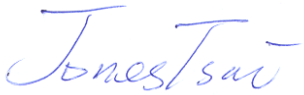
FCC RF Test Report

APPLICANT	:	Getac Technology Corporation.
EQUIPMENT	:	WLAN Module
BRAND NAME	:	AMPAK
MODEL NAME	:	AP6234
FCC ID	:	QYLAP6234E
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jan. 18, 2017 and testing was completed on Apr. 18, 2017. 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

TAF Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR710507-03C	Rev. 01	Initial issue of report	May 05, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.02 dB at 40.920 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.10 dB at 23.886 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Getac Technology Corporation.
5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, NFC, and GPS.

Product Specification subjective to this standard	
Sample 1	WWAN SKU
Sample 2	WLAN SKU
Antenna Type	WWAN: PIFA Antenna WLAN: Chip Antenna Bluetooth: Chip Antenna GPS : PATCH Antenna NFC: Loop Antenna

SKU	WWAN	Wifi+BT	GPS	RFID
SKU1	Brand name: Sierra Model name: EM7455	Brand name: AMPAK Model name: AP6234	Brand name: Ublox Model name: MAX-M8Q	support
SKU 2	not support	Brand name: AMPAK Model name: AP6234	Brand name:Ublox Model name: MAX-M8Q	support

1.3 Modification of EUT

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

1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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

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.**
	03CH13-HY

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

1.5 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 v04
- 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

a. 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: conduction emission (150 kHz to 30 MHz), radiation 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.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

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

2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

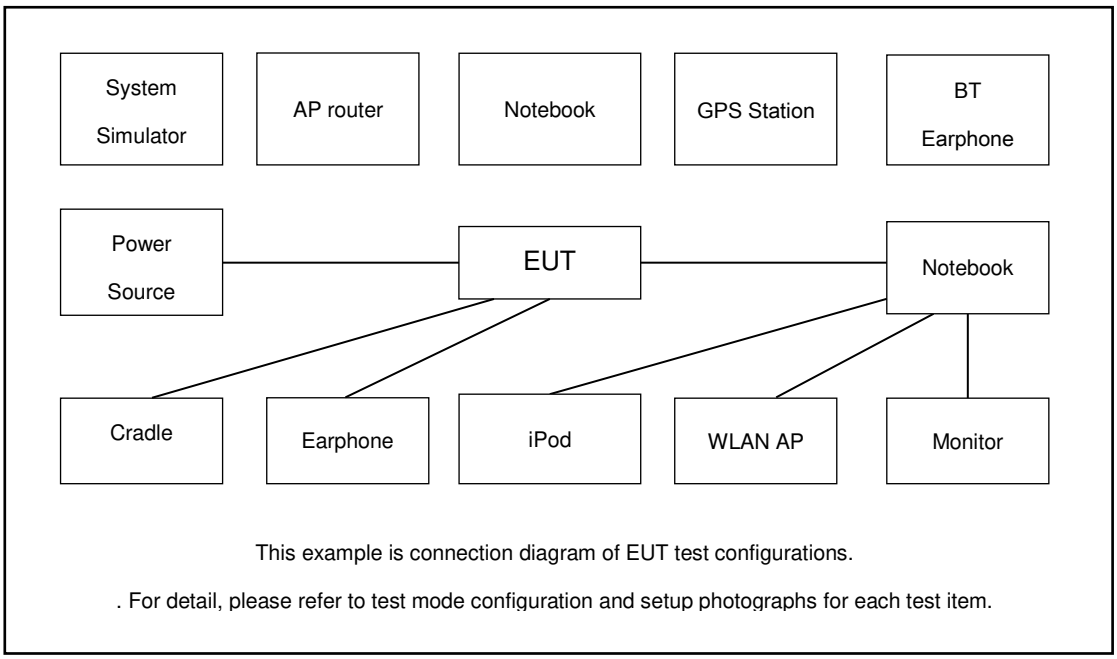
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : LTE Band 2 Idle + Bluetooth Link + WLAN (2.4GHz) Link + RFID On + TF + TC for Sample1
	Mode 2 : LTE Band 2 Idle + Bluetooth Link + WLAN (5GHz) Link + RFID On + TF + TC for Sample1
	Mode 3 : Bluetooth Link + WLAN (2.4GHz) Link + RFID On + TF + TC for Sample 2
	Mode 4 : Bluetooth Link + WLAN (5GHz) Link + RFID On + TF + TC for Sample 2

Remark:

1. The worst case of conducted emission is mode 4; only the test data of it was reported.
2. TC stands for Test Configuration, and consists of EX80 Cradle, USB flash drive (Front), USB Keyboard (side), USB Mouse (side), RJ-45 Link, and Adapter (WA-24Q12R).
3. TF stands for Test Function, and consists of H-Patten, MPEG4, GPS Rx, and Video Record (Rear Camera).

2.3 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 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.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	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
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
6.	USB Mouse	LOGITECH	M90	FCC DoC	shielded, 1.8m	N/A
7.	Keyboard	KRONE	SK900	FCC DoC	Shielded, 1.8m	N/A
8.	USB Flash Disk	Apacer	N/A	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, programmed RF utility “CMD”, is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

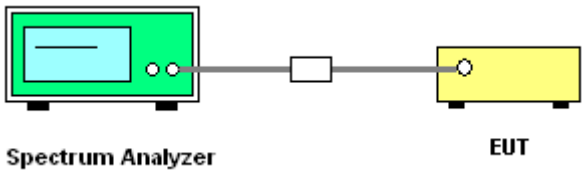
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

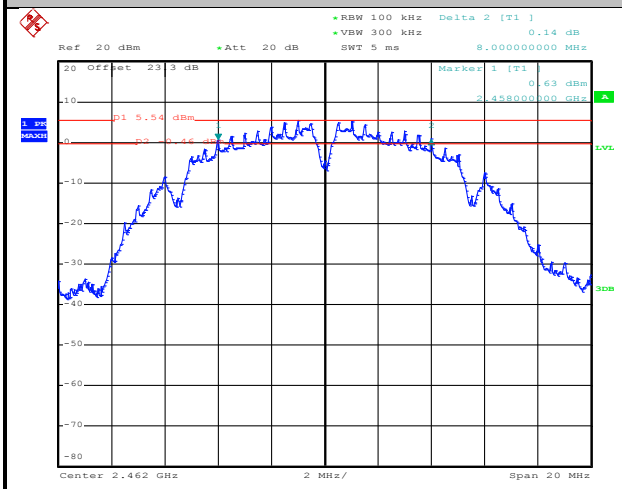
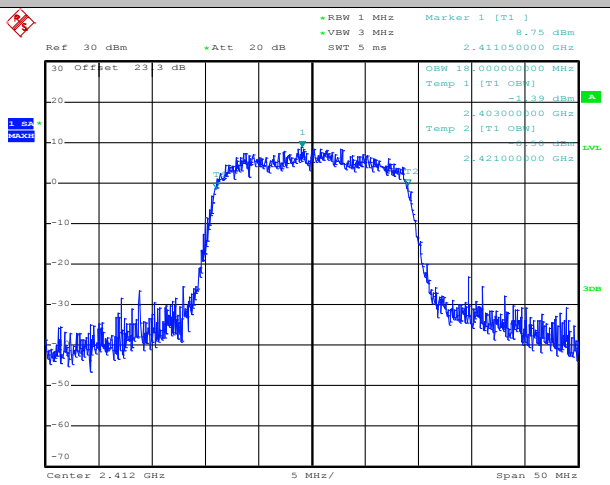
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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.

Minimum 6dB Bandwidth	Maximum 99% Occupied Bandwidth
	
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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.

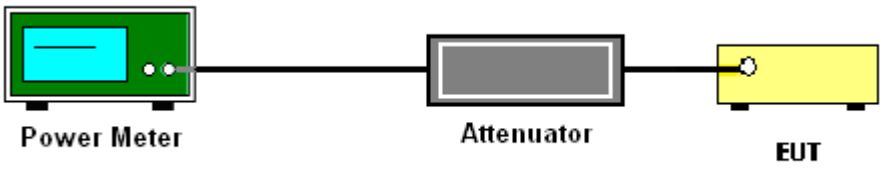
3.2.2 Measuring Instruments

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 v04 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.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

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.

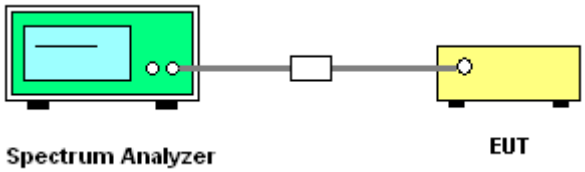
3.3.2 Measuring Instruments

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 v04
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.

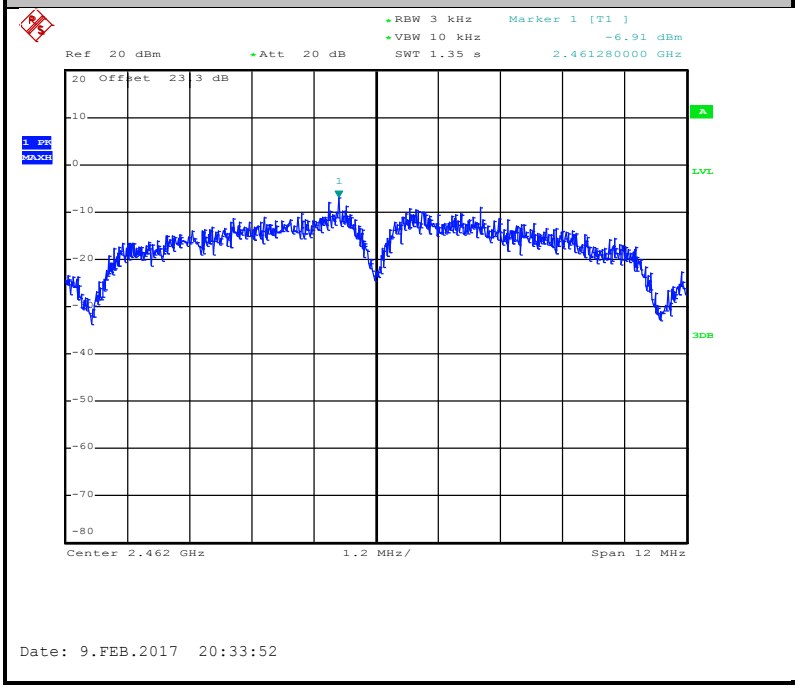
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/3kHz)



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

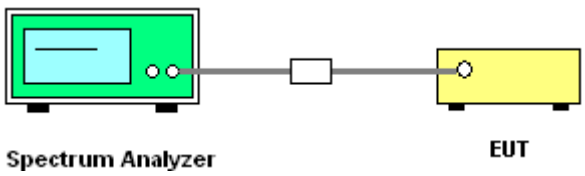
3.4.2 Measuring Instruments

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 v04.
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

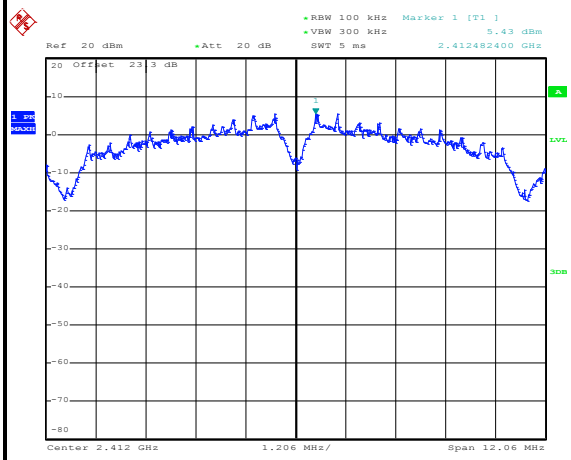


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

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

WLAN 802.11b Channel 01

100kHz PSD reference Level



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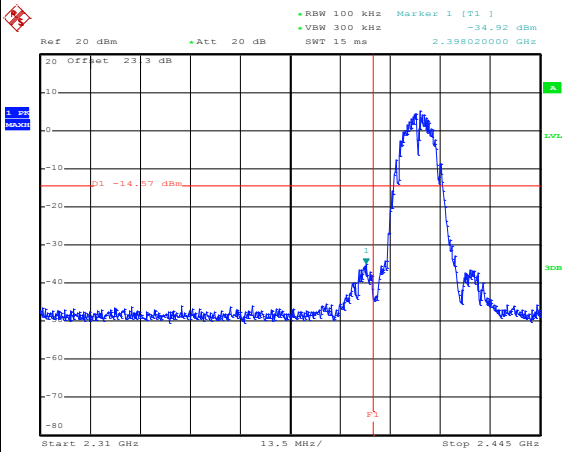
Low Channel Plot



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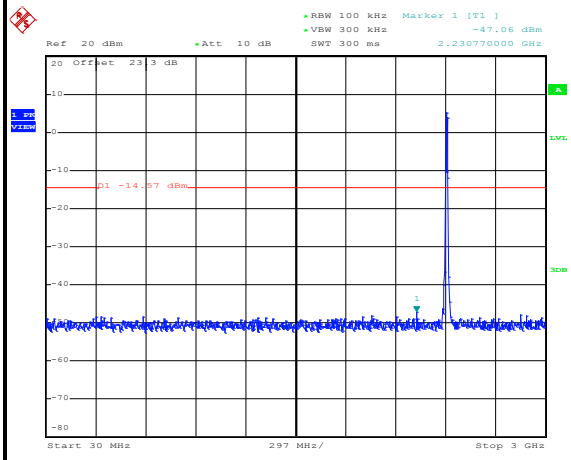
Spurious Emission 30MHz~3GHz



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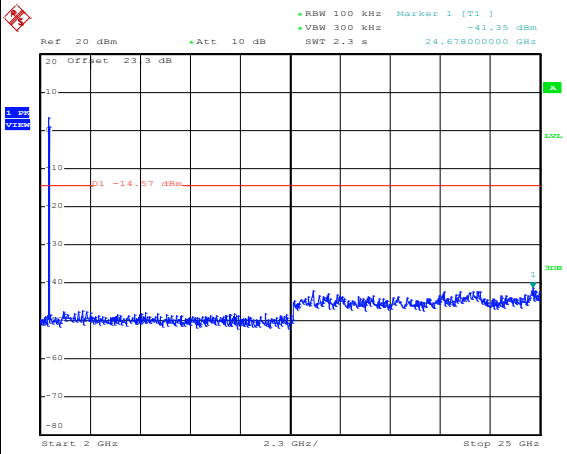
Spurious Emission 2GHz~25GHz



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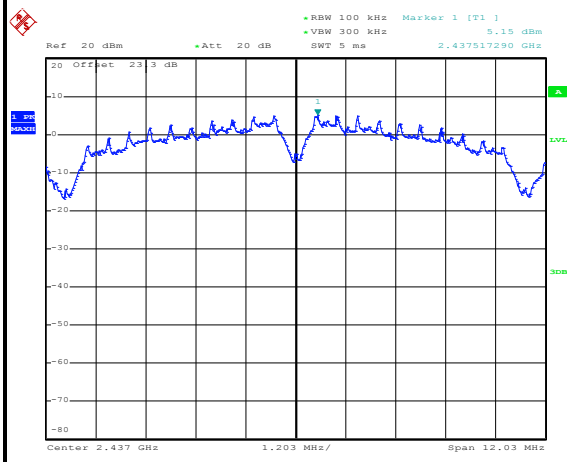
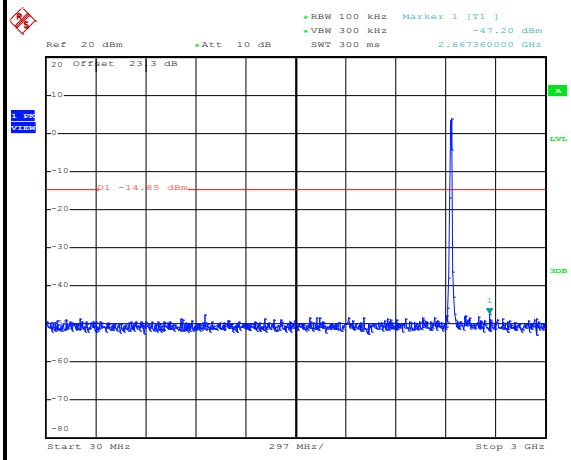
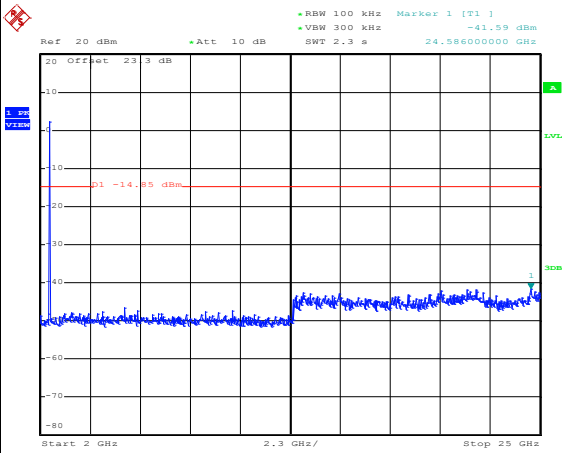
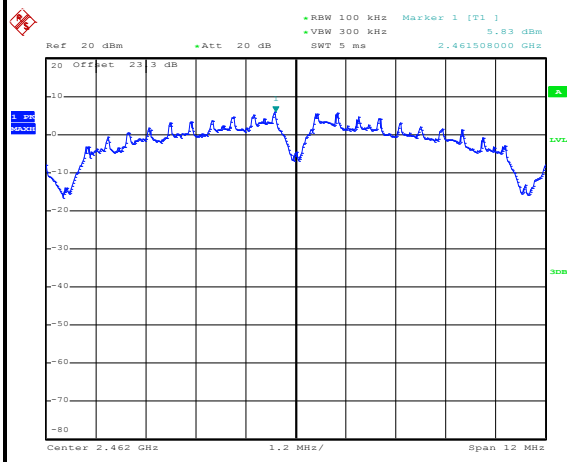
Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Shinming Liu

WLAN 802.11b Channel 06	
100kHz PSD reference Level	
	
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Shinming Liu

WLAN 802.11b Channel 11

100kHz PSD reference Level



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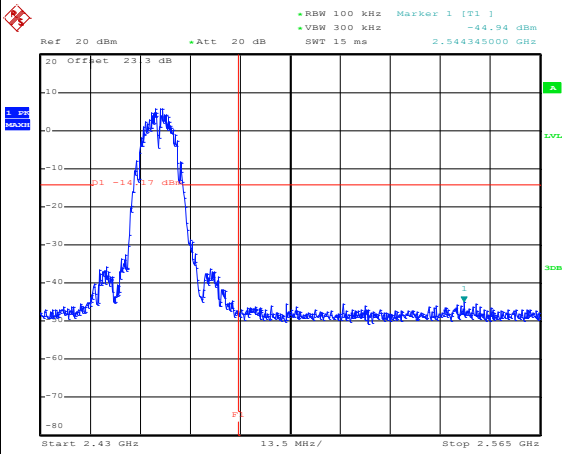
High Channel Plot



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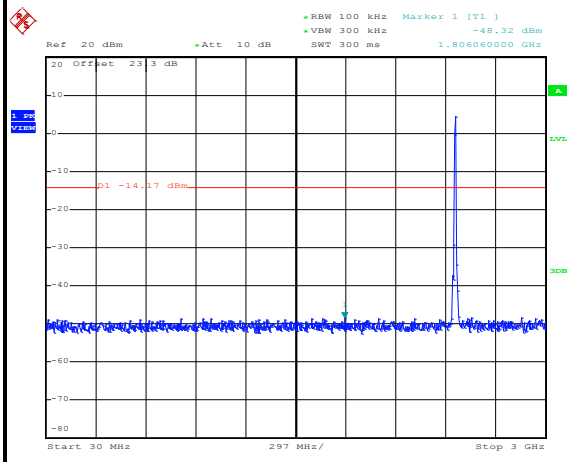
Spurious Emission 30MHz~3GHz



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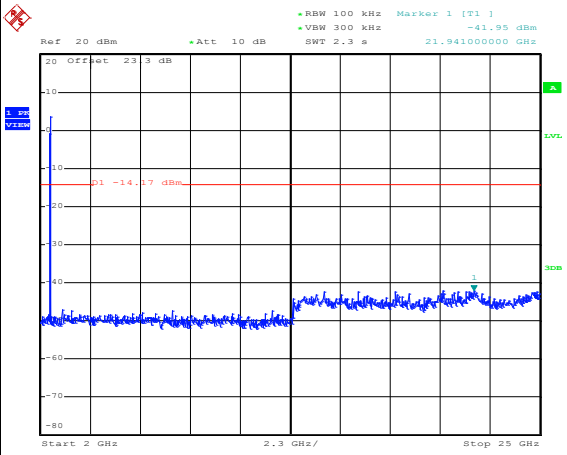
Spurious Emission 2GHz~25GHz

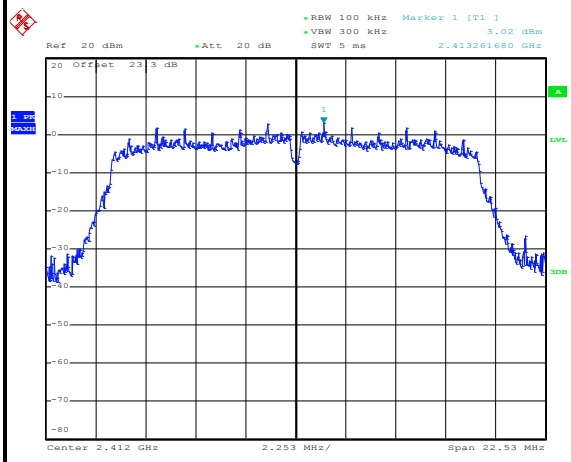


Date: 9.FEB.2017 20:35:02

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

WLAN 802.11g Channel 01

100kHz PSD reference Level



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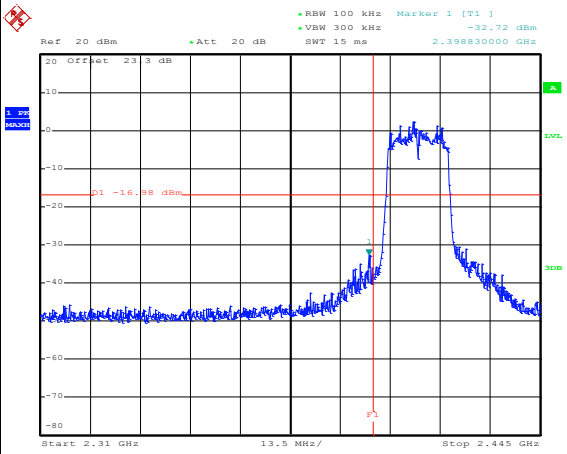
Low Channel Plot



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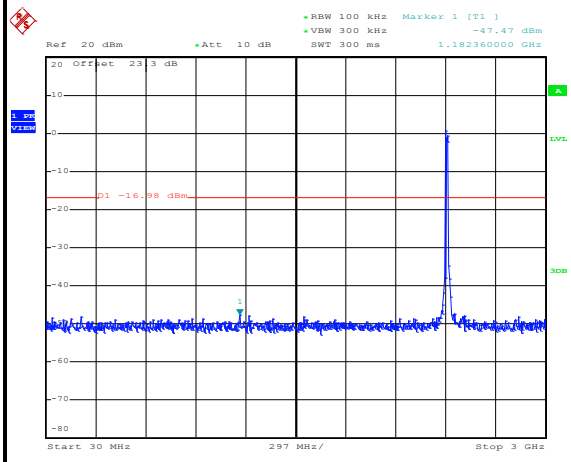
Spurious Emission 30MHz~3GHz



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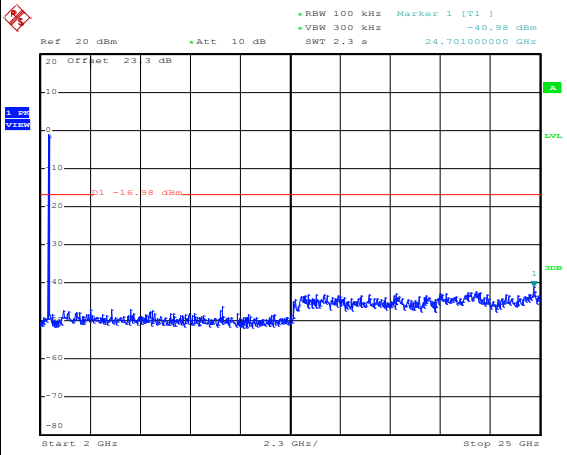
Spurious Emission 2GHz~25GHz



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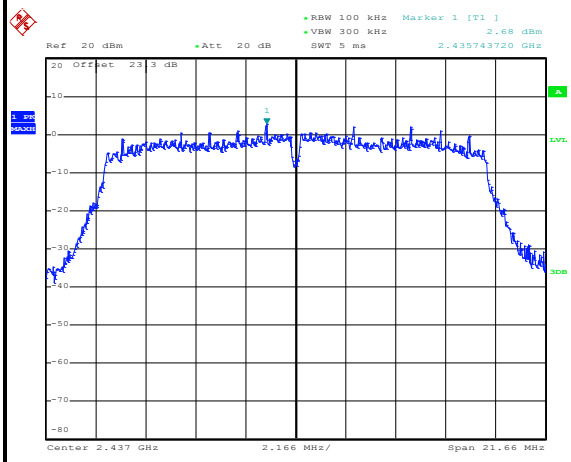
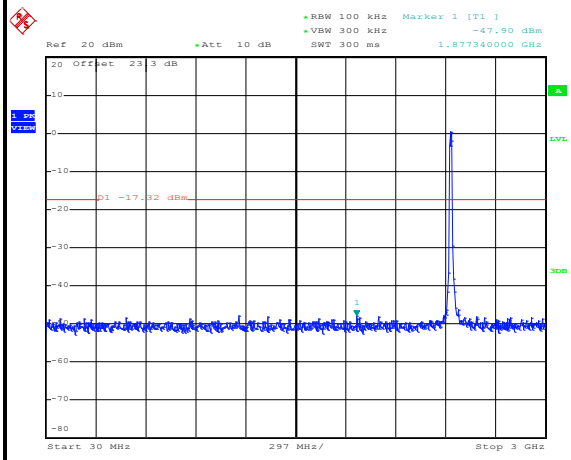
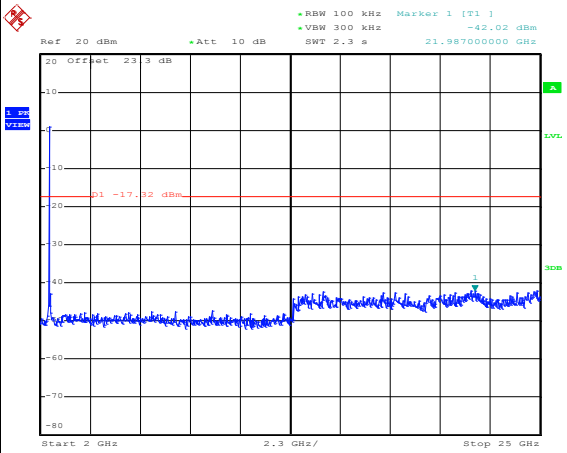
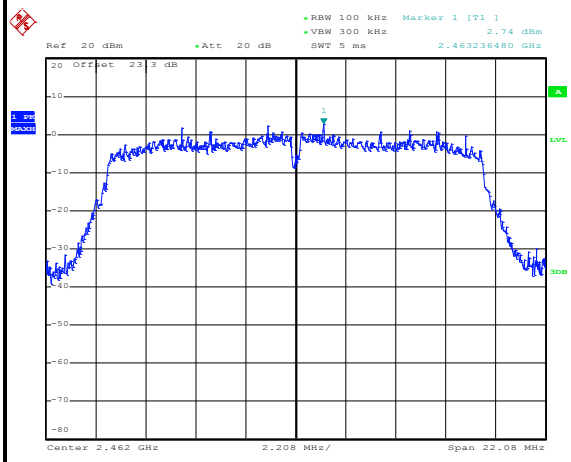
Test Mode :	802.11g	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Shinming Liu

WLAN 802.11g Channel 06	
100kHz PSD reference Level	
	
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

Test Mode :	802.11g	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Shinming Liu

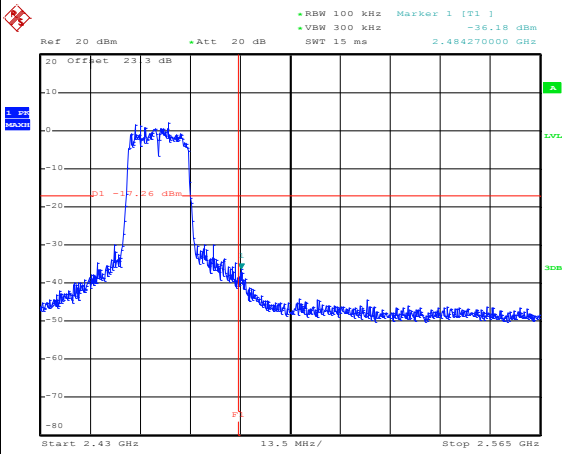
WLAN 802.11g Channel 11

100kHz PSD reference Level



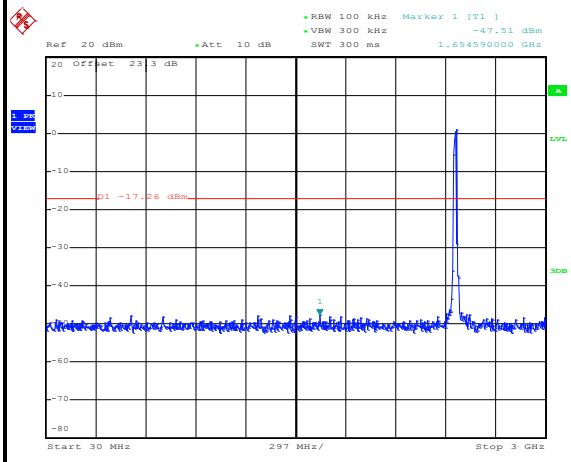
Date: 9.FEB.2017 20:49:59

High Channel Plot



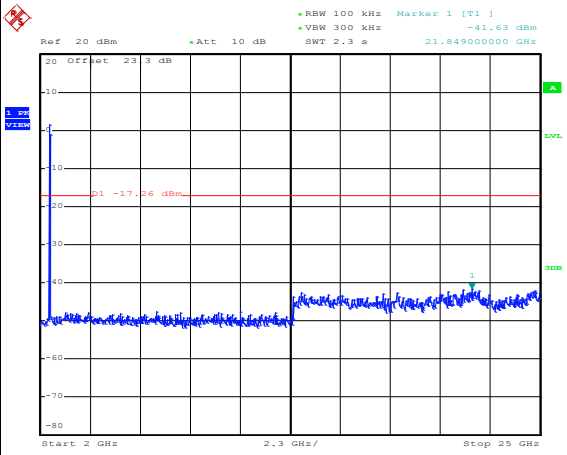
Date: 18.APR.2017 20:07:31

Spurious Emission 30MHz~3GHz



Date: 9.FEB.2017 20:50:13

Spurious Emission 2GHz~25GHz

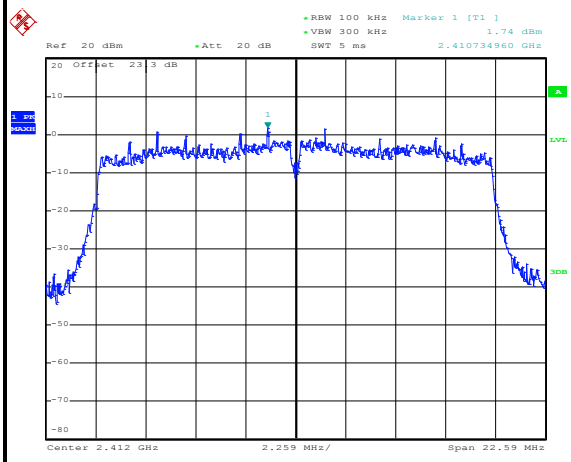


Date: 9.FEB.2017 20:50:22

Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Shinming Liu

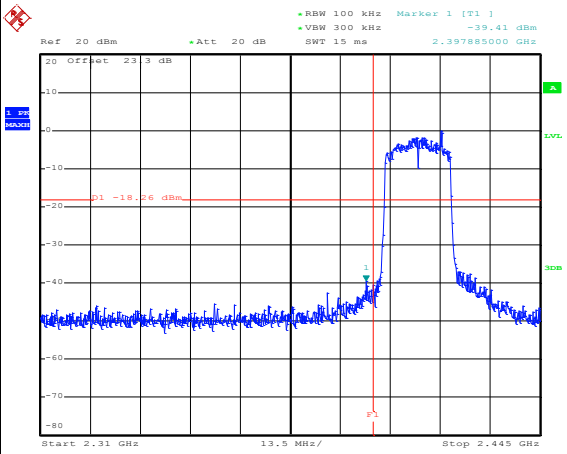
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



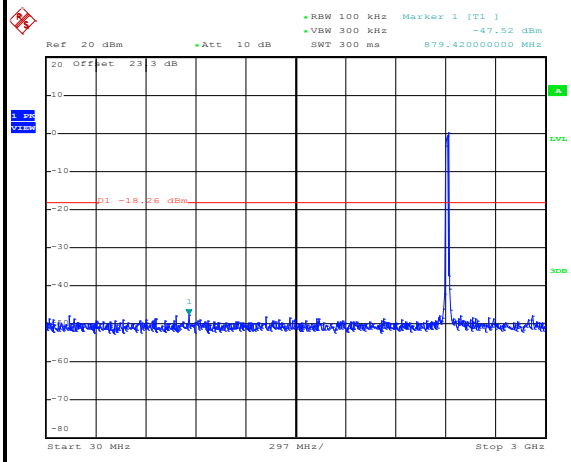
Date: 9.FEB.2017 20:54:10

Low Channel Plot



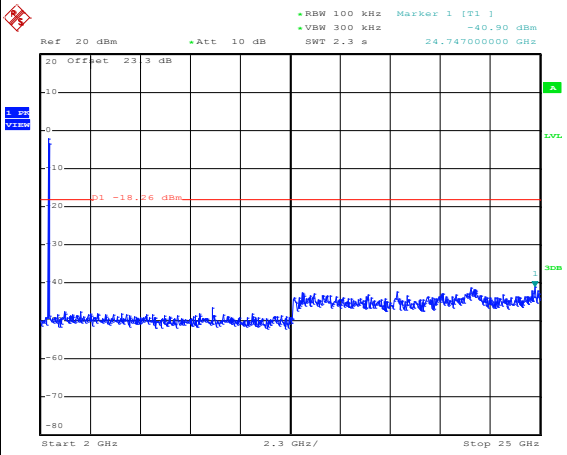
Date: 9.FEB.2017 20:55:05

Spurious Emission 30MHz~3GHz



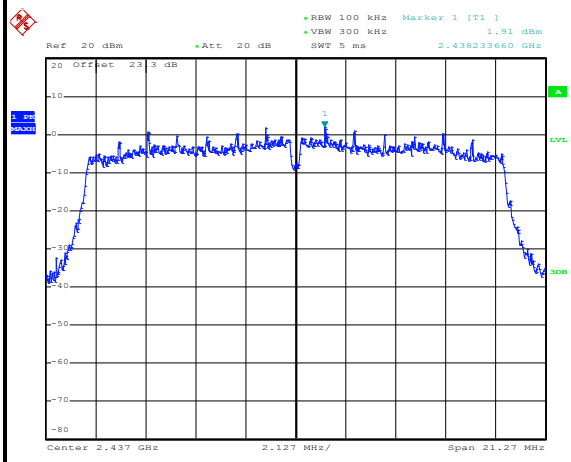
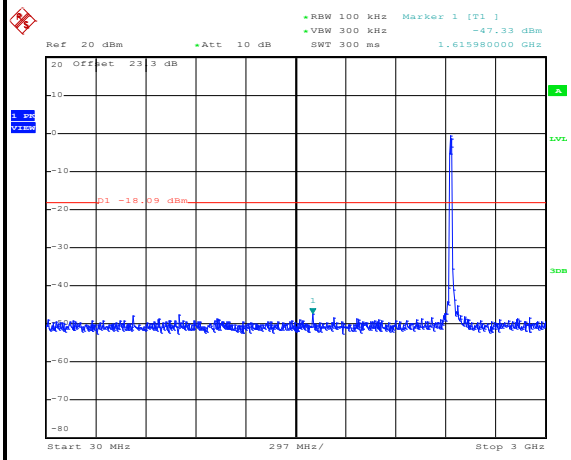
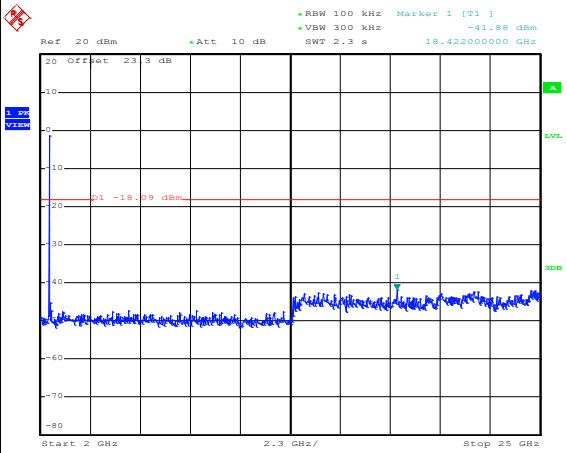
Date: 9.FEB.2017 20:55:39

Spurious Emission 2GHz~25GHz



Date: 9.FEB.2017 20:55:47

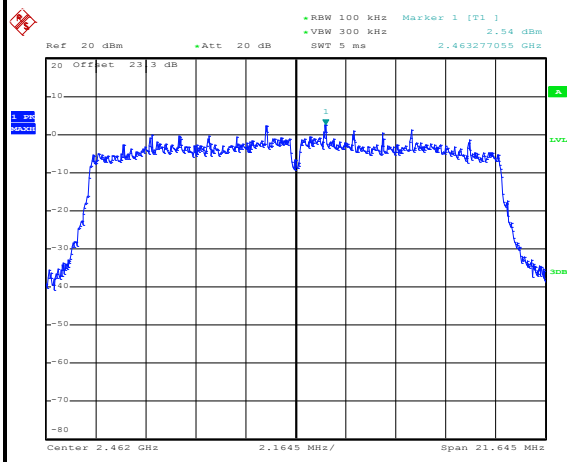
Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Shinming Liu

WLAN 802.11n HT20 Channel 06	
100kHz PSD reference Level	
 Date: 9.FEB.2017 20:58:56	
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
 Date: 9.FEB.2017 20:59:15	 Date: 9.FEB.2017 20:59:23

Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Shinming Liu

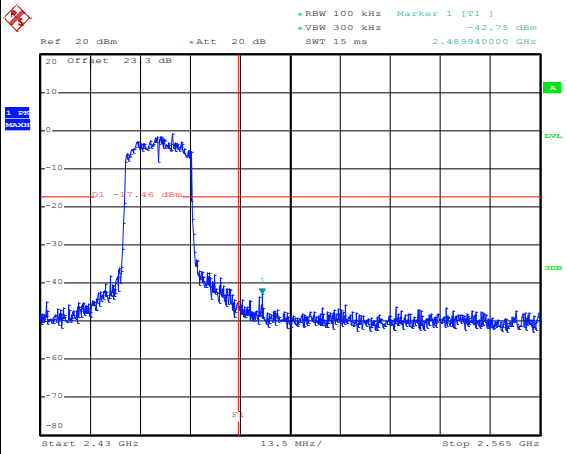
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



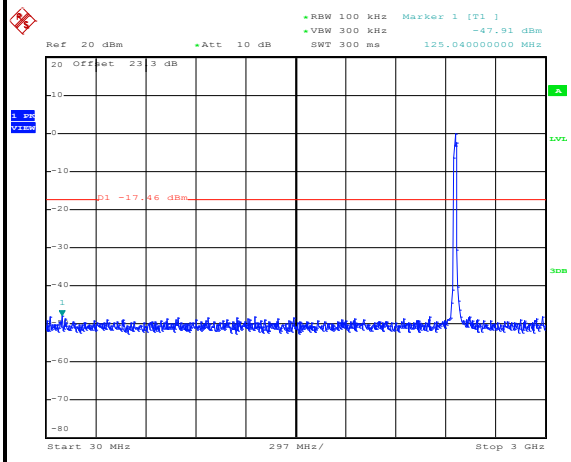
Date: 9.FEB.2017 21:03:11

High Channel Plot



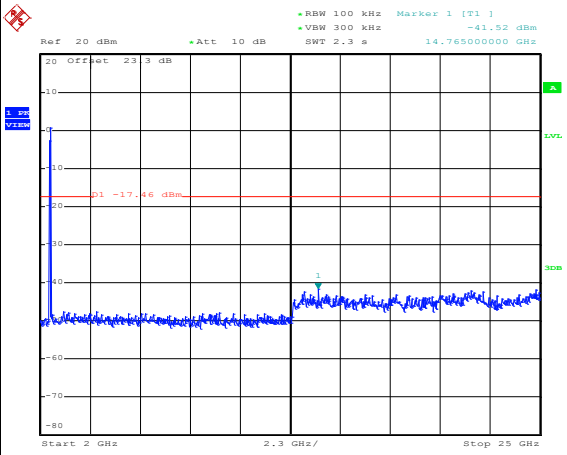
Date: 9.FEB.2017 21:03:32

Spurious Emission 30MHz~3GHz



Date: 9.FEB.2017 21:04:01

Spurious Emission 2GHz~25GHz



Date: 9.FEB.2017 21:04:09

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 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

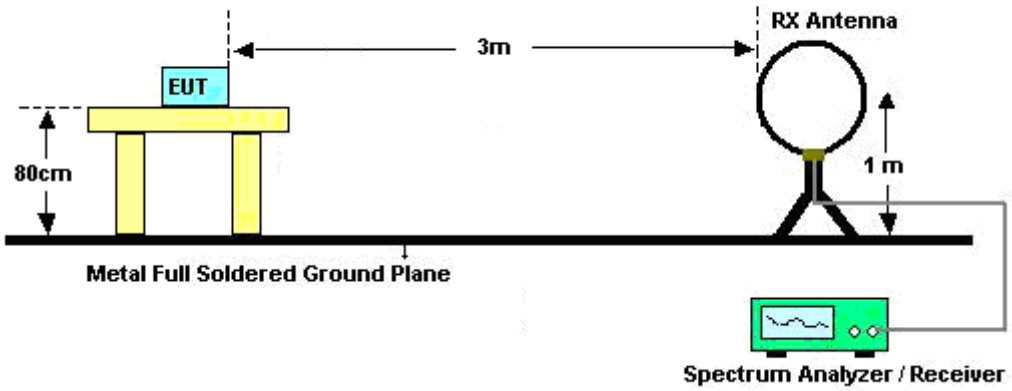
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

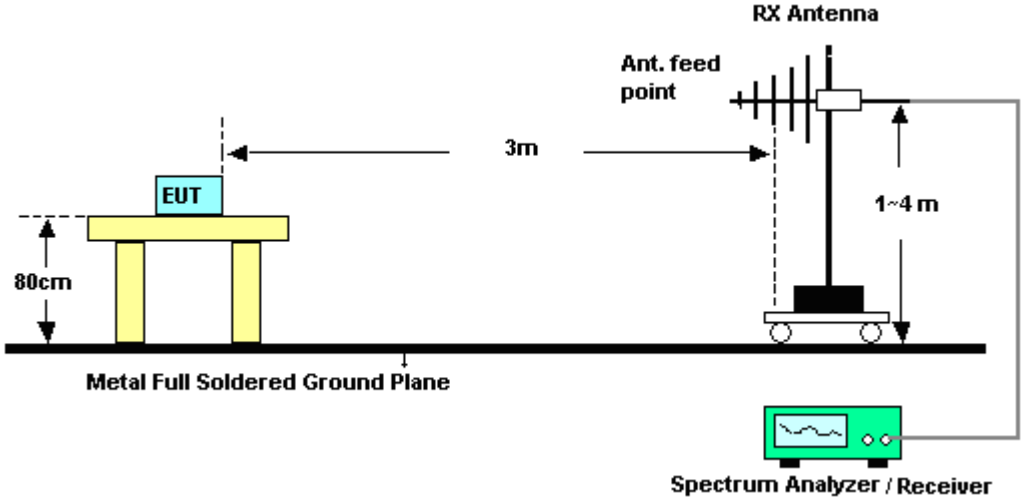
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

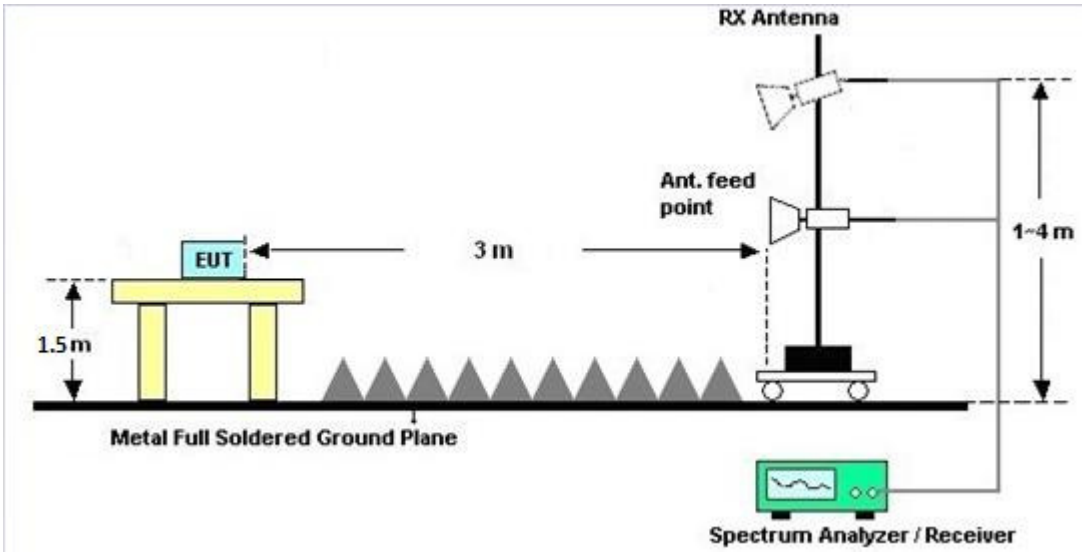
For radiated emissions below 30MHz



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 was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

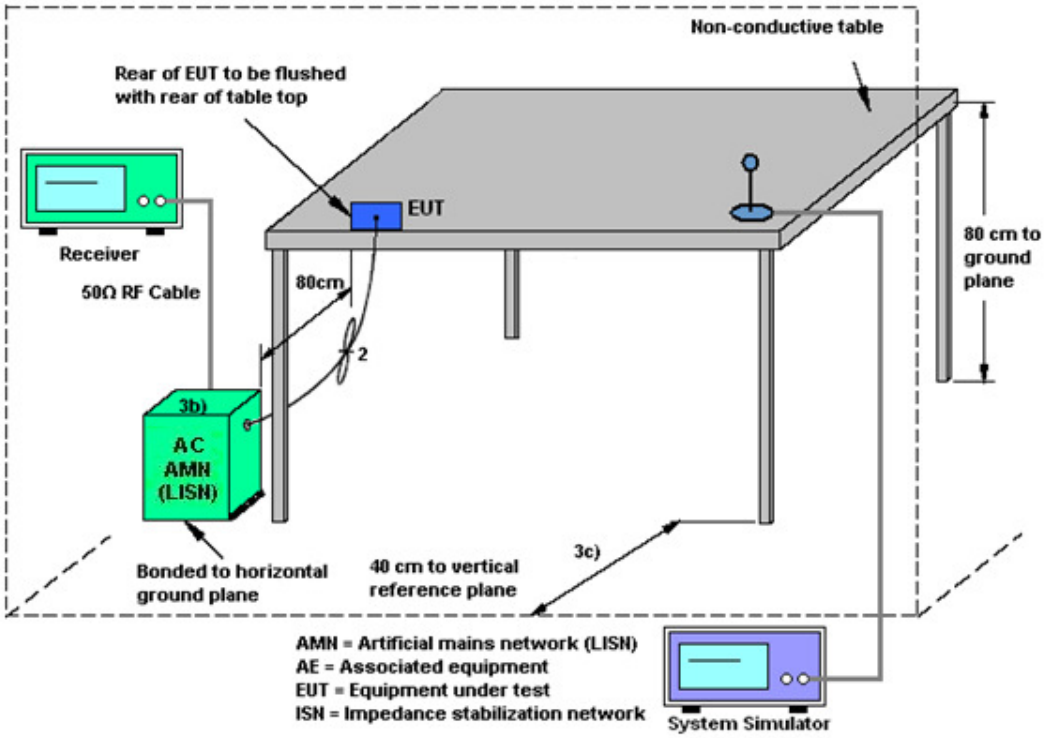
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

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 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	0932001	300MHz~40GHz	Sep. 29, 2016	Feb. 07, 2017~ Apr. 18, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Feb. 07, 2017~ Apr. 18, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Feb. 07, 2017~ Apr. 18, 2017	Jul. 16, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Mar. 15, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Mar. 15, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Mar. 15, 2017	Nov. 28, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Oct. 20, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Oct. 19, 2018	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	40103&04	30MHz to 1GHz	Jan. 07, 2017	Mar. 08, 2017 ~ Mar. 18, 2017	Jan. 06, 2018	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Apr. 25, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Apr. 24, 2017	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Nov. 08, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Nov. 07, 2017	Radiation (03CH13-HY)
Amplifier	Sonoma-Instrument	310 N	187282	9KHz~1GHz	Dec. 21, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Dec. 20, 2017	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-00101800	2025787	1GHZ~18GHZ	Feb. 13, 2017	Mar. 08, 2017 ~ Mar. 18, 2017	Feb. 12, 2018	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Jan. 09, 2017	Mar. 08, 2017 ~ Mar. 18, 2017	Jan. 08, 2018	Radiation (03CH13-HY)
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~40GHz	Jun. 14, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Jun. 13, 2017	Radiation (03CH13-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz to 26.5GHz	Jan. 12, 2017	Mar. 08, 2017 ~ Mar. 18, 2017	Jan. 11, 2018	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 12, 2016	Mar. 08, 2017 ~ Mar. 18, 2017	Oct. 11, 2017	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Mar. 08, 2017 ~ Mar. 18, 2017	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Mar. 08, 2017 ~ Mar. 18, 2017	N/A	Radiation (03CH13-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.70**

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

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

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.4**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.3**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Shiming Liu	Temperature:	21~25	°C
Test Date:	2017/02/07~2017/04/18	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	12.15	8.04	0.50	Pass
11b	1Mbps	1	6	2437	12.10	8.02	0.50	Pass
11b	1Mbps	1	11	2462	12.05	8.00	0.50	Pass
11g	6Mbps	1	1	2412	17.05	15.02	0.50	Pass
11g	6Mbps	1	6	2437	17.00	14.44	0.50	Pass
11g	6Mbps	1	11	2462	17.00	14.72	0.50	Pass
HT20	MCS0	1	1	2412	18.00	15.06	0.50	Pass
HT20	MCS0	1	6	2437	17.95	14.18	0.50	Pass
HT20	MCS0	1	11	2462	17.95	14.43	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	17.67	30.00	-0.34	17.33	36.00	Pass
11b	1Mbps	1	6	2437	17.78	30.00	-0.34	17.44	36.00	Pass
11b	1Mbps	1	11	2462	17.93	30.00	-0.34	17.59	36.00	Pass
11g	6Mbps	1	1	2412	23.11	30.00	-0.34	22.77	36.00	Pass
11g	6Mbps	1	6	2437	23.20	30.00	-0.34	22.86	36.00	Pass
11g	6Mbps	1	11	2462	23.31	30.00	-0.34	22.97	36.00	Pass
HT20	MCS0	1	1	2412	22.84	30.00	-0.34	22.50	36.00	Pass
HT20	MCS0	1	6	2437	22.95	30.00	-0.34	22.61	36.00	Pass
HT20	MCS0	1	11	2462	23.05	30.00	-0.34	22.71	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	0.00	14.55
11b	1Mbps	1	6	2437	0.00	14.67
11b	1Mbps	1	11	2462	0.00	14.80
11g	6Mbps	1	1	2412	0.33	14.38
11g	6Mbps	1	6	2437	0.33	14.46
11g	6Mbps	1	11	2462	0.33	14.63
HT20	MCS0	1	1	2412	0.32	13.24
HT20	MCS0	1	6	2437	0.32	13.31
HT20	MCS0	1	11	2462	0.32	13.52

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	-8.86	-0.34	8.00	Pass
11b	1Mbps	1	6	2437	-8.46	-0.34	8.00	Pass
11b	1Mbps	1	11	2462	-6.91	-0.34	8.00	Pass
11g	6Mbps	1	1	2412	-10.84	-0.34	8.00	Pass
11g	6Mbps	1	6	2437	-11.64	-0.34	8.00	Pass
11g	6Mbps	1	11	2462	-11.93	-0.34	8.00	Pass
HT20	MCS0	1	1	2412	-13.94	-0.34	8.00	Pass
HT20	MCS0	1	6	2437	-12.31	-0.34	8.00	Pass
HT20	MCS0	1	11	2462	-11.57	-0.34	8.00	Pass

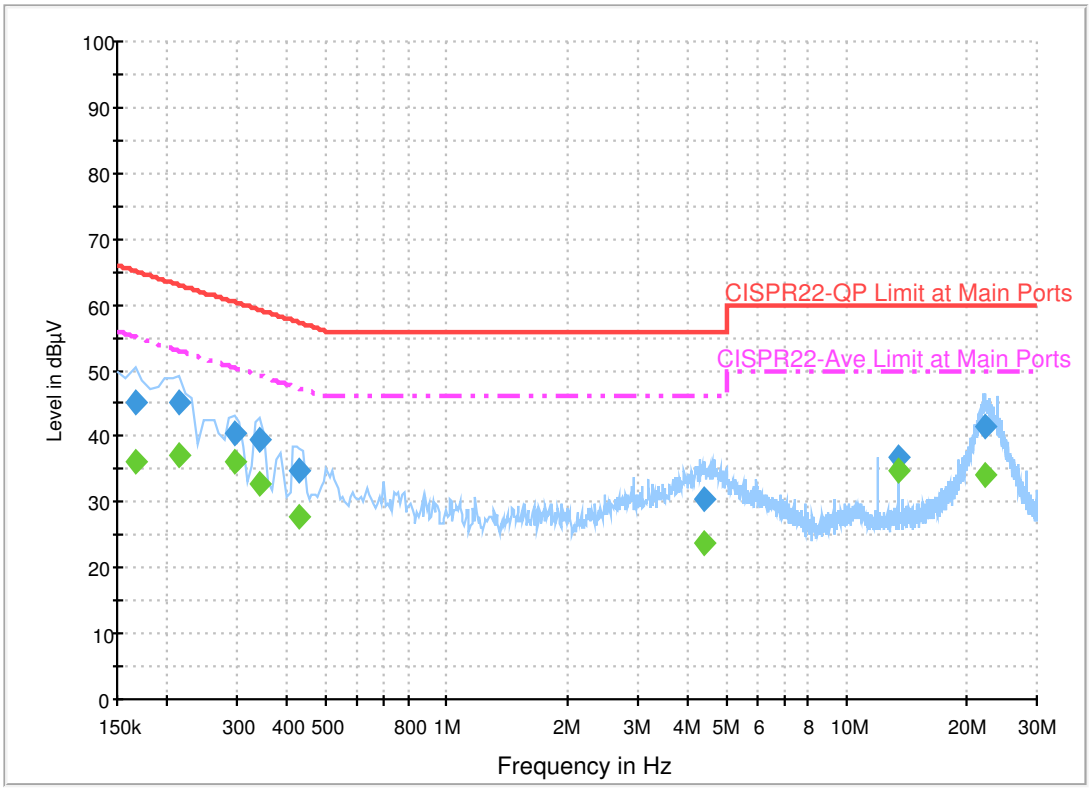
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Kai-Chun Chu	**Temperature :**	22~23℃
		Relative Humidity :	50~51%

EUT Information

Report NO :	710507-03
Test Mode :	Mode 4
Test Voltage :	120Vac/60Hz
Phase :	Line

ENV216 Auto Test FCC Power Bar - L



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	45.0	Off	L1	19.6	20.2	65.2
0.214000	45.2	Off	L1	19.6	17.8	63.0
0.294000	40.6	Off	L1	19.6	19.8	60.4
0.342000	39.3	Off	L1	19.6	19.9	59.2
0.430000	34.7	Off	L1	19.6	22.6	57.3
4.438000	30.3	Off	L1	19.7	25.7	56.0
13.558000	36.7	Off	L1	20.2	23.3	60.0
22.390000	41.3	Off	L1	20.7	18.7	60.0

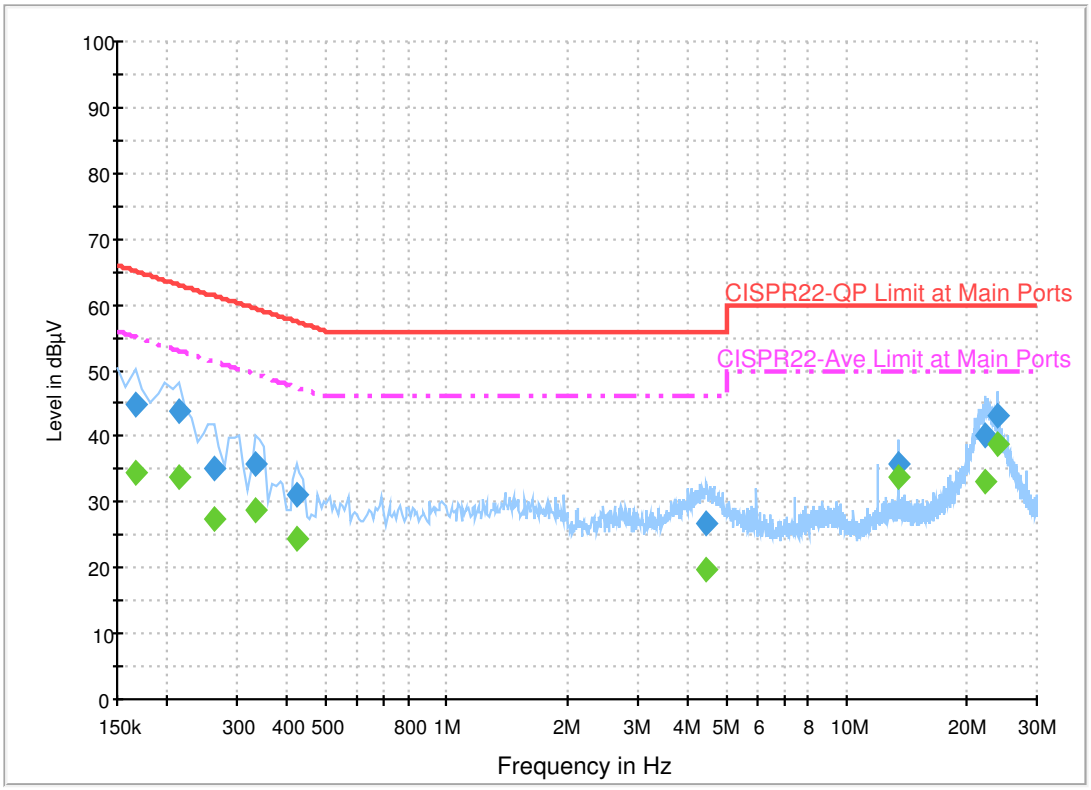
Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	36.1	Off	L1	19.6	19.1	55.2
0.214000	37.3	Off	L1	19.6	15.7	53.0
0.294000	36.2	Off	L1	19.6	14.2	50.4
0.342000	32.9	Off	L1	19.6	16.3	49.2
0.430000	27.6	Off	L1	19.6	19.7	47.3
4.438000	23.7	Off	L1	19.7	22.3	46.0
13.558000	34.7	Off	L1	20.2	15.3	50.0
22.390000	34.0	Off	L1	20.7	16.0	50.0

EUT Information

Report NO :	710507-03
Test Mode :	Mode 4
Test Voltage :	120Vac/60Hz
Phase :	Neutral

ENV216 Auto Test FCC Power Bar - N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	44.7	Off	N	19.5	20.5	65.2
0.214000	43.8	Off	N	19.5	19.2	63.0
0.262000	35.1	Off	N	19.5	26.3	61.4
0.334000	35.9	Off	N	19.5	23.5	59.4
0.422000	31.0	Off	N	19.5	26.4	57.4
4.470000	26.6	Off	N	19.7	29.4	56.0
13.558000	35.9	Off	N	20.3	24.1	60.0
22.390000	40.3	Off	N	20.8	19.7	60.0
23.886000	43.0	Off	N	20.9	17.0	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	34.6	Off	N	19.5	20.6	55.2
0.214000	33.9	Off	N	19.5	19.1	53.0
0.262000	27.5	Off	N	19.5	23.9	51.4
0.334000	28.7	Off	N	19.5	20.7	49.4
0.422000	24.6	Off	N	19.5	22.8	47.4
4.470000	19.7	Off	N	19.7	26.3	46.0
13.558000	33.8	Off	N	20.3	16.2	50.0
22.390000	33.2	Off	N	20.8	16.8	50.0
23.886000	38.9	Off	N	20.9	11.1	50.0

Appendix C. Radiated Spurious Emission

Test Engineer :	Alex Jheng, Bill Chang , and Wilson Wu	Temperature :	24~25°C
		Relative Humidity :	47~49%

<Sample 1>

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		2363.97	52.93	-21.07	74	49.92	27.07	6.93	30.99	132	218	P	H
		2386.335	43.27	-10.73	54	40.13	27.15	6.98	30.99	132	218	A	H
	*	2412	99.14	-	-	95.94	27.19	7	30.99	132	218	P	H
	*	2412	95.83	-	-	92.63	27.19	7	30.99	132	218	A	H
													H
													H
		2386.755	52.99	-21.01	74	49.85	27.15	6.98	30.99	381	331	P	V
		2386.335	44.09	-9.91	54	40.95	27.15	6.98	30.99	381	331	A	V
	*	2412	101.9	-	-	98.7	27.19	7	30.99	381	331	P	V
	*	2412	98.65	-	-	95.45	27.19	7	30.99	381	331	A	V
													V
													V
802.11b CH 06 2437MHz		2387.42	51.87	-22.13	74	48.73	27.15	6.98	30.99	100	231	P	H
		2357.18	41.95	-12.05	54	38.95	27.07	6.93	31	100	231	A	H
	*	2437	99.97	-	-	96.64	27.28	7.03	30.98	100	231	P	H
	*	2437	96.67	-	-	93.34	27.28	7.03	30.98	100	231	A	H
		2489.01	52.87	-21.13	74	49.34	27.4	7.09	30.96	100	231	P	H
		2498.46	41.85	-12.15	54	38.32	27.4	7.09	30.96	100	231	A	H
		2389.94	52.4	-21.6	74	49.26	27.15	6.98	30.99	375	339	P	V
		2357.04	41.81	-12.19	54	38.81	27.07	6.93	31	375	339	A	V
	*	2437	101.56	-	-	98.23	27.28	7.03	30.98	375	339	P	V
	*	2437	98.3	-	-	94.97	27.28	7.03	30.98	375	339	A	V
		2491.88	52.71	-21.29	74	49.18	27.4	7.09	30.96	375	339	P	V
		2485.3	41.87	-12.13	54	38.41	27.36	7.07	30.97	375	339	A	V

