

FCC Test Report (Class II Permissive Change)

Product Name	UAP AC
Model No	UAP-AC Outdoor, UAP-AC
FCC ID	SWX-UAPAC

Applicant	Ubiquiti Networks, Inc.
Address	12F, No. 105, Song Ren Rd., Sin Yi District, Taipei 110, Taiwan

Date of Receipt	Nov. 07, 2014
Issued Date	Jan. 26, 2015
Report No.	14B0240R-RFUSP69V00
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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Test Report

Issued Date: Jan. 26, 2015

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Applicant	Ubiquiti Networks, Inc.
Address	12F, No. 105, Song Ren Rd., Sin Yi District, Taipei 110, Taiwan
Manufacturer	Ubiquiti Networks, Inc.
Model No.	UAP-AC Outdoor, UAP-AC
FCC ID.	SWX-UAPAC
EUT Rated Voltage	DC 48V (Power by POE)
EUT Test Voltage	AC 120V/60Hz
Trade Name	UBIQUITI
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2014 ANSI C63.10: 2009 789033 D02 General UNII Test Procedures New Rules v01
Test Result	Complied

Documented By : Genie Chang
(Senior Adm. Specialist / Genie Chang)

Tested By : Alan Chen
(Engineer / Alan Chen)

Approved By : Vincent Lin
(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	UAP AC
Trade Name	UBIQUITI
FCC ID.	SWX-UAPAC
Model No.	UAP-AC Outdoor, UAP-AC
Frequency Range	802.11 ac-20MHz: 5180-5240MHz 802.11 ac-40MHz: 5190-5230MHz 802.11 ac-80MHz: 5210MHz
Number of Channels	802.11ac-20MHz: 3; 802.11ac-40MHz: 2; 802.11ac-80MHz: 1
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 450Mbps 802.11ac-80MHz: up to 1.3GHz
Channel Control	Auto
Type of Modulation	802.11ac:OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	PIFA Antenna
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: UBIQUITI, M/N: GP-B480-050 Input: AC 100-240V~50/60Hz MAX 0.75A Output: 48V==0.5A

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Ubiquiti Networks, Inc.	N/A	PIFA Antenna	6.00dBi For 5.15~5.25GHz (Model: UAP-AC) 8.00dBi For 5.15~5.25GHz (Model: UAP-AC Outdoor)

Note: The antenna of EUT is conform to FCC 15.203

802.11ac-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz

802.11ac-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 42:	5210 MHz

Note:

1. This device is a fixed point-to-point access points with a built-in 802.11ac WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. The EUT is including two models for different marketing requirement.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11 ac(20M-BW) is 14.4Mbps · 802.11 ac(40M-BW)BW is 30Mbps and 802.11ac(80M-BW) is 65 Mbps)
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
7. This is to request a Class II permissive change for FCC ID: SWX-UAPAC, originally granted on 04/08/2013 The major change filed under this application is:
 Change #1: Original grant compliance band 1 is following old rule of UNII requirements, this C2PC is following new rule of UNII requirements.

Test Mode	Mode 1: Transmit (802.11ac-20BW-21.7Mbps) Mode 2: Transmit (802.11ac-40BW-45Mbps) Mode 3 Transmit (802.11ac-80BW-1.3Gbps)
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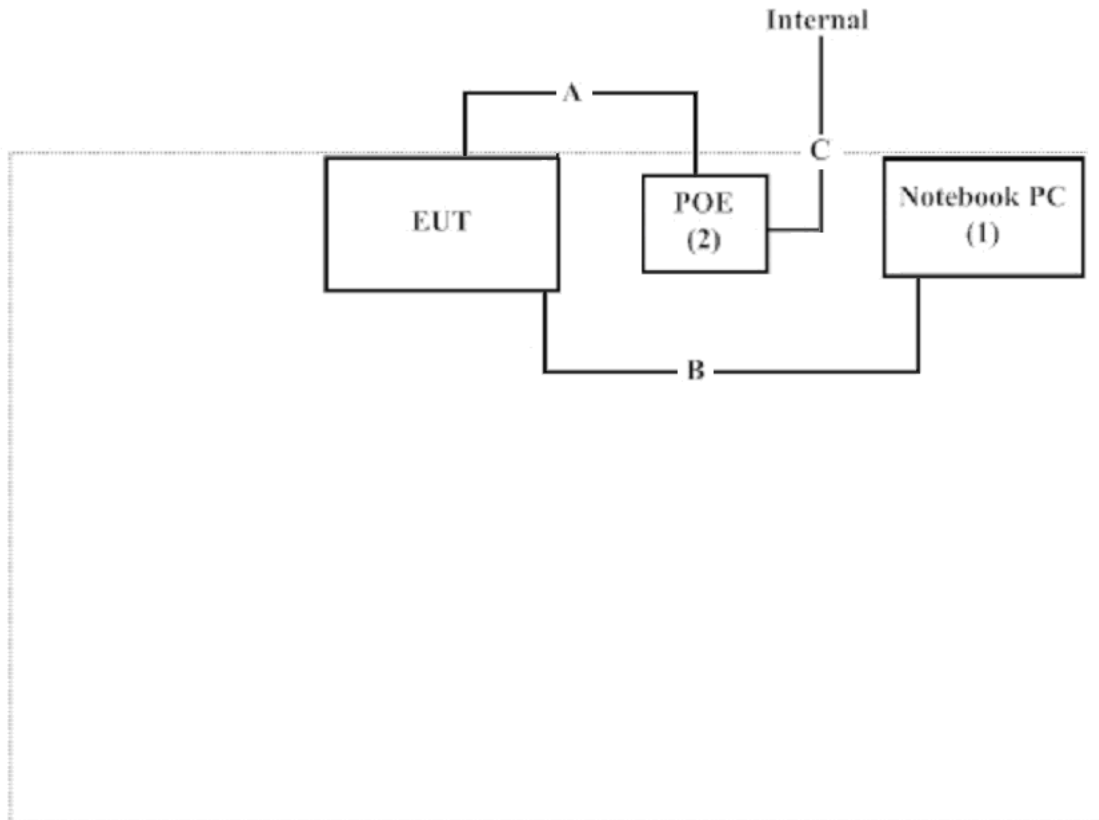
1.3. Tested System Details

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	PPT	N/A	Non-Shielded, 0.8m
2	POE	UBIQUITI	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
A	LAN Cable	Shielded, 1.2m
B	LAN Cable	Shielded, 1.2m
C	LAN Cable	Shielded, 1.2m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown on 1.4
- (2) Execute “MTool v1.0.0.10 Test” program on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (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 QuieTek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Registration Number: 92195

Site Name: Quietek Corporation
 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 : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

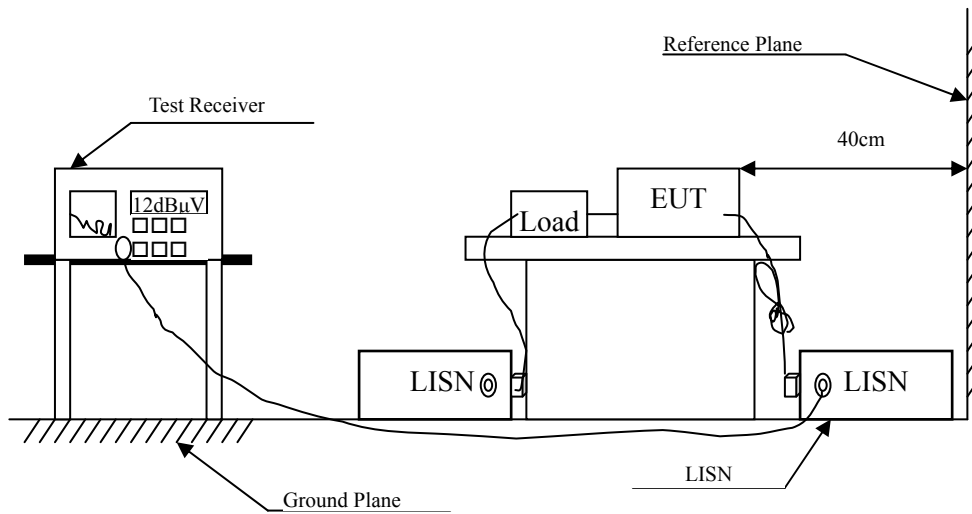
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2014	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2014	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2014	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2014	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2014	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

2.2. Test Setup



2.3. Limits

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

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. 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 C63.10:2009 on conducted measurement.

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

The EUT was setup to ANSI C63.10, 2009; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : UAP AC
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) (5210MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
LINE 1					
Quasi-Peak					
0.205	9.651	38.370	48.021	-16.408	64.429
0.283	9.655	25.650	35.305	-26.895	62.200
0.502	9.667	25.750	35.417	-20.583	56.000
0.654	9.675	33.640	43.315	-12.685	56.000
1.037	9.696	26.460	36.156	-19.844	56.000
1.650	9.740	26.240	35.980	-20.020	56.000
Average					
0.205	9.651	27.590	37.241	-17.188	54.429
0.283	9.655	11.610	21.265	-30.935	52.200
0.502	9.667	16.500	26.167	-19.833	46.000
0.654	9.675	25.700	35.375	-10.625	46.000
1.037	9.696	15.480	25.176	-20.824	46.000
1.650	9.740	15.420	25.160	-20.840	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : UAP AC
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) (5210MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
LINE 2					
Quasi-Peak					
0.201	9.660	35.730	45.390	-19.153	64.543
0.306	9.657	25.260	34.917	-26.626	61.543
0.463	9.665	25.630	35.295	-21.762	57.057
0.611	9.673	33.680	43.353	-12.647	56.000
0.830	9.695	30.140	39.835	-16.165	56.000
1.759	9.755	26.820	36.575	-19.425	56.000
Average					
0.201	9.660	28.520	38.180	-16.363	54.543
0.306	9.657	18.000	27.657	-23.886	51.543
0.463	9.665	13.270	22.935	-24.122	47.057
0.611	9.673	24.680	34.353	-11.647	46.000
0.830	9.695	18.980	28.675	-17.325	46.000
1.759	9.755	16.490	26.245	-19.755	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Maximun conducted output power

3.1. Test Equipment

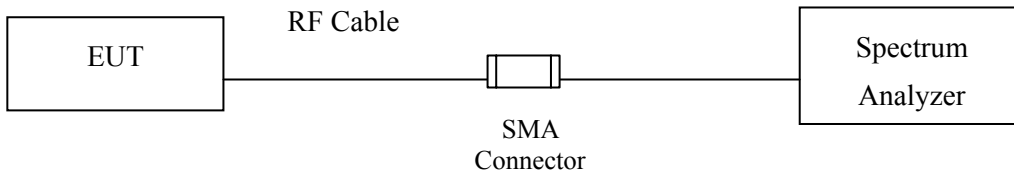
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
X	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2014
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

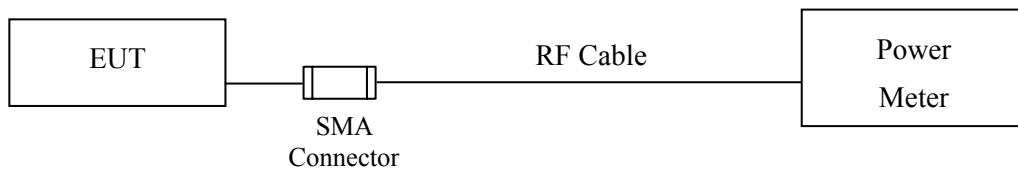
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup

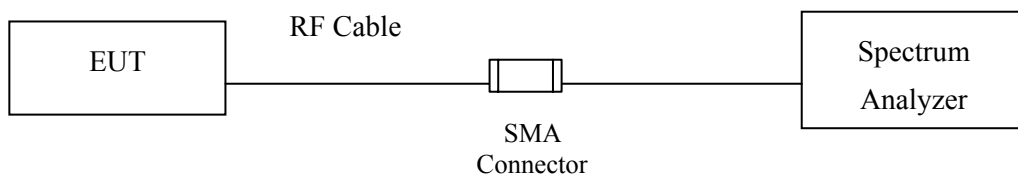
26dBc Occupied Bandwidth



Conduction Power Measurement (for 802.11a)



Conduction Power Measurement (for 802.11ac)



3.3. Limits

3.3.1. For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W, provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters

transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.4. Test Procedur

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater than 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW ≤ 40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D01 section F) procedure is used for measurements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Maximum conducted output power

Product : UAPAC
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power									
Channel No.	Frequency (MHz)	Data Rate (Mbps)									Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	
		Measurement Level (dBm)									
36	5180	11.2	--	--	--	--	--	--	--	--	<30dBm
44	5220	25.02	24.88	24.69	24.53	24.37	24.20	24.04	23.87	23.71	<30dBm
48	5240	24.62	--	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN B

Cable loss=1dB		Maximum conducted output power									
Channel No.	Frequency (MHz)	Data Rate (Mbps)									Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	
		Measurement Level (dBm)									
36	5180	11.45	--	--	--	--	--	--	--	--	<30dBm
44	5220	25.43	25.28	25.11	24.95	24.79	24.63	24.47	24.31	24.15	<30dBm
48	5240	24.97	--	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN C

Cable loss=1dB		Maximum conducted output power									
Channel No.	Frequency (MHz)	Data Rate (Mbps)									Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	
		Measurement Level (dBm)									
36	5180	11.25	--	--	--	--	--	--	--	--	<30dBm
44	5220	25.11	24.89	24.66	24.44	24.21	23.99	23.76	23.54	23.31	<30dBm
48	5240	24.43	--	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

(CHAIN A+ B+ C)

Channel Number	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Output Power (dBm)	Output Power Limit (dBm)
36	5180	11.20	11.45	11.25	16.07	30
44	5220	25.02	25.43	25.11	29.96	30
48	5240	24.62	24.97	24.43	29.45	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW) + Chain C Power (mW))

EIRP: (Model: UAP-AC)

Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
36	5180	16.07	6	22.07
44	5220	29.96	6	35.96
48	5240	29.45	6	35.45

EIRP: (Model: UAP-AC Outdoor)

Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
36	5180	16.07	8	24.07
44	5220	29.96	8	37.96
48	5240	29.45	8	37.45

Note: EIRP (dBm) = Output Power + Antenna Gain

Product : UAP AC
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power										
Channel No.	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
		Measurement Level (dBm)										
38	5190	9.59	--	--	--	--	--	--	--	--	--	<30dBm
46	5230	24.38	24.13	23.99	23.78	23.58	23.39	23.19	23.00	22.80	22.61	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN B

Cable loss=1dB		Maximum conducted output power										
Channel No.	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
		Measurement Level (dBm)										
38	5190	9.83	--	--	--	--	--	--	--	--	--	<30dBm
46	5230	24.40	24.31	24.15	24.04	23.91	23.79	23.66	23.54	23.41	23.29	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN C

Cable loss=1dB		Maximum conducted output power										
Channel No.	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
		Measurement Level (dBm)										
38	5190	5.22	--	--	--	--	--	--	--	--	--	<30dBm
46	5230	25.21	25.07	24.89	24.74	24.58	24.42	24.26	24.10	23.94	23.78	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**Maximum conducted output power Measurement:
(CHAIN A+ B+ C)**

Channel Number	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
38	5190	9.59	9.83	5.22	13.43	30
46	5230	24.38	24.40	25.21	29.45	30

Note:

1. Power Output Value = Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW) + Chain C Power (mW))

EIRP: (Model: UAP-AC)

Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
38	5190	13.43	6	19.43
46	5230	29.45	6	35.45

EIRP: (Model: UAP-AC Outdoor)

Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
38	5190	13.43	8	21.43
46	5230	29.45	8	37.45

Note: EIRP (dBm) = Output Power + Antenna Gain

Product : UAP AC
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps)

Chain A

Cable loss=1dB		Maximum conducted output power										
Channel No	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
42	5210	10.25	10.13	9.98	9.85	9.72	9.58	9.45	9.31	9.18	9.04	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power										
Channel No	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
42	5210	10.27	10.11	9.99	9.84	9.70	9.56	9.42	9.28	9.14	9.00	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain C

Cable loss=1dB		Maximum conducted output power										
Channel No	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
42	5210	10.58	10.44	10.28	10.13	9.98	9.83	9.68	9.53	9.38	9.23	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Output Power (dBm)	Output Power Limit (dBm)	Result
42	5210	81.200	10.25	10.27	10.58	15.14	30	Pass

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW) + Chain C Power (mW))

EIRP: (Model: UAP-AC)

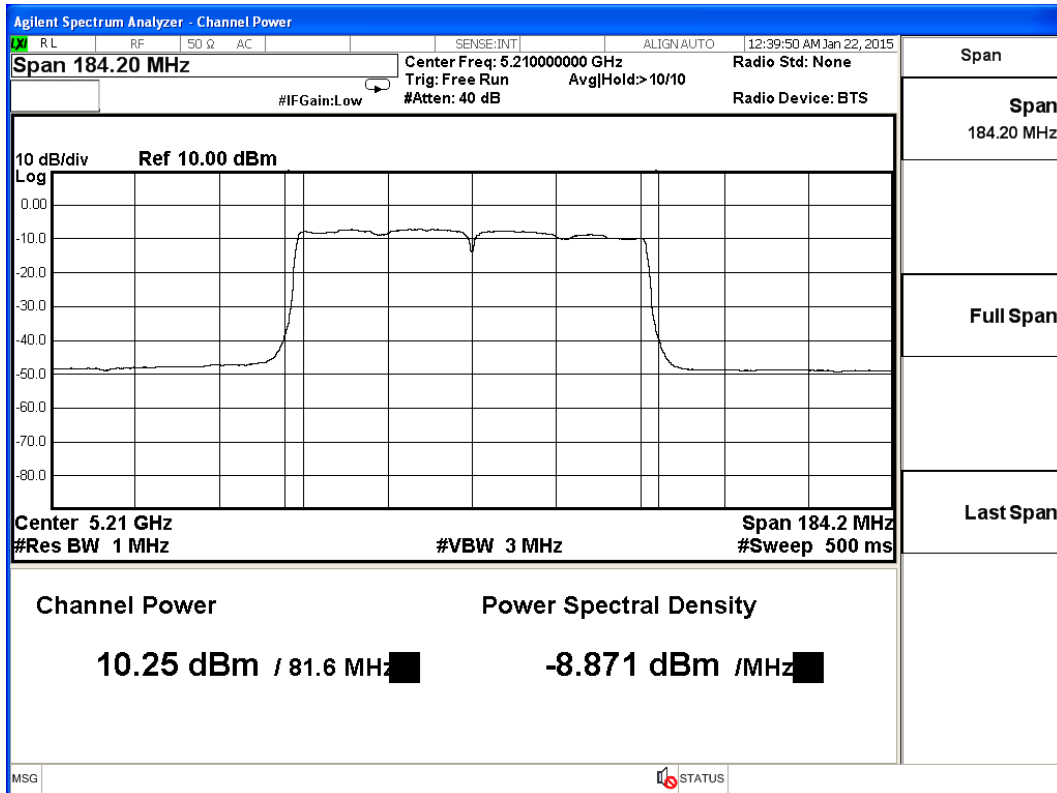
Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
42	5210	15.14	6	21.14

EIRP: (Model: UAP-AC Outdoor)

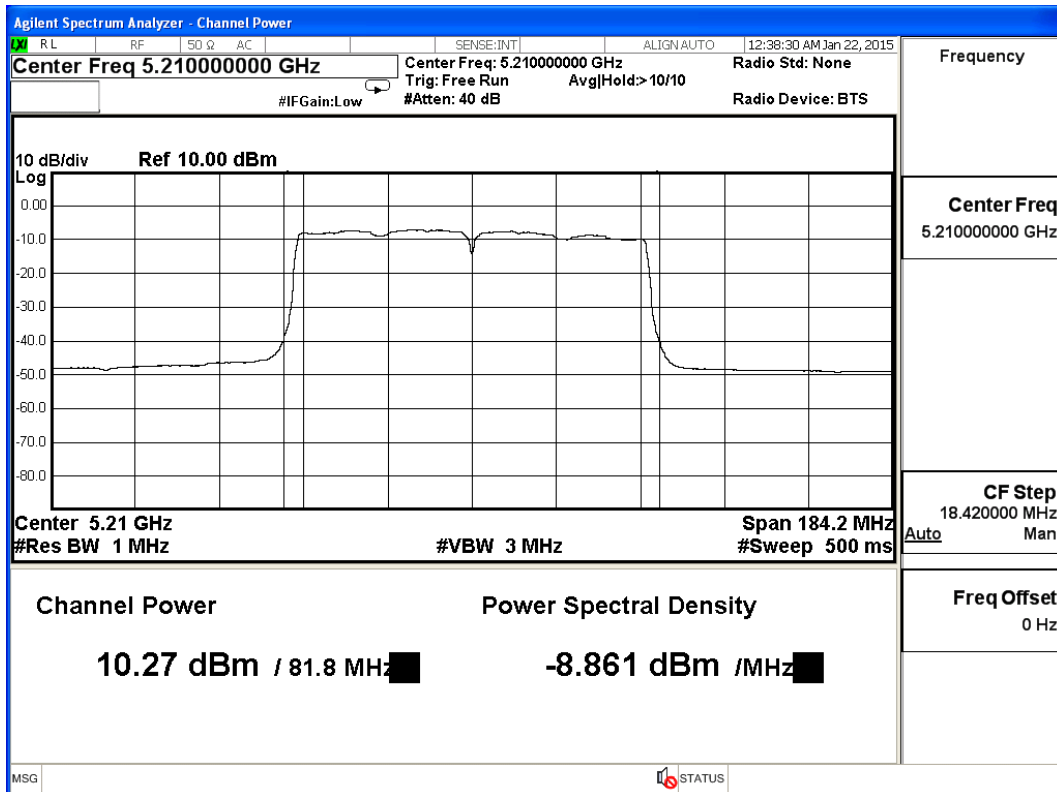
Channel Number	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dB)	EIRP (dBm)
42	5210	15.14	8	23.14

Note: $EIRP (dBm) = Output Power + Antenna Gain$

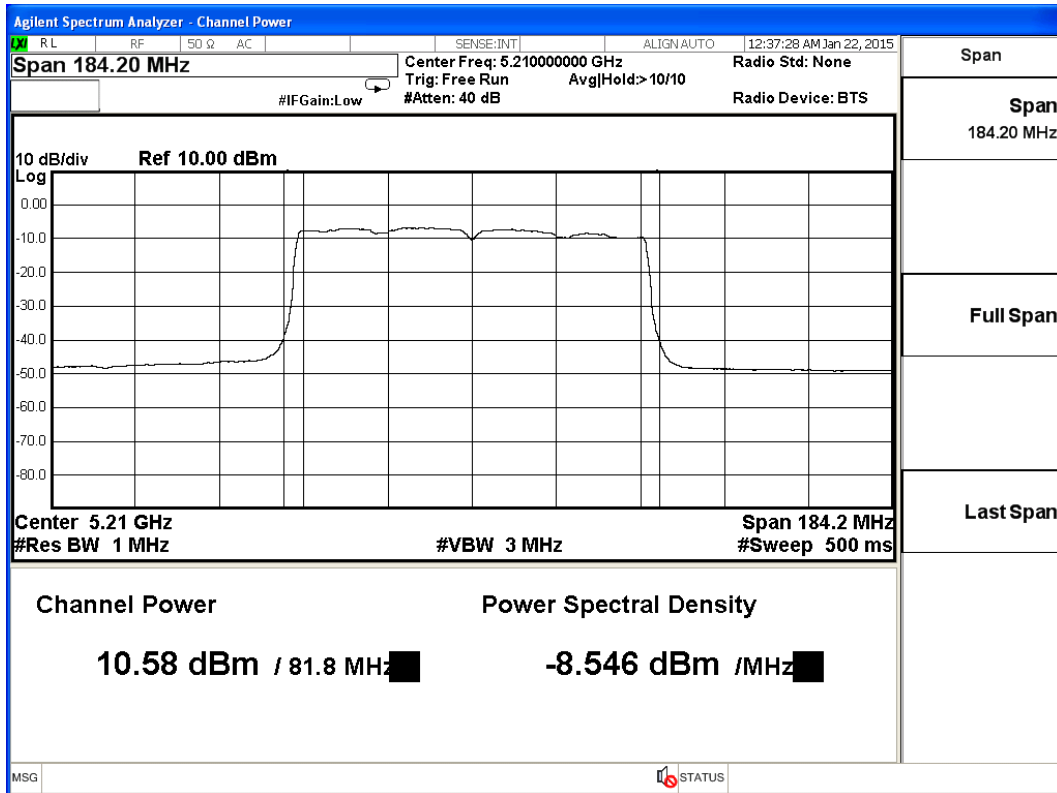
Maximum conducted output power:
Channel 42 – Chain A



Maximum conducted output power:
Channel 42 – Chain B



Maximum conducted output power:
Channel 42 – Chain C



4. Peak Power Spectral Density

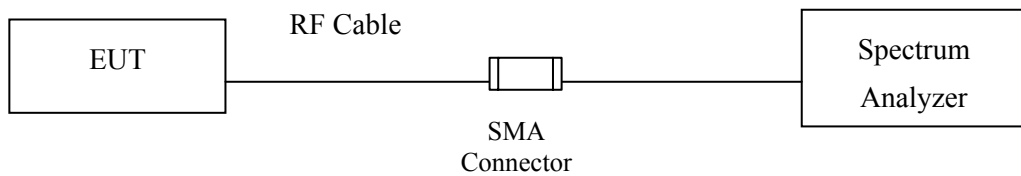
4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup



4.3. Limits

- (1) For the band 5.15-5.25 GHz,
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional

gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+

- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/100\text{ kHz}) = 6.98\text{ dB}$.

4.5. Uncertainty

± 1.27 dB

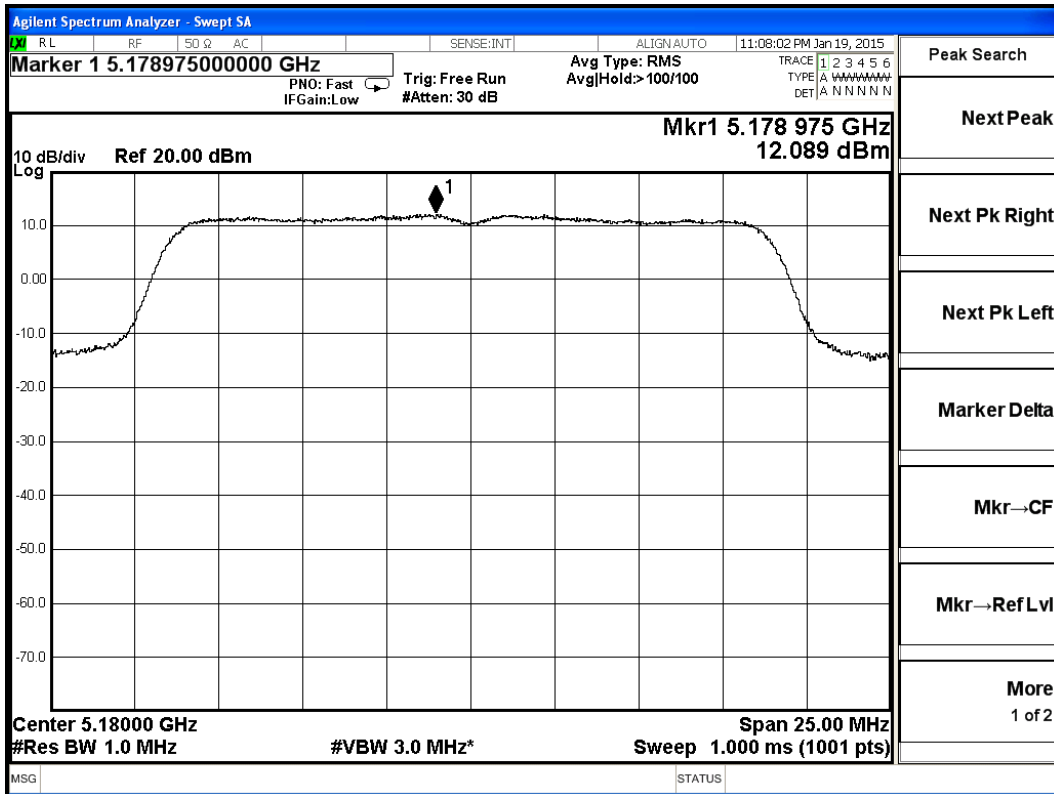
4.6. Test Result of Peak Power Spectral Density

Product : UAPAC
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps)

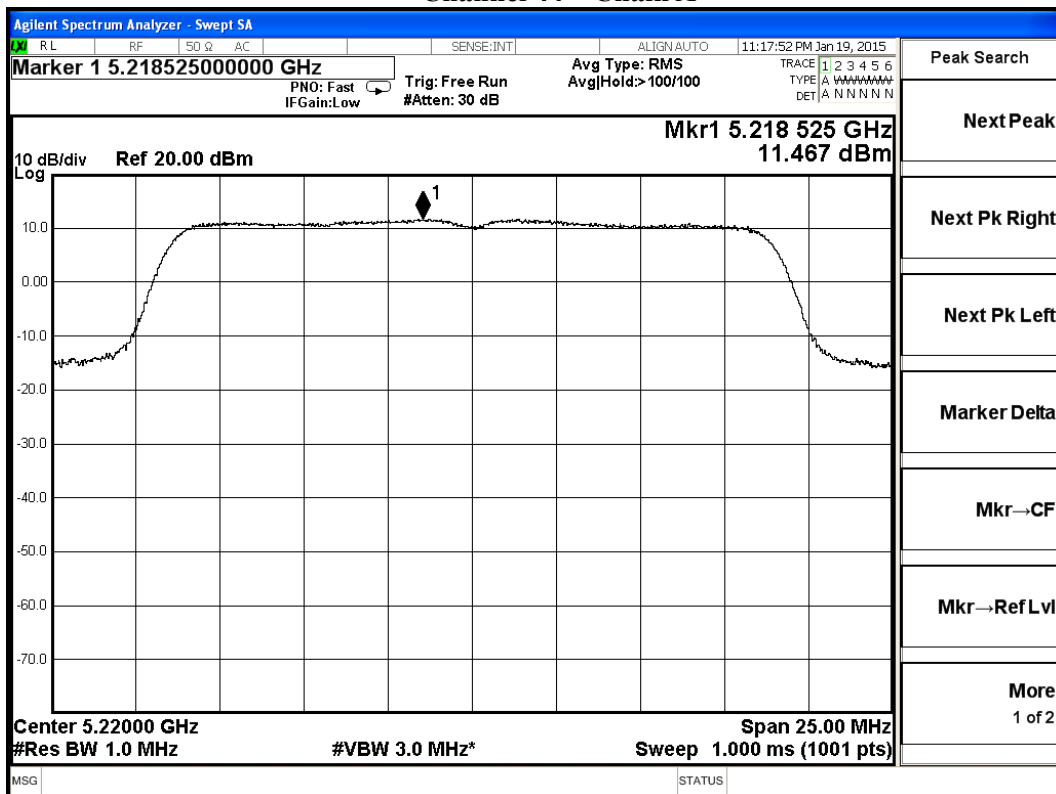
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm) ¹	Required Limit (dBm)	Result
36	5180	A	12.089	16.859	17	Pass
		B	11.397	16.167	17	Pass
		C	12.031	16.801	17	Pass
44	5220	A	11.467	16.237	17	Pass
		B	11.867	16.637	17	Pass
		C	11.436	16.206	17	Pass
48	5240	A	11.432	16.202	17	Pass
		B	11.698	16.468	17	Pass
		C	11.524	16.294	17	Pass

Note 1: The quantity $10 \cdot \log 3$ (three antennas) is added to the spectrum peak value according to document 662911 D01.

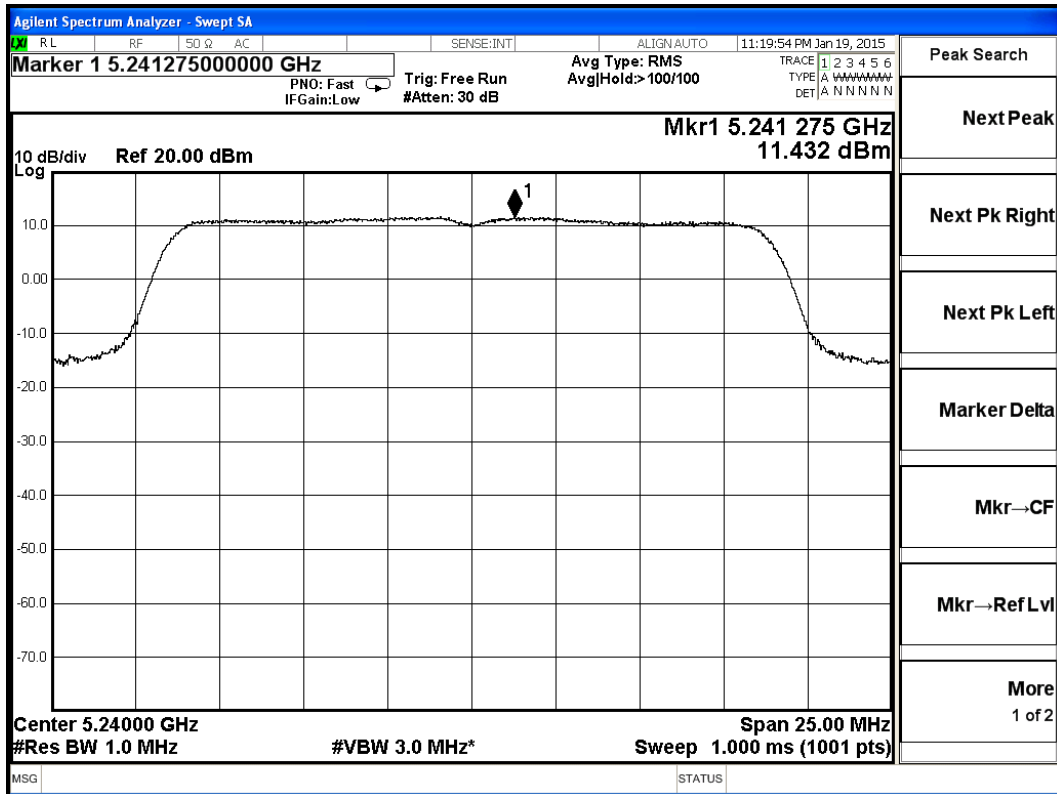
Channel 36 – Chain A



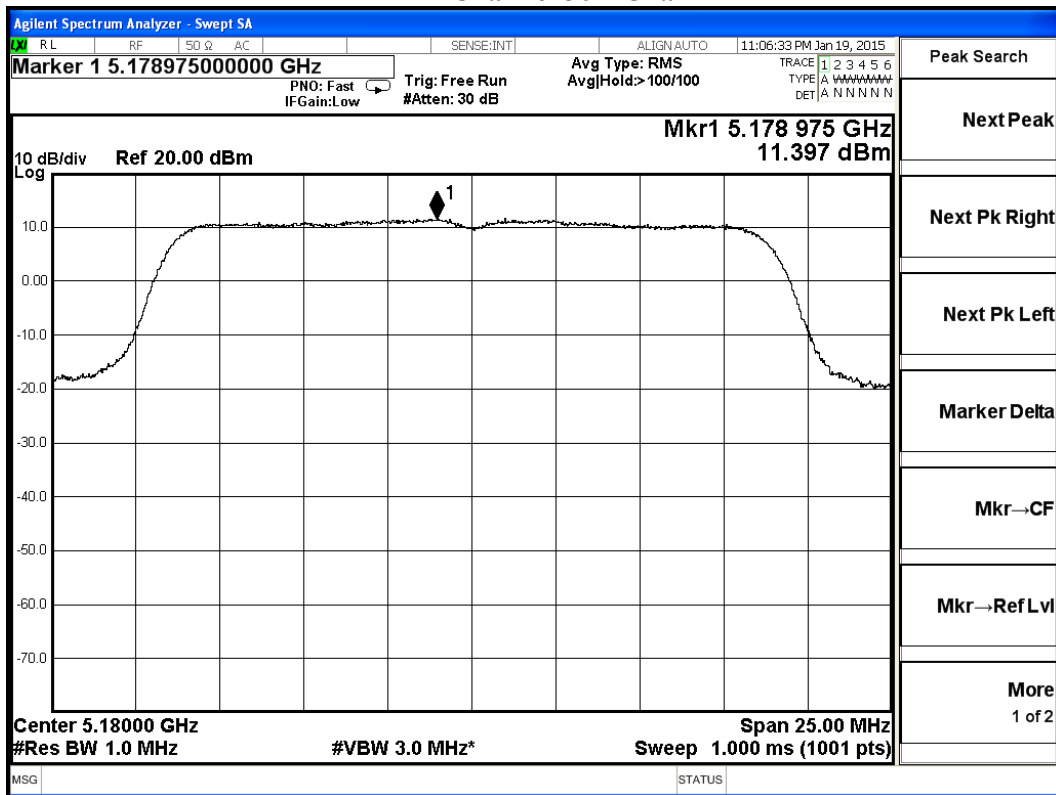
Channel 44 – Chain A



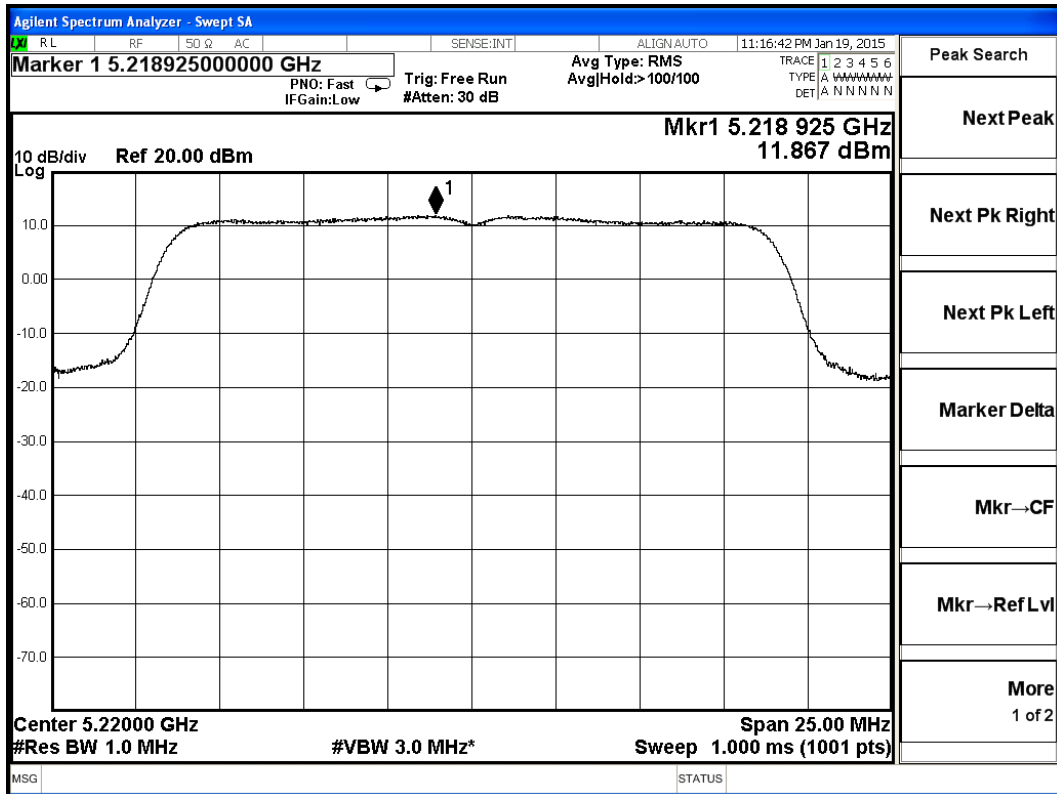
Channel 48 – Chain A



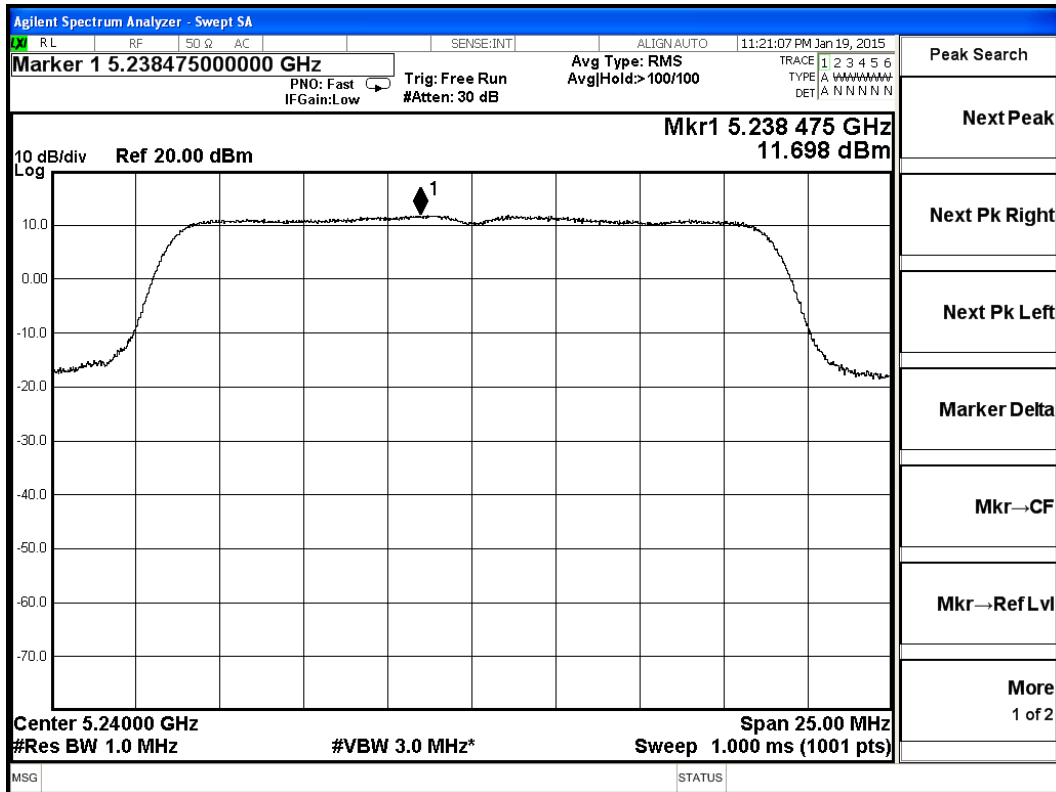
Channel 36 – Chain B



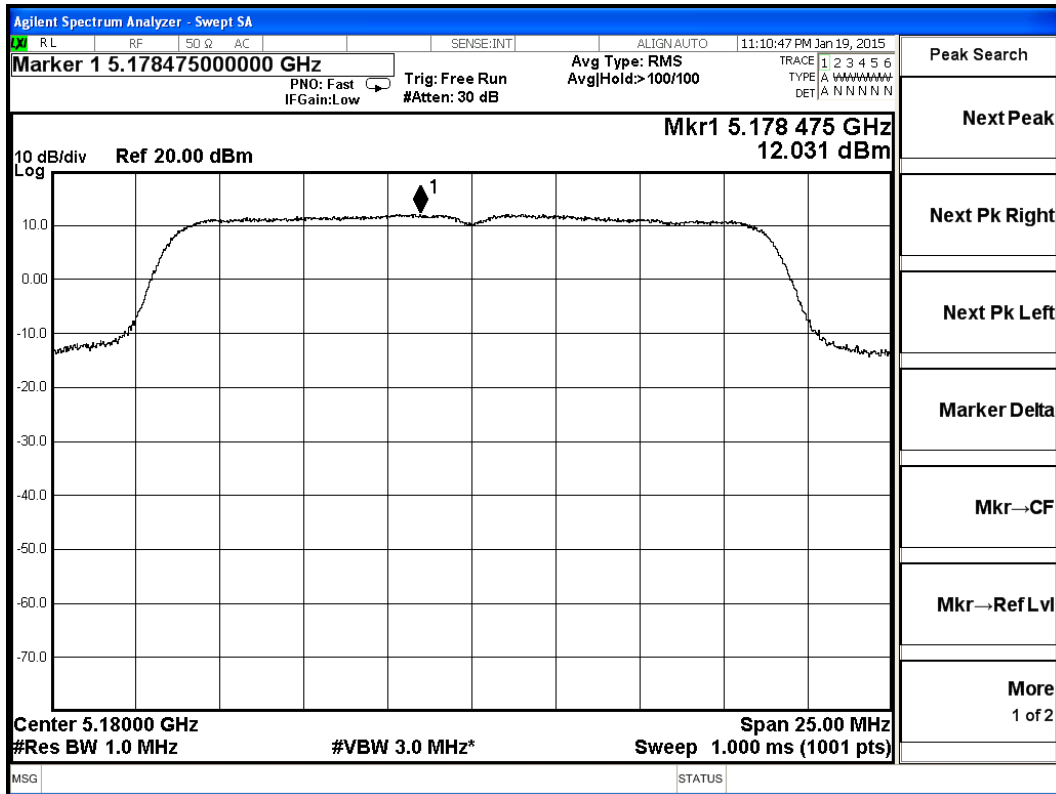
Channel 44 – Chain B



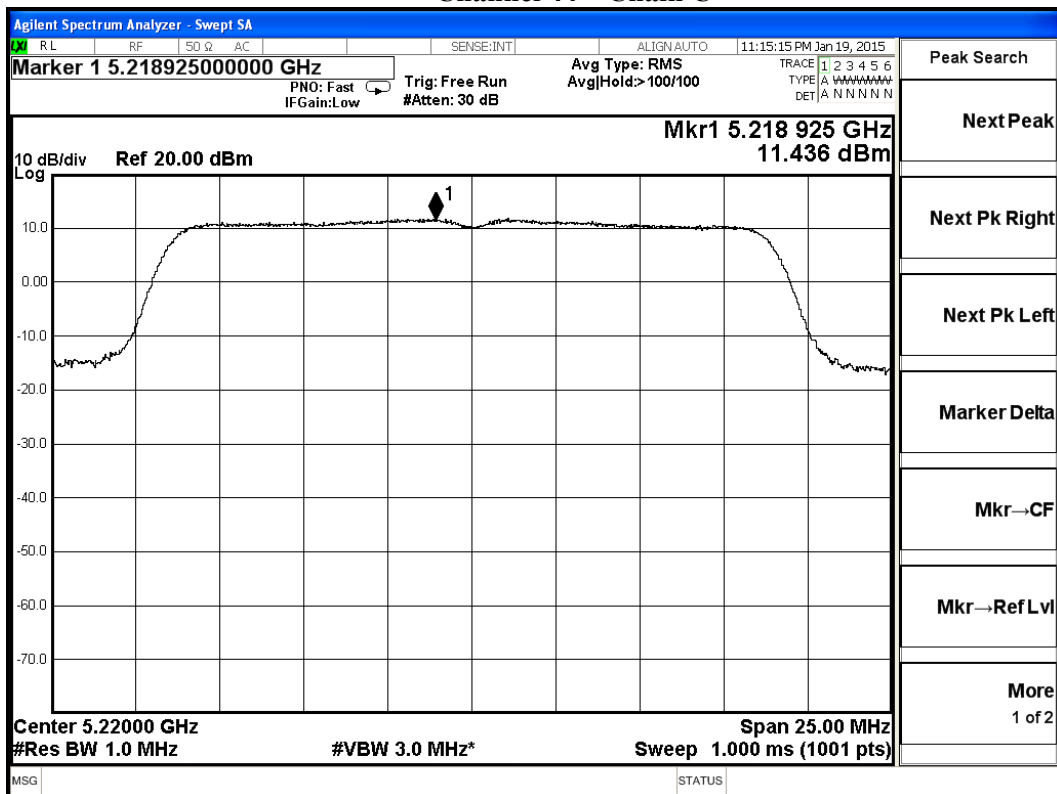
Channel 48 – Chain B



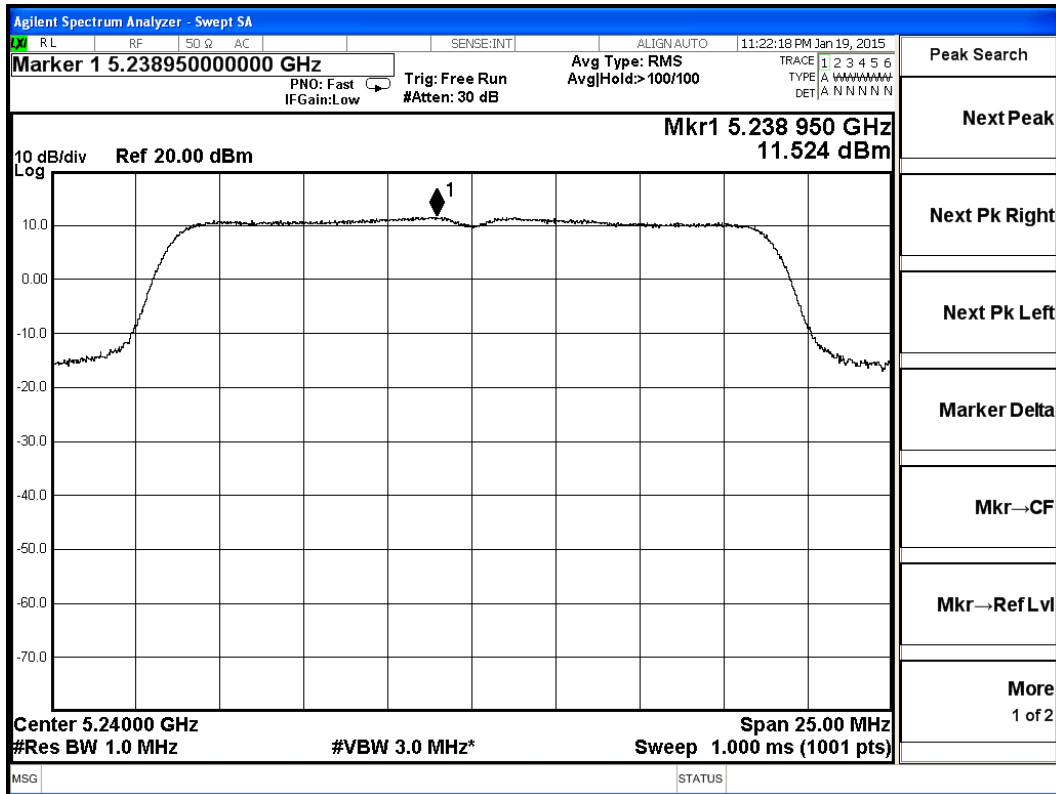
Channel 36 – Chain C



Channel 44 – Chain C



Channel 48 – Chain C

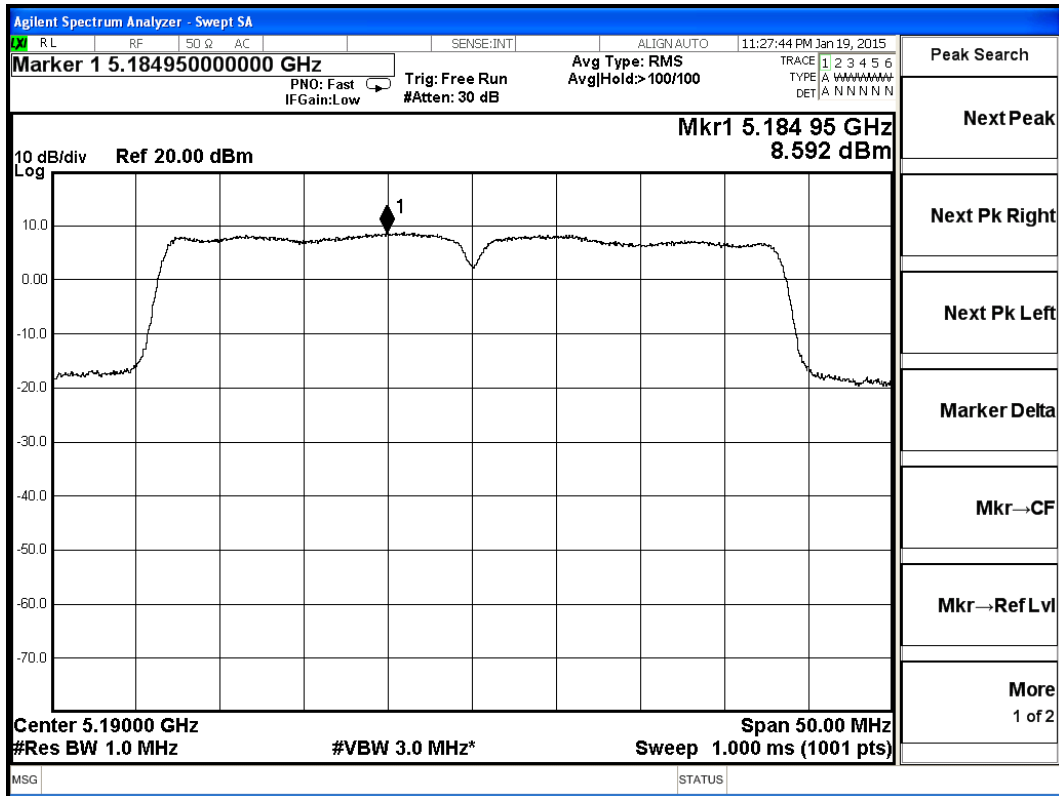


Product : UAP AC
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)

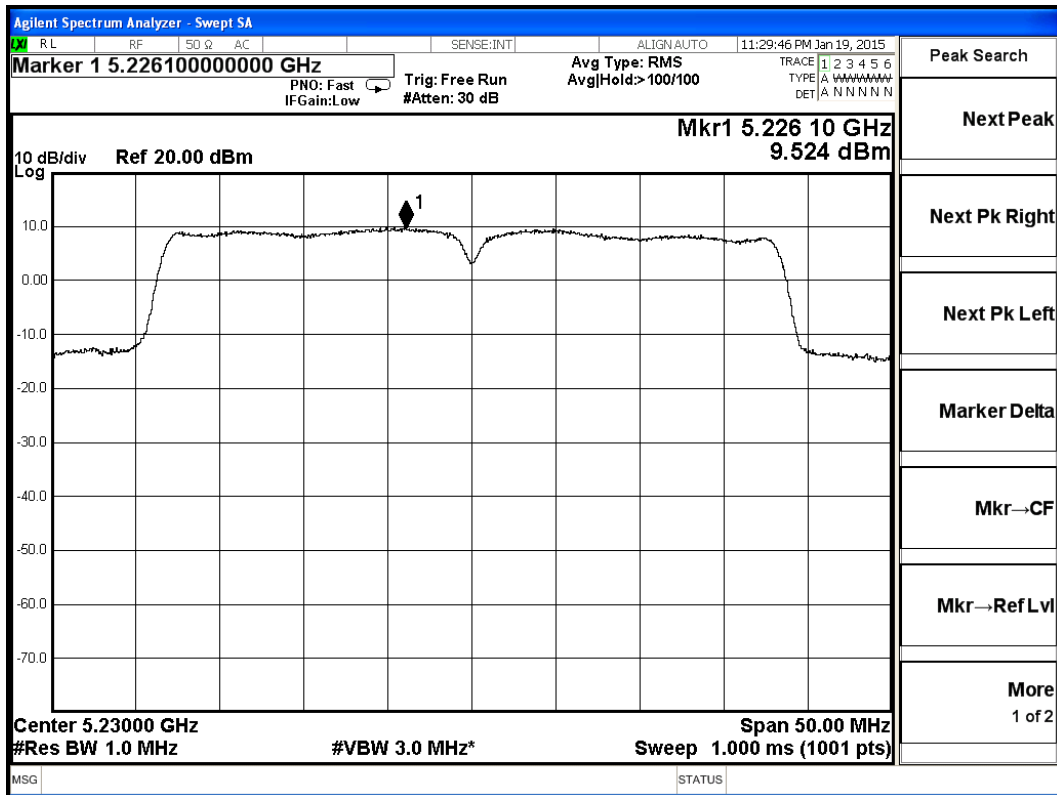
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm) ¹	Required Limit (dBm)	Result
38	5190	A	8.592	13.362	17	Pass
		B	8.117	12.887	17	Pass
		C	11.435	16.205	17	Pass
46	5230	A	9.524	14.294	17	Pass
		B	8.584	13.354	17	Pass
		C	11.215	15.985	17	Pass

Note 1: The quantity $10 \cdot \log 3$ (three antennas) is added to the spectrum peak value according to document 662911 D01.

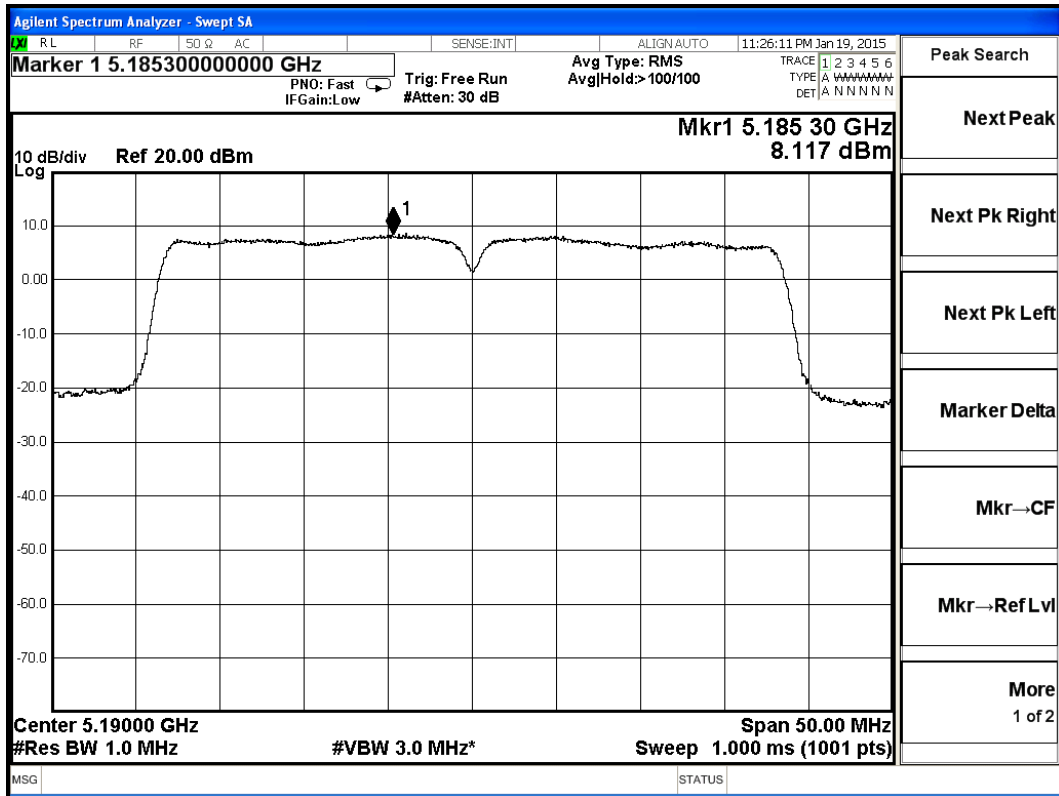
Channel 38 – Chain A



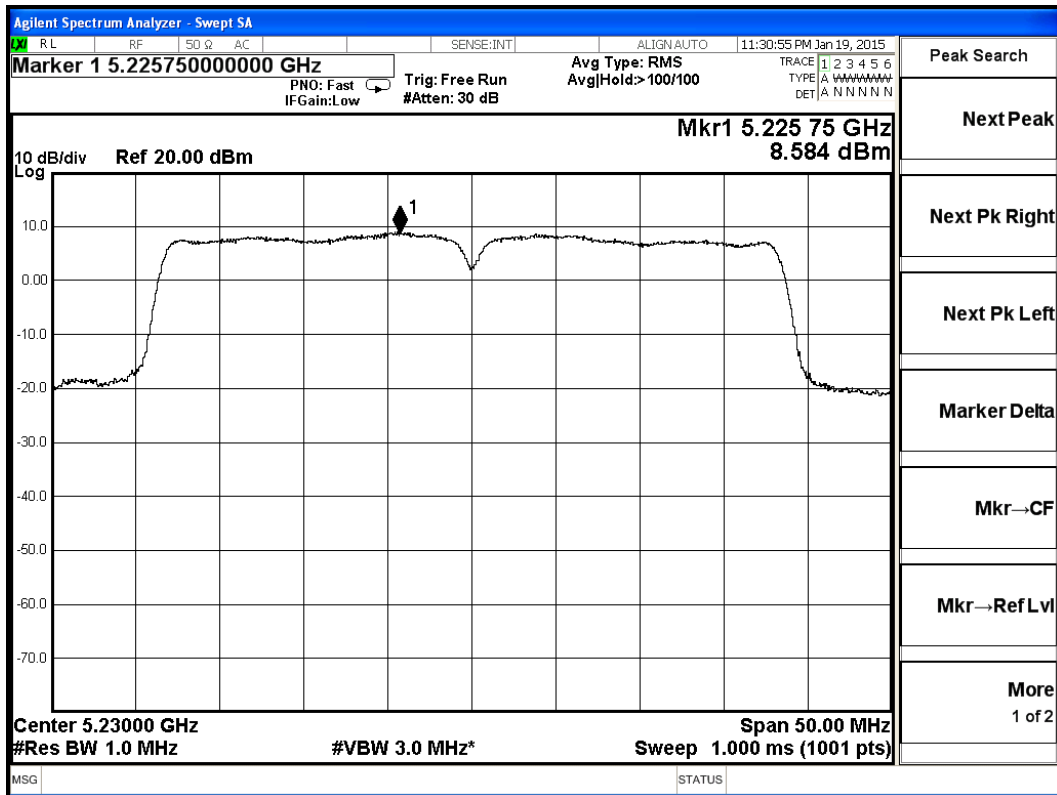
Channel 46 – Chain A



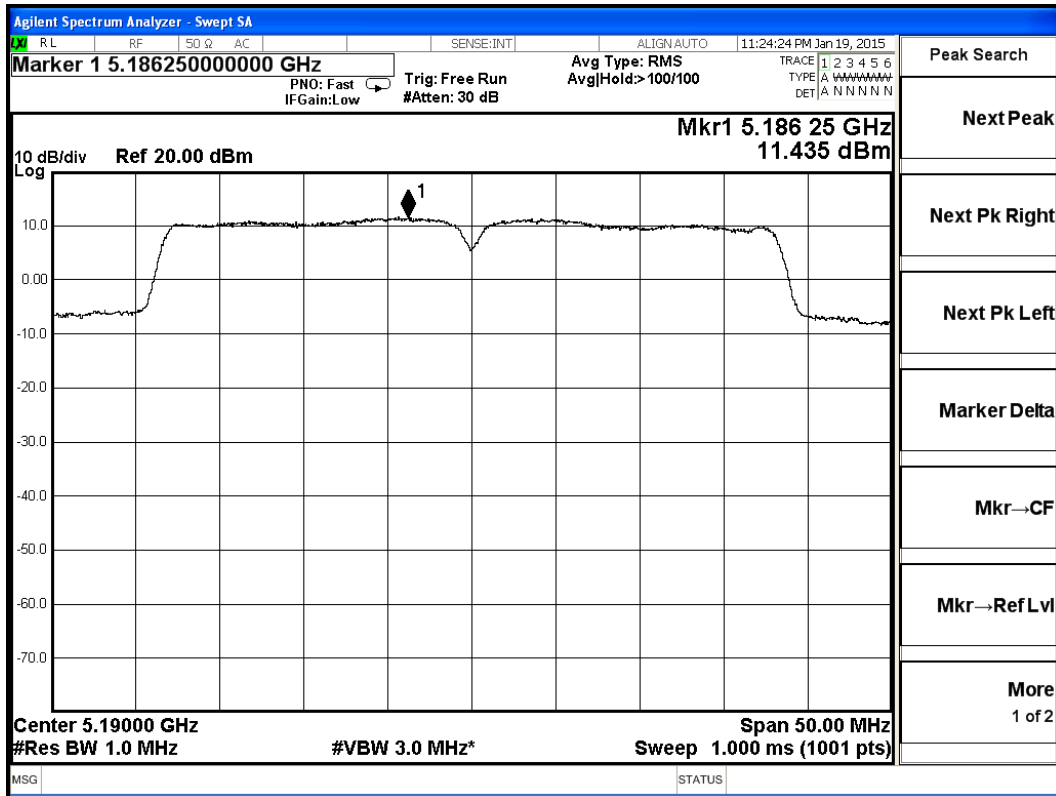
Channel 38 – Chain B



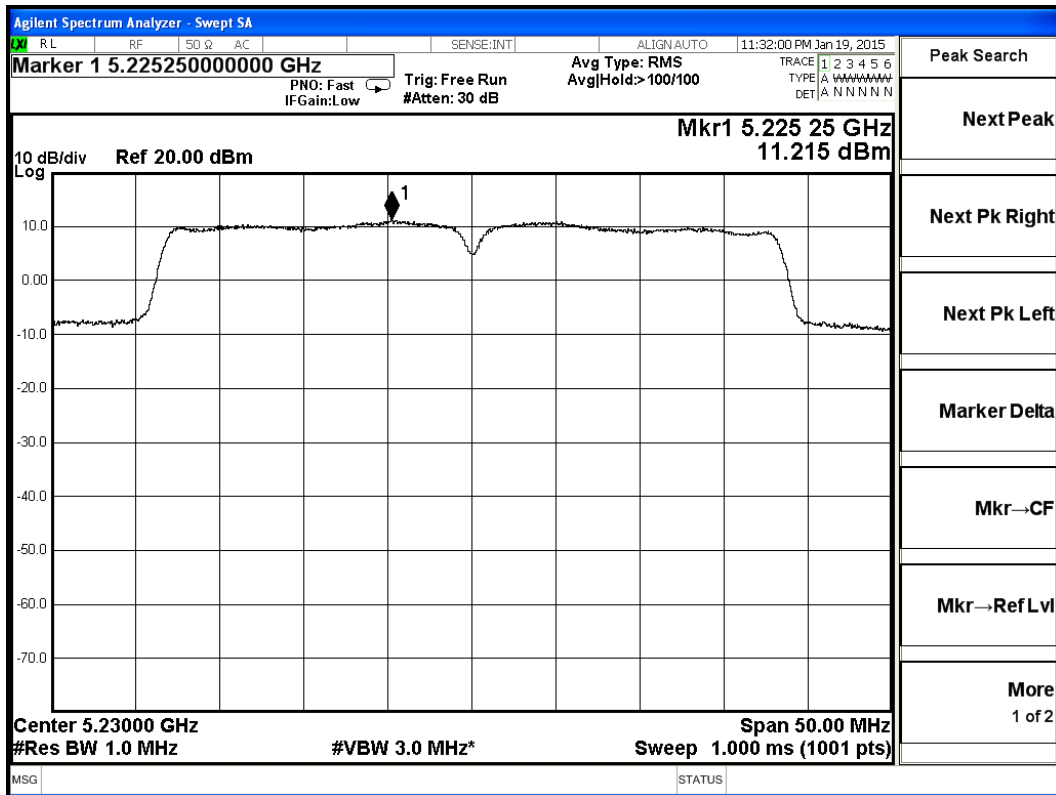
Channel 46 – Chain B



Channel 38 – Chain C



Channel 46 – Chain C

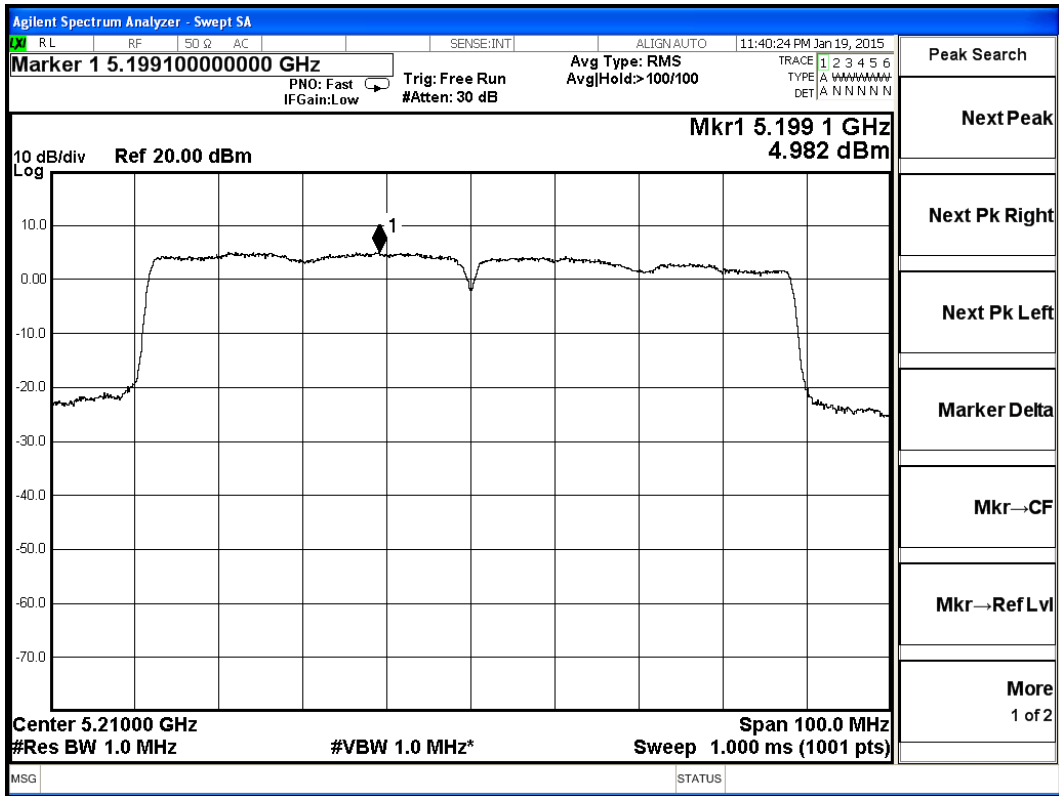


Product : UAPAC
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps)

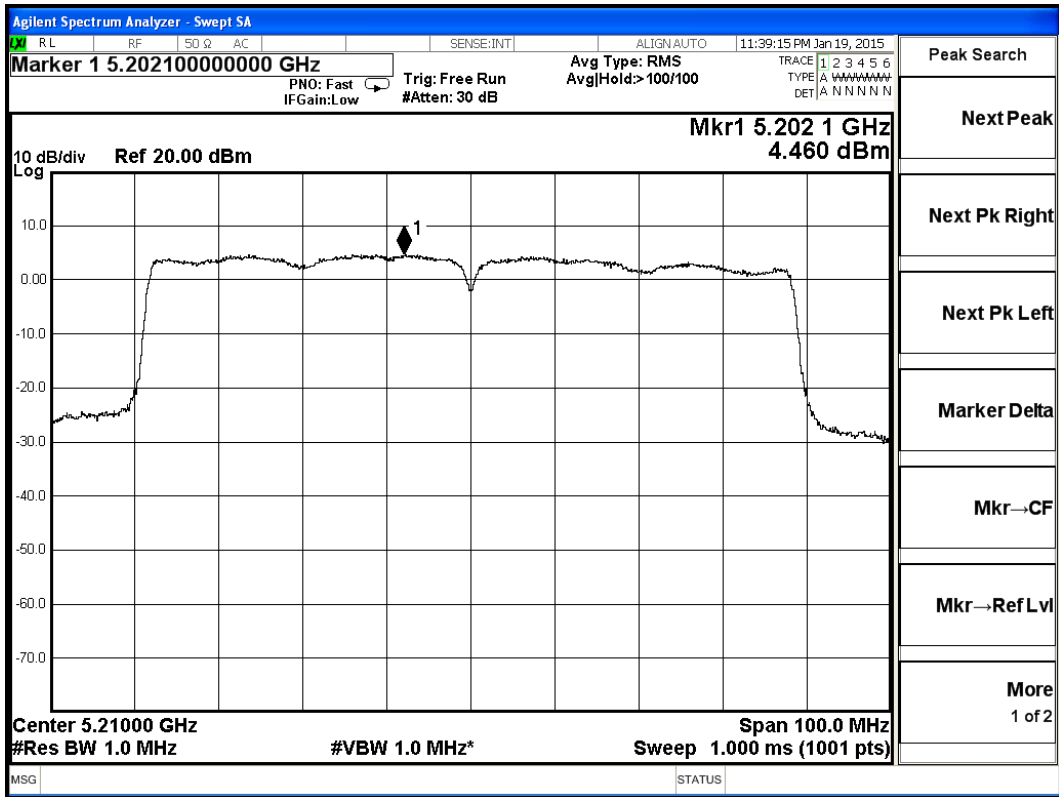
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm) ¹	Required Limit (dBm)	Result
42	5210	A	4.982	9.752	17	Pass
		B	4.460	9.230	17	Pass
		C	8.339	13.109	17	Pass

Note 1: The quantity $10 \cdot \log 3$ (three antennas) is added to the spectrum peak value according to document 662911 D01.

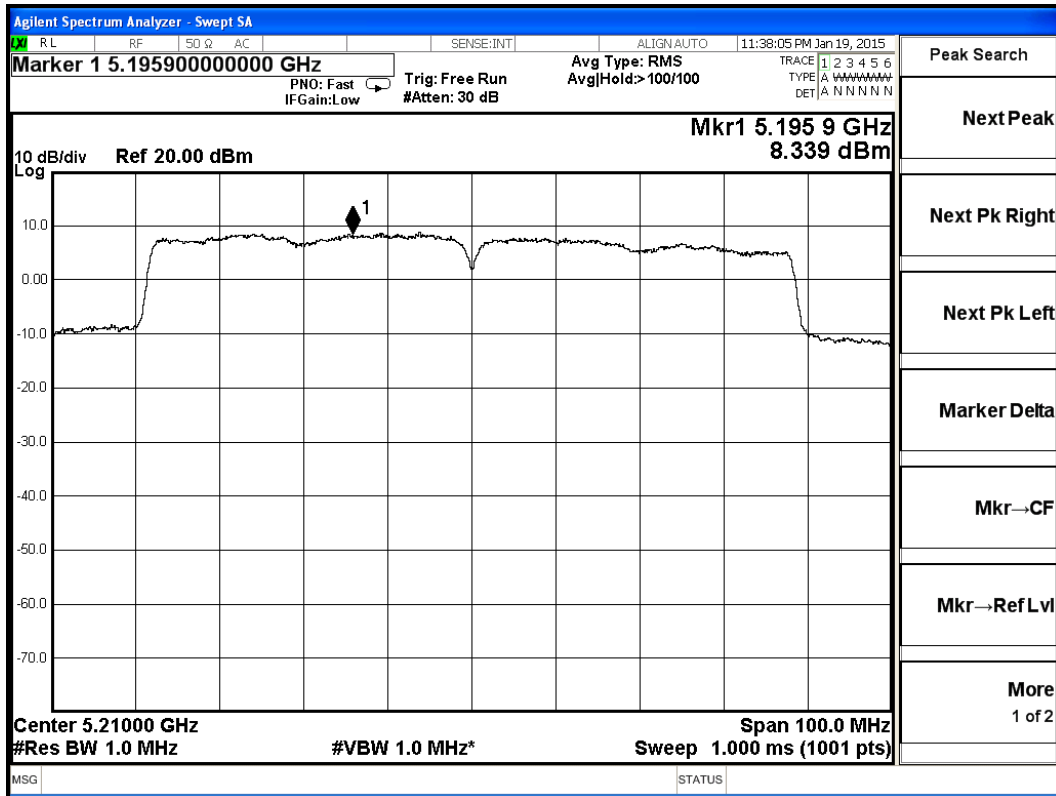
Channel 42 – Chain A



Channel 42 – Chain B



Channel 42 – Chain C



5. Radiated Emission

5.1. Test Equipment

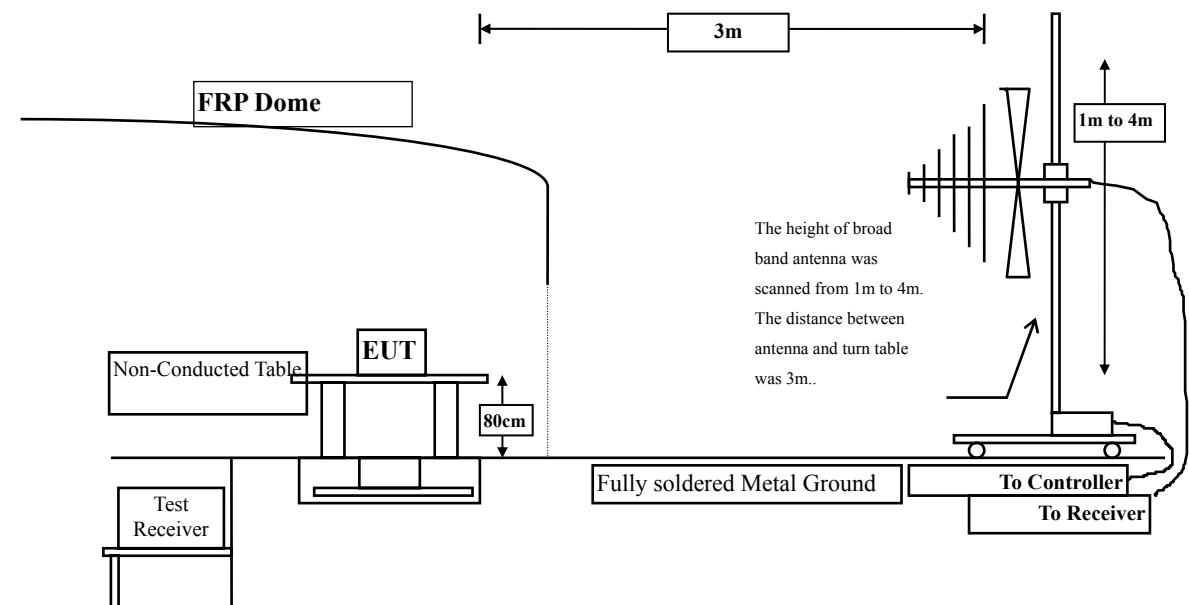
The following test equipments are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X Loop Antenna	Teseq	HLA6121 / 37133	Sep., 2014
	X Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2014
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2014
	X Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2014
	X Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2014
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	X Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2014
	X Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

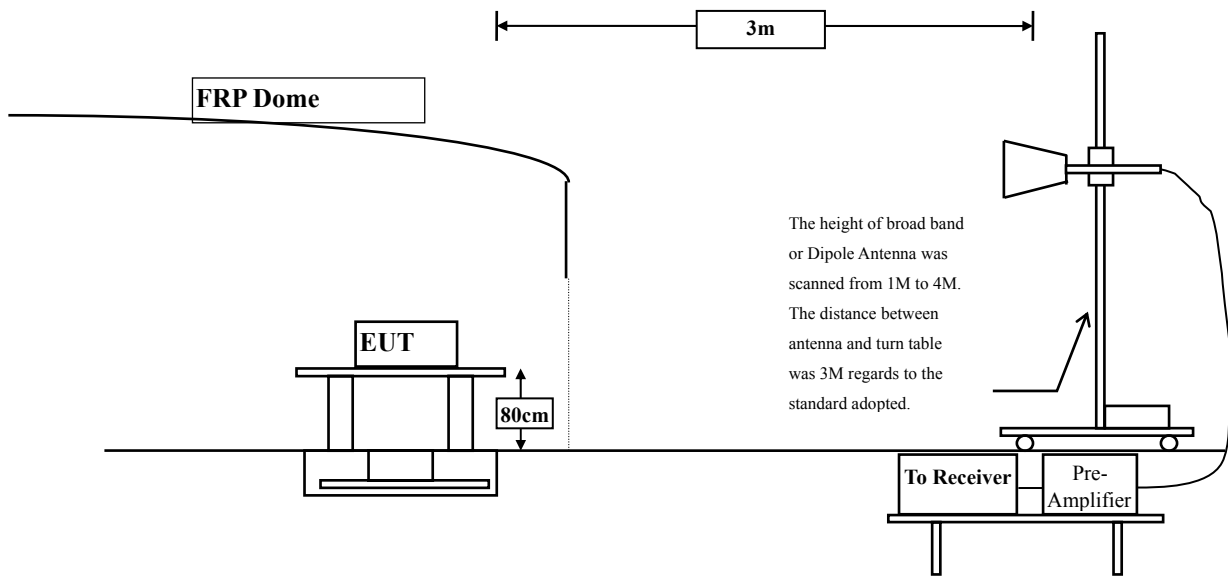
- Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.

5.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



5.3. 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)

5.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

The EUT is placed on a turn table which is 0.8 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, 2009 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 form 9KHz - 10th Harmonic of fundamental was investigated.

5.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

5.6. Test Result of Radiated Emission

Product : UAPAC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) (5180MHz)

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:					
10360.000	12.930	37.120	50.050	-23.950	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10360.000	13.724	37.590	51.314	-22.686	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	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 : UAPAC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) (5220MHz)

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:					
10440.000	13.322	44.590	57.912	-16.088	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
Average Detector:					
10440.000	13.322	32.560	45.882	-8.118	54.000
Vertical					
Peak Detector:					
10440.000	14.245	43.950	58.195	-15.805	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
Average Detector:					
10440.000	14.245	32.150	46.395	-7.605	54.000

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.

Product : UAPAC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) (5240MHz)

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:					
10480.000	13.693	42.590	56.284	-17.716	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average Detector:					
10480.000	13.693	31.590	45.284	-8.716	54.000
Vertical					
Peak Detector:					
10480.000	14.620	47.520	62.141	-11.859	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average Detector:					
10480.000	14.620	33.559	48.180	-5.820	54.000

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.

Product : UAP AC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
10380.000	12.939	37.560	50.499	-23.501	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10380.000	13.796	37.110	50.906	-23.094	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	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 : UAPAC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps) (5230MHz)

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:					
10460.000	13.508	45.260	58.768	-15.232	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average Detector:					
10460.000	13.508	31.260	44.768	-9.232	54.000
Vertical					
Peak Detector:					
10460.000	14.433	43.560	57.993	-16.007	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average Detector:					
10460.000	14.433	31.560	45.993	-8.007	54.000

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.

Product : UAP AC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) (5210MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
10420.000	13.135	38.230	51.365	-22.635	74.000
11550.000	*	*	*	*	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10420.000	14.057	38.420	52.477	-21.523	74.000
11550.000	*	*	*	*	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	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 : UAP AC
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector					
249.220	-6.014	42.739	36.725	-9.275	46.000
346.220	-2.213	42.150	39.937	-6.063	46.000
507.240	0.759	42.529	43.288	-2.712	46.000
662.440	2.084	39.375	41.459	-4.541	46.000
749.740	3.320	36.916	40.236	-5.764	46.000
800.180	5.141	34.642	39.783	-6.217	46.000
Vertical					
Peak Detector					
105.660	-0.253	36.963	36.710	-6.790	43.500
303.540	-6.794	46.917	40.123	-5.877	46.000
507.240	-0.471	42.362	41.891	-4.109	46.000
662.440	-2.026	39.433	37.407	-8.593	46.000
749.740	2.510	35.248	37.758	-8.242	46.000
875.840	1.621	42.270	43.891	-2.109	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 : UAP AC
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector					
103.720	-6.751	38.550	31.798	-11.702	43.500
249.220	-6.014	44.608	38.594	-7.406	46.000
348.160	-2.268	41.197	38.929	-7.071	46.000
507.240	0.759	42.239	42.998	-3.002	46.000
662.440	2.084	39.601	41.685	-4.315	46.000
800.180	5.141	35.214	40.355	-5.645	46.000
Vertical					
Peak Detector					
303.540	-6.794	45.969	39.175	-6.825	46.000
507.240	-0.471	43.721	43.250	-2.750	46.000
662.440	-2.026	40.040	38.014	-7.986	46.000
749.740	2.510	35.368	37.878	-8.122	46.000
875.840	1.621	40.795	42.416	-3.584	46.000
963.140	7.604	30.384	37.988	-16.012	54.000

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 : UAP AC
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) (5210MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector					
105.660	-6.673	38.870	32.197	-11.303	43.500
249.220	-6.014	44.097	38.083	-7.917	46.000
507.240	0.759	42.601	43.360	-2.640	46.000
662.440	2.084	39.963	42.047	-3.953	46.000
800.180	5.141	34.265	39.406	-6.594	46.000
953.440	6.387	32.257	38.644	-7.356	46.000
Vertical					
Peak Detector					
107.600	-0.318	36.784	36.466	-7.034	43.500
344.280	-3.171	43.461	40.291	-5.709	46.000
625.580	-2.600	37.129	34.529	-11.471	46.000
662.440	-2.026	39.820	37.794	-8.206	46.000
800.180	2.801	35.109	37.910	-8.090	46.000
941.800	6.585	31.874	38.459	-7.541	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.

6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

RF Radiated Measurement:

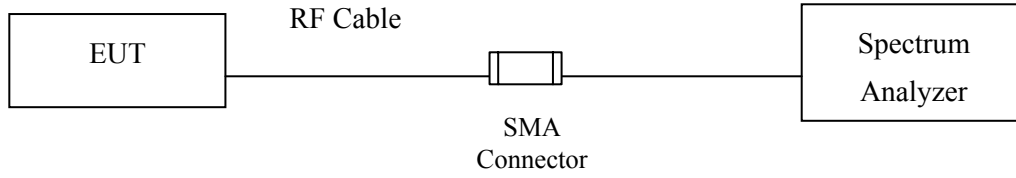
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.	
☒ Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2014
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2014
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2014
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2014
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2014
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

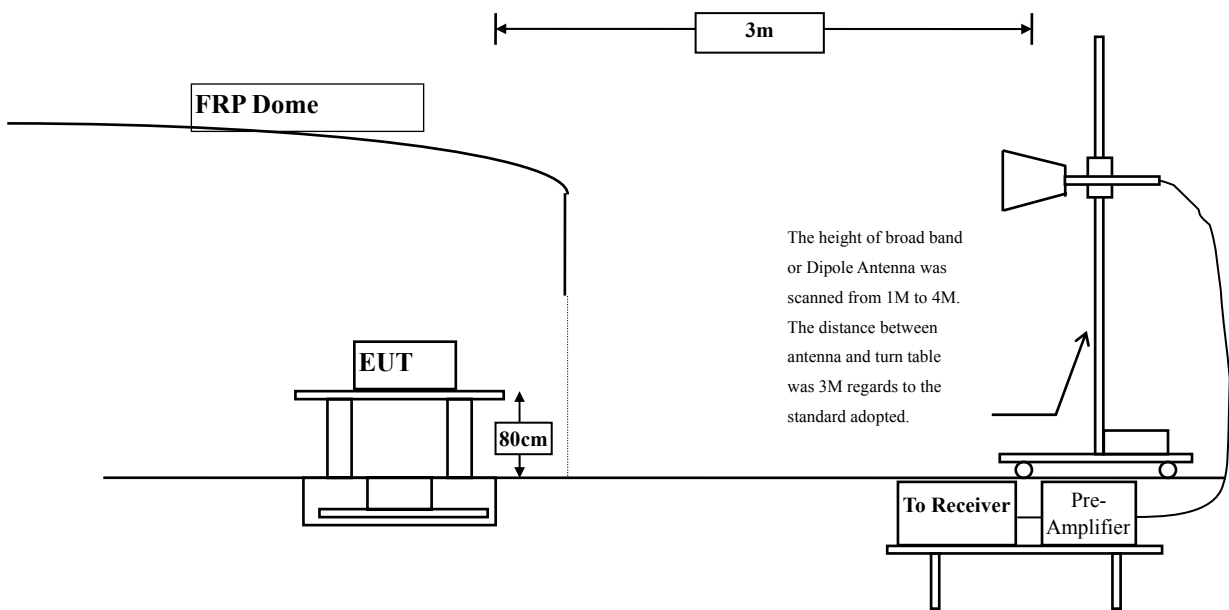
- Note:
1. All instruments are calibrated every one year.
 2. The test instruments marked by “X” are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.3. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBµV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBµV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

6.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

6.6. Test Result of Band Edge

Product : UAPAC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) -Channel 36

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
36 (Peak)	5107.200	3.476	50.015	53.491	74.00	54.00	Pass
36 (Peak)	5150.000	3.340	43.052	46.392	74.00	54.00	Pass
36 (Peak)	5174.000	3.256	97.598	100.854	--	--	--
36 (Average)	5104.400	3.479	37.525	41.004	74.00	54.00	Pass
36 (Average)	5150.000	3.340	31.258	34.598	74.00	54.00	Pass
36 (Average)	5179.000	3.237	84.196	87.434	--	--	--

Figure Channel 36: Horizontal (Peak)

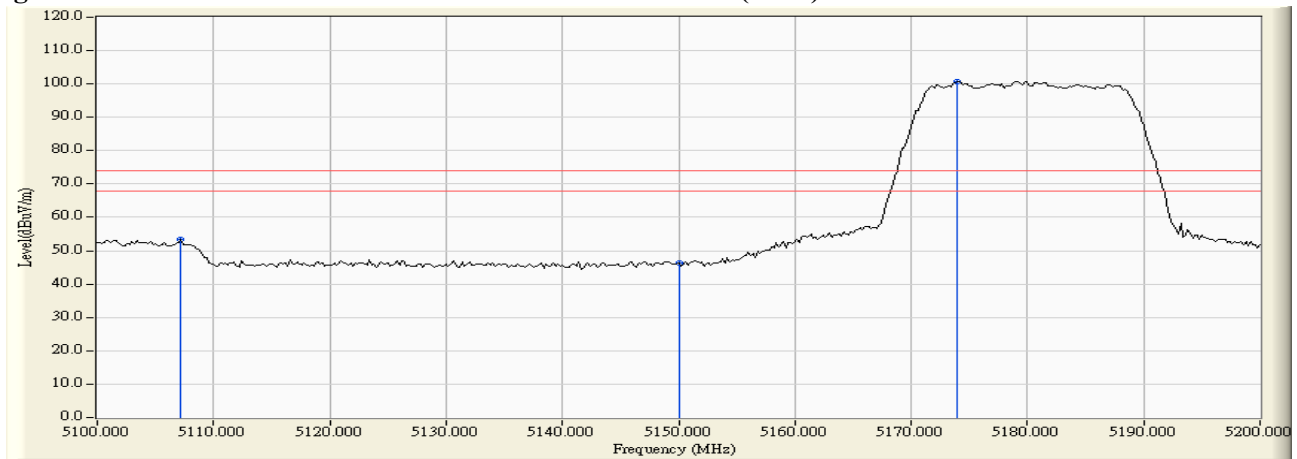
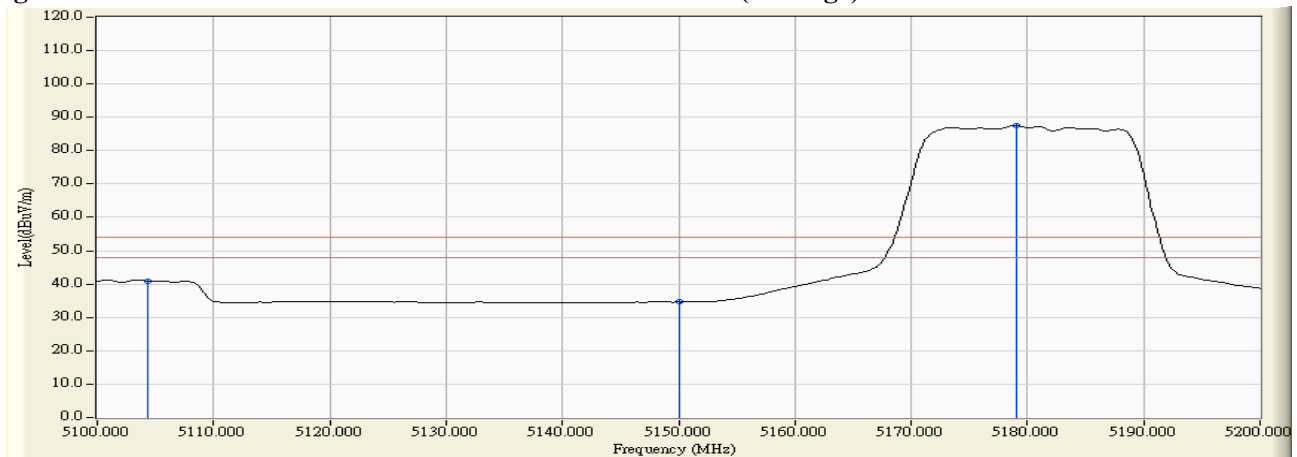


Figure Channel 36: Horizontal (Average)



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 : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) -Channel 36

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
36 (Peak)	5102.400	5.143	60.635	65.778	74.00	54.00	Pass
36 (Peak)	5150.000	5.260	51.744	57.004	74.00	54.00	Pass
36 (Peak)	5177.400	5.336	108.084	113.419	--	--	--
36 (Average)	5102.000	5.143	48.085	53.227	74.00	54.00	Pass
36 (Average)	5150.000	5.260	37.150	42.410	74.00	54.00	Pass
36 (Average)	5177.800	5.335	94.591	99.927	--	--	--

Figure Channel 36: Vertical (Peak)

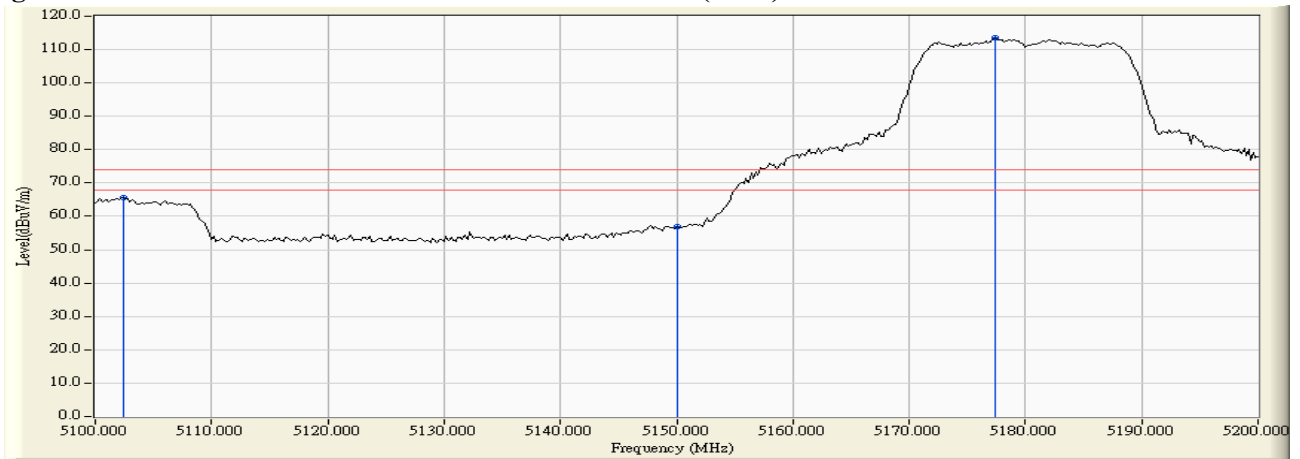
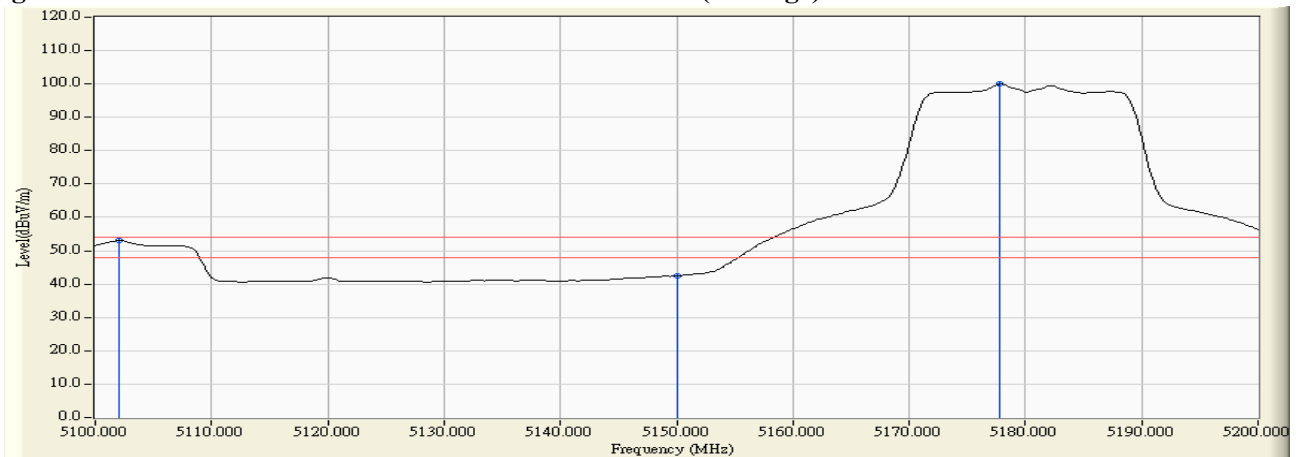


Figure Channel 36: Vertical (Average)



Note:

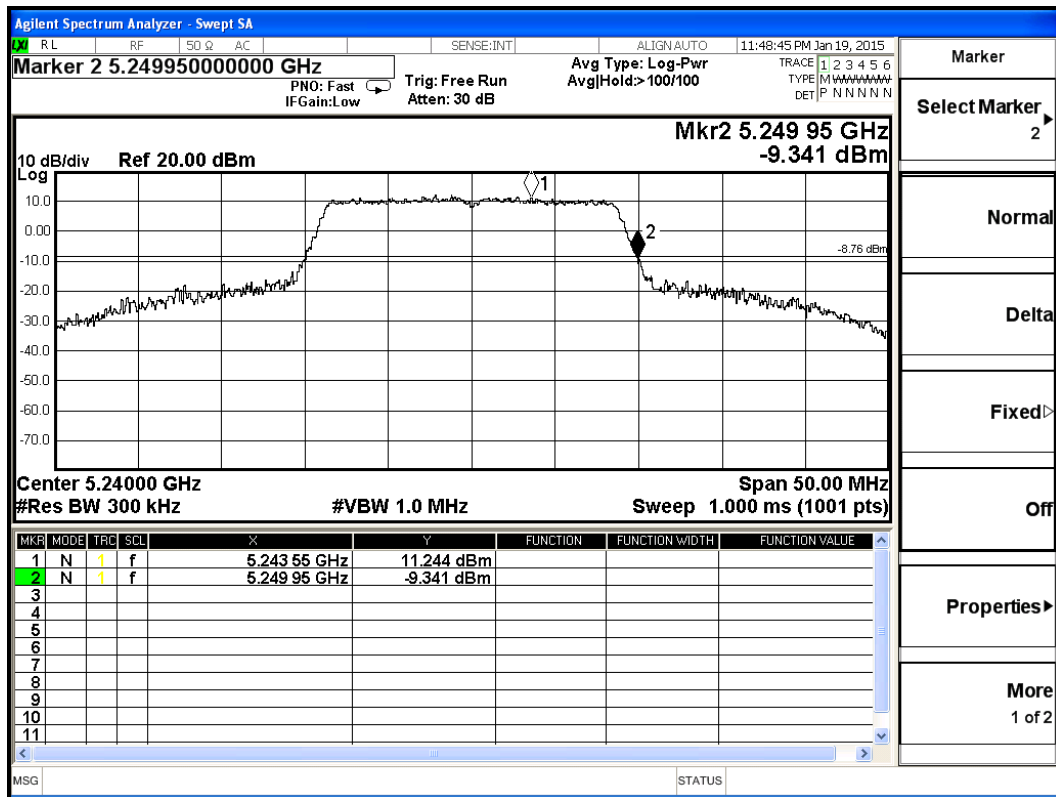
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps) Channel 48

Chain A

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5240	5249.95	<5250	PASS

NOTE: Accordance with 15.215 requirement.

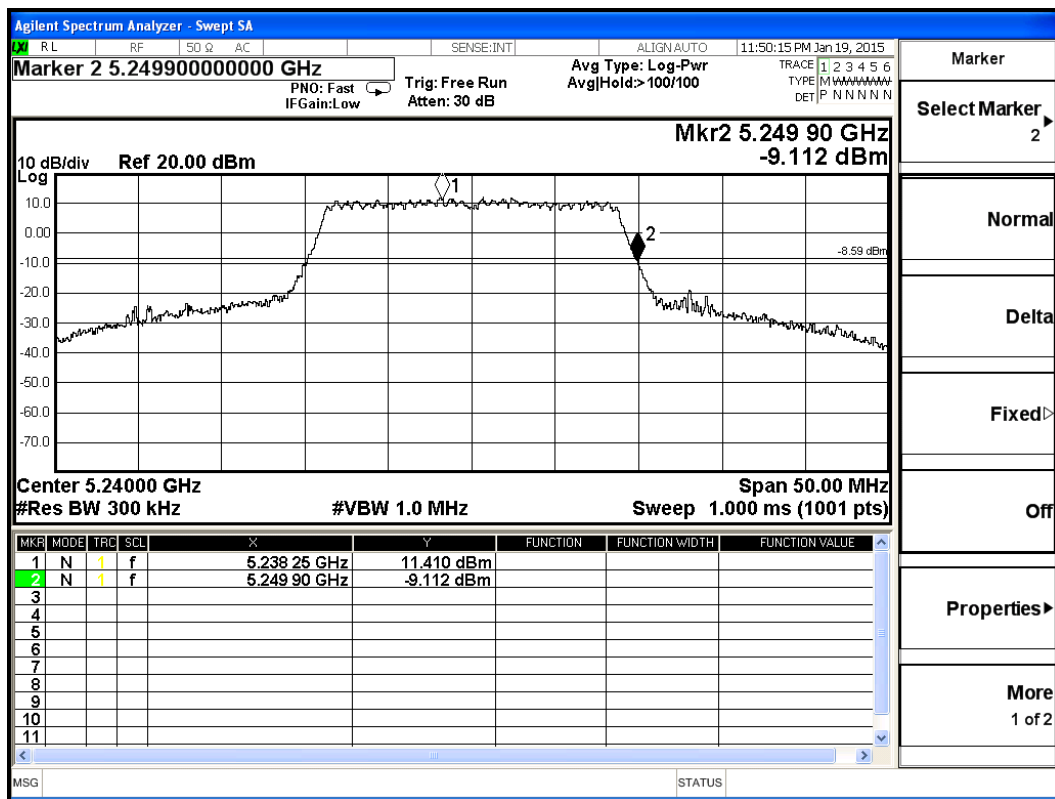


Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps)-Channel 48

Chain B

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5240	5249.00	<5250	PASS

NOTE: Accordance with 15.215 requirement.

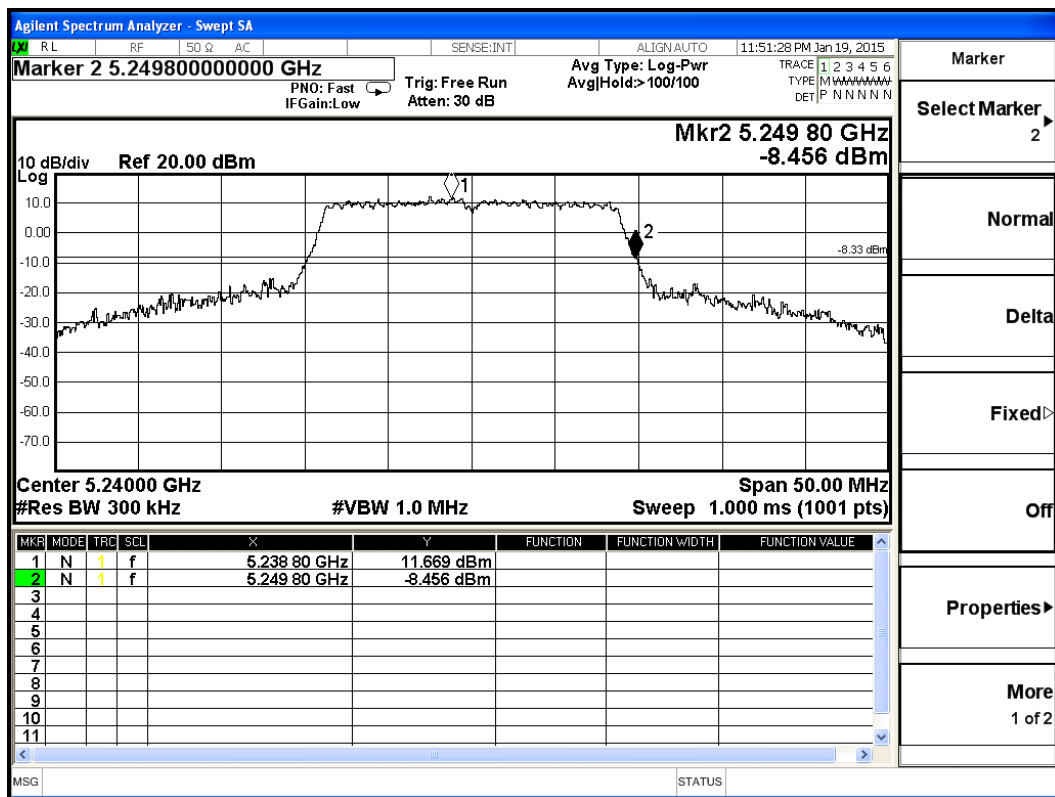


Product : UAPAC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11ac-20BW-21.7Mbps)-Channel 48

Chain C

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5240	5249.80	<5250	PASS

NOTE: Accordance with 15.215 requirement.



Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)-Channel 38

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
38 (Peak)	5115.400	3.462	48.879	52.341	74.00	54.00	Pass
38 (Peak)	5150.000	3.340	48.425	51.765	74.00	54.00	Pass
38 (Peak)	5194.200	3.178	96.323	99.501	--	--	--
38 (Average)	5113.600	3.468	37.035	40.503	74.00	54.00	Pass
38 (Average)	5150.000	3.340	35.306	38.646	74.00	54.00	Pass
38 (Average)	5185.400	3.215	80.996	84.211	--	--	--

Figure Channel 38: Horizontal (Peak)

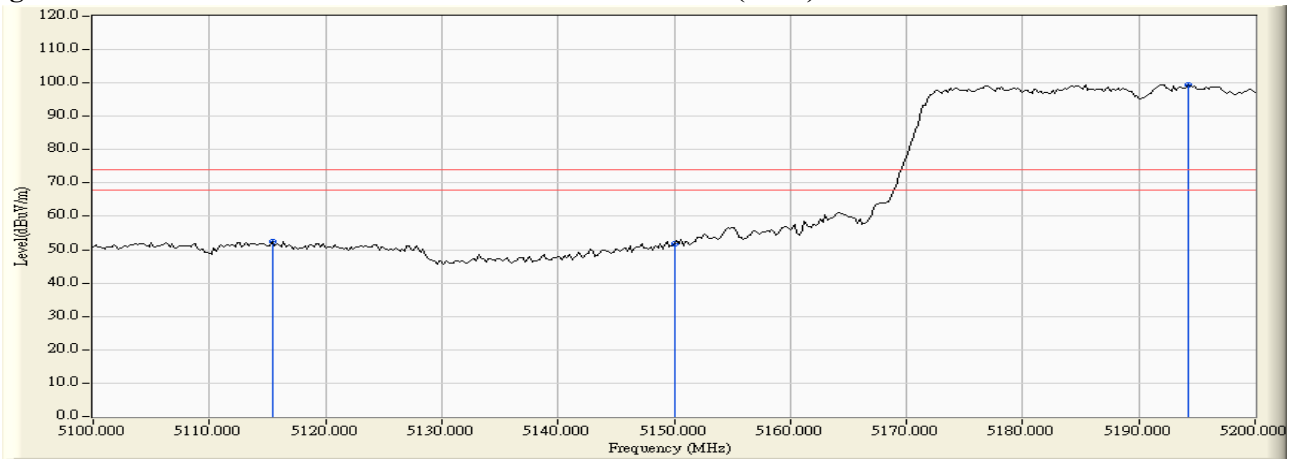
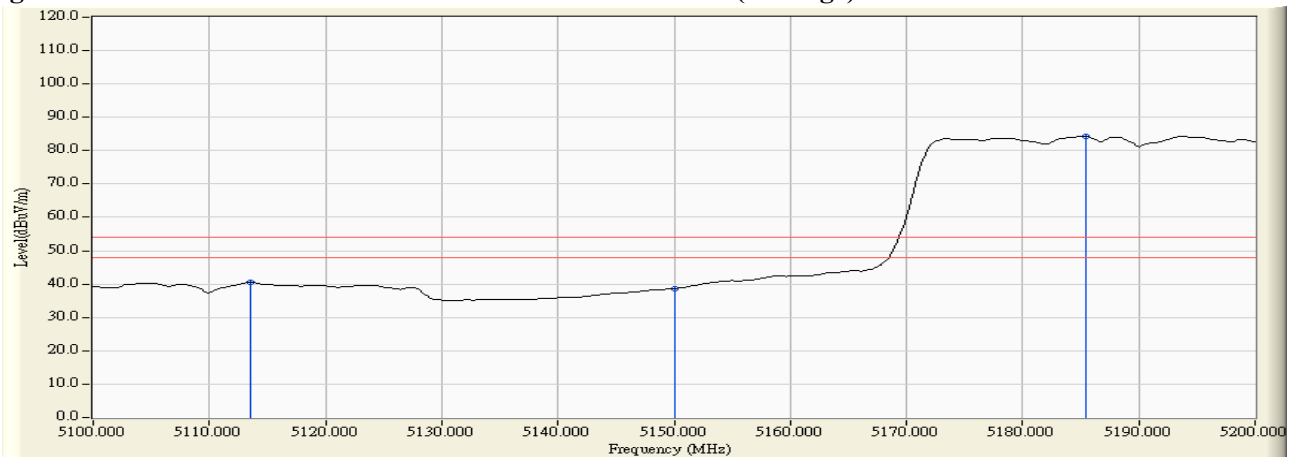


Figure Channel 38: Horizontal (Average)



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 : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)-Channel 38

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
38 (Peak)	5147.600	5.253	67.171	72.424	74.00	54.00	Pass
38 (Peak)	5150.000	5.260	65.741	71.001	74.00	54.00	Pass
38 (Peak)	5187.400	5.362	104.633	109.995	--	--	--
38 (Average)	5150.000	5.260	48.049	53.309	74.00	54.00	Pass
38 (Average)	5197.800	5.381	88.713	94.094	--	--	--

Figure Channel 38: Vertical (Peak)

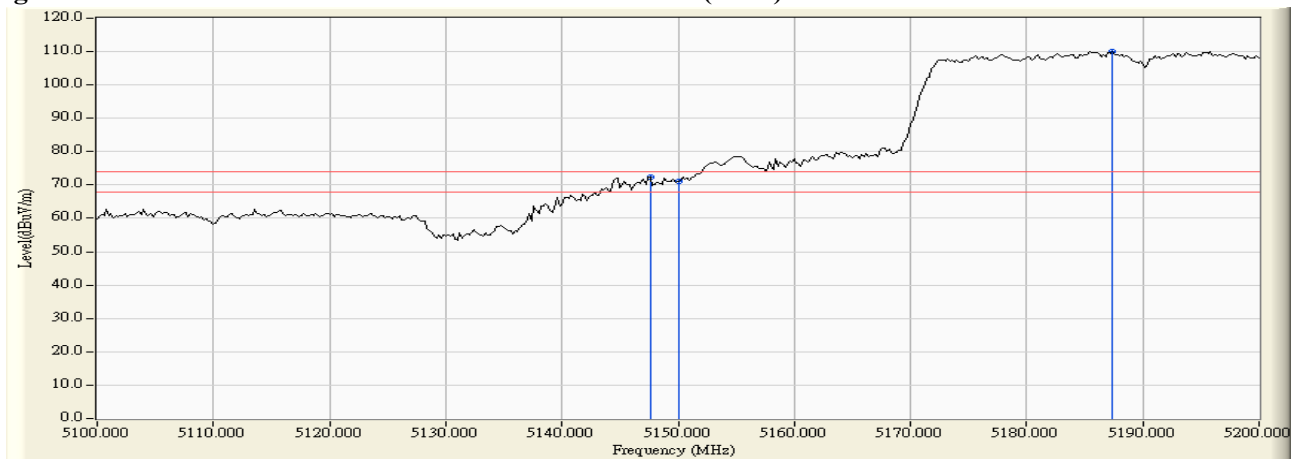
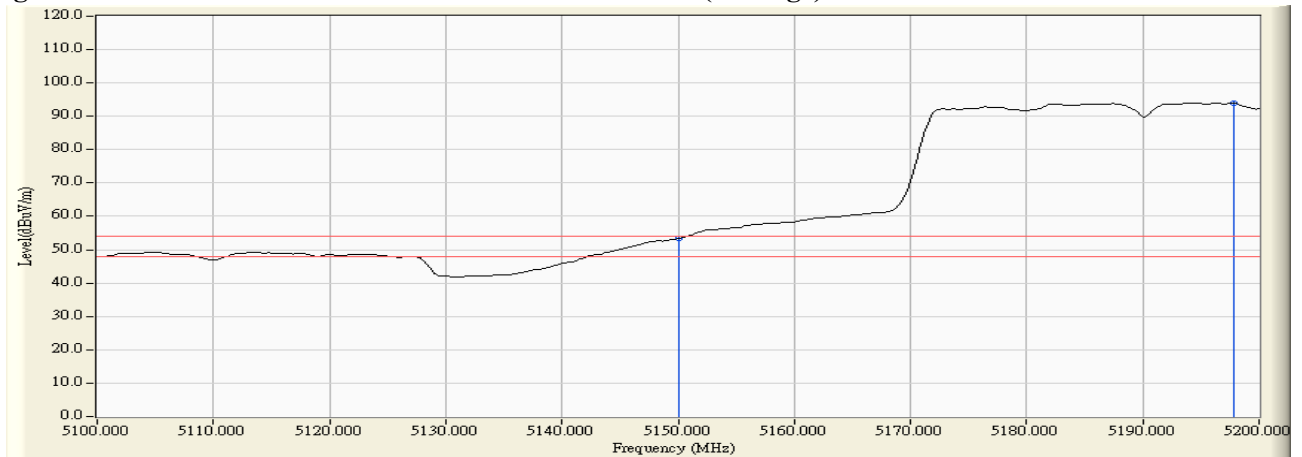


Figure Channel 38: Vertical (Average)



Note:

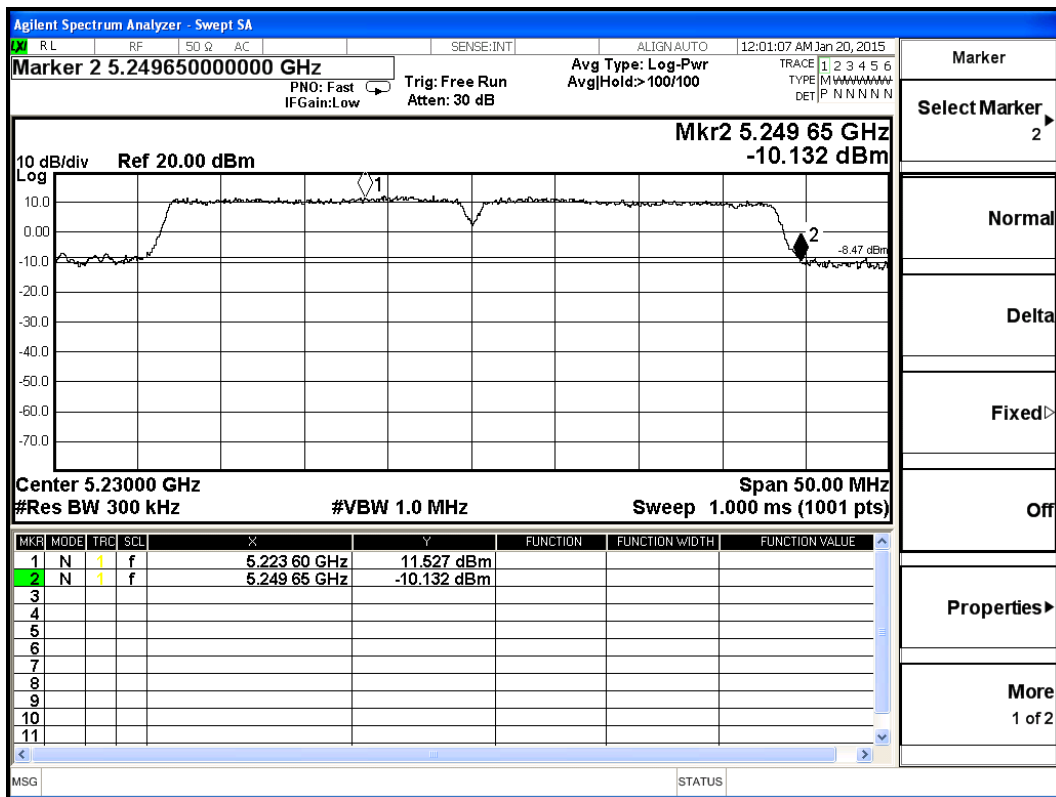
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)-Channel 46

Chain A

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5230	5249.65	<5250	PASS

NOTE: Accordance with 15.215 requirement.

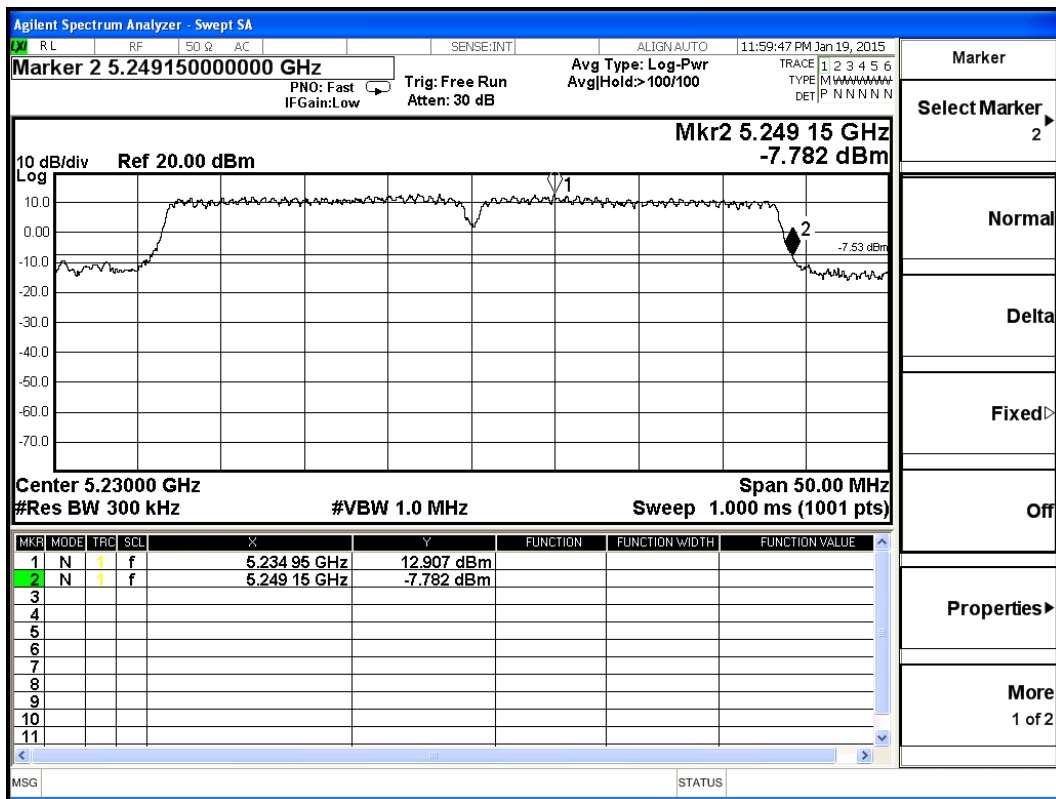


Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)-Channel 46

Chain B

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5230	5249.15	<5250	PASS

NOTE: Accordance with 15.215 requirement.

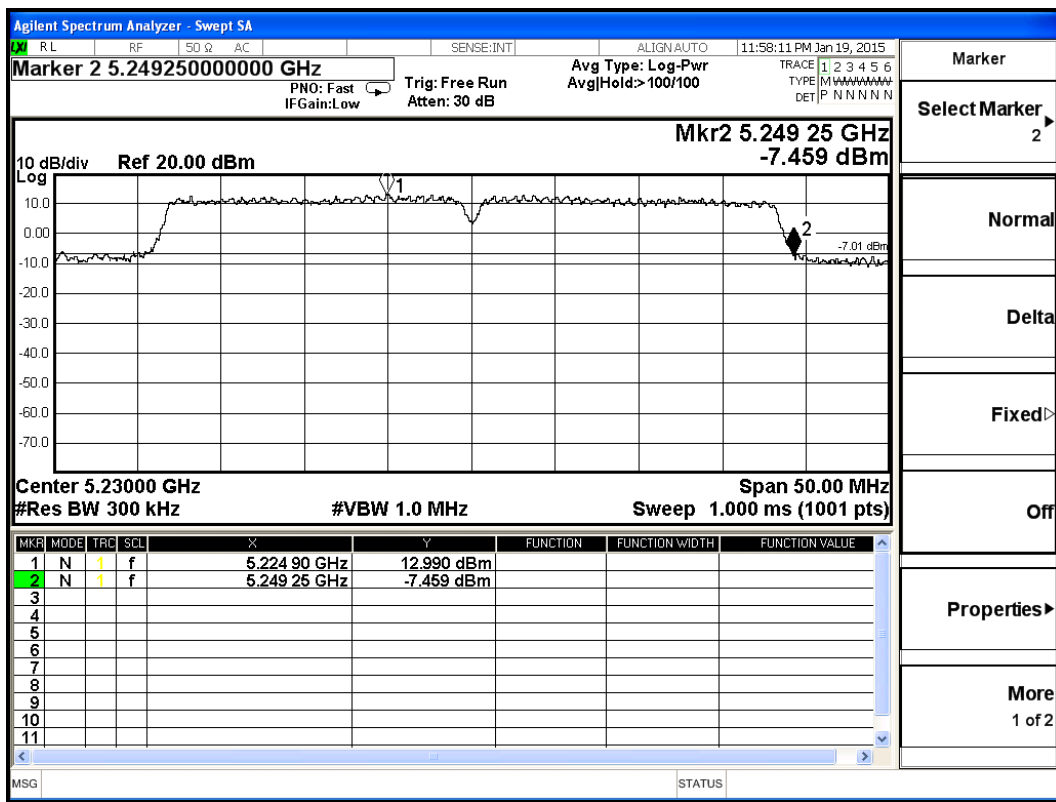


Product : UAPAC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11ac-40BW-45Mbps)-Channel 46

Chain C

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5230	5249.25	<5250	PASS

NOTE: Accordance with 15.215 requirement.



Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps)-Channel 42

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
42 (Peak)	5150.000	3.340	53.839	57.179	74.00	54.00	Pass
42 (Peak)	5197.600	3.162	93.083	96.245	--	--	--
42 (Average)	5150.000	3.340	36.677	40.017	74.00	54.00	Pass
42 (Average)	5199.000	3.156	75.996	79.152	--	--	--

Figure Channel 42: Horizontal (Peak)

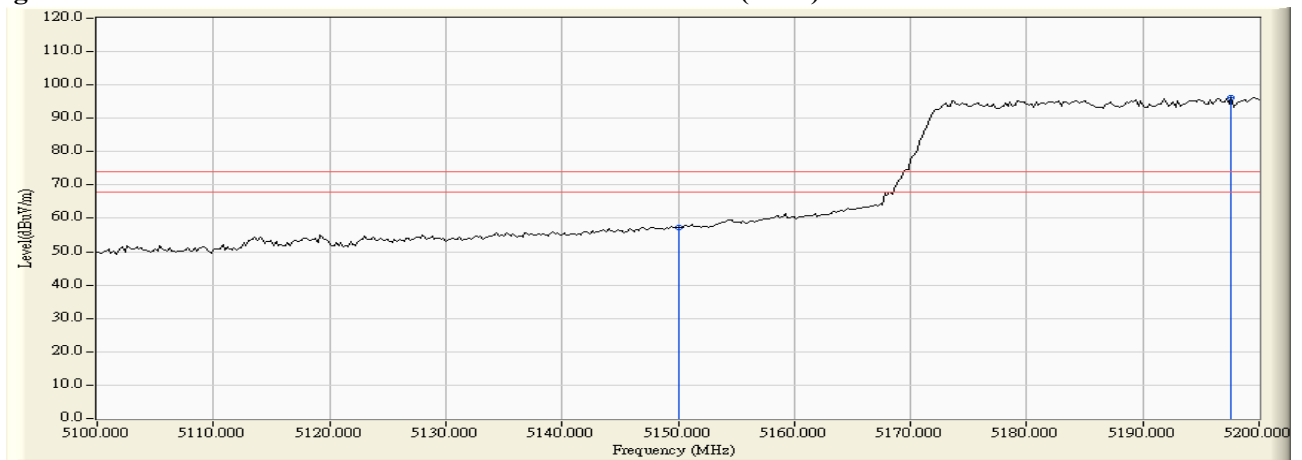
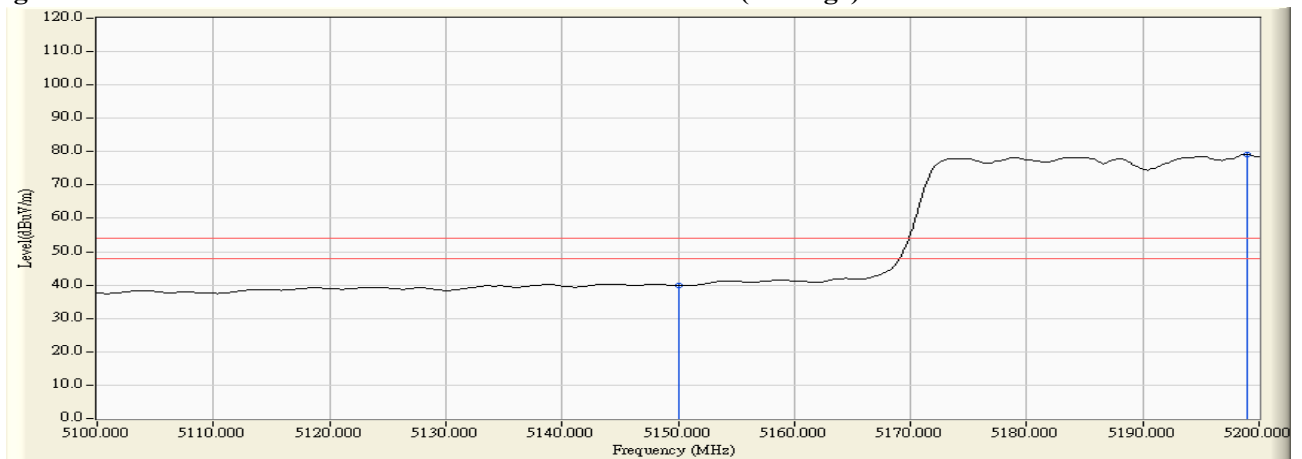


Figure Channel 42: Horizontal (Average)



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 : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) -Channel 42

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
42 (Peak)	5146.800	5.251	67.670	72.921	74.00	54.00	Pass
42 (Peak)	5150.000	5.260	65.721	70.981	74.00	54.00	Pass
42 (Peak)	5197.800	5.381	101.558	106.939	--	--	--
42 (Average)	5147.400	5.253	48.011	53.264	74.00	54.00	Pass
42 (Average)	5150.000	5.260	47.376	52.636	74.00	54.00	Pass
42 (Average)	5197.600	5.380	83.292	88.672	--	--	--

Figure Channel 42: Vertical (Peak)

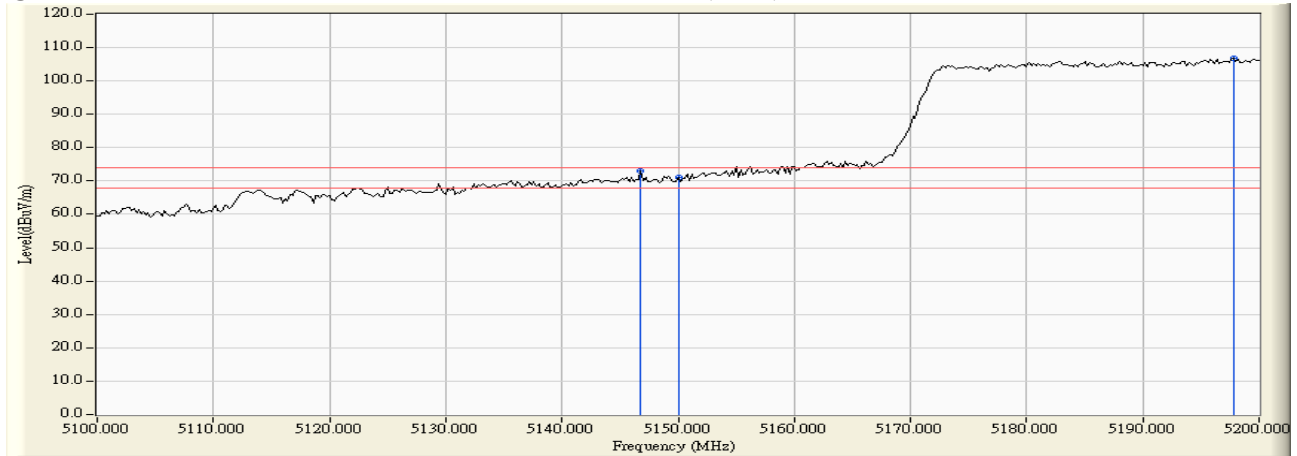
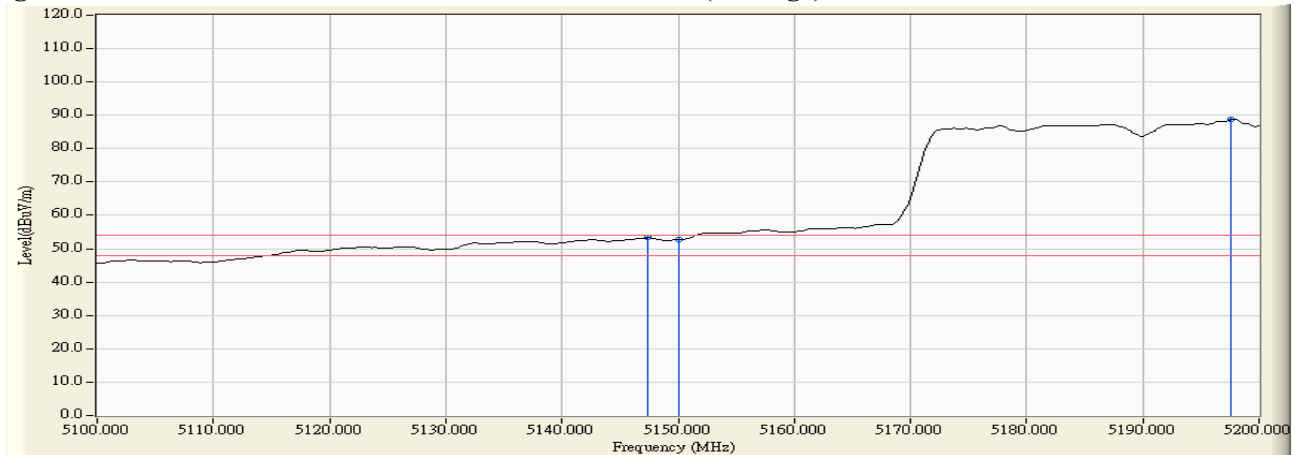


Figure Channel 42: Vertical (Average)



Note:

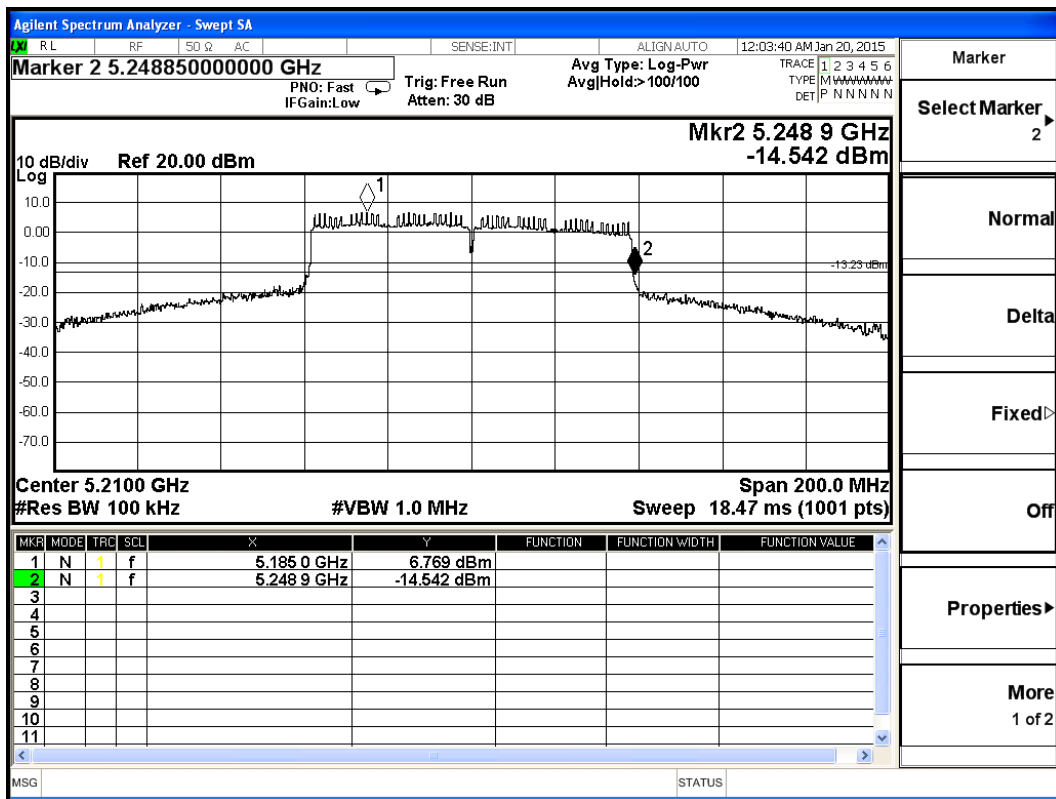
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps) -Channel 42

Chain A

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5210	5248.90	<5250	PASS

NOTE: Accordance with 15.215 requirement.

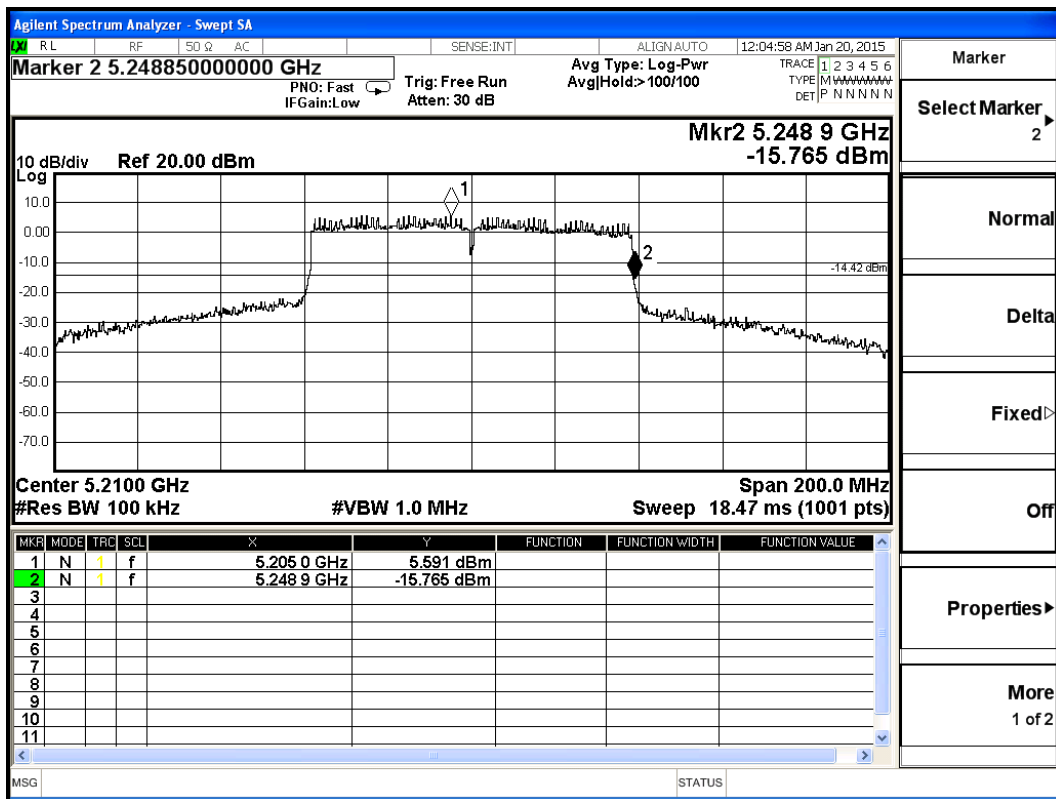


Product : UAP AC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps)-Channel 42

Chain B

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5210	5248.90	<5250	PASS

NOTE: Accordance with 15.215 requirement.

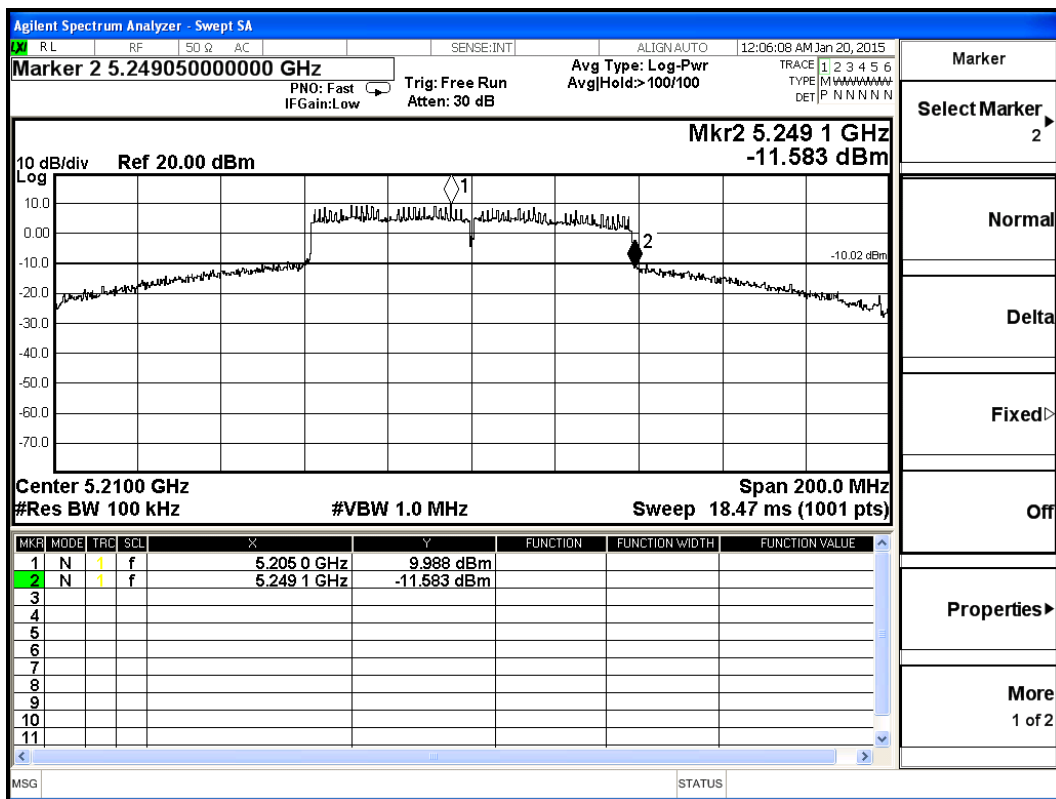


Product : UAPAC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3 Transmit (802.11ac-80BW-1.3Gbps)-Channel 42

Chain C

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
5210	5249.10	<5250	PASS

NOTE: Accordance with 15.215 requirement.



7. Frequency Stability

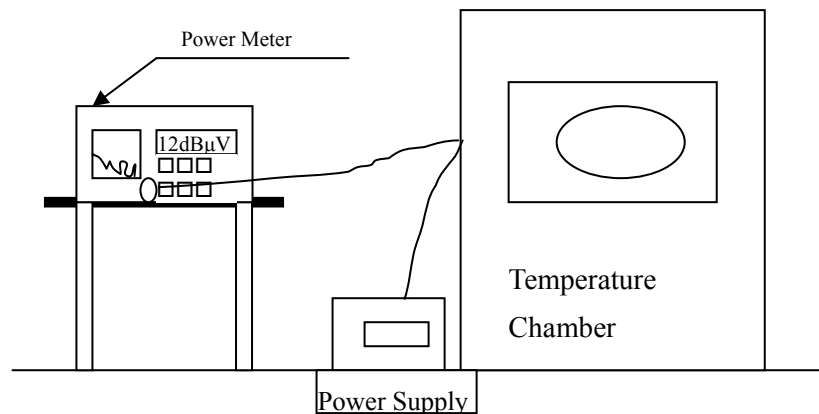
7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

7.2. Test Setup



7.3. Limits

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

7.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.5. Uncertainty

± 150 Hz

7.6. Test Result of Frequency Stability

Product : UAP AC
 Test Item : Frequency Stability
 Test Site : Temperature Chamber
 Test Mode : Carrier Wave

Chain A

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) oC	Vnom (120)V	36	5180.0000	5180.0021	-0.0021
		38	5190.0000	5190.0054	-0.0054
		42	5210.0000	5210.0035	-0.0035
		44	5220.0000	5220.0025	-0.0025
		46	5230.0000	5230.0035	-0.0035
		48	5240.0000	5240.0089	-0.0089
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (50) oC	Vnom (138)V	36	5180.0000	5180.0026	-0.0026
		38	5190.0000	5190.0054	-0.0054
		42	5210.0000	5210.0032	-0.0032
		44	5220.0000	5220.0022	-0.0022
		46	5230.0000	5230.0035	-0.0035
		48	5240.0000	5240.0088	-0.0088
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (50) oC	Vnom (102)V	36	5180.0000	5180.0022	-0.0022
		38	5190.0000	5190.0056	-0.0056
		42	5210.0000	5210.0037	-0.0037
		44	5220.0000	5220.0028	-0.0028
		46	5230.0000	5230.0039	-0.0039
		48	5240.0000	5240.0088	-0.0088
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (138)V	36	5180.0000	5180.0021	-0.0021
		38	5190.0000	5190.0054	-0.0054
		42	5210.0000	5210.0036	-0.0036
		44	5220.0000	5220.0026	-0.0026
		46	5230.0000	5230.0036	-0.0036
		48	5240.0000	5240.0089	-0.0089
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (102)V	36	5180.0000	5180.0021	-0.0021
		38	5190.0000	5190.0054	-0.0054
		42	5210.0000	5210.0036	-0.0036
		44	5220.0000	5220.0026	-0.0026
		46	5230.0000	5230.0036	-0.0036
		48	5240.0000	5240.0089	-0.0089

Chain B

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) oC	Vnom (120)V	36	5180.0000	5180.0032	-0.0032
		38	5190.0000	5190.0035	-0.0035
		42	5210.0000	5210.0035	-0.0035
		44	5220.0000	5220.0047	-0.0047
		46	5230.0000	5230.0021	-0.0021
		48	5240.0000	5240.0077	-0.0077
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) oC	Vnom (138)V	36	5180.0000	5180.0036	-0.0036
		38	5190.0000	5190.0038	-0.0038
		42	5210.0000	5210.0035	-0.0035
		44	5220.0000	5220.0046	-0.0046
		46	5230.0000	5230.0025	-0.0025
		48	5240.0000	5240.0075	-0.0075
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (50) oC	Vnom (102)V	36	5180.0000	5180.0035	-0.0035
		38	5190.0000	5190.0036	-0.0036
		42	5210.0000	5210.0034	-0.0034
		44	5220.0000	5220.0045	-0.0045
		46	5230.0000	5230.0022	-0.0022
		48	5240.0000	5240.0076	-0.0076
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (138)V	36	5180.0000	5180.0032	-0.0032
		38	5190.0000	5190.0036	-0.0036
		42	5210.0000	5210.0036	-0.0036
		44	5220.0000	5220.0046	-0.0046
		46	5230.0000	5230.0026	-0.0026
		48	5240.0000	5240.0077	-0.0077
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (102)V	36	5180.0000	5180.0037	-0.0037
		38	5190.0000	5190.0038	-0.0038
		42	5210.0000	5210.0039	-0.0039
		44	5220.0000	5220.0048	-0.0048
		46	5230.0000	5230.0021	-0.0021
		48	5240.0000	5240.0077	-0.0077

Chain C

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) oC	Vnom (120)V	36	5180.0000	5180.0056	-0.0056
		38	5190.0000	5190.0056	-0.0056
		42	5210.0000	5210.0054	-0.0054
		44	5220.0000	5220.0035	-0.0035
		46	5230.0000	5230.0055	-0.0055
		48	5240.0000	5240.0054	-0.0054
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) oC	Vnom (138)V	36	5180.0000	5180.0056	-0.0056
		38	5190.0000	5190.0054	-0.0054
		42	5210.0000	5210.0054	-0.0054
		44	5220.0000	5220.0033	-0.0033
		46	5230.0000	5230.0053	-0.0053
		48	5240.0000	5240.0058	-0.0058
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (50) oC	Vnom (102)V	36	5180.0000	5180.0056	-0.0056
		38	5190.0000	5190.0056	-0.0056
		42	5210.0000	5210.0054	-0.0054
		44	5220.0000	5220.0035	-0.0035
		46	5230.0000	5230.0055	-0.0055
		48	5240.0000	5240.0055	-0.0055
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (138)V	36	5180.0000	5180.0056	-0.0056
		38	5190.0000	5190.0059	-0.0059
		42	5210.0000	5210.0059	-0.0059
		44	5220.0000	5220.0039	-0.0039
		46	5230.0000	5230.0055	-0.0055
		48	5240.0000	5240.0059	-0.0059
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (0) oC	Vnom (102)V	36	5180.0000	5180.0059	-0.0059
		38	5190.0000	5190.0058	-0.0058
		42	5210.0000	5210.0057	-0.0057
		44	5220.0000	5220.0039	-0.0039
		46	5230.0000	5230.0058	-0.0058
		48	5240.0000	5240.0057	-0.0057

8. EMI Reduction Method During Compliance Testing

No modification was made during testing.