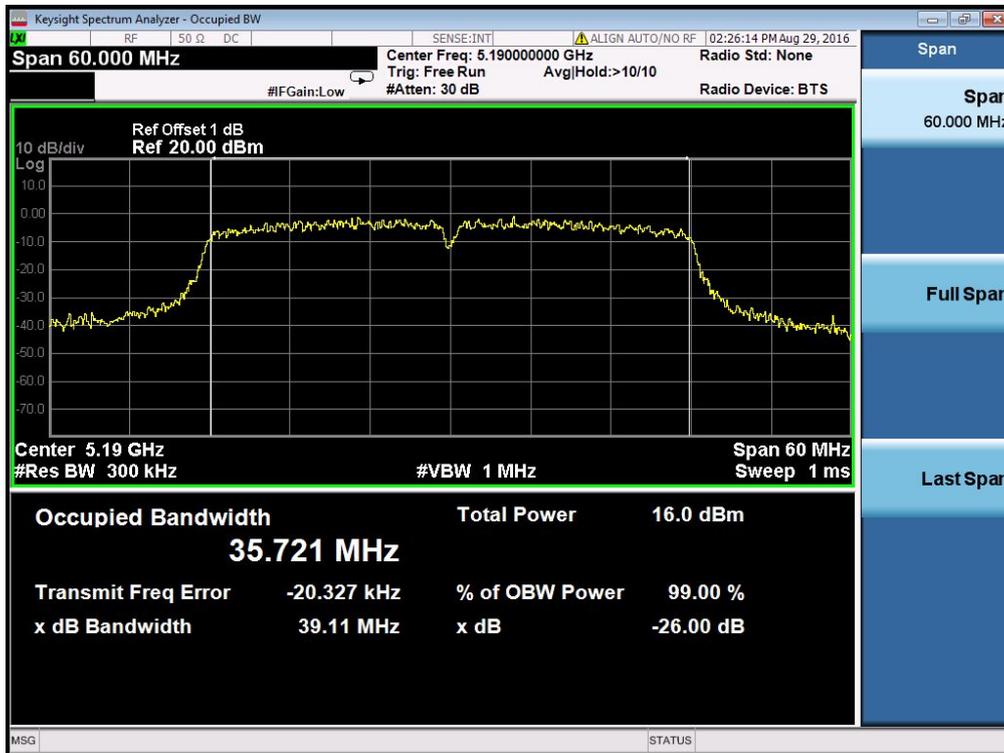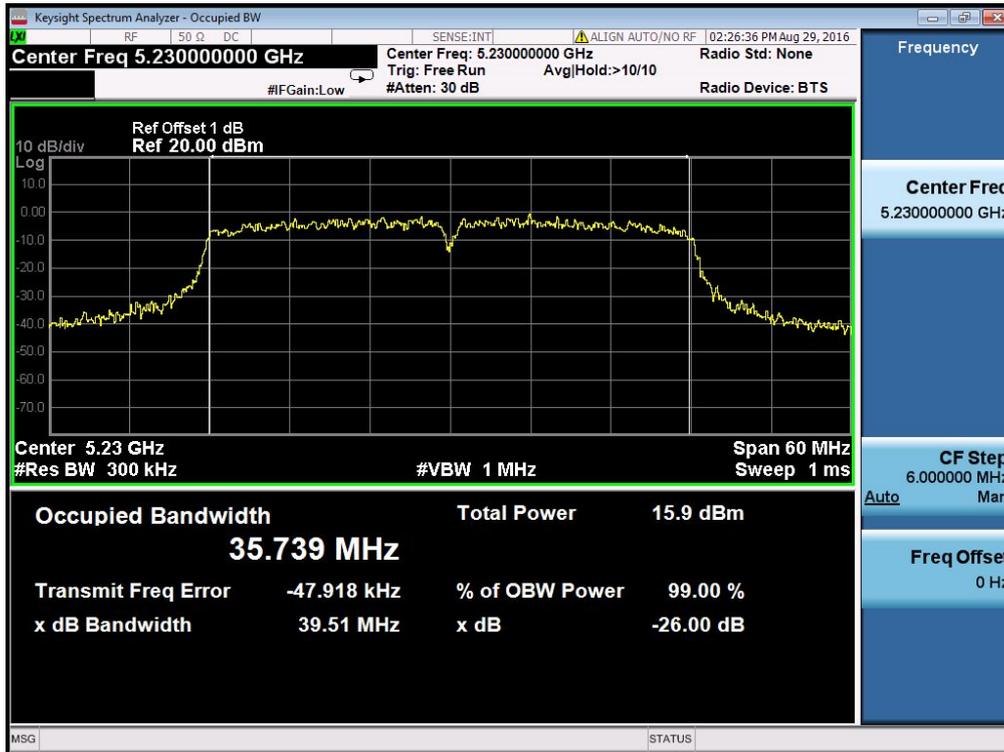Antenna 1 - 802.11ac-VHT20 – 5240MHz
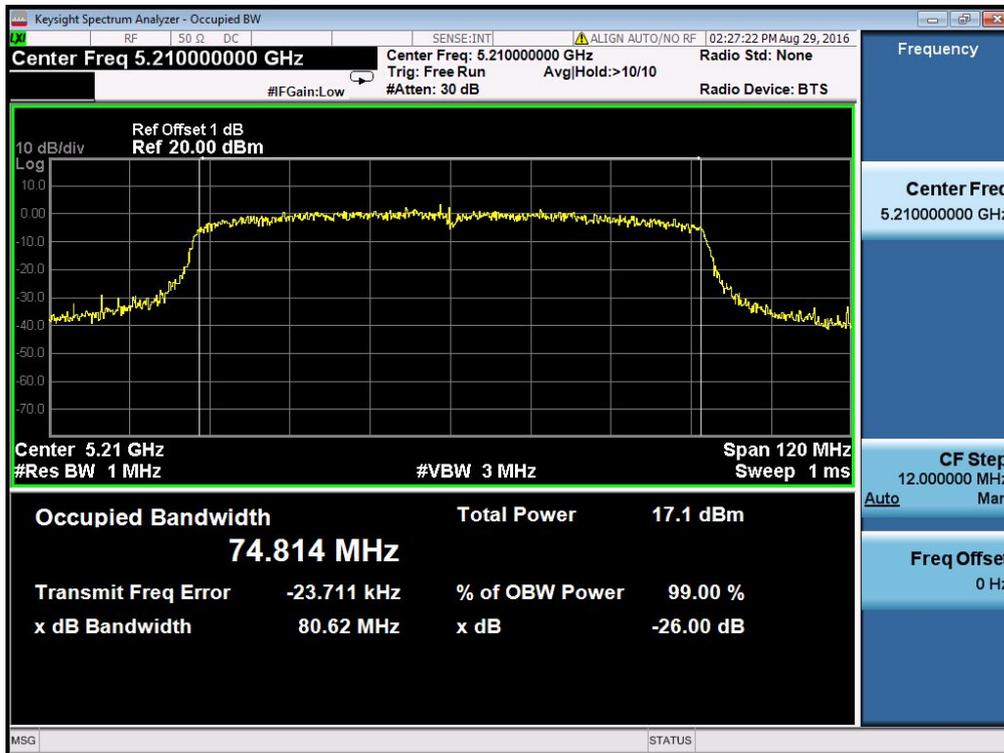

