FCC RF Test Report

APPLICANT	:	**Sony Mobile Communications Inc.**
EQUIPMENT	:	**GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+, and NFC**
BRAND NAME	:	**Sony**
FCC ID	:	**PY7-PM0882**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

The product was received on Jul. 16, 2015 and testing was completed on Aug. 25, 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

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR571619C	Rev. 01	Initial issue of report	Sep. 03, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	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 3.49 dB at 2483.520 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 18.60 dB at 0.678 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

Remark: The FR571619C report reuses test data from the FR571617C report.

1 General Description

1.1 Applicant

Sony Mobile Communications Inc.
Nya Vattentornet, 22188 Lund, Sweden

1.2 Manufacturer

Sony Mobile Communications Inc.
1-8-15 Konan, Minato-ku, Tokyo, 108-0075, Japan

1.3 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac, ANT+, NFC, and GPS

Product Specification subjective to this standard	
Antenna Type / Gain	Monopole Antenna type with gain -2.16 dBi

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
IMEI : 004402455123178	A	32.0.A.0.287	CB5A273TPX	RF conducted measurement
IMEI : 004402455122311			CB5A273TF4	Radiated Spurious Emission
IMEI : 004402455122410			CB5A273THY	Conducted Emission

Accessory List	
AC Adapter	Model No. : UCH20
	Type No. : AC-0061-US
	S/N : 2115W15500021 (for radiated spurious emission) 5815W22500112 (for conducted emission)
Earphone	Model No. : MDR-NC31E
	Type No. : AG-1110
USB Cable	Model No. : UCB11
	Type No. : AI-0120
	S/N : 1522A731000010A (for radiated spurious emission) 1512A73E0001BD0 (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.

1.4 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.

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st 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		
Test Site No.	**Sporton Site No.**		
	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.

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 (Y 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	8	2447
	2	2417	9	2452
	3	2422	10	2457
	4	2427	11	2462
	5	2432	12	2467
	6	2437	13	2472
	7	2442		

2.2 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)	**15.81**	15.78	15.78	15.80

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)	**23.19**	23.08	22.84	22.79	22.19	22.48	22.88	23.11

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	**23.59**	23.23	23.15	23.45	23.31	23.53	23.21	23.34

2.3 Test Mode

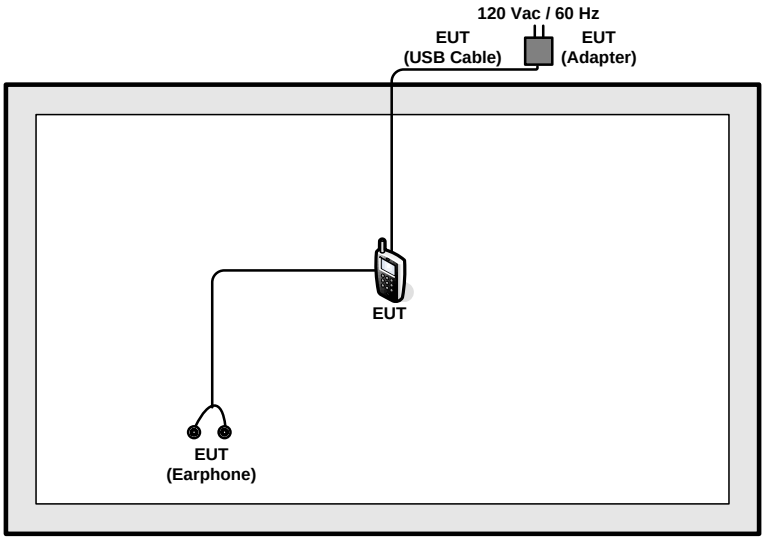
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

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

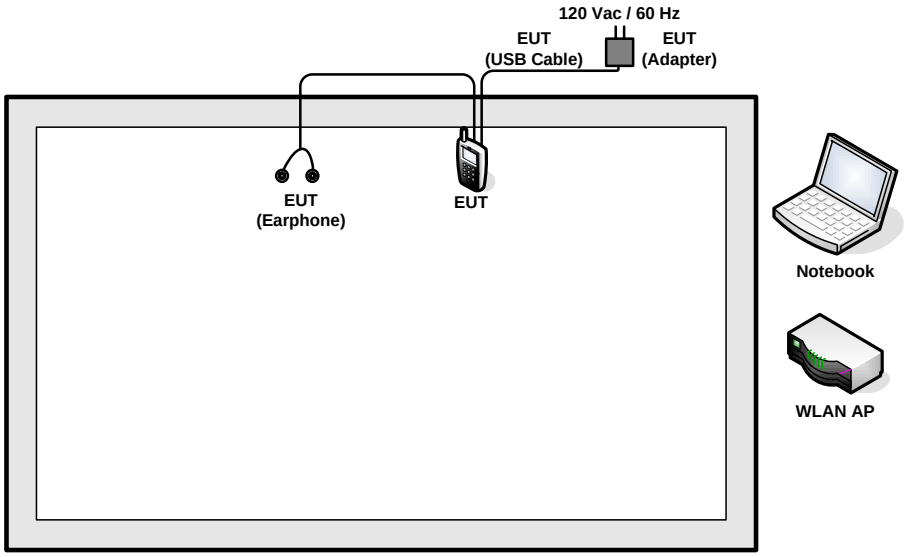
Test Cases	
AC Conducted Emission	Mode 1 : WLAN 2.4GHz Link + USB Cable (Charging from Adapter) + Earphone

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	D-Link	DIR-865L	KA2IR865LA1	N/A	Unshielded, 1.8 m
2.	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
3.	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.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

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.

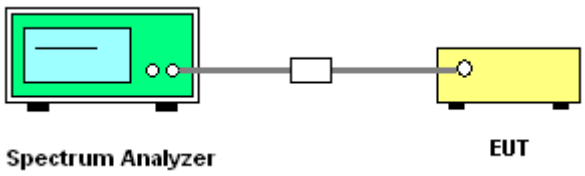
3.1.2 Measuring Instruments

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.

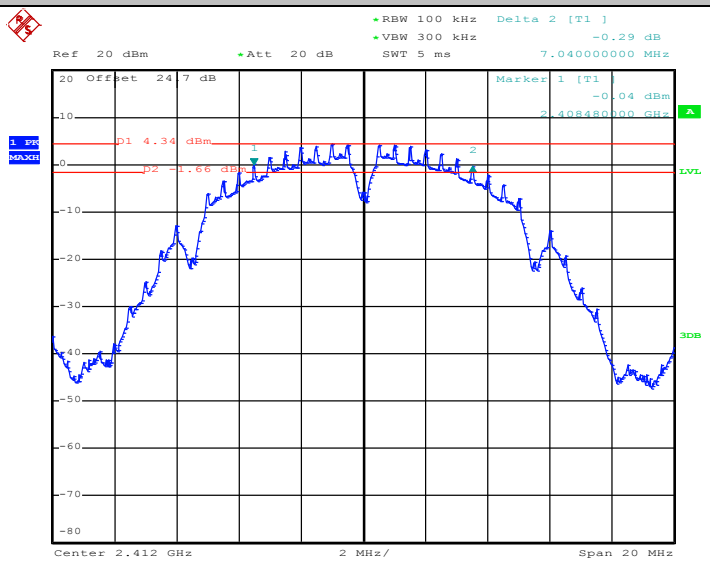
3.1.4 Test Setup



3.1.5 Test Result of 6dB Occupied Bandwidth

Please refer to Appendix A of this test report.

Minimum 6dB Bandwidth



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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.

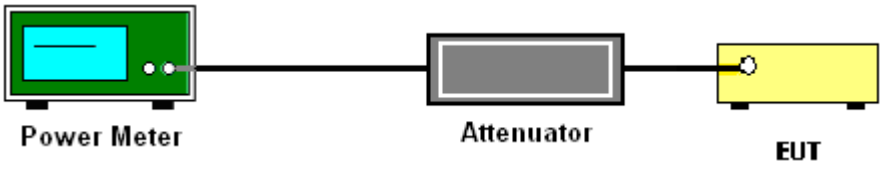
3.2.2 Measuring Instruments

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.
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.

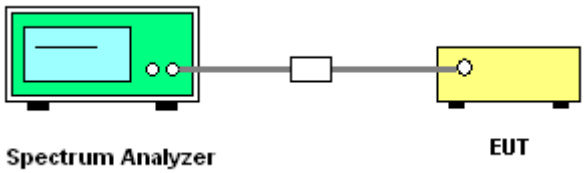
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   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)

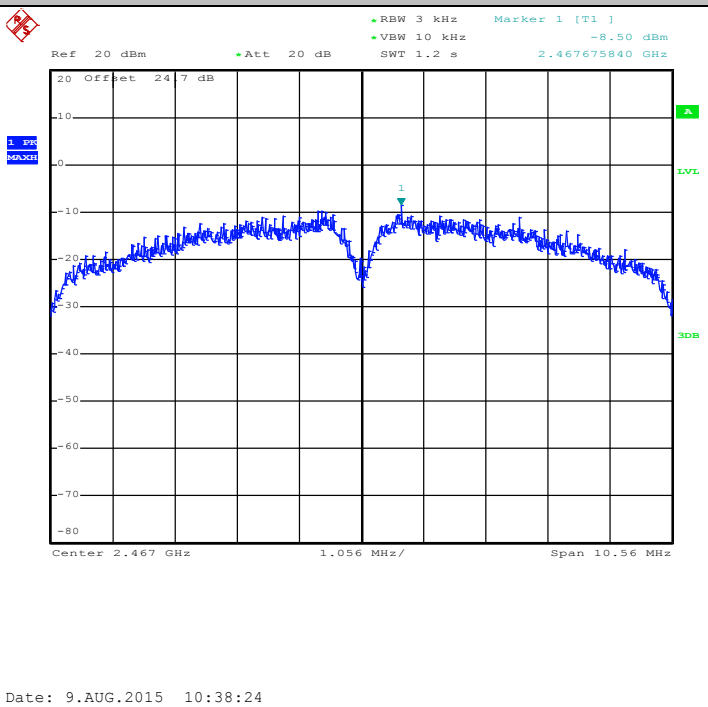
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.

Worst Case Power Density (dBm/3kHz)



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).

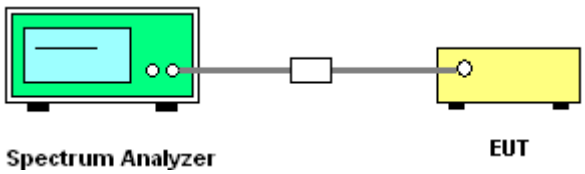
3.4.2 Measuring Instruments

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

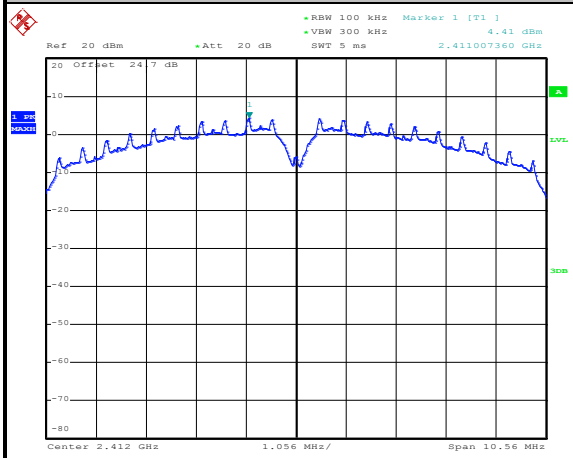


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Stuart Lin

WLAN 802.11b Channel 01

100kHz PSD reference Level



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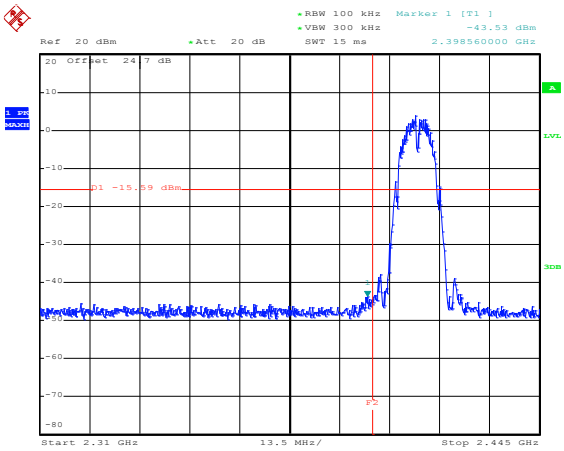
Low Channel Plot



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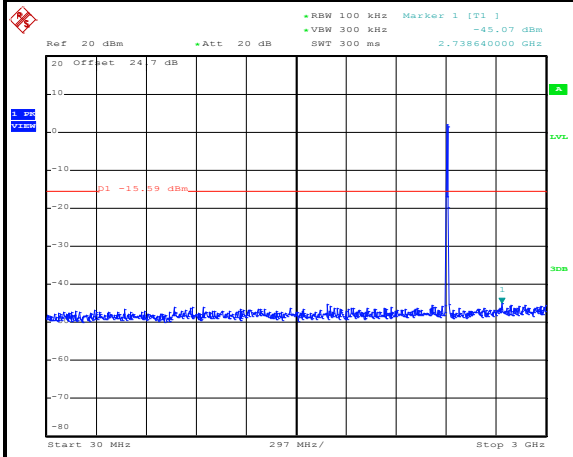
Spurious Emission 30MHz~3GHz



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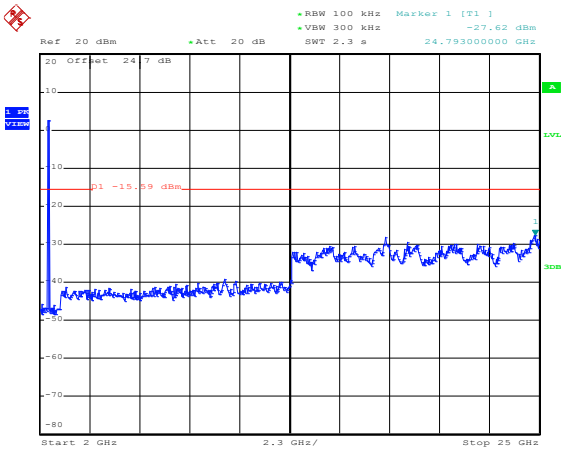
Spurious Emission 2GHz~25GHz



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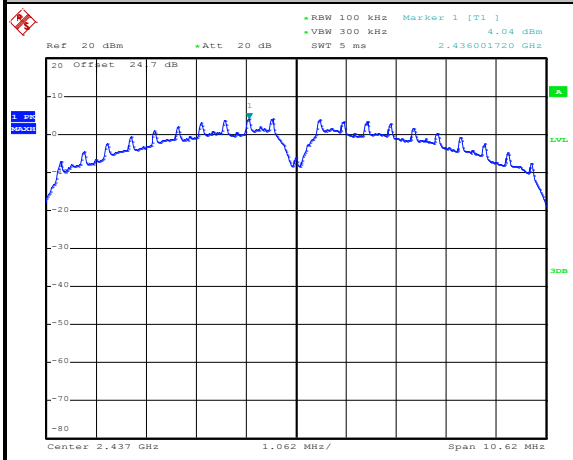
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Stuart Lin

WLAN 802.11b Channel 06

100kHz PSD reference Level



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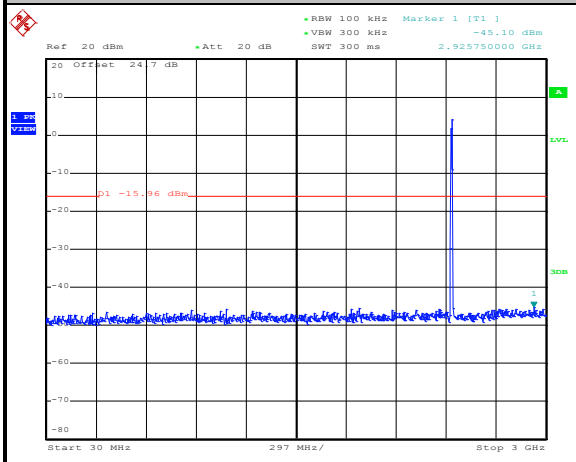
Spurious Emission 30MHz~3GHz



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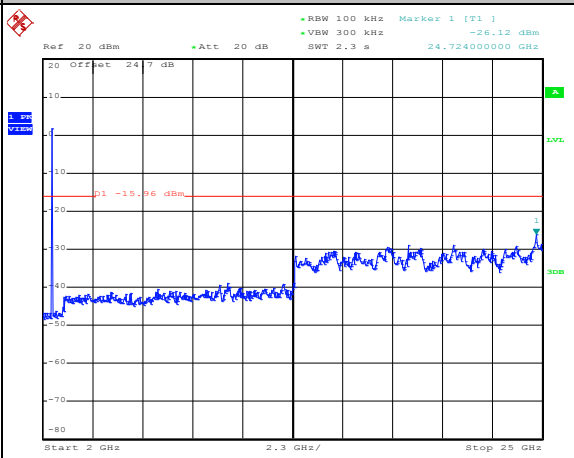
Spurious Emission 2GHz~25GHz



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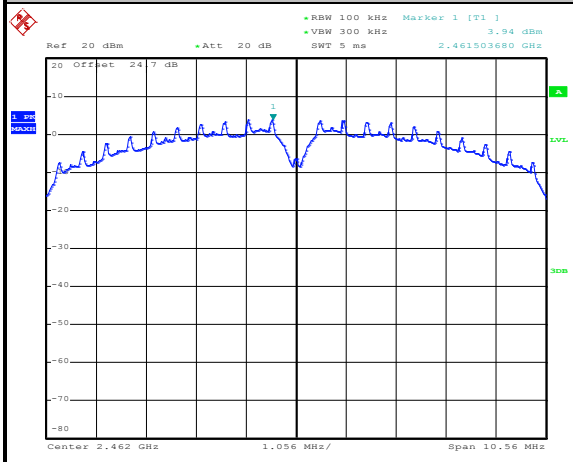
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Stuart Lin

WLAN 802.11b Channel 11

100kHz PSD reference Level



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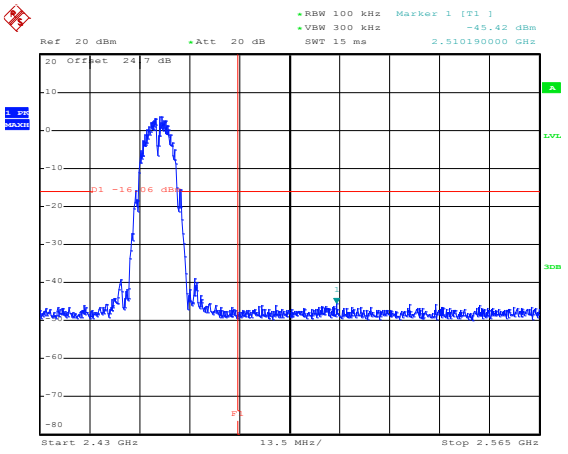
High Channel Plot



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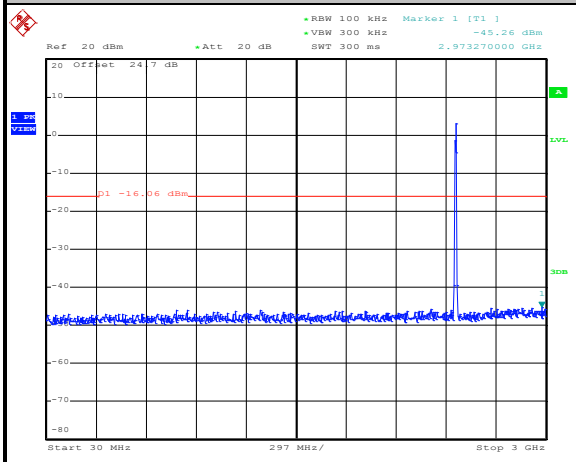
Spurious Emission 30MHz~3GHz



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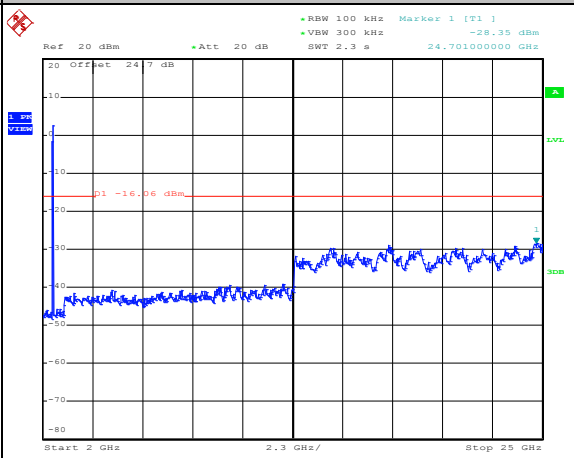
Spurious Emission 2GHz~25GHz



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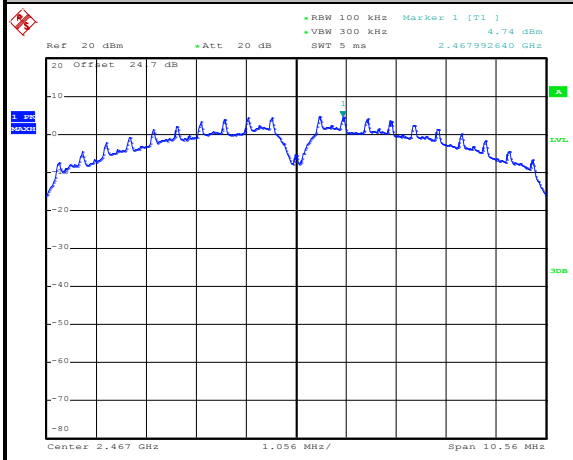
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	12	**Test Engineer :**	Stuart Lin

