

FCC Test Report

Product Name	Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Model No	AWK-1137C-XXXXX (x=0-9,A-Z, blank or dash for marketing purpose and no impact safety related critical components and constructions)
FCC ID.	SLE-1137C

Applicant	MOXA Inc.
Address	FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST.,NEW TAIPEI CITY, TAIWAN

Date of Receipt	Mar. 03, 2017
Issue Date	May 31, 2017
Report No.	1730078R-RFP25V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Applicant	MOXA Inc.
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Manufacturer	MOXA Inc.
Model No.	AWK-1137C-XXXXX (x=0-9,A-Z, blank or dash for marketing purpose and no impact safety related critical components and constructions)
EUT Rated Voltage	DC 9~30V
EUT Test Voltage	DC 24V
Trade Name	MOXA
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2016 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v04
Test Result	Complied

Documented By :



(Senior Adm. Specialist / Joanne Lin)

Tested By :



(Engineer / Paul Jiang)

Approved By :



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Trade Name	MOXA
Model No.	AWK-1137C-XXXXXX (x=0-9,A-Z, blank or dash for marketing purpose and no impact safety related critical components and constructions)
FCC ID.	SLE-1137C
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz,802.11n-40MHz:2422-2452MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps
Type of Modulation	802.11b:DSSS, DBPSK, DQPSK, CCK 802.11g/n: OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna Type	Omni-directional Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	WHA YU INDUSTRIAL CO., LTD.	ANT-WDB-ARM-0202	Omni-directional Antenna	1.8dBi for 2.4 GHz

Note: The antenna of EUT conforms to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz (2.4G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

Note:

1. This device is an Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client with a built-in WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. The different of each model is shown as below:

Model Number	Description
AWK-1137C-US	Industrial 802.11a/b/g/n Client, US Band, 0°C to 60°C
AWK-1137C-US-T	Industrial 802.11a/b/g/n Client, US Band, -40°C to 75°C
AWK-1137C-EU	Industrial 802.11a/b/g/n Client, EU Band, 0°C to 60°C
AWK-1137C-EU-T	Industrial 802.11a/b/g/n Client, EU Band, -40°C to 75°C
AWK-1137C-JP	Industrial 802.11a/b/g/n Client, JP Band, 0°C to 60°C
AWK-1137C-JP-T	Industrial 802.11a/b/g/n Client, JP Band, -40°C to 75°C

4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 、802.11g is 6Mbps 、802.11n(20M-BW) is 14.4Mbps and, 802.11n(40M-BW) is 30Mbps).
5. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report. (802.11b/g is chain A)
6. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit - (802.11n-20BW_14.4Mbps)
	Mode 4: Transmit - (802.11n-40BW_30Mbps)

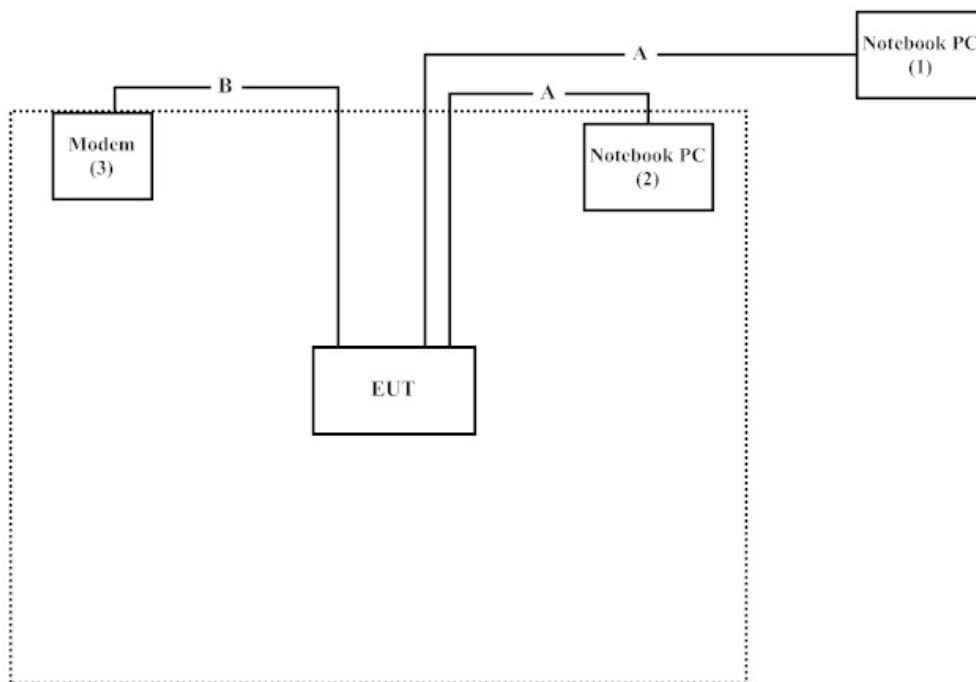
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook PC	DELL	Latitude E5440	B6TYTZ1	Non-Shielded, 1.8m
2 Notebook PC	DELL	Latitude E5440	HG26TZ1	Non-Shielded, 1.8m
3 Modem	ACEEX	DM-1414	0102027536	Non-Shielded, 1.8m

Signal Cable Type	Signal cable Description
A LAN Cable	Non-Shielded, 3m, two PCS.
B RS-232 Cable	Non-Shielded, 1.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown on 1.4
2. Execute software "ART2-Gui V2.3" on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press "OK" to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW1014

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2016/11/28	2017/11/27
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2016/7/22	2017/7/21
X	Power Meter	Anritsu	ML2495A	6K00003357	2016/6/23	2017/6/22
X	Pulse power sensor	Anritsu	MA2411B	0846193	2016/6/23	2017/6/22
X	EMI Test Receiver	R&S	ESCS 30	100369	2016/10/13	2017/10/12
X	LISN	R&S	ESH3-Z5	836679/017	2017/1/7	2018/1/6
X	LISN	R&S	ENV216	100097	2017/1/7	2018/1/6
X	Coaxial Cable	QTK(Arnist)	RG 400	LC018-RG	2016/6/25	2017/6/24

For Radiated measurements /Site3/CB8

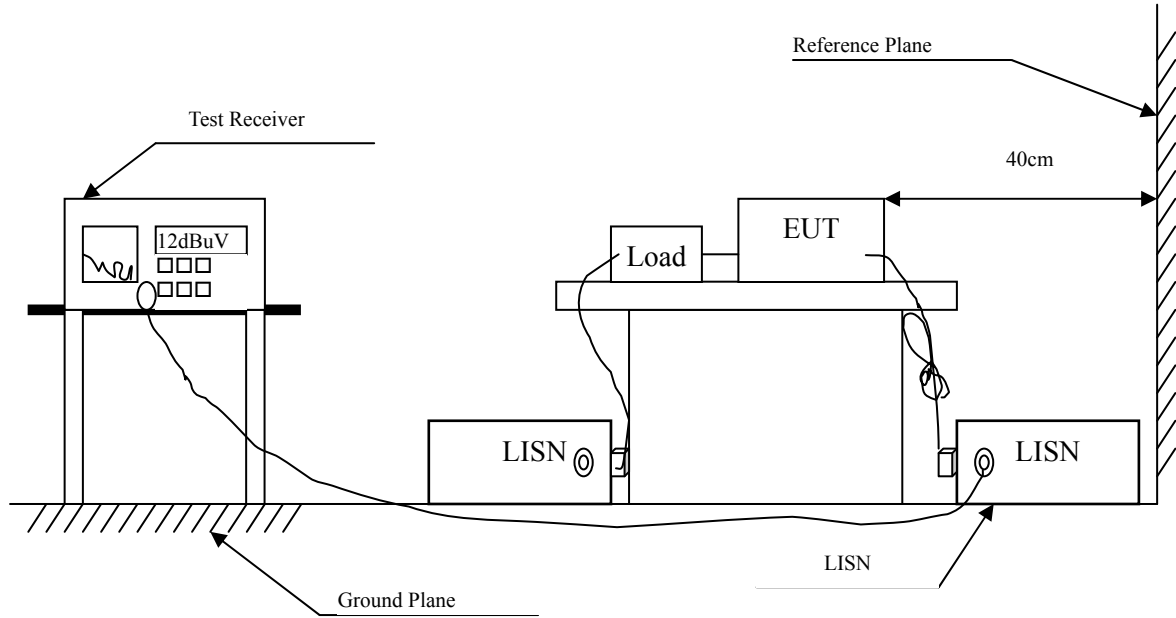
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2017/1/5	2018/1/4
	Loop Antenna	Teseq	HLA6121	37133	2017/3/18	2018/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2016/6/11	2017/6/10
X	Horn Antenna	ETS-Lindgren	3117	00135205	2017/4/6	2018/4/5
X	Horn Antenna	Schwarzbeck	BBHA9170	9170430	2017/1/11	2018/1/10
X	Pre-Amplifier	QTK	AP/0100A	CHM/0901069	2016/6/23	2017/6/22
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2017/1/26	2018/1/24
X	Pre-Amplifier	NARDA WE	DBL-1840N506	013	2016/9/30	2017/9/29
X	Filter	MicroTRON	BRM50701	019	2016/11/2	2017/11/1
X	Filter	Microwave Circuits	N0257881	36681	2016/12/7	2017/12/6
X	EMI Test Receiver	R&S	ESR26	101385	2016/9/29	2017/9/28
X	Coaxial Cable	QTK(Arnist)	SUCOFLEX 106	L1606-015C	2016/6/23	2017/6/22
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2016/7/21	2017/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2016/6/16	2017/6/15
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2016/6/16	2017/6/15

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version :QuieTek EMI 2.0 V2.1.113.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

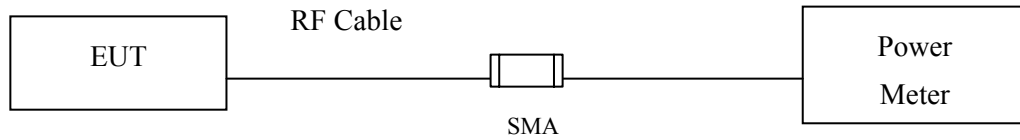
± 2.26 dB

2.5. Test Result of Conducted Emission

Owing to the DC operation of EUT, this test item is not performed.

3. Maximum Conducted Power

3.1. Test Setup



3.2. Limits

The maximum average power shall be less 1 Watt. (Section 15.247 (b)(3))

3.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Maximum Conducted Power

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Date : 2017/05/22
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	19.11	--	--	--	21.58	<30dBm	Pass
06	2437	18.76	18.63	18.51	18.32	21.31	<30dBm	Pass
11	2462	18.52	--	--	--	21.14	<30dBm	Pass

Note: Peak Power Output Value = Reading value on power meter + cable loss

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Date : 2017/05/22
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	19.88	--	--	--	--	--	--	--	27.23	<30dBm	Pass
06	2437	19.37	19.12	18.98	18.89	18.81	18.63	18.54	18.38	26.89	<30dBm	Pass
10	2457	18.12	--	--	--	--	--	--	--	26.13	<30dBm	Pass
11	2462	14.85	--	--	--	--	--	--	--	22.27	<30dBm	Pass

Note: Peak Power Output Value = Reading value on power meter + cable loss

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Date : 2017/05/22
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

Chain A

Channel No	Frequency (MHz)	Average Power								Peak Power
		For different Data Rate (Mbps)								
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
Measurement Level (dBm)										
01	2412	12.83	--	--	--	--	--	--	--	20.65
02	2417	12.35	--	--	--	--	--	--	--	20.47
03	2422	14.25	--	--	--	--	--	--	--	22.15
06	2437	13.63	13.49	13.41	13.28	13.19	13.11	13.02	12.91	21.58
11	2462	13.36	--	--	--	--	--	--	--	21.25

Note: Peak Power Output Value = Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power								Peak Power
		For different Data Rate (Mbps)								
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
Measurement Level (dBm)										
01	2412	12.79	--	--	--	--	--	--	--	20.83
02	2417	12.13	--	--	--	--	--	--	--	20.09
03	2422	14.09	--	--	--	--	--	--	--	22.25
06	2437	13.82	13.68	13.59	13.46	13.38	13.29	13.15	13.02	21.98
11	2462	12.82	--	--	--	--	--	--	--	20.72

Note: Peak Power Output Value = Reading value on power meter + cable loss

Chain A+B

Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
01	2412	14.4	20.65	20.83	23.75	<30dBm	Pass
02	2417	14.4	20.47	20.09	23.29	<30dBm	Pass
03	2422	14.4	22.15	22.25	25.21	<30dBm	Pass
06	2437	14.4	21.58	21.98	24.79	<30dBm	Pass
11	2462	14.4	21.25	20.72	24.00	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+Chain B (mW))

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Date : 2017/05/22
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

Chain A

Channel No	Frequency (MHz)	Average Power								Peak Power
		For different Data Rate (Mbps)								
		30	60	90	120	180	240	270	300	
Measurement Level (dBm)										
03	2422	11.17	--	--	--	--	--	--	--	19.61
04	2427	13.30	--	--	--	--	--	--	--	21.53
05	2432	14.58	--	--	--	--	--	--	--	23.22
06	2437	14.76	14.42	14.24	14.16	14.01	13.91	13.83	13.70	22.85
09	2452	14.30	--	--	--	--	--	--	--	22.94

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power								Peak Power
		For different Data Rate (Mbps)								
		30	60	90	120	180	240	270	300	
Measurement Level (dBm)										
03	2422	10.79	--	--	--	--	--	--	--	19.39
04	2427	13.31	--	--	--	--	--	--	--	21.83
05	2432	14.45	--	--	--	--	--	--	--	22.93
06	2437	14.58	14.23	14.14	14.01	13.86	13.71	13.55	13.39	23.15
09	2452	14.15	--	--	--	--	--	--	--	22.66

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain A+B

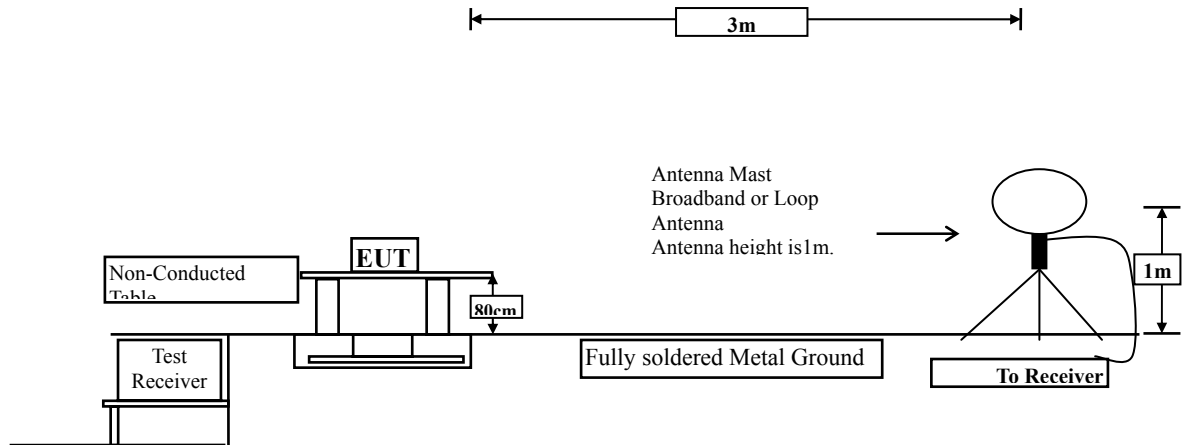
Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
03	2422	30	19.61	19.39	22.51	<30dBm	Pass
04	2427	30	21.53	21.83	24.69	<30dBm	Pass
05	2432	30	23.22	22.93	26.09	<30dBm	Pass
06	2437	30	22.85	23.15	26.01	<30dBm	Pass
09	2452	30	22.94	22.66	25.81	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+Chain B (mW))

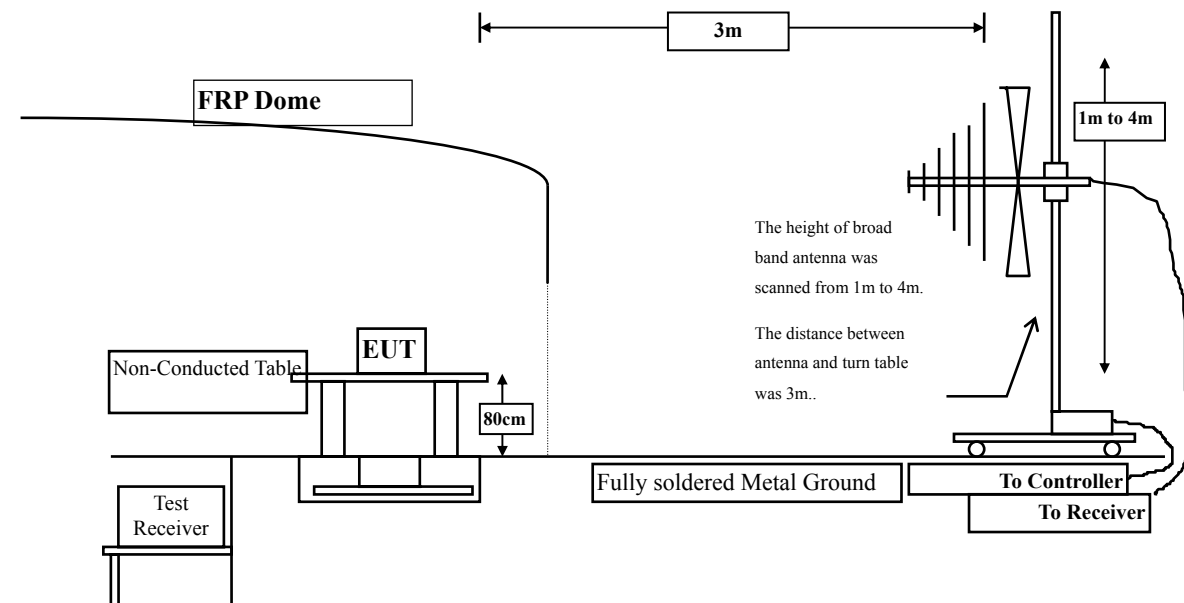
4. Radiated Emission

4.1. Test Setup

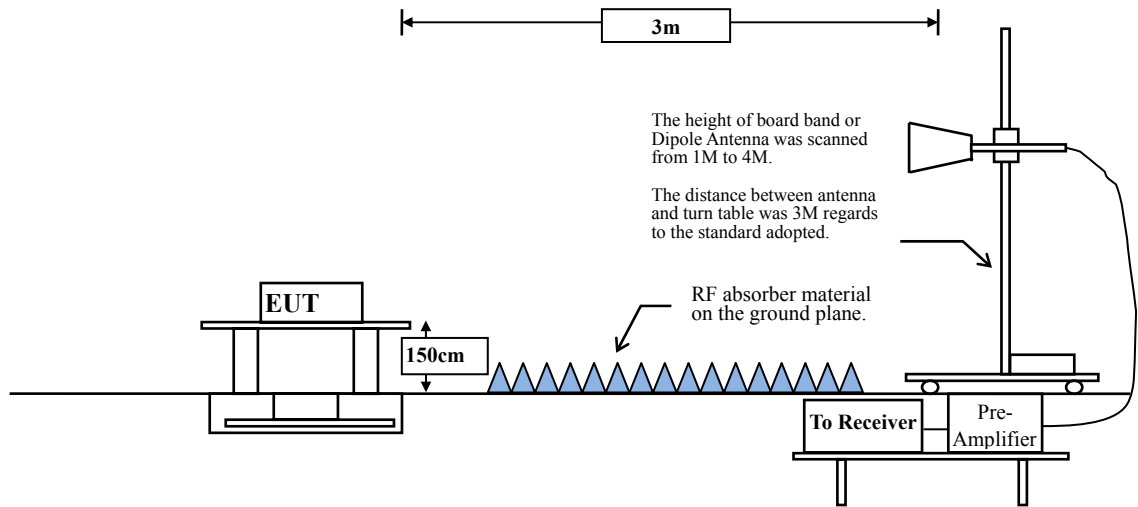
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV/m) = 20 log E field strength (uV/m)

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBµV	Measurement Level dBµV/m	Margin dB	Limit dBµV/m
Horizontal					
Peak Detector:					
4824.000	-9.979	47.210	37.231	-36.769	74.000
7236.000	-4.641	41.980	37.340	-36.660	74.000
9648.000	-1.835	40.630	38.794	-35.206	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	50.630	43.812	-30.188	74.000
7236.000	-3.796	44.210	40.414	-33.586	74.000
9648.000	-1.365	40.840	39.475	-34.525	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4874.000	-10.271	48.380	38.108	-35.892	74.000
7311.000	-3.853	41.730	37.876	-36.124	74.000
9748.000	-2.526	40.630	38.104	-35.896	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	50.910	43.412	-30.588	74.000
7311.000	-3.018	45.890	42.871	-31.129	74.000
9748.000	-2.035	40.810	38.775	-35.225	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4924.000	-10.519	48.630	38.110	-35.890	74.000
7386.000	-3.876	42.210	38.334	-35.666	74.000
9848.000	-2.581	40.640	38.059	-35.941	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	53.390	45.533	-28.467	74.000
7386.000	-2.749	45.670	42.921	-31.079	74.000
9848.000	-2.066	41.530	39.464	-34.536	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4824.000	-9.979	47.670	37.691	-36.309	74.000
7236.000	-4.641	52.340	47.700	-26.300	74.000
9648.000	-1.835	40.810	38.974	-35.026	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	52.630	45.812	-28.188	74.000
7236.000	-3.796	57.440	53.644	-20.356	74.000
9648.000	-1.365	40.890	39.525	-34.475	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4874.000	-10.271	45.830	35.558	-38.442	74.000
7311.000	-3.853	46.370	42.516	-31.484	74.000
9748.000	-2.526	40.610	38.084	-35.916	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	50.390	42.892	-31.108	74.000
7311.000	-3.018	56.830	53.811	-20.189	74.000
9748.000	-2.035	40.710	38.675	-35.325	74.000
Average Detector:					
--					

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4924.000	-10.519	45.010	34.490	-39.510	74.000
7386.000	-3.876	42.540	38.664	-35.336	74.000
9848.000	-2.581	41.890	39.309	-34.691	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	48.430	40.573	-33.427	74.000
7386.000	-2.749	50.510	47.761	-26.239	74.000
9848.000	-2.066	41.290	39.224	-34.776	74.000
Average Detector:					
--					

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11 a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4824.000	-9.979	45.830	35.851	-38.149	74.000
7236.000	-4.641	42.790	38.150	-35.850	74.000
9648.000	-1.835	41.170	39.334	-34.666	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	45.610	38.792	-35.208	74.000
7236.000	-3.796	46.290	42.494	-31.506	74.000
9648.000	-1.365	40.830	39.465	-34.535	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4874.000	-10.271	45.610	35.338	-38.662	74.000
7311.000	-3.853	43.090	39.236	-34.764	74.000
9748.000	-2.526	40.730	38.204	-35.796	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	46.190	38.692	-35.308	74.000
7311.000	-3.018	48.510	45.491	-28.509	74.000
9748.000	-2.035	40.830	38.795	-35.205	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4924.000	-10.519	46.580	36.060	-37.940	74.000
7386.000	-3.876	43.270	39.394	-34.606	74.000
9848.000	-2.581	41.310	38.729	-35.271	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	47.630	39.773	-34.227	74.000
7386.000	-2.749	48.580	45.831	-28.169	74.000
9848.000	-2.066	41.610	39.544	-34.456	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2422MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4844.000	-10.096	44.120	34.024	-39.976	74.000
7266.000	-4.271	42.380	38.109	-35.891	74.000
9688.000	-2.204	41.630	39.427	-34.573	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	-7.089	45.880	38.790	-35.210	74.000
7266.000	-3.451	43.190	39.739	-34.261	74.000
9688.000	-1.661	40.730	39.070	-34.930	74.000
Average Detector:					
--					

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4874.000	33.306	44.930	34.658	-39.342	74.000
7311.000	39.698	43.290	39.436	-34.564	74.000
9748.000	41.160	40.810	38.284	-35.716	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	46.390	38.892	-35.108	74.000
7311.000	-3.018	50.830	47.811	-26.189	74.000
9748.000	-2.035	40.760	38.725	-35.275	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2452 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4904.000	-10.435	46.190	35.755	-38.245	74.000
7356.000	-3.867	43.510	39.643	-34.357	74.000
9808.000	-2.726	40.370	37.644	-36.356	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	-7.819	46.810	38.991	-35.009	74.000
7356.000	-2.857	54.040	51.183	-22.817	74.000
9848.000	-2.066	41.360	39.294	-34.706	74.000
Average Detector:					
--					

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
32.000	-10.140	43.404	33.264	-6.736	40.000
138.491	-19.780	47.124	27.345	-16.155	43.500
228.638	-17.981	49.869	31.887	-14.113	46.000
310.184	-13.384	41.618	28.234	-17.766	46.000
451.893	-11.184	39.526	28.342	-17.658	46.000
601.873	-5.694	33.942	28.248	-17.752	46.000
Vertical					
42.652	-11.944	44.193	32.250	-7.750	40.000
109.143	-9.732	38.914	29.182	-14.318	43.500
234.817	-18.703	50.931	32.228	-13.772	46.000
524.298	-10.138	35.467	25.329	-20.671	46.000
674.565	-10.332	34.729	24.397	-21.603	46.000
901.381	-6.756	32.086	25.331	-20.669	46.000

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- No emission found between lowest internal used/generated frequency to 30MHz.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
33.480	-12.021	45.917	33.896	-6.104	40.000
138.526	-19.780	47.051	27.270	-16.230	43.500
230.173	-17.539	50.618	33.079	-12.921	46.000
451.819	-11.202	39.461	28.259	-17.741	46.000
601.382	-5.811	32.874	27.063	-18.937	46.000
901.091	-4.435	31.283	26.849	-19.151	46.000
Vertical					
43.186	-12.266	43.081	30.815	-9.185	40.000
100.672	-9.320	38.716	29.396	-14.104	43.500
232.814	-18.403	51.263	32.861	-13.139	46.000
453.721	-15.634	42.498	26.864	-19.136	46.000
625.269	-12.505	35.472	22.967	-23.033	46.000
899.683	-6.775	38.059	31.284	-14.716	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
32.392	-10.640	46.273	35.633	-4.367	40.000
230.176	-17.539	50.712	33.173	-12.827	46.000
305.713	-12.446	41.157	28.711	-17.289	46.000
450.287	-11.579	38.638	27.059	-18.941	46.000
601.461	-5.792	31.491	25.699	-20.301	46.000
900.839	-4.447	30.586	26.139	-19.861	46.000
Vertical					
43.293	-12.331	45.493	33.162	-6.838	40.000
64.281	-14.948	44.568	29.619	-10.381	40.000
230.537	-17.988	51.815	33.826	-12.174	46.000
451.812	-16.417	42.039	25.622	-20.378	46.000
625.649	-12.535	36.381	23.846	-22.154	46.000
900.756	-6.677	37.172	30.495	-15.505	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/23
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
33.593	-12.164	46.182	34.018	-5.982	40.000
137.931	-19.758	47.069	27.311	-16.189	43.500
229.716	-17.561	50.816	33.256	-12.744	46.000
305.029	-12.417	41.531	29.113	-16.887	46.000
451.192	-11.360	39.494	28.134	-17.866	46.000
601.387	-5.809	34.278	28.469	-17.531	46.000
Vertical					
43.193	-12.271	43.528	31.257	-8.743	40.000
109.716	-9.790	38.493	28.703	-14.797	43.500
229.702	-17.871	51.816	33.945	-12.055	46.000
451.389	-16.592	42.274	25.681	-20.319	46.000
625.461	-12.514	37.382	24.868	-21.132	46.000
900.674	-6.672	37.917	31.245	-14.755	46.000

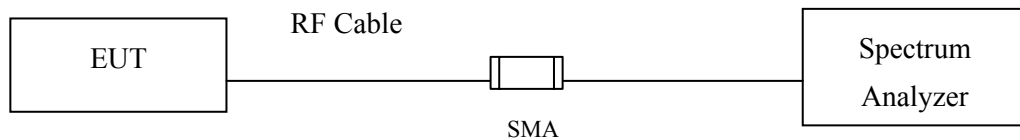
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF Antenna conducted test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.3. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.4. Uncertainty

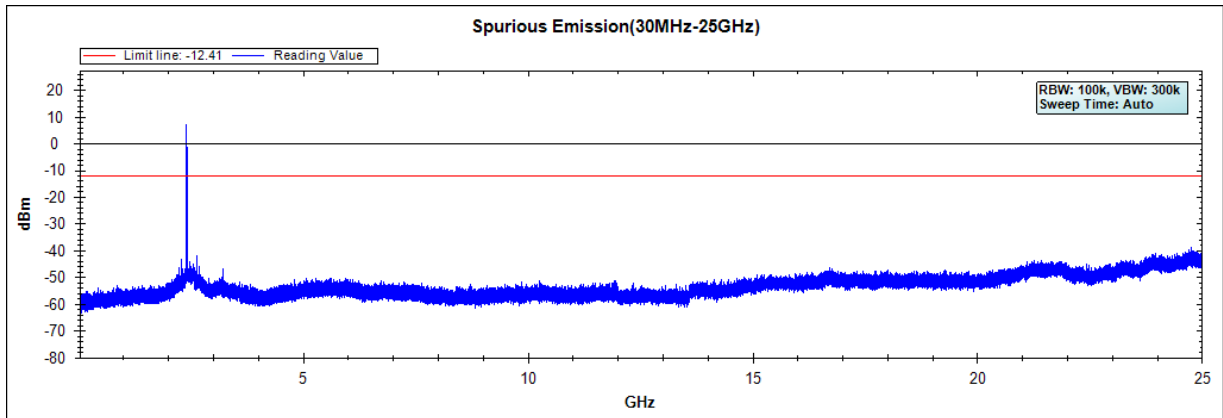
The measurement uncertainty

Conducted is defined as $\pm 1.20\text{dB}$

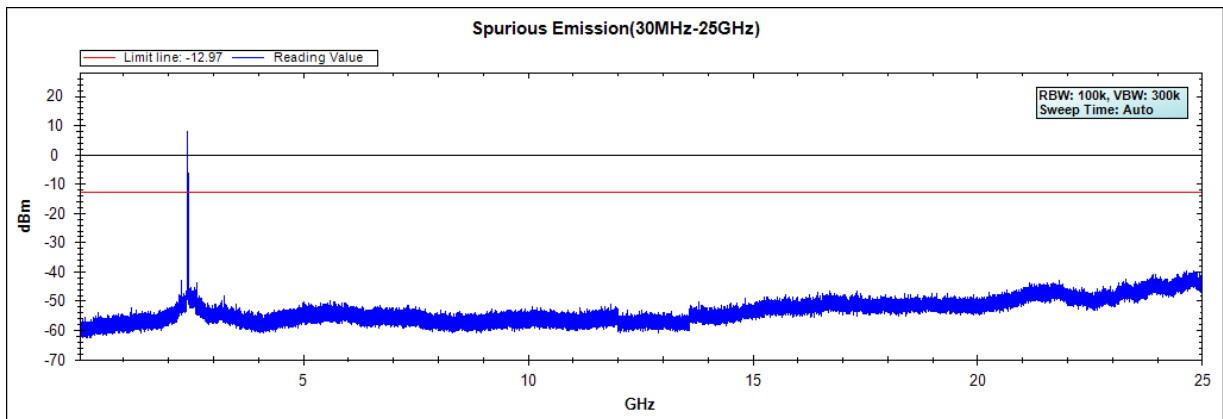
5.5. Test Result of RF antenna conducted test

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Date : 2017/03/06
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

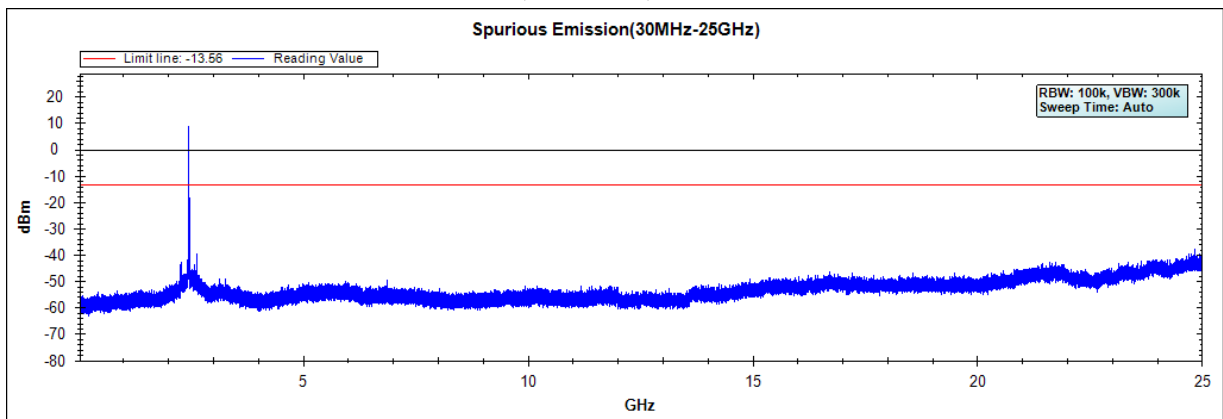
Channel 01 (2412MHz) 30MHz-25GHz



Channel 06 (2437MHz) 30MHz -25GHz



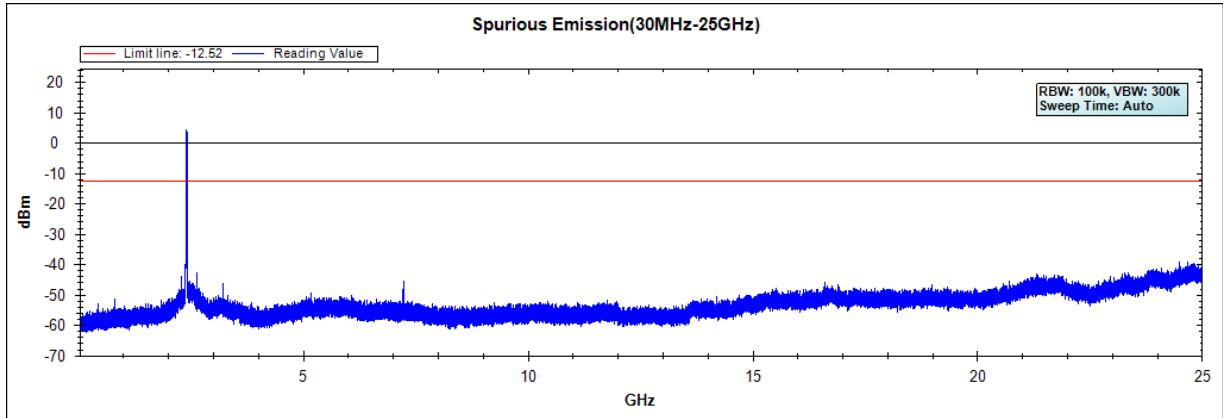
Channel 11 (2462MHz) 30MHz -25GHz



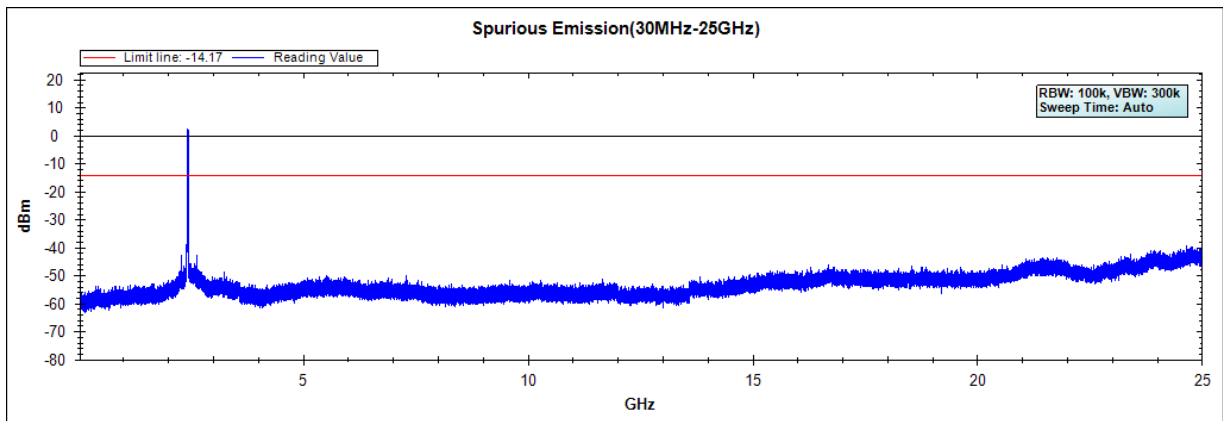
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Date : 2017/03/06
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

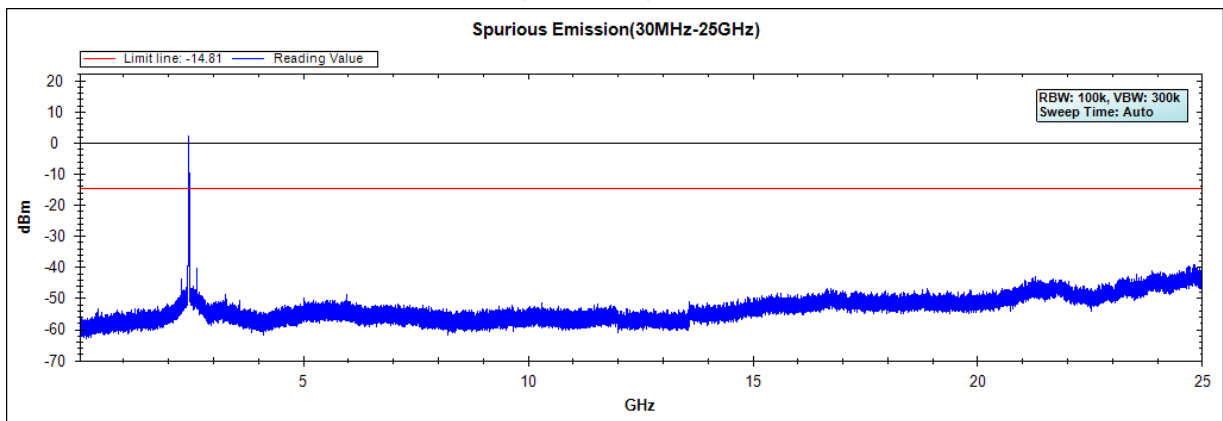
Channel 01 (2412MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz



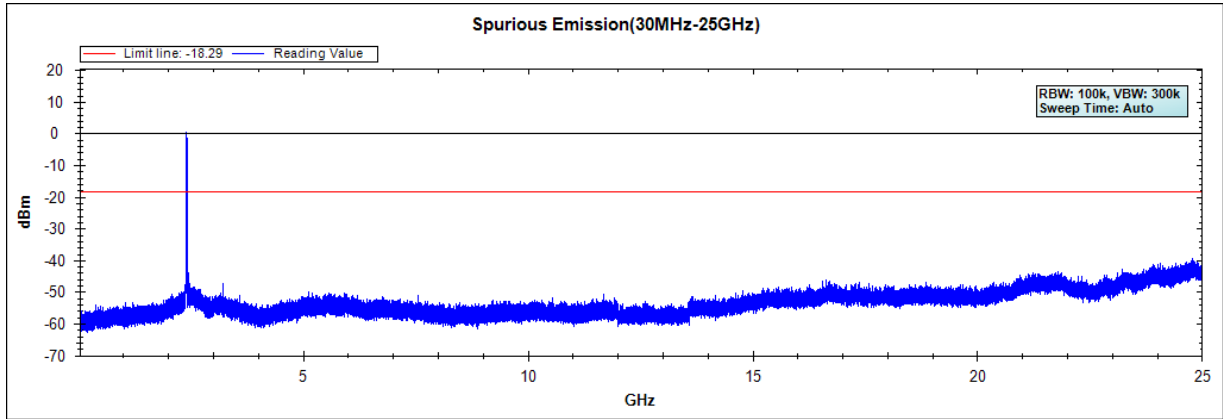
Channel 11 (2462MHz) 30MHz -25GHz



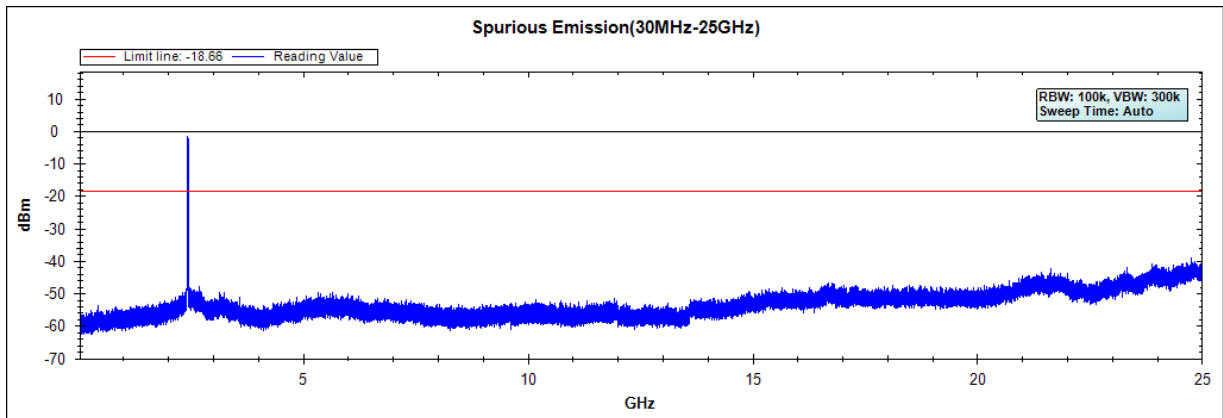
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Date : 2017/03/06
Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

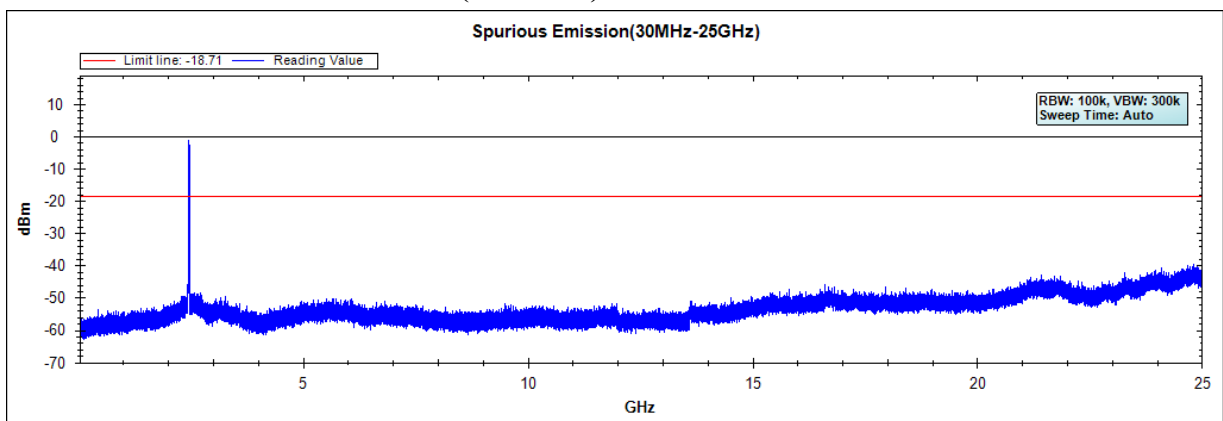
Channel 01 (2412MHz) 30MHz -25GHz-Chain A



Channel 06 (2437MHz) 30MHz -25GHz-Chain A

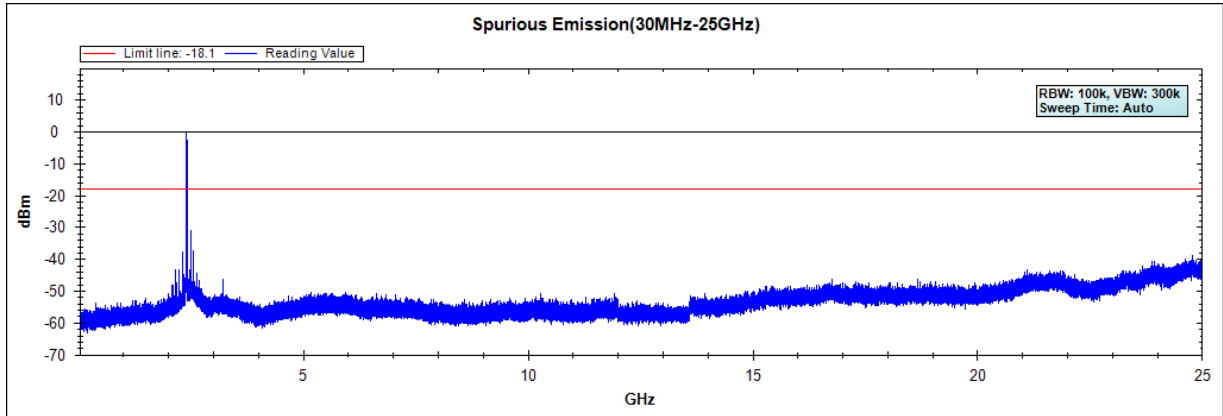


Channel 11 (2462MHz) 30MHz -25GHz-Chain A

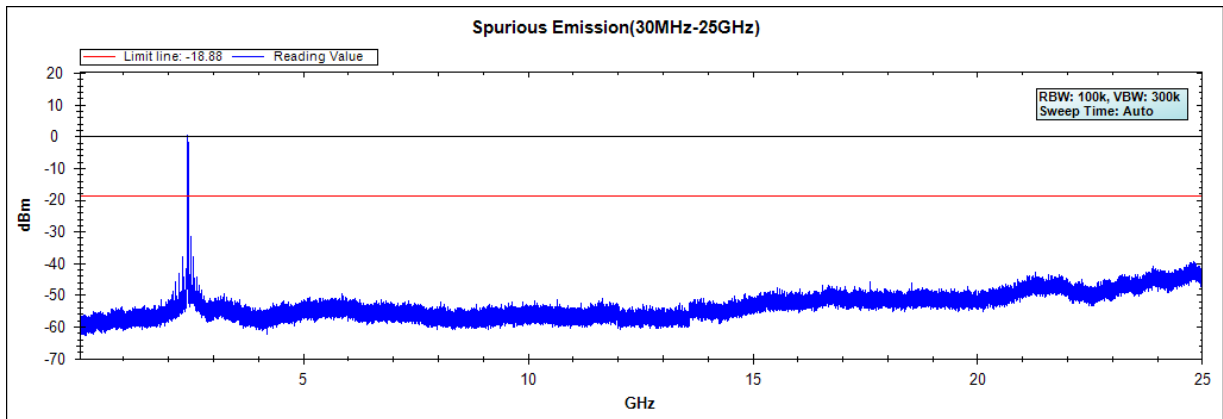


Note: The above test pattern is synthesized by multiple of the frequency range.

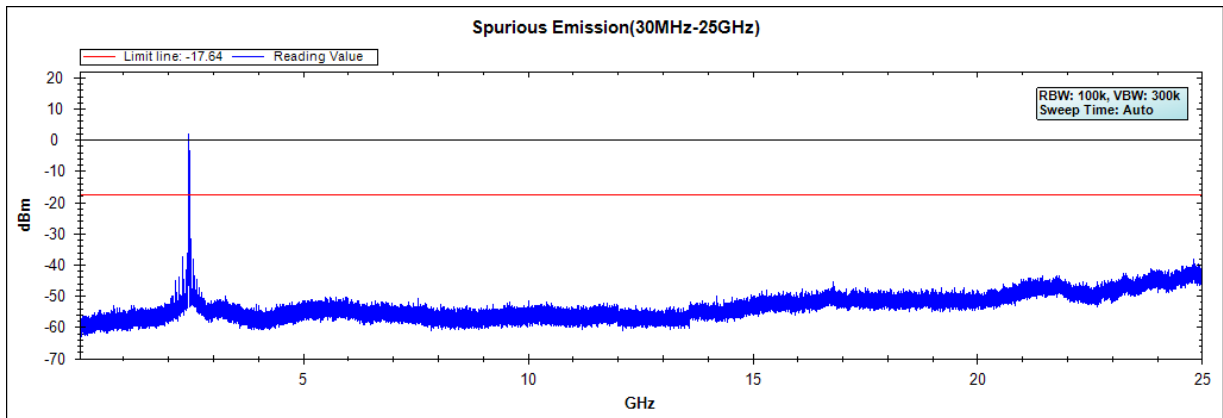
Channel 01 (2412MHz) 30MHz -25GHz-Chain B



Channel 06 (2437MHz) 30MHz -25GHz-Chain B



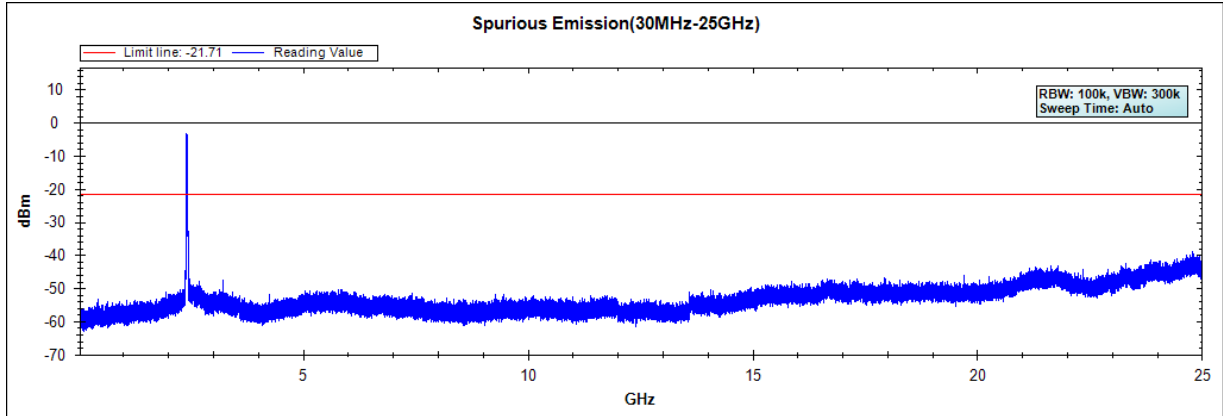
Channel 11 (2462MHz) 30MHz -25GHz-Chain B



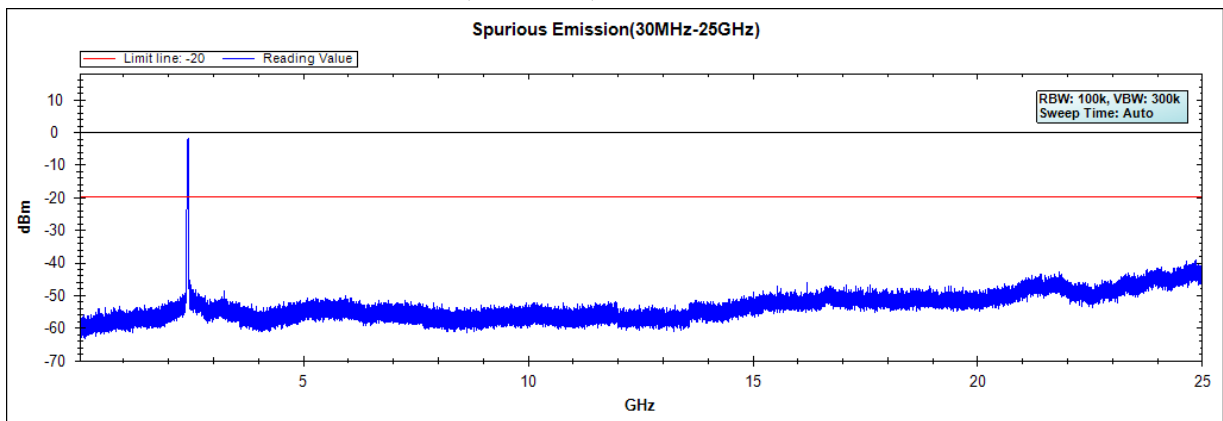
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Date : 2017/03/06
Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

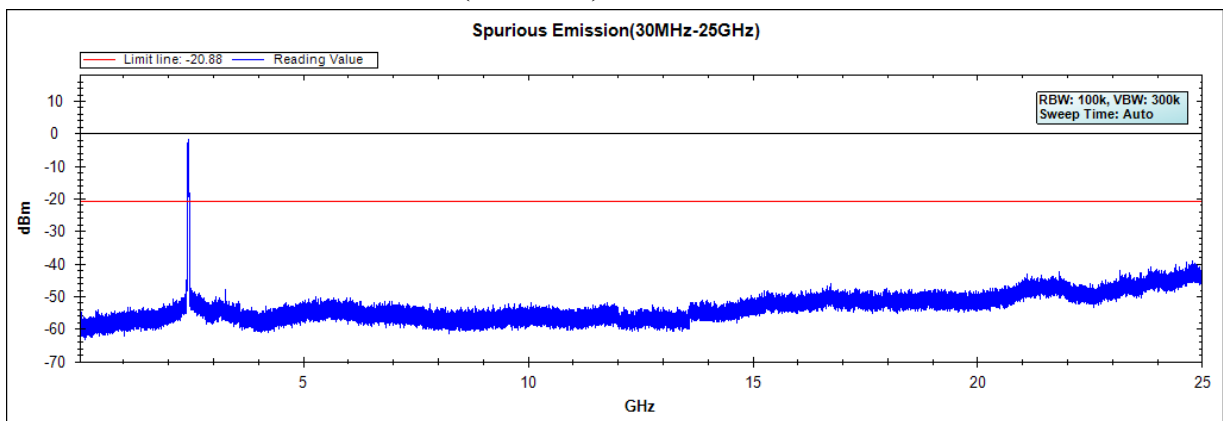
Channel 03 (2422MHz) 30MHz -25GHz-Chain A



Channel 06 (2437MHz) 30MHz -25GHz-Chain A

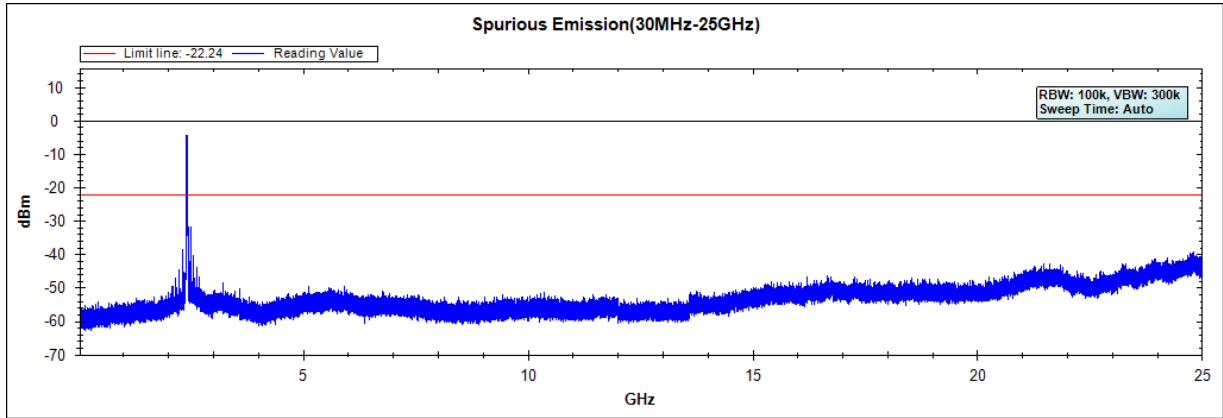


Channel 09 (2452MHz) 30MHz -25GHz-Chain A

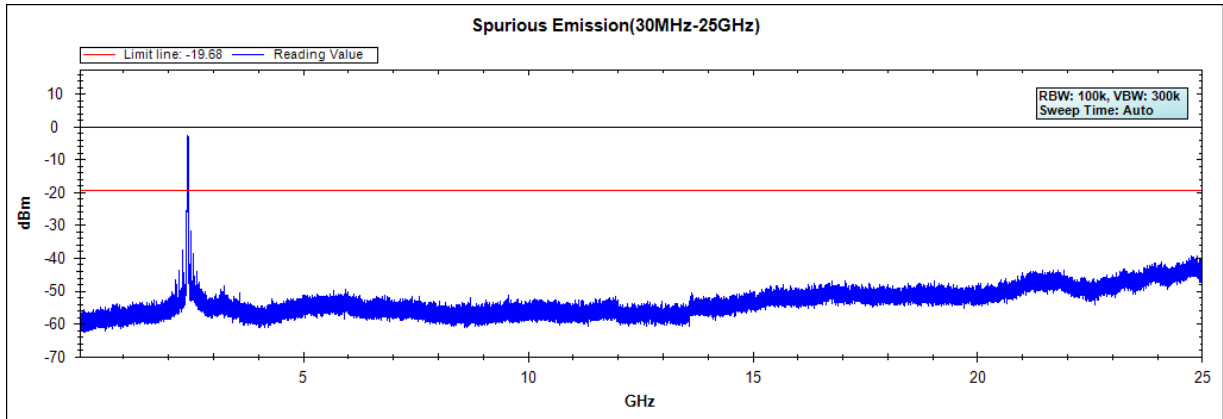


Note: The above test pattern is synthesized by multiple of the frequency range.

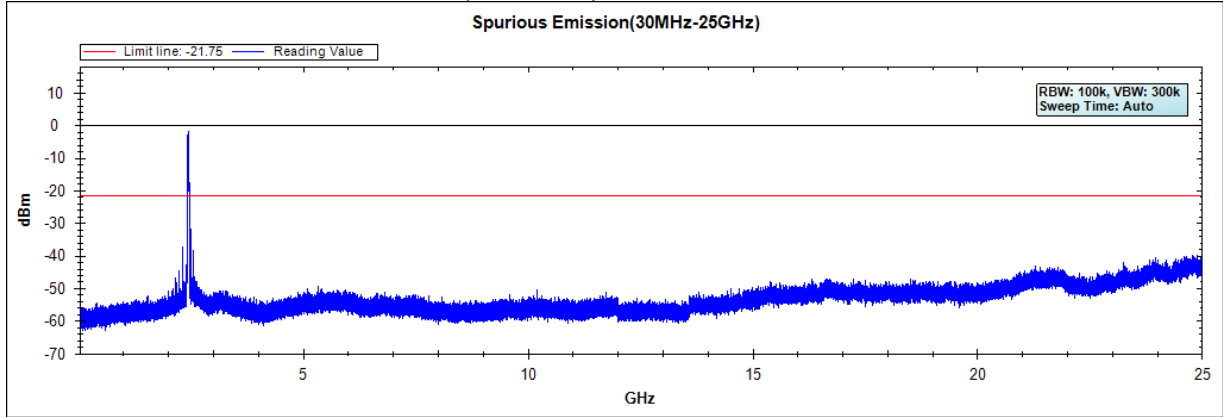
Channel 03 (2422MHz) 30MHz -25GHz-Chain B



Channel 06 (2437MHz) 30MHz -25GHz-Chain B



Channel 09 (2452MHz) 30MHz -25GHz-Chain B

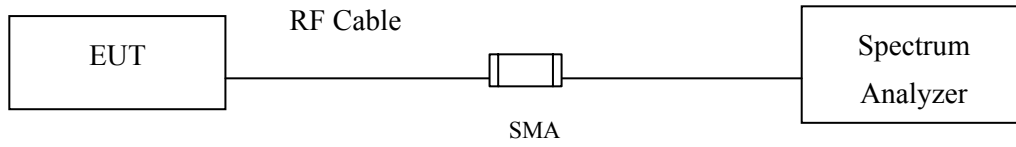


Note: The above test pattern is synthesized by multiple of the frequency range.

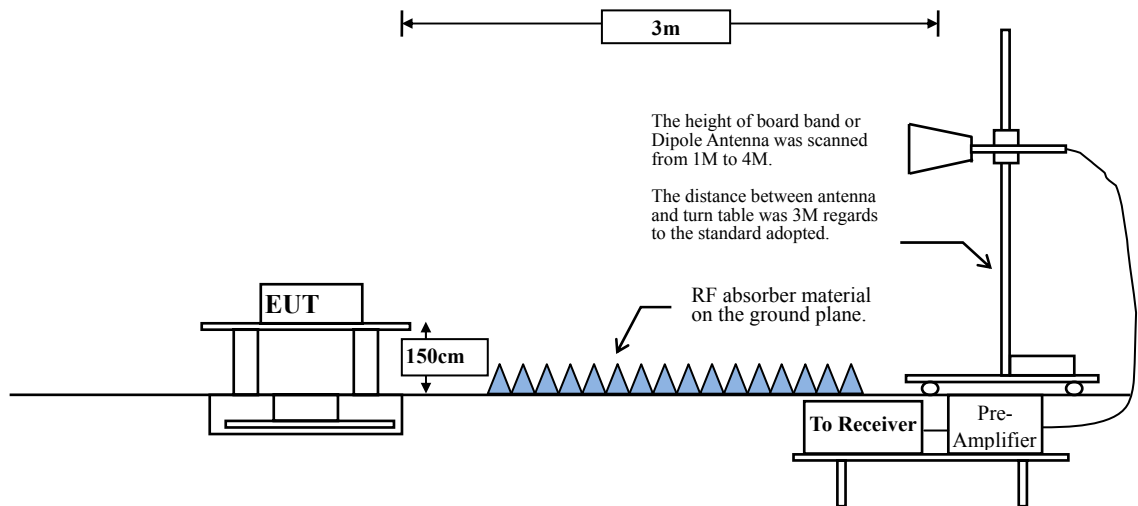
6. Band Edge

6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



6.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

6.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2380.435	6.433	49.466	55.899	74.00	54.00	Pass
01 (Peak)	2390.000	6.474	47.542	54.017	74.00	54.00	Pass
01 (Peak)	2396.812	6.510	51.751	58.260	--	--	--
01 (Peak)	2400.000	6.528	49.228	55.756	--	--	--
01 (Peak)	2413.043	6.610	92.609	99.219	--	--	--
01 (Average)	2390.000	6.474	32.722	39.197	74.00	54.00	Pass
01 (Average)	2397.246	6.512	40.835	47.347	--	--	--
01 (Average)	2400.000	6.528	35.952	42.480	--	--	--
01 (Average)	2412.754	6.608	89.125	95.733	--	--	--

Figure Channel 01: Horizontal (Peak)

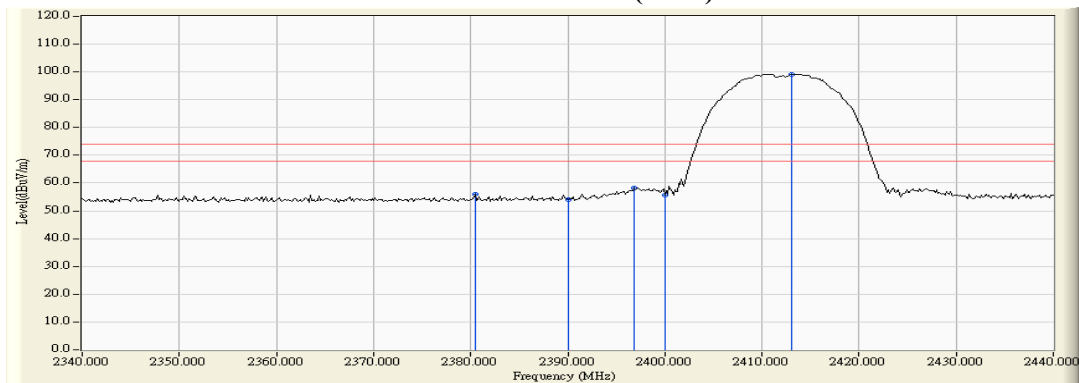
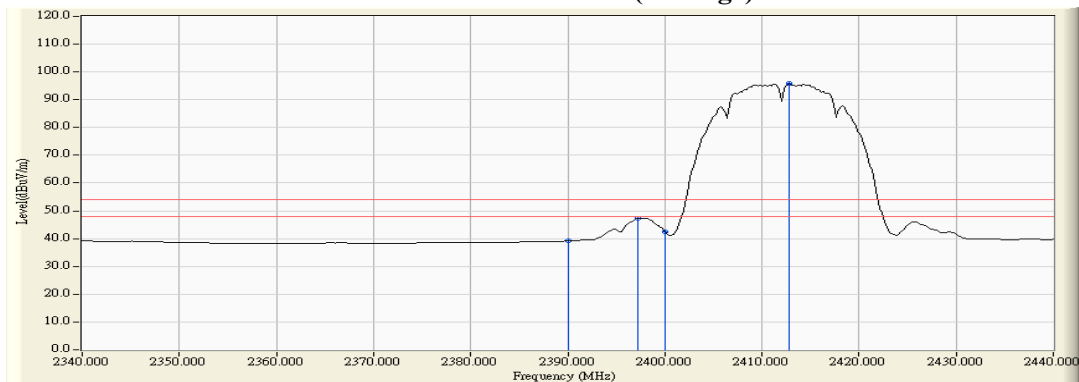


Figure Channel 01: Horizontal (Average)



- Note: 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2388.406	5.888	53.294	59.181	74.00	54.00	Pass
01 (Peak)	2390.000	5.880	51.816	57.697	74.00	54.00	Pass
01 (Peak)	2399.855	5.879	60.342	66.221	--	--	--
01 (Peak)	2400.000	5.879	59.199	65.078	--	--	--
01 (Peak)	2411.014	5.907	100.132	106.040	--	--	--
01 (Average)	2390.000	5.880	41.527	47.408	74.00	54.00	Pass
01 (Average)	2397.826	5.874	49.215	55.089	--	--	--
01 (Average)	2400.000	5.879	44.200	50.079	--	--	--
01 (Average)	2412.754	5.919	96.729	102.647	--	--	--

Figure Channel 01:

Vertical (Peak)

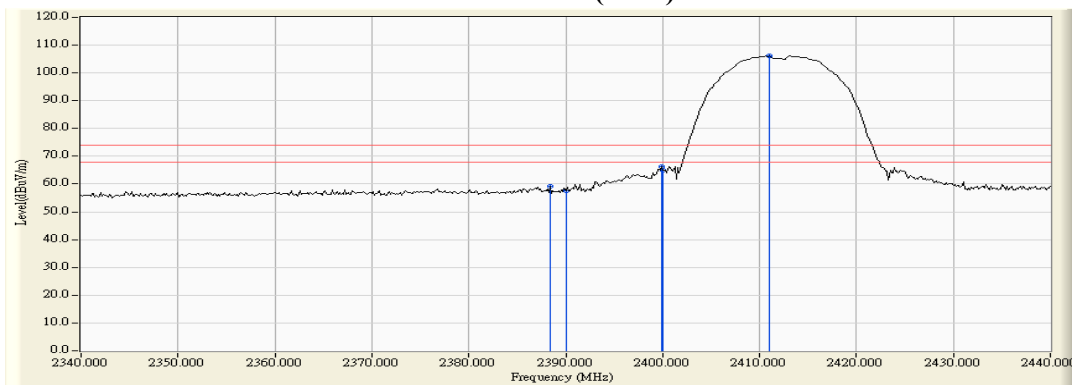
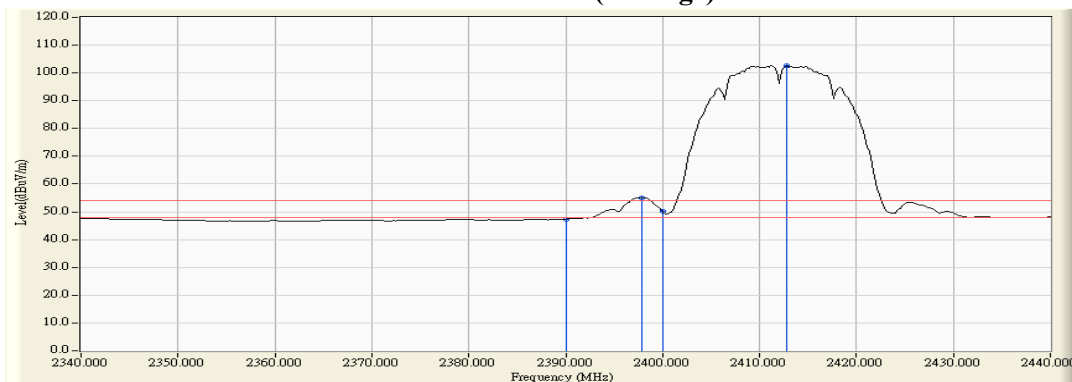


Figure Channel 01:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2463.500	6.969	94.842	101.811	--	--	--
11 (Peak)	2483.500	7.110	49.470	56.580	74.00	54.00	Pass
11 (Peak)	2490.891	7.162	51.179	58.341	74.00	54.00	Pass
11 (Average)	2462.775	6.964	91.263	98.227	--	--	--
11 (Average)	2483.500	7.110	35.830	42.940	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

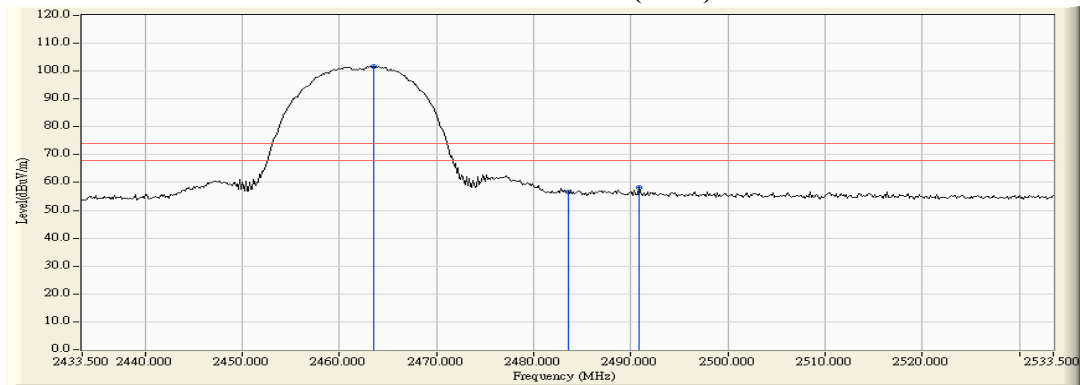
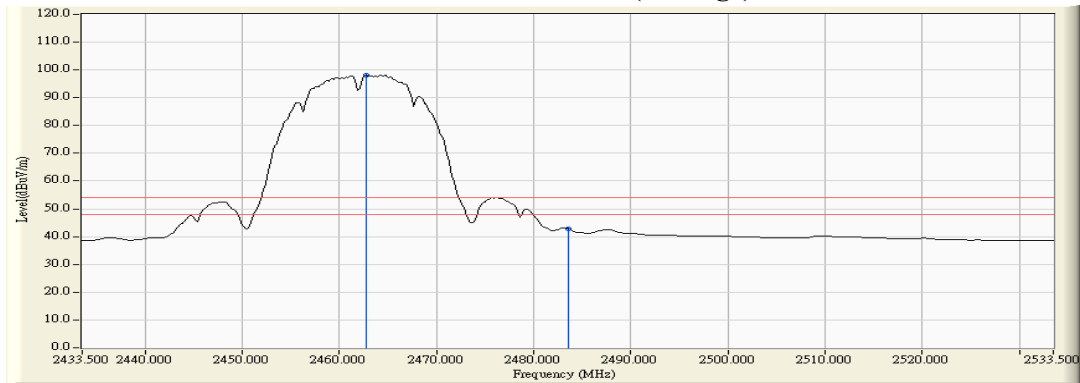


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2462.920	6.235	102.576	108.811	--	--	--
11 (Peak)	2483.500	6.363	55.519	61.882	74.00	54.00	Pass
11 (Peak)	2484.080	6.367	56.542	62.909	74.00	54.00	Pass
11 (Average)	2462.775	6.234	98.951	105.185	--	--	--
11 (Average)	2483.500	6.363	45.033	51.396	74.00	54.00	Pass
11 (Average)	2487.558	6.388	45.193	51.582	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

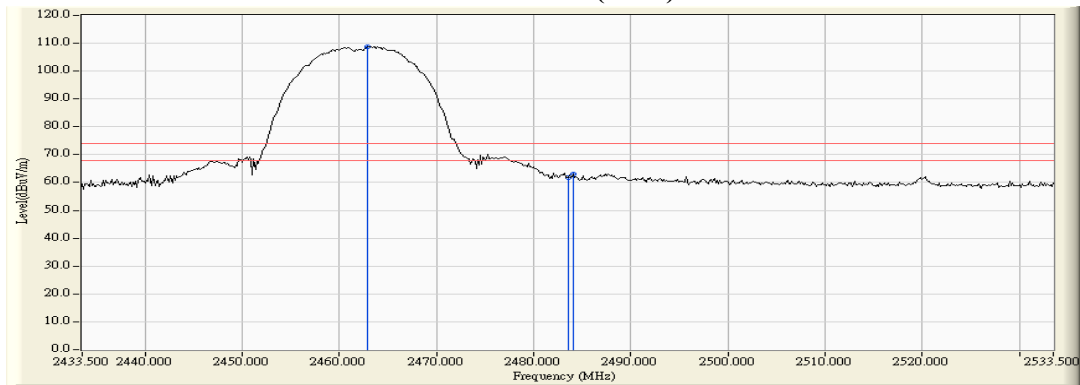


Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	6.474	58.658	65.133	74.00	54.00	Pass
01 (Peak)	2400.000	6.528	75.001	81.529	--	--	--
01 (Peak)	2415.942	6.631	96.919	103.550	--	--	--
01(Average)	2390.000	6.474	36.917	43.392	74.00	54.00	Pass
01(Average)	2400.000	6.528	48.277	54.805	--	--	--
01(Average)	2417.391	6.641	85.459	92.100	--	--	--

Figure Channel 01: Horizontal (Peak)

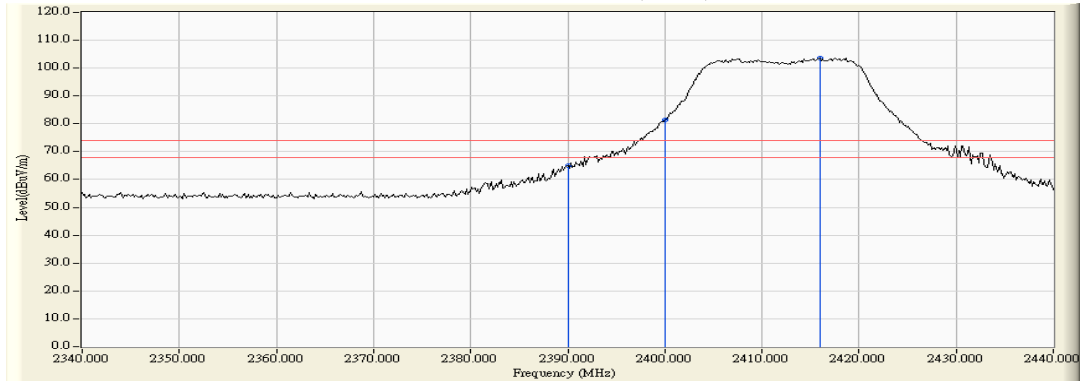
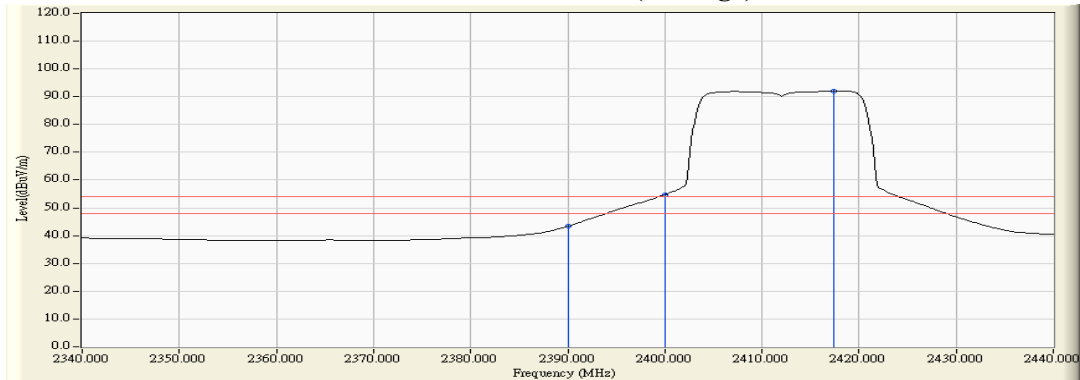


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	5.880	66.059	71.940	74.00	54.00	Pass
01 (Peak)	2400.000	5.879	82.871	88.750	--	--	--
01 (Peak)	2414.928	5.932	104.416	110.348	--	--	--
01 (Average)	2390.000	5.880	44.959	50.840	74.00	54.00	Pass
01 (Average)	2400.000	5.879	56.000	61.879	--	--	--
01 (Average)	2417.971	5.951	92.869	98.820	--	--	--

Figure Channel 01:

Vertical (Peak)

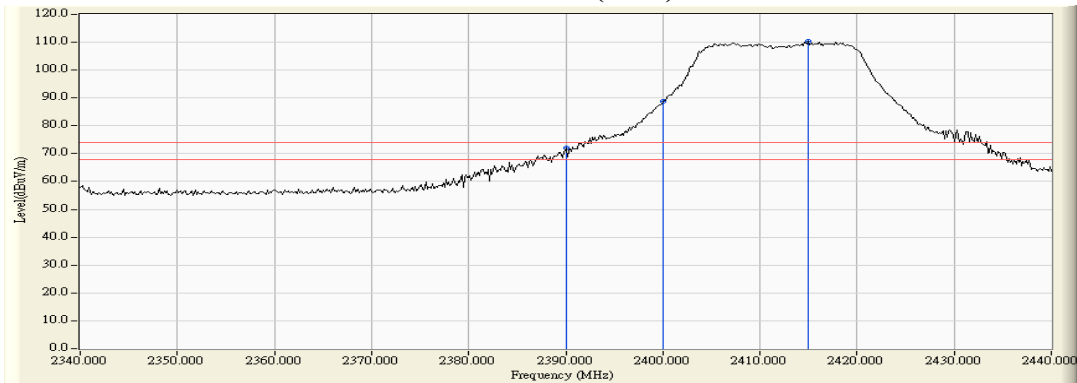
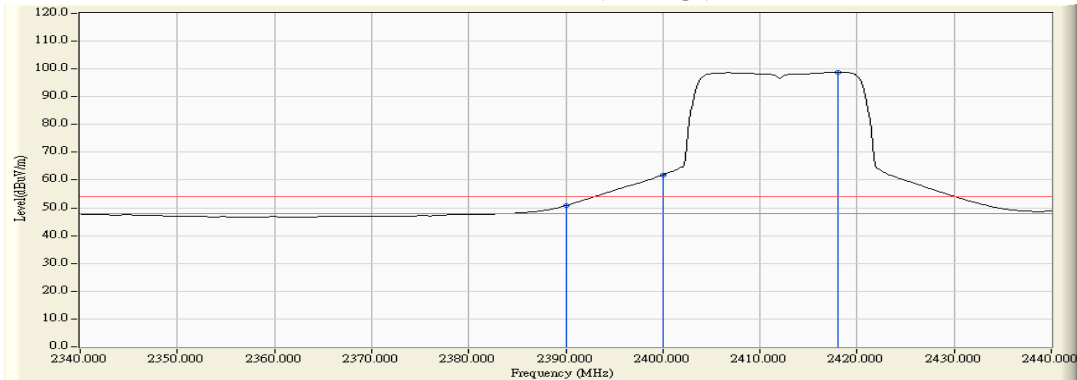


Figure Channel 01:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2457MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
10 (Peak)	2460.891	6.951	94.360	101.311	--	--	--
10 (Peak)	2483.500	7.110	51.220	58.330	74.00	54.00	Pass
10 (Peak)	2490.022	7.156	51.337	58.493	74.00	54.00	Pass
10 (Average)	2462.486	6.962	86.416	93.378	--	--	--
10 (Average)	2483.500	7.110	36.072	43.182	74.00	54.00	Pass

Figure Channel 10: Horizontal (Peak)

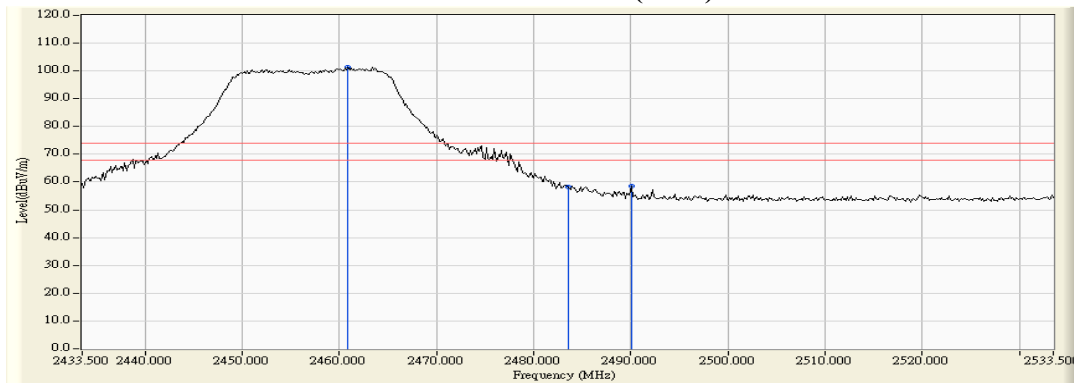
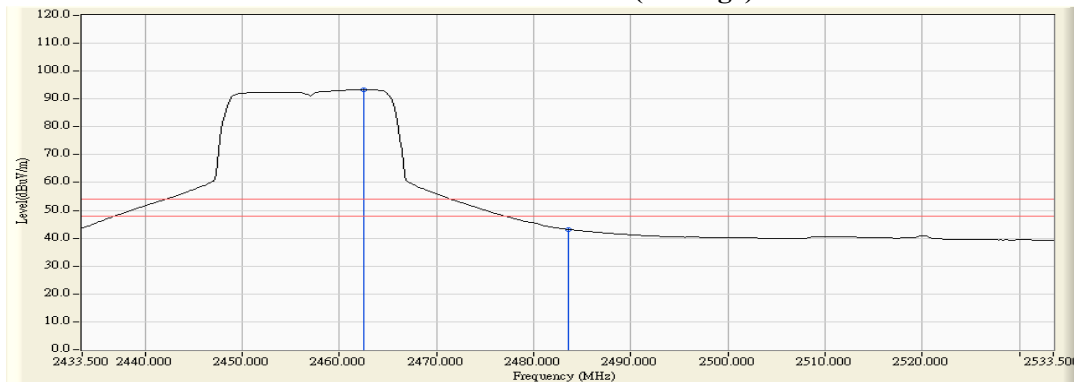


Figure Channel 10: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2457MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
10 (Peak)	2460.022	6.216	102.742	108.959	--	--	--
10 (Peak)	2483.500	6.363	60.596	66.959	74.00	54.00	Pass
10 (Peak)	2485.819	6.378	61.667	68.045	74.00	54.00	Pass
10 (Average)	2463.210	6.237	94.846	101.083	--	--	--
10 (Average)	2483.500	6.363	46.701	53.064	74.00	54.00	Pass

Figure Channel 10: Vertical (Peak)

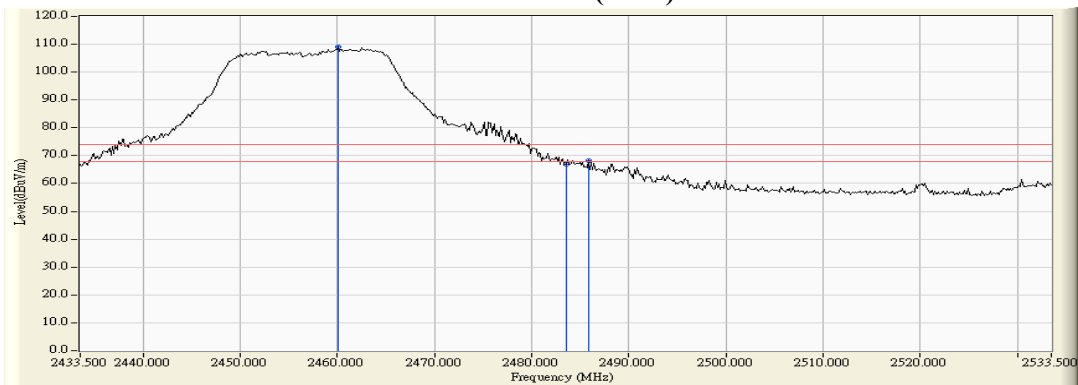
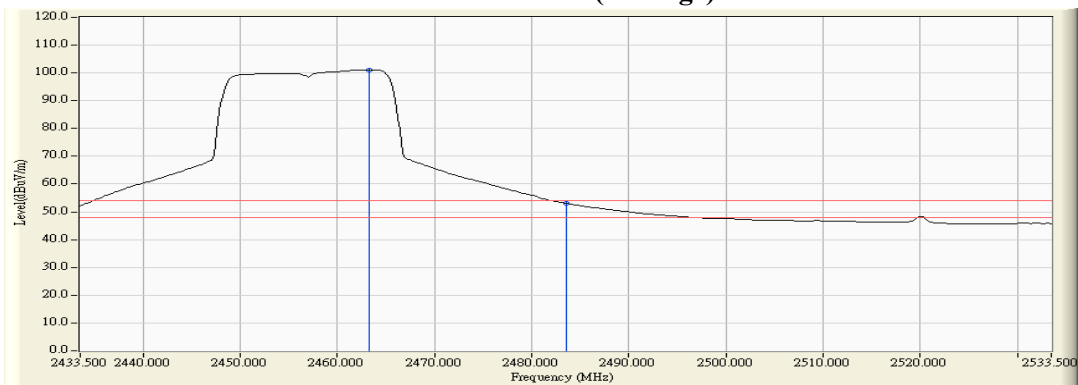


Figure Channel 10: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2464.949	6.979	96.992	103.971	--	--	--
11 (Peak)	2483.500	7.110	57.650	64.760	74.00	54.00	Pass
11 (Average)	2467.993	7.001	84.986	91.986	--	--	--
11 (Average)	2483.500	7.110	38.043	45.153	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

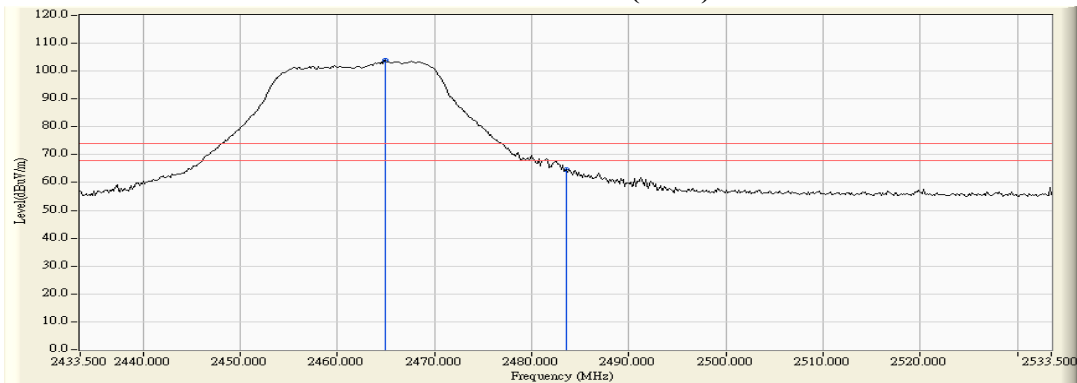
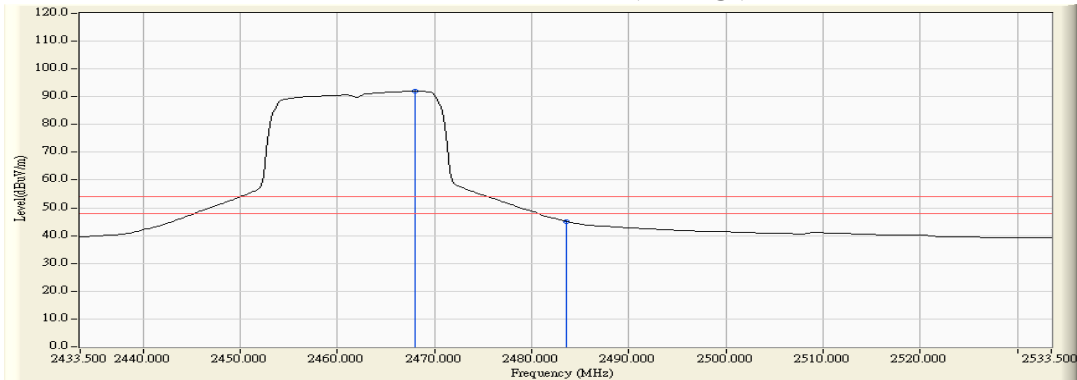


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2464.804	6.247	103.517	109.764	--	--	--
11 (Peak)	2483.500	6.363	64.587	70.950	74.00	54.00	Pass
11 (Peak)	2483.645	6.364	66.018	72.382	74.00	54.00	Pass
11 (Average)	2467.848	6.266	91.925	98.191	--	--	--
11 (Average)	2483.500	6.363	46.113	52.476	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

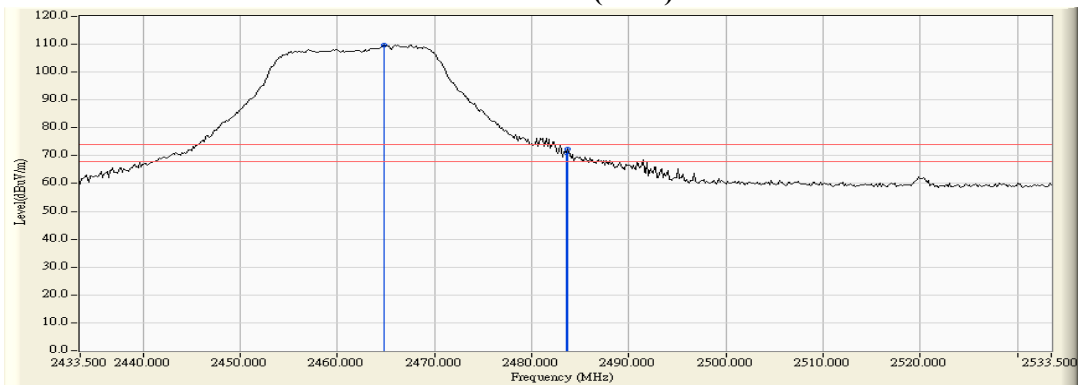
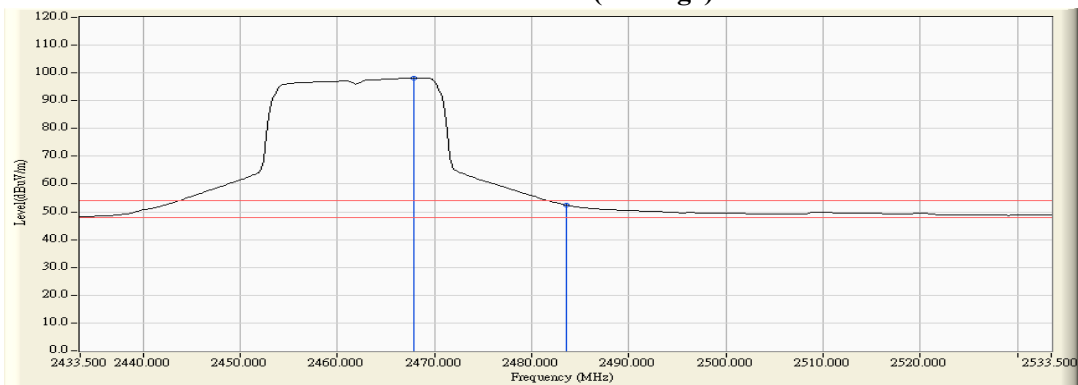


Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.855	6.474	51.472	57.946	74.00	54.00	Pass
01 (Peak)	2390.000	6.474	50.156	56.631	74.00	54.00	Pass
01 (Peak)	2399.710	6.527	71.722	78.249	--	--	--
01 (Peak)	2400.000	6.528	71.665	78.193	--	--	--
01 (Peak)	2417.971	6.646	94.938	101.583	--	--	--
01 (Average)	2390.000	6.474	35.709	42.184	74.00	54.00	Pass
01 (Average)	2400.000	6.528	46.941	53.469	--	--	--
01 (Average)	2418.261	6.647	81.991	88.638	--	--	--

Figure Channel 01: Horizontal (Peak)

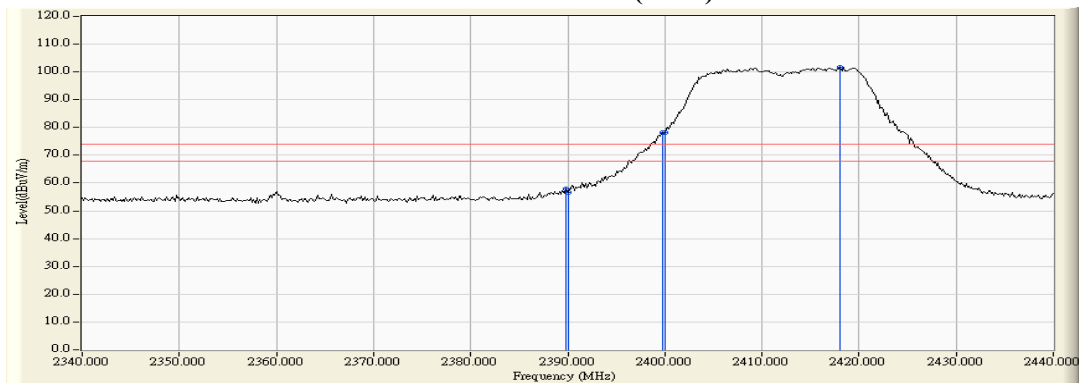
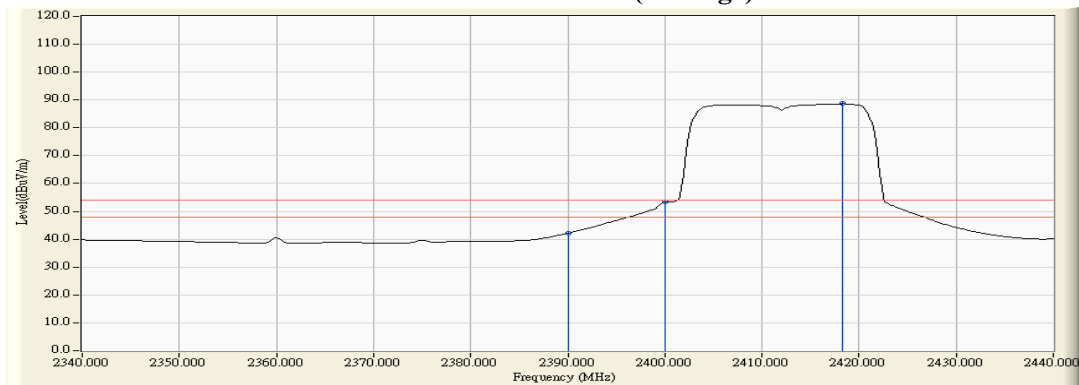


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.855	5.881	65.043	70.924	74.00	54.00	Pass
01 (Peak)	2390.000	5.880	63.534	69.415	74.00	54.00	Pass
01 (Peak)	2400.000	5.879	80.760	86.639	--	--	--
01 (Peak)	2408.406	5.901	102.490	108.391	--	--	--
01 (Average)	2360.000	6.004	47.985	53.989	74.00	54.00	Pass
01 (Average)	2390.000	5.880	47.364	53.245	74.00	54.00	Pass
01 (Average)	2400.000	5.879	57.619	63.498	--	--	--
01 (Average)	2406.377	5.896	89.110	95.005	--	--	--

Figure Channel 01: Vertical (Peak)

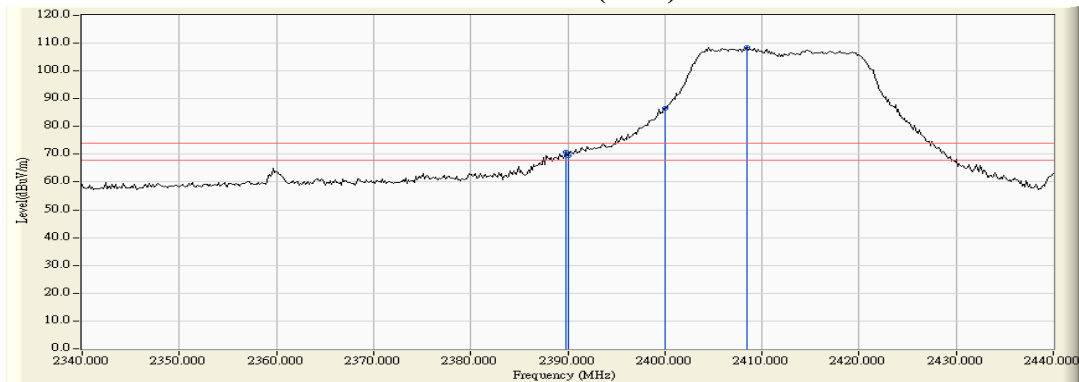
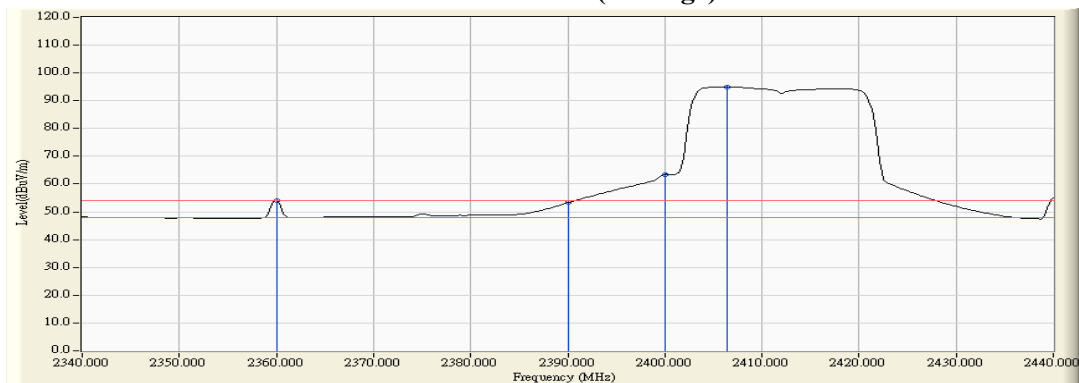


Figure Channel 01: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2417MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
02 (Peak)	2360.290	6.342	51.460	57.802	74.00	54.00	Pass
02 (Peak)	2390.000	6.474	47.223	53.698	74.00	54.00	Pass
02 (Peak)	2400.000	6.528	56.979	63.507	--	--	--
02 (Peak)	2420.725	6.664	91.098	97.763	--	--	--
02 (Average)	2360.000	6.341	43.738	50.079	74.00	54.00	Pass
02 (Average)	2390.000	6.474	34.617	41.092	74.00	54.00	Pass
02 (Average)	2400.000	6.528	45.996	52.524	--	--	--
02 (Average)	2411.014	6.595	81.495	88.091	--	--	--

Figure Channel 02: Horizontal (Peak)

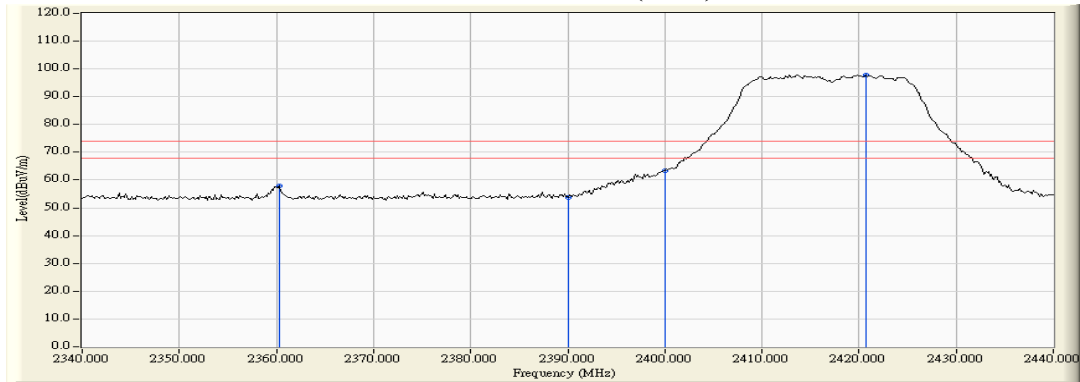
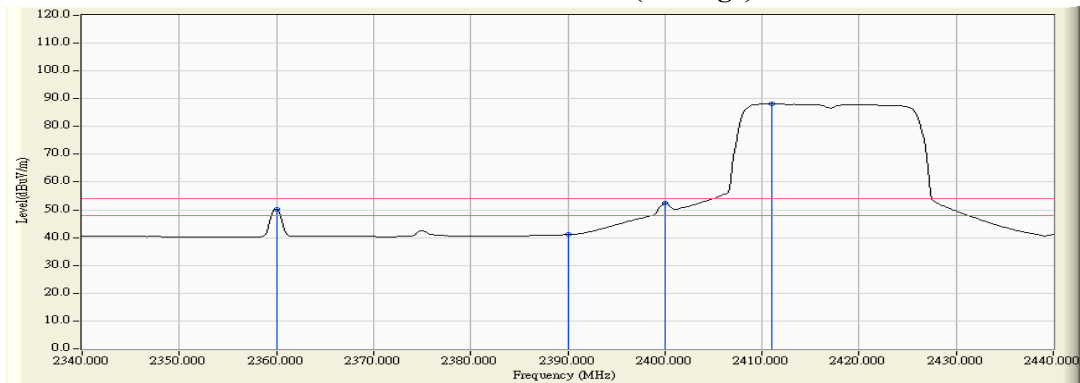


Figure Channel 02: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2417MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
02 (Peak)	2359.855	6.005	54.052	60.057	74.00	54.00	Pass
02 (Peak)	2390.000	5.880	51.283	57.164	74.00	54.00	Pass
02 (Peak)	2400.000	5.879	62.866	68.745	--	--	--
02 (Peak)	2418.551	5.955	97.686	103.641	--	--	--
02 (Average)	2360.000	6.004	47.965	53.969	74.00	54.00	Pass
02 (Average)	2390.000	5.880	40.206	46.087	74.00	54.00	Pass
02 (Average)	2400.000	5.879	53.027	58.906	--	--	--
02 (Average)	2411.449	5.911	88.424	94.334	--	--	--

Figure Channel 02: Vertical (Peak)

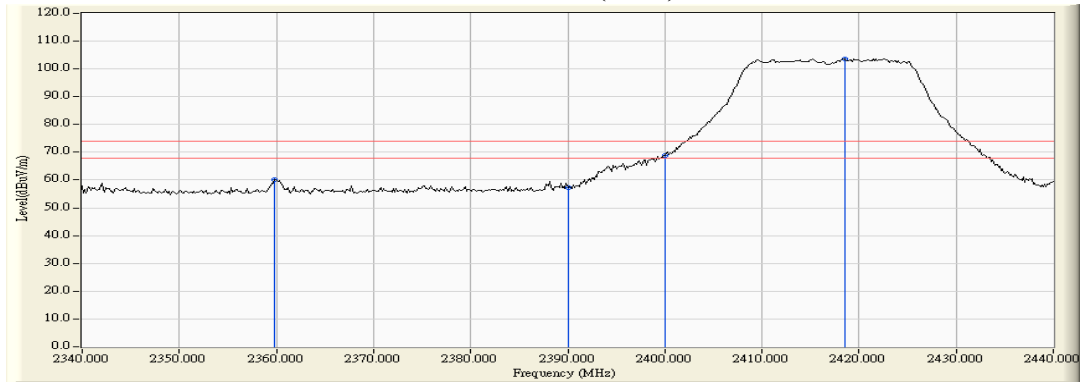
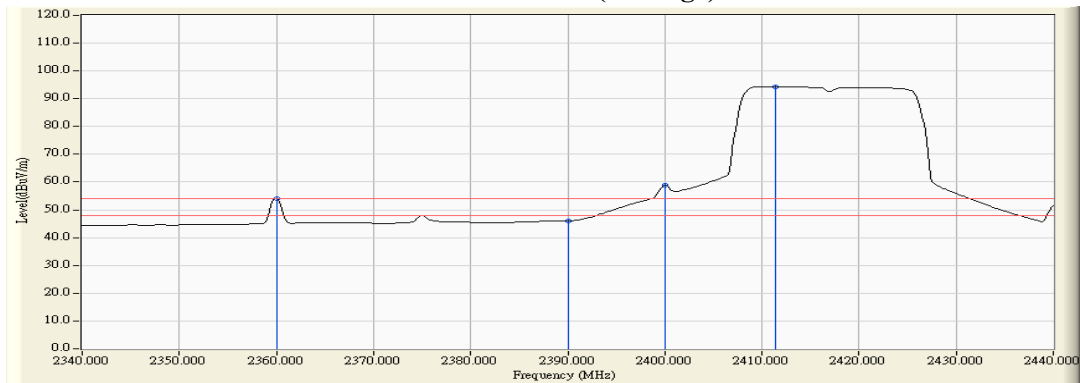


Figure Channel 02: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2422MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
03 (Peak)	2360.000	6.341	53.196	59.537	74.00	54.00	Pass
03 (Peak)	2390.000	6.474	48.245	54.720	74.00	54.00	Pass
03 (Peak)	2400.000	6.528	57.254	63.782	--	--	--
03 (Peak)	2416.957	6.638	94.162	100.800	--	--	--
03 (Average)	2360.000	6.341	45.799	52.140	74.00	54.00	Pass
03 (Average)	2390.000	6.474	36.222	42.697	74.00	54.00	Pass
03 (Average)	2400.000	6.528	47.700	54.228	--	--	--
03 (Average)	2416.812	6.637	83.900	90.537	--	--	--

Figure Channel 03: Horizontal (Peak)

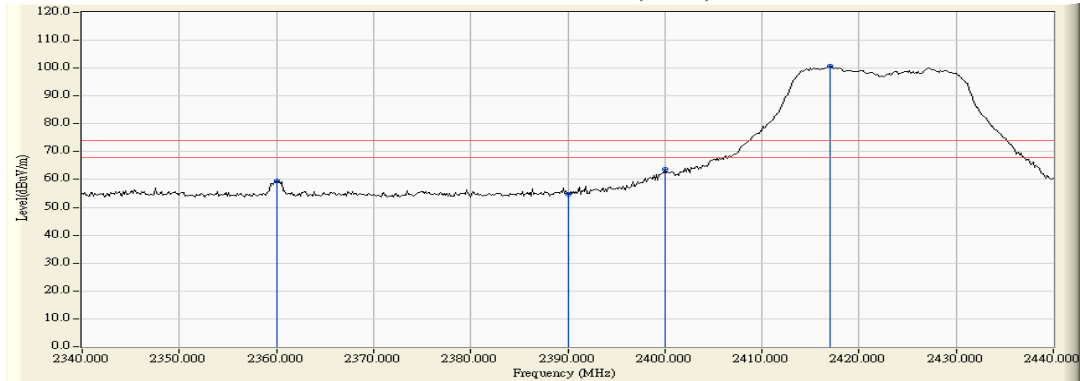
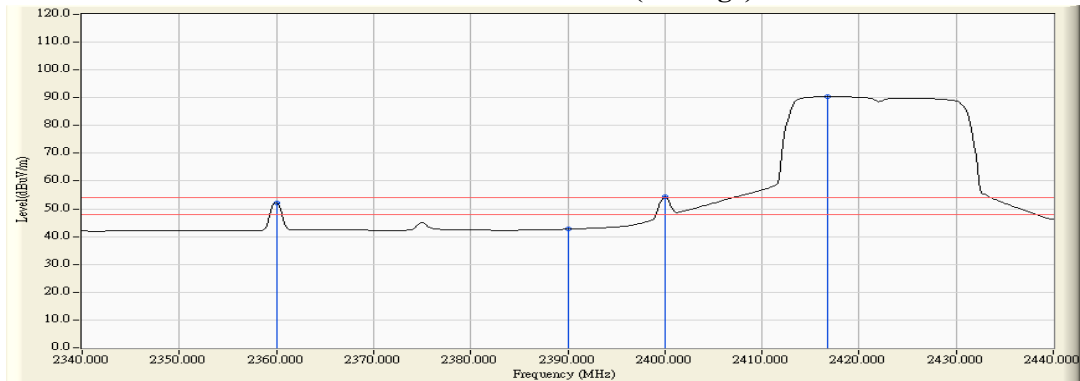


Figure Channel 03: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2422MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
03 (Peak)	2360.000	6.004	54.339	60.343	74.00	54.00	Pass
03 (Peak)	2390.000	5.880	51.977	57.858	74.00	54.00	Pass
03 (Peak)	2400.000	5.879	60.050	65.929	--	--	--
03 (Peak)	2428.116	6.015	100.792	106.807	--	--	--
03 (Average)	2360.000	6.004	42.410	48.414	74.00	54.00	Pass
03 (Average)	2390.000	5.880	40.323	46.204	74.00	54.00	Pass
03 (Average)	2400.000	5.879	48.383	54.262	--	--	--
03 (Average)	2426.667	6.005	90.996	97.002	--	--	--

Figure Channel 03: Vertical (Peak)

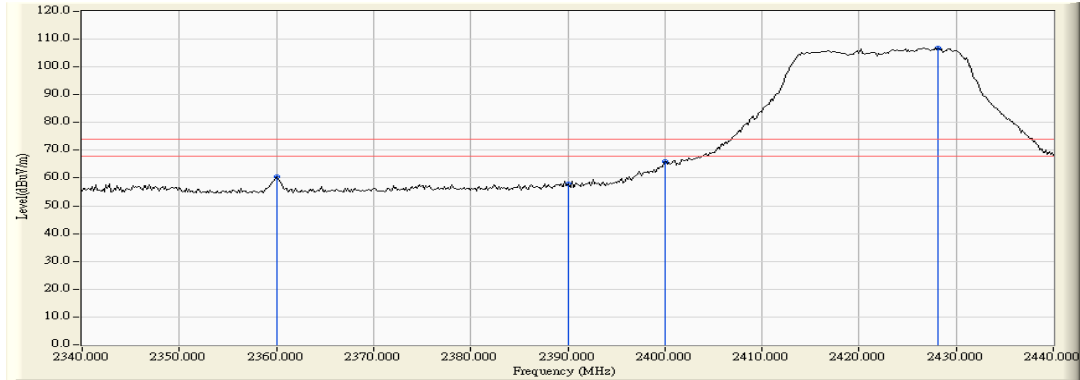
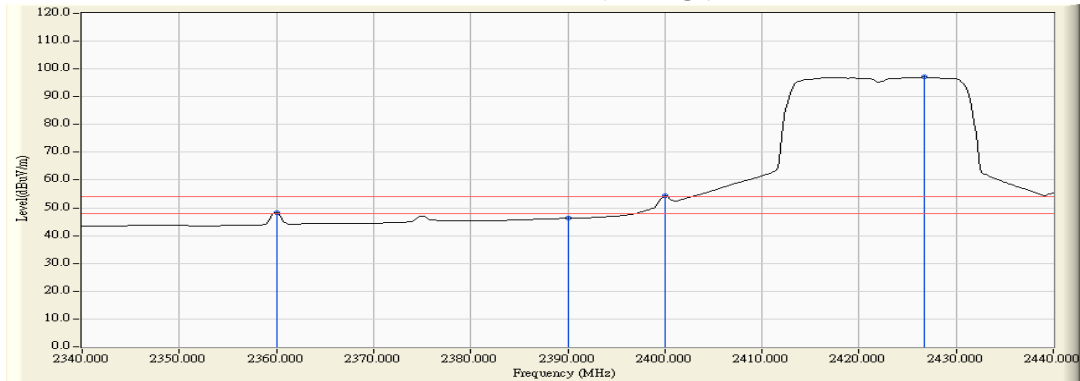


Figure Channel 03: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2467.413	6.996	95.084	102.080	--	--	--
11 (Peak)	2483.500	7.110	52.241	59.351	74.00	54.00	Pass
11 (Peak)	2484.370	7.116	52.787	59.903	74.00	54.00	Pass
11 (Average)	2468.283	7.003	82.074	89.077	--	--	--
11 (Average)	2483.500	7.110	35.560	42.670	74.00	54.00	Pass
11 (Average)	2520.022	7.125	36.794	43.919	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

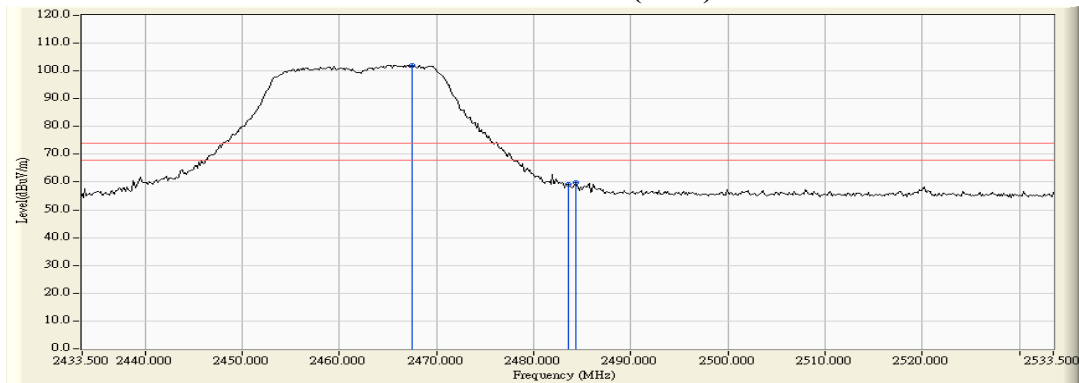
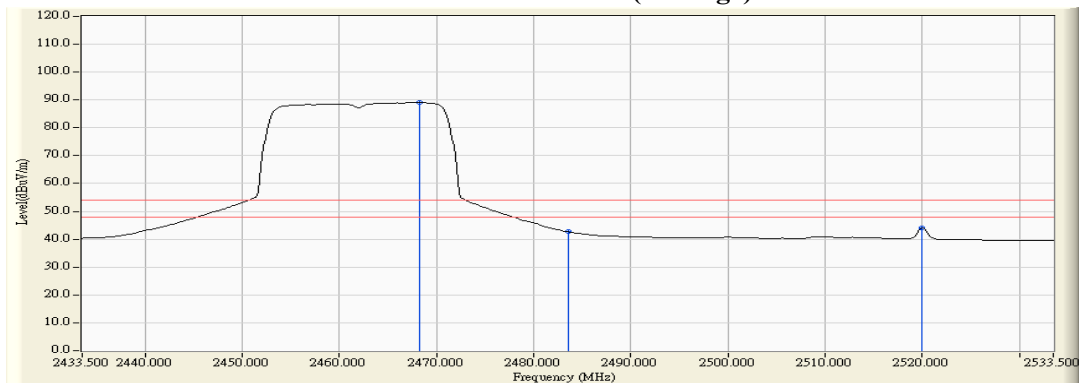


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2466.399	6.257	105.028	111.285	--	--	--
11 (Peak)	2483.500	6.363	59.309	65.672	74.00	54.00	Pass
11 (Peak)	2483.790	6.365	63.429	69.794	74.00	54.00	Pass
11 (Average)	2466.688	6.258	91.790	98.048	--	--	--
11 (Average)	2483.500	6.363	45.142	51.505	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

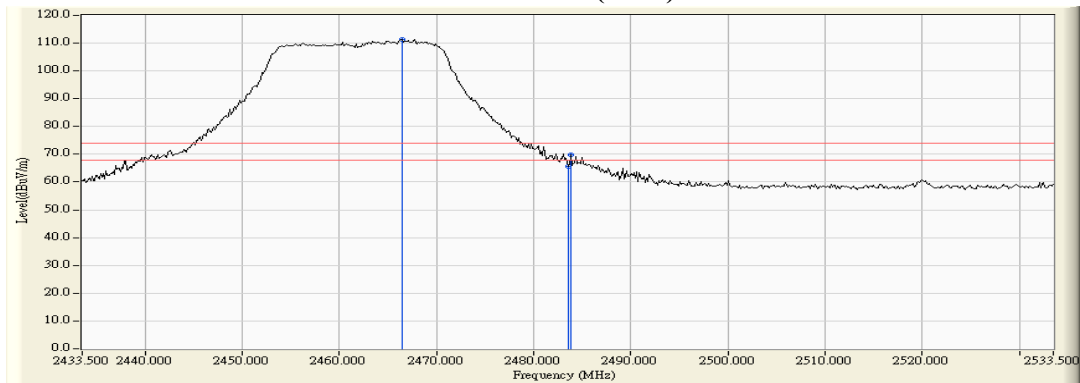
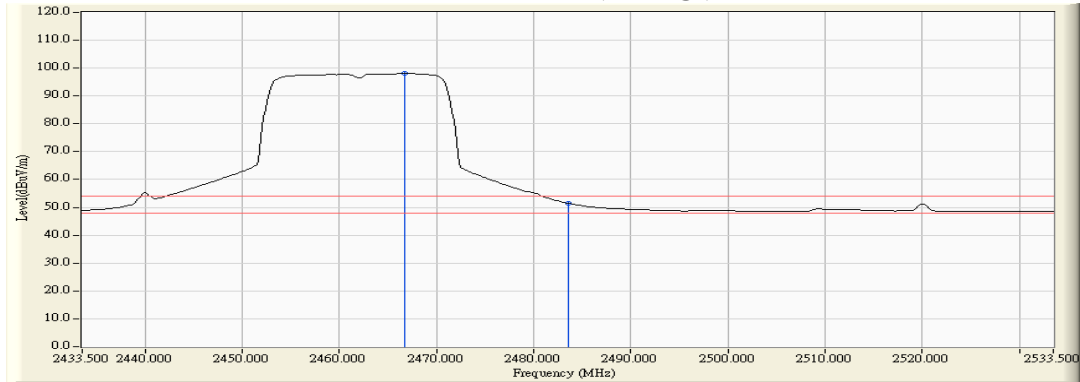


Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2422MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
03 (Peak)	2390.000	6.474	54.521	60.996	74.00	54.00	Pass
03 (Peak)	2400.000	6.528	70.106	76.634	--	--	--
03 (Peak)	2410.145	6.590	89.123	95.713	--	--	--
03 (Average)	2390.000	6.474	35.915	42.390	74.00	54.00	Pass
03 (Average)	2400.000	6.528	44.546	51.074	--	--	--
03 (Average)	2406.812	6.570	75.577	82.147	--	--	--

Figure Channel 03: Horizontal (Peak)

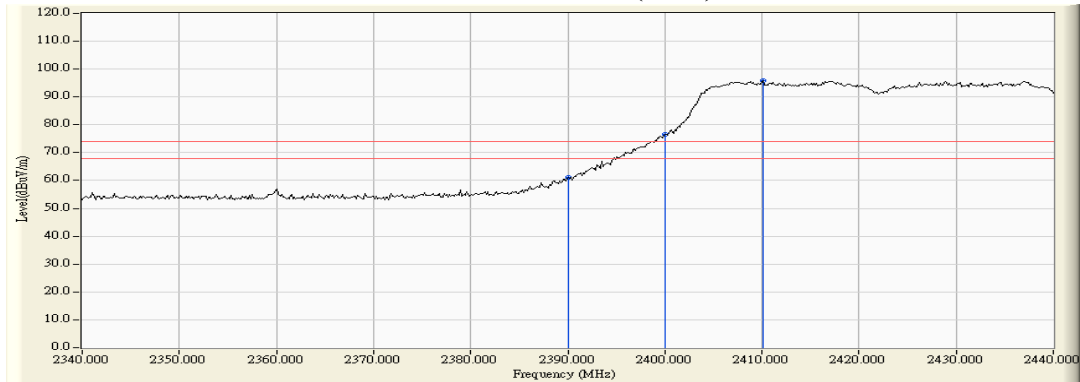
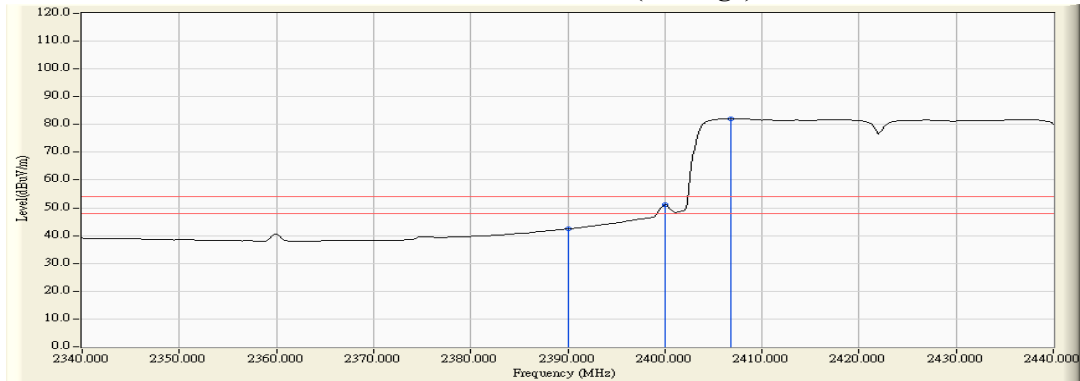


Figure Channel 03: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2422MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
03 (Peak)	2390.000	5.880	63.904	69.785	74.00	54.00	Pass
03 (Peak)	2400.000	5.879	77.738	83.617	--	--	--
03 (Peak)	2405.652	5.893	96.633	102.527	--	--	--
03 (Average)	2360.000	6.004	47.550	53.554	74.00	54.00	Pass
03 (Average)	2390.000	5.880	47.594	53.475	74.00	54.00	Pass
03 (Average)	2400.000	5.879	54.009	59.888	--	--	--
03 (Average)	2405.362	5.893	83.298	89.191	--	--	--

Figure Channel 03: Vertical (Peak)

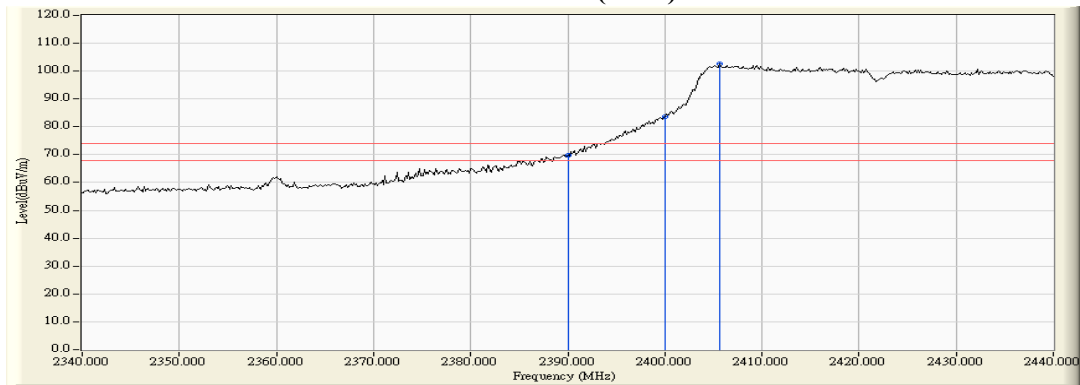
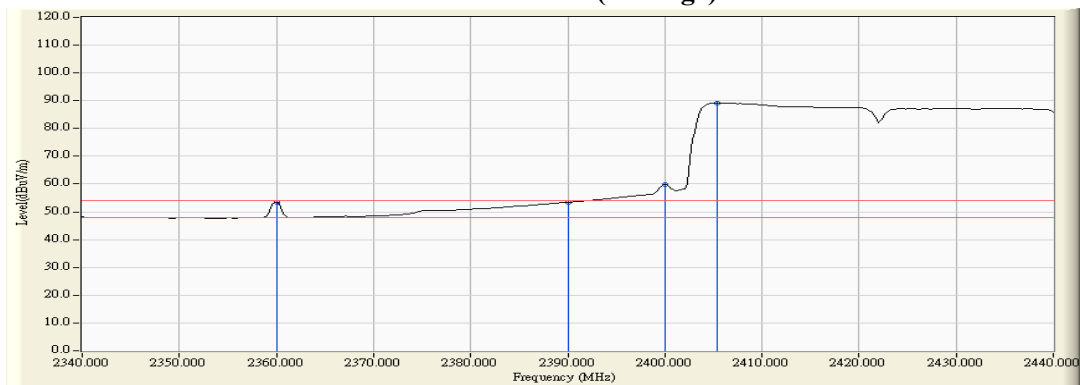


Figure Channel 03: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2427MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
04 (Peak)	2360.145	6.342	51.719	58.061	74.00	54.00	Pass
04 (Peak)	2390.000	6.474	52.849	59.324	74.00	54.00	Pass
04 (Peak)	2400.000	6.528	62.331	68.859	--	--	--
04 (Peak)	2412.464	6.606	88.085	94.691	--	--	--
04 (Average)	2360.000	6.341	42.917	49.258	74.00	54.00	Pass
04 (Average)	2390.000	6.474	39.999	46.474	74.00	54.00	Pass
04 (Average)	2400.000	6.528	46.556	53.084	--	--	--
04 (Average)	2412.029	6.603	77.796	84.399	--	--	--

Figure Channel 04: Horizontal (Peak)

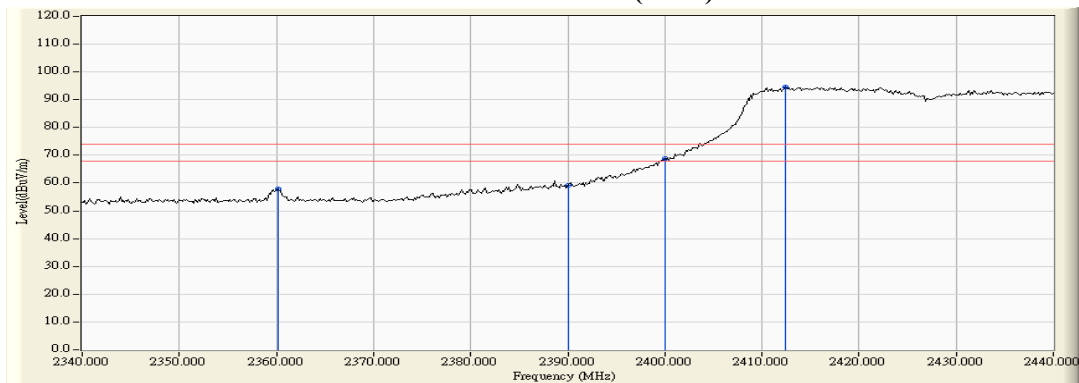
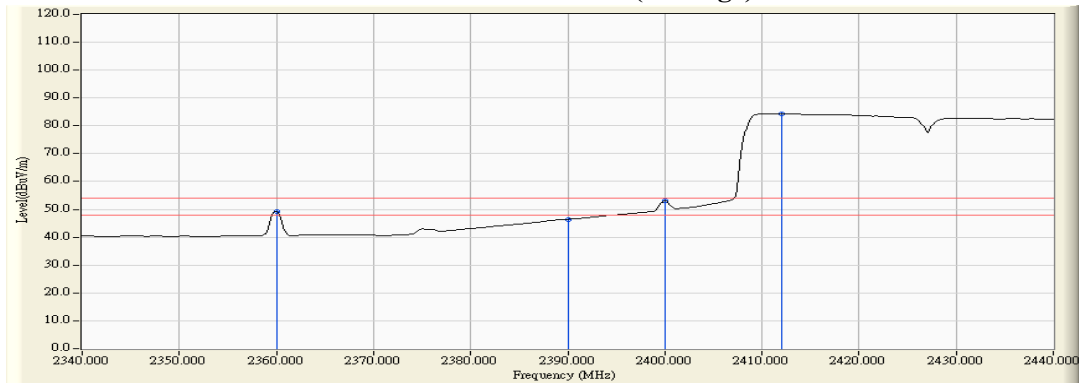


Figure Channel 04: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2427MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
04 (Peak)	2360.290	6.003	55.379	61.382	74.00	54.00	Pass
04 (Peak)	2390.000	5.880	60.721	66.602	74.00	54.00	Pass
04 (Peak)	2400.000	5.879	68.680	74.559	--	--	--
04 (Peak)	2414.348	5.929	95.301	101.229	--	--	--
04 (Average)	2360.000	6.004	47.480	53.484	74.00	54.00	Pass
04 (Average)	2390.000	5.880	47.448	53.329	74.00	54.00	Pass
04 (Average)	2400.000	5.879	53.477	59.356	--	--	--
04 (Average)	2410.290	5.906	84.877	90.783	--	--	--

Figure Channel 04: Vertical (Peak)

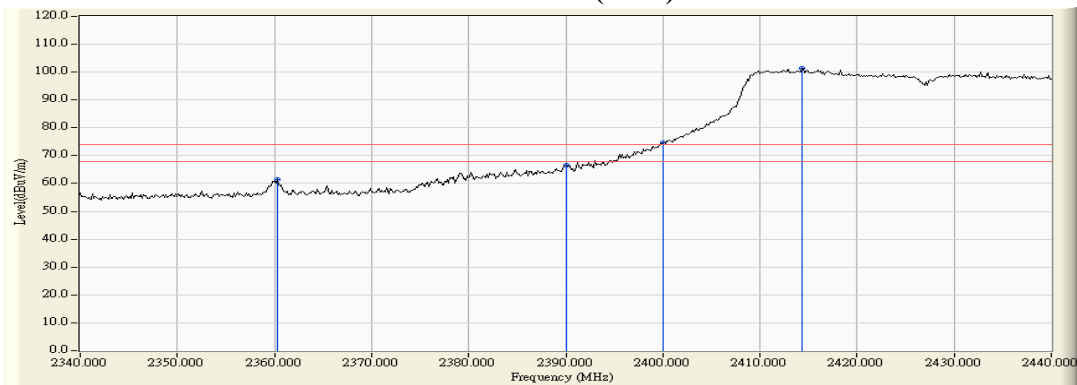
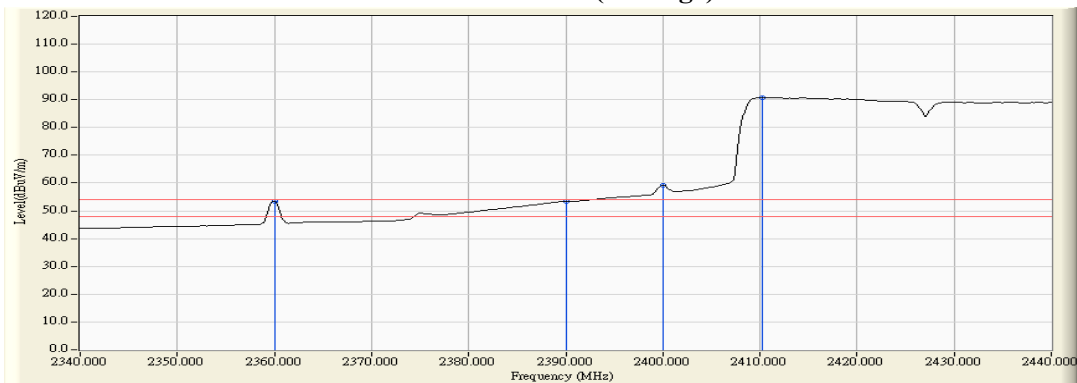


Figure Channel 04: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2432MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
05 (Peak)	2359.855	6.340	51.708	58.048	74.00	54.00	Pass
05 (Peak)	2390.000	6.474	51.541	58.016	74.00	54.00	Pass
05 (Peak)	2400.000	6.528	56.843	63.371	--	--	--
05 (Peak)	2417.391	6.641	88.988	95.629	--	--	--
05 (Average)	2360.000	6.341	42.041	48.382	74.00	54.00	Pass
05 (Average)	2390.000	6.474	39.590	46.065	74.00	54.00	Pass
05 (Average)	2400.000	6.528	45.743	52.271	--	--	--
05 (Average)	2417.101	6.639	79.336	85.975	--	--	--

Figure Channel 05: Horizontal (Peak)

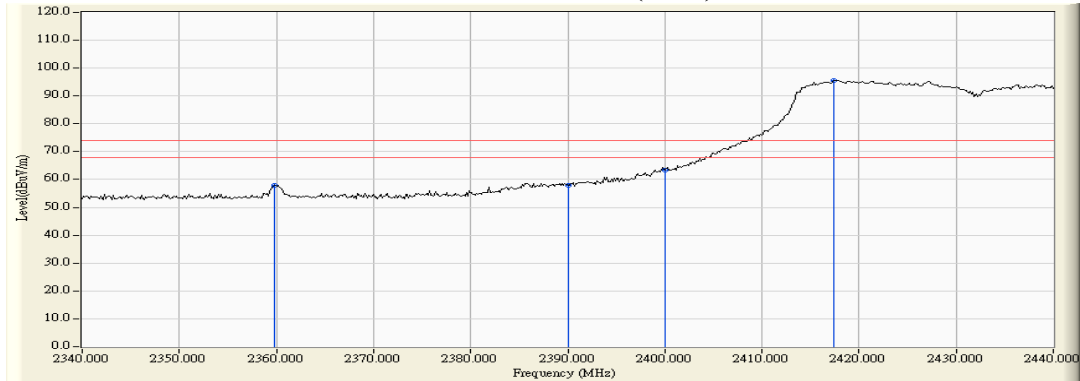
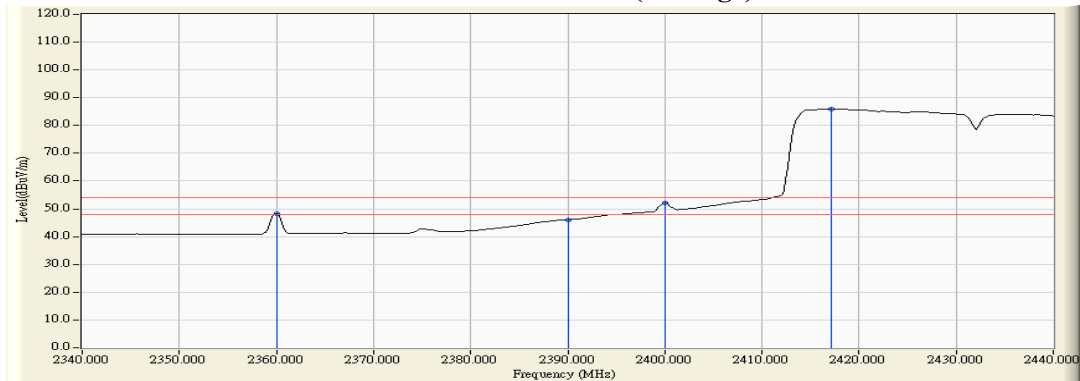


Figure Channel 05: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/09
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2432MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
05 (Peak)	2386.232	5.897	61.225	67.121	74.00	54.00	Pass
05 (Peak)	2390.000	5.880	58.918	64.799	74.00	54.00	Pass
05 (Peak)	2400.000	5.879	64.286	70.165	--	--	--
05 (Peak)	2420.435	5.966	95.842	101.809	--	--	--
05 (Average)	2360.000	6.004	47.668	53.672	74.00	54.00	Pass
05 (Average)	2390.000	5.880	46.625	52.506	74.00	54.00	Pass
05 (Average)	2400.000	5.879	53.069	58.948	--	--	--
05 (Average)	2416.957	5.945	85.952	91.897	--	--	--

Figure Channel 05: Vertical (Peak)

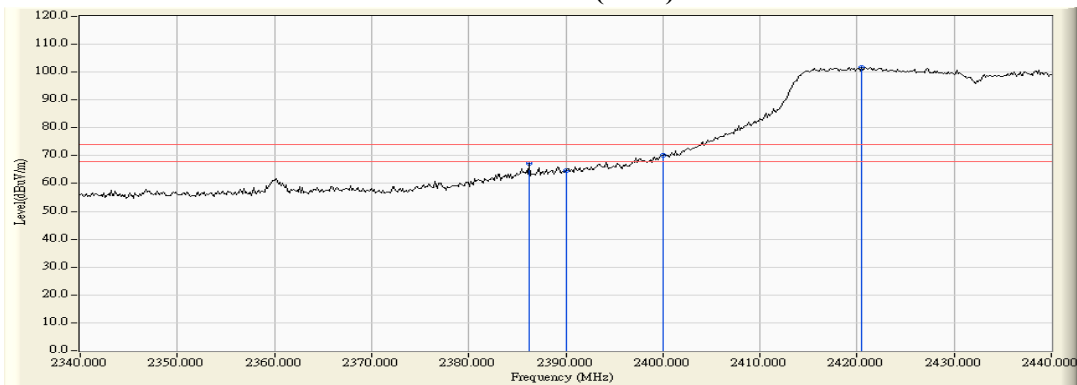
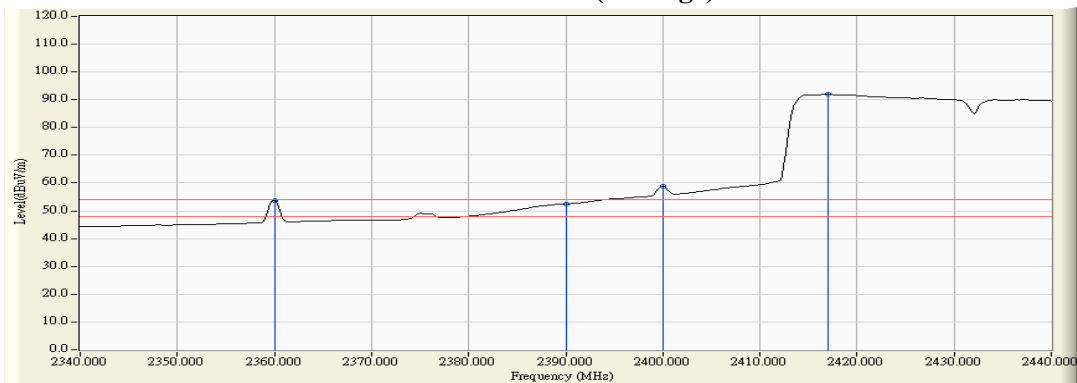


Figure Channel 05: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2452MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
09 (Peak)	2466.978	6.993	91.812	98.805	--	--	--
09 (Peak)	2483.500	7.110	56.704	63.814	74.00	54.00	Pass
09 (Peak)	2483.645	7.111	57.283	64.394	74.00	54.00	Pass
09 (Average)	2466.833	6.992	77.811	84.803	--	--	--
09 (Average)	2483.500	7.110	37.147	44.257	74.00	54.00	Pass

Figure Channel 09: Horizontal (Peak)

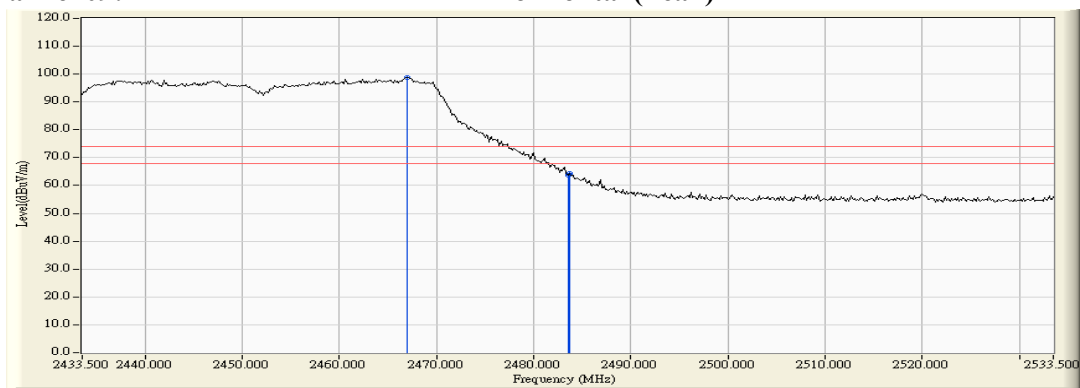
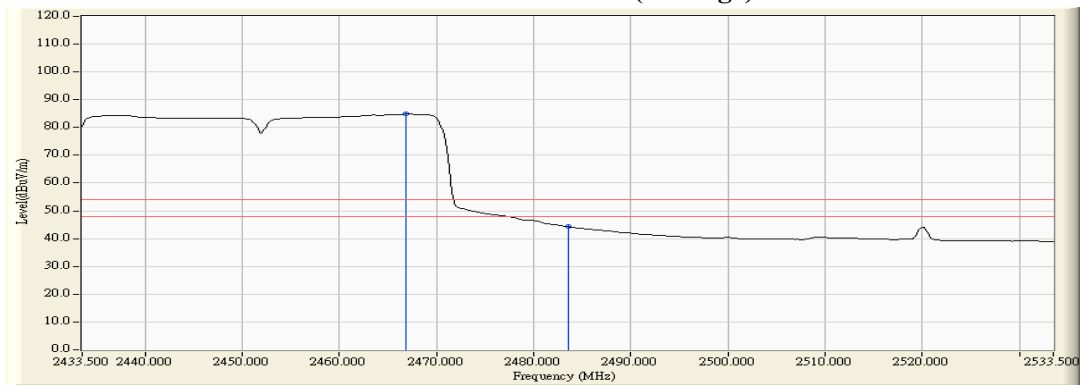


Figure Channel 09: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Date : 2017/05/08
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps) (2452MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
09 (Peak)	2464.225	6.244	101.535	107.778	--	--	--
09 (Peak)	2483.500	6.363	66.126	72.489	74.00	54.00	Pass
09 (Average)	2467.558	6.263	87.780	94.044	--	--	--
09 (Average)	2483.500	6.363	47.319	53.682	74.00	54.00	Pass

Figure Channel 09: Vertical (Peak)

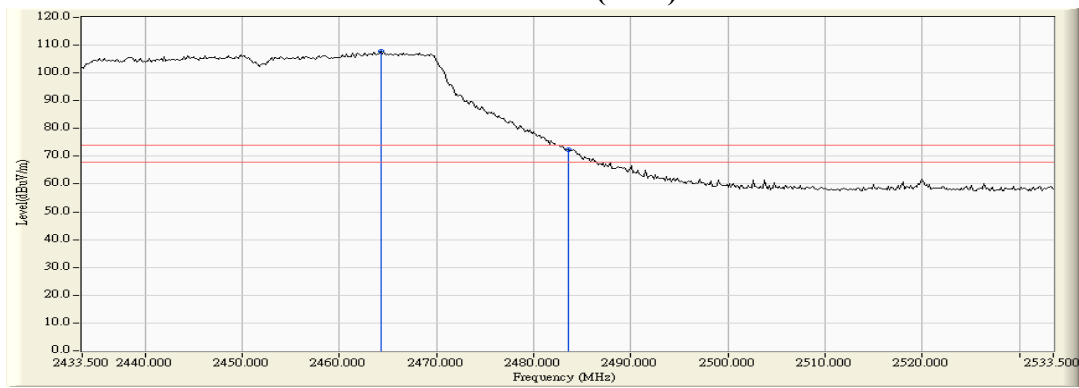
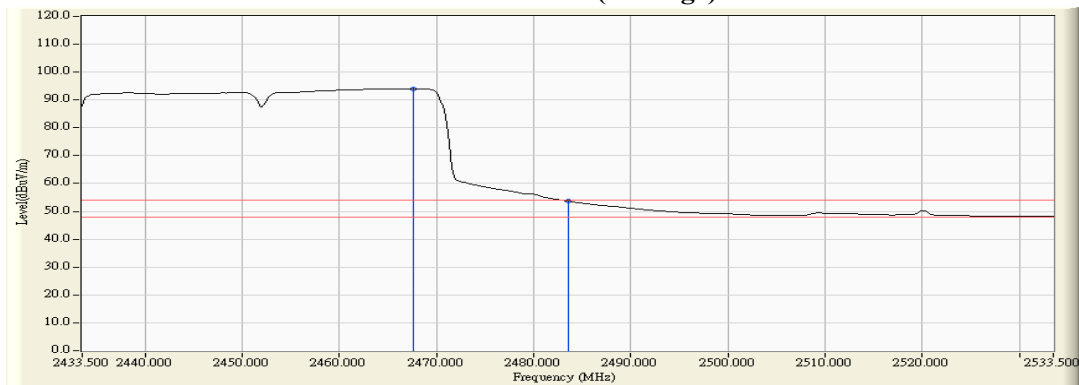


Figure Channel 09: Vertical (Average)

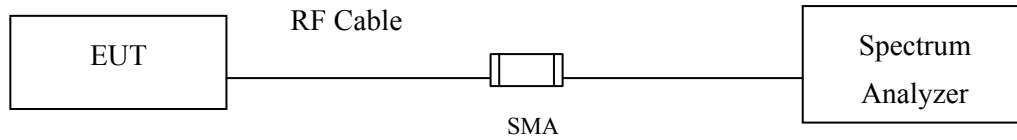


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1-5% of the emission bandwidth, $VBW \geq 3 * RBW$

7.4. Uncertainty

$\pm 283\text{Hz}$

7.5. Test Result of 6dB Bandwidth

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : 6dB Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412.00	10200	>500	Pass
06	2437.00	10200	>500	Pass
11	2462.00	10200	>500	Pass

Figure Channel 01:

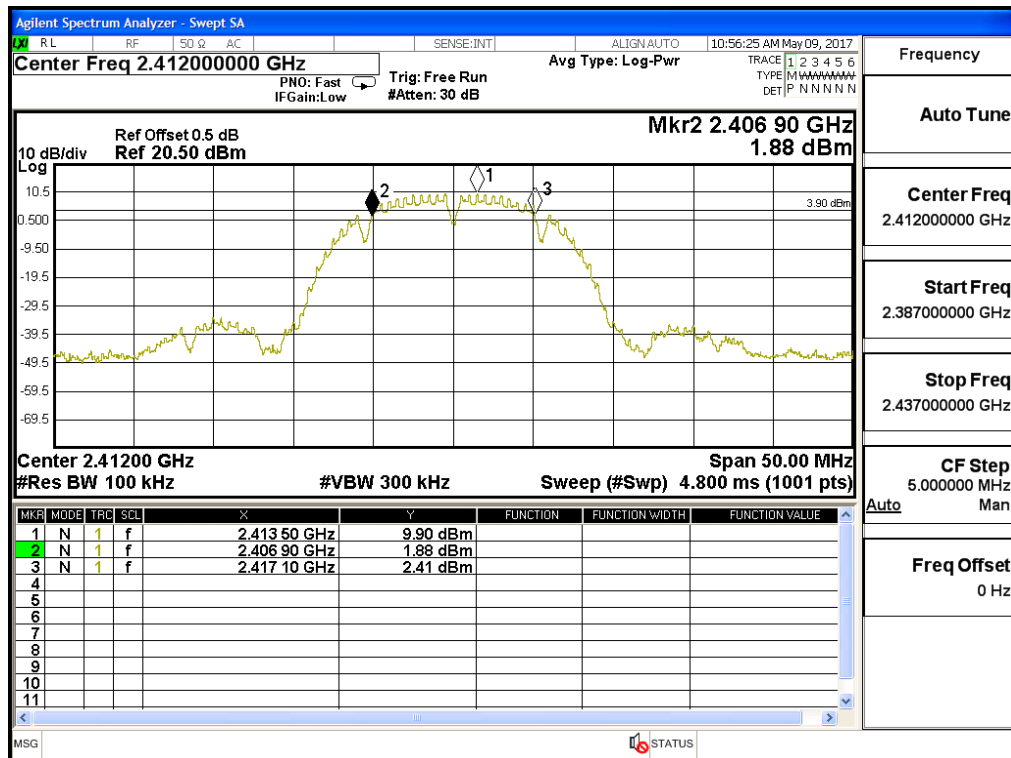


Figure Channel 06:

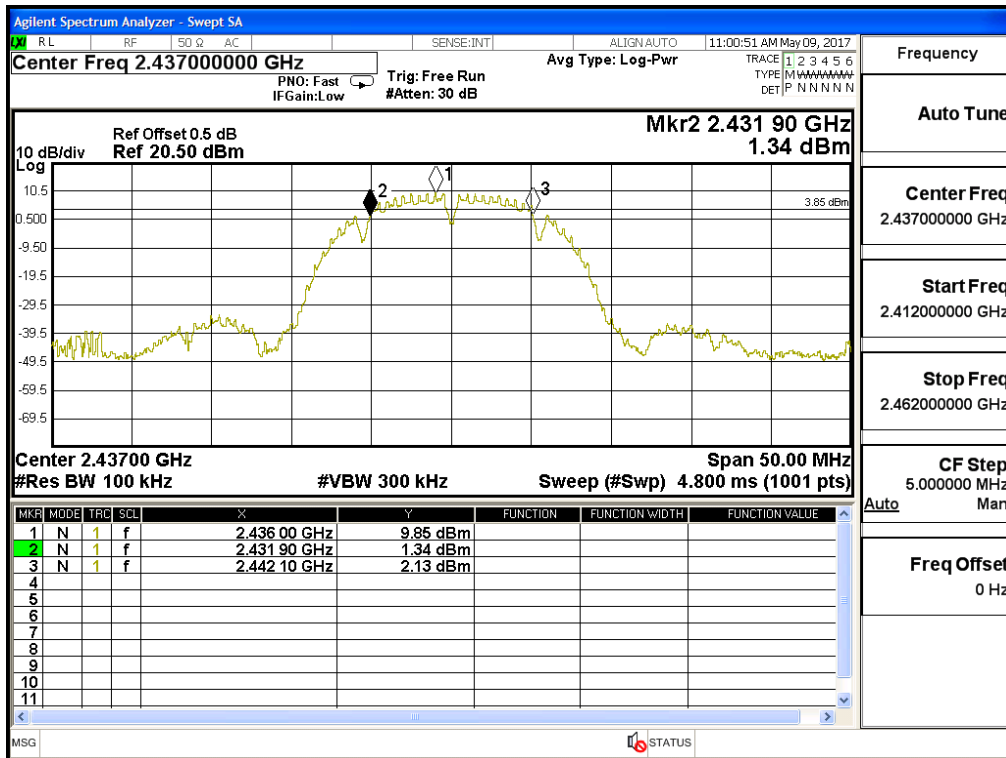
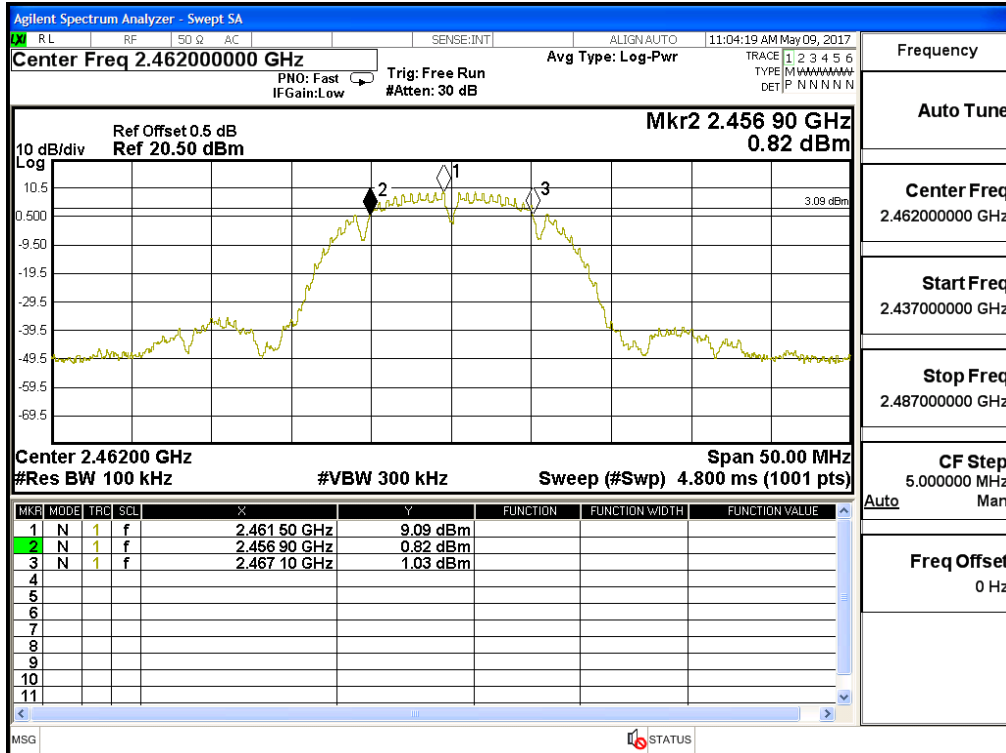


Figure Channel 11:



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : 6dB Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11 g 6Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412.00	16400	>500	Pass
06	2437.00	16400	>500	Pass
11	2462.00	16400	>500	Pass

Figure Channel 01:

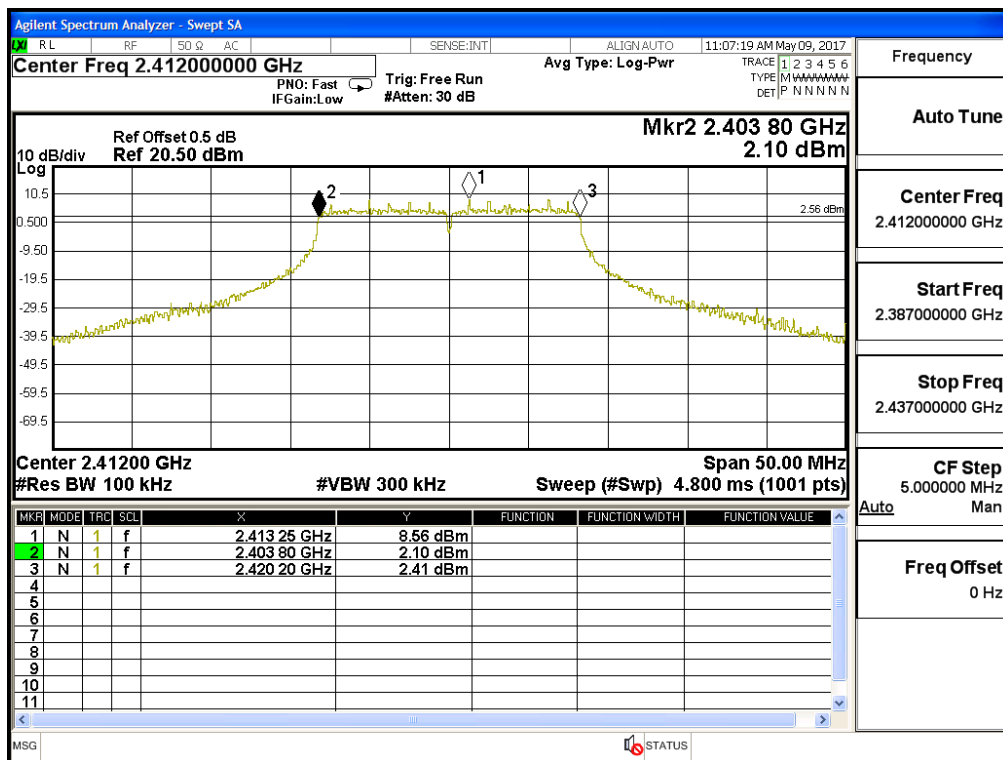


Figure Channel 06:

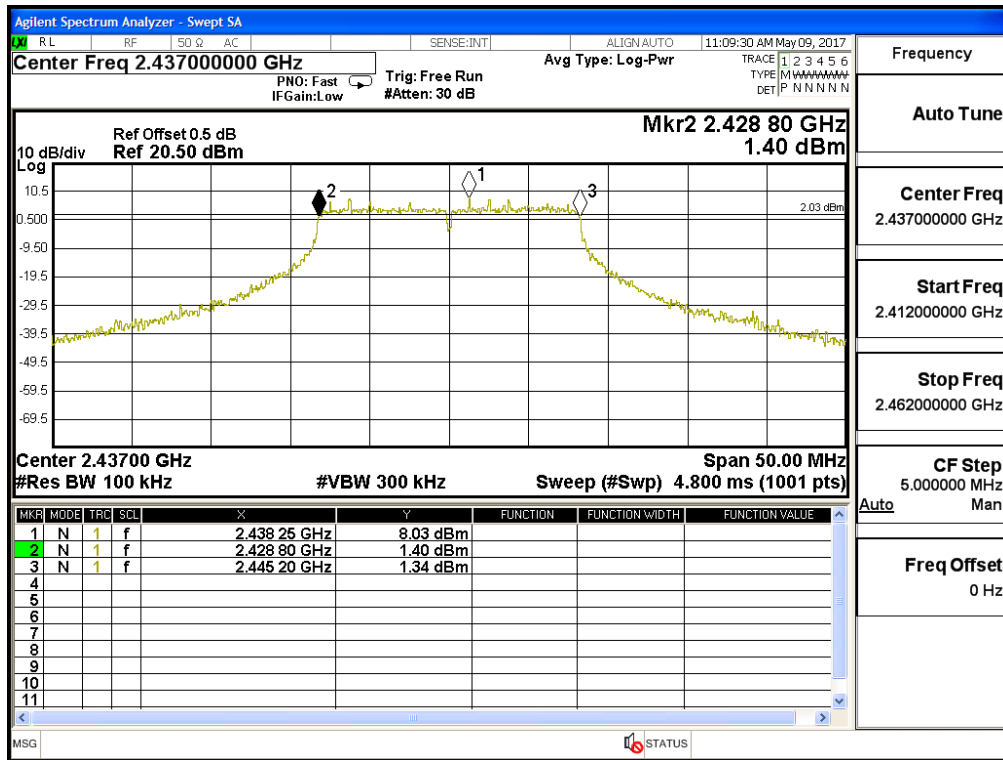
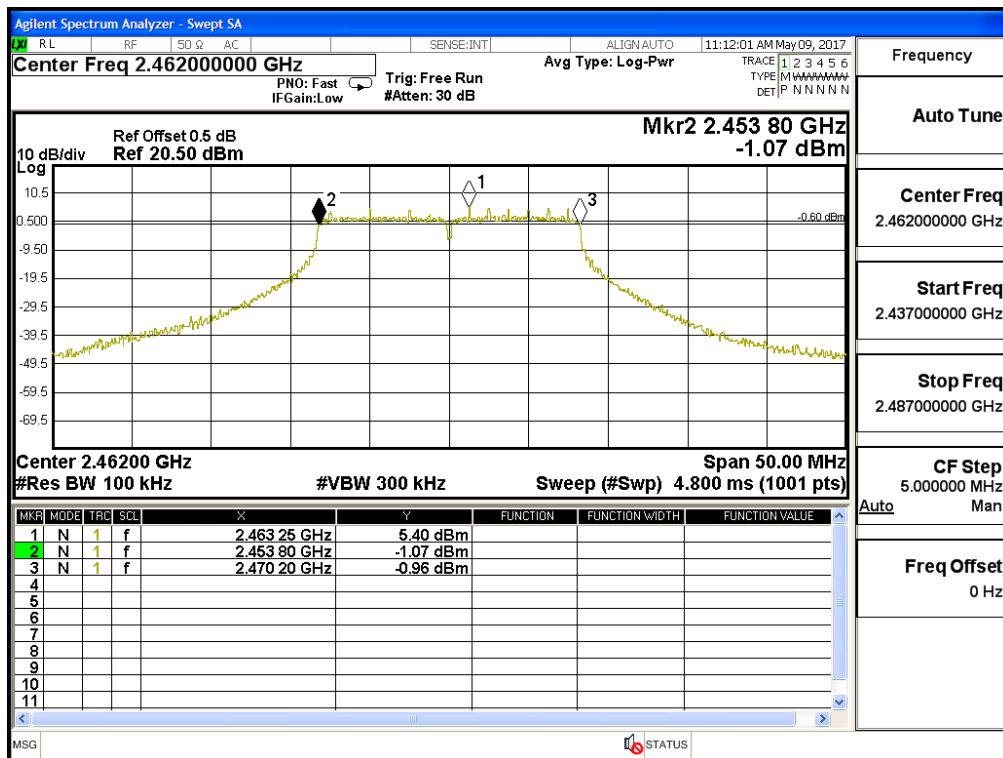


Figure Channel 11:



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	A	2412.00	17750	>500	Pass
06	A	2437.00	17700	>500	Pass
11	A	2462.00	17700	>500	Pass
01	B	2412.00	17700	>500	Pass
06	B	2437.00	17700	>500	Pass
11	B	2462.00	17700	>500	Pass

Figure Channel 01: (Chain A)

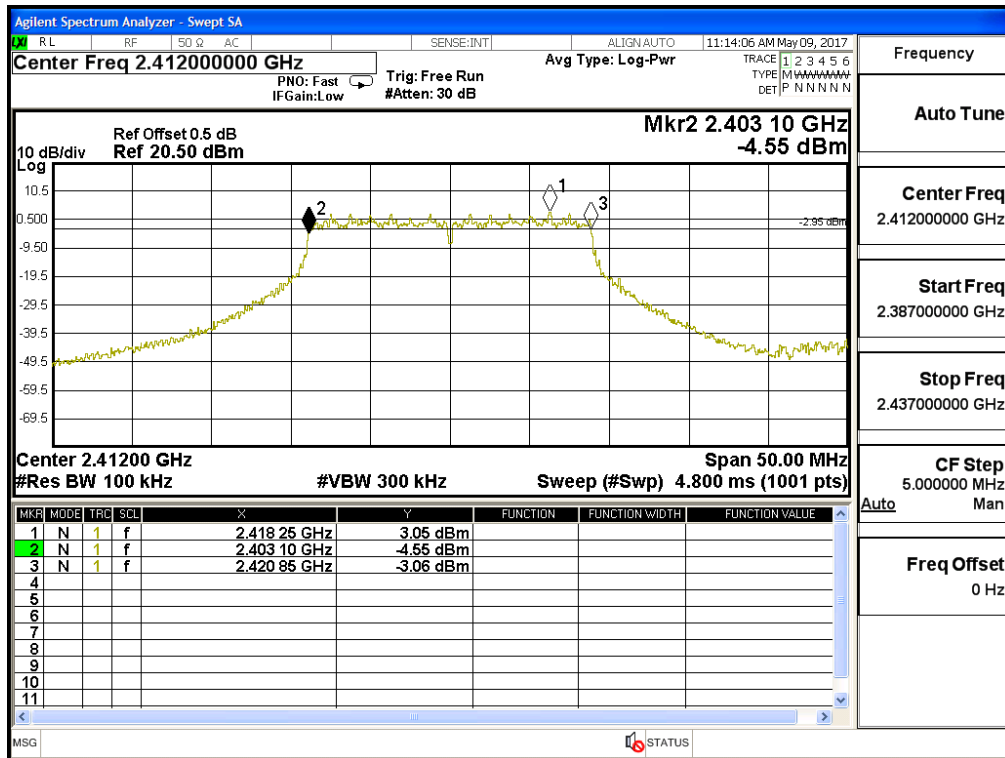


Figure Channel 01: (Chain B)

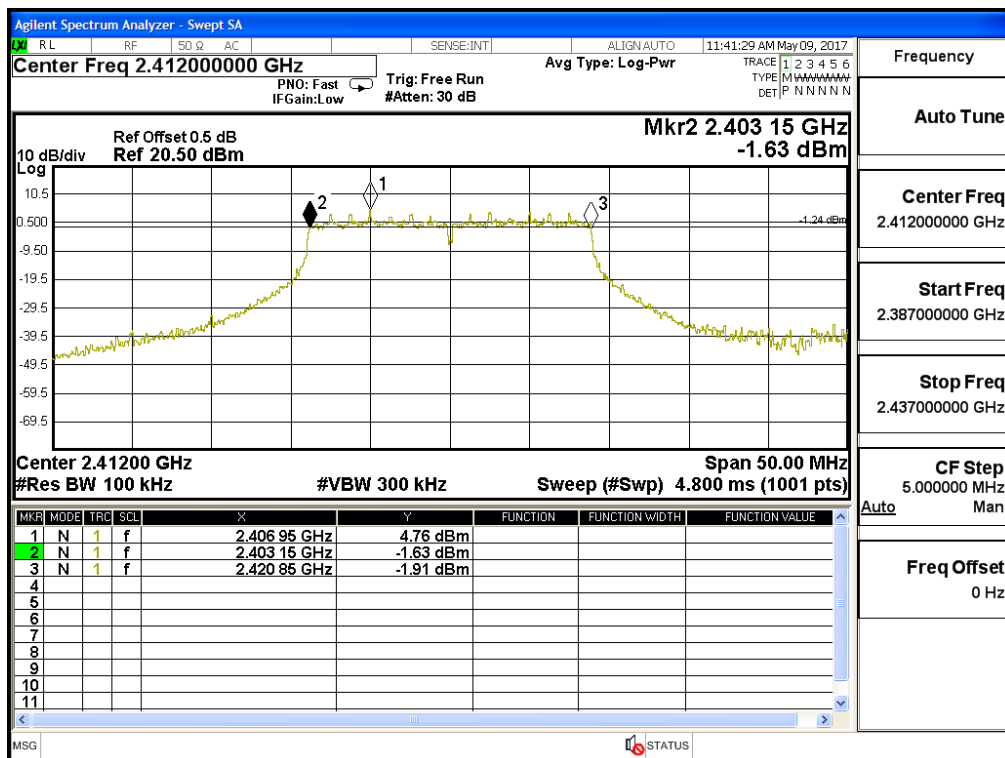


Figure Channel 06: (Chain A)

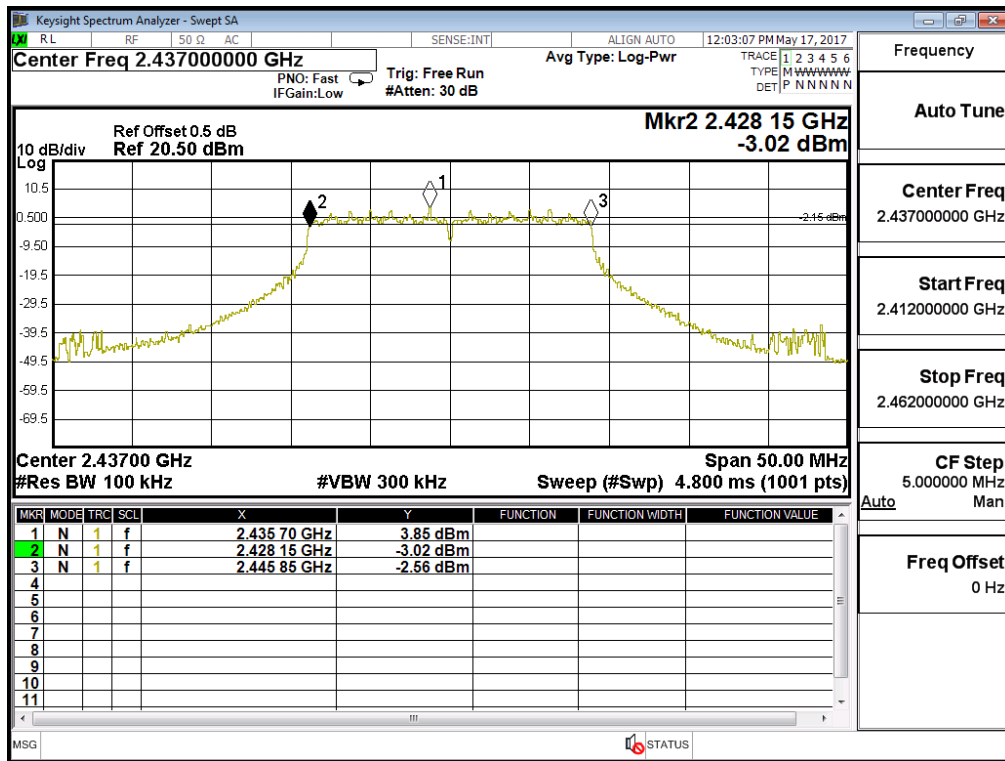


Figure Channel 06: (Chain B)

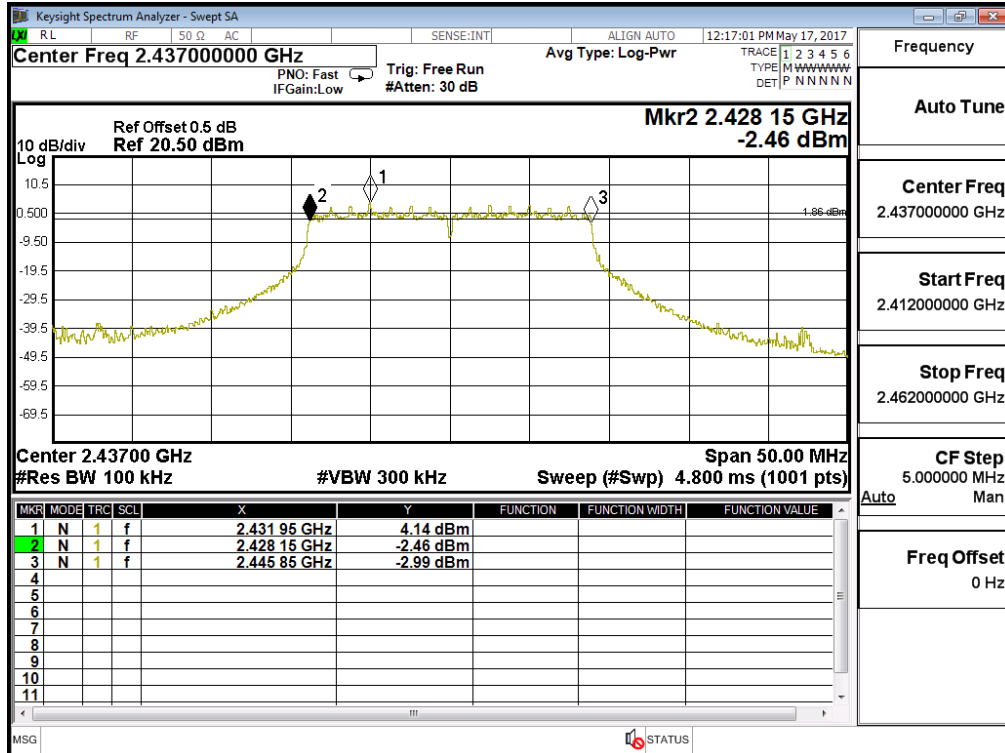


Figure Channel 11: (Chain A)

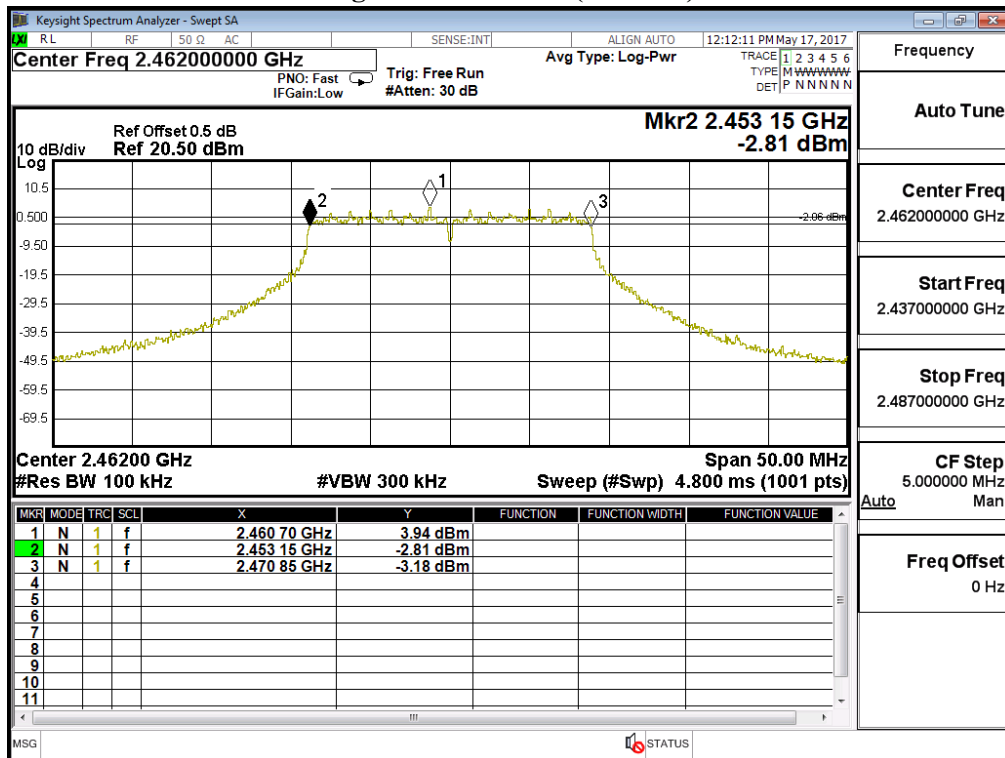
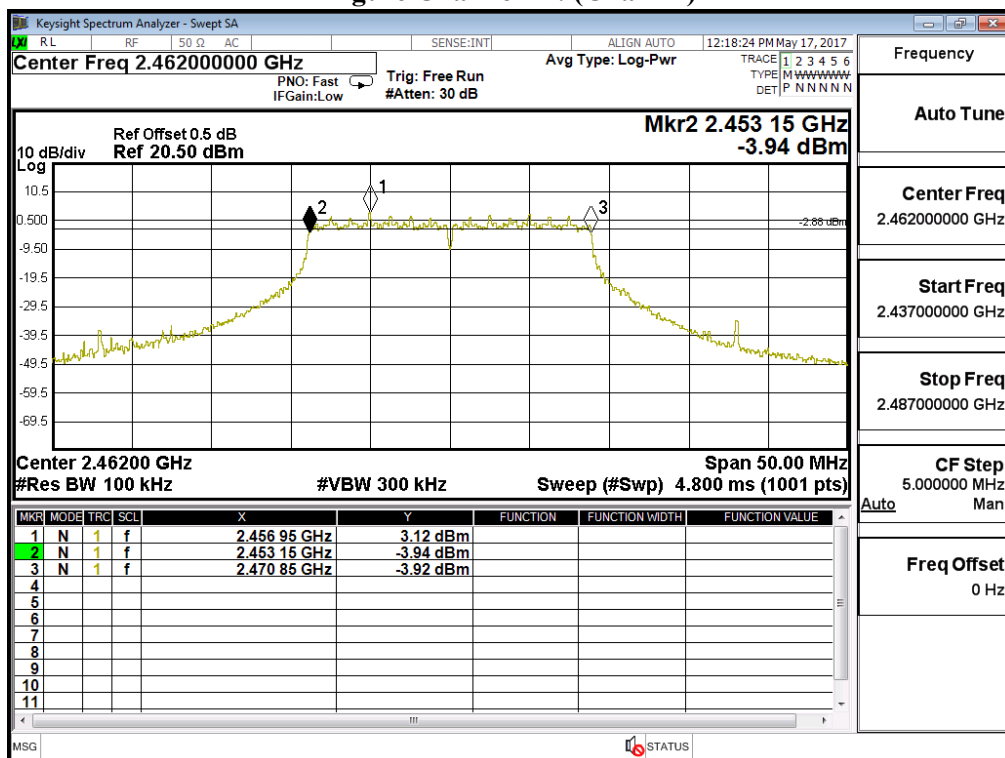


Figure Channel 11: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	A	2422.00	36600	>500	Pass
06	A	2437.00	36200	>500	Pass
09	A	2452.00	36200	>500	Pass
03	B	2422.00	36500	>500	Pass
06	B	2437.00	36500	>500	Pass
09	B	2452.00	36600	>500	Pass

Figure Channel 03: (Chain A)

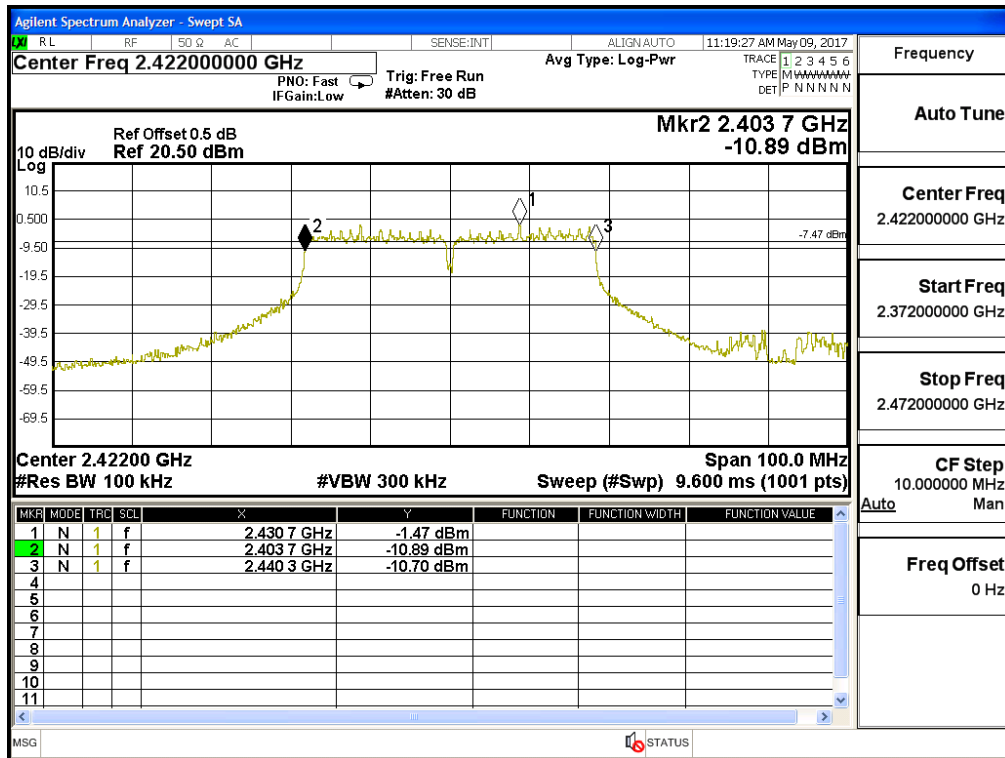


Figure Channel 03: (Chain B)

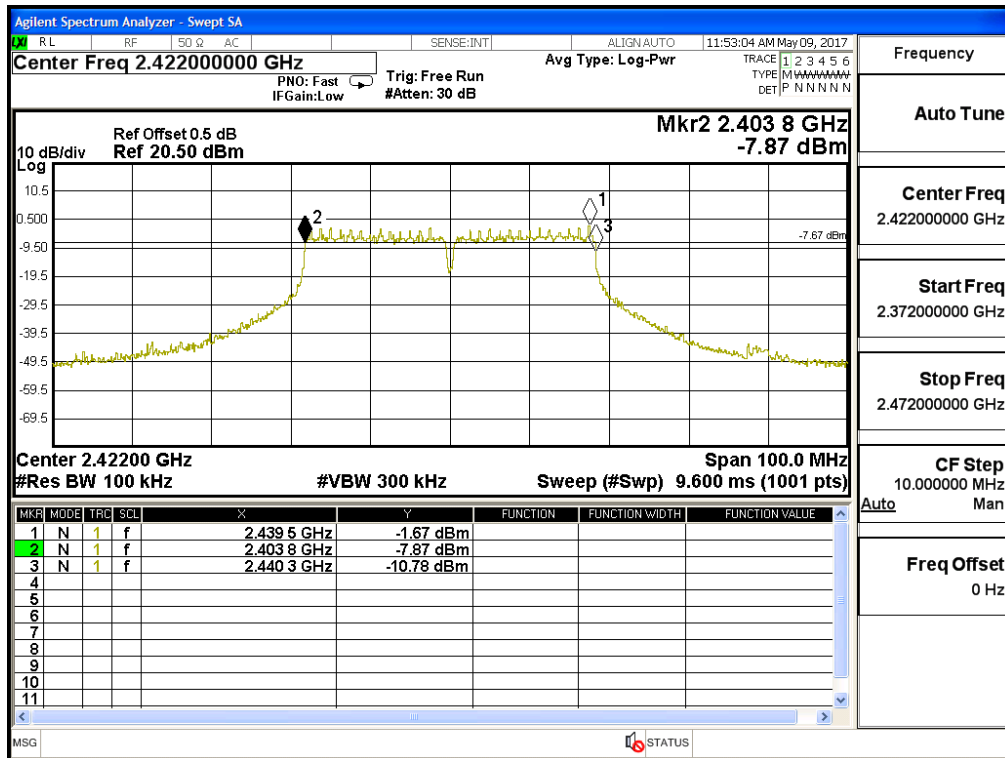


Figure Channel 06: (Chain A)

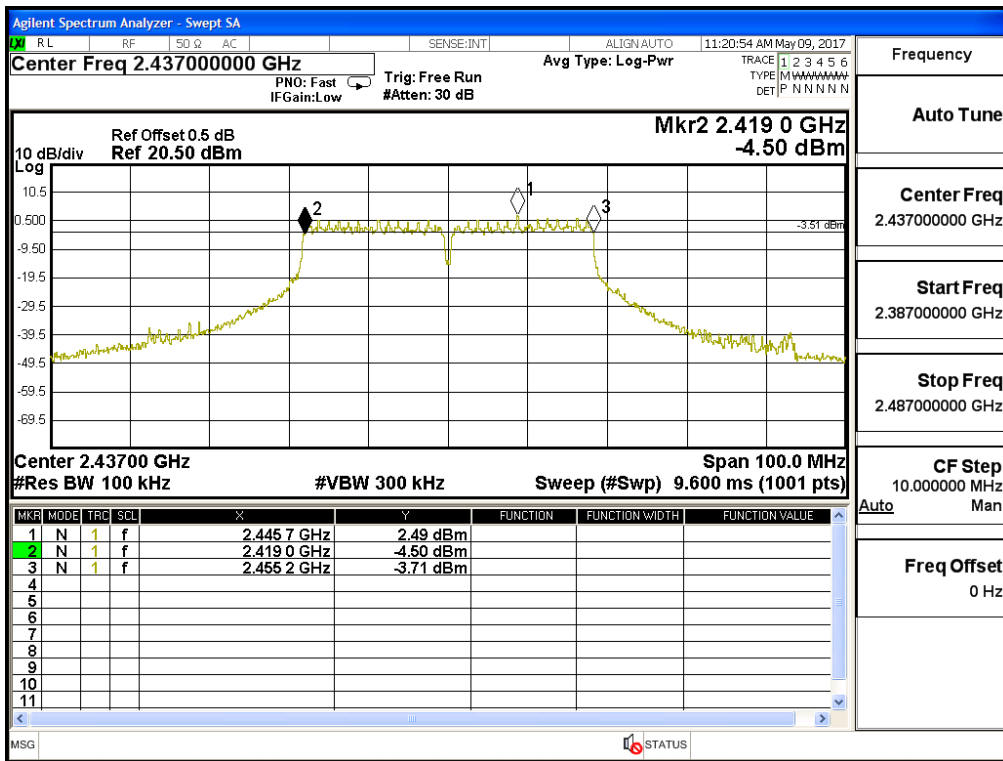


Figure Channel 06: (Chain B)

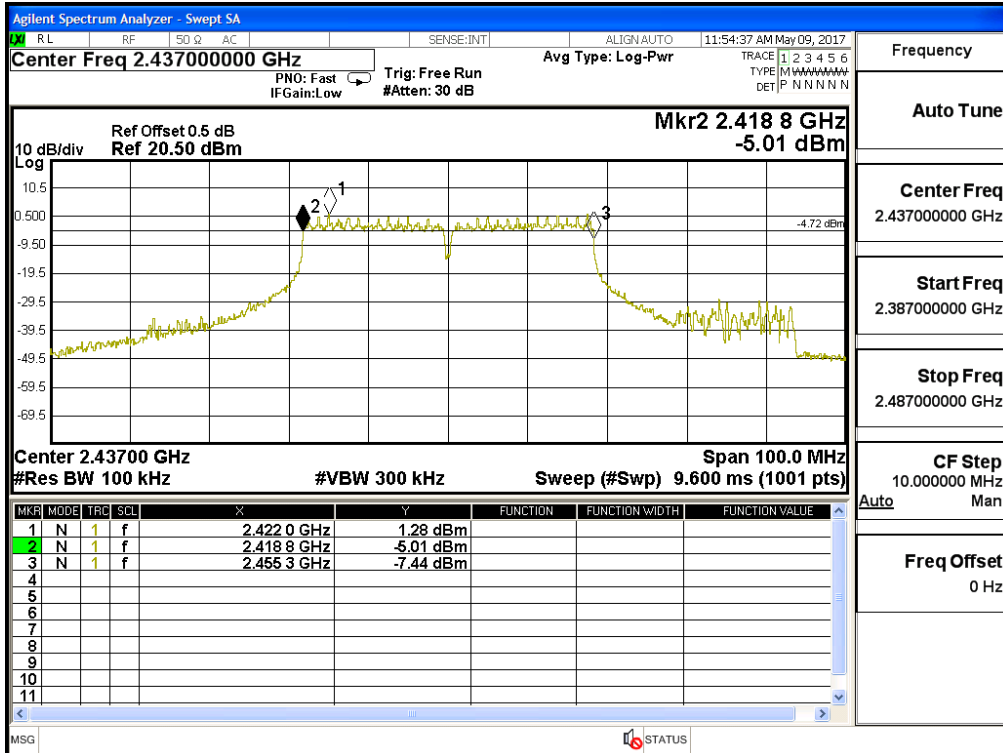


Figure Channel 09: (Chain A)

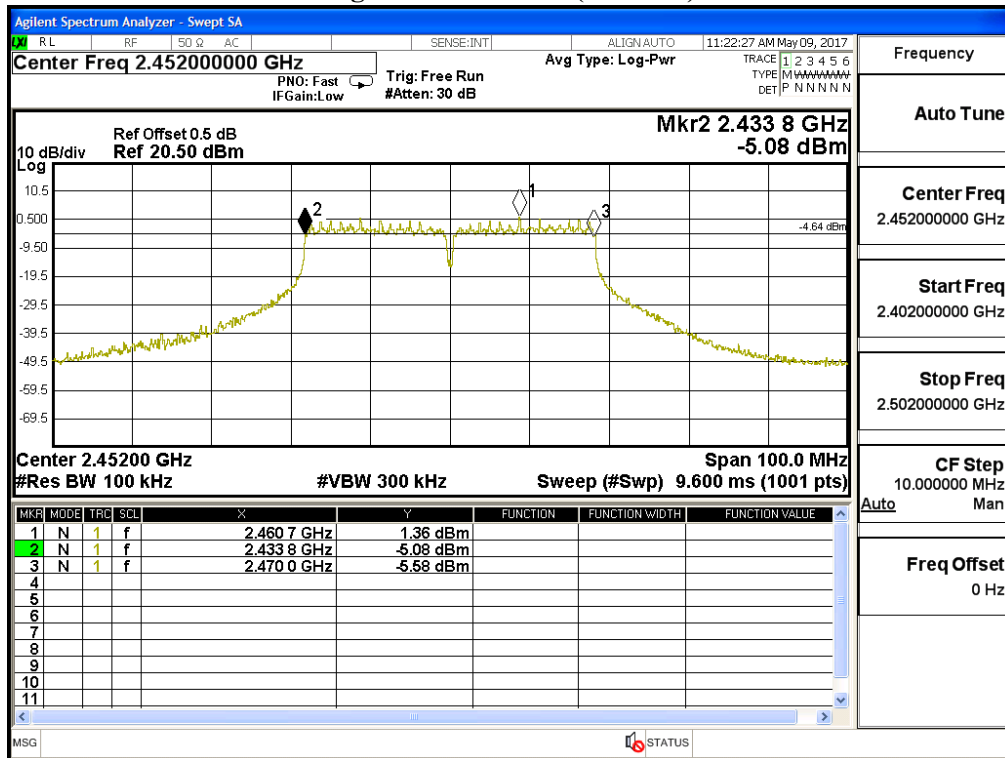
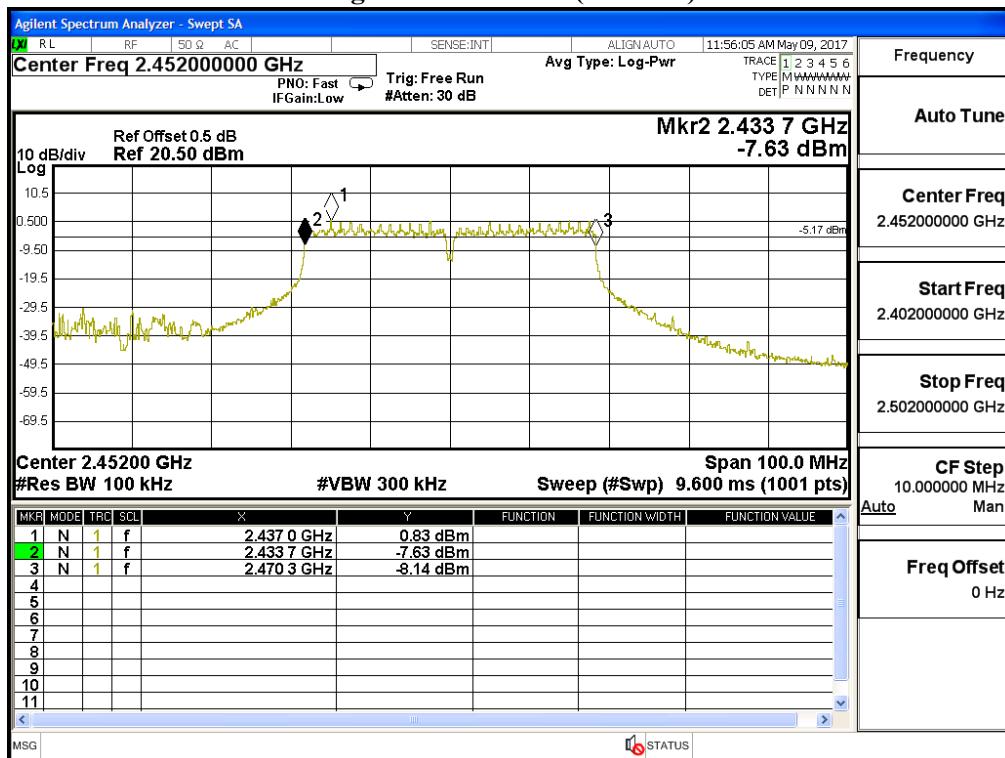
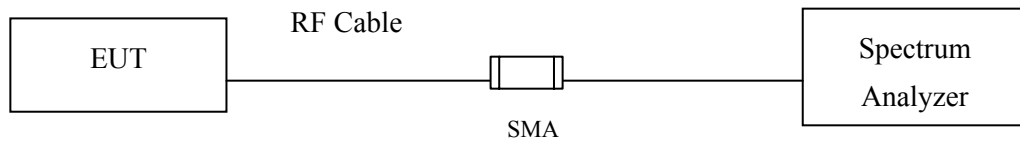


Figure Channel 09: (Chain B)



8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.4. Uncertainty

± 1.20 dB

8.5. Test Result of Power Density

Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	7.620	≤ 8dBm	Pass
06	2437	7.010	≤ 8dBm	Pass
11	2462	6.760	≤ 8dBm	Pass

Figure Channel 01:

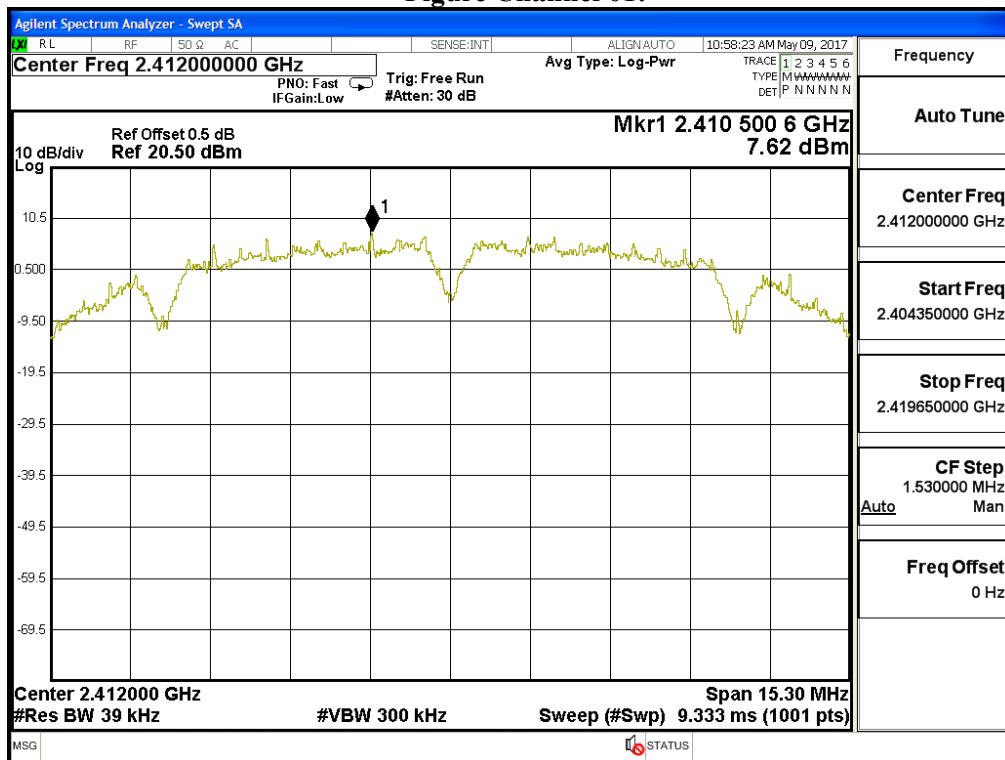


Figure Channel 06:

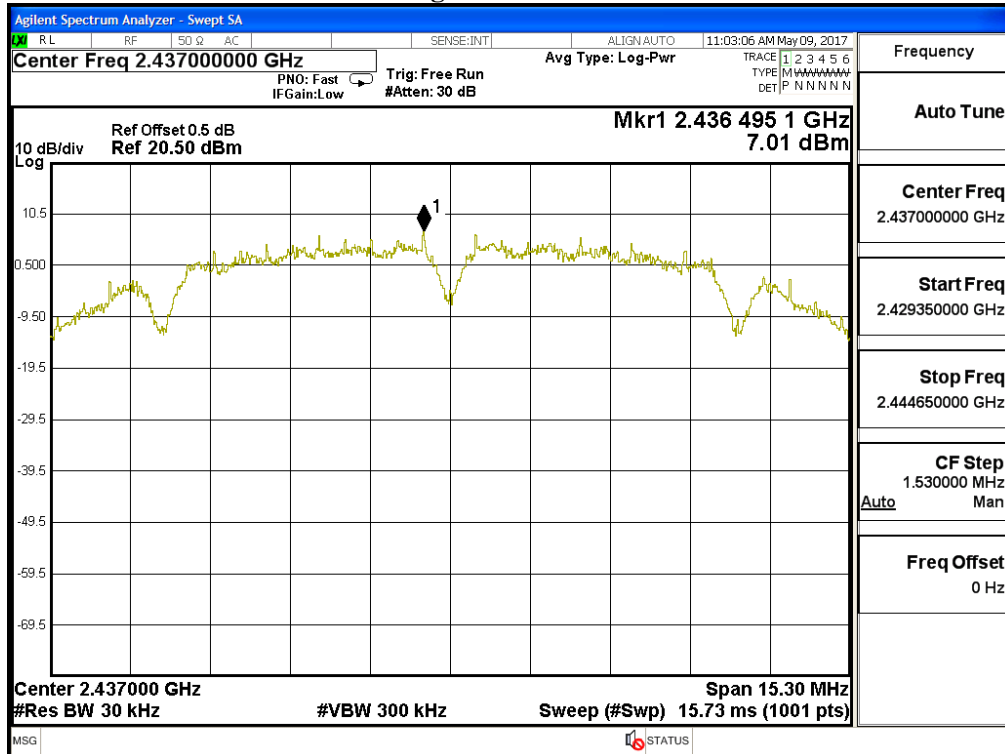
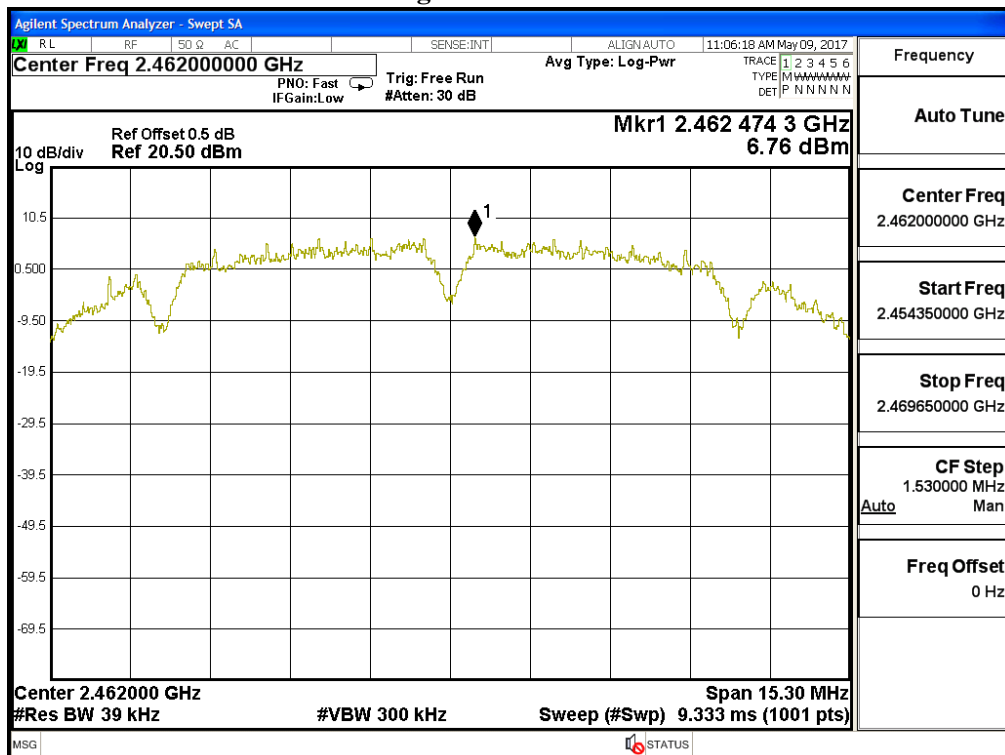


Figure Channel 11:



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	7.910	≤ 8dBm	Pass
06	2437	7.980	≤ 8dBm	Pass
11	2462	5.380	≤ 8dBm	Pass

Figure Channel 01:

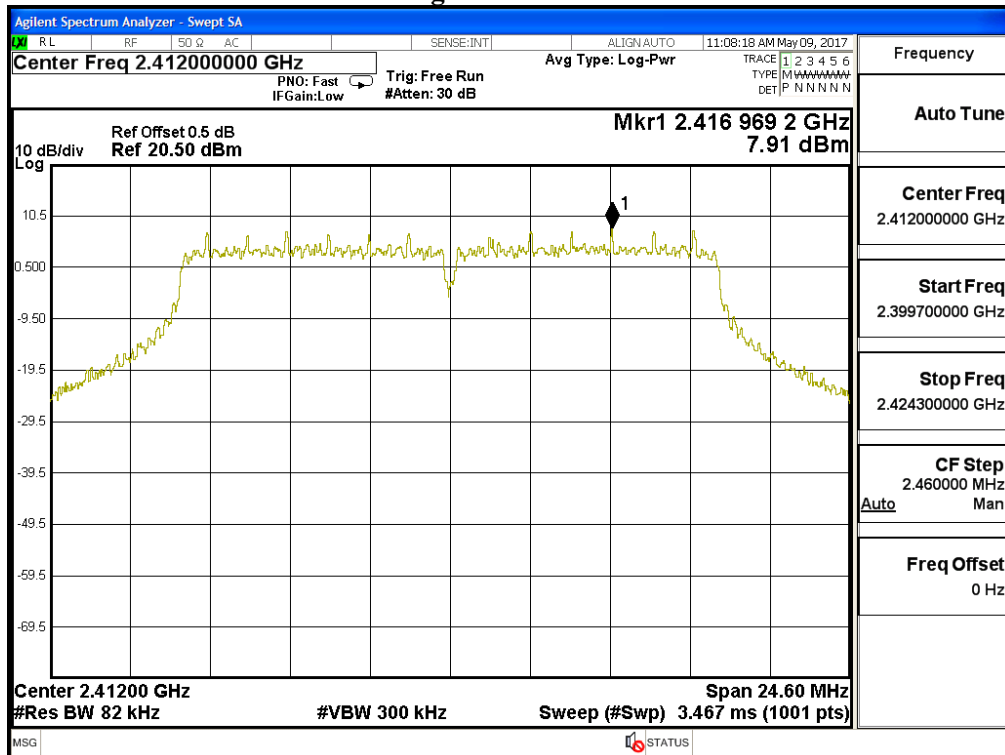


Figure Channel 06:

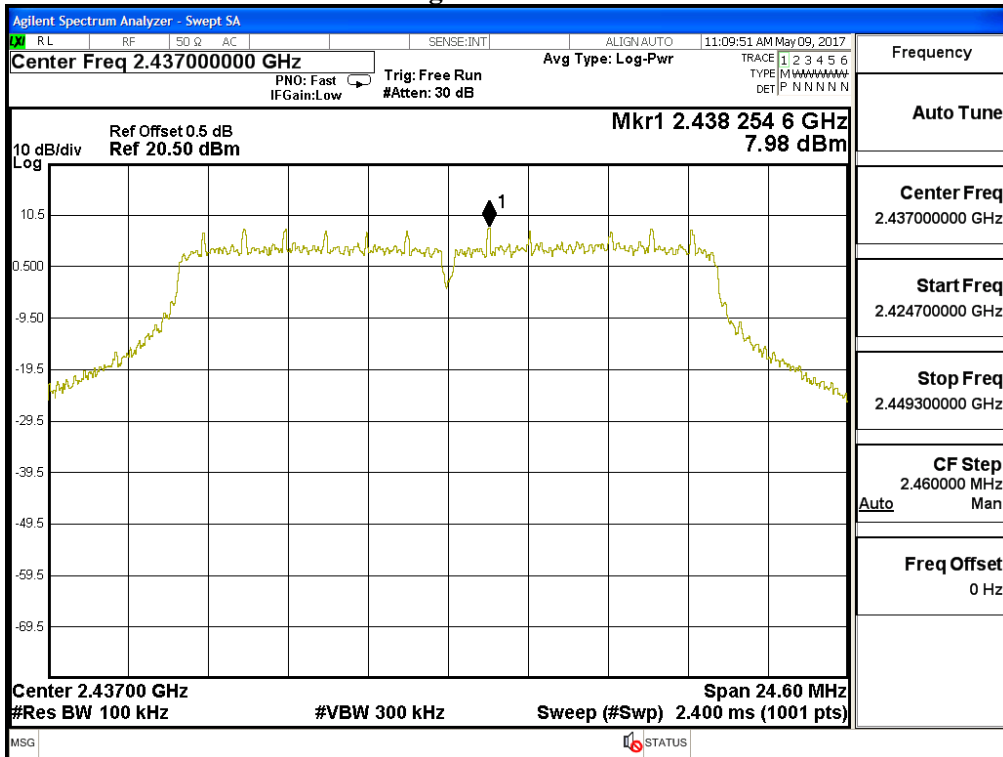
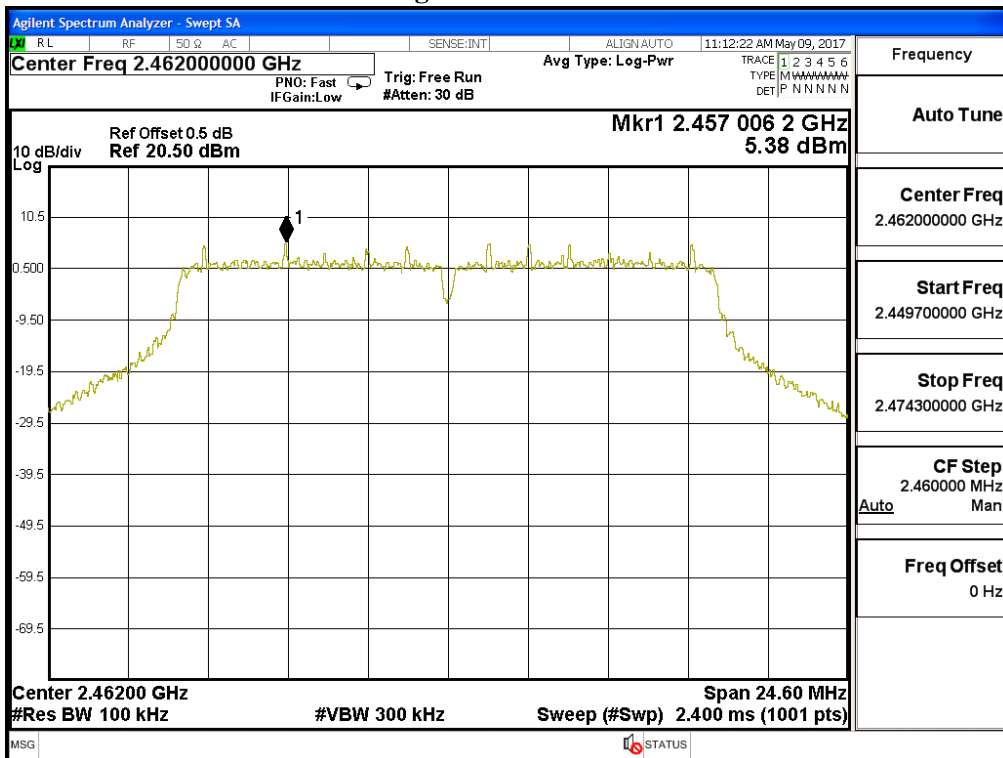


Figure Channel 11:



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
01	2412	A	4.420	7.430	≤ 8dBm	Pass
01	2412	B	4.630	7.640	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 01: (Chain A)

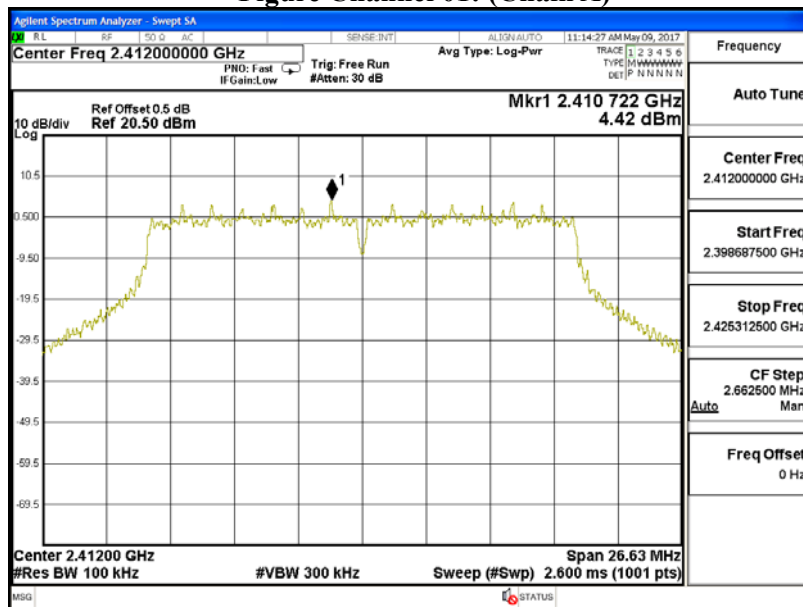
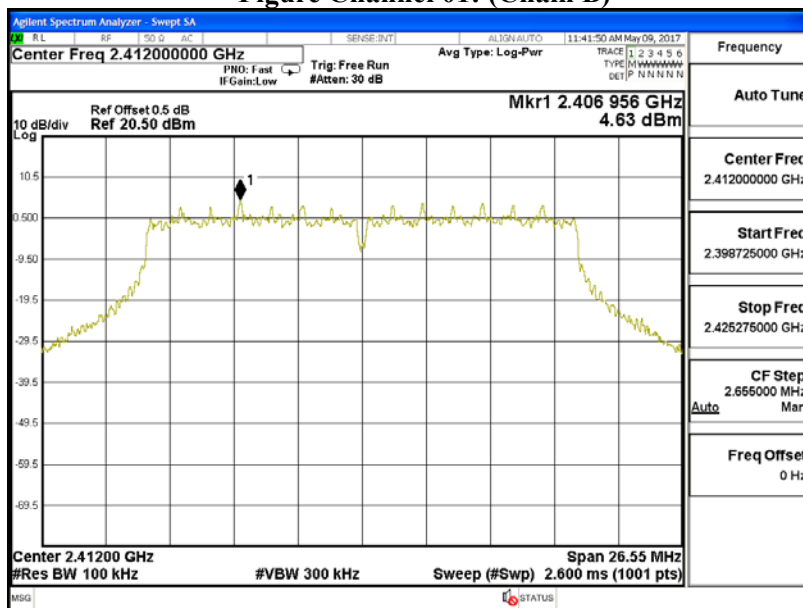


Figure Channel 01: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
06	2437	A	4.340	7.350	≤ 8dBm	Pass
06	2437	B	3.860	6.870	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 06: (Chain A)

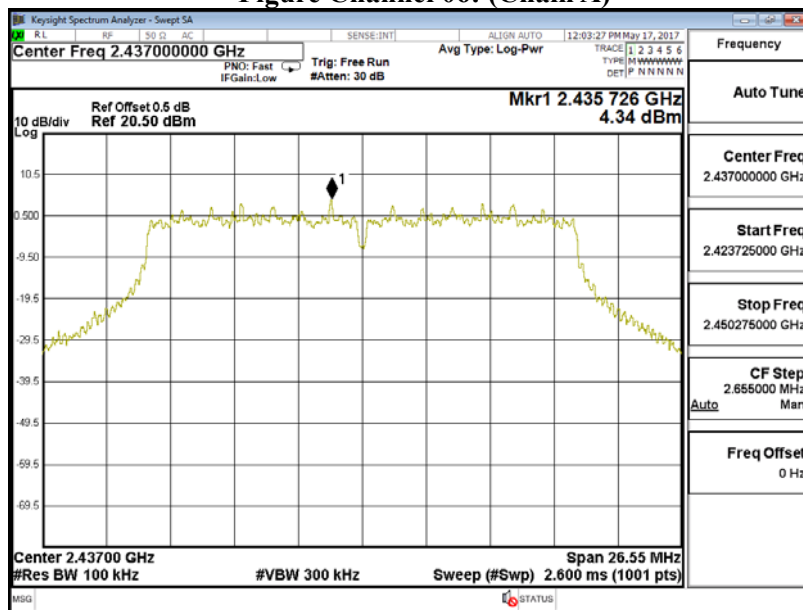
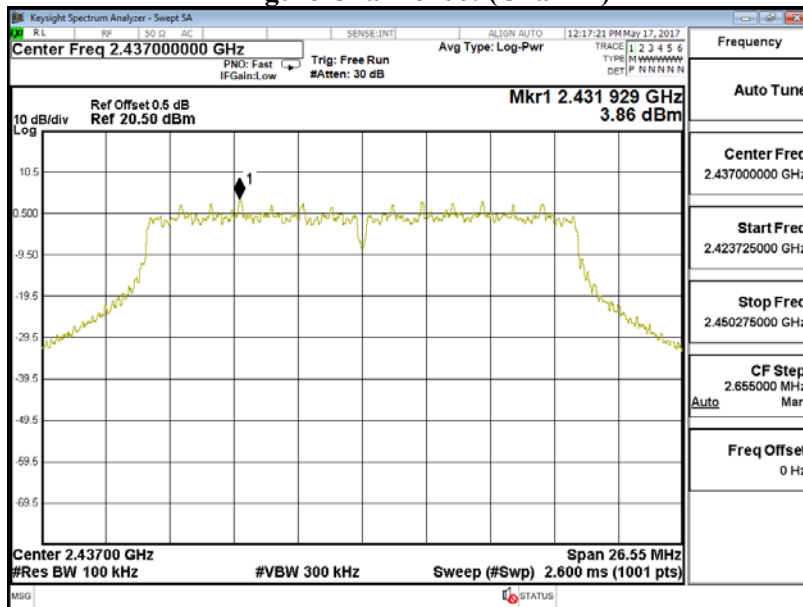


Figure Channel 06: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - (802.11n-20BW_14.4Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
11	2462	A	3.870	6.880	≤ 8dBm	Pass
11	2462	B	3.010	6.020	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 11: (Chain A)

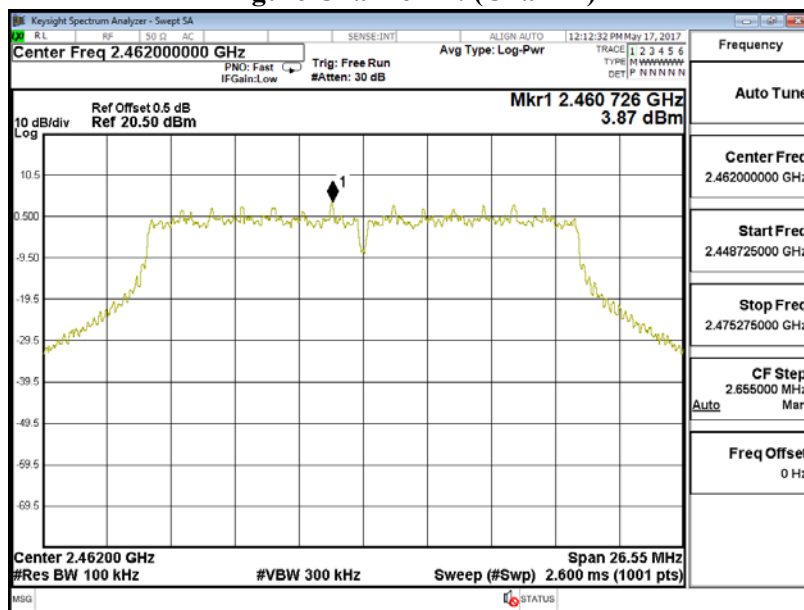
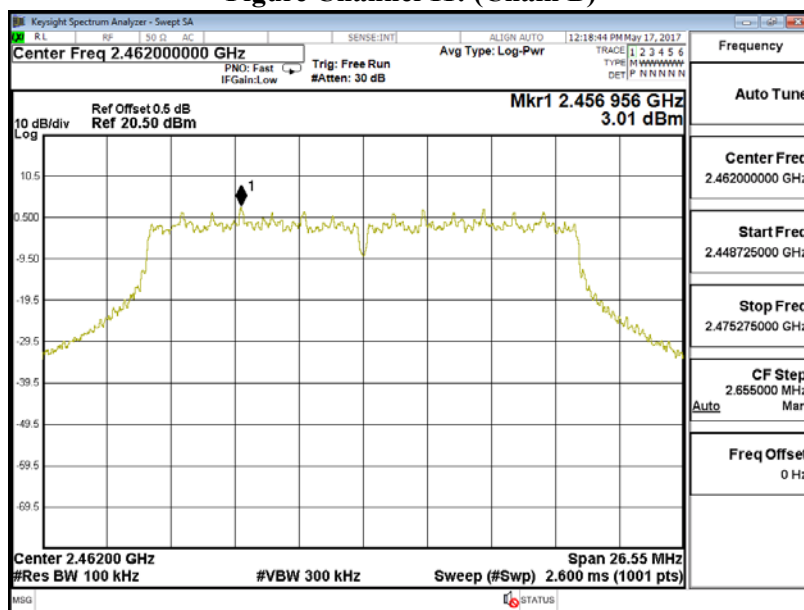


Figure Channel 11: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
03	2422	A	-1.220	1.790	≤ 8dBm	Pass
03	2422	B	-2.230	0.780	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 03: (Chain A)

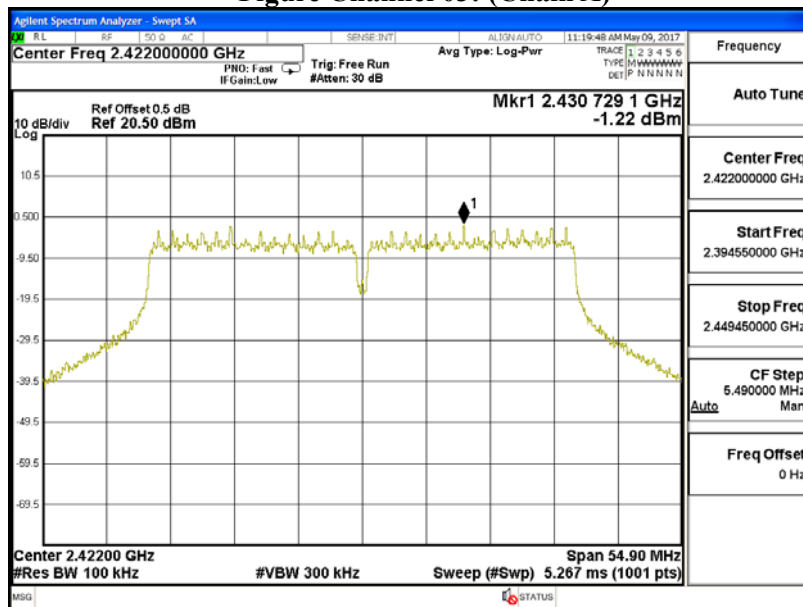
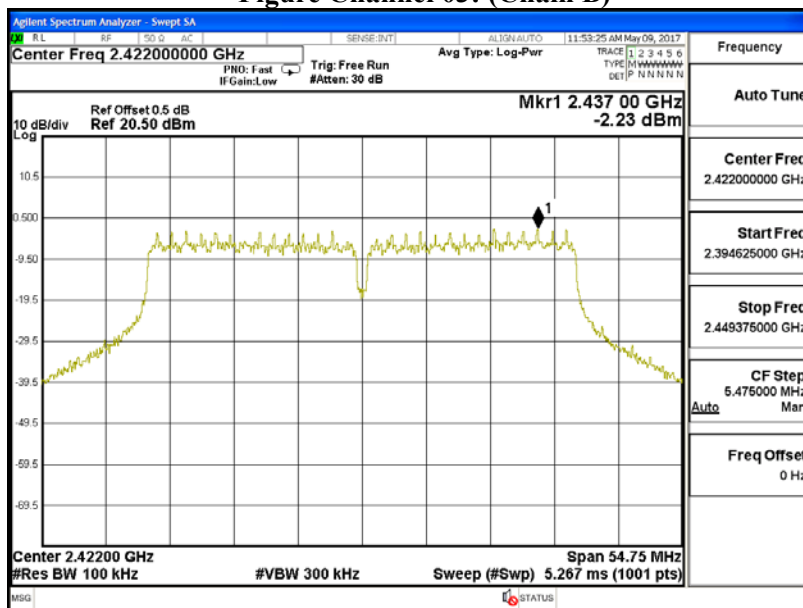


Figure Channel 03: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
06	2437	A	2.470	5.480	≤ 8dBm	Pass
06	2437	B	1.980	4.990	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 06: (Chain A)

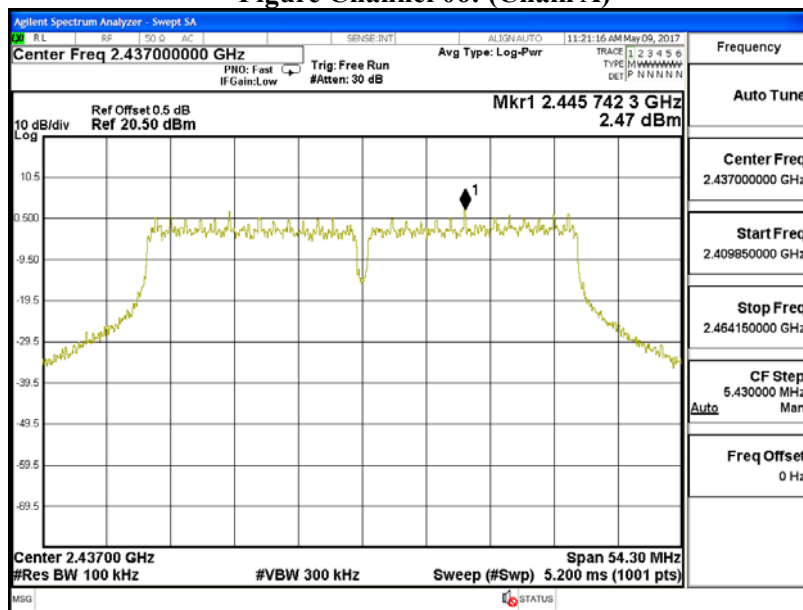
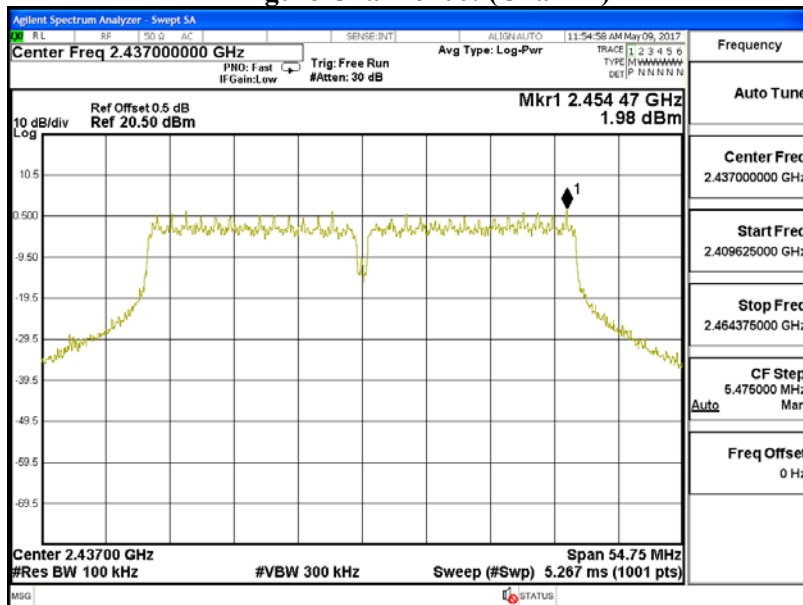


Figure Channel 06: (Chain B)



Product : Industrial 802.11a/b/g/n Serial/Ethernet to Wireless Client
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - (802.11n-40BW_30Mbps)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
09	2452	A	1.390	4.400	≤ 8dBm	Pass
09	2452	B	1.140	4.150	≤ 8dBm	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 09: (Chain A)

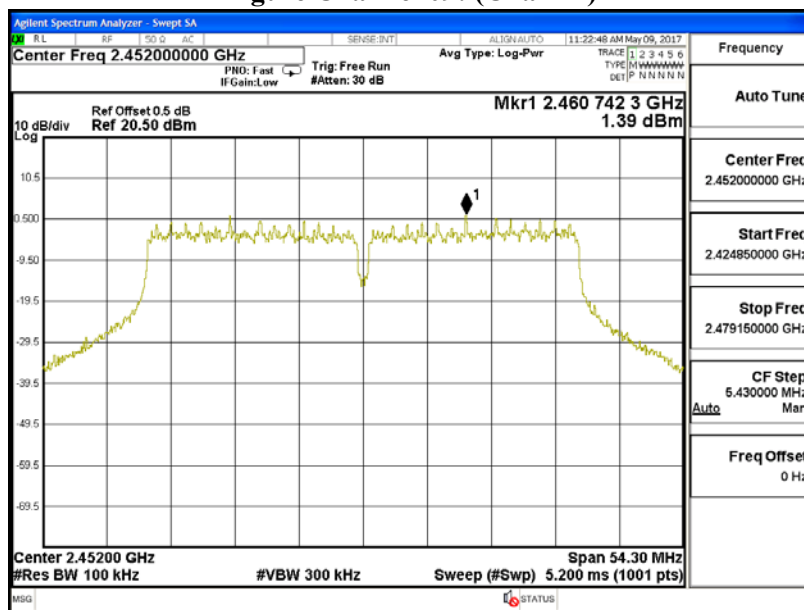
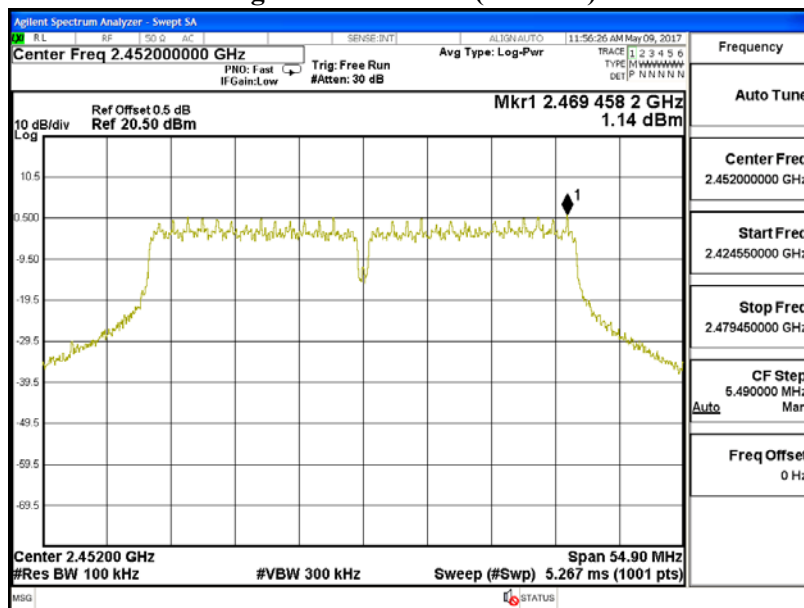


Figure Channel 09: (Chain B)



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs