | * | 2467 | 103.22 | - | - | 89.95 | 27.47 | 16.68 | 30.88 | 307 | 49 | A | H |
| | | 2483.7 | 57.03 | -16.97 | 74 | 43.77 | 27.43 | 16.71 | 30.88 | 307 | 49 | P | H |
| | | 2483.9 | 47.84 | -6.16 | 54 | 34.58 | 27.43 | 16.71 | 30.88 | 307 | 49 | A | H |
| | * | 2467 | 107.78 | - | - | 94.51 | 27.47 | 16.68 | 30.88 | 100 | 2 | P | V |
| | * | 2467 | 104.71 | - | - | 91.44 | 27.47 | 16.68 | 30.88 | 100 | 2 | A | V |
| | | 2483.8 | 58.21 | -15.79 | 74 | 44.95 | 27.43 | 16.71 | 30.88 | 100 | 2 | P | V |
| | | 2483.5 | 50.64 | -3.36 | 54 | 37.38 | 27.43 | 16.71 | 30.88 | 100 | 2 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz
## WIFI 802.11b (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 12 2467MHz | | 4934 | 40.76 | -33.24 | 74 | 58.42 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 47.02 | -26.98 | 74 | 56.63 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 18000 | 59.65 | -14.35 | 74 | 49 | 49 | 18.89 | 57.24 | 100 | 28 | P | H |
| | | 18000 | 49.59 | -4.41 | 54 | 38.94 | 49 | 18.89 | 57.24 | 100 | 28 | A | H |
| | | 4934 | 40.12 | -33.88 | 74 | 57.78 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 45.11 | -28.89 | 74 | 54.72 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 18000 | 60.04 | -13.96 | 74 | 49.39 | 49 | 18.89 | 57.24 | 100 | 18 | P | V |
| | | 18000 | 50.27 | -3.73 | 54 | 39.62 | 49 | 18.89 | 57.24 | 100 | 18 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

**<EUT with Fixture 2>**

**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Band Edge @ 3m)**

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1+2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 12 2467MHz | * | 2467 | 107.31 | - | - | 94.04 | 27.47 | 16.68 | 30.88 | 258 | 51 | P | H |
| | * | 2467 | 104.2 | - | - | 90.93 | 27.47 | 16.68 | 30.88 | 258 | 51 | A | H |
| | | 2483.6 | 58.06 | -15.94 | 74 | 44.8 | 27.43 | 16.71 | 30.88 | 258 | 51 | P | H |
| | | 2483.5 | 50.64 | -3.36 | 54 | 37.38 | 27.43 | 16.71 | 30.88 | 258 | 51 | A | H |
| | * | 2467 | 106.81 | - | - | 93.54 | 27.47 | 16.68 | 30.88 | 100 | 316 | P | V |
| | * | 2467 | 103.87 | - | - | 90.6 | 27.47 | 16.68 | 30.88 | 100 | 316 | A | V |
| | | 2483.5 | 57.34 | -16.66 | 74 | 44.08 | 27.43 | 16.71 | 30.88 | 100 | 316 | P | V |
| | | 2483.8 | 48.56 | -5.44 | 54 | 35.3 | 27.43 | 16.71 | 30.88 | 100 | 316 | A | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz
## WIFI 802.11b (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 12 2467MHz | | 4934 | 41.12 | -32.88 | 74 | 58.78 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 45.33 | -28.67 | 74 | 54.94 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 18000 | 60.11 | -13.89 | 74 | 49.46 | 49 | 18.89 | 57.24 | 100 | 28 | P | H |
| | | 18000 | 50.11 | -3.89 | 54 | 39.46 | 49 | 18.89 | 57.24 | 100 | 28 | A | H |
| | | 4934 | 40.37 | -33.63 | 74 | 58.03 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 45.11 | -28.89 | 74 | 54.72 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 18000 | 60.68 | -13.32 | 74 | 50.03 | 49 | 18.89 | 57.24 | 100 | 18 | P | V |
| | | 18000 | 50.67 | -3.33 | 54 | 40.02 | 49 | 18.89 | 57.24 | 100 | 18 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

**<EUT with Fixture 3>**

**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Band Edge @ 3m)**

| WIFI Ant. | Note | Frequency | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1+2 | | ( MHz ) | ( dBµV/m ) | ( dB ) | ( dBµV/m ) | ( dBµV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 12 2467MHz | | 2467 | 103.6 | - | - | 90.33 | 27.47 | 16.68 | 30.88 | 100 | 359 | P | H |
| | | 2467 | 100.66 | - | - | 87.39 | 27.47 | 16.68 | 30.88 | 100 | 359 | P | H |
| | | 2489.75 | 56 | -18 | 74 | 42.73 | 27.42 | 16.72 | 30.87 | 100 | 359 | P | H |
| | | 2483.95 | 45.91 | -8.09 | 54 | 32.65 | 27.43 | 16.71 | 30.88 | 100 | 359 | P | H |
| | | 2467 | 106.35 | - | - | 93.08 | 27.47 | 16.68 | 30.88 | 100 | 5 | P | V |
| | | 2467 | 103.29 | - | - | 90.02 | 27.47 | 16.68 | 30.88 | 100 | 5 | P | V |
| | | 2483.7 | 58.29 | -15.71 | 74 | 45.03 | 27.43 | 16.71 | 30.88 | 100 | 5 | P | V |
| | | 2483.5 | 49.97 | -4.03 | 54 | 36.71 | 27.43 | 16.71 | 30.88 | 100 | 5 | P | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz
## WIFI 802.11b (Harmonic @ 3m)

| WIFI Ant. 1+2 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 12 2467MHz | | 4934 | 41.47 | -32.53 | 74 | 59.13 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | H |
| | | 7401 | 45.89 | -28.11 | 74 | 55.5 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | H |
| | | 18000 | 60.17 | -13.83 | 74 | 49.52 | 49 | 18.89 | 57.24 | 100 | 28 | P | H |
| | | 18000 | 50.21 | -3.79 | 54 | 39.56 | 49 | 18.89 | 57.24 | 100 | 28 | A | H |
| | | 4934 | 40.99 | -33.01 | 74 | 58.65 | 31.14 | 10.15 | 58.95 | 100 | 0 | P | V |
| | | 7401 | 45.37 | -28.63 | 74 | 54.98 | 36.3 | 12.36 | 58.27 | 100 | 0 | P | V |
| | | 17985 | 60.13 | -13.87 | 74 | 49.79 | 48.73 | 18.88 | 57.27 | 100 | 18 | P | V |
| | | 17985 | 50.11 | -3.89 | 54 | 39.77 | 48.73 | 18.88 | 57.27 | 100 | 18 | A | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

**Note symbol**

| | |
|---|---|
| * | **Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| ! | Test result is **over limit** line. |
| P/A | **P**eak or **A**verage |
| H/V | **H**orizontal or **V**ertical |

## A calculation example for radiated spurious emission is shown as below:

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Path | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1+2 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 01 2412MHz | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**

# Appendix D. Radiated Spurious Emission Plots

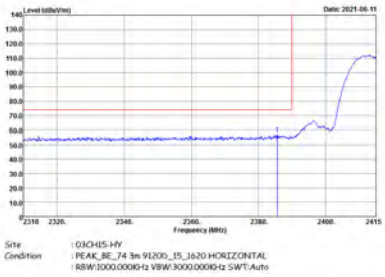
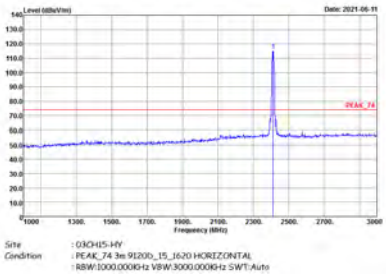
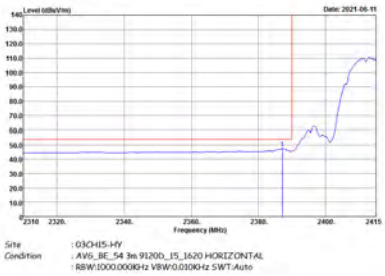
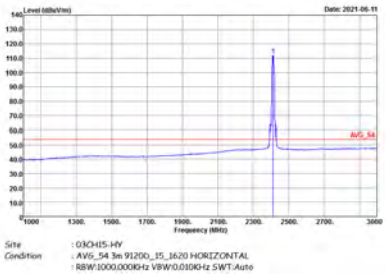
| | | | |
|---|---|---|---|
| **Test Engineer :** | Leo Lee, Mancy Chou and Bigshow Wang | **Temperature :** | 22.1~25.6℃ |
| | | **Relative Humidity :** | 46~64% |

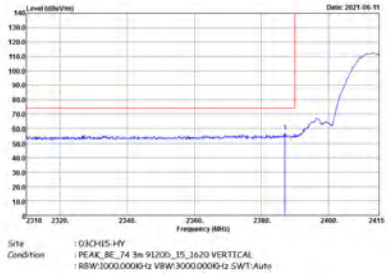
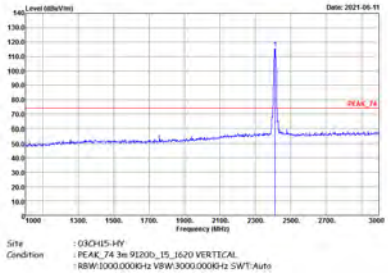
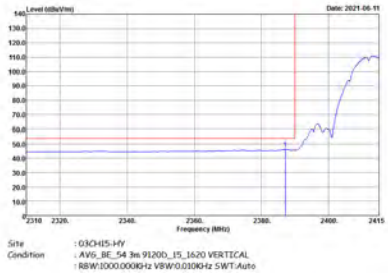
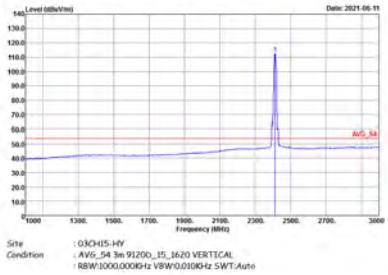
## Note symbol

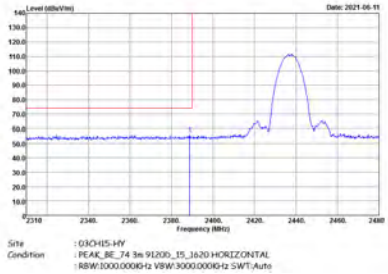
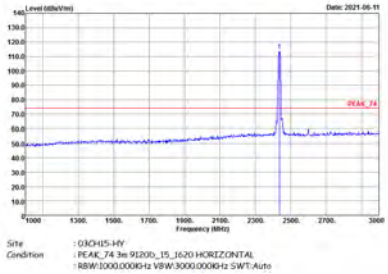
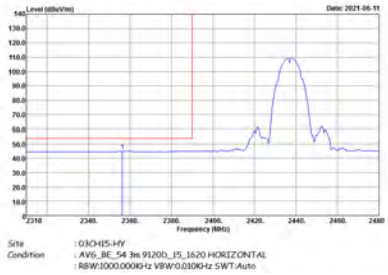
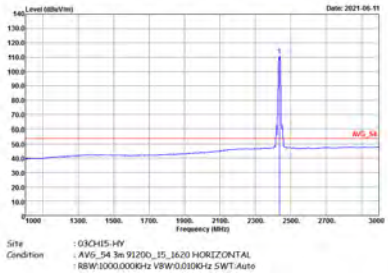
| | |
|---|---|
| -L | **Low channel location** |
| -R | **High channel location** |

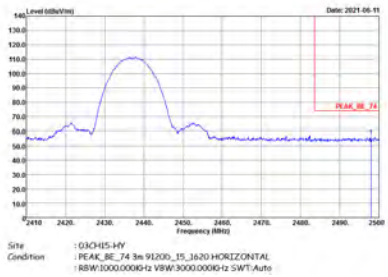
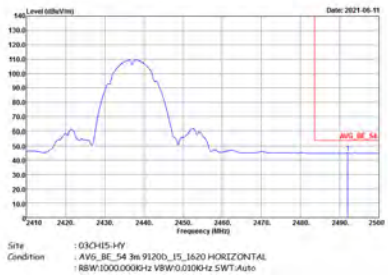
## 2.4GHz 2400~2483.5MHz

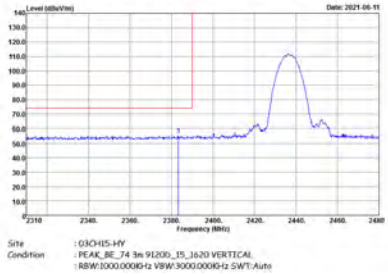
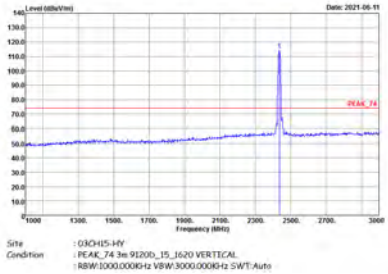
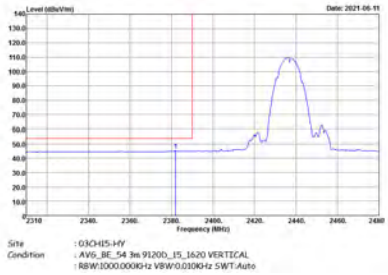
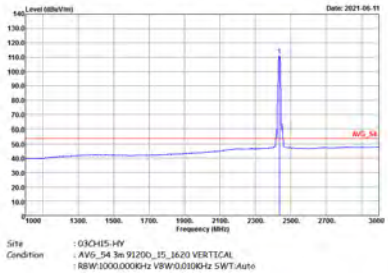
## WIFI 802.11b (Band Edge @ 3m)

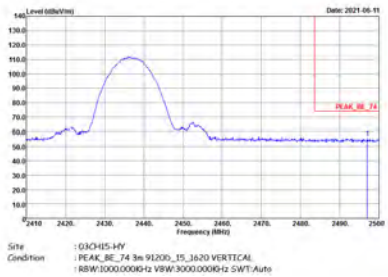
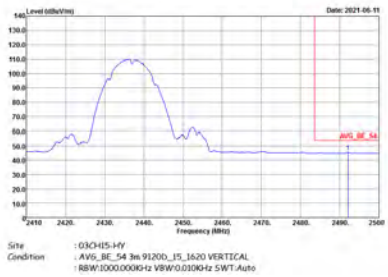
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH01 2412MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

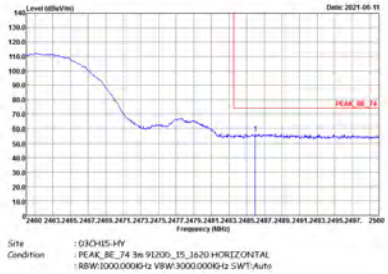
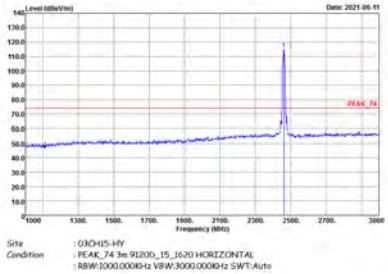
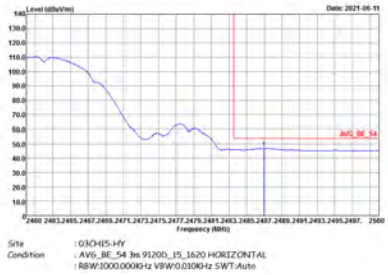
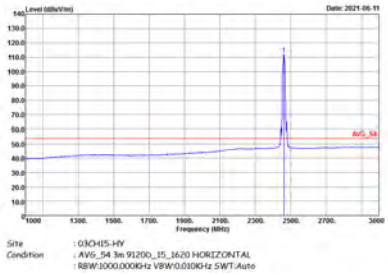
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH01 2412MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

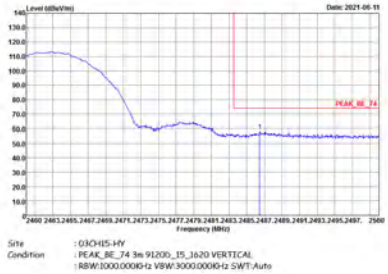
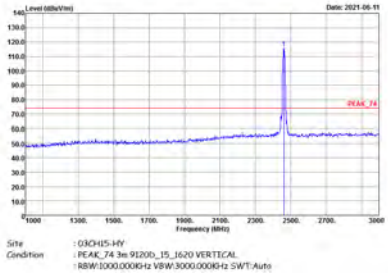
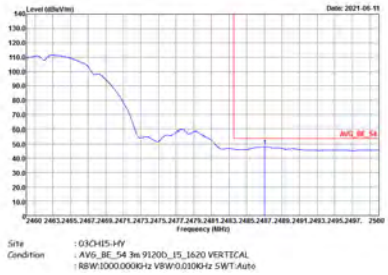
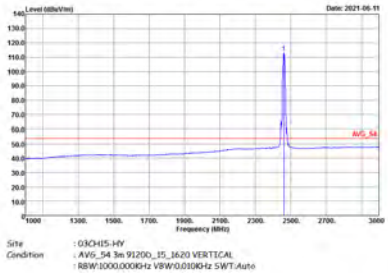
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH06 2437MHz - L | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

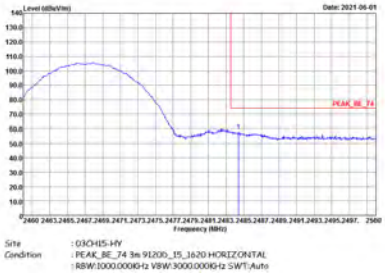
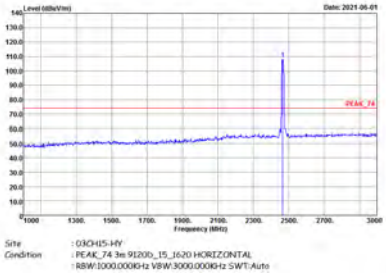
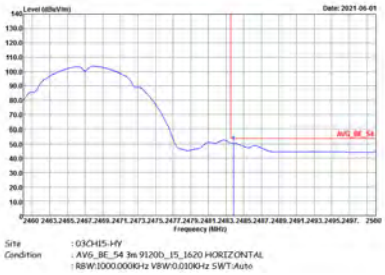
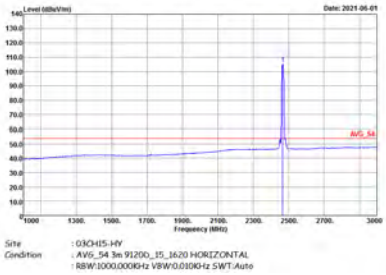
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH06 2437MHz - R | |
| 1+2 | Horizontal | Fundamental |
| Peak |  | Left blank |
| Avg. |  | Left blank |

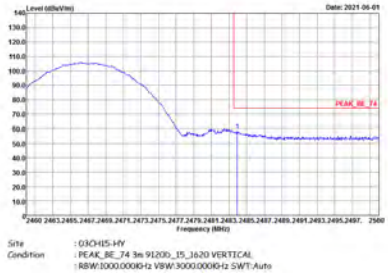
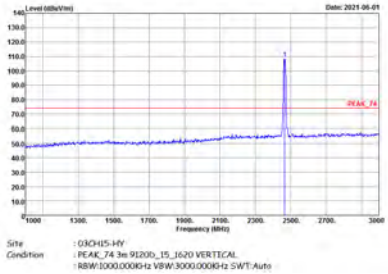
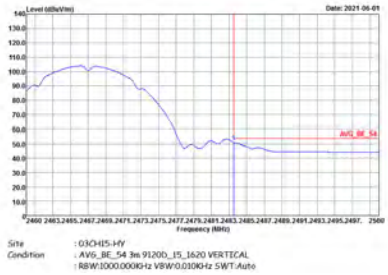
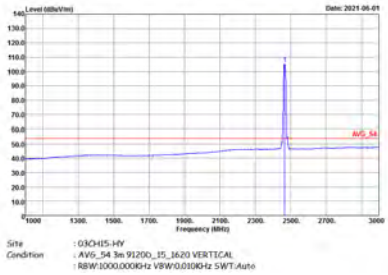
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH06 2437MHz - L | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

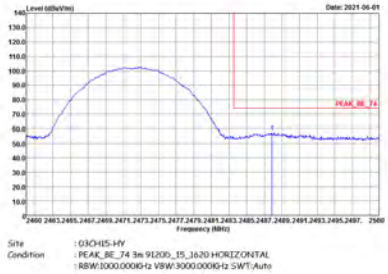
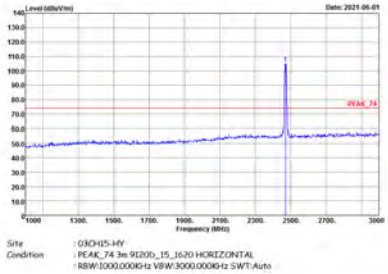
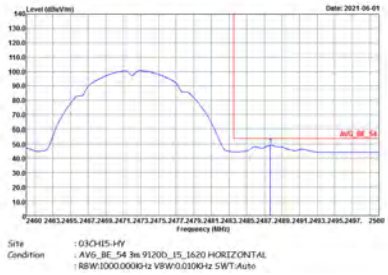
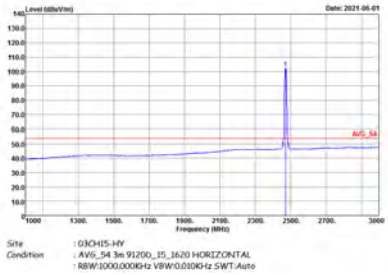
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH06 2437MHz - R | |
| 1+2 | Vertical | Fundamental |
| Peak |  | Left blank |
| Avg. |  | Left blank |

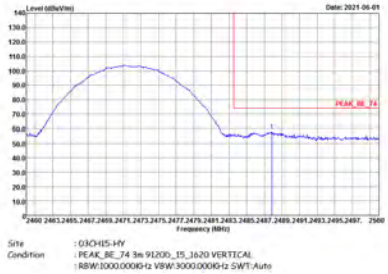
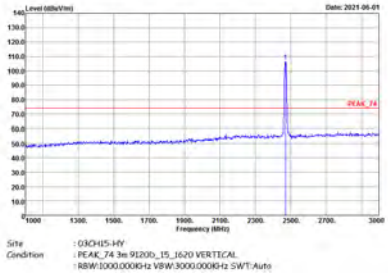
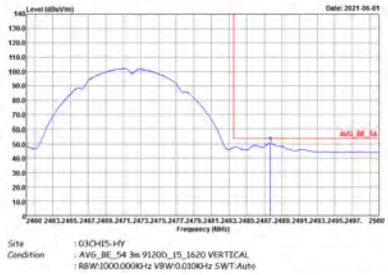
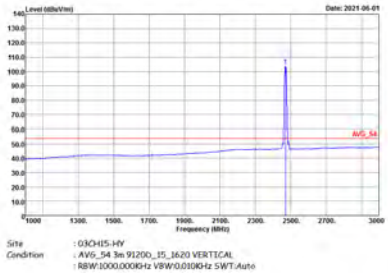
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH11 2462MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH11 2462MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

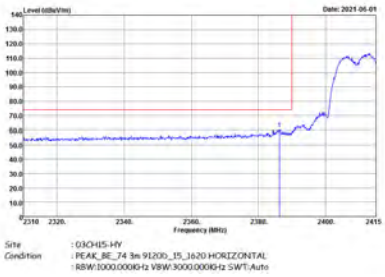
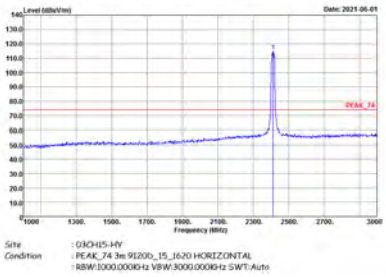
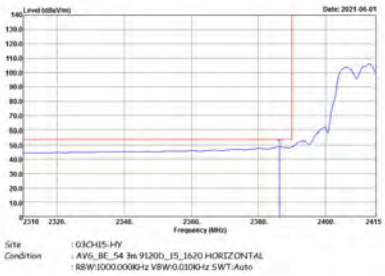
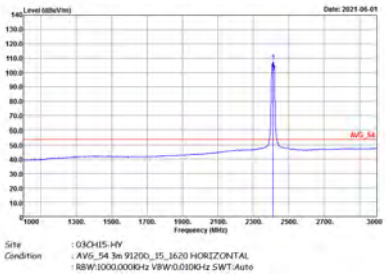
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

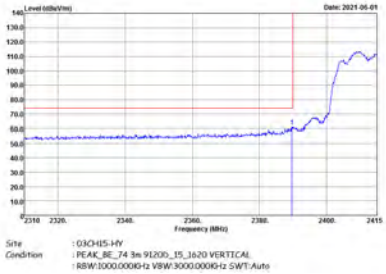
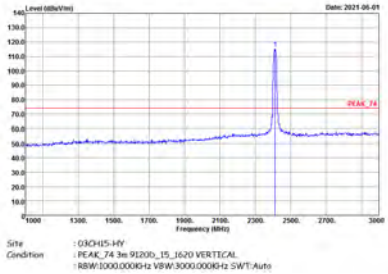
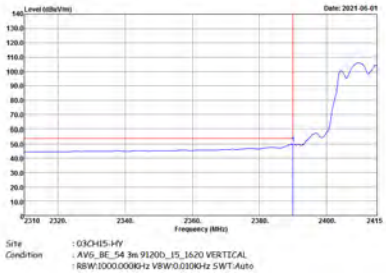
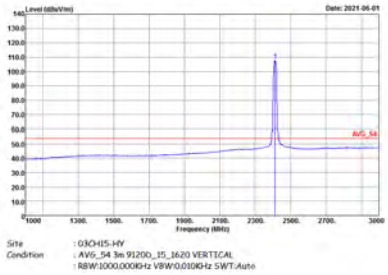
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH13 2472MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

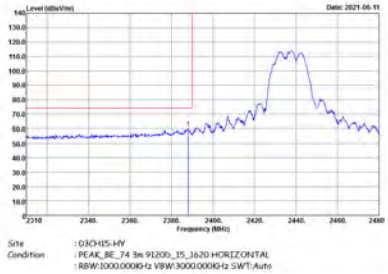
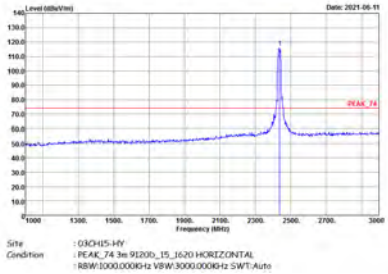
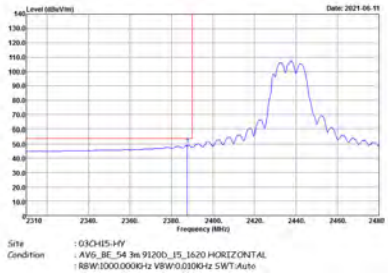
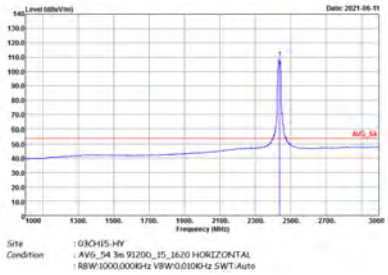
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH13 2472MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

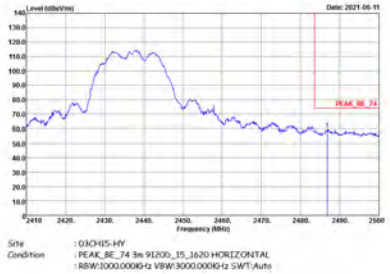
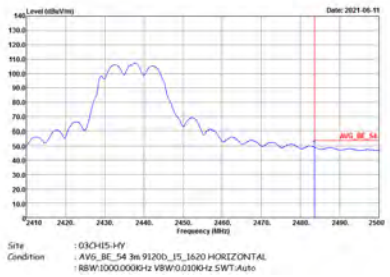
## 2.4GHz 2400~2483.5MHz

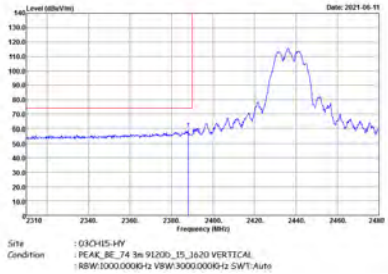
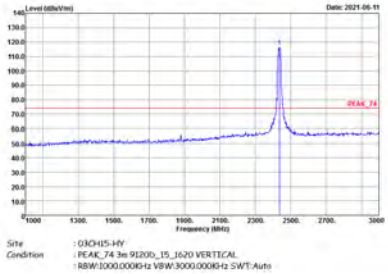
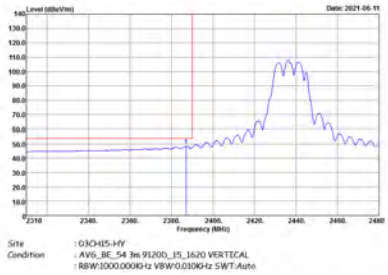
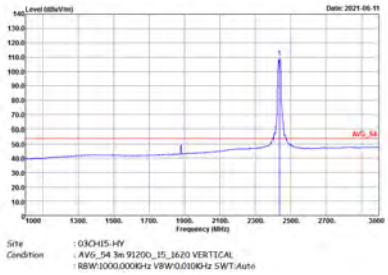
## WIFI 802.11g (Band Edge @ 3m)

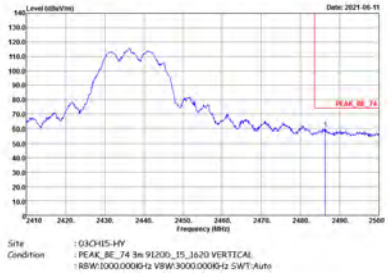
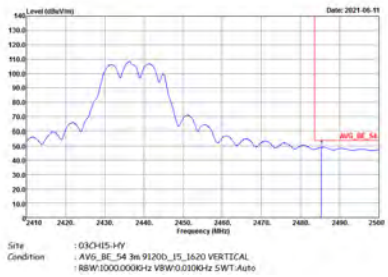
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH01 2412MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

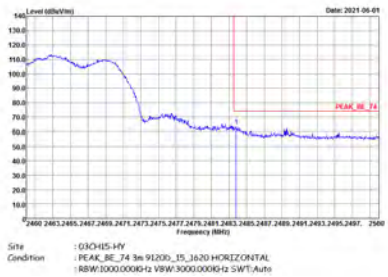
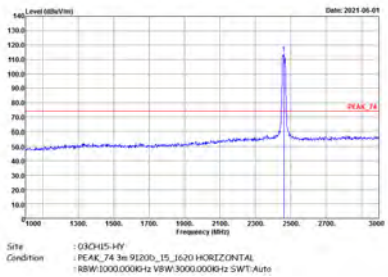
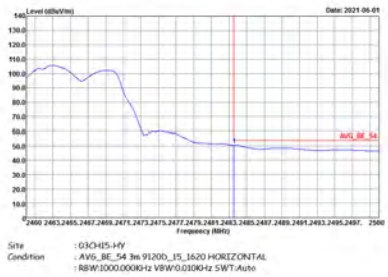
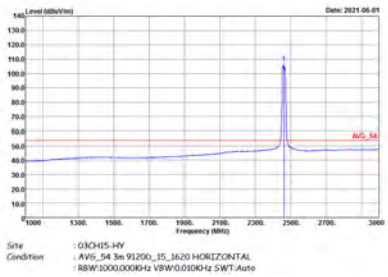
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH01 2412MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