WLAN 802.11b Channel 12

100kHz PSD reference Level



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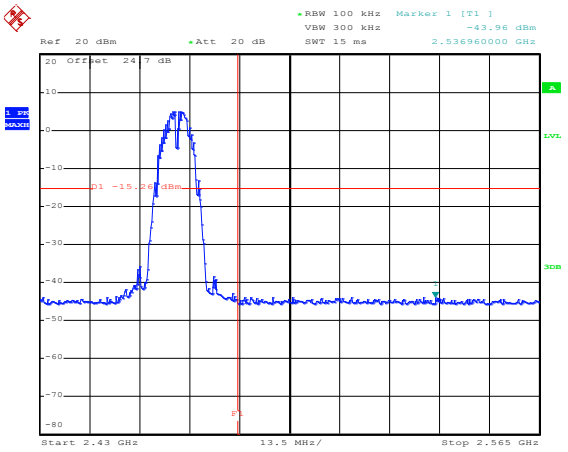
High Channel Plot



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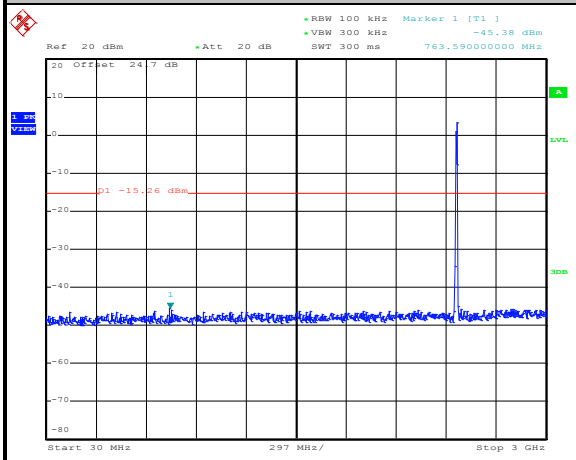
Spurious Emission 30MHz~3GHz



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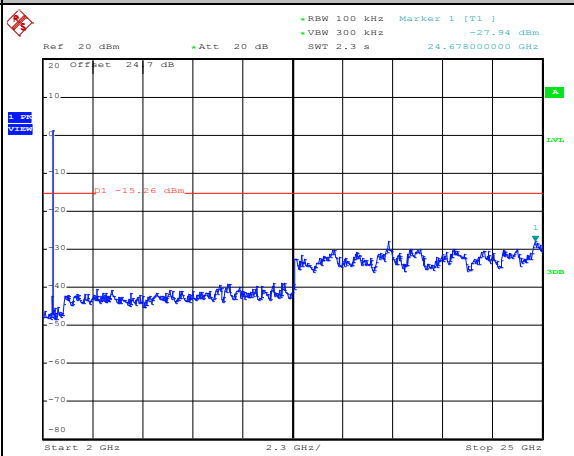
Spurious Emission 2GHz~25GHz



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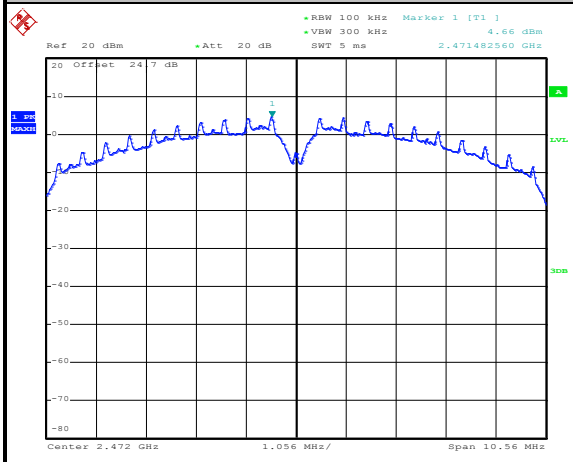
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	13	**Test Engineer :**	Stuart Lin

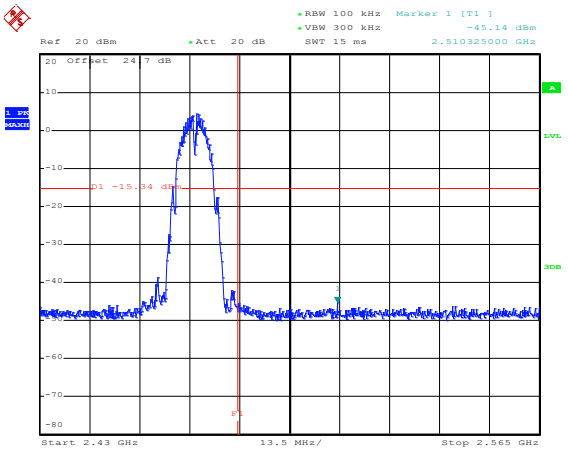
WLAN 802.11b Channel 13

100kHz PSD reference Level



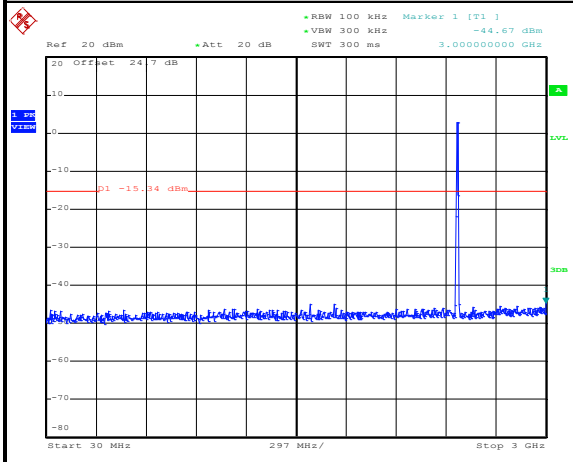
Date: 9.AUG.2015 10:41:49

High Channel Plot



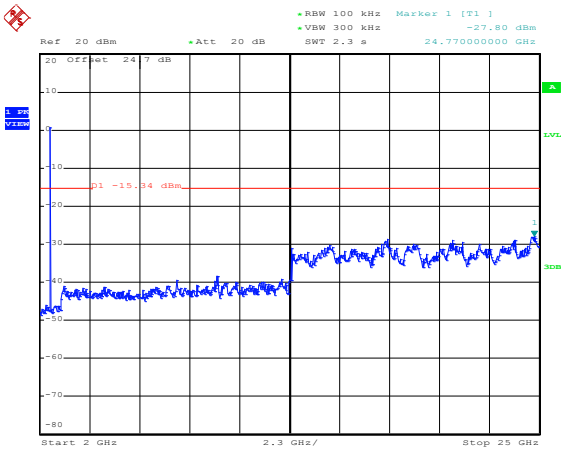
Date: 9.AUG.2015 10:42:21

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:42:44

Spurious Emission 2GHz~25GHz

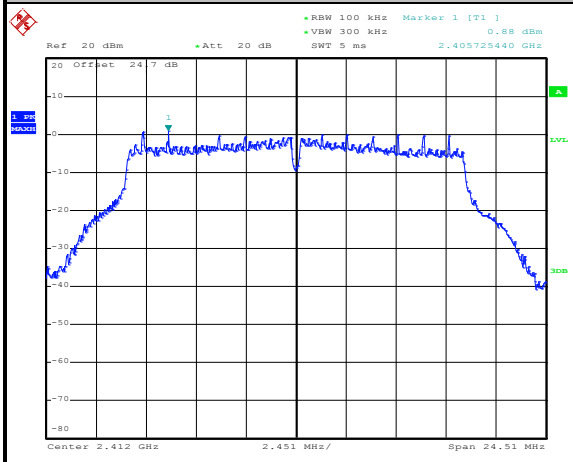


Date: 9.AUG.2015 10:43:02

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Stuart Lin

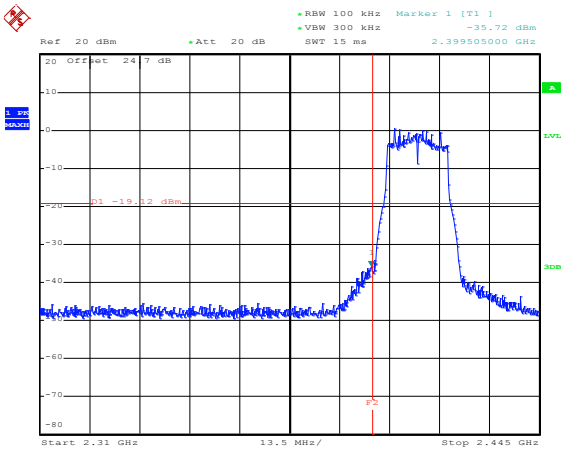
WLAN 802.11g Channel 01

100kHz PSD reference Level



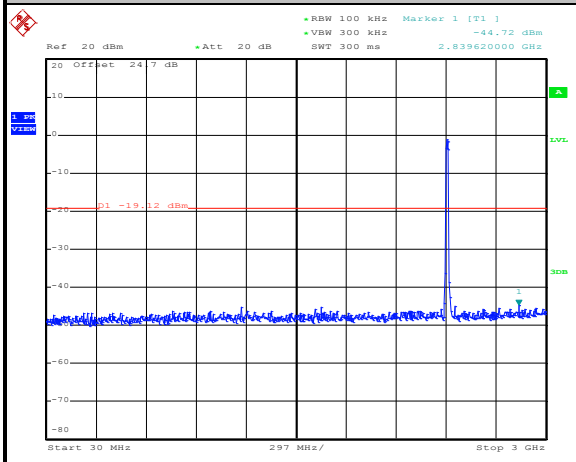
Date: 9.AUG.2015 09:40:56

Low Channel Plot



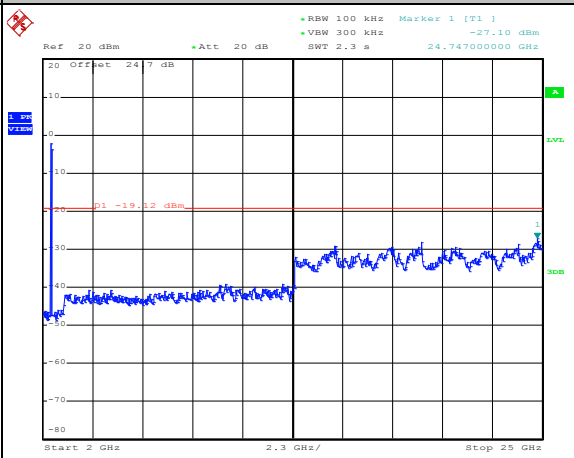
Date: 9.AUG.2015 09:41:14

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 09:41:35

Spurious Emission 2GHz~25GHz

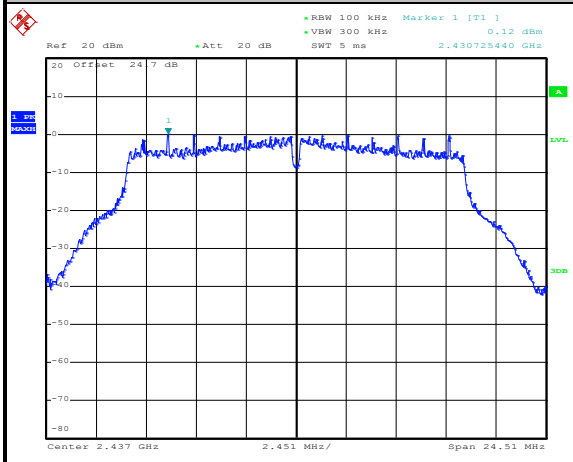


Date: 9.AUG.2015 09:41:53

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Stuart Lin

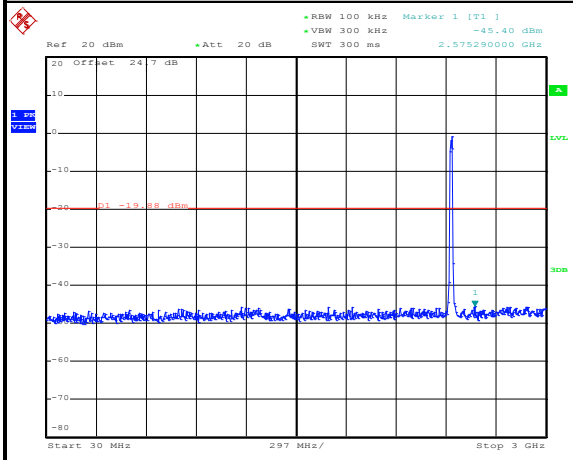
WLAN 802.11g Channel 06

100kHz PSD reference Level



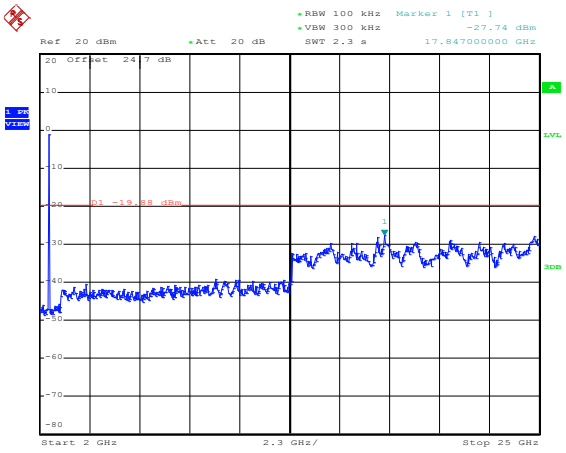
Date: 9.AUG.2015 09:45:55

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 09:46:18

Spurious Emission 2GHz~25GHz

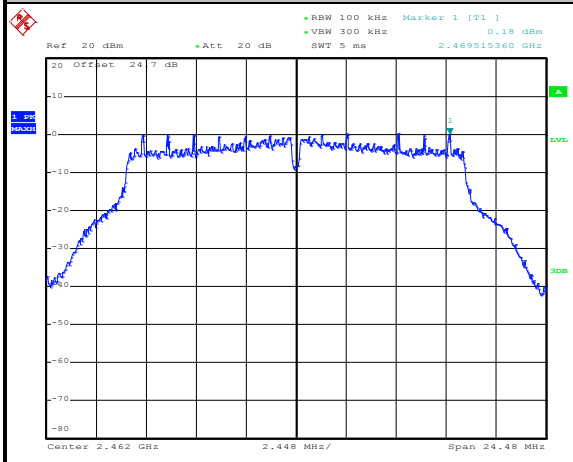


Date: 9.AUG.2015 09:46:36

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Stuart Lin

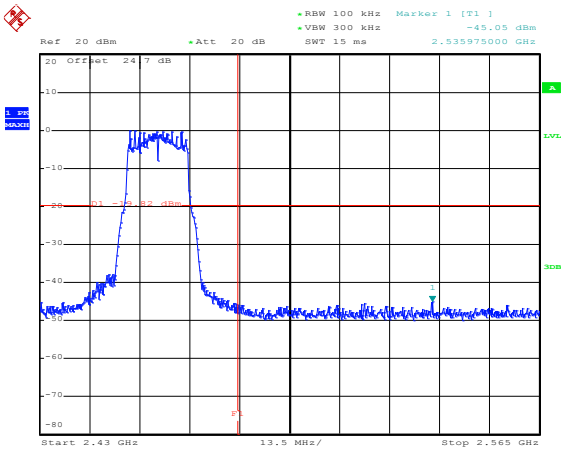
WLAN 802.11g Channel 11

100kHz PSD reference Level



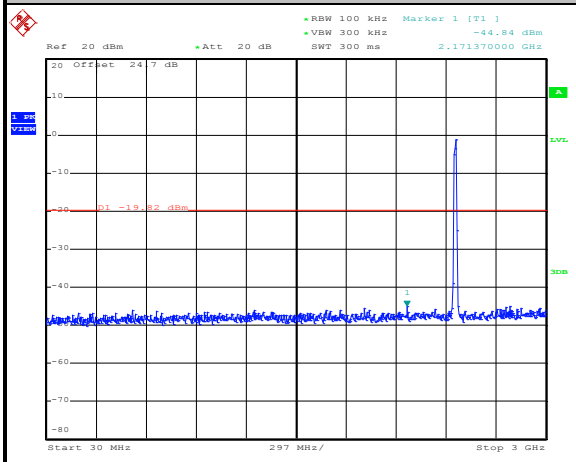
Date: 9.AUG.2015 09:49:48

High Channel Plot



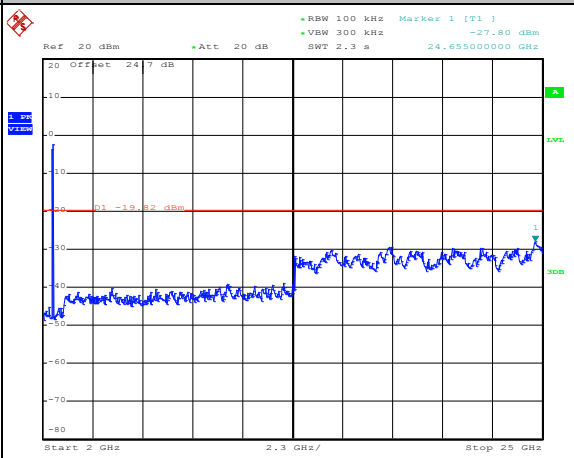
Date: 9.AUG.2015 09:50:14

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 09:50:55

Spurious Emission 2GHz~25GHz

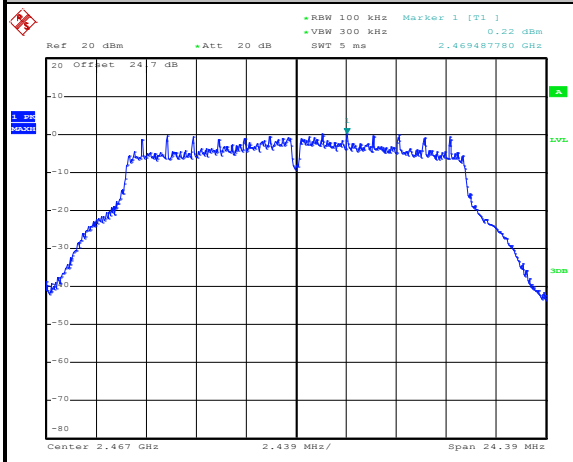


Date: 9.AUG.2015 09:51:13

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	12	**Test Engineer :**	Stuart Lin

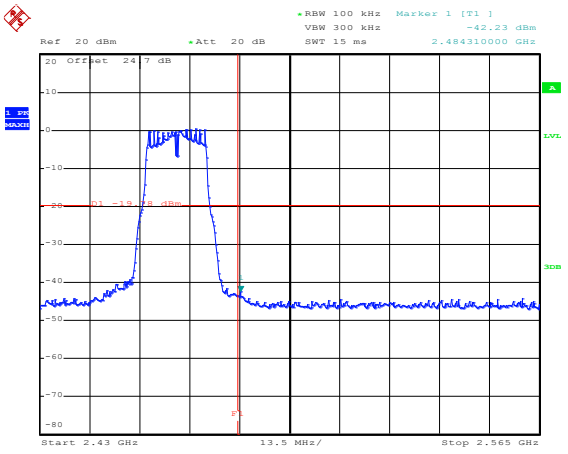
WLAN 802.11g Channel 12

100kHz PSD reference Level



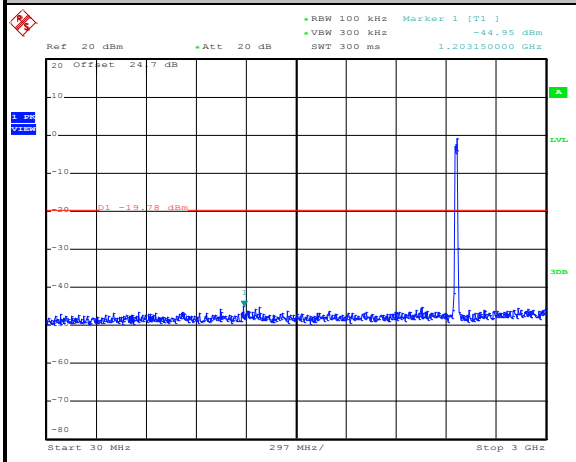
Date: 9.AUG.2015 10:27:30

High Channel Plot



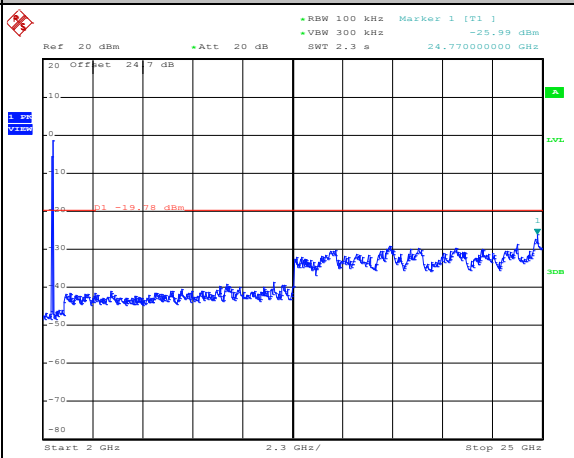
Date: 25.AUG.2015 17:40:35

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:27:53

Spurious Emission 2GHz~25GHz

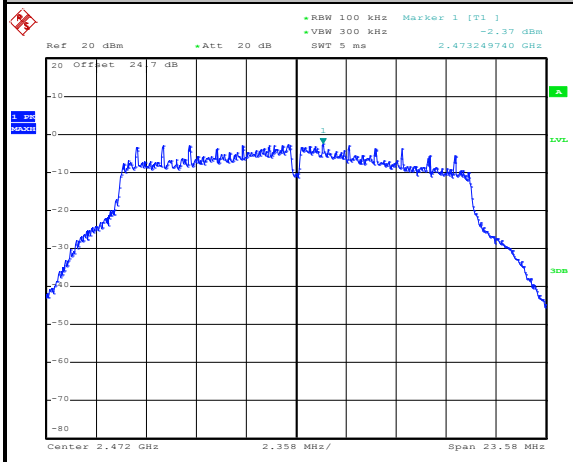


Date: 9.AUG.2015 10:28:10

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	13	**Test Engineer :**	Stuart Lin

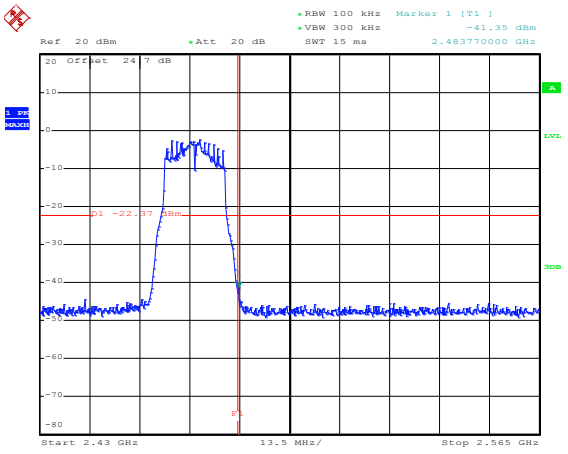
WLAN 802.11g Channel 13

100kHz PSD reference Level



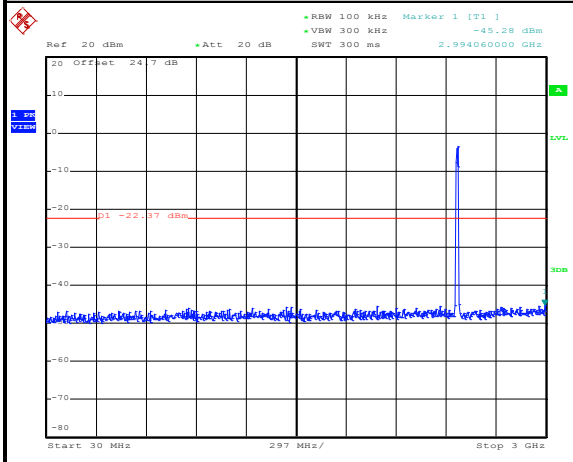
Date: 9.AUG.2015 10:31:12

High Channel Plot



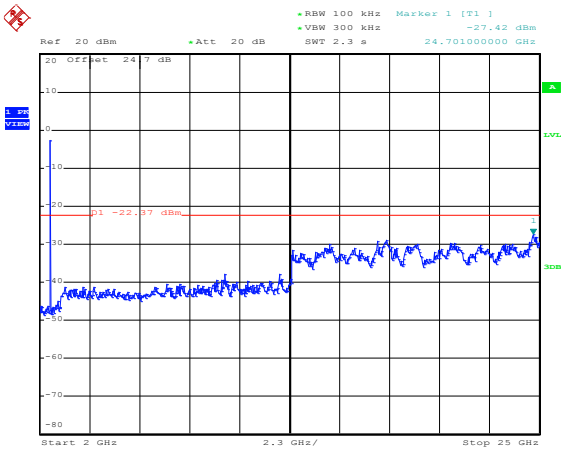
Date: 9.AUG.2015 10:35:46

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:32:34

Spurious Emission 2GHz~25GHz

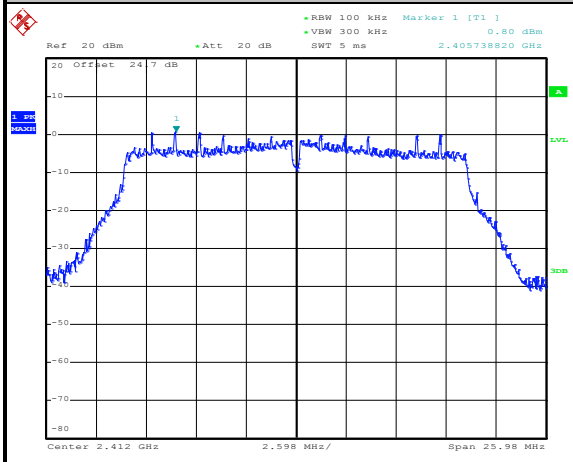


Date: 9.AUG.2015 10:32:52

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	52~55%
Test Channel :	01	**Test Engineer :**	Stuart Lin

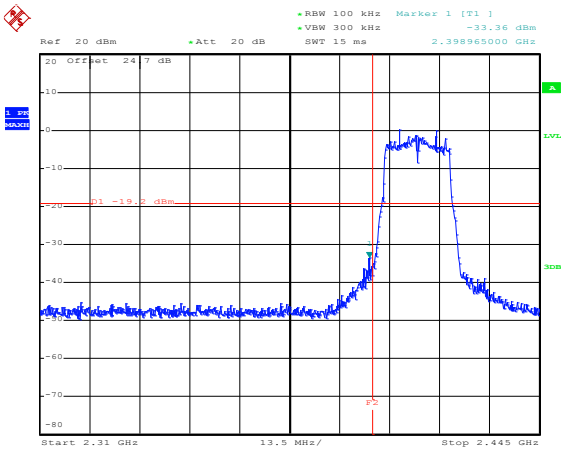
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



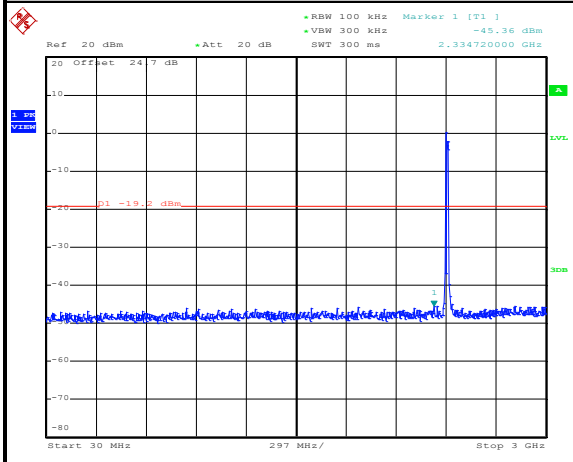
Date: 9.AUG.2015 10:01:21

Low Channel Plot



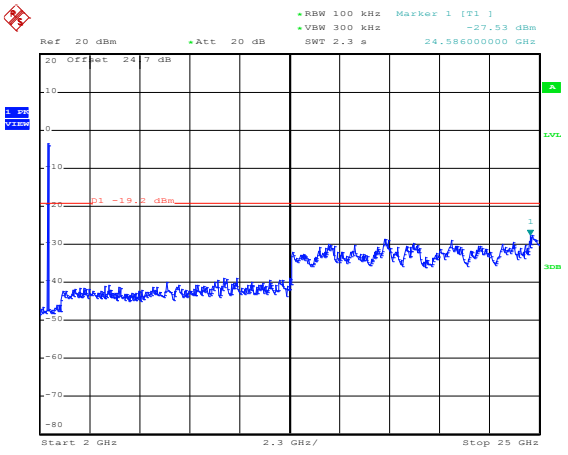
Date: 9.AUG.2015 10:01:47

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:02:09

Spurious Emission 2GHz~25GHz

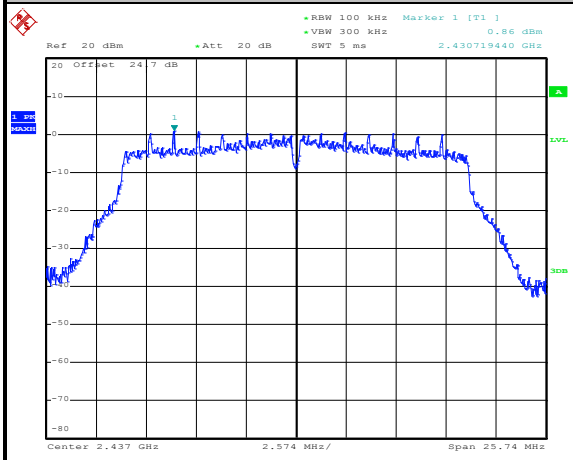


Date: 9.AUG.2015 10:02:27

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	52~55%
Test Channel :	06	**Test Engineer :**	Stuart Lin

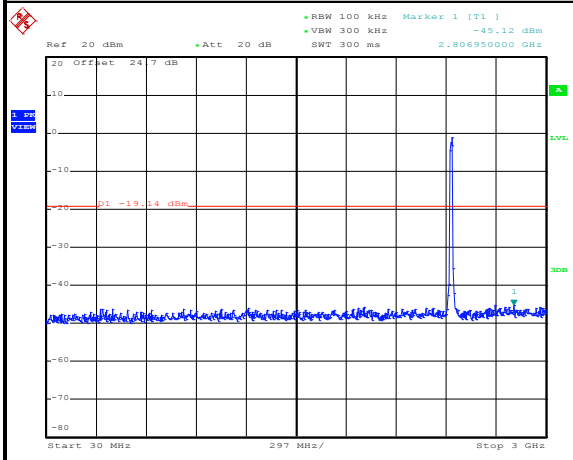
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



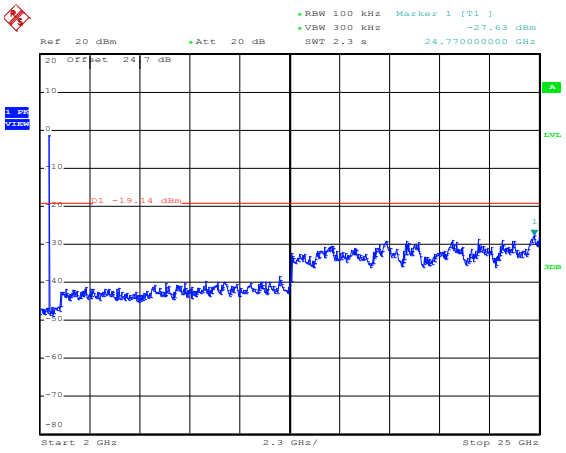
Date: 9.AUG.2015 09:57:59

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 09:59:02

Spurious Emission 2GHz~25GHz

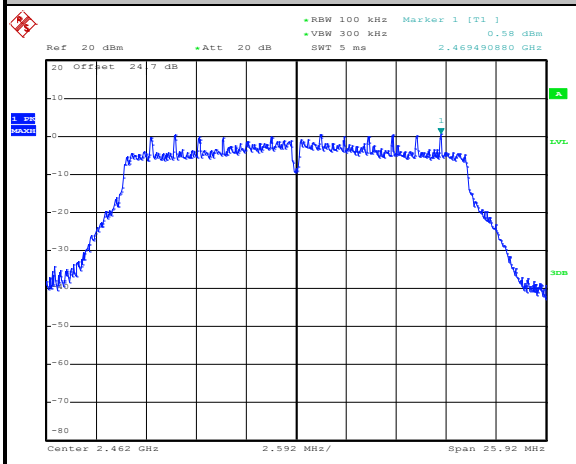


Date: 9.AUG.2015 09:59:20

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	11	**Test Engineer :**	Stuart Lin

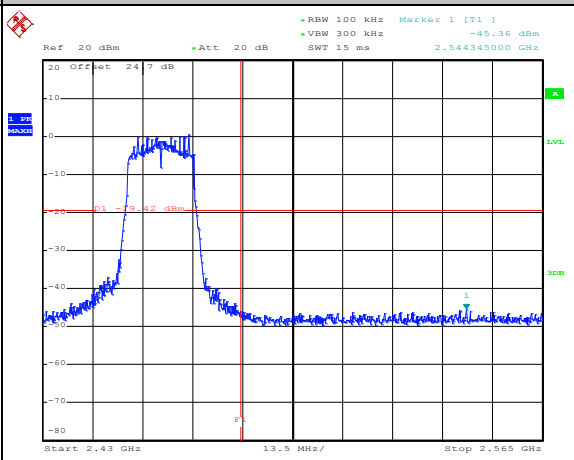
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



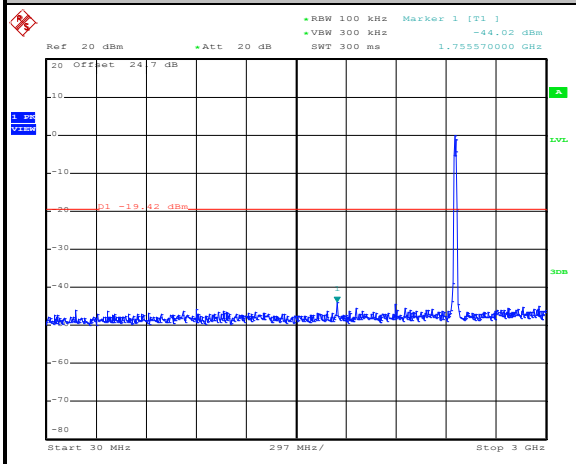
Date: 9.AUG.2015 09:54:23

High Channel Plot



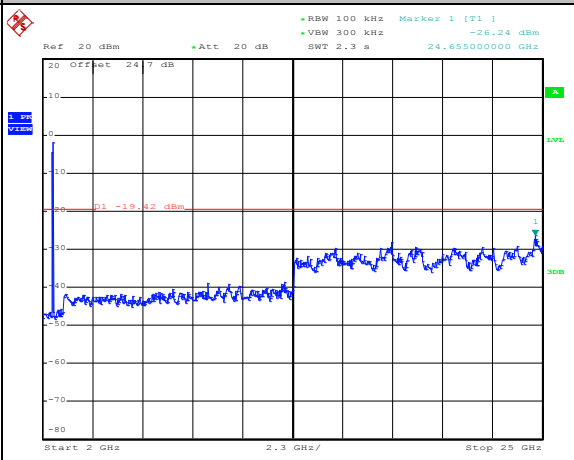
Date: 9.AUG.2015 09:54:41

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 09:55:05

Spurious Emission 2GHz~25GHz

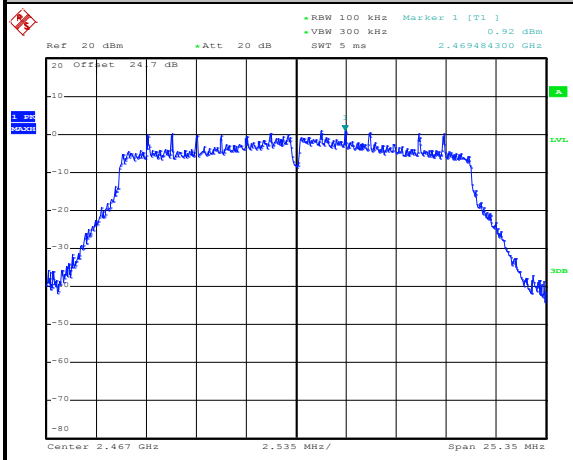


Date: 9.AUG.2015 09:55:23

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	12	**Test Engineer :**	Stuart Lin

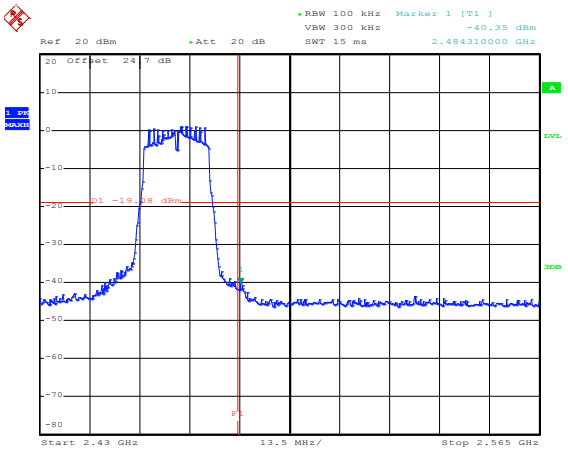
WLAN 802.11n HT20 Channel 12

100kHz PSD reference Level



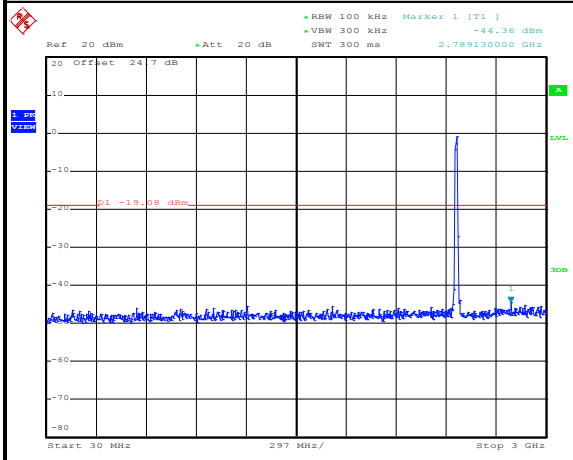
Date: 9.AUG.2015 10:12:07

High Channel Plot



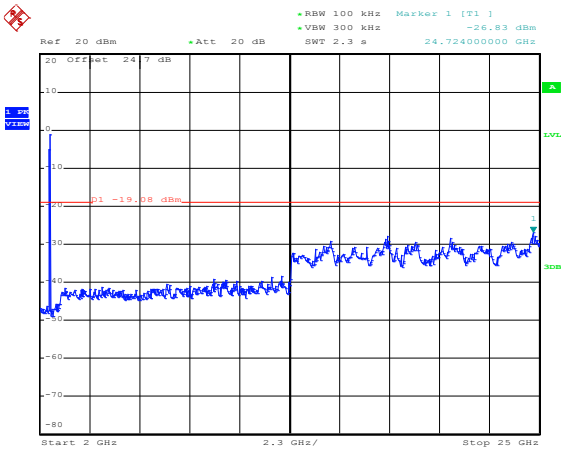
Date: 25.AUG.2015 17:47:49

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:13:03

Spurious Emission 2GHz~25GHz

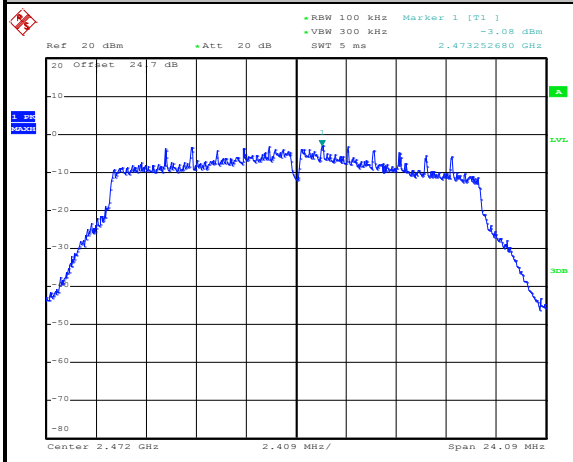


Date: 9.AUG.2015 10:13:21

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	52~55%
Test Channel :	13	**Test Engineer :**	Stuart Lin

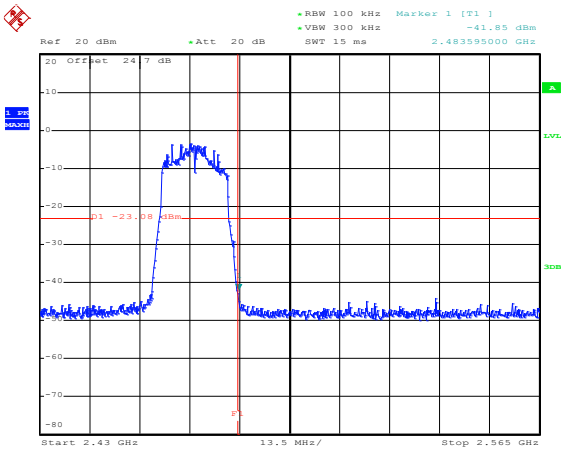
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



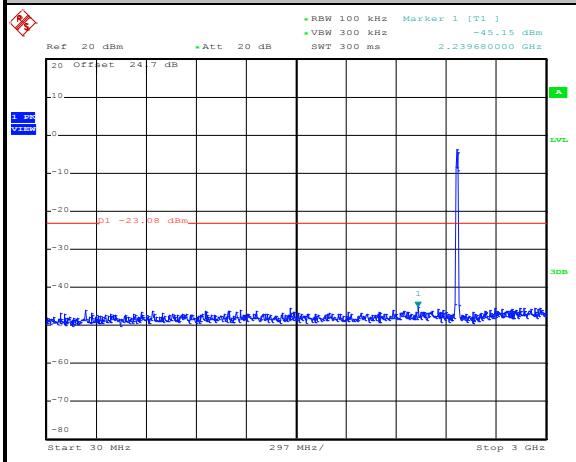
Date: 9.AUG.2015 10:16:04

High Channel Plot



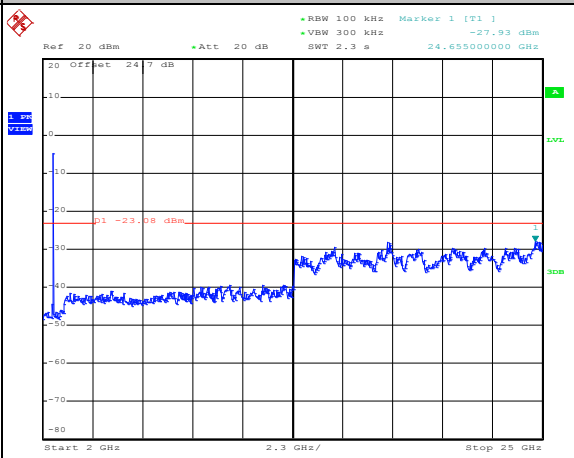
Date: 9.AUG.2015 10:24:09

Spurious Emission 30MHz~3GHz



Date: 9.AUG.2015 10:16:44

Spurious Emission 2GHz~25GHz



Date: 9.AUG.2015 10:17:01

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.

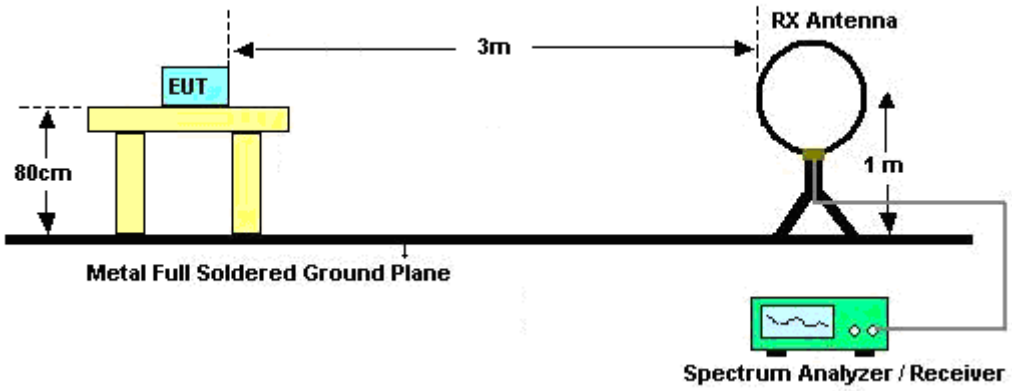
3.5.3 Test Procedure

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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

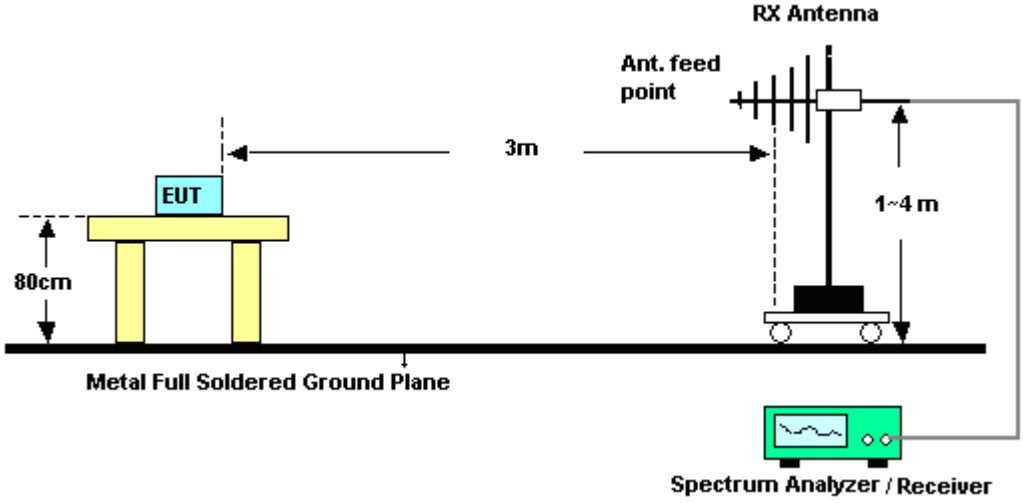
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	99.30	-	-	10Hz
1	2.4GHz 802.11g for Ant 1	98.48	-	-	
1	2.4GHz 802.11n HT20 for Ant 1	98.39	-	-	

3.5.4 Test Setup

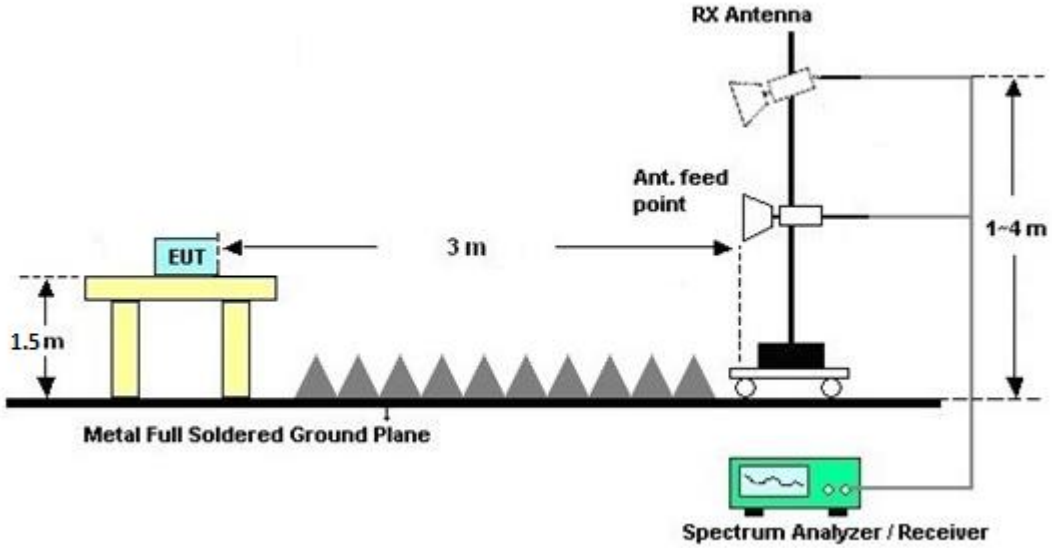
For radiated emissions below 30MHz



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 and C of this test report.

3.5.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C 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 (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

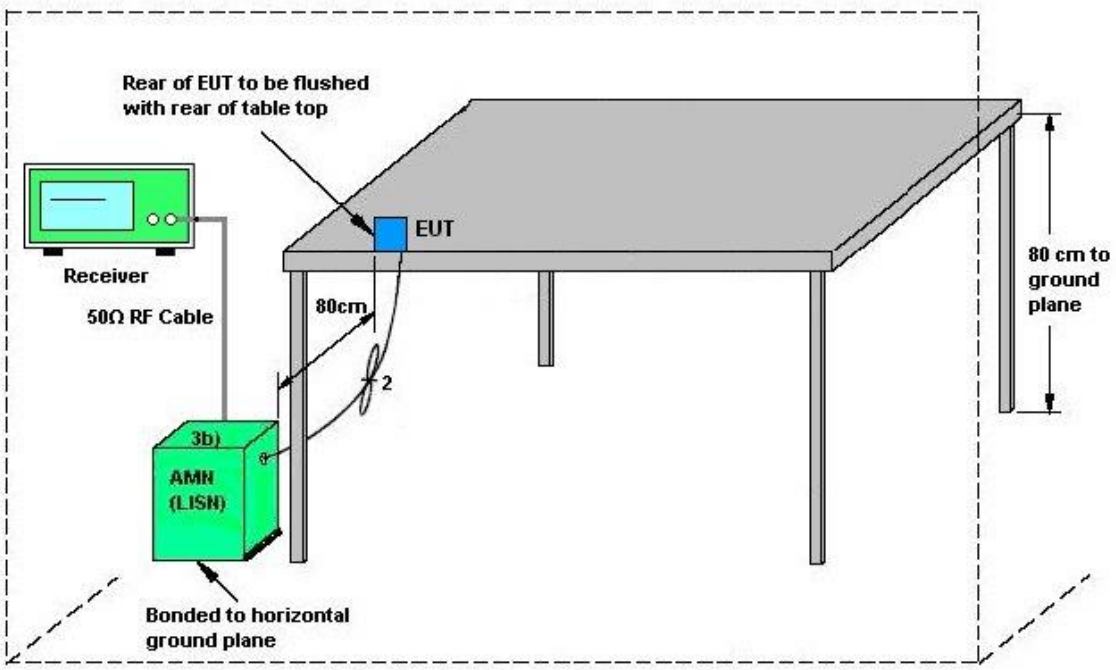
3.6.2 Measuring Instruments

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.

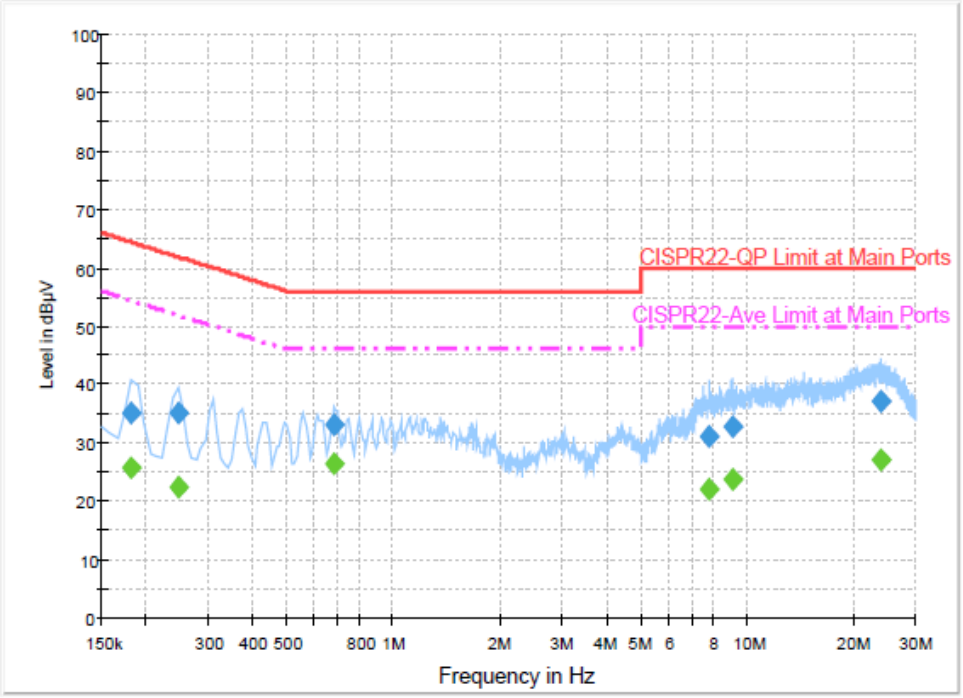
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~25℃
Test Engineer :	Eric Jeng	Relative Humidity :	58~61%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN 2.4GHz Link + USB Cable (Charging from Adapter) + Earphone		



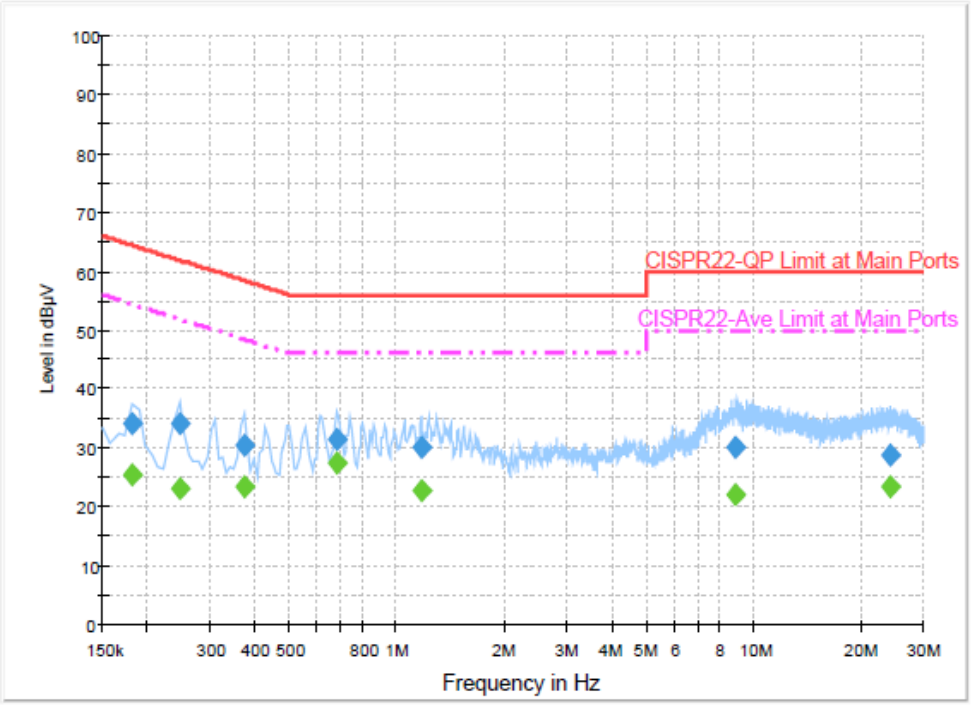
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	35.2	Off	L1	19.5	29.2	64.4
0.246000	35.2	Off	L1	19.5	26.7	61.9
0.678000	33.1	Off	L1	19.6	22.9	56.0
7.806000	31.1	Off	L1	19.8	28.9	60.0
9.070000	32.8	Off	L1	19.9	27.2	60.0
23.894000	37.0	Off	L1	20.0	23.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	25.6	Off	L1	19.5	28.8	54.4
0.246000	22.5	Off	L1	19.5	29.4	51.9
0.678000	26.5	Off	L1	19.6	19.5	46.0
7.806000	22.0	Off	L1	19.8	28.0	50.0
9.070000	23.8	Off	L1	19.9	26.2	50.0
23.894000	27.1	Off	L1	20.0	22.9	50.0

Test Mode :	Mode 1	Temperature :	23~25℃
Test Engineer :	Eric Jeng	Relative Humidity :	58~61%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN 2.4GHz Link + USB Cable (Charging from Adapter) + Earphone		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	34.2	Off	N	19.5	30.2	64.4
0.246000	34.1	Off	N	19.5	27.8	61.9
0.374000	30.3	Off	N	19.5	28.1	58.4
0.678000	31.4	Off	N	19.6	24.6	56.0
1.174000	30.0	Off	N	19.6	26.0	56.0
8.942000	30.0	Off	N	19.9	30.0	60.0
24.166000	28.8	Off	N	20.1	31.2	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	25.5	Off	N	19.5	28.9	54.4
0.246000	23.1	Off	N	19.5	28.8	51.9
0.374000	23.3	Off	N	19.5	25.1	48.4
0.678000	27.4	Off	N	19.6	18.6	46.0
1.174000	22.8	Off	N	19.6	23.2	46.0
8.942000	21.9	Off	N	19.9	28.1	50.0
24.166000	23.3	Off	N	20.1	26.7	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	Aug. 04, 2015 ~ Aug. 25, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Oct. 18, 2014	Aug. 04, 2015 ~ Aug. 25, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jun. 18, 2015	Aug. 04, 2015 ~ Aug. 25, 2015	Jun. 17, 2016	Conducted (TH05-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May 04, 2015	Aug. 04, 2015 ~ Aug. 25, 2015	May 03, 2016	Conducted (TH05-HY)
RF Cable	HARBOUR INDUSTRIES	LL142	Infinet CA3601-360 1-DLL	0.1MHz~40GHz	Mar. 06, 2015	Aug. 04, 2015 ~ Aug. 25, 2015	Mar. 05, 2016	Conducted (TH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Jul. 20, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Jul. 19, 2016	Radiation (03CH07-HY)
Loop Antenna	TESEQ	HLA 6120	31244	9kHZ~30MHz	Feb. 02, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Feb. 01, 2016	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Aug. 29, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 03, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Nov. 02, 2015	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34897197	N/A	May 04, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	May 03, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1590075	1GHz ~ 18GHz	Apr. 20, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Apr. 19, 2016	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 12, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Mar. 11, 2016	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 21, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Oct. 20, 2015	Radiation (03CH07-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Mar. 10, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Mar. 09, 2016	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	1GHz~40GHz	Dec. 04, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Dec. 03, 2015	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	9KHz~1GHz	Dec. 04, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Dec. 03, 2015	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Aug. 05, 2015 ~ Aug. 11, 2015	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Aug. 05, 2015 ~ Aug. 11, 2015	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Aug. 05, 2015 ~ Aug. 11, 2015	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	Aug. 05, 2015 ~ Aug. 11, 2015	N/A	Radiation (03CH07-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Aug. 05, 2015 ~ Aug. 11, 2015	Jun. 01, 2016	Radiation (03CH07-HY)
Test Software	Audix	E3	6.2009-8-24	N/A	N/A	Aug. 05, 2015 ~ Aug. 11, 2015	N/A	Radiation (03CH07-HY)
Filter	Wainwright	WLKS1200-8SS	SN3	1.2G Low Pass	Oct. 01, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Sep. 30, 2015	Radiation (03CH07-HY)
Filter	Microwave	H3G018G1	SN477220	3.0G High Pass	Oct. 01, 2014	Aug. 05, 2015 ~ Aug. 11, 2015	Sep. 30, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz – 2.75GHz	Dec. 01, 2014	Aug. 15, 2015	Nov. 30, 2015	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 20, 2015	Aug. 15, 2015	Apr. 19, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2014	Aug. 15, 2015	Dec. 01, 2015	Conduction (CO05-HY)
AC Power Source()	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 15, 2015	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 07, 2015	Aug. 15, 2015	Jan. 06, 2016	Conduction (CO05-HY)
Test Software	N/A	EMC32	8.40.0	N/A	N/A	Aug. 15, 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**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50**

Appendix A. Conducted Test Results

Report Number : FR571619C

Test Engineer:	Stuart Lin	Temperature:	24~26	°C
Test Date:	2015/8/4~2015/8/25	Relative Humidity:	52~55	%

TEST RESULTS DATA
6dB Occupied 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	7.04		0.50	Pass
11b	1Mbps	1	6	2437	7.08		0.50	Pass
11b	1Mbps	1	11	2462	7.04		0.50	Pass
11b	1Mbps	1	12	2467	7.04		0.50	Pass
11b	1Mbps	1	13	2472	7.04		0.50	Pass
11g	6Mbps	1	1	2462	16.34		0.50	Pass
11g	6Mbps	1	6	2412	16.34		0.50	Pass
11g	6Mbps	1	11	2437	16.32		0.50	Pass
11g	6Mbps	1	12	2462	16.26		0.50	Pass
11g	6Mbps	1	13	2472	15.72		0.50	Pass
HT20	MCS0	1	1	2462	17.32		0.50	Pass
HT20	MCS0	1	6	2412	17.16		0.50	Pass
HT20	MCS0	1	11	2437	17.28		0.50	Pass
HT20	MCS0	1	12	2462	16.90		0.50	Pass
HT20	MCS0	1	13	2472	16.06		0.50	Pass

Report Number : FR571619C

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	15.59			30.00	30.00	-2.16	0.00	13.43		36.00	36.00	Pass
11b	1Mbps	1	6	2437	15.71			30.00	30.00	-2.16	0.00	13.55		36.00	36.00	Pass
11b	1Mbps	1	11	2462	15.57			30.00	30.00	-2.16	0.00	13.41		36.00	36.00	Pass
11b	1Mbps	1	12	2467	15.81			30.00	30.00	-2.16	0.00	13.65		36.00	36.00	Pass
11b	1Mbps	1	13	2472	15.80			30.00	30.00	-2.16	0.00	13.64		36.00	36.00	Pass
11g	6Mbps	1	1	2412	22.99			30.00	30.00	-2.16	0.00	20.83		36.00	36.00	Pass
11g	6Mbps	1	6	2437	22.98			30.00	30.00	-2.16	0.00	20.82		36.00	36.00	Pass
11g	6Mbps	1	11	2462	23.19			30.00	30.00	-2.16	0.00	21.03		36.00	36.00	Pass
11g	6Mbps	1	12	2467	22.79			30.00	30.00	-2.16	0.00	20.63		36.00	36.00	Pass
11g	6Mbps	1	13	2472	20.12			30.00	30.00	-2.16	0.00	17.96		36.00	36.00	Pass
HT20	MCS0	1	1	2412	23.21			30.00	30.00	-2.16	0.00	21.05		36.00	36.00	Pass
HT20	MCS0	1	6	2437	23.59			30.00	30.00	-2.16	0.00	21.43		36.00	36.00	Pass
HT20	MCS0	1	11	2462	23.05			30.00	30.00	-2.16	0.00	20.89		36.00	36.00	Pass
HT20	MCS0	1	12	2467	23.19			30.00	30.00	-2.16	0.00	21.03		36.00	36.00	Pass
HT20	MCS0	1	13	2472	20.38			30.00	30.00	-2.16	0.00	18.22		36.00	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	0.03		12.02		
11b	1Mbps	1	6	2437	0.03		12.05		
11b	1Mbps	1	11	2462	0.03		12.01		
11b	1Mbps	1	12	2467	0.03		12.07		
11b	1Mbps	1	13	2472	0.03		12.05		
11g	6Mbps	1	1	2412	0.07		12.16		
11g	6Mbps	1	6	2437	0.07		12.03		
11g	6Mbps	1	11	2462	0.07		12.33		
11g	6Mbps	1	12	2467	0.07		12.05		
11g	6Mbps	1	13	2472	0.07		9.39		
HT20	MCS0	1	1	2412	0.07		12.06		
HT20	MCS0	1	6	2437	0.07		12.19		
HT20	MCS0	1	11	2462	0.07		12.00		
HT20	MCS0	1	12	2467	0.07		12.02		
HT20	MCS0	1	13	2472	0.07		8.18		