802.11b CH 11 2462MHz	*	2462	99.27	-	-	95.87	27.32	7.05	30.97	179	160	P	H
	*	2462	96.1	-	-	92.7	27.32	7.05	30.97	179	160	A	H
		2487.76	54.31	-19.69	74	50.78	27.4	7.09	30.96	179	160	P	H
		2487.84	43.88	-10.12	54	40.35	27.4	7.09	30.96	179	160	A	H
													H
													H
	*	2462	102.02	-	-	98.62	27.32	7.05	30.97	366	345	P	V
	*	2462	98.87	-	-	95.47	27.32	7.05	30.97	366	345	A	V
		2487.4	53.95	-20.05	74	50.49	27.36	7.07	30.97	366	345	P	V
		2487.8	44.78	-9.22	54	41.25	27.4	7.09	30.96	366	345	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	42.74	-31.26	74	66.19	31.22	10.07	64.74	100	0	P	H
													H
													H
													H
		4824	47.84	-26.16	74	71.29	31.22	10.07	64.74	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	43.71	-30.29	74	66.99	31.31	10.11	64.7	100	0	P	H
		7311	41.8	-32.2	74	57.82	36.27	12.53	64.82	100	0	P	H
													H
													H
		4874	48.95	-25.05	74	72.23	31.31	10.11	64.7	100	0	P	V
		7311	40.89	-33.11	74	56.91	36.27	12.53	64.82	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	42.21	-31.79	74	65.34	31.39	10.14	64.66	100	0	P	H
		7386	42.02	-31.98	74	57.64	36.51	12.73	64.86	100	0	P	H
													H
													H
		4924	47.68	-26.32	74	70.81	31.39	10.14	64.66	100	0	P	V
		7386	42.14	-31.86	74	57.76	36.51	12.73	64.86	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		2389.905	62.41	-11.59	74	59.27	27.15	6.98	30.99	164	163	P	H
		2389.695	45.62	-8.38	54	42.48	27.15	6.98	30.99	164	163	A	H
	*	2412	99.88	-	-	96.68	27.19	7	30.99	164	163	P	H
	*	2412	92.16	-	-	88.96	27.19	7	30.99	164	163	A	H
													H
													H
		2387.07	60.39	-13.61	74	57.25	27.15	6.98	30.99	381	332	P	V
		2389.905	46.08	-7.92	54	42.94	27.15	6.98	30.99	381	332	A	V
	*	2412	101.78	-	-	98.58	27.19	7	30.99	381	332	P	V
	*	2412	94.4	-	-	91.2	27.19	7	30.99	381	332	A	V
													V
													V
802.11g CH 06 2437MHz		2336.46	53.28	-20.72	74	50.35	27.03	6.91	31.01	162	163	P	H
		2389.52	43.17	-10.83	54	40.03	27.15	6.98	30.99	162	163	A	H
	*	2437	99.94	-	-	96.61	27.28	7.03	30.98	162	163	P	H
	*	2437	92.34	-	-	89.01	27.28	7.03	30.98	162	163	A	H
		2487.75	52.56	-21.44	74	49.03	27.4	7.09	30.96	162	163	P	H
		2485.09	43.22	-10.78	54	39.76	27.36	7.07	30.97	162	163	A	H
		2387.56	53.17	-20.83	74	50.03	27.15	6.98	30.99	375	340	P	V
		2388.68	43.25	-10.75	54	40.11	27.15	6.98	30.99	375	340	A	V
	*	2437	102.24	-	-	98.91	27.28	7.03	30.98	375	340	P	V
	*	2437	94.83	-	-	91.5	27.28	7.03	30.98	375	340	A	V
		2483.76	53.08	-20.92	74	49.62	27.36	7.07	30.97	375	340	P	V
		2485.58	43.69	-10.31	54	40.23	27.36	7.07	30.97	375	340	A	V

802.11g CH 11 2462MHz	*	2462	100.58	-	-	97.18	27.32	7.05	30.97	179	163	P	H
	*	2462	92.97	-	-	89.57	27.32	7.05	30.97	179	163	P	H
		2484.12	60.93	-13.07	74	57.47	27.36	7.07	30.97	179	163	P	H
		2483.64	45.22	-8.78	54	41.76	27.36	7.07	30.97	179	163	A	H
													H
													H
	*	2462	102.67	-	-	99.27	27.32	7.05	30.97	367	345	P	V
	*	2462	95.24	-	-	91.84	27.32	7.05	30.97	367	345	A	V
		2483.8	64.35	-9.65	74	60.89	27.36	7.07	30.97	367	345	P	V
		2484.52	46.72	-7.28	54	43.26	27.36	7.07	30.97	367	345	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	41.93	-32.07	74	65.38	31.22	10.07	64.74	100	0	P	H
													H
													H
													H
		4824	47.04	-26.96	74	70.49	31.22	10.07	64.74	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	42.83	-31.17	74	66.11	31.31	10.11	64.7	100	0	P	H
		7311	41.48	-32.52	74	57.5	36.27	12.53	64.82	100	0	P	H
													H
													H
		4874	46.13	-27.87	74	69.41	31.31	10.11	64.7	100	0	P	V
		7311	40.68	-33.32	74	56.7	36.27	12.53	64.82	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4924	40.21	-33.79	74	63.34	31.39	10.14	64.66	100	0	P	H
		7386	41.63	-32.37	74	57.25	36.51	12.73	64.86	100	0	P	H
													H
													H
		4924	45.97	-28.03	74	69.1	31.39	10.14	64.66	100	0	P	V
		7386	41.42	-32.58	74	57.04	36.51	12.73	64.86	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)
		2387.49	61.46	-12.54	74	58.32	27.15	6.98	30.99	183	165	P	H
		2389.8	47.05	-6.95	54	43.91	27.15	6.98	30.99	183	165	A	H
	*	2412	99.66	-	-	96.46	27.19	7	30.99	183	165	P	H
	*	2412	92.31	-	-	89.11	27.19	7	30.99	183	165	A	H
802.11n													H
HT20													H
CH 01		2389.905	65.32	-8.68	74	62.18	27.15	6.98	30.99	379	339	P	V
2412MHz		2389.695	46.65	-7.35	54	43.51	27.15	6.98	30.99	379	339	A	V
	*	2412	100.59	-	-	97.39	27.19	7	30.99	379	339	P	V
	*	2412	93.06	-	-	89.86	27.19	7	30.99	379	339	A	V
													V
													V
		2383.92	52.8	-21.2	74	49.72	27.11	6.96	30.99	179	165	P	H
		2389.8	43.46	-10.54	54	40.32	27.15	6.98	30.99	179	165	A	H
	*	2437	100.09	-	-	96.76	27.28	7.03	30.98	179	165	P	H
	*	2437	91.84	-	-	88.51	27.28	7.03	30.98	179	165	A	H
802.11n		2489.78	52.74	-21.26	74	49.21	27.4	7.09	30.96	179	165	P	H
HT20		2489.92	43.5	-10.5	54	39.97	27.4	7.09	30.96	179	165	A	H
CH 06		2376.22	52.45	-21.55	74	49.37	27.11	6.96	30.99	374	348	P	V
2437MHz		2388.96	43.24	-10.76	54	40.1	27.15	6.98	30.99	374	348	A	V
	*	2437	100.26	-	-	96.93	27.28	7.03	30.98	374	348	P	V
	*	2437	92.78	-	-	89.45	27.28	7.03	30.98	374	348	A	V
		2486.98	53.53	-20.47	74	50.07	27.36	7.07	30.97	374	348	P	V
		2484.53	43.47	-10.53	54	40.01	27.36	7.07	30.97	374	348	A	V

	*	2462	99.59	-	-	96.19	27.32	7.05	30.97	175	163	P	H
	*	2462	92.05	-	-	88.65	27.32	7.05	30.97	175	163	A	H
		2483.92	60.48	-13.52	74	57.02	27.36	7.07	30.97	175	163	P	H
		2483.6	45.92	-8.08	54	42.46	27.36	7.07	30.97	175	163	A	H
802.11n													H
HT20													H
CH 11	*	2462	100.61	-	-	97.21	27.32	7.05	30.97	363	345	P	V
2462MHz	*	2462	93.21	-	-	89.81	27.32	7.05	30.97	363	345	A	V
		2485.04	61.22	-12.78	74	57.76	27.36	7.07	30.97	363	345	P	V
		2483.76	47.04	-6.96	54	43.58	27.36	7.07	30.97	363	345	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)
		4824	41.29	-32.71	74	64.74	31.22	10.07	64.74	100	0	P	H
													H
802.11n													H
HT20													H
CH 01		4824	45.45	-28.55	74	68.9	31.22	10.07	64.74	100	0	P	V
2412MHz													V
													V
													V
		4874	41.03	-32.97	74	64.31	31.31	10.11	64.7	100	0	P	H
		7311	41.91	-32.09	74	57.93	36.27	12.53	64.82	100	0	P	H
802.11n													H
HT20													H
CH 06		4874	45.43	-28.57	74	68.71	31.31	10.11	64.7	100	0	P	V
2437MHz		7311	40.42	-33.58	74	56.44	36.27	12.53	64.82	100	0	P	V
													V
													V
		4924	41.73	-32.27	74	64.86	31.39	10.14	64.66	100	0	P	H
		7386	42.36	-31.64	74	57.98	36.51	12.73	64.86	100	0	P	H
802.11n													H
HT20													H
CH 11		4924	46.81	-27.19	74	69.94	31.39	10.14	64.66	100	0	P	V
2462MHz		7386	40.61	-33.39	74	56.23	36.51	12.73	64.86	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)
		67.26	30.1	-9.9	40	49.31	12.22	0.88	32.31	100	0	P	H
		94.53	31.47	-12.03	43.5	47.29	15.45	1.02	32.29			P	H
		207.39	28.19	-15.31	43.5	43	15.91	1.54	32.26			P	H
		479.9	29.38	-16.62	46	35.57	23.56	2.44	32.19			P	H
		622.7	34.66	-11.34	46	38.54	25.48	2.84	32.2			P	H
		960.1	35.65	-18.35	54	33	30.14	3.47	30.96			P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT20		41	34.57	-5.43	40	46.64	19.64	0.62	32.33	100	360	QP	V
LF		65.306	33.08	-6.92	40	52.41	12.1	0.88	32.31	100	46	QP	V
		95.61	30.12	-13.38	43.5	45.81	15.58	1.02	32.29			P	V
		479.9	33.12	-12.88	46	39.31	23.56	2.44	32.19			P	V
		759.2	28.09	-17.91	46	29.52	27.48	3.15	32.06			P	V
		960.1	37.43	-16.57	54	34.78	30.14	3.47	30.96			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2388.54	61.76	-12.24	74	58.62	27.15	6.98	30.99	187	162	P	H
		2390	48.23	-5.77	54	45.09	27.15	6.98	30.99	187	162	A	H
	*	2412	97.57	-	-	94.37	27.19	7	30.99	187	162	P	H
	*	2412	90.18	-	-	86.98	27.19	7	30.99	187	162	A	H
802.11n													H
HT20													H
CH 01		2385.81	62.26	-11.74	74	59.12	27.15	6.98	30.99	389	337	P	V
2412MHz		2389.905	48.52	-5.48	54	45.38	27.15	6.98	30.99	389	337	A	V
	*	2412	98.47	-	-	95.27	27.19	7	30.99	389	337	P	V
	*	2412	91.46	-	-	88.26	27.19	7	30.99	389	337	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)
		4824	36.87	-37.13	74	60.32	31.22	10.07	64.74	100	0	P	H
													H
802.11n													H
HT20													H
CH 01		4824	40.02	-33.98	74	63.47	31.22	10.07	64.74	100	0	P	V
2412MHz													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)
		66.45	31.52	-8.48	40	50.73	12.22	0.88	32.31	100	0	P	H
		107.22	30.85	-12.65	43.5	45.17	16.9	1.07	32.29			P	H
		207.39	28.54	-14.96	43.5	43.35	15.91	1.54	32.26			P	H
		414.8	27.38	-18.62	46	34.85	22.42	2.27	32.16			P	H
		622.7	31.69	-14.31	46	35.57	25.48	2.84	32.2			P	H
		960.1	35.86	-18.14	54	33.21	30.14	3.47	30.96			P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT20		40.92	34.98	-5.02	40	47.05	19.64	0.62	32.33	100	118	QP	V
LF		65.504	33.57	-6.43	40	52.84	12.16	0.88	32.31	100	38	QP	V
		207.39	23.67	-19.83	43.5	38.48	15.91	1.54	32.26			P	V
		479.9	32.9	-13.1	46	39.09	23.56	2.44	32.19			P	V
		692	27.21	-18.79	46	30.37	26.03	2.98	32.17			P	V
		960.1	38.53	-15.47	54	35.88	30.14	3.47	30.96			P	V
													V
													V
													V
													V
													V
													V

Remark

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

Note symbol

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

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

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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix D. Radiated Spurious Emission Plots

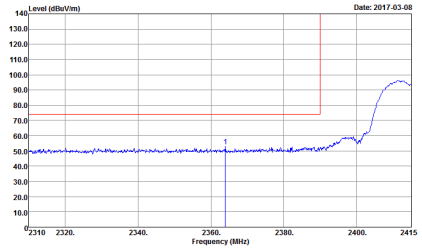
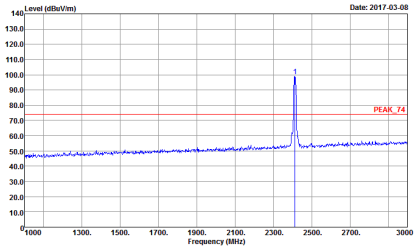
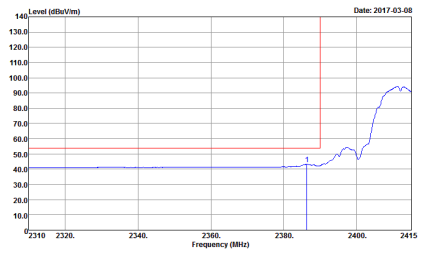
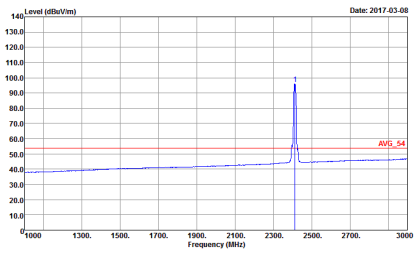
Test Engineer :	Alex Jheng, Bill Chang , and Wilson Wu	**Temperature :**	24~25°C
		Relative Humidity :	47~49%

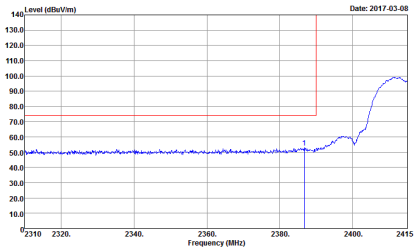
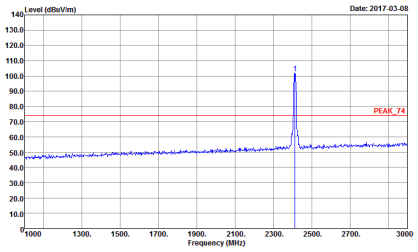
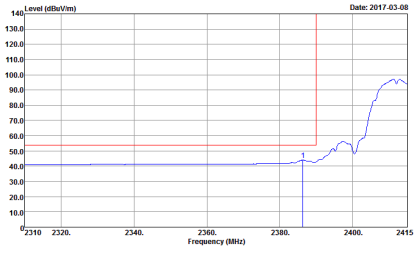
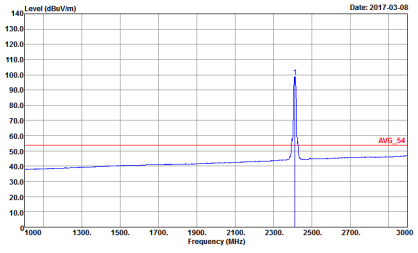
Note symbol

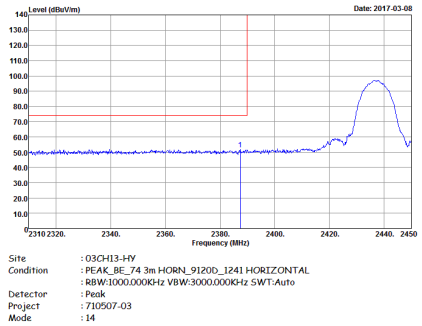
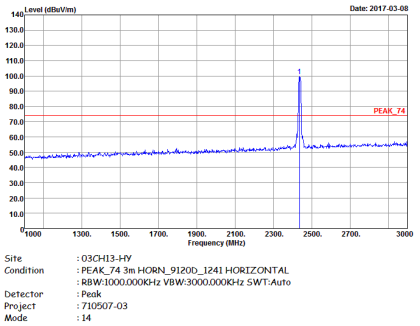
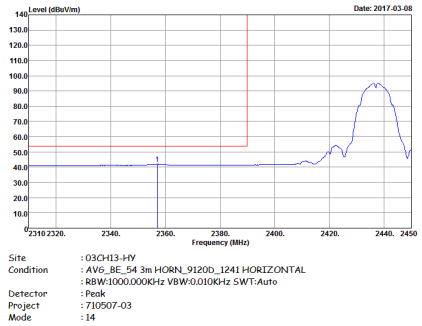
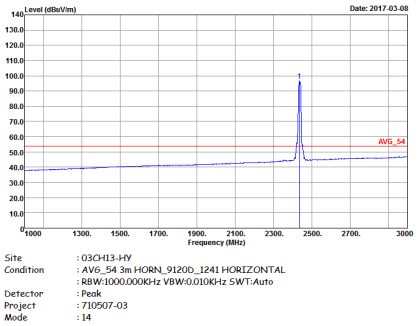
-L	**Low channel location**
-R	**High channel location**

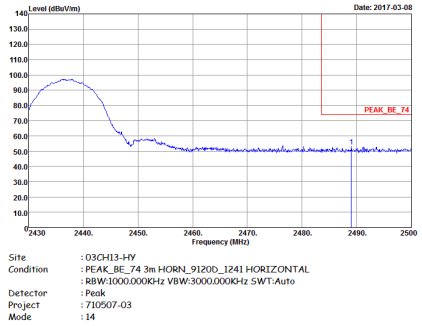
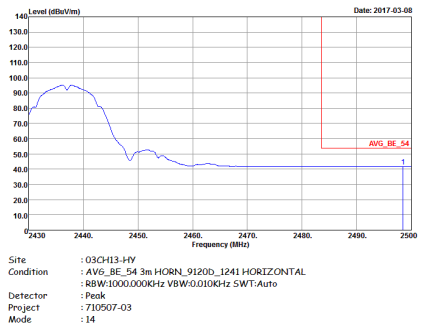
2.4GHz 2400~2483.5MHz

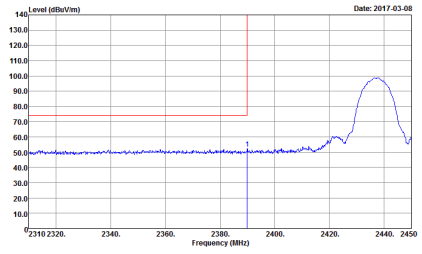
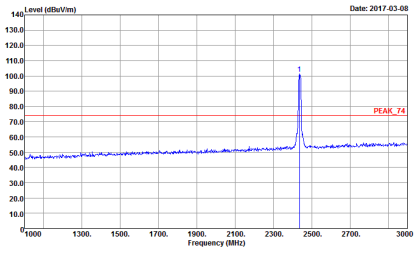
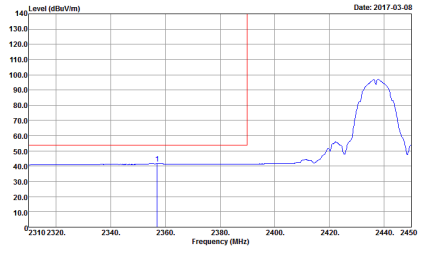
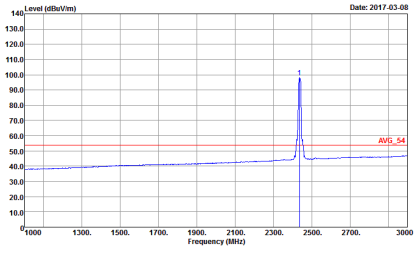
WIFI 802.11b (Band Edge @ 3m)

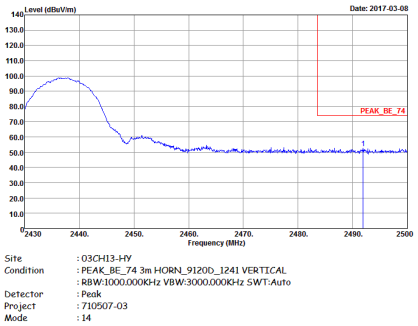
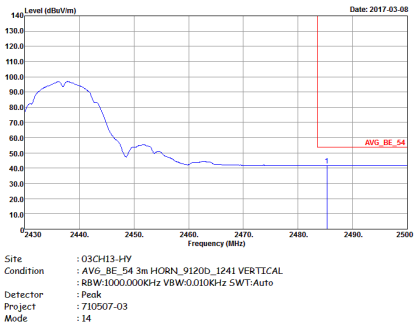
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

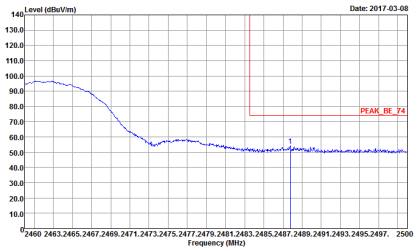
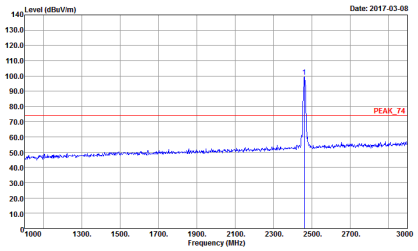
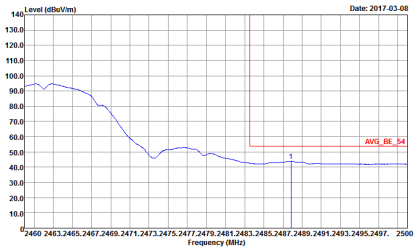
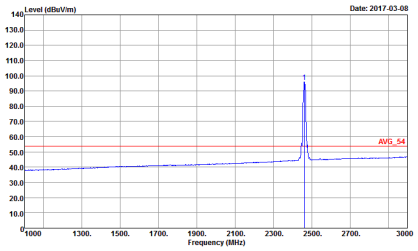
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 13	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 13
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 13	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 13

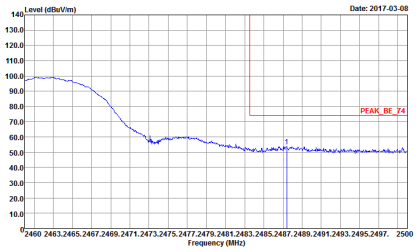
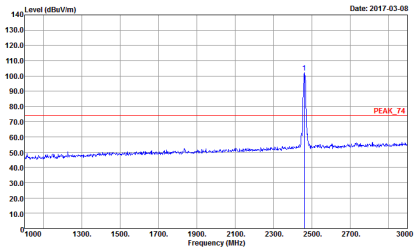
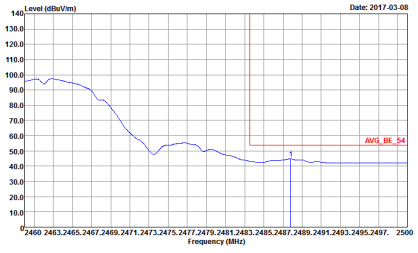
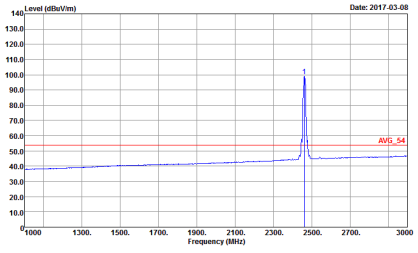
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 14	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 14
Avg.	 Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 14	 Site : 03CH13-HY Condition : AV6_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 14

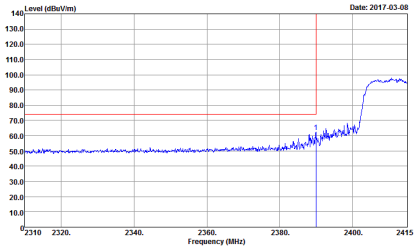
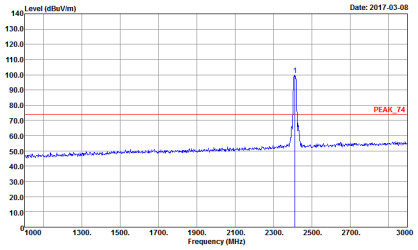
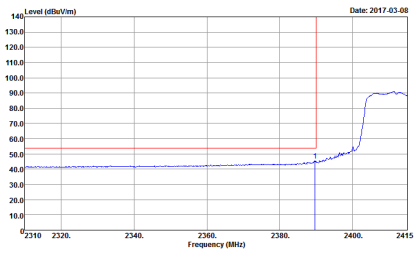
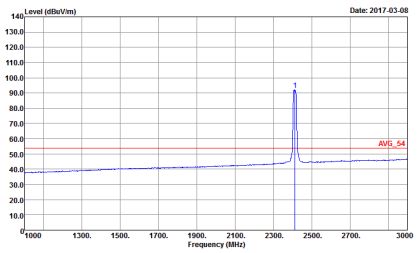
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

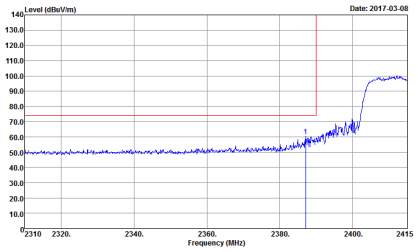
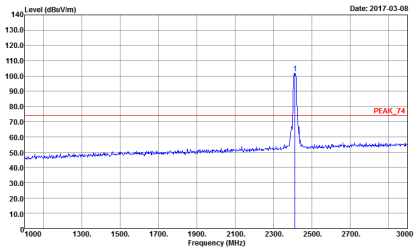
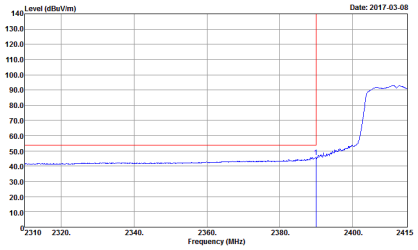
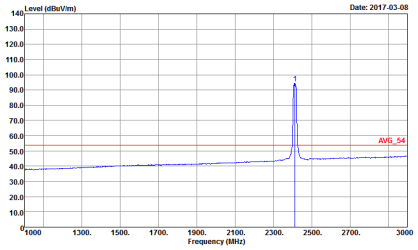
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15

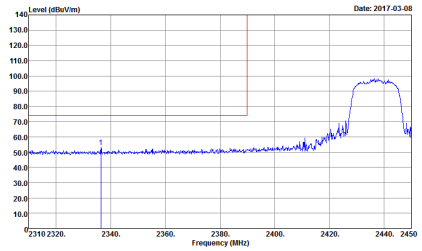
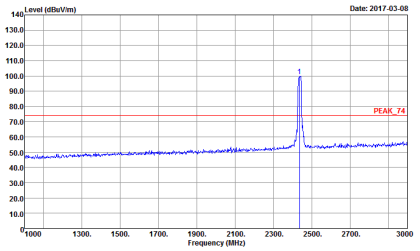
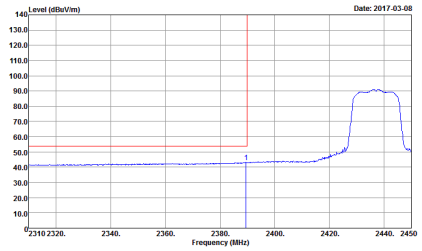
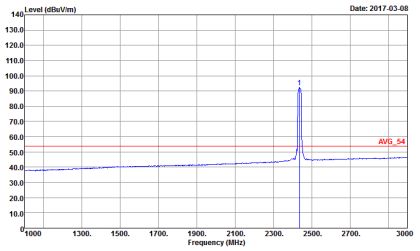
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15
Avg.	 Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15	 Site : 03CH13-HY Condition : AV6_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 15

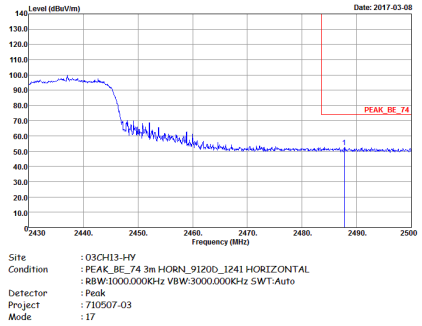
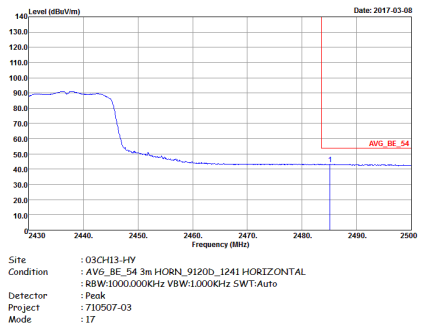
2.4GHz 2400~2483.5MHz

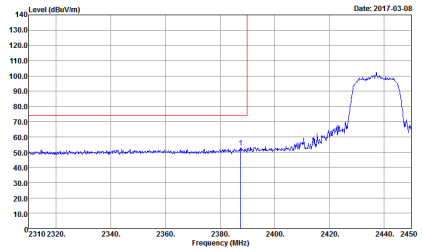
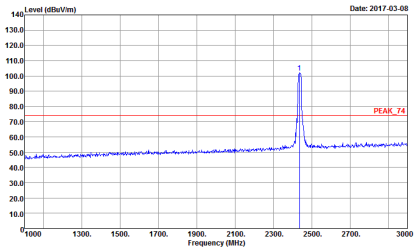
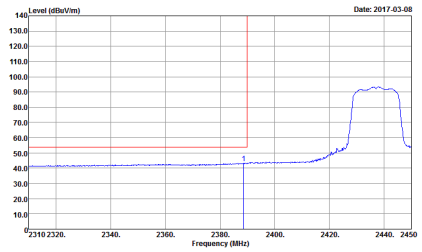
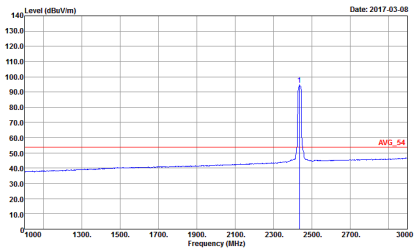
WIFI 802.11g (Band Edge @ 3m)

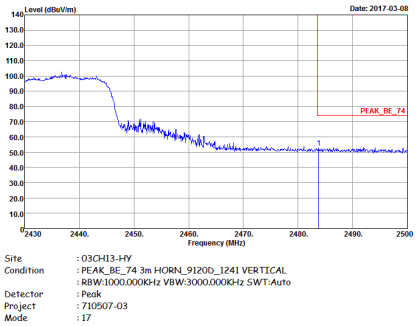
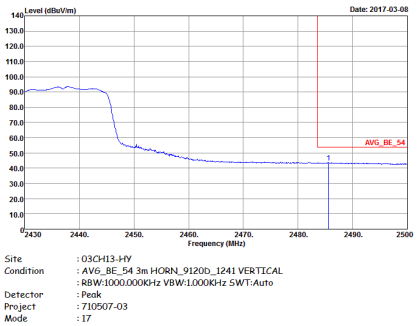
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

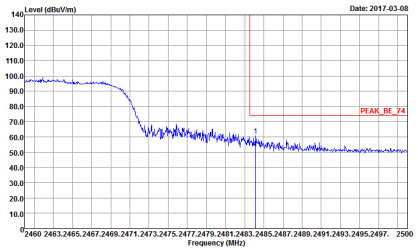
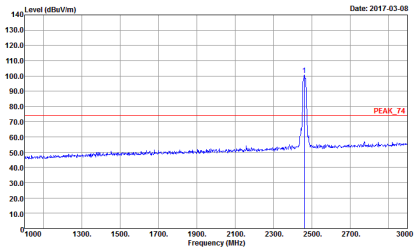
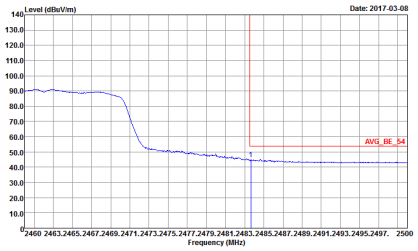
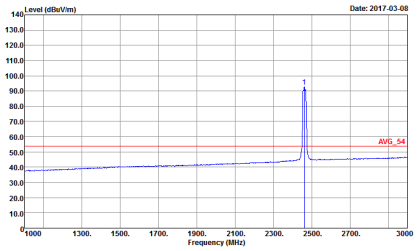
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 16	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 16
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 16	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 16

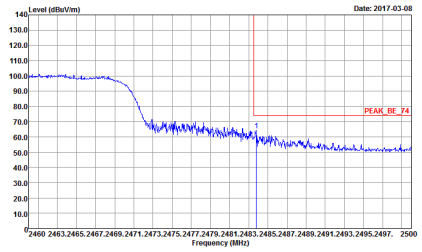
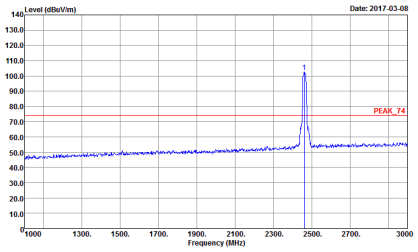
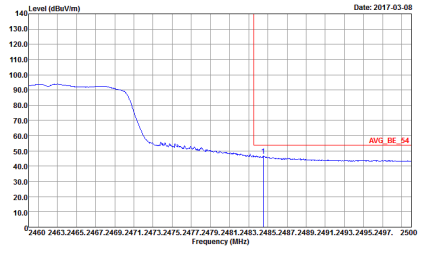
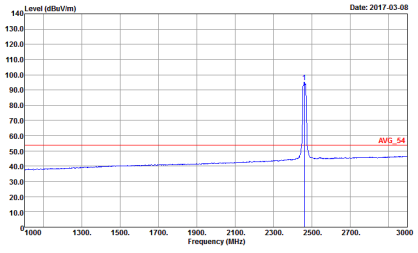
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17
Avg.	 Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17	 Site : 03CH13-HY Condition : AV6_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 17

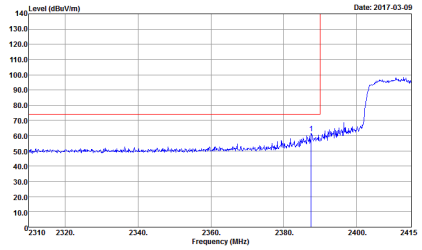
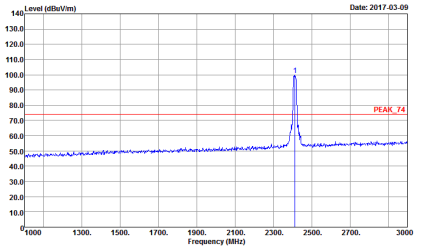
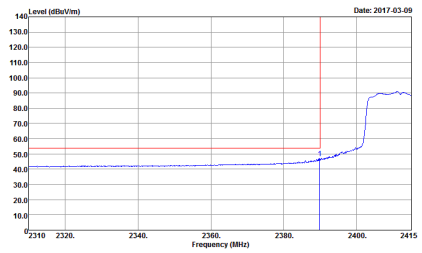
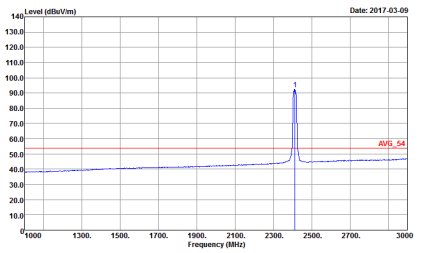
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		Left Blank
Avg.		Left Blank

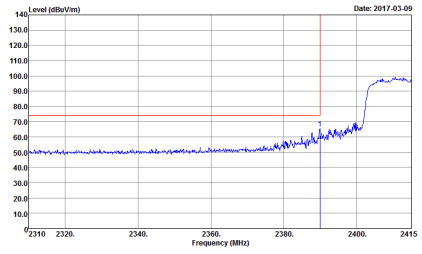
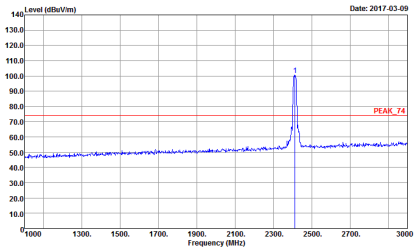
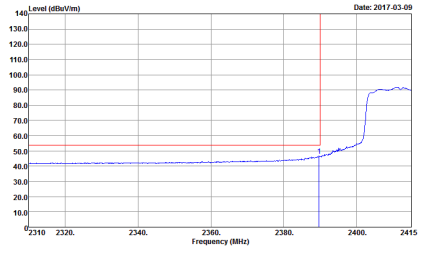
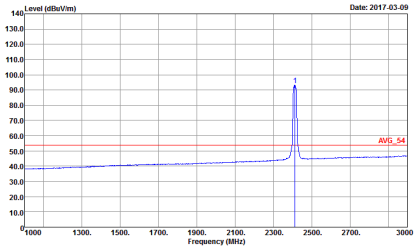
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18

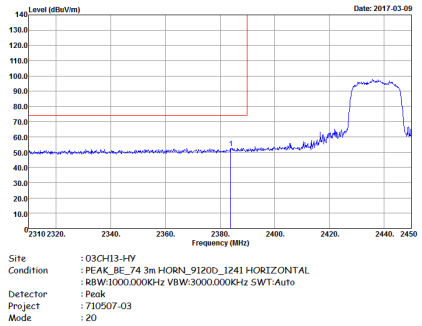
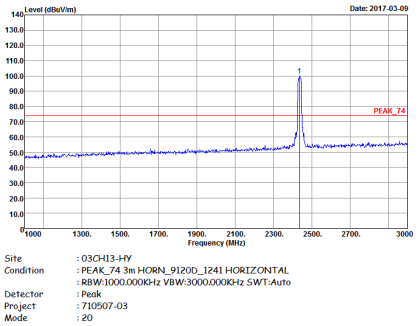
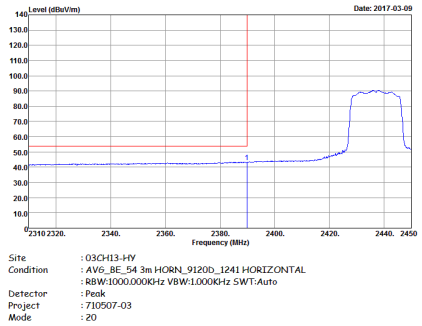
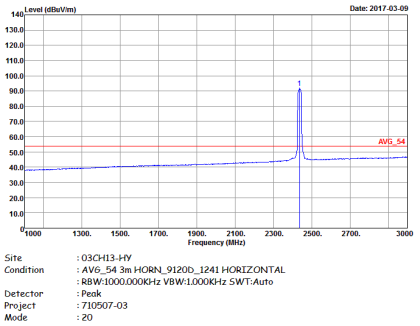
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 18

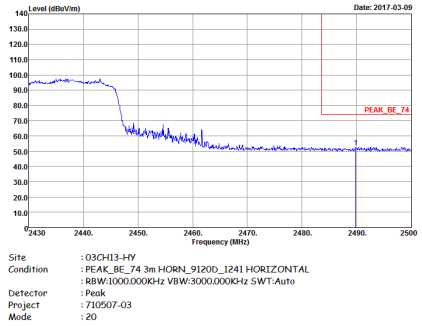
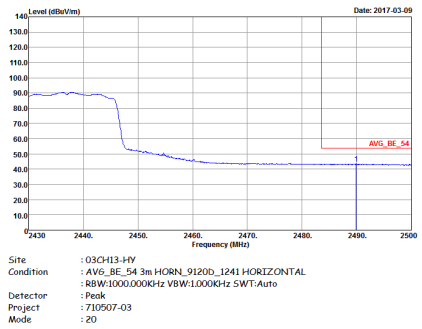
2.4GHz 2400~2483.5MHz

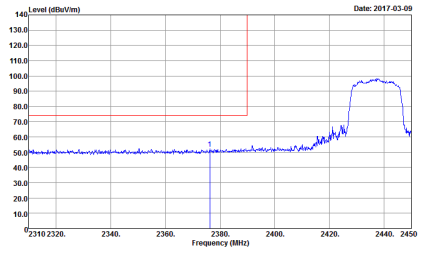
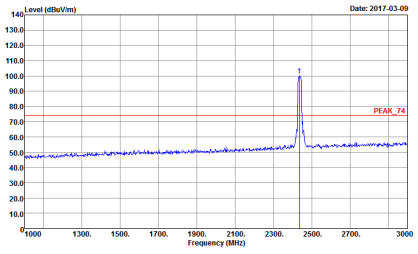
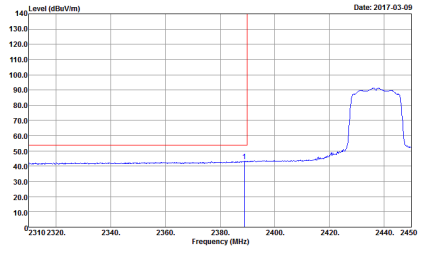
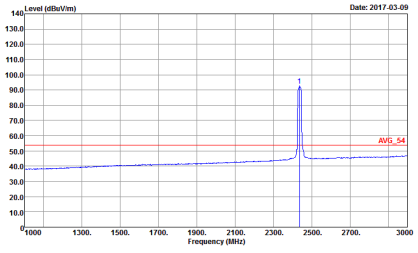
WIFI 802.11n HT20 (Band Edge @ 3m)

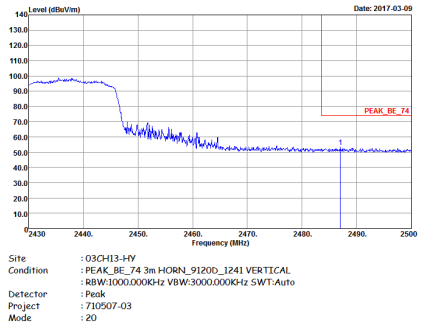
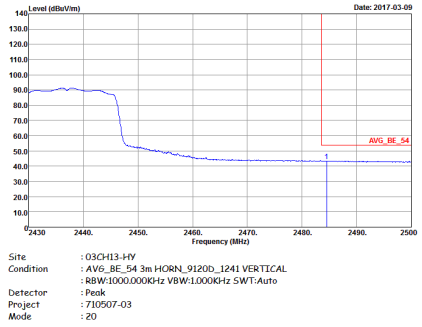
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19

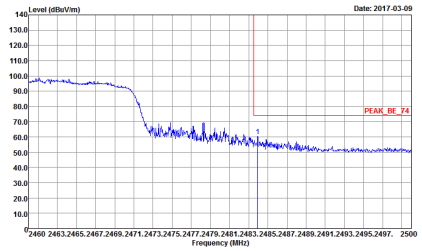
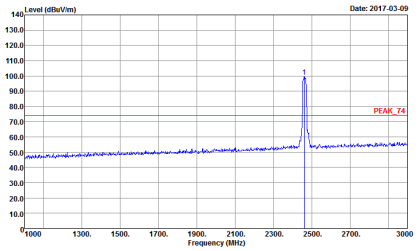
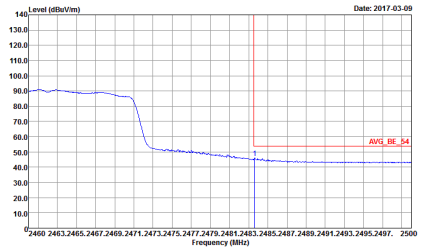
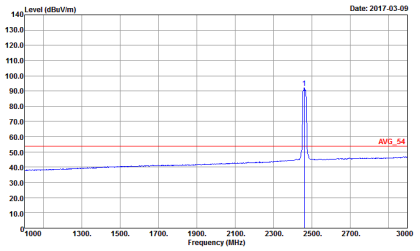
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19
Avg.	 Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19	 Site : 03CH13-HY Condition : AV6_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 19

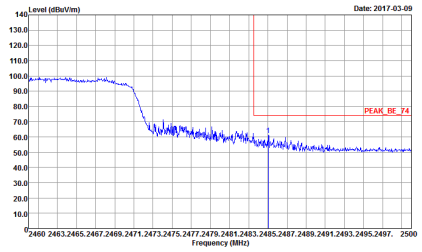
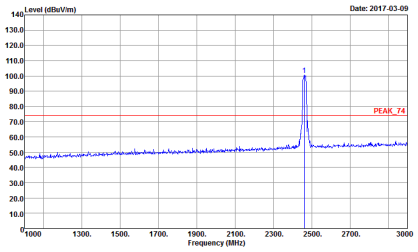
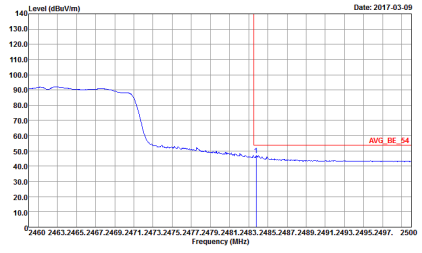
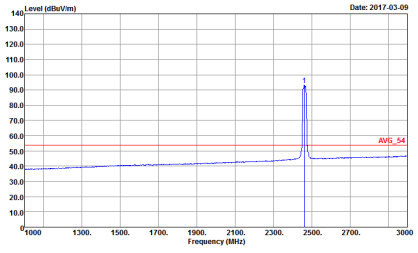
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 20

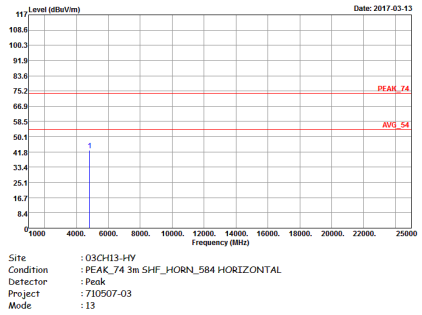
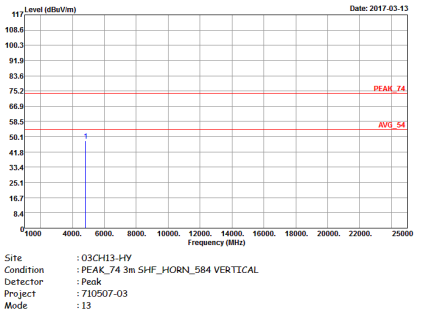
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		Left Blank
Avg.		Left Blank

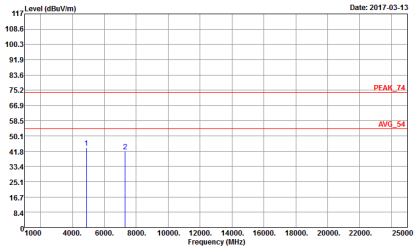
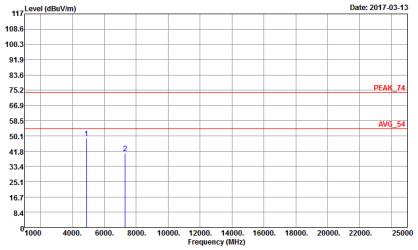
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21

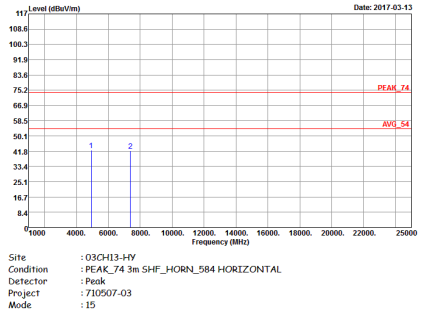
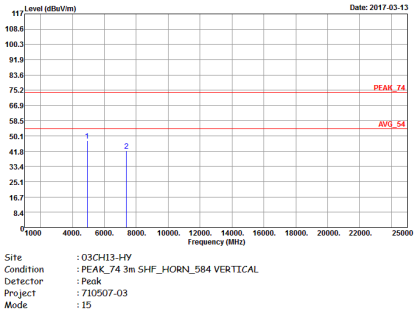
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 21

