

FCC RF Test Report

APPLICANT : i.am.plus electronics inc
EQUIPMENT : SmartWatch
BRAND NAME : iamplus
MODEL NAME : IAM1111
MARKETING NAME : DIAL
FCC ID : 2AB2S-IAM1111
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jul. 17, 2015 and testing was completed on Apr. 27, 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



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FCC ID : 2AB2S-IAM1111

Page Number : 1 of 37

Report Issued Date : May 11, 2016

Report Version : Rev. 01

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR611330C	Rev. 01	Initial issue of report	May 11, 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 11.60 dB at 2483.560 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.00 dB at 0.182 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

i.am.plus electronics inc

10960 Wilshire Blvd., 5th Floor Los Angeles, CA 90024

1.2 Manufacturer

FIH Mobile Limited

No.4, Mingsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	SmartWatch
Brand Name	iamplus
Model Name	IAM1111
Marketing Name	dial
FCC ID	2AB2S-IAM1111
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA WLAN 11b/g/n HT20 Bluetooth v4.0 EDR/LE
HW Version	PR2
SW Version	IP2_1C0C_1_240
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 : 17.07 dBm (0.0509 W) 802.11g : 20.60 dBm (0.1148 W) 802.11n HT20 : 19.12 dBm (0.0817 W)
99% Occupied Bandwidth	802.11b : 12.10MHz 802.11g : 18.15MHz 802.11n HT20 : 19.15MHz
Antenna Type	802.11b/g/n : PIFA Antenna type with gain -1.80 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.	
	TH02-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.	
	03CH10-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 v03r05
- ♦ 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 (Z plane) were recorded in this report.

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

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

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.07	16.96	16.96	17.02

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)	20.60	20.57	20.45	20.49	20.41	20.57	20.58	20.57

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.12	19.01	19.00	18.64	18.99	19.02	18.89	19.01

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.

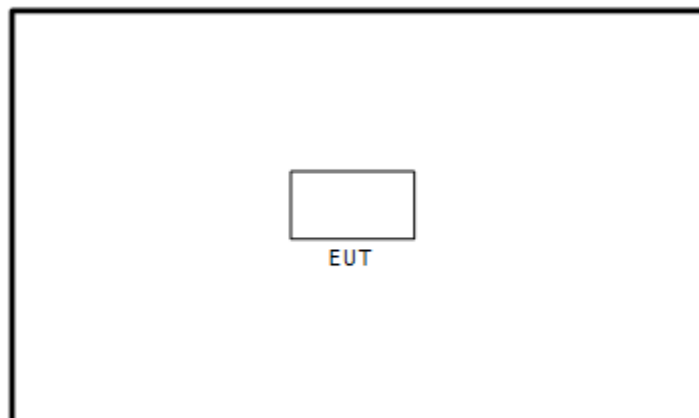
<2.4GHz>

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

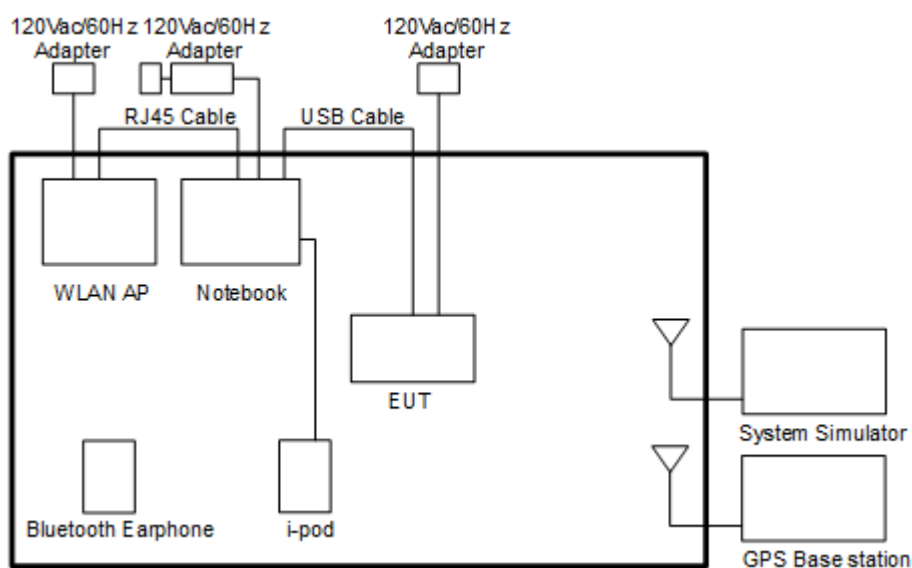
Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Data Link with Notebook)

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
5.	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
6.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.6 EUT Operation Test Setup

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

2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

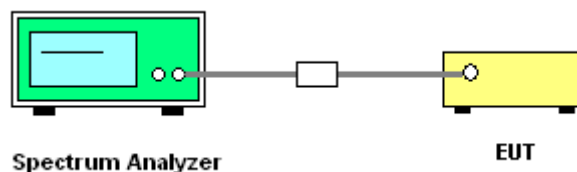
3.1.2 Measuring Instruments

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 v03r05.
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.

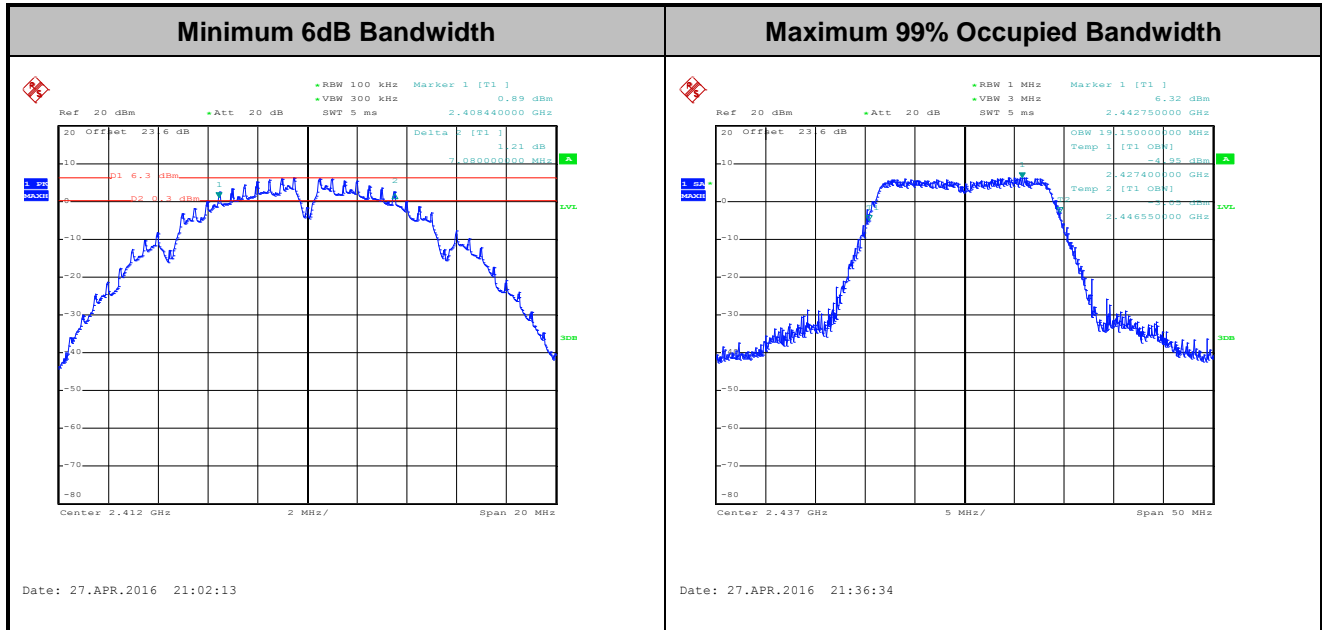
3.1.4 Test Setup





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 v03r05 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.

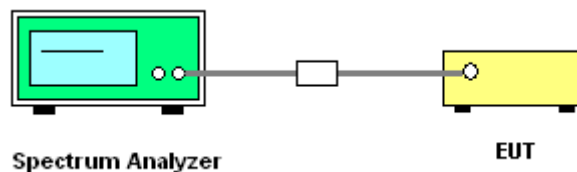
3.3.2 Measuring Instruments

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 v03r05
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.

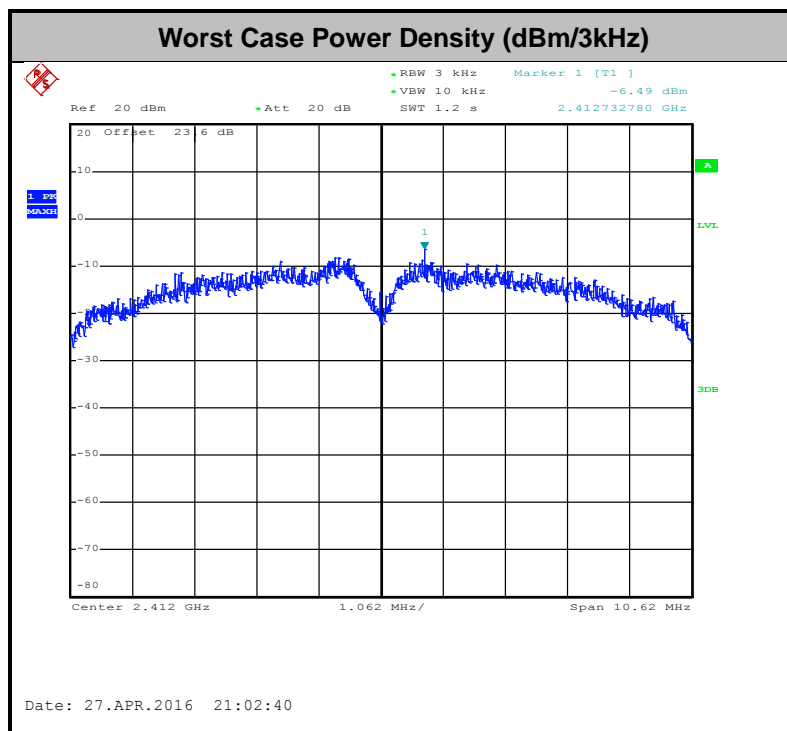
3.3.4 Test Setup





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).

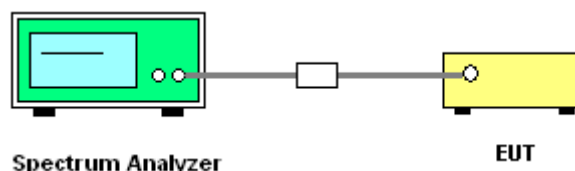
3.4.2 Measuring Instruments

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 v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

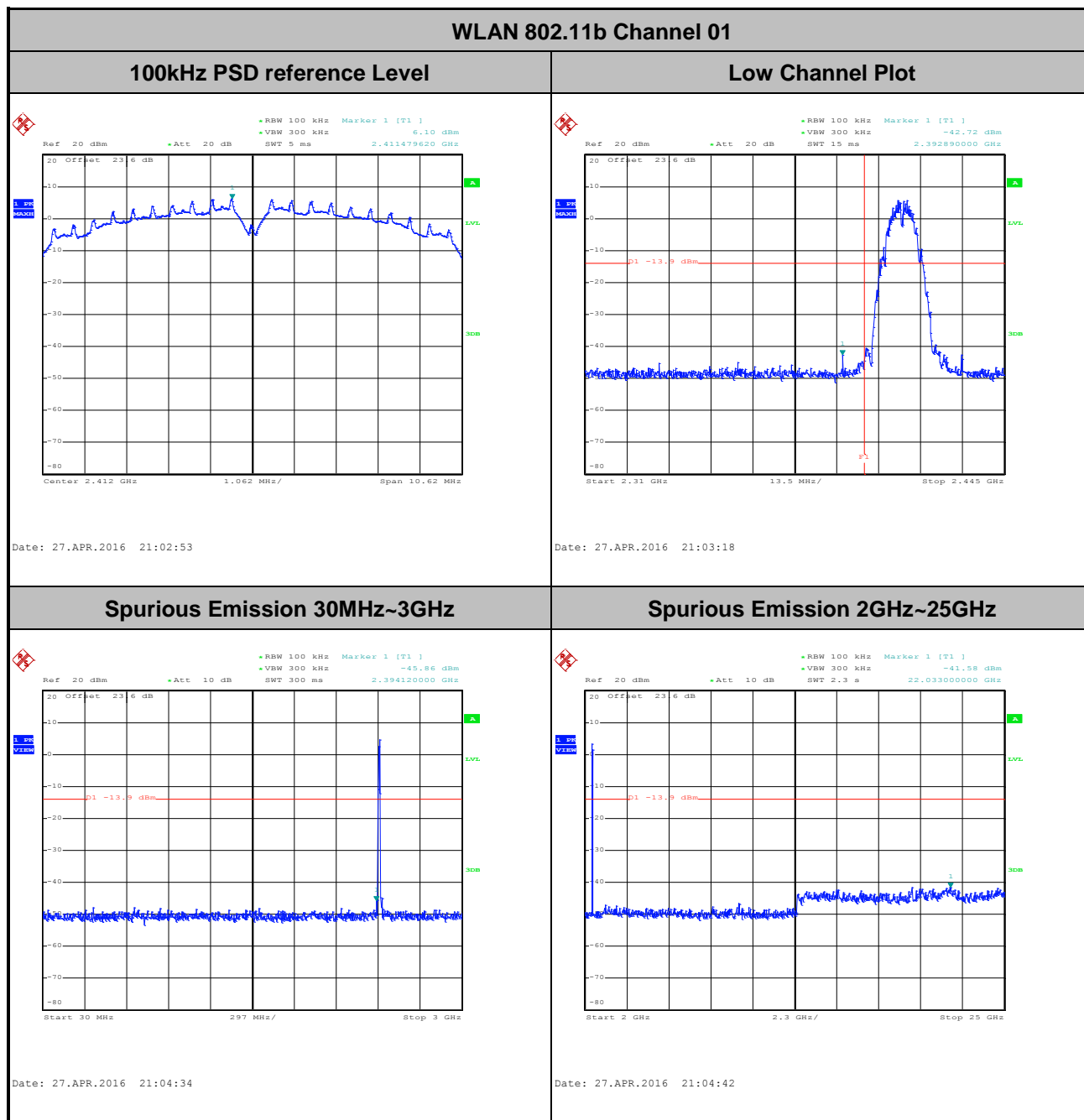
3.4.4 Test Setup





3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

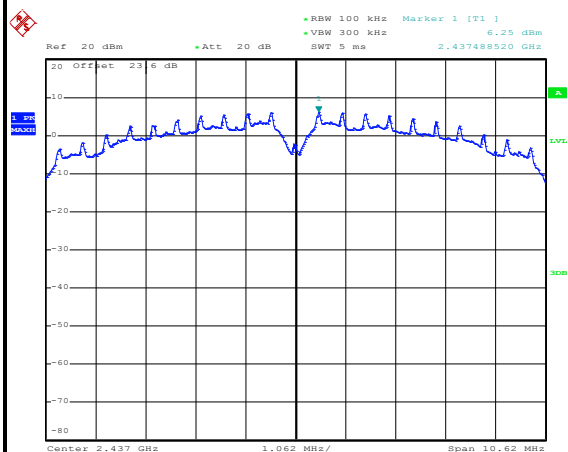




Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Jam Lee

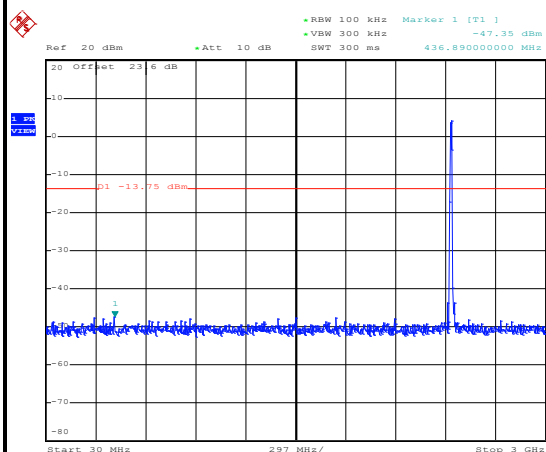
WLAN 802.11b Channel 06

100kHz PSD reference Level



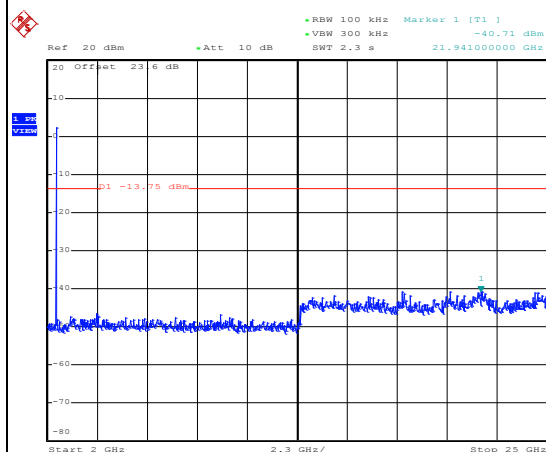
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Spurious Emission 30MHz~3GHz



Date: 27.APR.2016 21:10:30

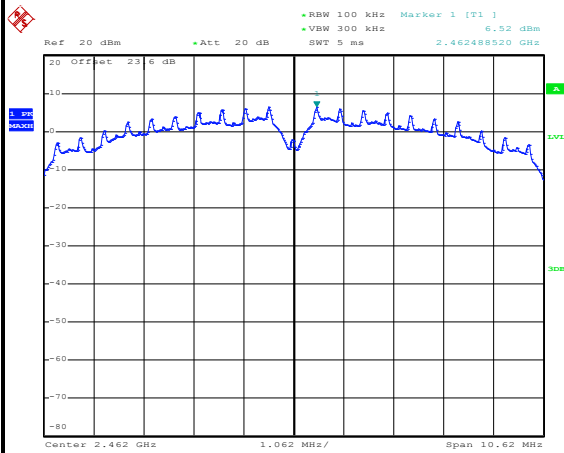
Spurious Emission 2GHz~25GHz



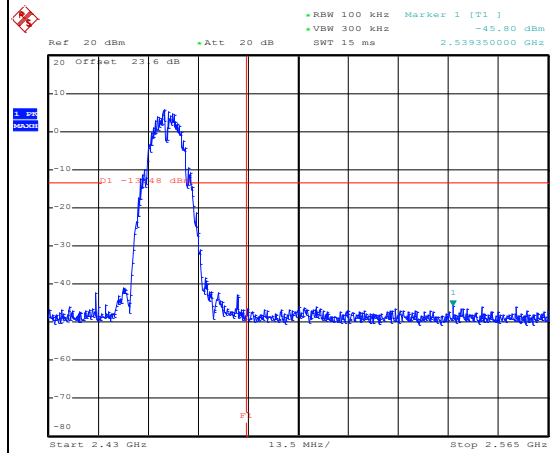
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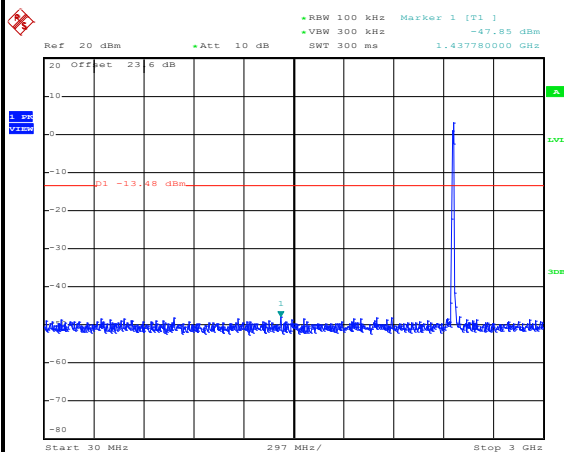
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Jam Lee

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

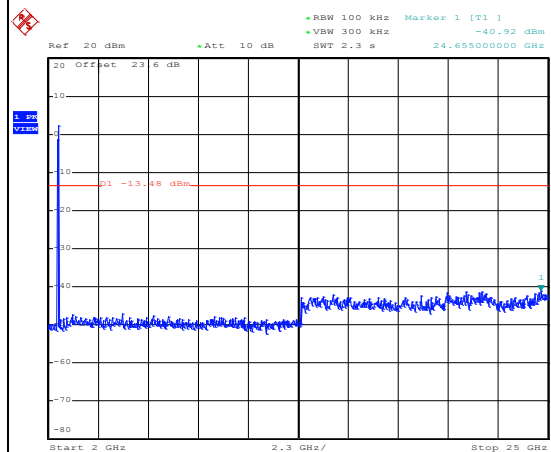
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High Channel Plot

Date: 27.APR.2016 21:14:08

Spurious Emission 30MHz~3GHz

Date: 27.APR.2016 21:15:09

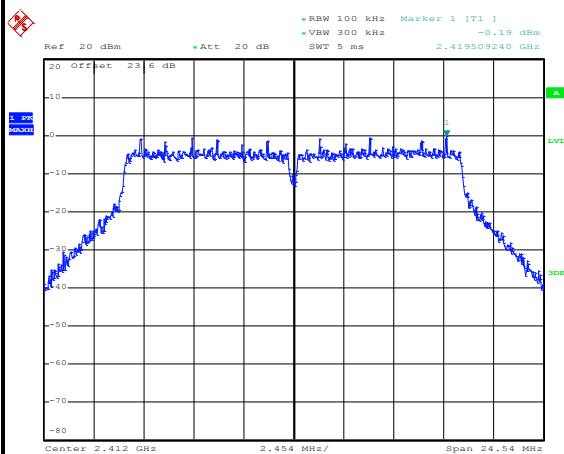
Spurious Emission 2GHz~25GHz

Date: 27.APR.2016 21:14:29

Test Mode :	802.11g	Temperature :	21~25℃
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Jam Lee

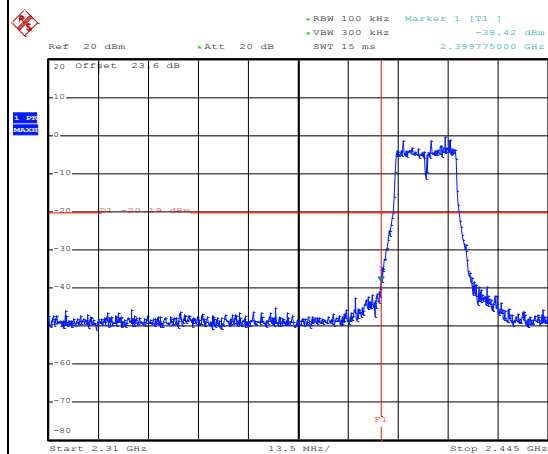
WLAN 802.11g Channel 01

100kHz PSD reference Level



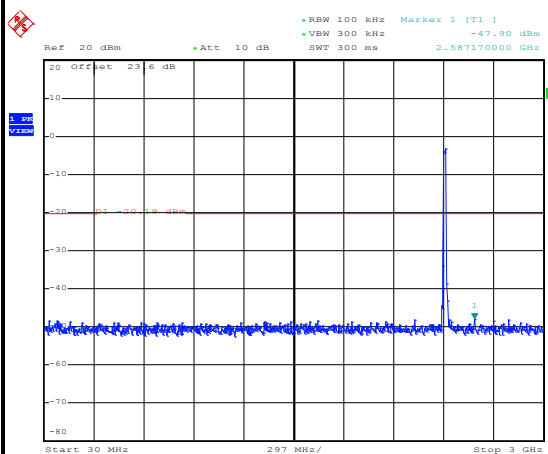
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Low Channel Plot



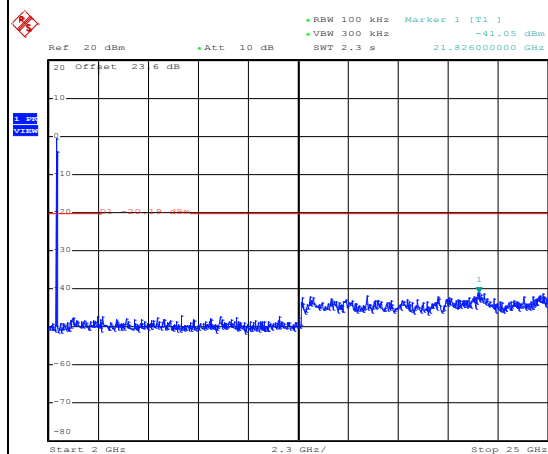
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Spurious Emission 30MHz~3GHz



Date: 27.APR.2016 21:19:51

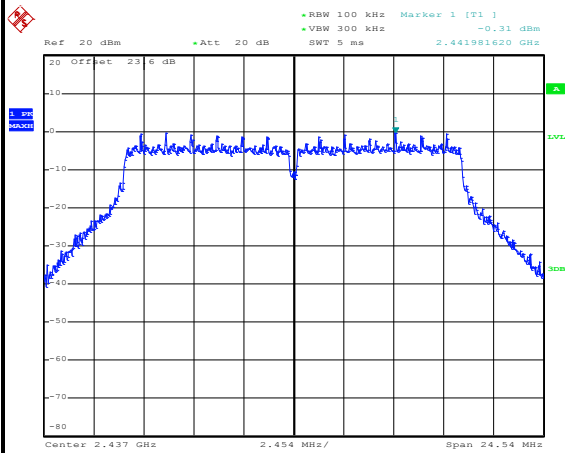
Spurious Emission 2GHz~25GHz



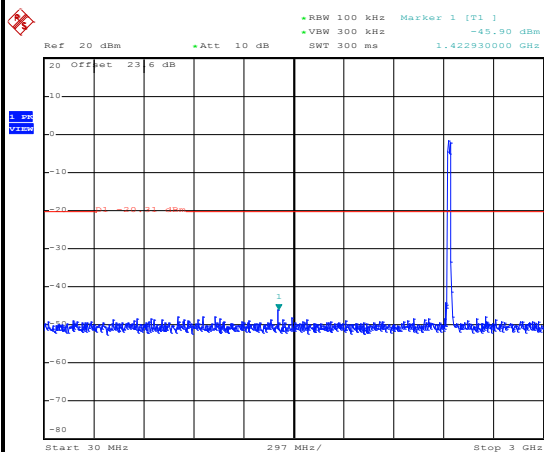
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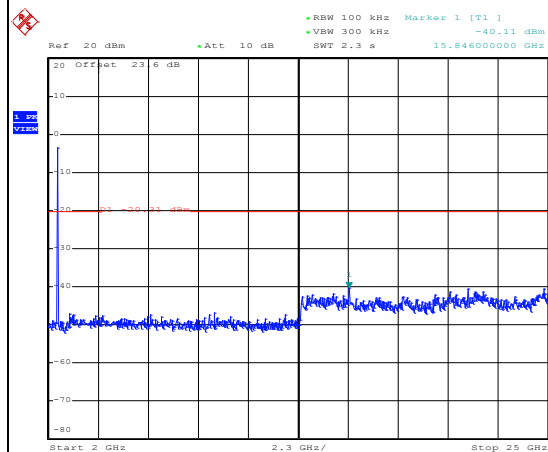
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Jam Lee

WLAN 802.11g Channel 06**100kHz PSD reference Level**

Date: 27.APR.2016 21:22:27

Spurious Emission 30MHz~3GHz

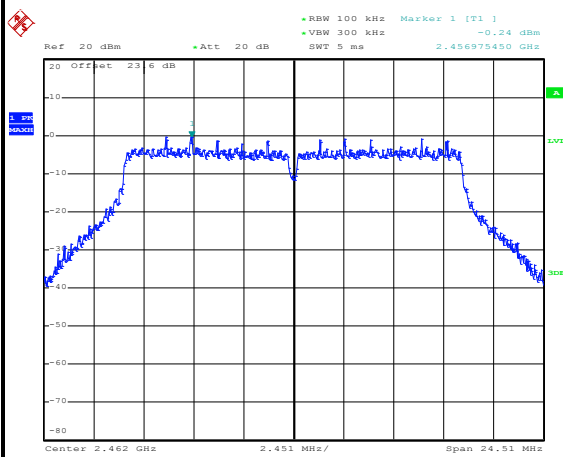
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Spurious Emission 2GHz~25GHz

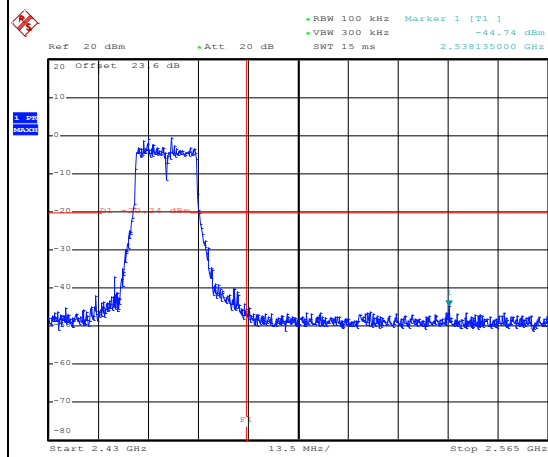
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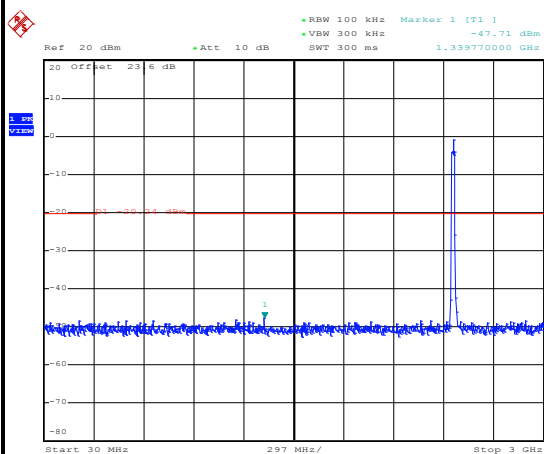
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Jam Lee

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

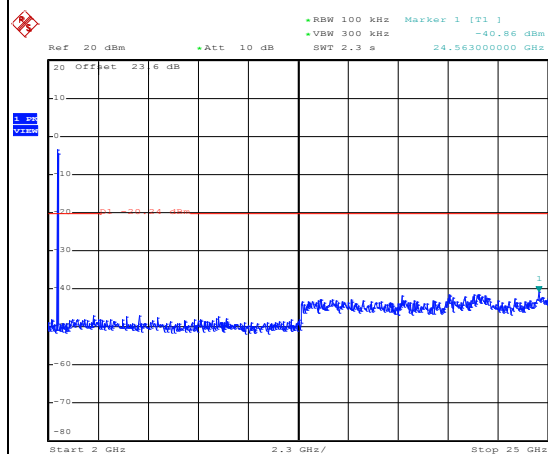
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High Channel Plot

Date: 27.APR.2016 21:26:03

Spurious Emission 30MHz~3GHz

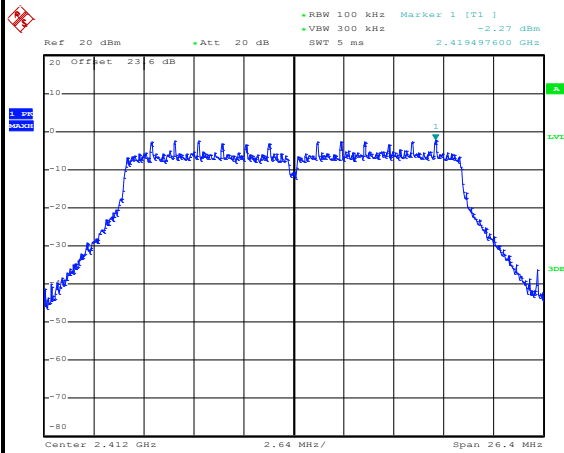
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Spurious Emission 2GHz~25GHz

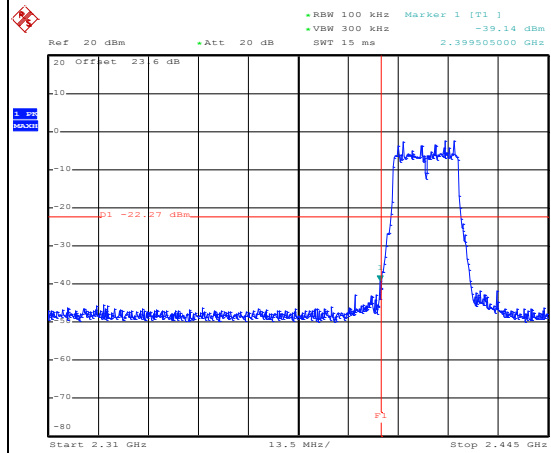
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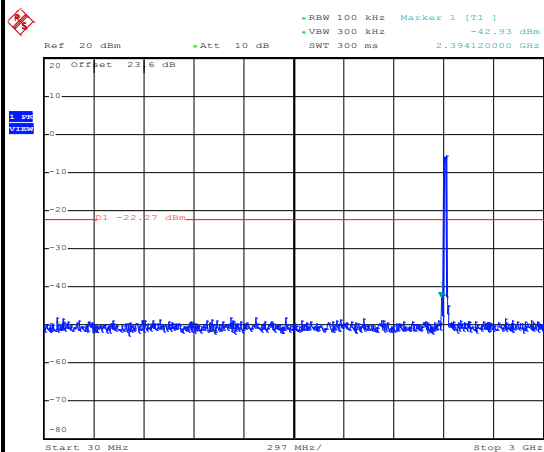
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Jam Lee

WLAN 802.11n HT20 Channel 01**100kHz PSD reference Level**

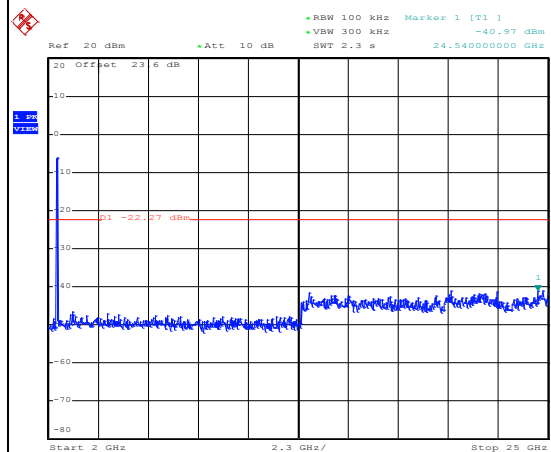
Date: 27.APR.2016 21:31:24

Low Channel Plot

Date: 27.APR.2016 21:31:50

Spurious Emission 30MHz~3GHz

Date: 27.APR.2016 21:33:02

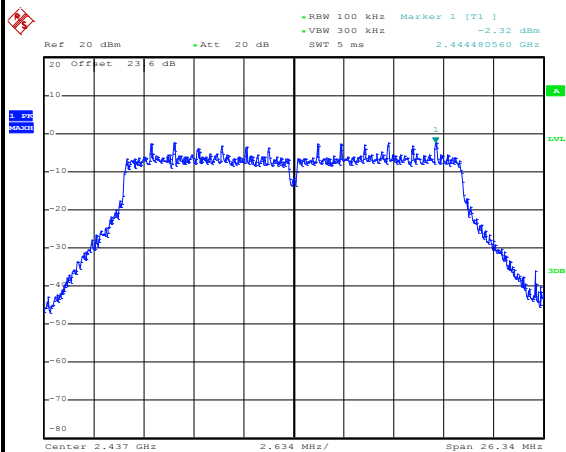
Spurious Emission 2GHz~25GHz

Date: 27.APR.2016 21:33:11

Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Jam Lee

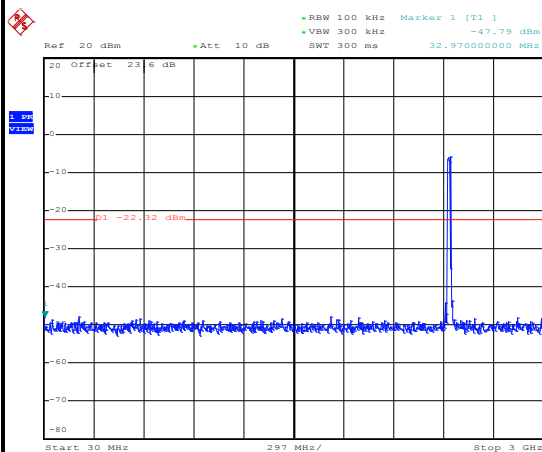
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



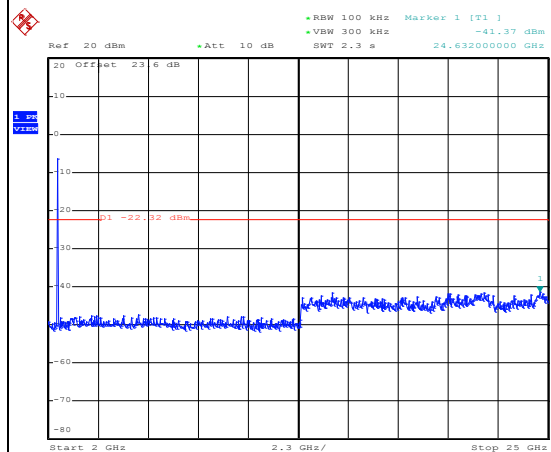
Date: 27.APR.2016 21:35:35

Spurious Emission 30MHz~3GHz



Date: 27.APR.2016 21:37:57

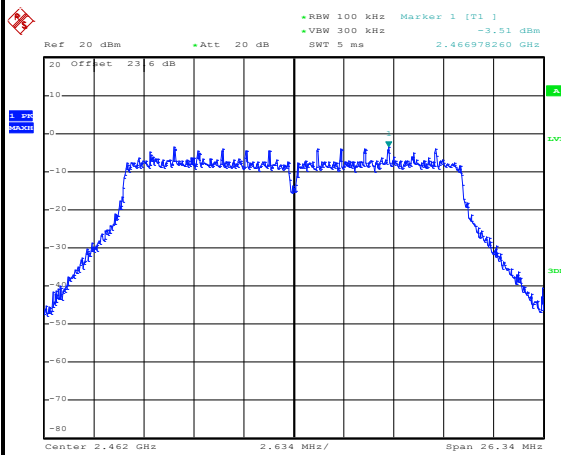
Spurious Emission 2GHz~25GHz



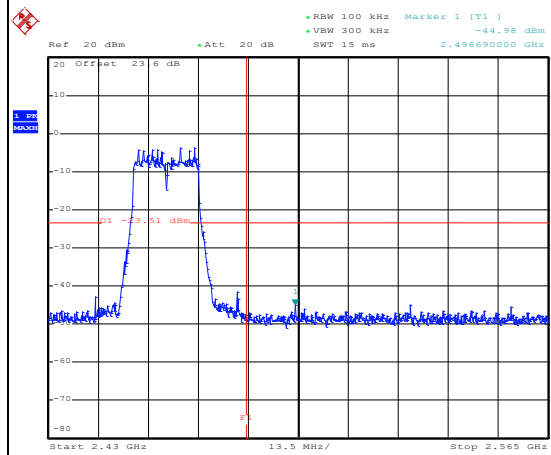
Date: 27.APR.2016 21:37:18



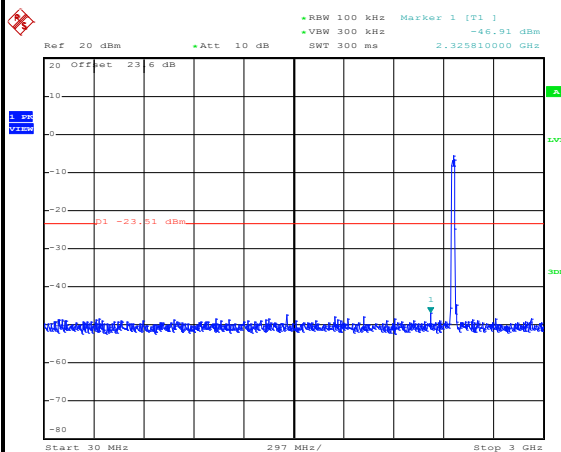
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Jam Lee

WLAN 802.11n HT20 Channel 11**100kHz PSD reference Level**

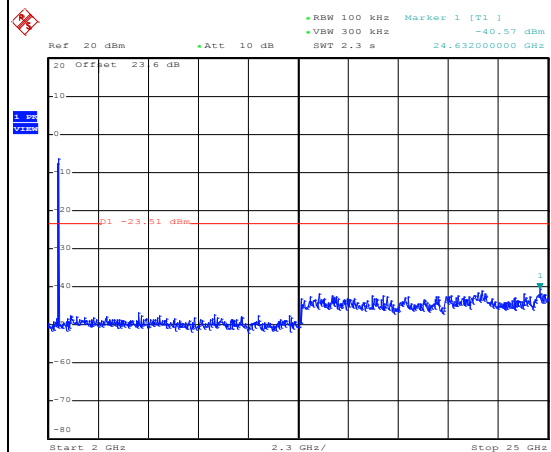
Date: 27.APR.2016 21:39:50

High Channel Plot

Date: 27.APR.2016 21:40:04

Spurious Emission 30MHz~3GHz

Date: 27.APR.2016 21:40:17

Spurious Emission 2GHz~25GHz

Date: 27.APR.2016 21:40:26

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

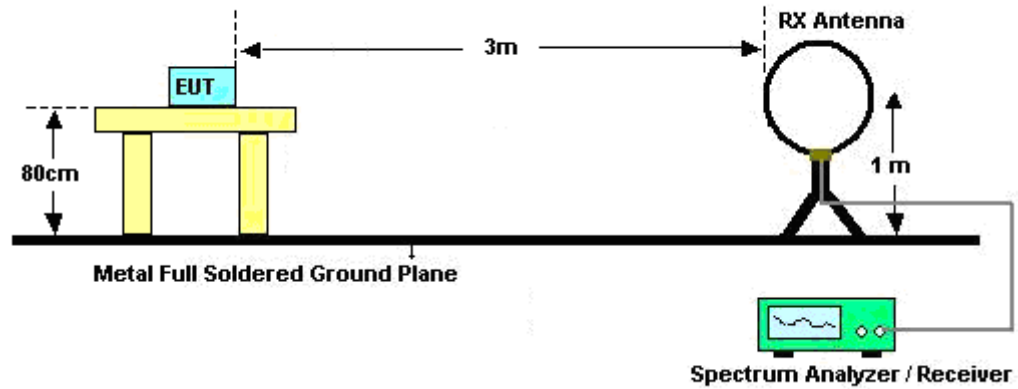
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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:

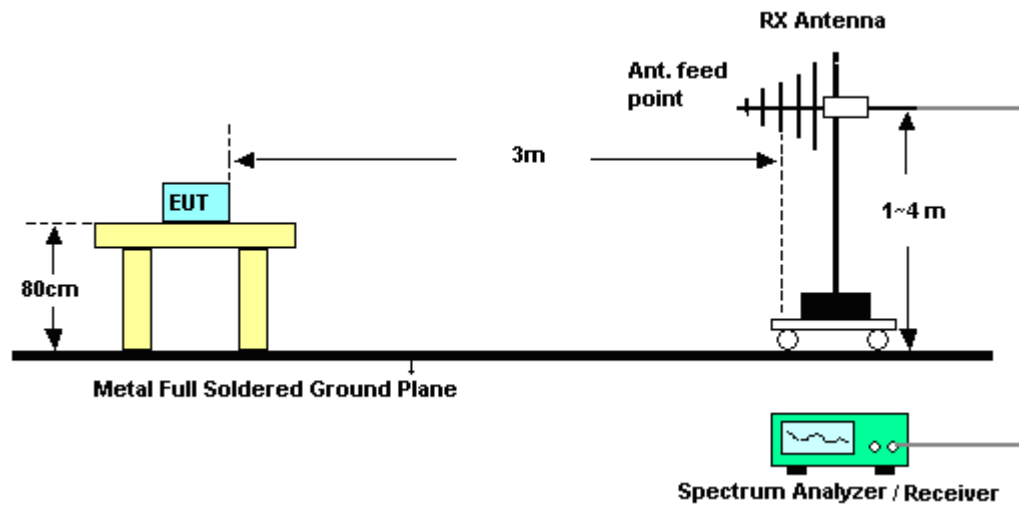
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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 Duty Cycle

Please refer to Appendix D.

3.5.8 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.

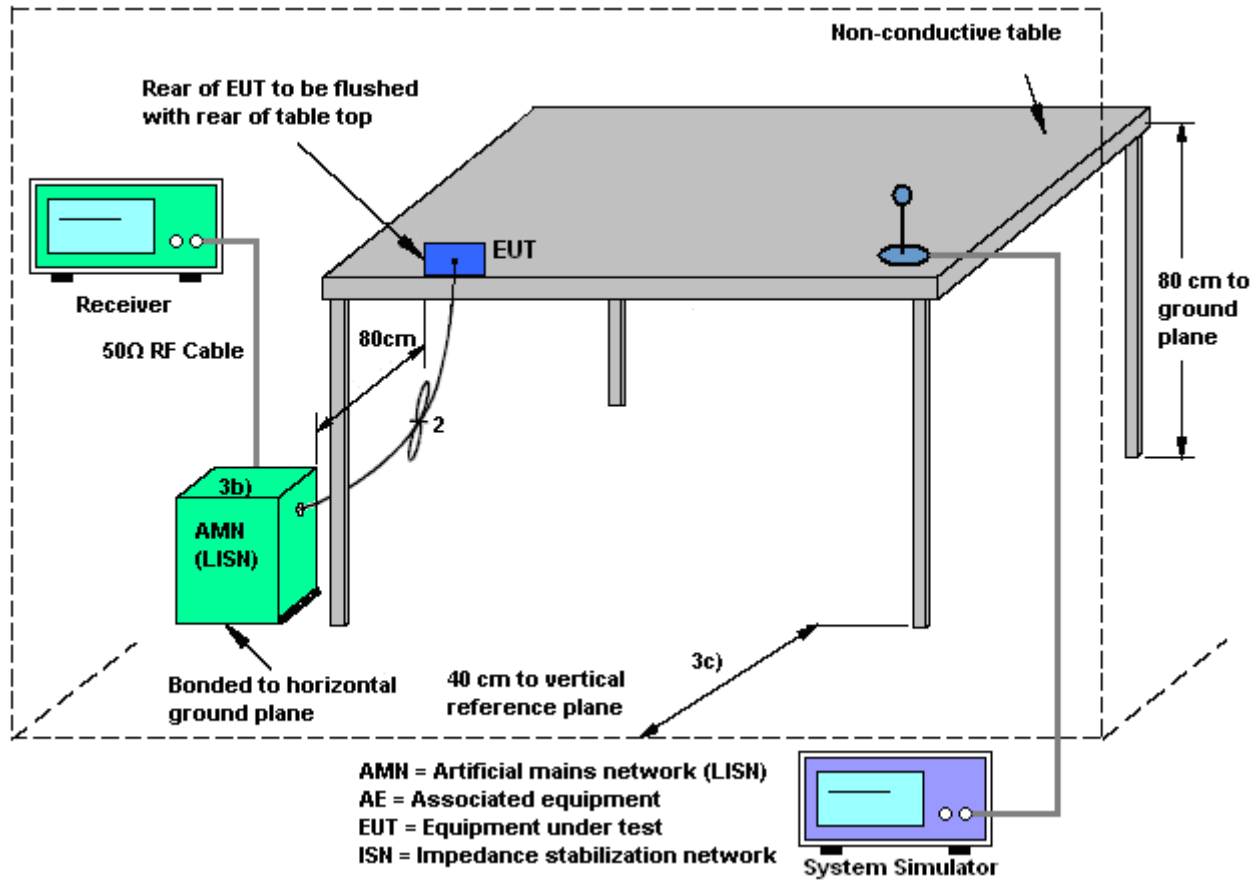
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

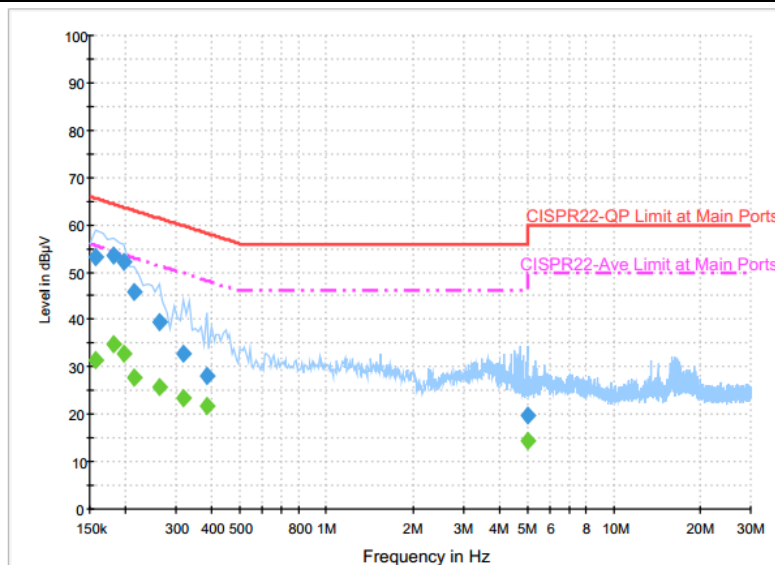
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	18~20°C
Test Engineer :	Derreck Chen	Relative Humidity :	48~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Data Link with Notebook)		



Final Result : Quasi-Peak

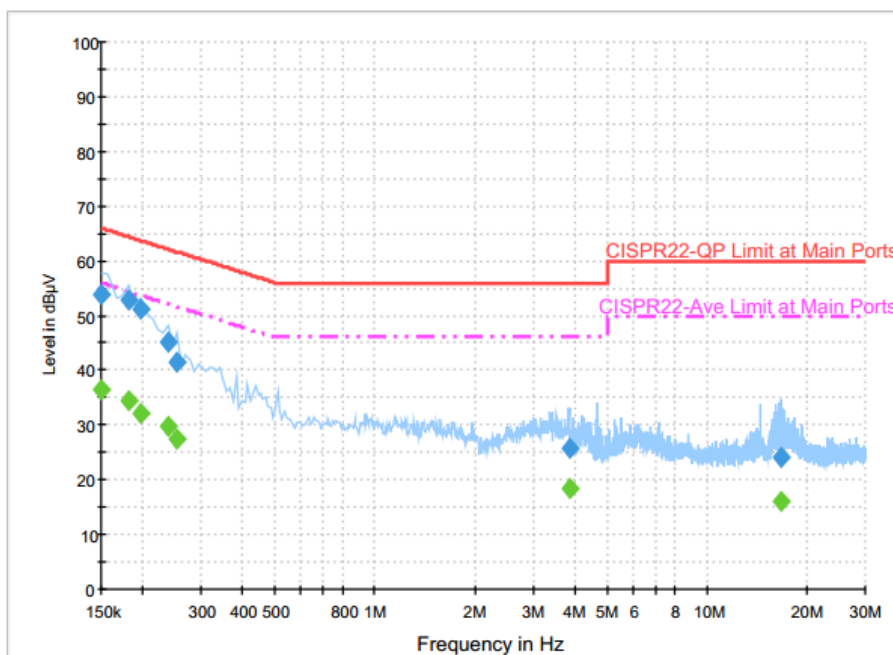
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	53.1	Off	L1	19.6	12.5	65.6
0.182000	53.4	Off	L1	19.6	11.0	64.4
0.198000	52.1	Off	L1	19.6	11.6	63.7
0.214000	45.8	Off	L1	19.6	17.2	63.0
0.262000	39.4	Off	L1	19.6	22.0	61.4
0.318000	32.8	Off	L1	19.6	27.0	59.8
0.382000	28.0	Off	L1	19.6	30.2	58.2
5.006000	19.7	Off	L1	19.7	40.3	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	31.4	Off	L1	19.6	24.2	55.6
0.182000	34.6	Off	L1	19.6	19.8	54.4
0.198000	32.8	Off	L1	19.6	20.9	53.7
0.214000	27.8	Off	L1	19.6	25.2	53.0
0.262000	25.7	Off	L1	19.6	25.7	51.4
0.318000	23.4	Off	L1	19.6	26.4	49.8
0.382000	21.7	Off	L1	19.6	26.5	48.2
5.006000	14.4	Off	L1	19.7	35.6	50.0



Test Mode :	Mode 1	Temperature :	18~20°C
Test Engineer :	Derreck Chen	Relative Humidity :	48~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + USB Cable (Data Link with Notebook)		

**Final Result : Quasi-Peak**

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	53.9	Off	N	19.6	12.1	66.0
0.182000	52.8	Off	N	19.6	11.6	64.4
0.198000	51.2	Off	N	19.7	12.5	63.7
0.238000	45.2	Off	N	19.6	17.0	62.2
0.254000	41.5	Off	N	19.6	20.1	61.6
3.854000	25.8	Off	N	19.6	30.2	56.0
16.782000	24.0	Off	N	19.9	36.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	36.3	Off	N	19.6	19.7	56.0
0.182000	34.4	Off	N	19.6	20.0	54.4
0.198000	32.3	Off	N	19.7	21.4	53.7
0.238000	29.8	Off	N	19.6	22.4	52.2
0.254000	27.4	Off	N	19.6	24.2	51.6
3.854000	18.5	Off	N	19.6	27.5	46.0
16.782000	15.9	Off	N	19.9	34.1	50.0



3.7 Antenna Requirements

3.7.1 Standard Applicable

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

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

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



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Jul. 29, 2015	Feb. 01, 2016 ~ Apr. 27, 2016	Jul. 28, 2016	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Jul. 29, 2015	Feb. 01, 2016 ~ Apr. 27, 2016	Jul. 28, 2016	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 18, 2015	Feb. 01, 2016 ~ Apr. 27, 2016	Jun. 17, 2016	Conducted (TH02-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Feb. 11, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Feb. 11, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Feb. 11, 2016	Dec. 01, 2016	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Feb. 11, 2016	Jan. 07, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Sep. 01, 2016	Radiation (03CH10-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Nov. 16, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Nov. 15, 2016	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D	35413	30MHz~1GHz	Jan. 13, 2016	Feb. 27, 2016 ~ Mar. 01, 2016	Jan. 12, 2017	Radiation (03CH10-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20Hz ~ 8.4GHz	Nov. 04, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Nov. 03, 2016	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz ~ 18GHz	Sep. 30, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Sep. 29, 2016	Radiation (03CH10-HY)
Preamplifier	Keysight	83017A	MY53270078	1GHz~26.5GHz	Nov. 13, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Nov. 12, 2016	Radiation (03CH10-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1902246	1GHz~18GHz	Nov. 16, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Nov. 15, 2016	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz ~ 44GHZ	Oct. 15, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Oct. 14, 2016	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Feb. 27, 2016 ~ Mar. 01, 2016	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0-360 degree	N/A	Feb. 27, 2016 ~ Mar. 01, 2016	N/A	Radiation (03CH10-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 02, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Nov. 01, 2016	Radiation (03CH10-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Feb. 27, 2016 ~ Mar. 01, 2016	Jun. 01, 2016	Radiation (03CH10-HY)



5 Uncertainty of Evaluation

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9
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Appendix A. Conducted Test Results

A1 - DTS Part

Test Engineer:	Jam Lee	Temperature:	21~25	°C
Test Date:	2016/02/01~2016/04/27	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	12.10	7.08	0.50	Pass
11b	1Mbps	1	6	2437	12.10	7.08	0.50	Pass
11b	1Mbps	1	11	2462	12.05	7.08	0.50	Pass
11g	6Mbps	1	1	2412	18.15	16.36	0.50	Pass
11g	6Mbps	1	6	2437	18.05	16.36	0.50	Pass
11g	6Mbps	1	11	2462	18.05	16.34	0.50	Pass
HT20	MCS0	1	1	2412	19.05	17.60	0.50	Pass
HT20	MCS0	1	6	2437	19.15	17.56	0.50	Pass
HT20	MCS0	1	11	2462	18.85	17.56	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	17.05	30.00	-1.80	15.25	36.00	Pass
11b	1Mbps	1	6	2437	17.02	30.00	-1.80	15.22	36.00	Pass
11b	1Mbps	1	11	2462	17.07	30.00	-1.80	15.27	36.00	Pass
11g	6Mbps	1	1	2412	20.45	30.00	-1.80	18.65	36.00	Pass
11g	6Mbps	1	6	2437	20.22	30.00	-1.80	18.42	36.00	Pass
11g	6Mbps	1	11	2462	20.60	30.00	-1.80	18.80	36.00	Pass
HT20	MCS0	1	1	2412	19.12	30.00	-1.80	17.32	36.00	Pass
HT20	MCS0	1	6	2437	19.02	30.00	-1.80	17.22	36.00	Pass
HT20	MCS0	1	11	2462	18.21	30.00	-1.80	16.41	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.10	14.01
11b	1Mbps	1	6	2437	0.10	13.84
11b	1Mbps	1	11	2462	0.10	14.02
11g	6Mbps	1	1	2412	0.58	11.11
11g	6Mbps	1	6	2437	0.58	11.01
11g	6Mbps	1	11	2462	0.58	11.12
HT20	MCS0	1	1	2412	0.64	9.13
HT20	MCS0	1	6	2437	0.64	9.06
HT20	MCS0	1	11	2462	0.64	8.13

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	-6.49	-1.80	8.00	Pass
11b	1Mbps	1	6	2437	-8.02	-1.80	8.00	Pass
11b	1Mbps	1	11	2462	-8.06	-1.80	8.00	Pass
11g	6Mbps	1	1	2412	-14.52	-1.80	8.00	Pass
11g	6Mbps	1	6	2437	-14.32	-1.80	8.00	Pass
11g	6Mbps	1	11	2462	-13.77	-1.80	8.00	Pass
HT20	MCS0	1	1	2412	-15.37	-1.80	8.00	Pass
HT20	MCS0	1	6	2437	-16.92	-1.80	8.00	Pass
HT20	MCS0	1	11	2462	-17.72	-1.80	8.00	Pass



Appendix B. Radiated Spurious Emission

Test Engineer :	Tsung Lee and Elvis Chen and Stan Hsieh	Temperature :	21~23°C
		Relative Humidity :	60~63%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		2355.45	51.19	-22.81	74	51.97	27.14	5.33	33.25	100	223	P	H
		2374.89	40.55	-13.45	54	41.21	27.19	5.39	33.24	100	223	A	H
	*	2412.024	99.81	-	-	100.33	27.28	5.42	33.22	100	223	P	H
	*	2413.026	97.1	-	-	97.62	27.28	5.42	33.22	100	223	A	H
													H
													H
		2375.34	51.15	-22.85	74	51.81	27.19	5.39	33.24	126	300	P	V
		2374.26	41.17	-12.83	54	41.83	27.19	5.39	33.24	126	300	A	V
	*	2412.024	101.79	-	-	102.31	27.28	5.42	33.22	126	300	P	V
	*	2411.022	99.22	-	-	99.74	27.28	5.42	33.22	126	300	A	V
													V
													V
802.11b CH 06 2437MHz		2374.08	50.84	-23.16	74	51.5	27.19	5.39	33.24	100	233	P	H
		2390	40.43	-13.57	54	41.03	27.23	5.39	33.22	100	233	A	H
	*	2437.074	101.09	-	-	101.51	27.37	5.42	33.21	100	233	P	H
	*	2435.989	98.38	-	-	98.85	27.32	5.42	33.21	100	233	A	H
		2499.36	51.69	-22.31	74	51.9	27.5	5.46	33.17	100	233	P	H
		2493.72	40.99	-13.01	54	41.2	27.5	5.46	33.17	100	233	A	H
		2382.72	50.61	-23.39	74	51.27	27.19	5.39	33.24	100	297	P	V
		2381.91	40.63	-13.37	54	41.29	27.19	5.39	33.24	100	297	A	V
	*	2436.99	100.75	-	-	101.17	27.37	5.42	33.21	100	297	P	V
	*	2435.989	98.08	-	-	98.55	27.32	5.42	33.21	100	297	A	V
		2483.72	51.34	-22.66	74	51.6	27.46	5.46	33.18	100	297	P	V
		2486.12	40.86	-13.14	54	41.12	27.46	5.46	33.18	100	297	A	V



802.11b CH 11 2462MHz	*	2462.041	100.77	-	-	101.12	27.41	5.44	33.2	109	230	P	H
	*	2461.039	98.1	-	-	98.45	27.41	5.44	33.2	109	230	A	H
		2498	52.19	-21.81	74	52.4	27.5	5.46	33.17	109	230	P	H
		2499.72	43.22	-10.78	54	43.43	27.5	5.46	33.17	109	230	A	H
													H
													H
	*	2462.041	97.97	-	-	98.32	27.41	5.44	33.2	367	301	P	V
	*	2463.126	95.1	-	-	95.45	27.41	5.44	33.2	367	301	A	V
		2497.24	50.78	-23.22	74	50.99	27.5	5.46	33.17	367	301	P	V
		2499.36	41.23	-12.77	54	41.44	27.5	5.46	33.17	367	301	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	43.7	-30.3	74	65.27	31.46	7.58	60.61	100	0	P	H
													H
													H
													H
		4824	41.73	-32.27	74	63.3	31.46	7.58	60.61	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	38.47	-35.53	74	59.73	31.56	7.7	60.52	100	0	P	H
		7313	43.61	-30.39	74	58.87	36.18	9.49	60.93	100	0	P	H
													H
													H
		4872	37.73	-36.27	74	58.99	31.56	7.7	60.52	100	0	P	V
		7313	41.48	-32.52	74	56.74	36.18	9.49	60.93	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	43.69	-30.31	74	64.52	31.66	7.93	60.42	100	0	P	H
		7386	40.29	-33.71	74	55.58	36.37	9.53	61.19	100	0	P	H
													H
													H
		4926	43.99	-30.01	74	64.82	31.66	7.93	60.42	100	0	P	V
		7386	40.7	-33.3	74	55.99	36.37	9.53	61.19	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		2388.84	51.59	-22.41	74	52.21	27.23	5.39	33.24	109	233	P	H
		2390	41.74	-12.26	54	42.34	27.23	5.39	33.22	109	233	A	H
	*	2414	98.56	-	-	99.08	27.28	5.42	33.22	109	233	P	H
	*	2414	90.02	-	-	90.54	27.28	5.42	33.22	109	233	A	H
													H
													H
		2389.65	54.21	-19.79	74	54.83	27.23	5.39	33.24	114	296	P	V
		2389.92	43.03	-10.97	54	43.63	27.23	5.39	33.22	114	296	A	V
	*	2414	101.92	-	-	102.44	27.28	5.42	33.22	114	296	P	V
	*	2414	93.33	-	-	93.85	27.28	5.42	33.22	114	296	A	V
													V
													V
802.11g CH 06 2437MHz		2339.79	51.43	-22.57	74	52.25	27.1	5.33	33.25	100	234	P	H
		2381.37	41.3	-12.7	54	41.96	27.19	5.39	33.24	100	234	A	H
	*	2435	99.04	-	-	99.51	27.32	5.42	33.21	100	234	P	H
	*	2439	91.63	-	-	92.05	27.37	5.42	33.21	100	234	A	H
		2493.92	50.73	-23.27	74	50.94	27.5	5.46	33.17	100	234	P	H
		2489.44	41.91	-12.09	54	42.13	27.5	5.46	33.18	100	234	A	H
		2384.97	51.64	-22.36	74	52.3	27.19	5.39	33.24	100	296	P	V
		2384.61	42.49	-11.51	54	43.15	27.19	5.39	33.24	100	296	A	V
	*	2439	100.57	-	-	100.99	27.37	5.42	33.21	100	296	P	V
	*	2435	92.48	-	-	92.95	27.32	5.42	33.21	100	296	A	V
		2489.84	51.81	-22.19	74	52.03	27.5	5.46	33.18	100	296	P	V
		2490.6	41.61	-12.39	54	41.83	27.5	5.46	33.18	100	296	A	V



802.11g CH 11 2462MHz	*	2460	99.17	-	-	99.52	27.41	5.44	33.2	270	238	P	H
	*	2460	91.61	-	-	91.96	27.41	5.44	33.2	270	238	A	H
		2484.96	54.4	-19.6	74	54.66	27.46	5.46	33.18	270	238	P	H
		2483.52	42.74	-11.26	54	43	27.46	5.46	33.18	270	238	A	H
													H
													H
	*	2460	99.21	-	-	99.56	27.41	5.44	33.2	115	298	P	V
	*	2460	91.62	-	-	91.97	27.41	5.44	33.2	115	298	A	V
		2484	51.98	-22.02	74	52.24	27.46	5.46	33.18	115	298	P	V
		2483.6	42.3	-11.7	54	42.56	27.46	5.46	33.18	115	298	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	36.95	-37.05	74	58.52	31.46	7.58	60.61	100	0	P	H
													H
													H
													H
		4824	37.12	-36.88	74	58.69	31.46	7.58	60.61	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	35.21	-38.79	74	56.47	31.56	7.7	60.52	100	0	P	H
		7309	39.84	-34.16	74	55.1	36.18	9.49	60.93	100	0	P	H
													H
													H
		4872	36.24	-37.76	74	57.5	31.56	7.7	60.52	100	0	P	V
		7309	41.33	-32.67	74	56.59	36.18	9.49	60.93	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	36.73	-37.27	74	57.56	31.66	7.93	60.42	100	0	P	H
		7386	40.49	-33.51	74	55.78	36.37	9.53	61.19	100	0	P	H
													H
													H
		4926	37.69	-36.31	74	58.52	31.66	7.93	60.42	100	0	P	V
		7386	40.6	-33.4	74	55.89	36.37	9.53	61.19	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		2356.26	50.78	-23.22	74	51.56	27.14	5.33	33.25	110	233	P	H
		2389.83	41.3	-12.7	54	41.9	27.23	5.39	33.22	110	233	A	H
	*	2414	95.24	-	-	95.76	27.28	5.42	33.22	110	233	P	H
	*	2414	87.72	-	-	88.24	27.28	5.42	33.22	110	233	A	H
													H
													H
		2388.84	51.46	-22.54	74	52.08	27.23	5.39	33.24	112	295	P	V
		2389.92	41.98	-12.02	54	42.58	27.23	5.39	33.22	112	295	A	V
	*	2414	99.23	-	-	99.75	27.28	5.42	33.22	112	295	P	V
	*	2414	90.81	-	-	91.33	27.28	5.42	33.22	112	295	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2363.91	51.3	-22.7	74	52.02	27.14	5.39	33.25	104	235	P	H
		2389.92	41.42	-12.58	54	42.02	27.23	5.39	33.22	104	235	A	H
	*	2439	97.19	-	-	97.61	27.37	5.42	33.21	104	235	P	H
	*	2439	89.52	-	-	89.94	27.37	5.42	33.21	104	235	A	H
		2483.68	51.16	-22.84	74	51.42	27.46	5.46	33.18	104	235	P	H
		2488.52	41.83	-12.17	54	42.05	27.5	5.46	33.18	104	235	A	H
		2385.06	52.29	-21.71	74	52.95	27.19	5.39	33.24	100	296	P	V
		2385.33	42.15	-11.85	54	42.81	27.19	5.39	33.24	100	296	A	V
	*	2435	98.4	-	-	98.87	27.32	5.42	33.21	100	296	P	V
	*	2435	90.32	-	-	90.79	27.32	5.42	33.21	100	296	A	V
		2489	51.18	-22.82	74	51.4	27.5	5.46	33.18	100	296	P	V
		2488.64	41.53	-12.47	54	41.75	27.5	5.46	33.18	100	296	A	V



802.11n HT20 CH 11 2462MHz	*	2460	95.86	-	-	96.21	27.41	5.44	33.2	108	235	P	H
	*	2460	88.55	-	-	88.9	27.41	5.44	33.2	108	235	A	H
		2483.56	51.84	-22.16	74	52.1	27.46	5.46	33.18	108	235	P	H
		2483.52	41.93	-12.07	54	42.19	27.46	5.46	33.18	108	235	A	H
													H
													H
	*	2460	96.75	-	-	97.1	27.41	5.44	33.2	117	298	P	V
	*	2460	88.67	-	-	89.02	27.41	5.44	33.2	117	298	A	V
		2493.12	50.96	-23.04	74	51.17	27.5	5.46	33.17	117	298	P	V
		2483.56	41.67	-12.33	54	41.93	27.46	5.46	33.18	117	298	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	36.5	-37.5	74	58.07	31.46	7.58	60.61	100	0	P	H
													H
													H
													H
		4824	36.16	-37.84	74	57.73	31.46	7.58	60.61	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4872	35.69	-38.31	74	56.95	31.56	7.7	60.52	100	0	P	H
		7309	40.66	-33.34	74	55.92	36.18	9.49	60.93	100	0	P	H
													H
													H
		4872	35.55	-38.45	74	56.81	31.56	7.7	60.52	100	0	P	V
		7309	40.02	-33.98	74	55.28	36.18	9.49	60.93	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4926	37.4	-36.6	74	58.23	31.66	7.93	60.42	100	0	P	H
		7386	40.46	-33.54	74	55.75	36.37	9.53	61.19	100	0	P	H
													H
													H
		4926	37.79	-36.21	74	58.62	31.66	7.93	60.42	100	0	P	V
		7386	40.3	-33.7	74	55.59	36.37	9.53	61.19	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 802.11b (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	23.35	-16.65	40	29.42	26.1	0.65	32.82			P	H
		48.63	13.81	-26.19	40	29.63	16.03	0.93	32.78			P	H
		162.03	20.54	-22.96	43.5	35.06	16.84	1.33	32.69			P	H
		360.9	21.86	-24.14	46	31.26	21.46	1.94	32.8			P	H
		619.2	25.61	-20.39	46	30.32	25.69	2.62	33.02			P	H
		947.5	32.12	-13.88	46	30.67	29.95	3.29	31.79	140	2	P	H
													H
													H
													H
													H
													H
													H
													H
		30.27	23	-17	40	29.07	26.1	0.65	32.82			P	V
		50.79	19.8	-20.2	40	36.45	15.2	0.93	32.78			P	V
		162.03	20.51	-22.99	43.5	35.03	16.84	1.33	32.69			P	V
		427.4	23.16	-22.84	46	31.01	22.85	2.16	32.86			P	V
		714.4	26.87	-19.13	46	30.37	26.65	2.82	32.97			P	V
		948.9	31.61	-14.39	46	30.12	29.97	3.29	31.77	100	0	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 :	Tsung Lee and Elvis Chen and Stan Hsieh	Temperature :	21~23°C
		Relative Humidity :	60~63%

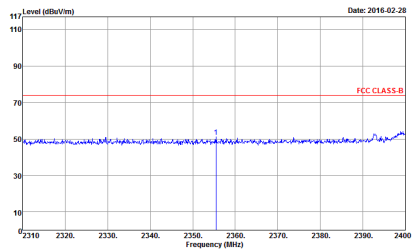
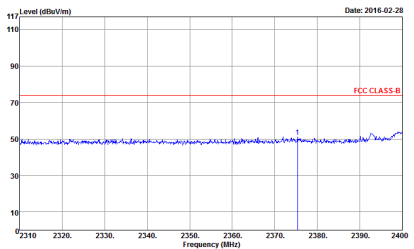
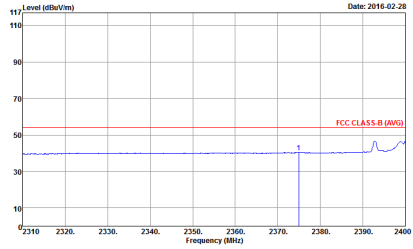
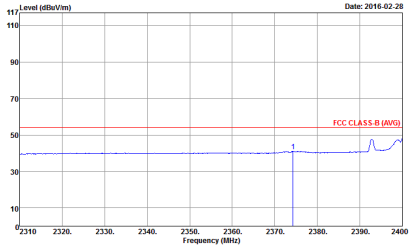
Note symbol

-L	Low channel location
-R	High channel location

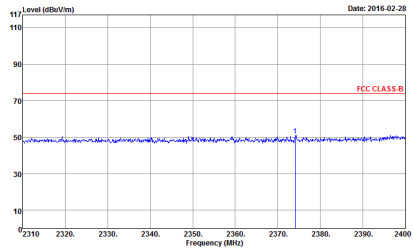
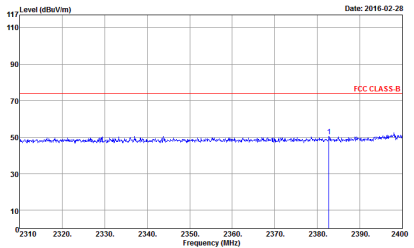
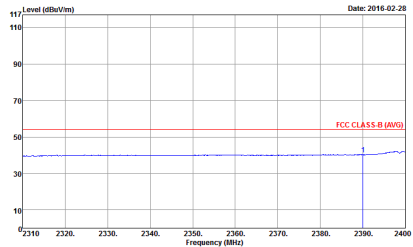
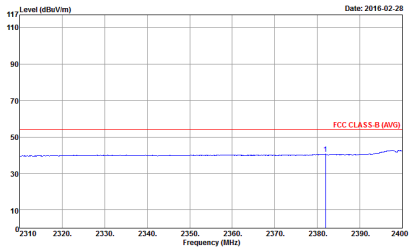


2.4GHz 2400~2483.5MHz

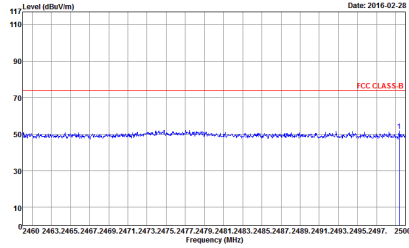
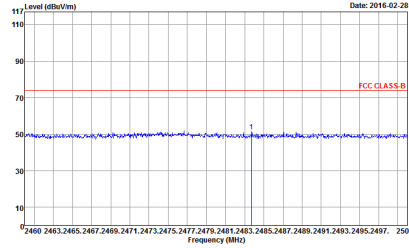
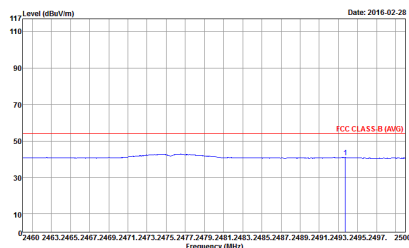
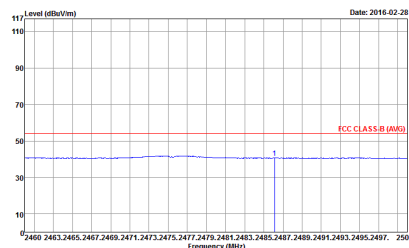
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 7</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 7</p></div>
Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 7</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 7</p></div>

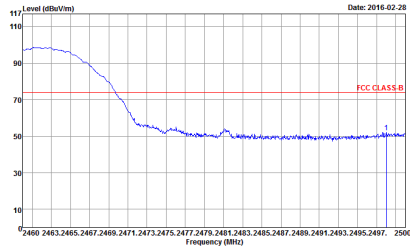
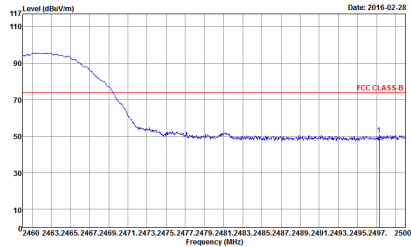
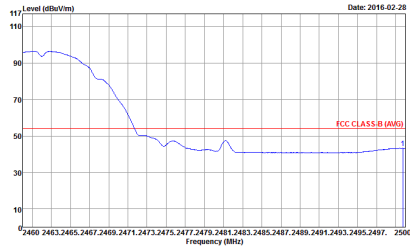
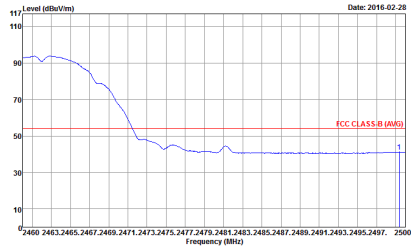


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Date: 2016-02-28</p><p>FCC CLASS-B</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>	<div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Date: 2016-02-28</p><p>FCC CLASS-B</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>
Avg.	<div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Date: 2016-02-28</p><p>FCC CLASS-B (AVG)</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>	<div><p>Level (dBuV/m)</p><p>Frequency (MHz)</p><p>Date: 2016-02-28</p><p>FCC CLASS-B (AVG)</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B limit at approximately 75 dBuV/m. The blue trace shows the measured signal, which is mostly flat around 50 dBuV/m with a small peak at 2437 MHz.</p></div> <div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B limit at approximately 75 dBuV/m. The blue trace shows the measured signal, which is mostly flat around 50 dBuV/m with a small peak at 2437 MHz.</p></div> <div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>
Avg.	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B (Ave) limit at approximately 55 dBuV/m. The blue trace shows the averaged signal, which is mostly flat around 40 dBuV/m with a small peak at 2437 MHz.</p></div> <div><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B (Ave) limit at approximately 55 dBuV/m. The blue trace shows the averaged signal, which is mostly flat around 40 dBuV/m with a small peak at 2437 MHz.</p></div> <div><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 8</p></div>

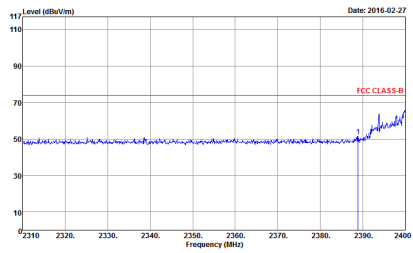
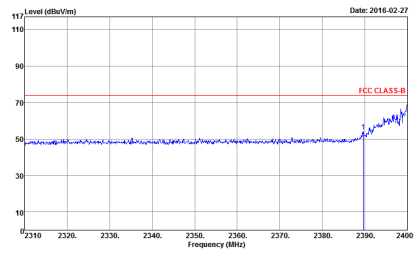
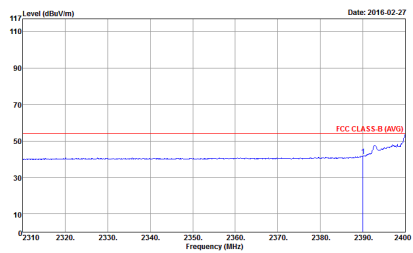
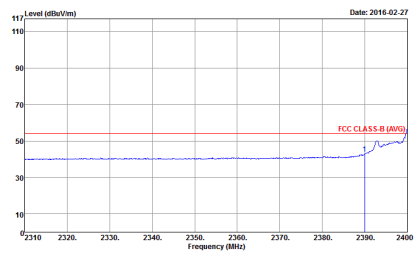


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 9</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 9</p></div>
Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 9</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 611330 Mode : 9</p></div>



2.4GHz 2400~2483.5MHz

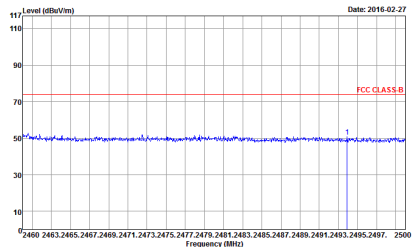
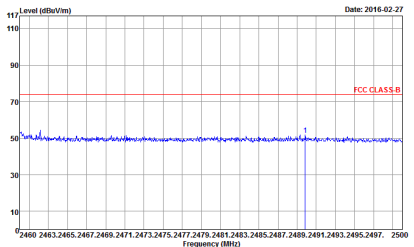
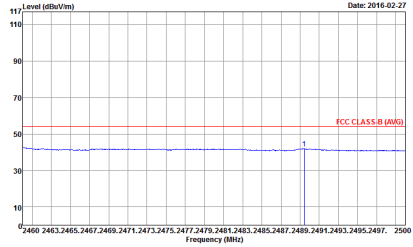
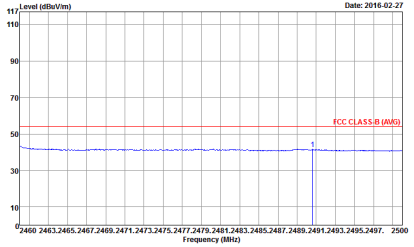
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : IO</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : IO</p></div>
Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : IO</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : IO</p></div>

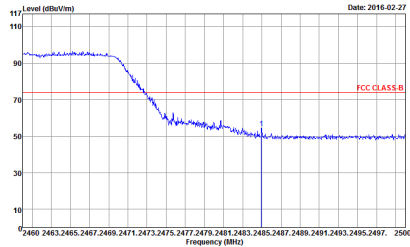
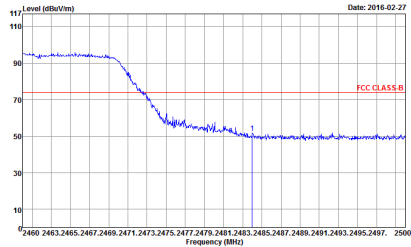
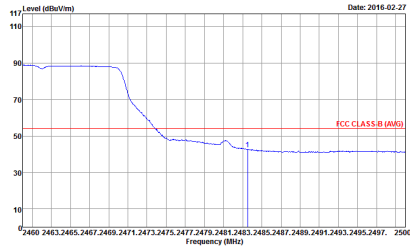
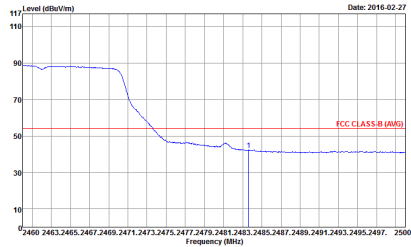


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m)</p><p>Date: 2016-02-27</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 11</p></div>	<div><p>Level (dBuV/m)</p><p>Date: 2016-02-27</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 11</p></div>
Avg.	<div><p>Level (dBuV/m)</p><p>Date: 2016-02-27</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 11</p></div>	<div><p>Level (dBuV/m)</p><p>Date: 2016-02-27</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 11</p></div>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The plot shows a blue signal line with a sharp peak at 2437 MHz. A red horizontal line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 11</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The plot shows a blue signal line with a sharp peak at 2437 MHz. A red horizontal line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 11</p></div>
Avg.	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The plot shows a blue signal line with a sharp peak at 2437 MHz. A red horizontal line indicates the FCC CLASS-B (Ave) limit at approximately 55 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 11</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The plot shows a blue signal line with a sharp peak at 2437 MHz. A red horizontal line indicates the FCC CLASS-B (Ave) limit at approximately 55 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 11</p></div>

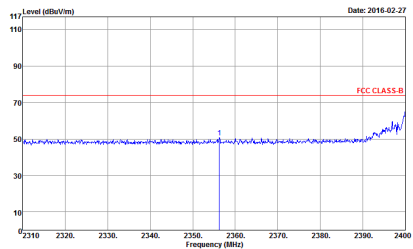
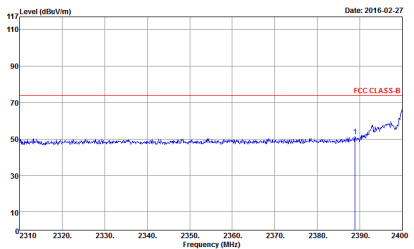
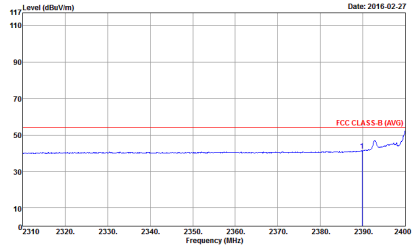
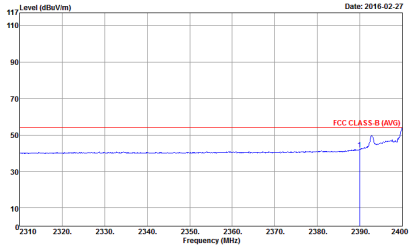


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The plot shows a signal level starting at approximately 90 dBuV/m at 2400 MHz, dropping to about 50 dBuV/m by 2462 MHz, and then remaining relatively flat. A red horizontal line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 12</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The plot shows a signal level starting at approximately 90 dBuV/m at 2400 MHz, dropping to about 50 dBuV/m by 2462 MHz, and then remaining relatively flat. A red horizontal line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 12</p></div>
Avg.	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation (Average). The plot shows a signal level starting at approximately 90 dBuV/m at 2400 MHz, dropping to about 50 dBuV/m by 2462 MHz, and then remaining relatively flat. A red horizontal line indicates the FCC CLASS-B (Ave) limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 12</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation (Average). The plot shows a signal level starting at approximately 90 dBuV/m at 2400 MHz, dropping to about 50 dBuV/m by 2462 MHz, and then remaining relatively flat. A red horizontal line indicates the FCC CLASS-B (Ave) limit at approximately 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (Ave) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 12</p></div>

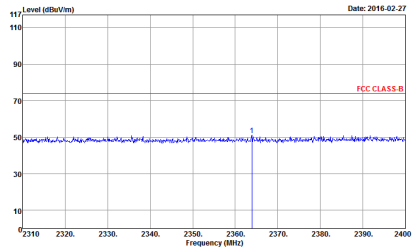
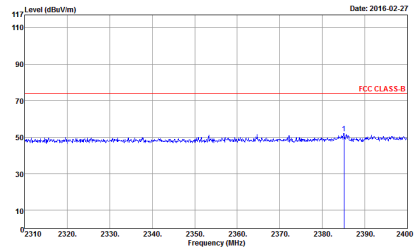
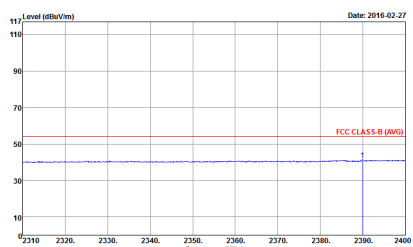
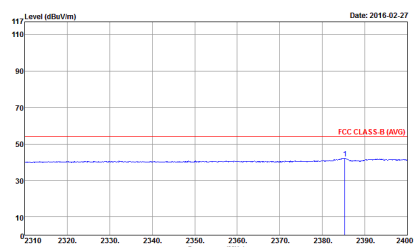


2.4GHz 2400~2483.5MHz

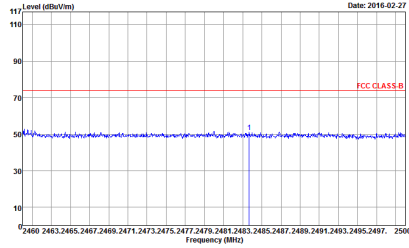
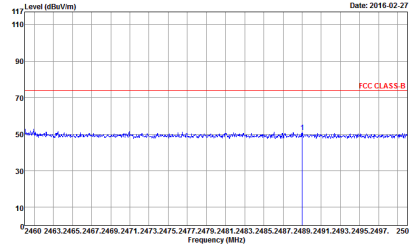
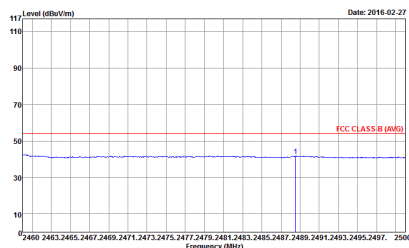
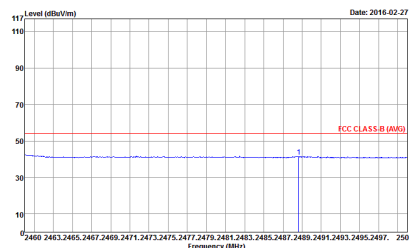
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 13</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 13</p></div>
Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 13</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 13</p></div>

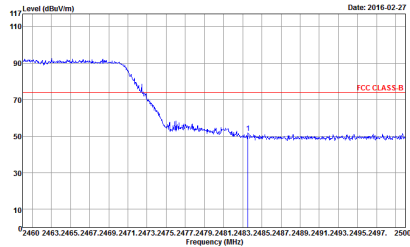
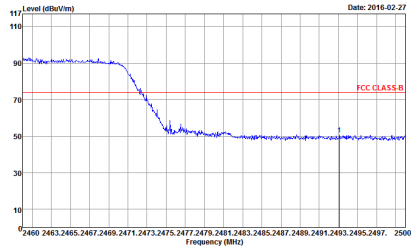
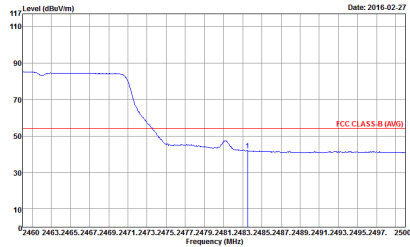
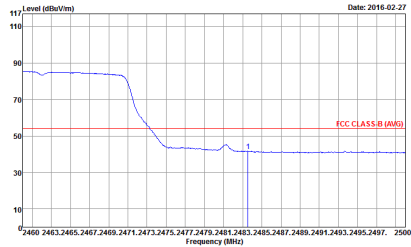


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Vertical
Peak	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 14</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 14</p></div>
Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 611330 Mode : 14</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 611330 Mode : 14</p></div>



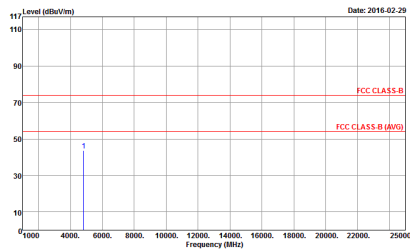
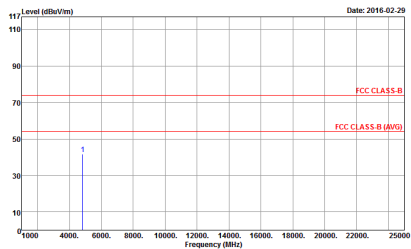
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The measured signal (blue line) shows a sharp peak at 2437 MHz reaching approximately 50 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 14</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B limit at approximately 70 dBuV/m. The measured signal (blue line) shows a sharp peak at 2437 MHz reaching approximately 50 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 14</p></div>
Avg.	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B (AVG) limit at approximately 55 dBuV/m. The measured signal (blue line) shows a sharp peak at 2437 MHz reaching approximately 50 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 14</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical orientation. The y-axis ranges from 10 to 117 dBuV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the FCC CLASS-B (AVG) limit at approximately 55 dBuV/m. The measured signal (blue line) shows a sharp peak at 2437 MHz reaching approximately 50 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:10000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 14</p></div>



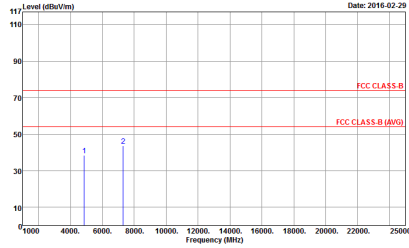
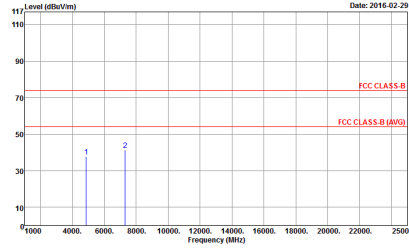
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization. The plot shows a signal level starting at approximately 90 dBuV/m, dropping sharply around 2462 MHz, and then leveling off at approximately 50 dBuV/m. A red horizontal line indicates the FCC CLASS-B limit at 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 15</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical polarization. The plot shows a signal level starting at approximately 90 dBuV/m, dropping sharply around 2462 MHz, and then leveling off at approximately 50 dBuV/m. A red horizontal line indicates the FCC CLASS-B limit at 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 15</p></div>
Avg.	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization (Average). The plot shows a signal level starting at approximately 90 dBuV/m, dropping sharply around 2462 MHz, and then leveling off at approximately 50 dBuV/m. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 15</p></div>	<div><p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical polarization (Average). The plot shows a signal level starting at approximately 90 dBuV/m, dropping sharply around 2462 MHz, and then leveling off at approximately 50 dBuV/m. A red horizontal line indicates the FCC CLASS-B (AVG) limit at 70 dBuV/m. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10 to 110 dBuV/m.</p><p>Site : 03CH10-HY Condition : FCC CLASS-B (AVG) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 611330 Mode : 15</p></div>



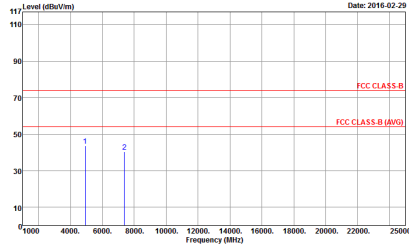
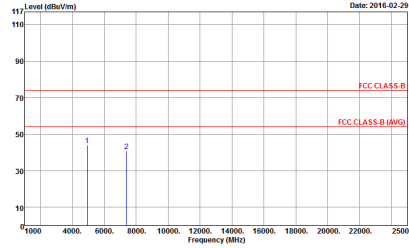
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 7</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 7</p></div>



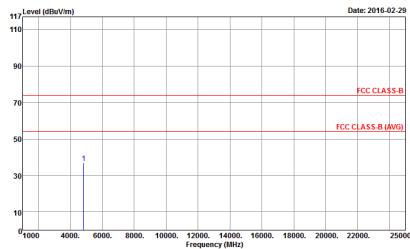
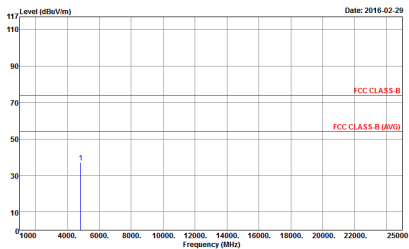
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 8</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 8</p></div>



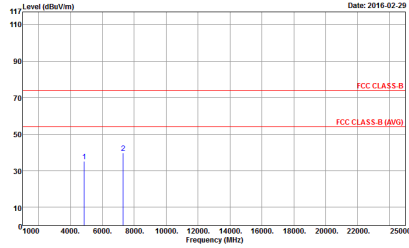
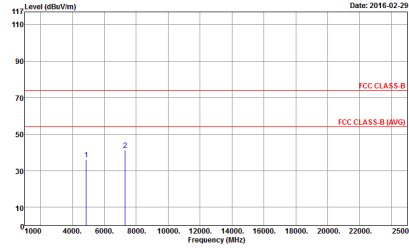
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 9</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 9</p></div>



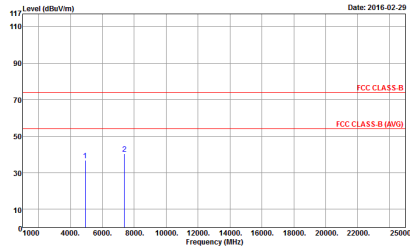
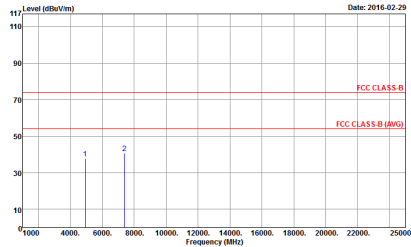
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : IO</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : IO</p></div>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : II</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : II</p></div>

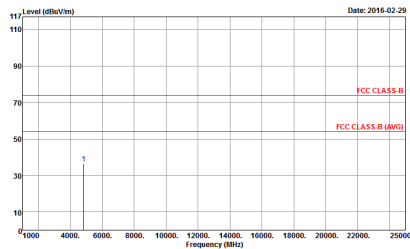
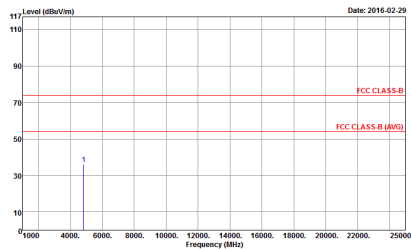


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 12</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 12</p></div>

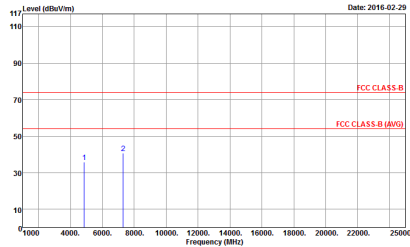
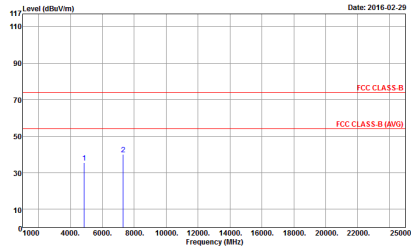


2.4GHz 2400~2483.5MHz

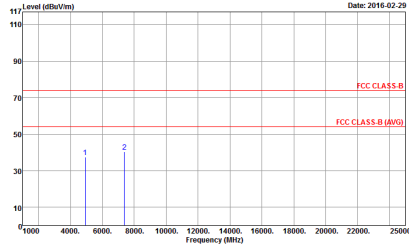
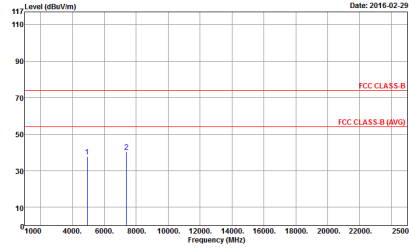
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 13</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 13</p></div>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : 14</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : 14</p></div>



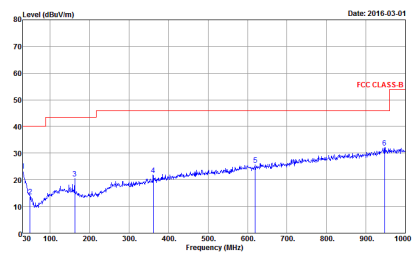
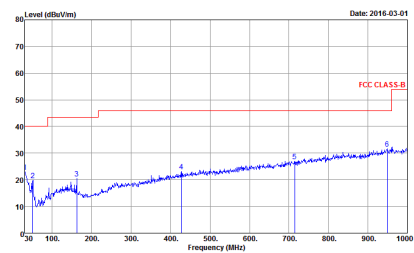
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 HORIZONTAL Detector : Peak Project : 611330 Mode : IS</p></div>	<div><p>Site : 03CH10-HY Condition : FCC CLASS-B 3m HORN_9170_406_0584 VERTICAL Detector : Peak Project : 611330 Mode : IS</p></div>



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11b (LF)

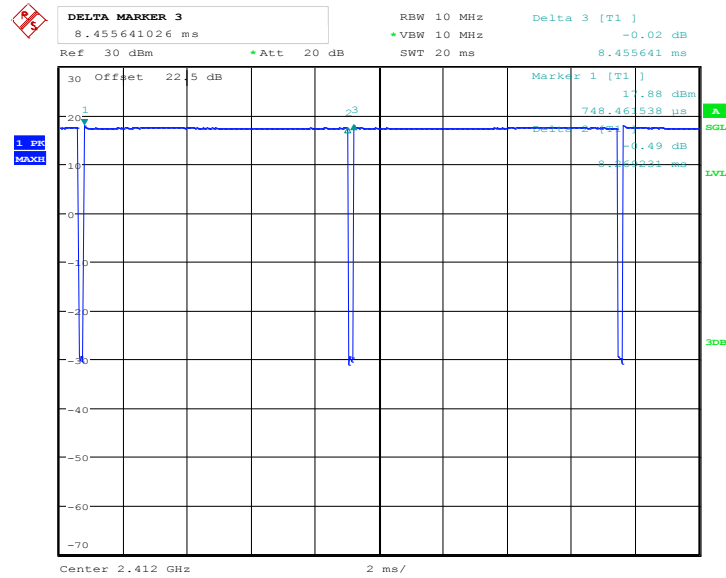
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b LF	
1	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m BI-LOG 6111D-LF HORIZONTAL Detector : Peak Project : 611330 Mode : 18</p>	 <p>Site : 03CH10-HY Condition : FCC CLASS-B 3m BI-LOG 6111D-LF VERTICAL Detector : Peak Project : 611330 Mode : 18</p>

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	97.8	8269.231	0.12	300Hz
1	802.11g	87.42	1372.923	0.73	1kHz
1	2.4GHz 802.11n HT20	86.29	1280.449	0.78	1kHz

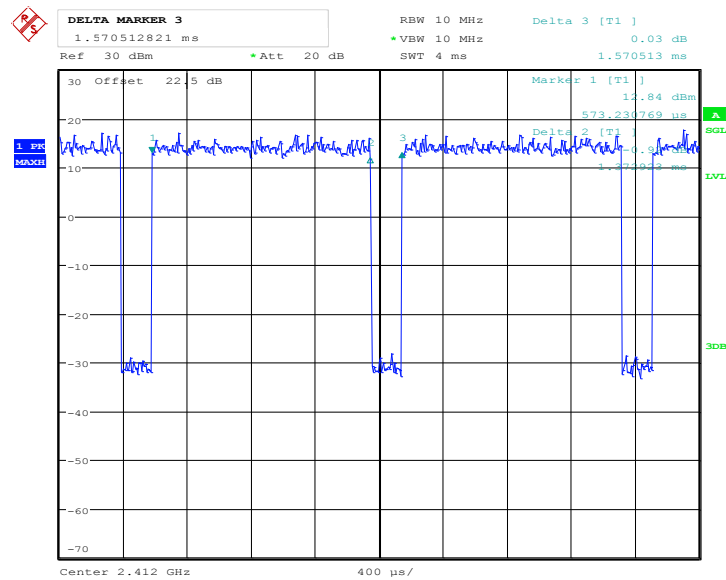


802.11b



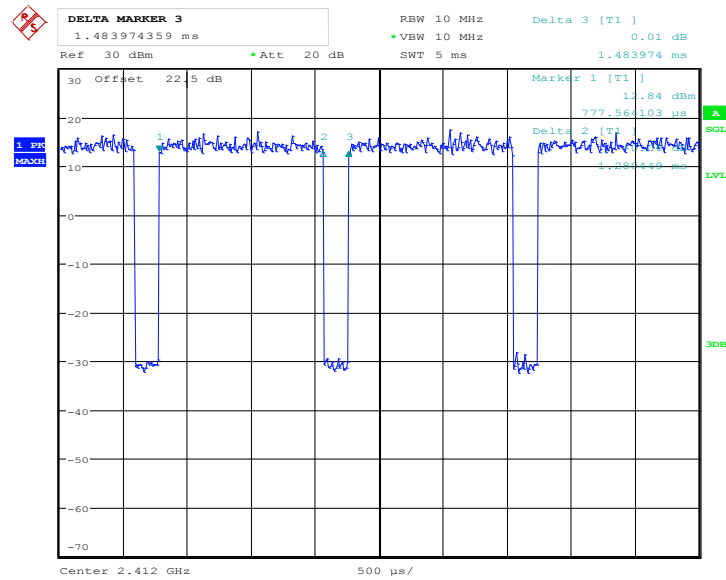
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802.11g



Date: 1.FEB.2016 19:48:42

802.11n HT20



Date: 1.FEB.2016 19:49:27