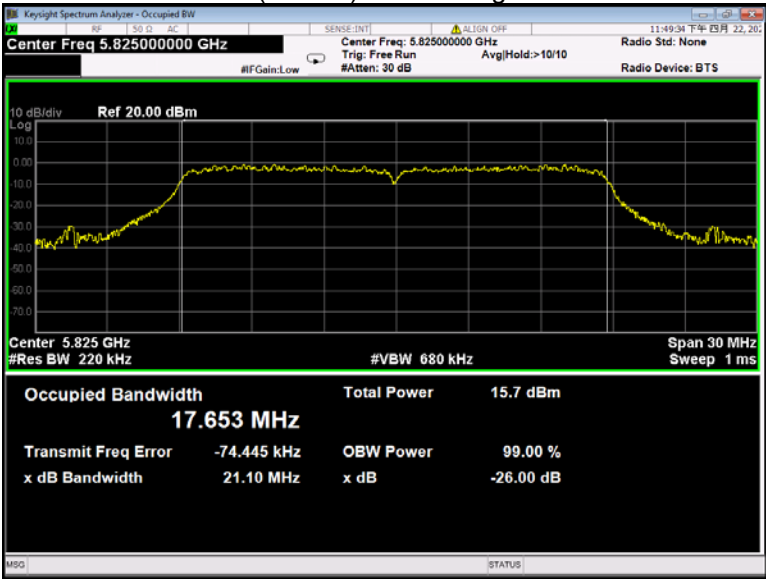
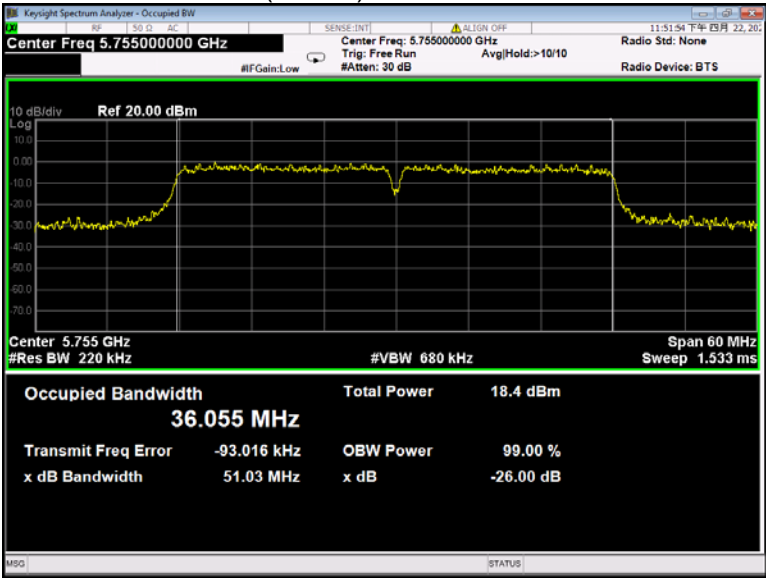


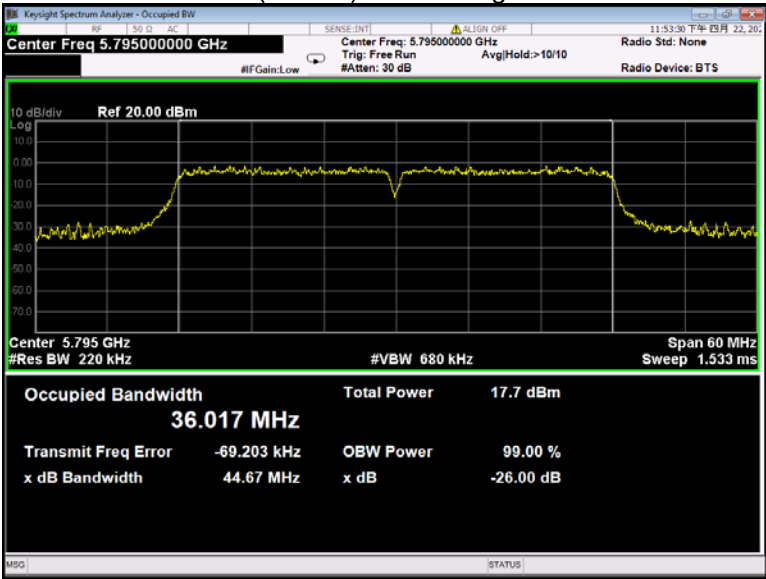
802.11ac(VHT20) U-NII-3 High channel



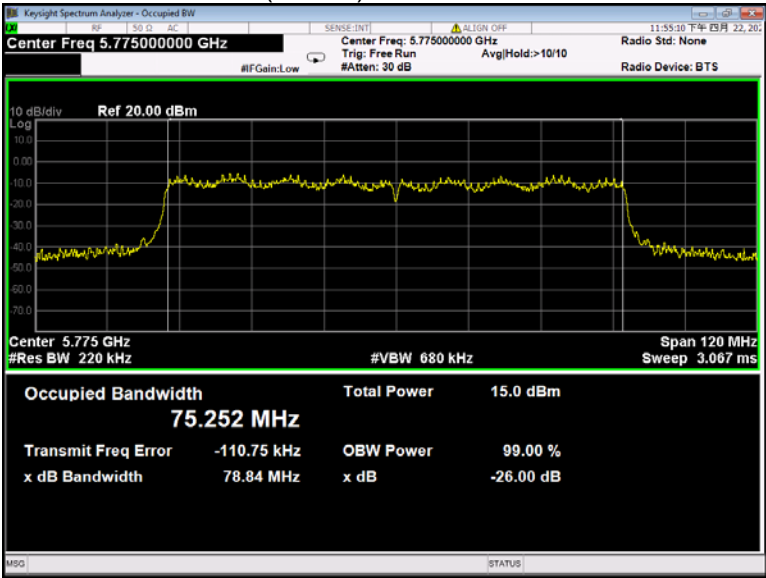
802.11ac(VHT40) U-NII-3 Low channel



802.11ac(VHT40) U-NII-3 High channel



802.11ac(VHT80) U-NII-3 Low channel



12 Conducted Output Power

Test Requirement:	FCC 47CFR Part 15 Section 15.407(a) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section E
Test Limit:	For the band 5.15-5.25 GHz 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. 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. 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. For 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. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands 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. For the band 5.725-5.850 GHz For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
Test Result:	PASS Conducted output power= measurement power+10log(1/x)
Remark:	X is duty cycle=1, so $10\log(1/1)=0$ Conducted output power= measurement power

12.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

12.2 Test Result

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-1	802.11a	Low	13.85	0.31	14.16
		Middle	14.89		15.2
		High	14.46		14.77
	802.11n(HT20)	Low	13.84	0.36	14.2
		Middle	14.19		14.55
		High	14.64		15.00
	802.11n(HT40)	Low	14.06	0.75	14.81
		Middle	/		/
		High	14.91		15.66
	802.11ac(VHT20)	Low	13.69	0.34	14.03
		Middle	14.34		14.68
		High	14.63		14.97
	802.11ac(VHT40)	Low	17.50	0.81	18.31
		Middle	/		/
		High	18.37		19.18
	802.11ac(VHT80)	Low	13.93	1.23	15.16
		Middle	/		/
		High	/		/

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-2A	802.11a	Low	13.29	0.33	13.62
		Middle	13.28		13.61
		High	13.13		13.46
	802.11n(HT20)	Low	13.08	0.16	13.24
		Middle	13.27		13.43
		High	12.81		12.97
	802.11n(HT40)	Low	13.63	0.53	14.16
		Middle	/		/
		High	13.42		13.95
	802.11ac(VHT20)	Low	13.14	0.17	13.31
		Middle	13.21		13.38
		High	13.24		13.41
	802.11ac(VHT40)	Low	18.34	0.74	19.08
		Middle	/		/
		High	18.31		19.05
	802.11ac(VHT80)	Low	12.97	1.53	14.50
		Middle	/		/
		High	/		/

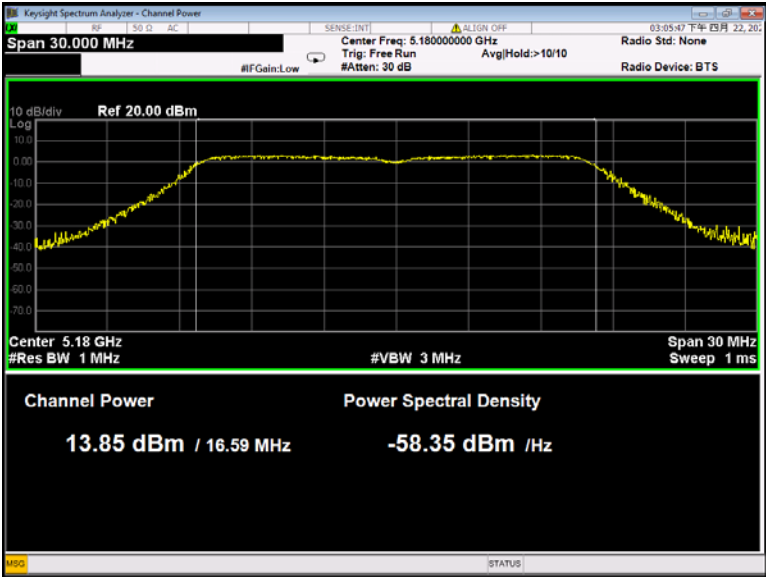
Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-2C	802.11a	Low	14.09	0.17	14.26
		Middle	13.30		13.47
		High	13.78		13.95
	802.11n(HT20)	Low	13.99	0.40	14.39
		Middle	12.95		13.35
		High	13.58		13.98
	802.11n(HT40)	Low	14.14	0.53	14.67
		Middle	13.78		14.31
		High	13.39		13.92
	802.11ac(VHT20)	Low	14.45	0.15	14.6
		Middle	13.47		13.62
		High	13.97		14.12
	802.11ac(VHT40)	Low	17.59	0.56	18.15
		Middle	17.32		17.88
		High	18.17		18.73
	802.11ac(VHT80)	Low	13.33	1.03	14.36
		Middle	/		/
		High	12.70		13.73

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-3	802.11a	Low	15.27	0.22	15.49
		Middle	14.98		15.2
		High	14.75		14.97
	802.11n(HT20)	Low	15.28	0.23	15.51
		Middle	15.06		15.29
		High	14.80		15.03
	802.11n(HT40)	Low	16.14	0.75	16.89
		Middle	/		/
		High	15.39		16.14
	802.11ac(VHT20)	Low	15.39	0.33	15.72
		Middle	15.11		15.44
		High	14.65		14.98
	802.11ac(VHT40)	Low	18.08	0.71	18.79
		Middle	/		/
		High	16.95		17.66
	802.11ac(VHT80)	Low	14.78	0.80	15.58
		Middle	/		/
		High	/		/

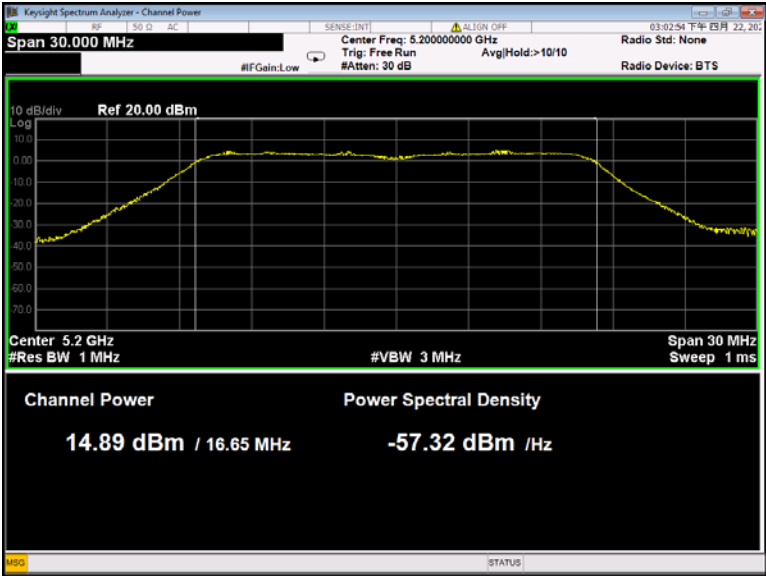
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

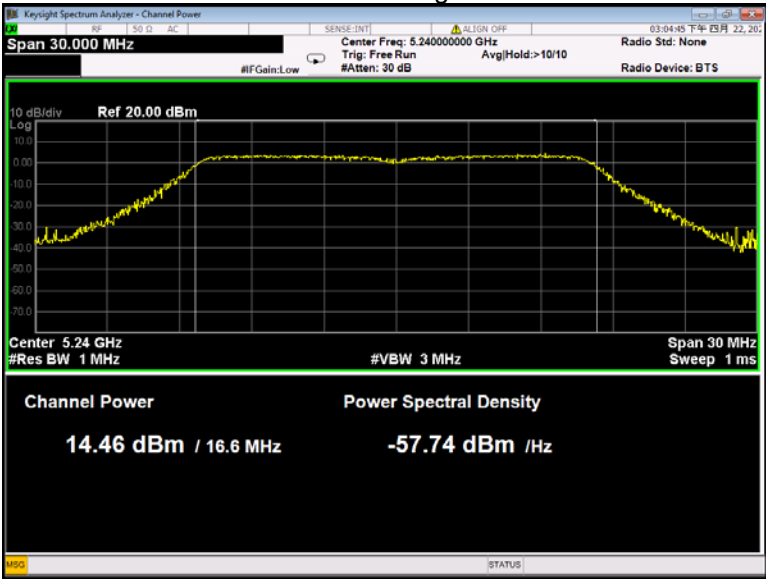
802.11a U-NII-1 Low channel



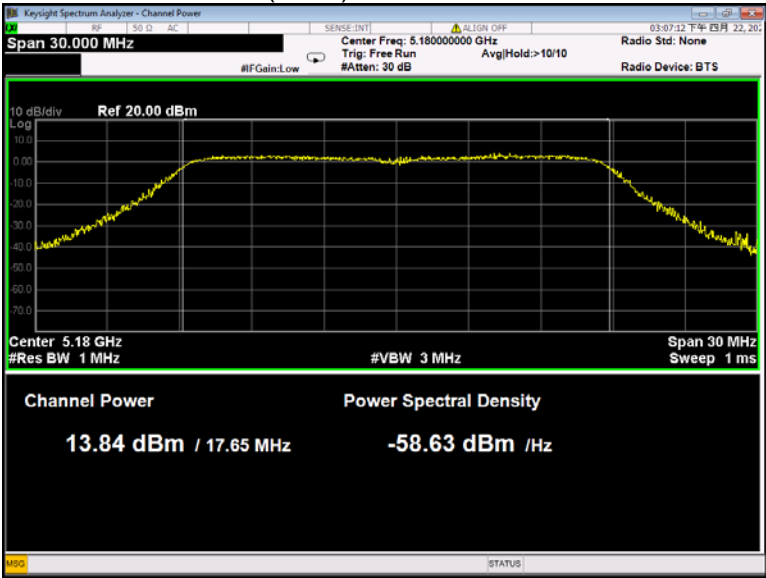
802.11a U-NII-1 Middle channel



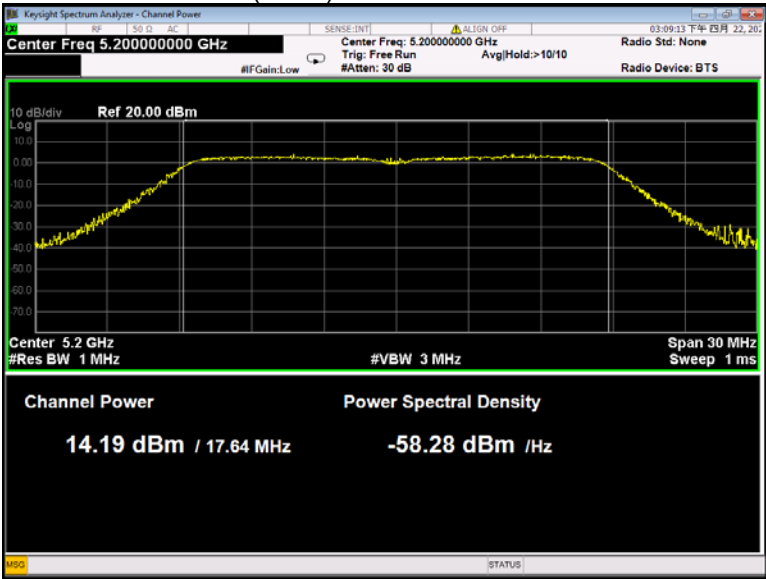
802.11a U-NII-1 High channel



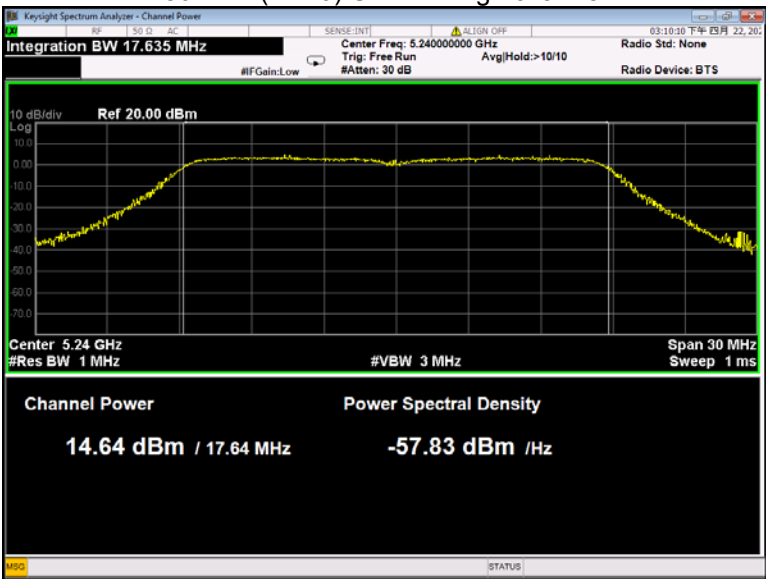
802.11n(HT20) U-NII-1 Low channel



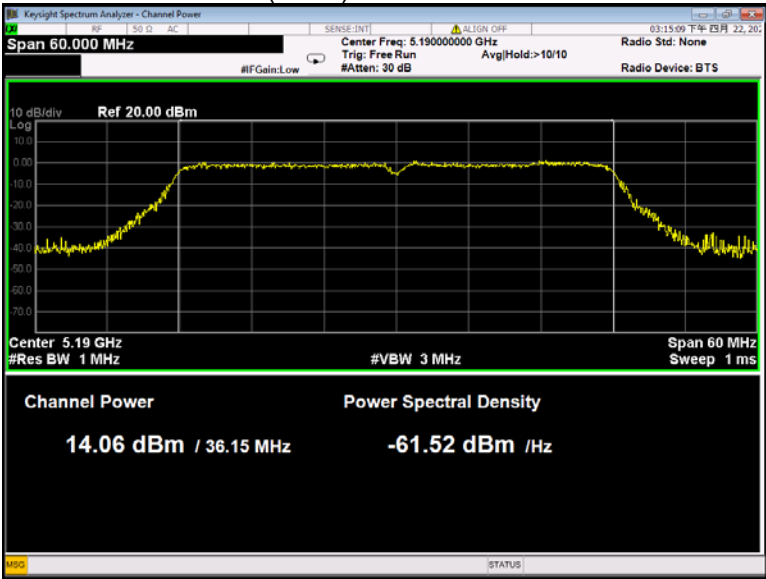
802.11n(HT20) U-NII-1 Middle channel



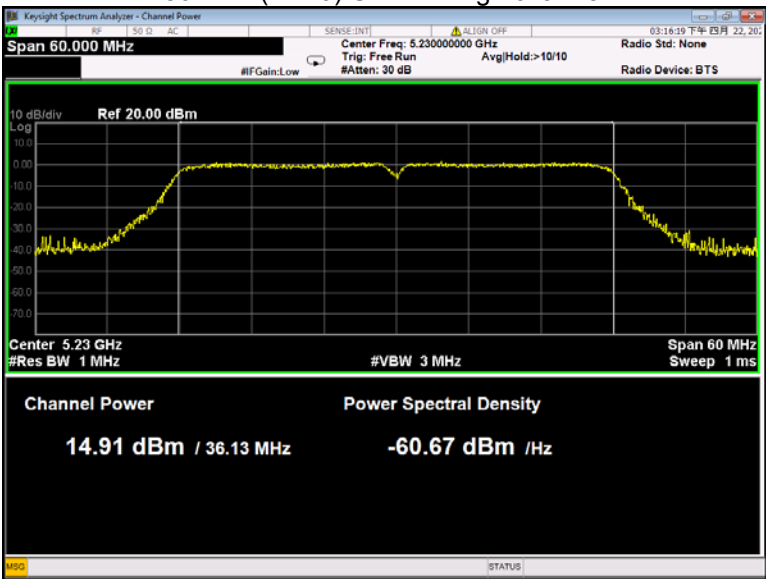
802.11n(HT20) U-NII-1 High channel



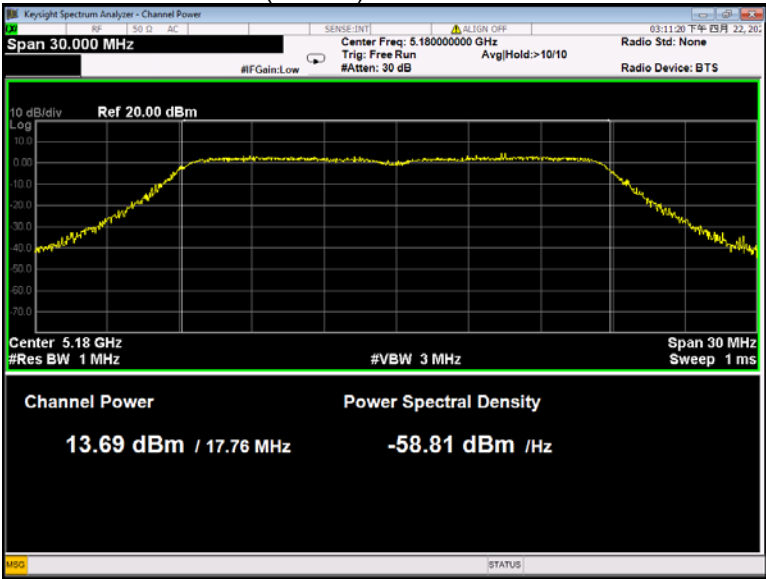
802.11n(HT40) U-NII-1 Low channel



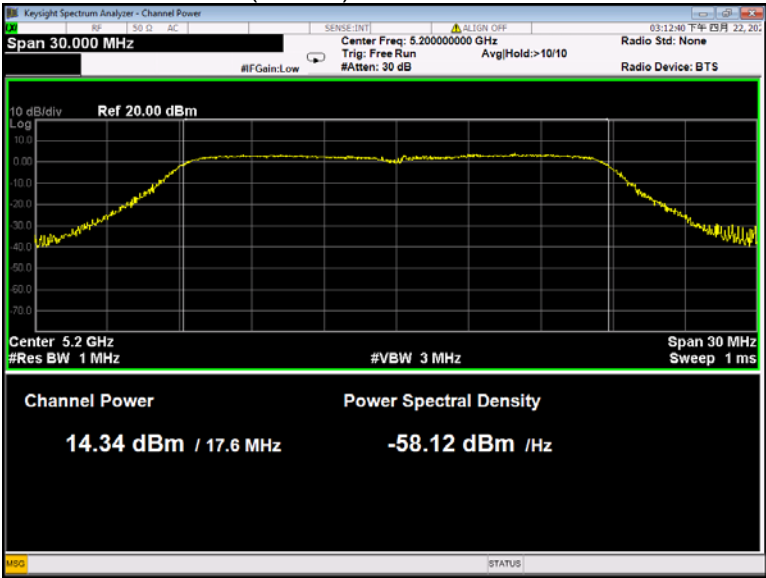
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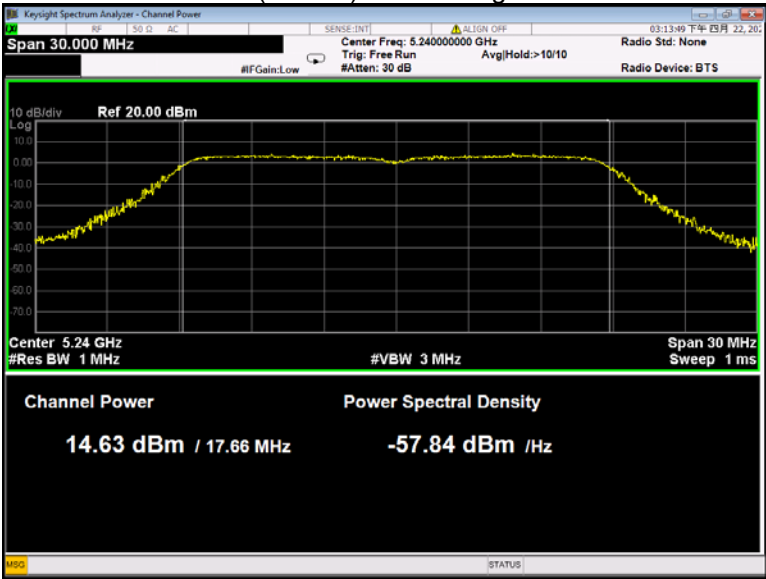
802.11ac(VHT20) U-NII-1 Low channel



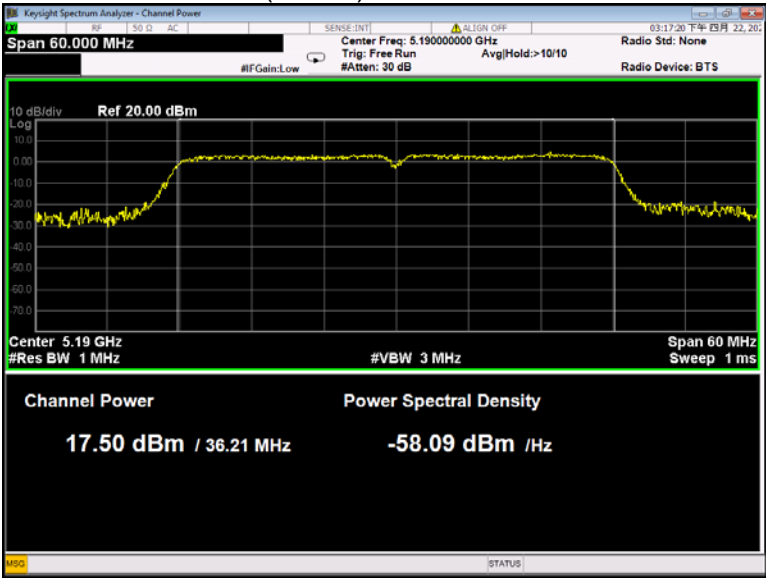
802.11ac(VHT20) U-NII-1 Middle channel



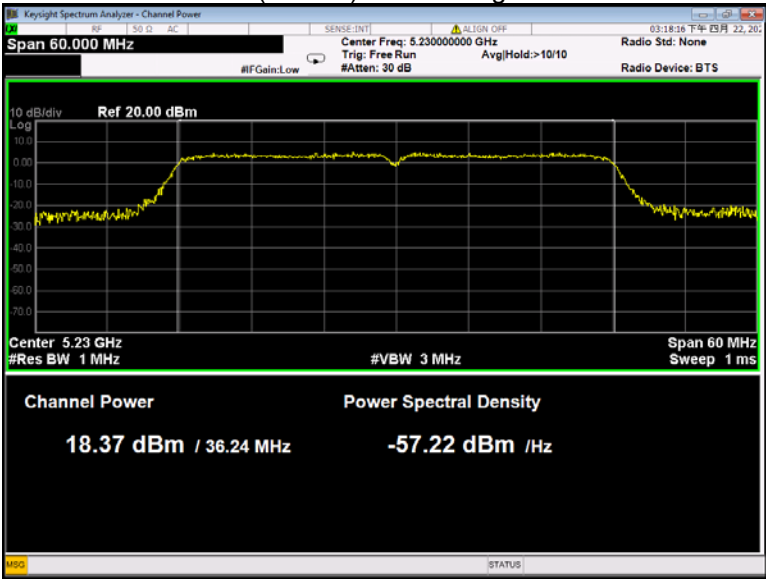
802.11ac(VHT20) U-NII-1 High channel



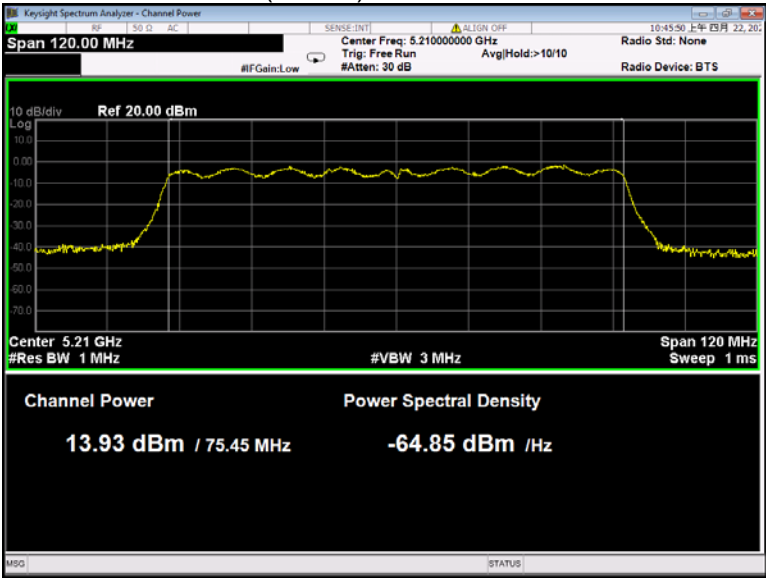
802.11ac(VHT40) U-NII-1 Low channel



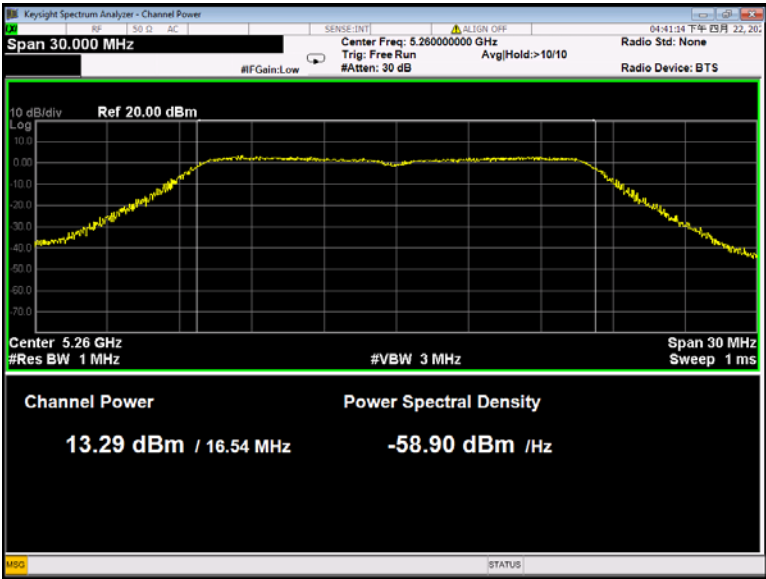
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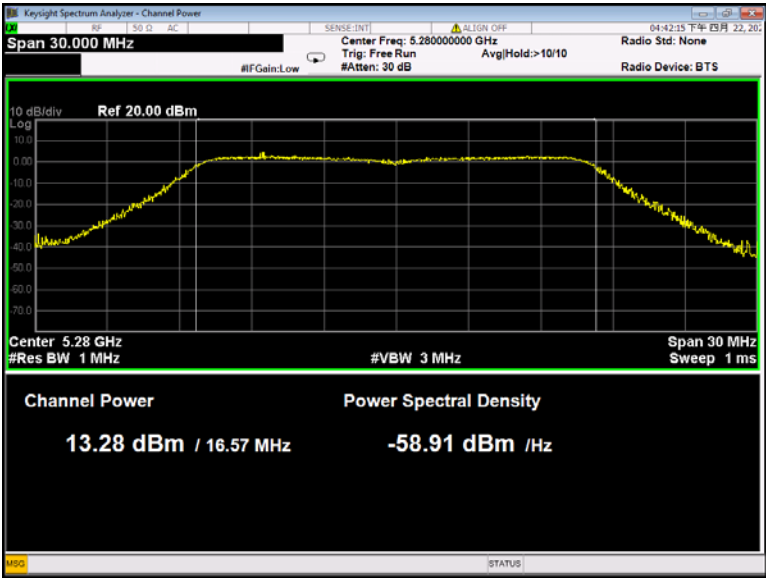
802.11ac(VHT80) U-NII-1 Low channel



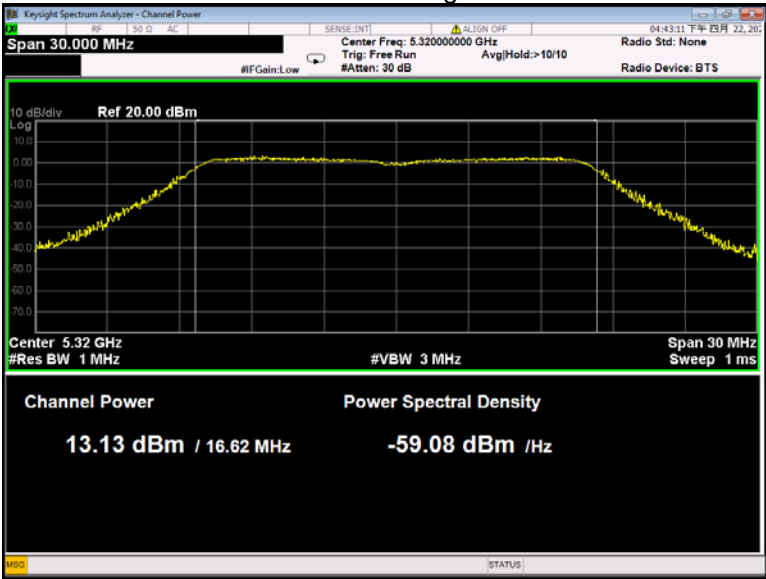
802.11a U-NII-2A Low channel



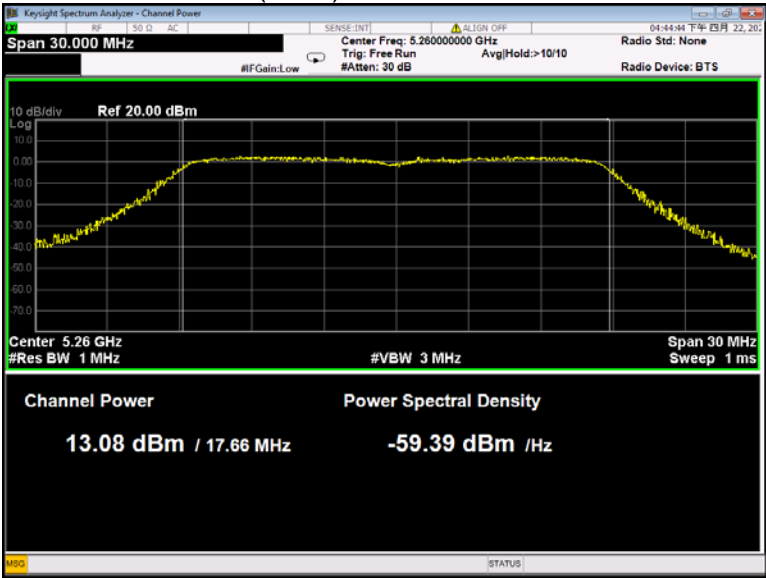
802.11a U-NII-2A Middle channel



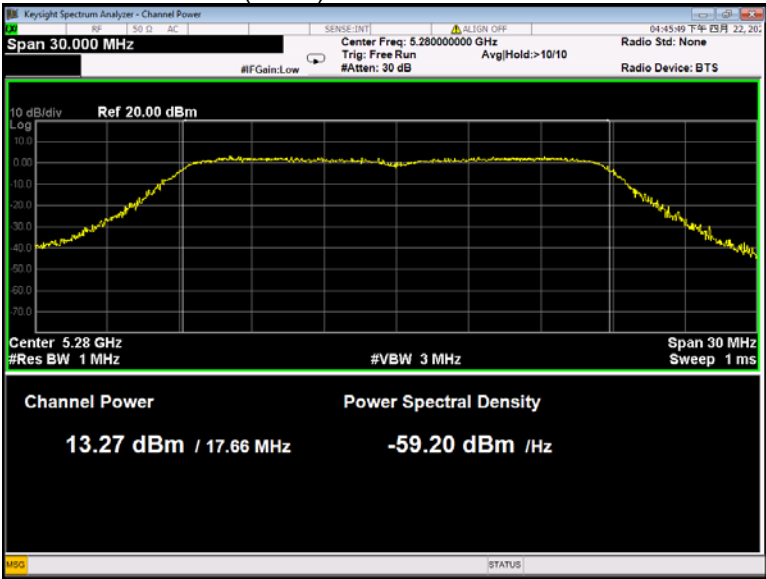
802.11a U-NII-2A High channel



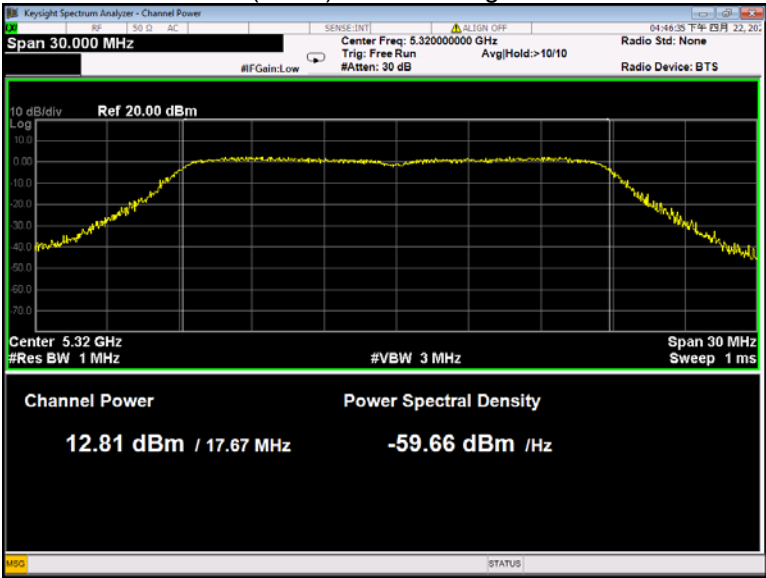
802.11n(HT20) U-NII-2A Low channel



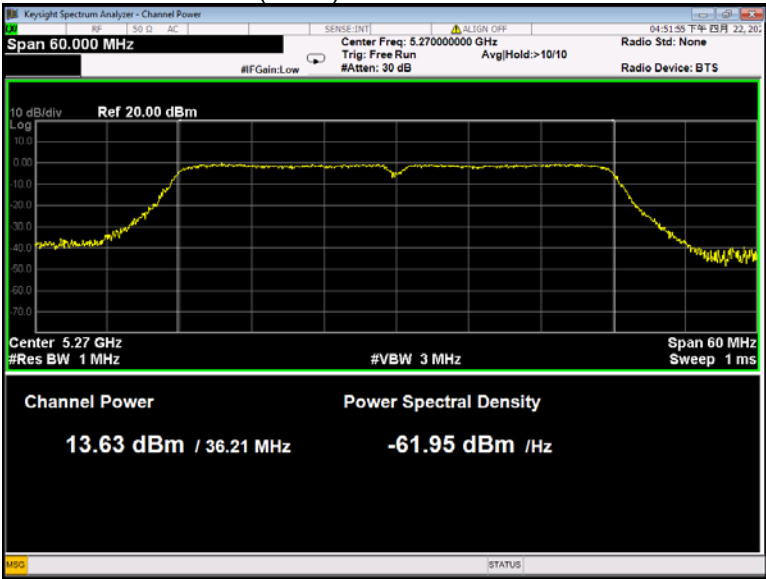
802.11n(HT20) U-NII-2A Middle channel



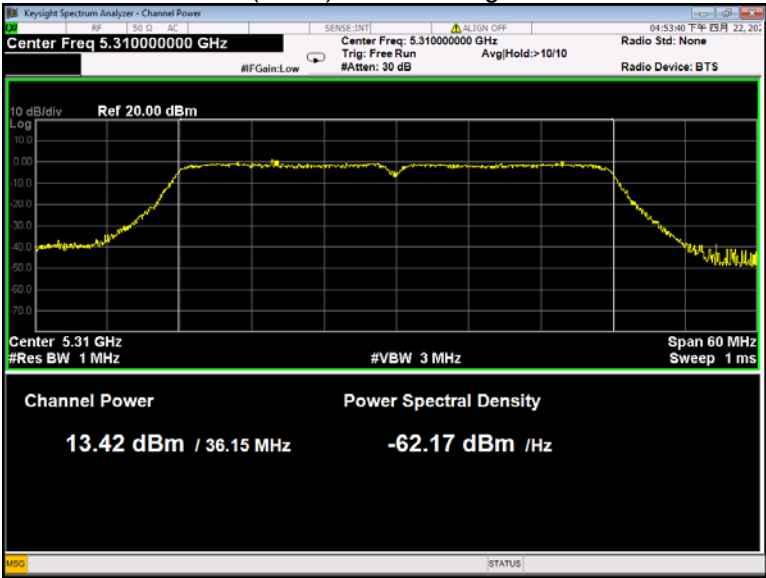
802.11n(HT20) U-NII-2A High channel



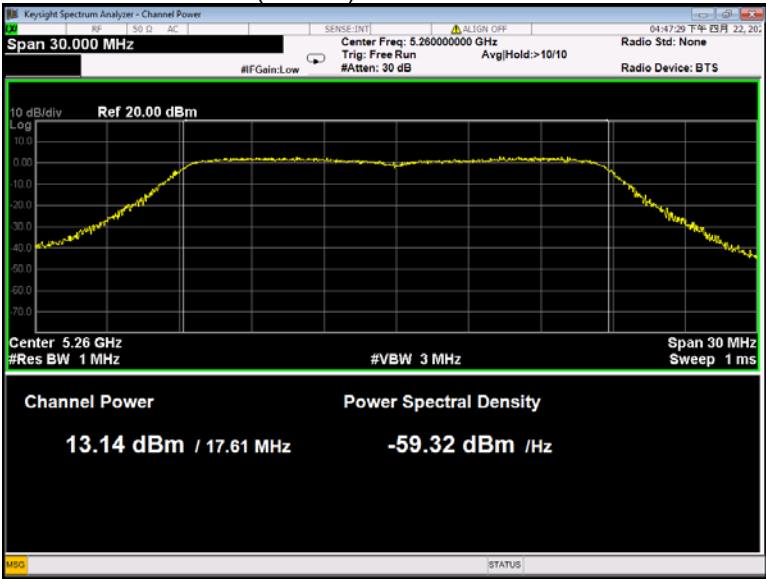
802.11n(HT40) U-NII-2A Low channel



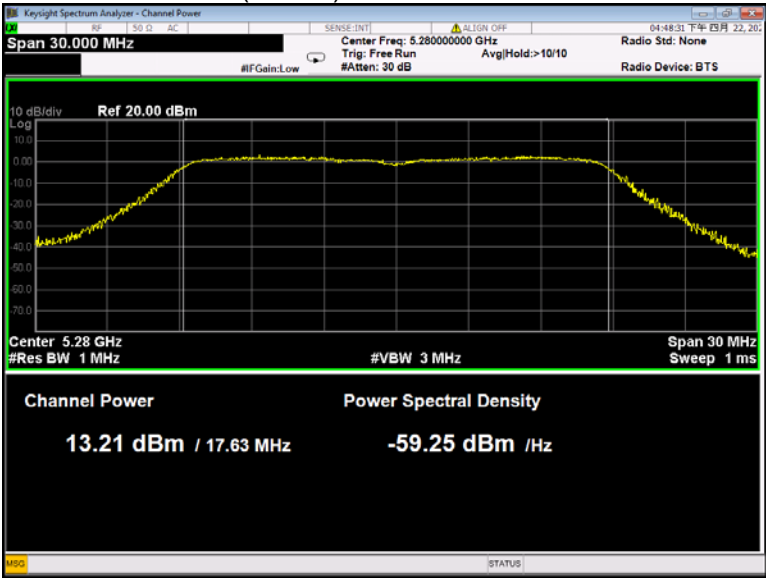
802.11n(HT40) U-NII-2A High channel



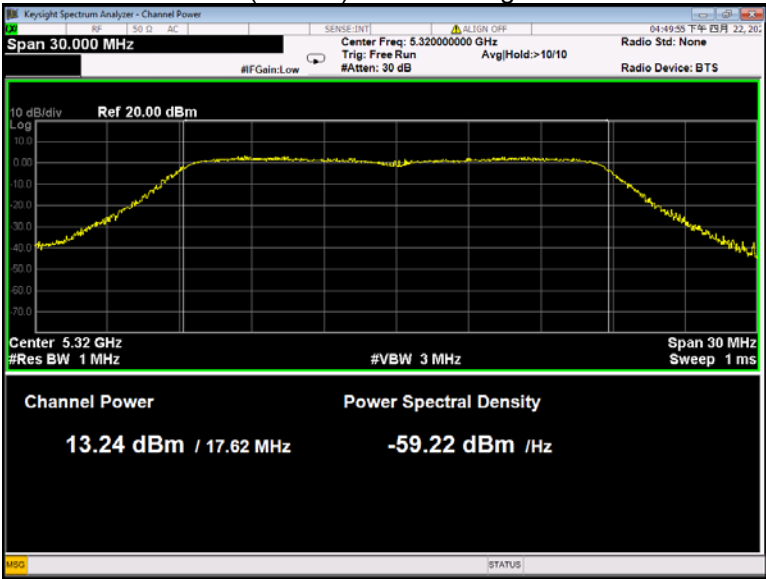
802.11ac(VHT20) U-NII-2A Low channel



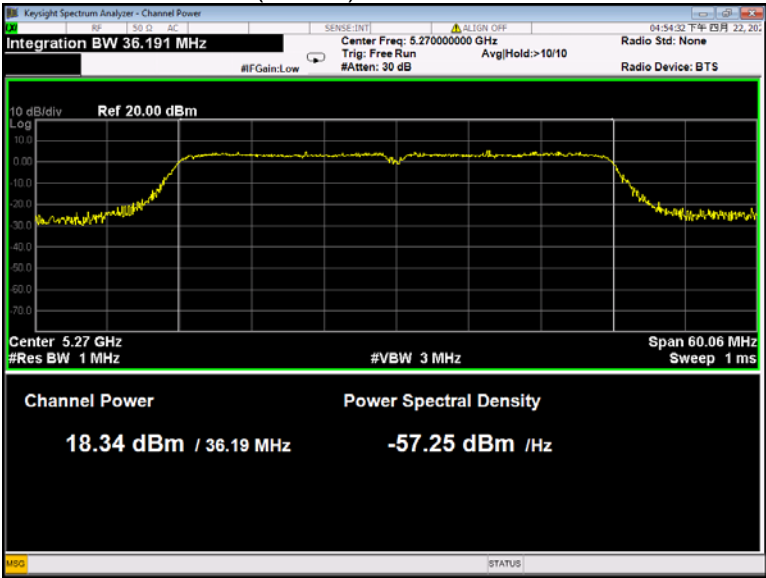
802.11ac(VHT20) U-NII-2A Middle channel



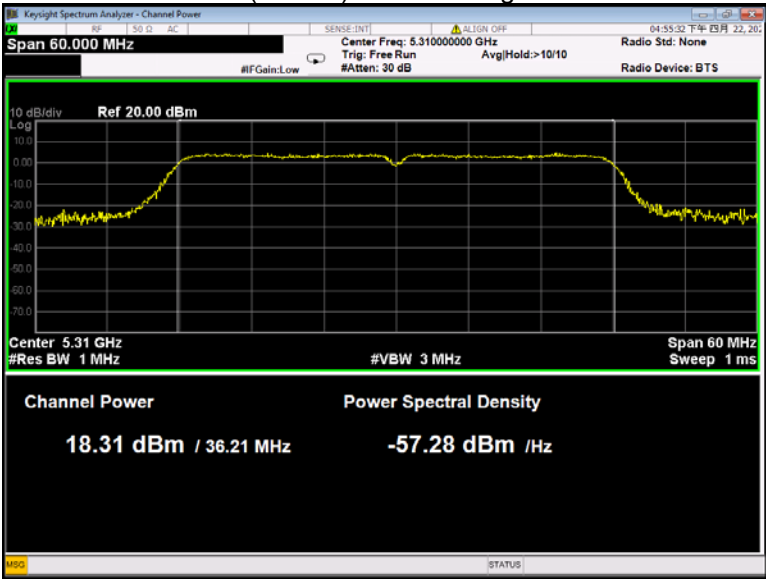
802.11ac(VHT20) U-NII-2A High channel



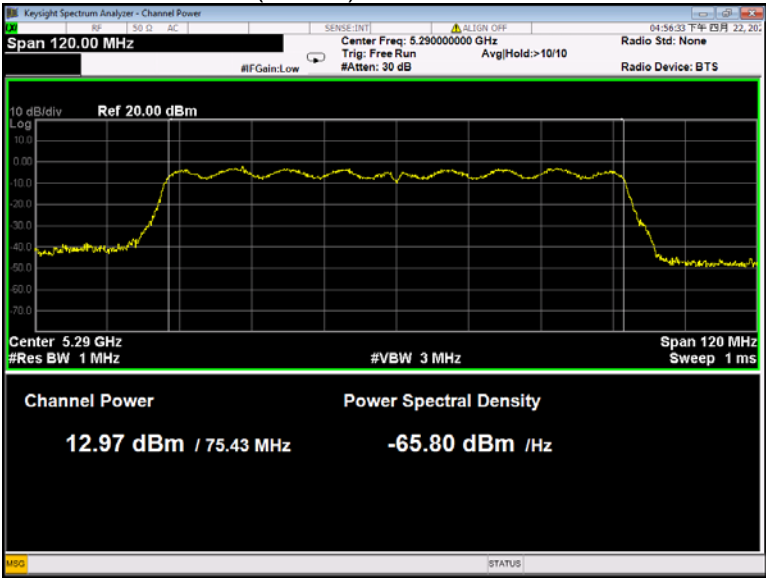
802.11ac(VHT40) U-NII-2A Low channel



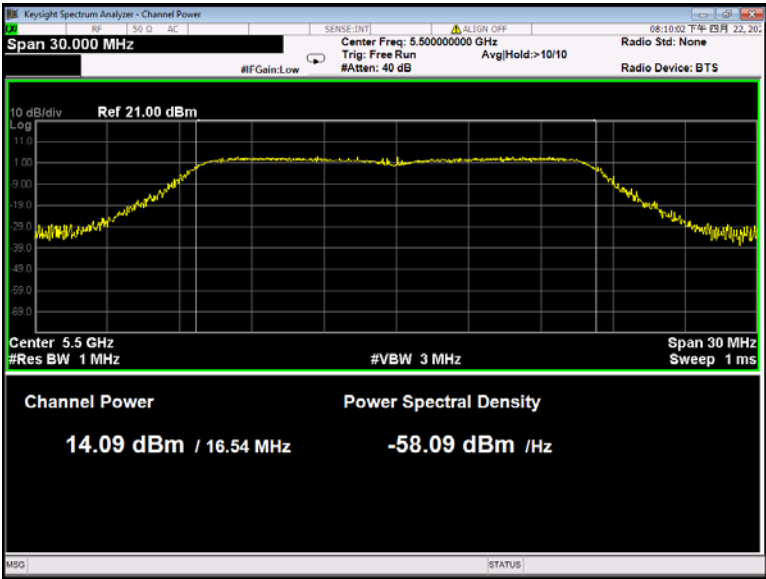
802.11ac(VHT40) U-NII-2A High channel



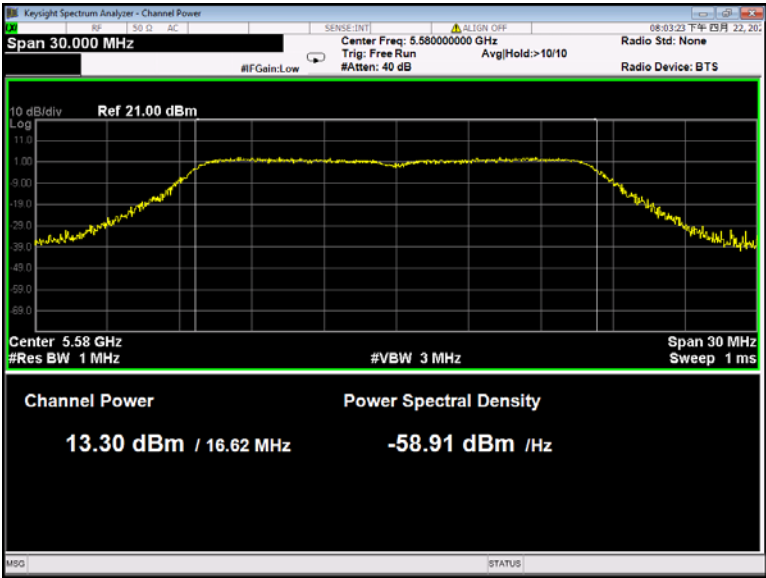
802.11ac(VHT80) U-NII-2A Low channel



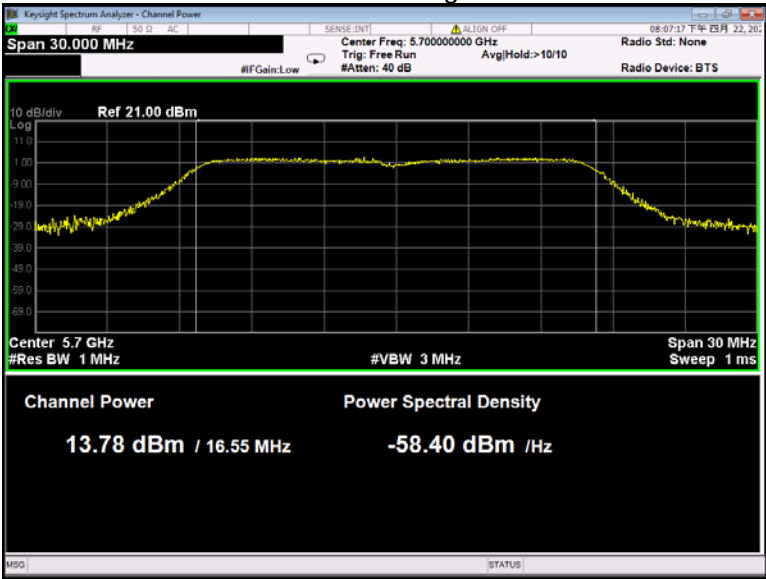
802.11a U-NII-2C Low channel



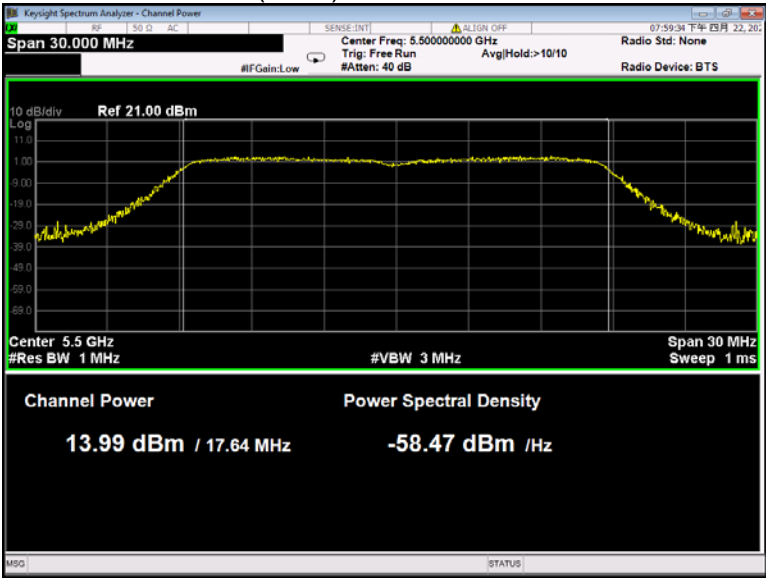
802.11a U-NII-2C Middle channel



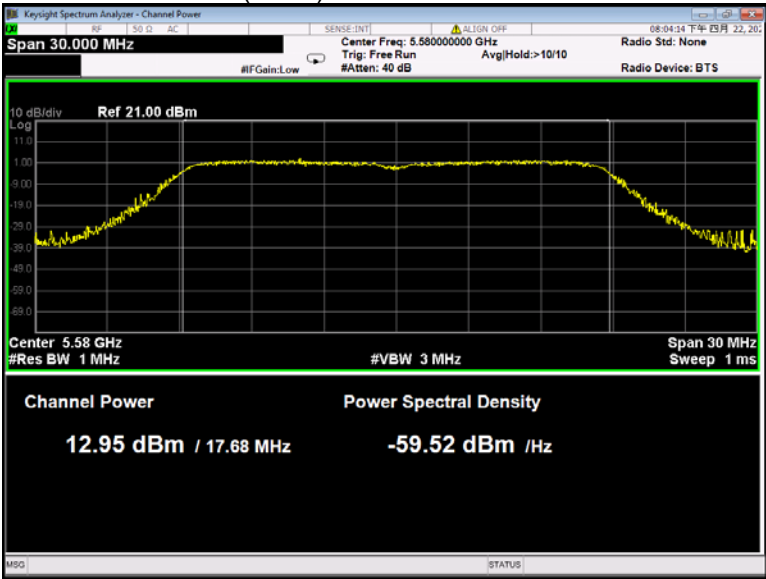
802.11a U-NII-2C High channel



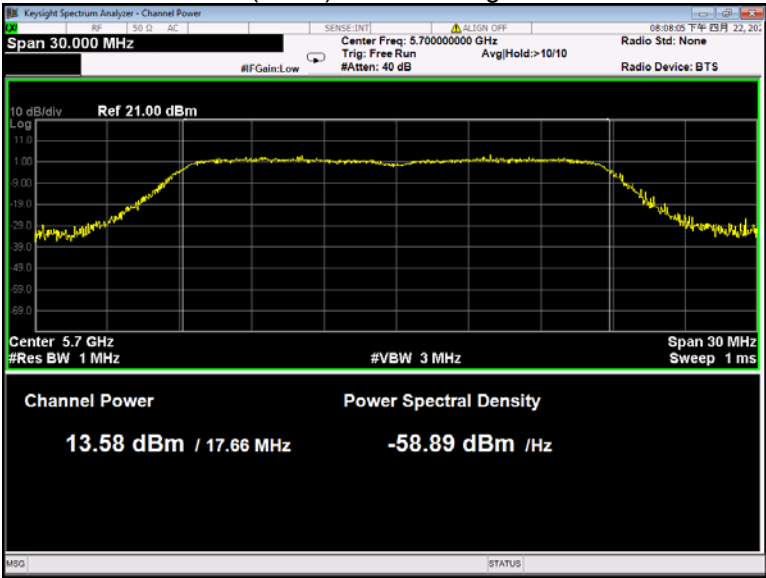
802.11n(HT20) U-NII-2C Low channel



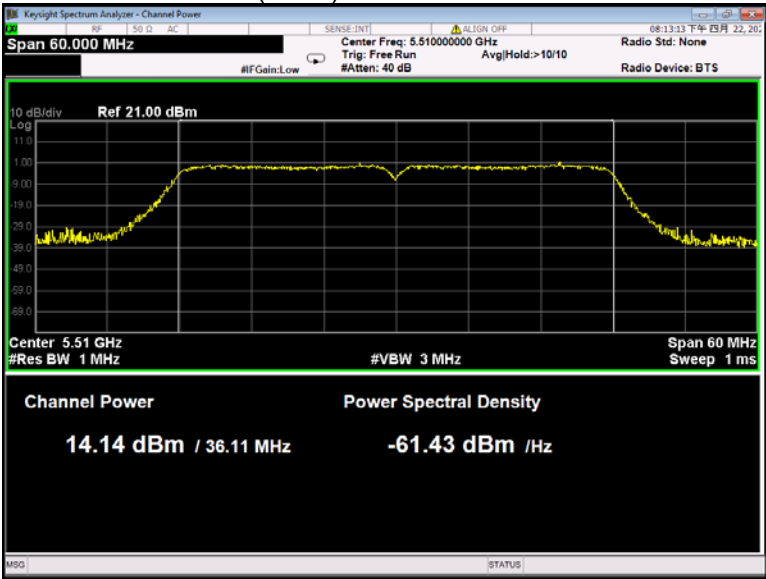
802.11n(HT20) U-NII-2C Middle channel



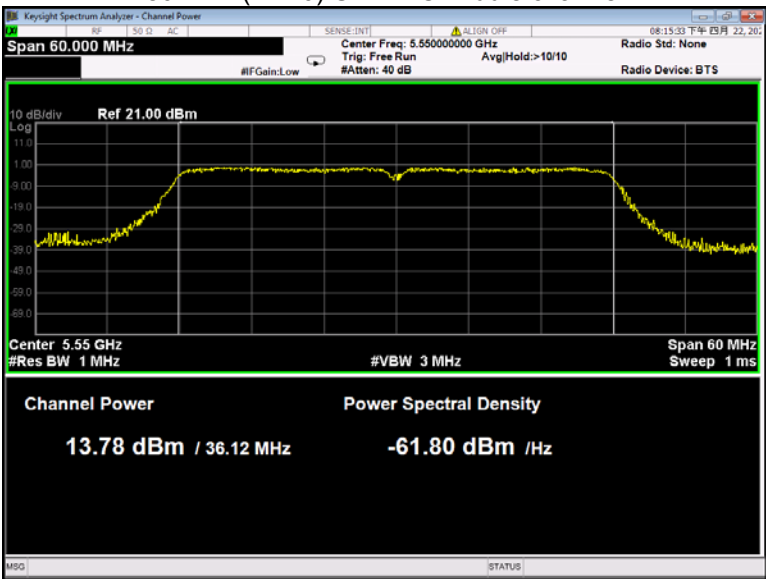
802.11n(HT20) U-NII-2C High channel

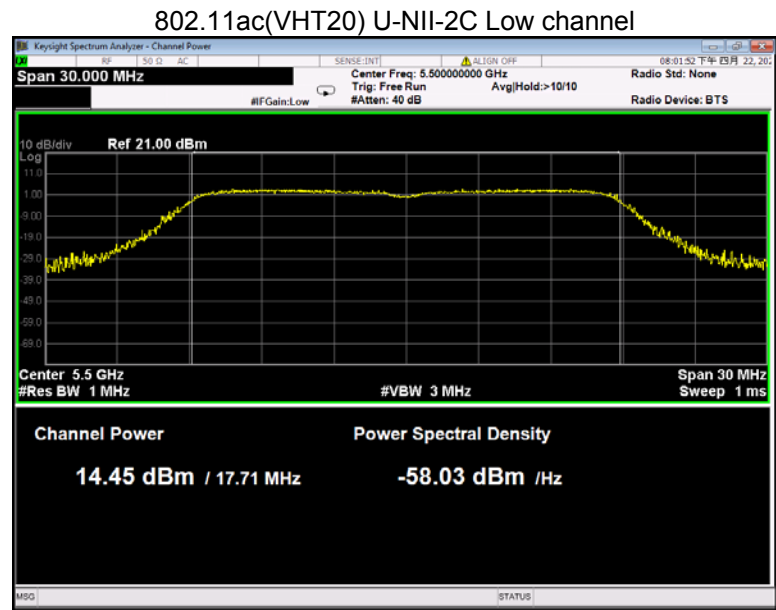
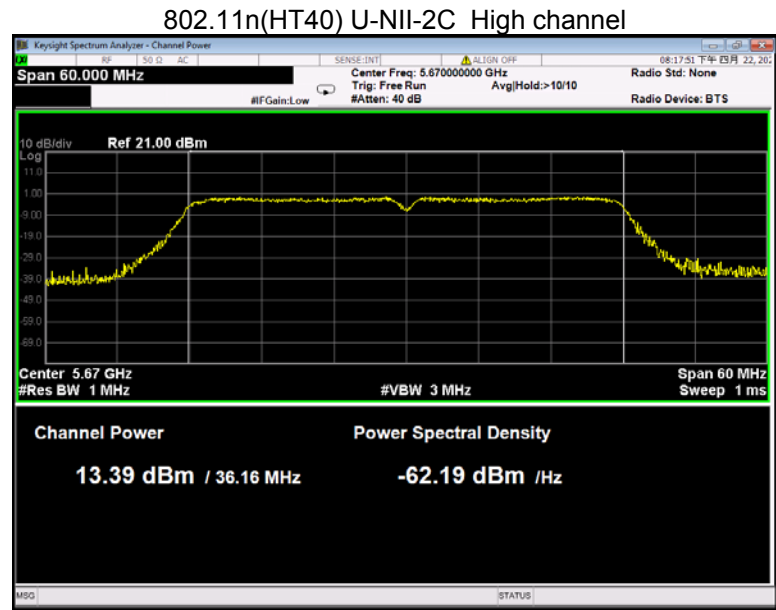


802.11n(HT40) U-NII-2C Low channel

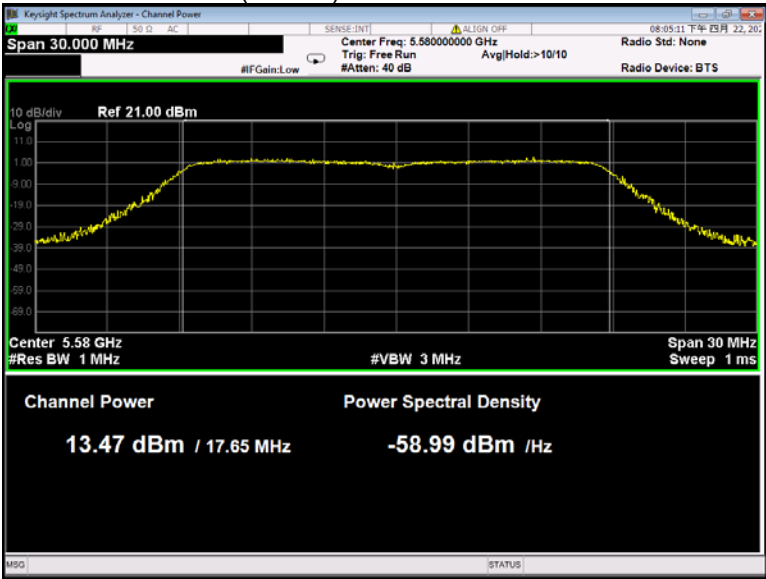


802.11n(HT40) U-NII-2C Middle channel

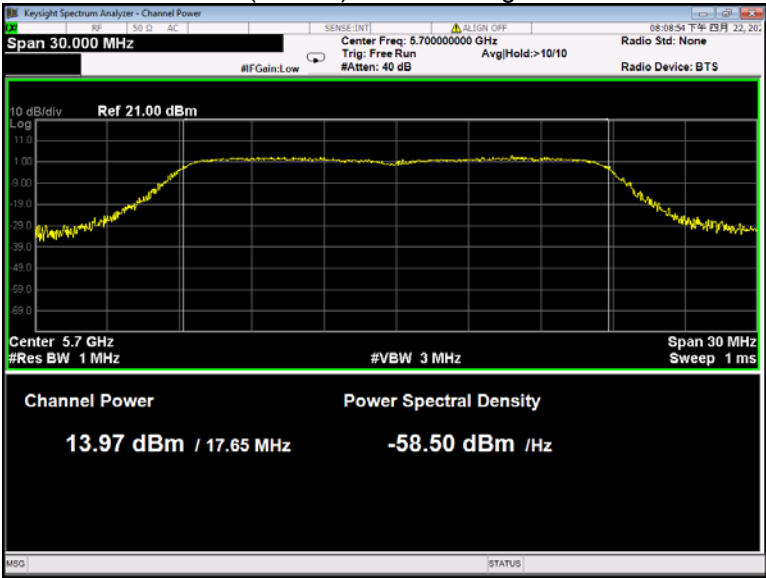




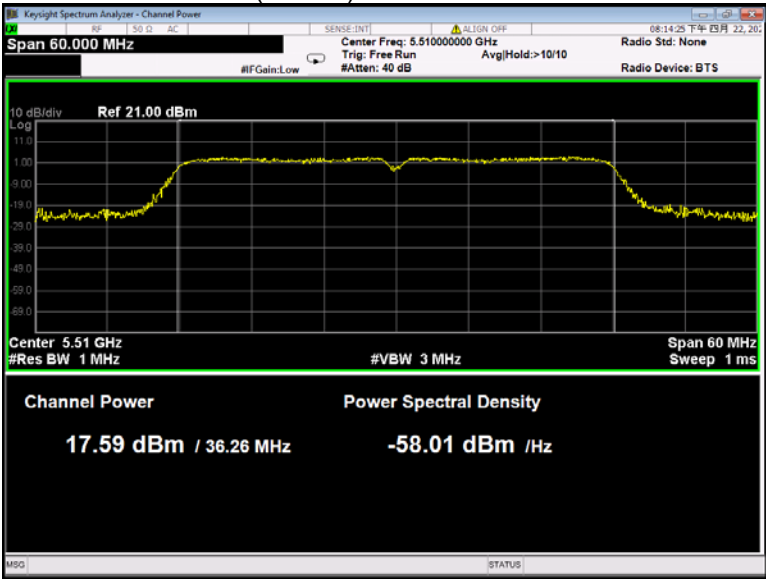
802.11ac(VHT20) U-NII-2C Middle channel



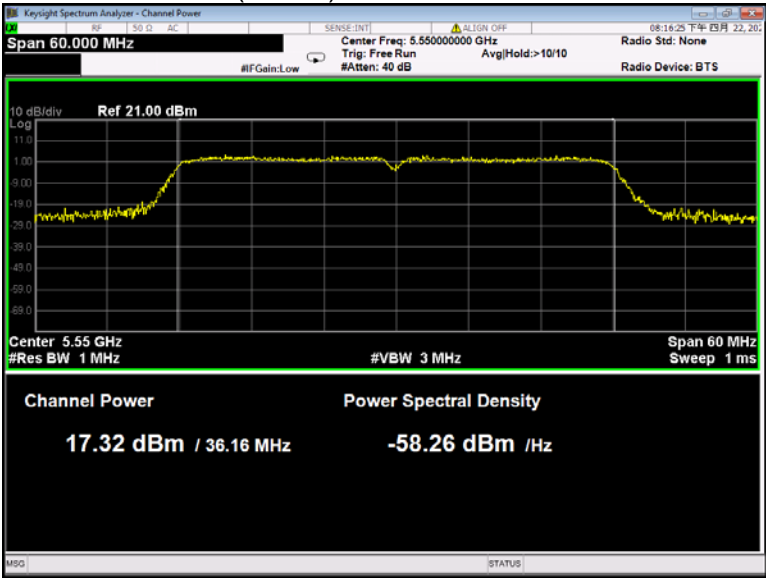
802.11ac(VHT20) U-NII-2C High channel



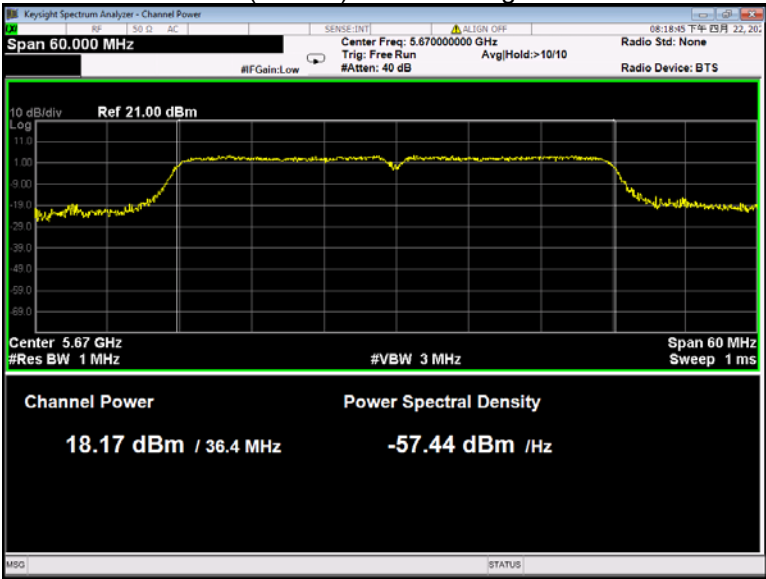
802.11ac(VHT40) U-NII-2C Low channel



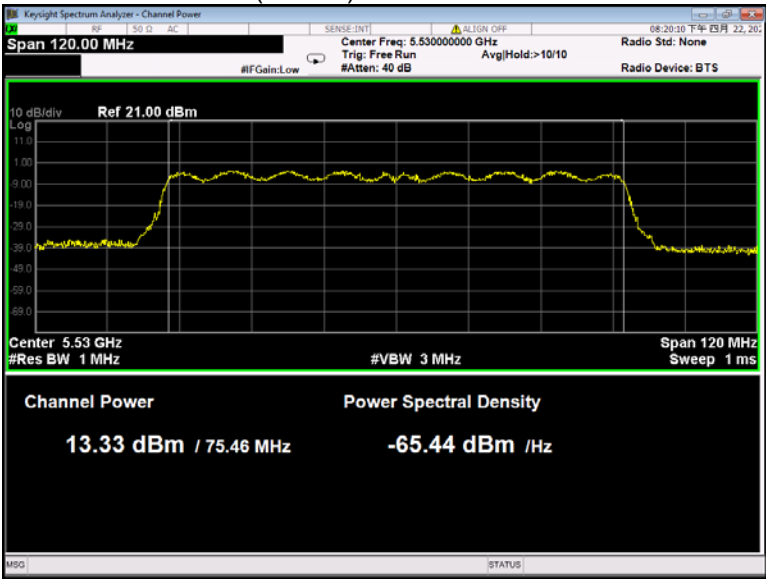
802.11ac(VHT40) U-NII-2C Middle channel



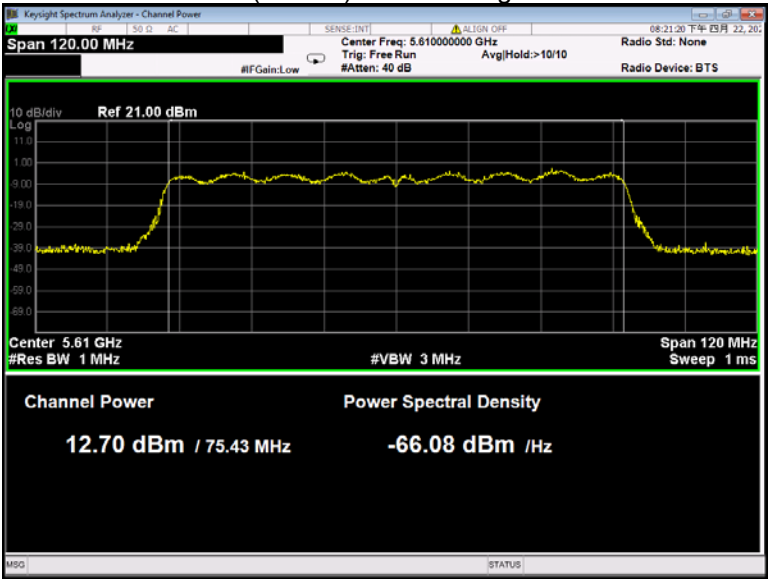
802.11ac(VHT40) U-NII-2C High channel



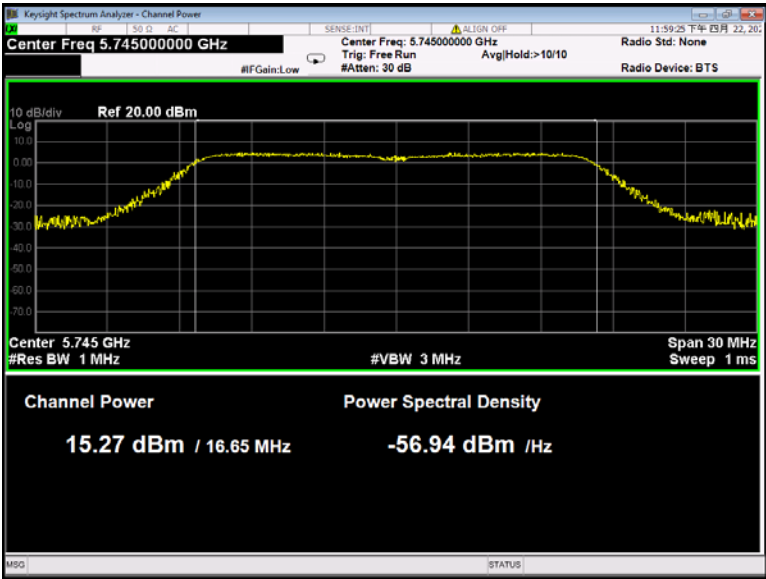
802.11ac(VHT80) U-NII-2C Low channel



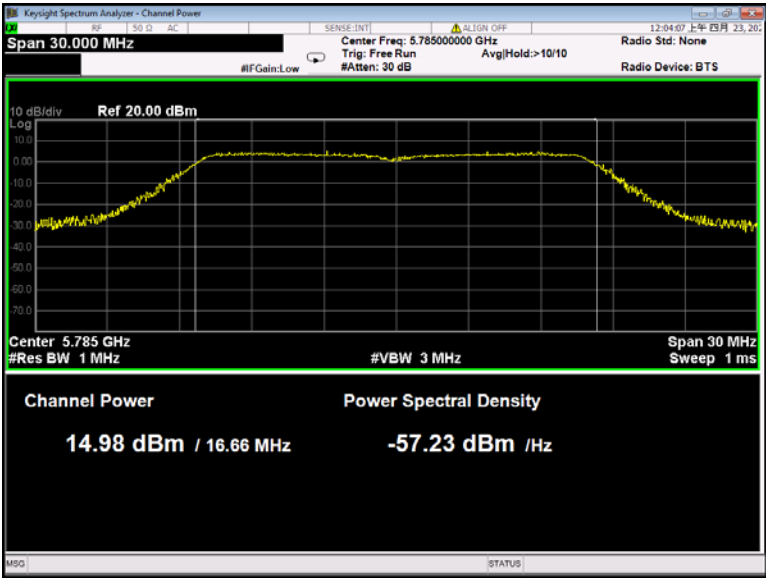
802.11ac(VHT80) U-NII-2C High channel



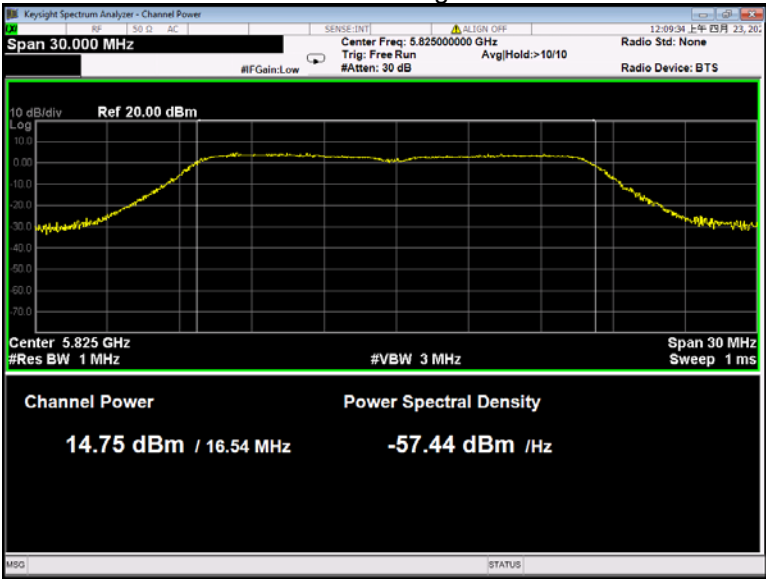
802.11a U-NII-3 Low channel



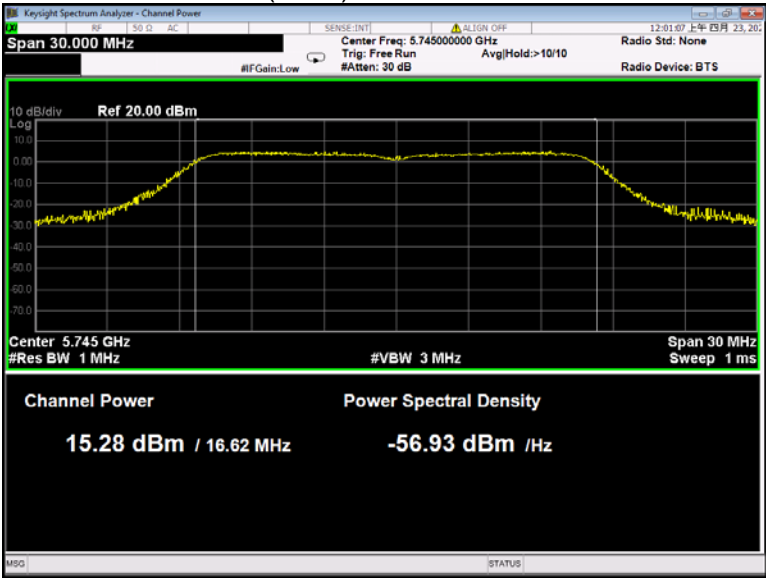
802.11a U-NII-3 Middle channel



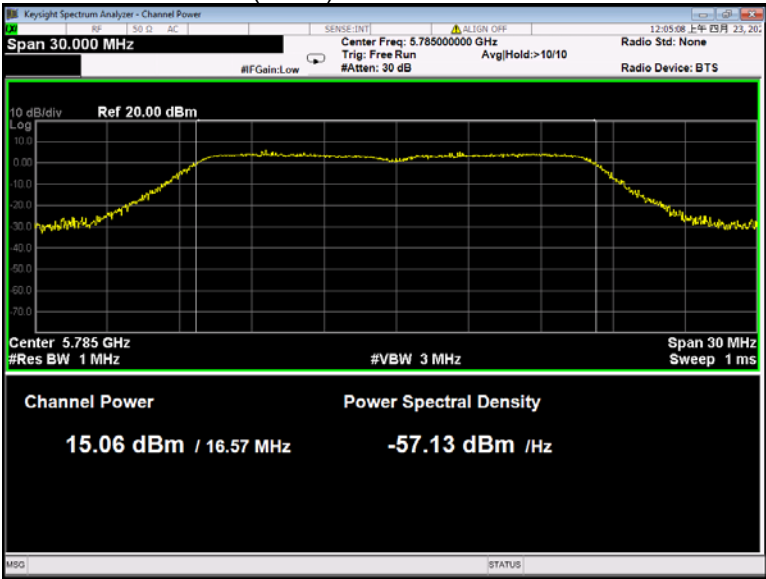
802.11a U-NII-3 High channel



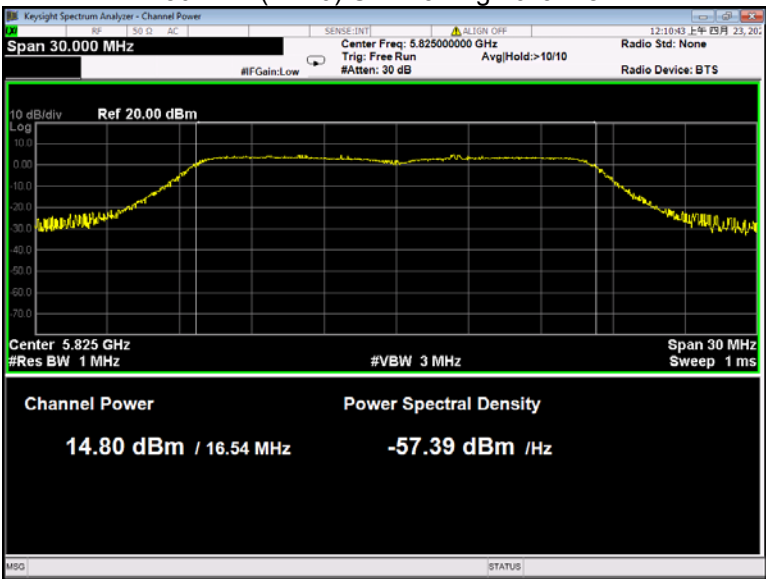
802.11n(HT20) U-NII-3 Low channel



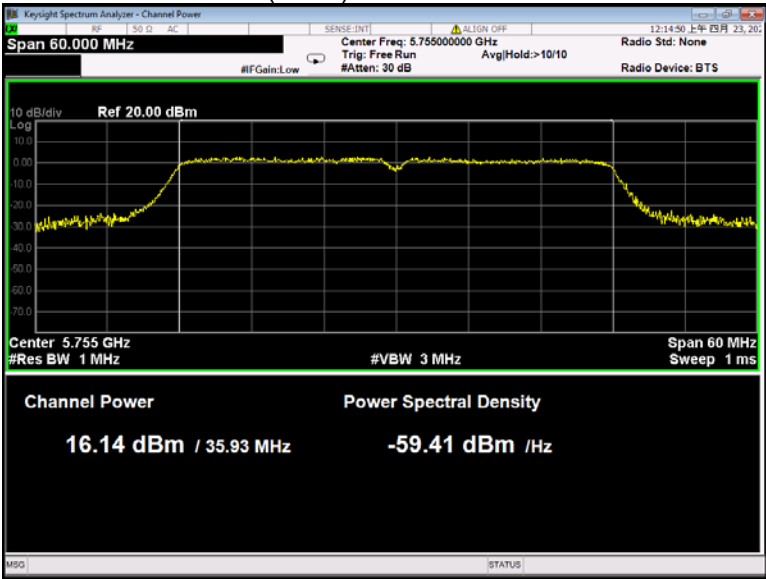
802.11n(HT20) U-NII-3 Middle channel



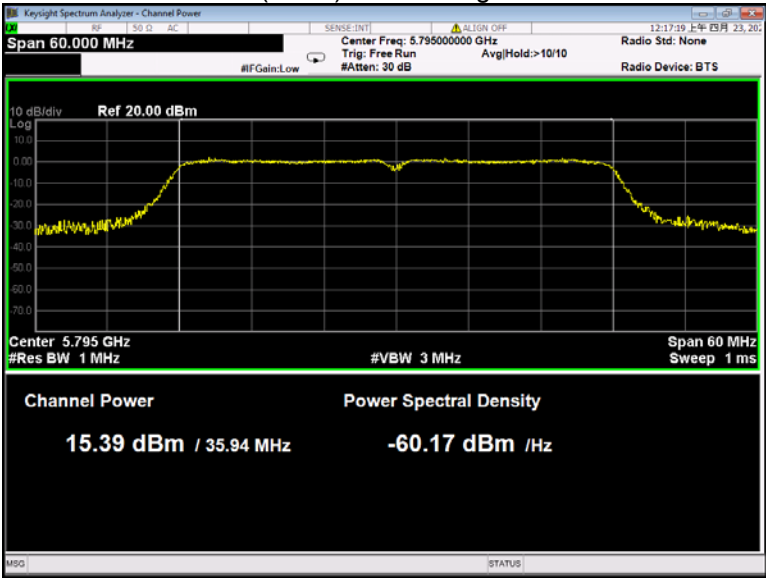
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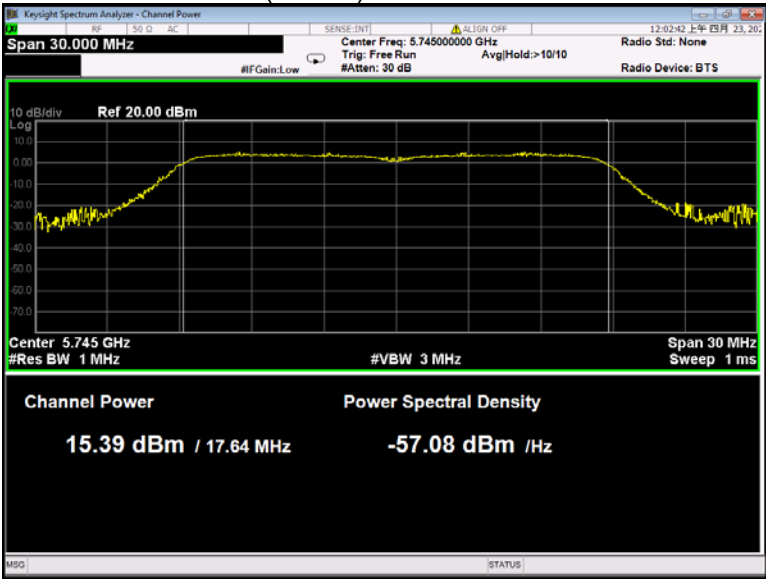
802.11n(HT40) U-NII-3 Low channel



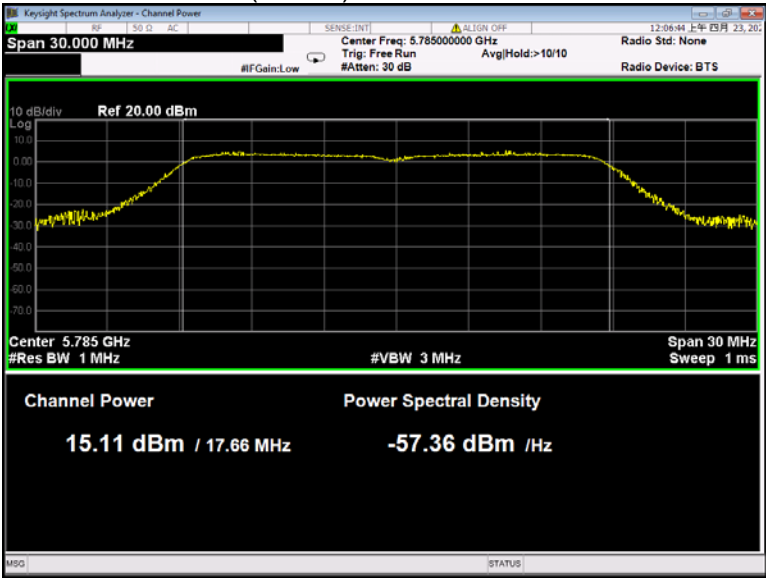
802.11n(HT40) U-NII-3 High channel



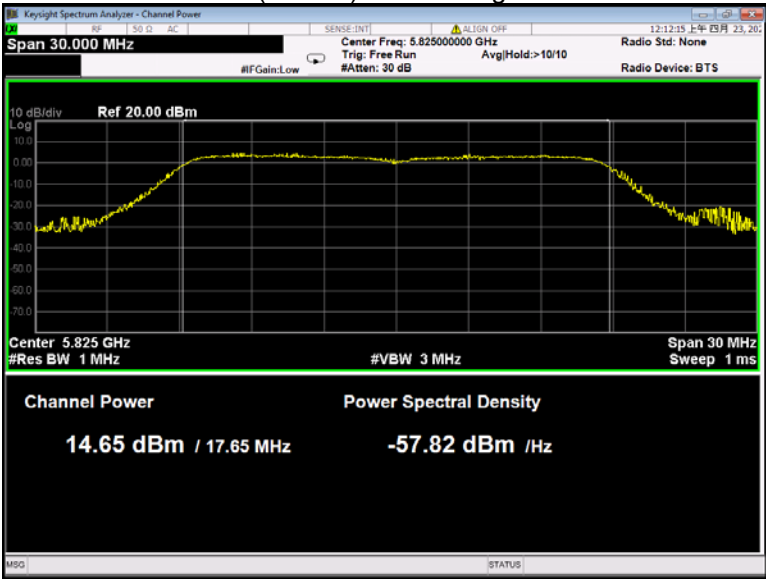
802.11ac(VHT20) U-NII-3 Low channel



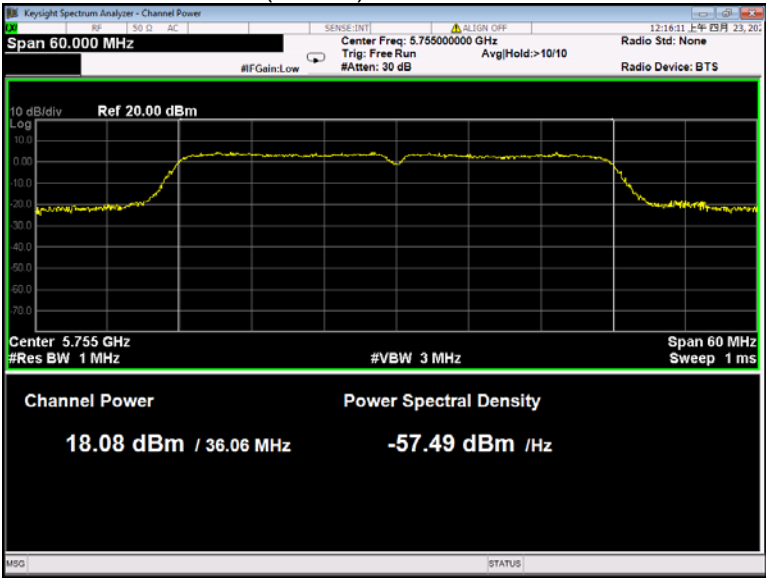
802.11ac(VHT20) U-NII-3 Middle channel



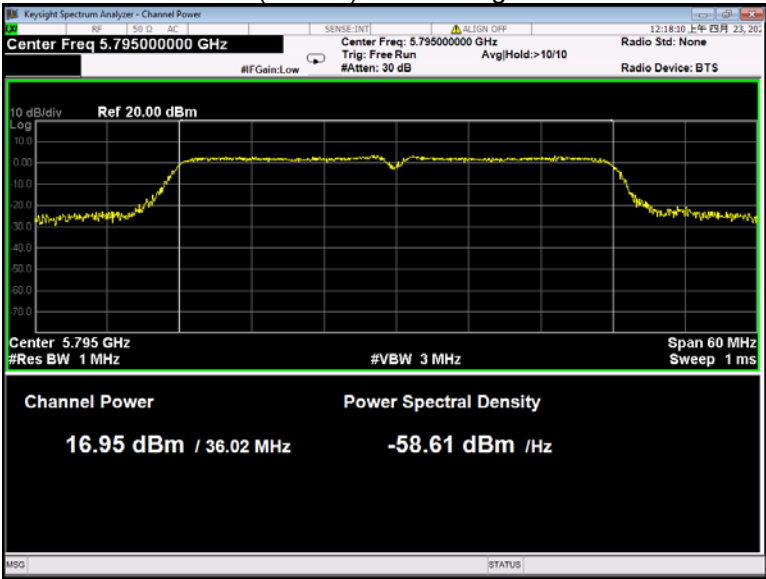
802.11ac(VHT20) U-NII-3 High channel



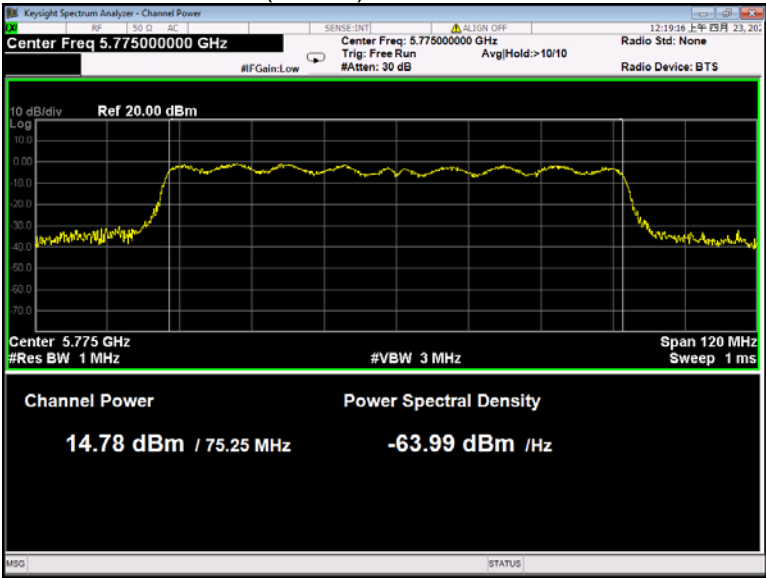
802.11ac(VHT40) U-NII-3 Low channel



802.11ac(VHT40) U-NII-3 High channel



802.11ac(VHT80) U-NII-3 Low channel



13 Power Spectral density

Test Requirement:	FCC 47CFR Part 15 Section 15.407(a)
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Test Limit:	For the band 5.15-5.25 GHz 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. For an indoor 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. For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. For the band 5.725-5.850 GHz The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.
Test Result:	PASS

13.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer:
U-NII-1
RBW = 1MHz, VBW $\geq 3 \times$ RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.
U-NII-3
RBW = 510KHz, VBW $\geq 3 \times$ RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

13.2 Test Result

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)
U-NII-1	802.11a	Low	3.968	0.31	4.278
		Middle	3.931		4.241
		High	4.408		4.718
	802.11n(HT20)	Low	3.419	0.36	3.779
		Middle	3.832		4.192
		High	4.031		4.391
	802.11n(HT40)	Low	0.805	0.75	1.555
		Middle	/		/
		High	1.834		2.584
	802.11ac(VHT20)	Low	3.403	0.34	3.743
		Middle	3.895		4.235
		High	4.405		4.745
	802.11ac(VHT40)	Low	4.643	0.81	5.453
		Middle	/		/
		High	4.718		5.528
	802.11ac(VHT80)	Low	-1.343	1.23	-0.113
		Middle	/		/
		High	/		/

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)
U-NII-2A	802.11a	Low	3.888	0.33	-57.76
		Middle	3.481		-58.58
		High	2.448		-58.07
	802.11n(HT20)	Low	3.412	0.16	-58.31
		Middle	3.515		-59.36
		High	2.296		-58.73
	802.11n(HT40)	Low	-0.400	0.53	-60.9
		Middle	/		-61.8
		High	0.221		-61.66
	802.11ac(VHT20)	Low	3.496	0.17	-57.86
		Middle	3.789		-58.82
		High	2.659		-58.33
	802.11ac(VHT40)	Low	5.397	0.74	-57.27
		Middle	/		-58.26
		High	5.247		-56.7
	802.11ac(VHT80)	Low	-2.579	1.53	-63.91
		Middle	/		-66.08
		High	/		/

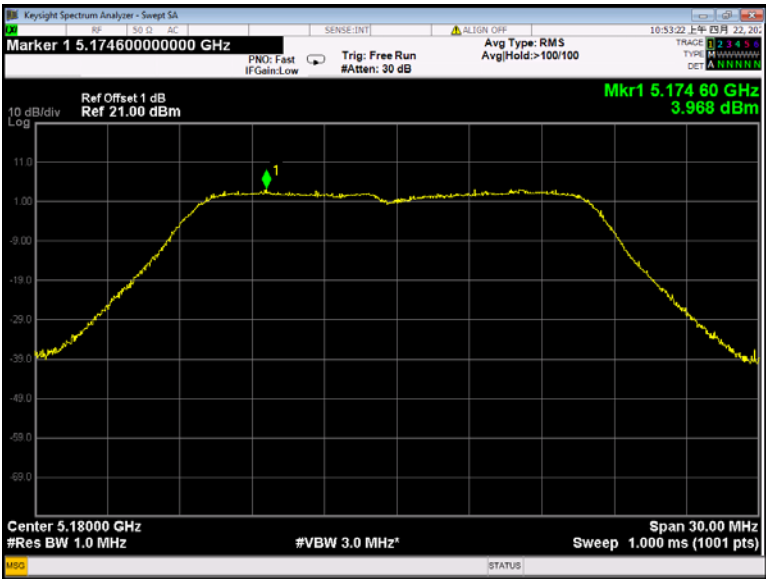
Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)
U-NII-2C	802.11a	Low	-58.09	0.17	-57.92
		Middle	-58.91		-58.74
		High	-58.40		-58.23
	802.11n(HT20)	Low	-58.47	0.40	-58.07
		Middle	-59.52		-59.12
		High	-58.89		-58.49
	802.11n(HT40)	Low	-61.43	0.53	-60.9
		Middle	-61.80		-61.27
		High	-62.19		-61.66
	802.11ac(VHT20)	Low	-58.03	0.15	-57.88
		Middle	-58.99		-58.84
		High	-58.50		-58.35
	802.11ac(VHT40)	Low	-58.01	0.56	-57.45
		Middle	-58.26		-57.7
		High	-57.44		-56.88
	802.11ac(VHT80)	Low	-65.44	1.03	-64.41
		Middle	-66.08		-66.08
		High	/		/

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)
U-NII-3	802.11a	Low	-56.94	0.22	-56.72
		Middle	-57.23		-57.01
		High	-57.44		-57.22
	802.11n(HT20)	Low	-56.93	0.23	-56.7
		Middle	-57.13		-56.9
		High	-57.39		-57.16
	802.11n(HT40)	Low	-59.41	0.75	-58.66
		Middle	/		/
		High	-60.17		-59.42
	802.11ac(VHT20)	Low	-57.08	0.33	-56.75
		Middle	-57.36		-57.03
		High	-57.82		-57.49
	802.11ac(VHT40)	Low	-57.49	0.71	-56.78
		Middle	/		/
		High	-58.61		-57.9
	802.11ac(VHT80)	Low	-63.99	0.80	-63.19
		Middle	/		/
		High	/		/

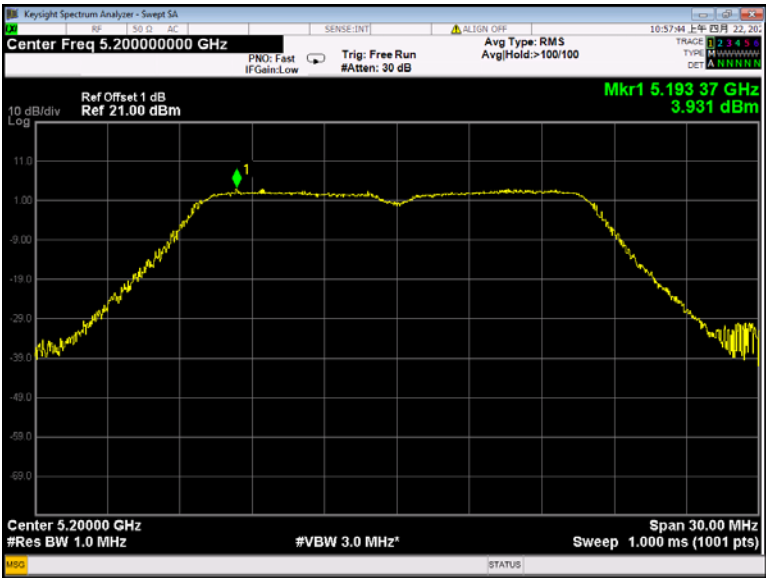
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

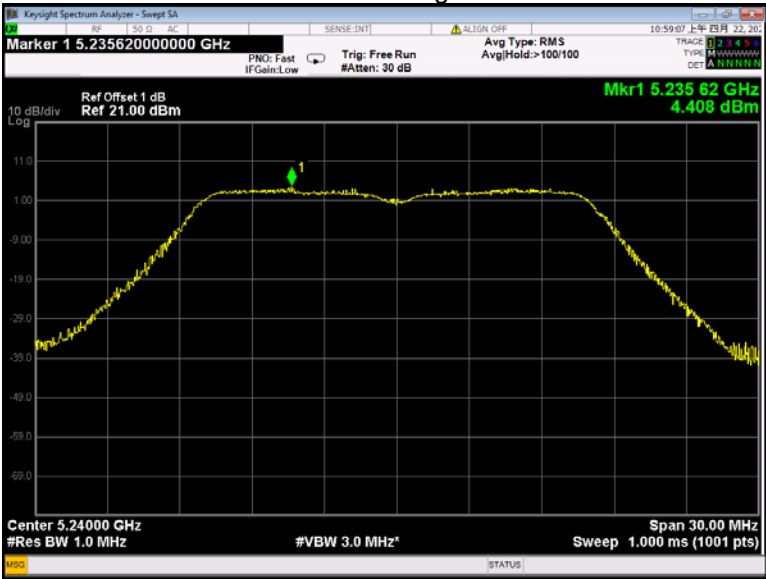
802.11a U-NII-1 Low channel



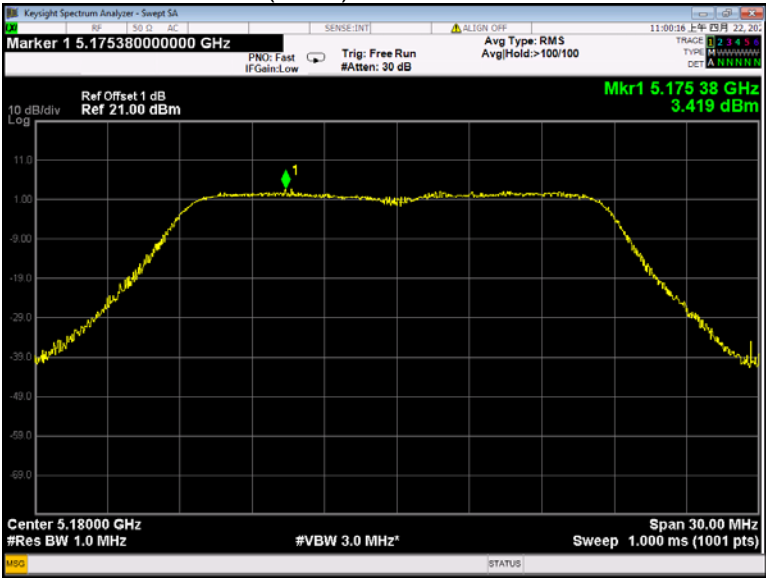
802.11a U-NII-1 Middle channel



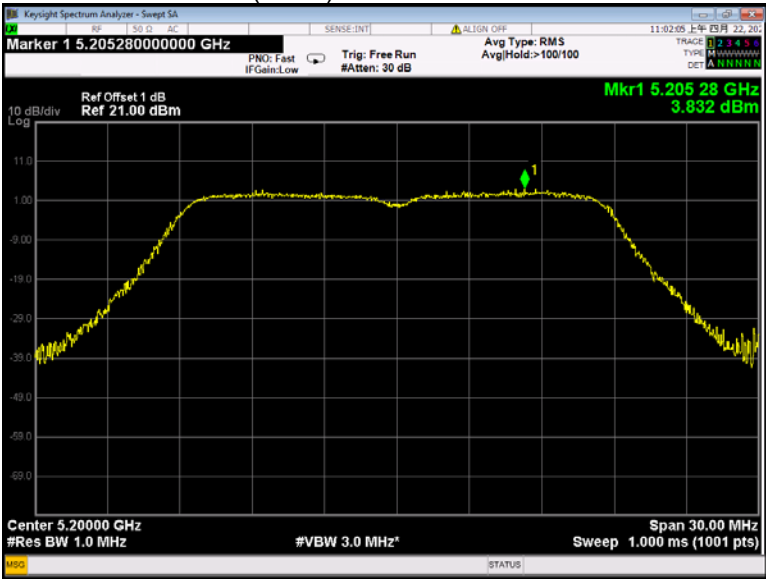
802.11a U-NII-1 High channel



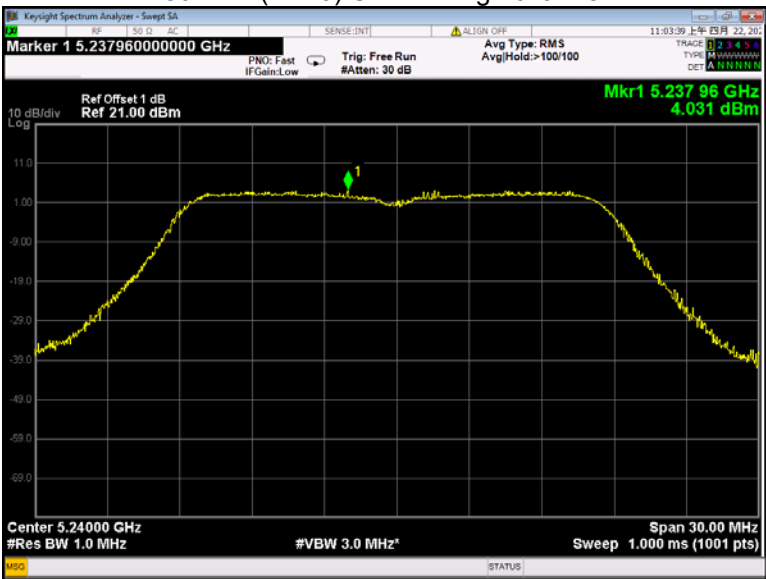
802.11n(HT20) U-NII-1 Low channel



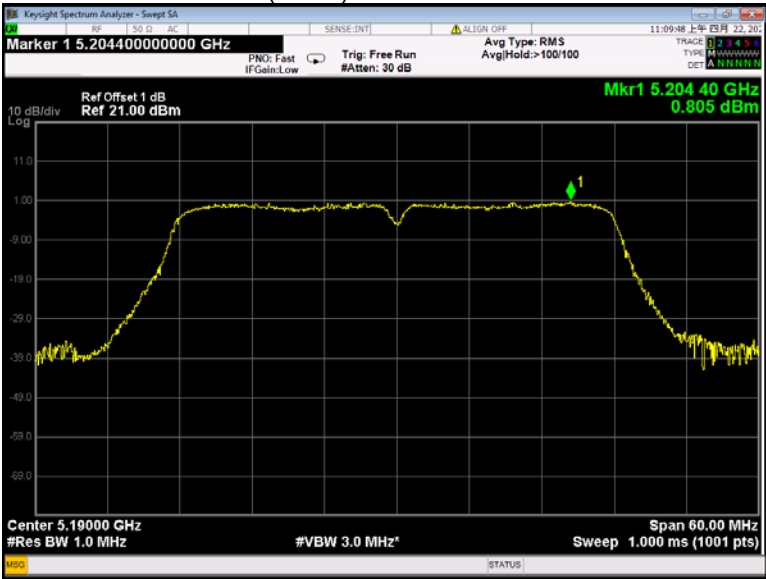
802.11n(HT20) U-NII-1 Middle channel



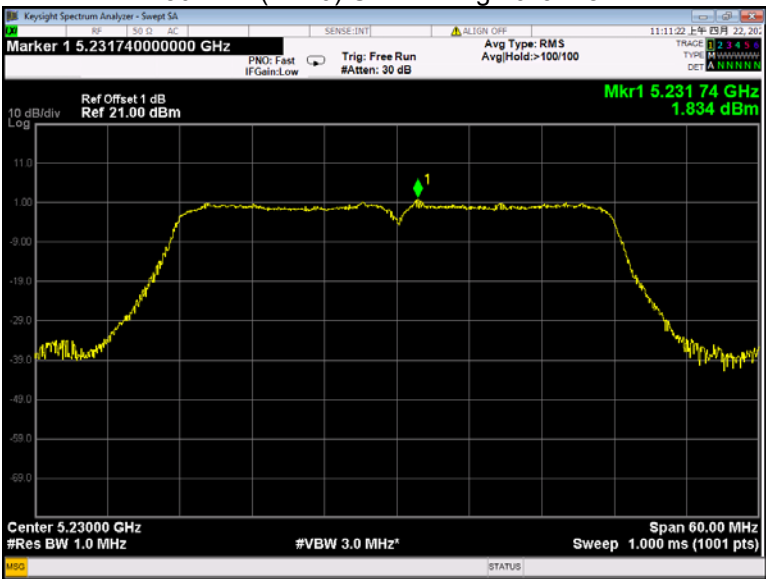
802.11n(HT20) U-NII-1 High channel



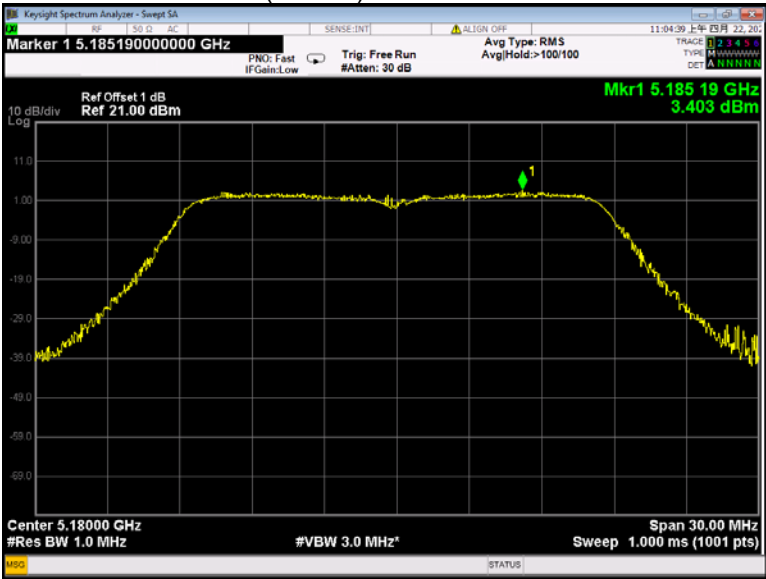
802.11n(HT40) U-NII-1 Low channel



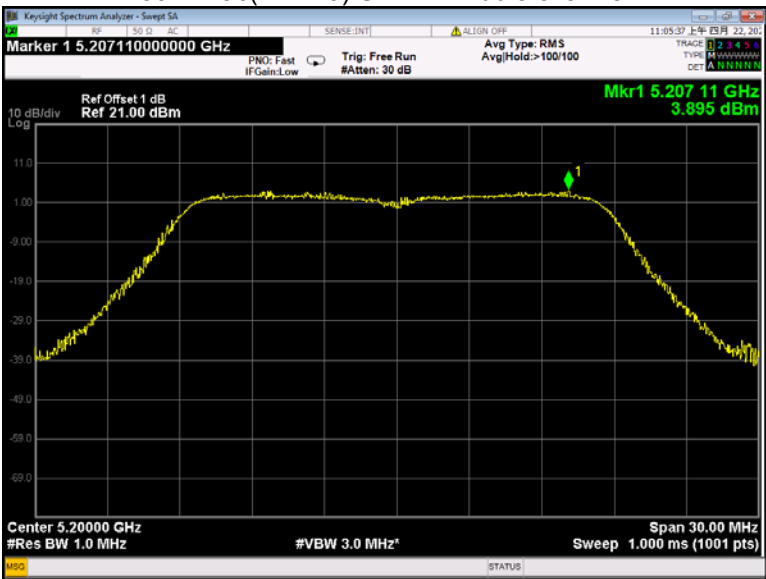
802.11n(HT40) U-NII-1 High channel



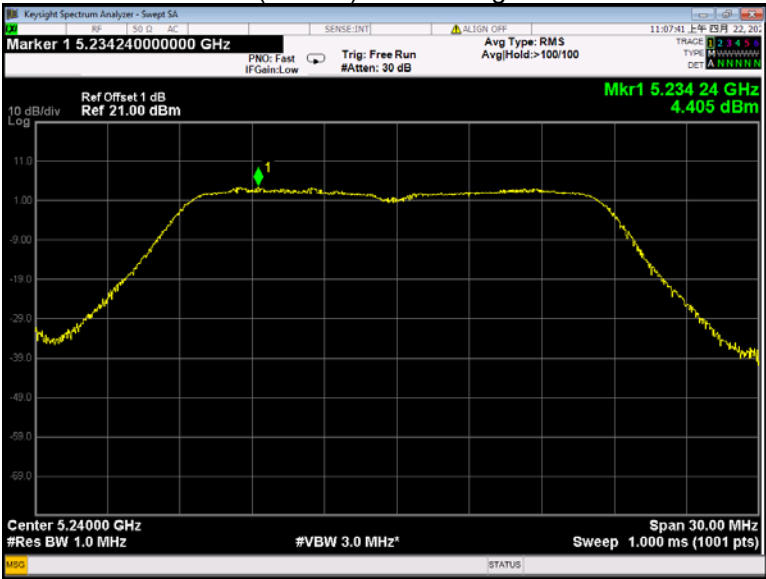
802.11ac(VHT20) U-NII-1 Low channel



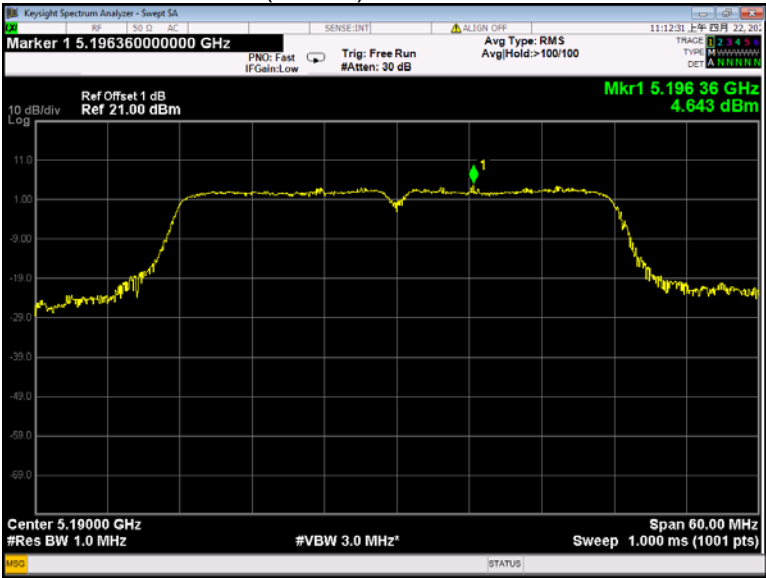
802.11ac(VHT20) U-NII-1 Middle channel



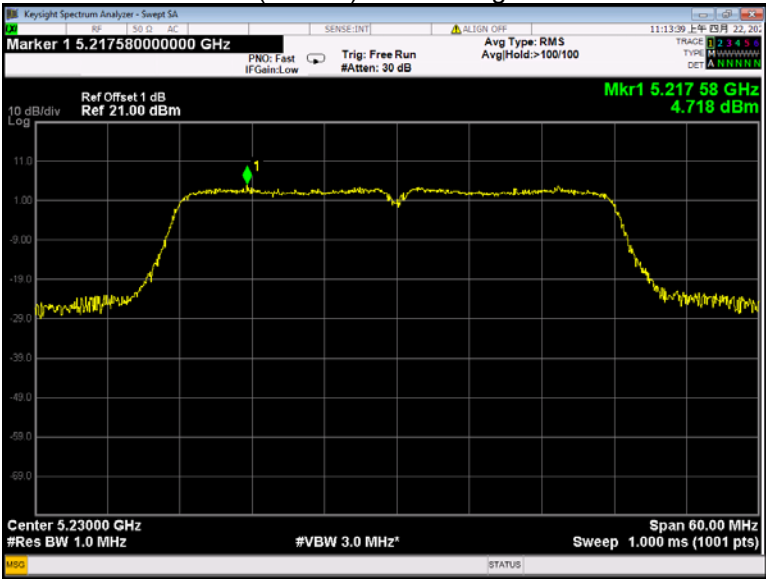
802.11ac(VHT20) U-NII-1 High channel



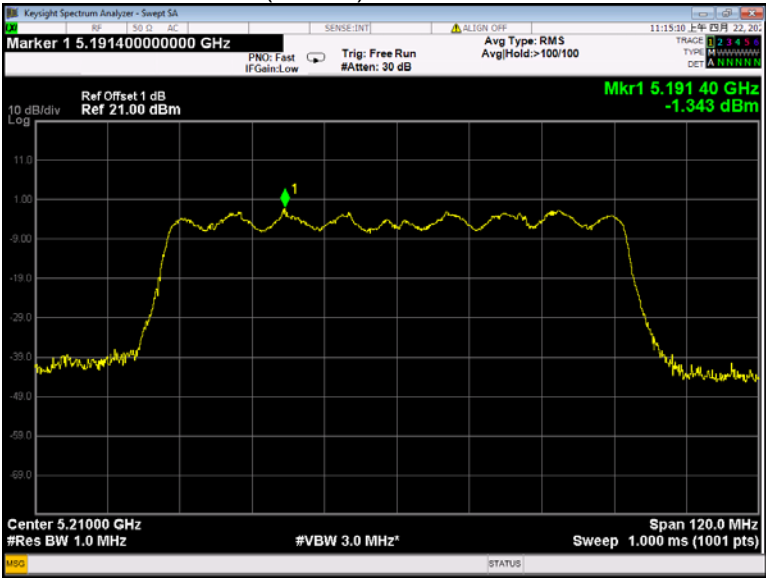
802.11ac(VHT40) U-NII-1 Low channel



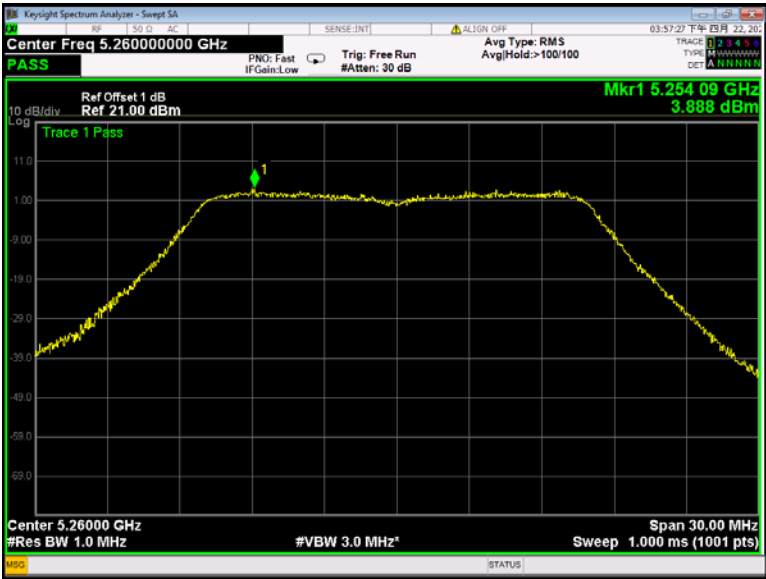
802.11ac(VHT40) U-NII-1 High channel



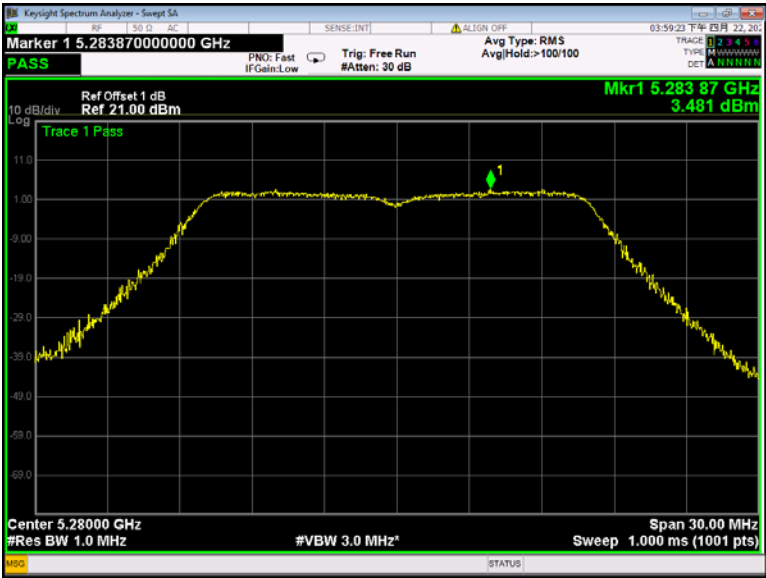
802.11ac(VHT80) U-NII-1 Low channel



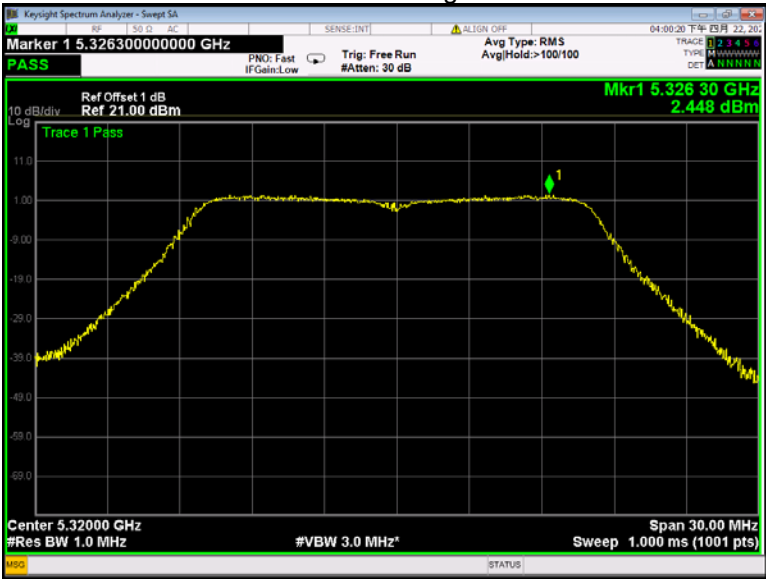
802.11a U-NII-2A Low channel



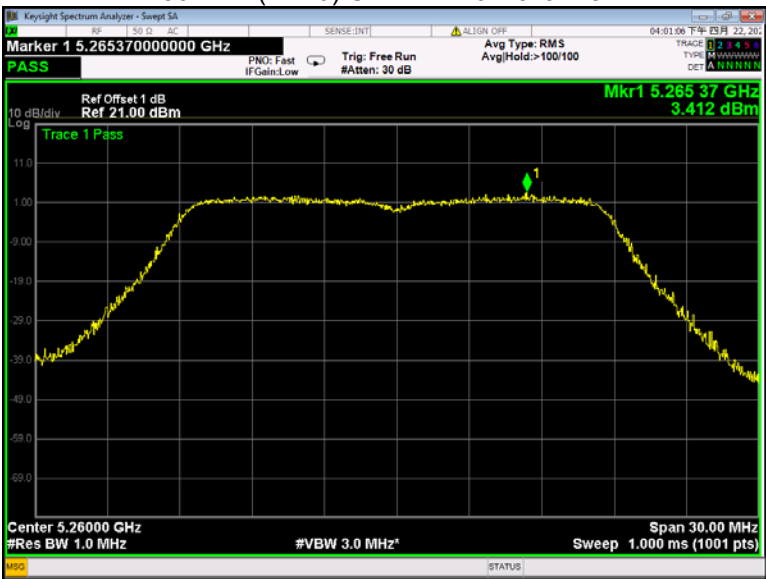
802.11a U-NII-2A Middle channel



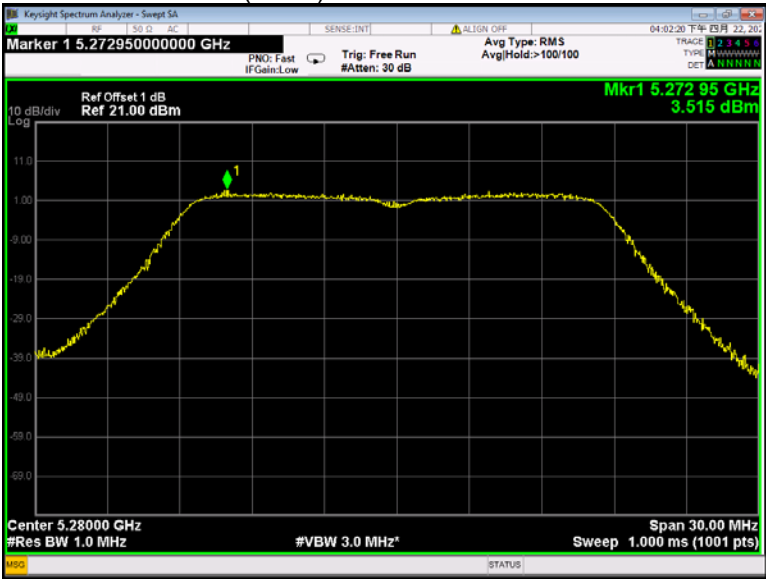
802.11a U-NII-2A High channel



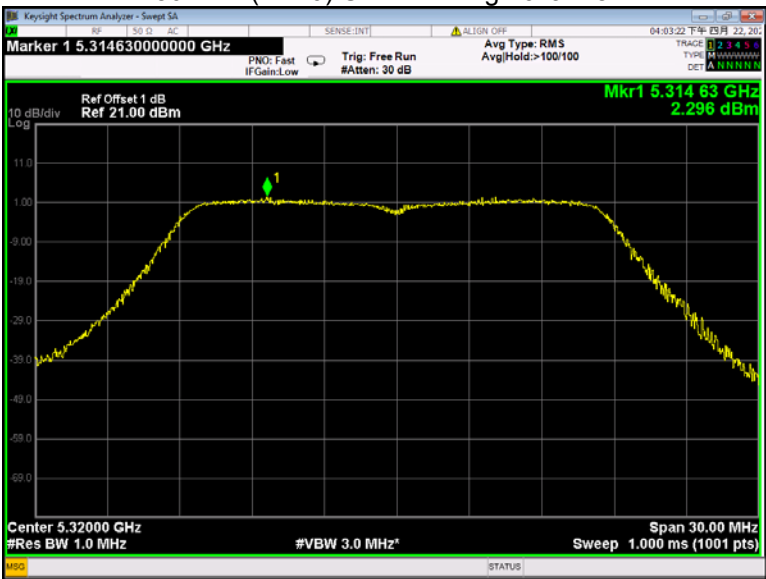
802.11n(HT20) U-NII-2A Low channel



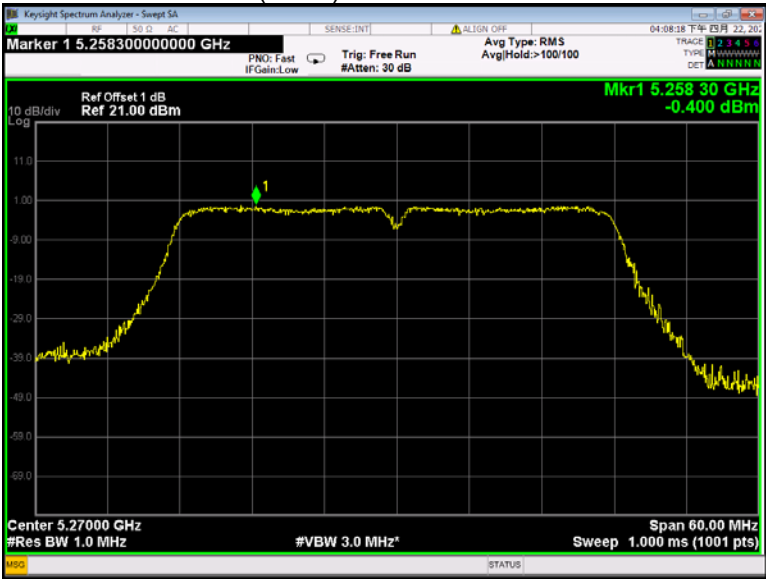
802.11n(HT20) U-NII-2A Middle channel



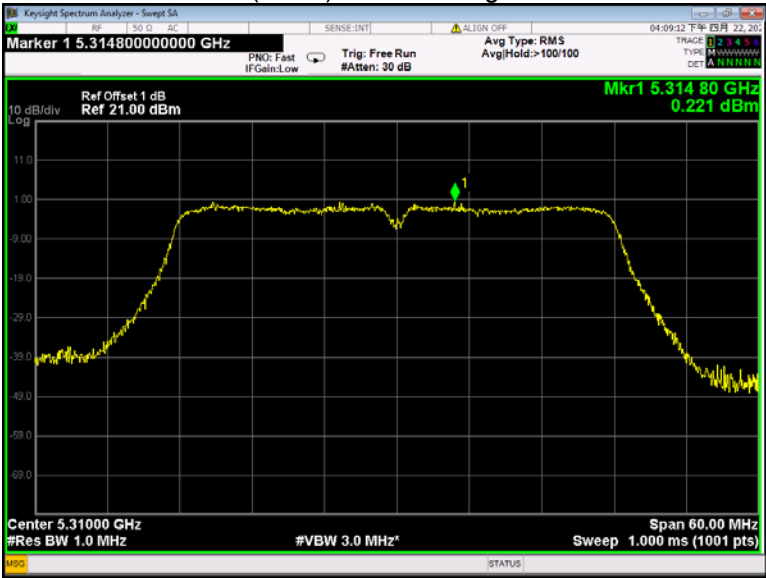
802.11n(HT20) U-NII-2A High channel



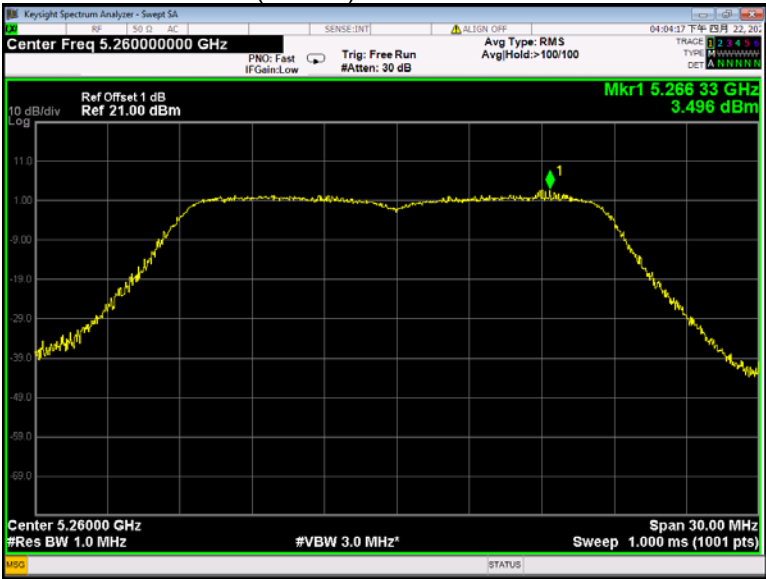
802.11n(HT40) U-NII-2A Low channel



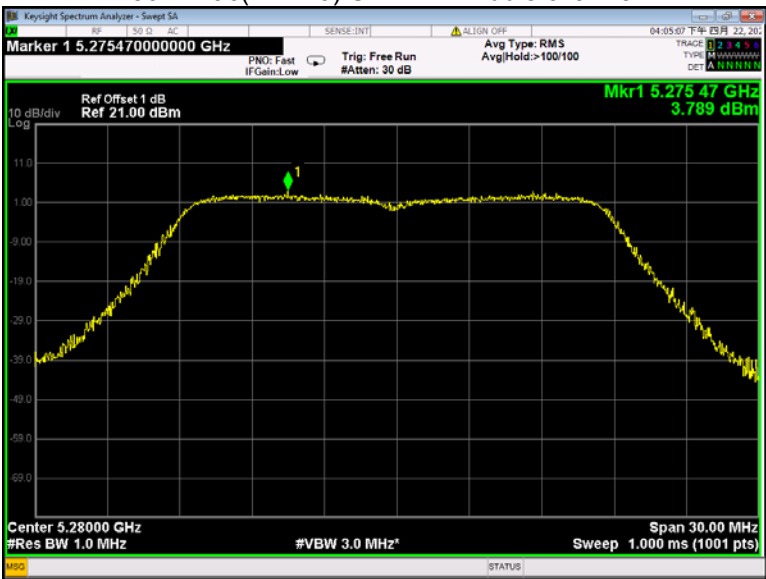
802.11n(HT40) U-NII-2A High channel



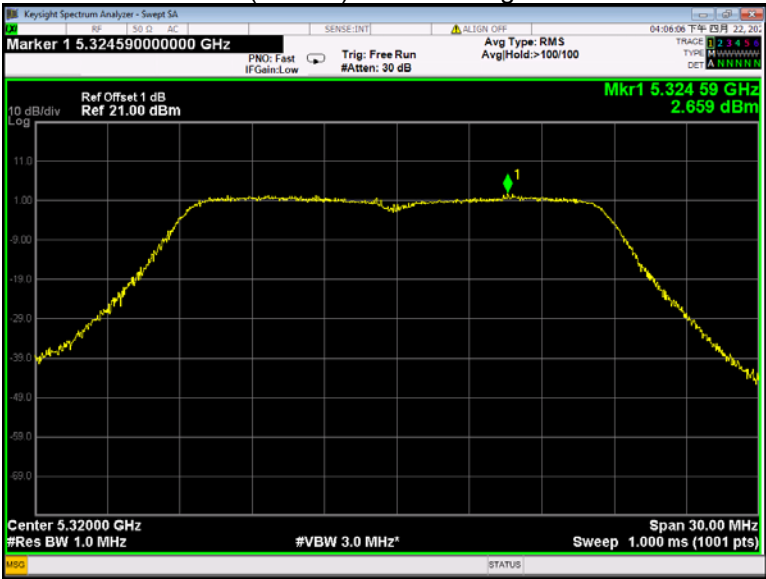
802.11ac(VHT20) U-NII-2A Low channel



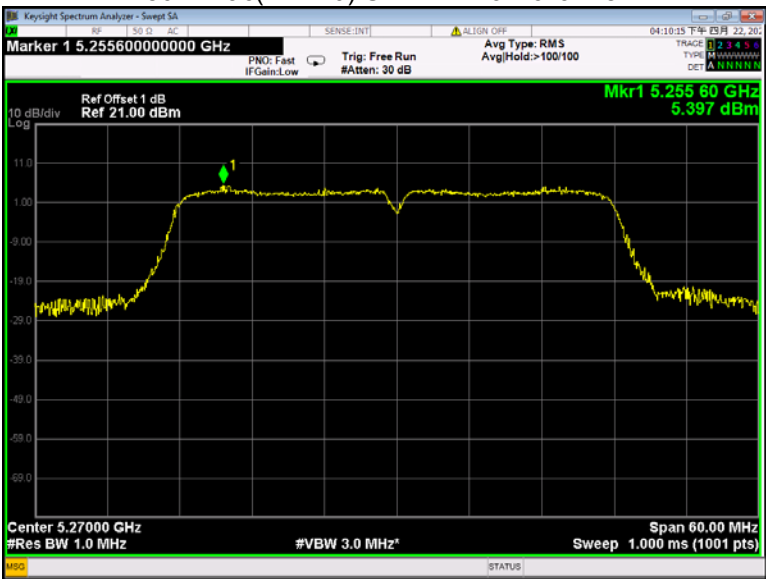
802.11ac(VHT20) U-NII-2A Middle channel



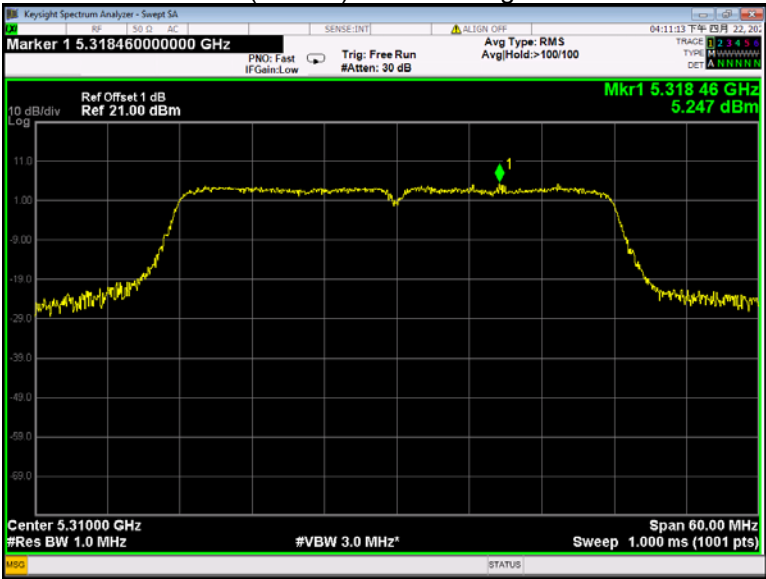
802.11ac(VHT20) U-NII-2A High channel



802.11ac(VHT40) U-NII-2A Low channel



802.11ac(VHT40) U-NII-2A High channel



802.11ac(VHT80) U-NII-2A Low channel