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

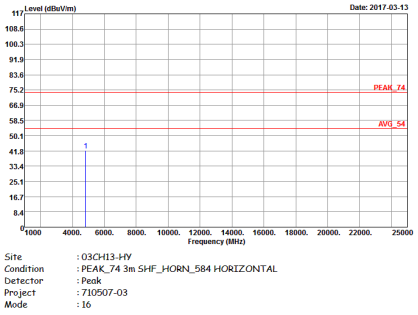
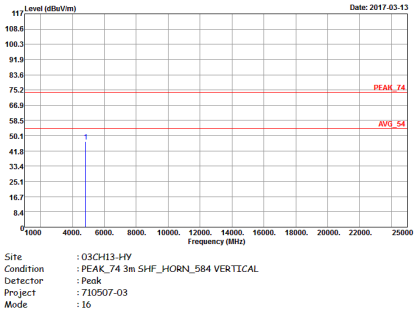
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

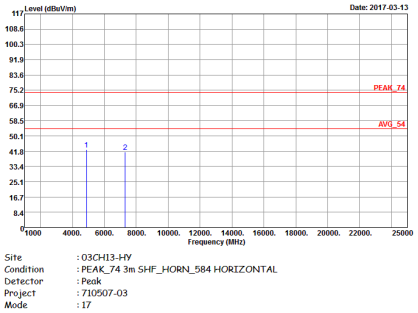
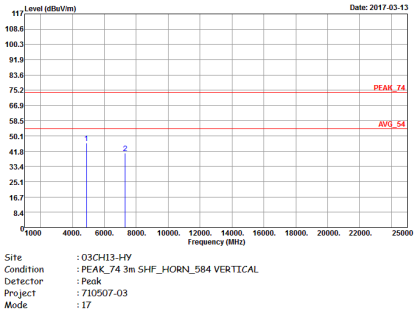
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 HORIZONTAL Detector : Peak Project : 710507-03 Mode : 14	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 VERTICAL Detector : Peak Project : 710507-03 Mode : 14

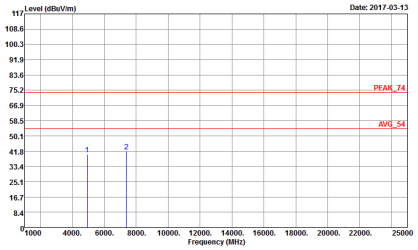
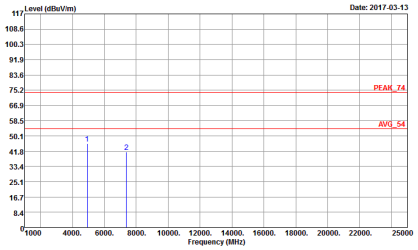
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

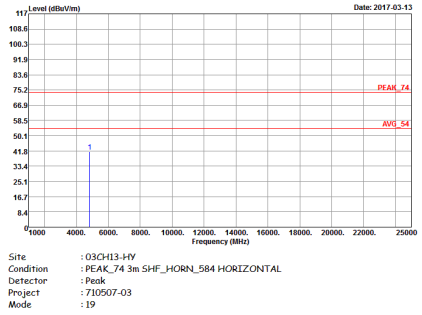
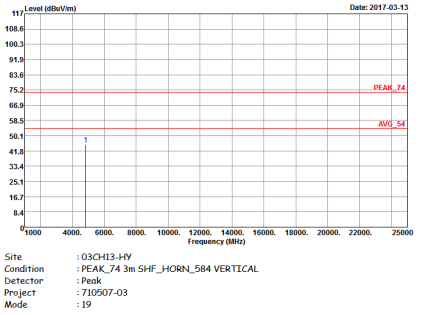
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

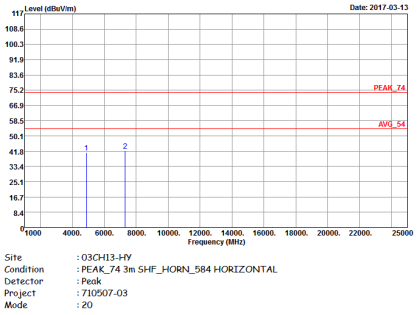
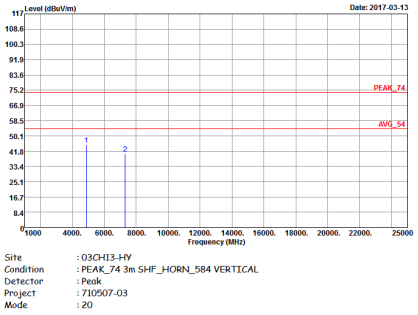
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

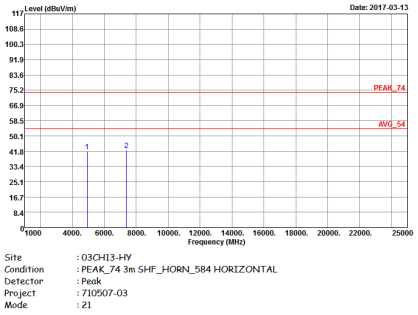
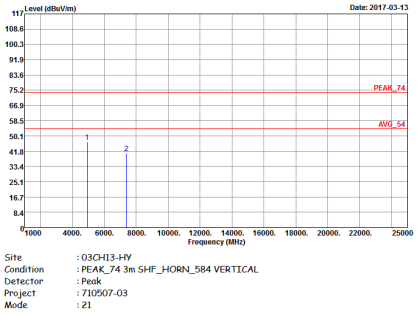
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 HORIZONTAL Detector : Peak Project : 710507-03 Mode : 18	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 VERTICAL Detector : Peak Project : 710507-03 Mode : 18

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

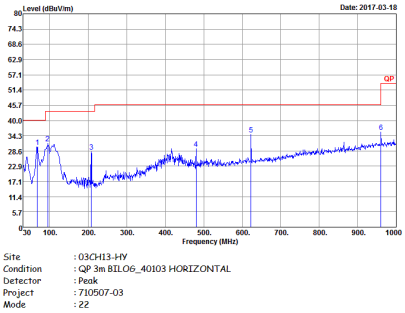
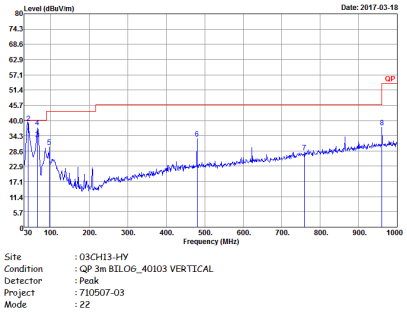
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

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

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 HORIZONTAL Detector : Peak Project : 710507-03 Mode : 21	 Site : 03CH13-HY Condition : PEAK_74 3m SHF_HORN_584 VERTICAL Detector : Peak Project : 710507-03 Mode : 21

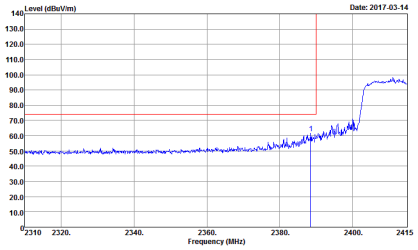
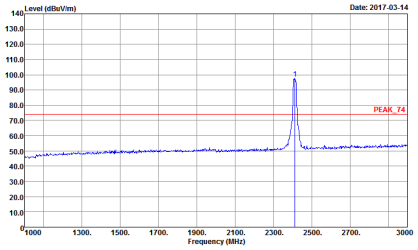
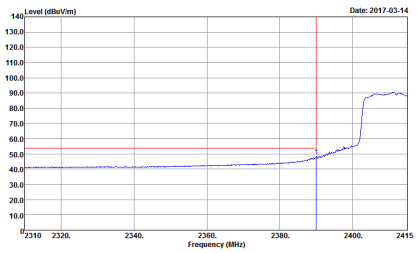
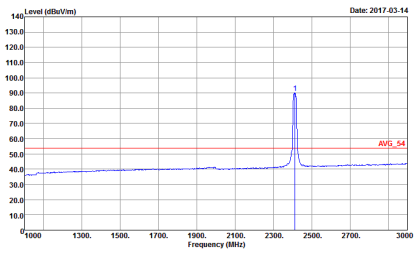
Emission below 1GHz

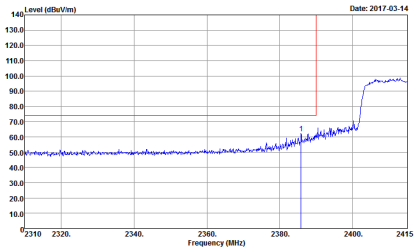
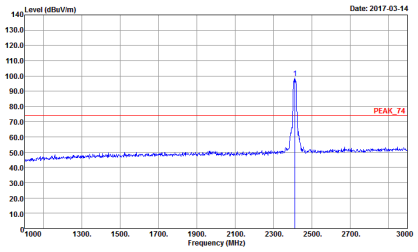
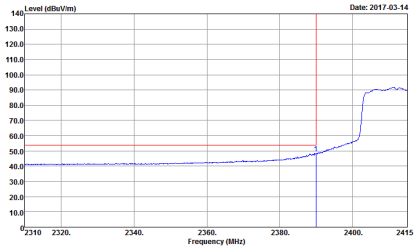
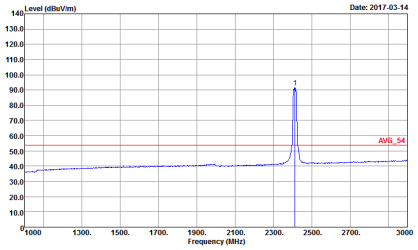
2.4GHz WIFI 802.11n HT20 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak		

2.4GHz 2400~2483.5MHz

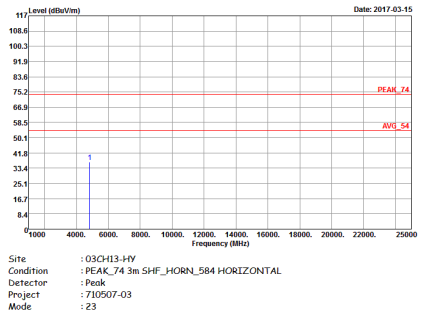
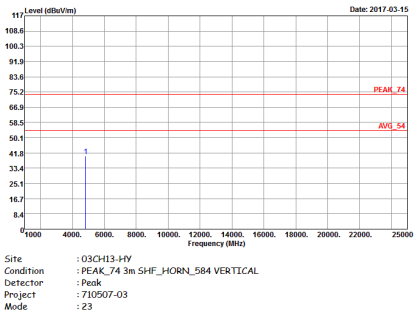
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23	 Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 710507-03 Mode : 23

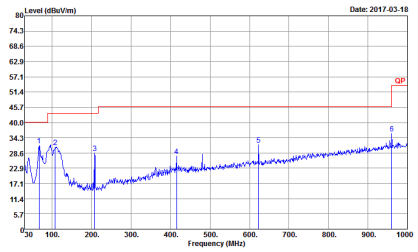
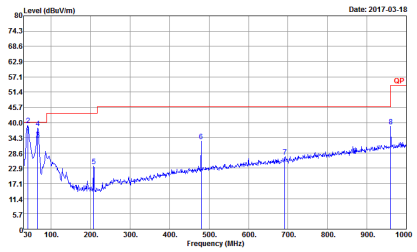
2.4GHz 2400~2483.5MHz

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.		

Emission below 1GHz

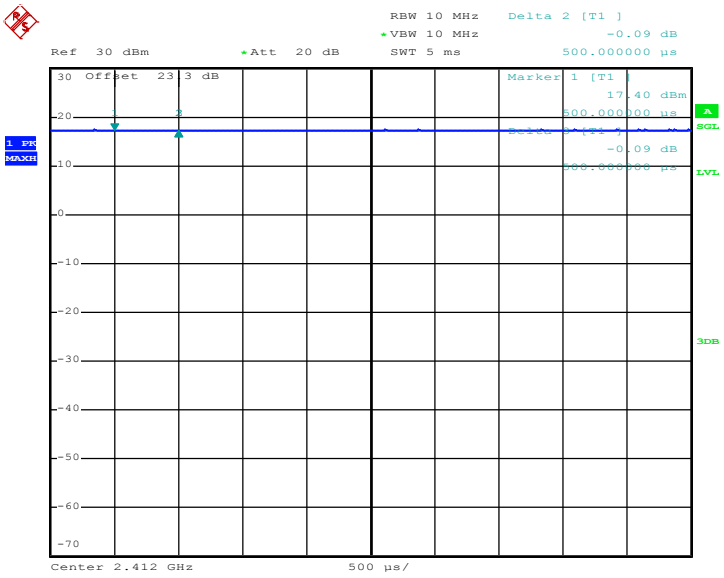
2.4GHz WIFI 802.11n HT20 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH13-HY Condition : QP 3m BILOG_40103 HORIZONTAL Detector : Peak Project : 710507-03 Mode : 24	 Site : 03CH13-HY Condition : QP 3m BILOG_40103 VERTICAL Detector : Peak Project : 710507-03 Mode : 24

Appendix E. Duty Cycle Plots

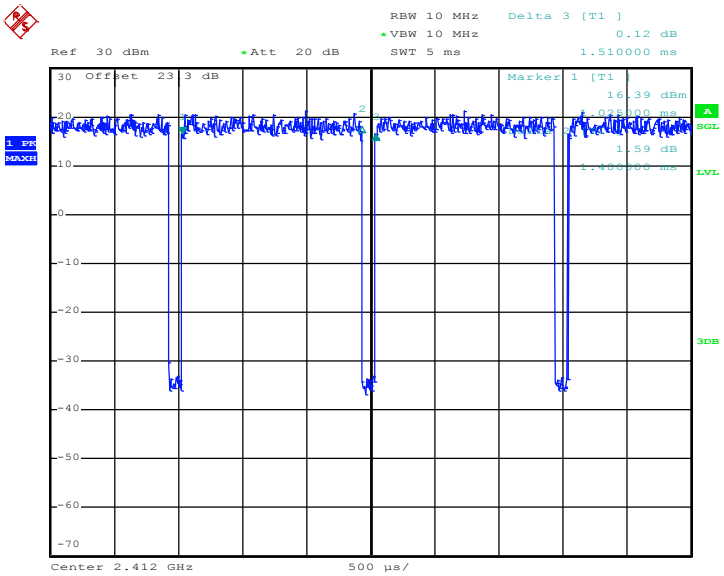
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	100	-	-	10Hz
1	802.11g	92.72	1400	0.71	1kHz
1	2.4GHz 802.11n HT20 for Ant. 1	92.86	1300	0.77	1kHz

802.11b



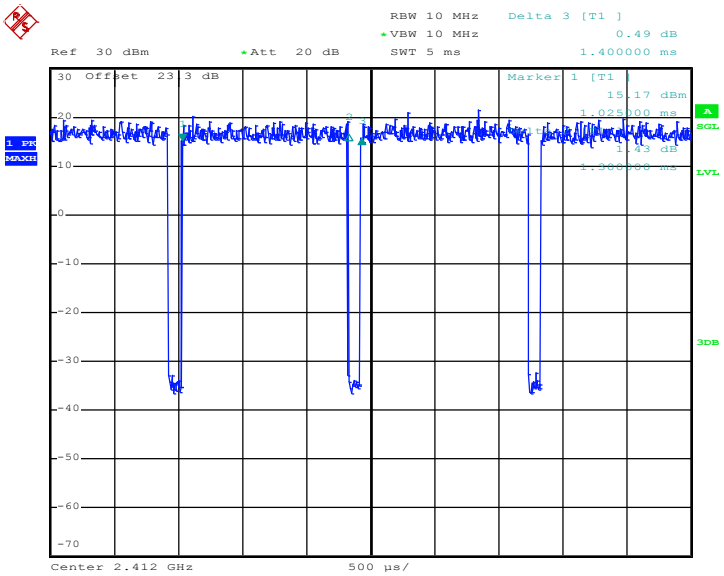
Date: 7.FEB.2017 00:24:46

802.11g



Date: 7.FEB.2017 00:20:55

802.11n HT20



Date: 7.FEB.2017 00:27:20