Antenna 1 - 802.11ac-VHT40 – 5190MHz

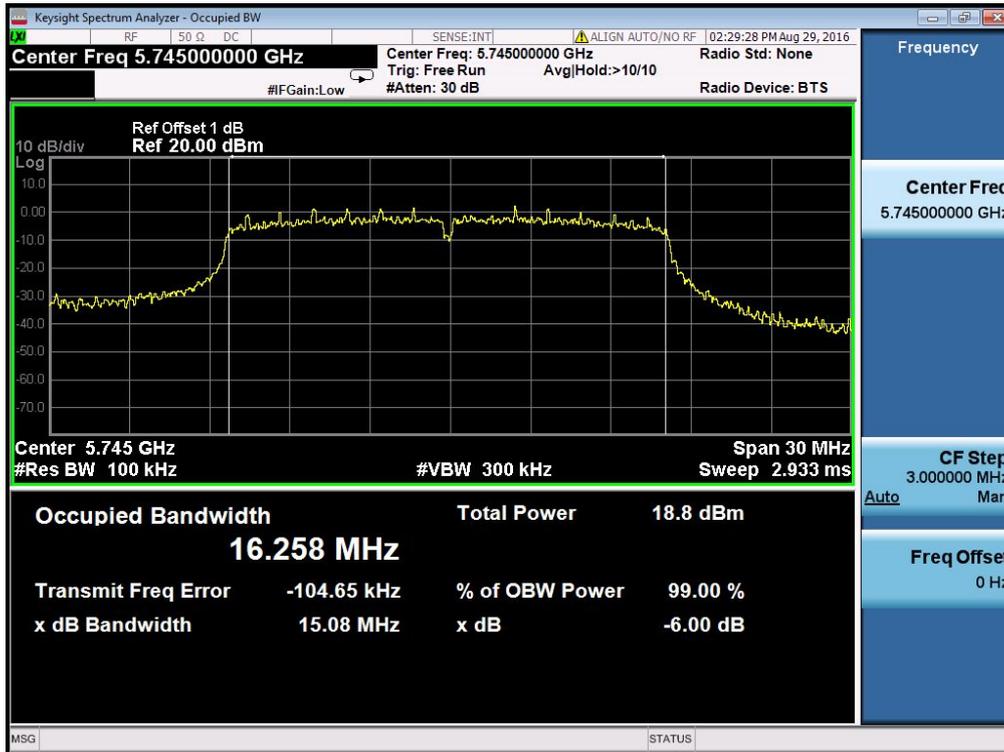Antenna 1 - 802.11ac-VHT40 – 5230MHz

Antenna 1 - 802.11ac-VHT80 – 5210MHz

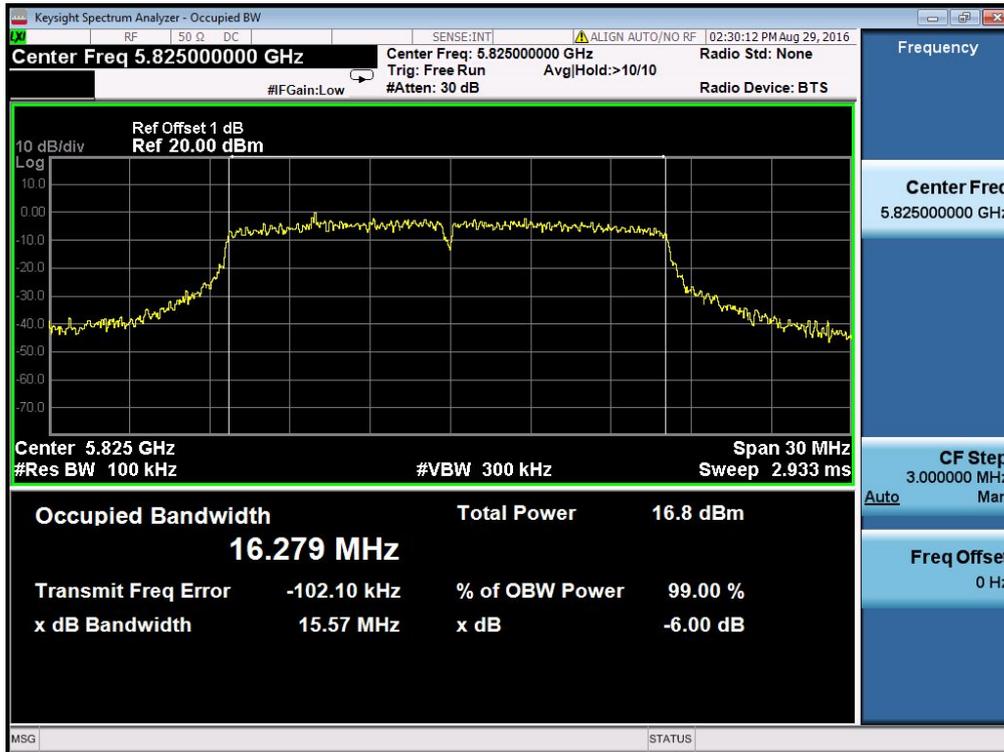Antenna 1 - 802.11a – 5745MHz

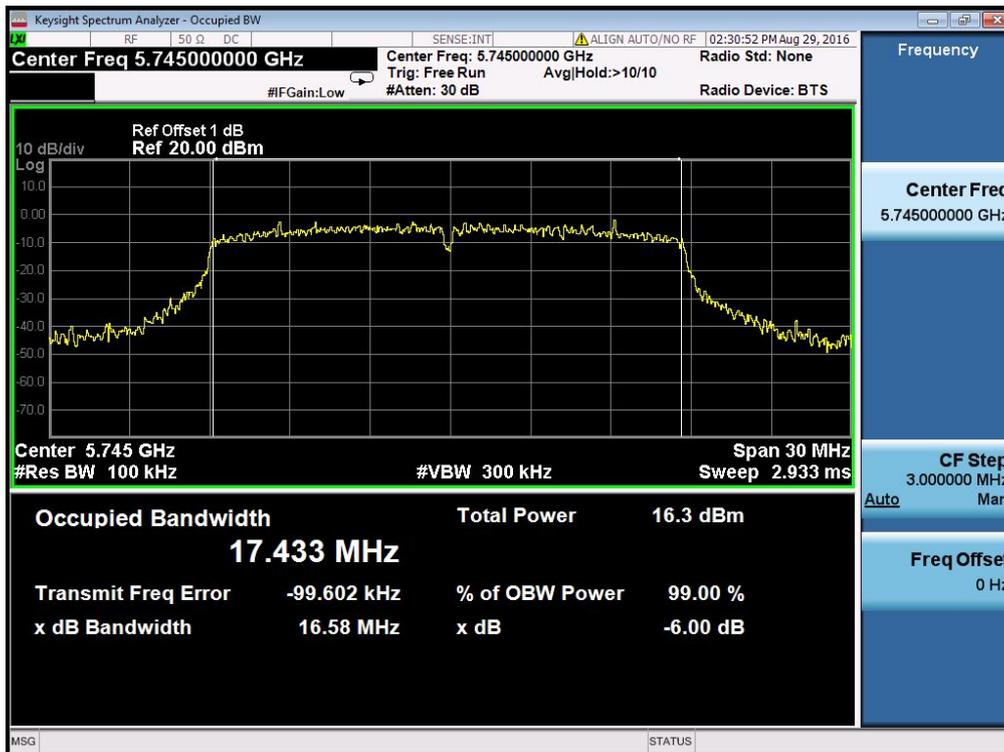Antenna 1 - 802.11a – 5785MHz

Antenna 1 - 802.11a – 5825MHz

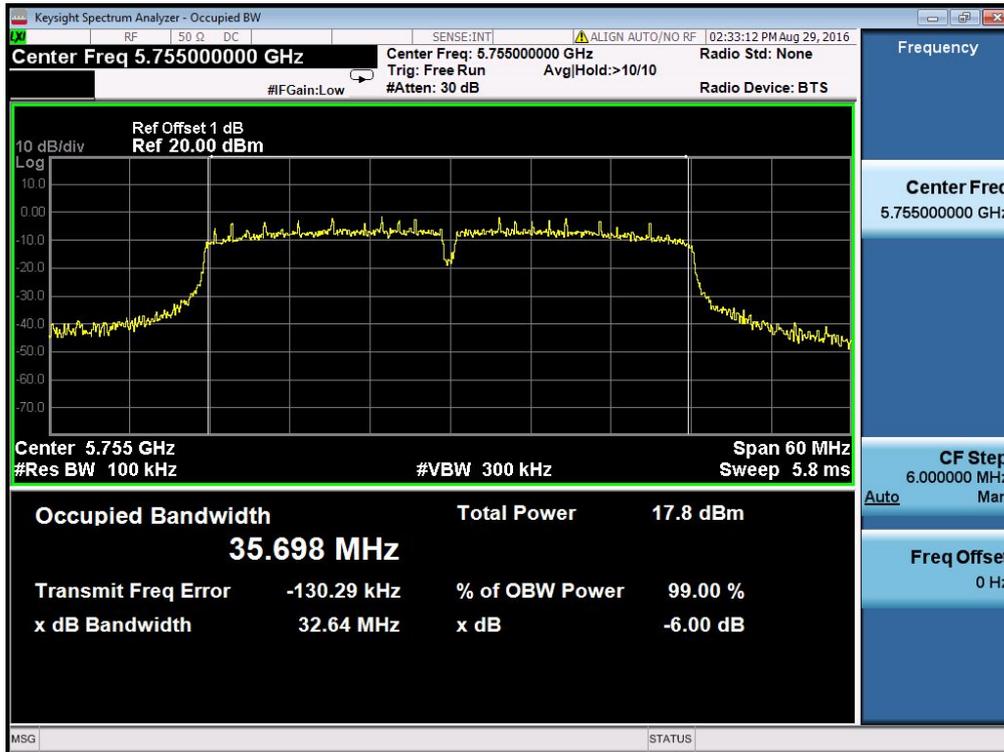Antenna 1 - 802.11n-HT20 – 5745MHz

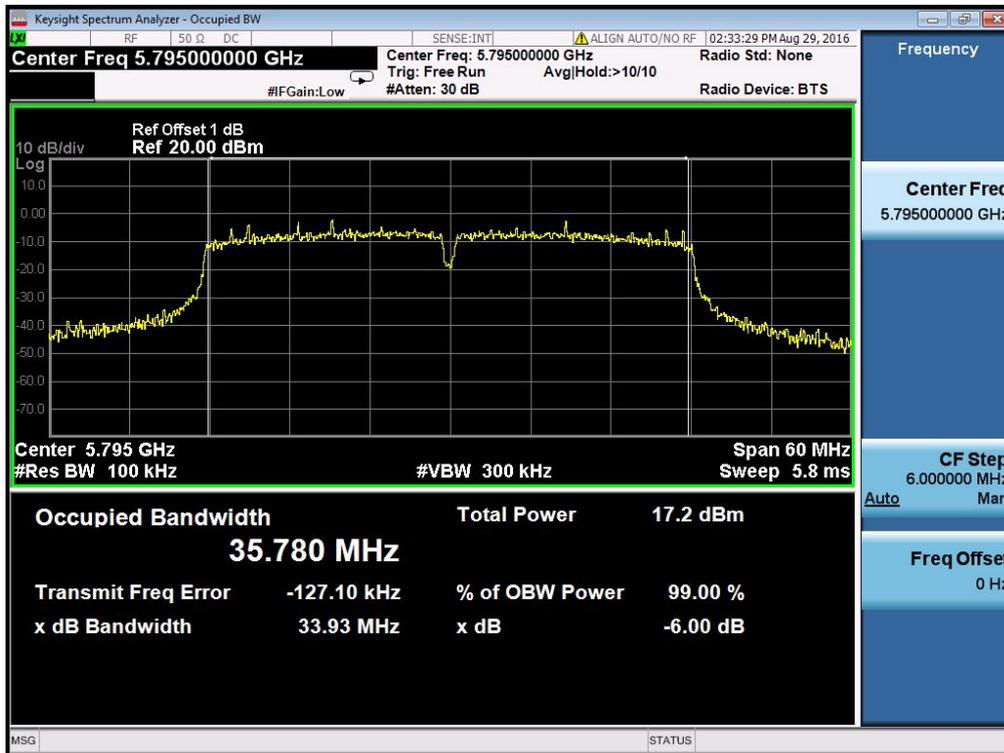Antenna 1 - 802.11n-HT20 – 5785MHz

Antenna 1 - 802.11n-HT20 – 5825MHz
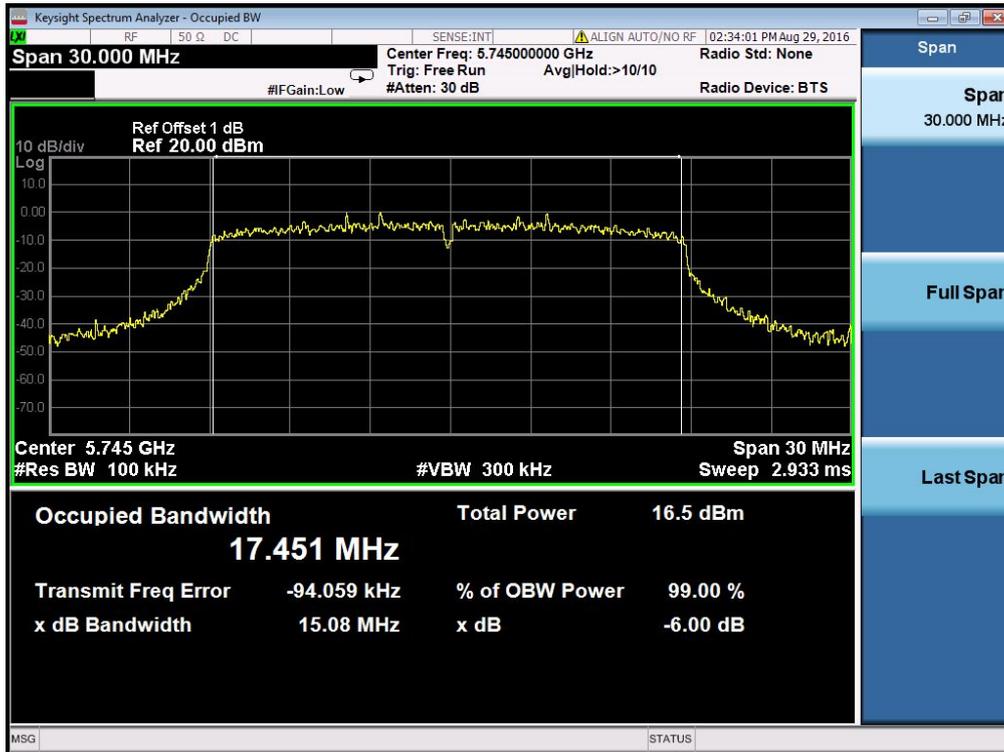
Antenna 1 - 802.11n-HT40 – 5755MHz
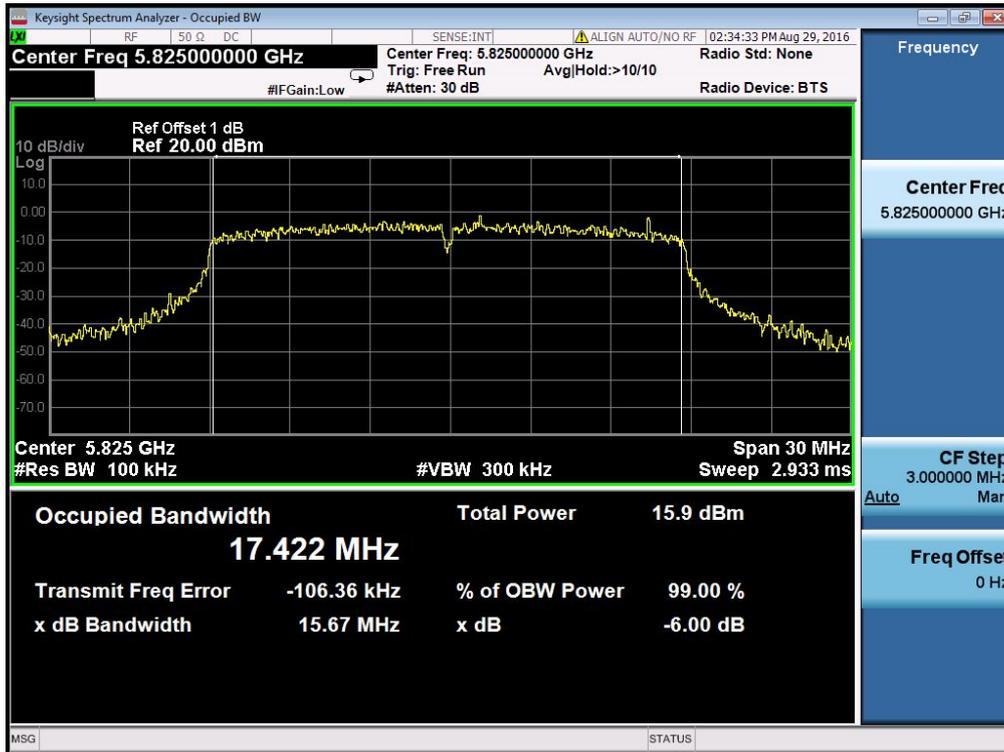

Antenna 1 - 802.11n-HT40 – 5795MHz

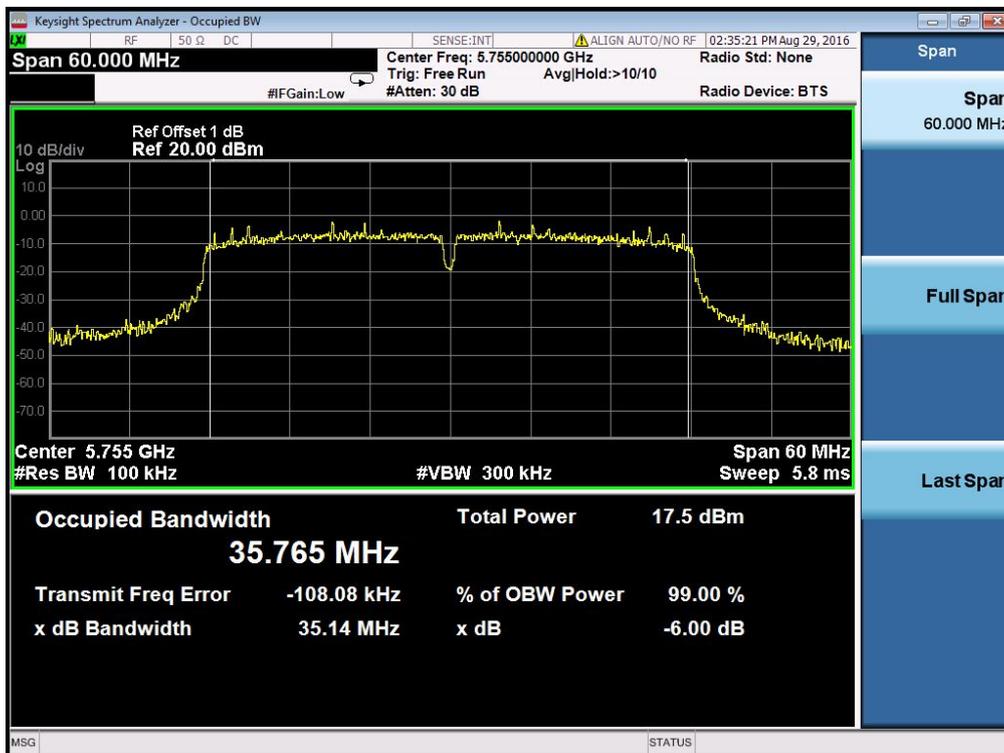Antenna 1 - 802.11ac-VHT20 – 5745MHz
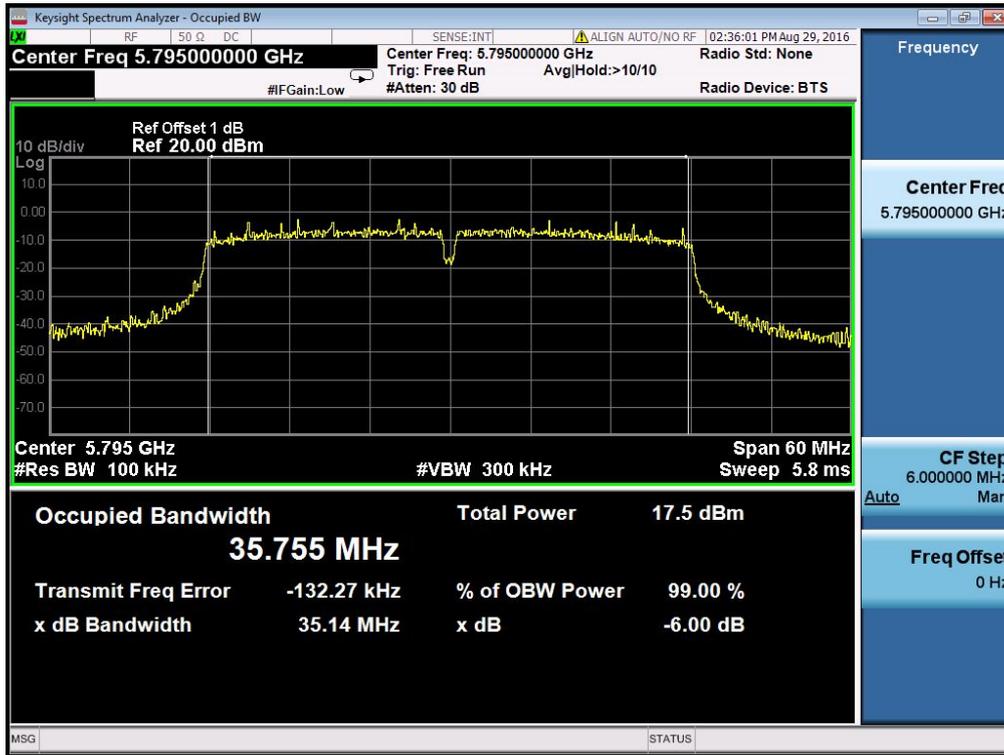

Antenna 1 - 802.11ac-VHT20 – 5785MHz
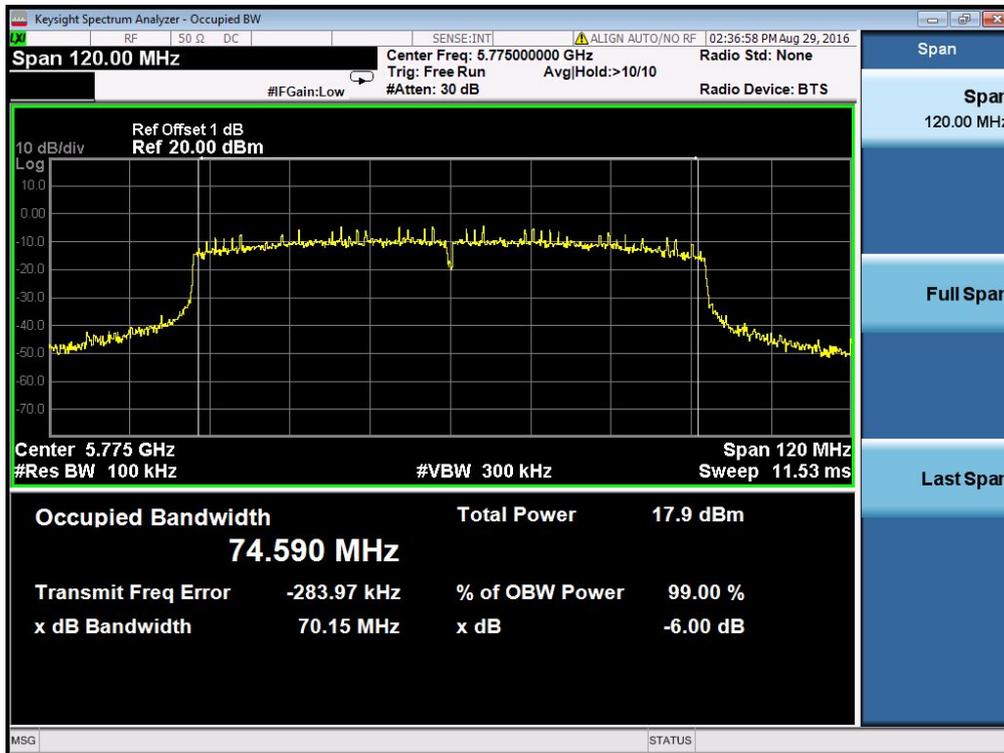
Antenna 1 - 802.11ac-VHT20 – 5825MHz

Antenna 1 - 802.11ac-VHT40 – 5755MHz

Antenna 1 - 802.11ac-VHT40 – 5795MHz

Antenna 1 - 802.11ac-VHT80 – 5775MHz

2.4. Power spectral density (PSD)

2.4.1. Limit of Power Spectral Density

Band	EUT Category	Limit
U-NII-1	☐ Access Point (Master device)	17 dBm/MHz
	☐ Fixed point-to-point Access device	
	☒ Mobile and portable client device	11 dBm/MHz
U-NII-2A	☐	11 dBm/MHz
U-NII-2C	☐	11 dBm/MHz
U-NII-3	☒	30dBm/500kHz

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Setup

Spectrum Analyzer   EUT
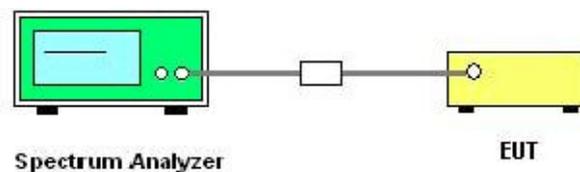
2.4.4. Test Procedures

1. Place the EUT on the table and set it in transmitting mode.

2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.

