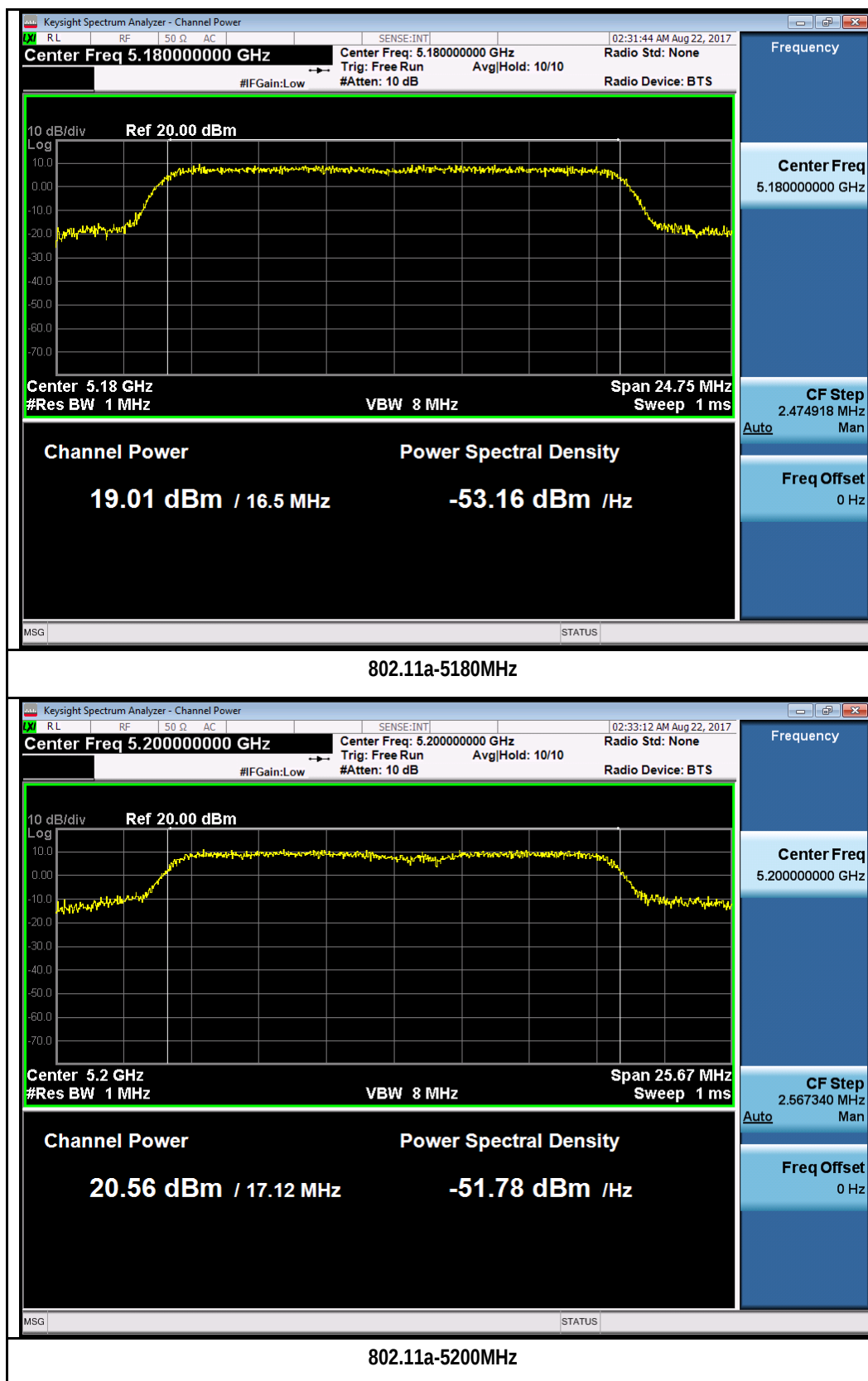
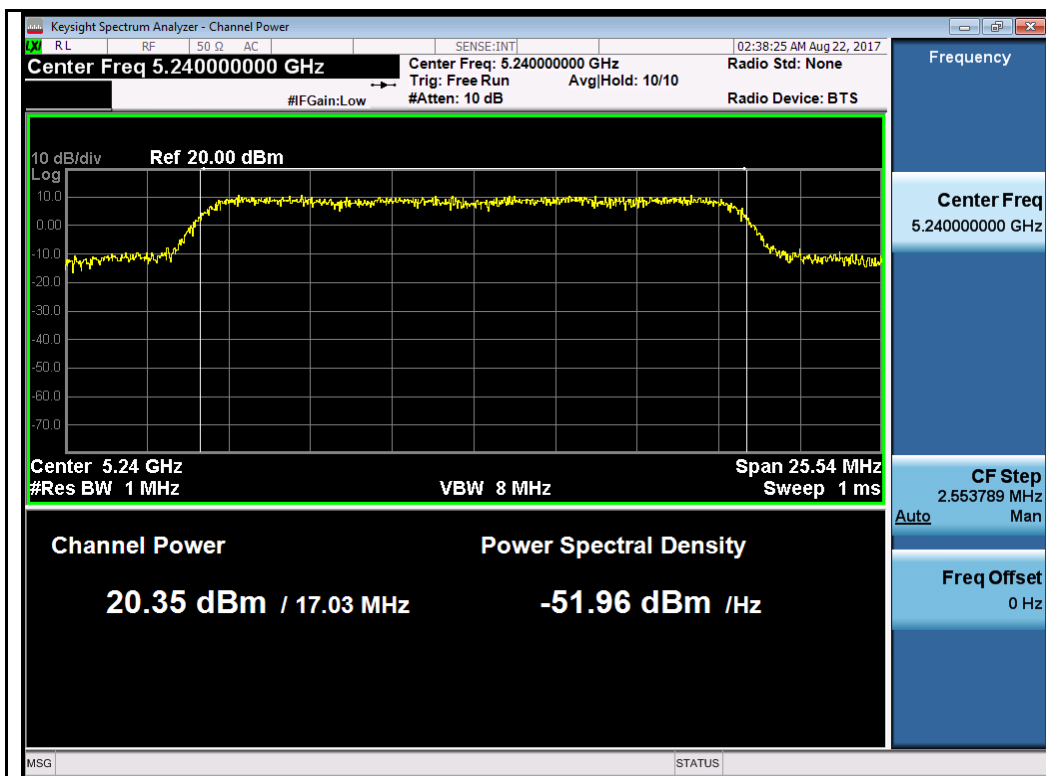


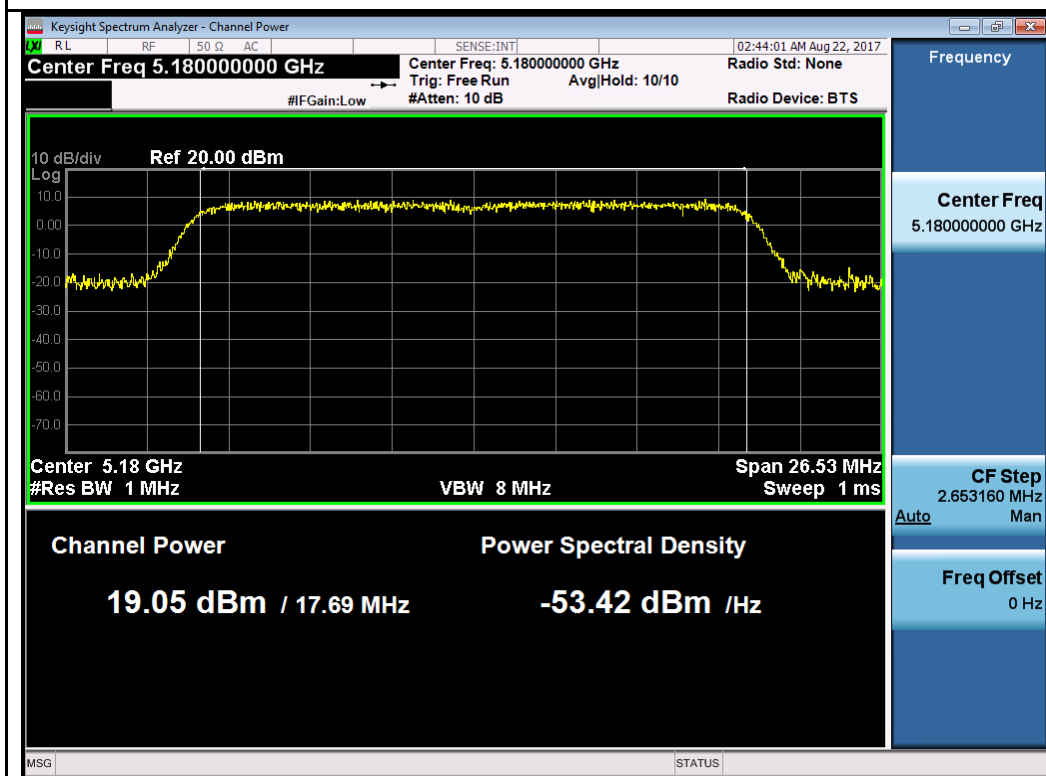
Test Plot for W52:

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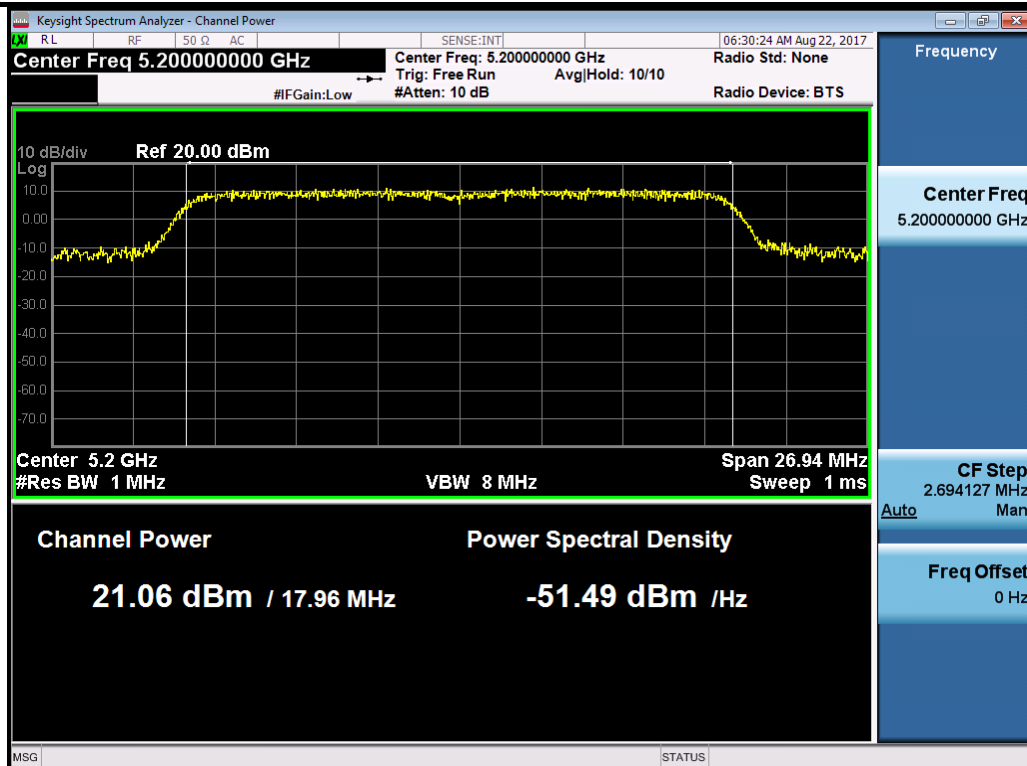




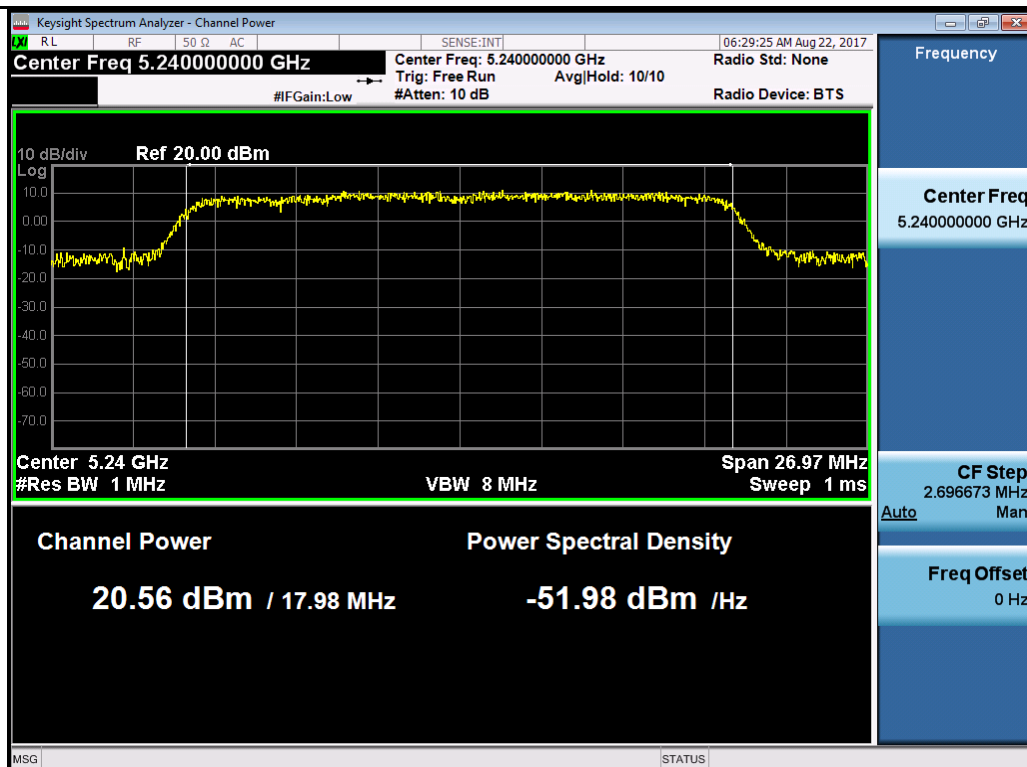
802.11a-5240MHz



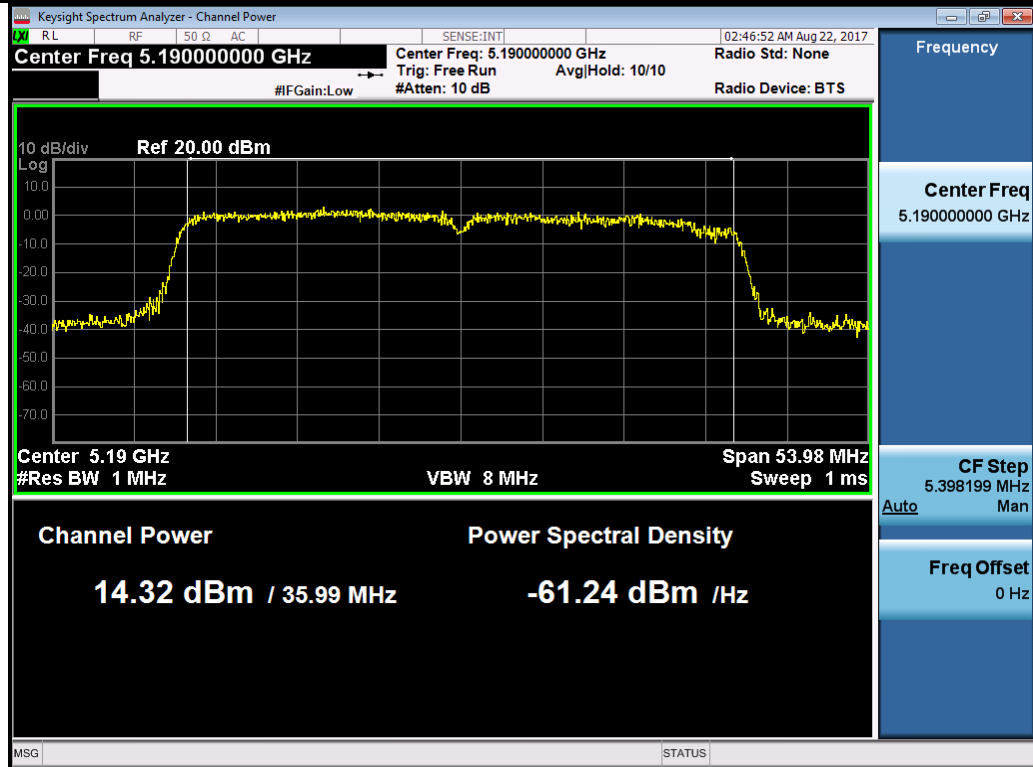
802.11n-HT20-5180MHz



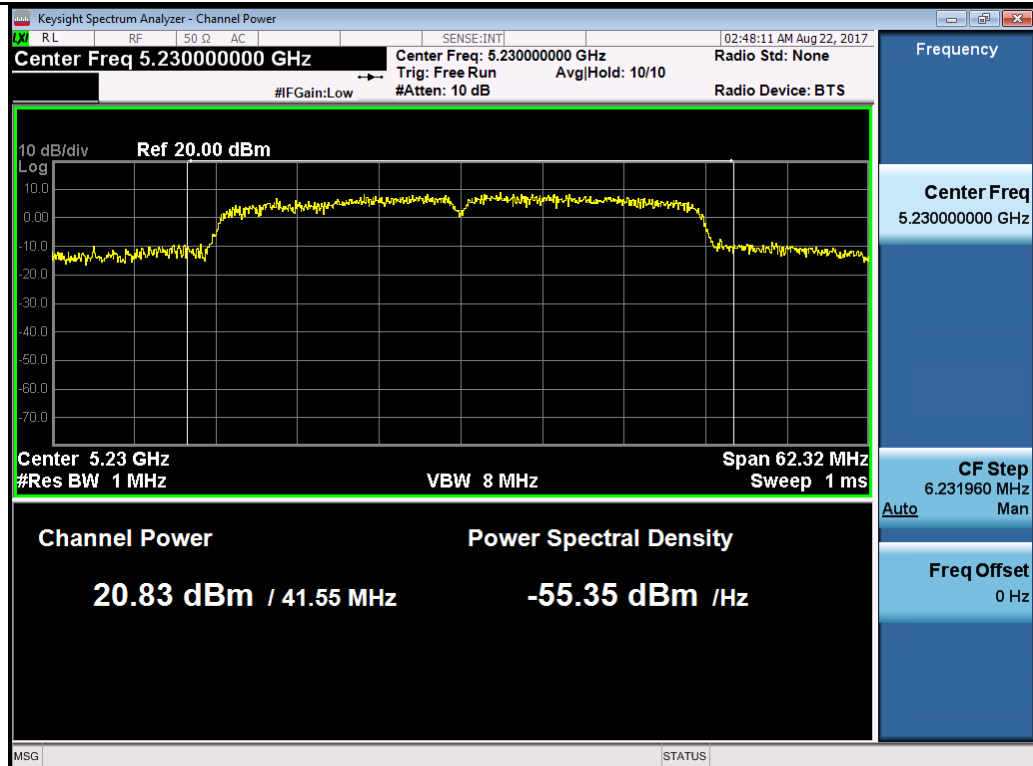
802.11n-HT20-5200MHz



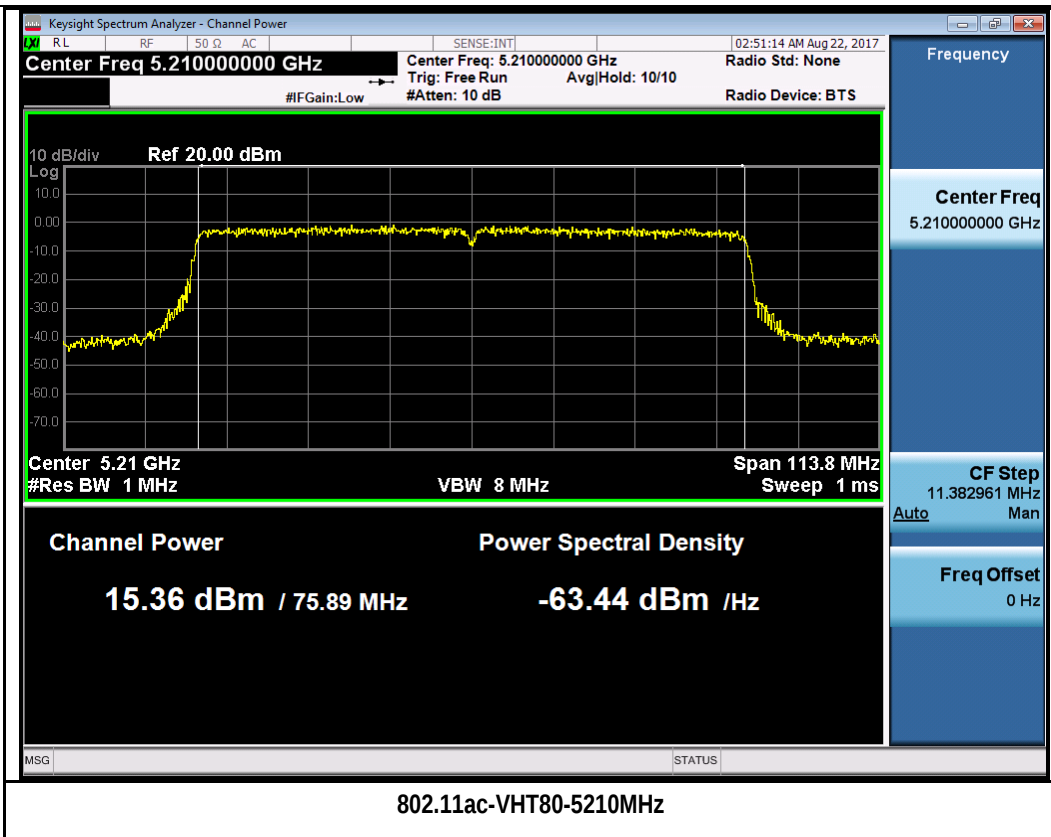
802.11n-HT20-5240MHz



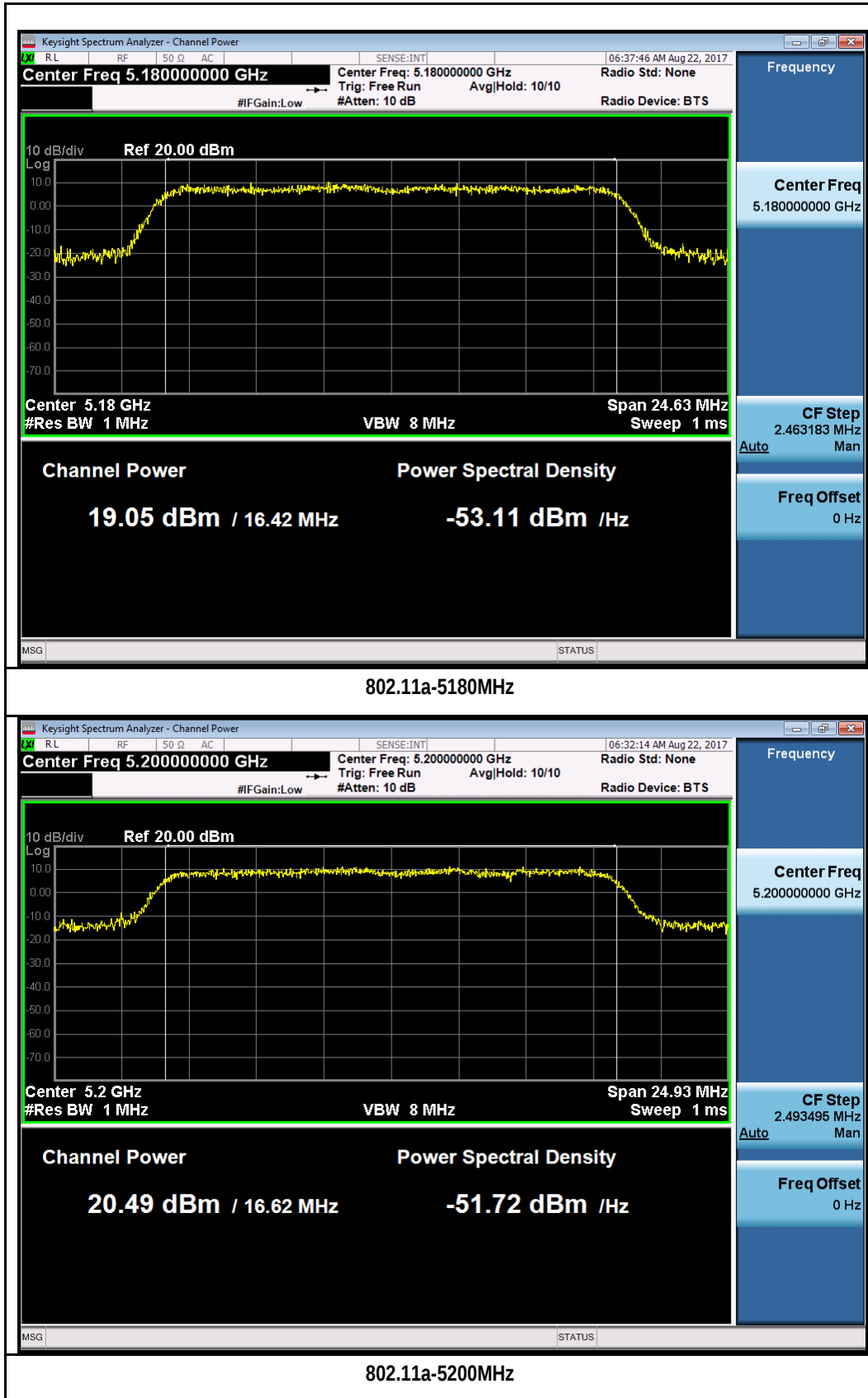
802.11n-HT40-5190MHz

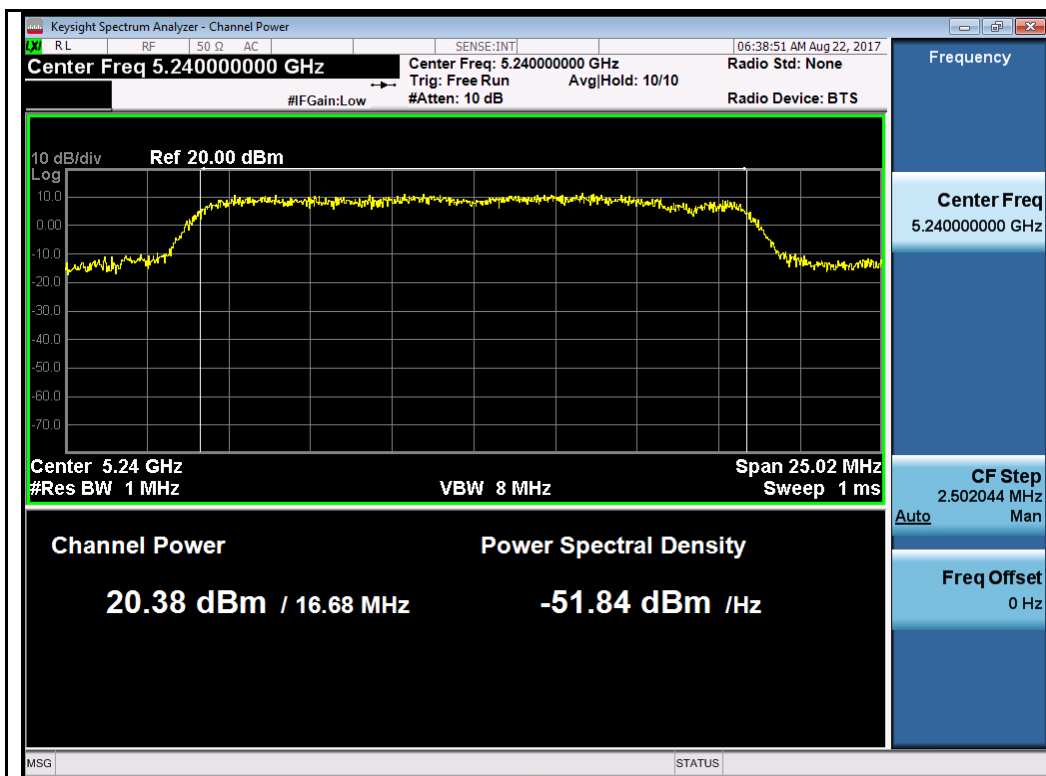


802.11n-HT40-5230MHz

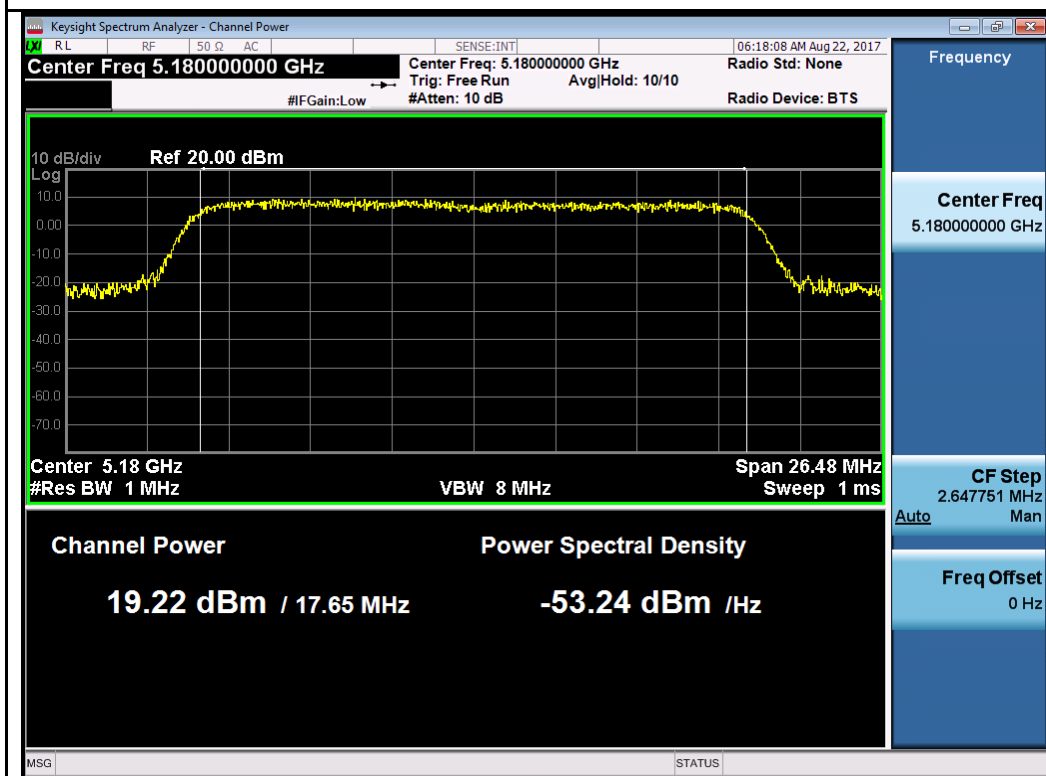


Chain 1:

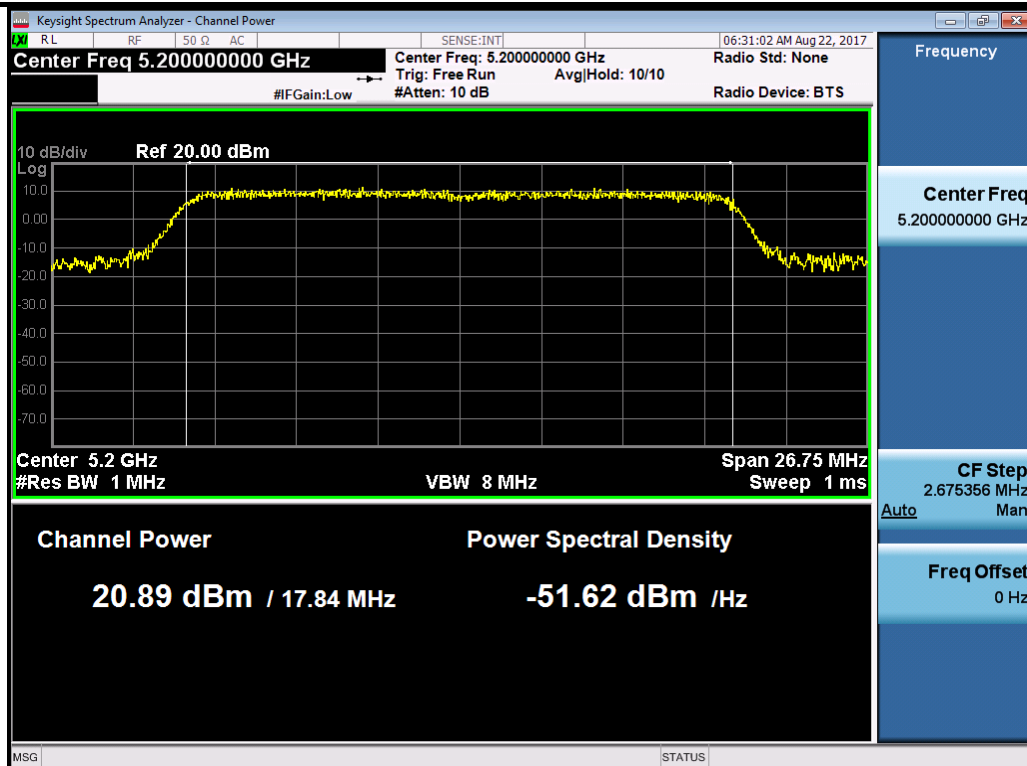




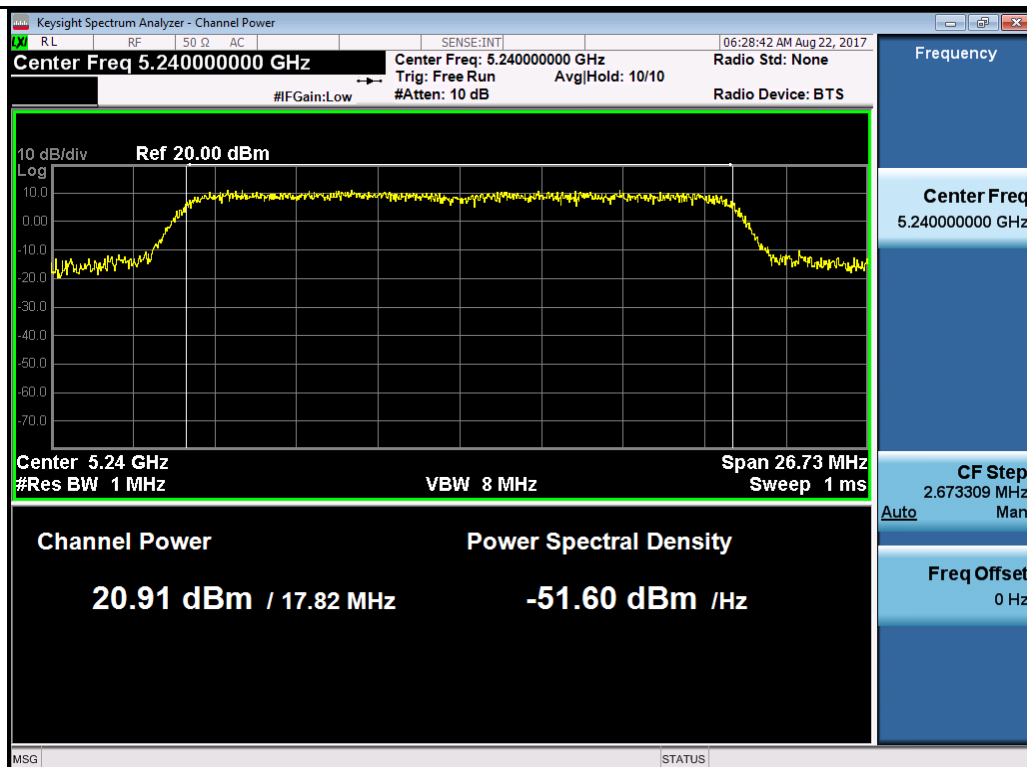
802.11a-5240MHz



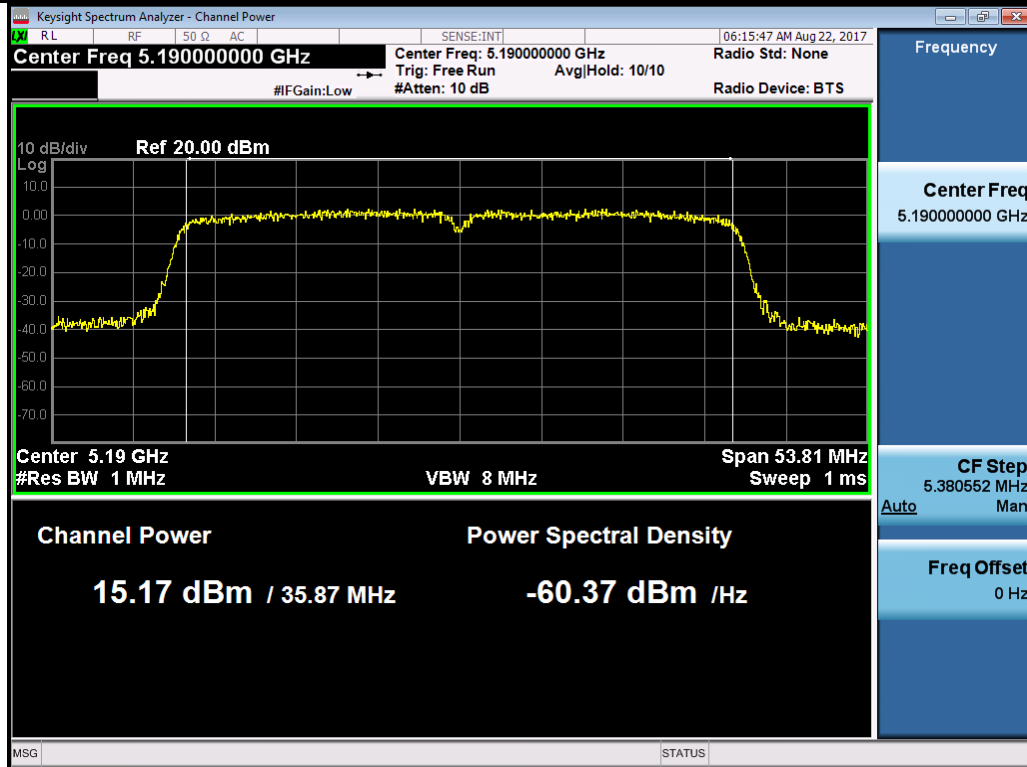
802.11n-HT20-5180MHz



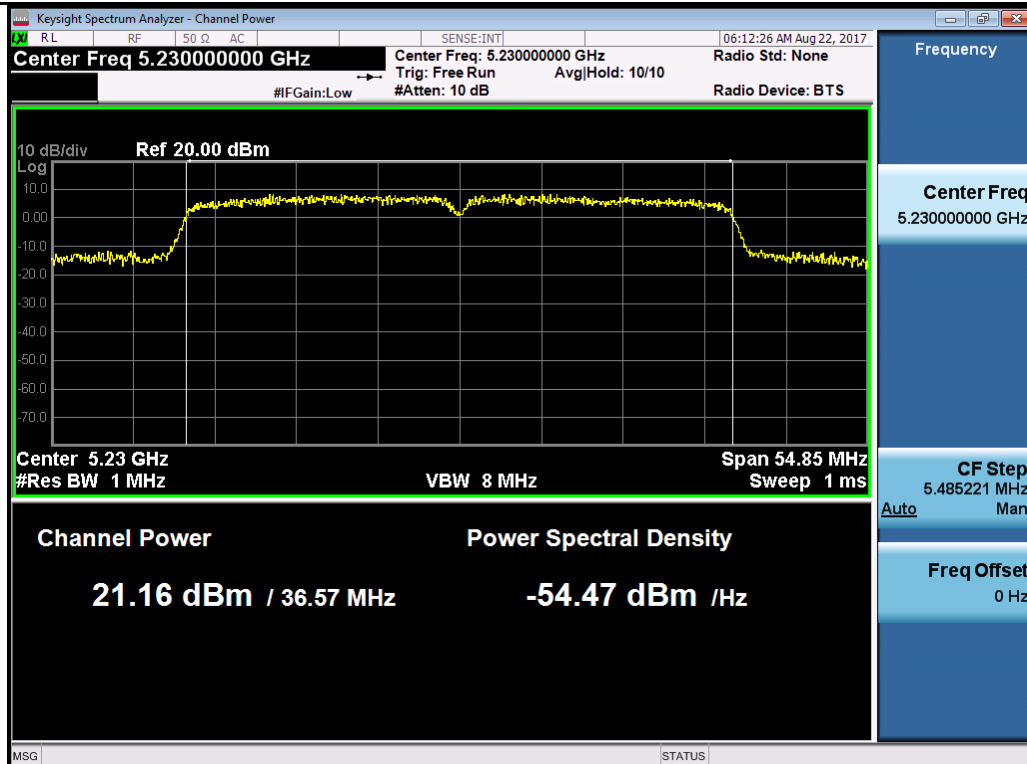
802.11n-HT20-5200MHz



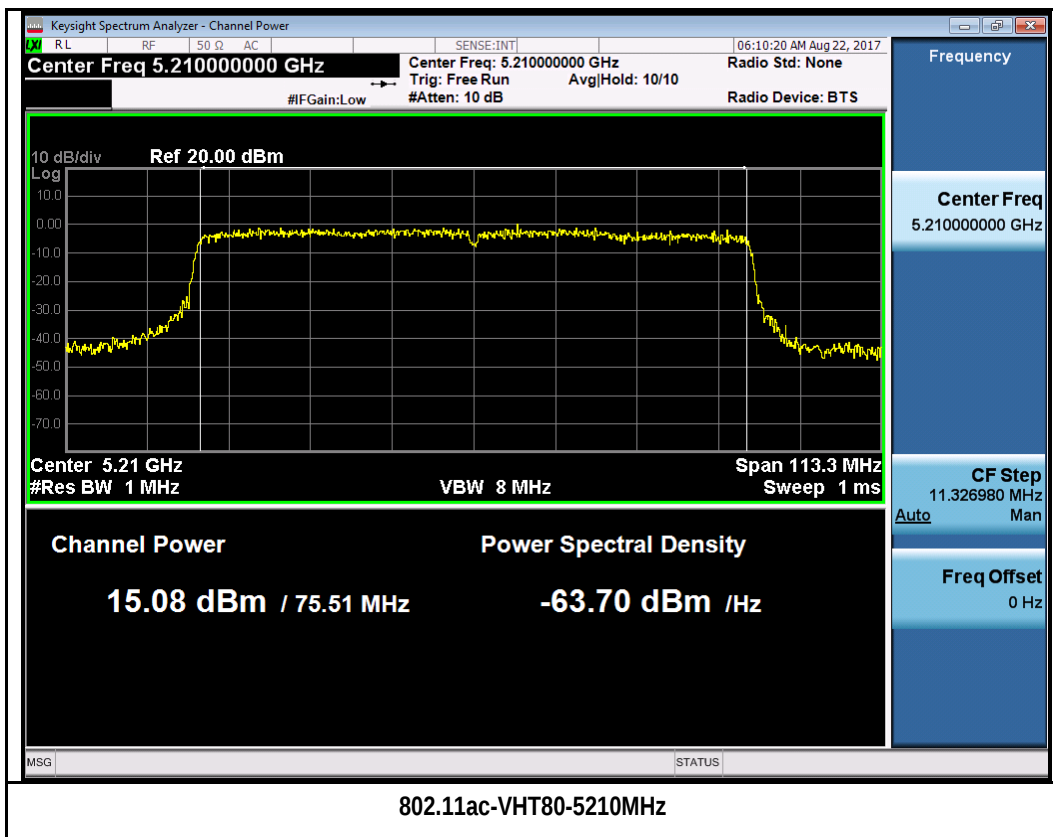
802.11n-HT20-5240MHz



802.11n-HT40-5190MHz

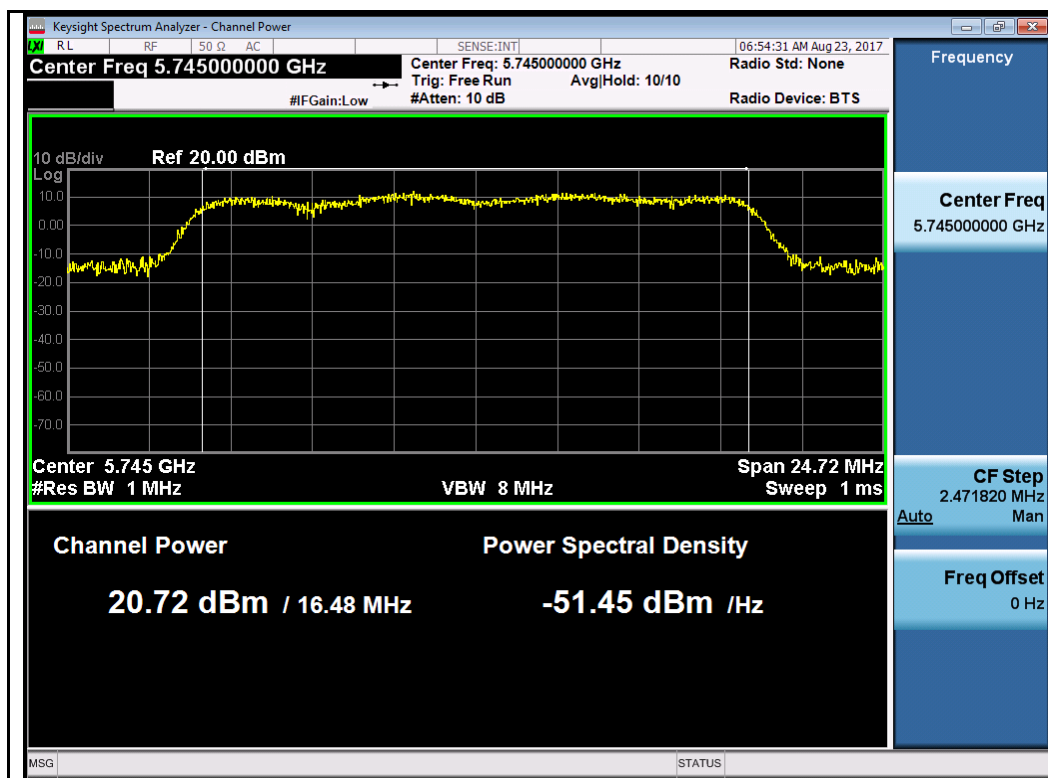


802.11n-HT40-5230MHz

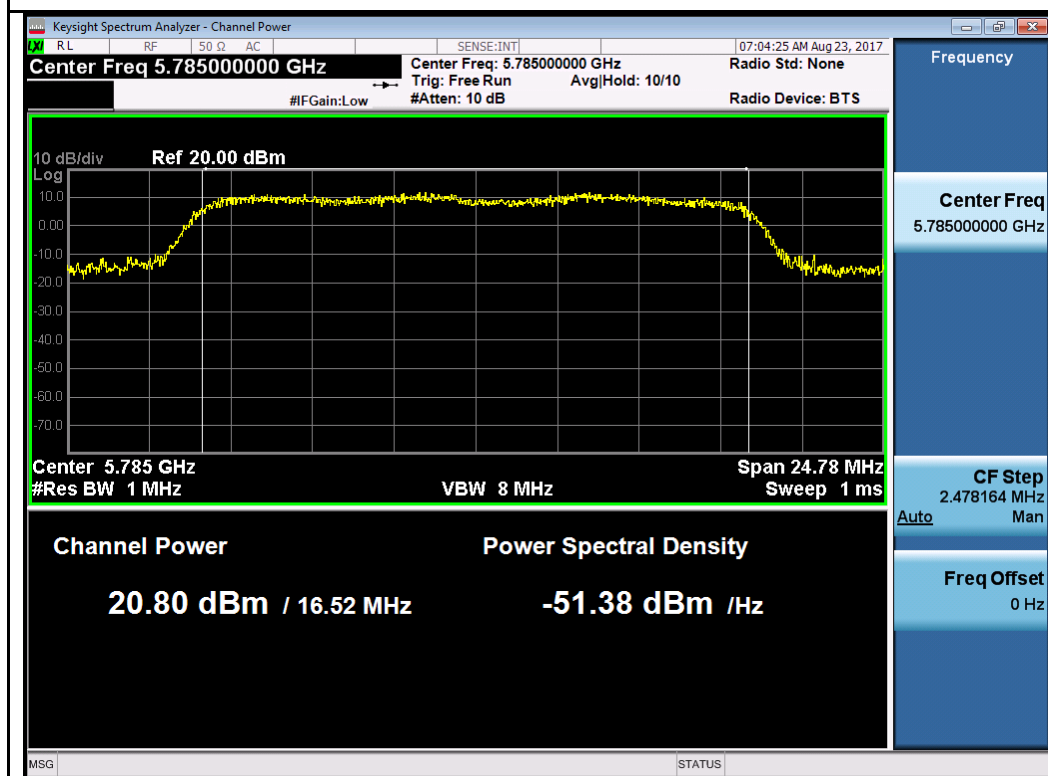


Test Plot for W58:

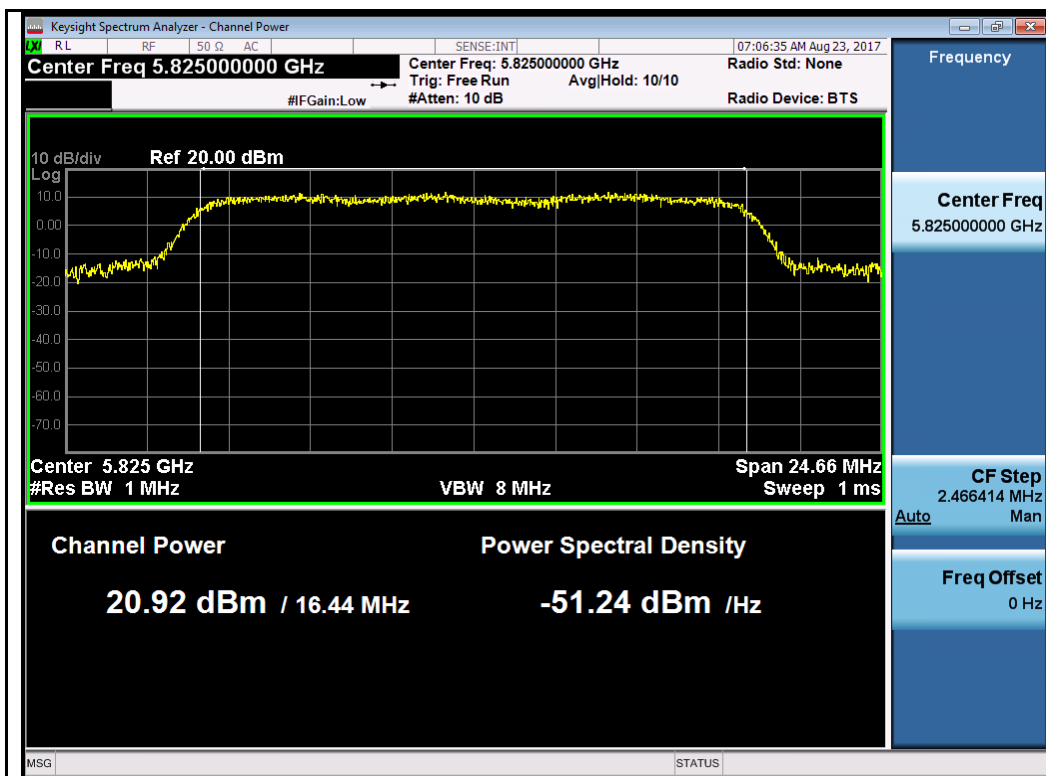
Chain 0:



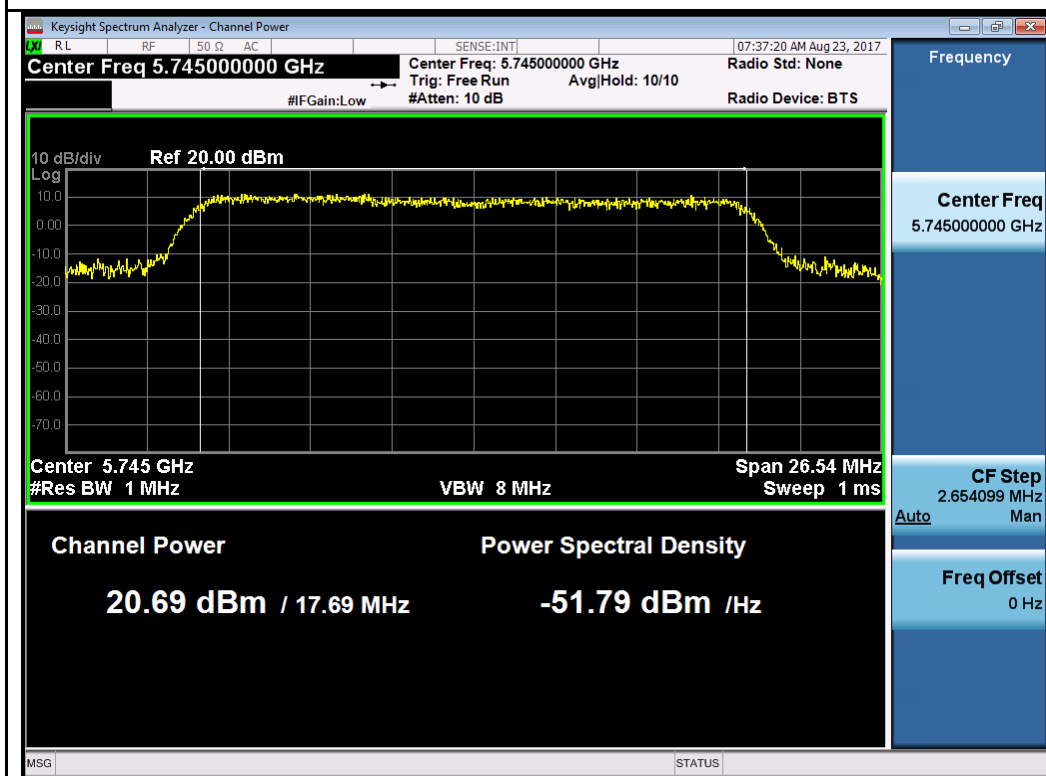
802.11a-5745MHz



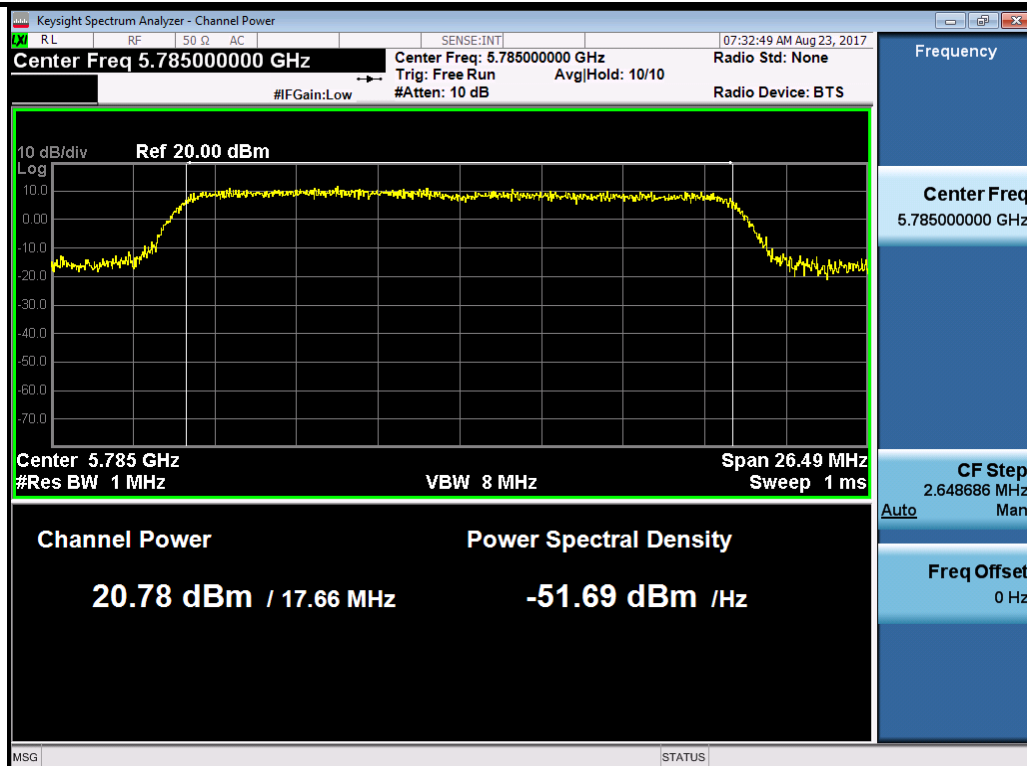
802.11a-5785MHz



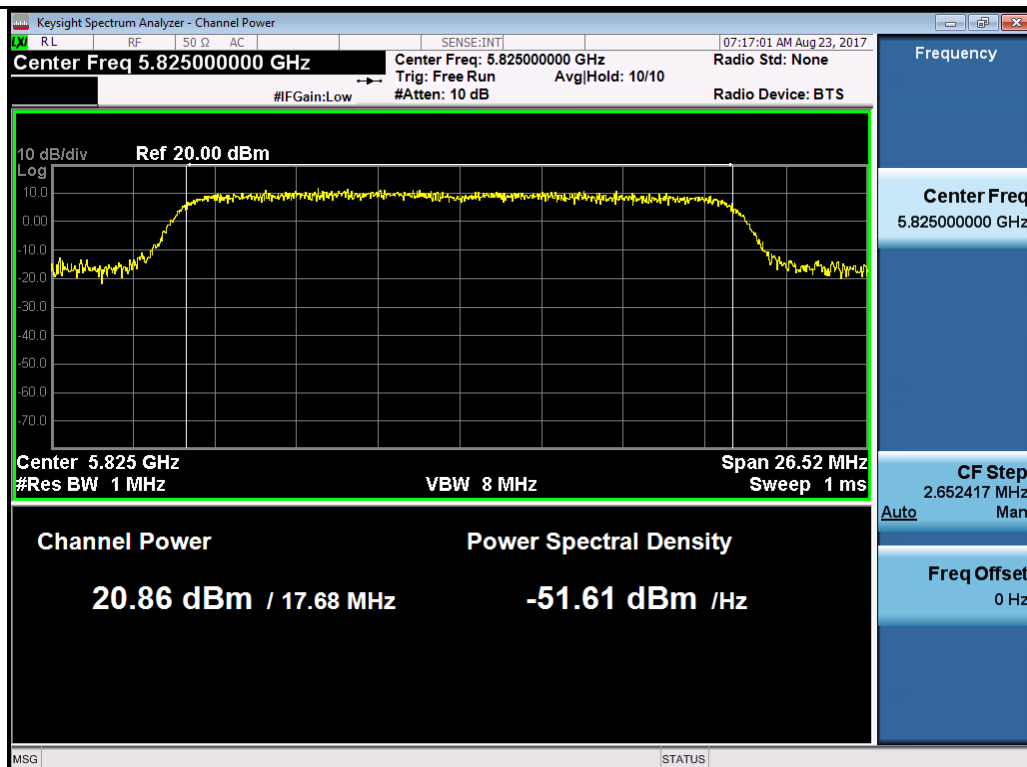
802.11a-5825MHz



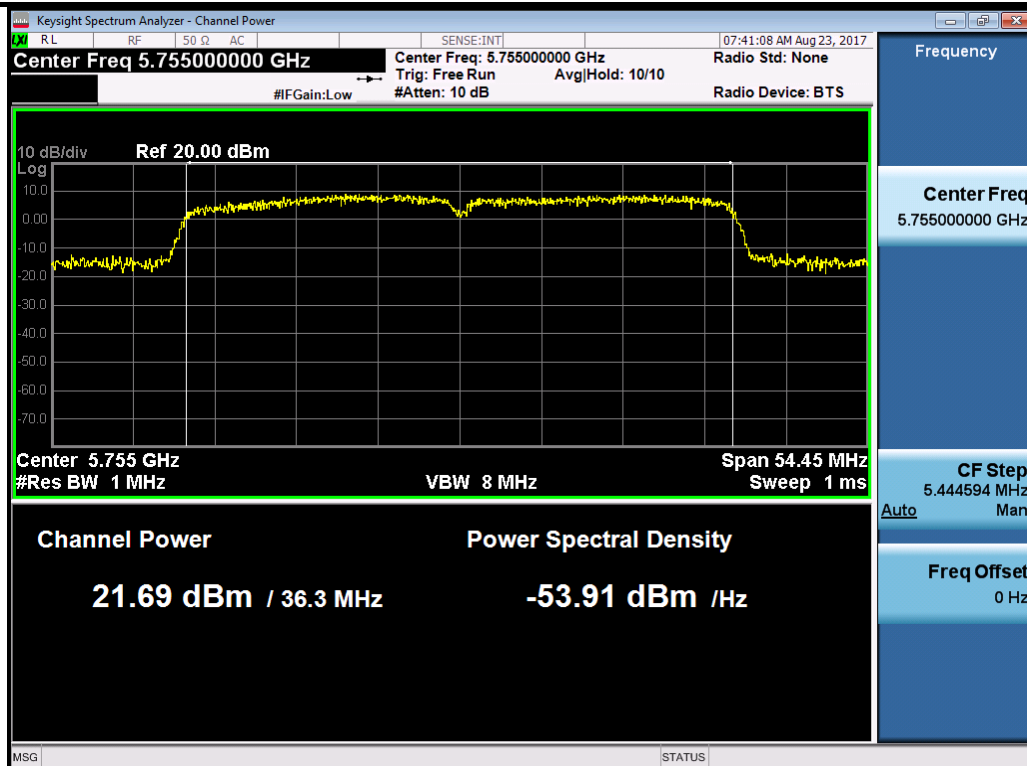
802.11n-HT20-5745MHz



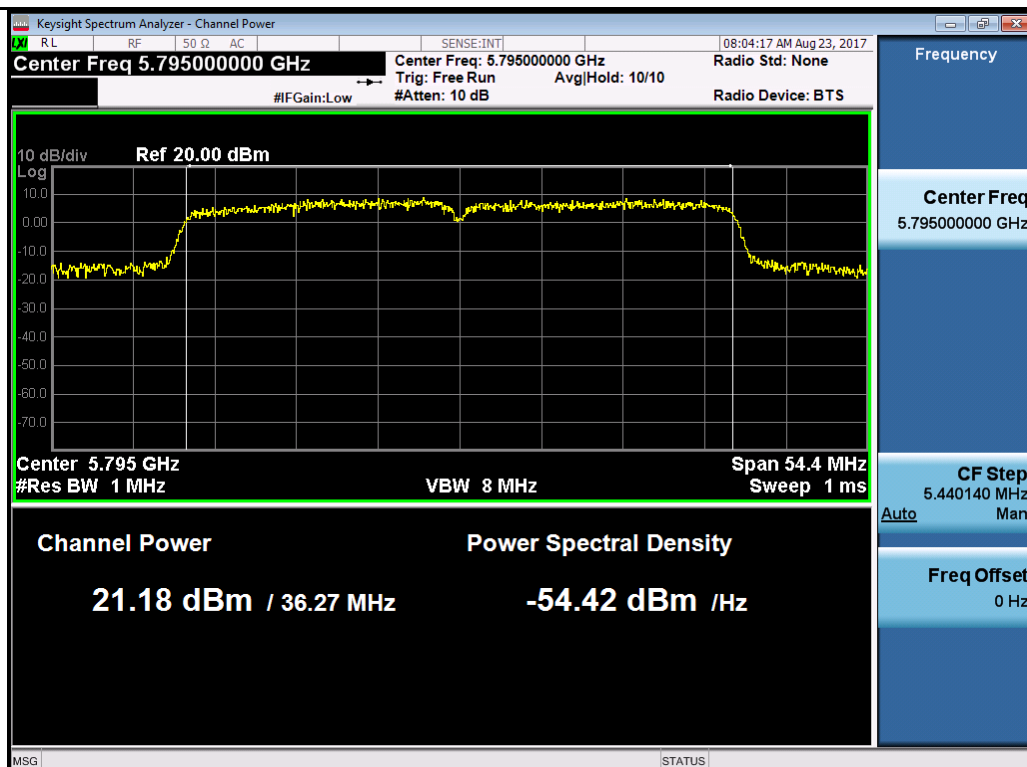
802.11n-HT20-5785MHz



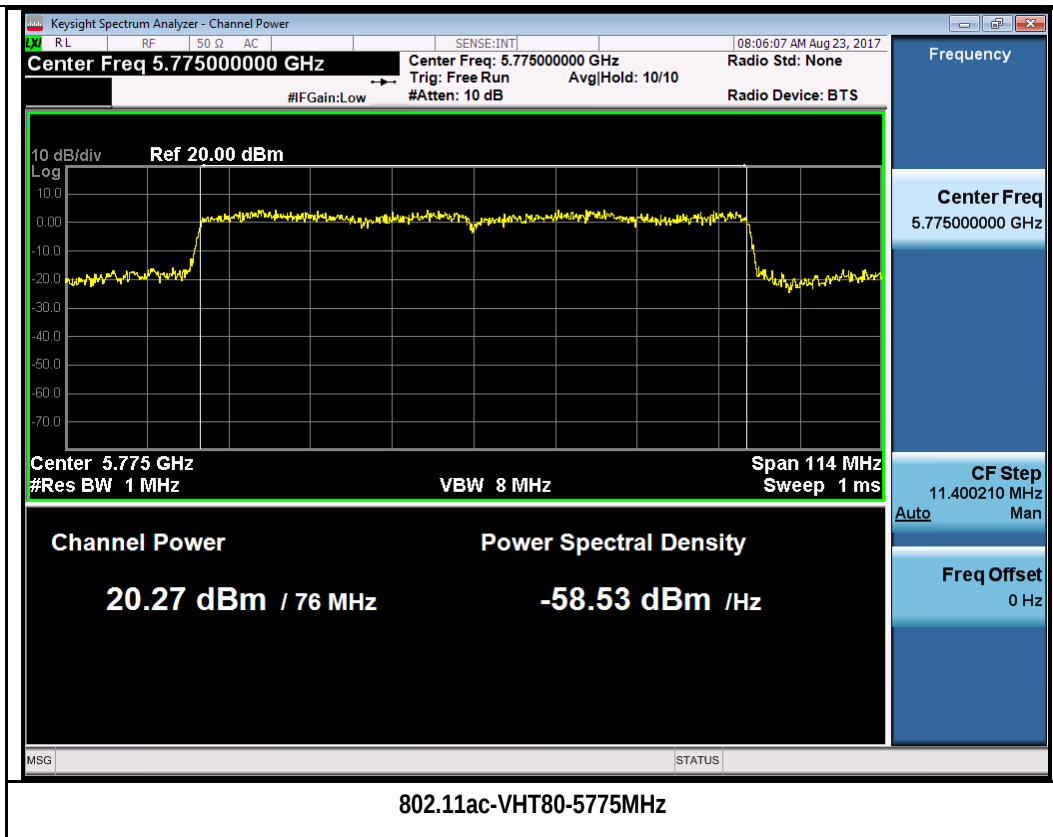
802.11n-HT20-5825MHz



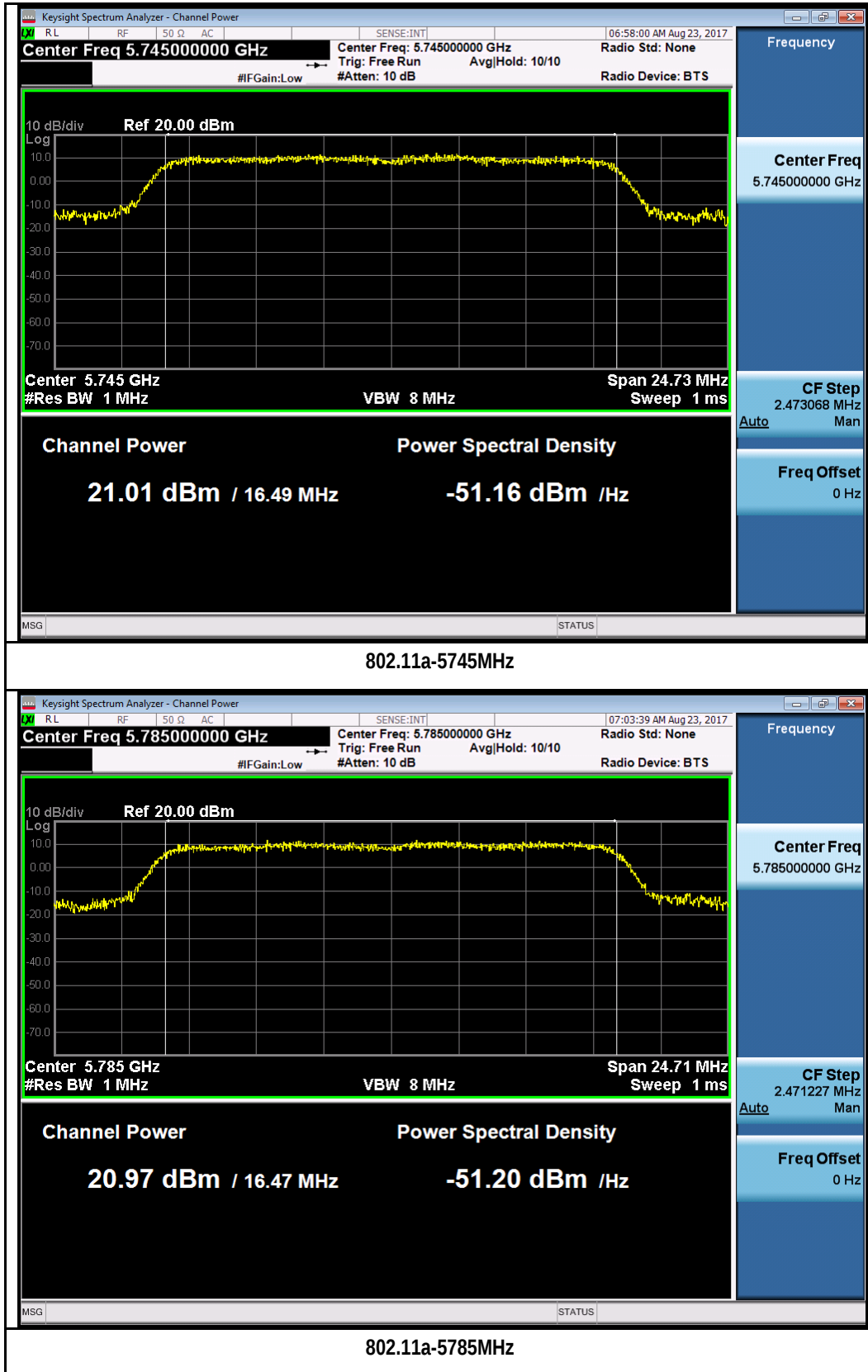
802.11n-HT40-5755MHz

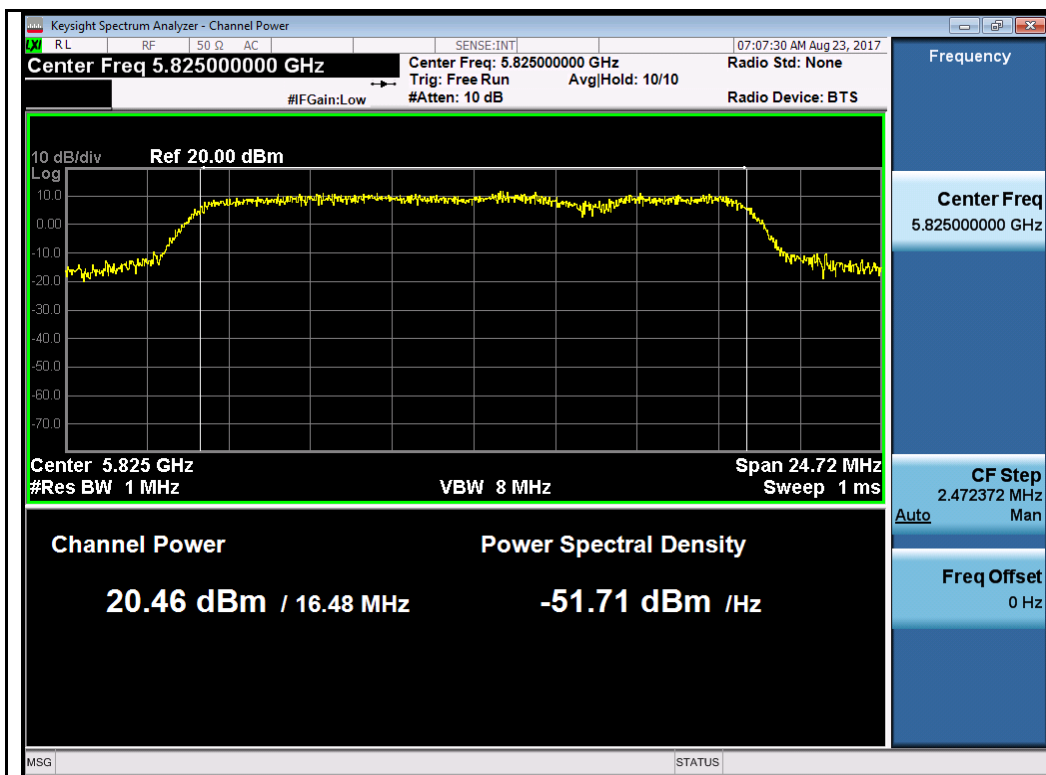


802.11n-HT40-5795MHz

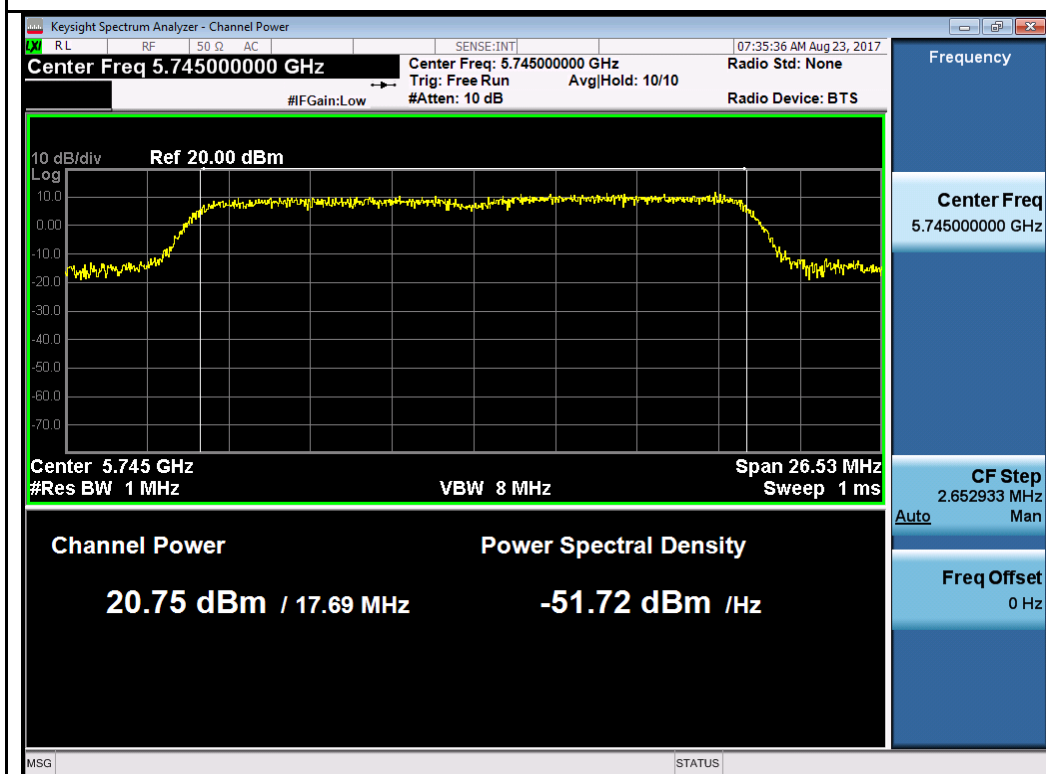


Chain 1:

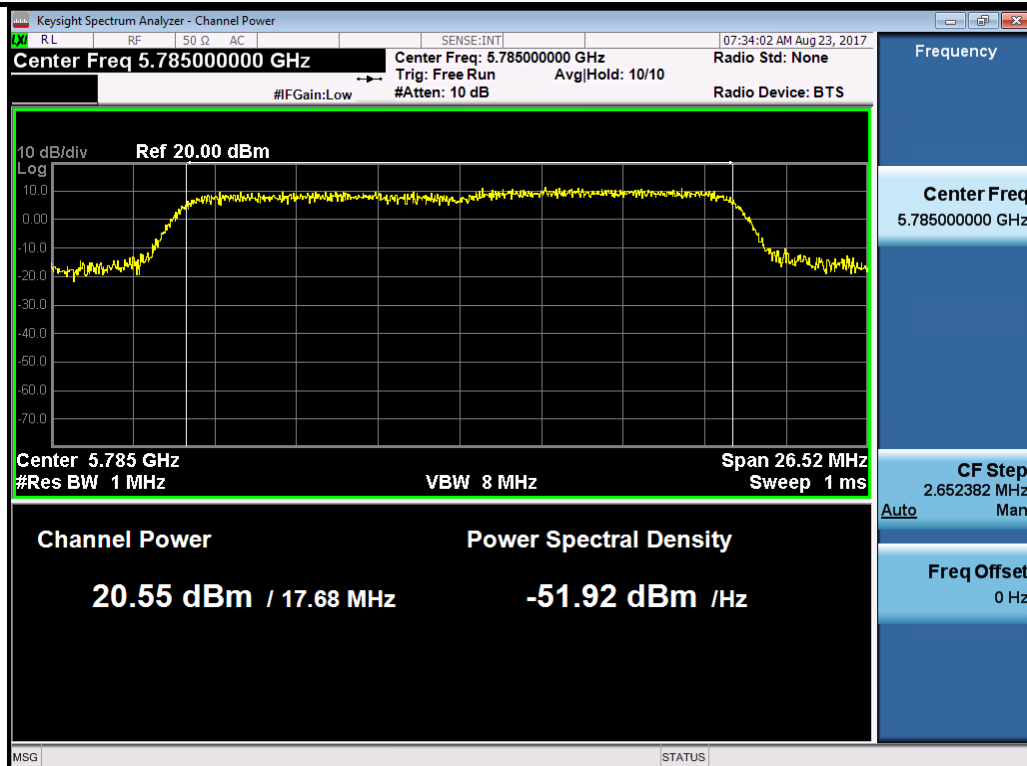




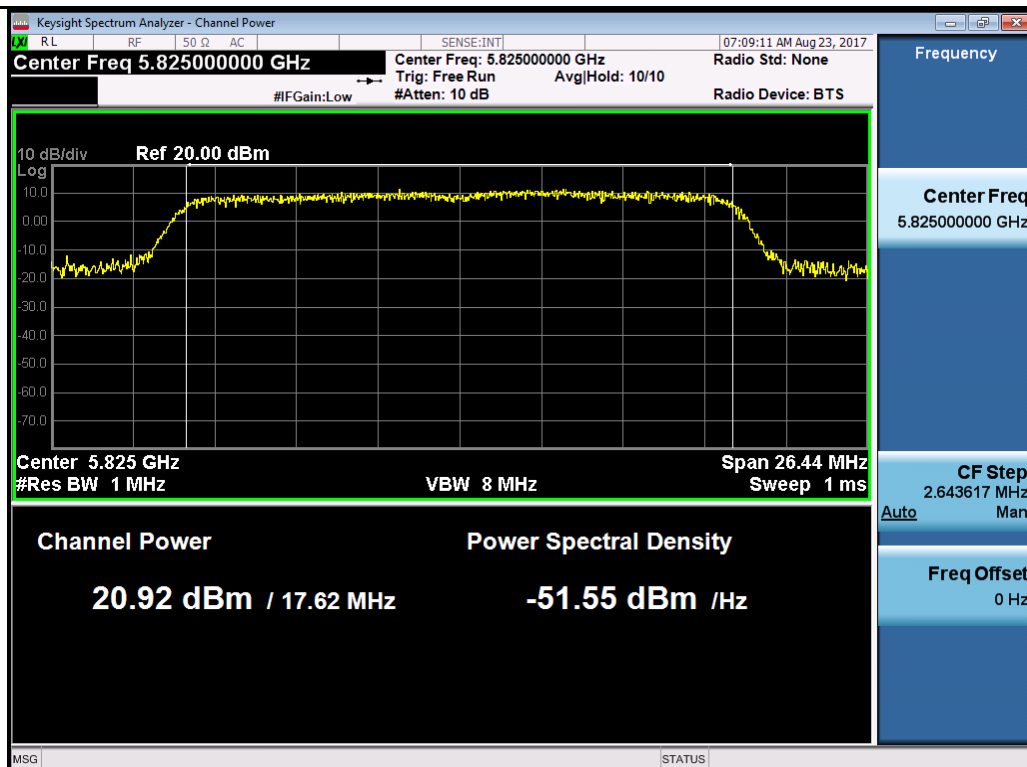
802.11a-5825MHz



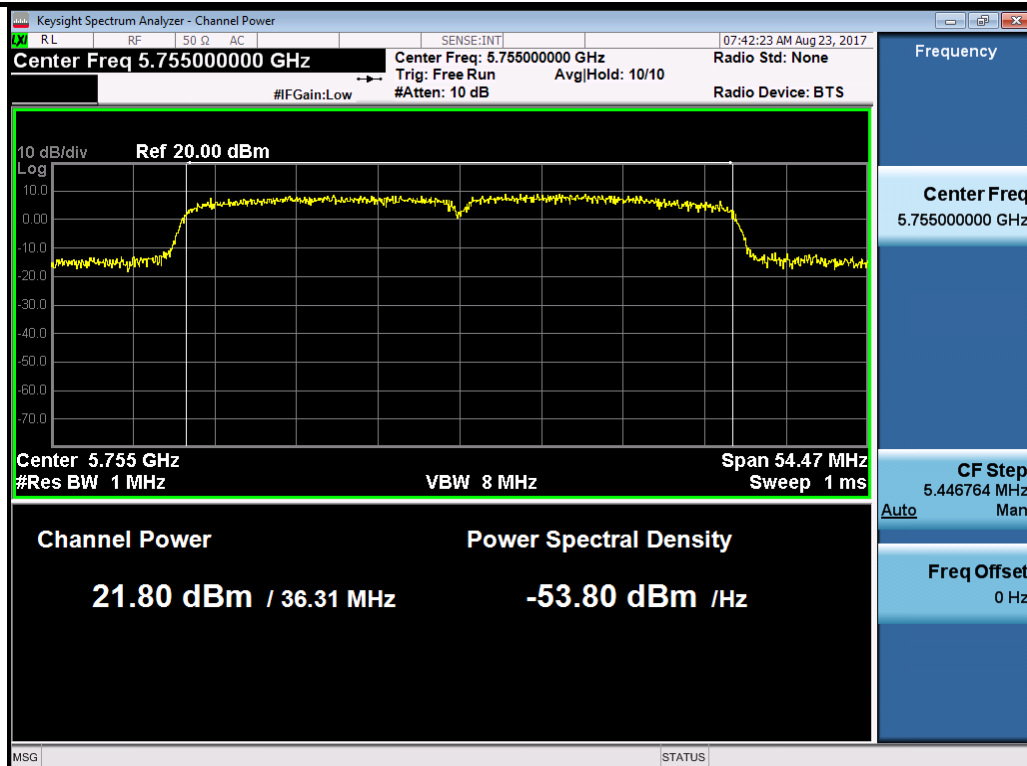
802.11n-HT20-5745MHz



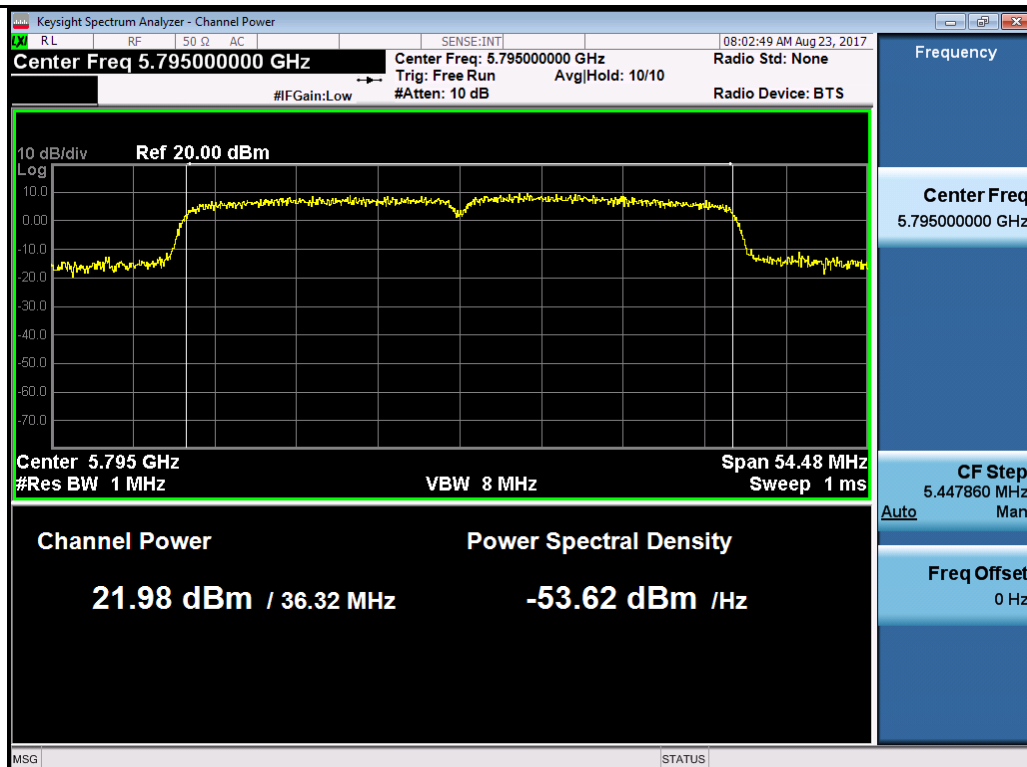
802.11n-HT20-5785MHz



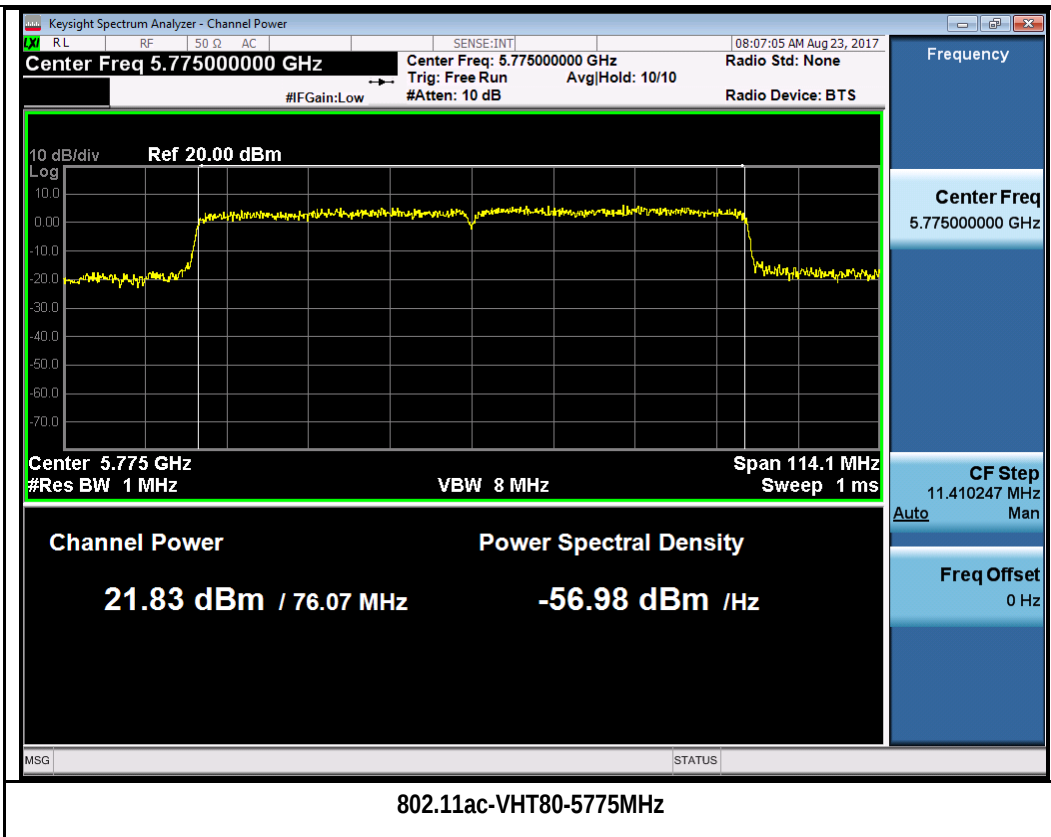
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

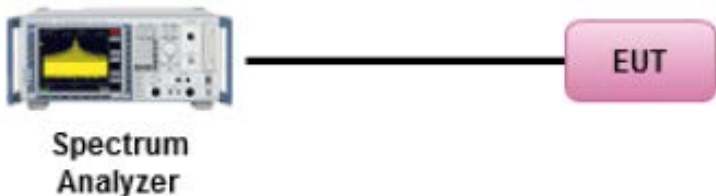


802.11n-HT40-5795MHz



10.4 Peak Spectral Density

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(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.	☒
	a)(3)	For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.	☒
Test Setup			
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1 <u>Maximum spectral density measurement procedure</u> - Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal. - Set RBW = 1 MHz - Set VBW ≥ 3 MHz - Detector = RMS. - Sweep time = auto couple. - Trace mode = max hold. - Trace average at least 100 traces in power averaging - Use the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.		
Test Date	08/21/2017-10/05/2017	Environmental condition	Temperature 22°C Relative Humidity 42% Atmospheric Pressure 1020mbar
Remark	N/A		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by CIPHER at RF test site.

PSD measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)			Limit (dBm)	Result
				Chain0	Chain1	Combined Power		
PSD	802.11a	5180	Low	6.867	7.051	9.970	17	Pass
	802.11a	5200	Mid	8.581	8.903	11.755	17	Pass
	802.11a	5240	High	8.172	8.708	11.459	17	Pass
	802.11n-20M	5180	Low	6.673	6.746	9.720	17	Pass
	802.11n-20M	5200	Mid	8.362	8.428	11.405	17	Pass
	802.11n-20M	5240	High	8.038	8.367	11.216	17	Pass
	802.11n-40M	5190	Low	0.135	0.217	3.186	17	Pass
	802.11n-40M	5230	Mid	6.153	6.282	9.228	17	Pass
	802.11ac-80M	5210	High	-4.205	-3.928	-1.054	17	Pass

PSD measurement result for 5.8GHz

Test mode	Freq (MHz)	CH	Conducted PSD (dBm/100kHz)			Correction factor (dB)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
			Chain0	Chain1	Combined				
802.11a	5745	Low	1.284	1.410	4.358	6.99	11.348	30	Pass
	5785	Mid	1.312	1.237	4.285	6.99	11.275	30	Pass
	5825	High	1.713	1.468	4.603	6.99	11.593	30	Pass
802.11n-20	5745	Low	0.967	0.870	3.929	6.99	10.919	30	Pass
	5785	Mid	1.113	0.741	3.941	6.99	10.931	30	Pass
	5825	High	1.132	1.680	4.425	6.99	11.415	30	Pass
802.11n-40	5755	Low	-1.136	-1.246	1.820	6.99	8.810	30	Pass
	5795	High	-1.469	-1.138	1.710	6.99	8.700	30	Pass
802.11ac-80	5775	Mid	-5.035	-4.670	-1.838	6.99	5.152	30	Pass
Note	BW correction factor = $10\log(500\text{kHz}/\text{RBW})$, RBW was set to 100kHz during test.								

Correction factor=10*log(500/100)=6.99

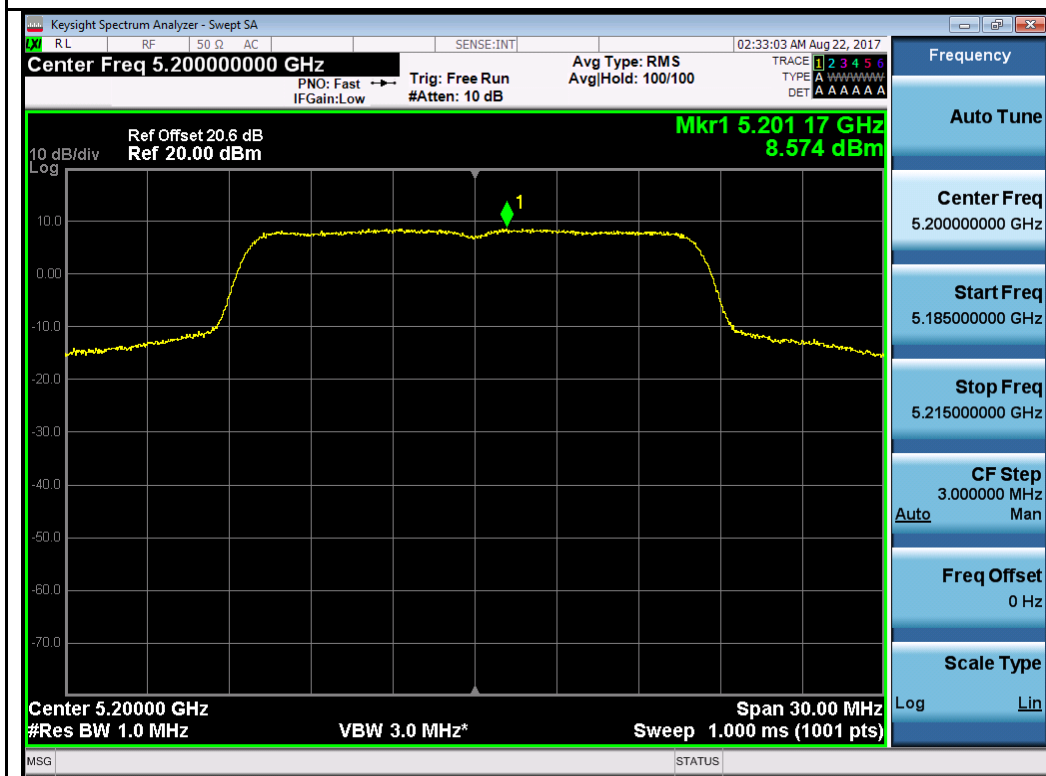
Note: Two chains are cross-polarized, additional gain is $10\log_{10}(\text{NANT})=0\text{dB}$, $N=1$, max directional gain of the EUT is 3.5dBi. No limit adjustment is needed. All the mode transmission is MIMO.

Test Plot for W52:

Chain 0:



802.11a-5180MHz



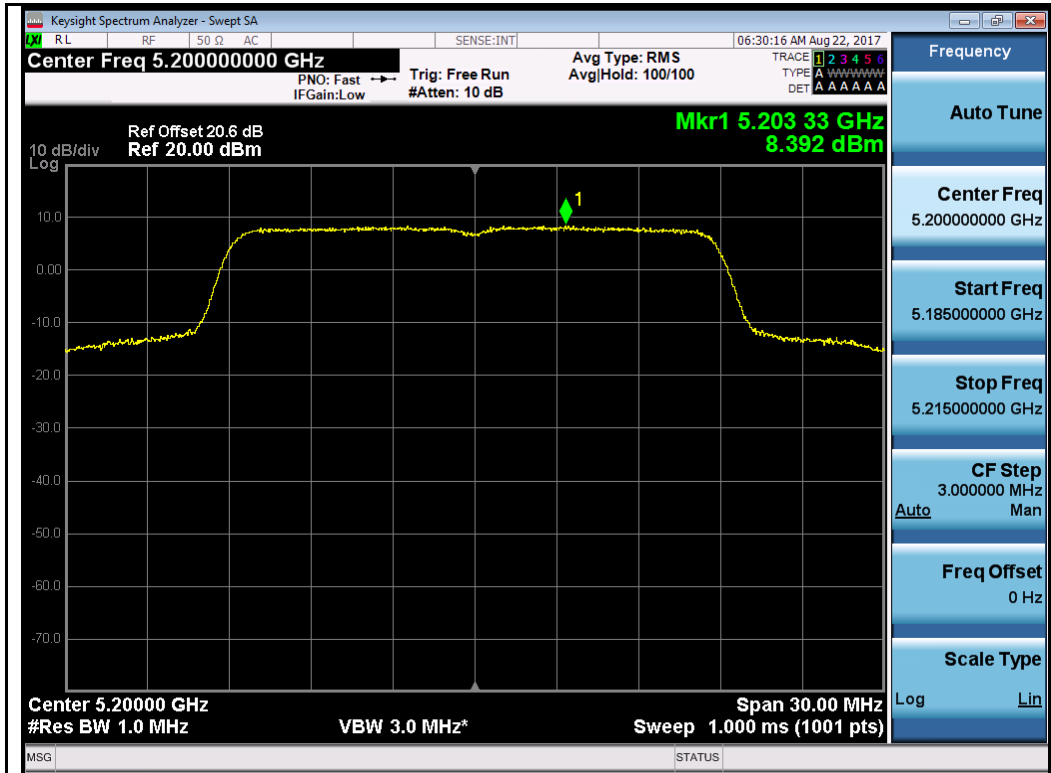
802.11a-5200MHz



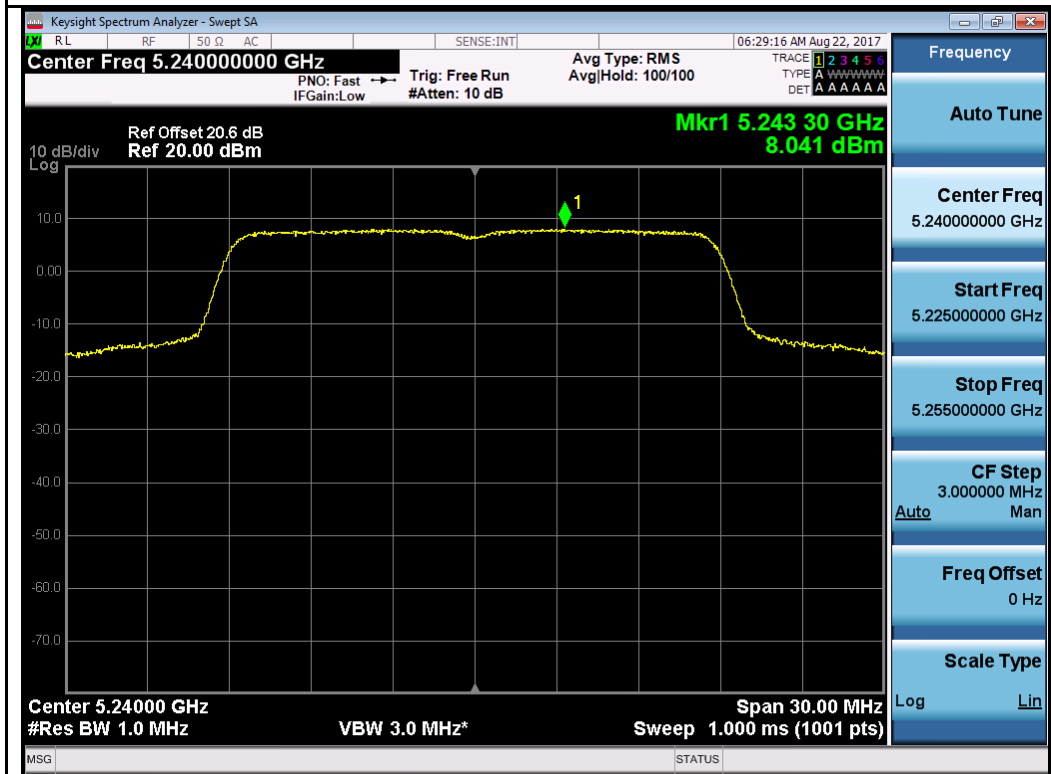
802.11a-5240MHz



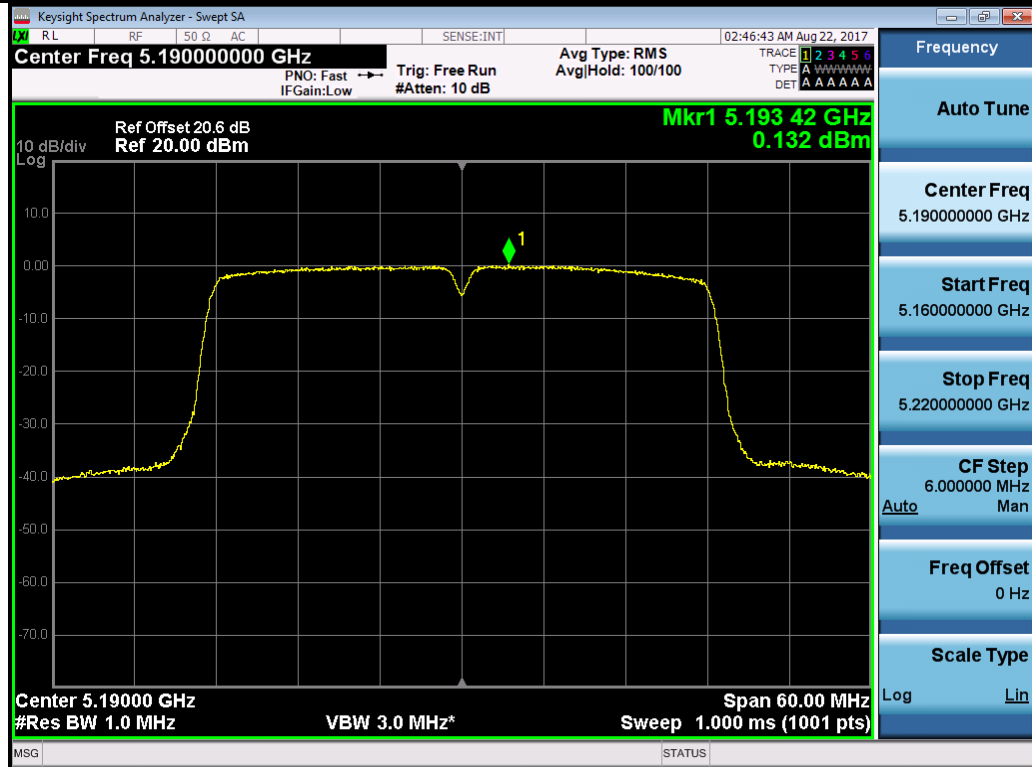
802.11n-HT20-5180MHz



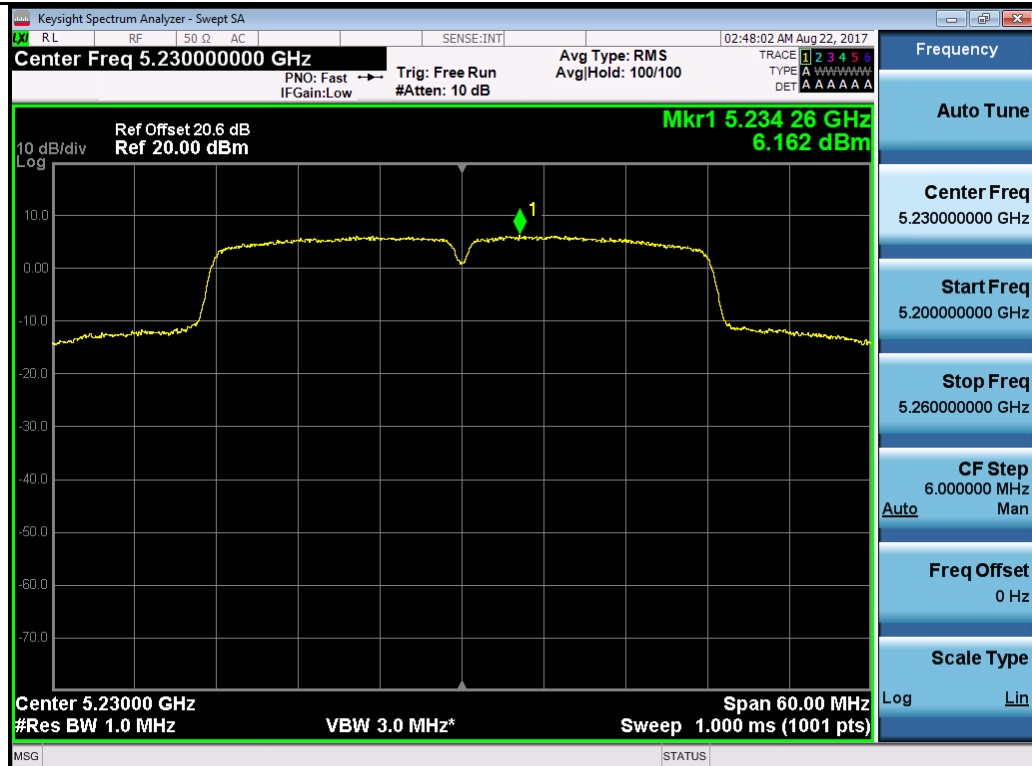
802.11n-HT20-5200MHz



802.11n-HT20-5240MHz



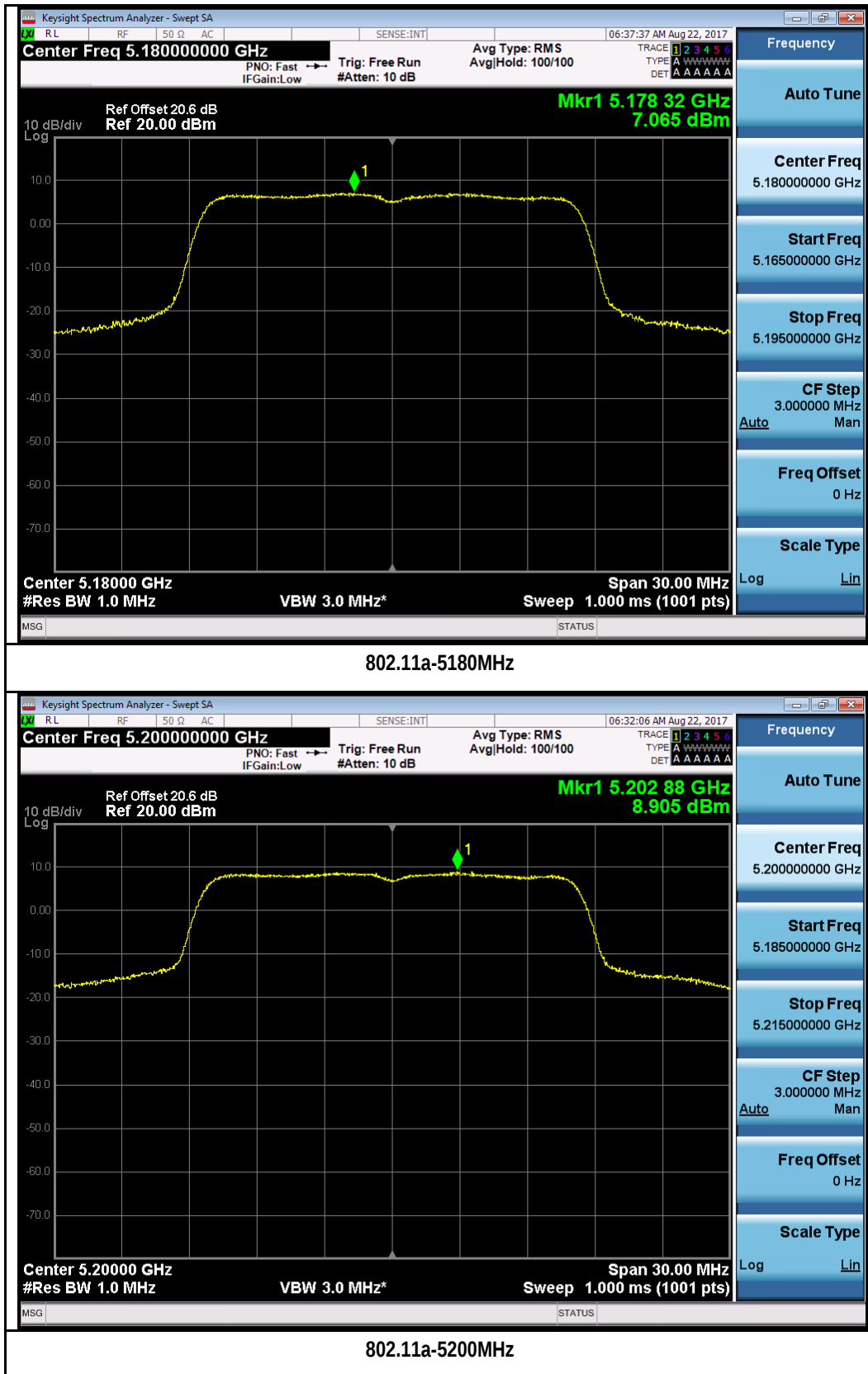
802.11n-HT40-5190MHz

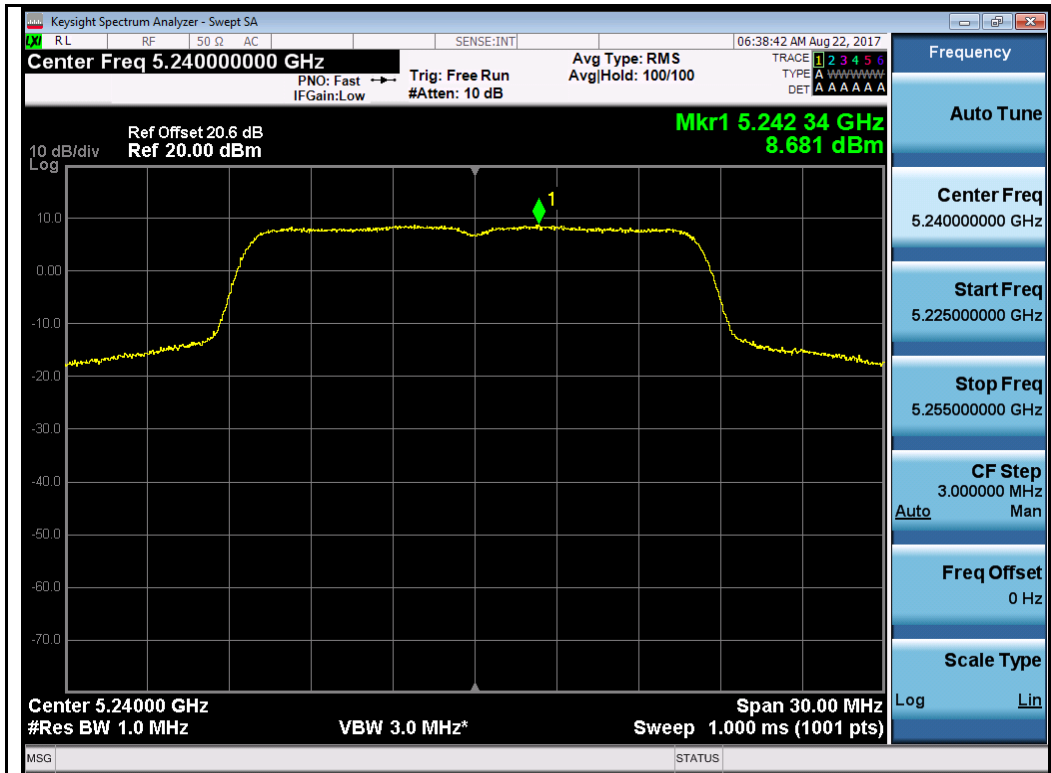


802.11n-HT40-5230MHz

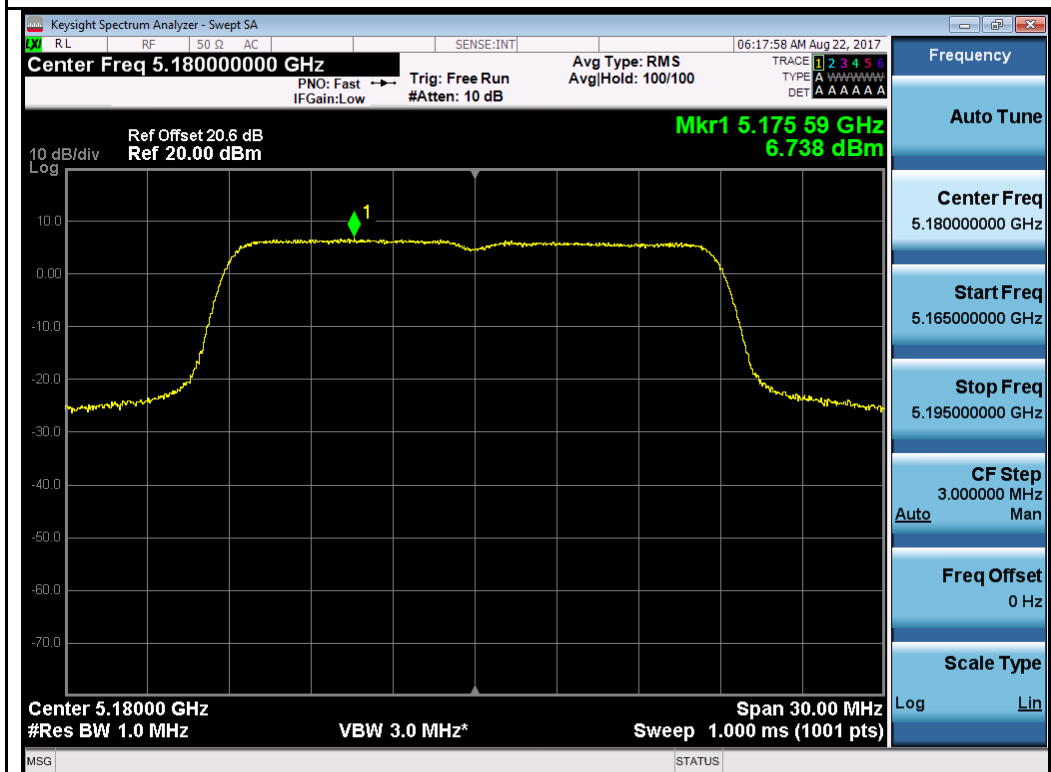


Chain 1:

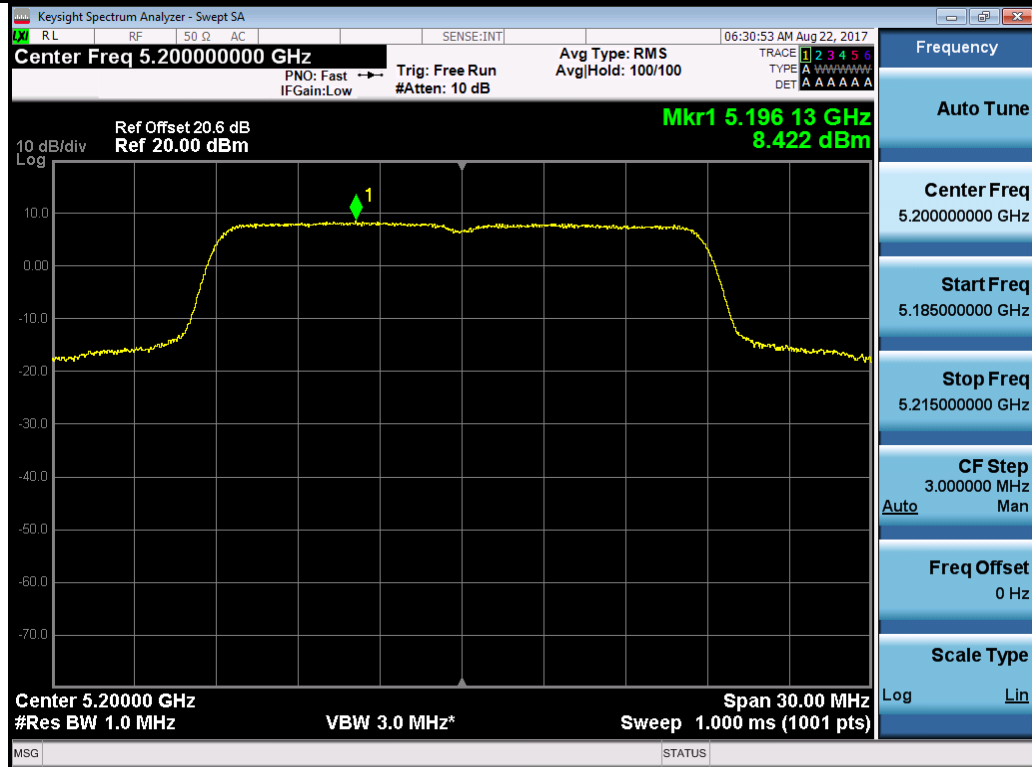




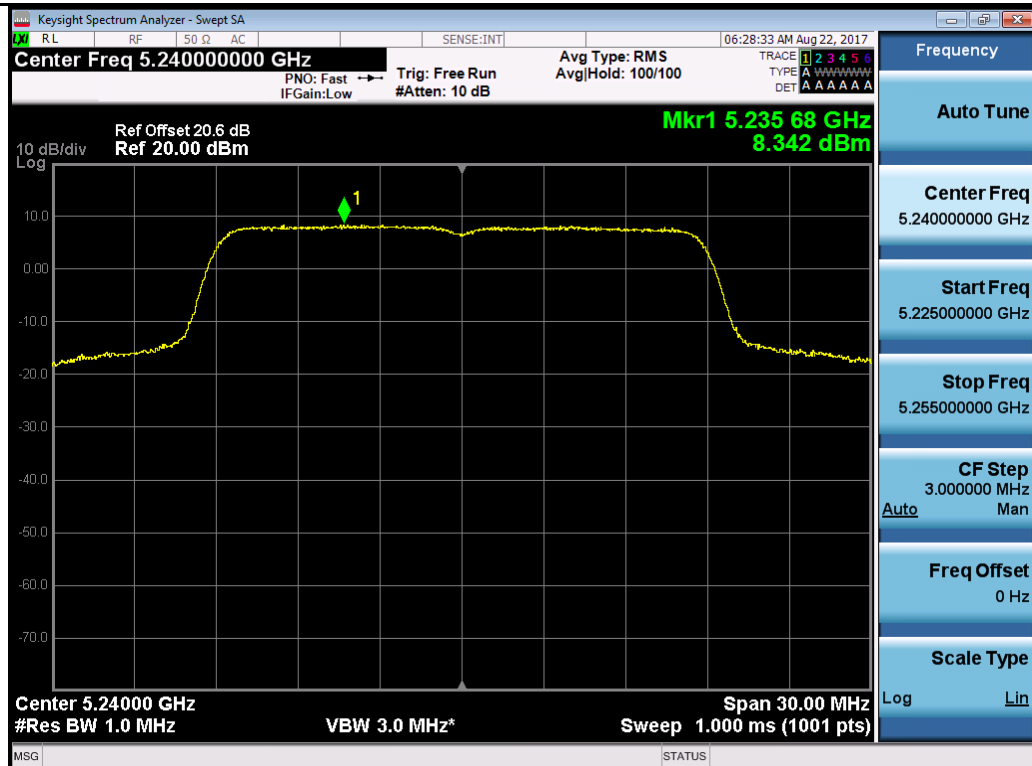
802.11a-5240MHz



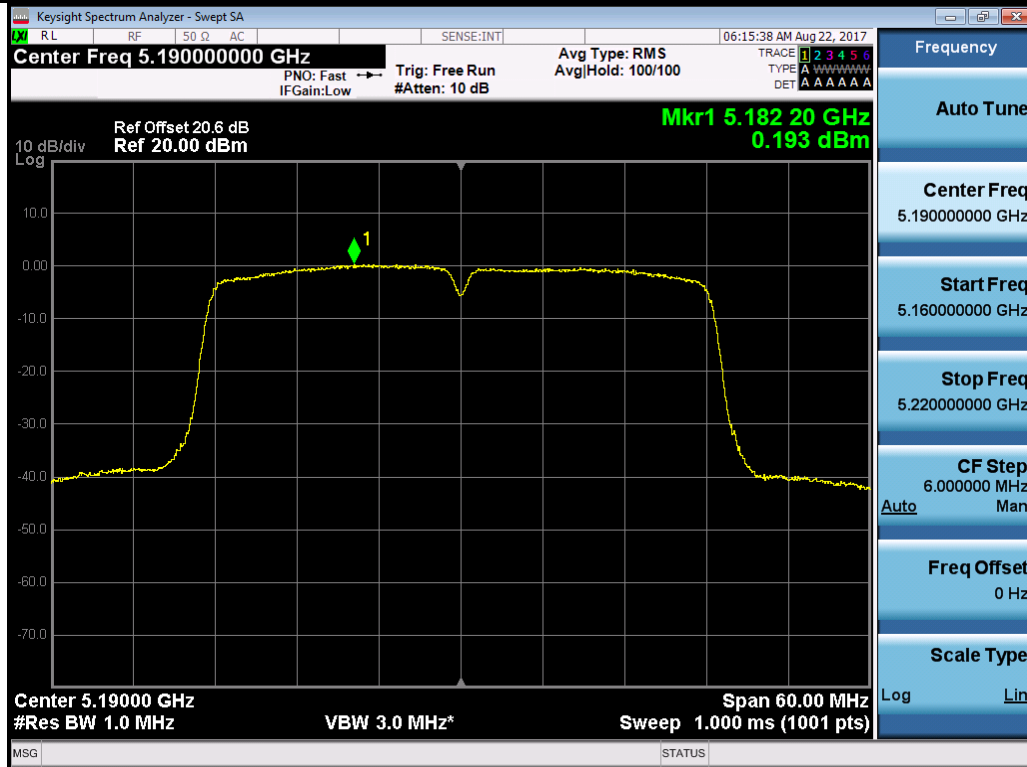
802.11n-HT20-5180MHz



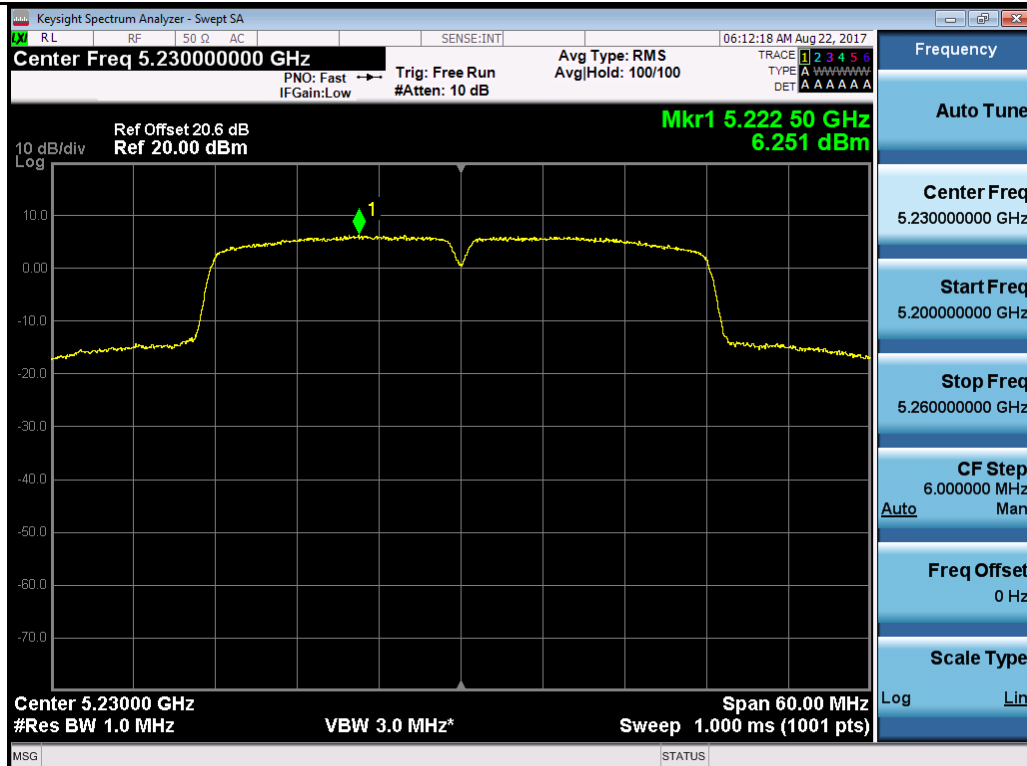
802.11n-HT20-5200MHz



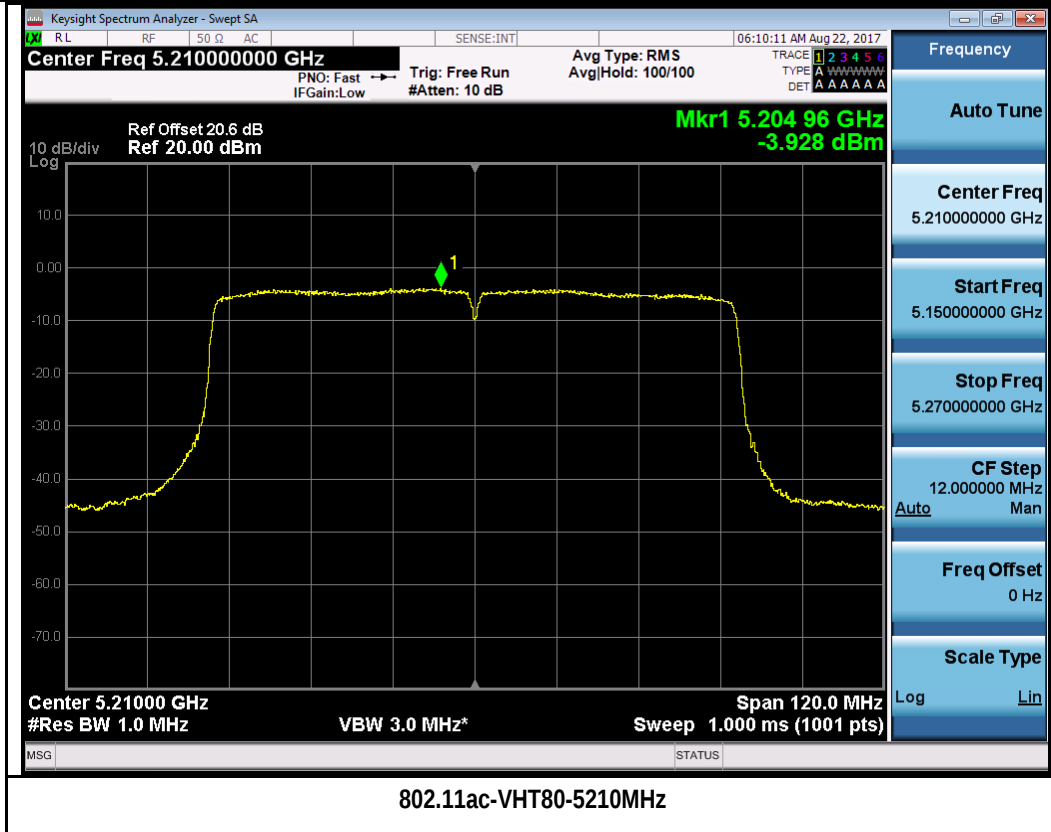
802.11n-HT20-5240MHz



802.11n-HT40-5190MHz

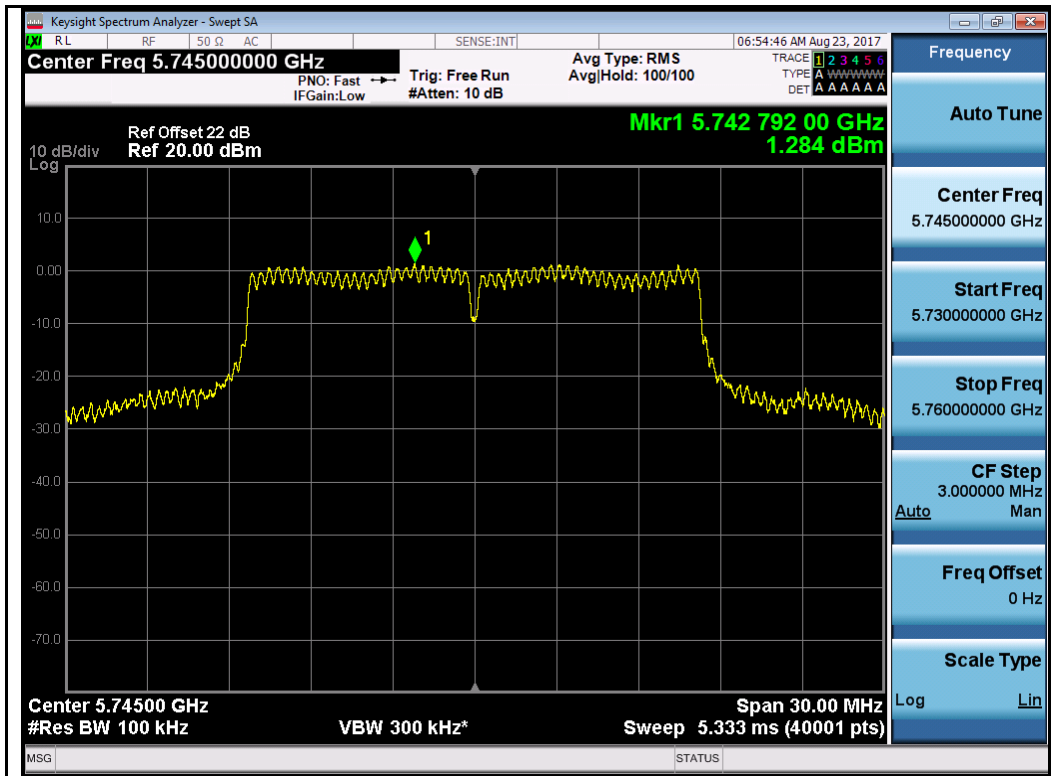


802.11n-HT40-5230MHz

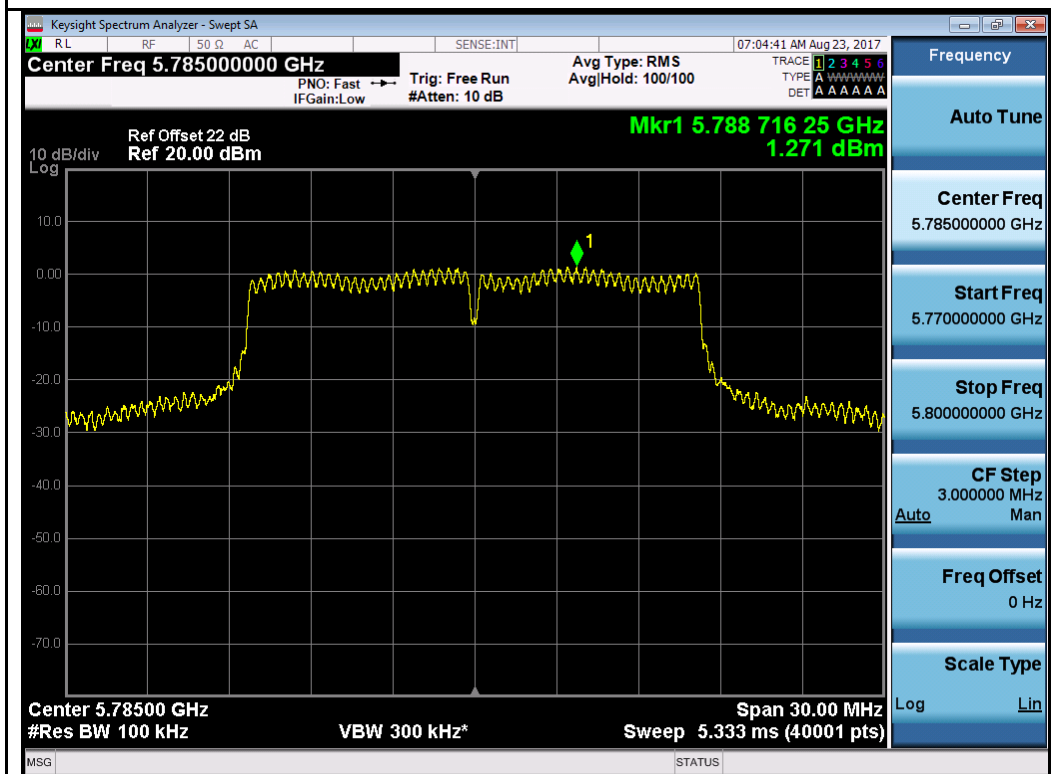


Test Plot for W58:

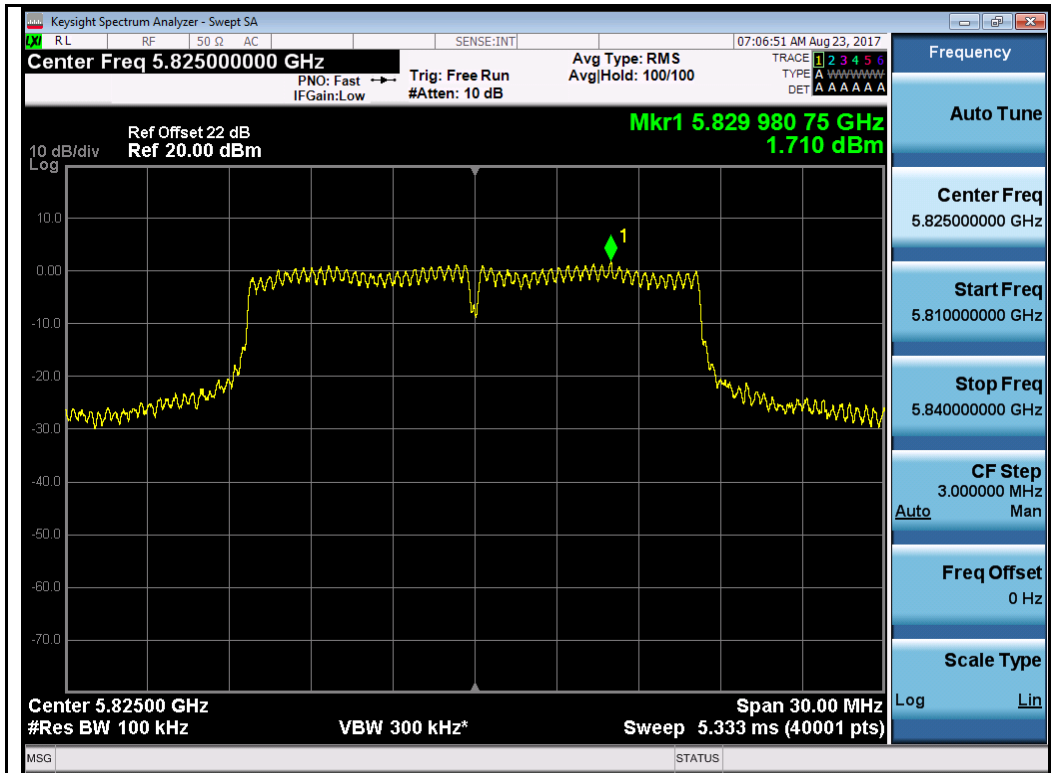
Chain 0:



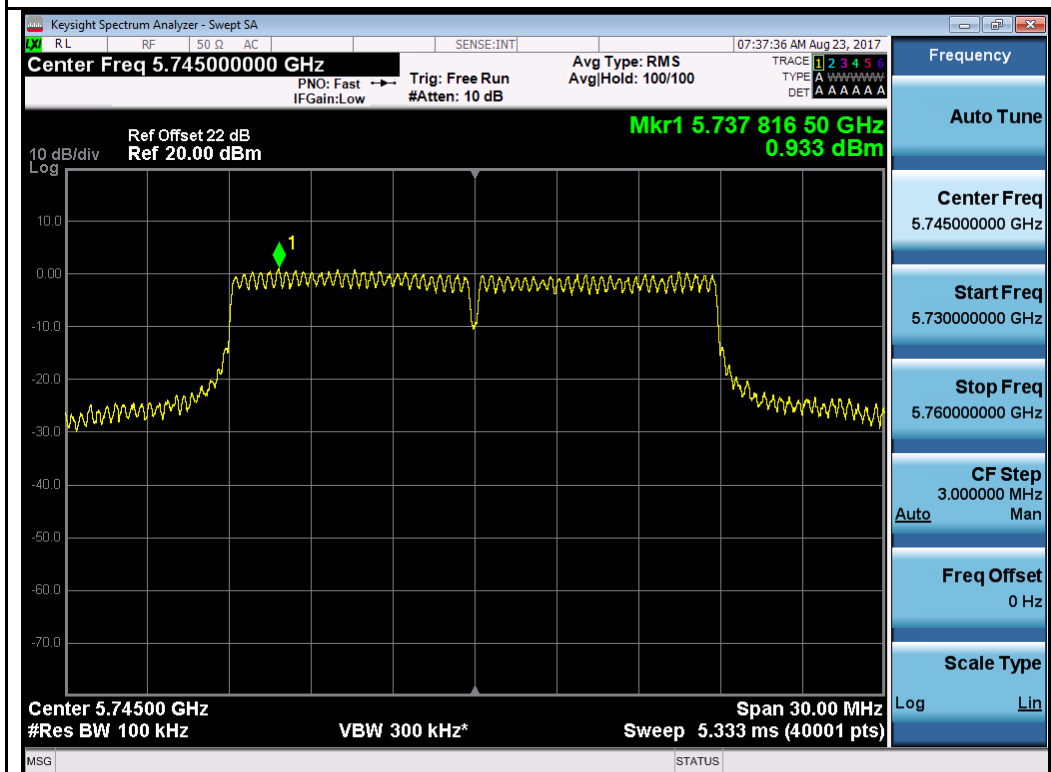
802.11a-5745MHz



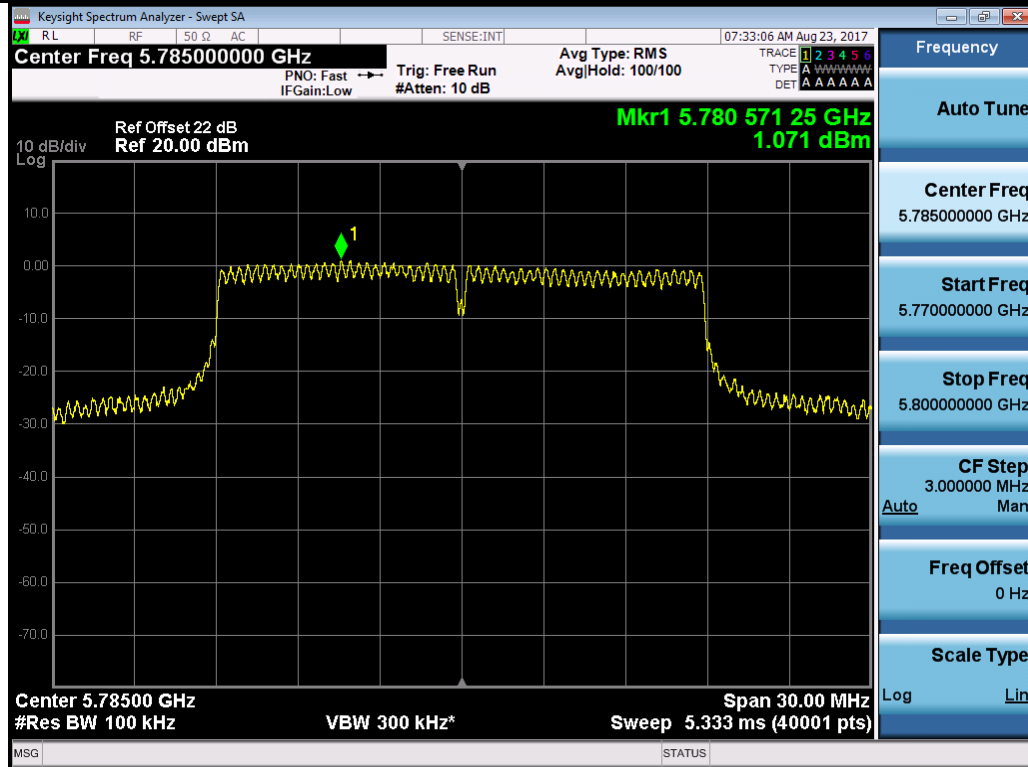
802.11a-5785MHz



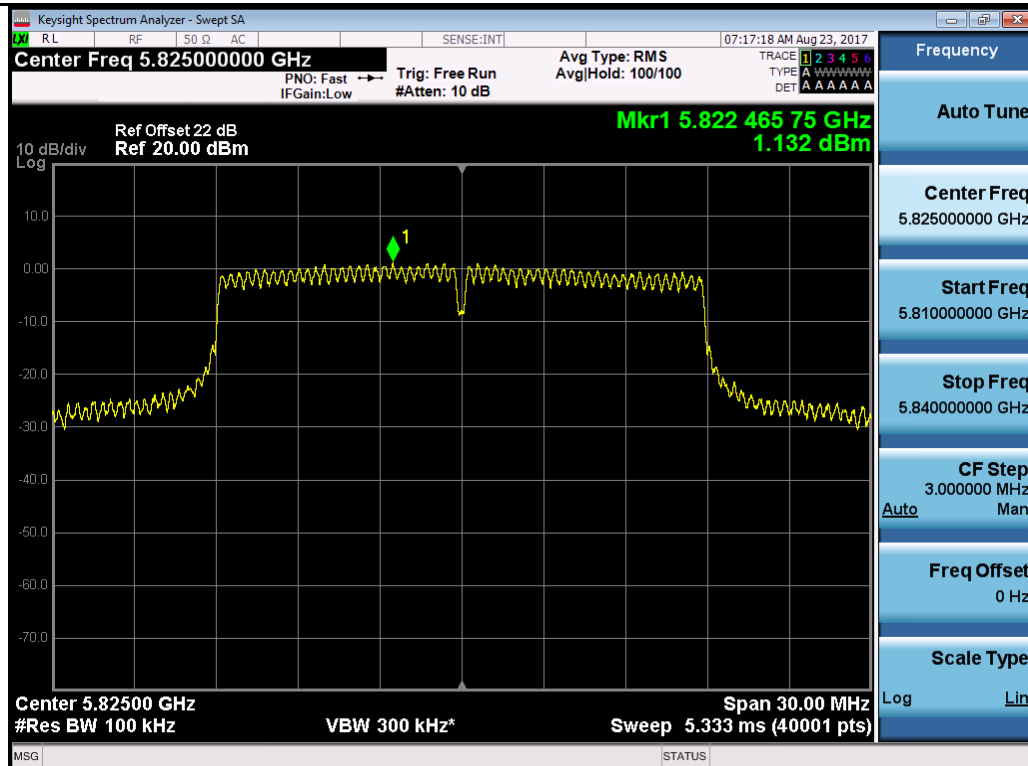
802.11a-5825MHz



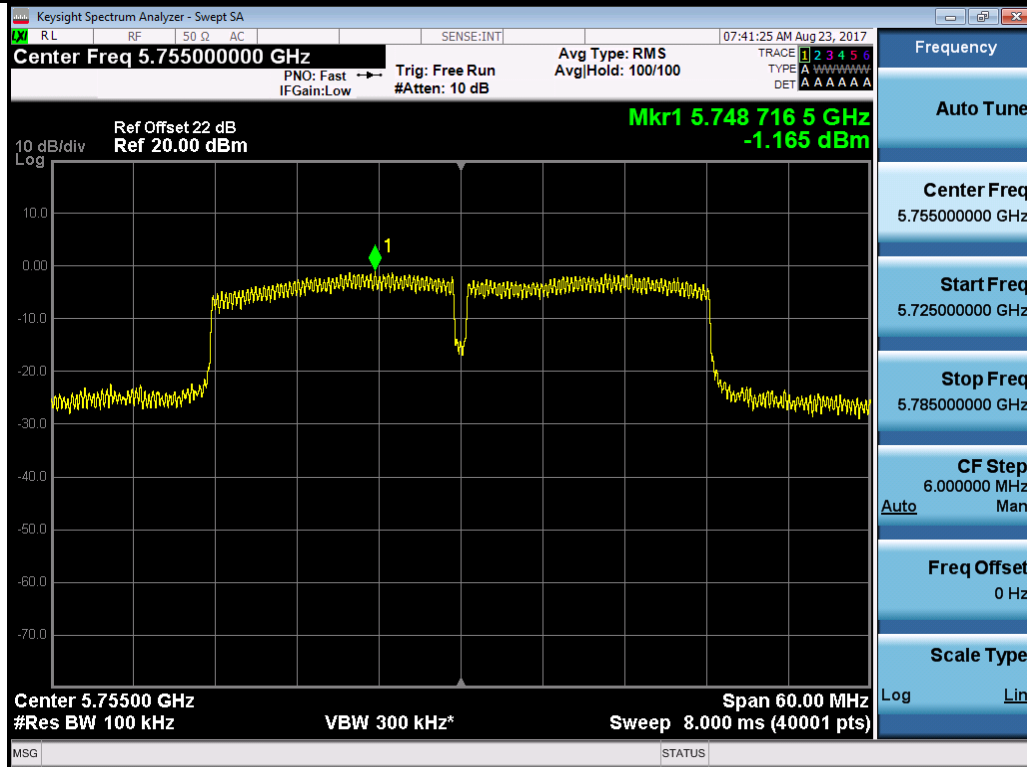
802.11n-HT20-5745MHz



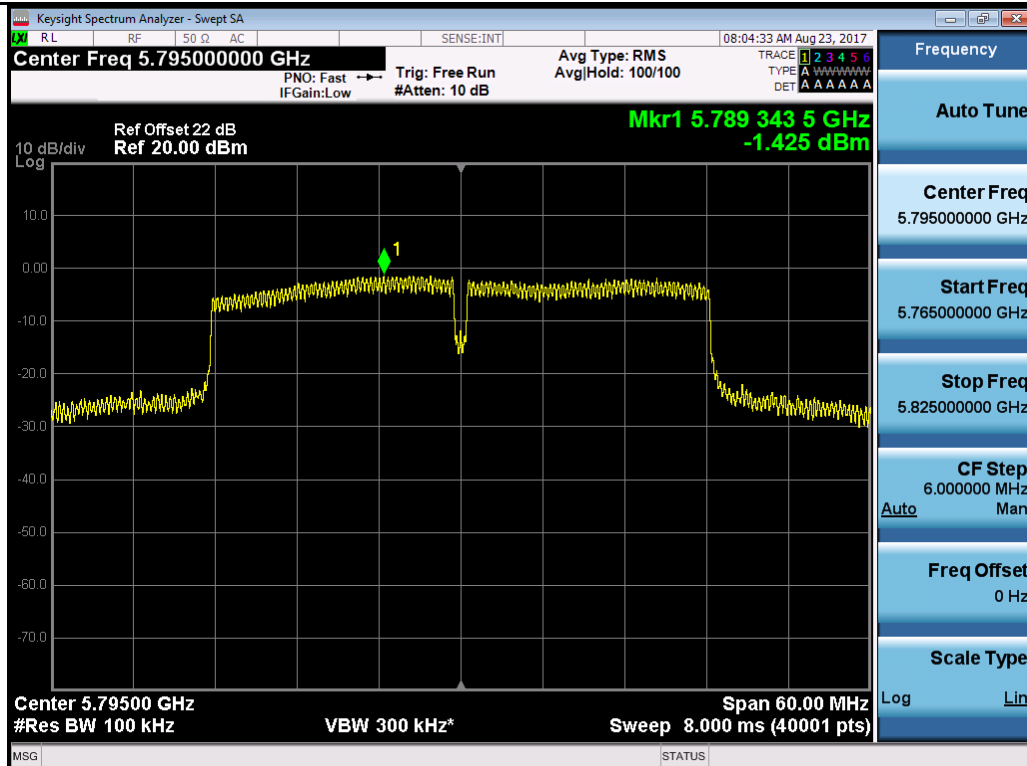
802.11n-HT20-5785MHz



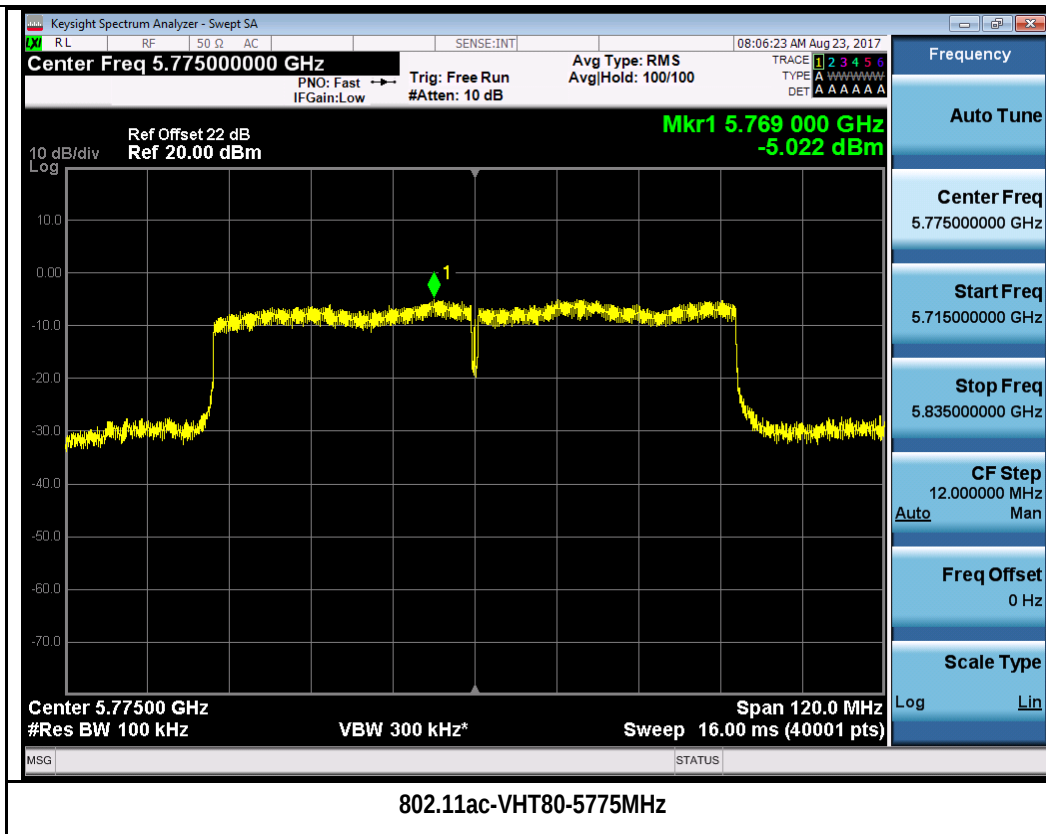
802.11n-HT20-5825MHz



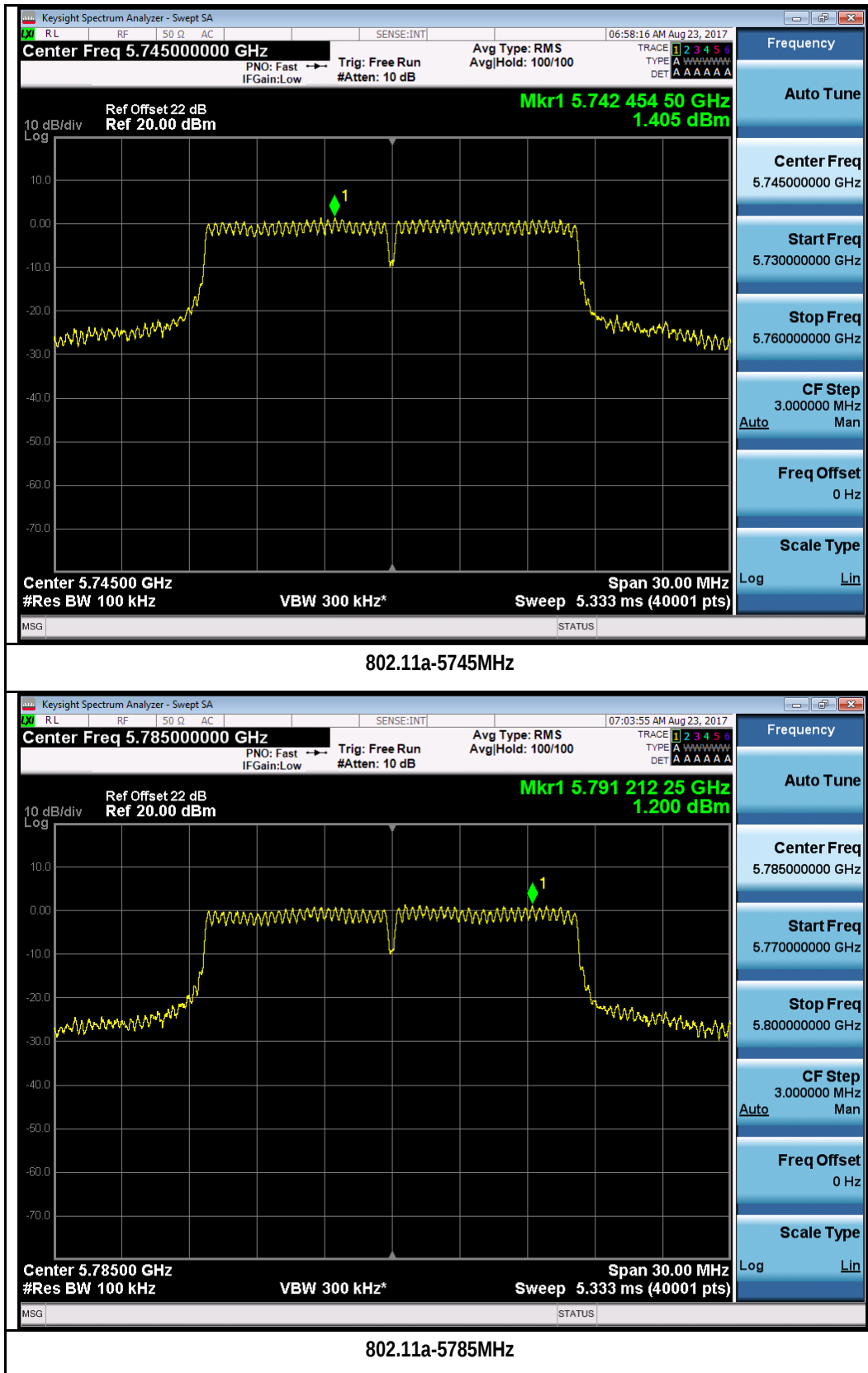
802.11n-HT40-5755MHz

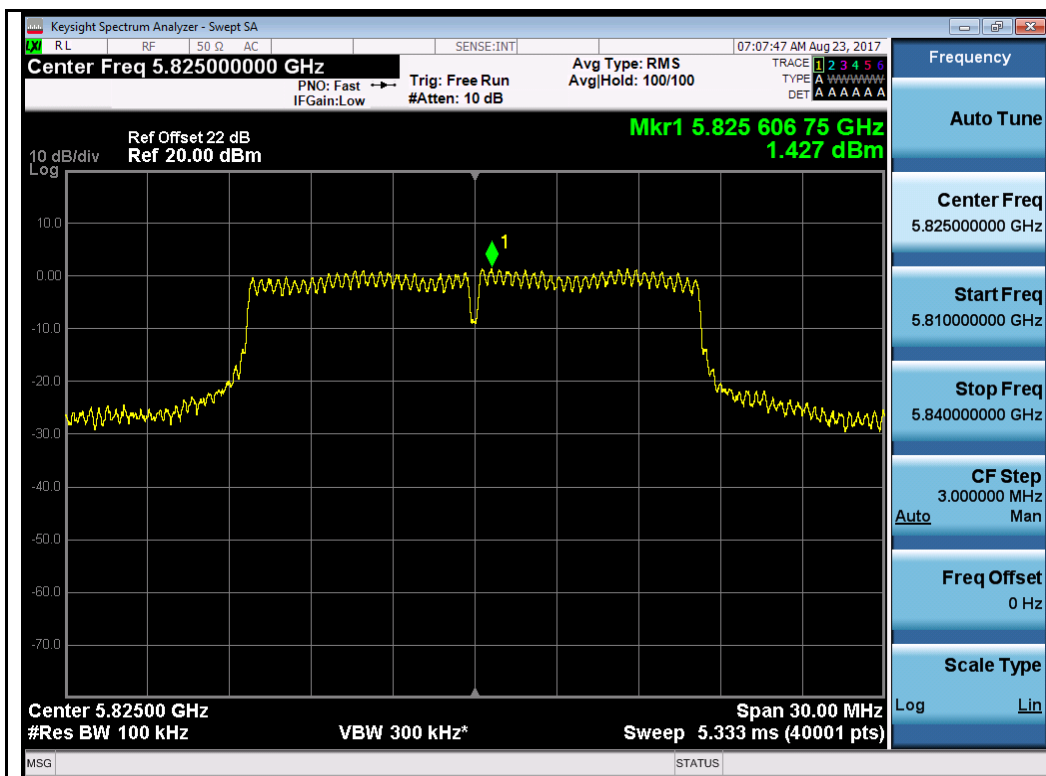


802.11n-HT40-5795MHz

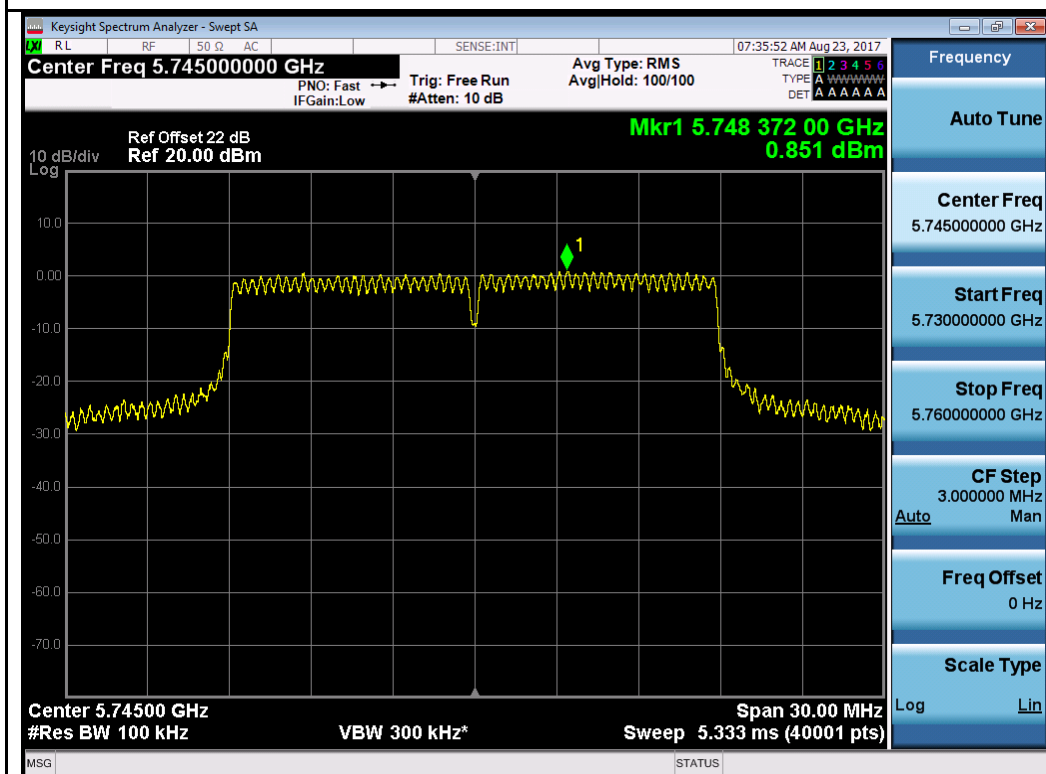


Chain 1:

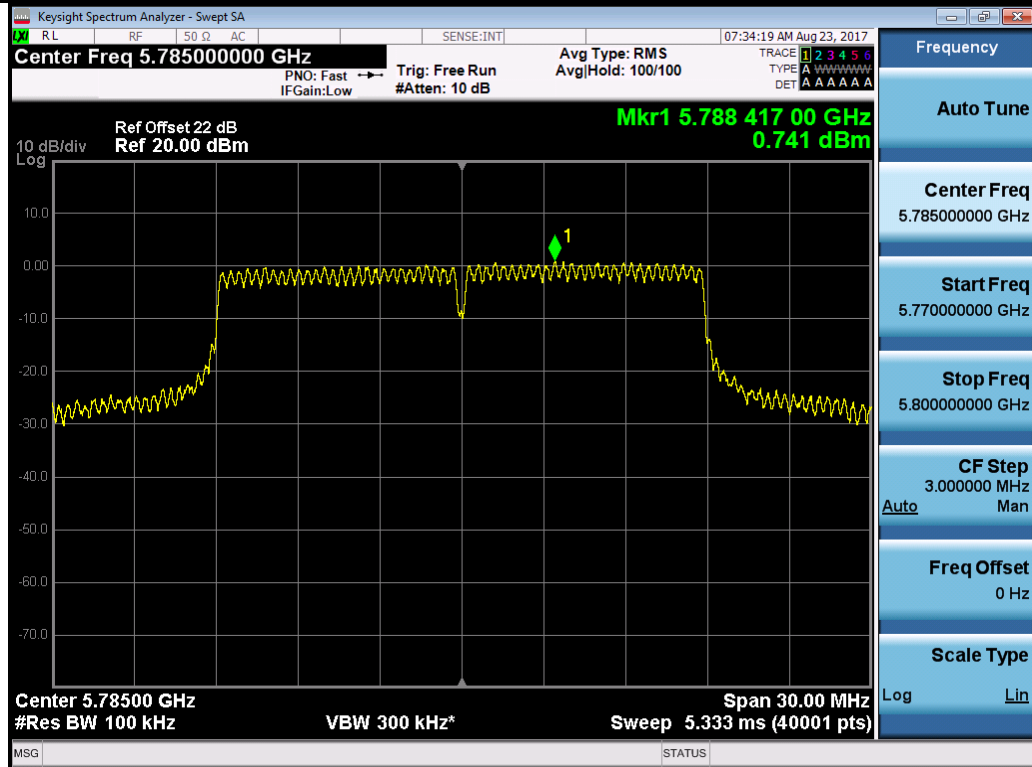




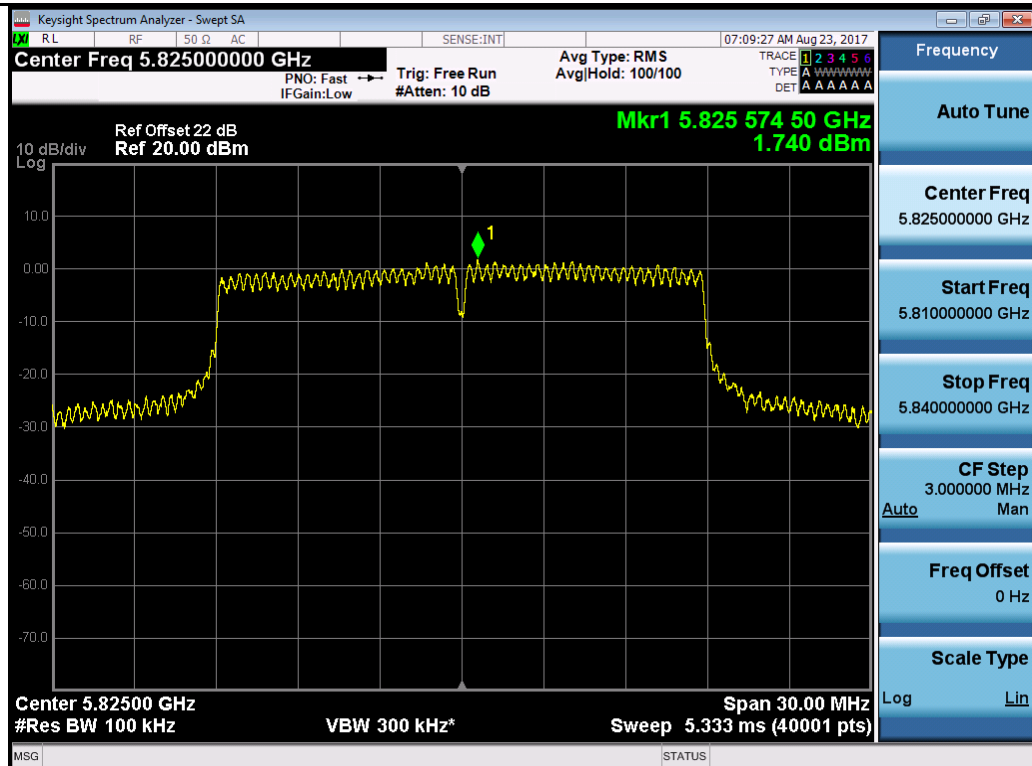
802.11a-5825MHz



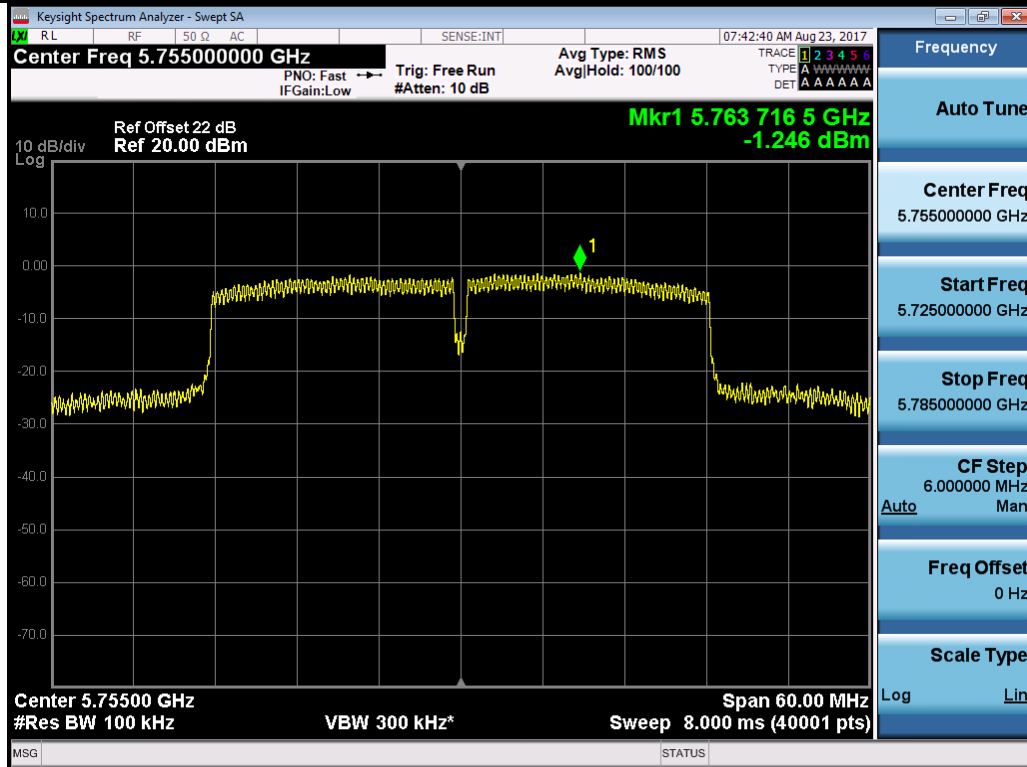
802.11n-HT20-5745MHz



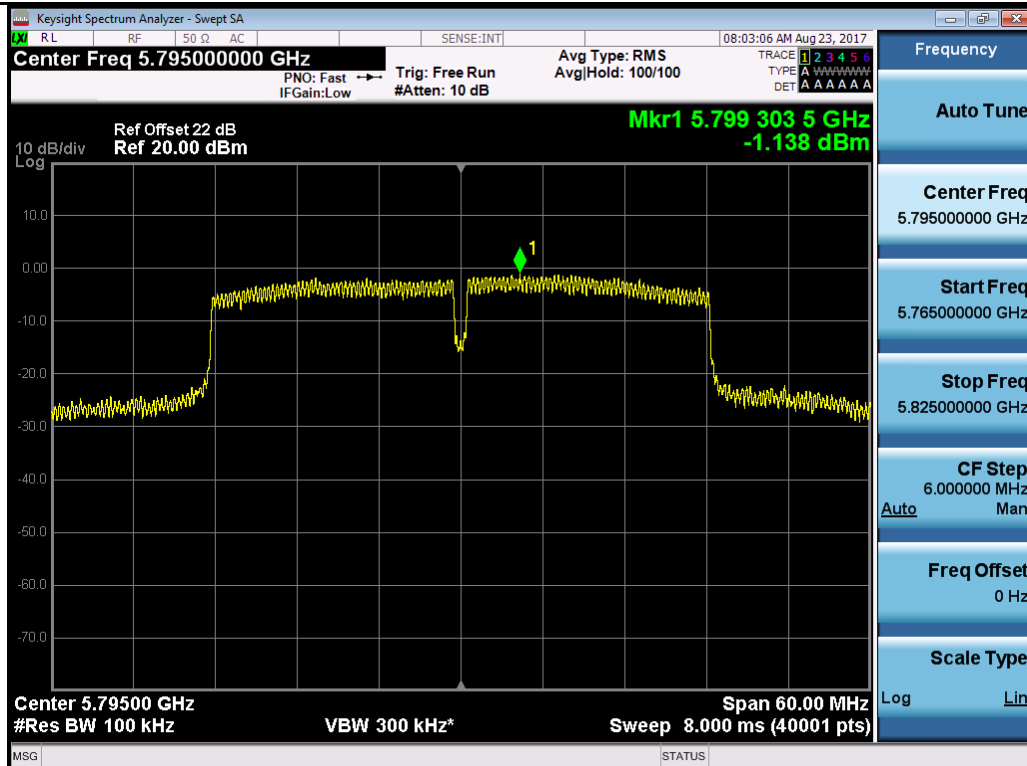
802.11n-HT20-5785MHz



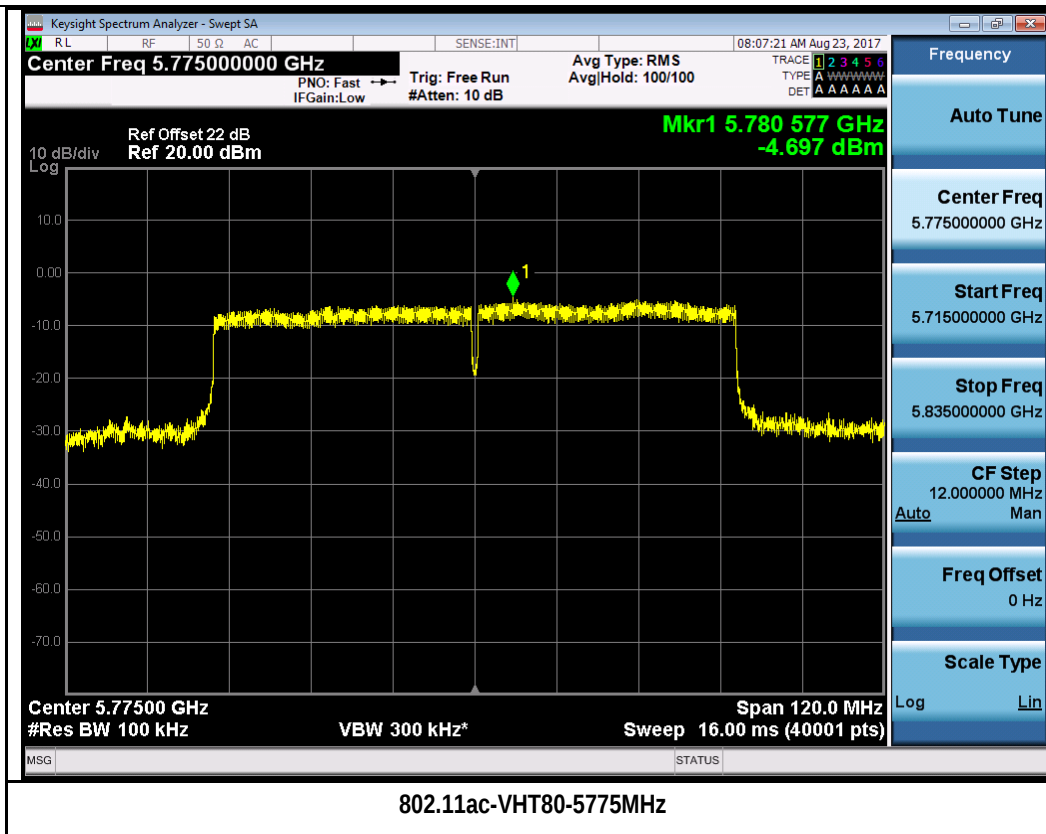
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

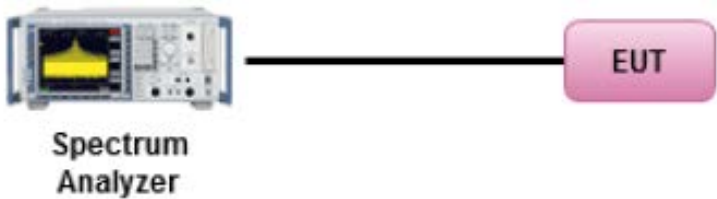


802.11n-HT40-5795MHz



10.5 Band Edge and Emission Mask Measurement

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(4)	For transmitters operating in the 5.725-5.825 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	☒
Test Setup	 Spectrum Analyzer — EUT		
Procedure	789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1 <u>Band Edge measurement:</u> - For average emissions measurements, follow the procedures described in section II.G.6., "Procedures for Average Unwanted Emissions Measurements above 1000 MHz", except for the following changes: - Set RBW=100kHz - Set VBW=300kHz - Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.		
Remark	Antenna gain was added to the offset.		
Result	☒ Pass ☐ Fail		

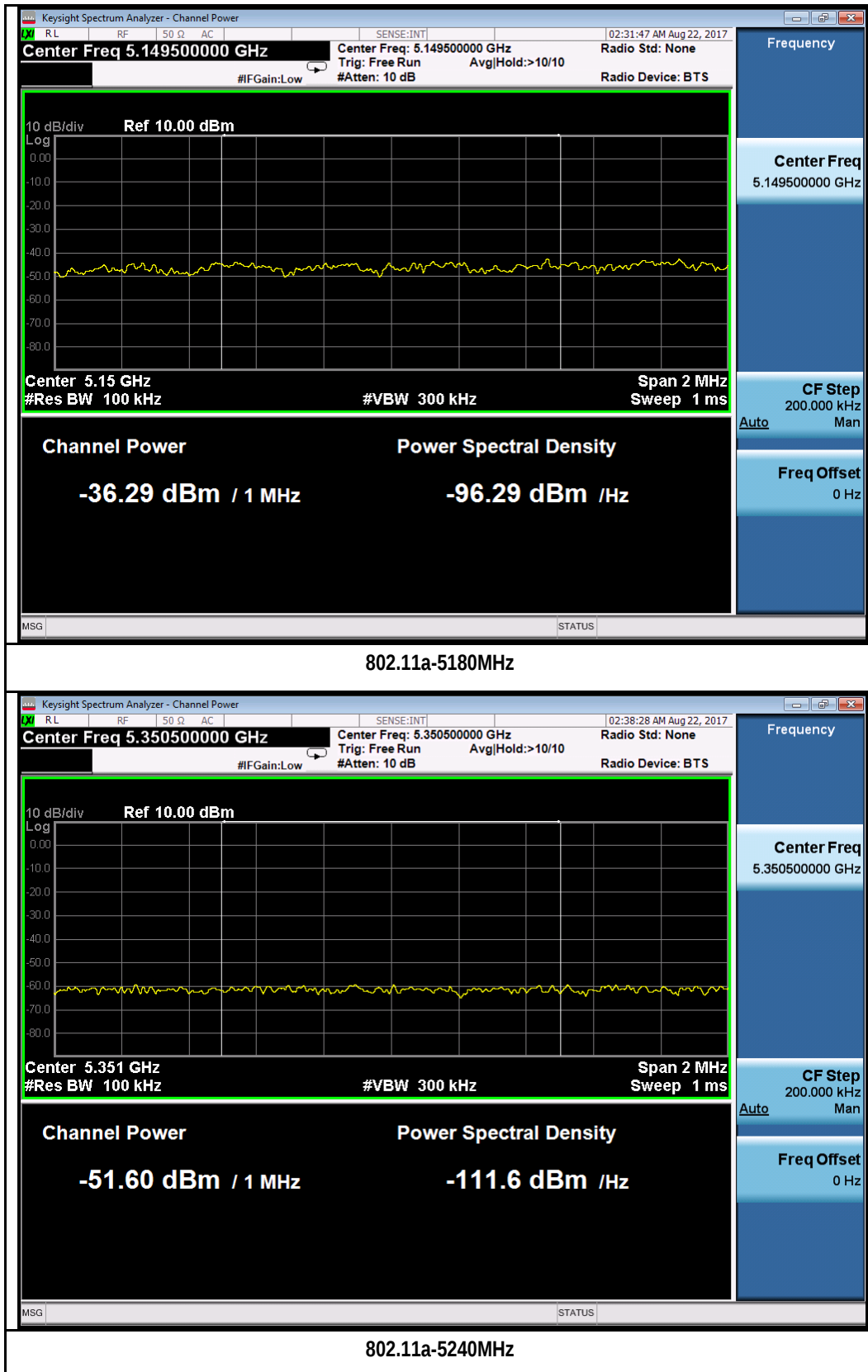
Test Data ☐ Yes (See below) ☒ N/A

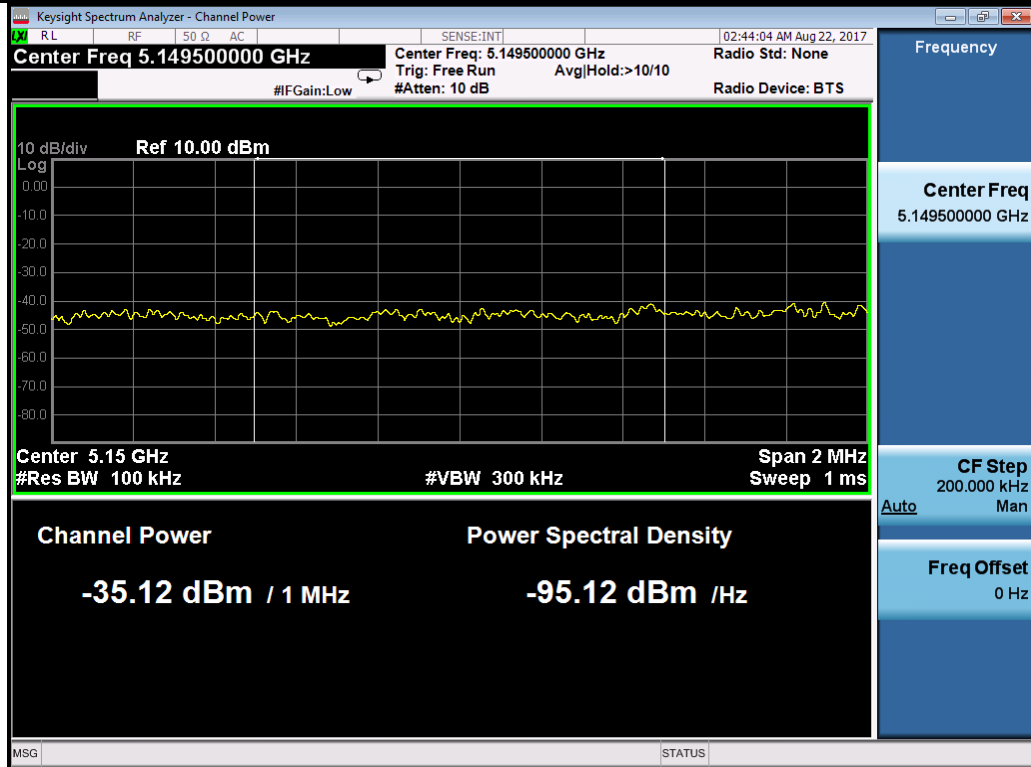
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Cipher at RF test site.

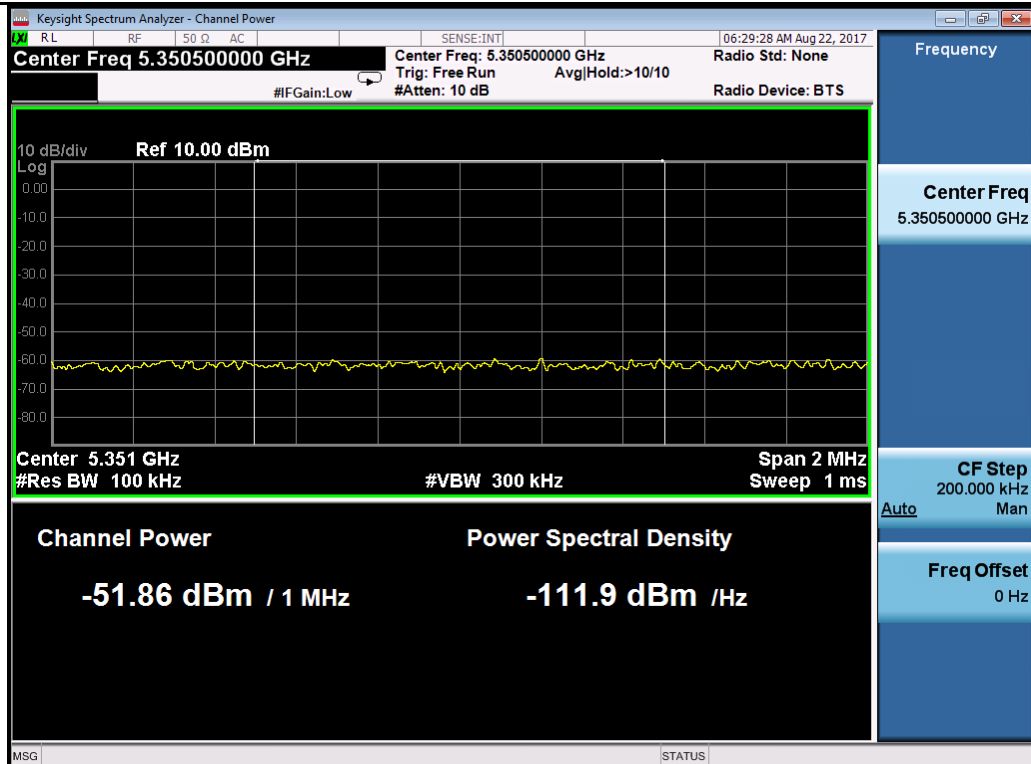
Test Plot for W52:

Chain 0:

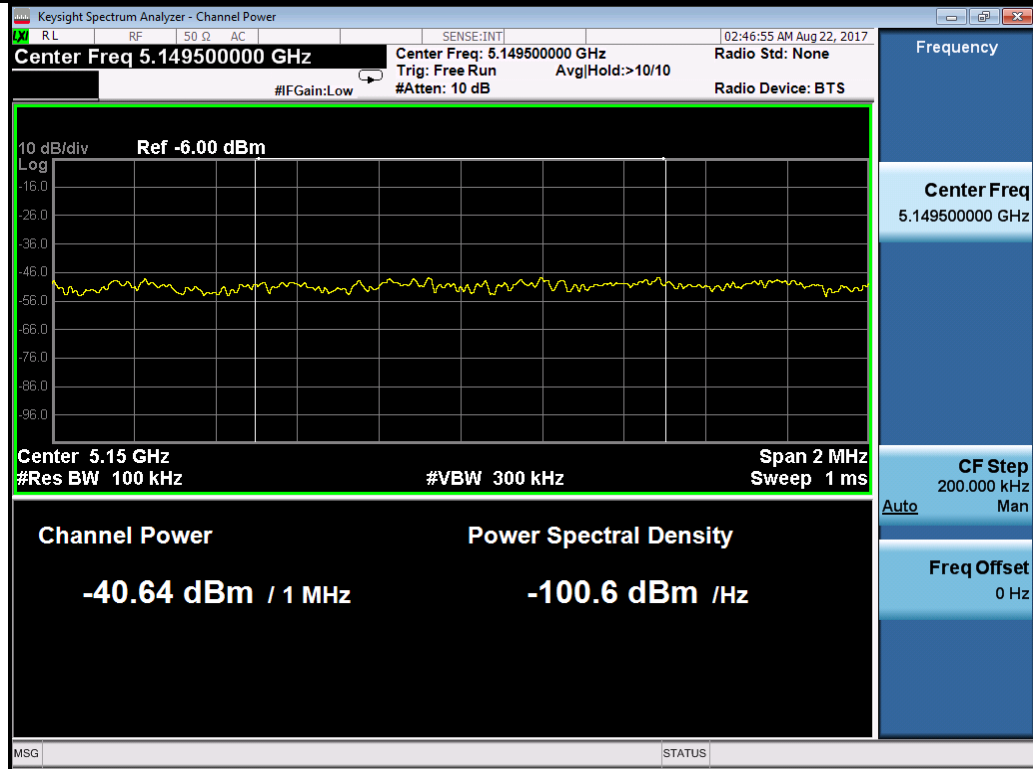




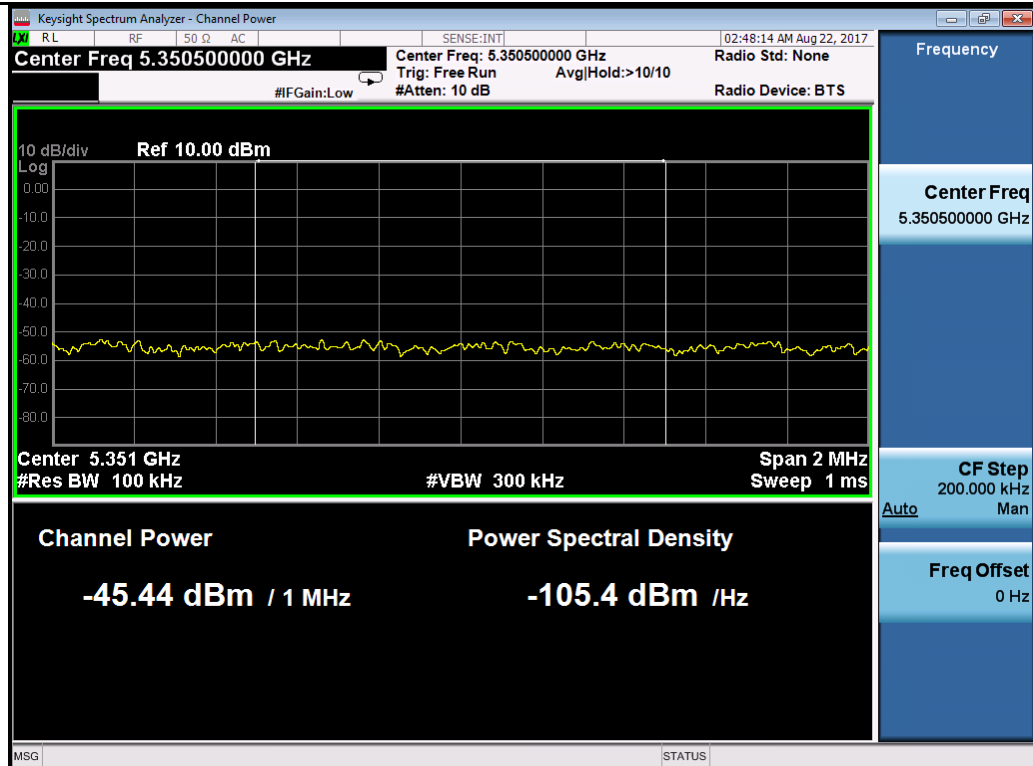
802.11n-HT20-5180MHz



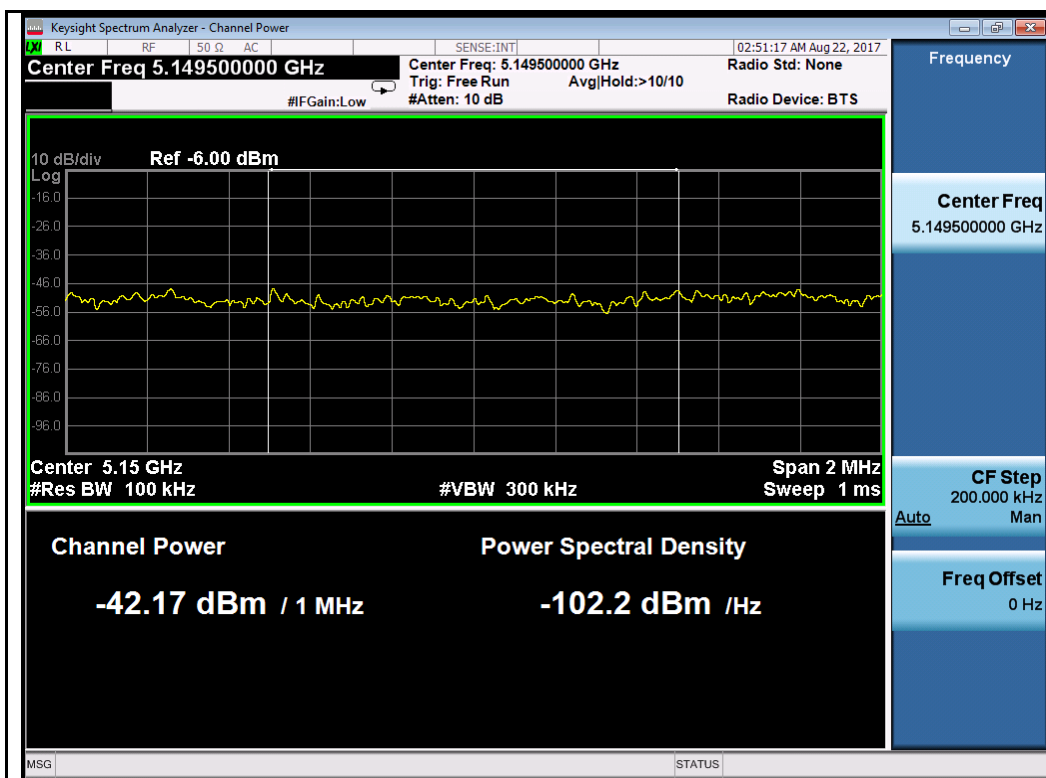
802.11n-HT20-5240MHz



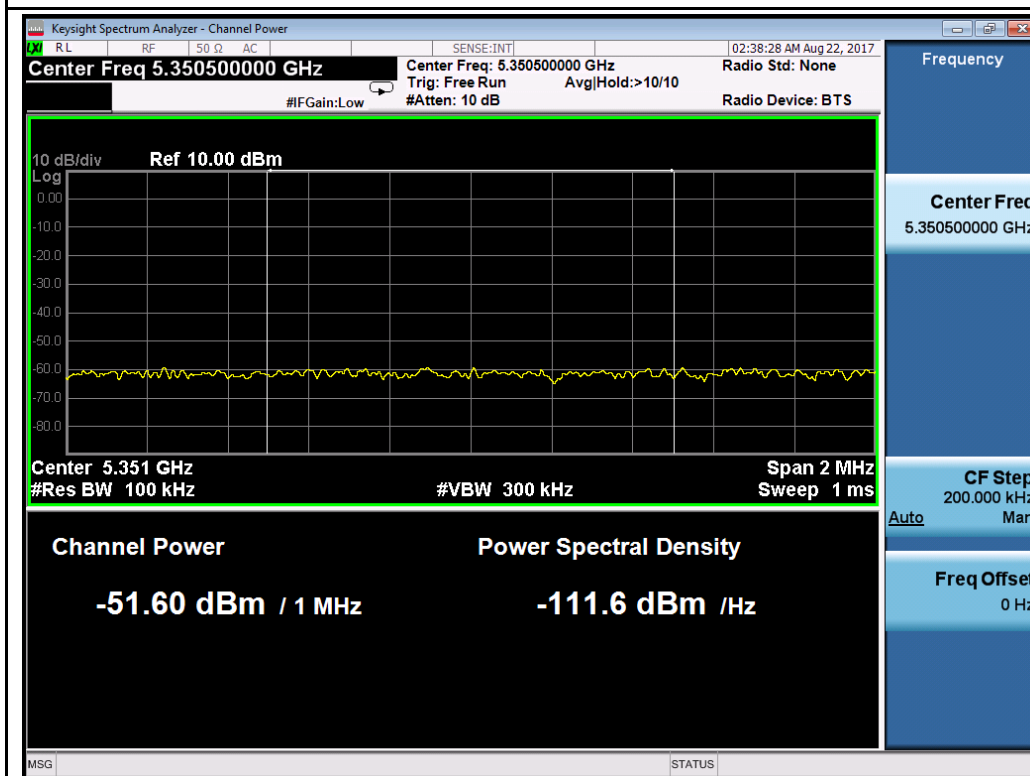
802.11n-HT40-5190MHz



802.11n-HT40-5230MHz

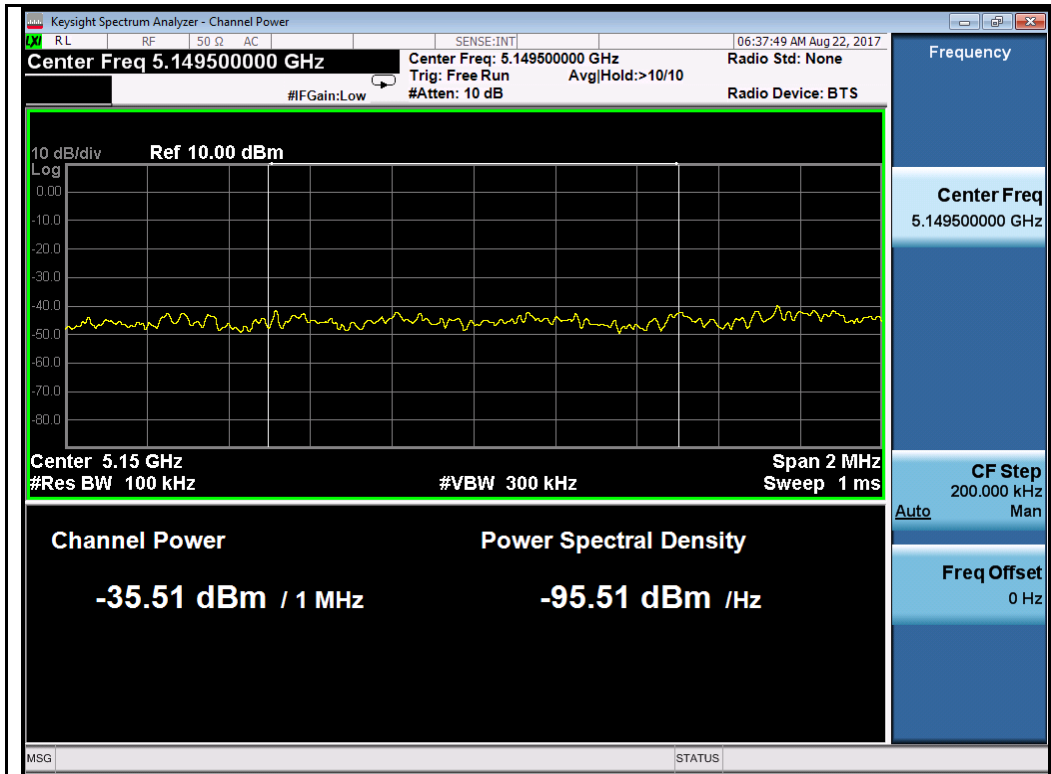


802.11ac-VHT80-5210MHz

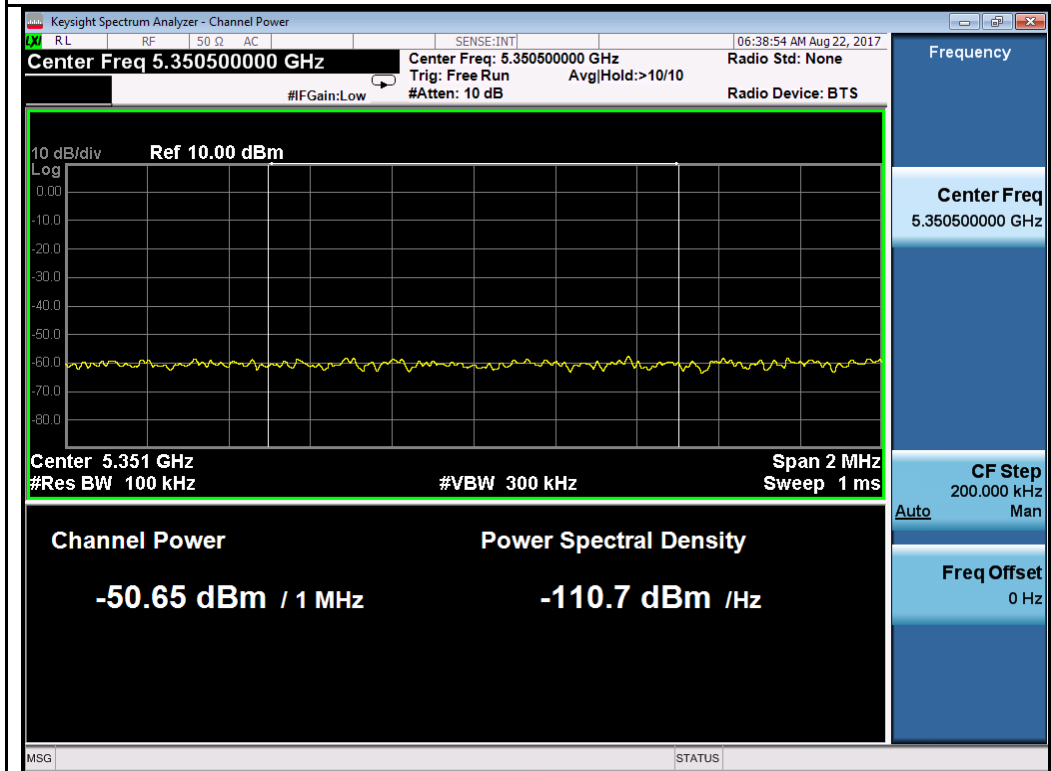


802.11ac-VHT80-5210MHz

Chain 1:



802.11a-5180MHz



802.11a-5240MHz