

RF TEST REPORT

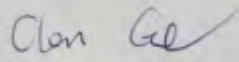


Report No.: FCC_SL16101901-RUC-037-W52W58 Rev 4.0

Supersede Report No.: FCC_SL16101901-RUC-037-W52W58 Rev 3.0

Applicant	:	Ruckus Wireless, Inc.
Product Name	:	R720 Access Point
Model No.	:	R720
Test Standard	:	47 CFR 15.407
Test Method	:	ANSI C63.4: 2014 789033 D02 General UNII Test Procedures New Rules v01r02
FCC ID	:	S9GR720
IC ID	:	5912A-R720
Dates of test	:	12/05/2016 to 01/11/2017
Issue Date	:	01/16/2017
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		

This Test Report is Issued Under the Authority of:

	
Gary Chou	Chen Ge
Test Engineer	Engineer Reviewer
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only	

Issued By:
SIEMIC Laboratories
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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.



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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

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_SL16101901-RUC-037-W52W58	None	Original	12/22/2016
FCC_SL16101901-RUC-037-W52W58 Rev 1.0	Rev 1.0	Updated power supply information	01/09/2017
FCC_SL16101901-RUC-037-W52W58 Rev 2.0	Rev 2.0	Updated conducted emission	01/11/2017
FCC_SL16101901-RUC-037-W52W58 Rev 3.0	Rev 3.0	Updated EUT information	01/12/2017
FCC_SL16101901-RUC-037-W52W58 Rev 4.0	Rev 4.0	Updated Beamforming	01/16/2017

2 Executive Summary

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

Company: Ruckus Wireless, Inc.
Product: R720 Access Point
Model: R720

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	R720 Access Point
Model No.	R720
Trade Name	Ruckus
Serial No.	451606000010
Host Model No.	N/A
Input Power	48VDC
Power Adapter Manu/Model	UMEC/UP0451H-54PP
Power Adapter SN	CQ112128
Date of EUT received	12/01/2016
Equipment Class/ Category	DTS, UNII
Port/Connectors	PoE, Ethernet

6.2 Radio Description

Radio Type	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	5180-5240MHz 5745-5825MHz	5180-5240MHz 5745-5825MHz	5190-5230MHz 5755-5795MHz	5210MHz 5775MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	9	9	4	2
Antenna Type	Internal Omni PCB Antenna			
Antenna Gain (Peak)	5GHz: 3.5dBi			
Antenna Connector Type	U.FL			
Note	2.4GHz and 5GHz Radio transmit simultaneously			

EUT Power level setting

Mode	Frequency	ART Power Setting
802.11-a	5180	20
802.11-a	5200	20
802.11-a	5240	20
802.11-n-20	5180	20
802.11-n-20	5200	20
802.11-n-20	5240	20
802.11-n-40	5190	20
802.11-n-40	5230	22
802.11-ac-80	5210	20
802.11-a	5745	22
802.11-a	5785	22
802.11-a	5825	22
802.11-n-20	5745	22
802.11-n-20	5785	22
802.11-n-20	5825	22
802.11-n-40	5755	22
802.11-n-40	5795	22
802.11-ac-80	5775	21

Note: For 160MHz BW channels, the first two chains 1 & 2 are transmitting the first 80MHz frequency, 5210MHz. And the last two chains 3 & 4 are transmitting the second 80MHz frequency, 5290MHz.

The AP supports Beamforming mode and the power setting for Beamforming and Non-Beamforming modes are the same.

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	AC/DC power adapter	UP0451H-54PP	CQ2112128	UMEC	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
							-
							-

7.3 Test Software Description

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

8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Restricted Band of Operation	FCC	15.205	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	ANSI C63.4 – 2014	☒ Pass ☐ N/A

Test Item	Test standard		Test Method/Procedure	Pass / Fail
26 & 6 dB Emission Bandwidth	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Maximum conducted Output Power	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Power reduction (Antenna Gain > 6 dBi)	FCC	15.407 (a) (2)	-	☐ Pass ☒ N/A
Band Edge and Radiated Spurious Emissions	FCC	15.407(b)(2), 15.407(b)(6)	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Power Spectral Density	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Frequency Stability	FCC	15.407 (g)	-	☐ Pass ☒ N/A
Transmit Power Control (TPC)	FCC	15.407 (h)(1)	-	☐ Pass ☒ N/A
User Manual	FCC	-	-	☒ Pass ☐ N/A
Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. 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

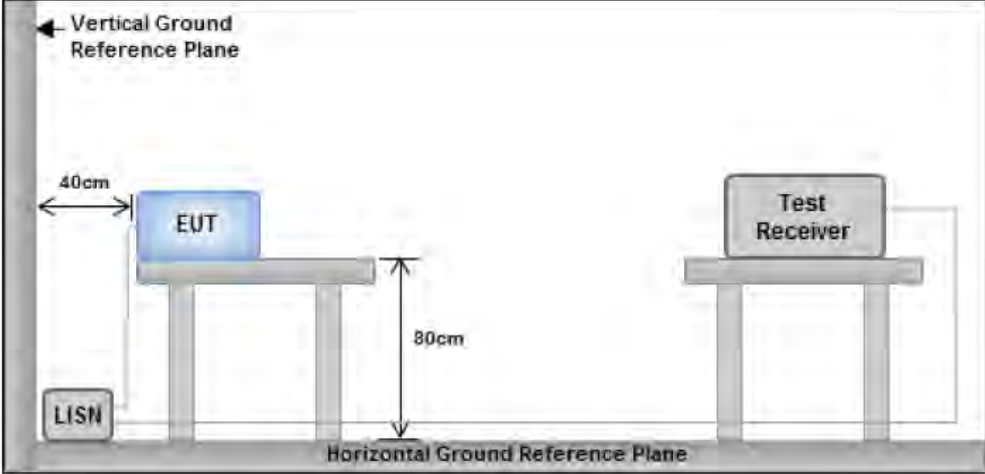
Emissions			
Test Item	Frequency Range	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and Radiated Spurious Emissions	1GHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+4.3dB/-4.1dB

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
RSS247(A8.1)	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.	☒
Test Setup	 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		
Procedure	- 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	☒ Pass ☐ Fail		

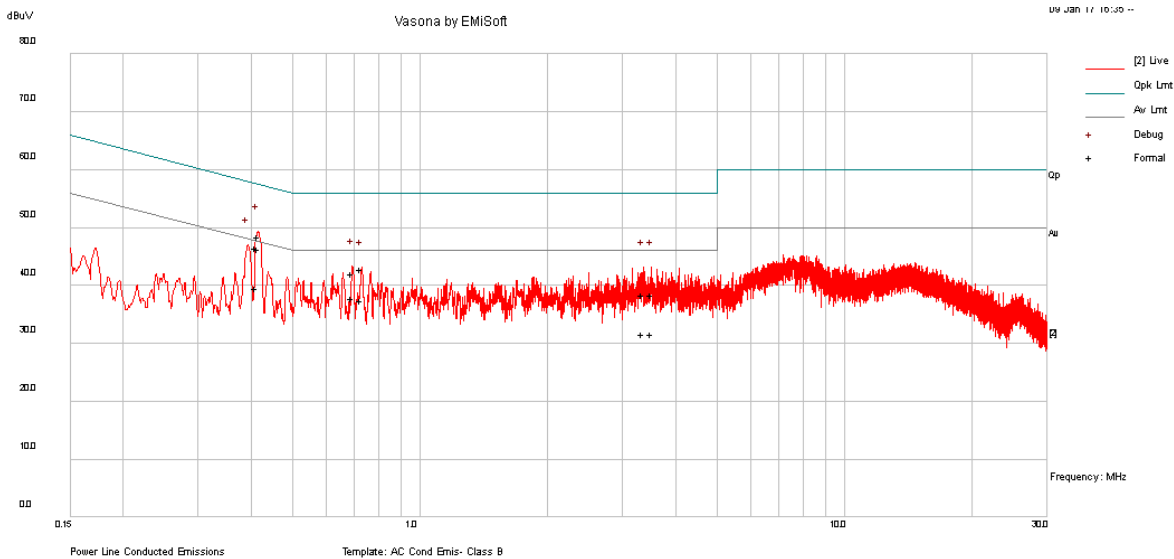
Test Data ☒ Yes ☐ N/A

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			
Environmental Conditions:	Temp(°C):	21	Result:	☒ Pass ☐ Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120Vac, 60Hz			
Tested by:	Gary Chou			
Test Date:	01/09/2017			
Remarks	AC/DC adapter, Line			

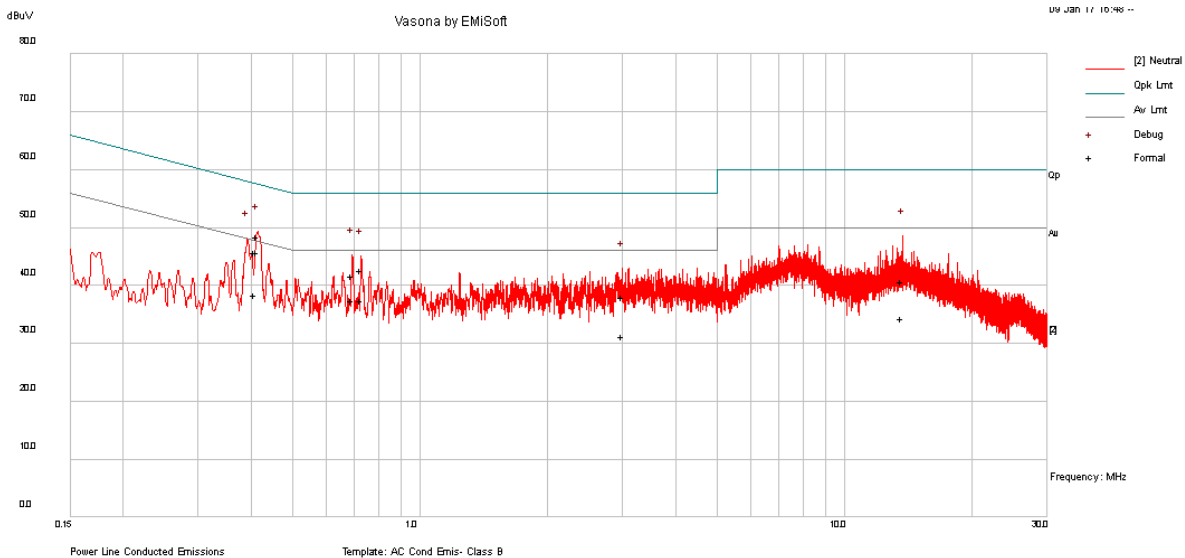


Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.42	37.77	10.01	0.69	48.46	Quasi Peak	Live	57.55	-9.09	Pass
0.41	35.74	10.01	0.69	46.44	Quasi Peak	Live	57.65	-11.21	Pass
0.69	31.47	10.01	0.56	42.04	Quasi Peak	Live	56	-13.96	Pass
0.73	32.19	10.01	0.56	42.76	Quasi Peak	Live	56	-13.24	Pass
3.51	27.93	10.03	0.5	38.46	Quasi Peak	Live	56	-17.54	Pass
3.35	27.9	10.03	0.5	38.43	Quasi Peak	Live	56	-17.57	Pass
0.42	35.59	10.01	0.69	46.29	Average	Live	47.55	-1.26	Pass
0.41	28.91	10.01	0.69	39.61	Average	Live	47.65	-8.04	Pass
0.69	27.2	10.01	0.56	37.77	Average	Live	46	-8.23	Pass
0.73	26.95	10.01	0.56	37.52	Average	Live	46	-8.48	Pass
3.51	21.1	10.03	0.5	31.63	Average	Live	46	-14.37	Pass
3.35	21.14	10.03	0.5	31.67	Average	Live	46	-14.33	Pass

Conducted Emission Test Results

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	21	Result:	☒ Pass ☐ Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120Vac, 60Hz			
Tested by:	Gary Chou			
Test Date:	01/09/2017			
Remarks	AC/DC adapter, Neutral			

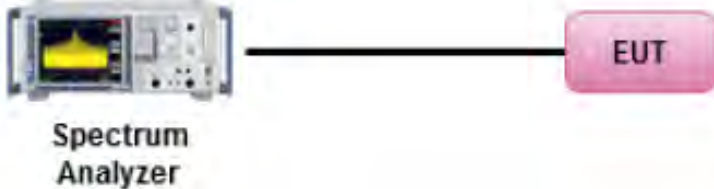


Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.41	37.75	10.01	0.69	48.44	Quasi Peak	Neutral	57.58	-9.13	Pass
0.41	35.03	10.01	0.69	45.73	Quasi Peak	Neutral	57.67	-11.94	Pass
0.69	31.17	10.01	0.56	41.74	Quasi Peak	Neutral	56	-14.26	Pass
0.73	32.04	10.01	0.56	42.61	Quasi Peak	Neutral	56	-13.39	Pass
13.68	30.05	10.06	0.55	40.66	Quasi Peak	Neutral	60	-19.34	Pass
2.99	27.5	10.03	0.5	38.03	Quasi Peak	Neutral	56	-17.97	Pass
0.41	35.13	10.01	0.69	45.82	Average	Neutral	47.58	-1.75	Pass
0.41	27.73	10.01	0.69	38.43	Average	Neutral	47.67	-9.25	Pass
0.69	26.95	10.01	0.56	37.52	Average	Neutral	46	-8.48	Pass
0.73	26.88	10.01	0.56	37.45	Average	Neutral	46	-8.55	Pass
13.68	23.84	10.06	0.55	34.44	Average	Neutral	50	-15.56	Pass
2.99	20.72	10.03	0.5	31.25	Average	Neutral	46	-14.75	Pass

10.2 26 dB Bandwidth & 6 dB Bandwidth

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	-	26 dB Emission BW: Report only for reference.	☒
	a) (2)	26 dB Emission BW: Report only for power limit calculation.	☐
	e)	Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.	☒
Test Setup			
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02 <u>26dB Emission bandwidth measurement procedure (Other than 5.725-5.85 GHz)</u> - Allow the trace to stabilize. - Use the spectrum analyzer built-in measurement function to determine the 26dB BW. - o Set RBW = around 1% of emission bandwidth - o Set VBW > RBW - o Detector = Peak - o Trace mode = max hold - Capture the plot. - Repeat above steps for different test channel and other modulation type. <u>6 dB Minimum emission bandwidth measurement procedure (for 5.725-5.85 GHz)</u> - Allow the trace to stabilize. - Use the spectrum analyzer built-in measurement function to determine the 6dB BW. - o Set RBW = 100 KHz - o Set VBW ≥ 3 x RBW - o Detector = Peak - o Trace mode = max hold - o Sweep = auto couple - Capture the plot. - Repeat above steps for different test channel and other modulation type.		
Test Date	12/05/2016 – 12/20/2016	Environmental condition	Temperature 22°C Relative Humidity 38% Atmospheric Pressure 1020mbar
Remark	99% BW result is presented here to show the channels in 5.1GHz is not crossing to DFS channel since the 26 dB BW is too wide.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A
Test Plot ☒ Yes ☐ N/A

Test was done by Shuo Zhang at RF test site.

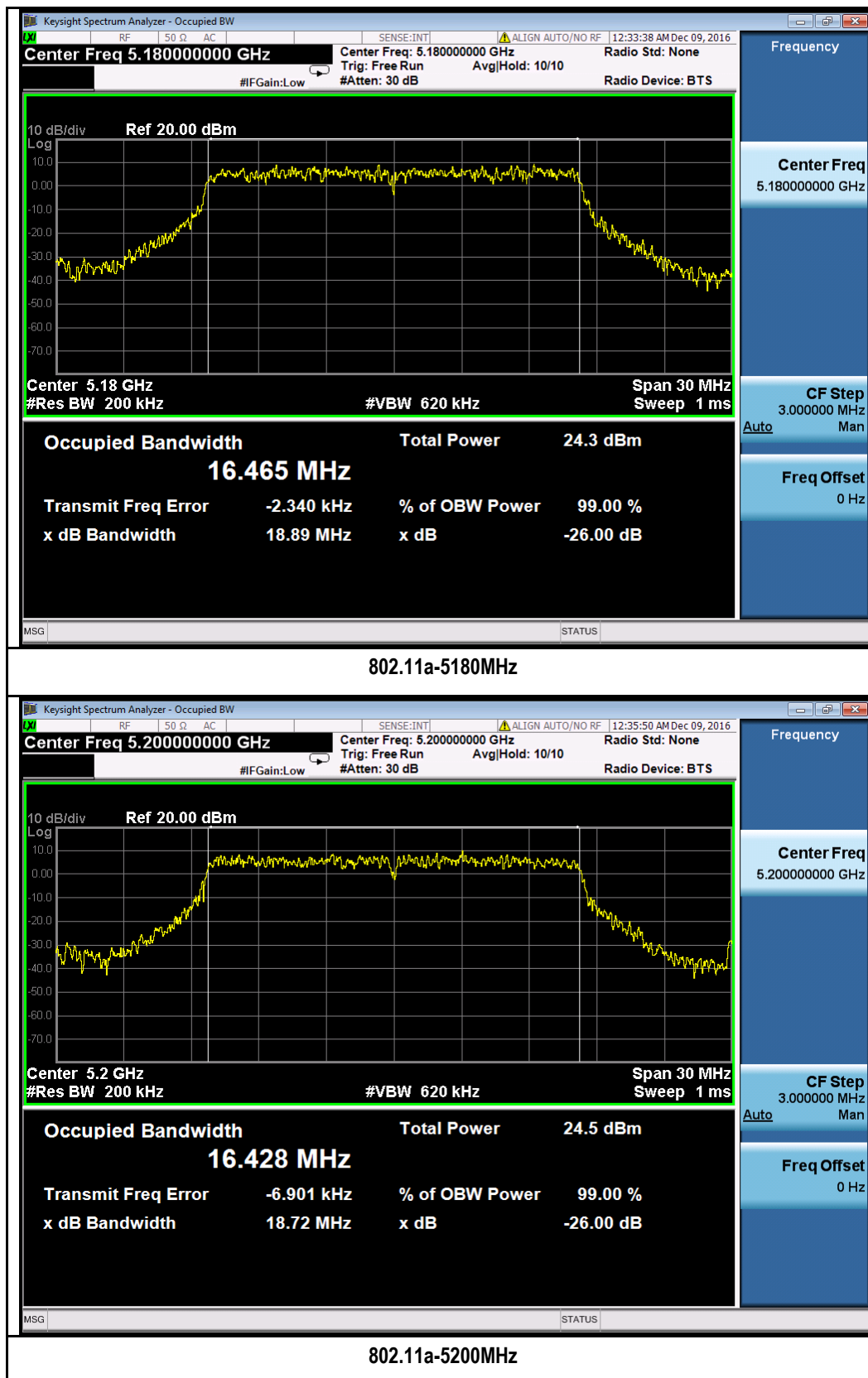
26dB Bandwidth measurement result for 5.2GHz

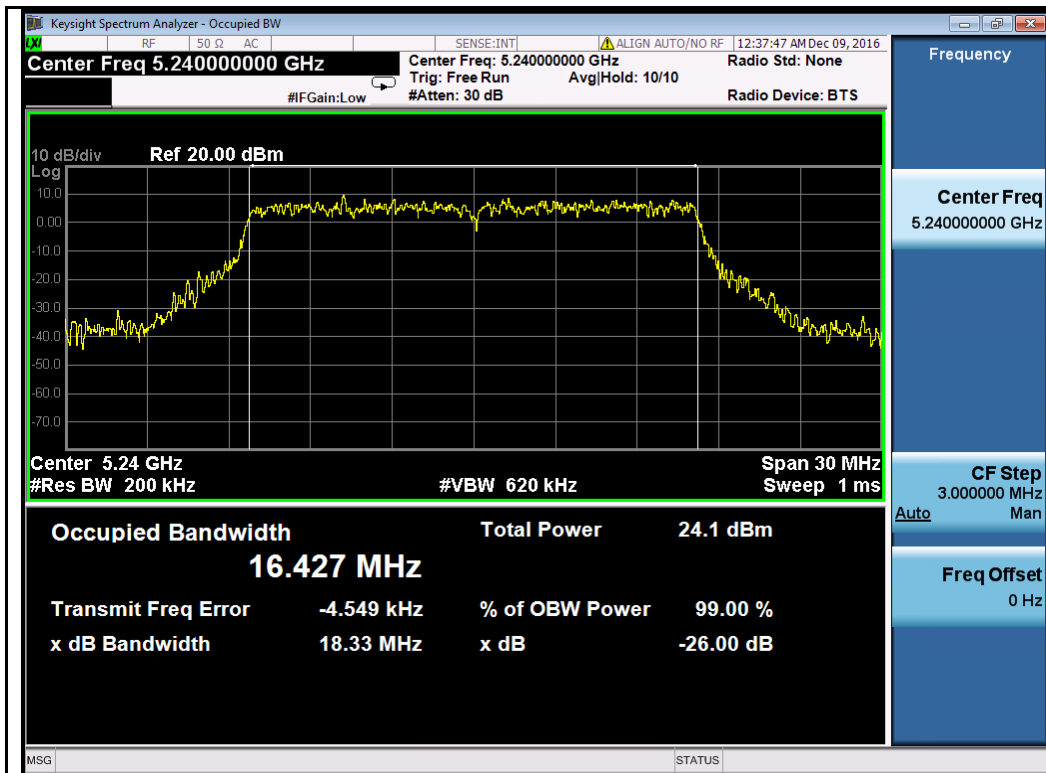
Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)
26dB BW	802.11a	5180	Low	18.89	-
		5200	Mid	18.72	-
		5240	High	18.33	-
	802.11n-20	5180	Low	20.15	-
		5200	Mid	19.62	-
		5240	High	19.73	-
	802.11n-40	5190	Low	38.48	-
		5230	High	39.20	-
	802.11ac-80	5210	Mid	83.63	-

6dB Bandwidth measurement result for 5.8GHz

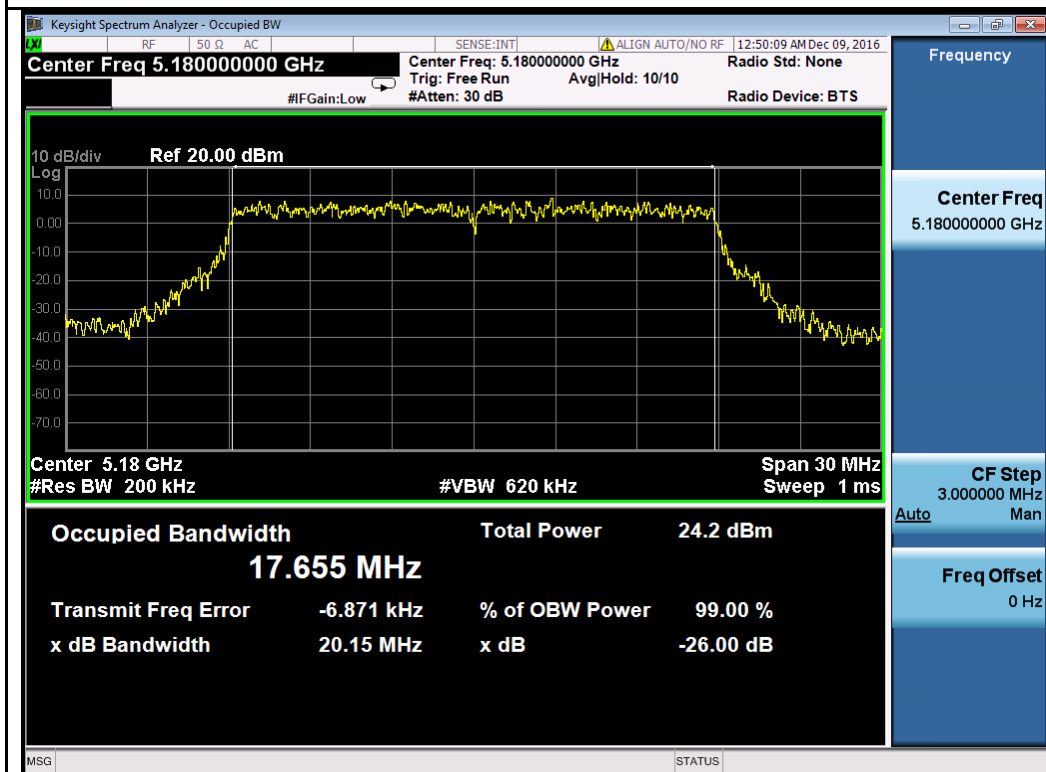
Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
6dB BW	802.11a	5745	Low	16.43	≥0.5	Pass
		5785	Mid	16.28	≥0.5	Pass
		5825	High	16.41	≥0.5	Pass
	802.11n-20	5745	Low	17.59	≥0.5	Pass
		5785	Mid	17.60	≥0.5	Pass
		5825	High	16.93	≥0.5	Pass
	802.11n-40	5755	Low	36.29	≥0.5	Pass
		5795	High	36.26	≥0.5	Pass
	802.11ac-80	5775	Mid	76.01	≥0.5	Pass

26dB Bandwidth Test Plots W52:

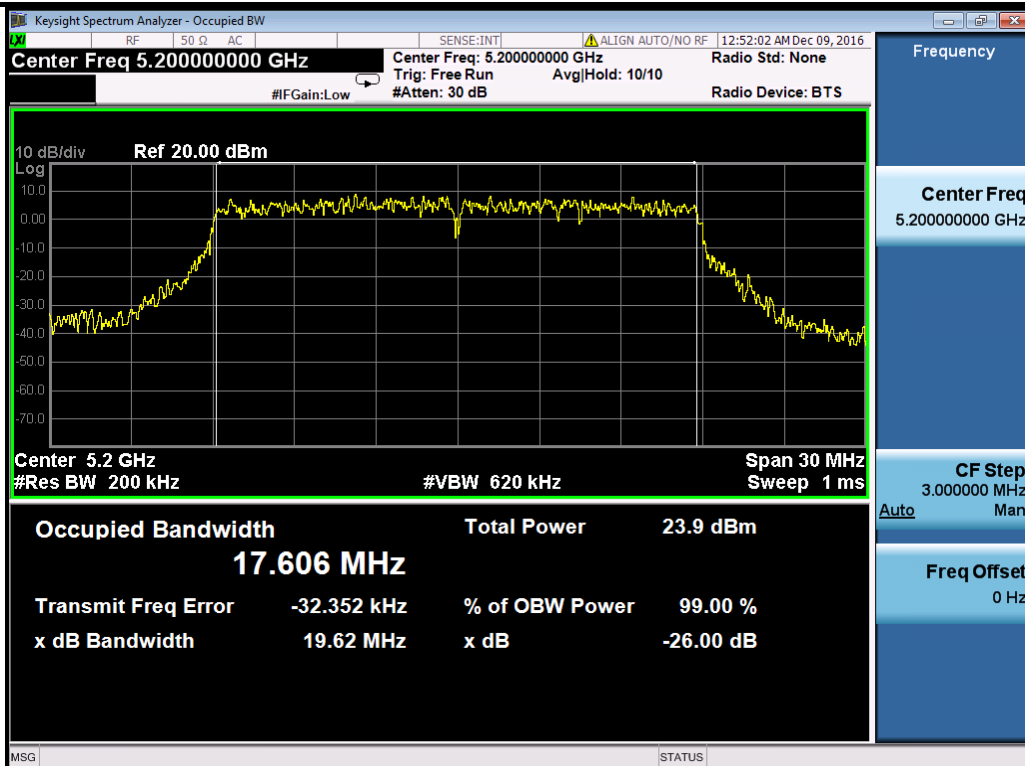




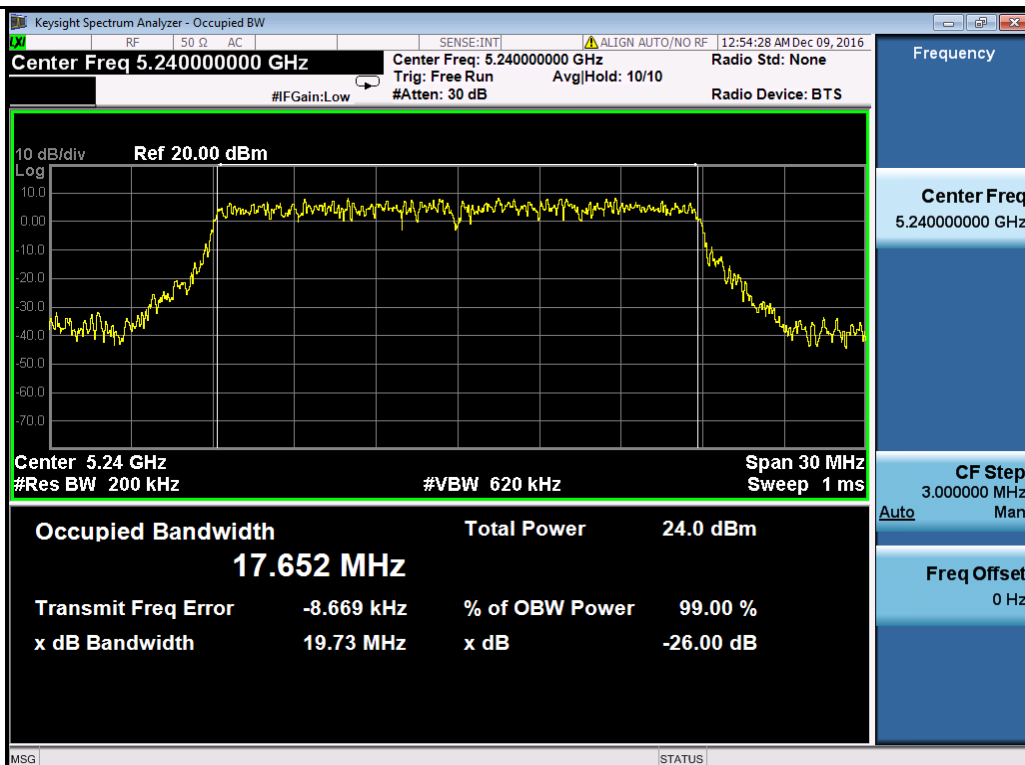
802.11a-5240MHz



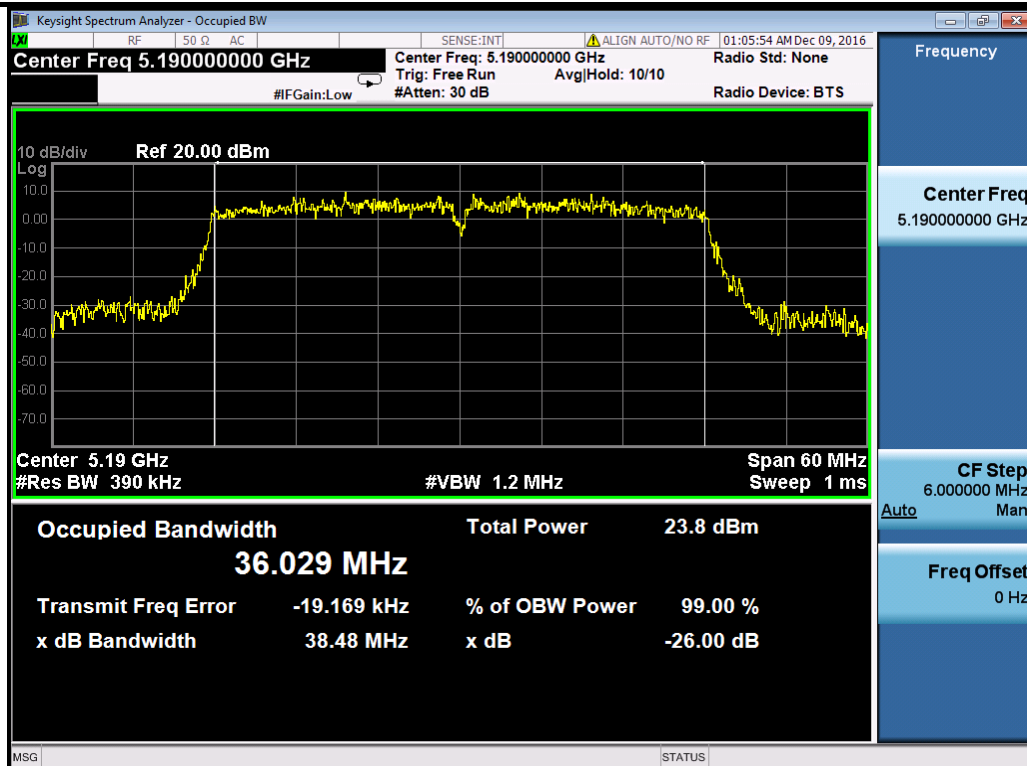
802.11n-HT20-5180MHz



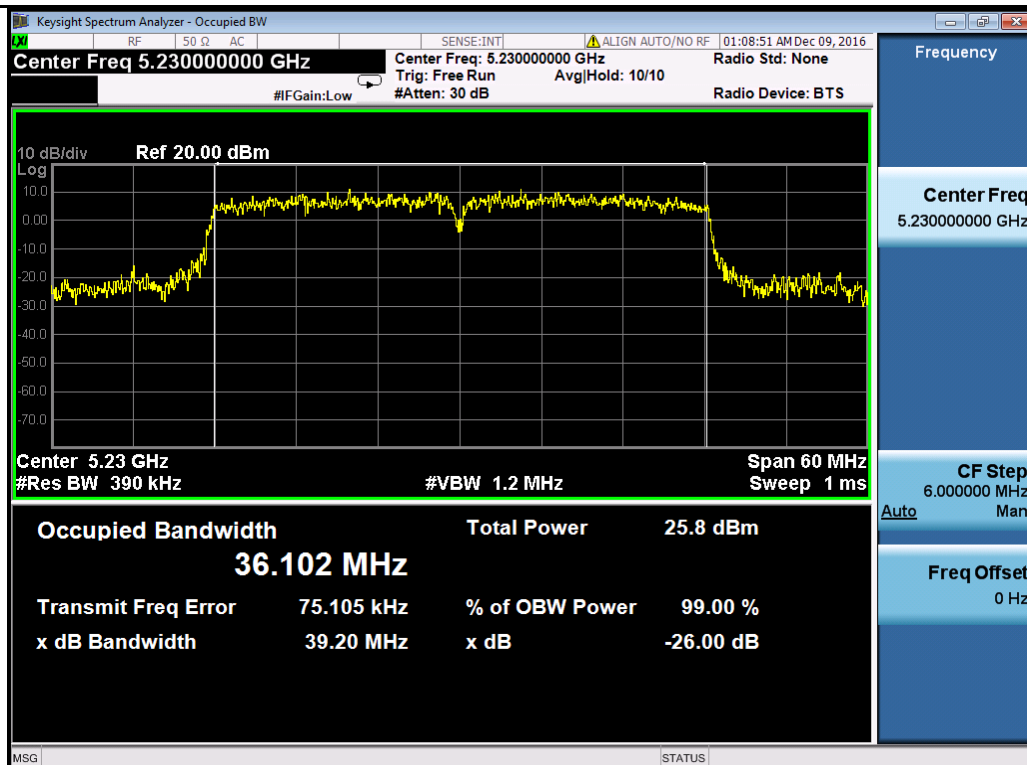
802.11n-HT20-5200MHz



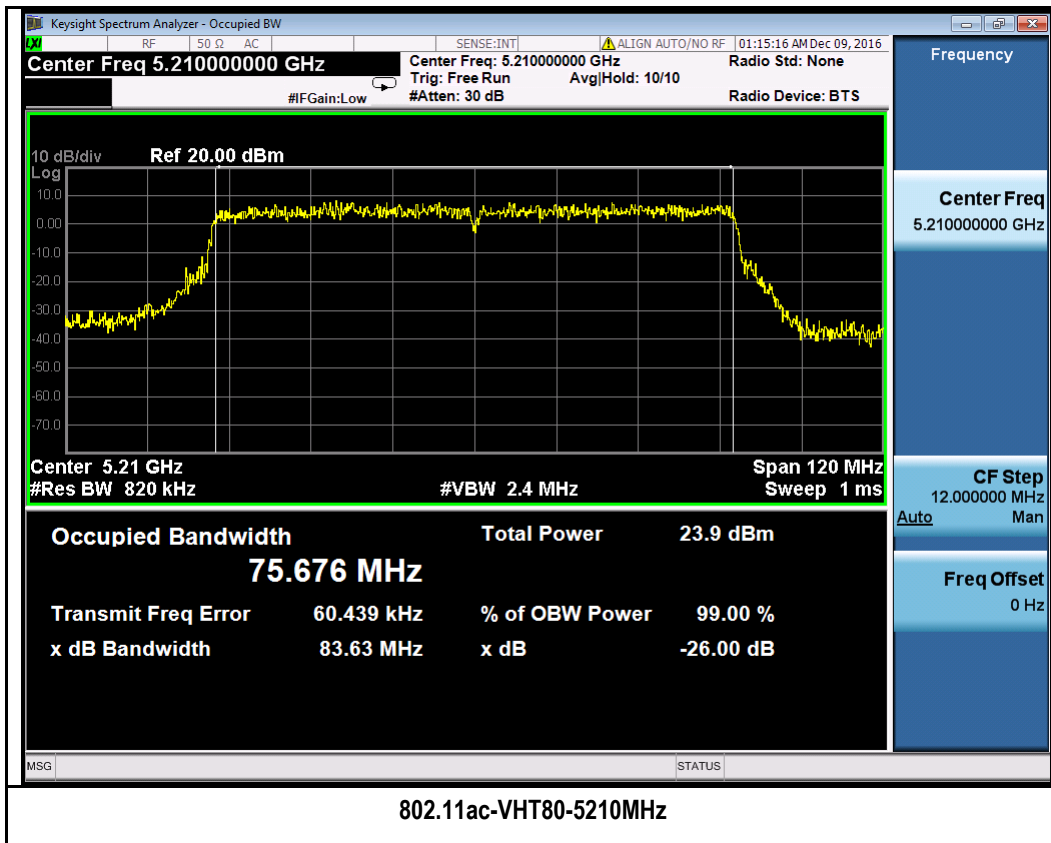
802.11n-HT20-5240MHz



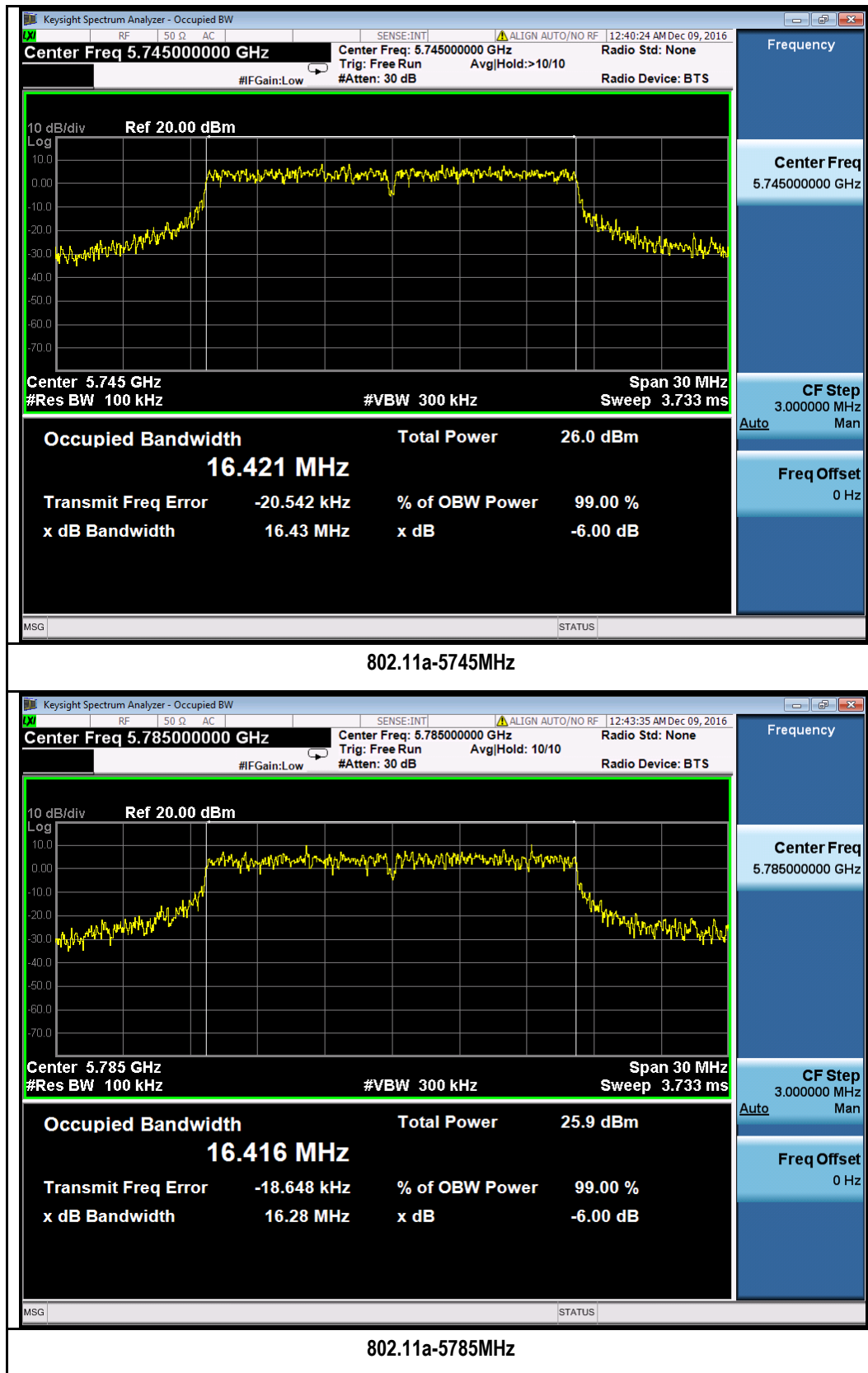
802.11n-HT40-5190MHz

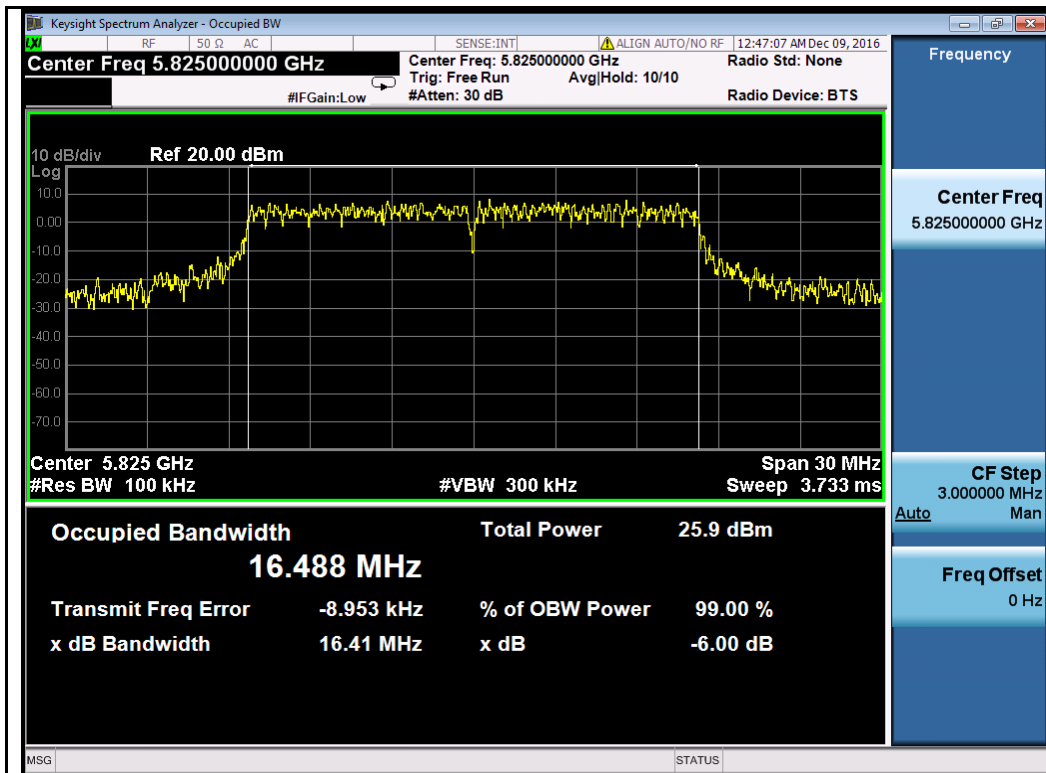


802.11n-HT40-5230MHz

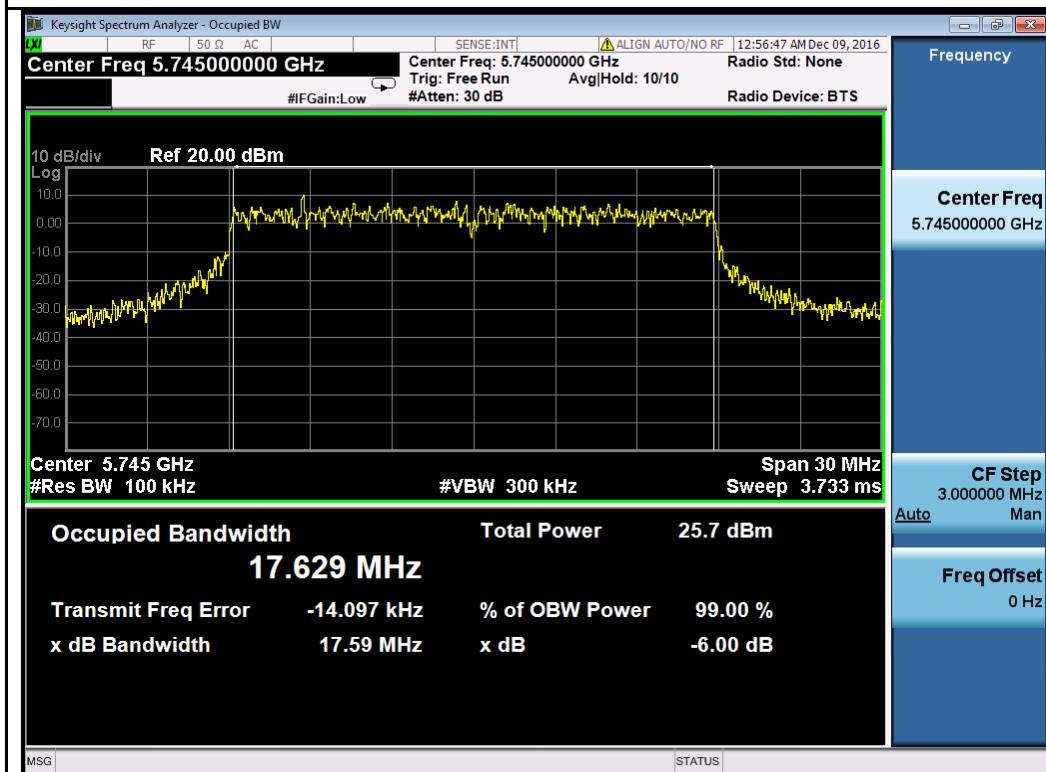


6dB Bandwidth Test Plots W58:

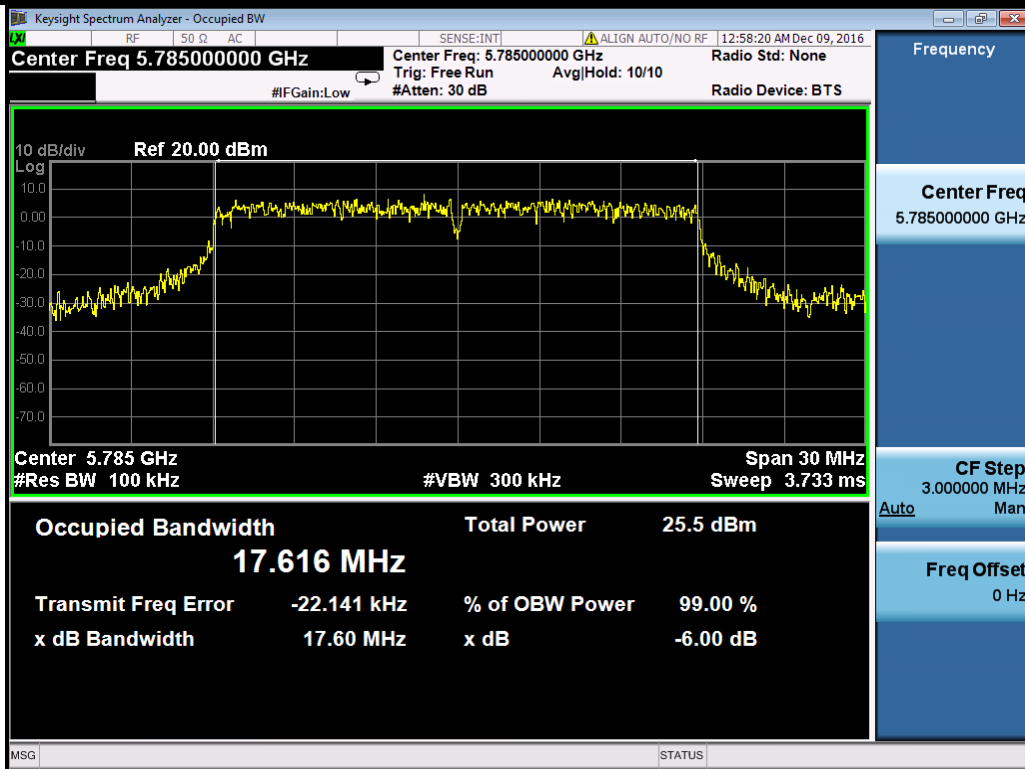




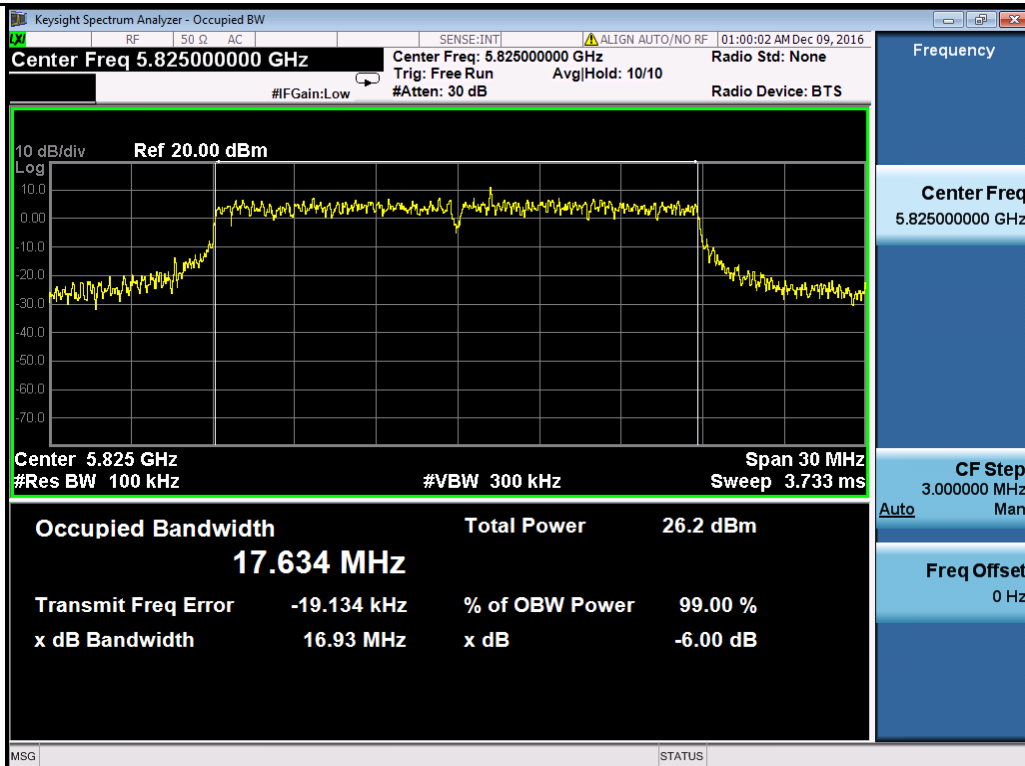
802.11a-5825MHz



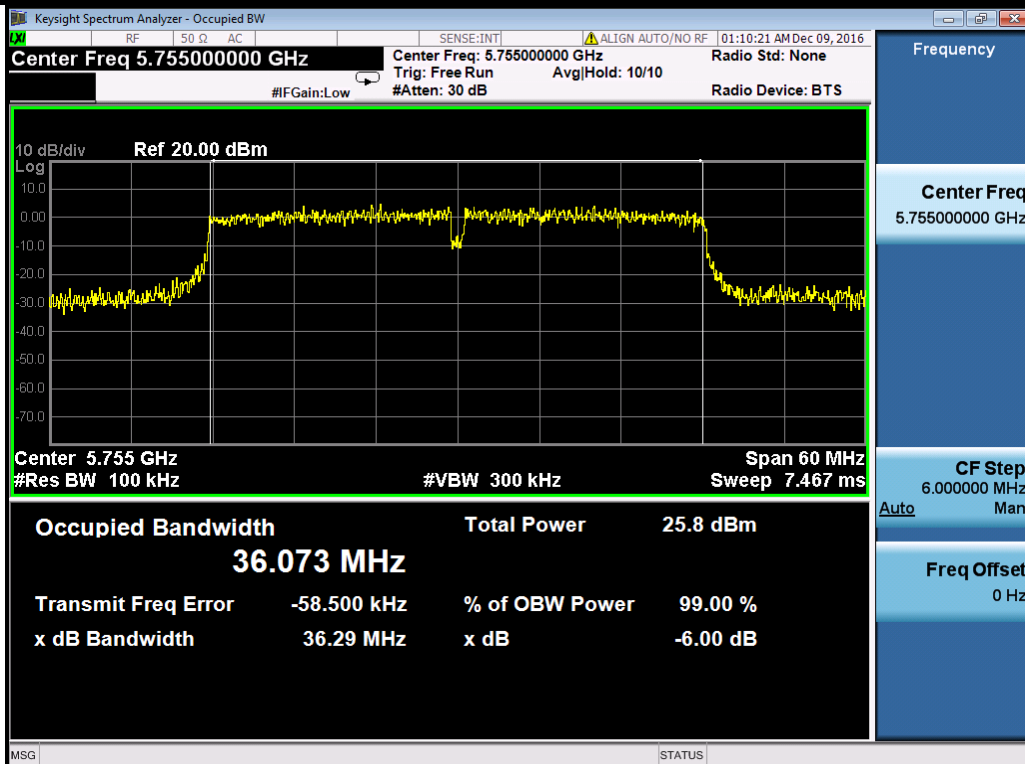
802.11n-HT20-5745MHz



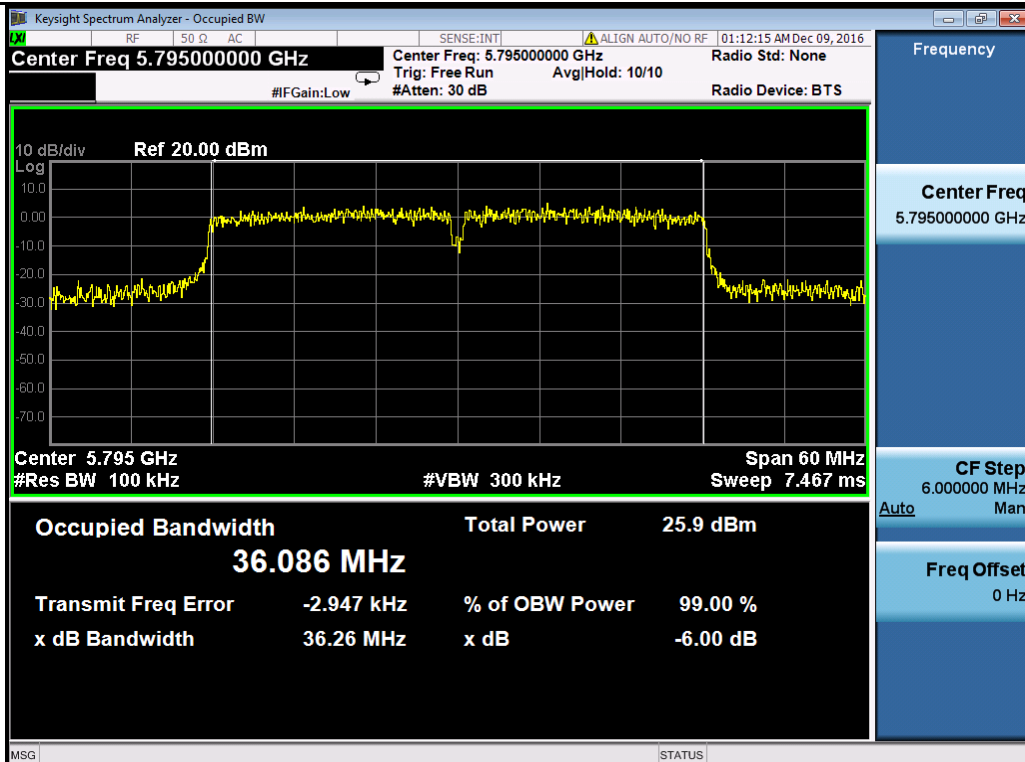
802.11n-HT20-5785MHz



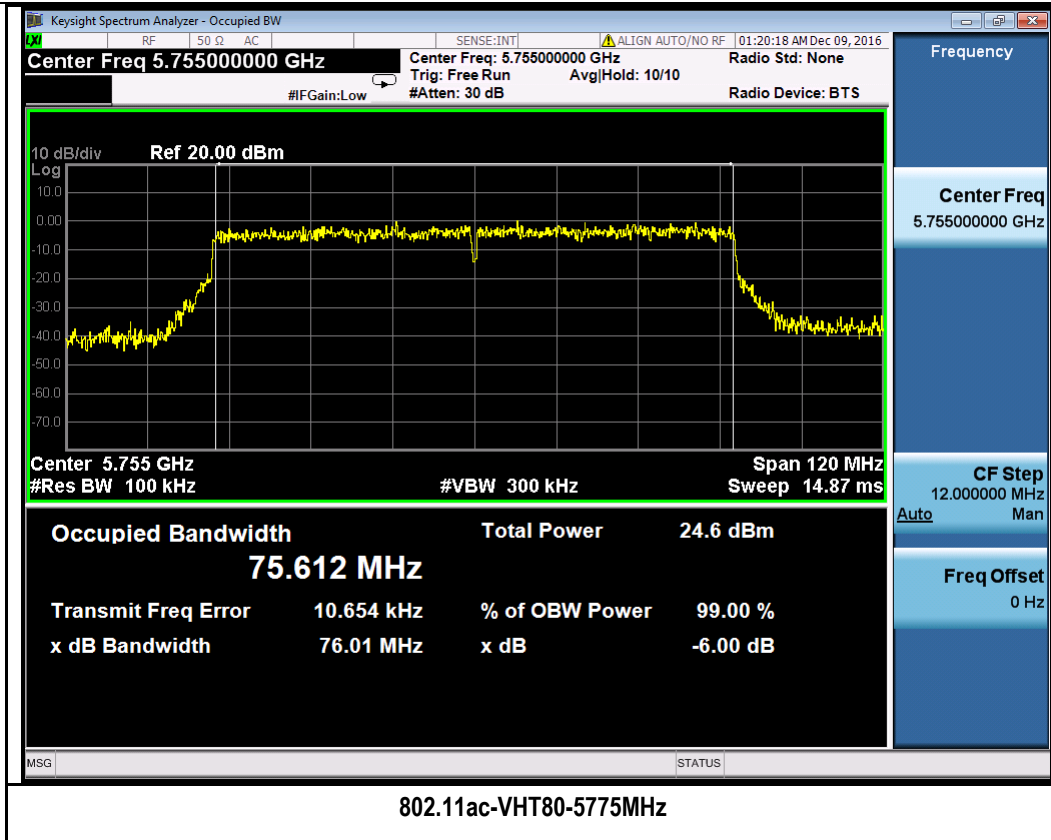
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz



802.11n-HT40-5795MHz



10.3 Output Power

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(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.	☒
	a)(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.	☒
Test Setup			
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02 <u>Measurement using a Spectrum Analyzer or EMI Receiver (SA)</u> Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal. (ii) Set RBW = 1 MHz (iii) Set VBW = 3 MHz (iv) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.) (v) Sweep time = auto. (vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode. (vii) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle $\geq 98\%$, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run." (viii) Trace average at least 100 traces in power averaging (rms) mode. (ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.		
Test Date	12/05/2016 – 12/20/2016	Environmental condition	Temperature 21°C Relative Humidity 40% Atmospheric Pressure 1019mbar
Remark	Per KDB 662911 D01 Multiple Transmitter Output v02r01, the direction gain for horizontal polarization and vertical polarization is calculated separately. For 5GHz band, peak antenna gain = 3.5 dBi, directional gain = 3 dB, total gain = 6.5 dBi. Highest of total gain is 6.5 dBi. The power limit and PSD limit will be reduced by amount of 0.5 dB.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Shuo Zhang at RF test site.

Output Power measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)					Limit (dBm)	Result
				Chain1	Chain2	Chain3	Chain4	Combined Power		
Output Power	802.11a	5180	Low	21.08	21.42	20.98	21.25	27.21	29.5	Pass
		5200	Mid	21.05	21.35	20.99	20.96	27.11	29.5	Pass
		5240	High	21.11	21.49	21.11	21.01	27.20	29.5	Pass
	802.11n-20	5180	Low	20.94	21.23	20.79	21.09	27.04	29.5	Pass
		5200	Mid	20.8	21.2	20.85	20.91	26.96	29.5	Pass
		5240	High	20.79	21.27	20.92	20.82	26.97	29.5	Pass
	802.11n-40	5190	Low	20.96	21.41	21.04	21.09	27.15	29.5	Pass
		5230	High	22.98	23.26	23.41	23.02	29.19	29.5	Pass
	802.11ac-80	5210	Mid	21.02	21.26	20.92	20.92	27.05	29.5	Pass

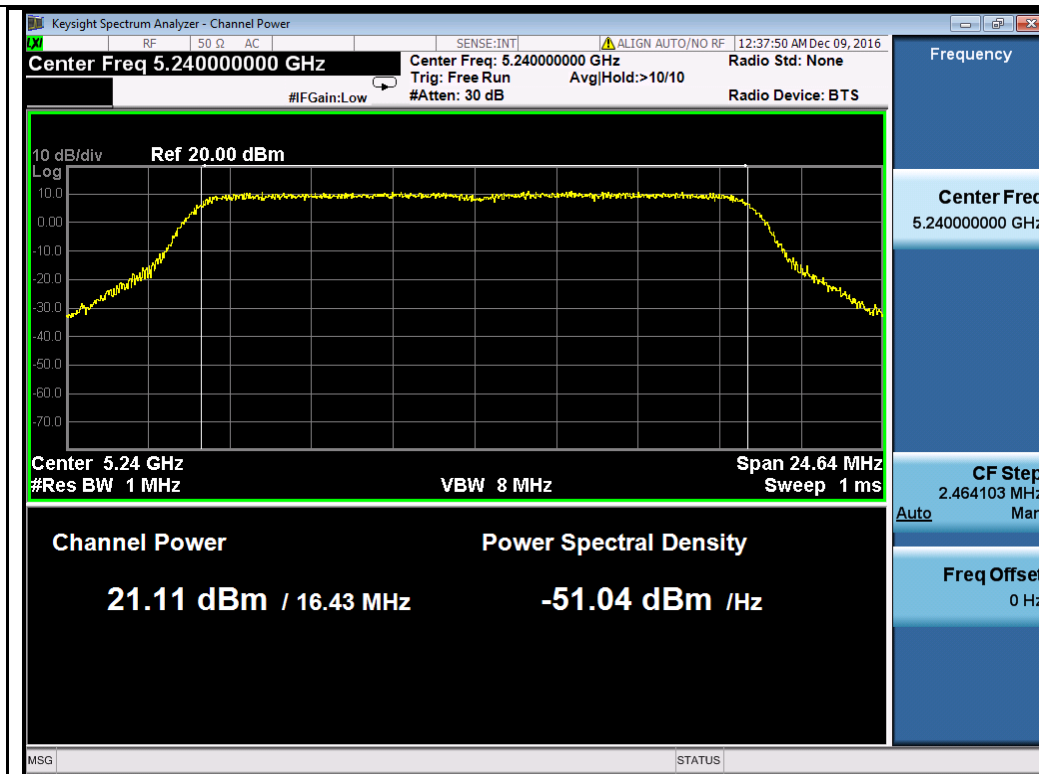
Output Power measurement result for 5.8GHz

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)					Limit (dBm)	Result
				Chain1	Chain2	Chain3	Chain4	Combined Power		
Output Power	802.11a	5745	Low	22.56	23.41	22.94	22.66	28.93	29.5	Pass
		5785	Mid	22.54	22.97	22.92	22.65	28.79	29.5	Pass
		5825	High	22.76	23.10	23.02	22.59	28.89	29.5	Pass
	802.11n-20	5745	Low	22.43	22.99	22.85	22.63	28.75	29.5	Pass
		5785	Mid	22.4	22.81	22.89	22.58	28.69	29.5	Pass
		5825	High	22.65	23.06	23.08	22.63	28.88	29.5	Pass
	802.11n-40	5755	Low	22.69	23.15	23.16	22.84	28.99	29.5	Pass
		5795	High	22.87	23.23	23.51	22.99	29.18	29.5	Pass
	802.11ac-80	5775	Mid	21.84	22.01	22.24	21.70	27.97	29.5	Pass

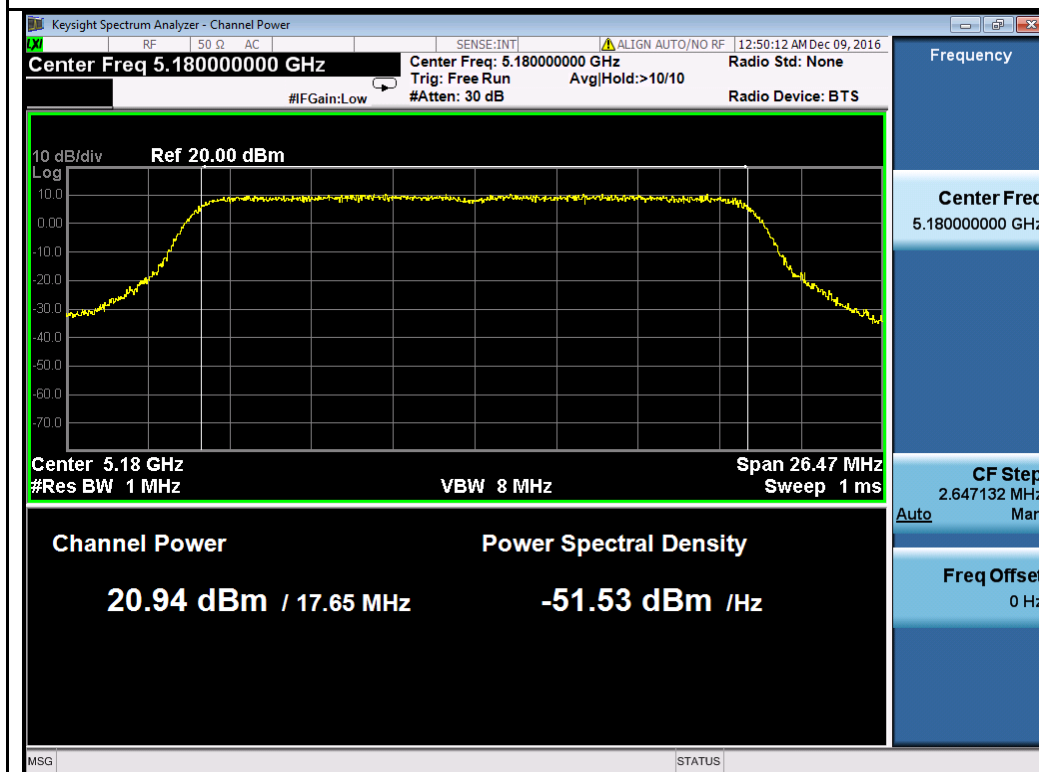
Test Plot for W52:

Chain 1:

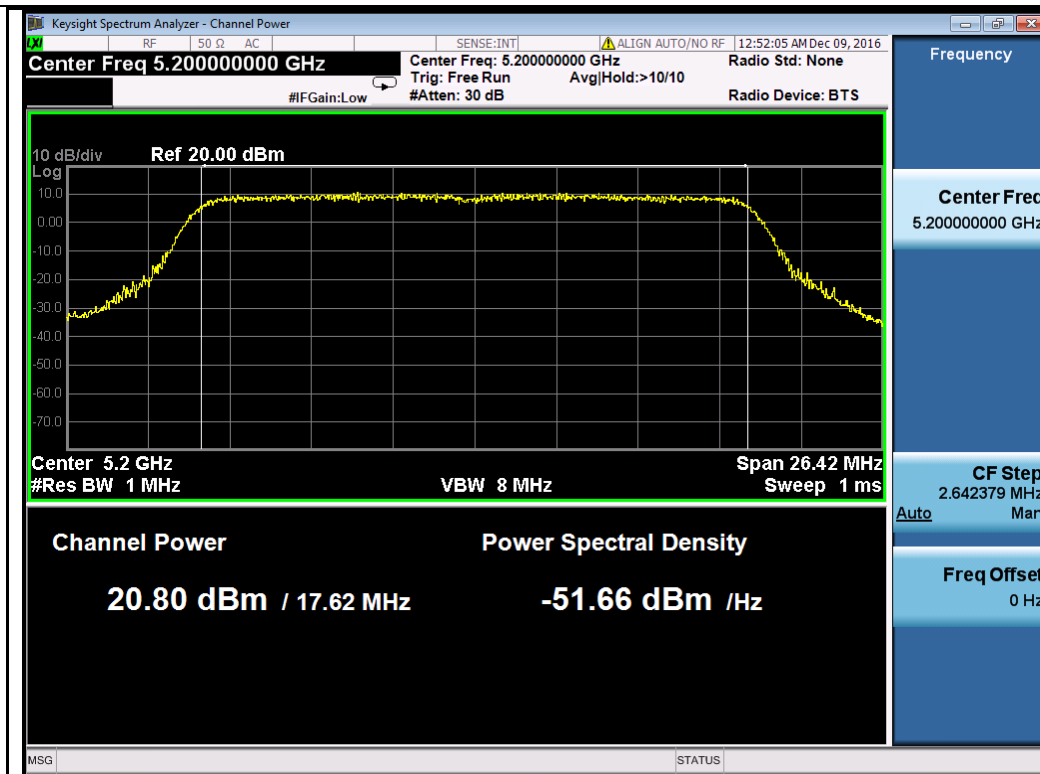




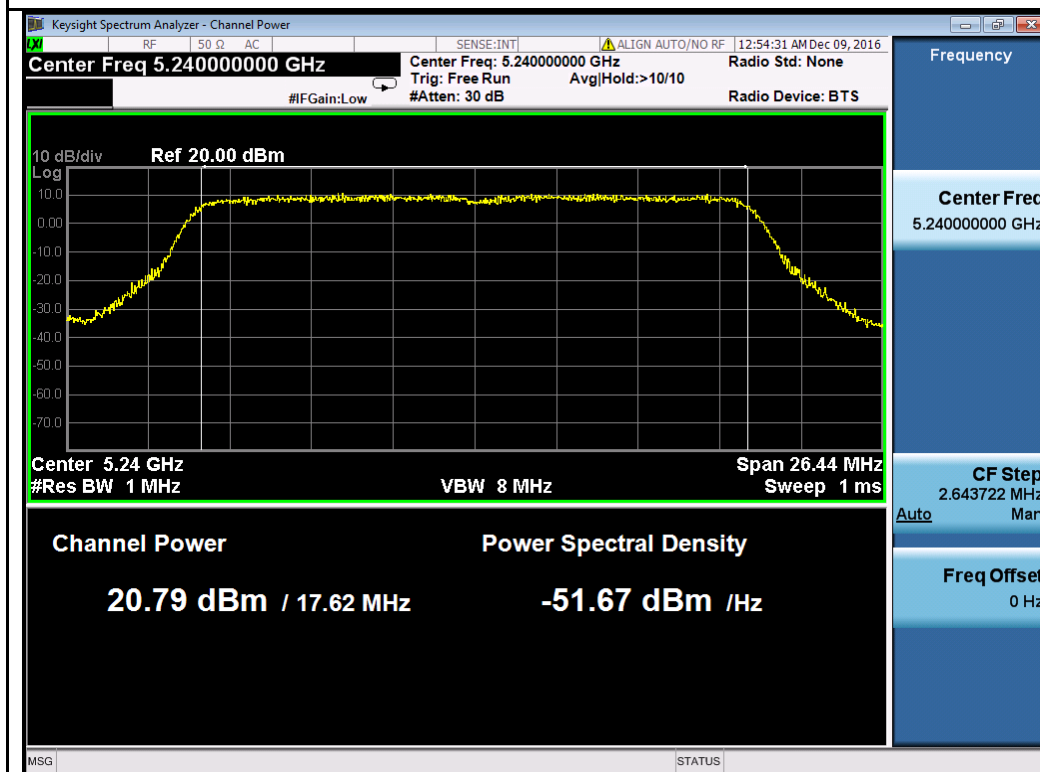
802.11a-5240M



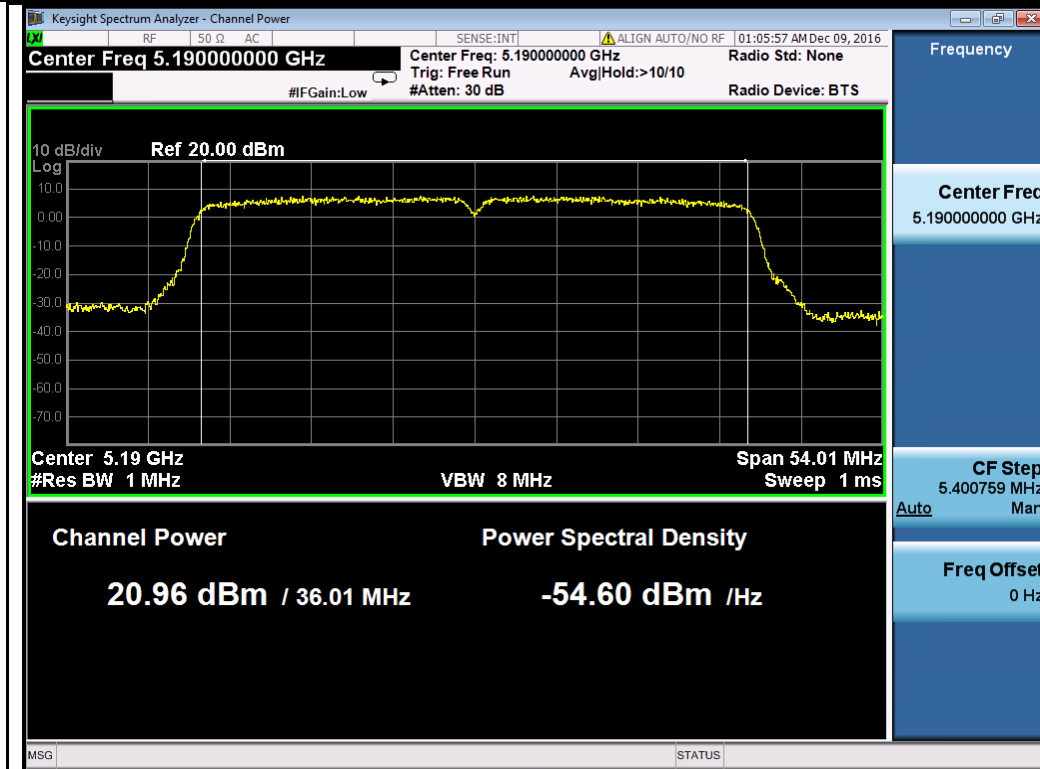
802.11n-HT20 5180M



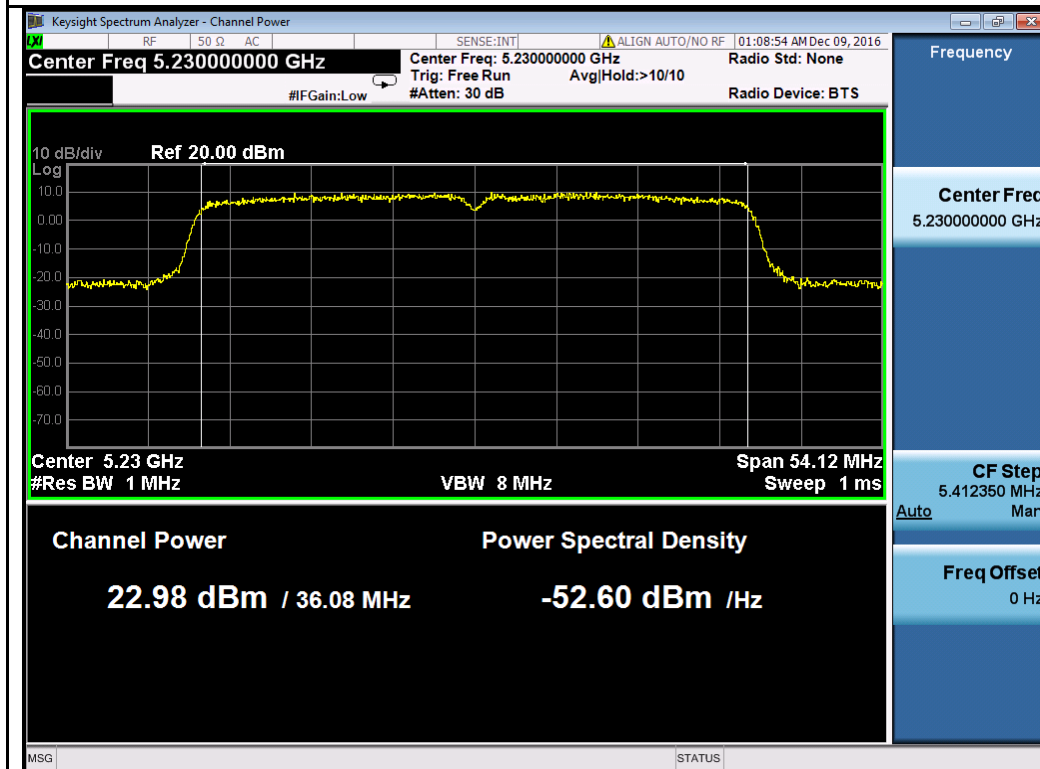
802.11n-HT20 5200M



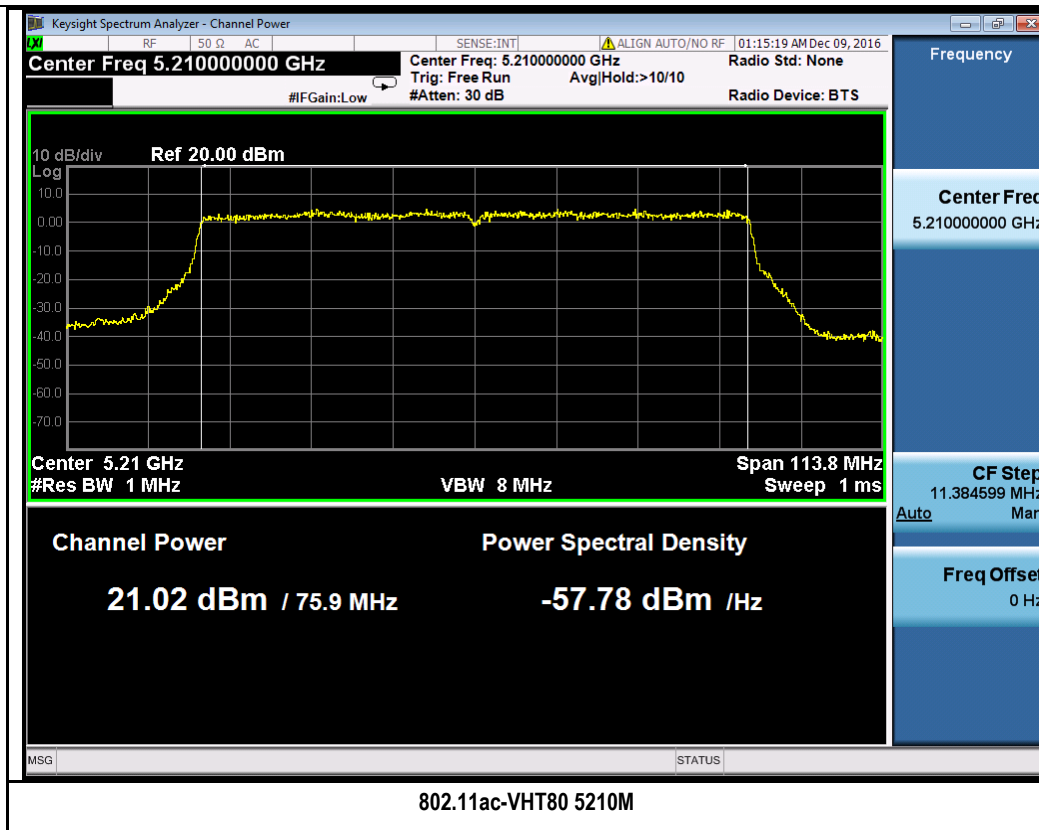
802.11n-HT20 5240M



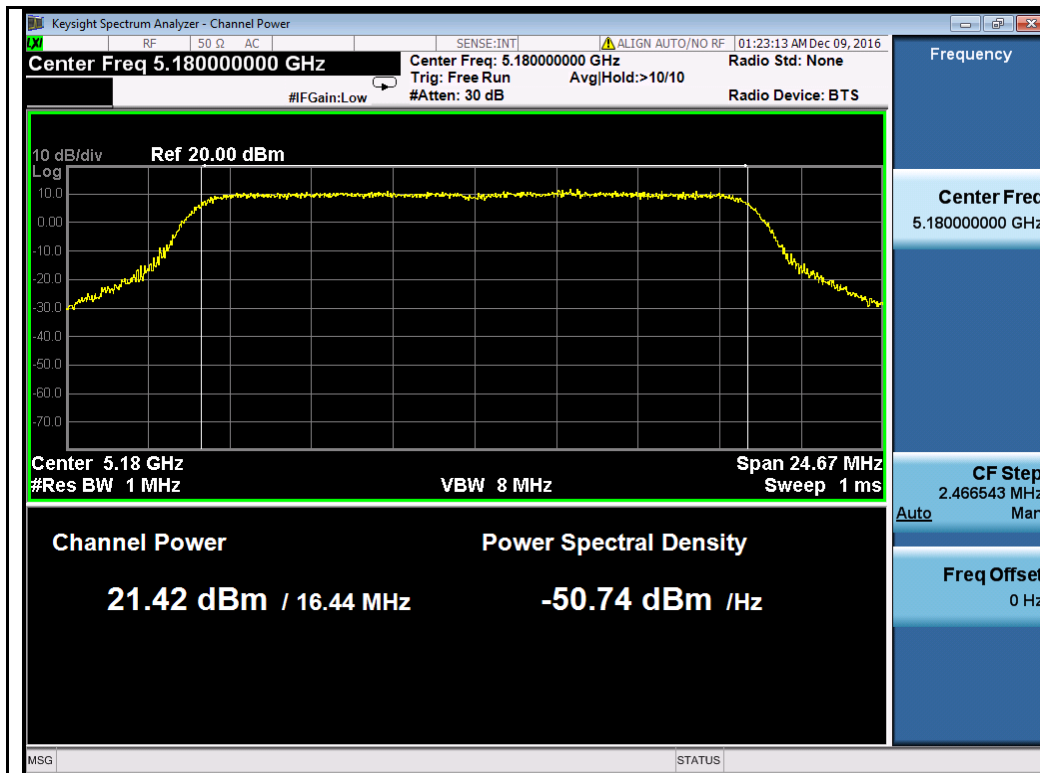
802.11n-HT40 5190M



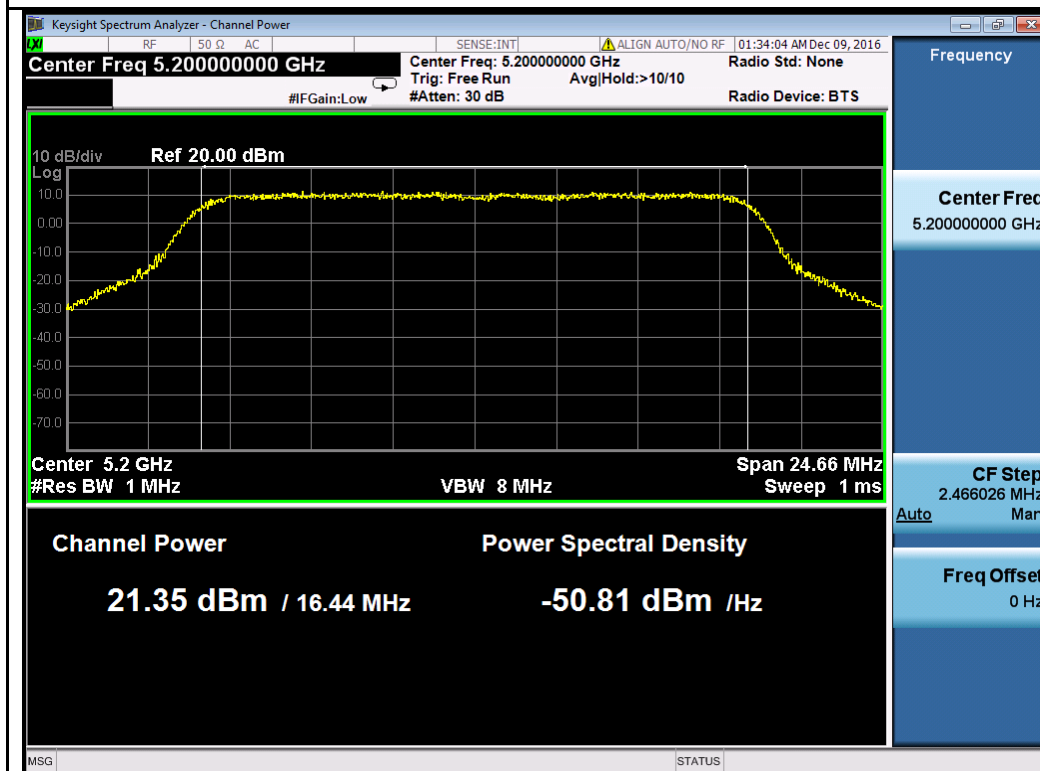
802.11n-HT40 5230M



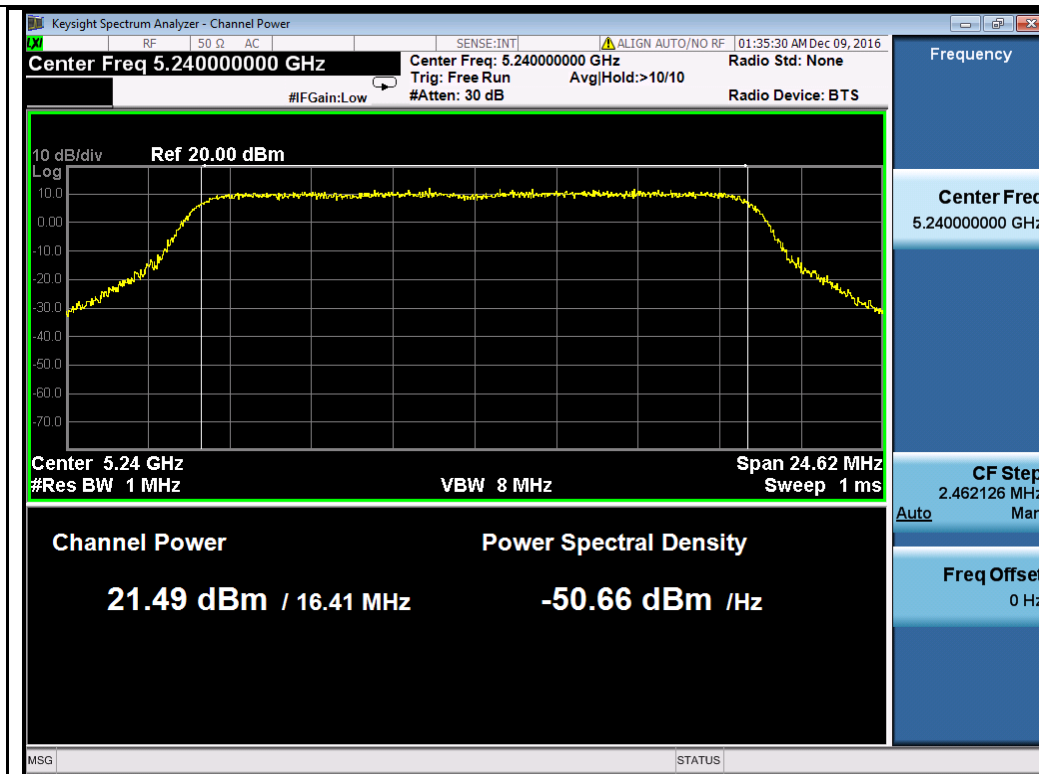
Chain 2:



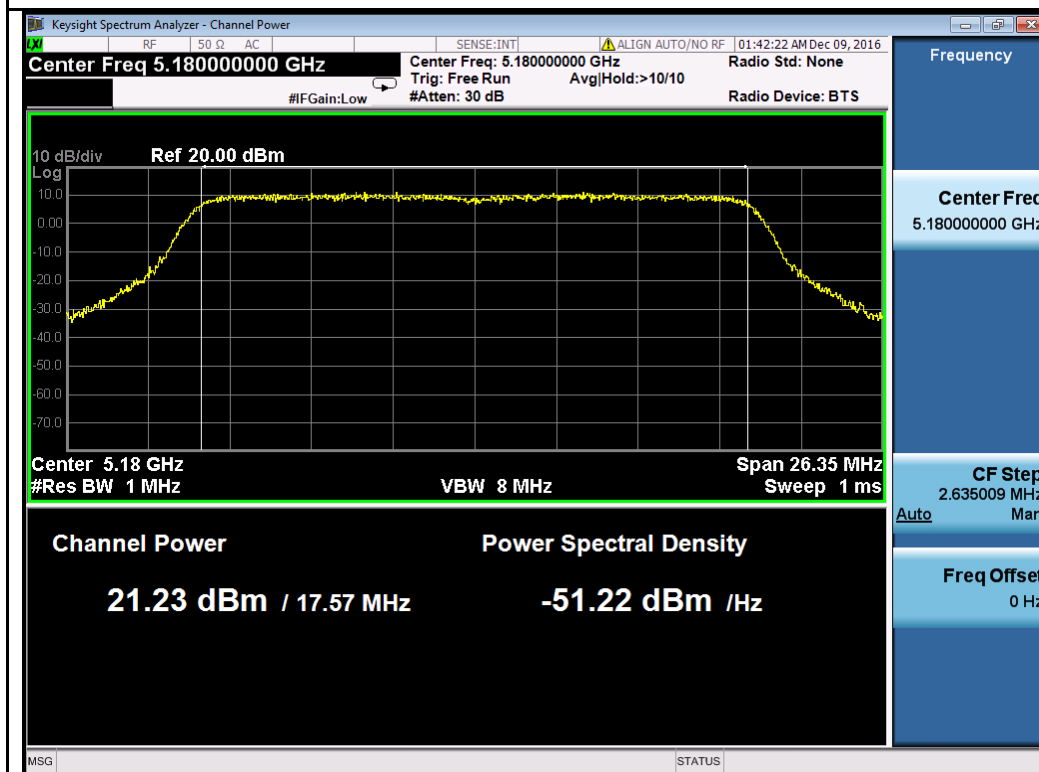
802.11a-5180M



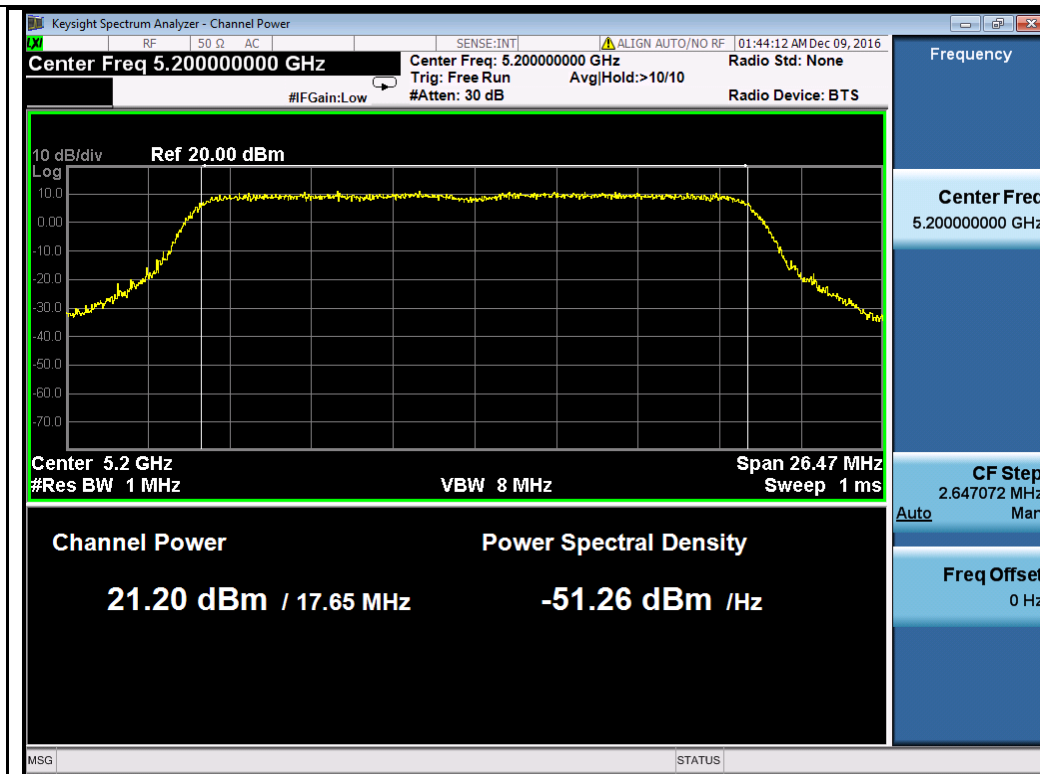
802.11a-5200M



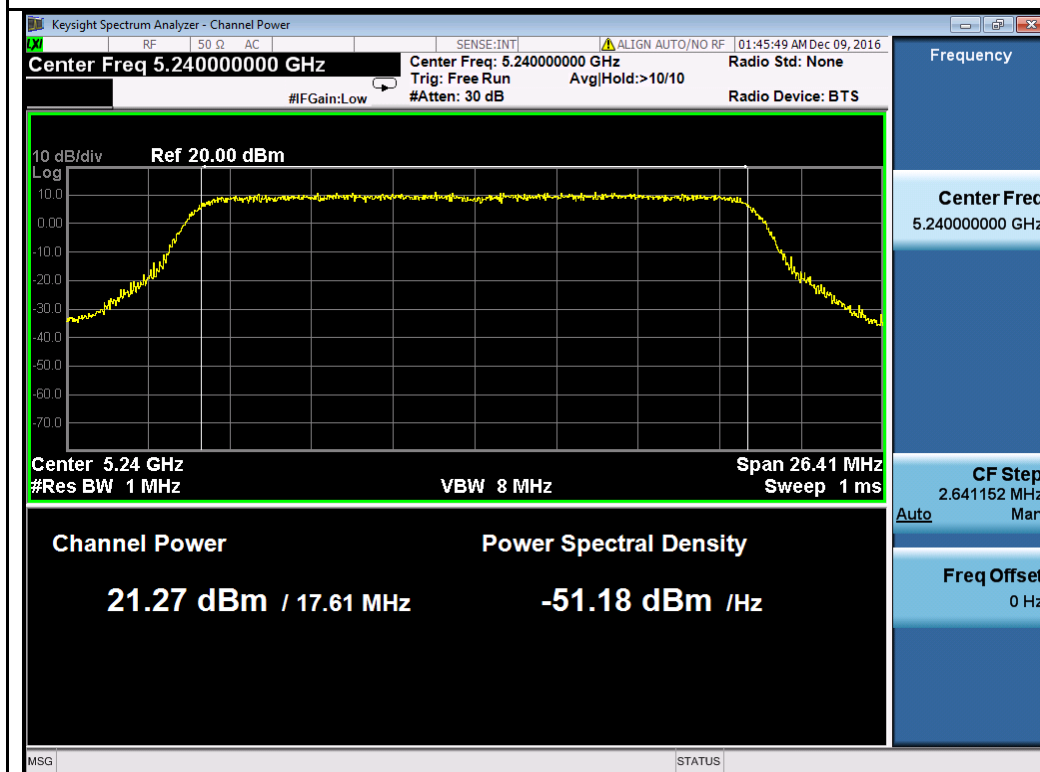
802.11a-5240M



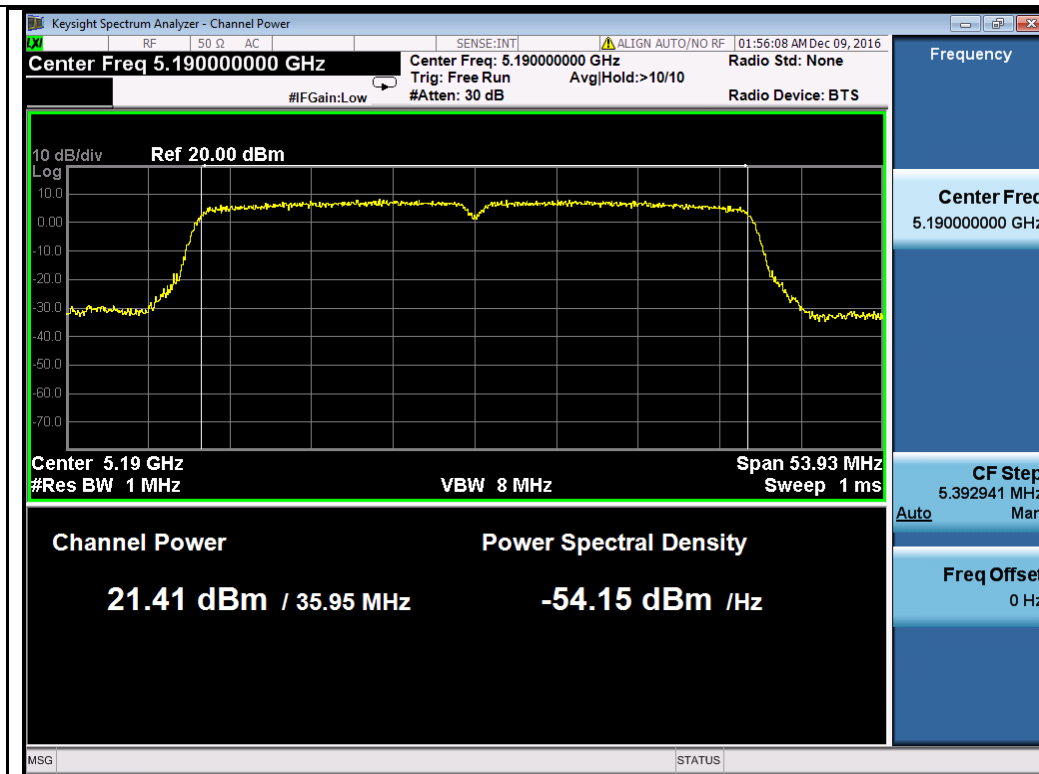
802.11n-HT20 5180M



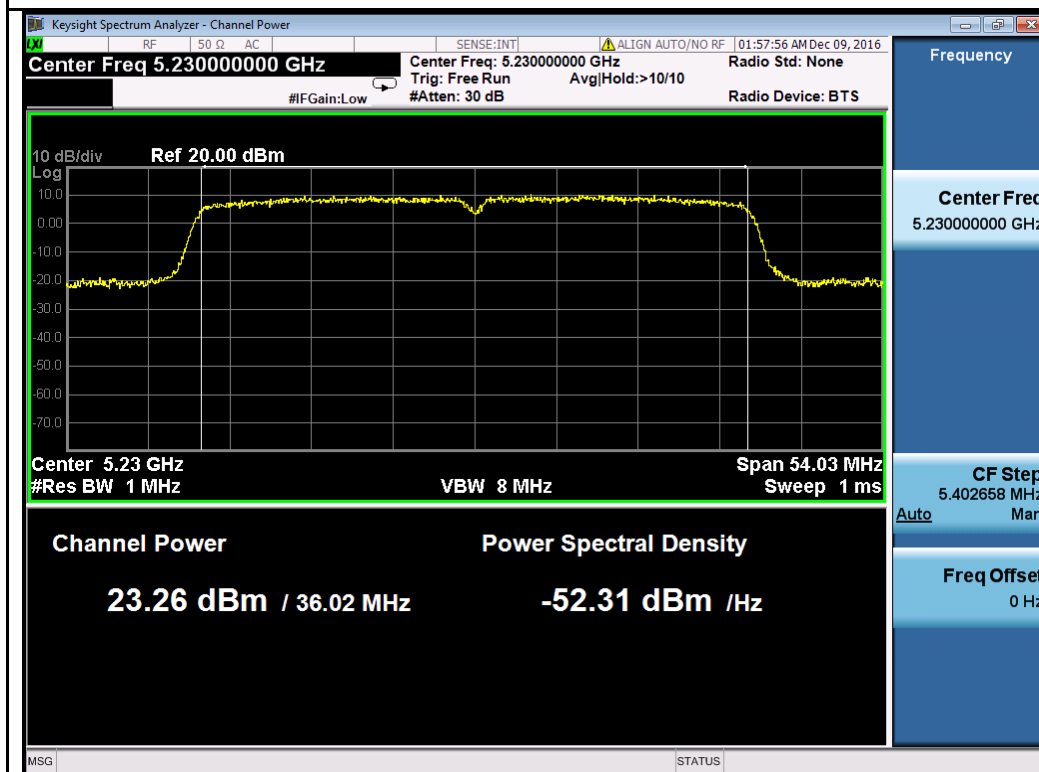
802.11n-HT20 5200M



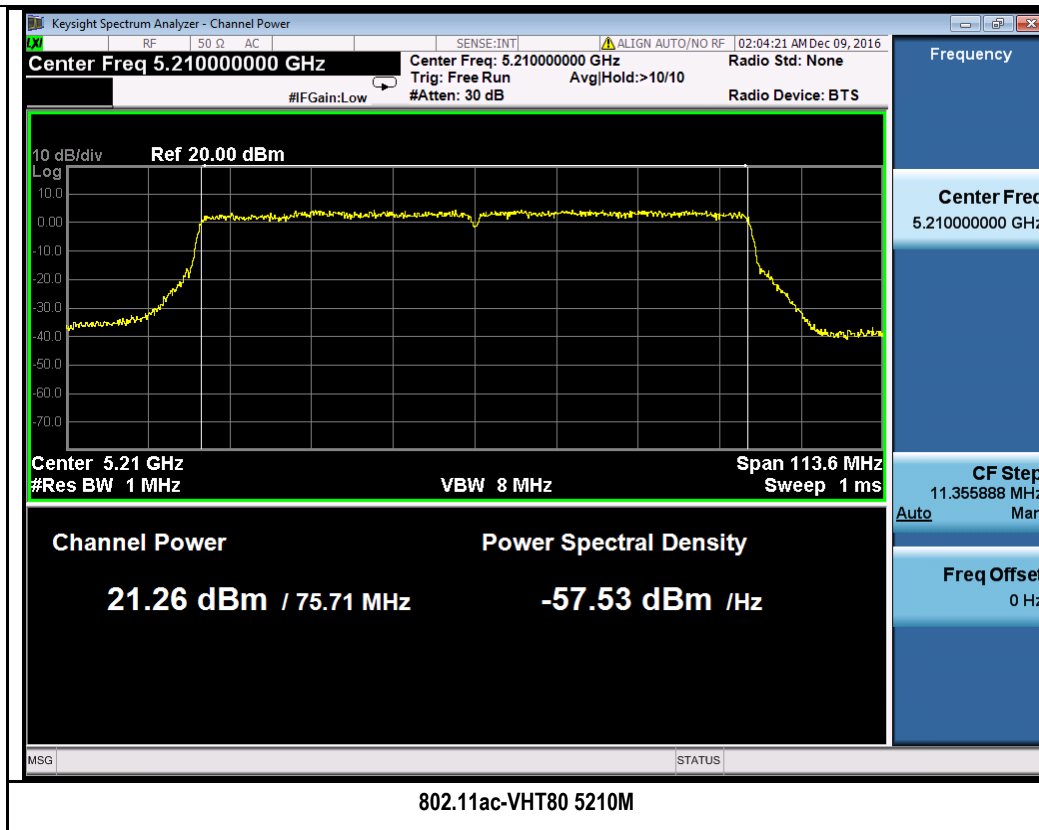
802.11n-HT20 5240M



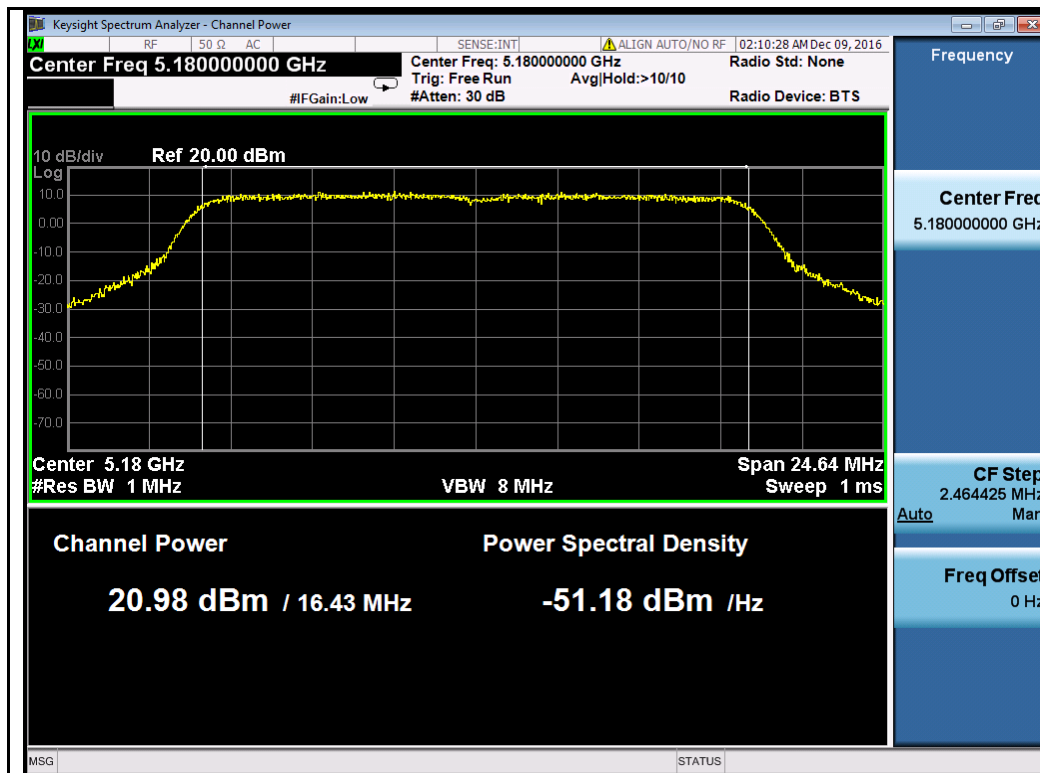
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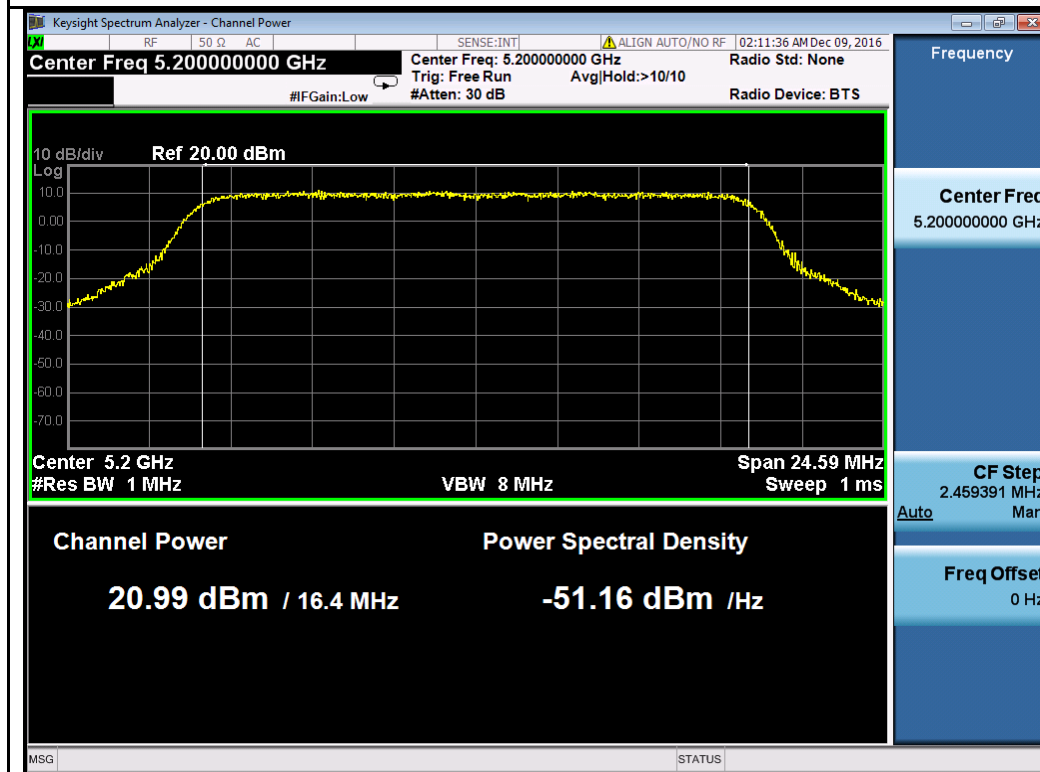
802.11n-HT40 5230M



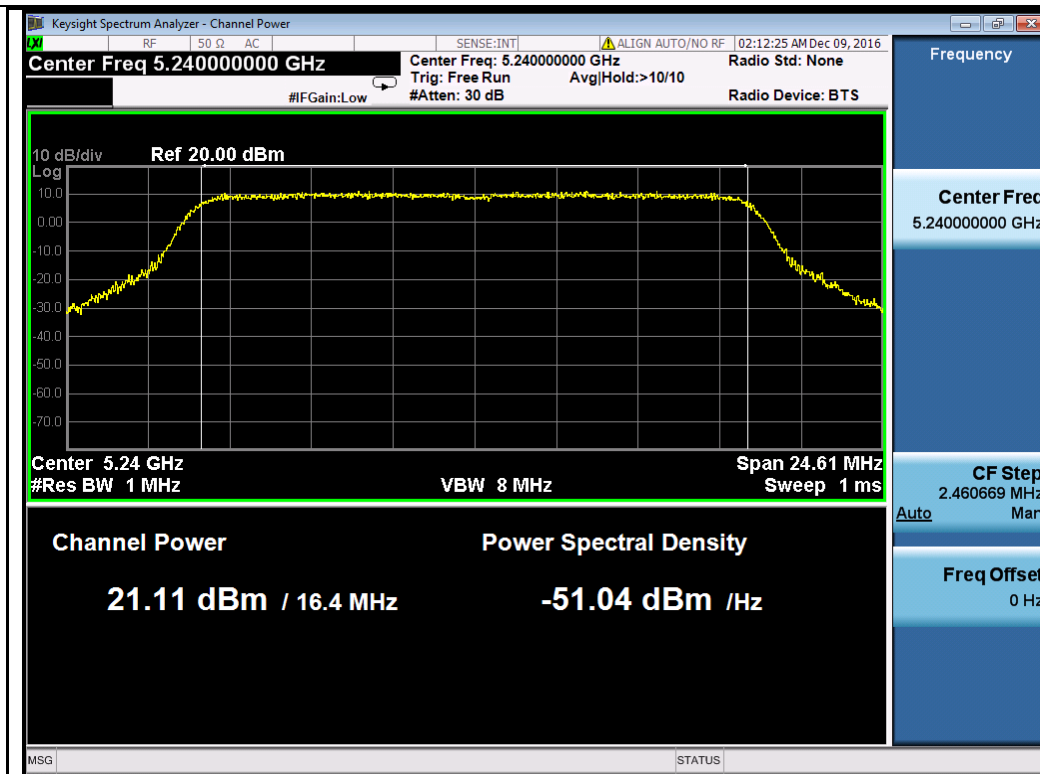
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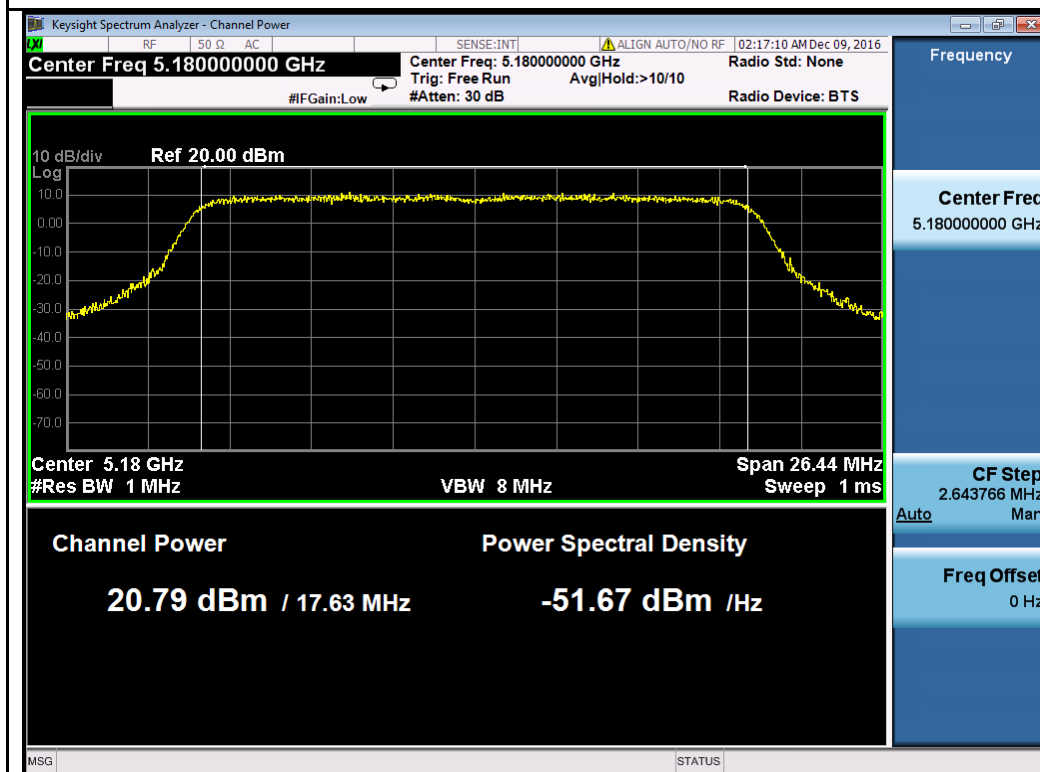
802.11a-5180M



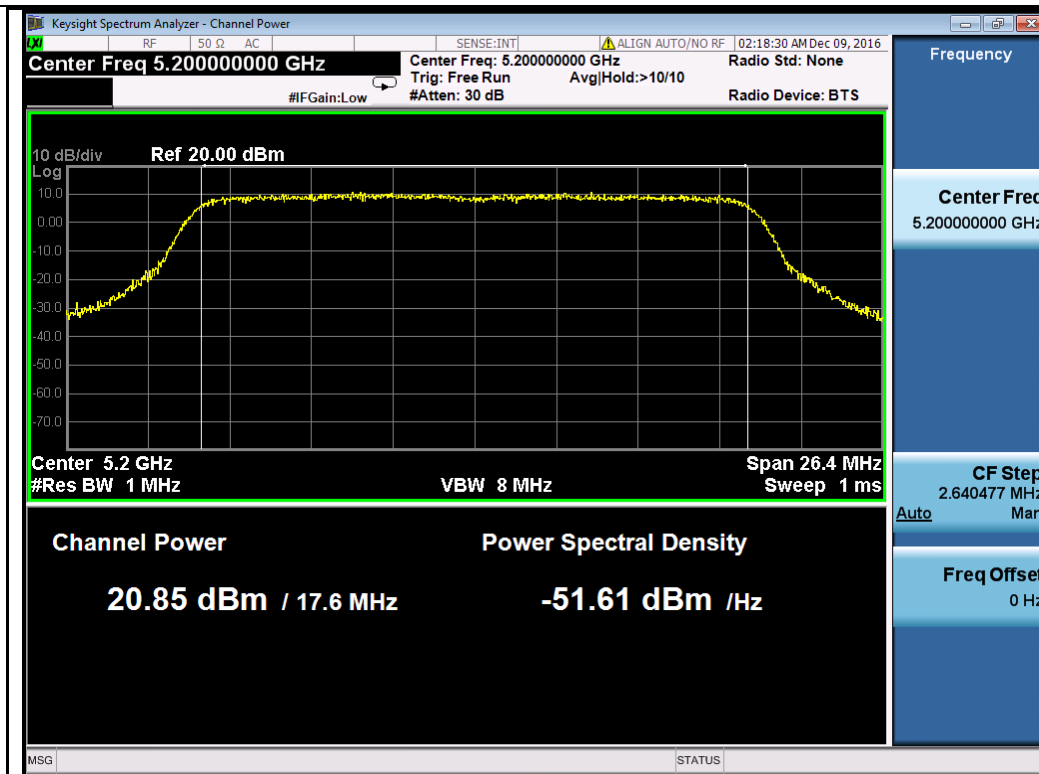
802.11a-5200M



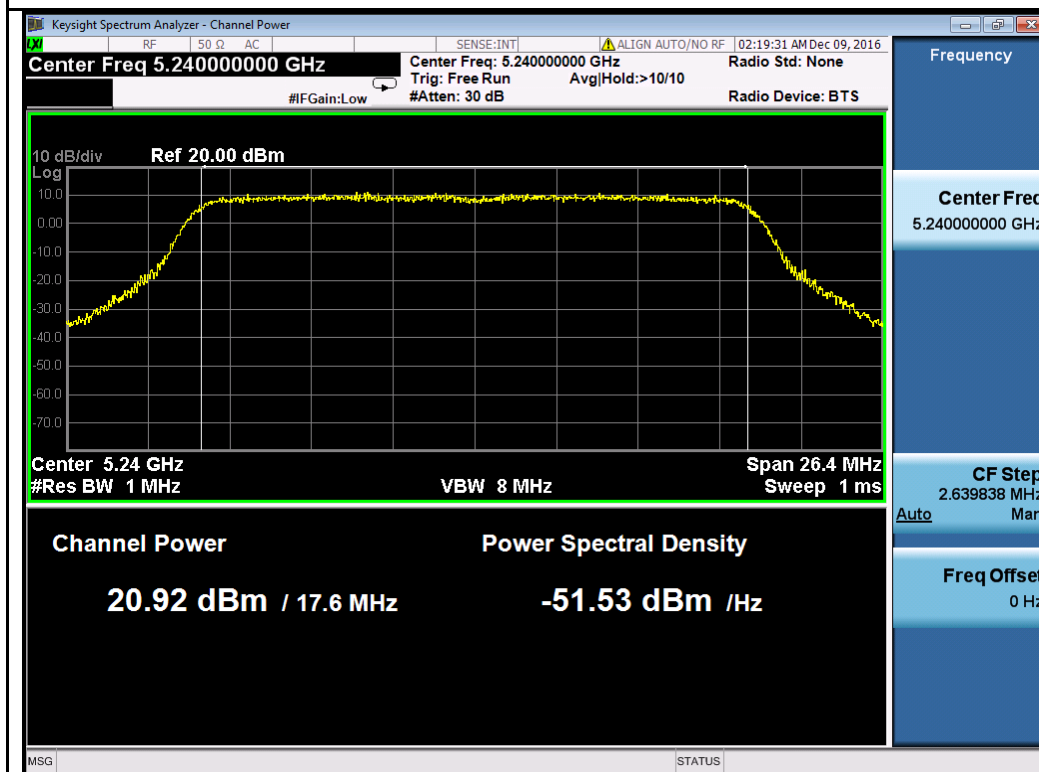
802.11a-5240M



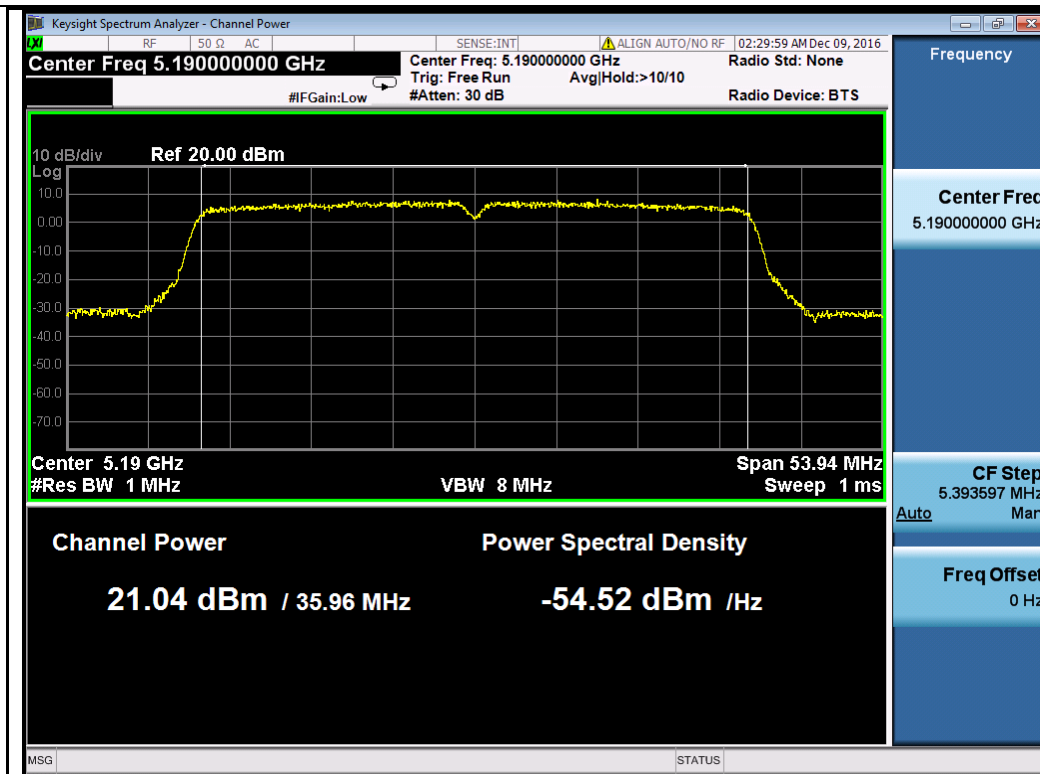
802.11n-HT20 5180M



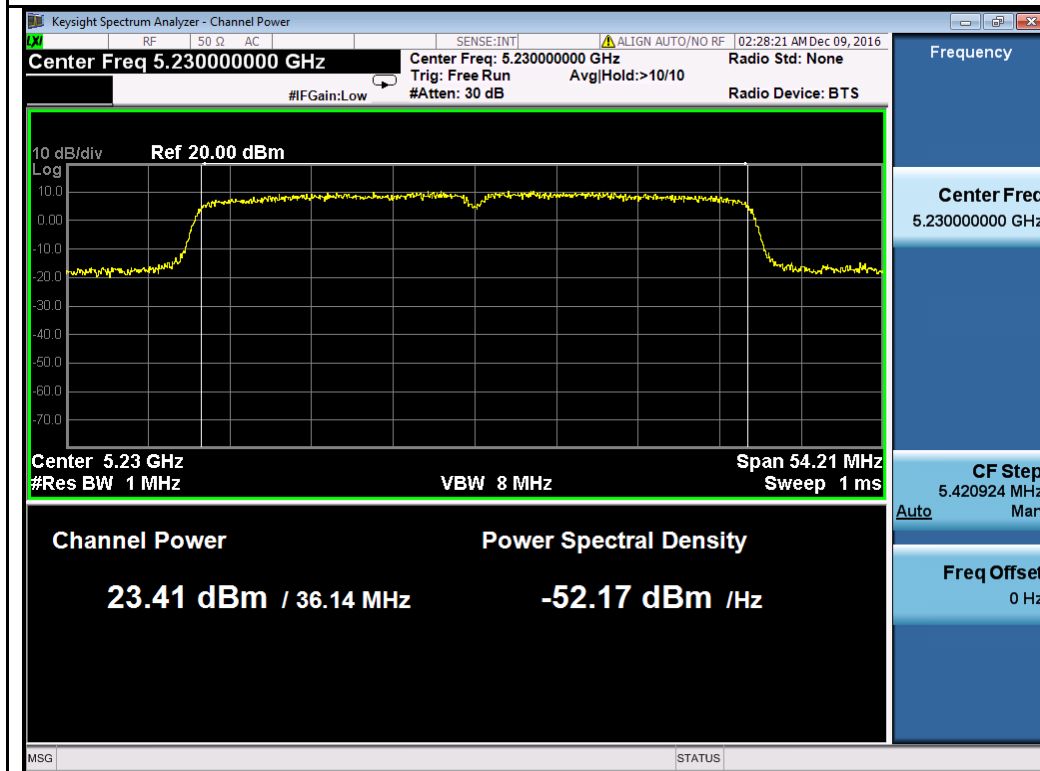
802.11n-HT20 5200M



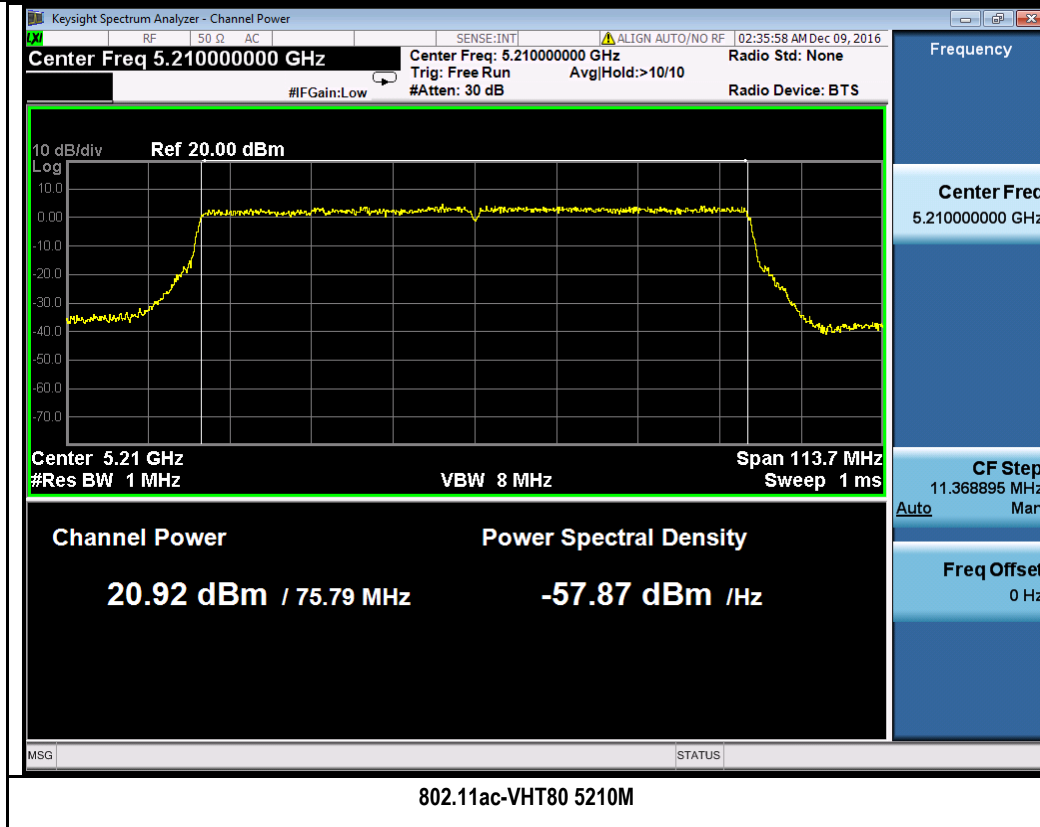
802.11n-HT20 5240M



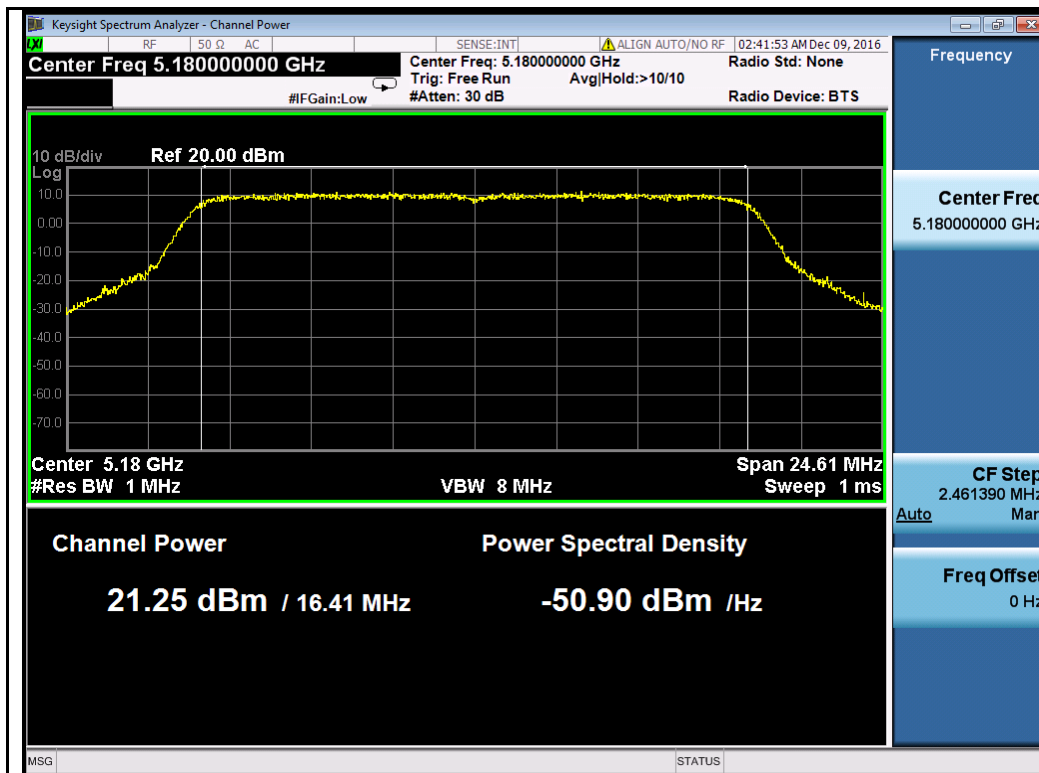
802.11n-HT40 5190M



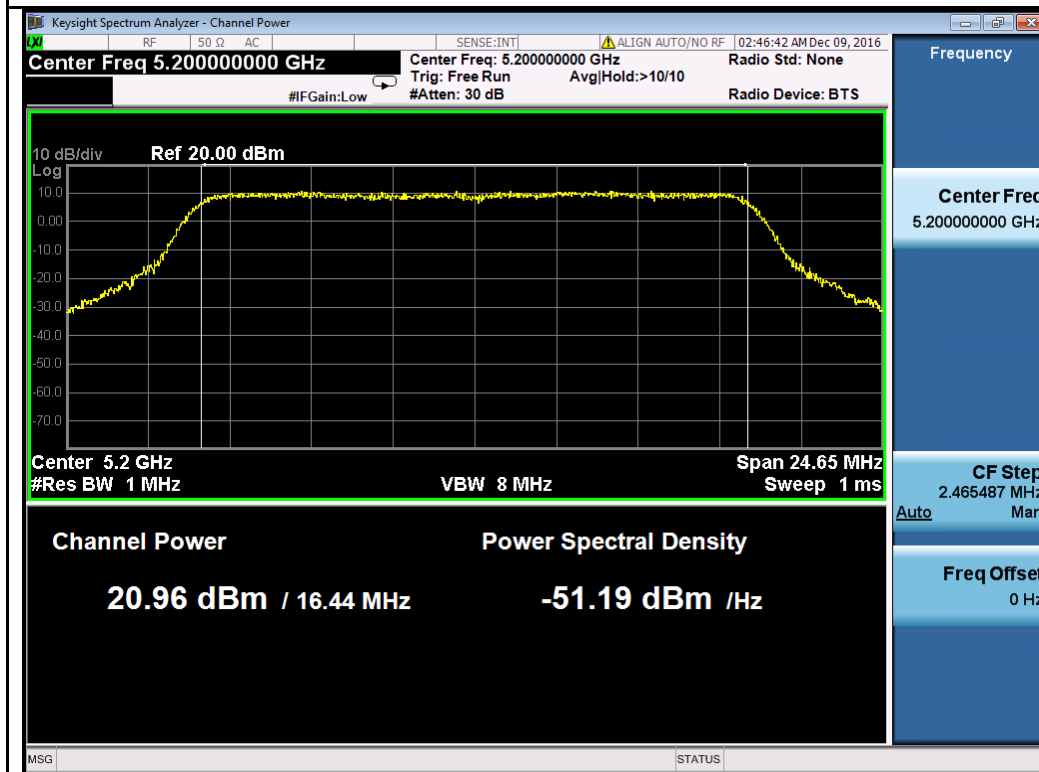
802.11n-HT40 5230M



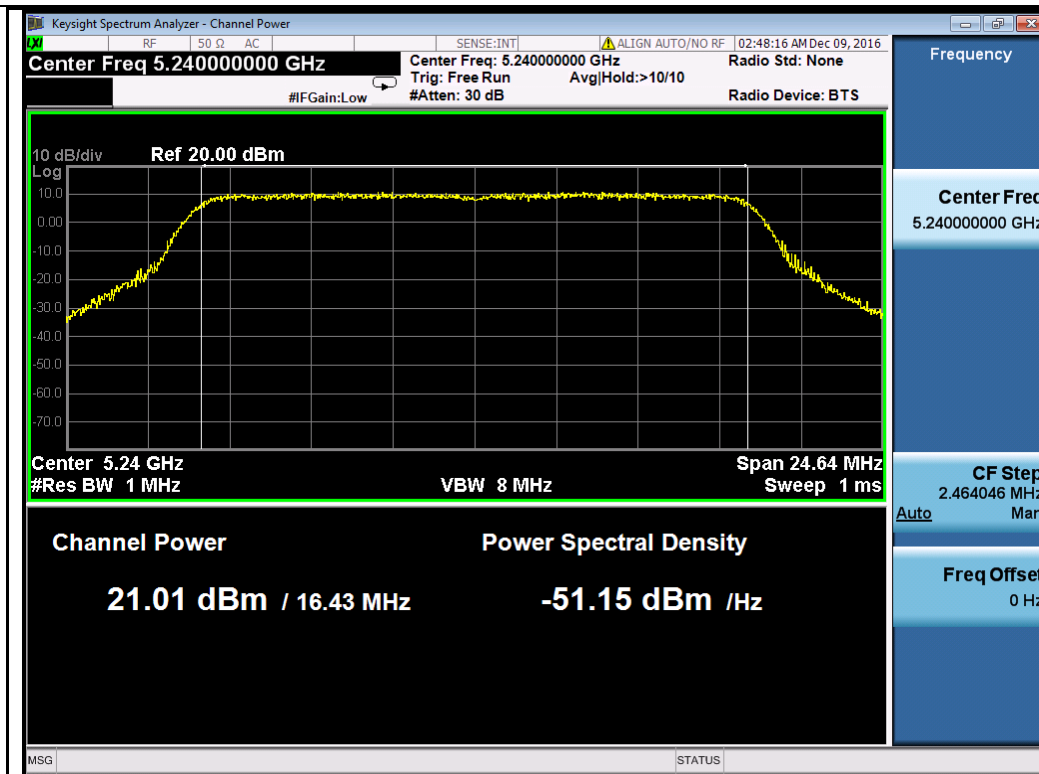
Chain 4:



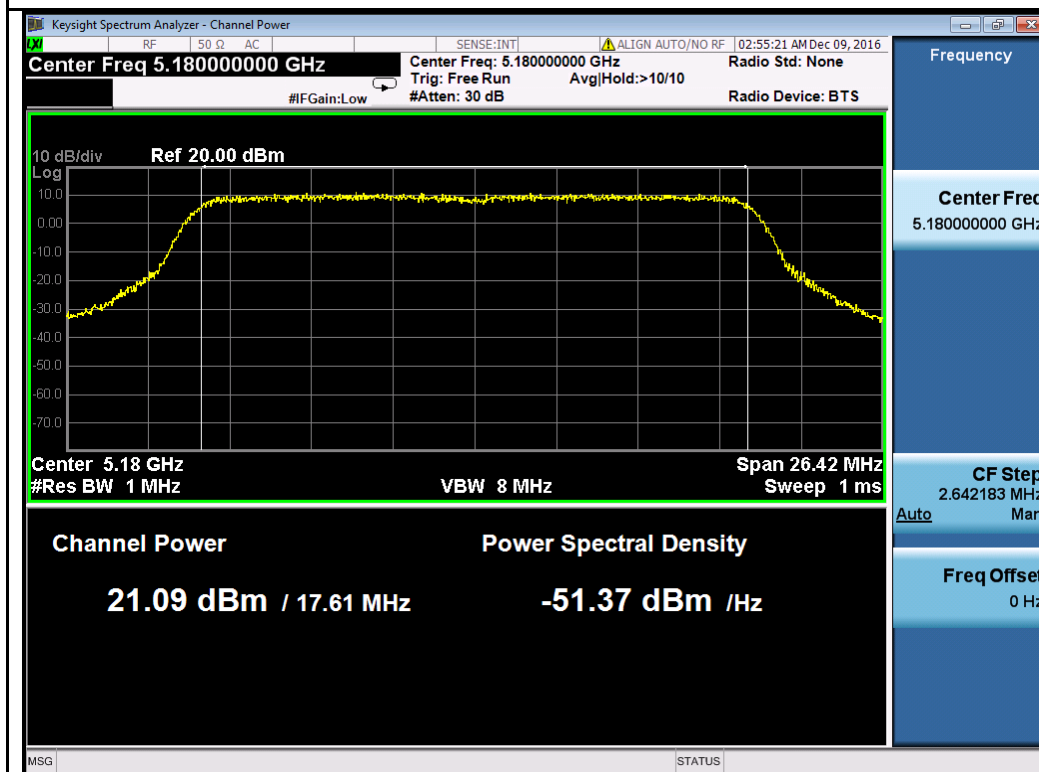
802.11a-5180M



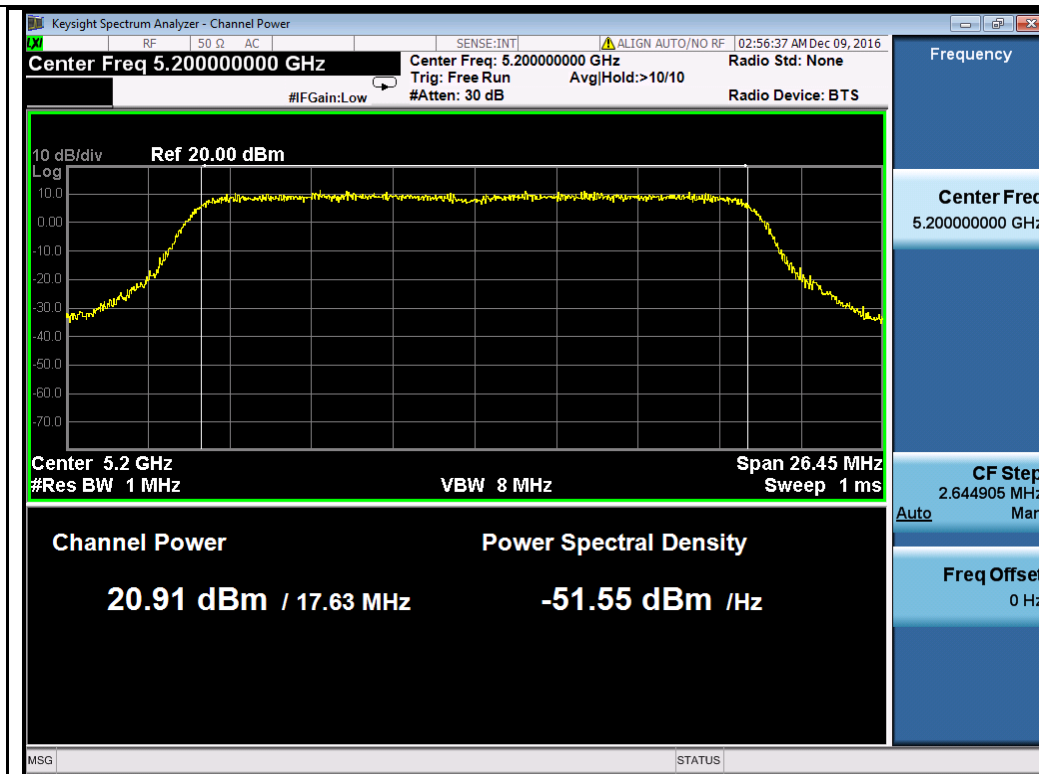
802.11a-5200M



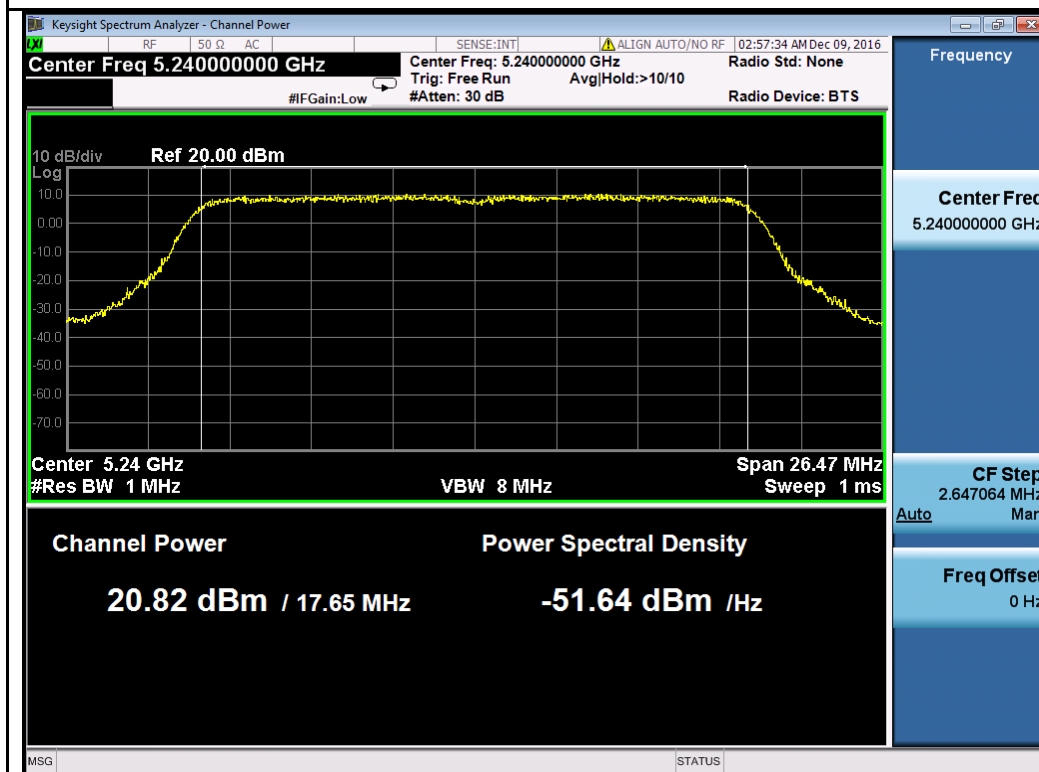
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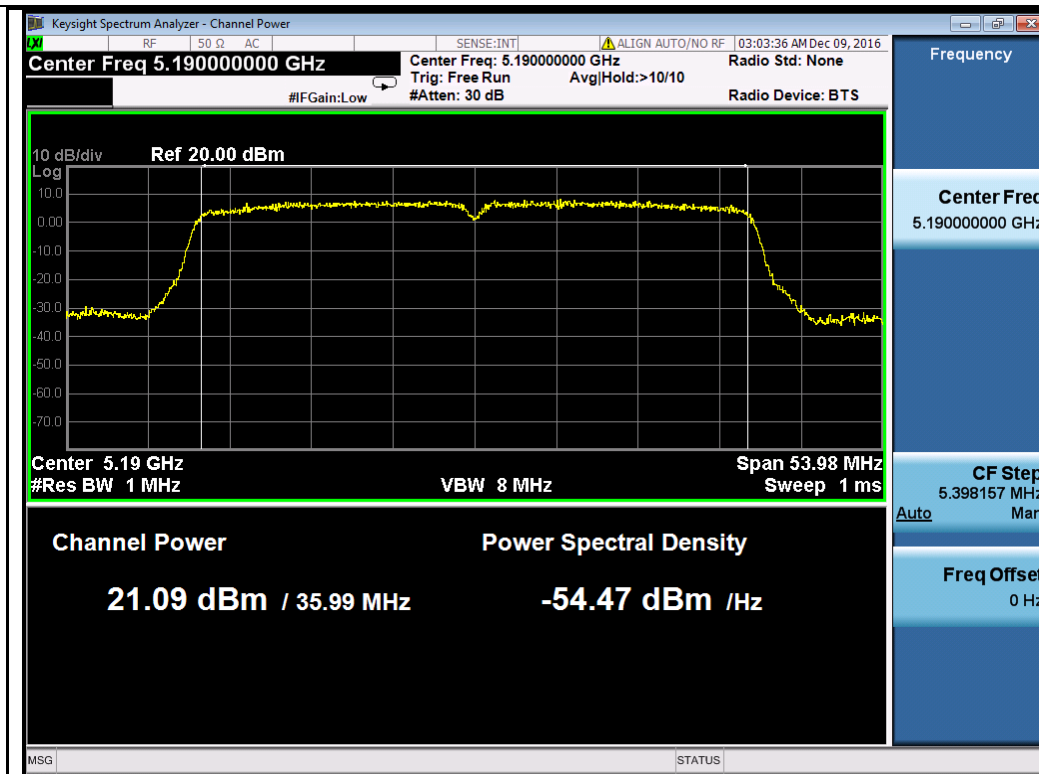
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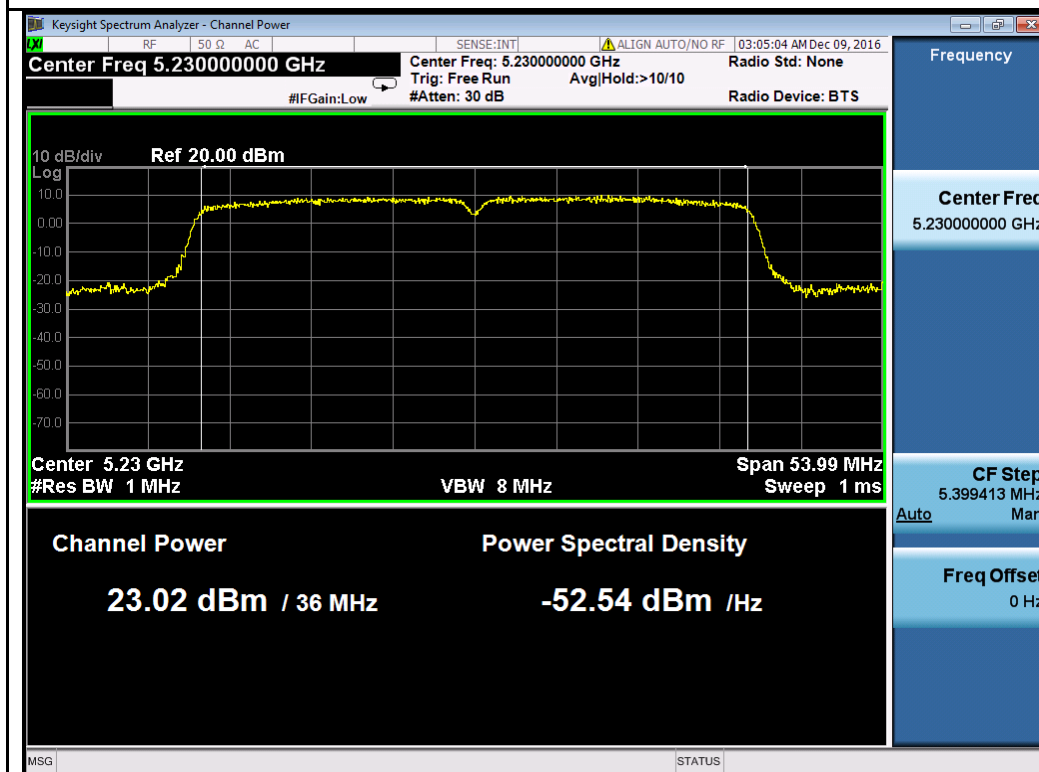
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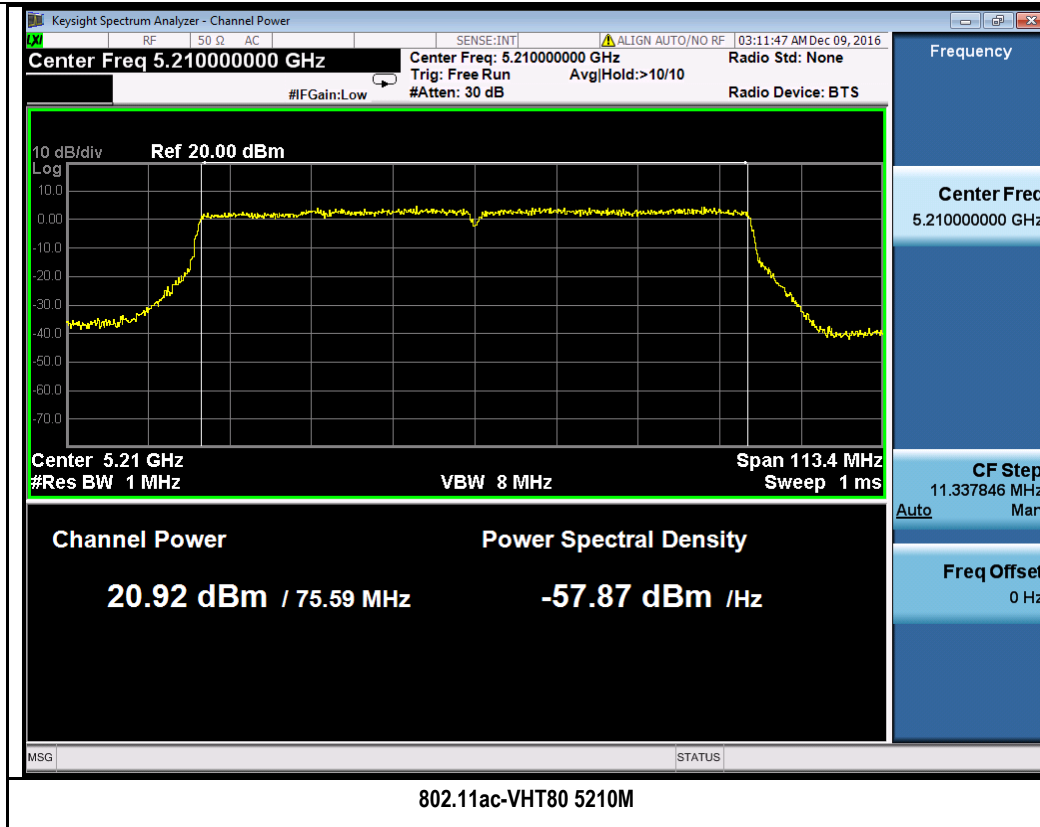
802.11n-HT20 5240M



802.11n-HT40 5190M



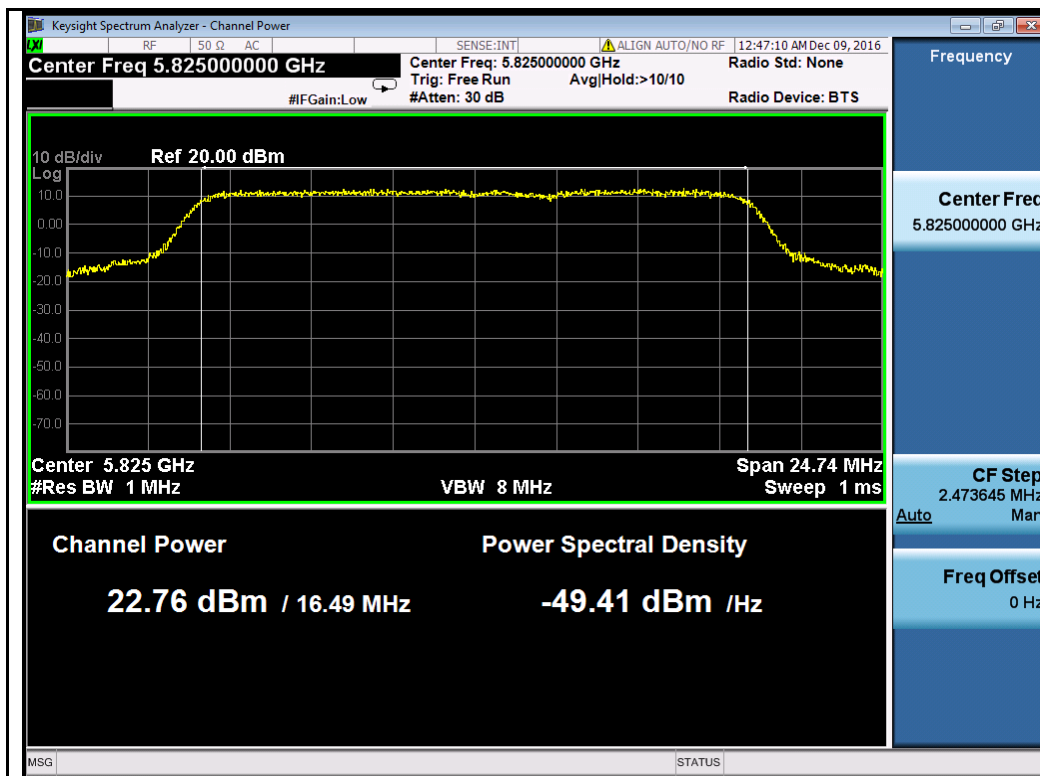
802.11n-HT40 5230M



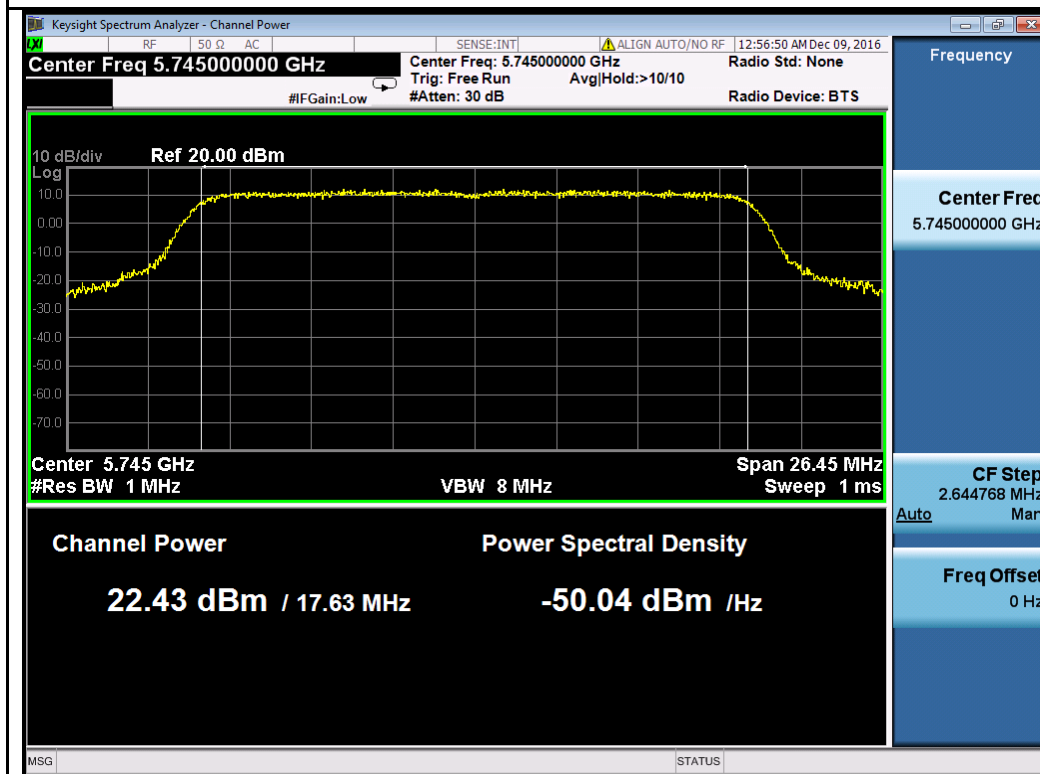
Test Plot for W58:

Chain 1:

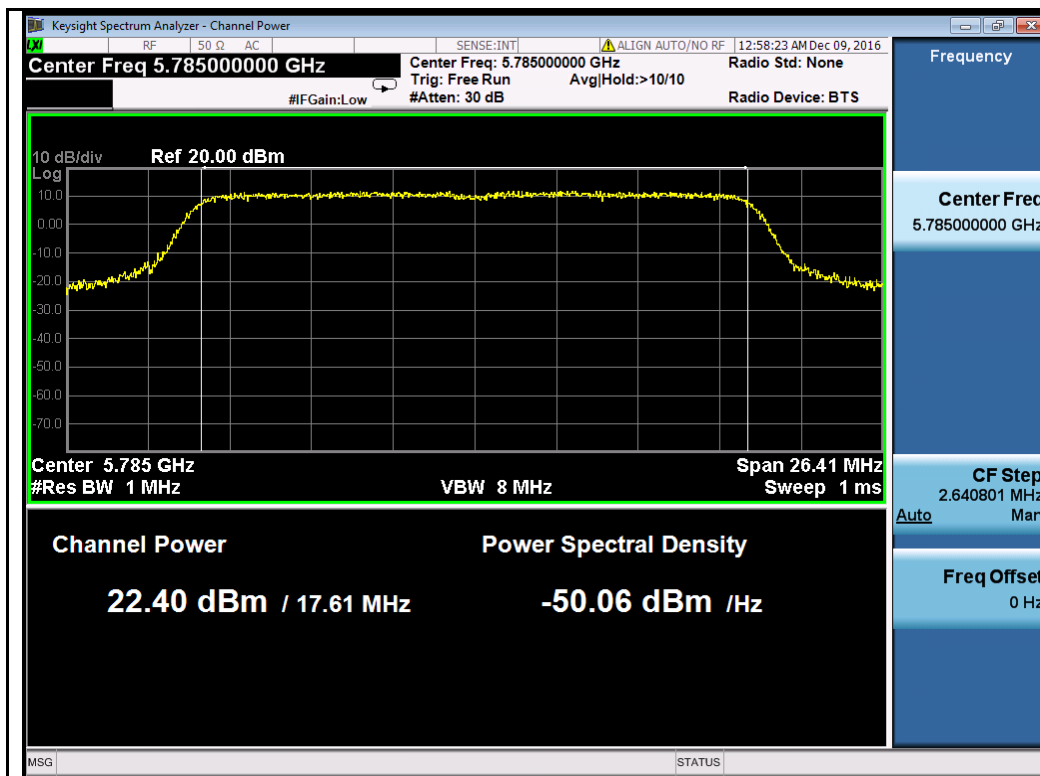




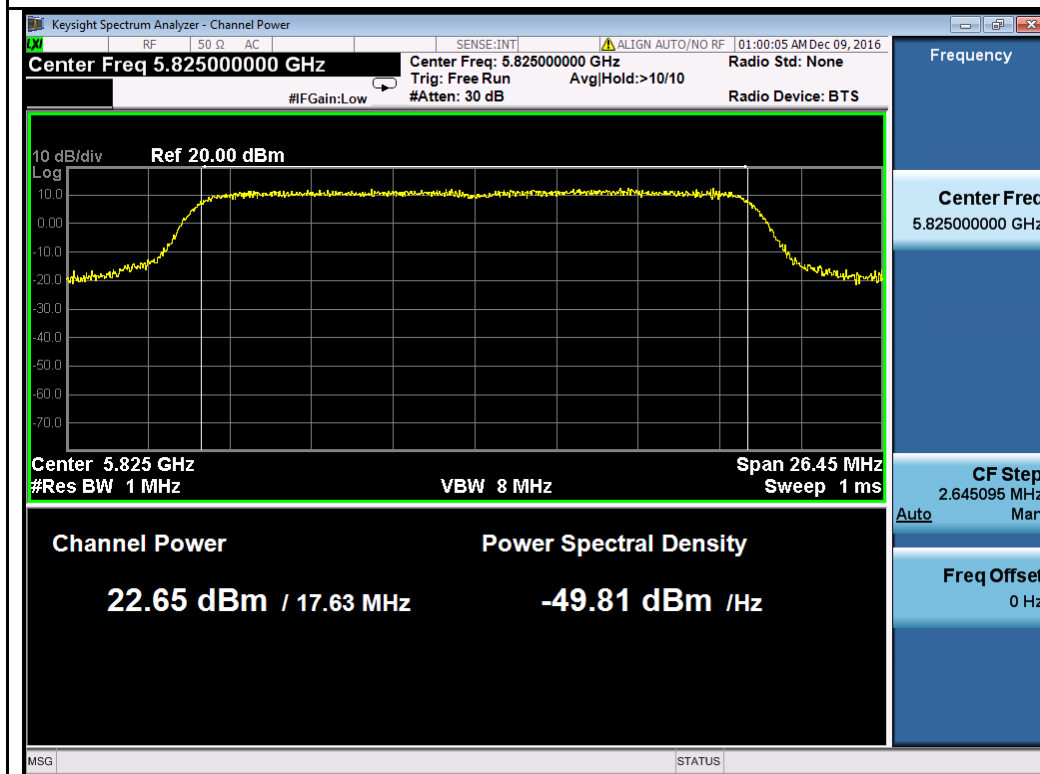
802.11a-5825M



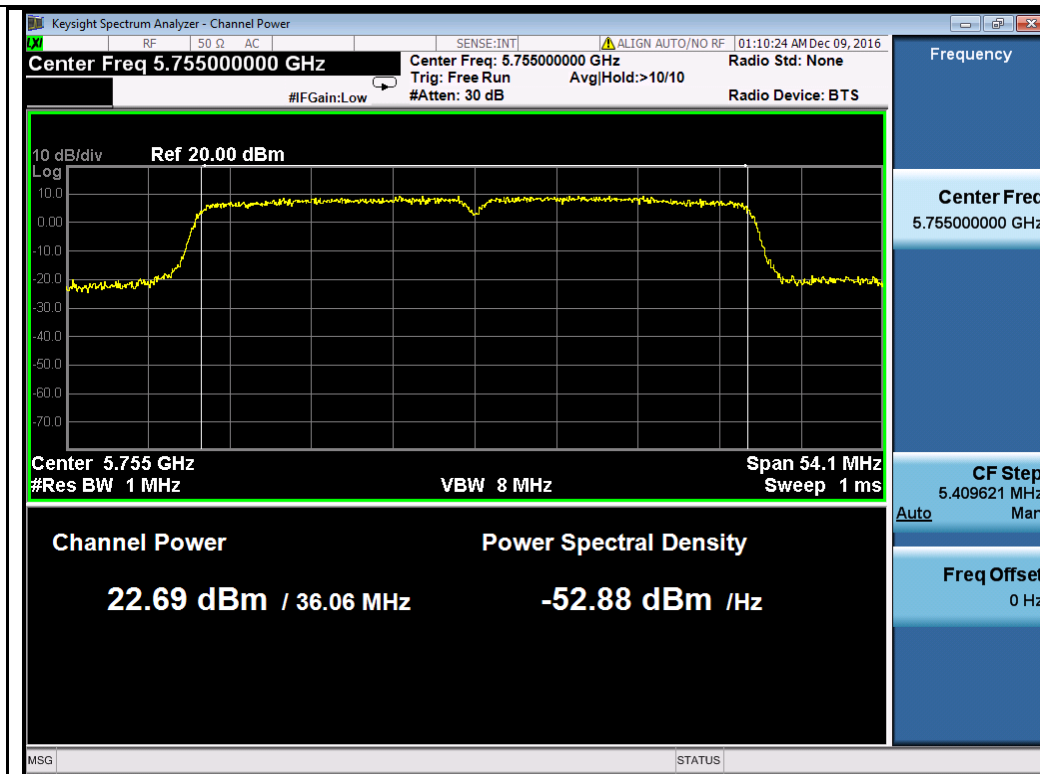
802.11n-HT20 5745M



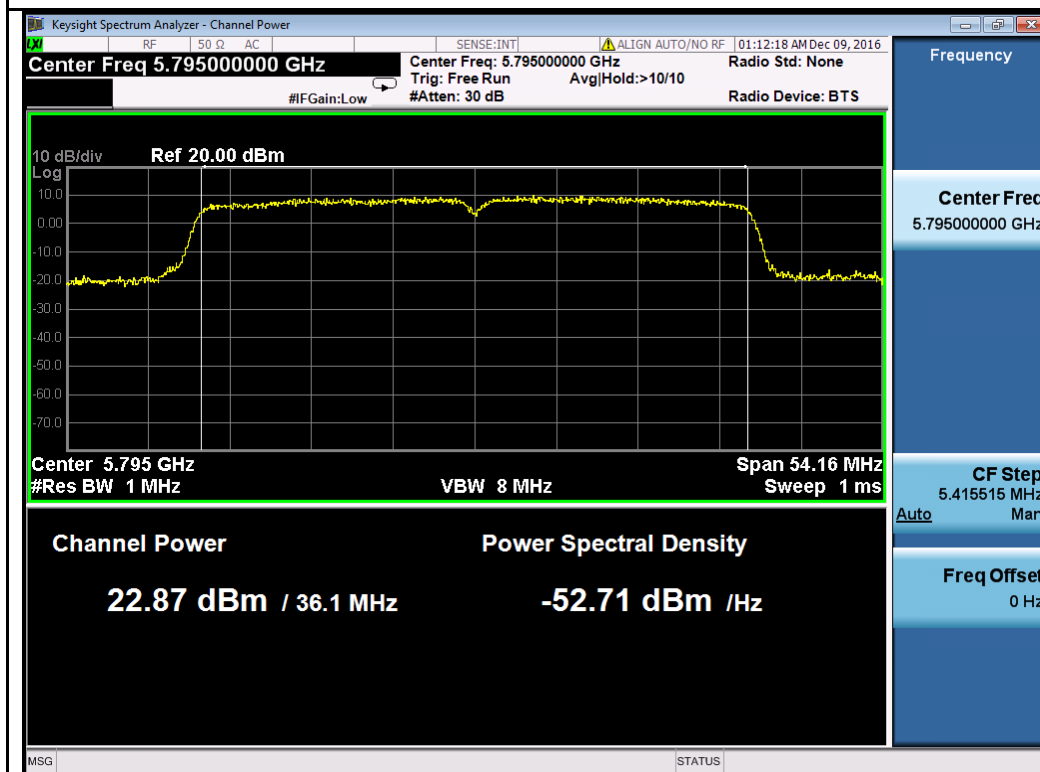
802.11n-HT20 5785M



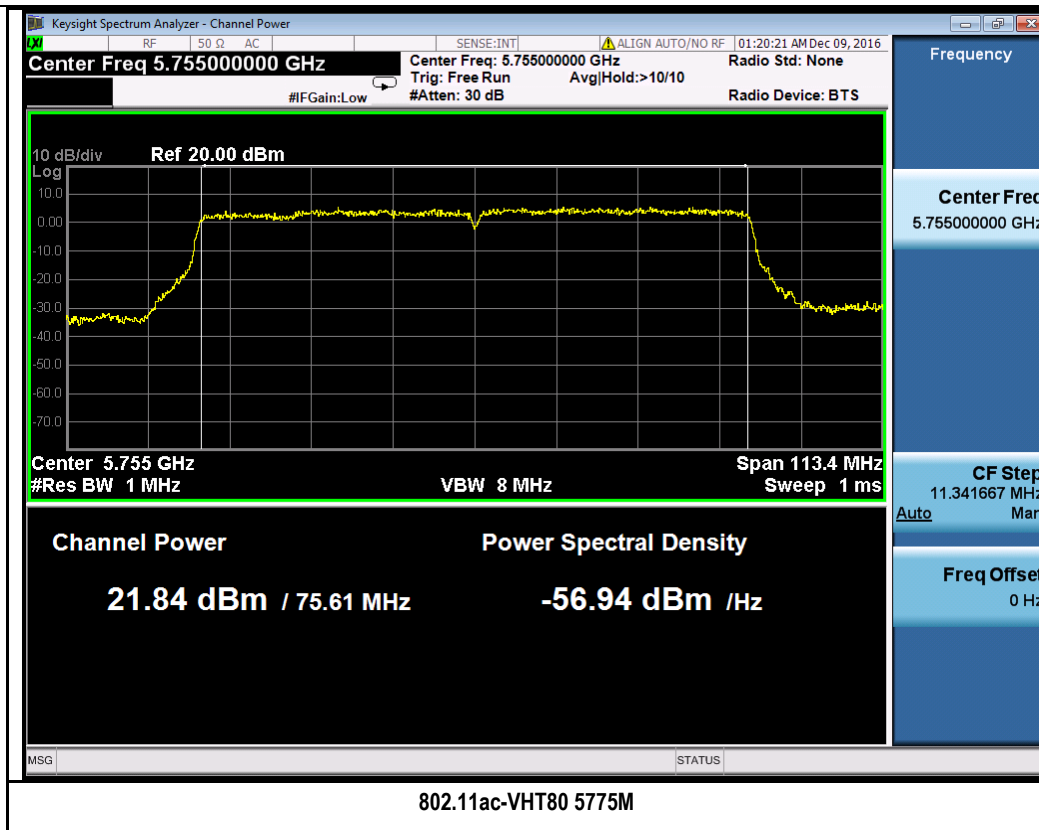
802.11n-HT20 5825M



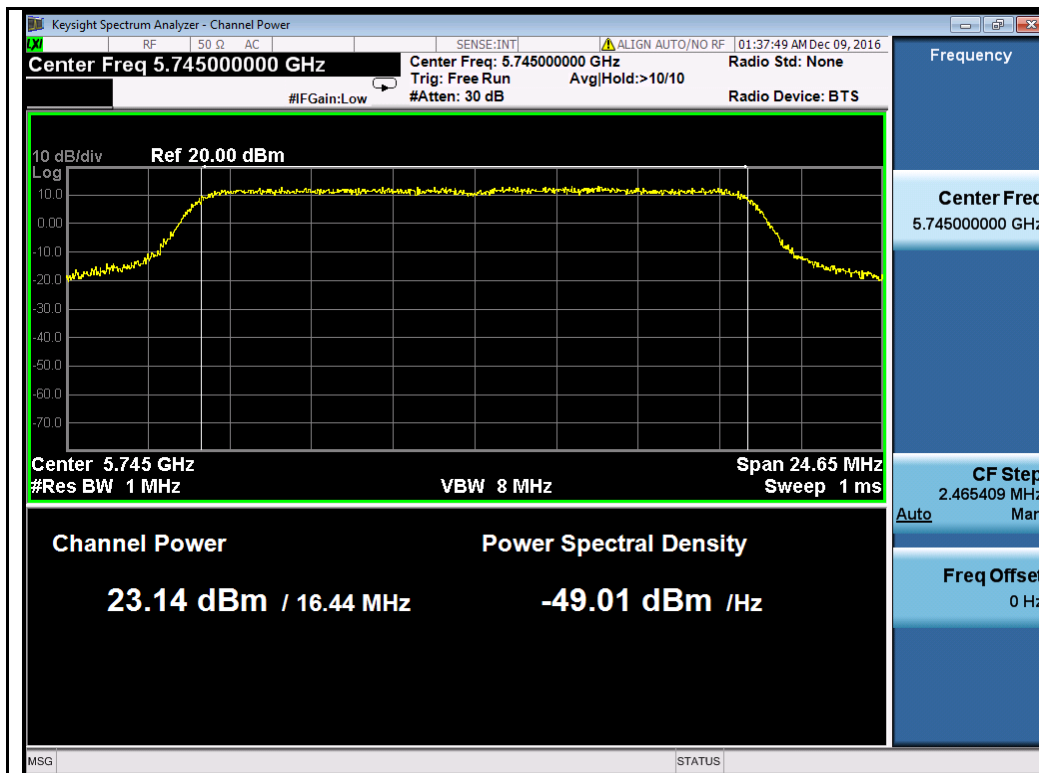
802.11n-HT40 5755M



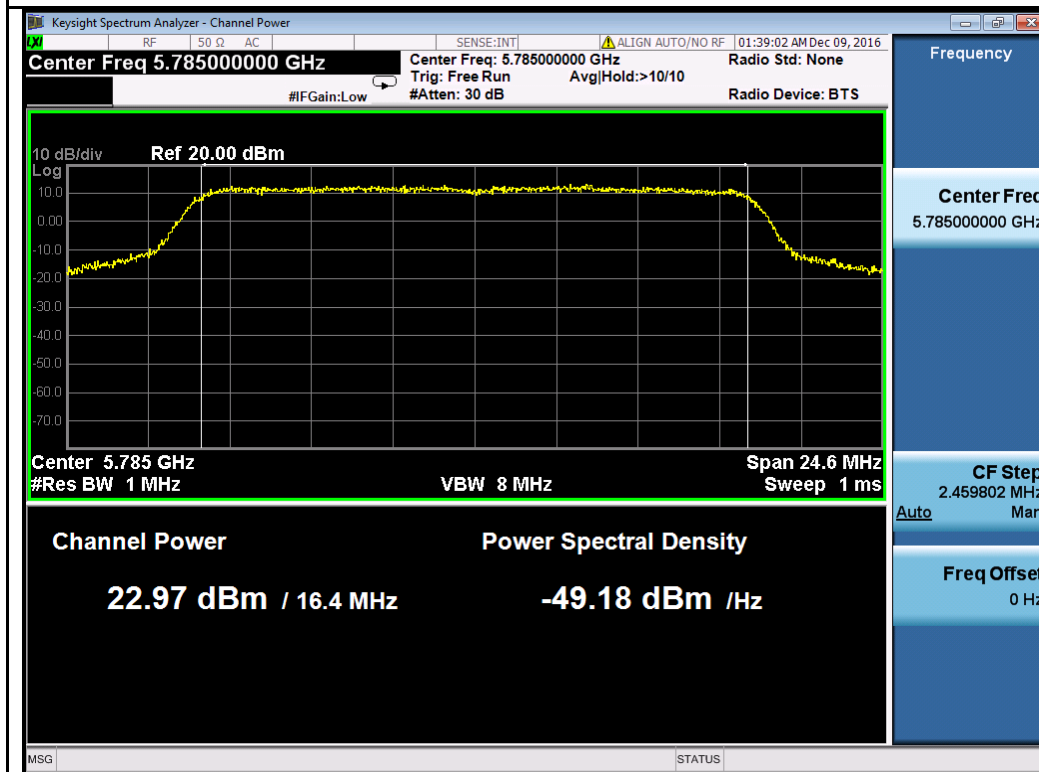
802.11n-HT40 5795M



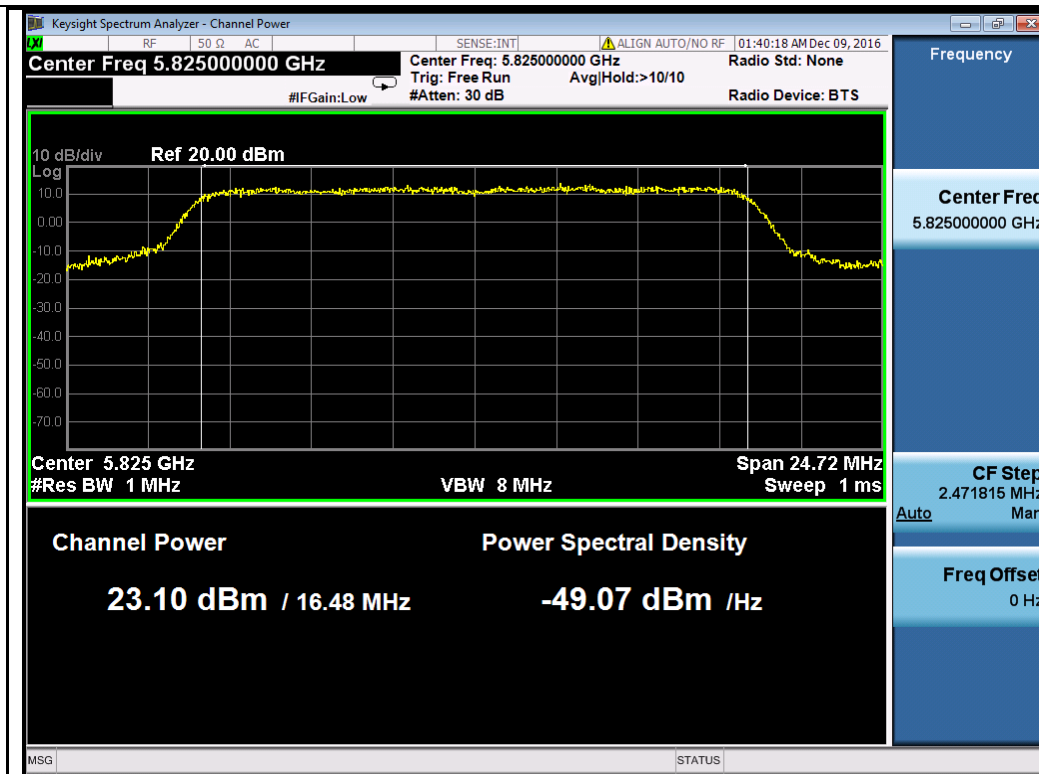
Chain 2:



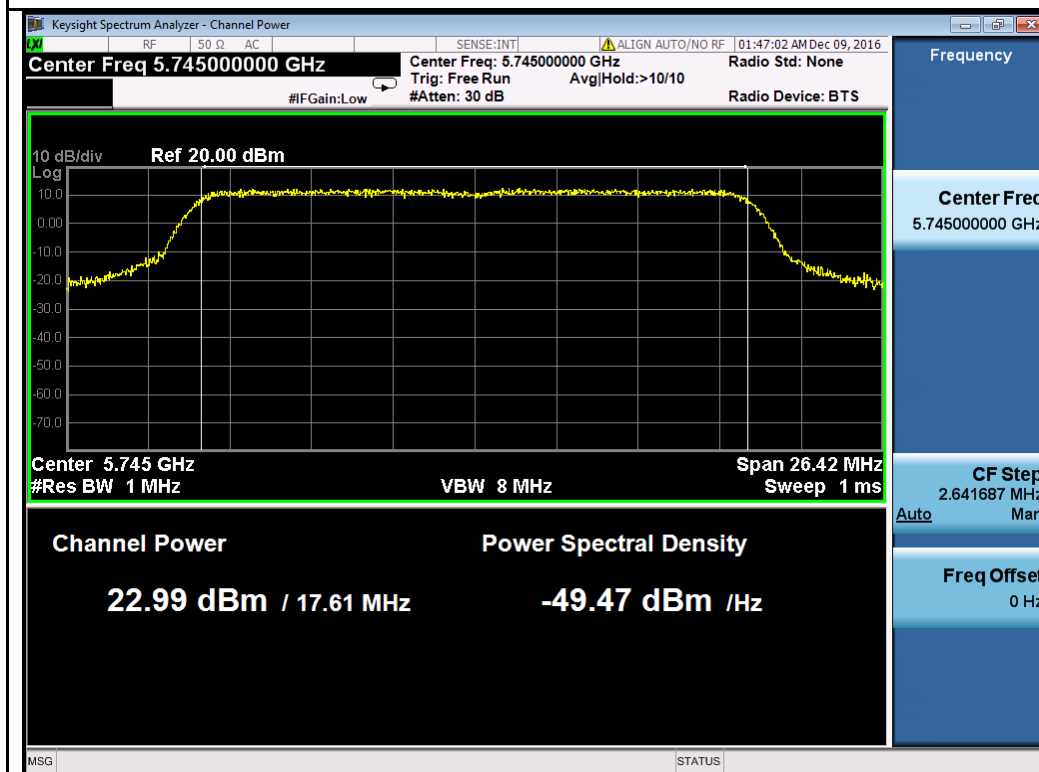
802.11a-5745M



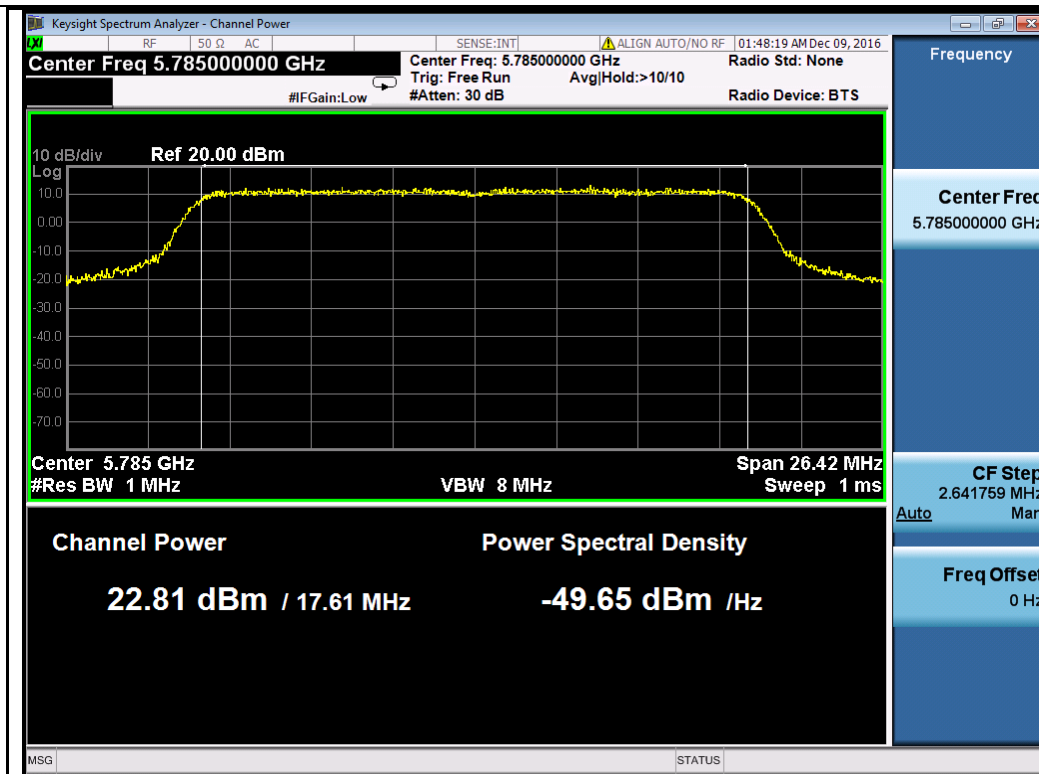
802.11a-5785M



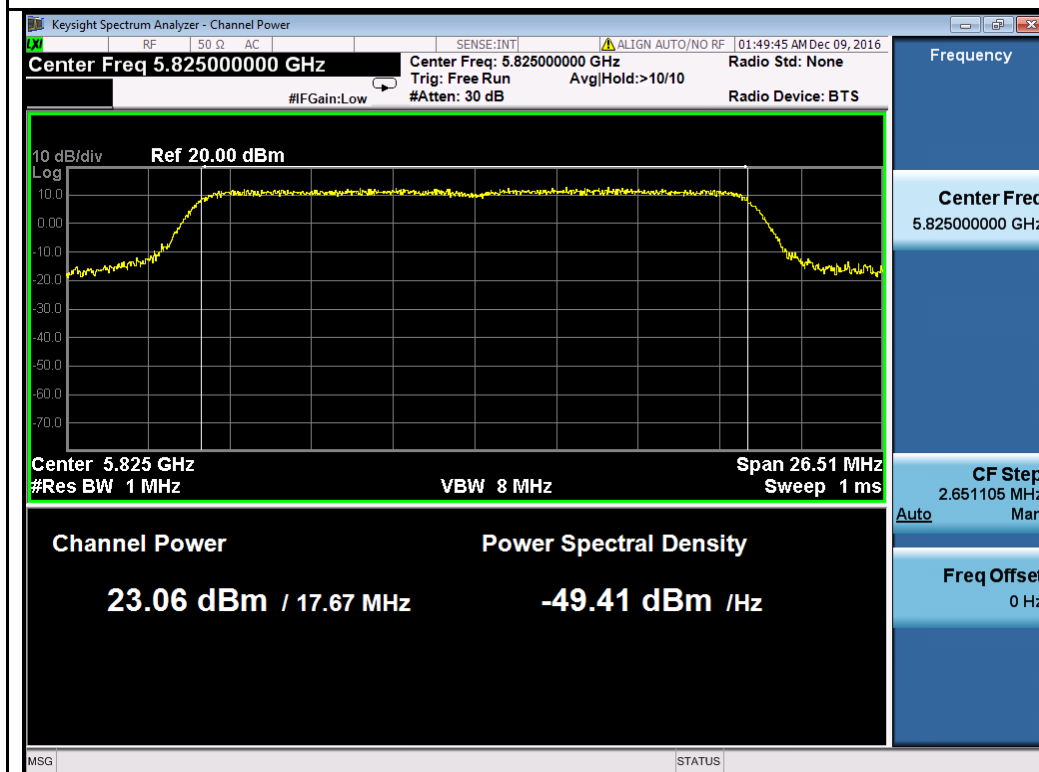
802.11a-5825M



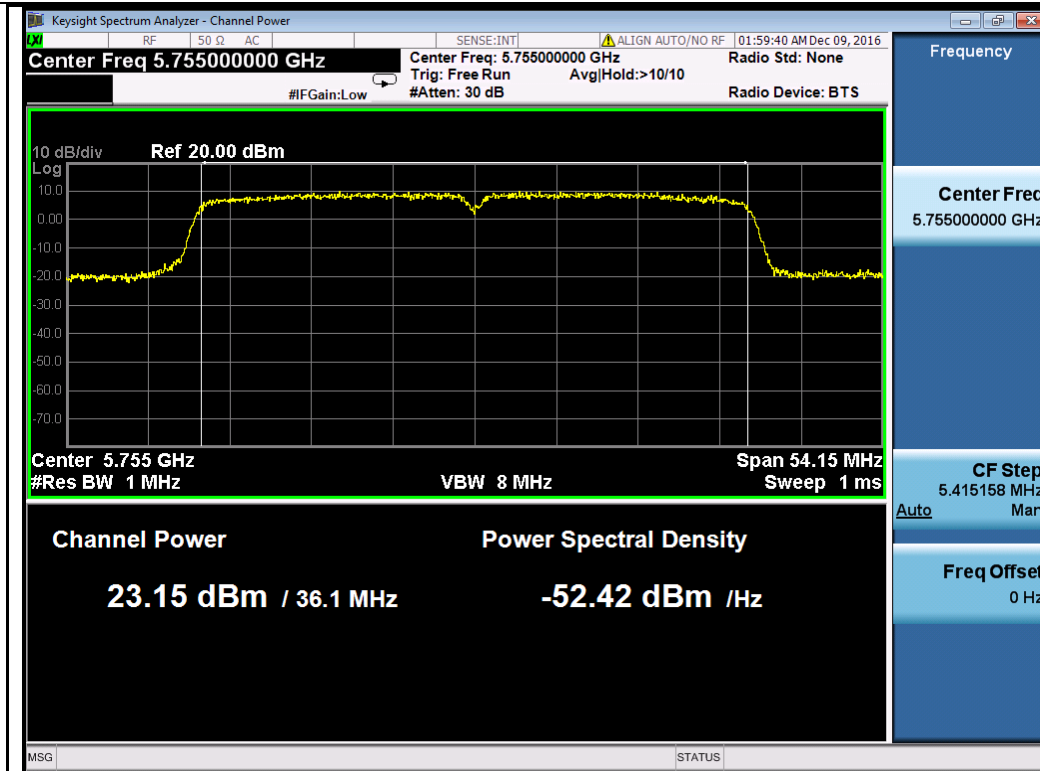
802.11n-HT20 5745M



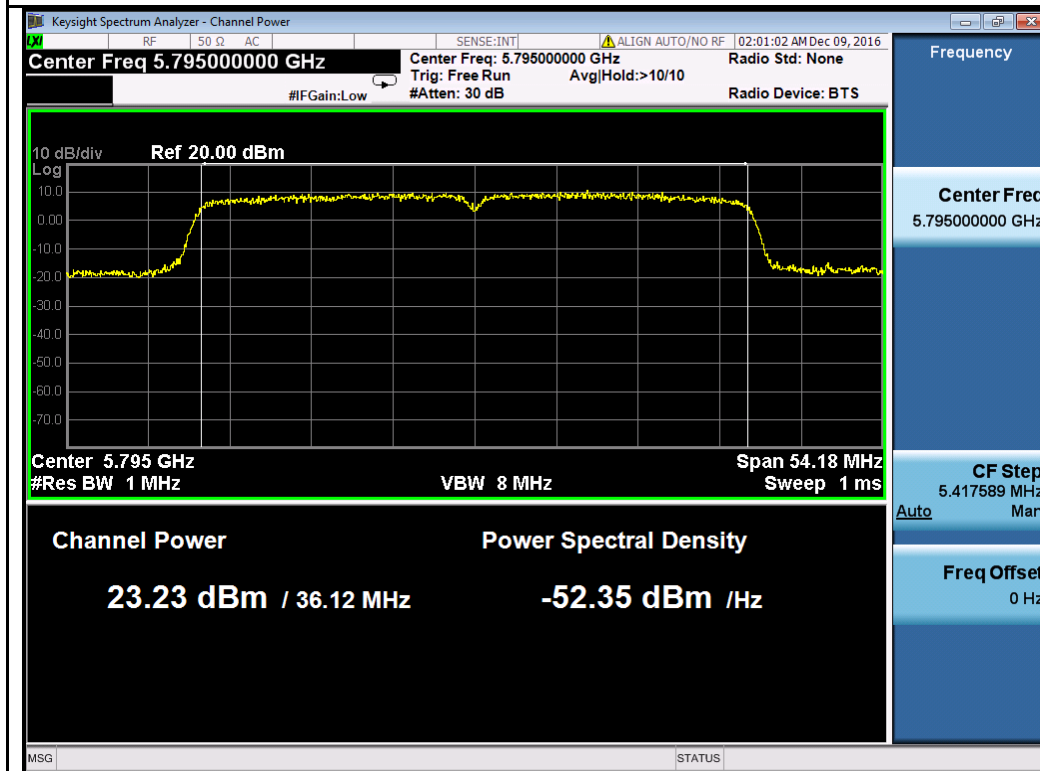
802.11n-HT20 5785M



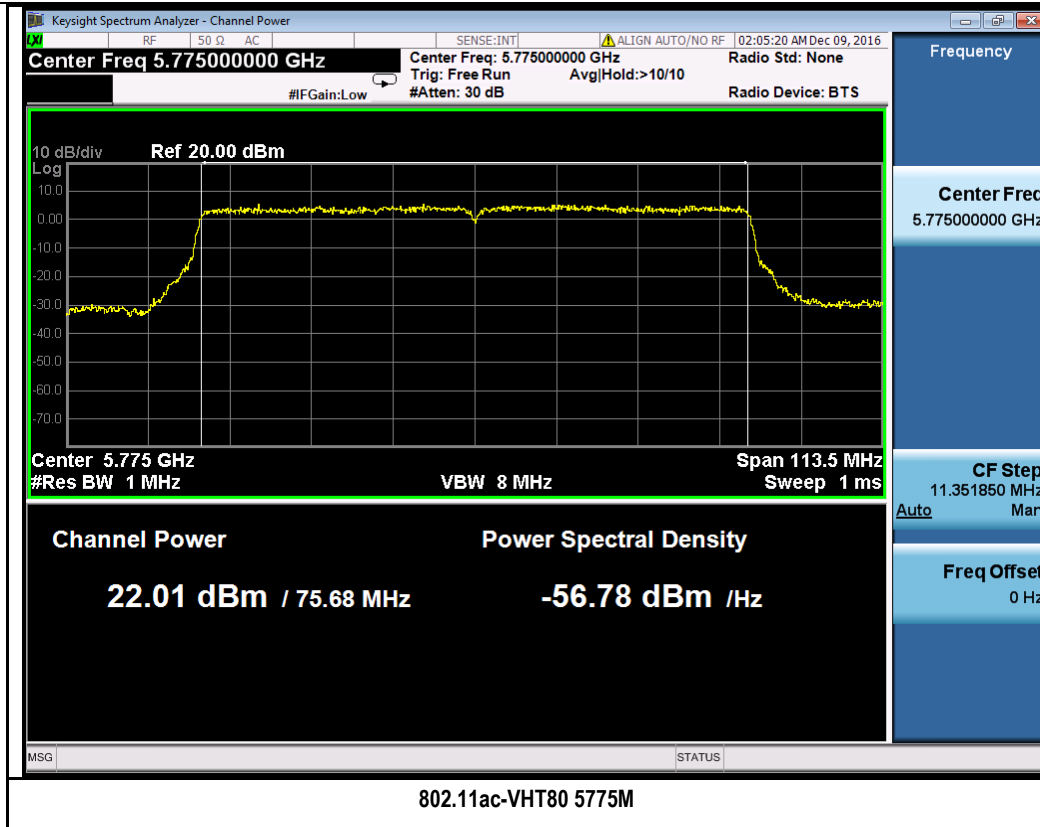
802.11n-HT20 5825M



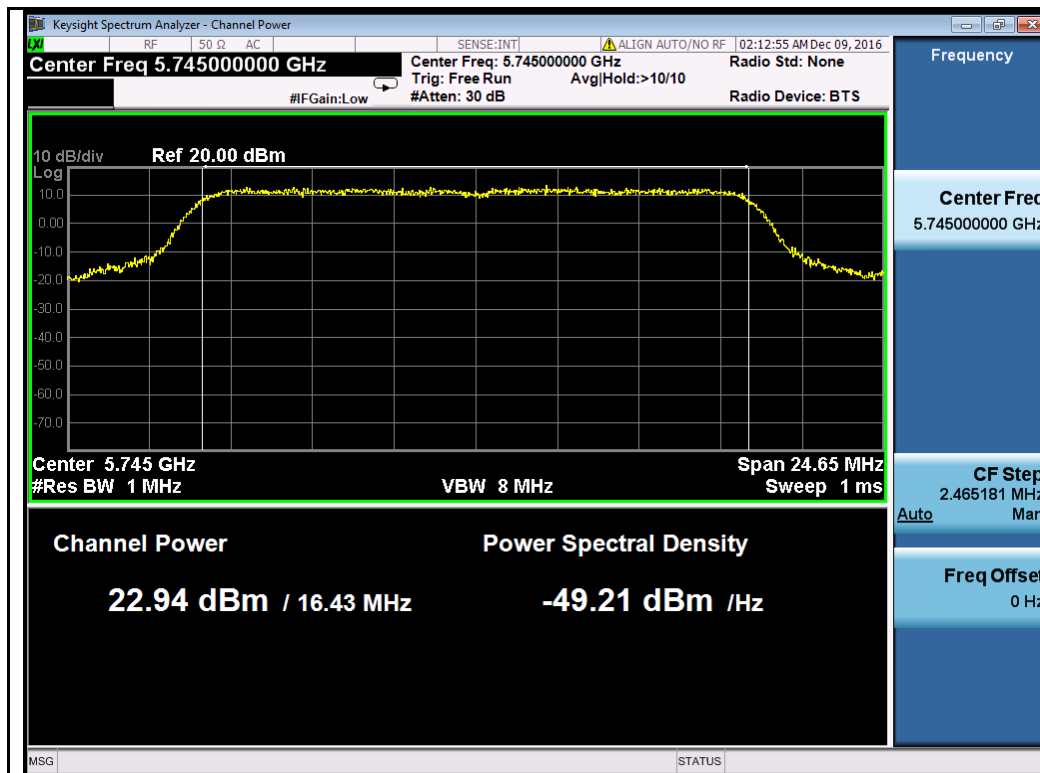
802.11n-HT40 5755M



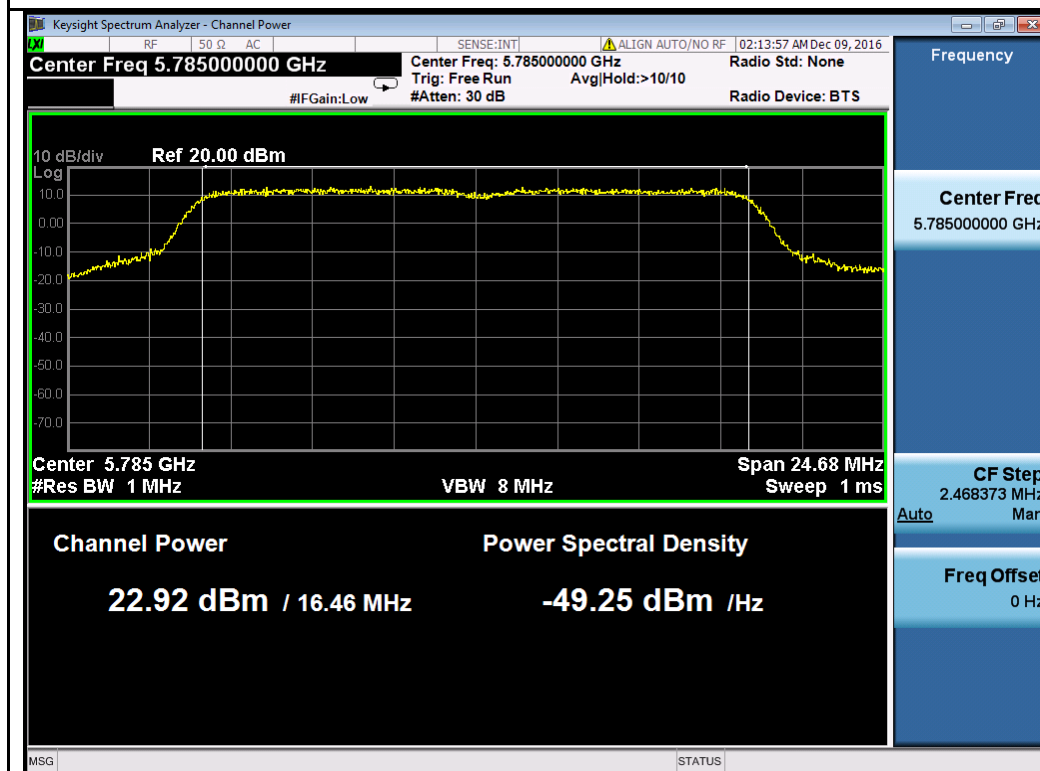
802.11n-HT40 5795M



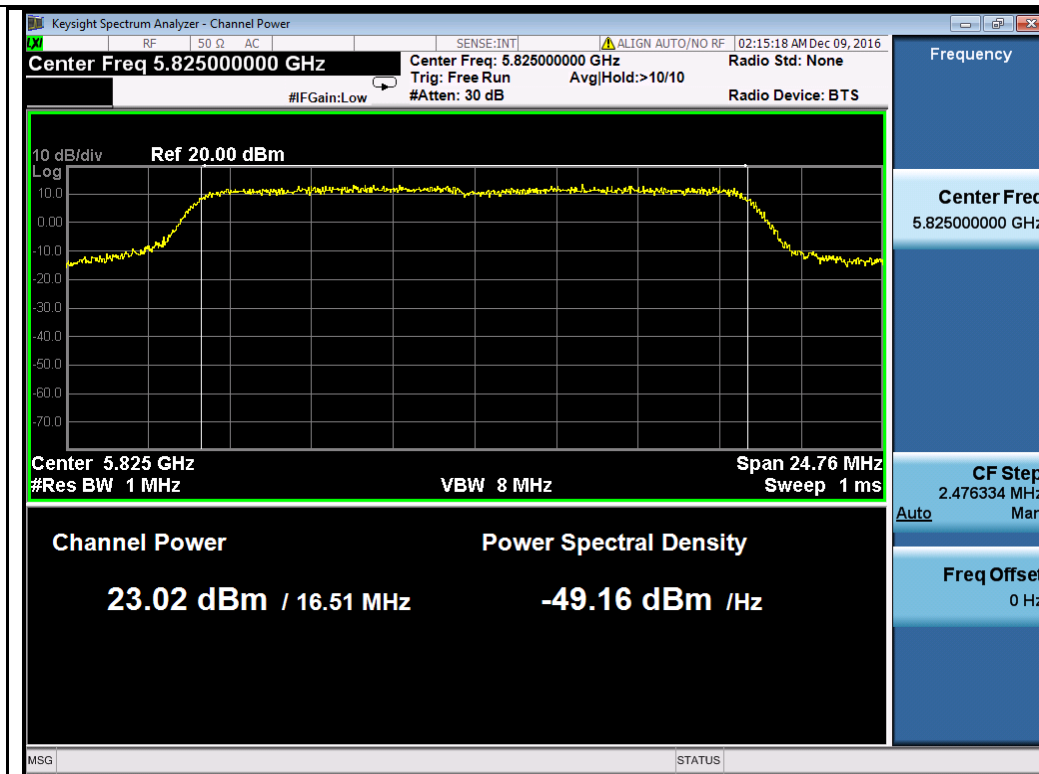
Chain 3:



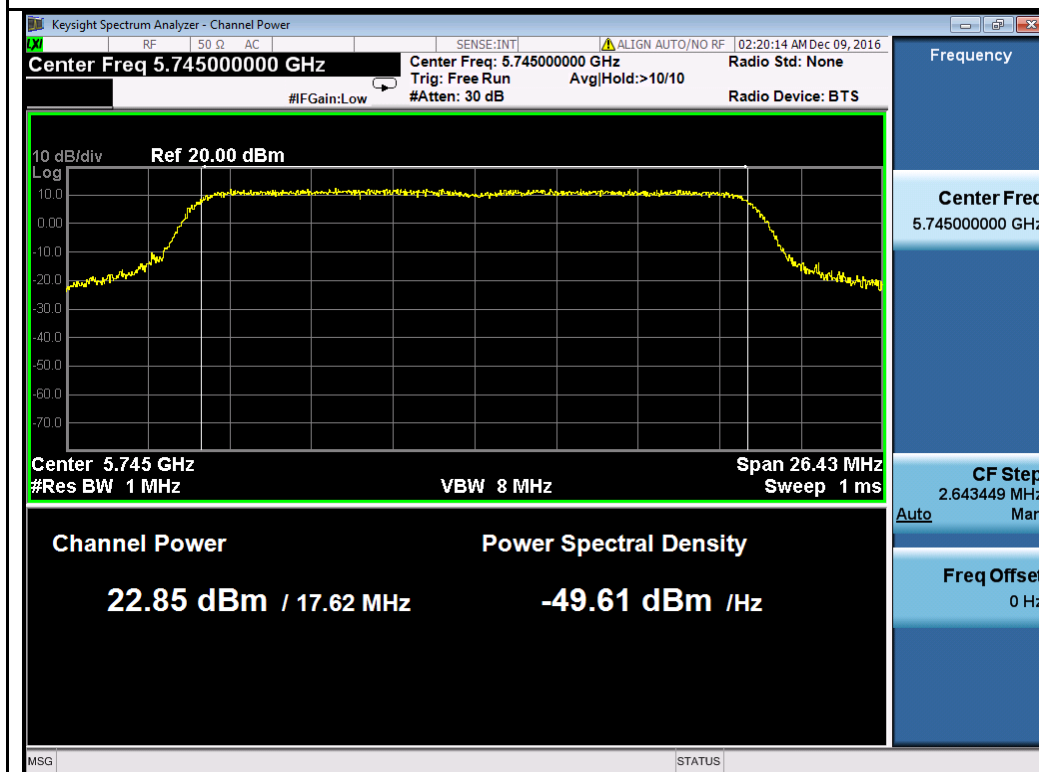
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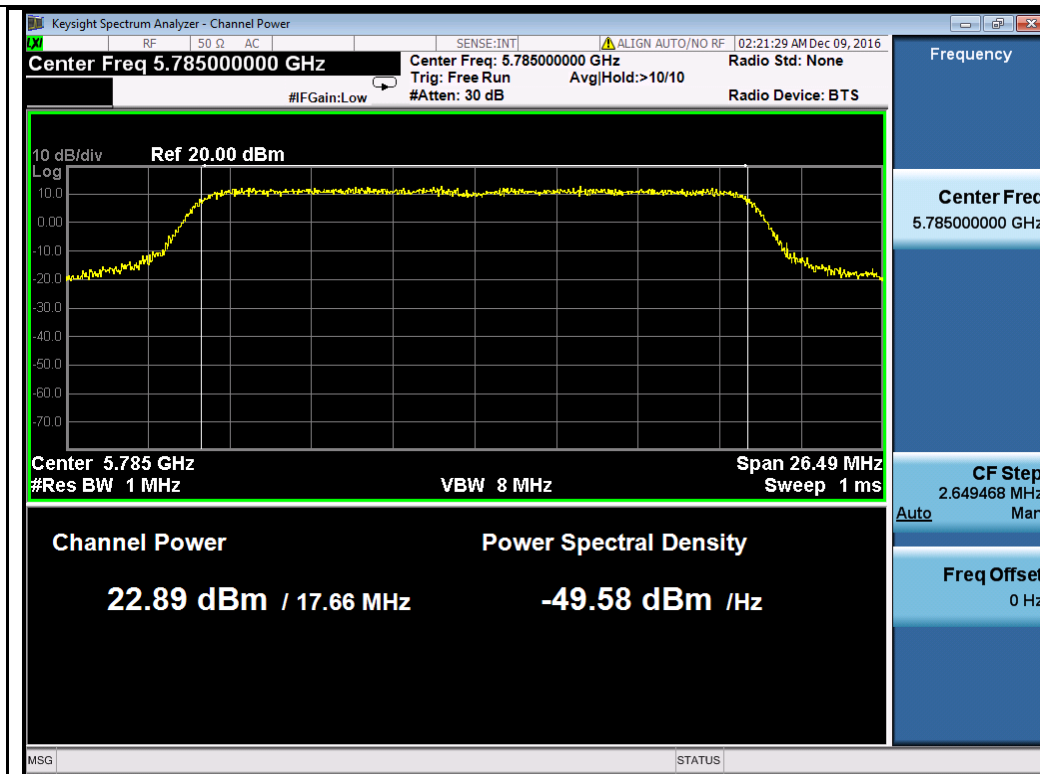
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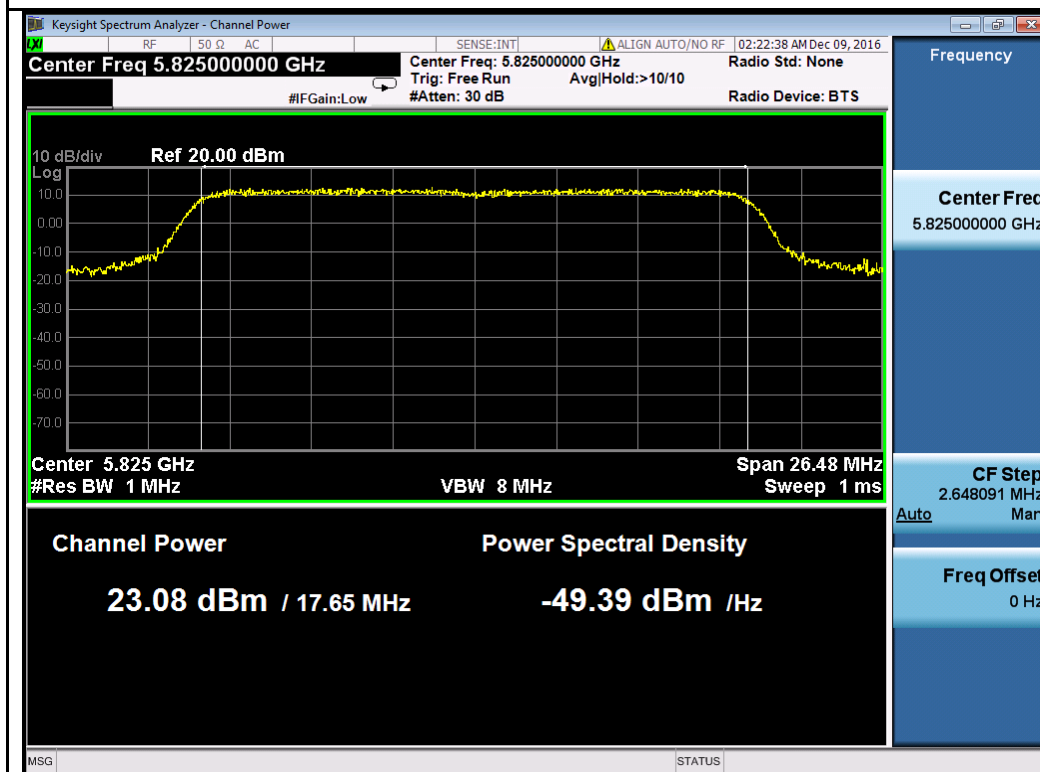
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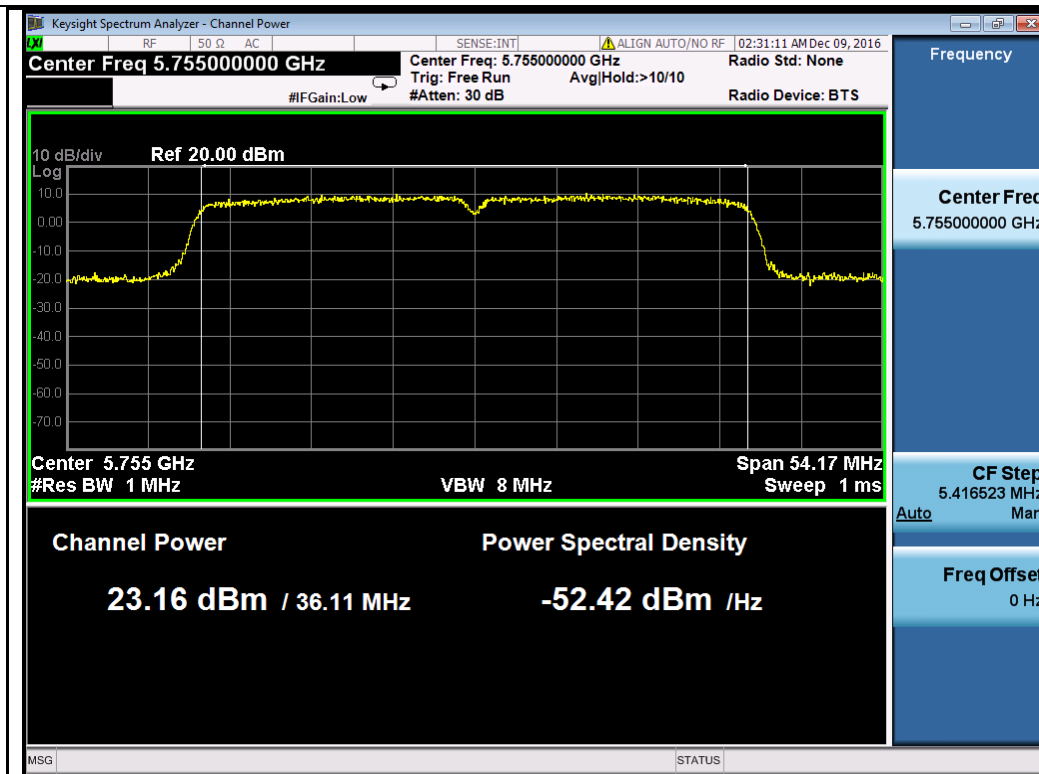
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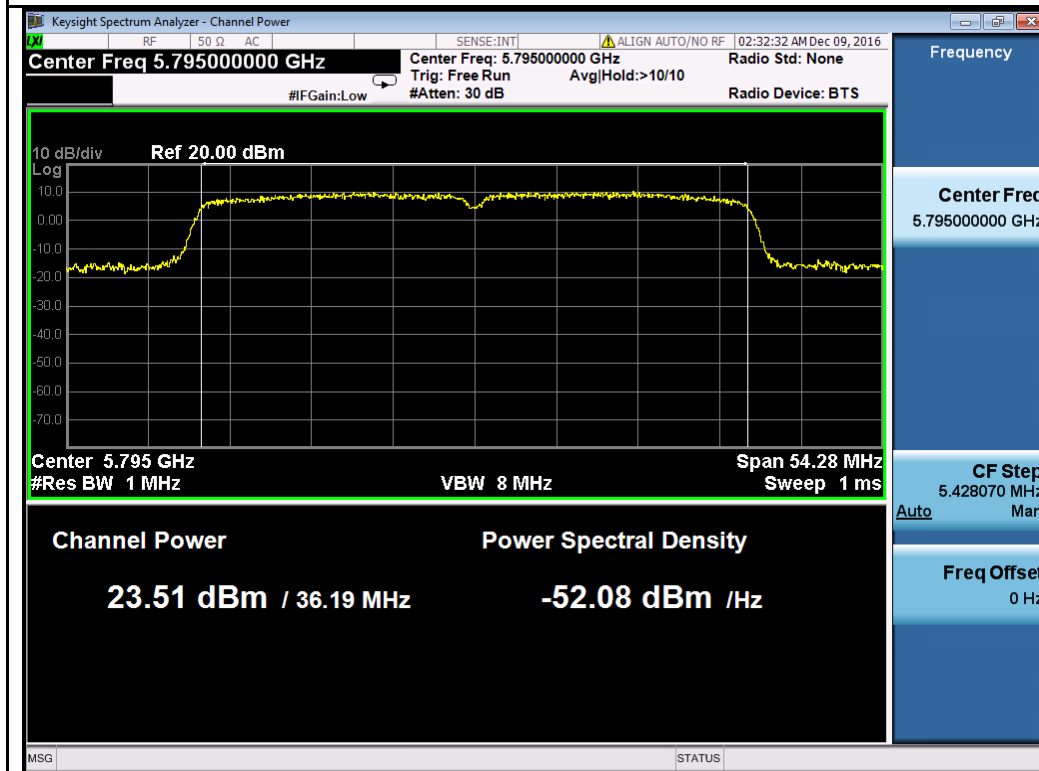
802.11n-HT20 5785M



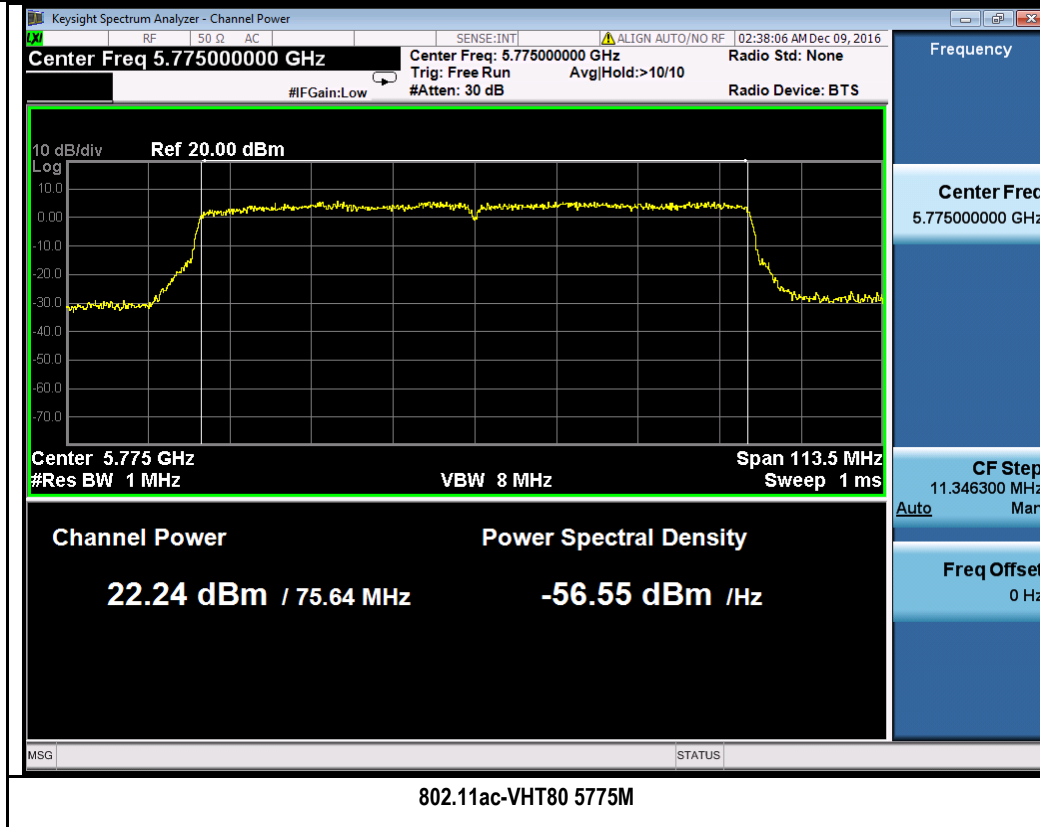
802.11n-HT20 5825M



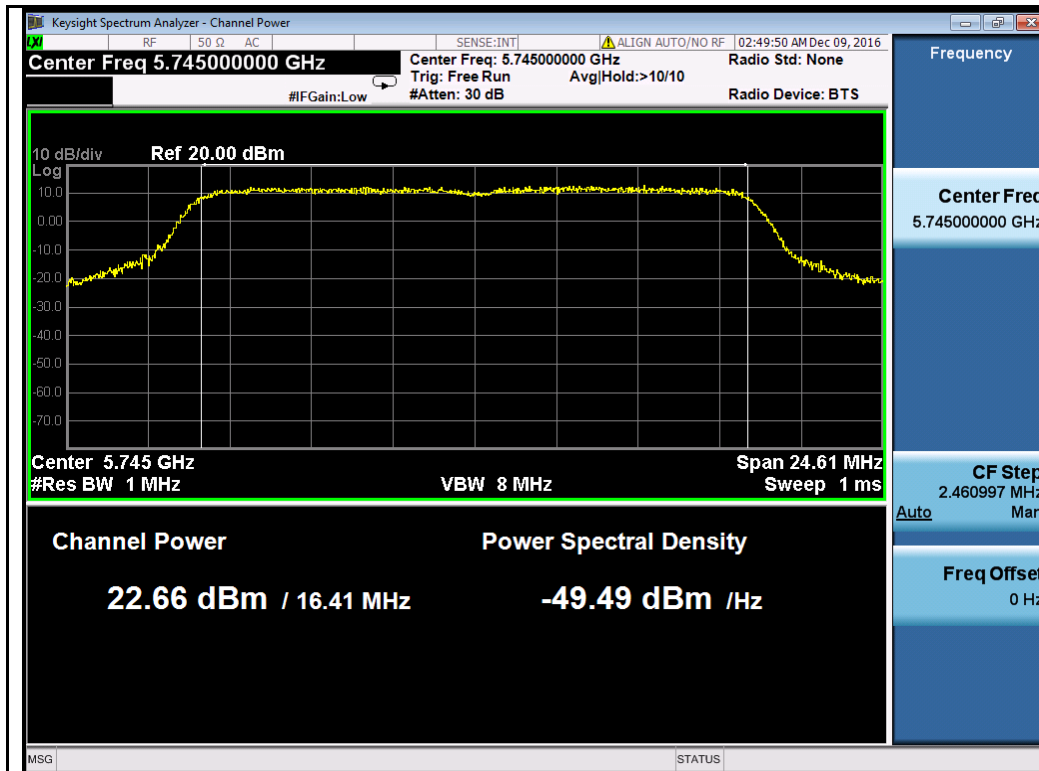
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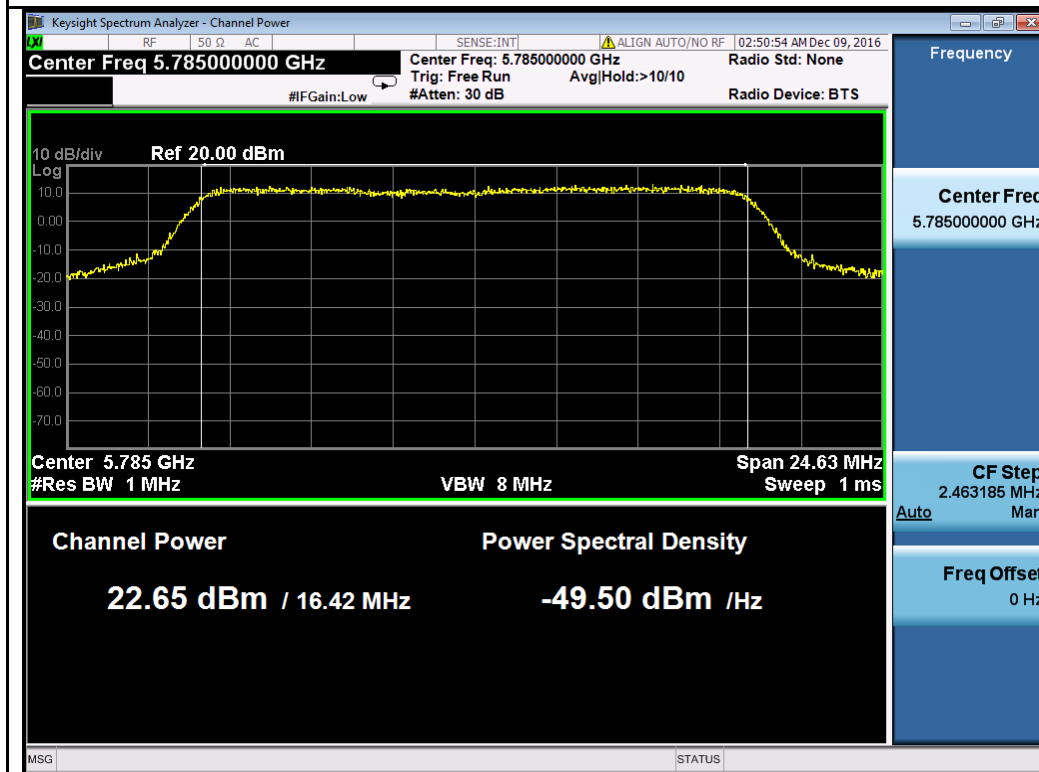
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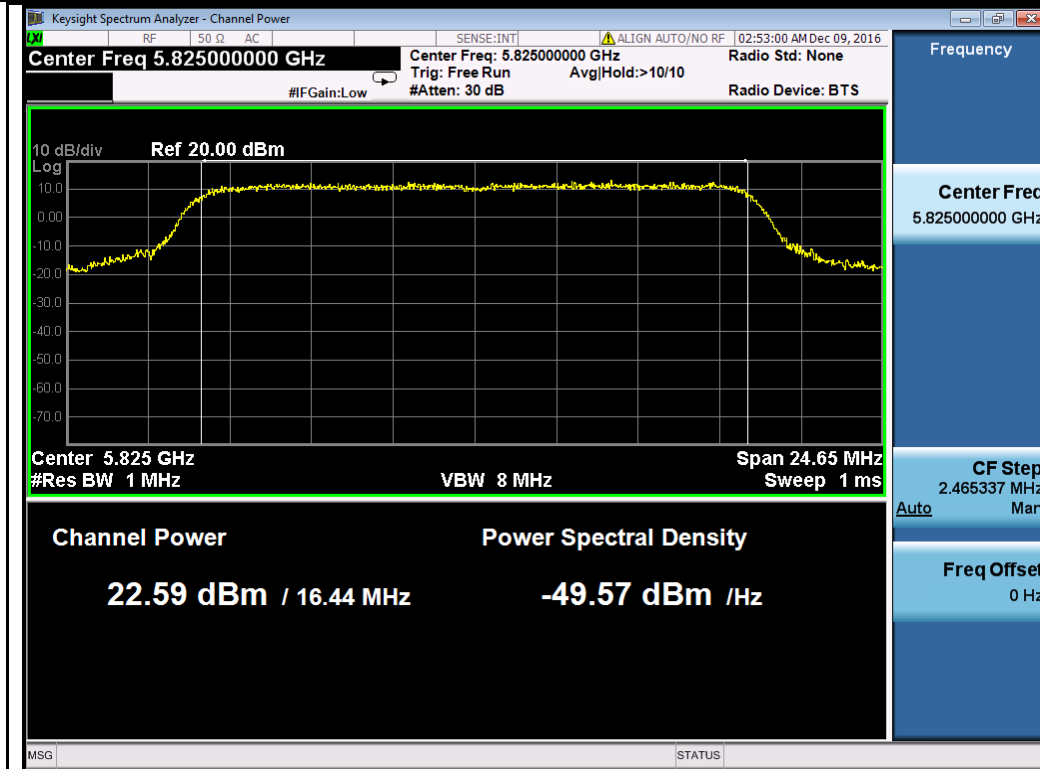
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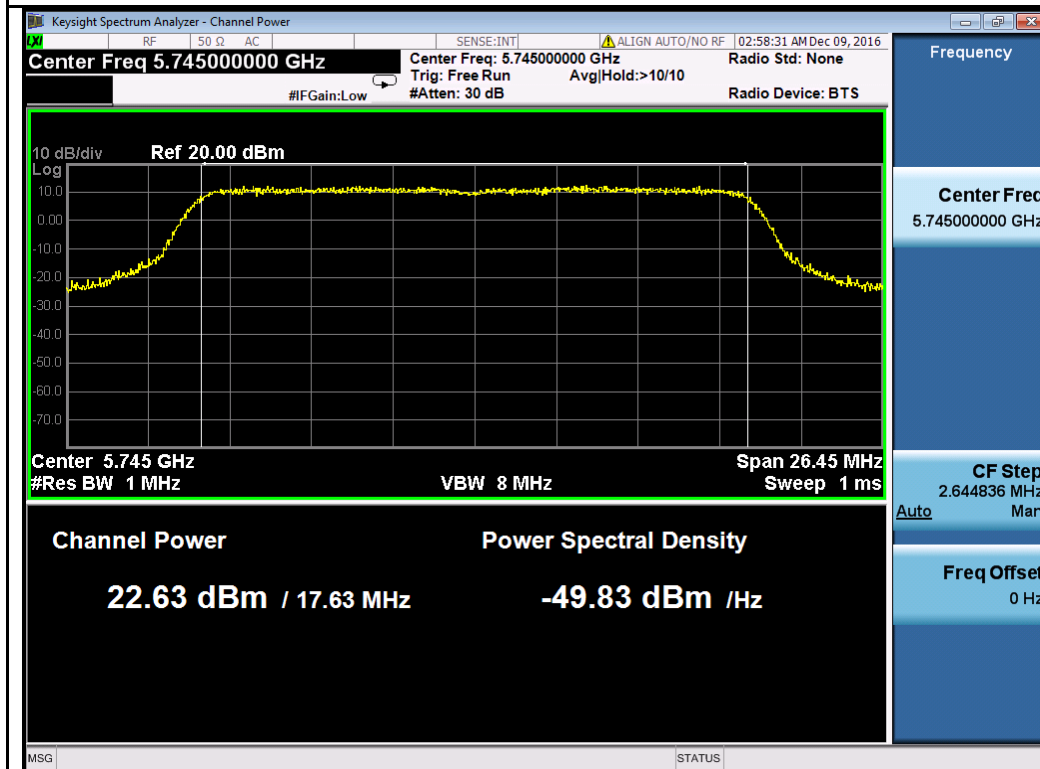
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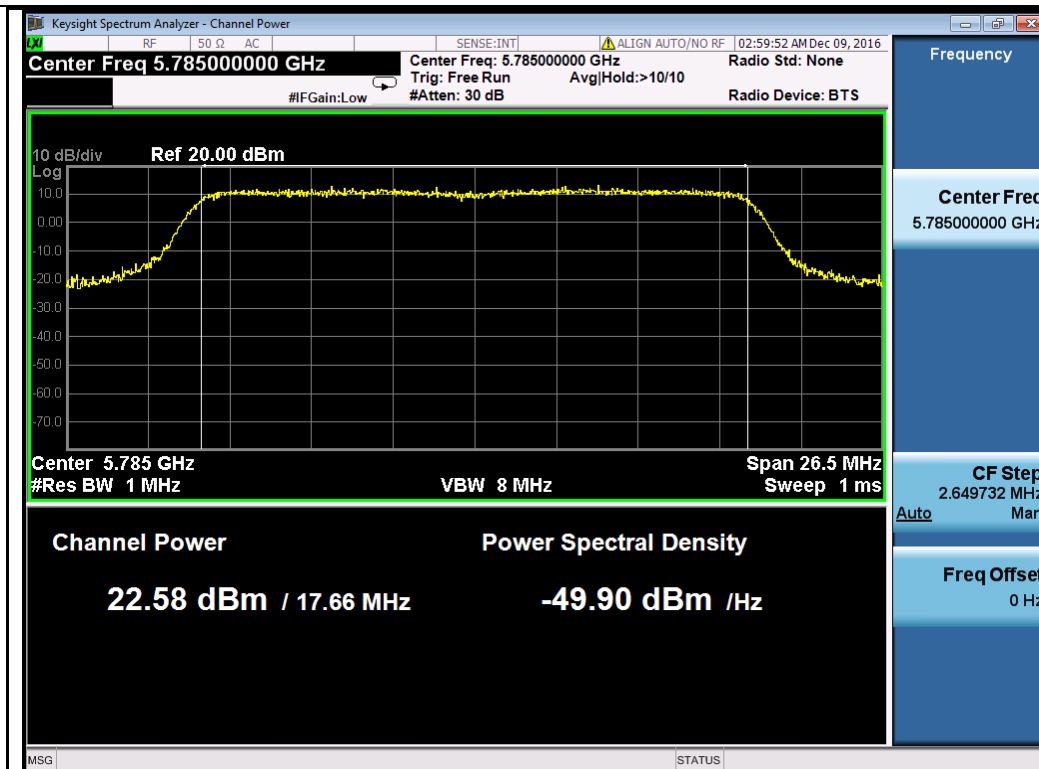
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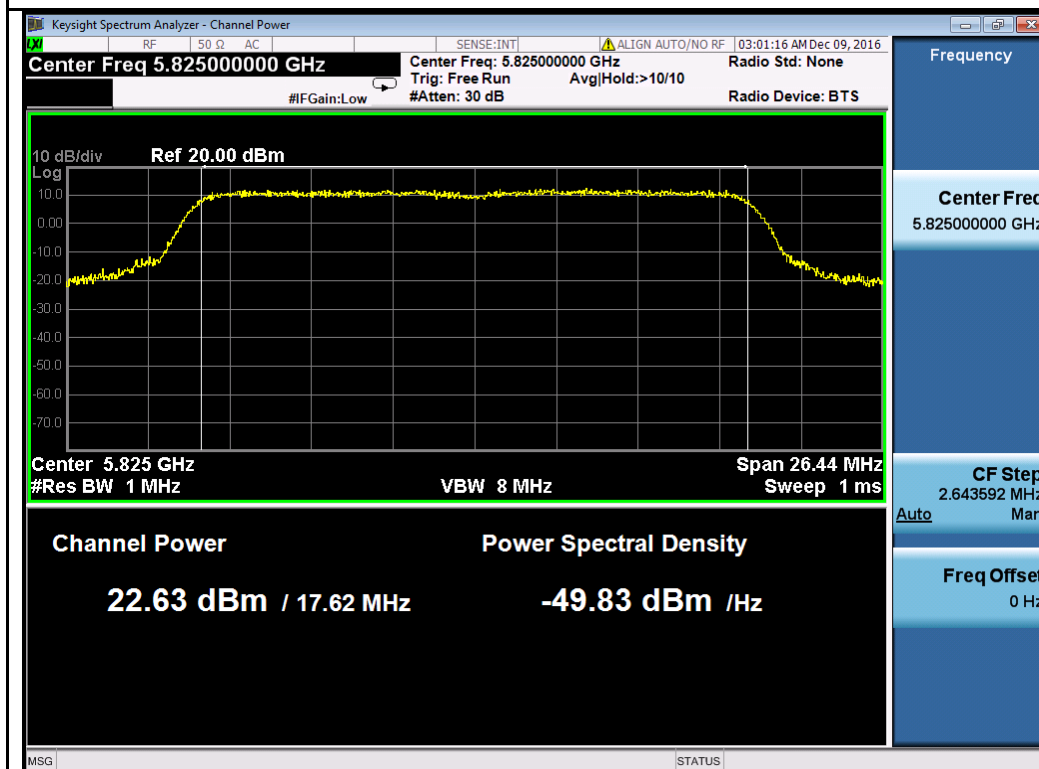
802.11a-5825M



802.11n-HT20 5745M



802.11n-HT20 5785M



802.11n-HT20 5825M