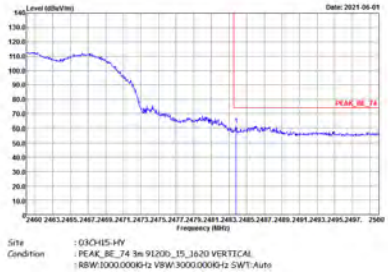
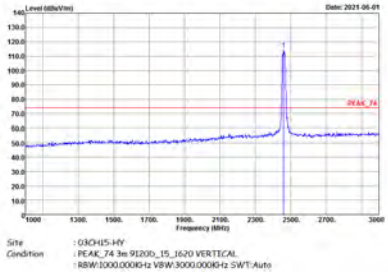
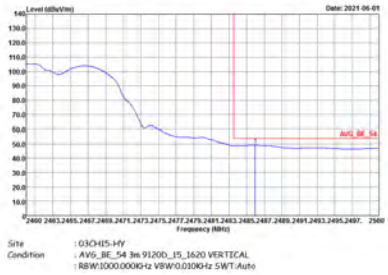
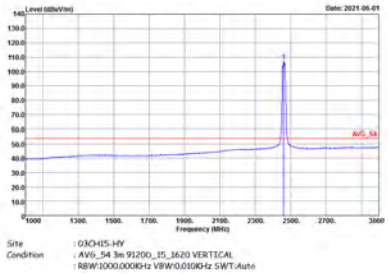
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH06 2437MHz - L | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

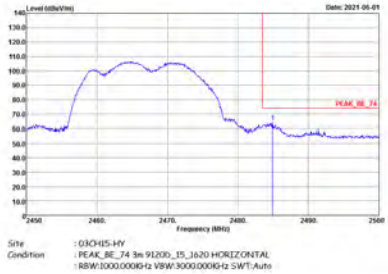
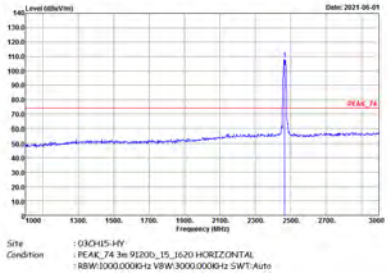
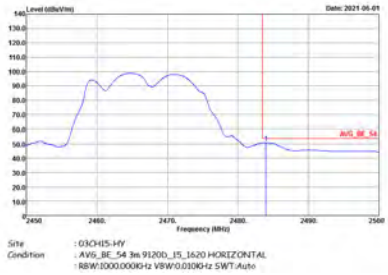
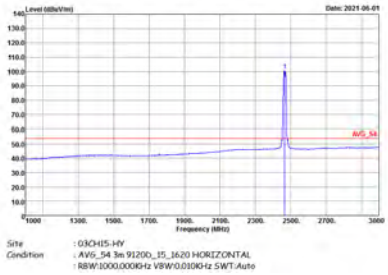
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH06 2437MHz - R | |
| 1+2 | Horizontal | Fundamental |
| Peak |  | Left blank |
| Avg. |  | Left blank |

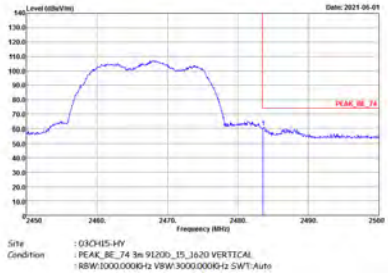
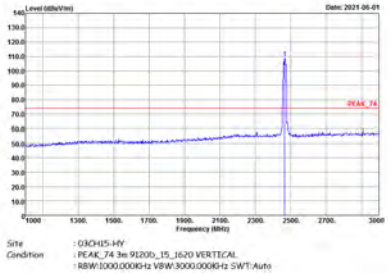
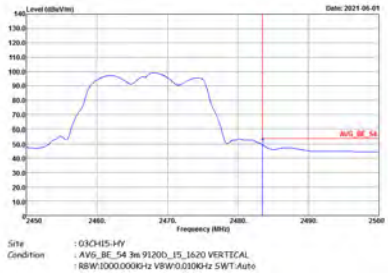
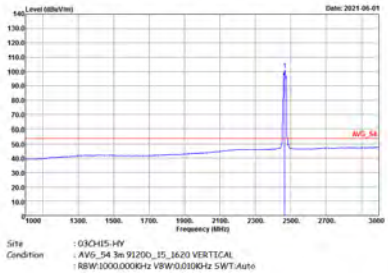
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH06 2437MHz - L | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

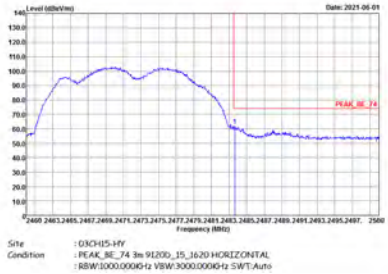
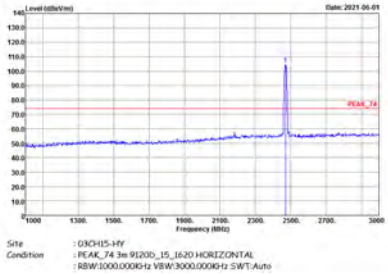
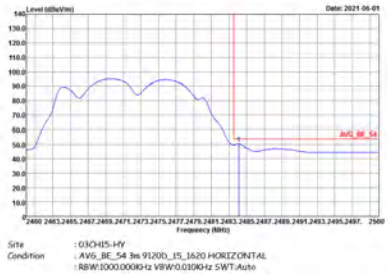
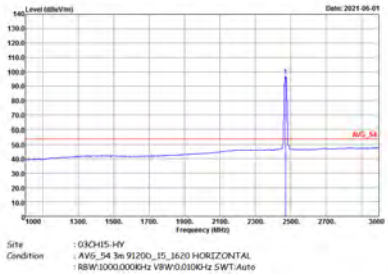
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH06 2437MHz - R | |
| 1+2 | Vertical | Fundamental |
| Peak |  | Left Blank |
| Avg. |  | Left Blank |

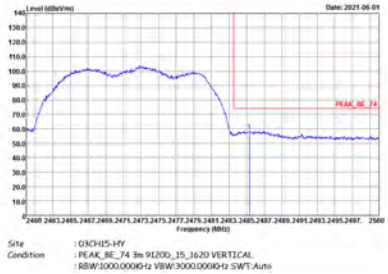
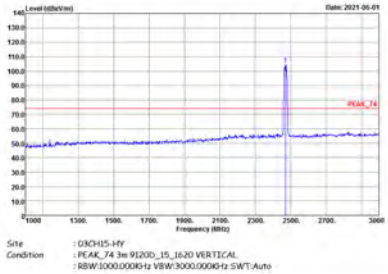
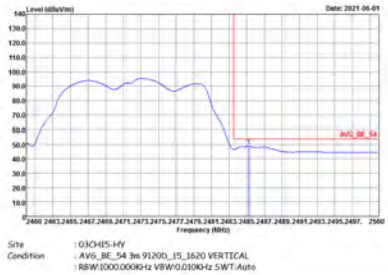
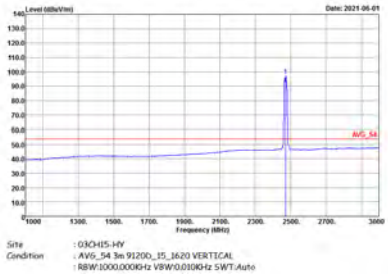
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH11 2462MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH11 2462MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

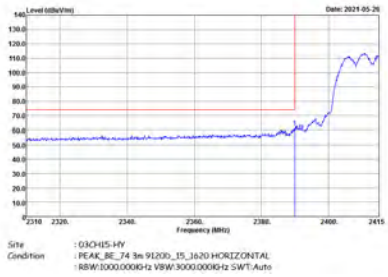
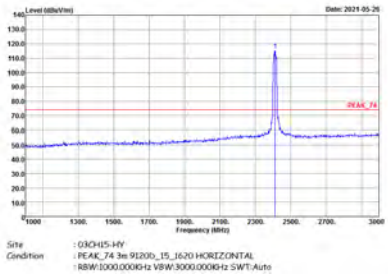
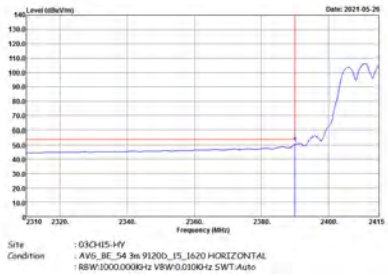
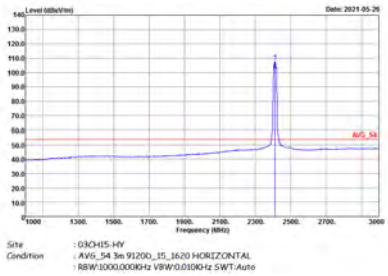
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

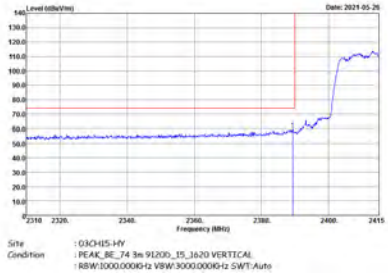
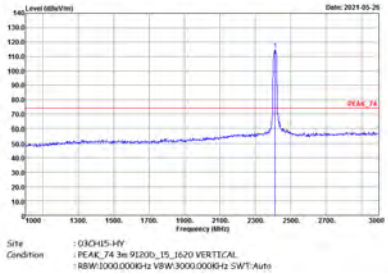
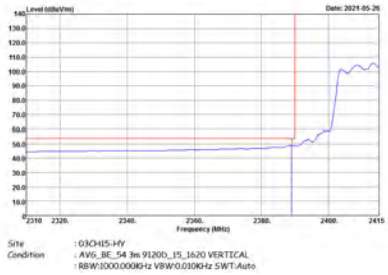
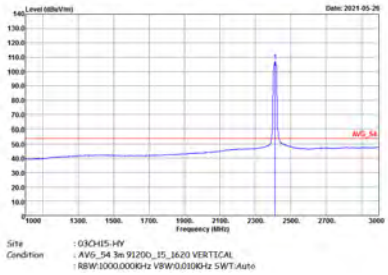
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH13 2472MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