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	-9.91			-2.16	0.00	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-9.44			-2.16	0.00	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-9.30			-2.16	0.00	8.00	8.00	Pass
11b	1Mbps	1	12	2467	-8.50			-2.16	0.00	8.00	8.00	Pass
11b	1Mbps	1	13	2472	-8.88			-2.16	0.00	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-11.64			-2.16	0.00	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-11.57			-2.16	0.00	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-11.50			-2.16	0.00	8.00	8.00	Pass
11g	6Mbps	1	12	2467	-12.66			-2.16	0.00	8.00	8.00	Pass
11g	6Mbps	1	13	2472	-13.88			-2.16	0.00	8.00	8.00	Pass
HT20	MCS8	1	1	2412	-12.55			-2.16	0.00	8.00	8.00	Pass
HT20	MCS8	1	6	2437	-12.11			-2.16	0.00	8.00	8.00	Pass
HT20	MCS8	1	11	2462	-11.80			-2.16	0.00	8.00	8.00	Pass
HT20	MCS8	1	12	2467	-11.61			-2.16	0.00	8.00	8.00	Pass
HT20	MCS8	1	13	2472	-15.43			-2.16	0.00	8.00	8.00	Pass

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

Appendix B. Radiated Spurious Emission

Test Engineer :	Wei Chen and Ken Wu and James Chiu	Temperature :	21~23°C
		Relative Humidity :	60~63%

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		2344.56	58.93	-15.07	74	53.39	32.11	7.68	34.25	139	32	P	H
		2343.57	44.11	-9.89	54	38.57	32.11	7.68	34.25	139	32	A	H
	*	2410.86	101.59	-	-	95.94	32.2	7.75	34.3	139	32	P	H
	*	2411.19	97.54	-	-	91.89	32.2	7.75	34.3	139	32	A	H
													H
													H
		2384.43	58.18	-15.82	74	52.54	32.16	7.75	34.27	102	305	P	V
		2333.76	44.14	-9.86	54	38.67	32.09	7.6	34.22	102	305	A	V
	*	2410.77	102.39	-	-	96.74	32.2	7.75	34.3	102	305	P	V
	*	2411.19	98.32	-	-	92.67	32.2	7.75	34.3	102	305	A	V
													V
													V
802.11b CH 06 2437MHz		2318.1	58.05	-15.95	74	52.58	32.09	7.6	34.22	164	35	P	H
		2333.49	44.12	-9.88	54	38.65	32.09	7.6	34.22	164	35	A	H
	*	2435.91	101.76	-	-	96.06	32.22	7.83	34.35	164	35	P	H
	*	2436.24	97.71	-	-	92.01	32.22	7.83	34.35	164	35	A	H
		2497.64	58.26	-15.74	74	52.53	32.3	7.91	34.48	164	35	P	H
		2486.64	44.29	-9.71	54	38.53	32.28	7.91	34.43	164	35	A	H
		2336.73	58.24	-15.76	74	52.75	32.11	7.6	34.22	106	306	P	V
		2334.66	44.1	-9.9	54	38.61	32.11	7.6	34.22	106	306	A	V
	*	2435.91	103.13	-	-	97.43	32.22	7.83	34.35	106	306	P	V
	*	2436.24	99.04	-	-	93.34	32.22	7.83	34.35	106	306	A	V
		2485.12	58.3	-15.7	74	52.54	32.28	7.91	34.43	106	306	P	V
		2486.28	44.31	-9.69	54	38.55	32.28	7.91	34.43	106	306	A	V

802.11b CH 11 2462MHz	*	2460.96	101.96	-	-	96.18	32.26	7.91	34.39	205	37	P	H
	*	2461.29	97.84	-	-	92.06	32.26	7.91	34.39	205	37	A	H
		2492.72	58.93	-15.07	74	53.2	32.3	7.91	34.48	205	37	P	H
		2483.88	44.27	-9.73	54	38.51	32.28	7.91	34.43	205	37	A	H
													H
													H
	*	2460.87	103.24	-	-	97.46	32.26	7.91	34.39	104	307	P	V
	*	2461.29	99.19	-	-	93.41	32.26	7.91	34.39	104	307	A	V
		2496.04	58.73	-15.27	74	53	32.3	7.91	34.48	104	307	P	V
		2484	44.34	-9.66	54	38.58	32.28	7.91	34.43	104	307	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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 12 2467MHz	*	2465.88	101.32	-	-	95.54	32.26	7.91	34.39	229	40	P	H
	*	2466.3	97.3	-	-	91.56	32.26	7.91	34.43	229	40	A	H
		2483.6	58.31	-15.69	74	52.55	32.28	7.91	34.43	229	40	P	H
		2488.04	44.27	-9.73	54	38.49	32.3	7.91	34.43	229	40	A	H
													H
													H
	*	2468.22	103.06	-	-	97.32	32.26	7.91	34.43	104	306	P	V
	*	2467.8	99.05	-	-	93.31	32.26	7.91	34.43	104	306	A	V
		2491.84	58.36	-15.64	74	52.63	32.3	7.91	34.48	104	306	P	V
		2483.56	44.41	-9.59	54	38.65	32.28	7.91	34.43	104	306	A	V
													V
													V
802.11b CH 13 2472MHz	*	2473.23	100.77	-	-	95.01	32.28	7.91	34.43	208	40	P	H
	*	2472.73	96.85	-	-	91.09	32.28	7.91	34.43	208	40	A	H
		2484.4	58.84	-15.16	74	53.08	32.28	7.91	34.43	208	40	P	H
		2483.52	45.32	-8.68	54	39.56	32.28	7.91	34.43	208	40	A	H
													H
													H
	*	2473.31	102.2	-	-	96.44	32.28	7.91	34.43	105	307	P	V
	*	2472.81	98.21	-	-	92.45	32.28	7.91	34.43	105	307	A	V
		2483.88	59.24	-14.76	74	53.48	32.28	7.91	34.43	105	307	P	V
		2483.52	46.54	-7.46	54	40.78	32.28	7.91	34.43	105	307	A	V
													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 802.11b (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	40.81	-33.19	74	55.03	34.26	11.16	59.64	100	0	P	H
													H
													H
													H
		4824	40.76	-33.24	74	54.98	34.26	11.16	59.64	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	41.5	-32.5	74	55.56	34.3	11.21	59.57	100	0	P	H
		7311	42.49	-31.51	74	50.28	35.6	15.08	58.47	100	0	P	H
													H
													H
		4872	40.31	-33.69	74	54.37	34.3	11.21	59.57	100	0	P	V
		7311	42.43	-31.57	74	50.22	35.6	15.08	58.47	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	40.45	-33.55	74	54.34	34.34	11.27	59.5	100	0	P	H
		7386	41.95	-32.05	74	49.79	35.6	15.14	58.58	100	0	P	H
													H
													H
		4926	41.52	-32.48	74	55.41	34.34	11.27	59.5	100	0	P	V
		7386	42.01	-31.99	74	49.85	35.6	15.14	58.58	100	0	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

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 12 2467MHz		4932	41.21	-32.79	74	55.1	34.34	11.27	59.5	100	0	P	H
		7404	42.23	-31.77	74	50.09	35.6	15.14	58.6	100	0	P	H
													H
													H
		4932	41.6	-32.4	74	55.49	34.34	11.27	59.5	100	0	P	V
		7404	41.41	-32.59	74	49.27	35.6	15.14	58.6	100	0	P	V
													V
													V
802.11b CH 13 2472MHz		4944	40.95	-33.05	74	54.74	34.36	11.32	59.47	100	0	P	H
		7416	41.28	-32.72	74	49.14	35.6	15.14	58.6	100	0	P	H
													H
													H
		4944	40.59	-33.41	74	54.38	34.36	11.32	59.47	100	0	P	V
		7416	41.5	-32.5	74	49.36	35.6	15.14	58.6	100	0	P	V
													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		2328.18	58.16	-15.84	74	52.69	32.09	7.6	34.22	188	16	P	H
		2389.92	44.2	-9.8	54	38.57	32.18	7.75	34.3	188	16	A	H
	*	2412	101.54	-	-	95.89	32.2	7.75	34.3	188	16	P	H
	*	2412	90.75	-	-	85.1	32.2	7.75	34.3	188	16	A	H
													H
													H
		2330.61	57.77	-16.23	74	52.3	32.09	7.6	34.22	110	302	P	V
		2390	44.28	-9.72	54	38.65	32.18	7.75	34.3	110	302	A	V
	*	2412	103.52	-	-	97.87	32.2	7.75	34.3	110	302	P	V
	*	2412	92.68	-	-	87.03	32.2	7.75	34.3	110	302	A	V
													V
													V
802.11g CH 06 2437MHz		2318.1	58.55	-15.45	74	53.08	32.09	7.6	34.22	187	13	P	H
		2325.3	44.09	-9.91	54	38.62	32.09	7.6	34.22	187	13	A	H
	*	2437	102.54	-	-	96.82	32.24	7.83	34.35	187	13	P	H
	*	2437	91.67	-	-	85.95	32.24	7.83	34.35	187	13	A	H
		2486.76	58.54	-15.46	74	52.78	32.28	7.91	34.43	187	13	P	H
		2484.32	44.3	-9.7	54	38.54	32.28	7.91	34.43	187	13	A	H
		2343.57	57.98	-16.02	74	52.44	32.11	7.68	34.25	102	288	P	V
		2331.6	44.1	-9.9	54	38.63	32.09	7.6	34.22	102	288	A	V
	*	2437	103.97	-	-	98.25	32.24	7.83	34.35	102	288	P	V
	*	2437	93.12	-	-	87.4	32.24	7.83	34.35	102	288	A	V
		2494	58.72	-15.28	74	52.99	32.3	7.91	34.48	102	288	P	V
		2484.28	44.33	-9.67	54	38.57	32.28	7.91	34.43	102	288	A	V

802.11g CH 11 2462MHz	*	2462	103.37	-	-	97.59	32.26	7.91	34.39	178	28	P	H
	*	2462	91.73	-	-	85.95	32.26	7.91	34.39	178	28	A	H
		2498.68	58.42	-15.58	74	52.69	32.3	7.91	34.48	178	28	P	H
		2483.52	44.7	-9.3	54	38.94	32.28	7.91	34.43	178	28	A	H
													H
													H
	*	2462	104.43	-	-	98.65	32.26	7.91	34.39	218	354	P	V
	*	2462	93.1	-	-	87.32	32.26	7.91	34.39	218	354	A	V
		2495.84	58.2	-15.8	74	52.47	32.3	7.91	34.48	218	354	P	V
		2483.52	44.61	-9.39	54	38.85	32.28	7.91	34.43	218	354	A	V
													V
													V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

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 12 2467MHz	*	2467	102.5	-	-	96.76	32.26	7.91	34.43	220	21	P	H
	*	2467	91.74	-	-	86	32.26	7.91	34.43	220	21	A	H
		2483.76	59.29	-14.71	74	53.53	32.28	7.91	34.43	220	21	P	H
		2483.52	45.07	-8.93	54	39.31	32.28	7.91	34.43	220	21	A	H
													H
													H
	*	2467	104.02	-	-	98.28	32.26	7.91	34.43	140	281	P	V
	*	2467	93.22	-	-	87.48	32.26	7.91	34.43	140	281	A	V
		2483.84	60.62	-13.38	74	54.86	32.28	7.91	34.43	140	281	P	V
		2483.56	45.91	-8.09	54	40.15	32.28	7.91	34.43	140	281	A	V
													V
													V
802.11g CH 13 2472MHz	*	2471.39	99.08	-	-	93.32	32.28	7.91	34.43	222	13	P	H
	*	2471.31	88.29	-	-	82.53	32.28	7.91	34.43	222	13	A	H
		2483.64	65.06	-8.94	74	59.3	32.28	7.91	34.43	222	13	P	H
		2483.52	46.28	-7.72	54	40.52	32.28	7.91	34.43	222	13	A	H
													H
													H
	*	2472	101.77	-	-	96.01	32.28	7.91	34.43	105	304	P	V
	*	2472	91.07	-	-	85.31	32.28	7.91	34.43	105	304	A	V
		2483.52	70.51	-3.49	74	64.75	32.28	7.91	34.43	105	304	P	V
		2483.52	48.32	-5.68	54	42.56	32.28	7.91	34.43	105	304	A	V
													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 (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	40.49	-33.51	74	54.71	34.26	11.16	59.64	100	0	P	H
													H
													H
													H
		4824	40.95	-33.05	74	55.17	34.26	11.16	59.64	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	39.62	-34.38	74	53.68	34.3	11.21	59.57	100	0	P	H
		7308	41.9	-32.1	74	49.69	35.6	15.08	58.47	100	0	P	H
													H
													H
		4872	40.86	-33.14	74	54.92	34.3	11.21	59.57	100	0	P	V
		7308	42.02	-31.98	74	49.81	35.6	15.08	58.47	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	41.69	-32.31	74	55.58	34.34	11.27	59.5	100	0	P	H
		7386	41.98	-32.02	74	49.82	35.6	15.14	58.58	100	0	P	H
													H
													H
		4926	40.97	-33.03	74	54.86	34.34	11.27	59.5	100	0	P	V
		7386	42.38	-31.62	74	50.22	35.6	15.14	58.58	100	0	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

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 12 2467MHz		4934	40.71	-33.29	74	54.6	34.34	11.27	59.5	100	0	P	H
		7401	41.37	-32.63	74	49.23	35.6	15.14	58.6	100	0	P	H
													H
													H
		4934	41.79	-32.21	74	55.68	34.34	11.27	59.5	100	0	P	V
		7401	42.04	-31.96	74	49.9	35.6	15.14	58.6	100	0	P	V
													V
													V
802.11g CH 13 2472MHz		4944	40.63	-33.37	74	54.42	34.36	11.32	59.47	100	0	P	H
		7416	41.9	-32.1	74	49.76	35.6	15.14	58.6	100	0	P	H
													H
													H
		4944	40.47	-33.53	74	54.26	34.36	11.32	59.47	100	0	P	V
		7416	41.61	-32.39	74	49.47	35.6	15.14	58.6	100	0	P	V
													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)
		2389.74	58.23	-15.77	74	52.57	32.18	7.75	34.27	189	36	P	H
		2390	44.73	-9.27	54	39.1	32.18	7.75	34.3	189	36	A	H
	*	2410.19	103.48	-	-	97.83	32.2	7.75	34.3	189	36	P	H
	*	2411.19	91.95	-	-	86.3	32.2	7.75	34.3	189	36	A	H
802.11n													H
HT20													H
CH 01		2390	62.15	-11.85	74	56.52	32.18	7.75	34.3	102	304	P	V
2412MHz		2390	44.83	-9.17	54	39.2	32.18	7.75	34.3	102	304	A	V
	*	2410.35	105.51	-	-	99.86	32.2	7.75	34.3	102	304	P	V
	*	2411.27	92.59	-	-	86.94	32.2	7.75	34.3	102	304	A	V
													V
													V
		2346.09	58.01	-15.99	74	52.47	32.11	7.68	34.25	166	35	P	H
		2334.21	44.12	-9.88	54	38.65	32.09	7.6	34.22	166	35	A	H
	*	2437	104.62	-	-	98.9	32.24	7.83	34.35	166	35	P	H
	*	2436.16	92.7	-	-	87	32.22	7.83	34.35	166	35	A	H
802.11n		2483.64	58.18	-15.82	74	52.42	32.28	7.91	34.43	166	35	P	H
HT20		2484.76	44.31	-9.69	54	38.55	32.28	7.91	34.43	166	35	A	H
CH 06		2355.27	58.03	-15.97	74	52.47	32.13	7.68	34.25	111	305	P	V
2437MHz		2332.77	44.14	-9.86	54	38.67	32.09	7.6	34.22	111	305	A	V
	*	2436.49	105.55	-	-	99.85	32.22	7.83	34.35	111	305	P	V
	*	2436.24	94.14	-	-	88.44	32.22	7.83	34.35	111	305	A	V
		2497.56	58.41	-15.59	74	52.68	32.3	7.91	34.48	111	305	P	V
		2483.52	44.35	-9.65	54	38.59	32.28	7.91	34.43	111	305	A	V

	*	2461.79	103.86	-	-	98.08	32.26	7.91	34.39	144	36	P	H
	*	2461.29	92.36	-	-	86.58	32.26	7.91	34.39	144	36	A	H
		2483.56	59.18	-14.82	74	53.42	32.28	7.91	34.43	144	36	P	H
		2483.52	44.78	-9.22	54	39.02	32.28	7.91	34.43	144	36	A	H
802.11n													H
HT20													H
CH 11	*	2461.37	105.74	-	-	99.96	32.26	7.91	34.39	120	306	P	V
2462MHz	*	2461.12	93.87	-	-	88.09	32.26	7.91	34.39	120	306	A	V
		2483.52	62.18	-11.82	74	56.42	32.28	7.91	34.43	120	306	P	V
		2483.56	45.47	-8.53	54	39.71	32.28	7.91	34.43	120	306	A	V
													V
													V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

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)
	*	2466.22	103.5	-	-	97.72	32.26	7.91	34.39	164	37	P	H
	*	2467.8	91.17	-	-	85.43	32.26	7.91	34.43	164	37	A	H
		2483.72	66.5	-7.5	74	60.74	32.28	7.91	34.43	164	37	P	H
		2483.52	46.08	-7.92	54	40.32	32.28	7.91	34.43	164	37	A	H
802.11n													H
HT20													H
CH 12	*	2468.8	105.8	-	-	100.06	32.26	7.91	34.43	104	307	P	V
2467MHz	*	2467.64	93.89	-	-	88.15	32.26	7.91	34.43	104	307	A	V
		2483.52	70.14	-3.86	74	64.38	32.28	7.91	34.43	104	307	P	V
		2483.52	47.58	-6.42	54	41.82	32.28	7.91	34.43	104	307	A	V
													V
													V
	*	2473.56	98.88	-	-	93.12	32.28	7.91	34.43	133	25	P	H
	*	2472.9	87.57	-	-	81.81	32.28	7.91	34.43	133	25	A	H
		2483.56	68.33	-5.67	74	62.57	32.28	7.91	34.43	133	25	P	H
		2483.52	47.05	-6.95	54	41.29	32.28	7.91	34.43	133	25	A	H
802.11n													H
HT20													H
CH 13	*	2474.06	101.1	-	-	95.34	32.28	7.91	34.43	102	349	P	V
2472MHz	*	2472.65	88.86	-	-	83.1	32.28	7.91	34.43	102	349	A	V
		2483.52	67.61	-6.39	74	61.85	32.28	7.91	34.43	102	349	P	V
		2483.52	46.8	-7.2	54	41.04	32.28	7.91	34.43	102	349	A	V
													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 (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)
		4824	40.38	-33.62	74	54.6	34.26	11.16	59.64	100	0	P	H
													H
802.11n													H
HT20													H
CH 01		4824	40.55	-33.45	74	54.77	34.26	11.16	59.64	100	0	P	V
2412MHz													V
													V
													V
		4872	39.25	-34.75	74	53.31	34.3	11.21	59.57	100	0	P	H
		7308	42.78	-31.22	74	50.57	35.6	15.08	58.47	100	0	P	H
802.11n													H
HT20													H
CH 06		4872	39.55	-34.45	74	53.61	34.3	11.21	59.57	100	0	P	V
2437MHz		7308	42.01	-31.99	74	49.8	35.6	15.08	58.47	100	0	P	V
													V
													V
		4926	39.94	-34.06	74	53.83	34.34	11.27	59.5	100	0	P	H
		7386	42.01	-31.99	74	49.85	35.6	15.14	58.58	100	0	P	H
802.11n													H
HT20													H
CH 11		4926	39.88	-34.12	74	53.77	34.34	11.27	59.5	100	0	P	V
2462MHz		7386	42.13	-31.87	74	49.97	35.6	15.14	58.58	100	0	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

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)
		4932	40.72	-33.28	74	54.61	34.34	11.27	59.5	100	0	P	H
		7404	42.2	-31.8	74	50.06	35.6	15.14	58.6	100	0	P	H
802.11n													H
HT20													H
CH 12		4932	40.03	-33.97	74	53.92	34.34	11.27	59.5	100	0	P	V
2467MHz		7404	42.12	-31.88	74	49.98	35.6	15.14	58.6	100	0	P	V
													V
													V
		4944	40.28	-33.72	74	54.07	34.36	11.32	59.47	100	0	P	H
		7416	42.14	-31.86	74	50	35.6	15.14	58.6	100	0	P	H
802.11n													H
HT20													H
CH 13		4944	40.75	-33.25	74	54.54	34.36	11.32	59.47	100	0	P	V
2472MHz		7416	41.81	-32.19	74	49.67	35.6	15.14	58.6	100	0	P	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 802.11b (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 802.11b LF		30.54	31.94	-8.06	40	43.35	18.28	1.77	31.46	100	0	P	H
		140.43	18.93	-24.57	43.5	35.92	11.5	2.61	31.1			P	H
		263.55	19.65	-26.35	46	33.93	13.56	3.16	31			P	H
		574.4	23.29	-22.71	46	30.32	19.66	4.01	30.7			P	H
		855.8	27.71	-18.29	46	30.15	23.25	4.7	30.39			P	H
		977.6	30.17	-23.83	54	30.56	24.96	4.94	30.29			P	H
													H
													H
													H
													H
													H
													H
		45.66	32.54	-7.46	40	51.82	10.15	1.77	31.2	100	0	P	V
		130.44	15.62	-27.88	43.5	32.44	11.9	2.38	31.1			P	V
		288.93	17.51	-28.49	46	32.36	13.07	3.16	31.08			P	V
		517.7	21.43	-24.57	46	30.11	18.1	3.89	30.67			P	V
		730.5	26.64	-19.36	46	30.63	22	4.41	30.4			P	V
		988.1	29.53	-24.47	54	29.91	24.84	5.03	30.25			P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against 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		43.5	29.76	-10.24	40	47.99	11.2	1.77	31.2	100	0	P	H
		119.37	19.21	-24.29	43.5	36.58	11.35	2.38	31.1			P	H
		257.34	20.22	-25.78	46	34.74	13.52	2.96	31			P	H
		369.3	20.88	-25.12	46	33.67	14.88	3.39	31.06			P	H
		682.2	25.9	-20.1	46	31.49	20.5	4.35	30.44			P	H
		910.4	28.45	-17.55	46	30.42	23.55	4.8	30.32			P	H
													H
													H
													H
													H
													H
													H
		43.5	32.3	-7.7	40	50.53	11.2	1.77	31.2	100	0	P	V
		128.82	16.99	-26.51	43.5	33.79	11.92	2.38	31.1			P	V
		247.89	17.45	-28.55	46	33.29	12.2	2.96	31			P	V
		339.9	19.08	-26.92	46	32.73	14.07	3.28	31			P	V
		614.3	25.75	-20.25	46	32.22	20.02	4.08	30.57			P	V
		914.6	30.13	-15.87	46	31.93	23.73	4.8	30.33			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against 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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		59.16	29.98	-10.02	40	53.41	6.08	1.77	31.28	100	0	P	H
		135.84	19.46	-24.04	43.5	36.68	11.5	2.38	31.1			P	H
		249.51	20.99	-25.01	46	36.73	12.3	2.96	31			P	H
		383.3	23.13	-22.87	46	35.38	15.22	3.52	30.99			P	H
		650.7	26.32	-19.68	46	32.21	20.39	4.22	30.5			P	H
		977.6	30.17	-23.83	54	30.56	24.96	4.94	30.29			P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT20		31.08	31.12	-8.88	40	42.53	18.28	1.77	31.46	100	0	P	V
LF		147.99	16.85	-26.65	43.5	34.26	11.08	2.61	31.1			P	V
		264.09	18.22	-27.78	46	32.5	13.56	3.16	31			P	V
		315.4	18.9	-27.1	46	33.27	13.35	3.28	31			P	V
		750.8	29.84	-16.16	46	33.66	22.1	4.48	30.4			P	V
		979.7	31.6	-22.4	54	31.94	25	4.94	30.28			P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	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 CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. 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)

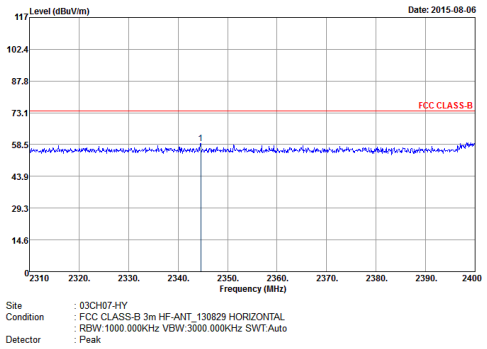
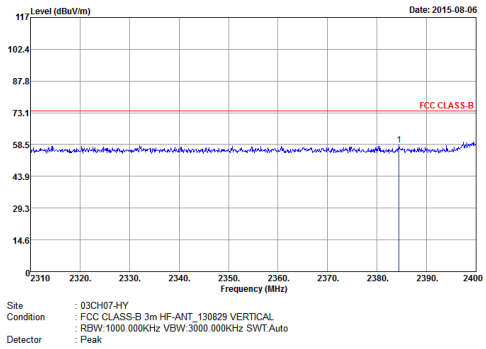
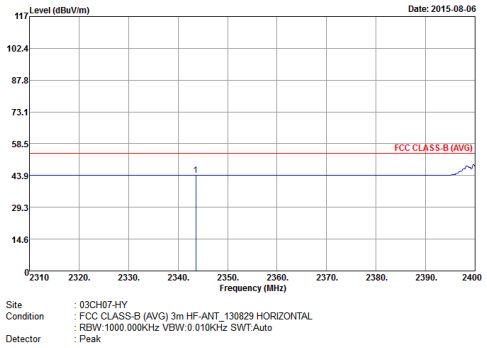
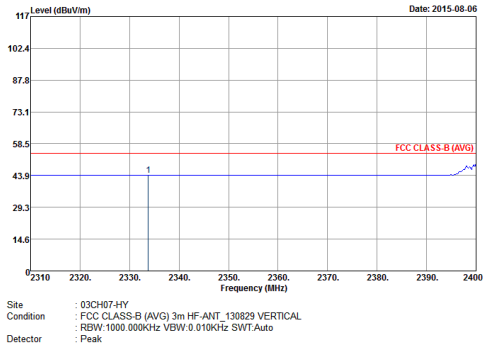
Both peak and average measured complies with the limit line, so test result is "PASS".

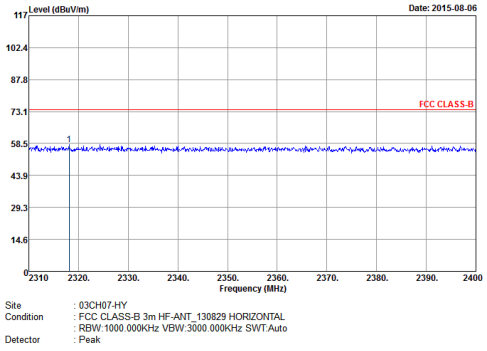
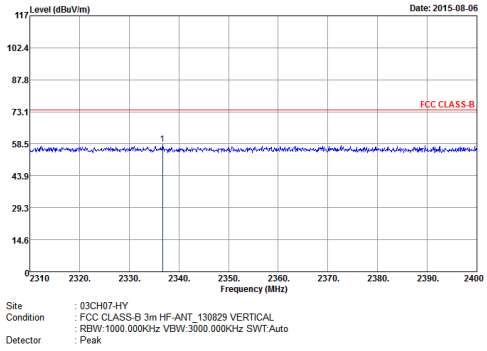
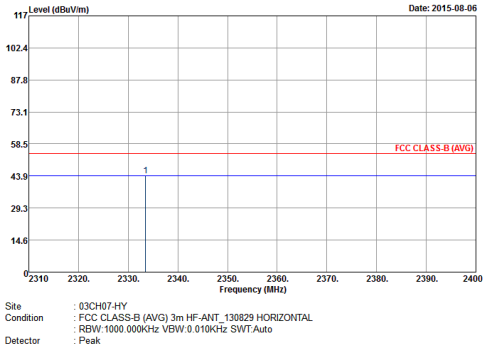
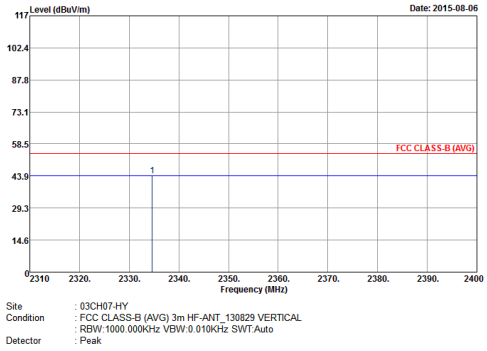
Appendix C. Radiated Spurious Emission Plots

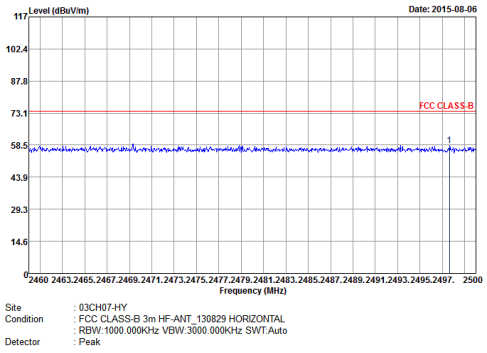
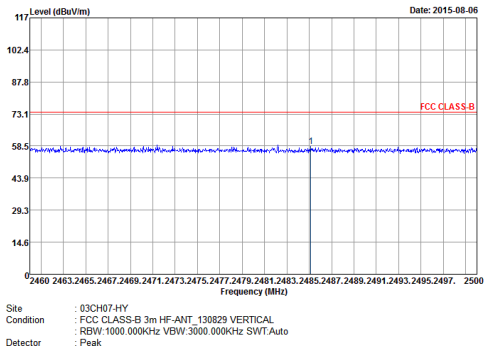
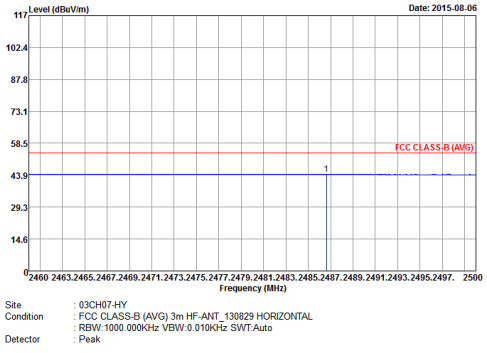
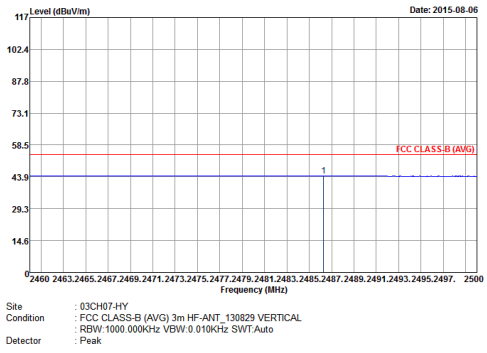
Test Engineer :	Wei Chen and Ken Wu and James Chiu	Temperature :	21~23°C
		Relative Humidity :	60~63%

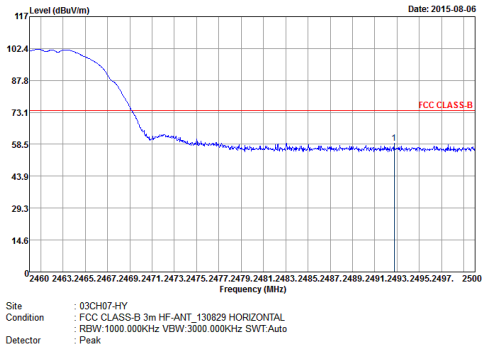
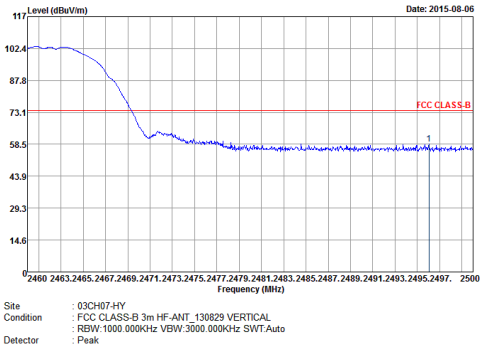
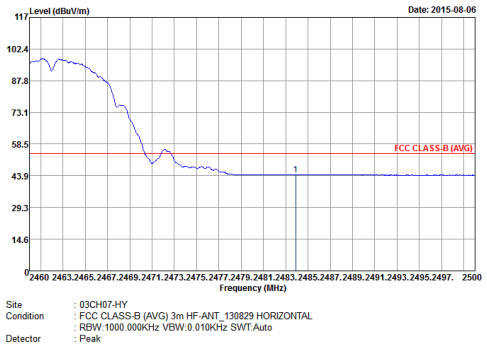
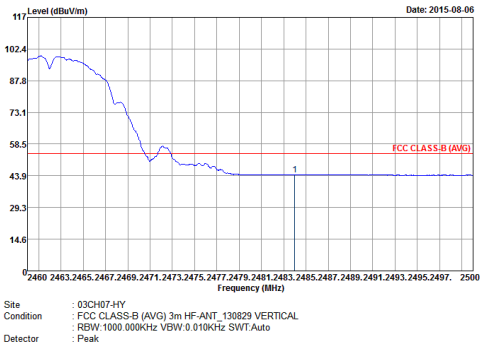
2.4GHz 2400~2483.5MHz

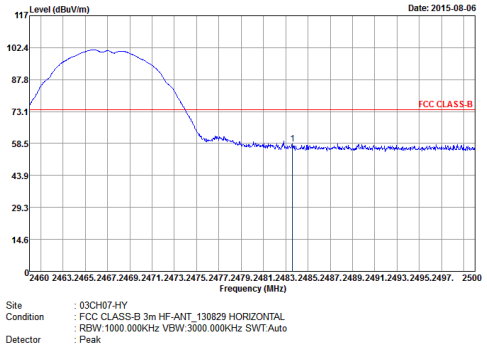
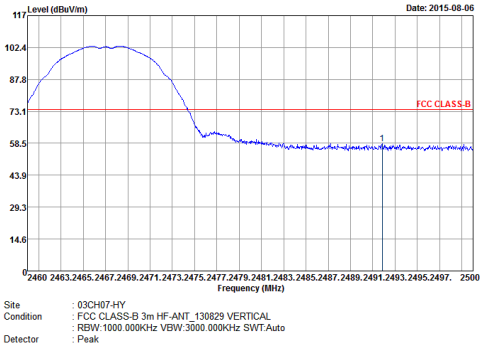
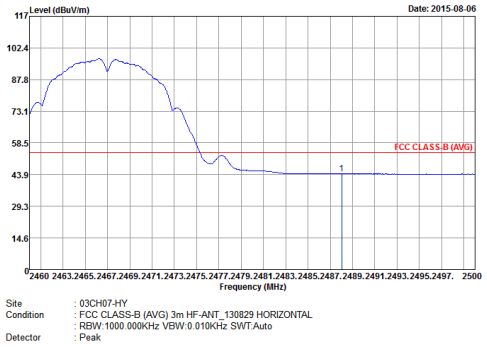
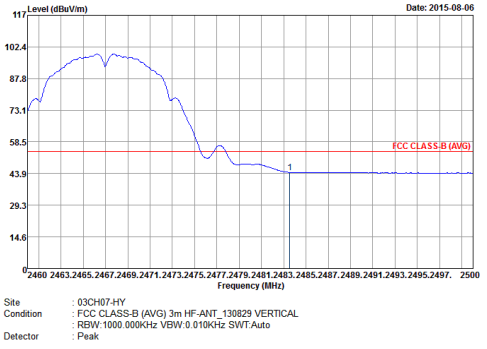
WIFI 802.11b (Band Edge @ 3m)

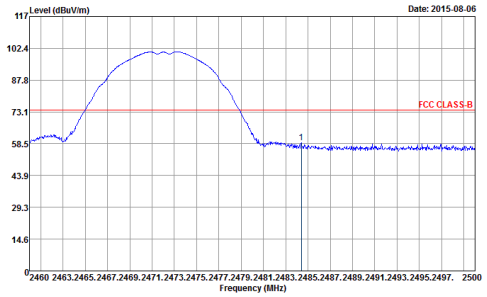
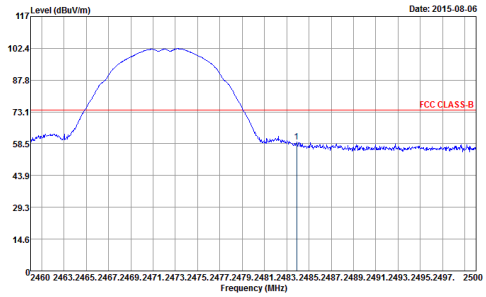
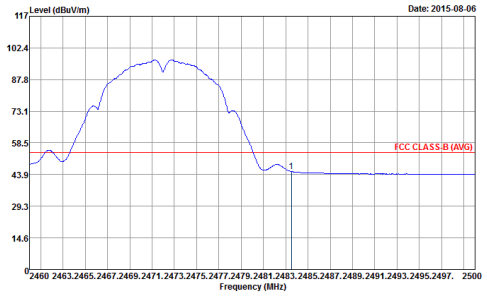
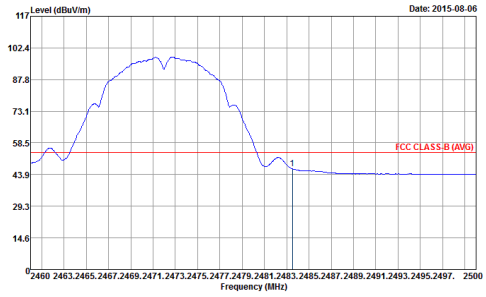
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak		
Avg.		

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

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - High channel location	
1	Horizontal	Vertical
Peak		
Avg.		

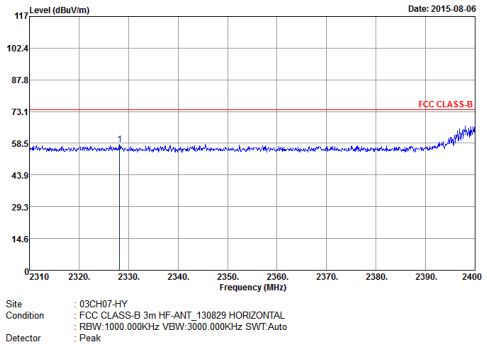
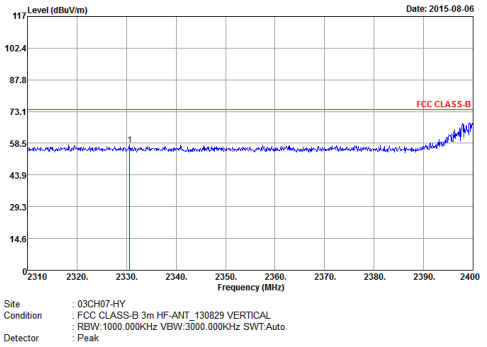
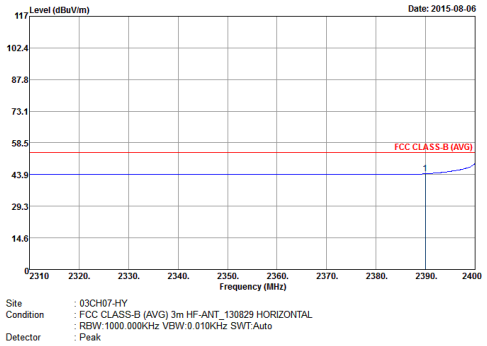
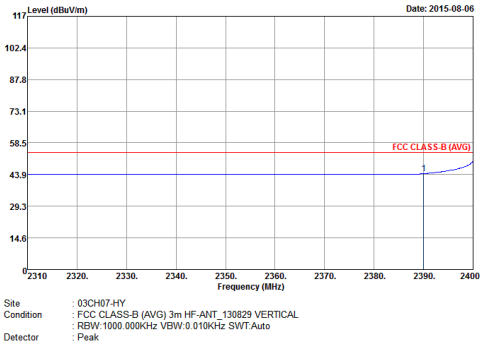
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak		
Avg.		

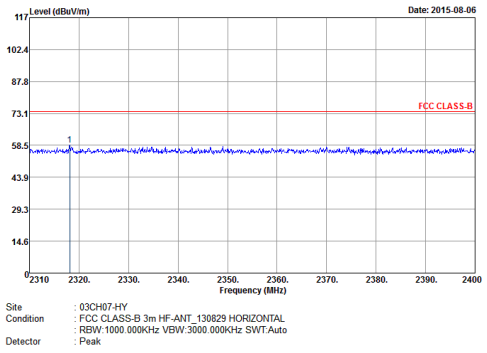
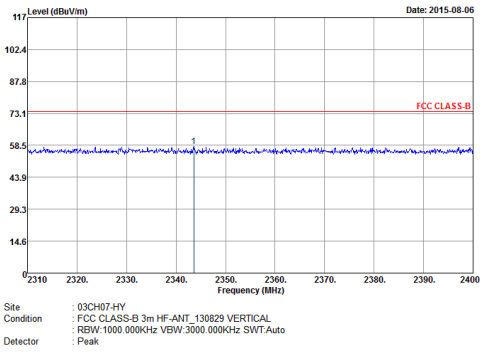
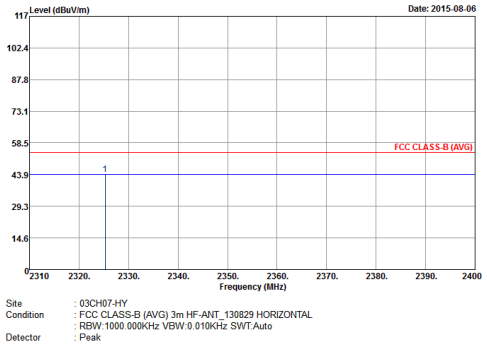
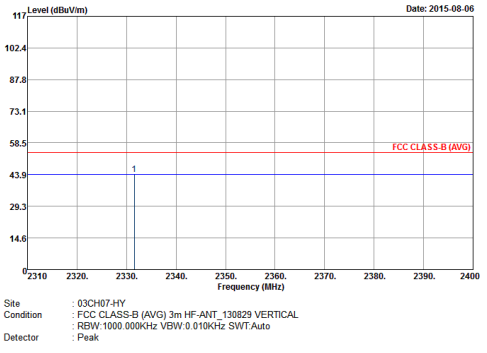
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH12 2467MHz	
1	Horizontal	Vertical
Peak		
Avg.		

