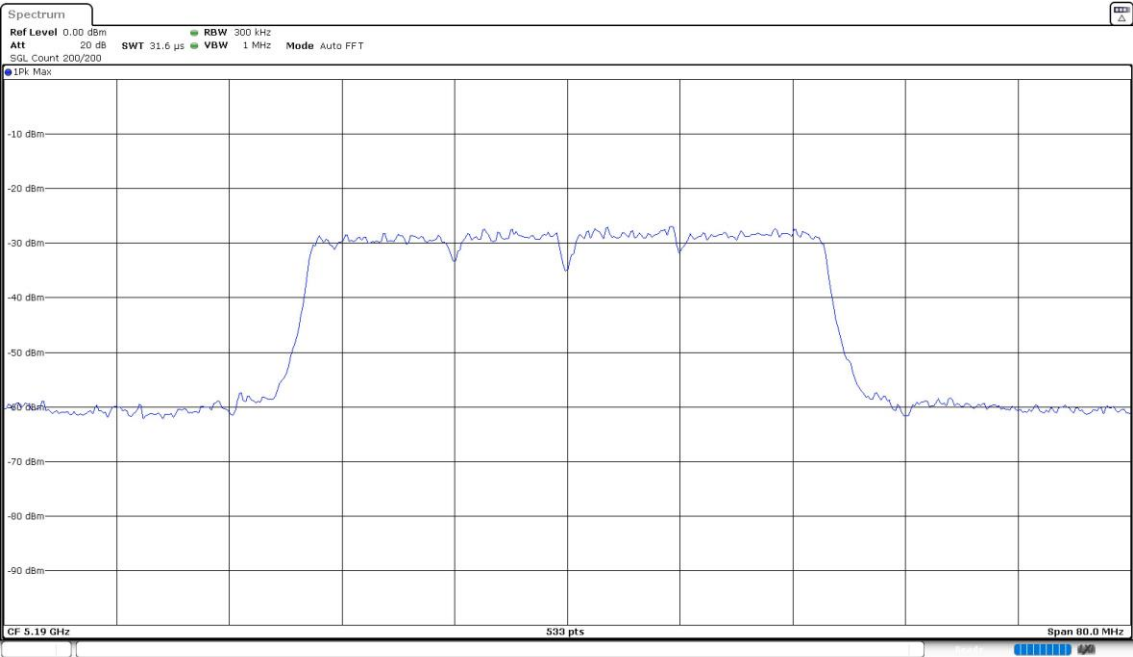
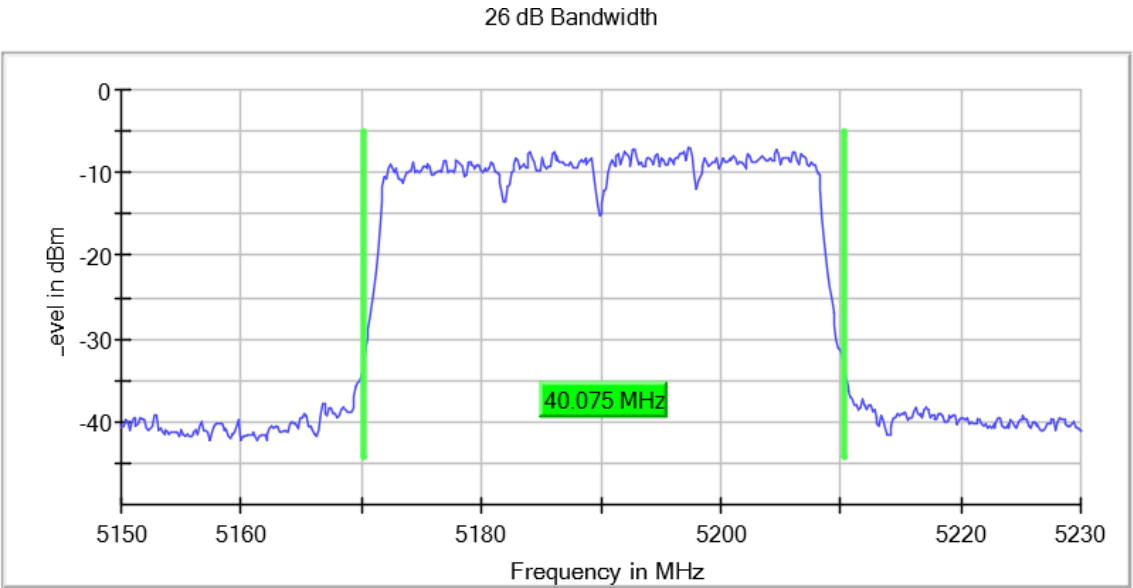


Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5190.00000 Modulation = 802.11n HT40 (OFDM MCS0)

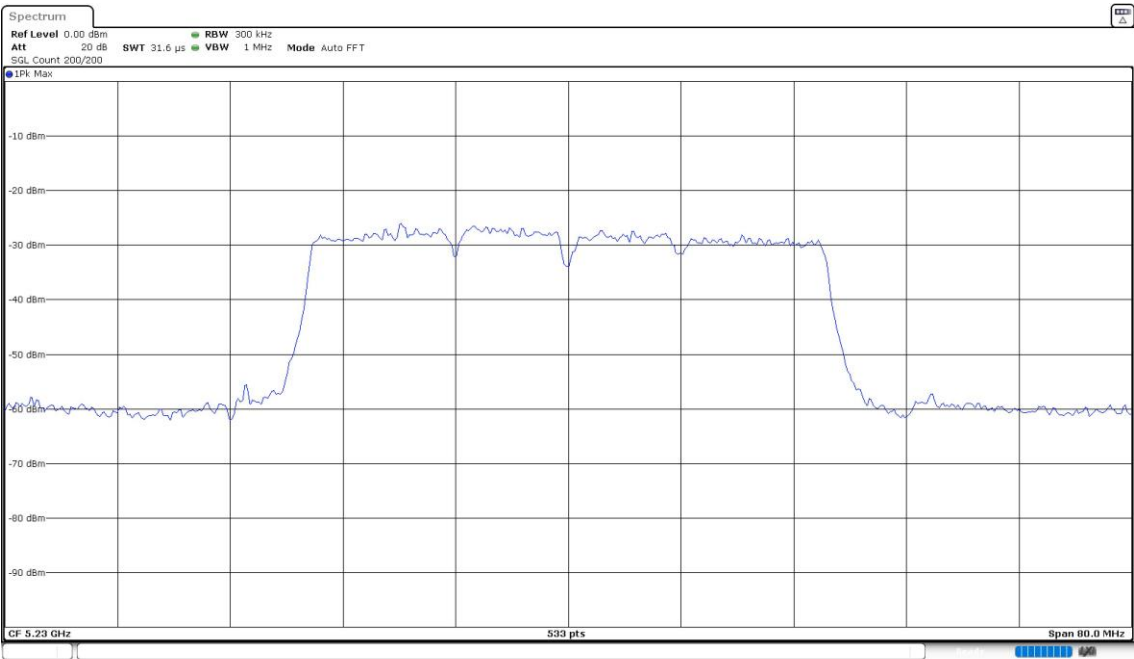
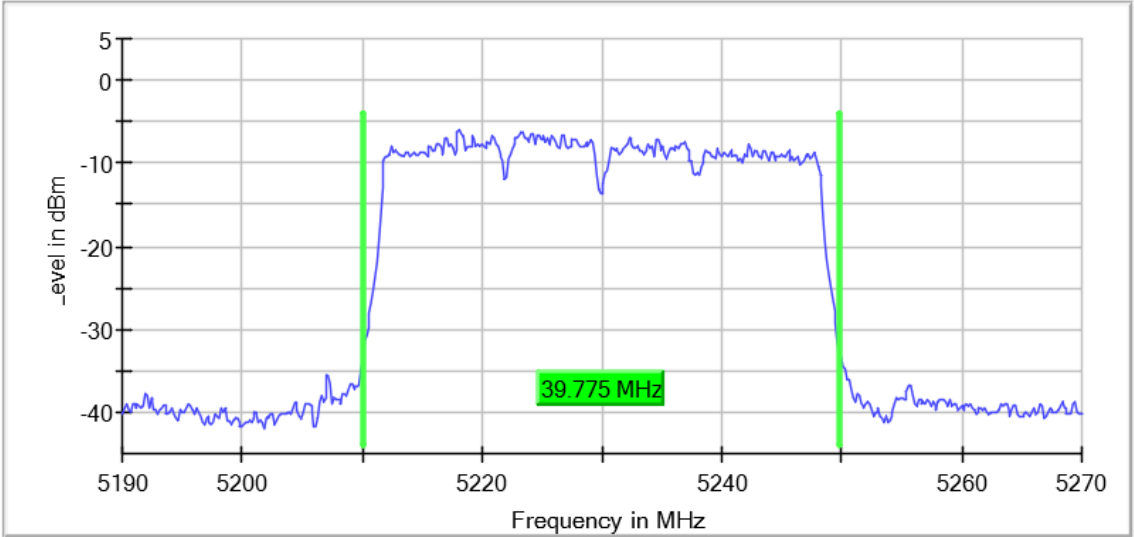
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5230.00000 Modulation = 802.11n HT40 (OFDM MCS0)

Images:

26 dB Bandwidth



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	2	5180.00000	21.500
		5200.00000	21.300
		5240.00000	21.600
	2+3	5180.00000	21.600
		5200.00000	21.600
		5240.00000	21.900

Verdict

Pass

Attachments

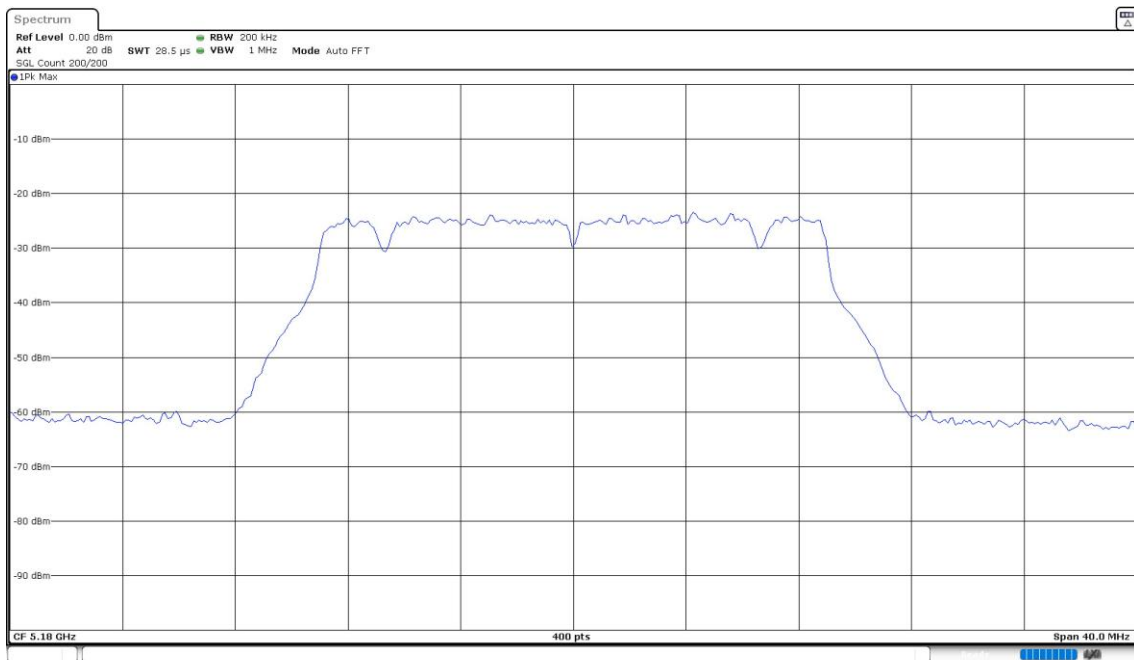
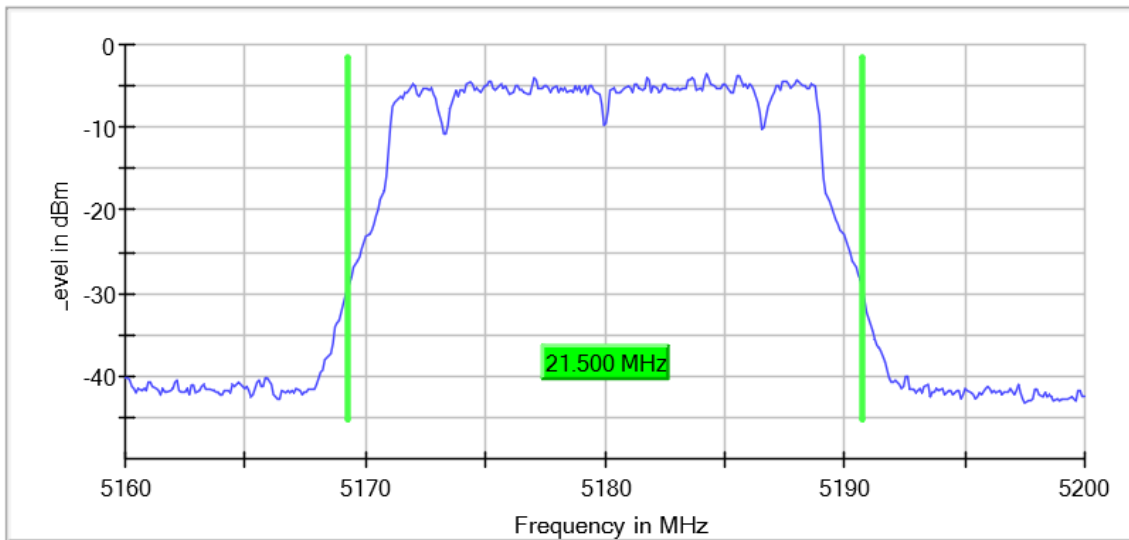
Operation Band MHz = [5150, 5250] Active Port = 2

Frequency MHz = 5180.00000

Modulation = 802.11ac VHT20 (OFDM MCS0)

Images:

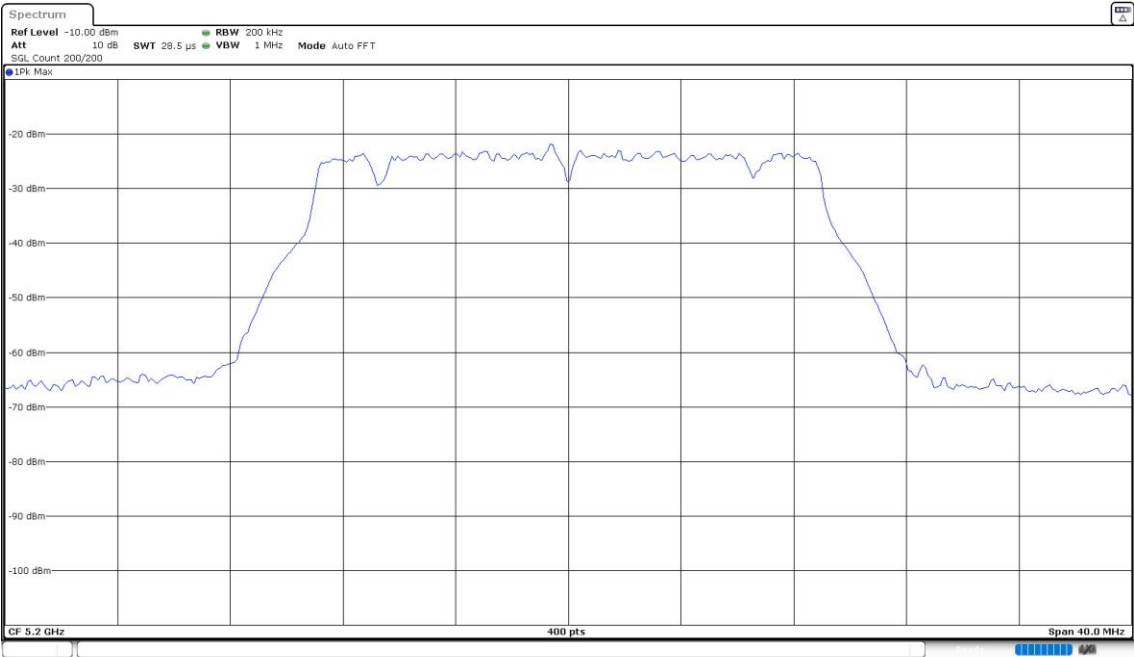
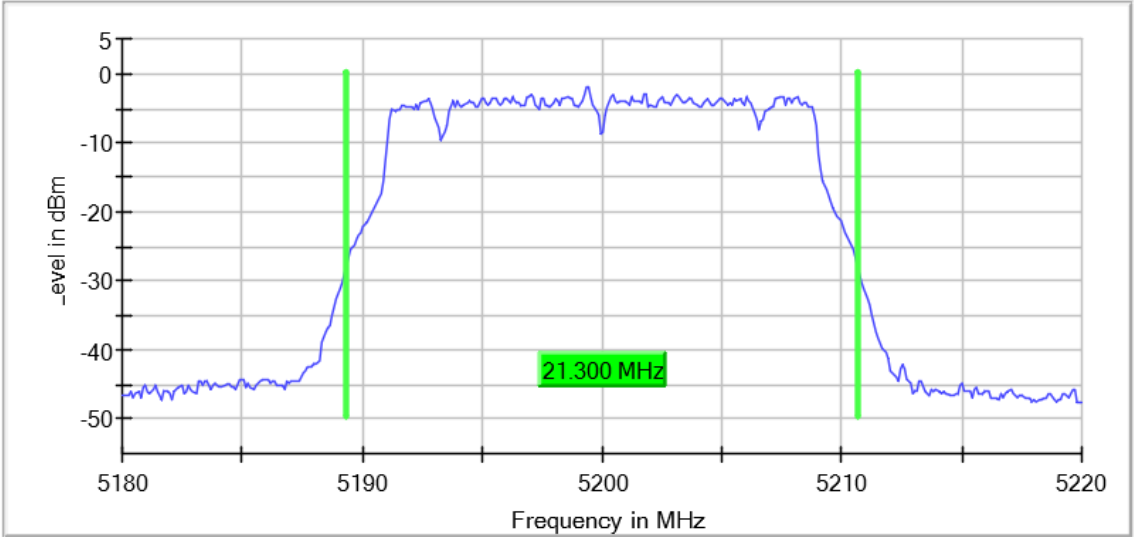
26 dB Bandwidth



Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5200.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

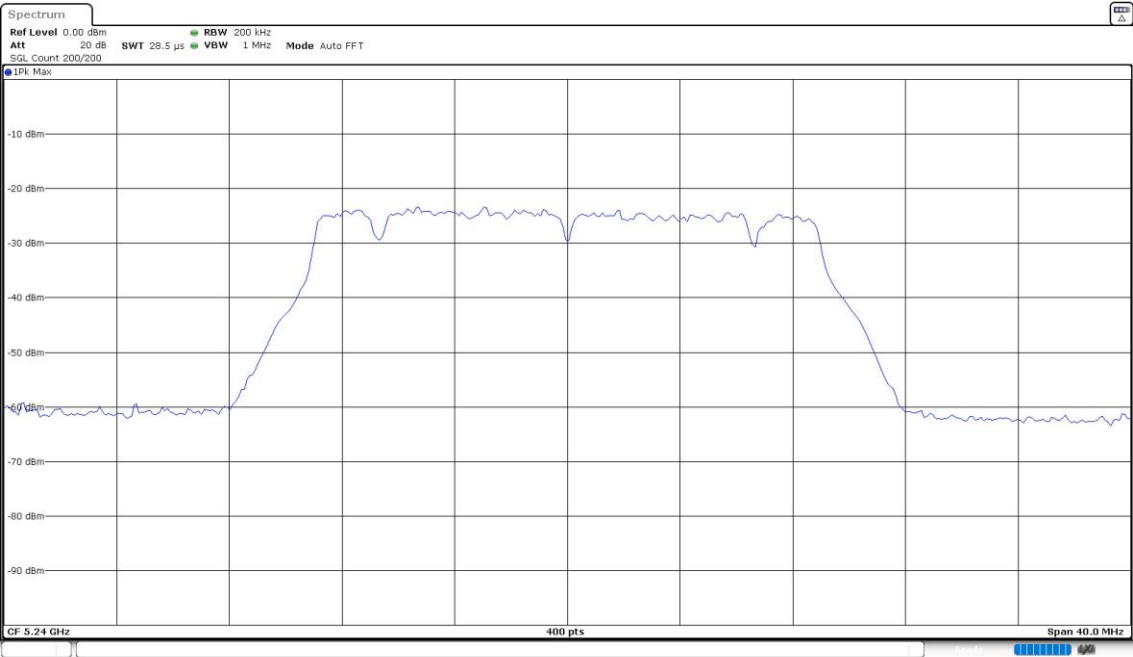
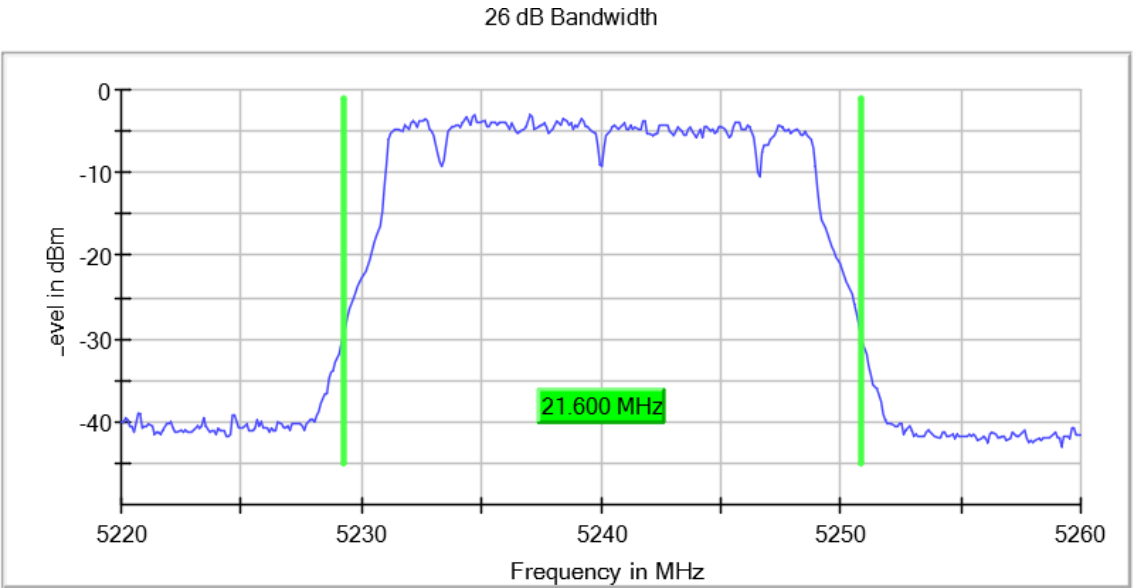
Images:

26 dB Bandwidth



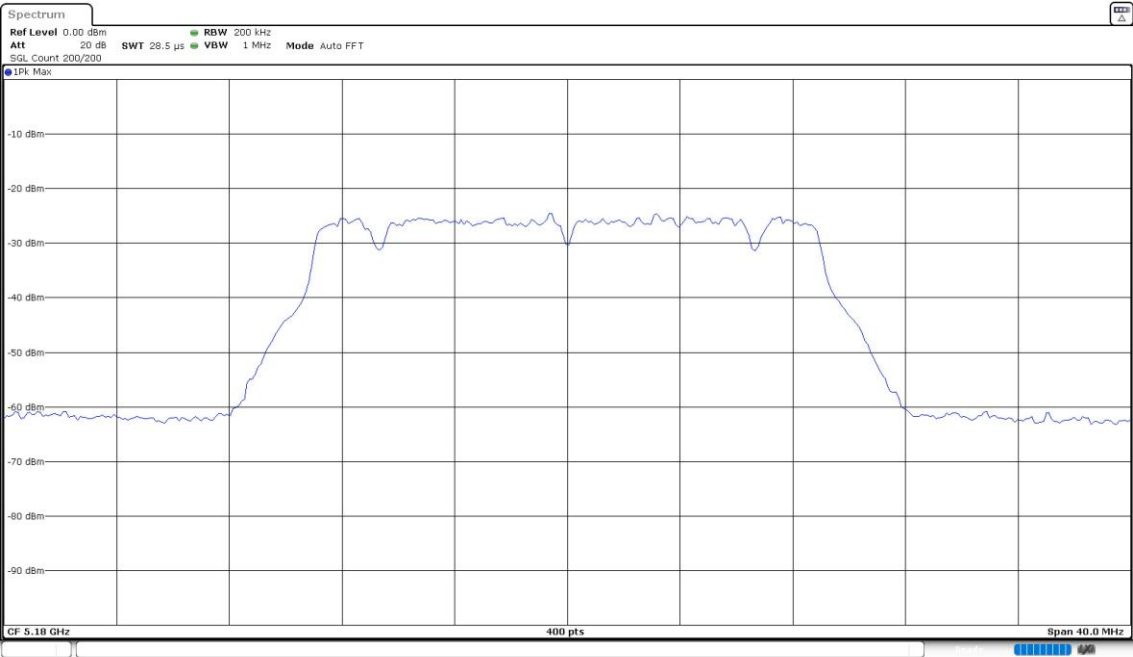
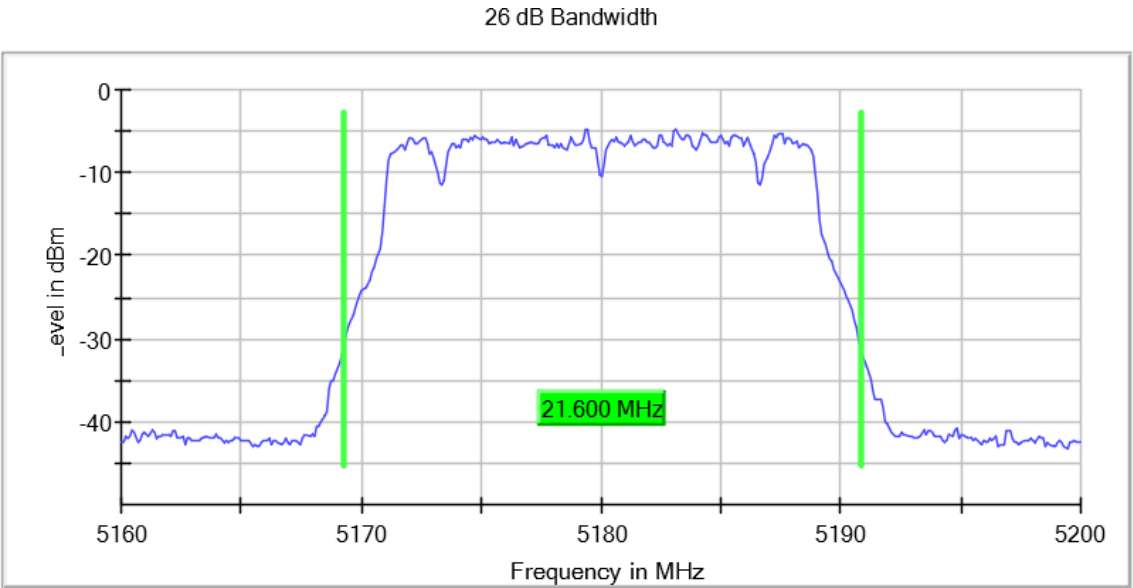
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5240.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

Images:



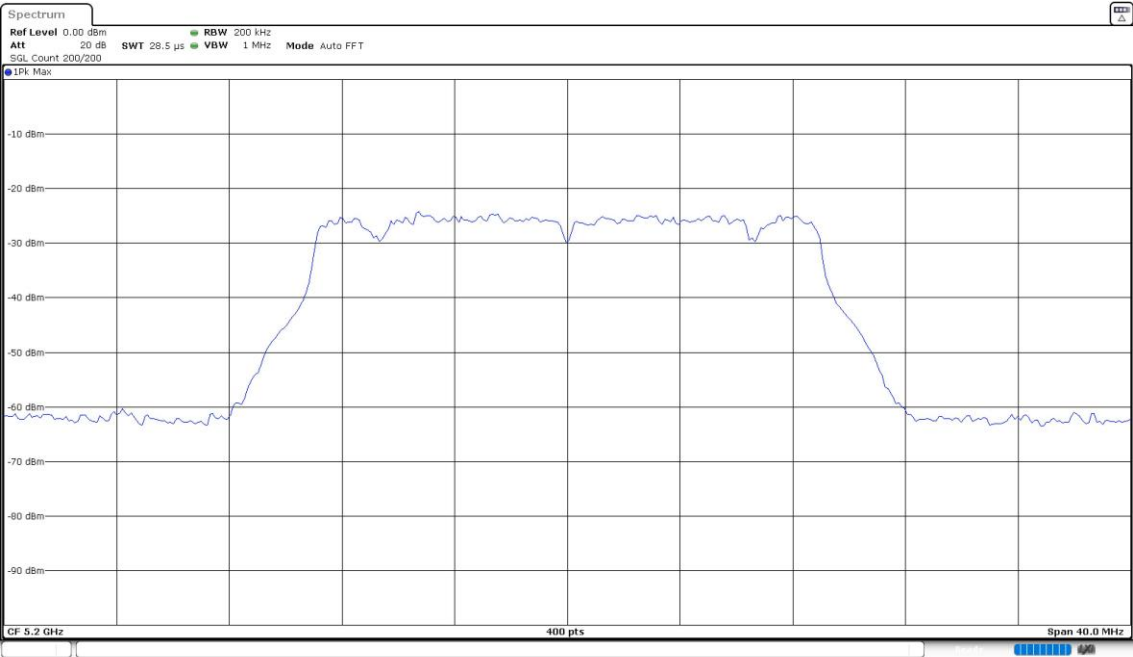
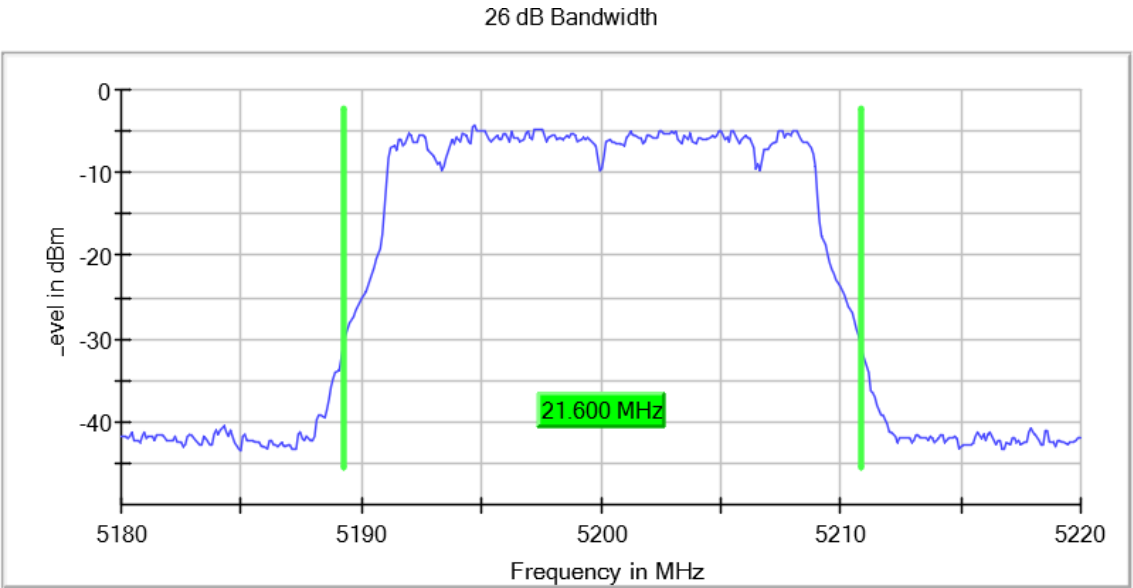
Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5180.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5200.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

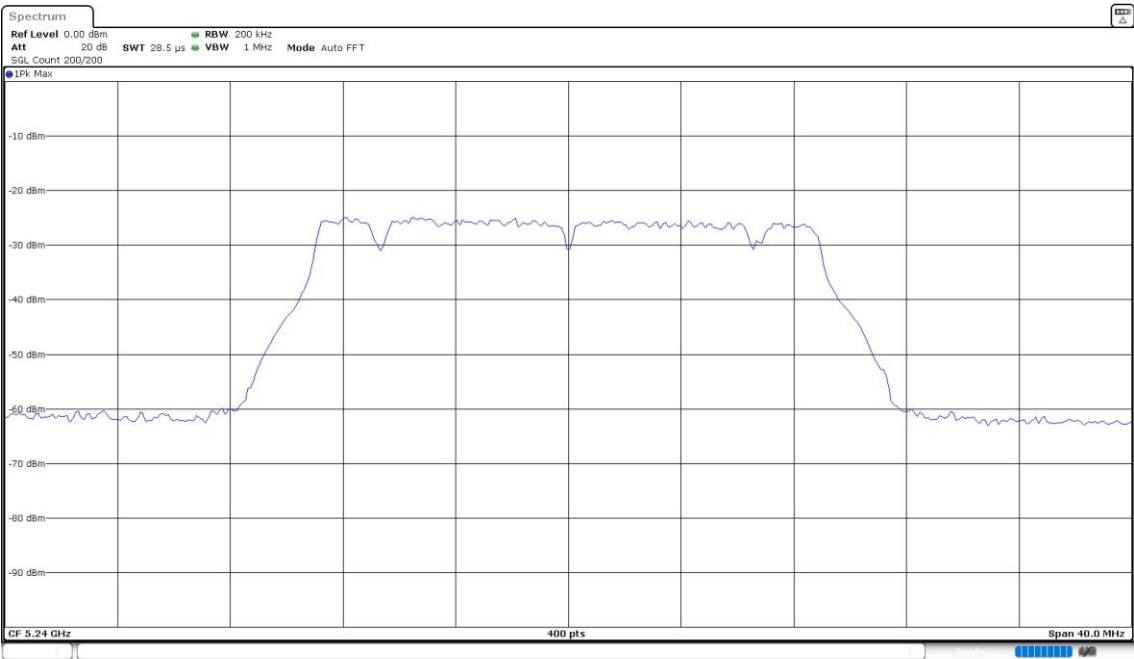
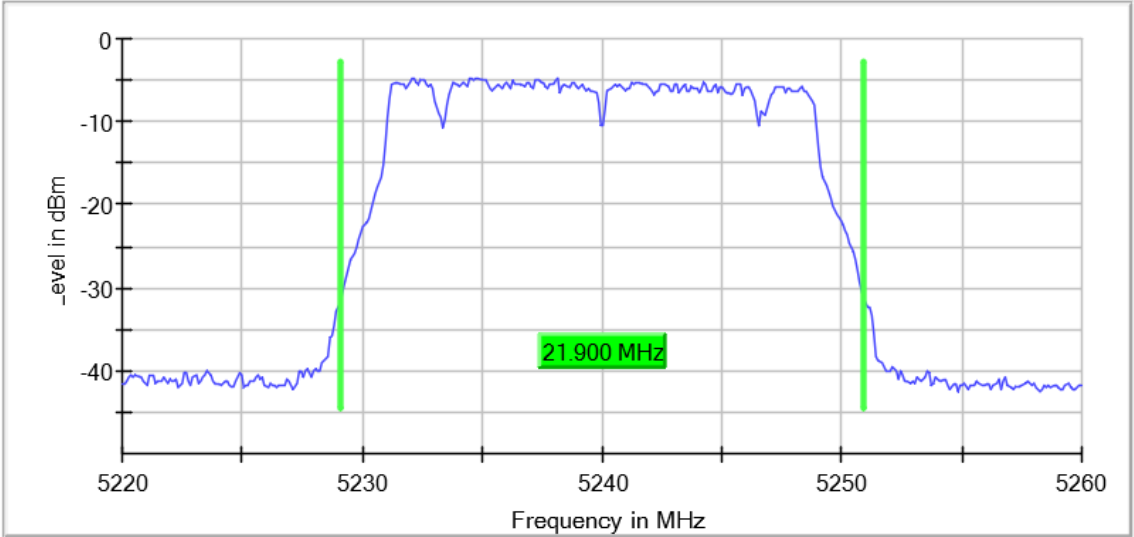
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5240.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

Images:

26 dB Bandwidth



Modulation: 802.11ac VHT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	2	5190.00000	39.775
		5230.00000	39.325
	2+3	5190.00000	39.625
		5230.00000	39.625

Verdict

Pass

Attachments

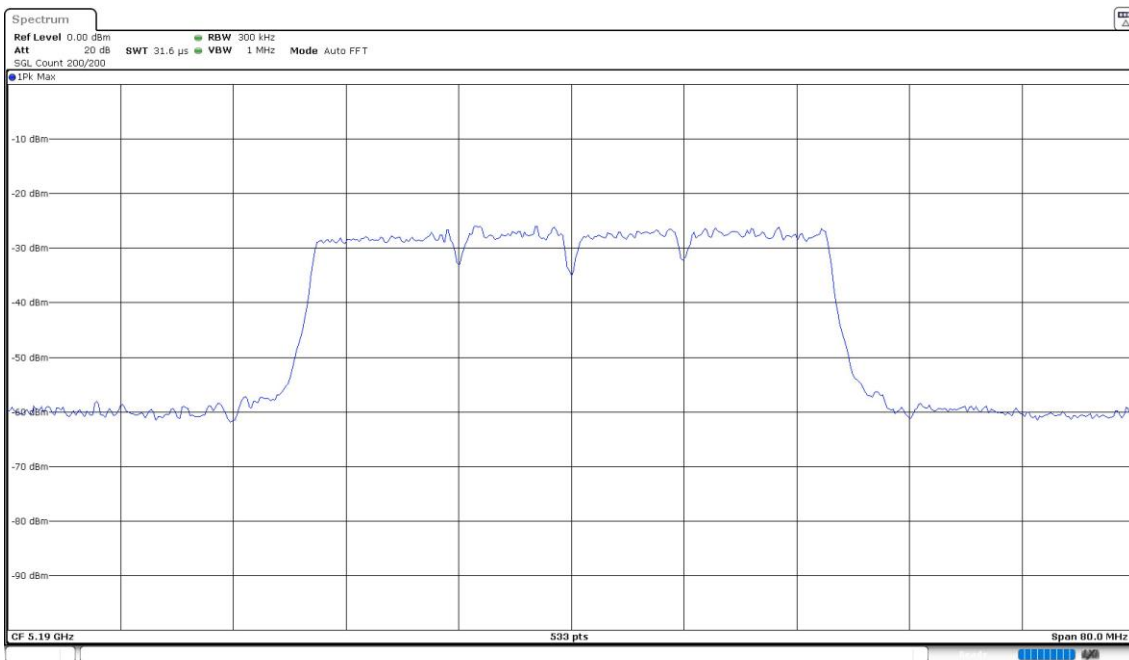
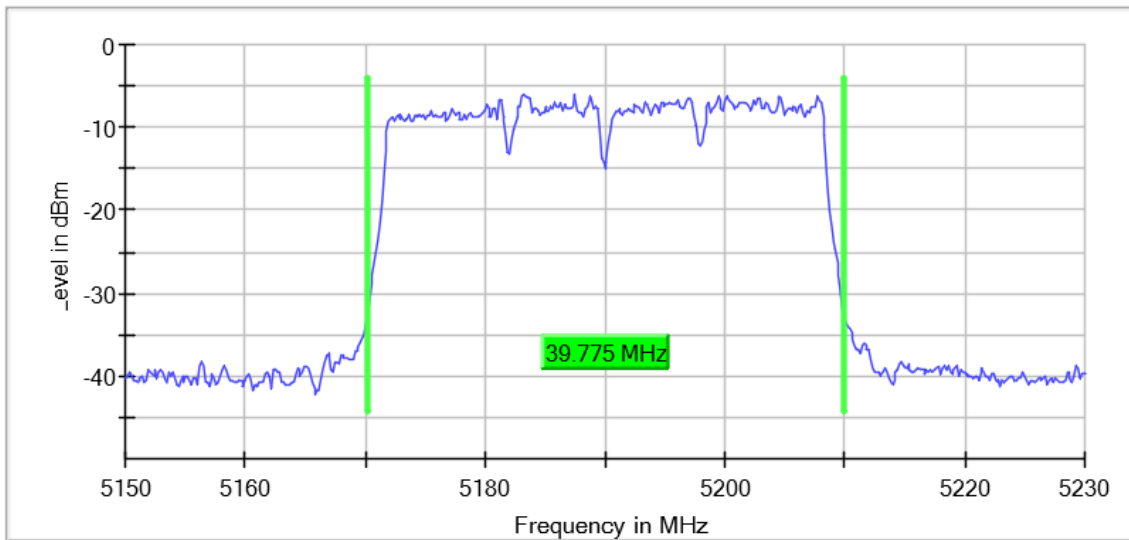
Operation Band MHz = [5150, 5250] Active Port = 2

Frequency MHz = 5190.00000

Modulation = 802.11ac VHT40 (OFDM MCS0)

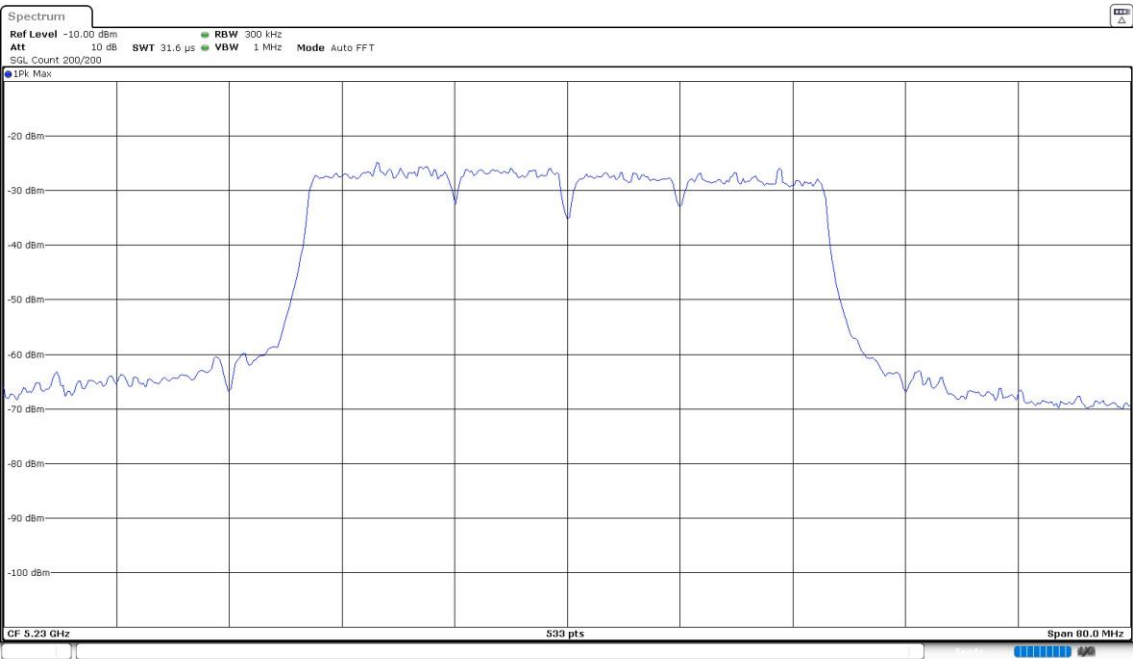
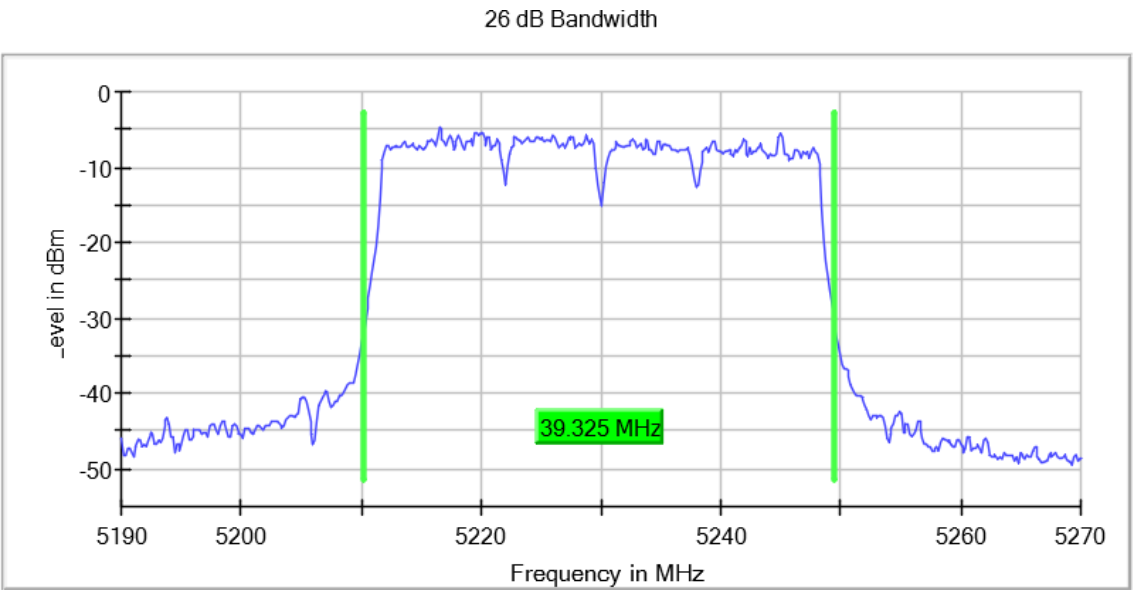
Images:

26 dB Bandwidth



Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5230.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

Images:



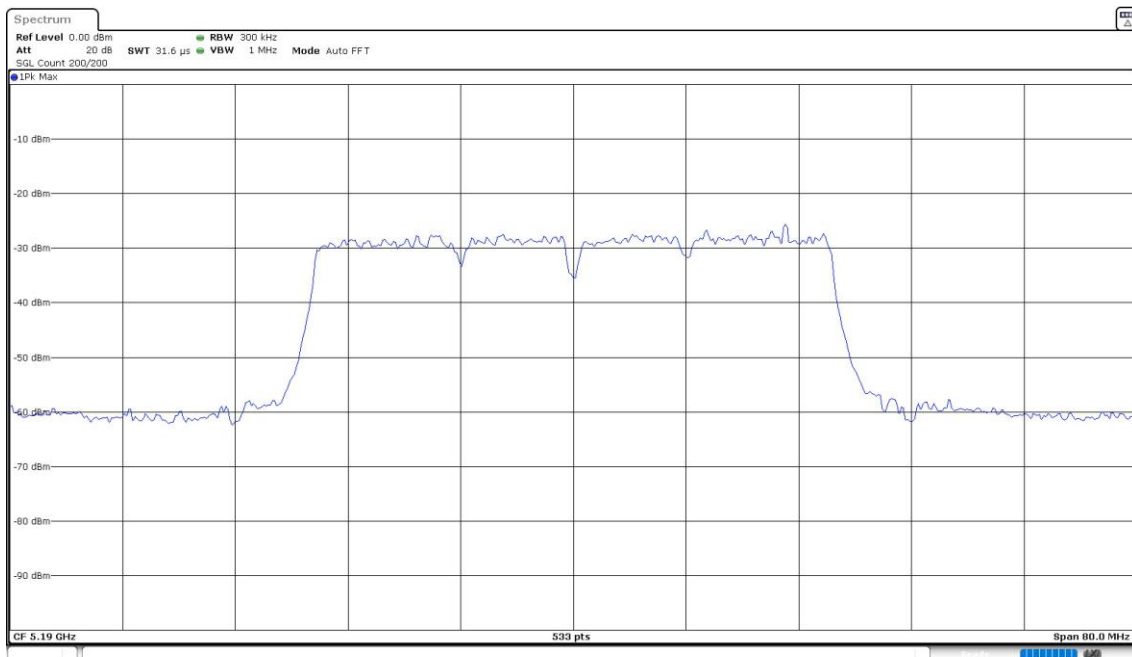
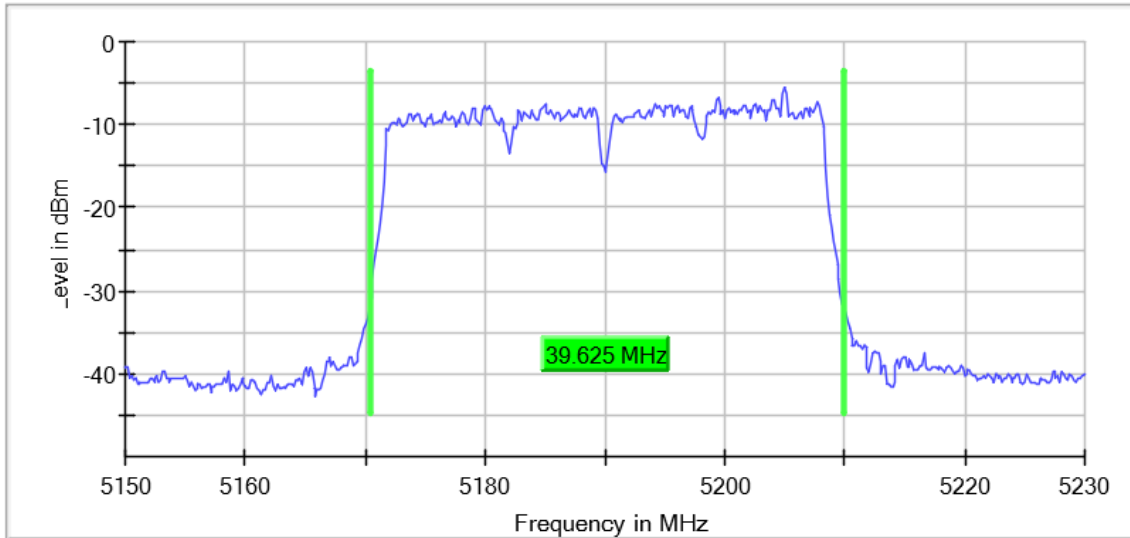
Operation Band MHz = [5150, 5250] Active Port = 2+3

Frequency MHz = 5190.00000

Modulation = 802.11ac VHT40 (OFDM MCS0)

Images:

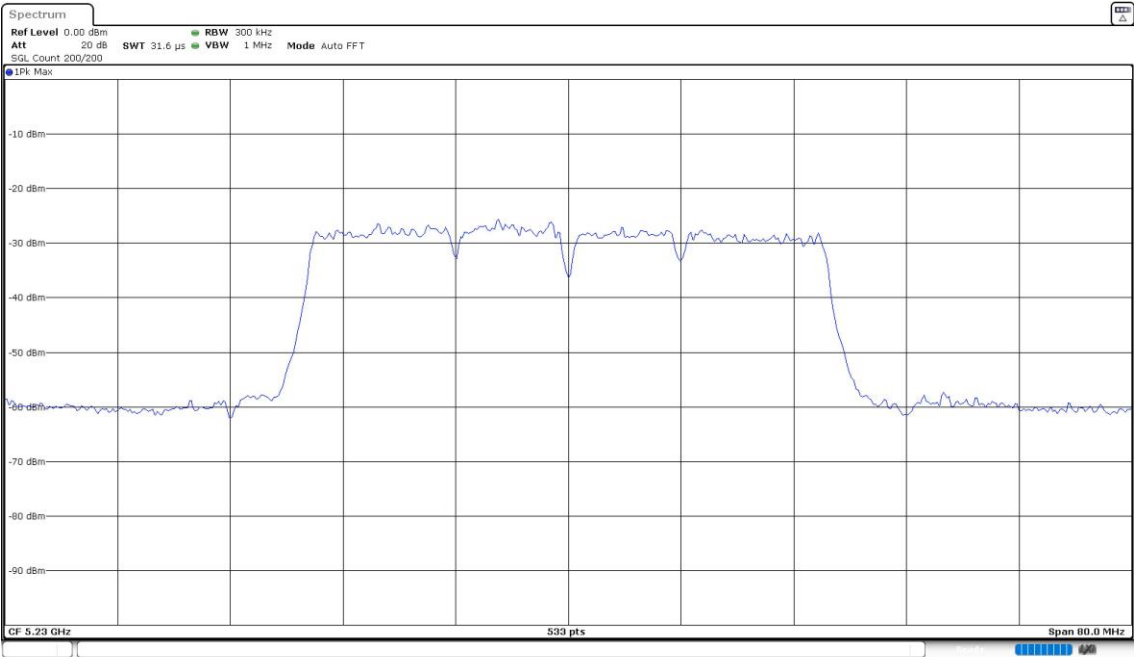
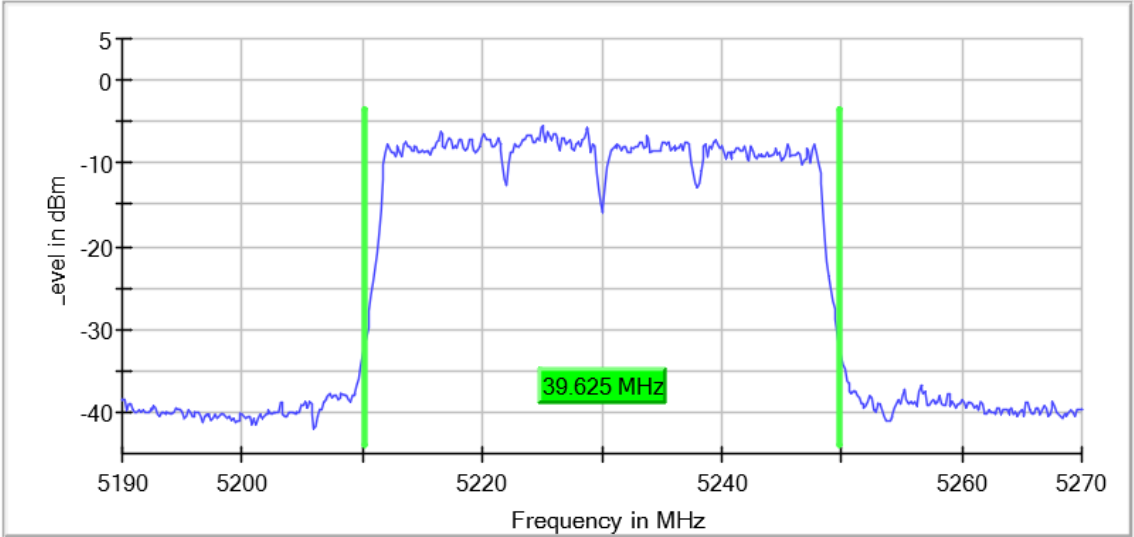
26 dB Bandwidth



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5230.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

Images:

26 dB Bandwidth



Modulation: 802.11ac VHT80 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	2	5210.00000	81.500
	2+3		82.000

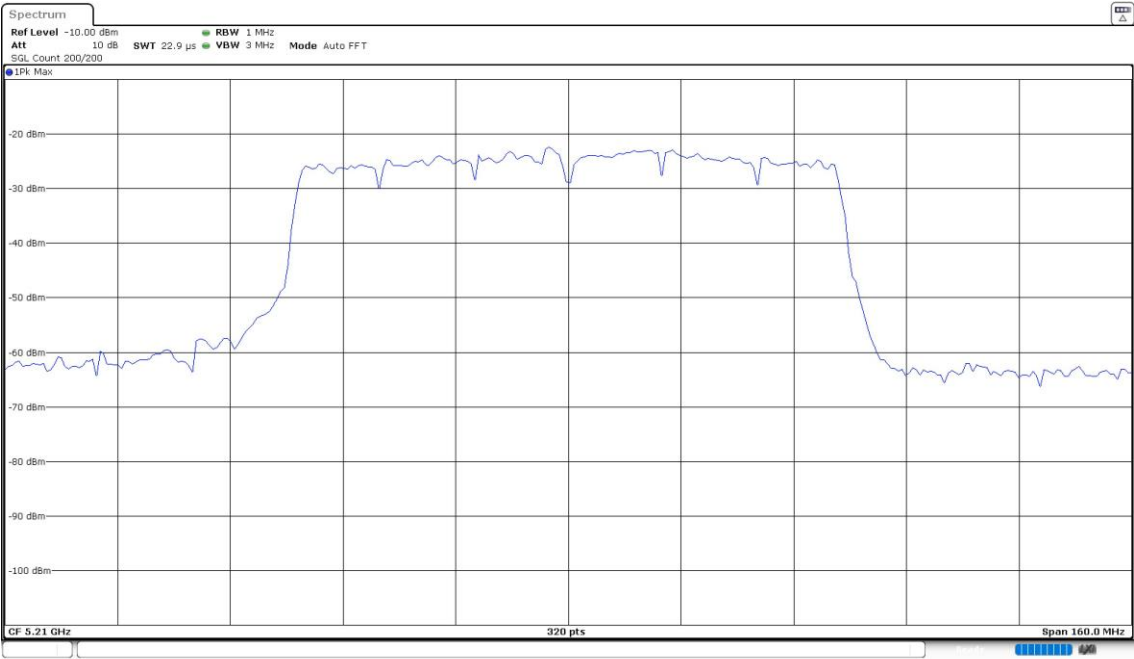
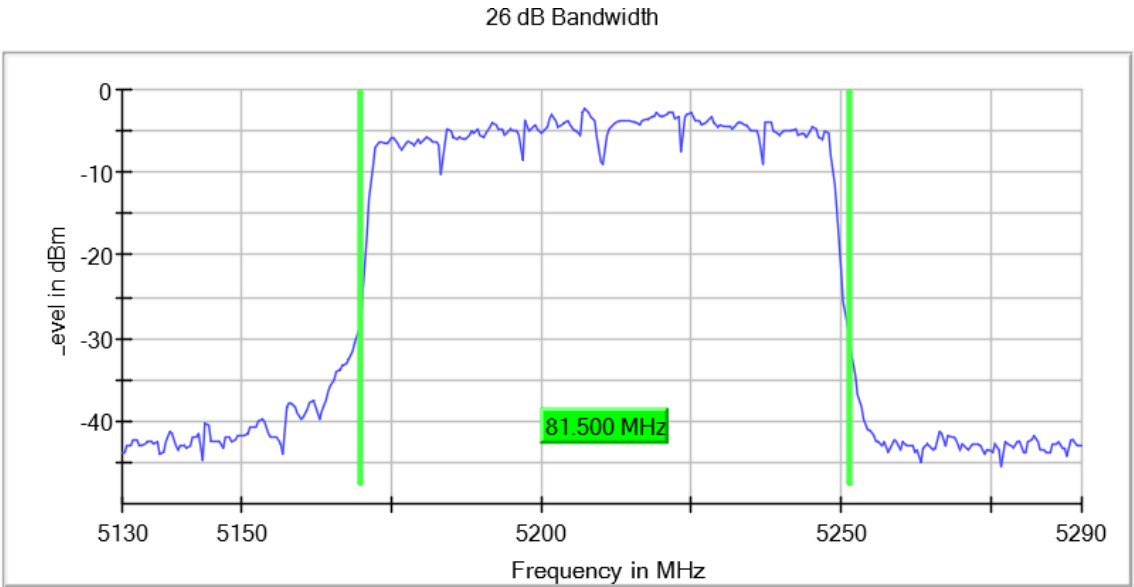
Verdict

Pass

Attachments

Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5210.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)

Images:



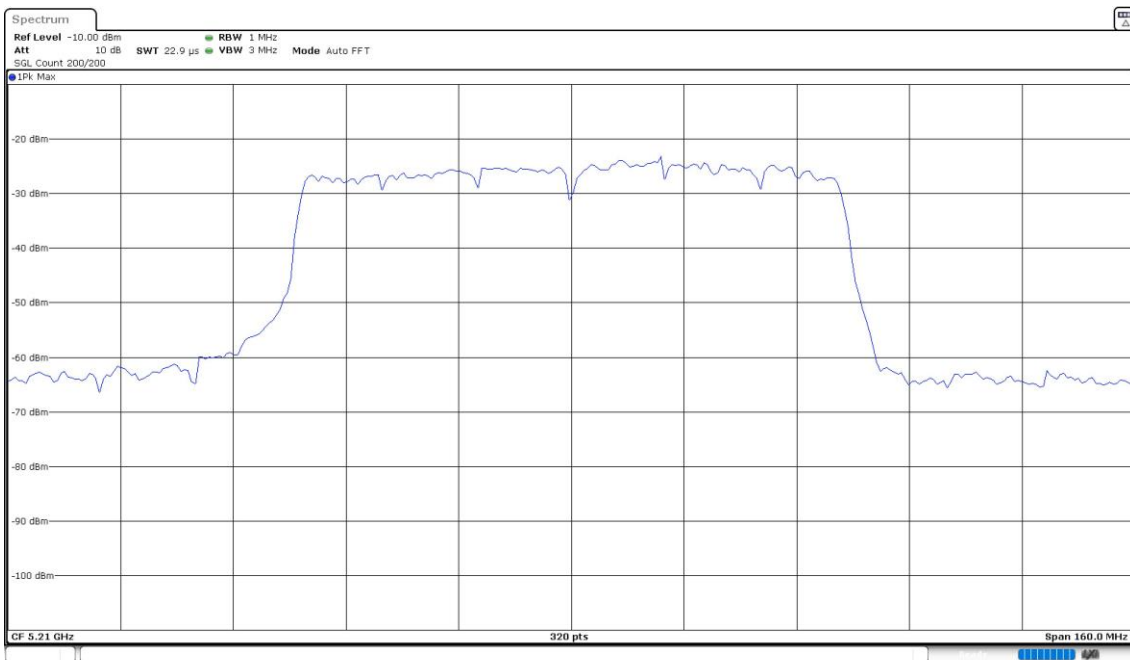
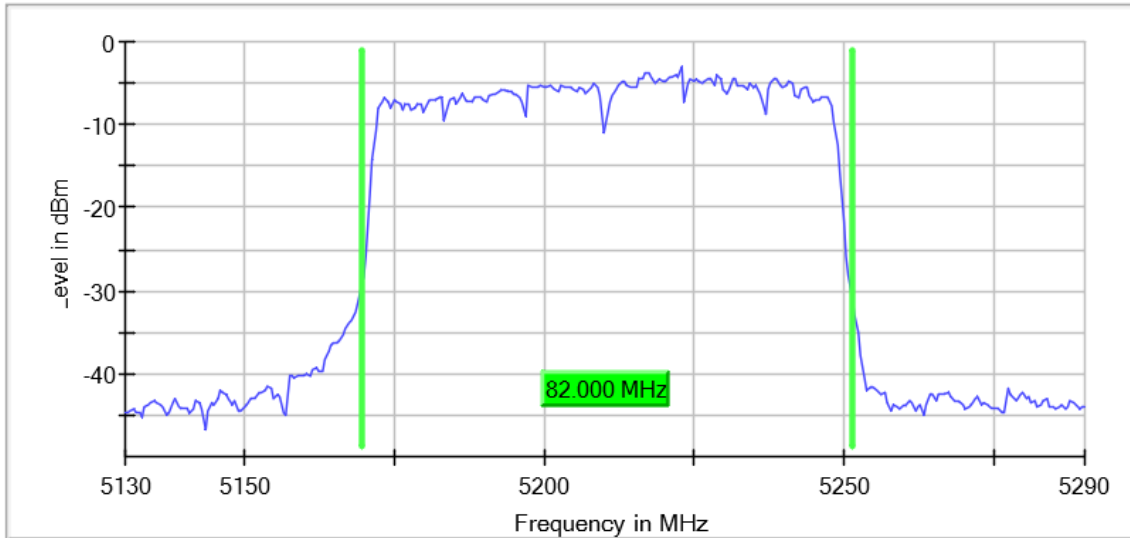
Operation Band MHz = [5150, 5250] Active Port = 2+3

Frequency MHz = 5210.00000

Modulation = 802.11ac VHT80 (OFDM MCS0)

Images:

26 dB Bandwidth



Appendix B: Tests results for the U-NII-1 Band 5.15–5.25 GHz

INDEX

FCC 47 CFR PART 15.40790

FCC 15.407 (a) (1) [Avcp] Maximum Conducted output power UNII-190

FCC 15.407 (a) (1) [Psd] Transmitter Maximum Power Spectral Density UNII-192

*FCC 15.407 (b) (1) (6) [Rse] + [Bndedge] Transmitter Out of Band Radiated Emissions For transmitters
operating in the 5.15–5.25 GHz.....134*

FCC 47 CFR Part 15.407

FCC 15.407 (a) (1) [Avcp] Maximum Conducted output power UNII-1

Limits

* **FCC 15.407:** 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.

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5180.00000	No	12.59	9.39
		5200.00000		13.50	10.30
		5240.00000		13.07	9.87

Modulation: 802.11n HT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5180.00000	No	13.42	10.22
		5200.00000		14.07	10.87
		5240.00000		13.79	10.59
	2+3	5180.00000		16.39	10.18
		5200.00000		16.89	10.68
		5240.00000		16.71	10.50

Modulation: 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5190.00000	No	12.27	9.07
		5230.00000		12.58	9.38
	2+3	5190.00000		16.33	10.12
		5230.00000		16.52	10.31

Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5180.00000	No	11.95	8.75
		5200.00000		12.71	9.51
		5240.00000		12.36	9.16
	2+3	5180.00000		16.45	10.24
		5200.00000		16.66	10.45
		5240.00000		16.68	10.47

Modulation: 802.11ac VHT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5190.00000	No	10.37	7.17
		5230.00000		10.80	7.60
	2+3	5190.00000		16.32	10.11
		5230.00000		16.52	10.31

Modulation: 802.11ac VHT80 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5150, 5250]	2	5210.00000	No	11.18	7.98
	2+3			16.67	10.46

Tables:
Spectrum Analyzer Parameters

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 µs	1.000 µs

FCC 15.407 (a) (1) [Psd] Transmitter Maximum Power Spectral Density UNII-1

Limits

FCC 15.407 (a)(2): For the 5.15-5.25 GHz band, 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.

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5180.00000	No	5181.980198	-9.52
		5200.00000		5205.742574	-8.40
		5240.00000		5233.069307	-8.54

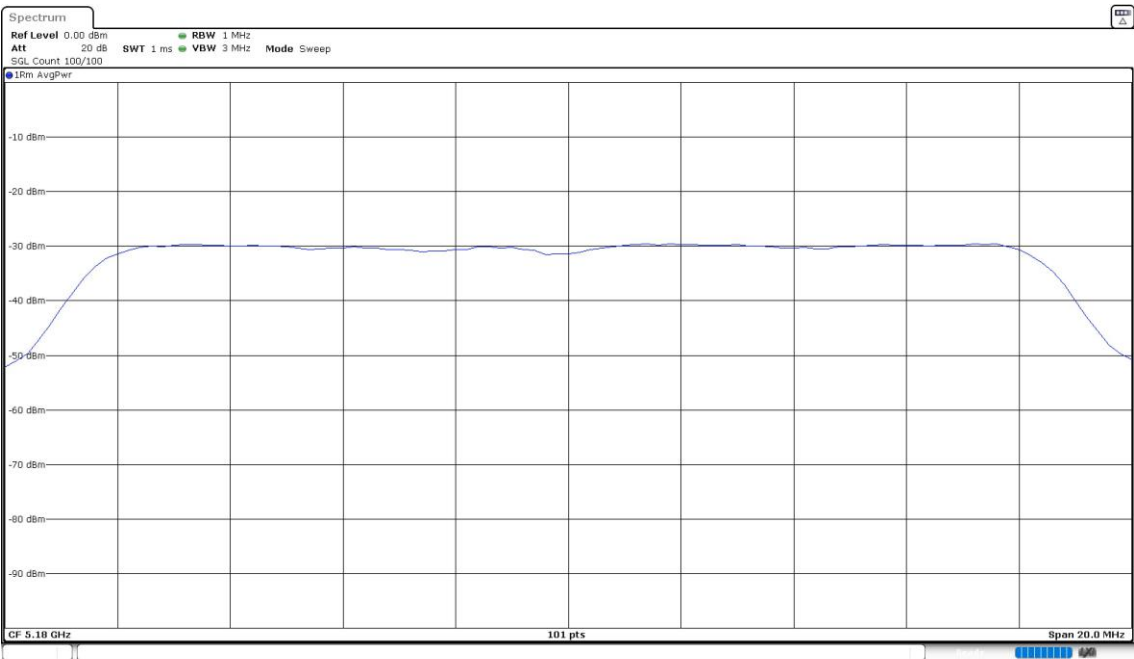
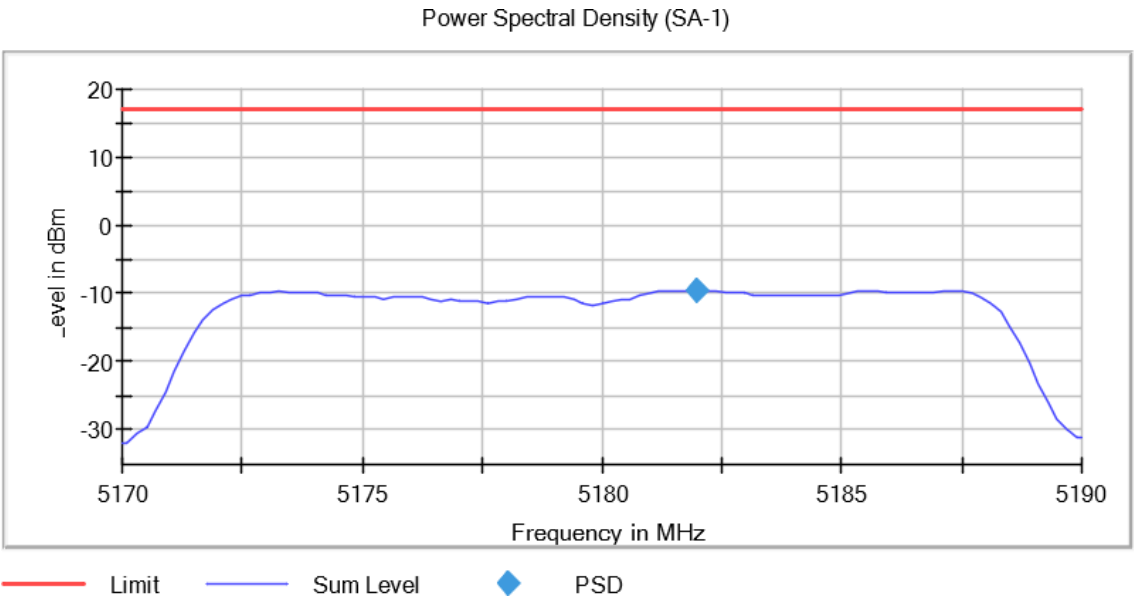
Verdict

Pass

Attachments

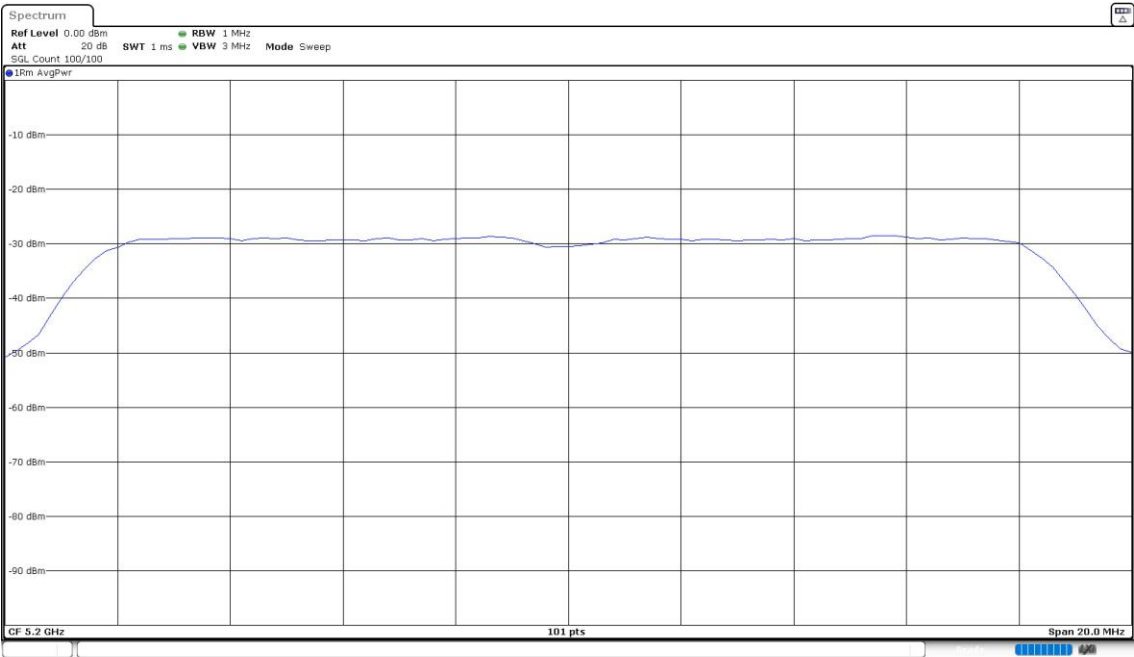
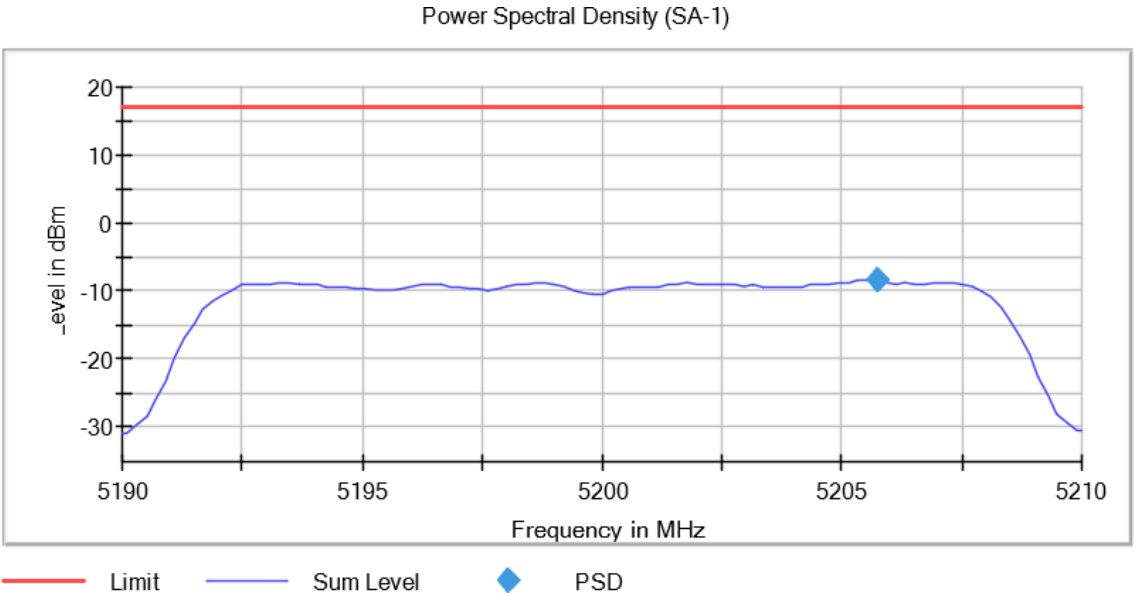
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5180.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No

Images:



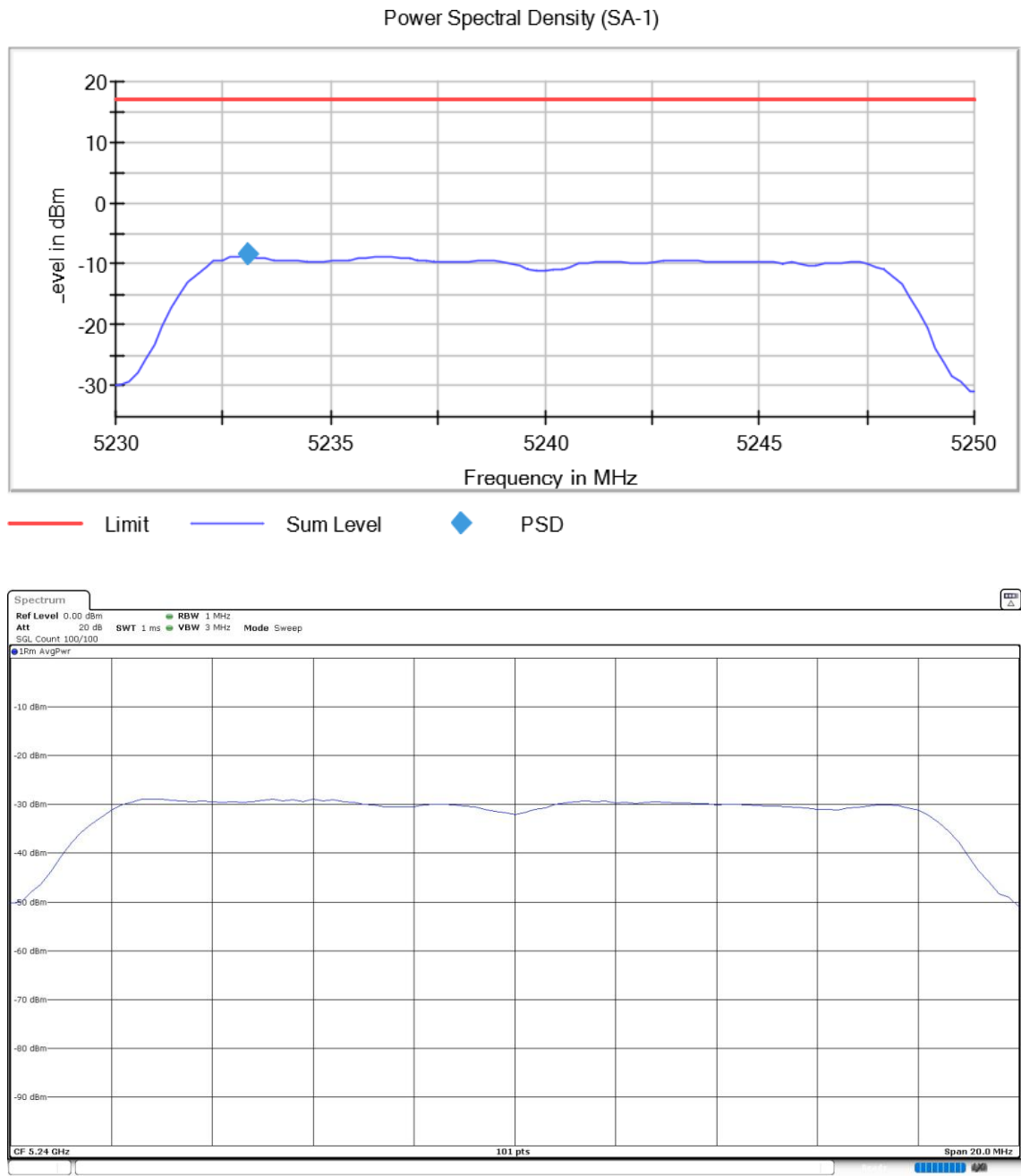
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5200.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No

Images:



Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5240.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No

Images:



Modulation: 802.11n HT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5180.00000	No	5182.970297	-9.09
		5200.00000		5204.752475	-7.99
		5240.00000		5233.663366	-8.21
	2+3	5180.00000		5178.217822	-10.90
		5200.00000		5197.425743	-9.77
		5240.00000		5236.237624	-9.79

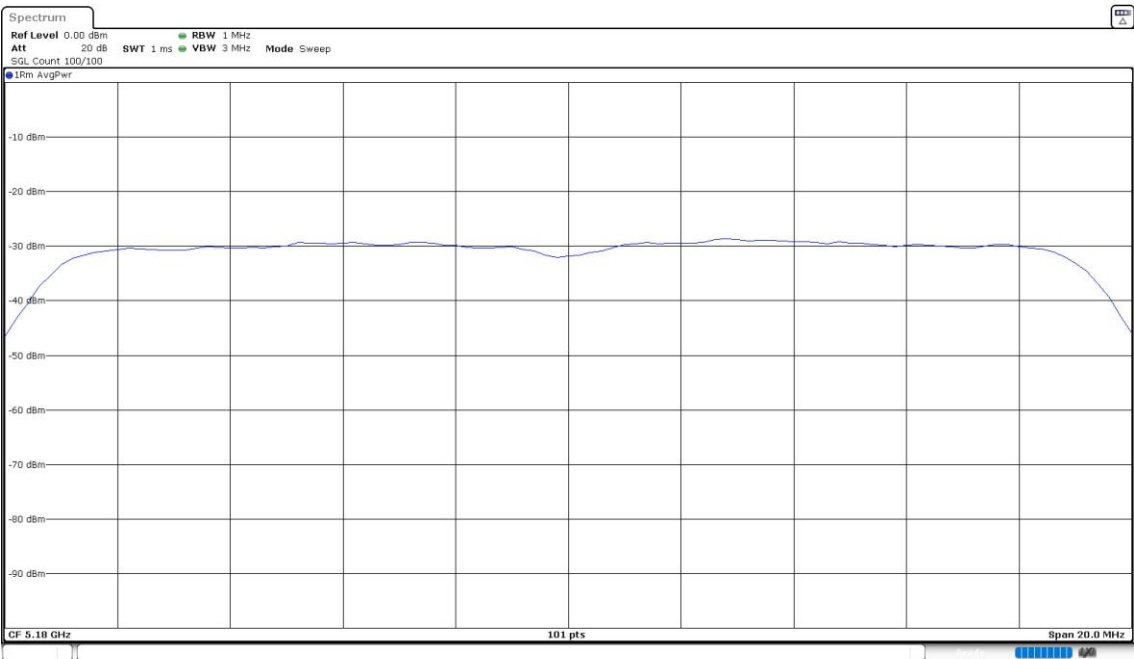
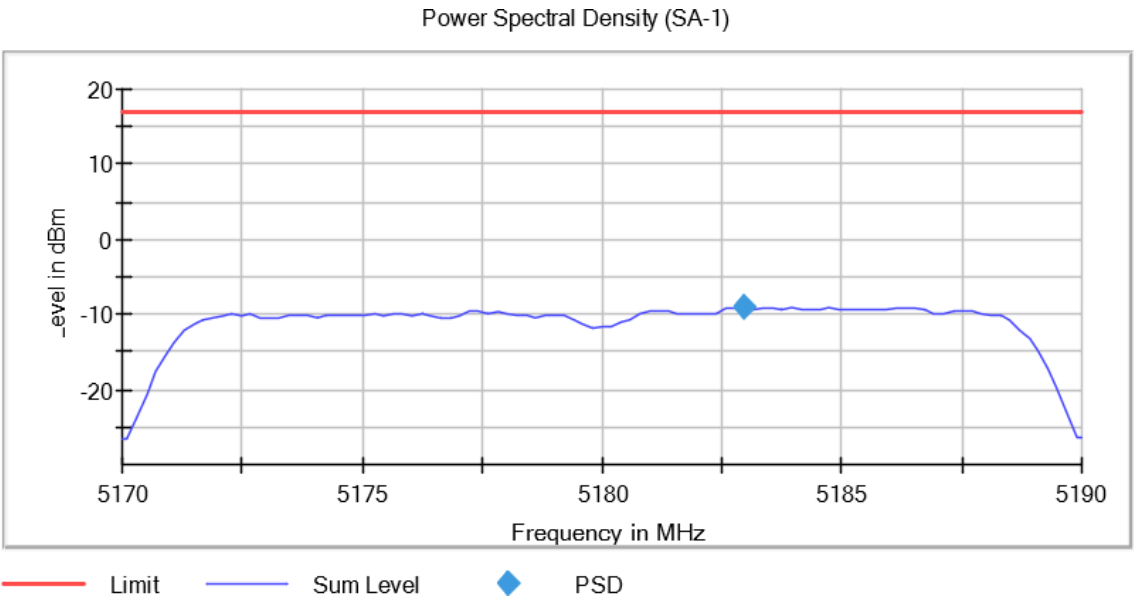
Verdict

Pass

Attachments

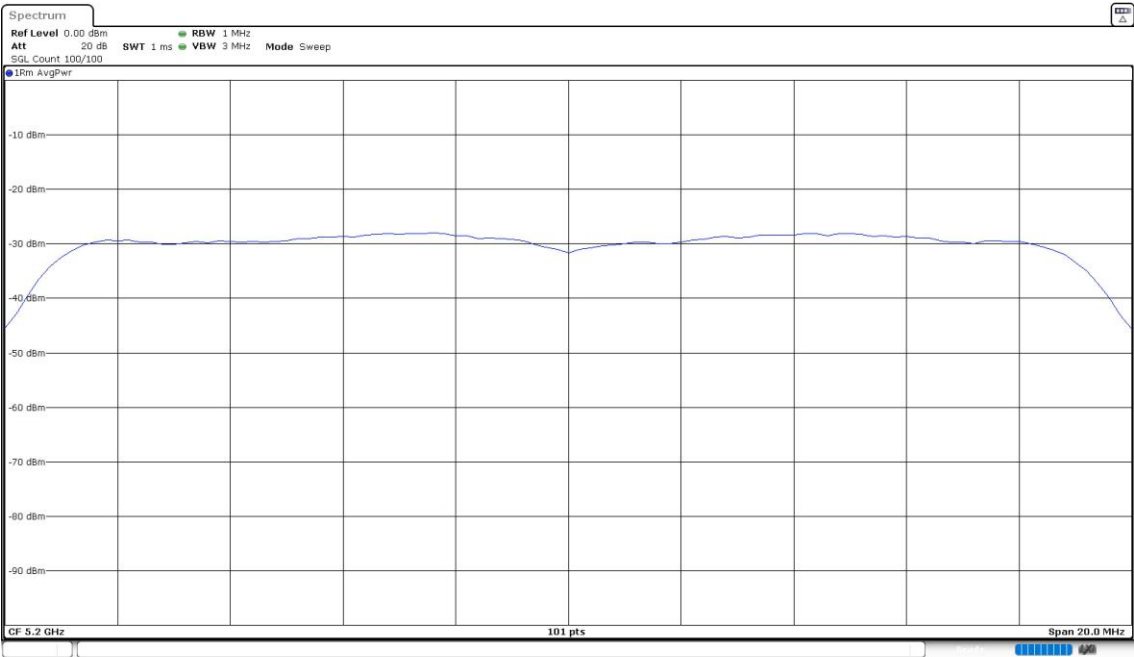
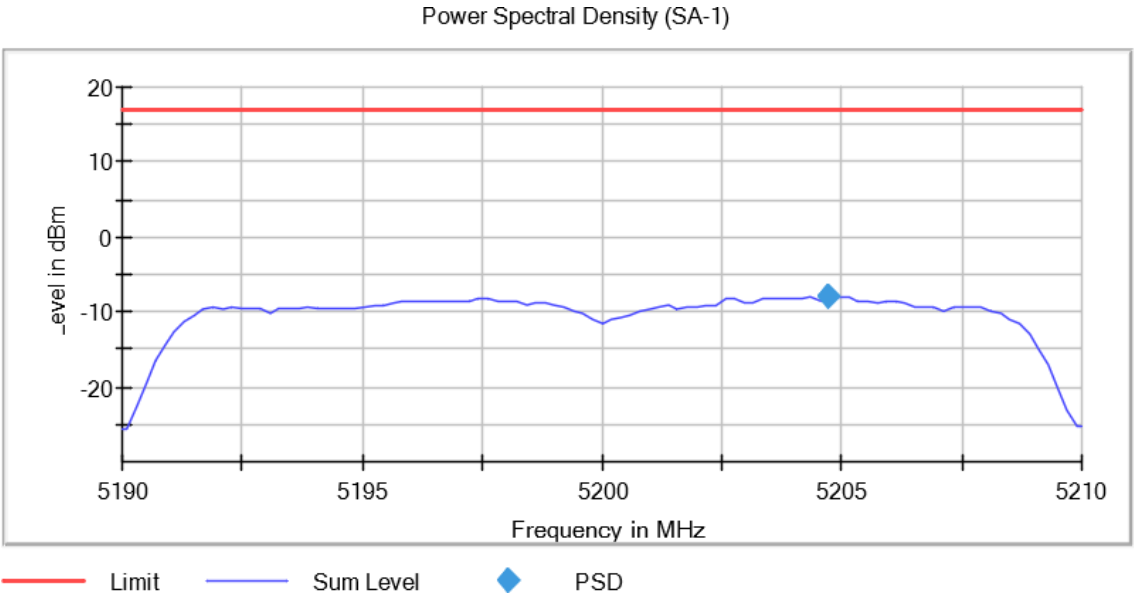
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5180.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

Images:



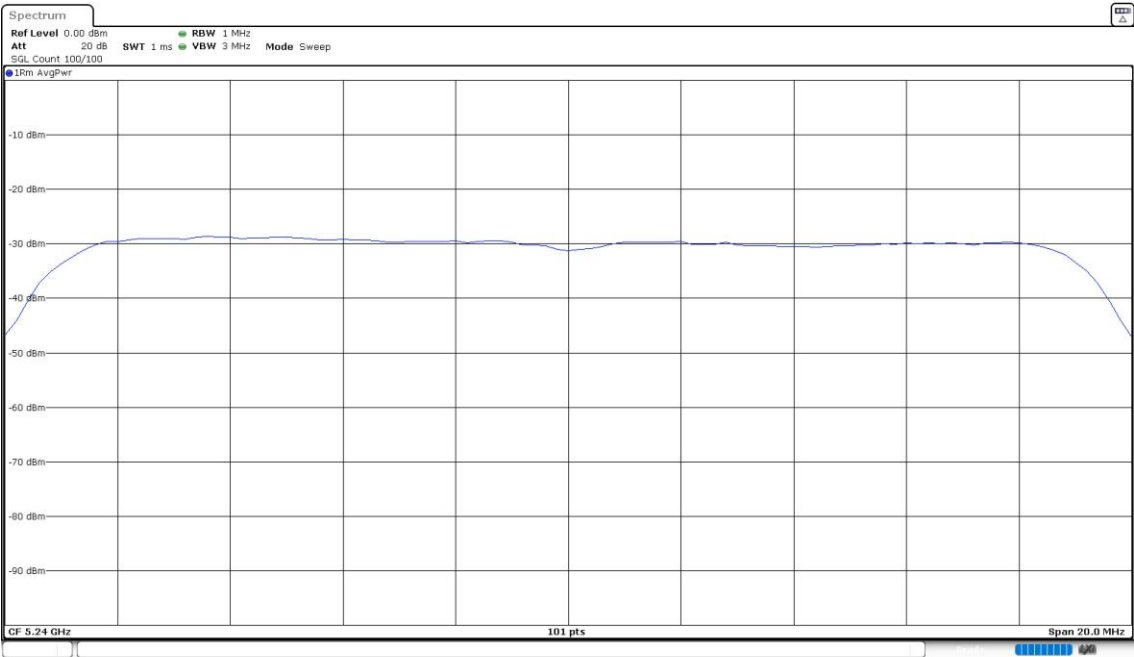
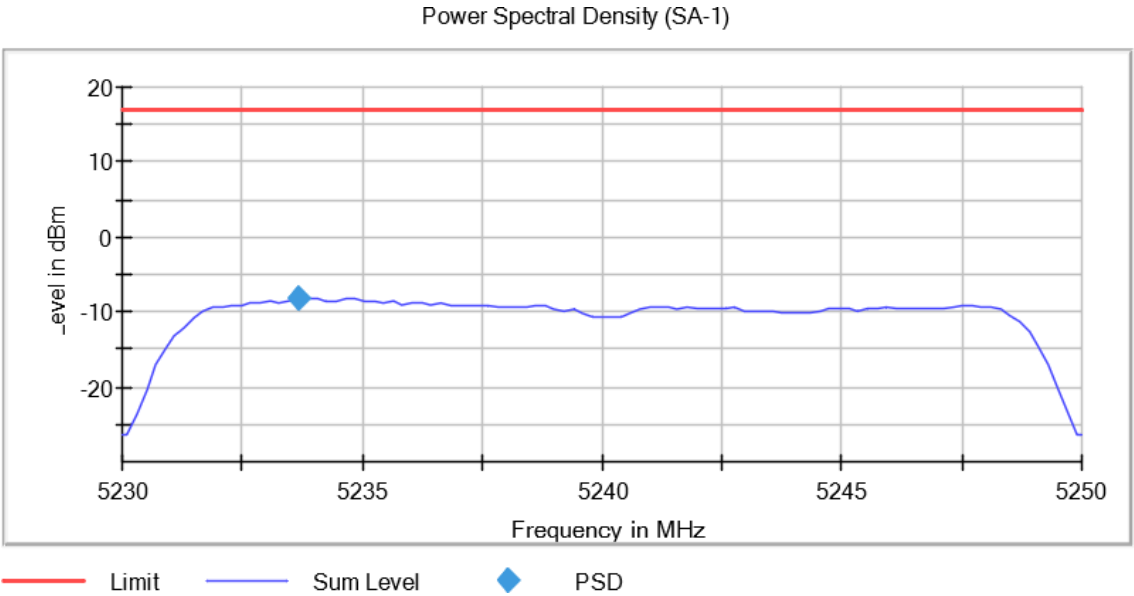
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5200.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

Images:



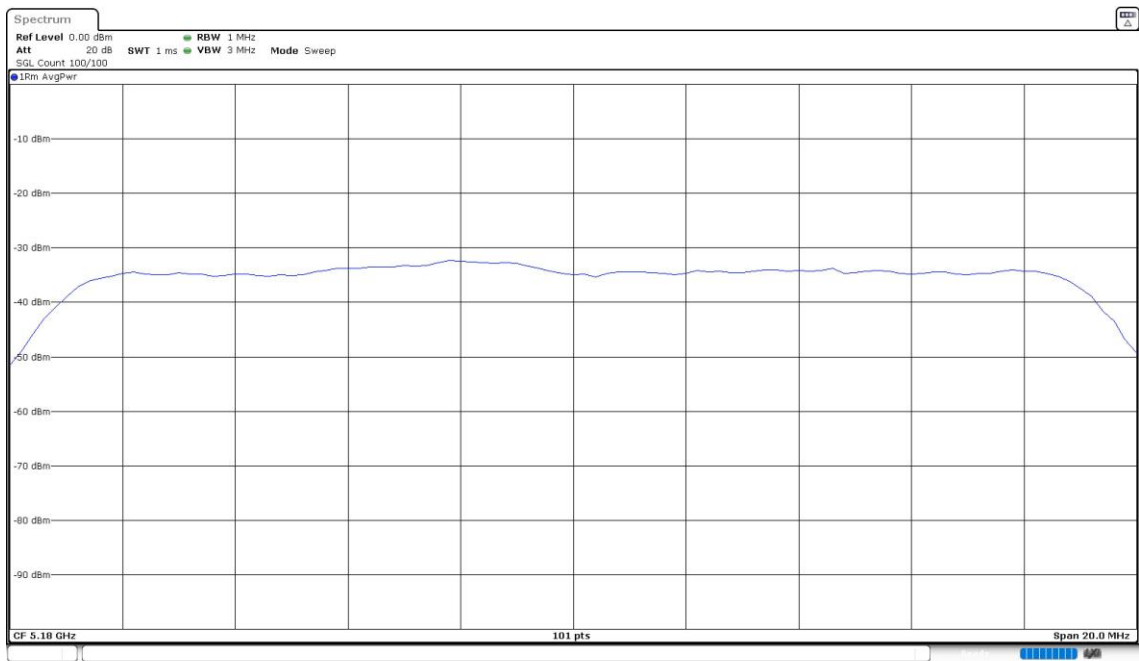
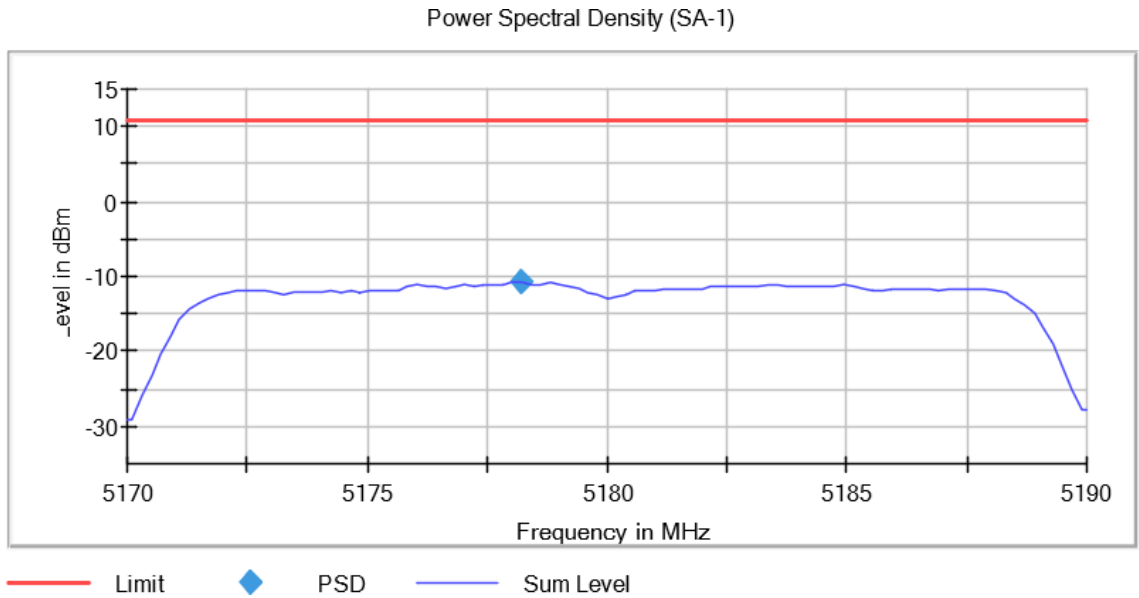
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5240.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

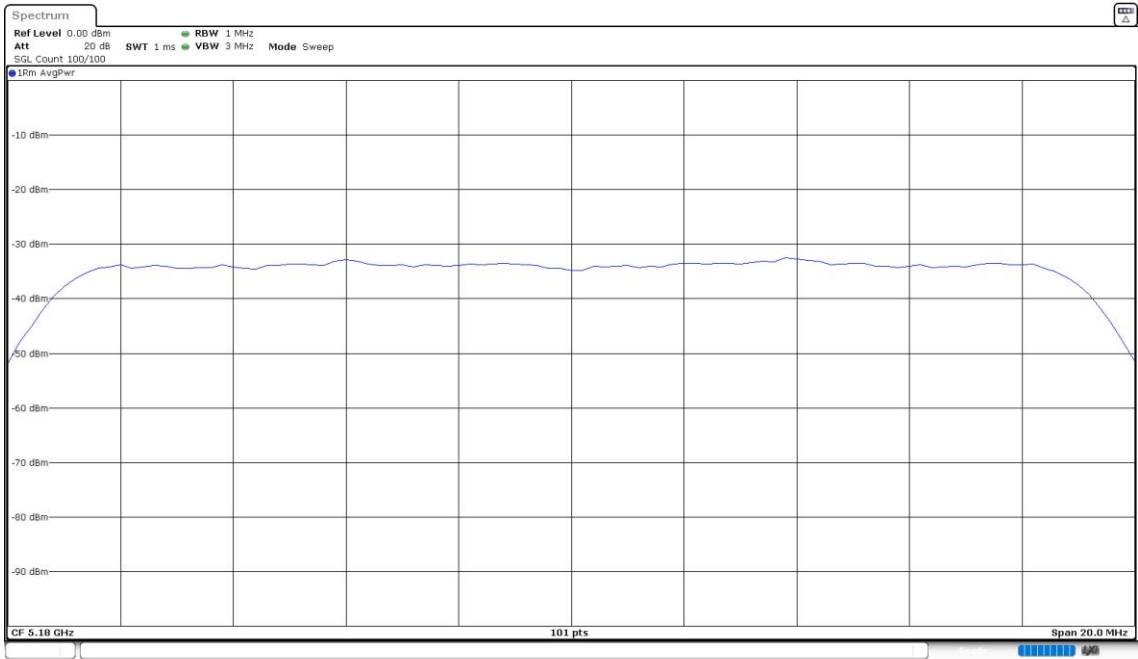
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5180.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

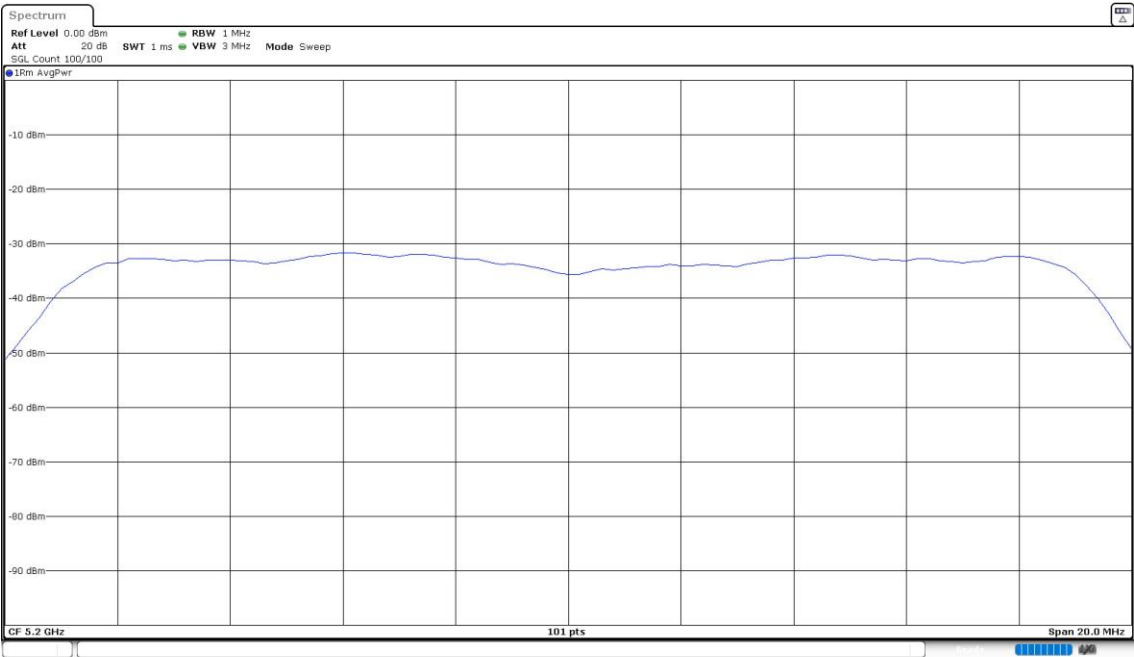
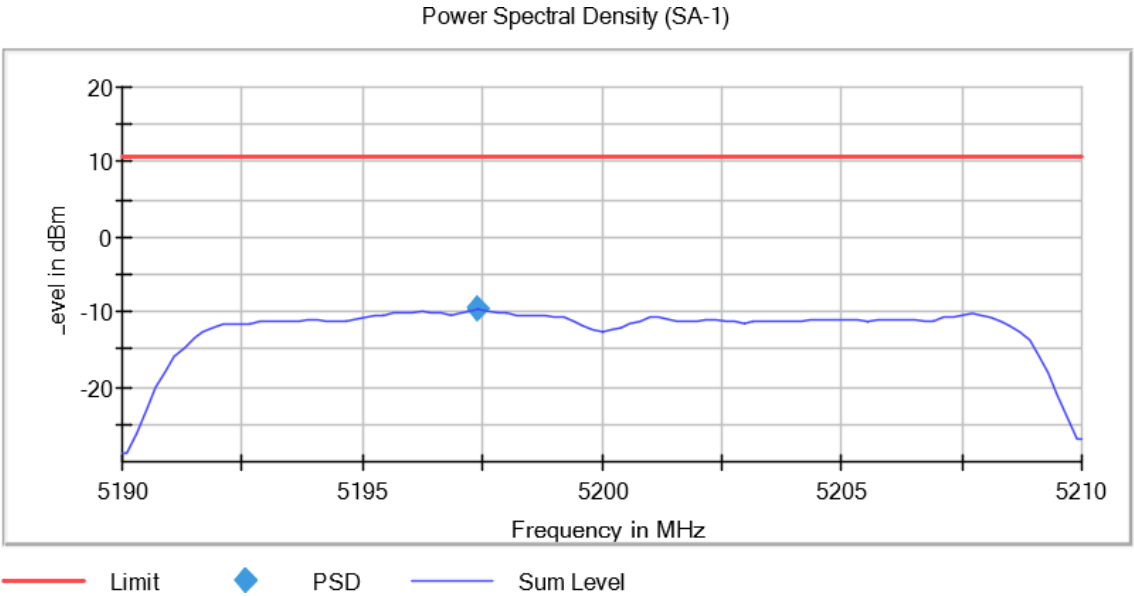
Images:

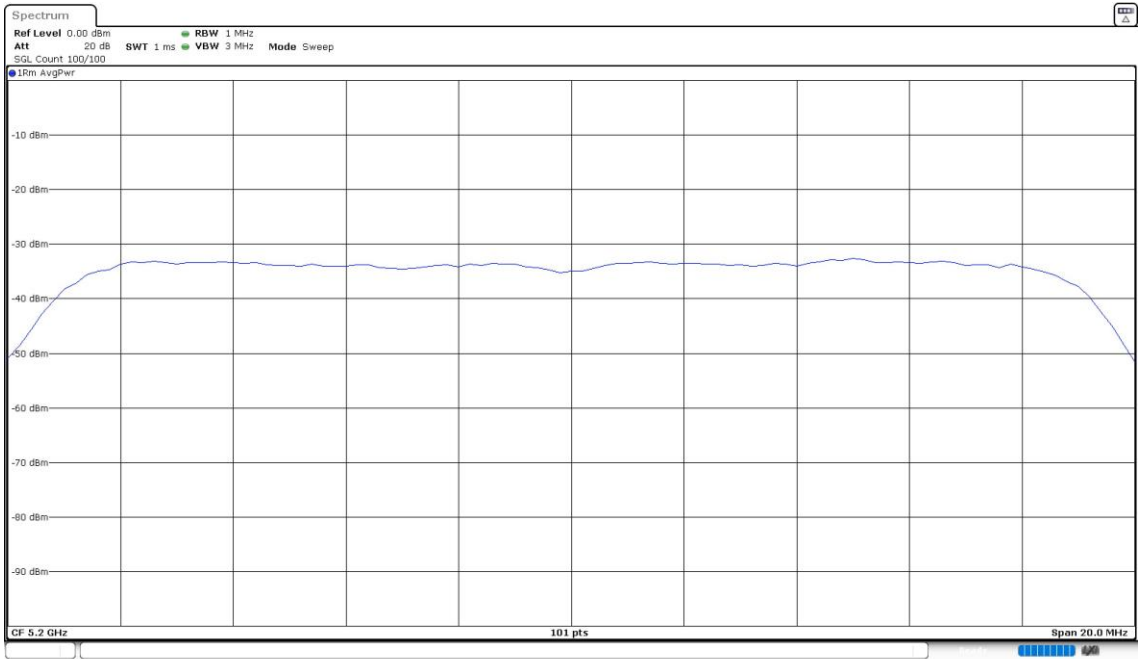




Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5200.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

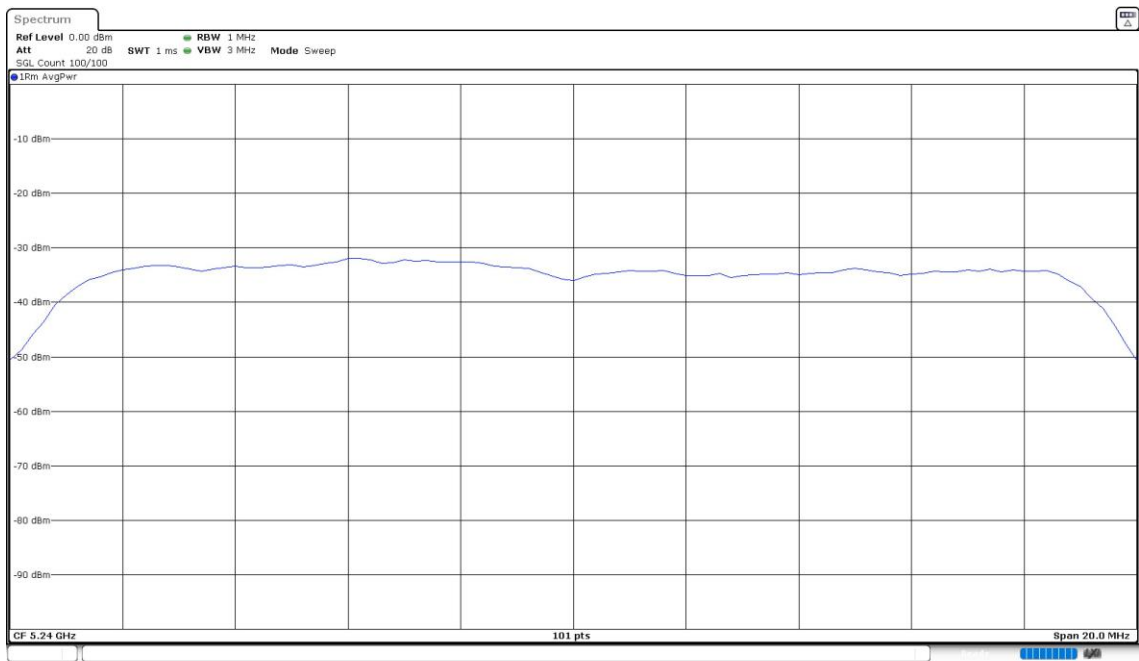
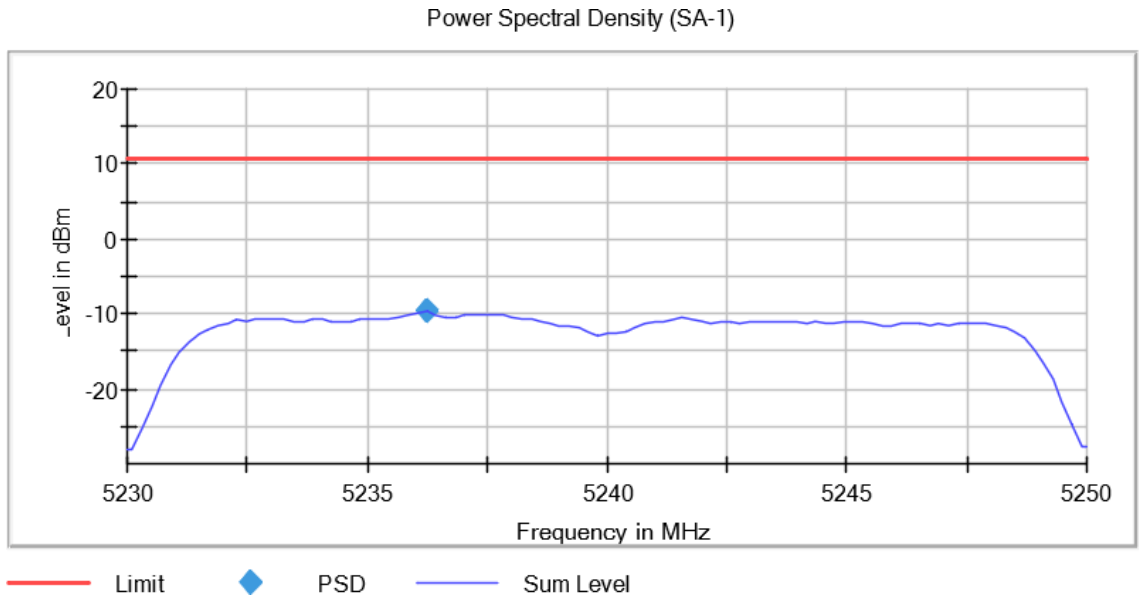
Images:

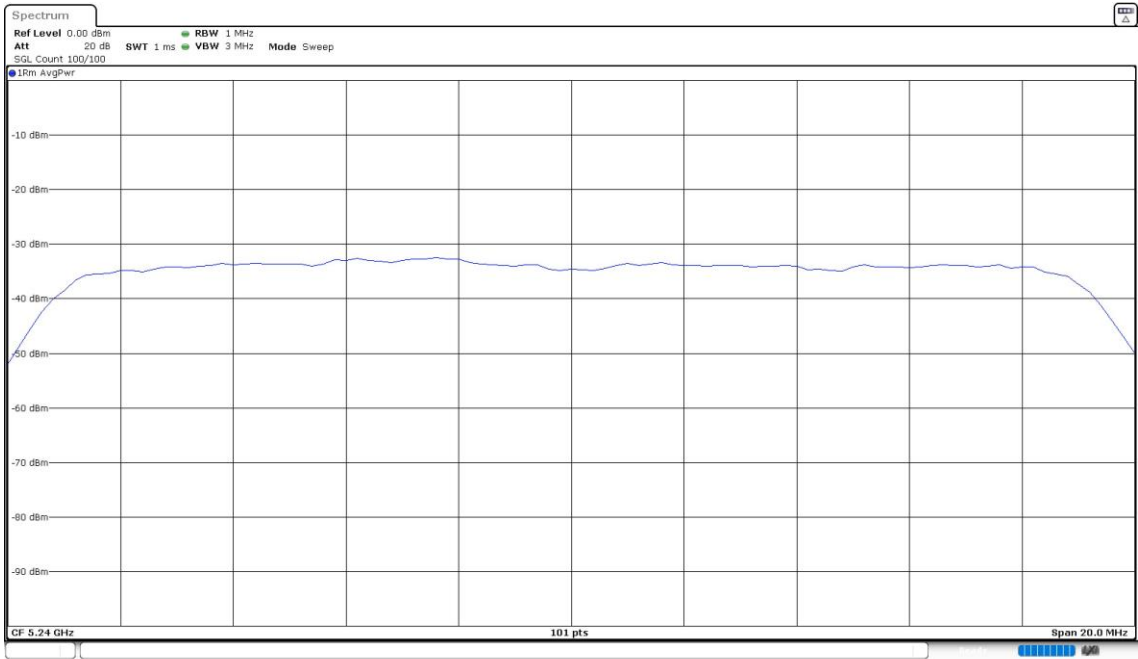




Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5240.00000 Modulation = 802.11n HT20 (OFDM MCS0)
TPC = No

Images:





Modulation: 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5190.00000	No	5207.425743	-12.96
		5230.00000		5223.663366	-12.66
		5190.00000		5201.485149	-14.98
		5230.00000		5224.851485	-14.57

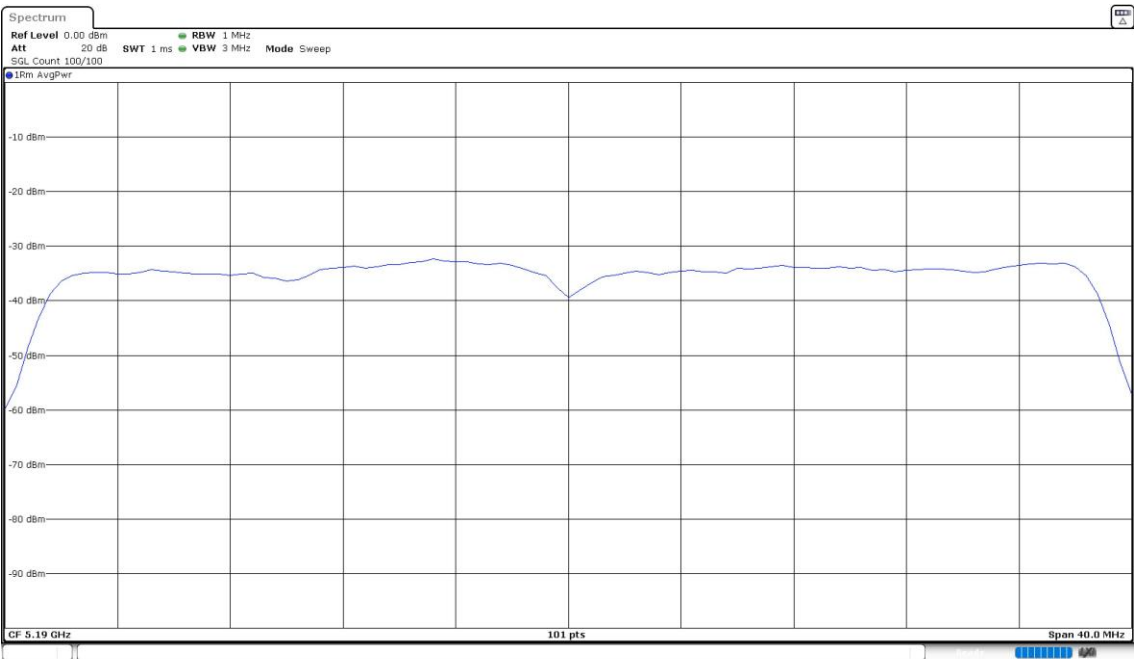
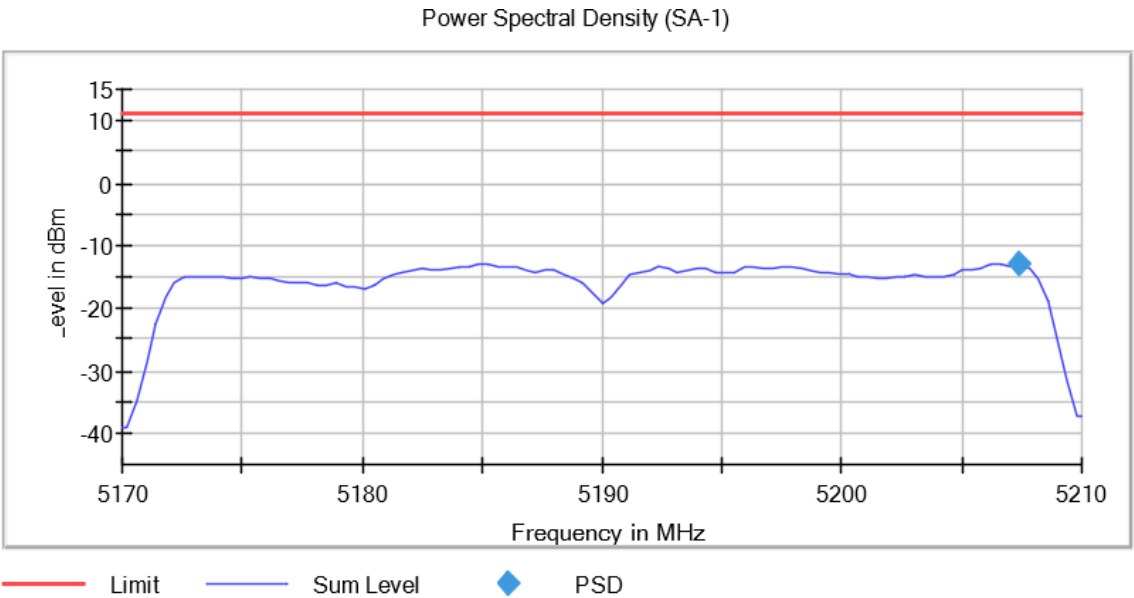
Verdict

Pass

Attachments

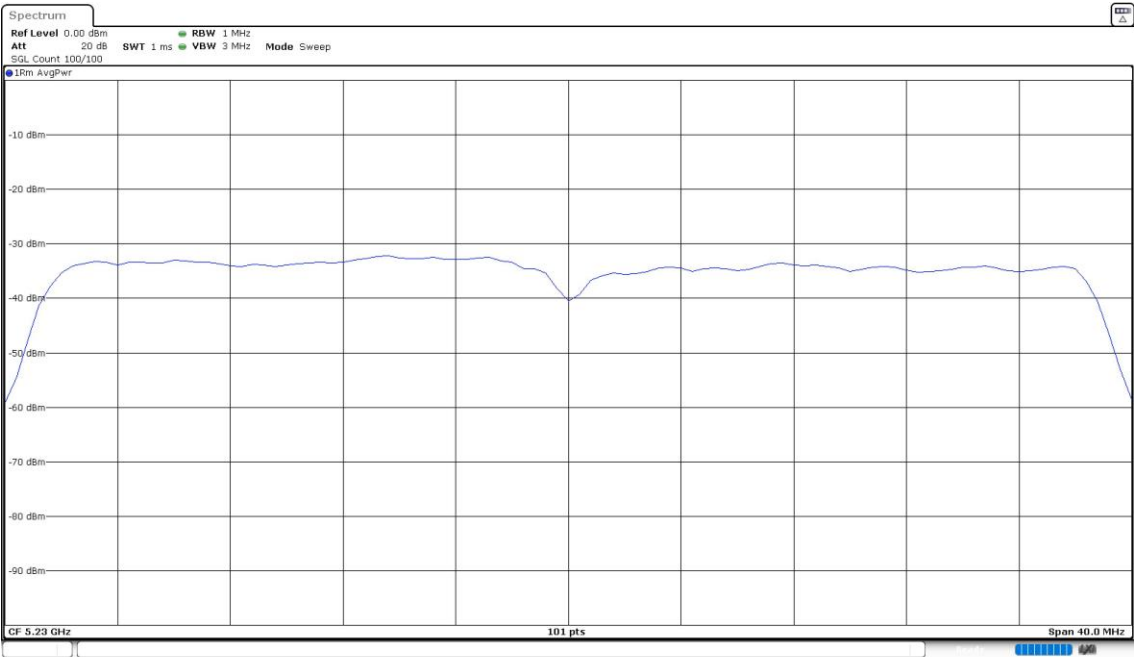
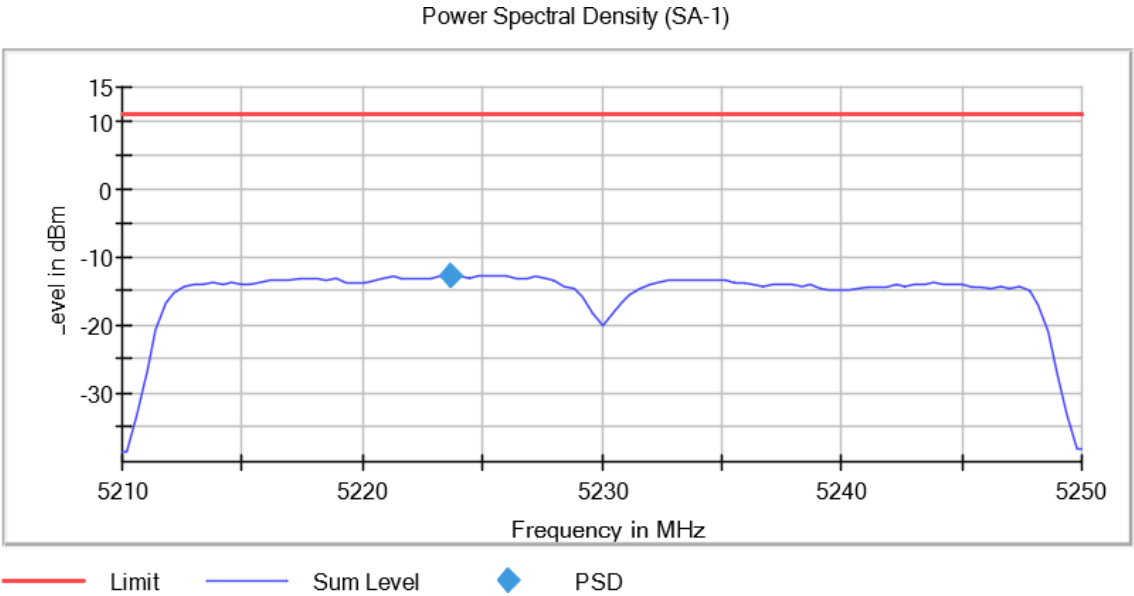
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Frequency MHz = 5190.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No

Images:



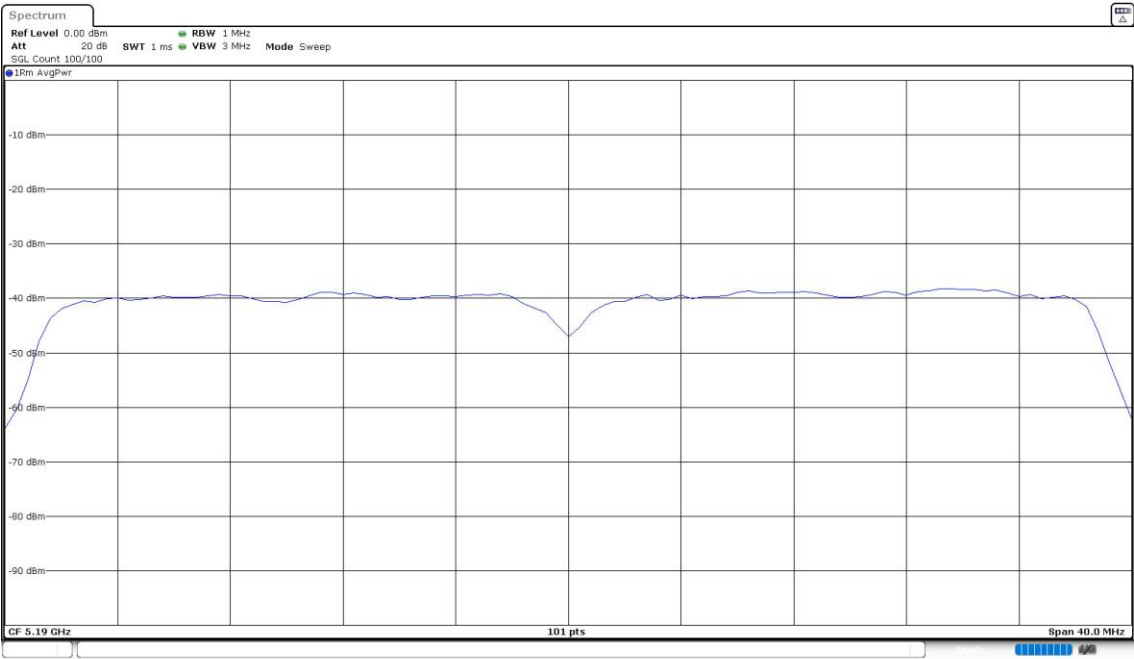
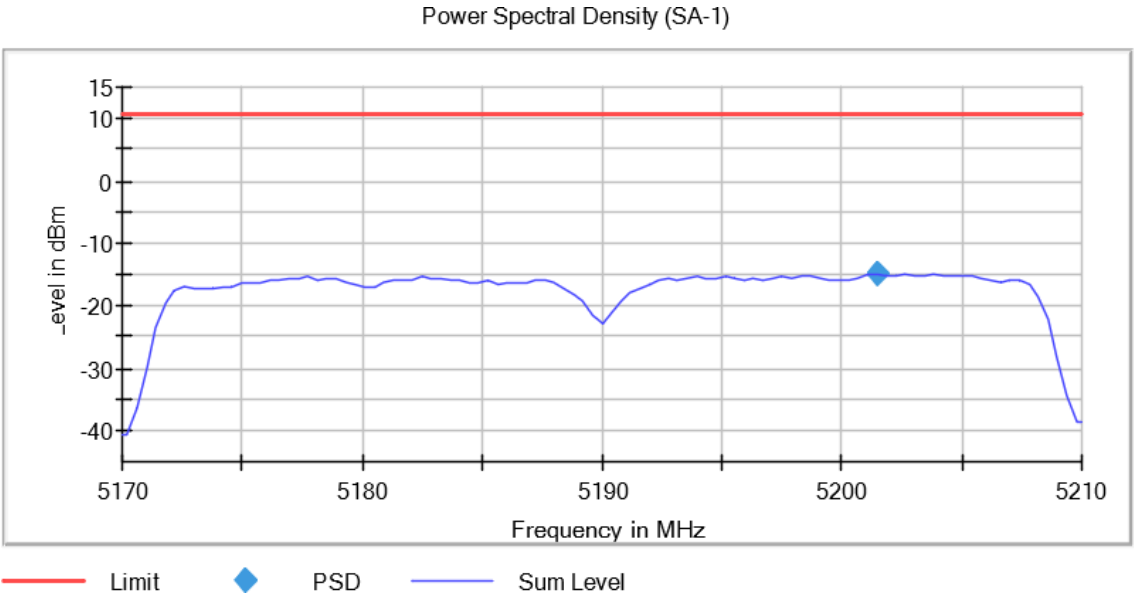
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5230.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No

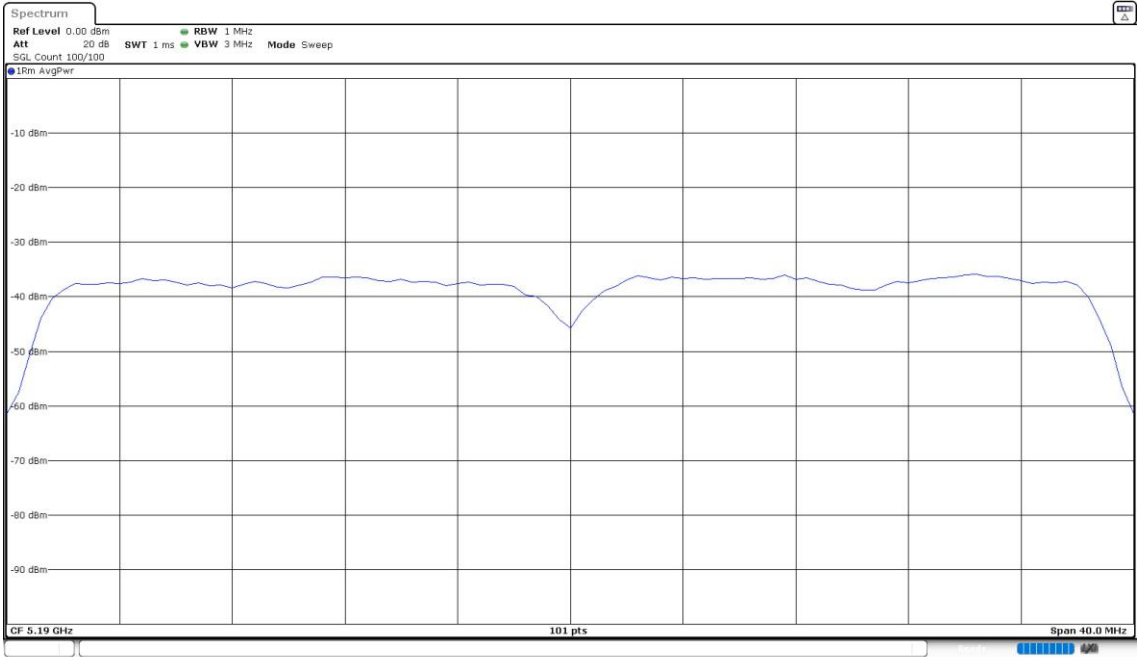
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5190.00000 Modulation = 802.11n HT40 (OFDM MCS0)
TPC = No

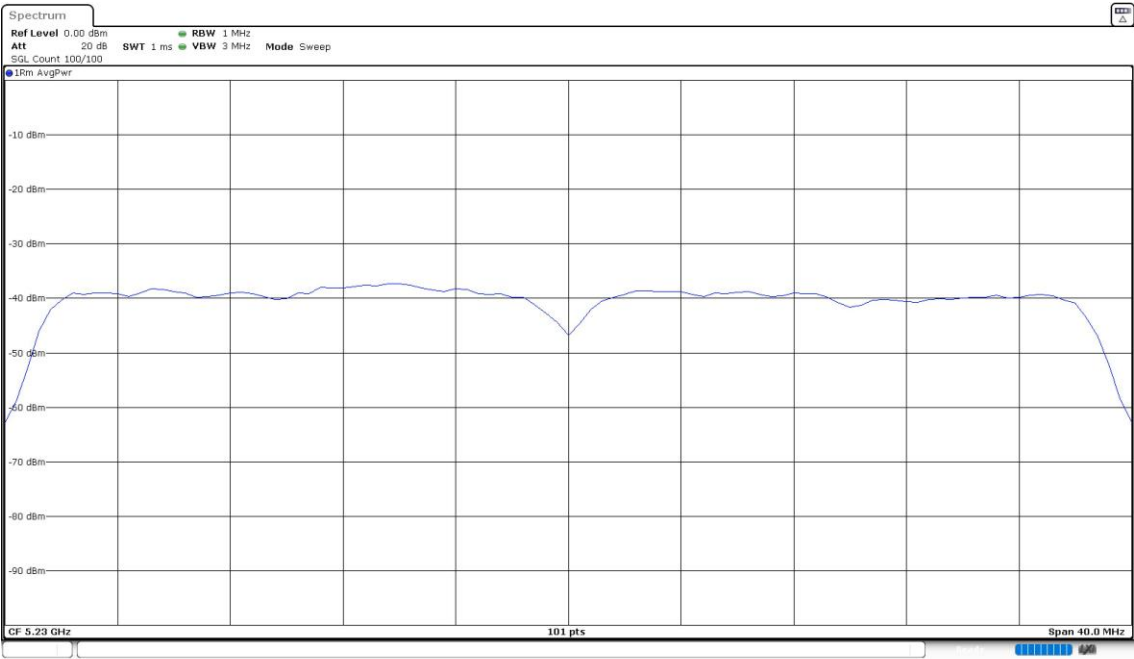
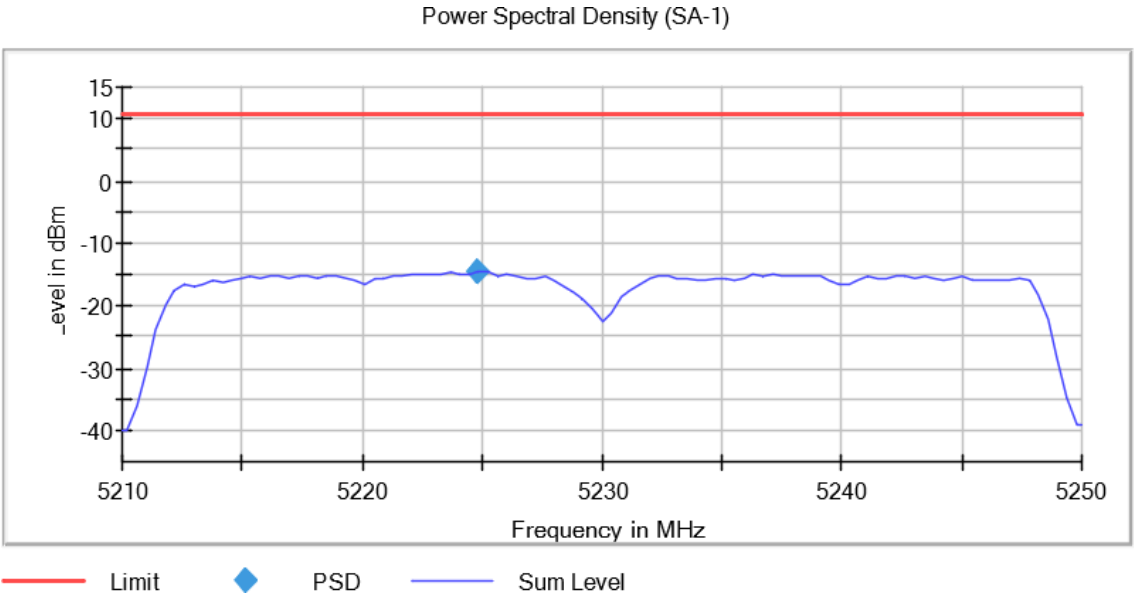
Images:

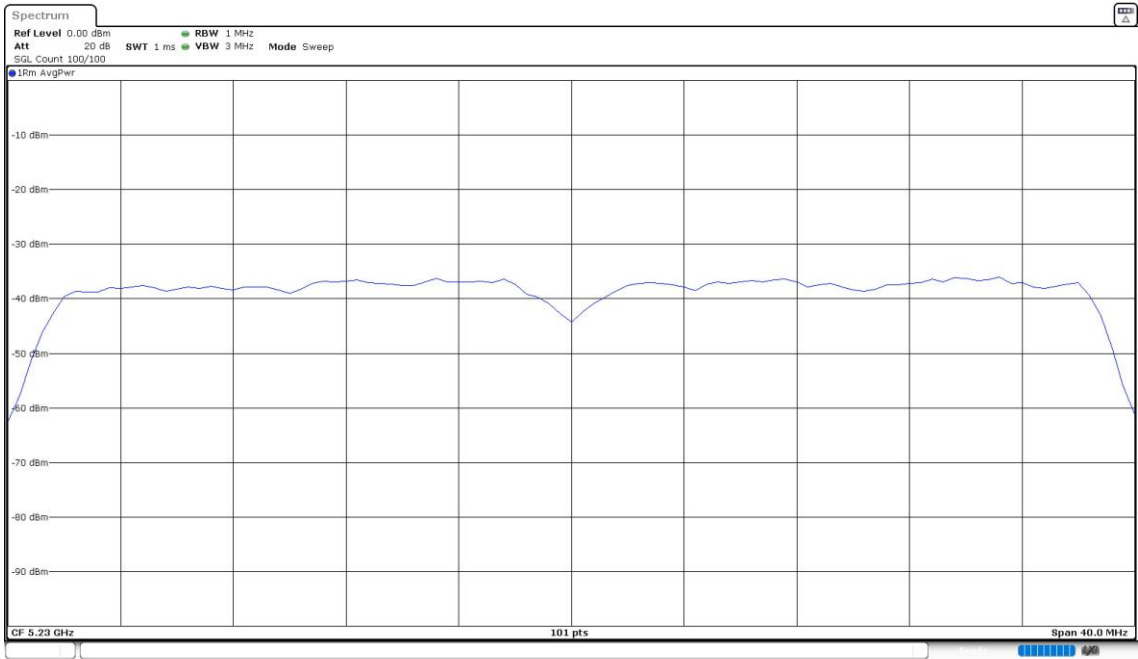




Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5230.00000 Modulation = 802.11n HT40 (OFDM MCS0)
TPC = No

Images:





Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5180.00000	No	5185.148515	-10.52
		5200.00000		5201.188119	-10.09
		5240.00000		5232.871287	-10.08
	2+3	5180.00000		5183.960396	-9.77
		5200.00000		5197.623762	-9.16
		5240.00000		5236.039604	-9.32

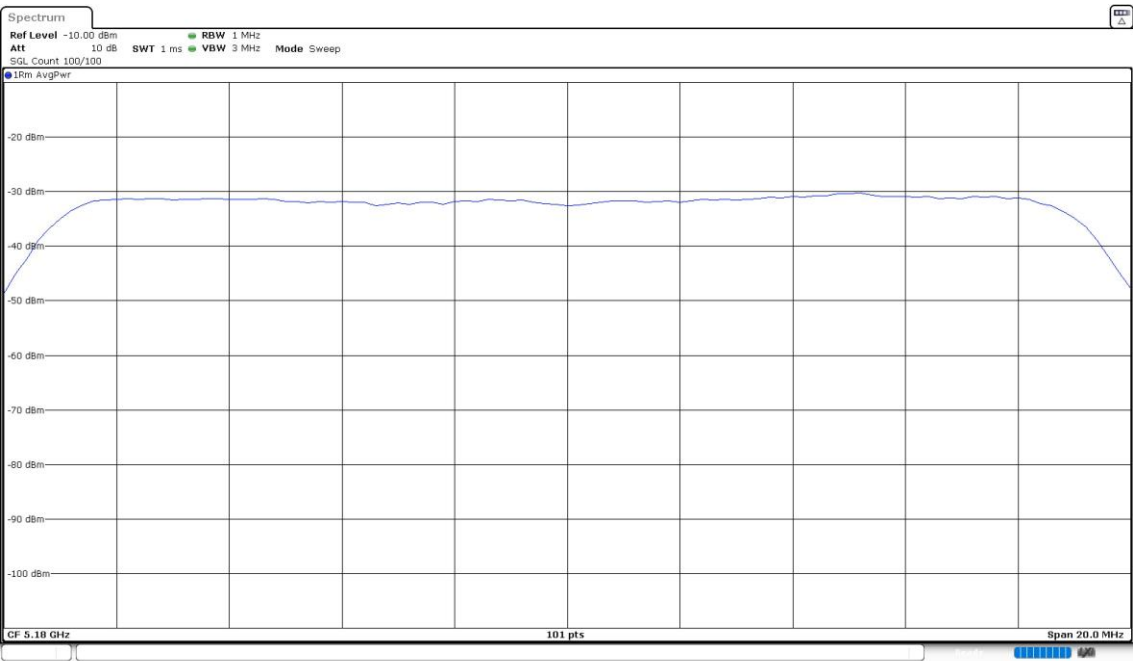
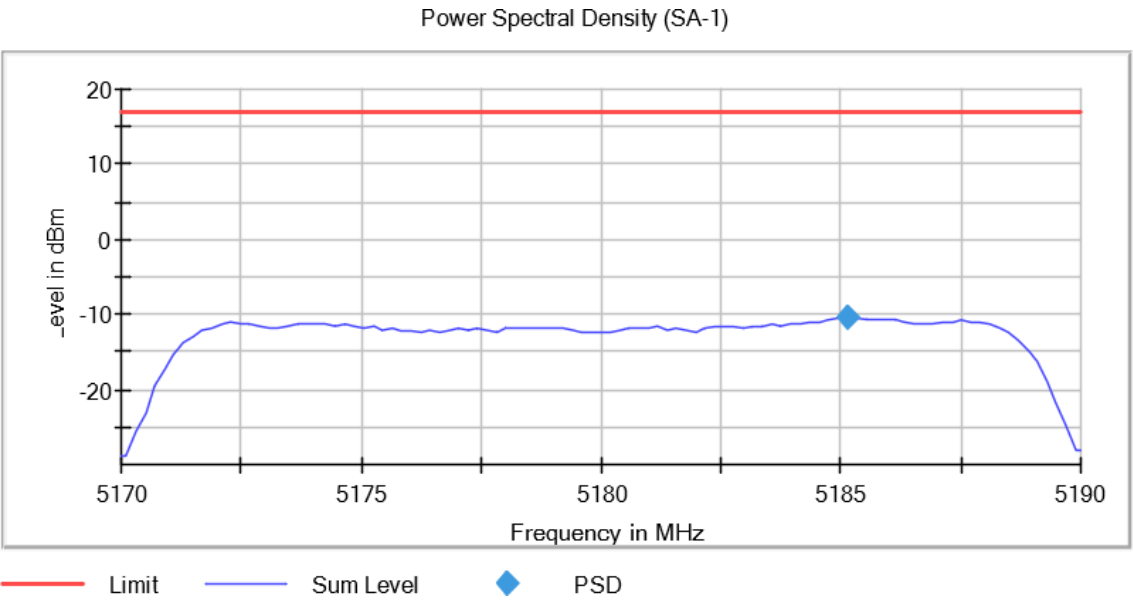
Verdict

Pass

Attachments

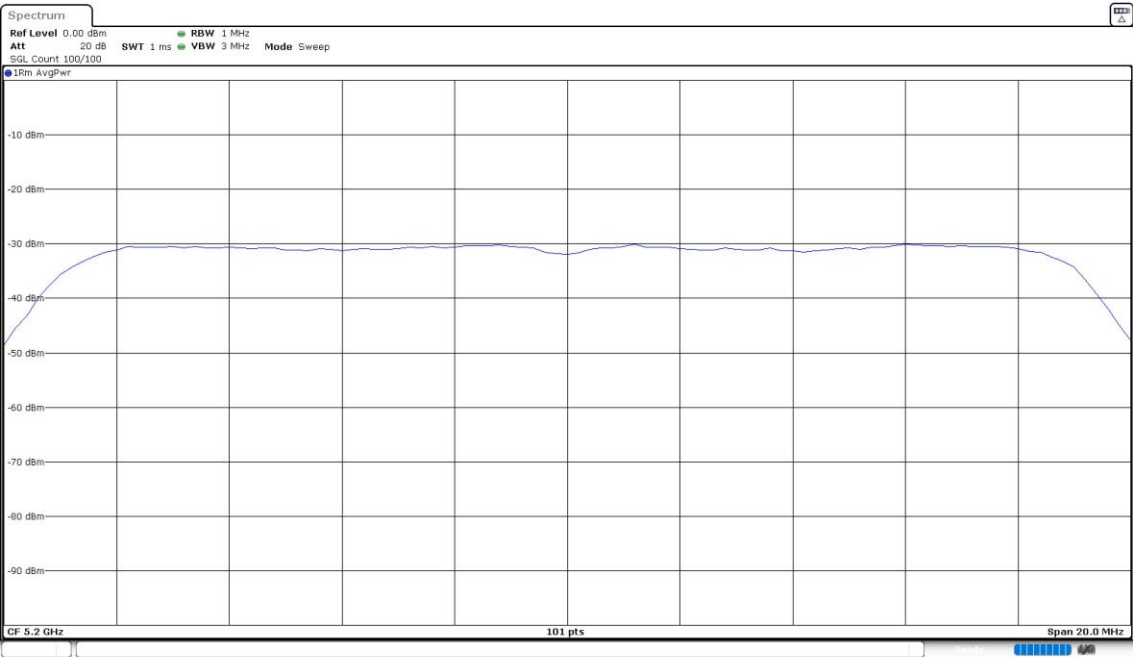
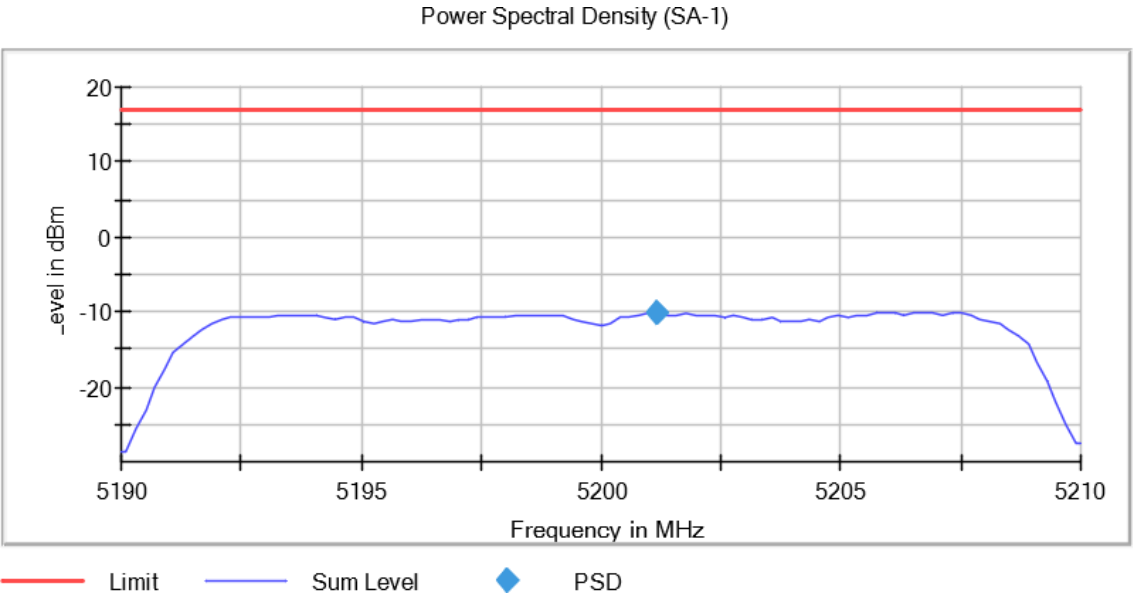
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5180.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

Images:



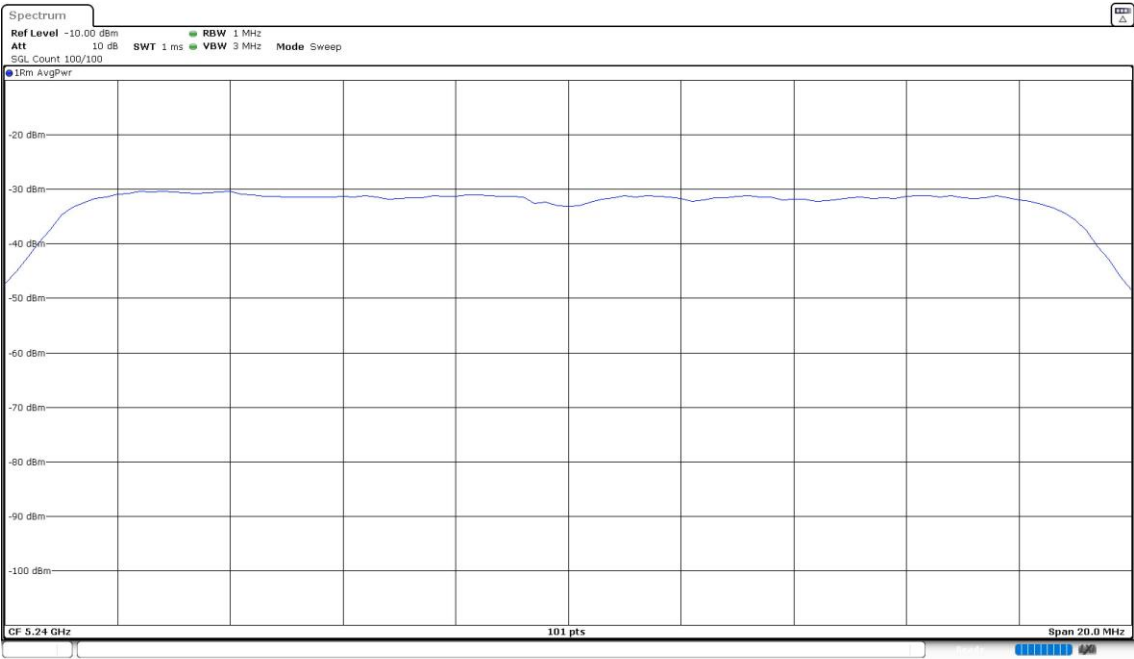
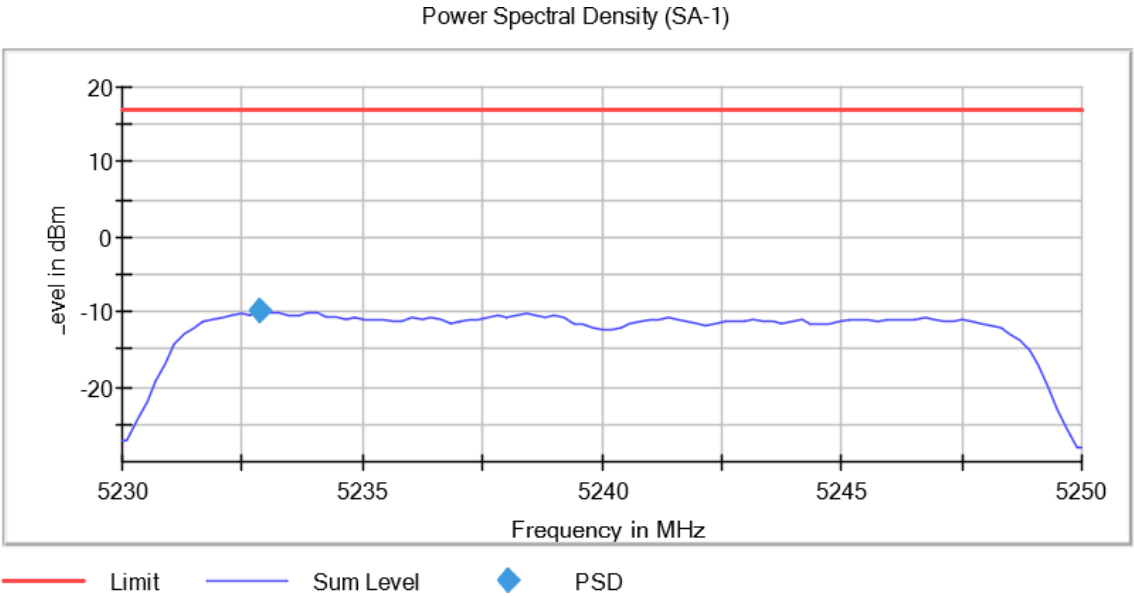
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5200.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

Images:



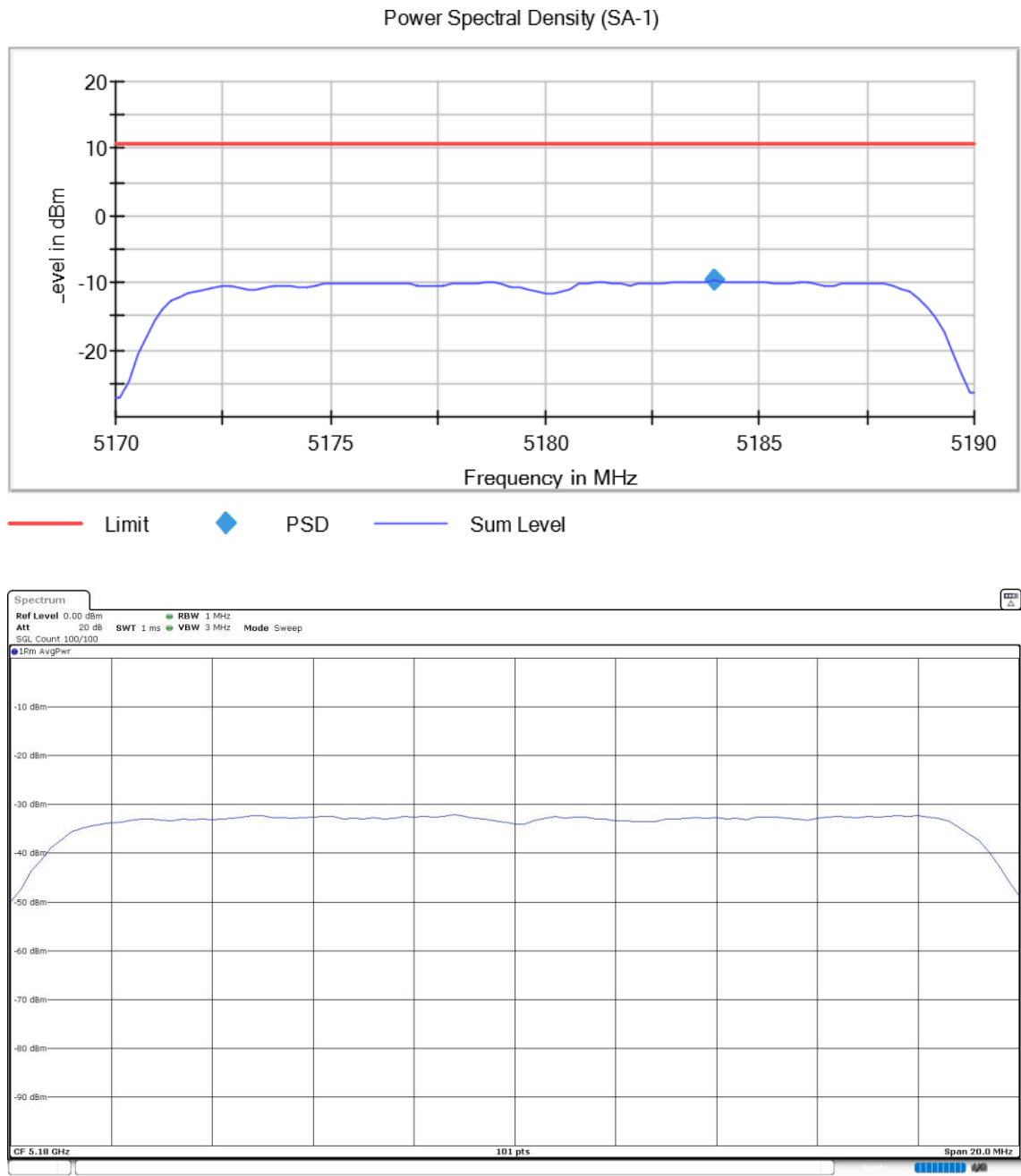
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5240.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

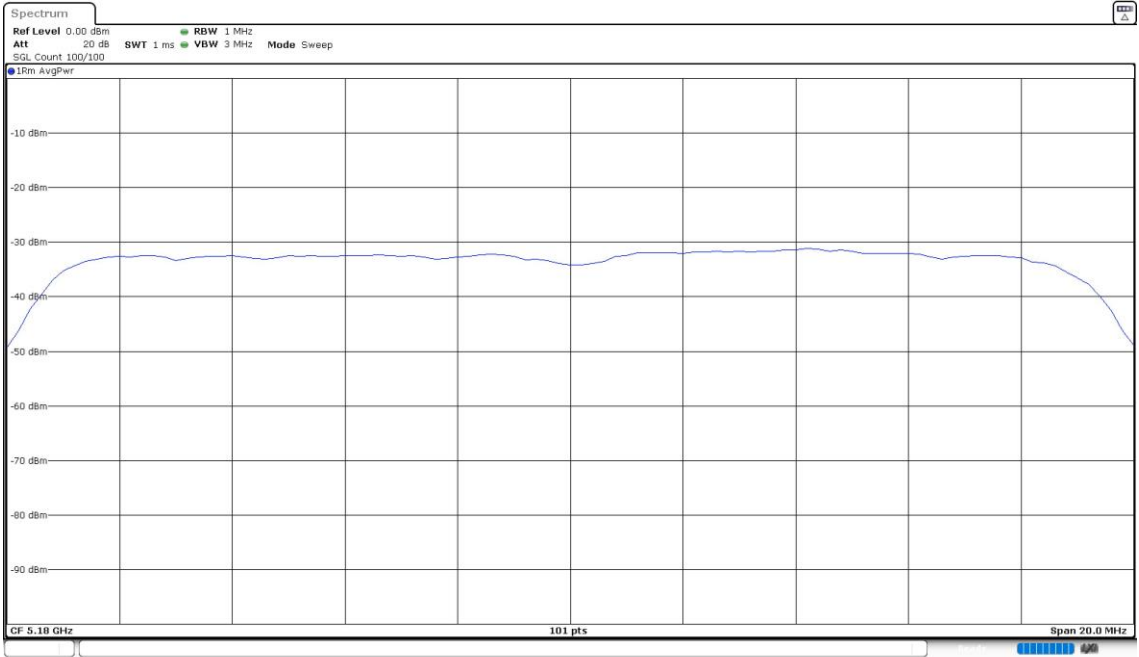
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5180.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

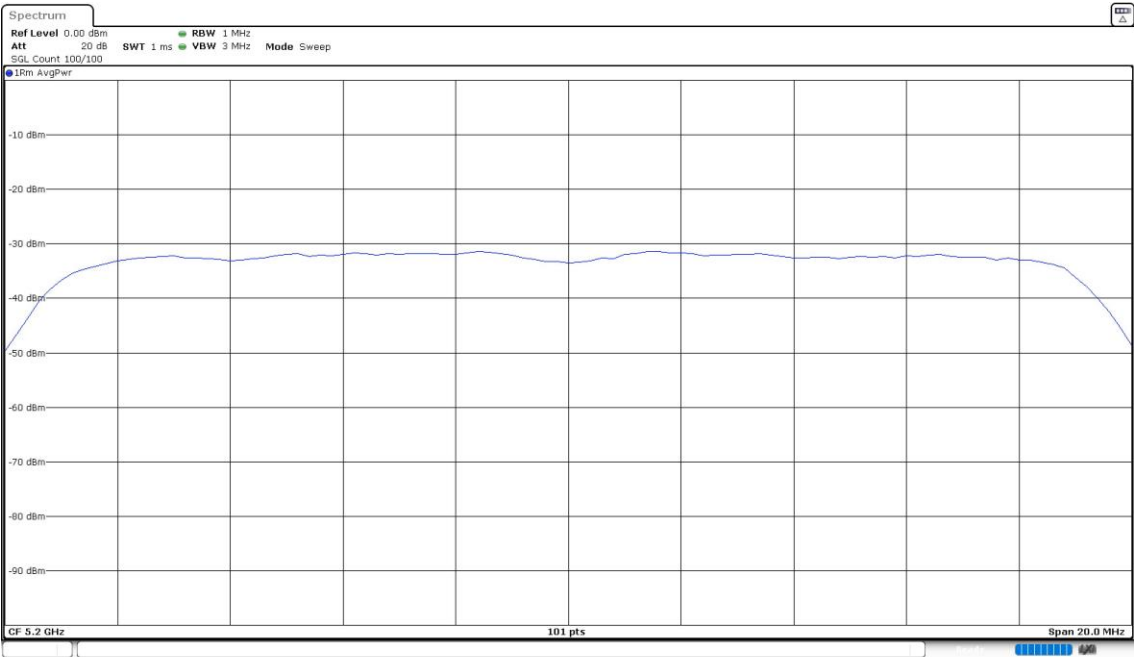
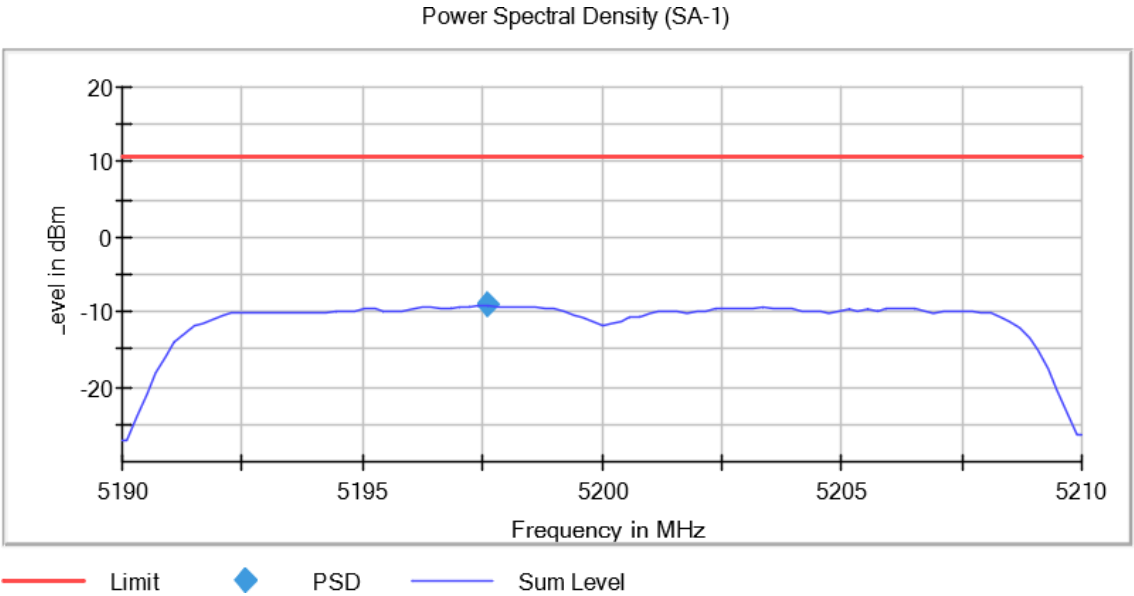
Images:

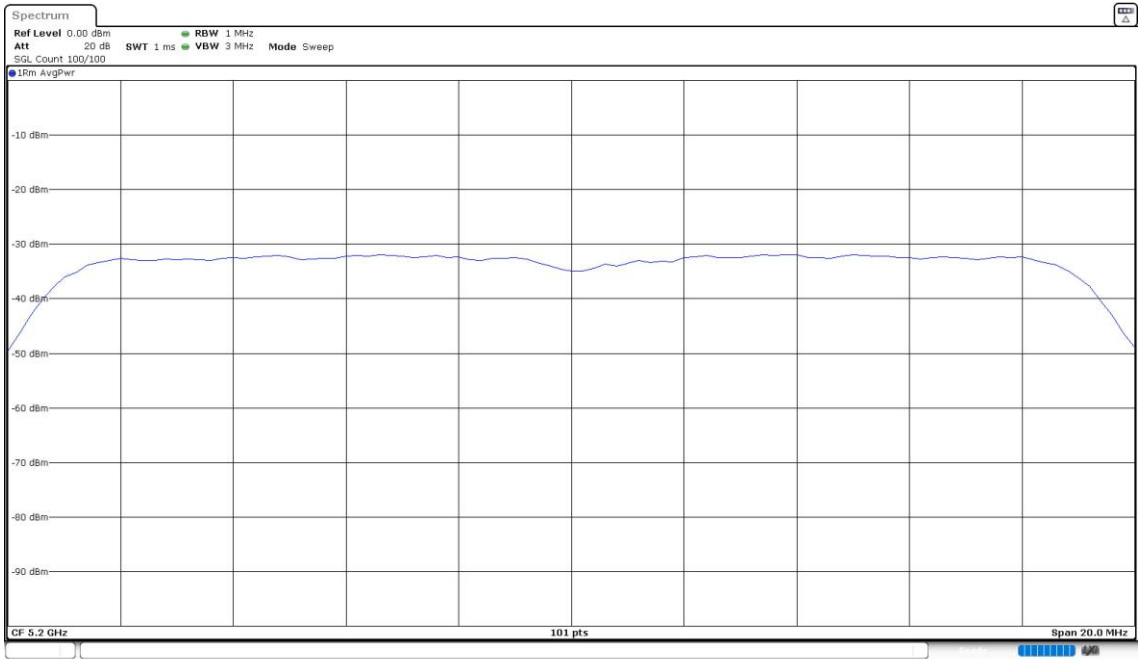




Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5200.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

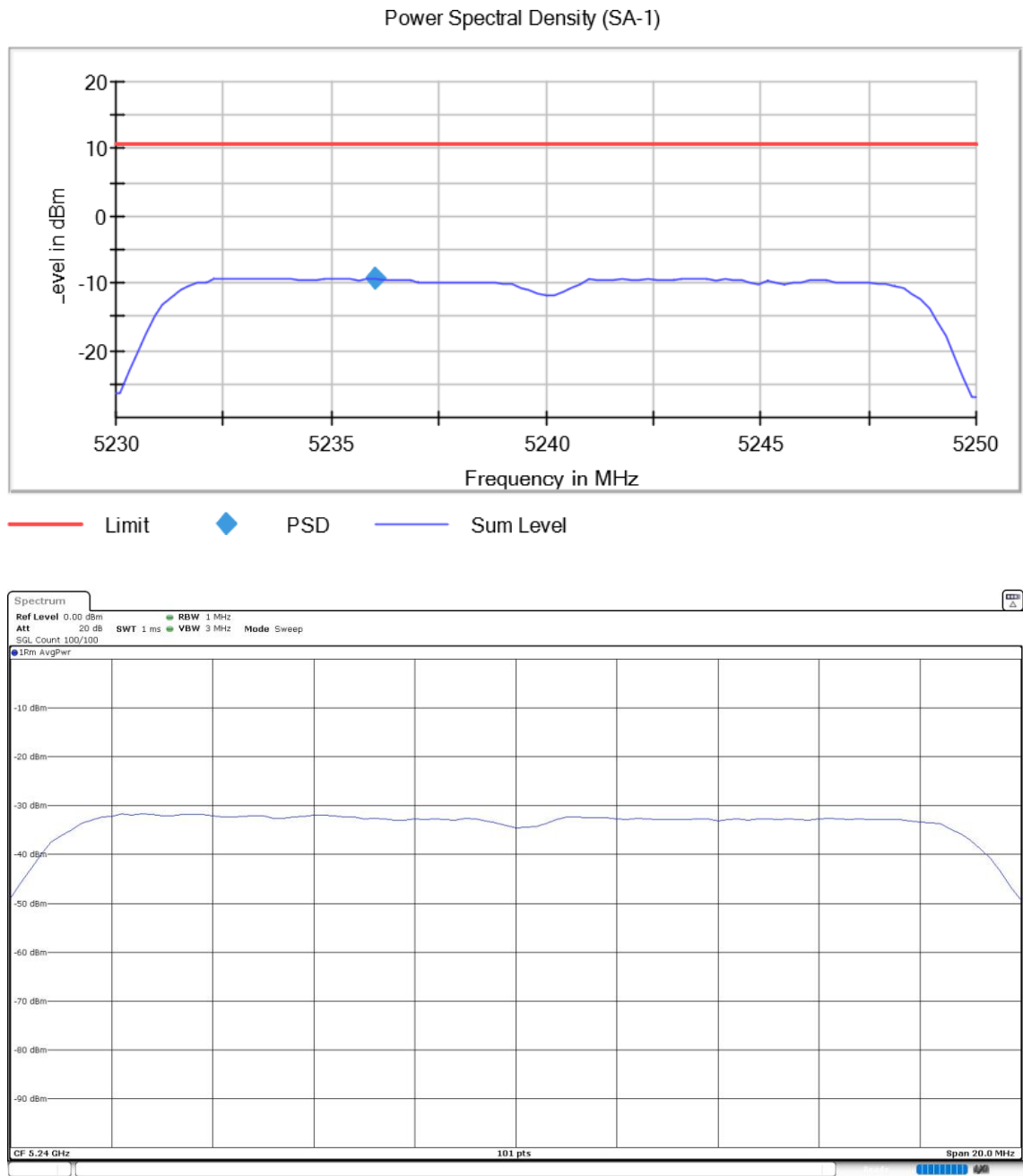
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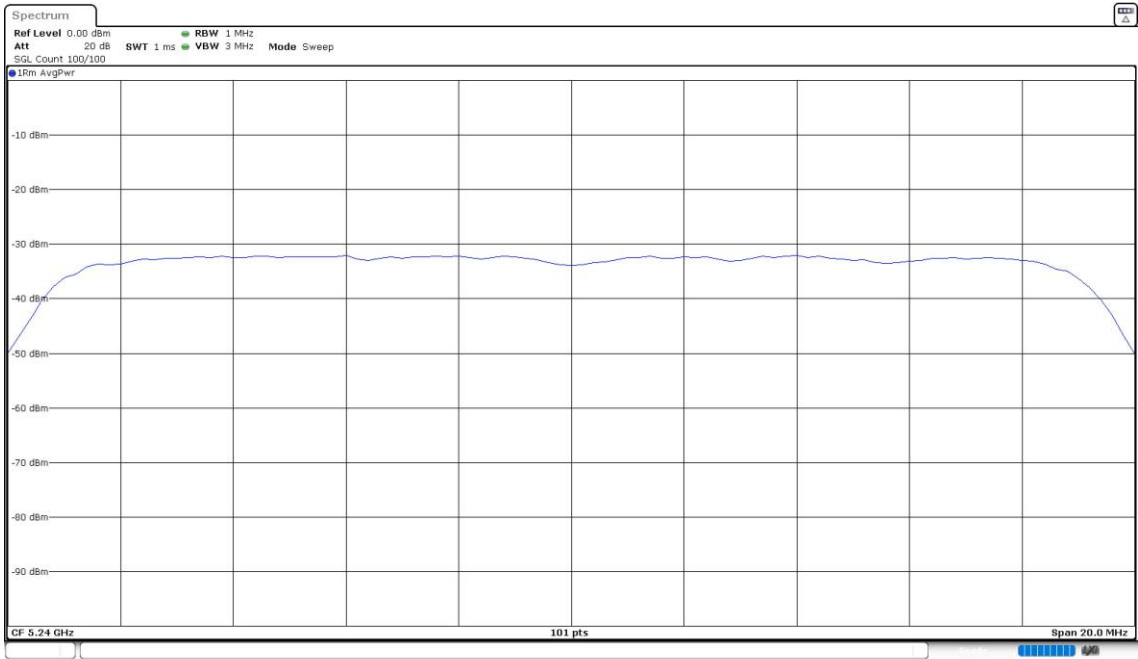




Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5240.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

Images:





Modulation: 802.11ac VHT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5190.00000	No	5203.069307	-16.64
		5230.00000		5224.851485	-15.58
	2+3	5190.00000		5196.336634	-14.29
		5230.00000		5225.247525	-13.24

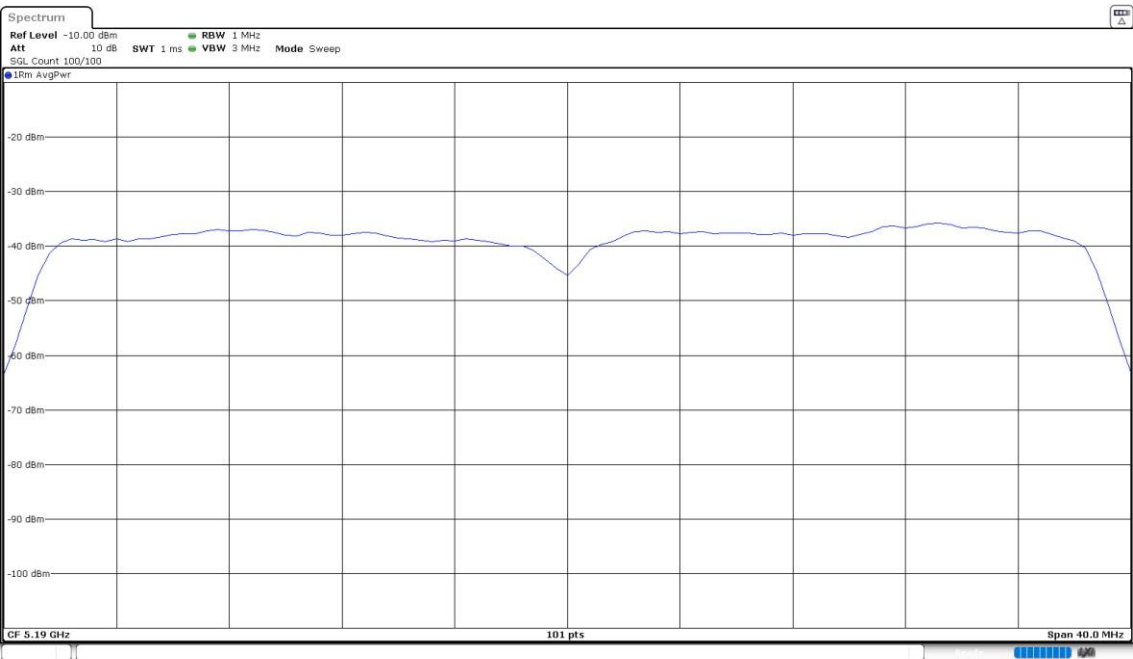
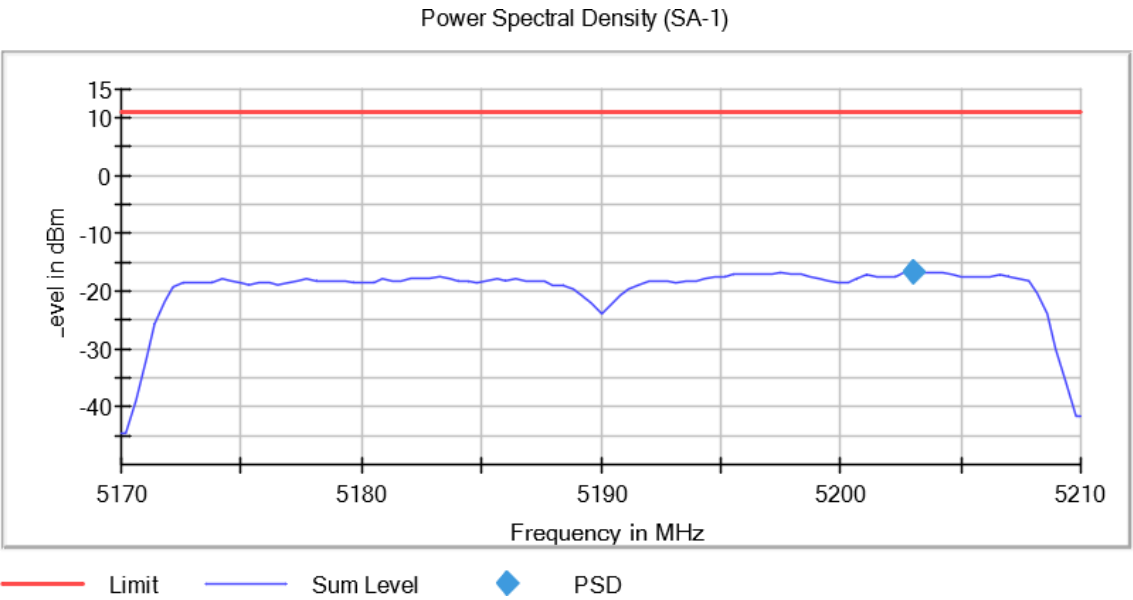
Verdict

Pass

Attachments

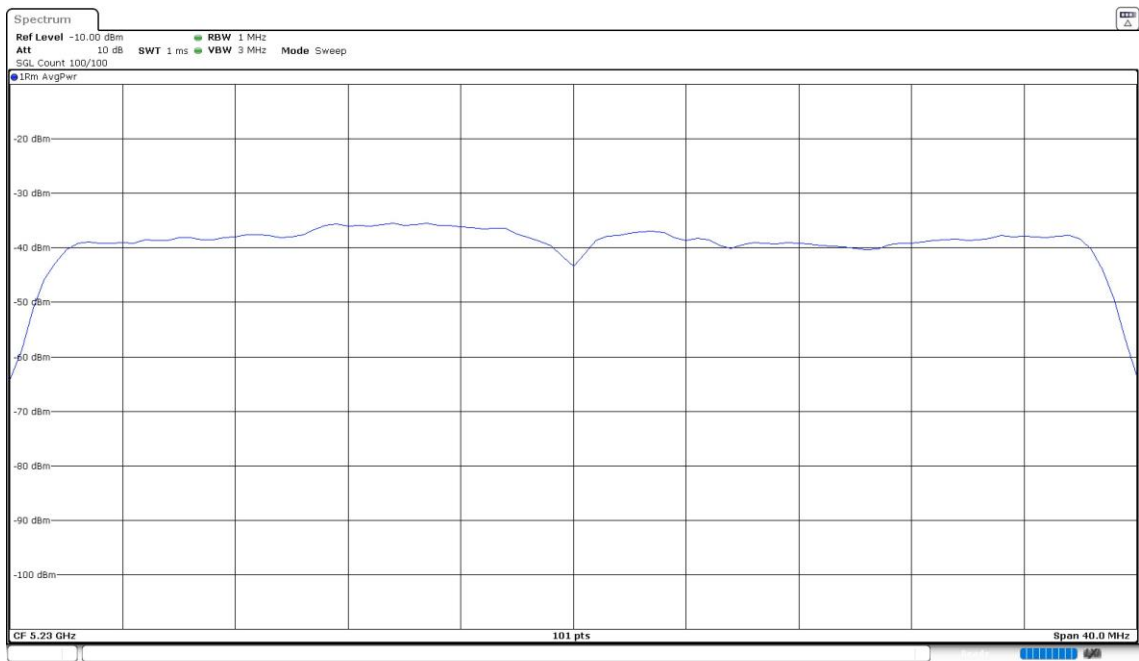
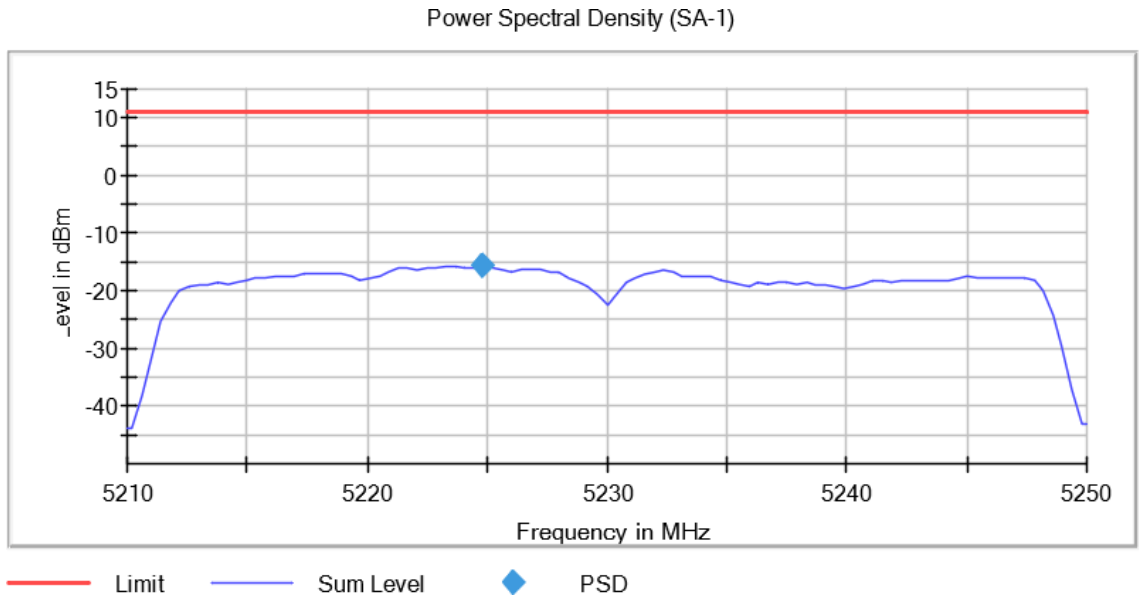
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5190.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No

Images:



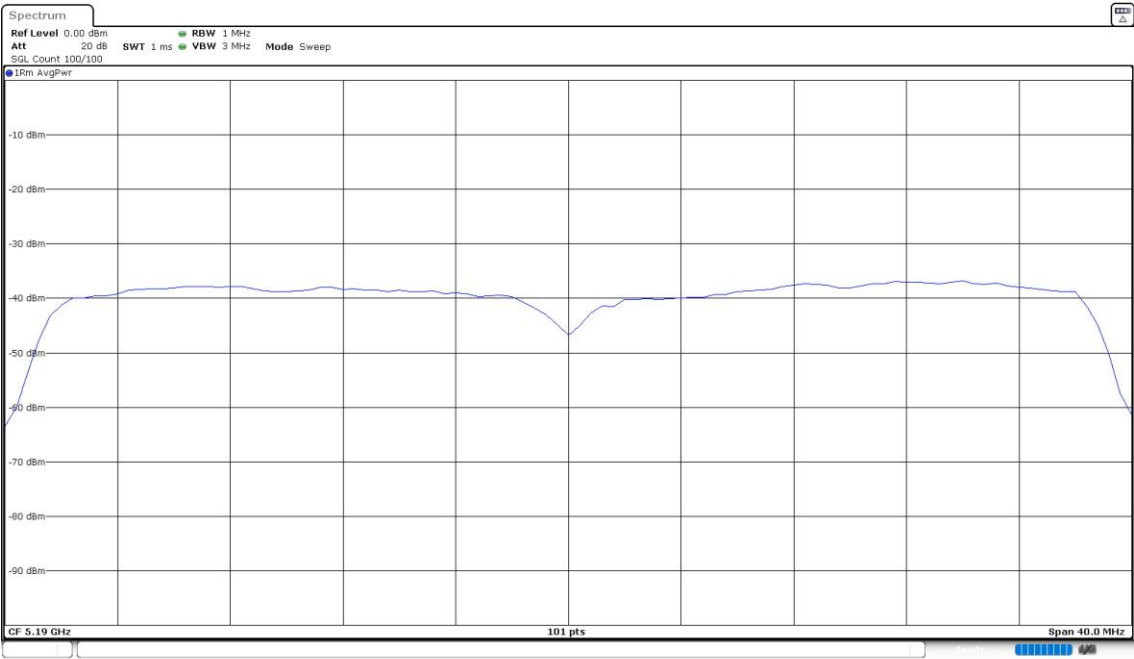
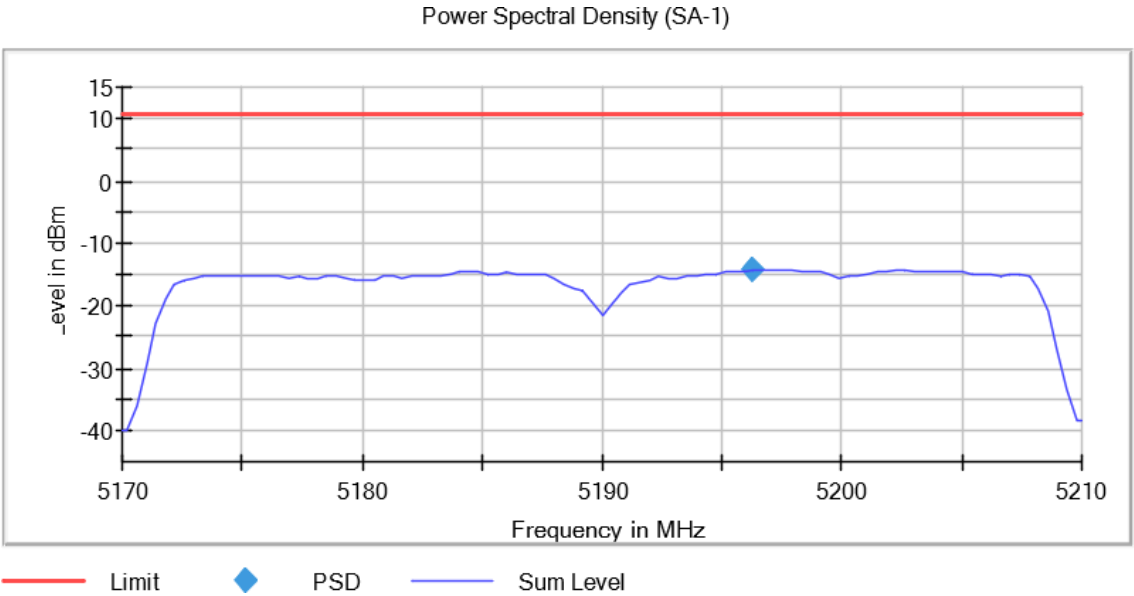
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5230.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No

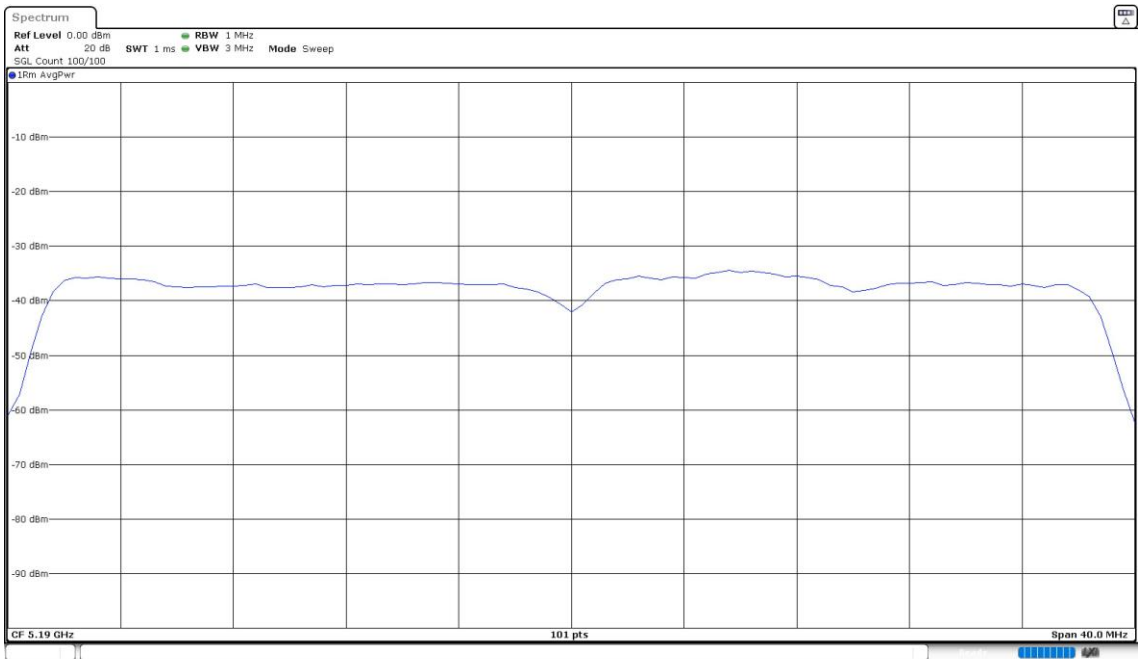
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5190.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No

Images:





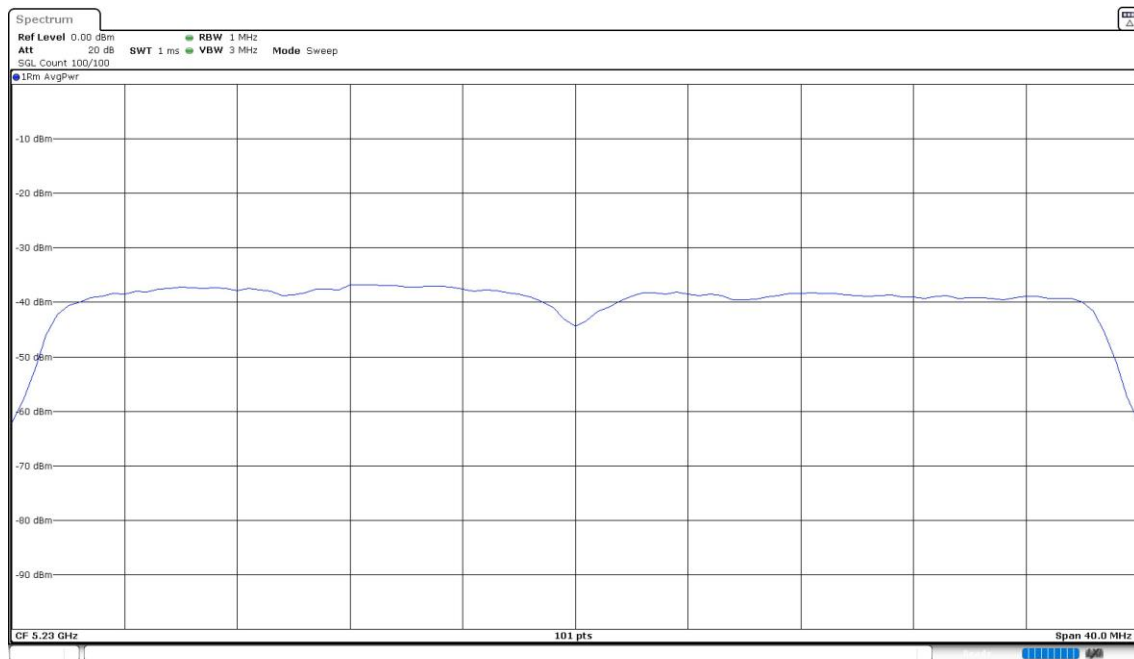
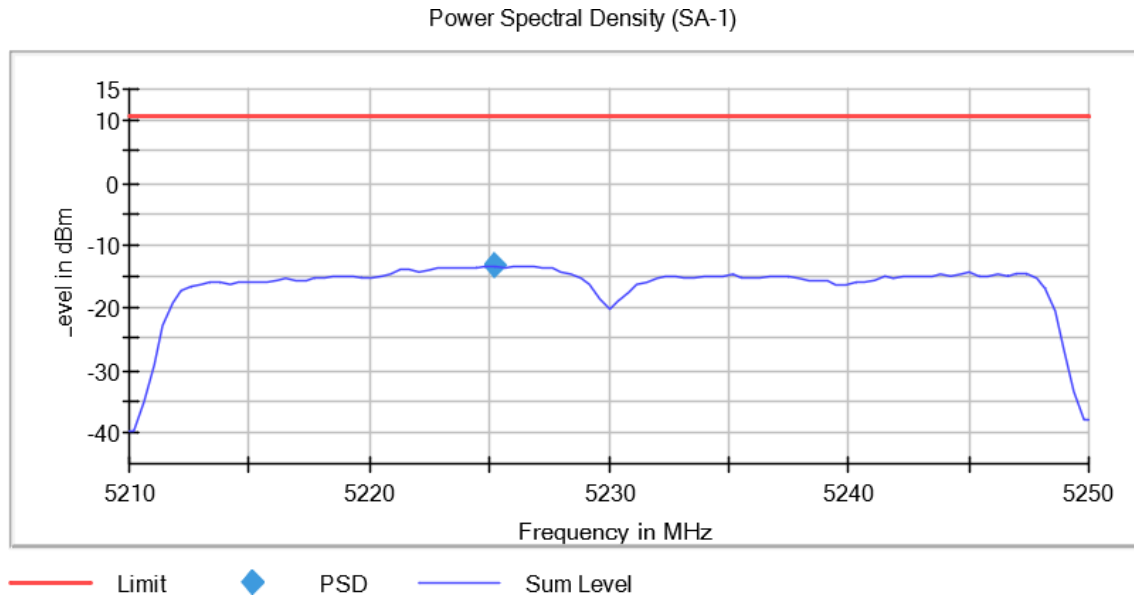
Operation Band MHz = [5150, 5250] Active Port = 2+3

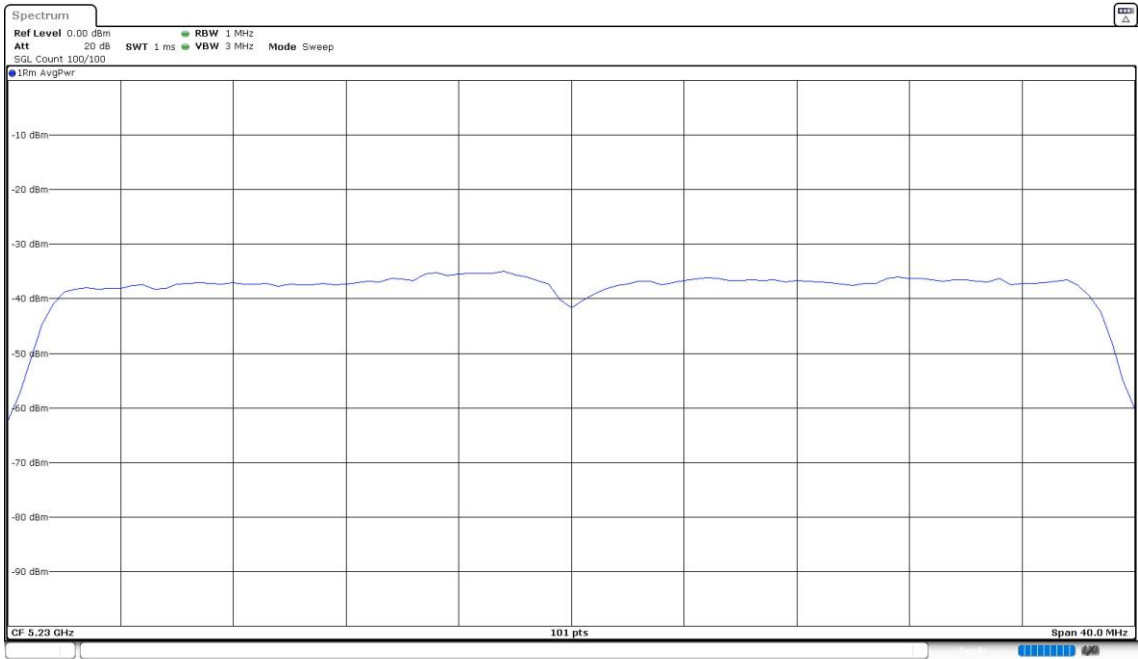
Frequency MHz = 5230.00000

Modulation = 802.11ac VHT40 (OFDM MCS0)

TPC = No

Images:





Modulation: 802.11ac VHT80 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	2	5210.00000	No	5222.750000	-19.53
	2+3			5222.250000	-17.73

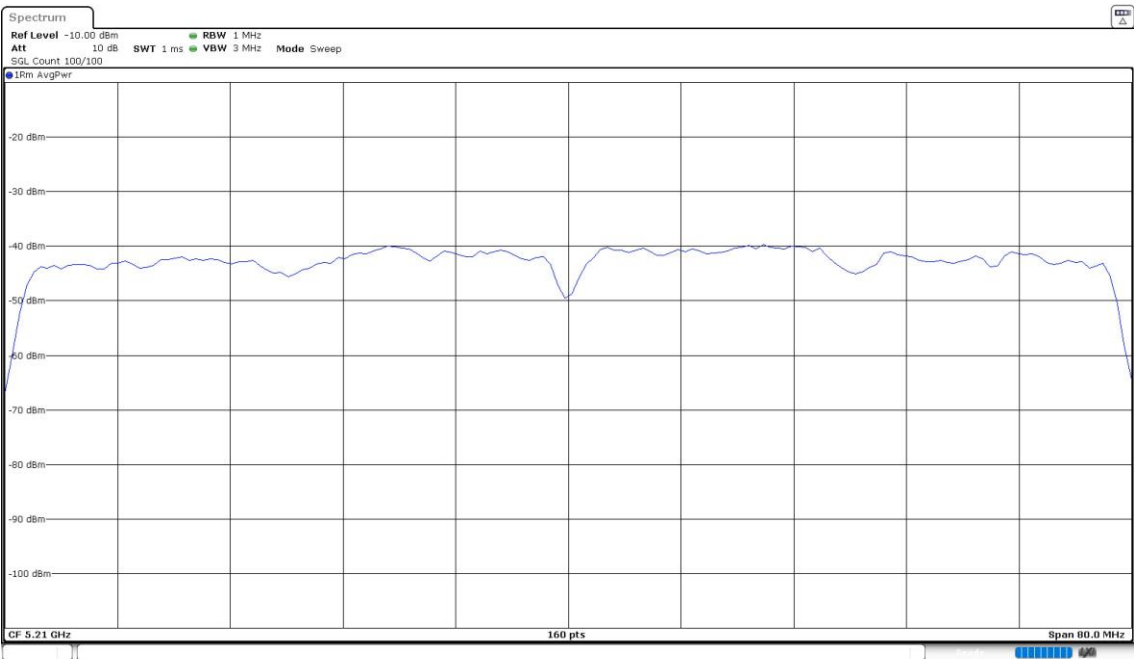
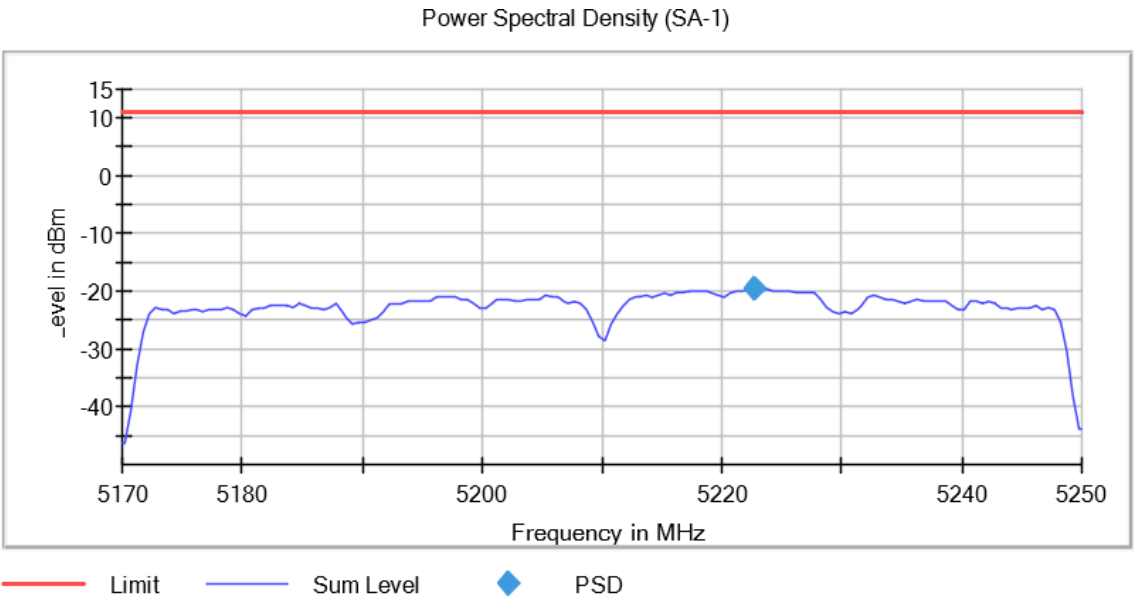
Verdict

Pass

Attachments

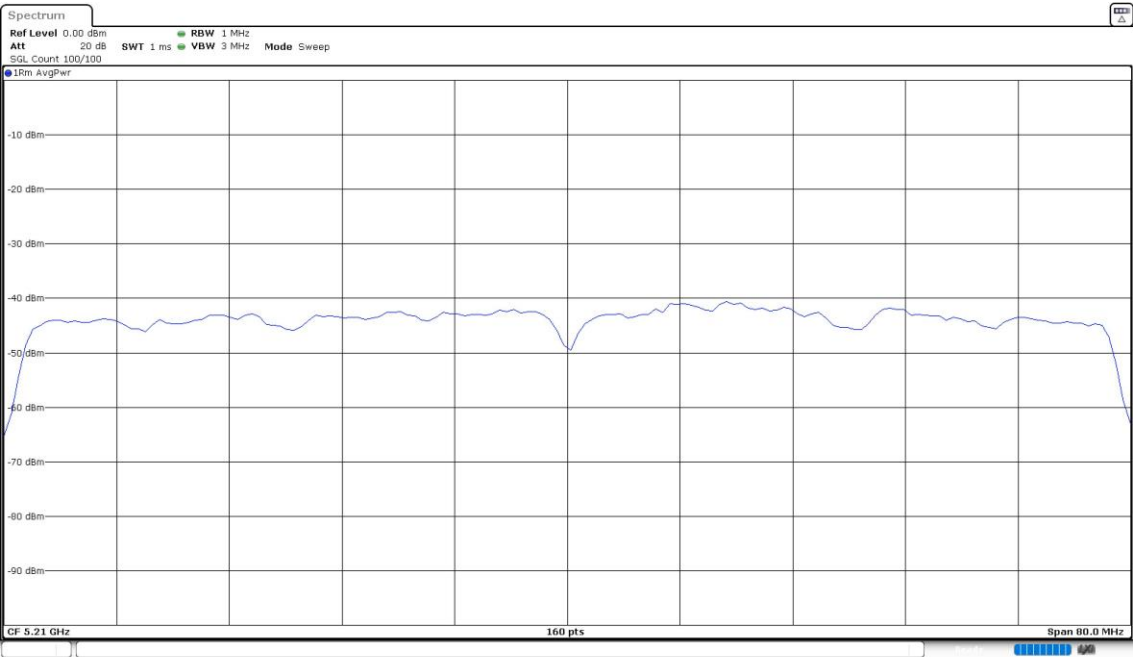
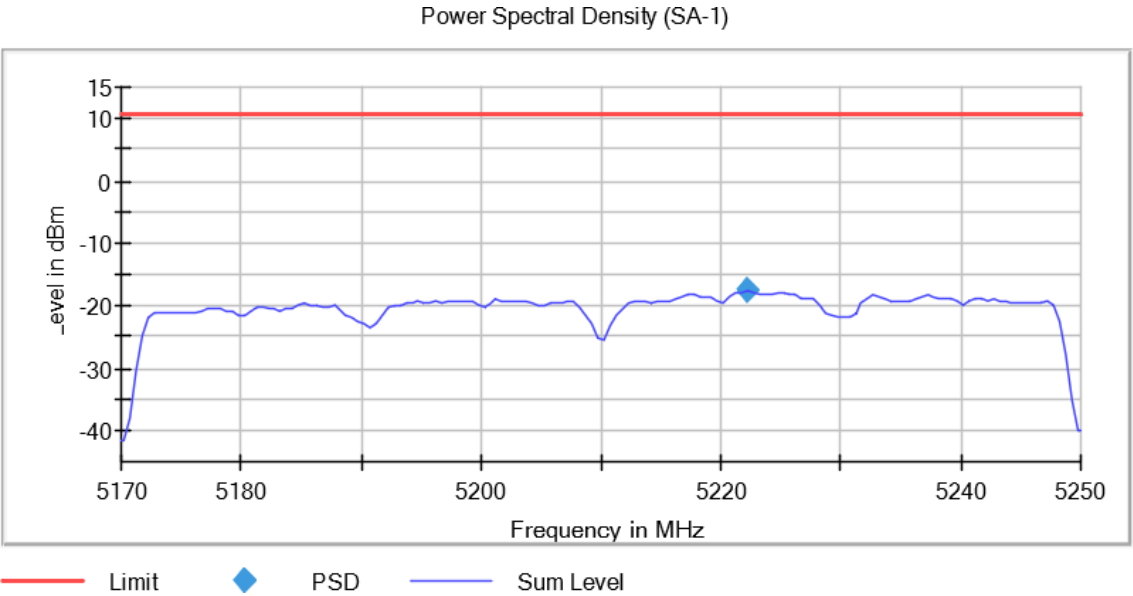
Operation Band MHz = [5150, 5250] Active Port = 2
Frequency MHz = 5210.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)
TPC = No

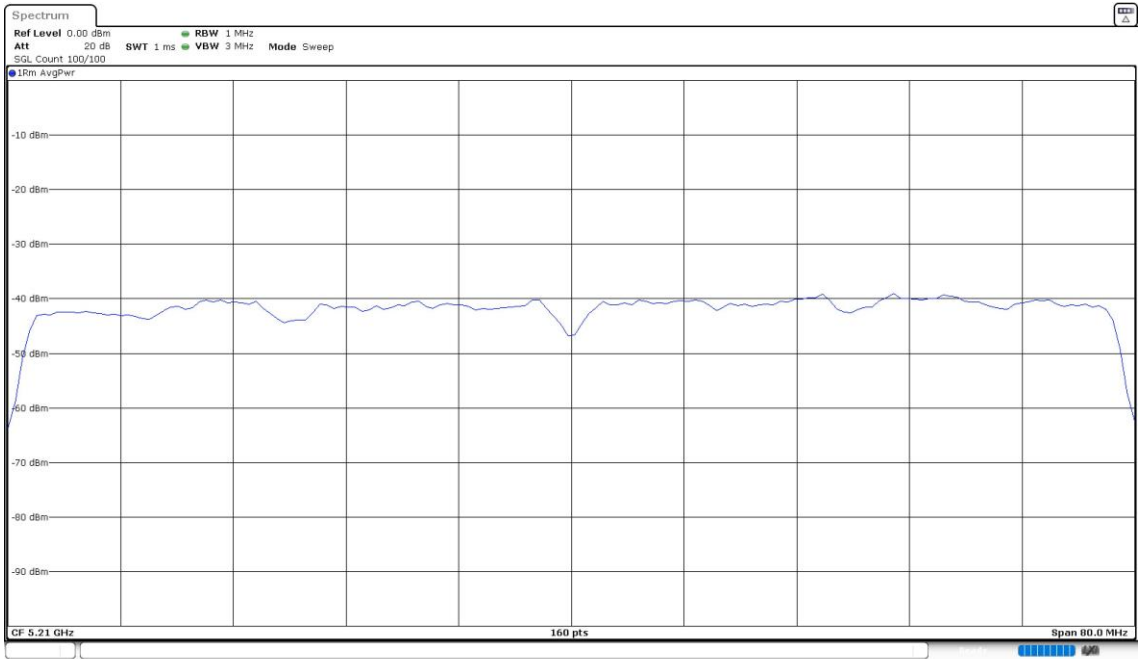
Images:



Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5210.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)
TPC = No

Images:





FCC 15.407 (b) (1) (6) [Rse] + [Bndedge] Transmitter Out of Band Radiated Emissions For transmitters operating in the 5.15–5.25 GHz

Limits

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.23 dBμV/m at 3 m distance).

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Tables:

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	32,333 kHz	PK+	100 kHz	1 s	30 dB
1 GHz - 7 GHz	30 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
7 GHz - 17 GHz	333,333 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
17 GHz - 40 GHz	511,111 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Modulation: All modulations
Mode: SISO and MIMO mode
Freq. Range MHz = 0.03 – 1 GHz

Results

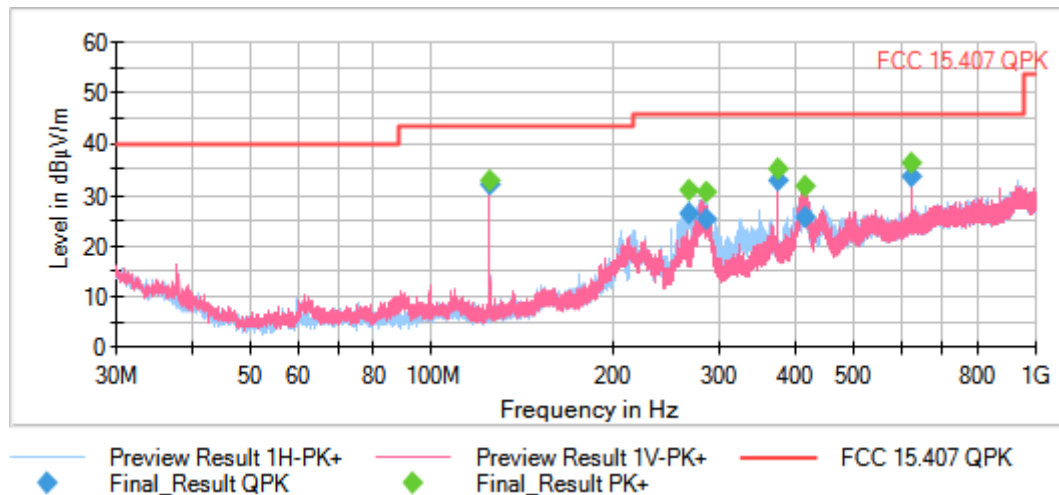
Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
[0.03, 1]	5180.00000	124.999	32.92	V	PK	1.3	0.0	7.5	24.12
		124.999	32.27	V	QP	1.3	0.0	7.5	23.47
		266.116	31.00	H	PK	2.0	0.0	13.8	15.2
		266.116	26.40	H	QP	2.0	0.0	13.8	10.6
		284.038	30.69	H	PK	2.1	0.0	12.4	16.19
		284.038	25.24	H	QP	2.1	0.0	12.4	10.74
		374.989	35.02	H	PK	2.4	0.0	16.0	16.62
		374.989	32.68	H	QP	2.4	0.0	16.0	14.28
		415.381	31.61	V	PK	2.6	0.0	18.0	11.01
		415.381	25.64	V	QP	2.6	0.0	18.0	5.04
		624.988	36.41	V	PK	3.3	0.0	21.8	11.31
		624.988	33.56	V	QP	3.3	0.0	21.8	8.46

Verdict

Pass

Operation Band MHz = [5150, 5250] Active Port = 2+3
 Frequency Range GHz = [0.03, 1] Frequency MHz = 5180.00000
 Modulation = All modulations

Images:



This plot is valid for all channels

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

No spurious frequencies detected at less than 20dB below the limit.

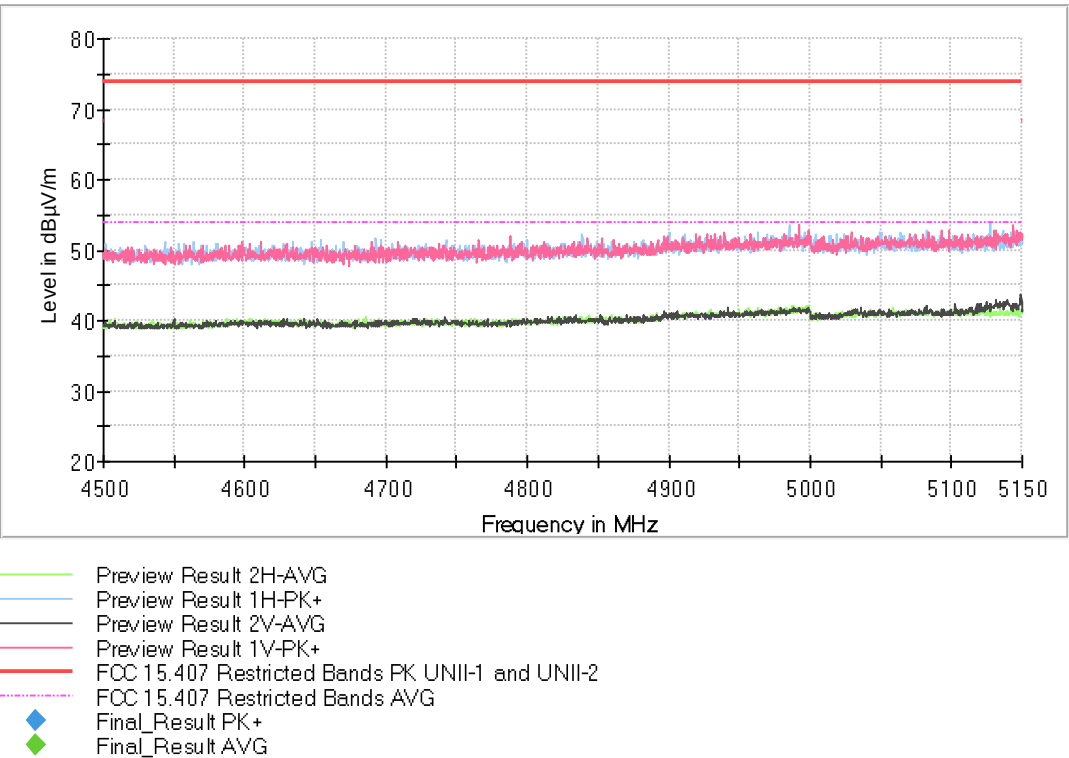
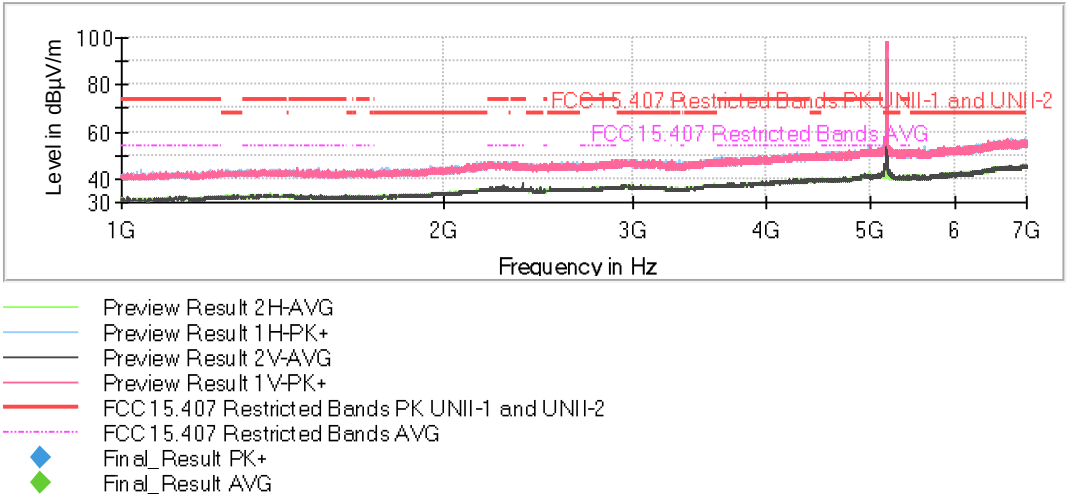
Verdict

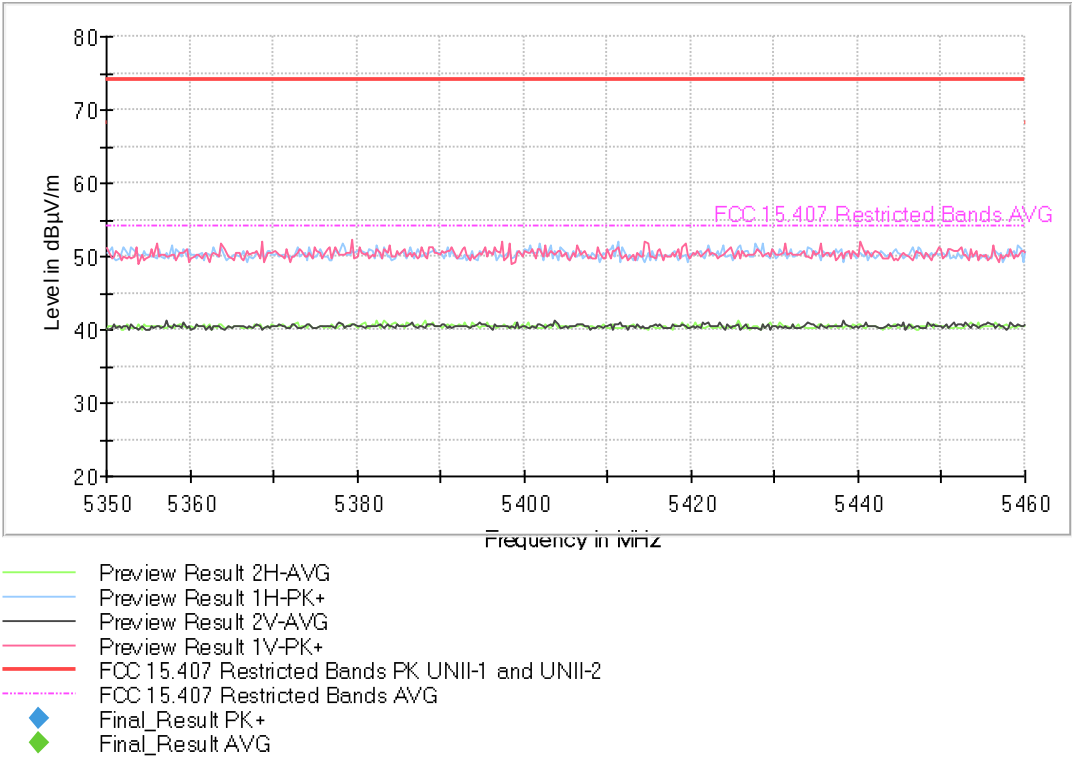
Pass

Attachments

Operation Band MHz = [5150, 5250] Active Port = 2
Frequency Range GHz = [1, 7] Frequency MHz = 5180.00000
Modulation = 802.11a (OFDM 6 Mbit/s)

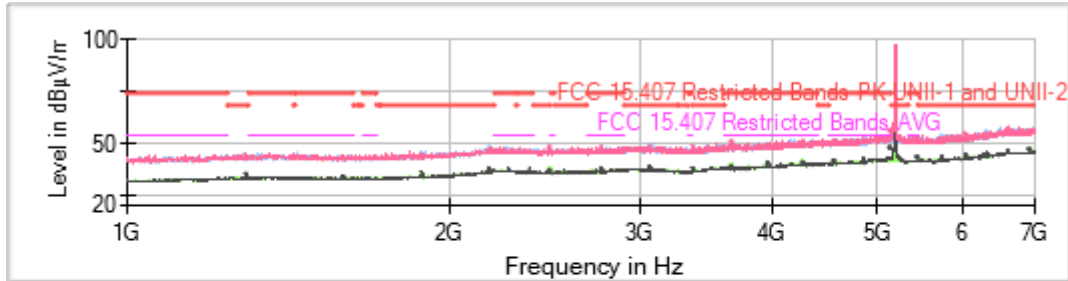
Images:



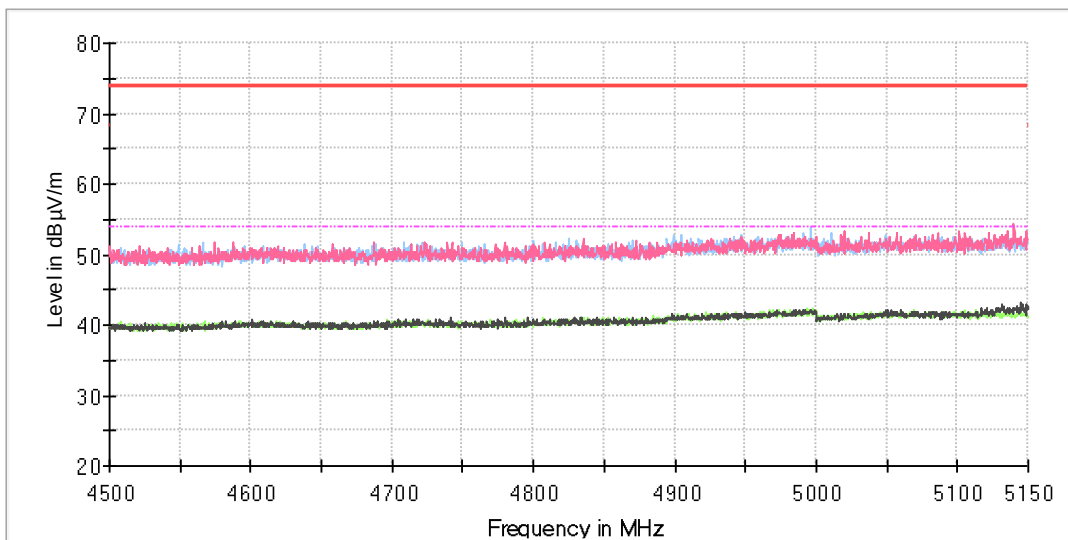


Operation Band MHz = [5150, 5250] Active Port = 2
Frequency Range GHz = [1, 7] Frequency MHz = 5200.00000
Modulation = 802.11a (OFDM 6 Mbit/s)

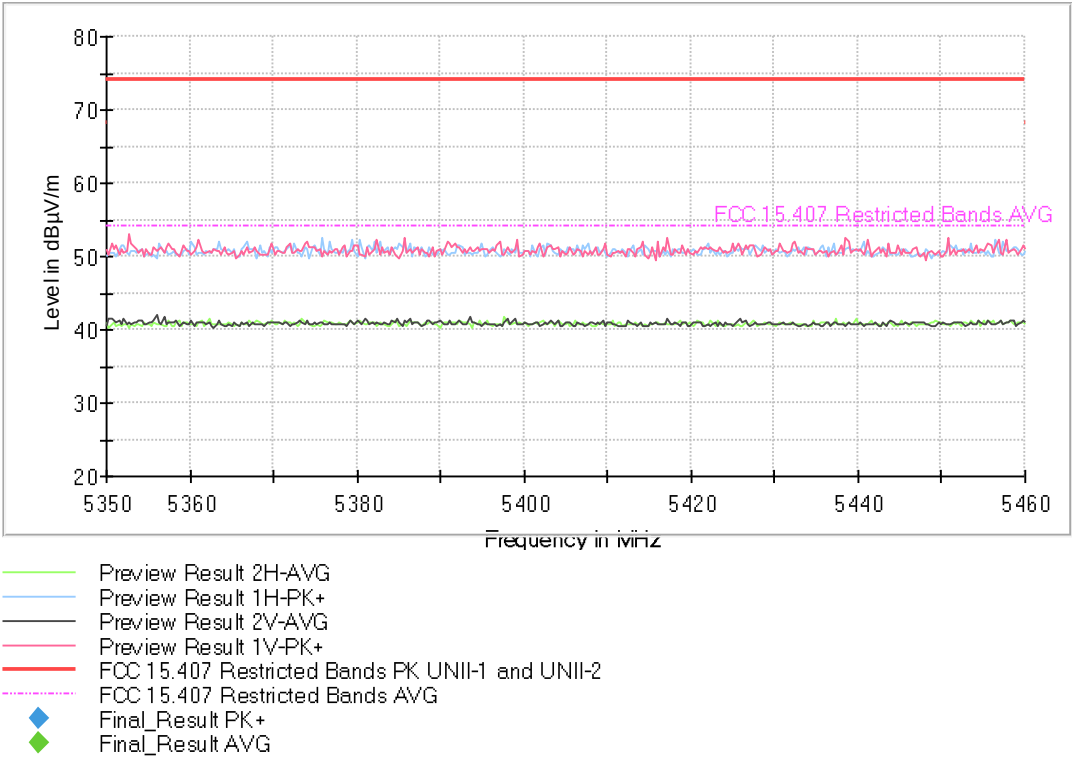
Images:



- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

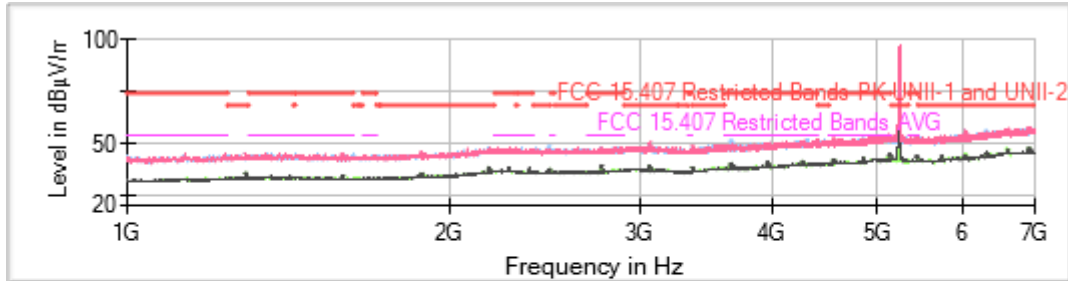


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

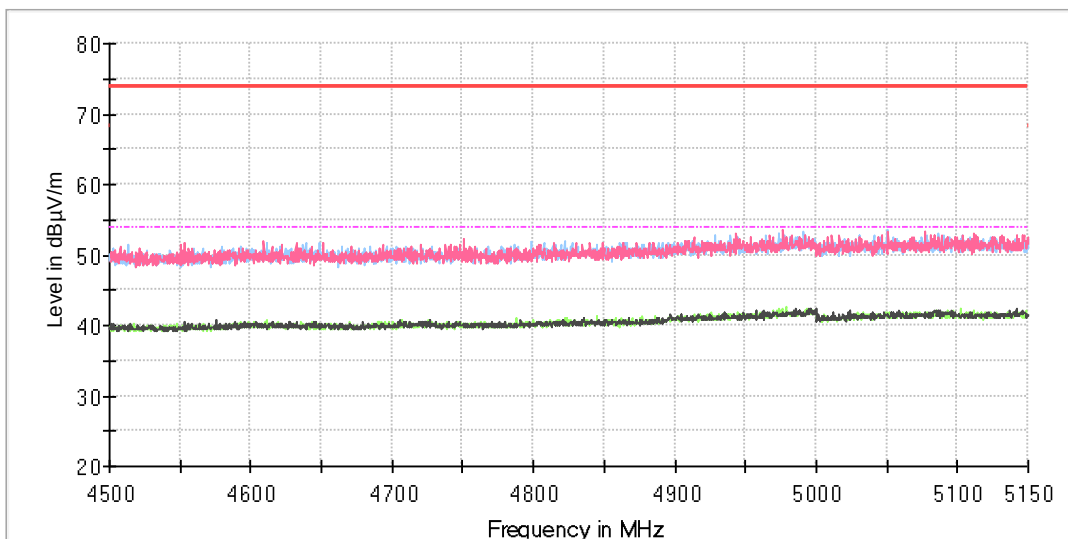


Operation Band MHz = [5150, 5250] Active Port = 2
Frequency Range GHz = [1, 7] Frequency MHz = 5240.00000
Modulation = 802.11a (OFDM 6 Mbit/s)

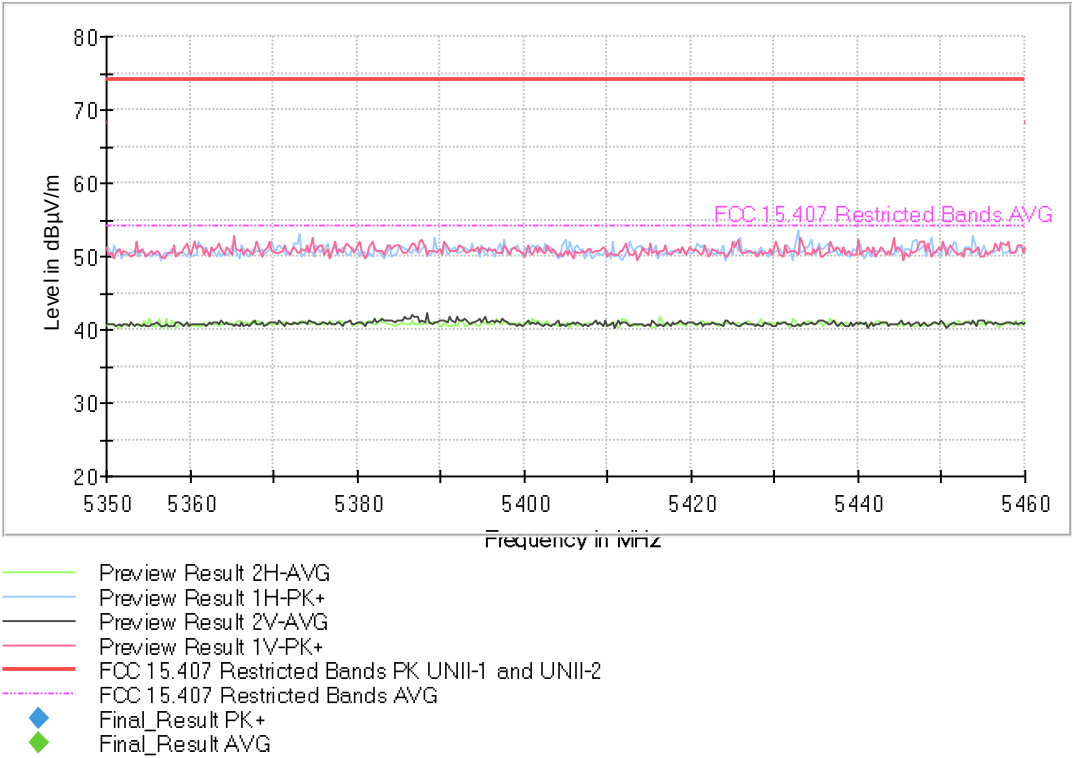
Images:



- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

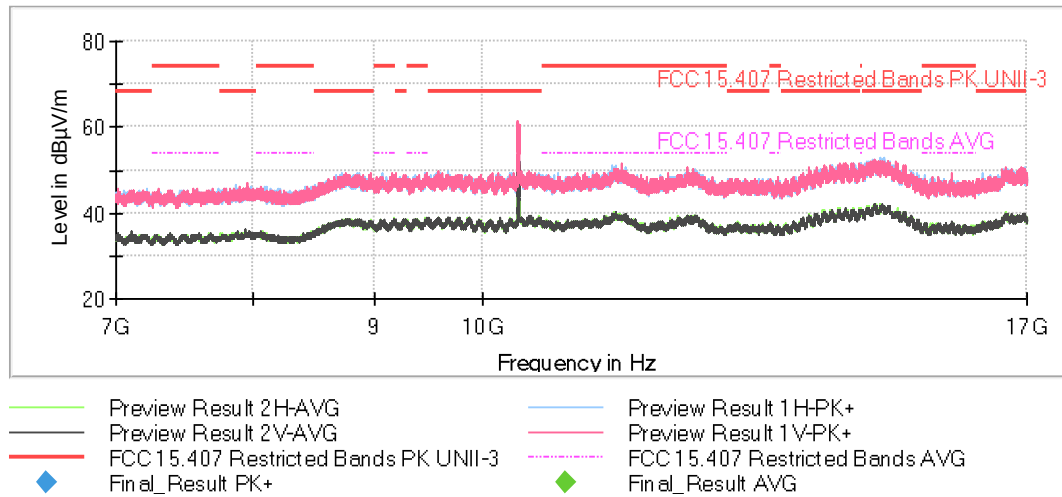


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



Operation Band MHz = [5150, 5250] Active Port = 2
Frequency Range GHz = [7, 17] Frequency MHz = 5180.00000
Modulation = 802.11a (OFDM 6 Mbit/s)

Images:



Operation Band MHz = [5150, 5250] Active Port = 2
Frequency Range GHz = [7, 17] Frequency MHz = 5200.00000
Modulation = 802.11a (OFDM 6 Mbit/s)

Images:

