



# FCC RF Test Report

**APPLICANT** : Chilton Fern Limited Liability Company  
**EQUIPMENT** : Digital Media Receiver  
**MODEL NAME** : S04WQR  
**FCC ID** : 2ABDW-1229  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The testing was completed on Sep. 04, 2015. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant ..... 5

    1.2 Product Feature of Equipment Under Test..... 5

    1.3 Product Specification subjective to this standard ..... 6

    1.4 Modification of EUT ..... 6

    1.5 Testing Location ..... 7

    1.6 Applicable Standards..... 7

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 8**

    2.1 Carrier Frequency and Channel ..... 8

    2.2 Pre-Scanned RF Power..... 9

    2.3 Test Mode..... 10

    2.4 Connection Diagram of Test System..... 11

    2.5 Support Unit used in test configuration and system ..... 12

    2.6 EUT Operation Test Setup ..... 12

    2.7 Measurement Results Explanation Example..... 12

**3 TEST RESULT ..... 13**

    3.1 6dB Bandwidth Measurement ..... 13

    3.2 Peak Output Power Measurement ..... 15

    3.3 Power Spectral Density Measurement ..... 17

    3.4 Conducted Band Edges and Spurious Emission Measurement ..... 19

    3.5 Radiated Band Edges and Spurious Emission Measurement ..... 35

    3.6 AC Conducted Emission Measurement..... 42

    3.7 Antenna Requirements ..... 48

**4 LIST OF MEASURING EQUIPMENT ..... 50**

**5 UNCERTAINTY OF EVALUATION ..... 51**

**APPENDIX A. CONDUCTED TEST RESULTS**

**APPENDIX B. RADIATED TEST RESULTS**

**APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS**



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR542541B	Rev. 01	Initial issue of report	Sep. 22, 2015
FR542541B	Rev. 02	Update report of removing the beamforming function at page 49	Oct. 14, 2015



### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-247 5.2(1)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	RSS-247 A5.4(4)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	RSS-247 5.2(2)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	RSS-247 5.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-247 5.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.56 dB at 2390.000 MHz
3.6	15.207	RSS-GEN 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 6.40 dB at 0.574 MHz
3.7	15.203 & 15.247(b)	N/A	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

**Chilton Fern Limited Liability Company**

80 S.W 8th Street Miami, FL 33130

## 1.2 Product Feature of Equipment Under Test

Product Feature	
<b>Equipment</b>	Digital Media Receiver
<b>Model Name</b>	S04WQR
<b>FCC ID</b>	2ABDW-1229
<b>EUT supports Radios application</b>	WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 Bluetooth v3.0 EDR

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



### 1.3 Product Specification subjective to this standard

Product Specification subjective to this standard																
<b>Tx/Rx Channel Frequency Range</b>	802.11b/g/n : 2412 MHz ~ 2462 MHz															
<b>Maximum (Peak) Output Power to antenna</b>	<b>&lt;Ant 1&gt;</b> 802.11b : 20.14 dBm (0.1033 W) 802.11g : 21.84 dBm (0.1528 W) 802.11n HT20 : 22.25 dBm (0.1679 W) <b>MIMO &lt;Ant. 1+2&gt;</b> 802.11n HT20 : 25.24 dBm (0.3342 W)															
<b>Antenna Type</b>	<b>&lt;Ant 1&gt;</b> 802.11b/g/n : PIFA Antenna type with gain 0.50 dBi <b>&lt;Ant 2&gt;</b> 802.11b/g/n : PIFA Antenna type with gain 2.80 dBi															
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)															
<b>Antenna Function for Transmitter</b>	<table border="1"> <thead> <tr> <th></th> <th>Ant. 1</th> <th>Ant. 2</th> </tr> </thead> <tbody> <tr> <td>802.11 b</td> <td>V</td> <td>-</td> </tr> <tr> <td>802.11 g</td> <td>V</td> <td>-</td> </tr> <tr> <td>802.11 n SISO</td> <td>V</td> <td>-</td> </tr> <tr> <td>802.11 n MIMO</td> <td>V</td> <td>V</td> </tr> </tbody> </table>		Ant. 1	Ant. 2	802.11 b	V	-	802.11 g	V	-	802.11 n SISO	V	-	802.11 n MIMO	V	V
	Ant. 1	Ant. 2														
802.11 b	V	-														
802.11 g	V	-														
802.11 n SISO	V	-														
802.11 n MIMO	V	V														

### 1.4 Modification of EUT

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



### 1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

<b>Test Site</b>	SPORTON INTERNATIONAL INC.		
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		
	TH05-HY	CO05-HY	03CH07-HY

**Note:** The test site complies with ANSI C63.4 2009 requirement.

### 1.6 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 v03r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2009

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table for frequency above 1GHz as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. 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 (X plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

### 2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (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 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

<Ant. 1>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	20.14	20.12	20.10	20.09

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.84	21.82	21.80	21.78	21.77	21.75	21.74	21.72

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.25	22.22	22.20	22.19	22.17	22.16	22.14	22.13

MIMO <Ant. 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	25.24	25.21	25.20	25.19	25.18	25.18	25.17	25.15

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.



### 2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

#### Single Antenna

<2.4GHz>

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

#### MIMO Antenna

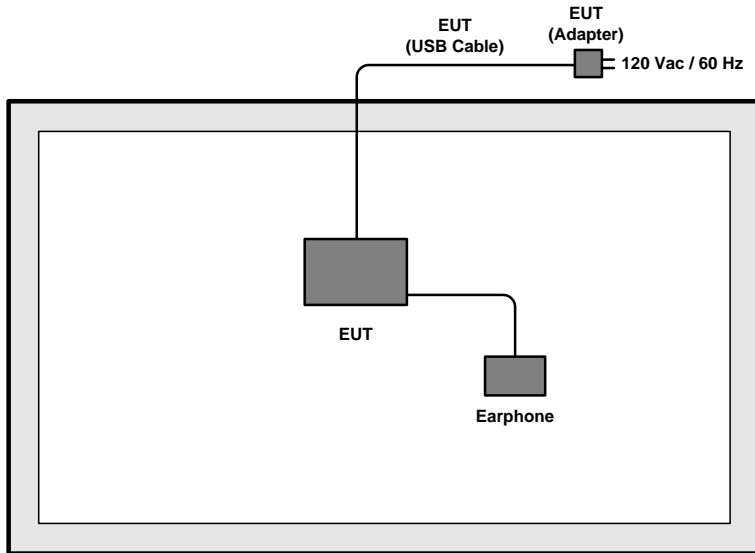
<2.4GHz>

Modulation	Data Rate
802.11n HT20	MCS0

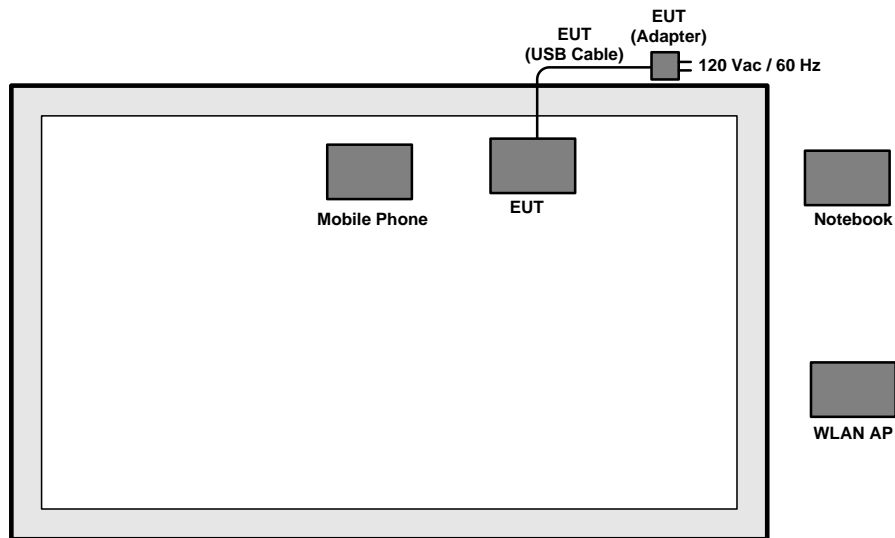
Test Cases	
AC Conducted Emission	Mode 1 : WLAN (2.4GHz) Link + Bluetooth Link

## 2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





## 2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	N/A	N/A	N/A	N/A	N/A
2.	Notebook	N/A	N/A	N/A	N/A	N/A
3.	Mobile Phone	N/A	N/A	N/A	N/A	N/A
4.	Earphone	N/A	N/A	N/A	N/A	N/A

## 2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

## 2.7 Measurement Results Explanation Example

**For all conducted test items:**

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

Example:

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

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB 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 v03r03.
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. Measure and record the results in the test report.

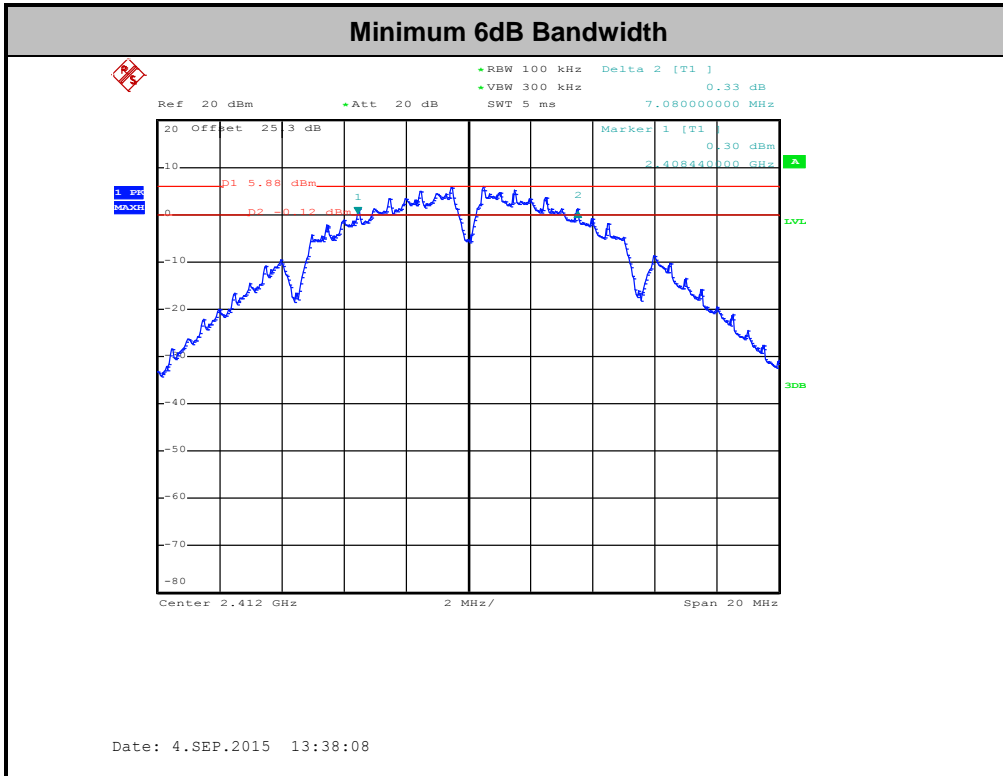
##### 3.1.4 Test Setup





### 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A of this test report.



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.

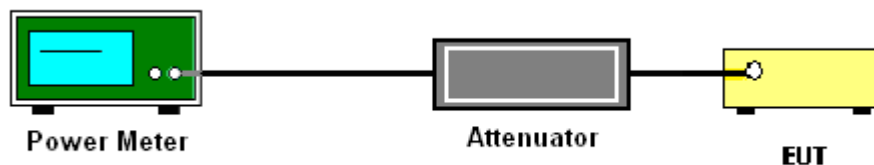
### 3.2.2 Measuring Instruments

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 v03r03 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 of this test report.

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

Please refer to Appendix A of this test report.





### 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 v03r03
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.

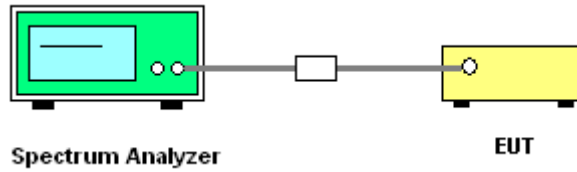
If measurements performed using method (2) plus  $10 \log(N)$  exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

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.

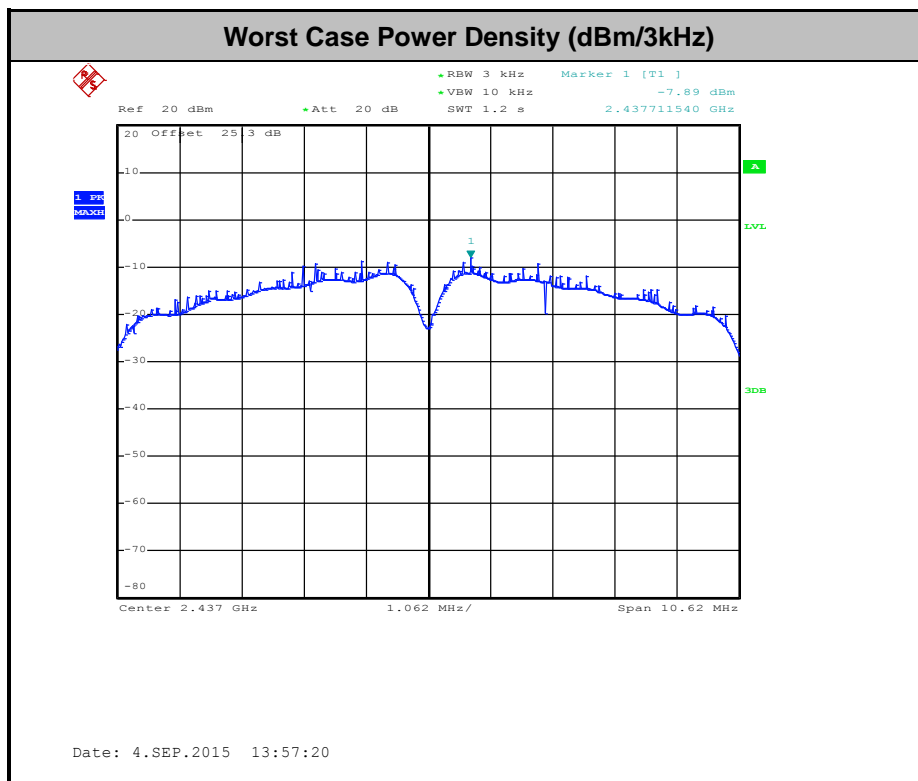
Method (2): Measure and add  $10 \log(N)$  dB, where N is the number of outputs. (N=2)

### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.



## 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 and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

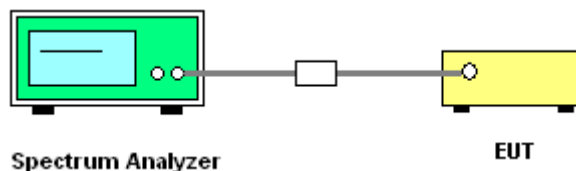
### 3.4.2 Measuring Instruments

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 v03r03.
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 per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 3.4.4 Test Setup

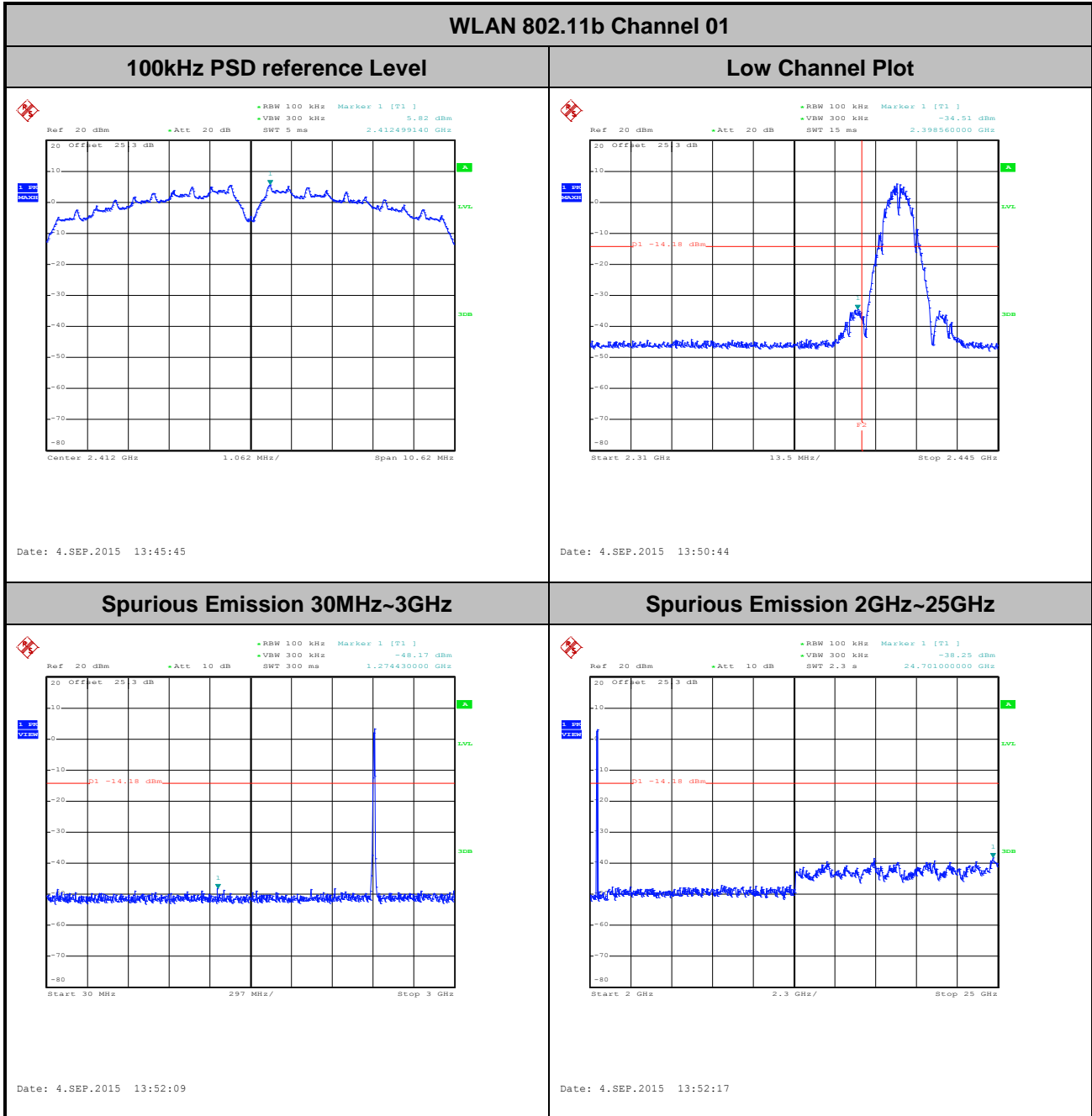




### 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

Number of TX	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Tommy Lee

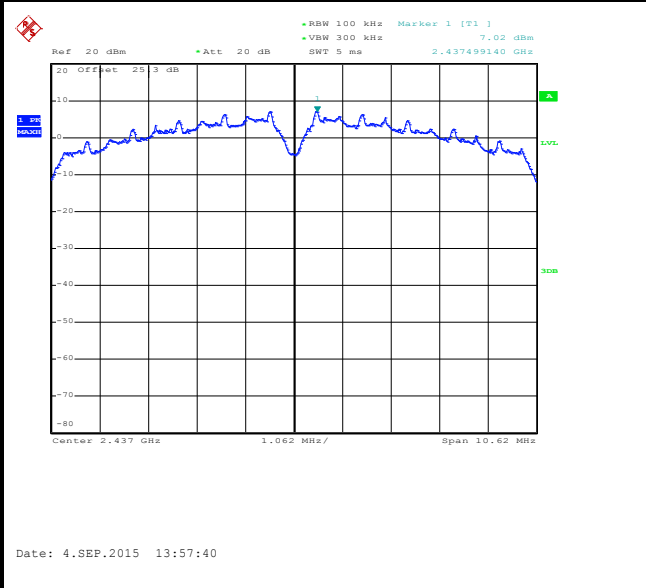




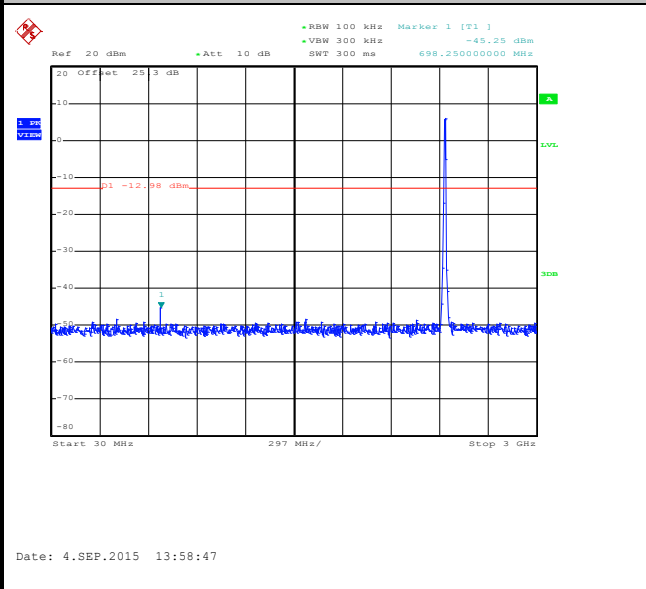
Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Tommy Lee

WLAN 802.11b Channel 06

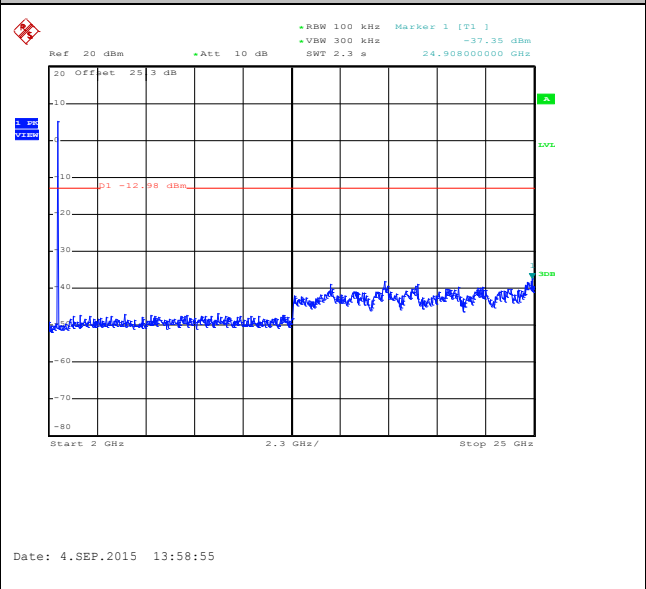
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

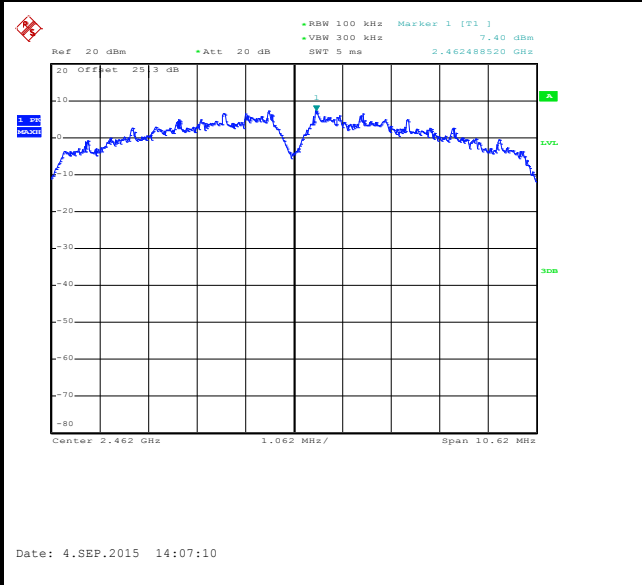




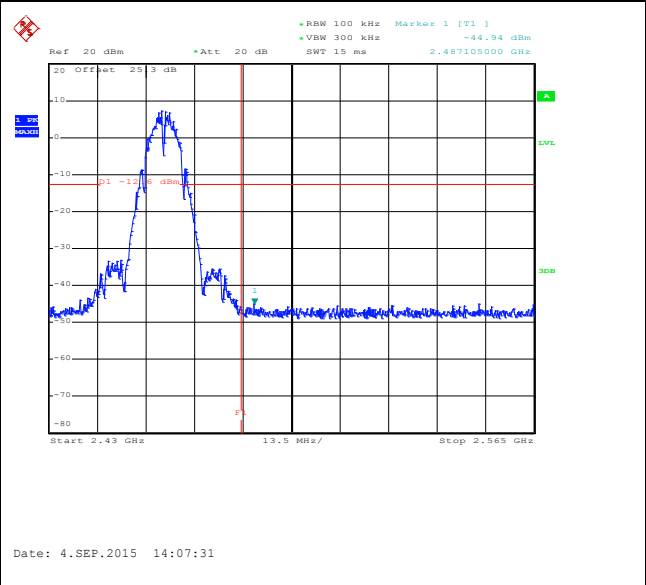
Number of TX :	1	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Tommy Lee

WLAN 802.11b Channel 11

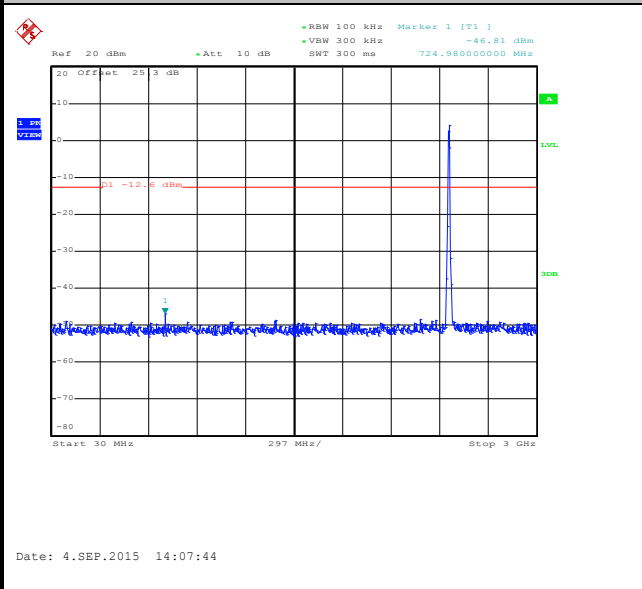
100kHz PSD reference Level



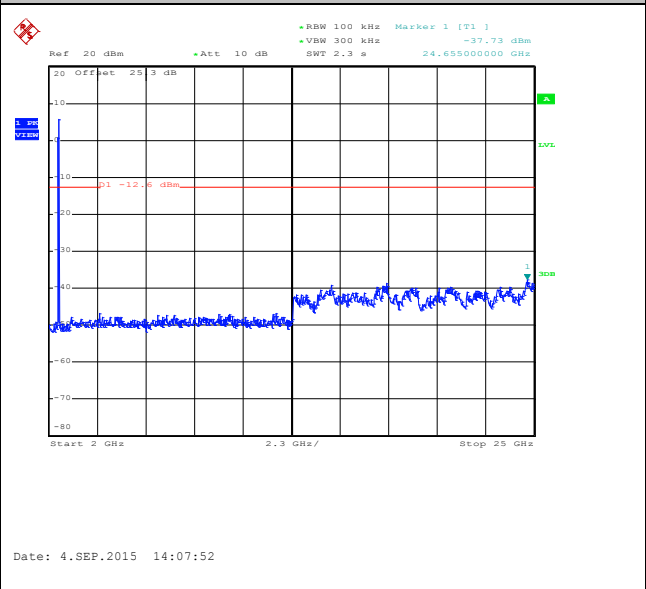
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz



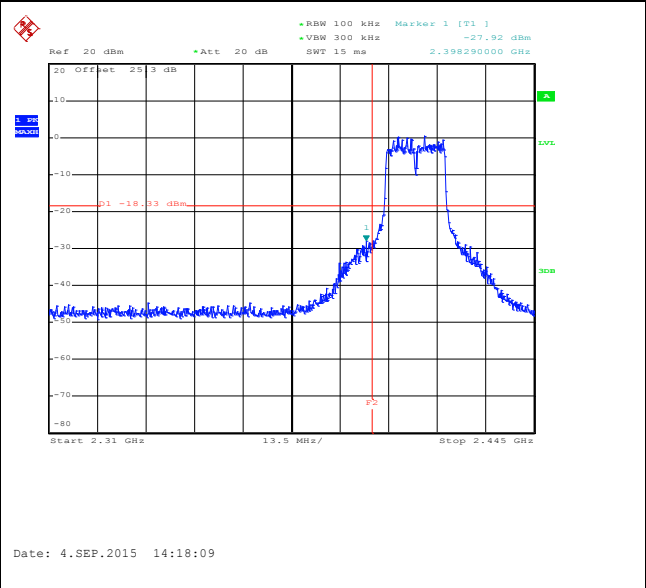
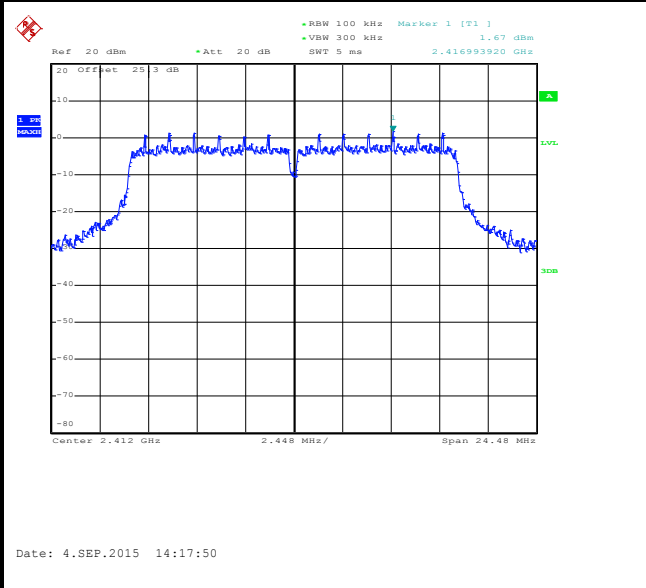


Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Tommy Lee

WLAN 802.11g Channel 01

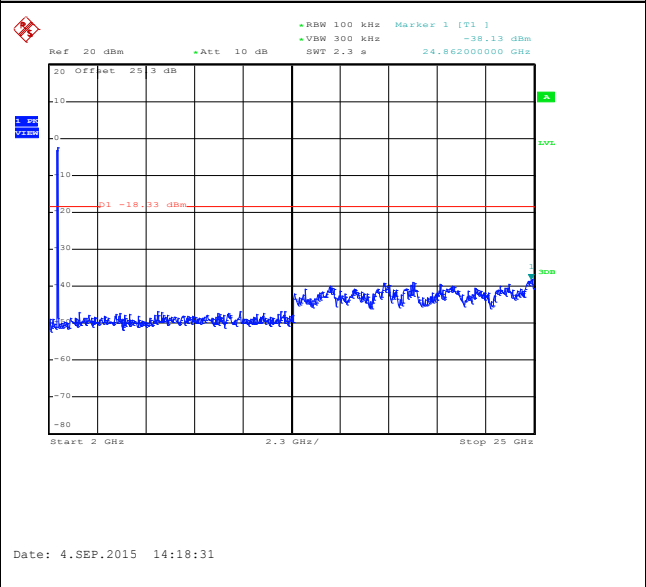
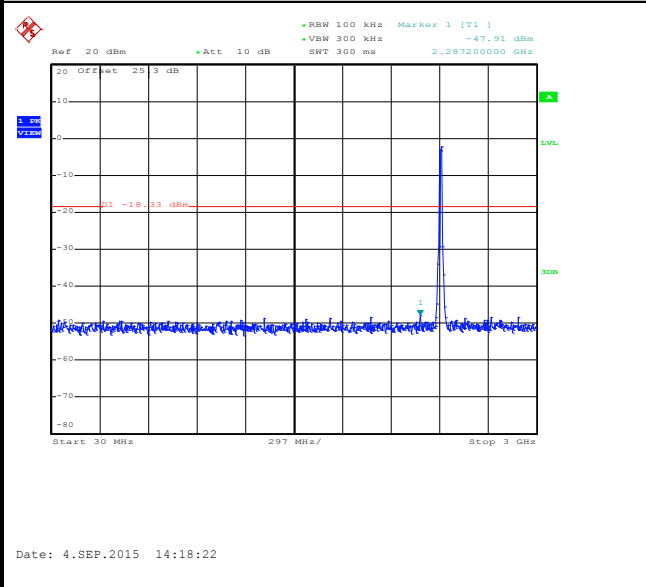
100kHz PSD reference Level

Low Channel Plot



Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz

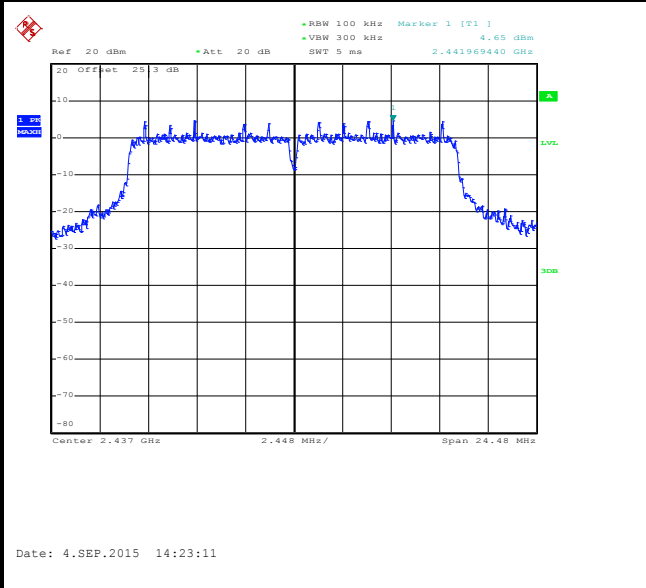




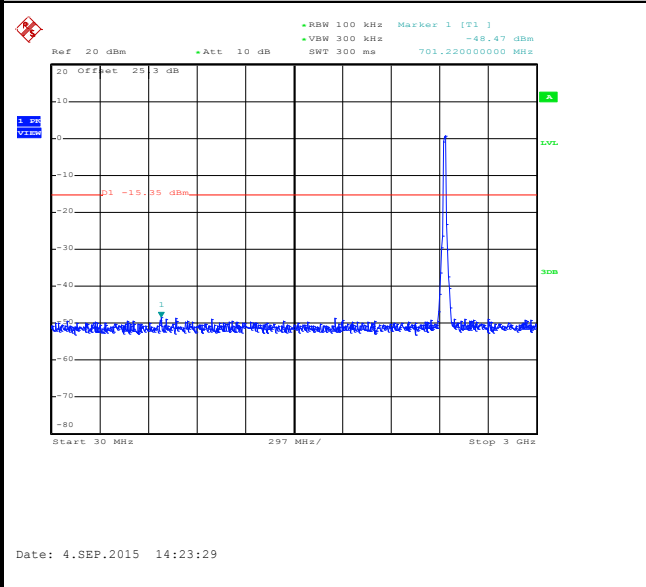
Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Tommy Lee

WLAN 802.11g Channel 06

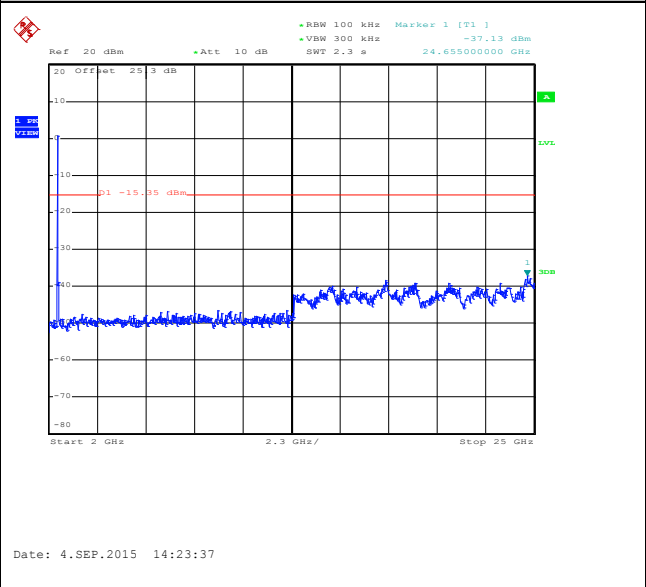
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz



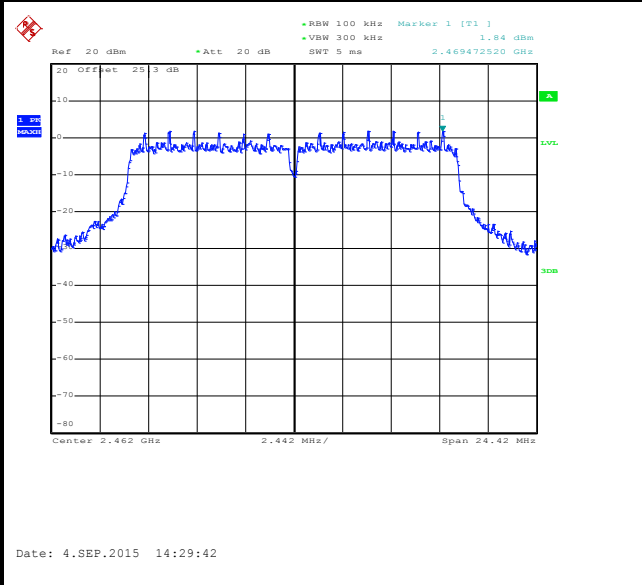




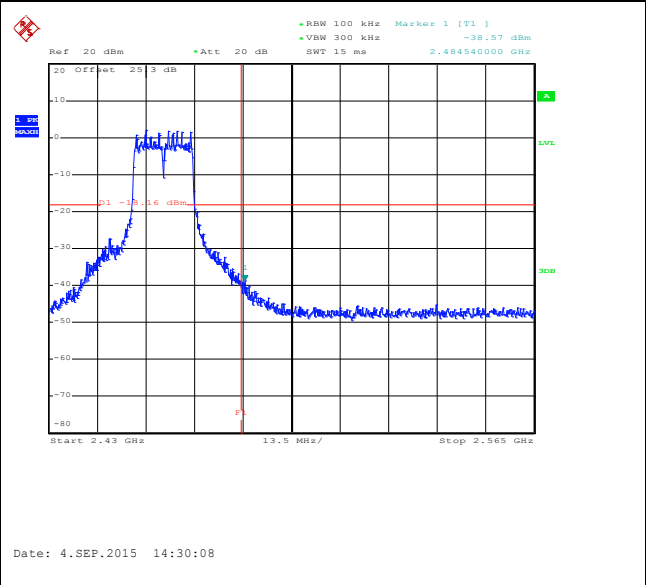
Number of TX :	1	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Tommy Lee

WLAN 802.11g Channel 11

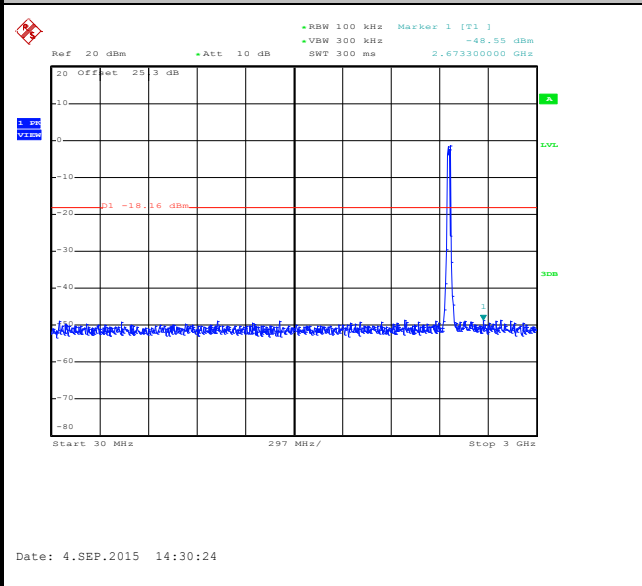
100kHz PSD reference Level



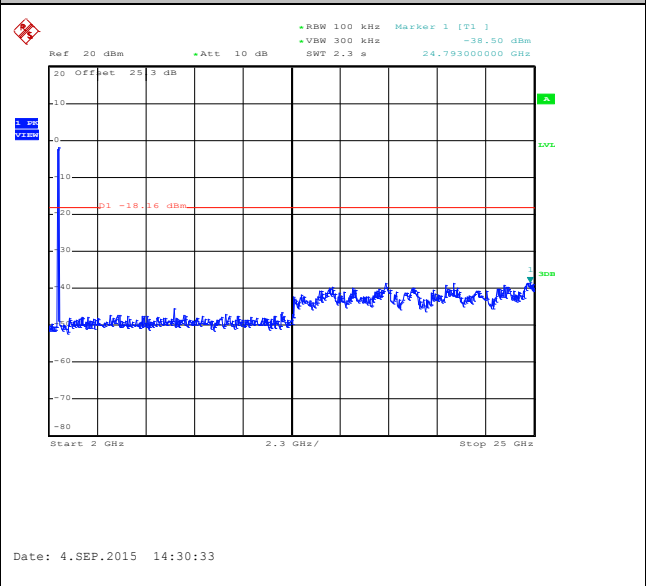
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz



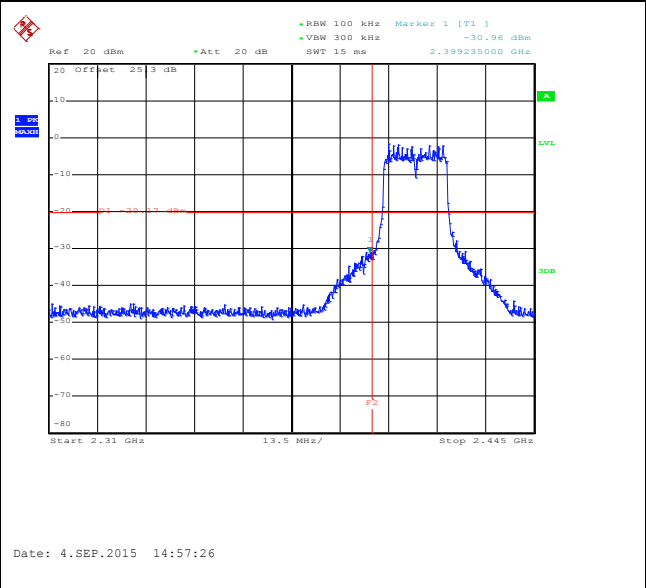
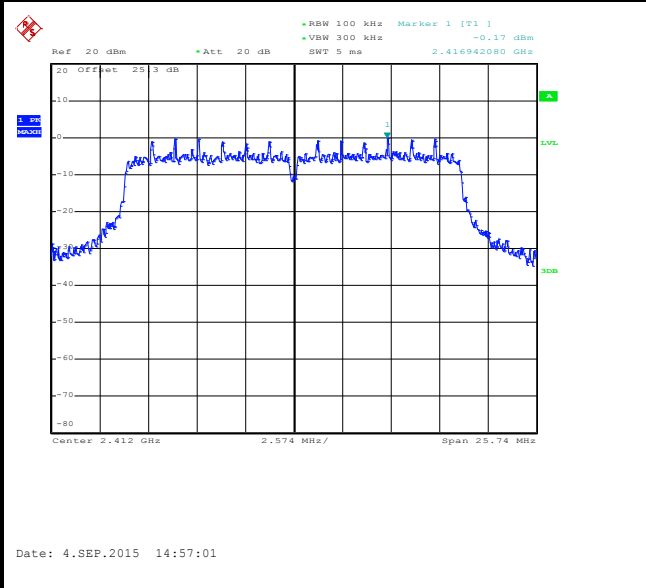


Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 01

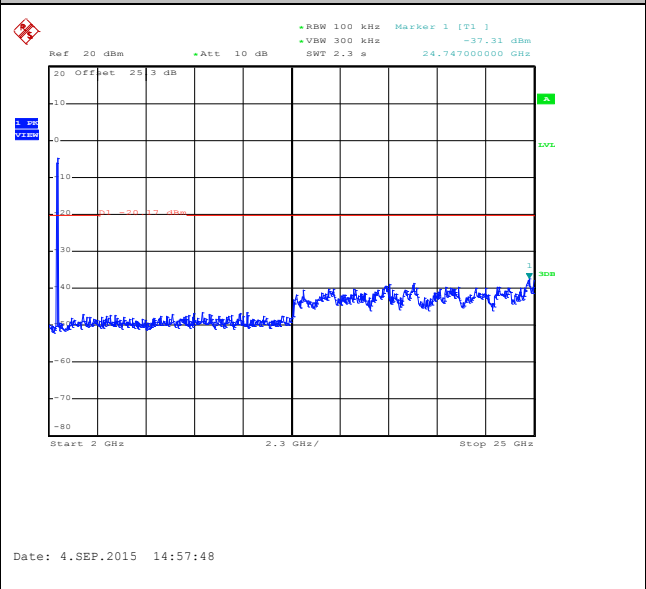
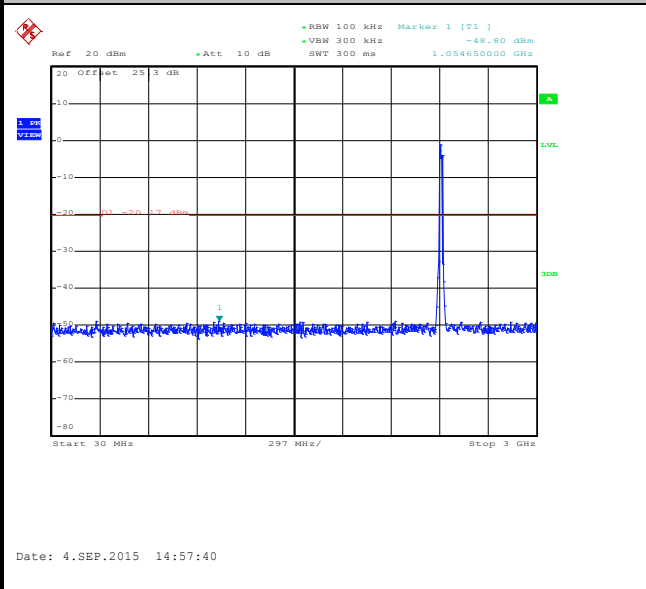
100kHz PSD reference Level

Low Channel Plot



Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz

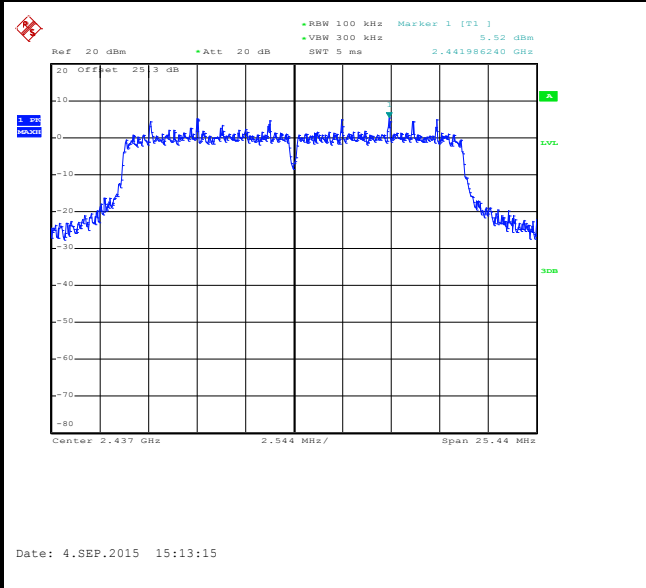




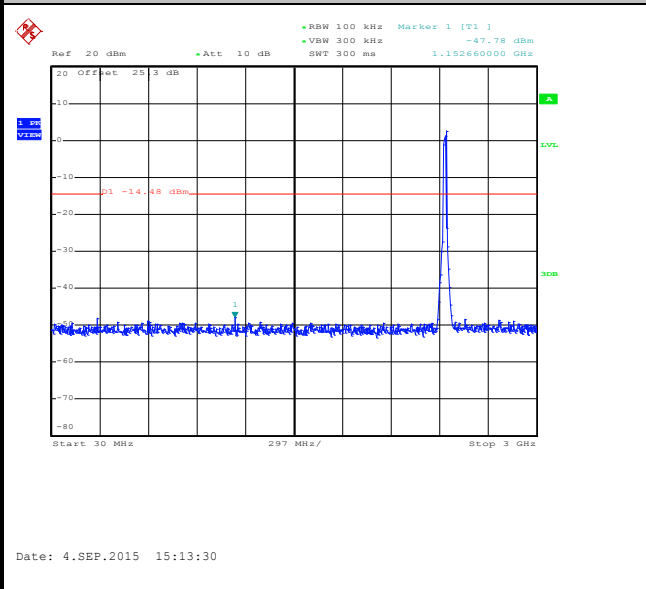
Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 06

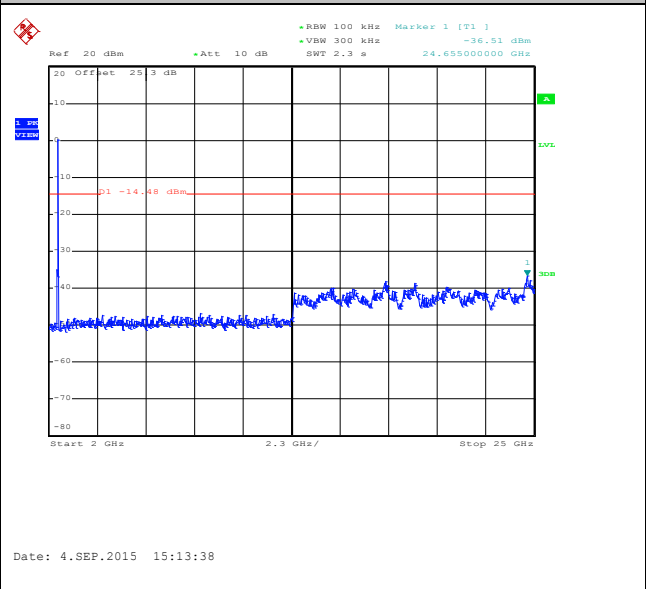
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz



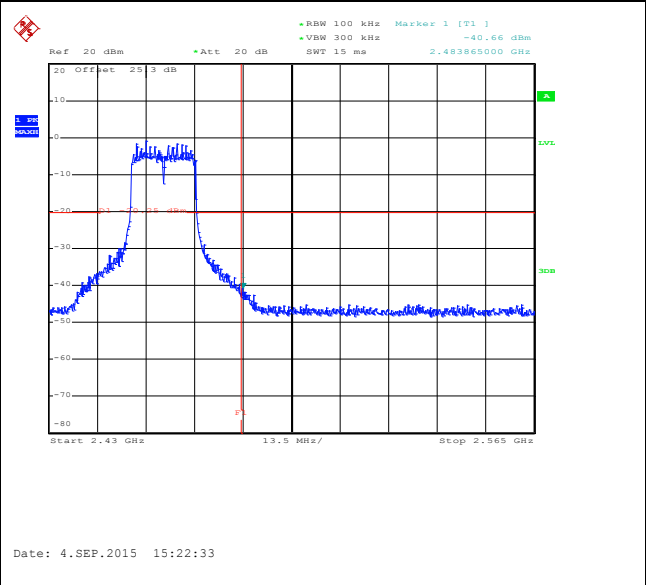
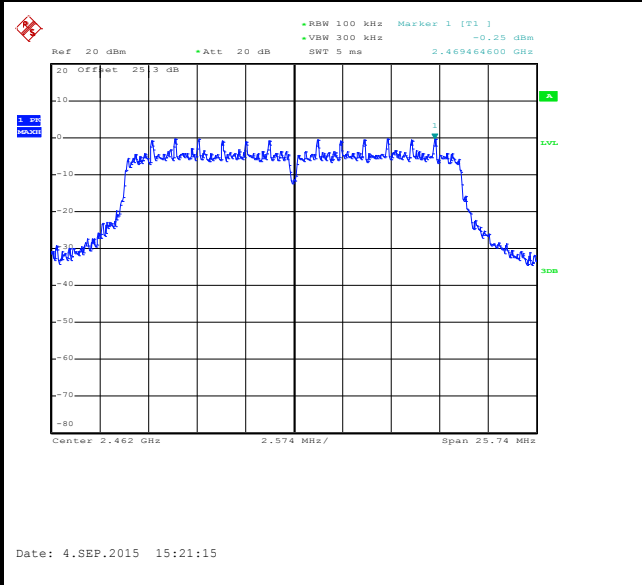


Number of TX :	1	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 11

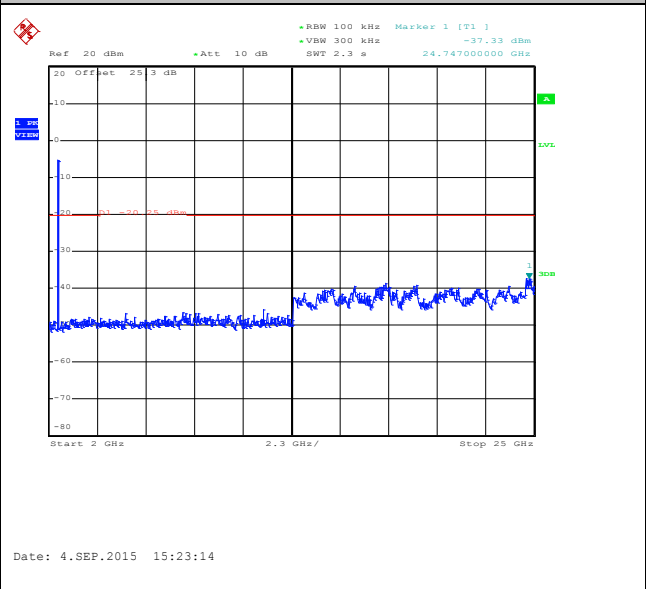
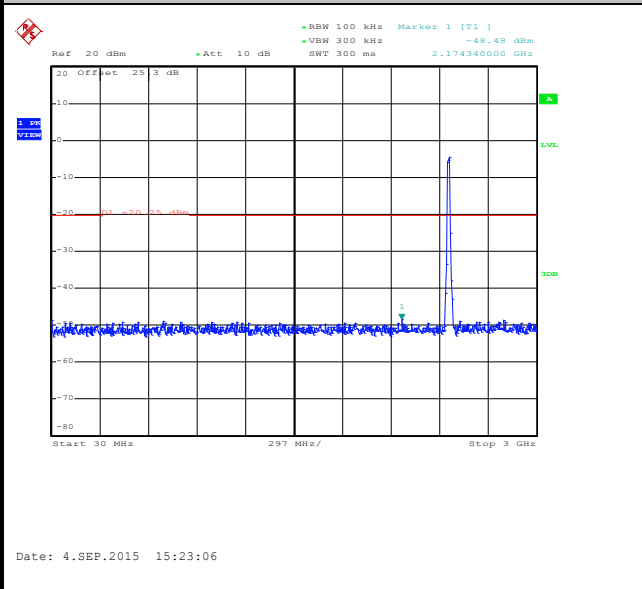
100kHz PSD reference Level

High Channel Plot



Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



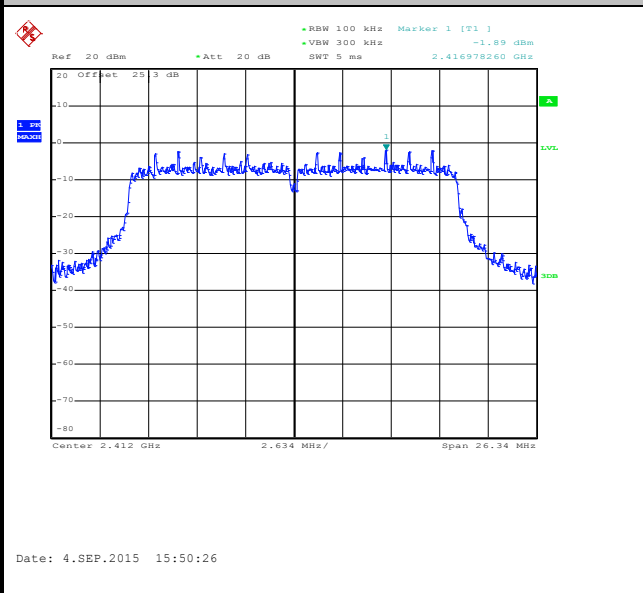


Number of TX = 2, Ant. 1 (Measured)

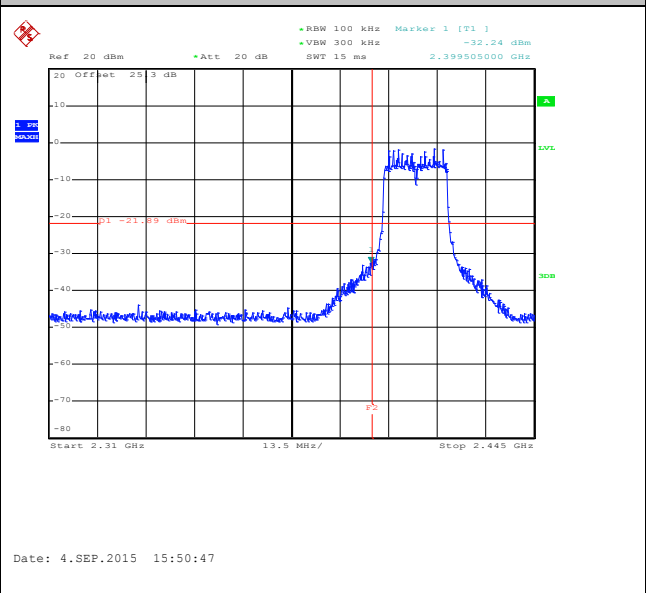
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 01

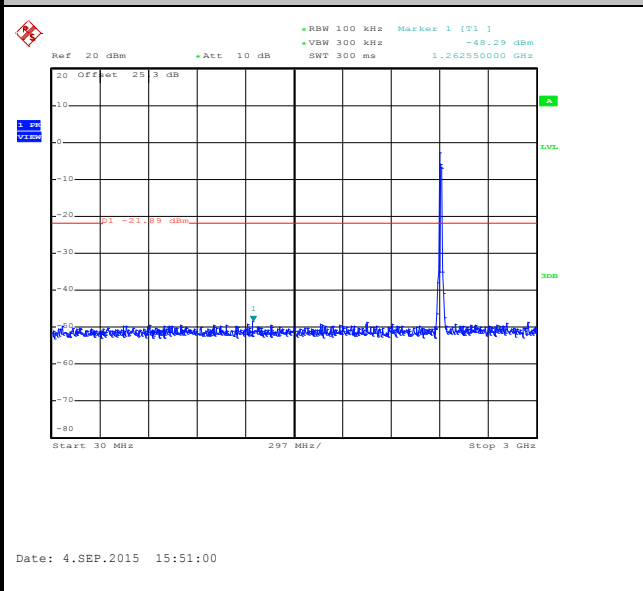
100kHz PSD reference Level



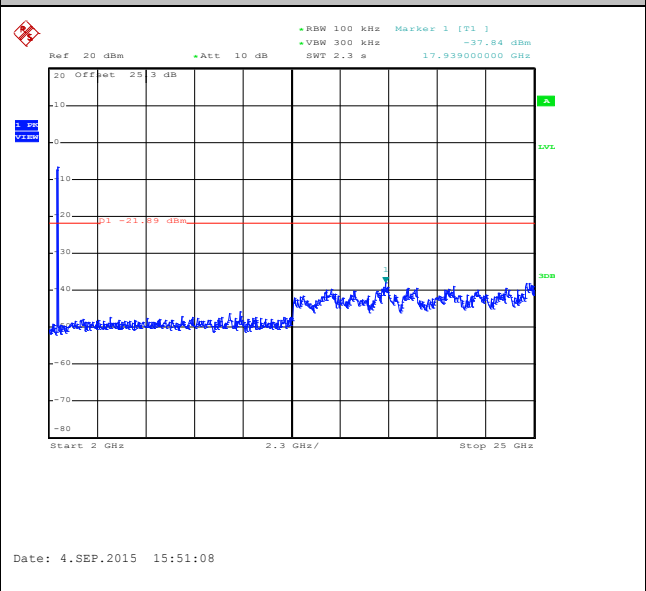
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

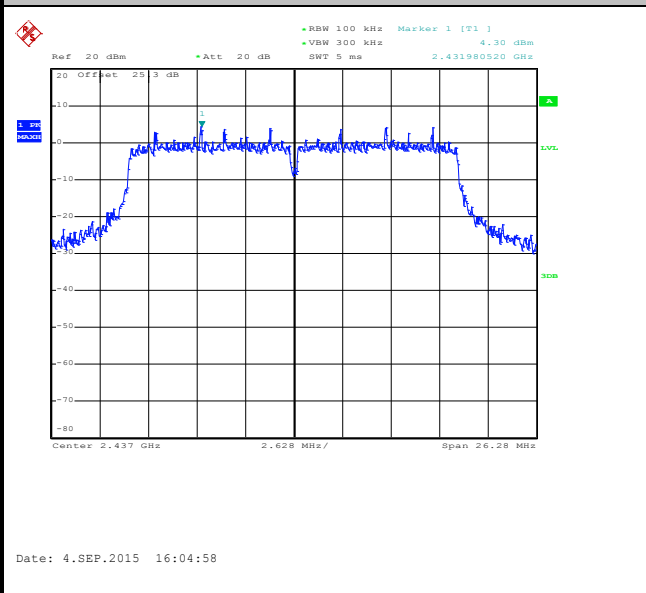




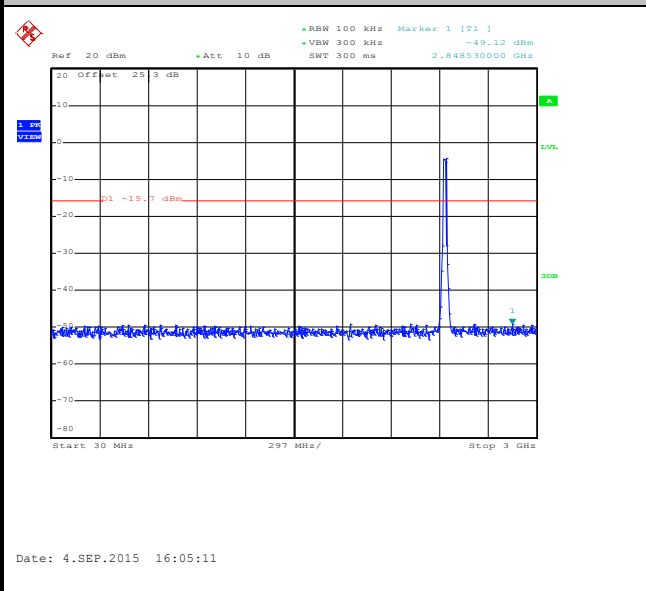
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 06

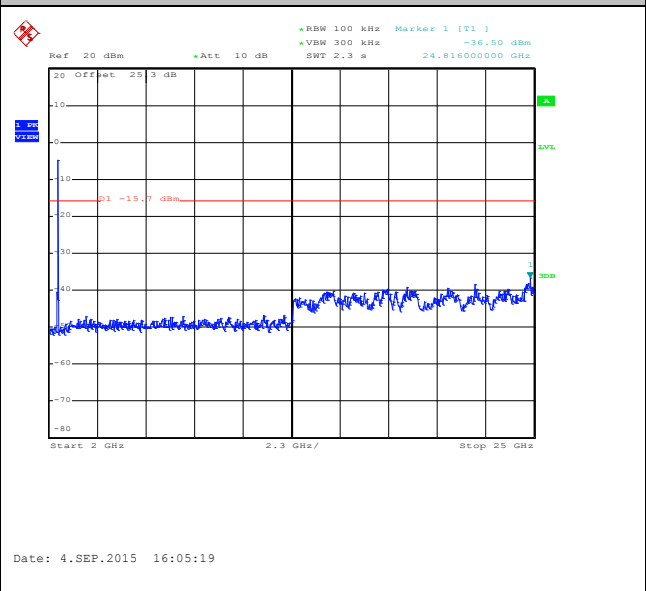
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz

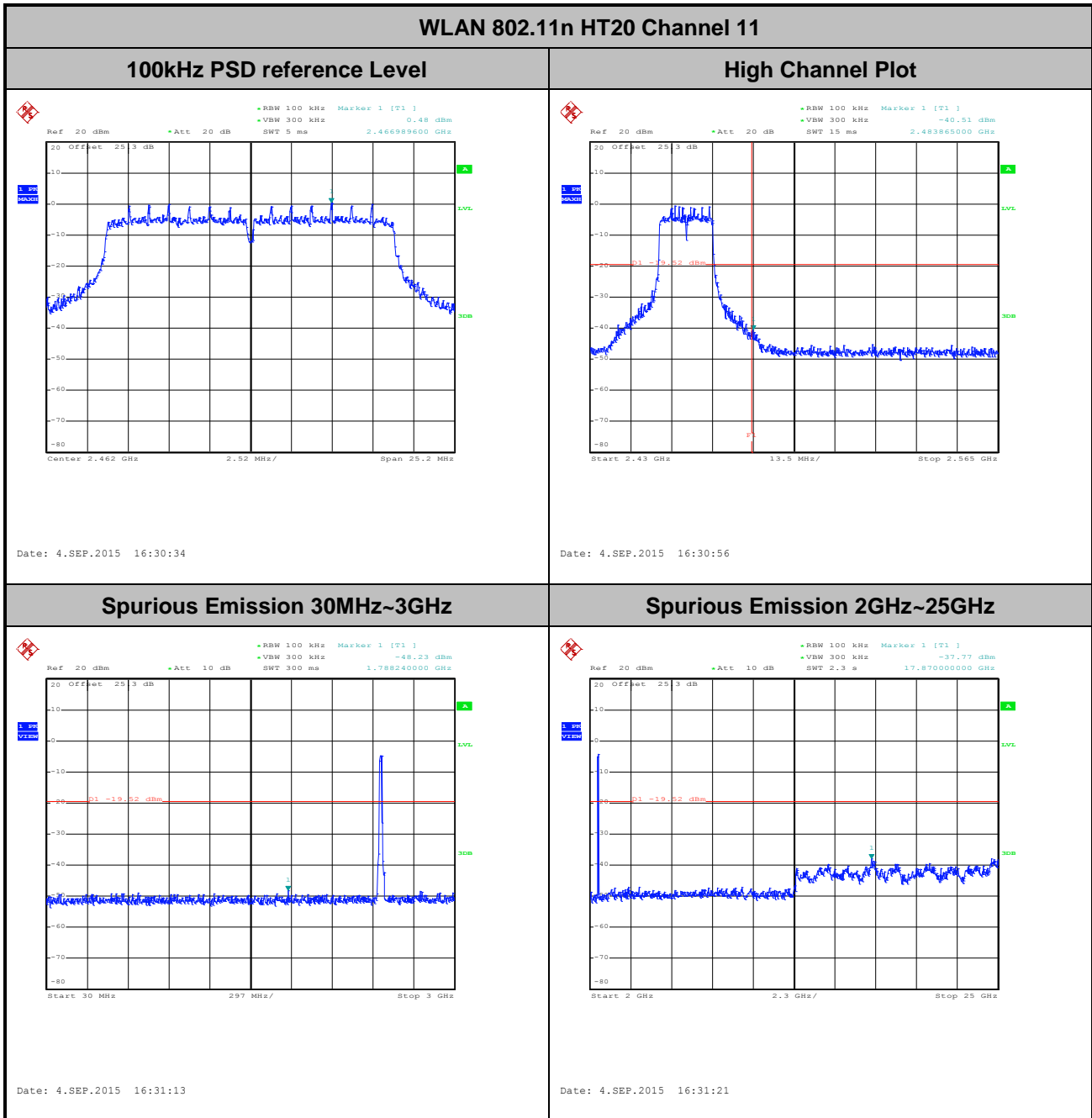


Spurious Emission 2GHz~25GHz





Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Tommy Lee



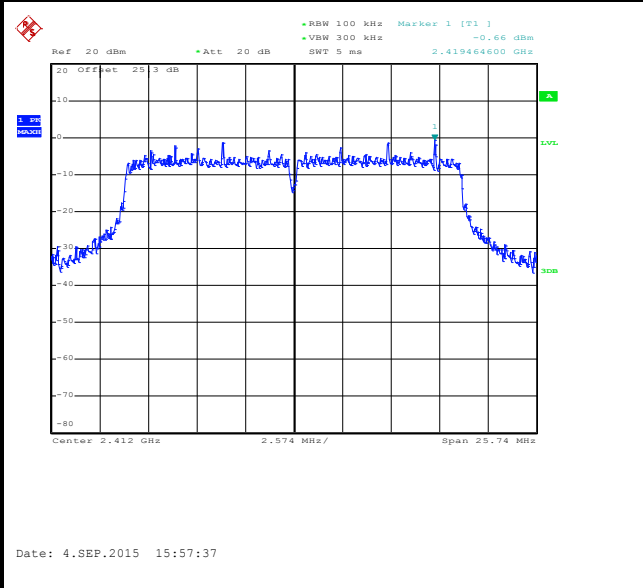


Number of TX = 2, Ant. 2 (Measured)

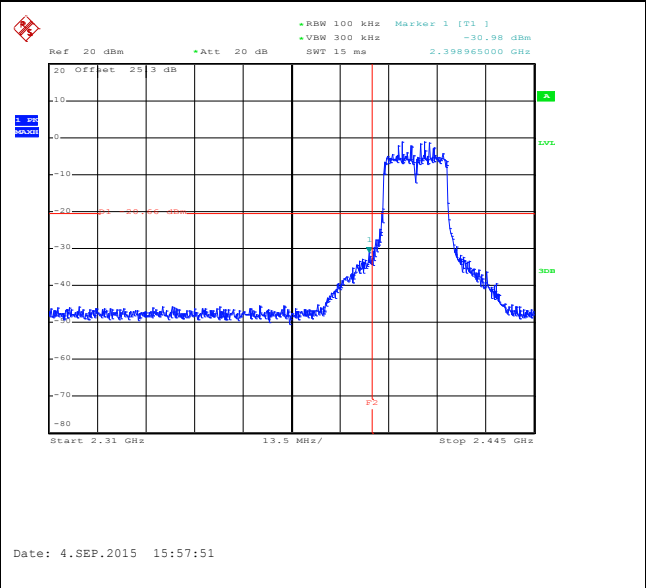
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 01

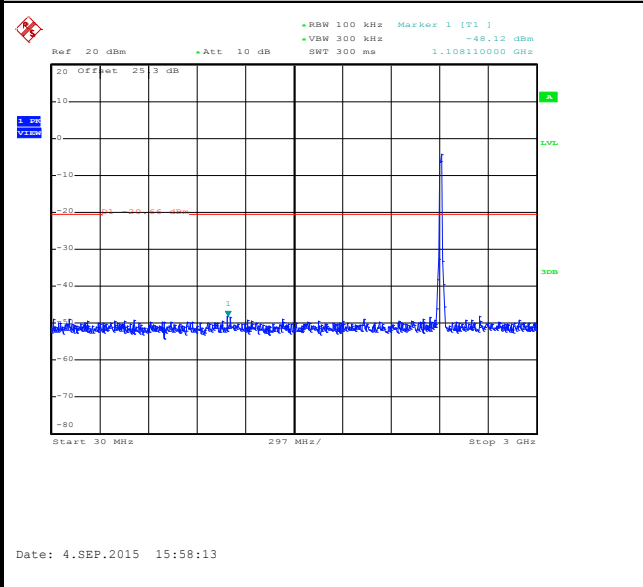
100kHz PSD reference Level



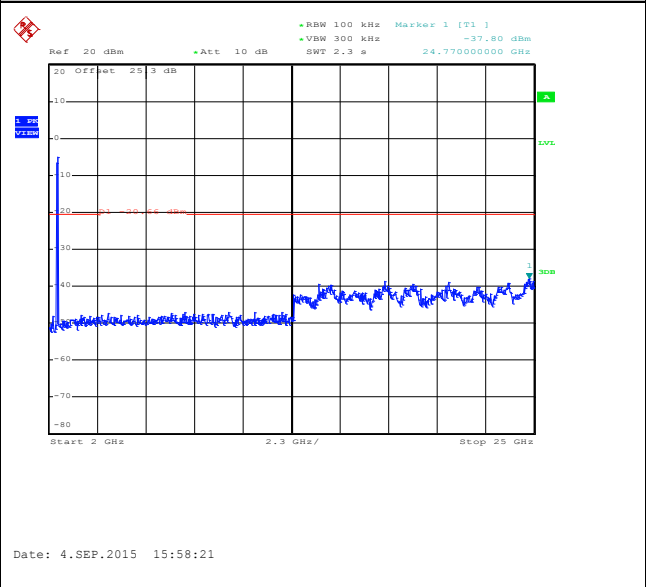
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz



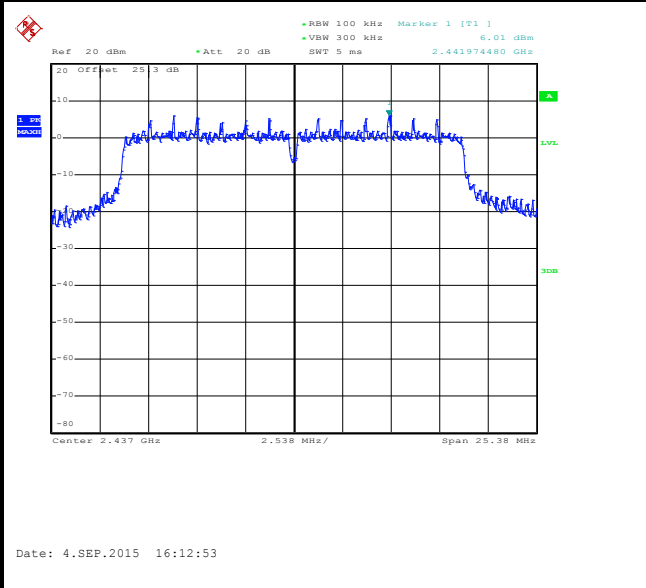




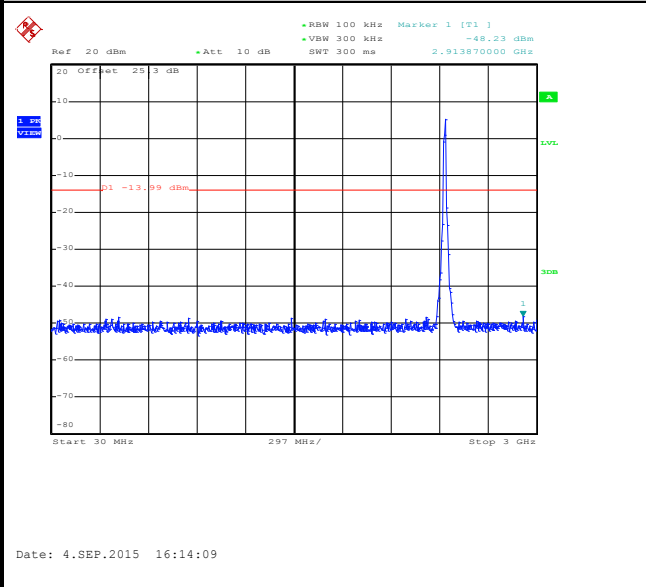
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 06

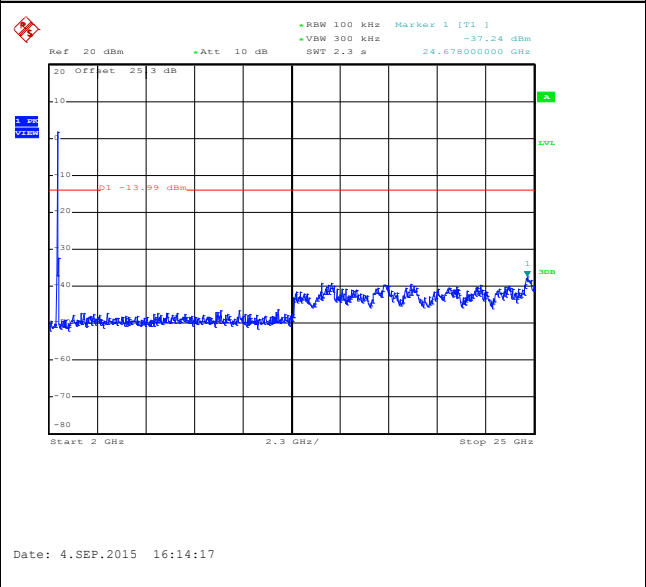
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

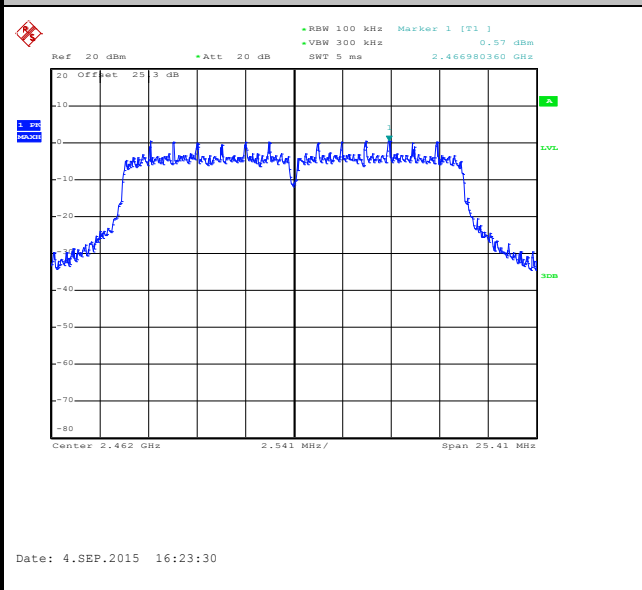




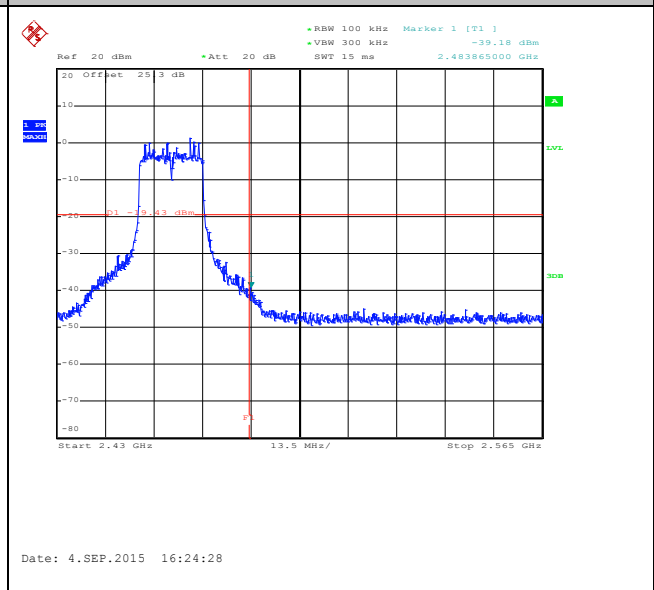
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Tommy Lee

WLAN 802.11n HT20 Channel 11

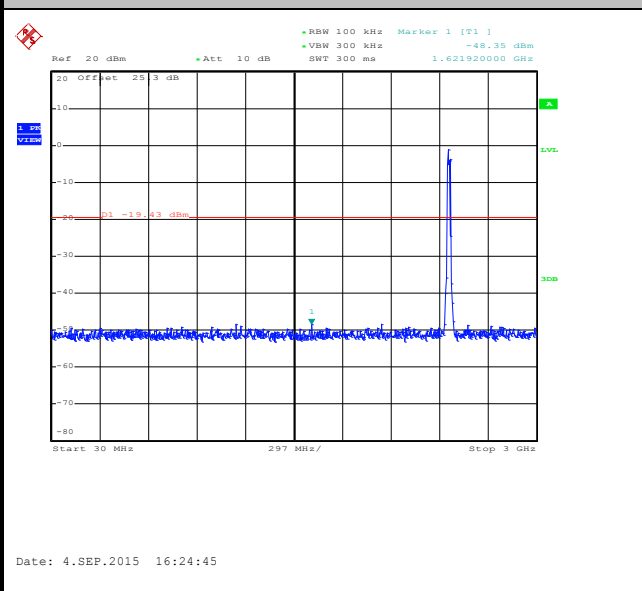
100kHz PSD reference Level



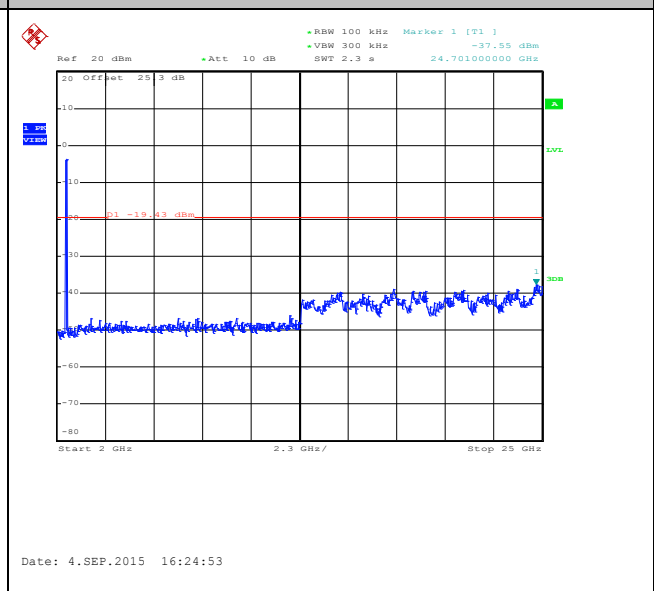
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz





### 3.5 Radiated Band Edges and Spurious Emission Measurement

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

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

#### 3.5.2 Measuring Instruments

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



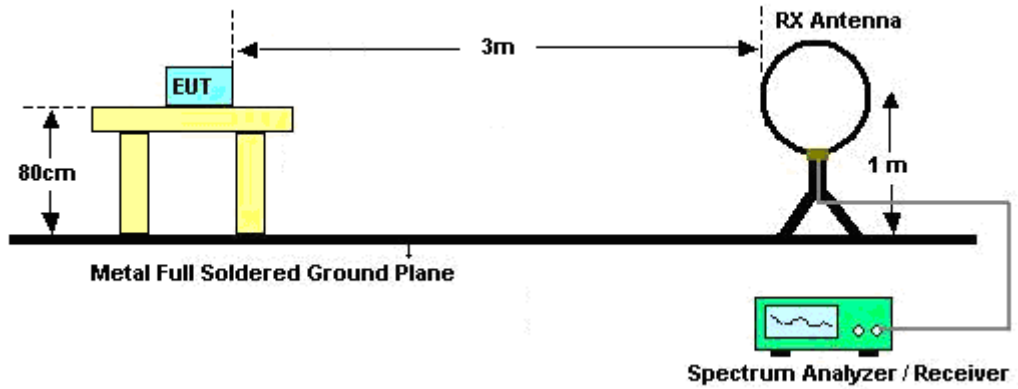
3.5.3 Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.  
For average measurement:
    - $VBW = 10$  Hz, when duty cycle is no less than 98 percent.
    - $VBW \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

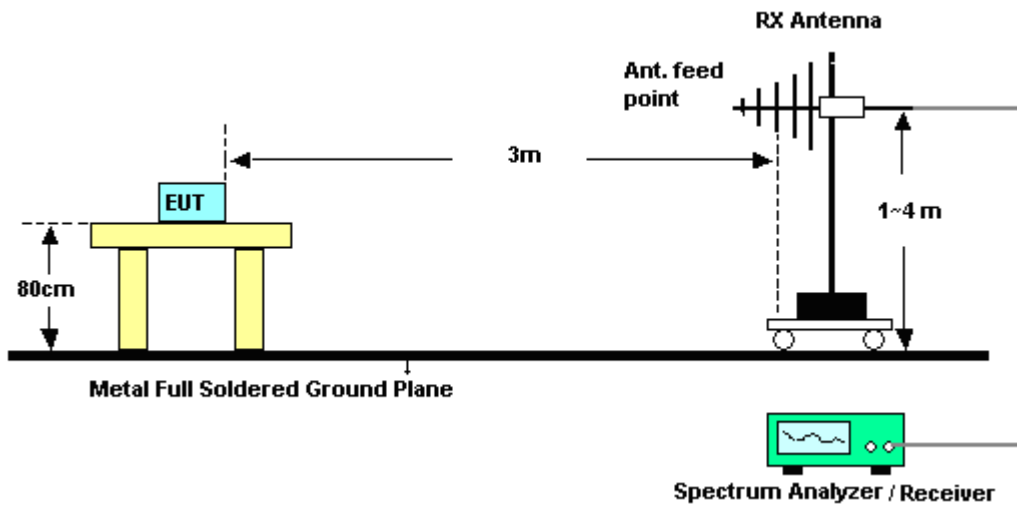
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	100	-	-	10Hz
1	802.11g	97.17	2060	0.49	1kHz
1	2.4GHz 802.11n HT20	96.97	1920	0.52	1kHz
1+2	2.4GHz 802.11n HT20 for Ant. 1	96.97	1920	0.52	1kHz
1+2	2.4GHz 802.11n HT20 for Ant. 2	96.97	1920	0.52	1kHz

### 3.5.4 Test Setup

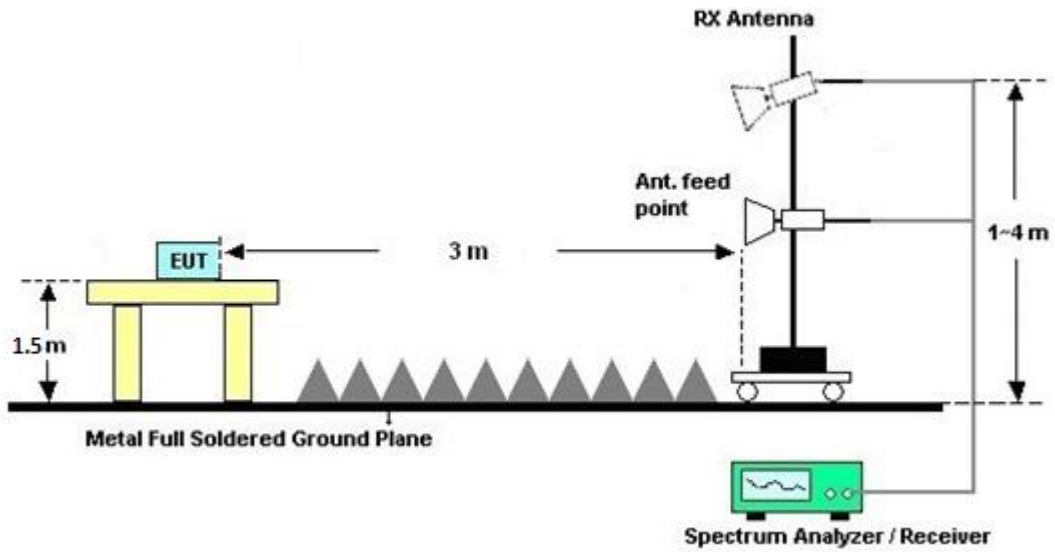
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

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

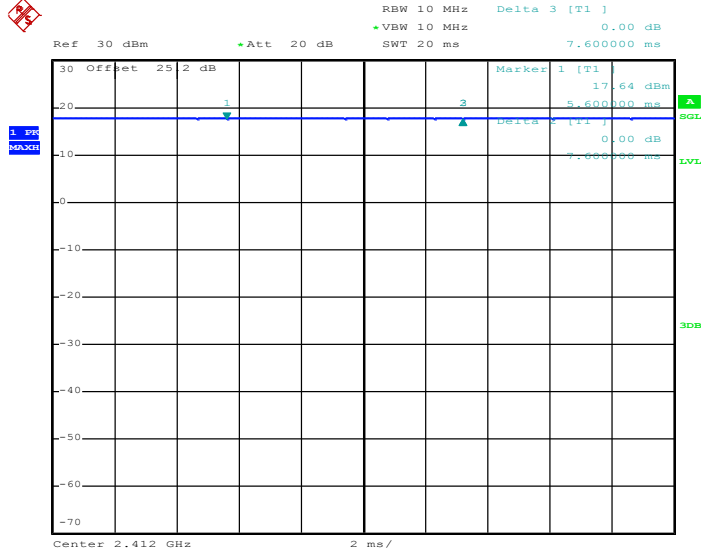
Please refer to Appendix B of this test report.



### 3.5.7 Duty Cycle

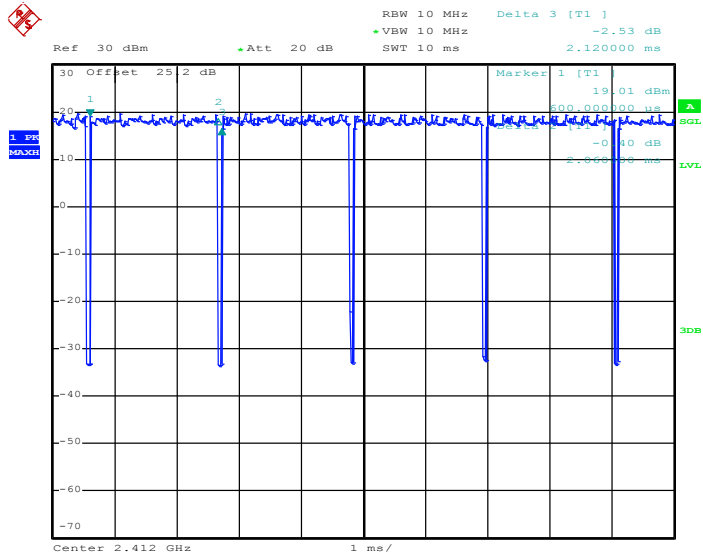
<Ant. 1>

802.11b



Date: 15.JUN.2015 17:12:33

802.11g

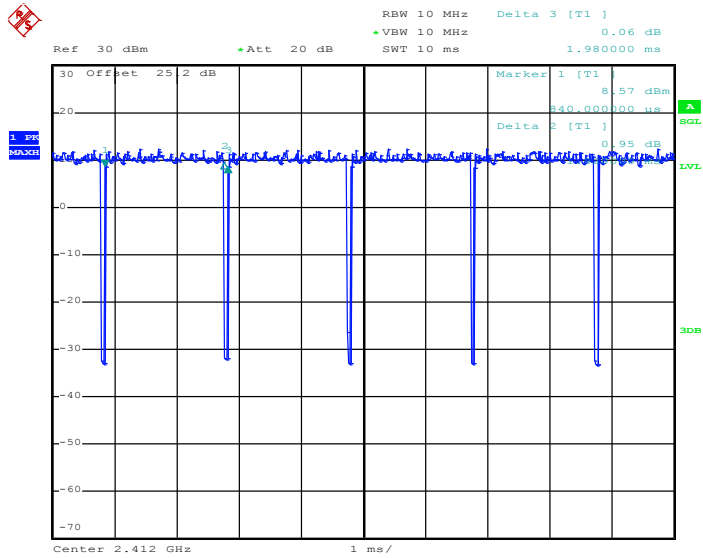


Date: 15.JUN.2015 17:27:30



<SISO Ant. 1>

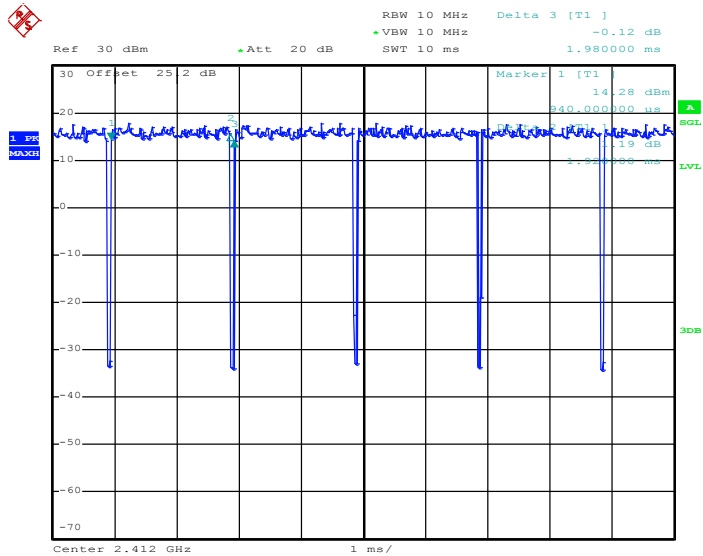
802.11n HT20



Date: 15.JUN.2015 18:20:37

<MIMO Ant. 1+2(1)>

802.11n HT20



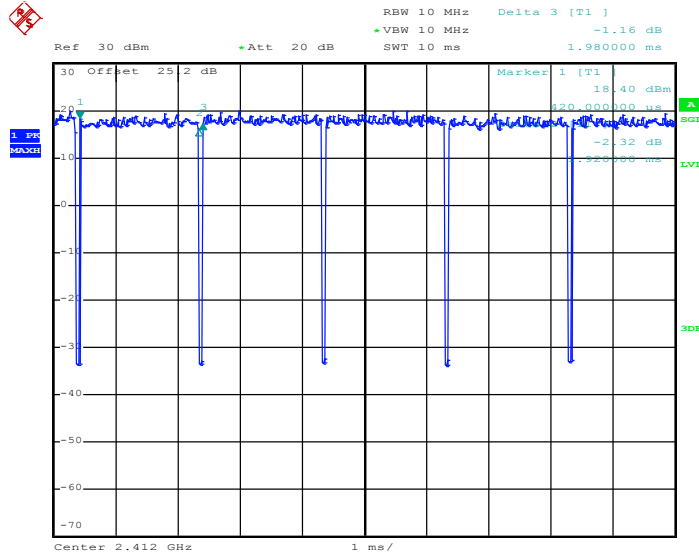
Date: 15.JUN.2015 17:59:29





<MIMO Ant. 1+2(2)>

802.11n HT20



Date: 15.JUN.2015 18:01:03

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)

Please refer to Appendix B of this test report.



### 3.6 AC Conducted Emission Measurement

#### 3.6.1 Limit of AC Conducted Emission

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

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

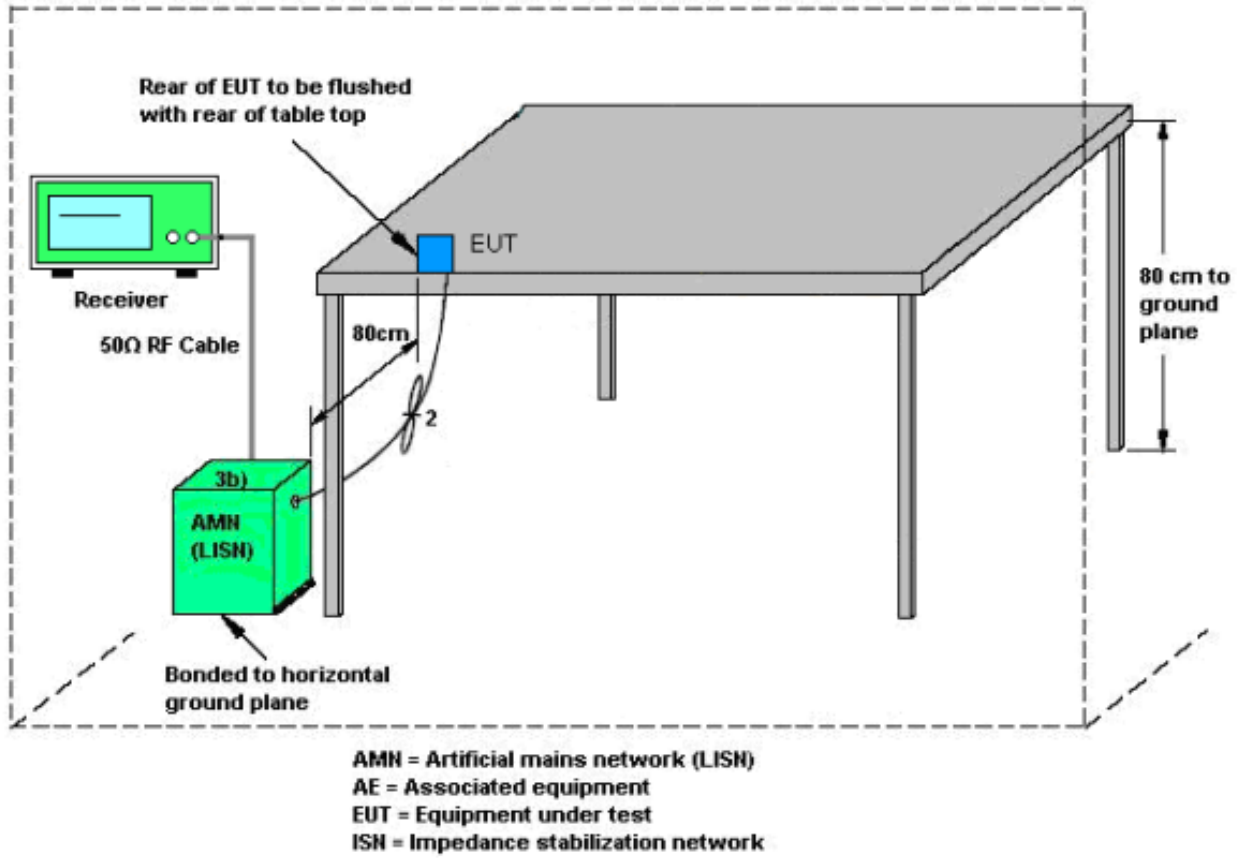
#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

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

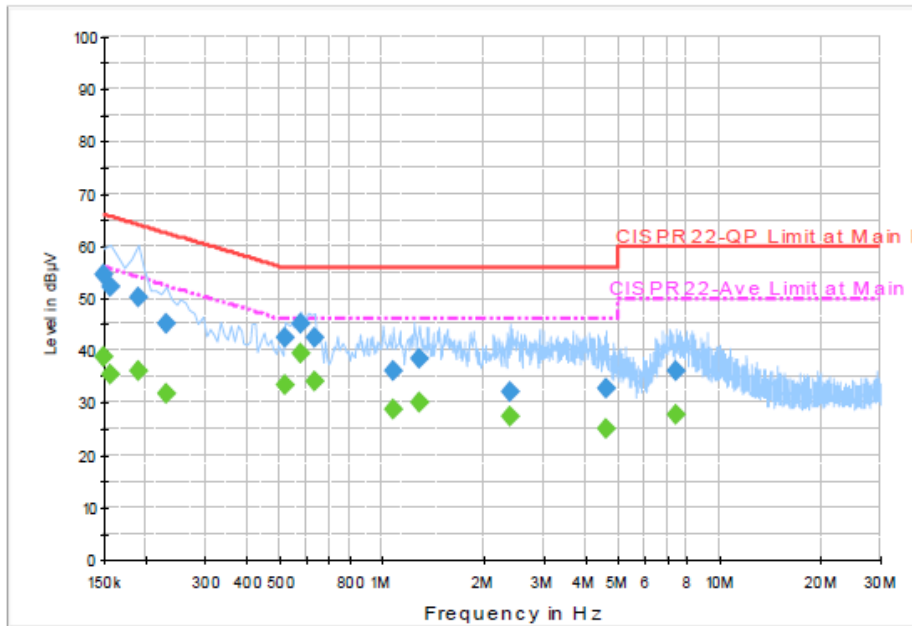
### 3.6.4 Test Setup





### 3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~56%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link		

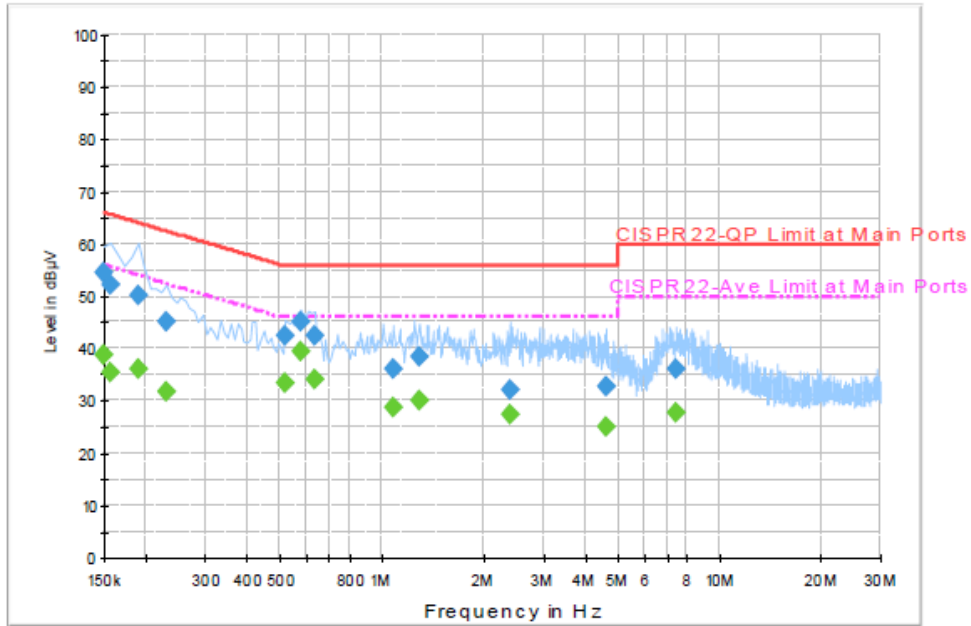


**Final Result : QuasiPeak**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.5	Off	L1	19.5	11.5	66.0
0.158000	52.2	Off	L1	19.5	13.4	65.6
0.190000	50.3	Off	L1	19.5	13.7	64.0
0.230000	45.0	Off	L1	19.6	17.4	62.4
0.518000	42.4	Off	L1	19.4	13.6	56.0
0.574000	45.2	Off	L1	19.5	10.8	56.0
0.630000	42.5	Off	L1	19.5	13.5	56.0
1.078000	36.0	Off	L1	19.6	20.0	56.0
1.294000	38.3	Off	L1	19.5	17.7	56.0
2.390000	32.2	Off	L1	19.7	23.8	56.0
4.630000	32.8	Off	L1	19.8	23.2	56.0
7.422000	36.1	Off	L1	19.7	23.9	60.0



Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~56%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link		

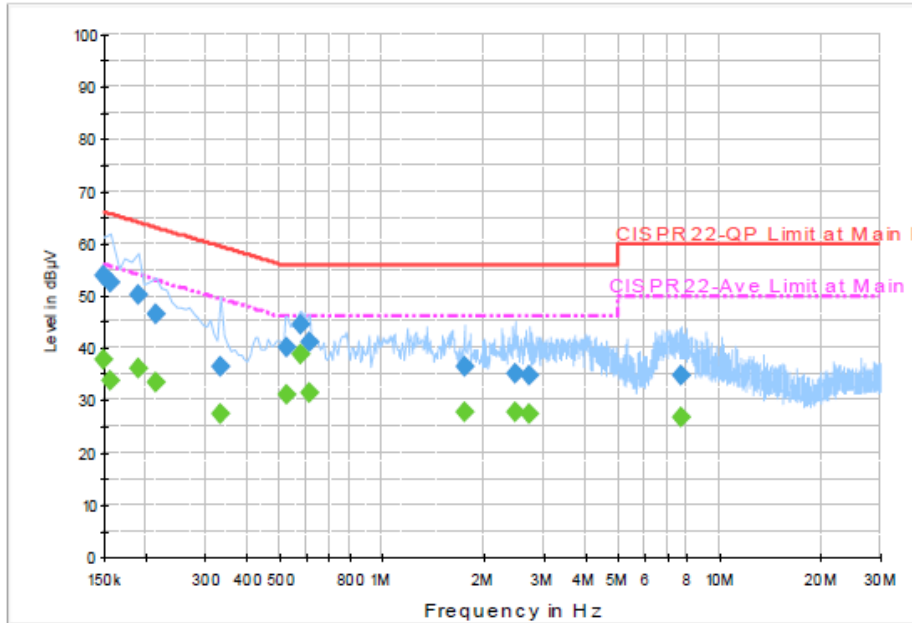


**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	38.8	Off	L1	19.5	17.2	56.0
0.158000	35.4	Off	L1	19.5	20.2	55.6
0.190000	36.2	Off	L1	19.5	17.8	54.0
0.230000	31.8	Off	L1	19.6	20.6	52.4
0.518000	33.3	Off	L1	19.4	12.7	46.0
0.574000	39.6	Off	L1	19.5	6.4	46.0
0.630000	34.1	Off	L1	19.5	11.9	46.0
1.078000	28.8	Off	L1	19.6	17.2	46.0
1.294000	30.2	Off	L1	19.5	15.8	46.0
2.390000	27.5	Off	L1	19.7	18.5	46.0
4.630000	25.0	Off	L1	19.8	21.0	46.0
7.422000	27.7	Off	L1	19.7	22.3	50.0



Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~56%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link		

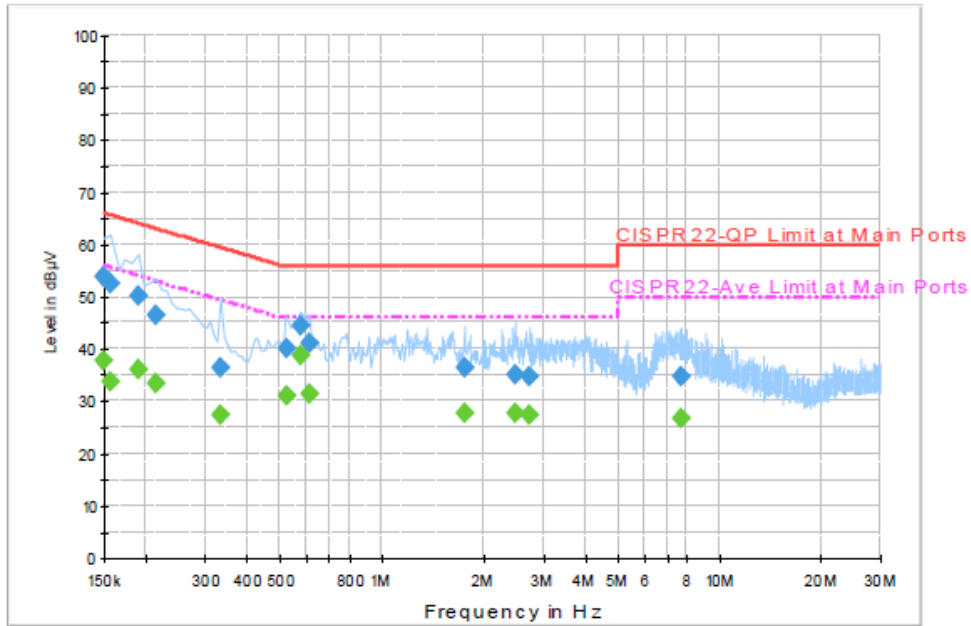


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.0	Off	N	19.5	12.0	66.0
0.158000	52.5	Off	N	19.5	13.1	65.6
0.190000	50.2	Off	N	19.5	13.8	64.0
0.214000	46.6	Off	N	19.4	16.4	63.0
0.334000	36.6	Off	N	19.5	22.8	59.4
0.526000	40.1	Off	N	19.4	15.9	56.0
0.574000	44.6	Off	N	19.5	11.4	56.0
0.614000	41.0	Off	N	19.5	15.0	56.0
1.758000	36.4	Off	N	19.6	19.6	56.0
2.478000	35.2	Off	N	19.7	20.8	56.0
2.734000	34.6	Off	N	19.7	21.4	56.0
7.734000	34.8	Off	N	19.8	25.2	60.0



Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~56%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (2.4GHz) Link + Bluetooth Link		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	37.8	Off	N	19.5	18.2	56.0
0.158000	33.9	Off	N	19.5	21.7	55.6
0.190000	36.0	Off	N	19.5	18.0	54.0
0.214000	33.5	Off	N	19.4	19.5	53.0
0.334000	27.5	Off	N	19.5	21.9	49.4
0.526000	31.1	Off	N	19.4	14.9	46.0
0.574000	38.7	Off	N	19.5	7.3	46.0
0.614000	31.4	Off	N	19.5	14.6	46.0
1.758000	27.6	Off	N	19.6	18.4	46.0
2.478000	27.8	Off	N	19.7	18.2	46.0
2.734000	27.4	Off	N	19.7	18.6	46.0
7.734000	26.6	Off	N	19.8	23.4	50.0

### 3.7 Antenna Requirements

#### 3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the Antenna exceeds 6 dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

#### 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

For CDD and beamforming transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;  
 $G_k$  is the gain in dBi of the  $k$ th antenna.





The EUT supports CDD mode.

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

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

			<b>DG</b>	<b>DG</b>	<b>Power</b>	<b>PSD</b>
			<b>for</b>	<b>for</b>	<b>Limit</b>	<b>Limit</b>
	<b>Ant. 1</b>	<b>Ant. 2</b>	<b>Power</b>	<b>PSD</b>	<b>Reduction</b>	<b>Reduction</b>
	<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>	<b>(dB)</b>	<b>(dB)</b>
<b>2.4 GHz</b>	0.50	2.80	4.74	4.74	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1218006	300MHz~40GHz	Oct. 18, 2014	Jun. 15, 2015~ Sep. 04, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1207363	300MHz~40GHz	Oct. 18, 2014	Jun. 15, 2015~ Sep. 04, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Oct. 17, 2014	Jun. 15, 2015~ Sep. 04, 2015	Oct. 16, 2015	Conducted (TH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Jun. 15, 2015~ Aug. 07, 2015	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2014	Jun. 15, 2015~ Aug. 07, 2015	Aug. 18, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2014	Jun. 15, 2015~ Aug. 07, 2015	Aug. 29, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Nov. 05, 2014	Jun. 15, 2015~ Aug. 07, 2015	Nov. 04, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 03, 2014	Jun. 15, 2015~ Aug. 07, 2015	Nov. 02, 2015	Radiation (03CH07-HY)
Loop Antenna	TESEQ	HLA6120	31244	9 kHz~30 MHz	Feb. 02, 2015	Jun. 15, 2015~ Aug. 07, 2015	Feb. 01, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz ~ 18GHz	Apr. 20, 2015	Jun. 15, 2015~ Aug. 07, 2015	Apr. 19, 2016	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 12, 2015	Jun. 15, 2015~ Aug. 07, 2015	Mar. 11, 2016	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 21, 2014	Jun. 15, 2015~ Aug. 07, 2015	Oct. 20, 2015	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Mar. 10, 2015	Jun. 15, 2015~ Aug. 07, 2015	Mar. 09, 2016	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Jun. 15, 2015~ Aug. 07, 2015	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Jun. 15, 2015~ Aug. 07, 2015	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Jun. 15, 2015~ Aug. 07, 2015	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	Jun. 15, 2015~ Aug. 07, 2015	N/A	Radiation (03CH07-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Jun. 15, 2015~ Aug. 07, 2015	Jun. 01, 2016	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Sep. 17, 2014	Jun. 15, 2015~ Aug. 07, 2015	Sep. 16, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz – 2.75GHz	Dec. 01, 2014	Jun. 16, 2015	Nov. 30, 2015	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2014	Jun. 16, 2015	Dec. 01, 2015	Conduction (CO05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 16, 2015	N/A	Conduction (CO05-HY)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.26
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.50
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## Appendix A. CONDUCTED TEST RESULTS

Test Engineer:	Luffy Lin / Tommy Lee	Temperature:	21~25	°C
Test Date:	2015/06/15~2015/09/04	Relative Humidity:	51~54	%

**TEST RESULTS DATA**  
**6dB Bandwidth**

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant 1	Ant 2		
11b	1Mbps	1	1	2412	7.08		0.50	Pass
11b	1Mbps	1	6	2437	7.08		0.50	Pass
11b	1Mbps	1	11	2462	7.08		0.50	Pass
11g	6Mbps	1	1	2412	16.32		0.50	Pass
11g	6Mbps	1	6	2437	16.32		0.50	Pass
11g	6Mbps	1	11	2462	16.28		0.50	Pass
HT20	MCS0	1	1	2412	17.16		0.50	Pass
HT20	MCS0	1	6	2437	16.96		0.50	Pass
HT20	MCS0	1	11	2462	17.16		0.50	Pass
HT20	MCS0	2	1	2412	17.56	17.16	0.50	Pass
HT20	MCS0	2	6	2437	17.52	16.92	0.50	Pass
HT20	MCS0	2	11	2462	16.80	16.94	0.50	Pass

**TEST RESULTS DATA**  
**Peak Output Power**

2.4GHz Band																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	18.66			30.00	30.00	0.50	2.80	19.16		36.00	36.00	Pass
11b	1Mbps	1	6	2437	20.14			30.00	30.00	0.50	2.80	20.64		36.00	36.00	Pass
11b	1Mbps	1	11	2462	20.10			30.00	30.00	0.50	2.80	20.60		36.00	36.00	Pass
11g	6Mbps	1	1	2412	19.31			30.00	30.00	0.50	2.80	19.81		36.00	36.00	Pass
11g	6Mbps	1	6	2437	21.84			30.00	30.00	0.50	2.80	22.34		36.00	36.00	Pass
11g	6Mbps	1	11	2462	20.17			30.00	30.00	0.50	2.80	20.67		36.00	36.00	Pass
HT20	MCS0	1	1	2412	18.06			30.00	30.00	0.50	2.80	18.56		36.00	36.00	Pass
HT20	MCS0	1	6	2437	22.25			30.00	30.00	0.50	2.80	22.75		36.00	36.00	Pass
HT20	MCS0	1	11	2462	19.01			30.00	30.00	0.50	2.80	19.51		36.00	36.00	Pass
HT20	MCS0	2	1	2412	16.74	17.21	19.99	30.00		4.74		24.73		36.00		Pass
HT20	MCS0	2	6	2437	21.68	22.71	25.24	30.00		4.74		29.98		36.00		Pass
HT20	MCS0	2	11	2462	17.26	18.16	20.74	30.00		4.74		25.48		36.00		Pass

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

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

2.4GHz Band									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11b	1Mbps	1	1	2412	0.00		15.70		
11b	1Mbps	1	6	2437	0.00		17.12		
11b	1Mbps	1	11	2462	0.00		17.15		
11g	6Mbps	1	1	2412	0.12		13.49		
11g	6Mbps	1	6	2437	0.12		16.78		
11g	6Mbps	1	11	2462	0.12		14.33		
HT20	MCS0	1	1	2412	0.13		11.82		
HT20	MCS0	1	6	2437	0.13		17.01		
HT20	MCS0	1	11	2462	0.13		12.41		
HT20	MCS0	2	1	2412	0.13	0.13	10.51	10.86	13.70
HT20	MCS0	2	6	2437	0.13	0.13	15.92	17.38	19.72
HT20	MCS0	2	11	2462	0.13	0.13	10.60	11.90	14.31

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

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

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant 1	Ant 2	Worse + 3.01	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	-9.42		-	0.50	2.80	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-7.89			0.50	2.80	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-9.65			0.50	2.80	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-15.38			0.50	2.80	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-12.53			0.50	2.80	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-13.89			0.50	2.80	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-17.18			0.50	2.80	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-10.64			0.50	2.80	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-16.59			0.50	2.80	8.00	8.00	Pass
HT20	MCS0	2	1	2412	-19.16	-18.19	-15.18	4.74		8.00		Pass
HT20	MCS0	2	6	2437	-13.07	-10.33	-7.32	4.74		8.00		Pass
HT20	MCS0	2	11	2462	-16.77	-16.34	-13.33	4.74		8.00		Pass

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





## Appendix B. Radiated Spurious Emission

Test Engineer :	Nick Yu and Ken Wu and James Chiu	Temperature :	22~23°C
		Relative Humidity :	58~62%

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
802.11b CH 01 2412MHz		2335.02	57.91	-16.09	74	52.42	32.11	7.6	34.22	101	286	P	H	
		2387.13	44.6	-9.4	54	38.94	32.18	7.75	34.27	101	286	A	H	
	*	2410.938	107.06	-	-	101.41	32.2	7.75	34.3	101	286	P	H	
	*	2411.189	103.36	-	-	97.71	32.2	7.75	34.3	101	286	A	H	
													H	
														H
			2372.28	59.33	-14.67	74	53.76	32.16	7.68	34.27	125	264	P	V
			2387.4	44.4	-9.6	54	38.74	32.18	7.75	34.27	125	264	A	V
	*		2410.938	105.49	-	-	99.84	32.2	7.75	34.3	125	264	P	V
	*		2411.189	101.85	-	-	96.2	32.2	7.75	34.3	125	264	A	V
														V
														V
802.11b CH 06 2437MHz		2361.12	58.62	-15.38	74	53.06	32.13	7.68	34.25	115	301	P	H	
		2386.14	44.3	-9.7	54	38.64	32.18	7.75	34.27	115	301	A	H	
	*	2438.243	108.41	-	-	102.69	32.24	7.83	34.35	115	301	P	H	
	*	2437.825	104.47	-	-	98.75	32.24	7.83	34.35	115	301	A	H	
			2493.36	58.68	-15.32	74	52.95	32.3	7.91	34.48	115	301	P	H
			2488.6	44.52	-9.48	54	38.74	32.3	7.91	34.43	115	301	A	H
			2384.25	58.73	-15.27	74	53.09	32.16	7.75	34.27	100	78	P	V
			2383.53	44.15	-9.85	54	38.51	32.16	7.75	34.27	100	78	A	V
	*		2435.989	107.13	-	-	101.43	32.22	7.83	34.35	100	78	P	V
	*		2437.742	103.23	-	-	97.51	32.24	7.83	34.35	100	78	A	V
			2488.8	58.39	-15.61	74	52.61	32.3	7.91	34.43	100	78	P	V
			2489.44	44.3	-9.7	54	38.52	32.3	7.91	34.43	100	78	A	V



<b>802.11b CH 11 2462MHz</b>	*	2462	109.28	-	-	103.5	32.26	7.91	34.39	132	290	P	H
	*	2462	105.62	-	-	99.84	32.26	7.91	34.39	132	290	A	H
		2483.96	59.82	-14.18	74	54.06	32.28	7.91	34.43	132	290	P	H
		2486.04	46.36	-7.64	54	40.6	32.28	7.91	34.43	132	290	A	H
													H
													H
	*	2462	106.08	-	-	100.3	32.26	7.91	34.39	100	77	P	V
	*	2462	102.43	-	-	96.65	32.26	7.91	34.39	100	77	A	V
		2487.72	59.2	-14.8	74	53.42	32.3	7.91	34.43	100	77	P	V
		2487.24	45.01	-8.99	54	39.25	32.28	7.91	34.43	100	77	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	51.53	-22.47	74	65.75	34.26	11.16	59.64	100	274	P	H
		4824	49.03	-4.97	54	63.25	34.26	11.16	59.64	100	274	A	H
													H
													H
		4824	43.34	-30.66	74	57.56	34.26	11.16	59.64	100	0	P	V
													V
													V
802.11b CH 06 2437MHz		4874	52.46	-21.54	74	66.52	34.3	11.21	59.57	100	282	P	H
		4874	49.71	-4.29	54	63.77	34.3	11.21	59.57	100	282	A	H
		7311	47.59	-26.41	74	55.38	35.6	15.08	58.47	100	0	P	H
													H
		4874	43.48	-30.52	74	57.54	34.3	11.21	59.57	100	0	P	V
		7311	45.23	-28.77	74	53.02	35.6	15.08	58.47	100	0	P	V
													V
802.11b CH 11 2462MHz		4924	52.48	-21.52	74	66.37	34.34	11.27	59.5	100	285	P	H
		4924	50.29	-3.71	54	64.18	34.34	11.27	59.5	100	285	A	H
		7386	47.06	-26.94	74	54.9	35.6	15.14	58.58	100	0	P	H
													H
		4924	43.83	-30.17	74	57.72	34.34	11.27	59.5	100	0	P	V
		7386	44.61	-29.39	74	52.45	35.6	15.14	58.58	100	0	P	V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
802.11g CH 01 2412MHz		2389.92	68.25	-5.75	74	62.62	32.18	7.75	34.3	101	288	P	H	
		2390	53.44	-0.56	54	47.81	32.18	7.75	34.3	101	288	A	H	
	*	2412	107.59	-	-	101.94	32.2	7.75	34.3	101	288	P	H	
	*	2412	97.22	-	-	91.57	32.2	7.75	34.3	101	288	A	H	
													H	
														H
			2389.92	68.69	-5.31	74	63.06	32.18	7.75	34.3	101	54	P	V
			2390	53.13	-0.87	54	47.5	32.18	7.75	34.3	101	54	A	V
	*		2412	104.8	-	-	99.15	32.2	7.75	34.3	101	54	P	V
	*		2412	94.42	-	-	88.77	32.2	7.75	34.3	101	54	A	V
														V
														V
2.11g CH 06 2437MHz		2384.88	58.11	-15.89	74	52.47	32.16	7.75	34.27	116	303	P	H	
		2389.56	45.25	-8.75	54	39.59	32.18	7.75	34.27	116	303	A	H	
	*	2437	110.08	-	-	104.36	32.24	7.83	34.35	116	303	P	H	
	*	2437	99.58	-	-	93.86	32.24	7.83	34.35	116	303	A	H	
			2489.52	59.12	-14.88	74	53.34	32.3	7.91	34.43	116	303	P	H
			2484.2	45.87	-8.13	54	40.11	32.28	7.91	34.43	116	303	A	H
			2319.18	58.14	-15.86	74	52.67	32.09	7.6	34.22	100	77	P	V
			2389.47	45.04	-8.96	54	39.38	32.18	7.75	34.27	100	77	A	V
	*		2437	108.05	-	-	102.33	32.24	7.83	34.35	100	77	P	V
	*		2437	97.58	-	-	91.86	32.24	7.83	34.35	100	77	A	V
			2483.72	58.63	-15.37	74	52.87	32.28	7.91	34.43	100	77	P	V
			2490.28	45.4	-8.6	54	39.62	32.3	7.91	34.43	100	77	A	V



<b>802.11g</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	108.42	-	-	102.64	32.26	7.91	34.39	130	291	P	H
	*	2462	97.9	-	-	92.12	32.26	7.91	34.39	130	291	A	H
		2484.44	68.4	-5.6	74	62.64	32.28	7.91	34.43	130	291	P	H
		2483.76	53.08	-0.92	54	47.32	32.28	7.91	34.43	130	291	A	H
													H
													H
	*	2462	105.63	-	-	99.85	32.26	7.91	34.39	107	53	P	V
	*	2462	95.3	-	-	89.52	32.26	7.91	34.39	107	53	A	V
		2483.56	66.89	-7.11	74	61.13	32.28	7.91	34.43	107	53	P	V
		2483.56	52	-2	54	46.24	32.28	7.91	34.43	107	53	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
802.11g CH 01 2412MHz		4824	43.74	-30.26	74	57.96	34.26	11.16	59.64	100	0	P	H	
													H	
													H	
													H	
		4824	40.77	-33.23	74	54.99	34.26	11.16	59.64	100	0	P	V	
														V
														V
802.11g CH 06 2437MHz		4874	48.56	-25.44	74	62.62	34.3	11.21	59.57	100	0	P	H	
		7311	47.04	-26.96	74	54.83	35.6	15.08	58.47	100	0	P	H	
													H	
													H	
		4874	41.08	-32.92	74	55.14	34.3	11.21	59.57	100	0	P	V	
		7311	44.27	-29.73	74	52.06	35.6	15.08	58.47	100	0	P	V	
														V
802.11g CH 11 2462MHz		4926	42.82	-31.18	74	56.71	34.34	11.27	59.5	100	0	P	H	
		7386	43.23	-30.77	74	51.07	35.6	15.14	58.58	100	0	P	H	
													H	
													H	
		4926	40.29	-33.71	74	54.18	34.34	11.27	59.5	100	0	P	V	
		7386	42.5	-31.5	74	50.34	35.6	15.14	58.58	100	0	P	V	
														V
Remark	1. No other spurious found.													
	2. All results are PASS against Peak and Average limit line.													



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
802.11n HT20 CH 01 2412MHz		2389.92	69.2	-4.8	74	63.57	32.18	7.75	34.3	101	288	P	H	
		2390	53.2	-0.8	54	47.57	32.18	7.75	34.3	101	288	A	H	
	*	2412	105.52	-	-	99.87	32.2	7.75	34.3	101	288	P	H	
	*	2412	95.3	-	-	89.65	32.2	7.75	34.3	101	288	A	H	
													H	
														H
			2389.56	68.85	-5.15	74	63.19	32.18	7.75	34.27	102	53	P	V
			2390	53.05	-0.95	54	47.42	32.18	7.75	34.3	102	53	A	V
	*		2412	102.71	-	-	97.06	32.2	7.75	34.3	102	53	P	V
	*		2412	92.8	-	-	87.15	32.2	7.75	34.3	102	53	A	V
														V
														V
802.11n HT20 CH 06 2437MHz		2389.74	59.21	-14.79	74	53.55	32.18	7.75	34.27	131	298	P	H	
		2389.83	45.61	-8.39	54	39.98	32.18	7.75	34.3	131	298	A	H	
	*	2437	110.18	-	-	104.46	32.24	7.83	34.35	131	298	P	H	
	*	2437	100	-	-	94.28	32.24	7.83	34.35	131	298	A	H	
			2484.6	60.15	-13.85	74	54.39	32.28	7.91	34.43	131	298	P	H
			2483.88	46.04	-7.96	54	40.28	32.28	7.91	34.43	131	298	A	H
			2319.63	59.14	-14.86	74	53.67	32.09	7.6	34.22	100	243	P	V
			2331.96	44.92	-9.08	54	39.45	32.09	7.6	34.22	100	243	A	V
	*		2437	107.05	-	-	101.33	32.24	7.83	34.35	100	243	P	V
	*		2437	97.06	-	-	91.34	32.24	7.83	34.35	100	243	A	V
			2492.36	58.08	-15.92	74	52.35	32.3	7.91	34.48	100	243	P	V
			2490.36	44.97	-9.03	54	39.19	32.3	7.91	34.43	100	243	A	V



<b>802.11n</b> <b>HT20</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	105.92	-	-	100.14	32.26	7.91	34.39	131	290	P	H
	*	2462	96.11	-	-	90.33	32.26	7.91	34.39	131	290	A	H
		2484.16	67.17	-6.83	74	61.41	32.28	7.91	34.43	131	290	P	H
		2483.6	52.42	-1.58	54	46.66	32.28	7.91	34.43	131	290	A	H
													H
													H
	*	2462	102.97	-	-	97.19	32.26	7.91	34.39	104	53	P	V
	*	2462	92.98	-	-	87.2	32.26	7.91	34.39	104	53	A	V
		2483.64	66.38	-7.62	74	60.62	32.28	7.91	34.43	104	53	P	V
		2483.52	51.13	-2.87	54	45.37	32.28	7.91	34.43	104	53	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	41.71	-32.29	74	55.93	34.26	11.16	59.64	100	0	P	H
													H
													H
													H
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	49.42	-24.58	74	63.48	34.3	11.21	59.57	100	0	P	H
		7311	47.77	-26.23	74	55.56	35.6	15.08	58.47	100	0	P	H
													H
													H
													V
													V
													V
802.11n HT20 CH 11 2462MHz		4926	42.74	-31.26	74	56.63	34.34	11.27	59.5	100	0	P	H
		7386	42.59	-31.41	74	50.43	35.6	15.14	58.58	100	0	P	H
													H
													H
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBµV/m )	( dB )	( dBµV/m )	( dBµV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz 802.11g LF		59.43	24.46	-15.54	40	47.89	6.08	1.77	31.28	-	-	P	H	
		104.79	34.74	-8.76	43.5	53.01	10.5	2.38	31.15	300	54	P	H	
		195.51	32.77	-10.73	43.5	52.2	8.98	2.69	31.1	-	-	P	H	
		307	27	-19	46	41.45	13.27	3.28	31	-	-	P	H	
		479.9	25.97	-20.03	46	35.4	17.6	3.77	30.8	-	-	P	H	
		528.2	26	-20	46	34.54	18.28	3.89	30.71	-	-	P	H	
														H
														H
														H
														H
														H
			36.75	32.98	-7.02	40	47.15	15.32	1.77	31.26	102	124	P	V
			100.47	34.88	-8.62	43.5	53.18	10.42	2.38	31.1	-	-	P	V
			194.16	28.91	-14.59	43.5	48.4	8.92	2.69	31.1	-	-	P	V
			431.6	26.21	-19.79	46	36.4	16.92	3.63	30.74	-	-	P	V
			527.5	30.37	-15.63	46	38.93	18.26	3.89	30.71	-	-	P	V
			930	28.99	-17.01	46	30.25	24.3	4.8	30.36	-	-	P	V
														V
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
802.11n HT20 CH 01 2412MHz		2388.21	67.22	-6.78	74	61.56	32.18	7.75	34.27	102	278	P	H	
		2390	51.74	-2.26	54	46.11	32.18	7.75	34.3	102	278	A	H	
	*	2412	108.22	-	-	102.57	32.2	7.75	34.3	102	278	P	H	
	*	2412	97.97	-	-	92.32	32.2	7.75	34.3	102	278	A	H	
													H	
														H
			2389.29	68.22	-5.78	74	62.56	32.18	7.75	34.27	102	26	P	V
			2390	53.4	-0.6	54	47.77	32.18	7.75	34.3	102	26	A	V
		*	2412	106.15	-	-	100.5	32.2	7.75	34.3	102	26	P	V
		*	2412	95.8	-	-	90.15	32.2	7.75	34.3	102	26	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2389.47	61.44	-12.56	74	55.78	32.18	7.75	34.27	100	285	P	H	
		2390.01	46.65	-7.35	54	41.02	32.18	7.75	34.3	100	285	A	H	
		*	2437	113.69	-	-	107.97	32.24	7.83	34.35	100	285	P	H
		*	2437	103.55	-	-	97.83	32.24	7.83	34.35	100	285	A	H
			2485.28	64.29	-9.71	74	58.53	32.28	7.91	34.43	100	285	P	H
			2483.76	48.54	-5.46	54	42.78	32.28	7.91	34.43	100	285	A	H
			2387.49	60.38	-13.62	74	54.72	32.18	7.75	34.27	101	20	P	V
			2386.77	45.45	-8.55	54	39.79	32.18	7.75	34.27	101	20	A	V
		*	2437	112.69	-	-	106.97	32.24	7.83	34.35	101	20	P	V
		*	2437	102.64	-	-	96.92	32.24	7.83	34.35	101	20	A	V
		2484.84	62.91	-11.09	74	57.15	32.28	7.91	34.43	101	20	P	V	
		2483.76	47.47	-6.53	54	41.71	32.28	7.91	34.43	101	20	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	107.95	-	-	102.17	32.26	7.91	34.39	108	291	P	H
	*	2462	97.66	-	-	91.88	32.26	7.91	34.39	108	291	A	H
		2484	68.16	-5.84	74	62.4	32.28	7.91	34.43	108	291	P	H
		2483.52	53.06	-0.94	54	47.3	32.28	7.91	34.43	108	291	A	H
													H
													H
	*	2462	104.5	-	-	98.72	32.26	7.91	34.39	102	49	P	V
	*	2462	94.17	-	-	88.39	32.26	7.91	34.39	102	49	A	V
		2484.08	62.52	-11.48	74	56.76	32.28	7.91	34.43	102	49	P	V
		2484.28	48.6	-5.4	54	42.84	32.28	7.91	34.43	102	49	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	42.91	-31.09	74	57.13	34.26	11.16	59.64	100	0	P	H
													H
													H
													H
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	49.47	-24.53	74	63.53	34.3	11.21	59.57	100	0	P	H
		7311	48.96	-25.04	74	56.75	35.6	15.08	58.47	100	0	P	H
													H
													H
													V
													V
													V
802.11n HT20 CH 11 2462MHz		4926	42.29	-31.71	74	56.18	34.34	11.27	59.5	100	0	P	H
		7386	42.39	-31.61	74	50.23	35.6	15.14	58.58	100	0	P	H
													H
													H
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz 802.11n HT20 LF		58.62	22.92	-17.08	40	46.33	6.08	1.77	31.26	-	-	P	H	
		106.95	32.59	-10.91	43.5	50.76	10.62	2.38	31.17	200	30	P	H	
		194.16	30.96	-12.54	43.5	50.45	8.92	2.69	31.1	-	-	P	H	
		311.9	27.55	-18.45	46	41.95	13.32	3.28	31	-	-	P	H	
		431.6	27.01	-18.99	46	37.2	16.92	3.63	30.74	-	-	P	H	
		965	28.53	-25.47	54	29.18	24.75	4.94	30.34	-	-	P	H	
														H
														H
														H
														H
														H
			36.75	32.29	-7.71	40	46.46	15.32	1.77	31.26	100	122	P	V
			99.66	35.09	-8.41	43.5	53.73	10.4	2.06	31.1	-	-	P	V
			195.24	28.79	-14.71	43.5	48.25	8.95	2.69	31.1	-	-	P	V
			441.4	21.34	-24.66	46	31.38	17.03	3.63	30.7	-	-	P	V
			527.5	28.16	-17.84	46	36.72	18.26	3.89	30.71	-	-	P	V
			898.5	28.59	-17.41	46	31.09	23.14	4.66	30.3	-	-	P	V
														V
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



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

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

- 1. Level(dBμV/m) =  
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- 2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

- 1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
- 2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- 1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
- 2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

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





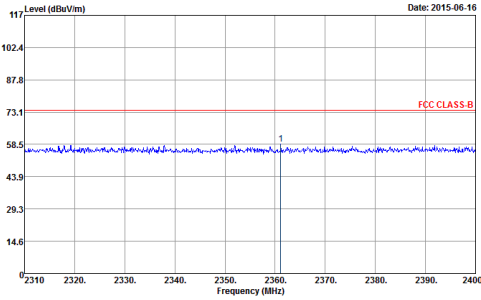
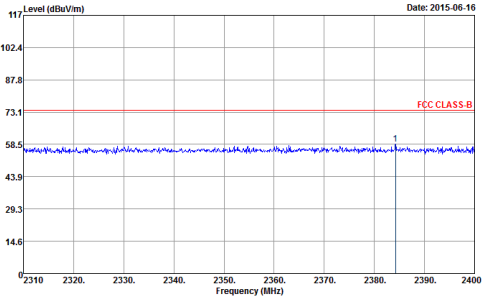
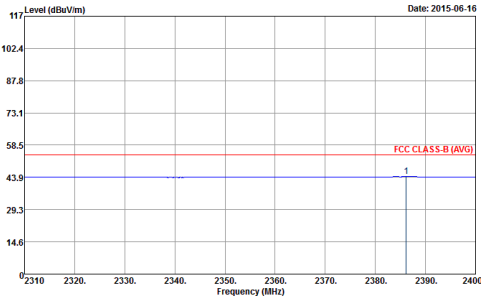
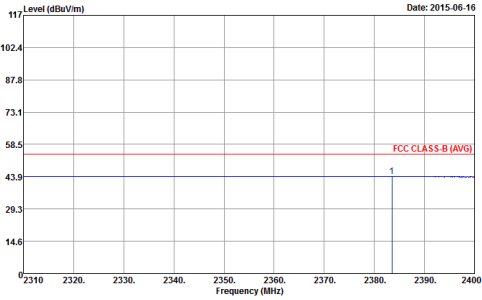
# Appendix C. Radiated Spurious Emission Plots

2.4GHz 2400~2483.5MHz

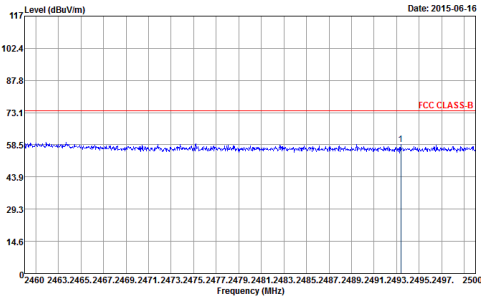
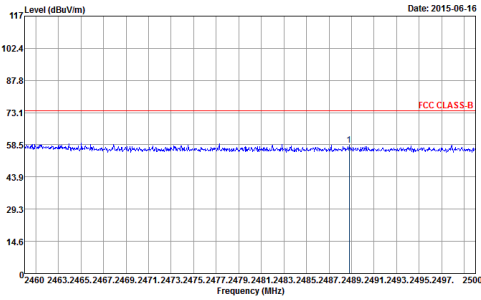
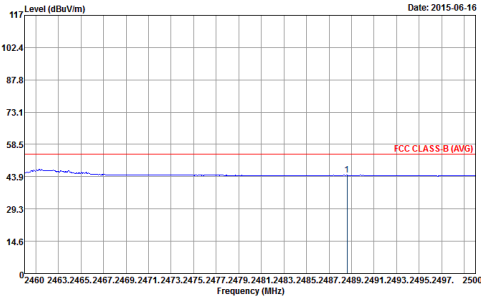
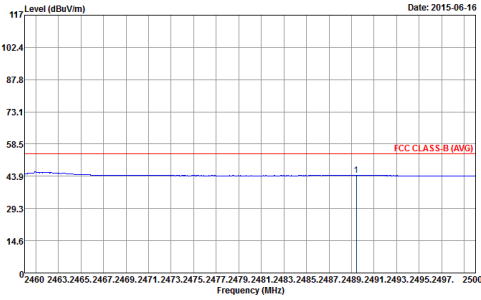
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz – Low channel location	
1	Horizontal	Vertical
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The blue trace shows a peak at approximately 2365 MHz, reaching about 65 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The blue trace shows a peak at approximately 2365 MHz, reaching about 65 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation showing average levels. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The blue trace shows a peak at approximately 2365 MHz, reaching about 45 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:0.010kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation showing average levels. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The blue trace shows a peak at approximately 2365 MHz, reaching about 45 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:0.010kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - High channel location	
1	Horizontal	Vertical
Peak	 <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>	 <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>
Avg.	 <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak</p>	 <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL RBW:1000.000kHz VBW:0.010kHz SWT:Auto Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:0.010kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:0.010kHz SWT:Auto            Detector : Peak</p>

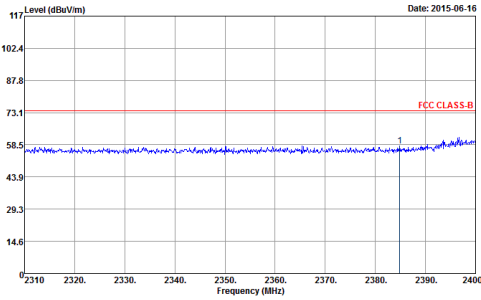
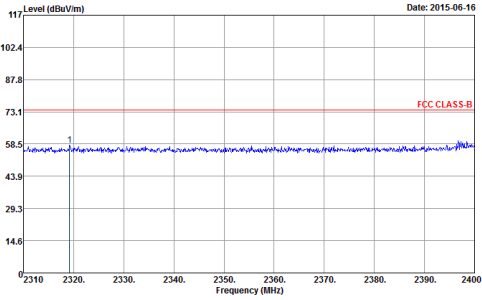
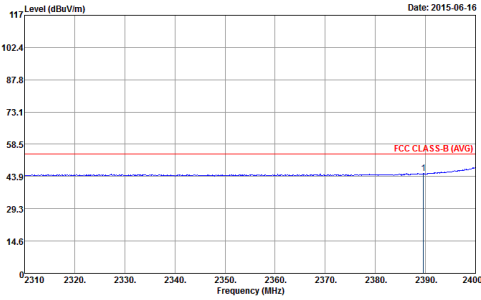
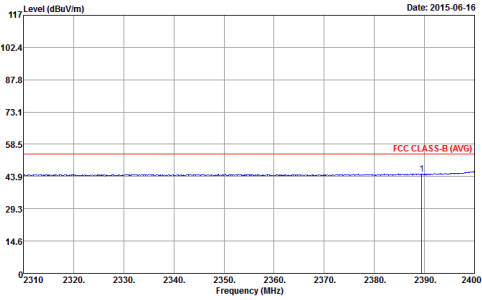


2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - Low channel location	
1	Horizontal	Vertical
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The blue signal trace shows a peak at approximately 2390 MHz, reaching about 58.5 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The blue signal trace shows a peak at approximately 2390 MHz, reaching about 58.5 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation showing average values. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The blue signal trace shows a peak at approximately 2390 MHz, reaching about 43.9 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation showing average values. The y-axis ranges from 0 to 117 dBuV/m, and the x-axis ranges from 2310 to 2400 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The blue signal trace shows a peak at approximately 2390 MHz, reaching about 43.9 dBuV/m.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - High channel location	
1	Horizontal	Vertical
Peak	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak	<p>Date: 2015-08-06</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>	<p>Date: 2015-08-06</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>
Avg.	<p>Date: 2015-08-06</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL RBW: 1000.000kHz VBW: 1.000kHz SWT: Auto Detector : Peak</p>	<p>Date: 2015-08-06</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL RBW: 1000.000kHz VBW: 1.000kHz SWT: Auto Detector : Peak</p>



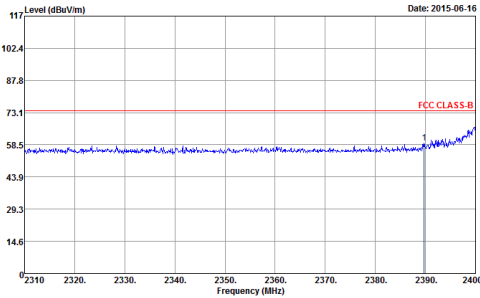
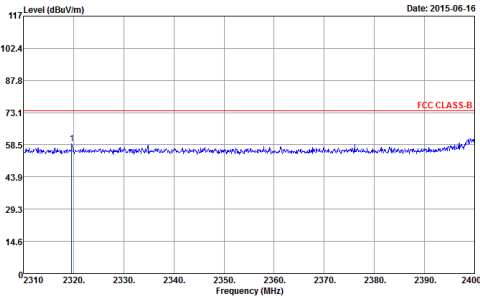
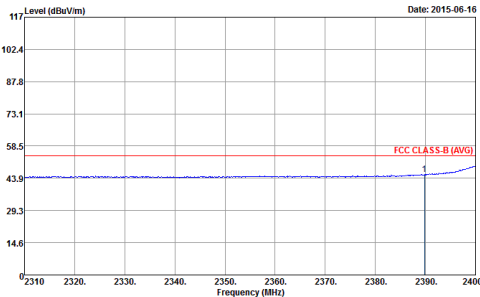
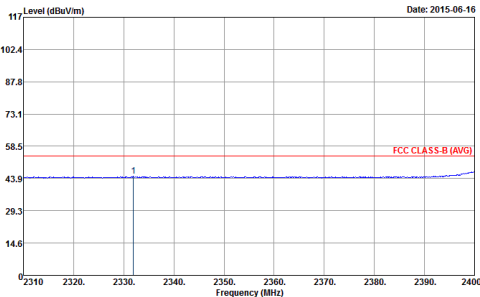


2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL Detector : Peak</p>

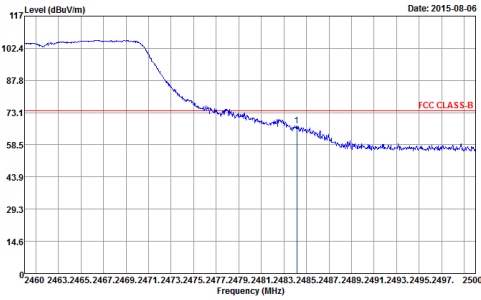
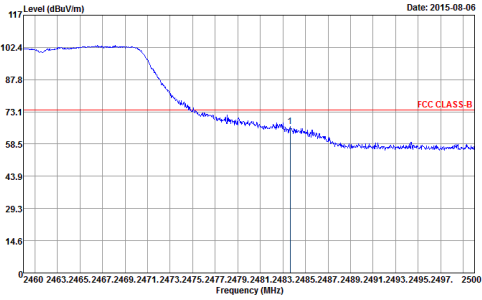
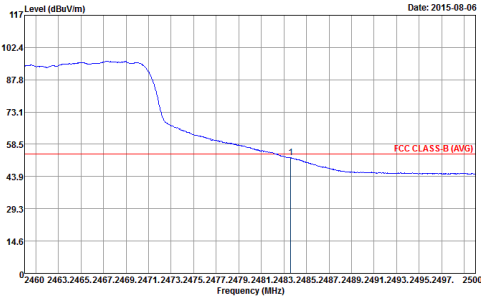
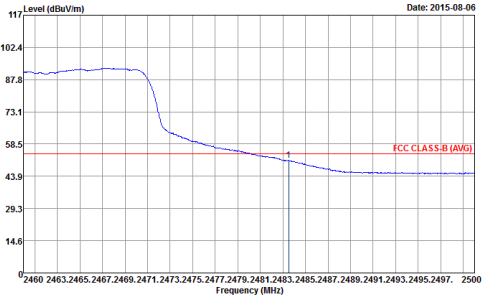


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - Low channel location	
1	Horizontal	Vertical
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) - Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) - Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL Detector : Peak</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) - Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) - Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - High channel location	
1	Horizontal	Vertical
Peak	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>
Avg.	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p>	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization. The plot shows a signal level starting at approximately 102.4 dBuV/m at 2460 MHz and decreasing to about 58.5 dBuV/m at 2500 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. A vertical line marks the peak at approximately 2475 MHz.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical polarization. The plot shows a signal level starting at approximately 102.4 dBuV/m at 2460 MHz and decreasing to about 58.5 dBuV/m at 2500 MHz. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. A vertical line marks the peak at approximately 2475 MHz.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization showing the average signal level. The plot shows a signal level starting at approximately 87.8 dBuV/m at 2460 MHz and decreasing to about 43.9 dBuV/m at 2500 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. A vertical line marks the peak at approximately 2475 MHz.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical polarization showing the average signal level. The plot shows a signal level starting at approximately 87.8 dBuV/m at 2460 MHz and decreasing to about 43.9 dBuV/m at 2500 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. A vertical line marks the peak at approximately 2475 MHz.</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>

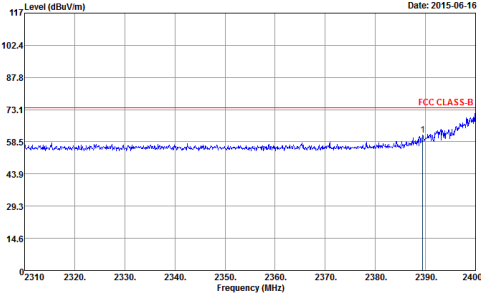
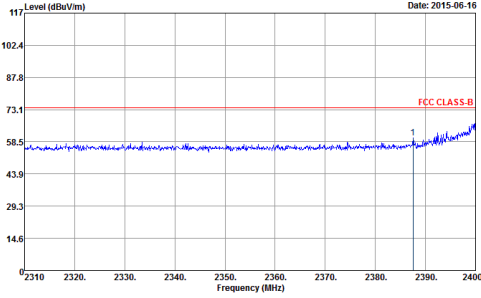
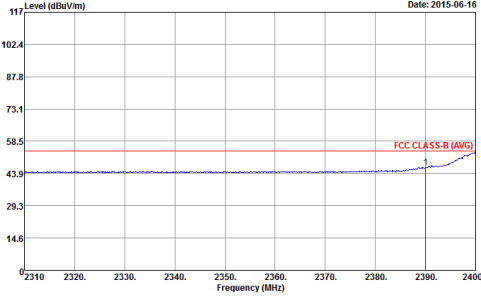
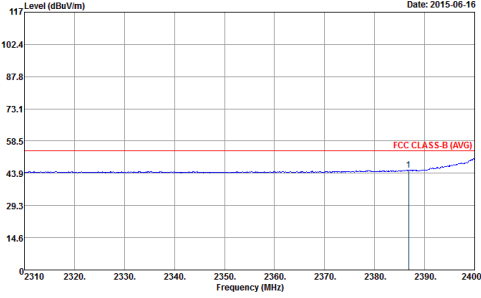


2.4GHz 2400~2483.5MHz

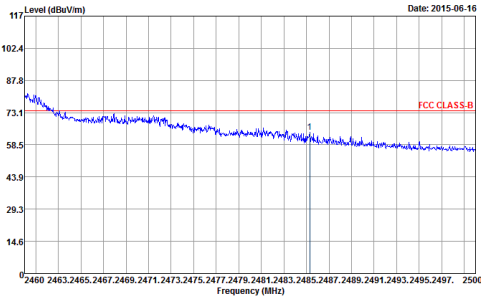
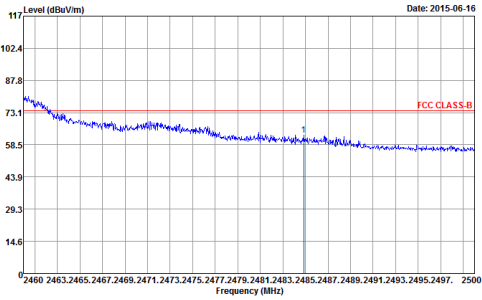
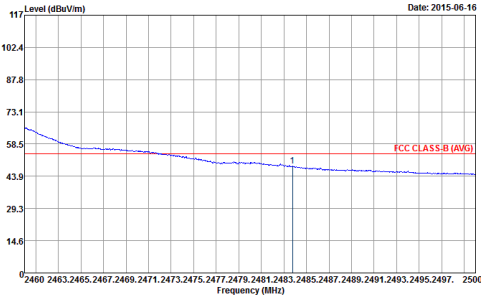
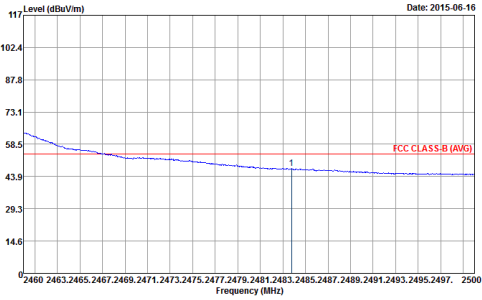
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL RBW: 1000.000kHz VBW: 1.000kHz SWT: Auto Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL RBW: 1000.000kHz VBW: 1.000kHz SWT: Auto Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - Low channel location	
1+2	Horizontal	Vertical
Peak	 <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>	 <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>
Avg.	 <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL RBW:1000.000kHz VBW:1.000kHz SWT:Auto Detector : Peak</p>	 <p>Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL RBW:1000.000kHz VBW:1.000kHz SWT:Auto Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - High channel location	
1+2	Horizontal	Vertical
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 14.6 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the FCC CLASS-B limit at approximately 73.1 dBuV/m. The measured signal is below this limit.</p> <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 14.6 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the FCC CLASS-B limit at approximately 73.1 dBuV/m. The measured signal is below this limit.</p> <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation showing the average signal. The y-axis ranges from 14.6 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at approximately 58.5 dBuV/m. The measured signal is below this limit.</p> <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000KHz VBW:1.000KHz SWT:Auto            Detector : Peak</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation showing the average signal. The y-axis ranges from 14.6 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the FCC CLASS-B (AVG) limit at approximately 58.5 dBuV/m. The measured signal is below this limit.</p> <p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000KHz VBW:1.000KHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1+2	Horizontal	Vertical
Peak	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>
Avg.	<p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL            RBW:1000.000kHz VBW:1.000kHz SWT:Auto            Detector : Peak</p>





**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Harmonic @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
<b>Peak Avg.</b>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



2.4GHz 2400~2483.5MHz

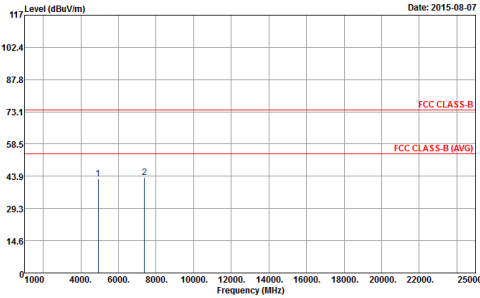
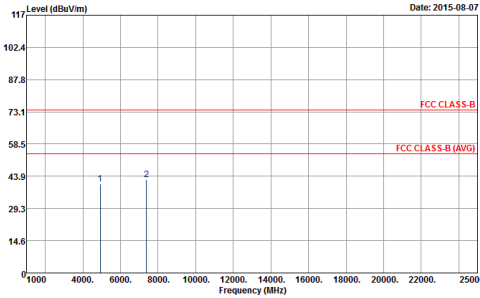
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	 <p>Date: 2015-08-07</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>	 <p>Date: 2015-08-07</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW: 1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW: 1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>





WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-08-07</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>	<p>Date: 2015-08-07</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto            Detector : Peak</p>



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m LF-ANT(131102) HORIZONTAL            RBW:120.000kHz VBW:300.000kHz SWT:0.500sec            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m LF-ANT(131102) VERTICAL            RBW:120.000kHz VBW:300.000kHz SWT:0.500sec            Detector : Peak</p>



2.4GHz 2400~2483.5MHz

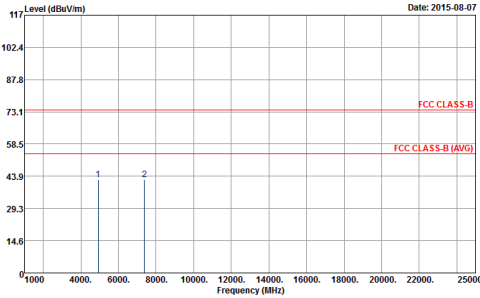
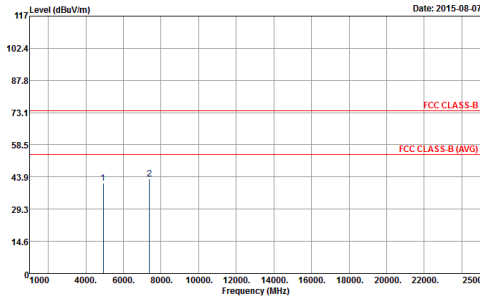
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1+2	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	<p>Date: 2015-06-16</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>	<p>Date: 2015-06-17</p> <p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL            RBW:1000.000kHz VBW:3000.000kHz SWT:Auto            Detector : Peak</p>



<b>WIFI</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11n HT20 CH11 2462MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b>	 <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>	 <p>Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL RBW: 1000.000kHz VBW: 3000.000kHz SWT: Auto Detector : Peak</p>
<b>Avg.</b>		



**2.4GHz 2400~2483.5MHz**

**Emission below 1GHz**

**2.4GHz WIFI 802.11n HT20 (LF)**

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
<p><b>QP / Peak</b></p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m LF-ANT(131102) HORIZONTAL            RBW:120.000kHz VBW:300.000kHz SWT:0.500sec            Detector : Peak</p>	<p>Site : 03CH07-HY            Condition : FCC CLASS-B 3m LF-ANT(131102) VERTICAL            RBW:120.000kHz VBW:300.000kHz SWT:0.500sec            Detector : Peak</p>