

RF TEST REPORT



Report No.: RF_FCC IC_SL18010503-RUC-002_DTS Rev 1.0
 Supersede Report No.: RF_FCC IC_SL18010503-RUC-002_DTS





Applicant	:	Ruckus Wireless, Inc.
Product Name	:	R730 Access Point
Model No.	:	R730
Test Standard	:	47 CFR 15.247 RSS 247 Iss 2: Feb 2017
Test Method	:	ANSI C63.10: 2013 RSS Gen Iss 5: Apr 2018 558074 D01 DTS Meas Guidance v04
FCC ID	:	S9GR730
IC ID	:	5912A-R730
Dates of test	:	04/27/2018 to 06/20/2018
Issue Date	:	08/16/2018
Test Result	:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		

This Test Report is Issued Under the Authority of:	
<i>Gary Chou</i>	<i>Chen Ge</i>
Gary Chou	Chen Ge
Test Engineer	Engineer Reviewer

Issued By:
 SIEMIC Laboratories
 775 Montague Expressway, Milpitas, 95035 CA



775 Montague Expressway, Milpitas, CA 95035, USA • Phone: (+1) 408 526 1188 • Facsimile (+1) 408 526 1088

Visit us at: www.siemic.com; Follow us at:    

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

CONTENTS

1	REPORT REVISION HISTORY	4
2	EXECUTIVE SUMMARY	5
3	CUSTOMER INFORMATION	5
4	TEST SITE INFORMATION	5
5	MODIFICATION	5
6	EUT INFORMATION	6
6.1	EUT Description	6
6.2	Radio Description	6
7	SUPPORTING EQUIPMENT/SOFTWARE AND CABLING DESCRIPTION.....	8
7.1	Supporting Equipment	8
7.2	Cabling Description	8
7.3	Test Software Description	8
8	TEST SUMMARY	9
9	MEASUREMENT UNCERTAINTY	10
9.1	Emissions (30MHz to 1GHz).....	10
9.2	Radiated Emissions (1GHz to 40GHz).....	10
9.3	RF conducted measurement.....	11
10	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	12
10.1	Conducted Emissions.....	12
10.2	6dB & 99% Bandwidth.....	15
10.4	Output Power	23
10.5	Band Edge	50
10.6	Peak Spectral Density	67
10.7	Radiated Spurious Emissions in restricted band.....	93
10.8	Radiated Spurious Emissions below 1GHz	98
10.9	Radiated Spurious Emissions between 1GHz – 25GHz	100
10.10	Receiver Spurious Emissions.....	105
	ANNEX A. TEST INSTRUMENT	109
	ANNEX B. SIEMIC ACCREDITATION	110

1 Report Revision History

Report No.	Report Version	Description	Issue Date
RF_FCC IC_SL18010503-RUC-002_DTS	None	Original	06/25/2018
RF_FCC IC_SL18010503-RUC-002_DTS Rev 1.0	1.0	Updated per customer	08/16/2018

2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Ruckus Wireless, Inc.
Product: R730 Access Point
Model: R730

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	:	Ruckus Wireless, Inc.
Applicant Address	:	350 West Java Drive, Sunnyvale, California 94089 U.S.A
Manufacturer Name	:	Ruckus Wireless, Inc.
Manufacturer Address	:	350 West Java Drive, Sunnyvale, California 94089 U.S.A

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Product Name	R730 Access Point
Model No.	R730
Trade Name	Ruckus
Serial No.	111806000002
Host Model No.	N/A
Input Power	48VDC (PoE)
Power Adapter Manu/Model	N/A
Power Adapter SN	N/A
Date of EUT received	04/20/2018
Equipment Class/ Category	DTS, UNII
Port/Connectors	PoE, Ethernet

6.2 Radio Description

Radio Type	802.11b/g/n/ax-20M	802.11n/ax-40M
Operating Frequency	2412-2462MHz	2412-2462MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz
Number of Channels	11	7
Antenna Type	Internal Omni PCB Antenna	
Antenna Gain (Peak)	0 dBi	
Antenna Connector Type	U.FL	
Note	2.4GHz and 5GHz Radio transmit simultaneously	

EUT Power level setting

Mode	Frequency (MHz)	Power setting
802.11-b	2412	22
802.11-b	2437	22
802.11-b	2462	22
802.11-g	2412	17
802.11-g	2437	22
802.11-g	2462	19
802.11-ax-20	2412	17.5
802.11-ax-20	2437	22
802.11-ax-20	2462	19
802.11-ax-40	2422	16
802.11-ax-40	2437	16
802.11-ax-40	2452	20

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	PP01L Latitude E5440	F1WPF12	Dell	-
2	POE Adapter	740-64214-001	N/A	Ruckus	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
RJ45	EUT	RJ45	POE	RJ45	2	Unshielded	-
RJ45	POE	RJ45	Laptop	RJ45	3	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	QCRT	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v04	<input checked="" type="checkbox"/> Pass
	IC	RSS Gen 8.10	IC		<input type="checkbox"/> N/A
AC Conducted Emissions	FCC	15.207(a)	FCC	ANSI C63.10:2013	<input checked="" type="checkbox"/> Pass
	IC	RSS Gen 8.8	IC	RSS Gen Issue 5: 2018	<input type="checkbox"/> N/A

DTS Band Requirement

Test Item	Test standard		Test Method/Procedure		Pass / Fail
99% Occupied Bandwidth	-	-	-	-	<input checked="" type="checkbox"/> Pass
	IC	RSS Gen 6.6	IC	RSS Gen Issue 5: 2018	<input type="checkbox"/> N/A
6dB Bandwidth	FCC	15.247(a)(2)	FCC	558074 D01 DTS Meas Guidance v04	<input checked="" type="checkbox"/> Pass
	IC	RSS247 (5.2.1)	IC		<input type="checkbox"/> N/A
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v04	<input checked="" type="checkbox"/> Pass
	IC	RSS247 (5.5)	IC		<input type="checkbox"/> N/A
Output Power	FCC	15.247(b)	FCC	558074 D01 DTS Meas Guidance v04	<input checked="" type="checkbox"/> Pass
	IC	RSS247 (5.4.4)	IC		<input type="checkbox"/> N/A
Receiver Spurious Emissions	IC	RSS Gen (4.8)	IC	RSS Gen Issue 5: 2018	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	-	<input type="checkbox"/> Pass
	IC	-	IC	-	<input checked="" type="checkbox"/> N/A
Power Spectral Density	FCC	15.247(e)	FCC	558074 D01 DTS Meas Guidance v04	<input checked="" type="checkbox"/> Pass
	IC	RSS247 (5.2.2)	IC		<input type="checkbox"/> N/A
RF Exposure requirement	FCC	15.247(i)	FCC	-	<input type="checkbox"/> Pass
	IC	RSS Gen(5.5)	IC	RSS Gen Issue 5: 2018	<input checked="" type="checkbox"/> N/A
Remark	<ol style="list-style-type: none"> All measurement uncertainties do not take into consideration for all presented test results. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual. 				

9 Measurement Uncertainty

9.1 Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
NSA Calibration	4.0	U-Shape	1.414	1	2.8288543
Combined Standard Uncertainty					3.0059131
Expanded Uncertainty (K=2)					6.0118262

The total derived measurement uncertainty is +/- 6.00 dB.

9.2 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.0692840
Cable Insertion Loss	0.21	Normal	2	1	0.1050000
Filter Insertion Loss	0.25	Normal	2	1	0.1250000
Antenna Factor	0.65	Normal	2	1	0.3250000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.8660508
PRF Response	1.5	Rectangular	1.732	1	0.8660508
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
VSWR Calibration	2.0	U-Shape	1.414	1	1.4144272
Combined Standard Uncertainty					4.2363
Expanded Uncertainty (K=2)					8.4726

The total derived measurement uncertainty is +/- 8.47 dB.

9.3 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					0.476087
Expanded Uncertainty (K=2)					0.952174

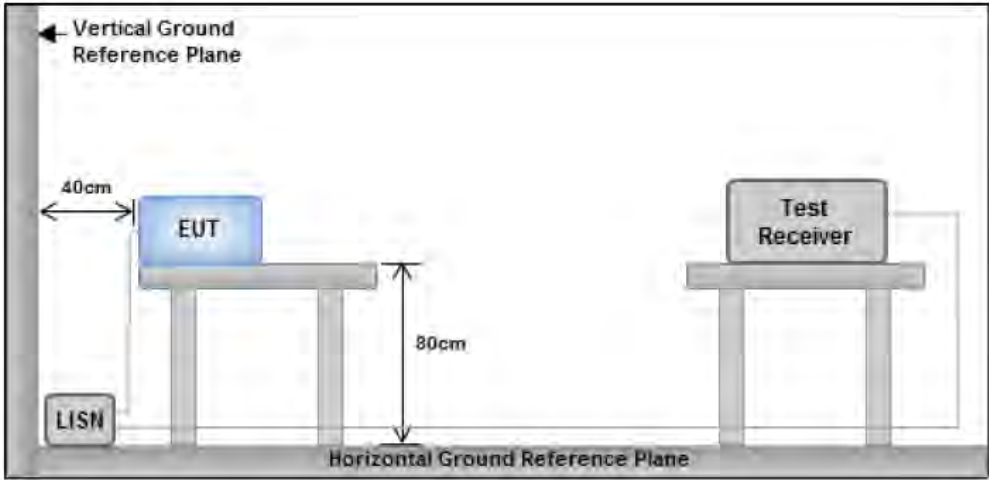
The total derived measurement uncertainty is +/- 0.95 dB.

10 Measurements, Examination and Derived Results

10.1 Conducted Emissions

Conducted Emission Limit

Frequency ranges (MHz)	Limit (dBuV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Spec	Item	Requirement	Applicable
FCC 15.207 RSS-GEN Section 8.8	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	<input checked="" type="checkbox"/>
Test Setup	 <p>Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes</p>		
Procedure	<ul style="list-style-type: none"> - The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment was powered separately from another main supply. 		
Remark	EUT was tested at 120VAC, 60Hz		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

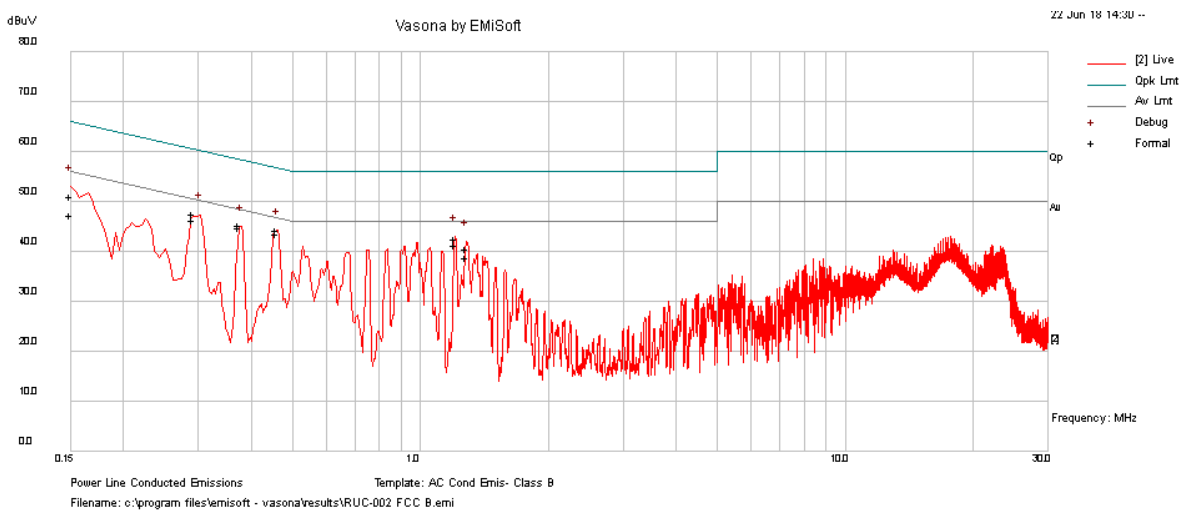
Test Data Yes N/A

Test Plot Yes (See below) N/A

Test was done by Gary Chou at Conducted Emission test site.

Conducted Emission Test Results

Test specification:	Conducted Emissions			Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Environmental Conditions:	Temp(°C):	21			
	Humidity (%):	42			
	Atmospheric(mbar):	1021			
Mains Power:	120Vac, 60Hz				
Tested by:	Gary Chou				
Test Date:	06/22/2018				
Remarks	POE, Live				

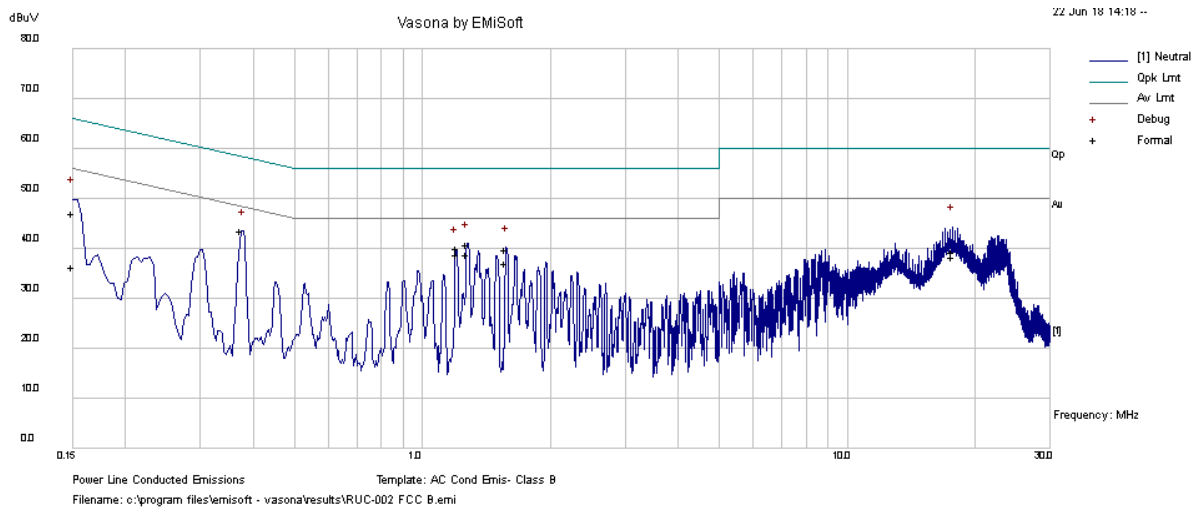


Live Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.46	34.99	9.33	0.04	44.36	Quasi Peak	Live	56.75	-12.39	Pass
0.29	38.19	9.32	0.04	47.56	Quasi Peak	Live	60.49	-12.93	Pass
0.15	41.7	9.33	0.05	51.08	Quasi Peak	Live	65.98	-14.9	Pass
1.20	33.32	9.33	0.05	42.7	Quasi Peak	Live	56	-13.3	Pass
0.37	35.91	9.33	0.04	45.28	Quasi Peak	Live	58.4	-13.12	Pass
1.28	31.09	9.34	0.05	40.47	Quasi Peak	Live	56	-15.53	Pass
0.46	34.29	9.33	0.04	43.66	Average	Live	46.75	-3.09	Pass
0.29	36.88	9.32	0.04	46.24	Average	Live	50.49	-4.25	Pass
0.15	38.03	9.33	0.05	47.41	Average	Live	55.98	-8.57	Pass
1.20	31.87	9.33	0.05	41.25	Average	Live	46	-4.75	Pass
0.37	35.57	9.33	0.04	44.93	Average	Live	48.4	-3.47	Pass
1.28	29.57	9.34	0.05	38.95	Average	Live	46	-7.05	Pass

Conducted Emission Test Results

Test specification:	Conducted Emissions			Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Environmental Conditions:	Temp(°C):	21			
	Humidity (%):	42			
	Atmospheric(mbar):	1021			
Mains Power:	120Vac, 60Hz				
Tested by:	Gary Chou				
Test Date:	06/22/2018				
Remarks	POE, Neutral				




Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.37	34.17	9.33	0.04	43.53	Quasi Peak	Neutral	58.41	-14.88	Pass
1.28	31.46	9.33	0.05	40.85	Quasi Peak	Neutral	56	-15.15	Pass
17.72	29.4	9.43	0.42	39.25	Quasi Peak	Neutral	60	-20.75	Pass
1.57	30.39	9.34	0.06	39.79	Quasi Peak	Neutral	56	-16.21	Pass
1.20	30.6	9.33	0.05	39.99	Quasi Peak	Neutral	56	-16.01	Pass
0.15	37.7	9.33	0.05	47.08	Quasi Peak	Neutral	66	-18.92	Pass
0.37	34.13	9.33	0.04	43.5	Average	Neutral	48.41	-4.91	Pass
1.28	29.46	9.33	0.05	38.84	Average	Neutral	46	-7.16	Pass
17.72	28.45	9.43	0.42	38.3	Average	Neutral	50	-11.7	Pass
1.57	27.65	9.34	0.06	37.05	Average	Neutral	46	-8.95	Pass
1.20	29.54	9.33	0.05	38.92	Average	Neutral	46	-7.08	Pass
0.15	26.86	9.33	0.05	36.24	Average	Neutral	56	-19.76	Pass

10.2 6dB & 99% Bandwidth

Requirement(s):

Spec	Requirement	Applicable
§ 15.247 RSS247 (5.2.1)	6dB BW≥500KHz:	<input checked="" type="checkbox"/>
RSS Gen 4.6.1	The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual. The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth	<input checked="" type="checkbox"/>
Test Setup		
Test Procedure	558074 D01 DTS Meas Guidance v04, 8.1 DTS bandwidth <u>6dB Emission bandwidth measurement procedure</u> <ul style="list-style-type: none"> - Set RBW = 100 kHz. - Set the video bandwidth (VBW) ≥ 3 x RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. 	
Test Date	05/17/2018 – 06/20/2018	Environmental condition Temperature 23°C Relative Humidity 42% Atmospheric Pressure 1021mbar
Remark	N/A	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	

Test Data Yes N/A
 Test Plot Yes N/A

Test was done by Chen Ge at RF test site.

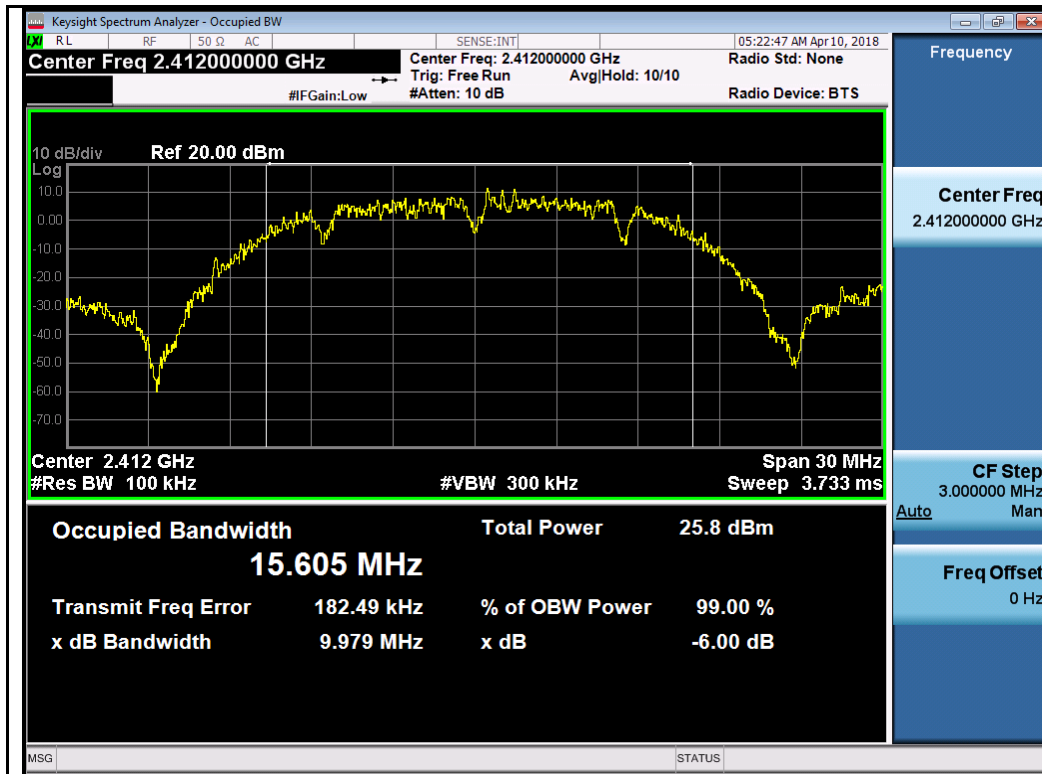
6dB Bandwidth measurement result for 2.4GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
6dB BW	802.11b	2412	Low	9.98	≥ 0.5	Pass
		2437	Mid	10.01	≥ 0.5	Pass
		2462	High	12.27	≥ 0.5	Pass
	802.11g	2412	Low	16.34	≥ 0.5	Pass
		2437	Mid	16.32	≥ 0.5	Pass
		2462	High	16.34	≥ 0.5	Pass
	802.11ax-20M	2412	Low	19.07	≥ 0.5	Pass
		2437	Mid	19.12	≥ 0.5	Pass
		2462	High	19.14	≥ 0.5	Pass
	802.11ax-40M	2422	Low	38.12	≥ 0.5	Pass
		2437	Mid	38.10	≥ 0.5	Pass
		2452	High	37.47	≥ 0.5	Pass

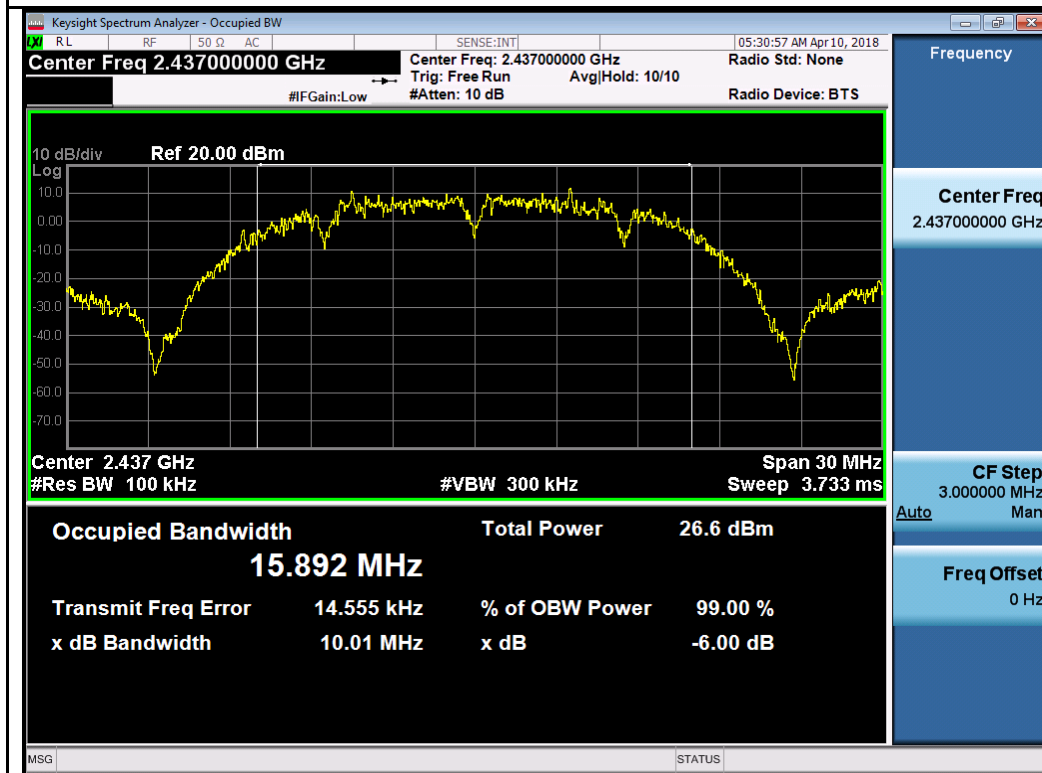
99% OBW measurement result for 2.4GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)
99% OBW	802.11b	2412	Low	15.52
		2437	Mid	15.71
		2462	High	16.24
	802.11g	2412	Low	16.40
		2437	Mid	16.62
		2462	High	16.53
	802.11ax-20M	2412	Low	18.98
		2437	Mid	19.06
		2462	High	19.05
	802.11ax-40M	2422	Low	37.83
		2437	Mid	37.76
		2452	High	37.89

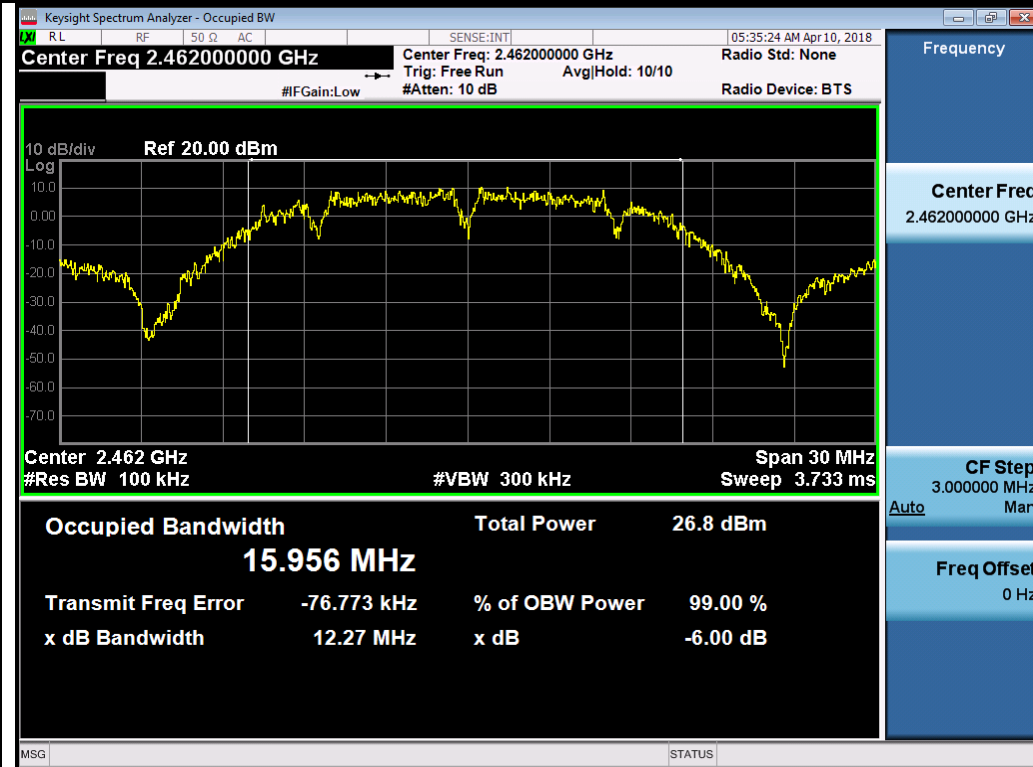
6dB & 99% Bandwidth Test Plots



802.11b-2412MHz



802.11b-2437MHz



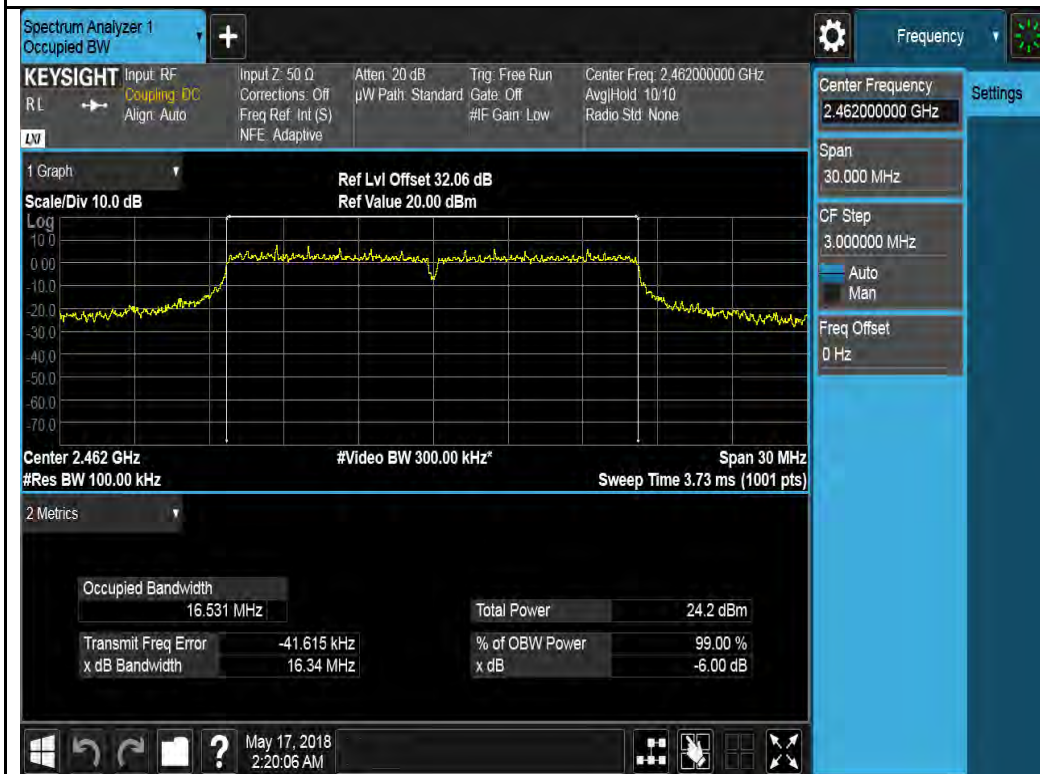
802.11b-2462MHz



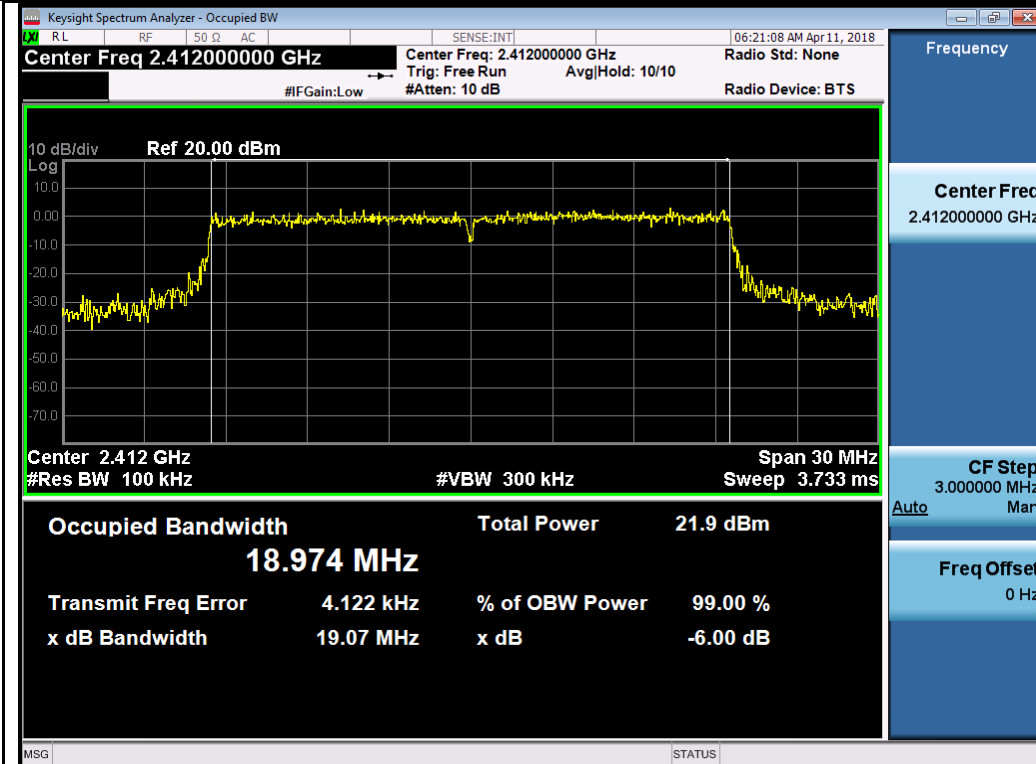
802.11g-2412MHz



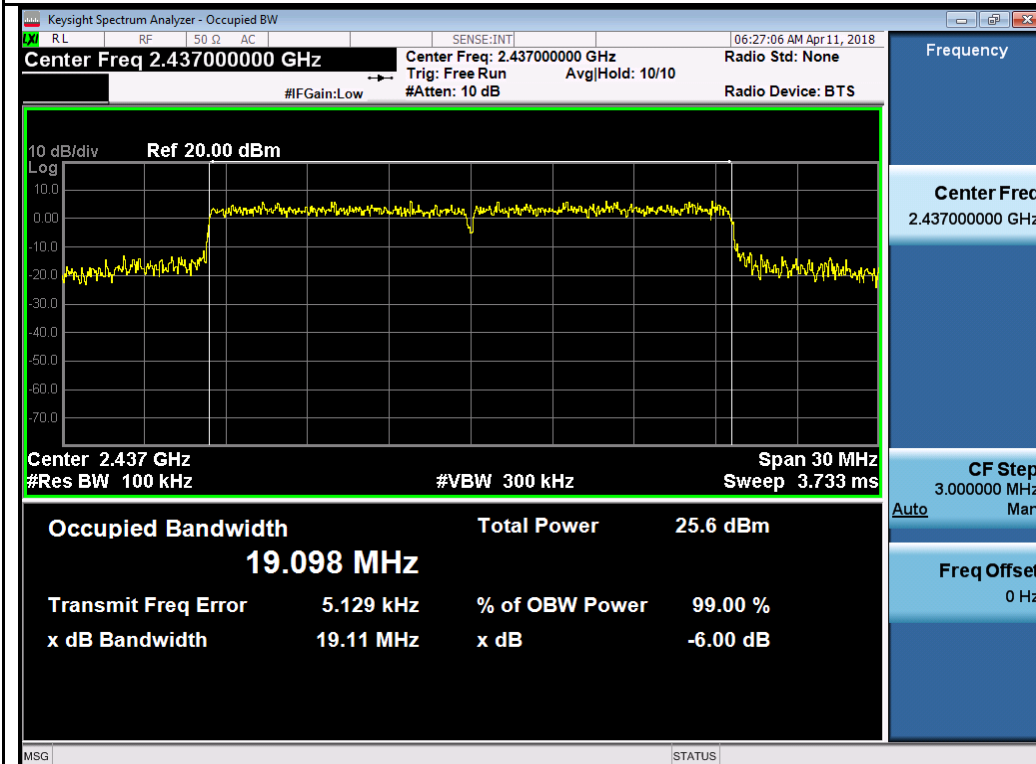
802.11g-2437MHz



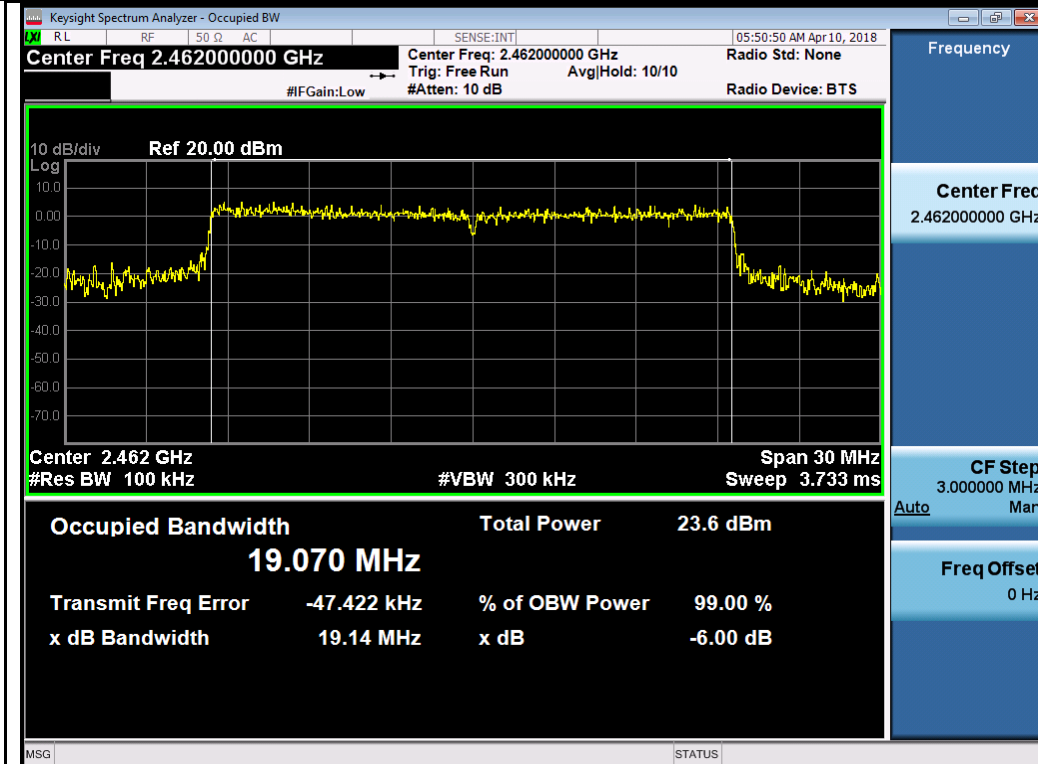
802.11g-2462MHz



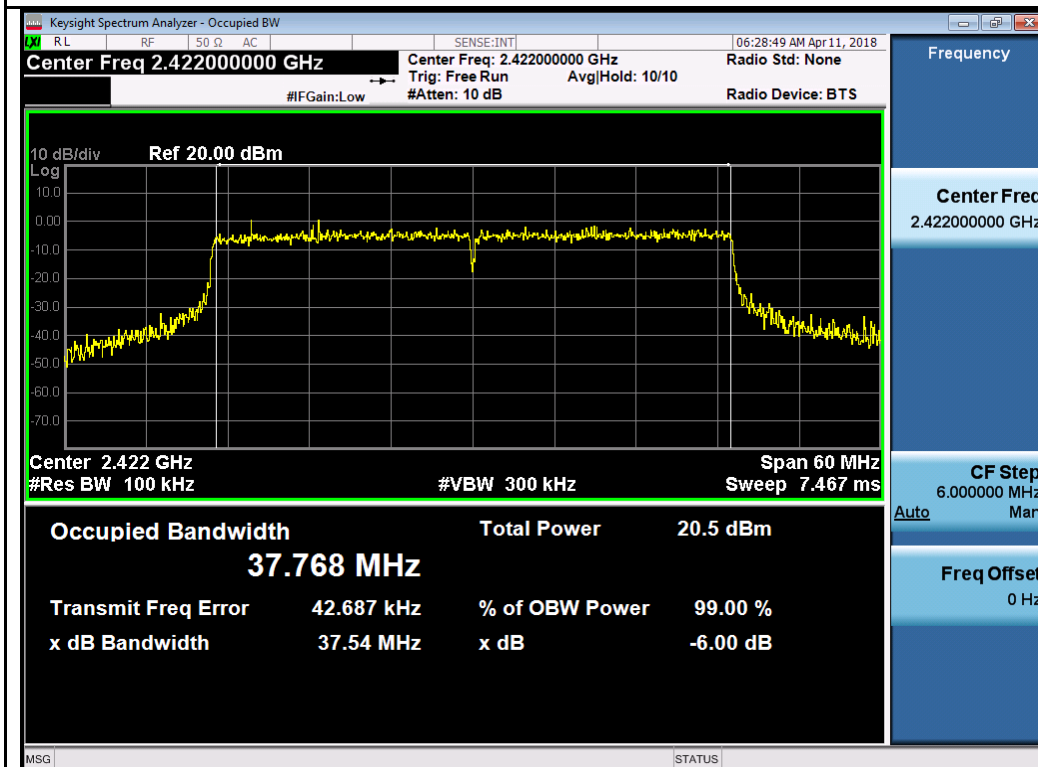
802.11ax20-2412MHz



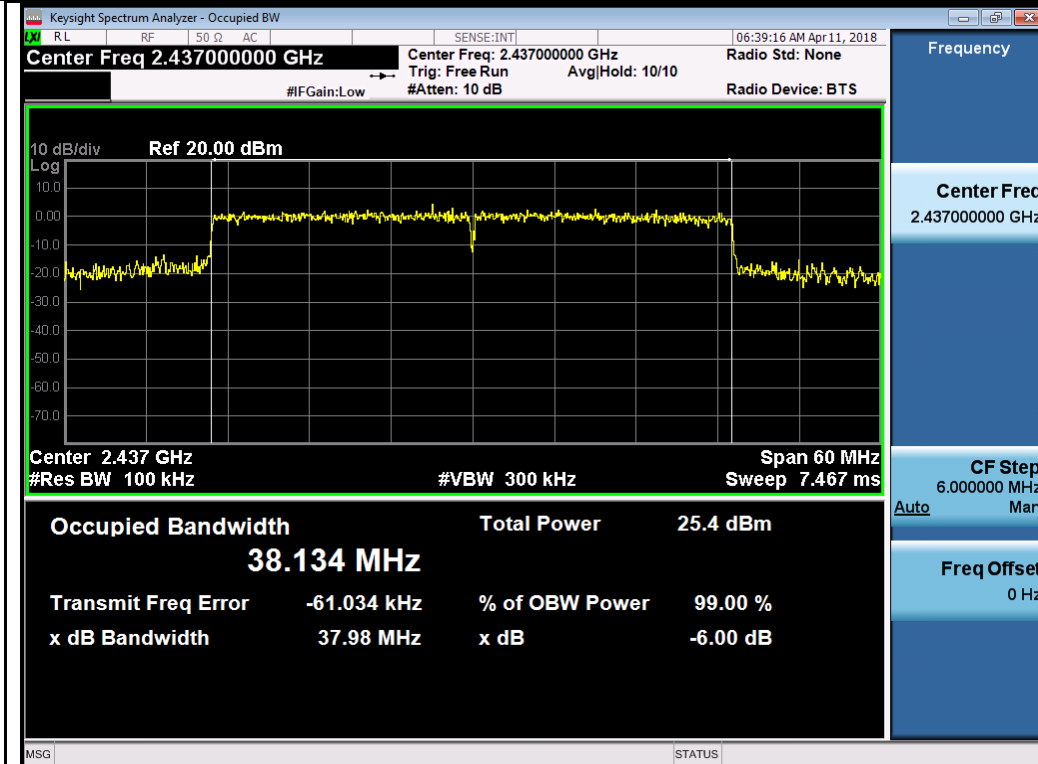
802.11ax20-2437MHz



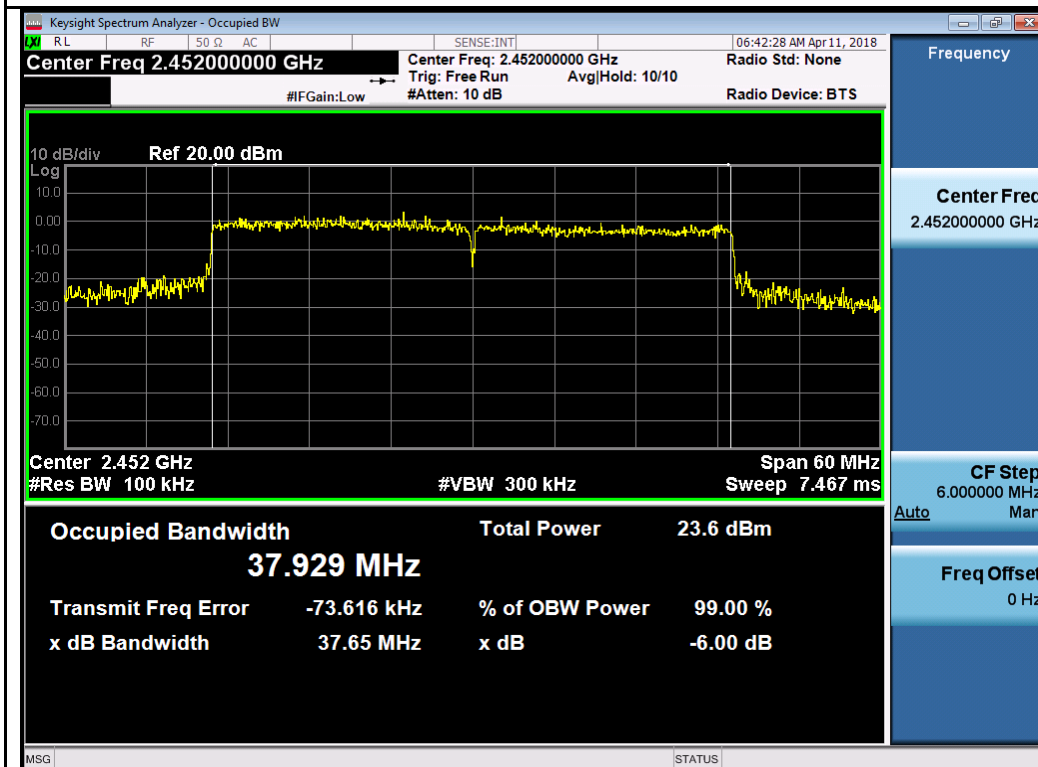
802.11ax20-2462MHz



802.11ax40-2412MHz



802.11ax40-2437MHz

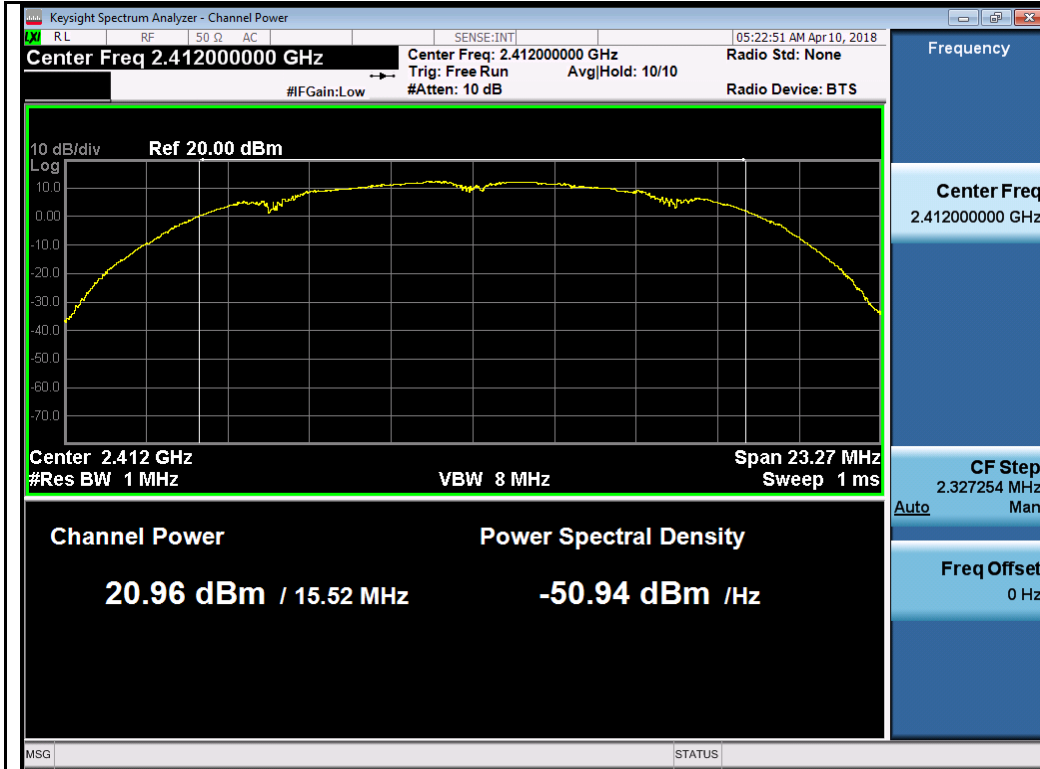


802.11ax40-2452MHz

Output Power measurement result

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)					Limit (dBm)	Result
				Chain1	Chain2	Chain3	Chain4	Combined Power		
Output Power	802.11b	2412	Low	20.96	21.19	21.18	21.33	27.19	30	Pass
		2437	Mid	21.64	22.27	21.57	21.88	27.87	30	Pass
		2462	High	22.39	22.54	22.46	22.70	28.54	30	Pass
	802.11g	2412	Low	17.02	16.85	16.40	16.86	22.81	30	Pass
		2437	Mid	20.91	20.83	21.11	21.20	27.03	30	Pass
		2462	High	18.75	18.42	18.97	19.13	24.84	30	Pass
	802.11ax-20M	2412	Low	18.66	18.63	18.11	18.95	24.62	30	Pass
		2437	Mid	22.07	22.25	22.28	22.66	28.34	30	Pass
		2462	High	20.14	20.24	20.01	20.67	26.29	30	Pass
	802.11n-40M	2422	Low	15.89	16.72	15.34	16.10	22.06	30	Pass
		2437	Mid	16.99	17.34	16.54	17.39	23.10	30	Pass
		2452	High	20.39	20.55	20.79	20.88	26.68	30	Pass
Note	Directional gain of the EUT is 6dBi. No limit adjustment is needed.									

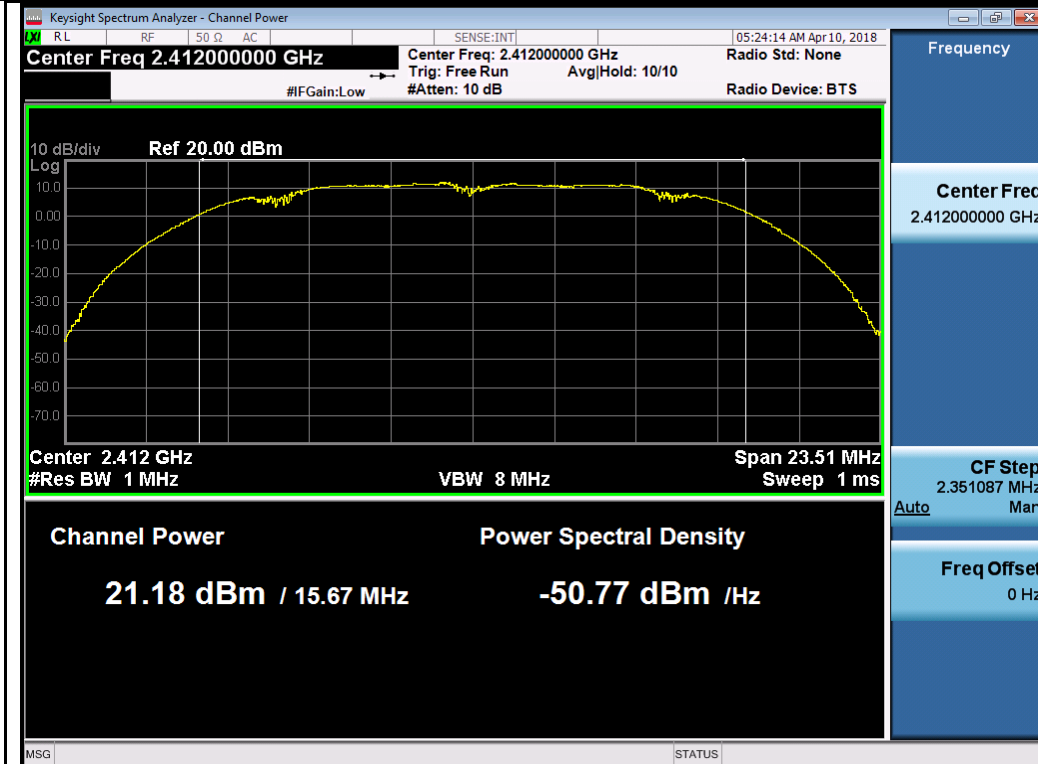
Test Plots:



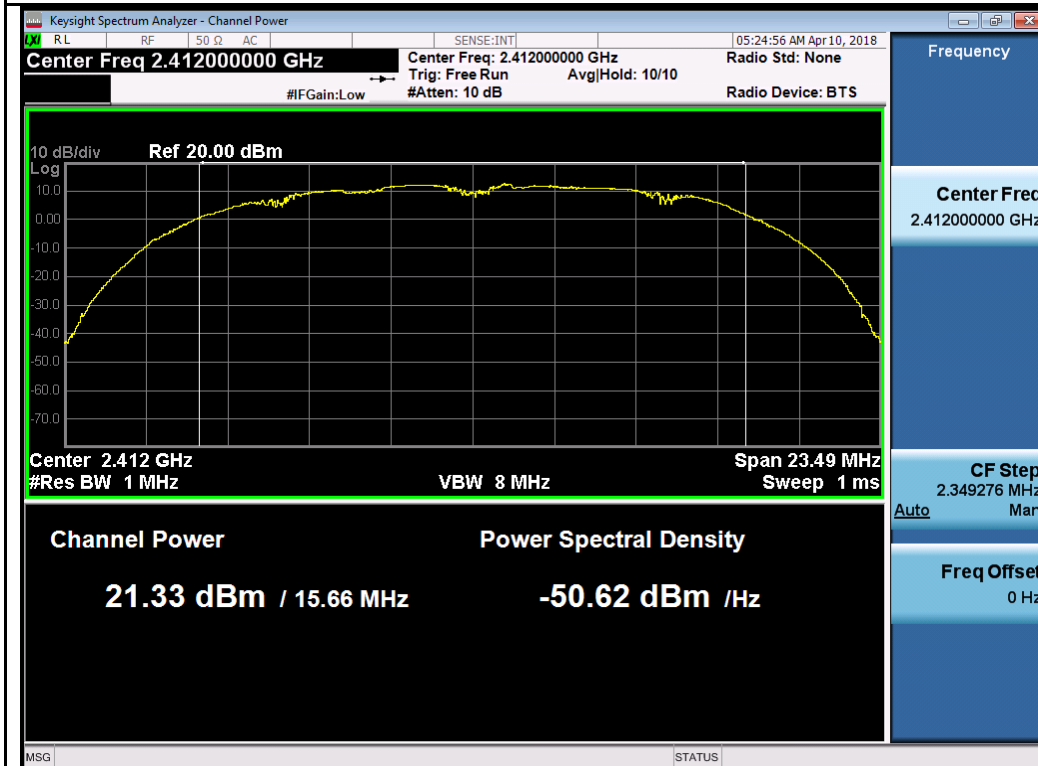
802.11b-2412MHz Chain 0



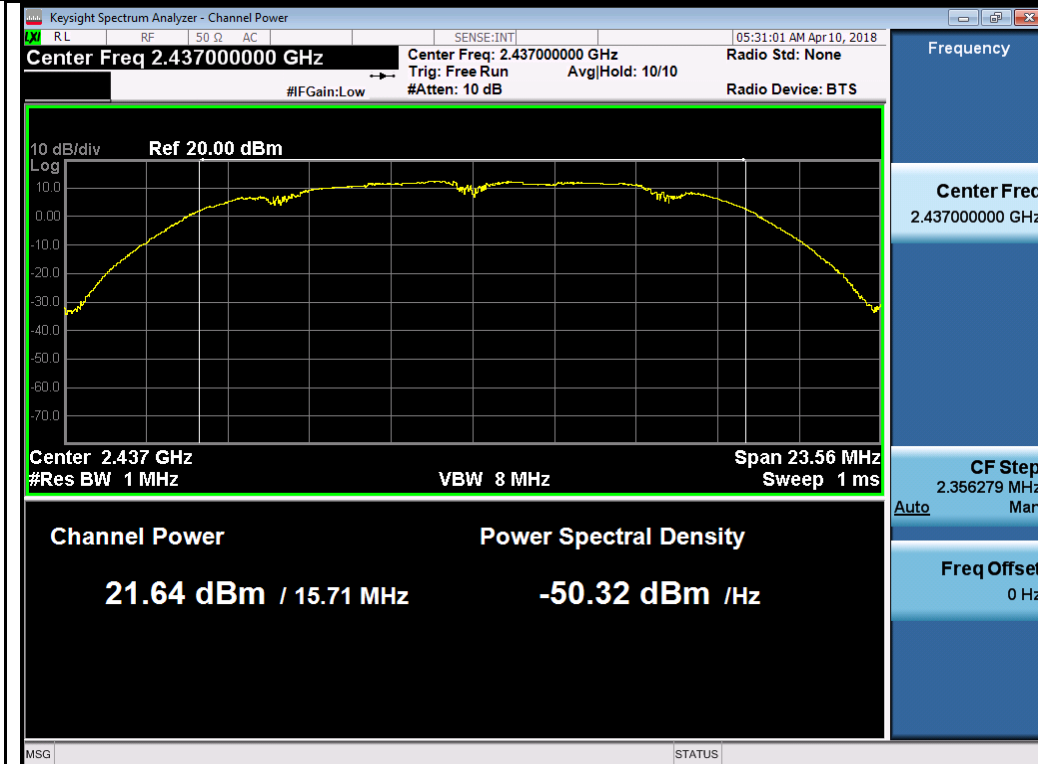
802.11b-2412MHz Chain 1



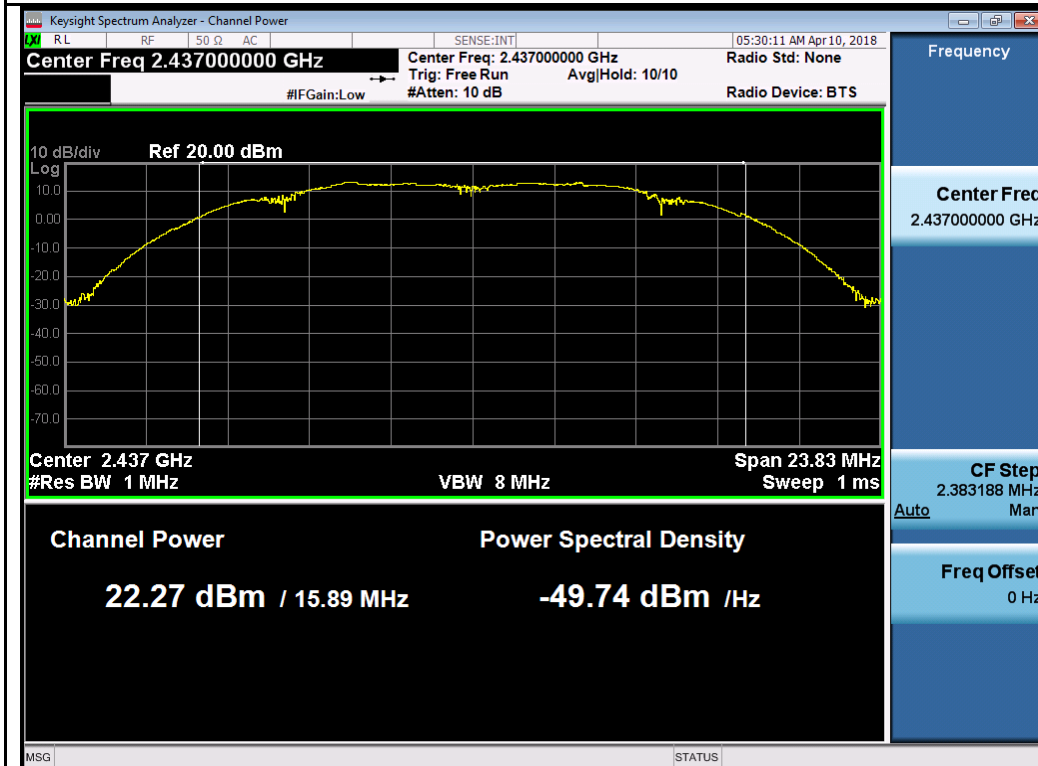
802.11b-2412MHz Chain 2



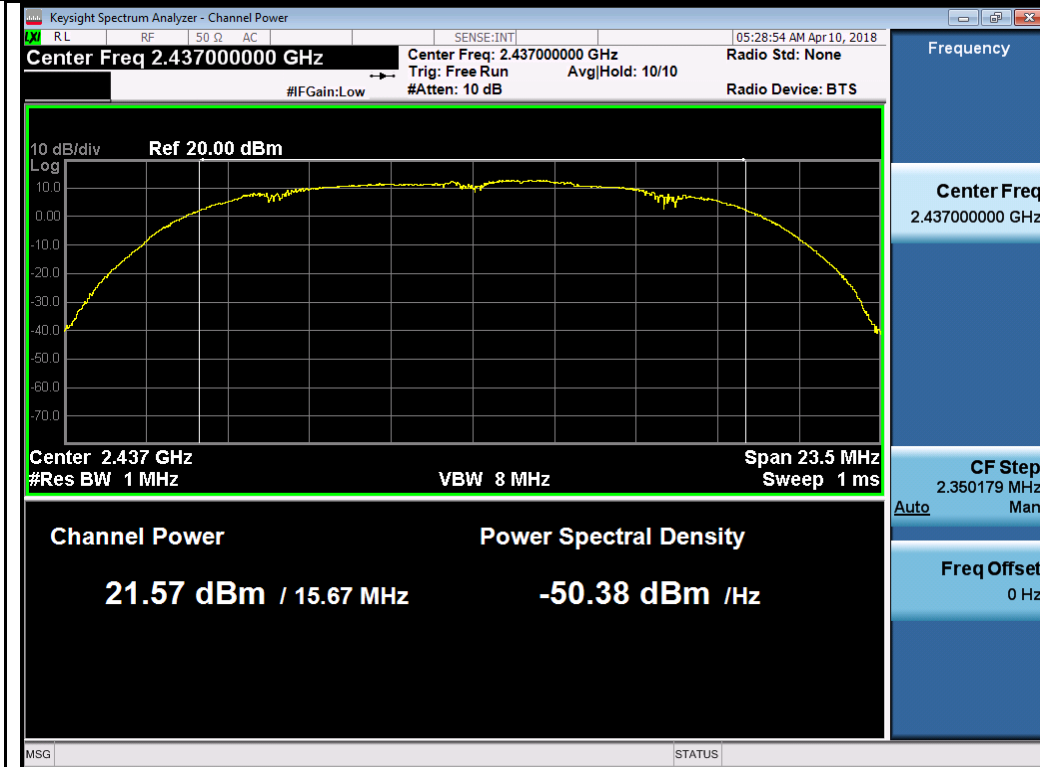
802.11b-2412MHz Chain 3



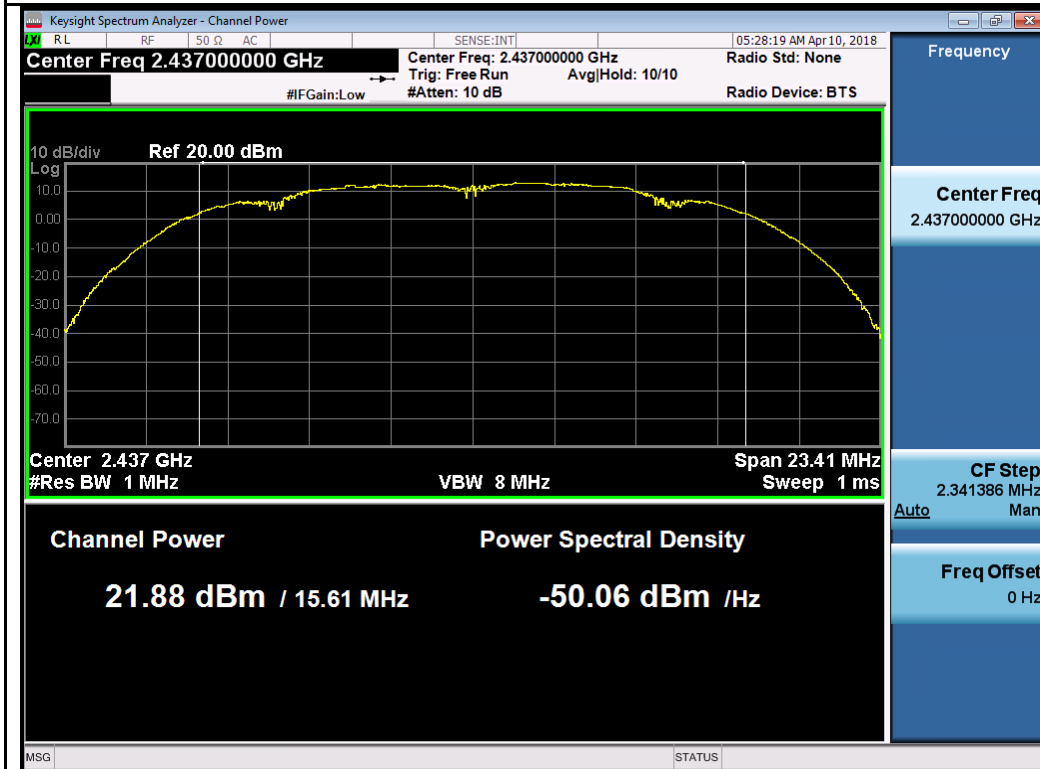
802.11b-2437MHz Chain 0



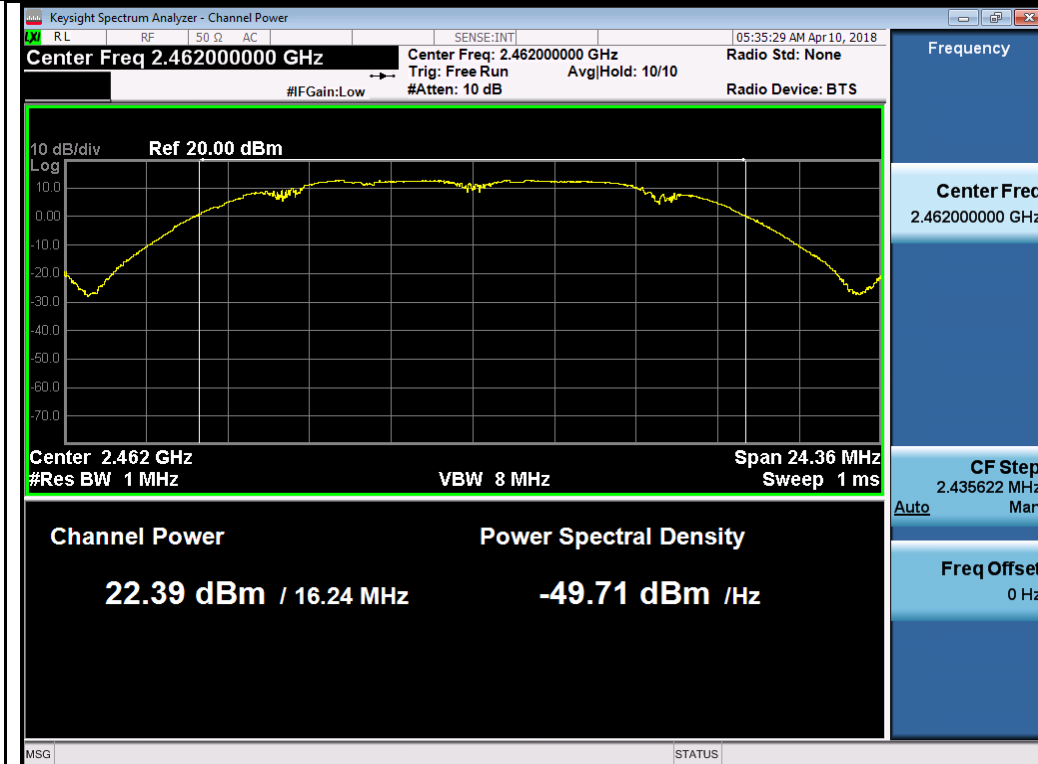
802.11b-2437MHz Chain 1



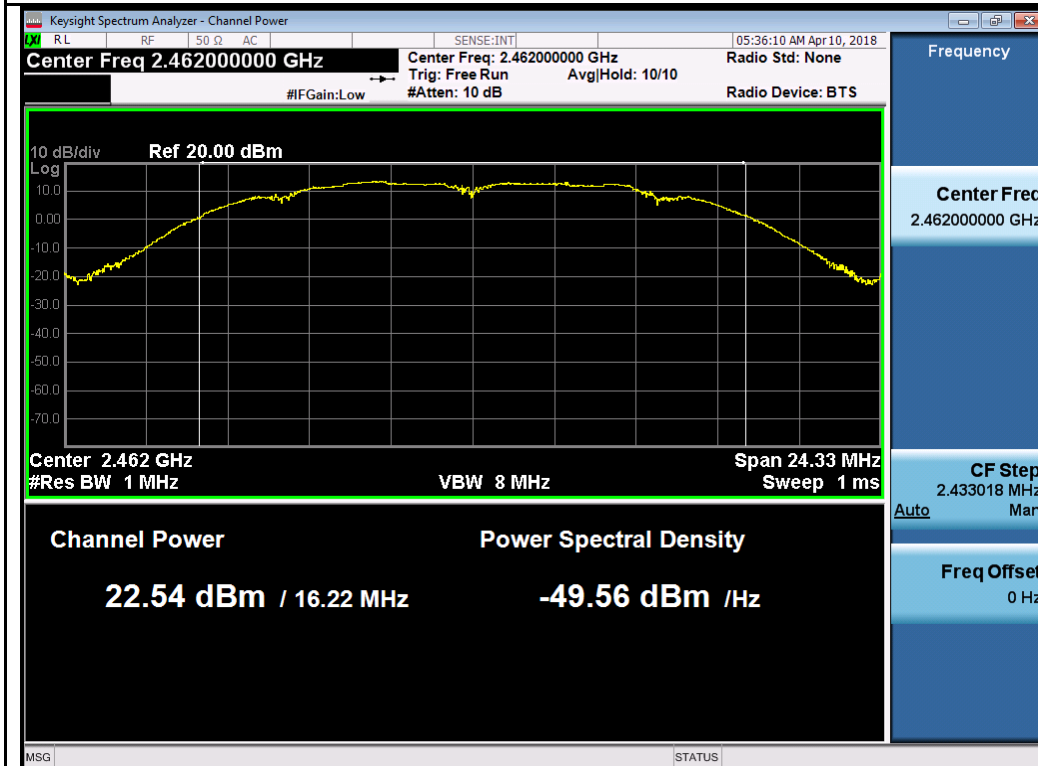
802.11b-2437MHz Chain 2



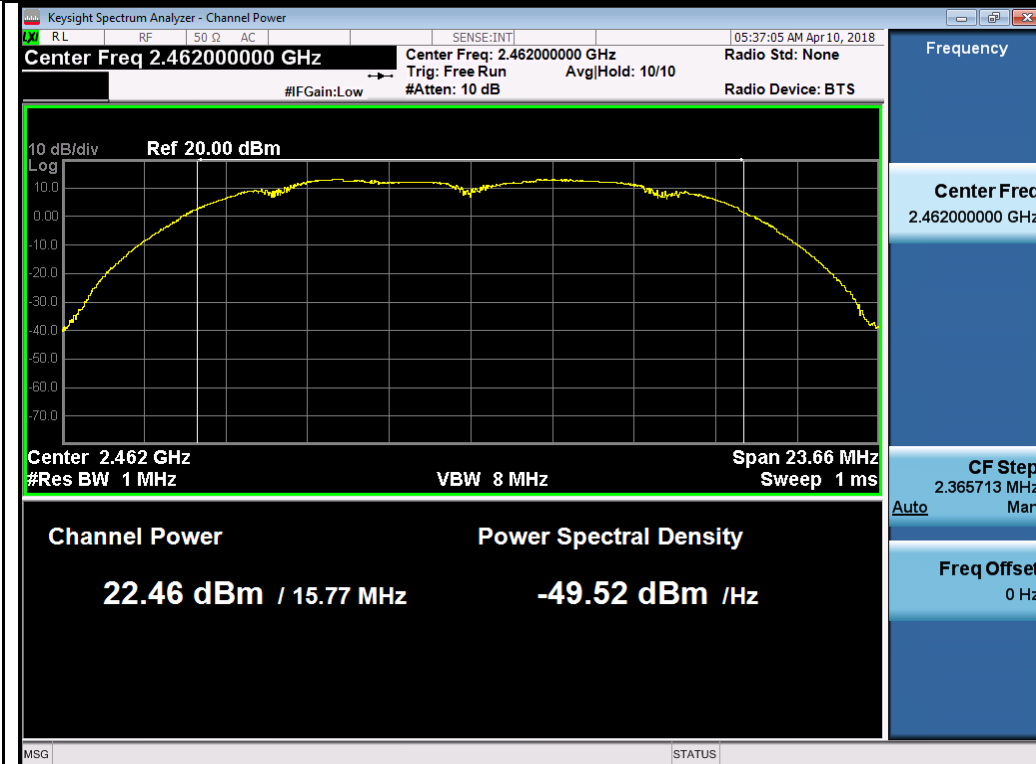
802.11b-2437MHz Chain 3



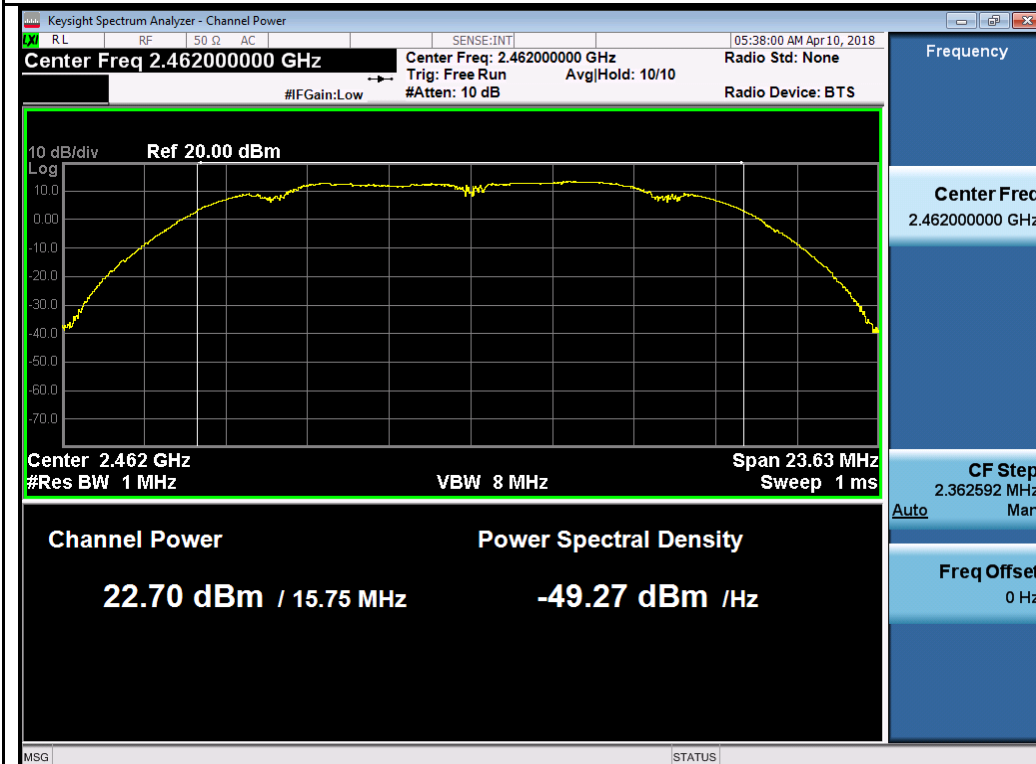
802.11b-2462MHz Chain 0



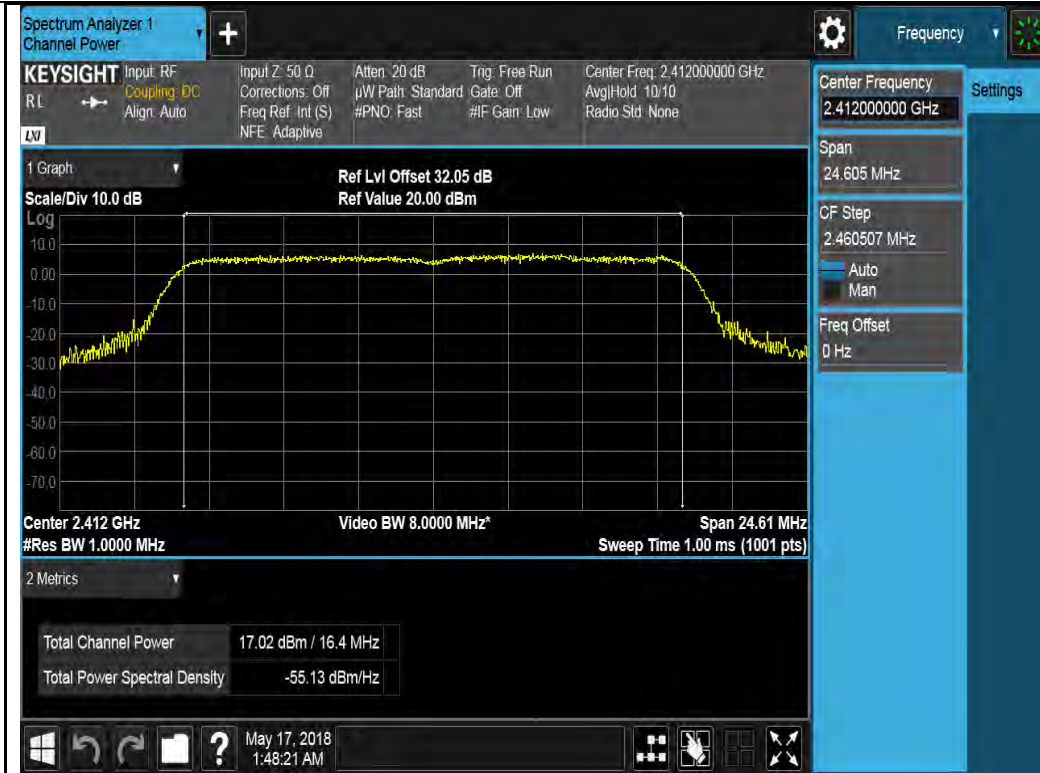
802.11b-2462MHz Chain 1



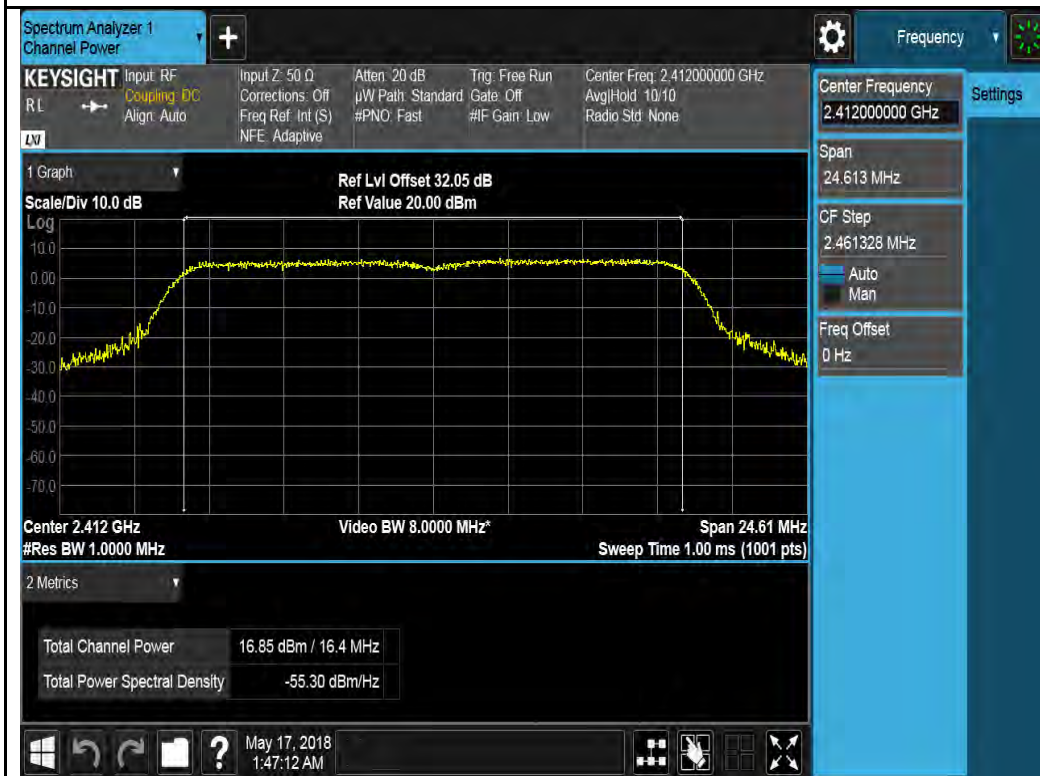
802.11b-2462MHz Chain 2



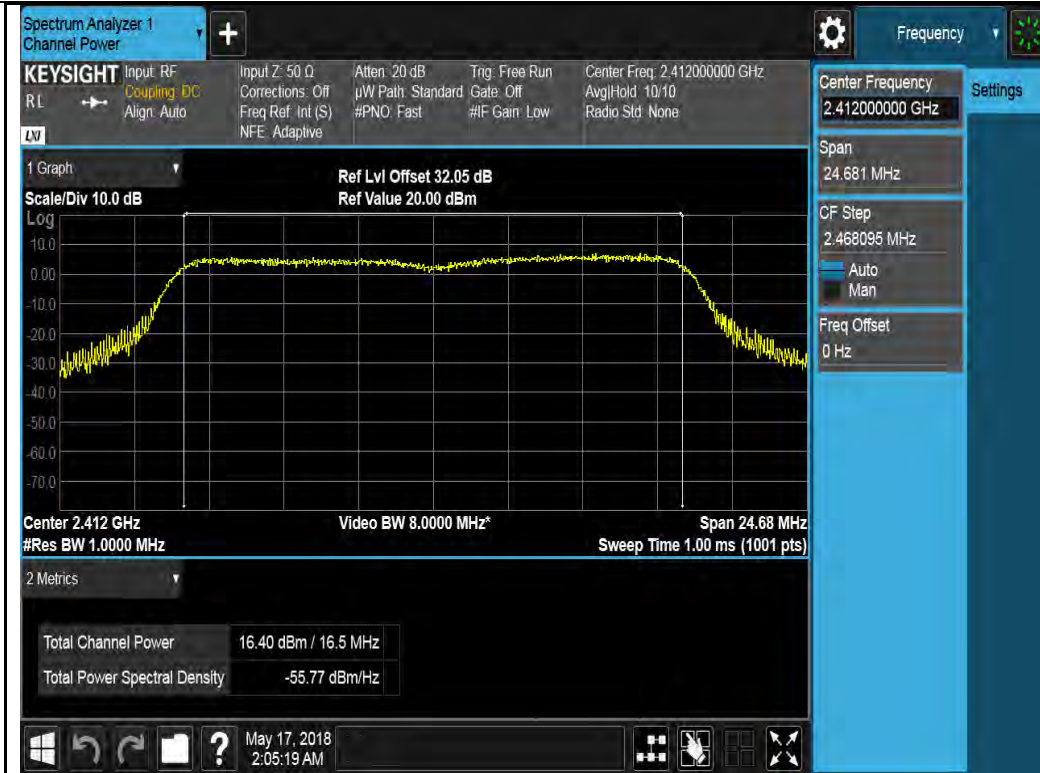
802.11b-2462MHz Chain 3



802.11g-2412MHz Chain 0



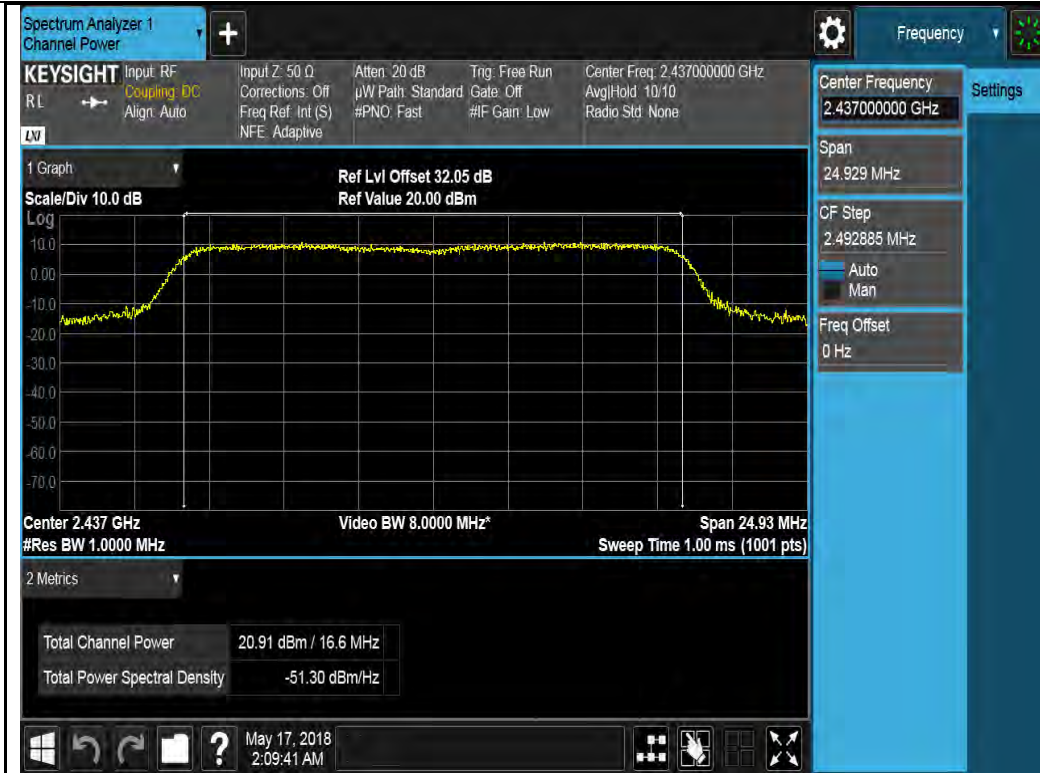
802.11g-2412MHz Chain 1



802.11g-2412MHz Chain 2



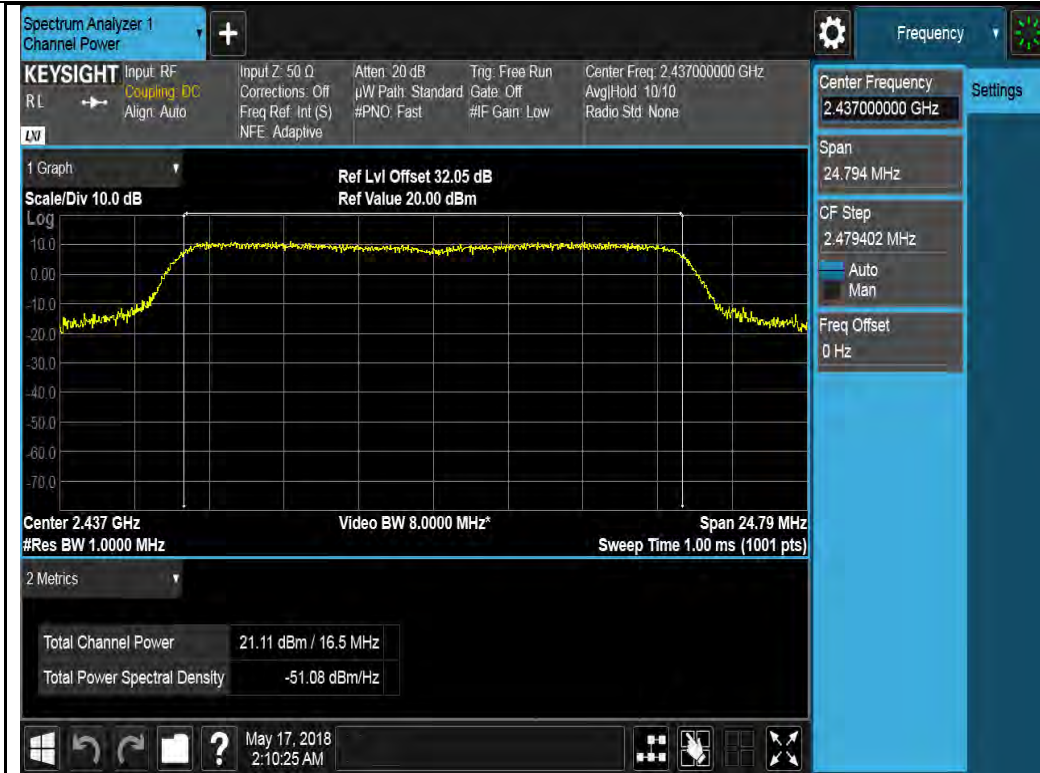
802.11g-2412MHz Chain 3



802.11g-2437MHz Chain 0



802.11g-2437MHz Chain 1



802.11g-2437MHz Chain 2



802.11g-2437MHz Chain 3



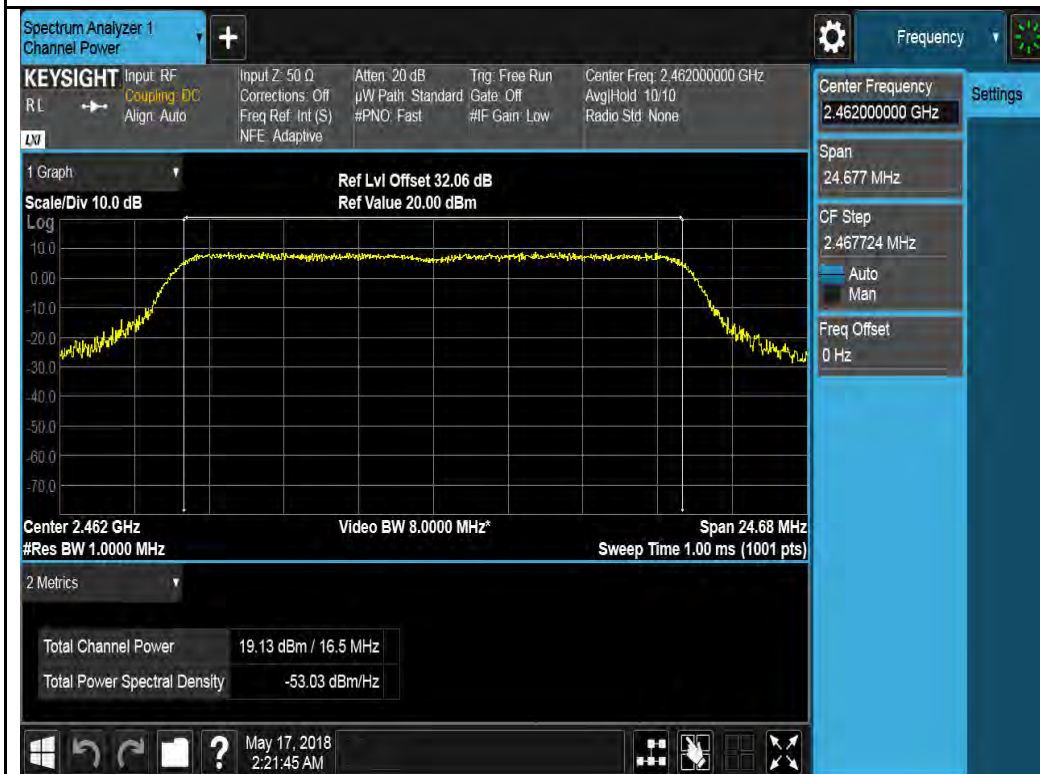
802.11g-2462MHz Chain 0



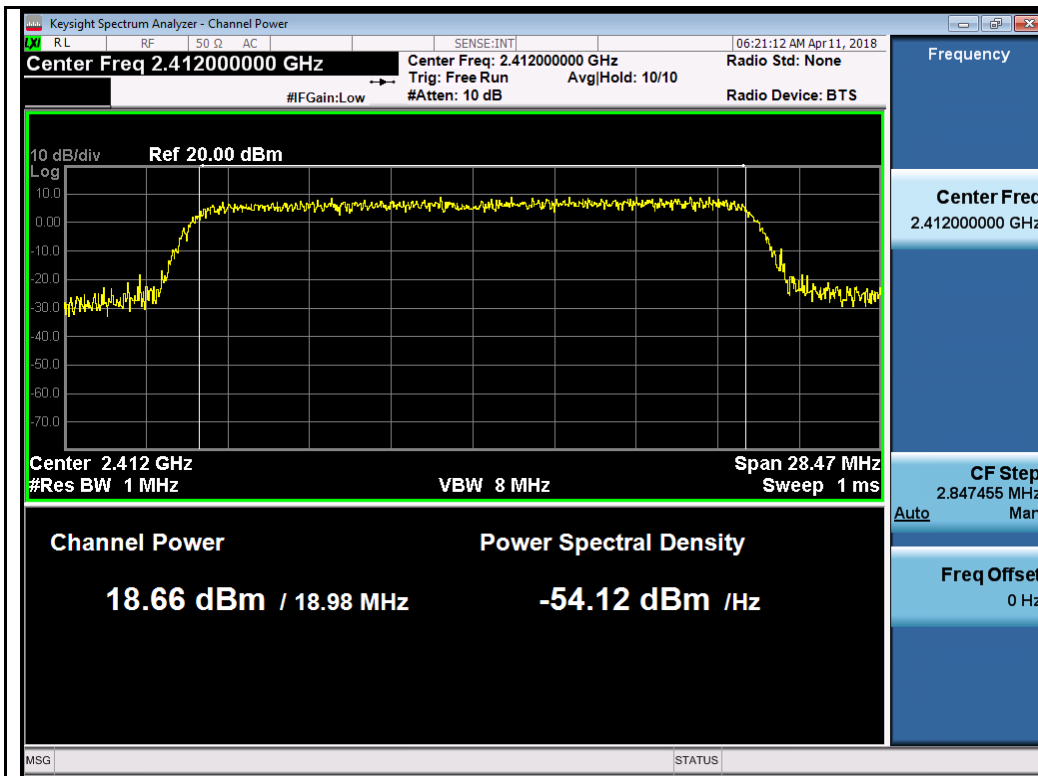
802.11g-2462MHz Chain 1



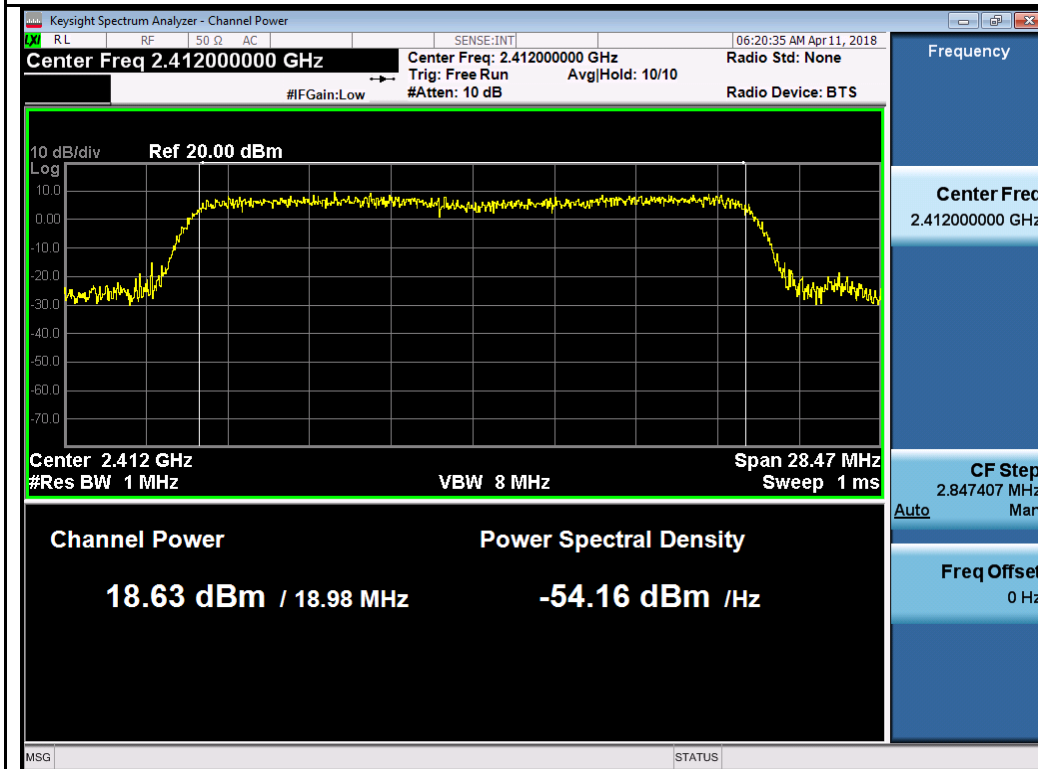
802.11g-2462MHz Chain 2



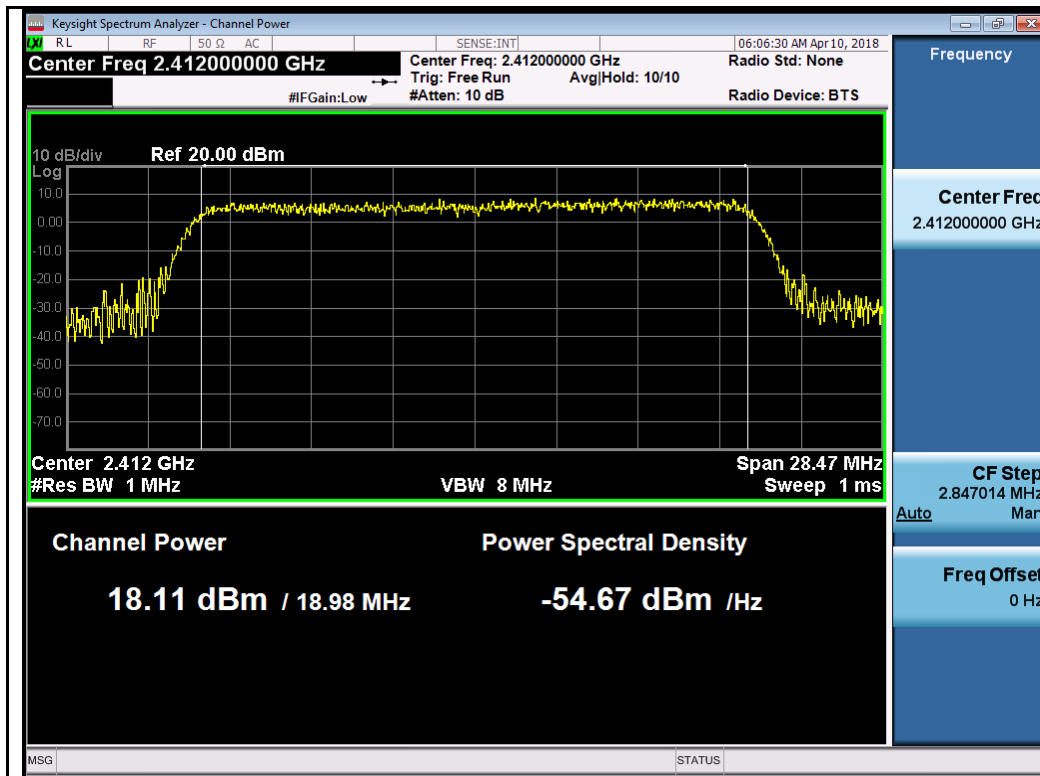
802.11g-2462MHz Chain 3



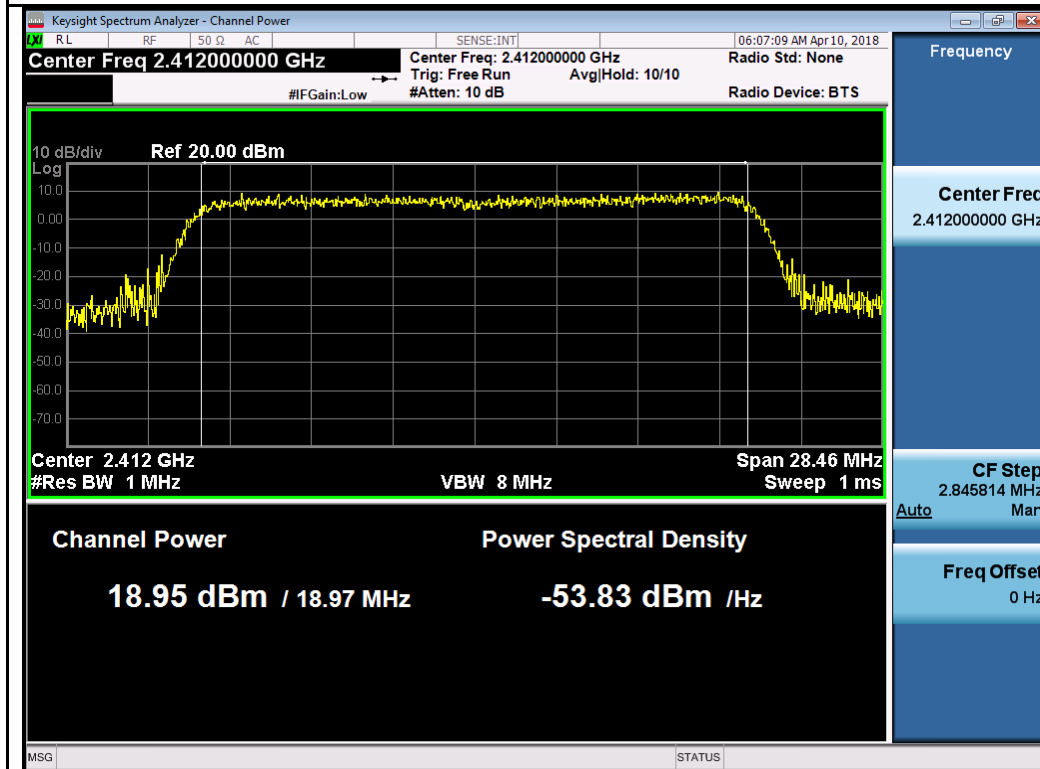
802.11ax20 2412MHz Chain 0



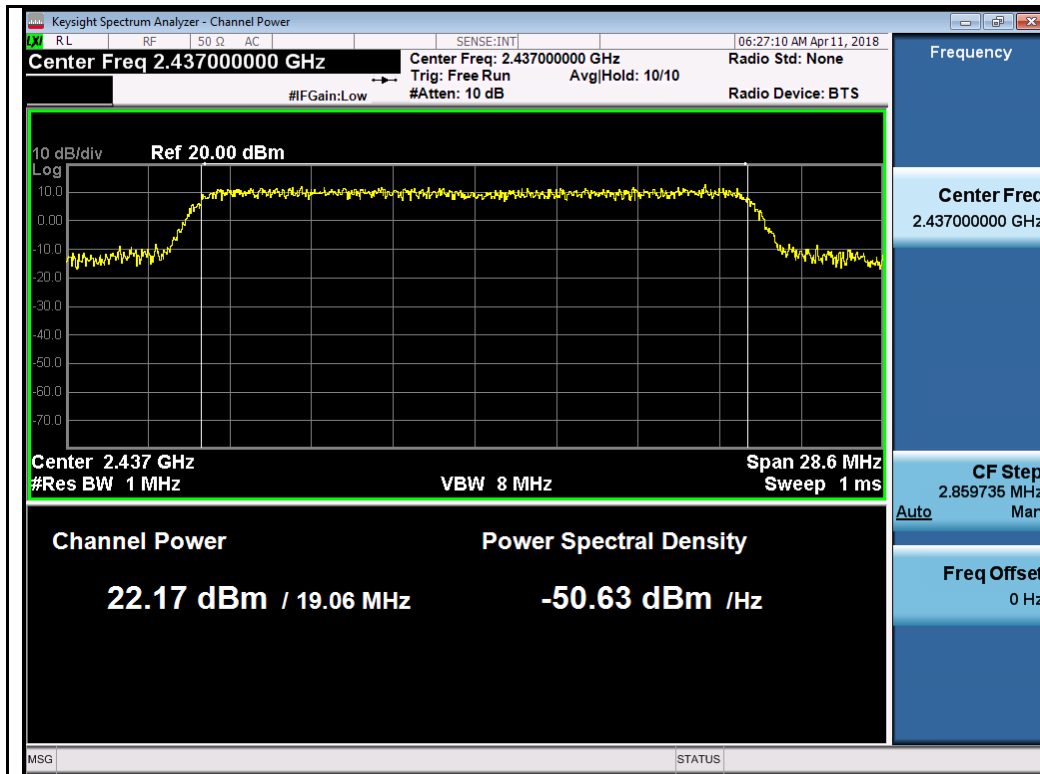
802.11ax20 2412MHz Chain 1



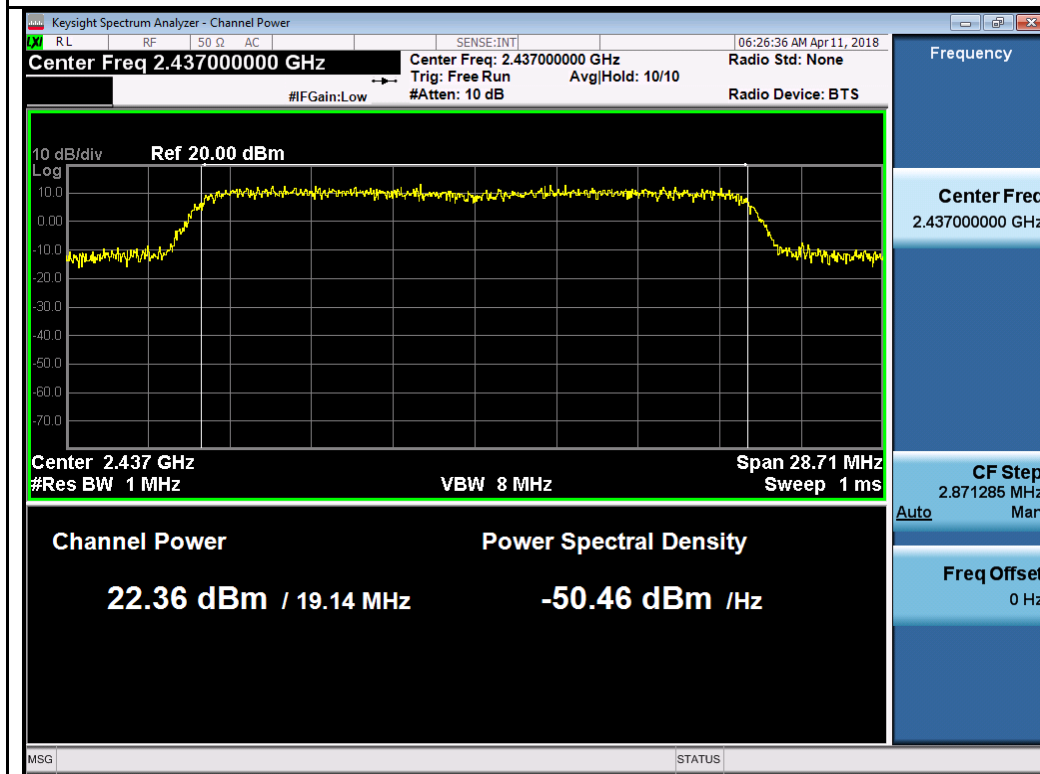
802.11ax20 2412MHz Chain 2



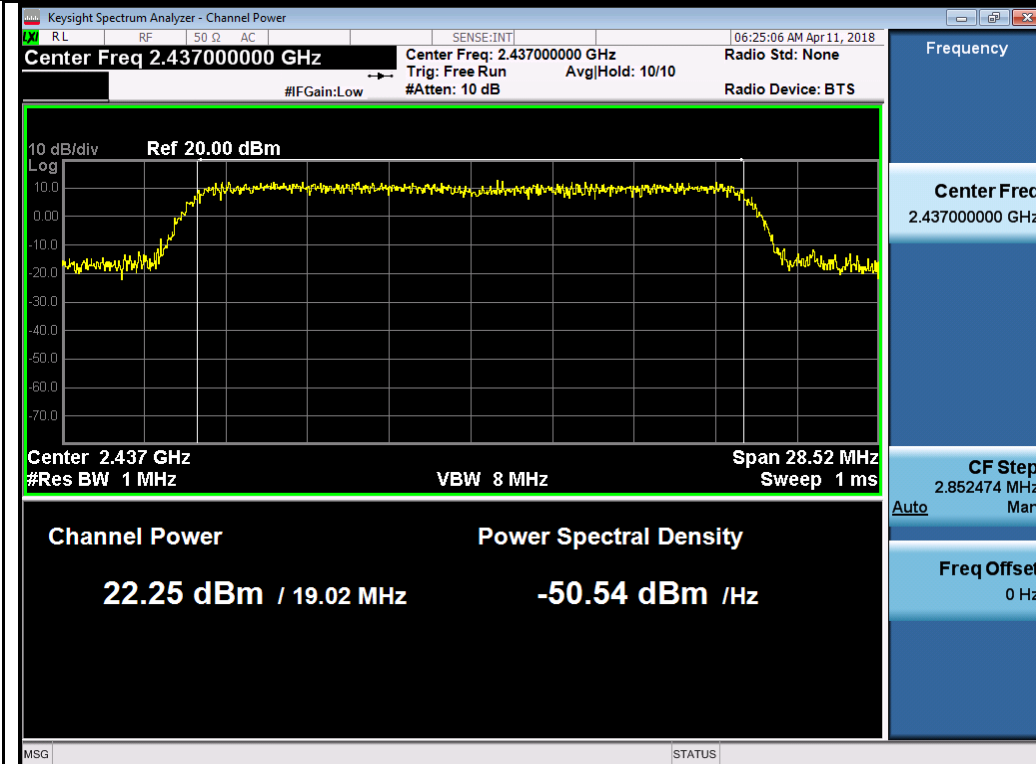
802.11ax20 2412MHz Chain 3



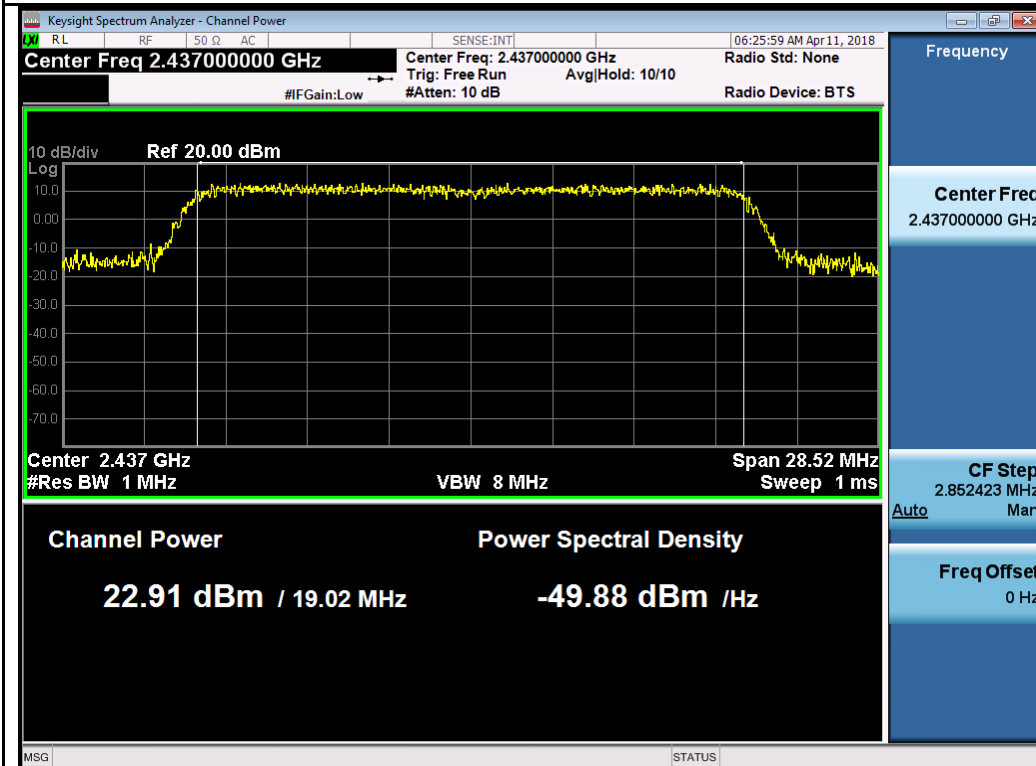
802.11ax20 2437MHz Chain 0



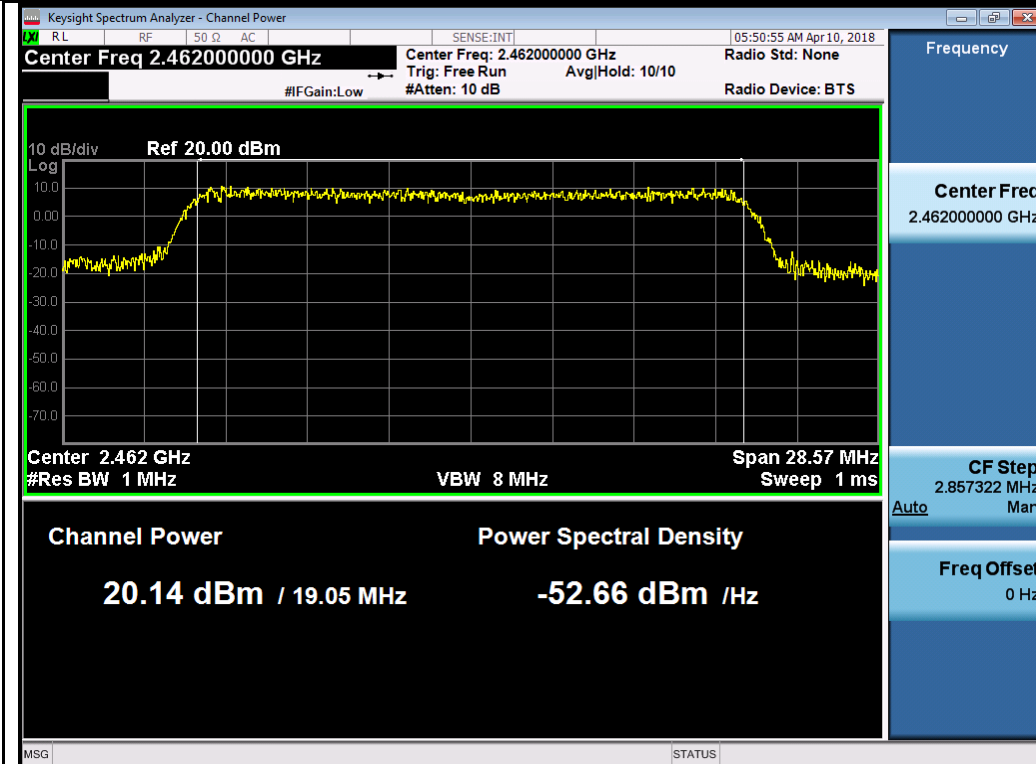
802.11ax20 2437MHz Chain 1



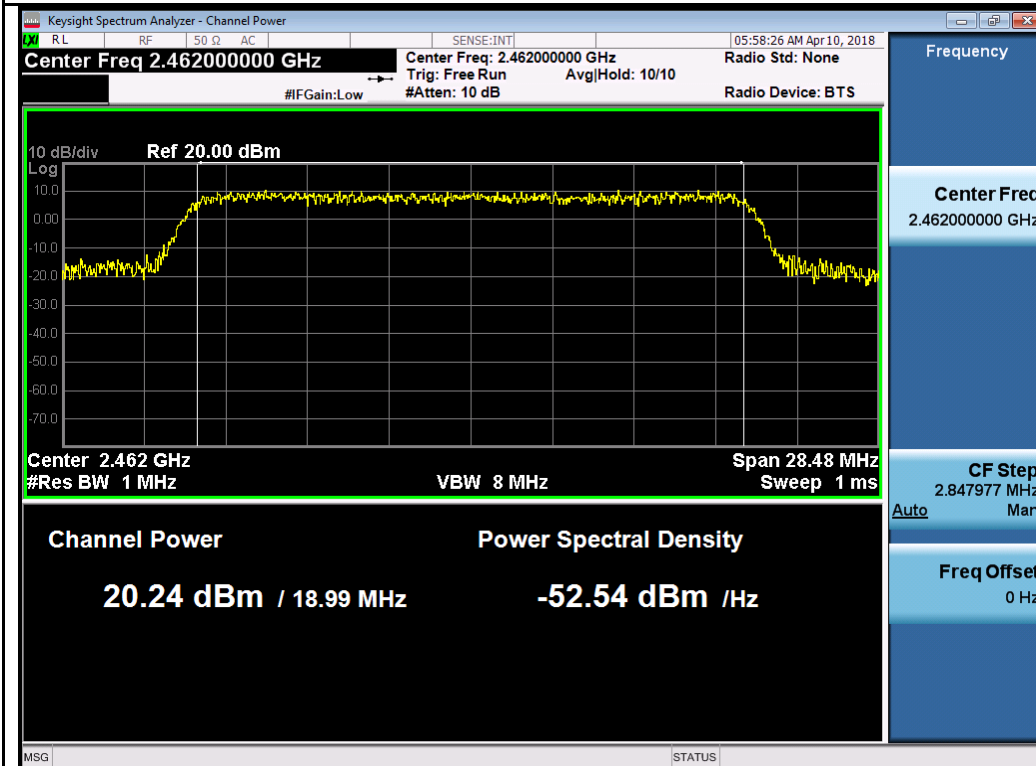
802.11ax20 2437MHz Chain 2



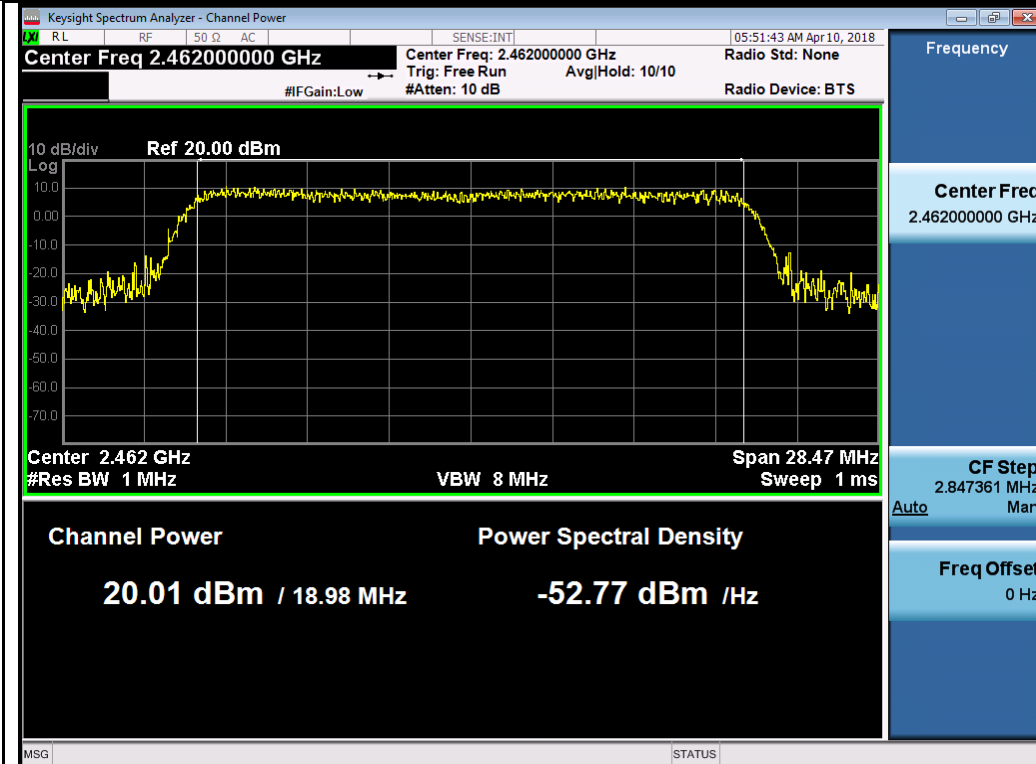
802.11ax20 2437MHz Chain 3



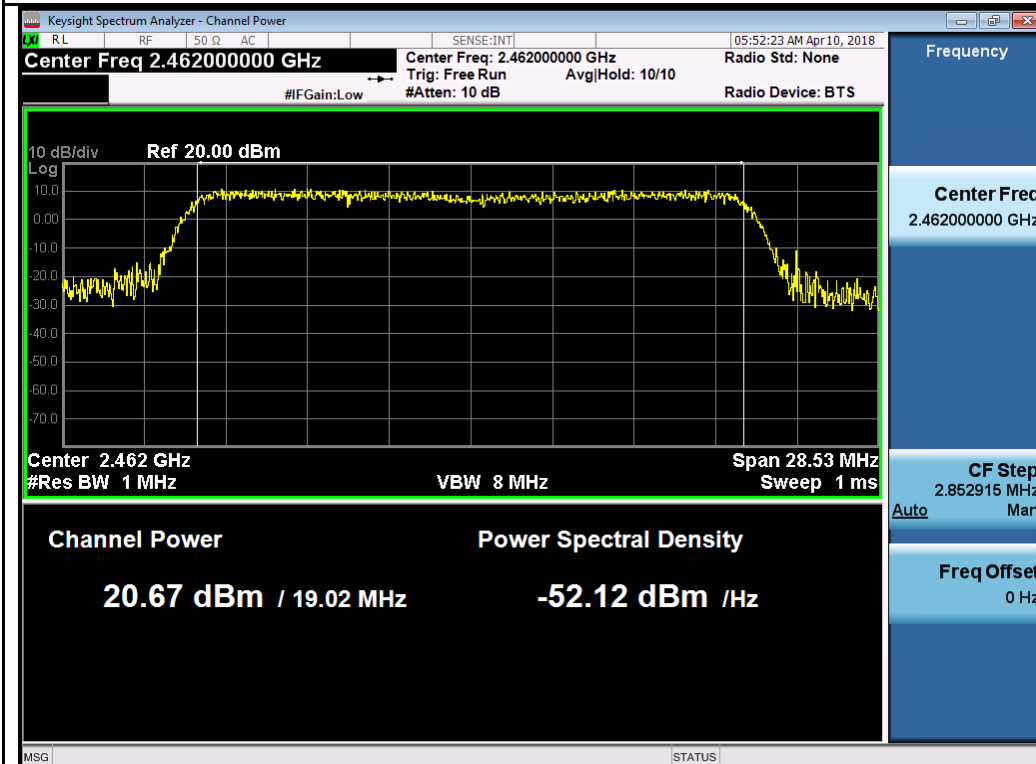
802.11ax20 2462MHz Chain 0



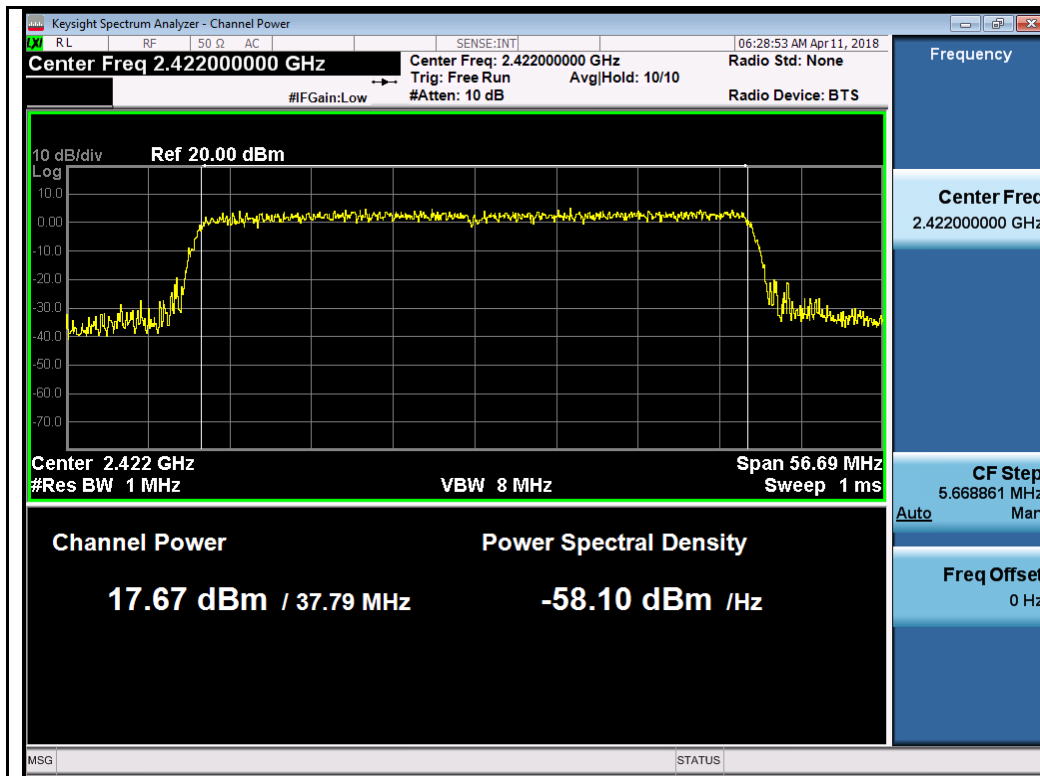
802.11ax20 2462MHz Chain 1



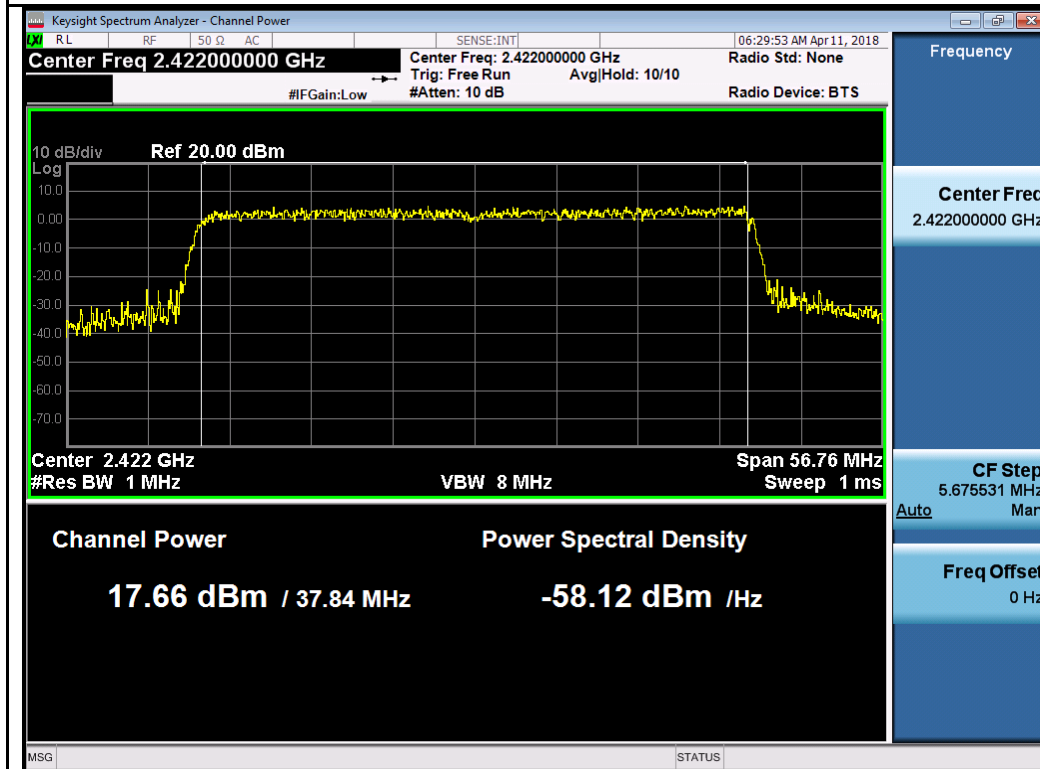
802.11ax20 2462MHz Chain 2



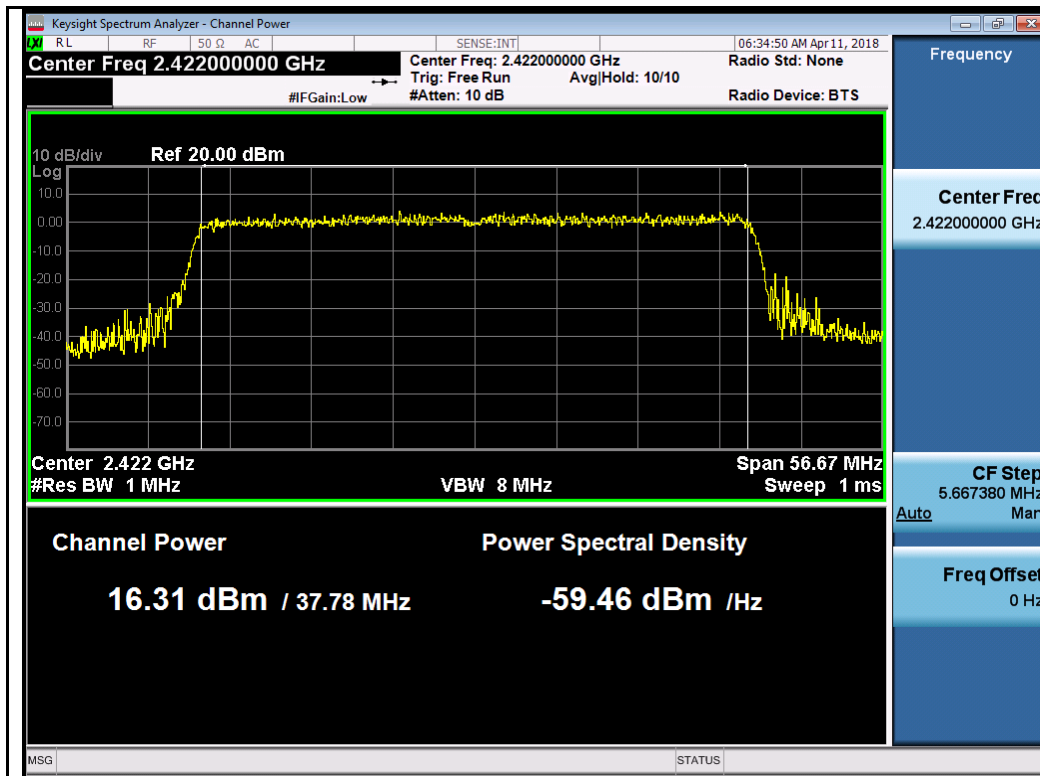
802.11ax20 2462MHz Chain 3



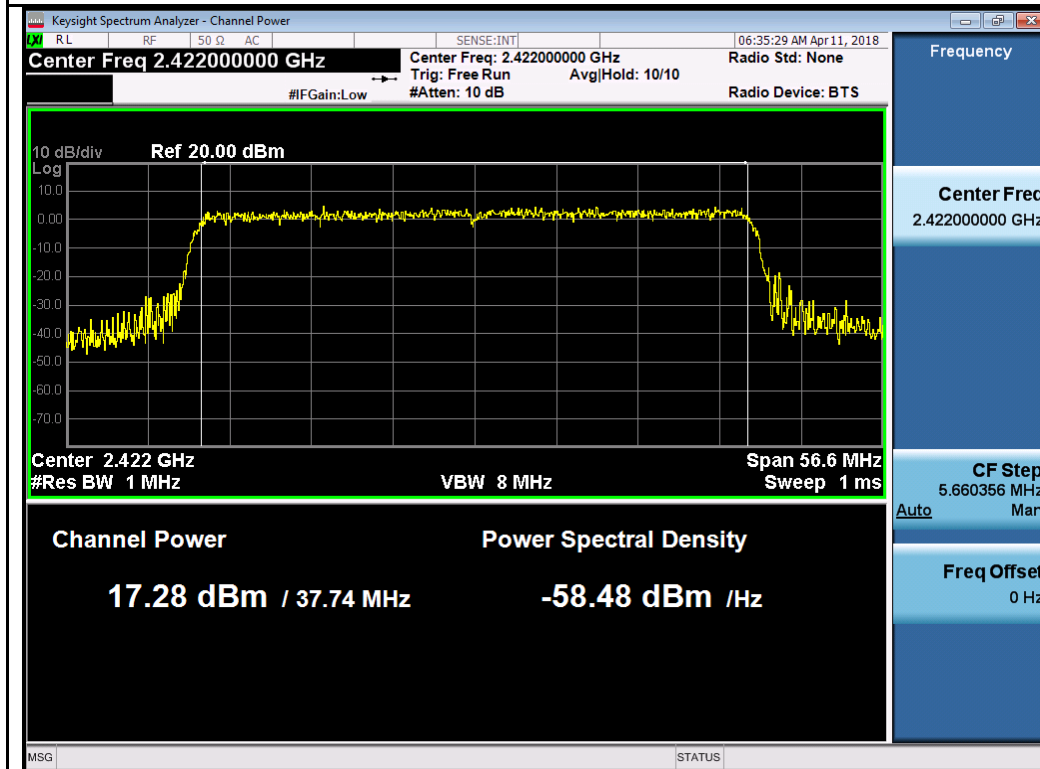
802.11ax40 2422MHz Chain 0



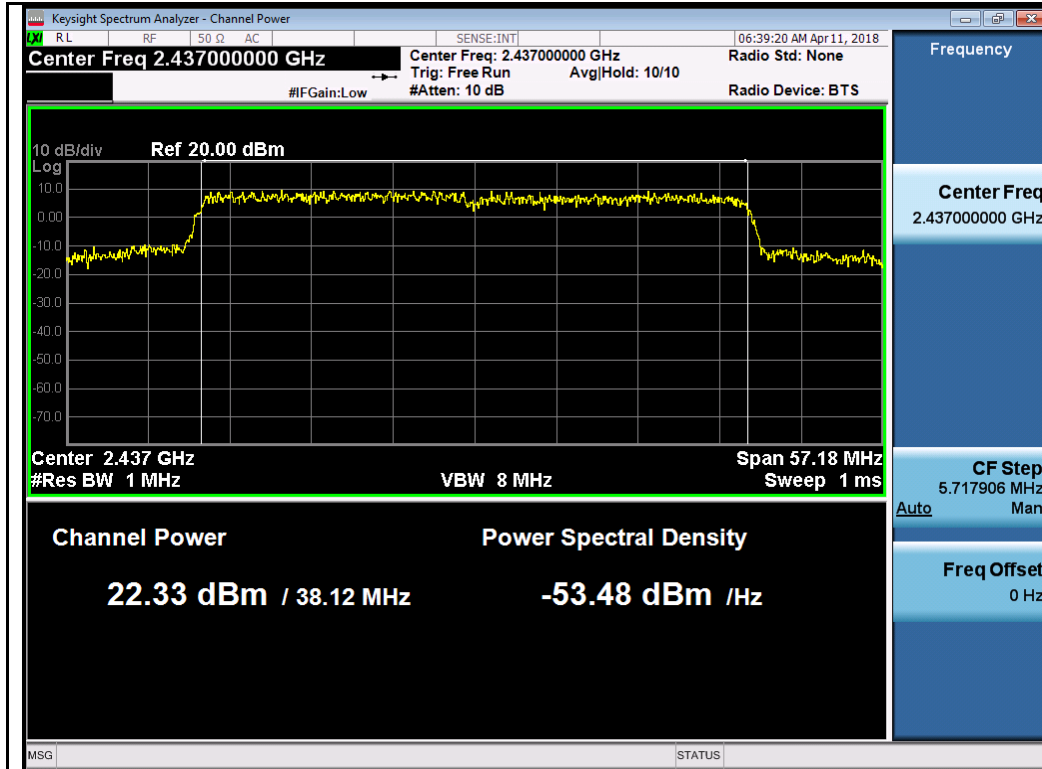
802.11ax40 2422MHz Chain 1



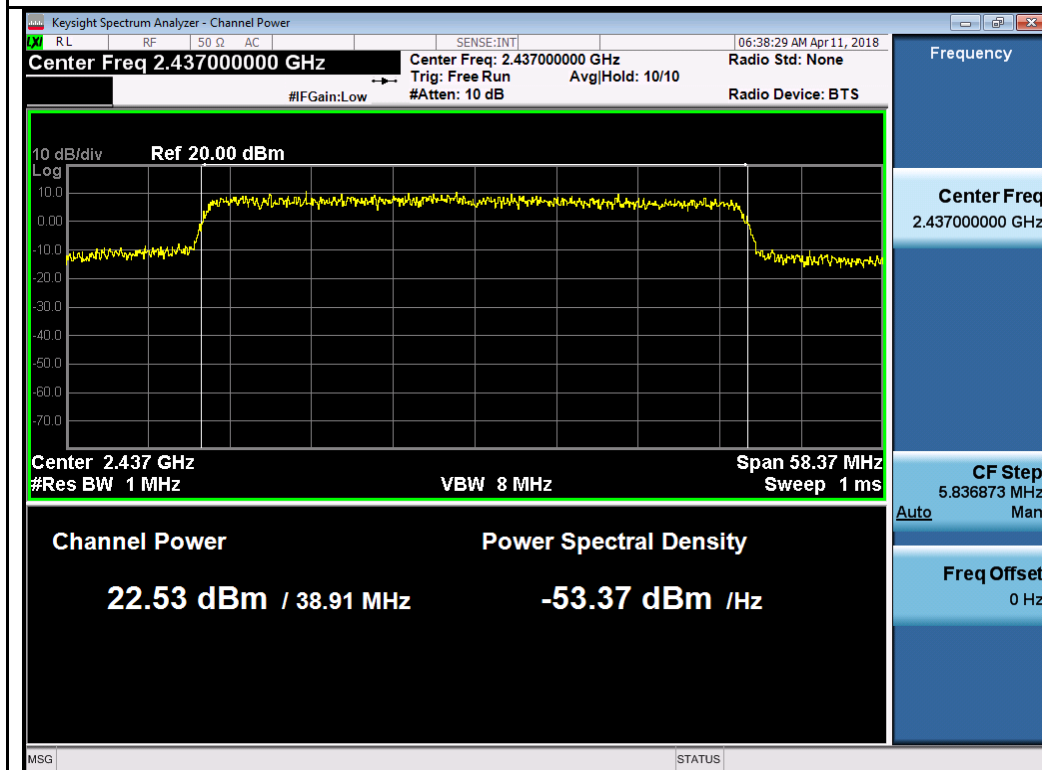
802.11ax40 2422MHz Chain 2



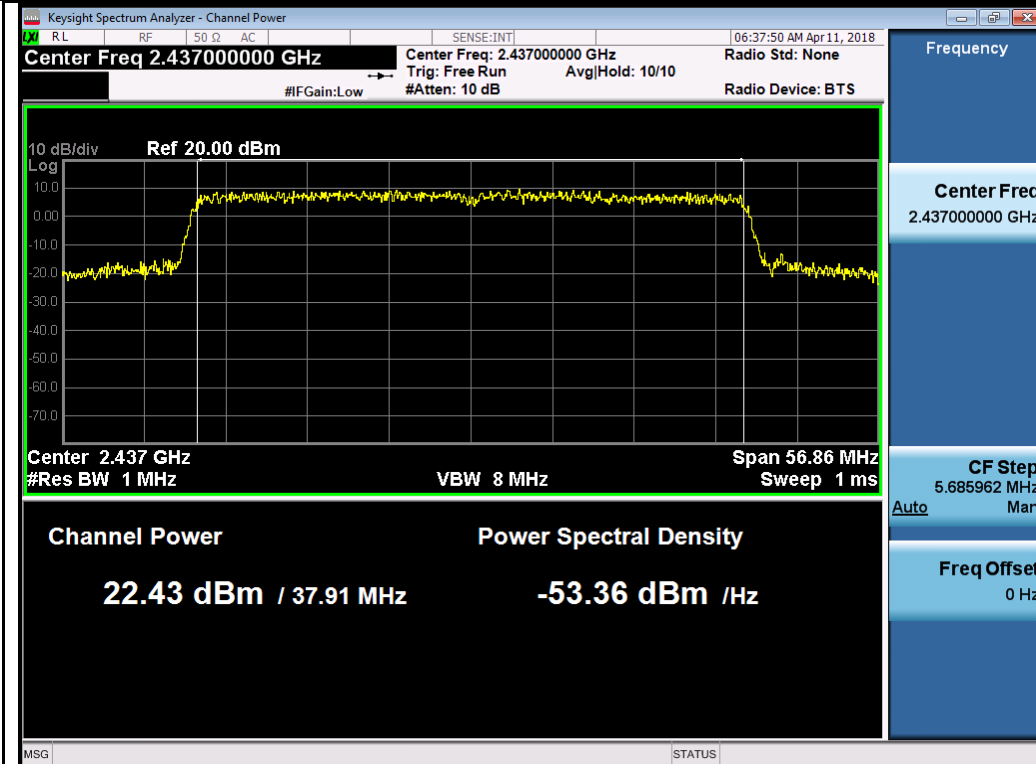
802.11ax40 2422MHz Chain 3



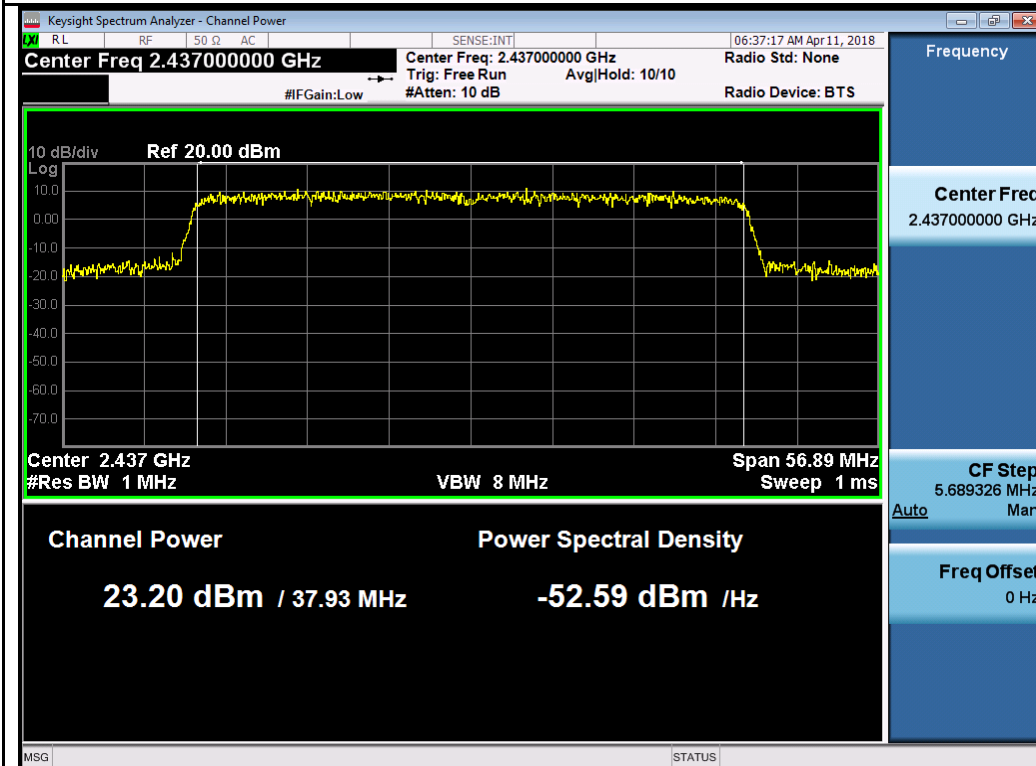
802.11ax40 2437MHz Chain 0



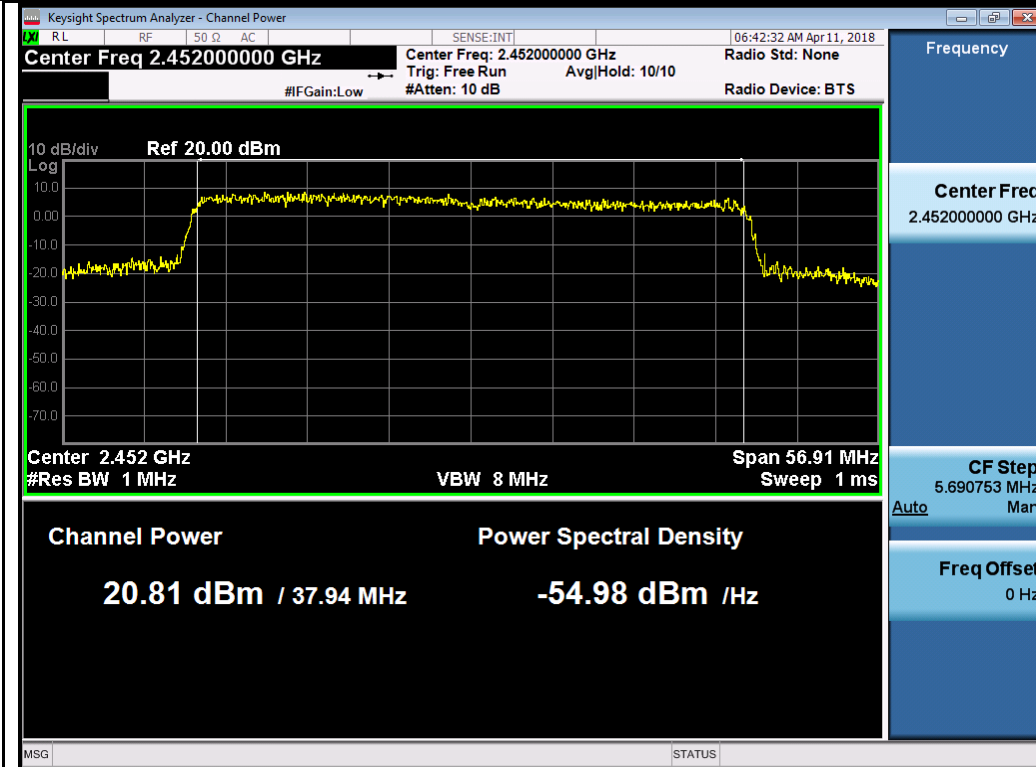
802.11ax40 2437MHz Chain 1



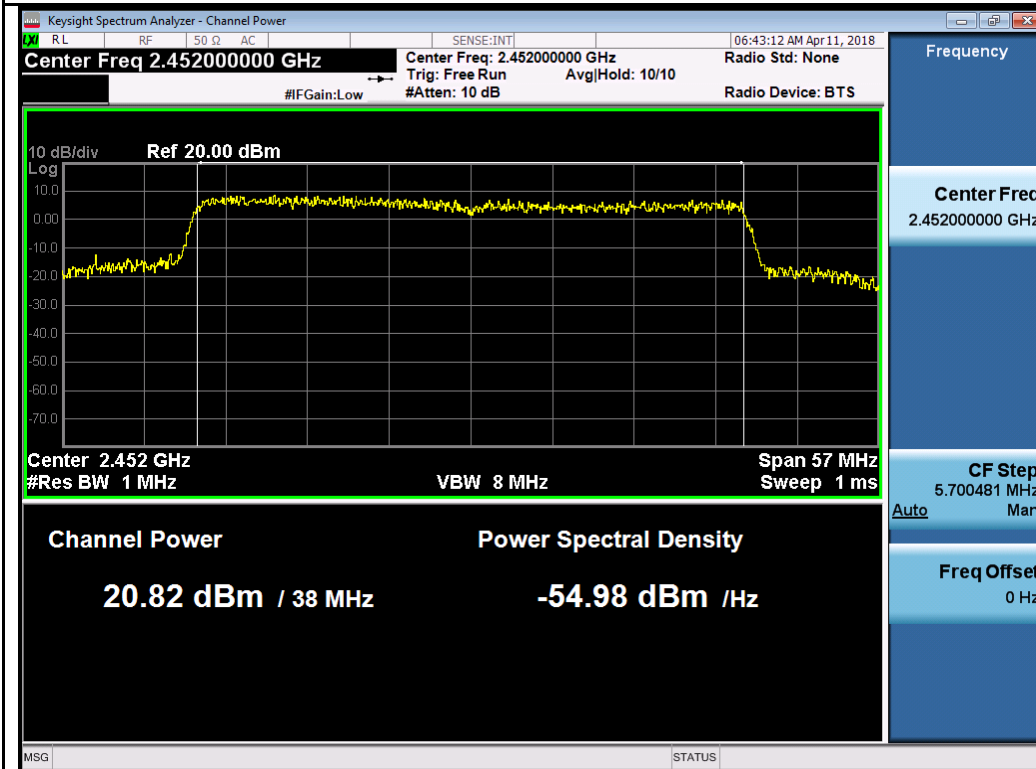
802.11ax40 2437MHz Chain 2



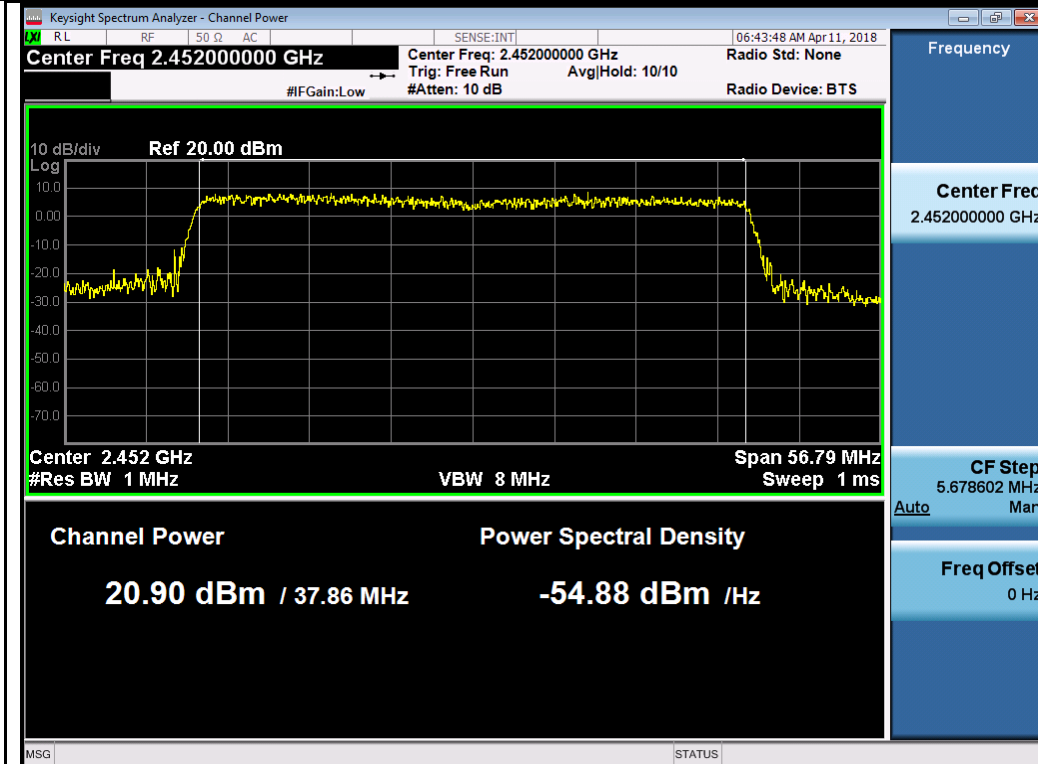
802.11ax40 2437MHz Chain 3



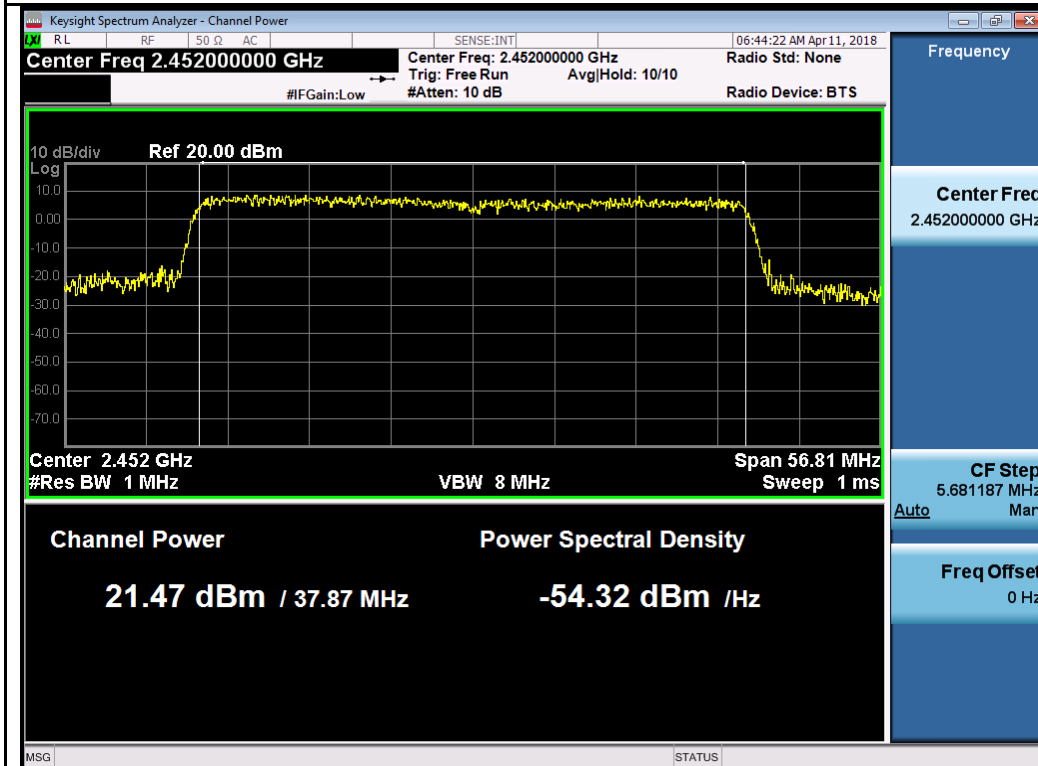
802.11ax40 2452MHz Chain 0



802.11ax40 2452MHz Chain 1




802.11ax40 2452MHz Chain 2



802.11ax40 2452MHz Chain 3

10.5 Band Edge

Requirement(s):

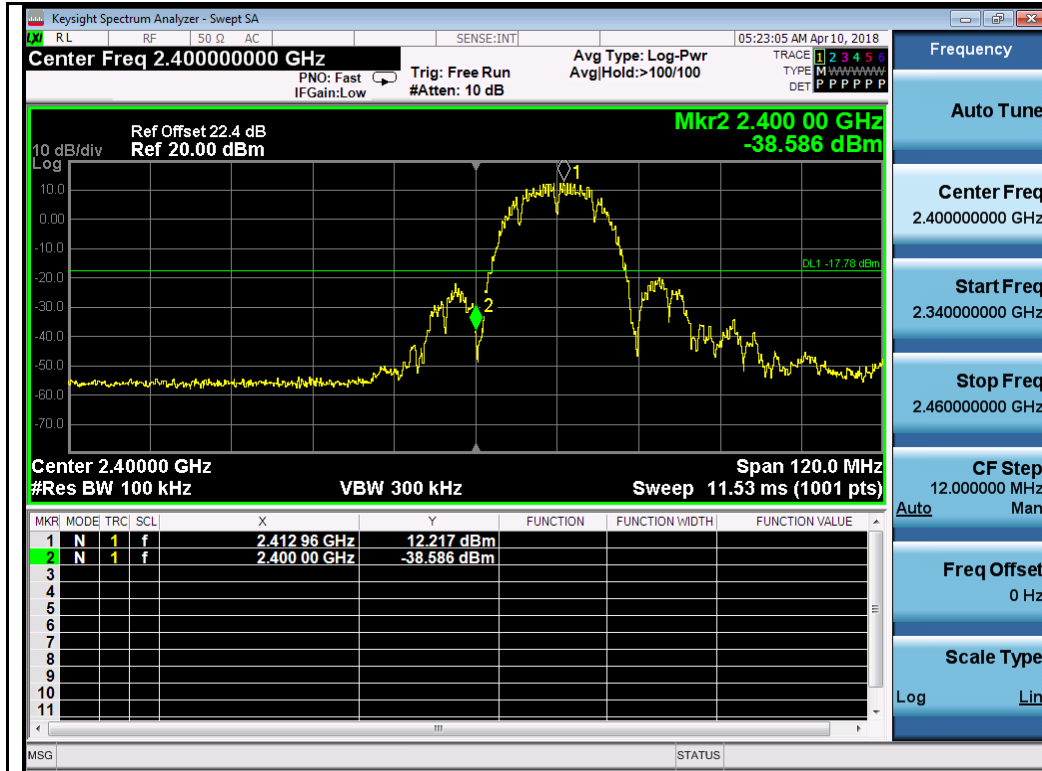
Spec	Item	Requirement	Applicable
§ 15.247 RSS247(5.5)	d)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209 (a) is not required <input type="checkbox"/> 20 dB down <input checked="" type="checkbox"/> 30 dB down	<input checked="" type="checkbox"/>
Test Setup	 <p>Spectrum Analyzer EUT</p>		
Test Procedure	<p>558074 D01 DTS Meas Guidance v04</p> <p><u>Band Edge measurement procedure</u></p> <ol style="list-style-type: none"> 1. Set the EUT to maximum power setting and enable the EUT transmit continuously. 2. Band edge emissions must be at least 30 dB down from the highest emission level within the authorized band as a measured. The attenuation shall be 30 dB instead of 20 dB when Peak conducted output power procedure is used. 3. Change modulation and channel bandwidth then repeat step 1 to 2. 4. Measured and record the results in the test report. 		
Test Date	05/17/2018 – 06/20/2018	Environmental condition	Temperature 22°C Relative Humidity 46% Atmospheric Pressure 1020mbar
Remark	-		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data Yes N/A

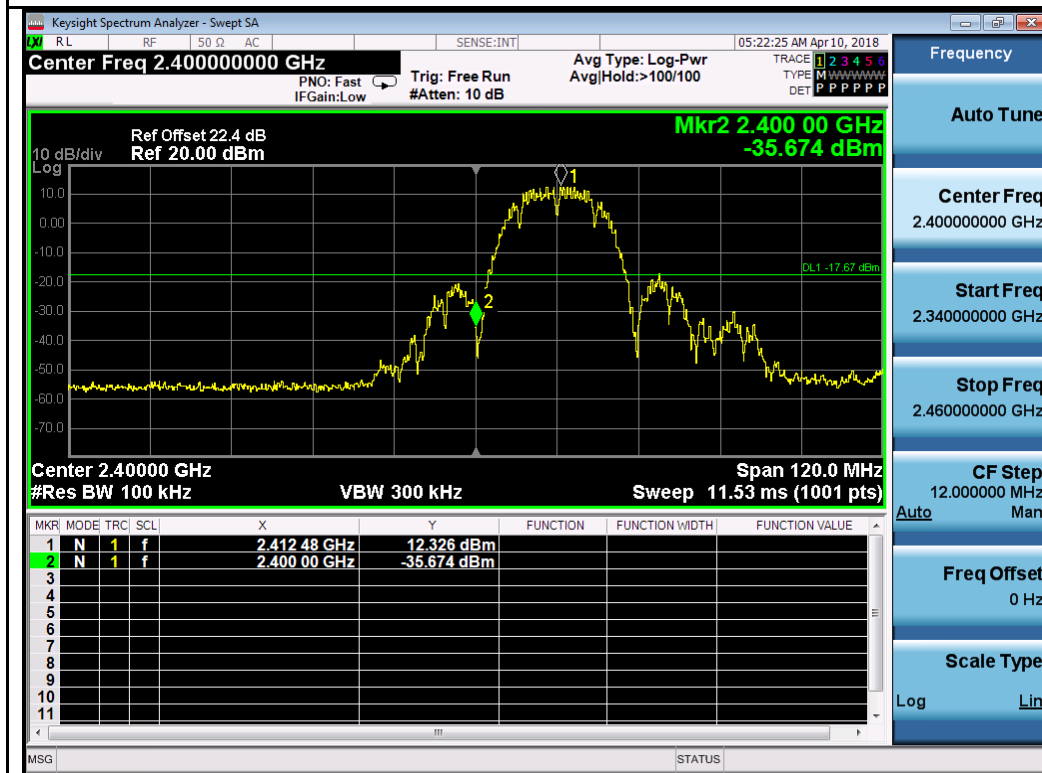
Test Plot Yes (See below) N/A

Test was done by Chen Ge at RF test site.

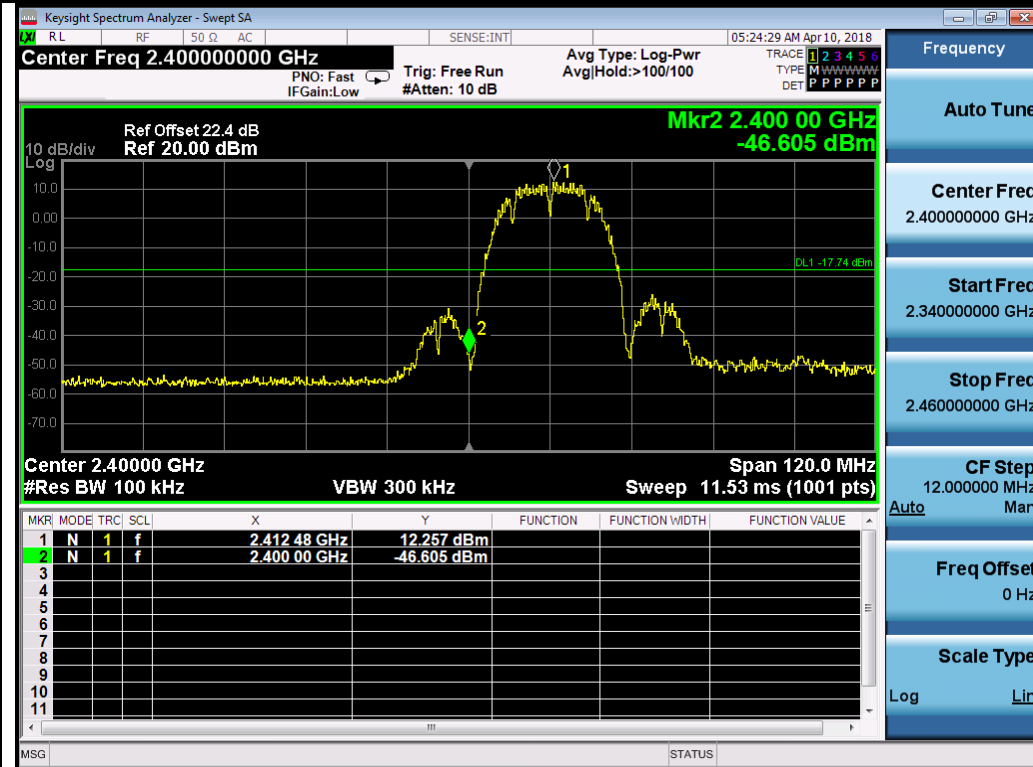
Test Plots



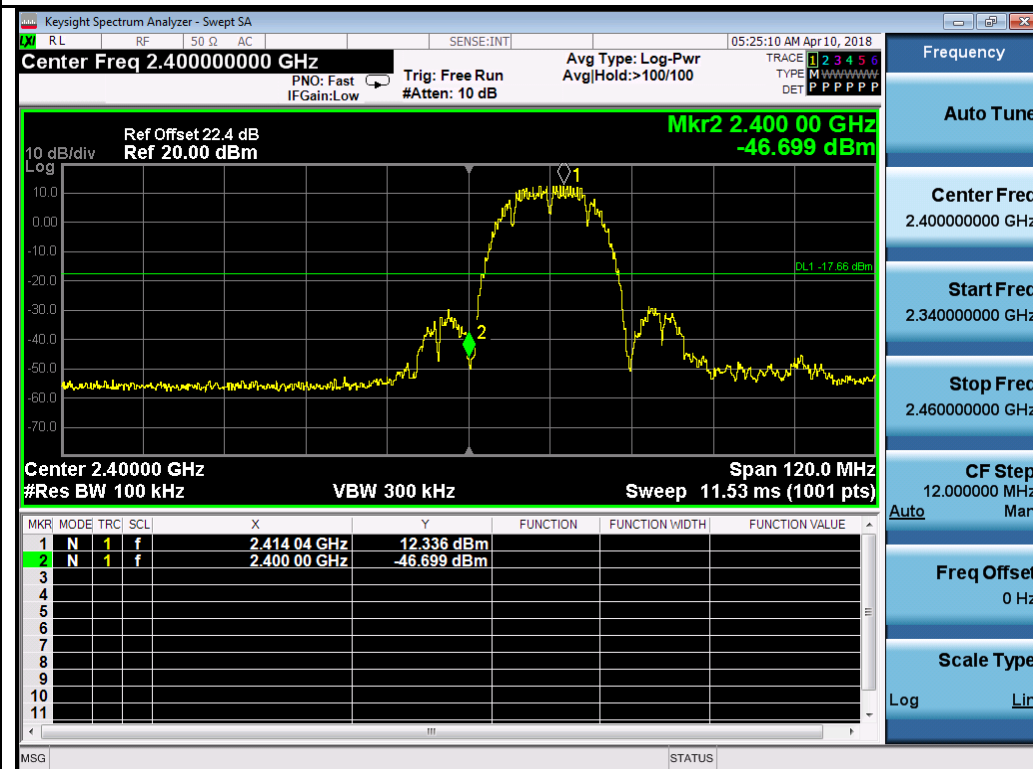
802.11b-2412MHz Chain 0



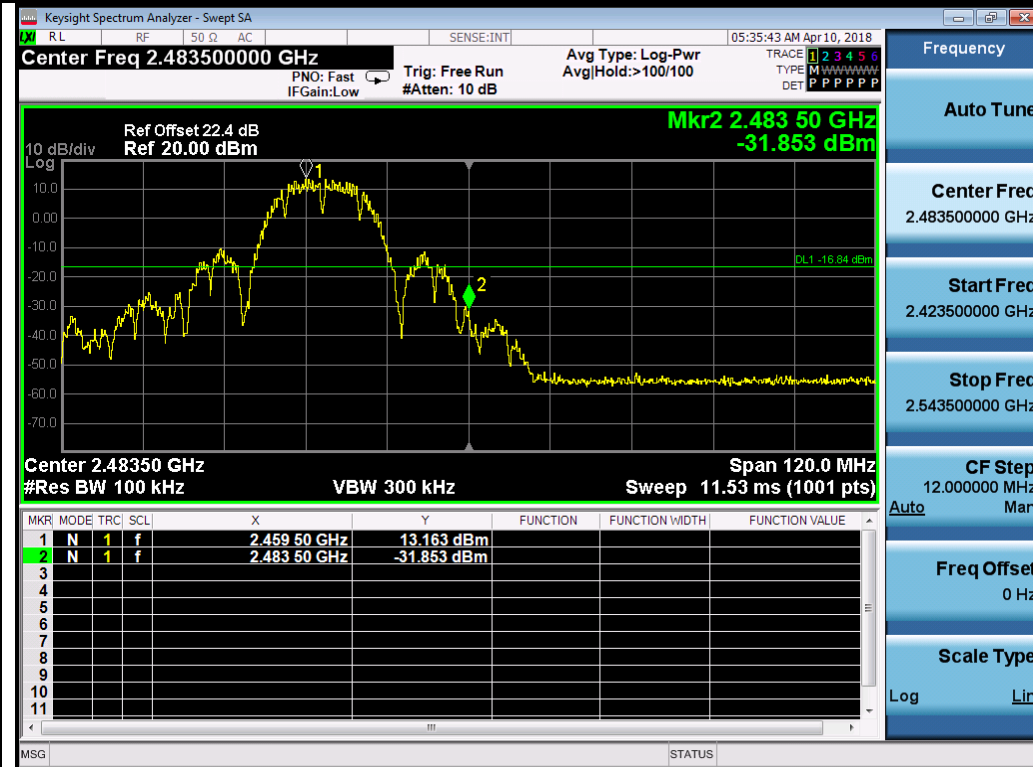
802.11b-2412MHz Chain 1



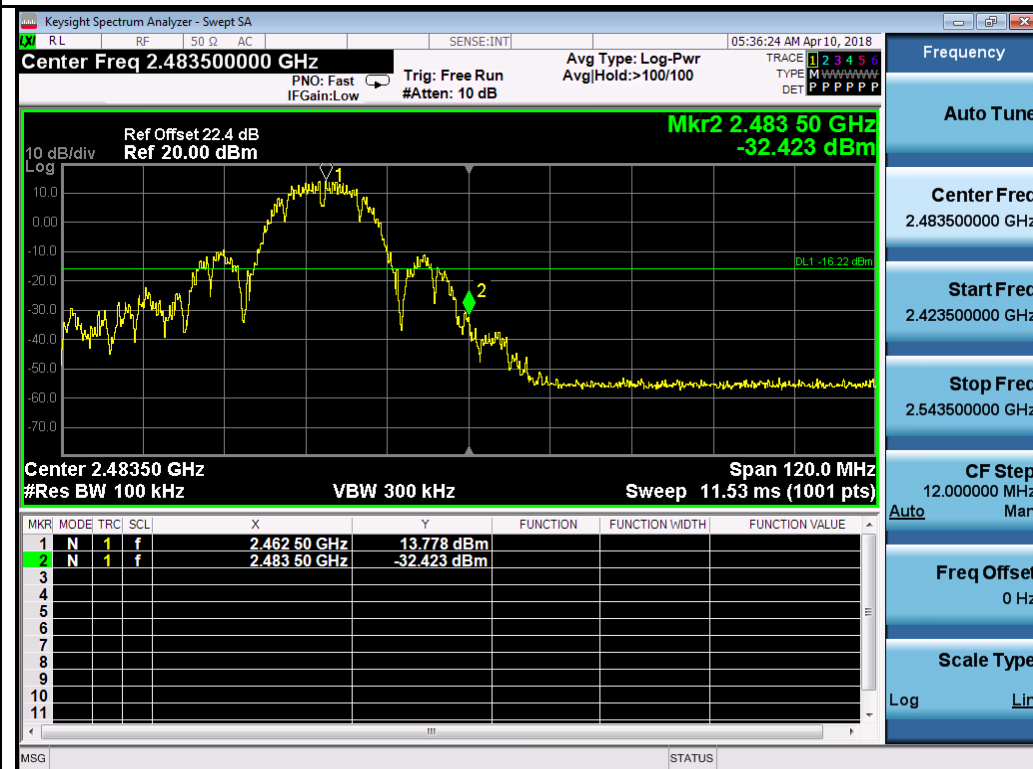
802.11b-2412MHz Chain 2



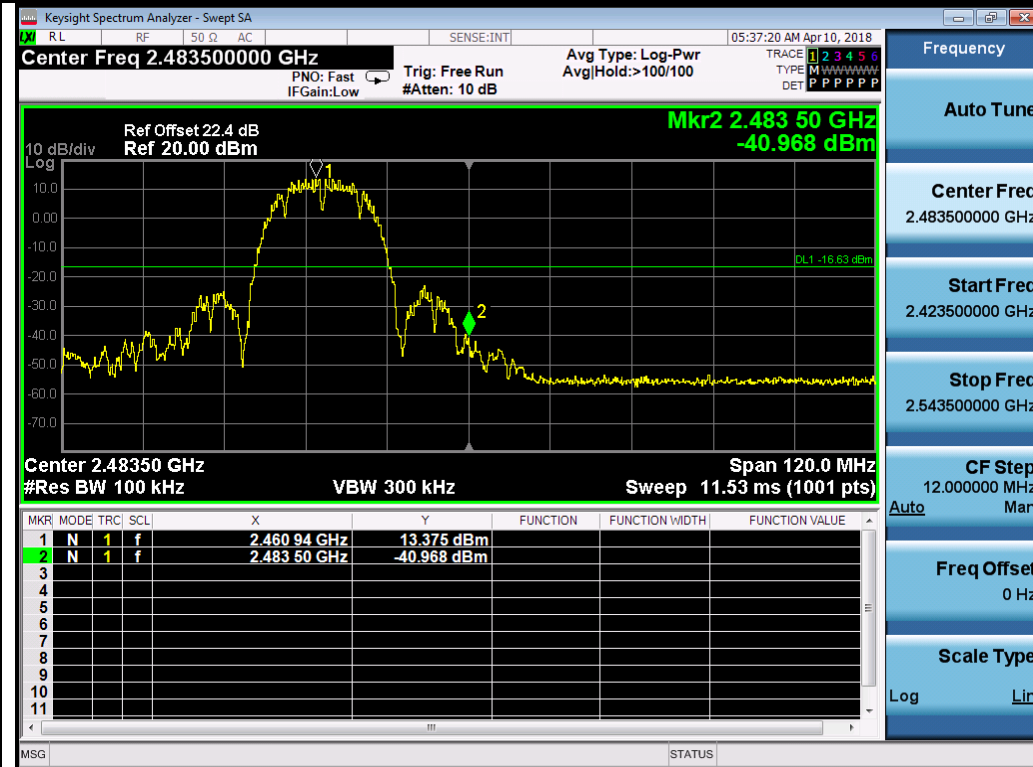
802.11b-2412MHz Chain 3



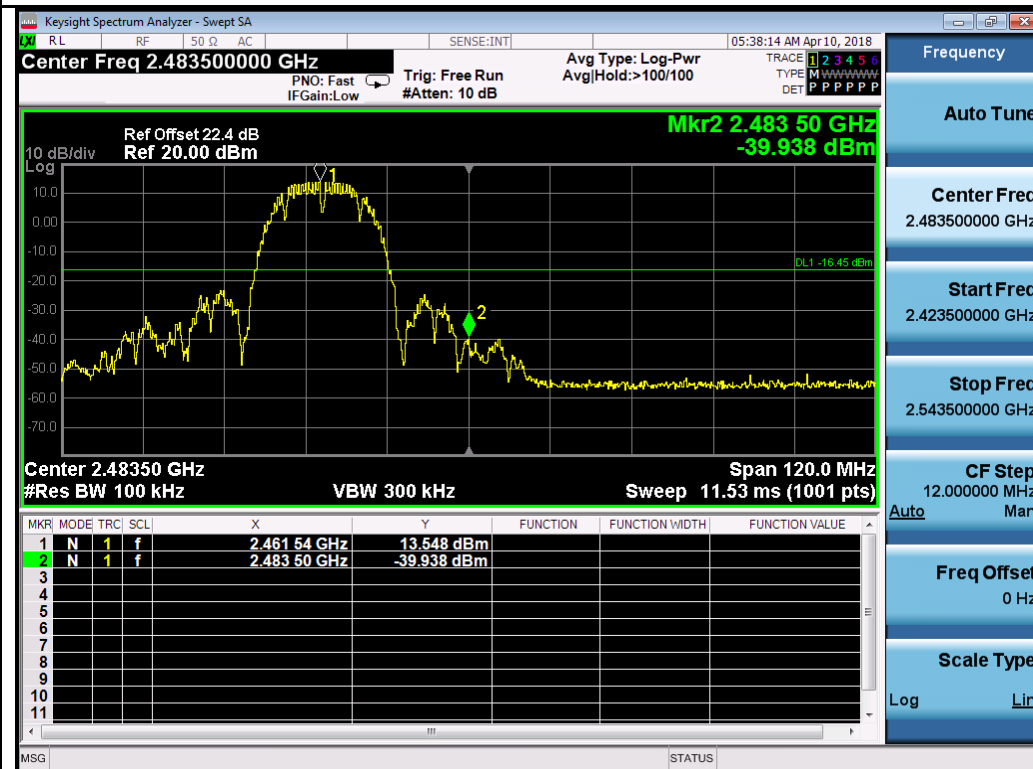
802.11b-2462MHz Chain 0



802.11b-2462MHz Chain 1



802.11b-2462MHz Chain 2



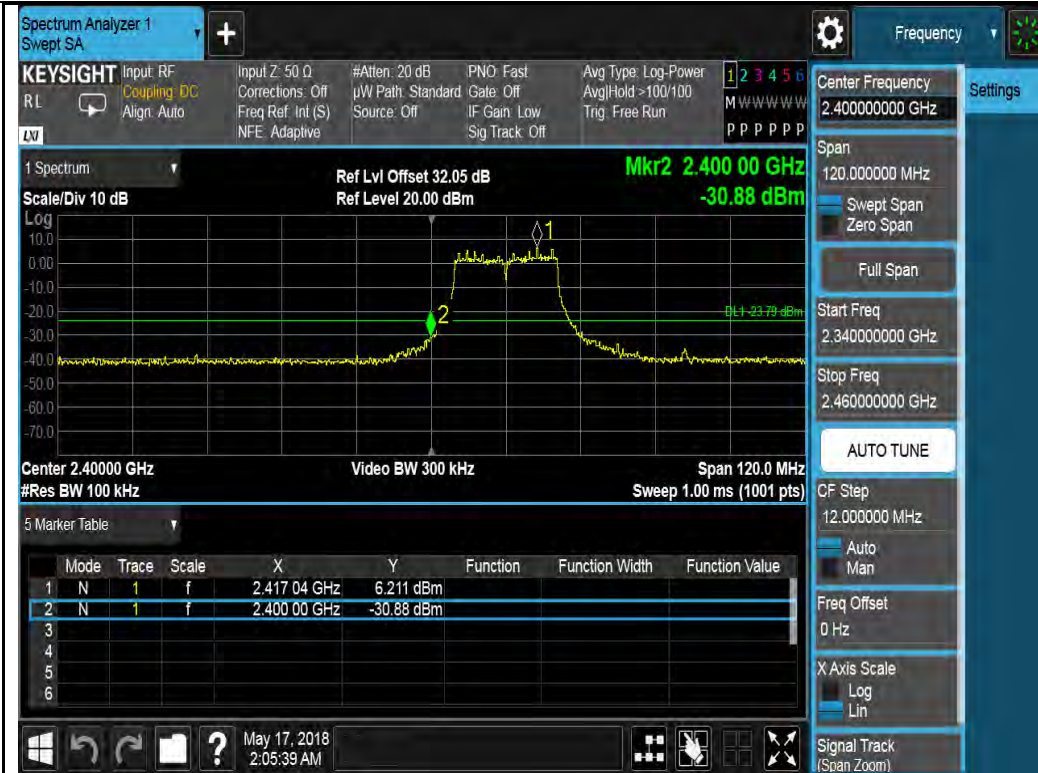
802.11b-2462MHz Chain 3



802.11g-2412MHz Chain 0



802.11g-2412MHz Chain 1



802.11g-2412MHz Chain 2



802.11g-2412MHz Chain 3



802.11g-2462MHz Chain 0



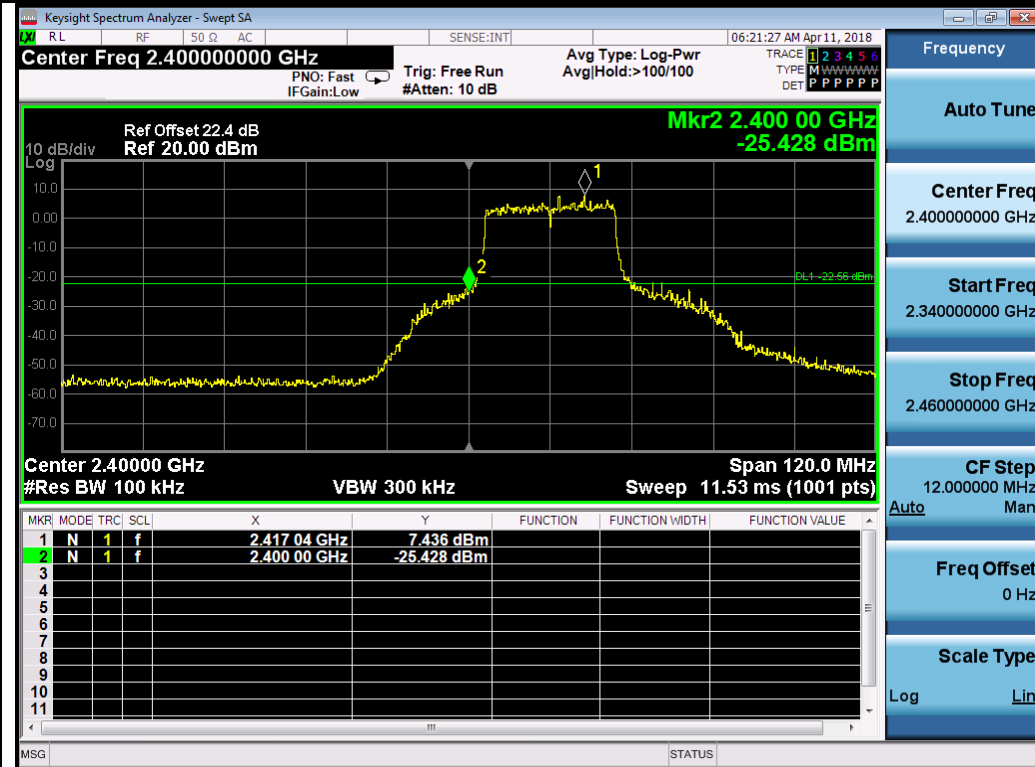
802.11g-2462MHz Chain 1



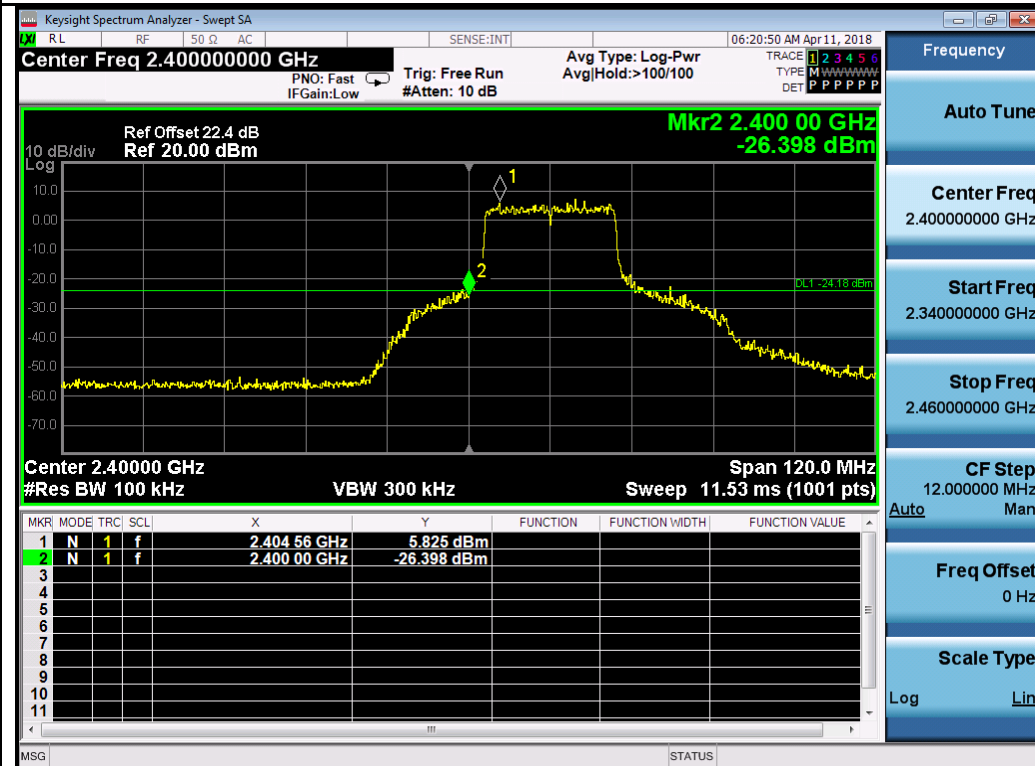
802.11g-2462MHz Chain 2



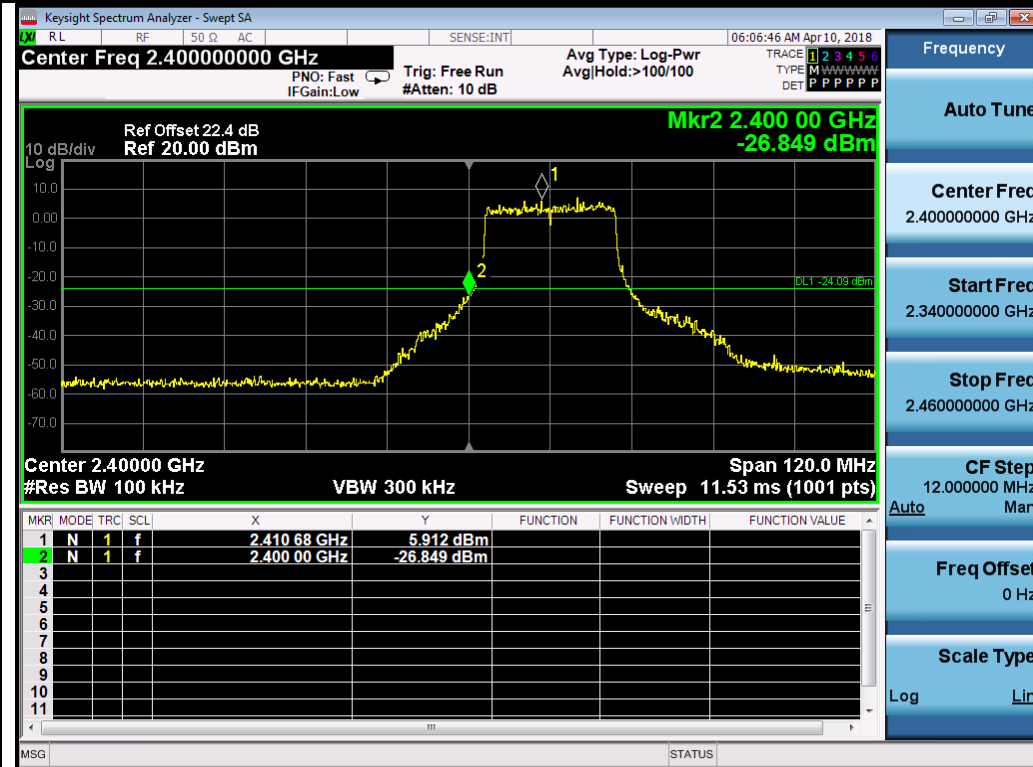
802.11g-2462MHz Chain 3



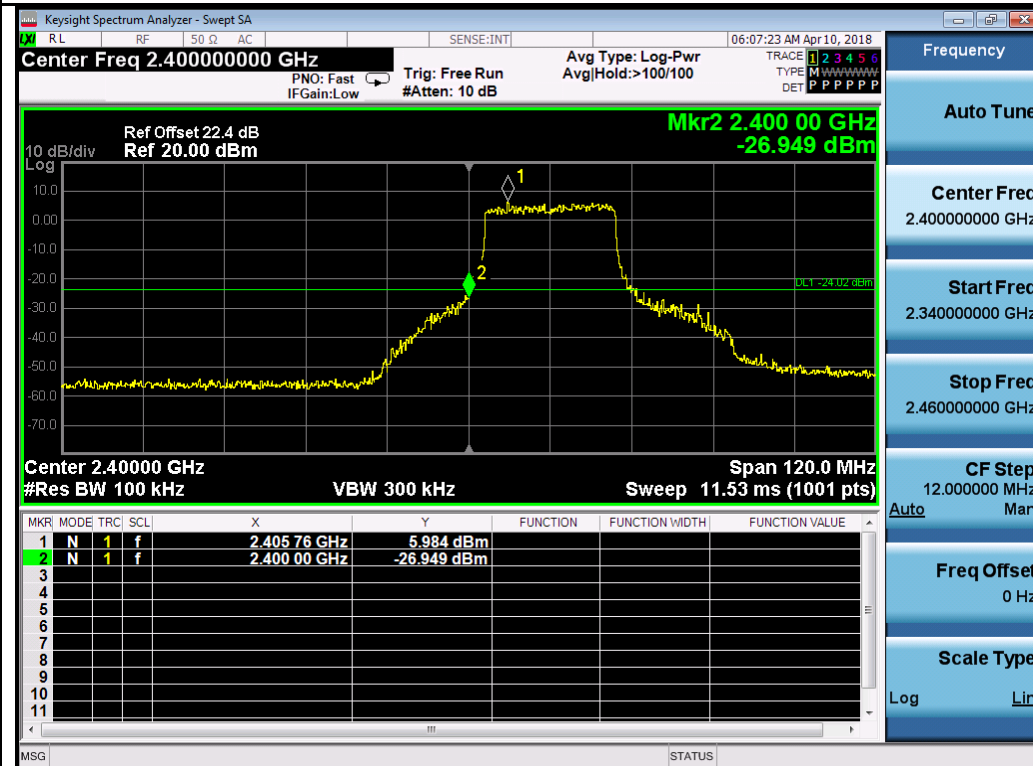
802.11ax20-2412MHz Chain 0



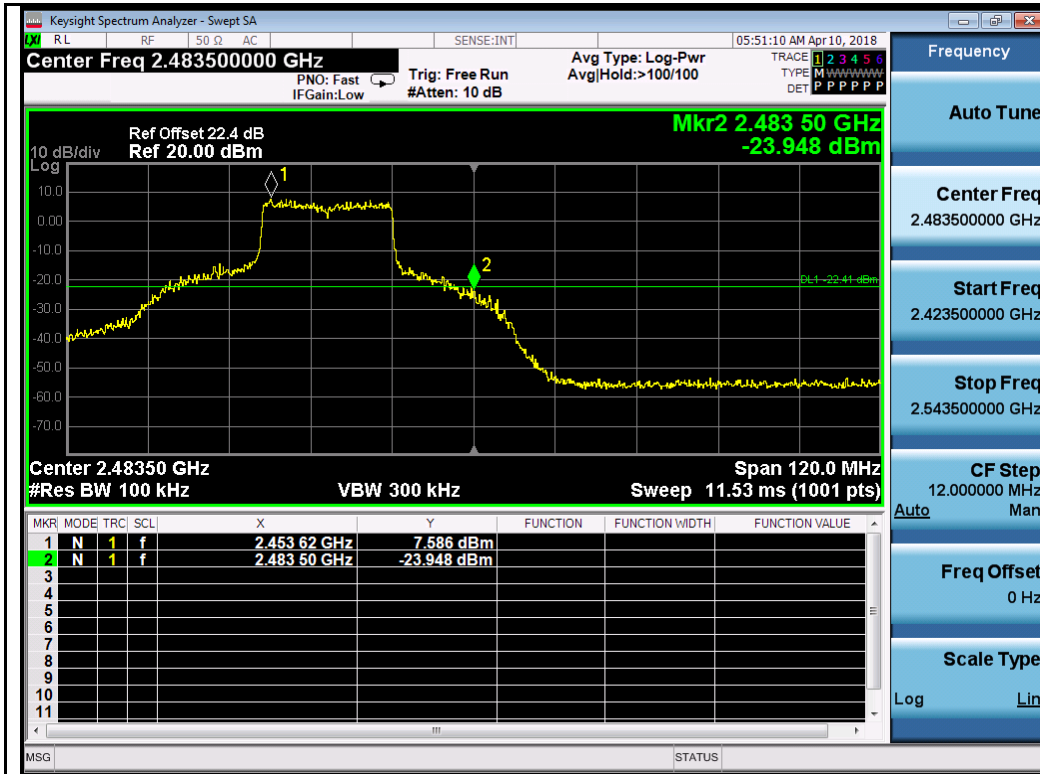
802.11ax20-2412MHz Chain 1



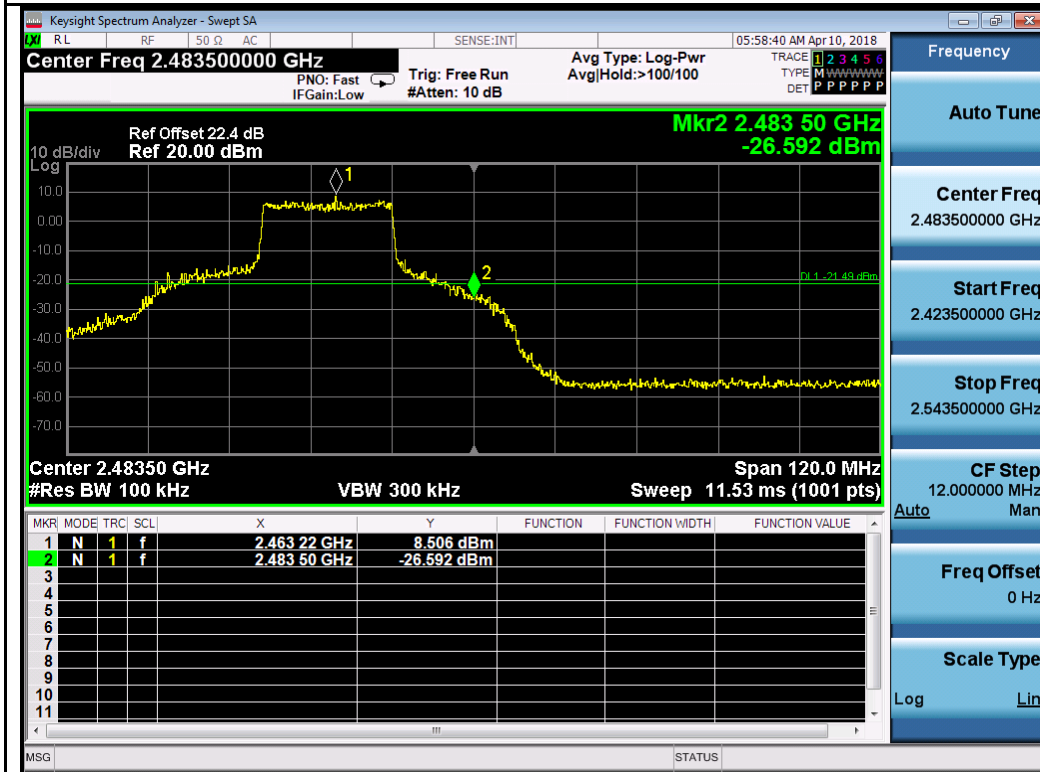
802.11ax20-2412MHz Chain 2



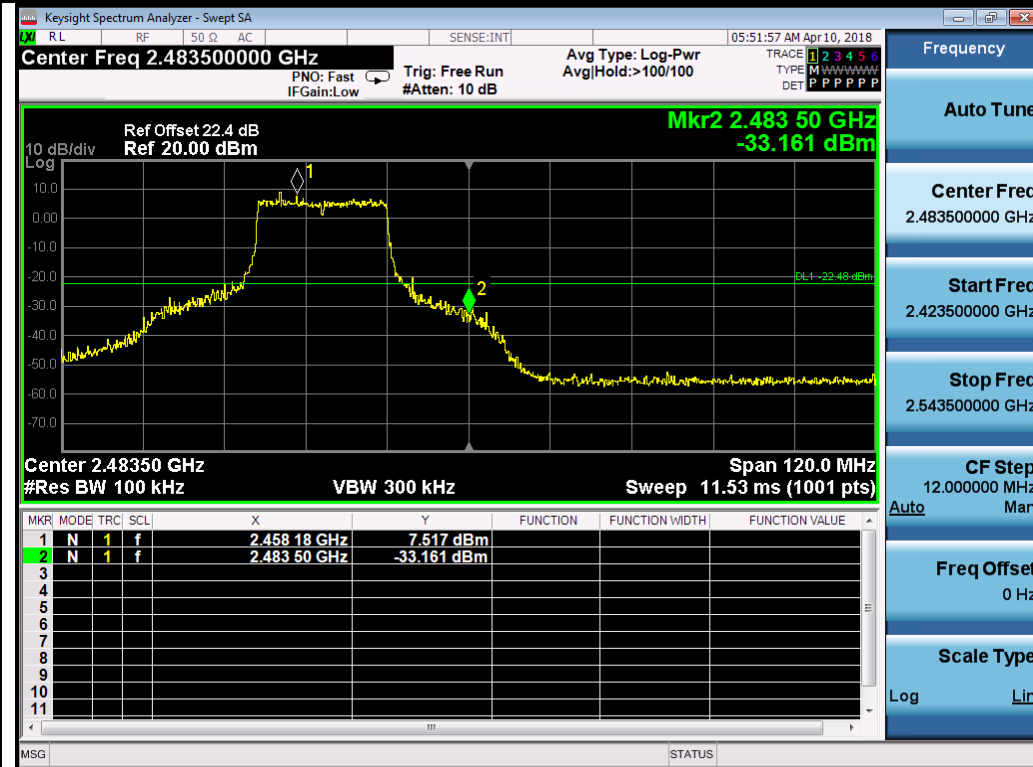
802.11ax20-2412MHz Chain 3



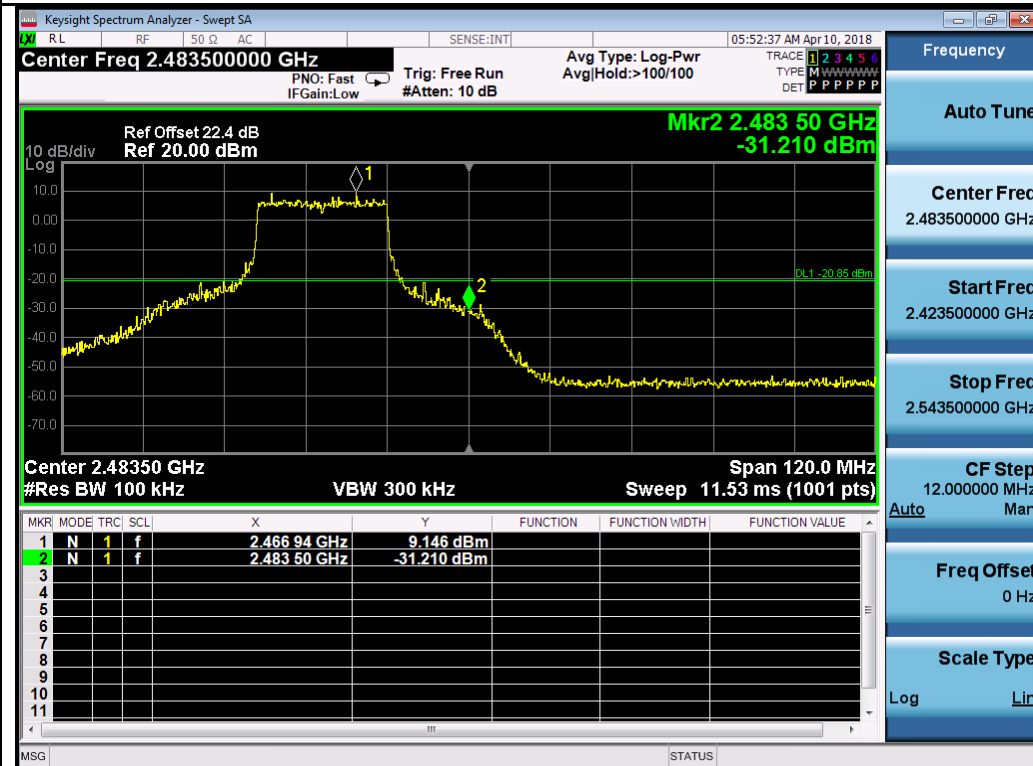
802.11ax20-2462MHz Chain 0



802.11ax20-2462MHz Chain 1



802.11ax20-2462MHz Chain 2



802.11ax20-2462MHz Chain 3