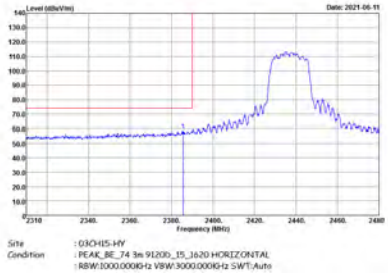
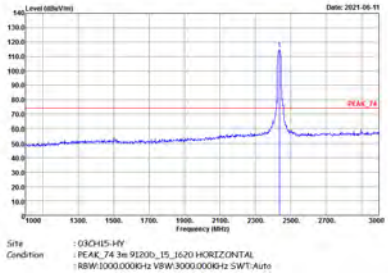
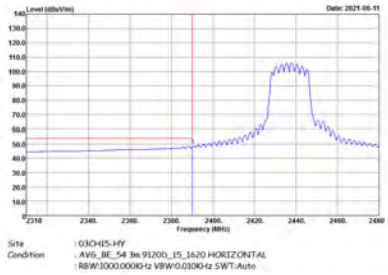
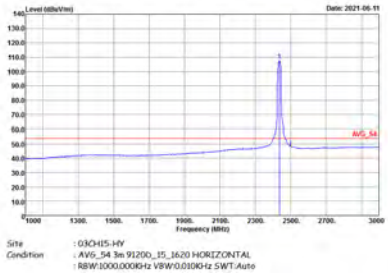
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11g CH13 2472MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

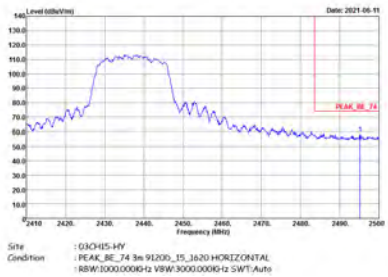
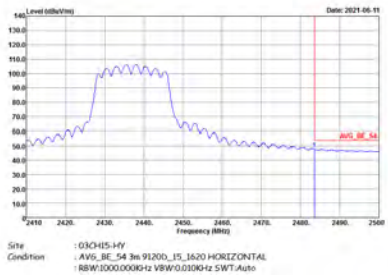
## 2.4GHz 2400~2483.5MHz

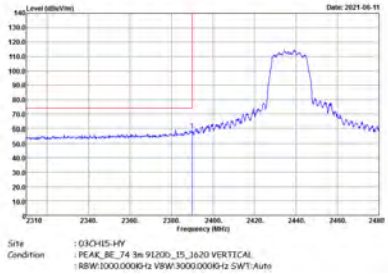
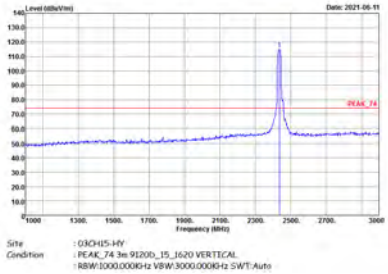
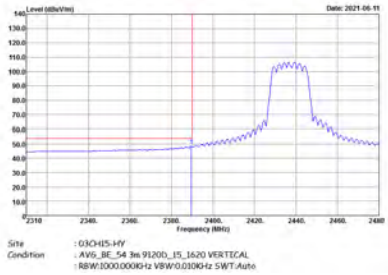
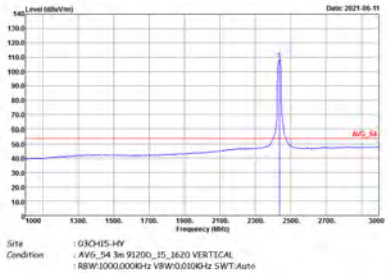
## WIFI 802.11n HT20 (Band Edge @ 3m)

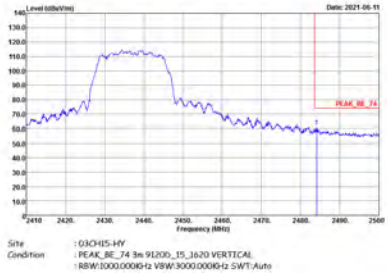
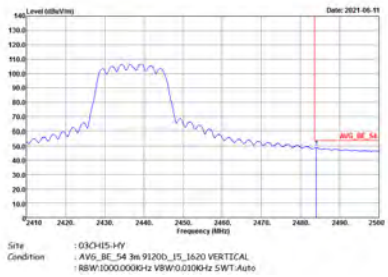
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH01 2412MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

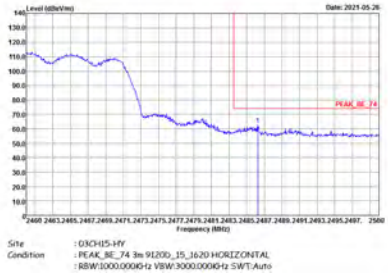
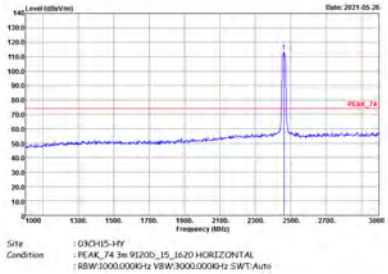
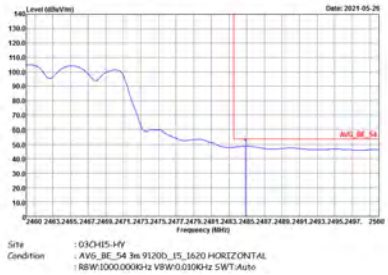
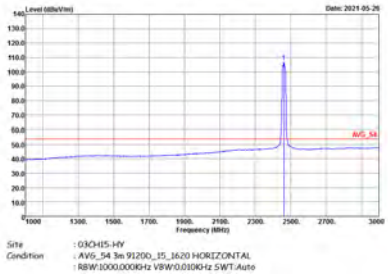
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH01 2412MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

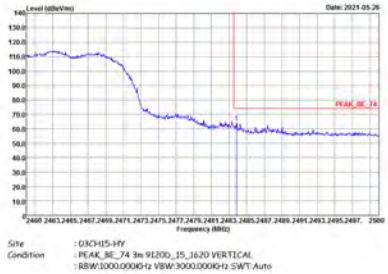
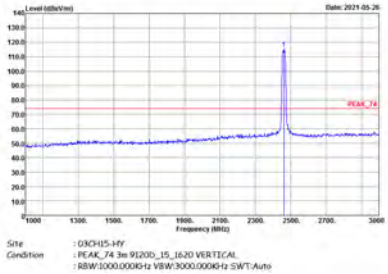
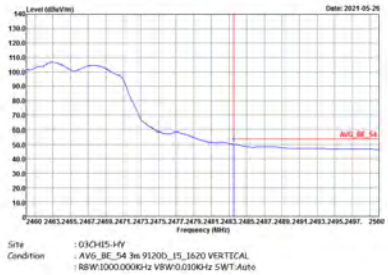
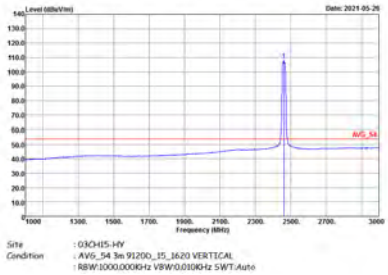
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH06 2437MHz - L | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

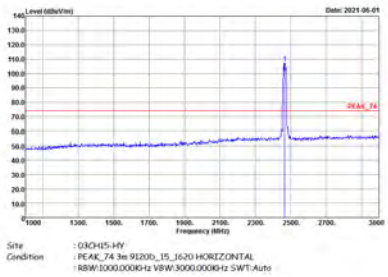
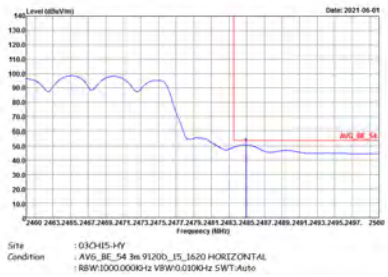
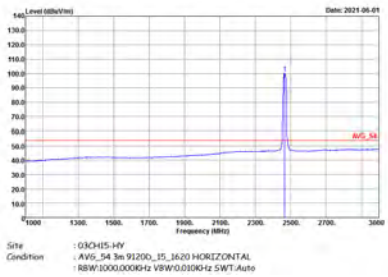
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH06 2437MHz - R | |
| 1+2 | Horizontal | Fundamental |
| Peak |  | Left blank |
| Avg. |  | Left blank |

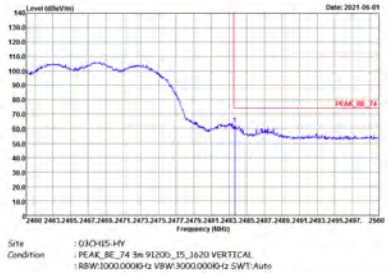
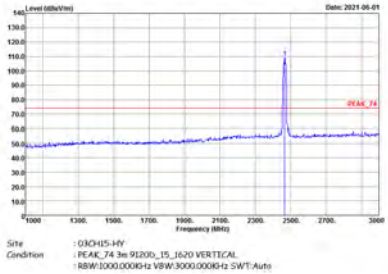
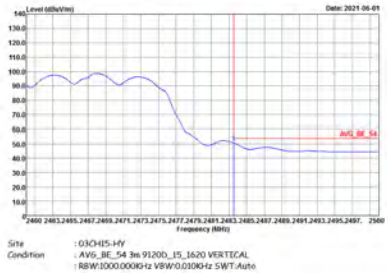
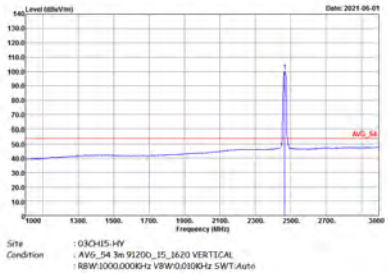
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH06 2437MHz - L | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

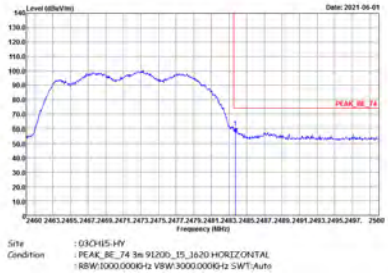
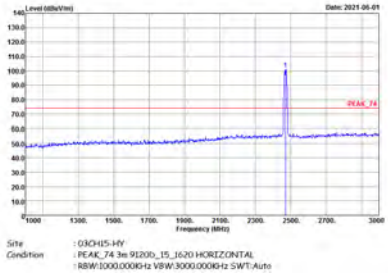
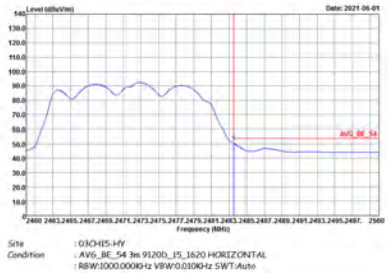
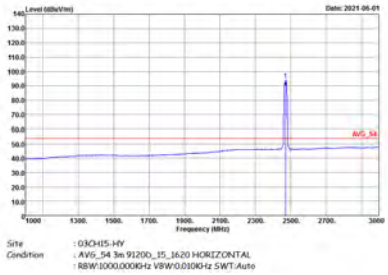
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH06 2437MHz - R | |
| 1+2 | Vertical | Fundamental |
| Peak |  | Left Blank |
| Avg. |  | Left Blank |

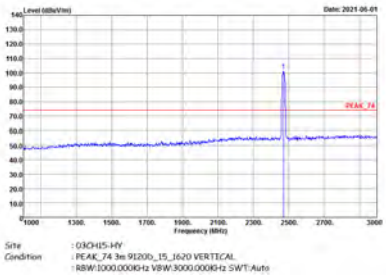
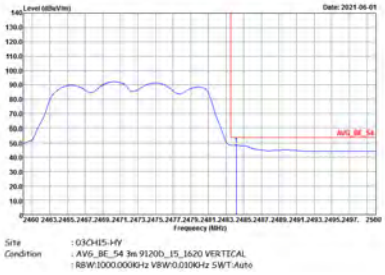
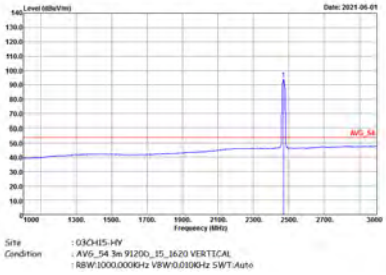
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH11 2462MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Fundamental @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH11 2462MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak | |  |
| Avg. |  |  |

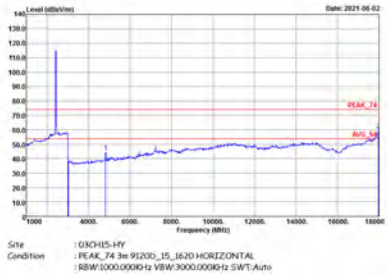
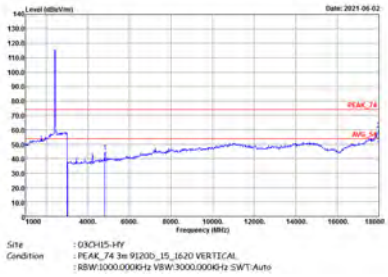
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

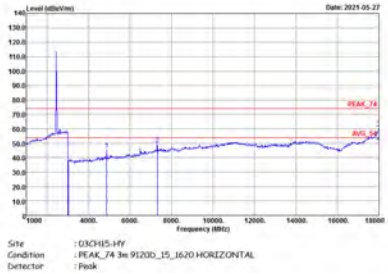
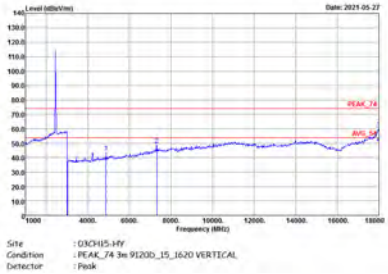
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH13 2472MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

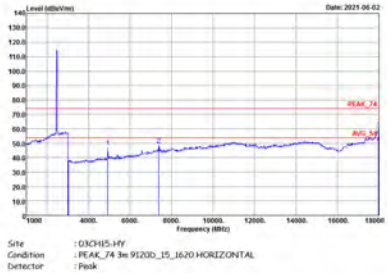
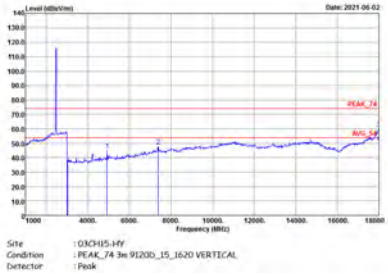
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH13 2472MHz | |
| 1+2 | Vertical | Fundamental |
| Peak | |  |
| Avg. |  |  |

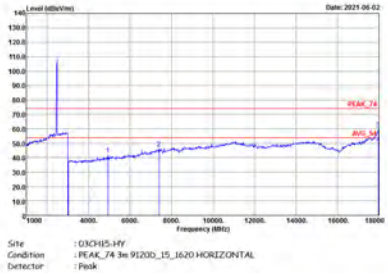
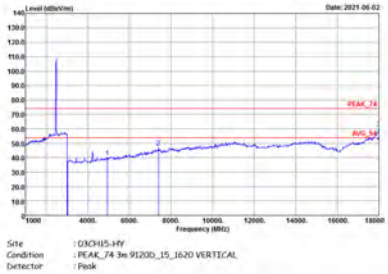
## 2.4GHz 2400~2483.5MHz

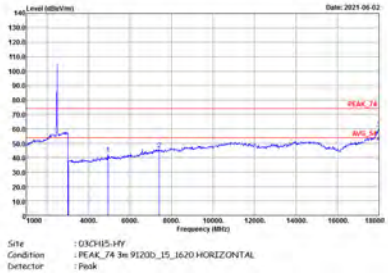
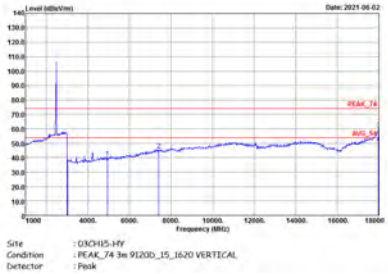
## WIFI 802.11b (Harmonic @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH01 2412MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH06 2437MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

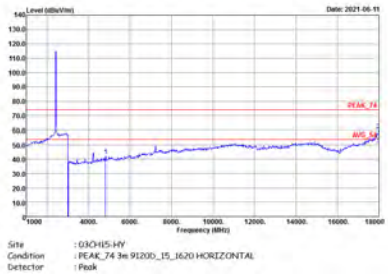
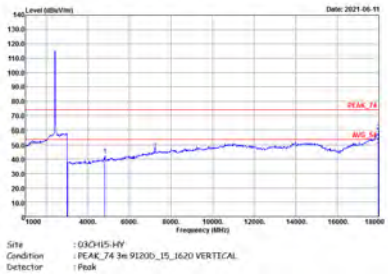
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH11 2462MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

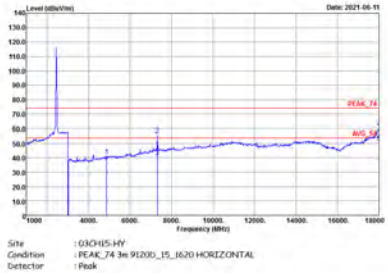
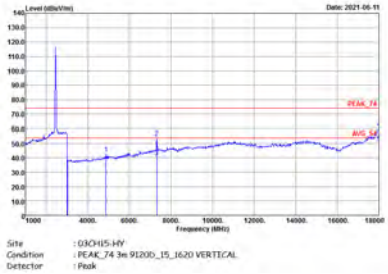
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

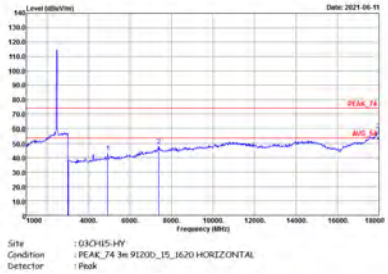
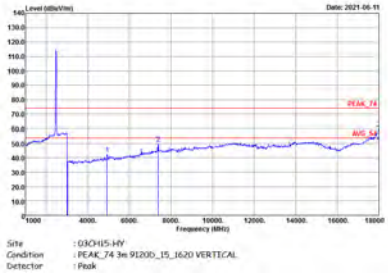
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH13 2472MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

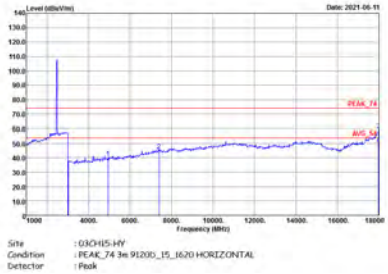
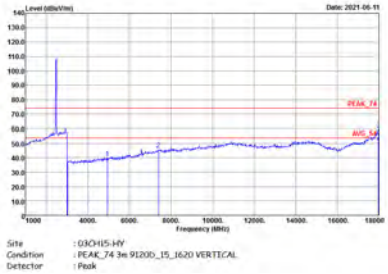
## 2.4GHz 2400~2483.5MHz

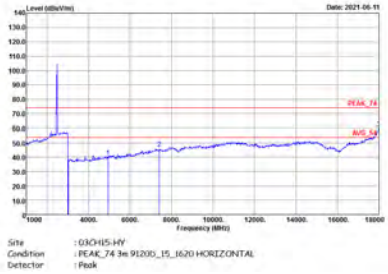
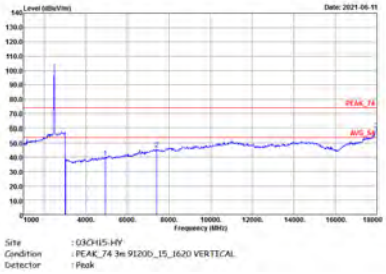
## WIFI 802.11g (Harmonic @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11g CH01 2412MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11g CH06 2437MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

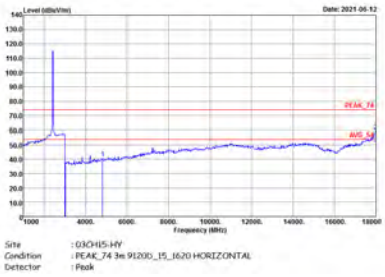
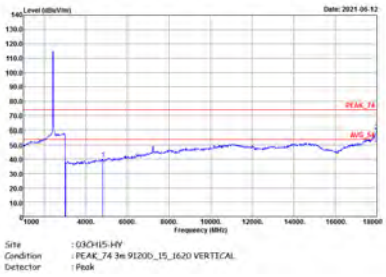
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11g CH11 2462MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

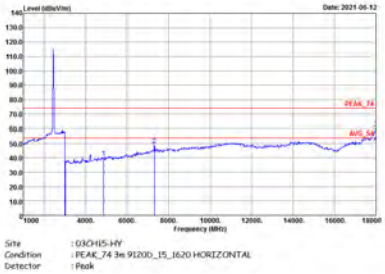
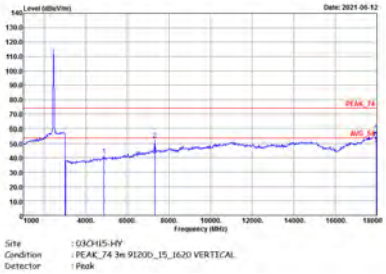
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11g CH12 2467MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

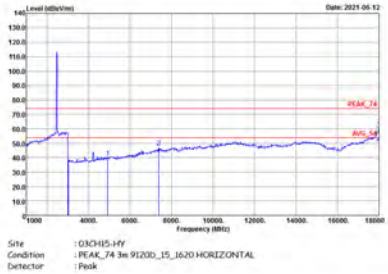
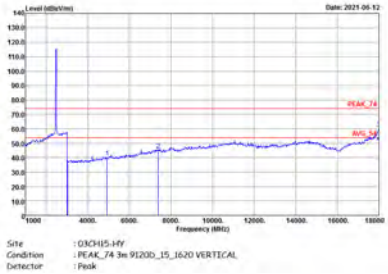
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11g CH13 2472MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

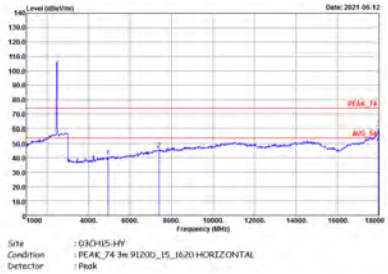
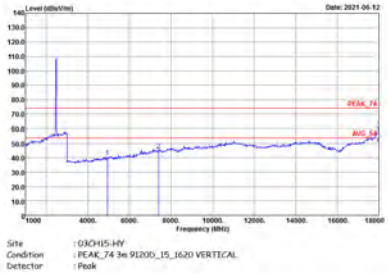
## 2.4GHz 2400~2483.5MHz

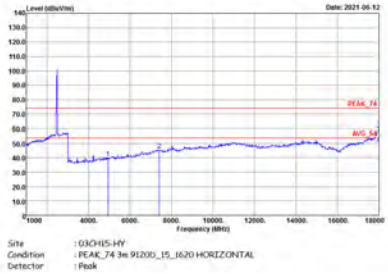
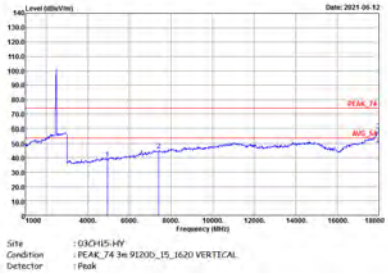
## WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH01 2412MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH06 2437MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

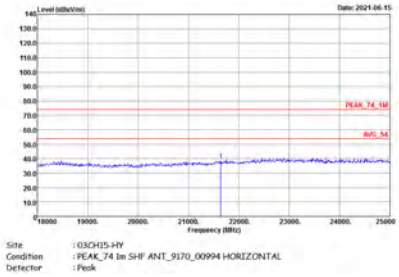
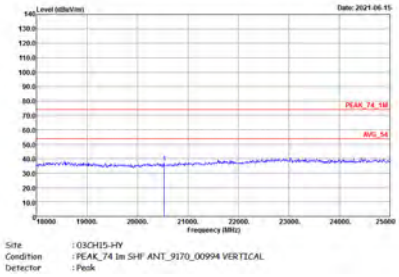
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH11 2462MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH12 2462MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11n HT20 CH13 2472MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

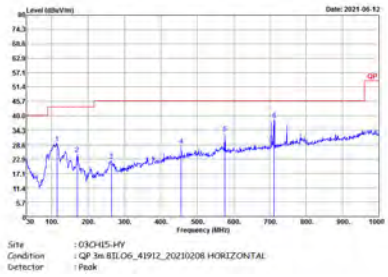
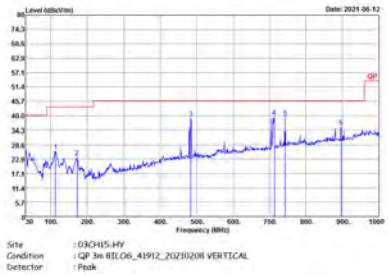
## Emission above 18GHz

## 2.4GHz WIFI 802.11b (SHF)

| WIFI | 2.4GHz 2400~2483.5MHz | |
|---|---|---|
| ANT | 802.11b Ch12 Super High Frequency (SHF) | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

## Emission below 1GHz

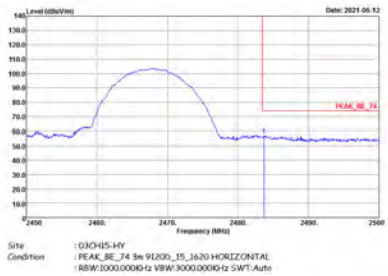
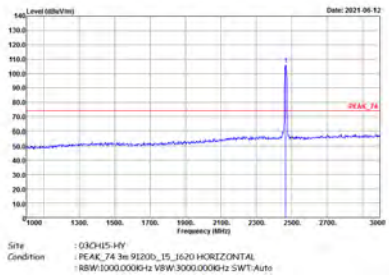
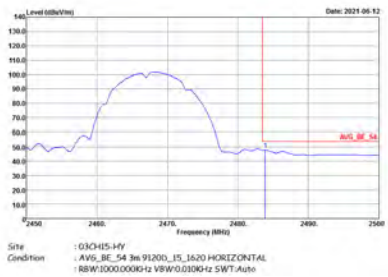
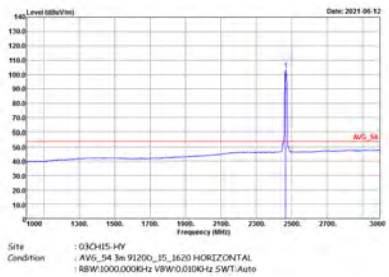
## 2.4GHz WIFI 802.11b (LF)

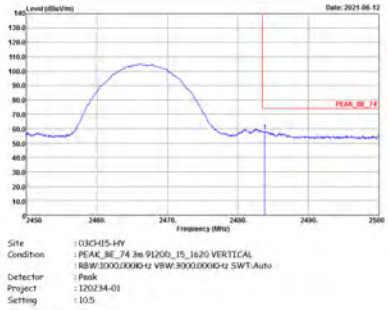
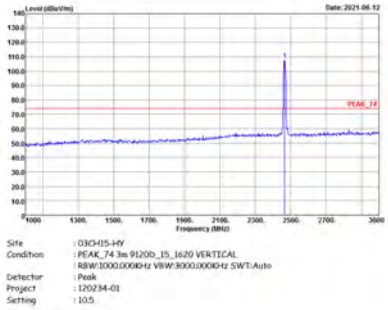
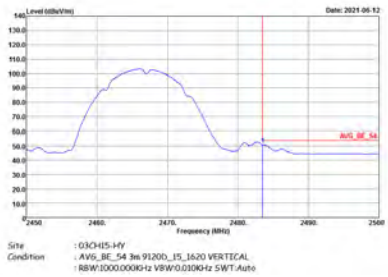
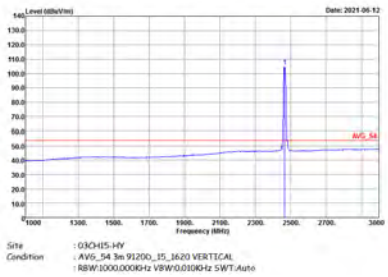
| WIFI | 2.4GHz 2400~2483.5MHz | |
|---|---|---|
| ANT | 802.11b LF | |
| 1+2 | Horizontal | Vertical |
| QP / Peak |  |  |

**<EUT with Fixture 1>**

**2.4GHz 2400~2483.5MHz**

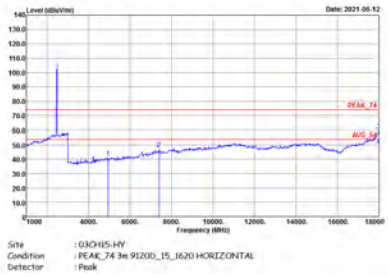
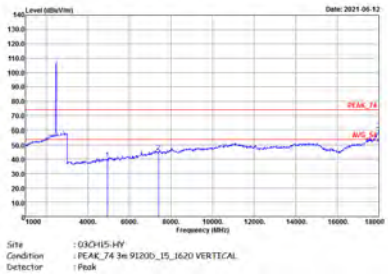
**WIFI 802.11b (Band Edge @ 3m)**

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

## 2.4GHz 2400~2483.5MHz

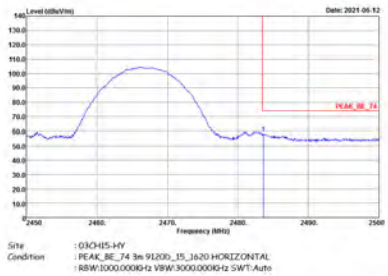
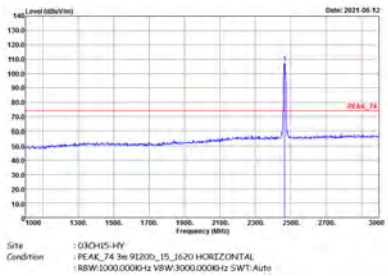
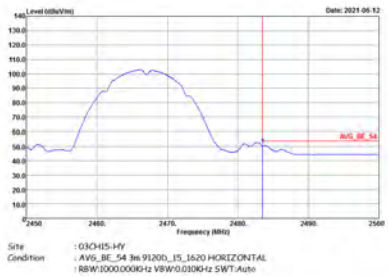
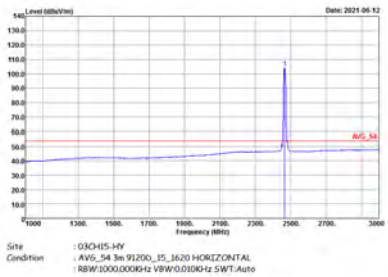
## WIFI 802.11b (Harmonic @ 3m)