4. **For U-NII-1, U-NII-2A, U-NII-2C Band:**

Using method SA-2

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

For U-NII-3 Band:

Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

5. User the cursor on spectrum to peak search the highest level of trace

6. Record the max. Reading and add 10 log (1/duty cycle).

7. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where

BWCF = 10log (500 kHz / 300 kHz) = 2.22

8. Repeat above procedures until all default test channel (low, middle, and high) was complete.

2.4.5. Test Results of Power spectral density

**Measurement Data of Band U-NII-1 (5150~5250MHz)**

802.11a mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)		Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1		
5180	8.252	7.683	11	PASS
5220	8.123	7.444	11	PASS
5240	8.096	7.318	11	PASS
802.11n-HT20 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5180	6.617	5.945	9.30	11	PASS
5220	7.082	6.035	9.60	11	PASS
5240	6.759	6.067	9.44	11	PASS
802.11n-HT40 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5190	5.410	4.278	7.89	11	PASS
5230	4.959	4.466	7.73	11	PASS
802.11ac-VHT20 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5180	7.098	6.059	9.62	11	PASS
5220	6.839	6.263	9.57	11	PASS
5240	7.061	6.037	9.59	11	PASS
802.11ac-VHT40 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5190	5.405	4.311	7.90	11	PASS
5230	5.197	4.137	7.71	11	PASS
802.11n-VHT80 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5210	2.306	1.552	4.96	11	PASS

Test results of band U-NII-3 (5725 ~ 5850 MHz)

802.11a mode				
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1		
5745	6.032	6.093	30	PASS
5785	5.635	5.091	30	PASS
5825	5.205	5.871	30	PASS
802.11n-HT20 mode				
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1	Total		
5745	4.598	4.467	7.54	30	PASS
5785	4.479	4.402	7.45	30	PASS
5825	4.182	4.903	7.57	30	PASS
802.11n-HT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1	Total		
5755	1.885	2.721	5.33	30	PASS
5795	1.472	2.390	4.97	30	PASS
802.11ac-VHT20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1	Total		
5745	4.162	4.360	7.27	30	PASS
5785	3.652	4.356	7.03	30	PASS
5825	3.906	4.197	7.06	30	PASS
802.11ac-VHT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1	Total		
5755	2.357	2.488	5.43	30	PASS
5795	2.016	2.057	5.05	30	PASS
802.11n-VHT80 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/500kHz)	Result
	Antenna 0	Antenna 1	Total		
5775	-0.731	-0.980	2.16	30	PASS

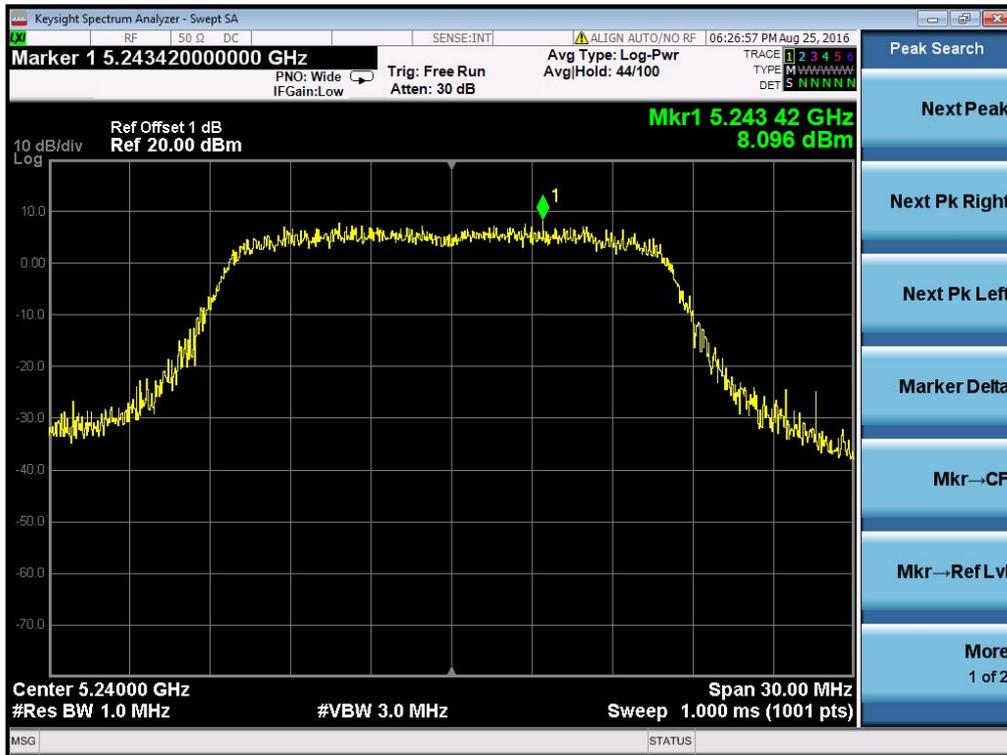## 2.4.6. Test Results (plots) of Power spectral density

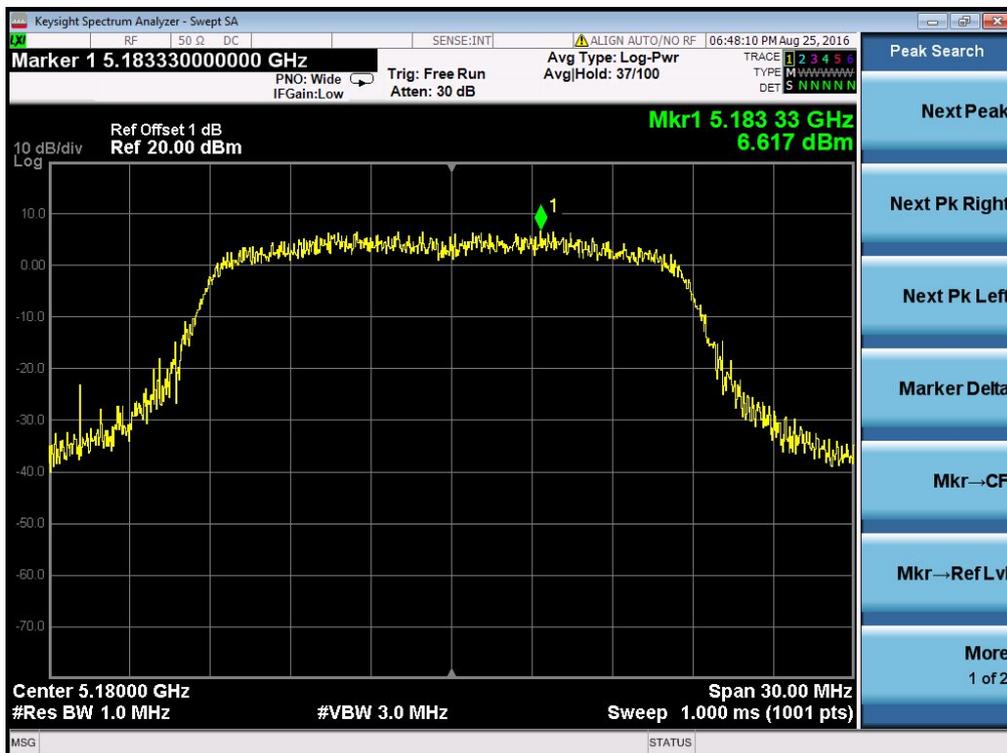Antenna 0 - 802.11a – 5180MHz
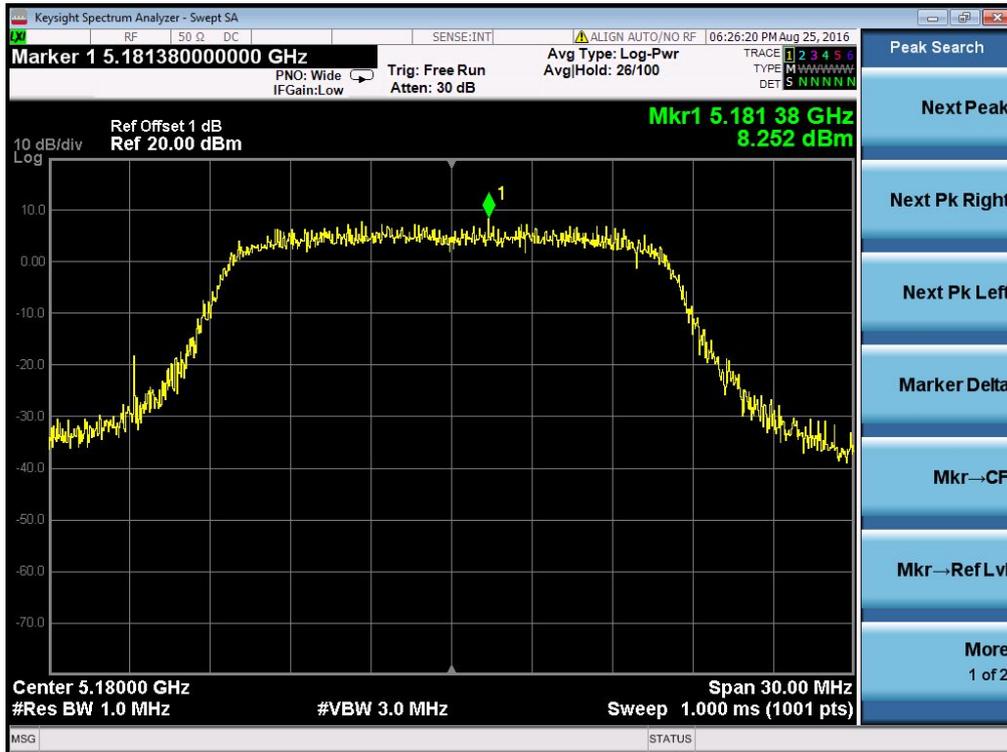
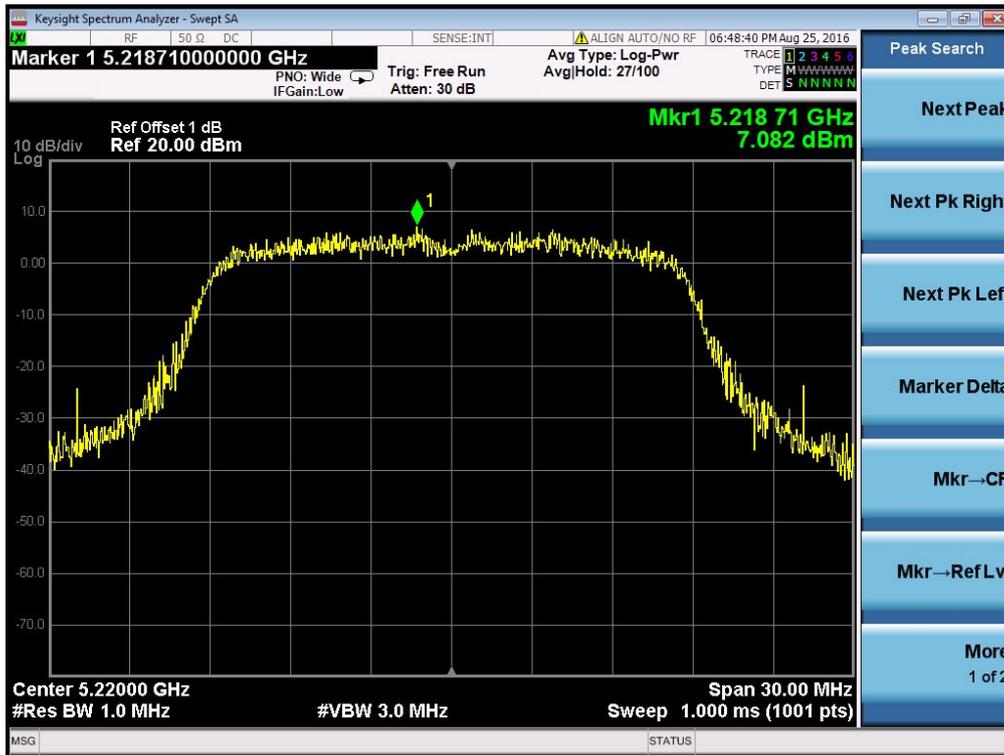Antenna 0 - 802.11a – 5220MHz
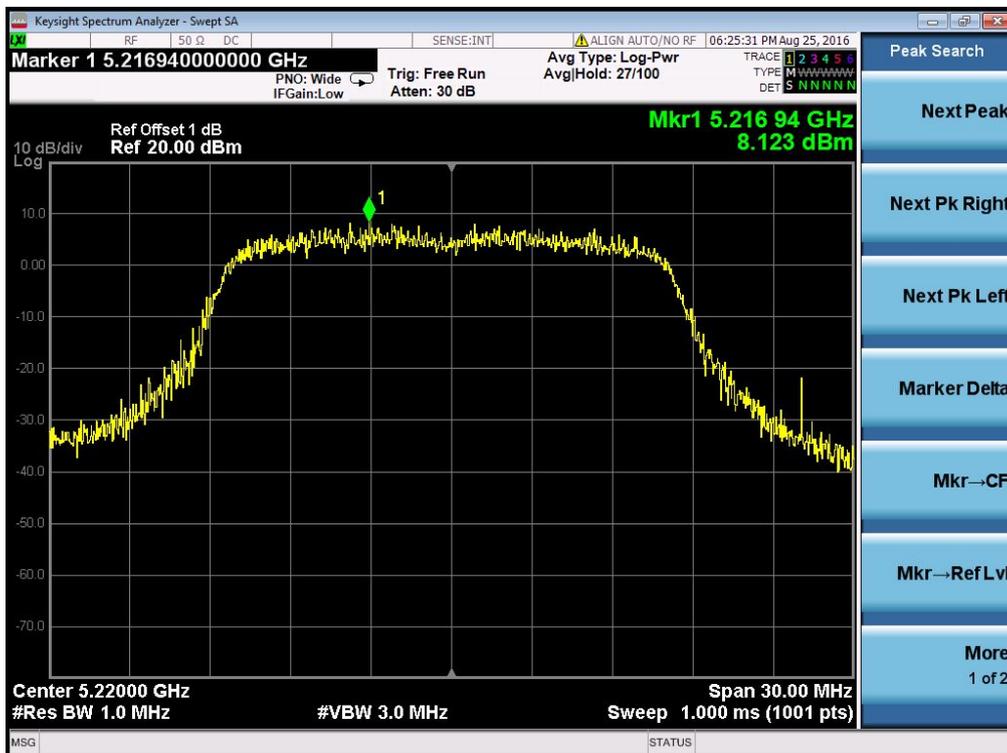
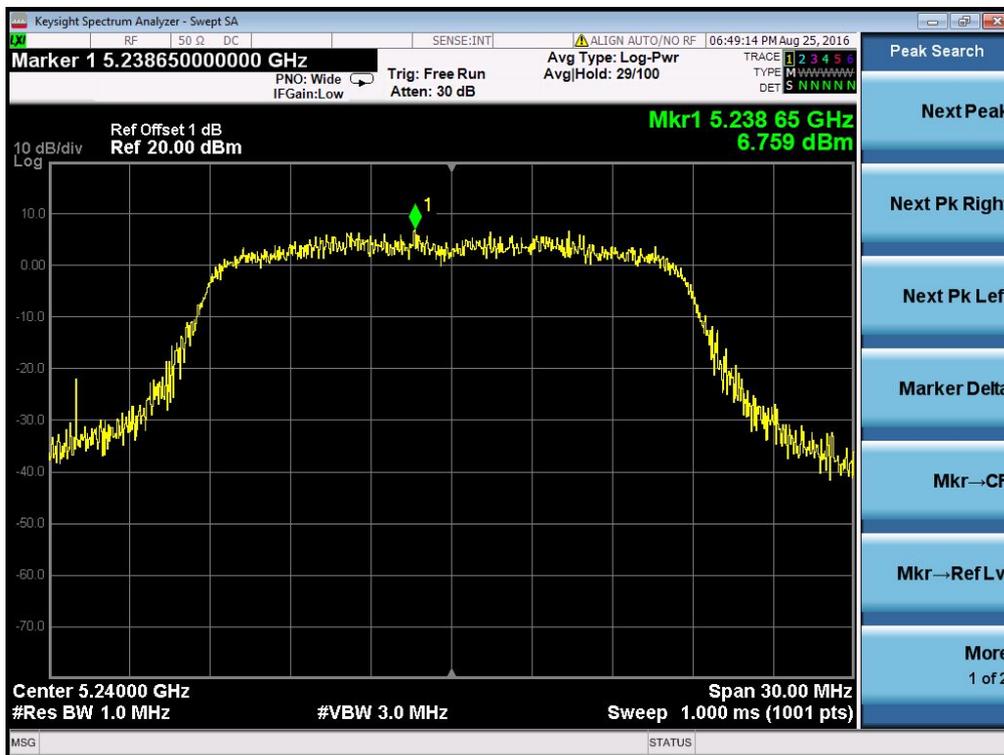Antenna 0 - 802.11a – 5240MHz

Antenna 0 - 802.11n-HT20 – 5180MHz
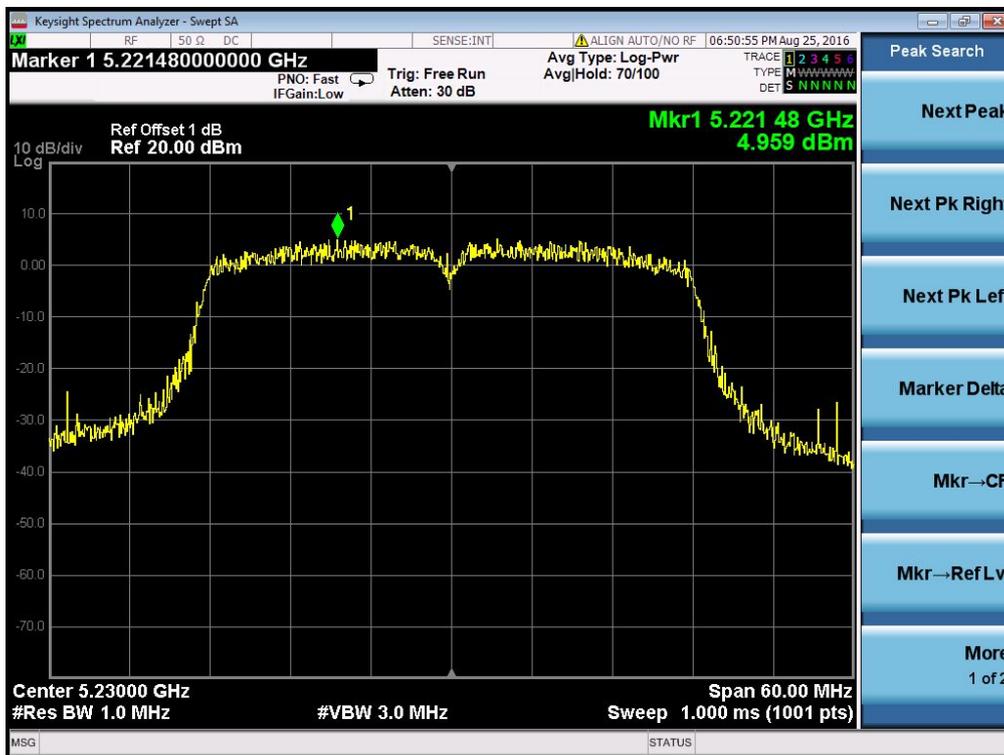
Antenna 0 - 802.11n-HT20 – 5220MHz
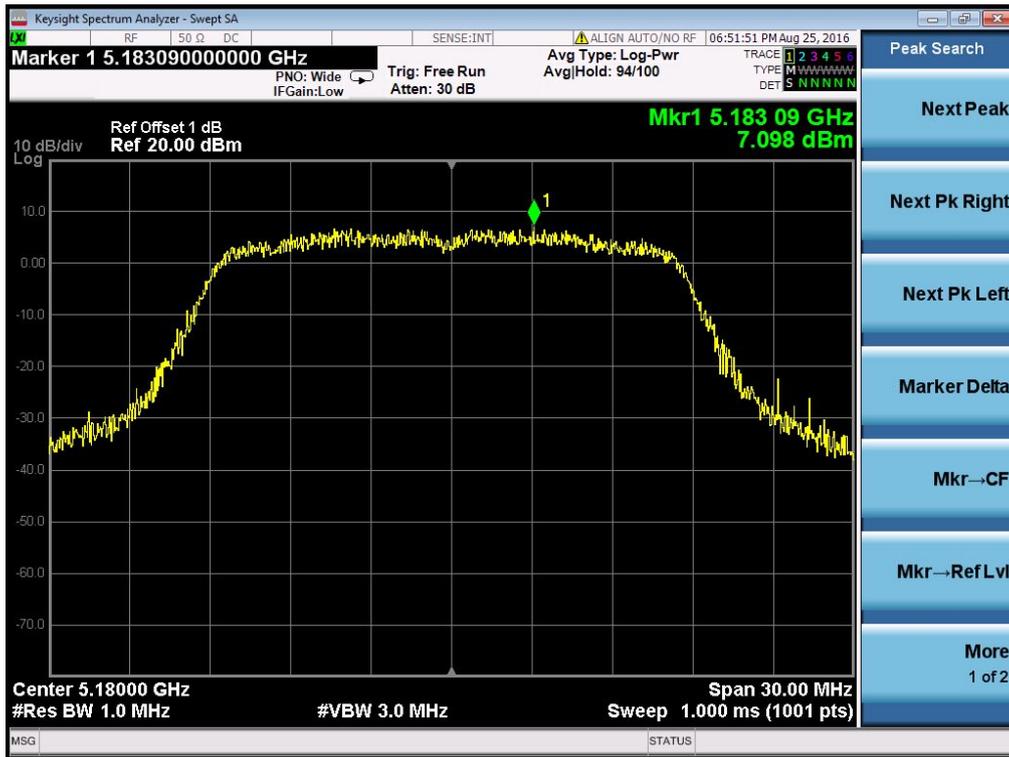

Antenna 0 - 802.11n-HT20 – 5240MHz
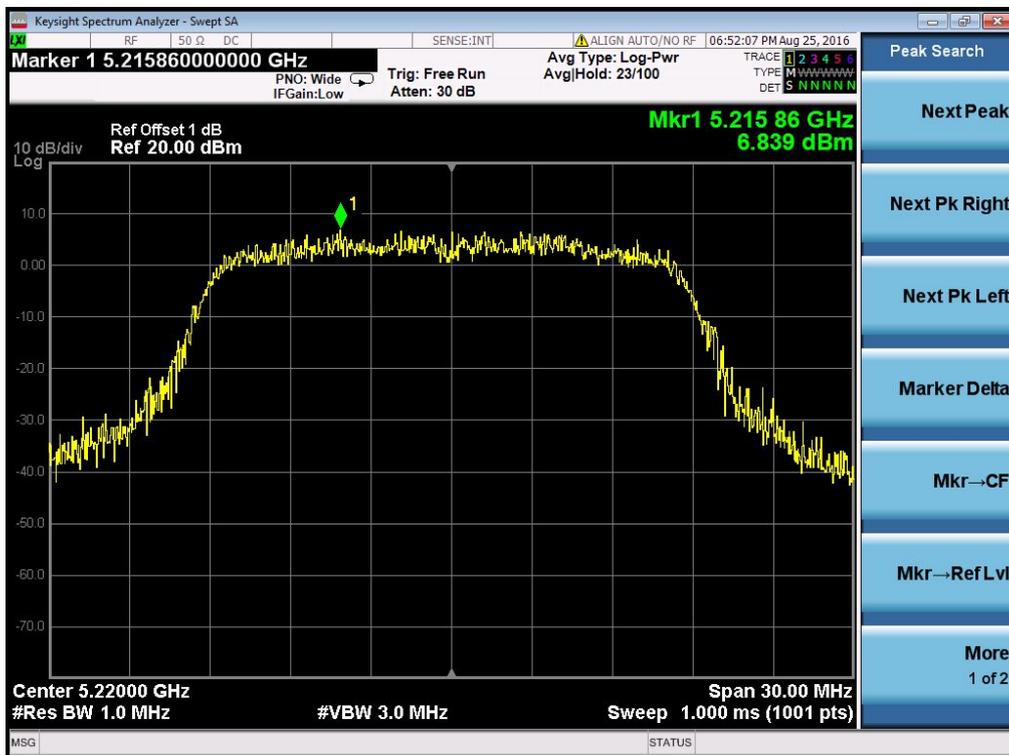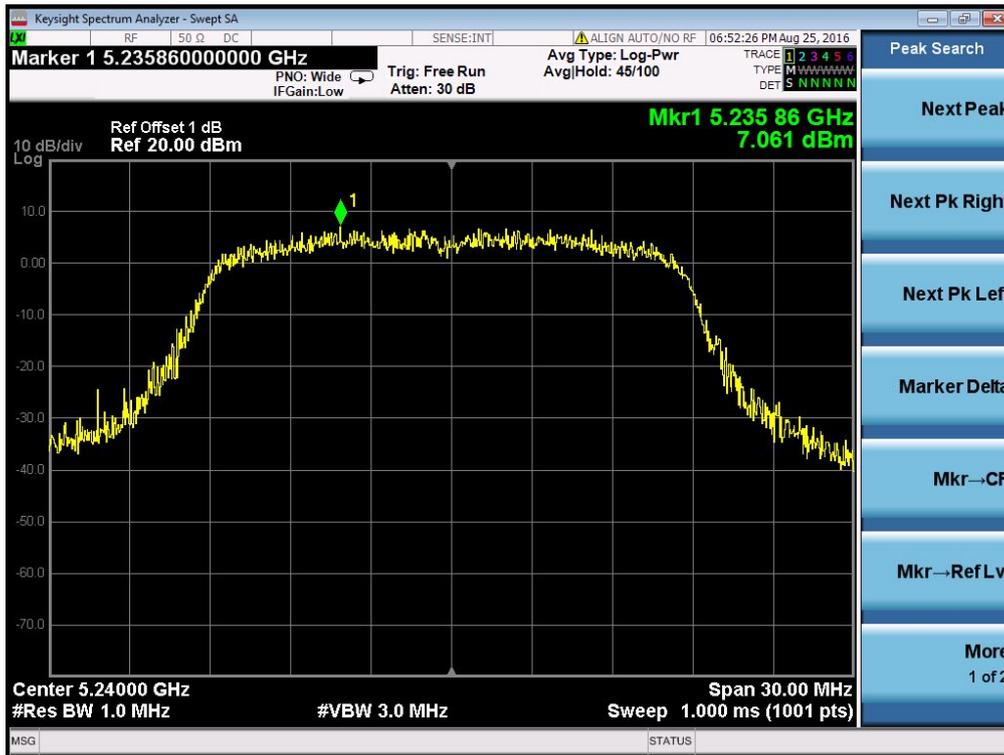
Antenna 0 - 802.11n-HT40 – 5190MHz

Antenna 0 - 802.11n-HT40 – 5230MHz

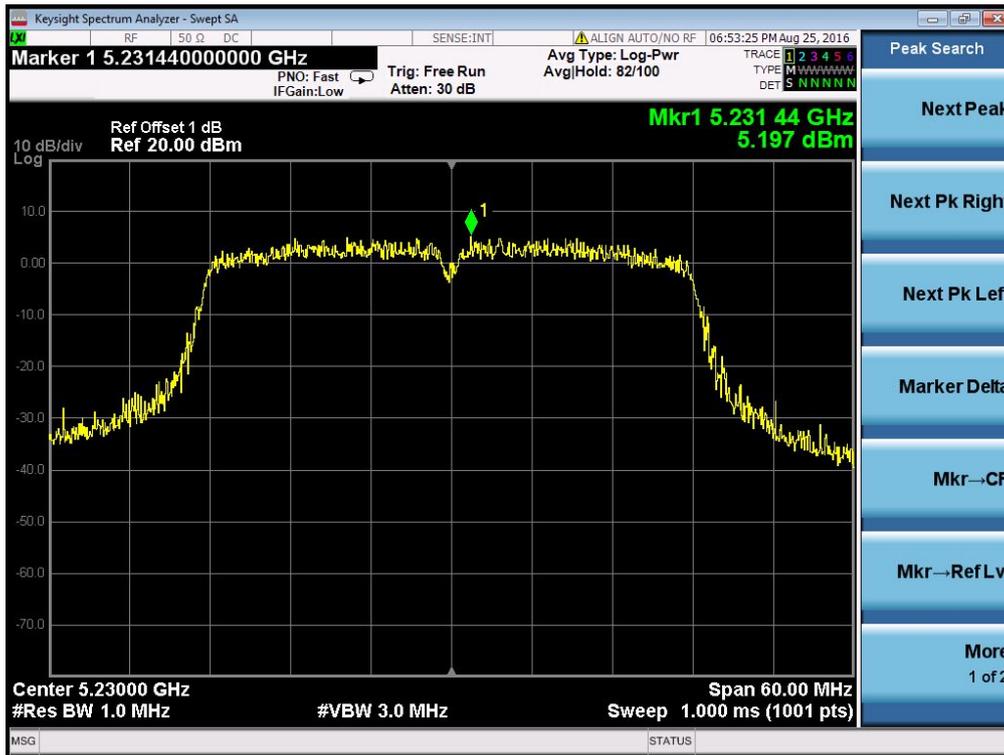Antenna 0 - 802.11ac-VHT20 – 5180MHz

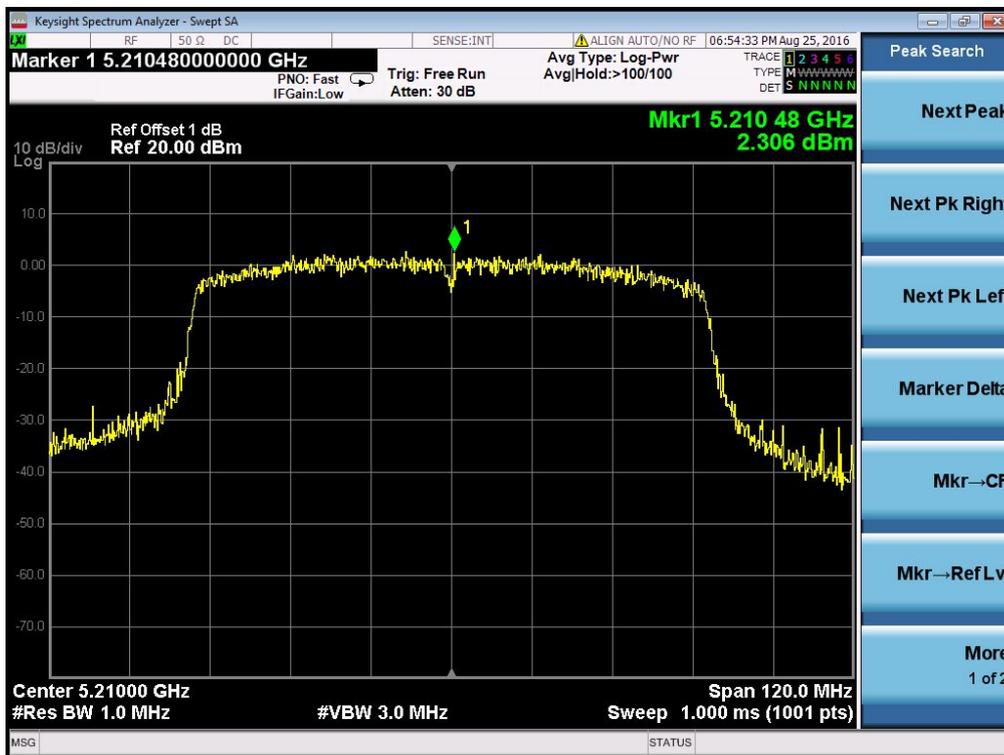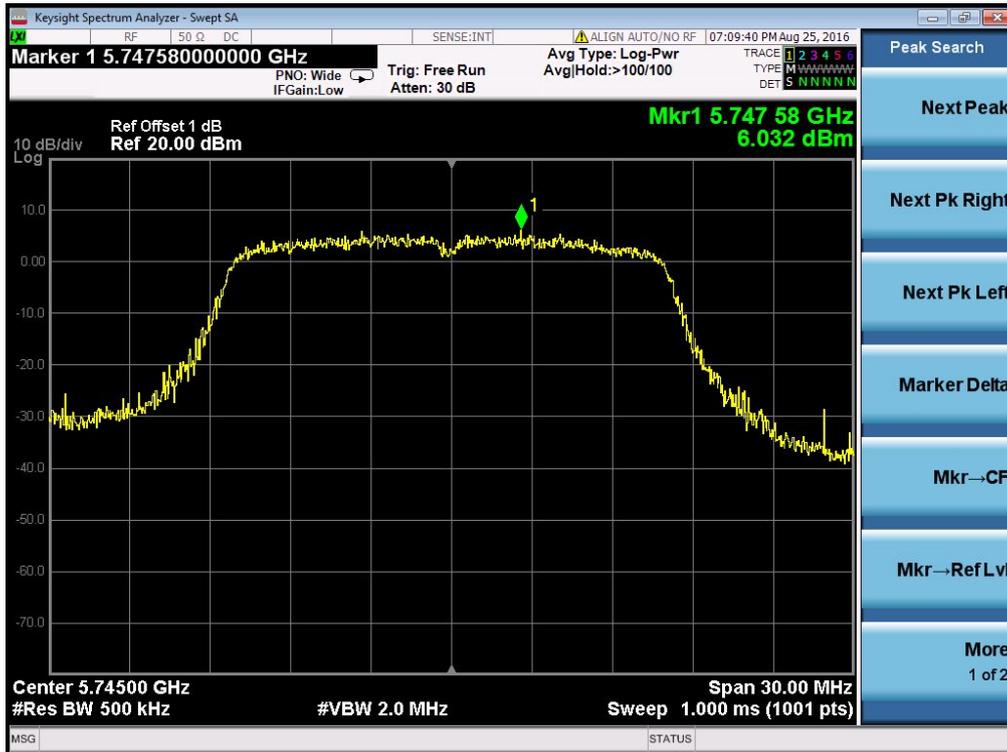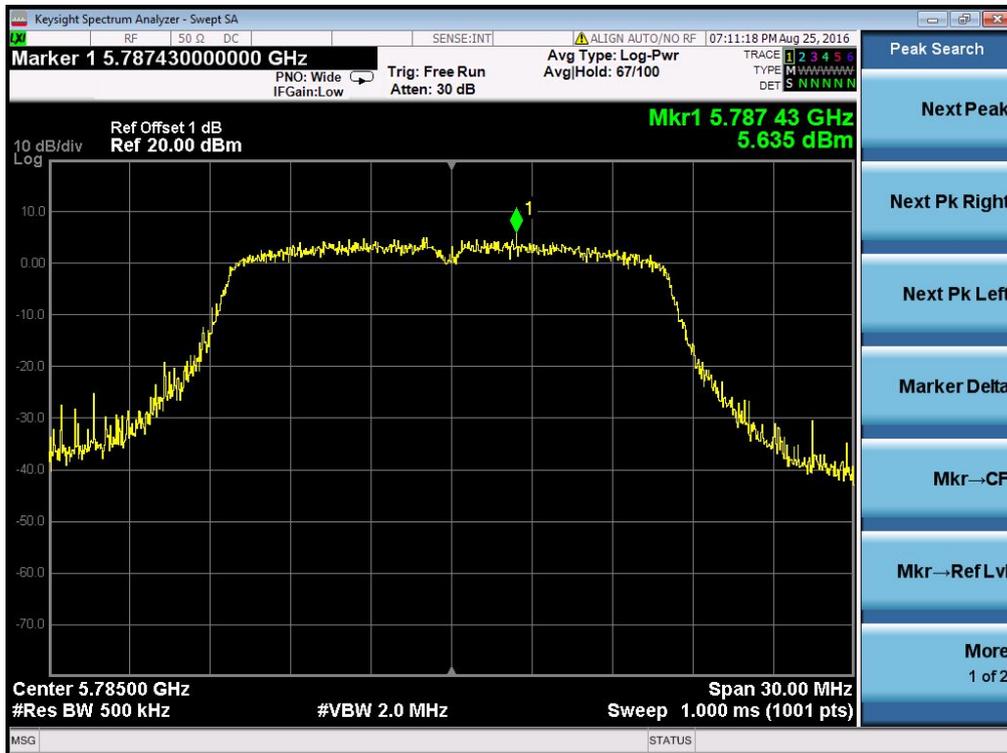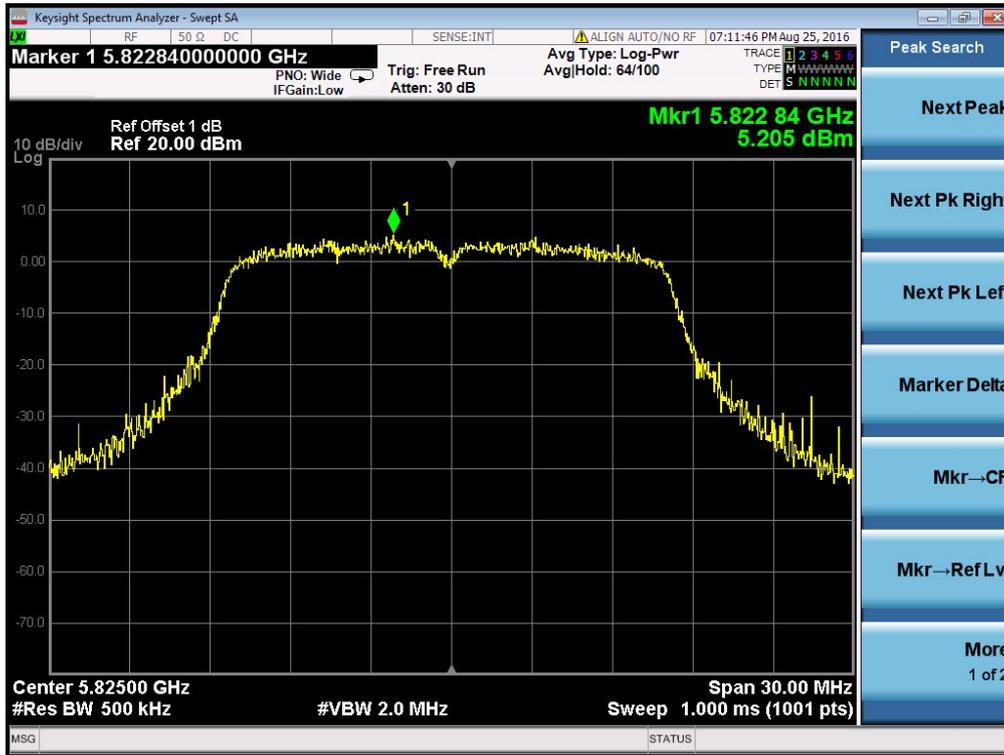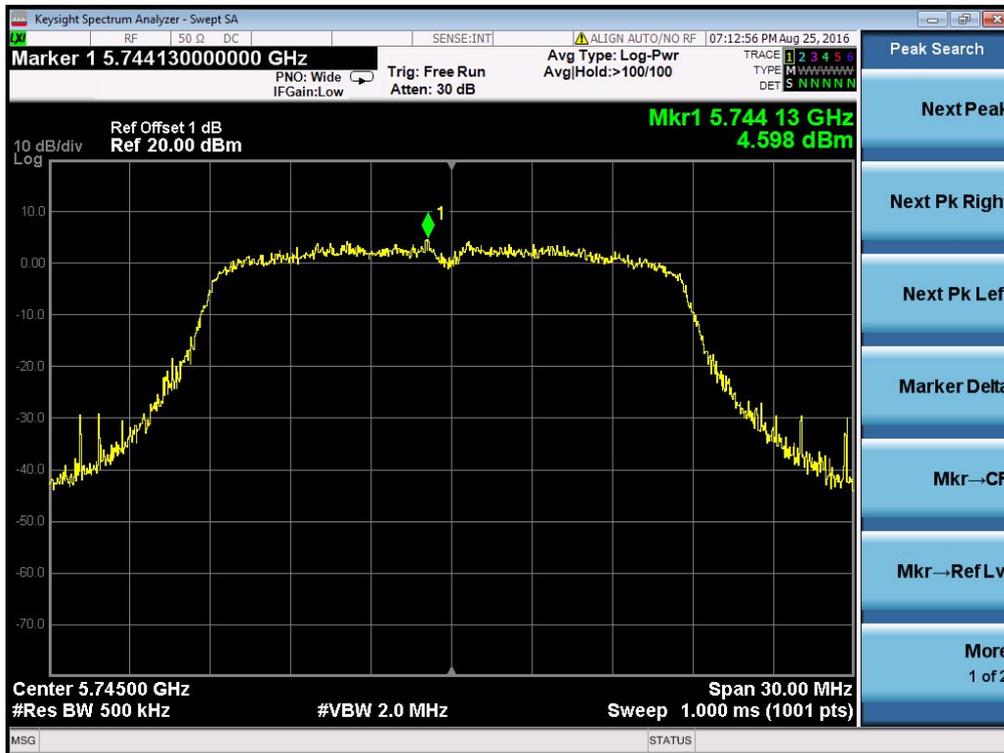Antenna 0 - 802.11ac-VHT20 – 5220MHz

Antenna 0 - 802.11ac-VHT20 – 5240MHz

Antenna 0 - 802.11ac-VHT40 – 5190MHz

Antenna 0 - 802.11ac-VHT40 – 5230MHz

Antenna 0 - 802.11ac-VHT80 – 5210MHz

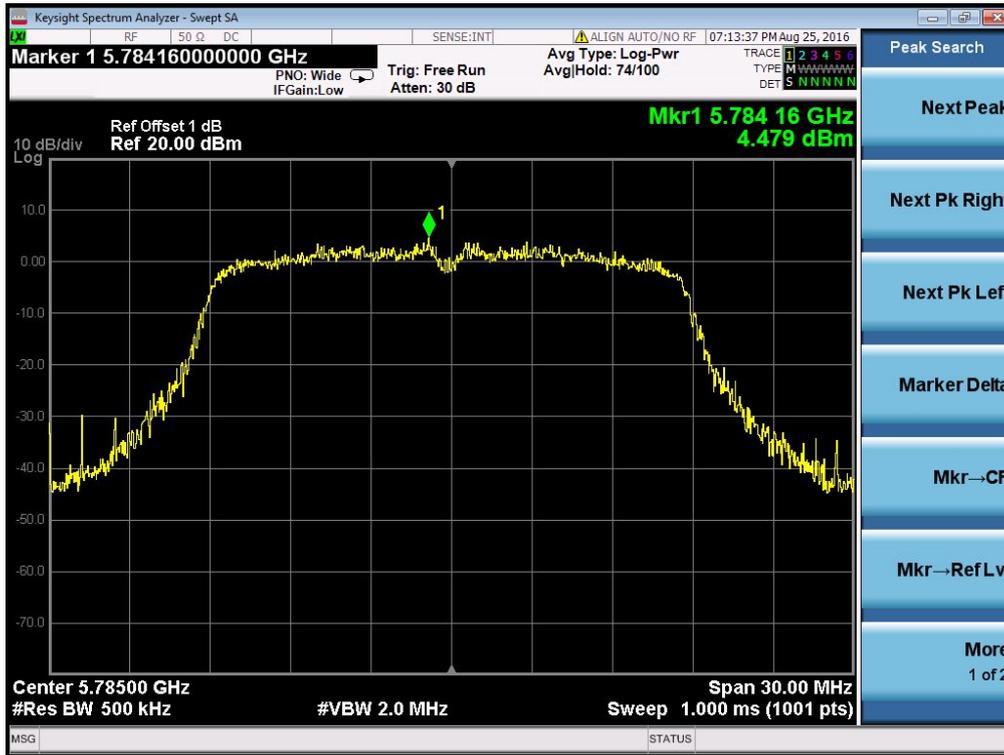Antenna 0 - 802.11a – 5745MHz

Antenna 0 - 802.11a – 5785MHz
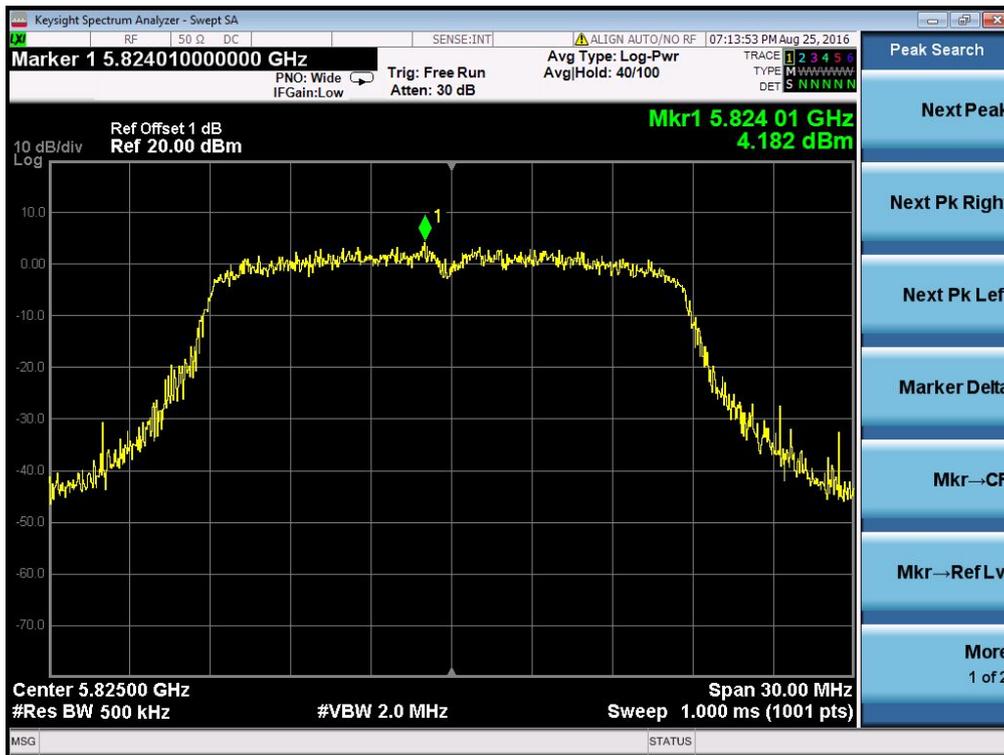
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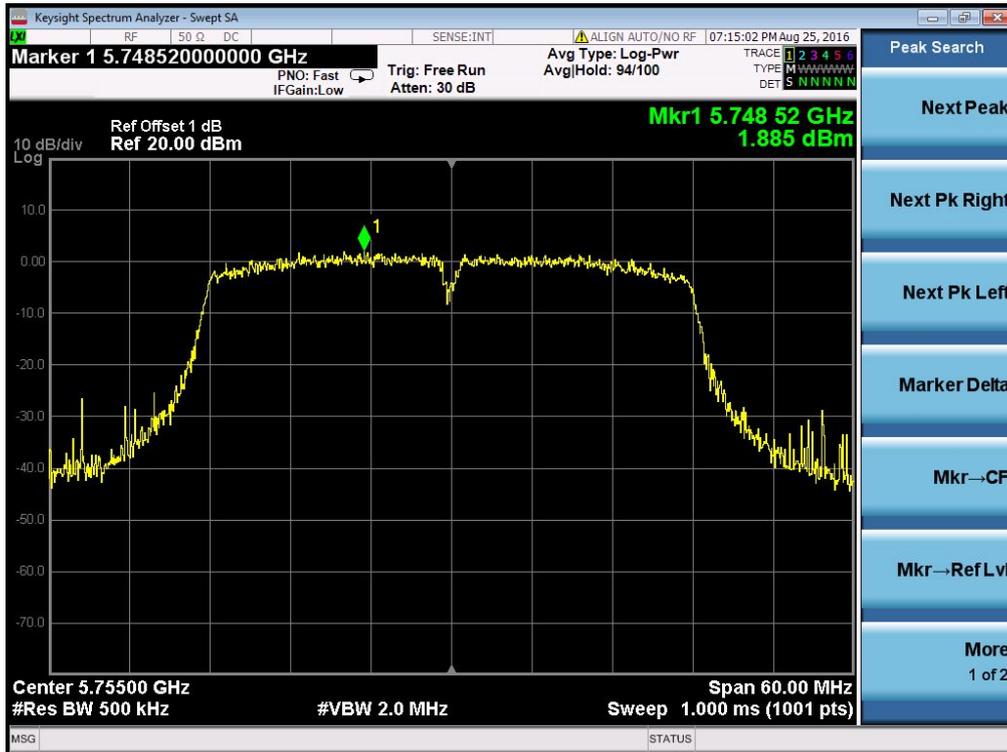

Antenna 0 - 802.11n-HT20 – 5745MHz

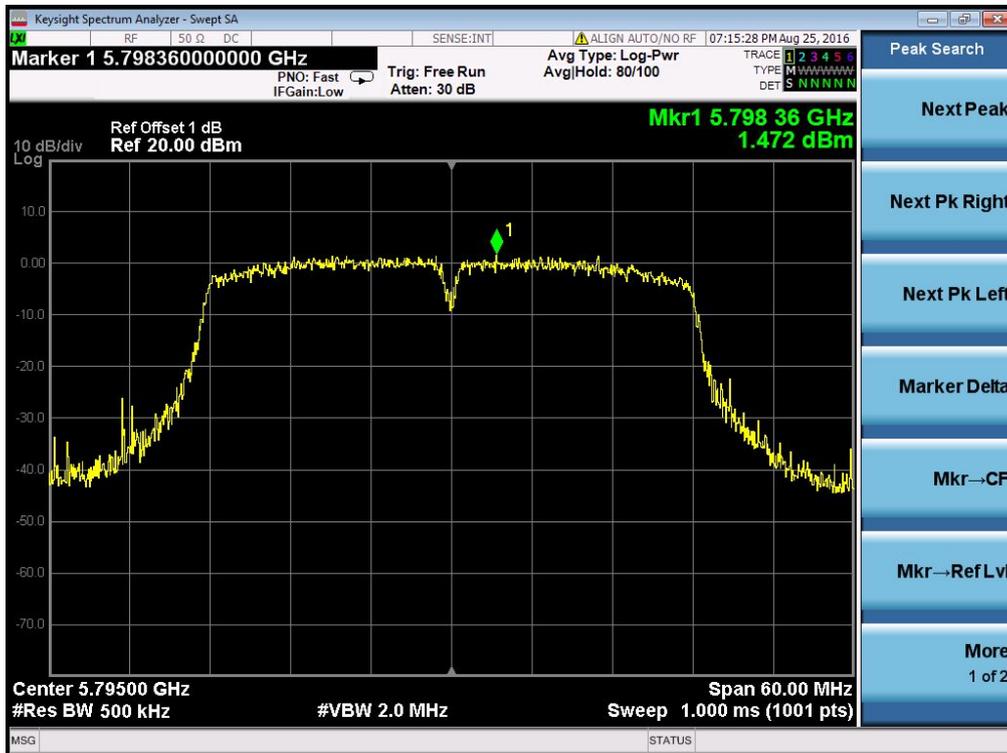Antenna 0 - 802.11n-HT20 – 5785MHz

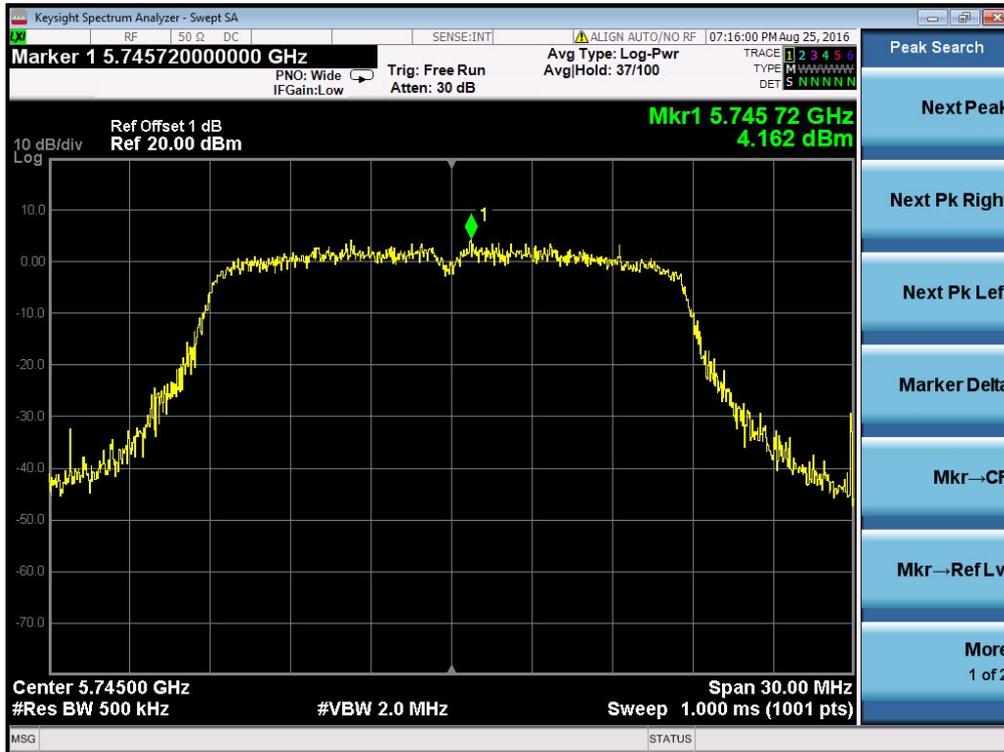Antenna 0 - 802.11n-HT20 – 5825MHz

Antenna 0 - 802.11n-HT40 – 5755MHz

Antenna 0 - 802.11n-HT40 – 5795MHz

Antenna 0 - 802.11ac-VHT20 – 5745MHz

Antenna 0 - 802.11ac-VHT20 – 5785MHz