

FCC RF Test Report

APPLICANT : TP-LINK TECHNOLOGIES CO., LTD.
EQUIPMENT : HD Wi-Fi Cloud Camera
BRAND NAME : TP-LINK
MODEL NAME : NC210
MARKETING NAME : HD WI-FI CLOUD CAMERA
FCC ID : TE7NC210
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jan. 14, 2016 and testing was completed on Mar. 04, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 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
FR611413	Rev. 01	Initial issue of report	Mar. 18, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.05 dB at 2390.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 18.60 dB at 0.598 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

TP-LINK TECHNOLOGIES CO., LTD.

Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd,
Nanshan, Shenzhen, China

1.2 Manufacturer

TP-LINK TECHNOLOGIES CO., LTD.

Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd,
Nanshan, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	HD Wi-Fi Cloud Camera
Brand Name	TP-LINK
Model Name	NC210
Marketing Name	HD Wi-Fi Cloud Camera
FCC ID	TE7NC210
EUT supports Radios application	WLAN 11a/b/g/n HT20/HT40
EUT Stage	Production Unit

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



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 24.67 dBm (0.2931 W) 802.11g : 26.11 dBm (0.4083 W) 802.11n HT20 : 25.91 dBm (0.3899 W) 802.11n HT40 : 25.51 dBm (0.3556 W)
99% Occupied Bandwidth	802.11b : 12.55MHz 802.11g : 18.10MHz 802.11n HT20 : 18.75MHz 802.11n HT40 : 37.00MHz
Antenna Type	802.11b/g/n : PIFA Antenna type with gain 2.40 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

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

1.6 Testing Location

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

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

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

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04
- ANSI C63.10-2013

Remark:

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



2 Test Configuration of Equipment Under Test

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

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



2.2 Pre-Scanned RF Power

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

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	24.67	24.66	23.91	24.45

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)	26.11	25.96	25.94	25.92	25.93	25.83	26.03	26.06

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	25.91	25.90	25.88	25.90	25.88	25.81	25.90	25.88

2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	25.51	25.41	25.21	25.35	25.12	25.22	25.48	25.17



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.

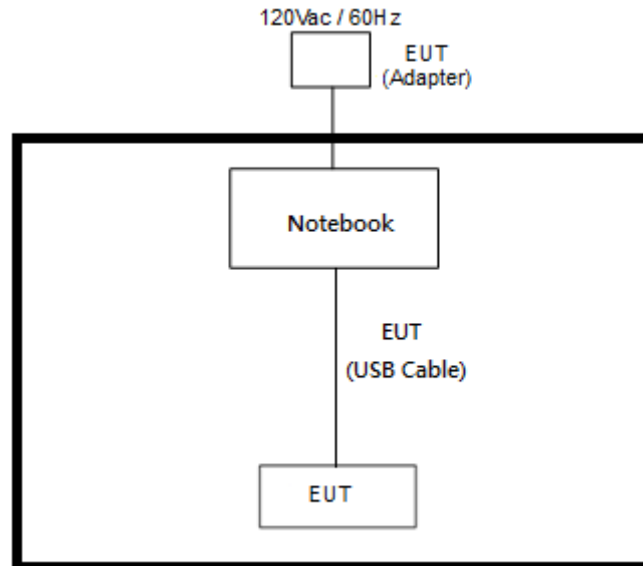
<2.4GHz>

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

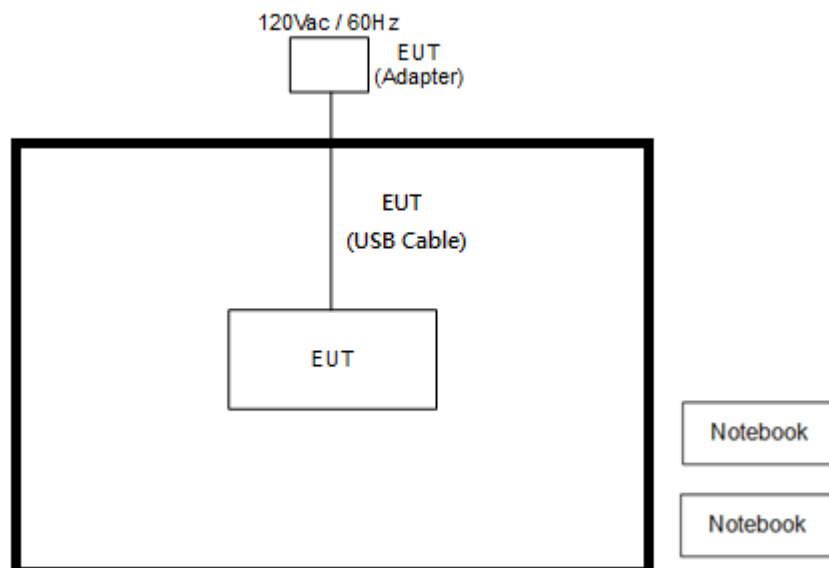
Test Cases	
AC Conducted Emission	Mode 1 : WLAN Link + Camera + USB Cable (Charging from Adapter)

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.	Notebook	DELL	P20G	FCC DoC/ Contains FCC ID: QDS-BRCM1051	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 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.	Notebook	Lenovo	E335	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, "MT7601USB.exe" installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

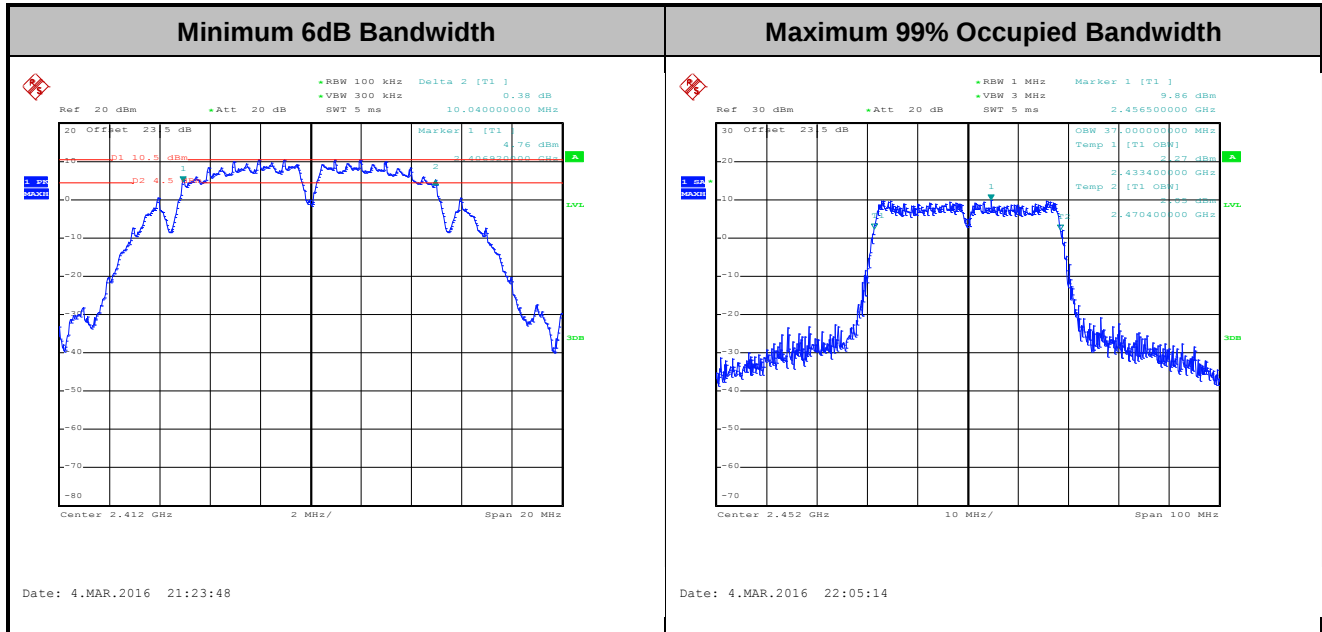
3.1.4 Test Setup





3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A of this test report.



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

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r04 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

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.

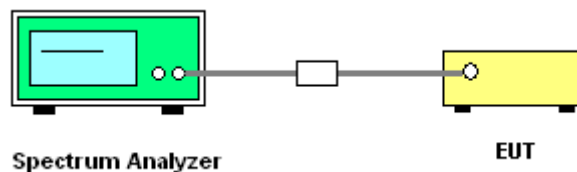
3.3.2 Measuring Instruments

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 v03r04
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

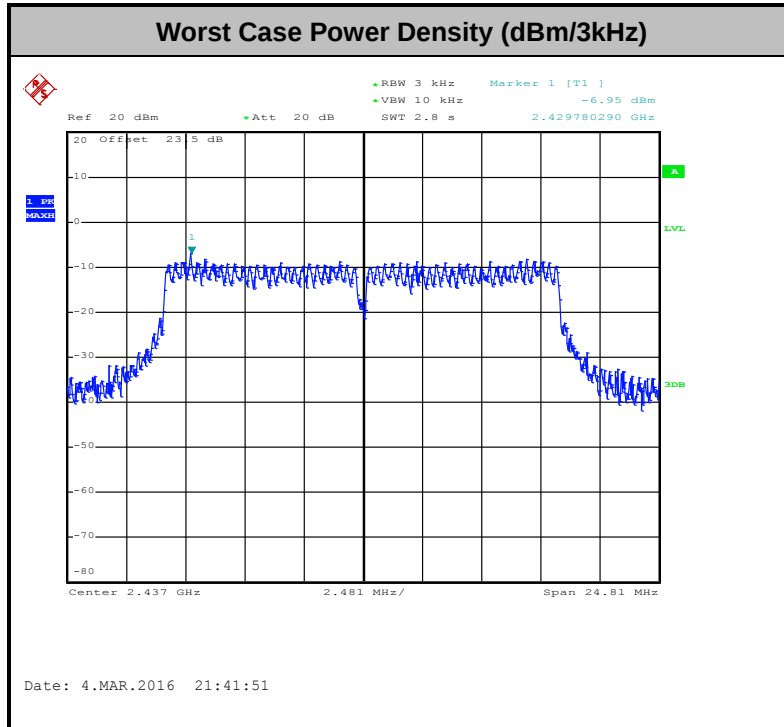
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

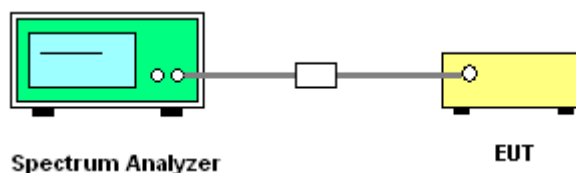
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

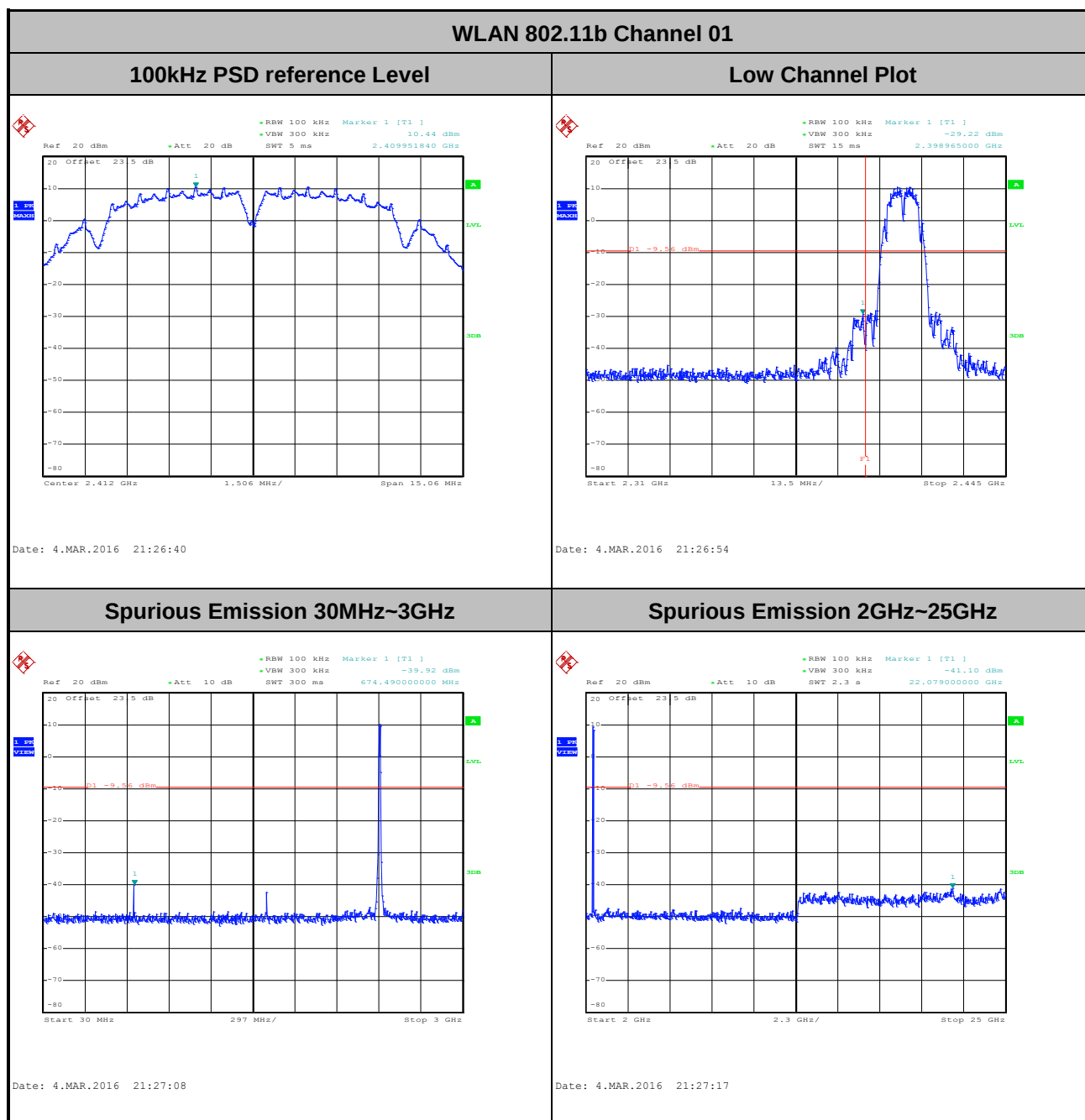
3.4.4 Test Setup





3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

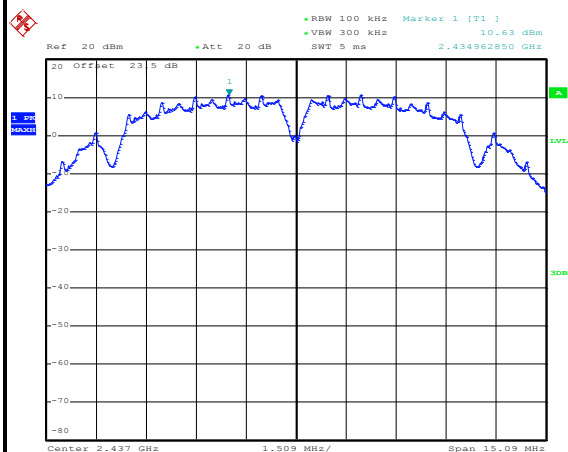




Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

WLAN 802.11b Channel 06

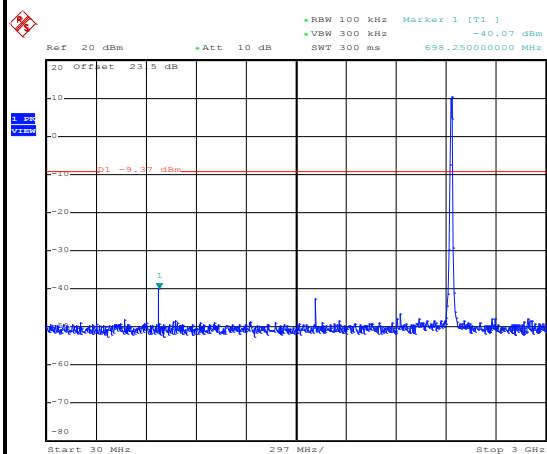
100kHz PSD reference Level



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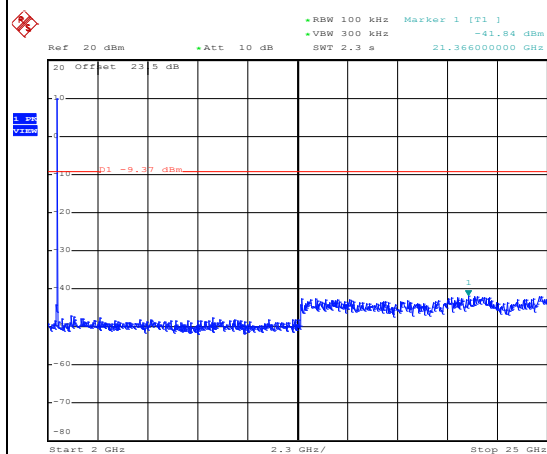
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:30:50

Spurious Emission 2GHz~25GHz



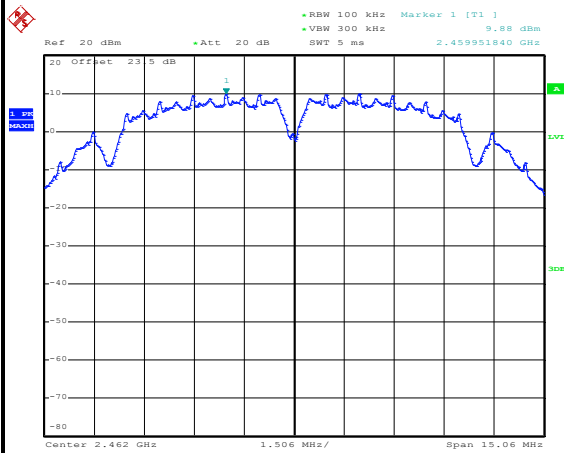
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Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

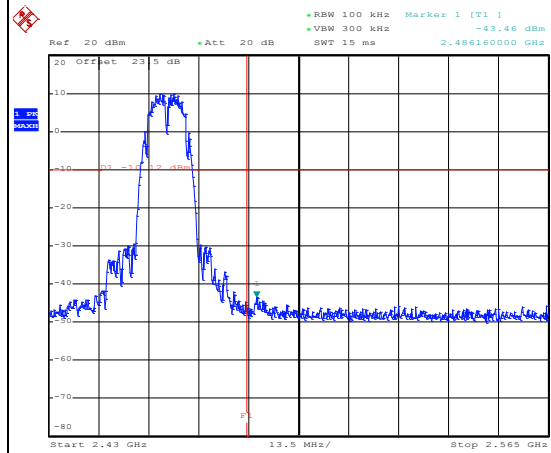
WLAN 802.11b Channel 11

100kHz PSD reference Level



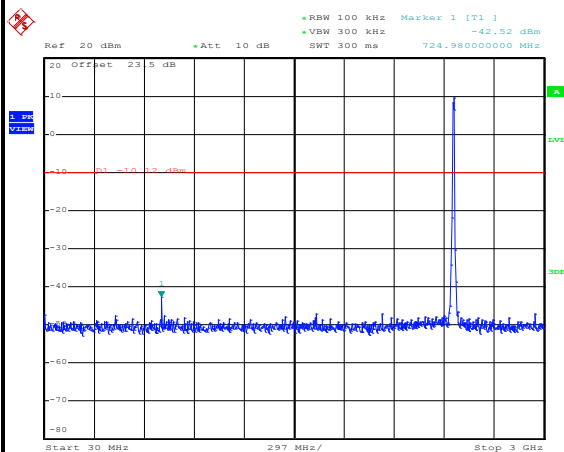
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High Channel Plot



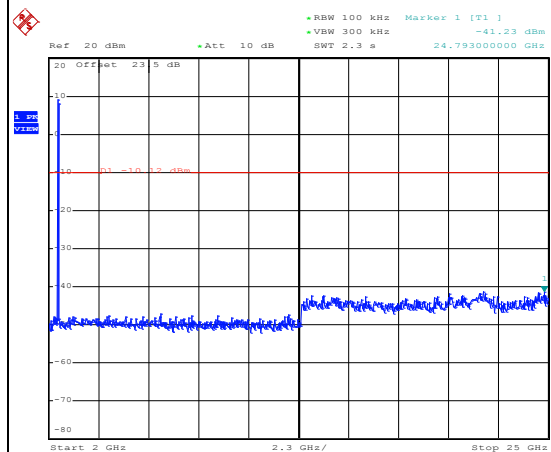
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Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:34:42

Spurious Emission 2GHz~25GHz



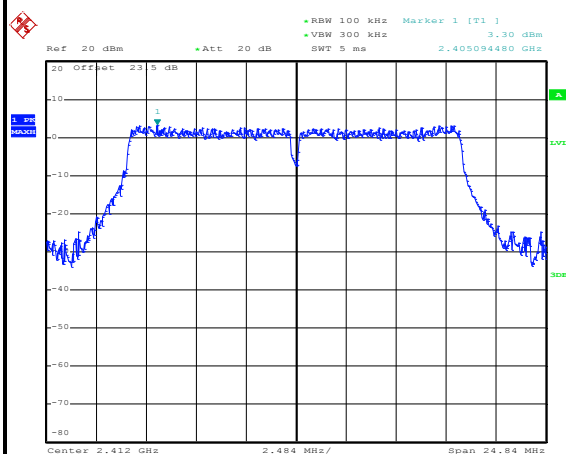
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Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

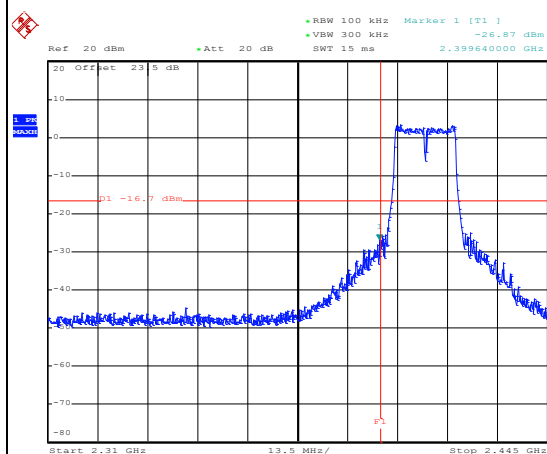
WLAN 802.11g Channel 01

100kHz PSD reference Level



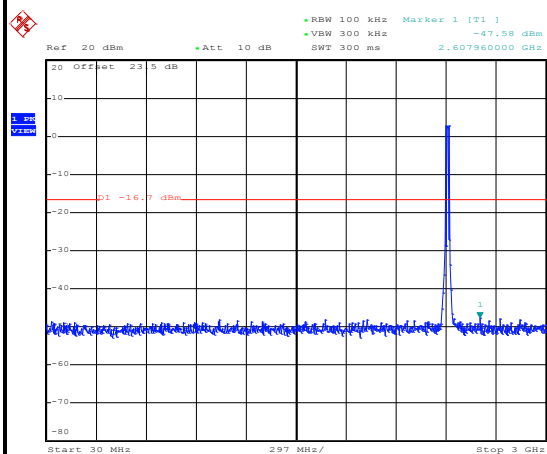
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Low Channel Plot



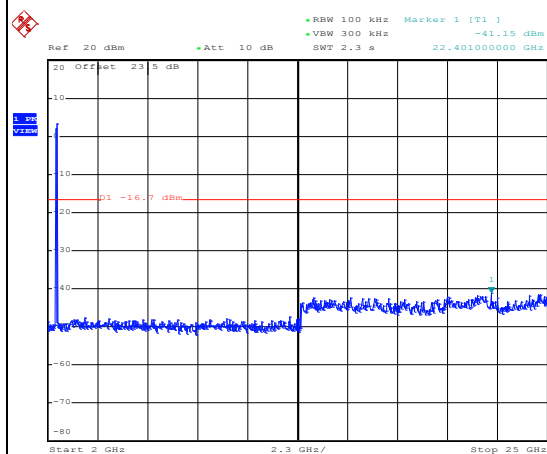
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Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:40:06

Spurious Emission 2GHz~25GHz



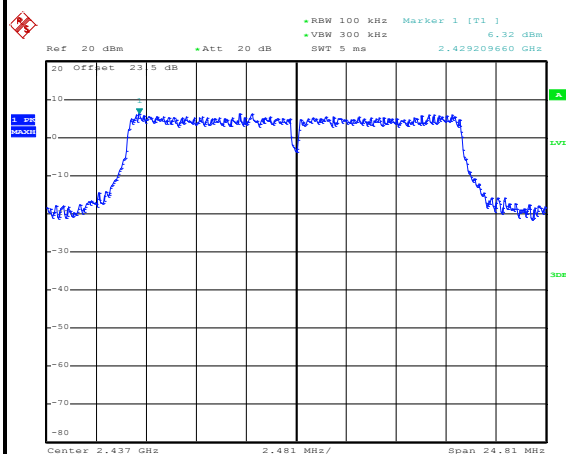
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Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu

WLAN 802.11g Channel 06

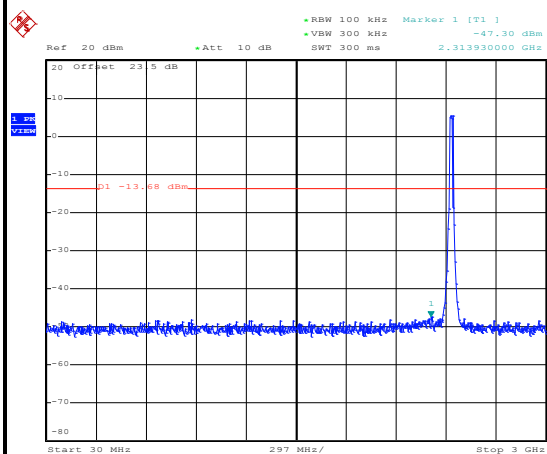
100kHz PSD reference Level



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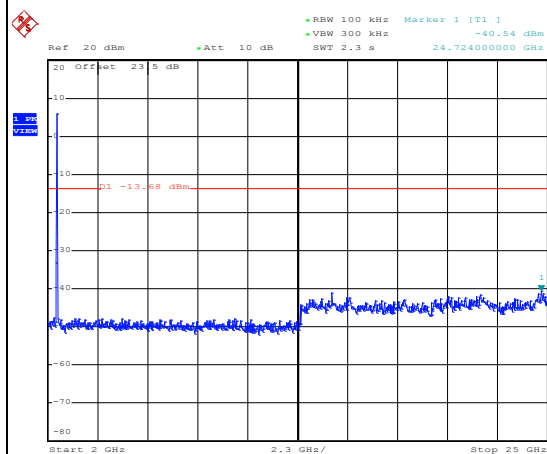
Mid Channel Plot

Spurious Emission 30MHz~3GHz



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Spurious Emission 2GHz~25GHz



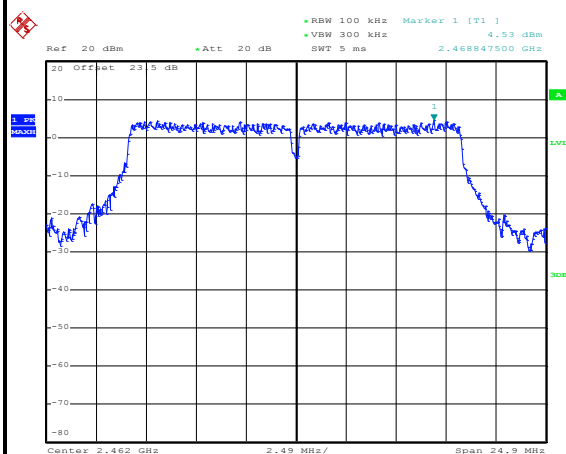
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Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Derek Hsu

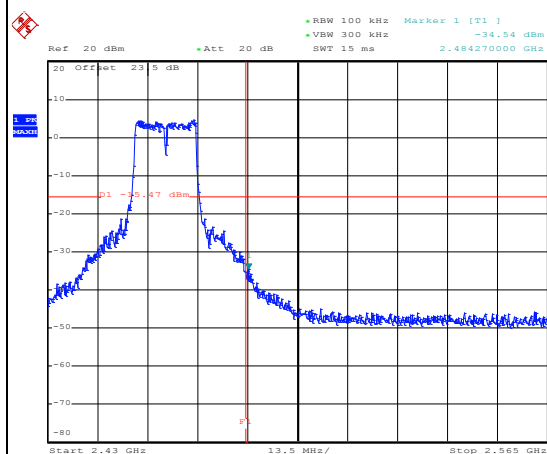
WLAN 802.11g Channel 11

100kHz PSD reference Level



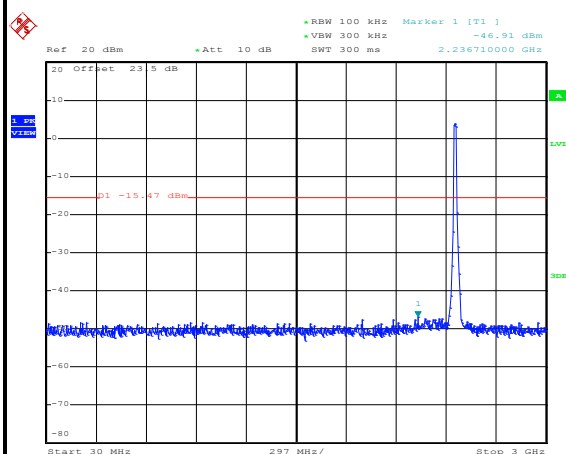
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High Channel Plot



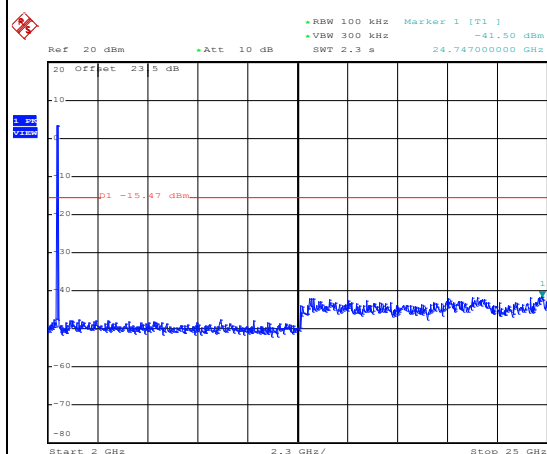
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Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:47:08

Spurious Emission 2GHz~25GHz



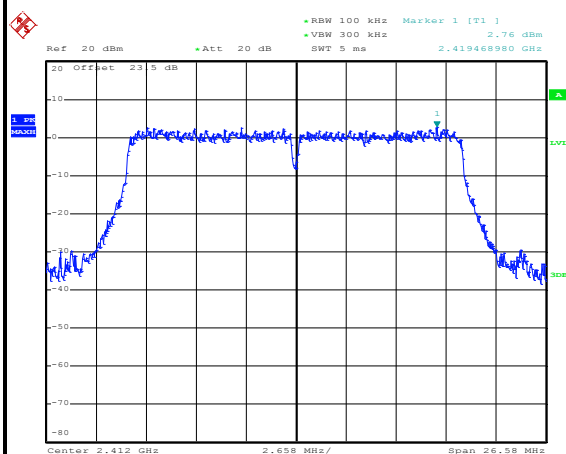
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Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu

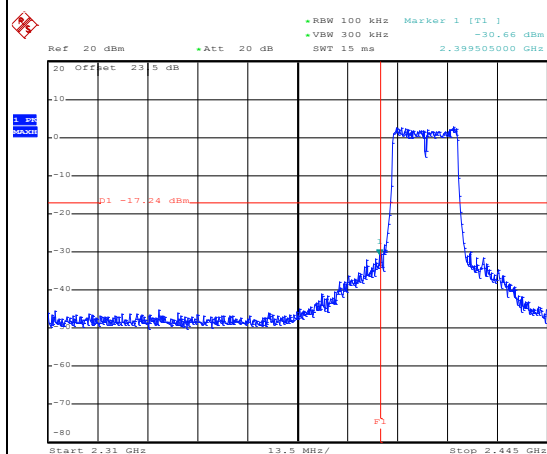
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



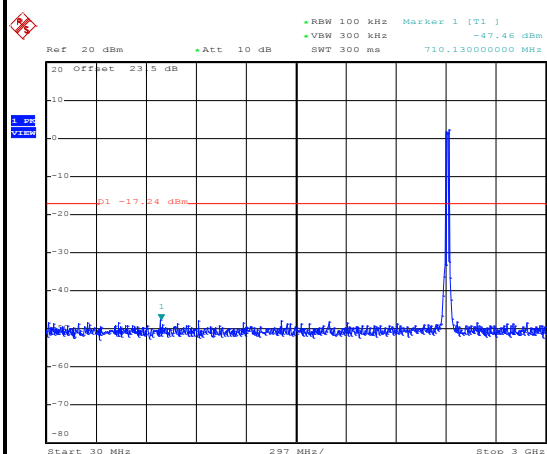
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Low Channel Plot



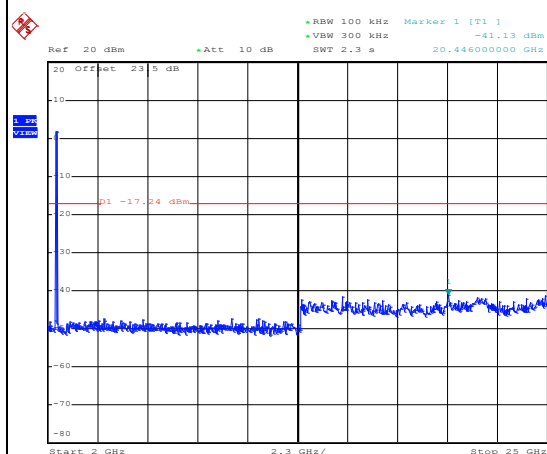
Date: 4.MAR.2016 21:50:02

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:50:17

Spurious Emission 2GHz~25GHz



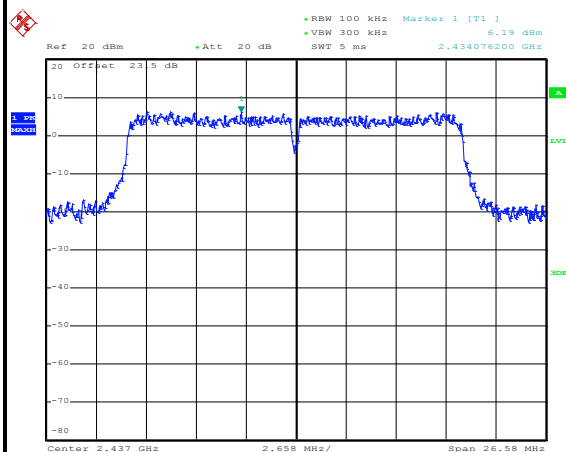
Date: 4.MAR.2016 21:50:25



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

WLAN 802.11n HT20 Channel 06

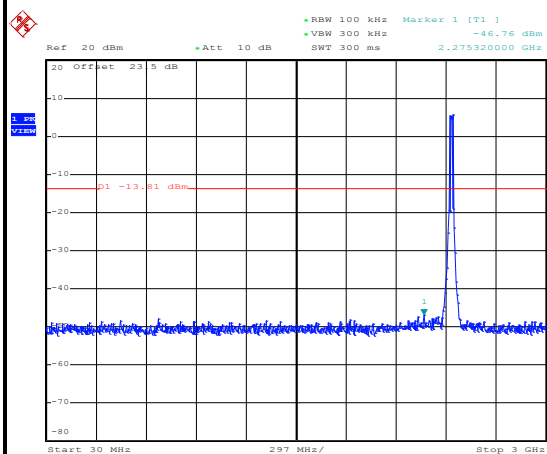
100kHz PSD reference Level



Date: 4.MAR.2016 21:52:34

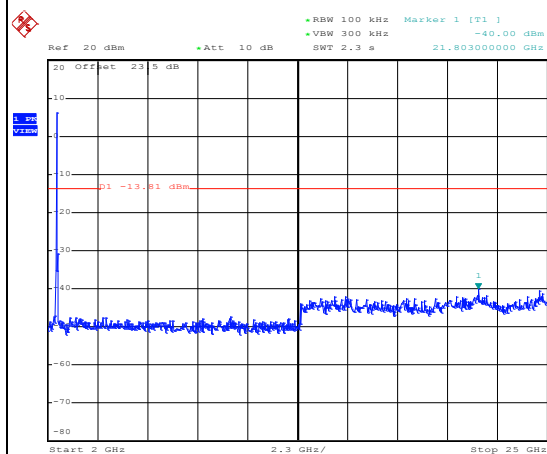
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:52:45

Spurious Emission 2GHz~25GHz



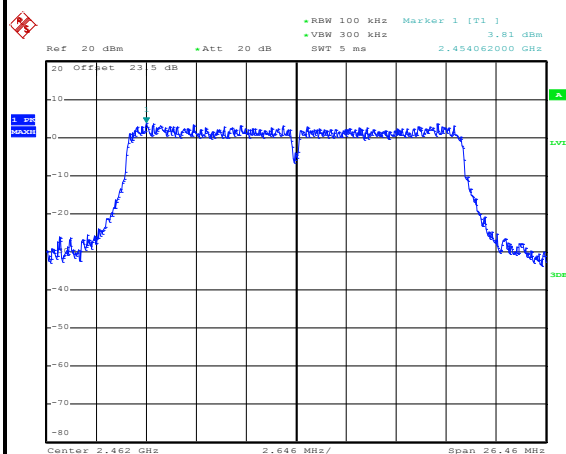
Date: 4.MAR.2016 21:52:54



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

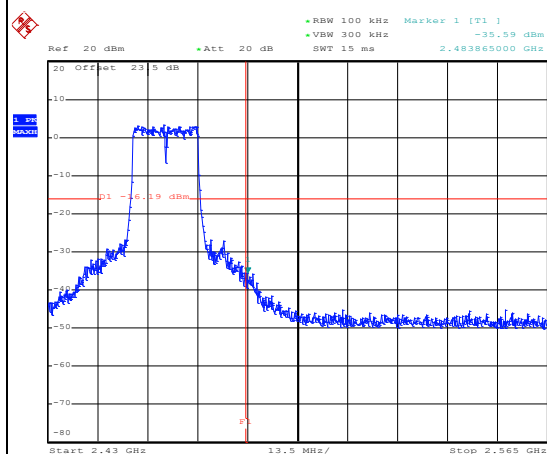
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



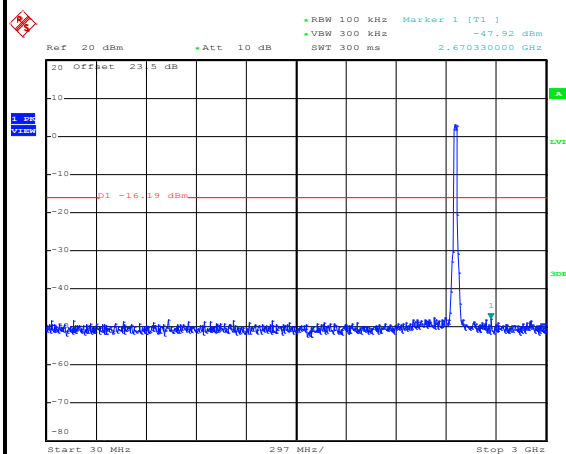
Date: 4.MAR.2016 21:54:52

High Channel Plot



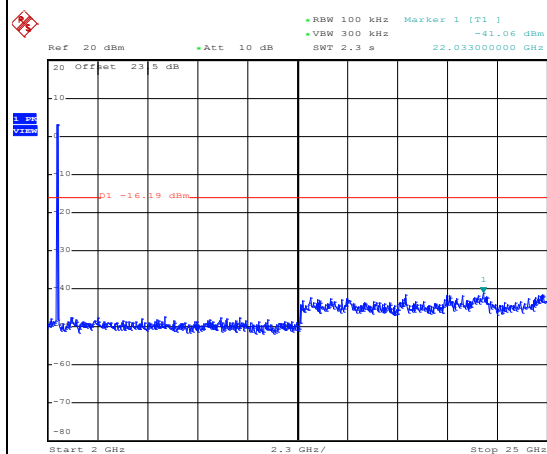
Date: 4.MAR.2016 21:55:08

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:55:19

Spurious Emission 2GHz~25GHz



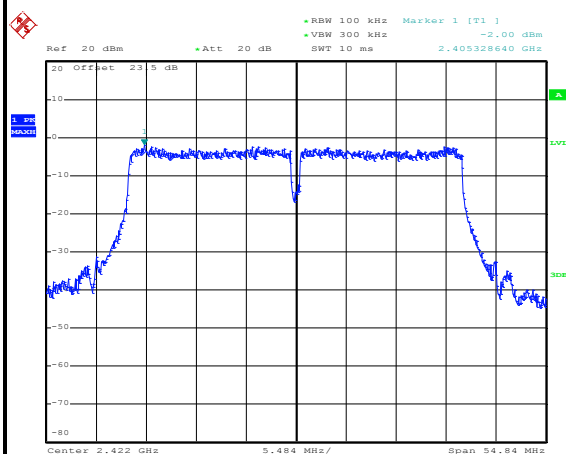
Date: 4.MAR.2016 21:55:28



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

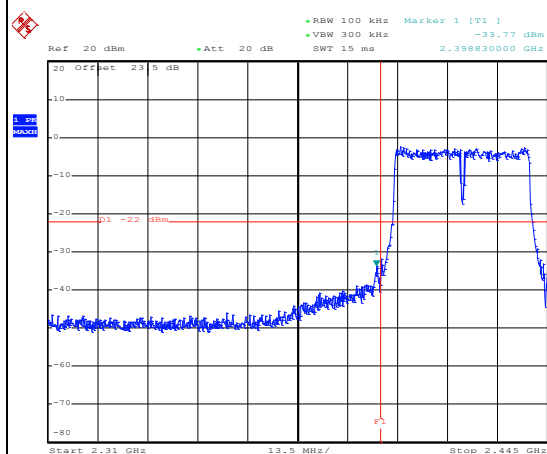
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



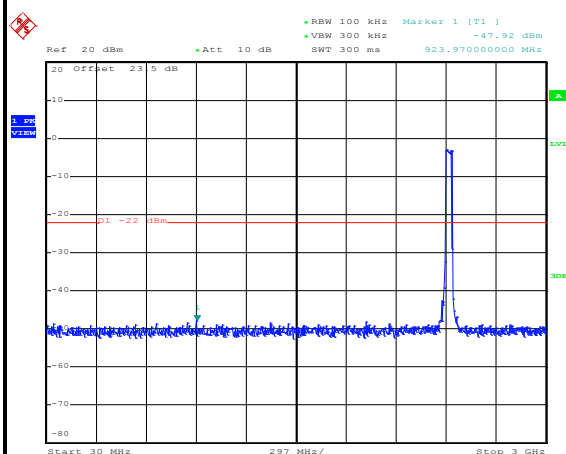
Date: 4.MAR.2016 21:58:38

Low Channel Plot



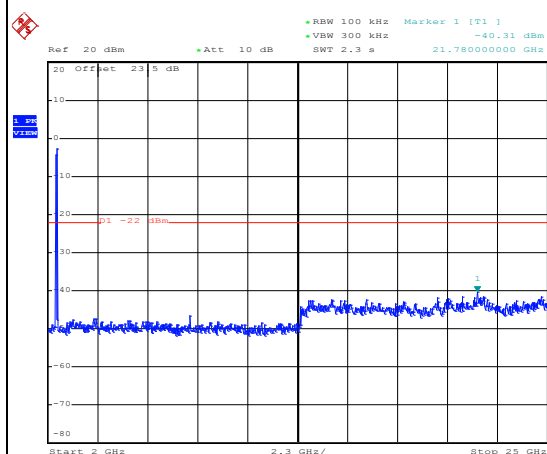
Date: 4.MAR.2016 21:59:18

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 21:59:33

Spurious Emission 2GHz~25GHz



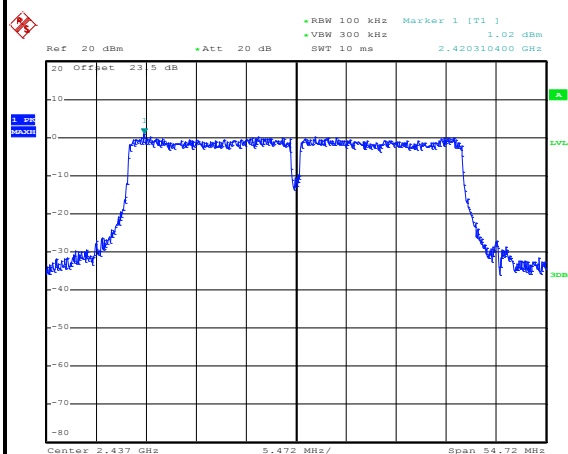
Date: 4.MAR.2016 21:59:41



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

WLAN 802.11n HT40 Channel 06

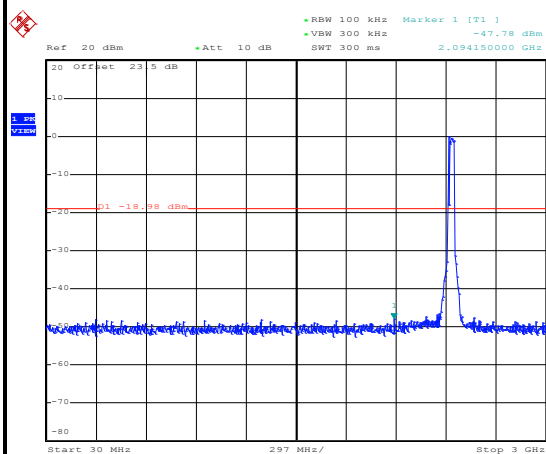
100kHz PSD reference Level



Date: 4.MAR.2016 22:01:44

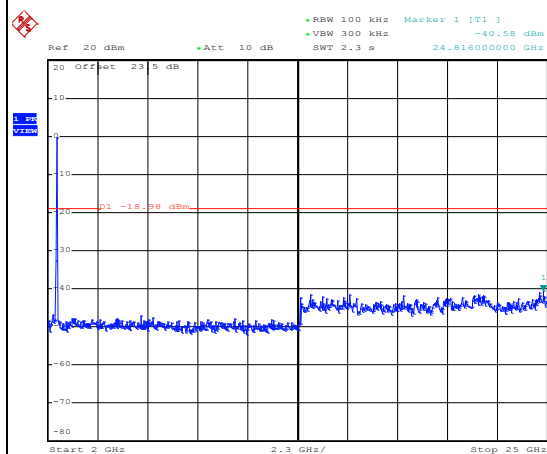
Mid Channel Plot

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 22:01:55

Spurious Emission 2GHz~25GHz



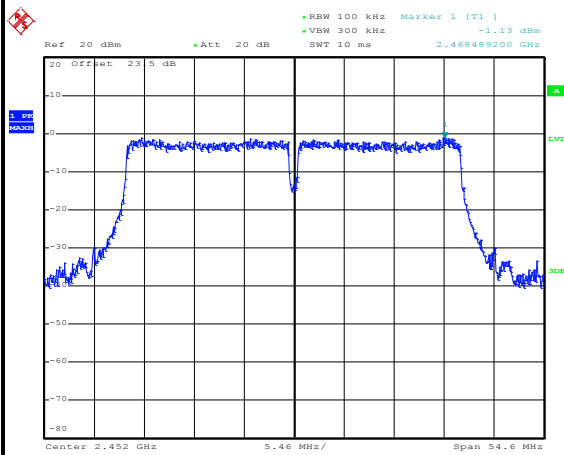
Date: 4.MAR.2016 22:02:04



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

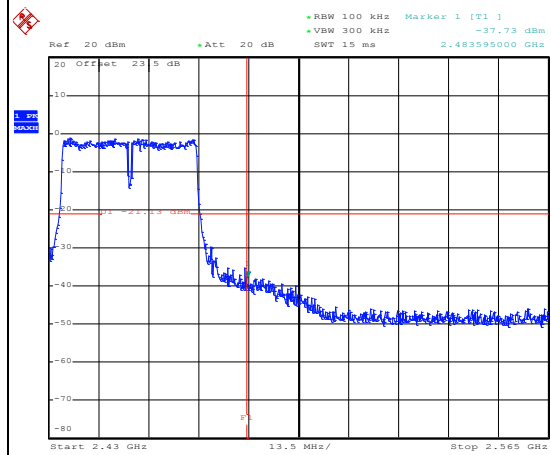
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



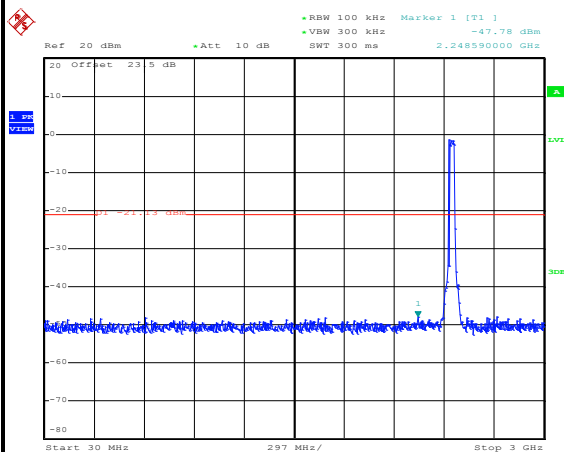
Date: 4.MAR.2016 22:04:25

High Channel Plot



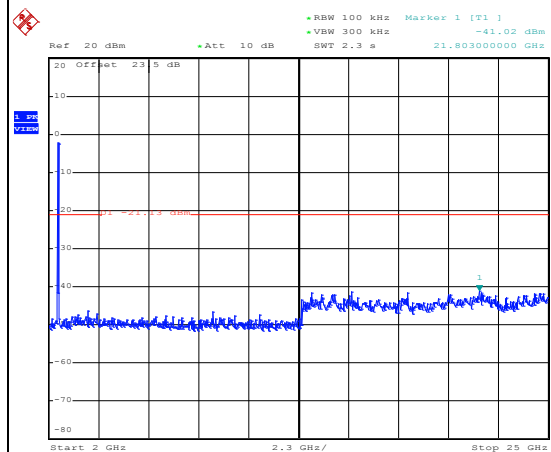
Date: 4.MAR.2016 22:04:37

Spurious Emission 30MHz~3GHz



Date: 4.MAR.2016 22:04:52

Spurious Emission 2GHz~25GHz



Date: 4.MAR.2016 22:05:00



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

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

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

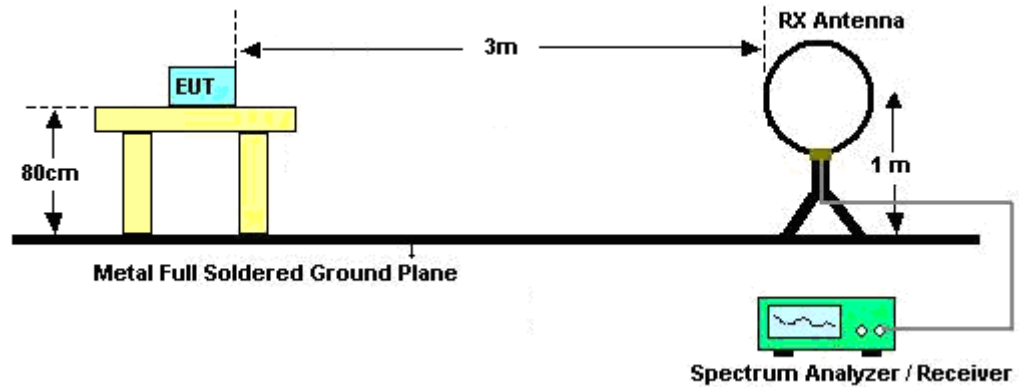
For average measurement:

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

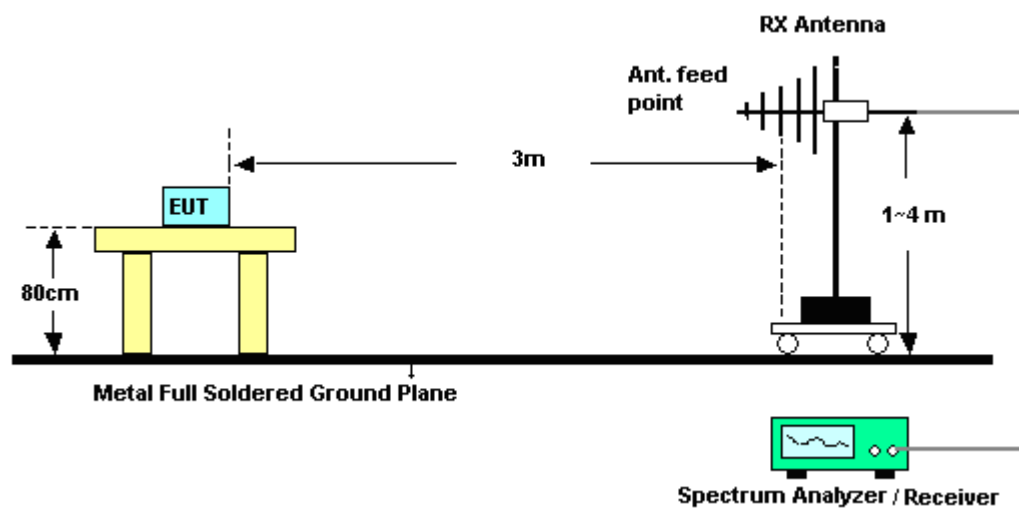
Band	Duty Cycle(%)	T(μ s)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	100.00	-	-	10Hz
2.4GHz 802.11n HT20	100.00	-	-	10Hz
2.4GHz 802.11n HT40	100.00	-	-	10Hz

3.5.4 Test Setup

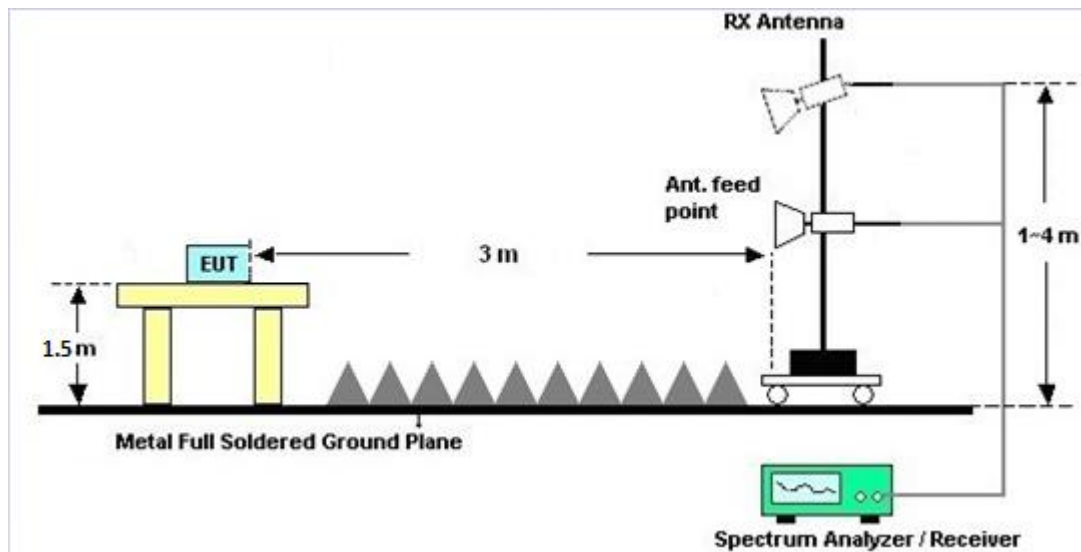
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

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

Please refer to Appendix B and C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

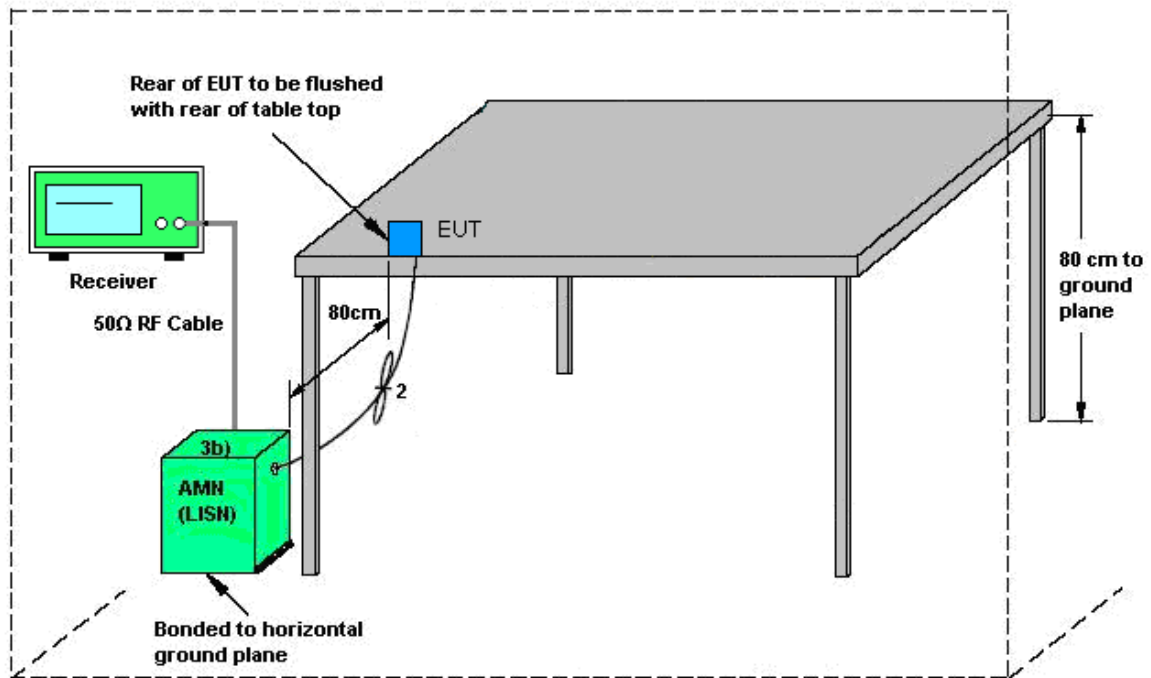
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

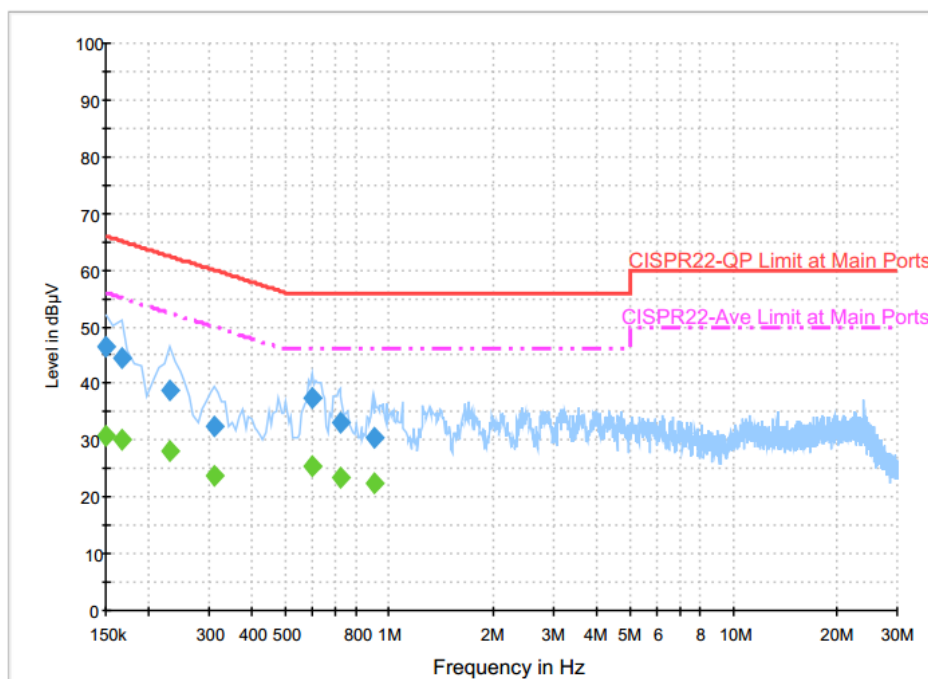
3.6.4 Test Setup



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 :	21~22℃
Test Engineer :	Derreck Chen	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Camera + USB Cable (Charging from Adapter)		



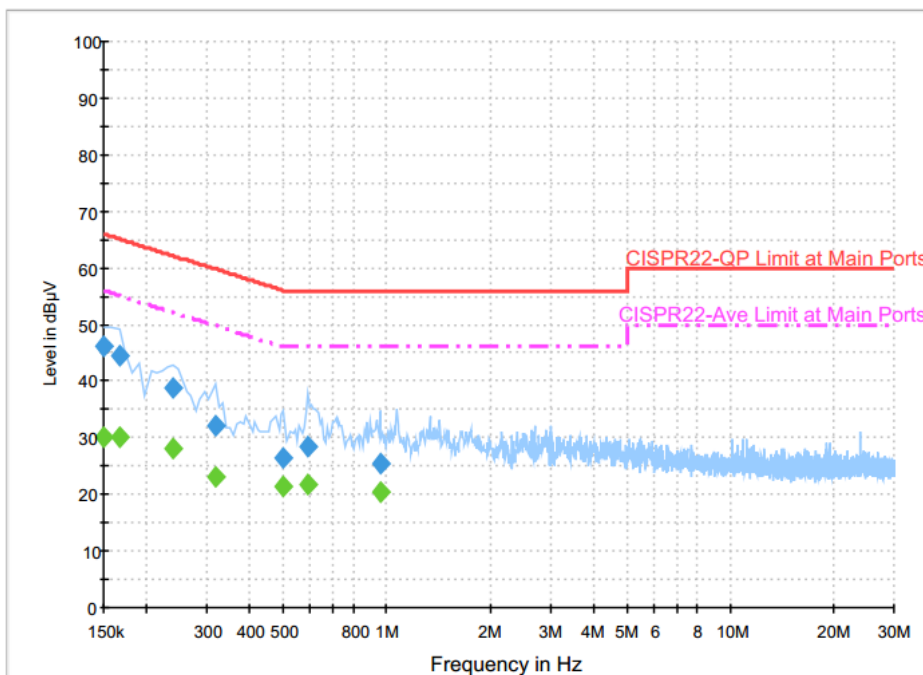
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	46.6	Off	L1	19.6	19.4	66.0
0.166000	44.5	Off	L1	19.6	20.7	65.2
0.230000	38.7	Off	L1	19.6	23.7	62.4
0.310000	32.4	Off	L1	19.6	27.6	60.0
0.598000	37.4	Off	L1	19.6	18.6	56.0
0.718000	33.0	Off	L1	19.6	23.0	56.0
0.910000	30.6	Off	L1	19.6	25.4	56.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	30.6	Off	L1	19.6	25.4	56.0
0.166000	30.2	Off	L1	19.6	25.0	55.2
0.230000	28.0	Off	L1	19.6	24.4	52.4
0.310000	23.6	Off	L1	19.6	26.4	50.0
0.598000	25.4	Off	L1	19.6	20.6	46.0
0.718000	23.5	Off	L1	19.6	22.5	46.0
0.910000	22.2	Off	L1	19.6	23.8	46.0

Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Derreck Chen	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Camera + USB Cable (Charging from Adapter)		


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.3	Off	N	19.6	19.7	66.0
0.166000	44.6	Off	N	19.6	20.6	65.2
0.238000	38.7	Off	N	19.6	23.5	62.2
0.318000	32.2	Off	N	19.6	27.6	59.8
0.502000	26.4	Off	N	19.6	29.6	56.0
0.590000	28.6	Off	N	19.6	27.4	56.0
0.958000	25.3	Off	N	19.6	30.7	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	30.0	Off	N	19.6	26.0	56.0
0.166000	30.0	Off	N	19.6	25.2	55.2
0.238000	27.9	Off	N	19.6	24.3	52.2
0.318000	22.9	Off	N	19.6	26.9	49.8
0.502000	21.2	Off	N	19.6	24.8	46.0
0.590000	21.7	Off	N	19.6	24.3	46.0
0.958000	20.4	Off	N	19.6	25.6	46.0



