802.11ac VHT80 mode (antenna 2)

Channel 5210MHz

Channel 5290MHz

Channel 5530MHz

Channel 5610MHz

Non- beamforming

6dB Bandwidth

802.11a mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5745	16.52	16.44	>500	PASS
5785	16.45	16.44		PASS
5825	16.42	16.46		PASS

802.11n HT20 mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5745	17.70	17.67	>500	PASS
5785	17.69	17.75		PASS
5825	17.80	17.74		PASS

802.11ac VHT20 mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5745	17.79	17.78	>500	PASS
5785	17.78	17.77		PASS
5825	17.77	17.78		PASS

802.11n HT40 mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5755	36.48	36.49	>500	PASS
5795	36.50	36.48		PASS

802.11ac VHT40 mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5755	36.45	36.47	>500	PASS
5795	36.50	36.51		PASS

802.11ac VHT80 mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Limit (kHz)	Result
	antenna 1	antenna 2		
5755	76.49	76.44	>500	PASS

Non- beamforming

Test Results (plots) of Bandwidth

802.11a mode (antenna 1)

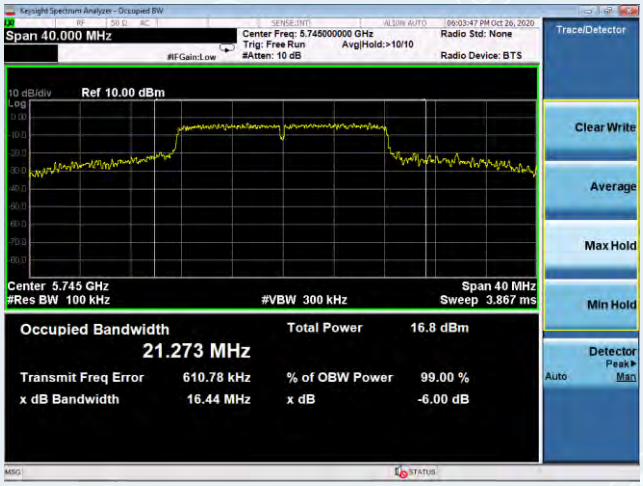
Channel 5745MHz

Channel 5785MHz

Channel 5825MHz

802.11a mode (antenna 2)

Channel 5745MHz

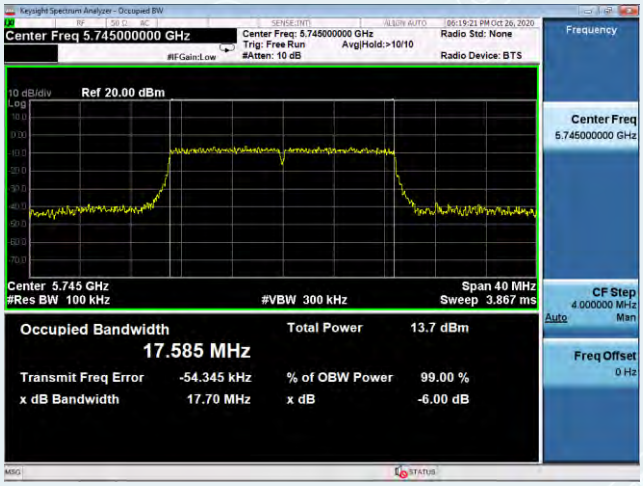


Channel 5785MHz

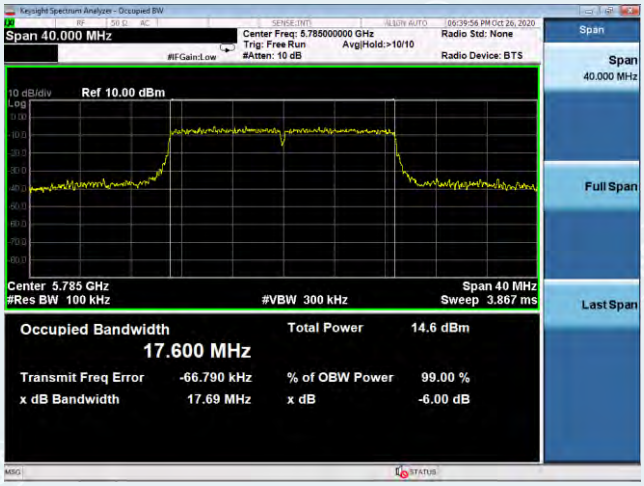
Channel 5825MHz

802.11n HT20 mode (antenna 1)

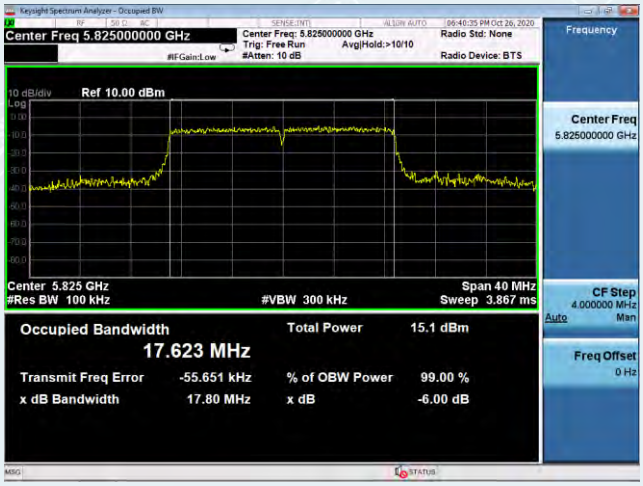
Channel 5745MHz



Channel 5785MHz

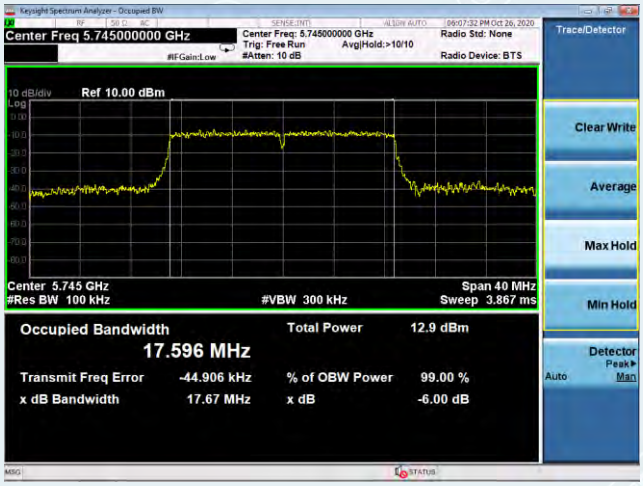


Channel 5825MHz

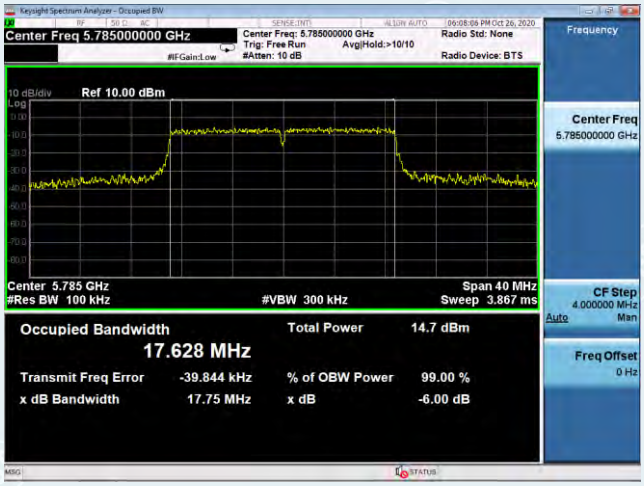


802.11n HT20 mode (antenna 2)

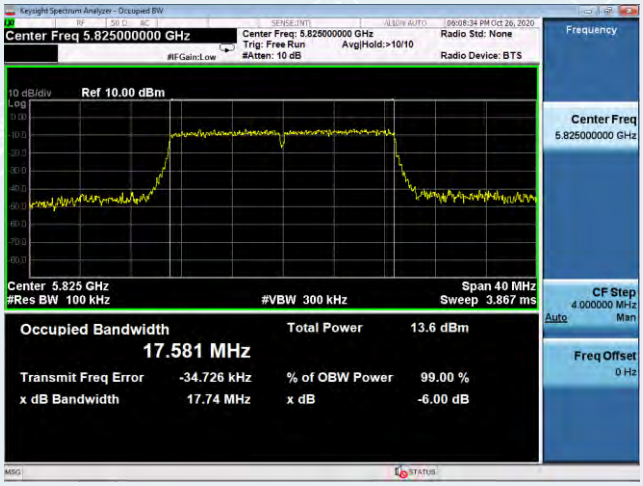
Channel 5745MHz



Channel 5785MHz



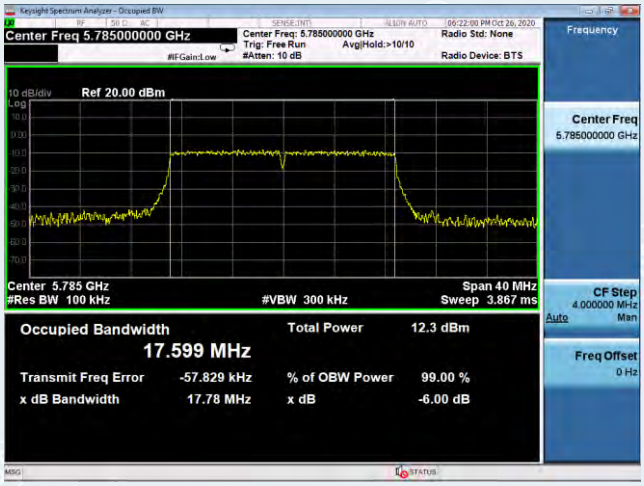
Channel 5825MHz



802.11ac VHT20 mode (antenna 1)

Channel 5745MHz

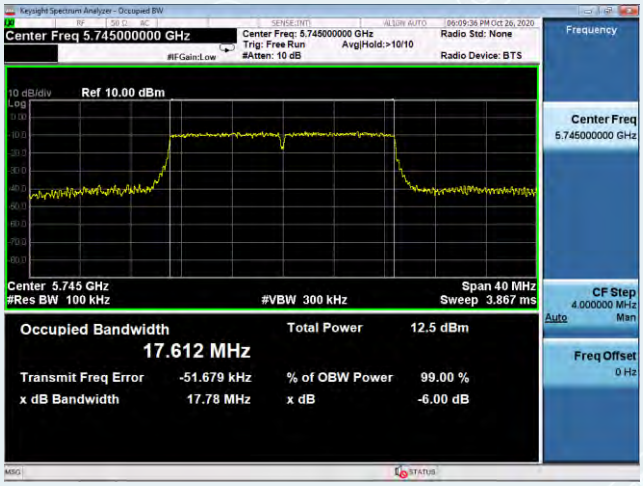
Channel 5785MHz



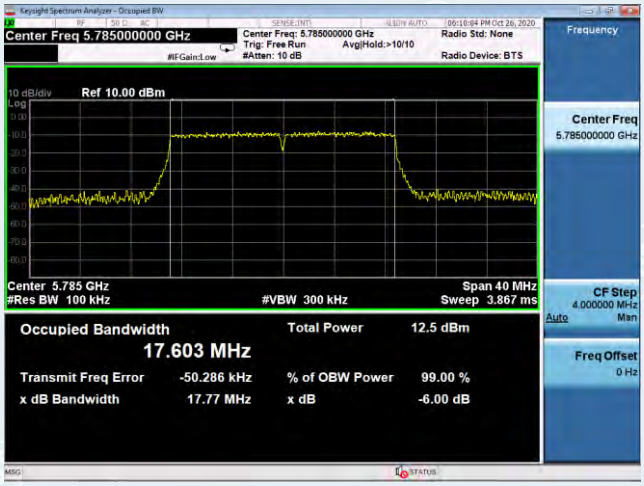
Channel 5825MHz

802.11ac VHT20 mode (antenna 2)

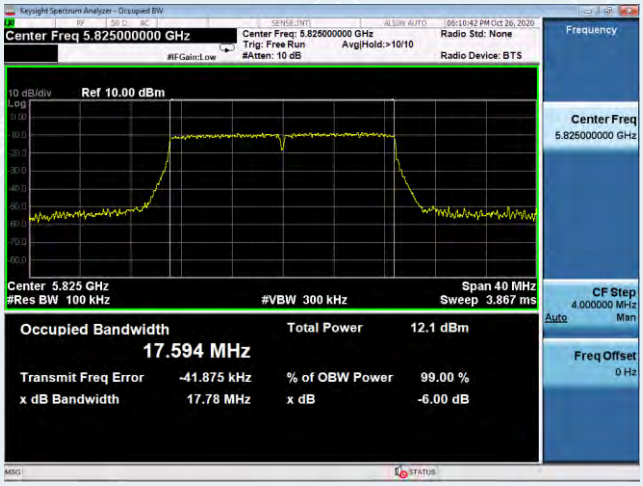
Channel 5745MHz



Channel 5785MHz

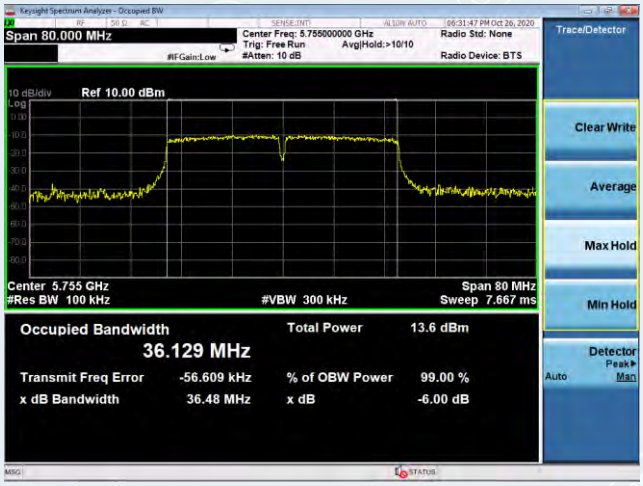


Channel 5825MHz

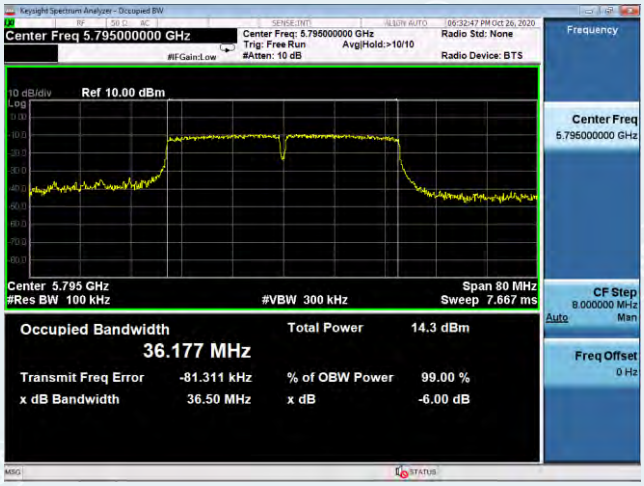


802.11n HT40 mode(antenna 1)

Channel 5755MHz

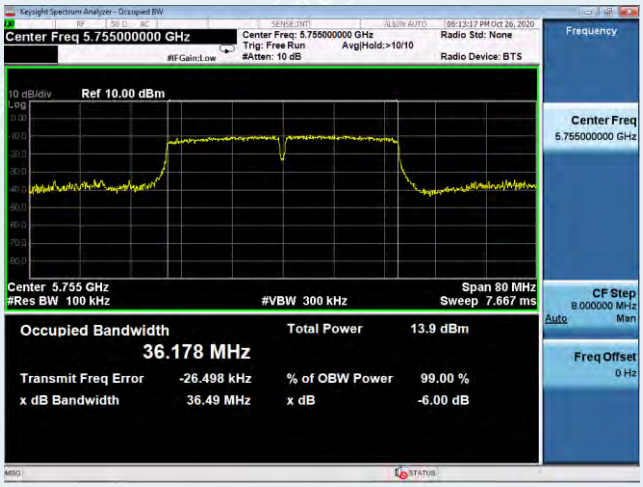


Channel 5795MHz

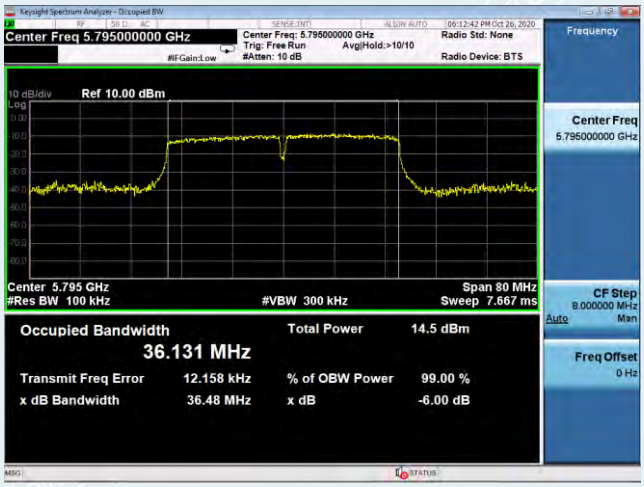


802.11n HT40 mode(antenna 2)

Channel 5755MHz

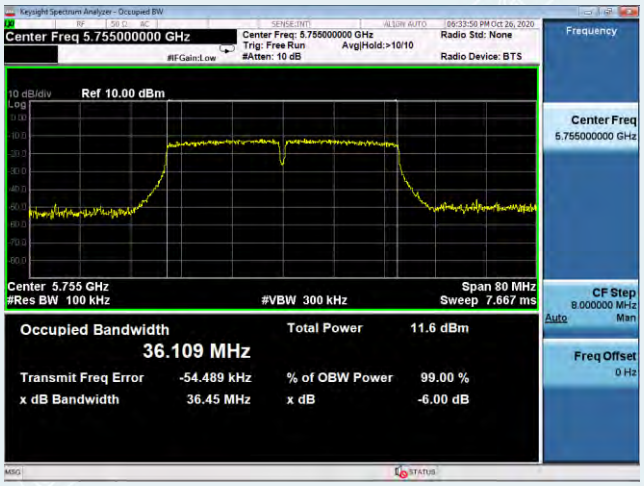


Channel 5795MHz

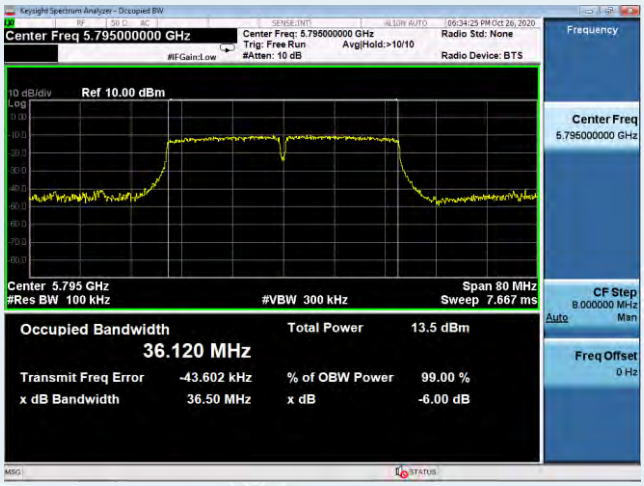


802.11ac VHT40 mode(antenna 1)

Channel 5755MHz

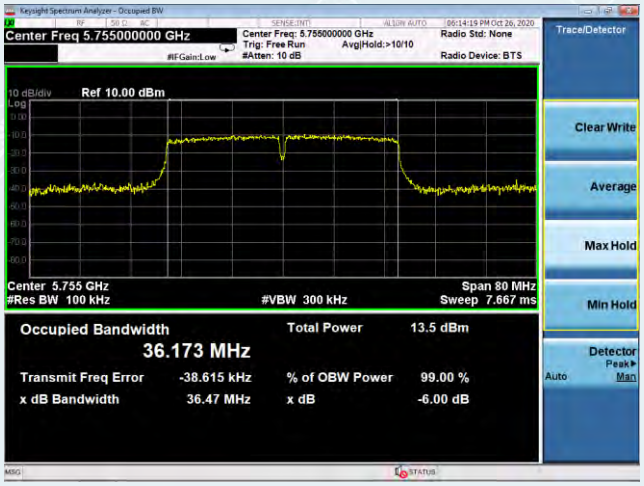


Channel 5795MHz

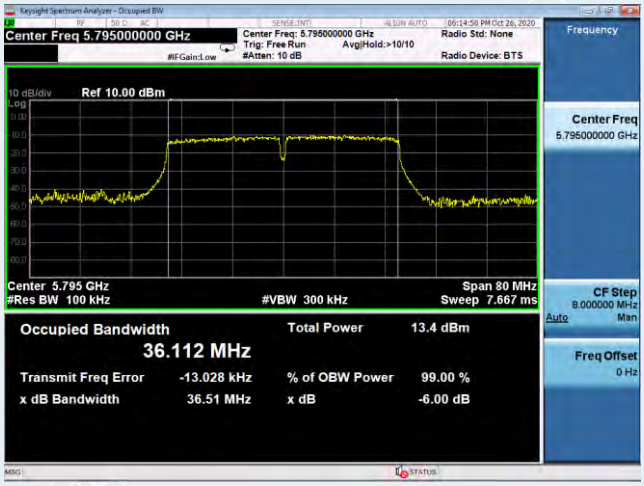


802.11ac VHT40 mode(antenna 2)

Channel 5755MHz



Channel 5795MHz



802.11ac VHT80 mode(antenna 1)

Channel 5775MHz

802.11ac VHT80 mode(antenna 2)

Channel 5775MHz

9. OUTPUT POWER

9.1. LIMITS

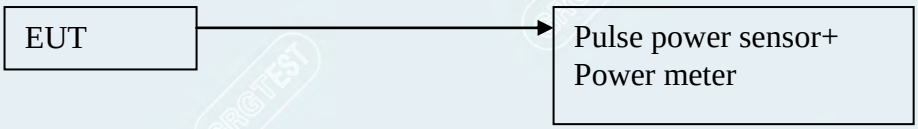
The FCC 15.407(a),The maximum conducted output power should not exceed:

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	1W(30dBm) (Max. e.i.r.p≦125mW at any elevation angle above 30 degrees as measured from the horizon)
	Indoor Access Point	1W(30dBm)
	Fixed point-to-point Access Point	1W(30dBm)
	Mobile and Portable Client Device	250mW(23.98dBm)
U-NII-2A	All Device	250mW(23.98dBm) or 11dBm+10 log B,Which is lesser. (B is 26dB Bandwidth in MHz)
U-NII-2C	All Device	250mW(23.98dBm) or 11dBm+10 log B,Which is lesser. (B is 26dB Bandwidth in MHz)
U-NII-3	All Device	1W(30dBm)

9.2. TEST PROCEDURES

1) The RF output of EUT was connected to the broadband average RF power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2) Set to the maximum power setting and enable the EUT transmit continuously.
3) Measure the conducted output power and record the results in the test report.

9.3. TEST SETUP



9.4. TEST RESULTS

Duty Cycle Calculation					
	Mode	ON Time(ms)	Total Time(ms)	Duty Cycle	Duty Factor
duty cycle>98%	802.11a	1	1	100%	0
	802.11n HT20	1	1	100%	0
	802.11n HT40	1	1	100%	0
	802.11ac VHT20	1	1	100%	0
	802.11ac VHT40	1	1	100%	0
	802.11ac VHT80	1	1	100%	0

Non-Beamforming

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)		Limit (dBm)	Result
			antenna 1	antenna 2		
802.11a	U-NII-1	5180	18.47	18.42	30	Pass
		5200	18.74	18.71		Pass
		5240	18.87	18.75		Pass
	U-NII-2A	5260	18.69	18.63	30	Pass
		5300	18.85	18.78		Pass
		5320	15.81	16.32		Pass
	U-NII-2C	5500	18.82	18.79	30	Pass
		5580	18.84	18.81		Pass
		5700	18.75	18.73		Pass
	U-NII-3	5745	18.83	18.76	30	Pass
		5785	18.84	18.82		Pass
		5825	18.85	18.83		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11n HT20	U-NII-1	5180	14.87	14.85	17.87	27.19	Pass
		5200	14.89	14.72	17.82		Pass
		5240	14.97	14.80	17.90		Pass
	U-NII-2A	5260	12.39	12.01	15.21	21.60	Pass
		5300	12.42	11.78	15.12		Pass
		5320	12.57	11.52	15.09		Pass
	U-NII-2C	5500	12.30	12.8	15.57	22.20	Pass
		5580	12.61	12.83	15.73		Pass
		5700	12.73	12.46	15.61		Pass
	U-NII-3	5745	14.95	14.94	17.96	27.56	Pass
		5785	14.60	14.89	17.76		Pass
		5825	14.89	14.69	17.80		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
IEEE 802.11ac VHT20	U-NII-1	5180	13.88	13.79	16.85	27.19	Pass
		5200	13.85	13.75	16.81		Pass
		5240	13.91	13.95	16.94		Pass
	U-NII-2A	5260	11.41	11.29	14.36	21.60	Pass
		5300	11.51	10.90	14.23		Pass
		5320	11.73	10.79	14.30		Pass
	U-NII-2C	5500	11.74	11.86	14.81	22.20	Pass
		5580	12.43	11.41	14.96		Pass
		5700	12.53	11.75	15.17		Pass
	U-NII-3	5745	13.99	13.91	16.96	27.56	Pass
		5785	13.97	13.92	16.96		Pass
		5825	13.94	13.50	16.74		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11n HT40 mode	U-NII-1	5190	13.97	13.92	16.96	27.19	Pass
		5230	13.98	13.90	16.95		Pass
	U-NII-2A	5270	13.97	13.89	16.94	21.60	Pass
		5310	13.96	13.87	16.93		Pass
	U-NII-2C	5510	13.95	13.89	16.93	22.20	Pass
		5550	13.97	13.90	16.95		Pass
		5670	13.96	13.87	16.93		Pass
	U-NII-3	5755	13.95	13.87	16.92	27.56	Pass
		5795	13.98	13.86	16.93		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11ac VHT40 mode	U-NII-1	5190	13.81	13.85	16.84	27.19	Pass
		5230	13.81	13.73	16.78		Pass
	U-NII-2A	5270	13.82	13.68	16.76	21.60	Pass
		5310	13.87	13.69	16.79		Pass
	U-NII-2C	5510	13.83	13.66	16.76	22.20	Pass
		5550	13.84	13.71	16.79		Pass
		5670	13.81	13.81	16.82		Pass
	U-NII-3	5755	13.79	13.77	16.79	27.56	Pass
		5795	13.87	13.78	16.84		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11ac VHT80	U-NII-1	5210	13.45	13.42	16.45	27.19	Pass
	U-NII-2A	5290	13.68	13.65	16.68	21.60	Pass
	U-NII-2C	5530	13.93	13.92	16.94	22.20	Pass
		5610	13.89	13.95	16.93		Pass
	U-NII-3	5775	13.71	13.98	16.86	27.56	Pass

U-NII-1 :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.85/20}+10^{5.74/20})/2]$dBi, that is Directional gain (dBi)= 8.81
Note2: Antenna gain is greater than 6, Output Power Limit=30-(8.81-6)=27.19dBm

U-NII-2A :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.32/20}+10^{5.46/20})/2]$dBi, that is Directional gain (dBi)= 8.40
Note2: Antenna gain is greater than 6, Output Power Limit=24-(8.40-6)=21.60dBm

U-NII-2C :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{4.56/20}+10^{5.01/20})/2]$dBi, that is Directional gain (dBi)= 7.80
Note2: Antenna gain is greater than 6, Output Power Limit=24-(7.80-6)=22.20dBm

U-NII-3:
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.35/20}+10^{5.5/20})/2]$dBi, that is Directional gain (dBi)= 8.44
Note2: Antenna gain is greater than 6, Output Power Limit=30-(8.44-6)=27.56dBm

Beamforming

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11n HT20	U-NII-1	5180	14.74	14.61	17.69	27.15	Pass
		5200	14.75	14.57	17.67		Pass
		5240	14.81	14.54	17.69		Pass
	U-NII-2A	5260	12.02	11.64	14.84	21.54	Pass
		5300	12.13	11.42	14.80		Pass
		5320	12.21	11.16	14.73		Pass
	U-NII-2C	5500	11.97	12.43	15.22	21.99	Pass
		5580	12.32	12.37	15.36		Pass
		5700	12.36	12.08	15.23		Pass
	U-NII-3	5745	14.31	14.35	17.34	27.5	Pass
		5785	14.20	14.72	17.48		Pass
		5825	14.77	14.43	17.61		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
IEEE 802.11ac VHT20	U-NII-1	5180	13.58	13.46	16.53	27.15	Pass
		5200	13.60	13.42	16.52		Pass
		5240	13.70	13.30	16.51		Pass
	U-NII-2A	5260	11.05	10.98	14.03	21.54	Pass
		5300	11.21	10.61	13.93		Pass
		5320	11.27	10.35	13.84		Pass
	U-NII-2C	5500	11.28	11.4	14.35	21.99	Pass
		5580	12.01	11.05	14.57		Pass
		5700	12.18	11.32	14.78		Pass
	U-NII-3	5745	13.20	13.35	16.29	27.5	Pass
		5785	13.35	13.65	16.51		Pass
		5825	13.62	13.24	16.44		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11n HT40 mode	U-NII-1	5190	13.75	13.80	16.79	27.15	Pass
		5230	13.73	13.72	16.74		Pass
	U-NII-2A	5270	13.71	13.66	16.70	21.54	Pass
		5310	13.70	13.64	16.68		Pass
	U-NII-2C	5510	13.80	13.64	16.73	21.99	Pass
		5550	13.75	13.68	16.73		Pass
		5670	13.73	13.76	16.76		Pass
	U-NII-3	5755	13.69	13.72	16.72	27.50	Pass

		5795	13.72	13.74	16.74		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11ac VHT40 mode	U-NII-1	5190	13.63	13.65	16.65	27.15	Pass
		5230	13.6	13.57	16.60		Pass
	U-NII-2A	5270	13.61	13.51	16.57	21.54	Pass
		5310	13.65	13.53	16.60		Pass
	U-NII-2C	5510	13.62	13.52	16.58	21.99	Pass
		5550	13.63	13.54	16.60		Pass
		5670	13.66	13.61	16.65		Pass
	U-NII-3	5755	13.59	13.51	16.56	27.50	Pass
		5795	13.58	13.52	16.56		Pass

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power with Duty Factor (dBm)			Limit (dBm)	Result
			antenna 1	antenna 2	total		
802.11ac VHT80	U-NII-1	5210	13.04	13.02	16.04	27.15	Pass
	U-NII-2A	5290	13.14	13.03	16.10	21.54	Pass
	U-NII-2C	5530	13.74	13.71	16.74	21.99	Pass
		5610	13.57	13.36	16.48		Pass
	U-NII-3	5775	13.14	13.64	16.41	27.5	Pass

U-NII-1 :
Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.85+3=8.85
Note2: Antenna gain is greater than 6, Output Power Limit=30-(8.85-6)=27.15dBm

U-NII-2A :
Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.46+3= 8.46
Note2: Antenna gain is greater than 6, Output Power Limit=24-(8.46-6)=21.54dBm

U-NII-2C :
Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.01+3= 8.01
Note2: Antenna gain is greater than 6, Output Power Limit=24-(8.01-6)=21.99dBm

U-NII-3:
Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.5+3=8.5
Note2: Antenna gain is greater than 6, Output Power Limit=30-(8.5-6)=27.5dBm

10. POWER SPECTRAL DENSITY

10.1. LIMITS

FCC 15.407(a)
The maximum power spectral density should not exceed:

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	17dBm/MHz
	Indoor Access Point	17dBm/MHz
	Fixed point-to-point Access Point	17dBm/MHz
	Mobile and Portable Client Device	11dBm/MHz
U-NII-2A	All Device	11dBm/MHz
U-NII-2C	All Device	11dBm/MHz
U-NII-3	All Device	30dBm/500KHz

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. TEST PROCEDURES

Spectrum Parameters	Setting
RBW	1MHz(For U-NII-1&U-NII-2A&U-NII-2C) 500KHz(For U-NII-3)
VBW	3MHz(For U-NII-1&U-NII-2A&U-NII-2C) 2MHz(For U-NII-3)
Span	encompass the entire 26 dB EBW or 99% OBW of the signal
Sweep Time	Auto
Number of Sweep Point	≥2×SPAN/RBW
Detector	RMS(power averaging)
Trace Average	≥100 traces

10.3. TEST SETUP

10.4. TEST RESULTS

Duty Cycle Calculation					
	Mode	ON Time(ms)	Total Time(ms)	Duty Cycle	Duty Factor
duty cycle>98%	802.11a	1	1	100%	0
	802.11n HT20	1	1	100%	0
	802.11n HT40	1	1	100%	0
	802.11ac VHT20	1	1	100%	0
	802.11ac VHT40	1	1	100%	0
	802.11ac VHT80	1	1	100%	0

Non-Beamforming

Test Mode	Band	Frequency (MHz)	PSD (dBm)		Duty Factor	Total PSD with Duty Factor (dBm)		Limit	Result
			antenna 1	antenna 2		antenna 1	antenna 2		
802.11a	U-NII-1	5180	11.937	12.322	0	11.937	12.322	17dBm/MHz	Pass
		5200	12.458	12.438	0	12.458	12.438		Pass
		5240	12.633	12.525	0	12.633	12.525		Pass
	U-NII-2A	5260	10.210	10.683	0	10.210	10.683	11dBm/MHz	Pass
		5300	10.315	10.518	0	10.315	10.518		Pass
		5320	9.785	10.052	0	9.785	10.052		Pass
	U-NII-2C	5500	10.344	10.378	0	10.344	10.378	11dBm/MHz	Pass
		5580	10.505	10.369	0	10.505	10.369		Pass
		5700	10.423	10.239	0	10.423	10.239		Pass
	U-NII-3	5745	10.626	10.542	0	10.626	10.542	30dBm /500kHz	Pass
		5785	10.920	10.388	0	10.920	10.388		Pass
		5825	11.347	11.058	0	11.347	11.058		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11n HT20	U-NII-1	5180	8.679	8.677	11.688	0	11.688	14.19dBm/ MHz	Pass
		5200	8.625	8.044	11.355	0	11.355		Pass
		5240	9.130	8.240	11.718	0	11.718		Pass
	U-NII-2A	5260	5.127	4.895	8.023	0	8.023	8.60dBm/ MHz	Pass
		5300	5.077	4.887	7.993	0	7.993		Pass
		5320	5.287	4.818	8.069	0	8.069		Pass
	U-NII-2C	5500	5.743	5.639	8.702	0	8.702	9.20dBm/ MHz	Pass
		5580	5.436	5.505	8.481	0	8.481		Pass
		5700	5.73	5.64	8.696	0	8.696		Pass
	U-NII-3	5745	6.424	5.462	8.980	0	8.980	27.56dBm /500kHz	Pass
		5785	5.768	6.541	9.182	0	9.182		Pass
		5825	5.887	6.744	9.347	0	9.347		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT20	U-NII-1	5180	8.114	8.396	11.268	0	11.268	14.19dBm/ MHz	Pass
		5200	8.601	8.211	11.421	0	11.421		Pass
		5240	8.481	8.193	11.350	0	11.350		Pass
	U-NII-2A	5260	5.334	4.942	8.153	0	8.153	8.60dBm/ MHz	Pass
		5300	4.849	5.269	8.074	0	8.074		Pass
		5320	5.22	5.114	8.178	0	8.178		Pass
	U-NII-2C	5500	5.599	5.805	8.714	0	8.714	9.20dBm/ MHz	Pass
		5580	5.769	5.963	8.877	0	8.877		Pass
		5700	5.621	5.799	8.721	0	8.721		Pass
	U-NII-3	5745	4.875	4.108	7.519	0	7.519	27.56dBm /500kHz	Pass
		5785	4.537	5.407	8.004	0	8.004		Pass
		5825	4.795	5.221	8.024	0	8.024		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11n HT40	U-NII-1	5190	3.478	3.73	6.616	0	6.616	14.19dBm/ MHz	Pass
		5230	3.817	3.895	6.866	0	6.866		Pass
	U-NII-2A	5270	3.88	4.567	7.247	0	7.247	8.60dBm/ MHz	Pass
		5310	4.182	3.945	7.075	0	7.075		Pass
	U-NII-2C	5510	4.771	4.182	7.497	0	7.497	9.20dBm/ MHz	Pass
		5550	5.266	4.519	7.919	0	7.919		Pass
		5670	4.914	4.191	7.578	0	7.578		Pass
	U-NII-3	5755	2.443	1.468	4.993	0	4.993	27.56dBm /500kHz	Pass
		5795	2.822	2.067	5.471	0	5.471		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT40	U-NII-1	5190	3.28	3.658	6.483	0	6.483	14.19dBm/ MHz	Pass
		5230	3.734	3.637	6.696	0	6.696		Pass
	U-NII-2A	5270	3.668	3.873	6.782	0	6.782	8.60dBm/ MHz	Pass
		5310	3.811	3.808	6.820	0	6.820		Pass
	U-NII-2C	5510	4.01	3.643	6.841	0	6.841	9.20dBm/ MHz	Pass
		5550	4.55	3.99	7.289	0	7.289		Pass
		5670	4.477	3.921	7.218	0	7.218		Pass
	U-NII-3	5755	2.346	0.917	4.70	0	4.70	27.56dBm /500kHz	Pass
		5795	2.232	1.788	5.026	0	5.026		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT80	U-NII-1	5210	1.878	2.323	5.116	0	5.116	14.19dBm/ MHz	Pass
	U-NII-2A	5290	1.578	1.773	4.687	0	4.687	8.60dBm/ MHz	Pass
	U-NII-2C	5530	1.926	2.623	5.299	0	5.299	9.20dBm/ MHz	Pass
		5610	2.167	1.990	5.090	0	5.090		Pass
	U-NII-3	5775	-0.720	0.062	2.699	0	2.699	27.56dBm /500kHz	Pass

U-NII-1 :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.85/20}+10^{5.74/20})/2]$dBi, that is Directional gain (dBi)= 8.81
Note2: Antenna gain is greater than 6, Power Density Limit=17-(8.81-6)=14.19dBm/MHz

U-NII-2A :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.32/20}+10^{5.46/20})/2]$dBi, that is Directional gain (dBi)= 8.40
Note2: Antenna gain is greater than 6, Power Density Limit=11-(8.40-6)=8.60dBm/MHz

U-NII-2C :
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{4.56/20}+10^{5.01/20})/2]$dBi, that is Directional gain (dBi)= 7.80
Note2: Antenna gain is greater than 6, Power Density Limit=11-(7.80-6)=9.20dBm/MHz

U-NII-3:
Note1: This EUT supports MIMO 2X2, any transmit signals are correlated with each other,
So Directional gain =$10\log[(10^{5.35/20}+10^{5.5/20})/2]$dBi, that is Directional gain (dBi)= 8.44
Note2: Antenna gain is greater than 6, Power Density Limit=30-(8.44-6)=27.56dBm/500kHz

Beamforming

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11n HT20	U-NII-1	5180	8.273	8.350	11.322	0	11.322	14.15dBm /MHz	Pass
		5200	8.358	7.888	11.140	0	11.140		Pass
		5240	8.533	7.846	11.213	0	11.213		Pass
	U-NII-2A	5260	4.977	4.793	7.896	0	7.896	8.54dBm/ MHz	Pass
		5300	4.92	4.668	7.806	0	7.806		Pass
		5320	4.837	4.593	7.727	0	7.727		Pass
	U-NII-2C	5500	5.242	5.507	8.387	0	8.387	8.99dBm/ MHz	Pass
		5580	5.135	5.399	8.279	0	8.279		Pass
		5700	5.622	5.389	8.517	0	8.517		Pass
	U-NII-3	5745	6.098	4.776	8.497	0	8.497	27.5dBm/ 500kHz	Pass
		5785	5.417	6.154	8.811	0	8.811		Pass
		5825	5.536	6.739	9.189	0	9.189		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT20	U-NII-1	5180	7.619	7.986	10.817	0	10.817	14.15dBm /MHz	Pass
		5200	8.357	8.054	11.218	0	11.218		Pass
		5240	8.231	7.790	11.026	0	11.026		Pass
	U-NII-2A	5260	4.757	4.634	7.706	0	7.706	8.54dBm/ MHz	Pass
		5300	4.877	4.407	7.659	0	7.659		Pass
		5320	4.765	4.462	7.626	0	7.626		Pass
	U-NII-2C	5500	4.948	5.129	8.05	0	8.05	8.99dBm/ MHz	Pass
		5580	5.044	5.203	8.135	0	8.135		Pass
		5700	5.073	5.126	8.11	0	8.11		Pass
	U-NII-3	5745	4.231	3.644	6.958	0	6.958	27.5dBm/ 500kHz	Pass
		5785	4.523	5.161	7.864	0	7.864		Pass
		5825	4.687	4.946	7.829	0	7.829		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11n HT40	U-NII-1	5190	5.004	5.805	8.433	0	8.433	14.15dBm /MHz	Pass
		5230	5.468	6.149	8.832	0	8.832		Pass
	U-NII-2A	5270	5.615	5.631	8.633	0	8.633	8.54dBm/ MHz	Pass
		5310	4.564	4.790	7.689	0	7.689		Pass
	U-NII-2C	5510	4.988	6.259	8.680	0	8.680	8.99dBm/ MHz	Pass
		5550	5.440	5.724	8.595	0	8.595		Pass
		5670	4.602	4.768	7.696	0	7.696		Pass
	U-NII-3	5755	2.274	2.822	5.567	0	5.567	27.5dBm/ 500kHz	Pass
		5795	2.100	3.570	5.907	0	5.907		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT40	U-NII-1	5190	4.182	4.250	7.226	0	7.226	14.15dBm /MHz	Pass
		5230	5.104	4.359	7.758	0	7.758		Pass
	U-NII-2A	5270	4.398	4.111	7.267	0	7.267	8.54dBm/ MHz	Pass
		5310	3.919	3.965	6.952	0	6.952		Pass
	U-NII-2C	5510	3.951	4.651	7.325	0	7.325	8.99dBm/ MHz	Pass
		5550	4.203	3.983	7.105	0	7.105		Pass
		5670	3.185	3.057	6.132	0	6.132		Pass
	U-NII-3	5755	1.356	1.802	4.595	0	4.595	27.5dBm/ 500kHz	Pass
		5795	0.849	2.693	4.878	0	4.878		Pass

Test Mode	Band	Frequency (MHz)	PSD (dBm)			Duty Factor	Total PSD with Duty Factor (dBm)	Limit	Result
			antenna 1	antenna 2	total				
802.11ac VHT80	U-NII-1	5210	1.852	1.783	4.828	0	6.952	14.15dBm /MHz	Pass
	U-NII-2A	5290	1.545	1.398	4.482	0	7.325	8.54dBm/ MHz	Pass
	U-NII-2C	5530	1.206	1.888	4.571	0	7.105	8.99dBm/ MHz	Pass
		5610	1.674	1.596	4.645	0	6.132		Pass
	U-NII-3	5775	-0.905	-0.281	2.428	0	4.595	27.5dBm/ 500kHz	Pass

U-NII-1 :

Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.85+3=8.85

Note2: Antenna gain is greater than 6, Power Density Limit=17-(8.85-6)=14.15dBm/MHz

U-NII-2A :

Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.46+3= 8.46

Note2: Antenna gain is greater than 6, Power Density Limit=11-(8.46-6)=8.54dBm/MHz

U-NII-2C :

Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.01+3= 8.01

Note2: Antenna gain is greater than 6, Power Density Limit=11-(8.01-6)=8.99dBm/MHz

U-NII-3:

Note1: The Beamforming Gain: 3dBi ,So Directional gain (dBi)= Gain(max)+ Beamforming Gain, that is Directional gain (dBi)= 5.5+3=8.5

Note2: Antenna gain is greater than 6, Power Density Limit=30-(8.5-6)=27.5dBm/500kHz

Non-Beamforming

Test Results (plots) of PSD

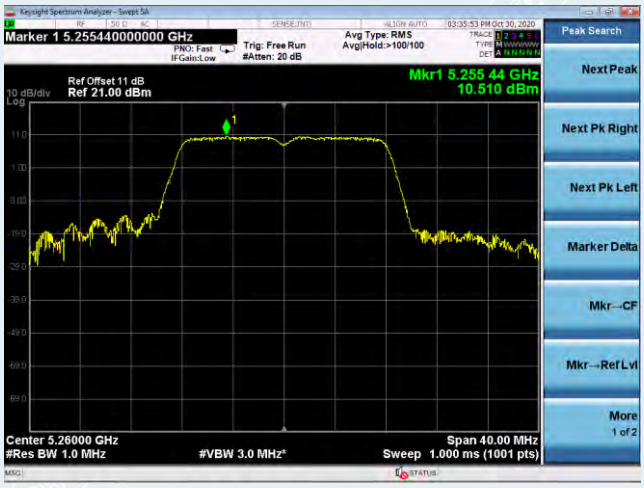
802.11a mode (antenna 1)

Channel 5180MHz

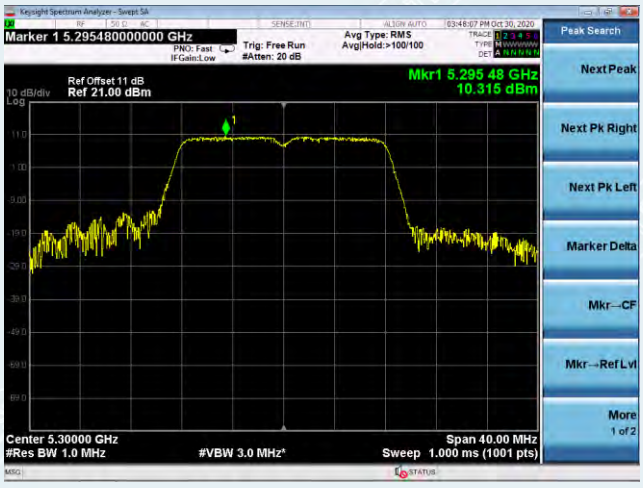
Channel 5200MHz

Channel 5240MHz

Channel 5260MHz



Channel 5300MHz

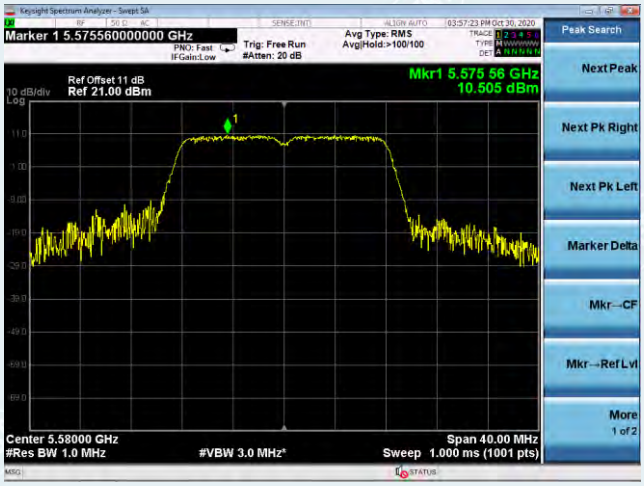


Channel 5320MHz

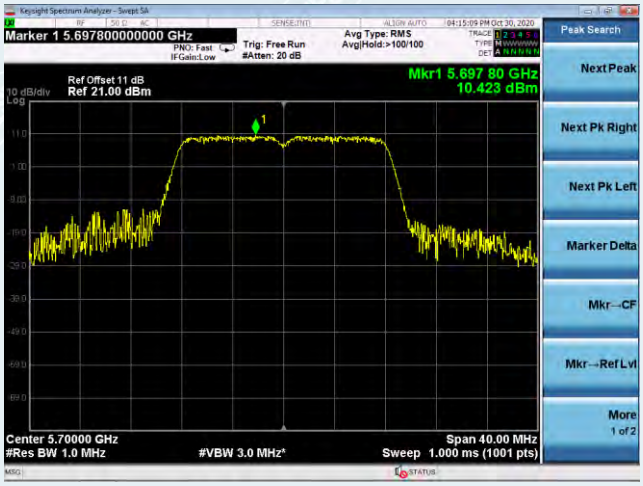
802.11a mode (antenna 1)

Channel 5500MHz

Channel 5580MHz



Channel 5700MHz



Channel 5745MHz

Channel 5785MHz

Channel 5825MHz

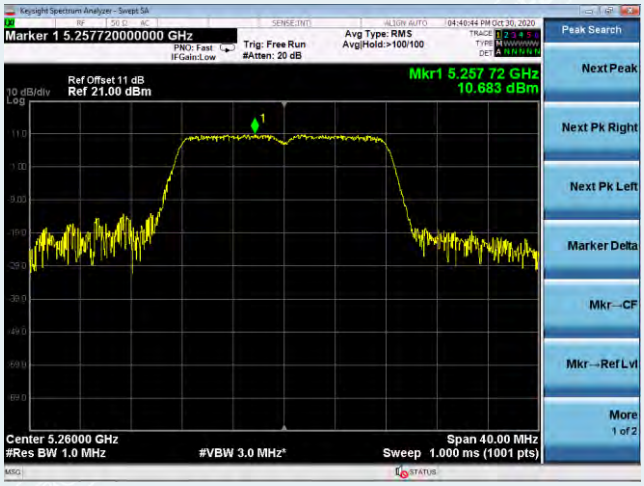
802.11a mode (antenna 2)

Channel 5180MHz

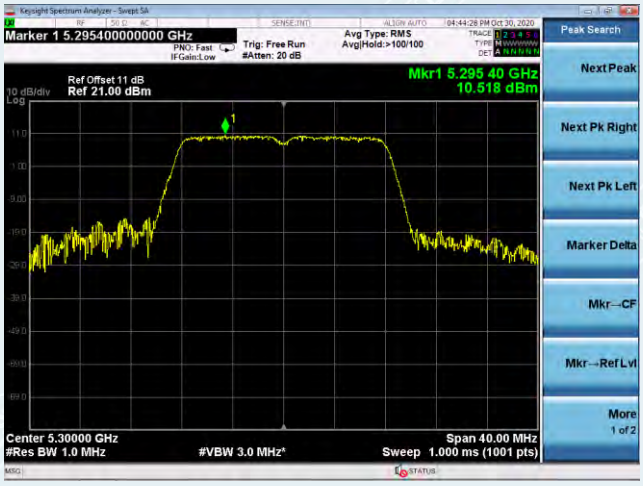
Channel 5200MHz

Channel 5240MHz

Channel 5260MHz



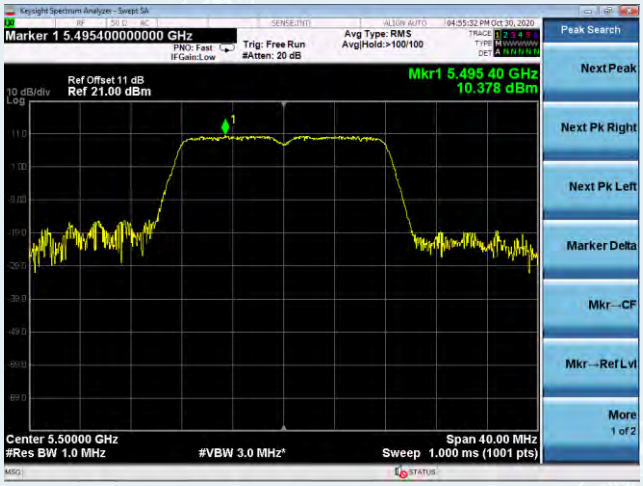
Channel 5300MHz



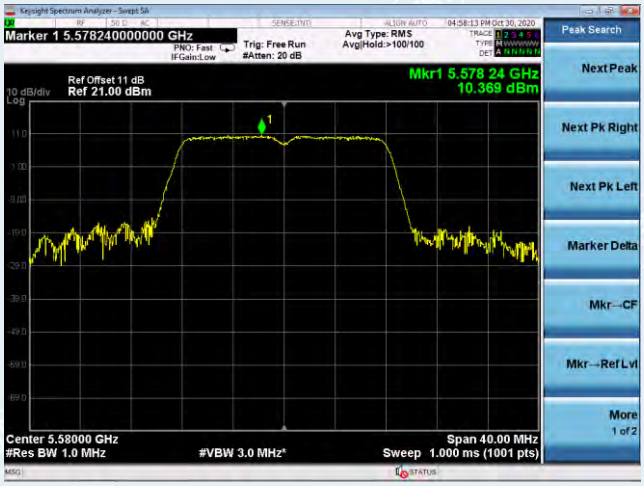
Channel 5320MHz

802.11a mode (antenna 2)

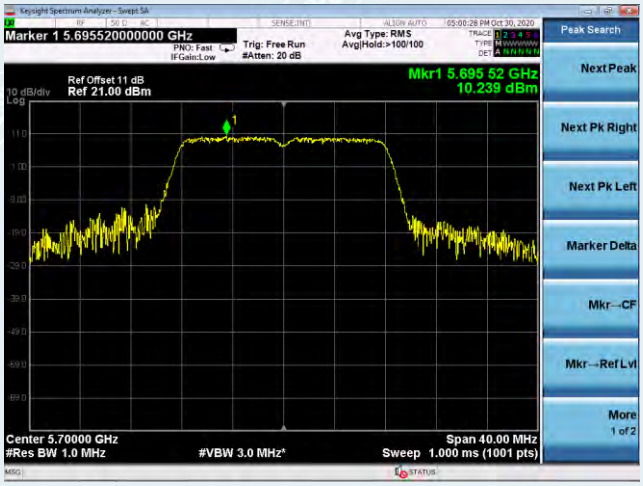
Channel 5500MHz



Channel 5580MHz



Channel 5700MHz



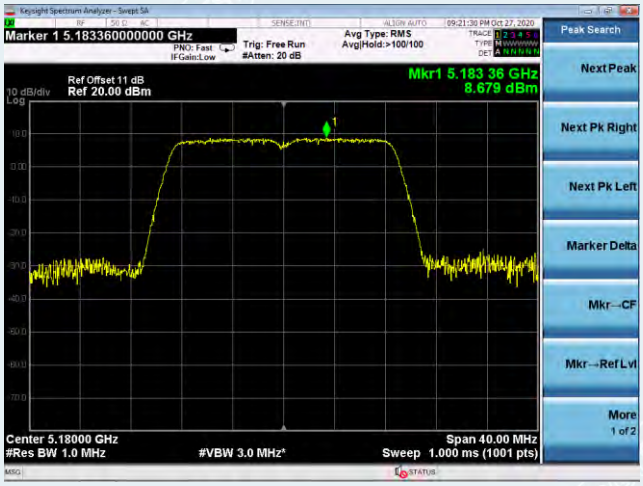
Channel 5745MHz

Channel 5785MHz

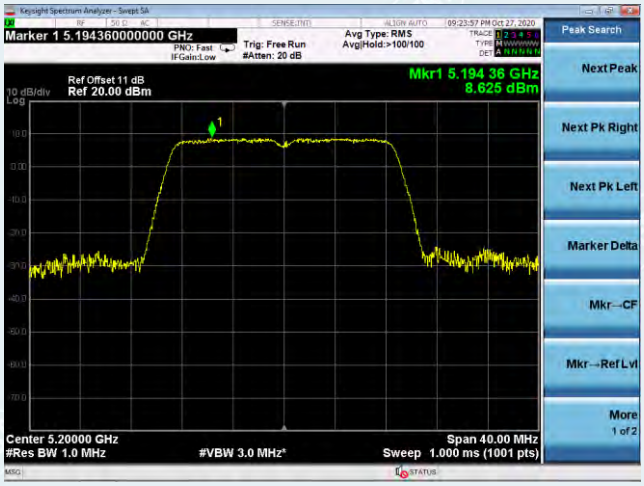
Channel 5825MHz

802.11n HT20 mode (antenna 1)

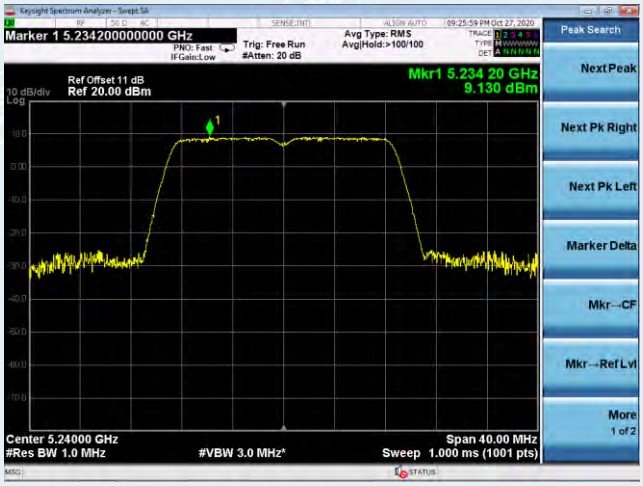
Channel 5180MHz



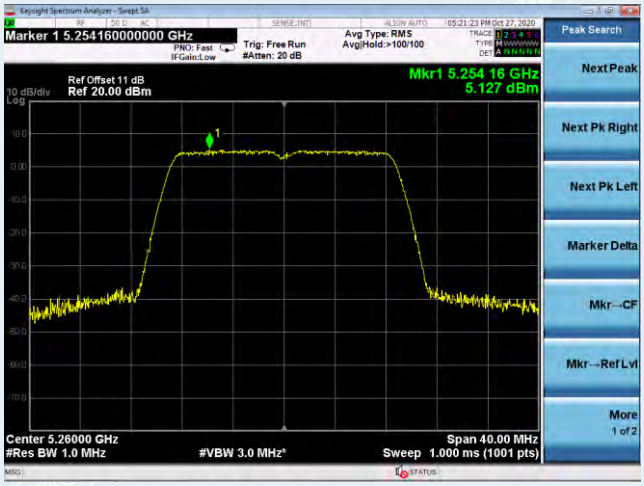
Channel 5200MHz



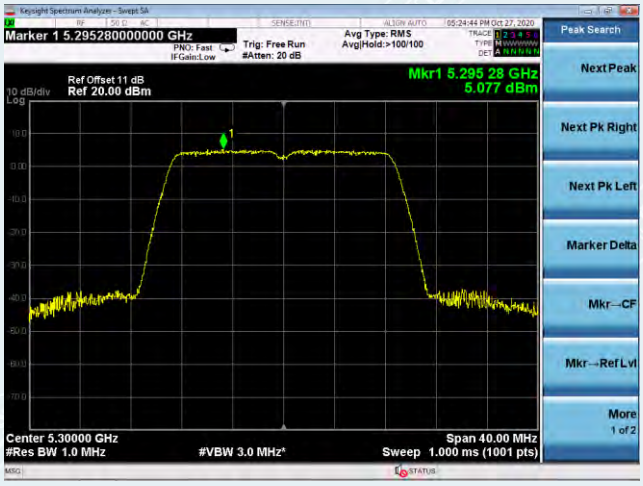
Channel 5240MHz



Channel 5260MHz



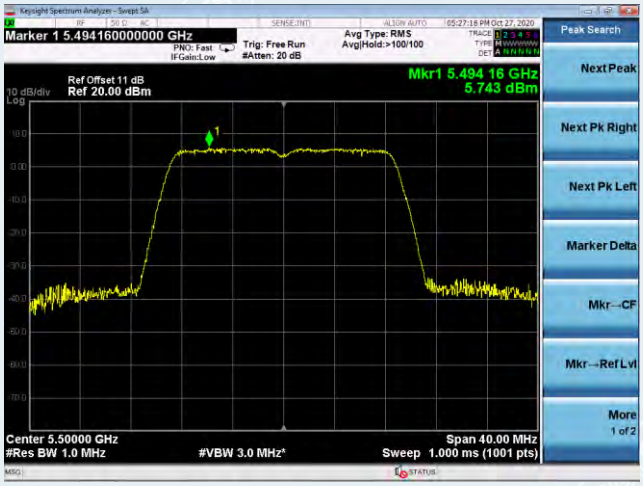
Channel 5300MHz



Channel 5320MHz

802.11n HT20 mode (antenna 1)

Channel 5500MHz



Channel 5580MHz

Channel 5700MHz

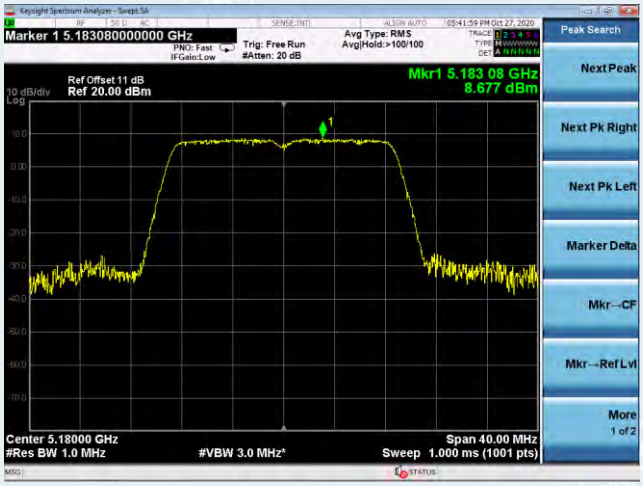
Channel 5745MHz

Channel 5785MHz

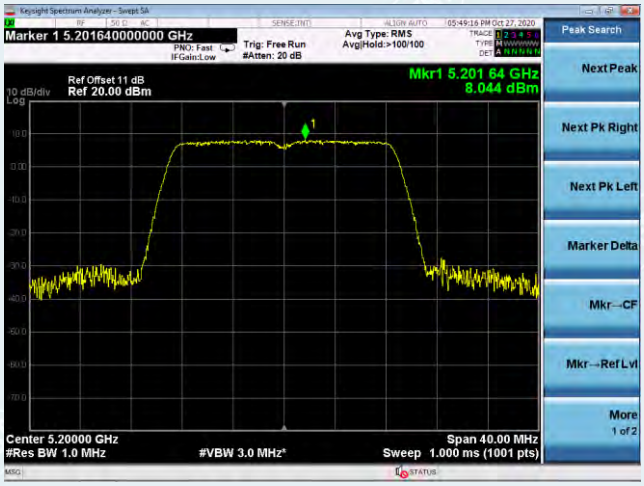
Channel 5825MHz

802.11n HT20 mode (antenna 2)

Channel 5180MHz

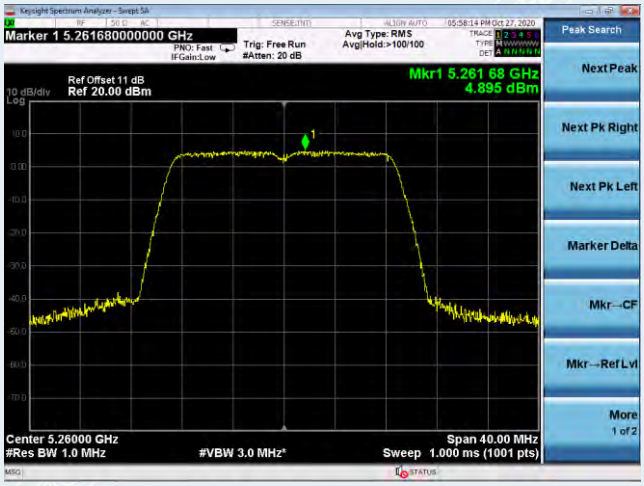


Channel 5200MHz

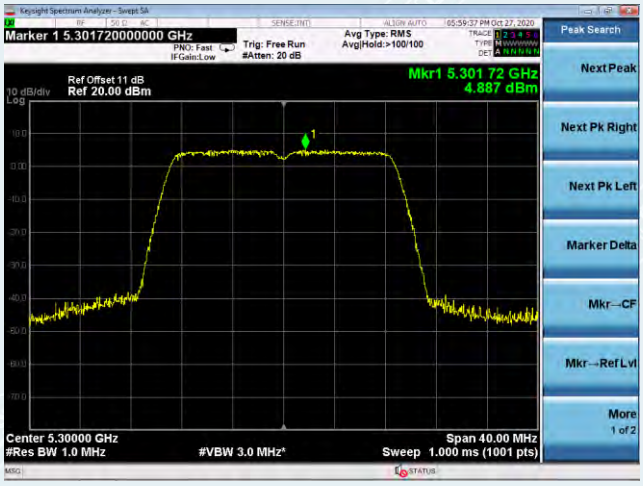


Channel 5240MHz

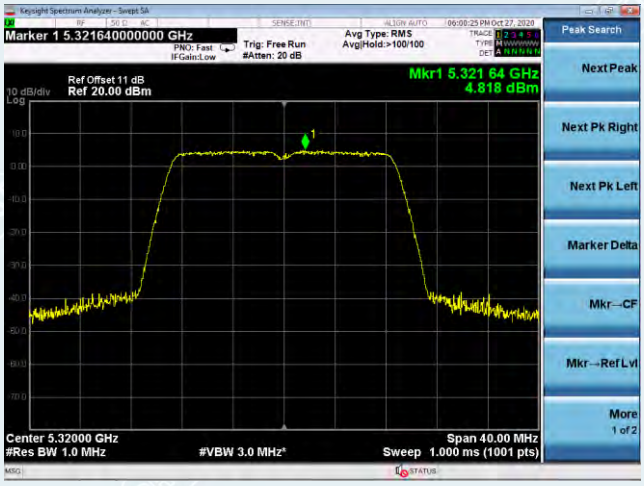
Channel 5260MHz



Channel 5300MHz



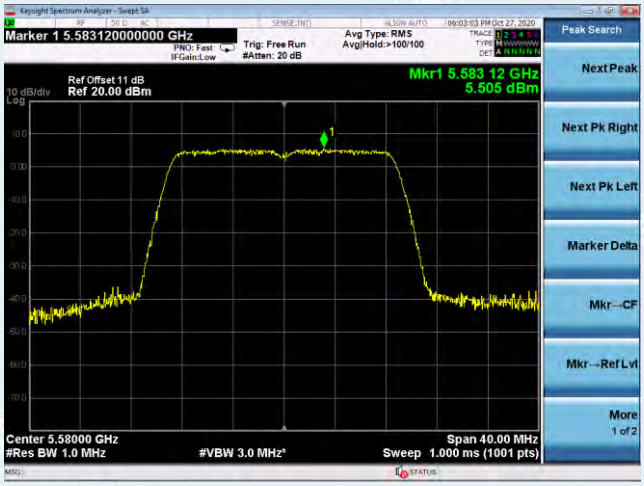
Channel 5320MHz



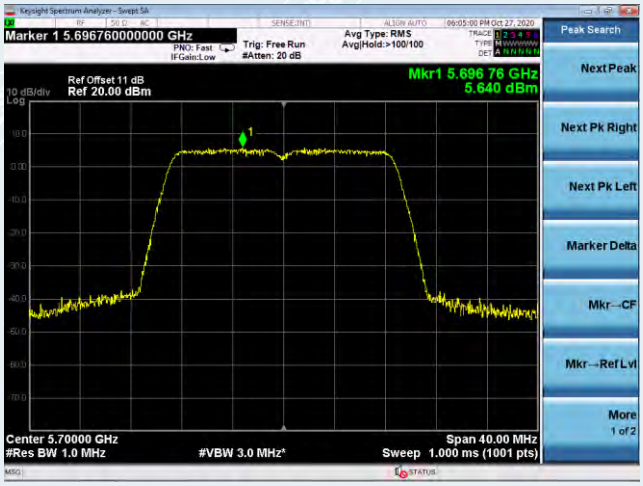
802.11n HT20 mode (antenna 2)

Channel 5500MHz

Channel 5580MHz



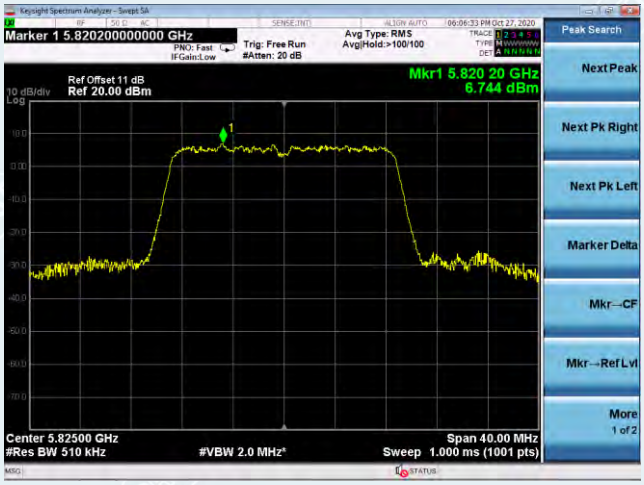
Channel 5700MHz



Channel 5745MHz

Channel 5785MHz

Channel 5825MHz



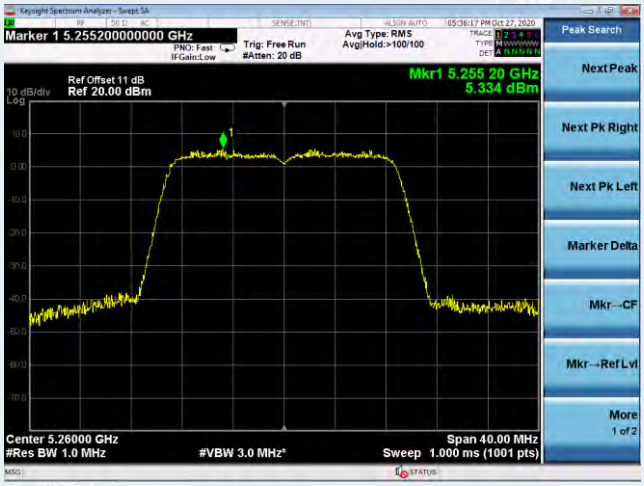
802.11ac VHT20 mode (antenna 1)

Channel 5180MHz

Channel 5200MHz

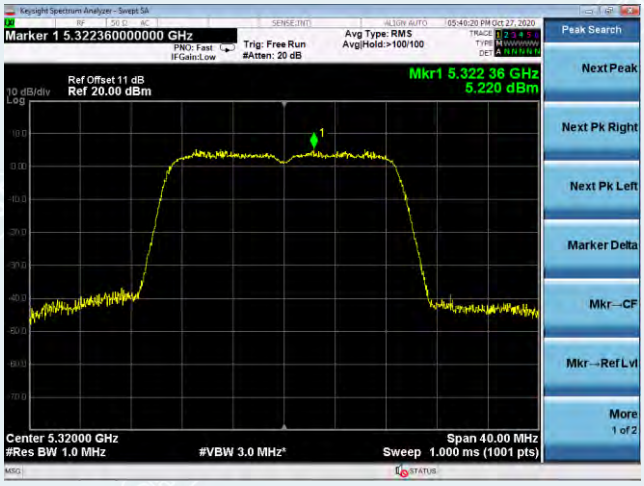
Channel 5240MHz

Channel 5260MHz



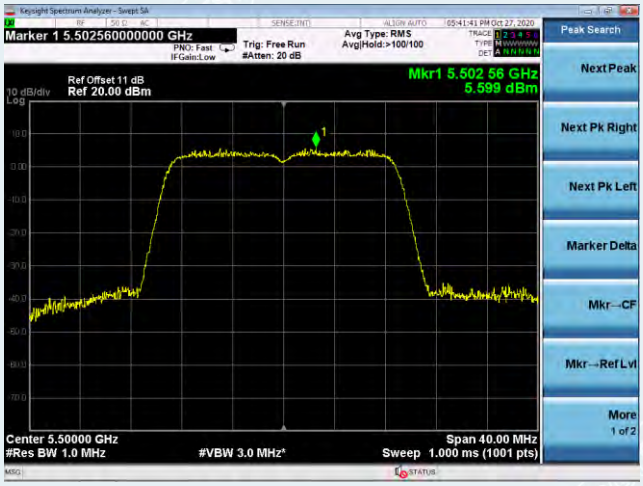
Channel 5300MHz

Channel 5320MHz

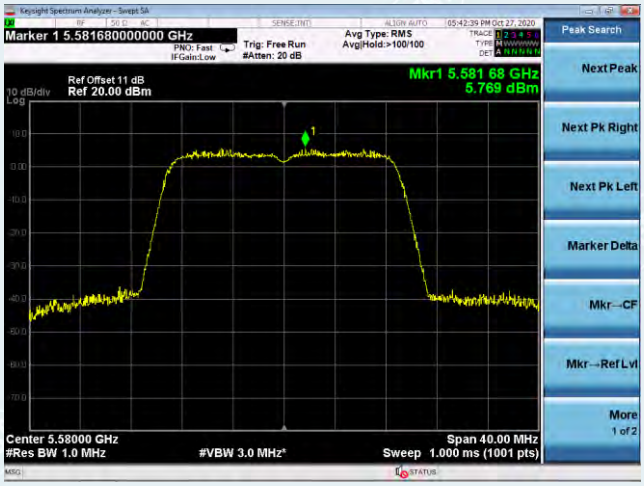


802.11ac VHT20 mode (antenna 1)

Channel 5500MHz



Channel 5580MHz



Channel 5700MHz

Channel 5745MHz

Channel 5785MHz

Channel 5825MHz