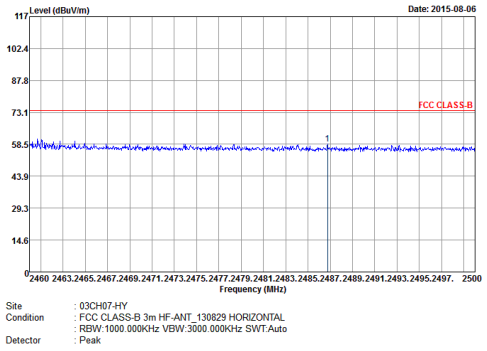
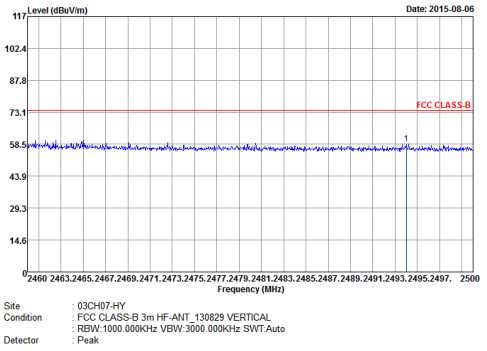
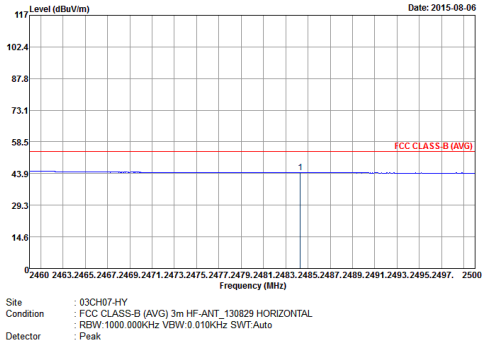
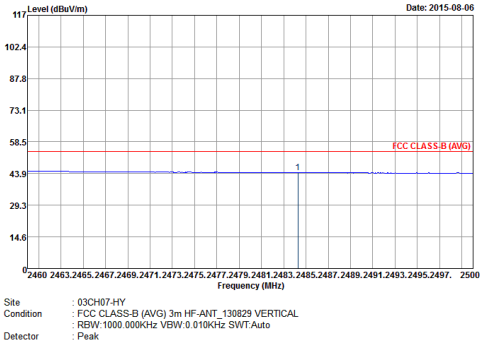
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH13 2472MHz	
1	Horizontal	Vertical
Peak		
Avg.		

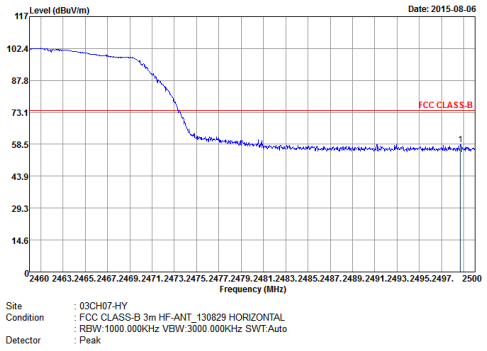
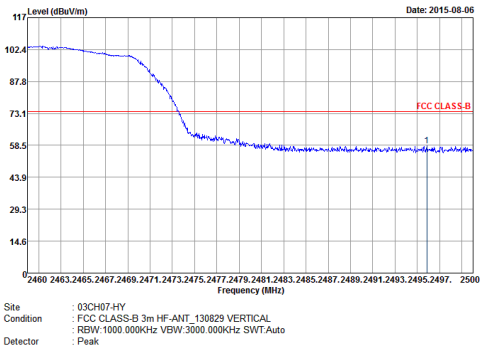
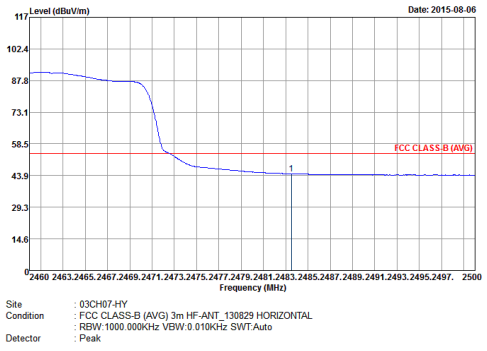
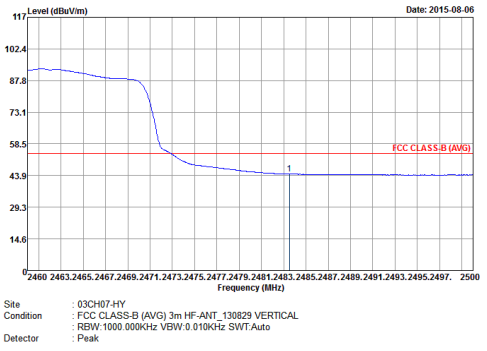
2.4GHz 2400~2483.5MHz

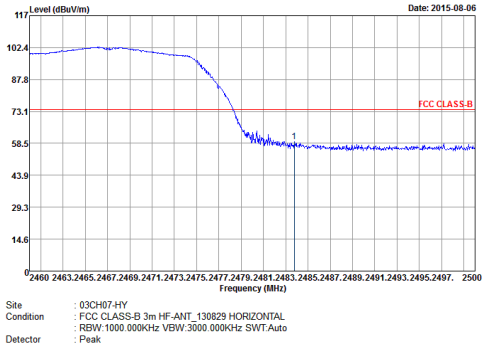
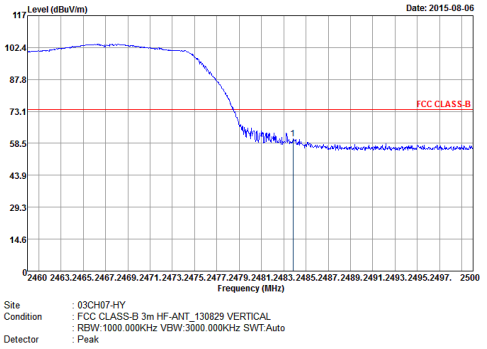
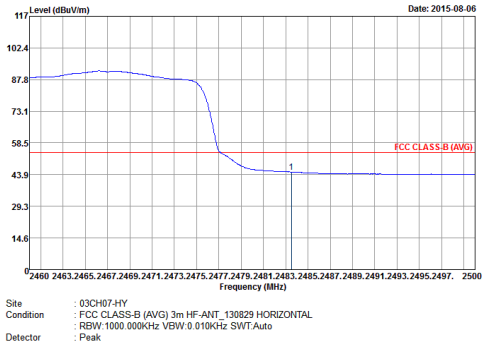
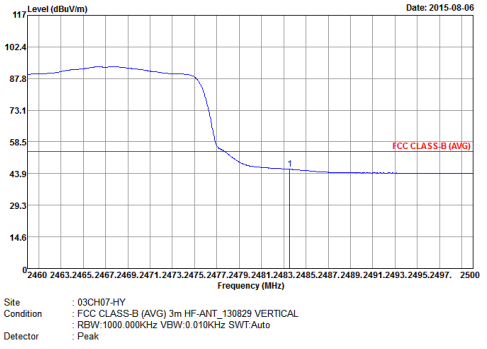
WIFI 802.11g (Band Edge @ 3m)

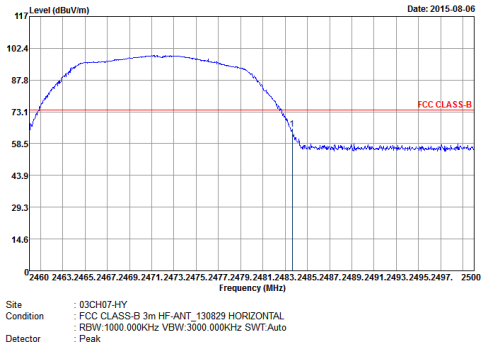
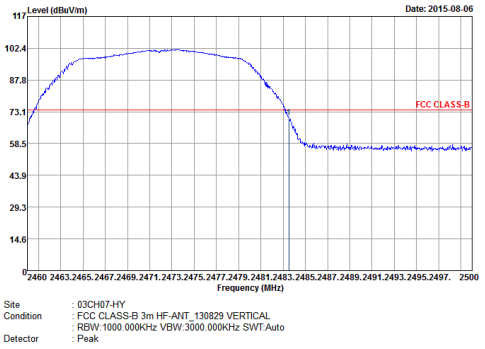
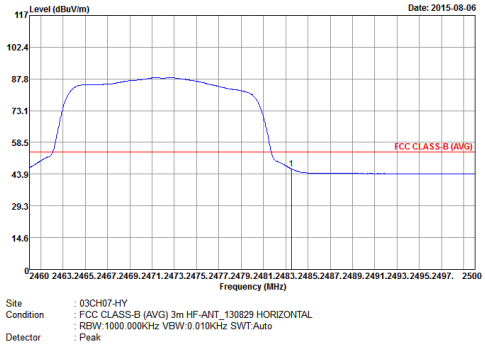
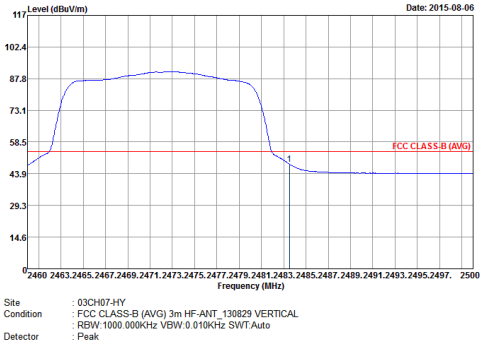
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - Low channel location	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - High channel location	
1	Horizontal	Vertical
Peak		
Avg.		

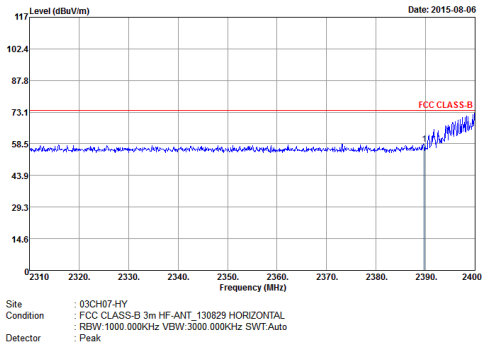
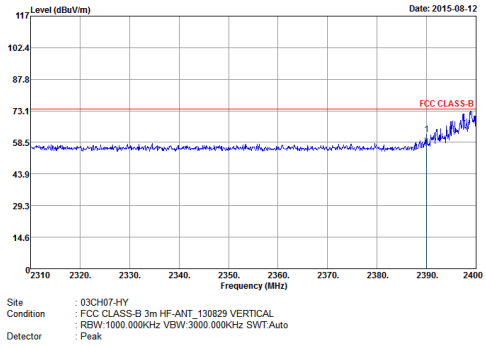
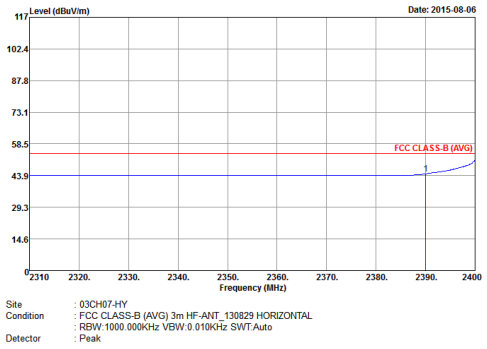
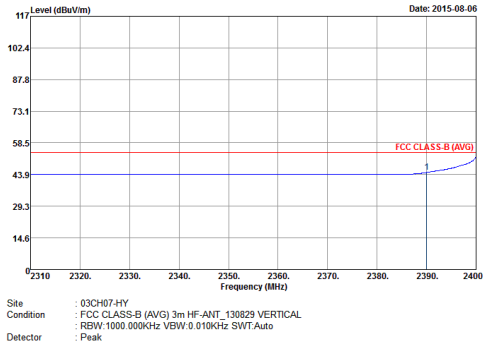
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak		
Avg.		

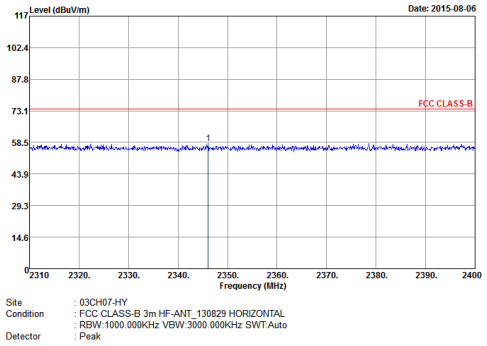
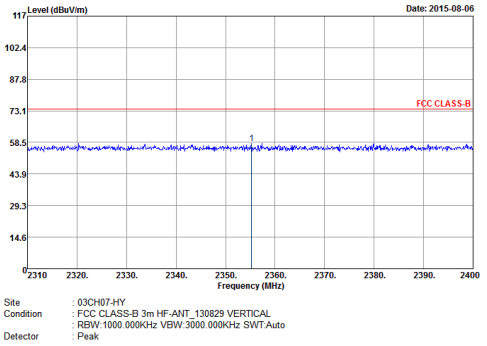
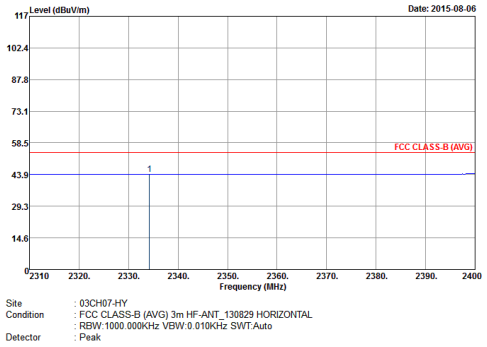
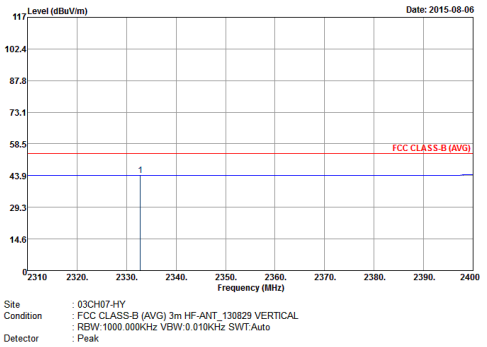
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH12 2467MHz	
1	Horizontal	Vertical
Peak		
Avg.		

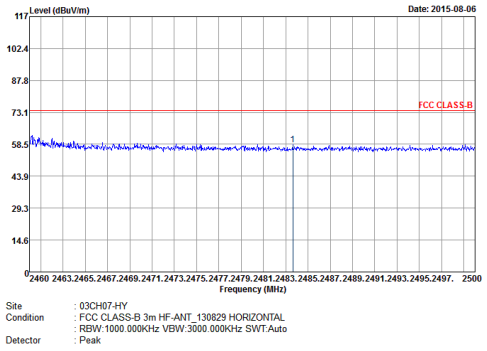
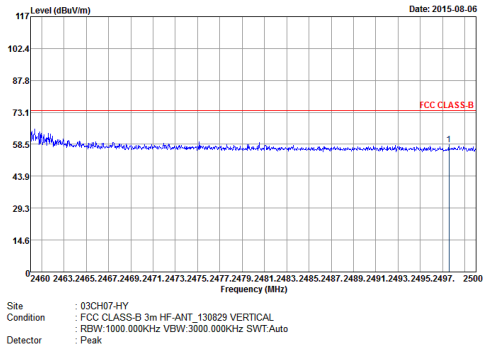
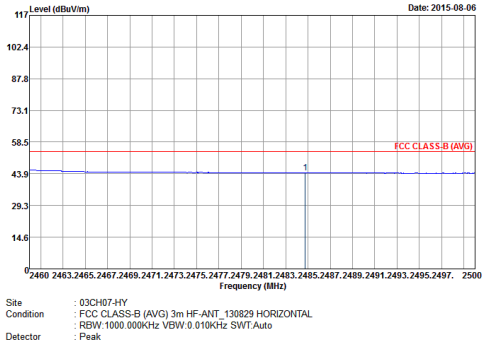
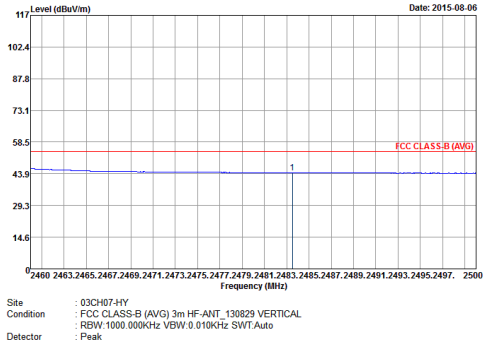
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH013 2472MHz	
1	Horizontal	Vertical
Peak		
Avg.		

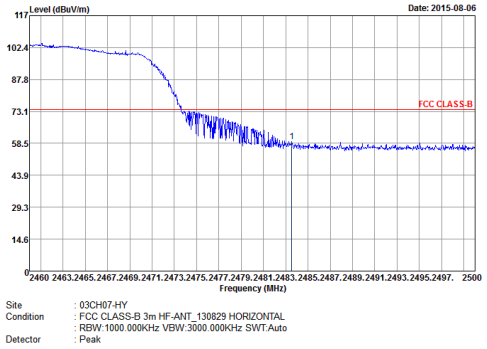
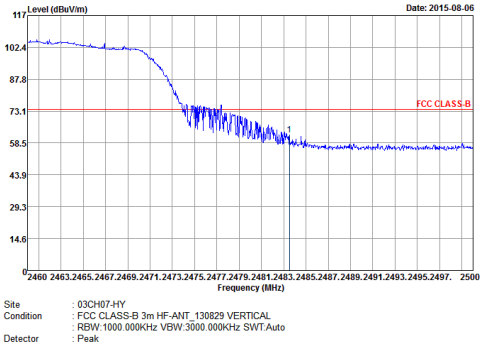
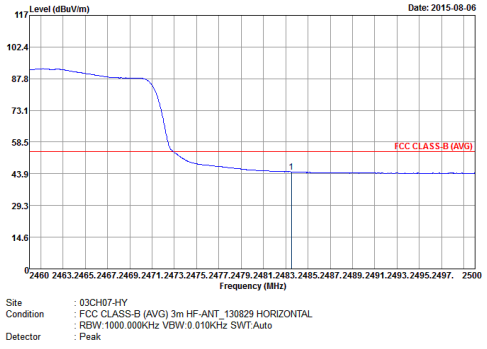
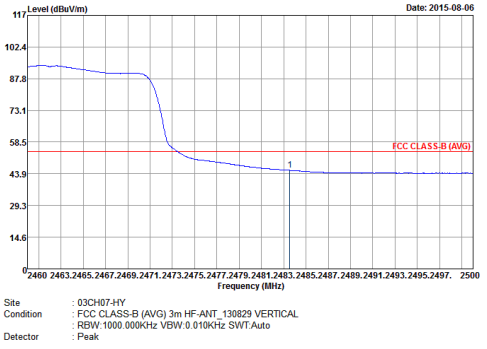
2.4GHz 2400~2483.5MHz

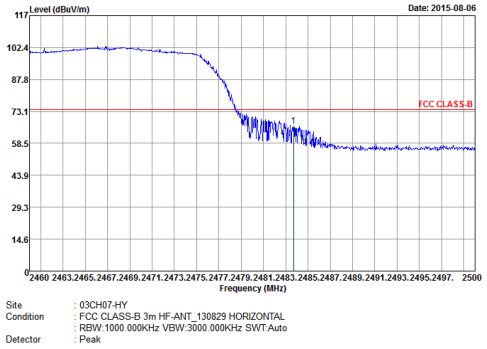
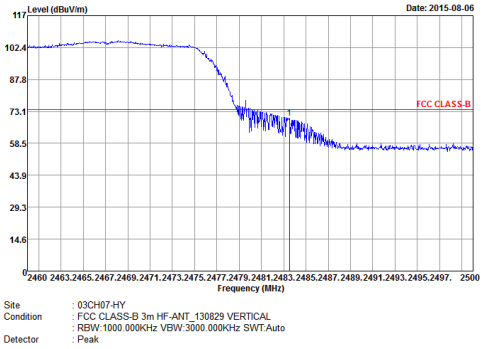
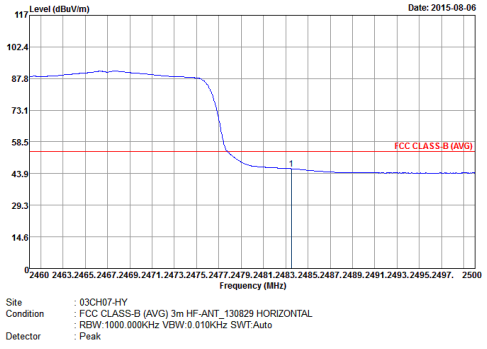
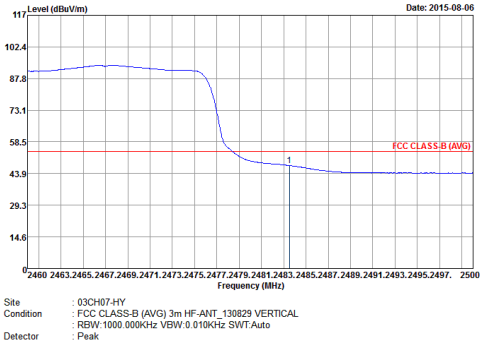
WIFI 802.11n HT20 (Band Edge @ 3m)

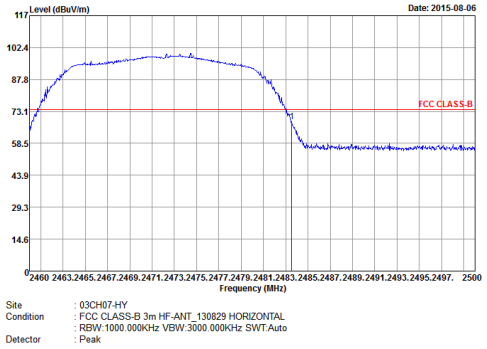
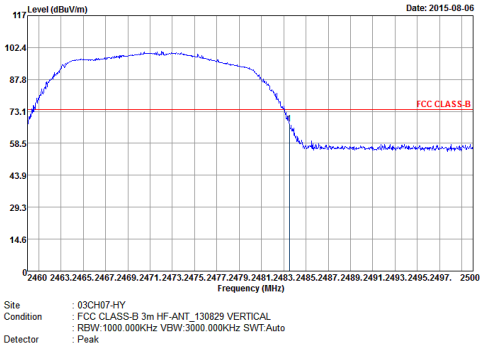
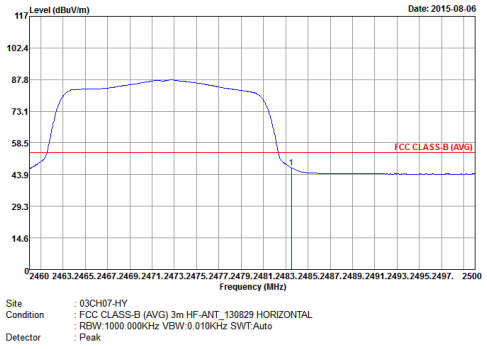
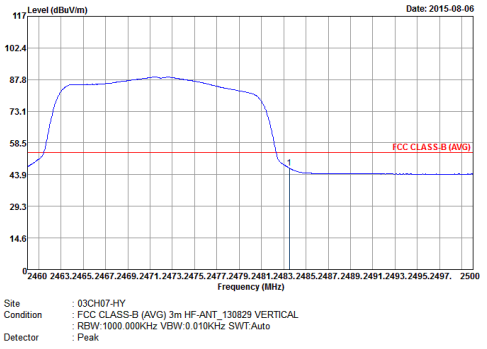
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - Low channel location	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz -High channel location	
1	Horizontal	Vertical
Peak		
Avg.		

