



FCC PART 15C & RSS-247 TEST REPORT FOR CERTIFICATION  
On Behalf of

Razer Inc.

Notebook PC

RZ09-0239

FCC ID: RWO-RZ090239

IC: 8092D-RZ090239

Prepared for : Razer Inc.  
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Date of Report : Sep.20, 2017



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## TEST REPORT CERTIFICATION

Applicant : Razer Inc.  
Manufacturer : Razer Inc.  
Product : Notebook PC  
FCC ID : RWO-RZ090239  
IC : 8092D-RZ090239  
(A) Model No. : RZ09-0239  
(B) Serial No. : N/A  
(C) Test Voltage : DC 20V From Adaptor Input AC 120V/60Hz

Tested for comply with:  
FCC CFR 47 Part 15 Subpart C  
RSS-247, ISSUE 2, Feb 2017  
RSS-Gen, ISSUE 4, November 2014

Test procedure used:  
ANSI C63.10: 2013

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch.

Date of Test : Aug.29~Sep.19,2017 Report of date: Sep.20,2017

Prepared by : *Kebo Zhang* Reviewed by : *Shawn Wen*  
Kebo Zhang / Engineer Shawn Wen / Laboratory Leader

Approved & Authorized Signer : *Stephen Guo*  
Stephen Guo / Laboratory Manager

# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

| EMISSION                                 |  |         |
|--|--|---------|
| Description of Test Item                 | Standard   | Results |
| Power Line Conducted Emission            | FCC Part 15: 15.207<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Radiated Emission                        | FCC Part 15: 15.209<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Band Edge Compliance                     | FCC Part 15: 15.247<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Conducted spurious emissions             | FCC Part 15: 15.247<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| 6dB & 99% Bandwidth                      | FCC Part 15: 15.247<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Peak Output Power                        | FCC Part 15: 15.247<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Equivalent Isotropic Radiated Power Test | RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10                        | PASS    |
| Power Spectral Density                   | FCC Part 15: 15.247<br>RSS-247, ISSUE 2<br>RSS-Gen, ISSUE 4<br>ANSI C63.10 | PASS    |
| Antenna requirement                      | FCC Part 15: 15.203  | PASS    |

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

|                       |   |
|-----------------------|---|
| Product               | : Notebook PC   |
| Model No.             | : RZ09-0239   |
| FCC ID                | : RWO-RZ090239  |
| IC                    | : 8092D-RZ090239  |
| Radio                 | : IEEE802.11 a/b/g/n/ac; Bluetooth V3.0+EDR; Bluetooth V4.1   |
| Operation Frequency   | : IEEE 802.11a:<br>5180MHz—5240MHz; 5260MHz—5320MHz<br>5500MHz—5700MHz; 5745MHz—5825MHz<br>IEEE 802.11ac VHT20:<br>5180MHz—5240MHz; 5260MHz—5320MHz<br>5500MHz—5700MHz; 5745MHz—5825MHz<br>IEEE 802.11ac VHT40:<br>5190MHz—5230MHz; 5270MHz—5310MHz<br>5510MHz—5670MHz; 5755MHz—5795MHz<br>IEEE 802.11ac VHT80: 5210MHz, 5290MHz; 5530MHz—5610MHz;<br>5775MHz<br>IEEE 802.11b: 2412MHz—2462MHz<br>IEEE 802.11g: 2412MHz—2462MHz<br>IEEE802.11nHT20: 2412MHz—2462MHz;<br>5180MHz—5240MHz; 5260MHz—5320MHz<br>5500MHz—5700MHz; 5745MHz—5825MHz<br>IEEE802.11nHT40: 2422MHz—2452MHz;<br>5190MHz—5230MHz; 5270MHz—5310MHz<br>5510MHz—5670MHz; 5755MHz—5795MHz<br>Bluetooth : 2402-2480MHz |
| Modulation Technology | : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE 802.11a/g: OFDM(64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ac VHT20, VHT40, VHT80: OFDM(16QAM, 64QAM, 256QAM, QPSK, BPSK)<br>IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM,QPSK,BPSK)<br>Bluetooth V3.0+EDR: GFSK, $\pi/4$ DQPSK,8-DPSK<br>Bluetooth V4.1:GFSK   |

Antenna Assembly : Antenna Type: PIFA  
Gain Bluetooth: 1.89dBi  
WIFI 2.4GHz: ANT 0: 1.89dBi; ANT 1: 3.08dBi  
WIFI 5GHz:  
Band 1: ANT 0: 2.91dBi; ANT 1: 2.96dBi  
Band 2: ANT 0: 3.08dBi; ANT 1: 2.96dBi  
Band 3: ANT 0: 1.61dBi; ANT 1: 2.99dBi  
Band 4: ANT 0: 3.16dBi; ANT 1: 2.88dBi

Applicant : Razer Inc.  
201 3rd Street, Suite 900, San Francisco, CA 94103

Manufacturer : Razer Inc.  
201 3rd Street, Suite 900, San Francisco, CA 94103

Factory : BYD Precision Manufacture Co., Ltd  
No.3001, Bao He Road, Baolong Industrial, Longgang Street,  
Longgang  
Zone, Shenzhen, 518116, P.R., China

Power Adaptor : Manufacturer: Razer Inc. M/N: RC30-0239  
Input: 100-240Vac; 50/60Hz, 2.0A  
Output: 20V; 3.25A  
DC Cable: Shielded, Undetachable, 2.0m

Power Cable : Unshielded, Detachable, 1.0m

Date of Test : Aug.30~Oct.16, 2017

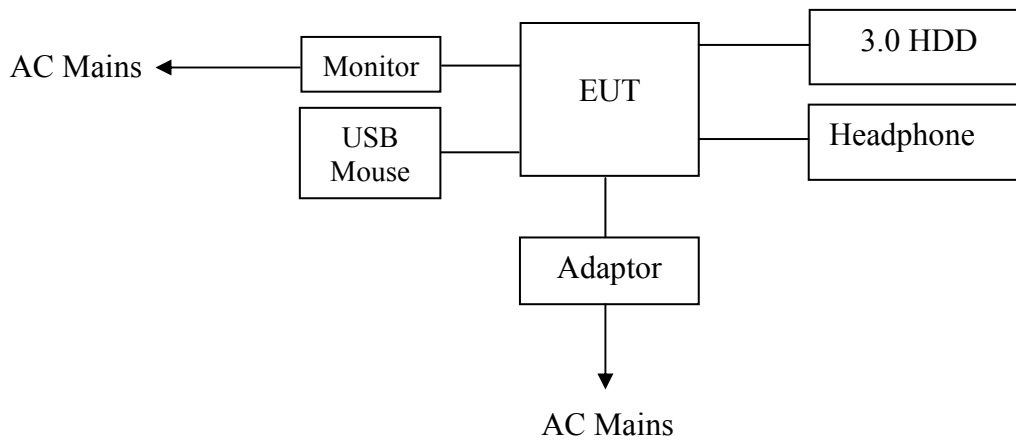
Date of Receipt : Aug.28, 2017

Sample Type Prototype production

### 2.2. Tested Supporting System Details

| No. | Description | Manufacturer   | Model    | Serial No.      |
|-----|-------------|--|----------|-----------------|
| 1.  | Monitor     | Lenovo   | L2264W   | N/A             |
|     |             | Power Cord: Unshielded, Detachable, 1.8m<br>HDMI Cable: Shielded, Detachable, 2.0m |          |                 |
| 2.  | Headphone   | OVANN  | 0V-T800V | N/A             |
|     |             | Data Cable: Shielded, Undetachable, 4.0m   |          |                 |
| 3.  | USB Mouse   | M0C5UO   | Dell     | 512022645       |
|     |             | USB Cable: Shielded, Detachable, 1.0m  |          |                 |
| 4.  | 3.0 HDD     | SONY   | HD-E     | 3PDLOT15515005C |
|     |             | USB Cable: Shielded, Detachable, 1.0m  |          |                 |

### 2.3. Block diagram of connection between the EUT and simulators



**(EUT: Notebook PC)**



## 2.4. Test Information

A special test software was used to control EUT work in Continuous TX mode(nearly 100% duty cycle), and select test channel, wireless mode and data rate.

| Tested mode, channel, and data rate information |                            |             |                 |
|---|----------------------------|-------------|-----------------|
| Mode  | data rate (Mbps)(see Note) | Channel     | Frequency (MHz) |
| IEEE 802.11b                                    | 1                          | Low :CH1    | 2412            |
|   | 1                          | Middle: CH6 | 2437            |
|   | 1                          | High: CH11  | 2462            |
| IEEE 802.11g                                    | 6                          | Low :CH1    | 2412            |
|   | 6                          | Middle: CH6 | 2437            |
|   | 6                          | High: CH11  | 2462            |
| IEEE 802.11n HT20                               | MCS0                       | Low :CH1    | 2412            |
|   | MCS0                       | Middle: CH6 | 2437            |
|   | MCS0                       | High: CH11  | 2462            |
| IEEE 802.11n HT40                               | MCS0                       | Low :CH3    | 2422            |
|   | MCS0                       | Middle: CH6 | 2437            |
|   | MCS0                       | High: CH9   | 2452            |

Note: 1. According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

Note: 2. 11b/g use SISO mode, choose ANT0 which has the worse case emission for the radiated emission and band edge measurement, 11n mode use MIMO Mode, test with two antenna transmit simultaneously in 11n mode, and comply with KDB662911D01.

## 2.5. Test Facility

|                           |   |
|---------------------------|---|
| Test Location             | UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.   |
| Address                   | Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China   |
| Accreditation Certificate | <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01.</p> <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187.</p> <p>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.</p> |

## 2.6.Measurement Uncertainty:

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus

| Test Item   | Uncertainty         |
|---|---------------------|
| Uncertainty for Conduction emission test  | 2.90dB              |
| Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)  | 4.52dB              |
| Uncertainty for Radiation Emission test (1GHz to 26GHz)( include Fundamental emission)  | 5.04dB(1-6GHz)      |
|   | 5.30dB (6GHz-18Gz)  |
|   | 5.23dB (18GHz-26Gz) |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. |                     |

### 3. MEASURING INSTRUMENT AND SOFTWARE USED

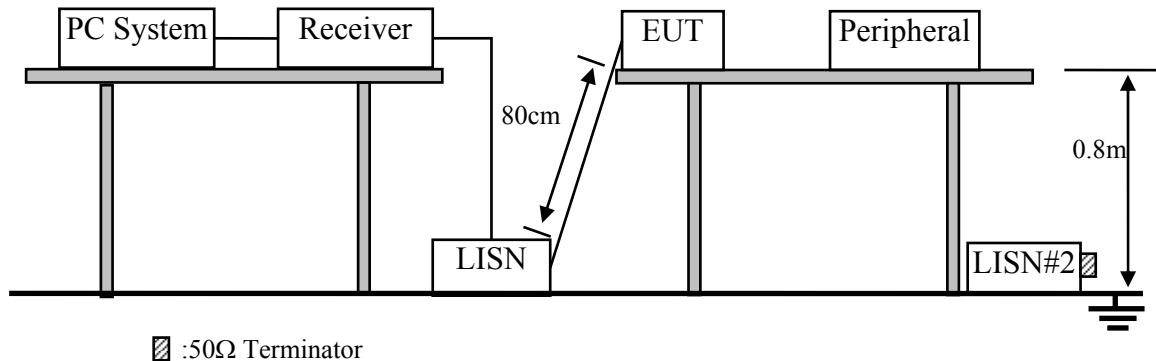
| Conducted Emissions                 |                             |              |            |               |               |               |
|-------------------------------------|-----------------------------|--------------|------------|---------------|---------------|---------------|
| Instrument                          |                             |              |            |               |               |               |
| Used                                | Equipment                   | Manufacturer | Model No.  | Serial No.    | Last Cal.     | Next Cal.     |
| <input checked="" type="checkbox"/> | EMI Test Receiver           | R&S          | ESR3       | 101961        | Dec.20, 2016  | Dec.19, 2017  |
| <input checked="" type="checkbox"/> | Two-Line V-Network          | R&S          | ENV216     | 101983        | Dec.20, 2016  | Dec.19, 2017  |
| <input checked="" type="checkbox"/> | Artificial Mains Networks   | Schwarzbeck  | NSLK 8126  | 8126465       | Feb.10, 2017  | Feb.10, 2018  |
| Radiated Emissions                  |                             |              |            |               |               |               |
| Instrument                          |                             |              |            |               |               |               |
| Used                                | Equipment                   | Manufacturer | Model No.  | Serial No.    | Last Cal.     | Next Cal.     |
| <input checked="" type="checkbox"/> | MXE EMI Receiver            | KESIGHT      | N9038A     | MY56400036    | Feb. 24, 2017 | Feb. 24, 2018 |
| <input checked="" type="checkbox"/> | Hybrid Log Periodic Antenna | TDK          | HLP-3003C  | 130960        | Jan.09, 2016  | Jan.09, 2019  |
| <input checked="" type="checkbox"/> | Preamplifier                | HP           | 8447D      | 2944A09099    | Feb. 13, 2017 | Feb. 13, 2018 |
| <input checked="" type="checkbox"/> | EMI Measurement Receiver    | R&S          | ESR26      | 101377        | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Horn Antenna                | TDK          | HRN-0118   | 130939        | Jan. 09, 2016 | Jan. 09, 2019 |
| <input checked="" type="checkbox"/> | High Gain Horn Antenna      | Schwarzbeck  | BBHA-9170  | 691           | Jan.06, 2016  | Jan.06, 2019  |
| <input checked="" type="checkbox"/> | Preamplifier                | TDK          | PA-02-0118 | TRS-305-00066 | Jan. 14, 2017 | Jan. 14, 2018 |
| <input checked="" type="checkbox"/> | Preamplifier                | TDK          | PA-02-2    | TRS-307-00003 | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Loop antenna                | Schwarzbeck  | 1519B      | 00008         | Mar. 26, 2016 | Mar. 26, 2019 |
| Other instruments                   |                             |              |            |               |               |               |
| Used                                | Equipment                   | Manufacturer | Model No.  | Serial No.    | Last Cal.     | Next Cal.     |
| <input checked="" type="checkbox"/> | Spectrum Analyzer           | Keysight     | N9030A     | MY55410512    | Dec. 20, 2016 | Dec. 20, 2017 |
| <input checked="" type="checkbox"/> | Power Meter                 | Keysight     | N9031A     | MY55416024    | Feb. 13, 2017 | Feb. 13, 2018 |
| <input checked="" type="checkbox"/> | Power Sensor                | Keysight     | N9323A     | MY55440013    | Feb. 13, 2017 | Feb. 13, 2018 |

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## 4. POWER LINE CONDUCTED EMISSION TEST

### 4.1. Block Diagram of Test Setup



### 4.2. Power Line Conducted Emission Test Limits

| Frequency       | Maximum RF Line Voltage          |                               |
|-----------------|----------------------------------|-------------------------------|
|                 | Quasi-Peak Level<br>dB( $\mu$ V) | Average Level<br>dB( $\mu$ V) |
| 150kHz ~ 500kHz | 66 ~ 56*                         | 56 ~ 46*                      |
| 500kHz ~ 5MHz   | 56                               | 46                            |
| 5MHz ~ 30MHz    | 60                               | 50                            |

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

### 4.3. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

#### 4.3.1. Notebook PC (EUT)

Model No. : RZ09-0239  
Serial No. : N/A

#### 4.3.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

### 4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipments.

4.4.3. PC run test software to control EUT work in Tx (WiFi 2.4GHz) mode.

#### 4.5. Test Procedure

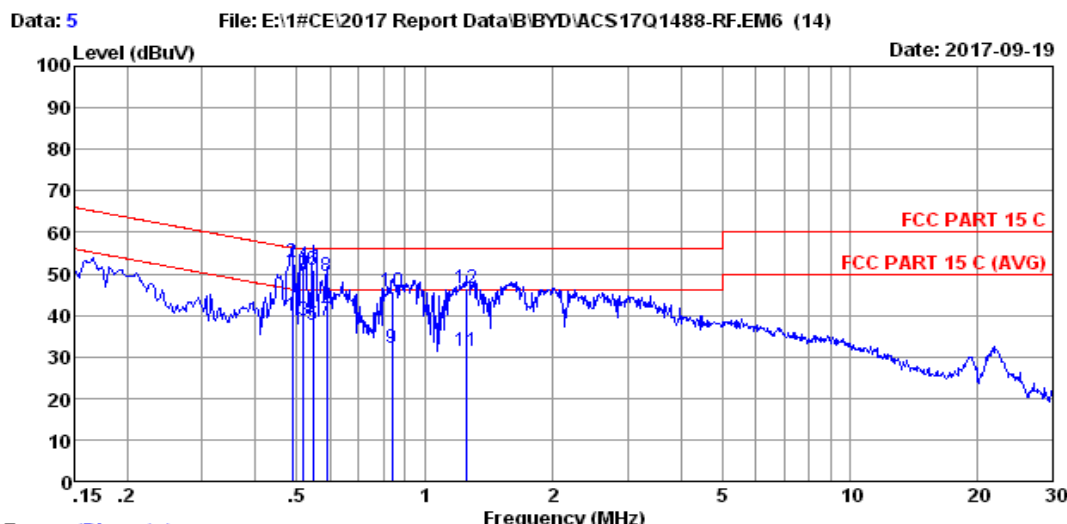
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 4.6. Power Line Conducted Emission Test Results

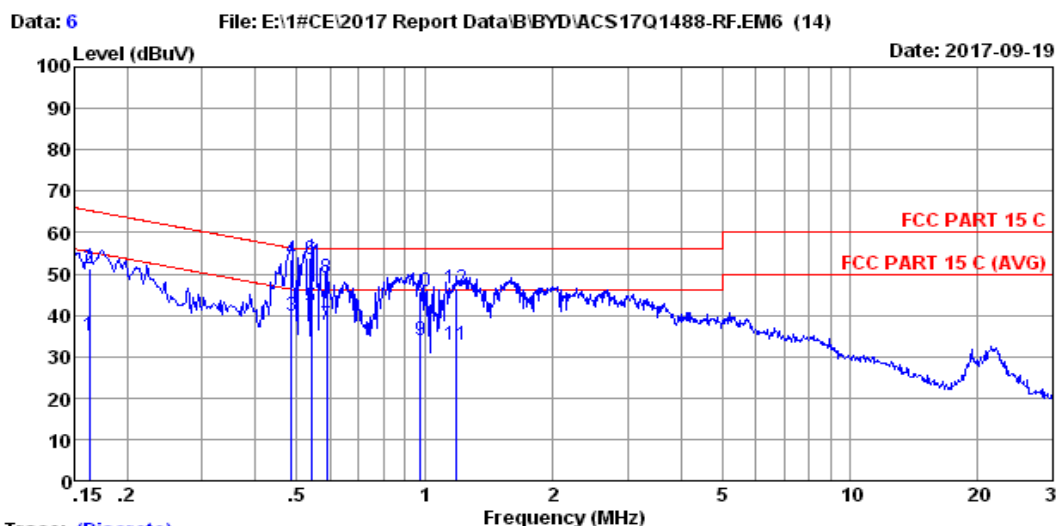
**PASS.** (All emissions not reported below are too low against the prescribed limits.)



Trace: (Discrete)  
 Site no :1# CE  
 Dis./Lisn :2017 LISN ENV216-L  
 Limit :FCC PART 15 C  
 Env./Ins. :23.3\*C/45%  
 EUT :Notebook PC M/N:RZ09-0239  
 Power Rating :DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode :Tx Mode  
 Data No :5  
 LISN phase:  
 Engineer :Lynn

| No | Freq (MHz) | LISN Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark  |
|----|------------|------------------|-----------------|----------------|-----------------------|---------------|-------------|---------|
| 1  | 0.489      | 9.50             | 0.03            | 30.26          | 39.79                 | 46.19         | 6.40        | Average |
| 2  | 0.489      | 9.50             | 0.03            | 43.19          | 52.72                 | 56.19         | 3.47        | QP      |
| 3  | 0.518      | 9.50             | 0.03            | 29.25          | 38.78                 | 46.00         | 7.22        | Average |
| 4  | 0.518      | 9.50             | 0.03            | 42.52          | 52.05                 | 56.00         | 3.95        | QP      |
| 5  | 0.546      | 9.50             | 0.03            | 28.25          | 37.78                 | 46.00         | 8.22        | Average |
| 6  | 0.546      | 9.50             | 0.03            | 41.23          | 50.76                 | 56.00         | 5.24        | QP      |
| 7  | 0.589      | 9.50             | 0.03            | 29.28          | 38.81                 | 46.00         | 7.19        | Average |
| 8  | 0.589      | 9.50             | 0.03            | 39.97          | 49.50                 | 56.00         | 6.50        | QP      |
| 9  | 0.839      | 9.50             | 0.04            | 22.71          | 32.25                 | 46.00         | 13.75       | Average |
| 10 | 0.839      | 9.50             | 0.04            | 36.13          | 45.67                 | 56.00         | 10.33       | QP      |
| 11 | 1.249      | 9.49             | 0.06            | 21.71          | 31.26                 | 46.00         | 14.74       | Average |
| 12 | 1.249      | 9.49             | 0.06            | 36.88          | 46.43                 | 56.00         | 9.57        | QP      |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



Trace: (Discrete)  
 Site no :1# CE Data No :6  
 Dis./Lisn :2017 LISN ENV216-N LISN phase:  
 Limit :FCC PART 15 C  
 Env./Ins. :23.3\*C/45% Engineer :Lynn  
 EUT :Notebook PC M/N:RZ09-0239  
 Power Rating :DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode :Tx Mode

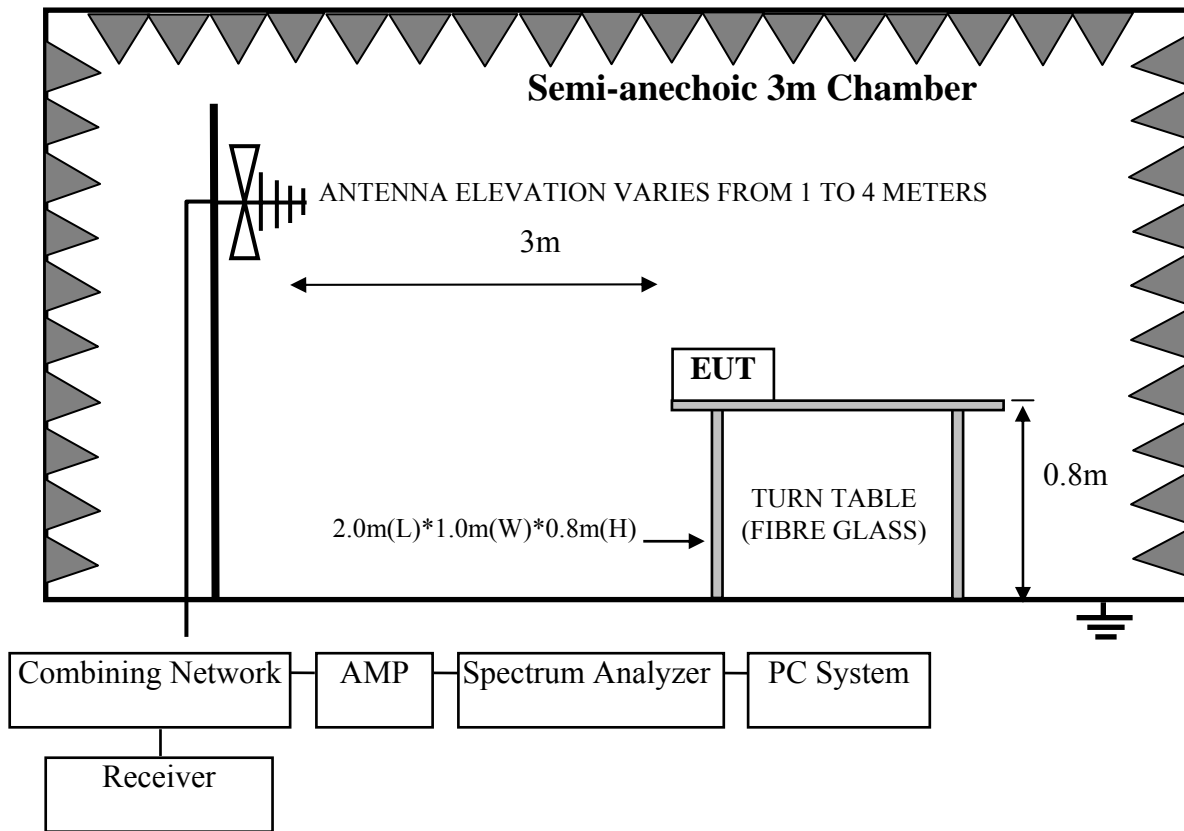
| No | Freq (MHz) | LISN Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark  |
|----|------------|------------------|-----------------|----------------|-----------------------|---------------|-------------|---------|
| 1  | 0.162      | 9.48             | 0.02            | 25.56          | 35.06                 | 55.34         | 20.28       | Average |
| 2  | 0.162      | 9.48             | 0.02            | 41.65          | 51.15                 | 65.34         | 14.19       | QP      |
| 3  | 0.486      | 9.33             | 0.03            | 30.55          | 39.91                 | 46.23         | 6.32        | Average |
| 4  | 0.486      | 9.33             | 0.03            | 44.07          | 53.43                 | 56.23         | 2.80        | QP      |
| 5  | 0.541      | 9.31             | 0.03            | 32.58          | 41.92                 | 46.00         | 4.08        | Average |
| 6  | 0.541      | 9.31             | 0.03            | 44.03          | 53.37                 | 56.00         | 2.63        | QP      |
| 7  | 0.589      | 9.31             | 0.03            | 28.26          | 37.60                 | 46.00         | 8.40        | Average |
| 8  | 0.589      | 9.31             | 0.03            | 39.67          | 49.01                 | 56.00         | 6.99        | QP      |
| 9  | 0.979      | 9.35             | 0.05            | 24.71          | 34.11                 | 46.00         | 11.89       | Average |
| 10 | 0.979      | 9.35             | 0.05            | 36.52          | 45.92                 | 56.00         | 10.08       | QP      |
| 11 | 1.191      | 9.35             | 0.05            | 23.61          | 33.01                 | 46.00         | 12.99       | Average |
| 12 | 1.191      | 9.35             | 0.05            | 37.01          | 46.41                 | 56.00         | 9.59        | QP      |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
 2.If the average limit is met when using a quasi-peak detector.  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.

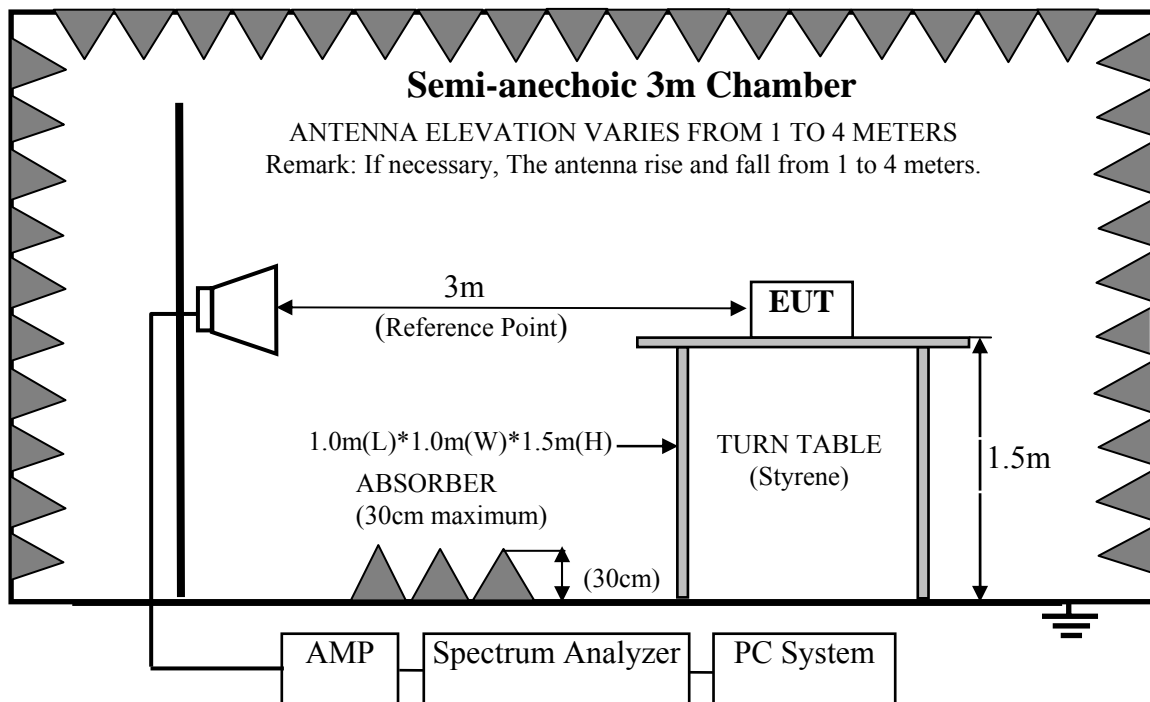
## 5. RADIATED EMISSION TEST

### 5.1. Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz





## 5.2. Radiated Emission Limit

### 5.2.1. 15.247&209 limits

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT   |                                   |
|------------------|--------------------|---|-----------------------------------|
|                  |                    | $\mu\text{V}/\text{m}$  | $\text{dB}(\mu\text{V})/\text{m}$ |
| 30 ~ 88          | 3                  | 100   | 40.0                              |
| 88 ~ 216         | 3                  | 150   | 43.5                              |
| 216 ~ 960        | 3                  | 200   | 46.0                              |
| 960 ~ 1000       | 3                  | 500   | 54.0                              |
| Above 1000       | 3                  | 74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)<br>54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) |                                   |

Remark : (1) Emission level  $\text{dB}\mu\text{V} = 20 \log$  Emission level  $\mu\text{V}/\text{m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 5.2.2. 15.205 Restricted bands of operation

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

## 5.3. EUT Configuration on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

### 5.3.1. Notebook PC (EUT)

Model No. : RZ09-0239

Serial No. : N/A

### 5.3.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

## 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipments.
- 5.4.3. Let EUT work in Tx(WiFi 2.4GHz) mode

## 5.5. Test Procedure

### **Frequency below 30MHz:**

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)\*2.4m(W)\*0.3m(H) on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horn antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna are set on test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as test photo indicated.

The bandwidth of the EMI test receiver (R&S ESR7) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

The frequency range from 30MHz to 10<sup>th</sup> harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25GHz, So the radiated emissions from 18GHz to 25GHz were not record.

## 5.6. Radiated Emission Test Results

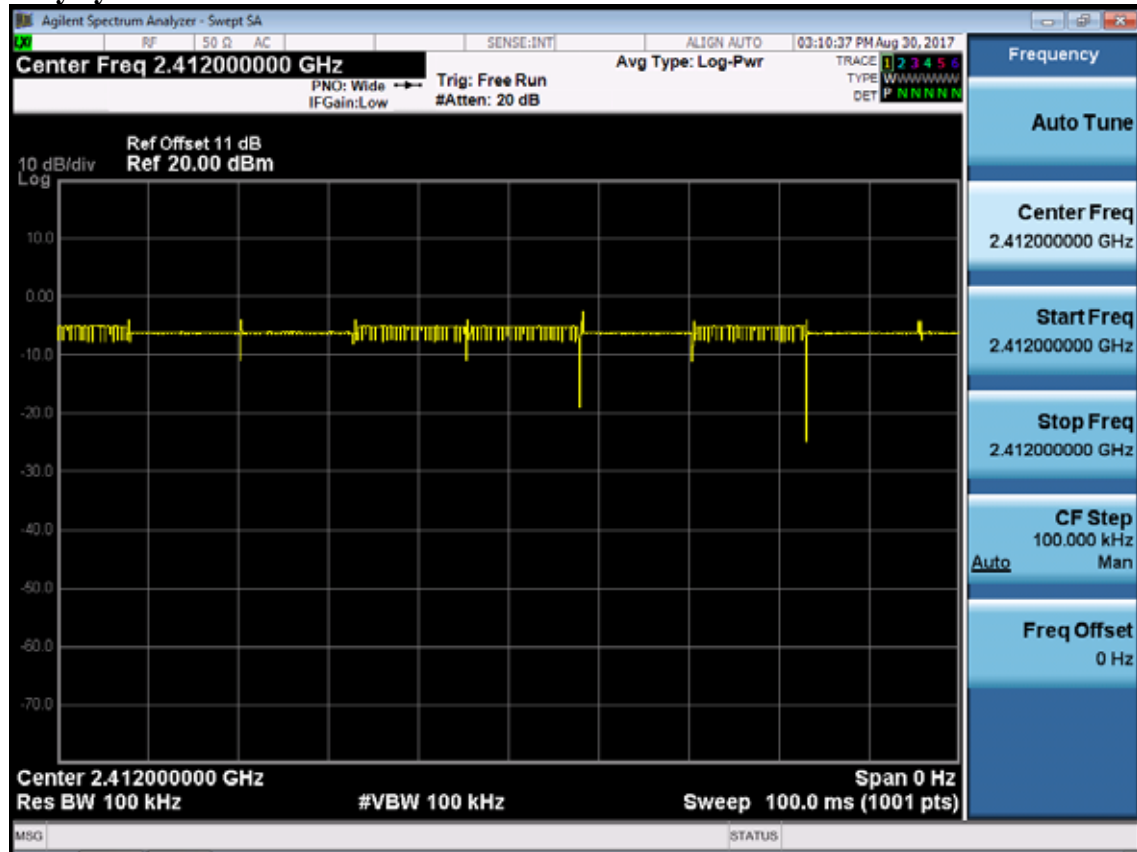
### **PASS.**

All the emissions from 30MHz to 25 GHz were comply with 15.209 limits.

Note 1: For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

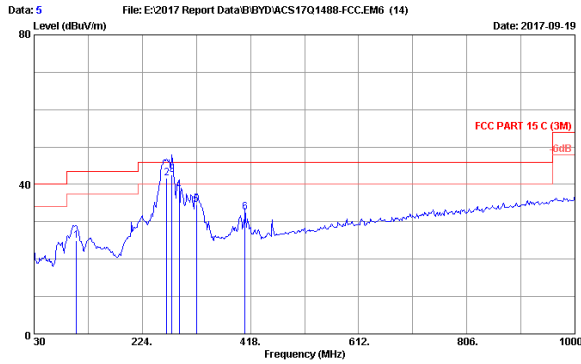
Note 2: The emissions (9kHz~30MHz) not reported for there is no emission be found

### Duty cycle



**Note: The Duty Cycle is close to 100%.**

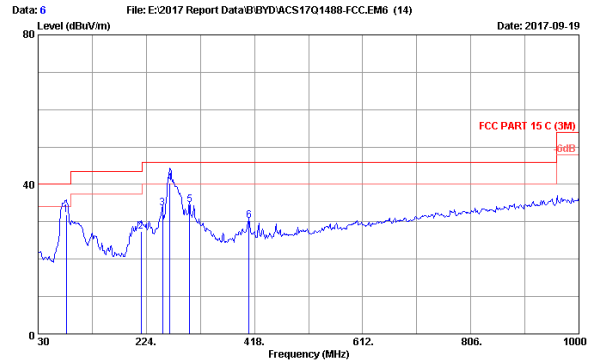
### Frequency: 30MHz~1GHz



Site no. : 3m Chamber Data no. : 5  
 Dis. / Ant. : 3m 2017 9168-493 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 C (3M)  
 Env. / Ins. : 23.4°C/53.6% Engineer : Lynn  
 EUT : Notebook PC N/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : Tx Mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-------------------------|-----------------|-------------|--------|
| 1   | 105.660     | 15.54              | 1.13            | 8.38           | 25.05                   | 43.50           | 18.45       | QP     |
| 2   | 267.650     | 18.94              | 2.05            | 20.76          | 41.75                   | 46.00           | 4.25        | QP     |
| 3   | 277.350     | 19.37              | 2.11            | 21.02          | 42.50                   | 46.00           | 3.50        | QP     |
| 4   | 289.960     | 19.70              | 2.19            | 16.33          | 38.22                   | 46.00           | 7.78        | QP     |
| 5   | 321.000     | 20.39              | 2.38            | 11.73          | 34.50                   | 46.00           | 11.50       | QP     |
| 6   | 408.300     | 22.36              | 2.91            | 7.36           | 32.63                   | 46.00           | 13.37       | QP     |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

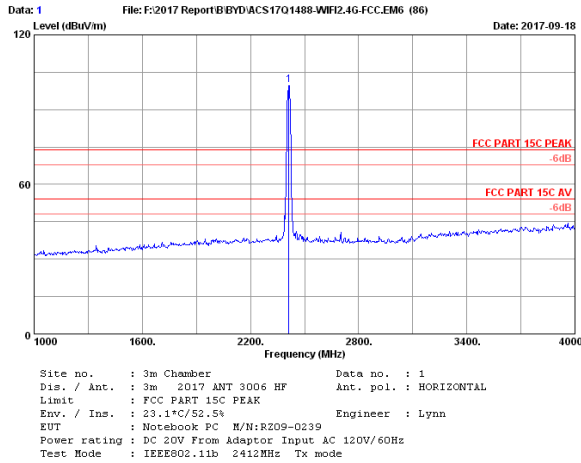


Site no. : 3m Chamber Data no. : 6  
 Dis. / Ant. : 3m 2017 9168-493 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 C (3M)  
 Env. / Ins. : 23.4°C/53.6% Engineer : Lynn  
 EUT : Notebook PC N/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : Tx Mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-------------------------|-----------------|-------------|--------|
| 1   | 80.440      | 15.20              | 0.98            | 15.68          | 31.86                   | 40.00           | 8.14        | QP     |
| 2   | 214.300     | 16.90              | 1.73            | 8.73           | 27.36                   | 43.50           | 16.14       | QP     |
| 3   | 253.100     | 18.43              | 1.96            | 13.17          | 33.56                   | 46.00           | 12.44       | QP     |
| 4   | 266.680     | 18.90              | 2.05            | 19.47          | 40.42                   | 46.00           | 5.58        | QP     |
| 5   | 301.600     | 19.94              | 2.26            | 12.34          | 34.54                   | 46.00           | 11.46       | QP     |
| 6   | 408.300     | 22.36              | 2.91            | 4.98           | 30.25                   | 46.00           | 15.75       | QP     |

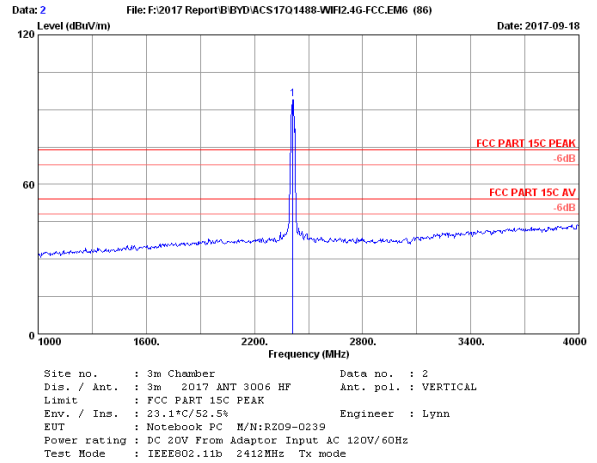
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

### Frequency: 1GHz~18GHz



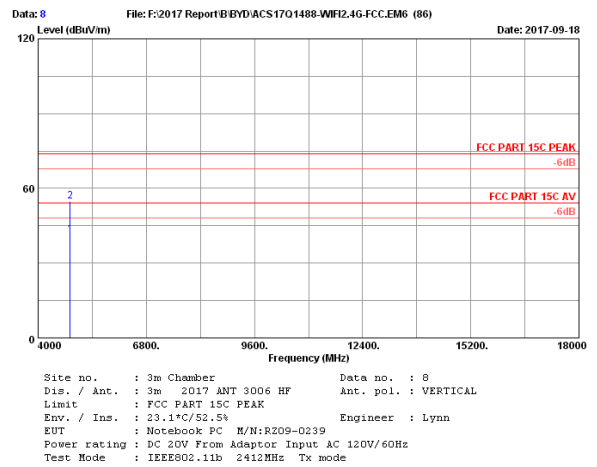
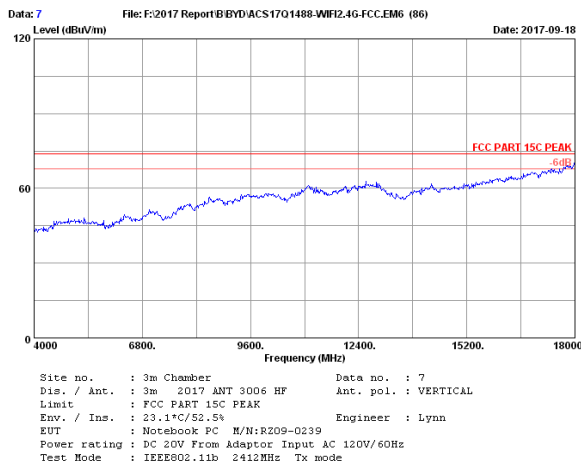
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2412.00     | 27.98              | 7.91            | 99.69          | 35.61           | 99.97                   | 74.00           | -25.97      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



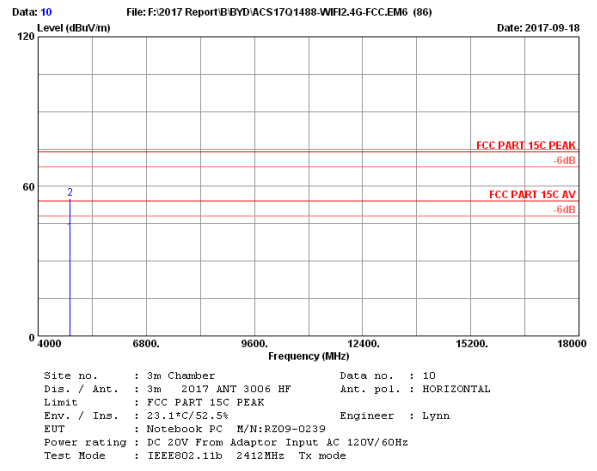
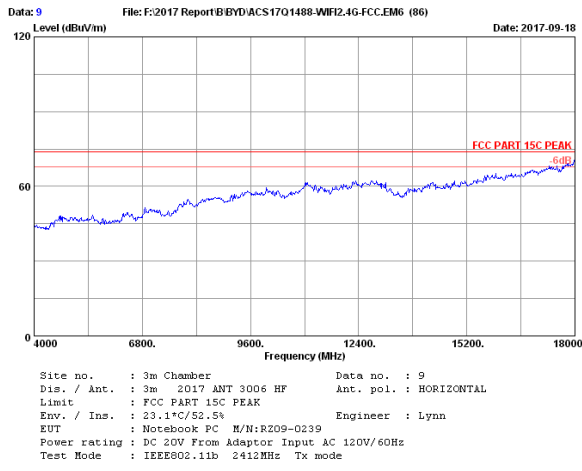
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2412.00     | 27.98              | 7.91            | 93.99          | 35.61           | 94.27                   | 74.00           | -20.27      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



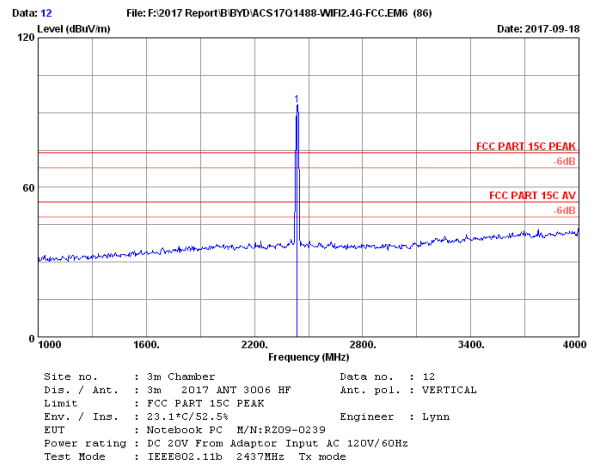
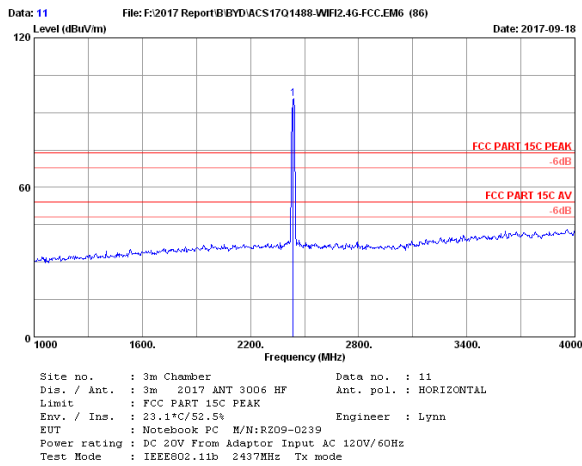
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4824.00     | 33.46              | 12.11           | 29.83          | 33.80           | 41.60                   | 54.00           | 12.40       | Average |
| 2   | 4824.00     | 33.46              | 12.11           | 42.92          | 33.80           | 54.69                   | 74.00           | 19.31       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4824.00     | 33.46              | 12.11           | 29.81          | 33.80           | 41.58                   | 54.00           | 12.42       | Average |
| 2   | 4824.00     | 33.46              | 12.11           | 43.36          | 33.80           | 55.13                   | 74.00           | 18.87       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

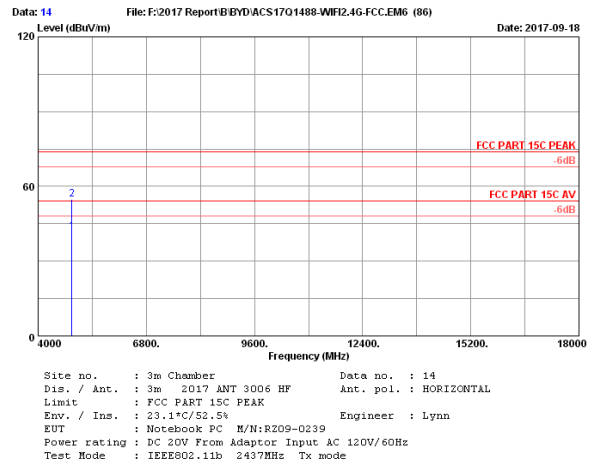
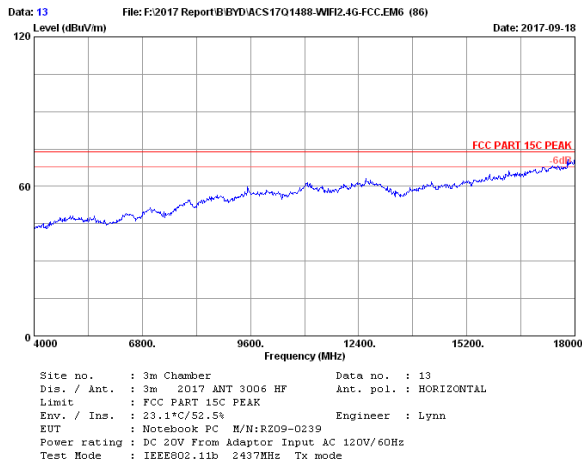


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2437.00     | 28.03              | 7.95            | 95.14          | 35.64           | 95.48                   | 74.00           | -21.48      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

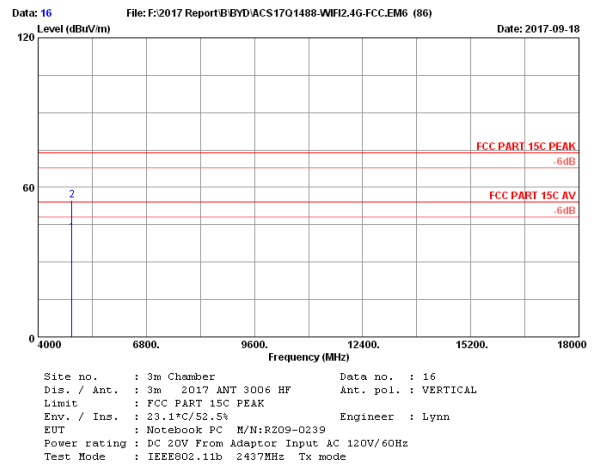
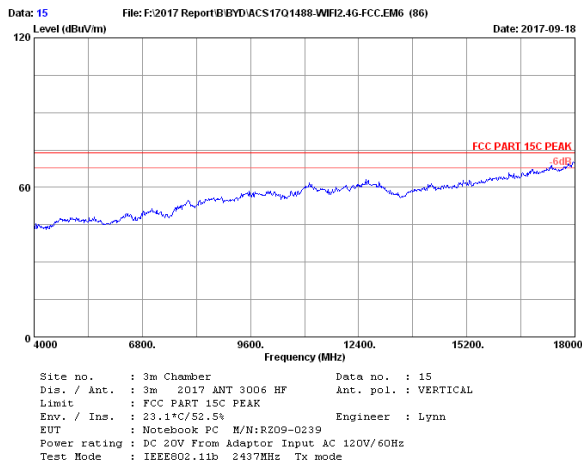
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2437.00     | 28.03              | 7.95            | 92.60          | 35.64           | 92.94                   | 74.00           | -18.94      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



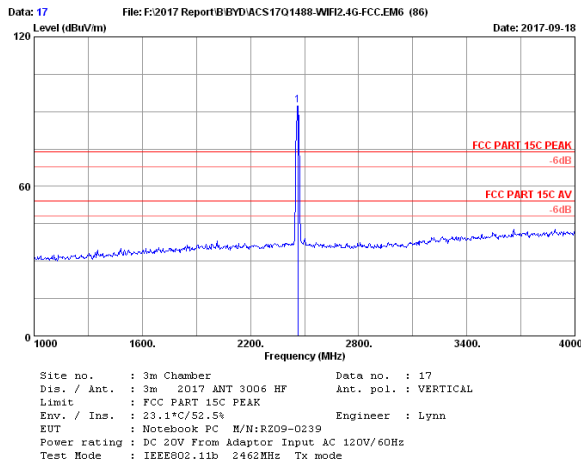
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4874.00     | 33.56              | 12.22           | 29.64          | 33.75           | 41.67                   | 54.00           | 12.33       | Average |
| 2   | 4874.00     | 33.56              | 12.22           | 42.95          | 33.75           | 54.98                   | 74.00           | 19.02       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



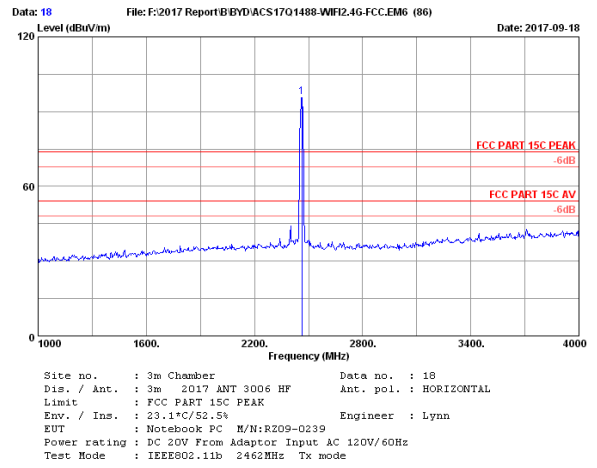
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4874.00     | 33.56              | 12.22           | 29.62          | 33.75           | 41.65                   | 54.00           | 12.35       | Average |
| 2   | 4874.00     | 33.56              | 12.22           | 42.71          | 33.75           | 54.74                   | 74.00           | 19.26       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



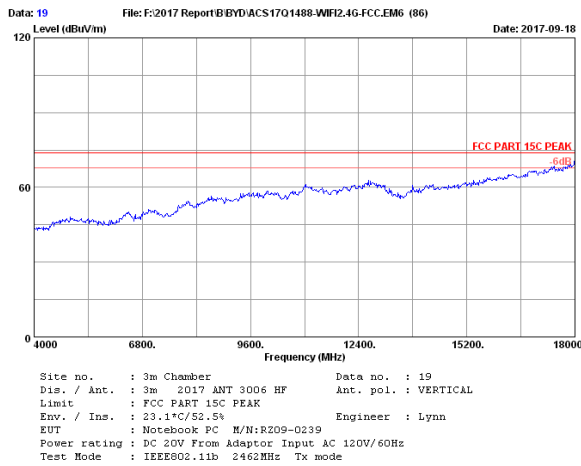
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2462.00     | 28.05              | 7.98            | 92.36          | 35.68           | 92.71                   | 74.00           | -18.71      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



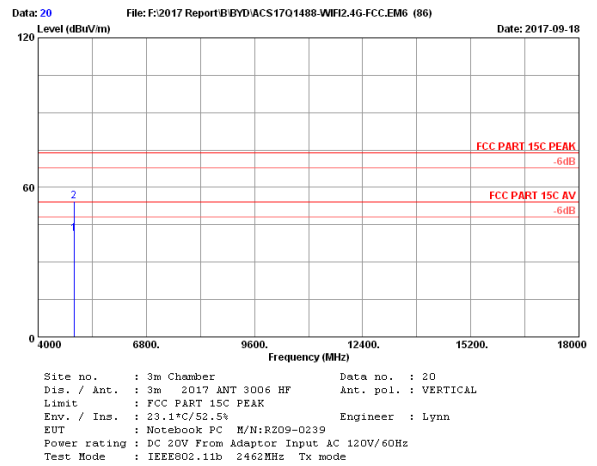
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2462.00     | 28.05              | 7.98            | 95.71          | 35.68           | 96.06                   | 74.00           | -22.06      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4924.00     | 33.66              | 12.30           | 29.08          | 33.71           | 41.33                   | 54.00           | 12.67       | Average |
| 2   | 4924.00     | 33.66              | 12.30           | 42.36          | 33.71           | 54.61                   | 74.00           | 19.39       | Peak    |

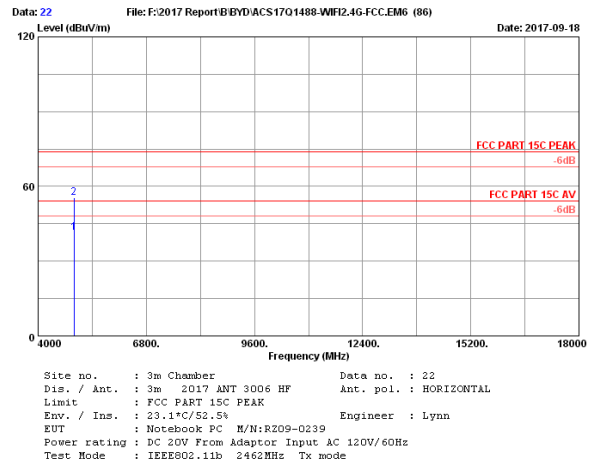
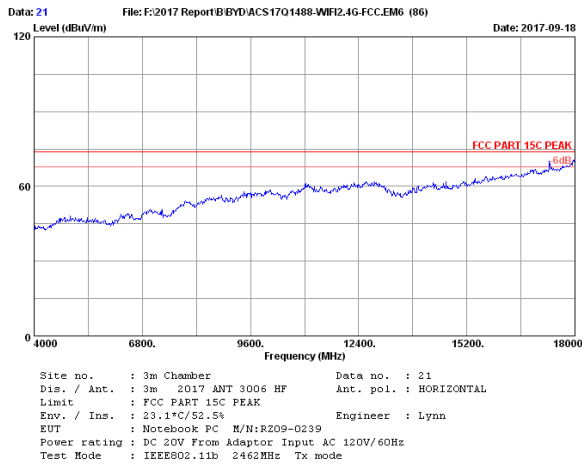
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4924.00     | 33.66              | 12.30           | 29.08          | 33.71           | 41.33                   | 54.00           | 12.67       | Average |
| 2   | 4924.00     | 33.66              | 12.30           | 42.36          | 33.71           | 54.61                   | 74.00           | 19.39       | Peak    |

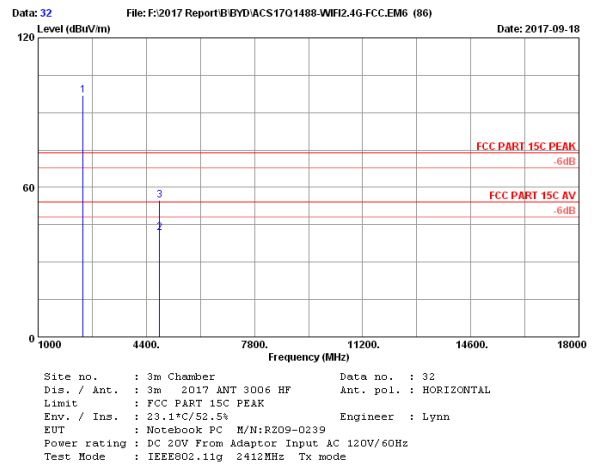
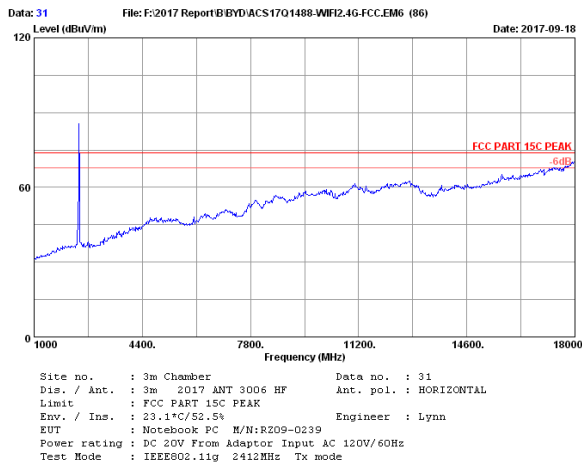
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.





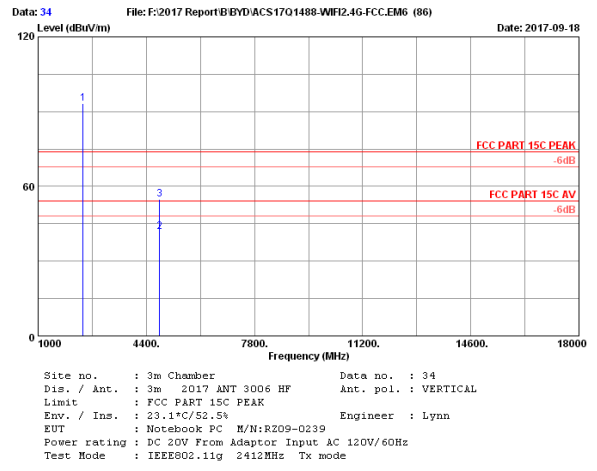
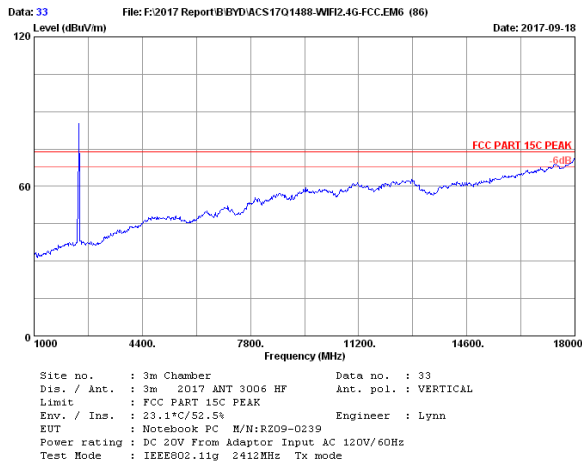
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 4924.00     | 33.66              | 12.30           | 29.19          | 33.71           | 41.44                   | 54.00           | 12.56       | Average |
| 2   | 4924.00     | 33.66              | 12.30           | 43.12          | 33.71           | 55.37                   | 74.00           | 18.63       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



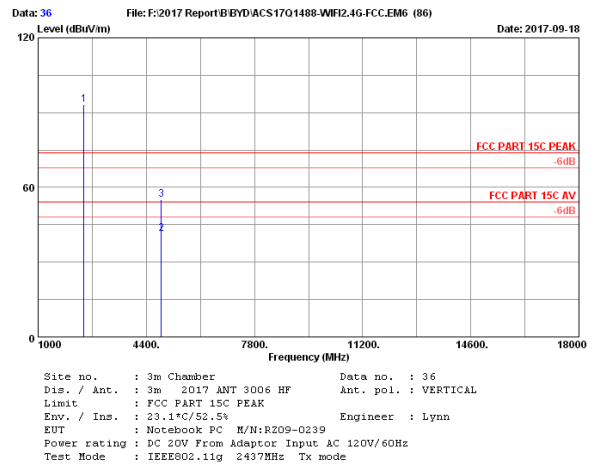
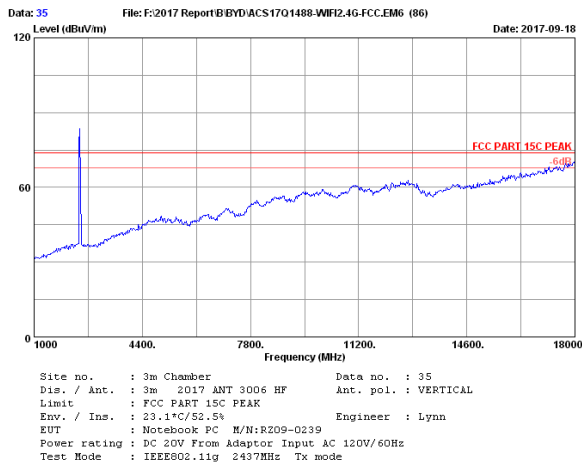
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2412.00     | 27.98              | 7.91            | 96.81          | 35.61           | 97.09                   | 74.00           | -23.09      | Peak    |
| 2   | 4824.00     | 33.46              | 12.11           | 30.00          | 33.80           | 41.77                   | 54.00           | 12.23       | Average |
| 3   | 4824.00     | 33.46              | 12.11           | 43.21          | 33.80           | 54.98                   | 74.00           | 19.02       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



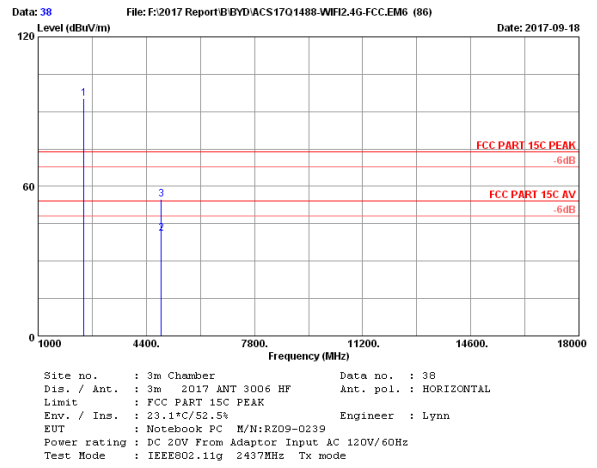
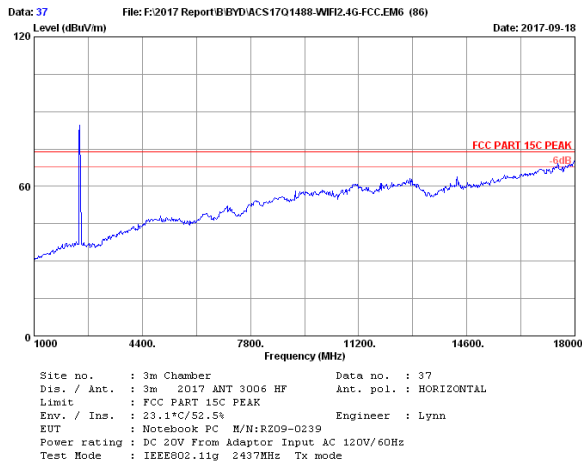
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2412.00     | 27.98              | 7.91            | 93.06          | 35.61           | 93.34                   | 74.00           | -19.34      | Peak    |
| 2   | 4824.00     | 33.46              | 12.11           | 29.86          | 33.80           | 41.63                   | 54.00           | 12.37       | Average |
| 3   | 4824.00     | 33.46              | 12.11           | 43.19          | 33.80           | 54.96                   | 74.00           | 19.04       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



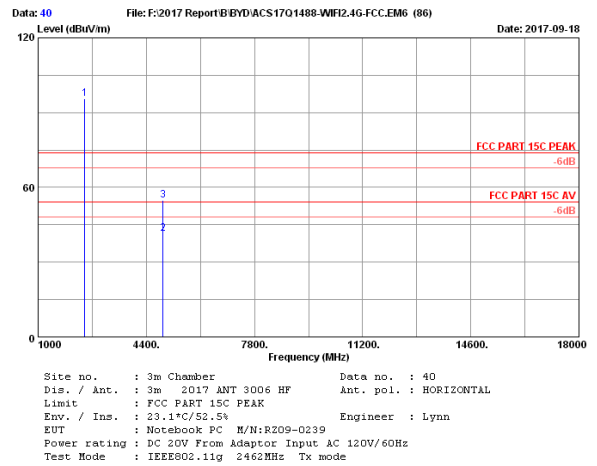
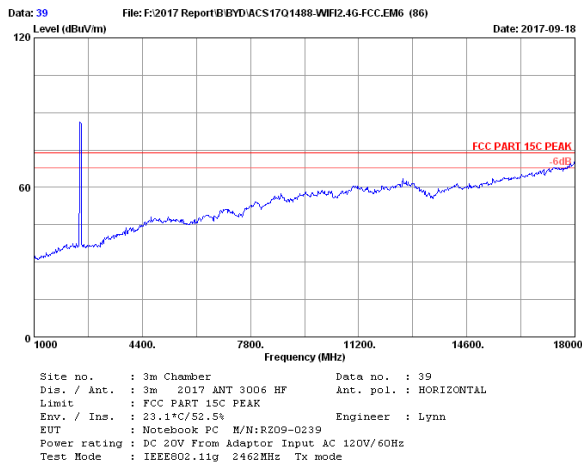
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 92.77          | 35.64           | 93.11                   | 74.00           | -19.11      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.40          | 33.75           | 41.43                   | 54.00           | 12.57       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 43.01          | 33.75           | 55.04                   | 74.00           | 18.96       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



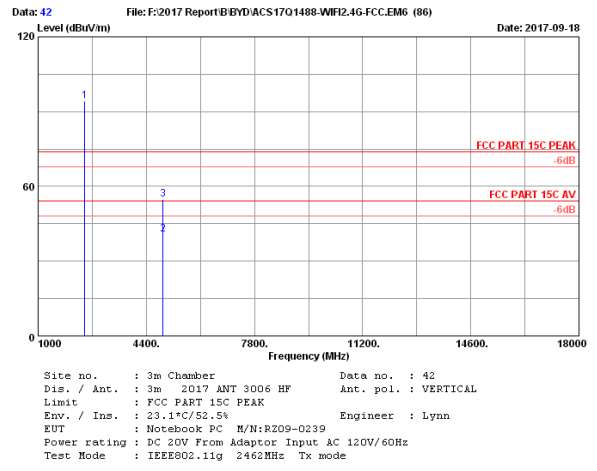
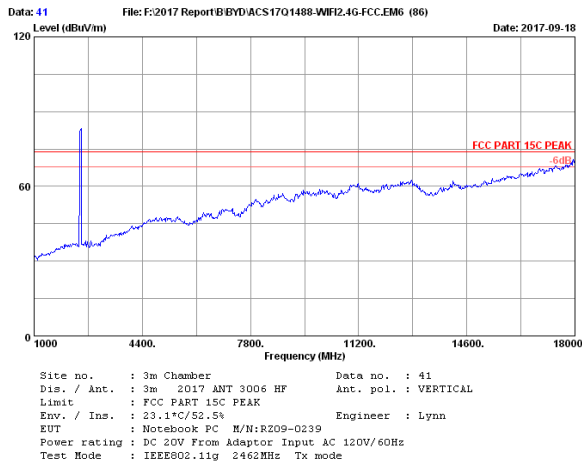
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 94.76          | 35.64           | 95.10                   | 74.00           | -21.10      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.08          | 33.75           | 41.11                   | 54.00           | 12.89       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 42.91          | 33.75           | 54.94                   | 74.00           | 19.06       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



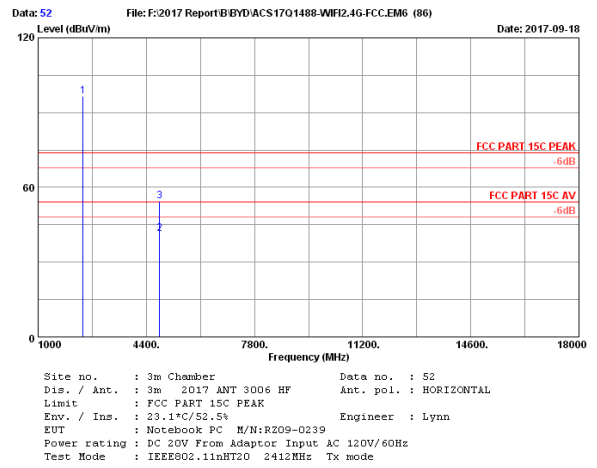
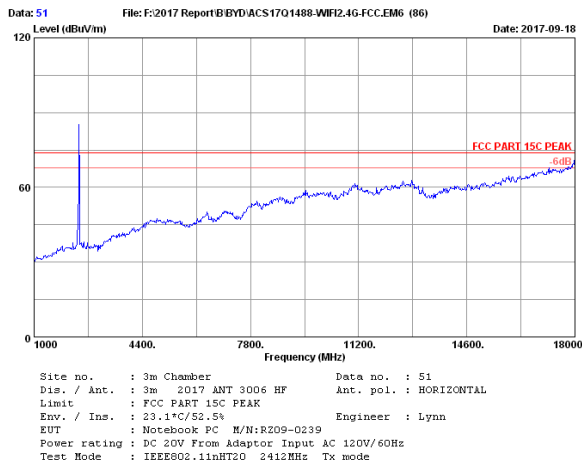
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2462.00     | 28.05              | 7.98            | 95.24          | 35.68           | 95.59                   | 74.00           | -21.59      | Peak    |
| 2   | 4924.00     | 33.66              | 12.30           | 29.09          | 33.71           | 41.34                   | 54.00           | 12.66       | Average |
| 3   | 4924.00     | 33.66              | 12.30           | 42.63          | 33.71           | 54.88                   | 74.00           | 19.12       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



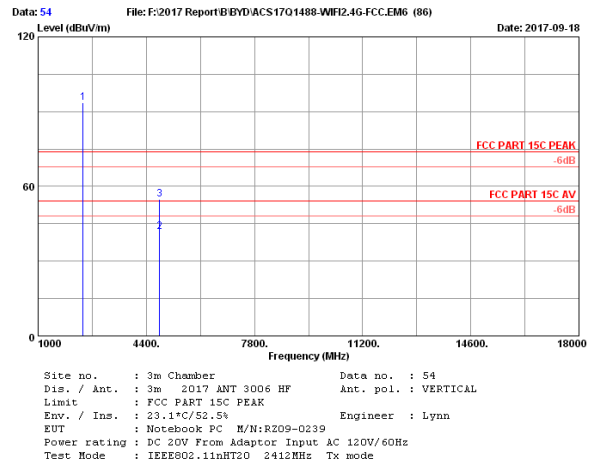
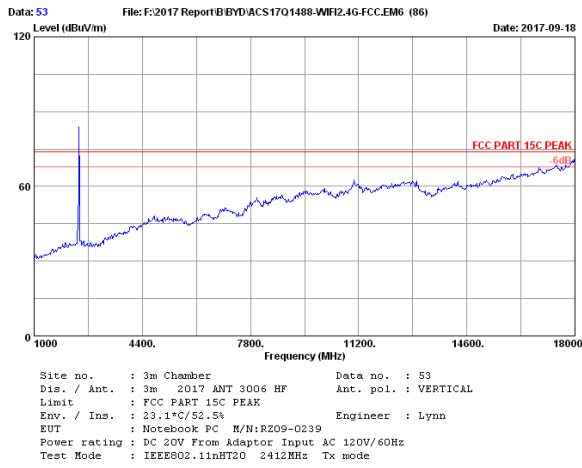
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2462.00     | 28.05              | 7.98            | 93.81          | 35.68           | 94.16                   | 74.00           | -20.16      | Peak    |
| 2   | 4924.00     | 33.66              | 12.30           | 28.68          | 33.71           | 40.93                   | 54.00           | 13.07       | Average |
| 3   | 4924.00     | 33.66              | 12.30           | 42.73          | 33.71           | 54.98                   | 74.00           | 19.02       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



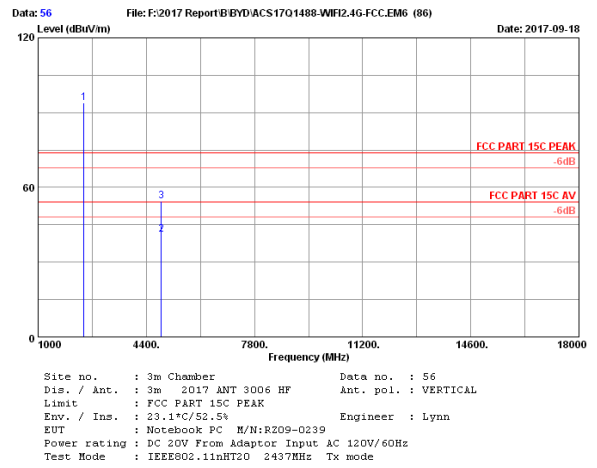
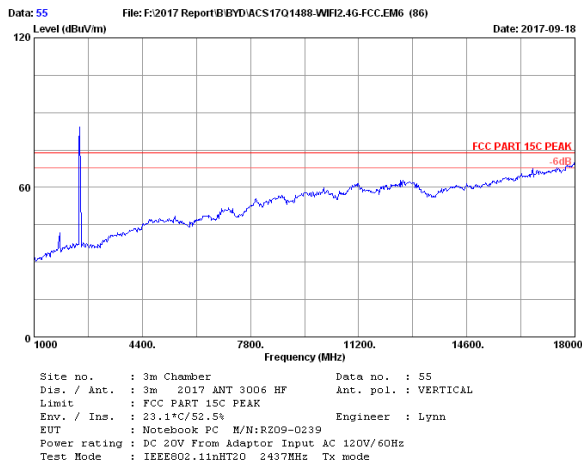
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2412.00     | 27.98              | 7.91            | 96.33          | 35.61           | 96.61                   | 74.00           | -22.61      | Peak    |
| 2   | 4924.00     | 33.46              | 12.11           | 29.52          | 33.80           | 41.29                   | 54.00           | 12.71       | Average |
| 3   | 4924.00     | 33.46              | 12.11           | 42.57          | 33.80           | 54.34                   | 74.00           | 19.66       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2412.00     | 27.98              | 7.91            | 93.22          | 35.61           | 93.50                   | 74.00           | -19.50      | Peak    |
| 2   | 4824.00     | 33.46              | 12.11           | 30.09          | 33.80           | 41.86                   | 54.00           | 12.14       | Average |
| 3   | 4824.00     | 33.46              | 12.11           | 43.01          | 33.80           | 54.78                   | 74.00           | 19.22       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

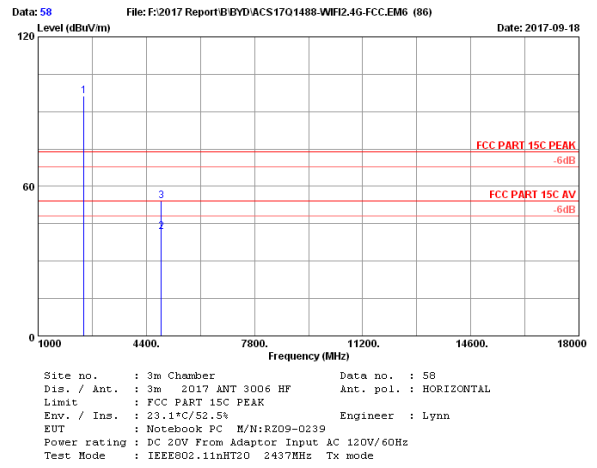
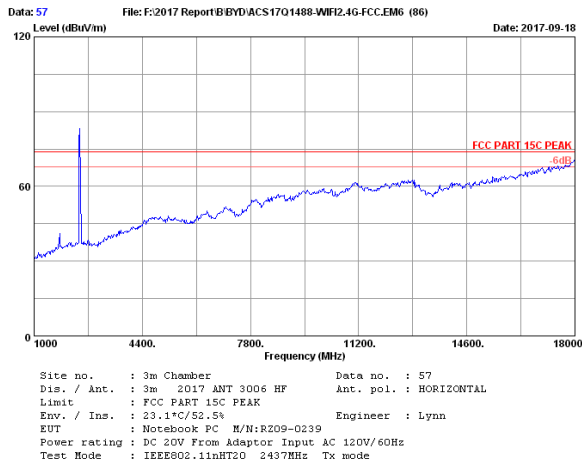


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 93.67          | 35.64           | 94.01                   | 74.00           | -20.01      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.14          | 33.75           | 41.17                   | 54.00           | 12.83       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 42.58          | 33.75           | 54.61                   | 74.00           | 19.39       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

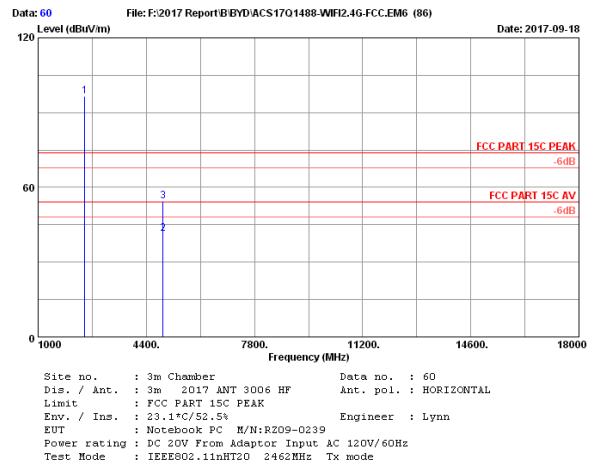
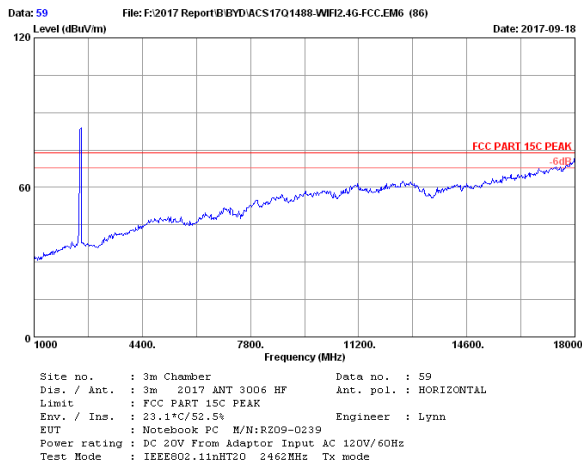
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| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 95.91          | 35.64           | 96.25                   | 74.00           | -22.25      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.64          | 33.75           | 41.67                   | 54.00           | 12.33       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 42.16          | 33.75           | 54.19                   | 74.00           | 19.81       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

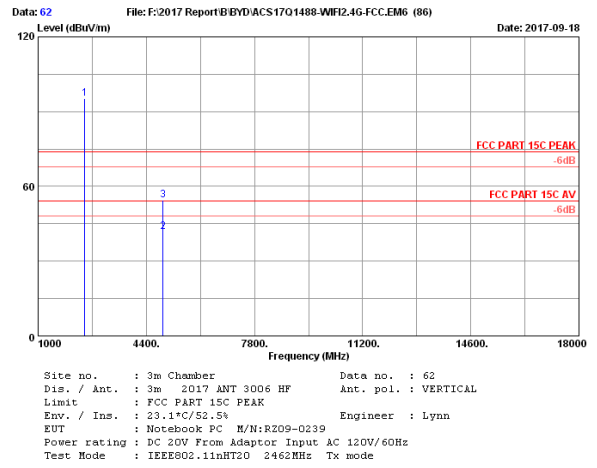
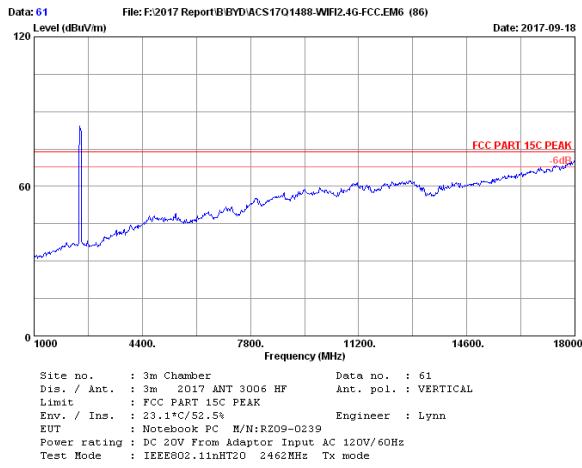


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2462.00     | 28.05              | 7.98            | 96.19          | 35.68           | 96.54                   | 74.00           | -22.54      | Peak    |
| 2   | 4924.00     | 33.66              | 12.30           | 29.32          | 33.71           | 41.57                   | 54.00           | 12.43       | Average |
| 3   | 4924.00     | 33.66              | 12.30           | 42.20          | 33.71           | 54.45                   | 74.00           | 19.55       | Peak    |

Remarks: 1. Emission Level\* Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

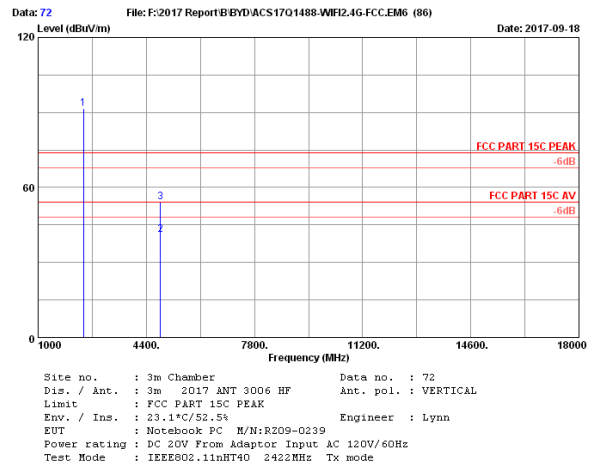
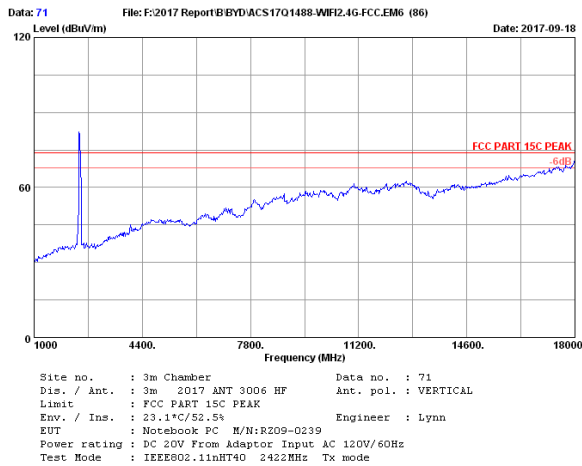
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| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2462.00     | 28.05              | 7.98            | 94.77          | 35.68           | 95.12                   | 74.00           | -21.12      | Peak    |
| 2   | 4924.00     | 33.66              | 12.30           | 29.48          | 33.71           | 41.73                   | 54.00           | 12.27       | Average |
| 3   | 4924.00     | 33.66              | 12.30           | 42.11          | 33.71           | 54.36                   | 74.00           | 19.64       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

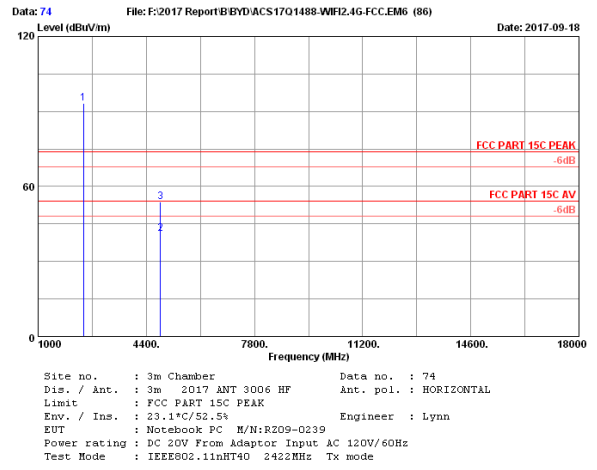
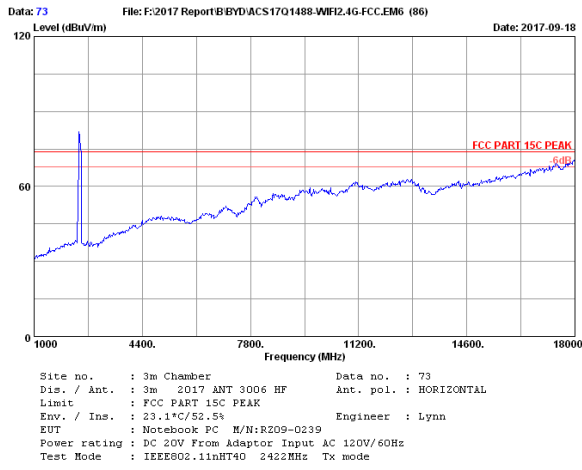


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2422.00     | 28.00              | 7.91            | 91.25          | 35.64           | 91.52                   | 74.00           | -17.52      | Peak    |
| 2   | 4844.00     | 33.49              | 12.15           | 29.27          | 33.78           | 41.13                   | 54.00           | 12.87       | Average |
| 3   | 4844.00     | 33.49              | 12.15           | 42.15          | 33.78           | 54.01                   | 74.00           | 19.99       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

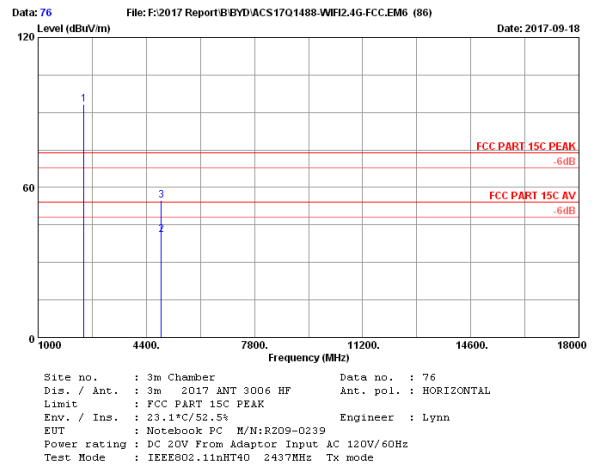
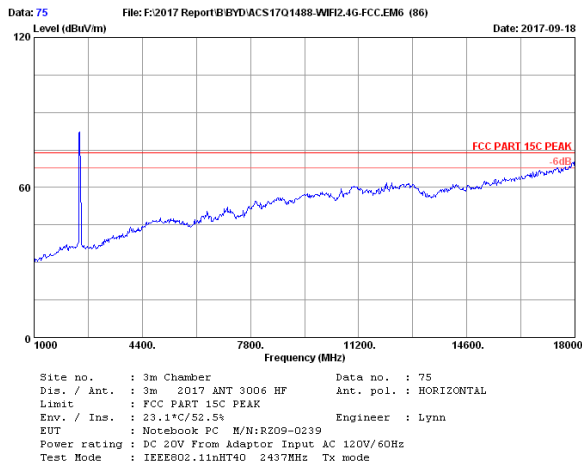
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| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2422.00     | 28.00              | 7.91            | 92.83          | 35.64           | 93.10                   | 74.00           | -19.10      | Peak    |
| 2   | 4844.00     | 33.49              | 12.15           | 29.31          | 33.78           | 41.17                   | 54.00           | 12.83       | Average |
| 3   | 4844.00     | 33.49              | 12.15           | 42.05          | 33.78           | 53.91                   | 74.00           | 20.09       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



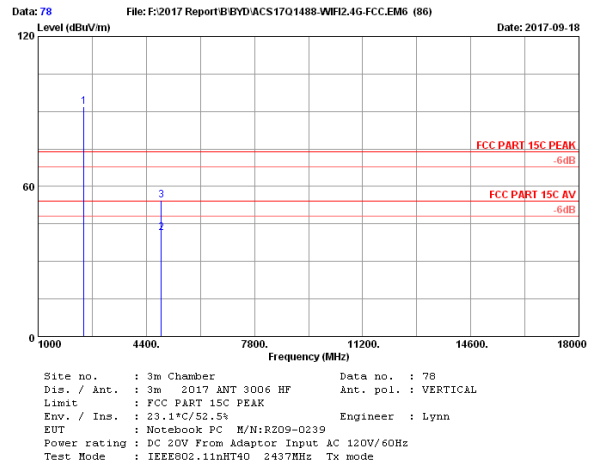
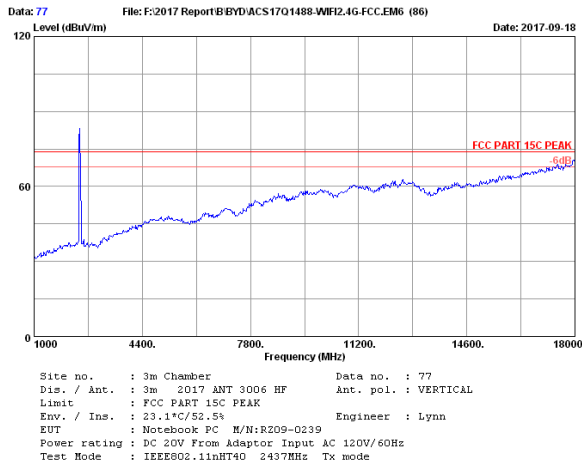
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 92.80          | 35.64           | 93.14                   | 74.00           | -19.14      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.18          | 33.75           | 41.21                   | 54.00           | 12.79       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 42.65          | 33.75           | 54.68                   | 74.00           | 19.32       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

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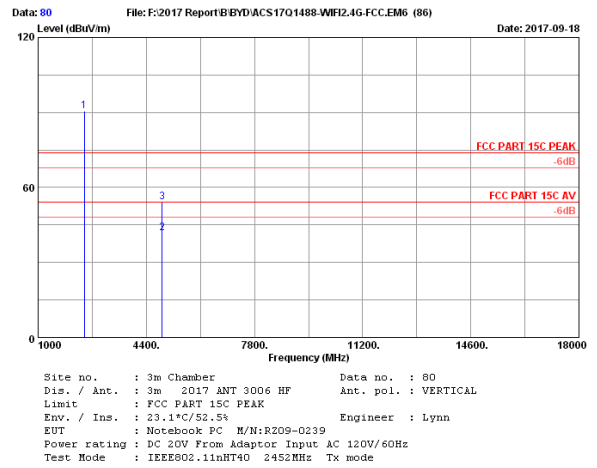
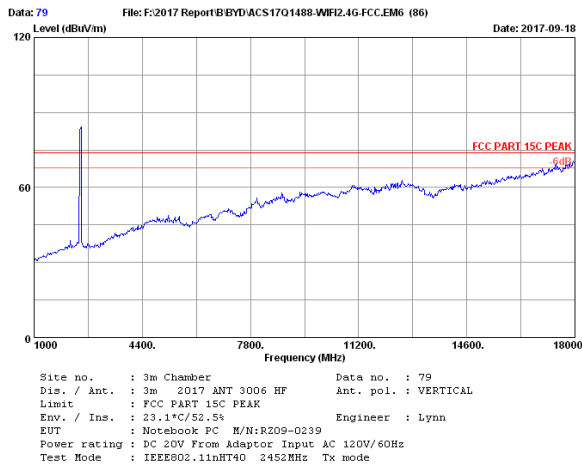
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| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2437.00     | 28.03              | 7.95            | 91.57          | 35.64           | 91.91                   | 74.00           | -17.91      | Peak    |
| 2   | 4874.00     | 33.56              | 12.22           | 29.55          | 33.75           | 41.58                   | 54.00           | 12.42       | Average |
| 3   | 4874.00     | 33.56              | 12.22           | 42.52          | 33.75           | 54.55                   | 74.00           | 19.45       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

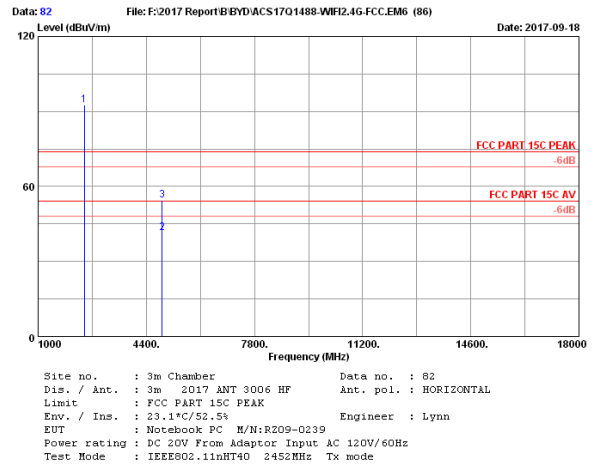
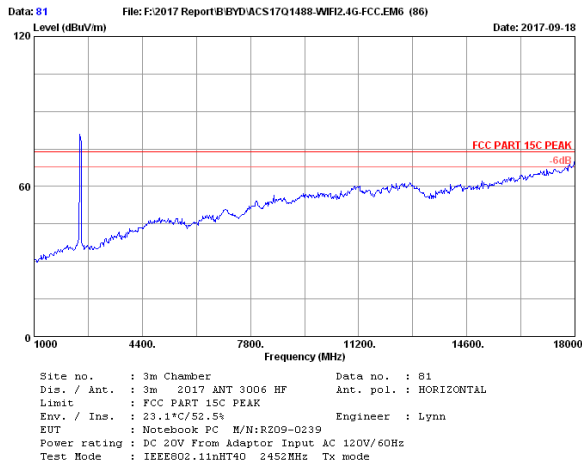


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2452.00     | 28.03              | 7.98            | 90.21          | 35.68           | 90.54                   | 74.00           | -16.54      | Peak    |
| 2   | 4904.00     | 33.63              | 12.26           | 29.51          | 33.73           | 41.67                   | 54.00           | 12.33       | Average |
| 3   | 4904.00     | 33.63              | 12.26           | 42.08          | 33.73           | 54.24                   | 74.00           | 19.76       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

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| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2452.00     | 28.03              | 7.98            | 92.25          | 35.68           | 92.58                   | 74.00           | -18.58      | Peak    |
| 2   | 4904.00     | 33.63              | 12.26           | 29.33          | 33.73           | 41.49                   | 54.00           | 12.51       | Average |
| 3   | 4904.00     | 33.63              | 12.26           | 42.19          | 33.73           | 54.35                   | 74.00           | 19.65       | Peak    |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

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## 6. CONDUCTED SPURIOUS EMISSIONS

### 6.1.Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

In addition, radiated emissions which fall in the restricted bands, as defined in RSS-GEN Clause 7.2.2, must also comply with the radiated emission limits specified in RSS-247.

### 6.2.Test Procedure

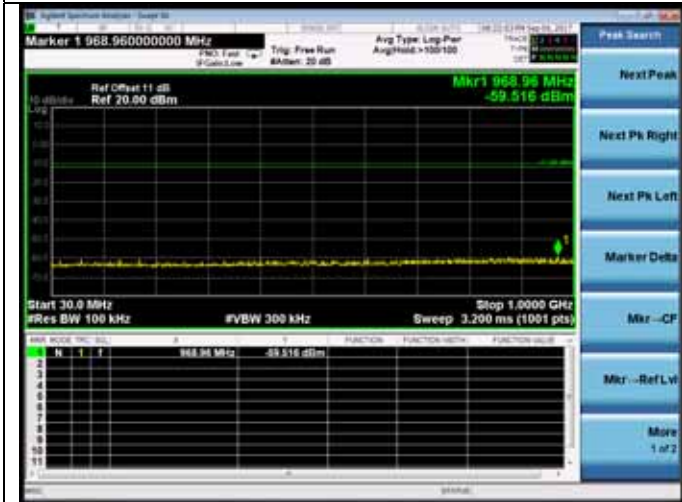
The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions with peak detector.

### 6.3.Test result

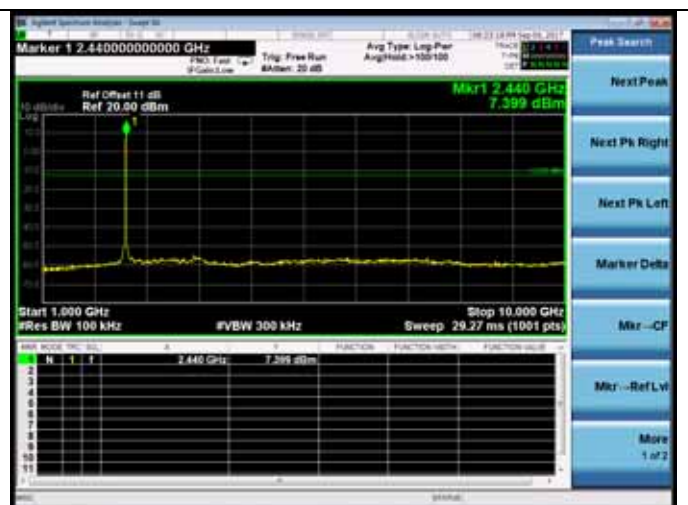
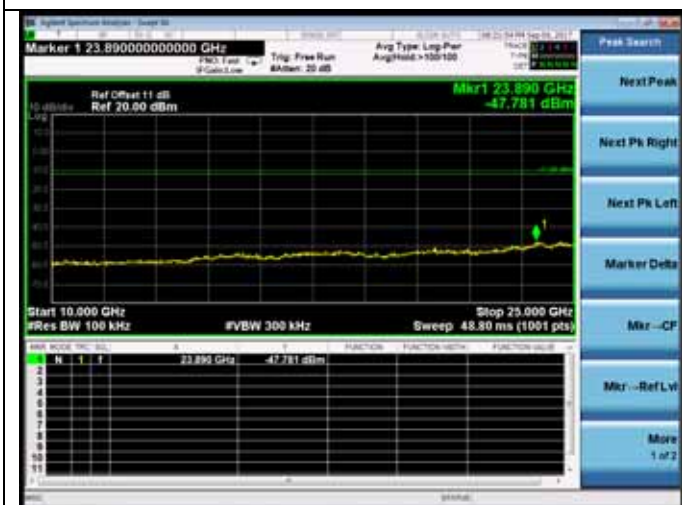
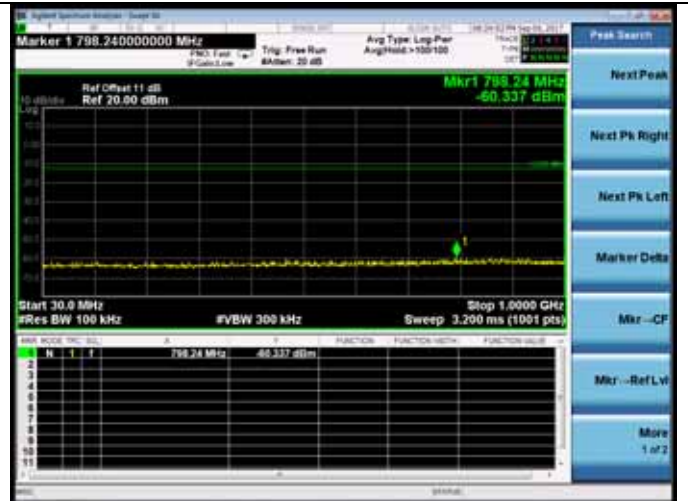
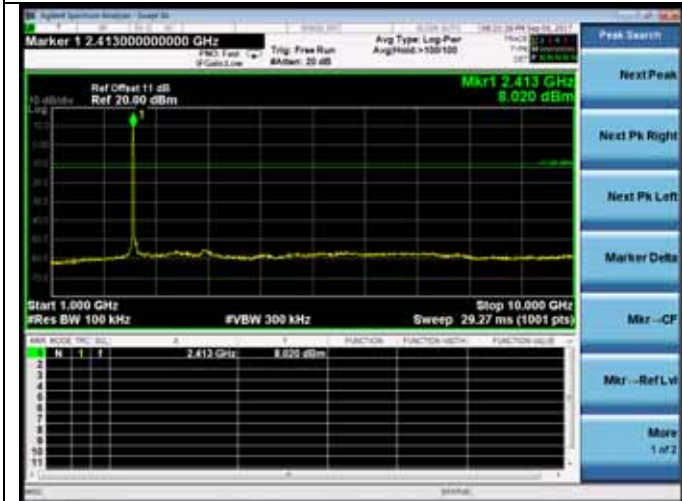
**PASS** (The testing data was attached in the next pages.)

**ANT0:**

Test Mode: IEEE 802.11b  
 Test CH1: 2412MHz

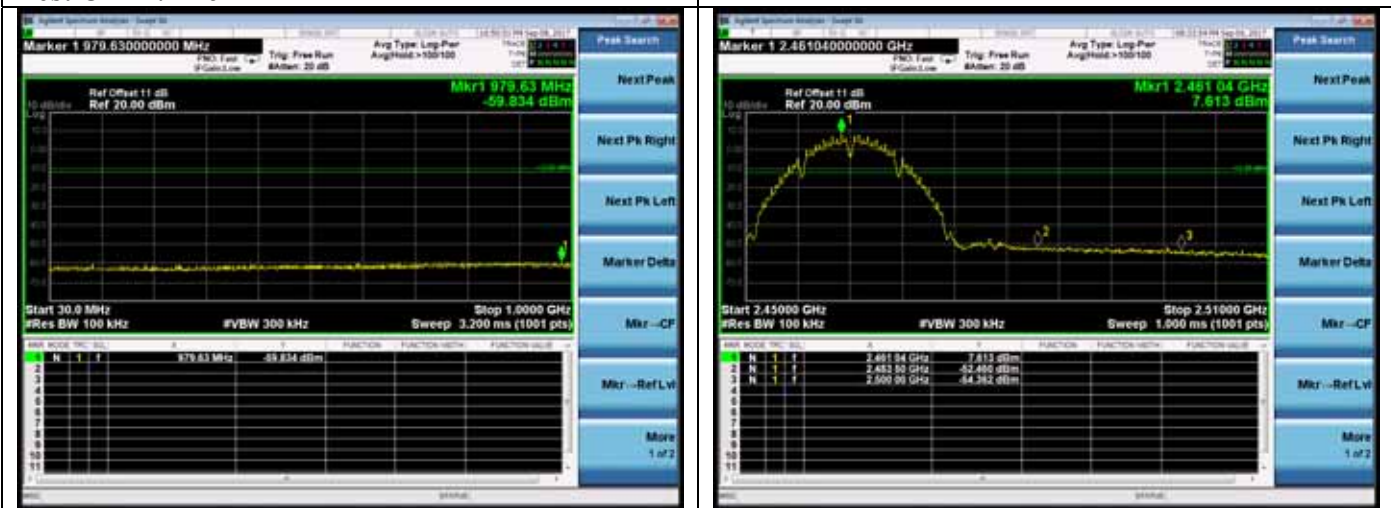


**Test CH6: 2437MHz**

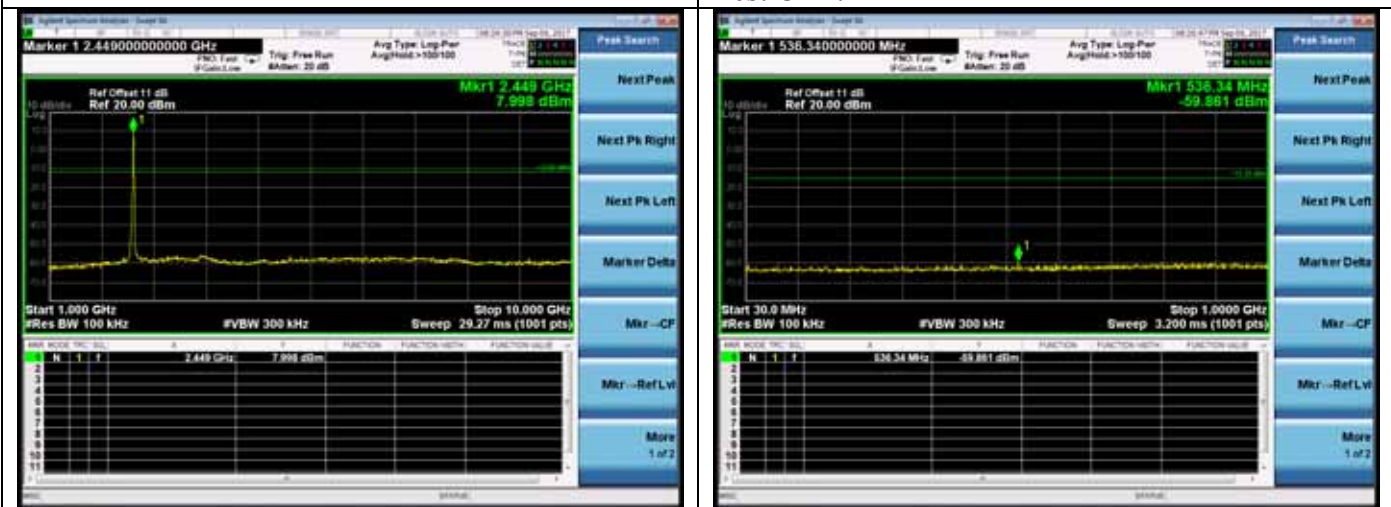




Test CH11: 2462MHz



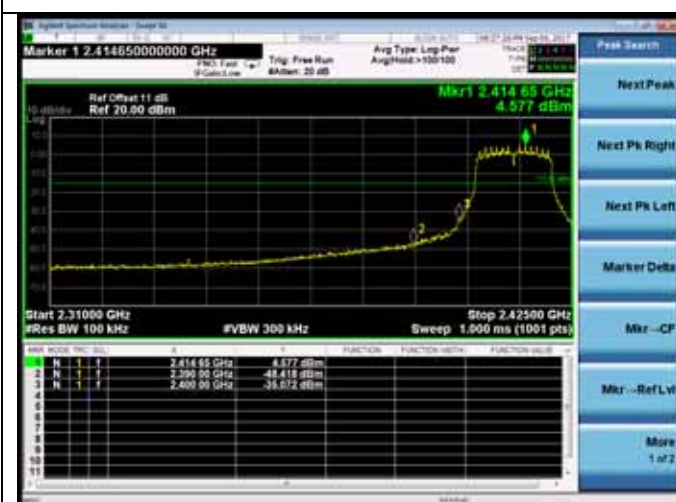
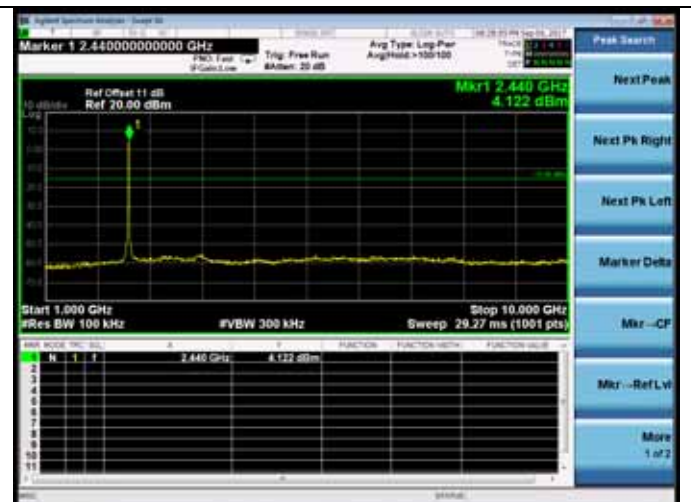
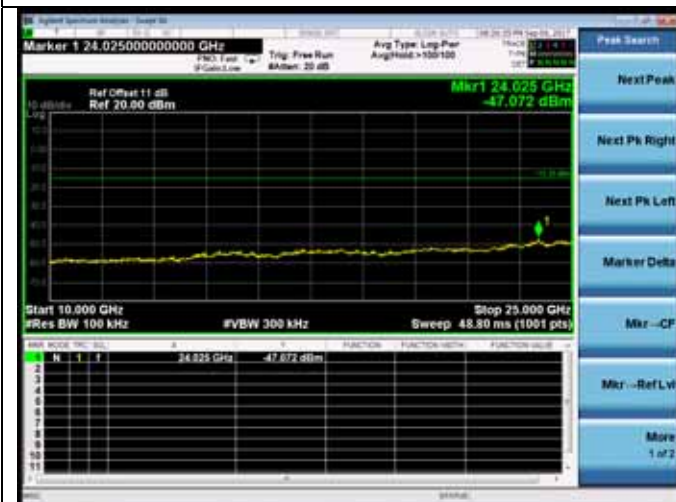
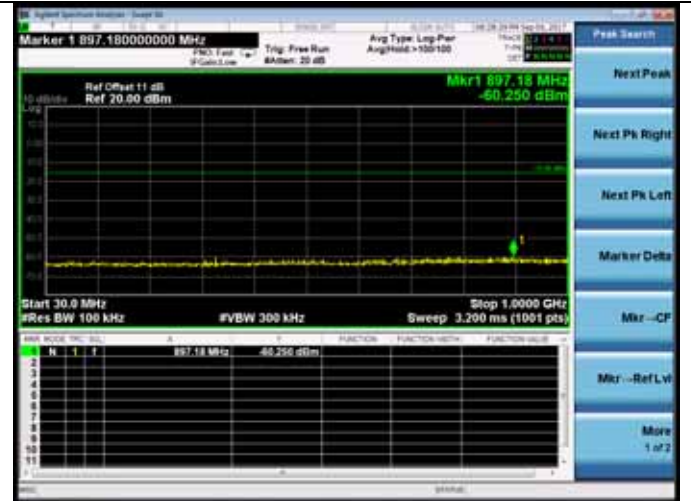
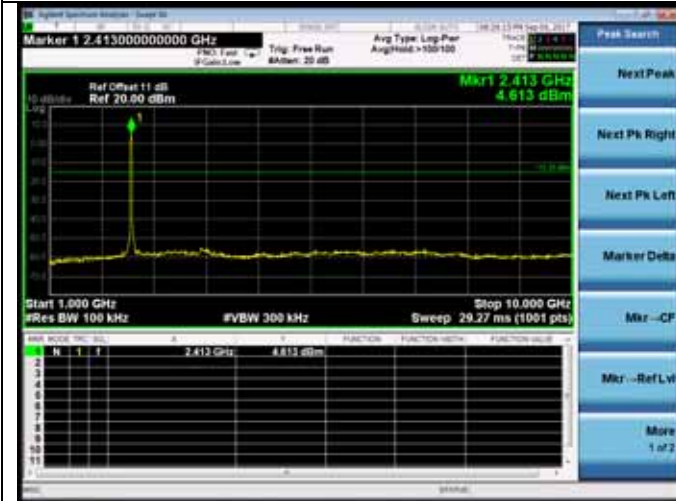
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



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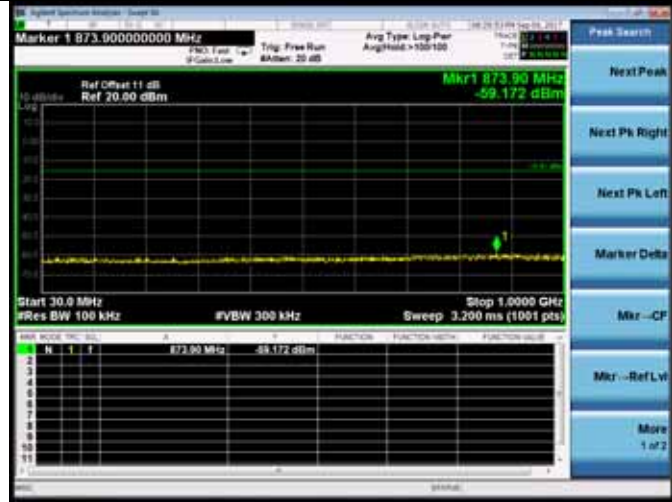
Test CH6: 2437MHz



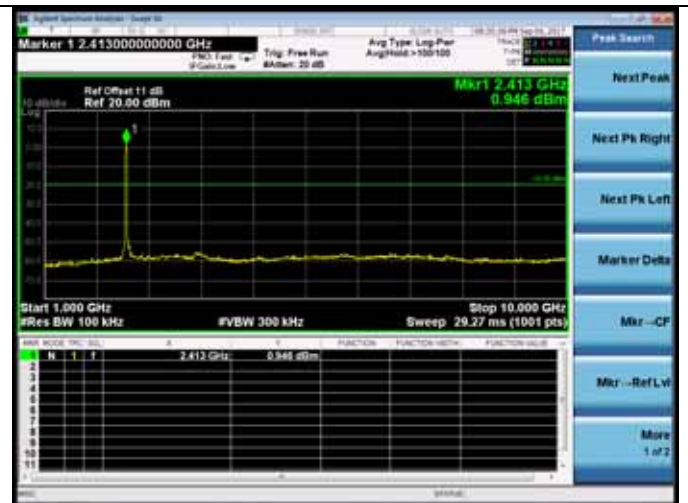
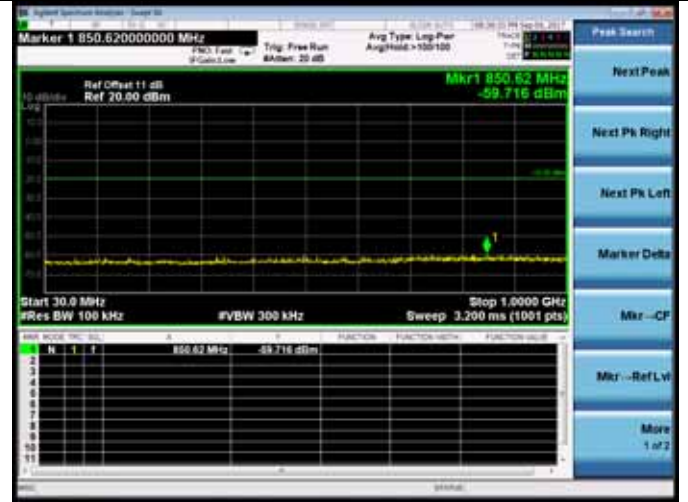
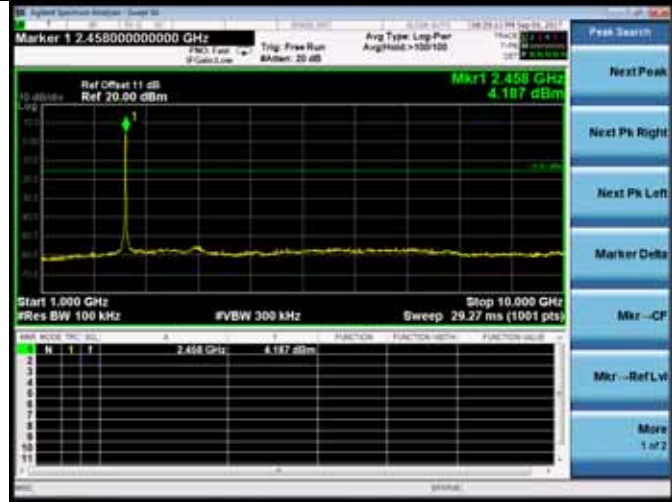
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Test CH11: 2462MHz

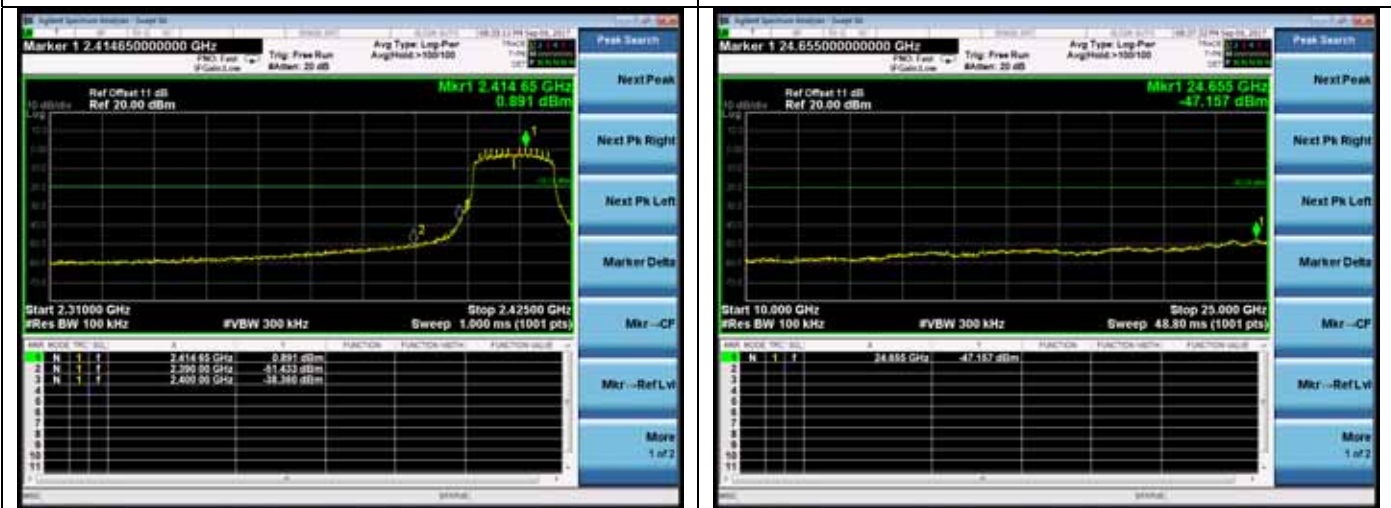
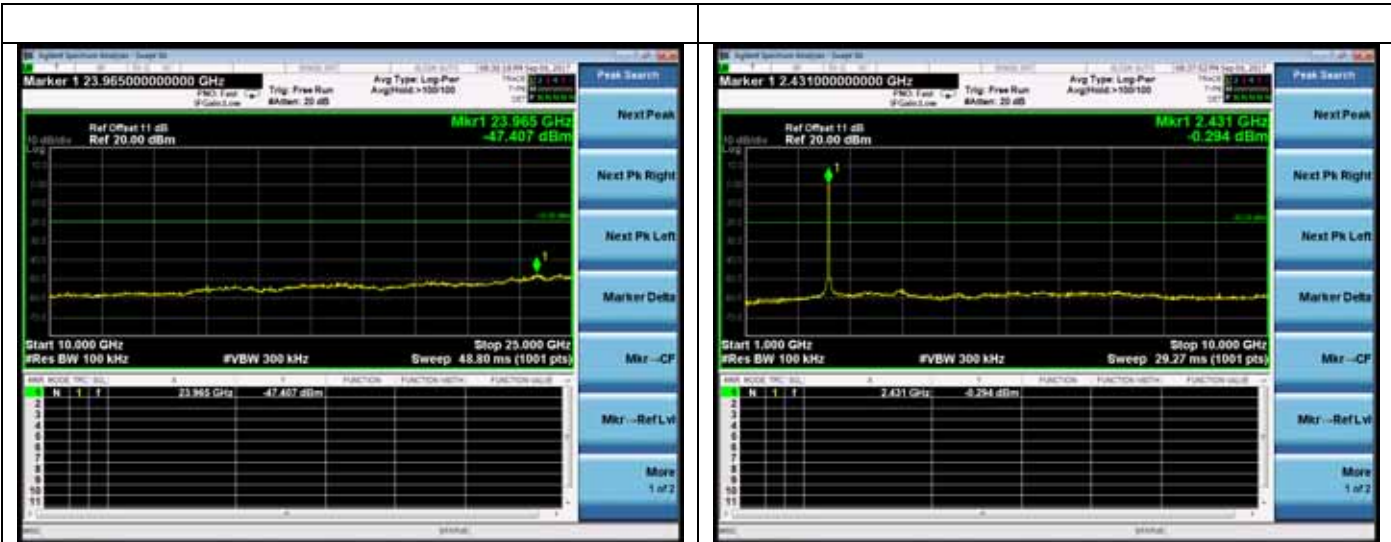


Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



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Test CH6: 2437MHz

Test CH11: 2462MHz

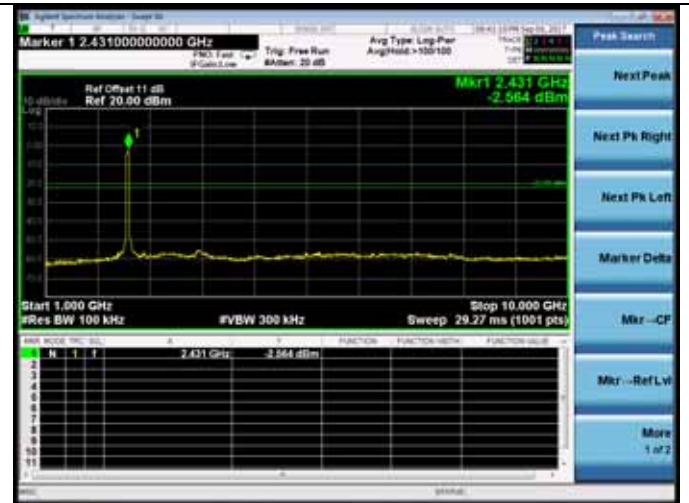
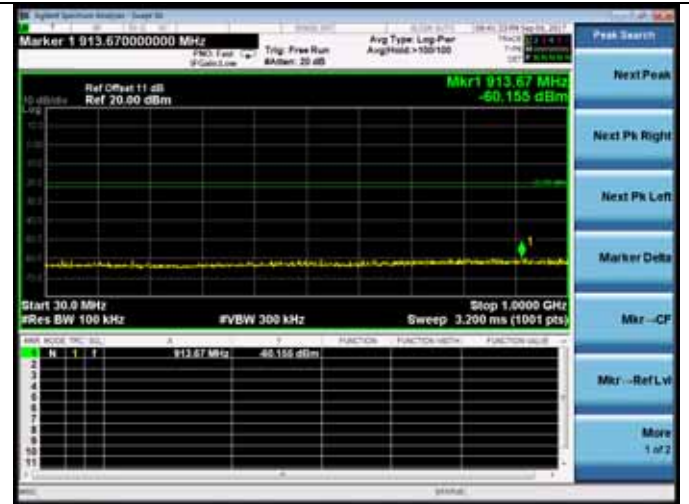
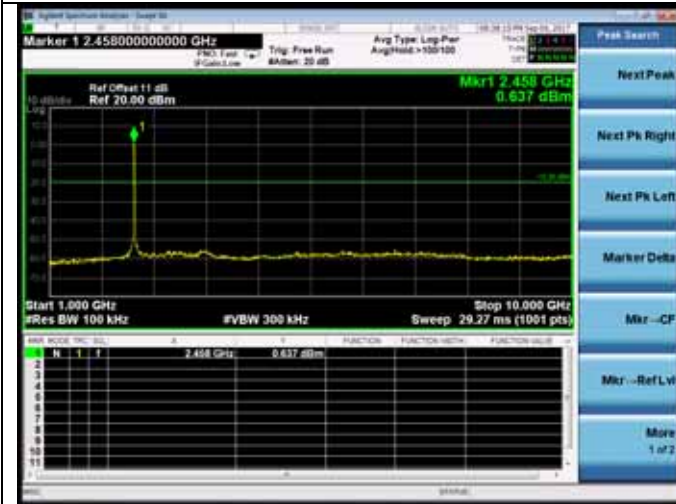


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Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



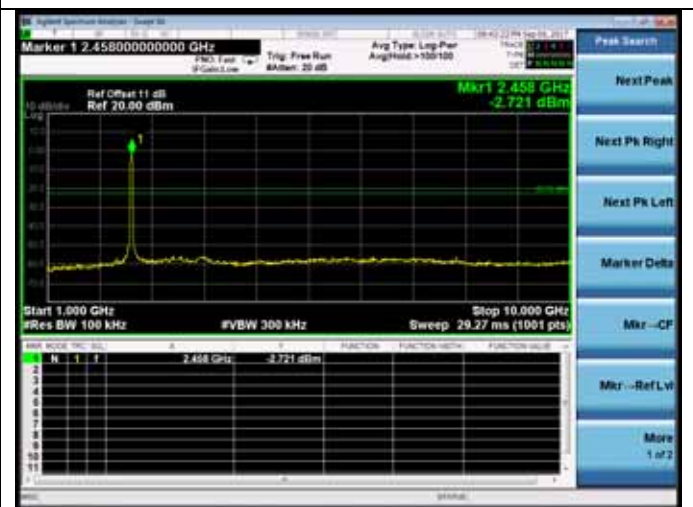
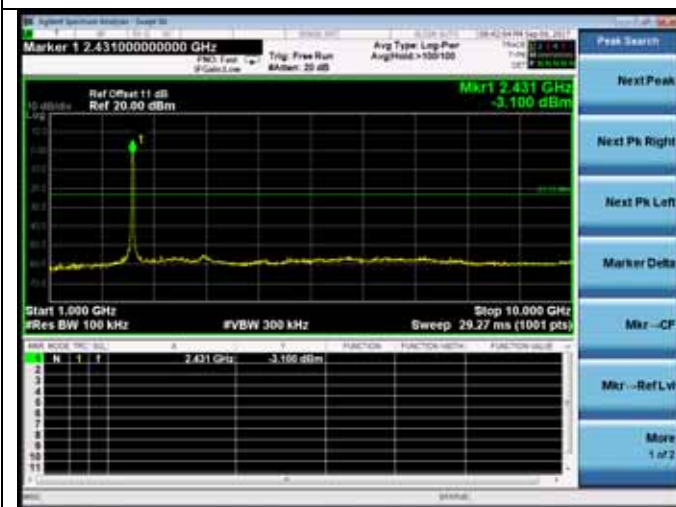
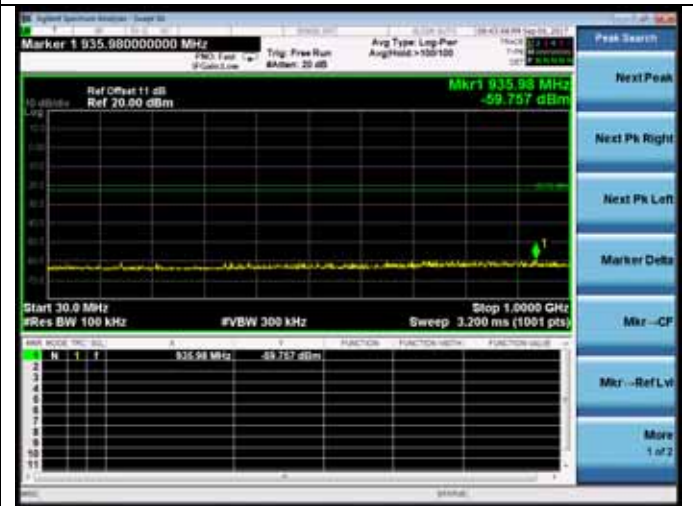
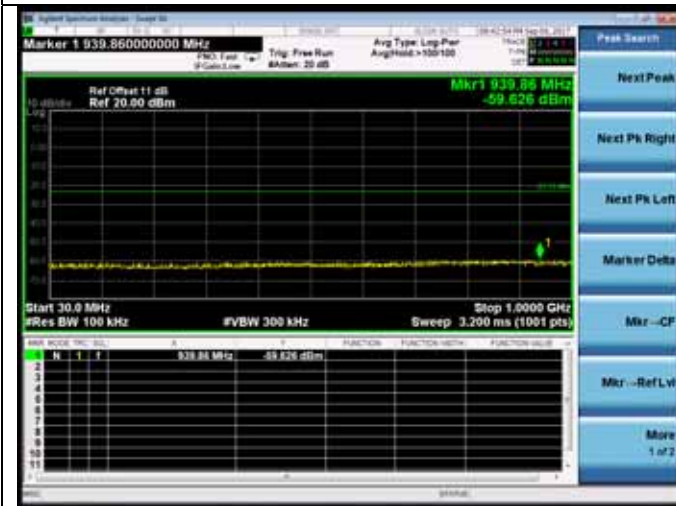
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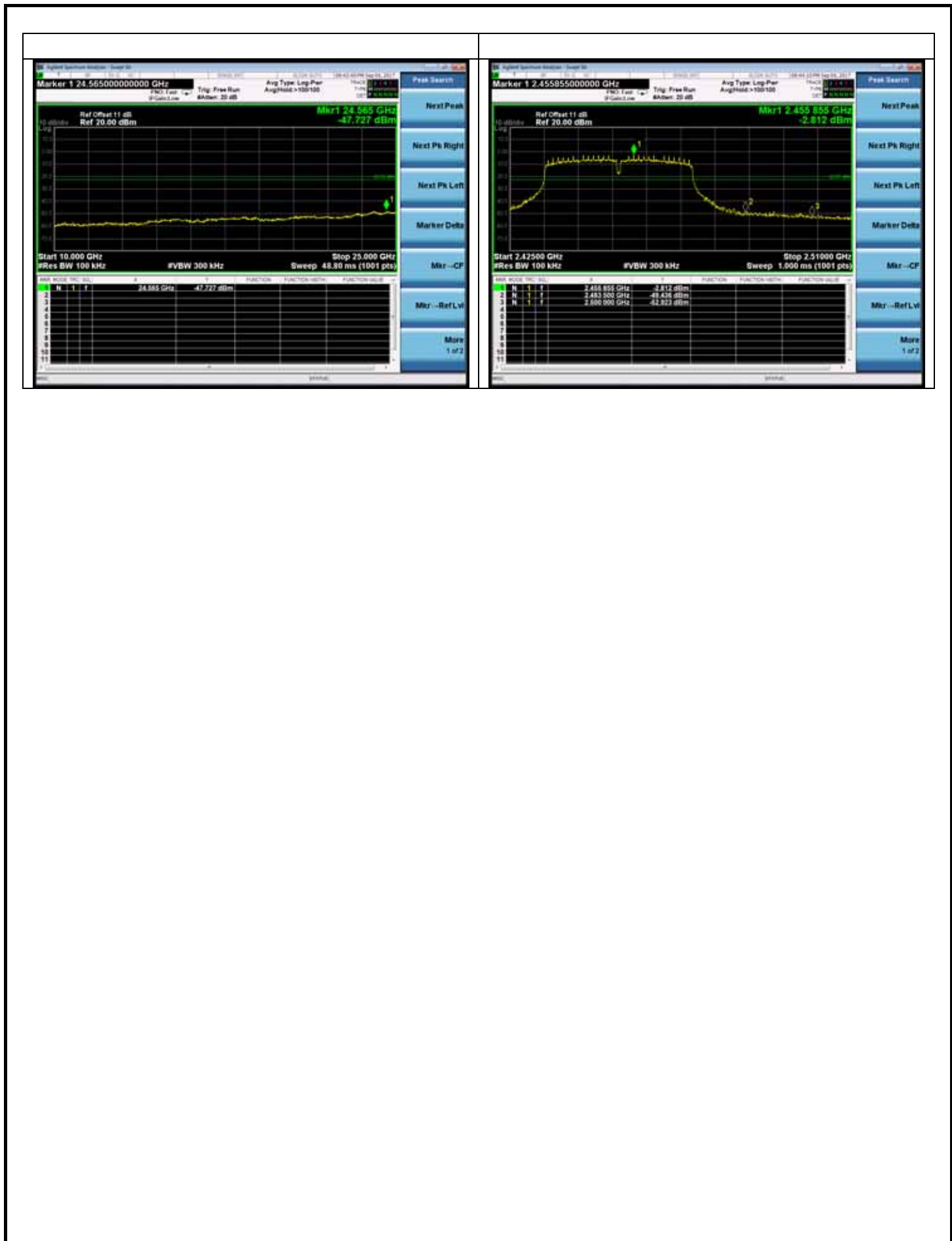
Test CH6: 2437MHz

Test CH9: 2452MHz



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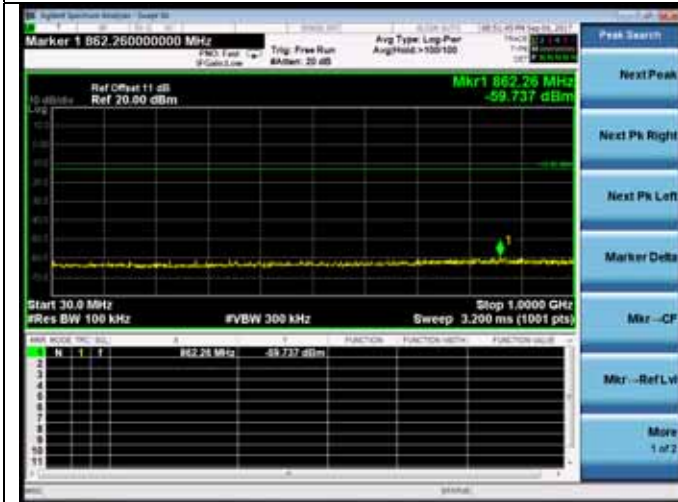


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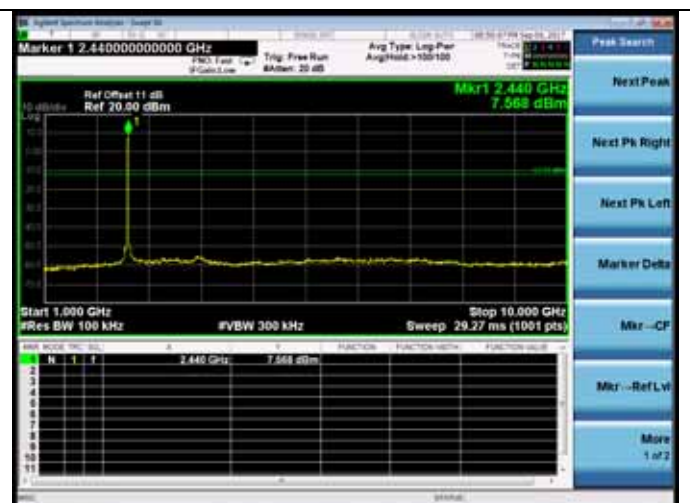
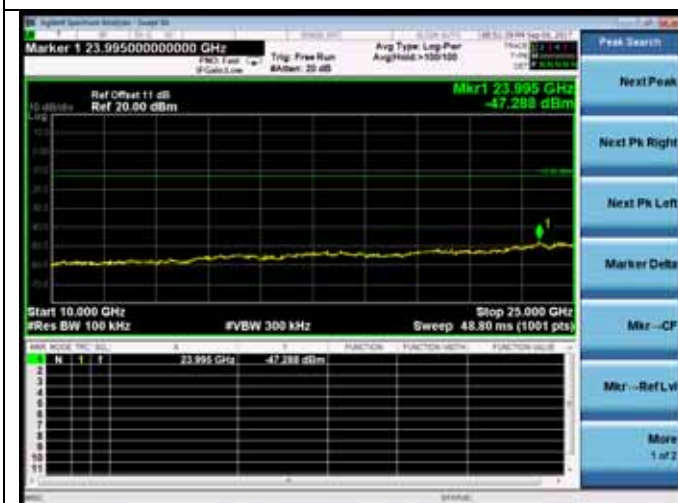
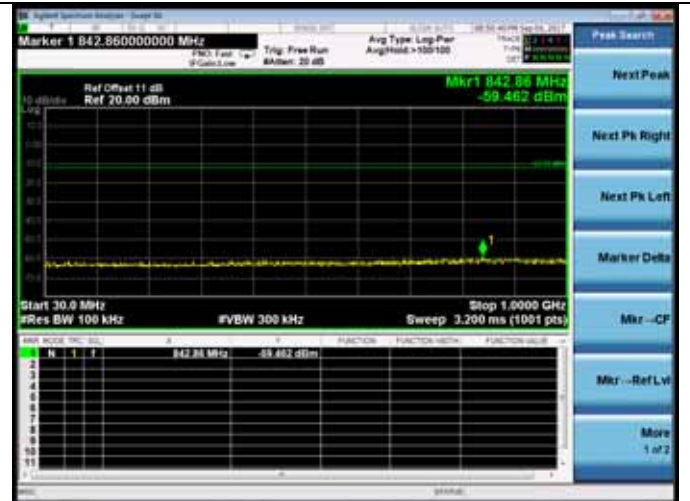
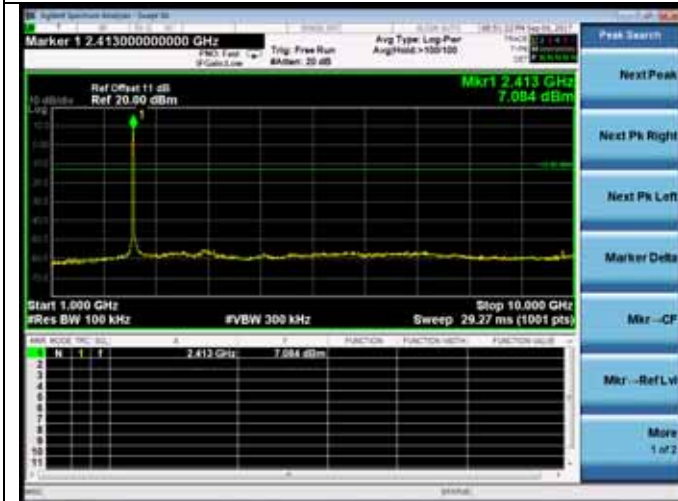
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**ANT1:**

Test Mode: IEEE 802.11b  
 Test CH1: 2412MHz

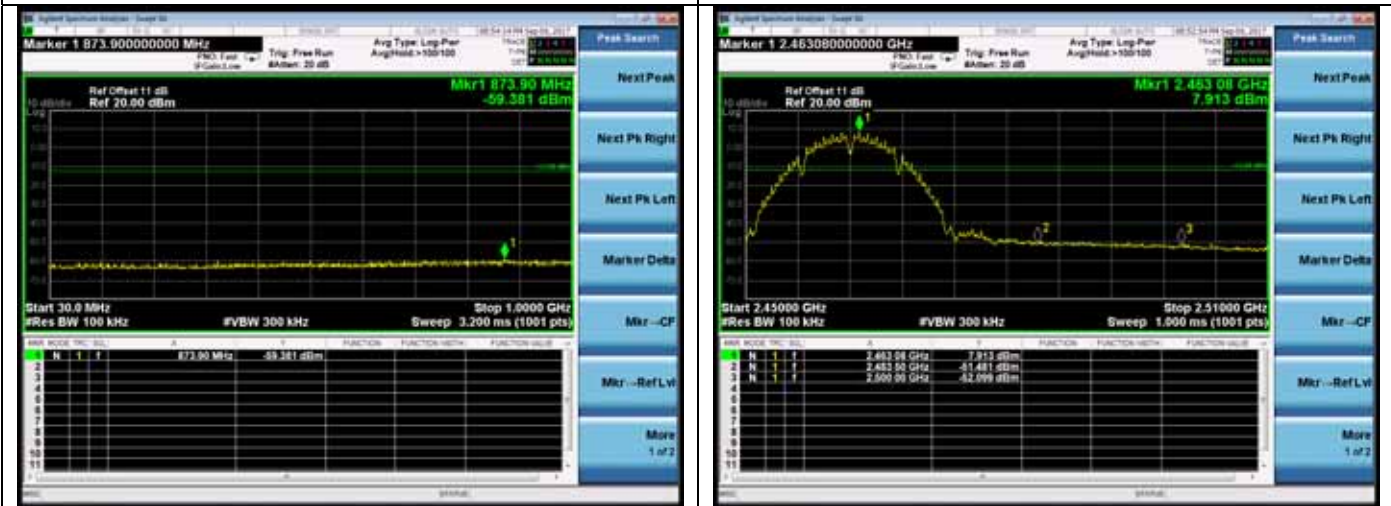


**Test CH6: 2437MHz**





Test CH11: 2462MHz



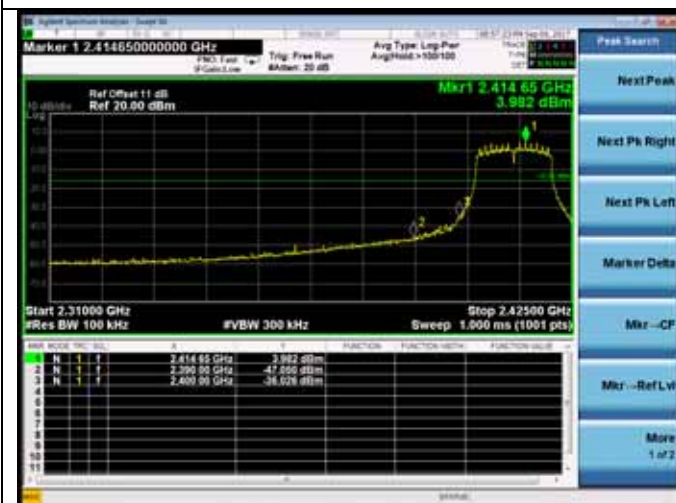
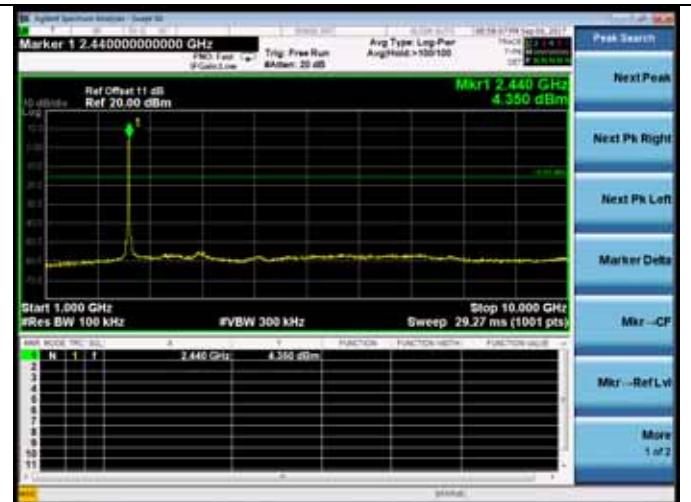
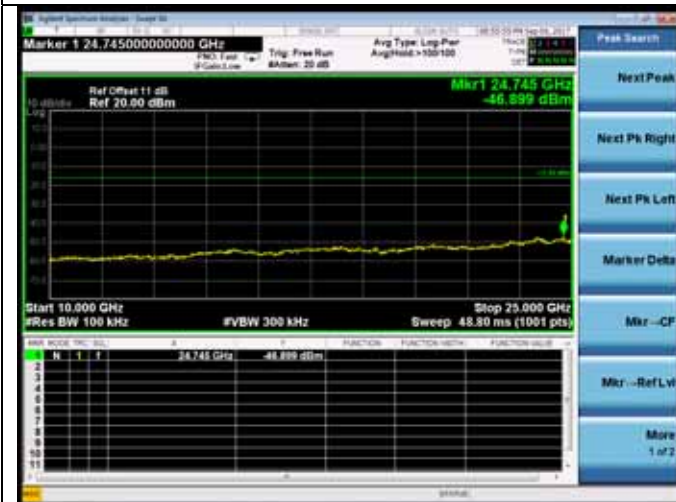
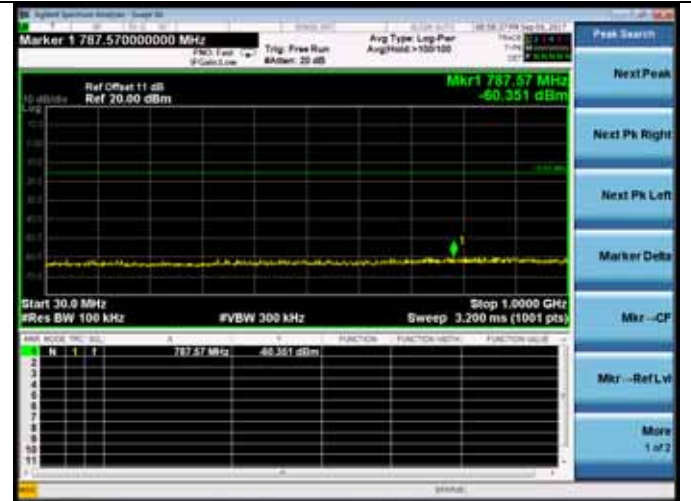
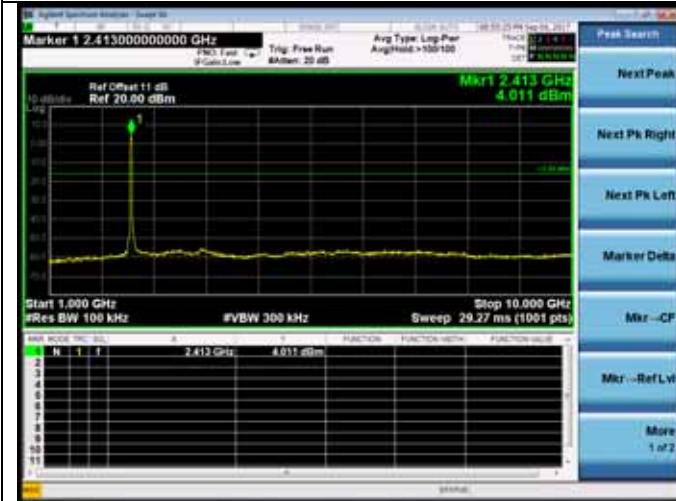
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



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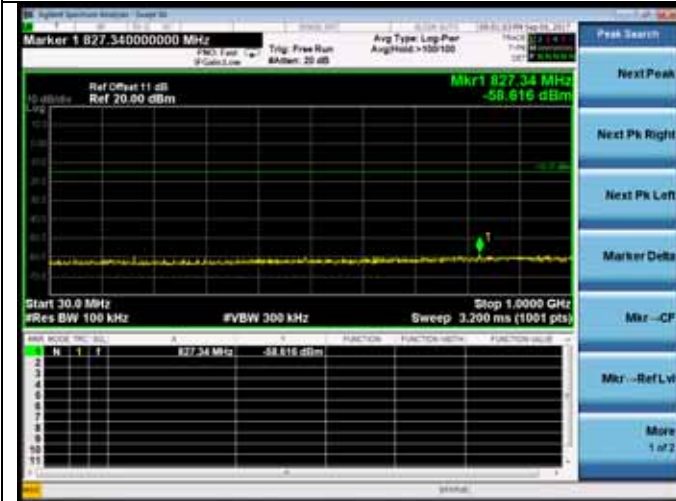
Test CH6: 2437MHz



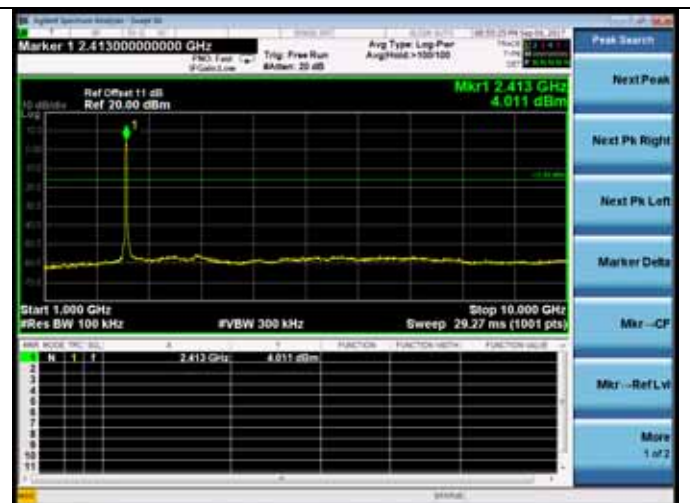
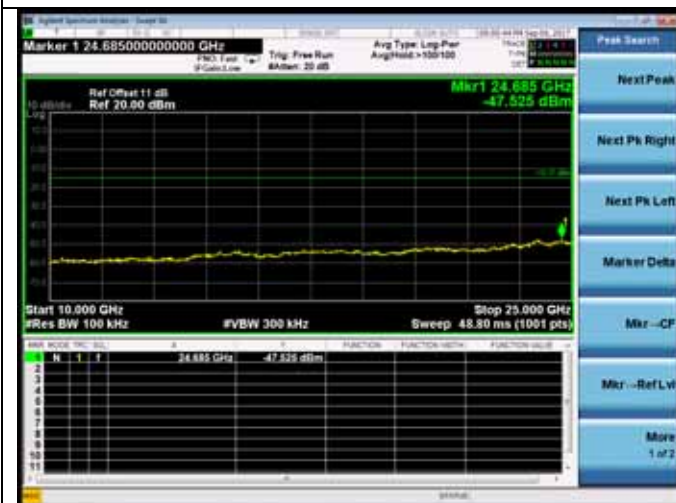
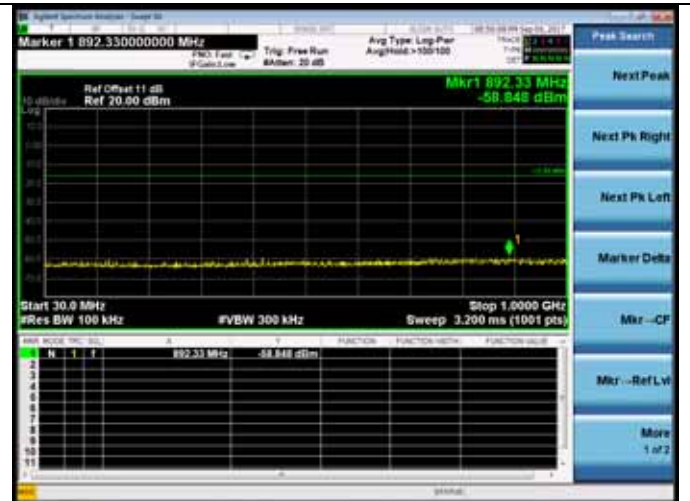
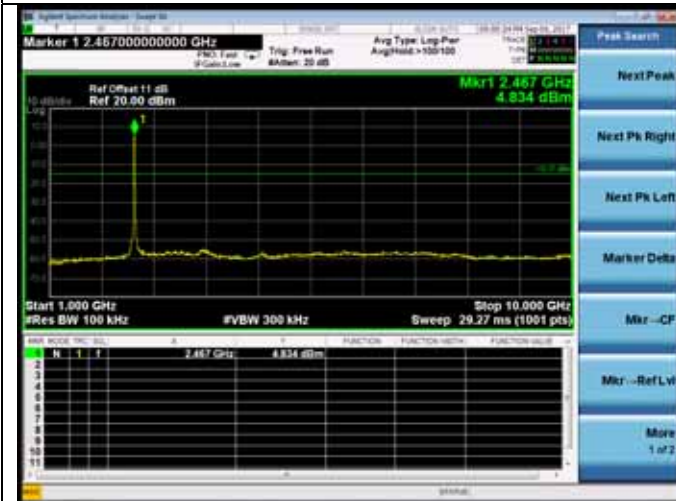
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Test CH11: 2462MHz



Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



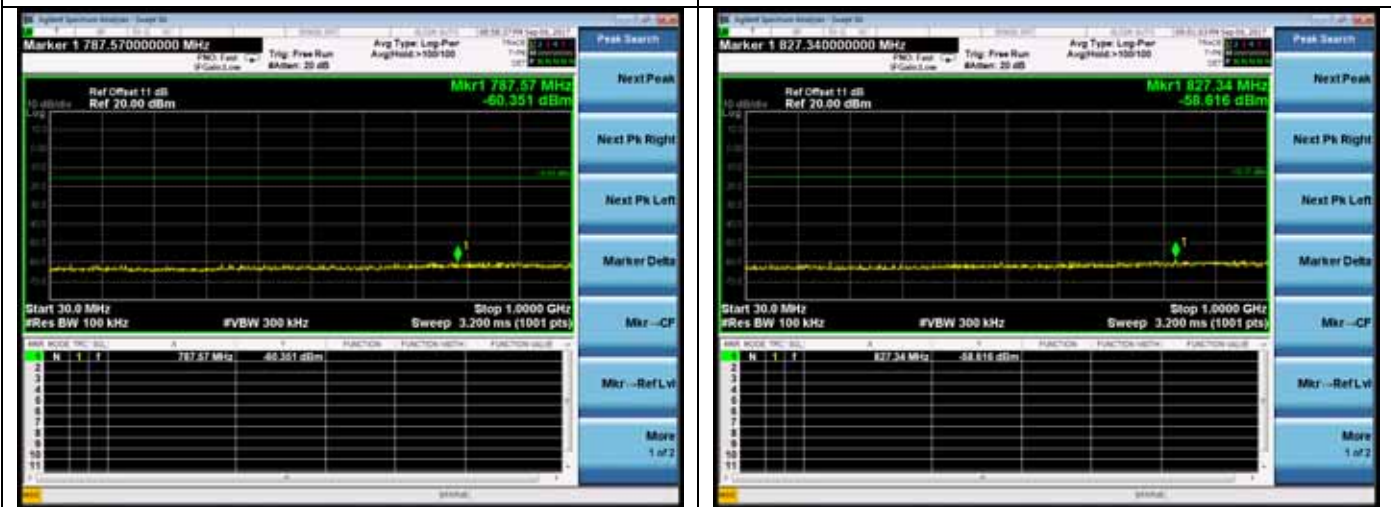
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Test CH6: 2437MHz

Test CH11: 2462MHz

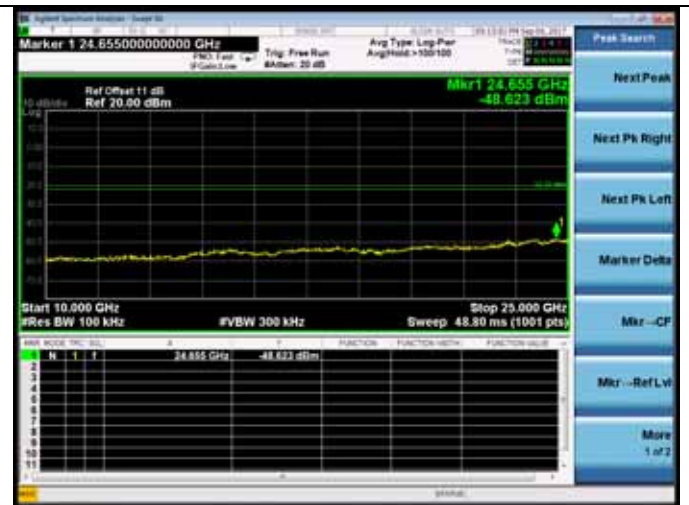
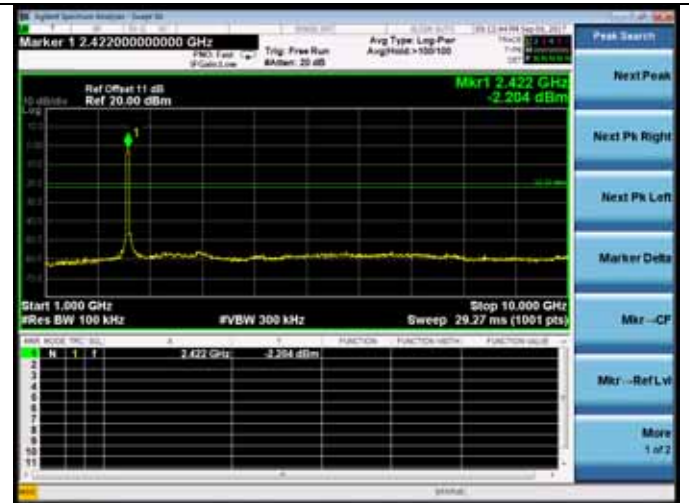
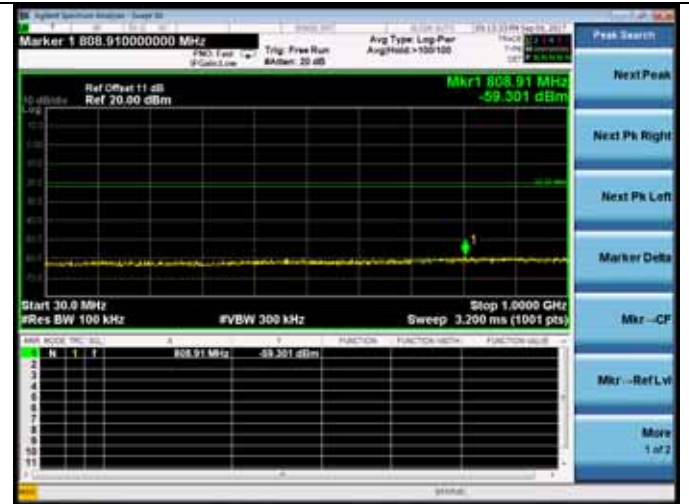
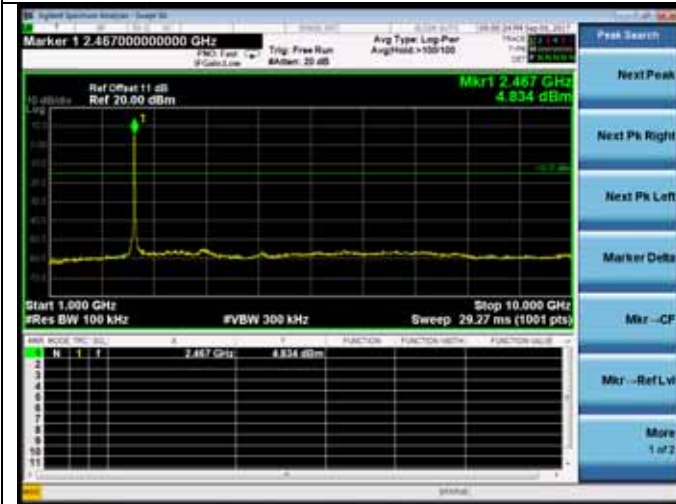


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Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



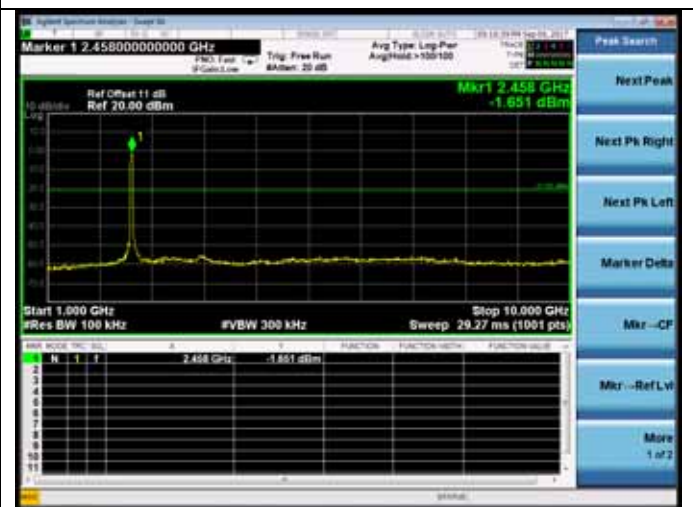
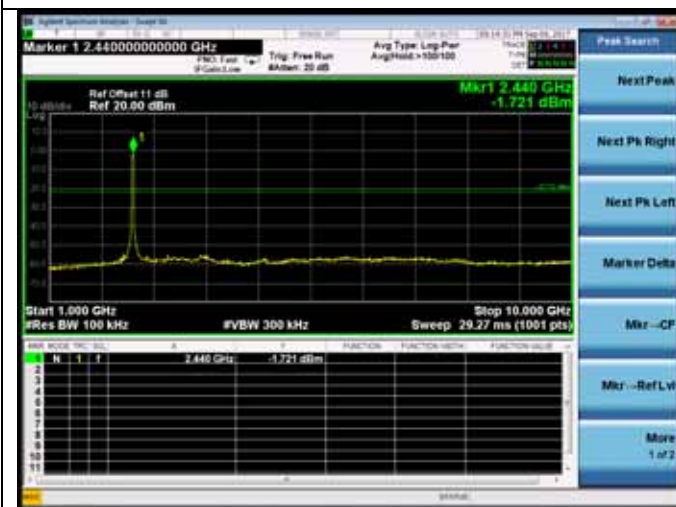
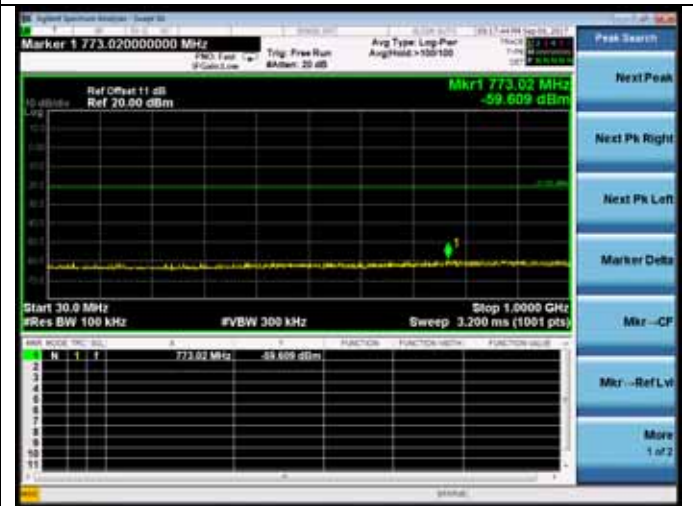
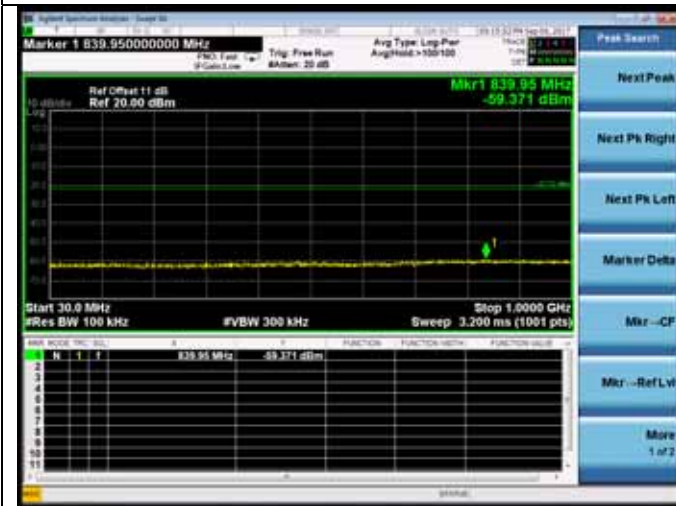
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Test CH6: 2437MHz

Test CH9: 2452MHz



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## 7. BAND EDGE COMPLIANCE TEST

### 7.1.Limit

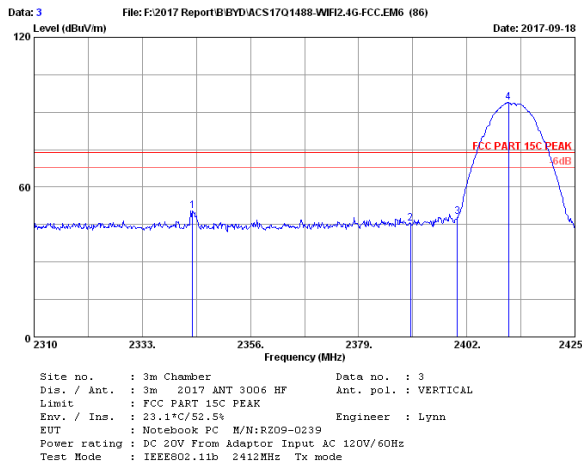
All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209 & RSS-247, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 & RSS-247 limits.

### 7.2.Test Procedure

1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - (a) PEAK: RBW=1MHz; VBW=3MHz; Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz; VBW=10Hz; Sweep=AUTO

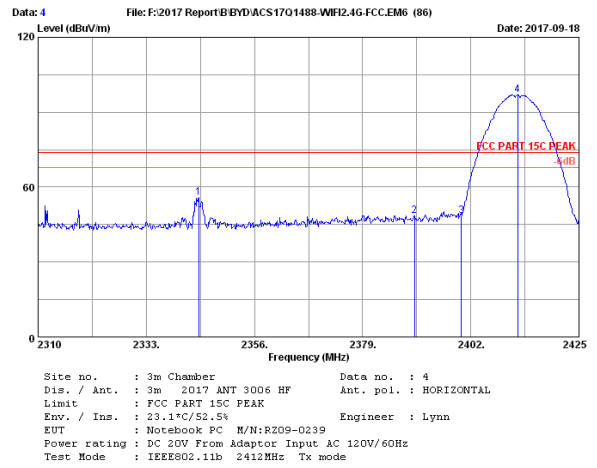
### 7.3.Test Results

Pass (The testing data was attached in the next pages.)



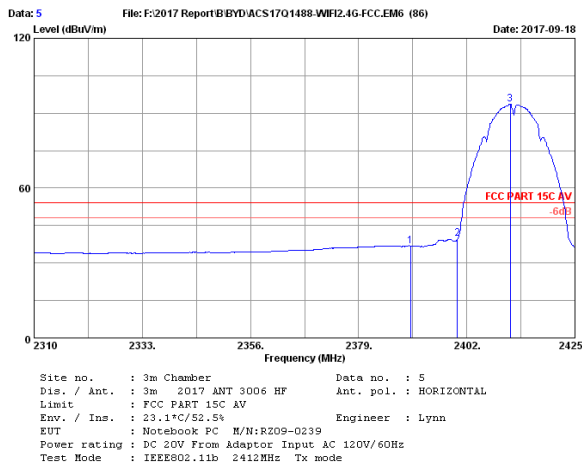
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2343.70     | 27.88              | 7.77            | 50.40          | 35.55           | 50.50                   | 74.00           | 23.50       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 45.16          | 35.61           | 45.35                   | 74.00           | 28.65       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 47.92          | 35.61           | 48.15                   | 74.00           | 25.85       | Peak   |
| 4   | 2410.86     | 27.98              | 7.91            | 93.57          | 35.61           | 93.85                   | 74.00           | -19.85      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



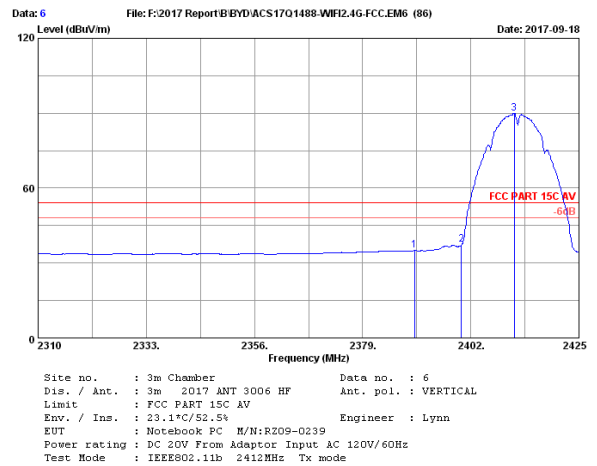
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2344.16     | 27.88              | 7.77            | 55.64          | 35.55           | 55.74                   | 74.00           | 18.26       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 48.42          | 35.61           | 48.61                   | 74.00           | 25.39       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 48.08          | 35.61           | 48.31                   | 74.00           | 25.69       | Peak   |
| 4   | 2412.01     | 27.98              | 7.91            | 96.59          | 35.61           | 96.87                   | 74.00           | -22.87      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



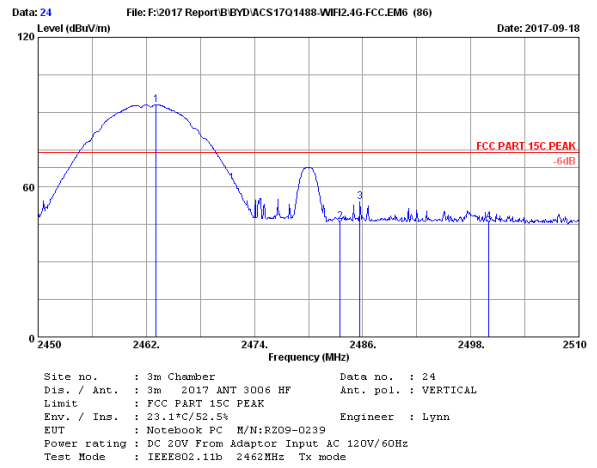
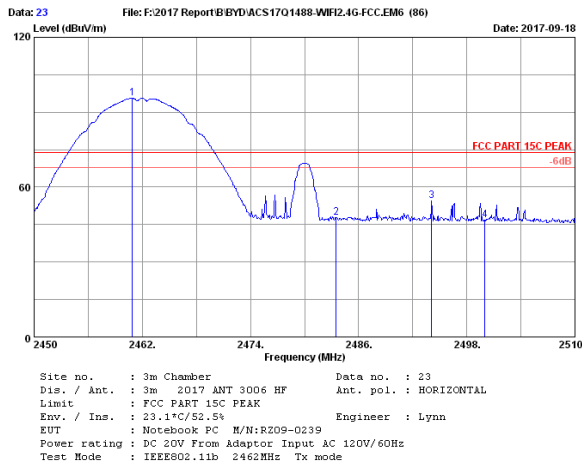
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 36.71          | 35.61           | 36.90                   | 54.00           | 17.10       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 39.44          | 35.61           | 39.67                   | 54.00           | 14.33       | Average |
| 3   | 2411.20     | 27.98              | 7.91            | 93.37          | 35.61           | 93.65                   | 54.00           | -39.65      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 34.77          | 35.61           | 34.96                   | 54.00           | 19.04       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 37.06          | 35.61           | 37.29                   | 54.00           | 16.71       | Average |
| 3   | 2411.20     | 27.98              | 7.91            | 89.63          | 35.61           | 89.91                   | 54.00           | -35.91      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

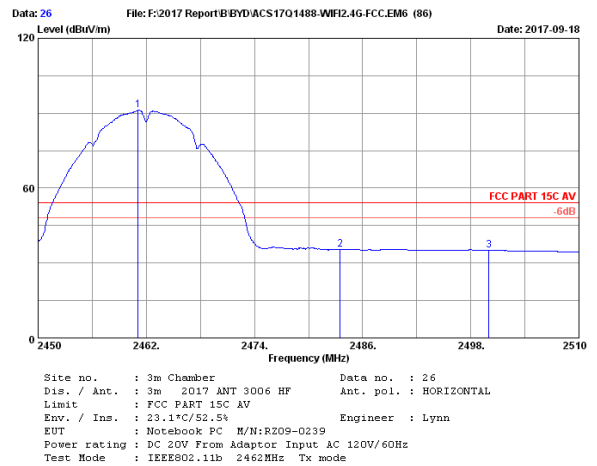
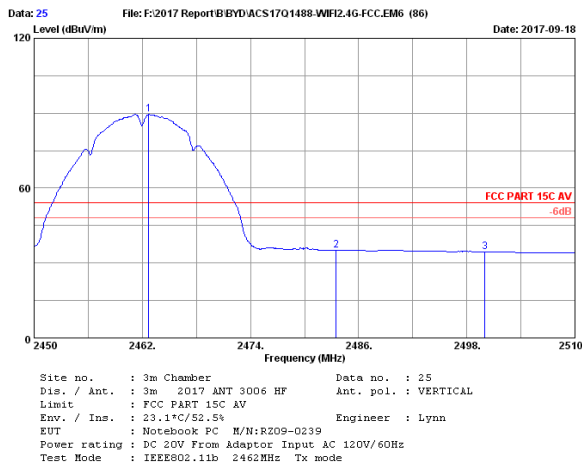


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2460.92     | 28.05              | 7.98            | 95.24          | 35.68           | 95.59                   | 74.00           | -21.59      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 47.56          | 35.71           | 47.95                   | 74.00           | 26.05       | Peak   |
| 3   | 2494.10     | 28.10              | 8.05            | 54.12          | 35.74           | 54.53                   | 74.00           | 19.47       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 46.47          | 35.74           | 46.88                   | 74.00           | 27.12       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2463.08     | 28.05              | 7.98            | 92.67          | 35.68           | 93.02                   | 74.00           | -19.02      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 45.77          | 35.71           | 46.16                   | 74.00           | 27.84       | Peak   |
| 3   | 2485.70     | 28.08              | 8.02            | 53.63          | 35.71           | 54.02                   | 74.00           | 19.98       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 45.76          | 35.74           | 46.17                   | 74.00           | 27.83       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

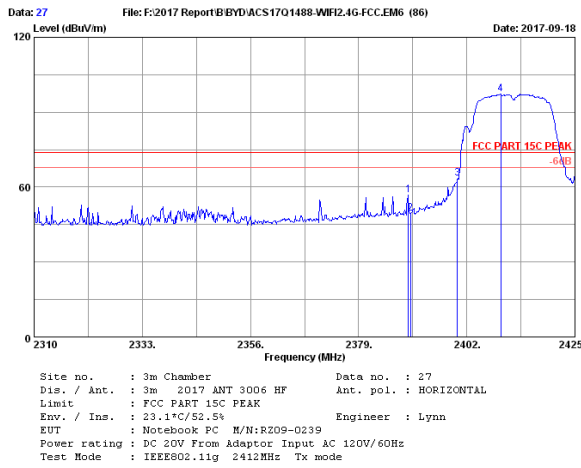


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2462.72     | 28.05              | 7.98            | 89.11          | 35.68           | 89.46                   | 54.00           | -35.46      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 34.75          | 35.71           | 35.14                   | 54.00           | 18.86       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 34.08          | 35.74           | 34.49                   | 54.00           | 19.51       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

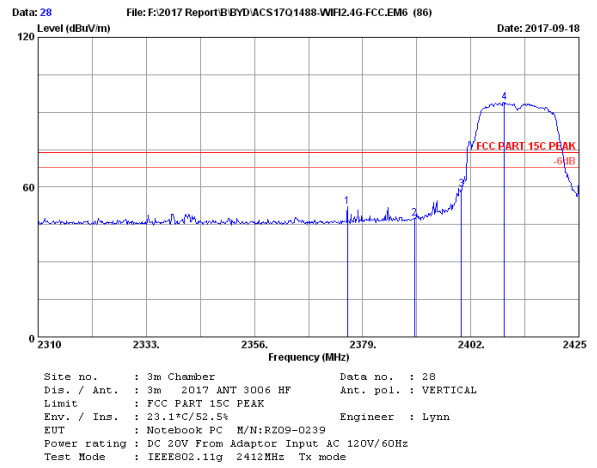
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2461.10     | 28.05              | 7.98            | 90.76          | 35.68           | 91.11                   | 54.00           | -37.11      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 34.97          | 35.71           | 35.36                   | 54.00           | 18.64       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 34.55          | 35.74           | 34.96                   | 54.00           | 19.04       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



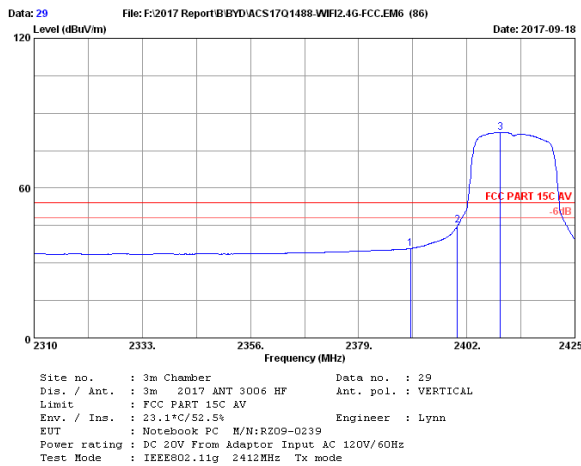
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2389.58     | 27.96              | 7.84            | 56.49          | 35.58           | 56.71                   | 74.00           | 17.29       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 49.20          | 35.61           | 49.39                   | 74.00           | 24.61       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 63.24          | 35.61           | 63.47                   | 74.00           | 10.53       | Peak   |
| 4   | 2409.25     | 27.98              | 7.88            | 96.99          | 35.61           | 97.24                   | 74.00           | -23.24      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



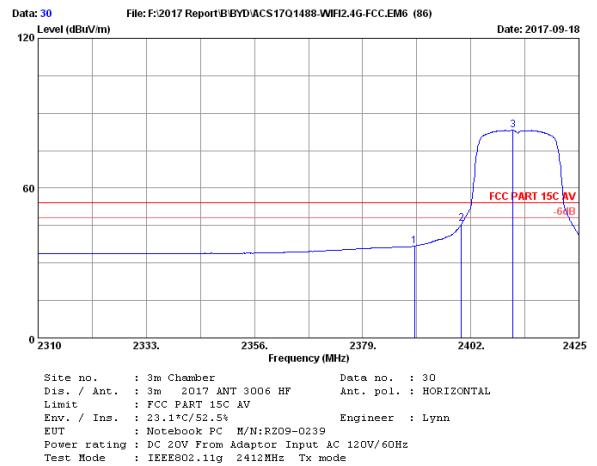
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2375.78     | 27.93              | 7.84            | 51.87          | 35.58           | 52.06                   | 74.00           | 21.94       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 47.18          | 35.61           | 47.37                   | 74.00           | 26.63       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 58.85          | 35.61           | 59.08                   | 74.00           | 14.92       | Peak   |
| 4   | 2409.13     | 27.98              | 7.88            | 93.67          | 35.61           | 93.92                   | 74.00           | -19.92      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



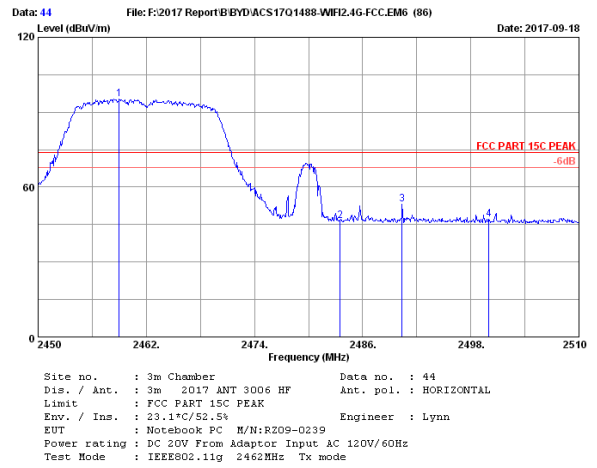
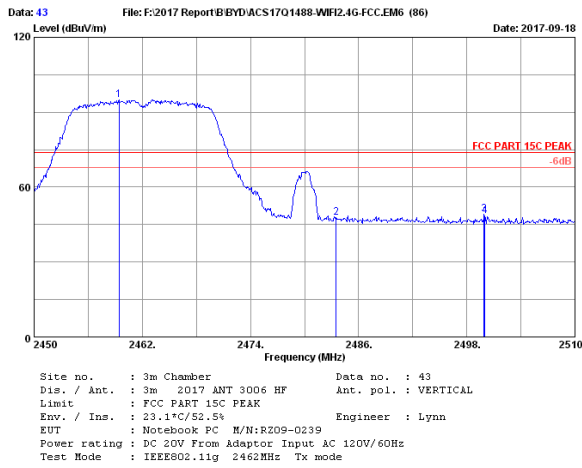
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 35.62          | 35.61           | 35.81                   | 54.00           | 18.19       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 44.77          | 35.61           | 45.00                   | 54.00           | 9.00        | Average |
| 3   | 2409.13     | 27.98              | 7.88            | 82.00          | 35.61           | 82.25                   | 54.00           | -28.25      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 36.68          | 35.61           | 36.87                   | 54.00           | 17.13       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 45.54          | 35.61           | 45.77                   | 54.00           | 8.23        | Average |
| 3   | 2410.97     | 27.98              | 7.91            | 82.81          | 35.61           | 83.09                   | 54.00           | -29.09      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

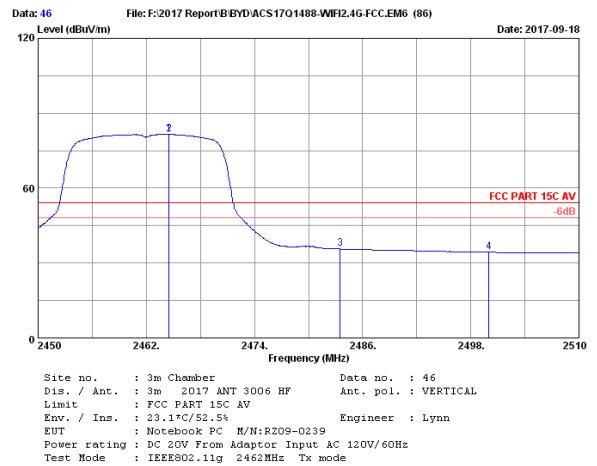
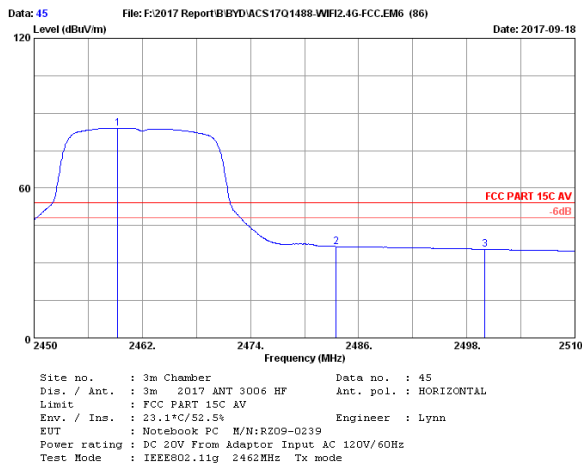


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2459.42     | 28.05              | 7.98            | 94.60          | 35.68           | 94.95                   | 74.00           | -20.95      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 47.28          | 35.71           | 47.67                   | 74.00           | 26.33       | Peak   |
| 3   | 2499.92     | 28.10              | 8.05            | 48.84          | 35.74           | 49.25                   | 74.00           | 24.75       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 48.17          | 35.74           | 48.58                   | 74.00           | 25.42       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2459.00     | 28.05              | 7.98            | 94.86          | 35.68           | 95.21                   | 74.00           | -21.21      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 46.02          | 35.71           | 46.41                   | 74.00           | 27.59       | Peak   |
| 3   | 2490.38     | 28.10              | 8.05            | 52.79          | 35.71           | 53.23                   | 74.00           | 20.77       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 46.77          | 35.74           | 47.18                   | 74.00           | 26.82       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



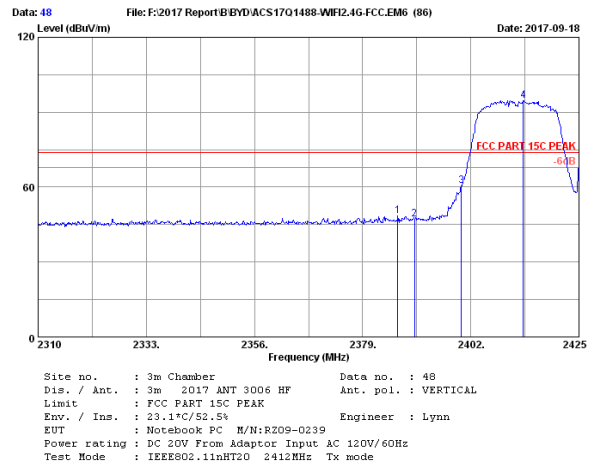
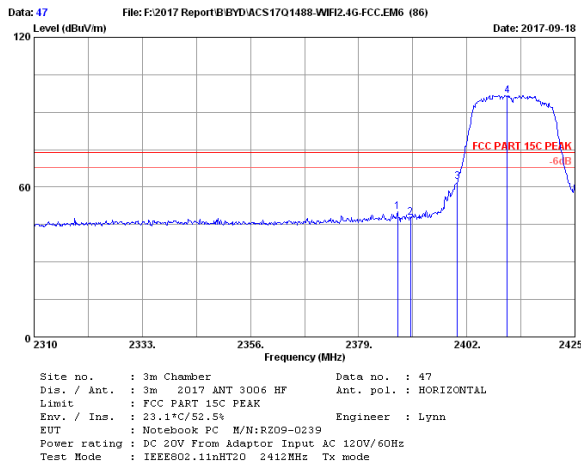
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2459.30     | 28.05              | 7.98            | 83.65          | 35.68           | 84.00                   | 54.00           | -30.00      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 36.19          | 35.71           | 36.58                   | 54.00           | 17.42       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 35.11          | 35.74           | 35.52                   | 54.00           | 18.48       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2464.52     | 28.05              | 7.98            | 81.16          | 35.68           | 81.51                   | 54.00           | -27.51      | Average |
| 2   | 2464.52     | 28.05              | 7.98            | 81.16          | 35.68           | 81.51                   | 54.00           | -27.51      | Average |
| 3   | 2483.50     | 28.08              | 8.02            | 35.21          | 35.71           | 35.60                   | 54.00           | 18.40       | Average |
| 4   | 2500.00     | 28.10              | 8.05            | 33.87          | 35.74           | 34.28                   | 54.00           | 19.72       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