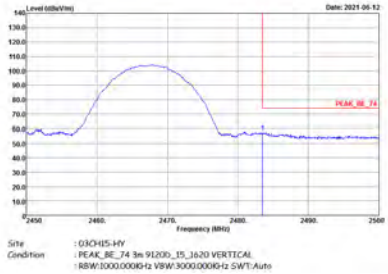
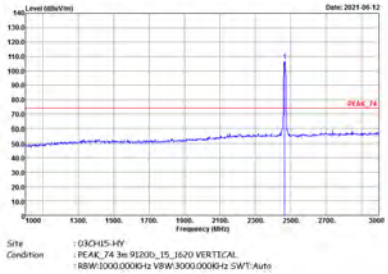
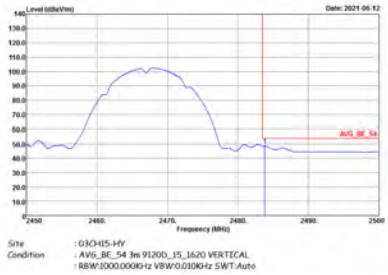
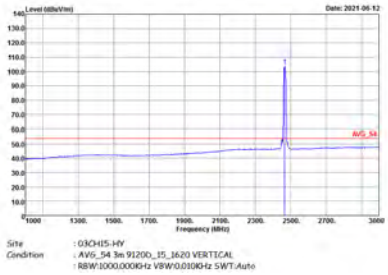
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

**<EUT with Fixture 2>**

**2.4GHz 2400~2483.5MHz**

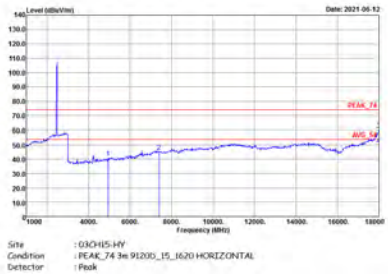
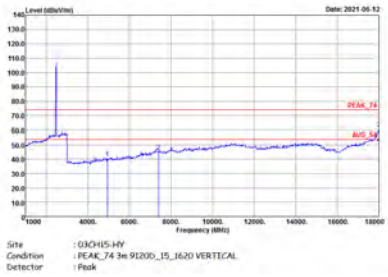
**WIFI 802.11b (Band Edge @ 3m)**

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

## 2.4GHz 2400~2483.5MHz

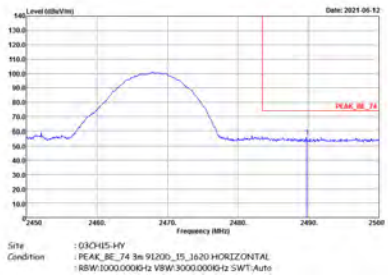
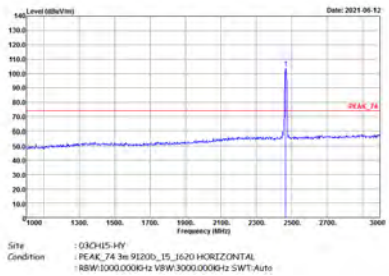
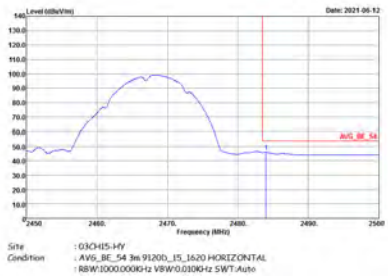
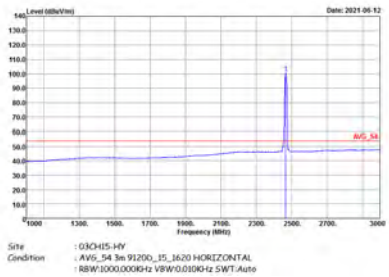
## WIFI 802.11b (Harmonic @ 3m)

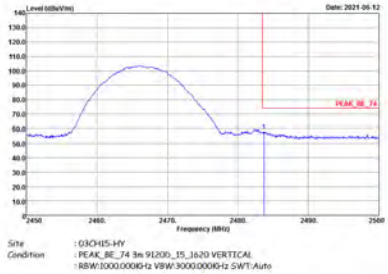
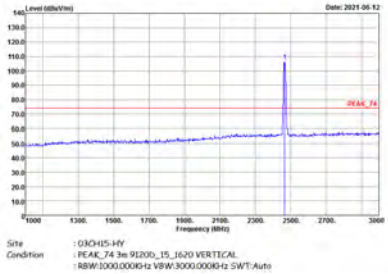
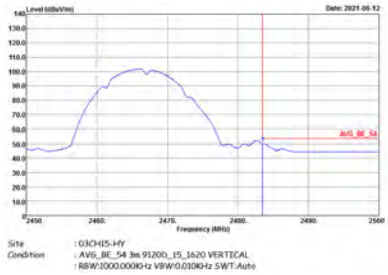
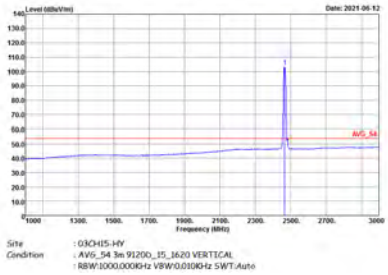
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

**<EUT with Fixture 3>**

## 2.4GHz 2400~2483.5MHz

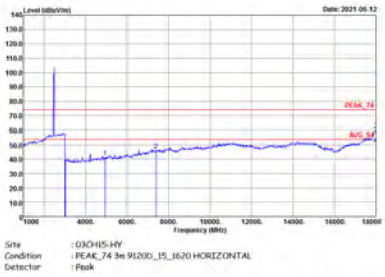
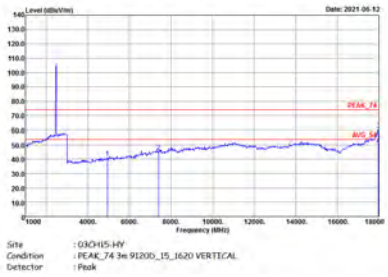
## WIFI 802.11b (Band Edge @ 3m)

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Fundamental |
| Peak |  |  |
| Avg. |  |  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Vertical | Fundamental |
| Peak |  |  |
| Avg. |  |  |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (Harmonic @ 3m)

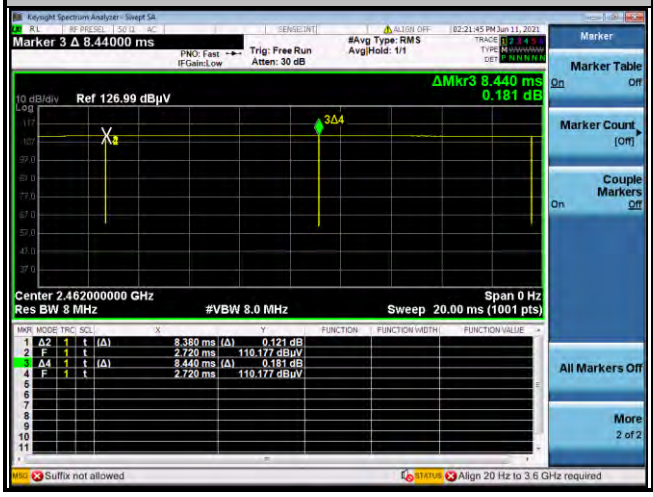
| WIFI | 2.4GHz 2400~2483.5MHz Harmonic @ 3m | |
|---|---|---|
| ANT | 802.11b CH12 2467MHz | |
| 1+2 | Horizontal | Vertical |
| Peak<br>Avg. |  |  |

# Appendix E. Duty Cycle Plots

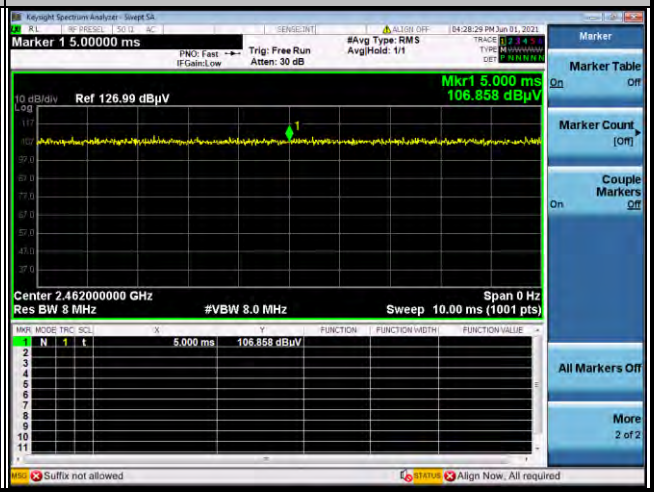
| Antenna | Band | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting | Duty Factor(dB) |
|---|---|---|---|---|---|---|
| 1+2 | 802.11b | 99.29 | - | - | 10Hz | 0.03 |
| 1+2 | 802.11g | 100.00 | - | - | 10Hz | 0.00 |
| 1+2 | 2.4GHz 802.11n HT20 | 100.00 | - | - | 10Hz | 0.00 |

**MIMO <Ant. 1+2>**

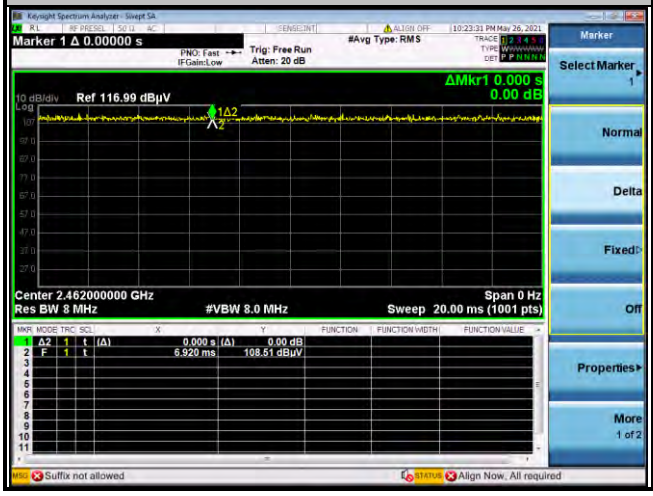
**802.11b**




**802.11g**




**802.11n HT20**




——THE END——