

FCC Test Report

Product Name	Evoko Liso Room Manager /Evoko Liso
Model No	ERM2001
FCC ID	2AH64-ERM2001

Applicant	Evoko Unlimited AB
Address	Hästholmsvägen 32, 5th floor, 131 30 Nacka, SWEDEN

Date of Receipt	Apr. 26, 2016
Issued Date	May 12, 2016
Report No.	1650010R-RFUSP06V00
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 of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: May 12, 2016

Report No.: 1650010R-RFUSP06V00



Product Name	Evoko Liso Room Manager /Evoko Liso
Applicant	Evoko Unlimited AB
Address	Hästholmsvägen 32, 5th floor, 131 30 Nacka, SWEDEN
Manufacturer	Ubiquconn Technology, Inc.
Model No.	ERM2001
FCC ID.	2AH64-ERM2001
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	Evoko
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v01r02
Test Result	Complied

Documented By

:

Genie Chang

(Senior Adm. Specialist / Genie Chang)

Tested By

:

Nick Chen

(Engineer / Nick Chen)

Approved By

:

Vincent Lin

(Director / Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	7
1.3. Tested System Details	8
1.4. Configuration of tested System	8
1.5. EUT Exercise Software.....	8
1.6. Test Facility	9
2. Conducted Emission	10
2.1. Test Equipment.....	10
2.2. Test Setup.....	10
2.3. Limits	11
2.4. Test Procedure	11
2.5. Uncertainty	11
2.6. Test Result of Conducted Emission	12
3. Maximum conducted output power	20
3.1. Test Equipment.....	20
3.2. Test Setup.....	20
3.3. Limits	21
3.4. Test Procedure	22
3.5. Uncertainty	22
3.6. Test Result of Maximum conducted output power	23
4. Peak Power Spectral Density.....	46
4.1. Test Equipment.....	46
4.2. Test Setup.....	46
4.3. Limits	46
4.4. Test Procedure	47
4.5. Uncertainty	47
4.6. Test Result of Peak Power Spectral Density	48
5. Radiated Emission	79
5.1. Test Equipment.....	79
5.2. Test Setup.....	80
5.3. Limits	81
5.4. Test Procedure	82
5.5. Uncertainty	82
5.6. Test Result of Radiated Emission	83
6. Band Edge.....	128
6.1. Test Equipment.....	128
6.2. Test Setup.....	129
6.3. Limits	130
6.4. Test Procedure	130
6.5. Uncertainty	131
6.6. Test Result of Band Edge.....	132
7. Occupied Bandwidth	168

7.1.	Test Equipment	168
7.2.	Test Setup	168
7.3.	Limits	168
7.4.	Test Procedure	168
7.5.	Uncertainty	168
7.6.	Test Result of Occupied Bandwidth	169
8.	Frequency Stability	177
8.1.	Test Equipment	177
8.2.	Test Setup	177
8.3.	Limits	177
8.4.	Test Procedure	177
8.5.	Uncertainty	177
8.6.	Test Result of Frequency Stability	178
9.	EMI Reduction Method During Compliance Testing	188
Attachment 1: EUT Test Photographs		
Attachment 2: EUT Detailed Photographs		

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Evoko Liso Room Manager /Evoko Liso
Trade Name	Evoko
FCC ID.	2AH64-ERM2001
Model No.	ERM2001
Frequency Range	802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5670MHz, 5755-5795MHz
Number of Channels	802.11a/n-20MHz: 24; 802.11n-40MHz: 11
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 300Mbps
Channel Control	Auto
Type of Modulation	802.11a/n:OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna type	PIFA Antenna
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: Elementech, M/N: A124-11202050 Input: AC 100-240V~50/60Hz, 0.6A Output: 12V $\overline{=}$ 2A Cable Out: Non-Shielded, 1.2m
Contain Module	AMPAK/AP62X2SD a/b/g/n +BT+BLE

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Anjie	N/A	PIFA Antenna	4.50dBi For 5.15~5.25GHz 4.50dBi For 5.25~5.35GHz 4.82dBi For 5.47~5.725GHz 4.35dBi For5.725~5.850GHz

Note: The antenna of EUT is conform to FCC 15.203

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz	Channel 149:	5745 MHz
Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz	Channel 165:	5825 MHz

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz		

Note:

1. This device is an Evoko Liso Room Manager /Evoko Liso with a built-in WLAN 、Bluetooth and NFC transceiver, this report for WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report. (802.11a is chain A)
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps 、802.11n-20BW is 14.4Mbps 、802.11n-40BW is 30Mbps)
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.

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW 14.4Mbps) Mode 3: Transmit (802.11n-40BW 30Mbps)
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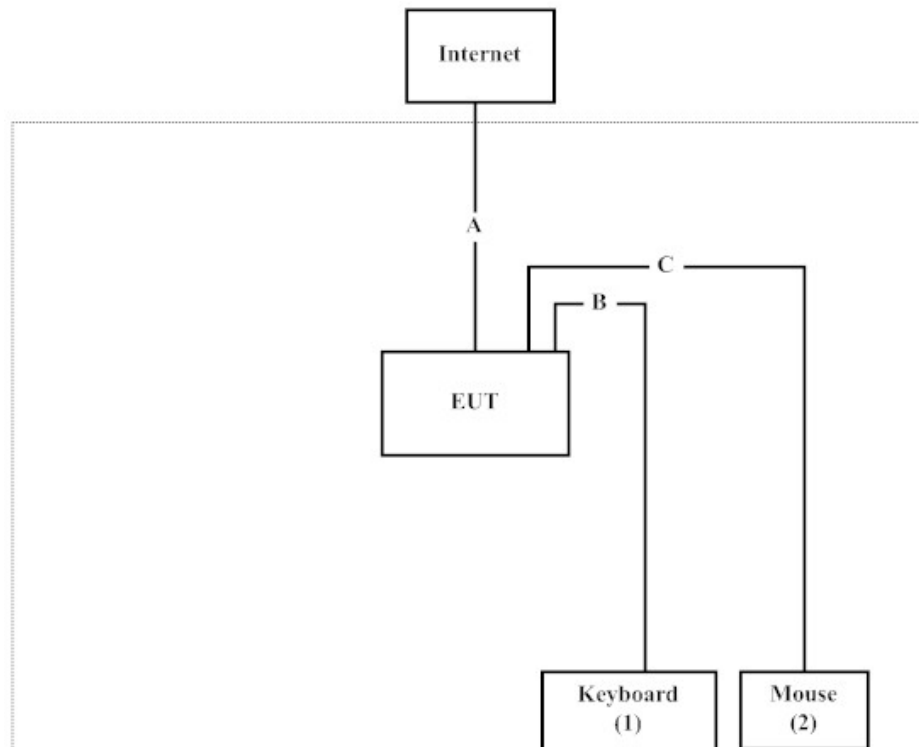
1.3. Tested System Details

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	Keyboard	Logitech	Y-UR83	SY848UK	N/A
2	Mouse	acer	M-VrACR1	N/A	N/A

Signal Cable Type	Signal cable Description
A RJ45 Cable	Shielded, 1.8m
B Keyboard Cable	Shielded, 1.8m
C Mouse Cable	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 "Terminal" 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://www.quietek.com/chinese/about/certificates.aspx?bval=5>

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

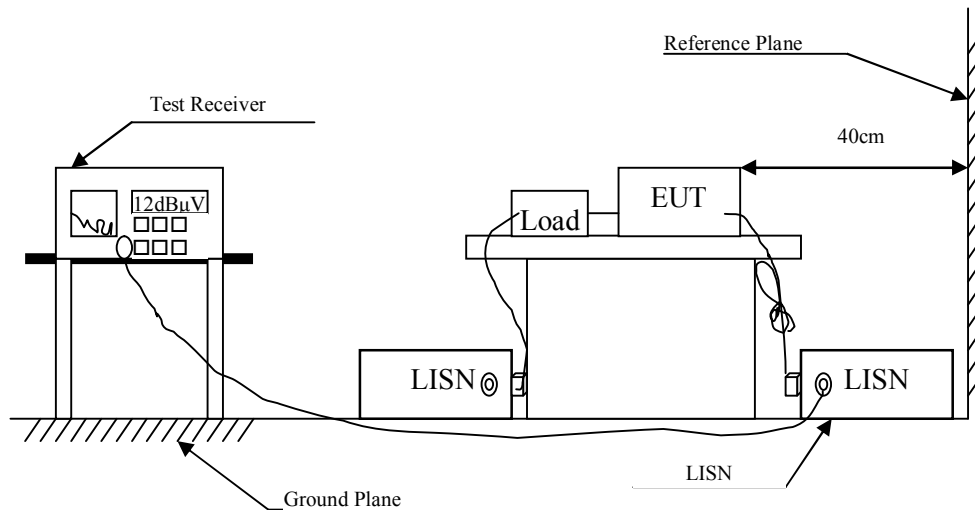
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2016	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	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 C63.10:2013 on conducted measurement.

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

The EUT was setup to ANSI C63.10, 2013; 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 : Evoko Liso Room Manager /Evoko Liso
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
LINE 1					
Quasi-Peak					
0.154	9.783	36.880	46.663	-19.223	65.886
0.205	9.775	23.370	33.145	-31.284	64.429
0.455	9.784	20.760	30.544	-26.742	57.286
1.150	9.848	17.710	27.558	-28.442	56.000
2.923	9.953	9.710	19.663	-36.337	56.000
15.302	10.159	21.310	31.469	-28.531	60.000
Average					
0.154	9.783	22.660	32.443	-23.443	55.886
0.205	9.775	6.690	16.465	-37.964	54.429
0.455	9.784	12.300	22.084	-25.202	47.286
1.150	9.848	11.130	20.978	-25.022	46.000
2.923	9.953	-0.590	9.363	-36.637	46.000
15.302	10.159	12.640	22.799	-27.201	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 2					
Quasi-Peak					
0.201	9.835	22.680	32.515	-32.028	64.543
0.255	9.839	23.800	33.639	-29.361	63.000
0.451	9.854	21.250	31.104	-26.296	57.400
1.060	9.901	15.160	25.061	-30.939	56.000
2.787	10.021	10.190	20.211	-35.789	56.000
16.298	10.318	16.340	26.658	-33.342	60.000
Average					
0.201	9.835	8.190	18.025	-36.518	54.543
0.255	9.839	8.660	18.499	-34.501	53.000
0.451	9.854	13.620	23.474	-23.926	47.400
1.060	9.901	8.410	18.311	-27.689	46.000
2.787	10.021	1.180	11.201	-34.799	46.000
16.298	10.318	6.960	17.278	-32.722	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 1					
Quasi-Peak					
0.150	9.784	36.390	46.174	-19.826	66.000
0.193	9.774	31.420	41.194	-23.577	64.771
0.244	9.778	25.020	34.798	-28.516	63.314
0.509	9.789	18.210	27.999	-28.001	56.000
1.150	9.848	17.870	27.718	-28.282	56.000
15.384	10.160	21.810	31.970	-28.030	60.000
Average					
0.150	9.784	19.210	28.994	-27.006	56.000
0.193	9.774	15.520	25.294	-29.477	54.771
0.244	9.778	11.260	21.038	-32.276	53.314
0.509	9.789	10.240	20.029	-25.971	46.000
1.150	9.848	11.330	21.178	-24.822	46.000
15.384	10.160	13.020	23.180	-26.820	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 2					
Quasi-Peak					
0.154	9.831	42.760	52.591	-13.295	65.886
0.212	9.836	28.270	38.106	-26.123	64.229
0.287	9.841	20.280	30.121	-31.965	62.086
0.463	9.855	19.100	28.955	-28.102	57.057
1.162	9.909	16.080	25.989	-30.011	56.000
16.873	10.323	13.770	24.093	-35.907	60.000
Average					
0.154	9.831	21.680	31.511	-24.375	55.886
0.212	9.836	10.710	20.546	-33.683	54.229
0.287	9.841	8.890	18.731	-33.355	52.086
0.463	9.855	10.260	20.115	-26.942	47.057
1.162	9.909	9.370	19.279	-26.721	46.000
16.873	10.323	7.230	17.553	-32.447	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 1					
Quasi-Peak					
0.162	9.781	35.620	45.401	-20.256	65.657
0.224	9.777	27.420	37.197	-26.689	63.886
0.560	9.793	13.810	23.603	-32.397	56.000
1.138	9.847	17.630	27.477	-28.523	56.000
2.193	9.939	8.080	18.019	-37.981	56.000
15.306	10.159	21.370	31.529	-28.471	60.000
Average					
0.162	9.781	19.290	29.071	-26.586	55.657
0.224	9.777	13.420	23.197	-30.689	53.886
0.560	9.793	4.610	14.403	-31.597	46.000
1.138	9.847	11.180	21.027	-24.973	46.000
2.193	9.939	-0.100	9.839	-36.161	46.000
15.306	10.159	12.900	23.059	-26.941	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 2					
Quasi-Peak					
0.154	9.831	36.100	45.931	-19.955	65.886
0.193	9.834	31.160	40.994	-23.777	64.771
0.459	9.855	20.080	29.935	-27.236	57.171
0.974	9.895	15.900	25.795	-30.205	56.000
2.451	10.004	9.560	19.564	-36.436	56.000
16.271	10.318	16.340	26.658	-33.342	60.000
Average					
0.154	9.831	22.010	31.841	-24.045	55.886
0.193	9.834	15.810	25.644	-29.127	54.771
0.459	9.855	11.970	21.825	-25.346	47.171
0.974	9.895	7.330	17.225	-28.775	46.000
2.451	10.004	2.030	12.034	-33.966	46.000
16.271	10.318	6.800	17.118	-32.882	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 1					
Quasi-Peak					
0.150	9.784	36.000	45.784	-20.216	66.000
0.185	9.775	31.870	41.645	-23.355	65.000
0.220	9.776	27.720	37.496	-26.504	64.000
0.455	9.784	21.030	30.814	-26.472	57.286
1.154	9.848	17.710	27.558	-28.442	56.000
15.283	10.158	21.480	31.638	-28.362	60.000
Average					
0.150	9.784	18.970	28.754	-27.246	56.000
0.185	9.775	17.090	26.865	-28.135	55.000
0.220	9.776	13.660	23.436	-30.564	54.000
0.455	9.784	12.390	22.174	-25.112	47.286
1.154	9.848	11.280	21.128	-24.872	46.000
15.283	10.158	12.800	22.958	-27.042	50.000

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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV	dB	dBμV
LINE 2					
Quasi-Peak					
0.162	9.832	35.340	45.172	-20.485	65.657
0.193	9.834	31.020	40.854	-23.917	64.771
0.451	9.854	21.510	31.364	-26.036	57.400
1.158	9.909	16.590	26.499	-29.501	56.000
2.181	9.998	9.220	19.218	-36.782	56.000
15.310	10.299	15.680	25.979	-34.021	60.000
Average					
0.162	9.832	19.290	29.122	-26.535	55.657
0.193	9.834	15.760	25.594	-29.177	54.771
0.451	9.854	13.620	23.474	-23.926	47.400
1.158	9.909	9.890	19.799	-26.201	46.000
2.181	9.998	2.370	12.368	-33.632	46.000
15.310	10.299	7.500	17.799	-32.201	50.000

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

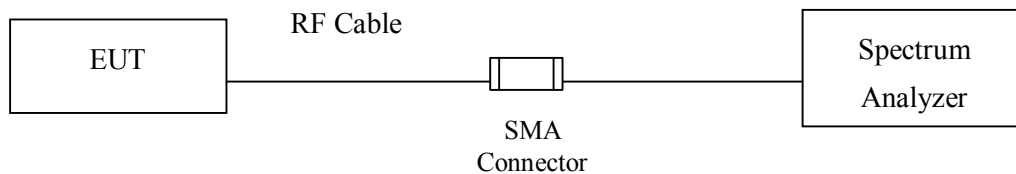
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2016
X	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note:

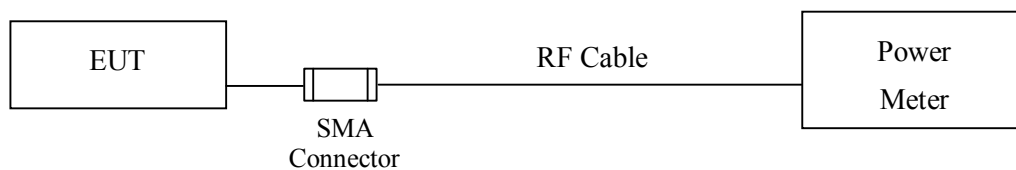
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup

26dBc Occupied Bandwidth



Conduction Power Measurement (for 802.11an)



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 colocated 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 colocated 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 Procedure

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 the 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 $\leq$ 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 : Evoko Liso Room Manager /Evoko Liso
Test Item : Maximum conducted output power
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6	9	12	18	24	36	48	54	
		Measurement Level (dBm)								
36	5180	12.97	--	--	--	--	--	--	--	<24dBm
44	5220	12.99	12.97	12.95	12.91	12.88	12.85	12.81	12.78	<24dBm
48	5240	12.91	--	--	--	--	--	--	--	<24dBm
52	5260	12.93	--	--	--	--	--	--	--	<24dBm
60	5300	12.85	12.82	12.78	12.76	12.74	12.70	12.68	12.65	<24dBm
64	5320	13.31	--	--	--	--	--	--	--	<24dBm
100	5500	14.57	14.55	14.52	14.49	14.47	14.42	14.39	14.36	<24dBm
116	5580	12.89	12.87	12.85	12.81	12.79	12.77	12.74	12.71	<24dBm
140	5700	12.86	--	--	--	--	--	--	--	<24dBm
149	5745	13.01	12.97	12.94	12.91	12.88	12.84	12.81	12.79	<30dBm
157	5785	12.95	12.91	12.88	12.85	12.81	12.78	12.75	12.71	<30dBm
165	5825	12.99	--	--	--	--	--	--	--	<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
		6	9	12	18	24	36	48	54	
		Measurement Level (dBm)								
36	5180	11.82	--	--	--	--	--	--	--	<24dBm
44	5220	11.63	11.61	11.58	11.55	11.52	11.48	11.45	11.43	<24dBm
48	5240	11.32	--	--	--	--	--	--	--	<24dBm
52	5260	11.07	--	--	--	--	--	--	--	<24dBm
60	5300	11.01	10.98	10.96	10.93	10.91	10.88	10.85	10.83	<24dBm
64	5320	12.81	--	--	--	--	--	--	--	<24dBm
100	5500	10.78	--	--	--	--	--	--	--	<24dBm
116	5580	12.27	12.24	12.21	12.18	12.16	12.14	12.11	12.07	<24dBm
140	5700	11.83	--	--	--	--	--	--	--	<24dBm
149	5745	12.65	--	--	--	--	--	--	--	<30dBm
157	5785	12.92	12.88	12.86	12.84	12.81	12.78	12.75	12.71	<30dBm
165	5825	13.54	--	--	--	--	--	--	--	<30dBm

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

Maximum conducted output power Measurement:

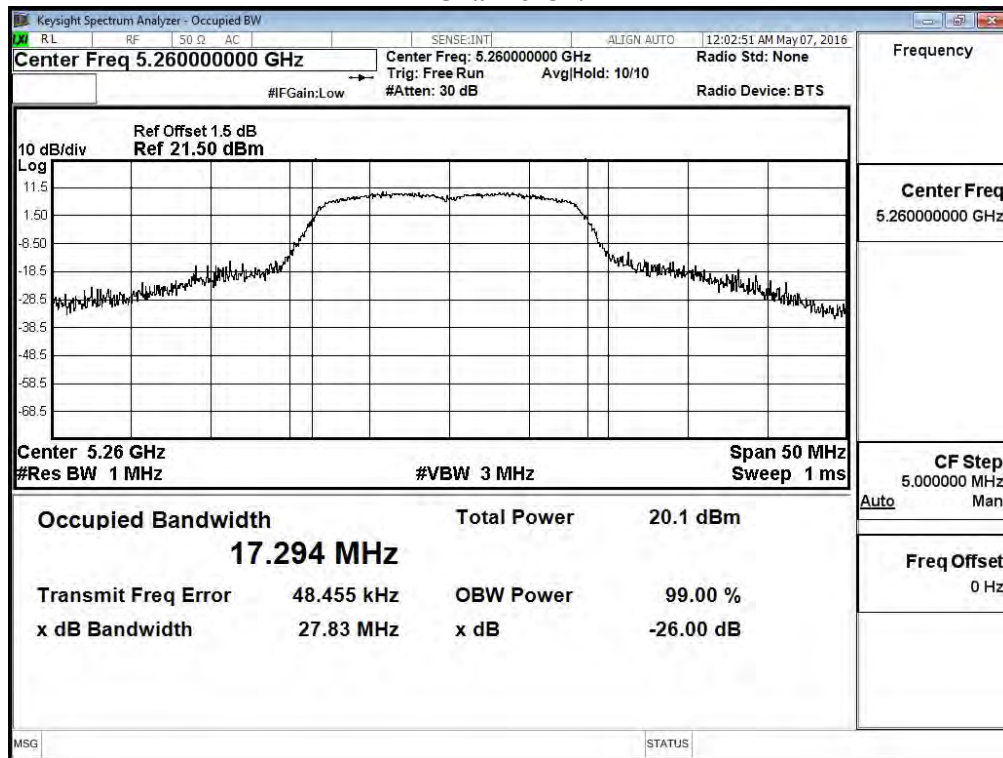
CHAIN A

Channel No	Frequency Range (MHz)	IC99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit	
				(dBm)	dBm+10log(BW)
36	5180	--	12.97	24	--
44	5220	--	12.99	24	--
48	5240	--	12.91	24	--
52	5260	17.294	12.93	24	23.38
60	5300	17.241	12.85	24	23.37
64	5320	17.287	13.31	24	23.38
100	5500	17.685	14.57	24	23.48
116	5580	22.297	12.89	24	24.48
140	5700	21.649	12.86	24	24.35
149	5745	--	13.01	30	--
157	5785	--	12.95	30	--
165	5825	--	12.99	30	--

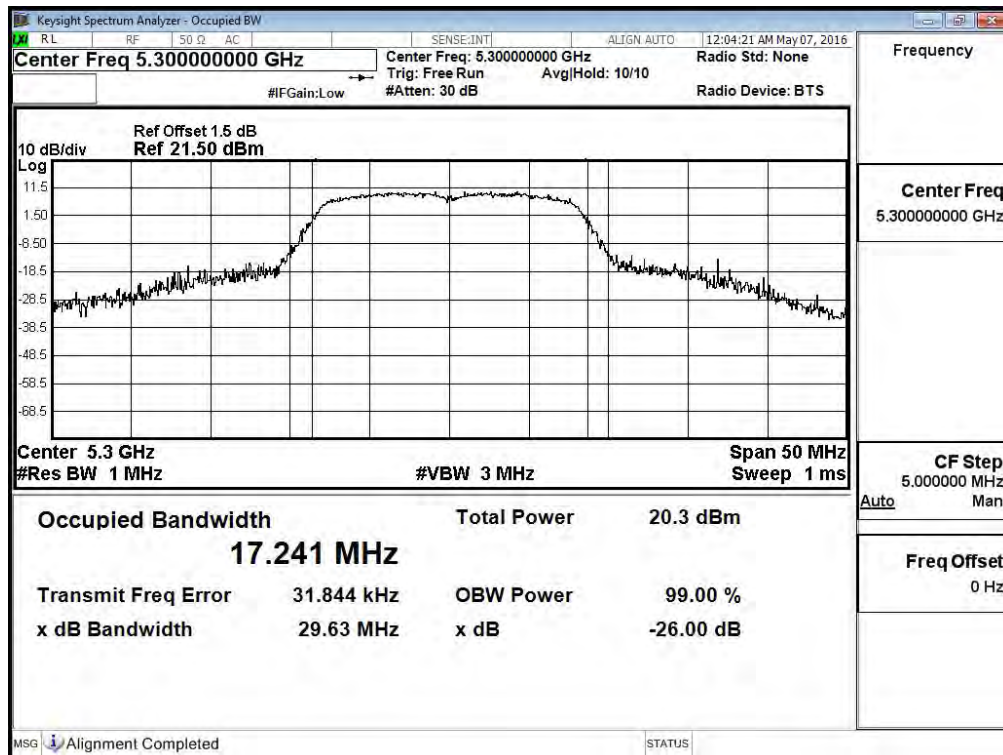
Note:

1. Power Output Value =Reading value on average power meter + cable loss

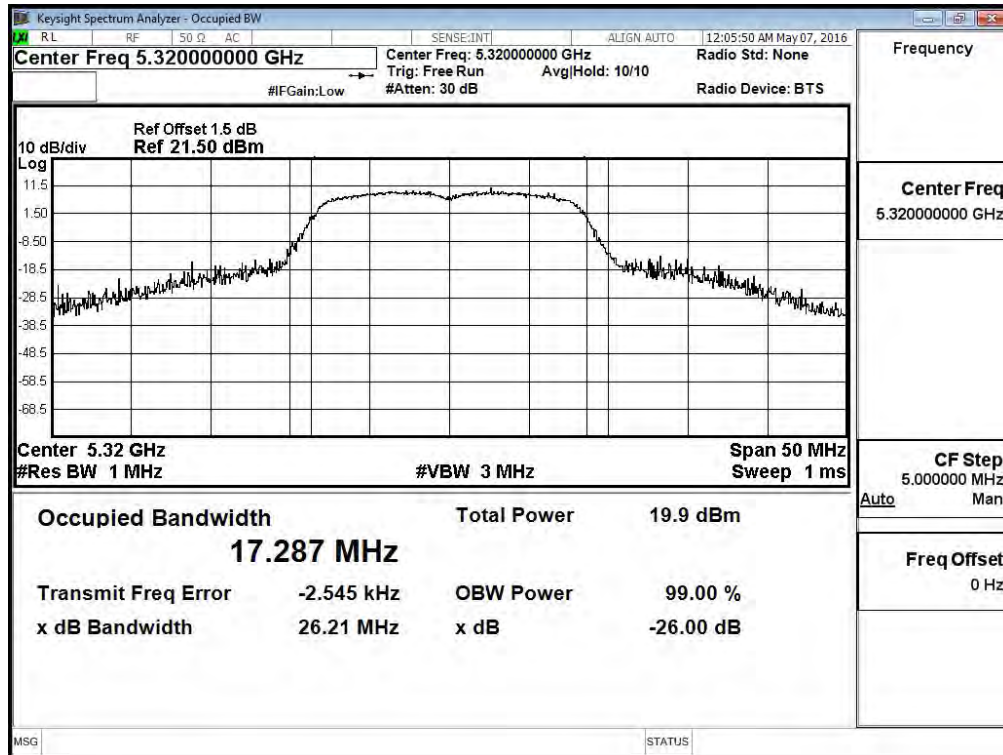
IC 99% Bandwidth:
Channel 52:



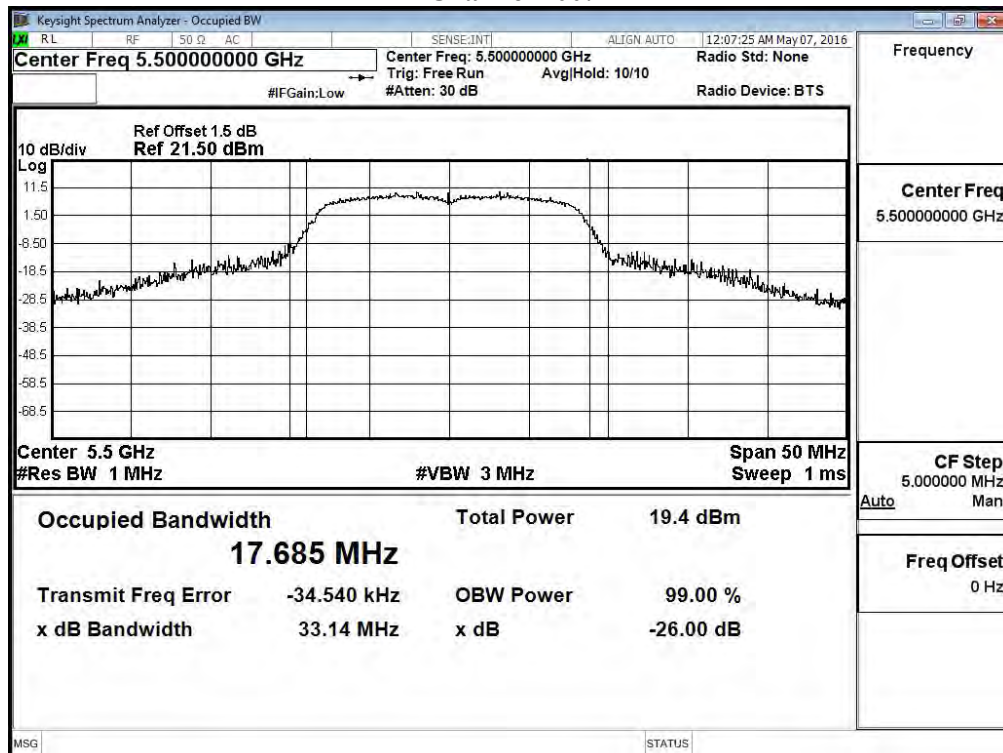
Channel 60:



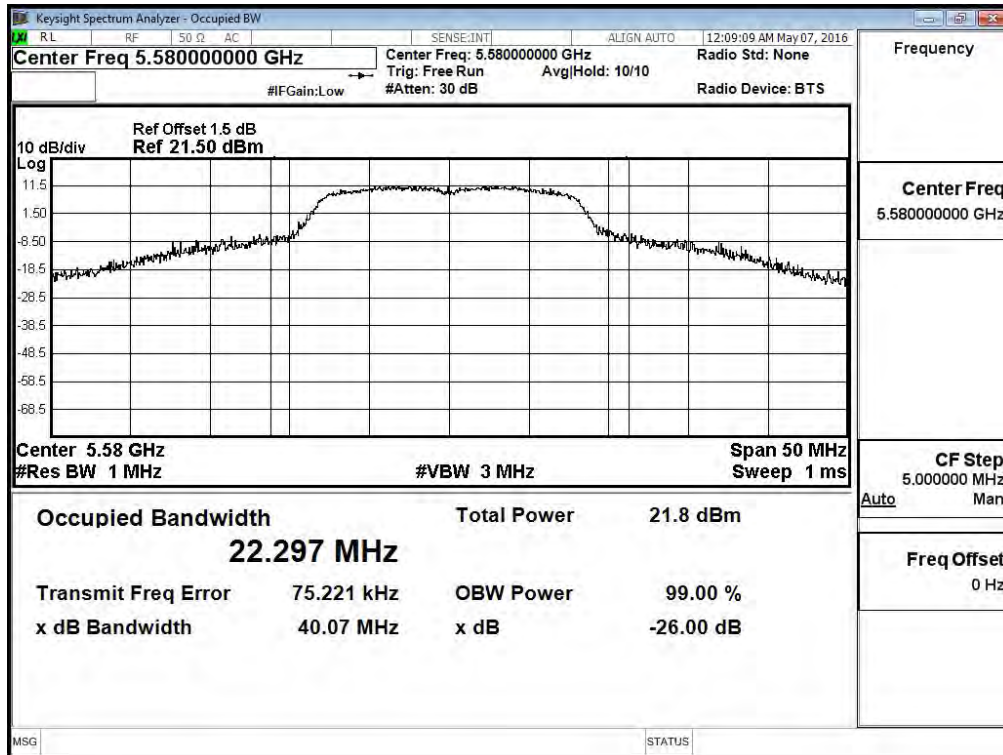
Channel 64:



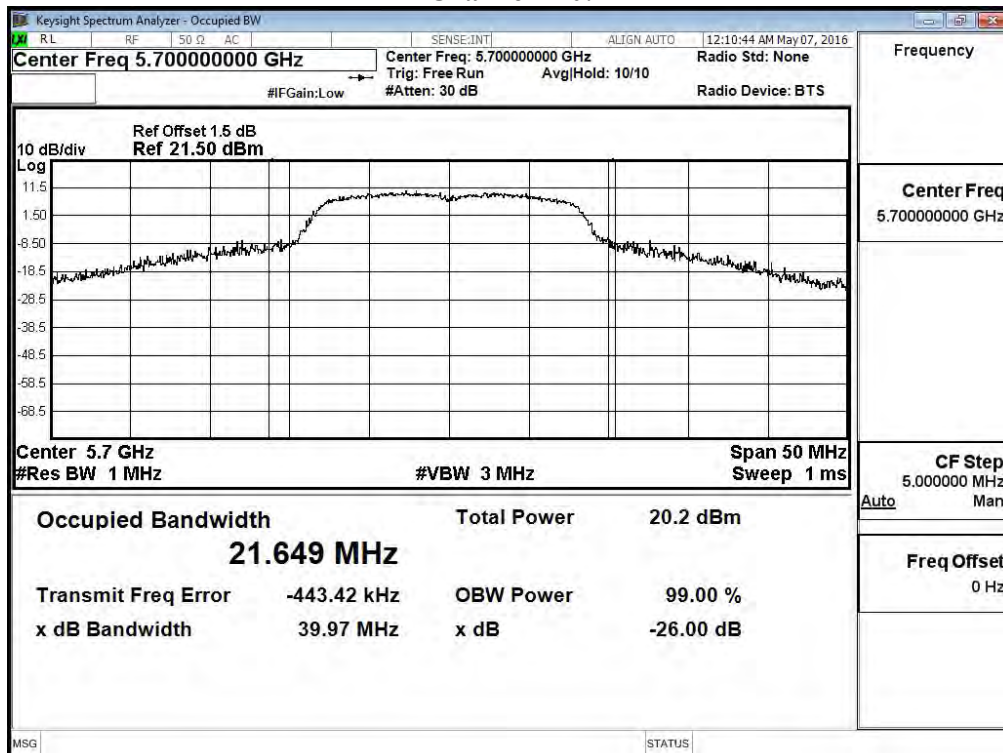
Channel 100:



Channel 116:



Channel 140:



Product : Evoko Liso Room Manager /Evoko Liso
Test Item : Maximum conducted output power
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
		Measurement Level (dBm)								
36	5180	12.62	--	--	--	--	--	--	--	<24dBm
44	5220	12.59	12.57	12.55	12.51	12.48	12.46	12.42	12.40	<24dBm
48	5240	12.68	--	--	--	--	--	--	--	<24dBm
52	5260	13.28	--	--	--	--	--	--	--	<24dBm
60	5300	12.94	12.91	12.87	12.84	12.81	12.78	12.76	12.72	<24dBm
64	5320	12.95	--	--	--	--	--	--	--	<24dBm
100	5500	12.28	--	--	--	--	--	--	--	<24dBm
116	5580	12.12	12.09	12.06	12.02	11.97	11.95	11.92	11.88	<24dBm
140	5700	12.21	--	--	--	--	--	--	--	<24dBm
149	5745	12.02	--	--	--	--	--	--	--	<30dBm
157	5785	11.75	11.73	11.71	11.67	11.63	11.61	11.58	11.56	<30dBm
165	5825	11.61	--	--	--	--	--	--	--	<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
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
		Measurement Level (dBm)								
36	5180	11.28	--	--	--	--	--	--	--	<24dBm
44	5220	11.21	11.18	11.15	11.12	11.09	11.05	11.03	10.99	<24dBm
48	5240	11.28	--	--	--	--	--	--	--	<24dBm
52	5260	10.35	--	--	--	--	--	--	--	<24dBm
60	5300	10.73	10.7	10.68	10.66	10.64	10.61	10.58	10.55	<24dBm
64	5320	10.83	--	--	--	--	--	--	--	<24dBm
100	5500	11.54	--	--	--	--	--	--	--	<24dBm
116	5580	11.86	11.84	11.81	11.78	11.74	11.71	11.68	11.64	<24dBm
140	5700	11.61	--	--	--	--	--	--	--	<24dBm
149	5745	11.95	--	--	--	--	--	--	--	<30dBm
157	5785	12.17	12.13	12.11	12.07	12.05	12.03	12.01	11.97	<30dBm
165	5825	12.32	--	--	--	--	--	--	--	<30dBm

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

Maximum conducted output power Measurement:

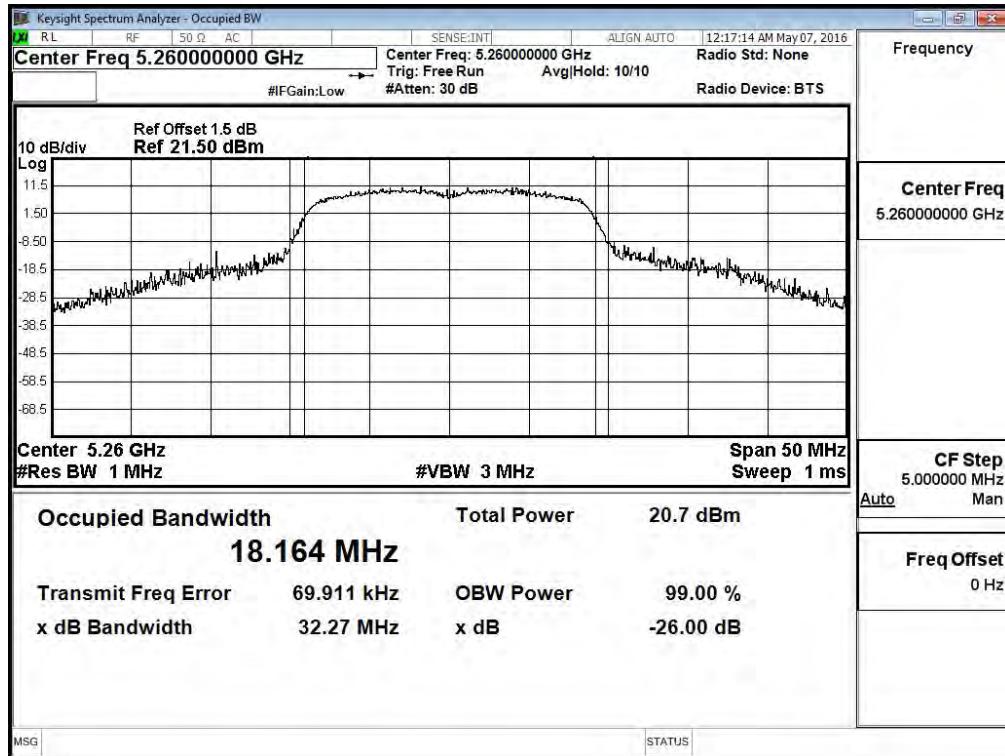
(CHAIN A+ B)

Channel Number	Frequency (MHz)	IC99% Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	dBm+10log(BW)
36	5180	--	12.62	11.28	15.01	24	--
44	5220	--	12.59	11.21	14.96	24	--
48	5240	--	12.68	11.28	15.05	24	--
52	5260	18.147	13.28	10.35	15.07	24	23.59
60	5300	18.099	12.94	10.73	14.98	24	23.58
64	5320	17.936	12.95	10.83	15.03	24	23.54
100	5500	18.204	12.28	11.54	14.94	24	23.60
116	5580	23.341	12.12	11.86	15.00	24	24.68
140	5700	18.449	12.21	11.61	14.93	24	23.66
149	5745	--	12.02	11.95	15.00	30	--
157	5785	--	11.75	12.17	14.98	30	--
165	5825	--	11.61	12.32	14.99	30	--

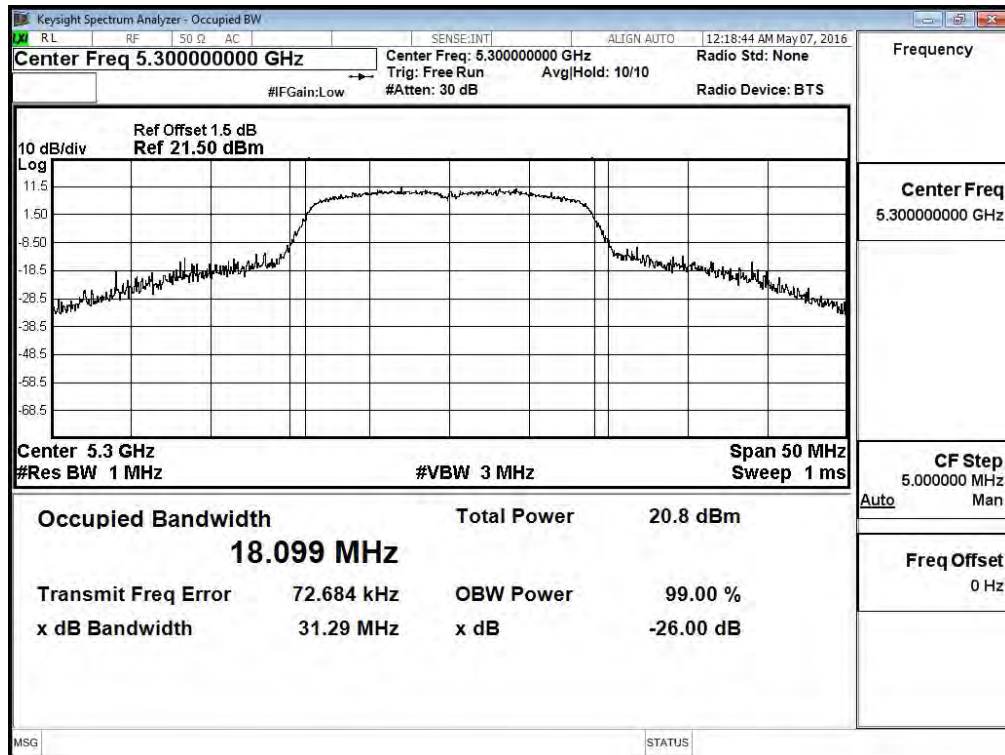
Note:

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))
3. IC99% Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

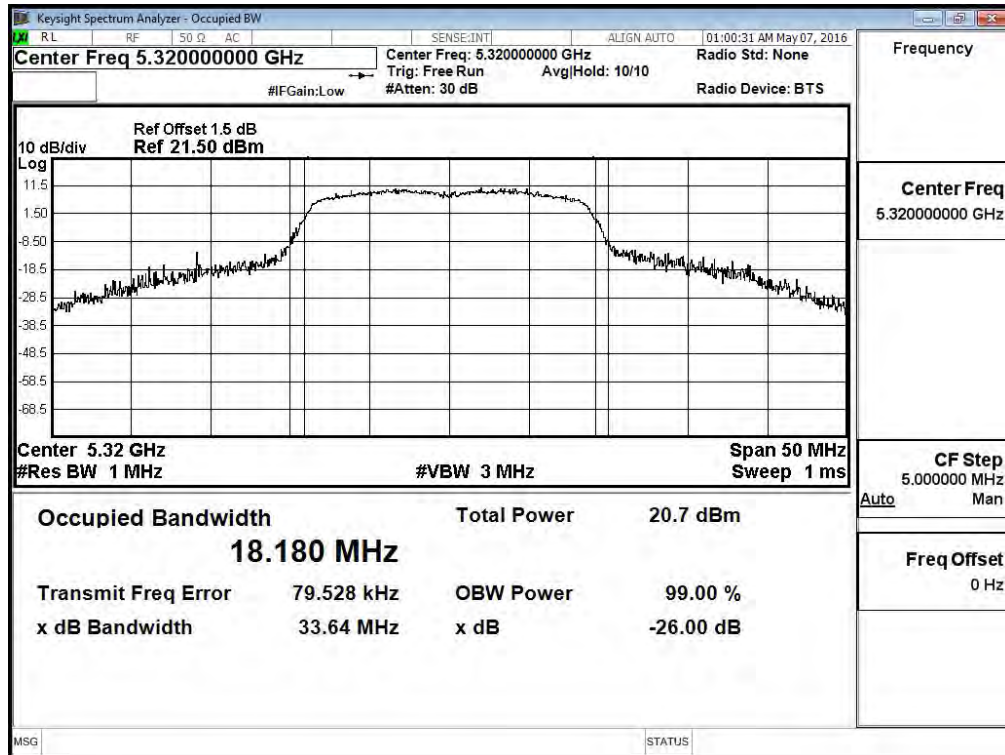
IC 99% Bandwidth: Channel 52 -Chain A



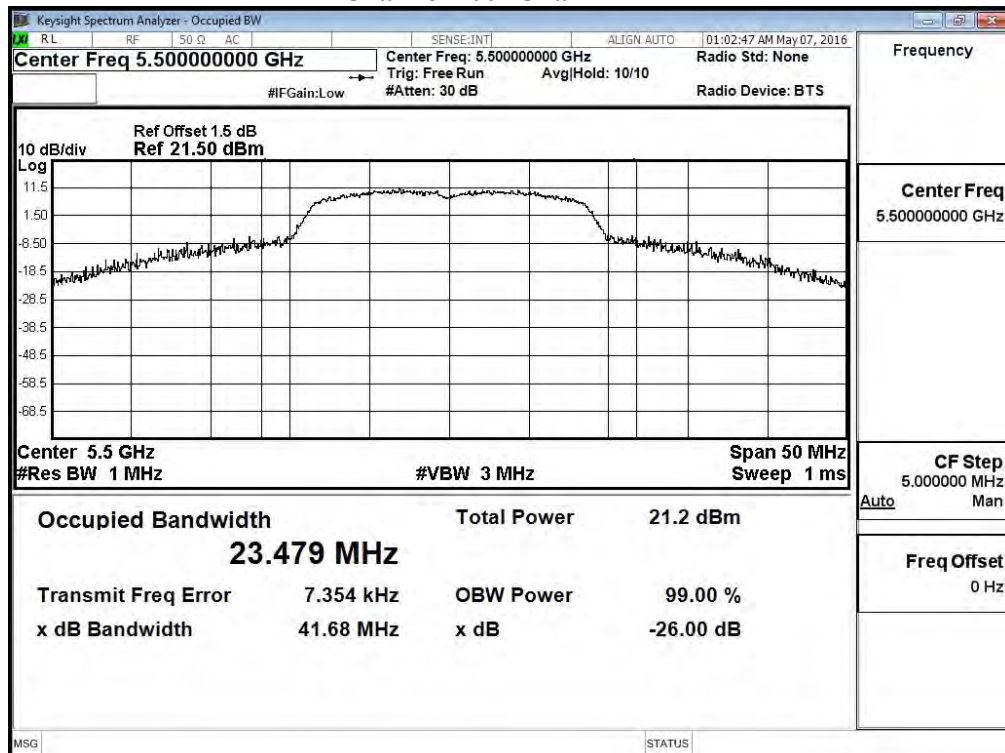
Channel 60 -Chain A



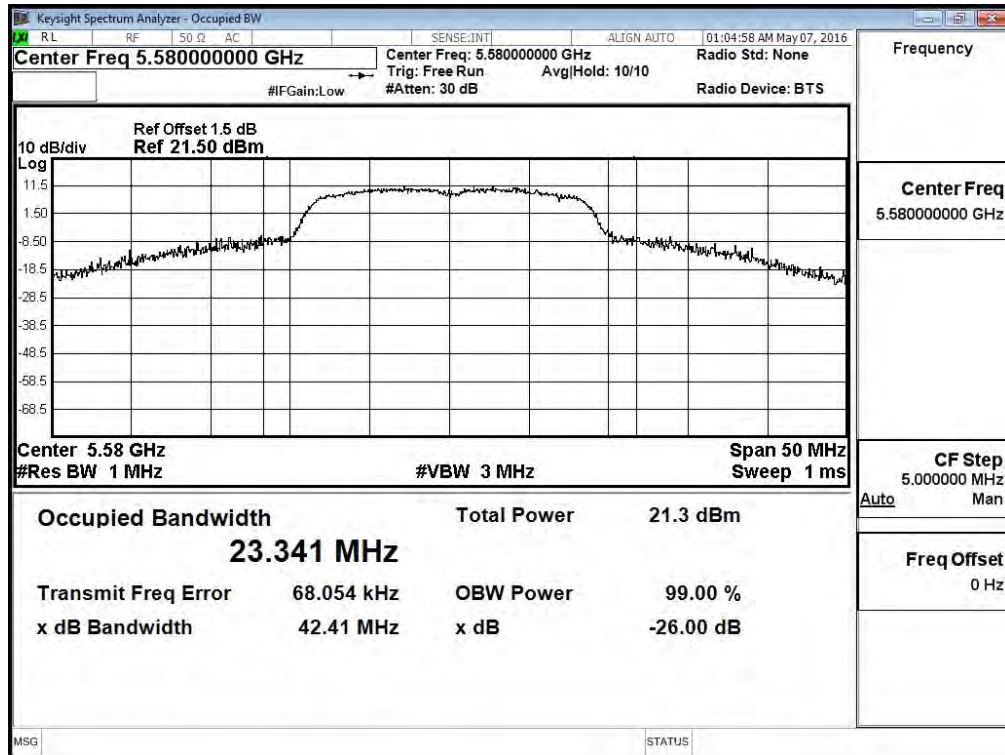
Channel 64 -Chain A



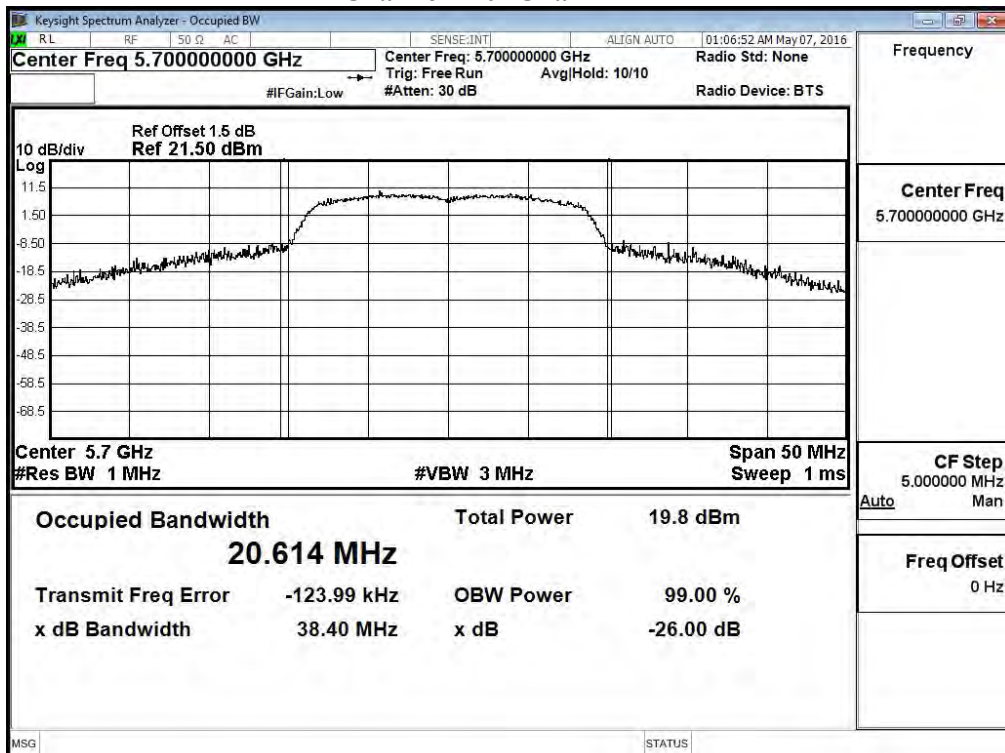
Channel 100 -Chain A



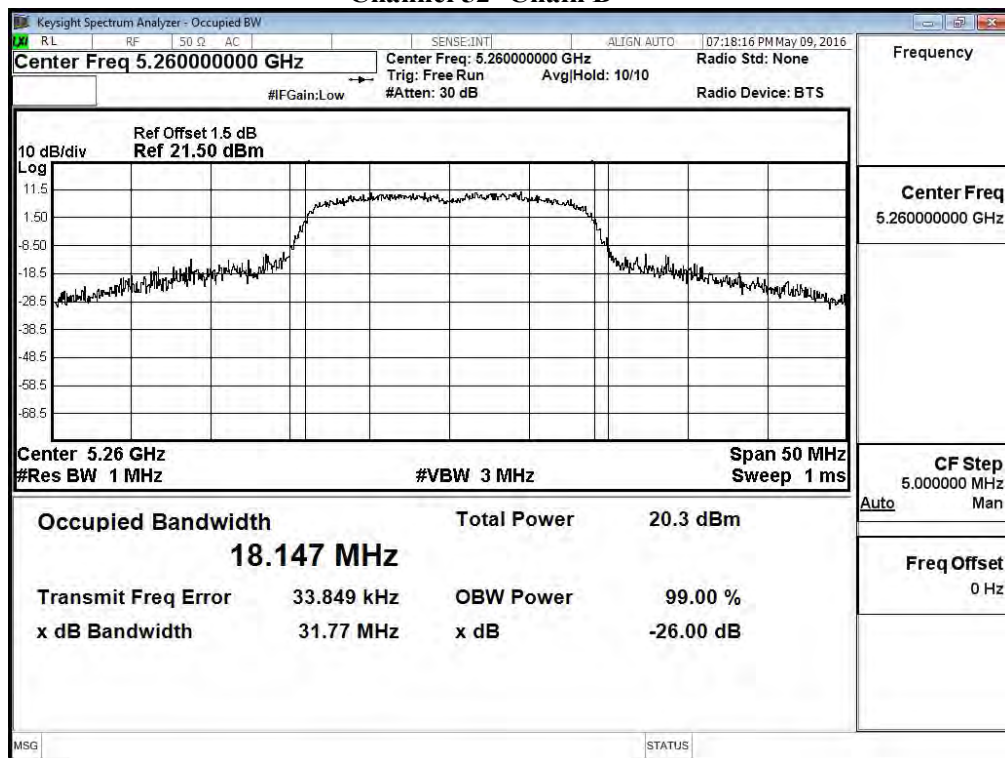
Channel 116 -Chain A



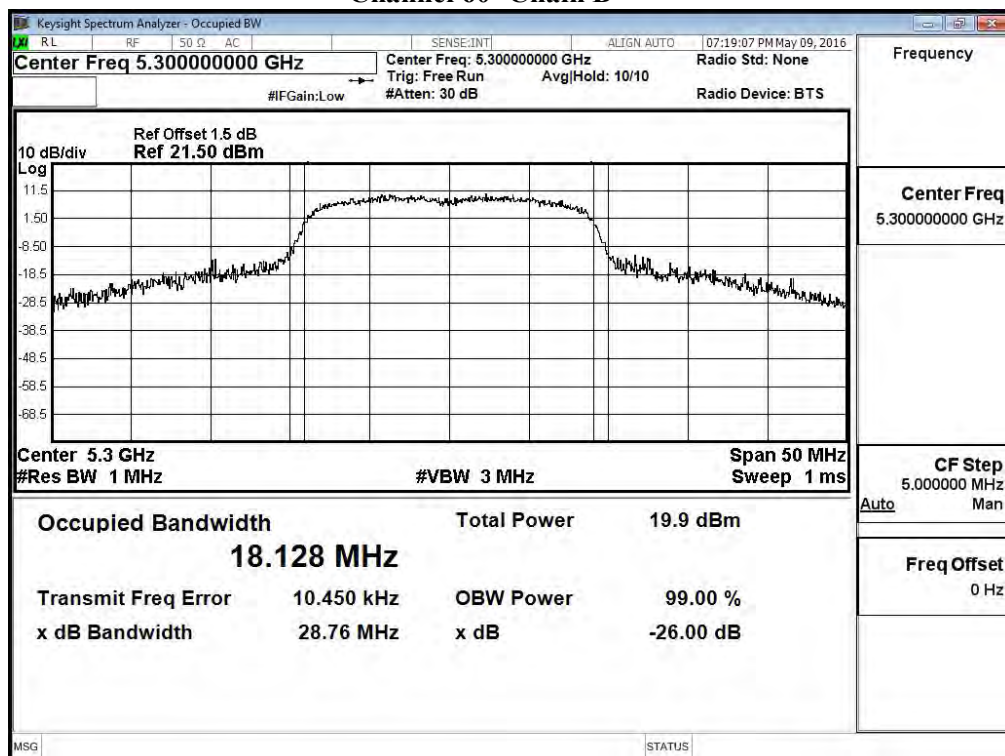
Channel 140 -Chain A



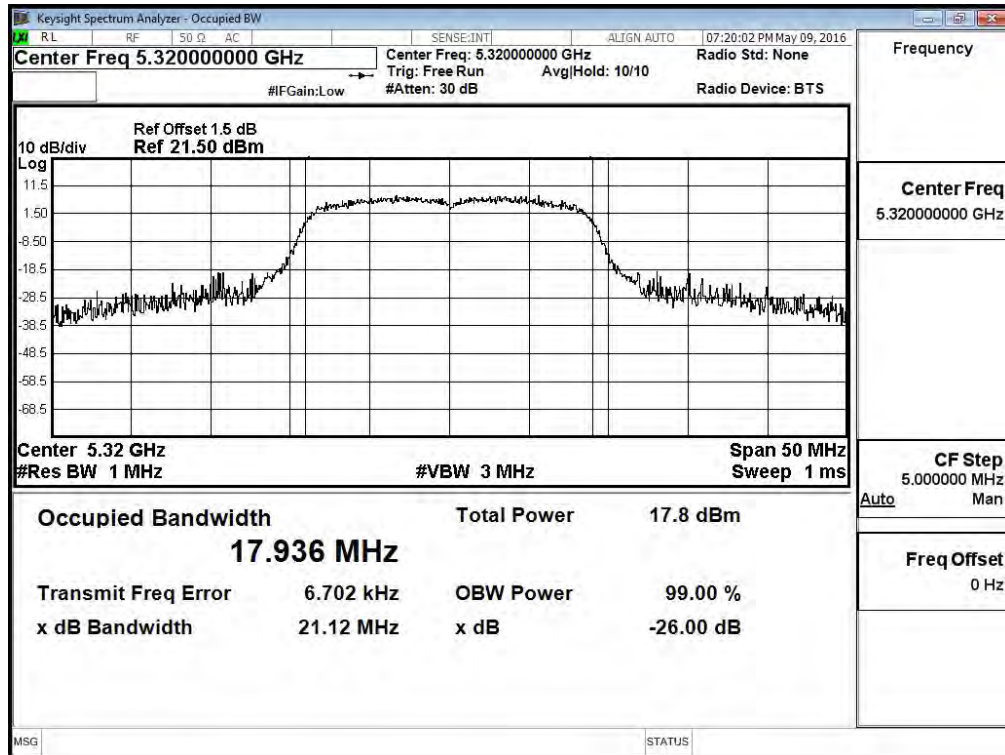
IC 99% Occupied Bandwidth: Channel 52 -Chain B



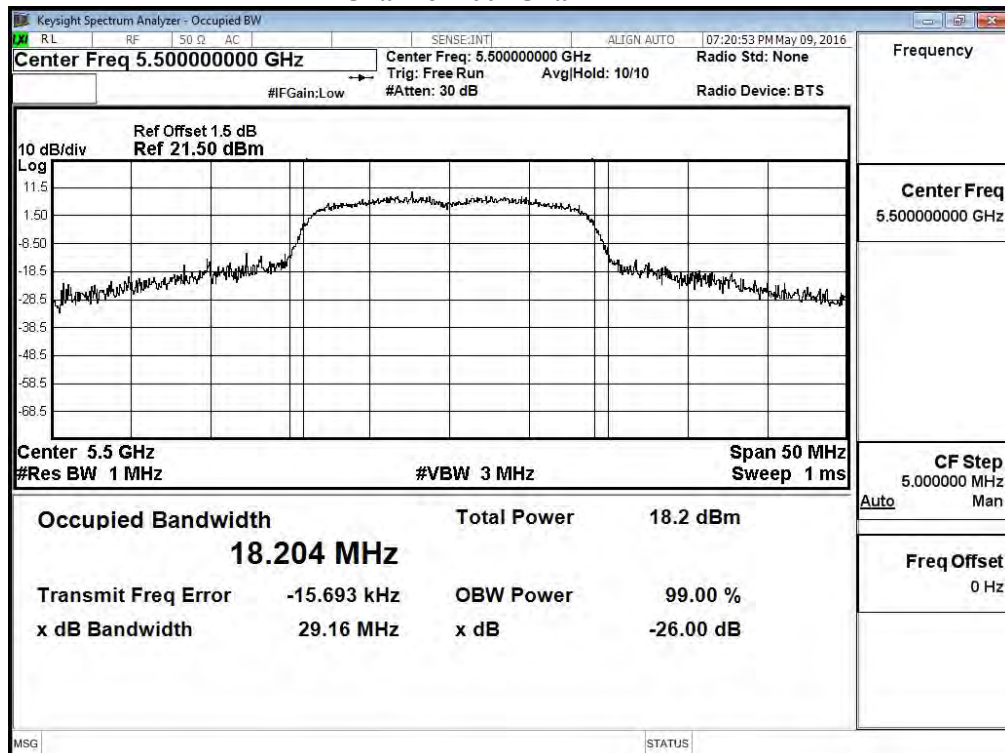
Channel 60 -Chain B



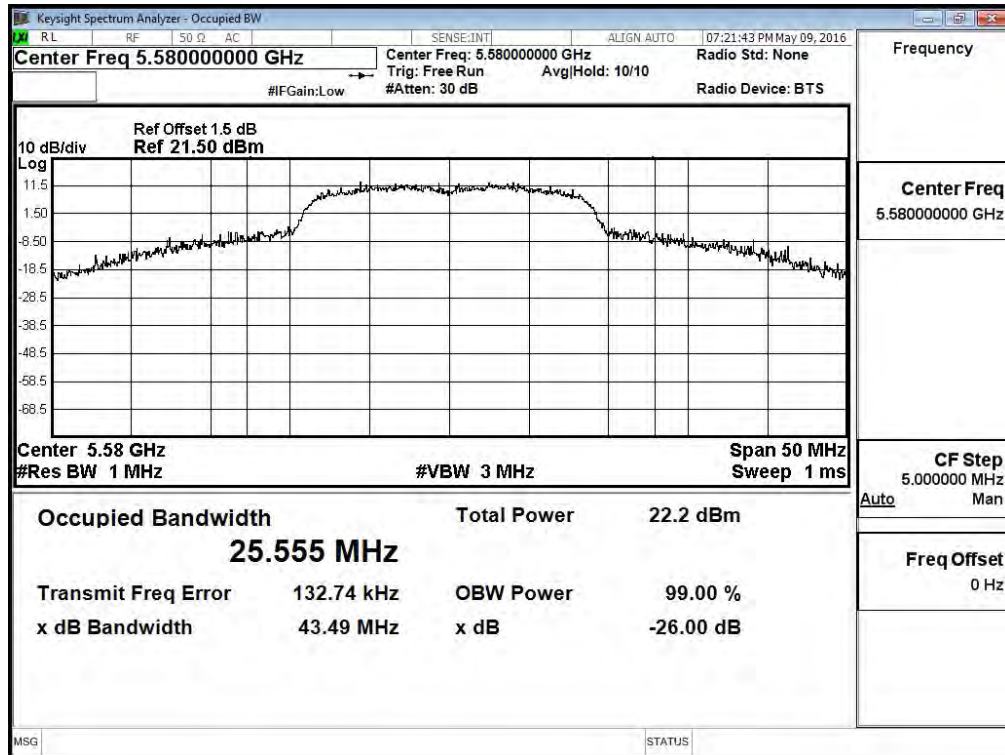
Channel 64 -Chain B



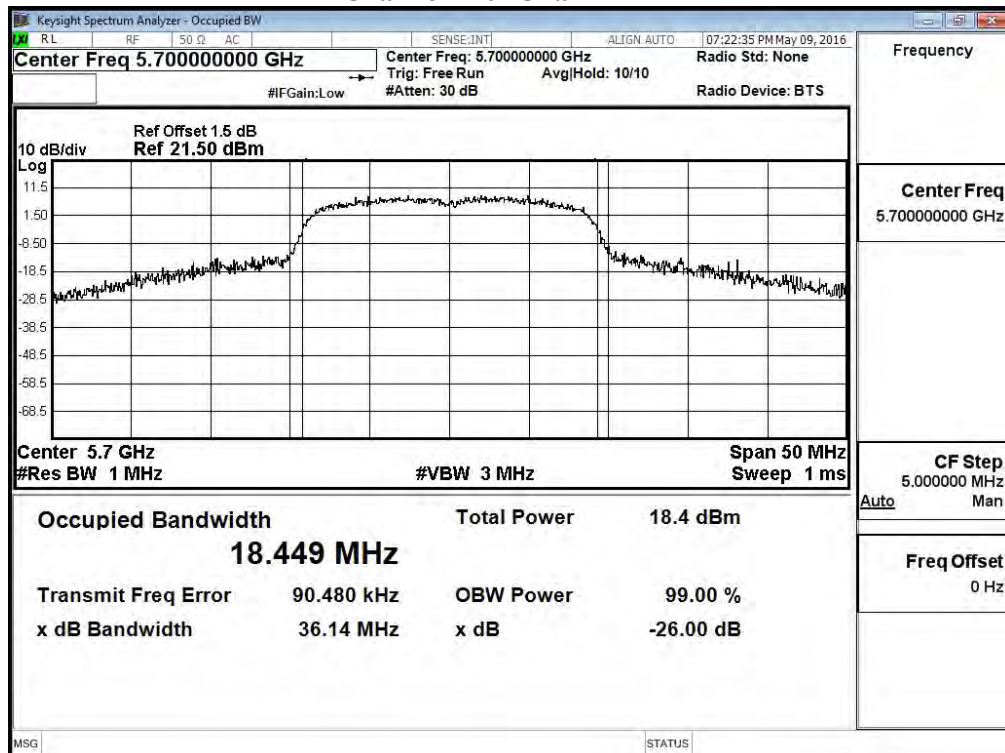
Channel 100 -Chain B



Channel 116 -Chain B



Channel 140 -Chain B



Product : Evoko Liso Room Manager /Evoko Liso
Test Item : Maximum conducted output power
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	11.81	--	--	--	--	--	--	--	<24dBm
46	5230	11.96	11.93	11.88	11.85	11.81	11.78	11.75	11.71	<24dBm
54	5270	12.07	--	--	--	--	--	--	--	<24dBm
62	5310	11.88	11.85	11.81	11.78	11.75	11.73	11.70	11.67	<24dBm
102	5510	12.53	--	--	--	--	--	--	--	<24dBm
110	5550	12.39	12.36	12.33	12.29	12.26	12.24	12.22	12.19	<24dBm
134	5670	12.37	--	--	--	--	--	--	--	<24dBm
151	5755	13.01	--	--	--	--	--	--	--	<30dBm
159	5795	13.06	13.03	12.99	12.97	12.94	12.92	12.88	12.84	<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
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	12.18	--	--	--	--	--	--	--	<24dBm
46	5230	11.93	11.9	11.88	11.85	11.83	11.79	11.76	11.74	<24dBm
54	5270	12.09	--	--	--	--	--	--	--	<24dBm
62	5310	12.03	11.99	11.95	11.93	11.90	11.87	11.83	11.80	<24dBm
102	5510	11.45	--	--	--	--	--	--	--	<24dBm
110	5550	11.36	11.33	11.31	11.27	11.24	11.20	11.16	11.12	<24dBm
134	5670	11.63	--	--	--	--	--	--	--	<24dBm
151	5755	10.56	--	--	--	--	--	--	--	<30dBm
159	5795	10.33	10.3	10.27	10.24	10.22	10.20	10.17	10.13	<30dBm

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

Maximum conducted output power Measurement:

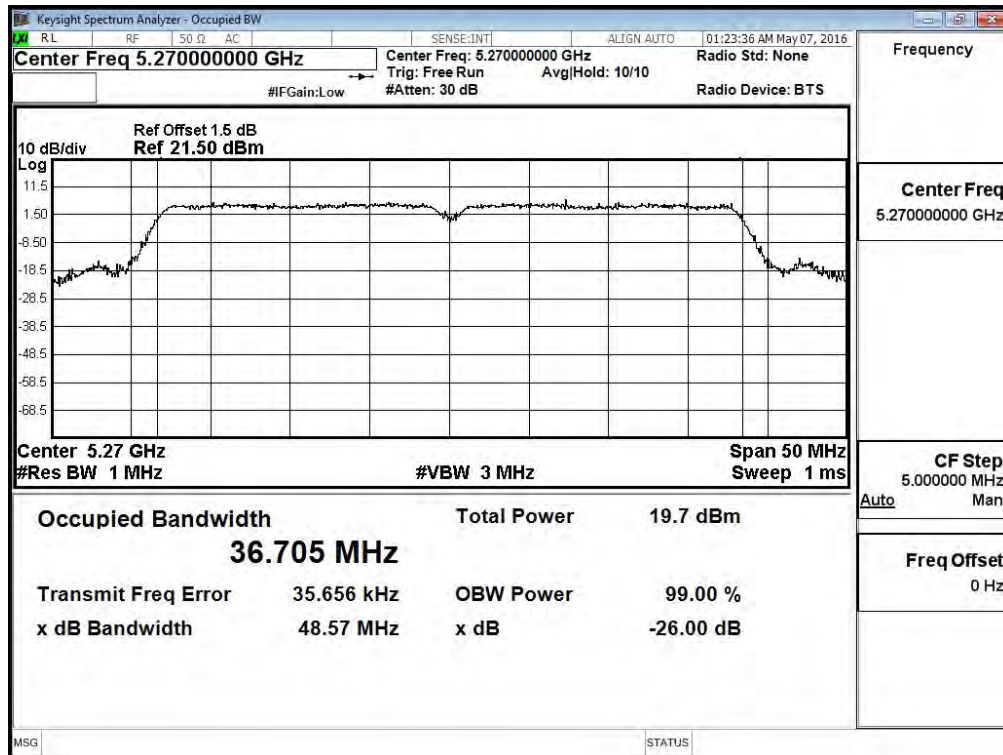
(CHAIN A+ B)

Channel Number	Frequency (MHz)	IC99% Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	dBm+10log(BW)
38	5190	--	11.81	12.18	15.01	24	--
46	5230	--	11.96	11.93	14.96	24	--
54	5270	36.663	12.07	12.09	15.09	24	26.64
62	5310	36.689	11.88	12.03	14.97	24	26.65
102	5510	37.009	12.53	11.45	15.03	24	26.68
110	5550	37.100	12.39	11.36	14.92	24	26.69
134	5670	37.502	12.37	11.63	15.03	24	26.74
151	5755	--	13.01	10.56	14.97	30	--
159	5795	--	13.06	10.33	14.92	30	--

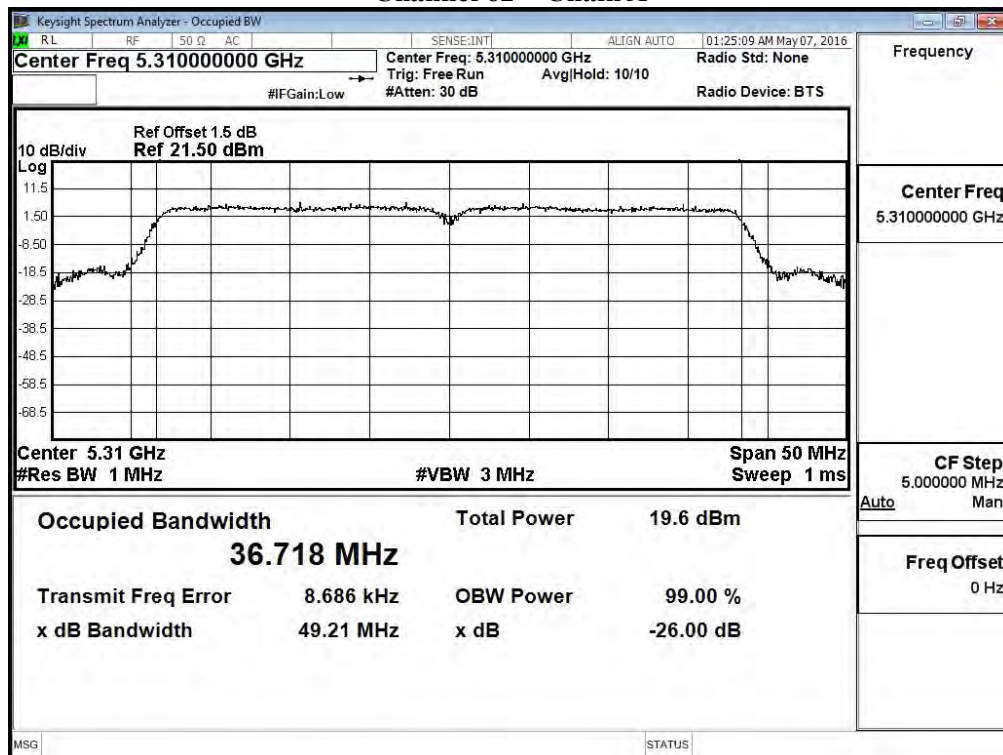
Note:

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))
3. IC99% Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

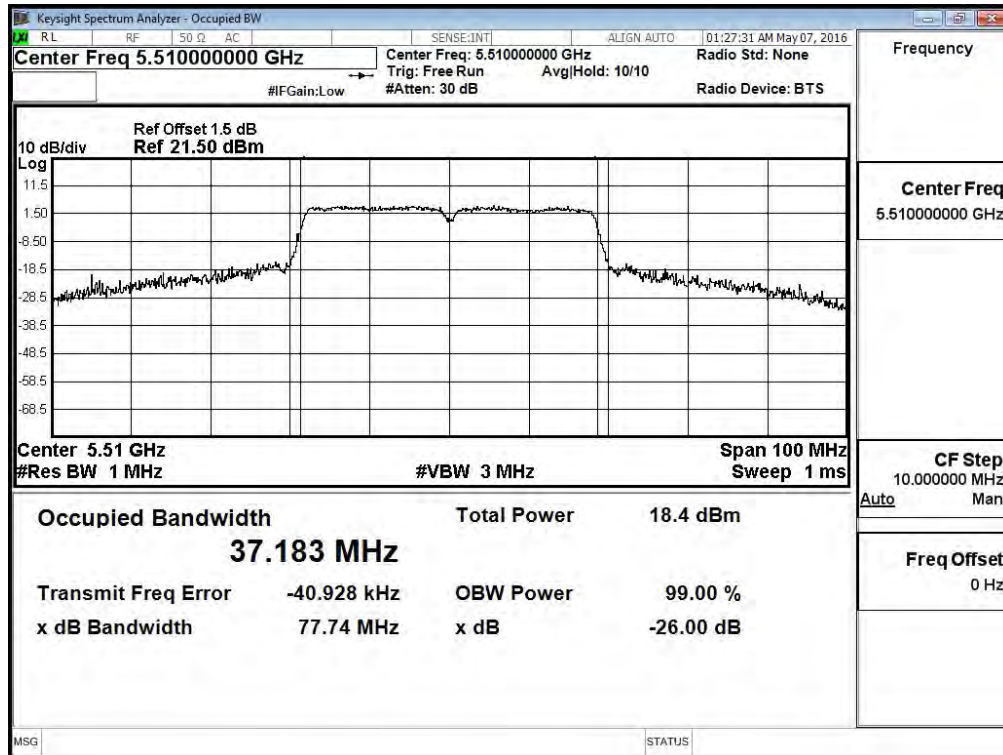
IC 99% Bandwidth: Channel 54 – Chain A



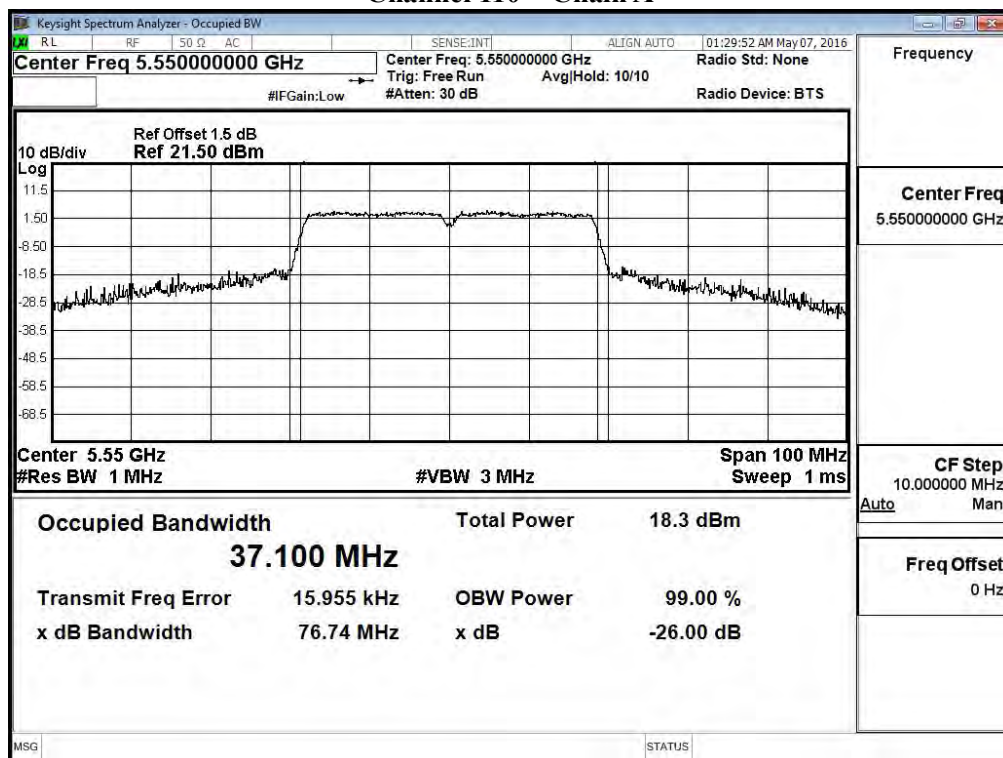
Channel 62 – Chain A



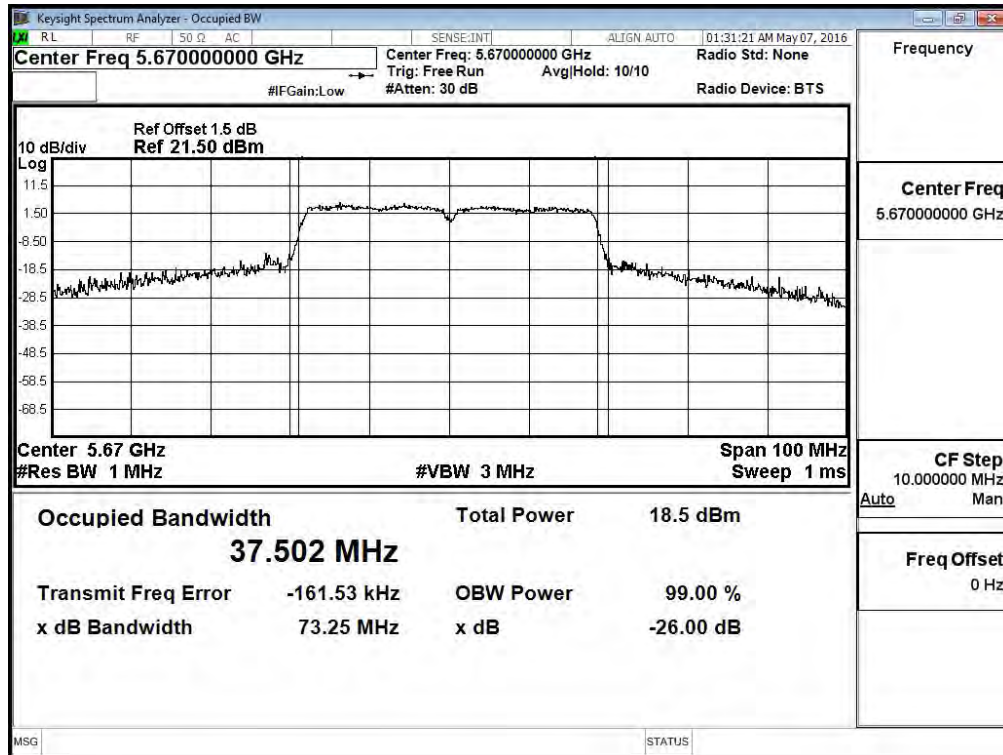
Channel 102 – Chain A



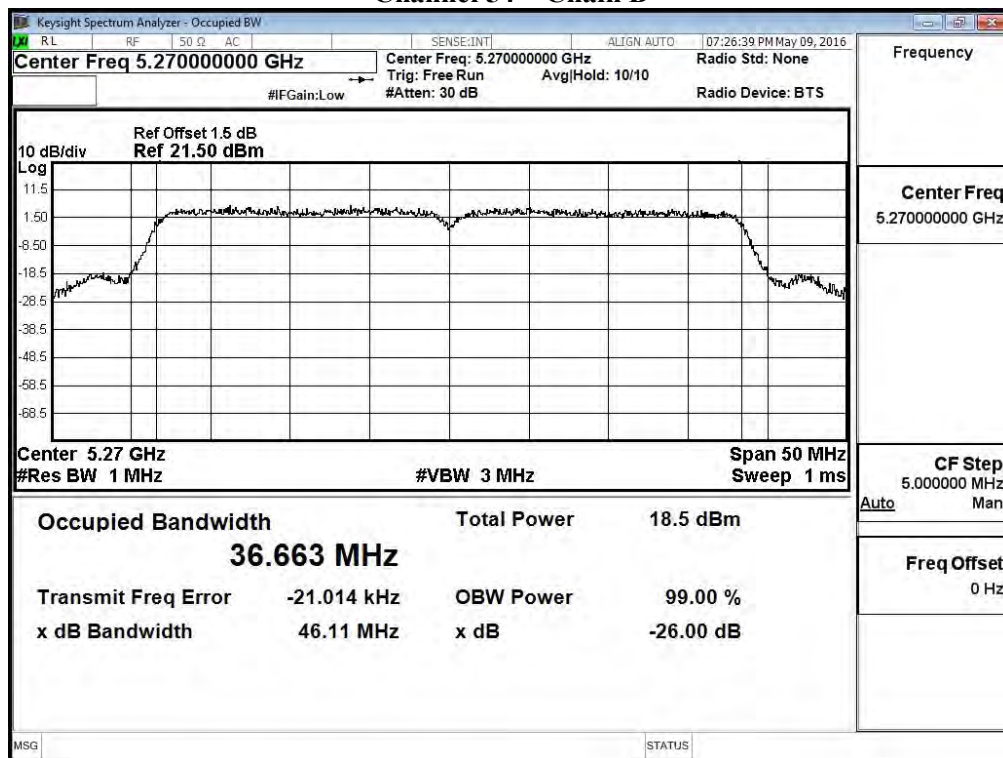
Channel 110 – Chain A



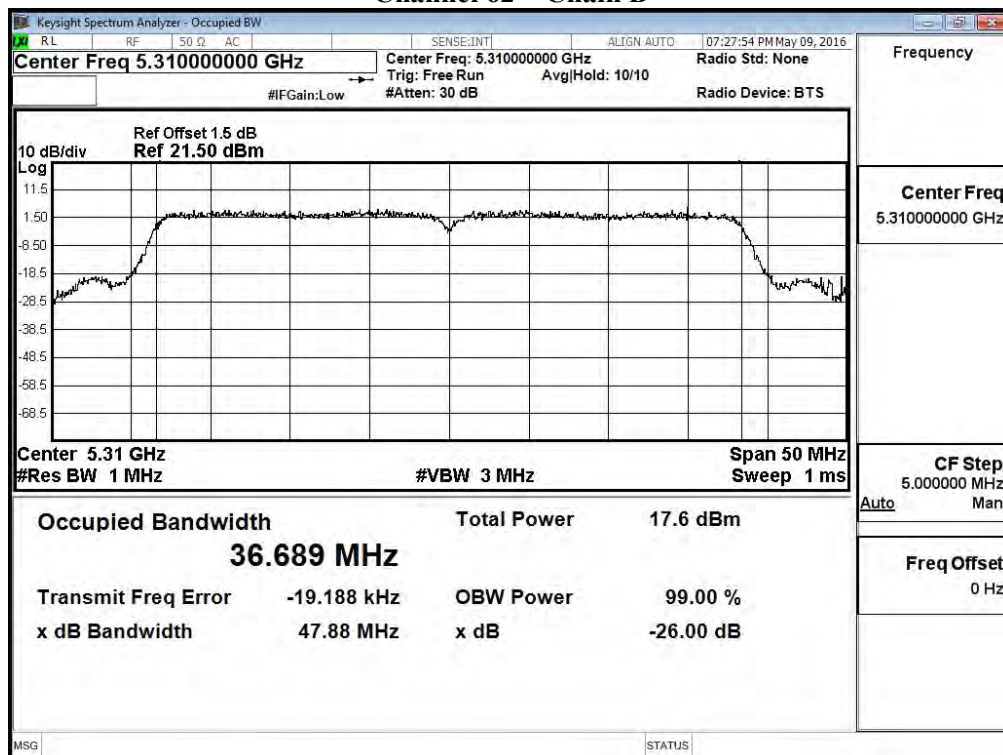
Channel 134 – Chain A



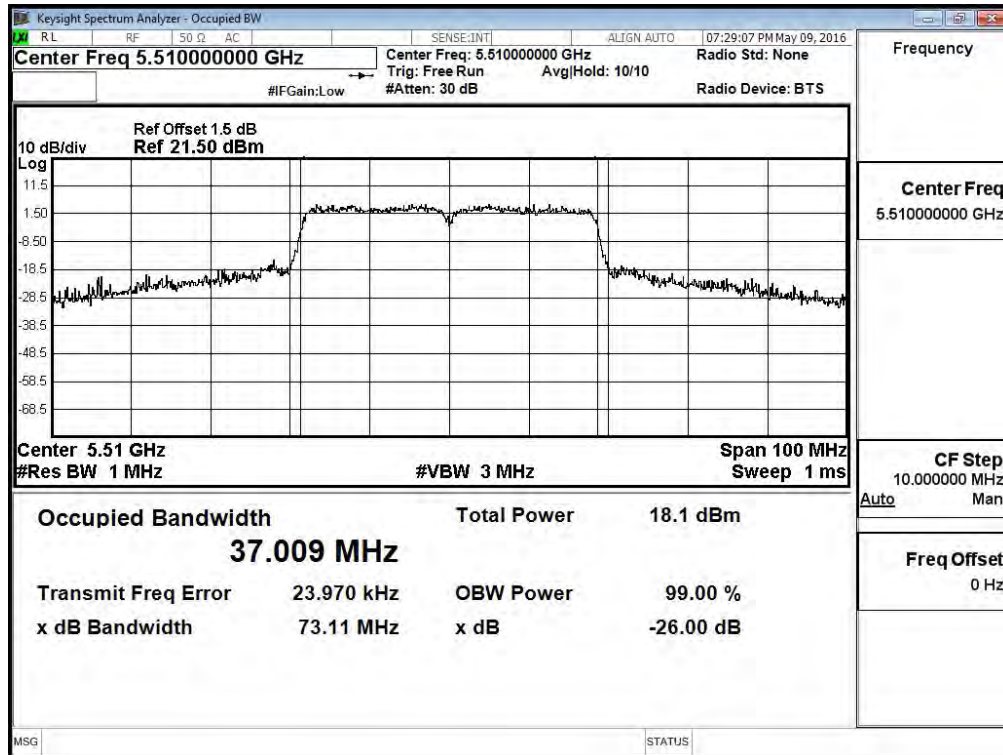
IC 99% Occupied Bandwidth: Channel 54 – Chain B



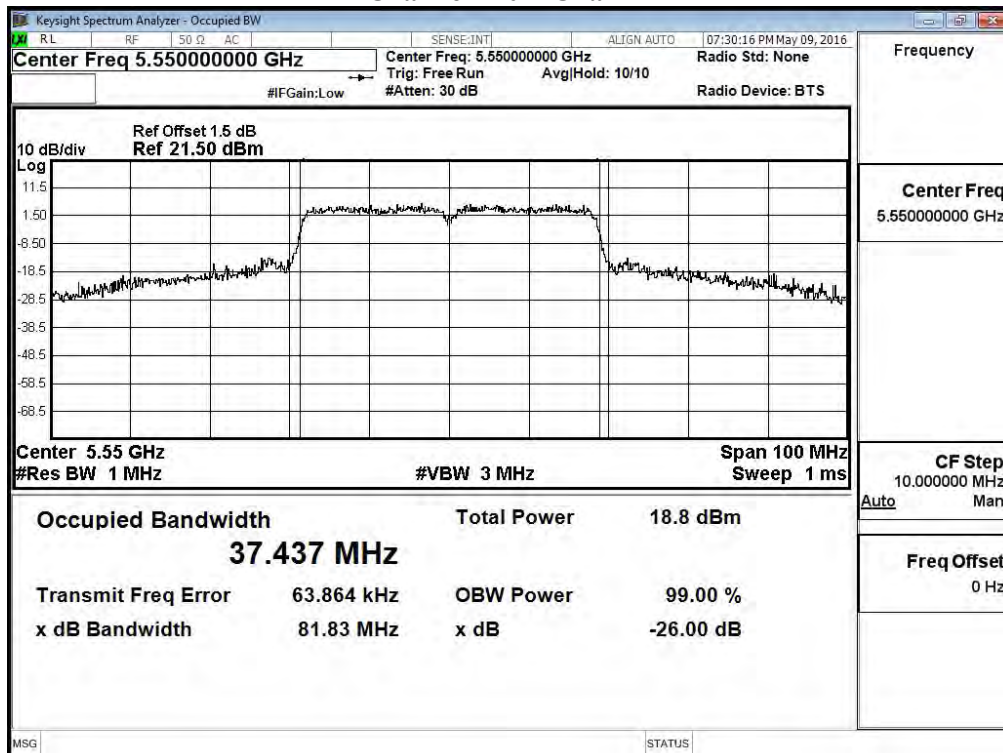
Channel 62 – Chain B



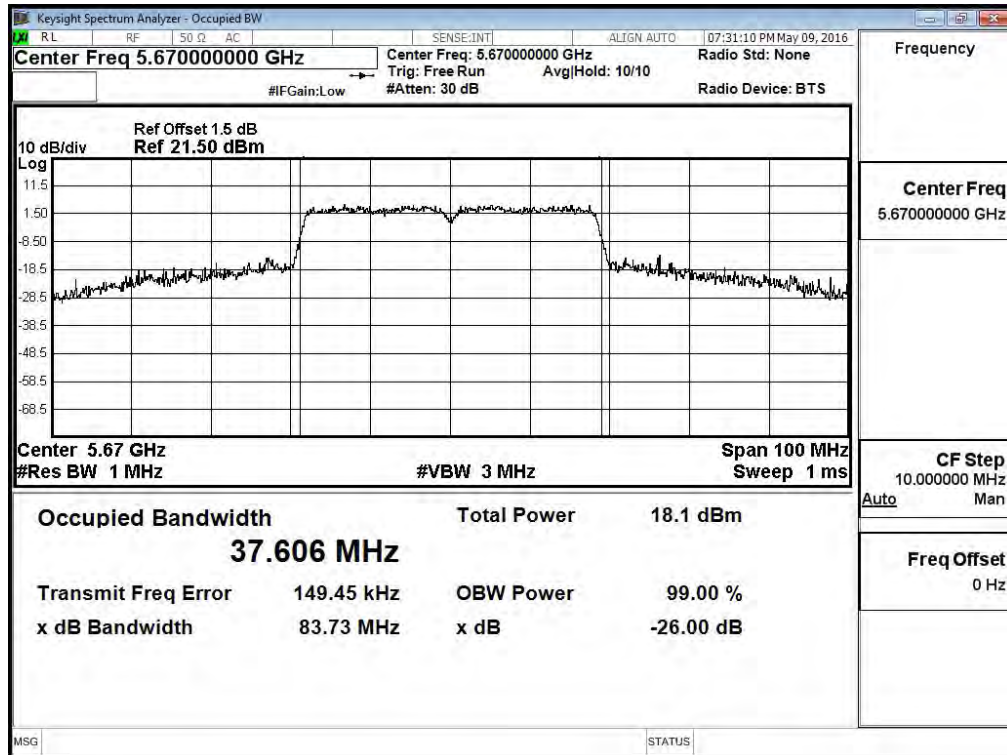
Channel 102 – Chain B



Channel 110 – Chain B



Channel 134 – Chain B



4. Peak Power Spectral Density

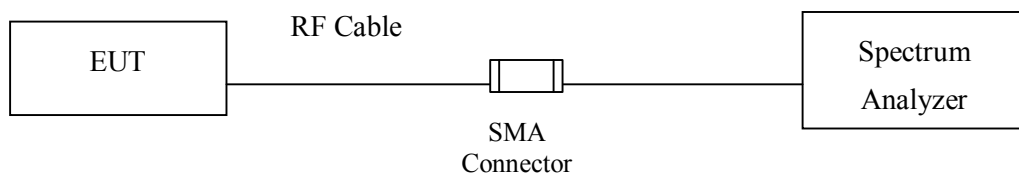
4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2016

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 colocated 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, 2013; tested to UNII 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

$\pm 1.27\text{ dB}$

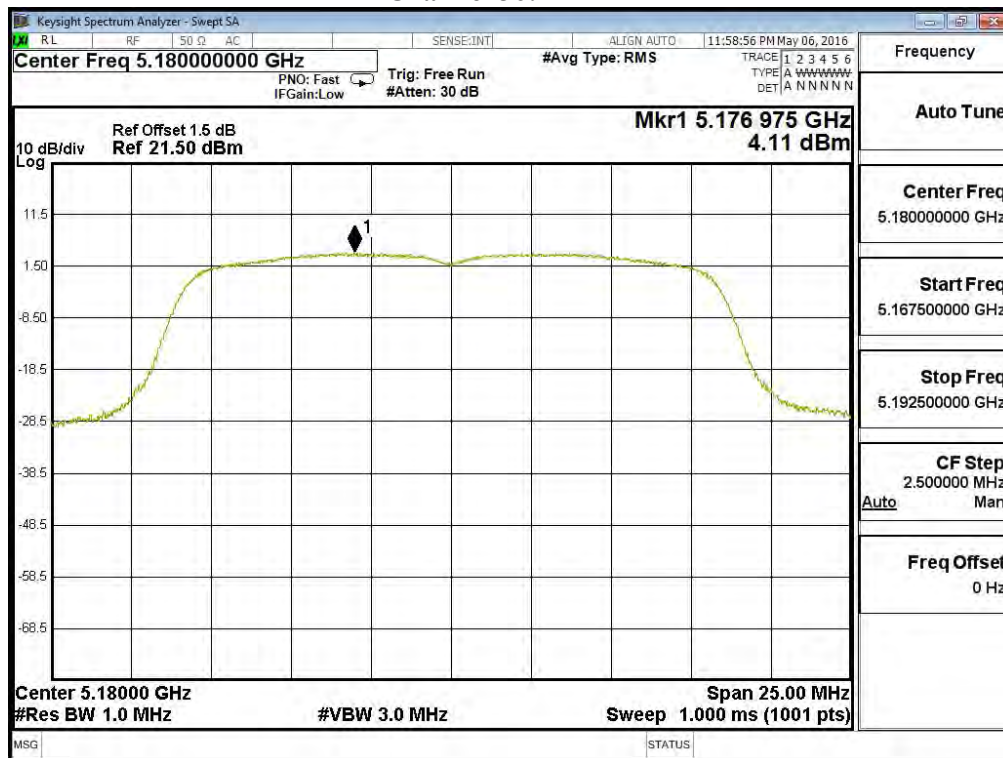
4.6. Test Result of Peak Power Spectral Density

Product : Evoko Liso Room Manager /Evoko Liso
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

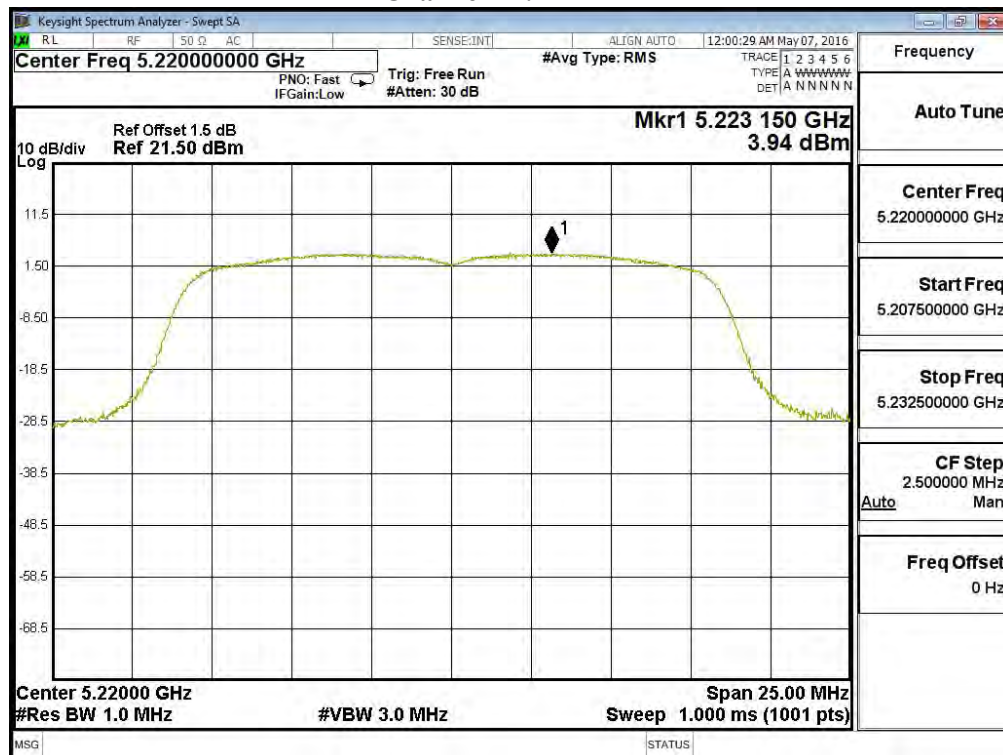
Channel Number	Frequency (MHz)	Data Rate (Mbps)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	6	4.110	11	Pass
44	5220	6	3.940	11	Pass
48	5240	6	3.940	11	Pass
52	5260	6	4.230	11	Pass
60	5300	6	4.020	11	Pass
64	5320	6	3.900	11	Pass
100	5500	6	3.430	11	Pass
116	5580	6	5.510	11	Pass
140	5700	6	3.930	11	Pass

Channel Number	Frequency (MHz)	Data Rate (Mbps)	PPSD (dBm)	BWCF (dB)	Total PSD (dBm)	Required Limit (dBm)	Result
149	5745	6	-6.400	6.980	0.580	<30	Pass
157	5785	6	-6.520	6.980	0.460	<30	Pass
165	5825	6	-5.500	6.980	1.480	<30	Pass

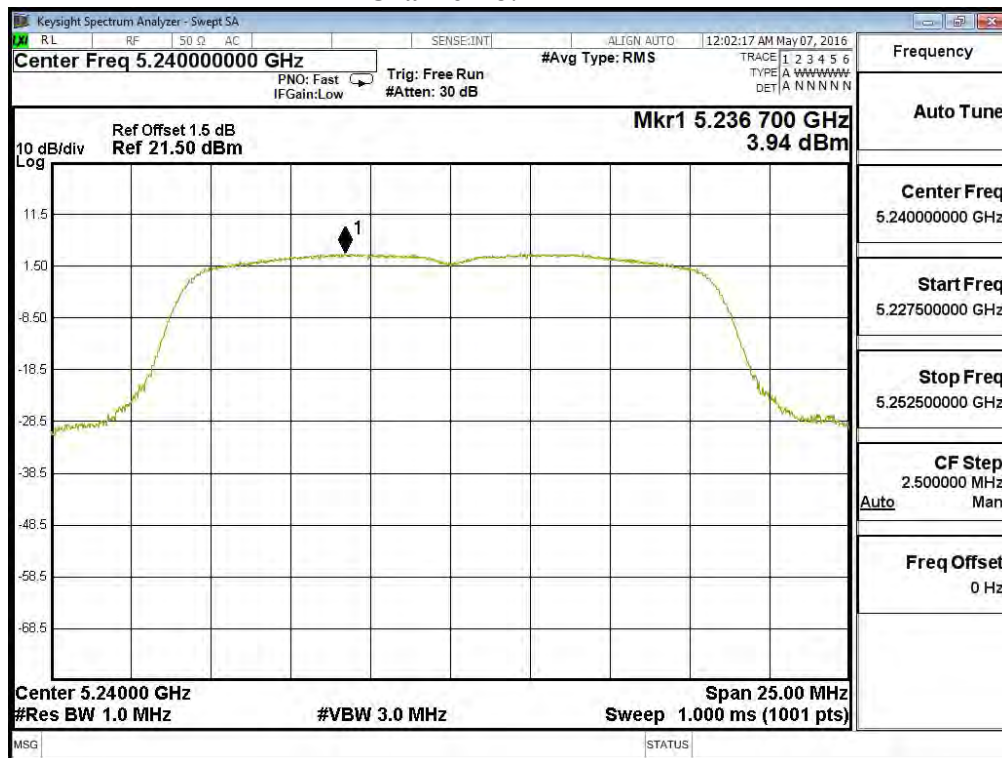
Channel 36:



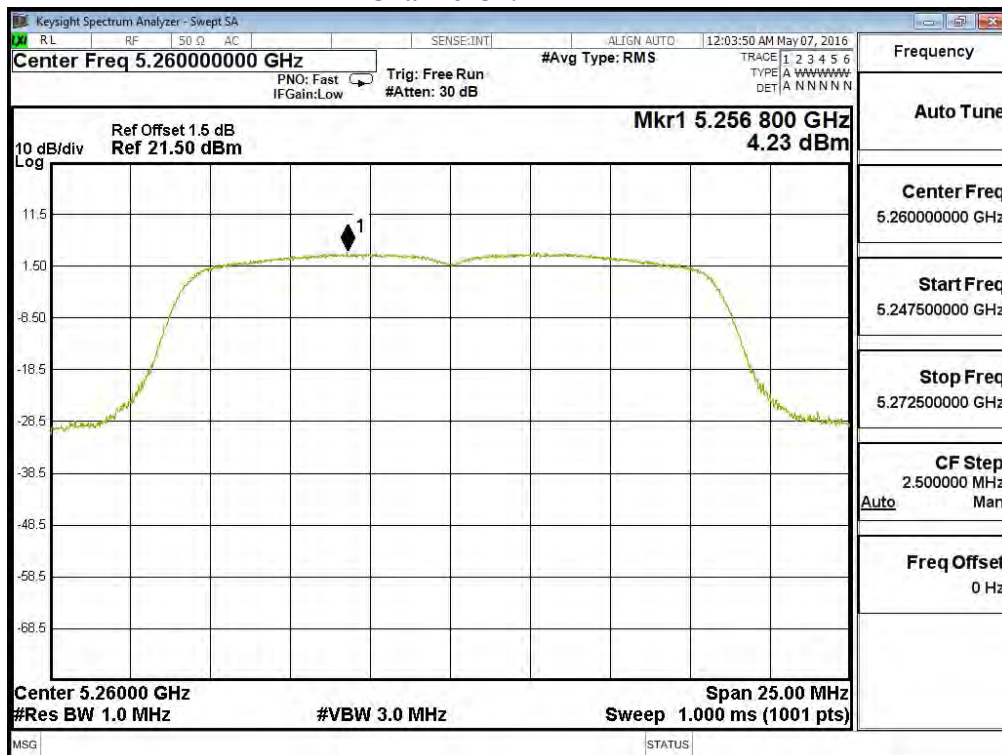
Channel 44:



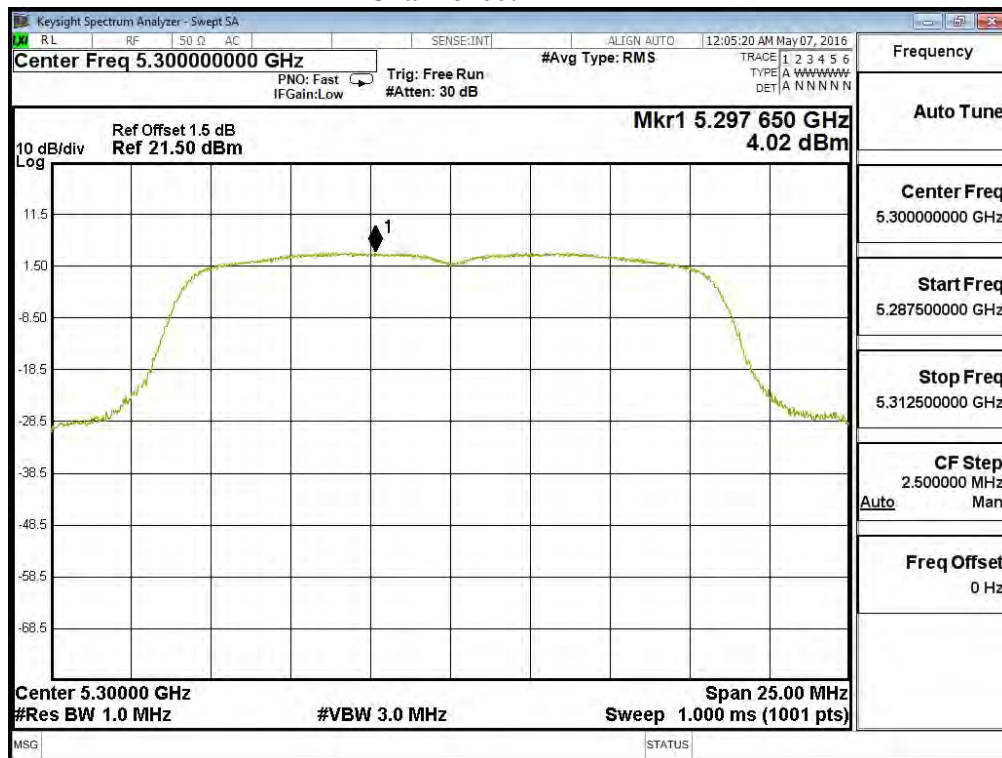
Channel 48:



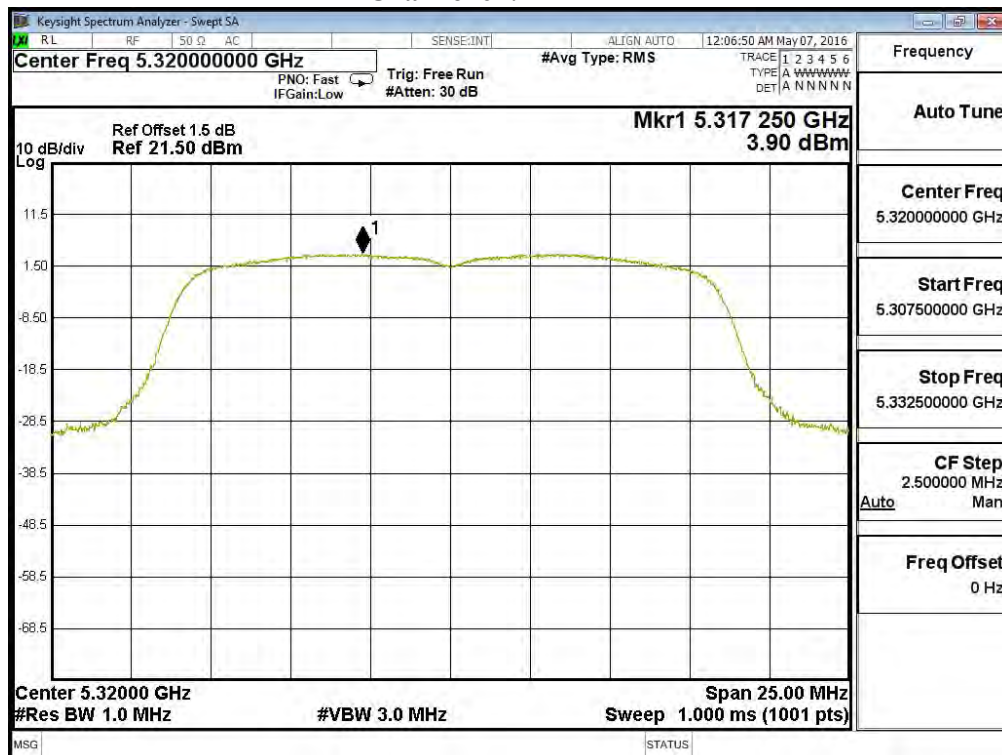
Channel 52:



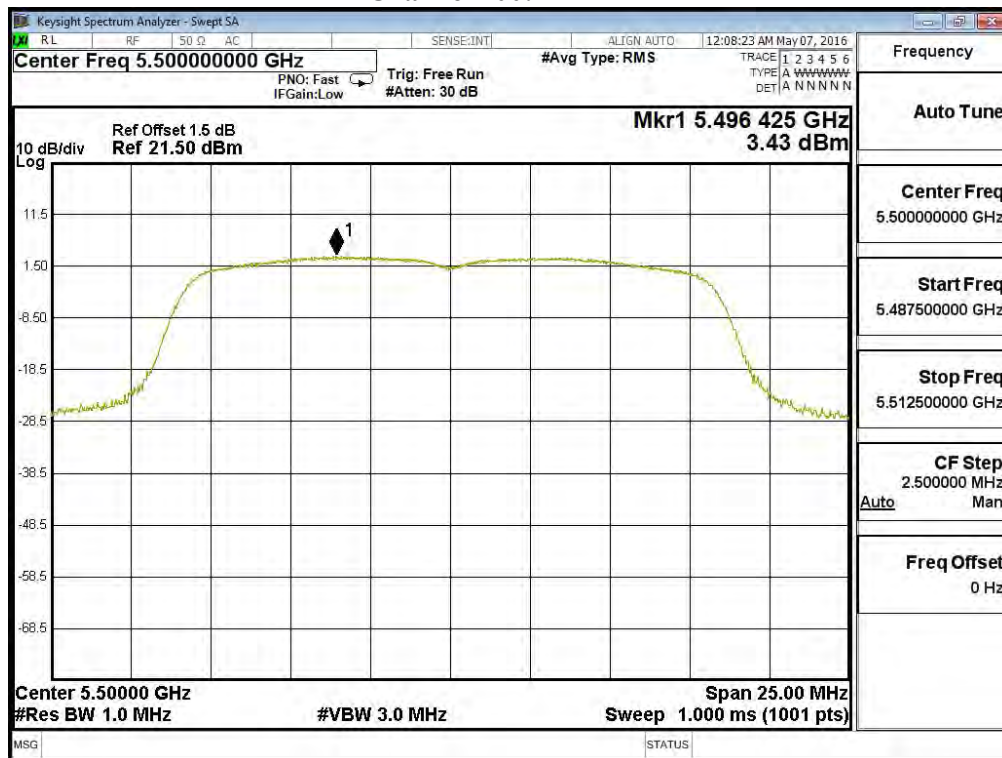
Channel 60:



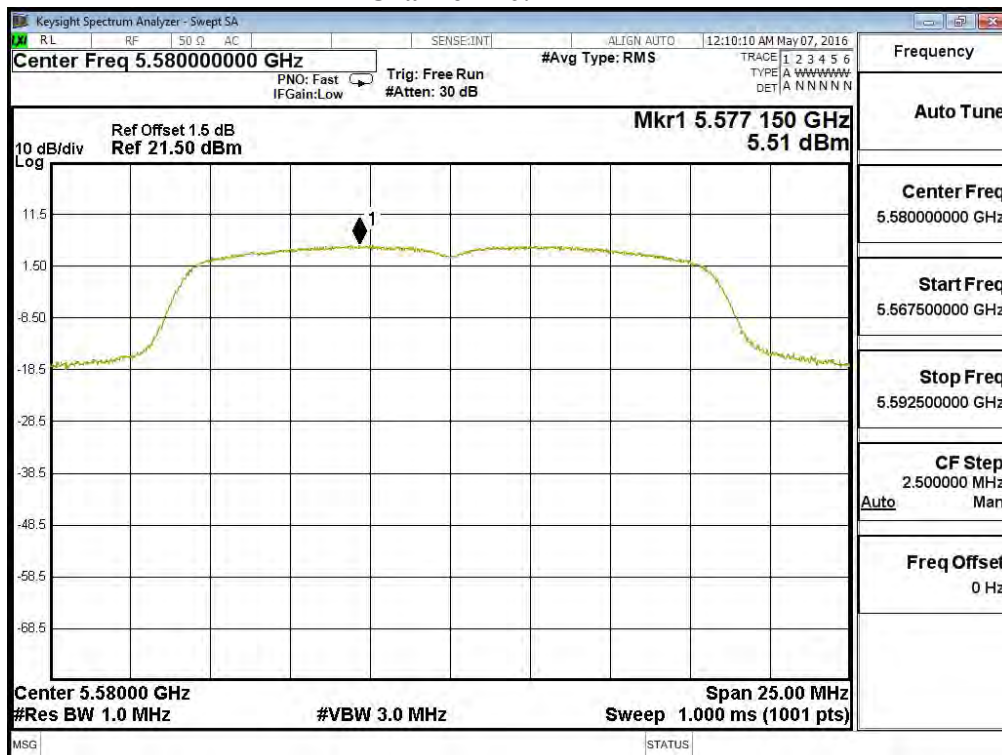
Channel 64:



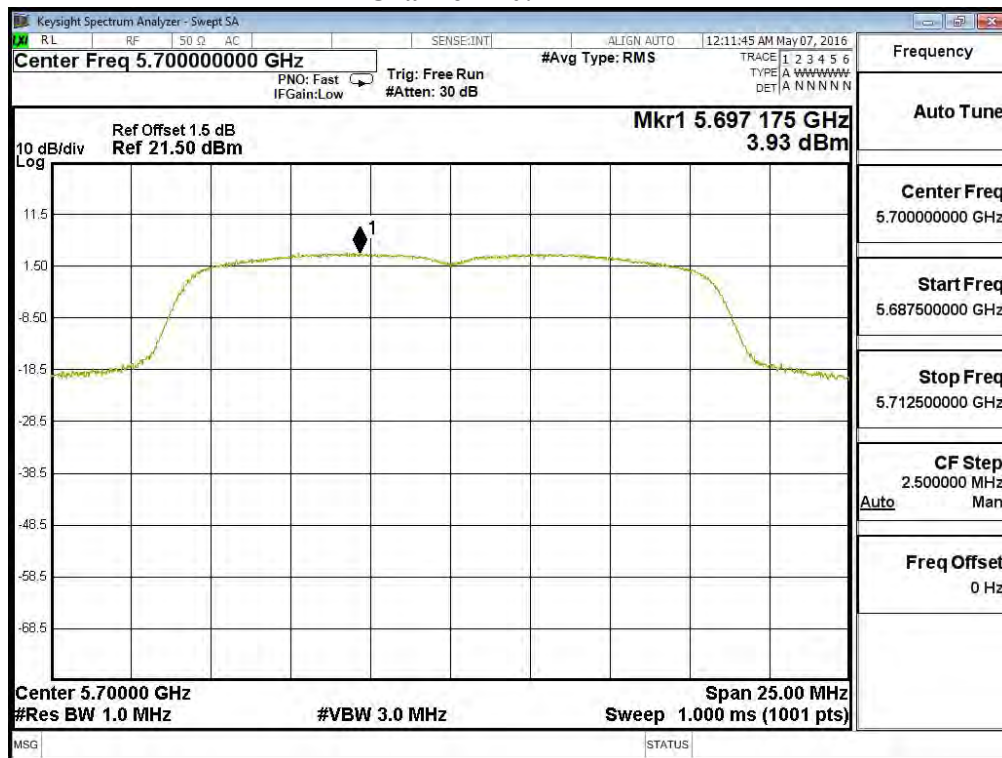
Channel 100:



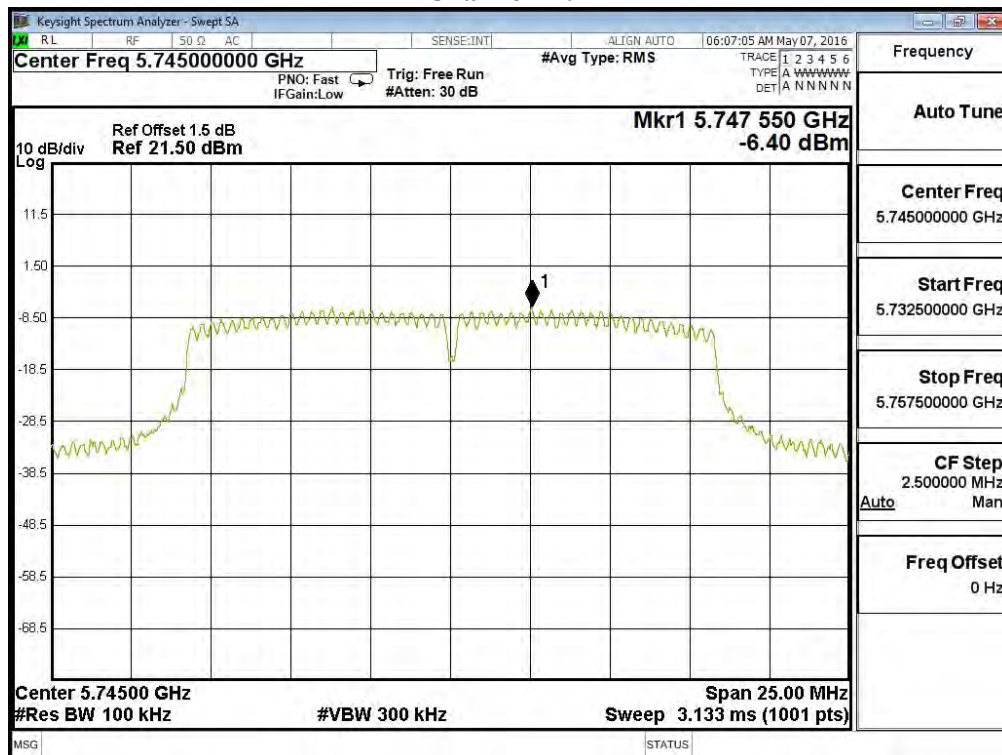
Channel 116:



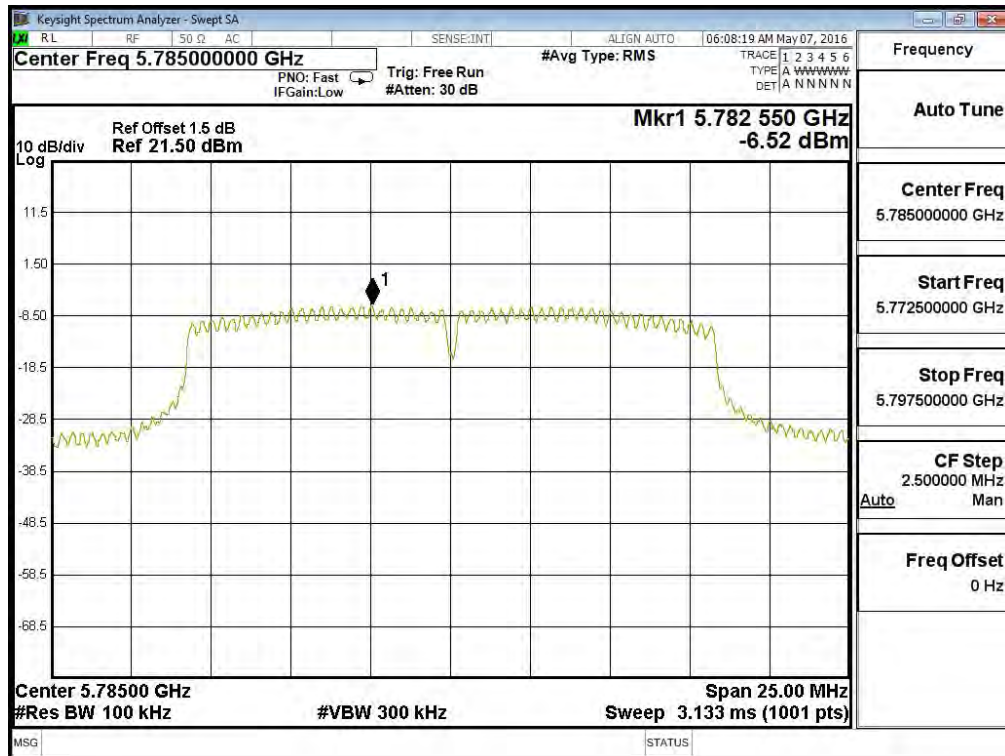
Channel 140:



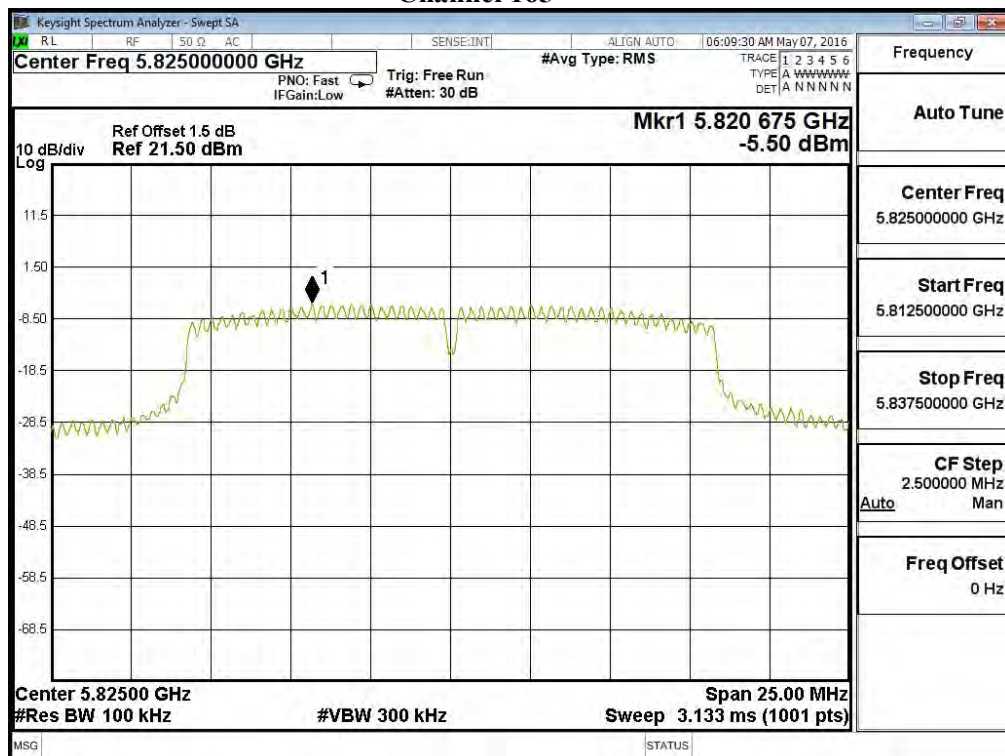
Channel 149



Channel 157



Channel 165



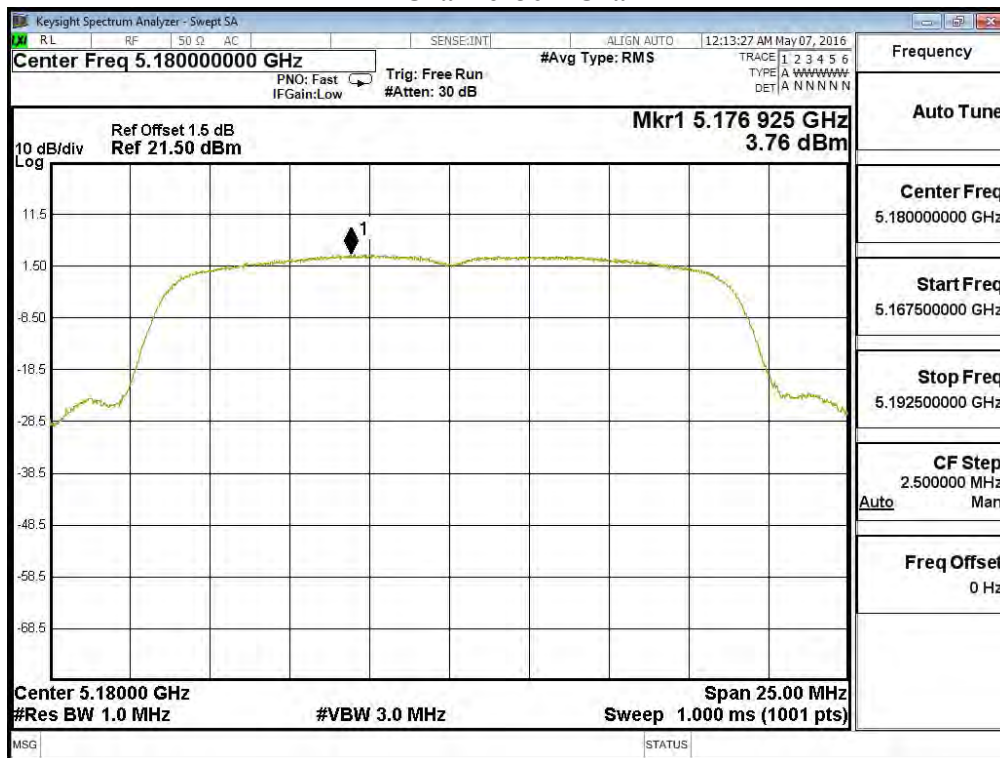
Product : Evoko Liso Room Manager /Evoko Liso
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)	Required Limit (dBm)	Result
36	5180	A	3.760	6.770	11	Pass
		B	0.820	3.830	11	Pass
44	5220	A	3.450	6.460	11	Pass
		B	2.350	5.360	11	Pass
48	5240	A	3.790	6.800	11	Pass
		B	3.220	6.230	11	Pass
52	5260	A	4.260	7.270	11	Pass
		B	3.100	6.110	11	Pass
60	5300	A	4.270	7.280	11	Pass
		B	2.810	5.820	11	Pass
64	5320	A	4.200	7.210	11	Pass
		B	0.610	3.620	11	Pass
100	5500	A	4.620	7.630	11	Pass
		B	1.150	4.160	11	Pass
116	5580	A	4.730	7.740	11	Pass
		B	4.780	7.790	11	Pass
140	5700	A	3.250	6.260	11	Pass
		B	1.120	4.130	11	Pass

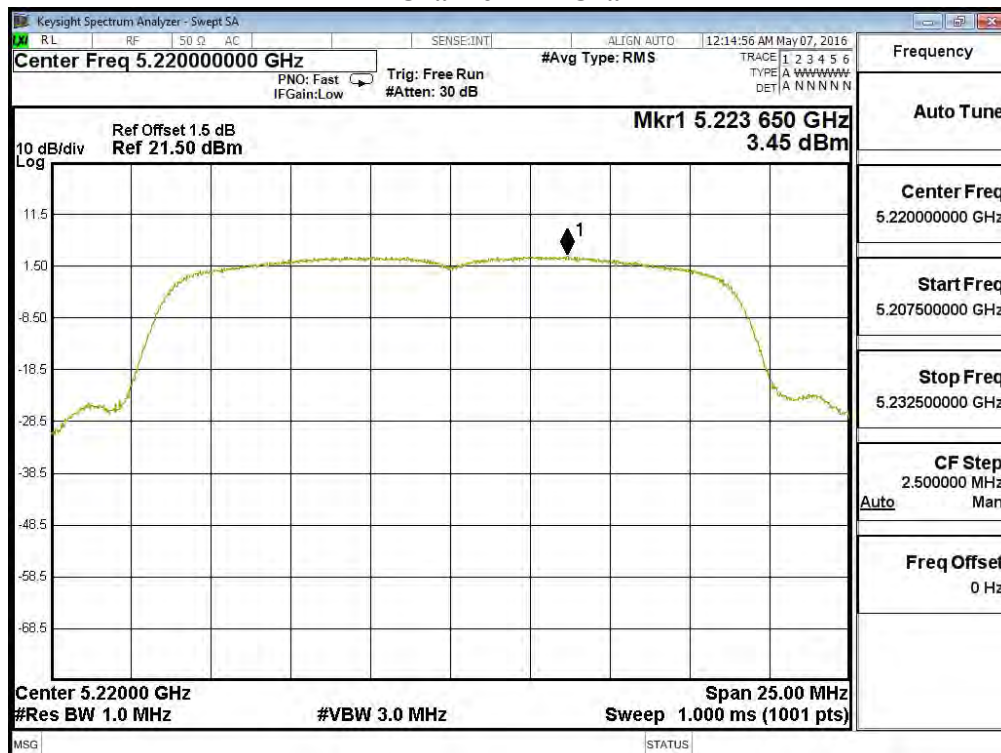
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	A	-6.490	6.980	3.500	<30	Pass
		B	-6.930	6.980	3.060	<30	Pass
157	5785	A	-6.010	6.980	3.980	<30	Pass
		B	-6.860	6.980	3.130	<30	Pass
165	5825	A	-5.540	6.980	4.450	<30	Pass
		B	-7.060	6.980	2.930	<30	Pass

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

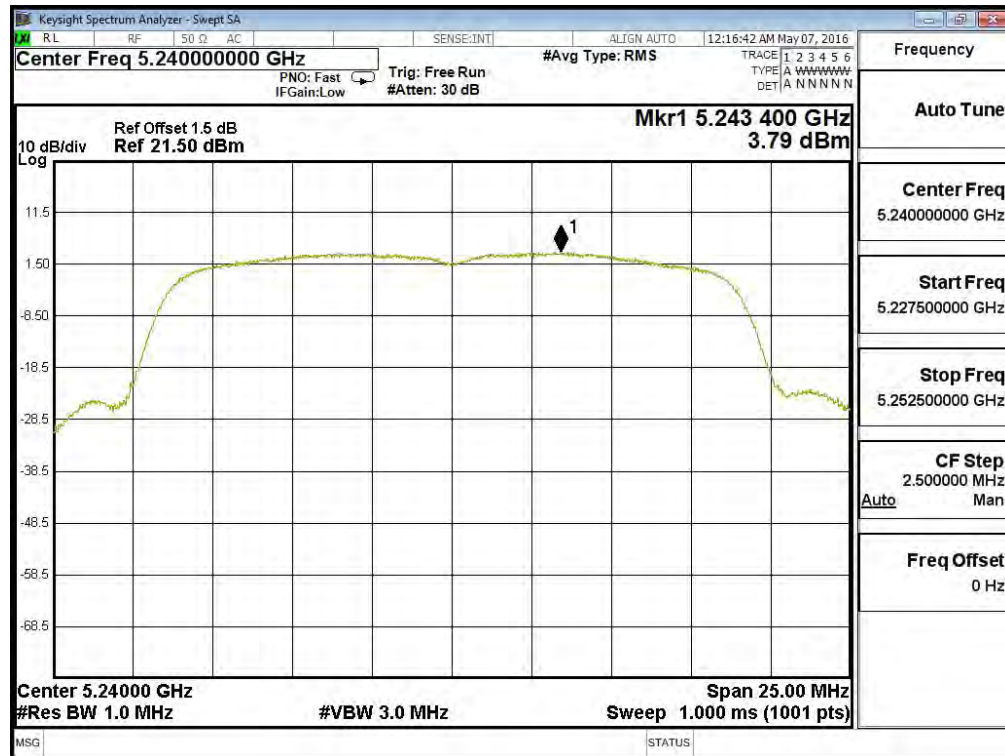
Channel 36 – Chain A



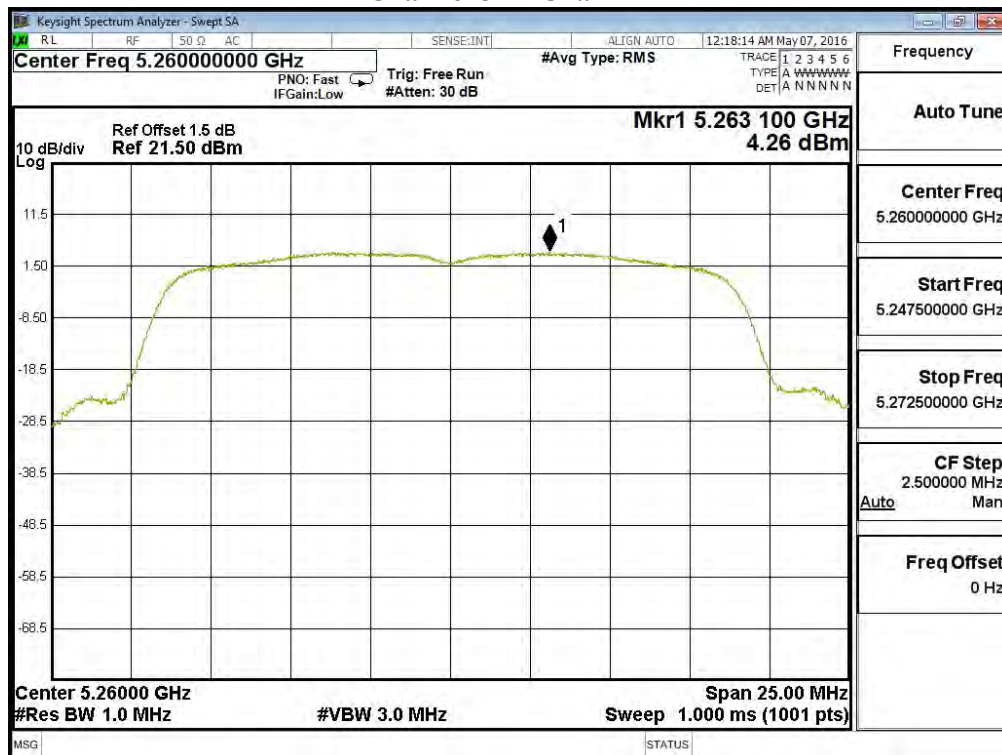
Channel 44 – Chain A



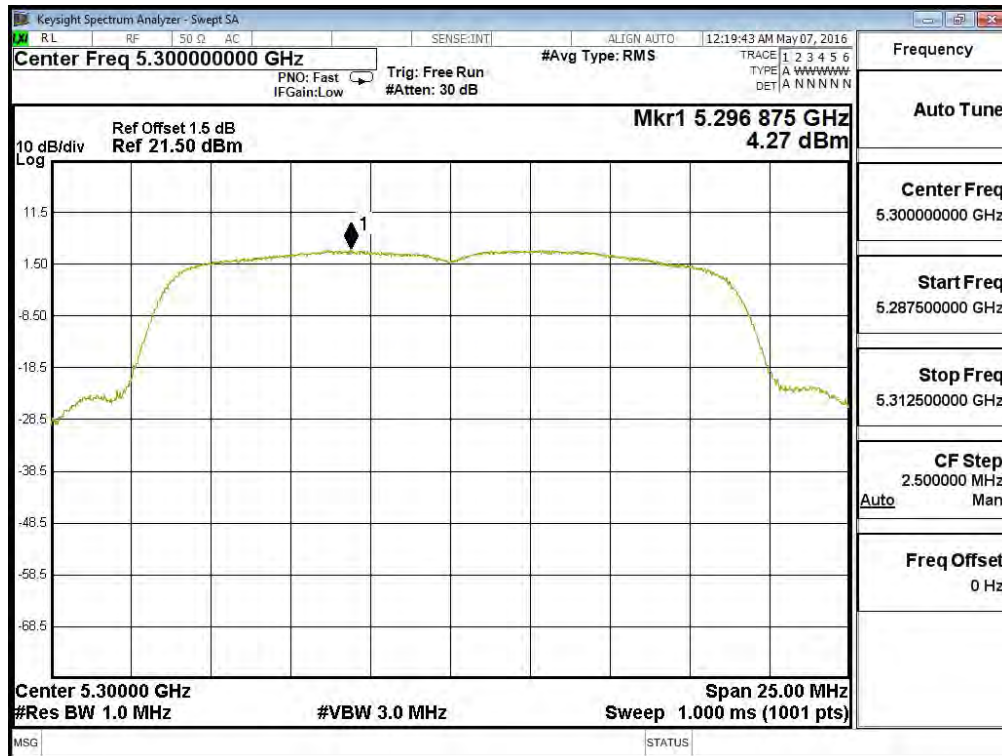
Channel 48 – Chain A



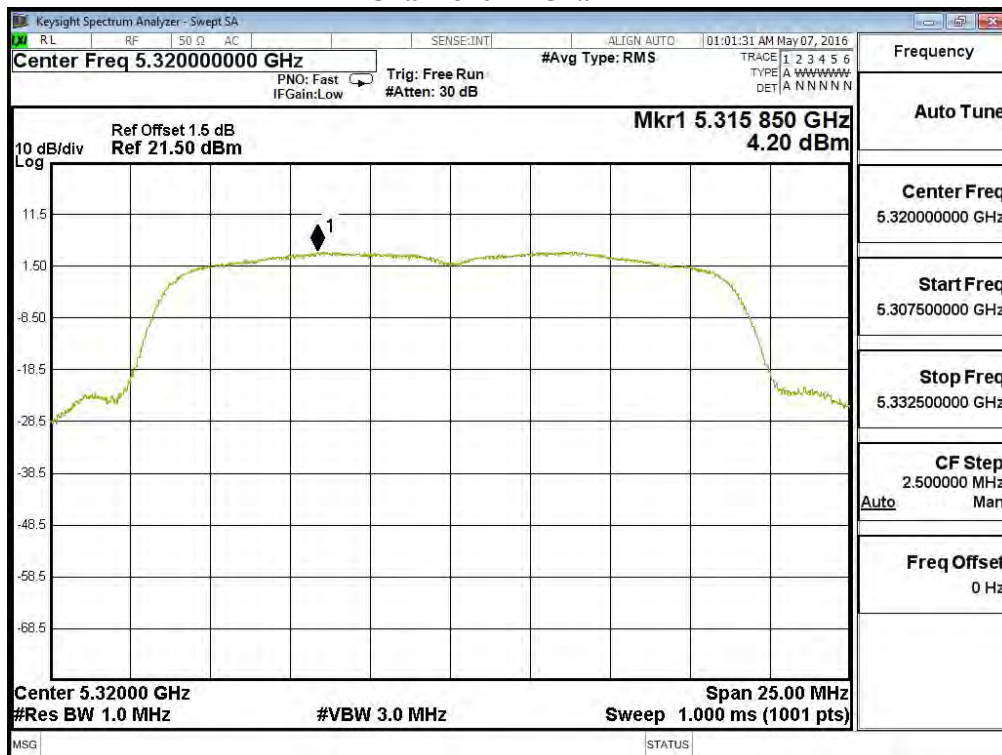
Channel 52 – Chain A



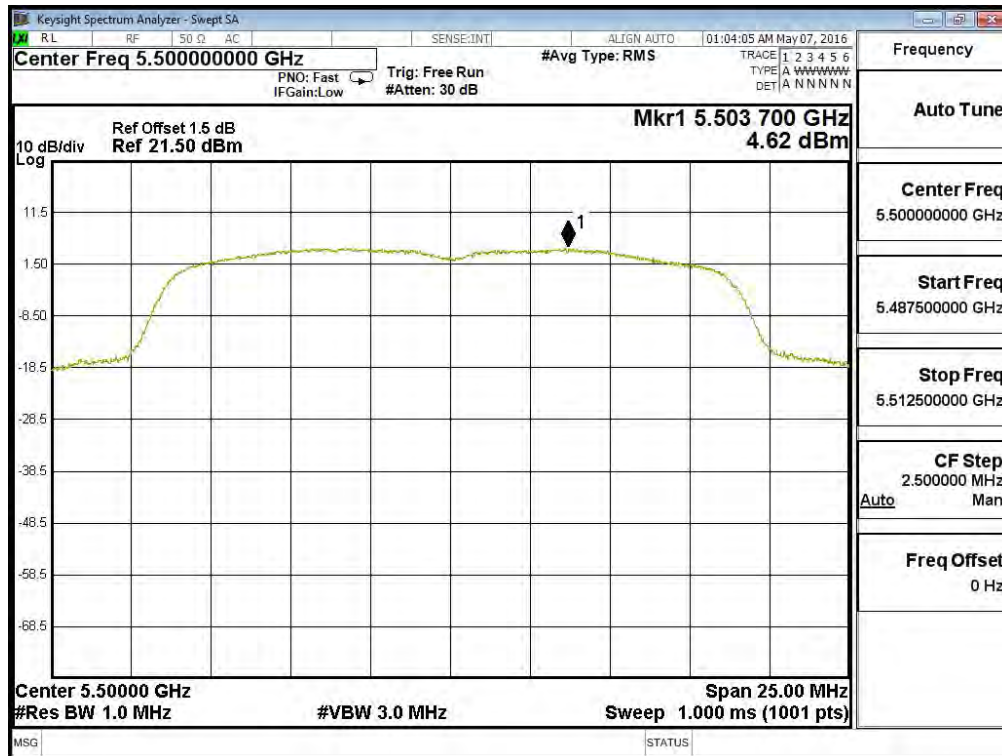
Channel 60 – Chain A



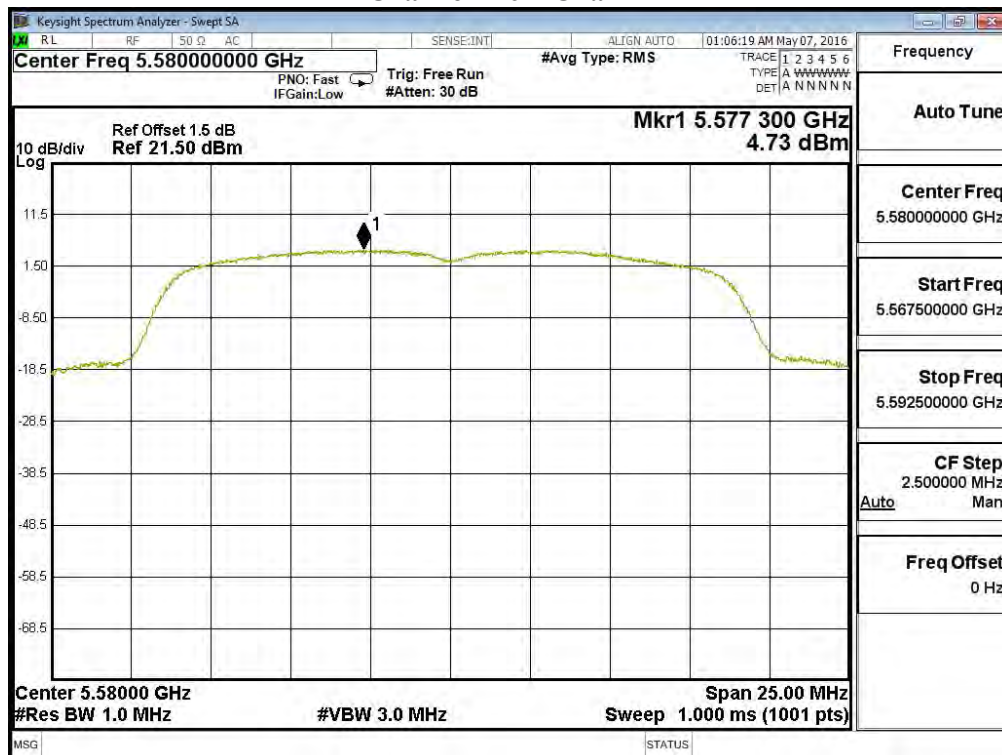
Channel 64 – Chain A



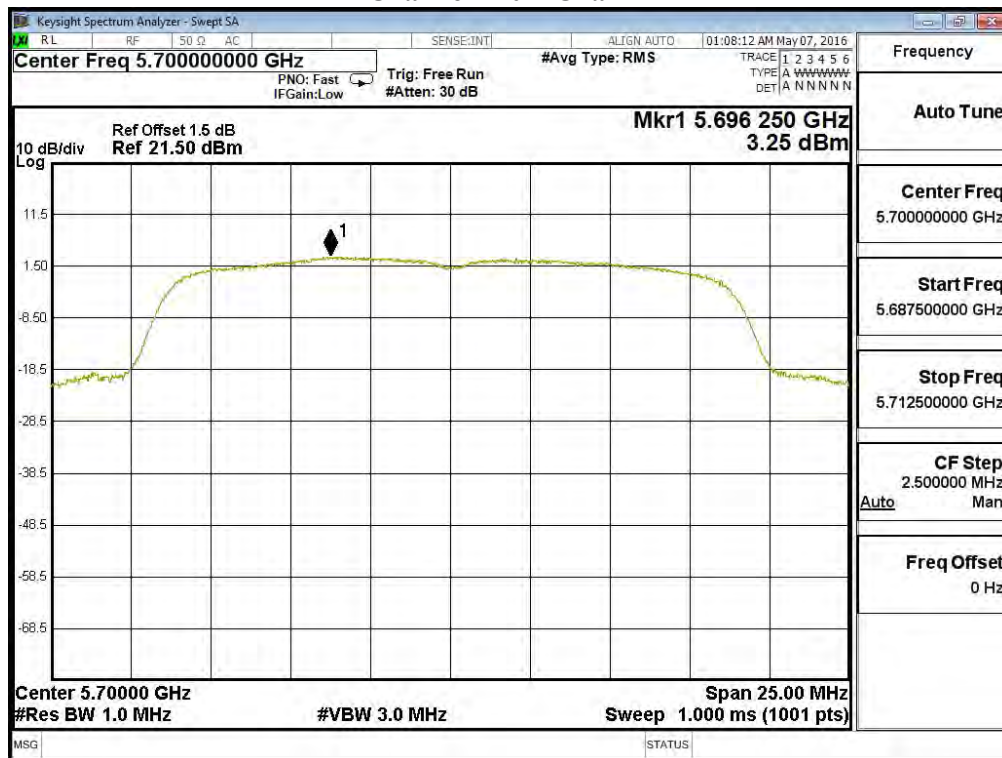
Channel 100 – Chain A



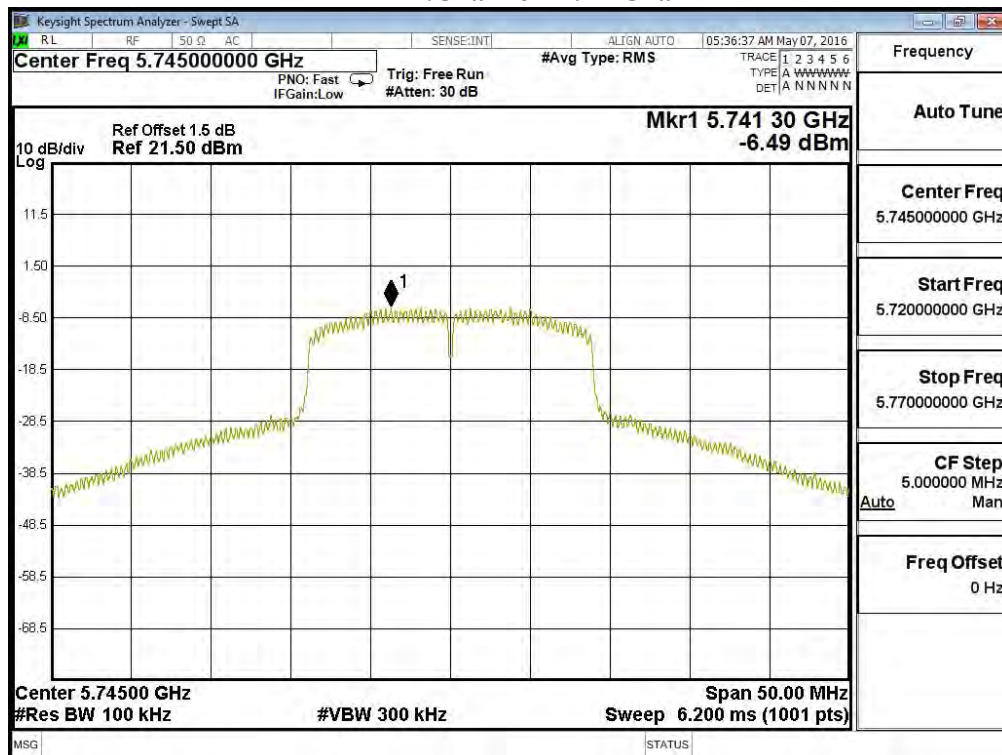
Channel 116 – Chain A



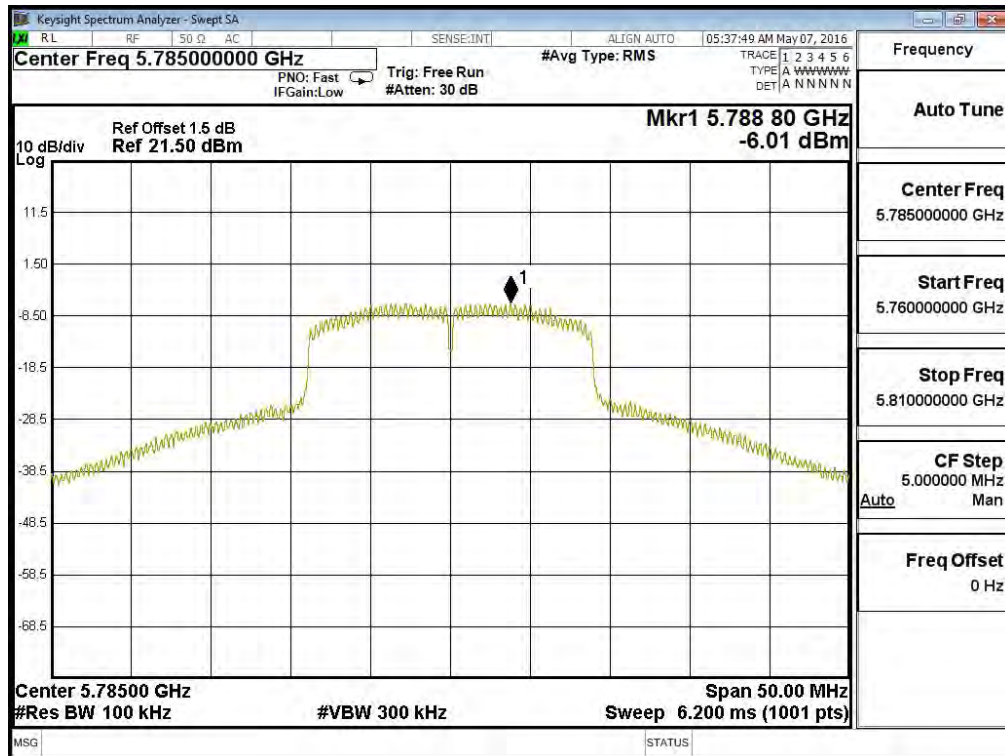
Channel 140 – Chain A



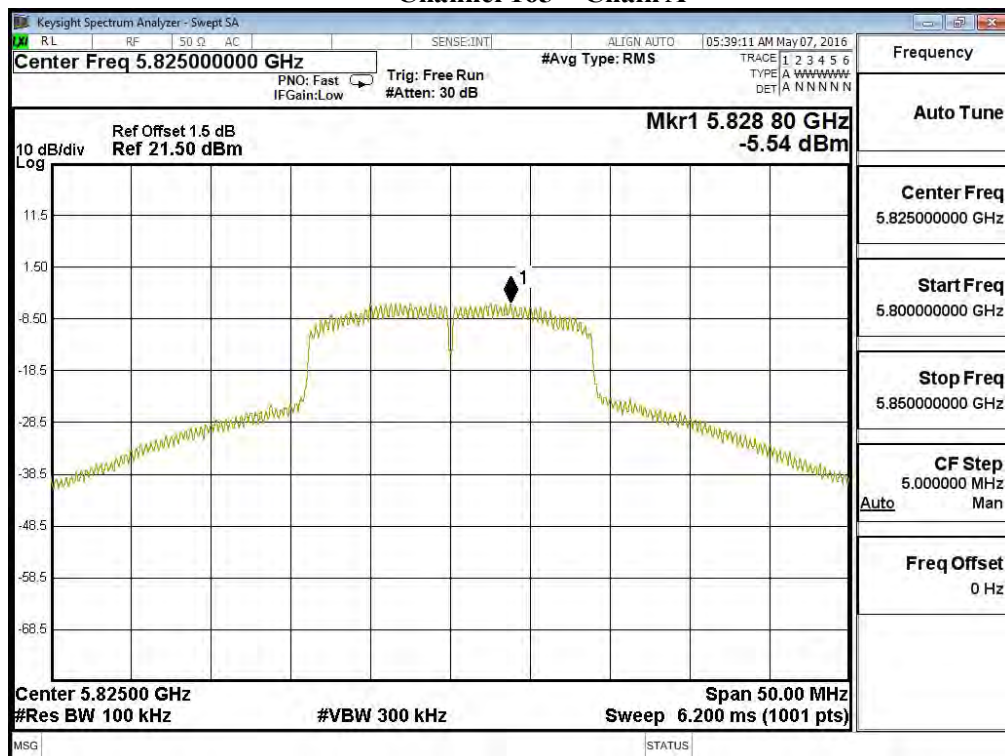
.Channel 149 – Chain A



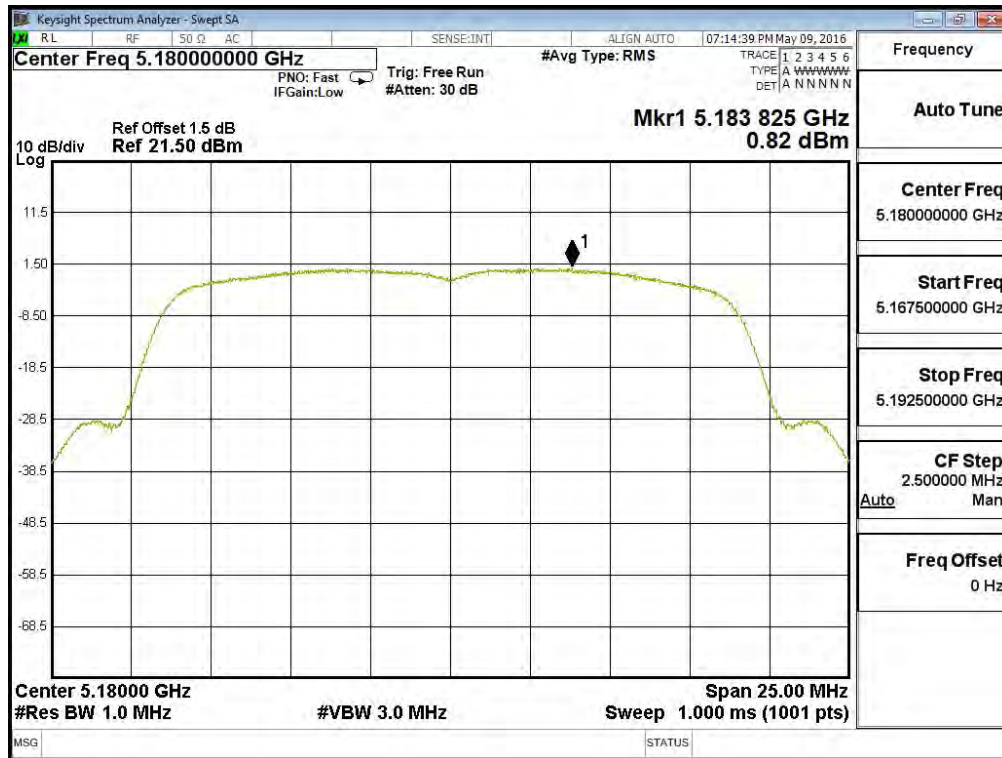
Channel 157 – Chain A



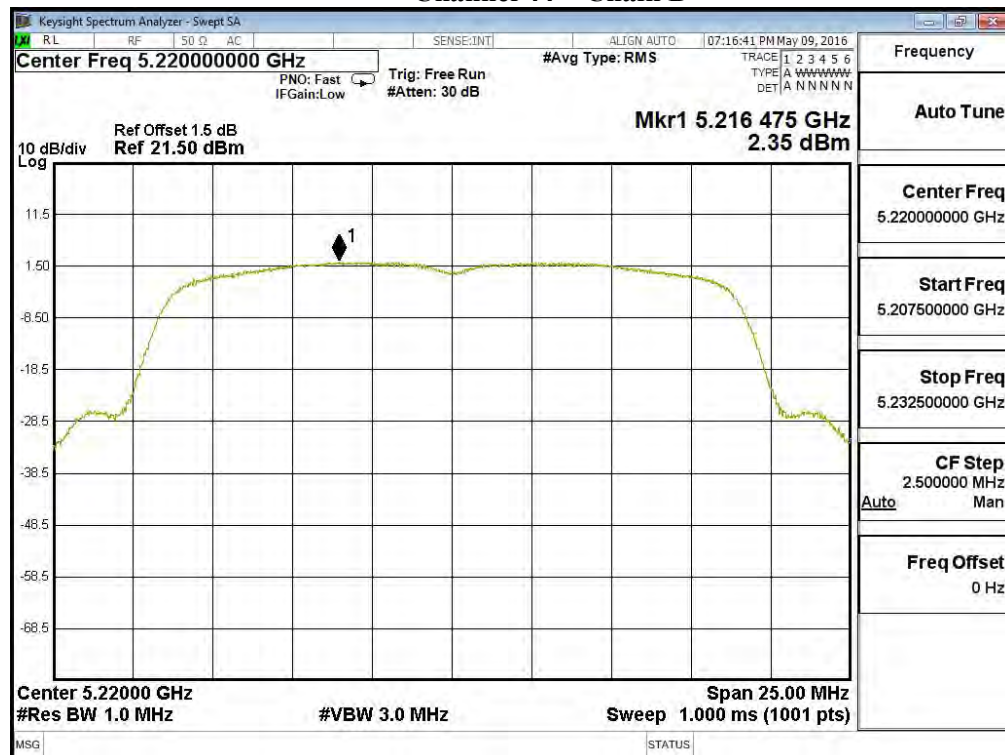
Channel 165 – Chain A



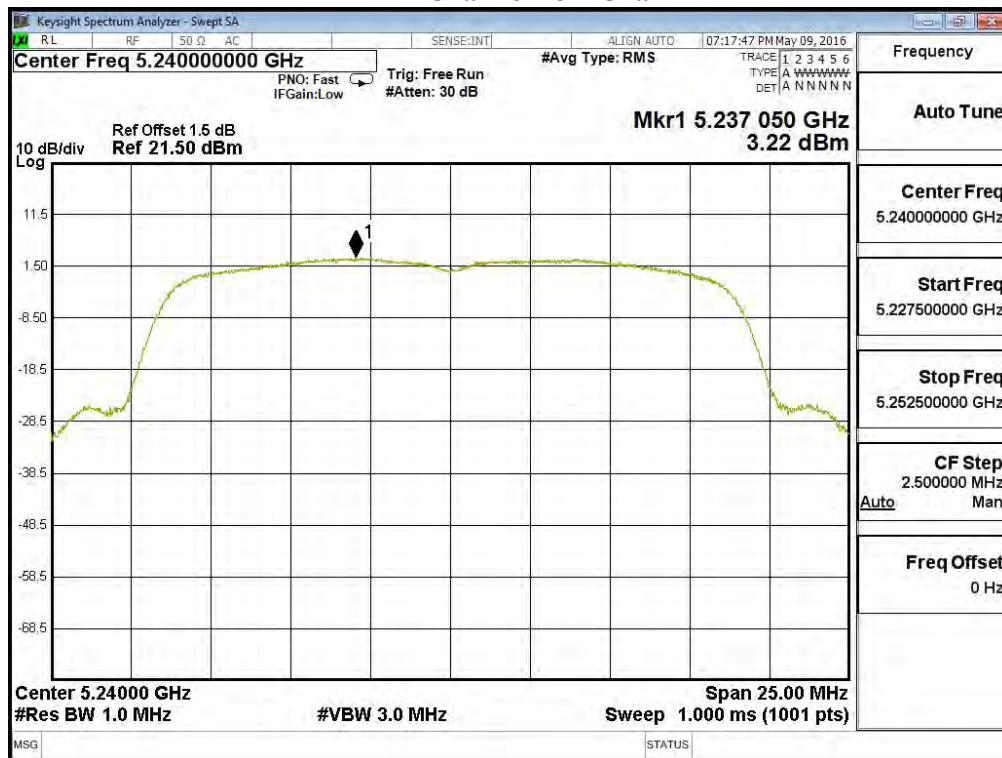
Channel 36 – Chain B



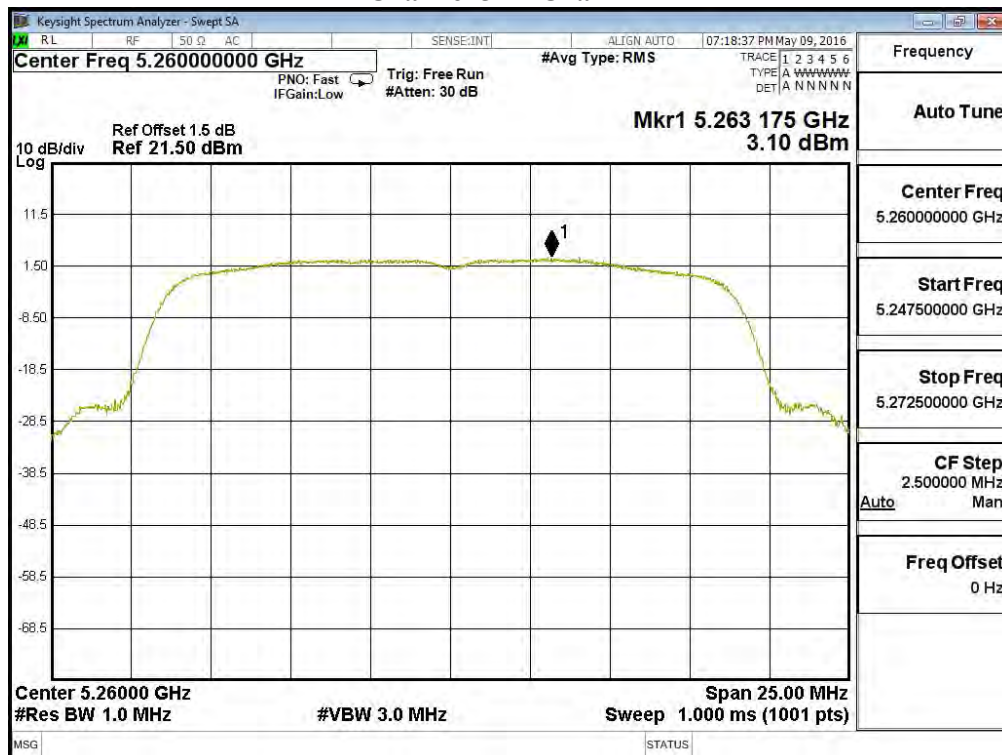
Channel 44 – Chain B



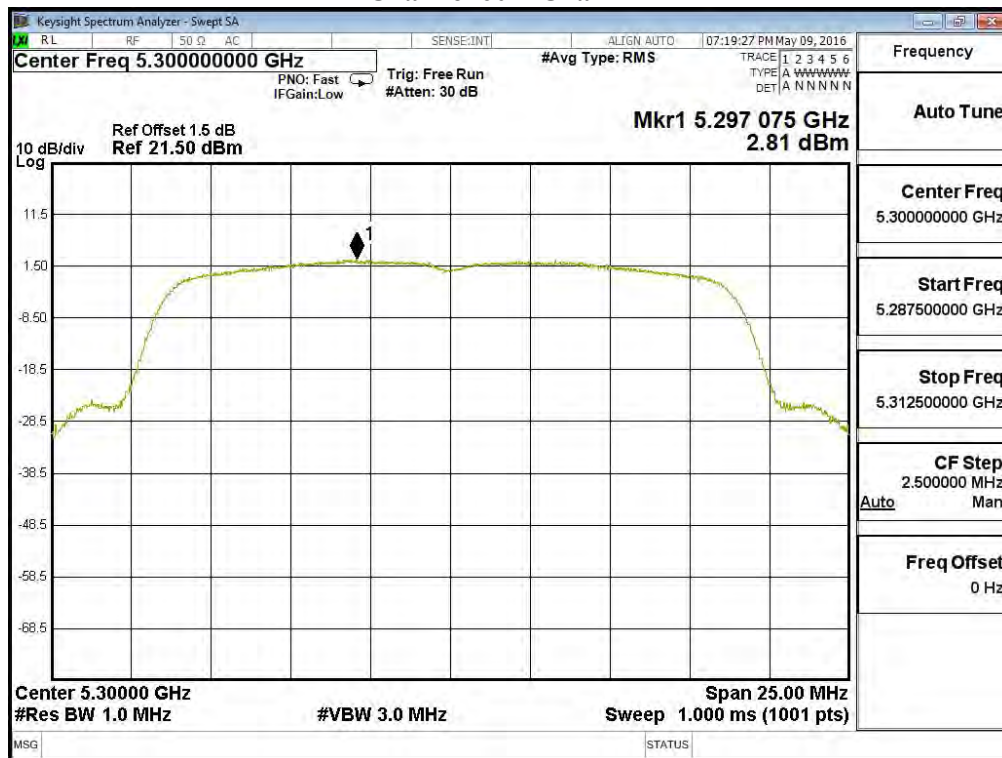
Channel 48 – Chain B



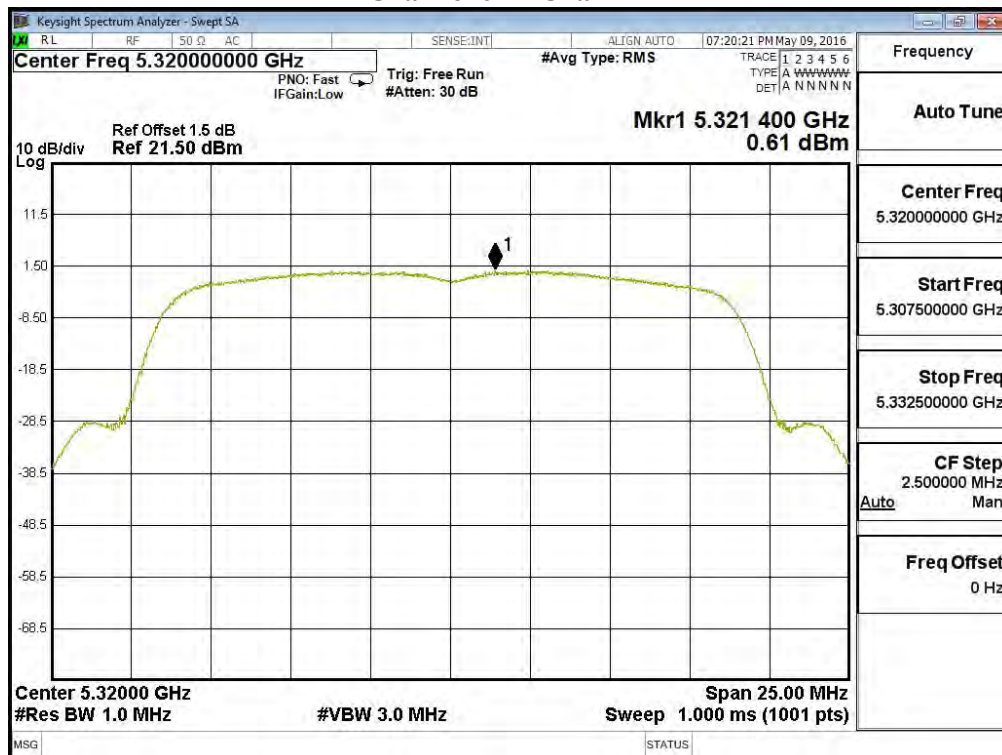
Channel 52 – Chain B



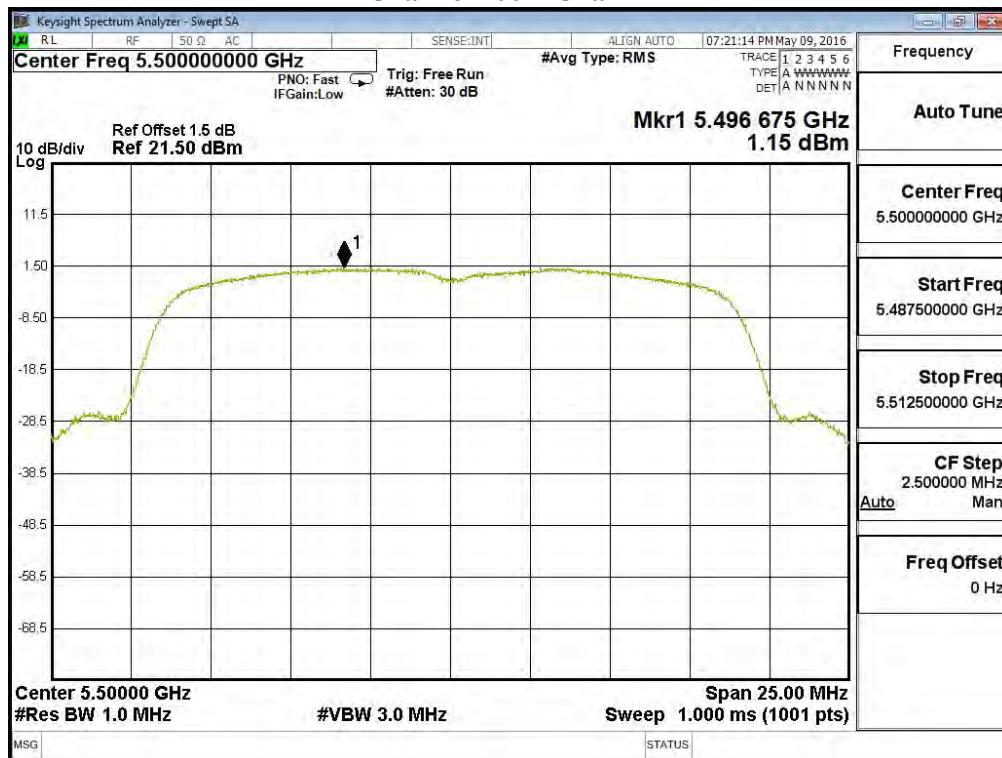
Channel 60 – Chain B



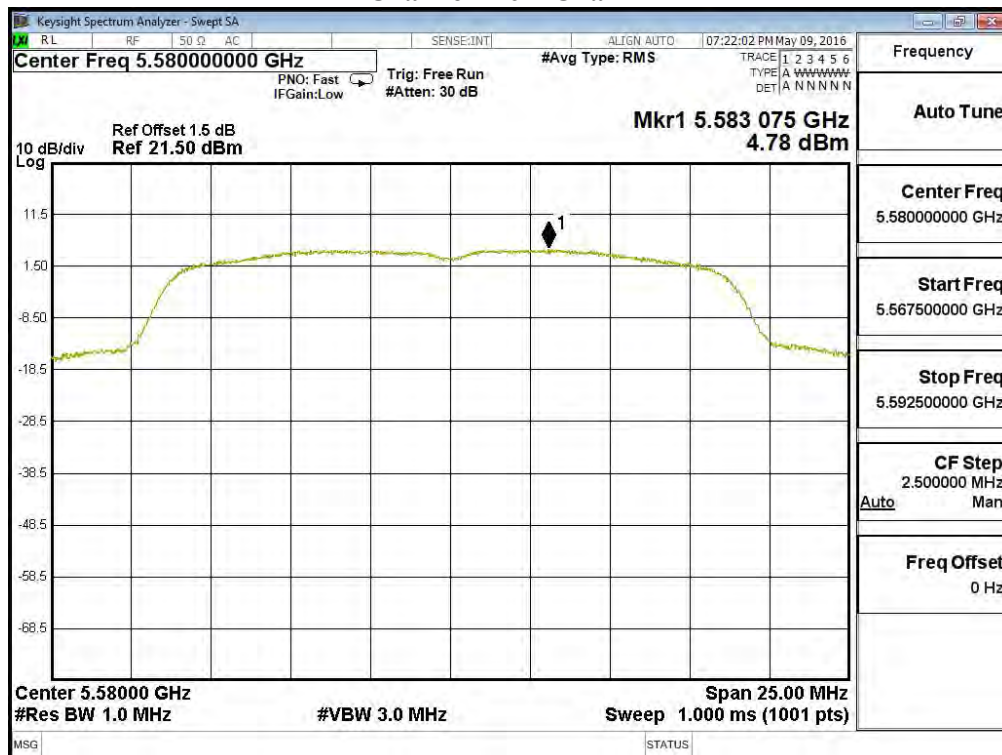
Channel 64 – Chain B



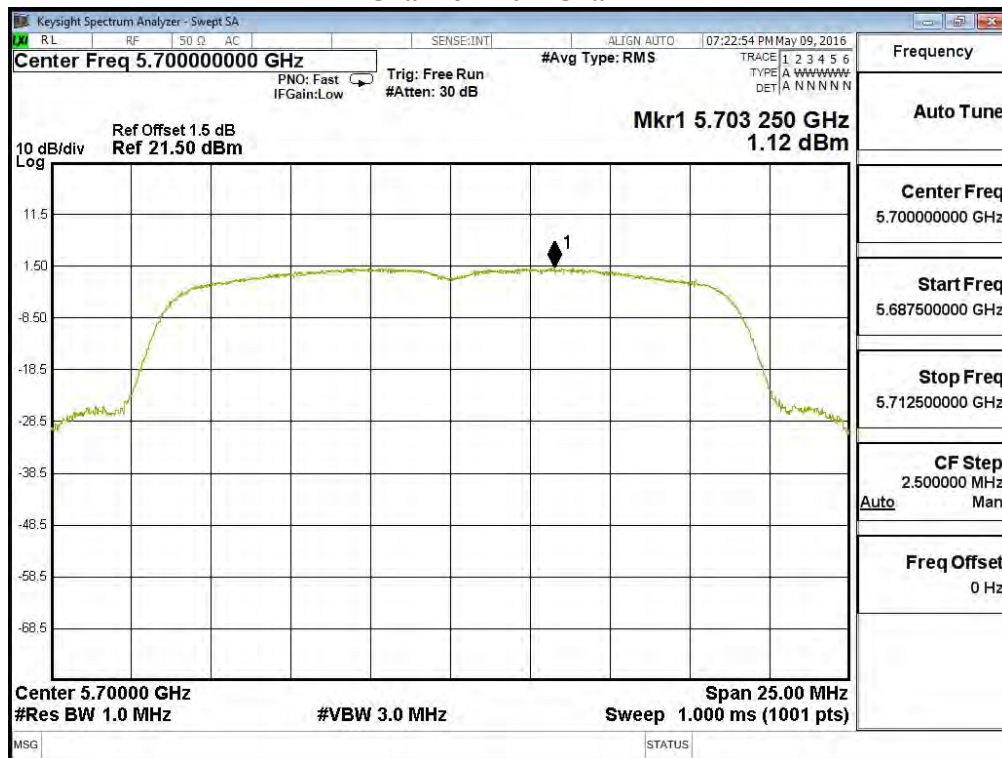
Channel 100 – Chain B



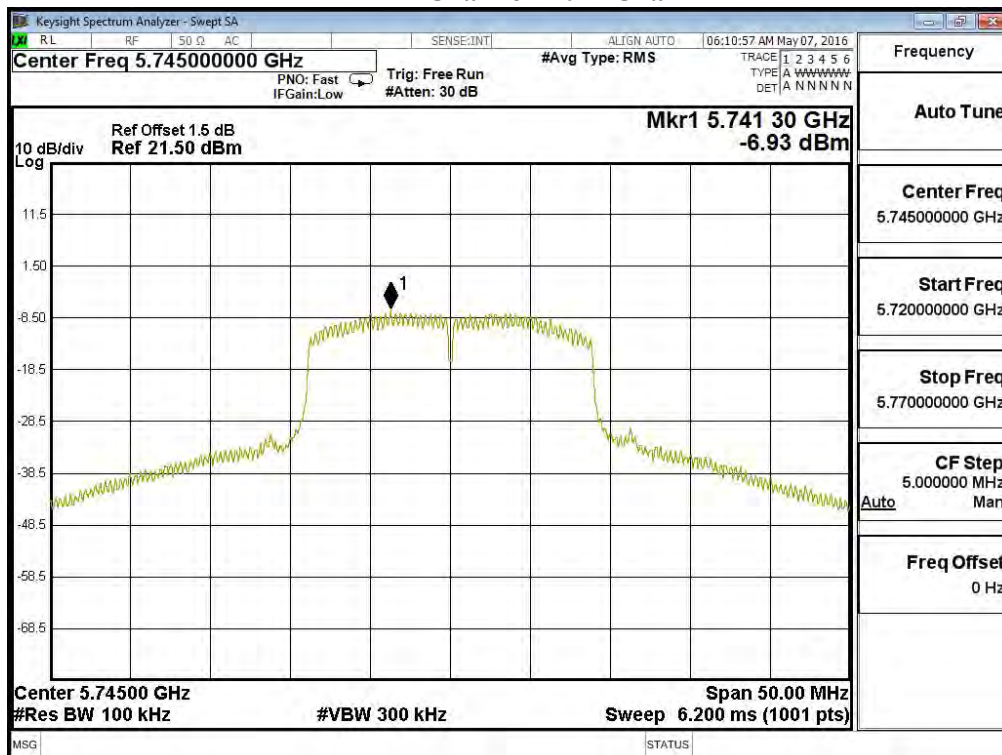
Channel 116 – Chain B



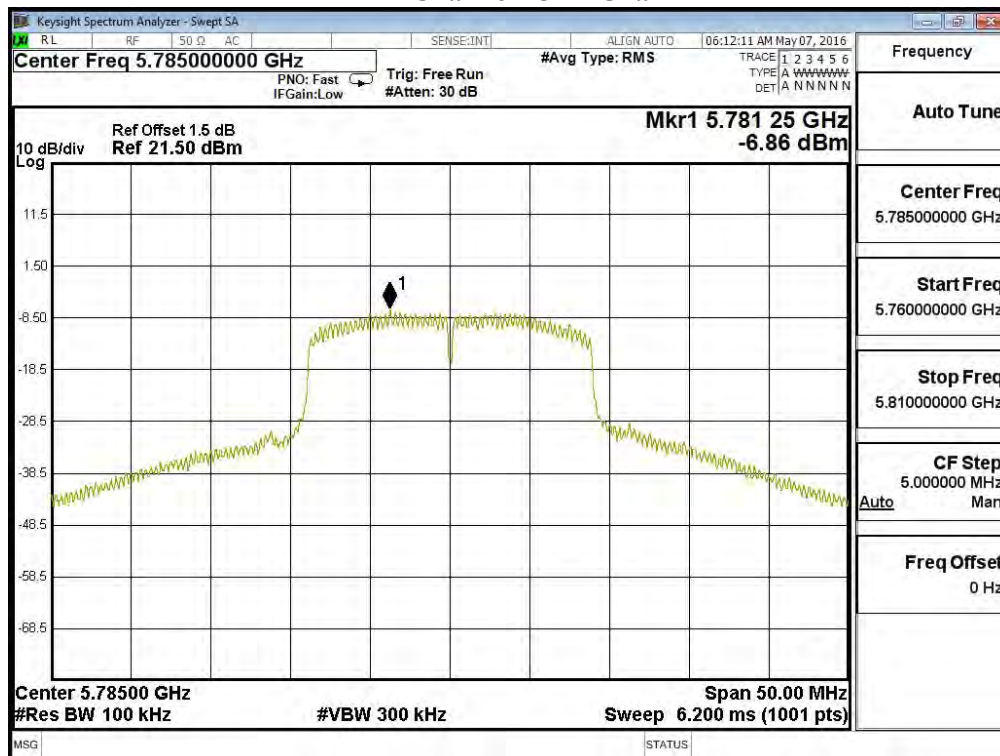
Channel 140 – Chain B



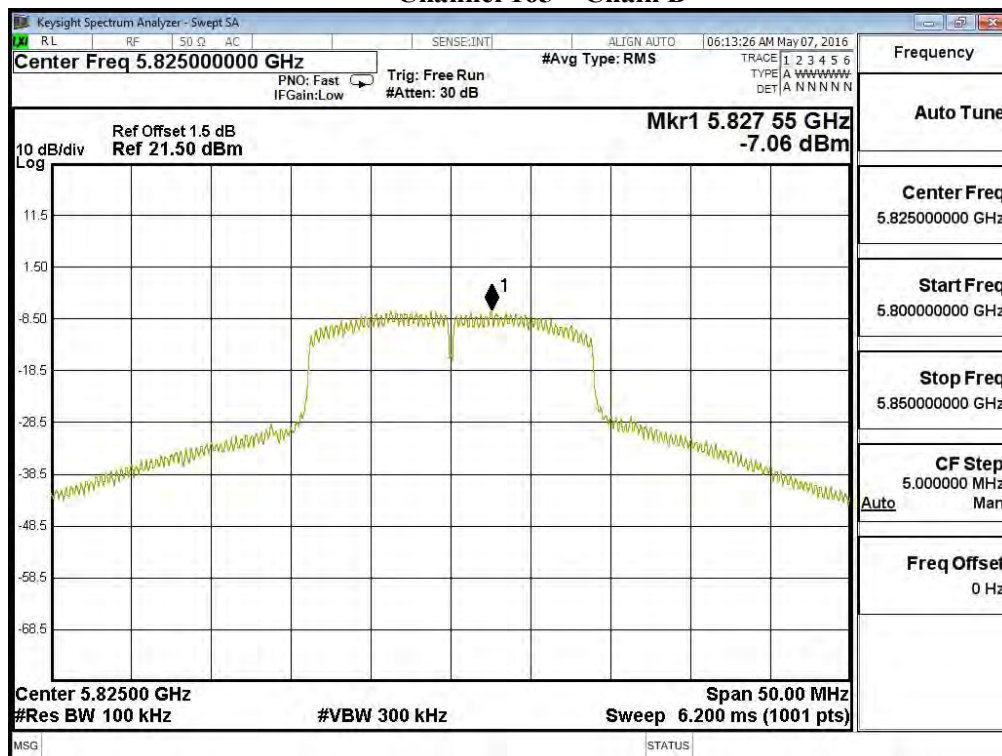
Channel 149 – Chain B



Channel 157 – Chain B



Channel 165 – Chain B



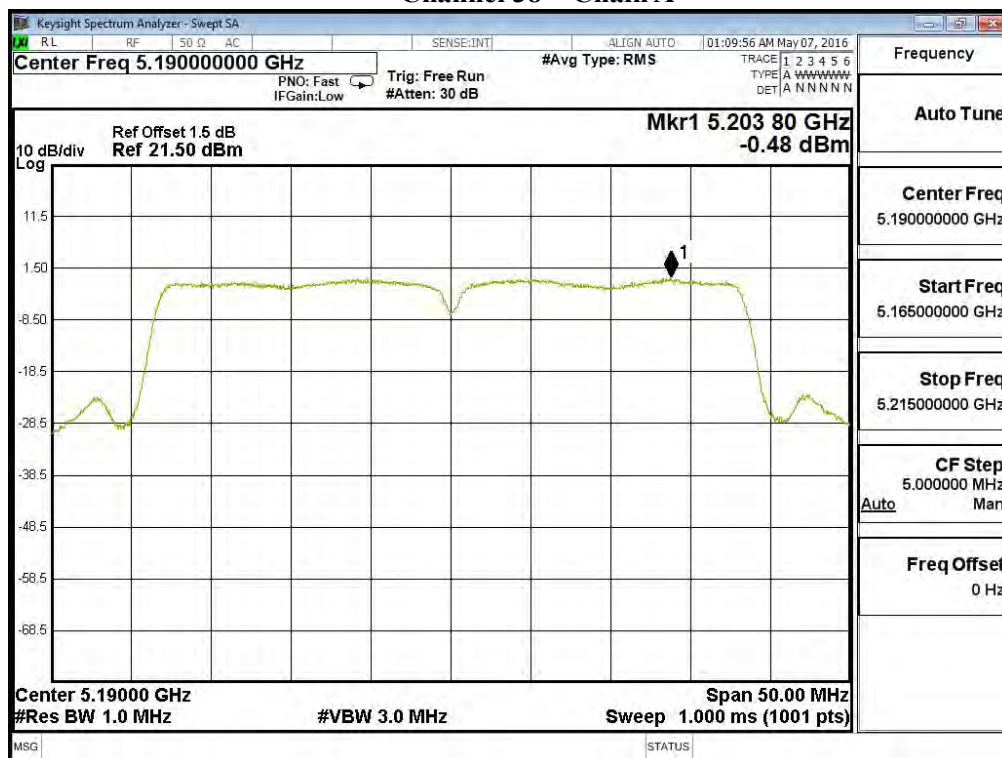
Product : Evoko Liso Room Manager /Evoko Liso
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PSD (dBm)	Required Limit (dBm)	Result
38	5190	A	-0.480	2.530	11	Pass
		B	-3.550	-0.540	11	Pass
46	5230	A	-0.970	2.040	11	Pass
		B	-2.410	0.600	11	Pass
54	5270	A	-0.490	2.520	11	Pass
		B	-2.560	0.450	11	Pass
62	5310	A	-0.750	2.260	11	Pass
		B	-3.420	-0.410	11	Pass
102	5510	A	-1.890	1.120	11	Pass
		B	-2.920	0.090	11	Pass
110	5550	A	-2.080	0.930	11	Pass
		B	-2.300	0.710	11	Pass
134	5670	A	-1.620	1.390	11	Pass
		B	-2.930	0.080	11	Pass

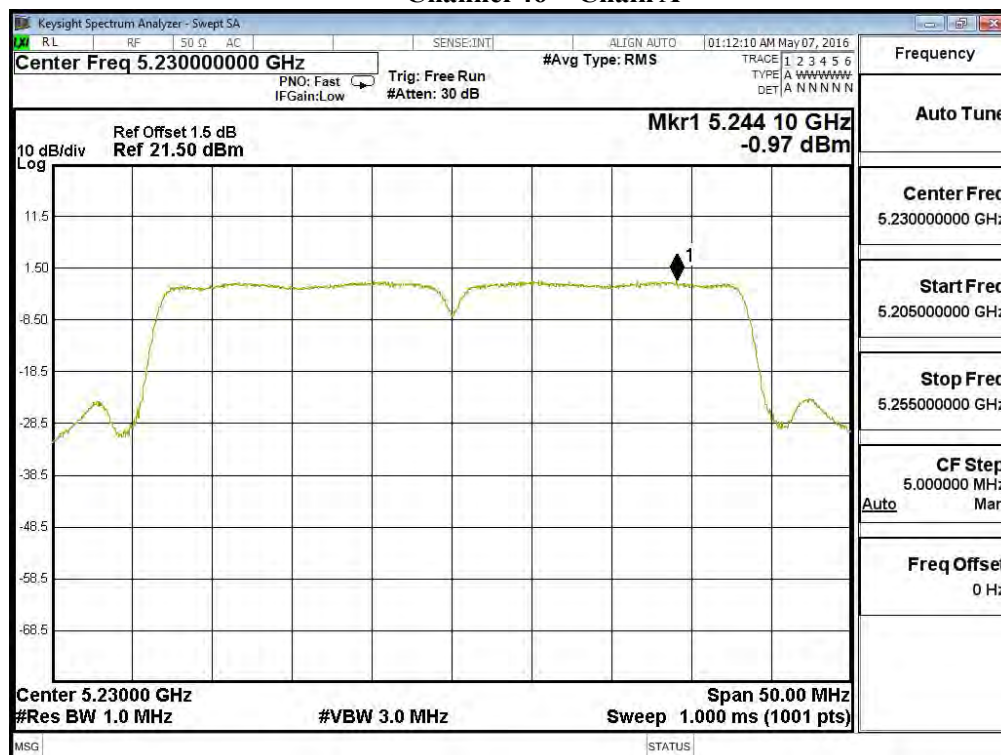
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PSD (dBm) ₁	Required Limit (dBm)	Result
151	5755	A	-11.250	6.980	-1.260	<30	Pass
		B	-12.070	6.980	-2.080	<30	Pass
159	5795	A	-11.110	6.980	-1.120	<30	Pass
		B	-12.420	6.980	-2.430	<30	Pass

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

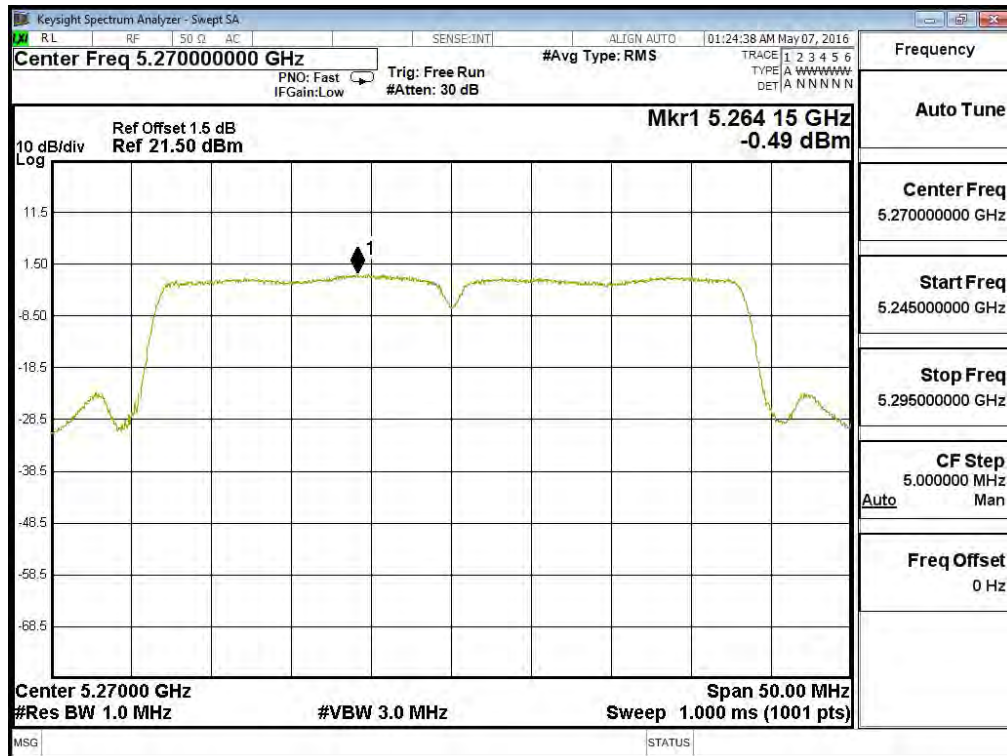
Channel 38 – Chain A



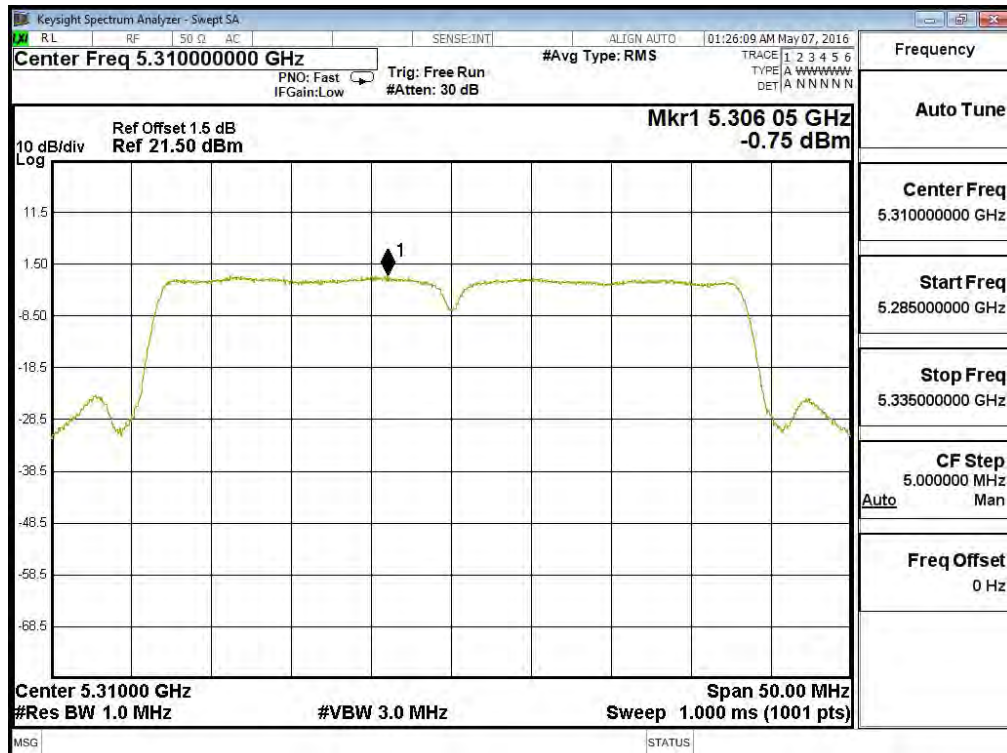
Channel 46 – Chain A



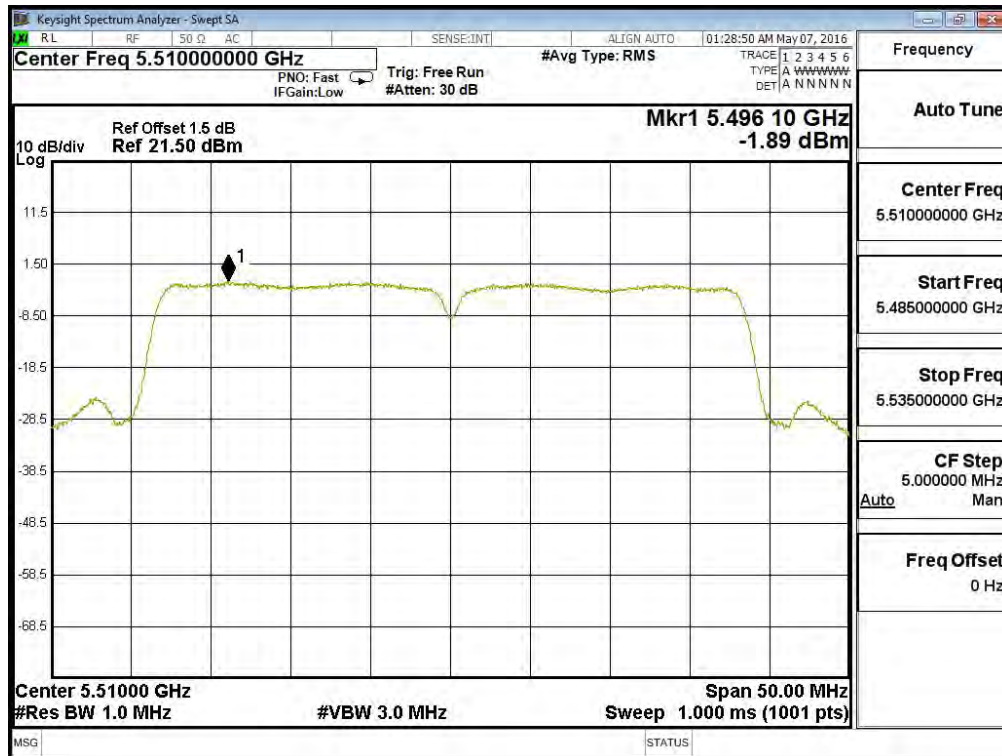
Channel 54 – Chain A



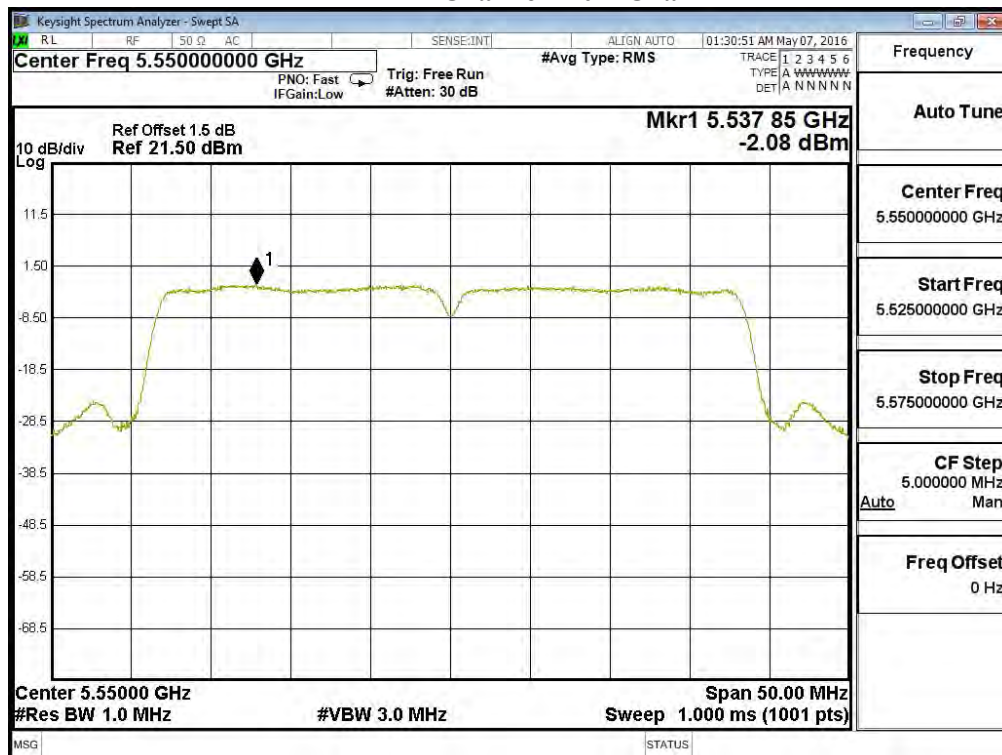
Channel 62 – Chain A



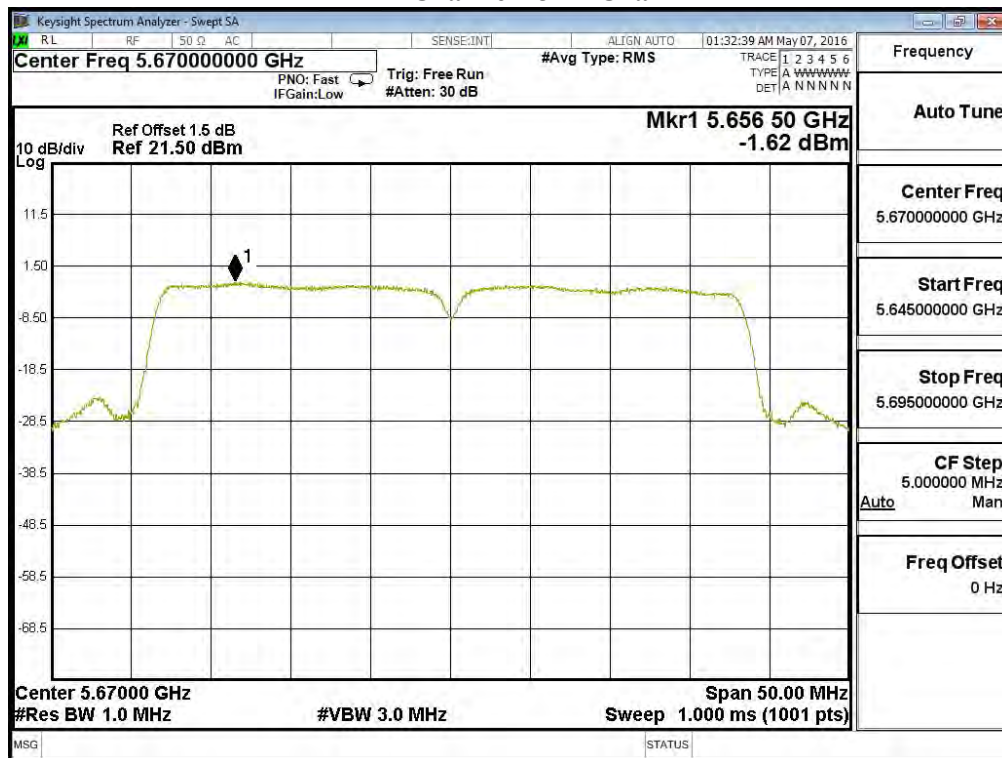
Channel 102 – Chain A



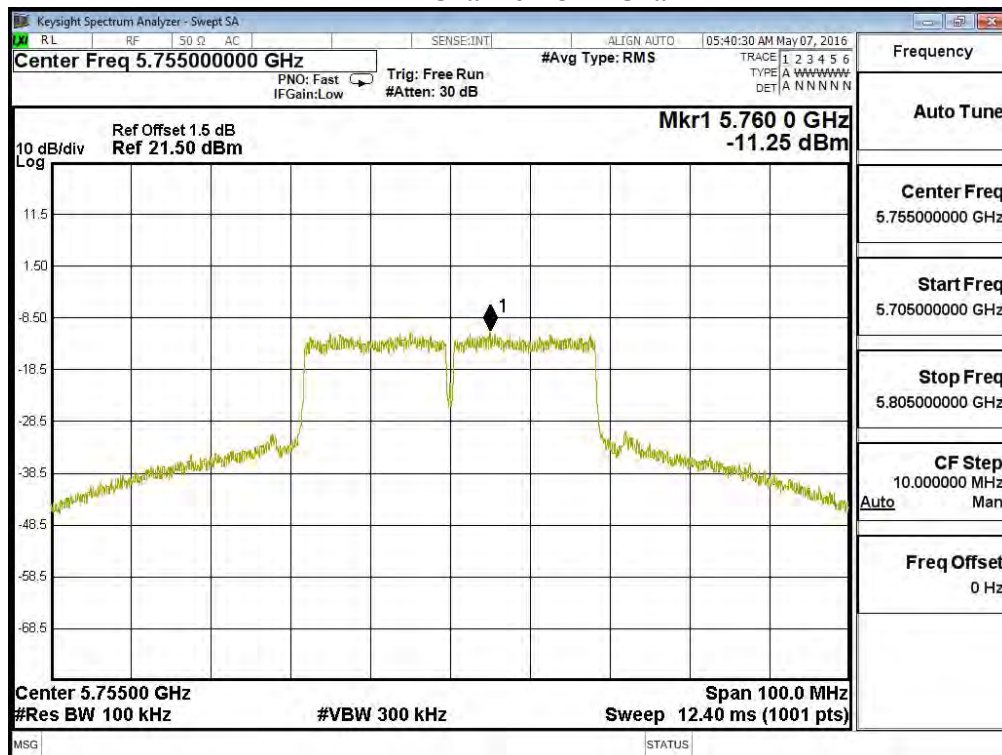
Channel 110 – Chain A



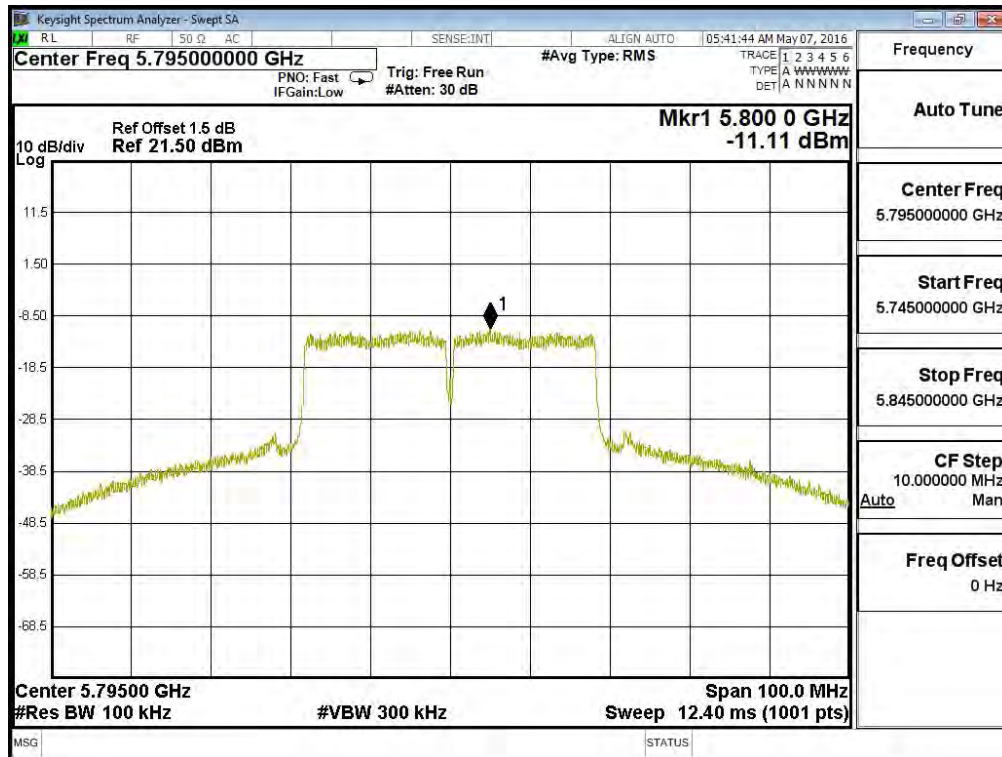
Channel 134 – Chain A



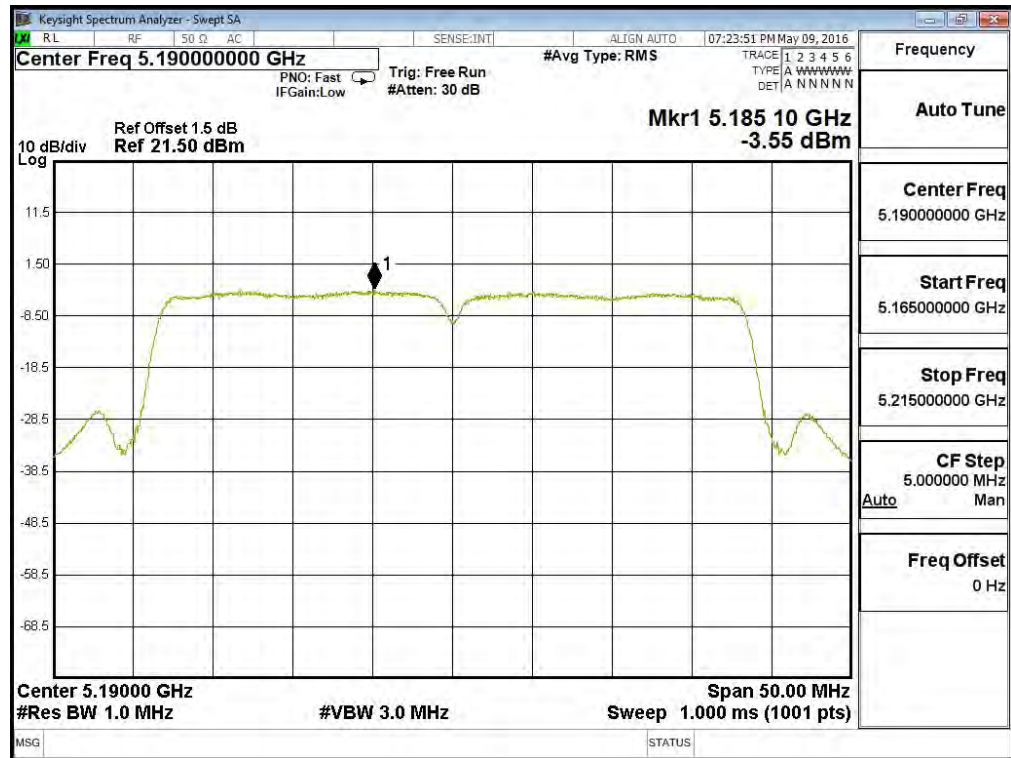
Channel 151 – Chain A



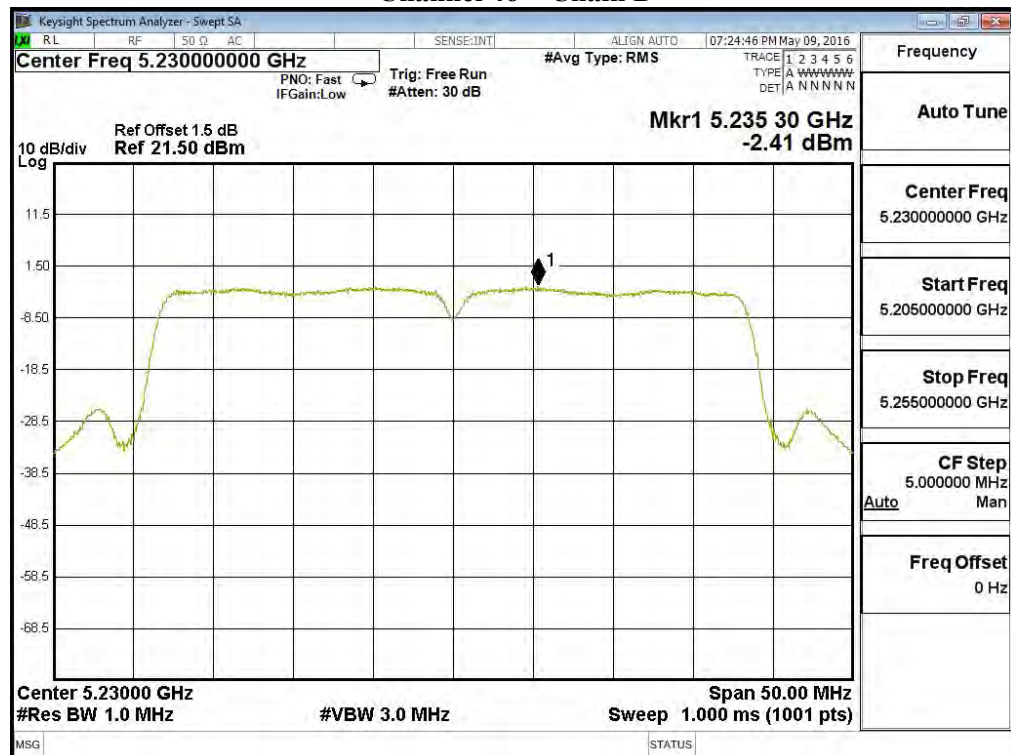
Channel 159 – Chain A



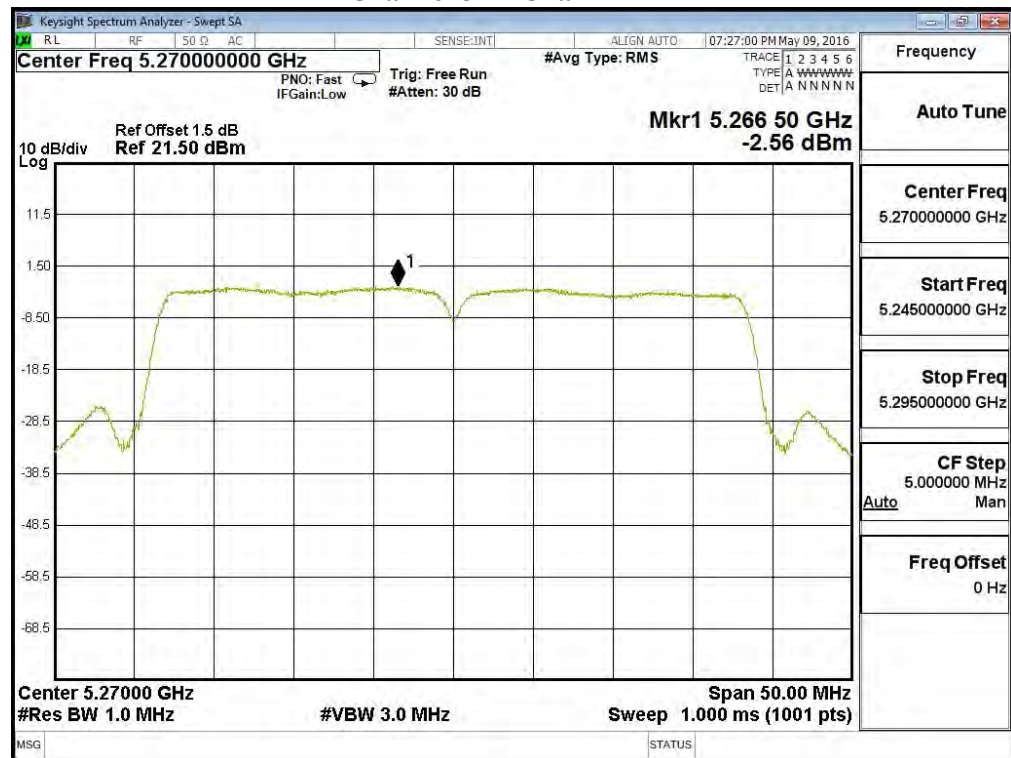
Channel 38 – Chain B



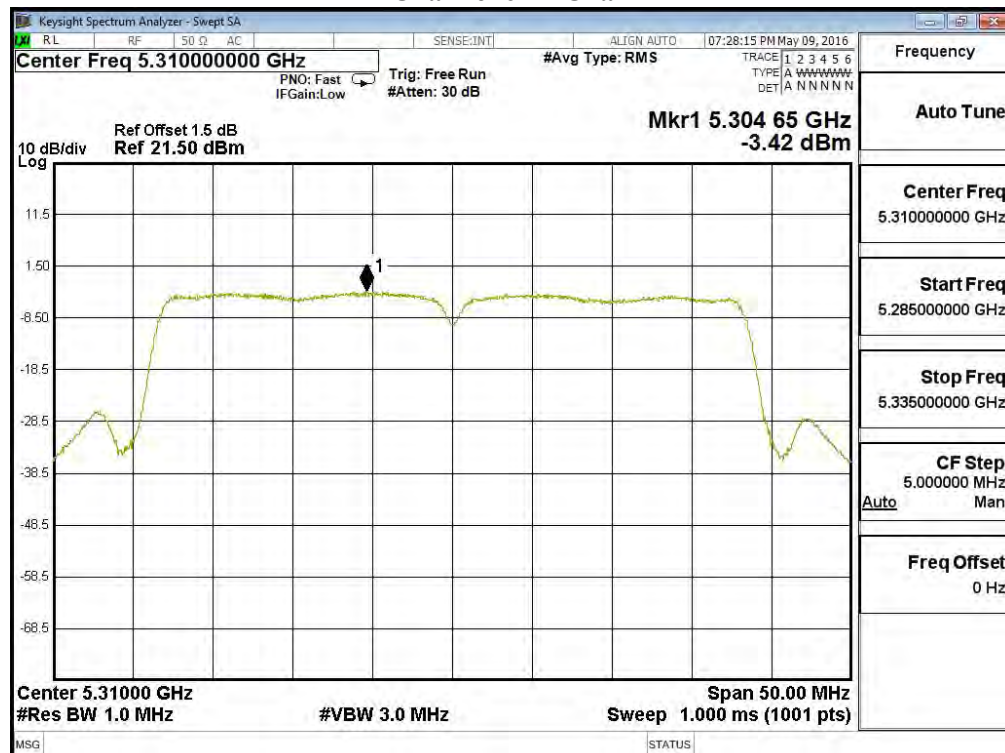
Channel 46 – Chain B



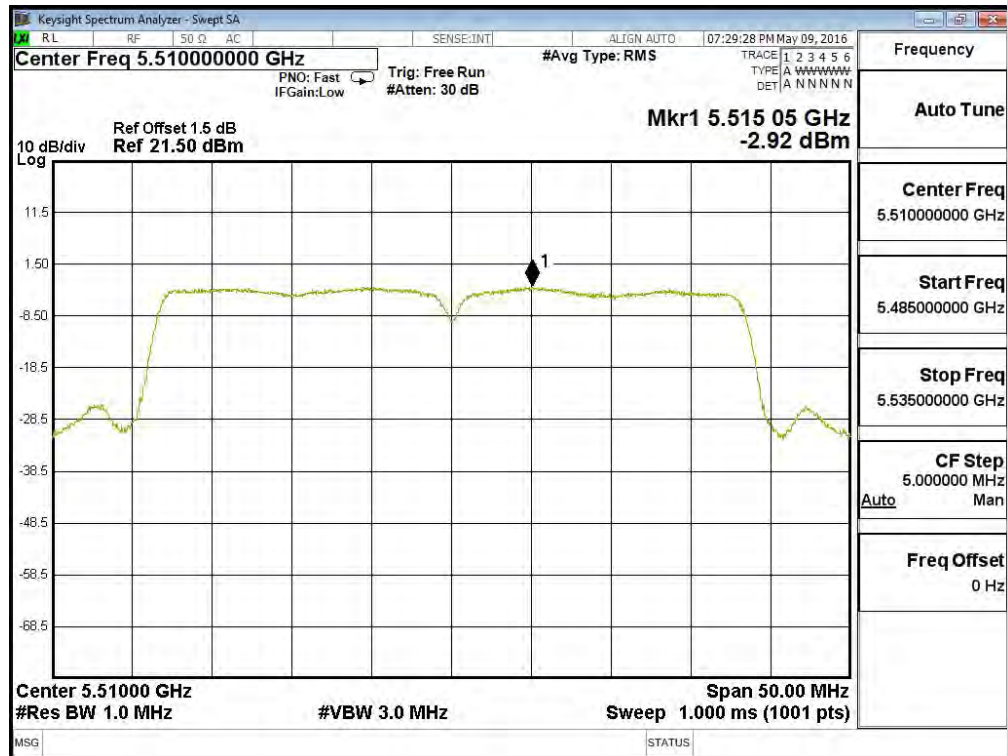
Channel 54 – Chain B



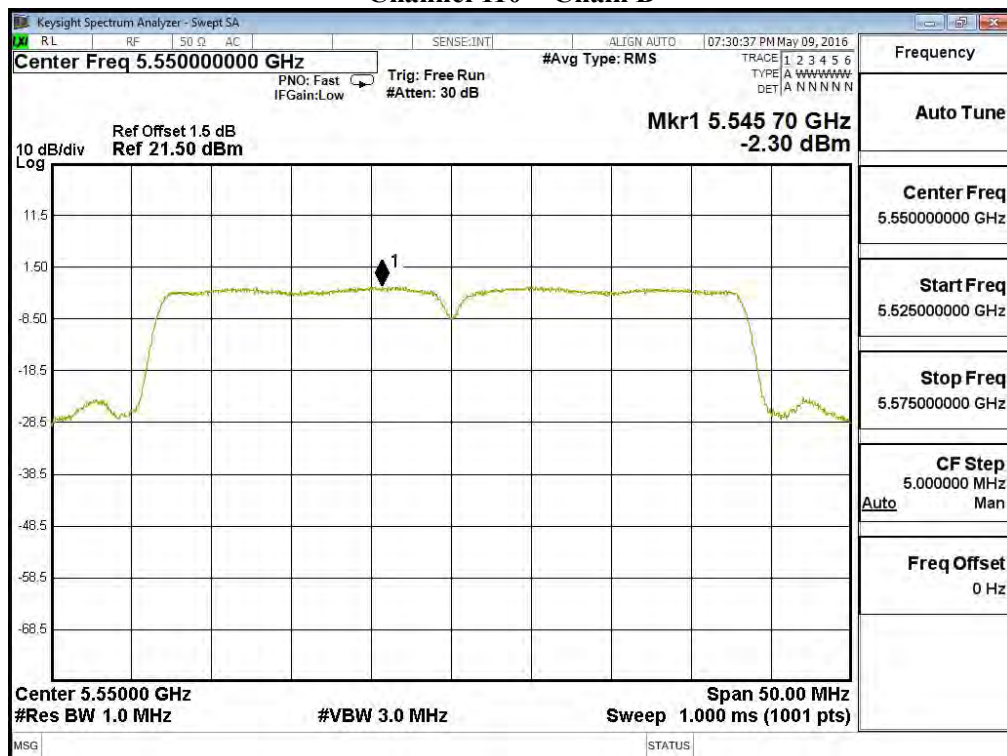
Channel 62 – Chain B



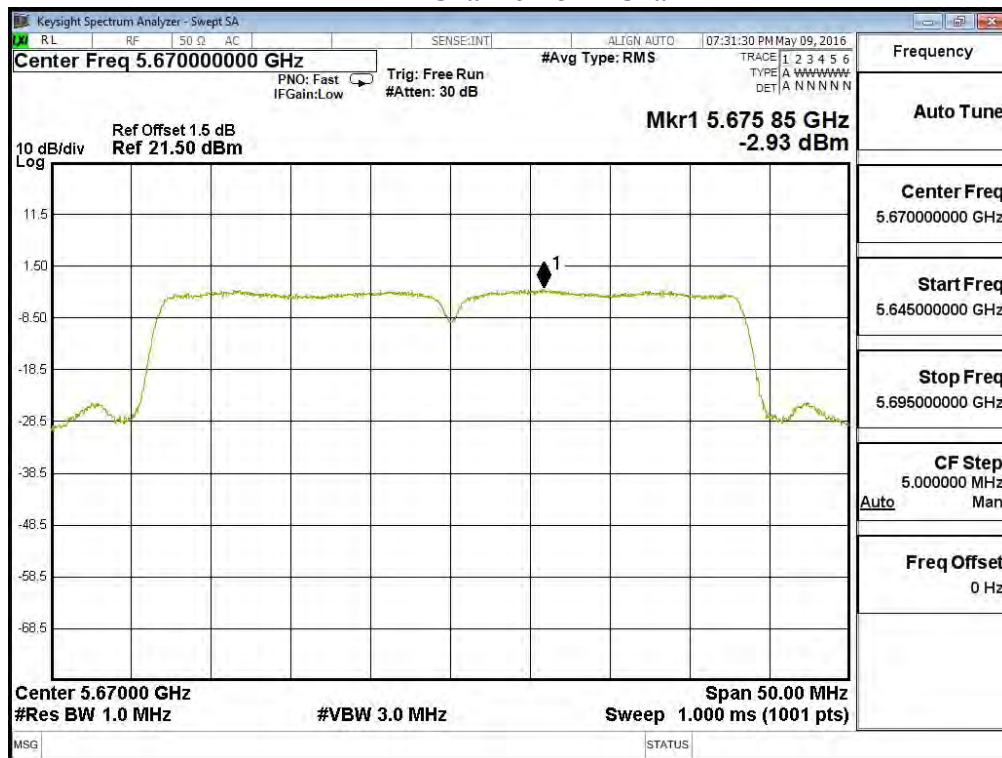
Channel 102 – Chain B



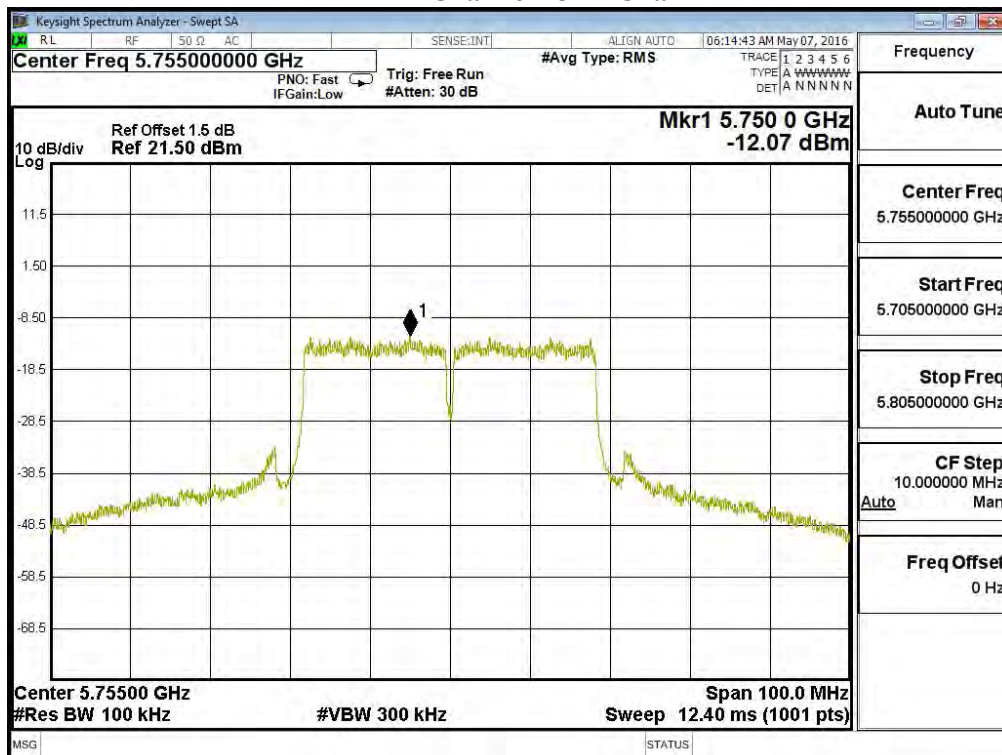
Channel 110 – Chain B



Channel 134 – Chain B



Channel 151 – Chain B



Channel 159 – Chain B

