



# FCC RF Test Report

**APPLICANT** : Sony Mobile Communications Inc.  
**EQUIPMENT** : Smart phone  
**BRAND NAME** : SONY  
**MODEL NAME** : PM-0891-BV  
**FCC ID** : PY7-PM0891  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on Apr. 29, 2015 and testing was completed on May 12, 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.**

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : PY7-PM0891

Page Number : 1 of 44

Report Issued Date : Jun. 30, 2015

Report Version : Rev. 01

Report Template No.: BU5-FR15CWL Version 1.0



# TABLE OF CONTENTS

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

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

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

    1.1 Applicant ..... 5

    1.2 Manufacturer ..... 5

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

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

    1.5 Modification of EUT ..... 7

    1.6 Testing Location ..... 7

    1.7 Applicable Standards ..... 8

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 9**

    2.1 Carrier Frequency Channel ..... 9

    2.2 Pre-Scanned RF Power ..... 10

    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 Output Power Measurement ..... 15

    3.3 Power Spectral Density Measurement ..... 16

    3.4 Conducted Band Edges and Spurious Emission Measurement ..... 18

    3.5 Radiated Band Edges and Spurious Emission Measurement ..... 31

    3.6 AC Conducted Emission Measurement ..... 35

    3.7 Antenna Requirements ..... 41

**4 LIST OF MEASURING EQUIPMENT ..... 42**

**5 UNCERTAINTY OF EVALUATION ..... 44**

**APPENDIX A. CONDUCTED TEST RESULTS**

**APPENDIX B. RADIATED TEST RESULTS**



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR542942C	Rev. 01	Initial issue of report	Jun. 30, 2015



### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 6.5dB at 6390.00MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.60 dB at 2.814 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

**Sony Mobile Communications Inc.**  
Nya Vattentorget, 22188 Lund, Sweden

## 1.2 Manufacturer

**Arima Communications Corp.**  
6F, No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

## 1.3 Product Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is Smart phone supporting, GSM/WCDMA/LTE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, and NFC features, and below is details of information.

Product Feature	
<b>Equipment</b>	Smart phone
<b>Brand Name</b>	SONY
<b>Type Name</b>	PM-0891-BV
<b>FCC ID</b>	PY7-PM0891
<b>GSM Operating Band(s)</b>	GSM 850/900/1800/1900MHz
<b>GPRS / EGPRS Multi Slot Class</b>	GPRS Class 12, EGPRS Class 12
<b>WCDMA Operating Band(s)</b>	FDD Band I / II / V / VIII
<b>WCDMA Rel. Version</b>	Rel. 8
<b>LTE Operating Band(s)</b>	FDD Band I / III / V / VII / VIII / XXVIII TDD Band XL
<b>LTE Rel. Version</b>	Rel. 8
<b>Wi-Fi Specification</b>	802.11a/b/g/n (HT20/HT40)
<b>Bluetooth Version</b>	v3.0+EDR / v4.0-LE
<b>NFC Specification</b>	ISO14443A / ISO14443B / Felica
<b>Power Supply</b>	Battery / AC Adapter / Car Charger

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



### 1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
<b>Tx/Rx Channel Frequency Range</b>	2412 MHz ~ 2462 MHz
<b>Maximum (Peak) Output Power to Antenna</b>	802.11b : 19.00 dBm (0.0794 W) 802.11g : 23.49 dBm (0.2234 W) 802.11n HT20 : 21.96 dBm (0.1570 W) 802.11n HT40 : 22.55 dBm (0.1799 W)
<b>Antenna Type</b>	PIFA Antenna type with gain -2.00 dBi
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
IMEI 1: 004402454617220 IMEI 2: 004402454617238	A	29.0.B.0.7 6	WUJ01HWJMD	RF conducted measurement
IMEI 1: 004402454617303 IMEI 2: 004402454617311			WUJ01HWJRA	Radiated Spurious Emission
IMEI 1: 004402454617709 IMEI 2: 004402144617717			WUJ01HWK59	Conducted Emission

Accessory List	
<b>AC Adapter</b>	Model No. : EP800
	Type No. : CAA-0002016-US B
	S/N : 3113W 45 108545 (for Radiation Spurious Emission) 3113W 38 210631 (for Conducted Emission)
<b>Battery</b>	Model No. : LIS1579ERPC
<b>Earphone 2</b>	Model No. : MH410c
	Type No. : AG-1103
	S/N :14292040011682C (for Conducted Emission)
<b>USB Cable</b>	Model No. : EC450
	Type No. : AI-0700
	S/N : 143412DE1065866 (for Radiation Spurious Emission) 134912D1000585A (for Conducted Emission)

**Note:**

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test.
3. For other wireless features of this EUT, test report will be issued separately.



### 1.5 Modification of EUT

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

### 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by 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>	
	TH02-HY	CO05-HY

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

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-0855	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	03CH11-HY	

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



## 1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03
- ♦ 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 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 (Z 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 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.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.00	18.98	18.92	18.91

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	23.49	23.27	23.19	23.05	22.70	22.52	22.47	22.36

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.96	21.61	21.72	21.90	21.61	21.61	21.69	21.69

2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.55	21.48	21.49	21.15	21.40	21.93	22.05	21.39

## 2.3 Test Mode

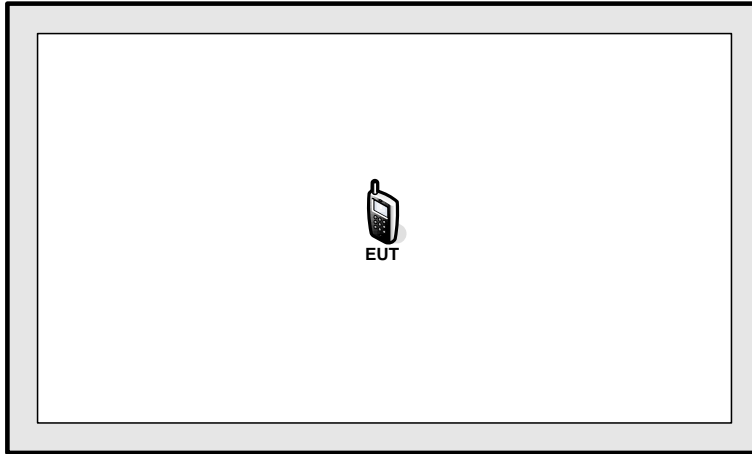
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

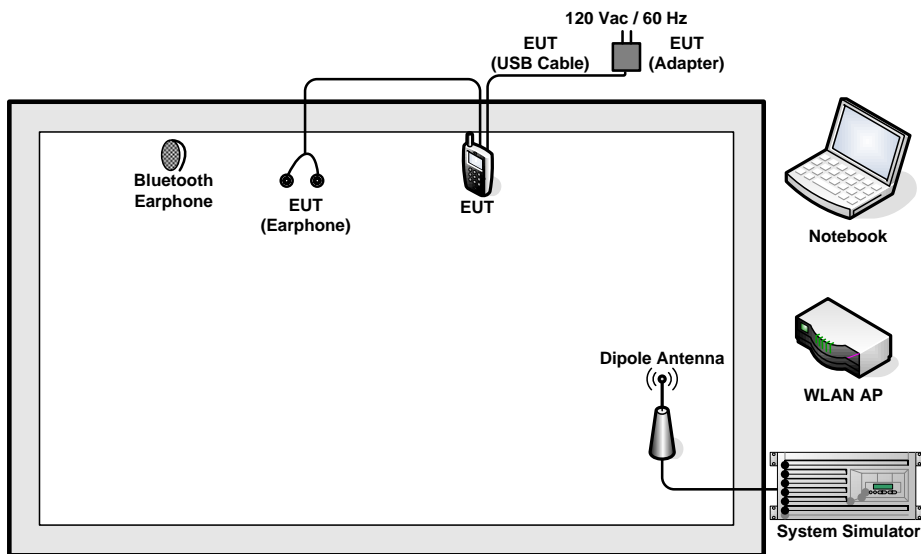
Test Cases	
AC Conducted Emission	Mode 1 : GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + MP3 + Earphone 2 + Battery + USB Cable (Charging from Adapter) + SIM 2
<b>Remark:</b> For Radiated TCs, The tests were performed with SIM 1.	

## 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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-865L	KA2IR865LA1	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	Unshielded, 0.75m	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

### 2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

### 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.

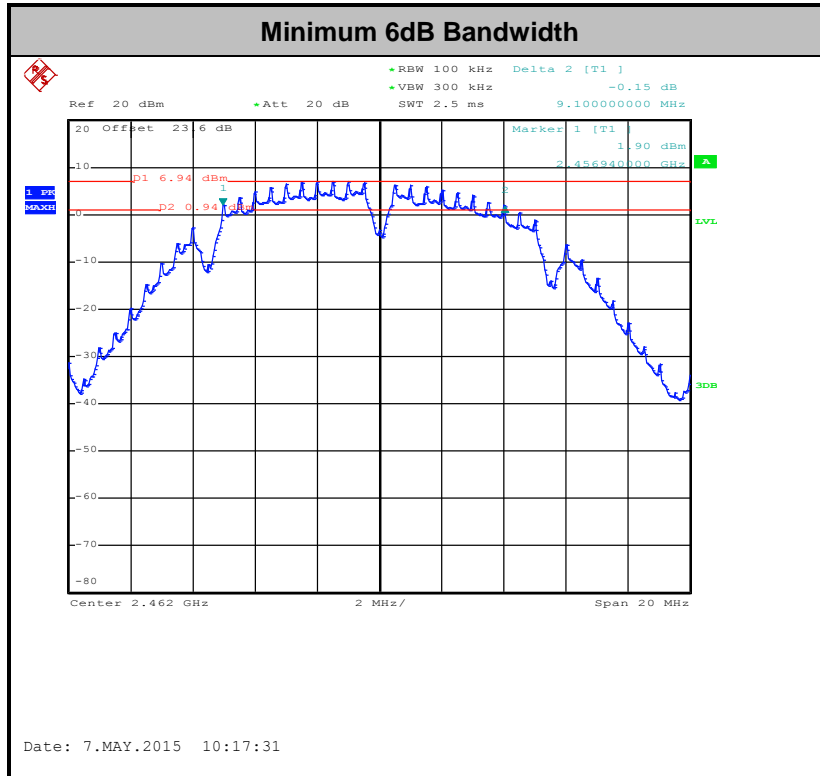
##### 3.1.4 Test Setup





### 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A of this test report.



## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are 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.

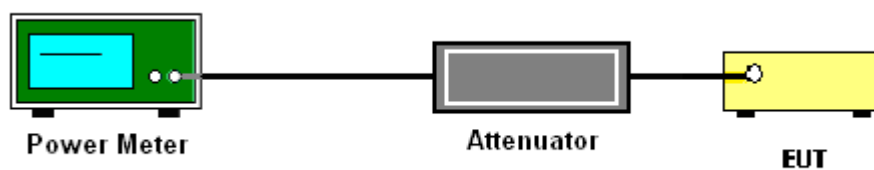
### 3.2.2 Measuring Instruments

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.
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.

### 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.

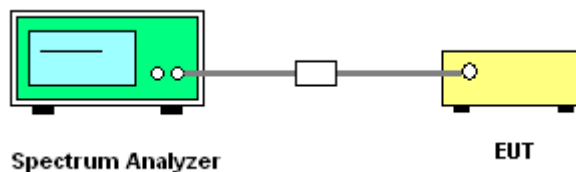
#### 3.3.2 Measuring Instruments

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.

#### 3.3.4 Test Setup

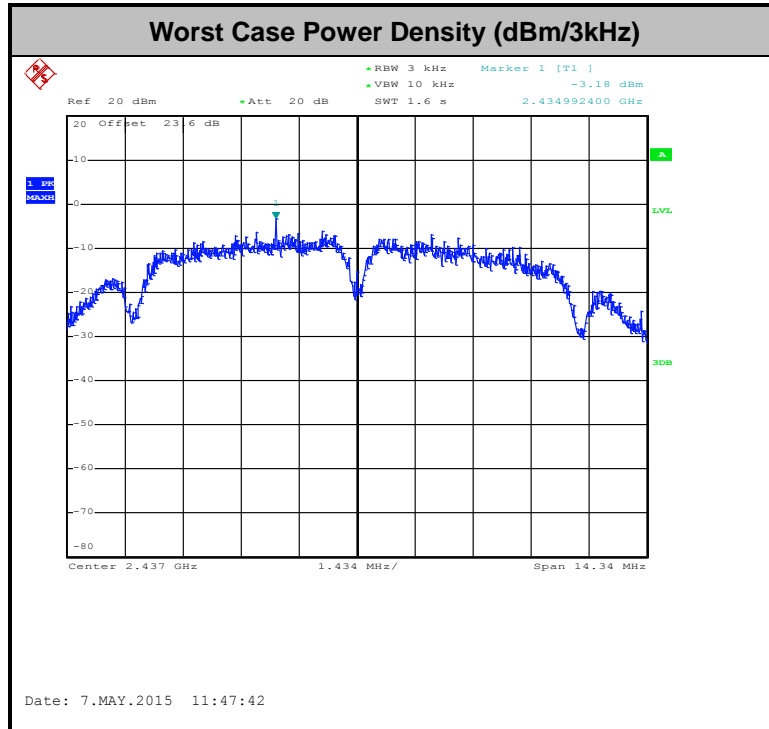






### 3.3.5 Test Result of Power Spectral Density

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).

