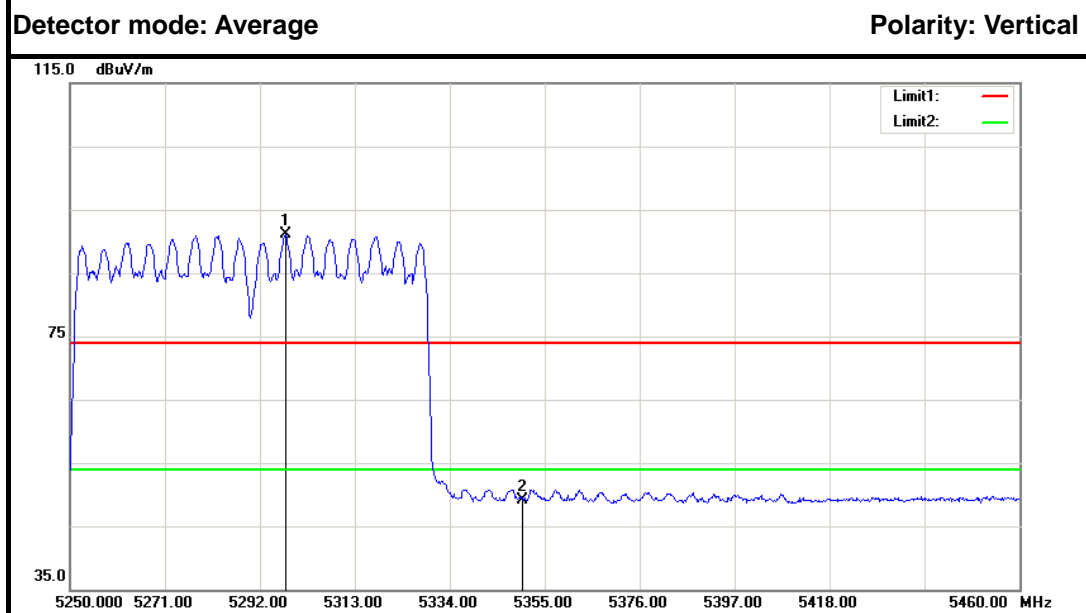
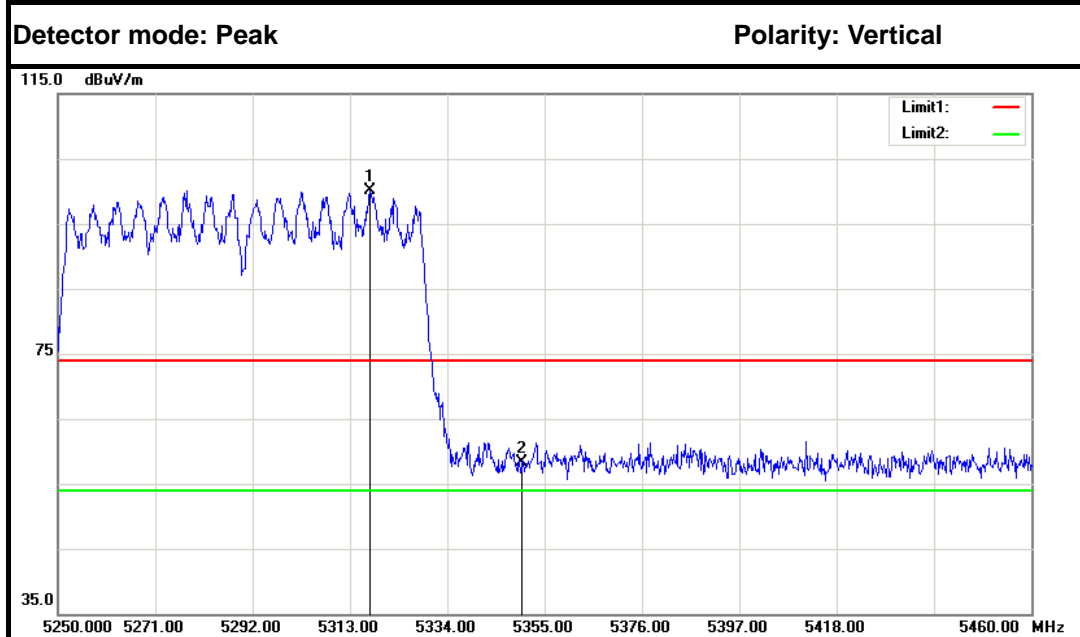
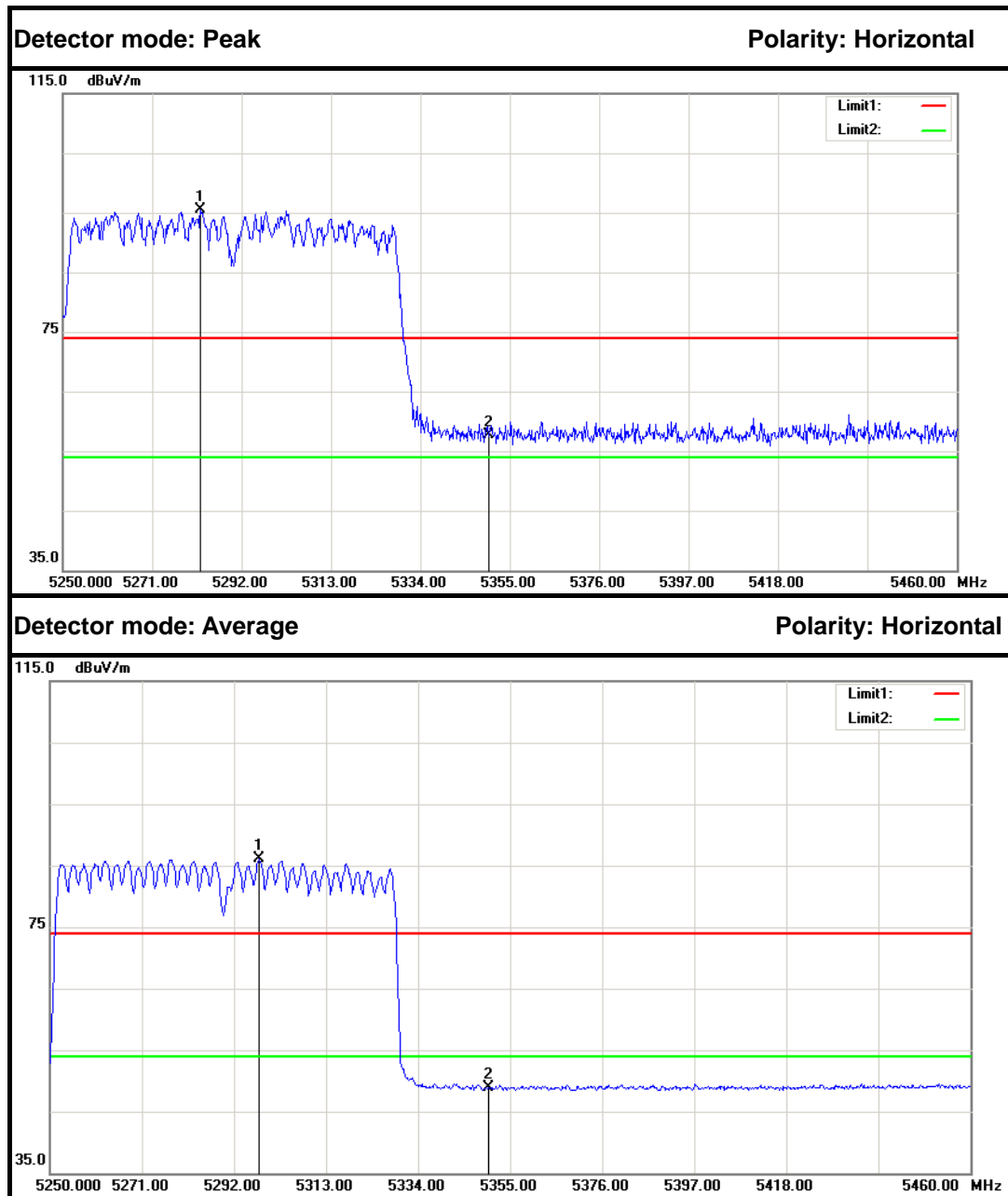




IEEE 802.11ac 80 mode / 5290 MHz



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5317.200	94.59	5.54	100.13	---	---	Peak	Vertical
2	5350.000	52.72	5.60	58.32	74.00	-15.68	Peak	Vertical
1	5297.670	85.51	5.51	91.02	---	---	Average	Vertical
2	5350.000	43.49	5.60	49.09	54.00	-4.91	Average	Vertical



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5282.340	90.02	5.48	95.50	---	---	Peak	Horizontal
2	5350.000	52.09	5.60	57.69	74.00	-16.31	Peak	Horizontal
1	5297.670	80.54	5.51	86.05	---	---	Average	Horizontal
2	5350.000	43.23	5.60	48.83	54.00	-5.17	Average	Horizontal



6.6 PEAK POWER SPECTRAL DENSITY

6.6.1 LIMIT

According to §15.407(a) & FCC R&O FCC 14-30

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

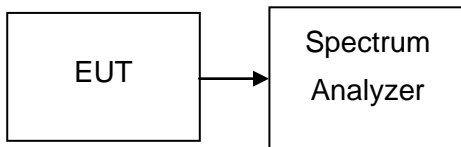
6.6.2 MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2017	02/20/2018

Remark: Each piece of equipment is scheduled for calibration once a year.



6.6.3 TEST CONFIGURATION



6.6.4 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. For devices operating in the bands 5.15-5.25 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span > 26dB bandwidth, Sweep=1ms
3. For devices operating in the bands 5.725-5.85 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span > 26dB bandwidth, Sweep=1ms
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed



6.6.5 TEST RESULTS

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margin			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5180	4.785	4.640	5.094	15.23	-10.445	-10.590	-10.136	PASS
Mid	5200	4.920	4.982	4.808		-10.310	-10.248	-10.422	PASS
High	5240	5.018	5.113	4.755		-10.212	-10.117	-10.475	PASS

Test mode: IEEE 802.11a mode / 5260~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margin			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5260	7.847	7.885	7.774	9.23	-1.383	-1.345	-1.456	PASS
Mid	5300	7.661	7.885	7.598		-1.569	-1.345	-1.632	PASS
High	5320	3.614	3.518	3.329		-5.616	-5.712	-5.901	PASS

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margin			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5500	2.294	2.407	2.148	9.23	-6.936	-6.823	-7.082	PASS
Mid	5580	7.548	8.142	7.527		-1.682	-1.088	-1.703	PASS
High	5700	5.802	4.847	5.240		-3.428	-4.383	-3.990	PASS

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margin			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5745	1.398	1.352	1.436	28.23	-26.832	-26.878	-26.794	PASS
Mid	5785	6.511	6.059	6.377		-21.719	-22.171	-21.853	PASS
High	5825	0.892	1.033	0.392		-27.338	-27.197	-27.838	PASS

Remark:

Directional Gain= $G_{ant} + 10\log(N_{ant})$ dBi

G_{ant} : Gain of Individual Antennas (Same for Each Antenna)

The RBW factor = $10\log_{10}(500/470)=0.269$ dB into test plots.

**Test mode: IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz**

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5180	-4.446	-4.719	-4.837	0.107	15.23	-15.123	PASS
Mid	5200	-4.340	-4.378	-4.327	0.423		-14.807	PASS
High	5240	-4.347	-4.545	-4.541	0.295		-14.935	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5260	3.984	4.028	3.518	8.621	9.23	-0.609	PASS
Mid	5300	3.573	3.857	3.663	8.471		-0.759	PASS
High	5320	-3.235	-3.333	-3.727	1.345		-7.885	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5500	-2.583	-2.835	-3.080	1.943	9.23	-7.287	PASS
Mid	5580	2.308	2.569	1.978	7.063		-2.167	PASS
High	5700	1.363	1.412	1.165	6.086		-3.144	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5745	-3.021	-2.964	-2.947	1.794	28.23	-26.436	PASS
Mid	5785	5.502	5.658	5.343	10.274		-17.956	PASS
High	5825	-2.572	-3.380	-2.930	1.823		-26.407	PASS

Remark:

Directional Gain= $G_{ant} + 10\log(N_{ant})$ dBi G_{ant} : Gain of Individual Antennas (Same for Each Antenna)The RBW factor = $10\log_{10}(500/470)=0.269$ dB into test plots.

**Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz**

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5190	-5.269	-5.573	-5.179	-0.566	15.23	-15.796	PASS
High	5230	-4.725	-5.334	-5.210	-0.310		-15.540	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5270	1.600	1.386	1.242	6.183	9.23	-3.047	PASS
High	5310	-3.876	-4.443	-4.536	0.496		-8.734	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5510	-4.369	-3.902	-4.103	0.651	9.23	-8.579	PASS
Mid	5550	1.597	1.354	1.295	6.189		-3.041	PASS
High	5670	-1.230	-1.312	-1.332	3.480		-5.750	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5755	-3.639	-3.554	-3.840	1.095	28.23	-27.135	PASS
High	5795	-3.903	-3.977	-3.986	0.816		-27.414	PASS

Remark:

Directional Gain= $G_{ant} + 10\log(N_{ant})$ dBi

G_{ant} : Gain of Individual Antennas (Same for Each Antenna)

The RBW factor = $10\log_{10}(500/470)=0.269$ dB into test plots.

**Test mode: IEEE 802.11ac 80 mode / 5210MHz**

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
	5210	-13.052	-13.020	-12.861	-8.206	9.23	-17.436	PASS

Test mode: IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
	5290	-13.288	-13.009	-13.787	-8.578	9.23	-17.808	PASS

Test mode: IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
	5530	-10.356	-10.609	-10.881	-5.839	9.23	-15.069	PASS

Test mode: IEEE 802.11ac 80 mode / 5775MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margin	Result
		Antenna 0	Antenna 1	Antenna 2				
	5775	-4.806	-4.721	-5.161	-0.121	28.23	-28.351	PASS

Remark:

Directional Gain= $G_{ant} + 10\log(N_{ant})$ dBi

G_{ant} : Gain of Individual Antennas (Same for Each Antenna)

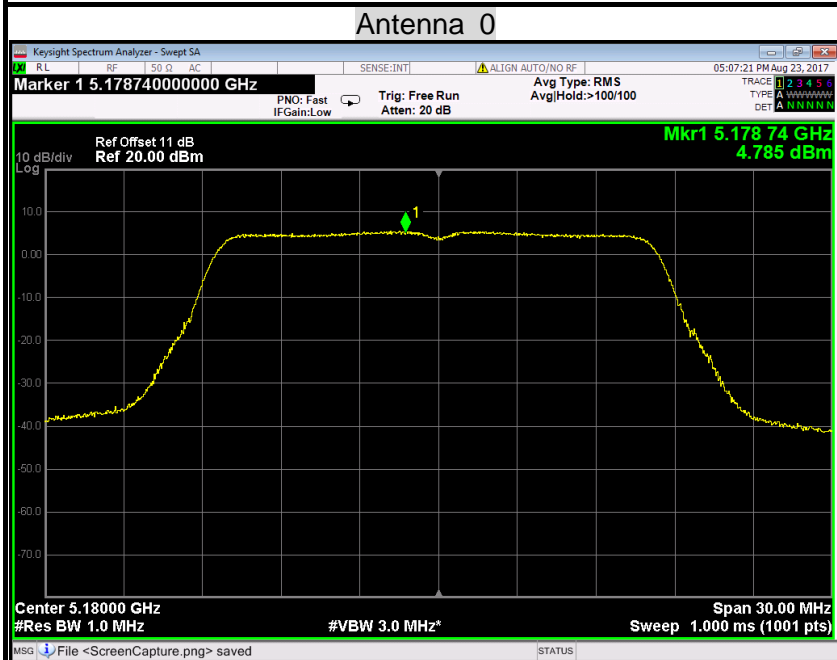
The RBW factor = $10\log_{10}(500/470)=0.269$ dB into test plots.



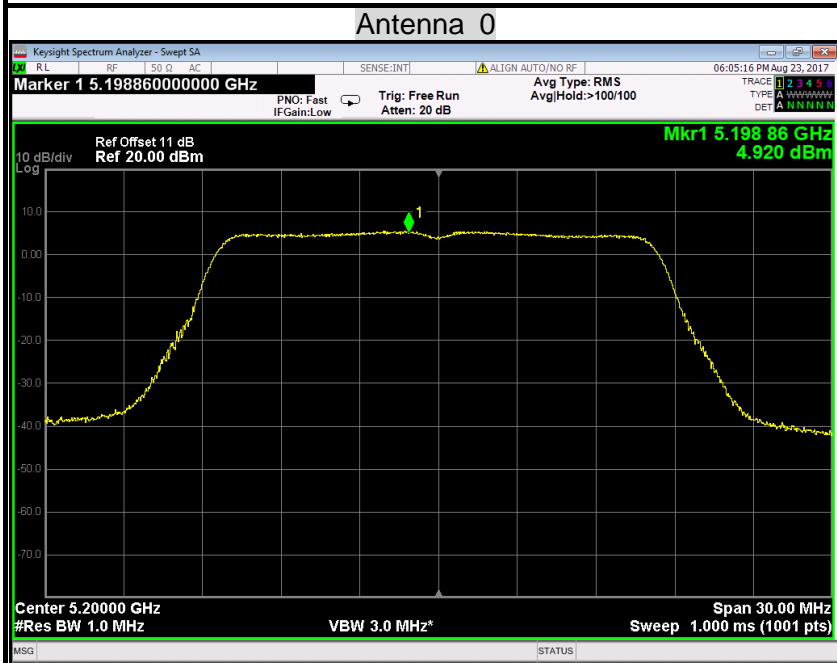
Test Plot

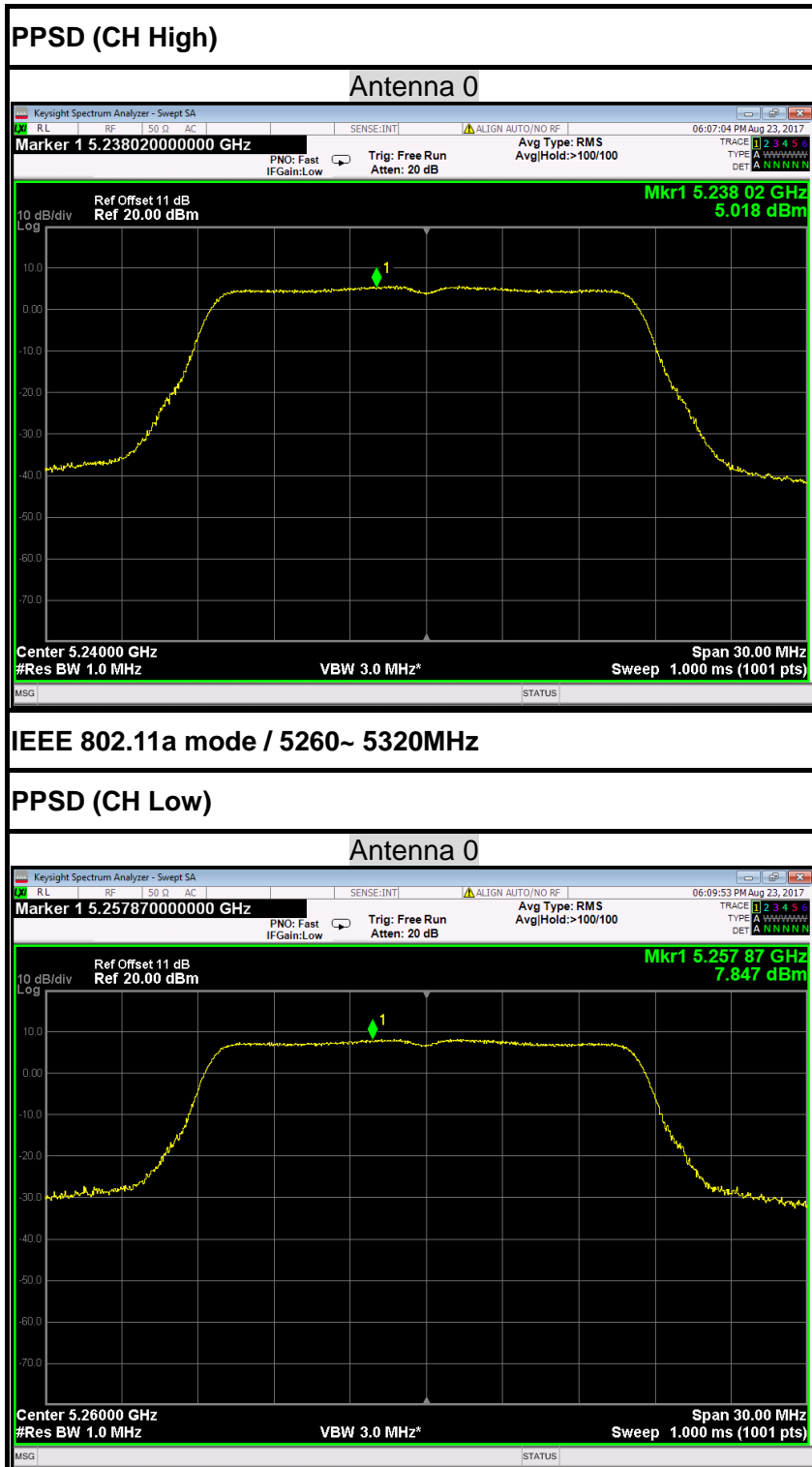
IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)



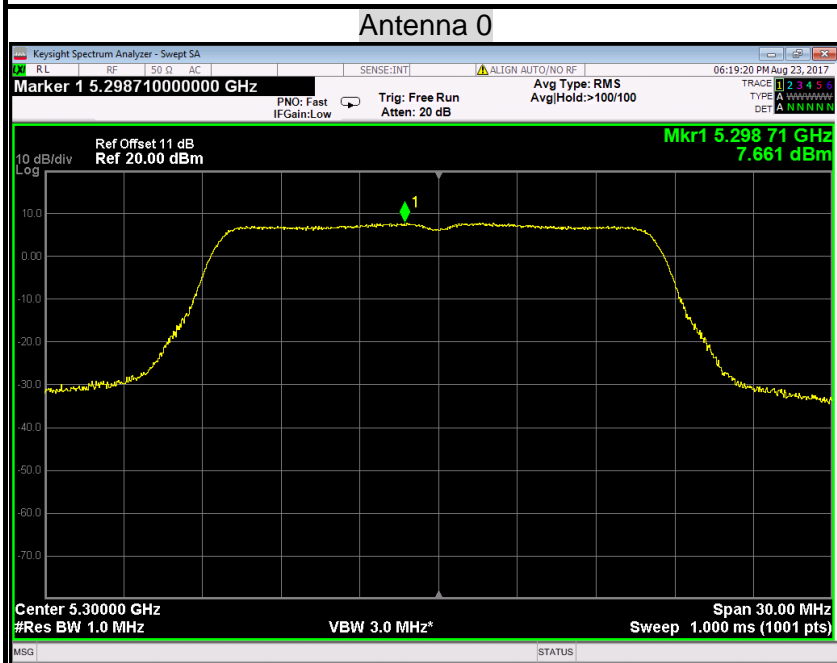
PPSD (CH Mid)



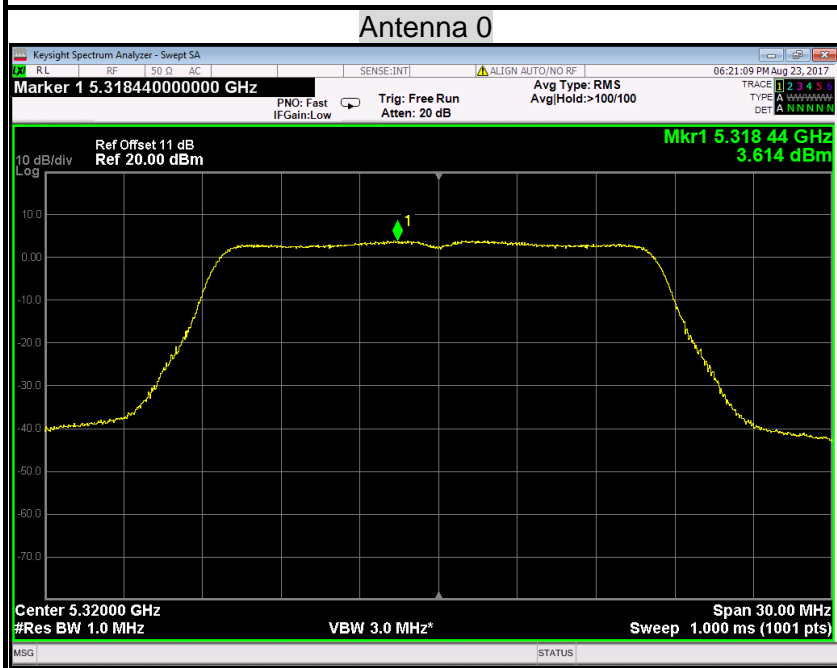




PPSD (CH Mid)



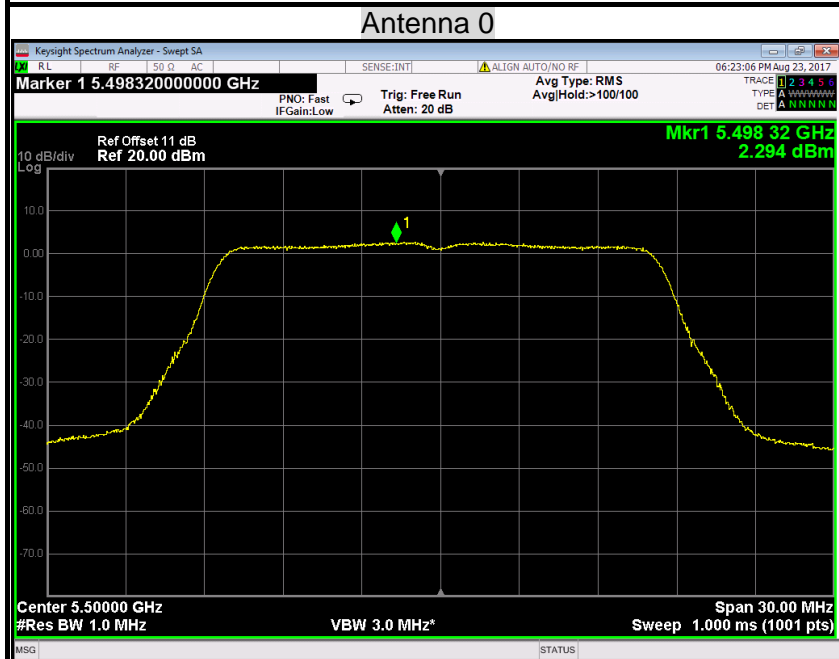
PPSD (CH High)



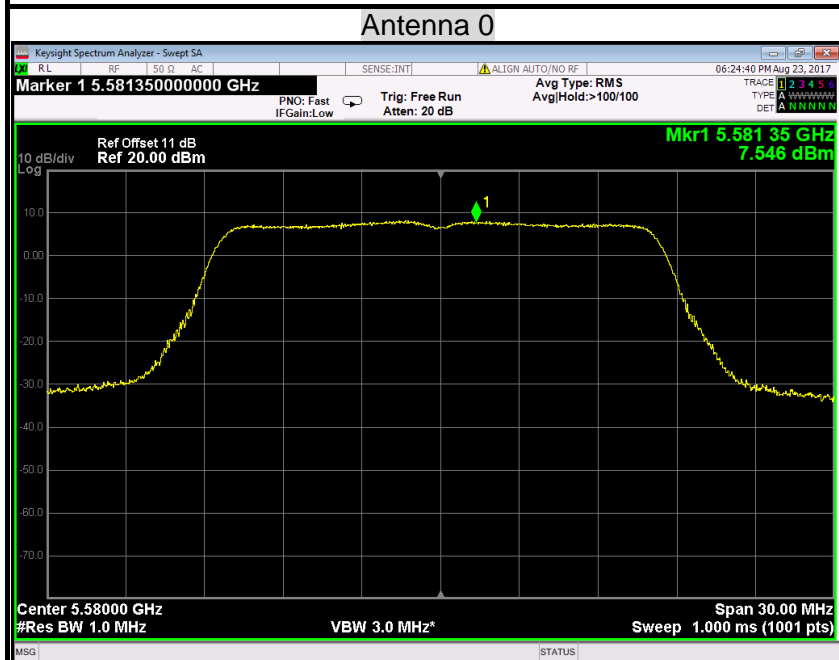


IEEE 802.11a mode / 5500 ~ 5700MHz

PPSD (CH Low)

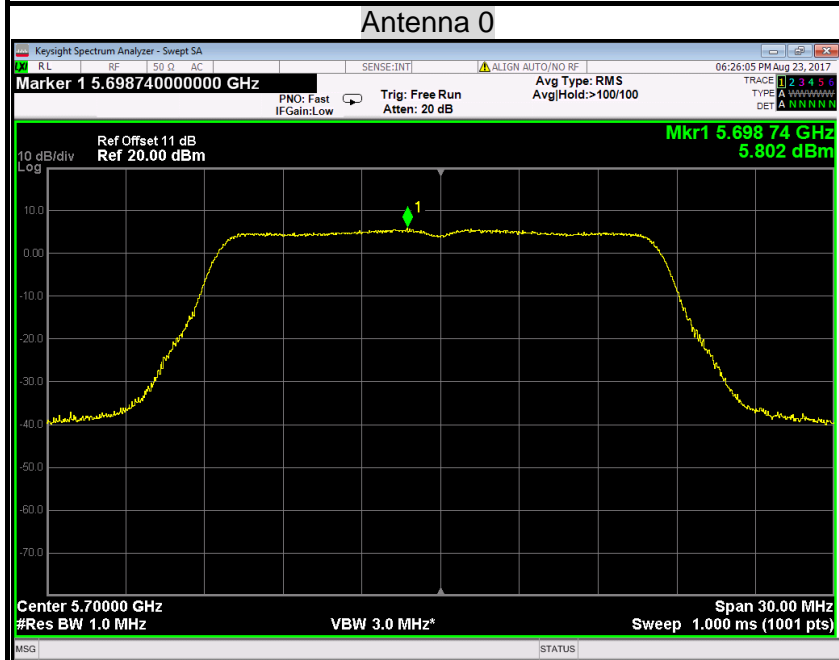


PPSD (CH Mid)



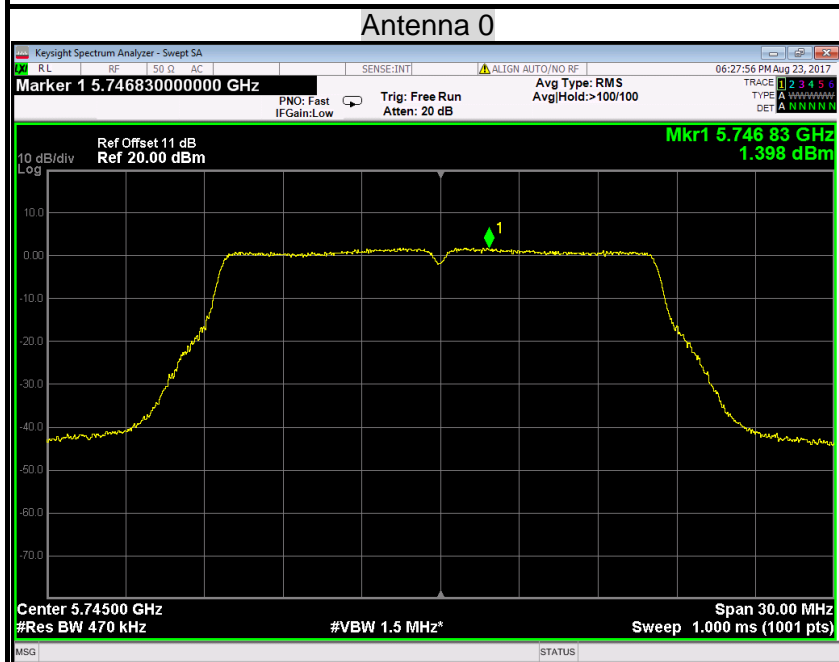


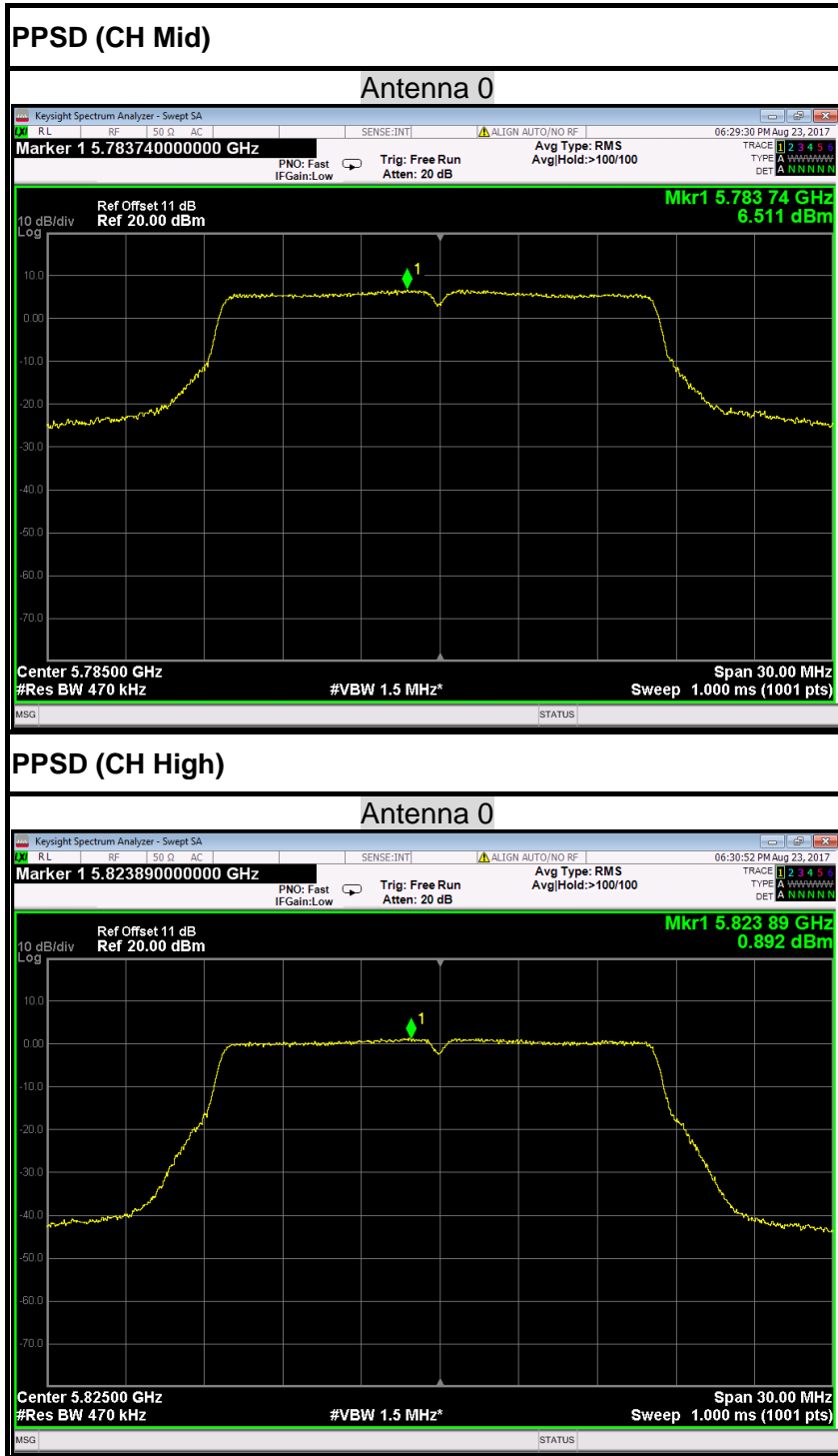
PPSD (CH High)



IEEE 802.11a mode / 5745 ~ 5825MHz

PPSD (CH Low)

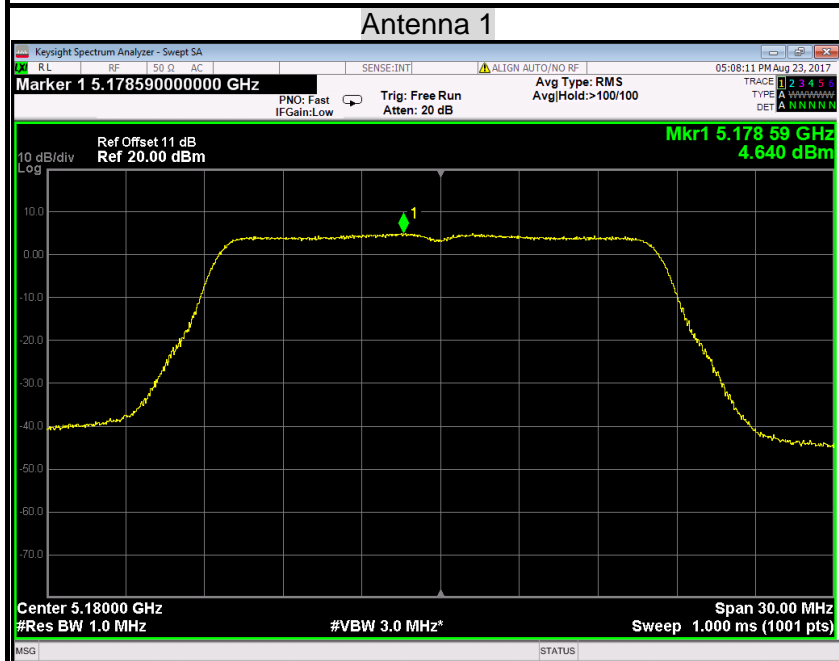




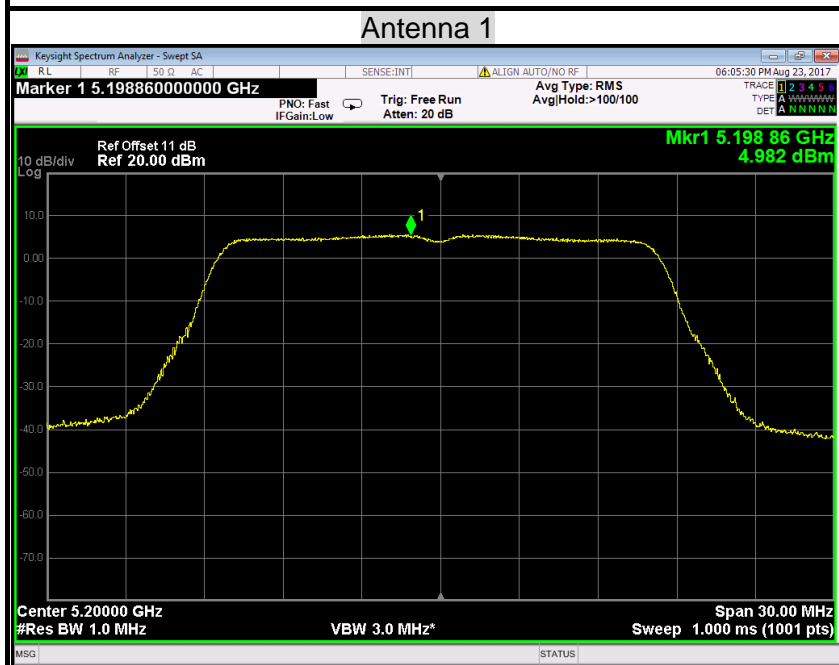


IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)

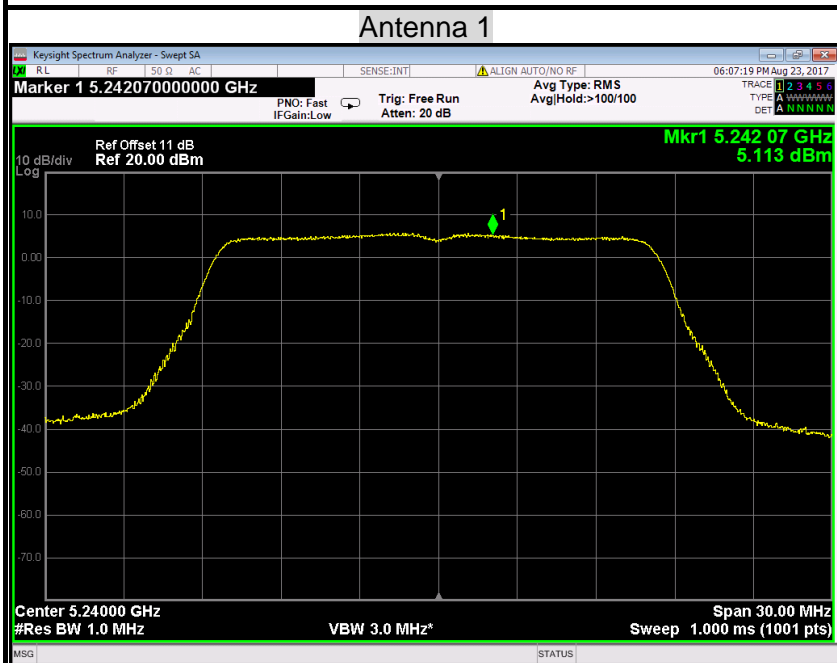


PPSD (CH Mid)



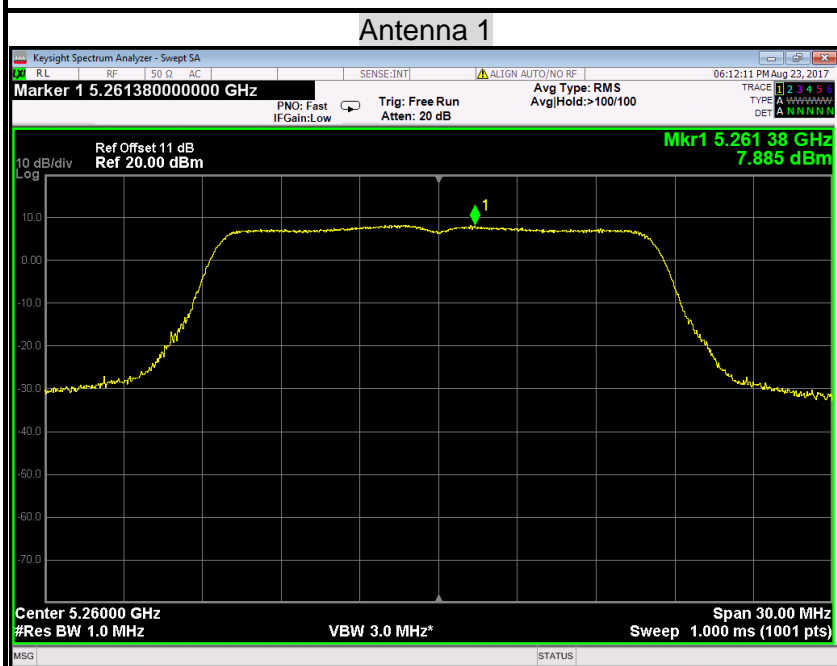


PPSD (CH High)



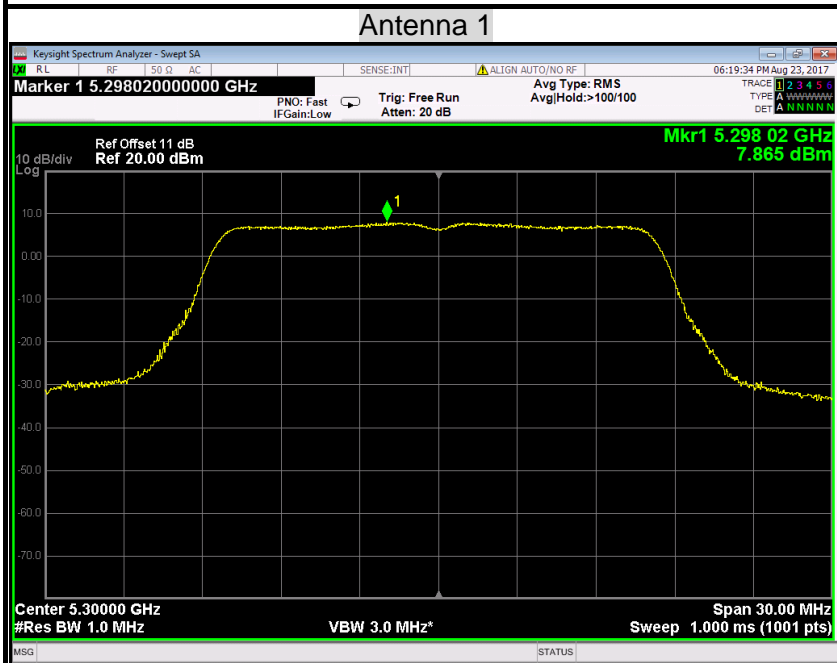
IEEE 802.11a mode / 5260~ 5320MHz

PPSD (CH Low)

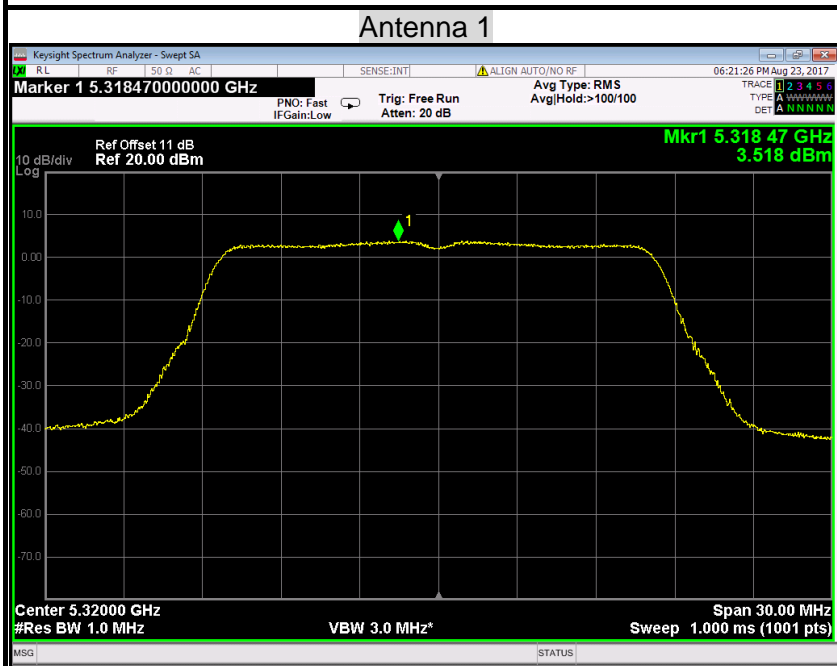




PPSD (CH Mid)



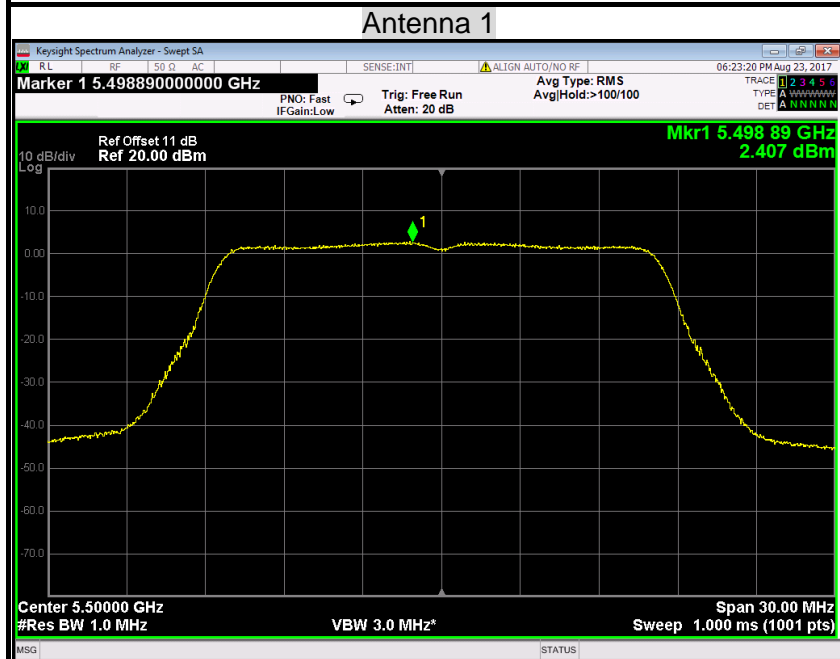
PPSD (CH High)



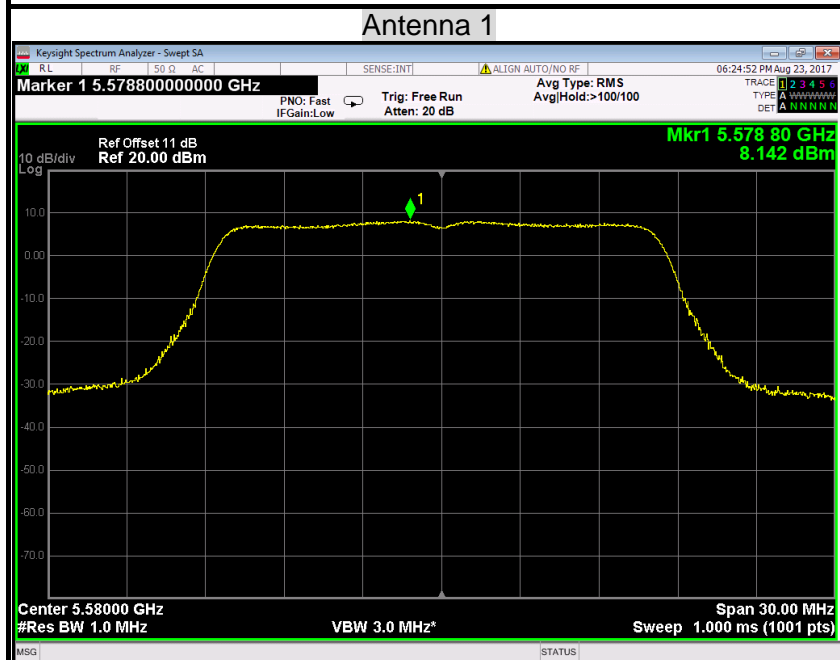


IEEE 802.11a mode / 5500 ~ 5700MHz

PPSD (CH Low)

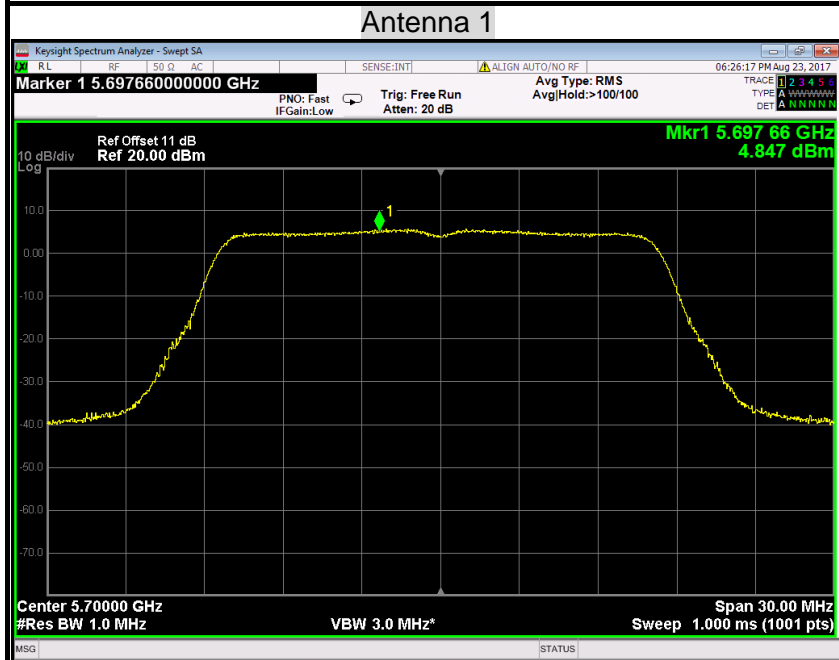


PPSD (CH Mid)



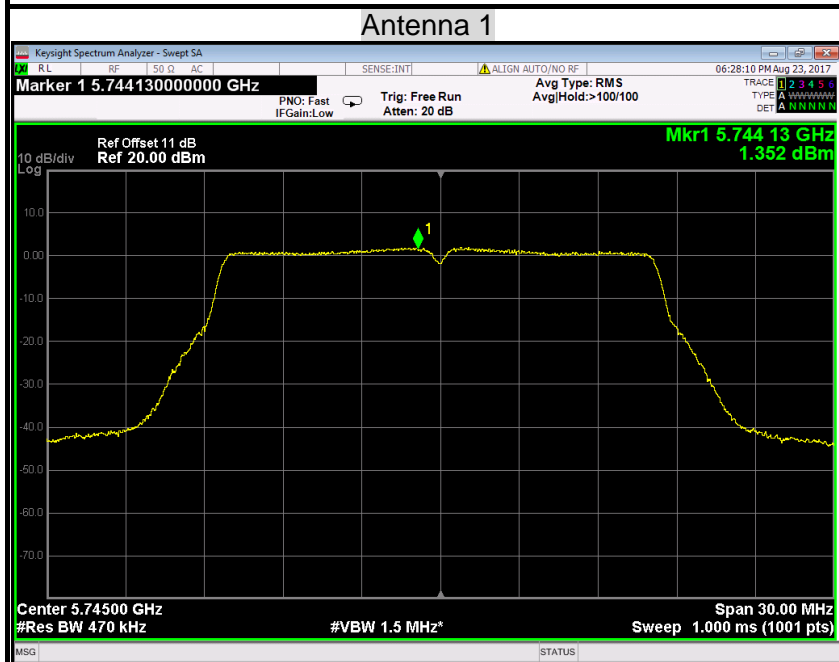


PPSD (CH High)



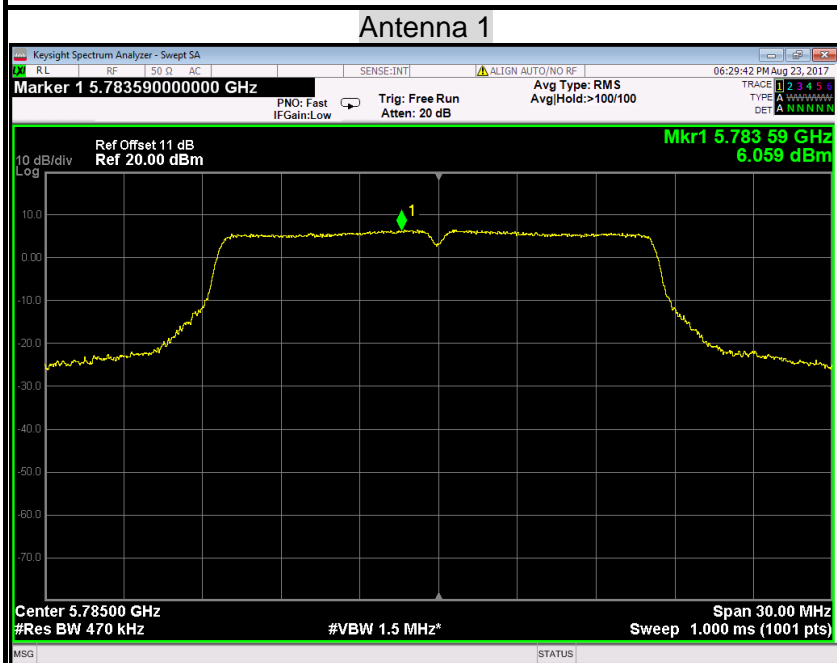
IEEE 802.11a mode / 5745 ~ 5825MHz

PPSD (CH Low)

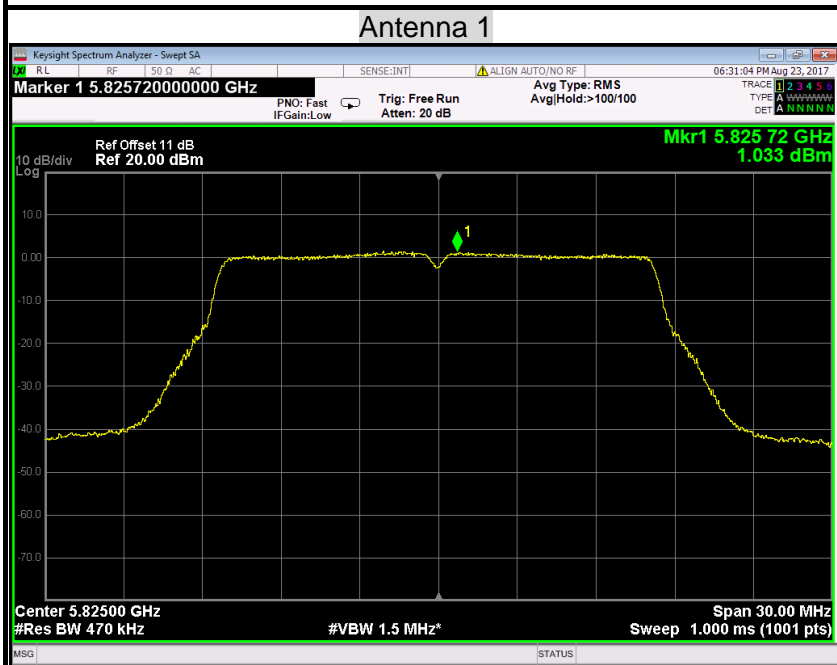




PPSD (CH Mid)



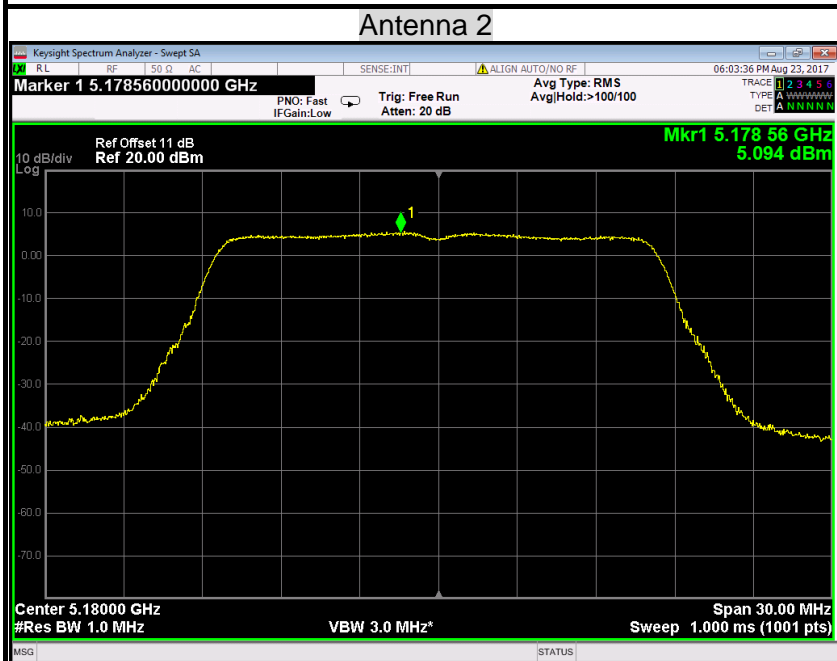
PPSD (CH High)



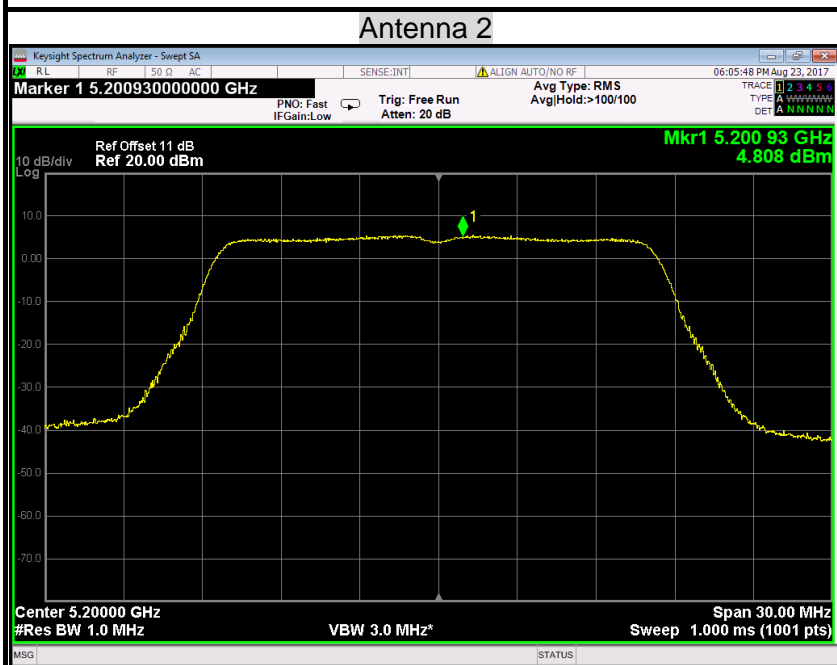


IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)

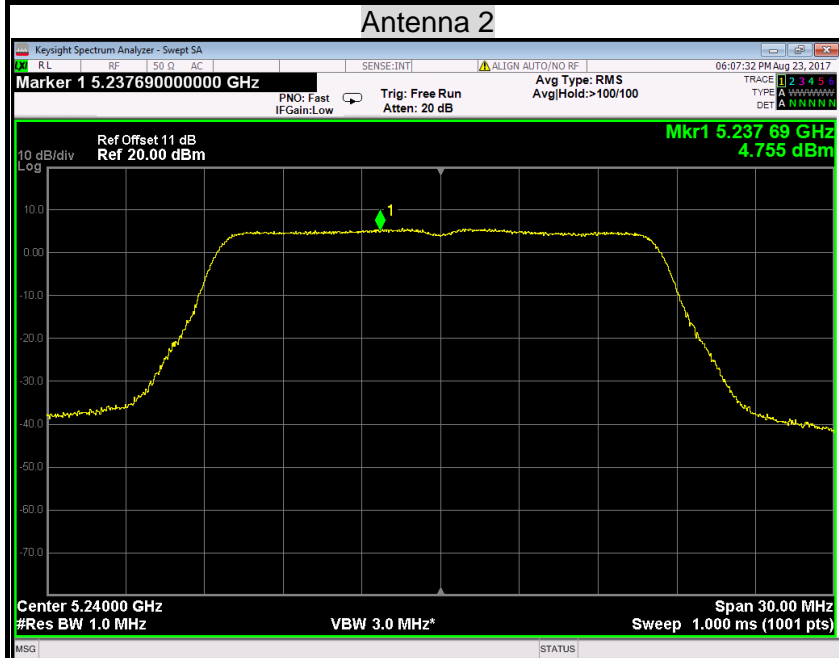


PPSD (CH Mid)



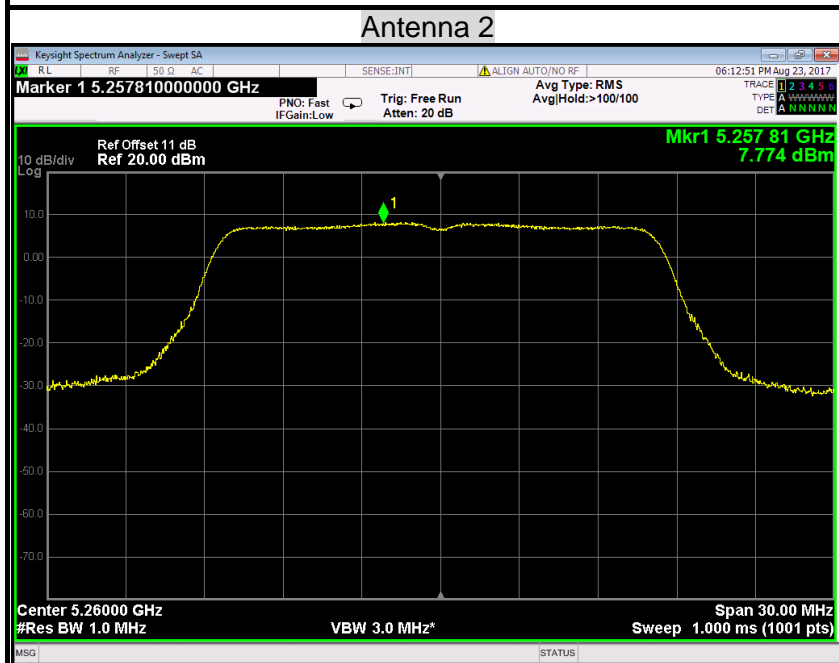


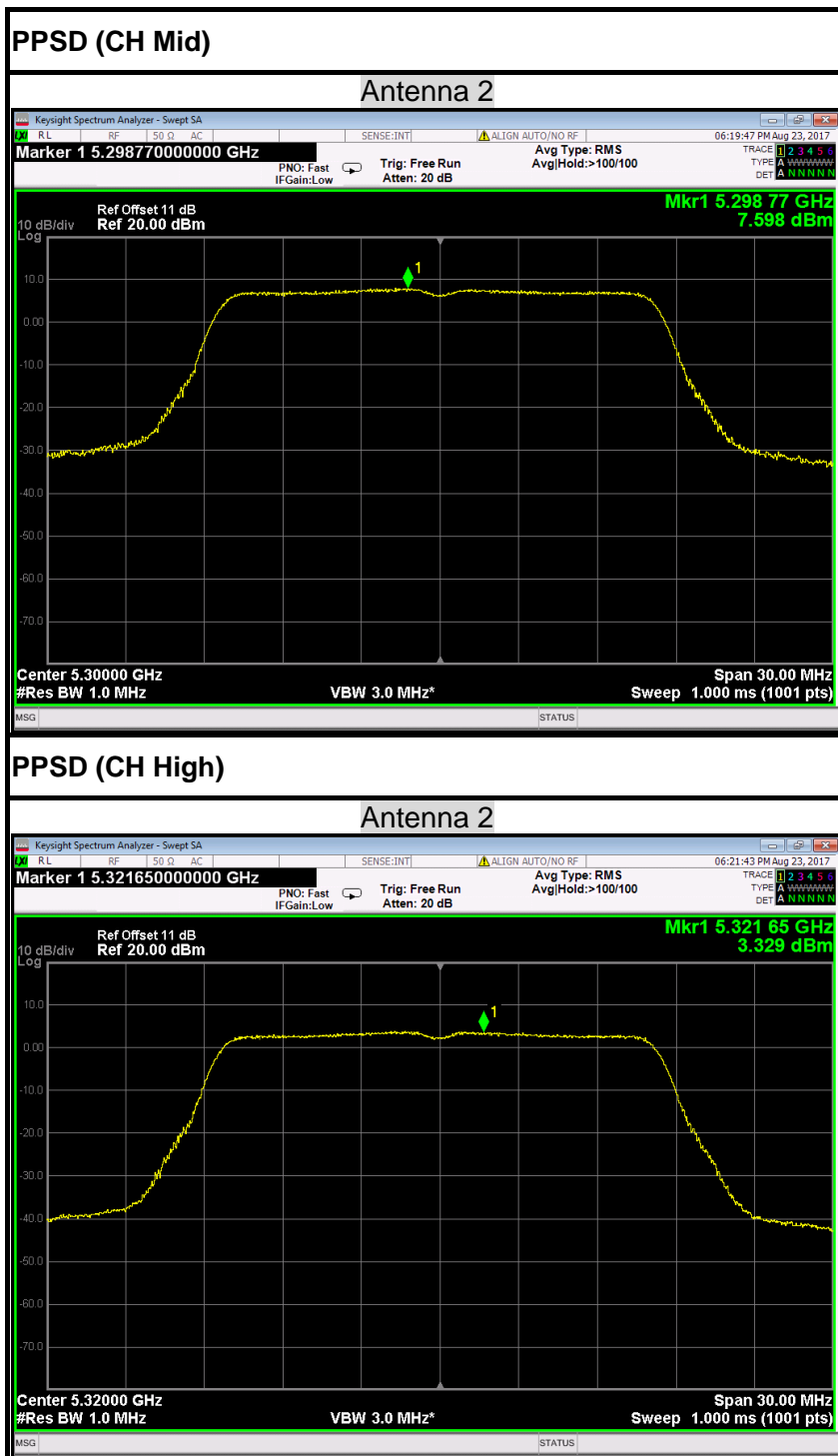
PPSD (CH High)



IEEE 802.11a mode / 5260~ 5320MHz

PPSD (CH Low)

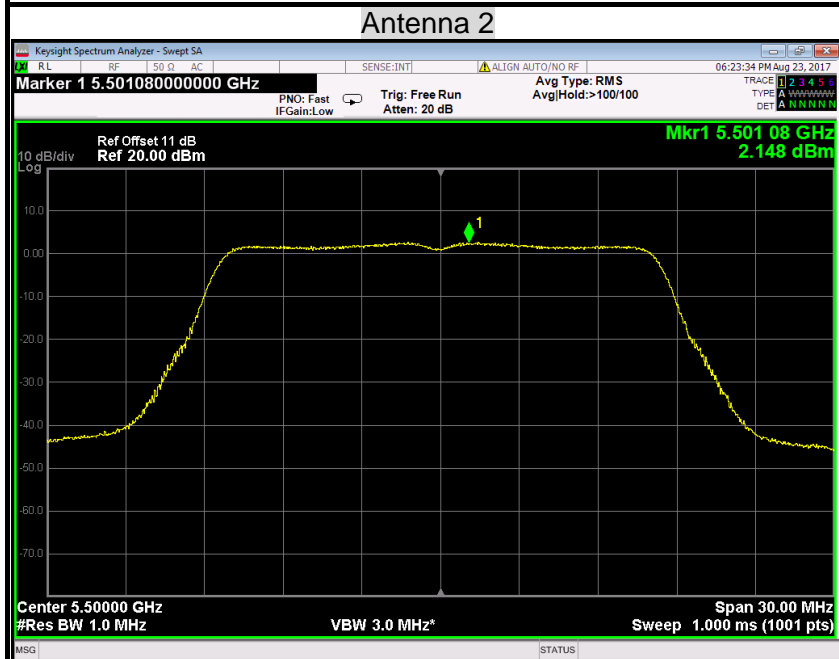




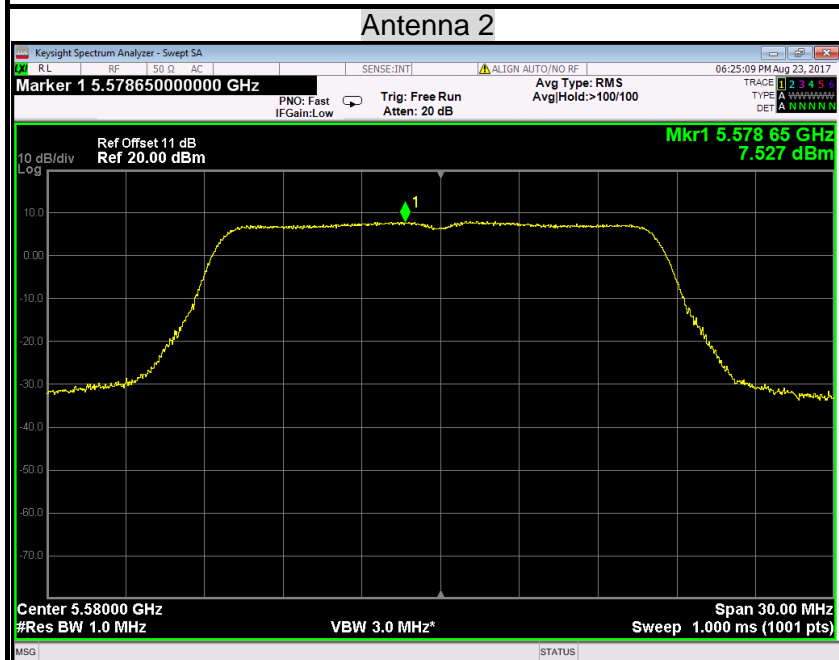


IEEE 802.11a mode / 5500 ~ 5700MHz

PPSD (CH Low)

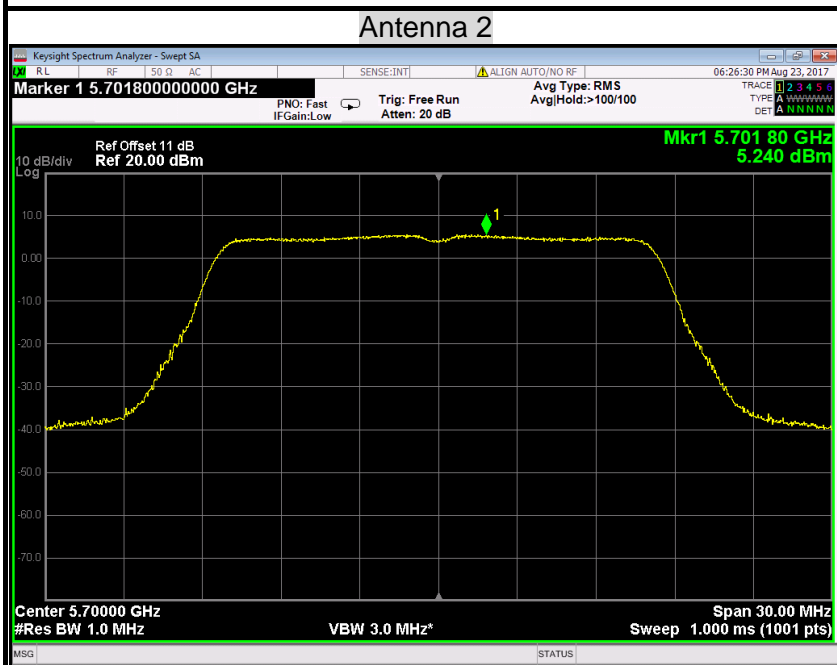


PPSD (CH Mid)



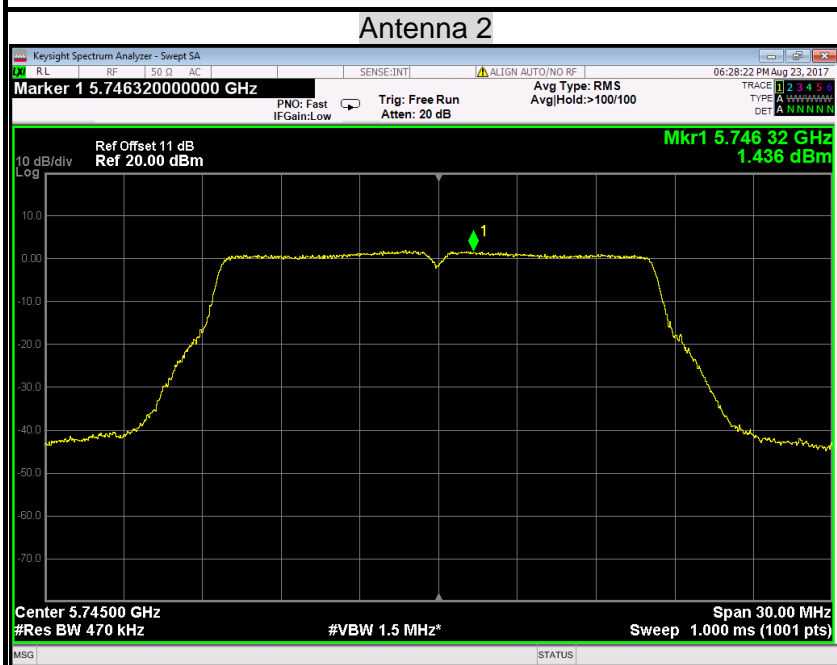


PPSD (CH High)



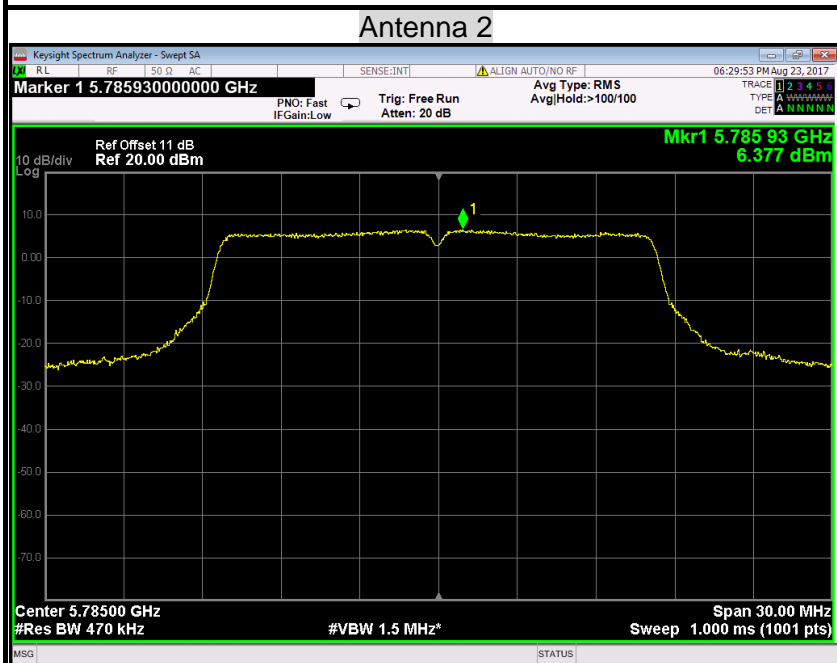
IEEE 802.11a mode / 5745 ~ 5825MHz

PPSD (CH Low)

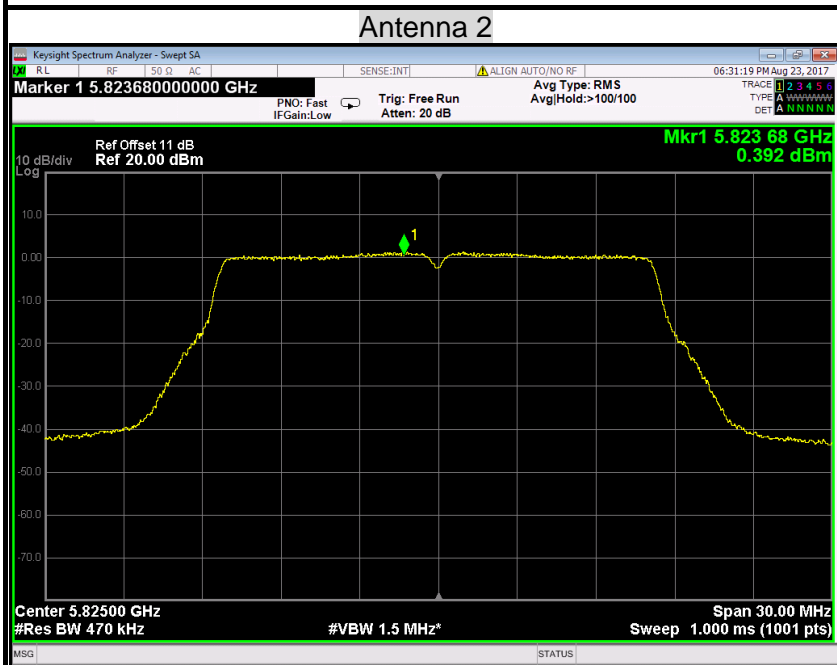




PPSD (CH Mid)



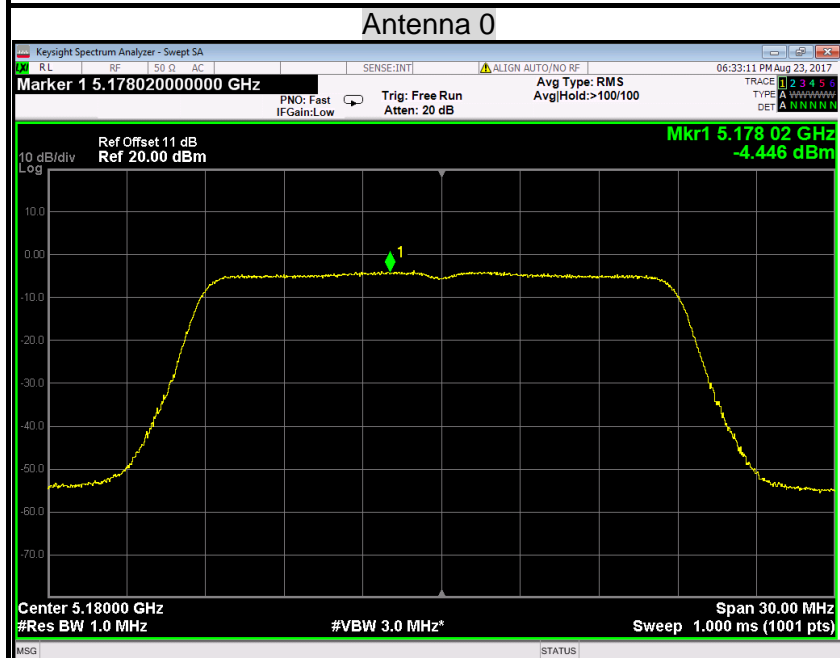
PPSD (CH High)



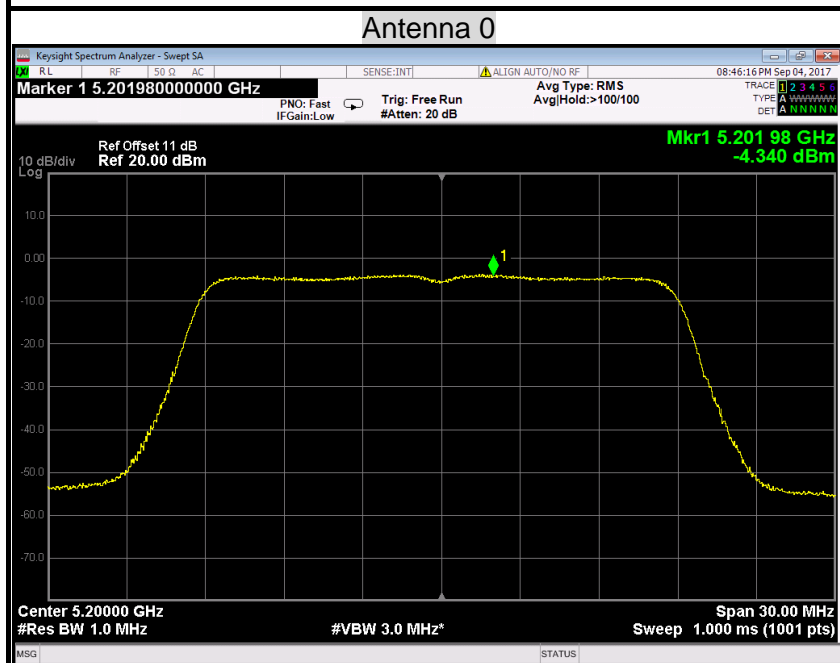


IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

PPSD (CH Low)

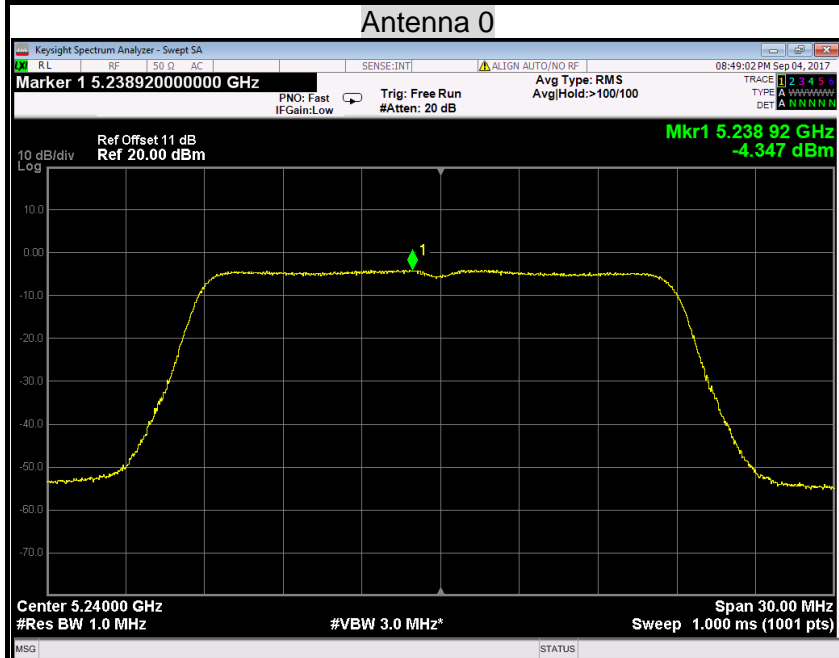


PPSD (CH Mid)



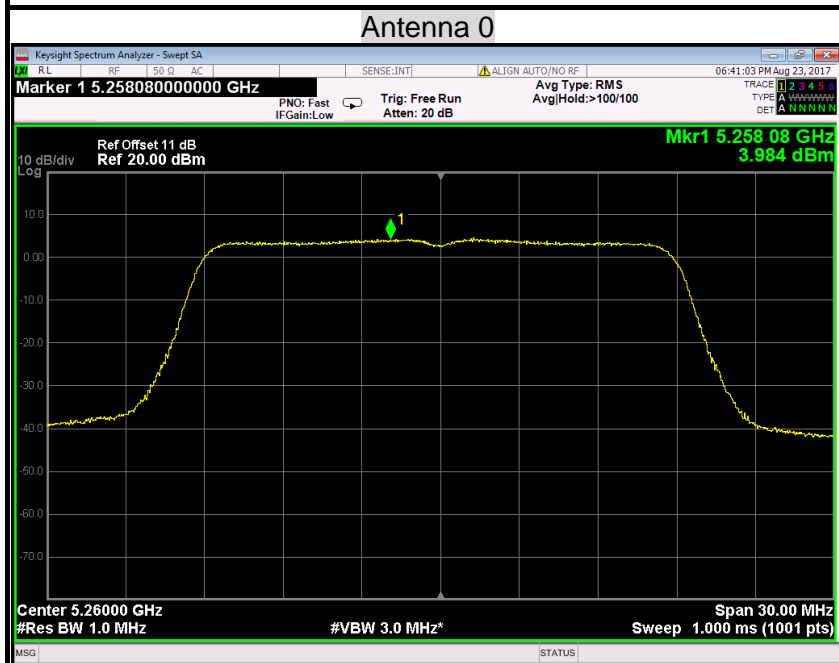


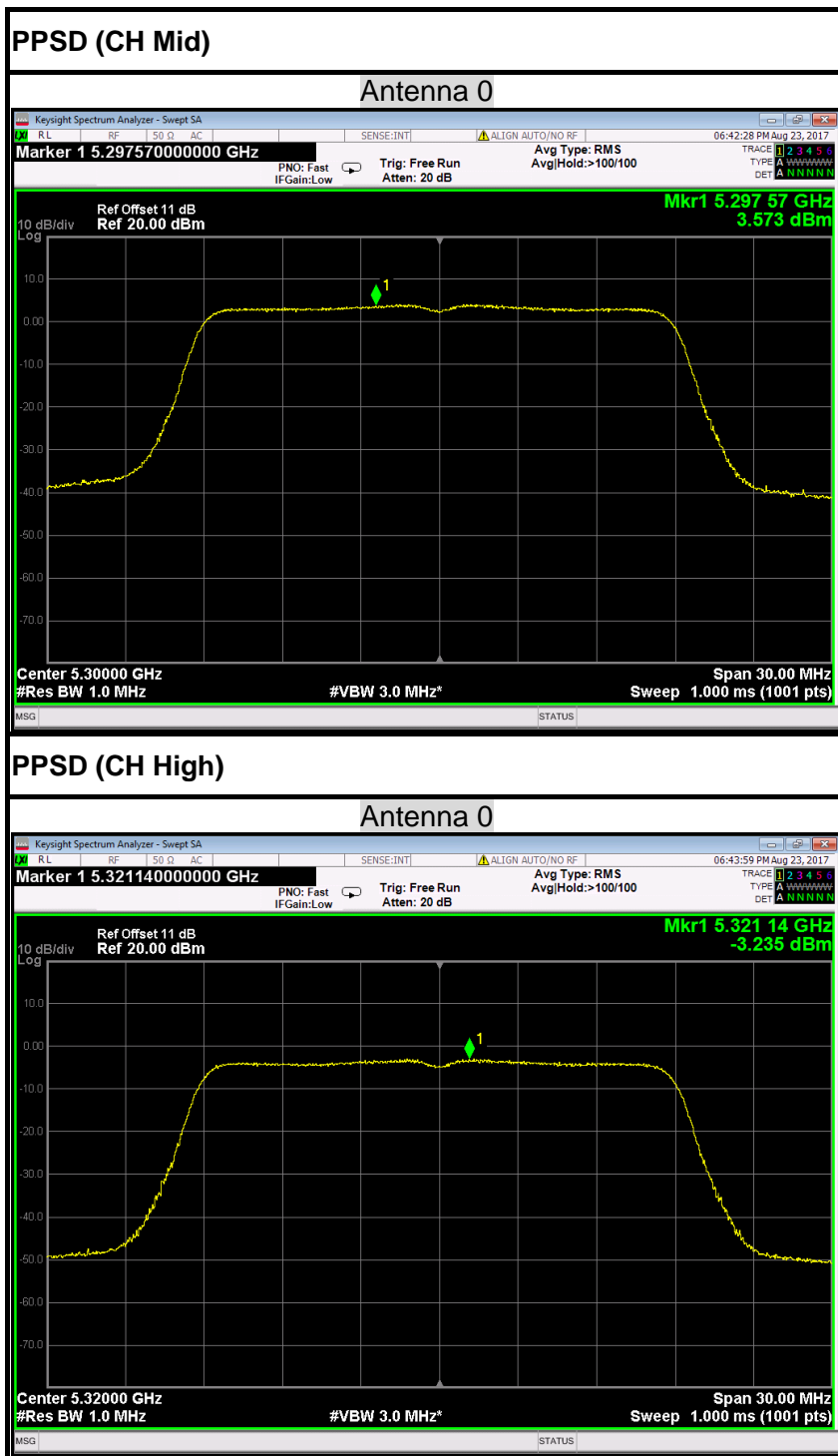
PPSD (CH High)



IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

PPSD (CH Low)



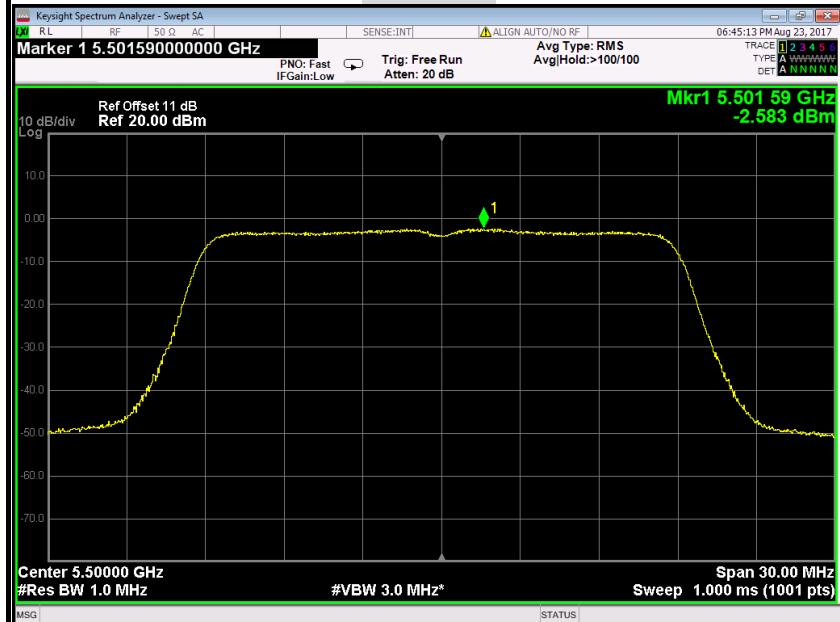




IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

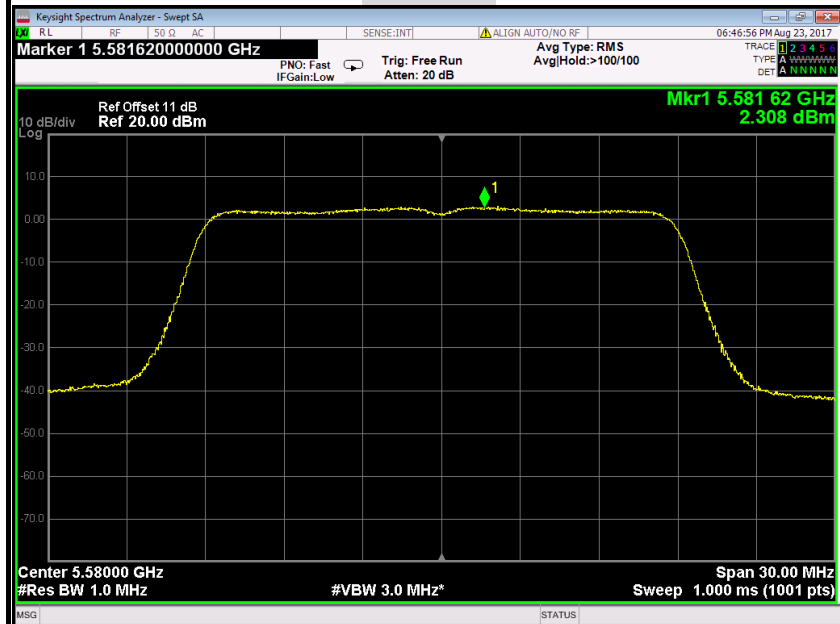
PPSD (CH Low)

Antenna 0



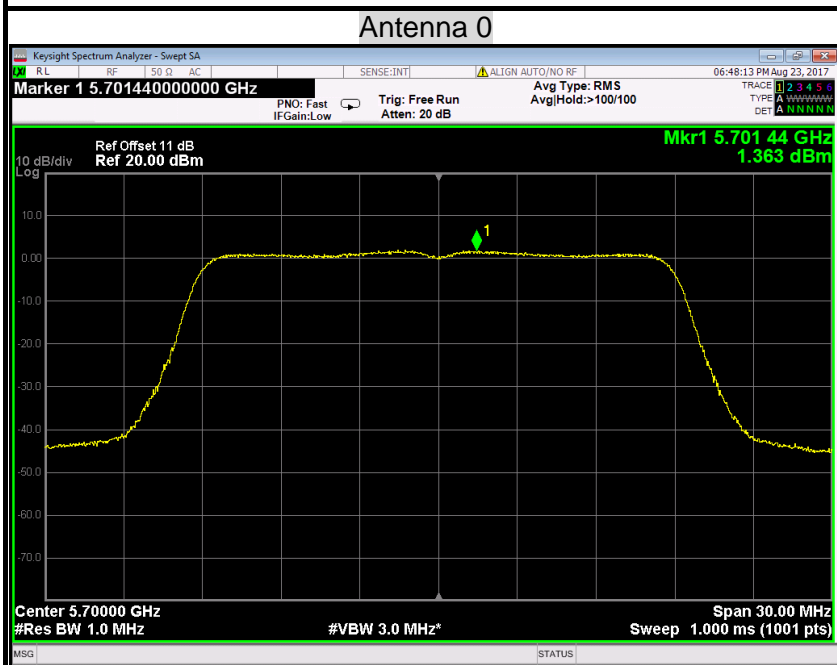
PPSD (CH Mid)

Antenna 0



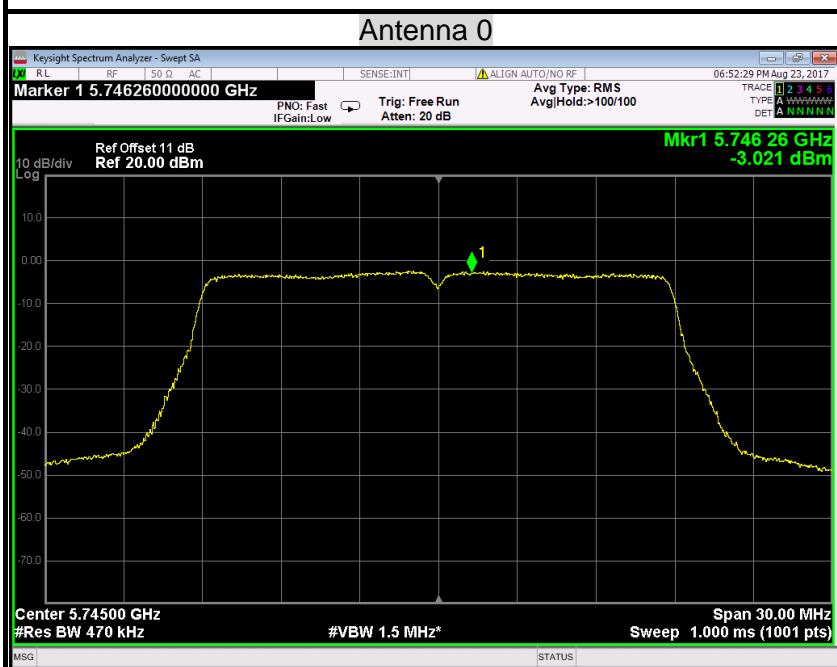


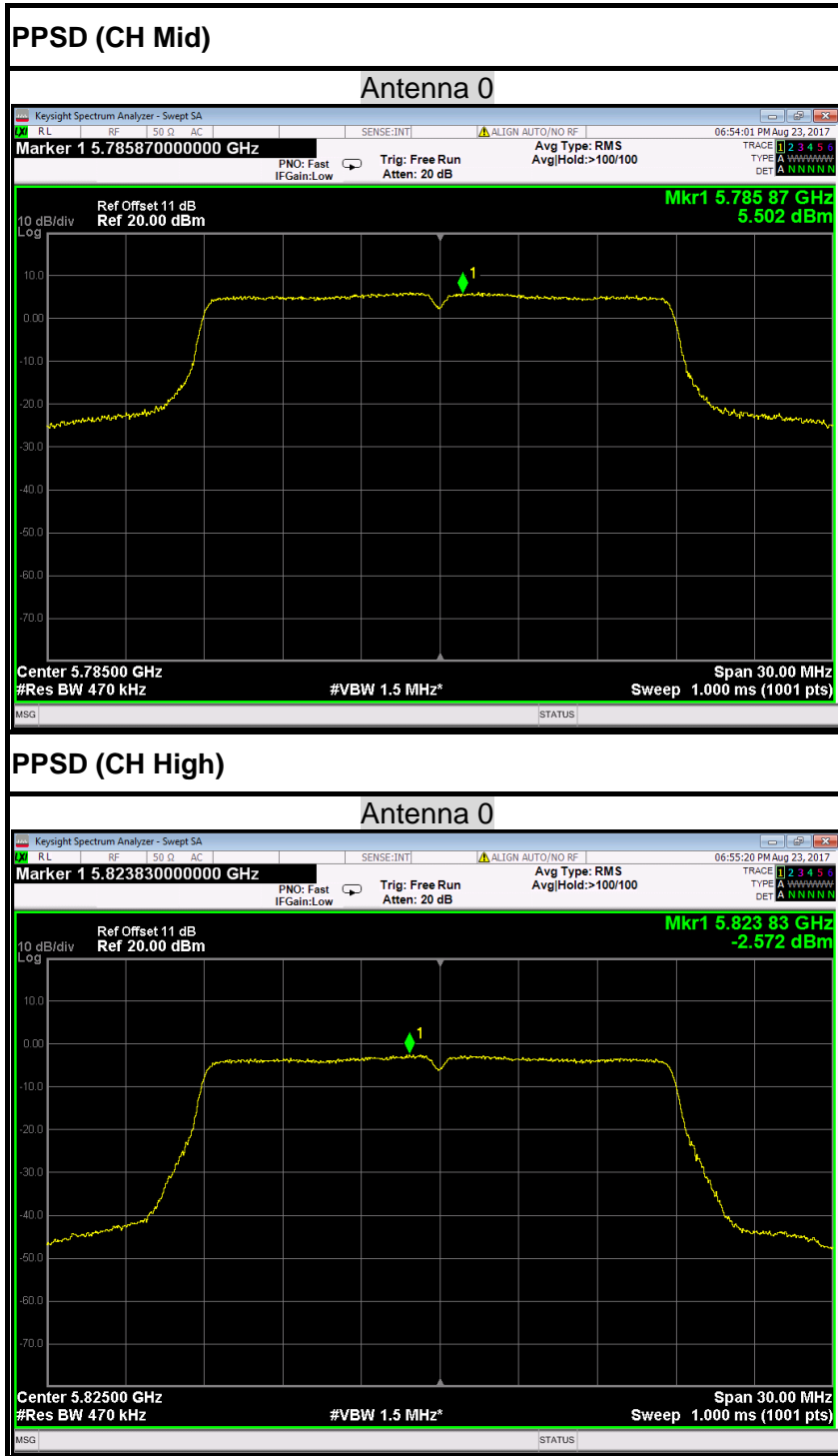
PPSD (CH High)



IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

PPSD (CH Low)

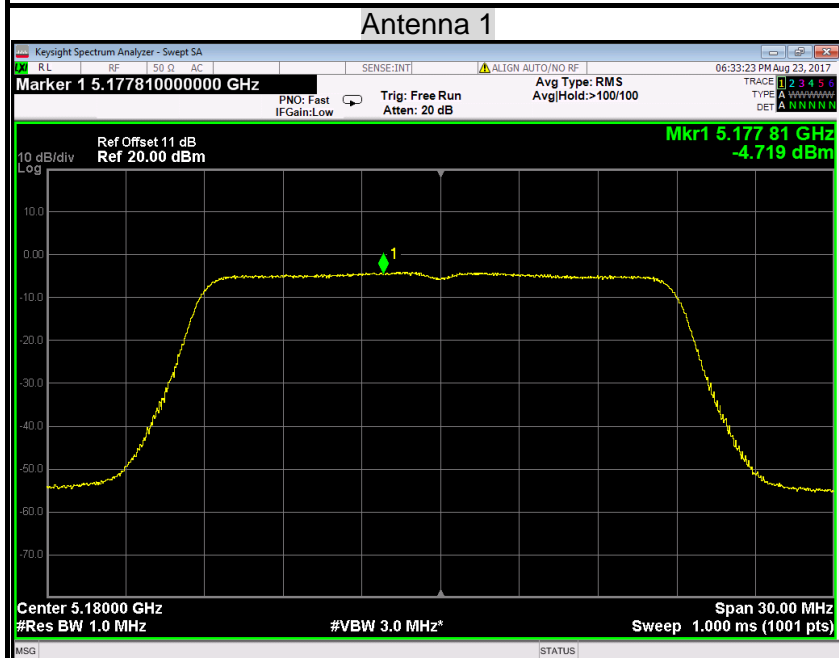




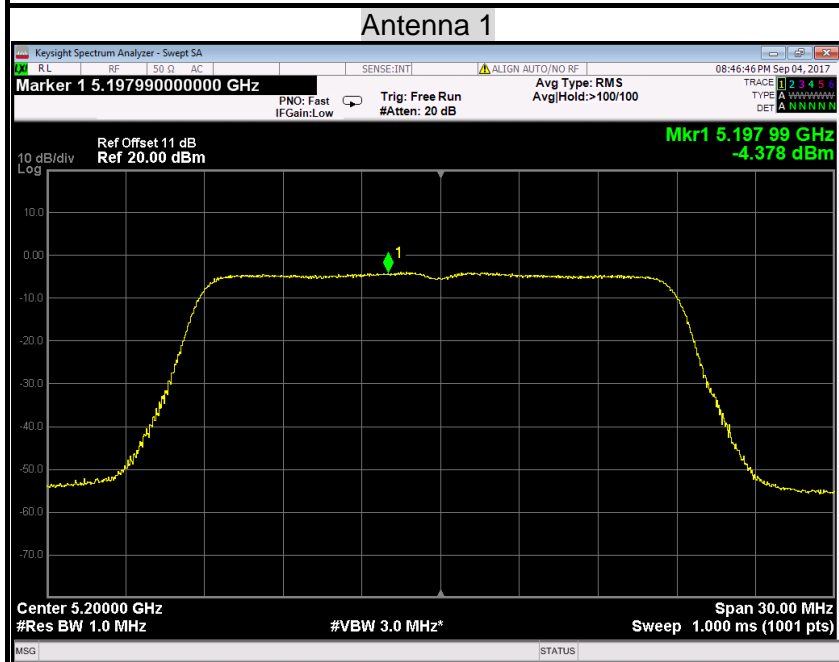


IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

PPSD (CH Low)

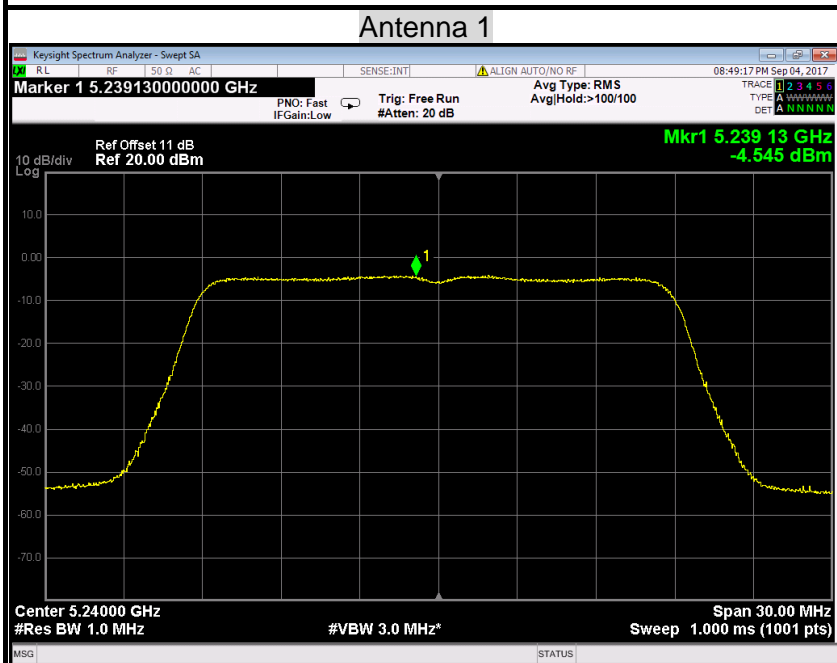


PPSD (CH Mid)



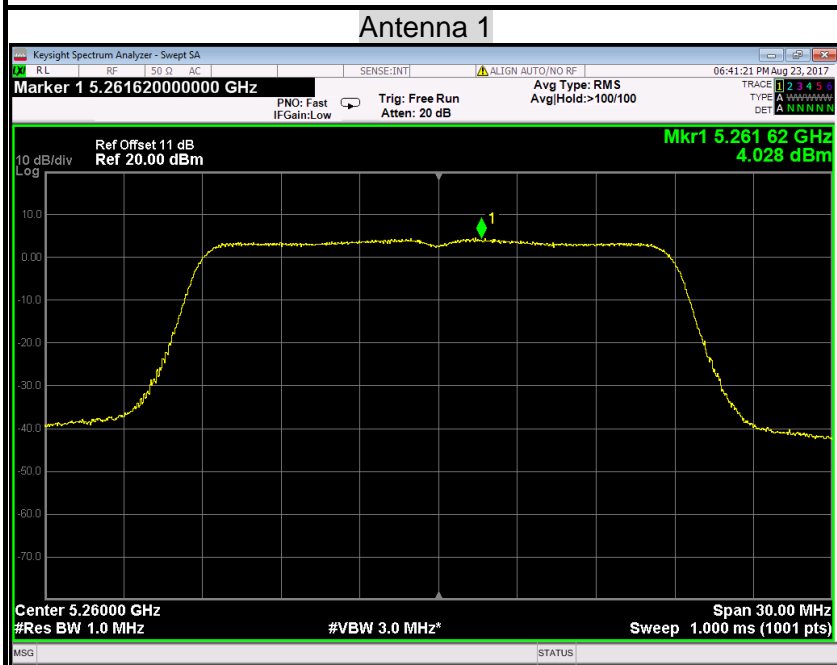


PPSD (CH High)



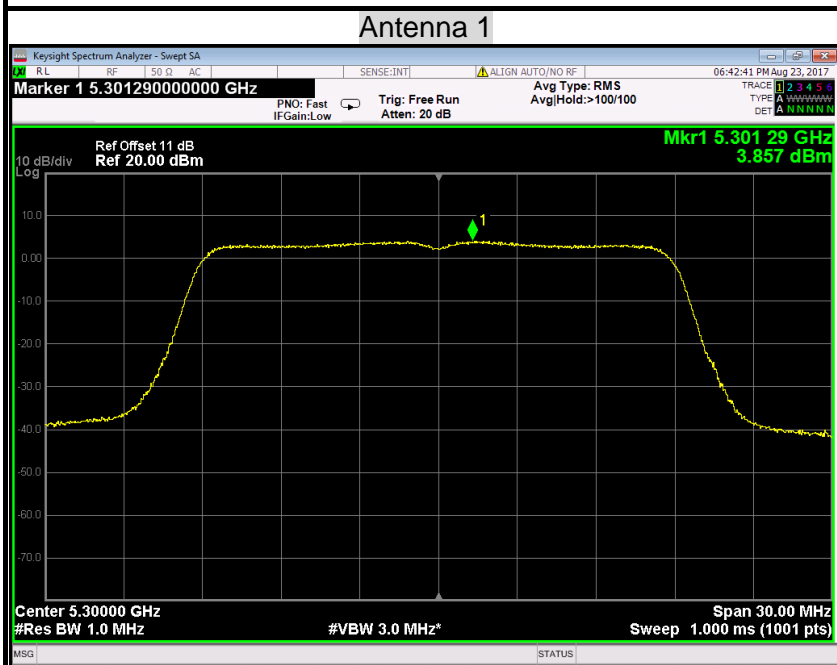
IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

PPSD (CH Low)

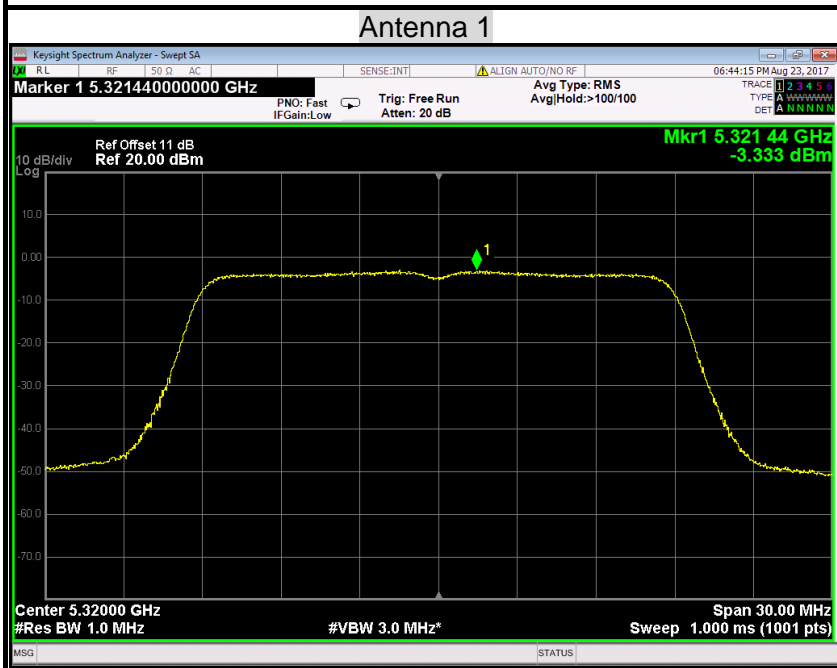




PPSD (CH Mid)



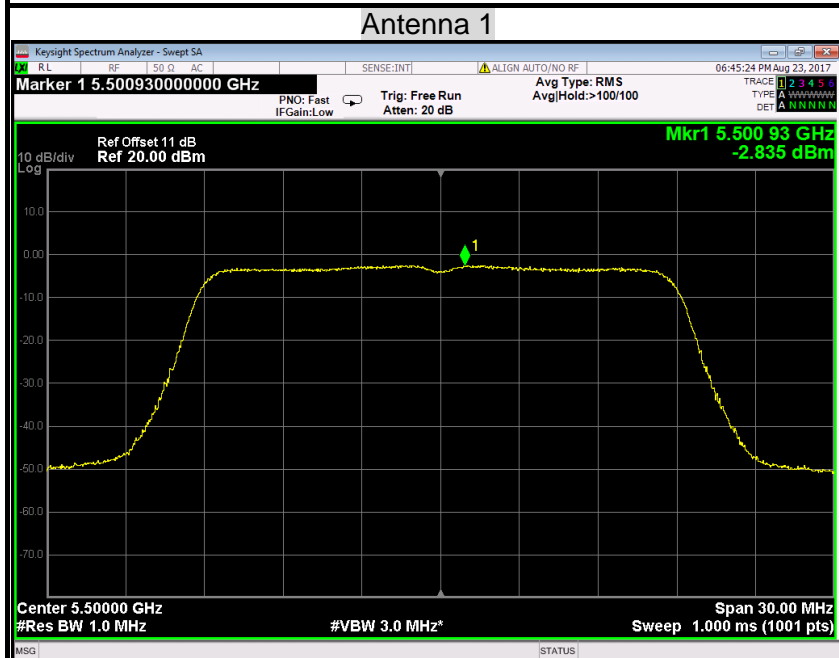
PPSD (CH High)



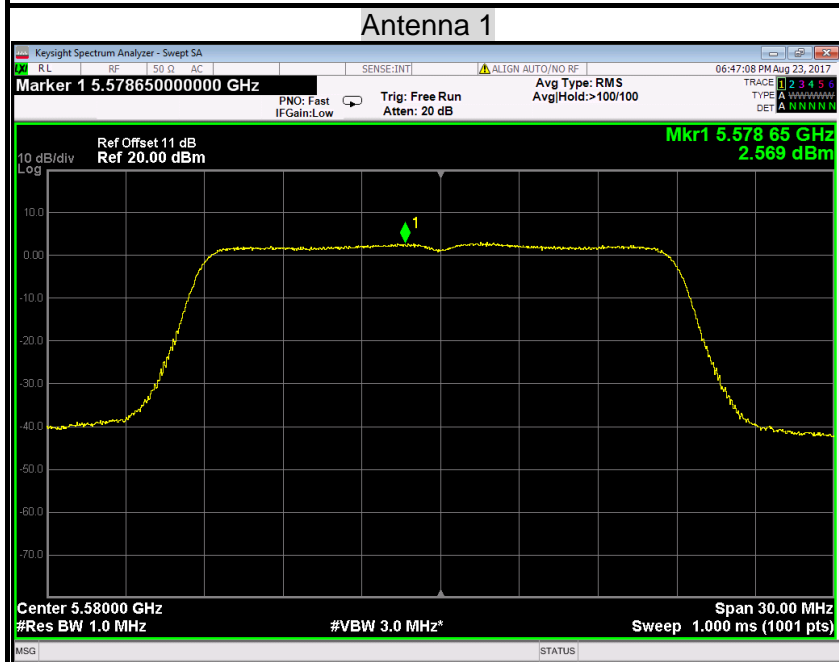


IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

PPSD (CH Low)

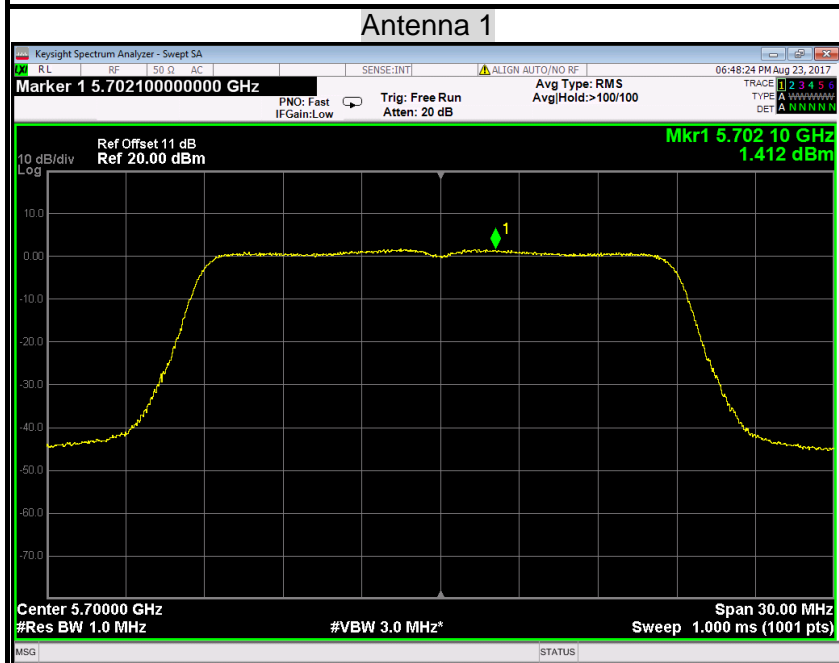


PPSD (CH Mid)



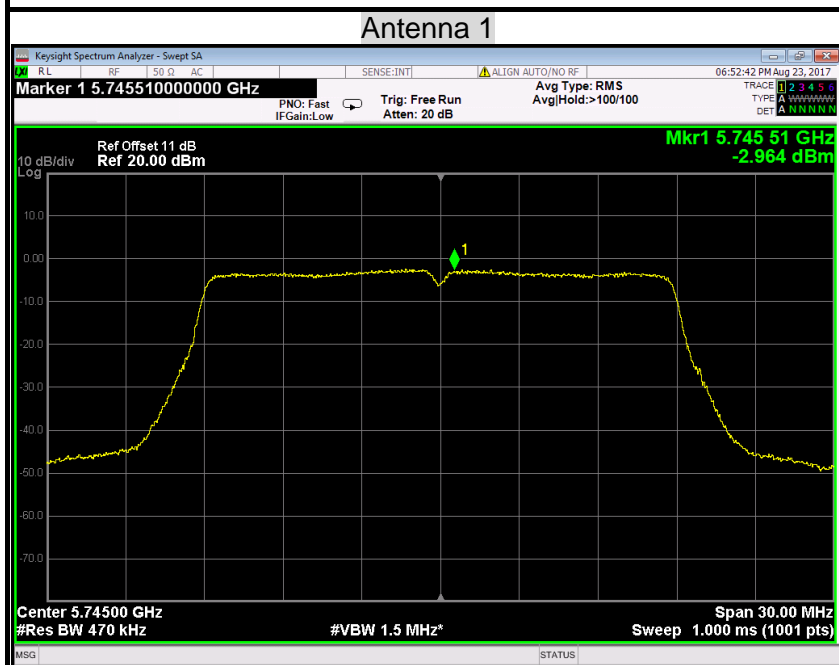


PPSD (CH High)



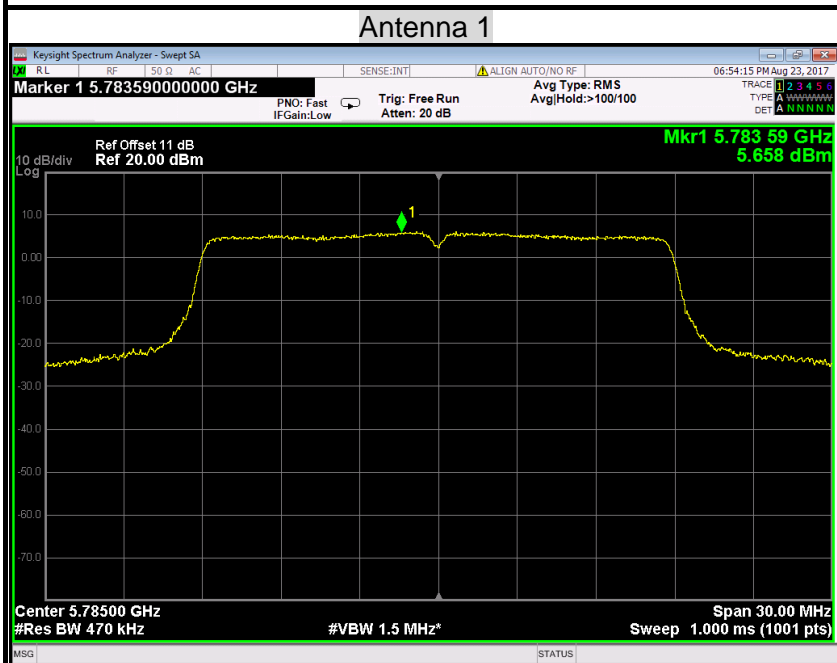
IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

PPSD (CH Low)

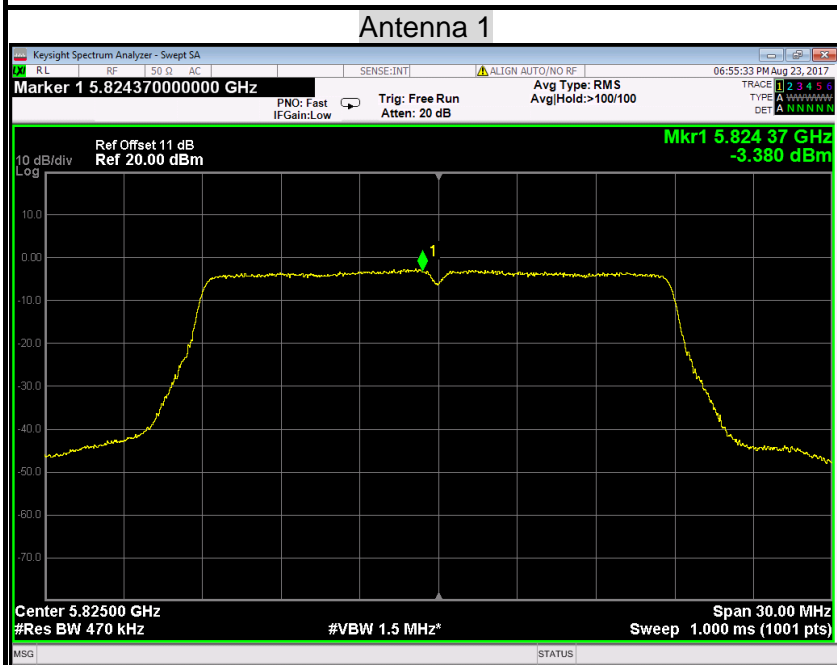




PPSD (CH Mid)



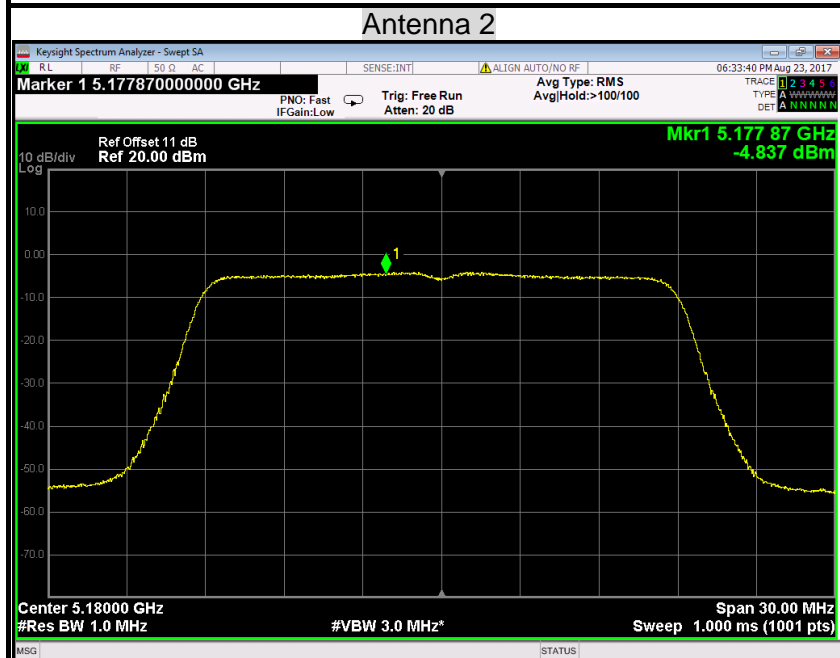
PPSD (CH High)



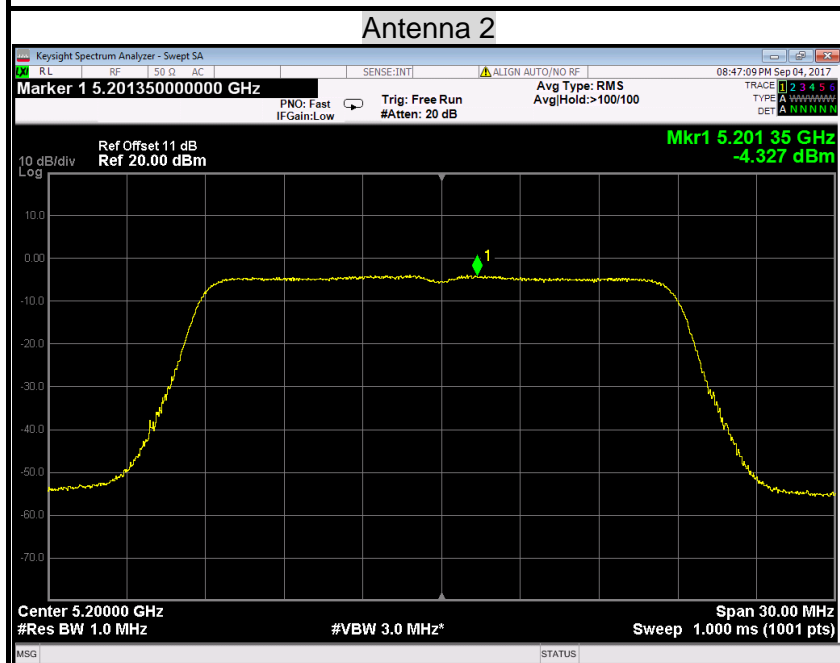


IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

PPSD (CH Low)

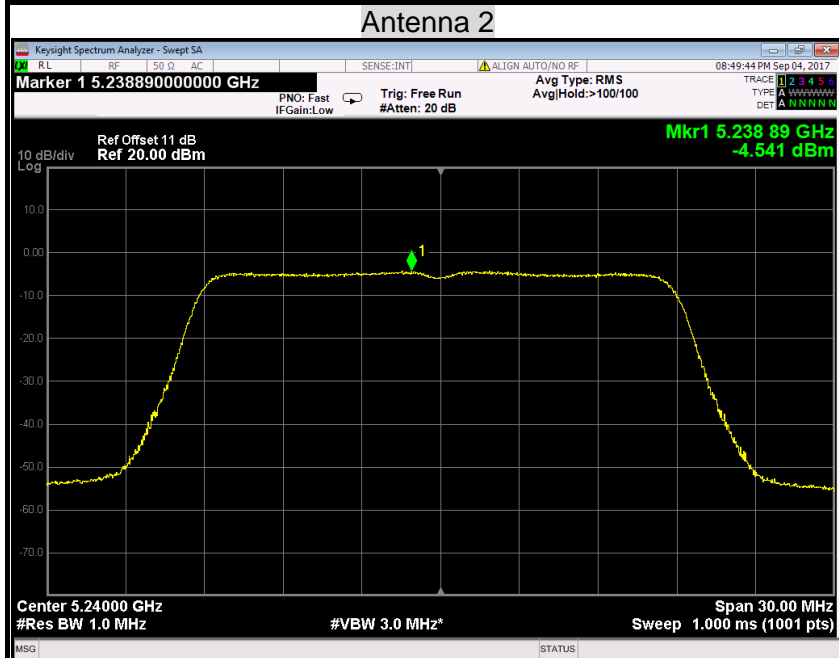


PPSD (CH Mid)



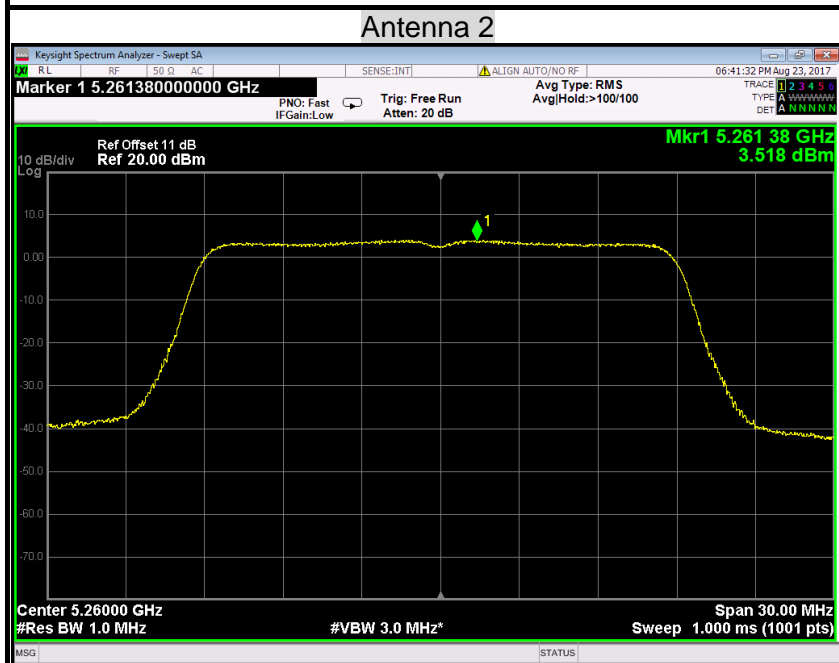


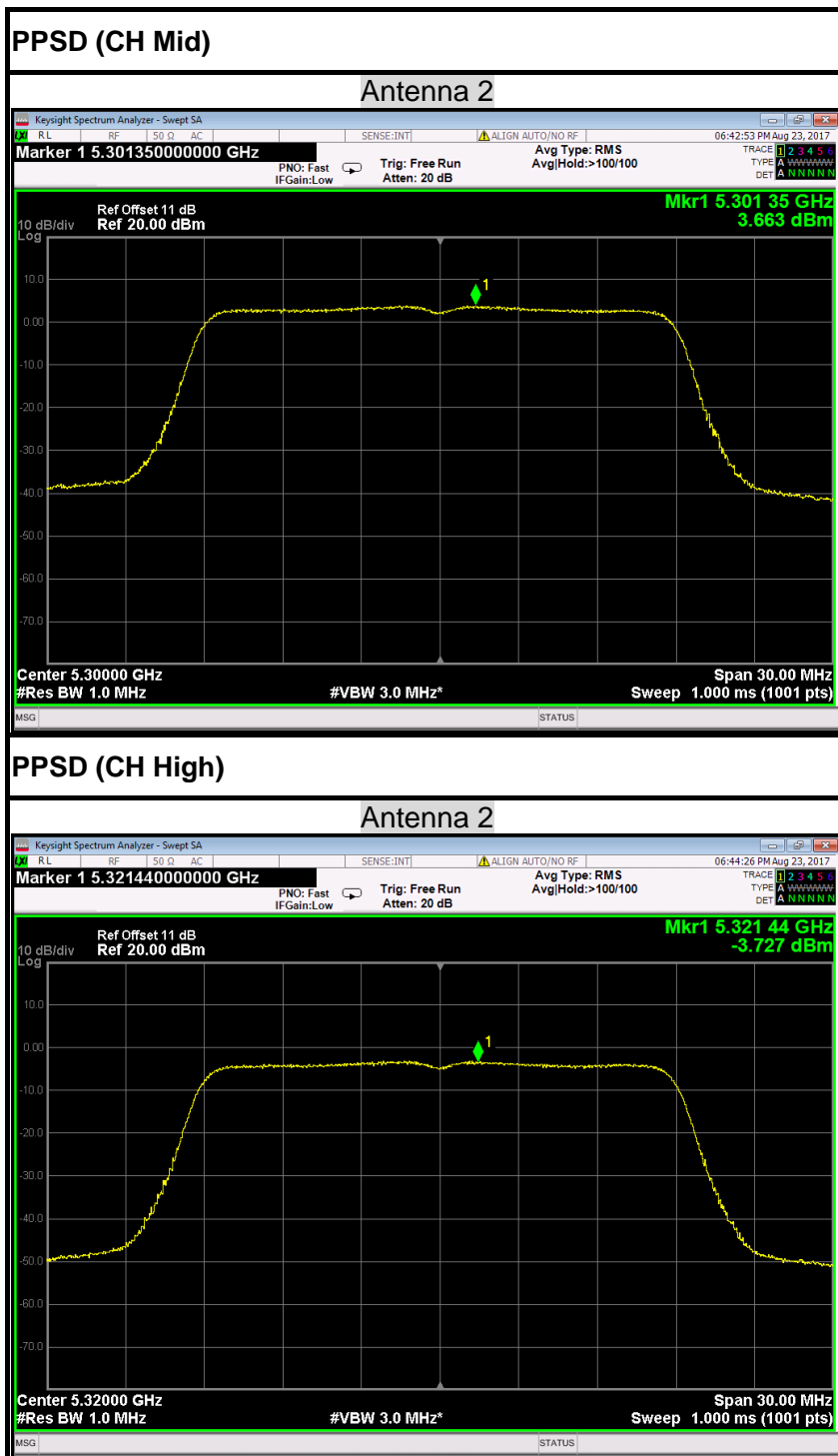
PPSD (CH High)



IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

PPSD (CH Low)

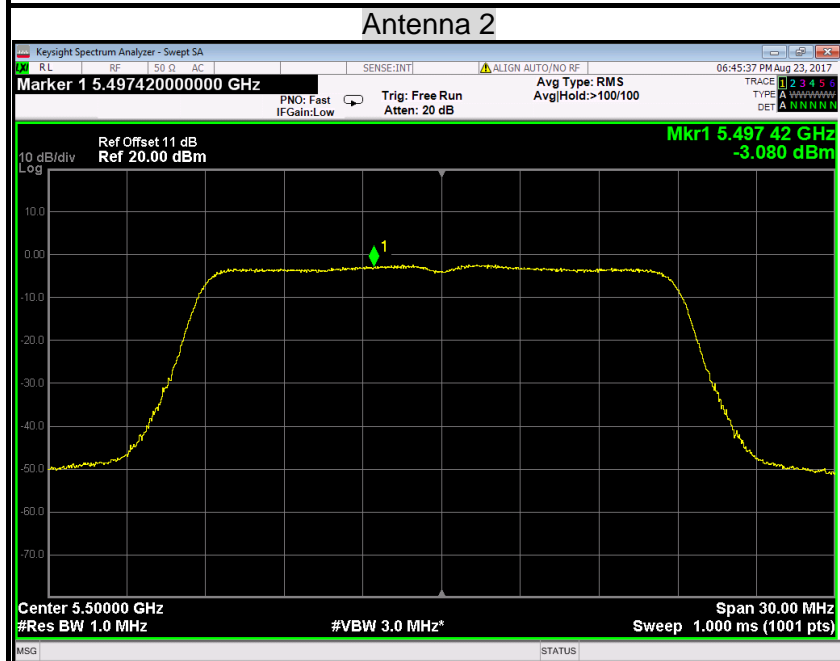




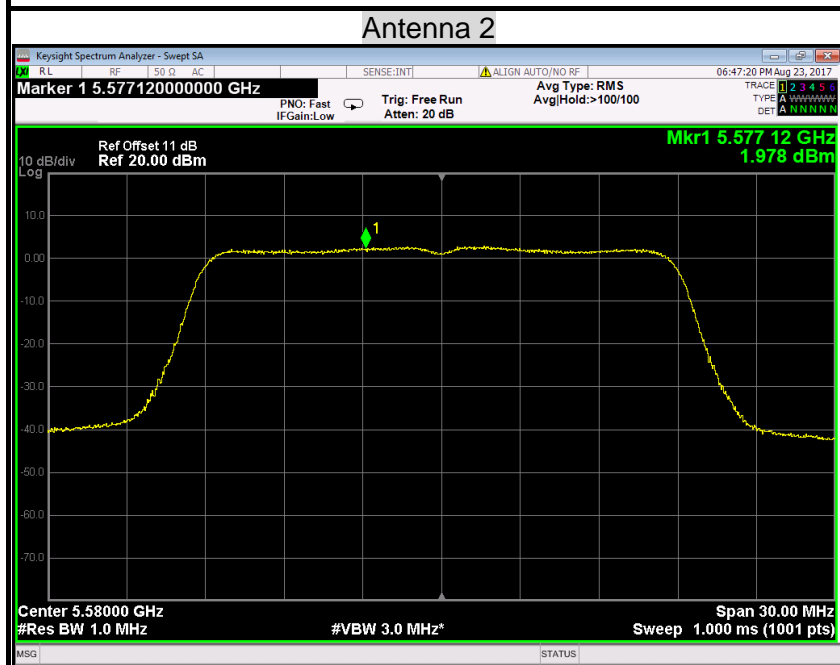


IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

PPSD (CH Low)

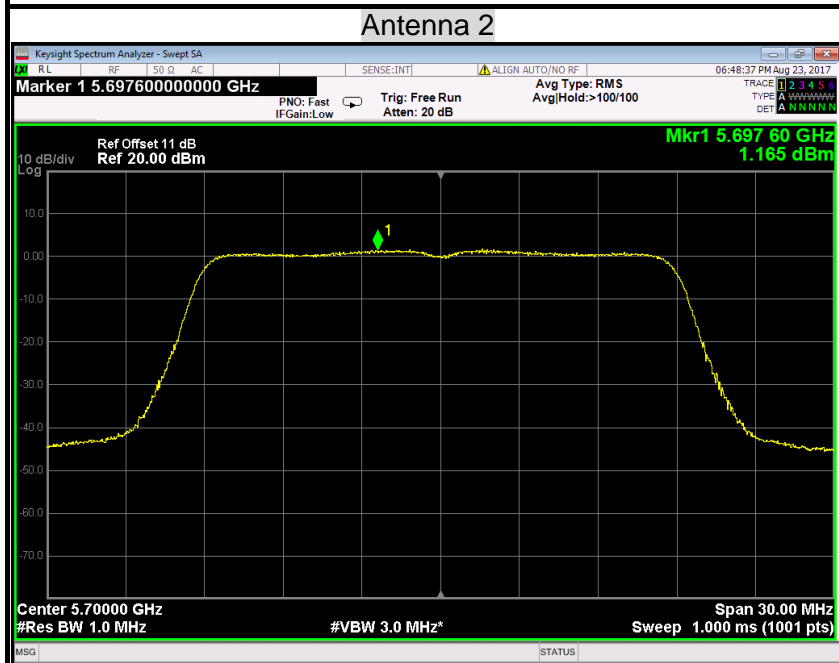


PPSD (CH Mid)



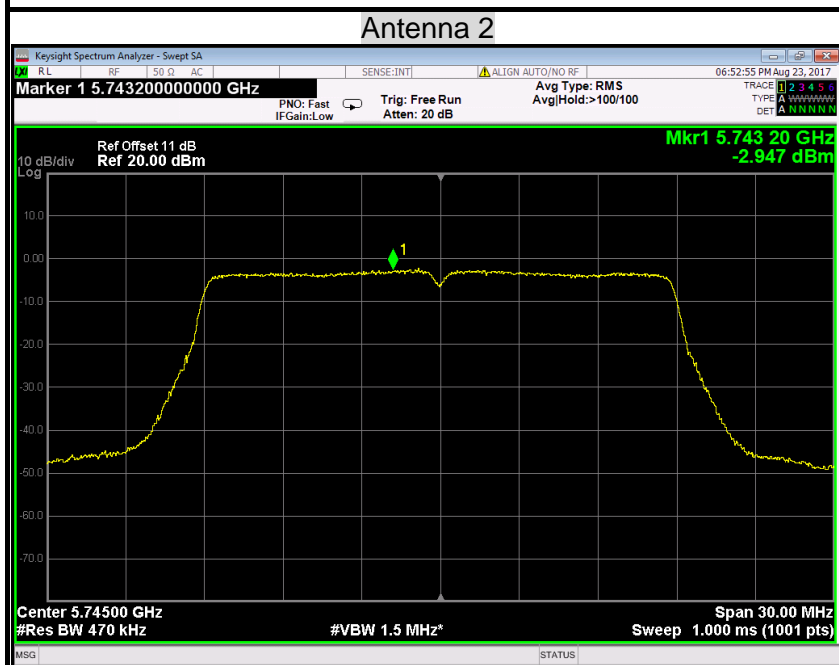


PPSD (CH High)



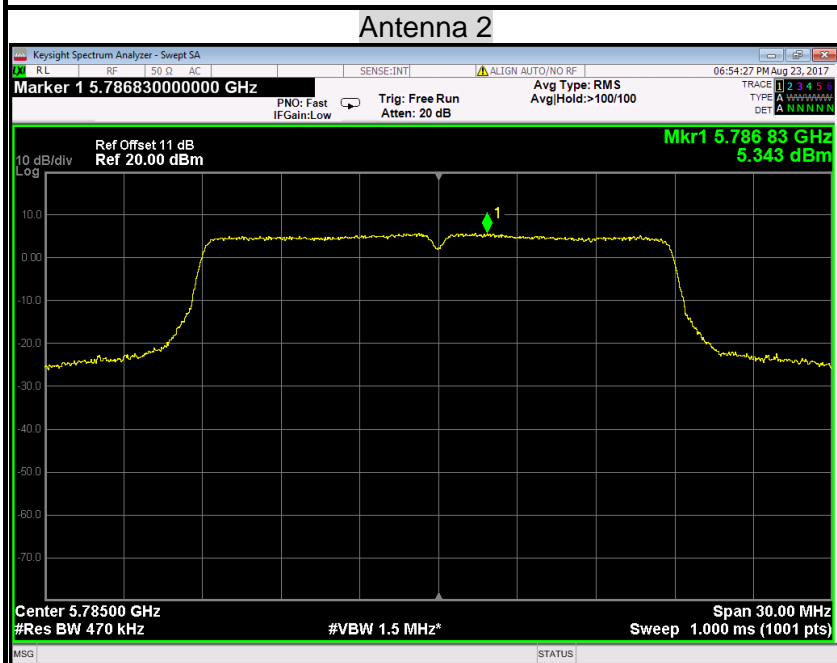
IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

PPSD (CH Low)

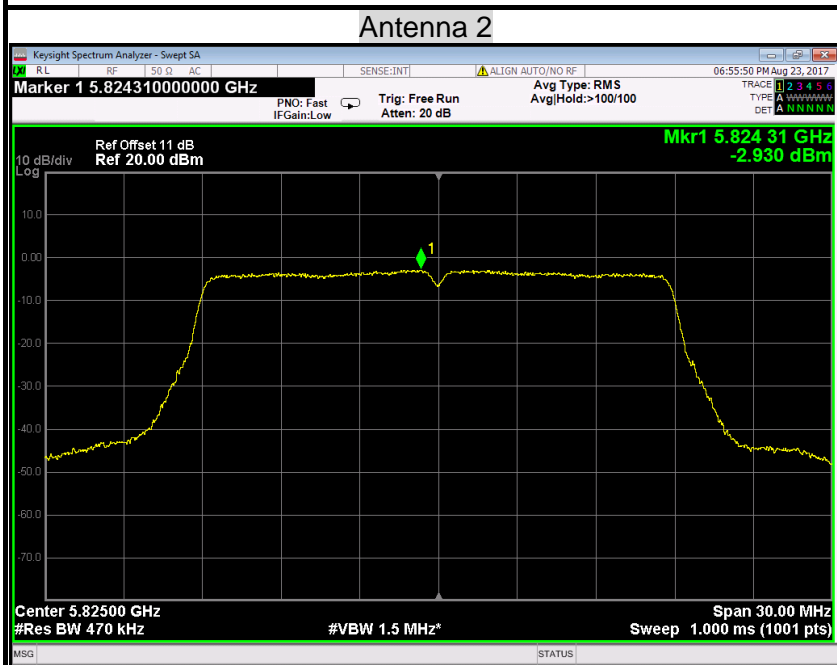




PPSD (CH Mid)



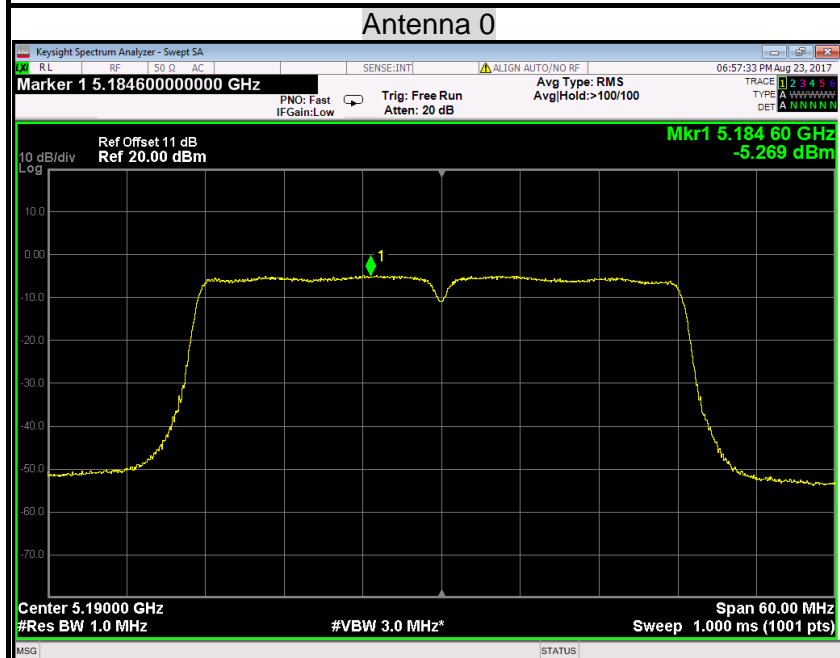
PPSD (CH High)



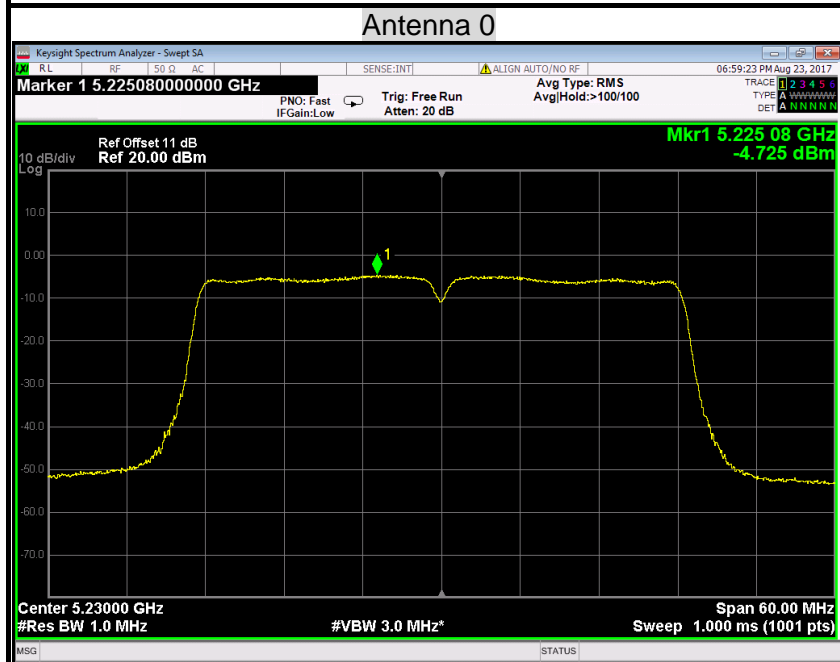


IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



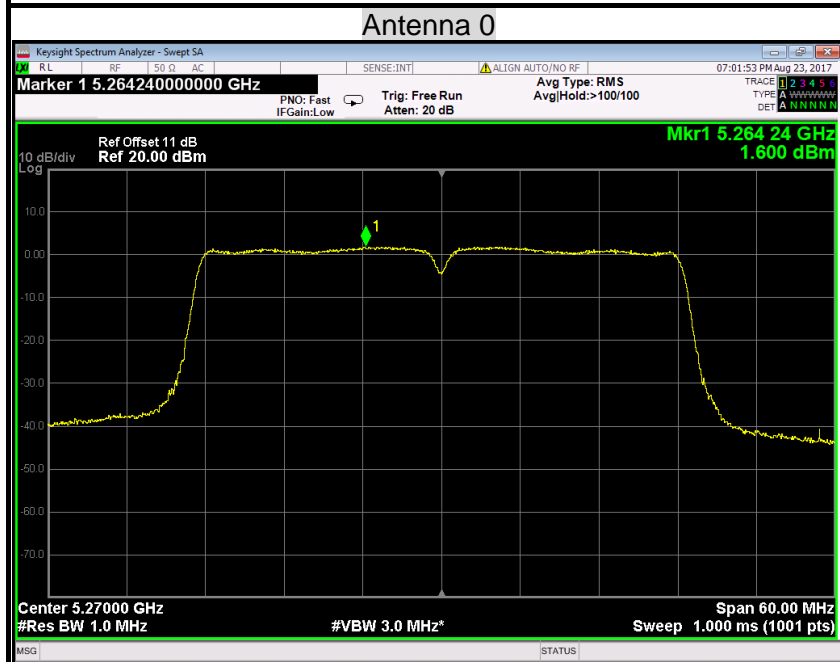
PPSD (CH High)



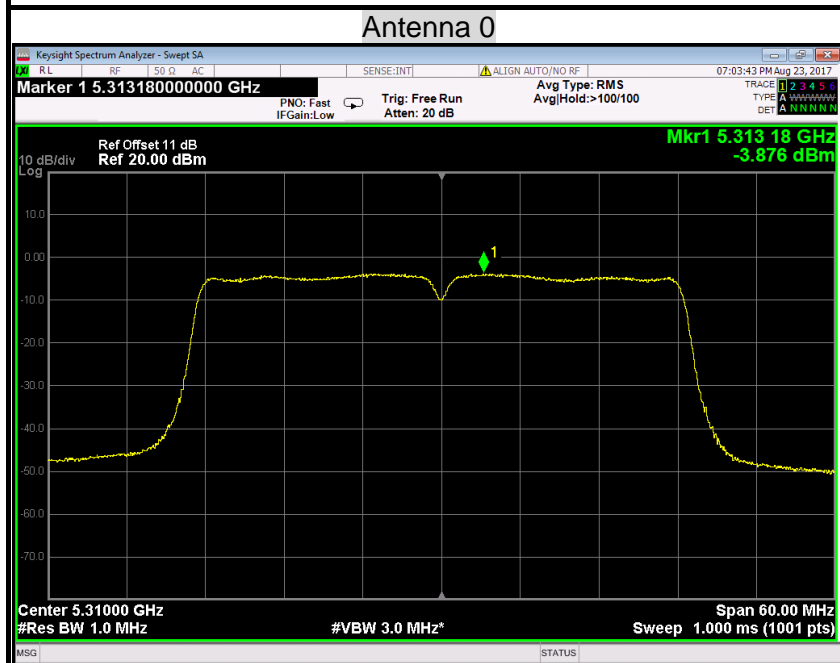


IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

PPSD (CH Low)



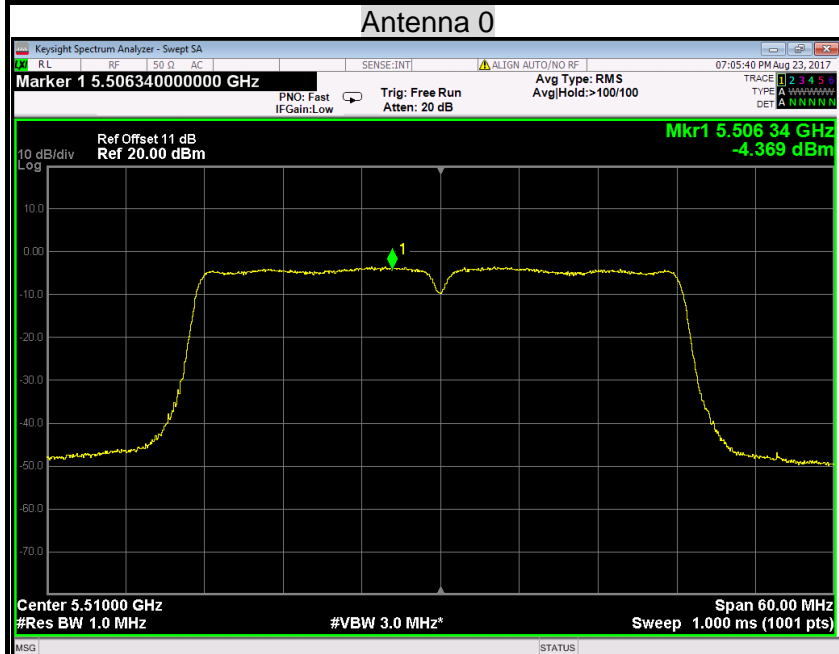
PPSD (CH High)



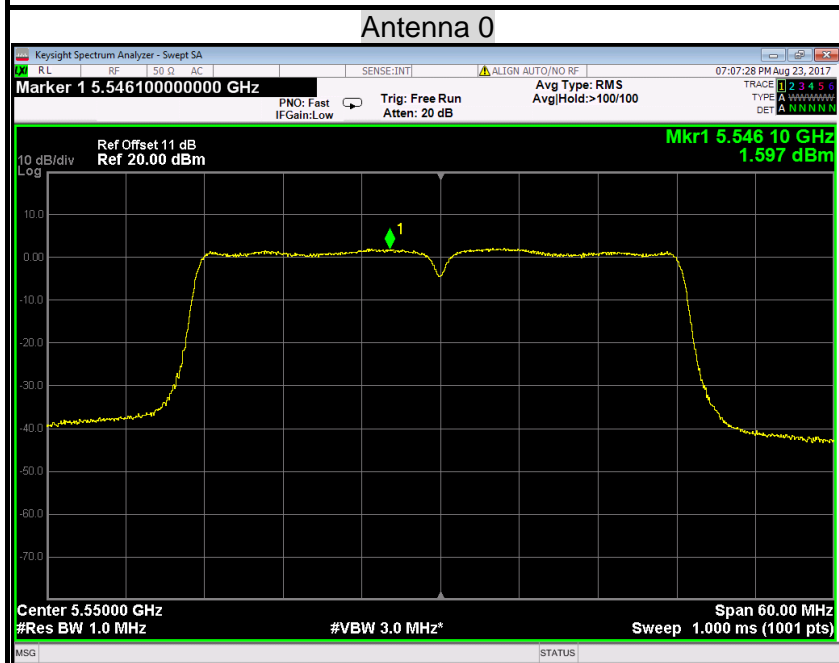


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

PPSD (CH Low)

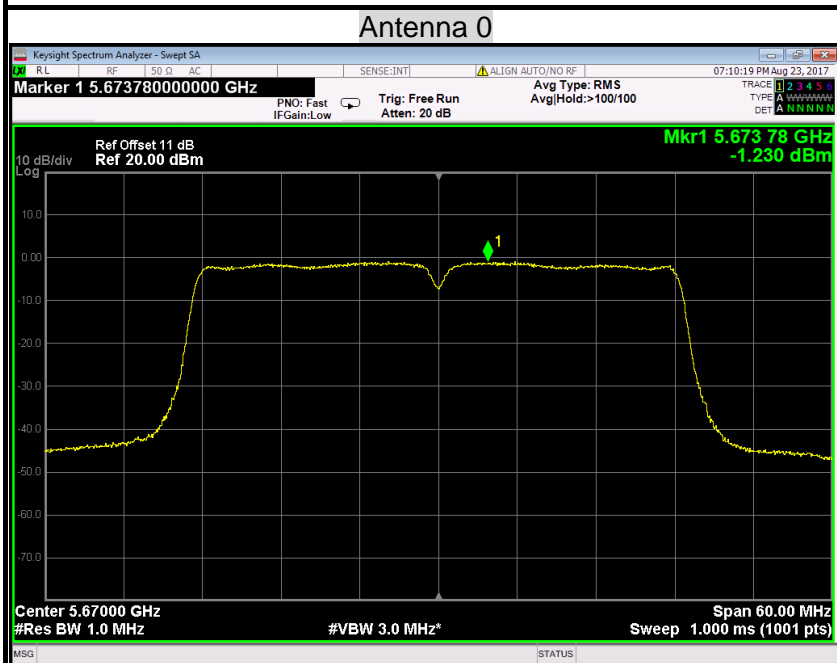


PPSD (CH Mid)



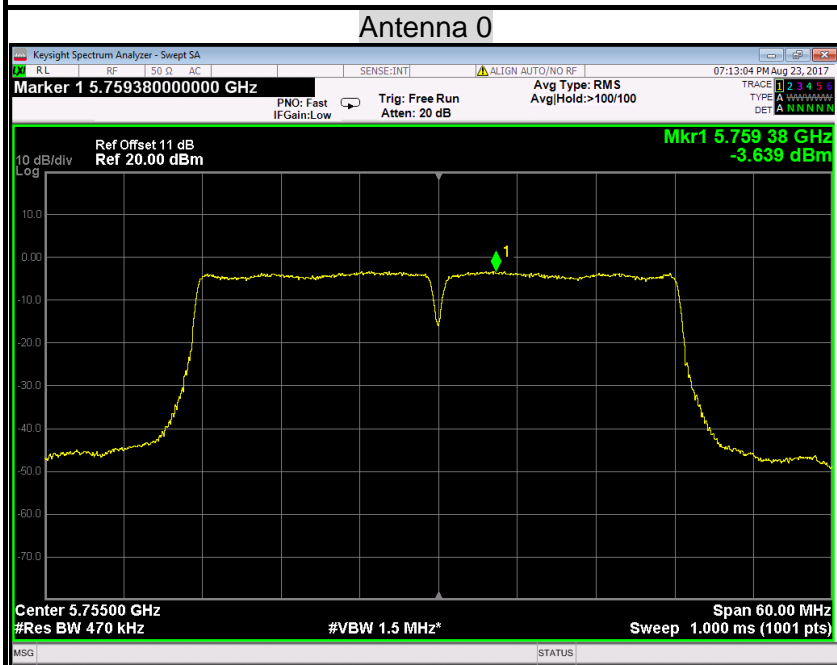


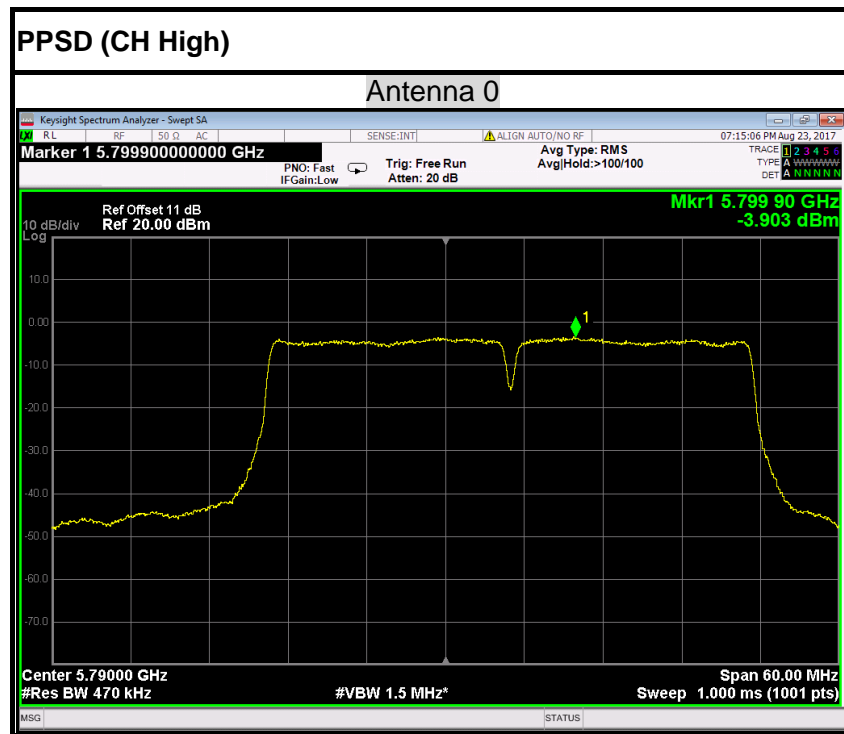
PPSD (CH High)



IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

PPSD (CH Low)

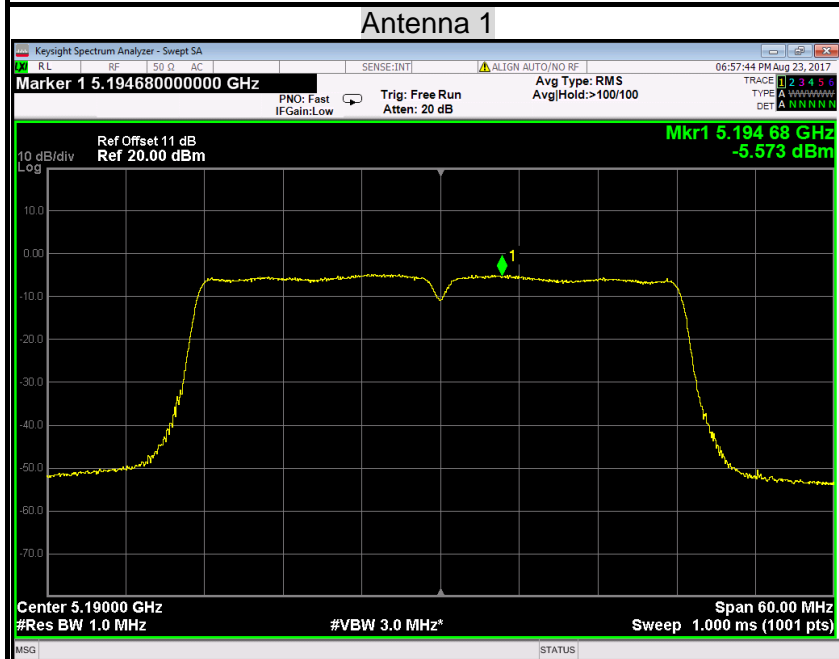




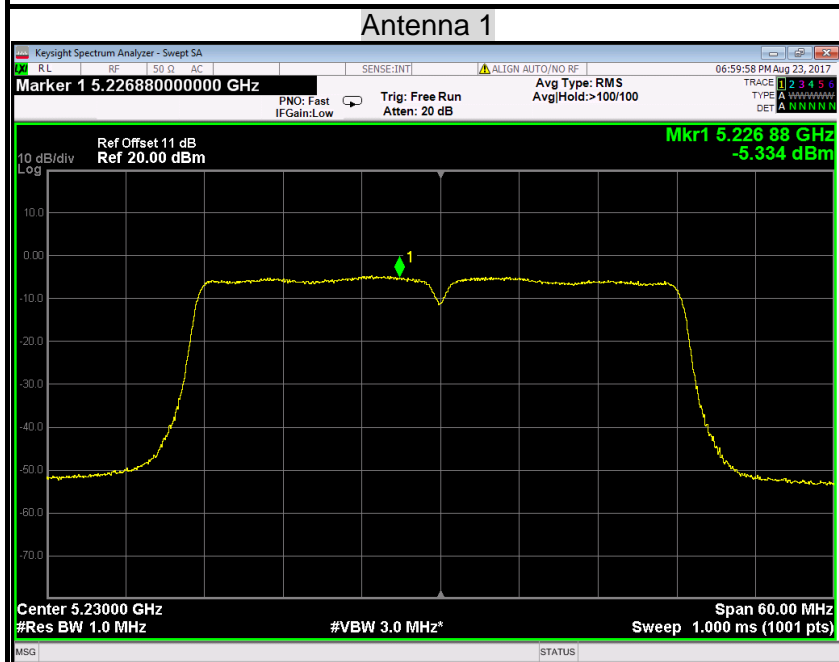


IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



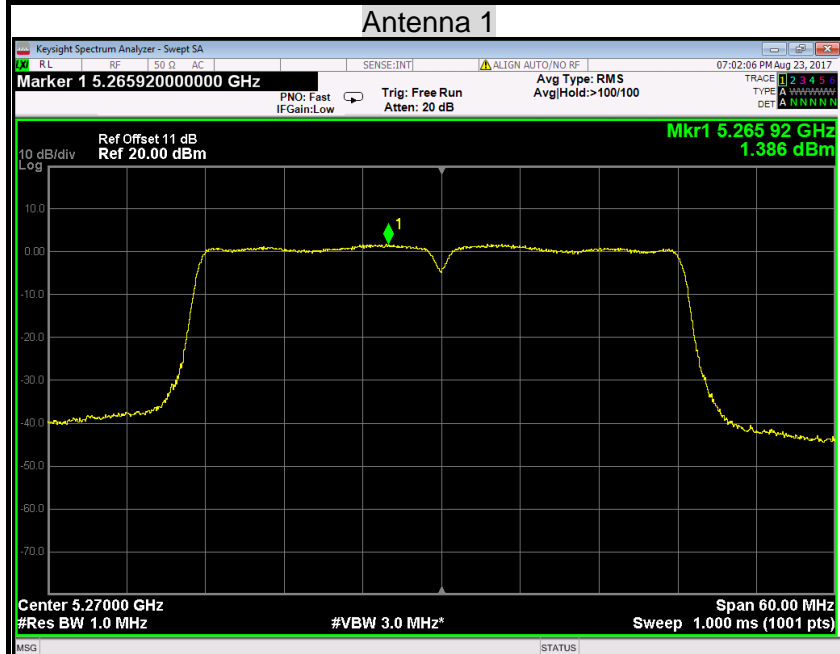
PPSD (CH High)



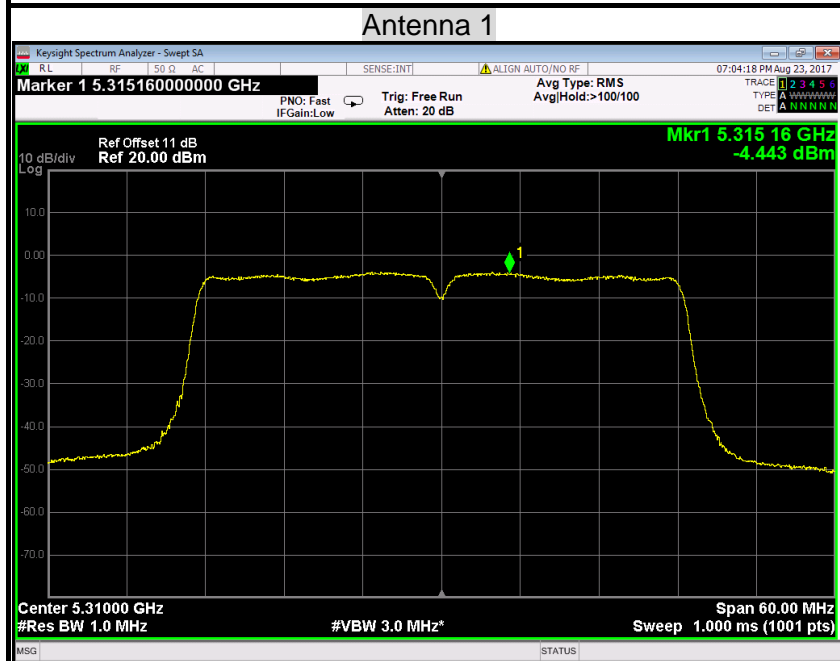


IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

PPSD (CH Low)



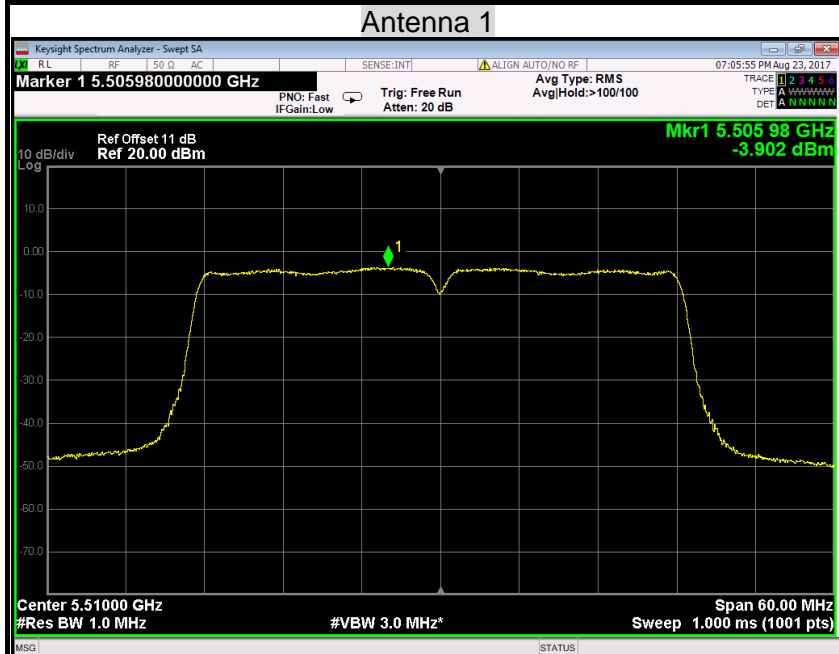
PPSD (CH High)



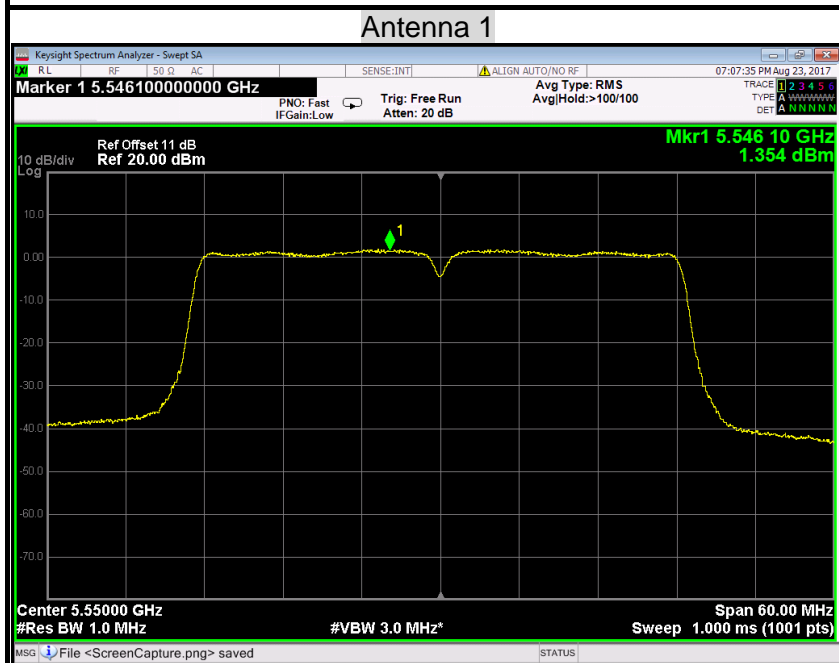


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

PPSD (CH Low)

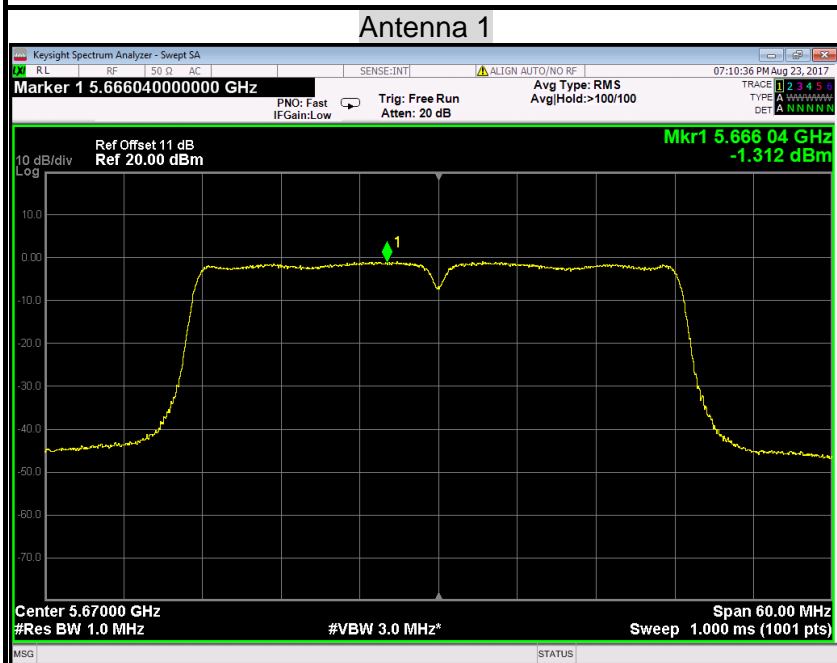


PPSD (CH Mid)



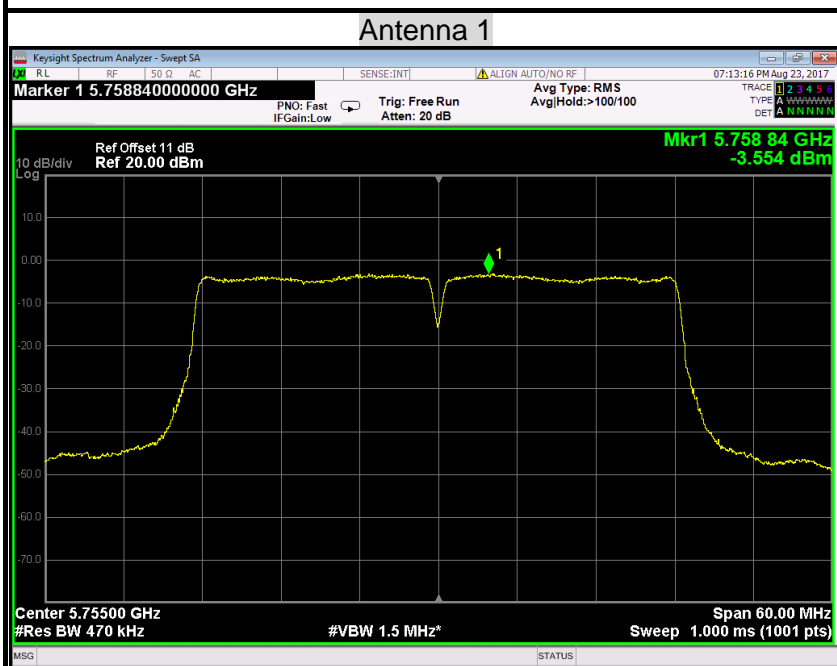


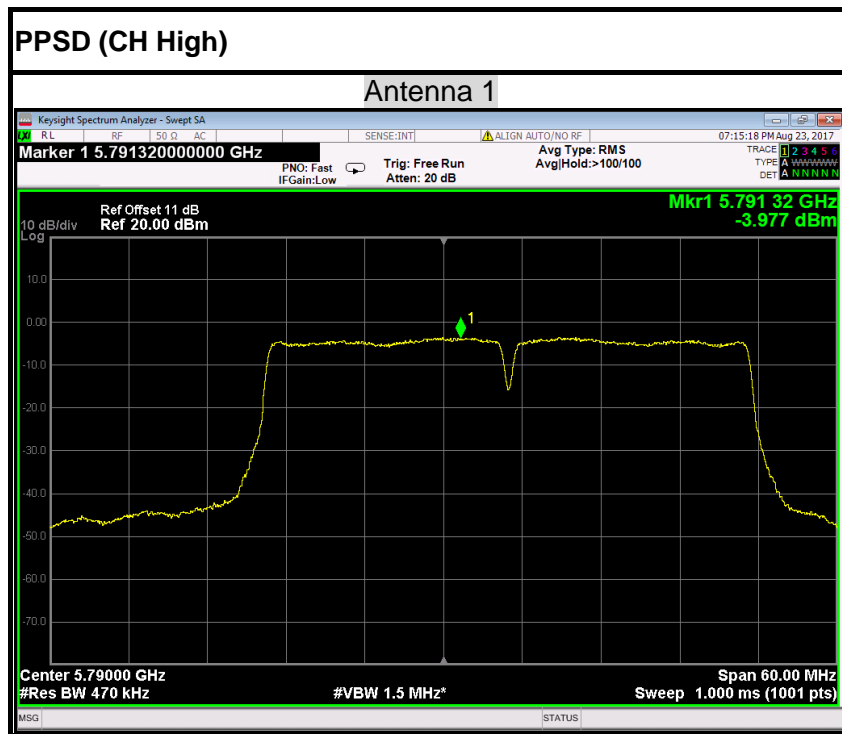
PPSD (CH High)



IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

PPSD (CH Low)

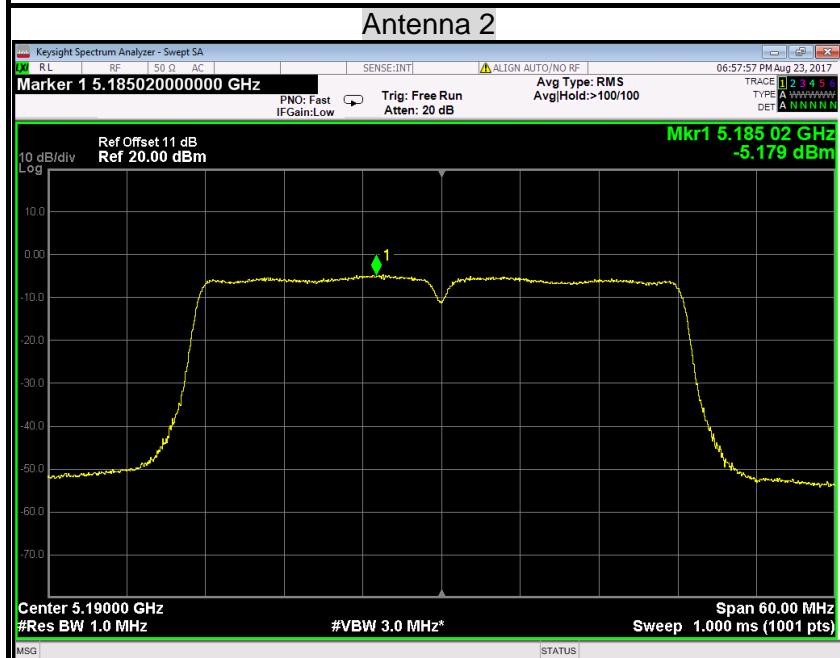




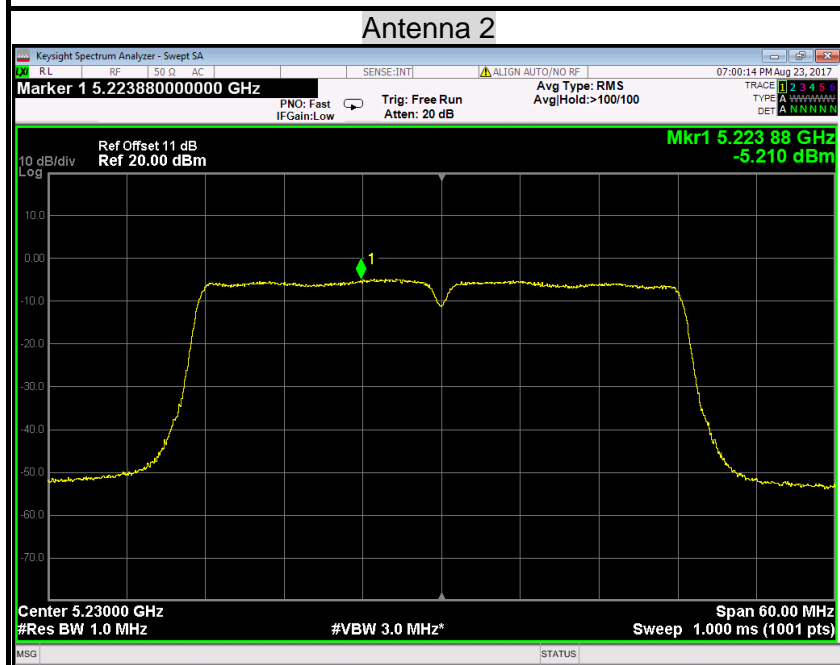


IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



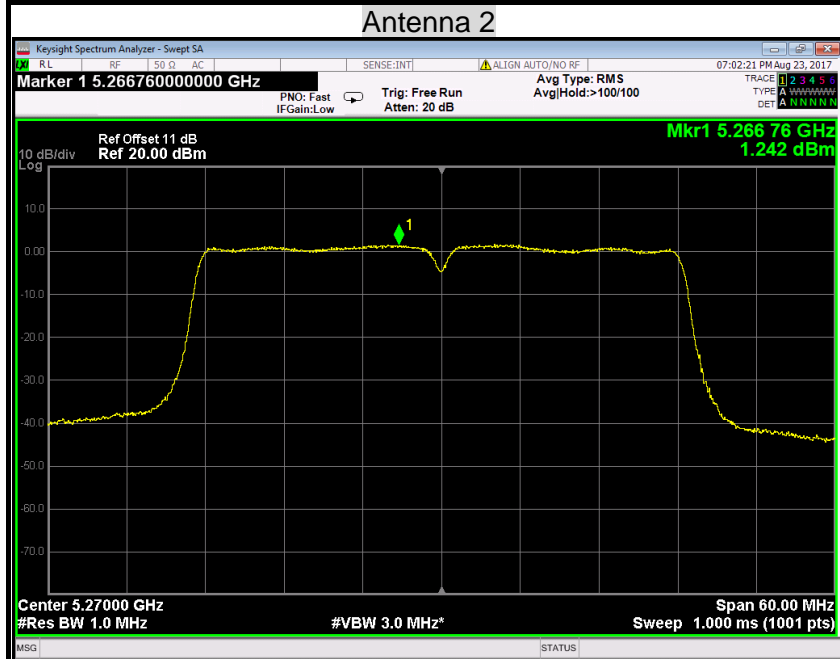
PPSD (CH High)



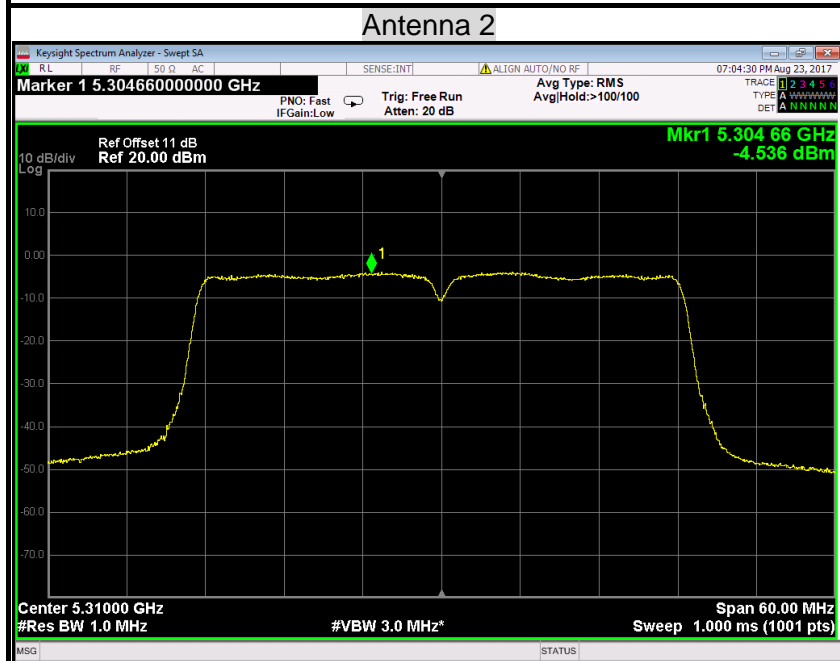


IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

PPSD (CH Low)



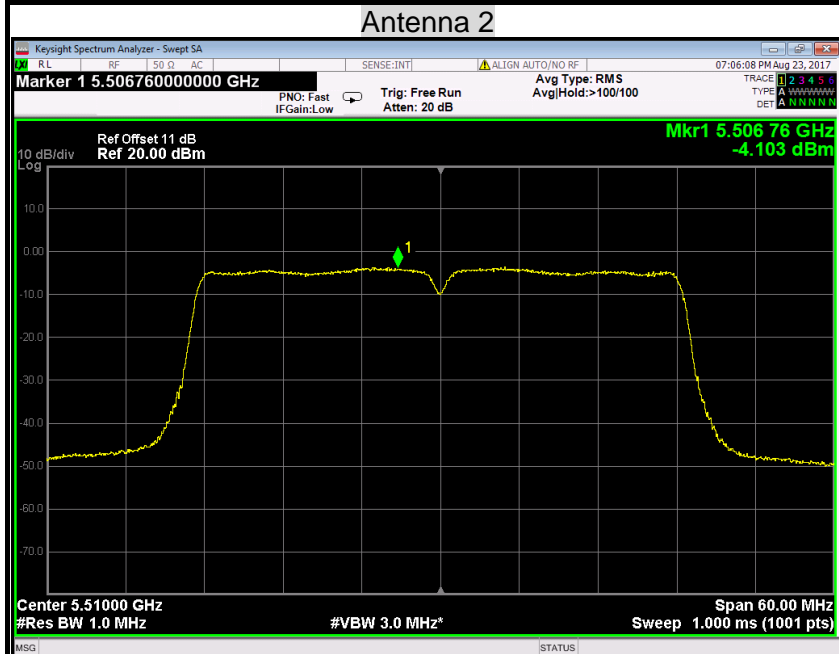
PPSD (CH High)



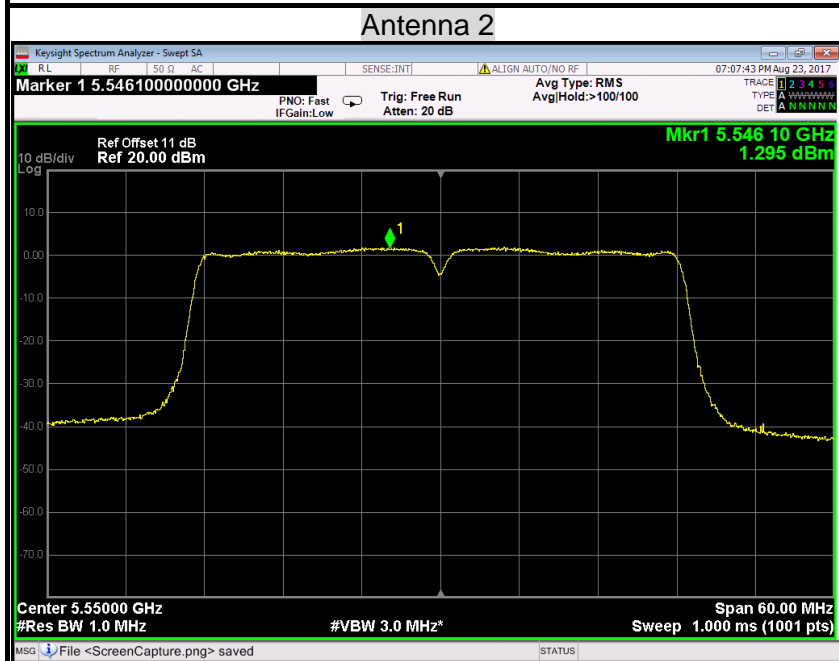


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

PPSD (CH Low)

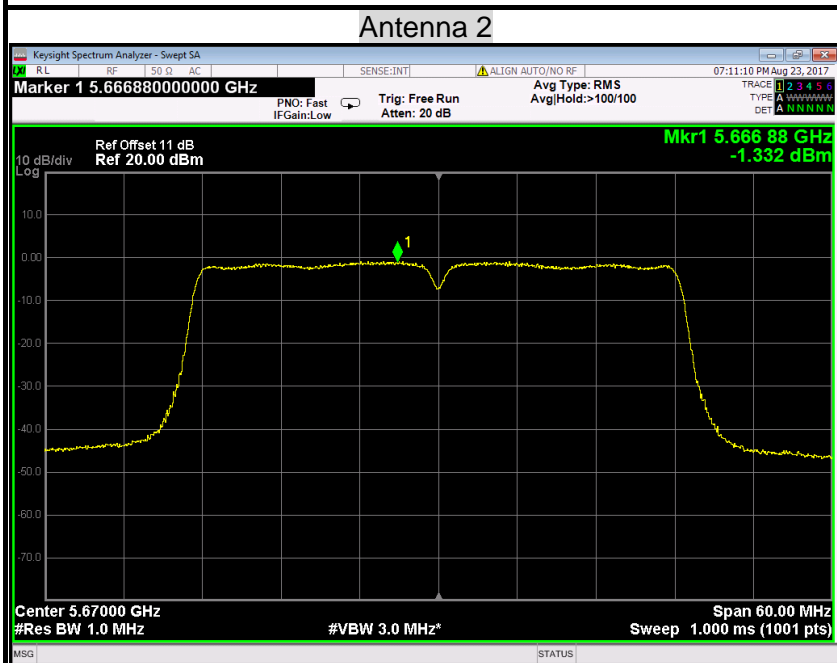


PPSD (CH Mid)





PPSD (CH High)



IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

PPSD (CH Low)

