



# FCC RF Test Report

**APPLICANT** : OnePlus Technology (shenzhen) Co., Ltd  
**EQUIPMENT** : Smart Phone  
**BRAND NAME** : ONEPLUS  
**MODEL NAME** : ONEPLUS A5010  
**MARKETING NAME** : ONEPLUS 5T  
**FCC ID** : 2ABZ2-A5010  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on Aug. 25, 2017 and testing was completed on Oct. 15, 2017. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.



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Approved by: Eric Shih / Manager

***Sporton International (Shenzhen) Inc.***

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Guangdong Province 518055 China***



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION             | ISSUED DATE   |
|--------------|---------|-------------------------|---------------|
| FR782510-01C | Rev. 01 | Initial issue of report | Oct. 19, 2017 |
|              |         |                         |               |
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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule           | Description                                        | Limit                          | Result | Remark                              |
|----------------|--------------------|----------------------------------------------------|--------------------------------|--------|-------------------------------------|
| 3.1            | 15.247(a)(2)       | 6dB Bandwidth                                      | $\geq 0.5\text{MHz}$           | Pass   | -                                   |
| 3.1            | -                  | 99% Bandwidth                                      | -                              | Pass   | -                                   |
| 3.2            | 15.247(b)          | Power Output Measurement                           | $\leq 30\text{dBm}$            | Pass   | -                                   |
| 3.3            | 15.247(e)          | Power Spectral Density                             | $\leq 8\text{dBm}/3\text{kHz}$ | Pass   | -                                   |
| 3.4            | 15.247(d)          | Conducted Band Edges                               | $\leq 20\text{dBc}$            | Pass   | -                                   |
|                |                    | Conducted Spurious Emission                        |                                | Pass   | -                                   |
| 3.5            | 15.247(d)          | Radiated Band Edges and Radiated Spurious Emission | 15.209(a) & 15.247(d)          | Pass   | Under limit 1.89 dB at 2483.520 MHz |
| 3.6            | 15.207             | AC Conducted Emission                              | 15.207(a)                      | Pass   | Under limit 10.92 dB at 0.200 MHz   |
| 3.7            | 15.203 & 15.247(b) | Antenna Requirement                                | N/A                            | Pass   | -                                   |



# 1 General Description

## 1.1 Applicant

**OnePlus Technology (shenzhen) Co., Ltd**

18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

## 1.2 Manufacturer

**OnePlus Technology (shenzhen) Co., Ltd**

18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

## 1.3 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Smart Phone                                                                                                                                                                                                                                                                                                        |
| Brand Name                      | ONEPLUS                                                                                                                                                                                                                                                                                                            |
| Model Name                      | ONEPLUS A5010                                                                                                                                                                                                                                                                                                      |
| Marketing Name                  | ONEPLUS 5T                                                                                                                                                                                                                                                                                                         |
| FCC ID                          | 2ABZ2-A5010                                                                                                                                                                                                                                                                                                        |
| EUT supports Radios application | CDMA/EV-DO/GSM/GPRS/EGPRS/WCDMA/HSPA/<br>HSPA+/DC-HSDPA/LTE/NFC<br>WLAN2.4GHz 802.11b/g/n HT20/HT40<br>WLAN2.4GHz 802.11ac VHT20/VHT40<br>WLAN5GHz 802.11a/n HT20/HT40<br>WLAN5GHz 802.11ac VHT20/VHT40/VHT80<br>Bluetooth v3.0+EDR/ Bluetooth v4.0 LE/<br>Bluetooth v4.1 LE/ Bluetooth v4.2 LE/ Bluetooth v5.0 LE |
| IMEI Code                       | Conducted: 866817030000889/866817030000889<br>Radiation: 866817030000947/866817030000947<br>Conduction: 866817030000988/866817030000988                                                                                                                                                                            |
| HW Version                      | EC017                                                                                                                                                                                                                                                                                                              |
| SW Version                      | oxygen version 4.7                                                                                                                                                                                                                                                                                                 |
| EUT Stage                       | Production Unit                                                                                                                                                                                                                                                                                                    |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |               |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| <b>Tx/Rx Channel Frequency Range</b>          | 2412 MHz ~ 2462 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |               |
| <b>Maximum (Peak) Output Power to antenna</b> | <b>&lt;Ant. 1&gt;</b><br>802.11b : 19.55 dBm (0.0902 W)<br>802.11g : 20.79 dBm (0.1199 W)<br>802.11n HT20 : 21.84 dBm (0.1528 W)<br>802.11n HT40 : 20.50 dBm (0.1122 W)<br>802.11ac VHT20 : 21.80 dBm (0.1514 W)<br>802.11ac VHT40 : 19.56 dBm (0.0904 W)<br><b>&lt;Ant. 2&gt;</b><br>802.11b : 16.52 dBm (0.0449 W)<br>802.11g : 19.55 dBm (0.0902 W)<br>802.11n HT20 : 19.46 dBm (0.0883 W)<br>802.11n HT40 : 19.46 dBm (0.0883 W)<br>802.11ac VHT20 : 19.23 dBm (0.0838 W)<br>802.11ac VHT40 : 19.42 dBm (0.0875 W)<br><b>MIMO &lt;Ant. 1 + 2&gt;</b><br>802.11b : 21.08 dBm (0.1282 W)<br>802.11g : 23.00 dBm (0.1995 W)<br>802.11n HT20 : 23.05 dBm (0.2018 W)<br>802.11n HT40 : 21.45 dBm (0.1396 W)<br>802.11ac VHT20 : 23.02 dBm (0.2004 W)<br>802.11ac VHT40 : 21.33 dBm (0.1358 W) |               |               |
| <b>99% Occupied Bandwidth</b>                 | 802.11b : 15.03MHz<br>802.11g : 17.68MHz<br>802.11n HT20 : 18.93MHz<br>802.11n HT40 : 36.66MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |               |
| <b>Antenna Type / Gain</b>                    | <b>&lt;Ant 1&gt;</b><br>PIFA Antenna with gain -2.80 dBi<br><b>&lt;Ant 2&gt;</b><br>PIFA Antenna with gain -3.00 dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |               |
| <b>Type of Modulation</b>                     | 802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |               |
| <b>Antenna Function for Transmitter</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Ant. 1</b> | <b>Ant. 2</b> |
|                                               | 802.11 b/g/n/ac SISO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | V             | V             |
|                                               | 802.11 b/g/n/ac MIMO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | V             | V             |

**Note:**

1. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
2. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11n HT20/ HT40 by referring to their maximum conducted power.

## 1.5 Modification of EUT

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

## 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No. are CN5018 and CN5019.

|                           |                                                                                                                                                                            |         |                                       |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------|
| <b>Test Site</b>          | Sporton International (Shenzhen) Inc.                                                                                                                                      |         |                                       |
| <b>Test Site Location</b> | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China<br>TEL: +86-755-8637-9589<br>FAX: +86-755-8637-9595 |         |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                    |         | <b>FCC Test Firm Registration No.</b> |
|                           | TH01-SZ                                                                                                                                                                    | CO01-SZ | 251365                                |

|                           |                                                                                                                                                                       |  |                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------|
| <b>Test Site</b>          | SPORTON International (ShenZhen) INC.                                                                                                                                 |  |                                       |
| <b>Test Site Location</b> | No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China<br>TEL: +86-755-3320-2398 |  |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                               |  | <b>FCC Test Firm Registration No.</b> |
|                           | 03CH03-SZ                                                                                                                                                             |  | 577730                                |

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



## 1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



## 2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

### 2.1 Carrier Frequency and Channel

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

## 2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

### Single Antenna

| Modulation     | Data Rate |
|----------------|-----------|
| 802.11b        | 1 Mbps    |
| 802.11g        | 6 Mbps    |
| 802.11n HT20   | MCS0      |
| 802.11n HT40   | MCS0      |
| 802.11ac VHT20 | MCS0      |
| 802.11ac VHT40 | MCS0      |

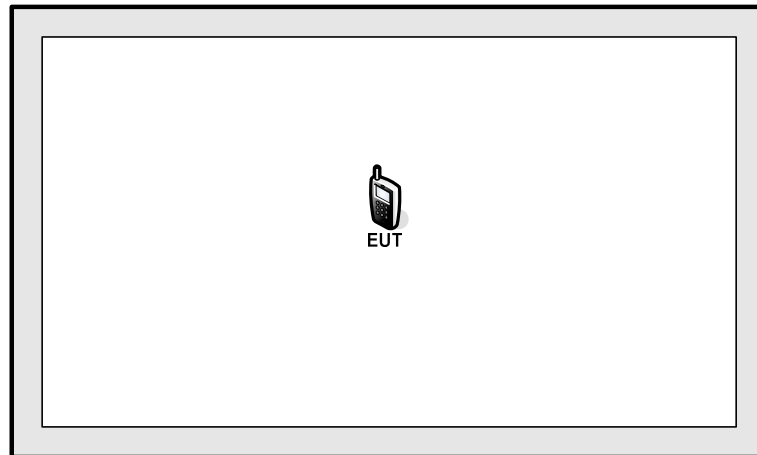
### MIMO Antenna

| Modulation     | Data Rate |
|----------------|-----------|
| 802.11b        | 1 Mbps    |
| 802.11g        | 6 Mbps    |
| 802.11n HT20   | MCS0      |
| 802.11n HT40   | MCS0      |
| 802.11ac VHT20 | MCS0      |
| 802.11ac VHT40 | MCS0      |

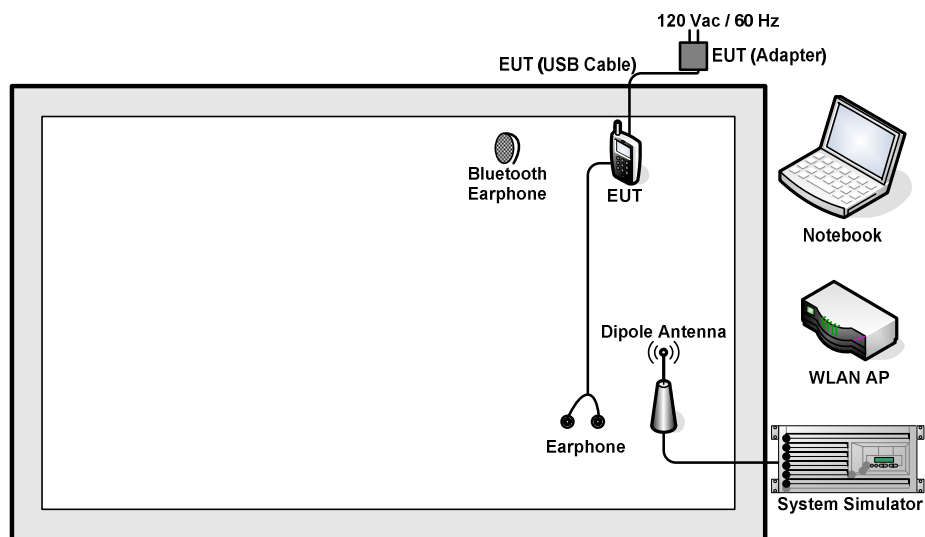
| Test Cases                   |                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>AC Conducted Emission</b> | Mode 1 : GSM1900 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + SIM 2 |

## 2.3 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.4 Support Unit used in test configuration and system

| Item | Equipment          | Trade Name | Model Name | FCC ID      | Data Cable       | Power Cord                                                         |
|------|--------------------|------------|------------|-------------|------------------|--------------------------------------------------------------------|
| 1.   | System Simulator   | R&S        | CMU 200    | N/A         | N/A              | Unshielded, 1.8 m                                                  |
| 2.   | WLAN AP            | D-Link     | DIR-820L   | KA2IR820LA1 | N/A              | Unshielded, 1.8 m                                                  |
| 3.   | Notebook           | Lenovo     | E540       | FCC DoC     | N/A              | Shielded cable<br>DC O/P 1.8 m<br>Unshielded AC<br>I/P cable 1.2 m |
| 4.   | Bluetooth Earphone | Samsung    | EO-MG900   | PYAHS-107W  | N/A              | Unshielded, 0.53 m                                                 |
| 5.   | Earphone           | Apple      | MC690ZP/A  | N/A         | Unshielded, 1.6m | N/A                                                                |

## 2.5 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

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

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 5.0 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5.0 + 10 = 15.0 \text{ (dB)} \end{aligned}$$

### 3 Test Result

#### 3.1 6dB and 99% Bandwidth Measurement

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

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

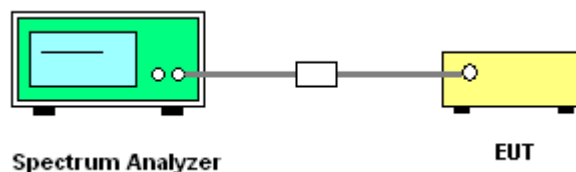
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

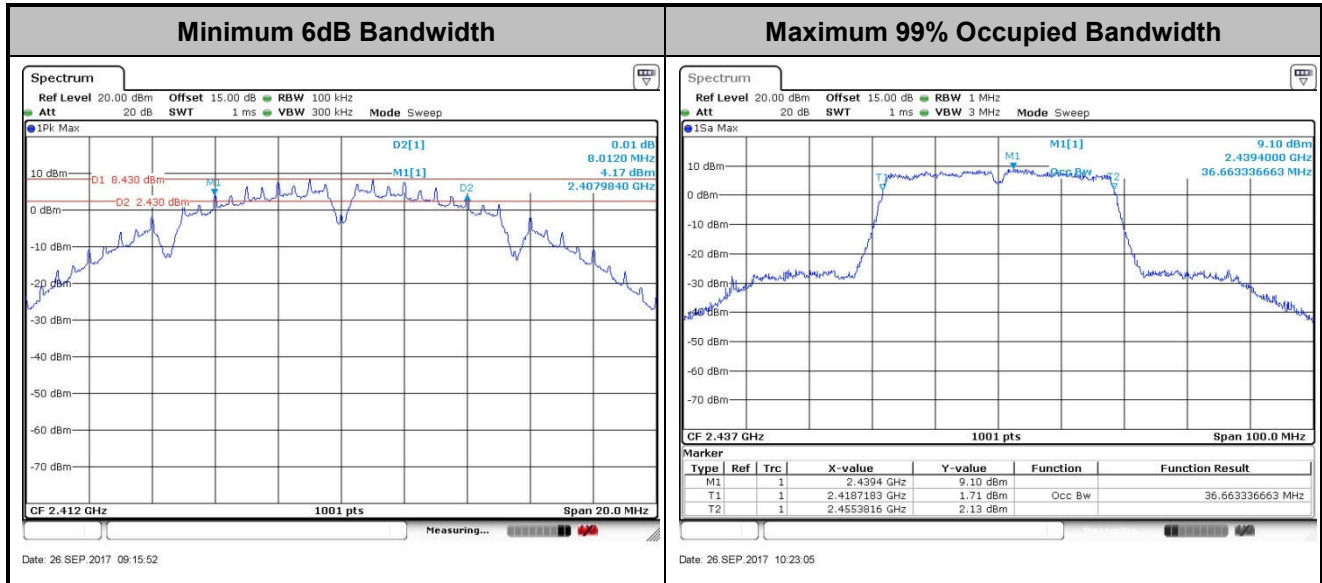
##### 3.1.4 Test Setup





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

Please refer to Appendix A.



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

## 3.2 Peak Output Power Measurement

### 3.2.1 Limit of Peak Output Power

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

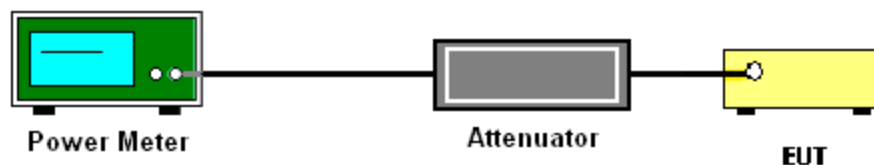
### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

### 3.2.4 Test Setup





### **3.2.5 Test Result of Peak Output Power**

Please refer to Appendix A.

### **3.2.6 Test Result of Average output Power (Reporting Only)**

Please refer to Appendix A.

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

#### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

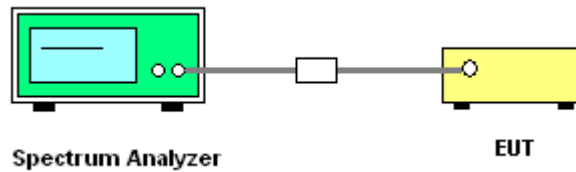
If measurements performed using method (2) plus  $10 \log(N)$  exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

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

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

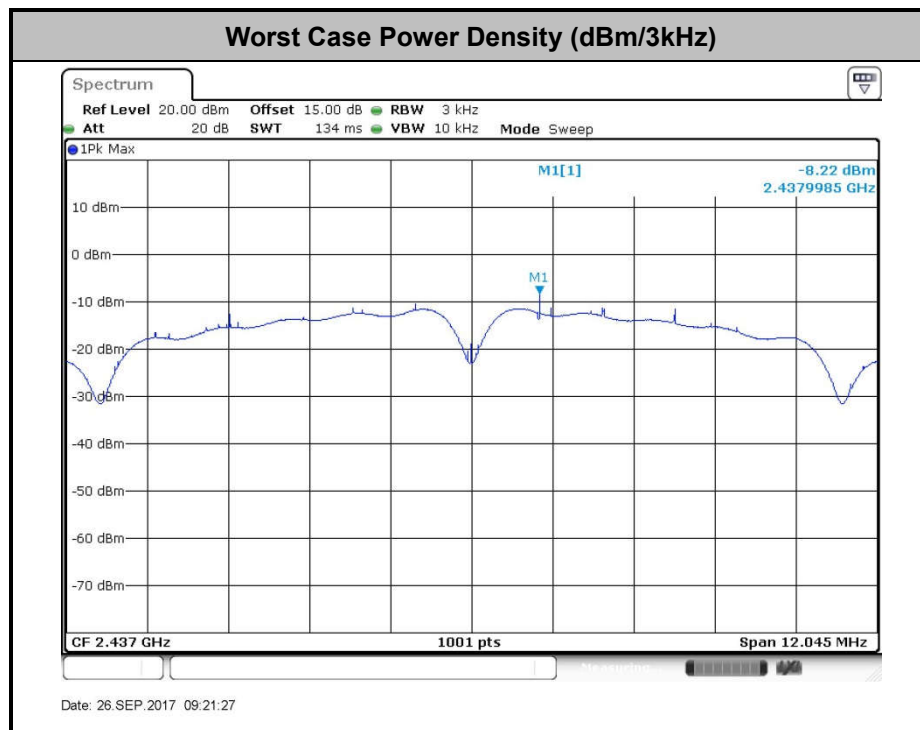
Method (2): Measure and add  $10 \log(N)$  dB, where N is the number of outputs. (N=2)

### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



### 3.4 Conducted Band Edges and Spurious Emission Measurement

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

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

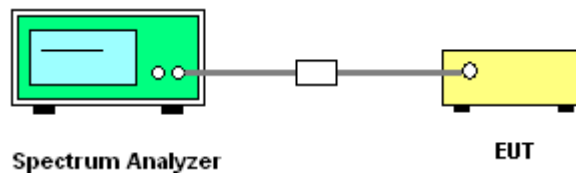
#### 3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

#### 3.4.4 Test Setup

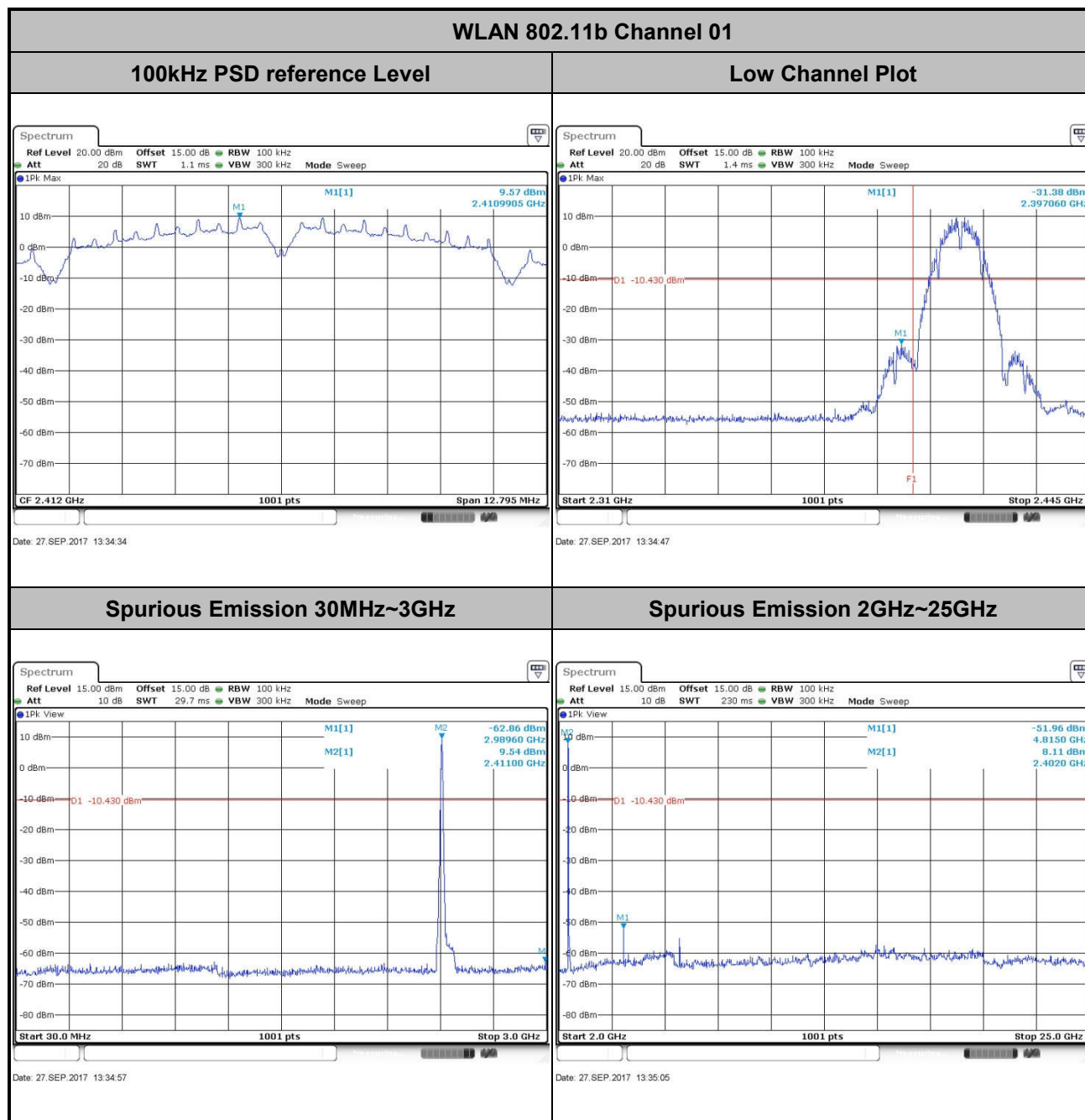




### 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX   | 1          | Ant. :              | 1         |
| Test Mode :    | 802.11b    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 50~53%    |
| Test Channel : | 01         | Test Engineer :     | Sam Zheng |

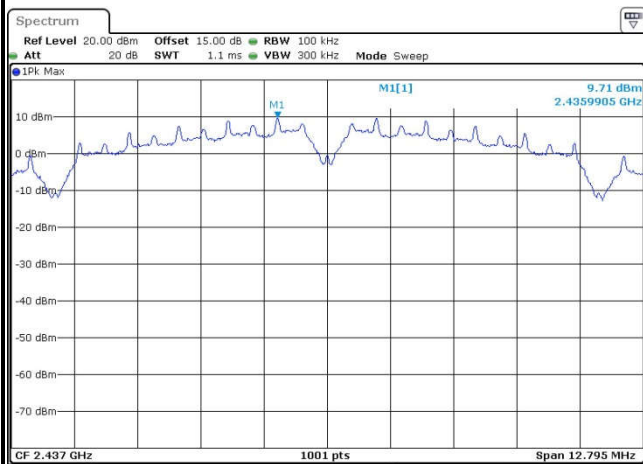




|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 1         |
| Test Mode :    | 802.11b    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid | Relative Humidity : | 50~53%    |
| Test Channel : | 06         | Test Engineer :     | Sam Zheng |

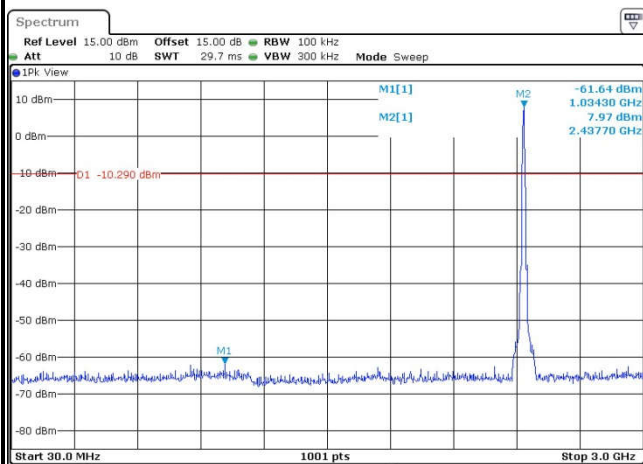
## WLAN 802.11b Channel 06

## 100kHz PSD reference Level



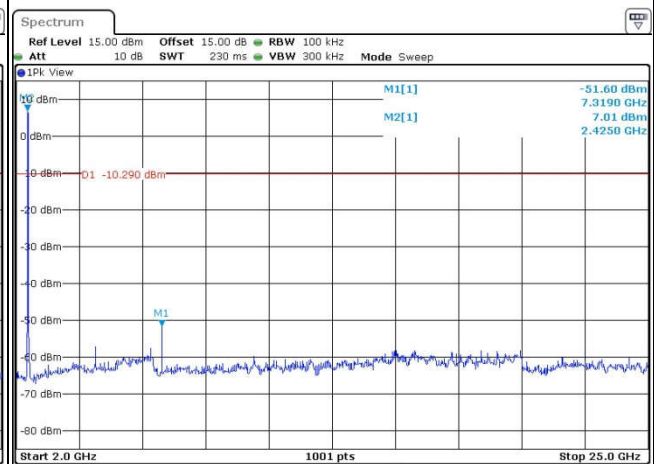
Date: 27.SEP.2017 13:38:06

## Spurious Emission 30MHz~3GHz



Date: 27.SEP.2017 13:38:20

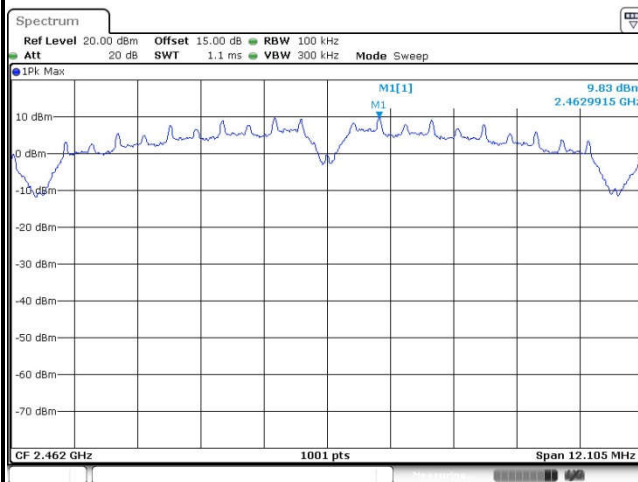
## Spurious Emission 2GHz~25GHz



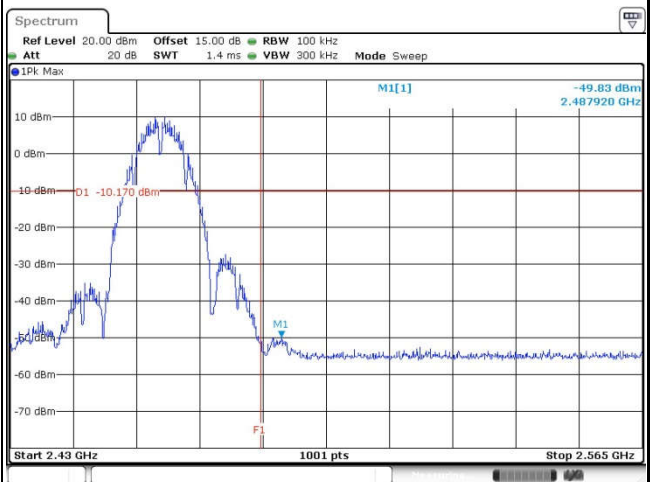
Date: 27.SEP.2017 13:38:28



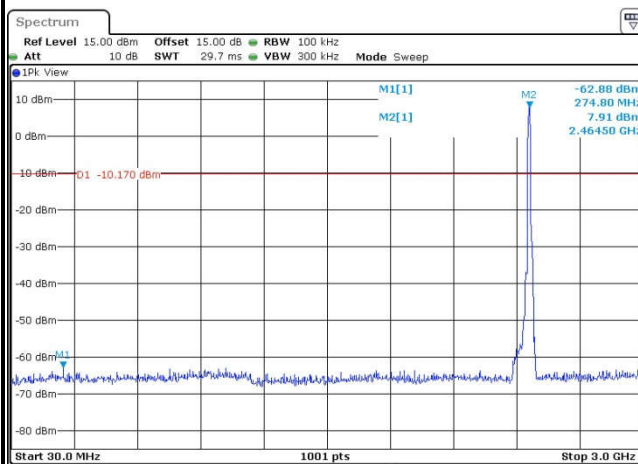
|                |             |                     |           |
|----------------|-------------|---------------------|-----------|
| Number of TX : | 1           | Ant. :              | 1         |
| Test Mode :    | 802.11b     | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High | Relative Humidity : | 50~53%    |
| Test Channel : | 11          | Test Engineer :     | Sam Zheng |

**WLAN 802.11b Channel 11****100kHz PSD reference Level**

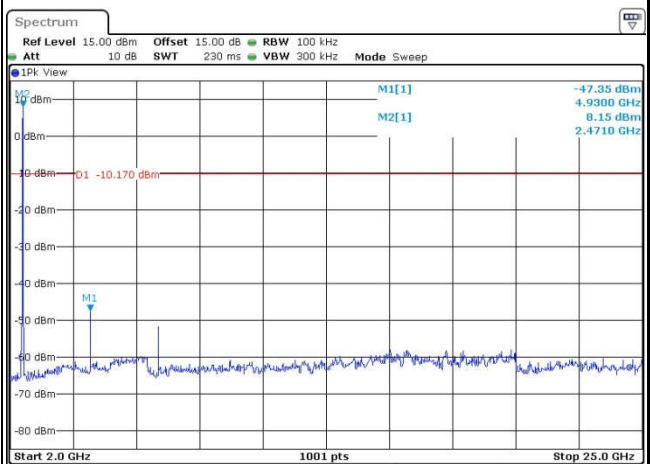
Date: 27.SEP.2017 13:42:48

**High Channel Plot**

Date: 27.SEP.2017 13:43:13

**Spurious Emission 30MHz~3GHz**

Date: 27.SEP.2017 13:43:24

**Spurious Emission 2GHz~25GHz**

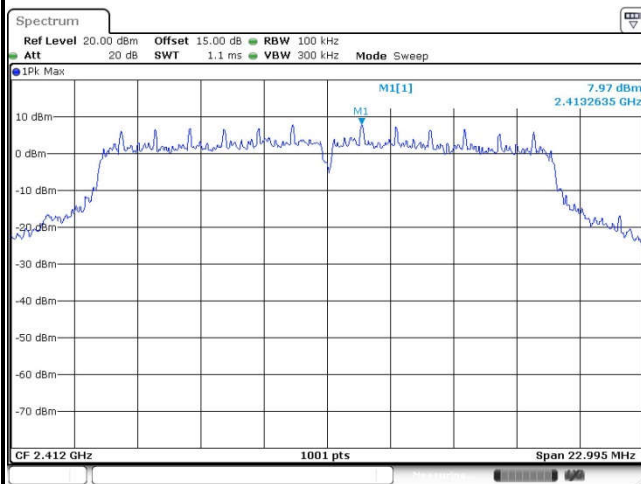
Date: 27.SEP.2017 13:43:32



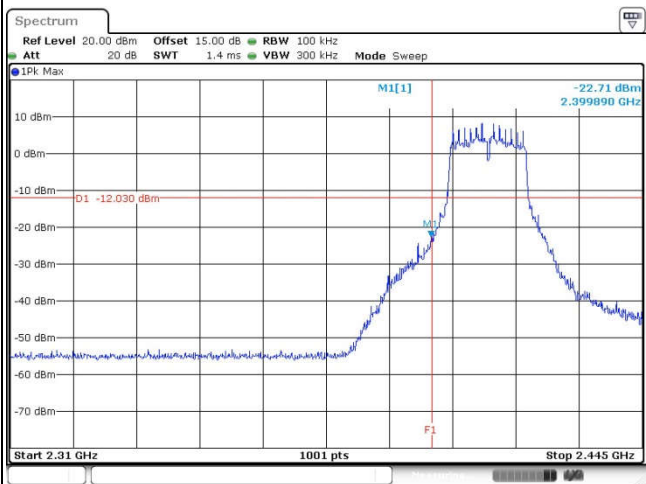
|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 1         |
| Test Mode :    | 802.11g    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 50~53%    |
| Test Channel : | 01         | Test Engineer :     | Sam Zheng |

## WLAN 802.11g Channel 01

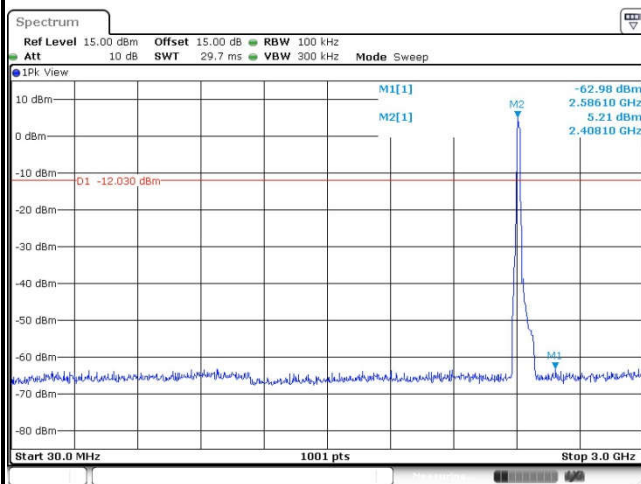
## 100kHz PSD reference Level



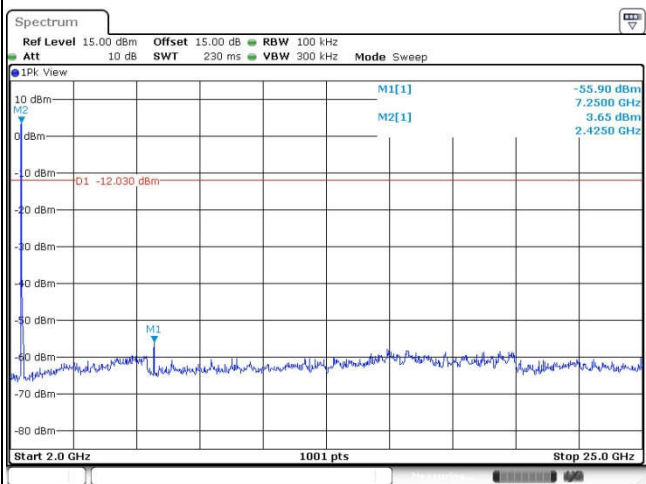
## Low Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

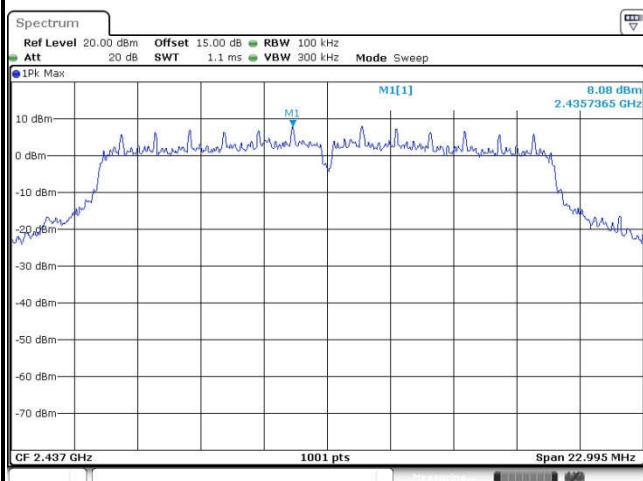




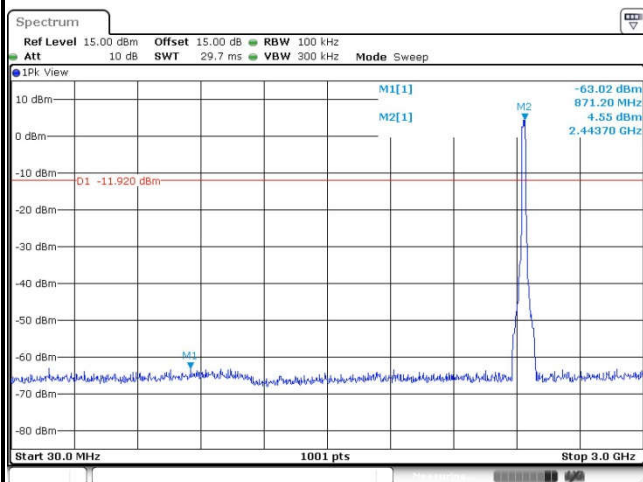
|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 1         |
| Test Mode :    | 802.11g    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid | Relative Humidity : | 50~53%    |
| Test Channel : | 06         | Test Engineer :     | Sam Zheng |

## WLAN 802.11g Channel 06

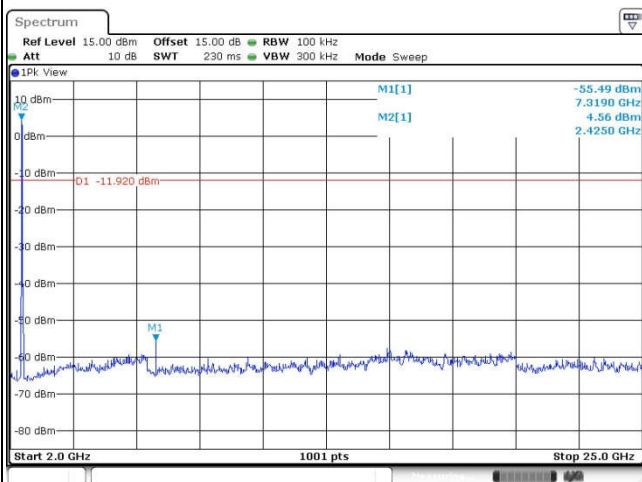
## 100kHz PSD reference Level



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

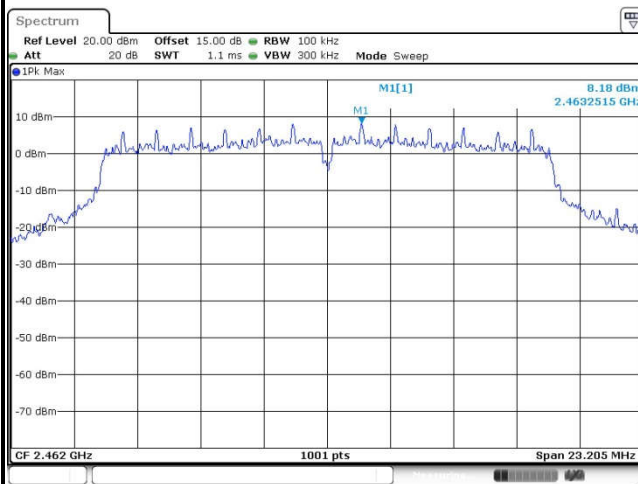




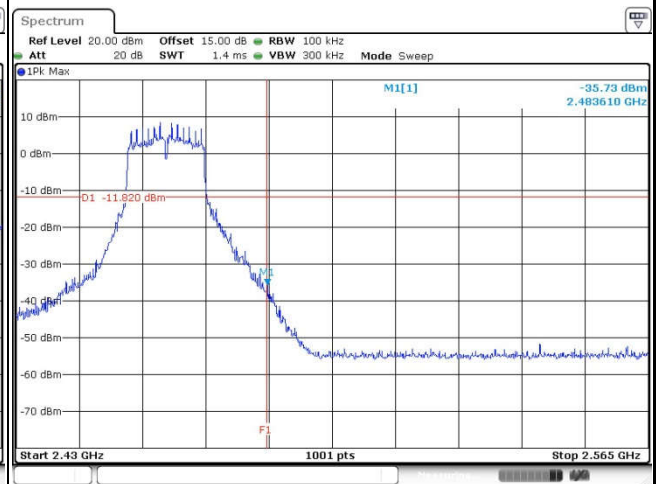
|                |             |                     |           |
|----------------|-------------|---------------------|-----------|
| Number of TX : | 1           | Ant. :              | 1         |
| Test Mode :    | 802.11g     | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High | Relative Humidity : | 50~53%    |
| Test Channel : | 11          | Test Engineer :     | Sam Zheng |

## WLAN 802.11g Channel 11

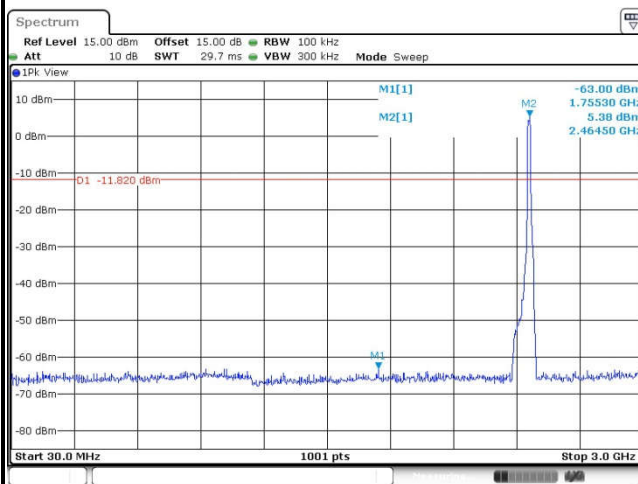
## 100kHz PSD reference Level



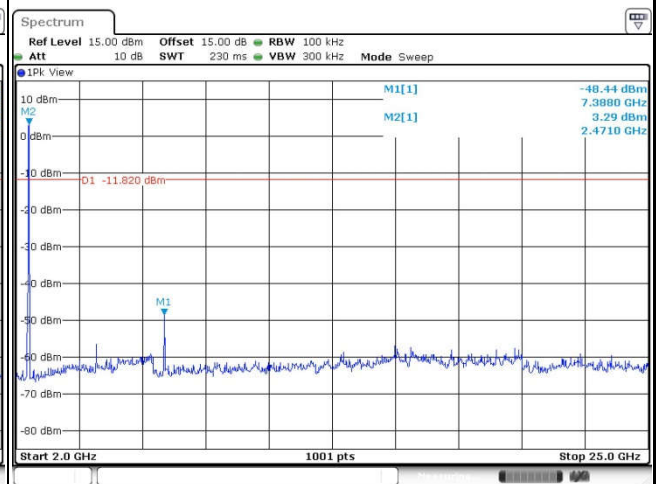
## High Channel Plot



## Spurious Emission 30MHz~3GHz

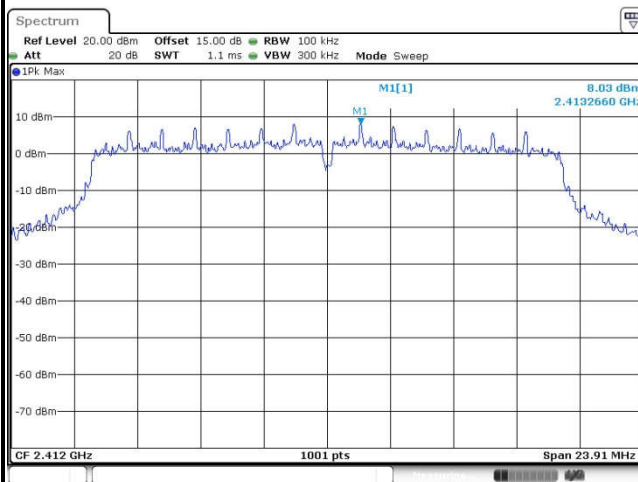
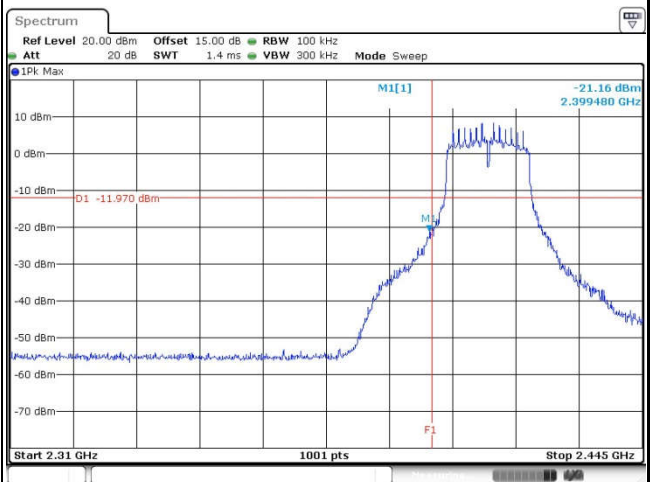
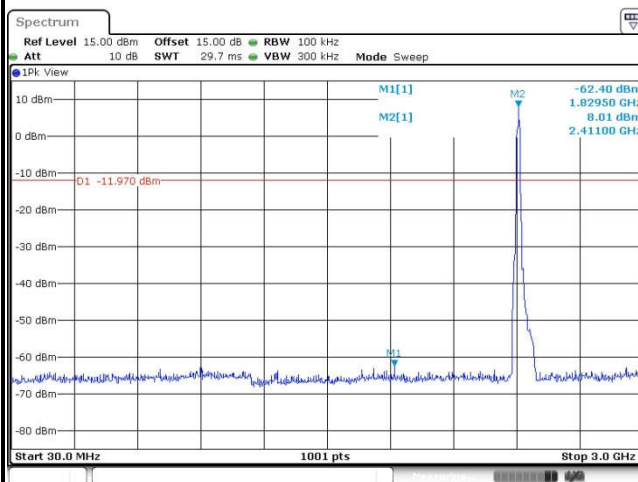
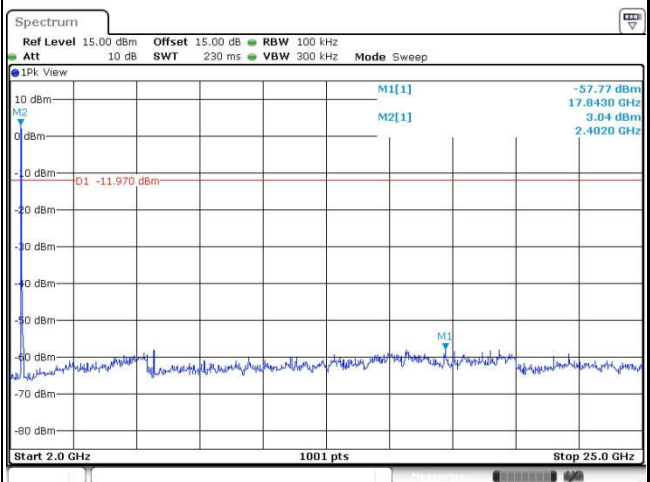


## Spurious Emission 2GHz~25GHz





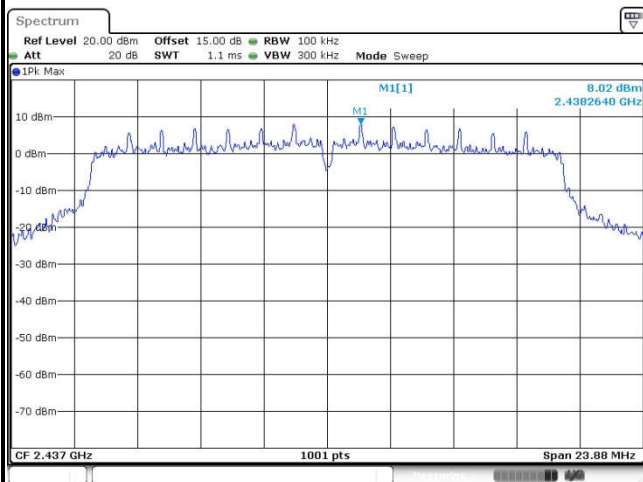
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 1         |
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low   | Relative Humidity : | 50~53%    |
| Test Channel : | 01           | Test Engineer :     | Sam Zheng |

**WLAN 802.11n HT20 Channel 01****100kHz PSD reference Level****Low Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**

|                       |              |                            |           |
|-----------------------|--------------|----------------------------|-----------|
| <b>Number of TX :</b> | 1            | <b>Ant. :</b>              | 1         |
| <b>Test Mode :</b>    | 802.11n HT20 | <b>Temperature :</b>       | 24~26℃    |
| <b>Test Band :</b>    | 2.4GHz Mid   | <b>Relative Humidity :</b> | 50~53%    |
| <b>Test Channel :</b> | 06           | <b>Test Engineer :</b>     | Sam Zheng |

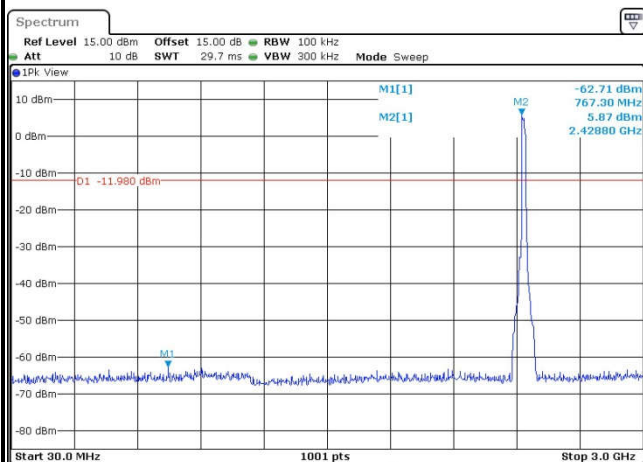
## WLAN 802.11n HT20 Channel 06

### 100kHz PSD reference Level



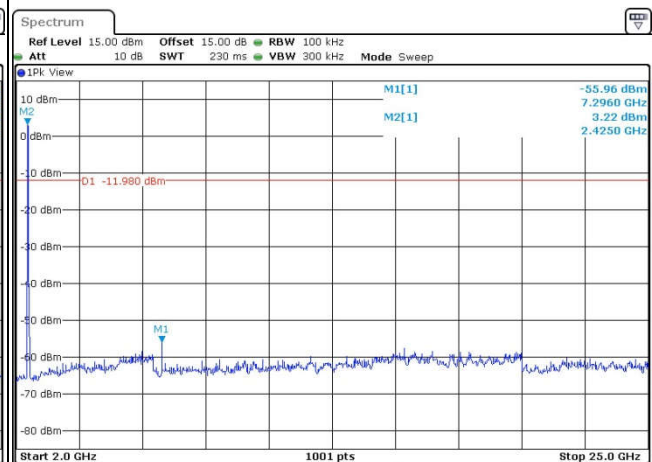
Date: 27.SEP.2017 14:19:33

## Spurious Emission 30MHz~3GHz



Date: 27.SEP.2017 14:19:43

## Spurious Emission 2GHz~25GHz



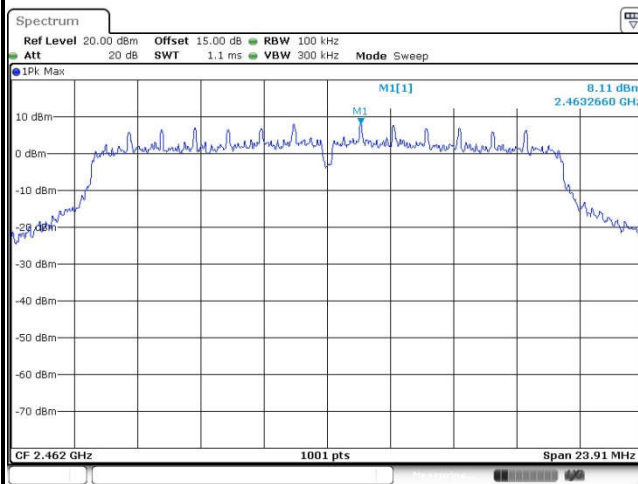
Date: 27.SEP.2017 14:19:51



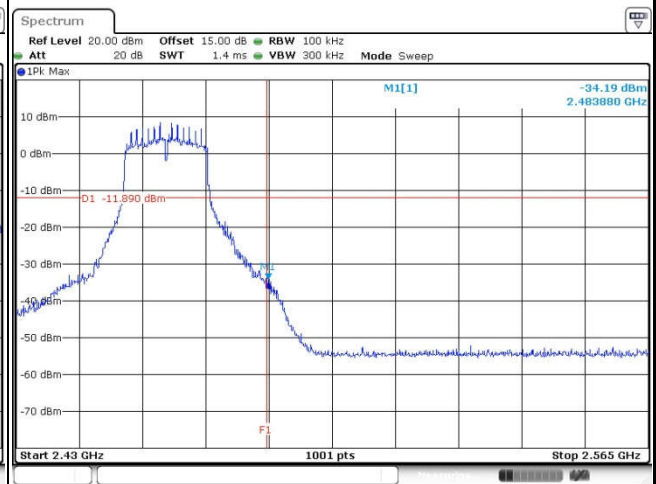
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 1         |
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High  | Relative Humidity : | 50~53%    |
| Test Channel : | 11           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT20 Channel 11

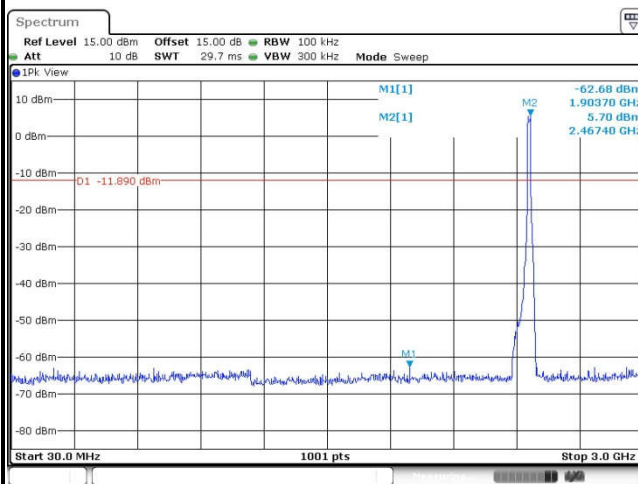
## 100kHz PSD reference Level



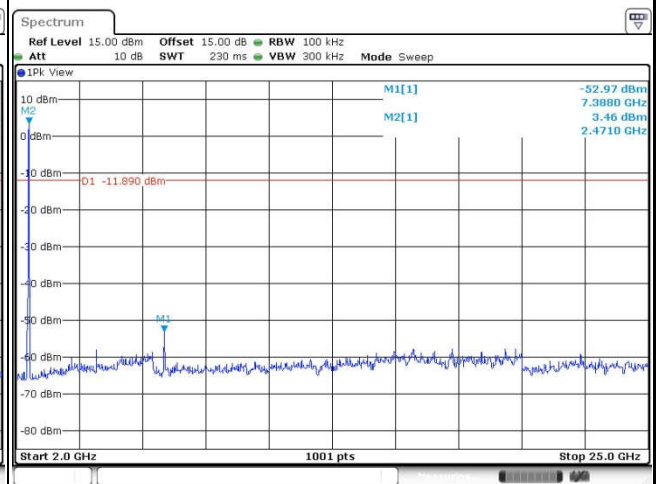
## High Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

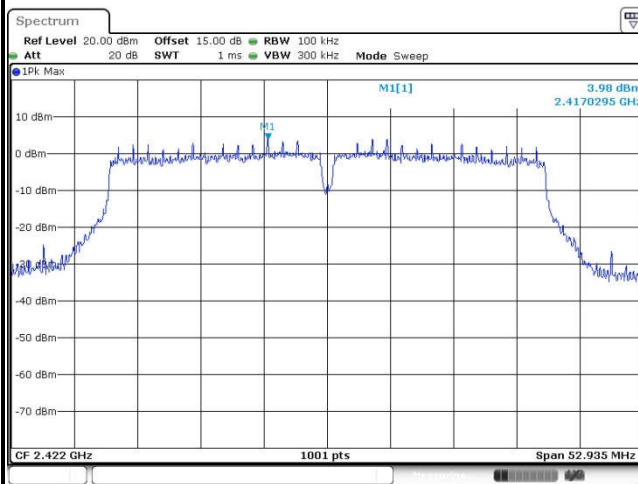




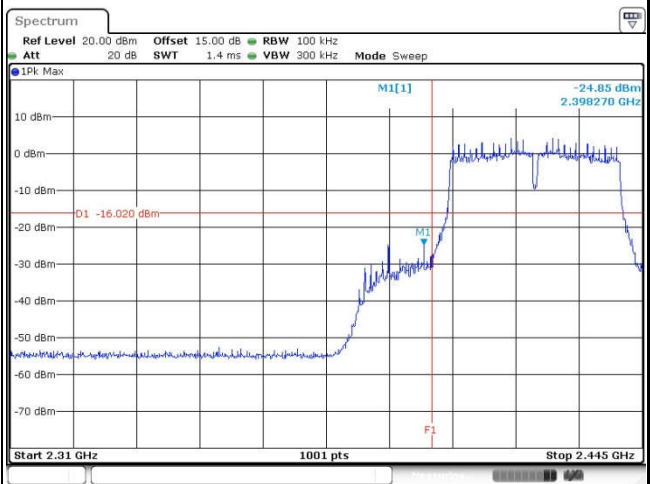
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 1         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low   | Relative Humidity : | 50~53%    |
| Test Channel : | 03           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT40 Channel 03

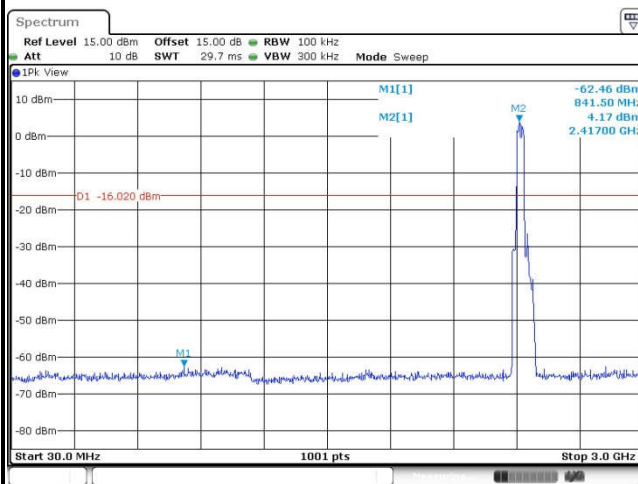
## 100kHz PSD reference Level



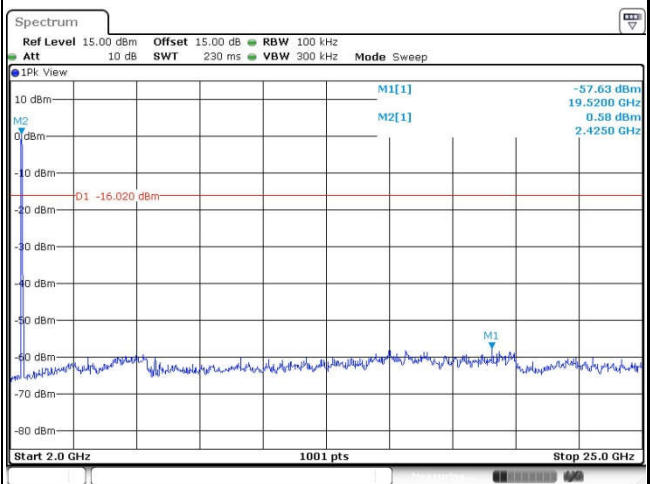
## Low Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

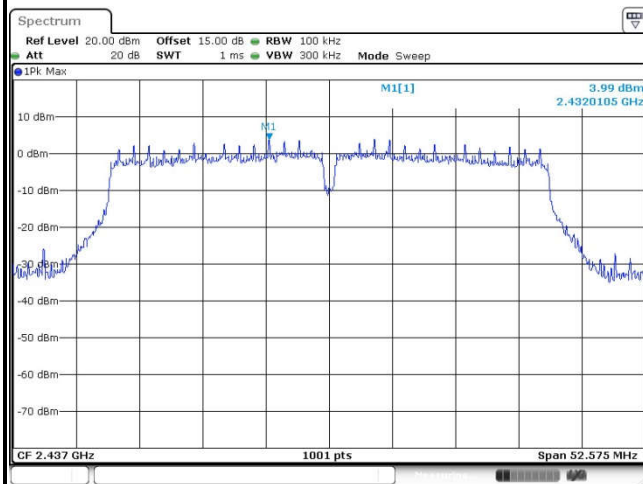




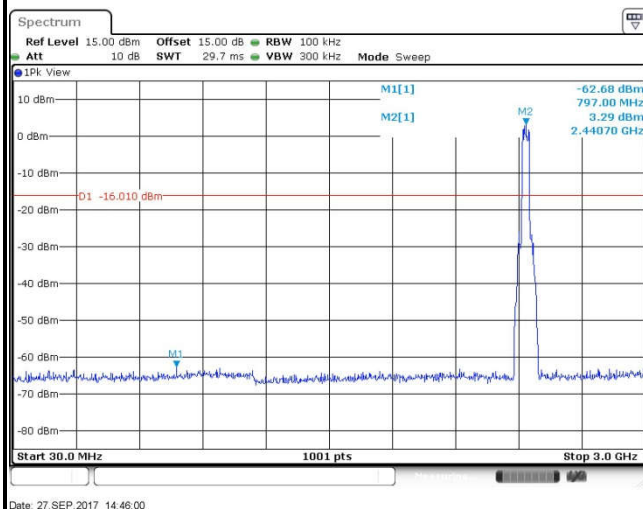
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 1         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid   | Relative Humidity : | 50~53%    |
| Test Channel : | 06           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT40 Channel 06

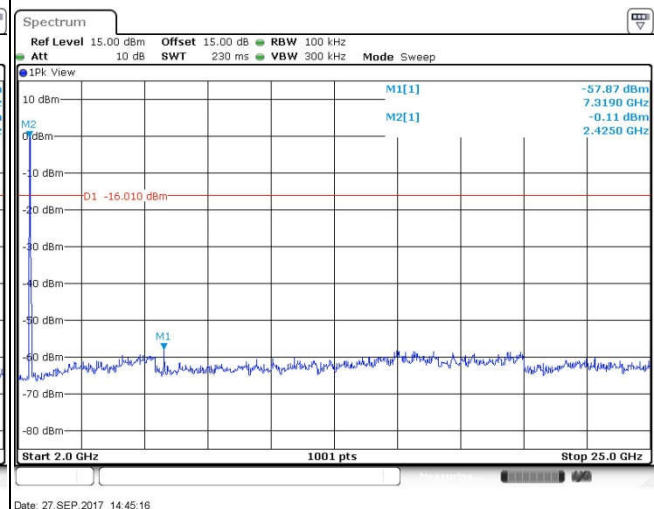
## 100kHz PSD reference Level



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

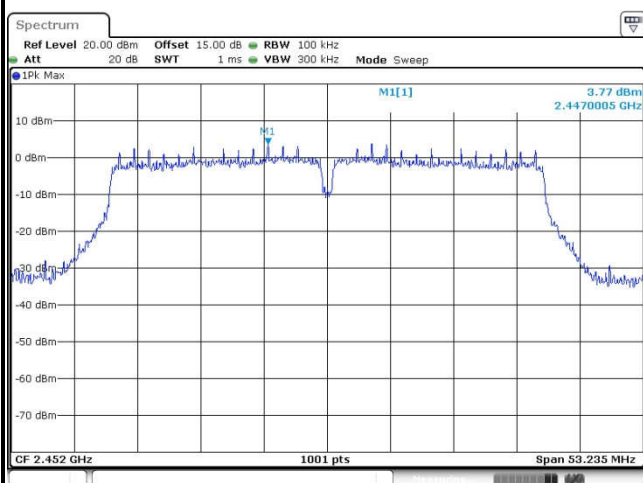




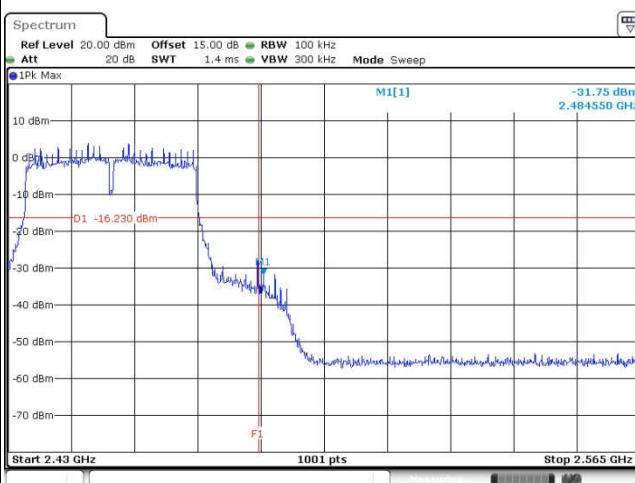
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 1         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High  | Relative Humidity : | 50~53%    |
| Test Channel : | 09           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT40 Channel 09

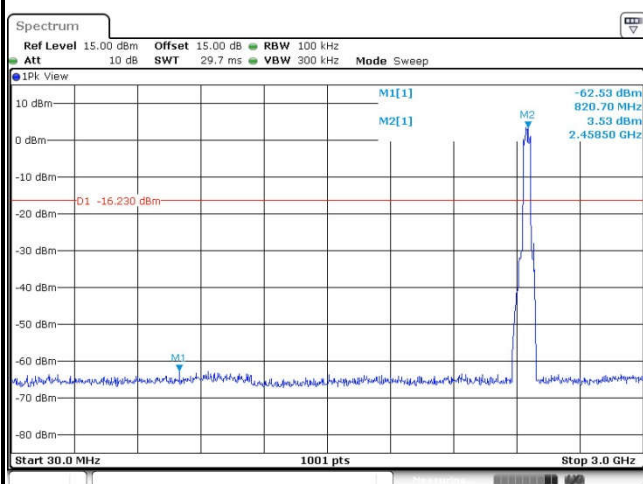
## 100kHz PSD reference Level



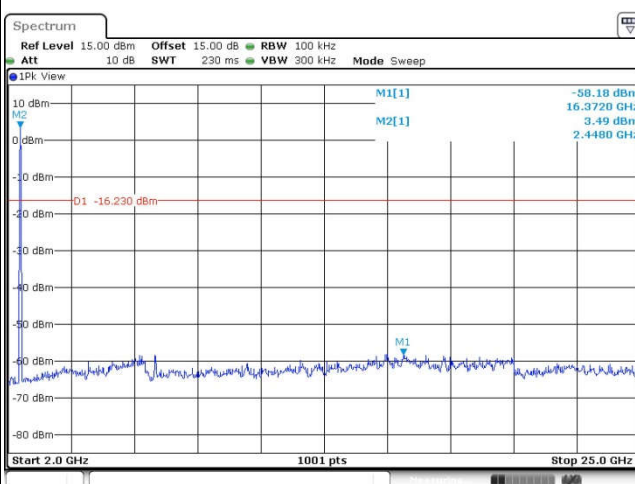
## High Channel Plot



## Spurious Emission 30MHz~3GHz

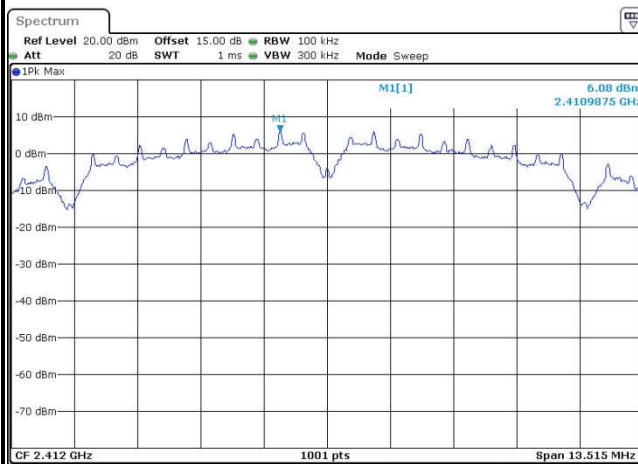
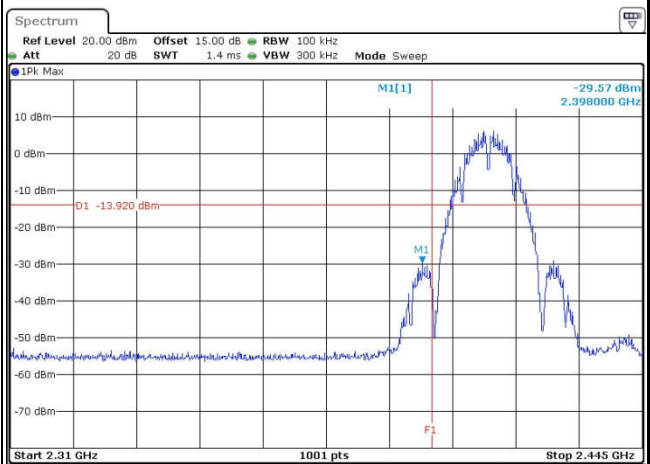
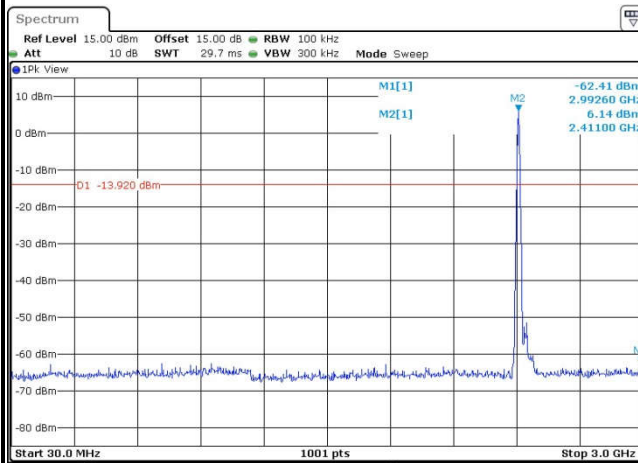
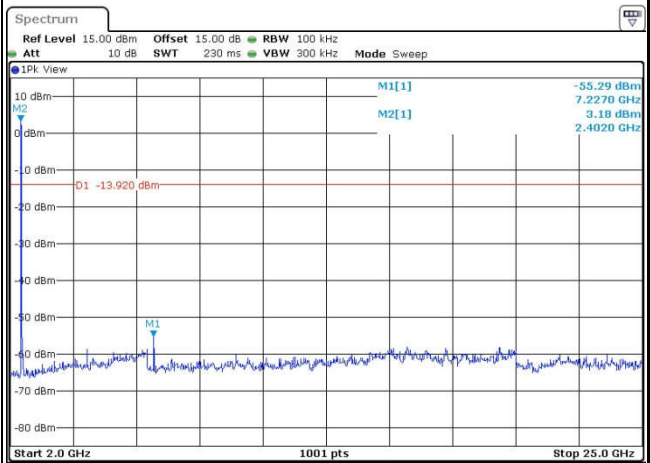


## Spurious Emission 2GHz~25GHz



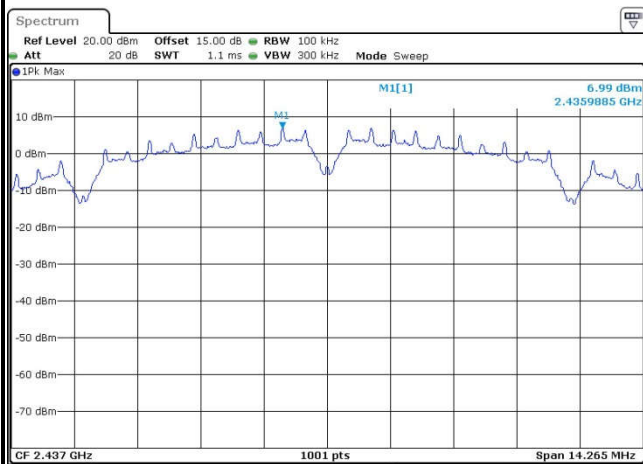
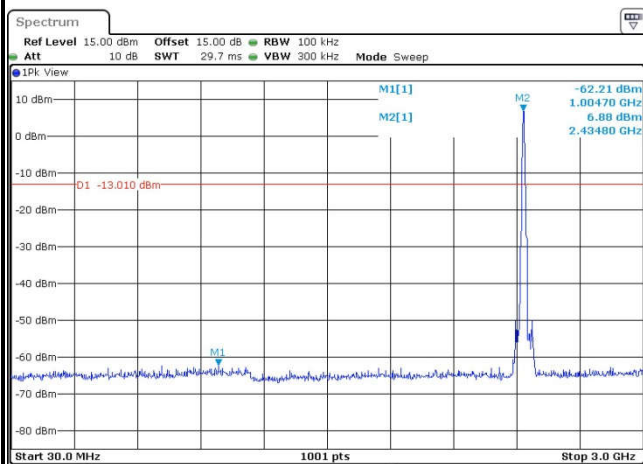
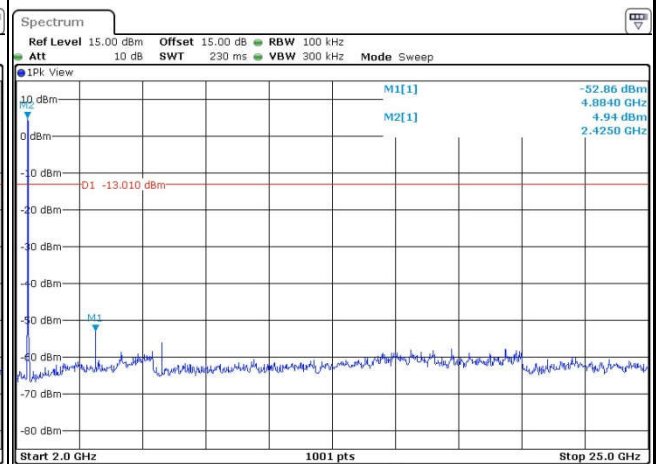
**Number of TX = 1, Ant. 2 (Measured)**

|                       |            |                            |           |
|-----------------------|------------|----------------------------|-----------|
| <b>Number of TX</b>   | 1          | <b>Ant. :</b>              | 2         |
| <b>Test Mode :</b>    | 802.11b    | <b>Temperature :</b>       | 24~26°C   |
| <b>Test Band :</b>    | 2.4GHz Low | <b>Relative Humidity :</b> | 50~53%    |
| <b>Test Channel :</b> | 01         | <b>Test Engineer :</b>     | Sam Zheng |

**WLAN 802.11b Channel 01****100kHz PSD reference Level****Low Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 2         |
| Test Mode :    | 802.11b    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid | Relative Humidity : | 50~53%    |
| Test Channel : | 06         | Test Engineer :     | Sam Zheng |

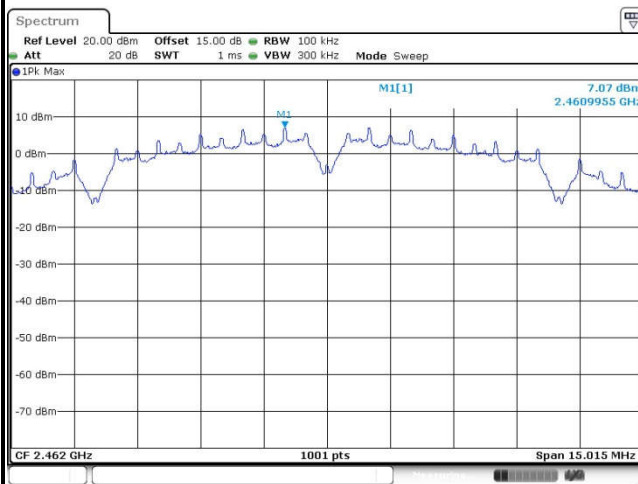
**WLAN 802.11b Channel 06****100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



|                |             |                     |           |
|----------------|-------------|---------------------|-----------|
| Number of TX : | 1           | Ant. :              | 2         |
| Test Mode :    | 802.11b     | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High | Relative Humidity : | 50~53%    |
| Test Channel : | 11          | Test Engineer :     | Sam Zheng |

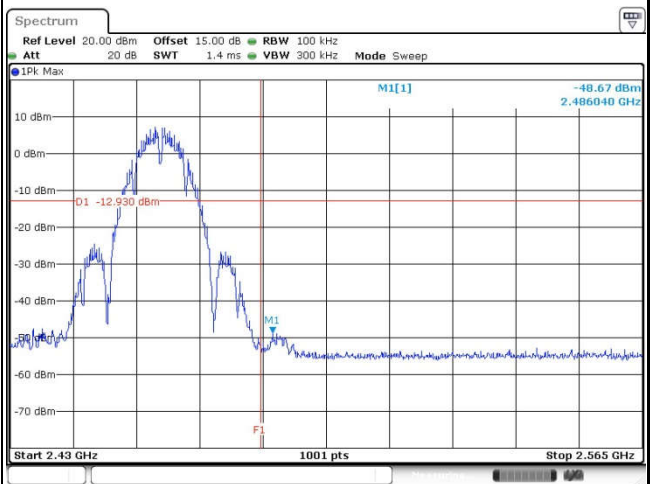
## WLAN 802.11b Channel 11

## 100kHz PSD reference Level



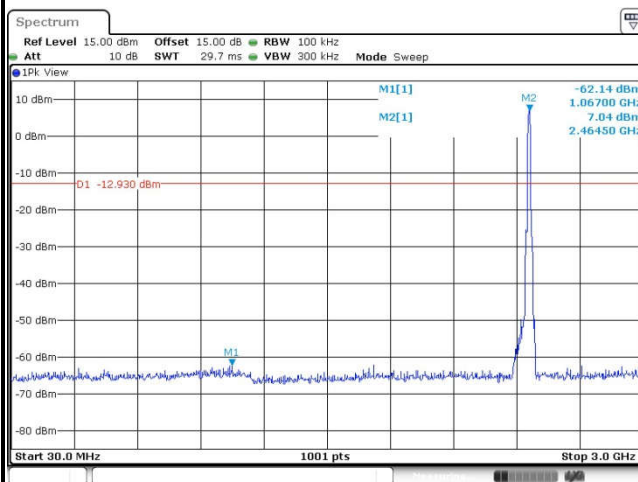
Date: 27.SEP.2017 10:27:19

## High Channel Plot



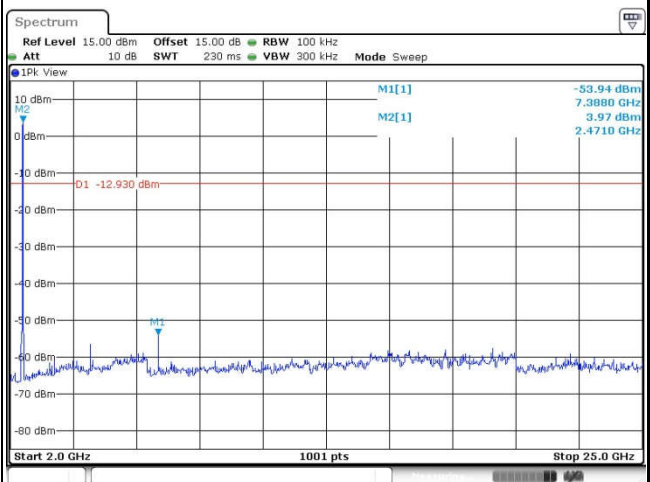
Date: 27.SEP.2017 10:27:55

## Spurious Emission 30MHz~3GHz



Date: 27.SEP.2017 10:32:07

## Spurious Emission 2GHz~25GHz



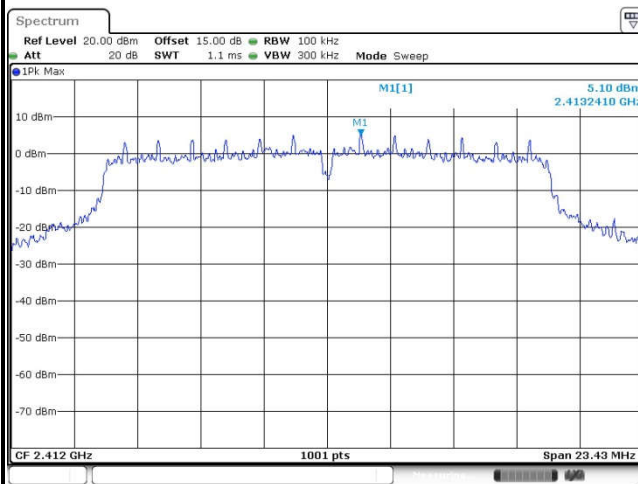
Date: 27.SEP.2017 10:31:07



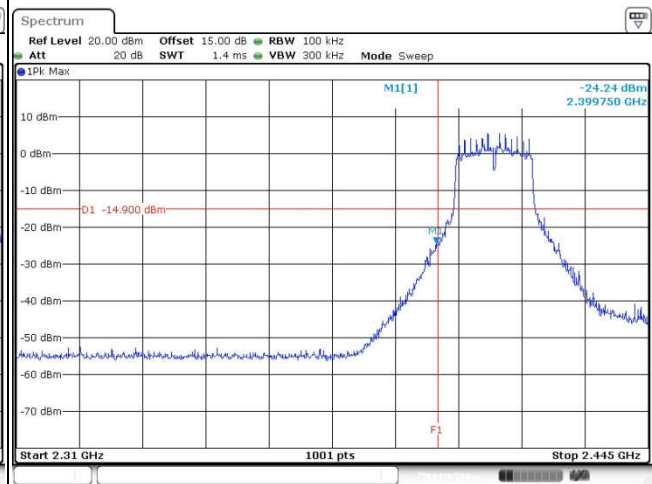
|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 2         |
| Test Mode :    | 802.11g    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 50~53%    |
| Test Channel : | 01         | Test Engineer :     | Sam Zheng |

## WLAN 802.11g Channel 01

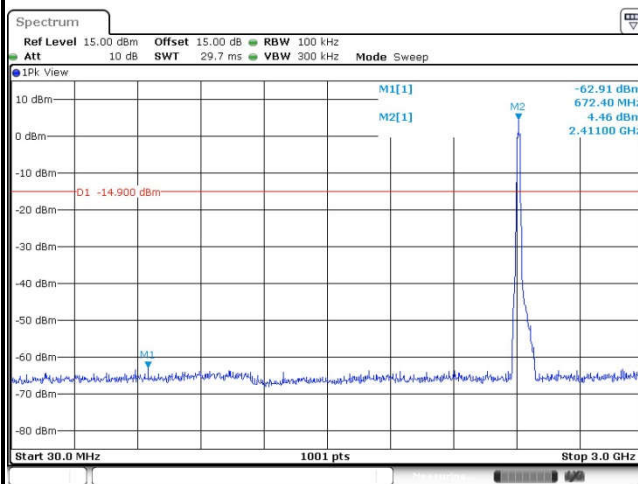
## 100kHz PSD reference Level



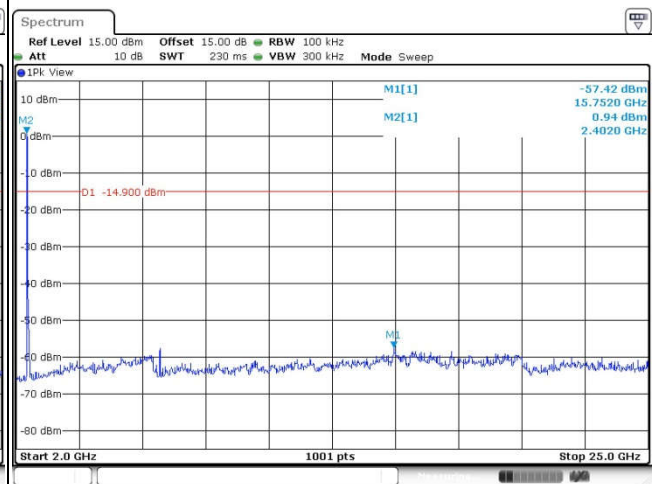
## Low Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

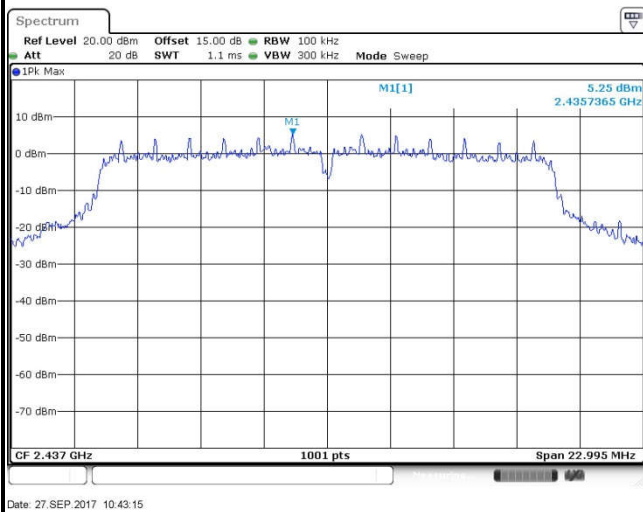




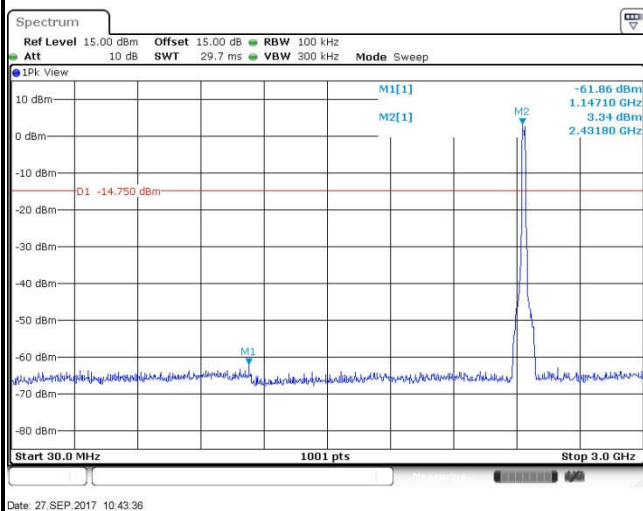
|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX : | 1          | Ant. :              | 2         |
| Test Mode :    | 802.11g    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid | Relative Humidity : | 50~53%    |
| Test Channel : | 06         | Test Engineer :     | Sam Zheng |

## WLAN 802.11g Channel 06

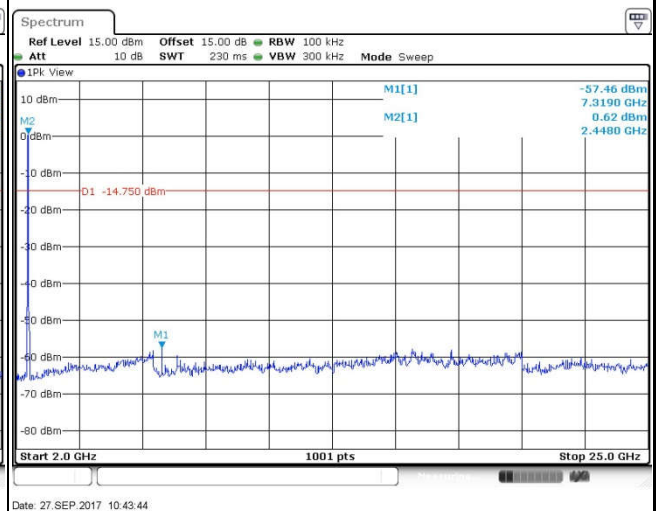
## 100kHz PSD reference Level



## Spurious Emission 30MHz~3GHz

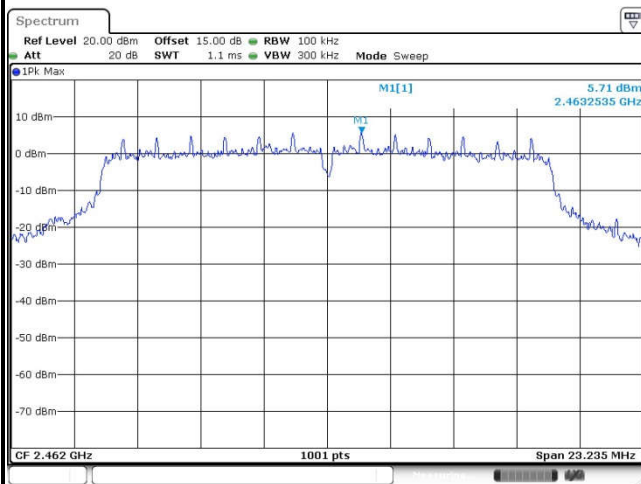
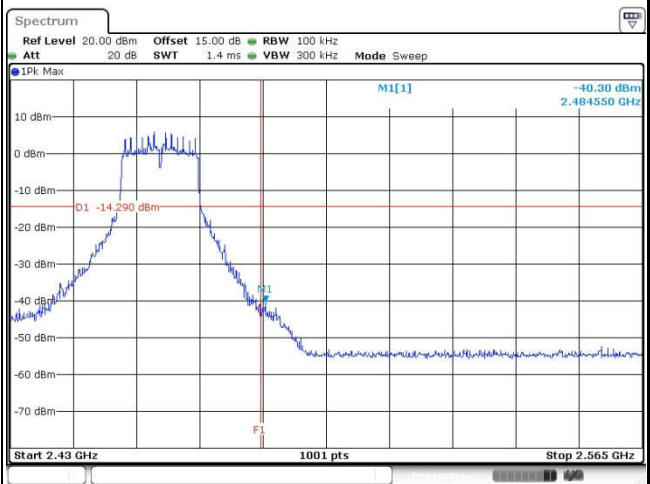
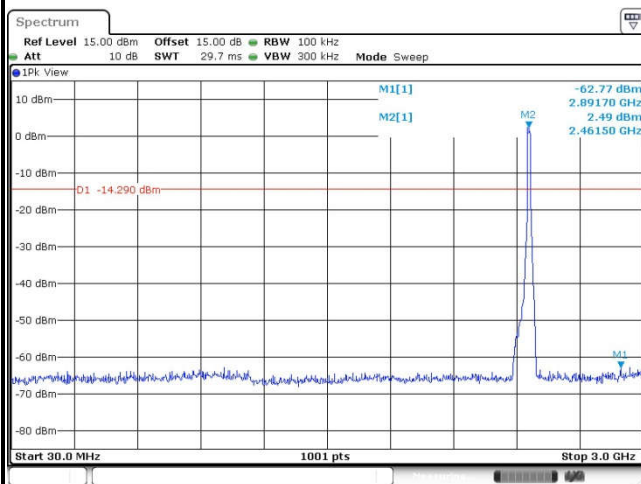
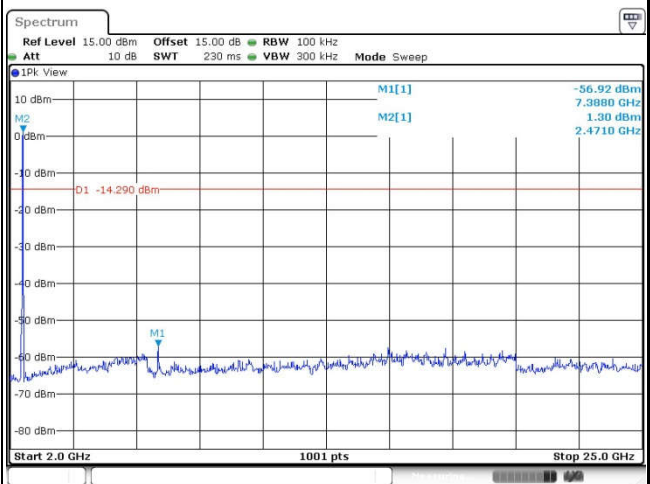


## Spurious Emission 2GHz~25GHz





|                |             |                     |           |
|----------------|-------------|---------------------|-----------|
| Number of TX : | 1           | Ant. :              | 2         |
| Test Mode :    | 802.11g     | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High | Relative Humidity : | 50~53%    |
| Test Channel : | 11          | Test Engineer :     | Sam Zheng |

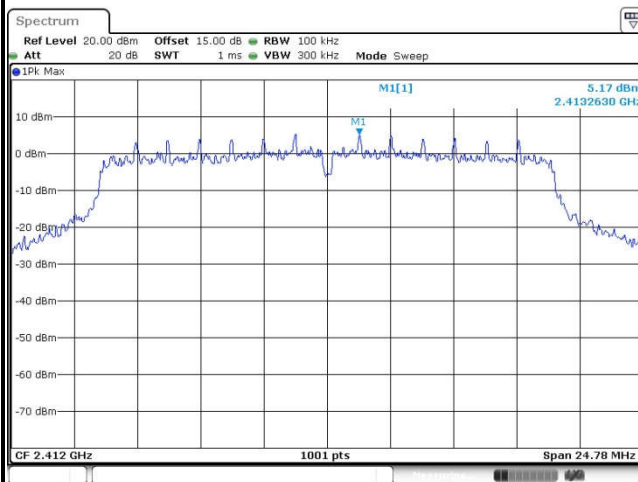
**WLAN 802.11g Channel 11****100kHz PSD reference Level****High Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



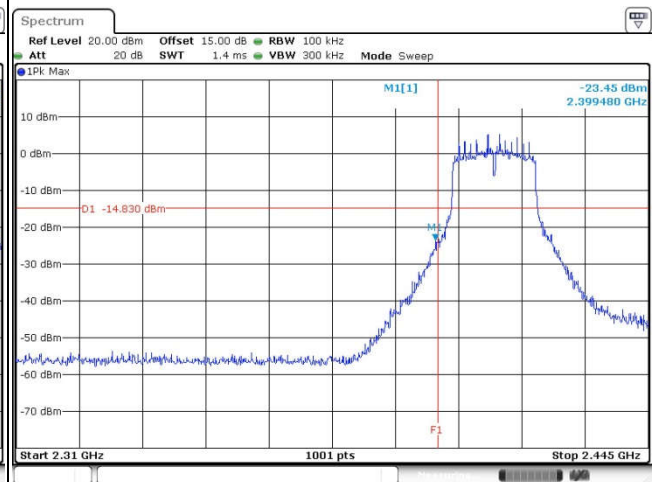
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low   | Relative Humidity : | 50~53%    |
| Test Channel : | 01           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT20 Channel 01

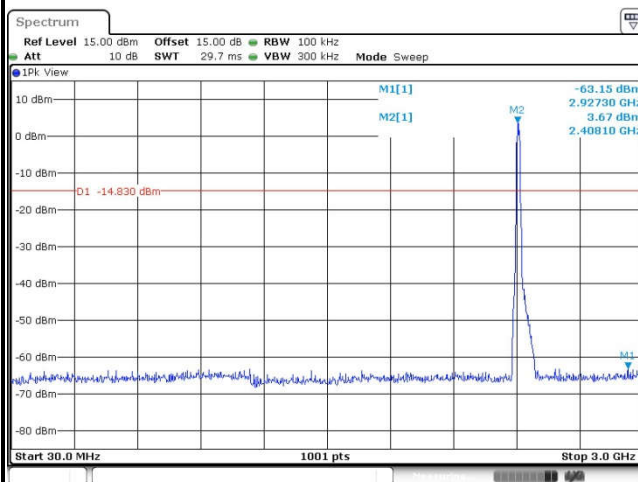
## 100kHz PSD reference Level



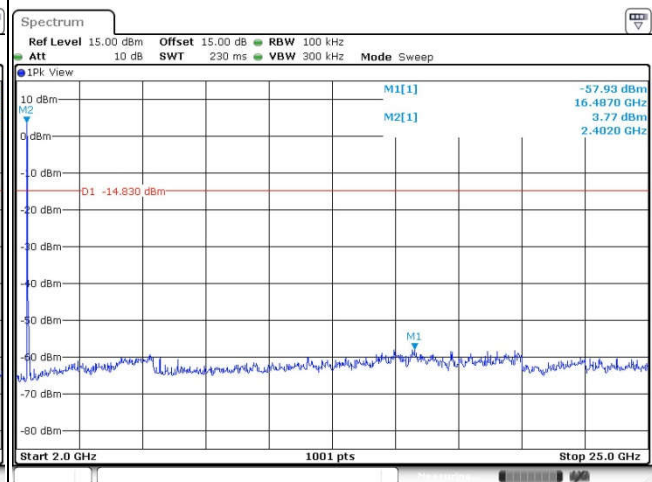
## Low Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

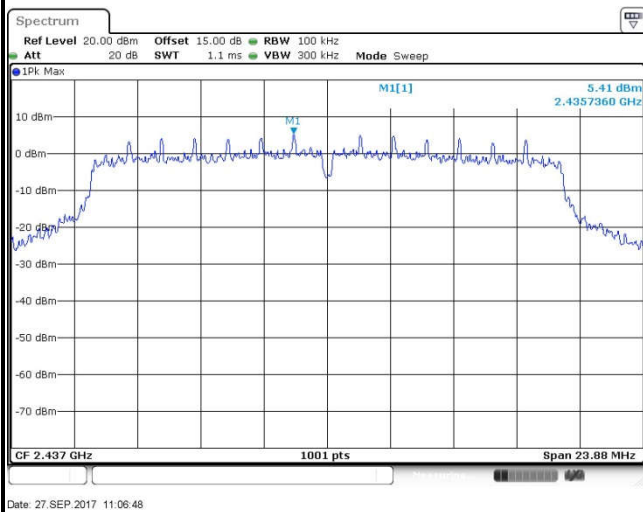




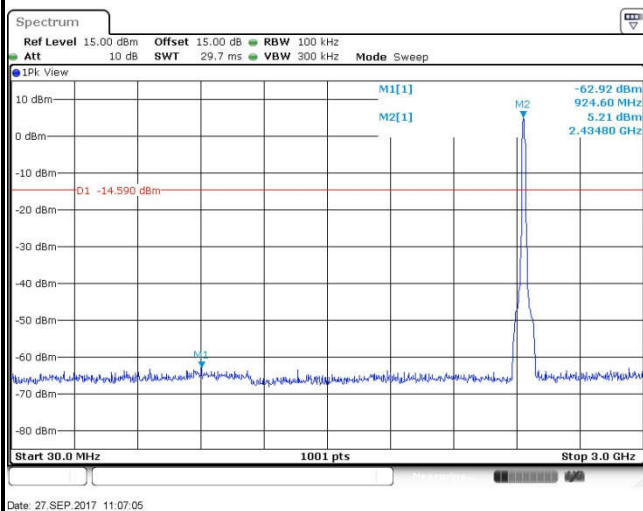
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid   | Relative Humidity : | 50~53%    |
| Test Channel : | 06           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT20 Channel 06

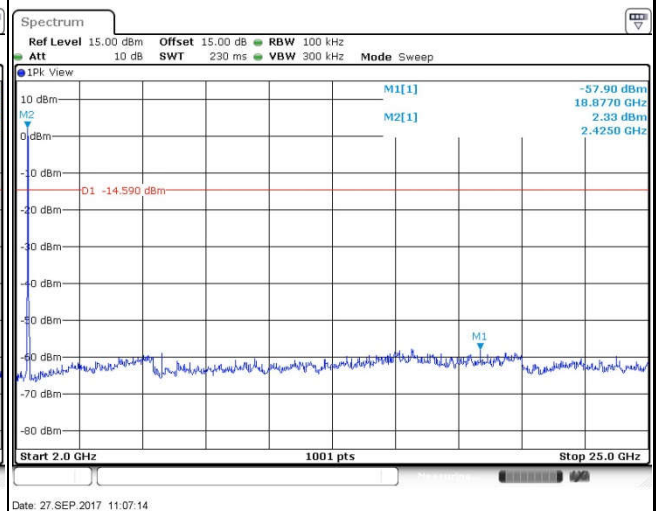
## 100kHz PSD reference Level



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

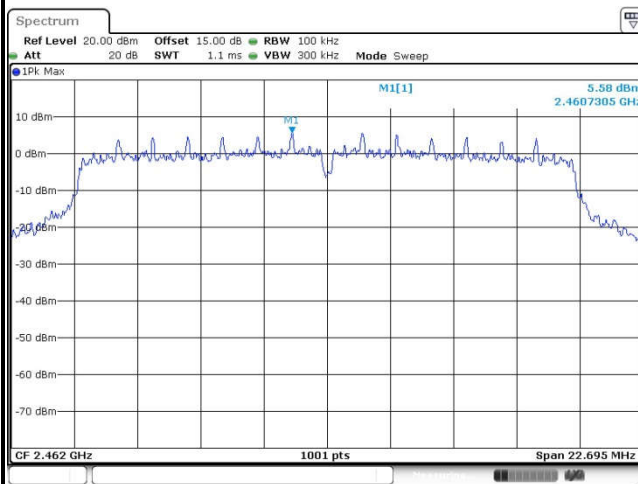




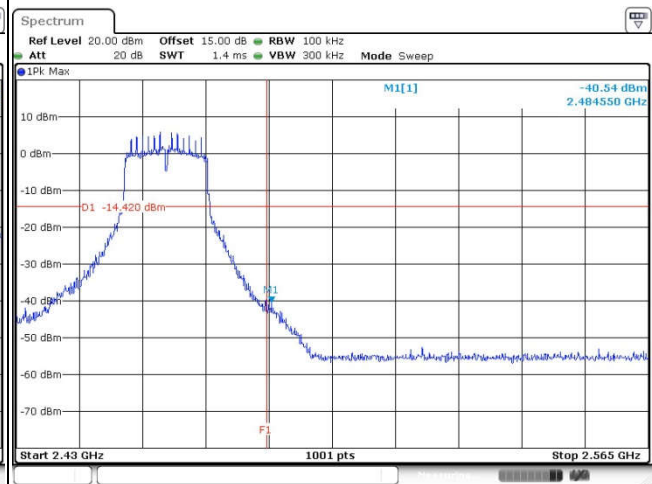
|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT20 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High  | Relative Humidity : | 50~53%    |
| Test Channel : | 11           | Test Engineer :     | Sam Zheng |

## WLAN 802.11n HT20 Channel 11

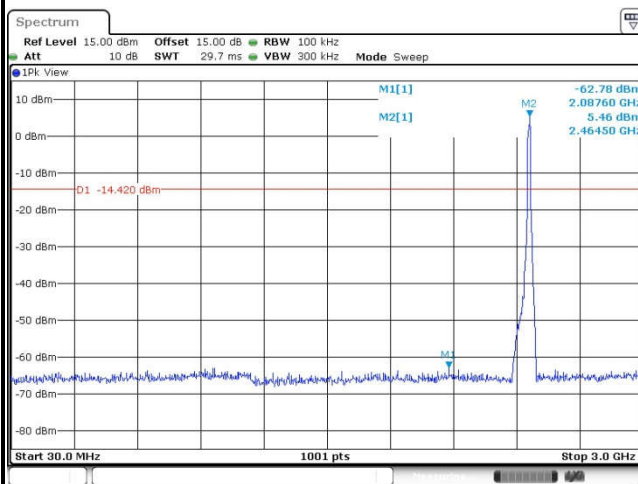
## 100kHz PSD reference Level



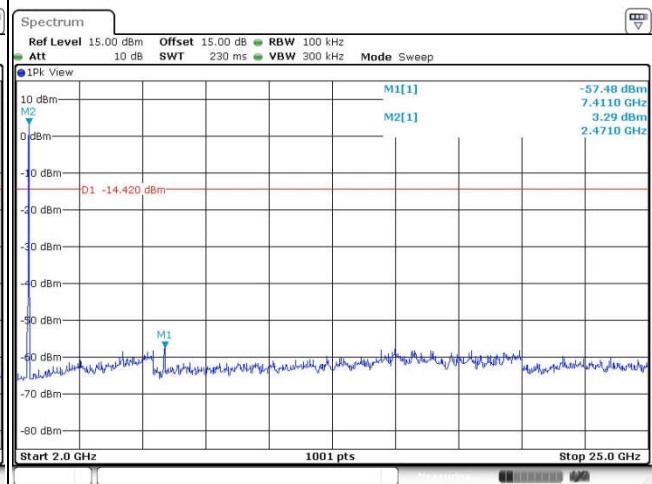
## High Channel Plot



## Spurious Emission 30MHz~3GHz

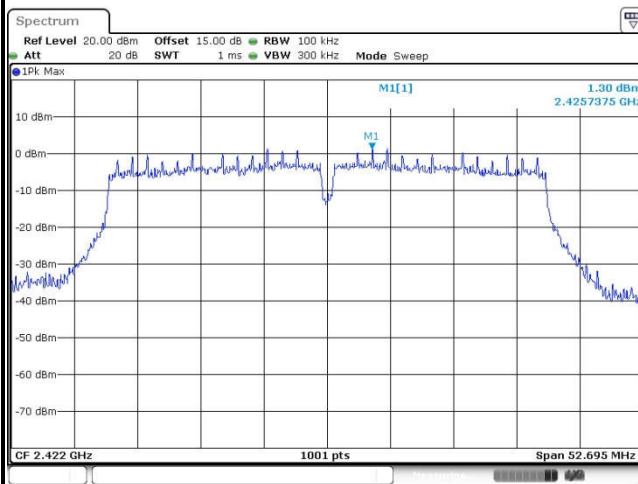
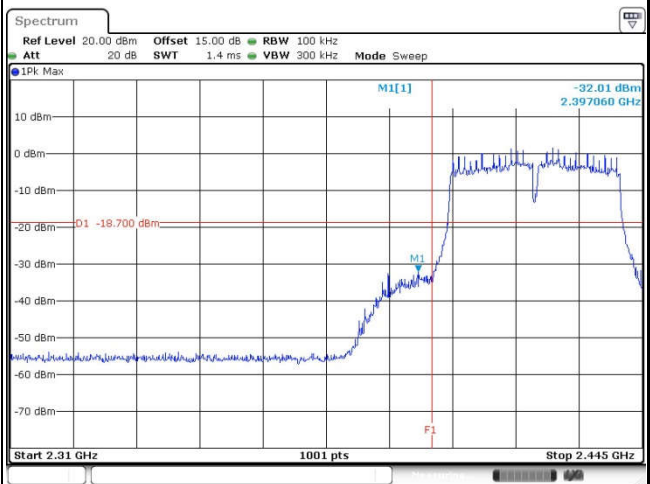
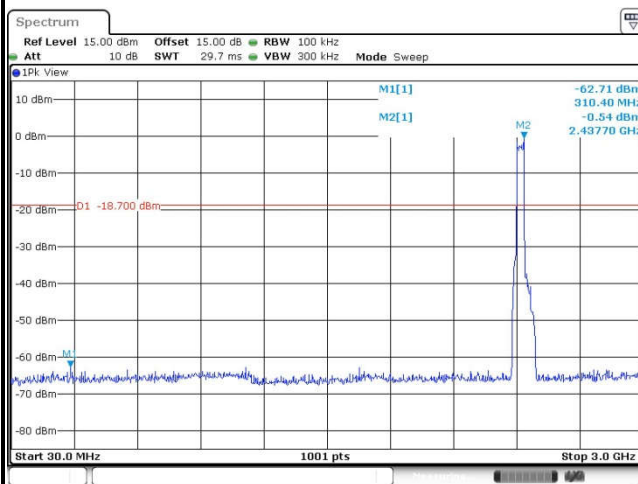
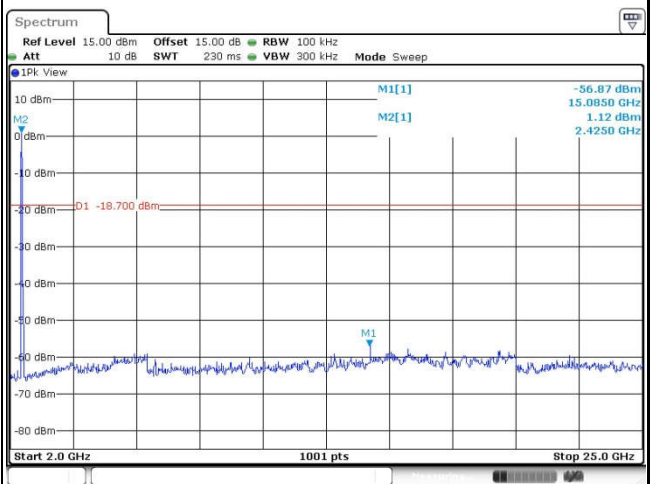


## Spurious Emission 2GHz~25GHz



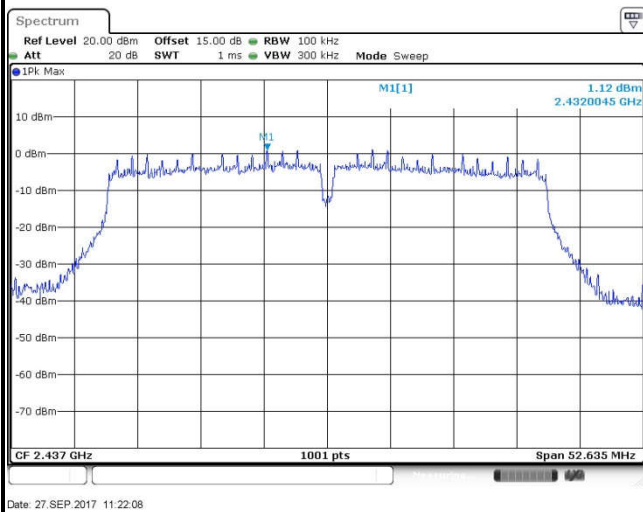
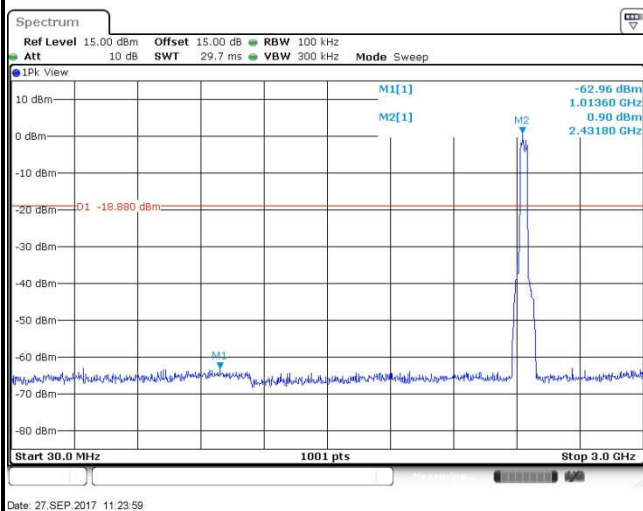
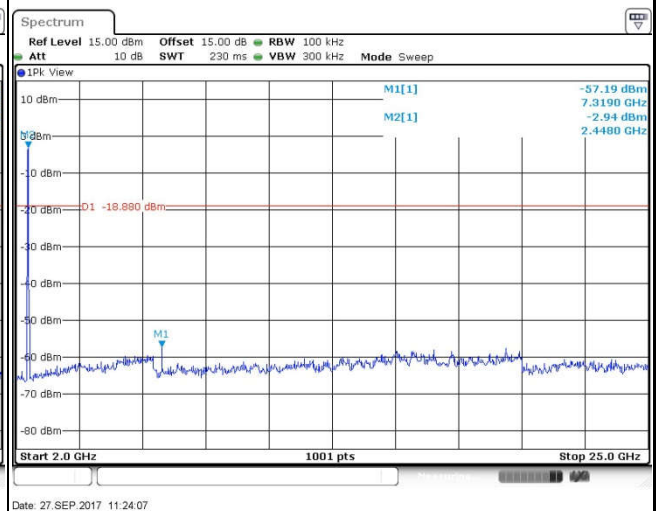


|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low   | Relative Humidity : | 50~53%    |
| Test Channel : | 03           | Test Engineer :     | Sam Zheng |

**WLAN 802.11n HT40 Channel 03****100kHz PSD reference Level****Low Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Mid   | Relative Humidity : | 50~53%    |
| Test Channel : | 06           | Test Engineer :     | Sam Zheng |

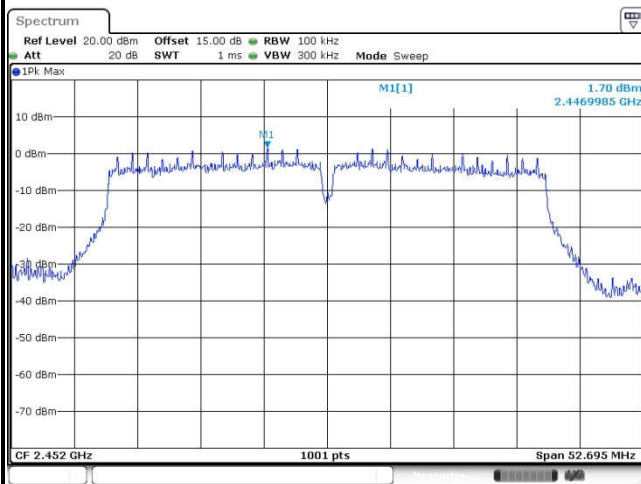
**WLAN 802.11n HT40 Channel 06****100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



|                |              |                     |           |
|----------------|--------------|---------------------|-----------|
| Number of TX : | 1            | Ant. :              | 2         |
| Test Mode :    | 802.11n HT40 | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz High  | Relative Humidity : | 50~53%    |
| Test Channel : | 09           | Test Engineer :     | Sam Zheng |

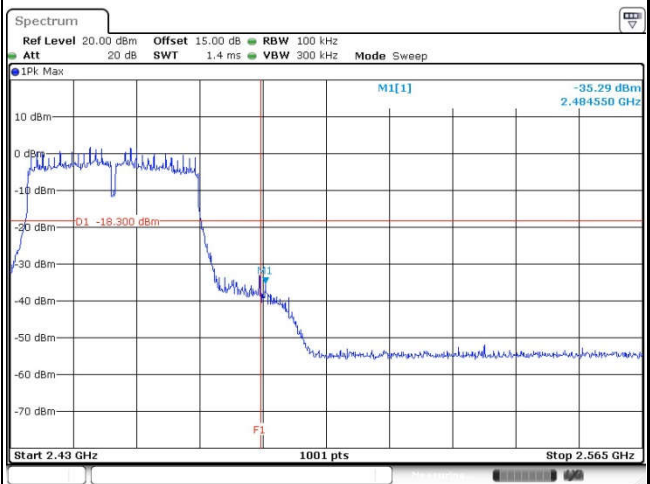
## WLAN 802.11n HT40 Channel 09

## 100kHz PSD reference Level



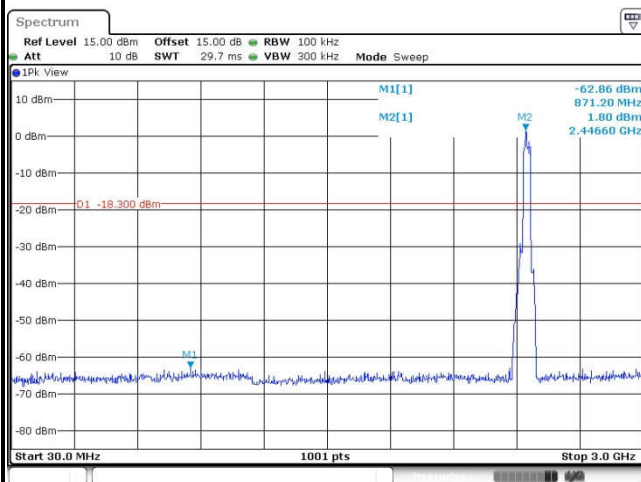
Date: 27.SEP.2017 11:27:00

## High Channel Plot



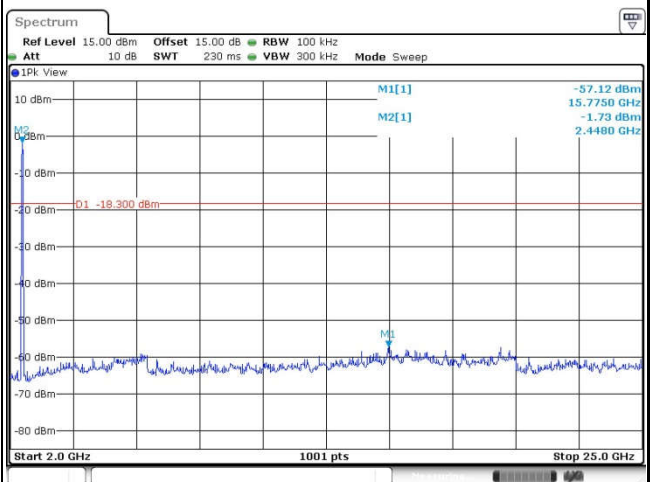
Date: 27.SEP.2017 11:27:49

## Spurious Emission 30MHz~3GHz



Date: 27.SEP.2017 11:32:20

## Spurious Emission 2GHz~25GHz



Date: 27.SEP.2017 11:32:28

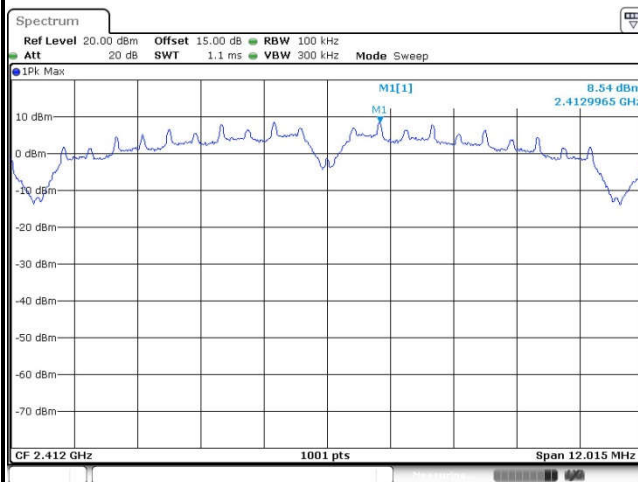


Number of TX = 2, Ant. 1 (Measured)

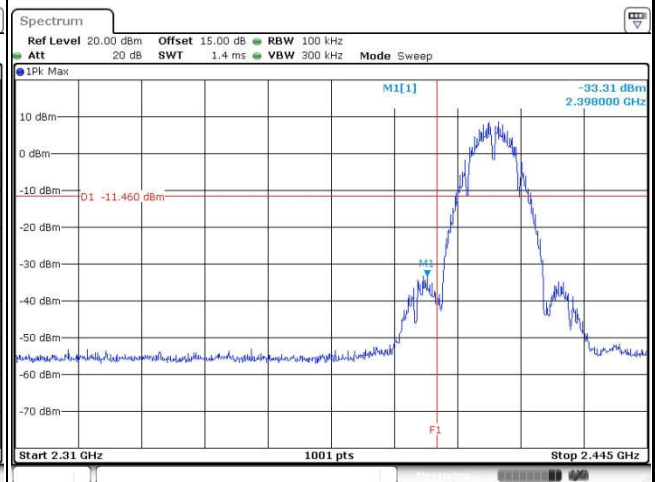
|                |            |                     |           |
|----------------|------------|---------------------|-----------|
| Number of TX   | 2          | Ant. :              | 1         |
| Test Mode :    | 802.11b    | Temperature :       | 24~26°C   |
| Test Band :    | 2.4GHz Low | Relative Humidity : | 50~53%    |
| Test Channel : | 01         | Test Engineer :     | Sam Zheng |

## WLAN 802.11b Channel 01

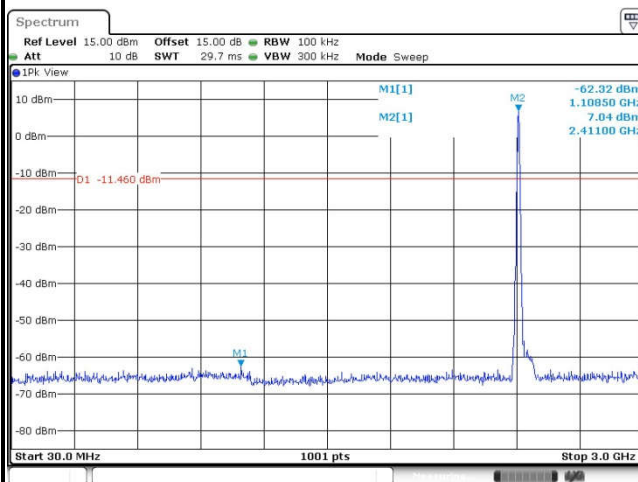
## 100kHz PSD reference Level



## Low Channel Plot



## Spurious Emission 30MHz~3GHz



## Spurious Emission 2GHz~25GHz