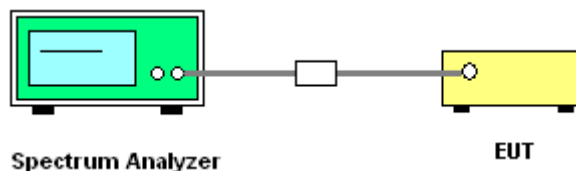
#### 3.4.2 Measuring Instruments

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

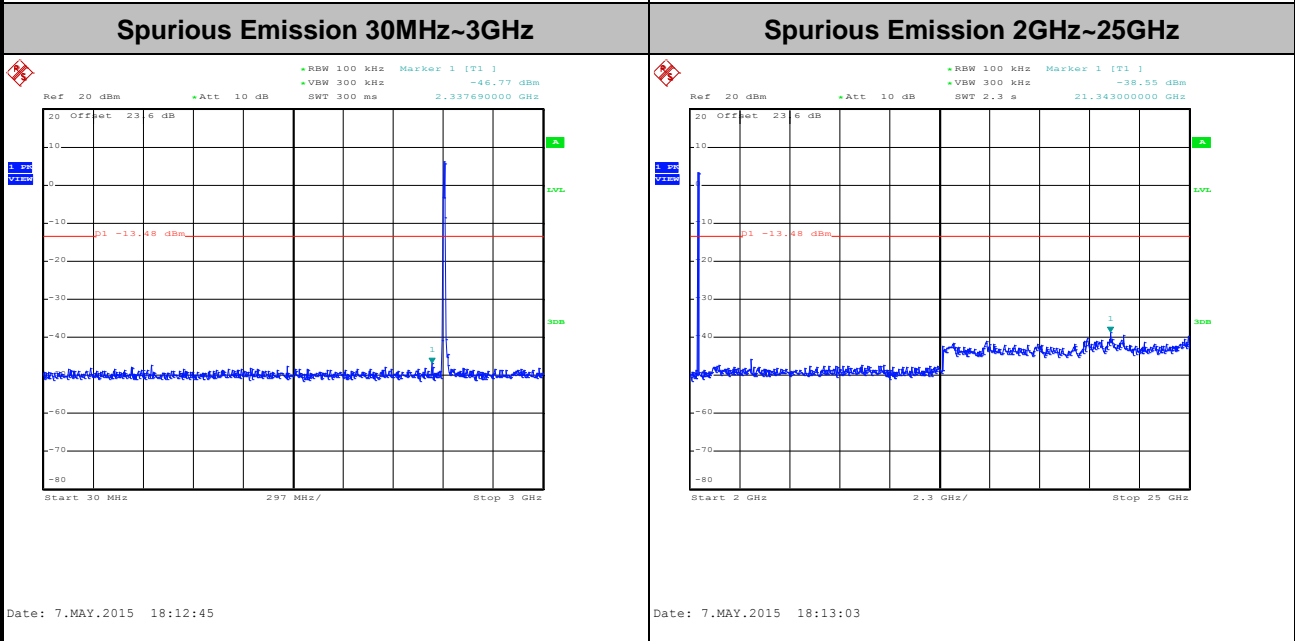
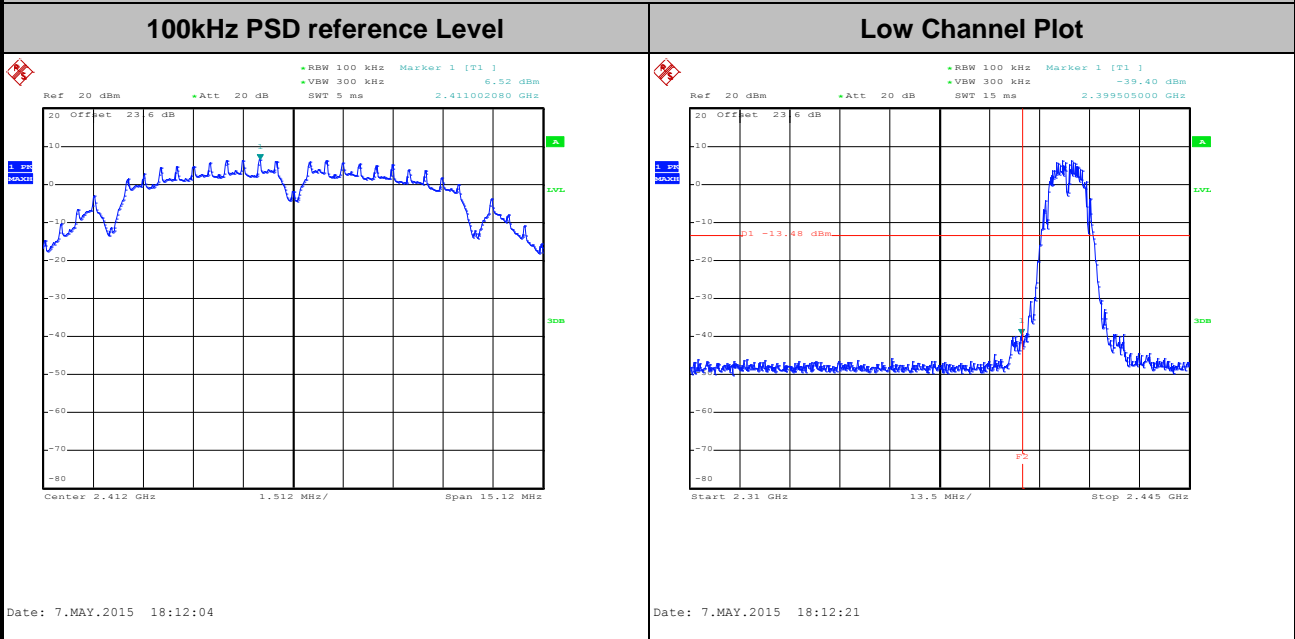




### 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	William Liao

#### WLAN 802.11b Channel 01

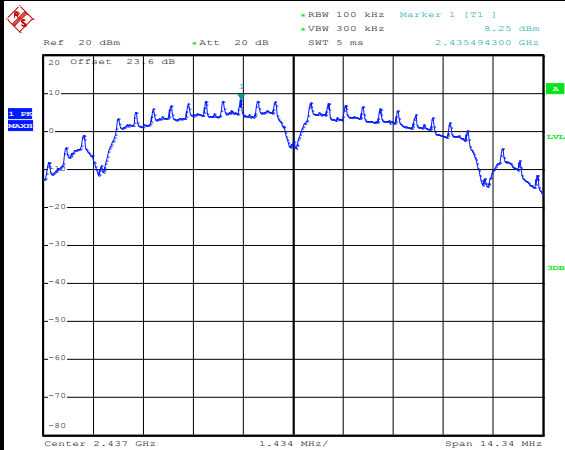




Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	William Liao

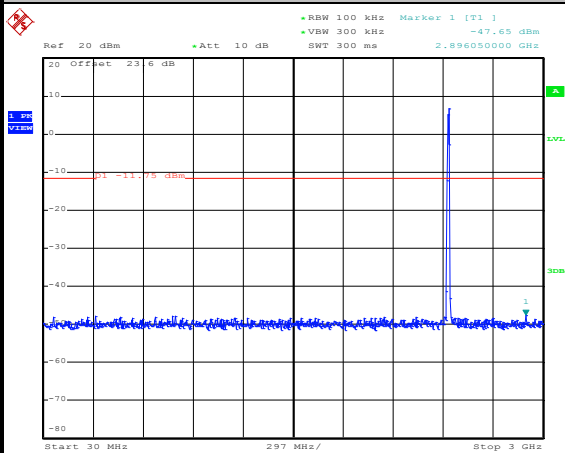
WLAN 802.11b Channel 06

100kHz PSD reference Level



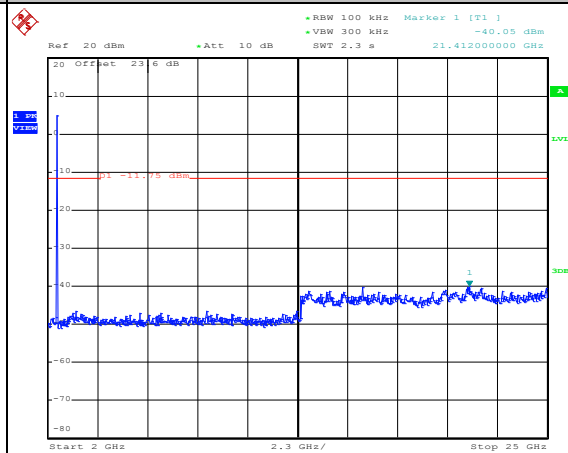
Date: 7.MAY.2015 11:45:53

Spurious Emission 30MHz~3GHz



Date: 12.MAY.2015 19:45:16

Spurious Emission 2GHz~25GHz



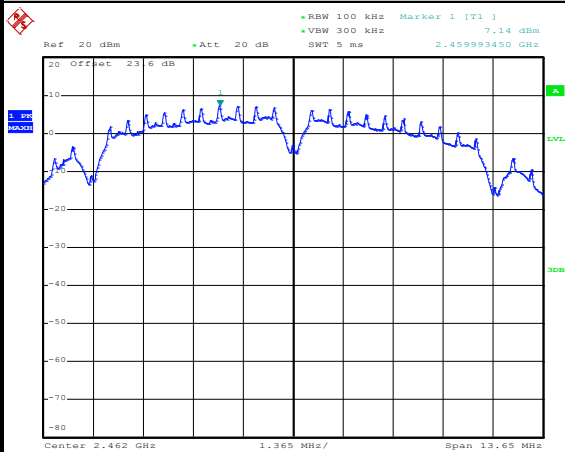
Date: 12.MAY.2015 19:45:34



Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	William Liao

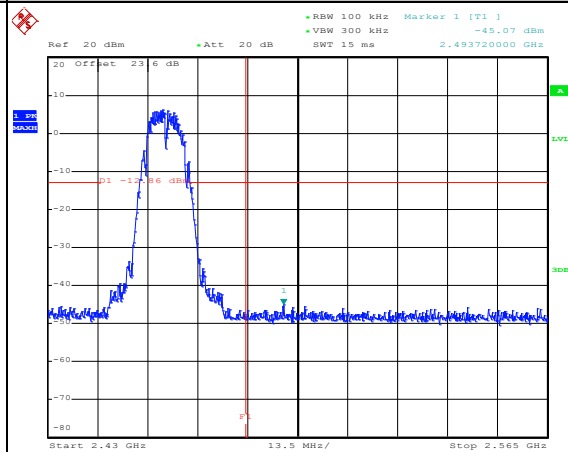
WLAN 802.11b Channel 11

100kHz PSD reference Level



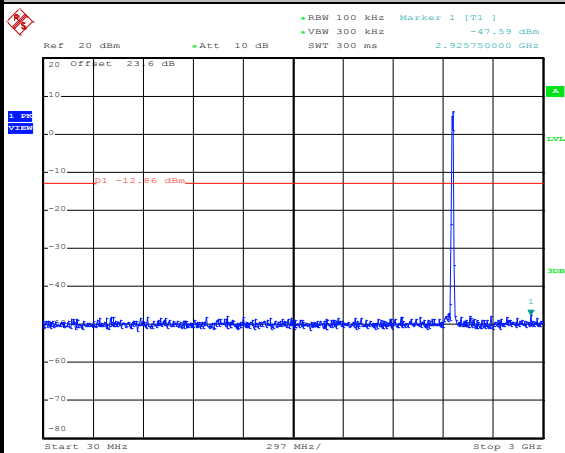
Date: 7.MAY.2015 11:50:25

High Channel Plot



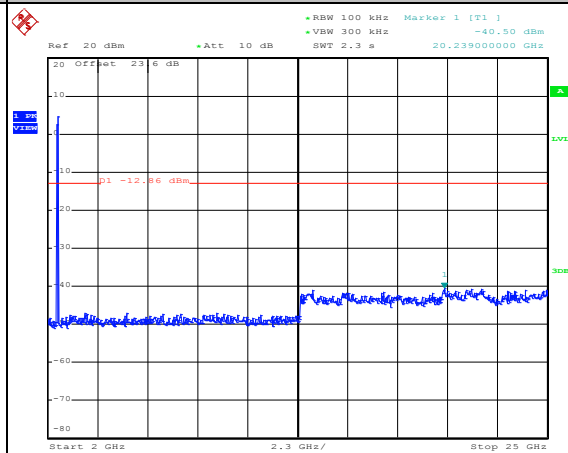
Date: 7.MAY.2015 11:50:48

Spurious Emission 30MHz~3GHz



Date: 12.MAY.2015 19:57:58

Spurious Emission 2GHz~25GHz



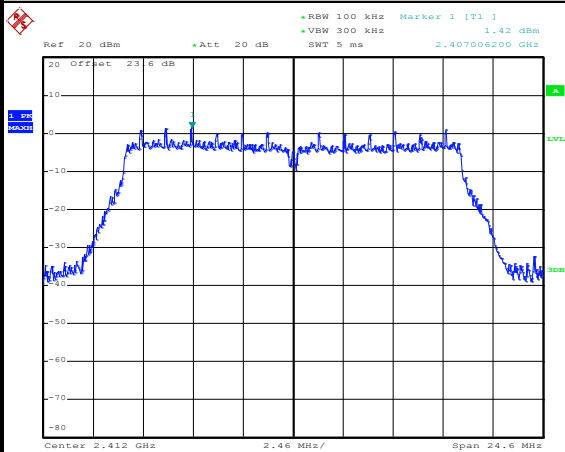
Date: 12.MAY.2015 19:58:16



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	William Liao

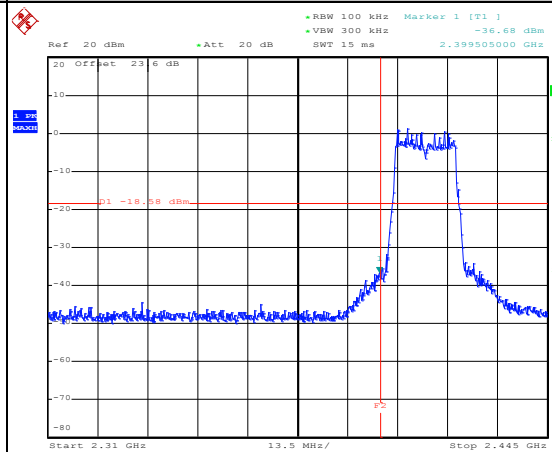
WLAN 802.11g Channel 01

100kHz PSD reference Level



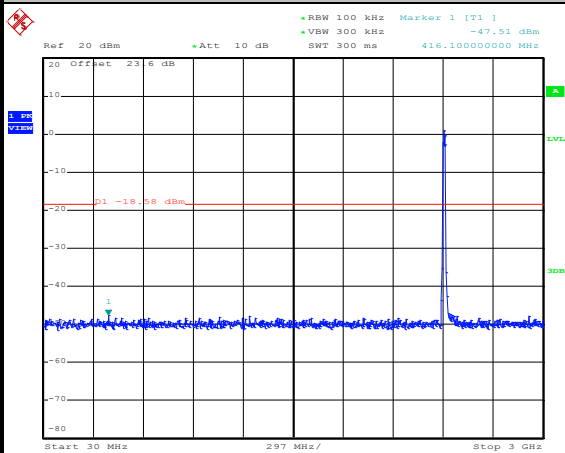
Date: 7.MAY.2015 18:17:01

Low Channel Plot



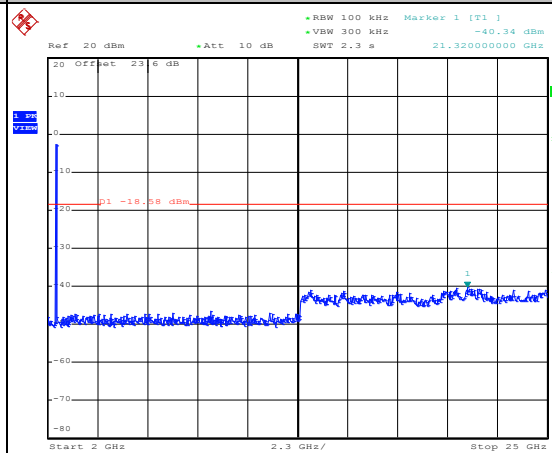
Date: 7.MAY.2015 18:17:17

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 18:17:43

Spurious Emission 2GHz~25GHz



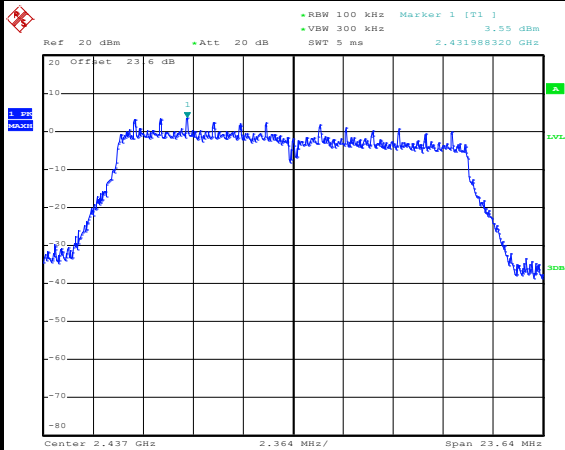
Date: 7.MAY.2015 18:18:01



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	William Liao

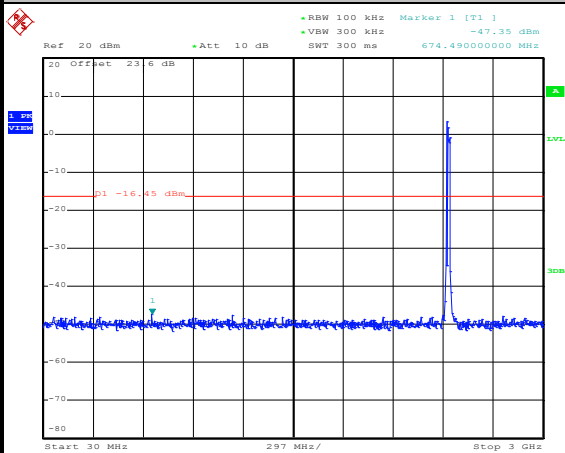
WLAN 802.11g Channel 06

100kHz PSD reference Level



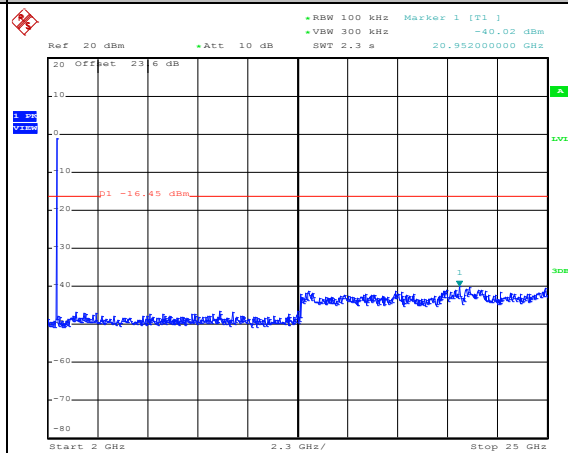
Date: 7.MAY.2015 18:20:45

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 18:21:06

Spurious Emission 2GHz~25GHz



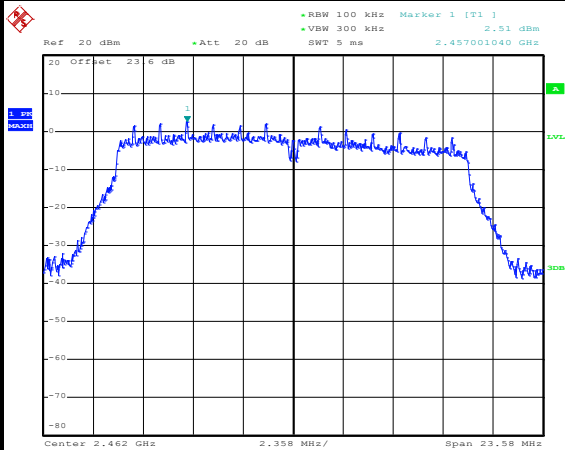
Date: 7.MAY.2015 18:21:24



Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	William Liao

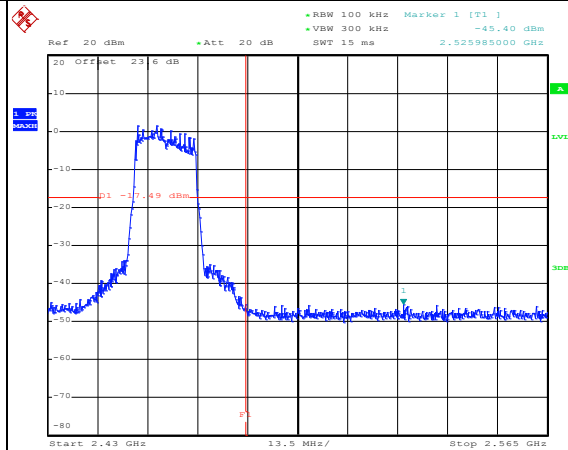
WLAN 802.11g Channel 11

100kHz PSD reference Level



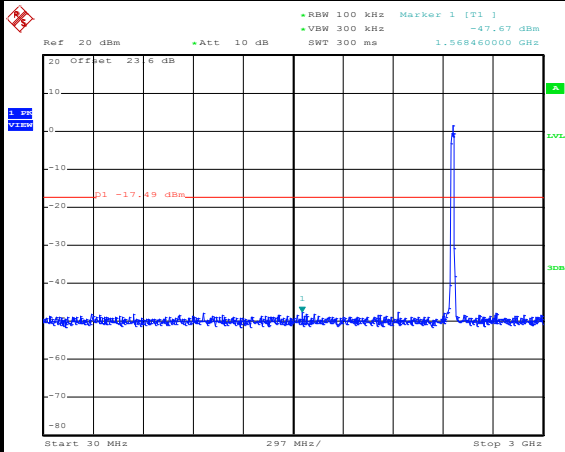
Date: 7.MAY.2015 18:25:24

High Channel Plot



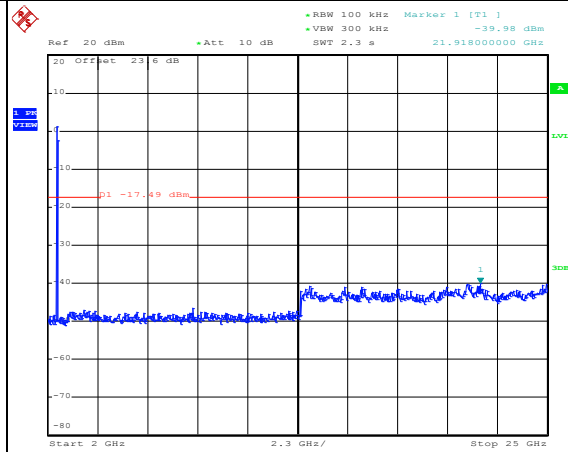
Date: 7.MAY.2015 18:25:41

Spurious Emission 30MHz~3GHz



Date: 7.MAY.2015 18:26:02

Spurious Emission 2GHz~25GHz



Date: 7.MAY.2015 18:26:20





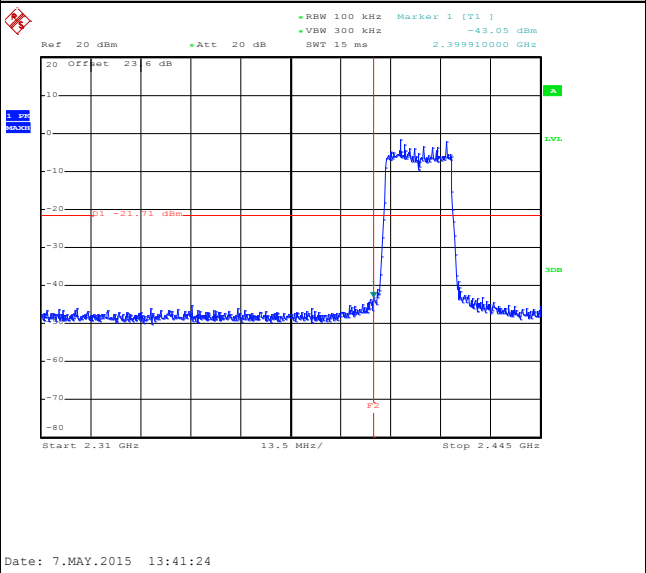
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	William Liao

WLAN 802.11n HT20 Channel 01

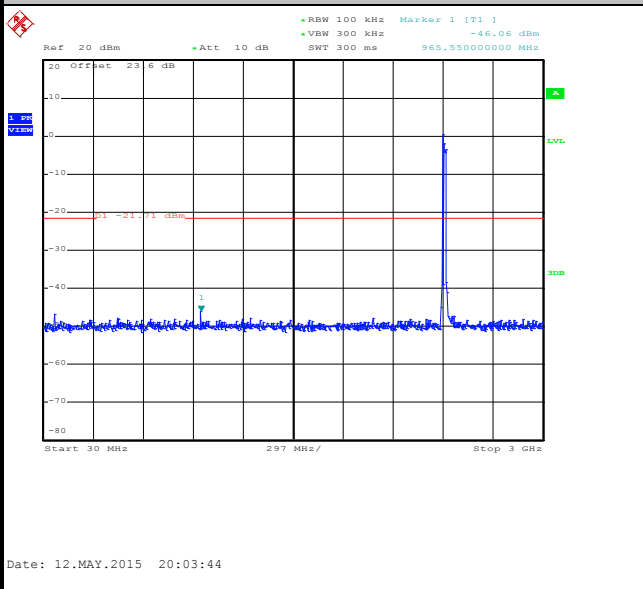
100kHz PSD reference Level



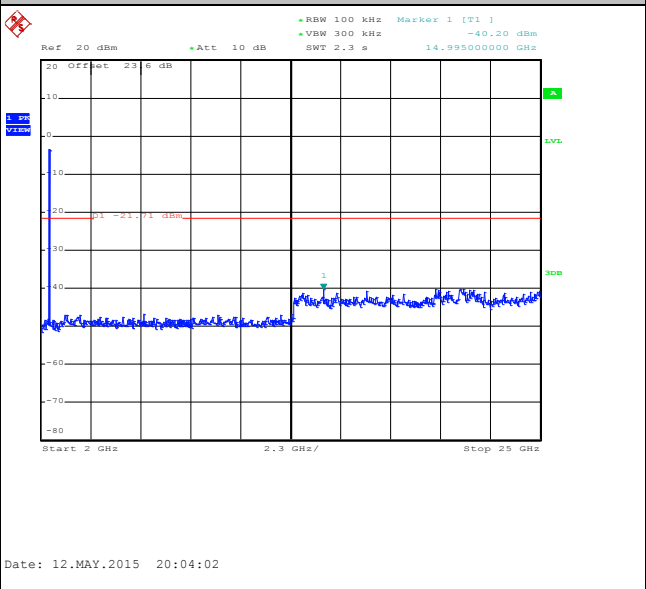
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

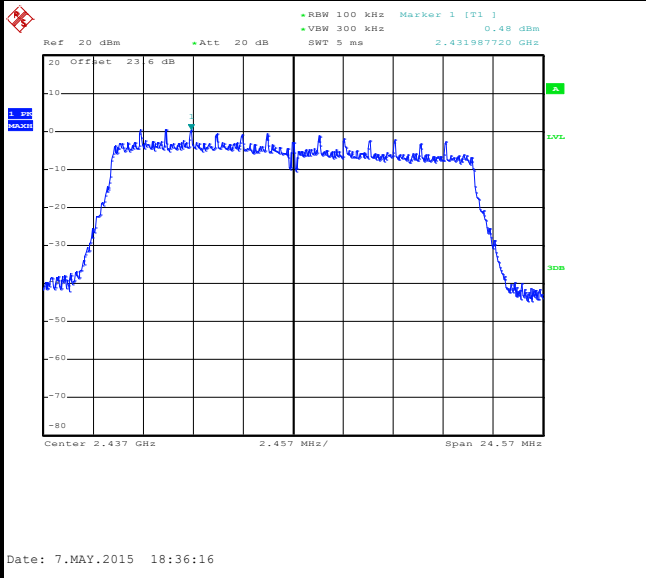




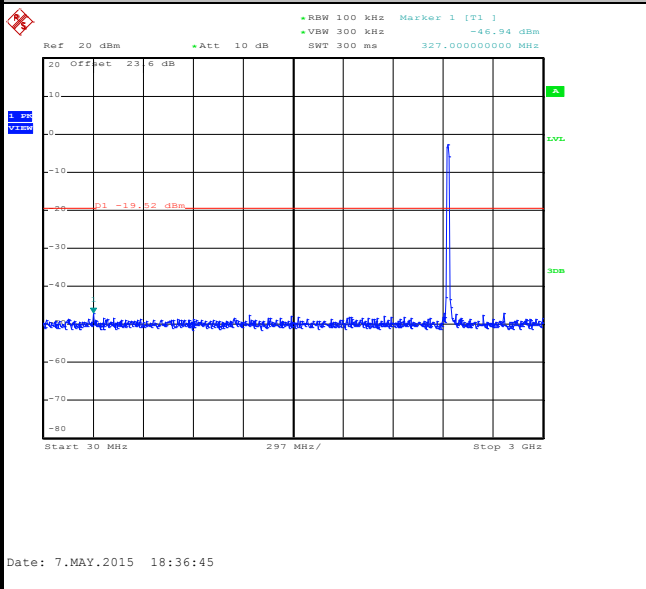
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	William Liao

WLAN 802.11n HT20 Channel 06

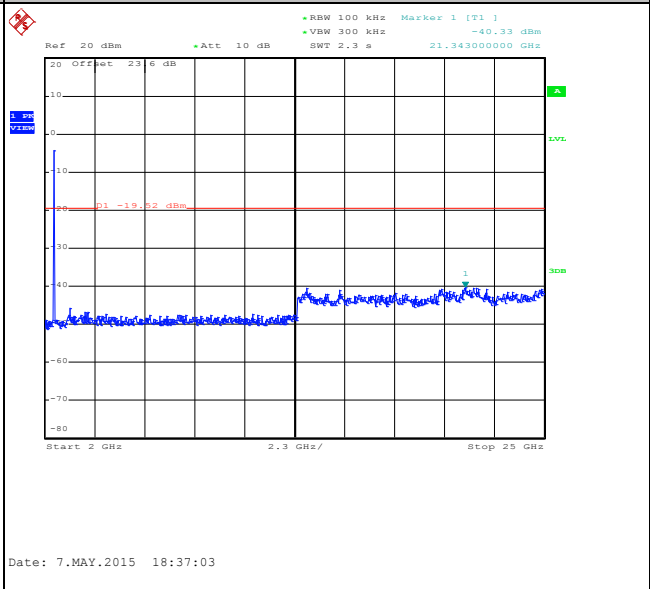
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

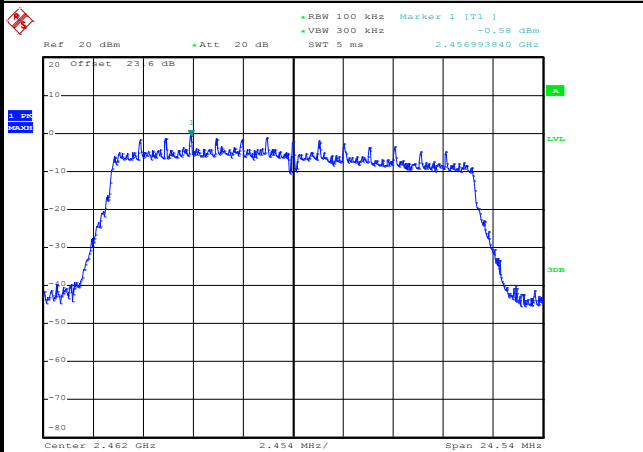




Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	William Liao

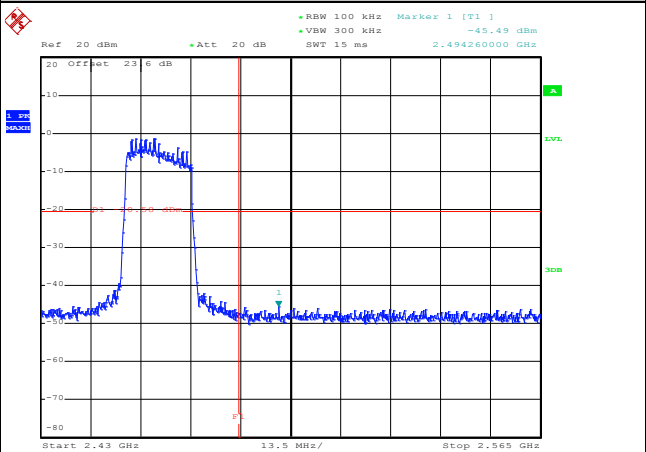
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



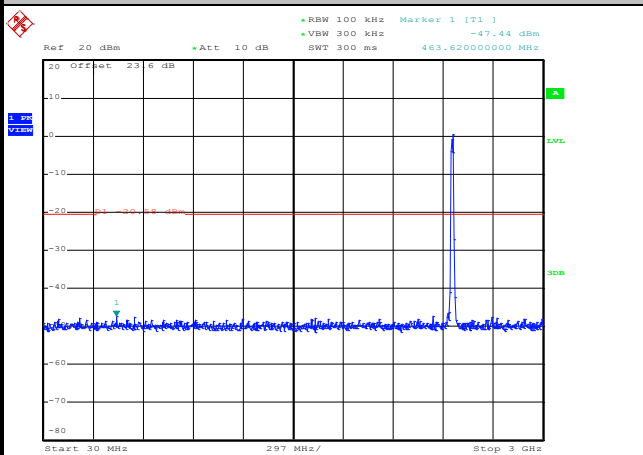
Date: 7.MAY.2015 13:45:23

High Channel Plot



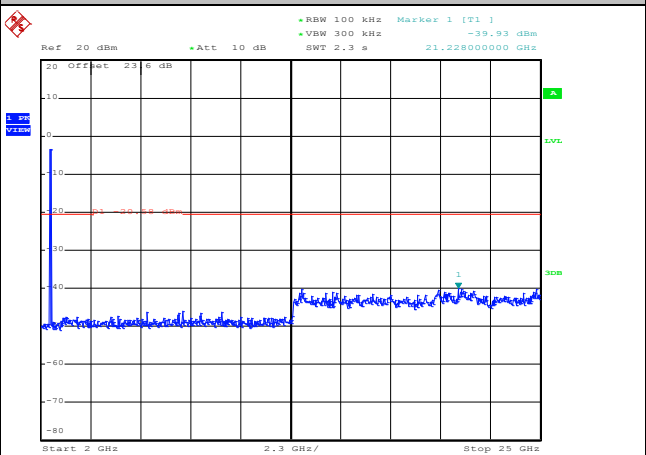
Date: 7.MAY.2015 13:45:41

Spurious Emission 30MHz~3GHz



Date: 12.MAY.2015 20:07:16

Spurious Emission 2GHz~25GHz



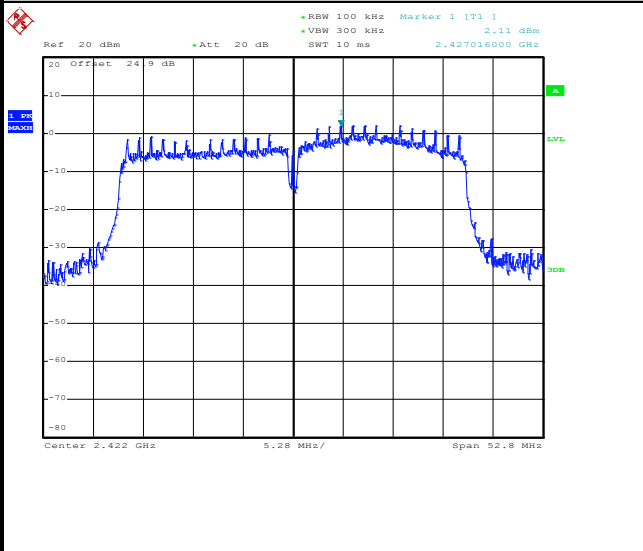
Date: 12.MAY.2015 20:07:34



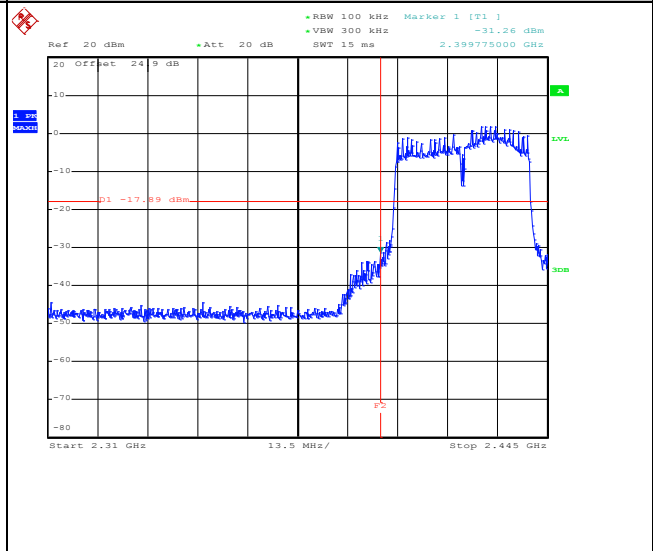
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	03	Test Engineer :	William Liao

WLAN 802.11n HT40 Channel 03

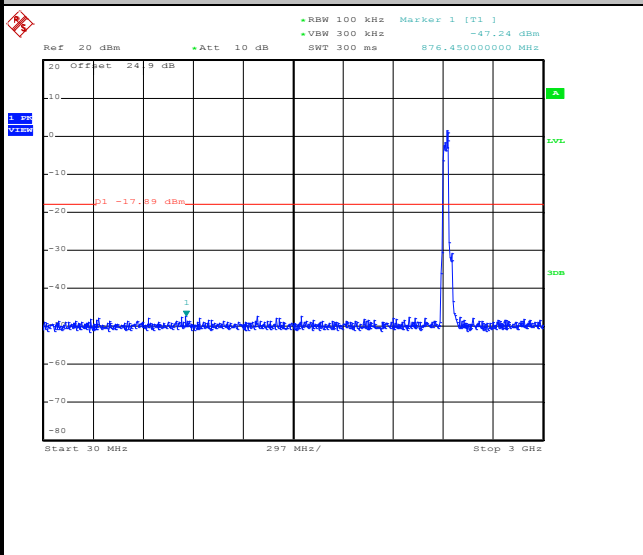
100kHz PSD reference Level



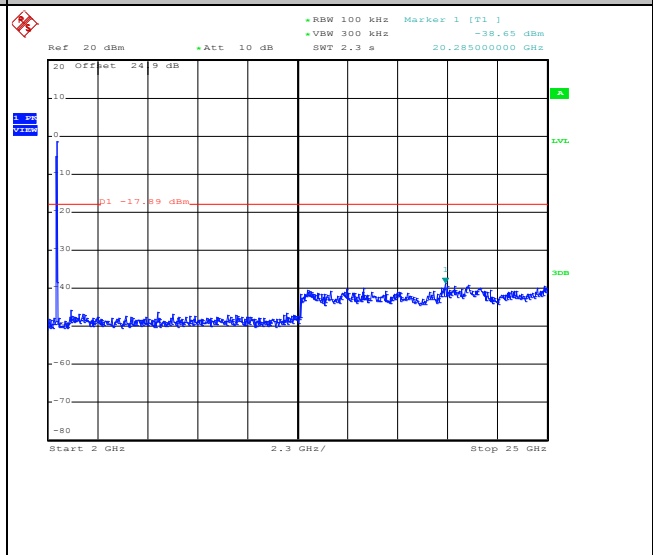
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

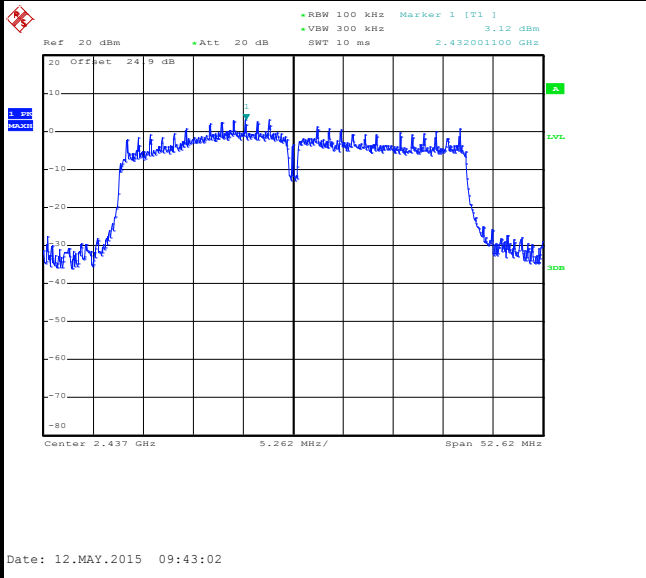




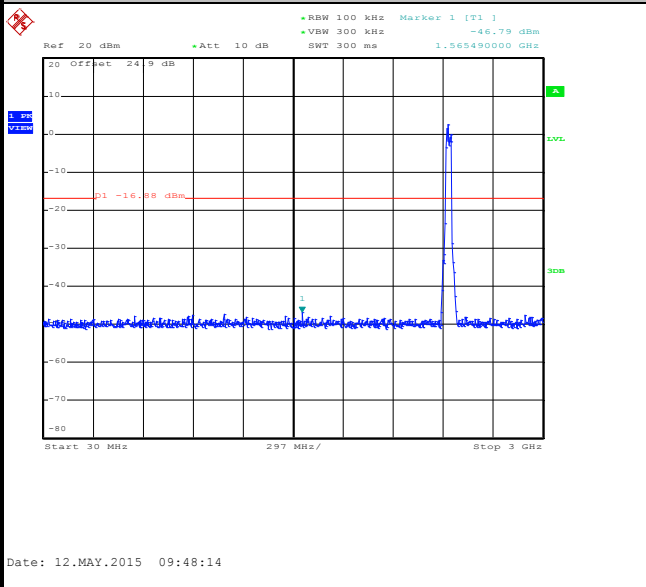
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	William Liao

WLAN 802.11n HT40 Channel 06

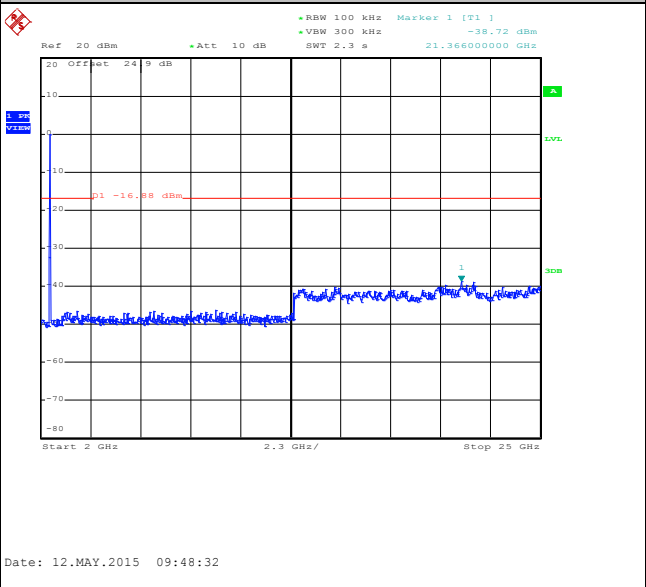
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

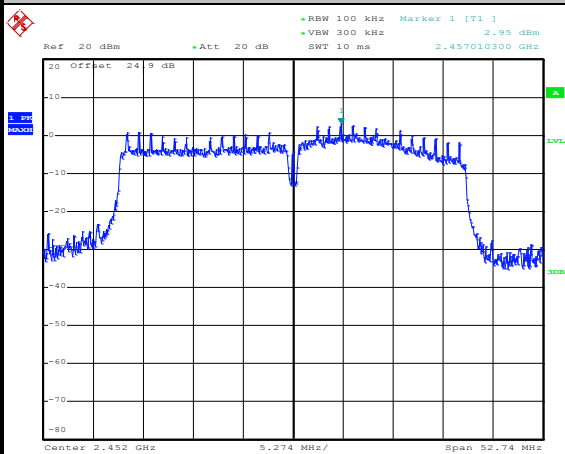




Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	09	Test Engineer :	William Liao

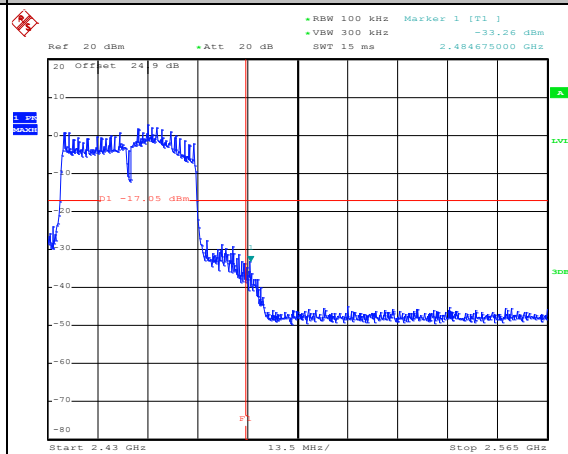
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



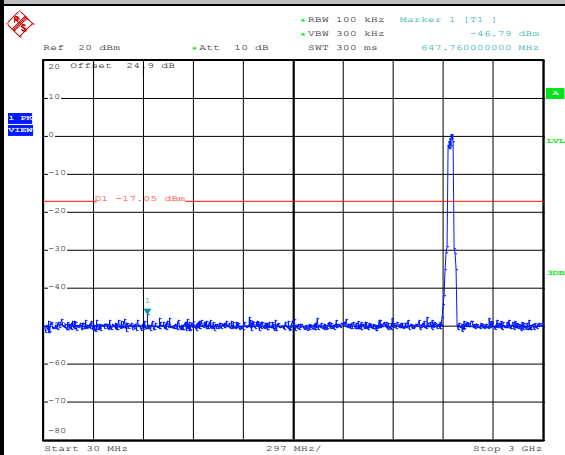
Date: 12.MAY.2015 09:51:43

High Channel Plot



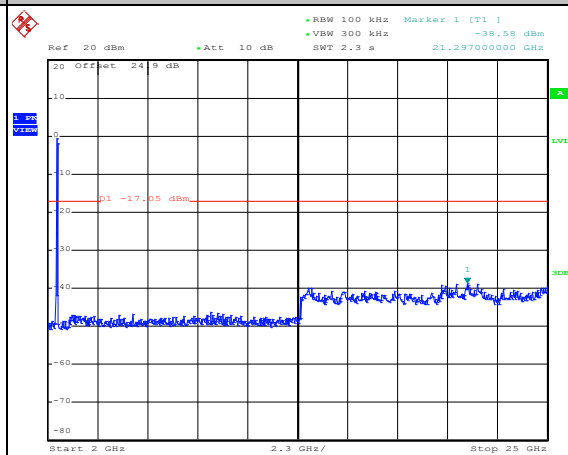
Date: 12.MAY.2015 09:52:02

Spurious Emission 30MHz~3GHz



Date: 12.MAY.2015 09:52:26

Spurious Emission 2GHz~25GHz



Date: 12.MAY.2015 09:52:44



### 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 Procedures

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  $f < 1 \text{ GHz}$ ;  $\text{VBW} \geq \text{RBW}$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1 \text{ GHz}$  for peak measurement.

For average measurement:

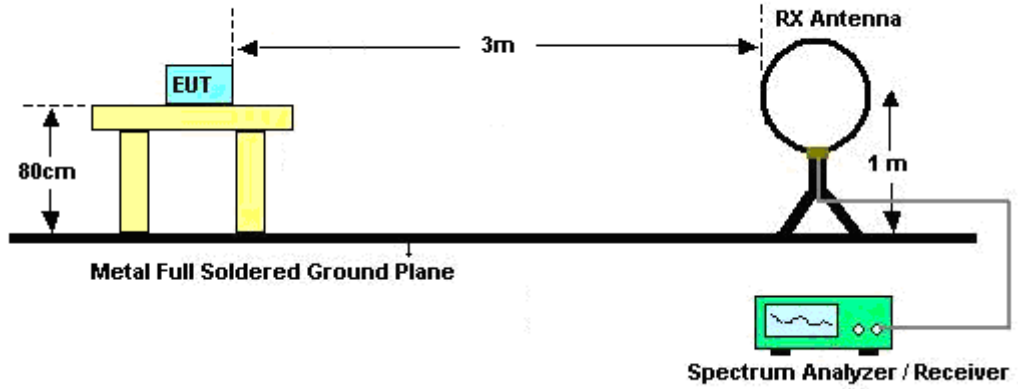
- $\text{VBW} = 10 \text{ Hz}$ , when duty cycle is no less than 98 percent.
- $\text{VBW} \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(μs)	1/T(kHz)	VBW Setting
802.11b	98.13	-	-	10Hz
802.11g	89.10	1390.00	0.72	1kHz
2.4GHz 802.11n HT20	88.44	1300.00	0.77	1kHz
2.4GHz 802.11n HT40	78.83	648.00	1.54	3kHz

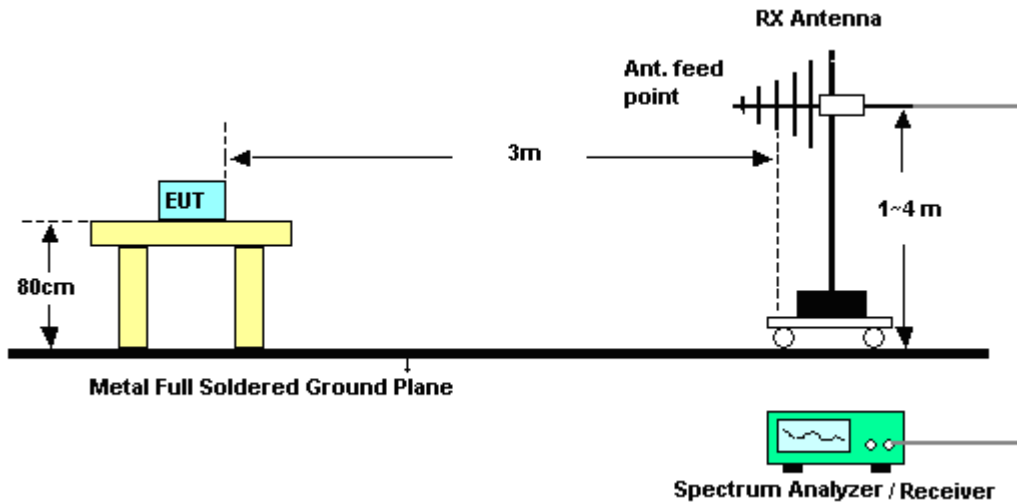


### 3.5.4 Test Setup

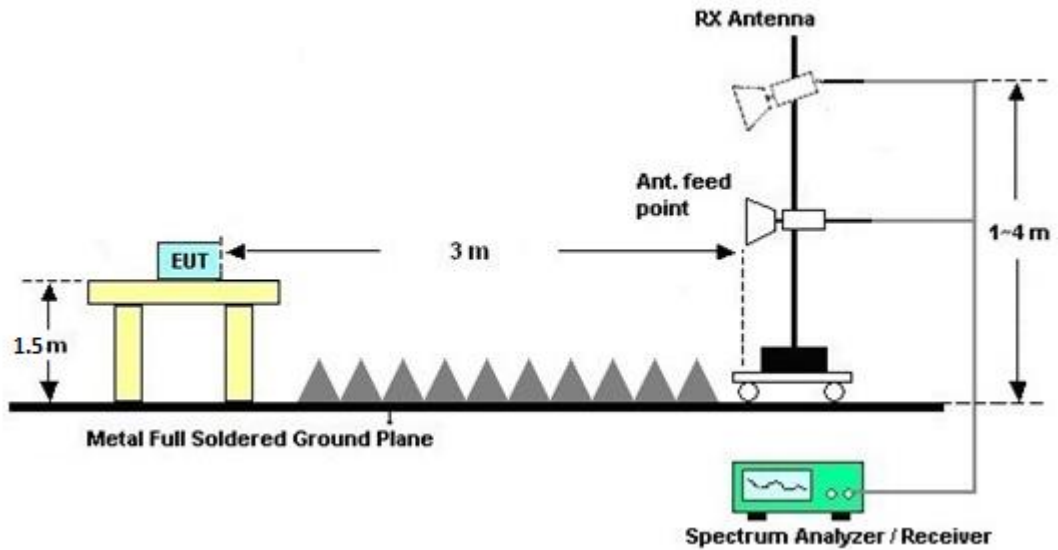
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

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

Please refer to Appendix B.

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

Please refer to Appendix B.



### 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.

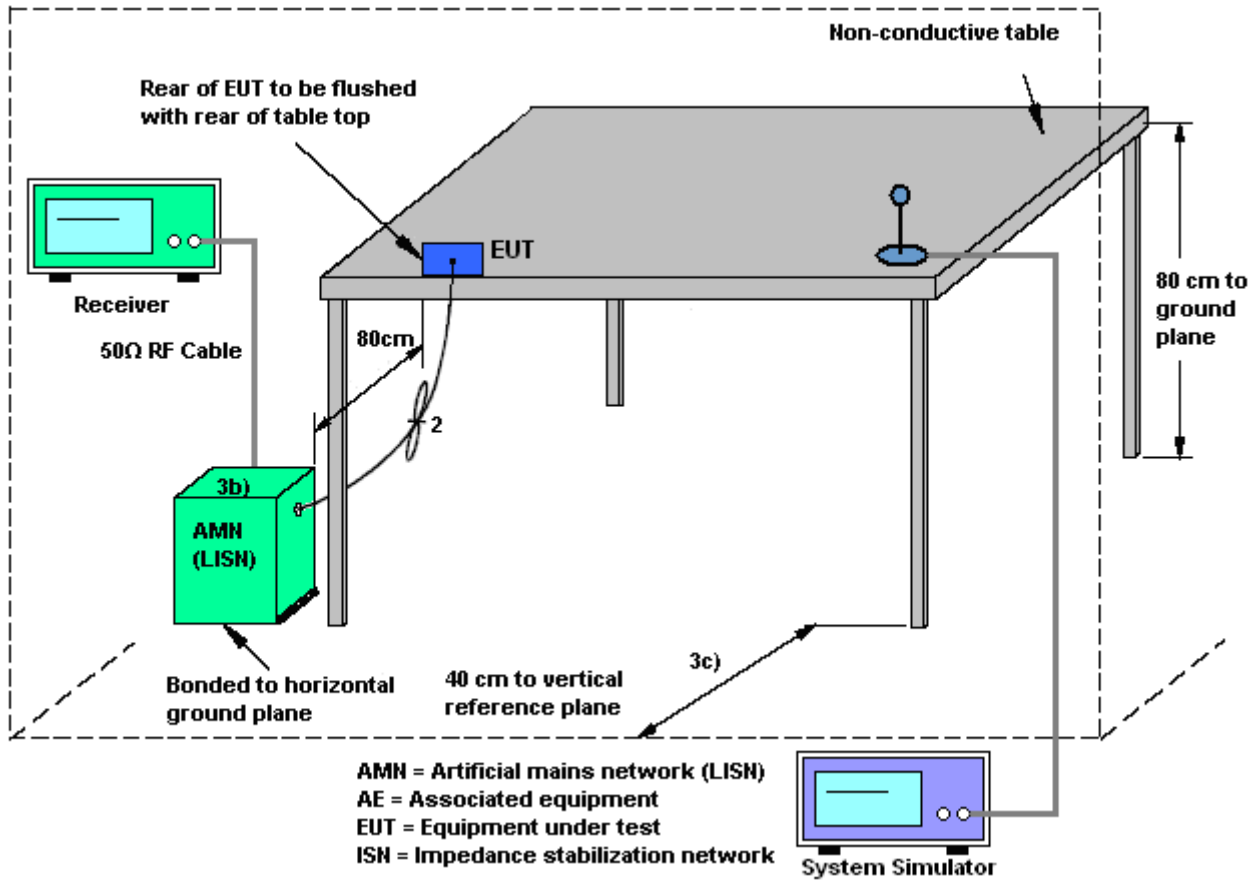
#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

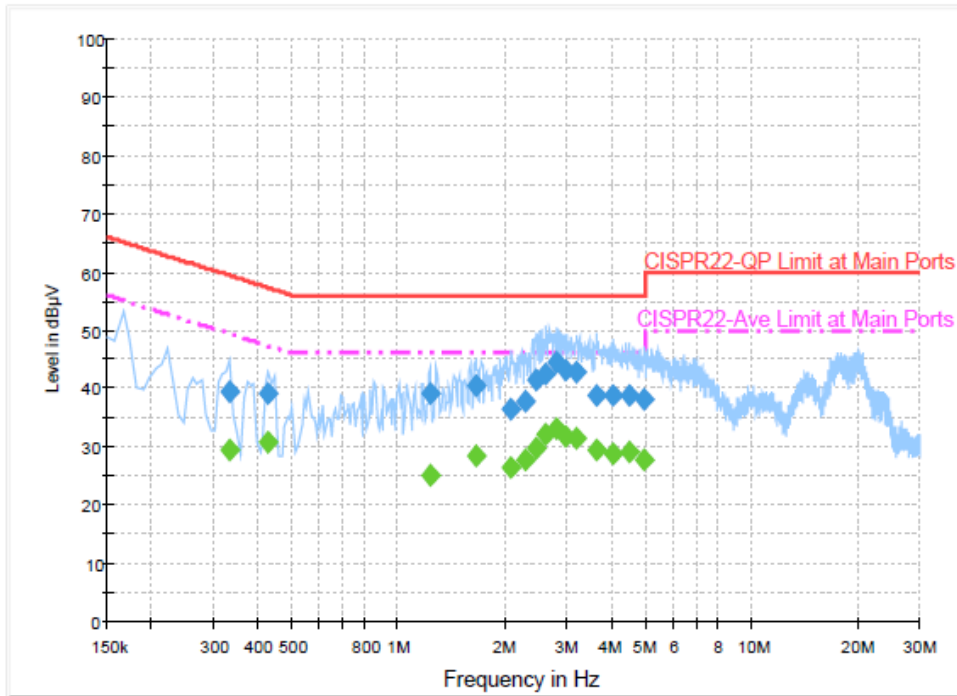
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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 :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	53~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + MP3 + Earphone 2 + Battery + USB Cable (Charging from Adapter) + SIM 2		

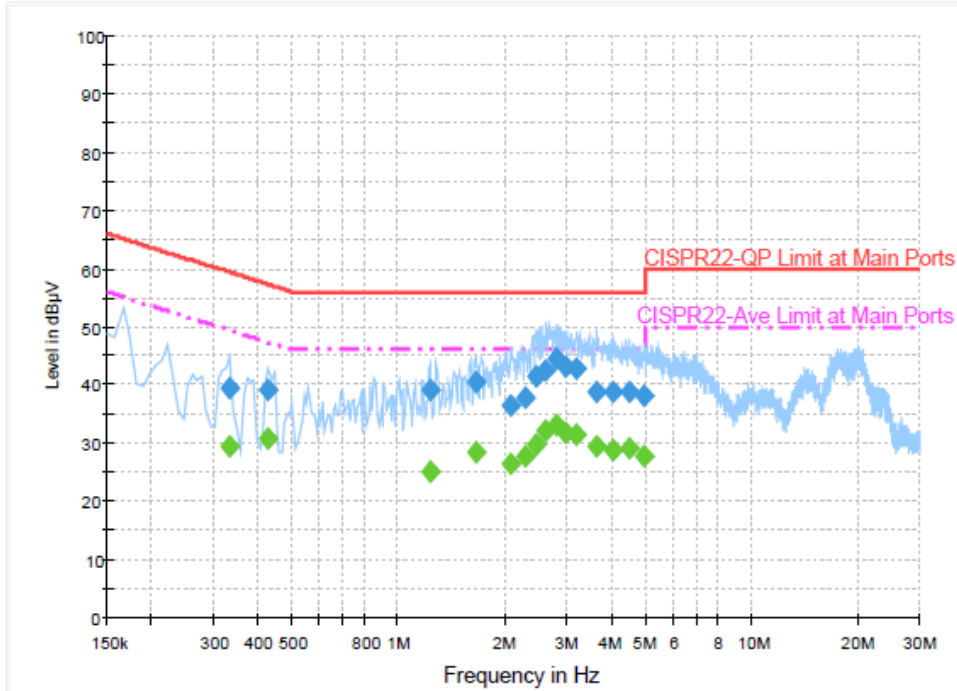


**Final Result : Quasi-Peak**

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.334000	39.6	Off	L1	19.4	19.8	59.4
0.430000	39.1	Off	L1	19.5	18.2	57.3
1.230000	39.2	Off	L1	19.6	16.8	56.0
1.662000	40.5	Off	L1	19.6	15.5	56.0
2.094000	36.4	Off	L1	19.7	19.6	56.0
2.302000	37.7	Off	L1	19.7	18.3	56.0
2.462000	41.5	Off	L1	19.7	14.5	56.0
2.614000	42.4	Off	L1	19.7	13.6	56.0
2.814000	44.4	Off	L1	19.7	11.6	56.0
2.990000	43.3	Off	L1	19.7	12.7	56.0
3.190000	42.7	Off	L1	19.7	13.3	56.0
3.646000	38.8	Off	L1	19.7	17.2	56.0
4.078000	38.7	Off	L1	19.7	17.3	56.0
4.502000	38.7	Off	L1	19.8	17.3	56.0
4.950000	38.0	Off	L1	19.8	18.0	56.0



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	53~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + MP3 + Earphone 2 + Battery + USB Cable (Charging from Adapter) + SIM 2		

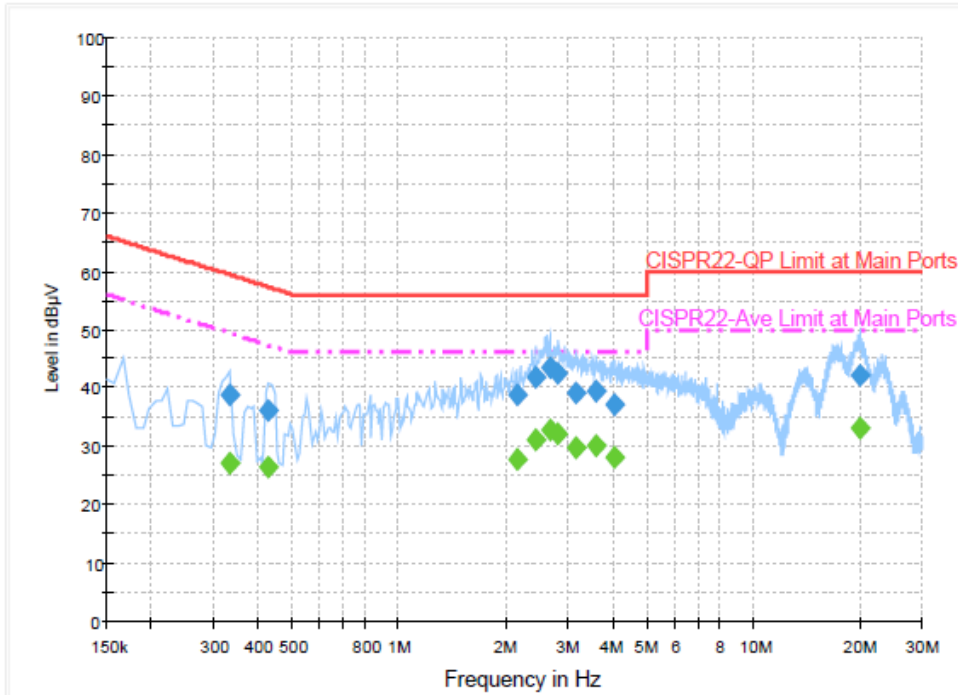


**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.334000	29.3	Off	L1	19.4	20.1	49.4
0.430000	30.9	Off	L1	19.5	16.4	47.3
1.230000	25.0	Off	L1	19.6	21.0	46.0
1.662000	28.5	Off	L1	19.6	17.5	46.0
2.094000	26.5	Off	L1	19.7	19.5	46.0
2.302000	27.7	Off	L1	19.7	18.3	46.0
2.462000	29.9	Off	L1	19.7	16.1	46.0
2.614000	32.1	Off	L1	19.7	13.9	46.0
2.814000	33.1	Off	L1	19.7	12.9	46.0
2.990000	31.9	Off	L1	19.7	14.1	46.0
3.190000	31.3	Off	L1	19.7	14.7	46.0
3.646000	29.3	Off	L1	19.7	16.7	46.0
4.078000	28.8	Off	L1	19.7	17.2	46.0
4.502000	29.2	Off	L1	19.8	16.8	46.0
4.950000	27.8	Off	L1	19.8	18.2	46.0



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	53~54%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + MP3 + Earphone 2 + Battery + USB Cable (Charging from Adapter) + SIM 2		

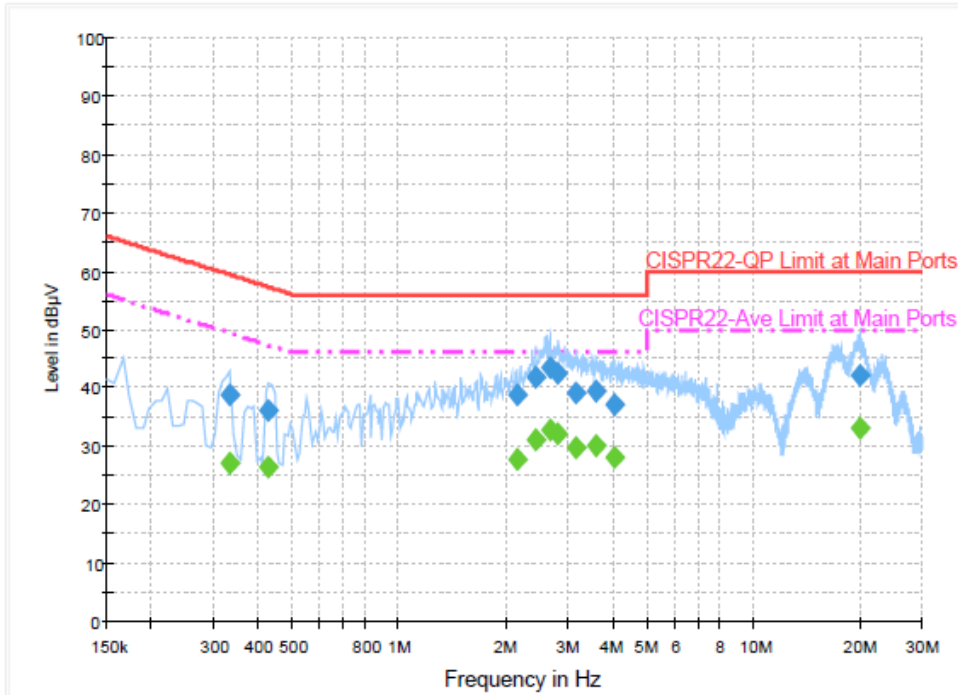


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.334000	38.7	Off	N	19.4	20.7	59.4
0.430000	36.2	Off	N	19.5	21.1	57.3
2.158000	38.8	Off	N	19.7	17.2	56.0
2.430000	41.9	Off	N	19.7	14.1	56.0
2.662000	43.6	Off	N	19.7	12.4	56.0
2.822000	42.5	Off	N	19.7	13.5	56.0
3.174000	39.2	Off	N	19.7	16.8	56.0
3.598000	39.4	Off	N	19.7	16.6	56.0
4.054000	37.1	Off	N	19.7	18.9	56.0
19.902000	42.1	Off	N	20.1	17.9	60.0



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	53~54%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + MP3 + Earphone 2 + Battery + USB Cable (Charging from Adapter) + SIM 2		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.334000	27.2	Off	N	19.4	22.2	49.4
0.430000	26.6	Off	N	19.5	20.7	47.3
2.158000	27.8	Off	N	19.7	18.2	46.0
2.430000	31.1	Off	N	19.7	14.9	46.0
2.662000	32.9	Off	N	19.7	13.1	46.0
2.822000	32.2	Off	N	19.7	13.8	46.0
3.174000	29.8	Off	N	19.7	16.2	46.0
3.598000	30.0	Off	N	19.7	16.0	46.0
4.054000	28.2	Off	N	19.7	17.8	46.0
19.902000	32.9	Off	N	20.1	17.1	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**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 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	May 07, 2015 ~ May 12, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 22, 2014	May 07, 2015 ~ May 12, 2015	Aug. 21, 2015	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz~40GHz	Oct. 17, 2014	May 07, 2015 ~ May 12, 2015	Oct. 16, 2015	Conducted (TH05-HY)
Hygrometer	Testo	608-H2	41410069	N/A	Jul. 17, 2014	May 07, 2015 ~ May 12, 2015	Jul. 16, 2015	Conducted (TH05-HY)
RF cable	WOKEN	S05	S05-130708-038	N/A	Jan. 21, 2015	May 07, 2015 ~ May 12, 2015	Jan. 20, 2016	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 10, 2015	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz – 2.75GHz	Dec. 01, 2014	May 10, 2015	Nov. 30, 2015	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 20, 2015	May 10, 2015	Apr. 19, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2014	May 10, 2015	Dec. 01, 2015	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2015	May 10, 2015	Jan. 01, 2016	Conduction (CO05-HY)
Test Software	N/A	EMC32	8.40.0	N/A	N/A	May 10, 2015	N/A	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 24, 2014	May 05, 2015 ~ May 08, 2015	Nov. 23, 2015	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Oct. 24, 2014	May 05, 2015 ~ May 08, 2015	Oct. 23, 2015	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 03, 2014	May 05, 2015 ~ May 08, 2015	Oct. 02, 2015	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP140325	N/A	Nov. 19, 2014	May 05, 2015 ~ May 08, 2015	Nov. 18, 2015	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 20, 2014	May 05, 2015 ~ May 08, 2015	Nov. 19, 2015	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Sep. 24, 2014	May 05, 2015 ~ May 08, 2015	Sep. 23, 2015	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24967/4 MY28419/4 MY28654/4	25GHz~40GHz	Nov. 06, 2014	May 05, 2015 ~ May 08, 2015	Nov. 05, 2015	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24967/4 MY28419/4 MY28654/4	30MHz~1GHz	Nov. 06, 2014	May 05, 2015 ~ May 08, 2015	Nov. 05, 2015	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24967/4 MY28419/4 MY28654/4	1GHz~25GHz	Nov. 06, 2014	May 05, 2015 ~ May 08, 2015	Nov. 05, 2015	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	May 05, 2015 ~ May 08, 2015	N/A	Radiation (03CH11-HY)



Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 05, 2015 ~ May 08, 2015	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	May 05, 2015 ~ May 08, 2015	N/A	Radiation (03CH11-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1902247	1GHz~18GHz	Nov. 25, 2014	May 05, 2015 ~ May 08, 2015	Nov. 24, 2015	Radiation (03CH11-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 09, 2014	May 05, 2015 ~ May 08, 2015	Jun. 08, 2015	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	May 05, 2015 ~ May 08, 2015	Jul. 27, 2015	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA91705 84	18GHz- 40GHz	Nov. 03, 2014	May 05, 2015 ~ May 08, 2015	Nov. 02, 2015	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A	MY54130085	20Hz ~ 26.5GHz	Nov. 05, 2014	May 05, 2015 ~ May 08, 2015	Nov. 04, 2015	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	9KHz~1GHz	Dec. 04, 2014	May 05, 2015 ~ May 08, 2015	Dec. 03, 2015	Radiation (03CH11-HY)
Filter	Wainwright	WLKS1200-8 SS	SN3	1.2G Low Pass	Oct. 01, 2014	May 05, 2015 ~ May 08, 2015	Sep. 30, 2015	Radiation (03CH11-HY)
Filter	Microwave	H3G018G1	SN477220	3.0G High Pass	Oct. 01, 2014	May 05, 2015 ~ May 08, 2015	Sep. 30, 2015	Radiation (03CH11-HY)
Test Software	Audix	E3	6.2009-8-24	N/A	N/A	May 05, 2015 ~ May 08, 2015	N/A	Radiation (03CH11-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
---	------

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

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



## Appendix A. Conducted Test Results

**A1 - DTS Part**

Test Engineer:	William Liao	Temperature:	21~25	°C
Test Date:	2015/05/07~2015/05/12	Relative Humidity:	51~54	%

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

2.4GHz Band								
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412		10.08	0.50	Pass
11b	1Mbps	1	6	2437		9.56	0.50	Pass
11b	1Mbps	1	11	2462		9.10	0.50	Pass
11g	6Mbps	1	1	2412		16.40	0.50	Pass
11g	6Mbps	1	6	2437		15.76	0.50	Pass
11g	6Mbps	1	11	2462		15.72	0.50	Pass
HT20	MCS0	1	1	2412		17.64	0.50	Pass
HT20	MCS0	1	6	2437		16.38	0.50	Pass
HT20	MCS0	1	11	2462		16.36	0.50	Pass
HT40	MCS0	1	3	2422		35.20	0.50	Pass
HT40	MCS0	1	6	2437		35.08	0.50	Pass
HT40	MCS0	1	9	2452		35.16	0.50	Pass

**TEST RESULTS DATA**  
**Peak Power Table**

2.4GHz Band										
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	18.99	30.00	-2.00	16.99	36.00	Pass
11b	1Mbps	1	6	2437	18.81	30.00	-2.00	16.81	36.00	Pass
11b	1Mbps	1	11	2462	19.00	30.00	-2.00	17.00	36.00	Pass
11g	6Mbps	1	1	2412	23.49	30.00	-2.00	21.49	36.00	Pass
11g	6Mbps	1	6	2437	23.42	30.00	-2.00	21.42	36.00	Pass
11g	6Mbps	1	11	2462	23.13	30.00	-2.00	21.13	36.00	Pass
HT20	MCS0	1	1	2412	21.95	30.00	-2.00	19.95	36.00	Pass
HT20	MCS0	1	6	2437	21.90	30.00	-2.00	19.90	36.00	Pass
HT20	MCS0	1	11	2462	21.96	30.00	-2.00	19.96	36.00	Pass
HT40	MCS0	1	3	2422	22.55	30.00	-2.00	20.55	36.00	Pass
HT40	MCS0	1	6	2437	22.37	30.00	-2.00	20.37	36.00	Pass
HT40	MCS0	1	9	2452	21.99	30.00	-2.00	19.99	36.00	Pass



**TEST RESULTS DATA**  
**Average Power Table**  
***(Reporting Only)***

2.4GHz Band						
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.08	15.90
11b	1Mbps	1	6	2437	0.08	15.76
11b	1Mbps	1	11	2462	0.08	15.94
11g	6Mbps	1	1	2412	0.50	14.99
11g	6Mbps	1	6	2437	0.50	14.69
11g	6Mbps	1	11	2462	0.50	14.96
HT20	MCS0	1	1	2412	0.53	11.72
HT20	MCS0	1	6	2437	0.53	11.64
HT20	MCS0	1	11	2462	0.53	11.79
HT40	MCS0	1	3	2422	1.03	11.48
HT40	MCS0	1	6	2437	1.03	11.28
HT40	MCS0	1	9	2452	1.03	11.26

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

2.4GHz Band								
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-5.30	-2.00	8.00	Pass
11b	1Mbps	1	6	2437	-3.18	-2.00	8.00	Pass
11b	1Mbps	1	11	2462	-7.12	-2.00	8.00	Pass
11g	6Mbps	1	1	2412	-9.15	-2.00	8.00	Pass
11g	6Mbps	1	6	2437	-6.07	-2.00	8.00	Pass
11g	6Mbps	1	11	2462	-5.73	-2.00	8.00	Pass
HT20	MCS0	1	1	2412	-8.05	-2.00	8.00	Pass
HT20	MCS0	1	6	2437	-5.48	-2.00	8.00	Pass
HT20	MCS0	1	11	2462	-5.16	-2.00	8.00	Pass
HT40	MCS0	1	3	2422	-7.78	-2.00	8.00	Pass
HT40	MCS0	1	6	2437	-5.81	-2.00	8.00	Pass
HT40	MCS0	1	9	2452	-6.62	-2.00	8.00	Pass



## Appendix B. Radiated Spurious Emission

Test Engineer :	Jesse Wang and Derreck Chen	Temperature :	23~24°C
		Relative Humidity :	46~48%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11b CH 01 2412MHz		2354.73	52.6	-21.4	74	53.56	27.14	5.95	34.05	317	301	P	H	
		2390	41.82	-12.18	54	42.62	27.23	6.01	34.04	317	301	A	H	
	*	2412	103.14	-	-	103.86	27.28	6.04	34.04	317	301	P	H	
	*	2412	100.43	-	-	101.15	27.28	6.04	34.04	317	301	A	H	
													H	
														H
			2390	53.24	-20.76	74	54.04	27.23	6.01	34.04	102	248	P	V
			2390	42.32	-11.68	54	43.12	27.23	6.01	34.04	102	248	A	V
	*		2412	105.2	-	-	105.92	27.28	6.04	34.04	102	248	P	V
	*		2412	102.62	-	-	103.34	27.28	6.04	34.04	102	248	A	V
														V
														V
802.11b CH 06 2437MHz		2348.97	52.59	-21.41	74	53.59	27.1	5.95	34.05	362	302	P	H	
		2389.74	41.29	-12.71	54	42.09	27.23	6.01	34.04	362	302	A	H	
	*	2437	102.94	-	-	103.56	27.37	6.04	34.03	362	302	P	H	
	*	2437	100.37	-	-	100.99	27.37	6.04	34.03	362	302	A	H	
			2484.16	52.71	-21.29	74	53.17	27.46	6.09	34.01	362	302	P	H
			2483.92	41.76	-12.24	54	42.22	27.46	6.09	34.01	362	302	A	H
			2373.99	52.56	-21.44	74	53.4	27.19	6.01	34.04	100	249	P	V
			2389.29	41.42	-12.58	54	42.22	27.23	6.01	34.04	100	249	A	V
	*		2437	105.78	-	-	106.4	27.37	6.04	34.03	100	249	P	V
	*		2437	103.25	-	-	103.87	27.37	6.04	34.03	100	249	A	V
			2496.56	52.62	-21.38	74	53.03	27.5	6.09	34	100	249	P	V
			2484.44	41.85	-12.15	54	42.31	27.46	6.09	34.01	100	249	A	V



<b>802.11b CH 11 2462MHz</b>	*	2462	102.96	-	-	103.5	27.41	6.07	34.02	347	301	P	H
	*	2462	98.16	-	-	98.7	27.41	6.07	34.02	347	301	A	H
		2489.68	52.65	-21.35	74	53.07	27.5	6.09	34.01	347	301	P	H
		2492.6	41.79	-12.21	54	42.2	27.5	6.09	34	347	301	A	H
													H
													H
	*	2462	106.42	-	-	106.96	27.41	6.07	34.02	100	248	P	V
	*	2462	103.2	-	-	103.74	27.41	6.07	34.02	100	248	A	V
		2483.52	53.73	-20.27	74	54.19	27.46	6.09	34.01	100	248	P	V
		2483.52	42.31	-11.69	54	42.77	27.46	6.09	34.01	100	248	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBµV/m )	Over Limit ( dB )	Limit Line ( dBµV/m )	Read Level ( dBµV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11b CH 01 2412MHz		4824	43.42	-30.58	74	37	31.32	8.65	33.55	100	0	P	H	
													H	
													H	
													H	
			4824	43.84	-30.16	74	37.42	31.32	8.65	33.55	100	0	P	V
														V
														V
802.11b CH 06 2437MHz		4872	46.14	-27.86	74	39.58	31.41	8.69	33.54	100	0	P	H	
		7310	43.12	-30.88	74	30.89	36.28	10.39	34.44	100	0	P	H	
													H	
													H	
			4872	45.41	-28.59	74	38.85	31.41	8.69	33.54	100	0	P	V
			7310	43.56	-30.44	74	31.33	36.28	10.39	34.44	100	0	P	V
														V
802.11b CH 11 2462MHz		4924	45.63	-28.37	74	38.89	31.49	8.79	33.54	100	0	P	H	
		7385	43.4	-30.6	74	30.93	36.47	10.48	34.48	100	0	P	H	
													H	
													H	
			4924	44.9	-29.1	74	38.16	31.49	8.79	33.54	100	0	P	V
			7385	44.6	-29.4	74	32.13	36.47	10.48	34.48	100	0	P	V
														V
Remark	1. No other spurious found.													
	2. All results are PASS against Peak and Average limit line.													



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBµV/m )	Over Limit ( dB )	Limit Line ( dBµV/m )	Read Level ( dBµV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
802.11g CH 01 2412MHz		2389.47	56.11	-17.89	74	56.91	27.23	6.01	34.04	367	305	P	H	
		2390	44.81	-9.19	54	45.61	27.23	6.01	34.04	367	305	A	H	
	*	2412	102.98	-	-	103.7	27.28	6.04	34.04	367	305	P	H	
	*	2412	95.56	-	-	96.28	27.28	6.04	34.04	367	305	A	H	
													H	
													H	
			2389.2	57.71	-16.29	74	58.51	27.23	6.01	34.04	100	248	P	V
			2389.83	46.38	-7.62	54	47.18	27.23	6.01	34.04	100	248	A	V
	*		2412	105.49	-	-	106.21	27.28	6.04	34.04	100	248	P	V
	*		2412	97.86	-	-	98.58	27.28	6.04	34.04	100	248	A	V
													V	
													V	
802.11g CH 06 2437MHz		2340.15	52.28	-21.72	74	53.28	27.1	5.95	34.05	361	305	P	H	
		2375.7	42.09	-11.91	54	42.93	27.19	6.01	34.04	361	305	A	H	
	*	2437	105.17	-	-	105.79	27.37	6.04	34.03	361	305	P	H	
	*	2437	97.71	-	-	98.33	27.37	6.04	34.03	361	305	A	H	
			2494.52	53.1	-20.9	74	53.51	27.5	6.09	34	361	305	P	H
			2484.88	42.77	-11.23	54	43.23	27.46	6.09	34.01	361	305	A	H
			2351.49	53.02	-20.98	74	54.02	27.1	5.95	34.05	100	249	P	V
			2390	42.49	-11.51	54	43.29	27.23	6.01	34.04	100	249	A	V
	*		2437	107.54	-	-	108.16	27.37	6.04	34.03	100	249	P	V
	*		2437	100.31	-	-	100.93	27.37	6.04	34.03	100	249	A	V
			2485.76	53.21	-20.79	74	53.67	27.46	6.09	34.01	100	249	P	V
			2483.6	43.42	-10.58	54	43.88	27.46	6.09	34.01	100	249	A	V



<b>802.11g</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	104.75	-	-	105.29	27.41	6.07	34.02	351	308	P	H
	*	2462	97.84	-	-	98.38	27.41	6.07	34.02	351	308	A	H
		2485.36	55.28	-18.72	74	55.74	27.46	6.09	34.01	351	308	P	H
		2484.04	44.09	-9.91	54	44.55	27.46	6.09	34.01	351	308	A	H
													H
													H
	*	2462	107.14	-	-	107.68	27.41	6.07	34.02	100	249	P	V
	*	2462	100.13	-	-	100.67	27.41	6.07	34.02	100	249	A	V
		2483.52	56.59	-17.41	74	57.05	27.46	6.09	34.01	100	249	P	V
		2483.56	44.86	-9.14	54	45.32	27.46	6.09	34.01	100	249	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11g (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBµV/m )	Over Limit ( dB )	Limit Line ( dBµV/m )	Read Level ( dBµV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11g CH 01 2412MHz		4824	43.42	-30.58	74	37	31.32	8.65	33.55	100	0	P	H	
													H	
													H	
													H	
			4824	43.84	-30.16	74	37.42	31.32	8.65	33.55	100	0	P	V
														V
														V
802.11g CH 06 2437MHz		4872	46.14	-27.86	74	39.58	31.41	8.69	33.54	100	0	P	H	
		7310	43.12	-30.88	74	30.89	36.28	10.39	34.44	100	0	P	H	
													H	
													H	
			4872	45.41	-28.59	74	38.85	31.41	8.69	33.54	100	0	P	V
			7310	43.56	-30.44	74	31.33	36.28	10.39	34.44	100	0	P	V
														V
802.11g CH 11 2462MHz		4924	45.63	-28.37	74	38.89	31.49	8.79	33.54	100	0	P	H	
		7385	43.4	-30.6	74	30.93	36.47	10.48	34.48	100	0	P	H	
													H	
													H	
			4924	44.9	-29.1	74	38.16	31.49	8.79	33.54	100	0	P	V
			7385	44.6	-29.4	74	32.13	36.47	10.48	34.48	100	0	P	V
														V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													





2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11n HT20 CH 01 2412MHz		2389.92	58.81	-15.19	74	59.61	27.23	6.01	34.04	327	299	P	H	
		2390	45.43	-8.57	54	46.23	27.23	6.01	34.04	327	299	A	H	
	*	2412	102.21	-	-	102.93	27.28	6.04	34.04	327	299	P	H	
	*	2412	94.65	-	-	95.37	27.28	6.04	34.04	327	299	A	H	
													H	
														H
			2389.47	60.54	-13.46	74	61.34	27.23	6.01	34.04	100	245	P	V
			2390	47.5	-6.5	54	48.3	27.23	6.01	34.04	100	245	A	V
		*	2412	104.4	-	-	105.12	27.28	6.04	34.04	100	245	P	V
		*	2412	96.89	-	-	97.61	27.28	6.04	34.04	100	245	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2362.29	52.39	-21.61	74	53.35	27.14	5.95	34.05	323	308	P	H	
		2385.24	42.09	-11.91	54	42.93	27.19	6.01	34.04	323	308	A	H	
	*	2437	101.34	-	-	101.96	27.37	6.04	34.03	323	308	P	H	
	*	2437	94.13	-	-	94.75	27.37	6.04	34.03	323	308	A	H	
			2489.16	52.39	-21.61	74	52.81	27.5	6.09	34.01	323	308	P	H
			2484.12	42.59	-11.41	54	43.05	27.46	6.09	34.01	323	308	A	H
			2351.49	52.68	-21.32	74	53.68	27.1	5.95	34.05	104	246	P	V
			2388.21	42.15	-11.85	54	42.95	27.23	6.01	34.04	104	246	A	V
		*	2437	103.98	-	-	104.6	27.37	6.04	34.03	104	246	P	V
		*	2437	96.74	-	-	97.36	27.37	6.04	34.03	104	246	A	V
		2492.56	52.6	-21.4	74	53.01	27.5	6.09	34	104	246	P	V	
		2484.88	42.84	-11.16	54	43.3	27.46	6.09	34.01	104	246	A	V	



<b>802.11n</b>  <b>HT20</b>  <b>CH 11</b>  <b>2462MHz</b>	*	2462	102.06	-	-	102.6	27.41	6.07	34.02	347	310	P	H
	*	2462	94.61	-	-	95.15	27.41	6.07	34.02	347	310	A	H
		2483.52	54.15	-19.85	74	54.61	27.46	6.09	34.01	347	310	P	H
		2483.72	43.88	-10.12	54	44.34	27.46	6.09	34.01	347	310	A	H
													H
													H
	*	2462	104.96	-	-	105.5	27.41	6.07	34.02	108	249	P	V
	*	2462	97.42	-	-	97.96	27.41	6.07	34.02	108	249	A	V
		2484.32	55.94	-18.06	74	56.4	27.46	6.09	34.01	108	249	P	V
		2483.52	44.83	-9.17	54	45.29	27.46	6.09	34.01	108	249	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11n HT20 CH 01 2412MHz		4824	45.2	-28.8	74	38.78	31.32	8.65	33.55	100	0	P	H	
													H	
													H	
													H	
			4824	45.55	-28.45	74	39.13	31.32	8.65	33.55	100	0	P	V
														V
														V
802.11n HT20 CH 06 2437MHz		4872	45.14	-28.86	74	38.58	31.41	8.69	33.54	100	0	P	H	
		7310	41.8	-32.2	74	29.57	36.28	10.39	34.44	100	0	P	H	
													H	
													H	
			4872	46.09	-27.91	74	39.53	31.41	8.69	33.54	100	0	P	V
			7310	41.68	-32.32	74	29.45	36.28	10.39	34.44	100	0	P	V
														V
802.11n HT20 CH 11 2462MHz		4924	45.09	-28.91	74	38.35	31.49	8.79	33.54	100	0	P	H	
		7385	42.65	-31.35	74	30.18	36.47	10.48	34.48	100	0	P	H	
													H	
													H	
			4924	45.25	-28.75	74	38.51	31.49	8.79	33.54	100	0	P	V
			7385	41.59	-32.41	74	29.12	36.47	10.48	34.48	100	0	P	V
														V
Remark	1. No other spurious found.													
	2. All results are PASS against Peak and Average limit line.													



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
802.11n HT40 CH 03 2422MHz		2389.47	56.24	-17.76	74	57.04	27.23	6.01	34.04	320	310	P	H	
		2389.92	44.35	-9.65	54	45.15	27.23	6.01	34.04	320	310	A	H	
	*	2422	99.53	-	-	100.2	27.32	6.04	34.03	320	310	P	H	
	*	2422	92.52	-	-	93.19	27.32	6.04	34.03	320	310	A	H	
													H	
														H
			2389.29	60.39	-13.61	74	61.19	27.23	6.01	34.04	100	251	P	V
			2389.83	45.44	-8.56	54	46.24	27.23	6.01	34.04	100	251	A	V
		*	2422	102.25	-	-	102.92	27.32	6.04	34.03	100	251	P	V
		*	2422	94.93	-	-	95.6	27.32	6.04	34.03	100	251	A	V
													V	
													V	
802.11n HT40 CH 06 2437MHz		2344.83	52.93	-21.07	74	53.93	27.1	5.95	34.05	320	307	P	H	
		2370.21	42.8	-11.2	54	43.64	27.19	6.01	34.04	320	307	A	H	
	*	2437	100.43	-	-	101.05	27.37	6.04	34.03	320	307	P	H	
	*	2437	92.83	-	-	93.45	27.37	6.04	34.03	320	307	A	H	
			2489.52	52.44	-21.56	74	52.86	27.5	6.09	34.01	320	307	P	H
			2484.52	43.41	-10.59	54	43.87	27.46	6.09	34.01	320	307	A	H
			2383.89	52.86	-21.14	74	53.7	27.19	6.01	34.04	100	250	P	V
			2389.65	43	-11	54	43.8	27.23	6.01	34.04	100	250	A	V
		*	2437	102.97	-	-	103.59	27.37	6.04	34.03	100	250	P	V
		*	2437	95.44	-	-	96.06	27.37	6.04	34.03	100	250	A	V
		2494.24	53.17	-20.83	74	53.58	27.5	6.09	34	100	250	P	V	
		2483.52	43.6	-10.4	54	44.06	27.46	6.09	34.01	100	250	A	V	



<b>802.11n</b>  <b>HT40</b>  <b>CH 09</b>  <b>2452MHz</b>	*	2452	98.97	-	-	99.55	27.37	6.07	34.02	324	308	P	H
	*	2452	91.72	-	-	92.3	27.37	6.07	34.02	324	308	A	H
		2485.92	58.01	-15.99	74	58.47	27.46	6.09	34.01	324	308	P	H
		2484.52	44.82	-9.18	54	45.28	27.46	6.09	34.01	324	308	A	H
													H
													H
	*	2452	101.16	-	-	101.74	27.37	6.07	34.02	100	251	P	V
	*	2452	94.24	-	-	94.82	27.37	6.07	34.02	100	251	A	V
		2485.4	61.05	-12.95	74	61.51	27.46	6.09	34.01	100	251	P	V
		2483.52	46.03	-7.97	54	46.49	27.46	6.09	34.01	100	251	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT40 CH 03 2422MHz		4844	45.21	-28.79	74	38.72	31.35	8.69	33.55	100	0	P	H
		7265	49.32	-24.68	74	37.2	36.21	10.34	34.43	100	0	P	H
													H
													H
		4844	44.78	-29.22	74	38.29	31.35	8.69	33.55	100	0	P	V
		7265	49.3	-24.7	74	37.18	36.21	10.34	34.43	100	0	P	V
													V
802.11n HT40 CH 06 2437MHz		4872	44.98	-29.02	74	38.42	31.41	8.69	33.54	100	0	P	H
		7310	41.62	-32.38	74	29.39	36.28	10.39	34.44	100	0	P	H
													H
													H
		4872	45.27	-28.73	74	38.71	31.41	8.69	33.54	100	0	P	V
		7310	44.26	-29.74	74	32.03	36.28	10.39	34.44	100	0	P	V
													V
802.11n HT40 CH 09 2452MHz		4904	45.03	-28.97	74	38.37	31.46	8.74	33.54	100	0	P	H
		7355	49.5	-24.5	74	37.13	36.4	10.44	34.47	100	0	P	H
													H
													H
		4904	43.96	-30.04	74	37.3	31.46	8.74	33.54	100	0	P	V
		7355	49.86	-24.14	74	37.49	36.4	10.44	34.47	100	0	P	V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz  
2.4GHz WIFI 802.11b (LF)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBµV/m )	Over Limit ( dB )	Limit Line ( dBµV/m )	Read Level (dBµV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
		82.38	18.55	-21.45	40	42.22	7.08	1.04	31.79	-	-	P	H
		203.34	10.18	-33.32	43.5	31.85	8.47	1.64	31.78	-	-	P	H
		273	12.62	-33.38	46	30.05	12.4	1.94	31.77	-	-	P	H
		316.8	18.7	-27.3	46	34.89	13.47	2.11	31.77	-	-	P	H
		577.9	24.6	-21.4	46	35.22	18.5	2.89	32.01	117	94	P	H
		876.8	23.4	-22.6	46	31.47	20.03	3.44	31.54	-	-	P	H
													H
													H
													H
													H
													H
													H
2.4GHz 802.11b LF		96.15	18.6	-24.9	43.5	39.58	9.52	1.28	31.78	-	-	P	V
		142.32	12.14	-31.36	43.5	32	10.46	1.46	31.78	-	-	P	V
		290.82	14.14	-31.86	46	31.06	12.73	2.11	31.76	-	-	P	V
		319.6	19.38	-26.62	46	35.54	13.5	2.11	31.77	-	-	P	V
		613.6	20.01	-25.99	46	30.22	18.87	2.96	32.04	-	-	P	V
		808.2	22.17	-23.83	46	30.79	19.86	3.4	31.88	172	117	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz  
2.4GHz WIFI 802.11g (LF)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
2.4GHz 802.11g LF		60.24	16.79	-23.21	40	42.37	5.18	1.04	31.8	-	-	P	H	
		165.54	13.51	-29.99	43.5	34.58	9.07	1.64	31.78	-	-	P	H	
		253.56	12.82	-33.18	46	30.29	12.36	1.94	31.77	-	-	P	H	
		401.5	18.45	-27.55	46	32.14	15.79	2.32	31.8	-	-	P	H	
		729.1	21.31	-24.69	46	30.3	19.77	3.25	32.01	-	-	P	H	
		951	23.44	-22.56	46	30.21	20.58	3.68	31.03	164	112	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			61.32	16.21	-23.79	40	41.9	5.07	1.04	31.8	-	-	P	V
			154.2	10.65	-32.85	43.5	31.14	9.83	1.46	31.78	-	-	P	V
			259.5	16.74	-29.26	46	33.62	12.95	1.94	31.77	-	-	P	V
			444.9	17.43	-28.57	46	30.3	16.4	2.57	31.84	-	-	P	V
			701.8	22.25	-23.75	46	32.21	18.94	3.14	32.04	162	83	P	V
			967.8	22.61	-31.39	54	29.24	20.48	3.78	30.89	-	-	P	V
													V	
												V		
												V		
												V		
												V		
												V		
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line.													





Emission below 1GHz  
2.4GHz WIFI 802.11n HT20 (LF)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
2.4GHz 802.11n HT20 LF		49.44	29.87	-10.13	40	52.73	7.9	1.04	31.8	126	171	P	H	
		124.5	24.5	-19	43.5	43.51	11.49	1.28	31.78	-	-	P	H	
		192.27	15.23	-28.27	43.5	37.03	8.34	1.64	31.78	-	-	P	H	
		334.3	22.42	-23.58	46	38.33	13.69	2.17	31.77	-	-	P	H	
		559.7	19.04	-26.96	46	29.74	18.51	2.77	31.98	-	-	P	H	
		749.4	21.8	-24.2	46	30.73	19.8	3.25	31.98	-	-	P	H	
														H
														H
														H
														H
														H
														H
			74.82	18.18	-21.82	40	43.21	5.72	1.04	31.79	-	-	P	V
			136.65	14.28	-29.22	43.5	33.6	11	1.46	31.78	-	-	P	V
			223.32	24.32	-21.68	46	45.74	8.57	1.79	31.78	-	-	P	V
			331.5	23.43	-22.57	46	39.4	13.63	2.17	31.77	-	-	P	V
			566.7	27.74	-18.26	46	38.34	18.5	2.89	31.99	151	82	P	V
			712.3	21.86	-24.14	46	31.56	19.19	3.14	32.03	-	-	P	V
													V	
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Emission below 1GHz  
2.4GHz WIFI 802.11n HT40 (LF)

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
2.4GHz 802.11n HT40 LF		41.07	32.71	-7.29	40	51.8	12.06	0.67	31.82	112	210	P	H	
		124.5	24.5	-19	43.5	43.51	11.49	1.28	31.78	-	-	P	H	
		235.47	16.42	-29.58	46	36.24	10.16	1.79	31.77	-	-	P	H	
		421.8	22.31	-23.69	46	35.06	16.66	2.41	31.82	-	-	P	H	
		626.9	31.34	-14.66	46	41.42	19	2.96	32.04	-	-	P	H	
		820.8	26.67	-19.33	46	34.99	20.1	3.4	31.82	-	-	P	H	
														H
														H
														H
														H
														H
														H
			49.44	29.94	-10.06	40	52.8	7.9	1.04	31.8	147	96	P	V
			163.11	17.41	-26.09	43.5	38.44	9.29	1.46	31.78	-	-	P	V
			251.4	21.88	-24.12	46	39.57	12.14	1.94	31.77	-	-	P	V
			386.1	18.71	-27.29	46	33.1	15.08	2.32	31.79	-	-	P	V
			644.4	26.45	-19.55	46	36.43	19.1	2.96	32.04	-	-	P	V
			894.3	24.16	-21.84	46	31.97	20.1	3.55	31.46	-	-	P	V
													V	
													V	
													V	
													V	
													V	
													V	
<b>Remark</b>	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.
!	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 Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2412MHz													

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

**For Peak Limit @ 2390MHz:**

- 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)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- 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)
- 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”.**