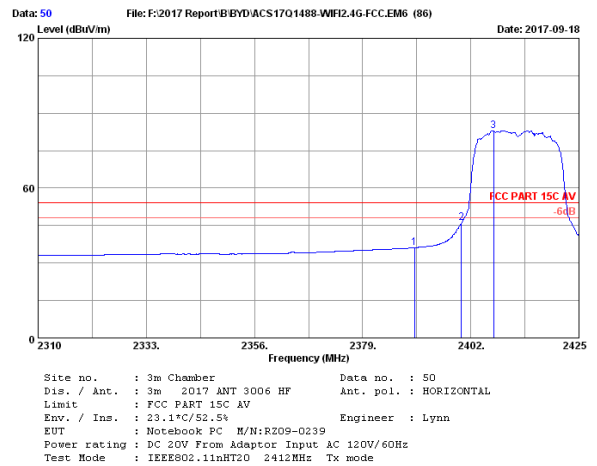
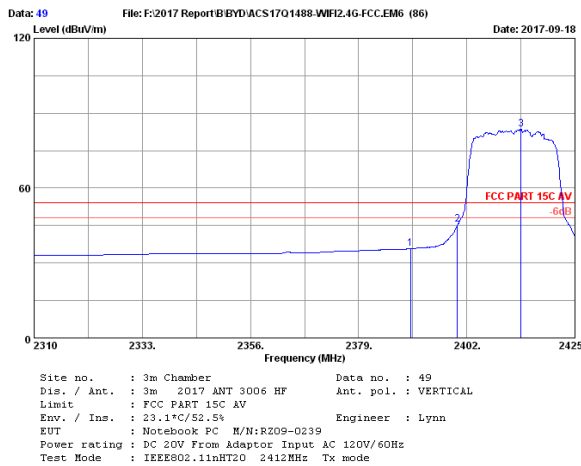


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2387.28     | 27.96              | 7.84            | 49.78          | 35.58           | 50.00                   | 74.00           | 24.00       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 47.63          | 35.61           | 47.82                   | 74.00           | 26.18       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 62.02          | 35.61           | 62.25                   | 74.00           | 11.75       | Peak   |
| 4   | 2410.63     | 27.98              | 7.91            | 96.49          | 35.61           | 96.77                   | 74.00           | -22.77      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2386.48     | 27.96              | 7.84            | 48.18          | 35.58           | 48.40                   | 74.00           | 25.60       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 46.89          | 35.61           | 47.08                   | 74.00           | 26.92       | Peak   |
| 3   | 2400.00     | 27.96              | 7.88            | 60.12          | 35.61           | 60.35                   | 74.00           | 13.65       | Peak   |
| 4   | 2413.16     | 27.98              | 7.91            | 94.47          | 35.61           | 94.75                   | 74.00           | -20.75      | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

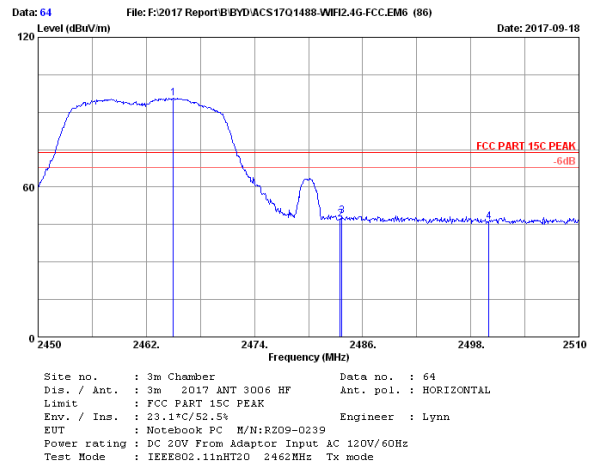
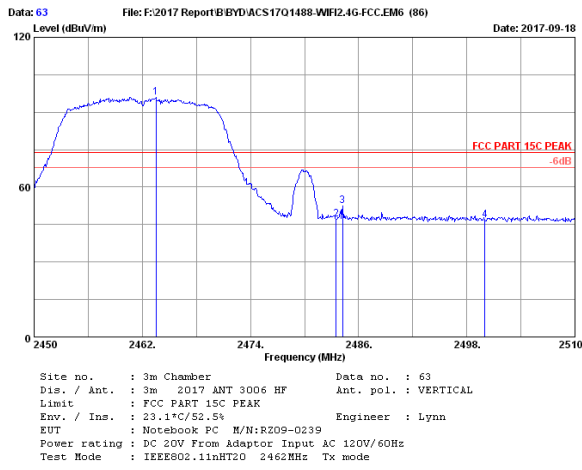


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 35.57          | 35.61           | 35.76                   | 54.00           | 18.24       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 45.35          | 35.61           | 45.58                   | 54.00           | 8.42        | Average |
| 3   | 2413.50     | 27.98              | 7.91            | 83.32          | 35.61           | 83.60                   | 54.00           | -29.60      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 35.95          | 35.61           | 36.14                   | 54.00           | 17.86       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 45.94          | 35.61           | 46.17                   | 54.00           | 7.83        | Average |
| 3   | 2406.83     | 27.98              | 7.88            | 82.81          | 35.61           | 83.06                   | 54.00           | -29.06      | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

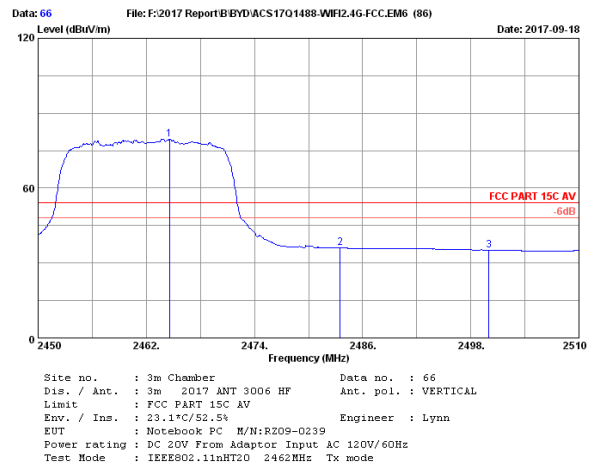
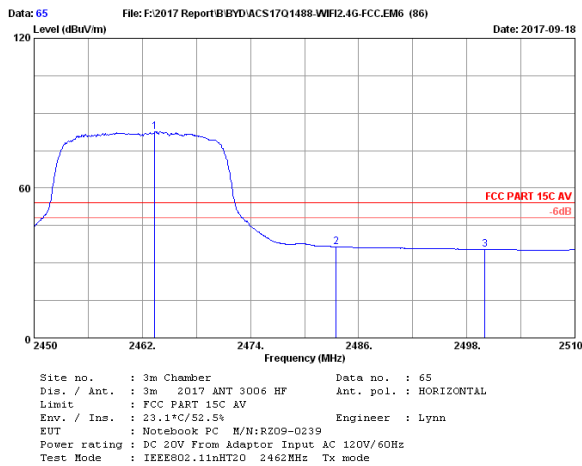


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2463.50     | 28.05              | 7.98            | 95.72          | 35.68           | 96.07                   | 74.00           | -22.07      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 46.82          | 35.71           | 47.21                   | 74.00           | 26.79       | Peak   |
| 3   | 2484.20     | 28.08              | 8.02            | 52.02          | 35.71           | 52.41                   | 74.00           | 21.59       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 46.26          | 35.74           | 46.67                   | 74.00           | 27.33       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2465.00     | 28.05              | 7.98            | 95.41          | 35.68           | 95.76                   | 74.00           | -21.76      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 46.63          | 35.71           | 47.02                   | 74.00           | 26.98       | Peak   |
| 3   | 2483.72     | 28.08              | 8.02            | 48.22          | 35.71           | 48.61                   | 74.00           | 25.39       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 45.87          | 35.74           | 46.28                   | 74.00           | 27.72       | Peak   |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

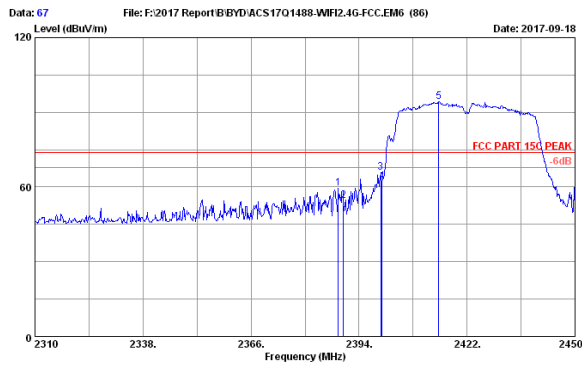


| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2463.38     | 28.05              | 7.98            | 82.30          | 35.68           | 82.65                   | 54.00           | -28.65      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 36.11          | 35.71           | 36.50                   | 54.00           | 17.50       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 35.06          | 35.74           | 35.47                   | 54.00           | 18.53       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2464.58     | 28.05              | 7.98            | 79.35          | 35.68           | 79.70                   | 54.00           | -25.70      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 35.62          | 35.71           | 36.01                   | 54.00           | 17.99       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 34.78          | 35.74           | 35.19                   | 54.00           | 18.81       | Average |

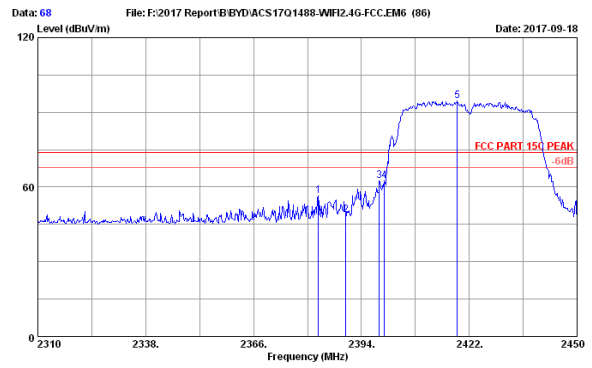
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 67  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2422MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2388.68     | 27.96              | 7.84            | 59.43          | 35.58           | 59.65                   | 74.00           | 14.35       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 54.31          | 35.61           | 54.50                   | 74.00           | 19.50       | Peak   |
| 3   | 2399.60     | 27.96              | 7.88            | 65.67          | 35.61           | 65.90                   | 74.00           | 8.10        | Peak   |
| 4   | 2400.00     | 27.96              | 7.88            | 61.80          | 35.61           | 62.03                   | 74.00           | 11.97       | Peak   |
| 5   | 2414.72     | 27.98              | 7.91            | 93.95          | 35.61           | 94.23                   | 74.00           | -20.23      | Peak   |

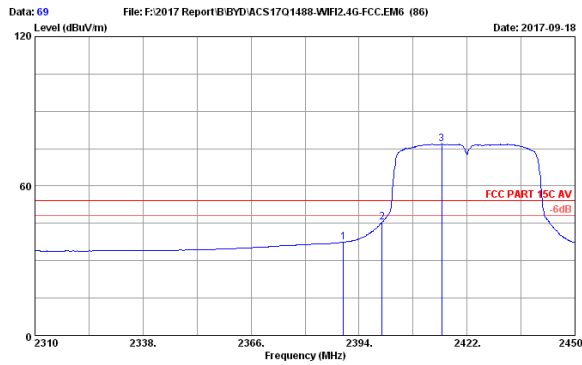
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 68  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2422MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2382.80     | 27.93              | 7.84            | 56.27          | 35.58           | 56.46                   | 74.00           | 17.54       | Peak   |
| 2   | 2390.00     | 27.96              | 7.84            | 48.51          | 35.61           | 48.70                   | 74.00           | 25.30       | Peak   |
| 3   | 2398.62     | 27.96              | 7.88            | 62.30          | 35.61           | 62.53                   | 74.00           | 11.47       | Peak   |
| 4   | 2400.00     | 27.96              | 7.88            | 62.24          | 35.61           | 62.47                   | 74.00           | 11.53       | Peak   |
| 5   | 2418.92     | 27.98              | 7.91            | 94.51          | 35.64           | 94.76                   | 74.00           | -20.76      | Peak   |

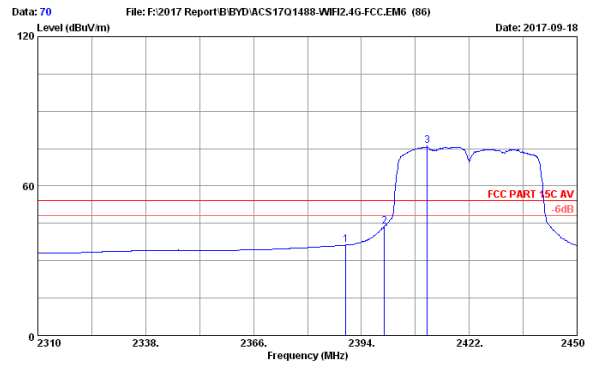
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 69  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2422MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 37.21          | 35.61           | 37.40                   | 54.00           | 16.60       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 45.35          | 35.61           | 45.58                   | 54.00           | 8.42        | Average |
| 3   | 2415.42     | 27.98              | 7.91            | 76.59          | 35.64           | 76.84                   | 54.00           | -22.84      | Average |

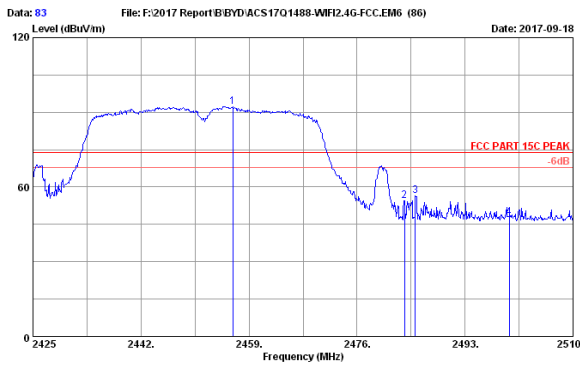
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 70  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2422MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2390.00     | 27.96              | 7.84            | 36.09          | 35.61           | 36.28                   | 54.00           | 17.72       | Average |
| 2   | 2400.00     | 27.96              | 7.88            | 43.60          | 35.61           | 43.83                   | 54.00           | 10.17       | Average |
| 3   | 2411.08     | 27.98              | 7.91            | 75.79          | 35.61           | 76.07                   | 54.00           | -22.07      | Average |

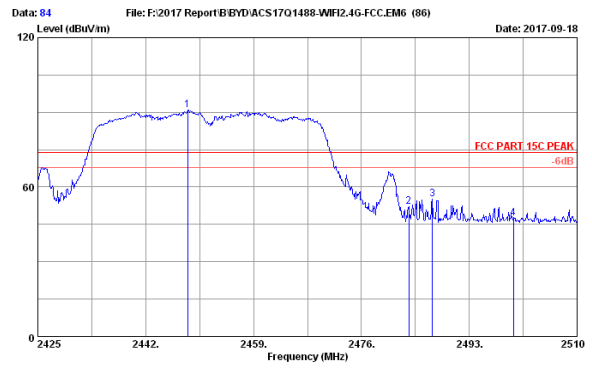
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 83  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2452MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2456.45     | 28.05              | 7.98            | 91.94          | 35.68           | 92.29                   | 74.00           | -18.29      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 54.16          | 35.71           | 54.55                   | 74.00           | 19.45       | Peak   |
| 3   | 2485.18     | 28.08              | 8.02            | 56.00          | 35.71           | 56.39                   | 74.00           | 17.61       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 47.52          | 35.74           | 47.93                   | 74.00           | 26.07       | Peak   |

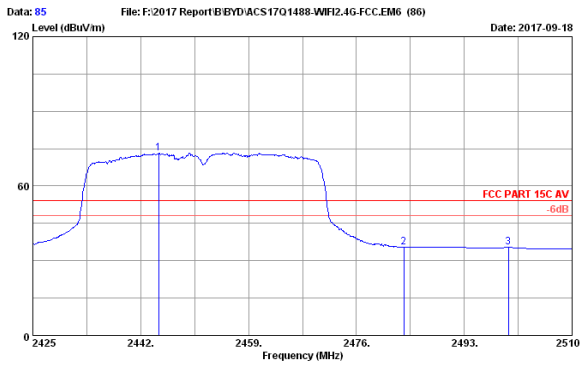
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 84  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2452MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|--------|
| 1   | 2448.63     | 28.03              | 7.95            | 90.65          | 35.68           | 90.95                   | 74.00           | -16.95      | Peak   |
| 2   | 2483.50     | 28.08              | 8.02            | 51.75          | 35.71           | 52.14                   | 74.00           | 21.86       | Peak   |
| 3   | 2487.22     | 28.08              | 8.02            | 54.89          | 35.71           | 55.28                   | 74.00           | 18.72       | Peak   |
| 4   | 2500.00     | 28.10              | 8.05            | 47.19          | 35.74           | 47.60                   | 74.00           | 26.40       | Peak   |

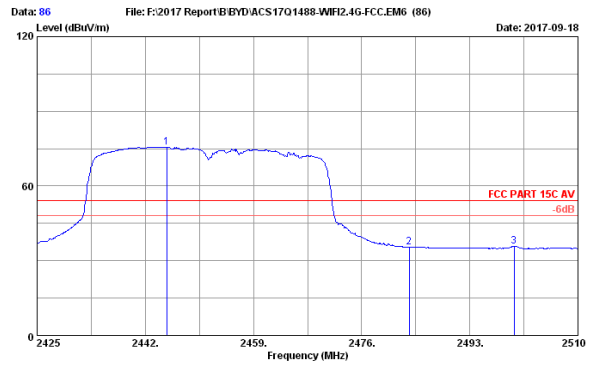
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 85  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : VERTICAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2452MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2444.81     | 28.03              | 7.95            | 73.05          | 35.68           | 73.35                   | 54.00           | -19.35      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 35.10          | 35.71           | 35.49                   | 54.00           | 18.51       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 35.16          | 35.74           | 35.57                   | 54.00           | 18.43       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 86  
 Dis. / Ant. : 3m 2017 ANT 3006 HF Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C AV  
 Env. / Ins. : 23.1°C/52.5% Engineer : Lynn  
 EUT : Notebook PC M/N:R209-0239  
 Power rating : DC 20V From Adaptor Input AC 120V/60Hz  
 Test Mode : IEEE802.11nHT40 2452MHz Tx mode

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark  |
|-----|-------------|--------------------|-----------------|----------------|-----------------|-------------------------|-----------------|-------------|---------|
| 1   | 2445.40     | 28.03              | 7.95            | 75.35          | 35.68           | 75.65                   | 54.00           | -21.65      | Average |
| 2   | 2483.50     | 28.08              | 8.02            | 35.08          | 35.71           | 35.47                   | 54.00           | 18.53       | Average |
| 3   | 2500.00     | 28.10              | 8.05            | 35.46          | 35.74           | 35.87                   | 54.00           | 18.13       | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.  
 2. The emission levels that are 20dB below the official limit are not reported.

## 8. 6dB & 99% Bandwidth Test

### 8.1.Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

### 8.2.Test Procedure

The transmitter output was connected to a spectrum analyzer, The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

### 8.3.Test Results

|                       |                         |                         |
|-----------------------|-------------------------|-------------------------|
| EUT: Notebook PC      |                         |                         |
| M/N: RA09-0239        |                         |                         |
| Test date: 2017-08-30 | Pressure: 102.8±1.0 kpa | Humidity: 51.7±3.0%     |
| Tested by: Kebo       | Test site: RF site      | Temperature:22.5±0.6 °C |

| Test Mode   | CH   | 6dB bandwidth<br>( MHz ) |       | Limit<br>(KHz) |
|-------------|------|--------------------------|-------|----------------|
|             |      | ANT0                     | ANT1  |                |
| 11b         | CH1  | 8.085                    | 8.085 | ≧ 500          |
|             | CH6  | 8.086                    | 8.086 | ≧ 500          |
|             | CH11 | 8.086                    | 8.086 | ≧ 500          |
| 11g         | CH1  | 15.16                    | 15.16 | ≧ 500          |
|             | CH6  | 15.16                    | 15.17 | ≧ 500          |
|             | CH11 | 15.16                    | 15.16 | ≧ 500          |
| 11n<br>HT20 | CH1  | 15.16                    | 15.15 | ≧ 500          |
|             | CH6  | 15.16                    | 15.15 | ≧ 500          |
|             | CH11 | 15.16                    | 15.16 | ≧ 500          |
| 11n<br>HT40 | CH3  | 35.14                    | 35.13 | ≧ 500          |
|             | CH6  | 35.15                    | 35.13 | ≧ 500          |
|             | CH9  | 35.15                    | 35.13 | ≧ 500          |

Conclusion : PASS

| Test Mode         | CH   | 99% Bandwidth<br>( MHz ) |        | Limit<br>(KHz) |
|-------------------|------|--------------------------|--------|----------------|
|                   |      | ANT0                     | ANT1   |                |
| 11b               | CH1  | 12.958                   | 12.950 | N/A            |
|                   | CH6  | 12.973                   | 12.942 | N/A            |
|                   | CH11 | 12.942                   | 12.948 | N/A            |
| 11g               | CH1  | 16.213                   | 16.238 | N/A            |
|                   | CH6  | 16.217                   | 16.237 | N/A            |
|                   | CH11 | 16.223                   | 16.216 | N/A            |
| 11n<br>HT20       | CH1  | 17.350                   | 17.359 | N/A            |
|                   | CH6  | 17.346                   | 17.366 | N/A            |
|                   | CH11 | 17.347                   | 17.363 | N/A            |
| 11n<br>HT40       | CH3  | 35.650                   | 35.653 | N/A            |
|                   | CH6  | 35.645                   | 35.675 | N/A            |
|                   | CH9  | 35.656                   | 35.672 | N/A            |
| Conclusion : PASS |      |                          |        |                |

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**ANT0:**

Test Mode: IEEE 802.11b  
 Test CH1: 2412MHz

Test Mode: IEEE 802.11g  
 Test CH1: 2412MHz



Test CH6: 2437MHz

Test CH6: 2437MHz



Test CH11: 2462MHz

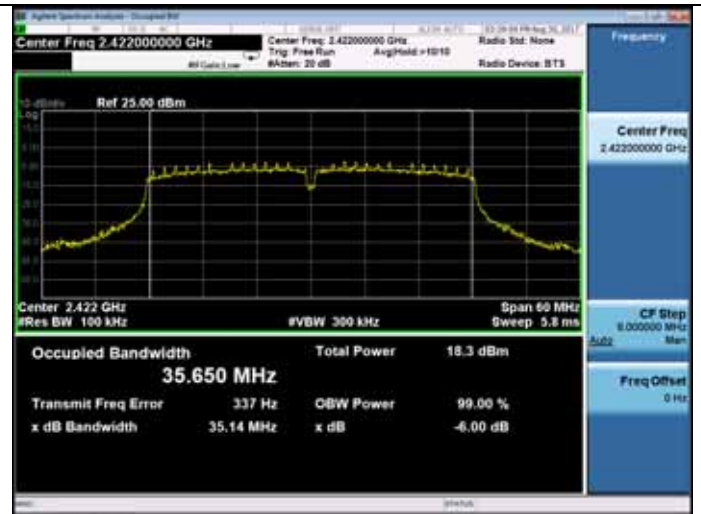
Test CH11: 2462MHz



Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



Test CH6: 2437MHz



Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH9: 2452MHz





**ANT1:**

Test Mode: IEEE 802.11b  
Test CH1: 2412MHz

Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



Test CH6: 2437MHz

Test CH6: 2437MHz



Test CH11: 2462MHz

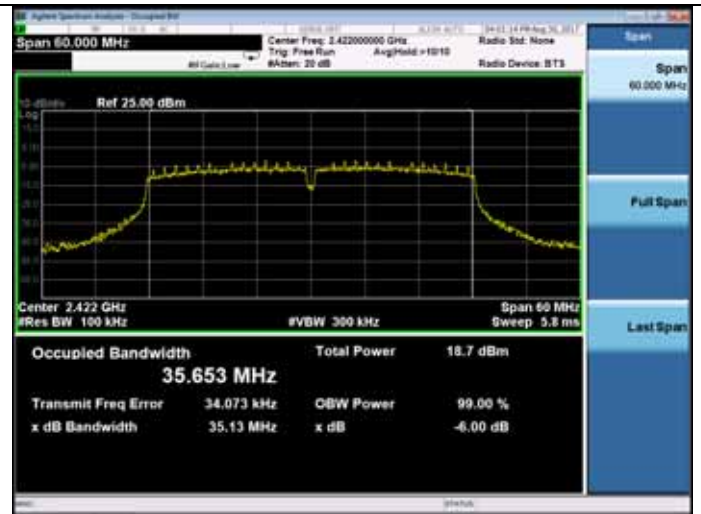
Test CH11: 2462MHz



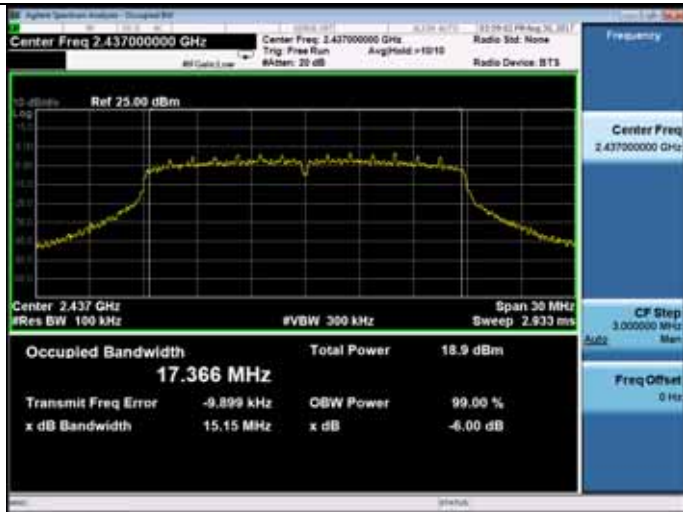
Test Mode: IEEE 802.11n HT20  
 Test CH1: 2412MHz



Test Mode: IEEE 802.11n HT40  
 Test CH3: 2422MHz



Test CH6: 2437MHz



Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH9: 2452MHz



## 9. OUTPUT POWER TEST

### 9.1.Limit

For systems using digital modulation in the 2400—2483.5MHz, The Peak output Power shall not exceed 1W(30dBm), As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.

### 9.2.Test Procedure

- 1, Connected the EUT's antenna port to measure device by 20dB attenuator.
- 2, For IEEE 802.11b/g and IEEE802.11n HT20 modes, use a power meter which bandwidth is 20MHz, above the bandwidth of signals, to measure out output power in each mode.
- 3, For IEEE802.11n HT40 mode, since the signal bandwidth is nearly 40MHz, which is above 20MHz bandwidth of power sensor. use the test method descried in KDB558074 clause 9.2.2.
  - 1) Set the RBW=1MHz and VBW =3MHz
  - 2) Set the span at least 1.5 times the OBW
  - 3) Detector = RMS
  - 4) Sweep time = auto couple
  - 5) allow trace to fully stabilize
  - 6) use the spectrum analyser's integrated band power measurement function with band limits set equal to the EBW band edges.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

## 9.3. Test Results

|                             |                         |                         |
|-----------------------------|-------------------------|-------------------------|
| EUT: Notebook PC            |                         |                         |
| M/N:RZ09-0239               |                         |                         |
| Test date: 2017-08-30~10-16 | Pressure: 102.1±1.0 kpa | Humidity: 51.1±3.0%     |
| Tested by: Kebo             | Test site: RF site      | Temperature:22.8±0.6 °C |

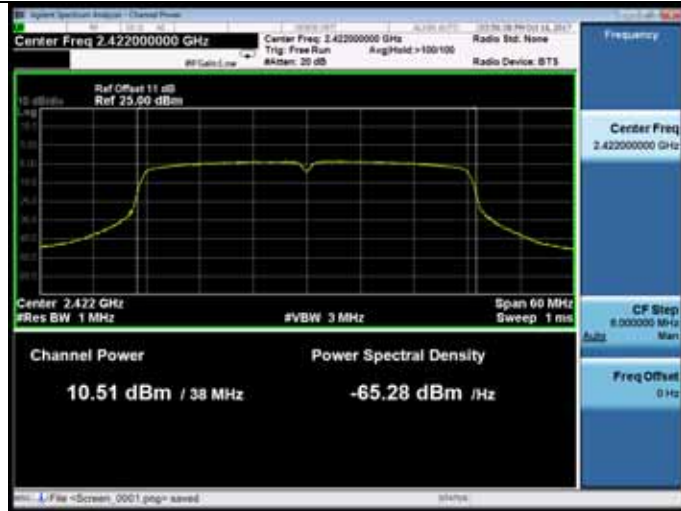
| Test Mode   | CH   | Output Power ( dBm ) |       |       | Limit (dBm) |
|-------------|------|----------------------|-------|-------|-------------|
|             |      | ANT0                 | ANT1  | Total |             |
| 11b         | CH1  | 15.91                | 14.96 | N/A   | 30          |
|             | CH6  | 15.45                | 15.48 | N/A   | 30          |
|             | CH11 | 15.64                | 15.83 | N/A   | 30          |
| 11g         | CH1  | 14.87                | 14.27 | N/A   | 30          |
|             | CH6  | 14.45                | 14.56 | N/A   | 30          |
|             | CH11 | 14.75                | 15.04 | N/A   | 30          |
| 11n<br>HT20 | CH1  | 10.75                | 11.17 | 13.98 | 30          |
|             | CH6  | 10.13                | 11.76 | 14.03 | 30          |
|             | CH11 | 10.64                | 12.26 | 14.54 | 30          |
| 11n<br>HT40 | CH3  | 10.51                | 11.14 | 13.85 | 30          |
|             | CH6  | 10.02                | 11.42 | 13.79 | 30          |
|             | CH9  | 10.26                | 11.73 | 14.07 | 30          |

Conclusion: PASS

**Note: For 11n mode, the direction gain less than 6dBi.**

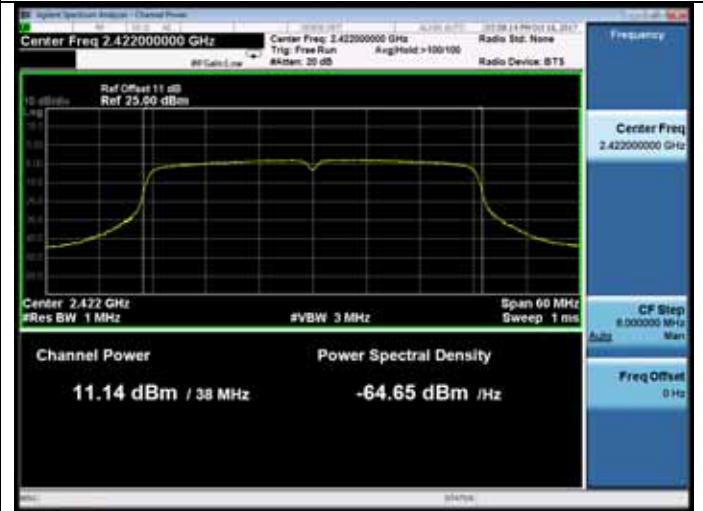
**ANT0:**

Test Mode: IEEE 802.11n HT40  
 Test CH3: 2422MHz

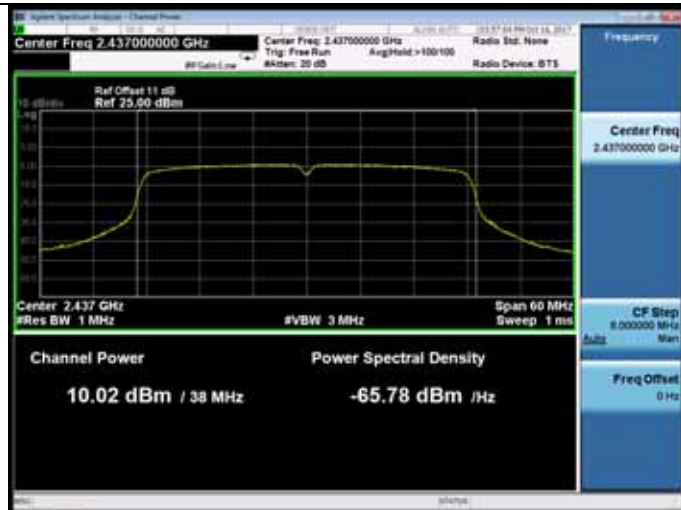


**ANT1:**

Test Mode: IEEE 802.11n HT40  
 Test CH3: 2422MHz



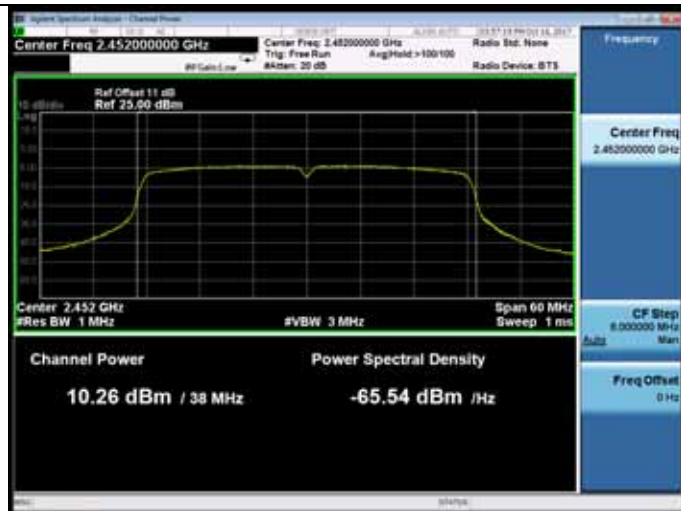
**Test CH6: 2437MHz**



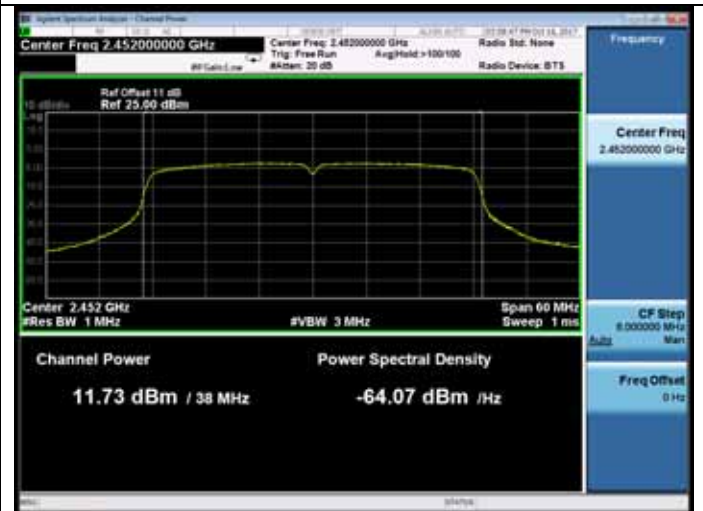
**Test CH6: 2437MHz**



**Test CH9: 2452MHz**



**Test CH9: 2452MHz**



## 10.EQUIVALENT Isotropic Radiated Power Test

### 10.1.Limit

| Limit                  |
|------------------------|
| 36dBm / (4W) (e.i.r.p) |

These limits shall apply for any combination of power level and intended antenna assembly.

### 10.2.Test Method

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator ,set the Spectrum Analyzer as below:

Span: Zero

RBW:100KHz

VBW:100KHz

Read out the duty cycle(X) of the transmitter and record as X

(2)For IEEE 802.11b/g IEEE 802.11n HT20 mode connected the antenna port to the Power Meter via a 20dB Attenuator, read out average output power of the transmitter.

(3)For IEEE 802.11n HT40 mode, because the signal's EBW is about 40MHz and above 20MHz bandwidth of power sensor. So the channel power measure function of spectrum Analyzer was used to measure out average output power of transmitter.

(4)Calculated e.i.r.p according to the formula: Read + Cable loss + Atten loss + Antenna Gain +  $10\log(1/x)$

(5)Repeated test at the lowest, the middle, and the highest frequency of the stated frequency range.

### 10.3.Test Results

| Test Mode        | CH   | Max Out power (dBm) |       |       | Antenna Gain (dBi) |       | 10log(1/X) | Max Out power EIRP (dBm) |       |       | Limit (dBm) |
|------------------|------|---------------------|-------|-------|--------------------|-------|------------|--------------------------|-------|-------|-------------|
|                  |      | Ant0                | Ant1  | Total | Ant0               | Ant1  |            | Ant0                     | Ant1  | Total |             |
| 11b              | CH1  | 15.91               | 14.96 | N/A   | 1.89               | 3.08  | 0          | 17.80                    | 18.04 | N/A   | 36          |
|                  | CH6  | 15.45               | 15.48 | N/A   |                    |       |            | 17.34                    | 18.56 | N/A   | 36          |
|                  | CH11 | 15.64               | 15.83 | N/A   |                    |       |            | 17.53                    | 18.91 | N/A   | 36          |
| 11g              | CH1  | 14.87               | 14.27 | N/A   |                    |       | 0          | 16.76                    | 17.35 | N/A   | 36          |
|                  | CH6  | 14.45               | 14.56 | N/A   |                    |       |            | 16.34                    | 17.64 | N/A   | 36          |
|                  | CH11 | 14.75               | 15.04 | N/A   |                    |       |            | 16.64                    | 18.12 | N/A   | 36          |
| 11n HT20         | CH1  | 10.75               | 11.17 | 13.98 |                    |       | 0          | 12.64                    | 14.25 | 16.53 | 36          |
|                  | CH6  | 10.13               | 11.76 | 14.03 |                    |       |            | 12.02                    | 14.84 | 16.67 | 36          |
|                  | CH11 | 10.64               | 12.26 | 14.54 |                    |       |            | 12.53                    | 15.34 | 17.17 | 36          |
| 11n HT40         | CH3  | 10.51               | 11.14 | 13.85 | 0                  | 12.40 | 14.22      | 16.42                    | 36    |       |             |
|                  | CH6  | 10.02               | 11.42 | 13.79 |                    | 11.91 | 14.5       | 16.41                    | 36    |       |             |
|                  | CH9  | 10.26               | 11.73 | 14.07 |                    | 12.15 | 14.81      | 16.69                    | 36    |       |             |
| Conclusion: PASS |      |                     |       |       |                    |       |            |                          |       |       |             |

## 11. POWER SPECTRAL DENSITY TEST

### 11.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

### 11.2. Test Procedure

1. Connected the EUT's antenna port to spectrum analyzer device by 20dB attenuator.
2. Set span to 1.5 times the DTS Bandwidth.
3. Set the RBW=3KHz, VBW=10KHz.
4. Detector=peak, Sweep time=Auto, Trace mode=max Hold
5. All the trace to fully stabilize.
6. Use the peak marker function to determine the maximum amplitude level with in the RBW.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude

## 11.3. Test Results

|                       |                         |                          |
|-----------------------|-------------------------|--------------------------|
| EUT: Notebook PC      |                         |                          |
| M/N: RA09-0239        |                         |                          |
| Test date: 2017-09-06 | Pressure: 102.8±1.0 kpa | Humidity: 51.7±3.0%      |
| Tested by: Kebo       | Test site: RF site      | Temperature: 22.5±0.6 °C |

| Test Mode   | CH   | Power Density<br>( dBm/3KHz ) |         |         | Limit<br>(dBm/3KHz) |
|-------------|------|-------------------------------|---------|---------|---------------------|
|             |      | ANT0                          | ANT1    | Total   |                     |
| 11b         | CH1  | 7.980                         | 7.059   | N/A     | 8                   |
|             | CH6  | 7.509                         | 7.557   | N/A     | 8                   |
|             | CH11 | 7.711                         | 7.933   | N/A     | 8                   |
| 11g         | CH1  | -11.256                       | -11.520 | N/A     | 8                   |
|             | CH6  | -11.336                       | -11.469 | N/A     | 8                   |
|             | CH11 | -10.179                       | -10.603 | N/A     | 8                   |
| 11n<br>HT20 | CH1  | -12.624                       | -14.499 | -10.451 | 8                   |
|             | CH6  | -15.360                       | -13.582 | -11.370 | 8                   |
|             | CH11 | -14.060                       | -13.418 | -10.717 | 8                   |
| 11n<br>HT40 | CH3  | -16.456                       | -16.227 | -13.330 | 8                   |
|             | Ch6  | -17.592                       | -16.015 | -13.722 | 8                   |
|             | CH9  | -17.491                       | -15.797 | -13.552 | 8                   |

Conclusion: PASS

**Note: For 11n mode, the direction gain less than 6dBi.**

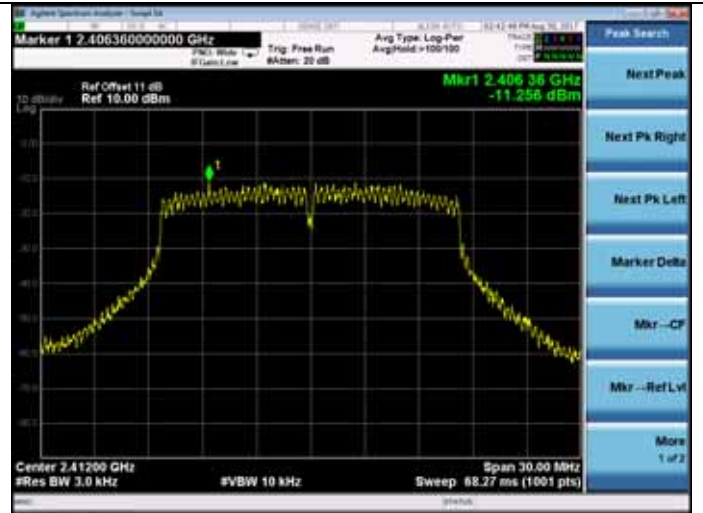


ANT0:

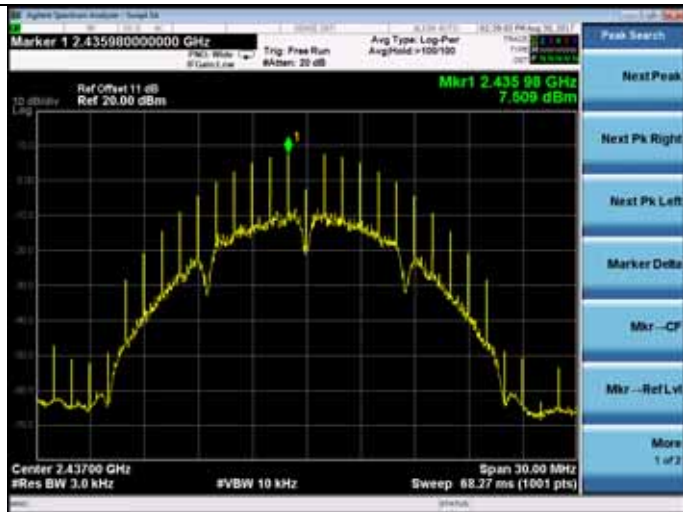
Test Mode: IEEE 802.11b  
Test CH1: 2412MHz



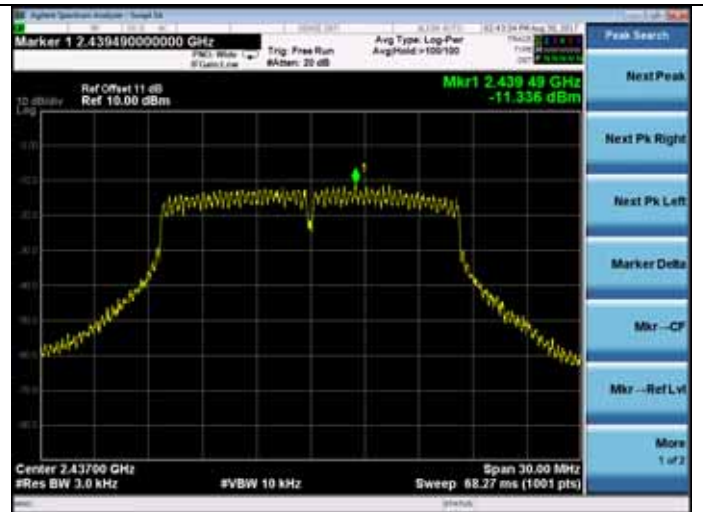
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



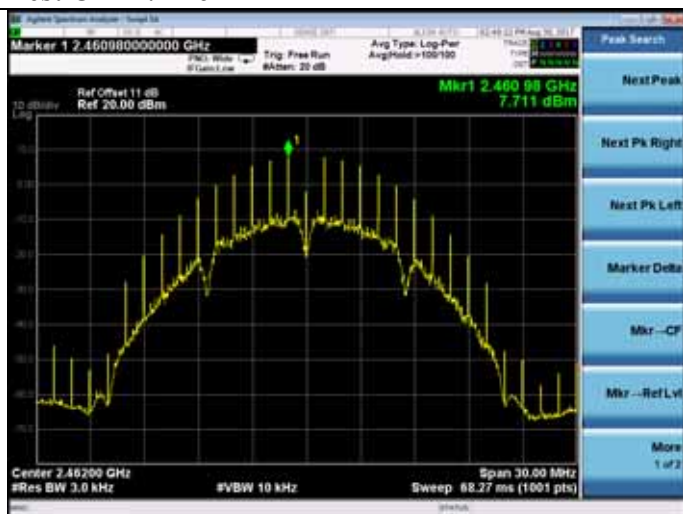
Test CH6: 2437MHz



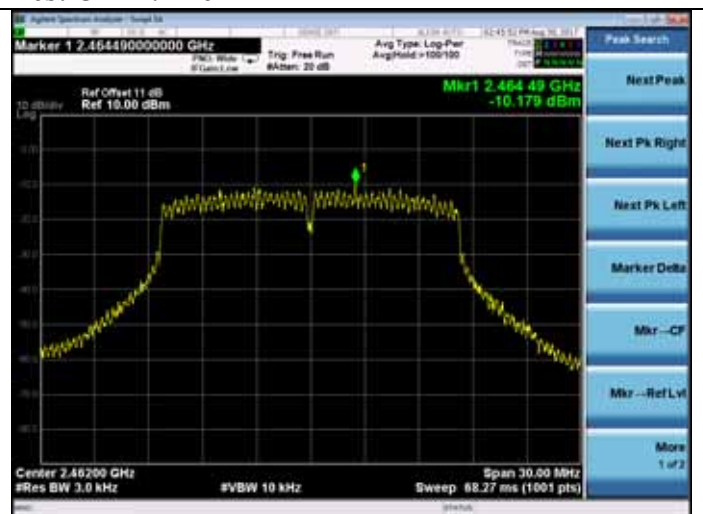
Test CH6: 2437MHz



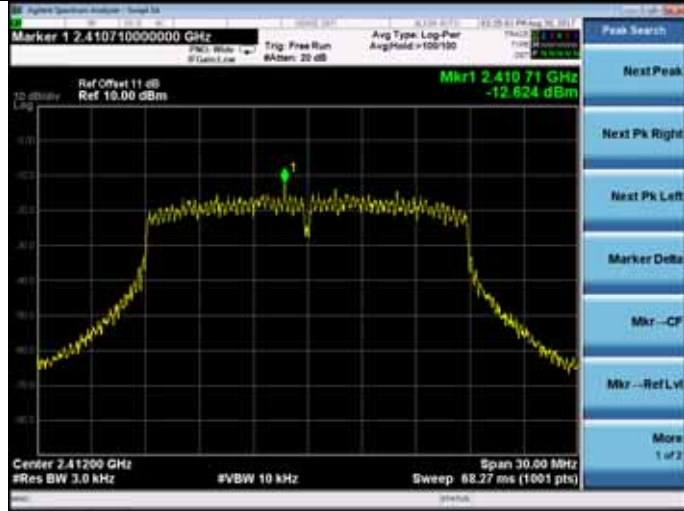
Test CH11: 2462MHz



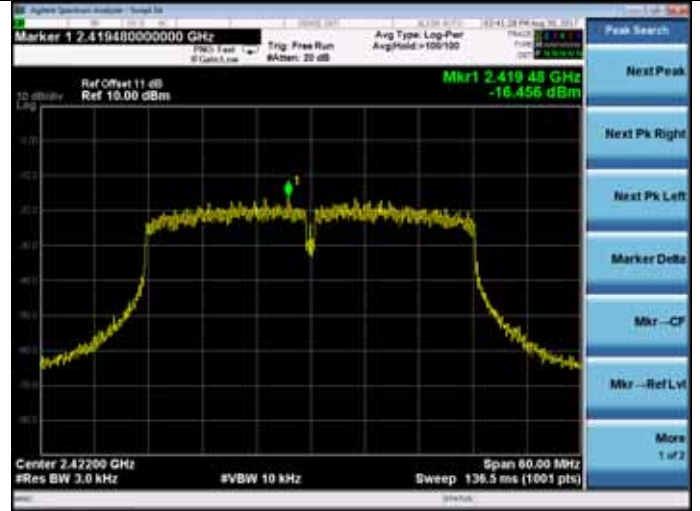
Test CH11: 2462MHz



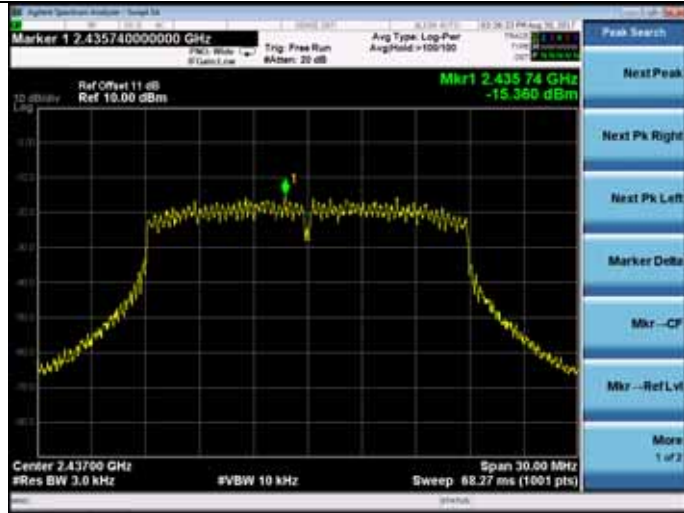
Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



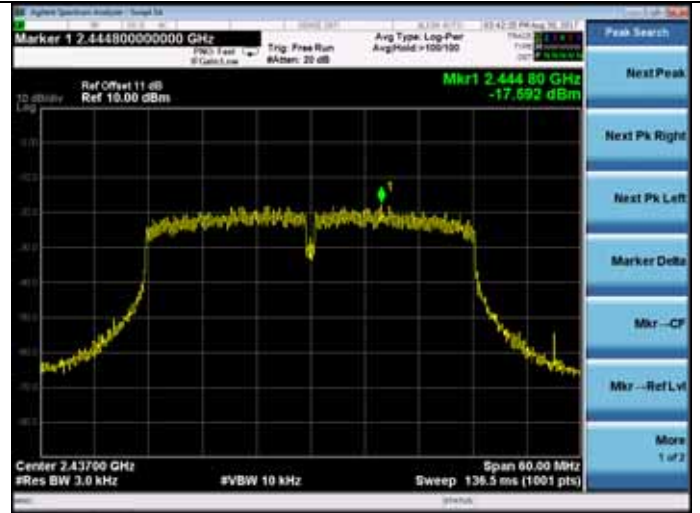
Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



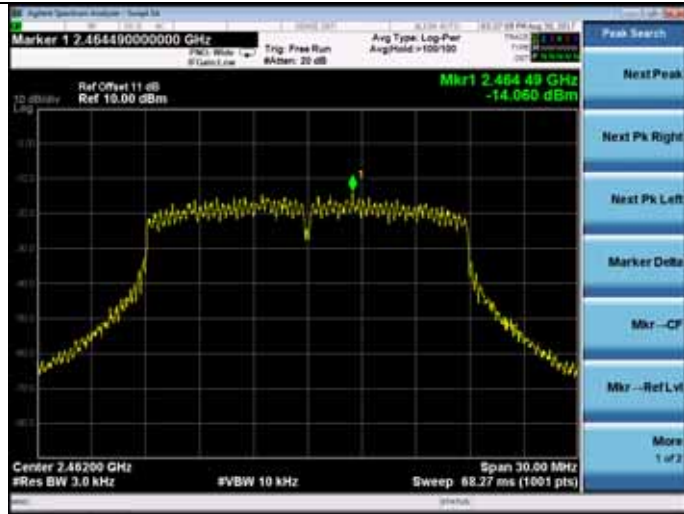
Test CH6: 2437MHz



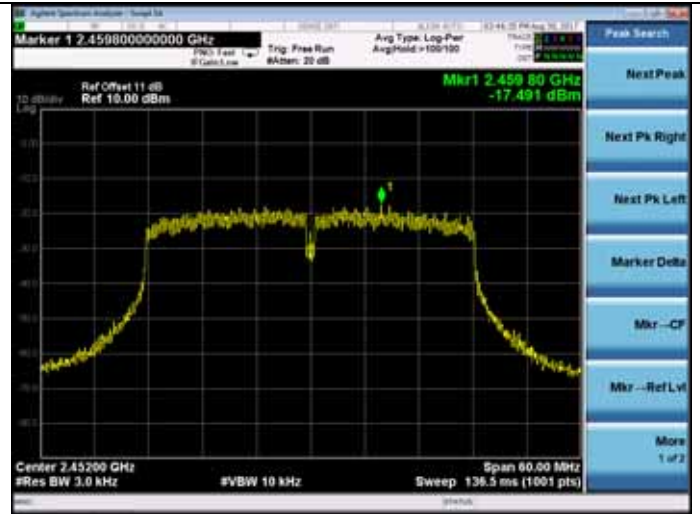
Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH9: 2452MHz

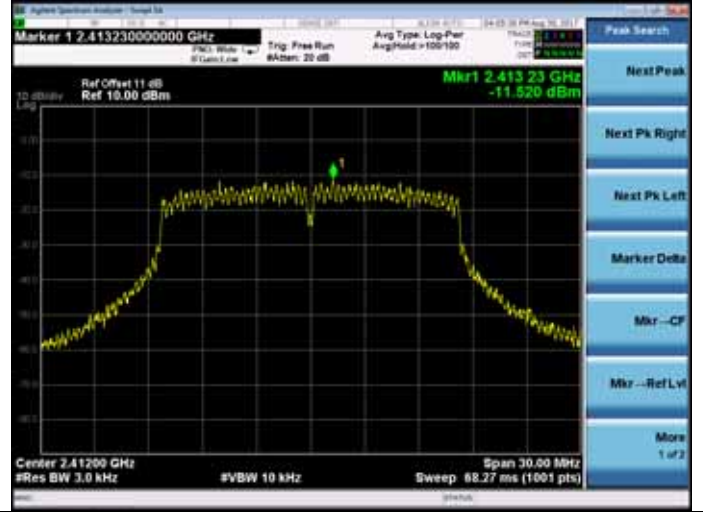


ANT1:

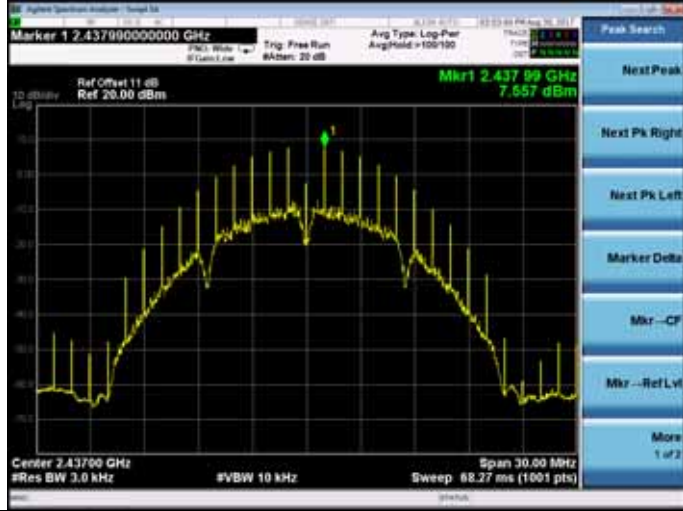
Test Mode: IEEE 802.11b  
Test CH1: 2412MHz



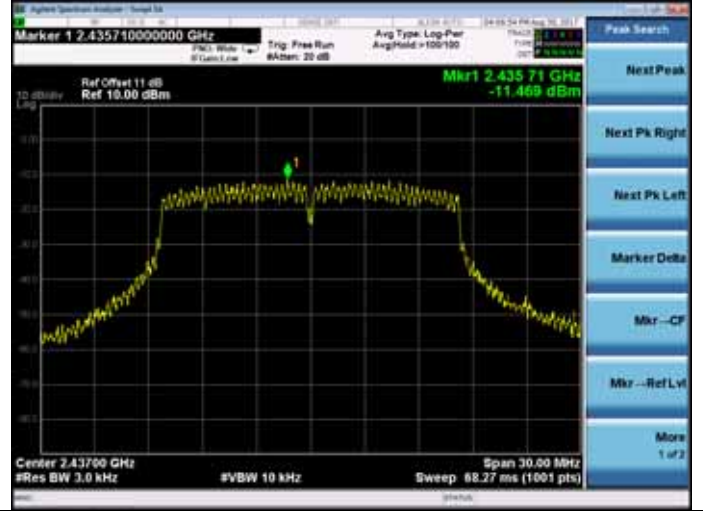
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



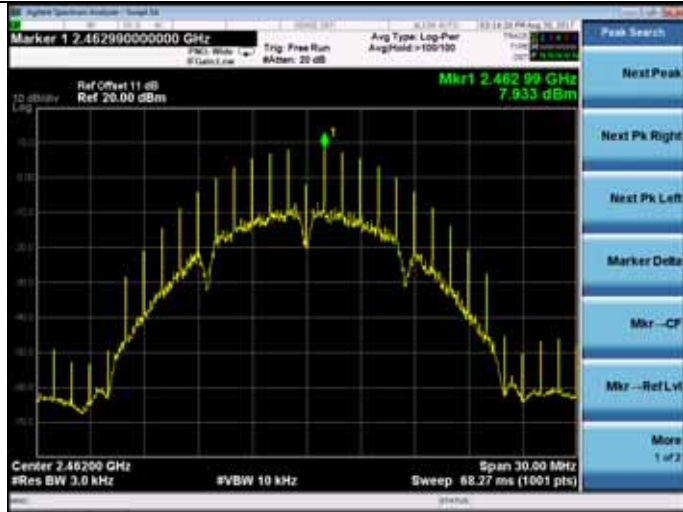
Test CH6: 2437MHz



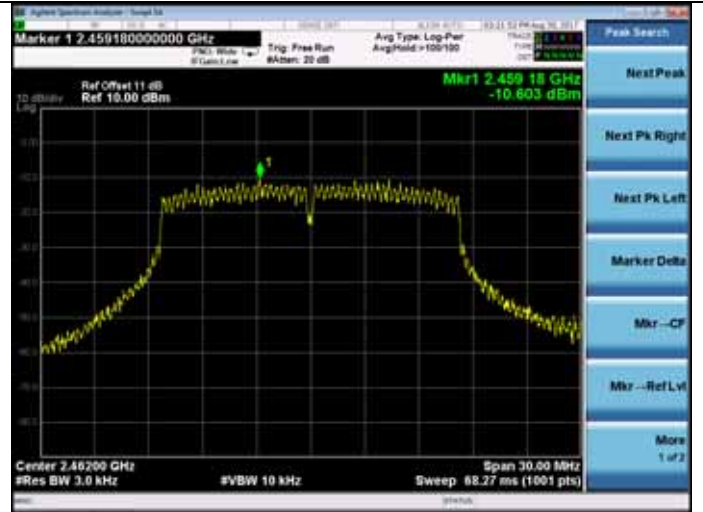
Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH11: 2462MHz



Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



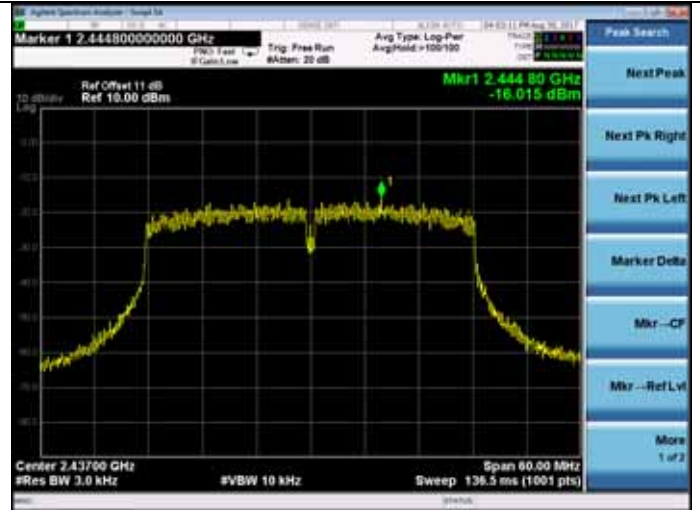
Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



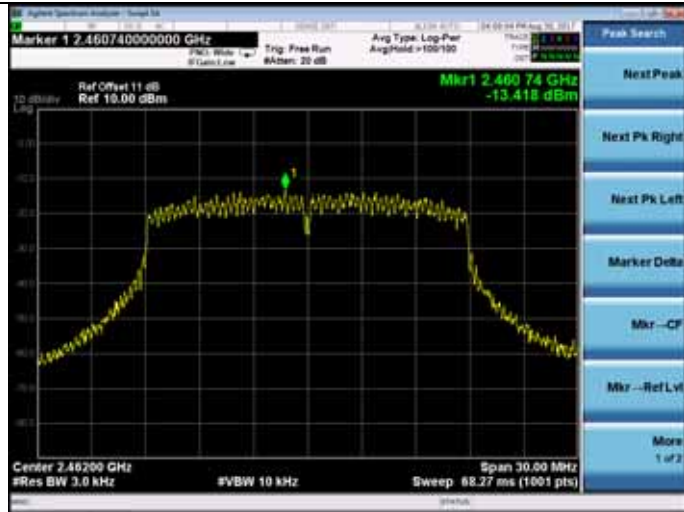
Test CH6: 2437MHz



Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH9: 2452MHz



## 12. ANTENNA REQUIREMENT

### 12.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 12.2. Antenna Connected Construction

The antennas used for this product are PIFA antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3.08dBi.

### **13.DEVIATION TO TEST SPECIFICATIONS**

[NONE]