

FCC RF Test Report

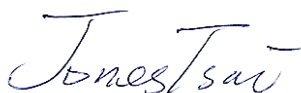
APPLICANT : Ubiquiti Networks, Inc.
EQUIPMENT : airCube ISP
BRAND NAME : UBIQUITI
MODEL NAME : ACB-ISP
FCC ID : SWX-ACBISP
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 05, 2017 and testing was completed on Oct. 11, 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



SPORTON INTERNATIONAL INC.

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



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Modification of EUT	5
1.5 Testing Location	6
1.6 Applicable Standards.....	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Carrier Frequency and Channel	7
2.2 Test Mode.....	8
2.3 Connection Diagram of Test System.....	8
2.4 Support Unit used in test configuration and system	9
2.5 EUT Operation Test Setup	9
2.6 Measurement Results Explanation Example.....	9
3 TEST RESULT	10
3.1 6dB and 99% Bandwidth Measurement	10
3.2 Peak Output Power Measurement	12
3.3 Power Spectral Density Measurement	13
3.4 Conducted Band Edges and Spurious Emission Measurement	15
3.5 Radiated Band Edges and Spurious Emission Measurement	40
3.6 AC Conducted Emission Measurement.....	44
3.7 Antenna Requirements.....	46
4 LIST OF MEASURING EQUIPMENT	47
5 UNCERTAINTY OF EVALUATION	48
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX C. RADIATED SPURIOUS EMISSION	
APPENDIX D. RADIATED SPURIOUS EMISSION PLOTS	
APPENDIX E. DUTY CYCLE PLOTS	
APPENDIX F. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR741927-01	Rev. 01	Initial issue of report	Oct. 16, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.11 dB at 4824.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.20 dB at 0.550 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Ubiquiti Networks, Inc.

685 Third Avenue, 27th Floor New York, New York 10017 USA

1.2 Manufacturer

Ubiquiti Networks, Inc.

685 Third Avenue, 27th Floor New York, New York 10017 USA

1.3 Product Feature of Equipment Under Test

Wi-Fi 2.4GHz 802.11b/g/n

Product Specification subjective to this standard	
Antenna Type	WLAN: Internal Antenna

1.4 Modification of EUT

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

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. 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 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	CO05-HY

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

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.). TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH15-HY	

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

1.6 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ 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 (Z 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

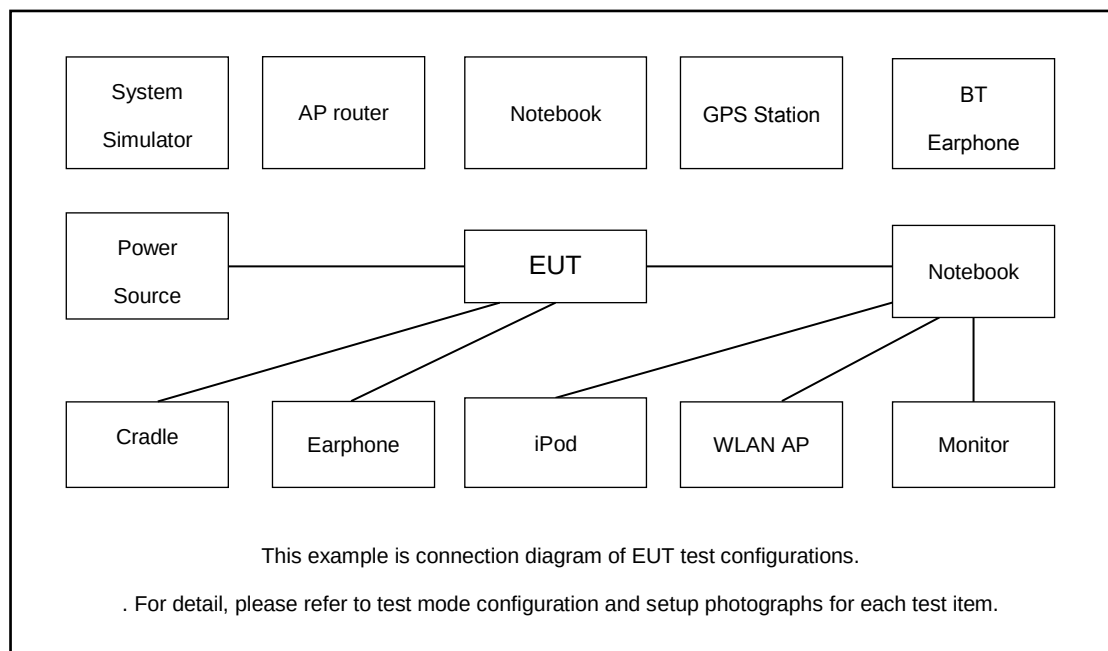
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

MIMO Antenna

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

Test Cases	
AC Conducted Emission	Mode 1 :WLAN Link + WAN Link + LAN Link + PoE

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	Y510P	FCC DoC	NA	AC I/P Unshielded 1.2m DC O/P Shielded 1.8m
2.	Notebook	DELL	P20G	FCC DoC/ Contains FCC ID: QDS-BRCM1051	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Switch Hub	Ubiquiti	US-8-60W	FCC DoC	Shielded 2.0m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, programmed RF utility, "CMD" installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

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.

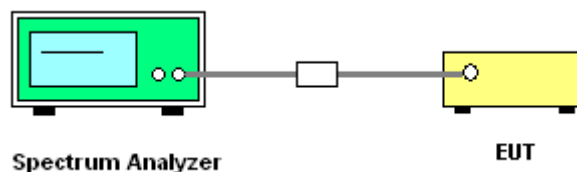
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

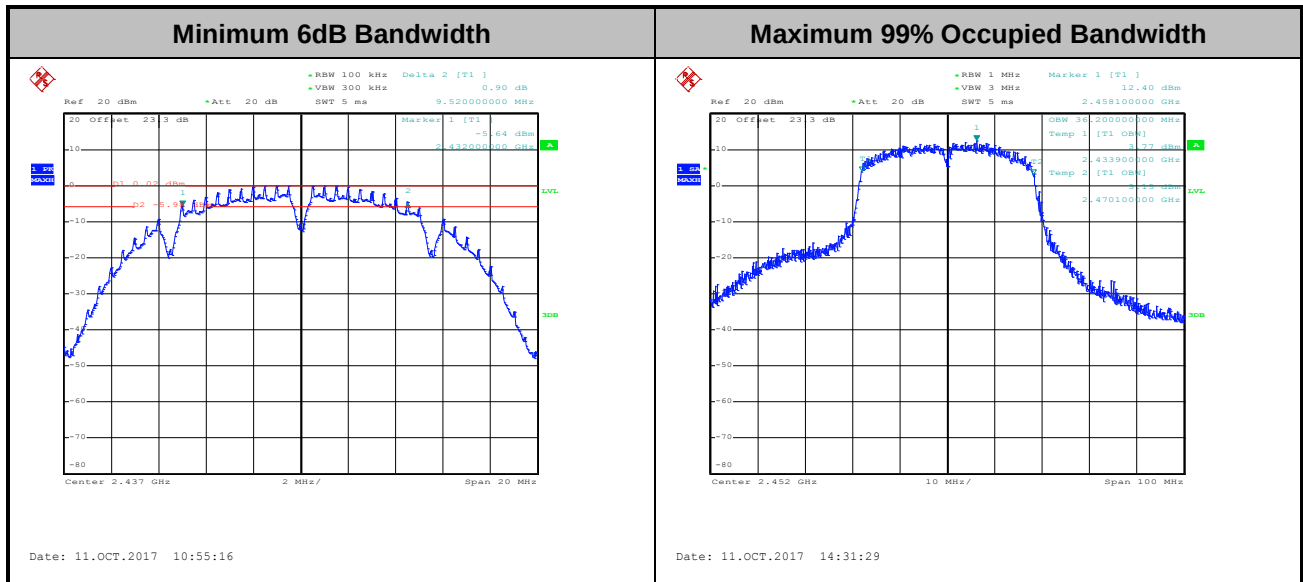
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit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



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

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

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

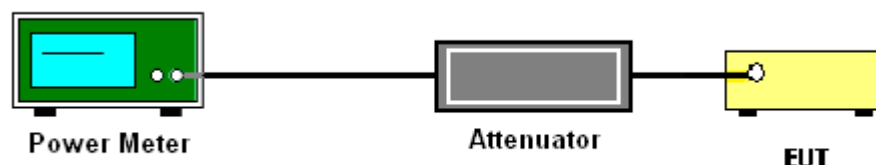
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance 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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

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.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

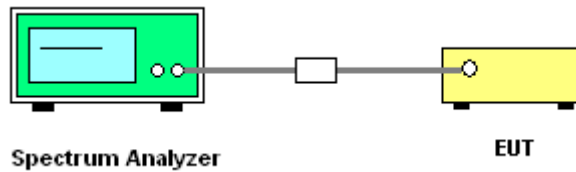
If measurements performed using method (2) plus $10 \log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

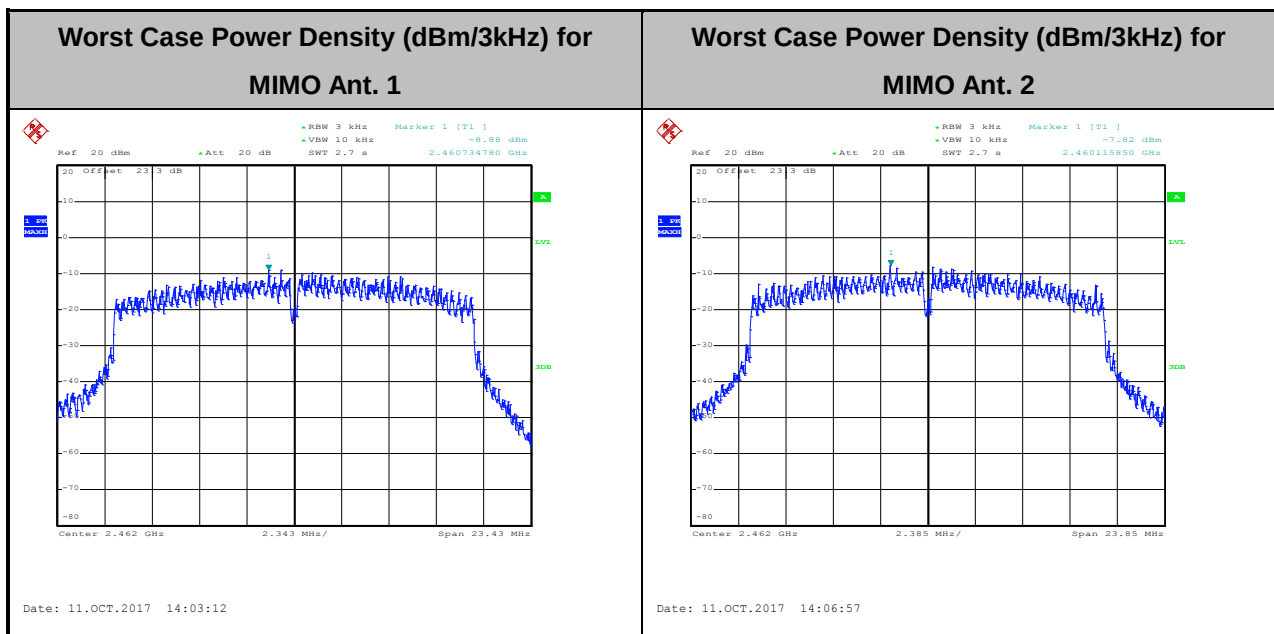
Method (2): Measure and add $10 \log(N)$ dB, where N is the number of outputs. (N=2)

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



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.

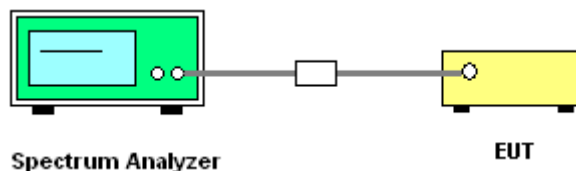
3.4.2 Measuring Instruments

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

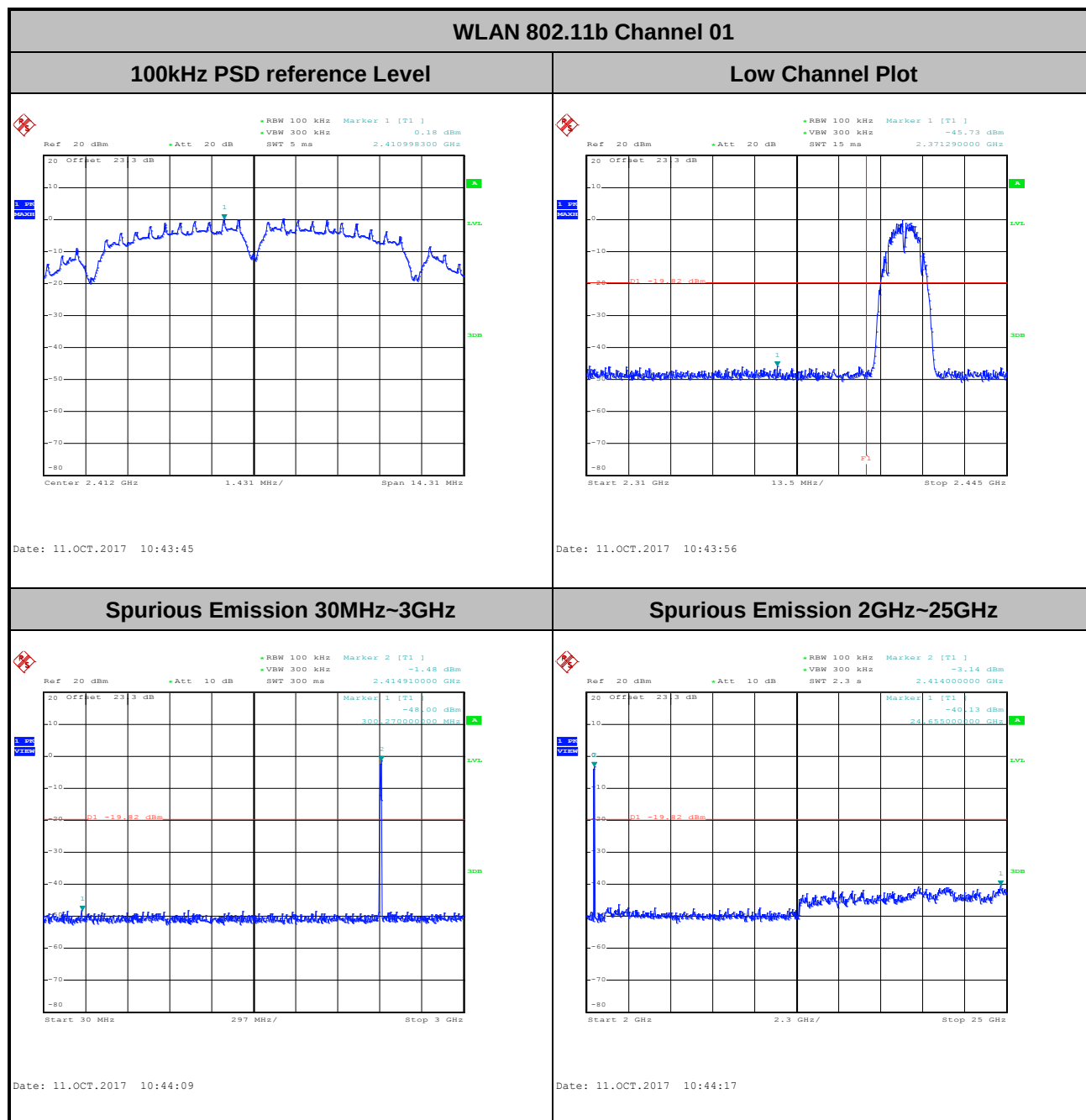




3.4.5 Test Result of Conducted Band Edges and Spurious Emission

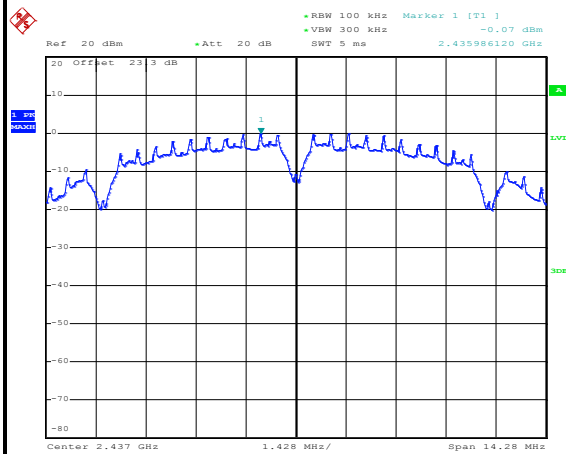
Number of TX = 2, Ant. 1 (Measured)

Number of TX :	2	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

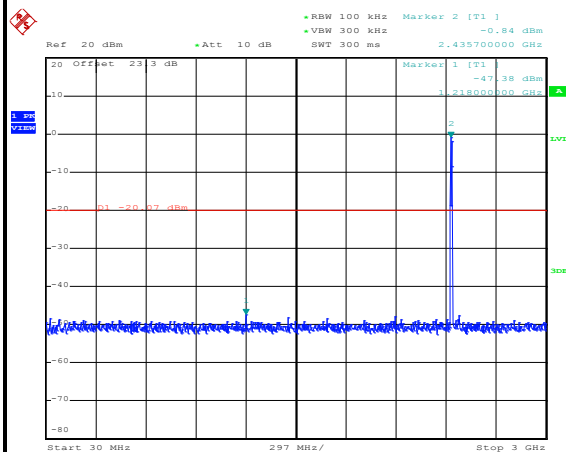




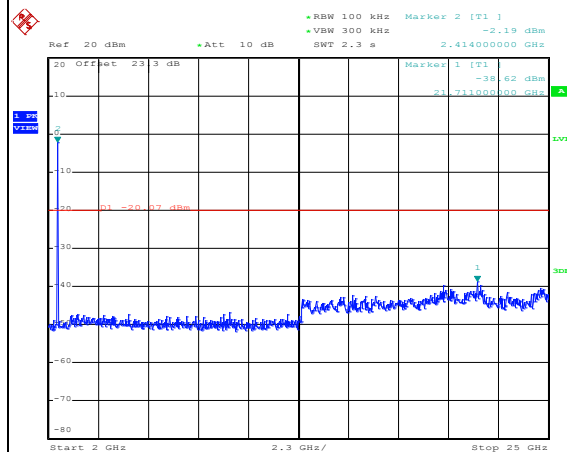
Number of TX :	2	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11b Channel 06**100kHz PSD reference Level****Mid Channel Plot**

Date: 11.OCT.2017 10:56:17

Spurious Emission 30MHz~3GHz**Spurious Emission 2GHz~25GHz**

Date: 11.OCT.2017 10:56:33



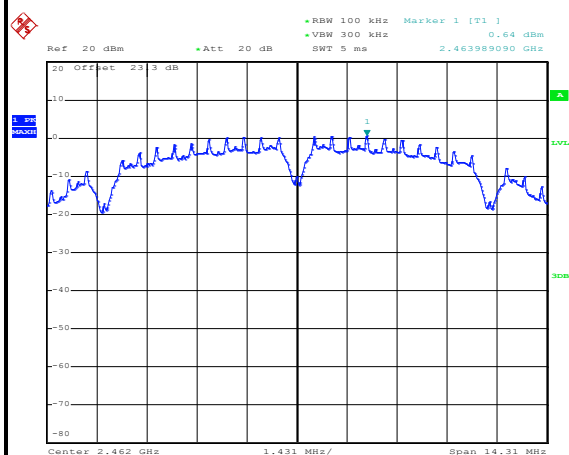
Date: 11.OCT.2017 10:56:41



Number of TX :	2	Ant. :	1
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

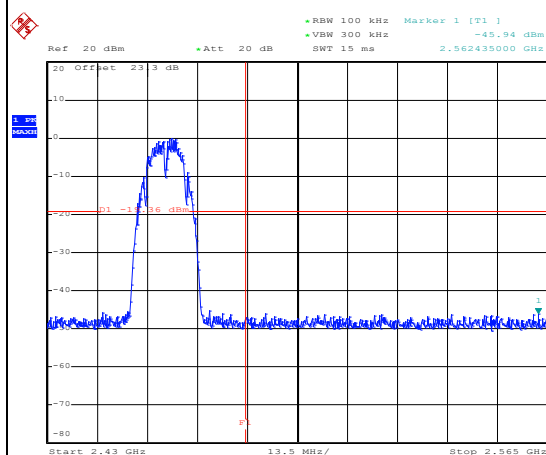
WLAN 802.11b Channel 11

100kHz PSD reference Level



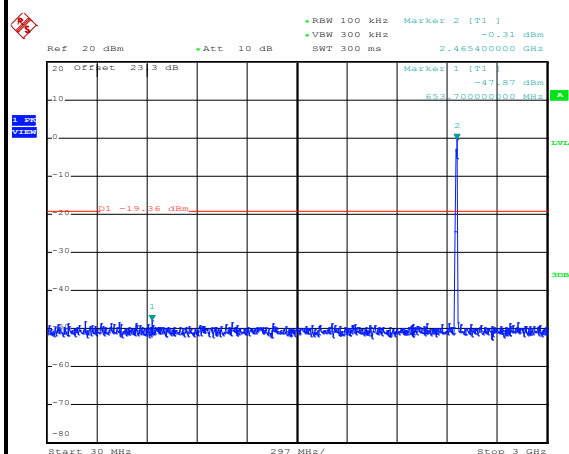
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High Channel Plot



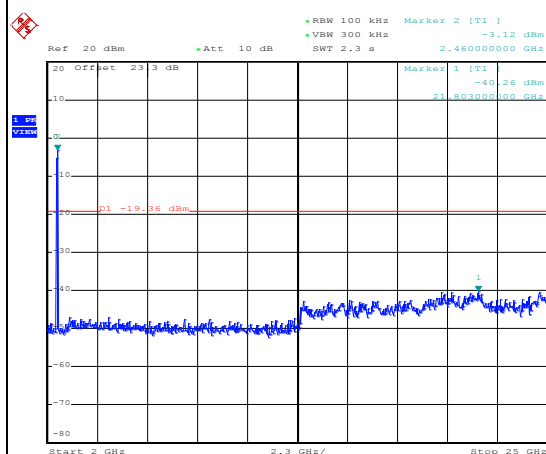
Date: 11.OCT.2017 11:01:18

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 11:01:31

Spurious Emission 2GHz~25GHz



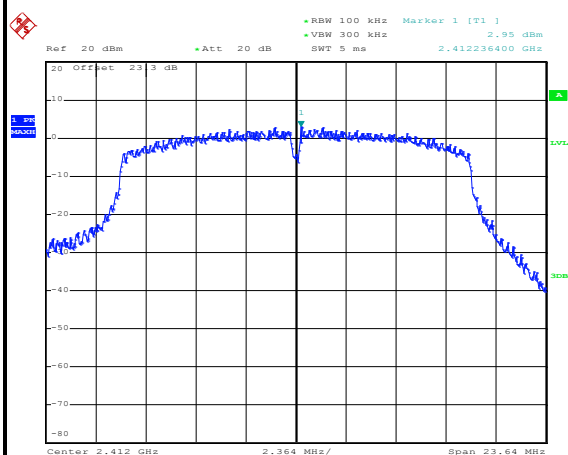
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Number of TX :	2	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

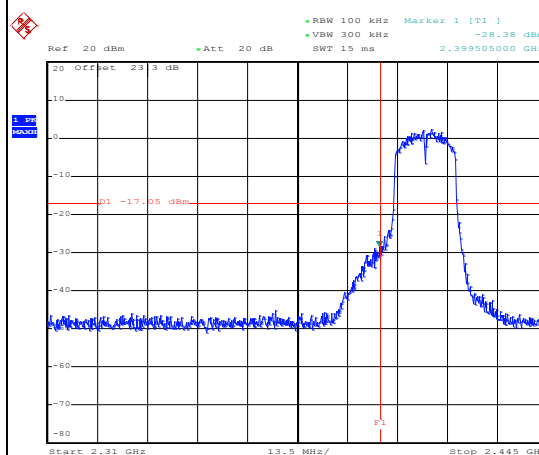
WLAN 802.11g Channel 01

100kHz PSD reference Level



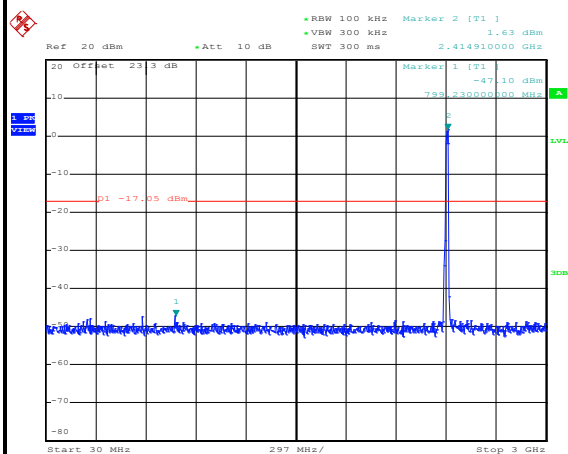
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Low Channel Plot



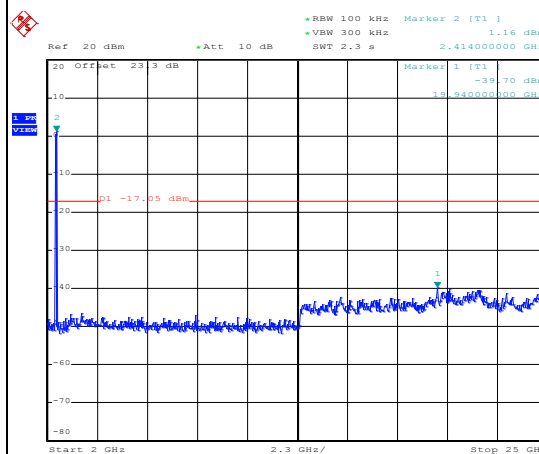
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Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 11:23:11

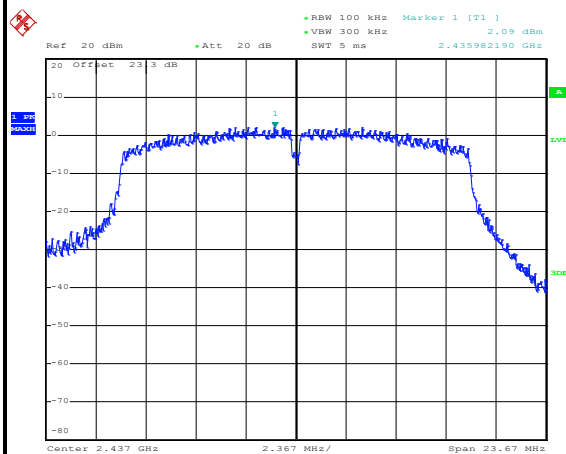
Spurious Emission 2GHz~25GHz



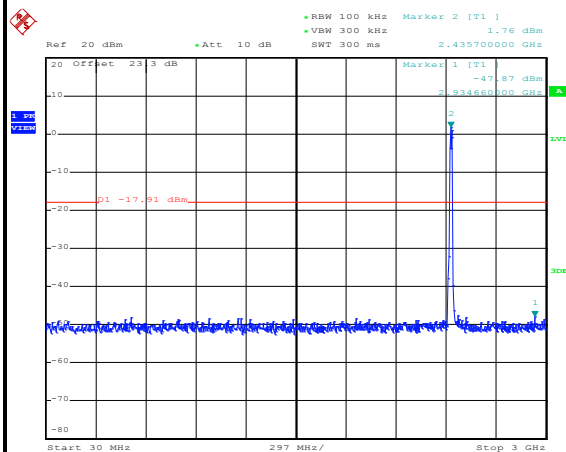
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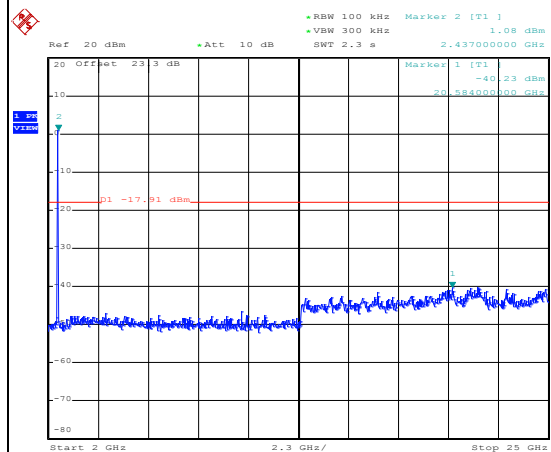
Number of TX :	2	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

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

Date: 11.OCT.2017 11:33:12

Spurious Emission 30MHz~3GHz**Spurious Emission 2GHz~25GHz**

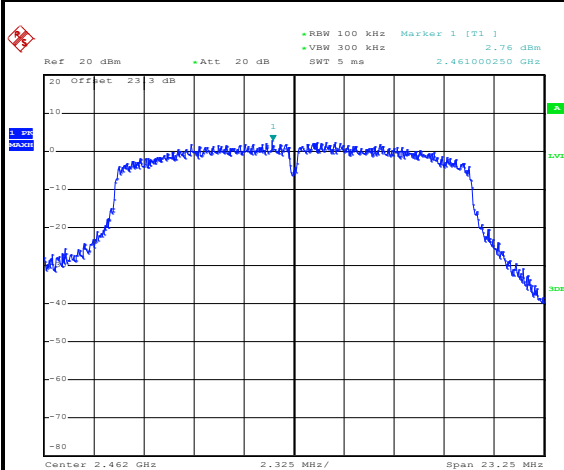
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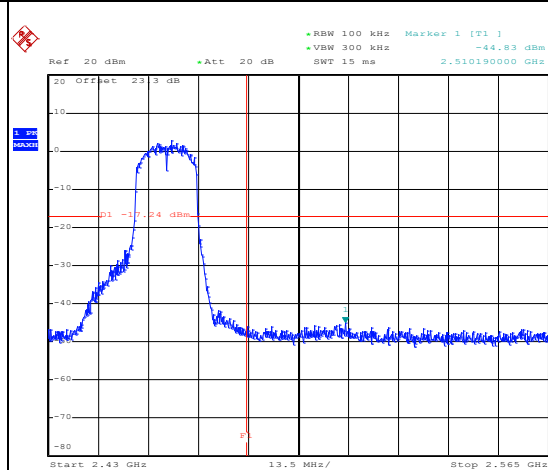
Date: 11.OCT.2017 11:33:32



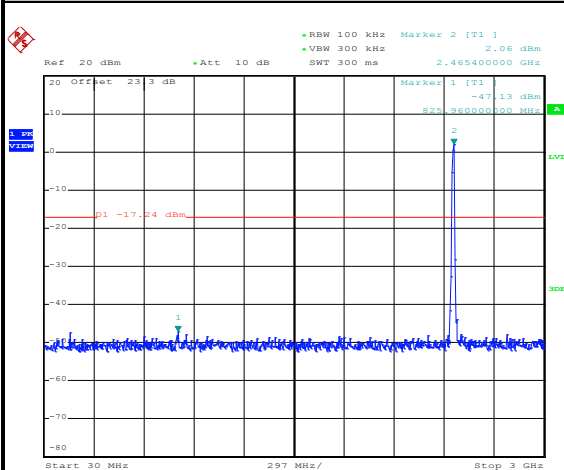
Number of TX :	2	Ant. :	1
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

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

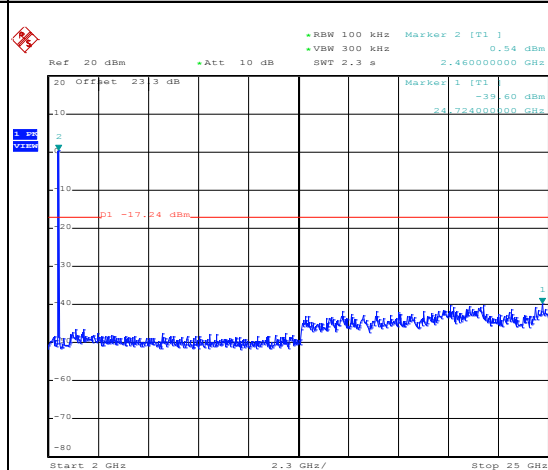
Date: 11.OCT.2017 11:37:22

High Channel Plot

Date: 11.OCT.2017 11:37:32

Spurious Emission 30MHz~3GHz

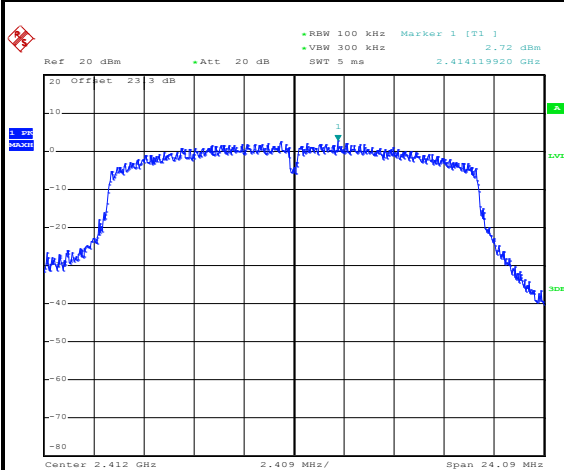
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Spurious Emission 2GHz~25GHz

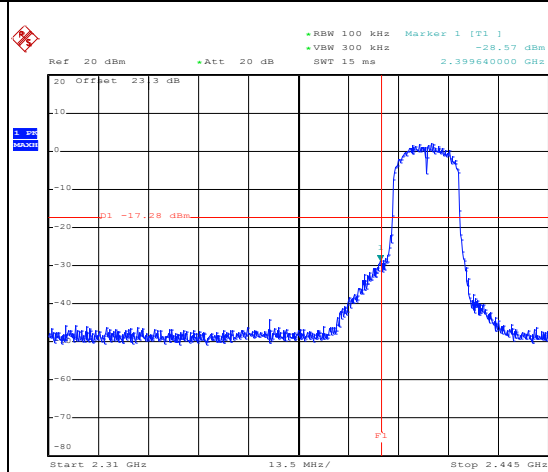
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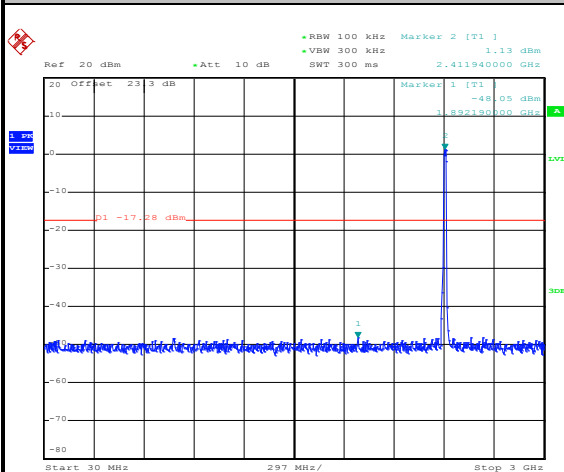
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

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

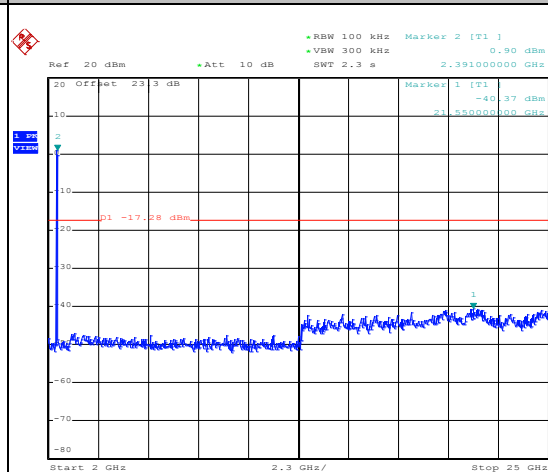
Date: 11.OCT.2017 13:42:59

Low Channel Plot

Date: 11.OCT.2017 13:43:10

Spurious Emission 30MHz~3GHz

Date: 11.OCT.2017 13:43:23

Spurious Emission 2GHz~25GHz

Date: 11.OCT.2017 13:43:31

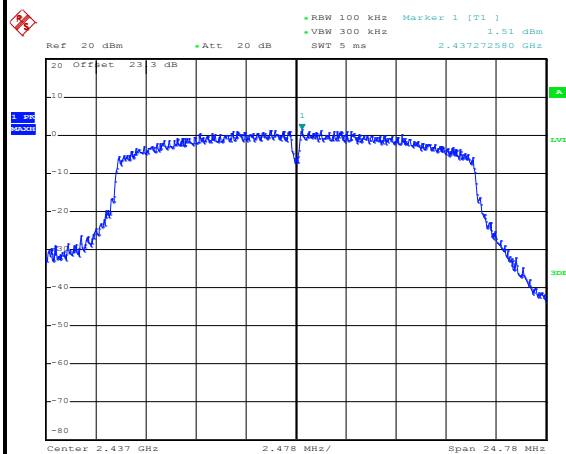


Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level

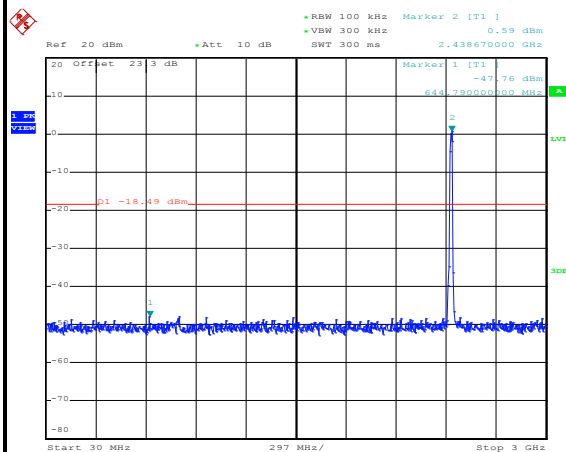
Mid Channel Plot



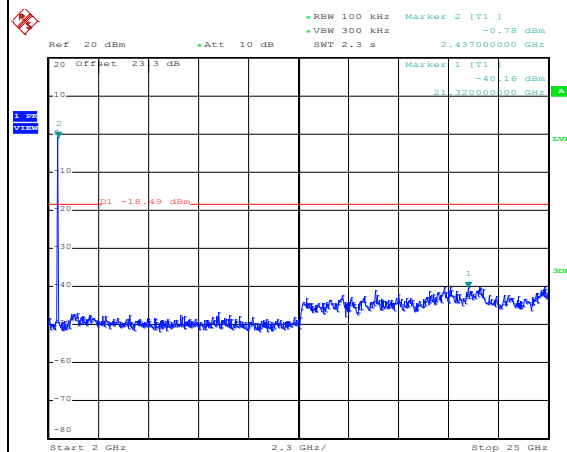
Date: 11.OCT.2017 13:57:12

Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



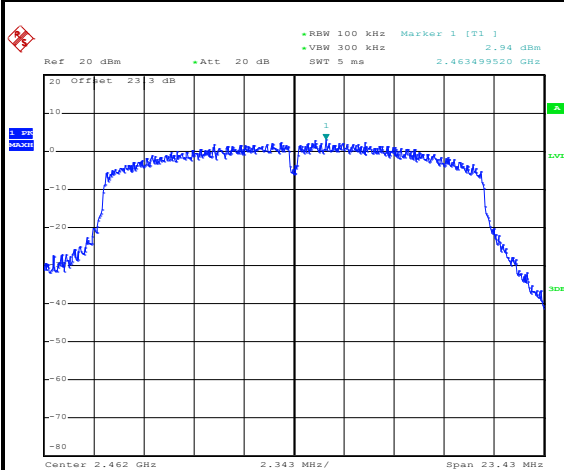
Date: 11.OCT.2017 13:58:10



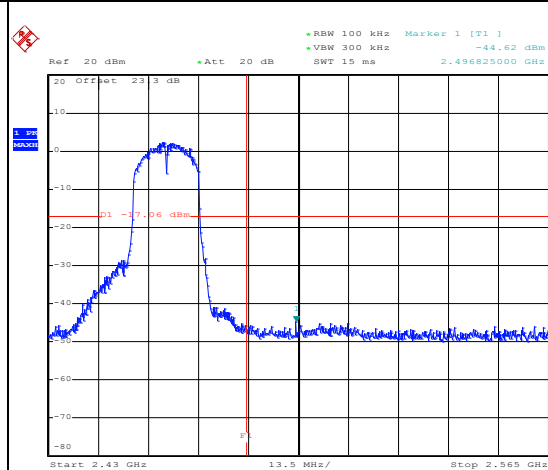
Date: 11.OCT.2017 13:58:19



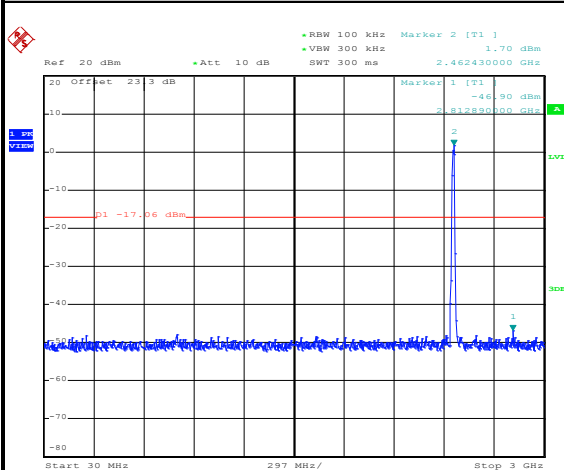
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

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

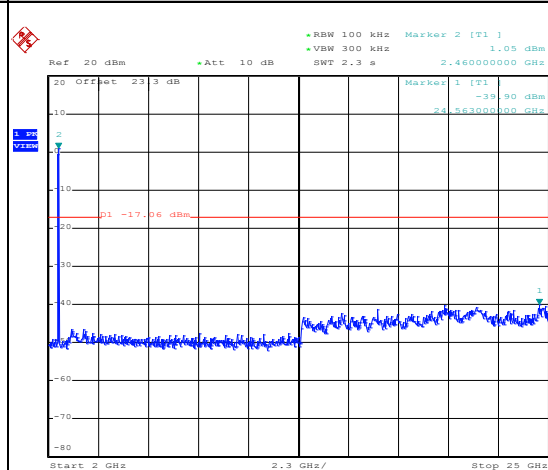
Date: 11.OCT.2017 14:03:34

High Channel Plot

Date: 11.OCT.2017 14:03:50

Spurious Emission 30MHz~3GHz

Date: 11.OCT.2017 14:04:04

Spurious Emission 2GHz~25GHz

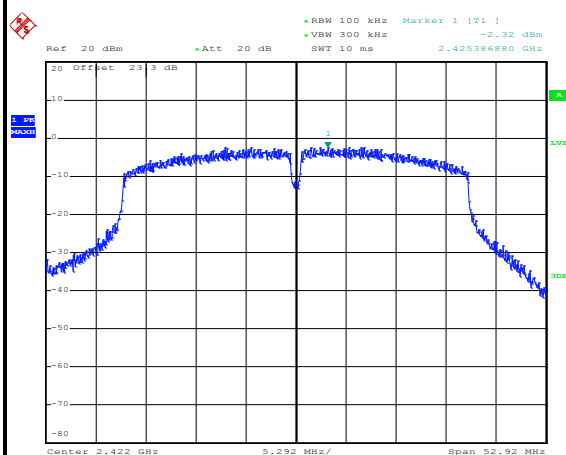
Date: 11.OCT.2017 14:04:13



Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	03	Test Engineer :	Allen Lin and AC Chang

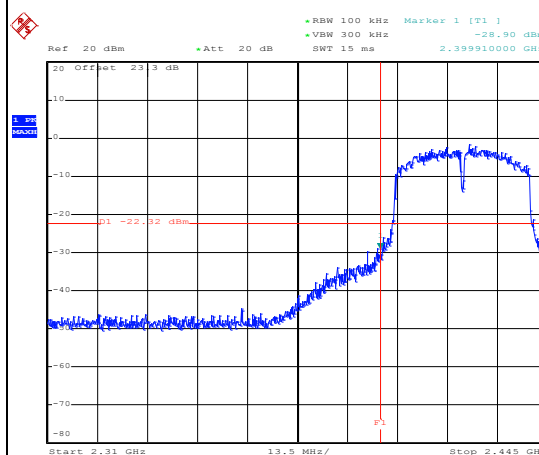
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



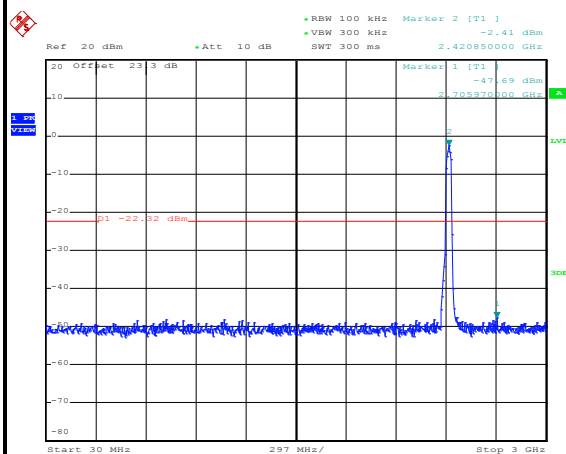
Date: 11.OCT.2017 14:12:27

Low Channel Plot



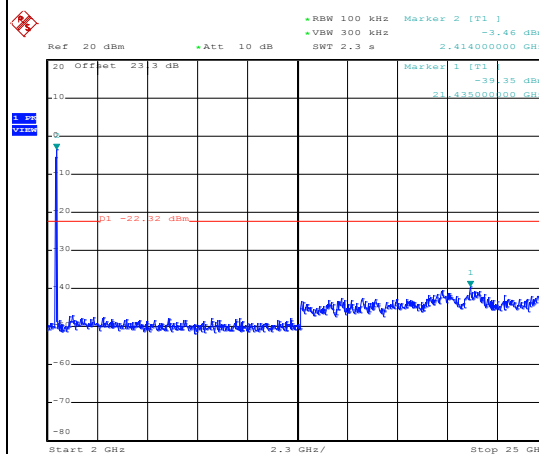
Date: 11.OCT.2017 14:12:37

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 14:12:51

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:13:00

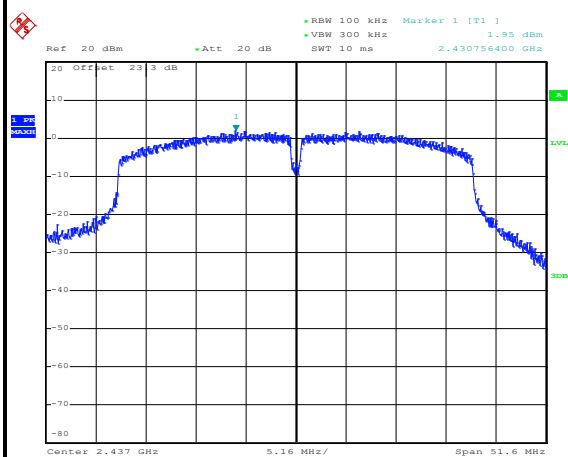


Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level

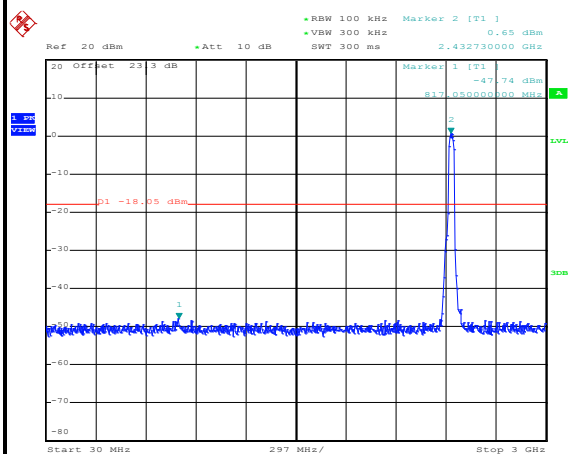
Mid Channel Plot



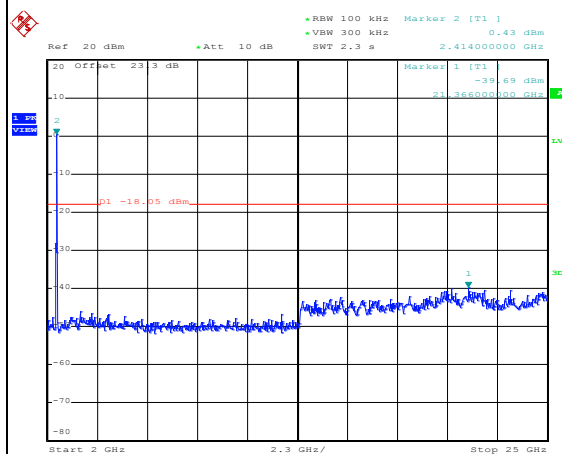
Date: 11.OCT.2017 14:25:52

Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:26:19



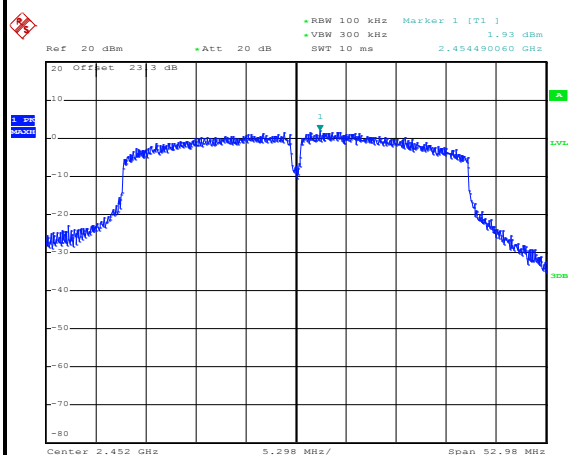
Date: 11.OCT.2017 14:26:28



Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	09	Test Engineer :	Allen Lin and AC Chang

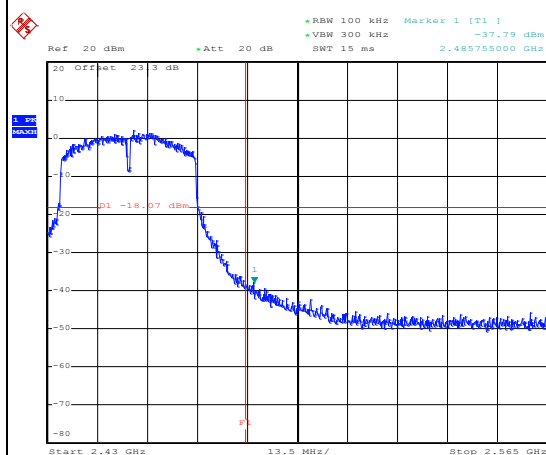
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



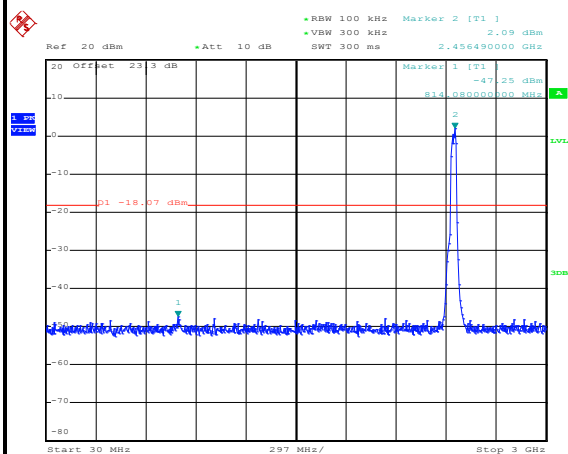
Date: 11.OCT.2017 14:36:44

High Channel Plot



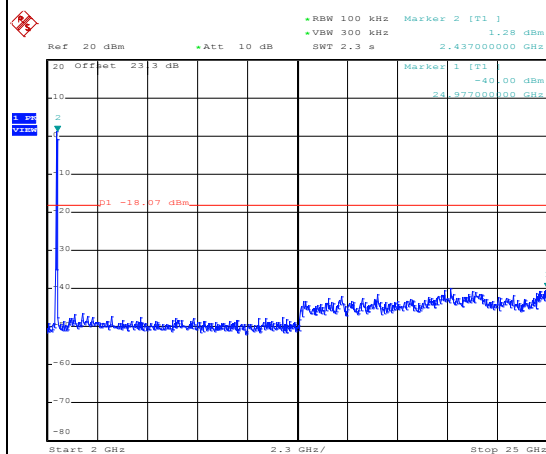
Date: 11.OCT.2017 14:36:56

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 14:37:12

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:37:20

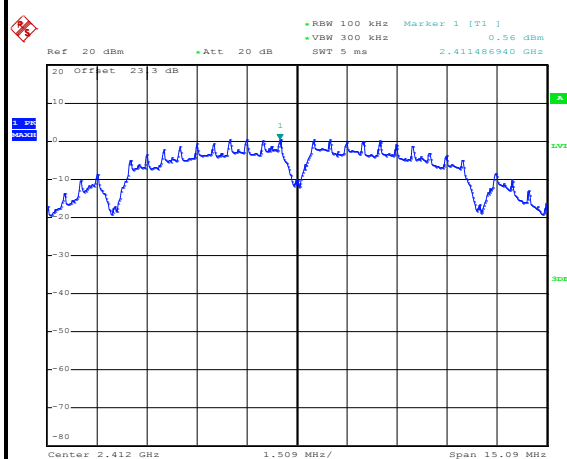


Number of TX = 2, Ant. 2 (Measured)

Number of TX :	2	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

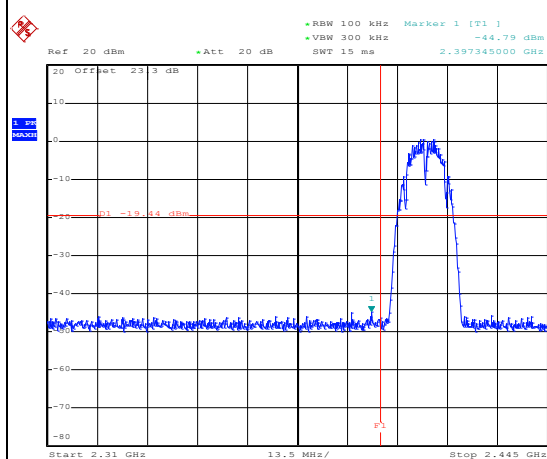
WLAN 802.11b Channel 01

100kHz PSD reference Level



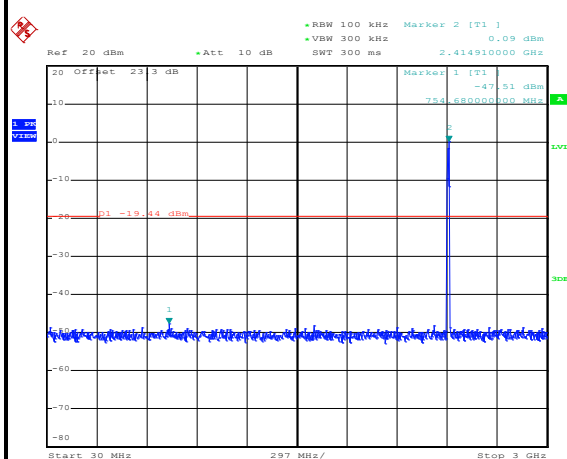
Date: 11.OCT.2017 10:47:27

Low Channel Plot



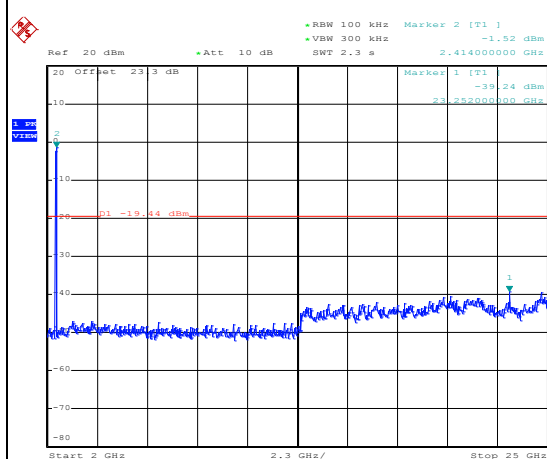
Date: 11.OCT.2017 10:47:43

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 10:48:16

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 10:48:25

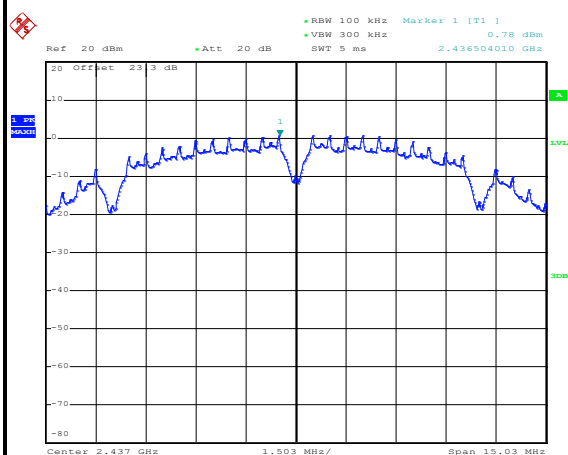


Number of TX :	2	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11b Channel 06

100kHz PSD reference Level

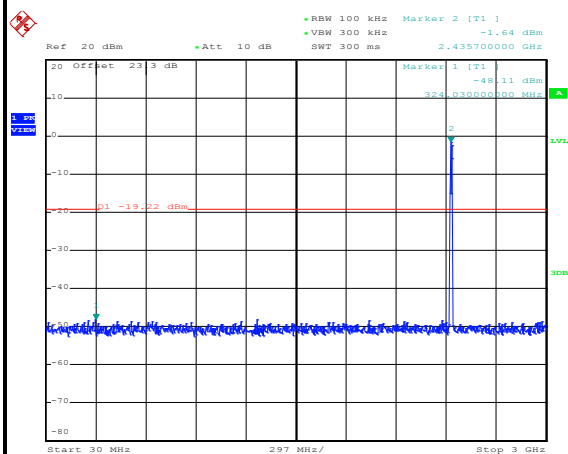
Mid Channel Plot



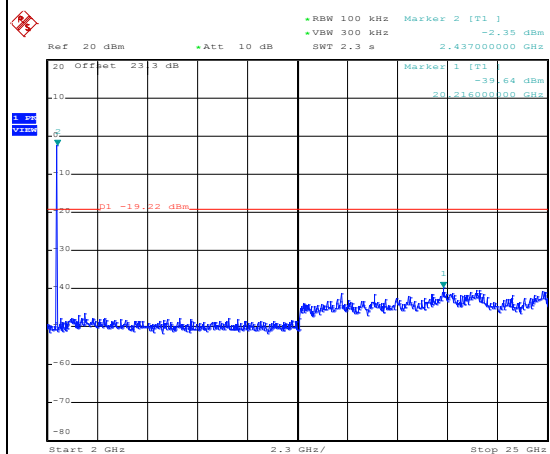
Date: 11.OCT.2017 10:53:01

Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 10:53:15



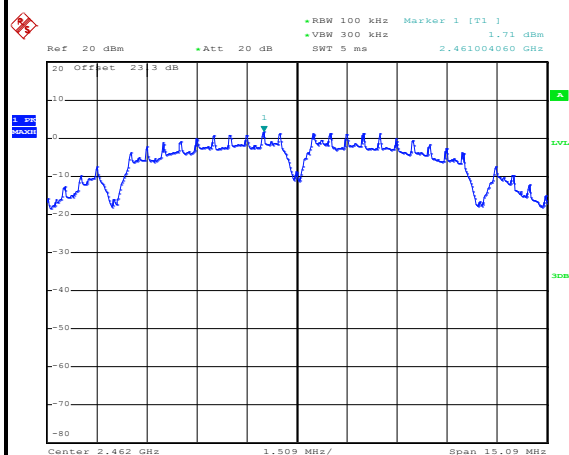
Date: 11.OCT.2017 10:53:23



Number of TX :	2	Ant. :	2
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

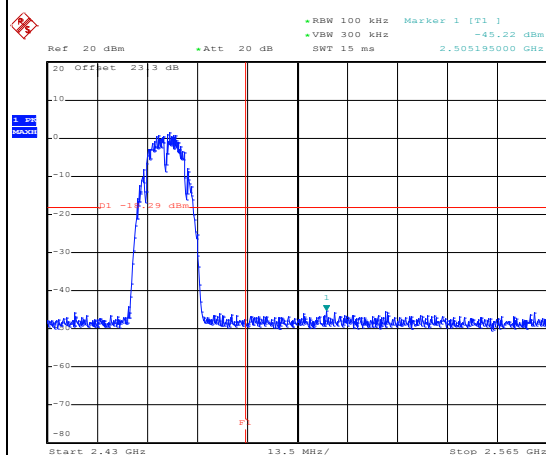
WLAN 802.11b Channel 11

100kHz PSD reference Level



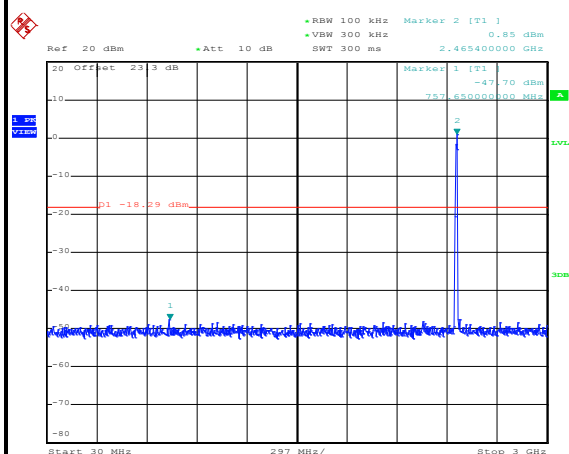
Date: 11.OCT.2017 11:04:37

High Channel Plot



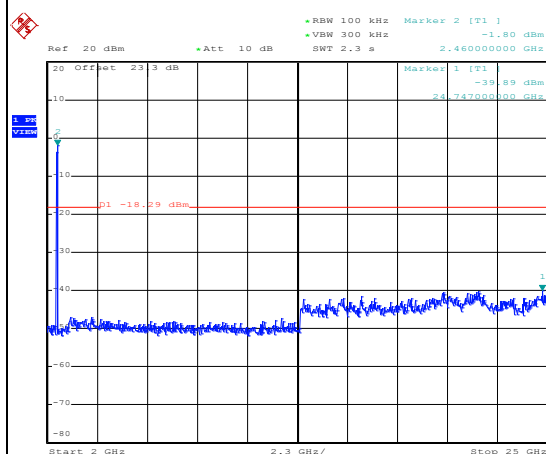
Date: 11.OCT.2017 11:04:50

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 11:05:02

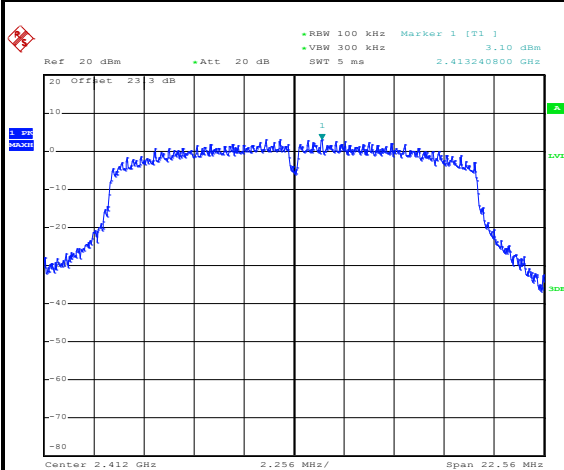
Spurious Emission 2GHz~25GHz



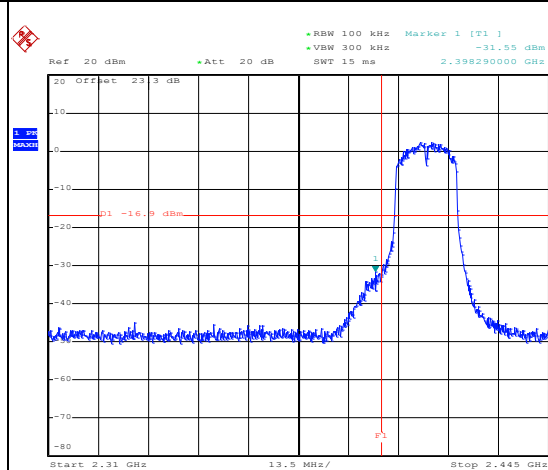
Date: 11.OCT.2017 11:05:11



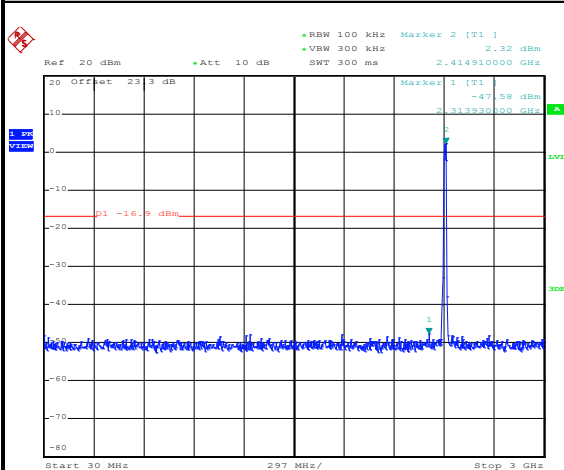
Number of TX :	2	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11g Channel 01**100kHz PSD reference Level**

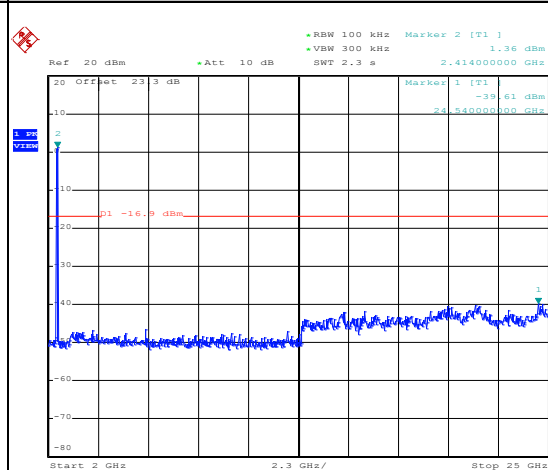
Date: 11.OCT.2017 11:27:23

Low Channel Plot

Date: 11.OCT.2017 11:27:38

Spurious Emission 30MHz~3GHz

Date: 11.OCT.2017 11:27:51

Spurious Emission 2GHz~25GHz

Date: 11.OCT.2017 11:28:00

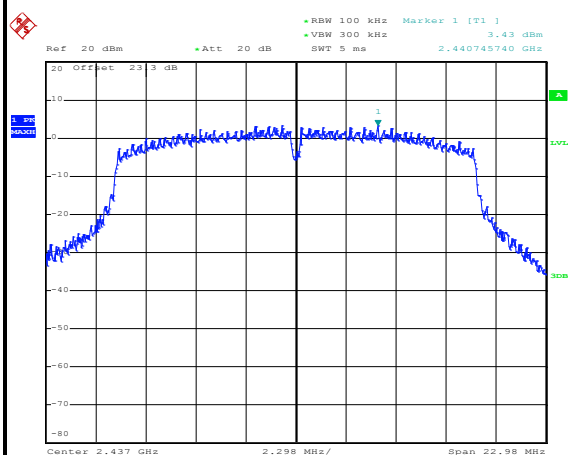


Number of TX :	2	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11g Channel 06

100kHz PSD reference Level

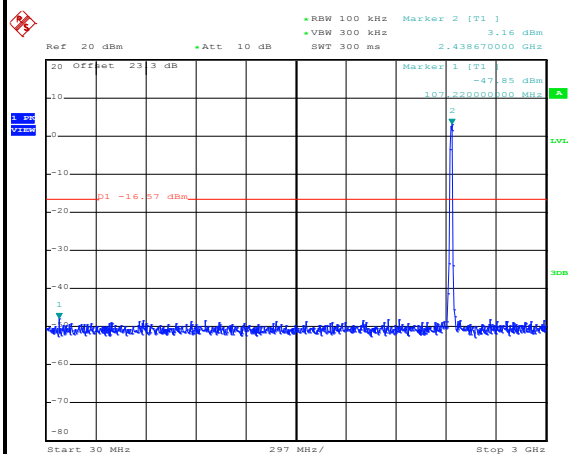
Mid Channel Plot



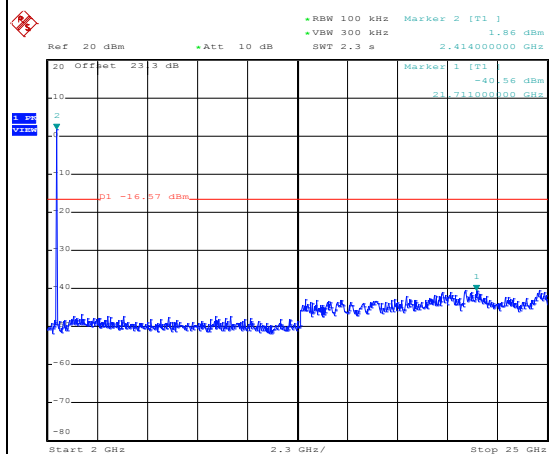
Date: 11.OCT.2017 11:50:04

Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



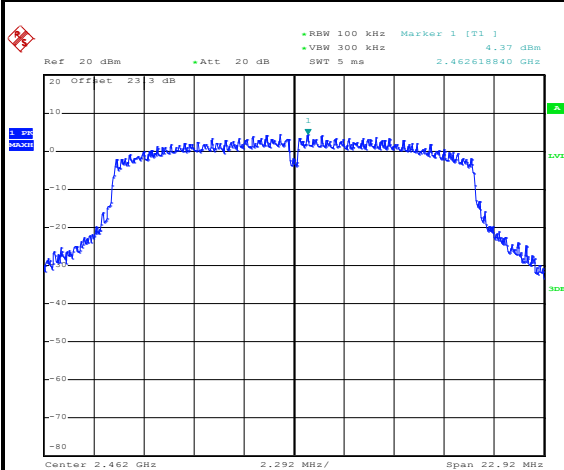
Date: 11.OCT.2017 11:50:15



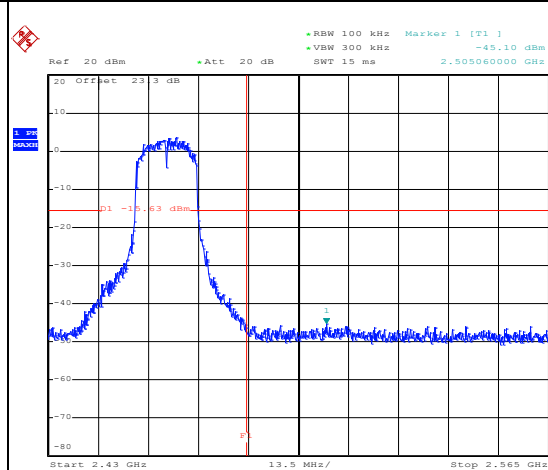
Date: 11.OCT.2017 11:50:24



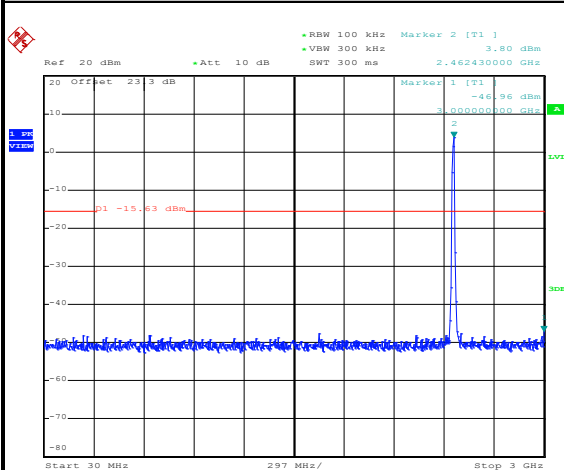
Number of TX :	2	Ant. :	2
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

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

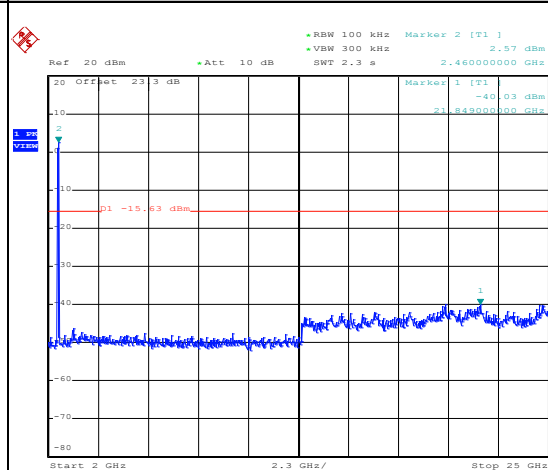
Date: 11.OCT.2017 11:46:41

High Channel Plot

Date: 11.OCT.2017 11:46:53

Spurious Emission 30MHz~3GHz

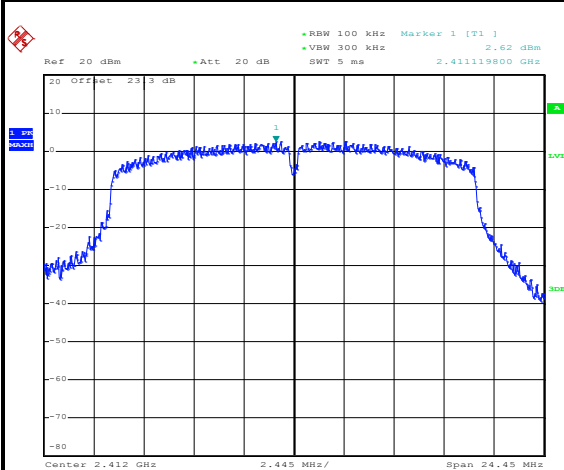
Date: 11.OCT.2017 11:47:31

Spurious Emission 2GHz~25GHz

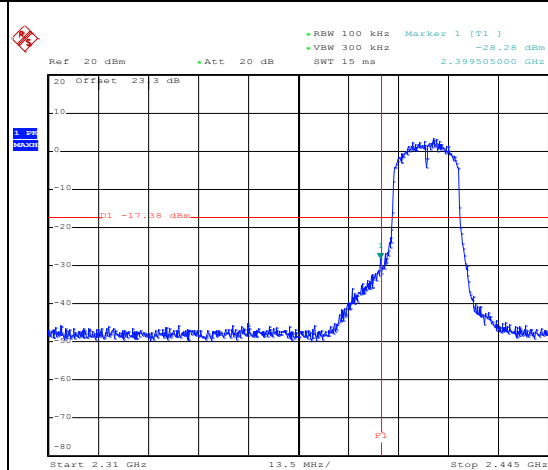
Date: 11.OCT.2017 11:47:39



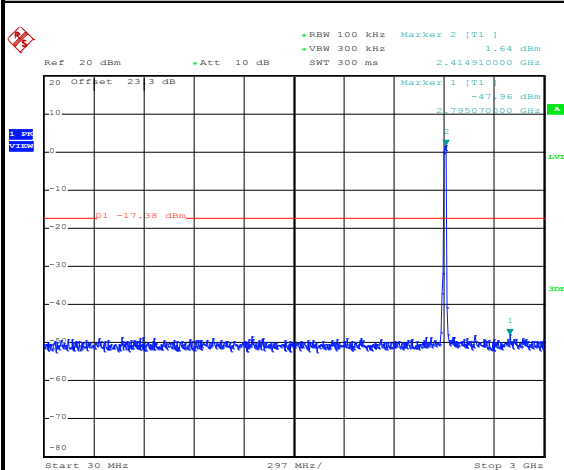
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Allen Lin and AC Chang

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

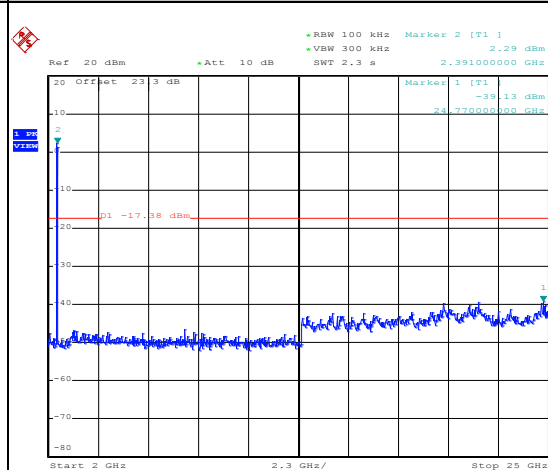
Date: 11.OCT.2017 13:47:53

Low Channel Plot

Date: 11.OCT.2017 13:48:09

Spurious Emission 30MHz~3GHz

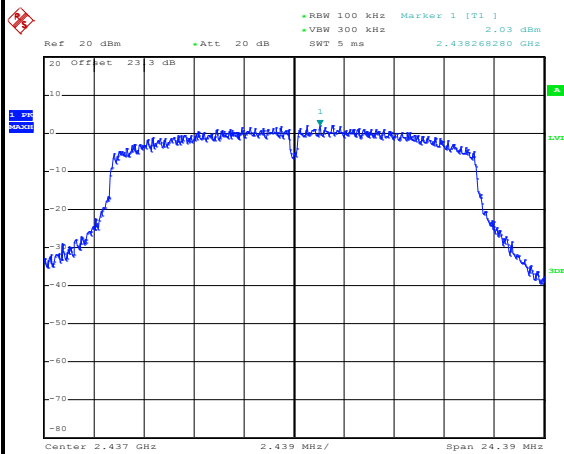
Date: 11.OCT.2017 13:48:21

Spurious Emission 2GHz~25GHz

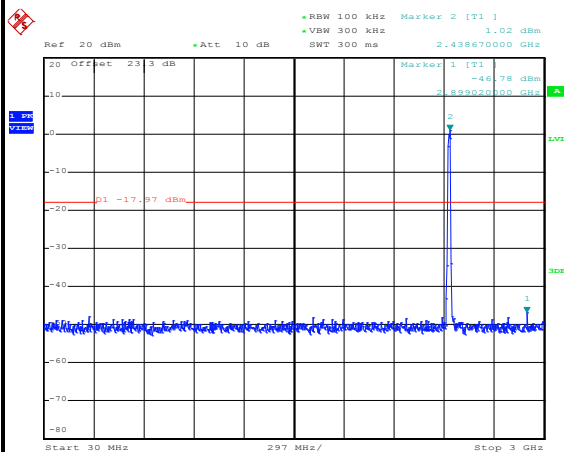
Date: 11.OCT.2017 13:48:29



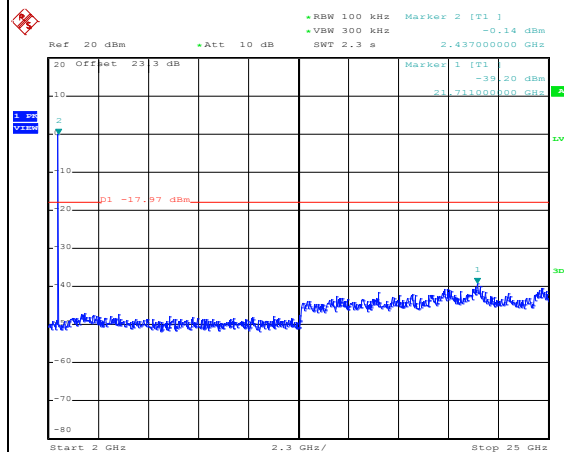
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11n HT20 Channel 06**100kHz PSD reference Level****Mid Channel Plot**

Date: 11.OCT.2017 13:54:28

Spurious Emission 30MHz~3GHz**Spurious Emission 2GHz~25GHz**

Date: 11.OCT.2017 13:54:40



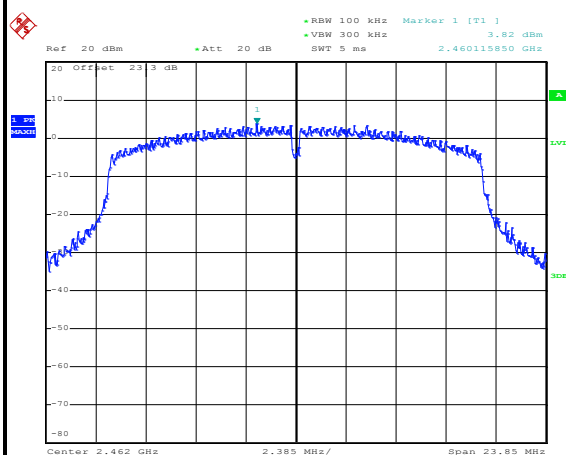
Date: 11.OCT.2017 13:54:49



Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	Allen Lin and AC Chang

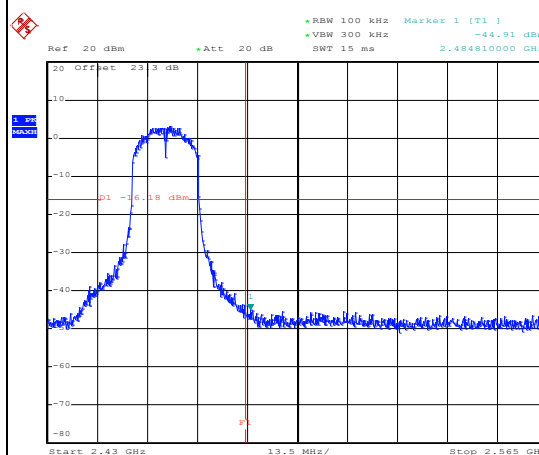
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



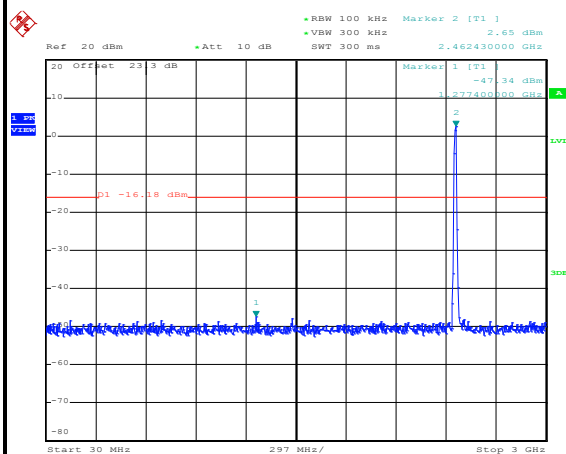
Date: 11.OCT.2017 14:07:14

High Channel Plot



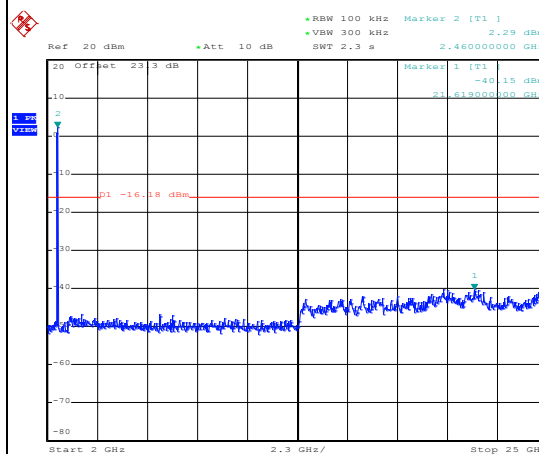
Date: 11.OCT.2017 14:07:25

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 14:07:38

Spurious Emission 2GHz~25GHz



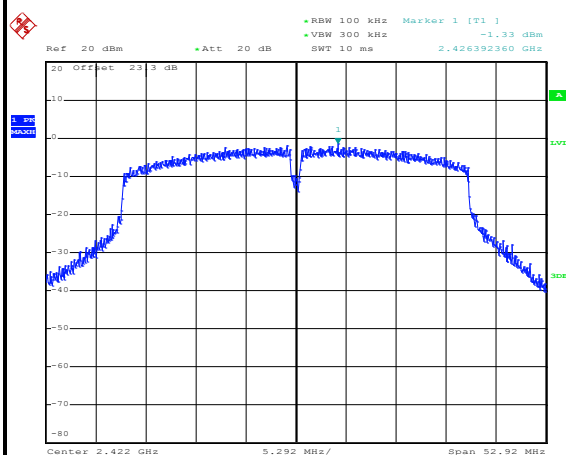
Date: 11.OCT.2017 14:07:47



Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	03	Test Engineer :	Allen Lin and AC Chang

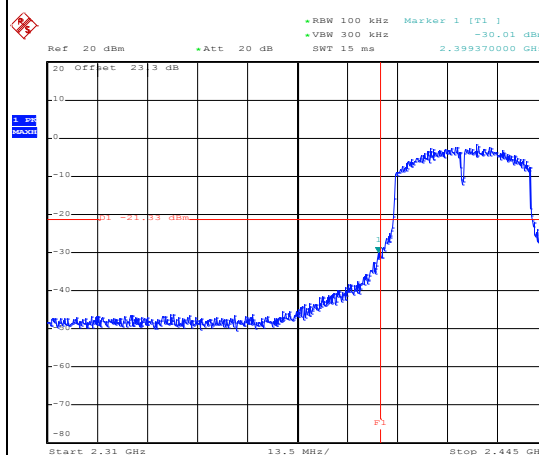
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



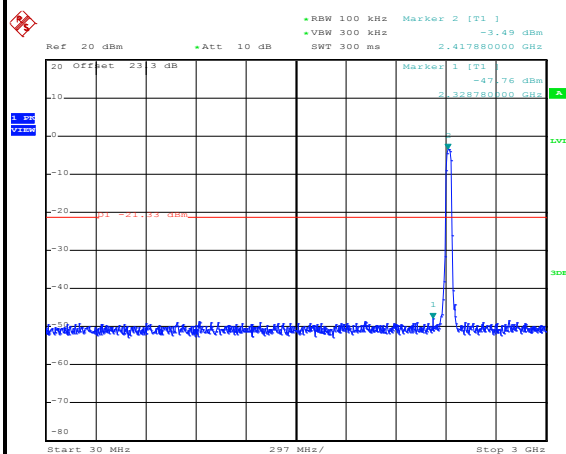
Date: 11.OCT.2017 14:15:41

Low Channel Plot



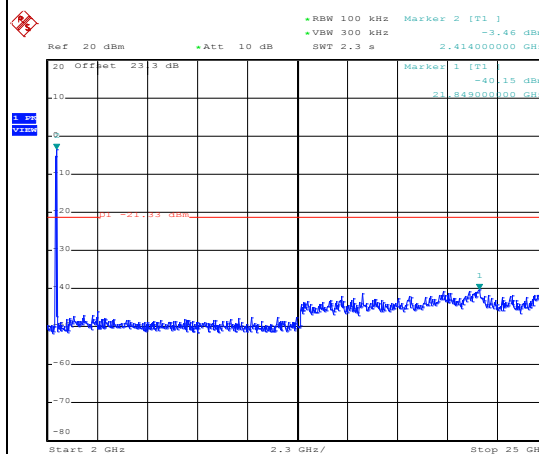
Date: 11.OCT.2017 14:15:54

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 14:16:09

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:16:18

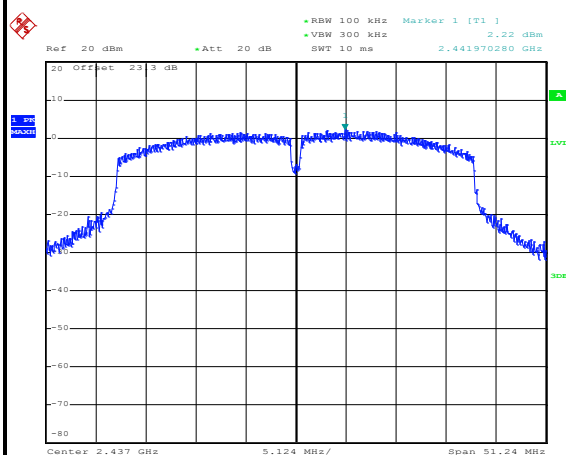


Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Allen Lin and AC Chang

WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level

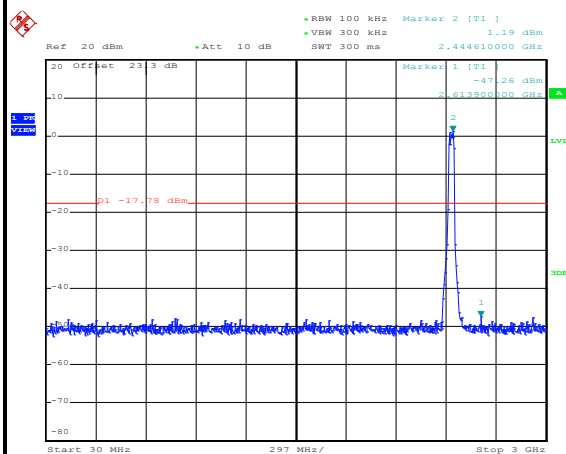
Mid Channel Plot



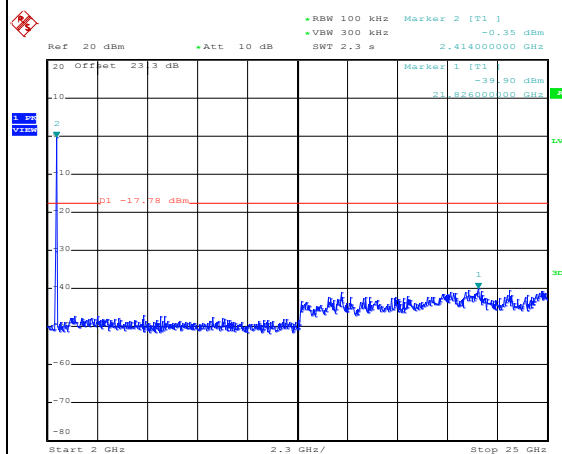
Date: 11.OCT.2017 14:20:08

Spurious Emission 30MHz~3GHz

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:20:19



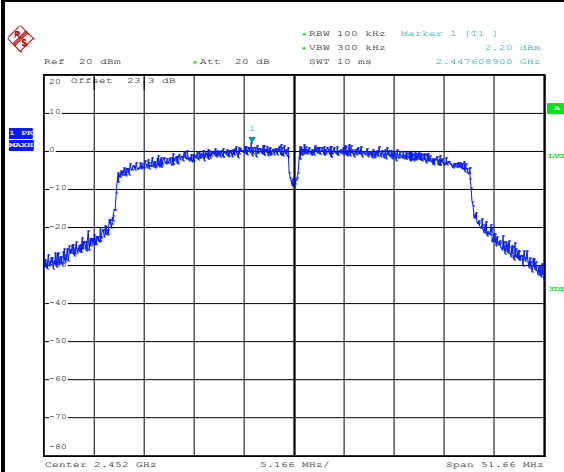
Date: 11.OCT.2017 14:20:28



Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	09	Test Engineer :	Allen Lin and AC Chang

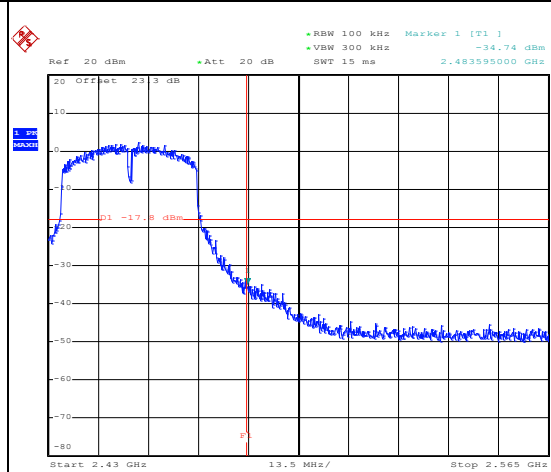
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



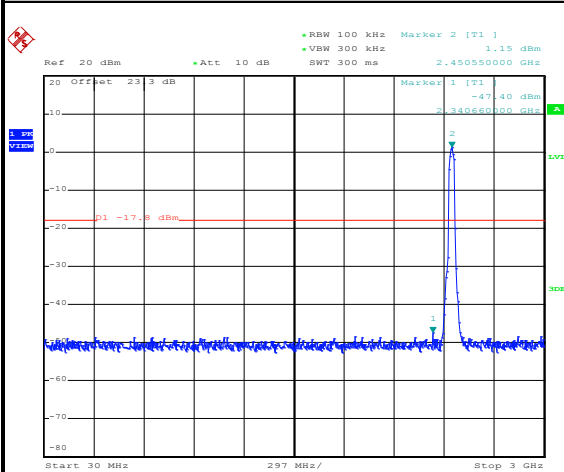
Date: 11.OCT.2017 14:40:08

High Channel Plot



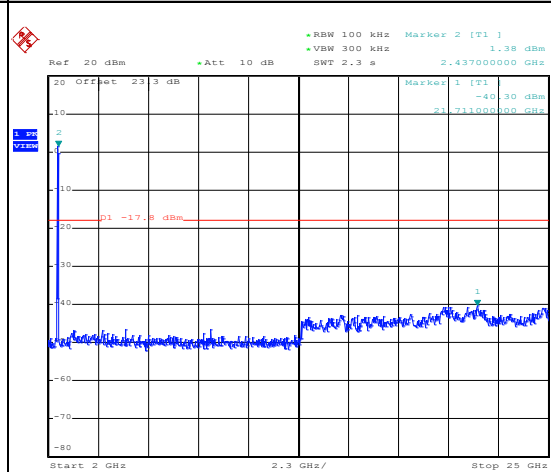
Date: 11.OCT.2017 14:40:22

Spurious Emission 30MHz~3GHz



Date: 11.OCT.2017 14:40:39

Spurious Emission 2GHz~25GHz



Date: 11.OCT.2017 14:40:48



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

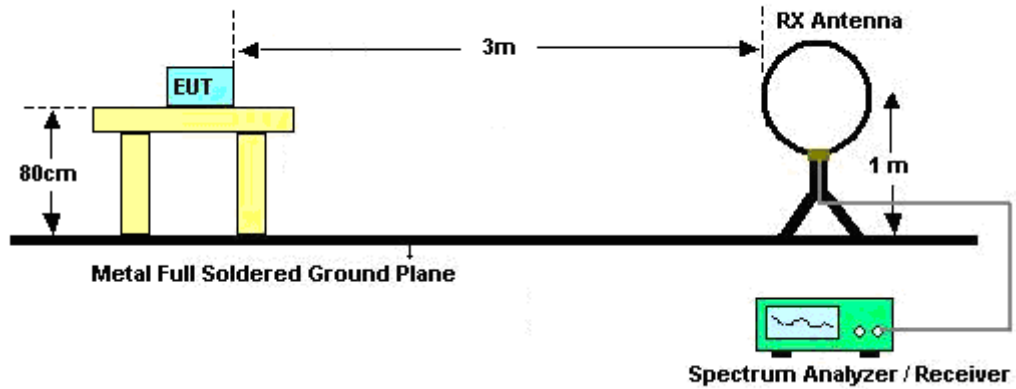
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test 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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

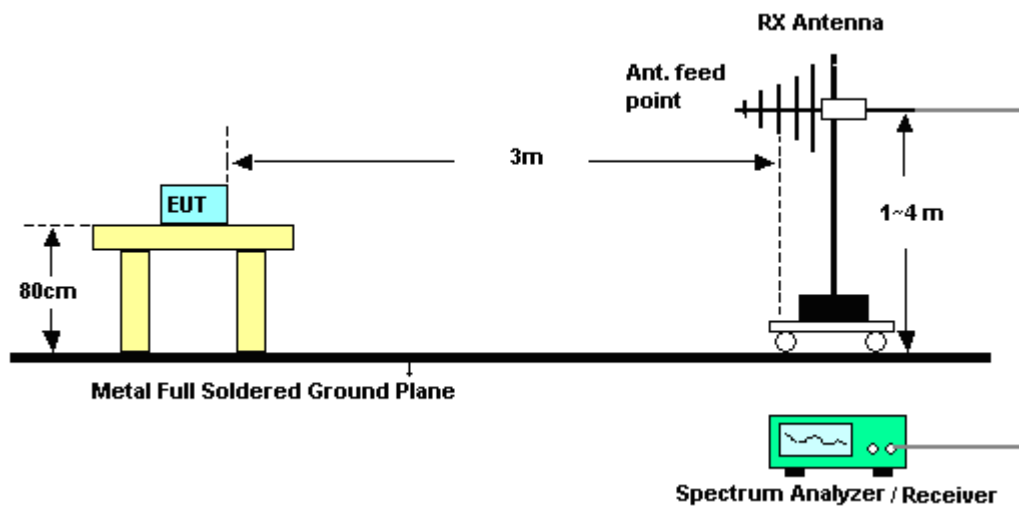
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

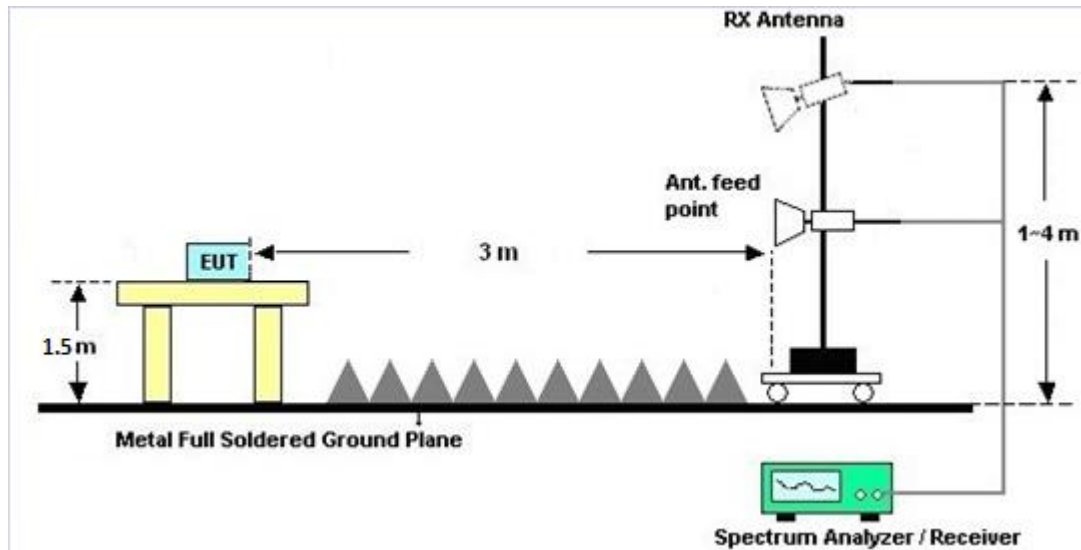
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line 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 (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

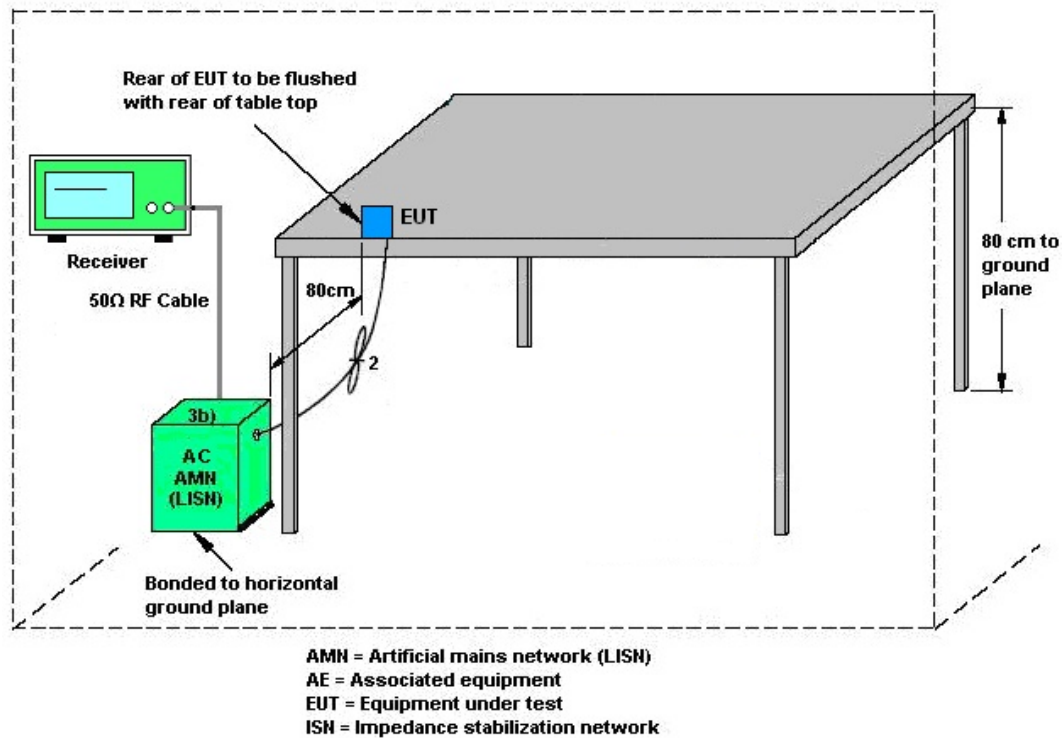
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

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. 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

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
2.4 GHz	4.00	4.00	4.00	7.01	0.00	1.01

Power Limit Reduction = $DG(\text{Power}) - 6\text{dBi}$, (min = 0)

PSD Limit Reduction = $DG(\text{PSD}) - 6\text{dBi}$, (min = 0)



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 20, 2017	Oct. 03, 2017 ~ Oct. 11, 2017	Jun. 19, 2018	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1132003	N/A	Aug. 09, 2017	Oct. 03, 2017 ~ Oct. 11, 2017	Aug. 08, 2018	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 09, 2017	Oct. 03, 2017 ~ Oct. 11, 2017	Aug. 08, 2018	Conducted (TH02-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 22, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 20, 2017	Sep. 22, 2017	Sep. 19, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Sep. 22, 2017	Nov. 28, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 06, 2016	Sep. 22, 2017	Dec. 05, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	May 15, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	May 14, 2019	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 27, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Apr. 26, 2018	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Nov. 09, 2016	Sep. 29, 2017 ~ Oct. 07, 2017	Nov. 08, 2017	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&0800N1D01N-06	41912&05	30MHz to 1GHz	Jan. 07, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Jan. 06, 2018	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA 9120 D 1212	1G~18GHz	Mar. 17, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Mar. 16, 2018	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 21, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Aug. 20, 2018	Radiation (03CH15-HY)
Preamplifier	MITEQ	AMF-7D-00101800	2025787	1GHZ~18GHZ	Feb. 13, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Feb. 12, 2018	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 23, 2017	Sep. 29, 2017 ~ Oct. 07, 2017	Mar. 22, 2018	Radiation (03CH15-HY)
Preamplifier	MITEQ	TTA 1840-35-HG	1887435	18GHz ~ 40GHz	Oct. 13, 2016	Sep. 29, 2017 ~ Oct. 07, 2017	Oct. 12, 2017	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 29, 2017 ~ Oct. 07, 2017	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 29, 2017 ~ Oct. 07, 2017	N/A	Radiation (03CH15-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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.14
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.48
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.12
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Allen Lin/AC Chang	Temperature:	21~25	°C
Test Date:	2017/10/3~2017/10/11	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
					Ant 1	Ant 2	Ant 1	Ant 2		
11b	1Mbps	2	1	2412	13.75	13.70	9.54	10.06	0.50	Pass
11b	1Mbps	2	6	2437	13.60	13.55	9.52	10.02	0.50	Pass
11b	1Mbps	2	11	2462	13.75	13.75	9.54	10.06	0.50	Pass
11g	6Mbps	2	1	2412	16.60	16.65	15.76	15.04	0.50	Pass
11g	6Mbps	2	6	2437	16.70	16.75	15.78	15.32	0.50	Pass
11g	6Mbps	2	11	2462	16.65	16.65	15.50	15.28	0.50	Pass
HT20	MCS0	2	1	2412	17.70	17.70	16.06	16.30	0.50	Pass
HT20	MCS0	2	6	2437	17.65	17.65	16.52	16.26	0.50	Pass
HT20	MCS0	2	11	2462	17.55	17.65	15.62	15.90	0.50	Pass
HT40	MCS0	2	3	2422	36.00	36.10	35.28	35.28	0.50	Pass
HT40	MCS0	2	6	2437	36.00	35.90	34.40	34.16	0.50	Pass
HT40	MCS0	2	9	2452	36.20	36.10	35.32	34.44	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	2	1	2412	11.87	12.08	14.99	30.00		4.00		18.99		36.00		Pass
11b	1Mbps	2	6	2437	12.65	12.59	15.63	30.00		4.00		19.63		36.00		Pass
11b	1Mbps	2	11	2462	12.09	12.94	15.55	30.00		4.00		19.55		36.00		Pass
11g	6Mbps	2	1	2412	21.54	21.92	24.74	30.00		4.00		28.74		36.00		Pass
11g	6Mbps	2	6	2437	22.62	23.02	25.83	30.00		4.00		29.83		36.00		Pass
11g	6Mbps	2	11	2462	22.01	22.21	25.12	30.00		4.00		29.12		36.00		Pass
HT20	MCS0	2	1	2412	22.42	22.14	25.29	30.00		4.00		29.29		36.00		Pass
HT20	MCS0	2	6	2437	22.15	22.25	25.21	30.00		4.00		29.21		36.00		Pass
HT20	MCS0	2	11	2462	22.42	22.47	25.46	30.00		4.00		29.46		36.00		Pass
HT40	MCS0	2	3	2422	18.37	18.23	21.31	30.00		4.00		25.31		36.00		Pass
HT40	MCS0	2	6	2437	22.97	22.71	25.85	30.00		4.00		29.85		36.00		Pass
HT40	MCS0	2	9	2452	22.27	22.14	25.22	30.00		4.00		29.22		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power

2.4GHz Band									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11b	1Mbps	2	1	2412	0.00	0.00	9.54	9.60	12.58
11b	1Mbps	2	6	2437	0.00	0.00	10.16	10.05	13.12
11b	1Mbps	2	11	2462	0.00	0.00	9.67	10.53	13.13
11g	6Mbps	2	1	2412	0.48	0.48	15.25	15.47	18.37
11g	6Mbps	2	6	2437	0.48	0.48	15.81	16.60	19.23
11g	6Mbps	2	11	2462	0.48	0.48	15.63	16.39	19.04
HT20	MCS0	2	1	2412	0.45	0.45	15.35	15.65	18.51
HT20	MCS0	2	6	2437	0.45	0.45	14.88	15.44	18.18
HT20	MCS0	2	11	2462	0.45	0.45	15.47	16.26	18.89
HT40	MCS0	2	3	2422	0.62	0.62	13.83	13.95	16.90
HT40	MCS0	2	6	2437	0.62	0.62	18.17	18.05	21.12
HT40	MCS0	2	9	2452	0.62	0.62	17.90	18.02	20.97

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant 1	Ant 2	Worse + 3.01	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	2	1	2412	-14.12	-13.56	-10.55	7.01		6.99		Pass
11b	1Mbps	2	6	2437	-14.44	-11.98	-8.97	7.01		6.99		Pass
11b	1Mbps	2	11	2462	-14.71	-12.62	-9.61	7.01		6.99		Pass
11g	6Mbps	2	1	2412	-10.30	-9.69	-6.68	7.01		6.99		Pass
11g	6Mbps	2	6	2437	-9.38	-9.50	-6.37	7.01		6.99		Pass
11g	6Mbps	2	11	2462	-9.23	-8.79	-5.78	7.01		6.99		Pass
HT20	MCS0	2	1	2412	-9.87	-10.08	-6.86	7.01		6.99		Pass
HT20	MCS0	2	6	2437	-9.80	-9.98	-6.79	7.01		6.99		Pass
HT20	MCS0	2	11	2462	-8.88	-7.82	-4.81	7.01		6.99		Pass
HT40	MCS0	2	3	2422	-14.11	-14.37	-11.10	7.01		6.99		Pass
HT40	MCS0	2	6	2437	-10.38	-9.01	-6.00	7.01		6.99		Pass
HT40	MCS0	2	9	2452	-10.27	-10.49	-7.26	7.01		6.99		Pass

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



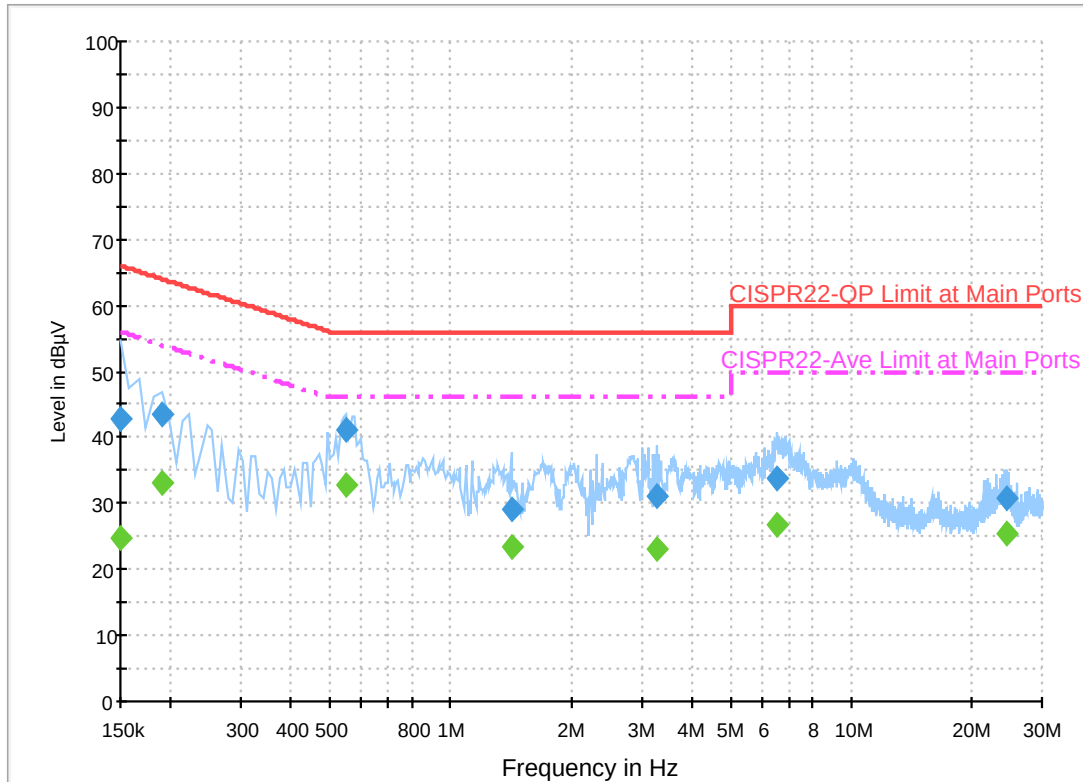
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Shareef Yu	Temperature :	26~27°C
		Relative Humidity :	58~62%

EUT Information

Report NO : 741927-01
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

ENV216 Auto Test-L



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	42.7	Off	L1	19.6	23.3	66.0
0.190000	43.6	Off	L1	19.5	20.4	64.0
0.550000	41.2	Off	L1	19.5	14.8	56.0
1.422000	29.2	Off	L1	19.5	26.8	56.0
3.286000	31.3	Off	L1	19.5	24.7	56.0
6.534000	33.6	Off	L1	19.6	26.4	60.0
24.534000	30.8	Off	L1	19.8	29.2	60.0

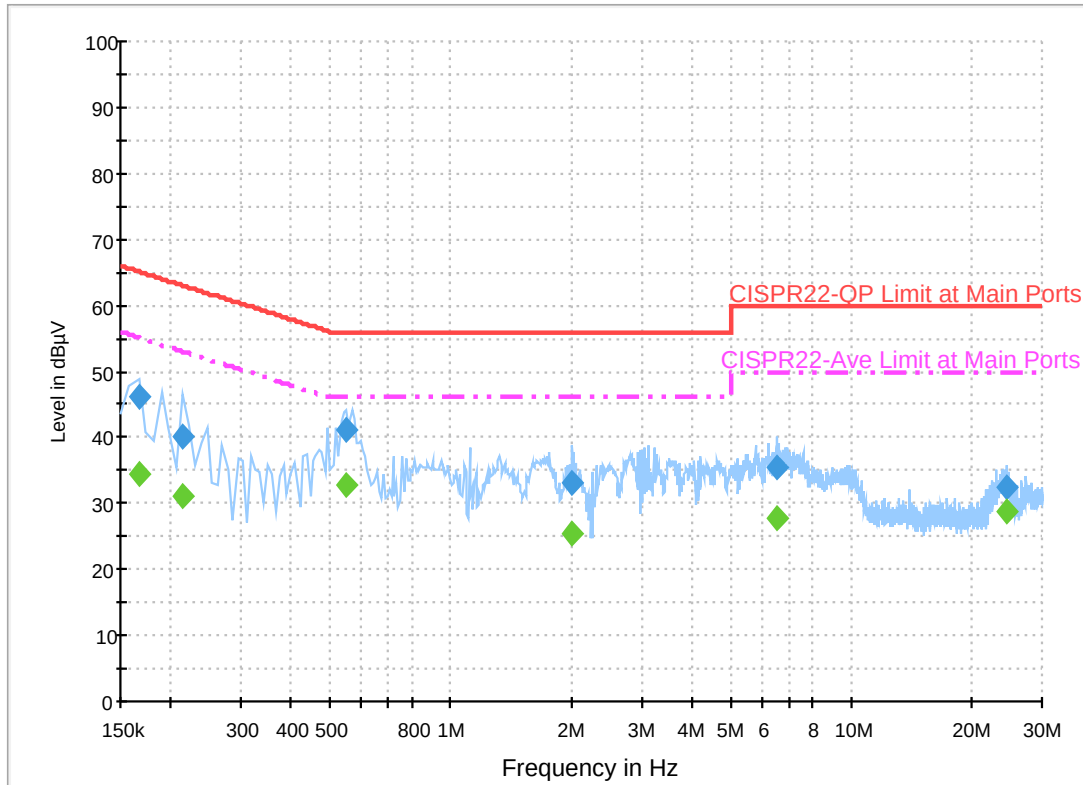
Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	24.6	Off	L1	19.6	31.4	56.0
0.190000	33.2	Off	L1	19.5	20.8	54.0
0.550000	32.8	Off	L1	19.5	13.2	46.0
1.422000	23.3	Off	L1	19.5	22.7	46.0
3.286000	23.1	Off	L1	19.5	22.9	46.0
6.534000	26.8	Off	L1	19.6	23.2	50.0
24.534000	25.3	Off	L1	19.8	24.7	50.0

EUT Information

Report NO : 741927-01
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

ENV216 Auto Test-N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	46.1	Off	N	19.5	19.1	65.2
0.214000	40.3	Off	N	19.5	22.7	63.0
0.550000	41.0	Off	N	19.5	15.0	56.0
2.022000	33.0	Off	N	19.5	23.0	56.0
6.566000	35.4	Off	N	19.6	24.6	60.0
24.574000	32.6	Off	N	19.9	27.4	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	31.0	Off	N	19.5	22.0	53.0
0.550000	32.7	Off	N	19.5	13.3	46.0
2.022000	25.5	Off	N	19.5	20.5	46.0
6.566000	27.8	Off	N	19.6	22.2	50.0
24.574000	28.8	Off	N	19.9	21.2	50.0



Appendix C. Radiated Spurious Emission

Test Engineer :	Watt Tseng, Karl Hou, and Lance Chiang	Temperature :	23~24°C
		Relative Humidity :	57~58%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2371.635	51.26	-22.74	74	41.25	27.01	3.94	30.86	112	143	P	H
		2364.285	40.52	-13.48	54	30.56	26.96	3.94	30.86	112	143	A	H
	*	2412	101.44	-	-	91.26	27.12	3.99	30.85	112	143	P	H
	*	2412	98.39	-	-	88.21	27.12	3.99	30.85	112	143	A	H
													H
													H
		2388.225	51.63	-22.37	74	41.54	27.07	3.96	30.86	367	252	P	V
		2388.435	40.48	-13.52	54	30.39	27.07	3.96	30.86	367	252	A	V
	*	2412	100.76	-	-	90.58	27.12	3.99	30.85	367	252	P	V
	*	2412	97.67	-	-	87.49	27.12	3.99	30.85	367	252	A	V
													V
													V
802.11b CH 06 2437MHz		2372.3	51.06	-22.94	74	41.05	27.01	3.94	30.86	107	142	P	H
		2389.94	40.63	-13.37	54	30.53	27.07	3.96	30.85	107	142	A	H
	*	2437	100.69	-	-	90.38	27.23	4	30.84	107	142	P	H
	*	2437	97.64	-	-	87.38	27.18	4	30.84	107	142	A	H
		2488.03	52.22	-21.78	74	41.68	27.4	4.04	30.82	107	142	P	H
		2483.9	41.5	-12.5	54	31.02	27.34	4.04	30.82	107	142	A	H
		2345.84	50.5	-23.5	74	40.64	26.9	3.92	30.88	400	227	P	V
		2389.38	40.28	-13.72	54	30.19	27.07	3.96	30.86	400	227	A	V
	*	2437	98.11	-	-	87.8	27.23	4	30.84	400	227	P	V
	*	2437	95.05	-	-	84.74	27.23	4	30.84	400	227	A	V
		2488.1	50.81	-23.19	74	40.27	27.4	4.04	30.82	400	227	P	V
		2485.3	40.97	-13.03	54	30.49	27.34	4.04	30.82	400	227	A	V



802.11b CH 11 2462MHz	*	2462	101.21	-	-	90.82	27.29	4.01	30.83	106	142	P	H
	*	2462	98.14	-	-	87.75	27.29	4.01	30.83	106	142	A	H
		2498.64	51.28	-22.72	74	40.73	27.4	4.04	30.81	106	142	P	H
		2483.56	41.32	-12.68	54	30.84	27.34	4.04	30.82	106	142	A	H
													H
													H
	*	2462	101.42	-	-	91.03	27.29	4.01	30.83	352	252	P	V
	*	2462	98.35	-	-	87.96	27.29	4.01	30.83	352	252	A	V
		2487.32	51.42	-22.58	74	40.94	27.34	4.04	30.82	352	252	P	V
		2483.56	41.16	-12.84	54	30.68	27.34	4.04	30.82	352	252	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+2	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	55.02	-18.98	74	81.15	31.69	6.46	64.74	249	115	P	H
		4824	53.56	-0.44	54	79.69	31.69	6.46	64.74	249	115	A	H
													H
													H
		4824	47.88	-26.12	74	74.01	31.69	6.46	64.74	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	54.78	-19.22	74	80.73	31.78	6.51	64.7	253	117	P	H
		4874	53.24	-0.76	54	79.19	31.78	6.51	64.7	253	117	A	H
		7311	44.14	-29.86	74	63.66	36.73	8.08	64.82	100	0	P	H
													H
		4874	47.86	-26.14	74	73.81	31.78	6.51	64.7	100	0	P	V
		7311	43.62	-30.38	74	63.14	36.73	8.08	64.82	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	54.88	-19.12	74	80.65	31.88	6.55	64.66	251	112	P	H
		4924	53.75	-0.25	54	79.52	31.88	6.55	64.66	251	112	A	H
		7386	44.44	-29.56	74	63.78	36.99	8.09	64.86	100	0	P	H
													H
		4924	47.71	-26.29	74	73.48	31.88	6.55	64.66	100	0	P	V
		7386	42.79	-31.21	74	62.13	36.99	8.09	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+2	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	62.14	-11.86	74	52.04	27.07	3.96	30.85	111	141	P	H
		2390	48.4	-5.6	54	38.3	27.07	3.96	30.85	111	141	A	H
	*	2412	109.17	-	-	98.99	27.12	3.99	30.85	111	141	P	H
	*	2412	101.96	-	-	91.78	27.12	3.99	30.85	111	141	A	H
													H
													H
		2390	59.72	-14.28	74	49.62	27.07	3.96	30.85	368	249	P	V
		2390	48.53	-5.47	54	38.43	27.07	3.96	30.85	368	249	A	V
	*	2412	108.73	-	-	98.55	27.12	3.99	30.85	368	249	P	V
	*	2412	101.23	-	-	91.05	27.12	3.99	30.85	368	249	A	V
													V
													V
802.11g CH 06 2437MHz		2389.94	51.77	-22.23	74	41.67	27.07	3.96	30.85	111	141	P	H
		2389.94	43.21	-10.79	54	33.11	27.07	3.96	30.85	111	141	A	H
	*	2437	109.89	-	-	99.58	27.23	4	30.84	111	141	P	H
	*	2437	101.78	-	-	91.47	27.23	4	30.84	111	141	A	H
		2485.02	53.76	-20.24	74	43.28	27.34	4.04	30.82	111	141	P	H
		2484.11	44.72	-9.28	54	34.24	27.34	4.04	30.82	111	141	A	H
		2367.82	50.39	-23.61	74	40.43	26.96	3.94	30.86	400	213	P	V
		2389.94	41.31	-12.69	54	31.21	27.07	3.96	30.85	400	213	A	V
	*	2437	107.55	-	-	97.24	27.23	4	30.84	400	213	P	V
	*	2437	99.25	-	-	88.94	27.23	4	30.84	400	213	A	V
		2485.86	52.31	-21.69	74	41.83	27.34	4.04	30.82	400	213	P	V
		2484.67	42.32	-11.68	54	31.84	27.34	4.04	30.82	400	213	A	V



802.11g CH 11 2462MHz	*	2462	109.74	-	-	99.35	27.29	4.01	30.83	104	141	P	H
	*	2462	102.15	-	-	91.76	27.29	4.01	30.83	104	141	A	H
		2484	54.94	-19.06	74	44.46	27.34	4.04	30.82	104	141	P	H
		2483.52	44.94	-9.06	54	34.46	27.34	4.04	30.82	104	141	A	H
													H
													H
	*	2462	109.54	-	-	99.15	27.29	4.01	30.83	352	251	P	V
	*	2462	102.26	-	-	91.87	27.29	4.01	30.83	352	251	A	V
		2483.56	56.27	-17.73	74	45.79	27.34	4.04	30.82	352	251	P	V
		2483.52	44.48	-9.52	54	34	27.34	4.04	30.82	352	251	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+2	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	63.18	-10.82	74	89.31	31.69	6.46	64.74	242	117	P	H
		4824	53.63	-0.37	54	79.76	31.69	6.46	64.74	242	117	A	H
													H
													H
		4824	57.83	-16.17	74	83.96	31.69	6.46	64.74	385	109	P	V
		4824	48.93	-5.07	54	75.06	31.69	6.46	64.74	385	109	A	V
													V
													V
802.11g CH 06 2437MHz		4874	65.47	-8.53	74	91.42	31.78	6.51	64.7	254	120	P	H
		4874	53.8	-0.2	54	79.75	31.78	6.51	64.7	254	120	A	H
		7311	44.66	-29.34	74	64.18	36.73	8.08	64.82	100	0	P	H
													H
		4874	61.67	-12.33	74	87.62	31.78	6.51	64.7	253	107	P	V
		4874	49.79	-4.21	54	75.74	31.78	6.51	64.7	253	107	A	V
		7311	45.86	-28.14	74	65.38	36.73	8.08	64.82	100	0	P	V
													V
802.11g CH 11 2462MHz		4924	63.21	-10.79	74	88.98	31.88	6.55	64.66	249	112	P	H
		4924	53.83	-0.17	54	79.6	31.88	6.55	64.66	249	112	A	H
		7386	45.66	-28.34	74	65	36.99	8.09	64.86	100	0	P	H
													H
		4924	59.75	-14.25	74	85.52	31.88	6.55	64.66	349	111	P	V
		4924	49.37	-4.63	54	75.14	31.88	6.55	64.66	349	111	A	V
		7386	46.73	-27.27	74	66.07	36.99	8.09	64.86	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.905	60.92	-13.08	74	50.82	27.07	3.96	30.85	112	142	P	H
		2390	50	-4	54	39.9	27.07	3.96	30.85	112	142	A	H
	*	2412	110.55	-	-	100.37	27.12	3.99	30.85	112	142	P	H
	*	2412	102.32	-	-	92.14	27.12	3.99	30.85	112	142	A	H
													H
													H
		2389.905	60.18	-13.82	74	50.08	27.07	3.96	30.85	368	252	P	V
		2390	49.91	-4.09	54	39.81	27.07	3.96	30.85	368	252	A	V
	*	2412	110.09	-	-	99.91	27.12	3.99	30.85	368	252	P	V
	*	2412	101.48	-	-	91.3	27.12	3.99	30.85	368	252	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2386.3	53.27	-20.73	74	43.18	27.07	3.96	30.86	137	141	P	H
		2389.94	42.76	-11.24	54	32.66	27.07	3.96	30.85	137	141	A	H
	*	2437	109.07	-	-	98.76	27.23	4	30.84	137	141	P	H
	*	2437	100.65	-	-	90.34	27.23	4	30.84	137	141	A	H
		2484.25	54.81	-19.19	74	44.33	27.34	4.04	30.82	137	141	P	H
		2483.83	44.21	-9.79	54	33.73	27.34	4.04	30.82	137	141	A	H
		2356.06	50.99	-23.01	74	41.07	26.96	3.92	30.88	400	226	P	V
		2389.94	40.94	-13.06	54	30.84	27.07	3.96	30.85	400	226	A	V
	*	2437	105.7	-	-	95.39	27.23	4	30.84	400	226	P	V
	*	2437	98.22	-	-	87.91	27.23	4	30.84	400	226	A	V
		2484.11	52.77	-21.23	74	42.29	27.34	4.04	30.82	400	226	P	V
		2483.55	42.1	-11.9	54	31.62	27.34	4.04	30.82	400	226	A	V



802.11n HT20 CH 11 2462MHz	*	2462	109.6	-	-	99.21	27.29	4.01	30.83	111	142	P	H
	*	2462	101.52	-	-	91.13	27.29	4.01	30.83	111	142	A	H
		2485.6	53.44	-20.56	74	42.96	27.34	4.04	30.82	111	142	P	H
		2483.52	44.55	-9.45	54	34.07	27.34	4.04	30.82	111	142	A	H
													H
													H
	*	2462	109.8	-	-	99.41	27.29	4.01	30.83	353	253	P	V
	*	2462	101.69	-	-	91.3	27.29	4.01	30.83	353	253	A	V
		2490.64	53.56	-20.44	74	43.02	27.4	4.04	30.82	353	253	P	V
		2483.52	44.37	-9.63	54	33.89	27.34	4.04	30.82	353	253	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+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	64.08	-9.92	74	90.21	31.69	6.46	64.74	248	118	P	H
		4824	53.89	-0.11	54	80.02	31.69	6.46	64.74	248	118	A	H
													H
													H
		4824	57.59	-16.41	74	83.72	31.69	6.46	64.74	400	104	P	V
		4824	48.06	-5.94	54	74.19	31.69	6.46	64.74	400	104	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	65.26	-8.74	74	91.21	31.78	6.51	64.7	251	119	P	H
		4874	52.84	-1.16	54	78.79	31.78	6.51	64.7	251	119	A	H
		7311	43.76	-30.24	74	63.28	36.73	8.08	64.82	100	0	P	H
													H
		4874	58.66	-15.34	74	84.61	31.78	6.51	64.7	400	107	P	V
		4874	47.01	-6.99	54	72.96	31.78	6.51	64.7	400	107	A	V
		7311	43.99	-30.01	74	63.51	36.73	8.08	64.82	100	0	P	V
													V
802.11n HT20 CH 11 2462MHz		4924	64.05	-9.95	74	89.82	31.88	6.55	64.66	248	113	P	H
		4924	53.67	-0.33	54	79.44	31.88	6.55	64.66	248	113	A	H
		7386	45.21	-28.79	74	64.55	36.99	8.09	64.86	100	0	P	H
													H
		4924	59.32	-14.68	74	85.09	31.88	6.55	64.66	372	102	P	V
		4924	47.87	-6.13	54	73.64	31.88	6.55	64.66	372	102	A	V
		7386	44.49	-29.51	74	63.83	36.99	8.09	64.86	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2389.24	63.98	-10.02	74	53.89	27.07	3.96	30.86	114	140	P	H
		2389.94	53.86	-0.14	54	43.76	27.07	3.96	30.85	114	140	A	H
	*	2422	105.27	-	-	95.02	27.18	3.99	30.84	114	140	P	H
	*	2422	96.57	-	-	86.32	27.18	3.99	30.84	114	140	A	H
		2492.09	52.42	-21.58	74	41.87	27.4	4.04	30.81	114	140	P	H
		2483.76	41.24	-12.76	54	30.76	27.34	4.04	30.82	114	140	A	H
		2389.66	62.08	-11.92	74	51.99	27.07	3.96	30.86	361	251	P	V
		2389.94	52.17	-1.83	54	42.07	27.07	3.96	30.85	361	251	A	V
	*	2422	103.51	-	-	93.26	27.18	3.99	30.84	361	251	P	V
	*	2422	95.7	-	-	85.45	27.18	3.99	30.84	361	251	A	V
		2495.59	51.31	-22.69	74	40.76	27.4	4.04	30.81	361	251	P	V
		2483.69	41.03	-12.97	54	30.55	27.34	4.04	30.82	361	251	A	V
802.11n HT40 CH 06 2437MHz		2388.54	61.52	-12.48	74	51.43	27.07	3.96	30.86	143	141	P	H
		2389.94	51.42	-2.58	54	41.32	27.07	3.96	30.85	143	141	A	H
	*	2437	107.9	-	-	97.59	27.23	4	30.84	143	141	P	H
	*	2437	99.82	-	-	89.51	27.23	4	30.84	143	141	A	H
		2484.81	56.62	-17.38	74	46.14	27.34	4.04	30.82	143	141	P	H
		2484.88	46.21	-7.79	54	35.73	27.34	4.04	30.82	143	141	A	H
		2388.26	57.78	-16.22	74	47.69	27.07	3.96	30.86	400	211	P	V
		2389.94	47.56	-6.44	54	37.46	27.07	3.96	30.85	400	211	A	V
	*	2437	105.69	-	-	95.38	27.23	4	30.84	400	211	P	V
	*	2437	97.96	-	-	87.65	27.23	4	30.84	400	211	A	V
		2486.91	54.58	-19.42	74	44.1	27.34	4.04	30.82	400	211	P	V
		2486.28	43.57	-10.43	54	33.09	27.34	4.04	30.82	400	211	A	V



802.11n HT40 CH 09 2452MHz		2388.82	51.41	-22.59	74	41.32	27.07	3.96	30.86	109	141	P	H
		2388.4	41.3	-12.7	54	31.21	27.07	3.96	30.86	109	141	A	H
	*	2452	107.34	-	-	97.01	27.23	4.01	30.83	109	141	P	H
	*	2452	99.69	-	-	89.36	27.23	4.01	30.83	109	141	A	H
		2483.5	64.79	-9.21	74	54.31	27.34	4.04	30.82	109	141	P	H
		2483.62	53.83	-0.17	54	43.35	27.34	4.04	30.82	109	141	A	H
		2314.2	51.37	-22.63	74	41.66	26.79	3.89	30.89	356	252	P	V
		2389.52	41.17	-12.83	54	31.08	27.07	3.96	30.86	356	252	A	V
	*	2452	107.69	-	-	97.36	27.23	4.01	30.83	356	252	P	V
	*	2452	98.94	-	-	88.61	27.23	4.01	30.83	356	252	P	V
		2484.32	63.12	-10.88	74	52.64	27.34	4.04	30.82	356	252	P	V
		2483.55	53.27	-0.73	54	42.79	27.34	4.04	30.82	356	252	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		4844	56.93	-17.07	74	82.99	31.72	6.48	64.72	260	114	P	H
		4844	46.83	-7.17	54	72.89	31.72	6.48	64.72	260	114	A	H
		7266	43.74	-30.26	74	63.33	36.63	8.08	64.81	100	0	P	H
													H
		4844	53.1	-20.9	74	79.16	31.72	6.48	64.72	362	105	P	V
		4844	42.2	-11.8	54	68.26	31.72	6.48	64.72	362	105	A	V
		7266	43.64	-30.36	74	63.23	36.63	8.08	64.81	100	0	P	V
													V
802.11n HT40 CH 06 2437MHz		4874	63.94	-10.06	74	89.89	31.78	6.51	64.7	254	118	P	H
		4874	53.66	-0.34	54	79.61	31.78	6.51	64.7	254	118	A	H
		7311	45.75	-28.25	74	65.27	36.73	8.08	64.82	100	0	P	H
													H
		4874	58.49	-15.51	74	84.44	31.78	6.51	64.7	399	106	P	V
		4874	48.67	-5.33	54	74.62	31.78	6.51	64.7	399	106	A	V
		7311	44.72	-29.28	74	64.24	36.73	8.08	64.82	100	0	P	V
													V
802.11n HT40 CH 09 2452MHz		4904	61.11	-12.89	74	86.95	31.84	6.53	64.67	248	112	P	H
		4904	53.11	-0.89	54	78.95	31.84	6.53	64.67	248	112	A	H
		7356	45.96	-28.04	74	65.36	36.89	8.09	64.84	100	0	P	H
													H
		4904	58.43	-15.57	74	84.27	31.84	6.53	64.67	313	105	P	V
		4904	48.66	-5.34	54	74.5	31.84	6.53	64.67	313	105	A	V
		7356	44.49	-29.51	74	63.89	36.89	8.09	64.84	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT20 LF		62.67	30.34	-9.66	40	50.25	11.94	0.67	32.58	-	-	P	H
		195.78	30.28	-13.22	43.5	46.43	15.05	1.11	32.5	-	-	P	H
		224.67	36.65	-9.35	46	52.04	15.79	1.21	32.51	100	0	P	H
		304.9	34.4	-11.6	46	46.14	19.32	1.37	32.56	-	-	P	H
		589.8	32.84	-13.16	46	37.63	25.81	1.91	32.65	-	-	P	H
		799.8	35.28	-10.72	46	36.97	28.21	2.24	32.32	-	-	P	H
													H
													H
													H
													H
													H
		62.67	35.38	-4.62	40	55.29	11.94	0.67	32.58	100	0	P	V
		86.16	32.17	-7.83	40	49.69	14.23	0.74	32.59	-	-	P	V
		98.58	31.2	-12.3	43.5	47	15.92	0.79	32.6	-	-	P	V
		398.7	30.12	-15.88	46	39.16	21.86	1.58	32.56	-	-	P	V
		589.1	31.28	-14.72	46	36.08	25.8	1.91	32.65	-	-	P	V
		976.9	37.32	-16.68	54	34.53	31.12	2.49	31.09	-	-	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	Peak or Average
H/V	Horizontal or Vertical



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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



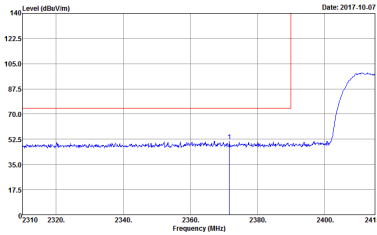
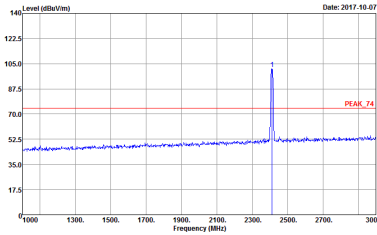
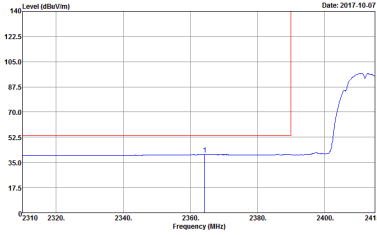
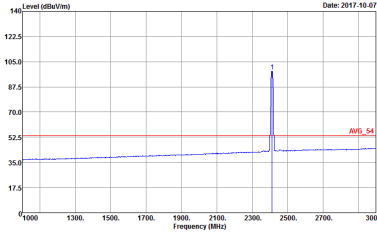
Appendix D. Radiated Spurious Emission Plots

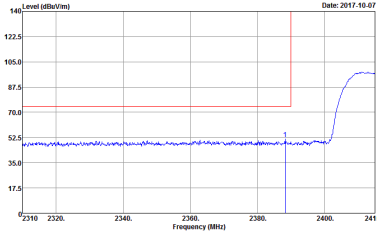
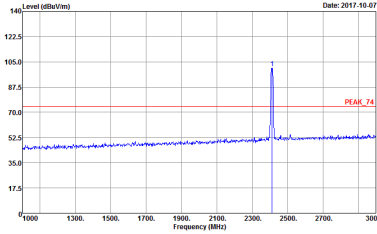
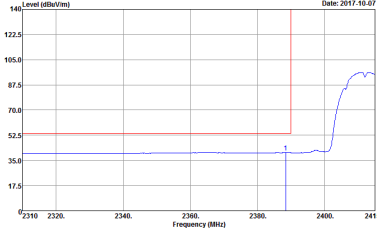
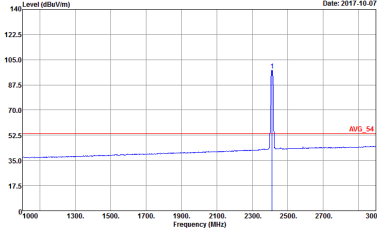
Test Engineer :	Watt Tseng, Karl Hou, and Lance Chiang	Temperature :	23~24°C
		Relative Humidity :	57~58%

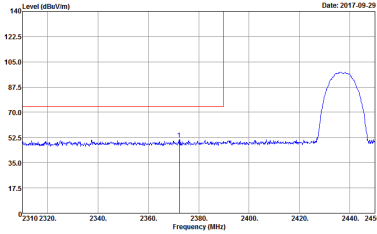
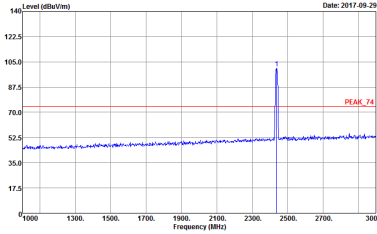
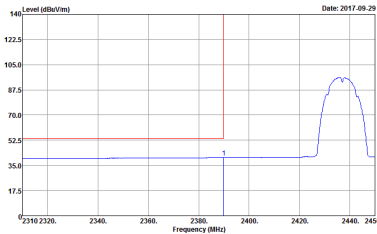
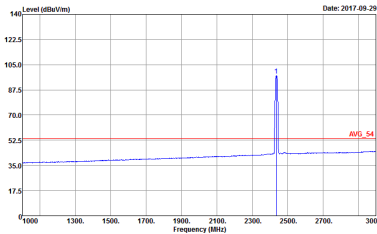
Note symbol

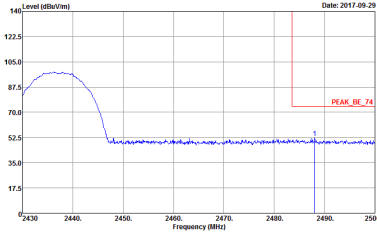
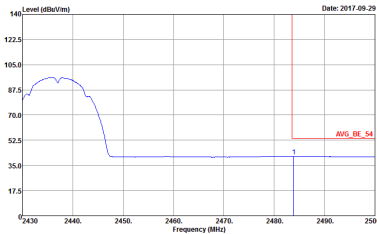
-L	Low channel location
-R	High channel location

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

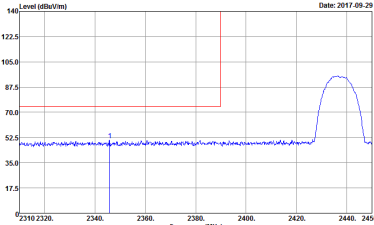
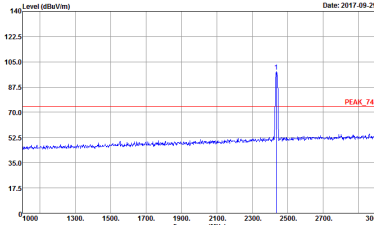
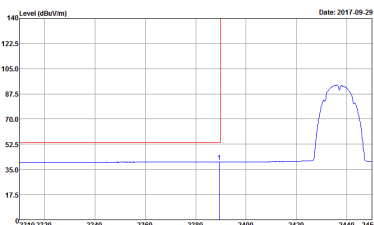
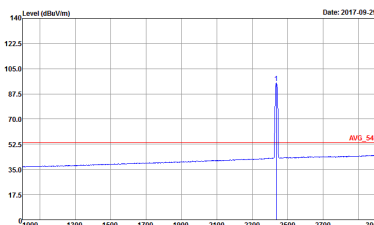
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10

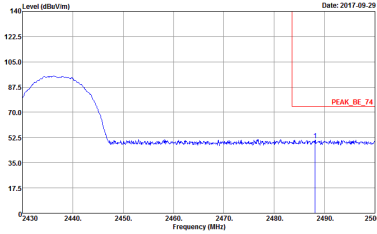
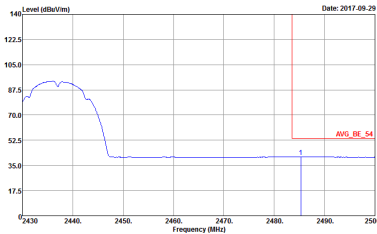
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5

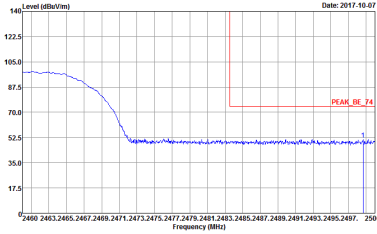
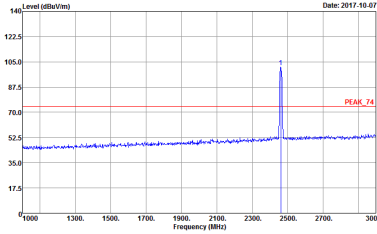
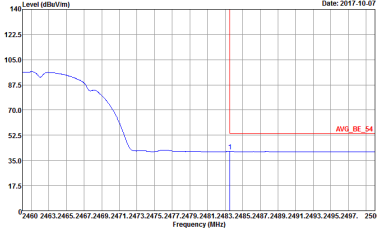
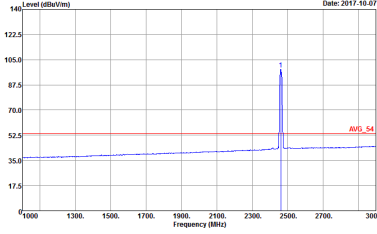
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	Left blank

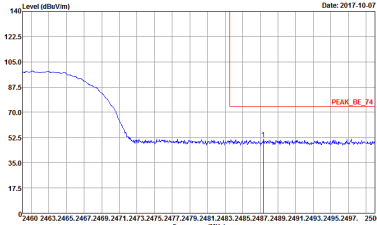
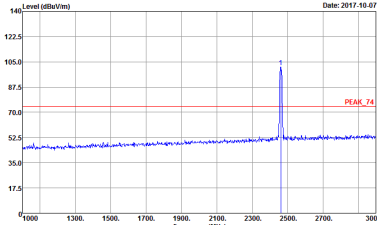
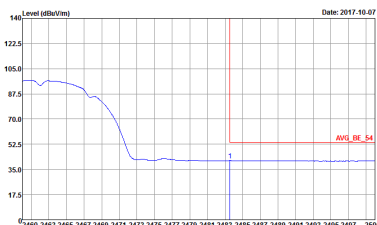
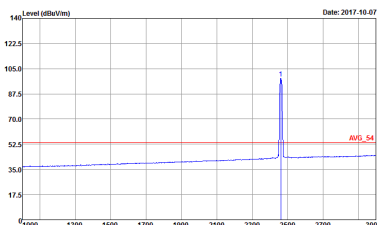


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 741927-01 Mode : 2 Setting : 9.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 741927-01 Mode : 2 Setting : 9.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak 741927-01 Mode : 2 Setting : 9.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak 741927-01 Mode : 2 Setting : 9.5

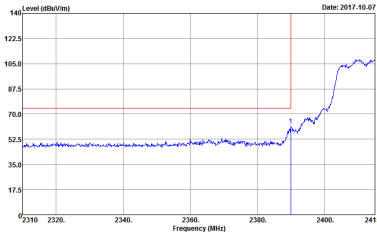
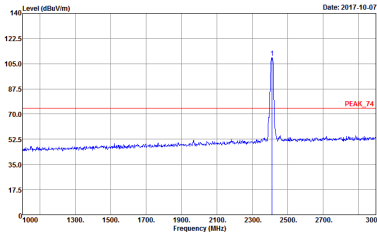
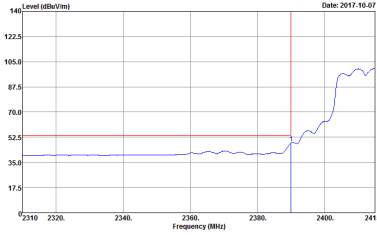
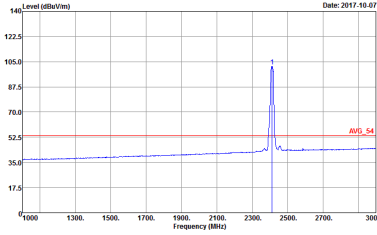
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	Left blank

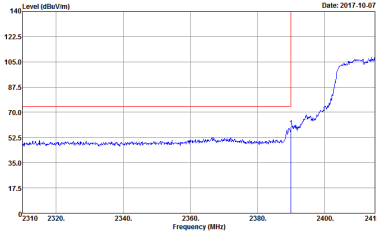
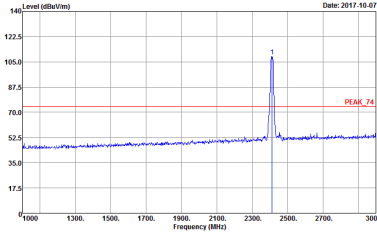
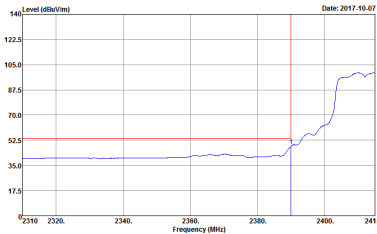
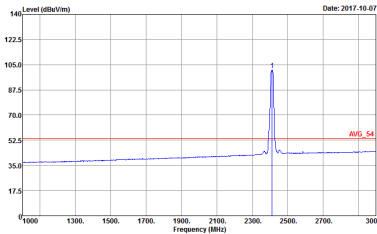


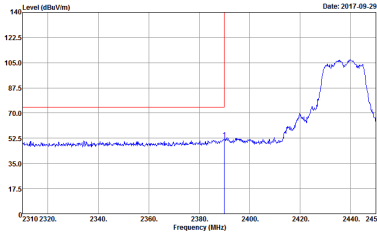
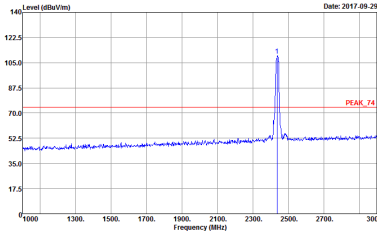
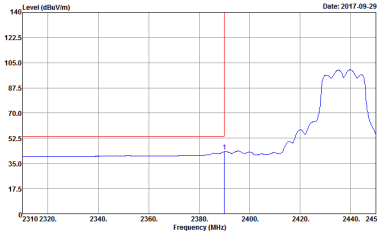
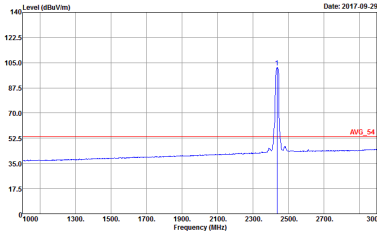
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5

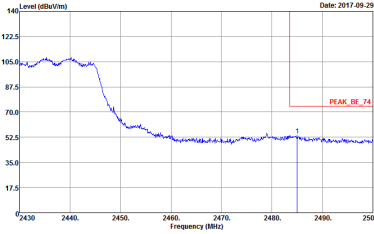
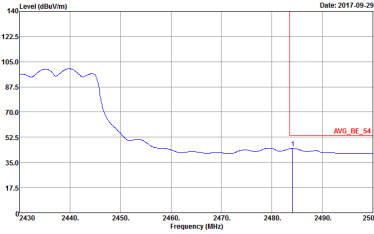
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15

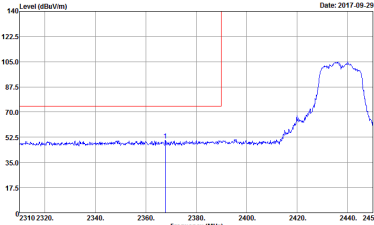
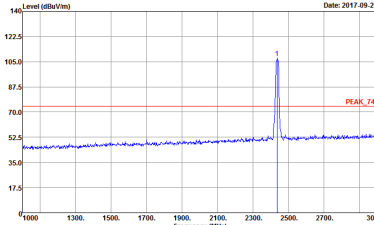
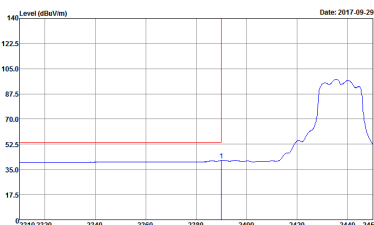
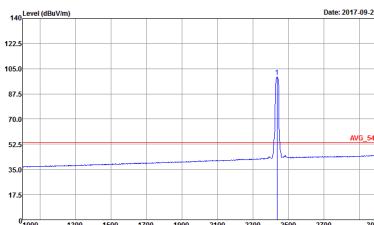
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15

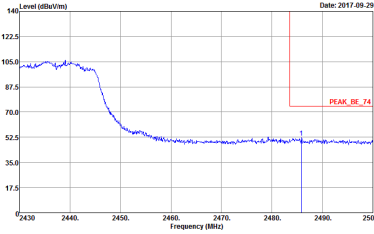
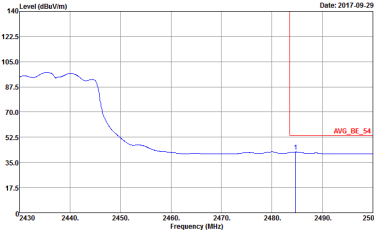


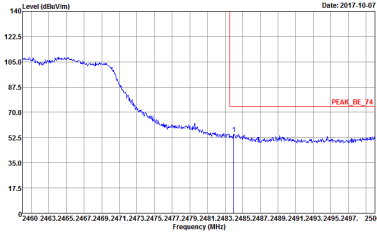
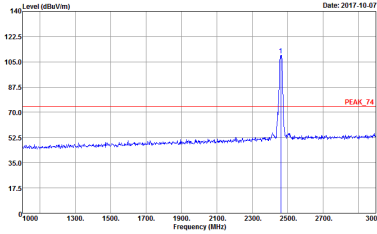
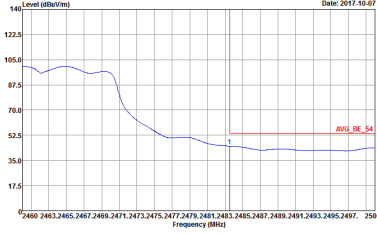
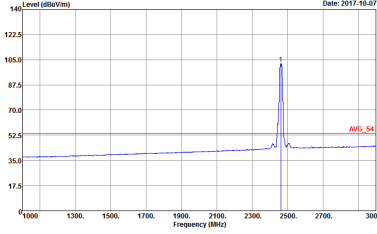
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	Left blank

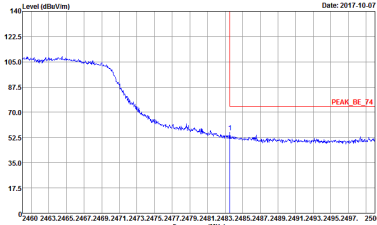
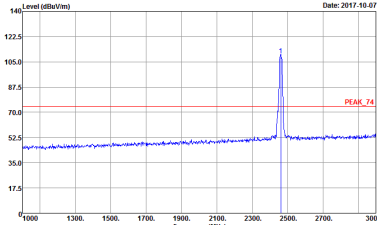
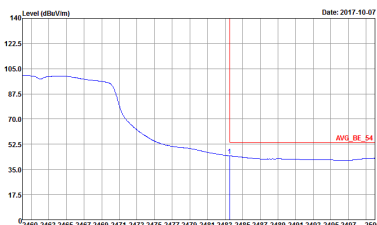
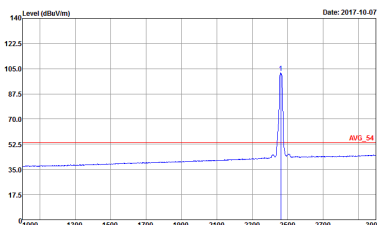


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 15 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 15 Setting : 15
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 15 Setting : 15	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 15 Setting : 15

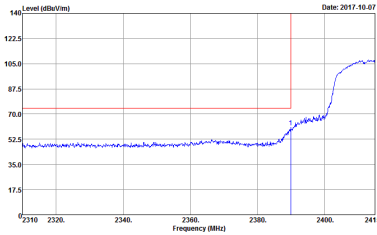
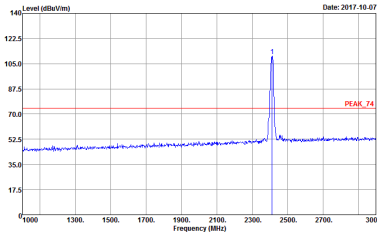
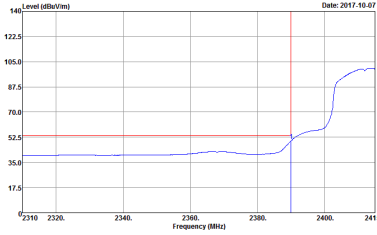
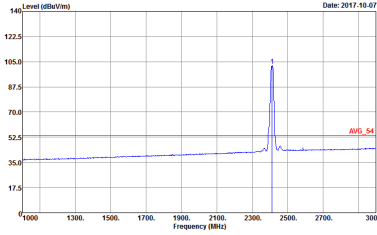


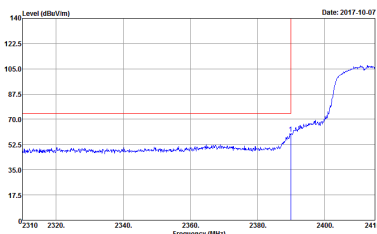
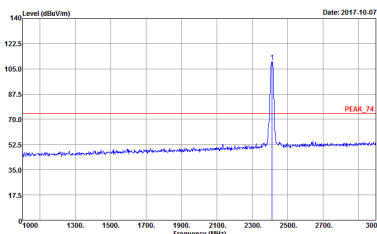
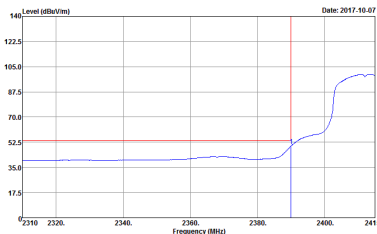
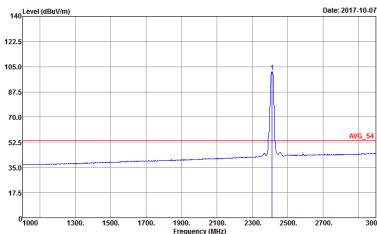
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	Left Blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	Left Blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5

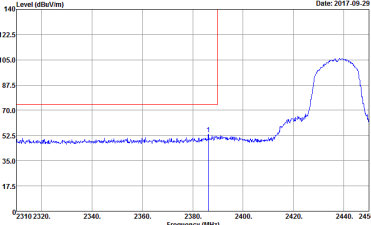
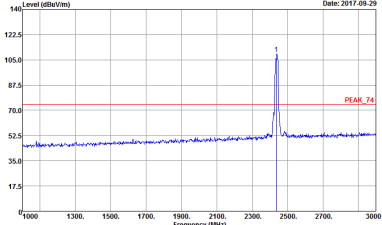
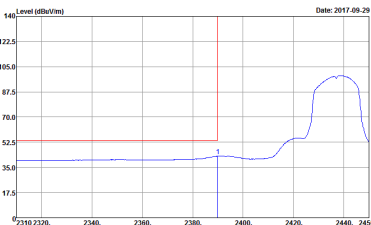
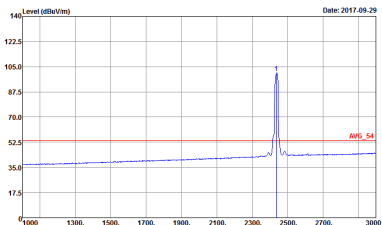
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5

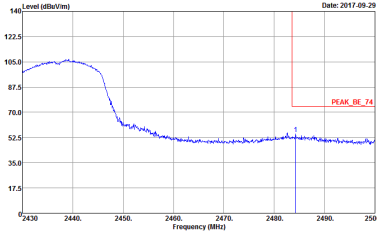
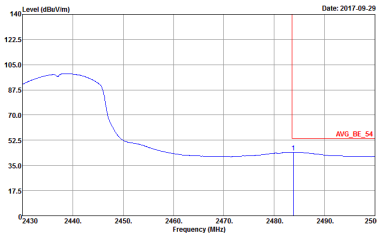
2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

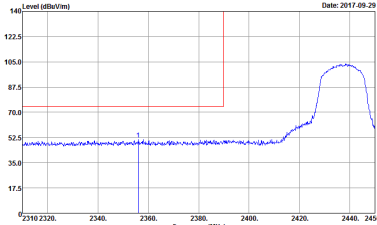
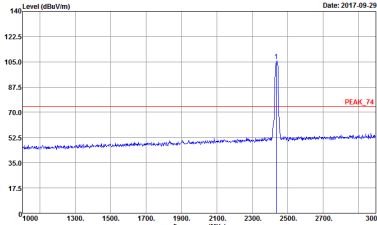
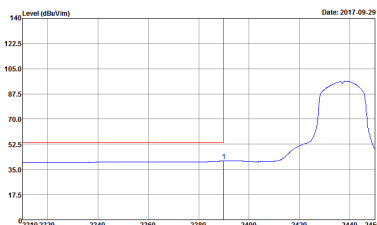
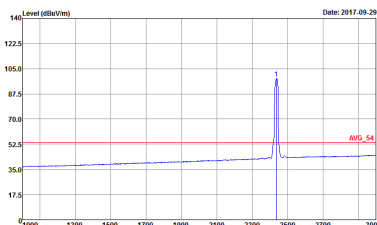
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5

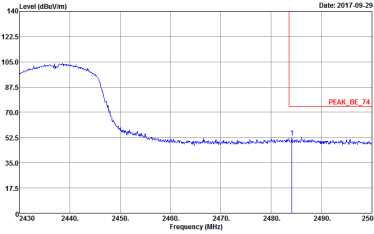
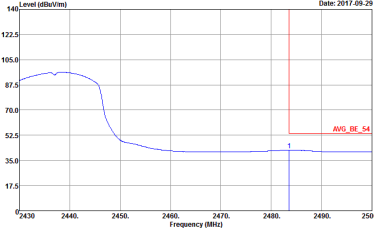
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5

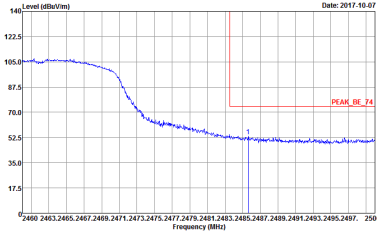
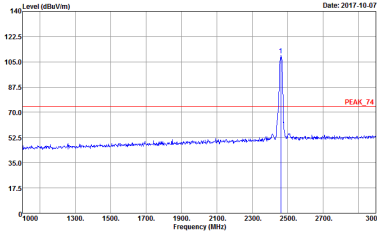
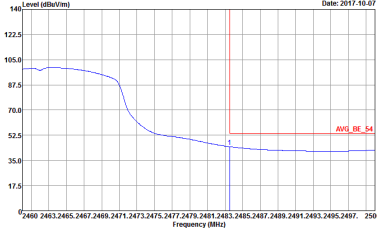
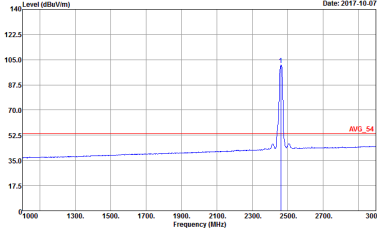


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 741927-01 Mode : 8 Setting : 14.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 741927-01 Mode : 8 Setting : 14.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak 741927-01 Mode : 8 Setting : 14.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak 741927-01 Mode : 8 Setting : 14.5

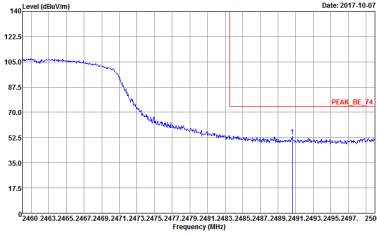
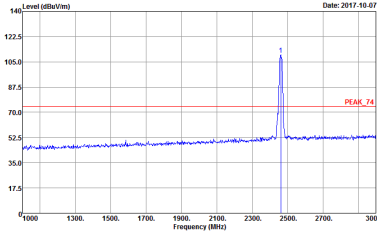
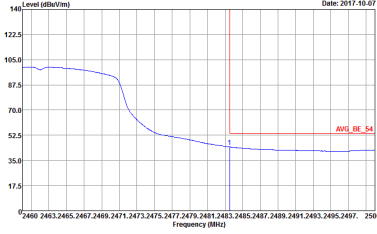
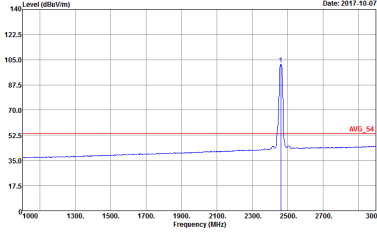
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HV Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	Left blank
Avg.	 Site : 03CH15-HV Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	Left Blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	Left Blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5
Avg.		



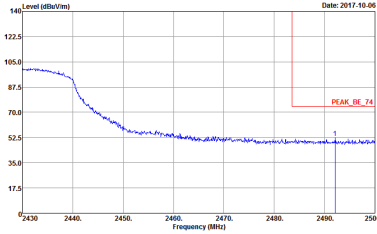
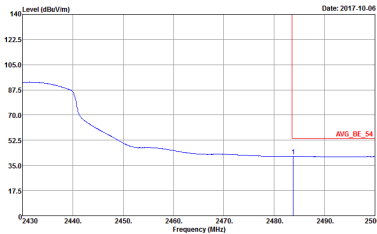
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5

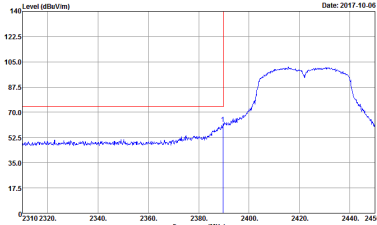
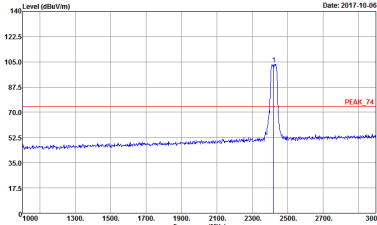
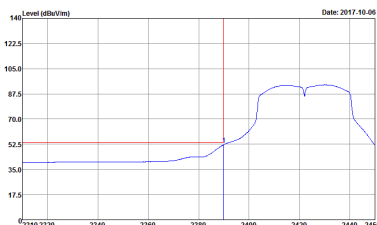
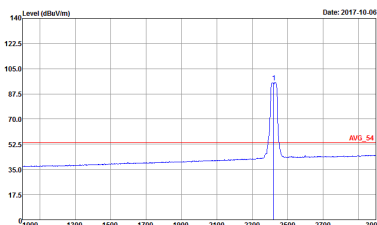


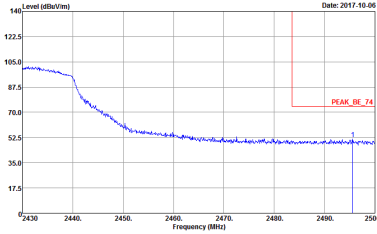
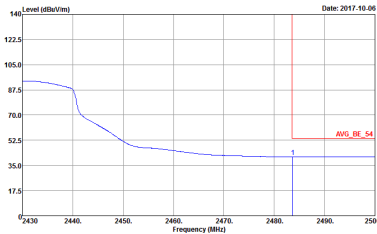
2.4GHz 2400~2483.5MHz

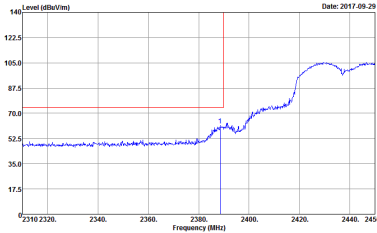
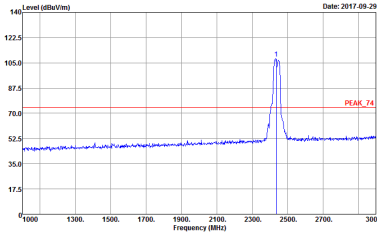
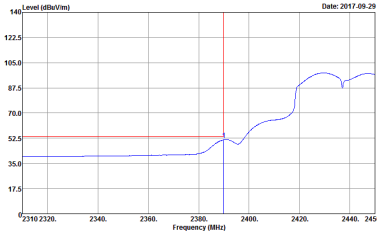
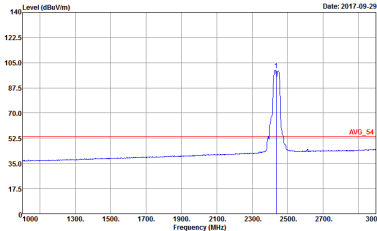
WIFI 802.11n HT40 (Band Edge @ 3m)

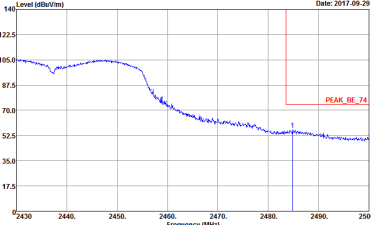
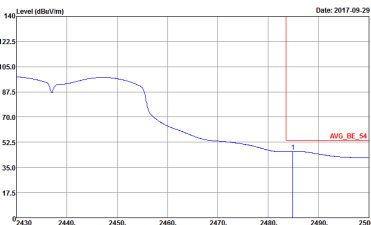
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1+2	Horizontal	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5
Avg.	Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5

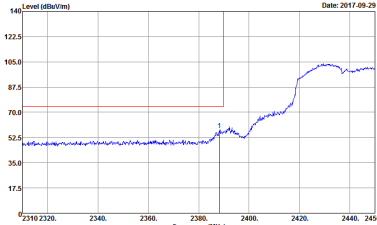
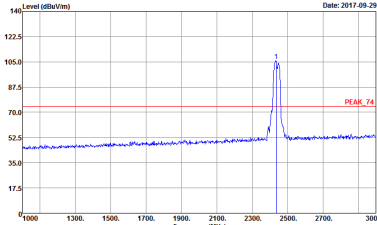
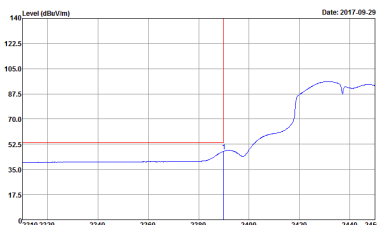
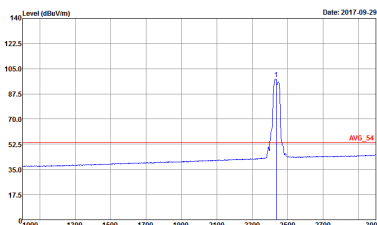
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Left Blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Left Blank

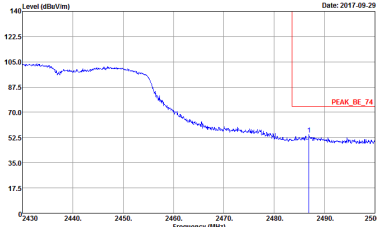
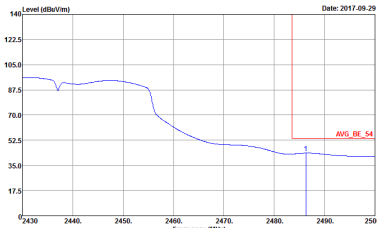
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5

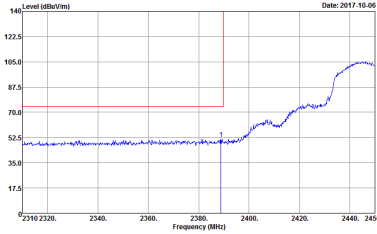
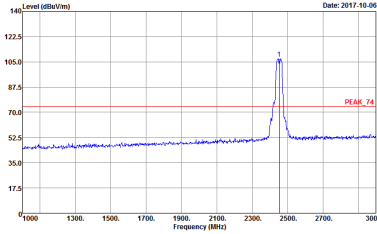
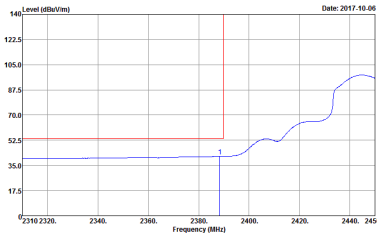
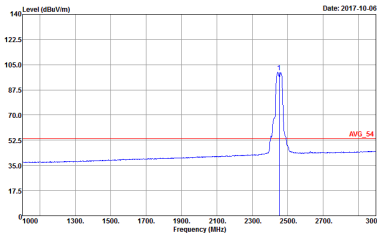
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	Left blank

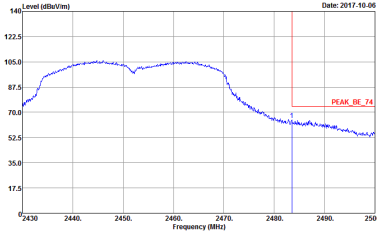
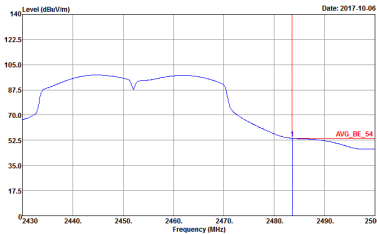
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5

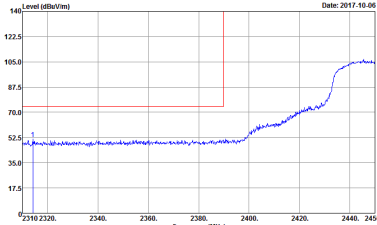
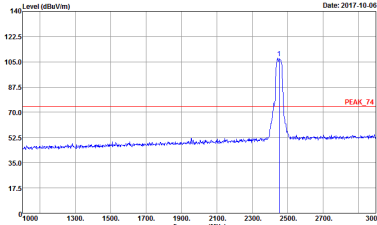
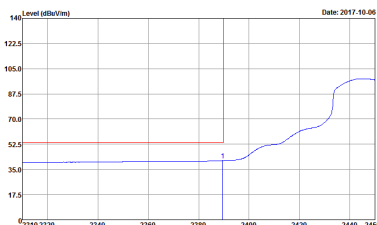
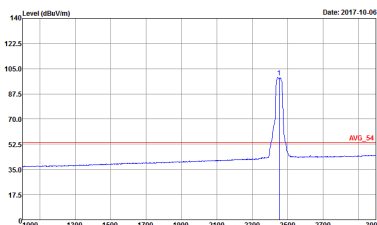
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	Left blank

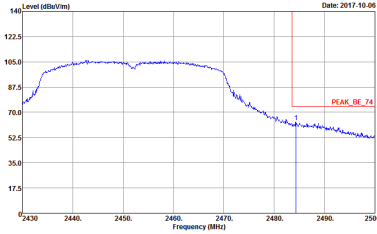
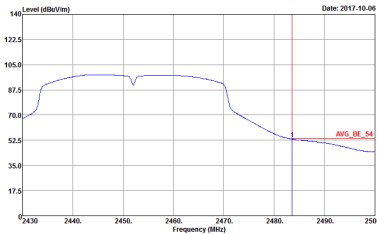
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	Left blank

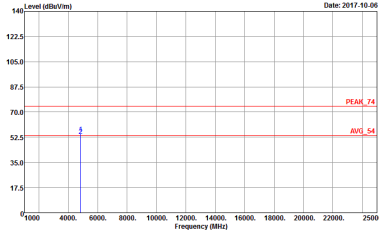
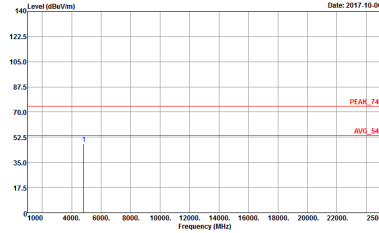
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	Left blank

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

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 1 Setting : 10

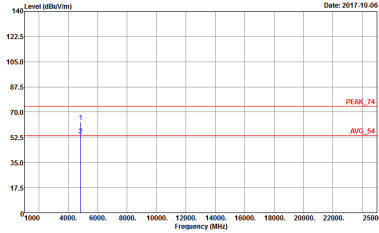
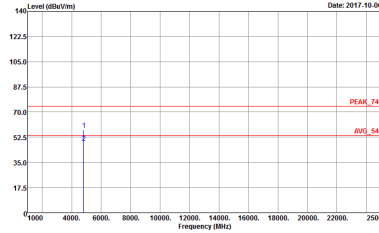


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5	Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 2 Setting : 9.5

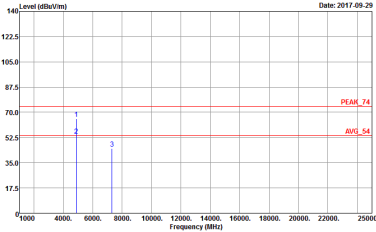
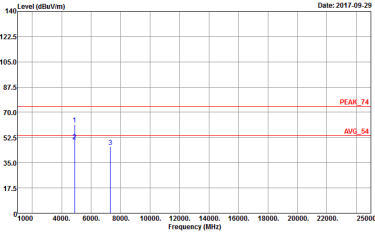


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 3 Setting : 10.5

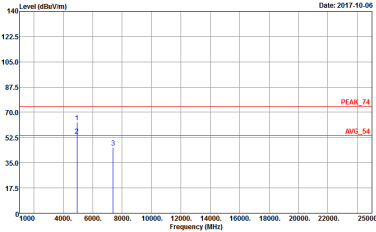
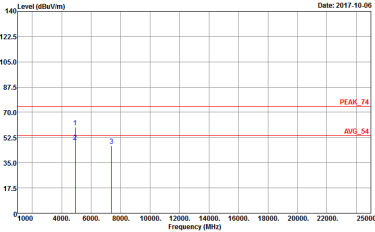
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 4 Setting : 15

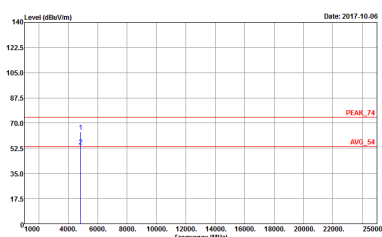
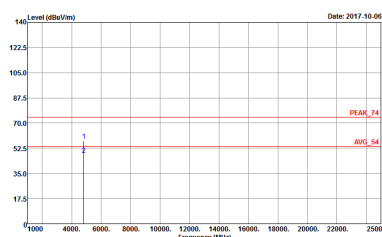


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 5 Setting : 15

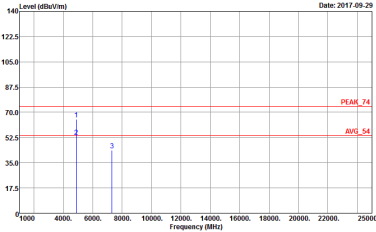
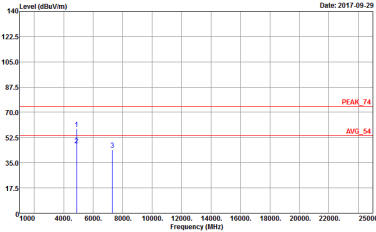


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 6 Setting : 15.5

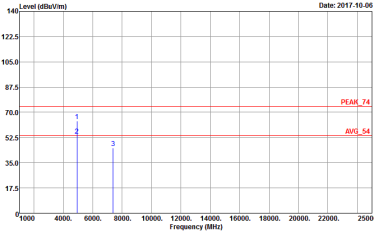
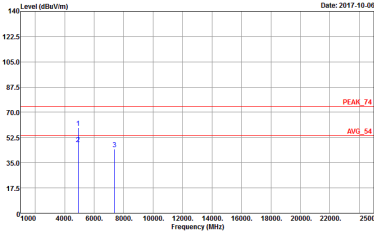
2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 7 Setting : 15.5

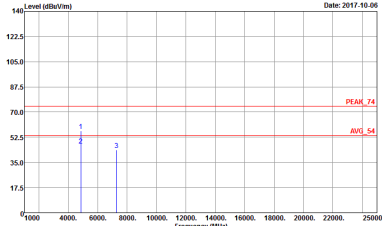
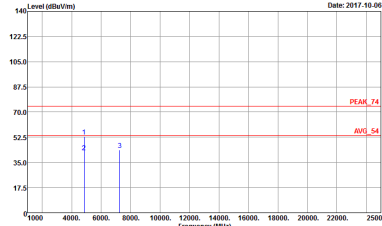


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 8 Setting : 14.5

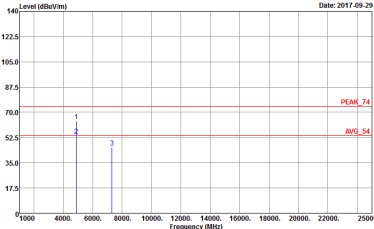
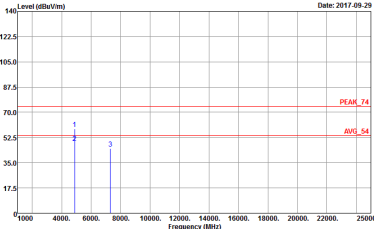


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 9 Setting : 15.5

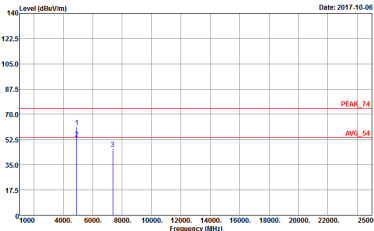
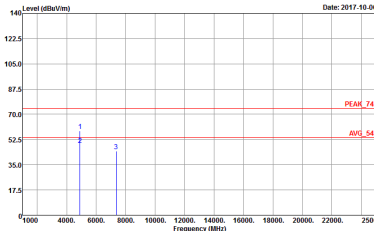
2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH03 2422MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 10 Setting : 13.5

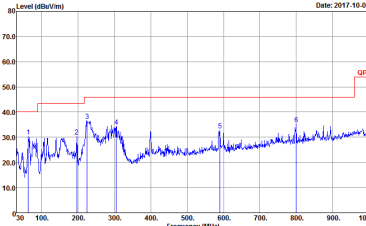
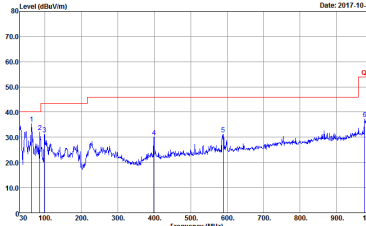


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 11 Setting : 17.5



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5	 Site : 03CHI5-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 741927-01 Mode : 12 Setting : 17.5

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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH15-HY Condition : QP 3m BTL06_15_41912 HORIZONTAL Detector : Peak Project : 741927-01 Mode : 13	 Site : 03CH15-HY Condition : QP 3m BTL06_15_41912 VERTICAL Detector : Peak Project : 741927-01 Mode : 13

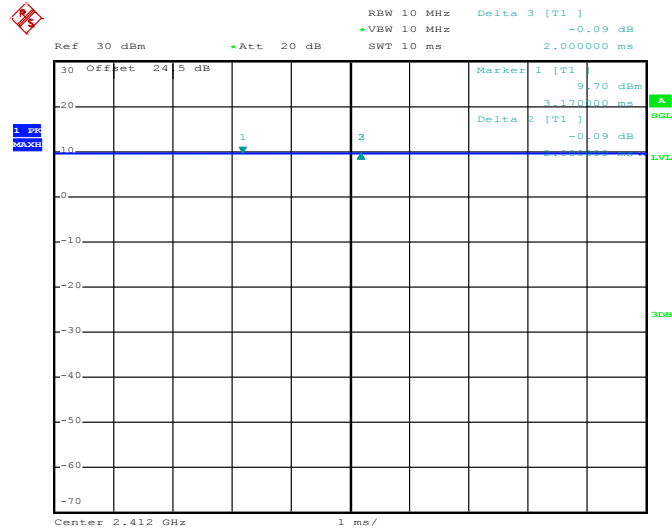
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11b for Ant. 1	100.00	-	-	10Hz
1+2	802.11b for Ant. 2	100.00	-	-	10Hz
1+2	802.11g for Ant. 1	89.54	1370.00	0.73	1kHz
1+2	802.11g for Ant. 2	89.47	1360.00	0.74	1kHz
1+2	2.4GHz 802.11n HT20 for Ant. 1	90.07	1270.00	0.79	1kHz
1+2	2.4GHz 802.11n HT20 for Ant. 2	90.14	1280.00	0.78	1kHz
1+2	2.4GHz 802.11n HT40 for Ant. 1	86.74	628.00	1.59	3kHz
1+2	2.4GHz 802.11n HT40 for Ant. 2	86.74	628.00	1.59	3kHz



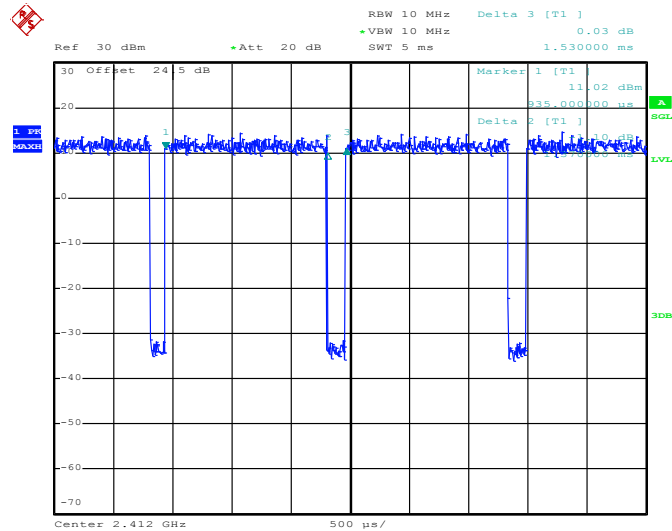
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802.11b

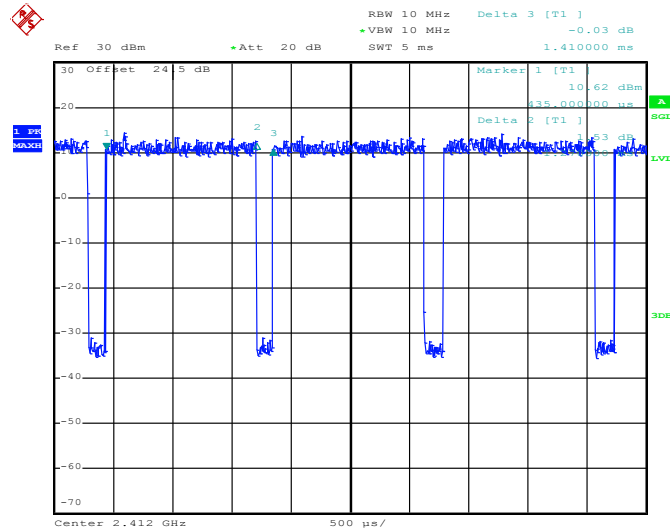


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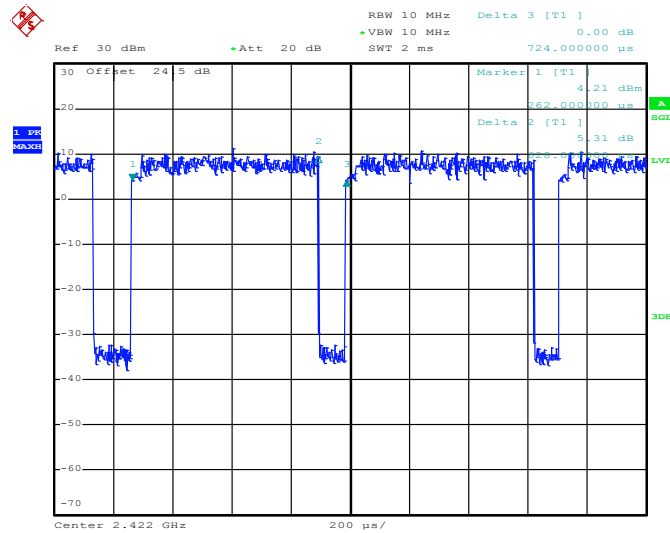
802.11g



Date: 3.OCT.2017 11:17:42

802.11n HT20


Date: 3.OCT.2017 11:21:36

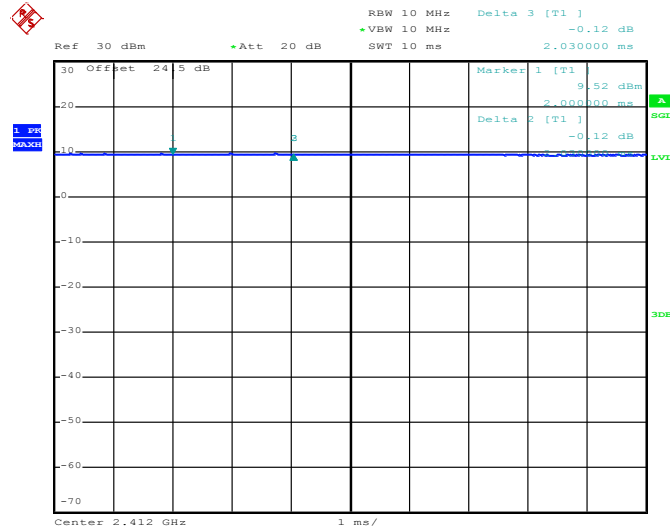
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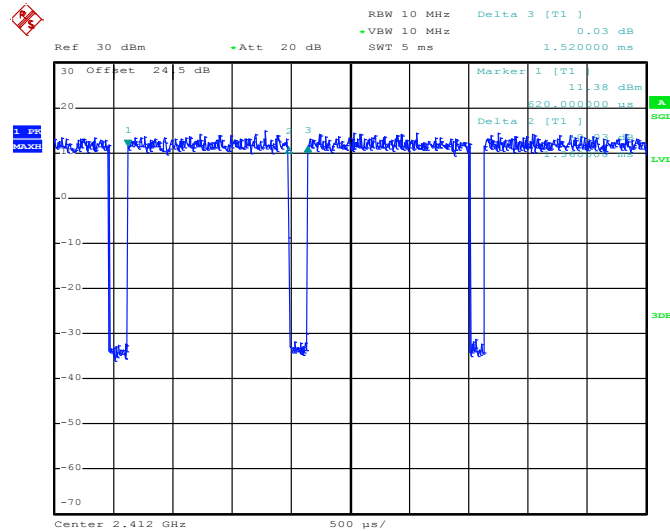
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802.11b



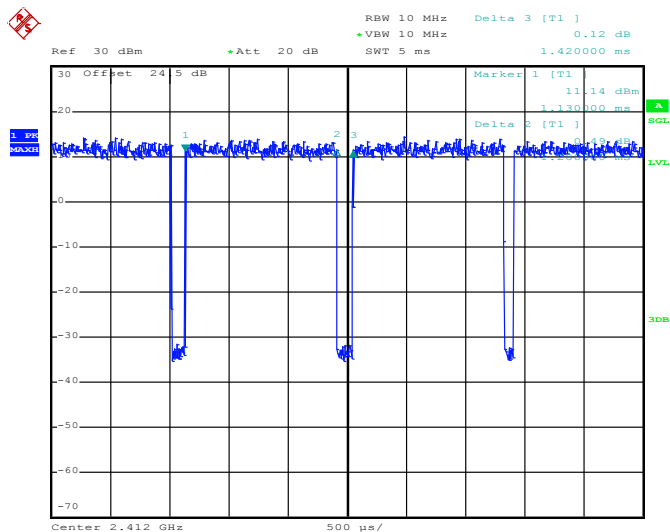
Date: 3.OCT.2017 11:04:01

802.11g



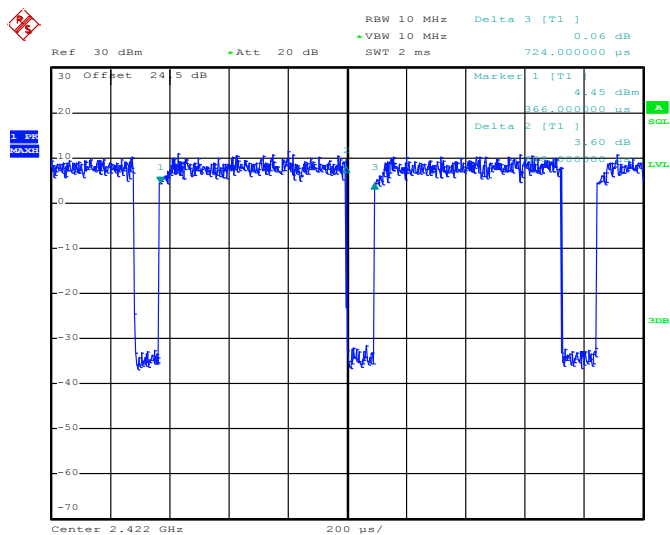
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802.11n HT20



Date: 3.OCT.2017 11:24:35

802.11n HT40



Date: 3.OCT.2017 11:32:46