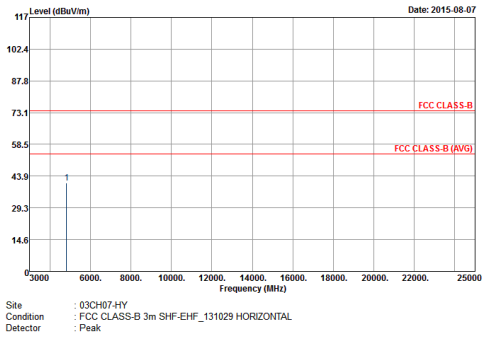
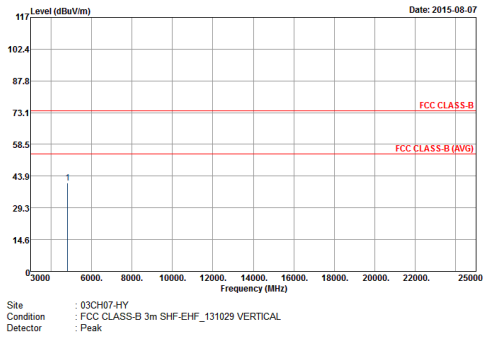
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak		
Avg.		

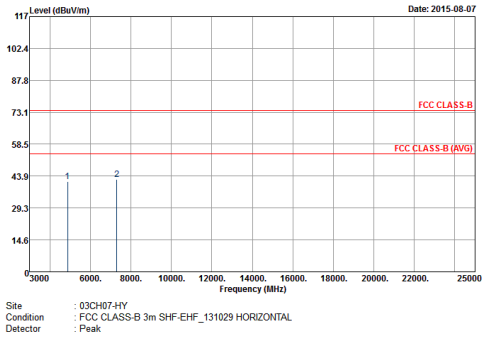
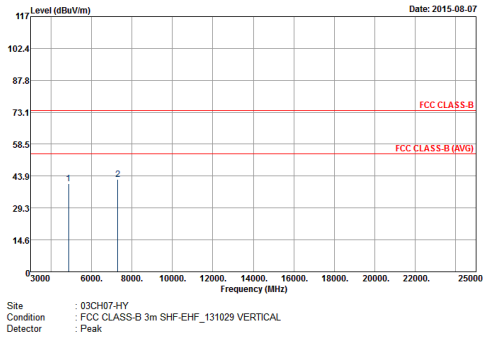
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH12 2467MHz	
1	Horizontal	Vertical
Peak		
Avg.		

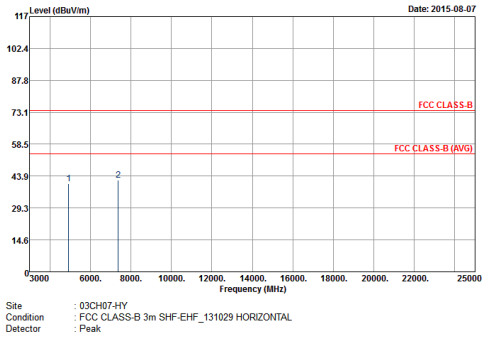
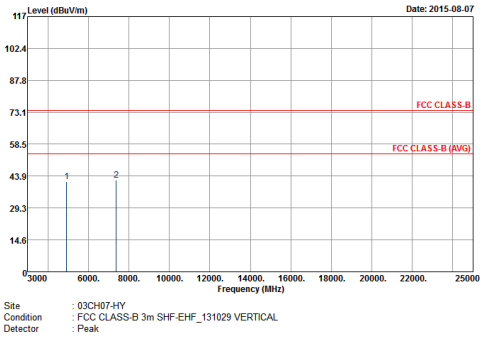
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH13 2472MHz	
1	Horizontal	Vertical
Peak		
Avg.		

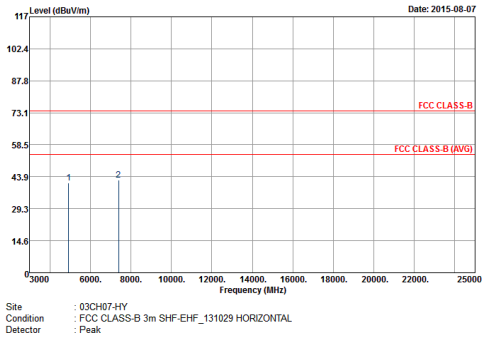
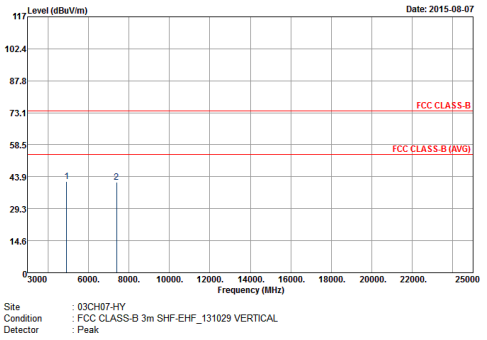
2.4GHz 2400~2483.5MHz

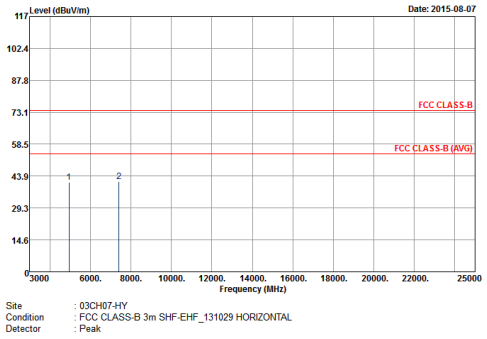
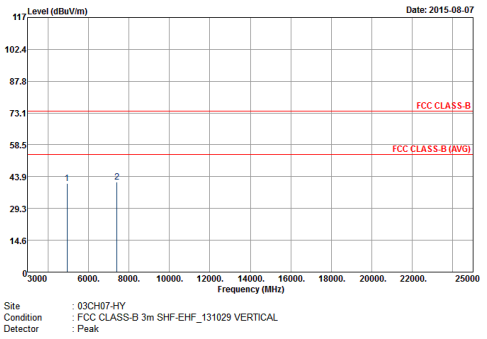
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

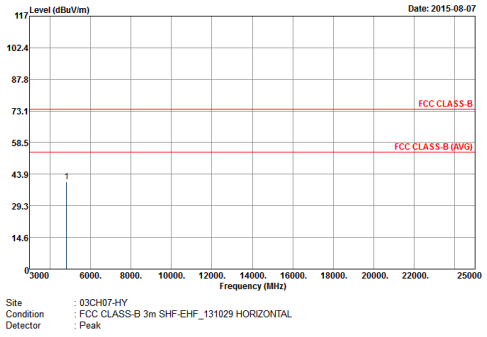
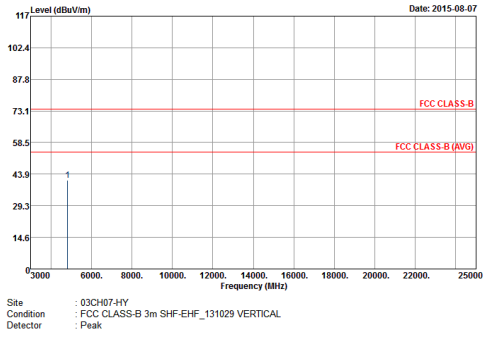
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

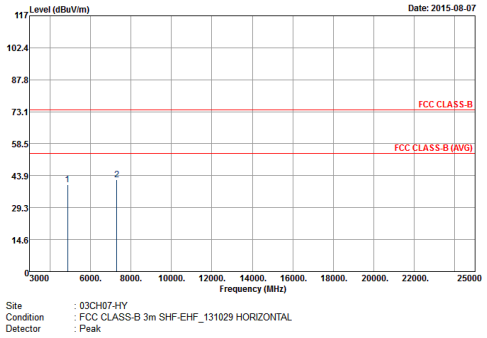
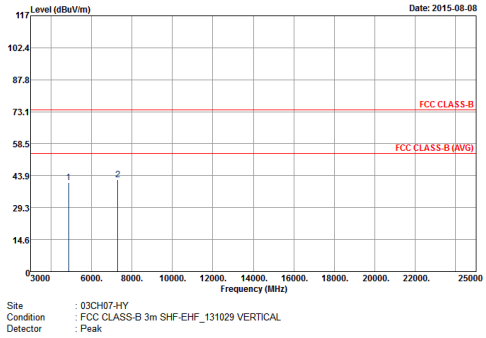
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH12 2467MHz	
1	Horizontal	Vertical
Peak Avg.		

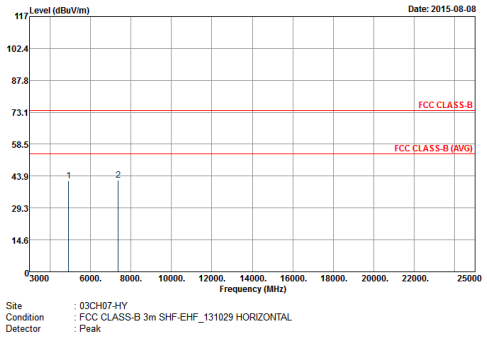
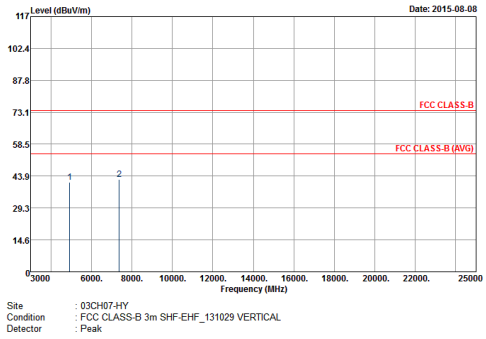
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH13 2472MHz	
1	Horizontal	Vertical
Peak		

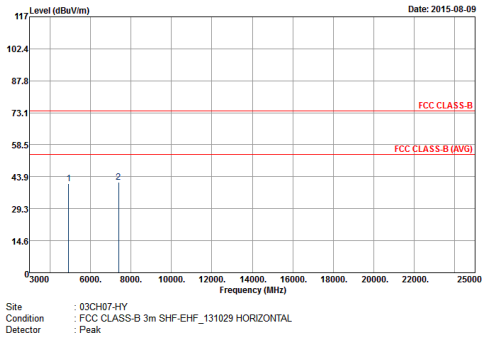
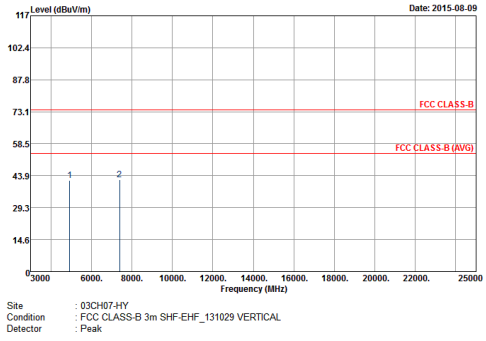
2.4GHz 2400~2483.5MHz

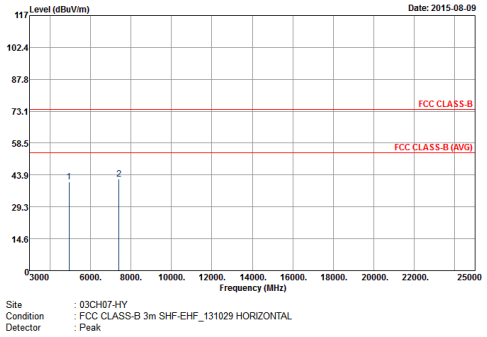
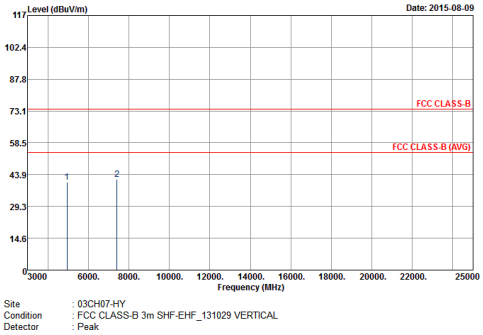
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

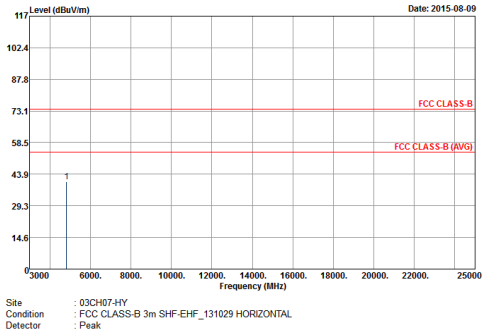
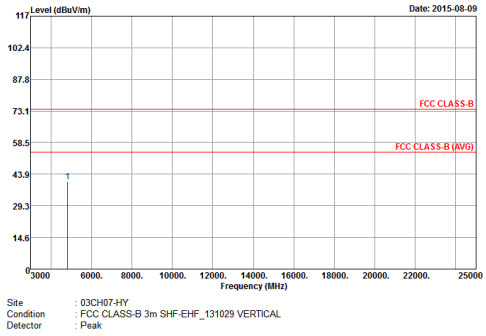
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

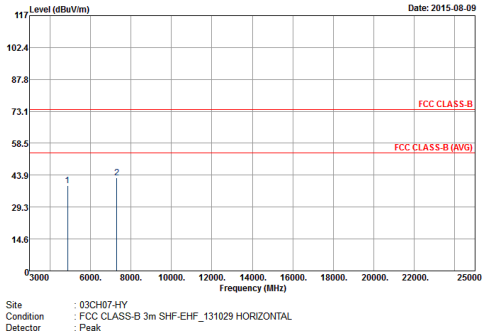
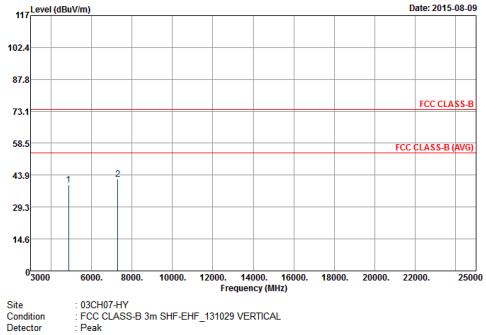
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH12 2467MHz	
1	Horizontal	Vertical
Peak Avg.		

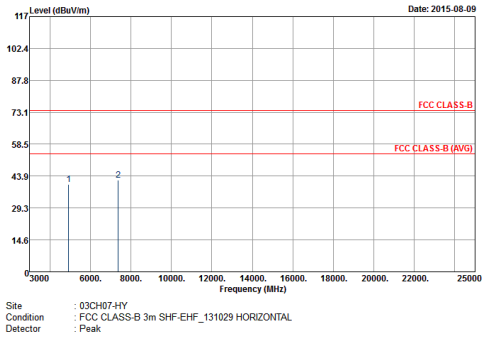
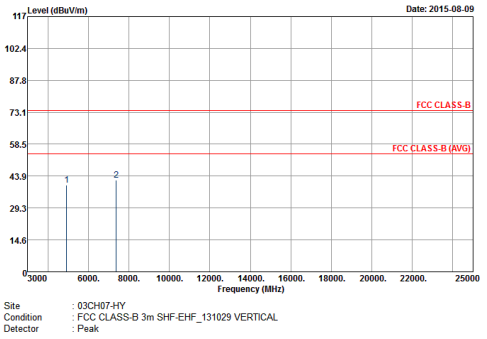
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH13 2472MHz	
1	Horizontal	Vertical
Peak Avg.		

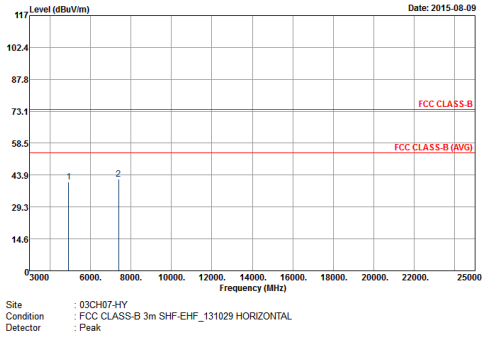
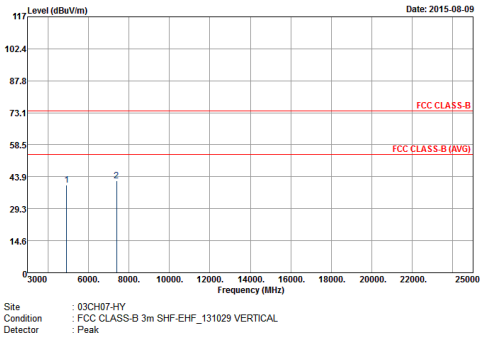
2.4GHz 2400~2483.5MHz

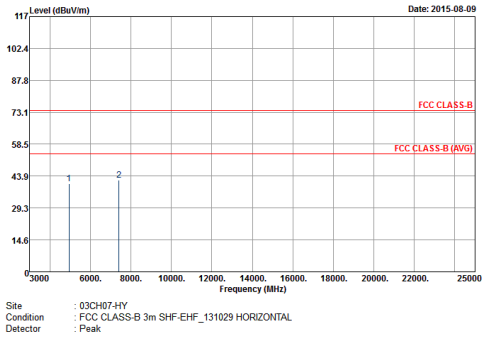
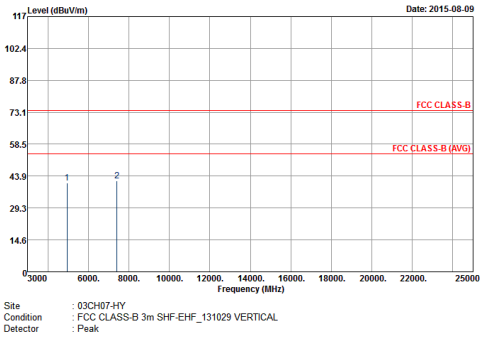
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

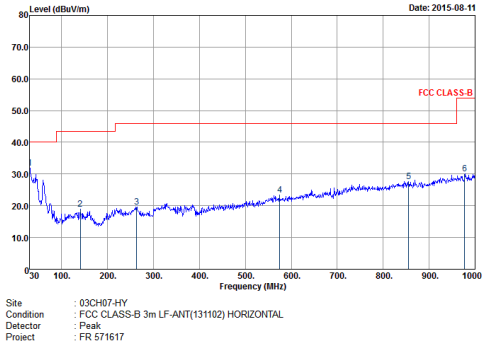
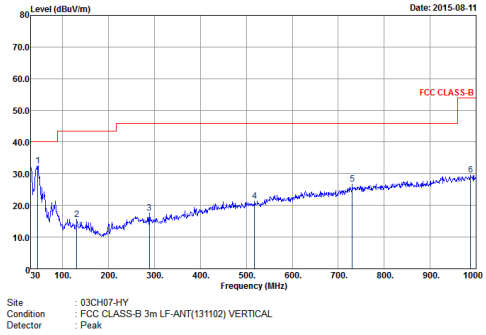
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH12 2467MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH13 2472MHz	
1	Horizontal	Vertical
Peak Avg.		

2.4GHz 2400~2483.5MHz

Emission below 1GHz

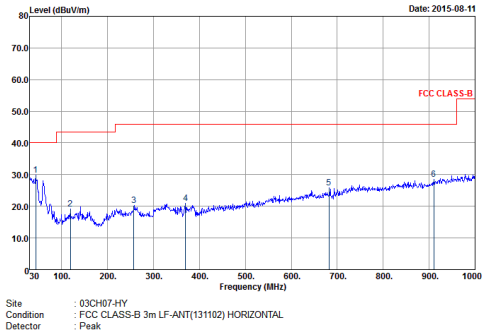
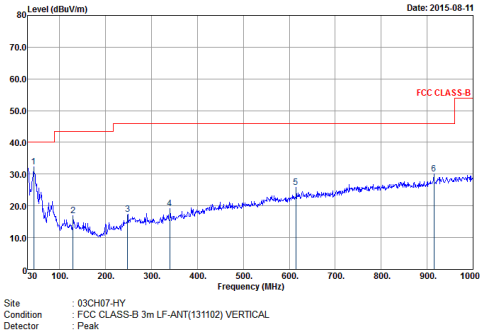
2.4GHz WIFI 802.11b (LF)

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

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		

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	Horizontal	Vertical
QP / Peak