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	1132003	300MHz~40GHz z	Aug. 12, 2015	Feb. 01, 2016 ~ Mar. 04, 2016	Aug. 11, 2016	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz z	Aug. 12, 2015	Feb. 01, 2016 ~ Mar. 04, 2016	Aug. 11, 2016	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 23, 2015	Feb. 01, 2016 ~ Mar. 04, 2016	Nov. 22, 2016	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 25, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Jan. 25, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Jan. 25, 2016	Dec. 01, 2016	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Jan. 25, 2016	Jan. 07, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Sep. 01, 2016	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Nov. 19, 2016	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Nov. 17, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Nov. 16, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-132 6	1GHz ~ 18GHz	Oct. 08, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Oct. 07, 2016	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP140325	N/A	Nov. 17, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Nov. 16, 2016	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY532700 80	1GHz~26.5GHz	Nov. 19, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Nov. 18, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1902247	1GHz~18GHz	Jul. 01, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Jun. 30, 2016	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz ~ 44GHz	Sep. 24, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Sep. 23, 2016	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Feb. 05, 2016 ~ Feb. 13, 2016	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1~4m	N/A	Feb. 05, 2016 ~ Feb. 13, 2016	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	Feb. 05, 2016 ~ Feb. 13, 2016	N/A	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 584	18GHz- 40GHz	Nov. 02, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Nov. 01, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Feb. 05, 2016 ~ Feb. 13, 2016	Jun. 01, 2016	Radiation (03CH11-HY)
EMI Test Receiver	Agilent Technologies	N9038A(MXE)	MY532900 45	20MHz~8.4GHz	Feb. 01, 2016	Feb. 05, 2016 ~ Feb. 13, 2016	Jan. 31, 2017	Radiation (03CH11-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.90
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Appendix A. Conducted Test Results

A1 - DTS Part

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2016/02/01~2016/03/04	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	12.45	10.04	0.50	Pass
11b	1Mbps	1	6	2437	12.55	10.06	0.50	Pass
11b	1Mbps	1	11	2462	12.45	10.04	0.50	Pass
11g	6Mbps	1	1	2412	17.55	16.56	0.50	Pass
11g	6Mbps	1	6	2437	18.10	16.54	0.50	Pass
11g	6Mbps	1	11	2462	17.60	16.60	0.50	Pass
HT20	MCS0	1	1	2412	18.30	17.72	0.50	Pass
HT20	MCS0	1	6	2437	18.75	17.72	0.50	Pass
HT20	MCS0	1	11	2462	18.35	17.64	0.50	Pass
HT40	MCS0	1	3	2422	36.90	36.56	0.50	Pass
HT40	MCS0	1	6	2437	36.80	36.48	0.50	Pass
HT40	MCS0	1	9	2452	37.00	36.40	0.50	Pass

TEST RESULTS DATA
Peak Power Table

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
11b	1Mbps	1	1	2412	24.63	30.00	2.40	27.03	36.00	Pass
11b	1Mbps	1	6	2437	24.67	30.00	2.40	27.07	36.00	Pass
11b	1Mbps	1	11	2462	23.99	30.00	2.40	26.39	36.00	Pass
11g	6Mbps	1	1	2412	25.88	30.00	2.40	28.28	36.00	Pass
11g	6Mbps	1	6	2437	26.11	30.00	2.40	28.51	36.00	Pass
11g	6Mbps	1	11	2462	26.08	30.00	2.40	28.48	36.00	Pass
HT20	MCS0	1	1	2412	24.99	30.00	2.40	27.39	36.00	Pass
HT20	MCS0	1	6	2437	25.91	30.00	2.40	28.31	36.00	Pass
HT20	MCS0	1	11	2462	25.26	30.00	2.40	27.66	36.00	Pass
HT40	MCS0	1	3	2422	24.14	30.00	2.40	26.54	36.00	Pass
HT40	MCS0	1	6	2437	25.51	30.00	2.40	27.91	36.00	Pass
HT40	MCS0	1	9	2452	24.71	30.00	2.40	27.11	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.00	21.77
11b	1Mbps	1	6	2437	0.00	21.88
11b	1Mbps	1	11	2462	0.00	20.90
11g	6Mbps	1	1	2412	0.00	17.81
11g	6Mbps	1	6	2437	0.00	20.79
11g	6Mbps	1	11	2462	0.00	19.99
HT20	MCS0	1	1	2412	0.00	17.53
HT20	MCS0	1	6	2437	0.00	20.68
HT20	MCS0	1	11	2462	0.00	18.57
HT40	MCS0	1	3	2422	0.00	15.73
HT40	MCS0	1	6	2437	0.00	18.53
HT40	MCS0	1	9	2452	0.00	16.97

TEST RESULTS DATA
Peak Power Density

2.4GHz Band								
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-7.92	2.40	8.00	Pass
11b	1Mbps	1	6	2437	-7.80	2.40	8.00	Pass
11b	1Mbps	1	11	2462	-8.49	2.40	8.00	Pass
11g	6Mbps	1	1	2412	-10.95	2.40	8.00	Pass
11g	6Mbps	1	6	2437	-6.95	2.40	8.00	Pass
11g	6Mbps	1	11	2462	-9.47	2.40	8.00	Pass
HT20	MCS0	1	1	2412	-11.73	2.40	8.00	Pass
HT20	MCS0	1	6	2437	-7.20	2.40	8.00	Pass
HT20	MCS0	1	11	2462	-10.42	2.40	8.00	Pass
HT40	MCS0	1	3	2422	-14.88	2.40	8.00	Pass
HT40	MCS0	1	6	2437	-10.87	2.40	8.00	Pass
HT40	MCS0	1	9	2452	-12.52	2.40	8.00	Pass



Appendix B. Radiated Spurious Emission

Test Engineer :	Bill Chang and Ken Wu	Temperature :	21~24°C
		Relative Humidity :	50~54%

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		2387.58	53.15	-20.85	74	53.42	27.01	6.71	33.99	367	168	P	H
		2387.04	44.04	-9.96	54	44.31	27.01	6.71	33.99	367	168	A	H
	*	2412	110.02	-	-	110.23	27.06	6.71	33.98	367	168	P	H
	*	2412	107.54	-	-	107.75	27.06	6.71	33.98	367	168	A	H
													H
													H
		2385.51	52.21	-21.79	74	52.48	27.01	6.71	33.99	309	262	P	V
		2387.04	42.26	-11.74	54	42.53	27.01	6.71	33.99	309	262	A	V
	*	2412	106.2	-	-	106.41	27.06	6.71	33.98	309	262	P	V
	*	2412	103.74	-	-	103.95	27.06	6.71	33.98	309	262	A	V
													V
													V
802.11b CH 06 2437MHz		2330.79	52.4	-21.6	74	53	26.82	6.58	34	397	174	P	H
		2310	41.08	-12.92	54	41.74	26.77	6.58	34.01	397	174	A	H
	*	2437	109.1	-	-	109.17	27.16	6.74	33.97	397	174	P	H
	*	2437	106.66	-	-	106.73	27.16	6.74	33.97	397	174	A	H
		2486.04	51.61	-22.39	74	51.54	27.25	6.77	33.95	397	174	P	H
		2484	40.93	-13.07	54	40.86	27.25	6.77	33.95	397	174	A	H
		2383.98	51.35	-22.65	74	51.67	26.96	6.71	33.99	300	267	P	V
		2380.83	40.51	-13.49	54	40.83	26.96	6.71	33.99	300	267	A	V
	*	2437	107.02	-	-	107.09	27.16	6.74	33.97	300	267	P	V
	*	2437	104.53	-	-	104.6	27.16	6.74	33.97	300	267	A	V
		2496.2	51.95	-22.05	74	51.82	27.3	6.77	33.94	300	267	P	V
		2492.2	40.6	-13.4	54	40.47	27.3	6.77	33.94	300	267	A	V



802.11b CH 11 2462MHz	*	2462	108.9	-	-	108.89	27.2	6.77	33.96	391	173	P	H
	*	2462	106.45	-	-	106.44	27.2	6.77	33.96	391	173	A	H
		2483.68	55.39	-18.61	74	55.32	27.25	6.77	33.95	391	173	P	H
		2483.52	45.65	-8.35	54	45.58	27.25	6.77	33.95	391	173	A	H
													H
													H
	*	2462	106.27	-	-	106.26	27.2	6.77	33.96	263	258	P	V
	*	2462	103.82	-	-	103.81	27.2	6.77	33.96	263	258	A	V
		2494.28	52.97	-21.03	74	52.84	27.3	6.77	33.94	263	258	P	V
		2483.52	43.3	-10.7	54	43.23	27.25	6.77	33.95	263	258	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	51.88	-22.12	74	75.25	31.12	10.58	65.07	255	142	P	H
		4824	50.61	-3.39	54	73.98	31.12	10.58	65.07	255	142	A	H
													H
													H
		4824	44.29	-29.71	74	67.66	31.12	10.58	65.07	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	51.79	-22.21	74	75.12	31.21	10.48	65.02	328	142	P	H
		4874	49.89	-4.11	54	73.22	31.21	10.48	65.02	328	142	A	H
		7311	39.8	-34.2	74	56.5	36.08	12.28	65.06	100	0	P	H
													H
		4874	47.39	-26.61	74	70.72	31.21	10.48	65.02	100	0	P	V
		7311	39.73	-34.27	74	56.43	36.08	12.28	65.06	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	53.22	-20.78	74	76.51	31.29	10.39	64.97	266	139	P	H
		4924	52.09	-1.91	54	75.38	31.29	10.39	64.97	266	139	A	H
		7386	40.92	-33.08	74	57.24	36.27	12.49	65.08	100	0	P	H
													H
		4924	44.87	-29.13	74	68.16	31.29	10.39	64.97	100	0	P	V
		7386	40.05	-33.95	74	56.37	36.27	12.49	65.08	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2390	65.49	-8.51	74	65.75	27.01	6.71	33.98	367	167	P	H
		2390	52.23	-1.77	54	52.49	27.01	6.71	33.98	367	167	A	H
	*	2412	108.47	-	-	108.68	27.06	6.71	33.98	367	167	P	H
	*	2412	101.28	-	-	101.49	27.06	6.71	33.98	367	167	A	H
													H
													H
		2389.83	63.27	-10.73	74	63.53	27.01	6.71	33.98	278	308	P	V
		2390	49.46	-4.54	54	49.72	27.01	6.71	33.98	278	308	A	V
	*	2412	104.24	-	-	104.45	27.06	6.71	33.98	278	308	P	V
	*	2412	96.98	-	-	97.19	27.06	6.71	33.98	278	308	A	V
													V
													V
802.11g CH 06 2437MHz		2386.95	52.57	-21.43	74	52.84	27.01	6.71	33.99	399	175	P	H
		2384.7	42.05	-11.95	54	42.37	26.96	6.71	33.99	399	175	A	H
	*	2437	110.86	-	-	110.93	27.16	6.74	33.97	399	175	P	H
	*	2437	103.82	-	-	103.89	27.16	6.74	33.97	399	175	A	H
		2484.2	52.13	-21.87	74	52.06	27.25	6.77	33.95	399	175	P	H
		2483.52	41.29	-12.71	54	41.22	27.25	6.77	33.95	399	175	A	H
		2388.66	52.14	-21.86	74	52.41	27.01	6.71	33.99	100	246	P	V
		2384.7	41.47	-12.53	54	41.79	26.96	6.71	33.99	100	246	A	V
	*	2437	107.02	-	-	107.09	27.16	6.74	33.97	100	246	P	V
	*	2437	100	-	-	100.07	27.16	6.74	33.97	100	246	A	V
		2485.52	50.76	-23.24	74	50.69	27.25	6.77	33.95	100	246	P	V
		2489.36	40.9	-13.1	54	40.78	27.3	6.77	33.95	100	246	A	V



802.11g CH 11 2462MHz	*	2462	109.46	-	-	109.45	27.2	6.77	33.96	395	172	P	H
	*	2462	102.22	-	-	102.21	27.2	6.77	33.96	395	172	A	H
		2483.76	67.42	-6.58	74	67.35	27.25	6.77	33.95	395	172	P	H
		2483.52	52.04	-1.96	54	51.97	27.25	6.77	33.95	395	172	A	H
													H
													H
	*	2462	106.07	-	-	106.06	27.2	6.77	33.96	266	259	P	V
	*	2462	98.86	-	-	98.85	27.2	6.77	33.96	266	259	A	V
		2483.72	63.36	-10.64	74	63.29	27.25	6.77	33.95	266	259	P	V
		2483.52	48.01	-5.99	54	47.94	27.25	6.77	33.95	266	259	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	43.55	-30.45	74	66.92	31.12	10.58	65.07	100	0	P	H
													H
													H
													H
		4824	37.95	-36.05	74	61.32	31.12	10.58	65.07	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	47.27	-26.73	74	70.6	31.21	10.48	65.02	100	0	P	H
		7311	41.25	-32.75	74	57.95	36.08	12.28	65.06	100	0	P	H
													H
													H
		4874	45.53	-28.47	74	68.86	31.21	10.48	65.02	100	0	P	V
		7311	41.78	-32.22	74	58.48	36.08	12.28	65.06	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4924	48.21	-25.79	74	71.5	31.29	10.39	64.97	100	0	P	H
		7386	41.19	-32.81	74	57.51	36.27	12.49	65.08	100	0	P	H
													H
													H
		4924	42.66	-31.34	74	65.95	31.29	10.39	64.97	100	0	P	V
		7386	40.49	-33.51	74	56.81	36.27	12.49	65.08	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.65	69.65	-4.35	74	69.92	27.01	6.71	33.99	365	167	P	H
		2390	52.95	-1.05	54	53.21	27.01	6.71	33.98	365	167	A	H
	*	2412	108.09	-	-	108.3	27.06	6.71	33.98	365	167	P	H
	*	2412	100.75	-	-	100.96	27.06	6.71	33.98	365	167	A	H
													H
													H
		2390	66.36	-7.64	74	66.62	27.01	6.71	33.98	346	311	P	V
		2390	49.15	-4.85	54	49.41	27.01	6.71	33.98	346	311	A	V
	*	2412	103.79	-	-	104	27.06	6.71	33.98	346	311	P	V
	*	2412	96.35	-	-	96.56	27.06	6.71	33.98	346	311	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2327.82	56.81	-17.19	74	57.41	26.82	6.58	34	400	175	P	H
		2310.81	45.21	-8.79	54	45.87	26.77	6.58	34.01	400	175	A	H
	*	2437	110.07	-	-	110.14	27.16	6.74	33.97	400	175	P	H
	*	2437	102.87	-	-	102.94	27.16	6.74	33.97	400	175	A	H
		2484.68	53.34	-20.66	74	53.27	27.25	6.77	33.95	400	175	P	H
		2483.84	42.39	-11.61	54	42.32	27.25	6.77	33.95	400	175	A	H
		2345.73	52.78	-21.22	74	53.25	26.87	6.65	33.99	299	266	P	V
		2385.24	42.7	-11.3	54	43.02	26.96	6.71	33.99	299	266	A	V
	*	2437	107.16	-	-	107.23	27.16	6.74	33.97	299	266	P	V
	*	2437	99.87	-	-	99.94	27.16	6.74	33.97	299	266	A	V
		2485.72	52.47	-21.53	74	52.4	27.25	6.77	33.95	299	266	P	V
		2489.2	41.86	-12.14	54	41.74	27.3	6.77	33.95	299	266	A	V



802.11n HT20 CH 11 2462MHz	*	2462	108.57	-	-	108.56	27.2	6.77	33.96	393	173	P	H
	*	2462	101.23	-	-	101.22	27.2	6.77	33.96	393	173	A	H
		2483.56	67.67	-6.33	74	67.6	27.25	6.77	33.95	393	173	P	H
		2483.52	52.28	-1.72	54	52.21	27.25	6.77	33.95	393	173	A	H
													H
													H
	*	2462	105.57	-	-	105.56	27.2	6.77	33.96	265	257	P	V
	*	2462	98.19	-	-	98.18	27.2	6.77	33.96	265	257	A	V
		2483.52	63.37	-10.63	74	63.3	27.25	6.77	33.95	265	257	P	V
		2483.52	48.42	-5.58	54	48.35	27.25	6.77	33.95	265	257	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	45.44	-28.56	74	68.81	31.12	10.58	65.07	100	0	P	H
													H
													H
													H
		4824	37.73	-36.27	74	61.1	31.12	10.58	65.07	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	49.83	-24.17	74	73.16	31.21	10.48	65.02	100	0	P	H
		7311	40.77	-33.23	74	57.47	36.08	12.28	65.06	100	0	P	H
													H
													H
		4874	43.97	-30.03	74	67.3	31.21	10.48	65.02	100	0	P	V
		7311	40.37	-33.63	74	57.07	36.08	12.28	65.06	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4924	48	-26	74	71.29	31.29	10.39	64.97	100	0	P	H
		7386	40.19	-33.81	74	56.51	36.27	12.49	65.08	100	0	P	H
													H
													H
		4924	42.67	-31.33	74	65.96	31.29	10.39	64.97	100	0	P	V
		7386	40	-34	74	56.32	36.27	12.49	65.08	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2388.84	64.94	-9.06	74	65.21	27.01	6.71	33.99	367	163	P	H
		2390	52.32	-1.68	54	52.58	27.01	6.71	33.98	367	163	A	H
	*	2422	102.86	-	-	102.98	27.11	6.74	33.97	367	163	P	H
	*	2422	95.38	-	-	95.5	27.11	6.74	33.97	367	163	A	H
		2495.56	52.37	-21.63	74	52.24	27.3	6.77	33.94	367	163	P	H
		2489.84	41.35	-12.65	54	41.23	27.3	6.77	33.95	367	163	A	H
		2388.84	62.15	-11.85	74	62.42	27.01	6.71	33.99	246	294	P	V
		2390	49.15	-4.85	54	49.41	27.01	6.71	33.98	246	294	A	V
	*	2422	100.39	-	-	100.51	27.11	6.74	33.97	246	294	P	V
	*	2422	92.96	-	-	93.08	27.11	6.74	33.97	246	294	A	V
		2497.08	51.75	-22.25	74	51.62	27.3	6.77	33.94	246	294	P	V
		2487.52	40.9	-13.1	54	40.78	27.3	6.77	33.95	246	294	A	V
802.11n HT40 CH 06 2437MHz		2389.29	66.23	-7.77	74	66.5	27.01	6.71	33.99	364	341	P	H
		2390	52.2	-1.8	54	52.46	27.01	6.71	33.98	364	341	A	H
	*	2437	106.2	-	-	106.27	27.16	6.74	33.97	364	341	P	H
	*	2437	98.75	-	-	98.82	27.16	6.74	33.97	364	341	A	H
		2483.68	60.8	-13.2	74	60.73	27.25	6.77	33.95	364	341	P	H
		2483.52	48.97	-5.03	54	48.9	27.25	6.77	33.95	364	341	A	H
		2389.38	58.33	-15.67	74	58.6	27.01	6.71	33.99	387	257	P	V
		2390	46.16	-7.84	54	46.42	27.01	6.71	33.98	387	257	A	V
	*	2437	102.97	-	-	103.04	27.16	6.74	33.97	387	257	P	V
	*	2437	95.53	-	-	95.6	27.16	6.74	33.97	387	257	A	V
		2483.88	53.45	-20.55	74	53.38	27.25	6.77	33.95	387	257	P	V
		2483.52	42.39	-11.61	54	42.32	27.25	6.77	33.95	387	257	A	V



802.11n HT40 CH 09 2452MHz		2325.66	52.97	-21.03	74	53.57	26.82	6.58	34	394	165	P	H
		2330.88	42.34	-11.66	54	42.94	26.82	6.58	34	394	165	A	H
	*	2452	104.51	-	-	104.57	27.16	6.74	33.96	394	165	P	H
	*	2452	96.78	-	-	96.84	27.16	6.74	33.96	394	165	A	H
		2483.88	63	-11	74	62.93	27.25	6.77	33.95	394	165	P	H
		2483.52	51.91	-2.09	54	51.84	27.25	6.77	33.95	394	165	A	H
		2326.92	51.84	-22.16	74	52.44	26.82	6.58	34	376	290	P	V
		2328.99	40.84	-13.16	54	41.44	26.82	6.58	34	376	290	A	V
	*	2452	99.92	-	-	99.98	27.16	6.74	33.96	376	290	P	V
	*	2452	92.4	-	-	92.46	27.16	6.74	33.96	376	290	A	V
		2487.76	60.82	-13.18	74	60.7	27.3	6.77	33.95	376	290	P	V
		2483.52	48.71	-5.29	54	48.64	27.25	6.77	33.95	376	290	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		4844	40.6	-33.4	74	63.93	31.15	10.58	65.06	100	0	P	H
		7266	40.72	-33.28	74	57.6	36.01	12.17	65.06	100	0	P	H
													H
													H
		4844	38.9	-35.1	74	62.23	31.15	10.58	65.06	100	0	P	V
		7266	40.79	-33.21	74	57.67	36.01	12.17	65.06	100	0	P	V
													V
													V
802.11n HT40 CH 06 2437MHz		4874	42.64	-31.36	74	65.97	31.21	10.48	65.02	100	0	P	H
		7311	40.71	-33.29	74	57.41	36.08	12.28	65.06	100	0	P	H
													H
													H
		4874	38.92	-35.08	74	62.25	31.21	10.48	65.02	100	0	P	V
		7311	40.55	-33.45	74	57.25	36.08	12.28	65.06	100	0	P	V
													V
													V
802.11n HT40 CH 09 2452MHz		4904	44.36	-29.64	74	67.7	31.26	10.39	64.99	100	0	P	H
		7356	41.16	-32.84	74	57.65	36.2	12.38	65.07	100	0	P	H
													H
													H
		4904	39.9	-34.1	74	63.24	31.26	10.39	64.99	100	0	P	V
		7356	41.95	-32.05	74	58.44	36.2	12.38	65.07	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz WIFI 802.11n 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)
2.4GHz 802.11n HT20 LF		88.32	38.24	-5.26	43.5	54.19	14.66	1.17	31.78	150	100	P	H
		166.62	33.43	-10.07	43.5	47.33	16.2	1.68	31.78			P	H
		240.06	40.57	-5.43	46	52.57	17.79	1.98	31.77			P	H
		463.1	34.37	-11.63	46	39.87	23.5	2.86	31.86			P	H
		717.9	37.64	-8.36	46	39.07	27.05	3.54	32.02			P	H
		960.1	35.44	-18.56	54	31.93	30.58	3.89	30.96			P	H
													H
													H
													H
													H
													H
													H
		45.12	33.8	-6.2	40	47.61	17.07	0.93	31.81	100	290	P	V
		73.2	33.63	-6.37	40	51.38	12.87	1.17	31.79			P	V
		251.94	29.66	-16.34	46	40.55	18.9	1.98	31.77			P	V
		547.1	37.52	-8.48	46	41.69	24.76	3.03	31.96			P	V
		843.2	35.28	-10.72	46	34.4	28.82	3.77	31.71			P	V
		960.1	34.73	-19.27	54	31.22	30.58	3.89	30.96			P	V
													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.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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



Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Bill Chang and Ken Wu	Temperature :	21~24°C
		Relative Humidity :	50~54%

Note symbol

-L	Low channel location
-R	High channel location



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	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak RBW:1000.000KHz VBW:0.010KHz SWT:Auto	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak RBW:1000.000KHz VBW:0.010KHz SWT:Auto

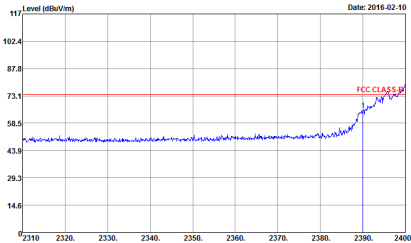
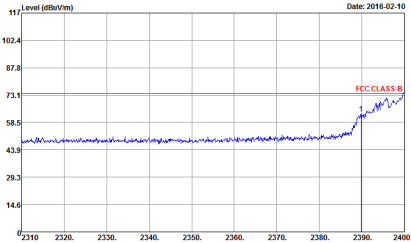
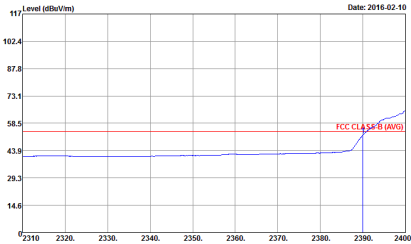
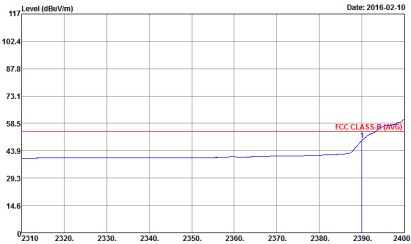


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

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	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF VERTICAL Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

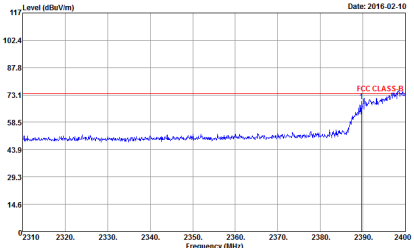
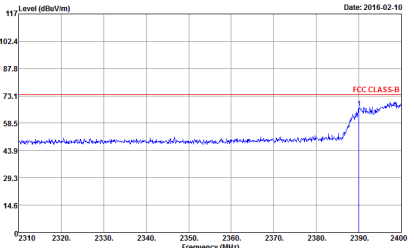
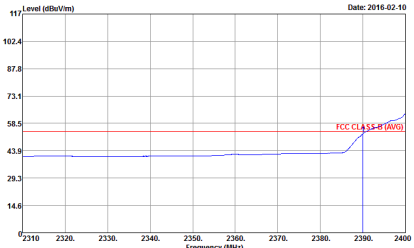
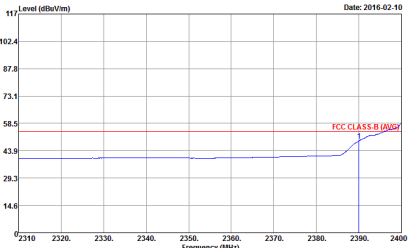


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak



2.4GHz 2400~2483.5MHz

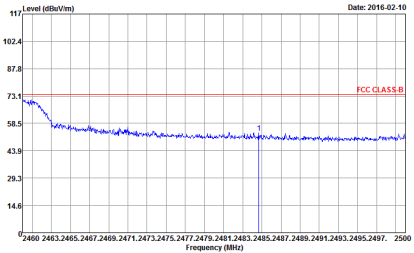
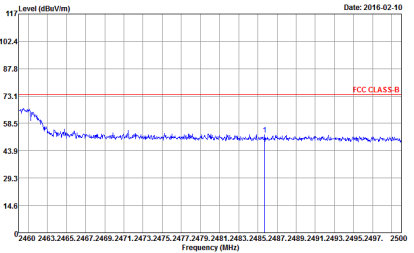
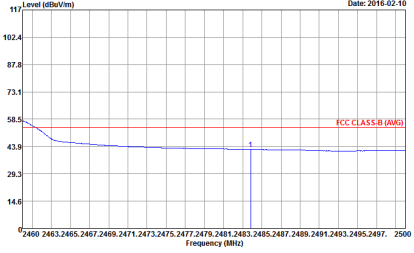
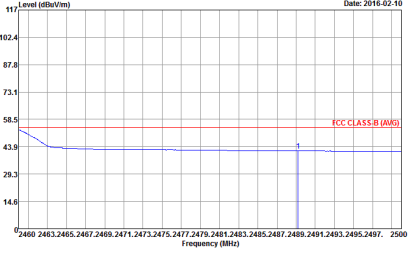
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF VERTICAL Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF VERTICAL Detector : Peak

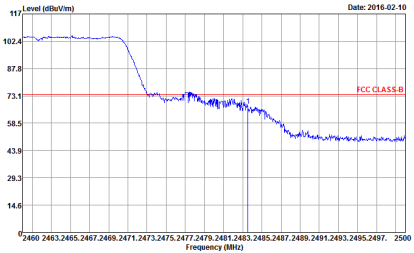
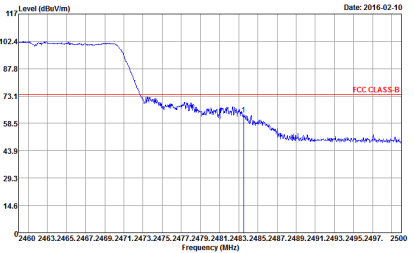
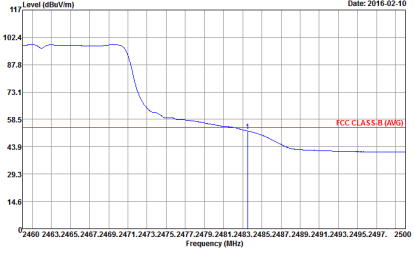
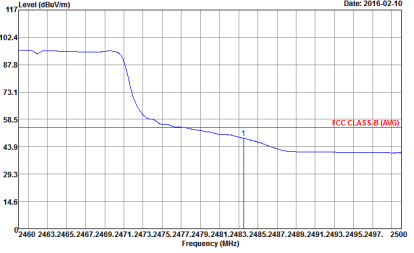


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	Horizontal Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2310 to 2400 MHz. The plot shows a noisy baseline around 58.5 dBuV/m with a sharp peak at approximately 2335 MHz reaching about 102.4 dBuV/m. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The date is 2016-02-10. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Vertical Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2310 to 2400 MHz. The plot shows a noisy baseline around 58.5 dBuV/m with a sharp peak at approximately 2335 MHz reaching about 102.4 dBuV/m. A red horizontal line indicates the FCC CLASS-B limit at 73.1 dBuV/m. The date is 2016-02-10. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Horizontal Average Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2310 to 2400 MHz. The plot shows a relatively flat baseline around 43.9 dBuV/m. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The date is 2016-02-10. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak RBW:1000.000KHz VBW:0.010KHz SWT:Auto	Vertical Average Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2310 to 2400 MHz. The plot shows a relatively flat baseline around 43.9 dBuV/m. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 58.5 dBuV/m. The date is 2016-02-10. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak RBW:1000.000KHz VBW:0.010KHz SWT:Auto



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

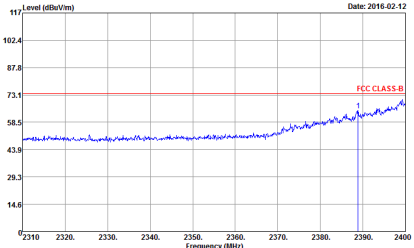
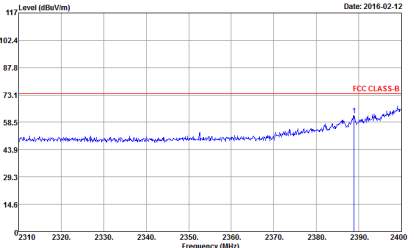
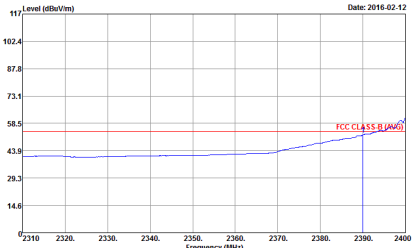
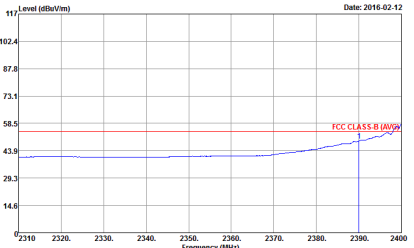


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak

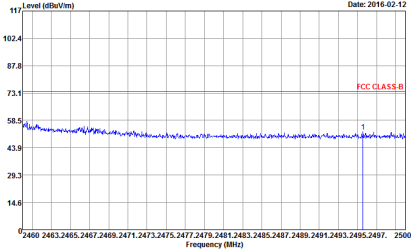
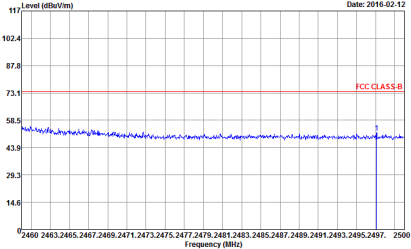
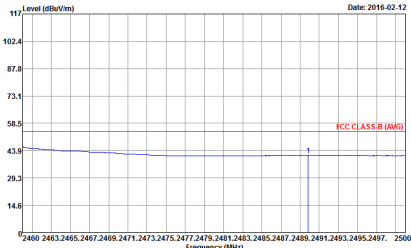
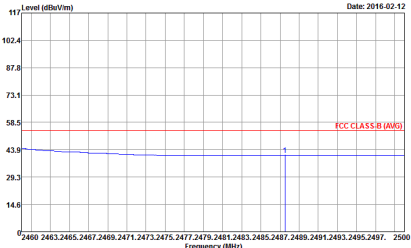


2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 91200-HF VERTICAL Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak
Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	Horizontal Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) for Horizontal polarization. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B limit, and a vertical blue line indicating the peak at approximately 2390 MHz. The peak level is approximately 73.1 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Vertical Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) for Vertical polarization. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B limit, and a vertical blue line indicating the peak at approximately 2390 MHz. The peak level is approximately 73.1 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Horizontal Avg Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) for Horizontal polarization. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B (AVG) limit, and a vertical blue line indicating the average level at approximately 2390 MHz. The average level is approximately 58.5 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Vertical Avg Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) for Vertical polarization. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B (AVG) limit, and a vertical blue line indicating the average level at approximately 2390 MHz. The average level is approximately 58.5 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1	Horizontal	Vertical
Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1	Horizontal	Vertical
Peak	Horizontal Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2400 to 2500 MHz. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B limit, and a vertical blue line indicating the peak at approximately 2452 MHz. The peak level is approximately 73.1 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Vertical Peak Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2400 to 2500 MHz. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B limit, and a vertical blue line indicating the peak at approximately 2452 MHz. The peak level is approximately 73.1 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak
Avg.	Horizontal Avg. Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2400 to 2500 MHz. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B (AVG) limit, and a vertical blue line indicating the average level at approximately 2452 MHz. The average level is approximately 58.5 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak	Vertical Avg. Spectrum Plot showing Level (dBuV/m) vs Frequency (MHz) from 2400 to 2500 MHz. The plot shows a blue line representing the measured signal, a red line for the FCC CLASS-B (AVG) limit, and a vertical blue line indicating the average level at approximately 2452 MHz. The average level is approximately 58.5 dBuV/m. Site : 03CH11-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak



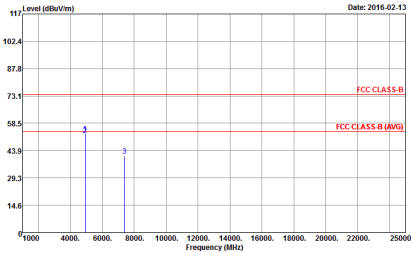
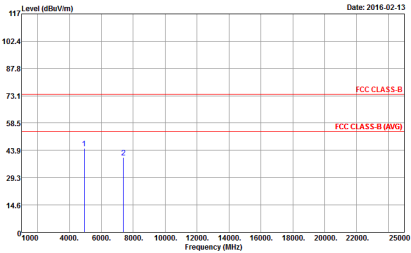
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



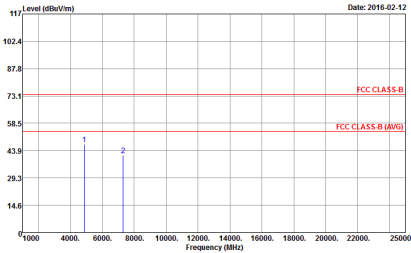
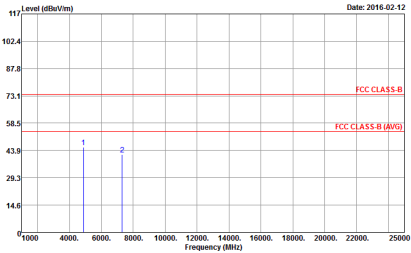
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



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.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak

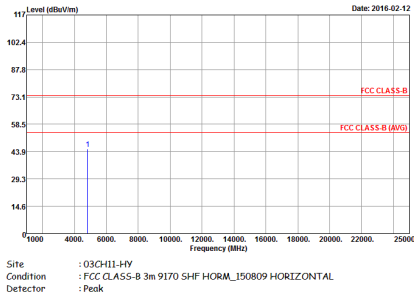
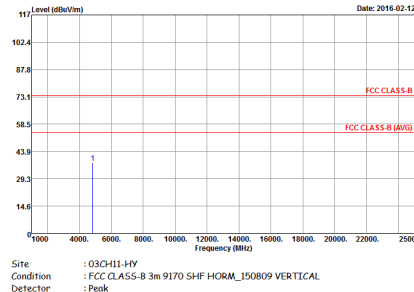


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak

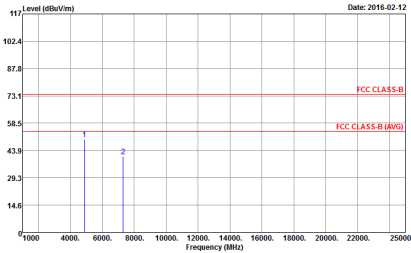
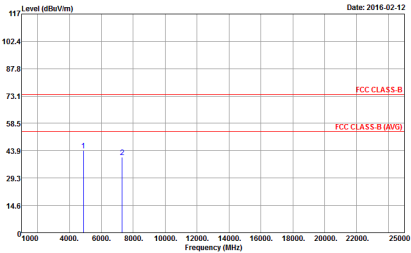


2.4GHz 2400~2483.5MHz

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.	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak

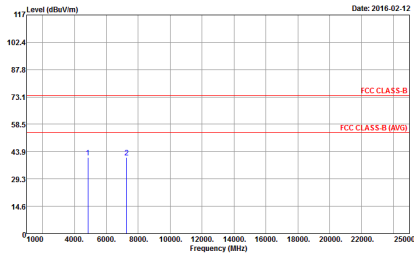
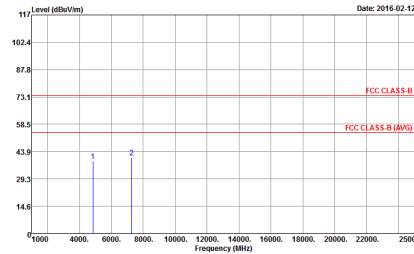


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH03 2422MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



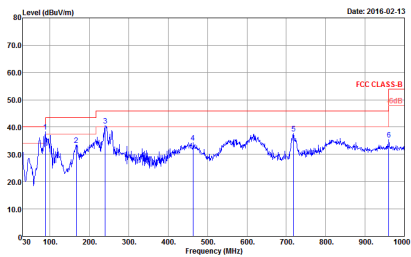
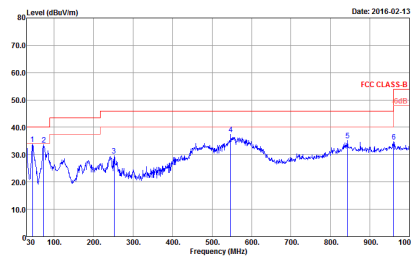
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
1	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2016-02-12 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak	Level (dBuV/m) Date: 2016-02-12 Site : 03CH11-HY Condition : FCC CLASS-B 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak



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	 Site : 03CH11-HV Condition : FCC CLASS-B 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak	 Site : 03CH11-HV Condition : FCC CLASS-B 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak