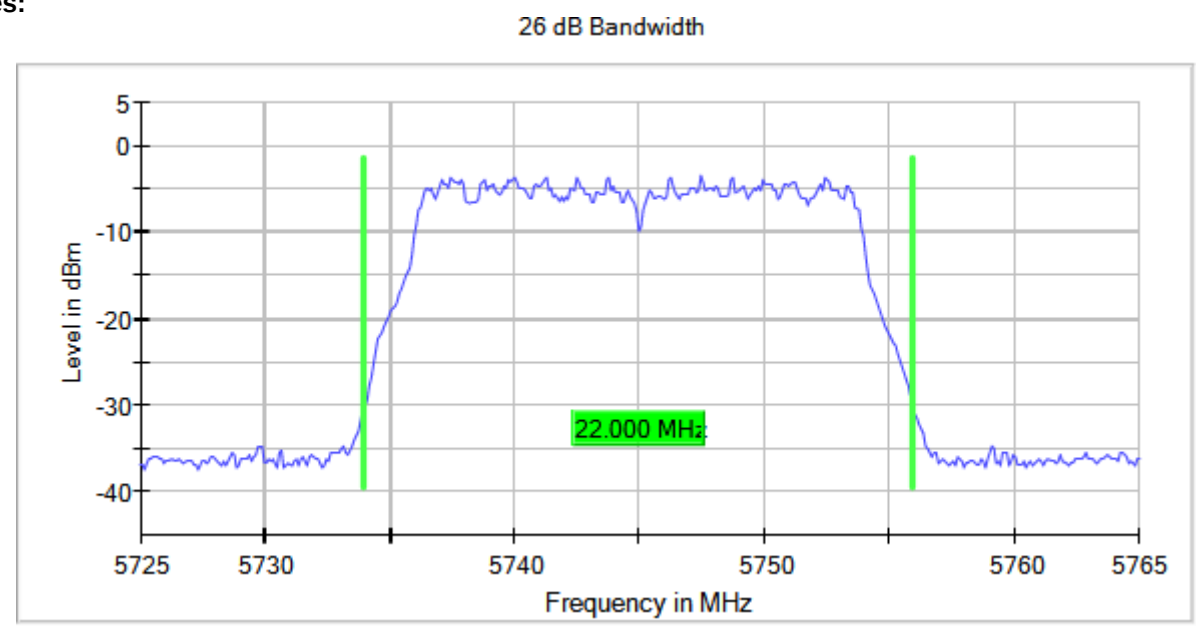
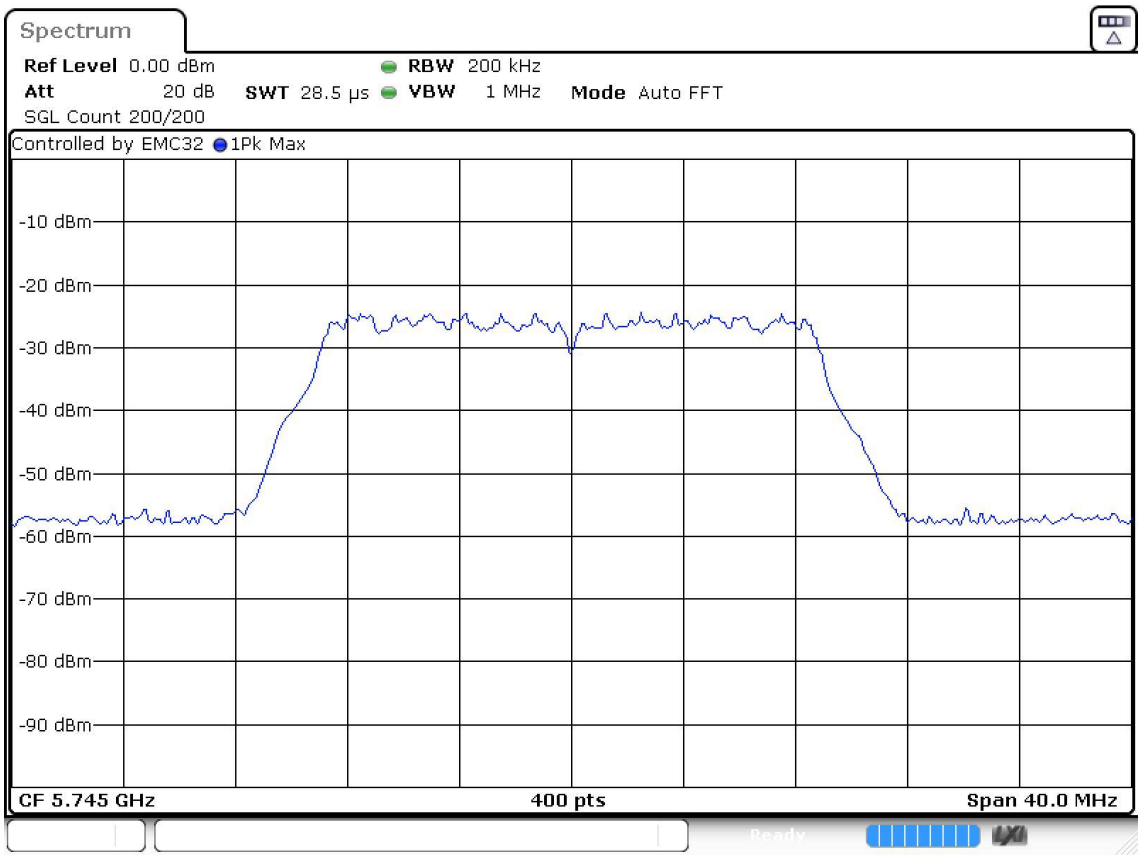
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5745.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode = SISO

Images:



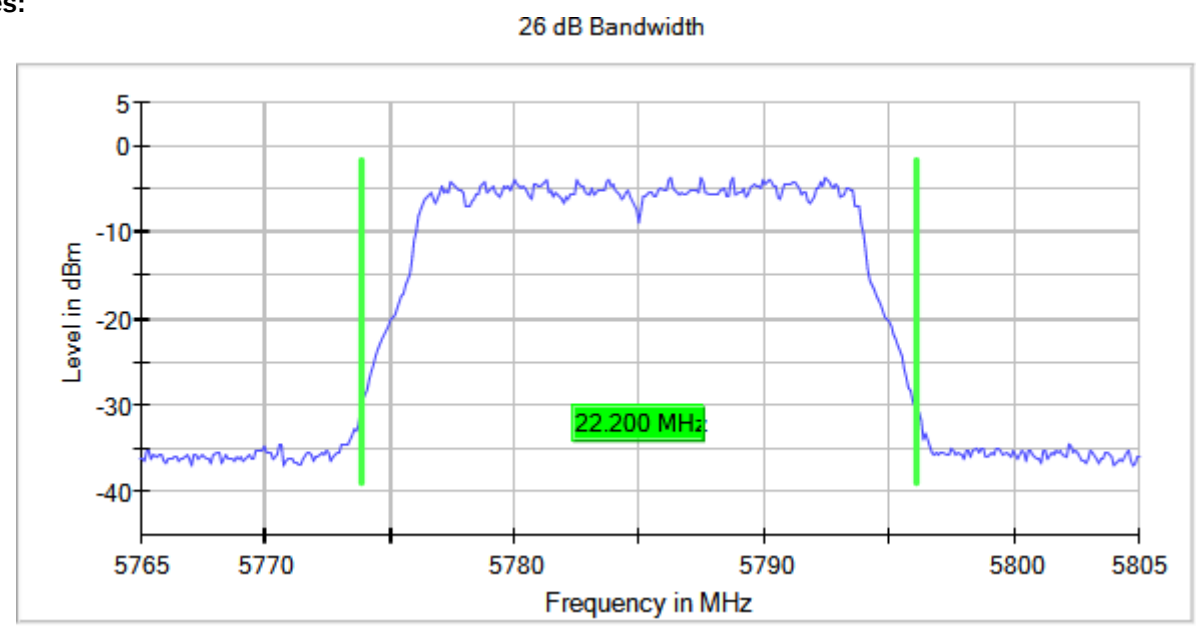


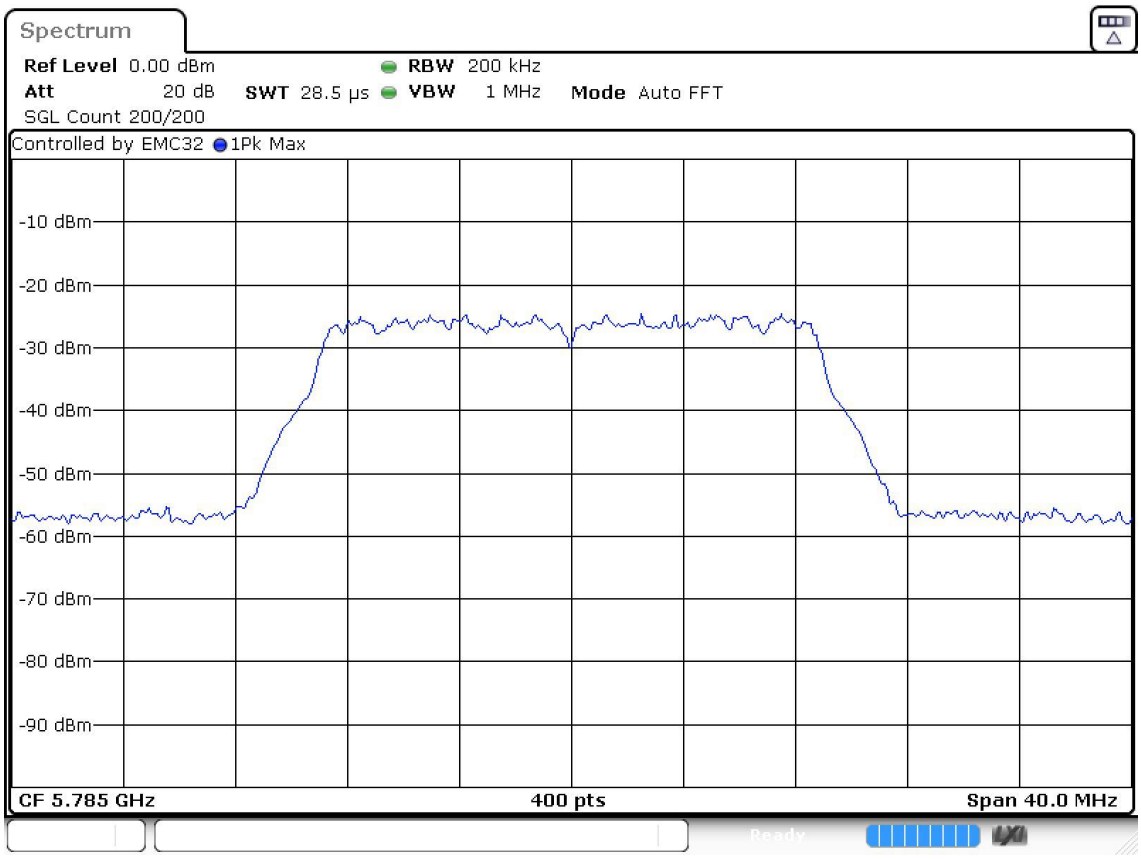
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5785.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode = SISO

Images:



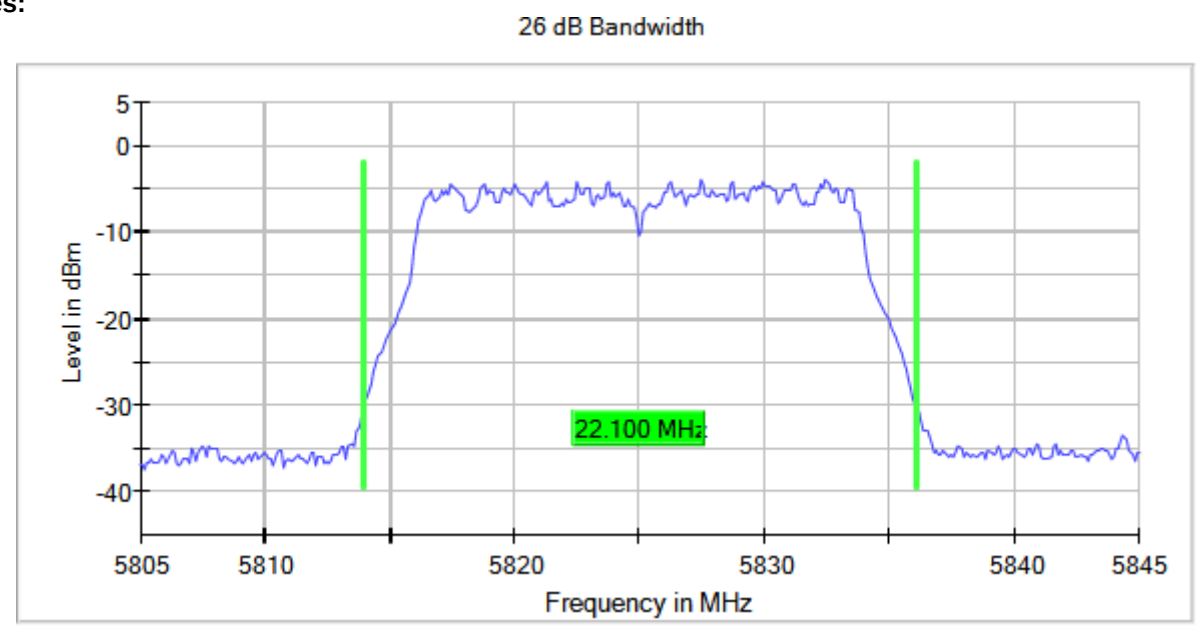


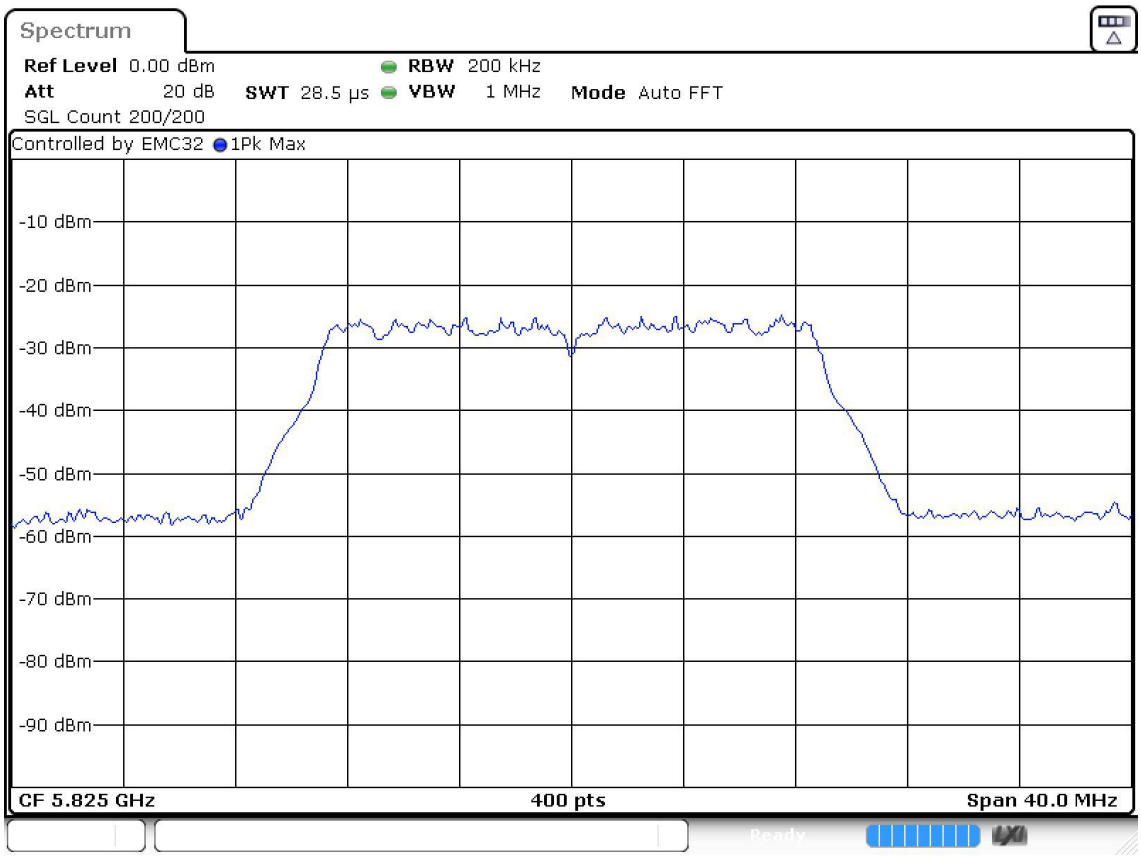
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5825.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	1	5190.00000	40.075
		5230.00000	40.375
[5725, 5850]		5755.00000	40.525
		5795.00000	40.525

Verdict

Pass

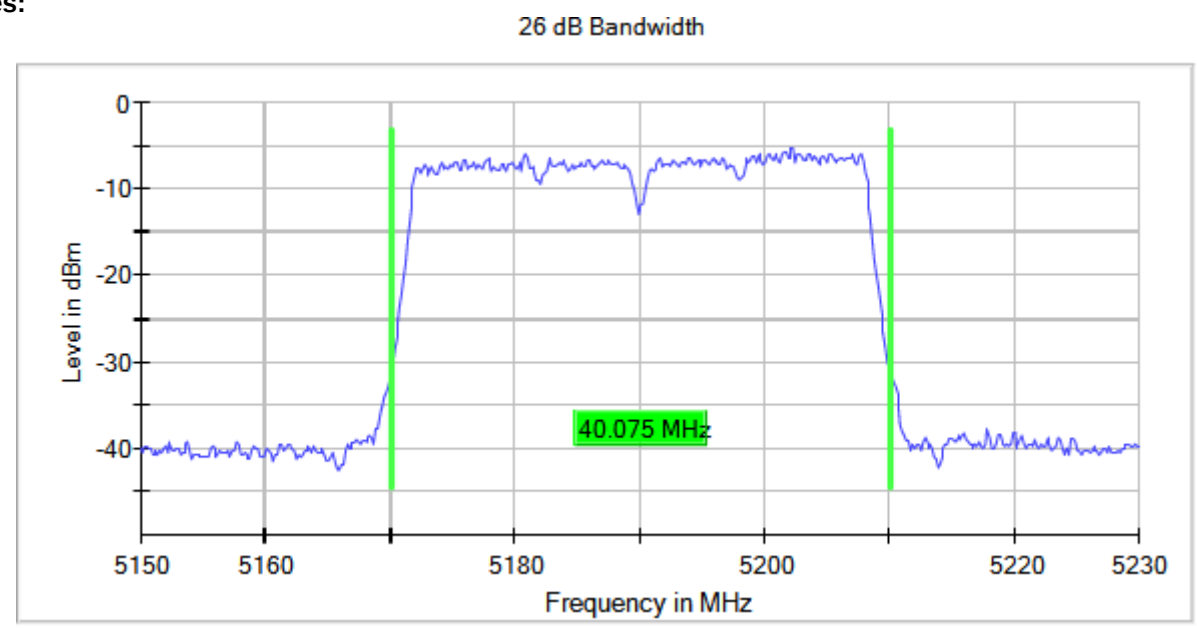
Attachments

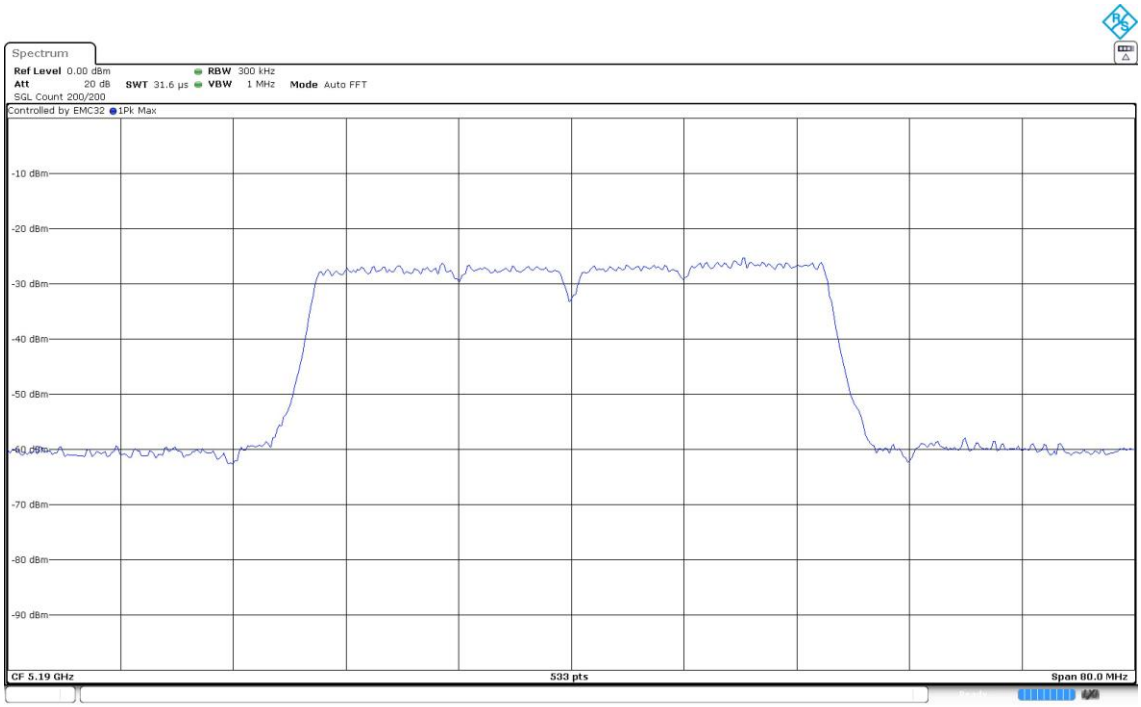
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5190.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

MIMO Mode = SISO

Images:



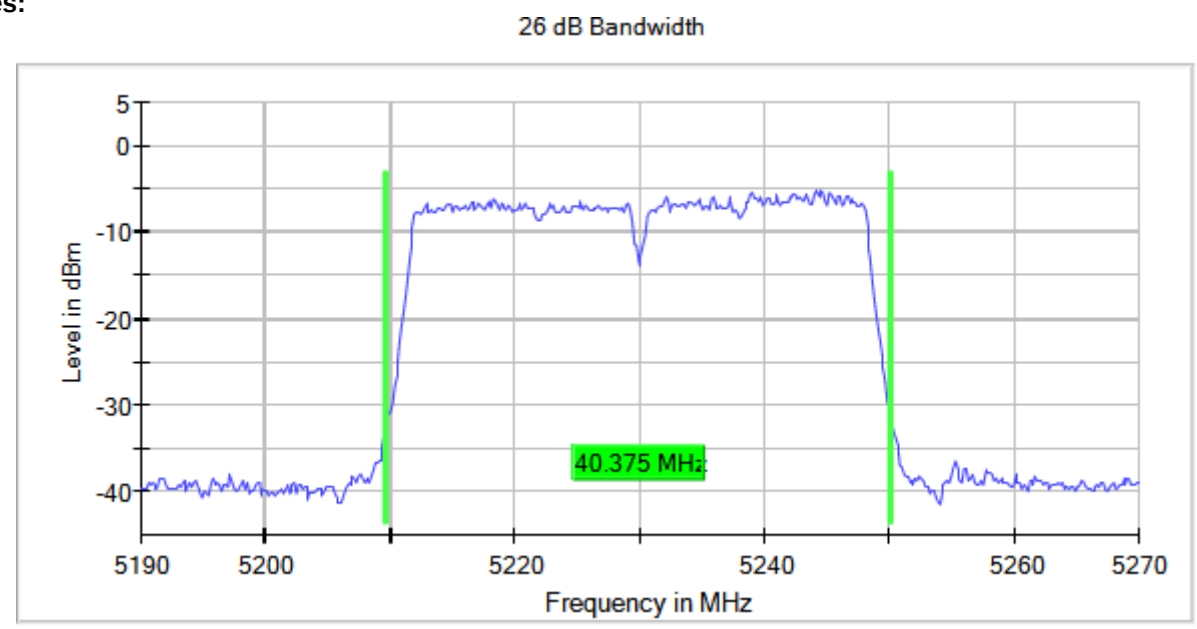


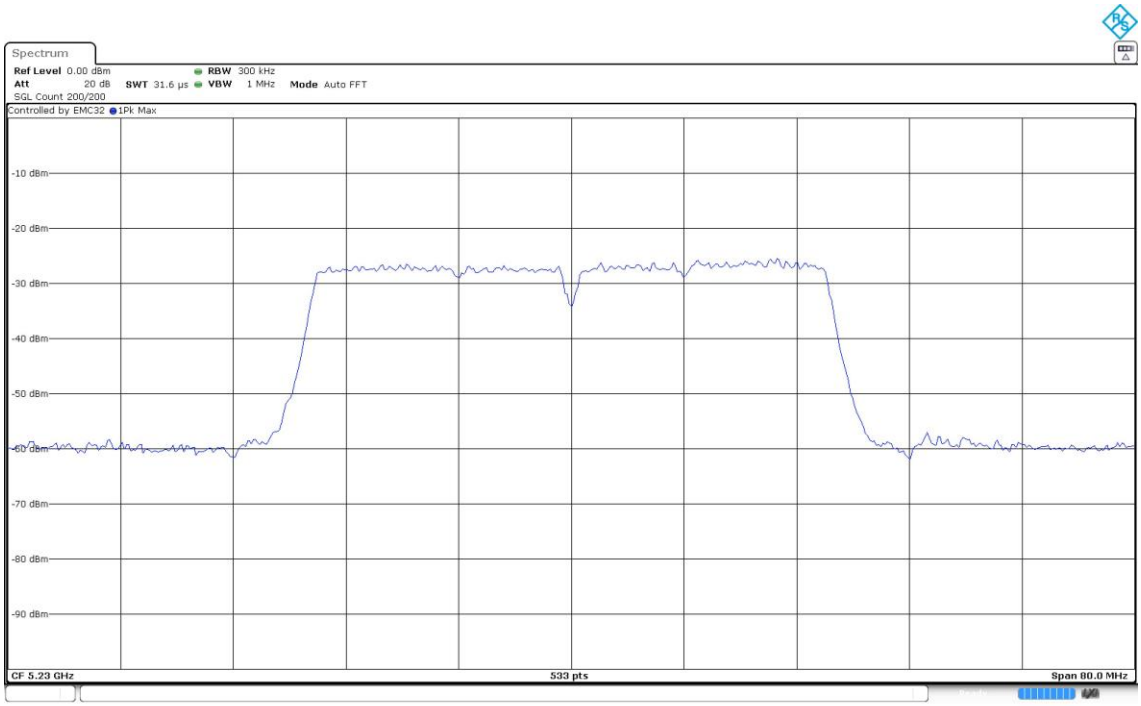
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5230.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

MIMO Mode = SISO

Images:



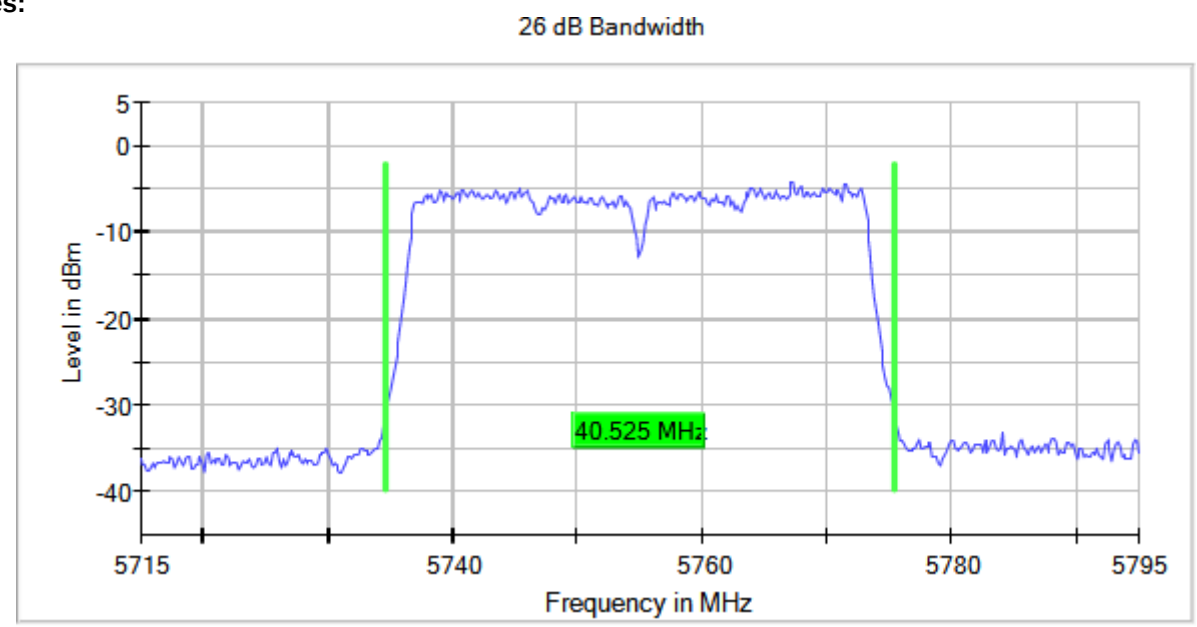


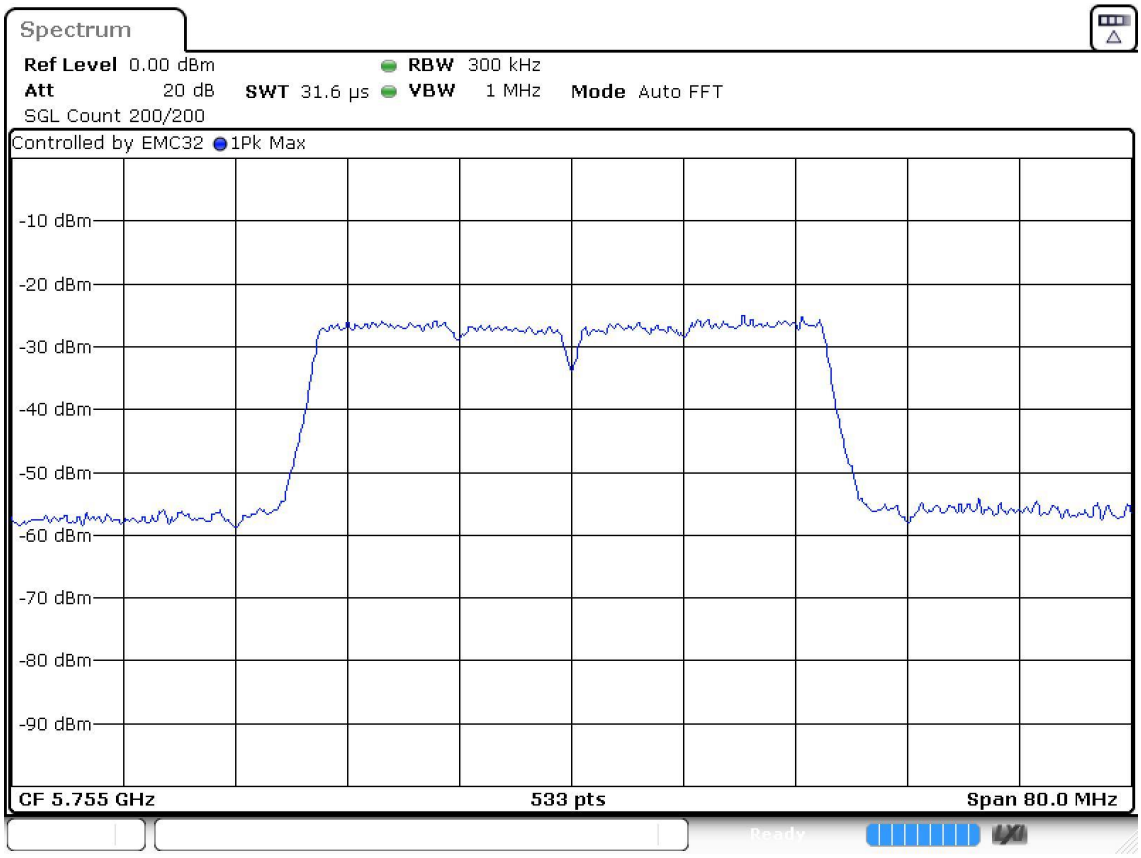
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5755.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

MIMO Mode = SISO

Images:



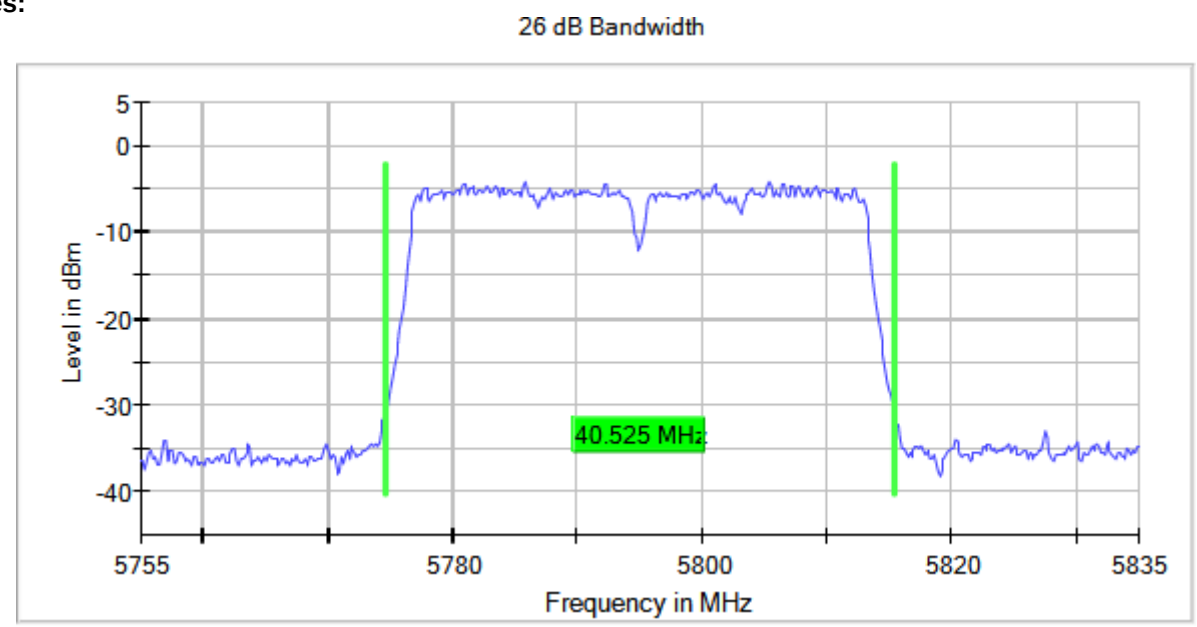


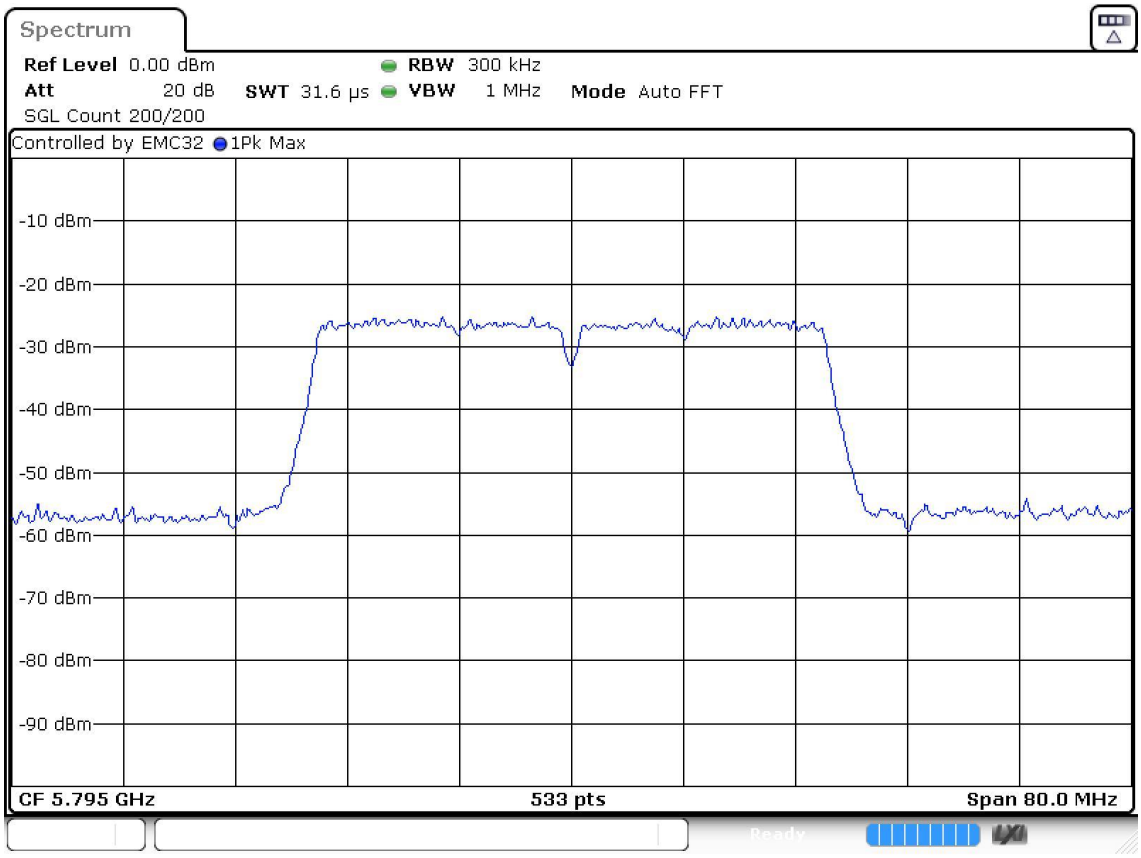
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5795.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)

MIMO Mode = SISO

Images:





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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	1	5190.00000	40.375
		5230.00000	40.225
[5725, 5850]		5755.00000	40.525
		5795.00000	40.525

Verdict

Pass

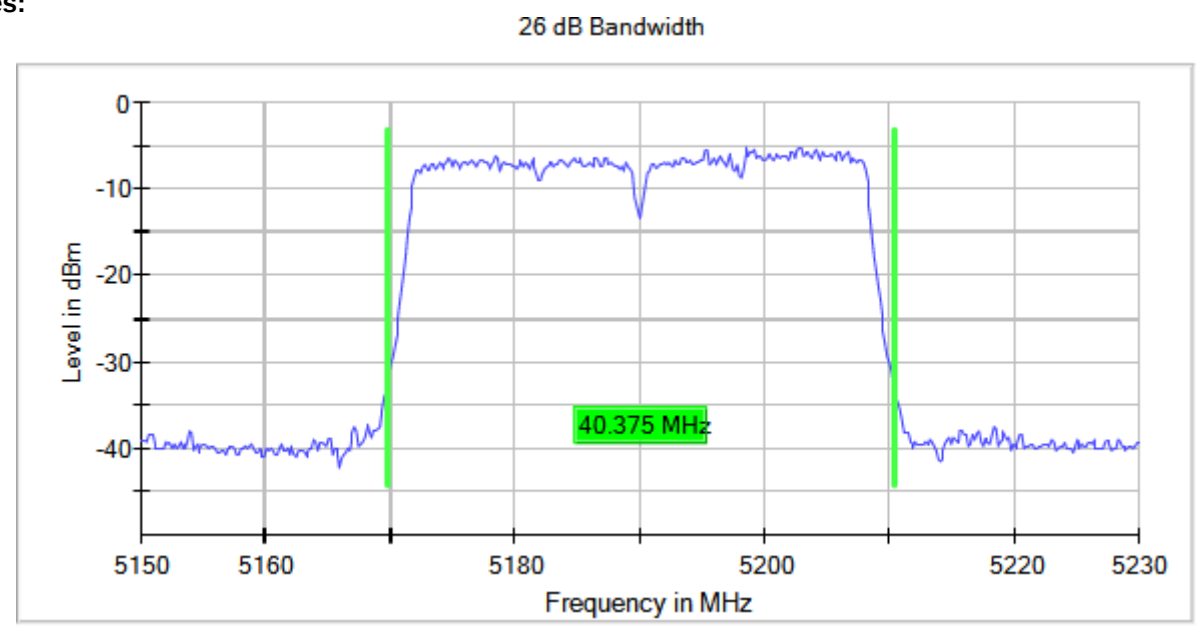
Attachments

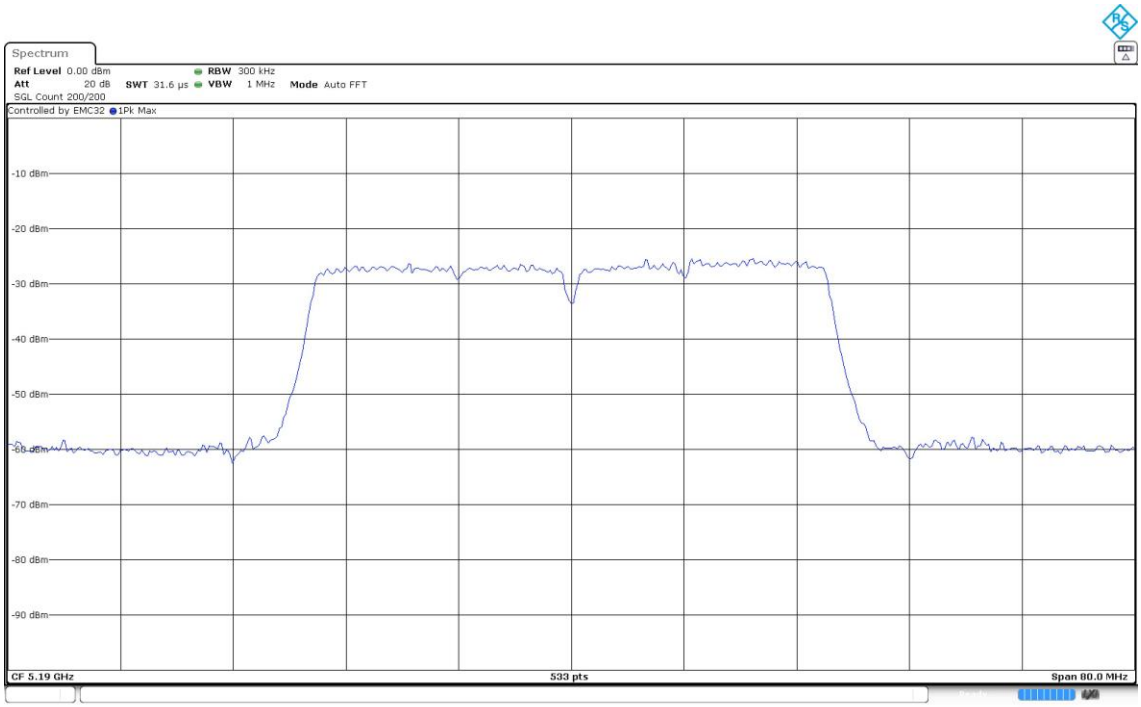
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5190.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

MIMO Mode = SISO

Images:



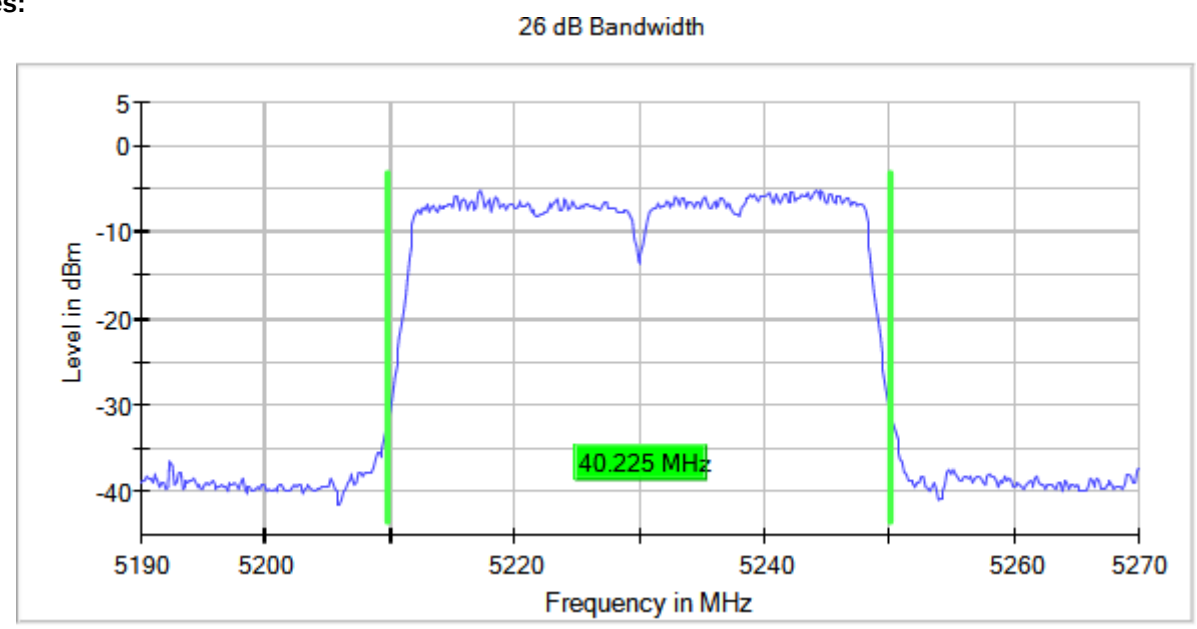


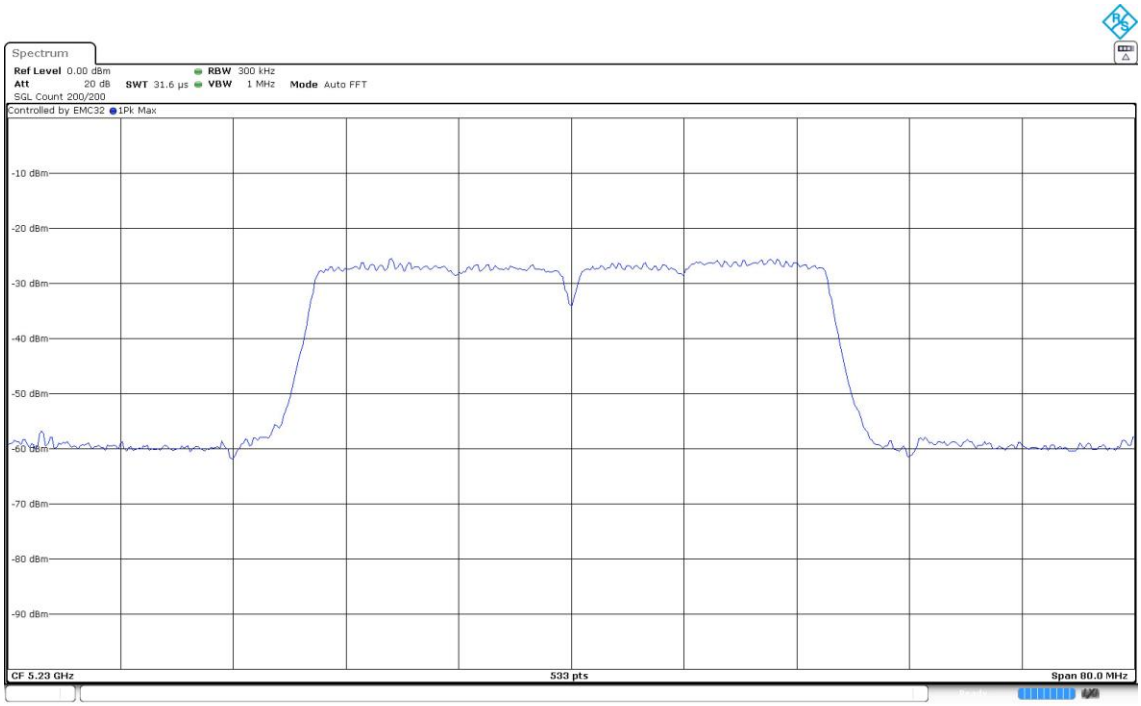
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5230.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

MIMO Mode = SISO

Images:



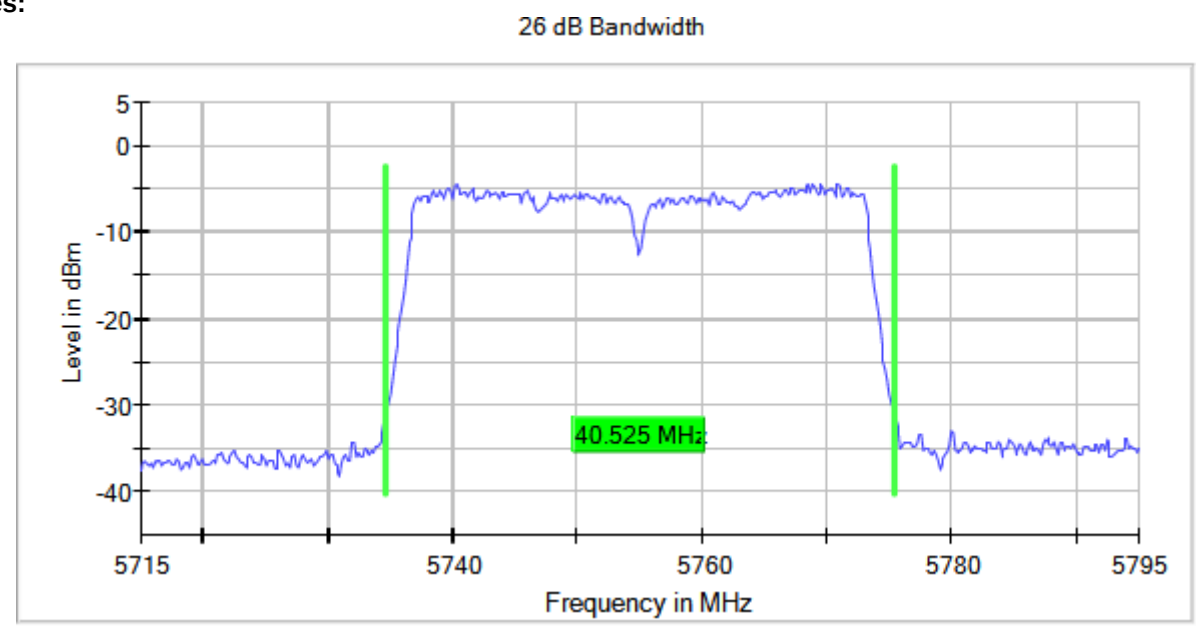


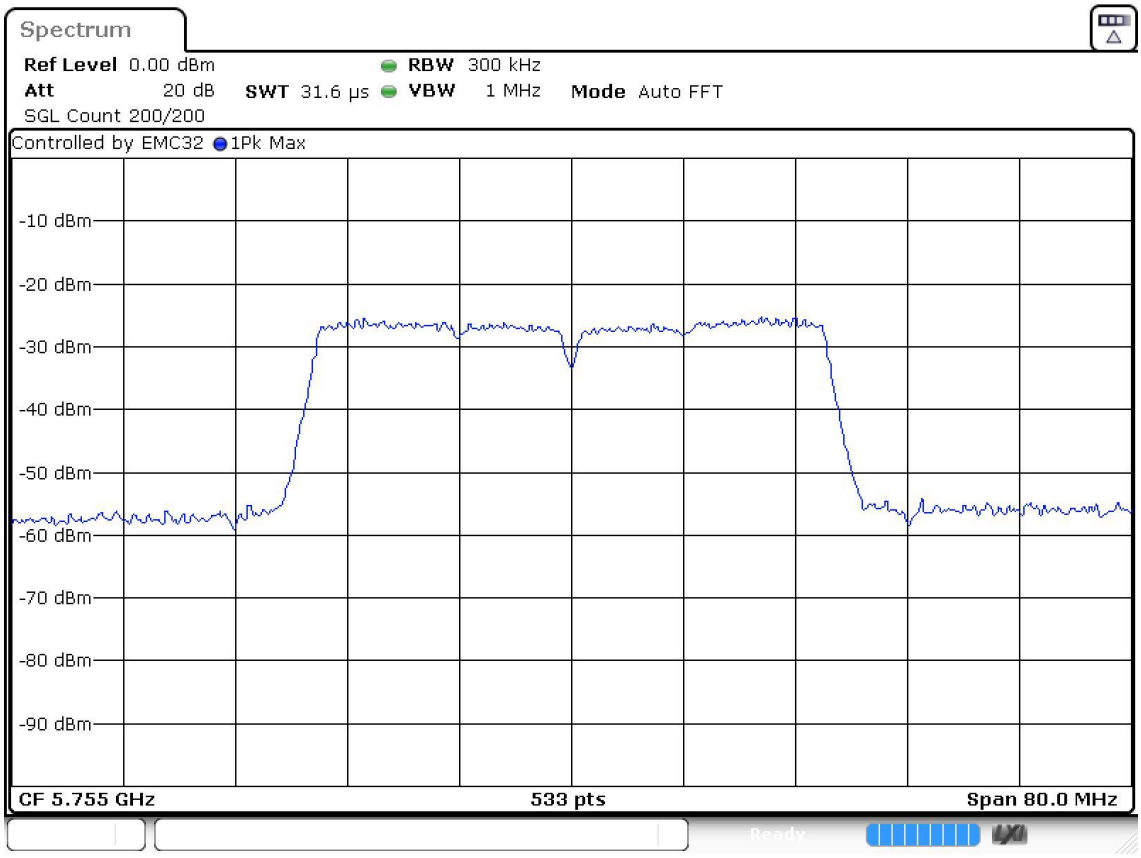
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5755.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

MIMO Mode = SISO

Images:



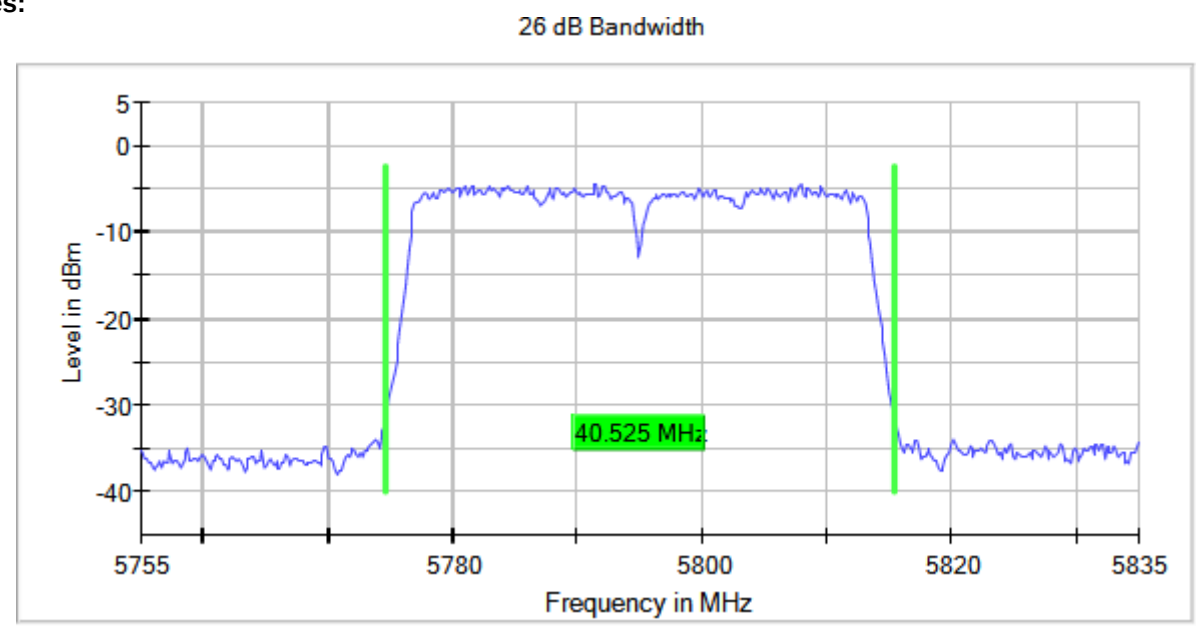


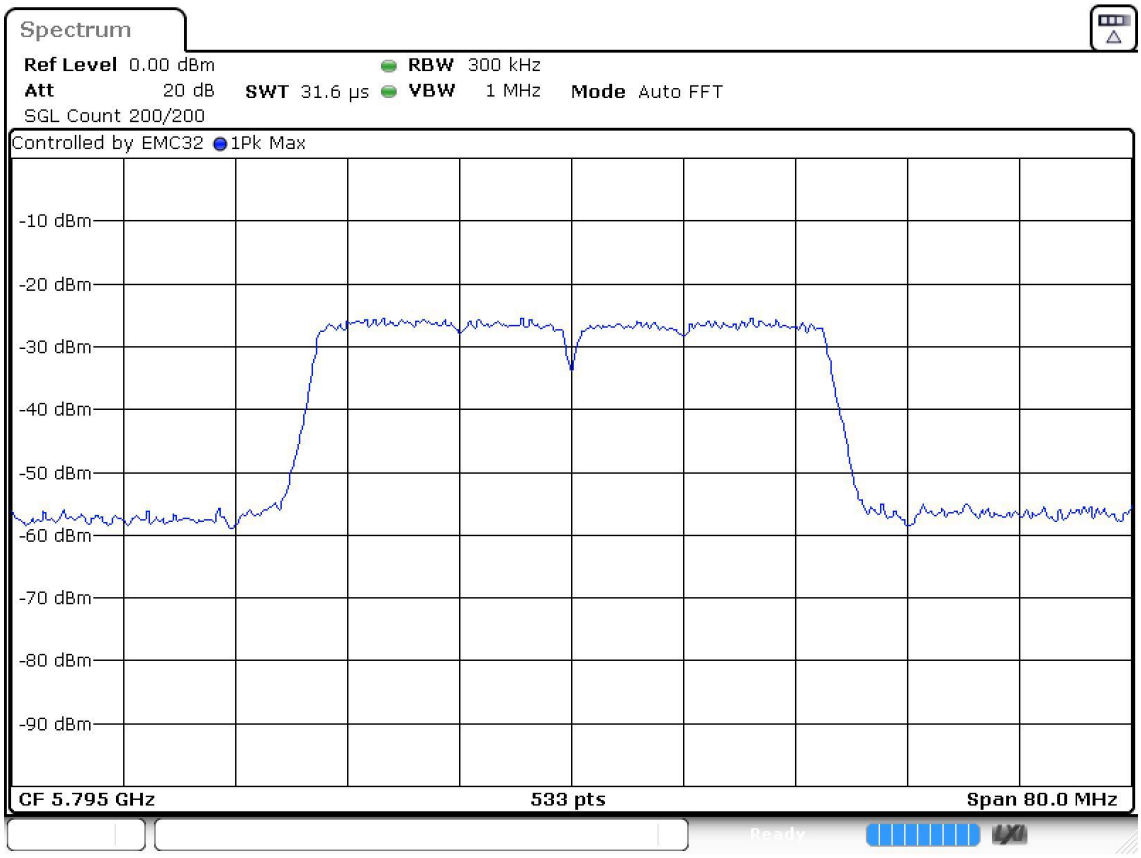
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5795.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	1	5210.00000	82.500
[5725, 5850]		5775.00000	83.500

Verdict

Pass

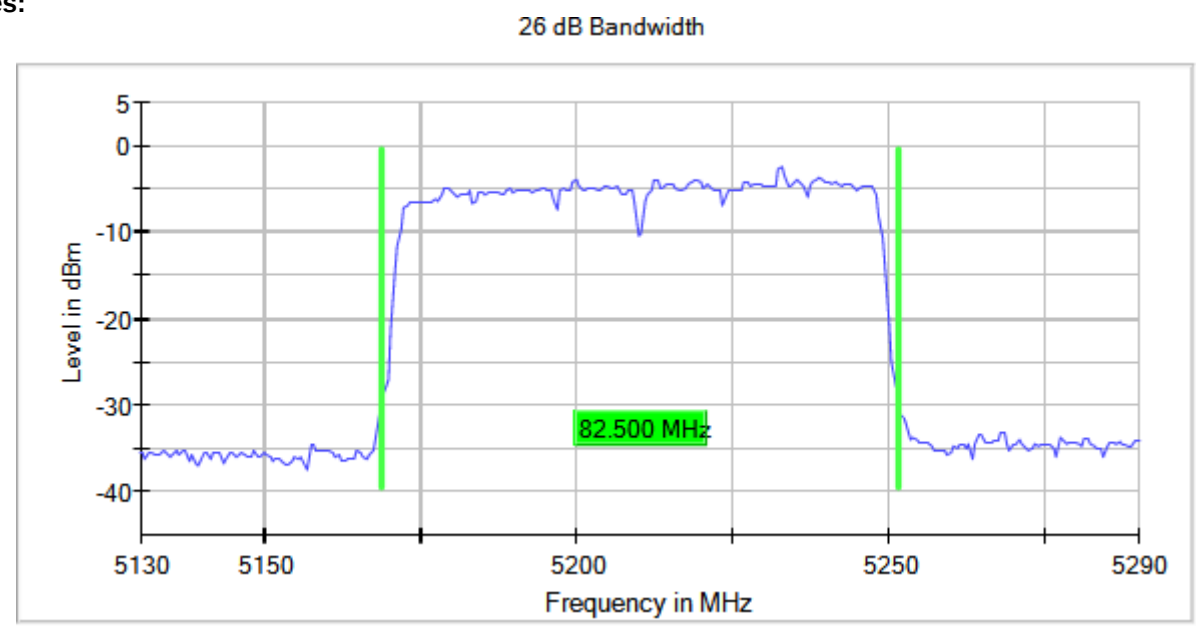
Attachments

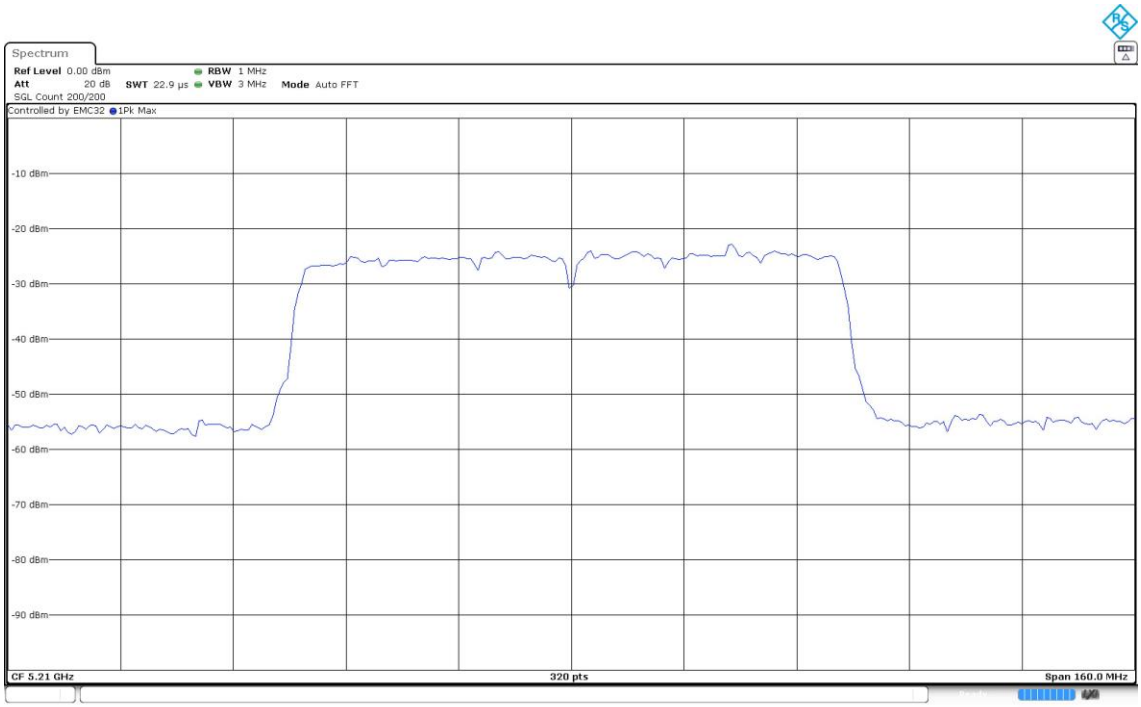
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5210.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)

MIMO Mode = SISO

Images:



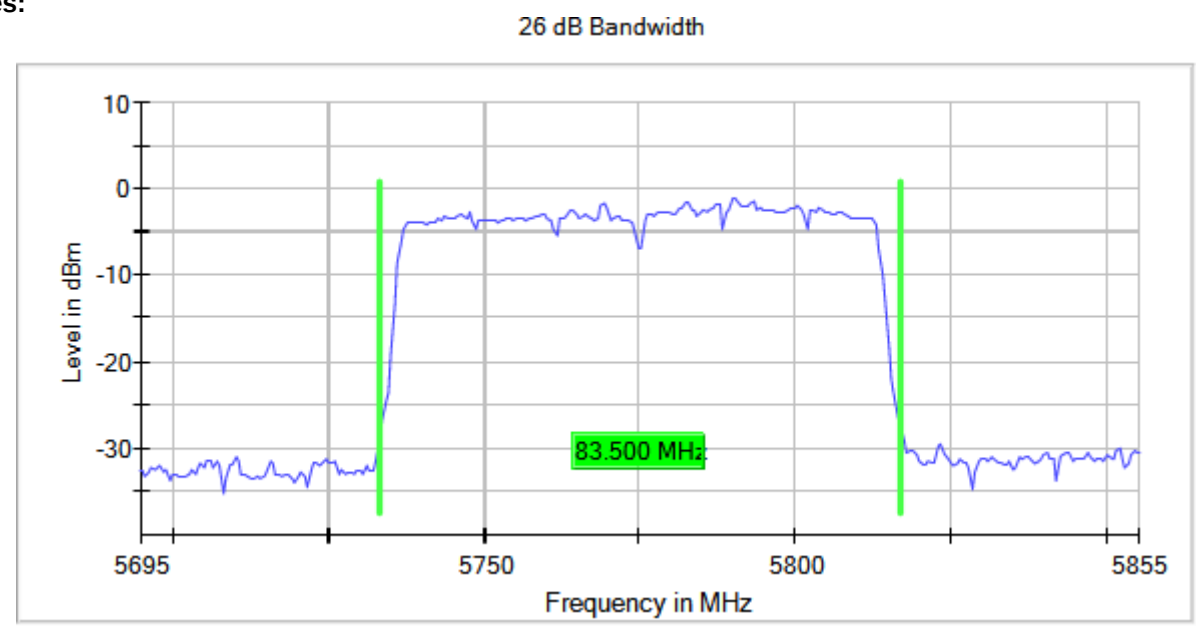


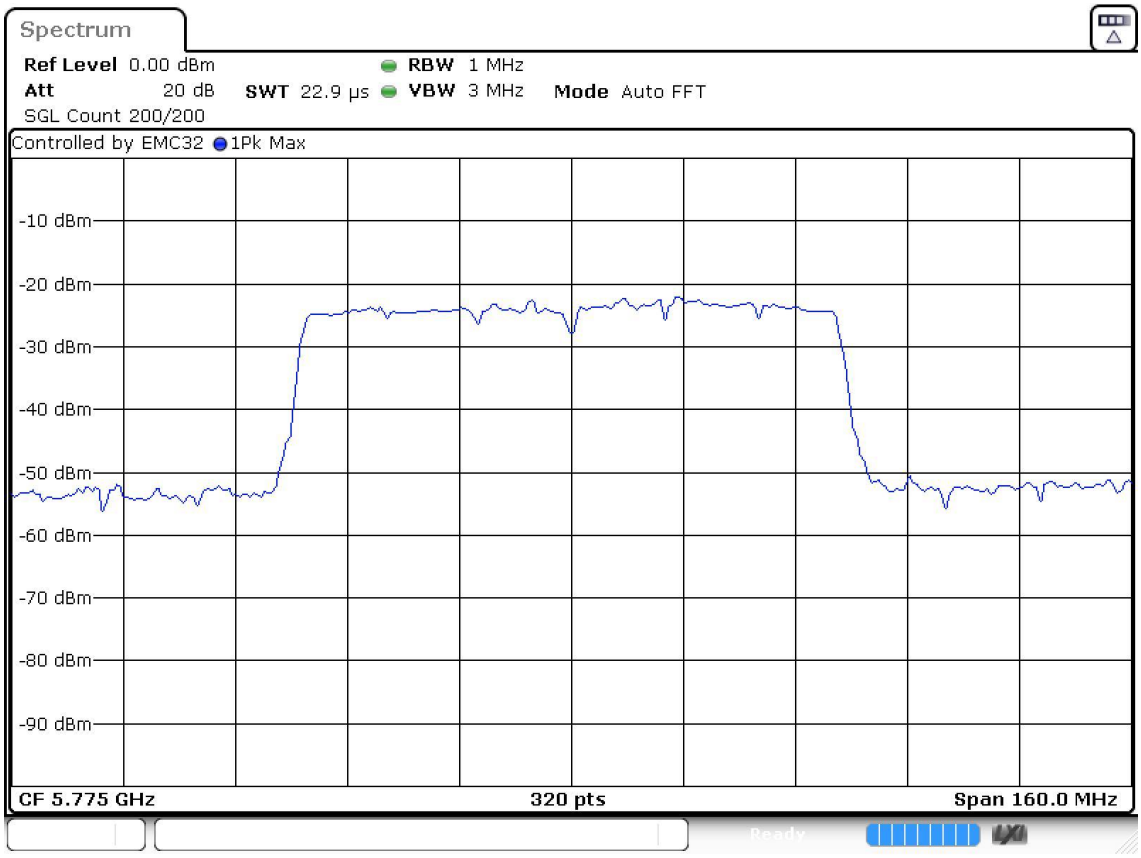
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5775.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)

MIMO Mode = SISO

Images:





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

INDEX

TEST CASES DETAILS

FCC 15.407 (a)(1)(iv) Transmitter Maximum Conducted Output Power/ RSS-247 Clause 6.2.1.1. Transmitter Maximum Equivalent Isotropically Radiated Power

Limits

FCC 15.407:
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. 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.

RSS-247:
The maximum e.i.r.p. shall not exceed 200 mW (23 dBm) or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Specification

The maximum conducted output power was measured using the method according to clause E) 3) b) (Method PM-G) of 789033 D02 General UNII Test Procedures New Rules v02r01.

The e.i.r.p. levels are calculated by adding the declared maximum antenna gain (dBi).

Results (FCC)

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	5.42	11.12
		5220.00000		5.46	11.16
		5240.00000		5.65	11.35

Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	5.41	11.11
		5220.00000		5.24	10.94
		5240.00000		5.67	11.37

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	5.35	11.05
		5220.00000		5.47	11.17
		5240.00000		5.68	11.38

Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5190.00000	No	5.83	11.53
		5230.00000		5.80	11.50

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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5190.00000	No	5.90	11.60
		5230.00000		6.03	11.73

Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5210.00000	No	5.40	11.10

Verdict

Pass

Results (ISED)

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	1.20	6.90
		5220.00000		1.02	6.72
		5240.00000		0.68	6.38

Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	1.25	6.95
		5220.00000		0.75	6.45
		5240.00000		0.67	6.37

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5180.00000	No	1.03	6.73
		5220.00000		0.92	6.62
		5240.00000		0.71	6.41

Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5190.00000	No	1.57	7.27
		5230.00000		1.00	6.70

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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5190.00000	No	1.57	7.27
		5230.00000		1.01	6.71

Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	1	5210.00000	No	0.93	6.63

Verdict

Pass

RSS-247 6.2.1.1 / FCC 15.407 (a) (1) Transmitter Maximum Power Spectral Density UNII-1

Limits

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.

Specification

The maximum Power Spectral Density (PSD) was measured using the method according to clause F) referencing E.2.b) (Method SA-1) of Guidance 789033 D02 General UNII Test Procedures New Rules v02r01.

The result of PSD was measured by setting a marker on the peak of the signal on the spectrum analyzer. The results are in the tables below.

Results (FCC)

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5186.534653	-6.09
		5220.00000		5214.851485	-6.79
		5240.00000		5246.336634	-6.04

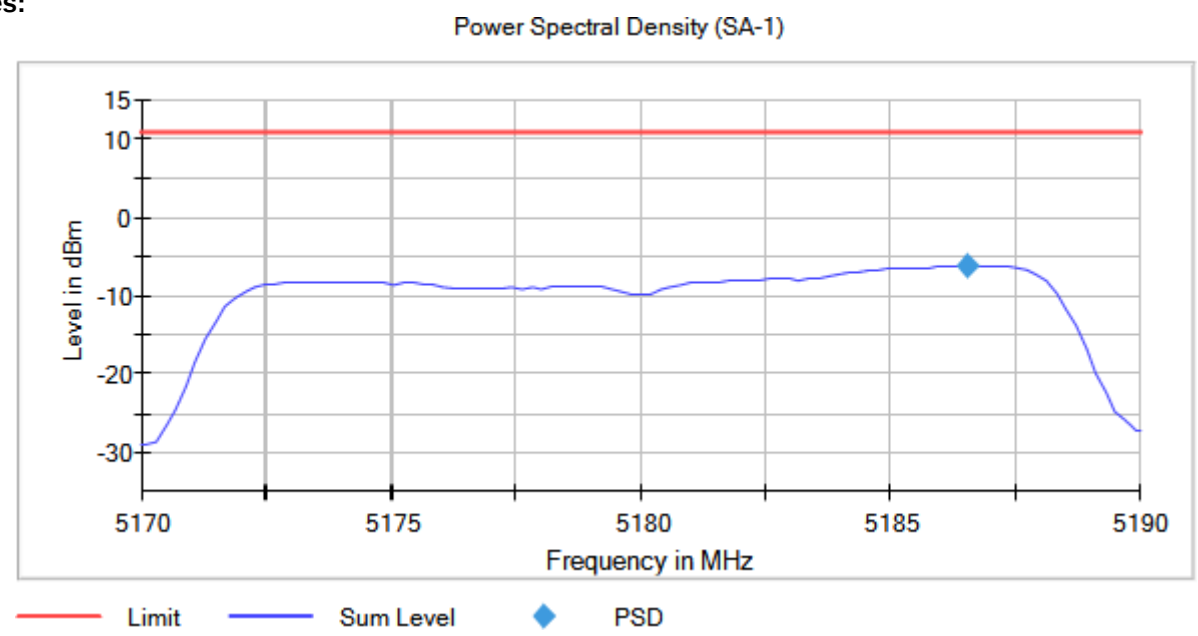
Verdict

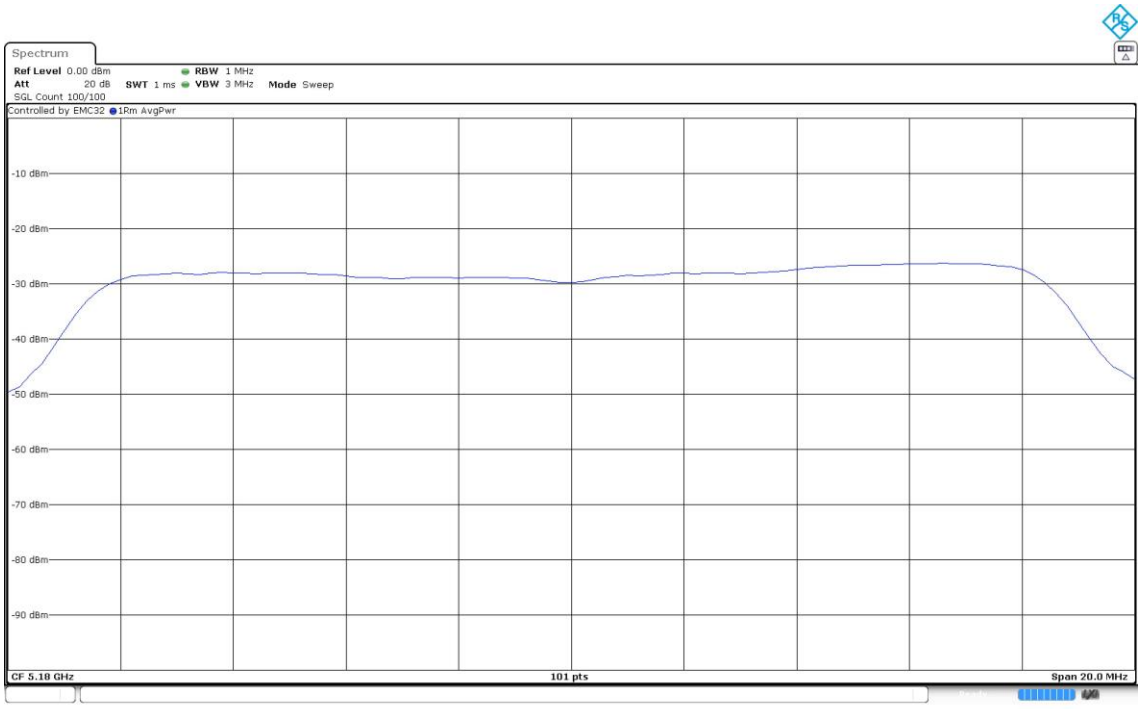
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

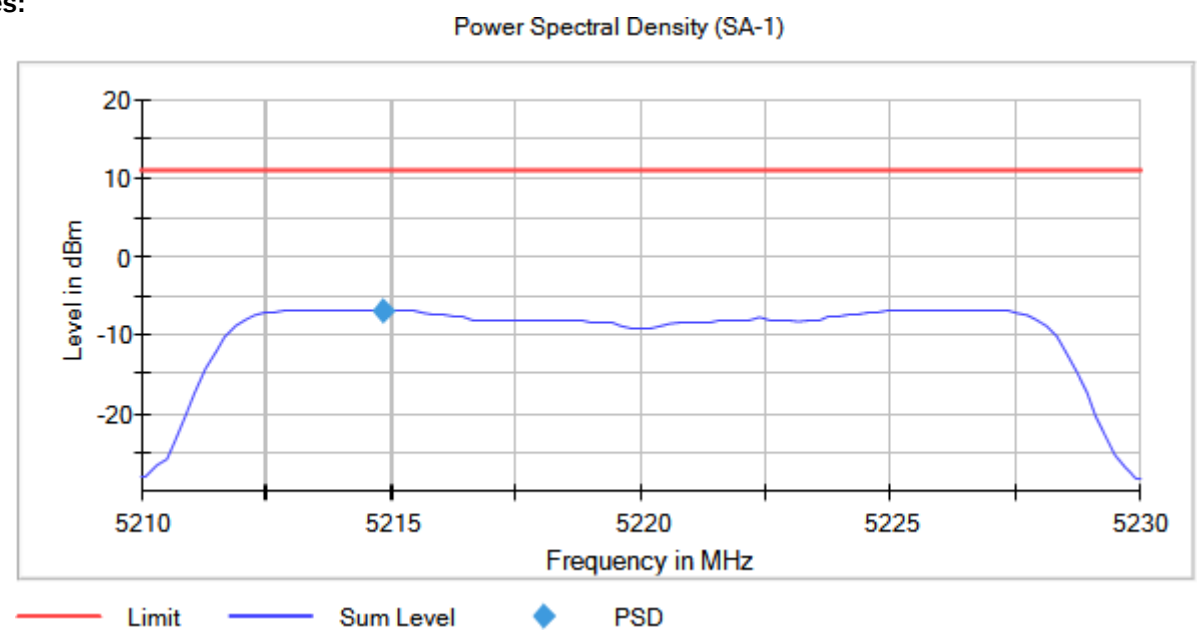
Images:

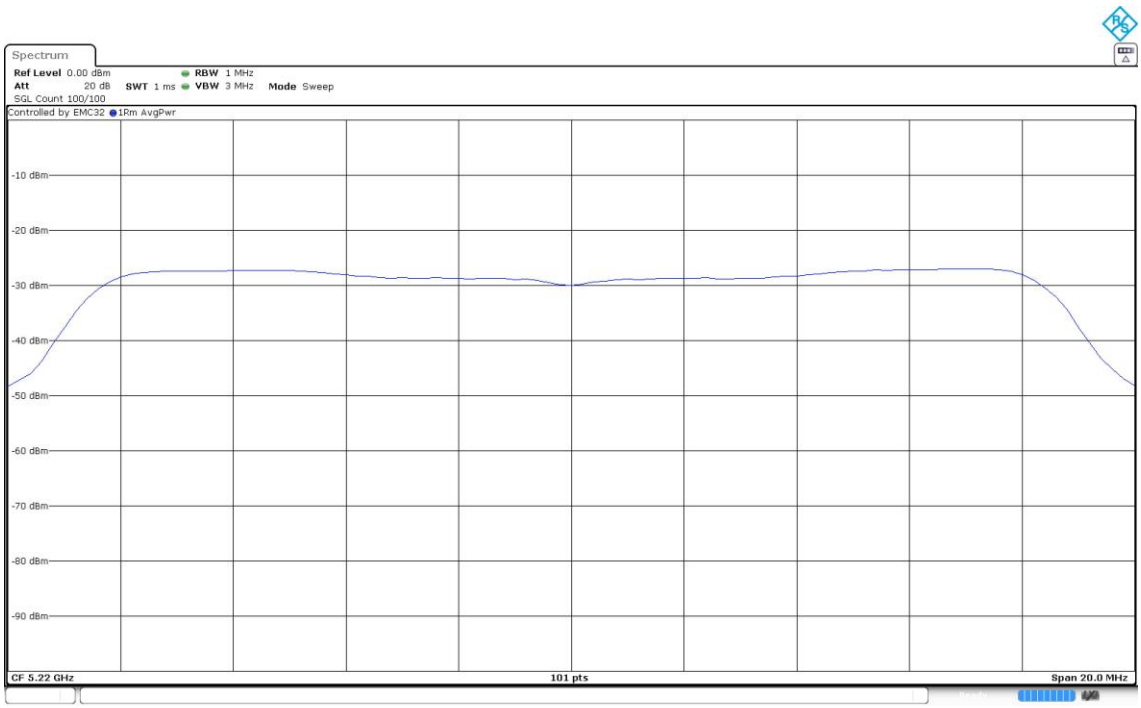




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

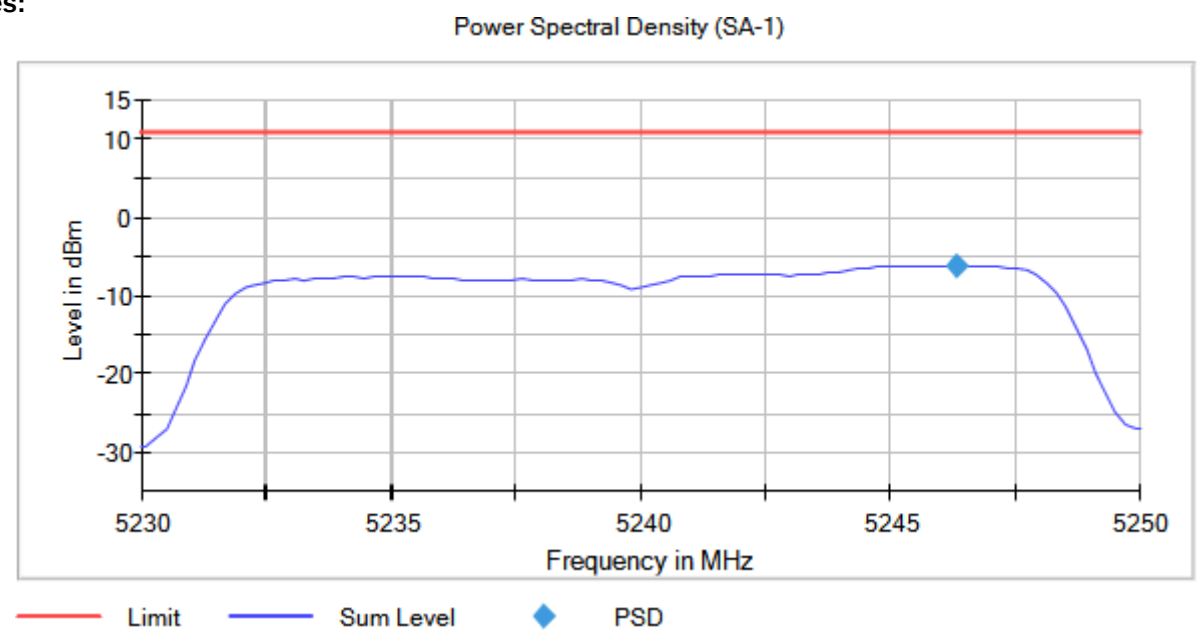
Images:

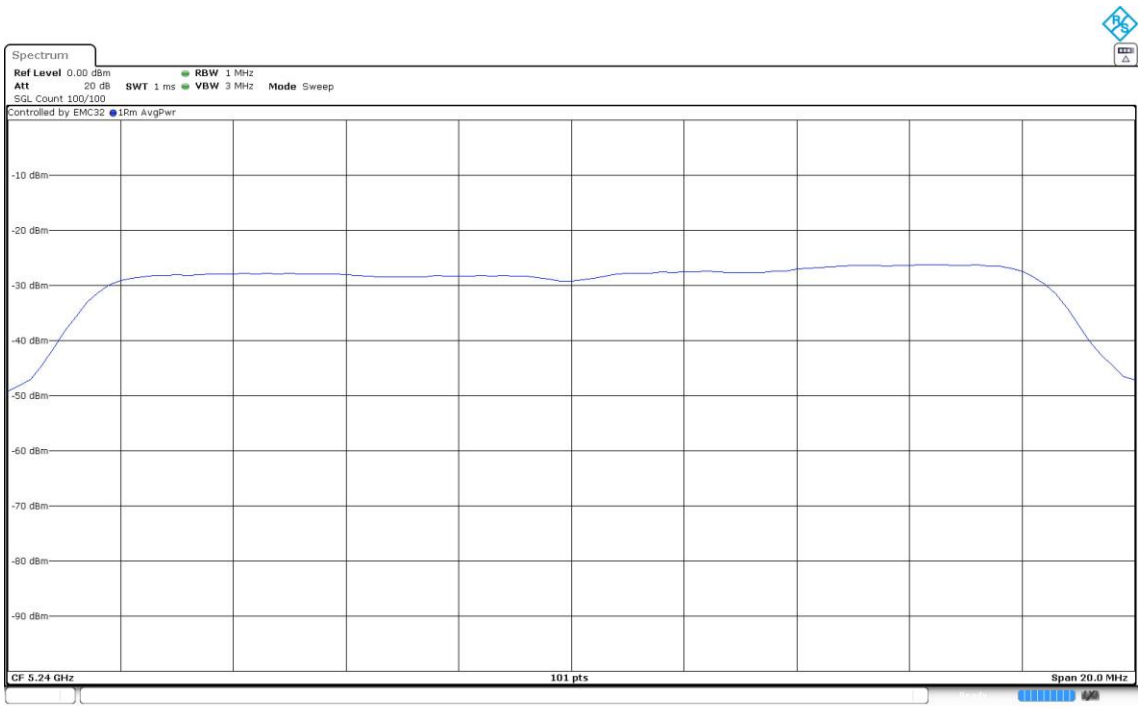




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5187.326733	-6.94
		5220.00000		5226.138614	-7.09
		5240.00000		5245.940594	-7.00

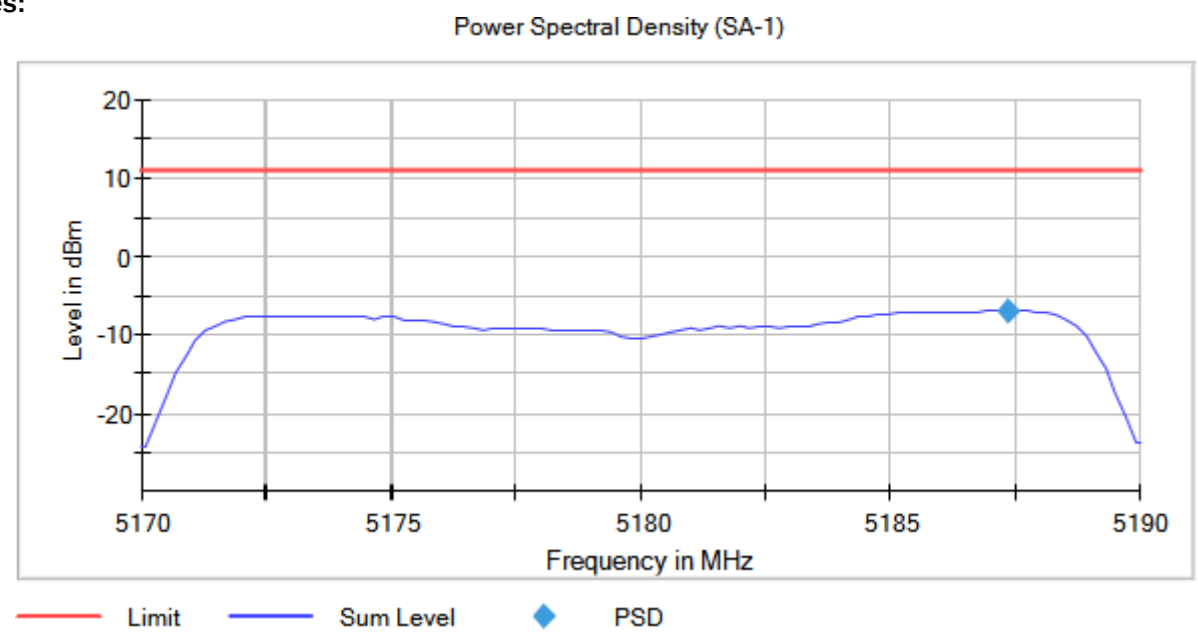
Verdict

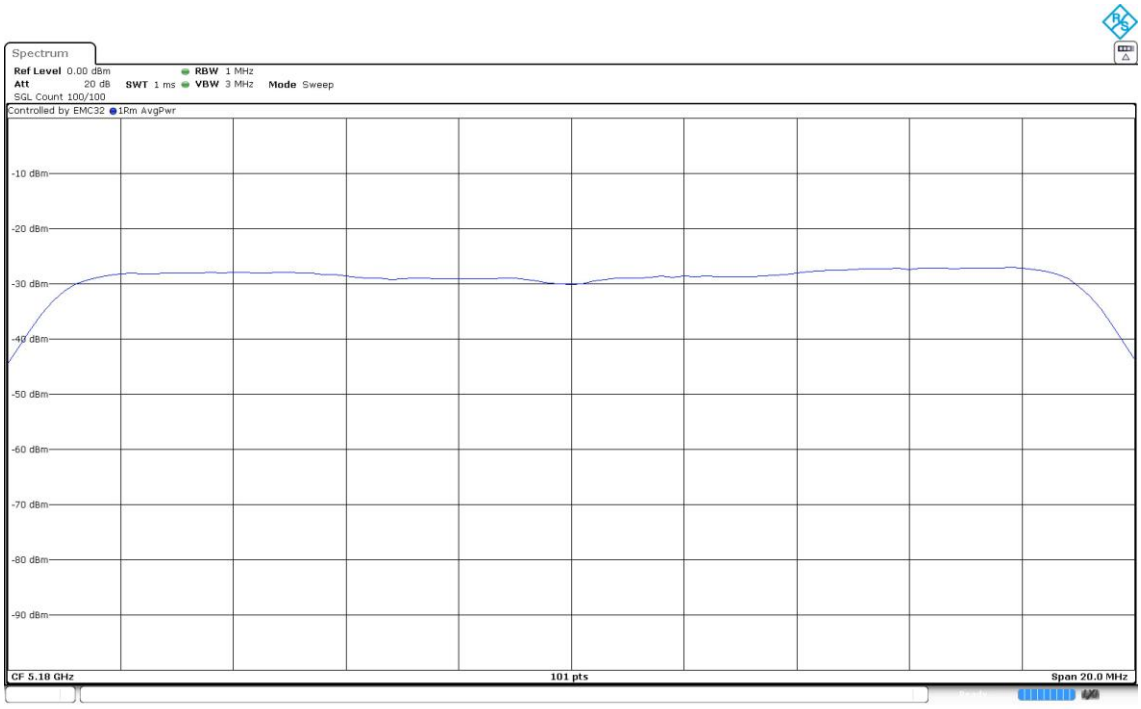
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

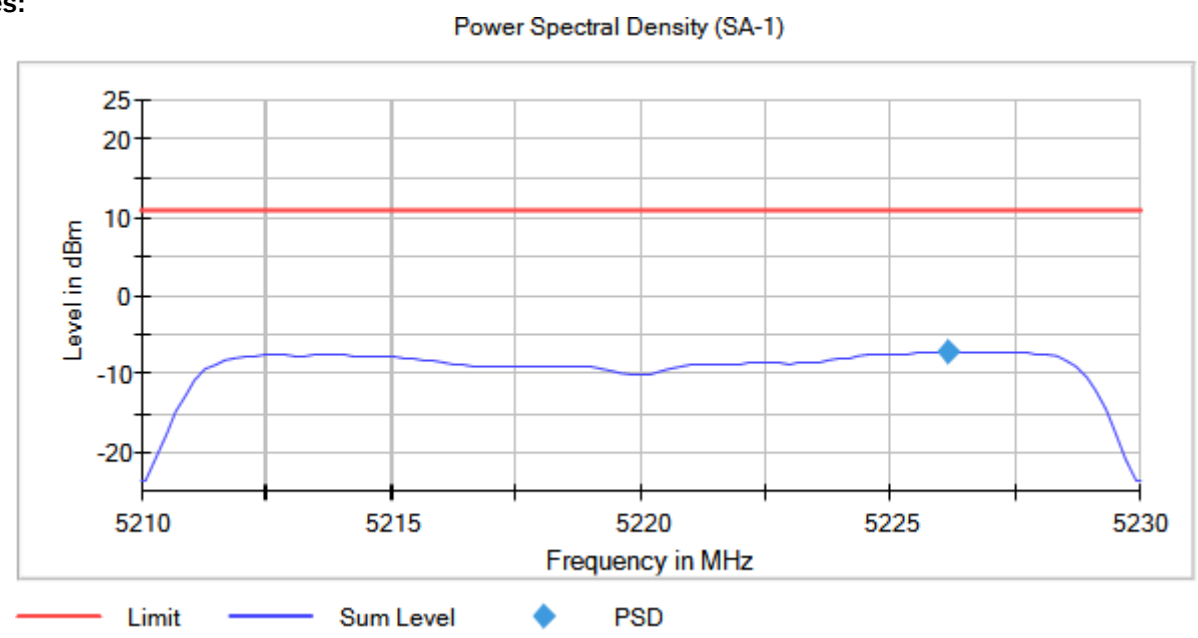
Images:

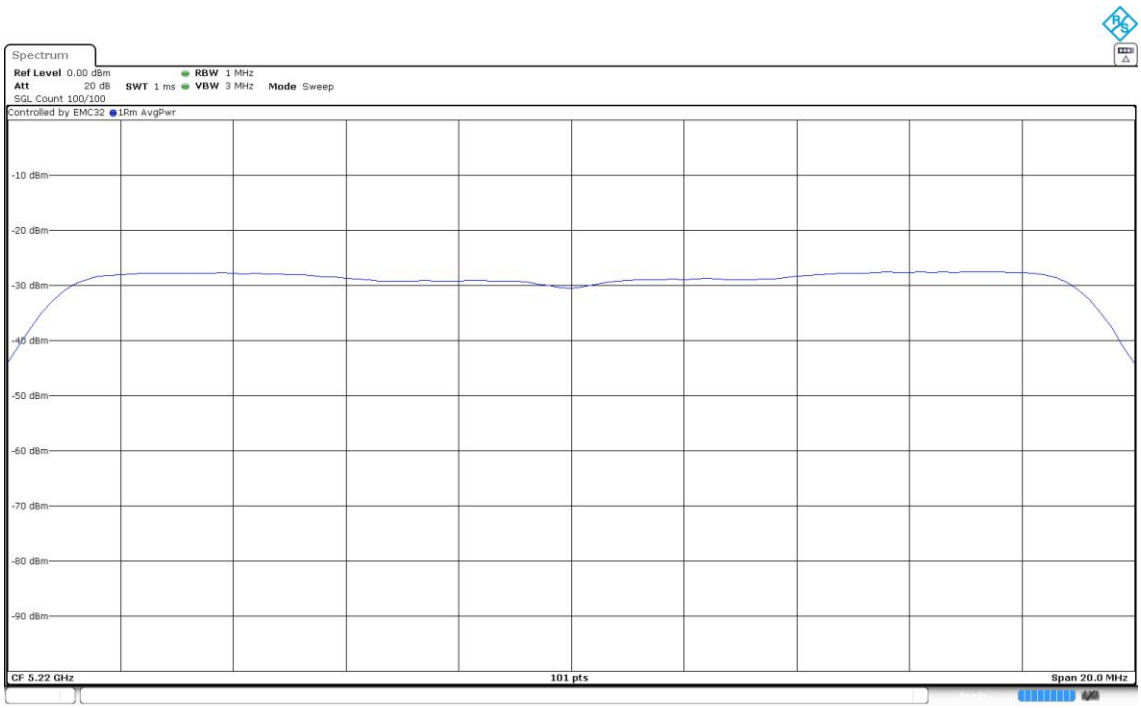




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

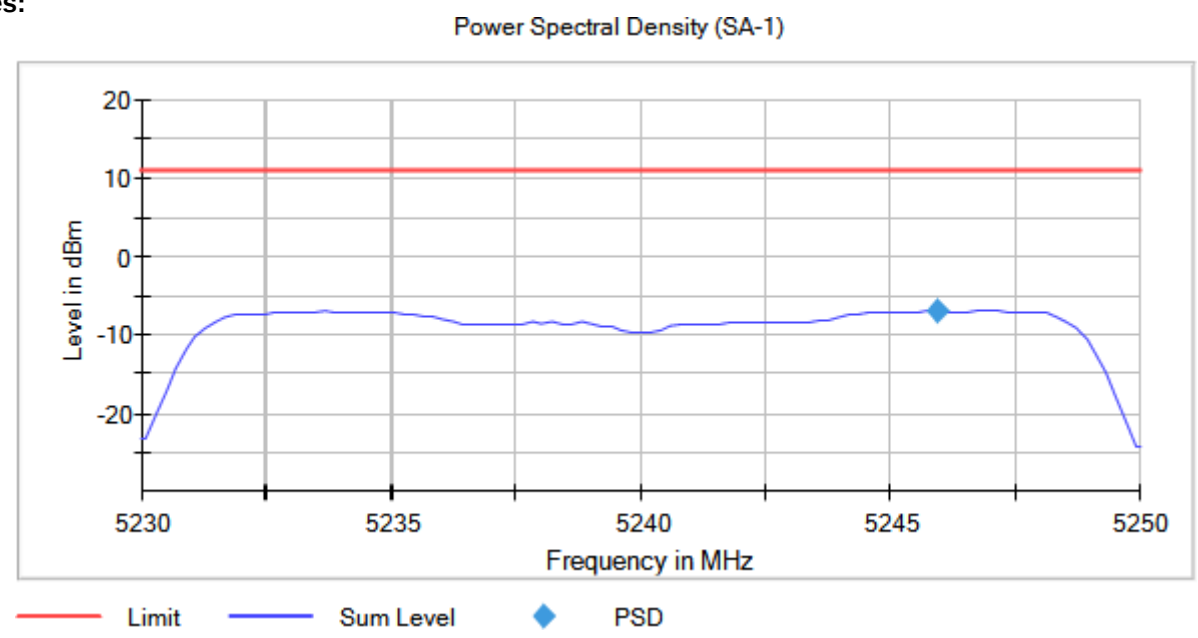
Images:

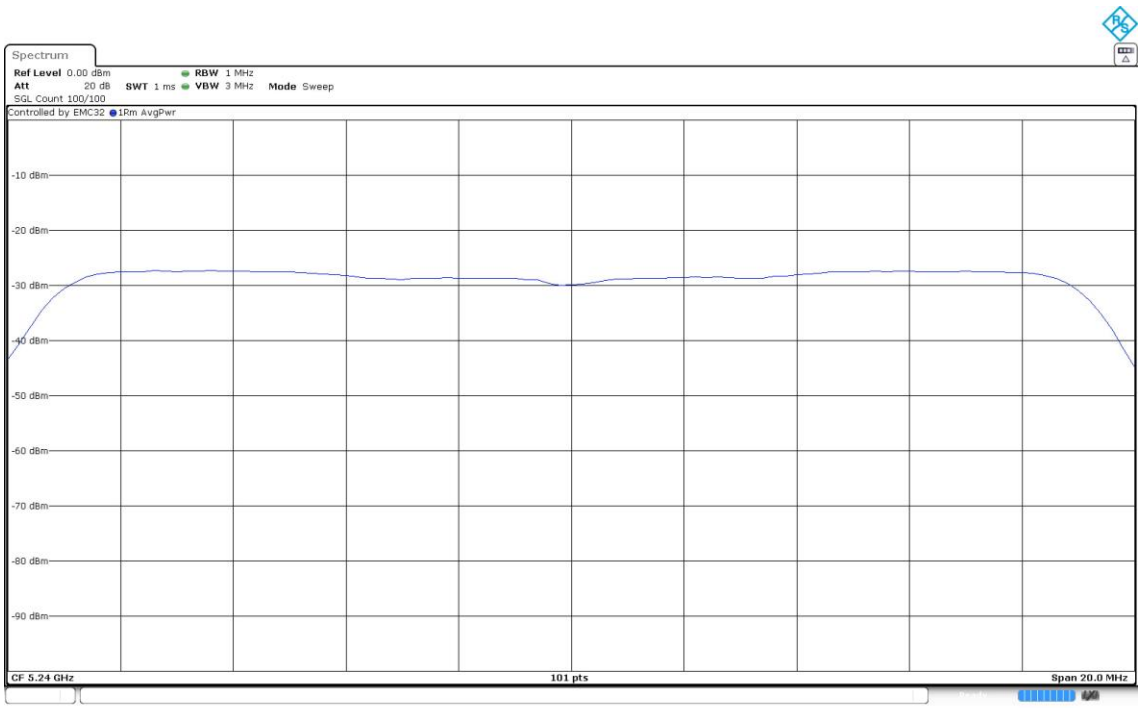




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5187.326733	-7.01
		5220.00000		5225.742574	-7.04
		5240.00000		5246.138614	-6.65

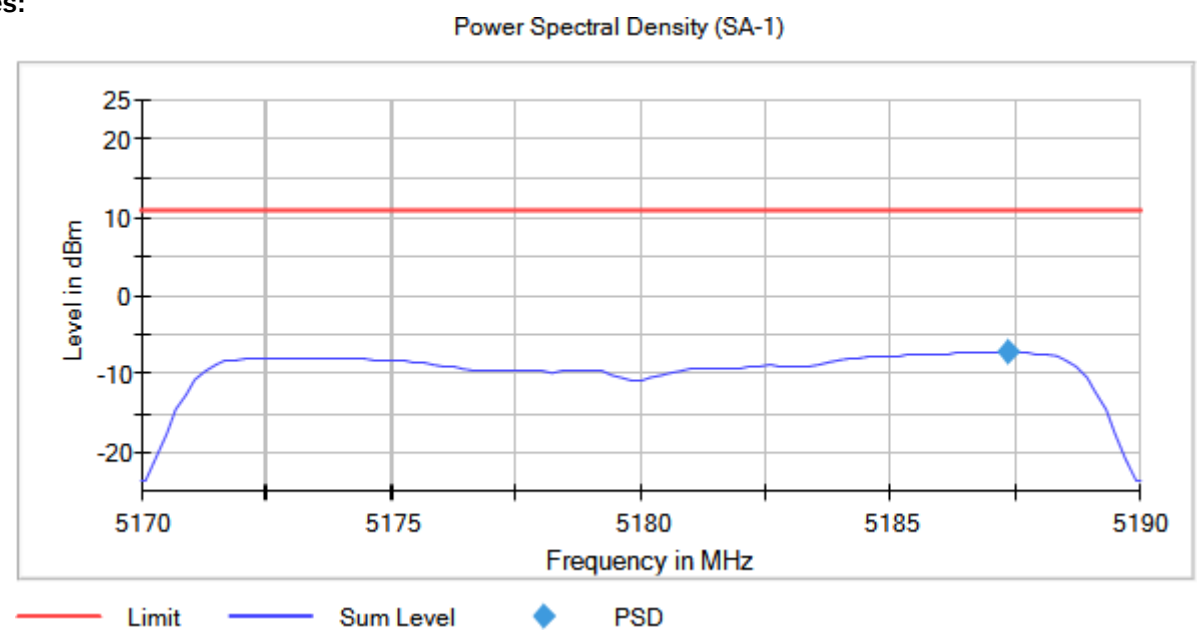
Verdict

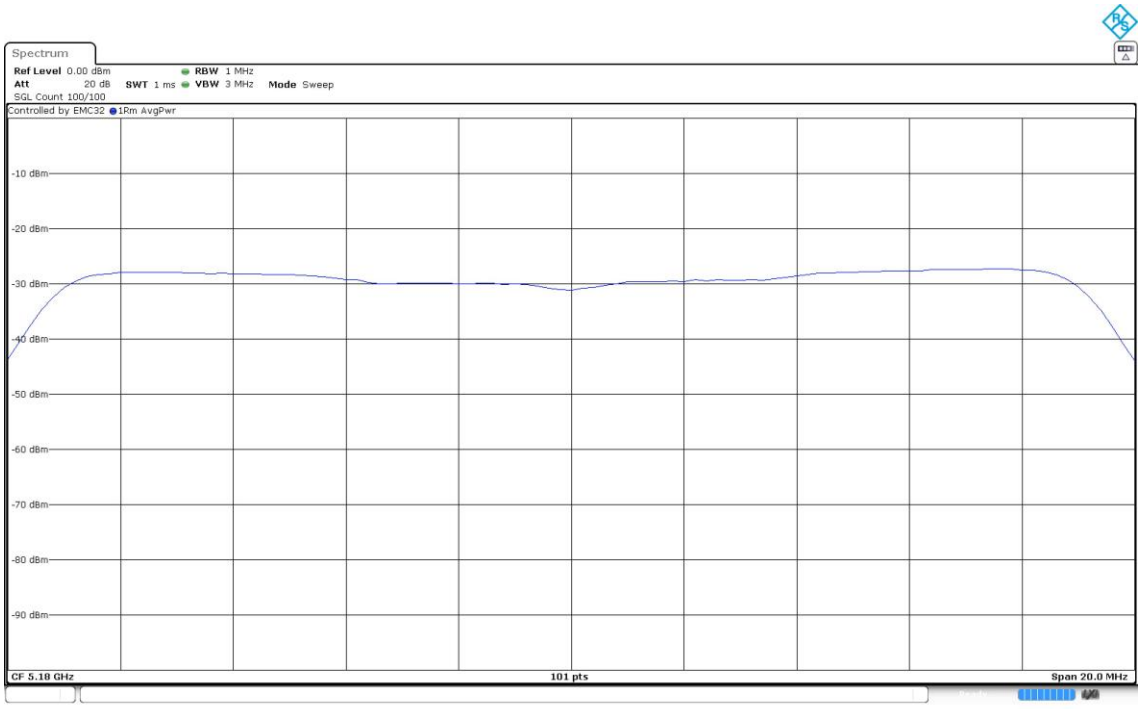
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

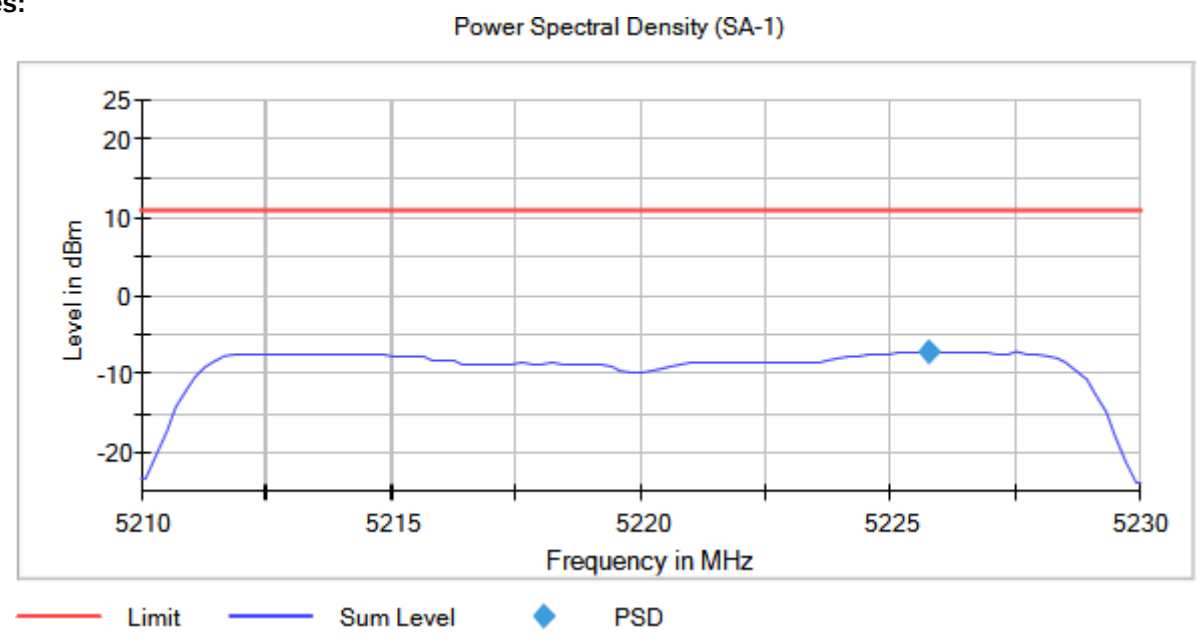
Images:

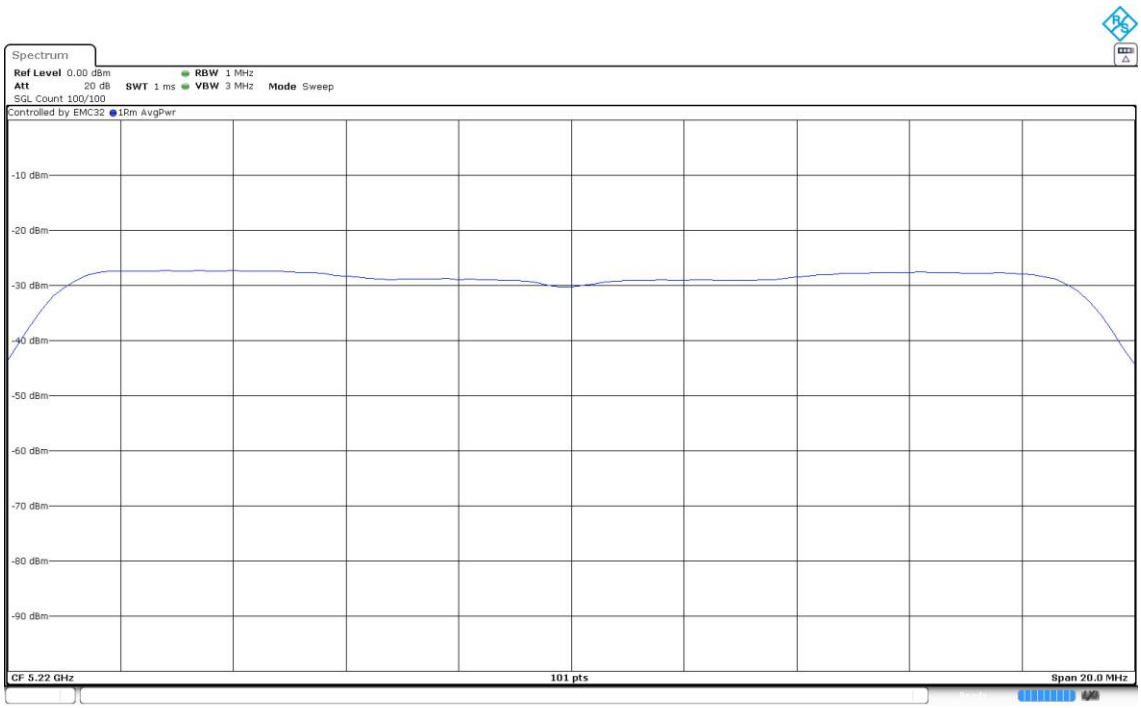




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

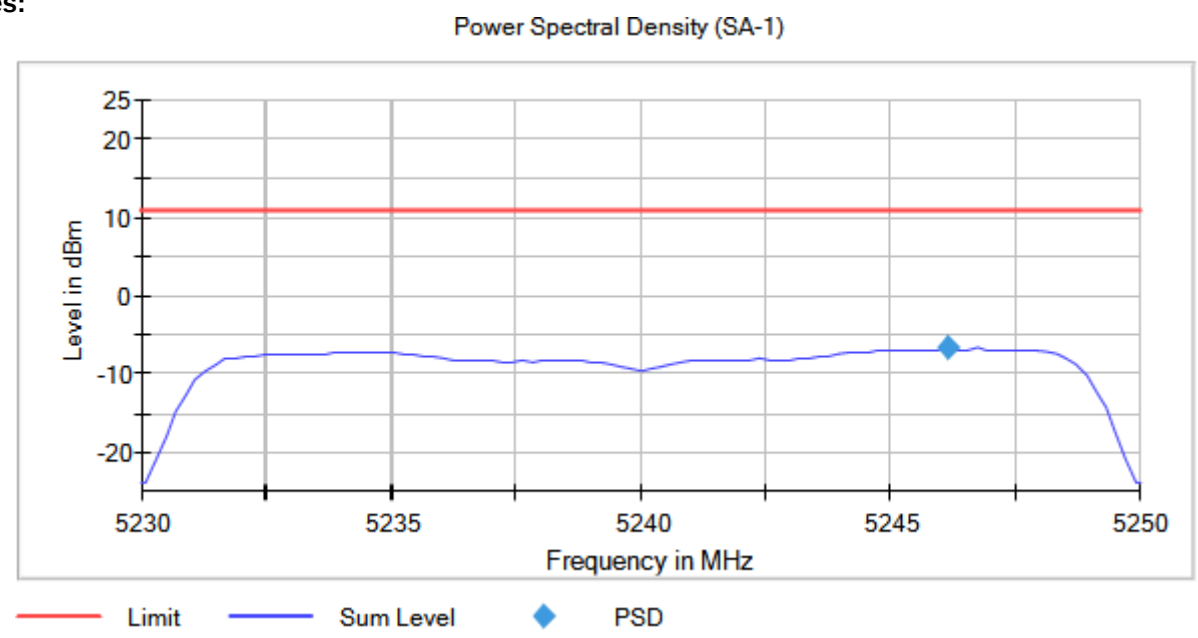
Images:

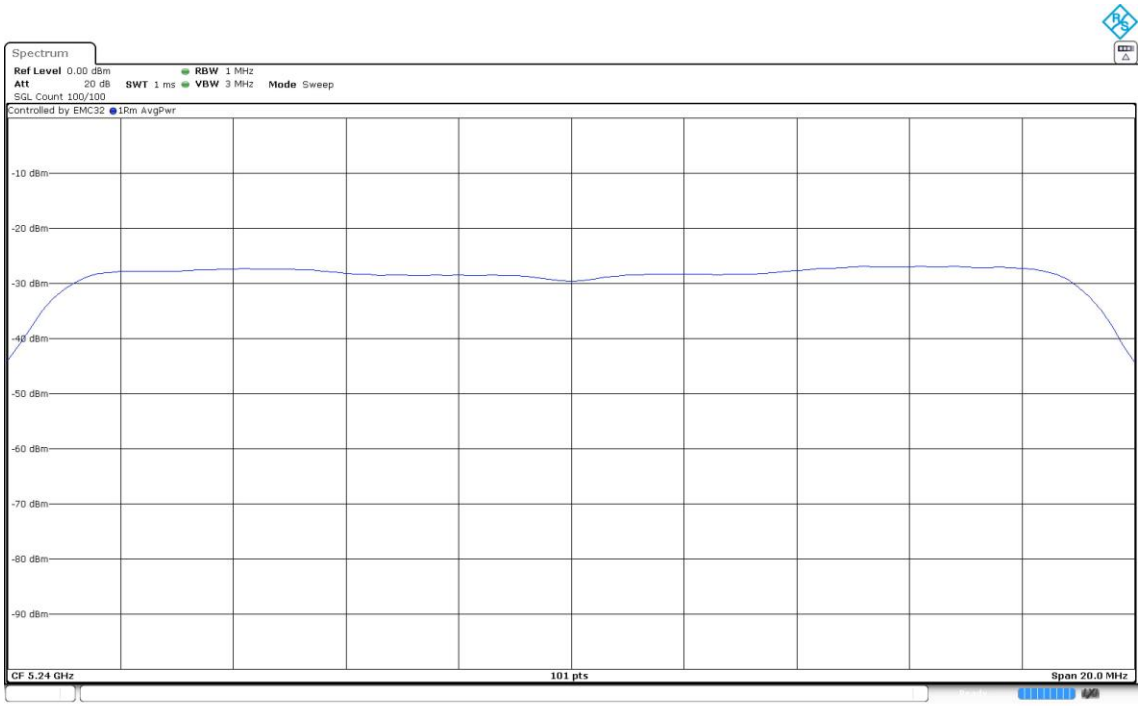




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5190.00000	No	5205.445545	-10.58
		5230.00000		5243.861386	-10.47

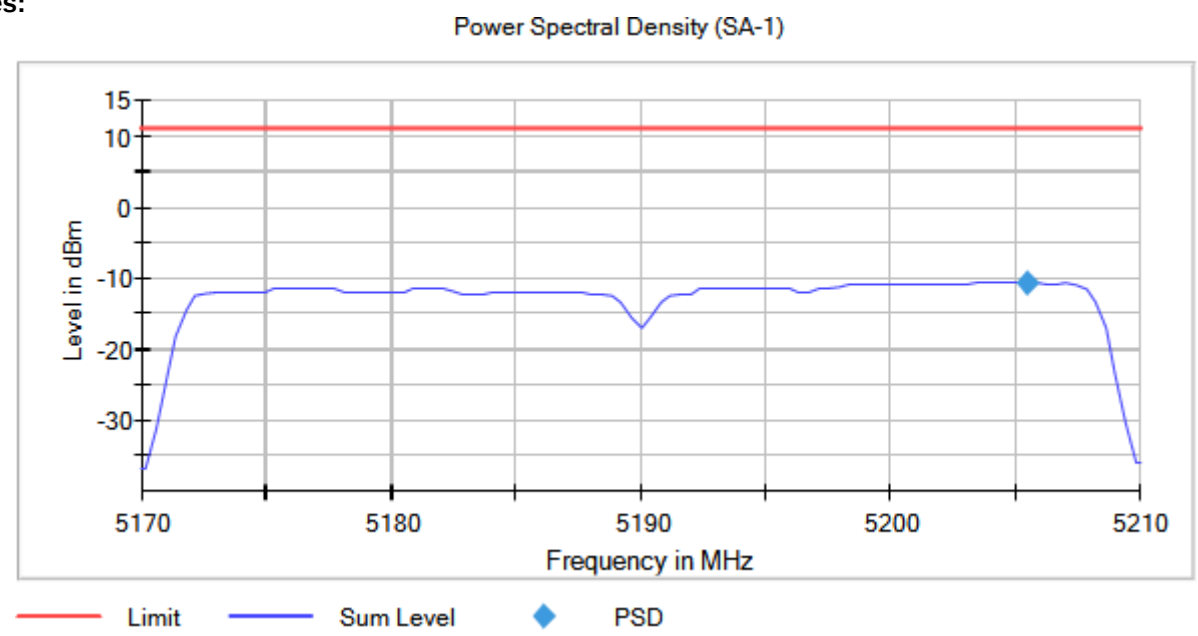
Verdict

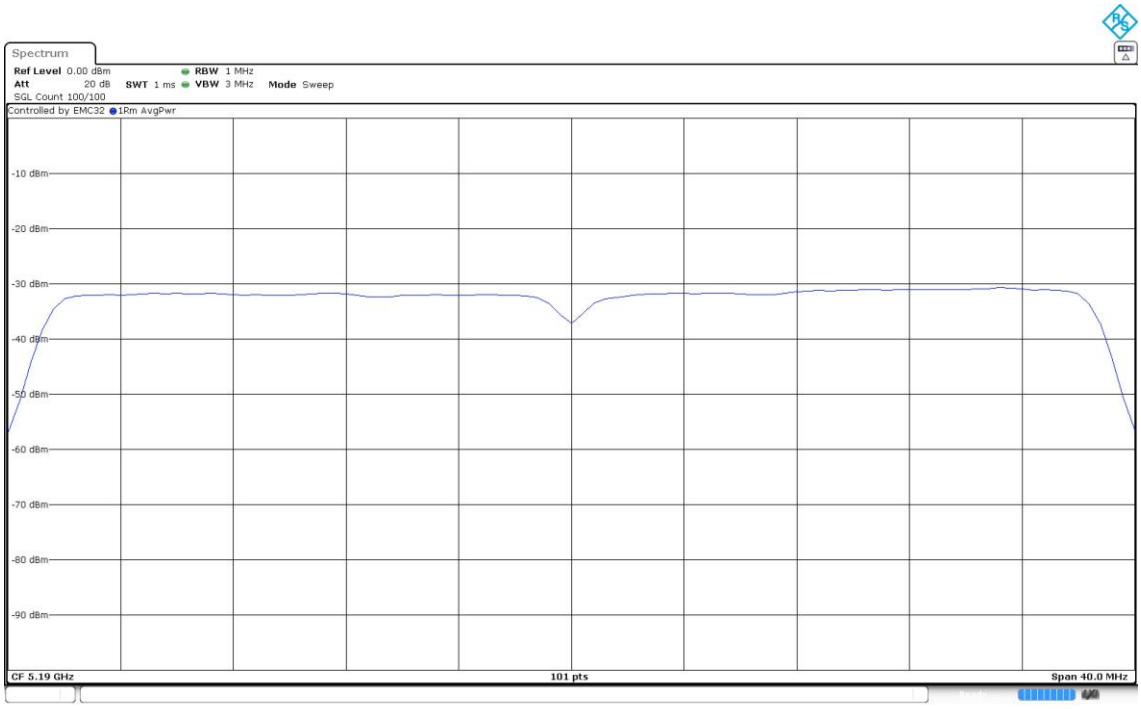
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5190.00000	Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

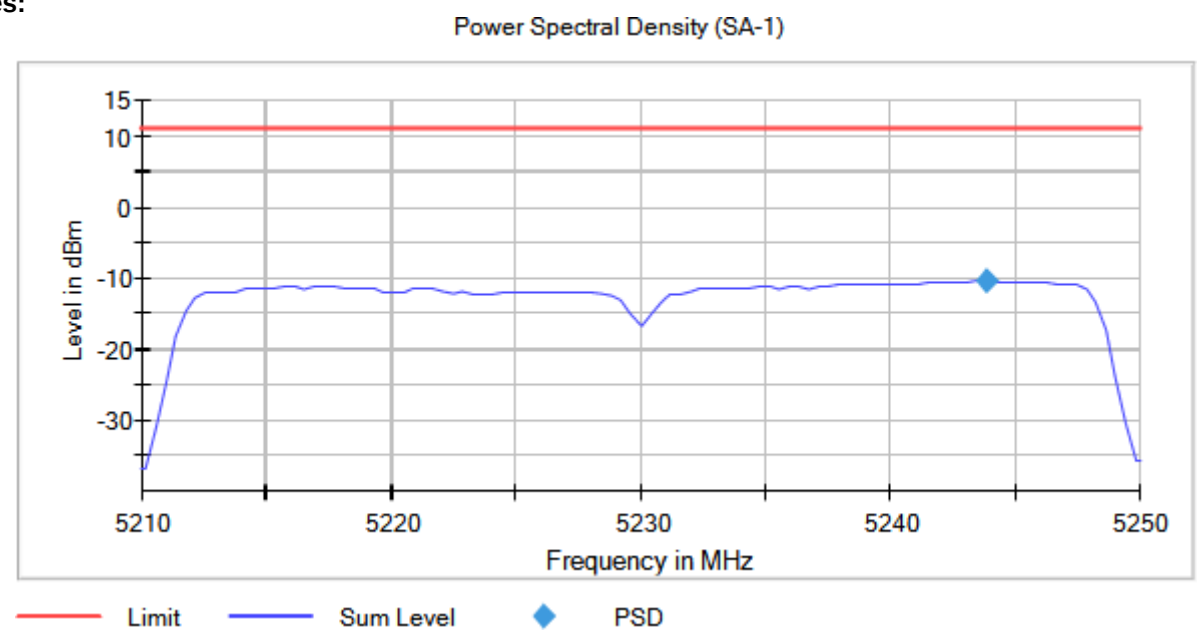
Images:

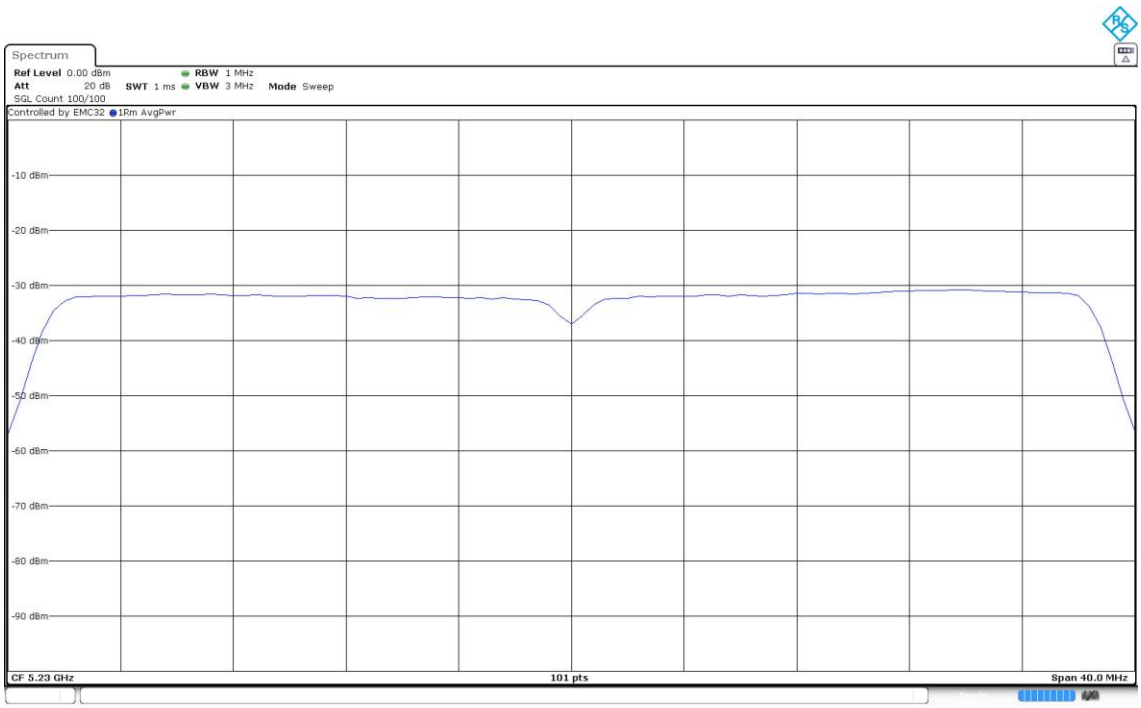




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5230.00000	Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5190.00000	No	5203.465347	-10.54
		5230.00000		5244.257426	-10.42

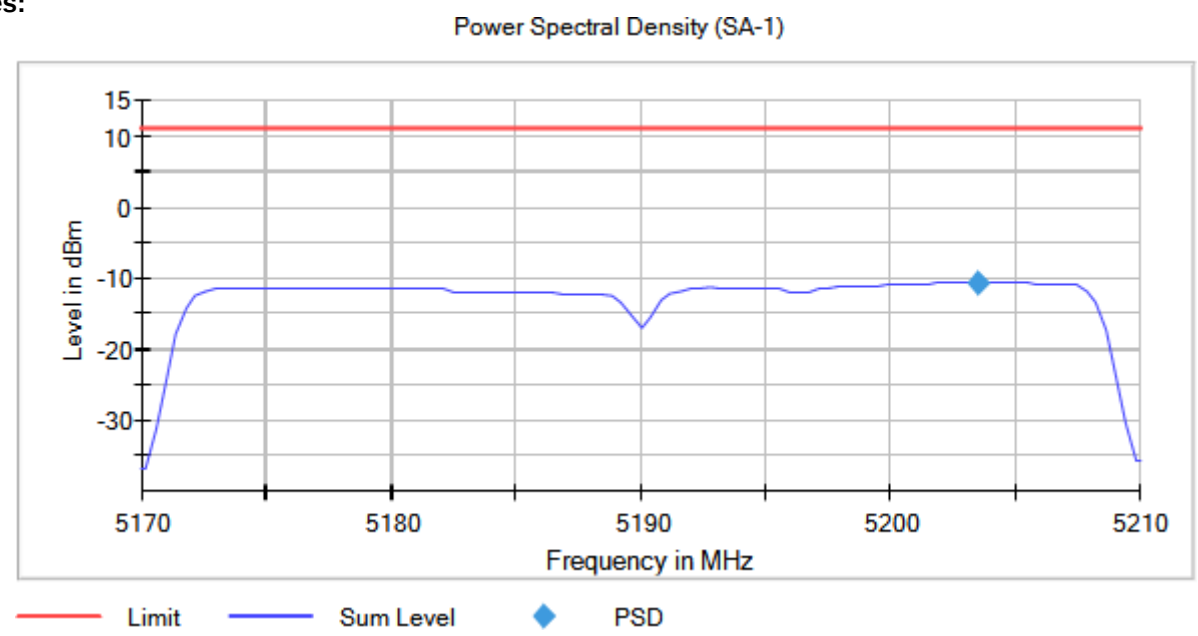
Verdict

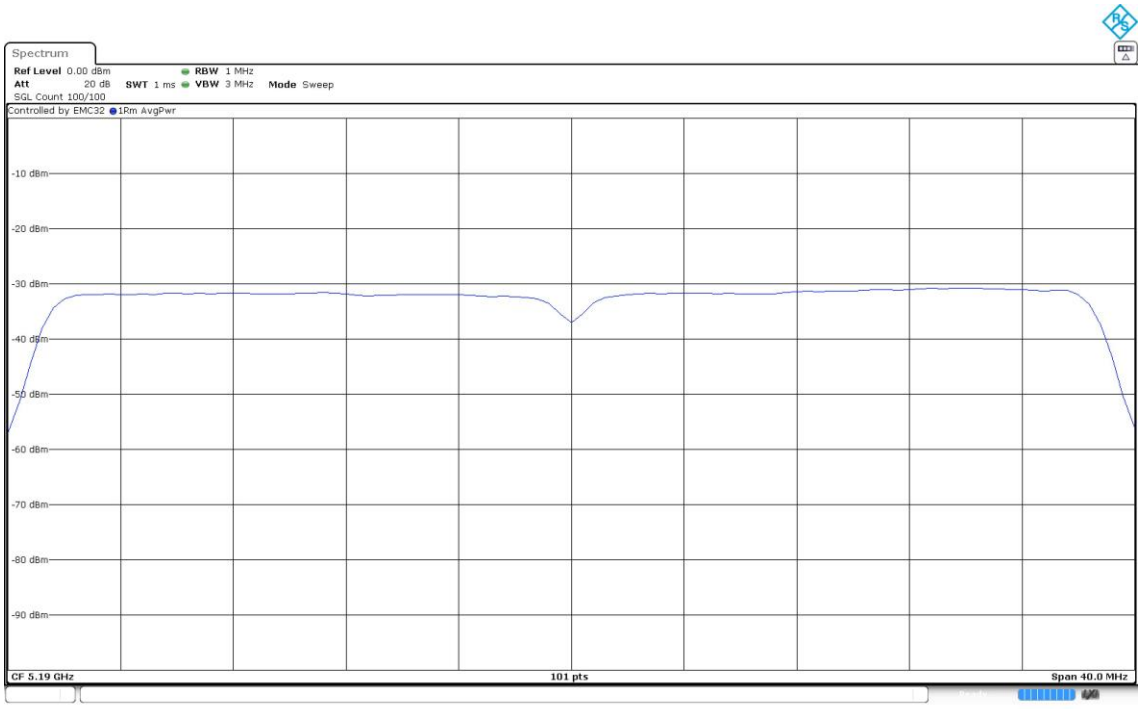
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5190.00000	Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No	MIMO Mode = SISO

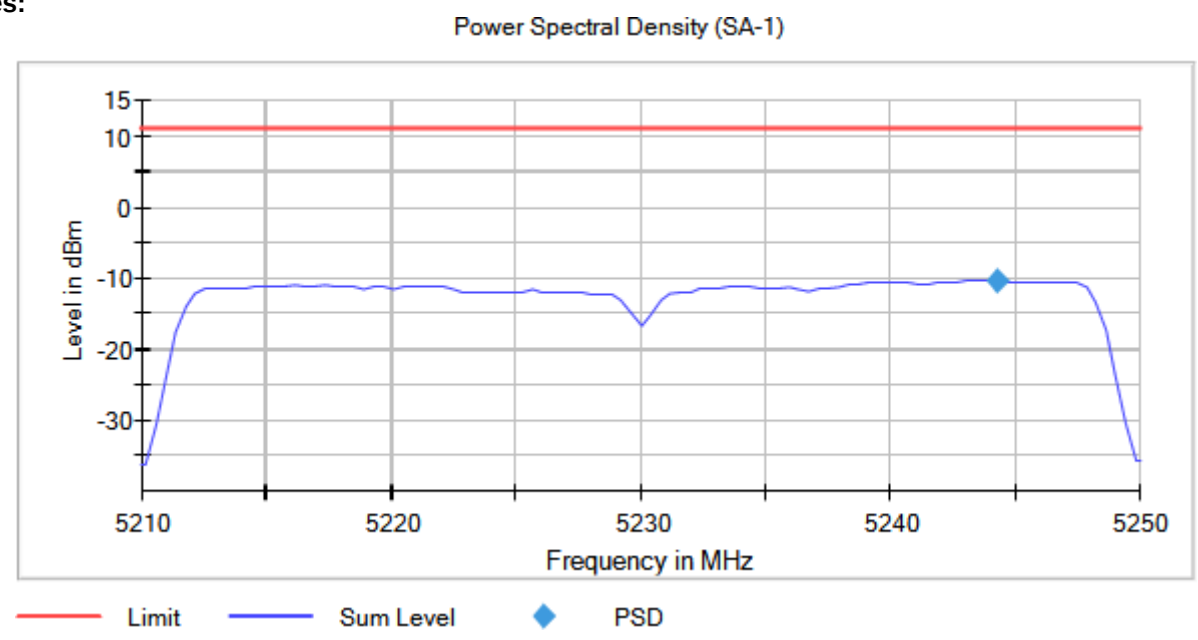
Images:

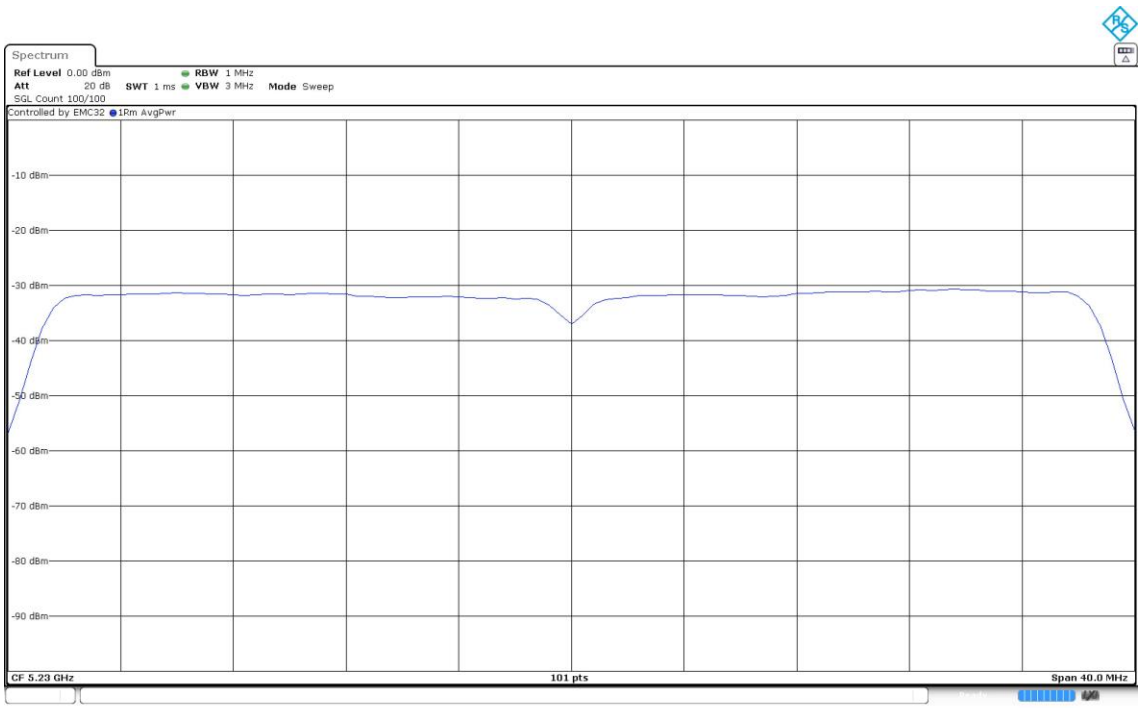




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5230.00000	Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5210.00000	No	5241.250000	-15.19

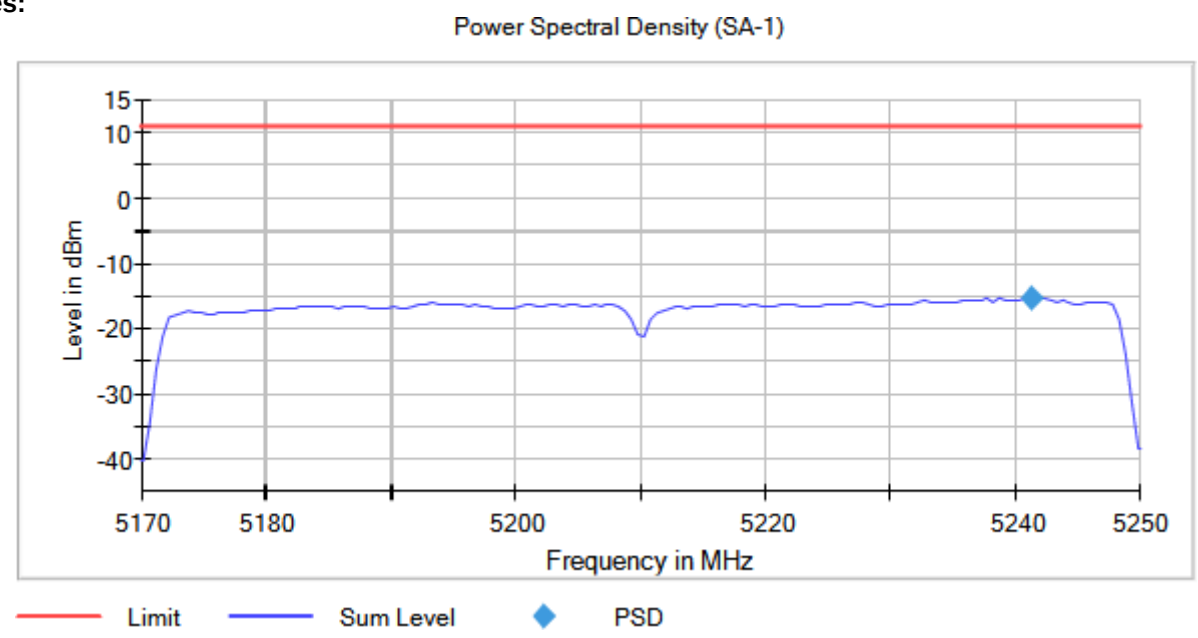
Verdict

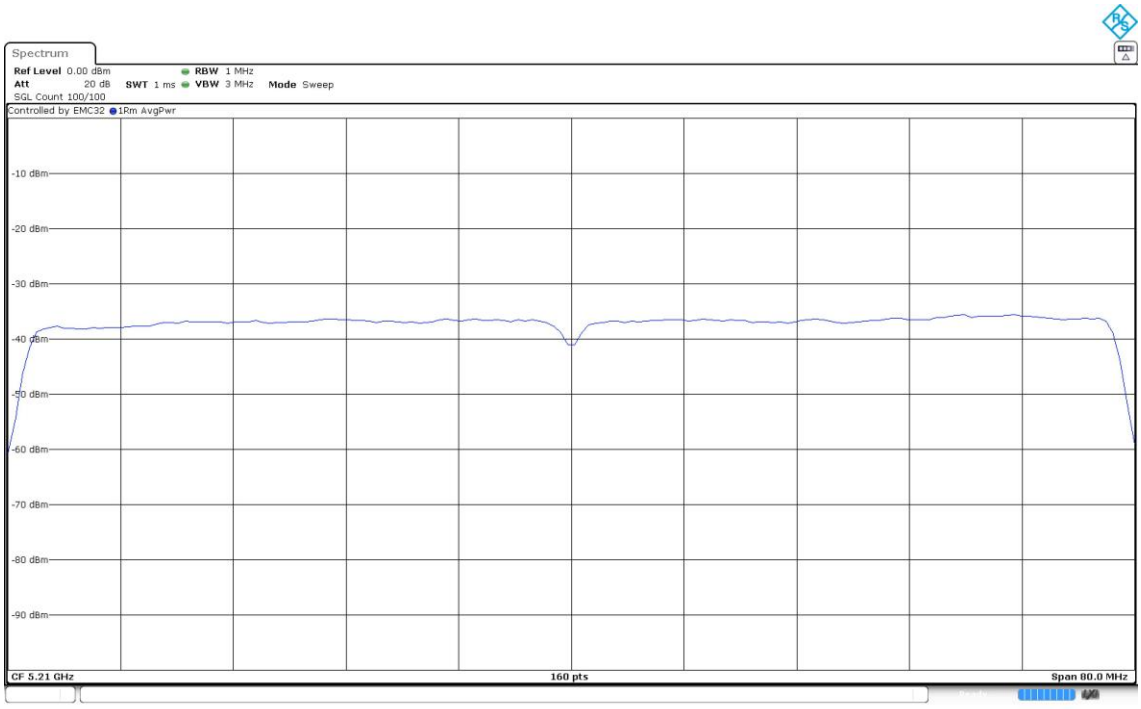
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5210.00000	Modulation = 802.11ac VHT80 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





Results (ISED)

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5186.732673	-10.74
		5220.00000		5226.336634	-11.22
		5240.00000		5246.138614	-11.55

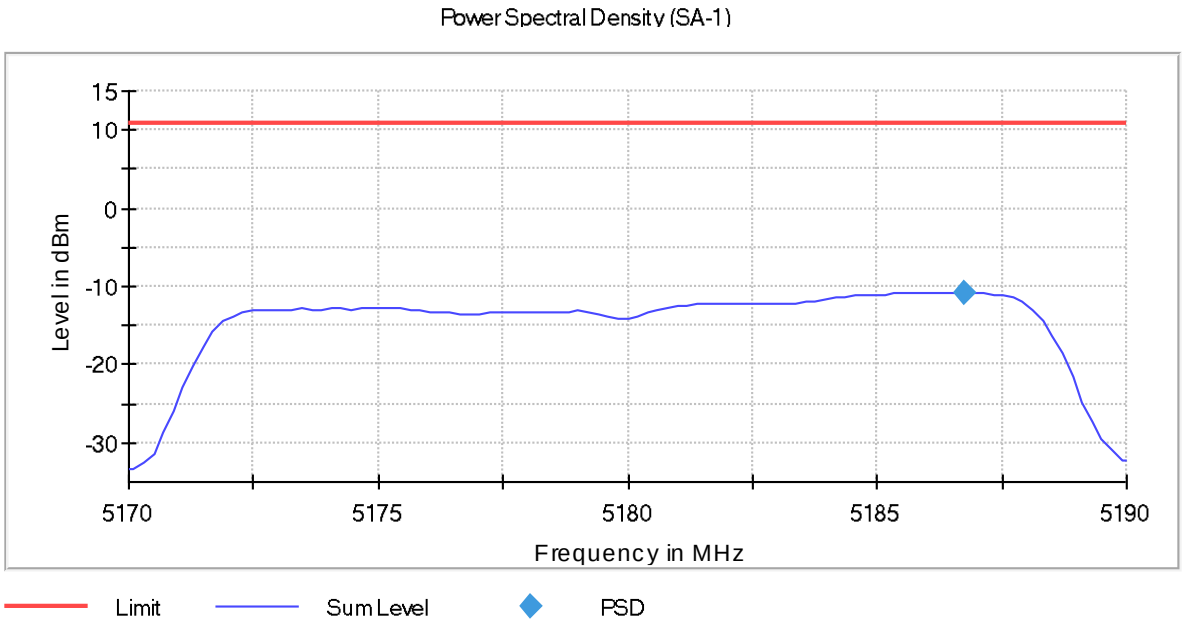
Verdict

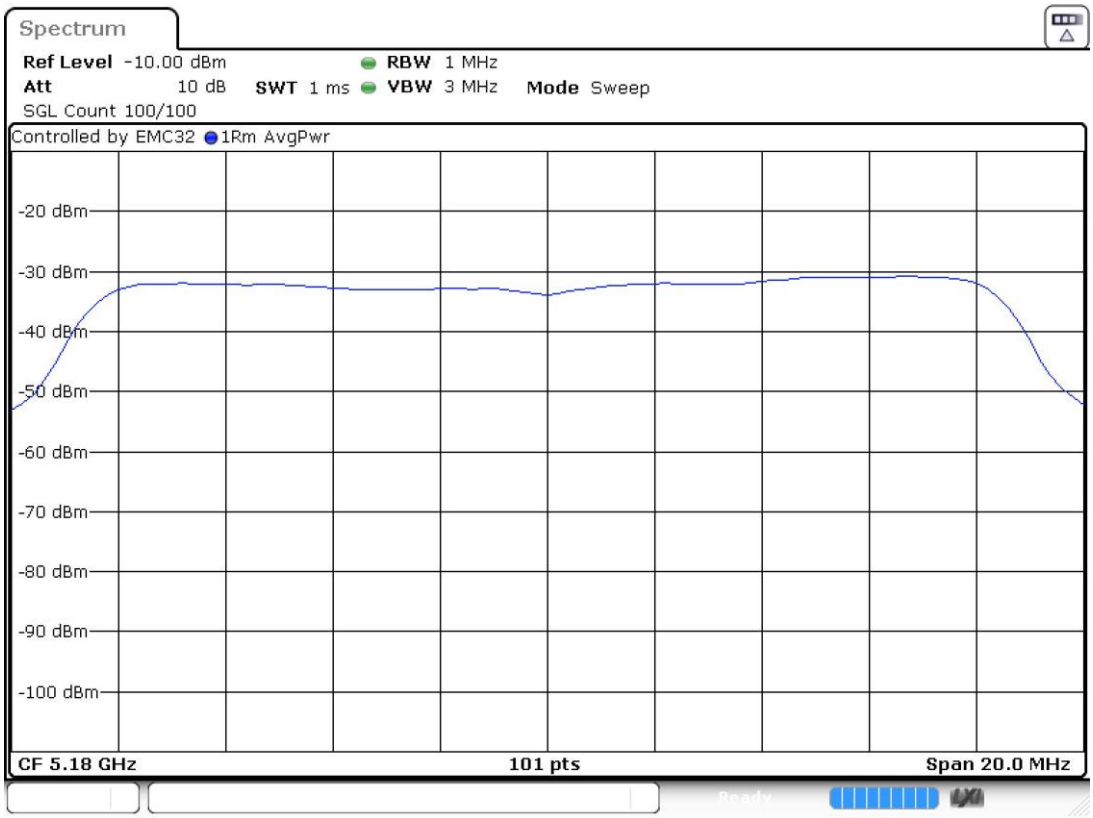
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

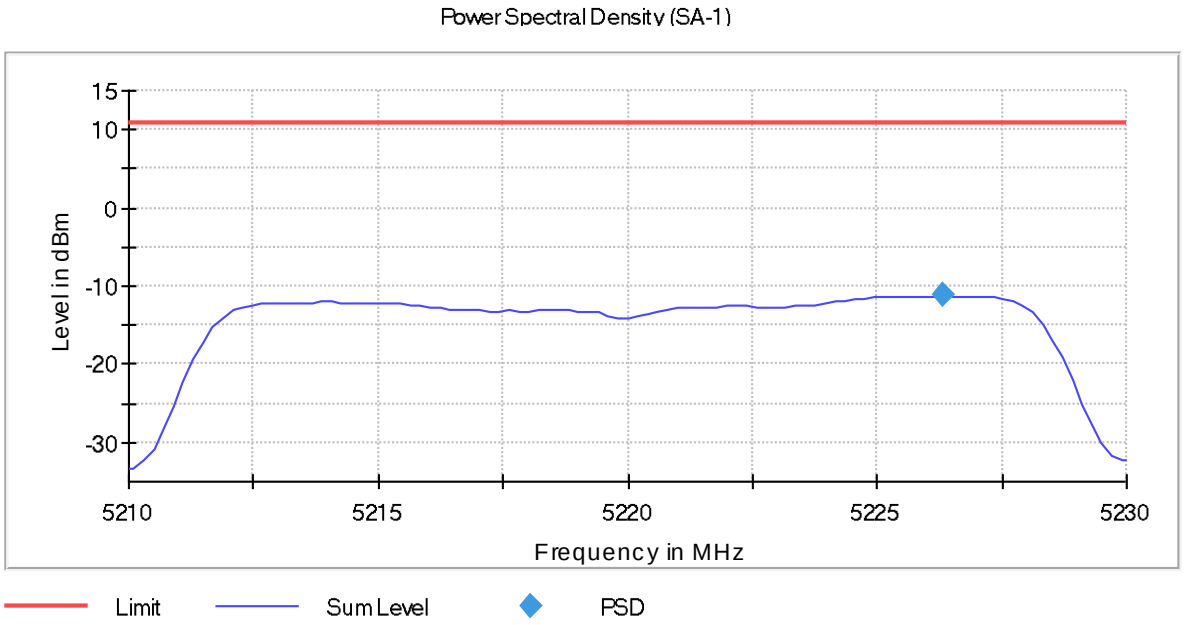
Images:

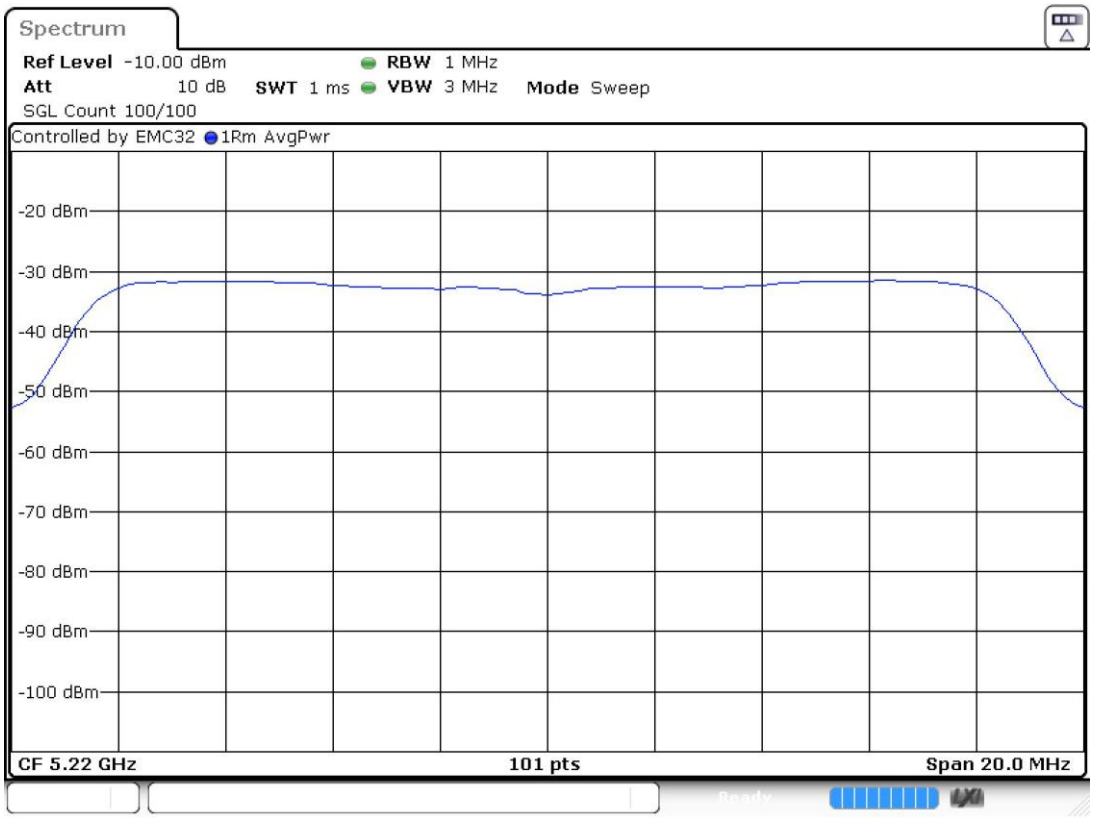




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

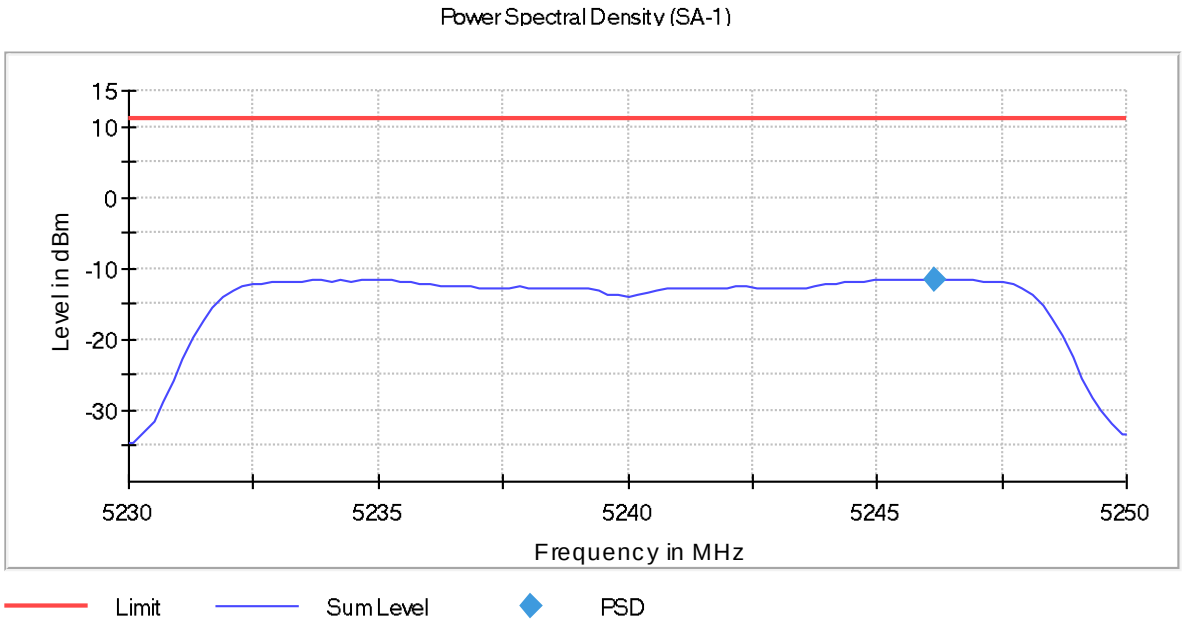
Images:

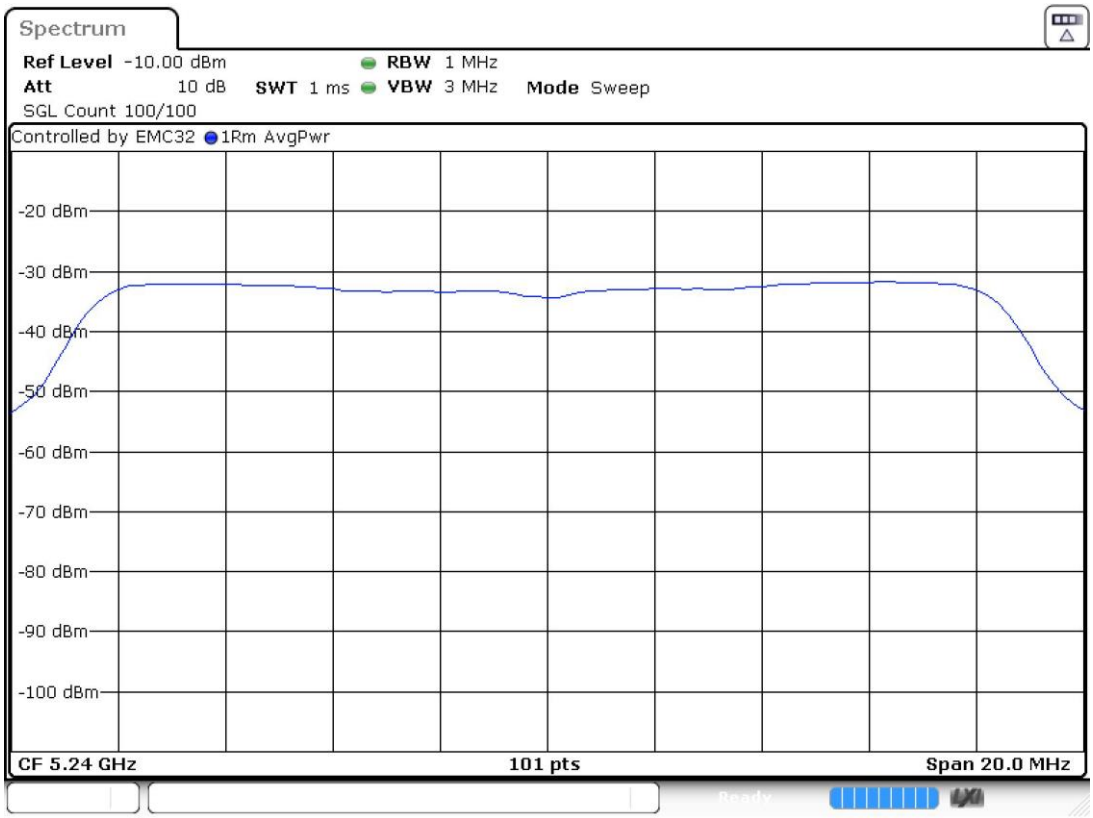




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5173.069307	-11.68
		5220.00000		5226.732673	-12.06
		5240.00000		5233.465347	-12.41

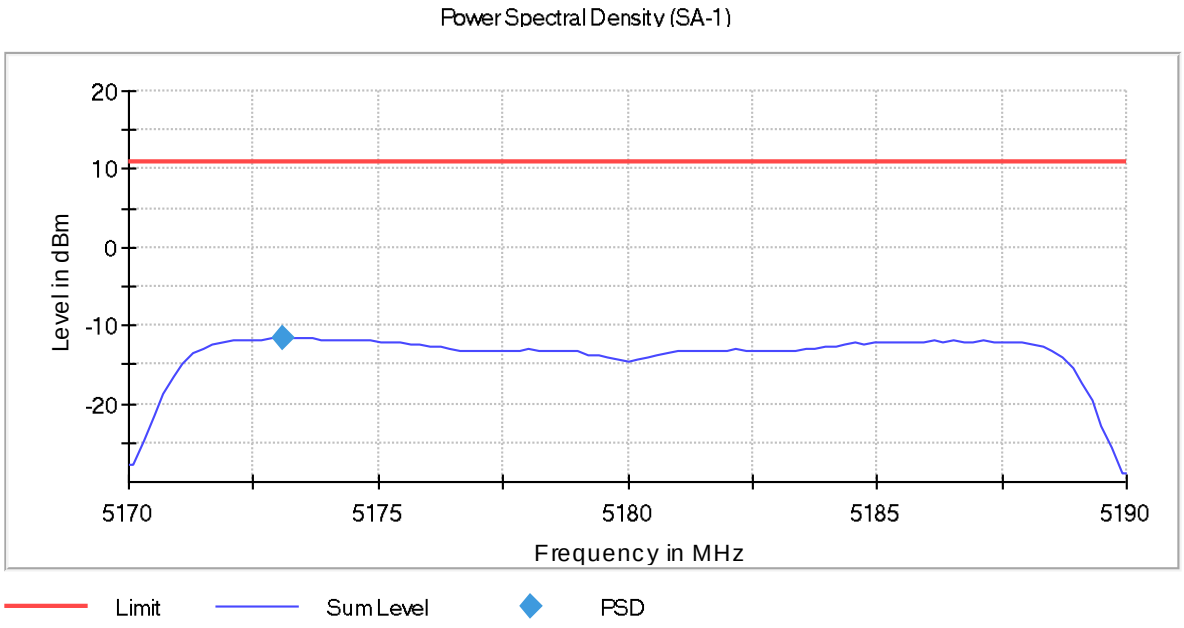
Verdict

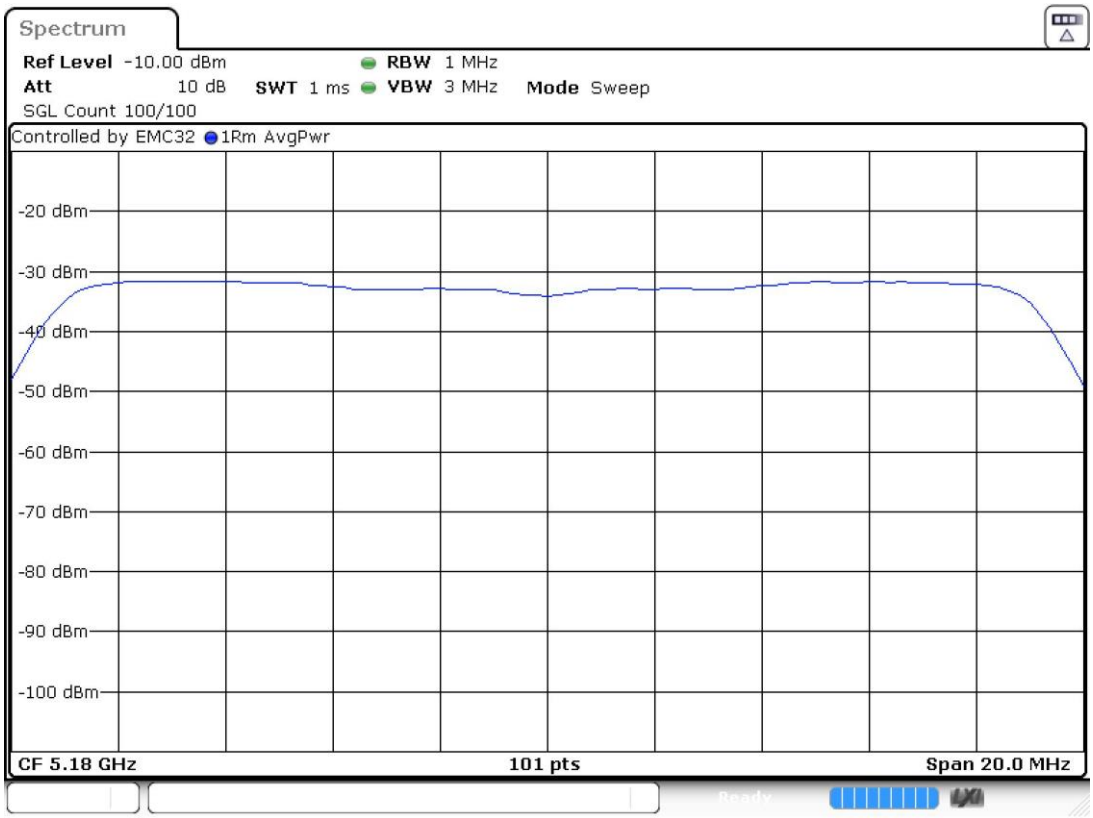
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

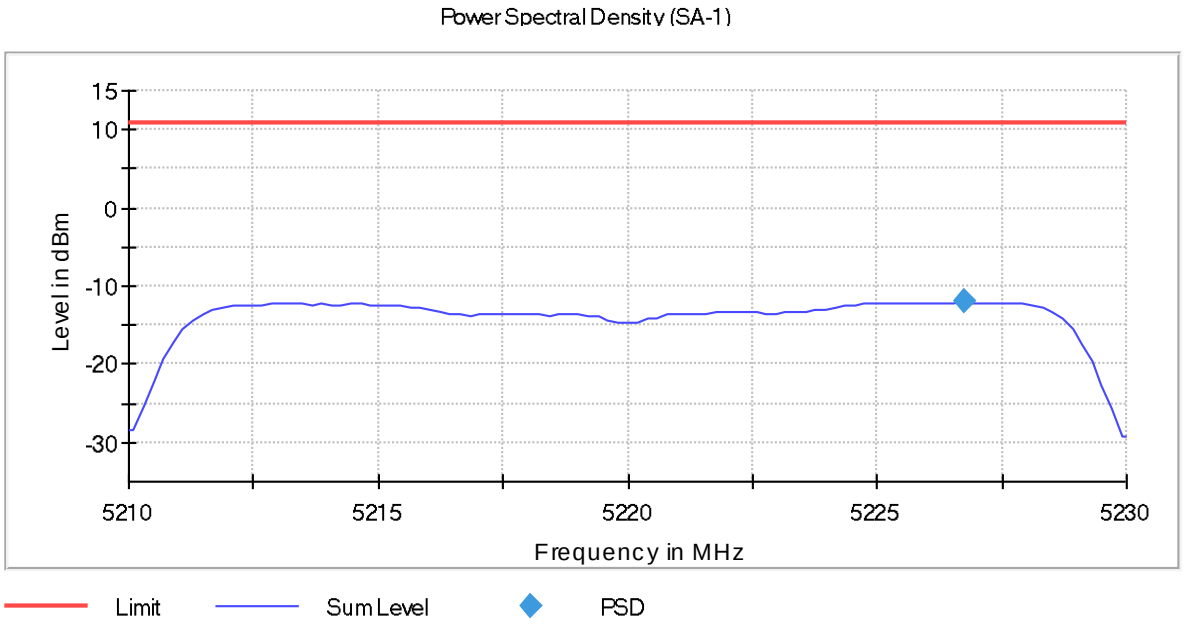
Images:

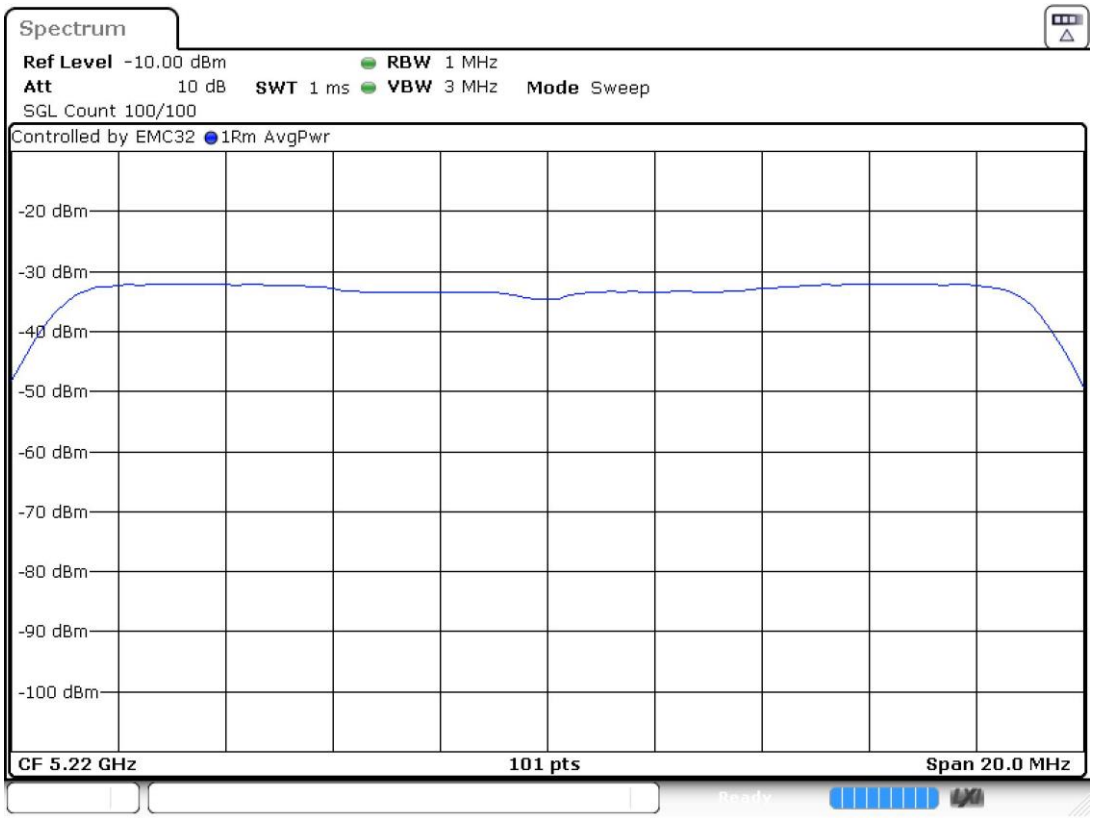




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

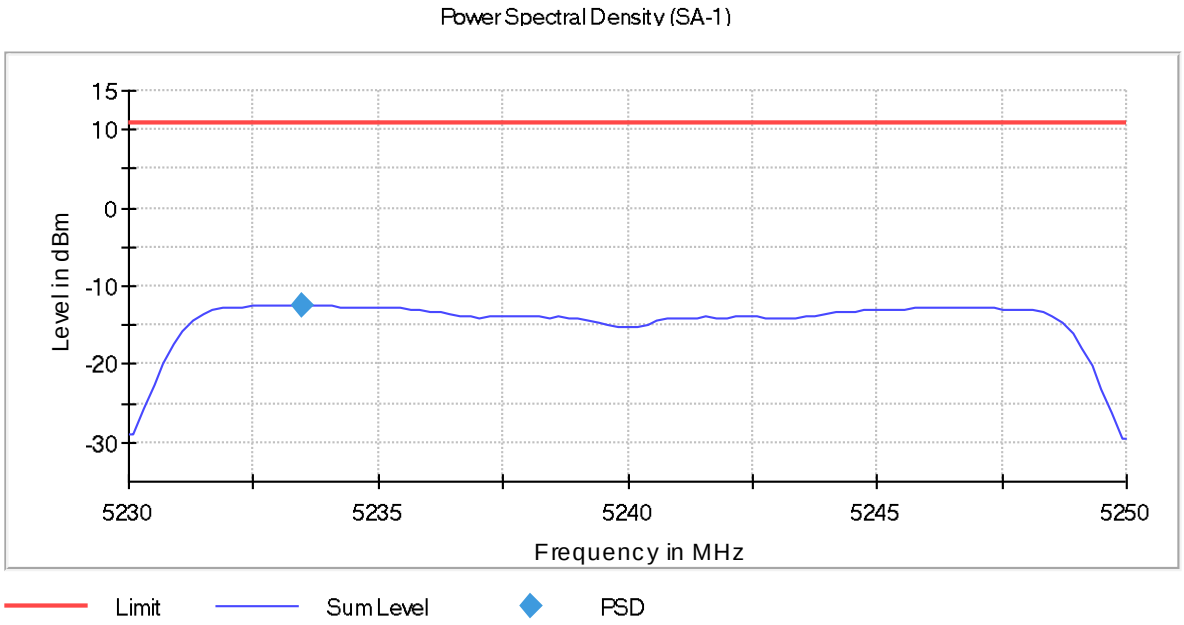
Images:

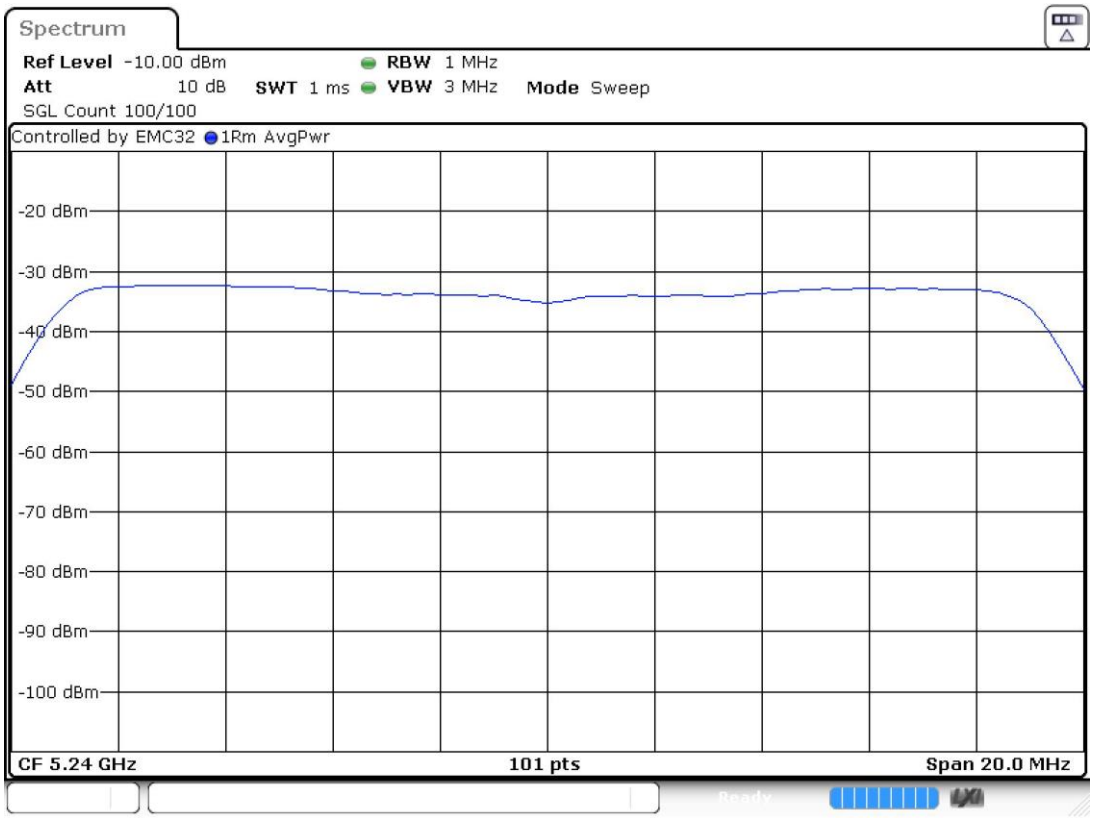




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5180.00000	No	5187.524752	-12.02
		5220.00000		5226.336634	-11.80
		5240.00000		5232.475248	-12.04

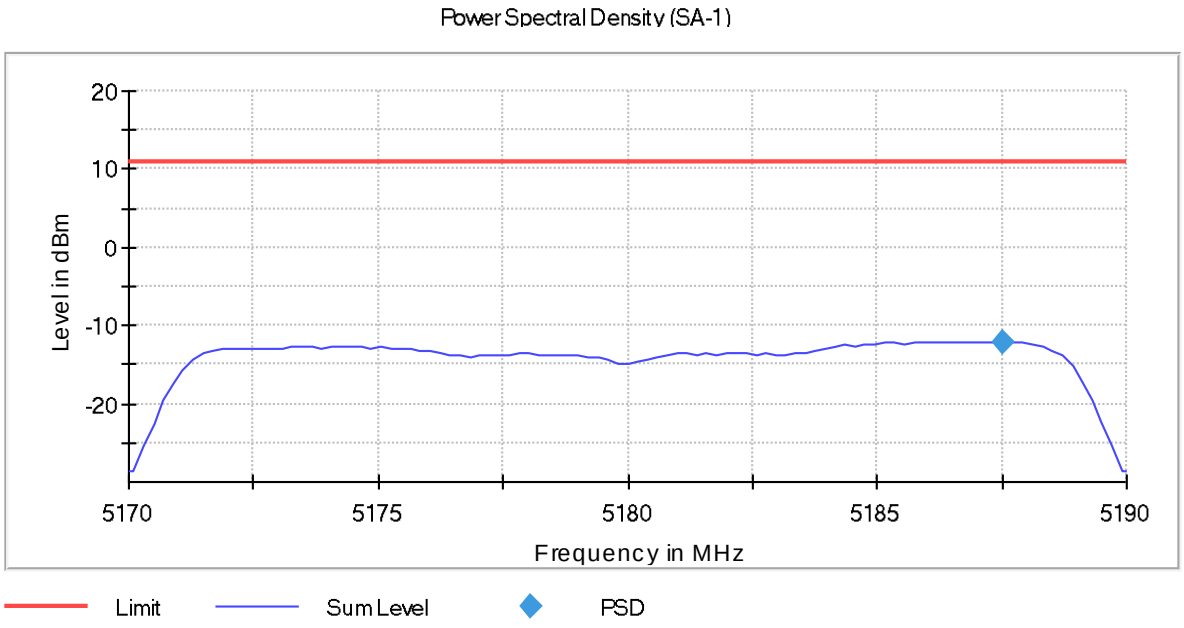
Verdict

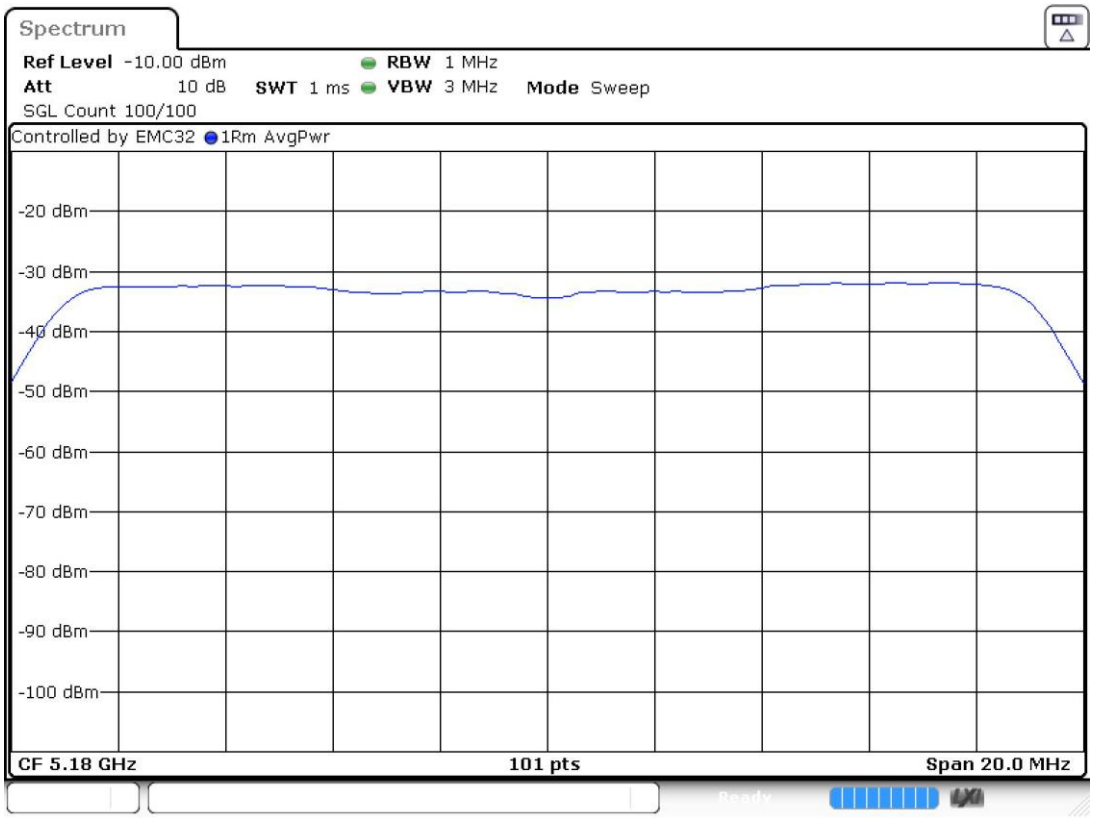
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5180.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

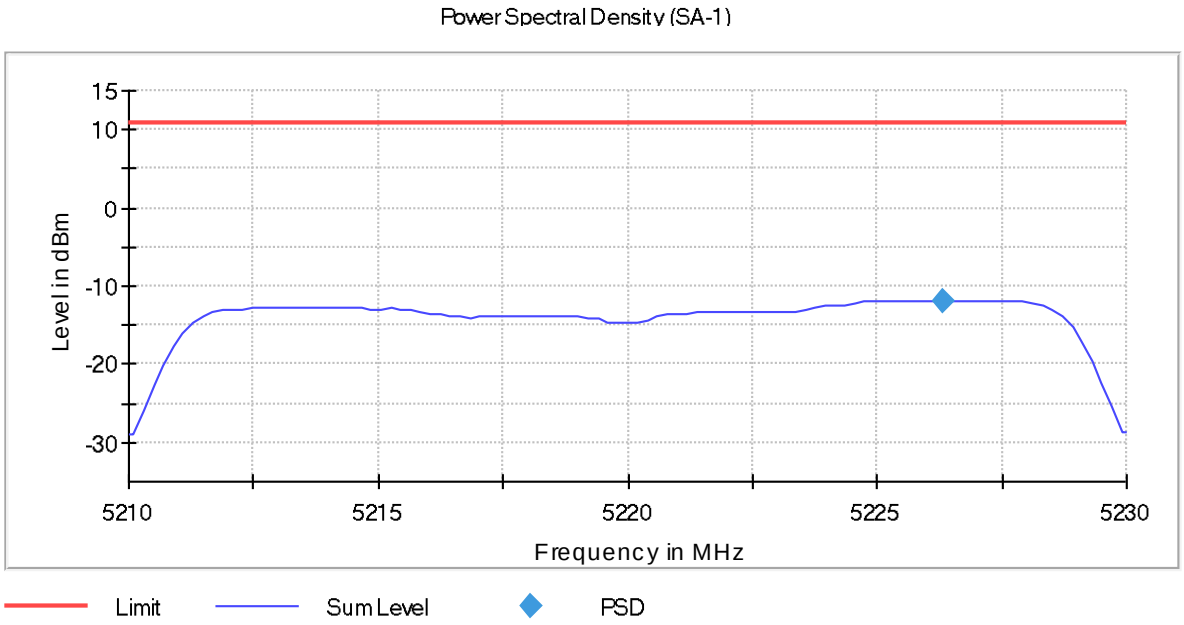
Images:

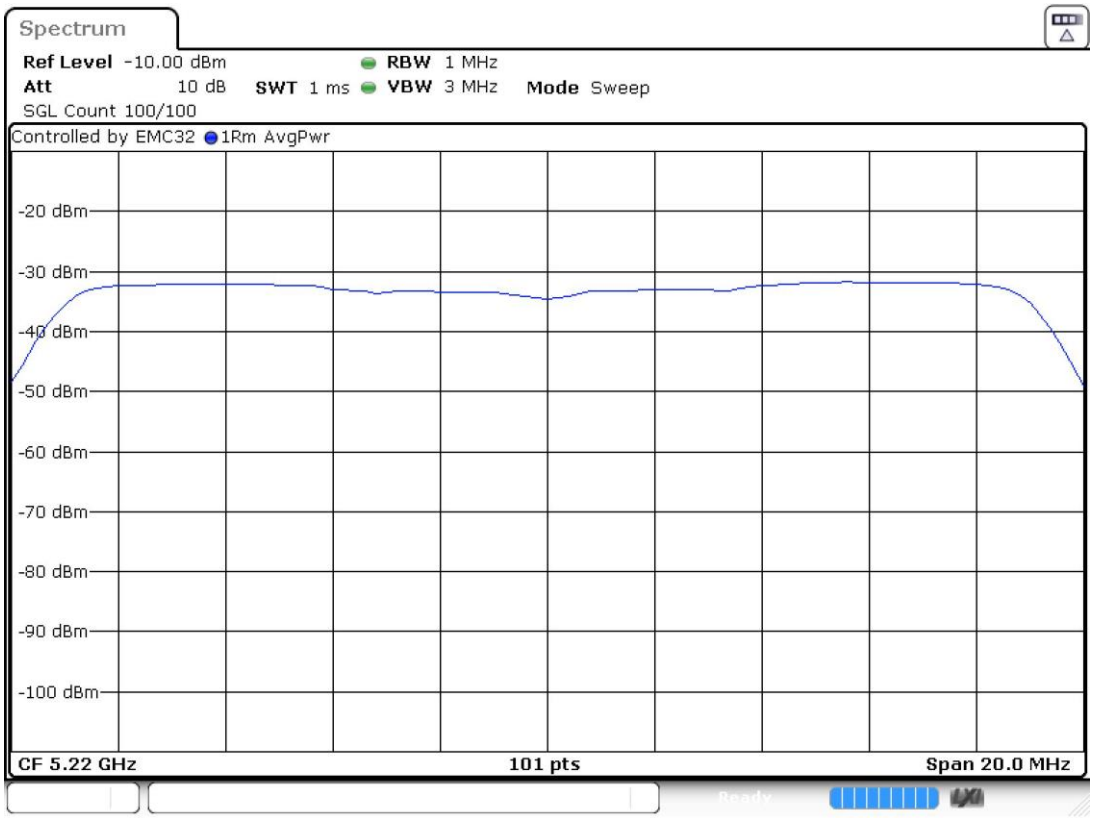




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5220.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

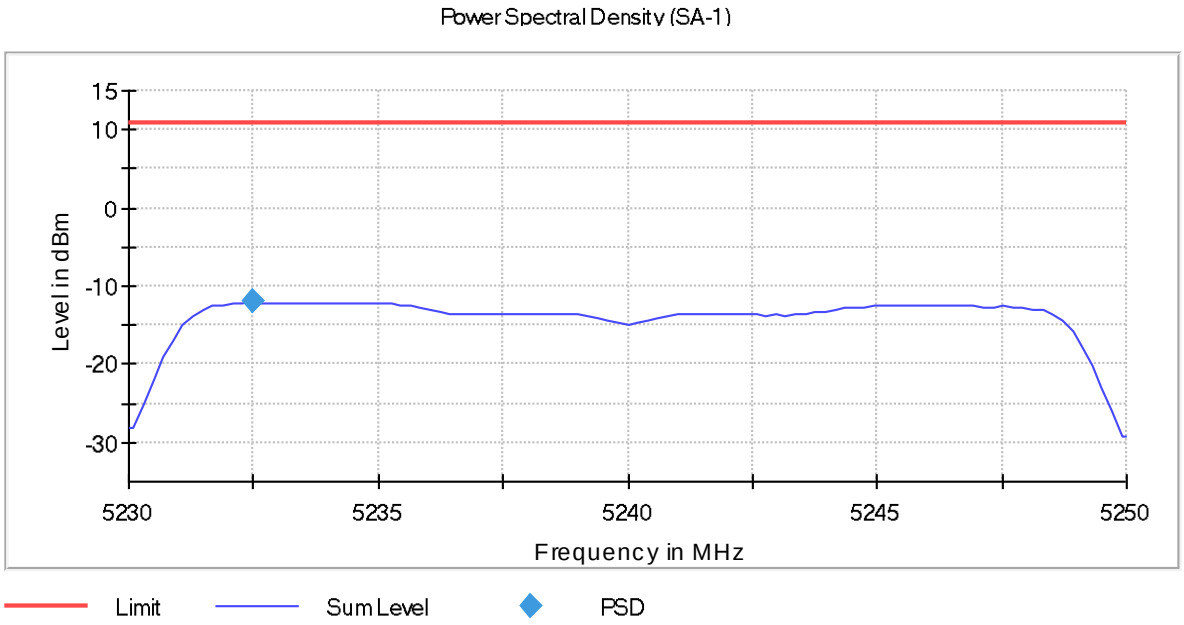
Images:

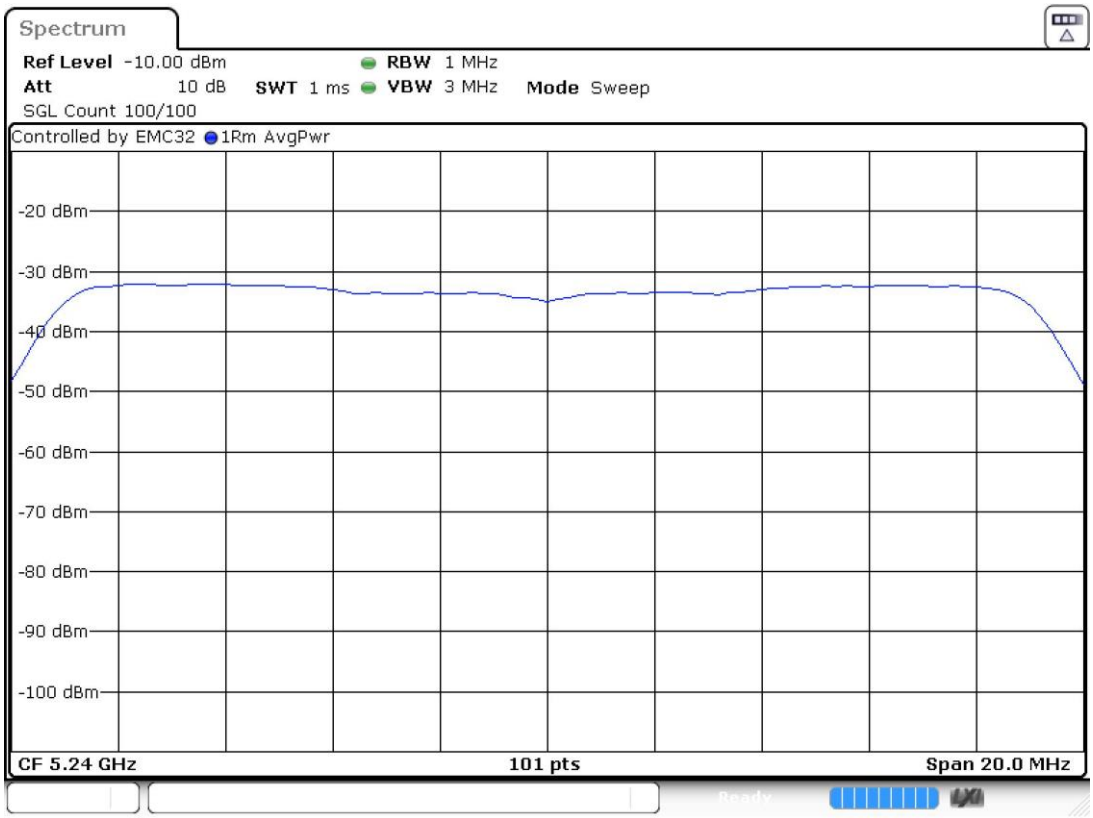




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5240.00000	Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5190.00000	No	5203.861386	-15.31
		5230.00000		5243.069307	-16.00

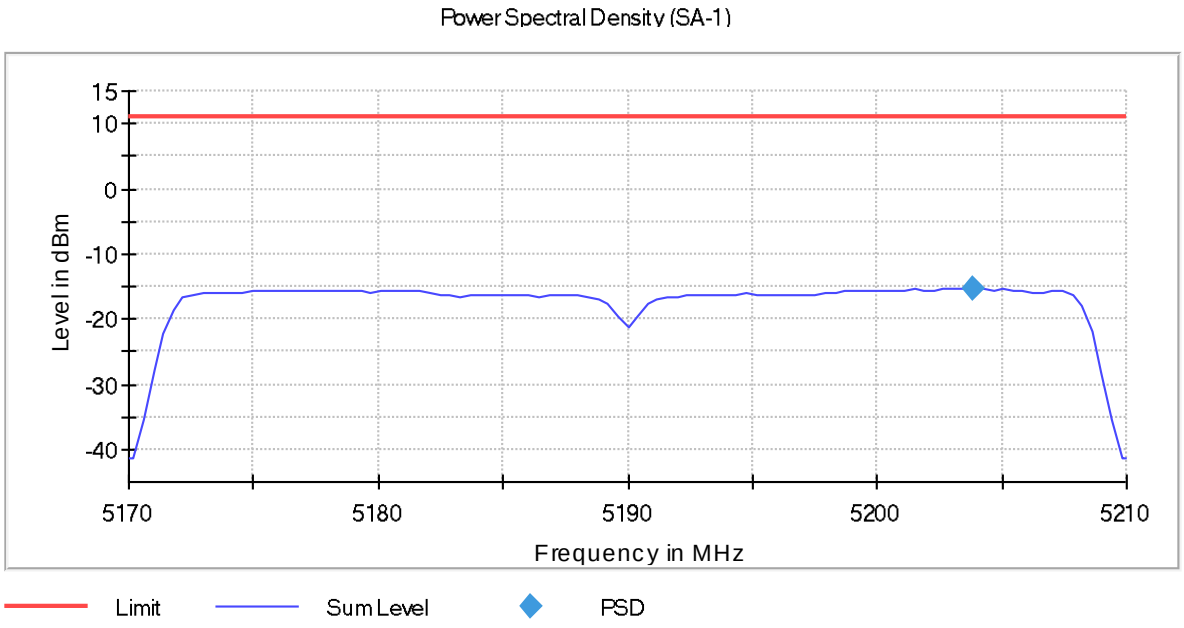
Verdict

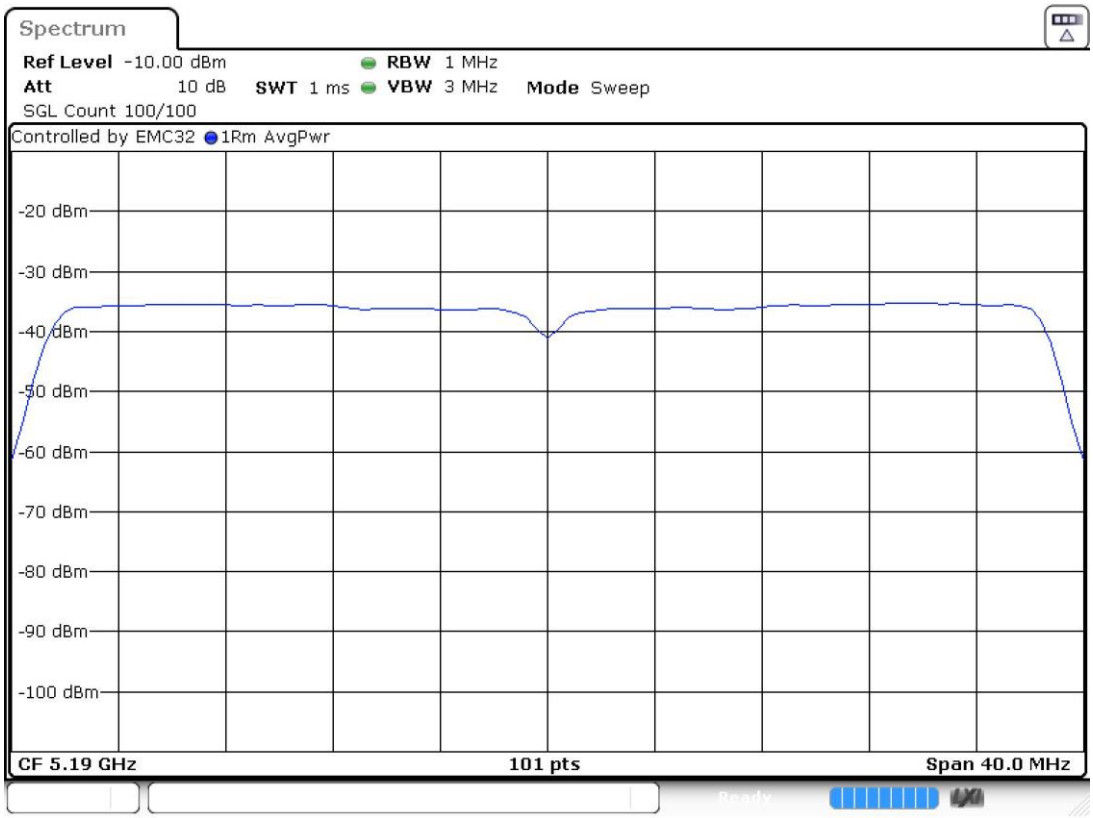
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5190.00000	Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

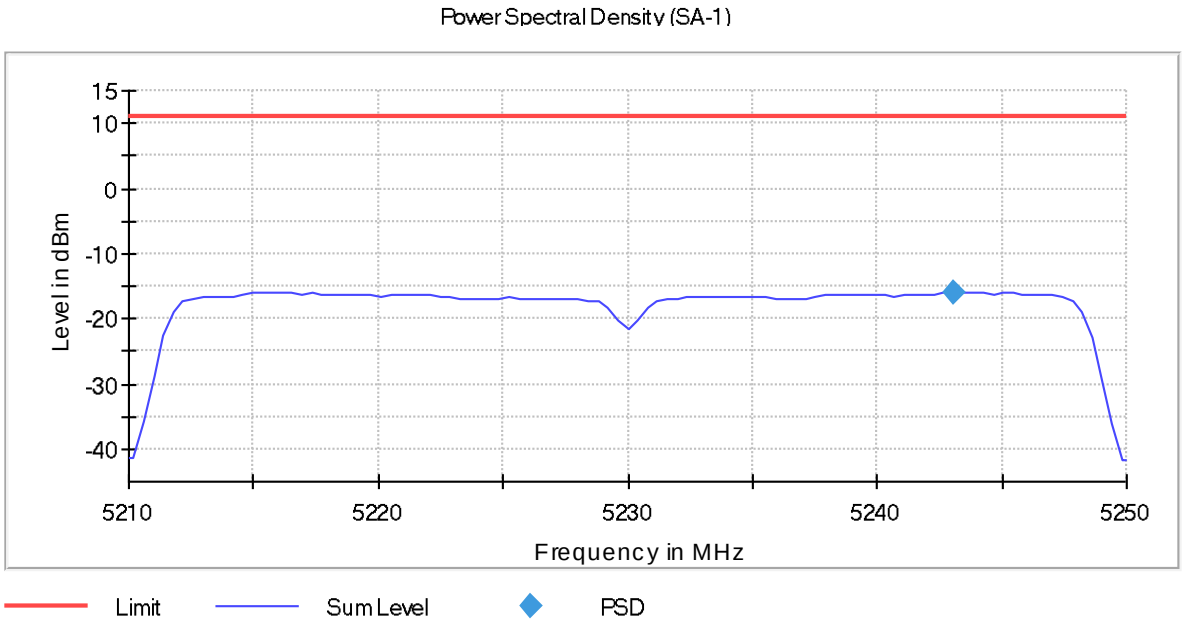
Images:

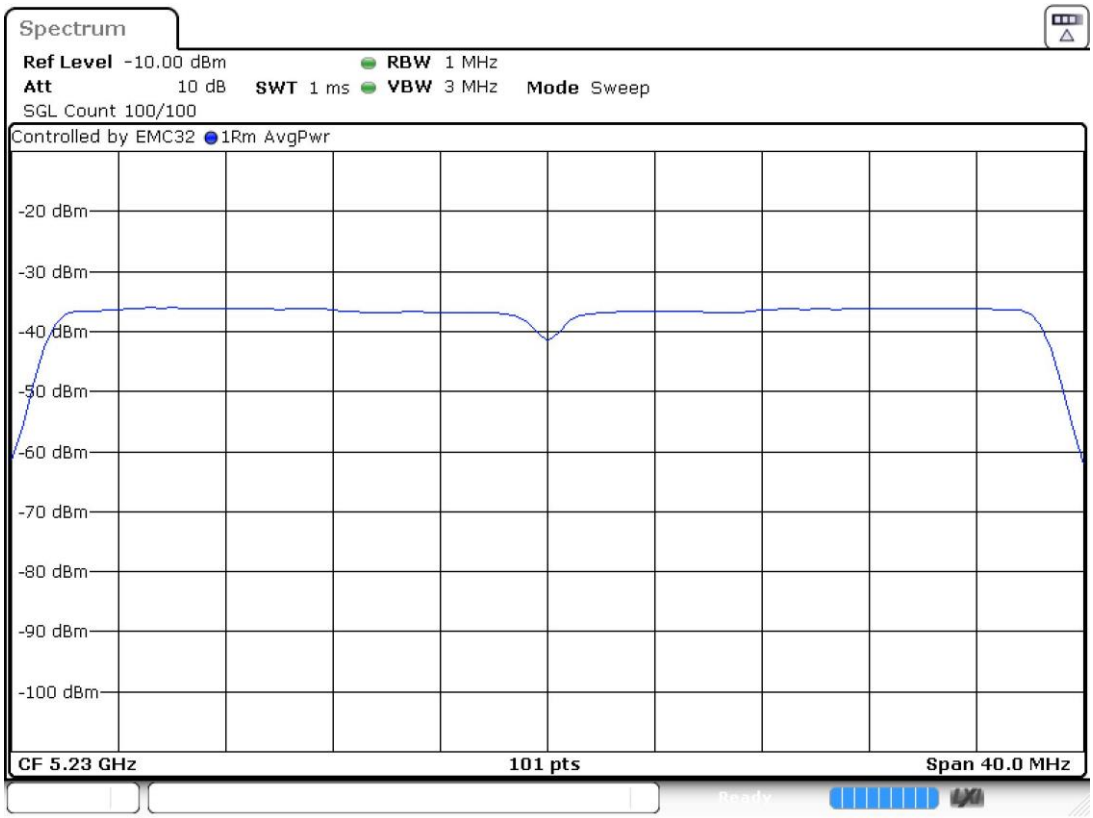




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5230.00000	Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5190.00000	No	5203.861386	-15.31
		5230.00000		5243.069307	-16.00

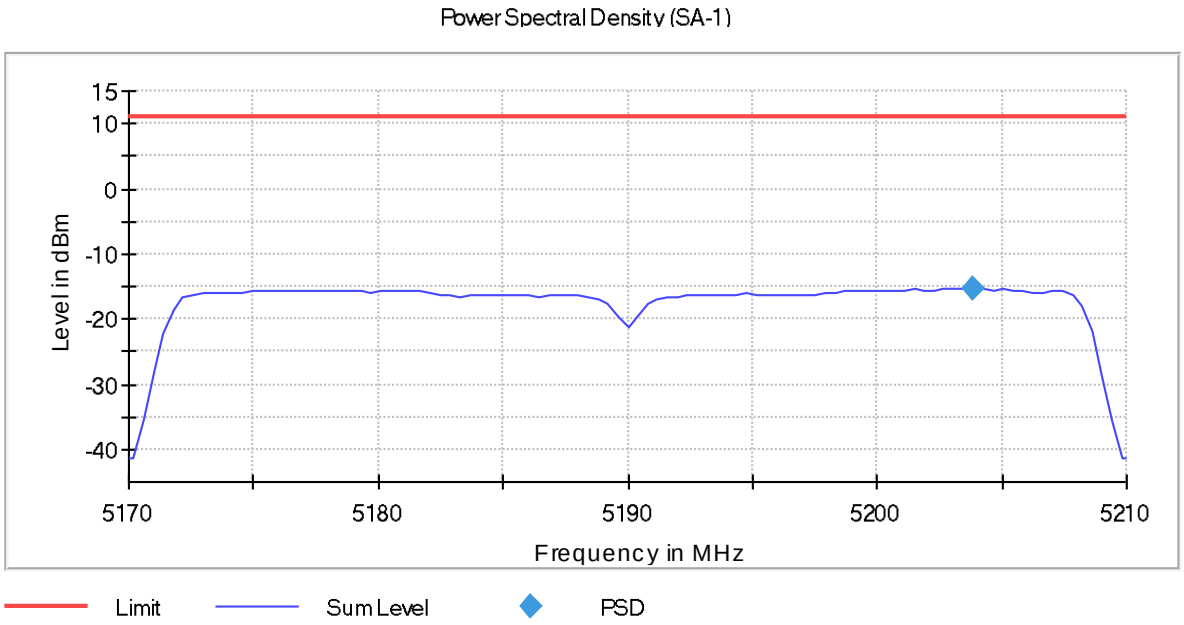
Verdict

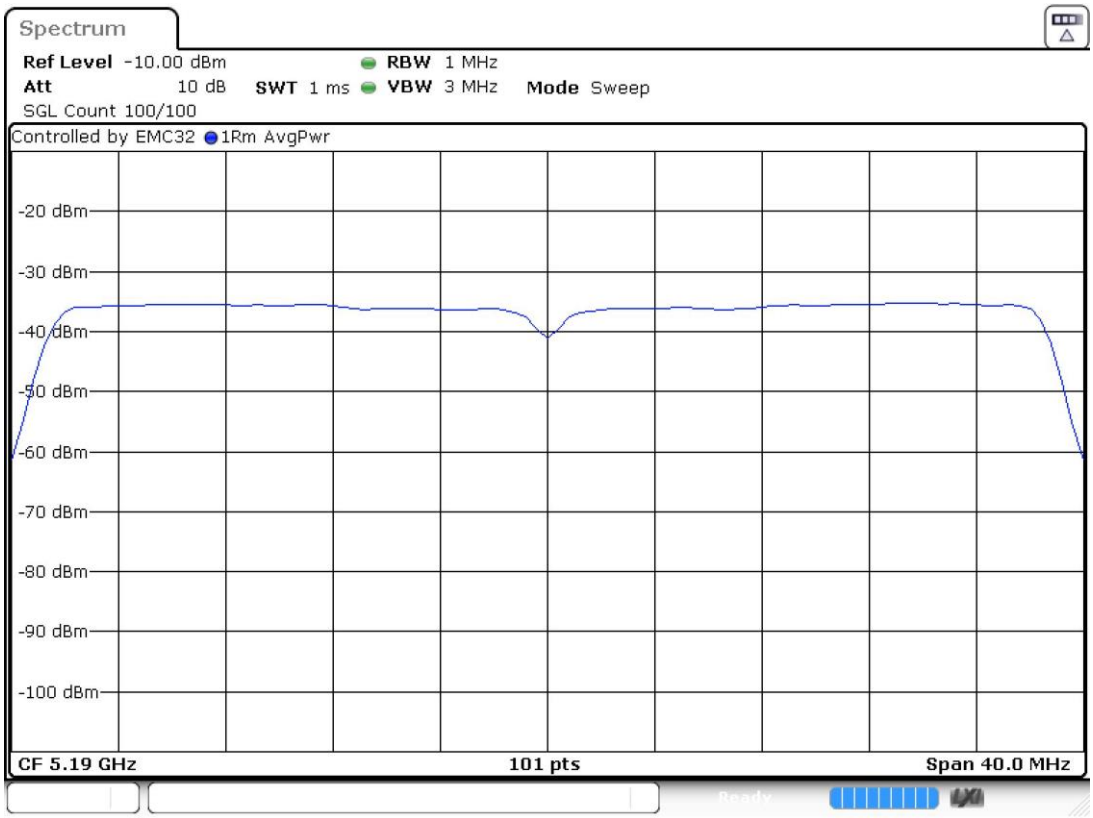
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5190.00000	Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No	MIMO Mode = SISO

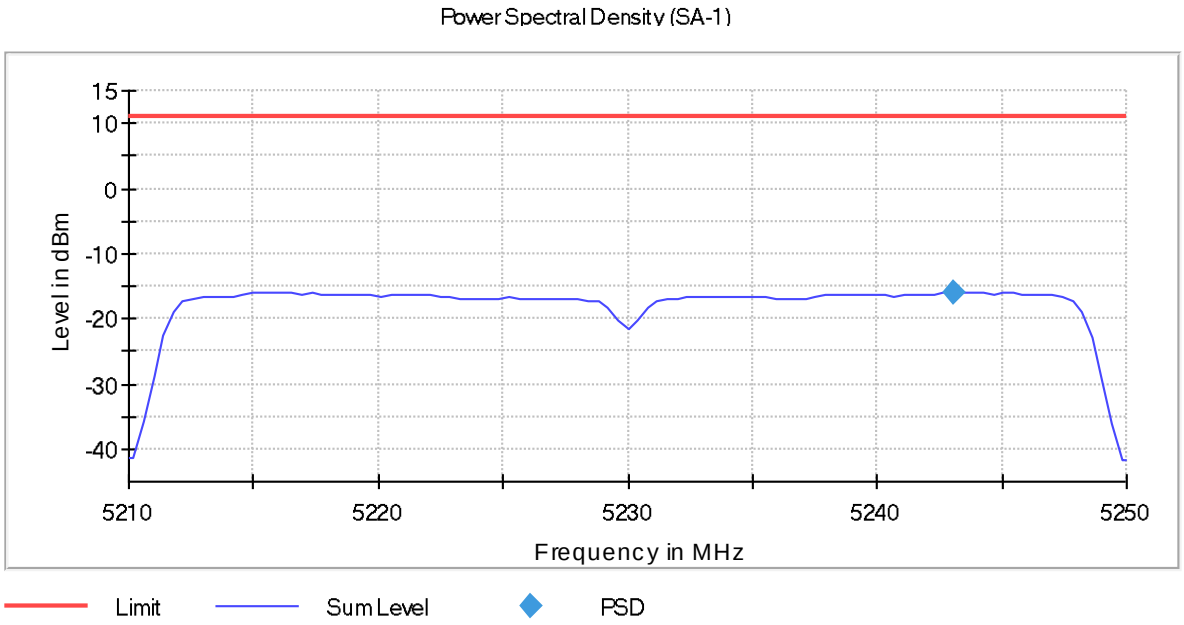
Images:

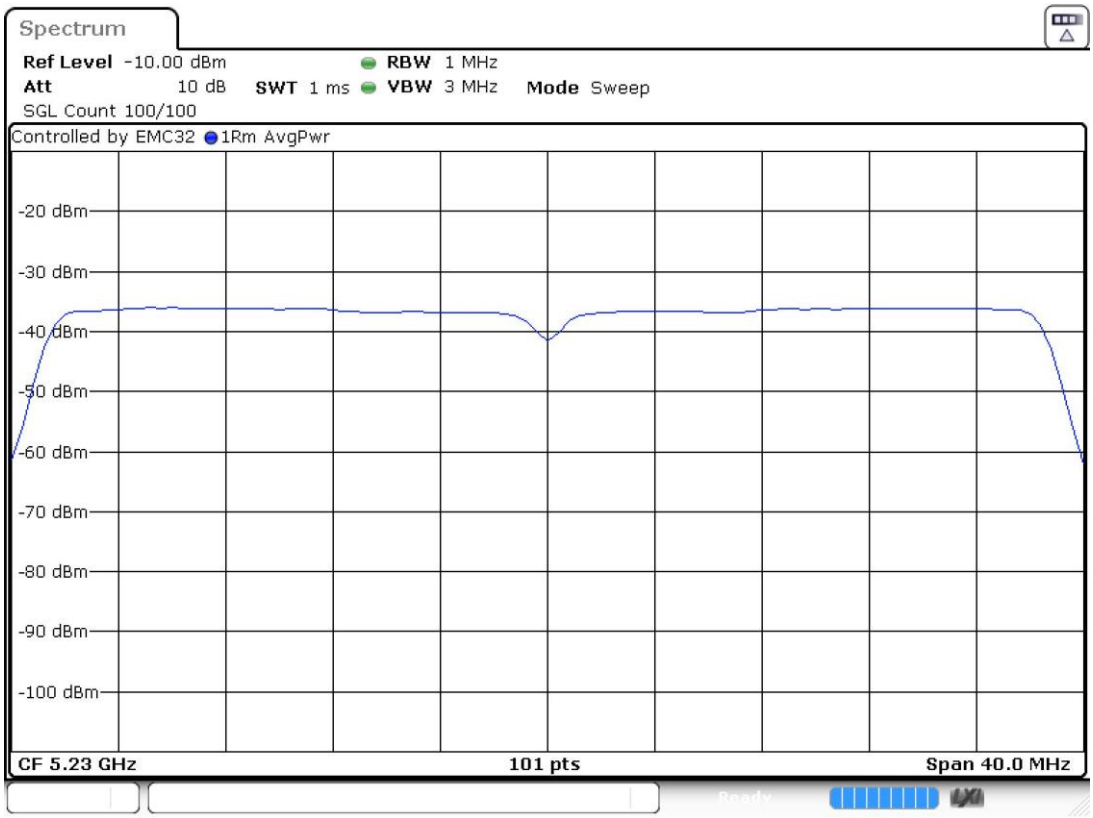




Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5230.00000	Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No	MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5150, 5250]	1	5210.00000	No	5227.750000	-20.41

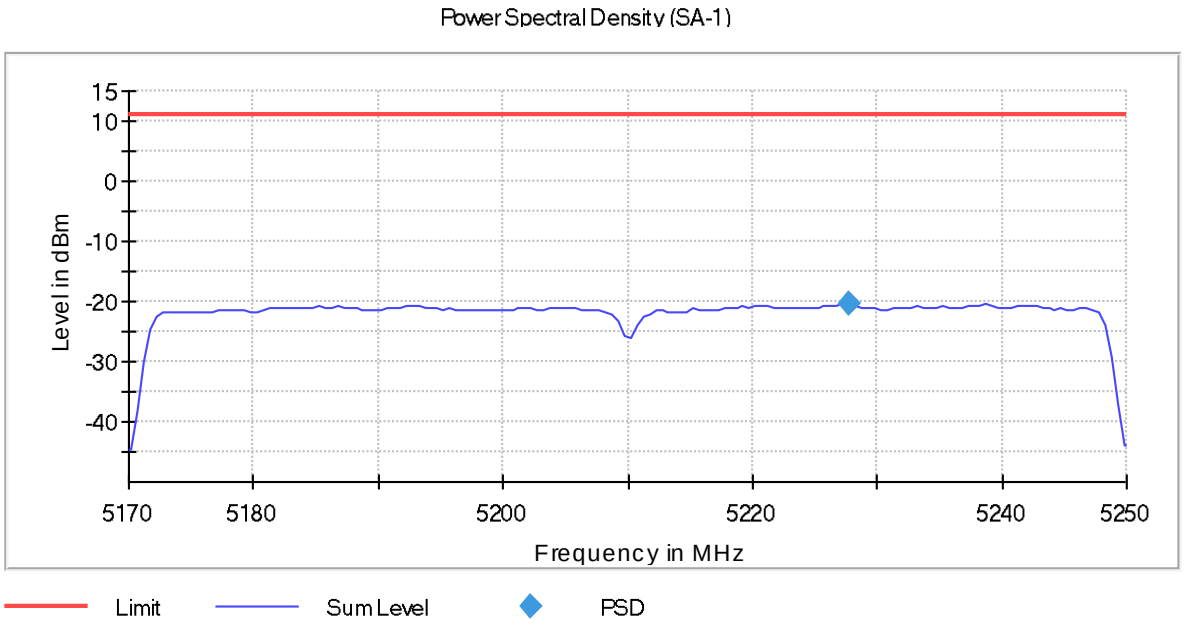
Verdict

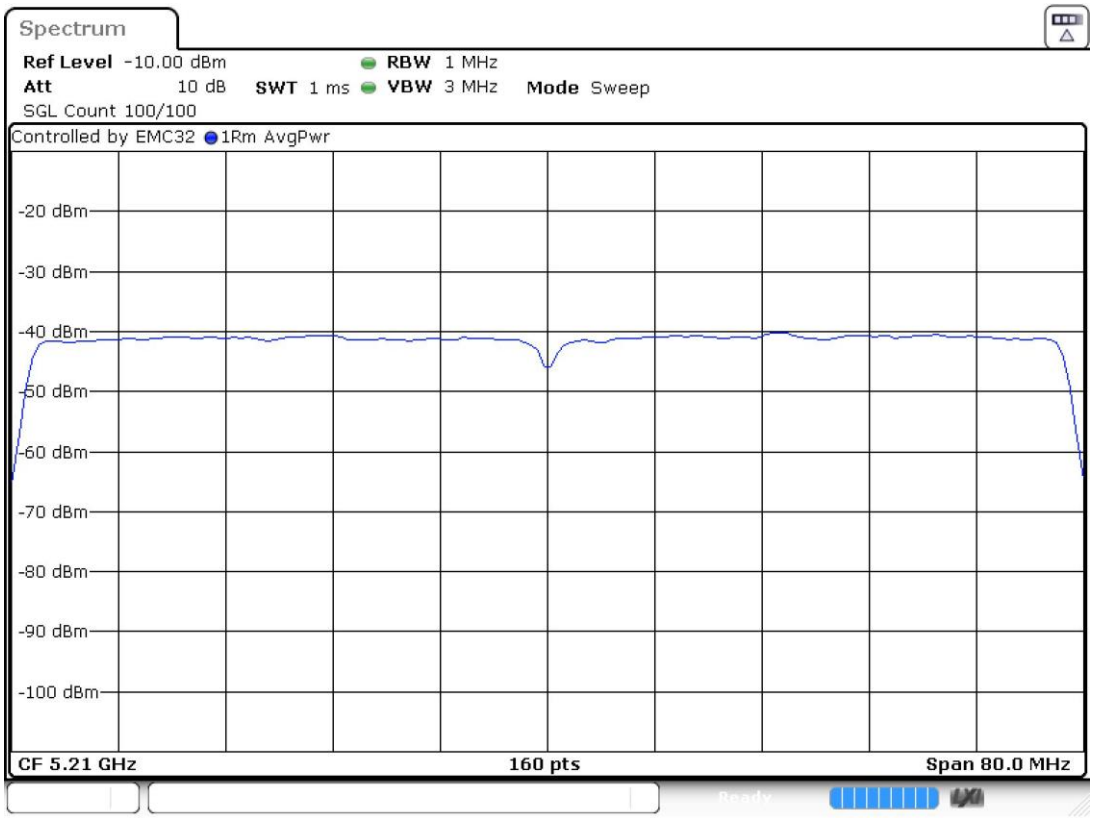
Pass

Attachments

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency MHz = 5210.00000	Modulation = 802.11ac VHT80 (OFDM MCS0)
TPC = No	MIMO Mode = SISO

Images:





RSS-247 6.2.1.2 / FCC 15.407 (b) (1) (6) 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.

Results

Frequency range tested for Radiated emissions:

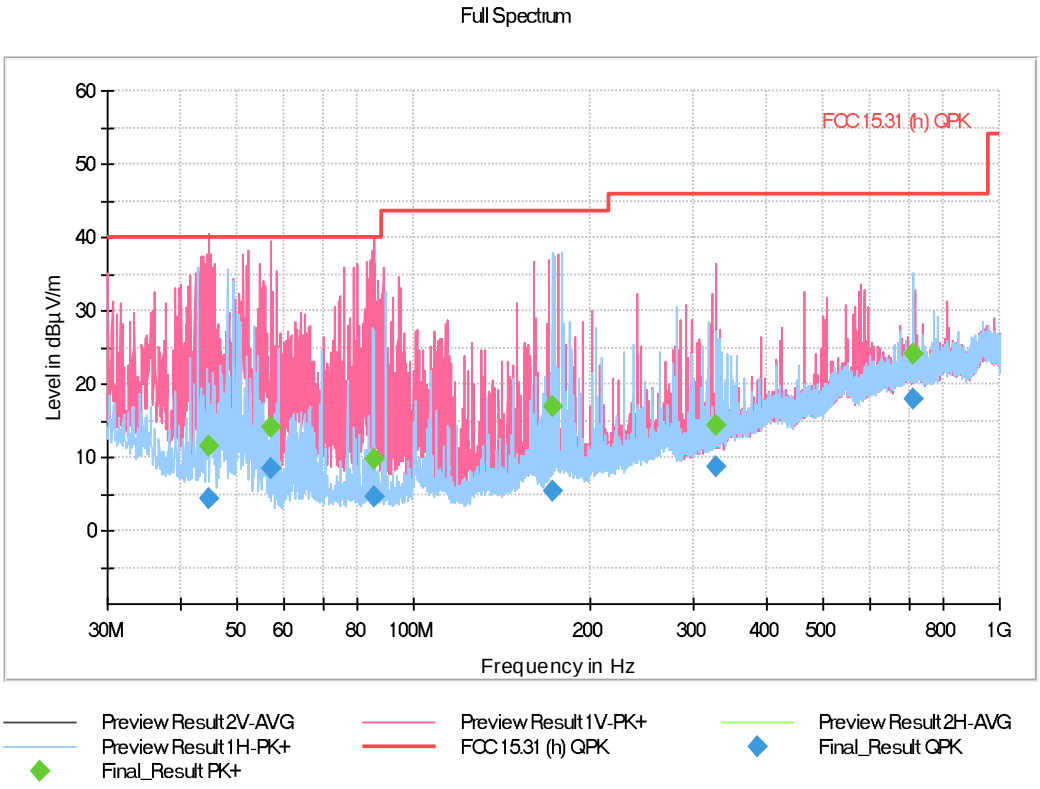
Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.
Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

The worst case was determined by measuring the e.i.r.p density (radiated).

FREQUENCY RANGE 30 MHz - 1 GHz

Spurious frequencies at less than 20 dB below the limit: Test range performed in worst-case.

Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	44.598	11.48	V	PK
		4.28	V	QP
	57.063	14.04	V	PK
		8.54	V	QP
	85.678	9.81	V	PK
		4.49	V	QP
	172.735	16.99	H	PK
		5.46	H	QP
	327.353	14.39	V	PK
		8.62	V	QP
	710.746	23.98	H	PK
		18.06	H	QP
		47.38	H	AVG



The measurement settings are as follows:

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESW 44]					
30 MHz - 1 GHz	30,312 kHz	PK+	100 kHz	1 s	0 dB

Tests results for worst-case 20MHz Modulation: 802.11n HT20 (OFDM MCS0)

Modulation: 802.11n HT20 (OFDM MCS0)

Mode: SISO

Results

** Duty Cycle correction factor: 1.19 dB*

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Corrected RMS Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5220.00000	5141.500	54.44	--	V	PK
					41.89	43.08	V	AVG
			5240.00000	5000.150	44.08	--	V	AVG
					56.01	57.20	V	PK

Tests results for worst-case 40MHz Modulation: 802.11ac VHT40 (OFDM MCS0)

Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

** Duty Cycle correction factor: 2.14 dB*

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Corrected RMS Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5220.00000	5141.500	47.33	--	V	PK
					35.41	37.55	V	AVG

Tests results for worst-case 80MHz Modulation: 802.11ac VHT80 (OFDM MCS0)

Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

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

Verdict

Pass

Attachments

The measurement settings for each range of frequency is as follows:

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESW 44]					
1 GHz - 6,5 GHz	100 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESW 44]					
6,5 GHz - 17 GHz	105 kHz	PK+ ; AVG	1 MHz	1 s	30 dB

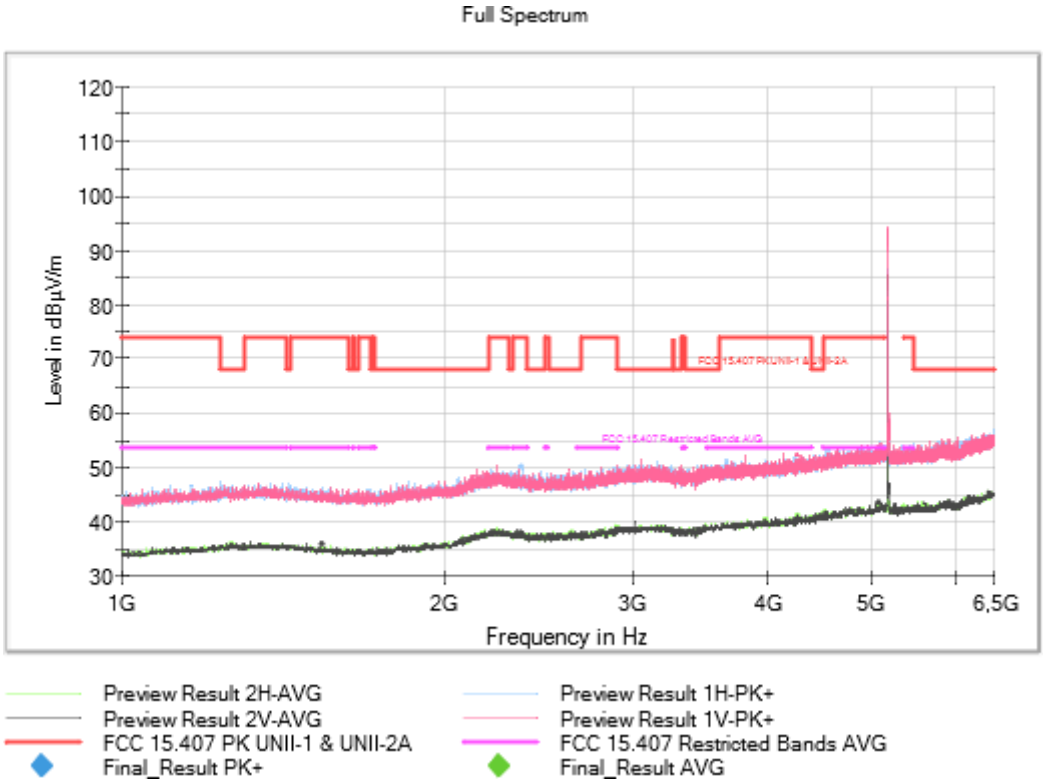
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESW 44]					
17 GHz - 40 GHz	766,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000

Modulation = 802.11n HT20 (OFDM MCS0) MIMO Mode = SISO

Images:

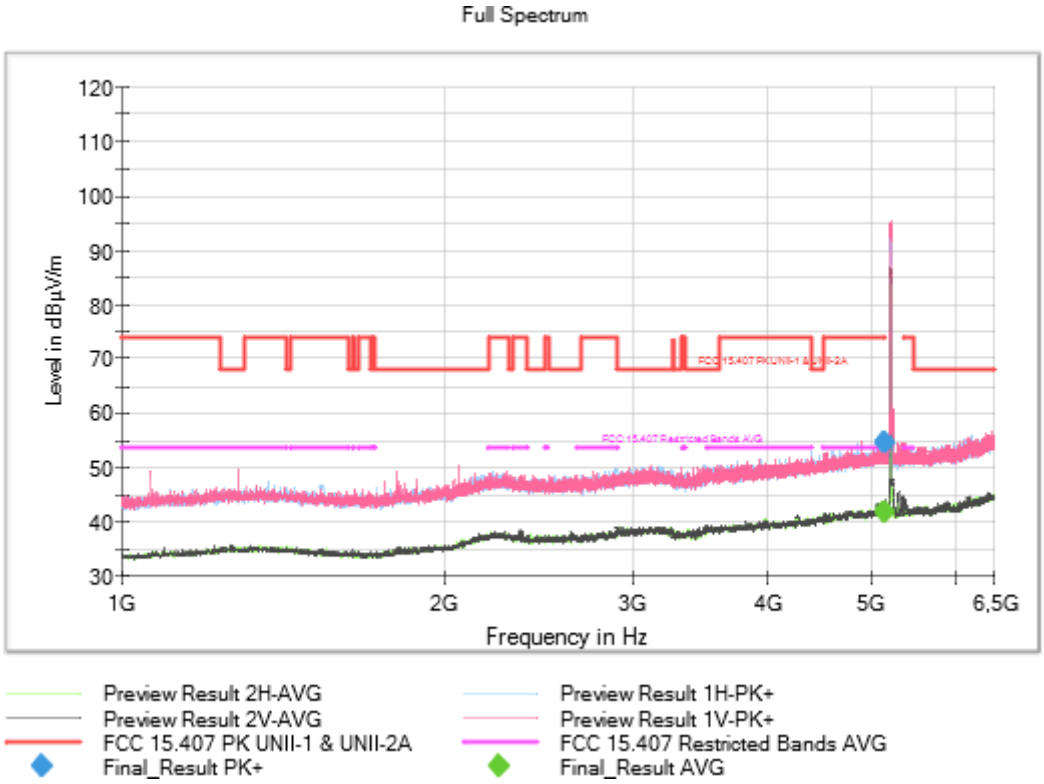


Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5220.00000

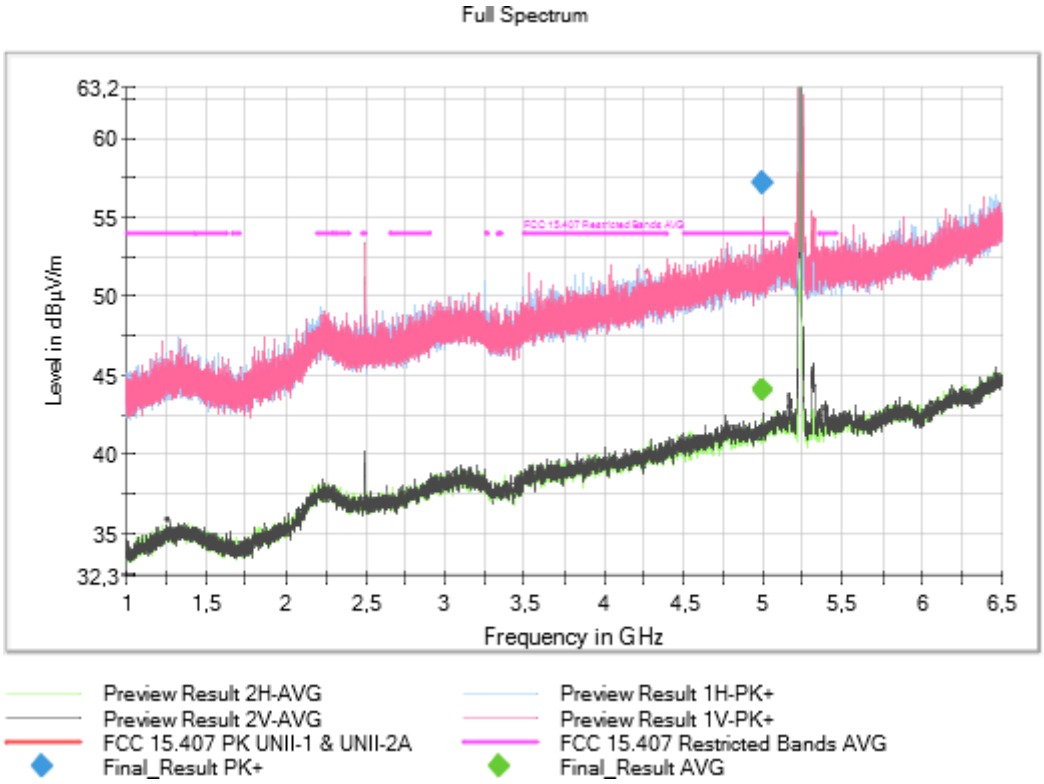
Modulation = 802.11n HT20 (OFDM MCS0) MIMO Mode = SISO

Images:



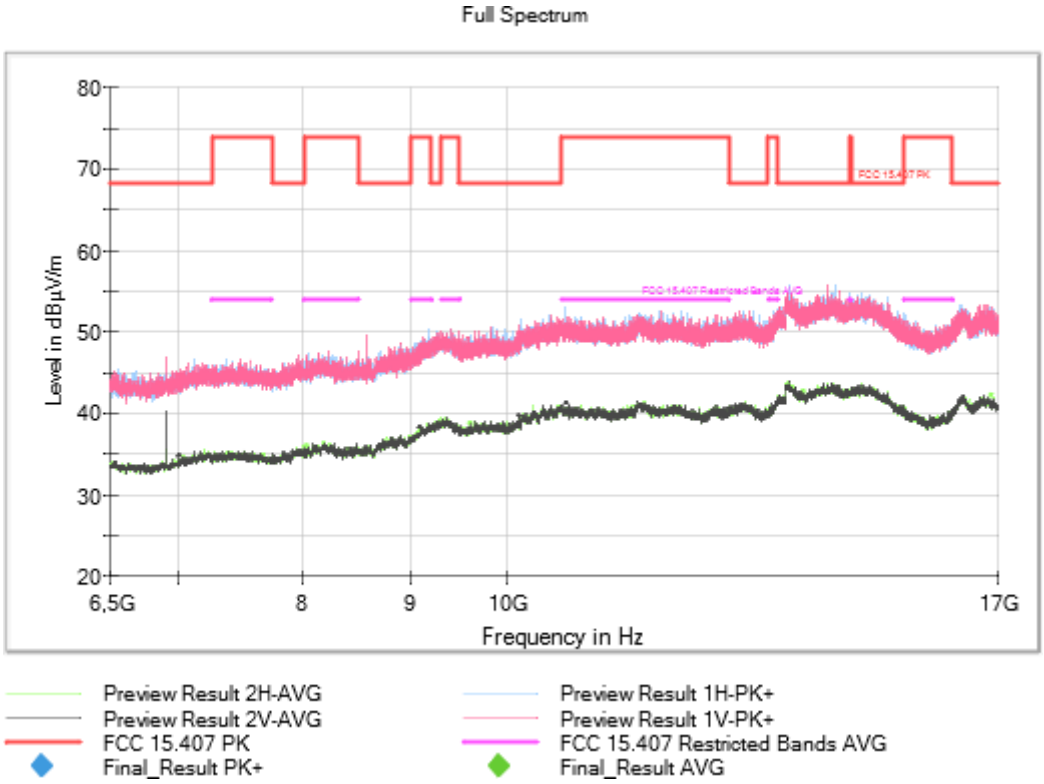
Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5240.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = SISO

Images:



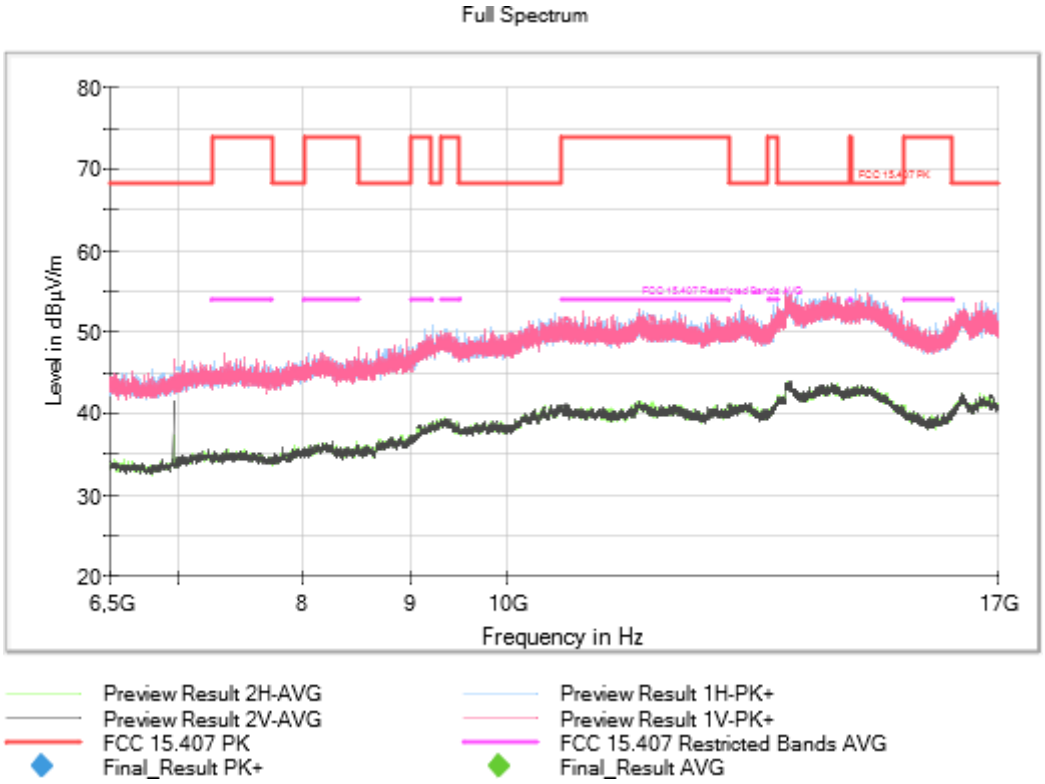
Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5180.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = SISO

Images:



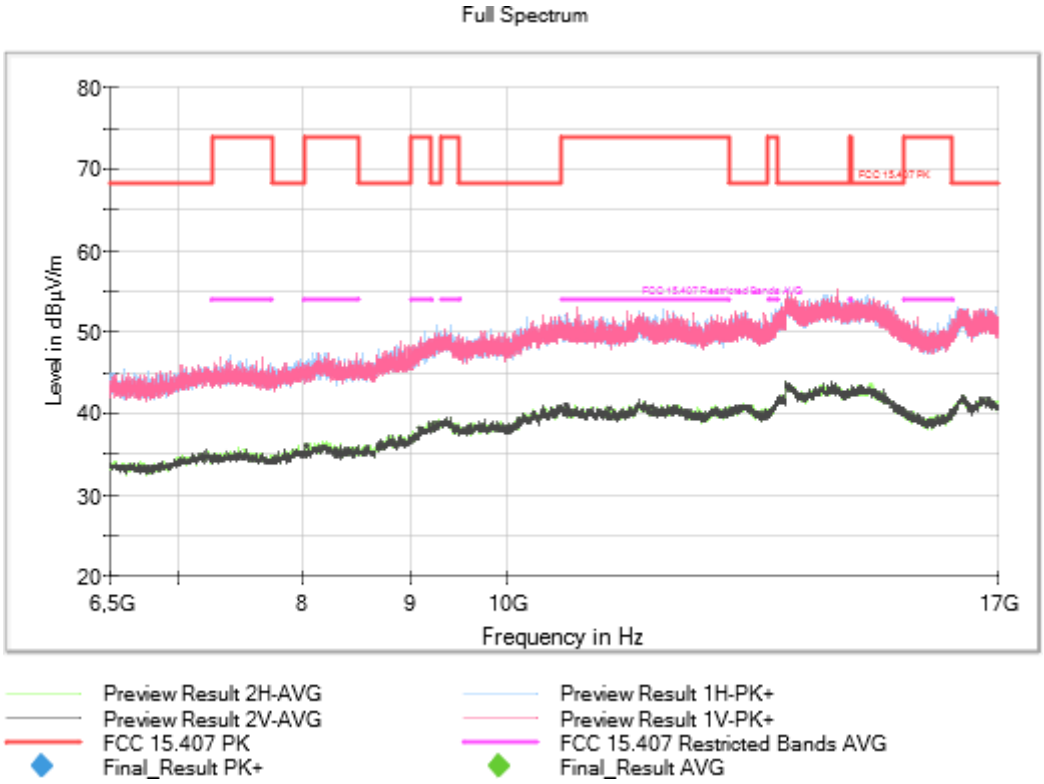
Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5220.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = SISO

Images:



Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5240.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = SISO

Images:

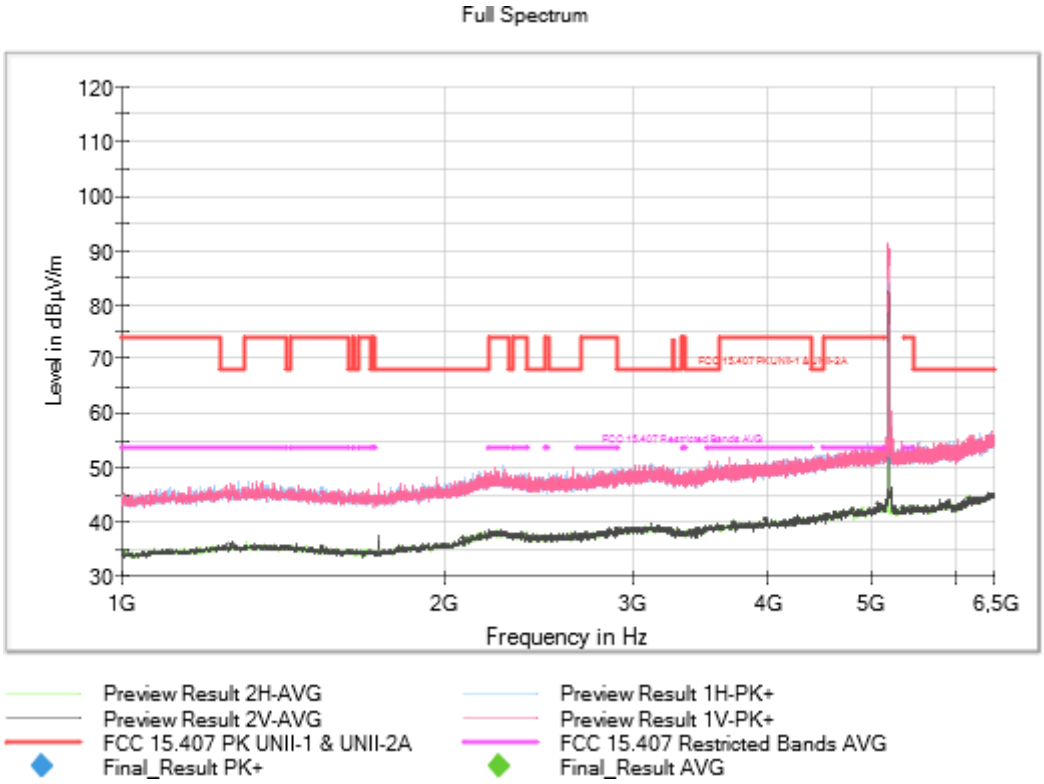


Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000

Modulation = 802.11ac VHT40 (OFDM MCS0) MIMO Mode = SISO

Images:

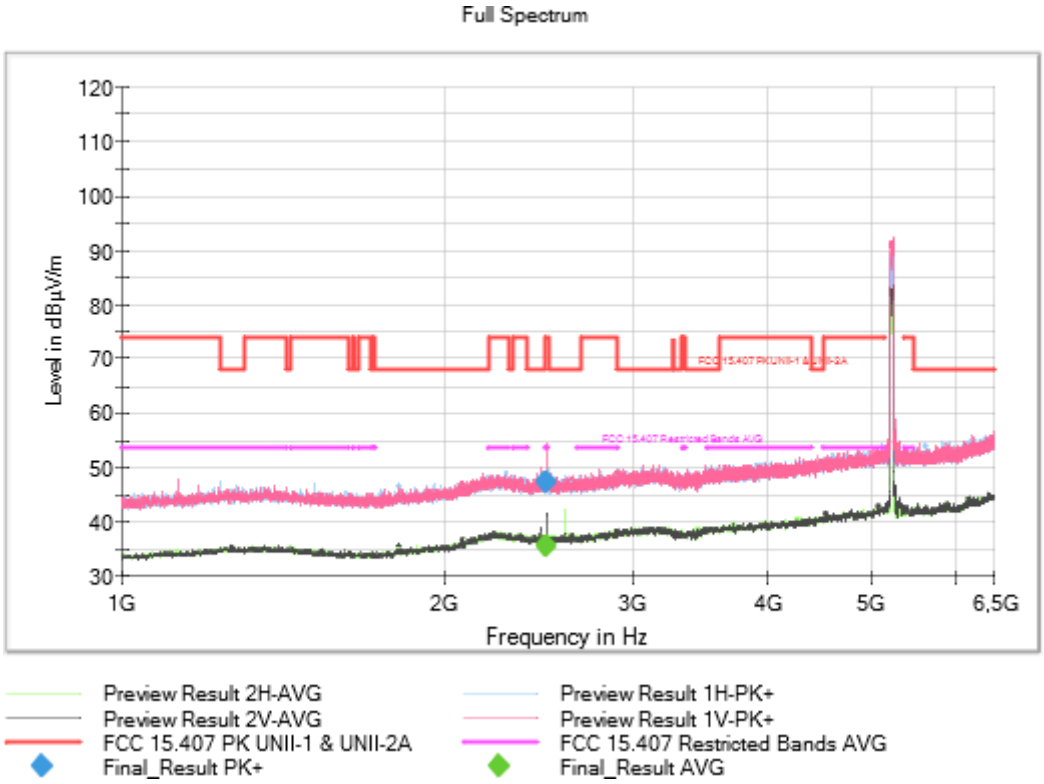


Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5230.00000

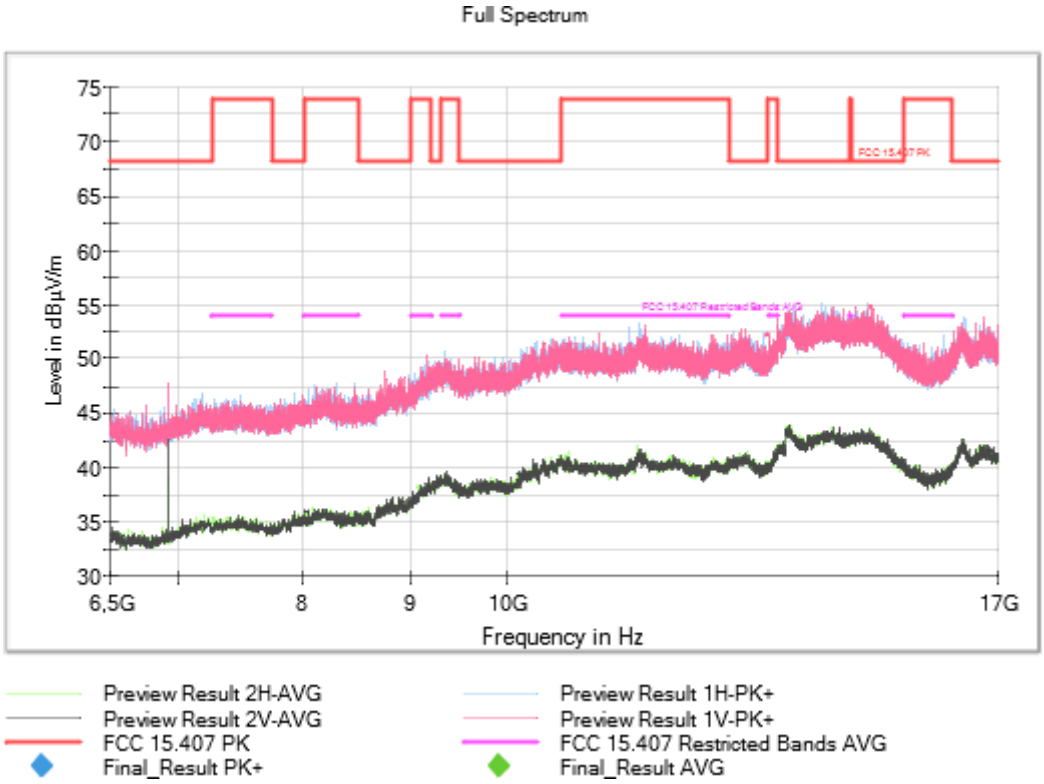
Modulation = 802.11ac VHT40 (OFDM MCS0) MIMO Mode = SISO

Images:



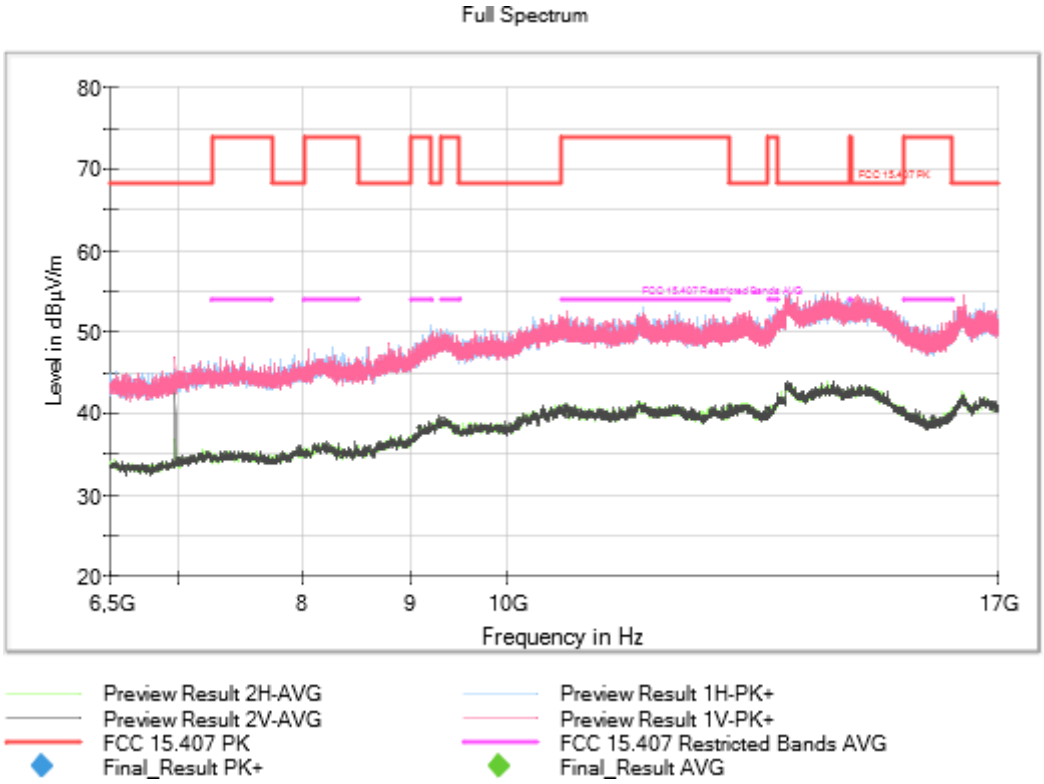
Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5190.00000
Modulation = 802.11ac VHT40 (OFDM MCS0)	MIMO Mode = SISO

Images:



Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5230.00000
Modulation = 802.11ac VHT40 (OFDM MCS0)	MIMO Mode = SISO

Images:

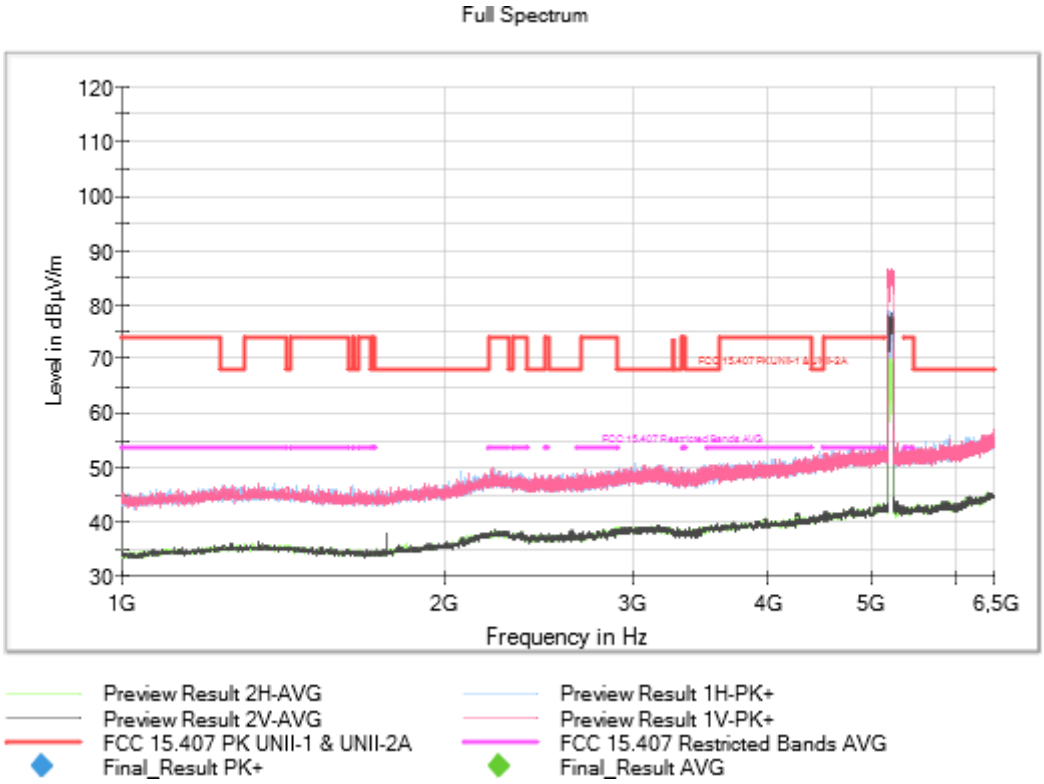


Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5210.00000

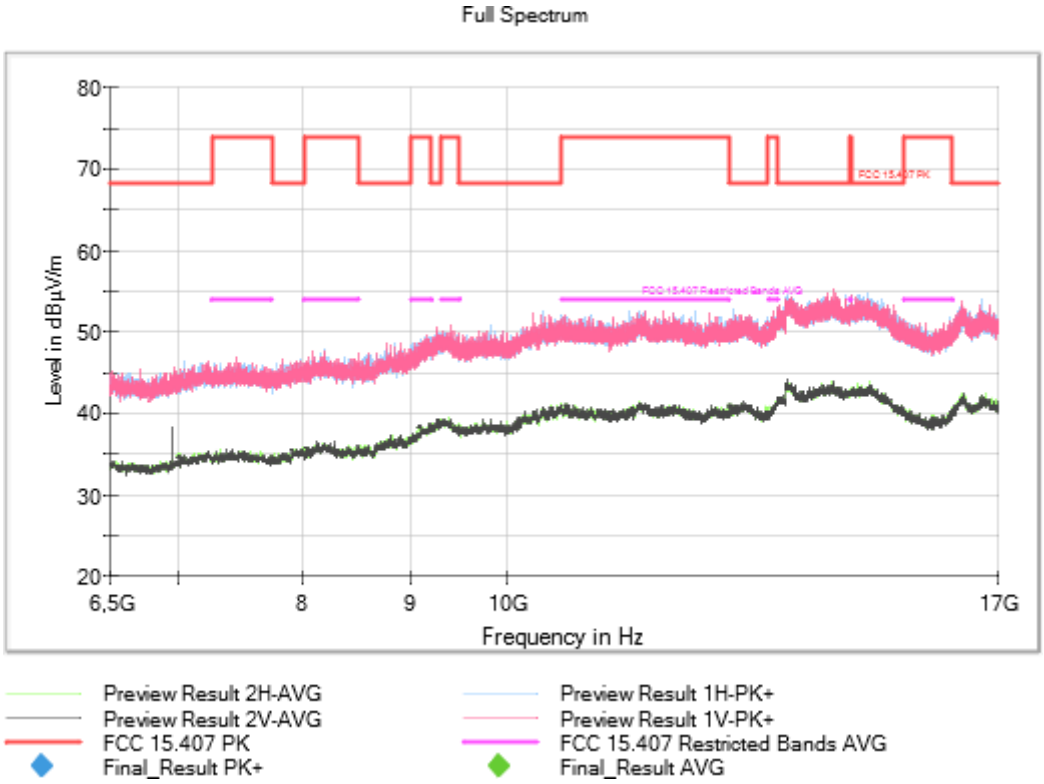
Modulation = 802.11ac VHT80 (OFDM MCS0) MIMO Mode = SISO

Images:



Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [6.5, 17]	Frequency MHz = 5210.00000
Modulation = 802.11ac VHT80 (OFDM MCS0)	MIMO Mode = SISO

Images:

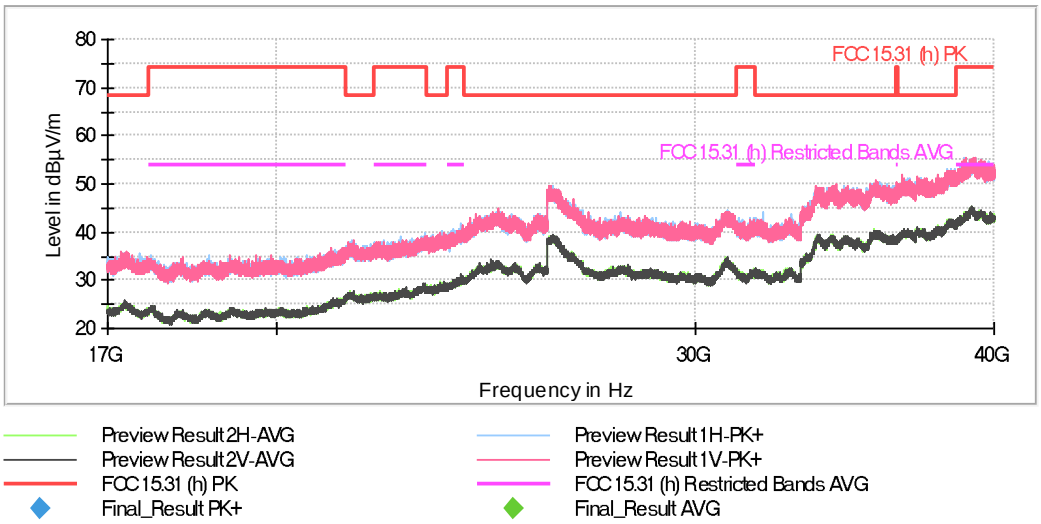


Operation Band MHz = [5725, 5850] Active Port = 1

Frequency Range GHz = [17, 40] MIMO Mode = SISO

The spurious emissions above 17 GHz do not depend on either the operating channel or the modulation mode selected in the EUT. Test range performed in worst-case.

Images:



FCC 15.407 (b)(1) / RSS-247 6.2.1.2. Transmitter Band Edge Radiated Emissions.

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)	-	30
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, specified when measuring with peak detector function.

RSS 247: Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz.

Results

All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz. There are restricted bands of operation below band edge at 4.50-5.15 GHz also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.

Field strength measurements using peak detector performed in the restricted bands below 5.15 GHz and above 5.35 GHz.
Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with an average detector for checking compliance with the average limit.

Test performed on all the supported modes of the EUT, in the worst data rates after preliminary testing.

BAND EDGE EMISSIONS: For U-NII-1 band edge spurious emissions inside of the Restricted Bands 4.50-5.15 GHz and 5.35-5.46 GHz.

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

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

Modulation: 802.11n HT20 (OFDM MCS0)

Mode: SISO

Results

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

Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

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

Modulation: 802.11n HT40 (OFDM MCS0)

Mode: SISO

Results

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

Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

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

Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

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

Verdict

Pass

Attachments

Spectrum analyser:

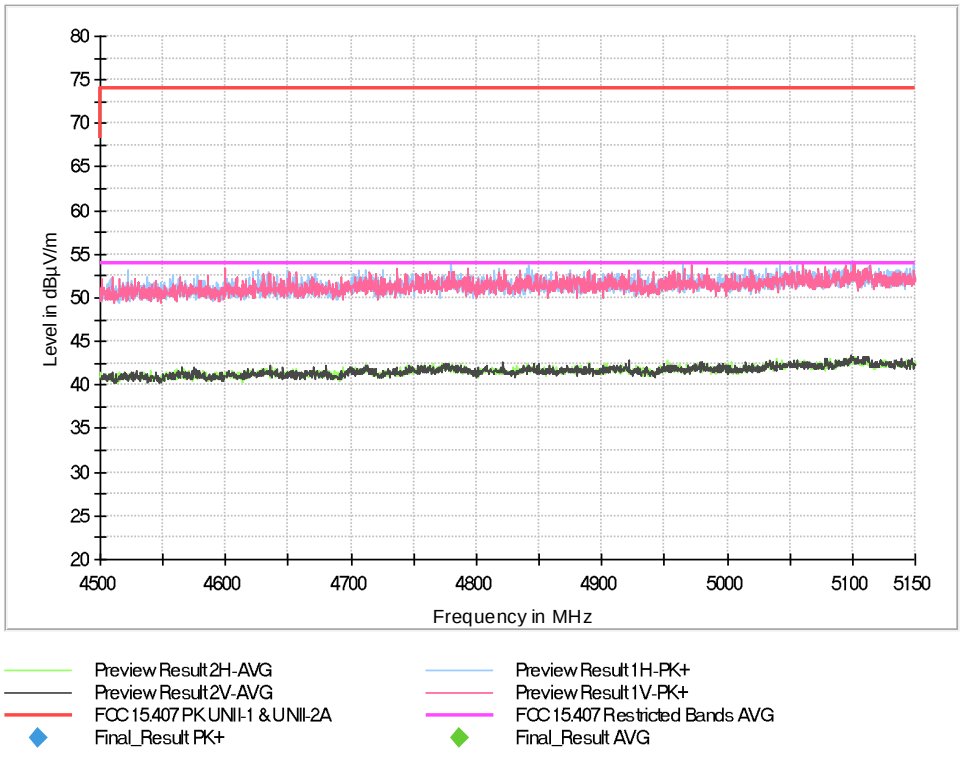
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [FSW 50]					
1 GHz - 6,5 GHz	100 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

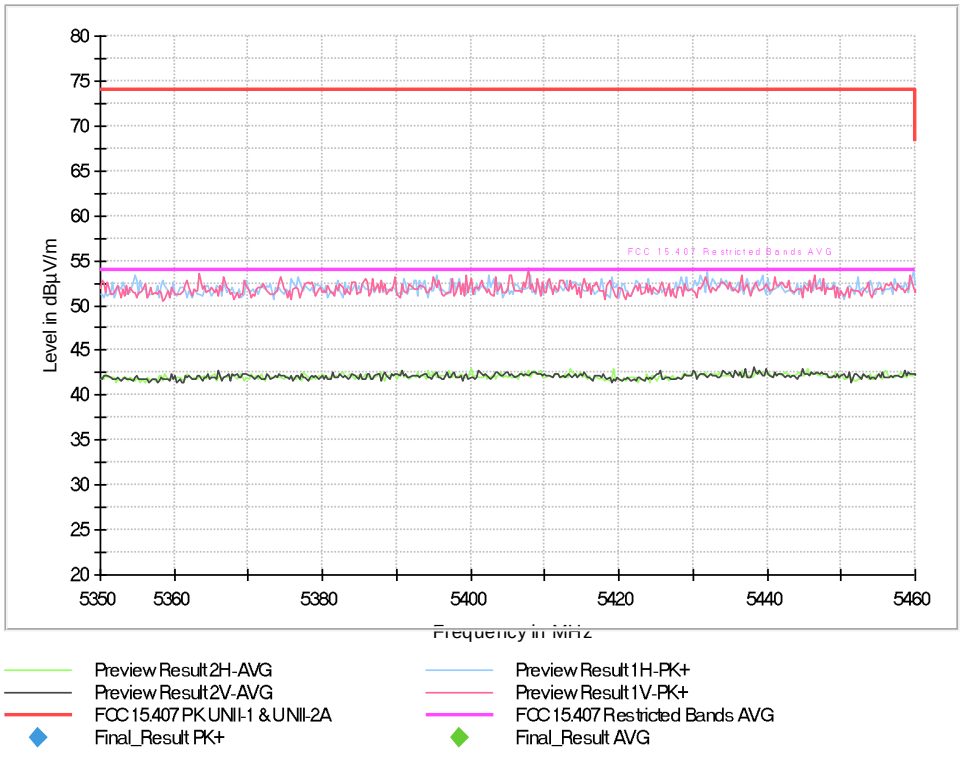
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000

Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



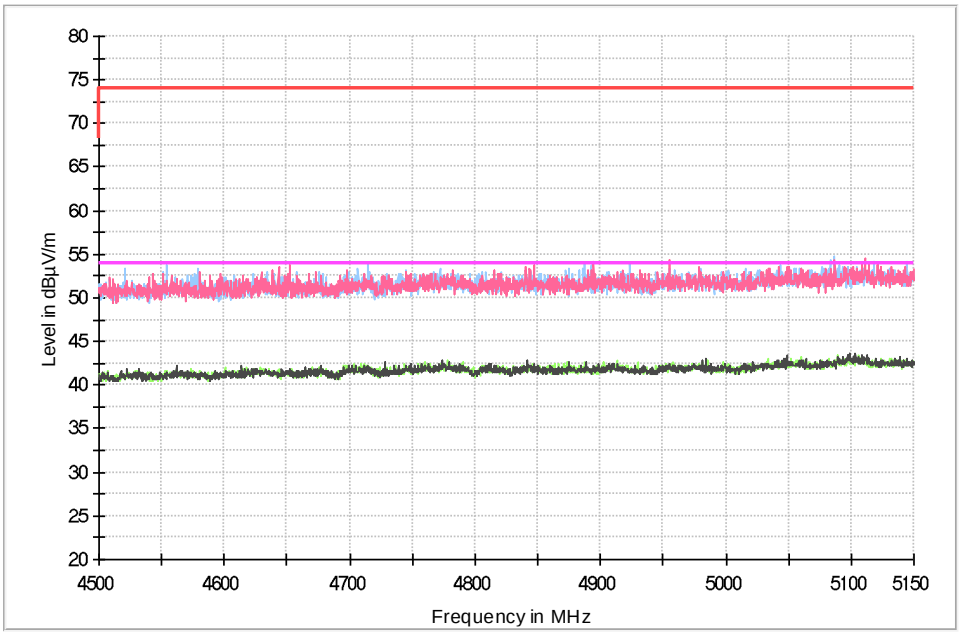


Operation Band MHz = [5150, 5250] Active Port = 1

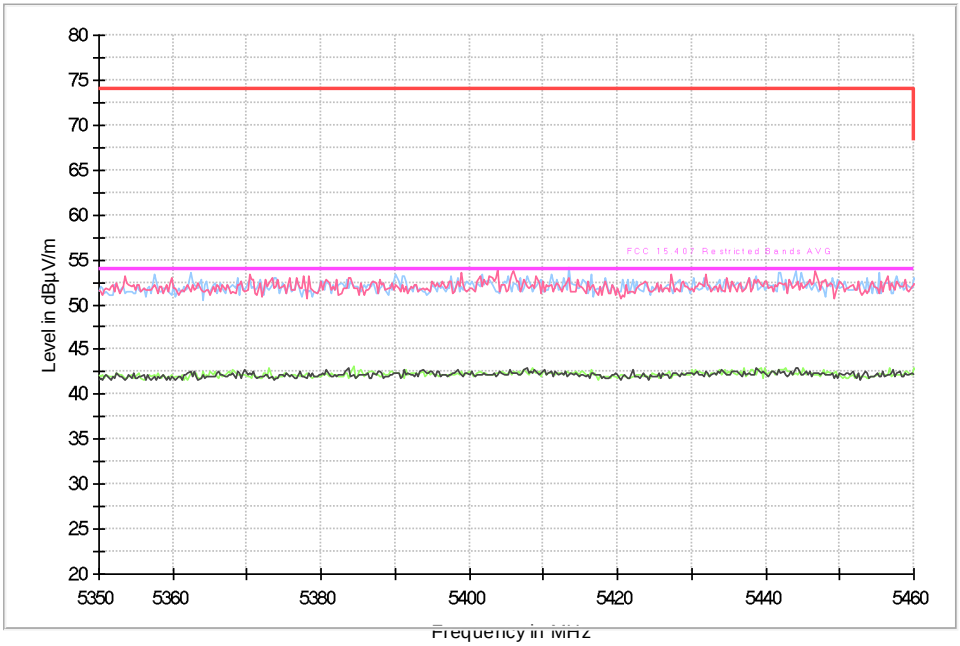
Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000

Modulation = 802.11n HT20 (OFDM MCS0) MIMO Mode = SISO

Images:



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



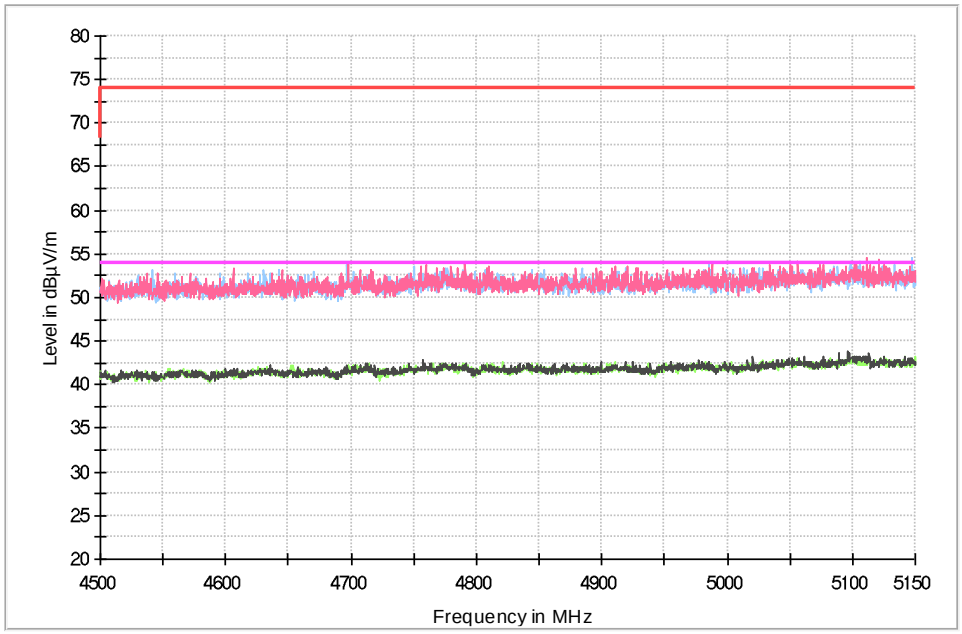
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

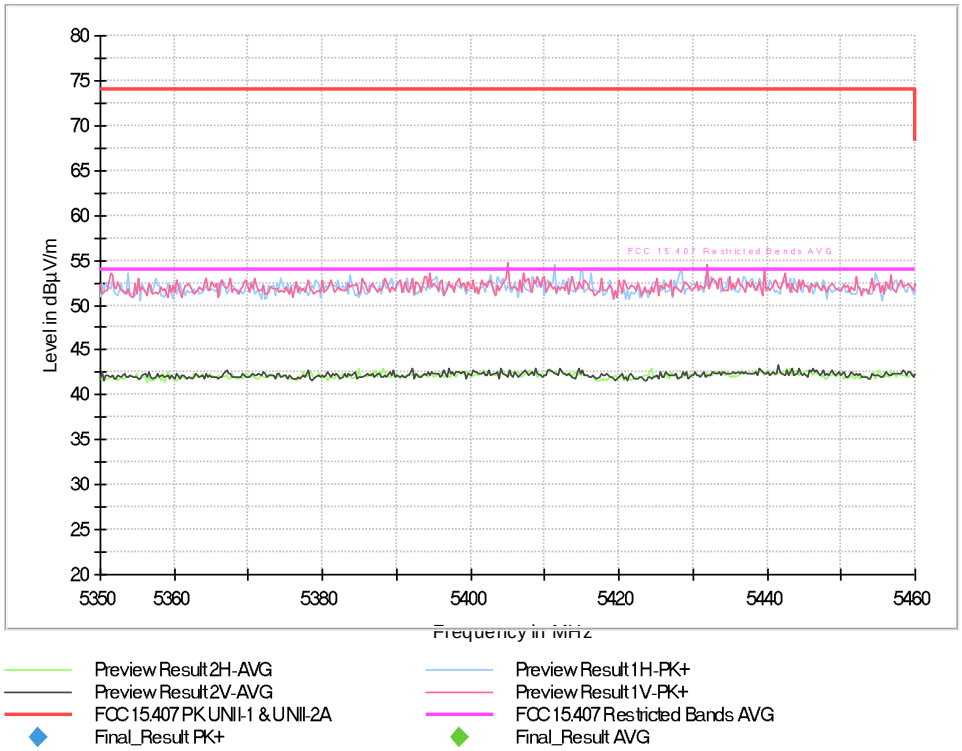
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000

Modulation = 802.11ac VHT20 (OFDM MCS0) MIMO Mode = SISO

Images:



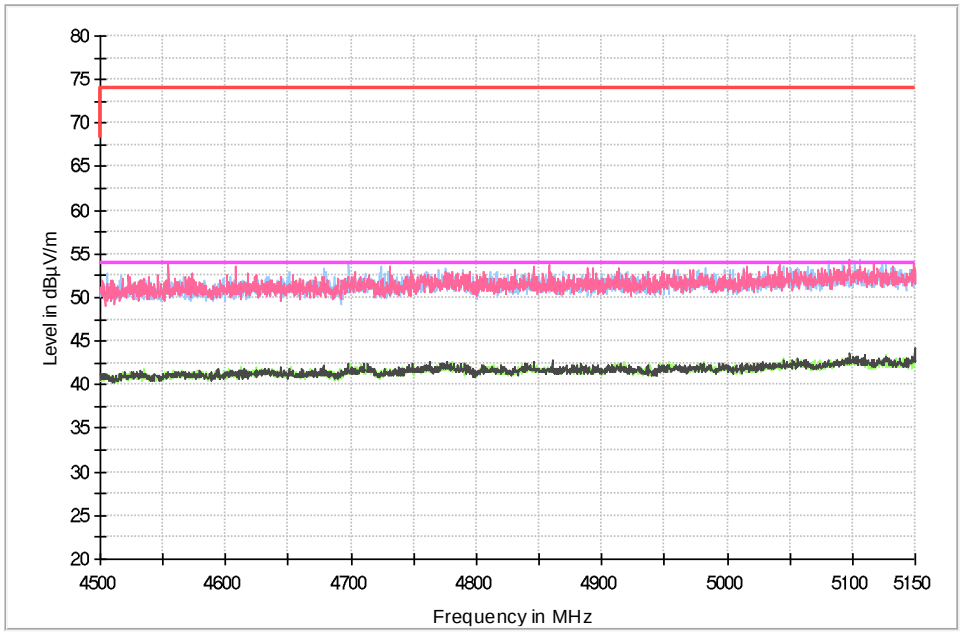


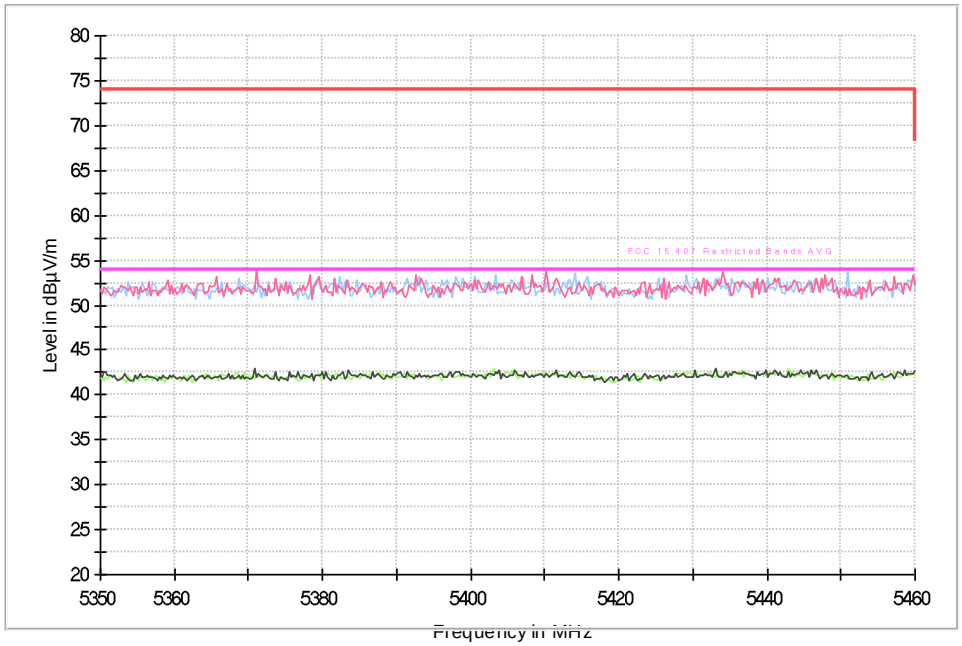
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000

Modulation = 802.11n HT40 (OFDM MCS0) MIMO Mode = SISO

Images:



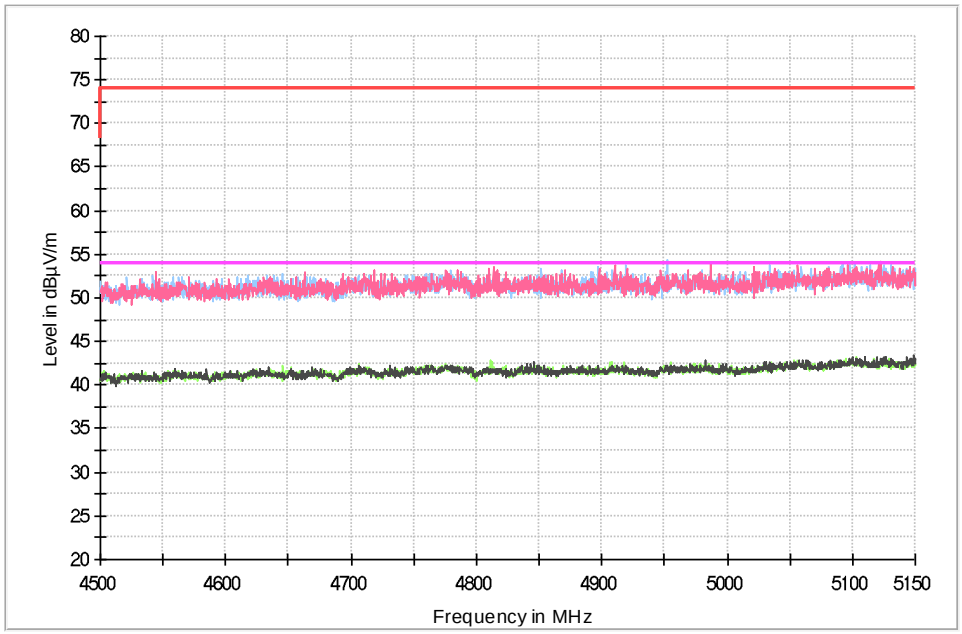


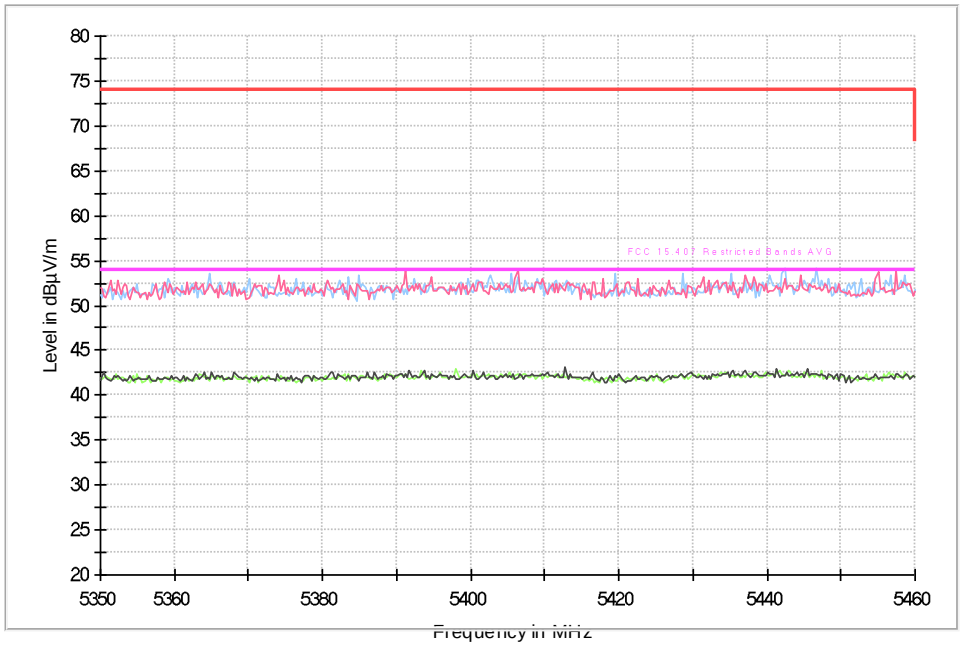
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000

Modulation = 802.11ac VHT40 (OFDM MCS0) MIMO Mode = SISO

Images:

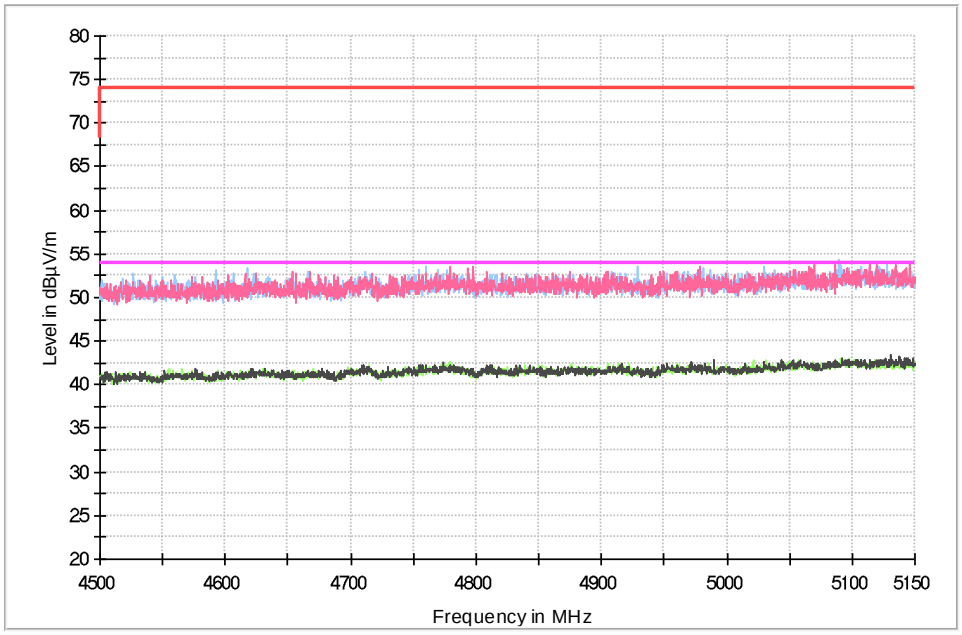


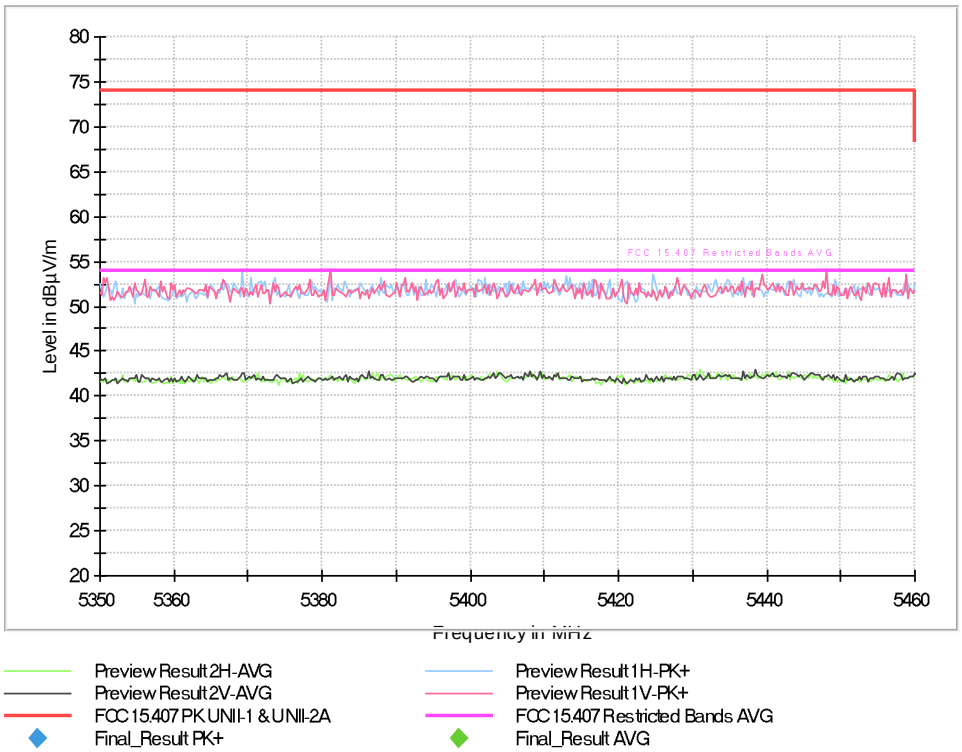


Modulation: 802.11ac VHT80 (OFDM MCS0)

Operation Band MHz = [5150, 5250]	Active Port = 1
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5210.00000
Modulation = 802.11ac VHT80 (OFDM MCS0)	MIMO Mode = SISO

Images:





Appendix C: Tests results for the U-NII-3: 5.725 GHz – 5.85 GHz Band

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TEST CASES DETAILS

RSS-247 6.2.4.1 / FCC 15.407 (e) 6 dB Emission Bandwidth

Limits

For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5745.00000	16.400
		5785.00000	16.400
		5825.00000	16.400

Verdict

Pass

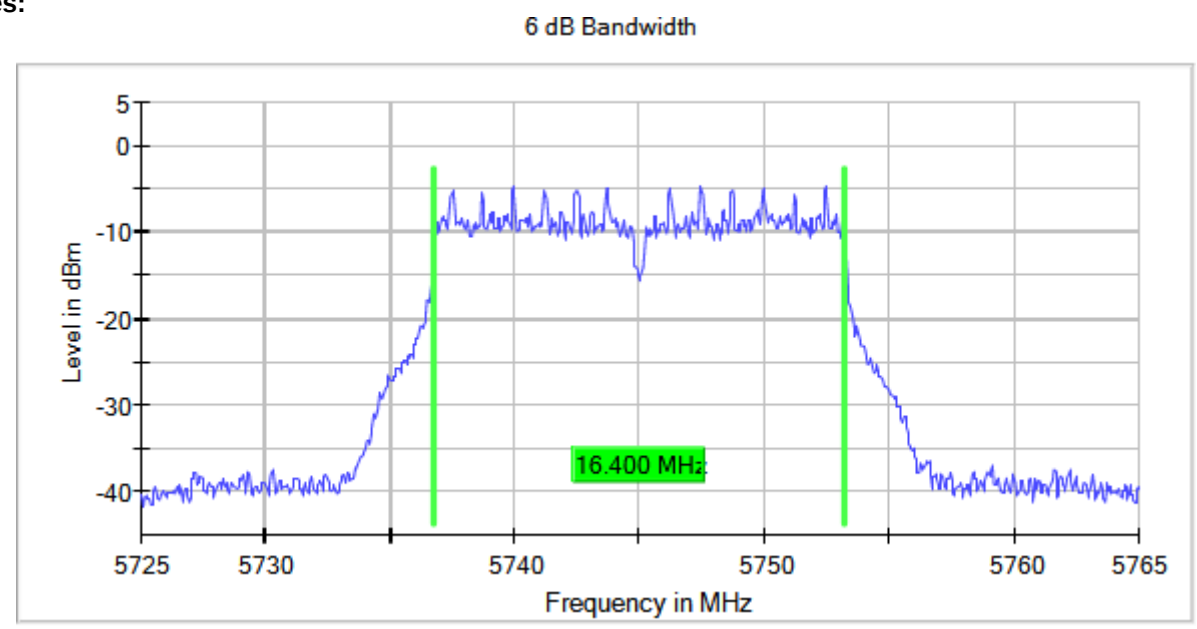
Attachments

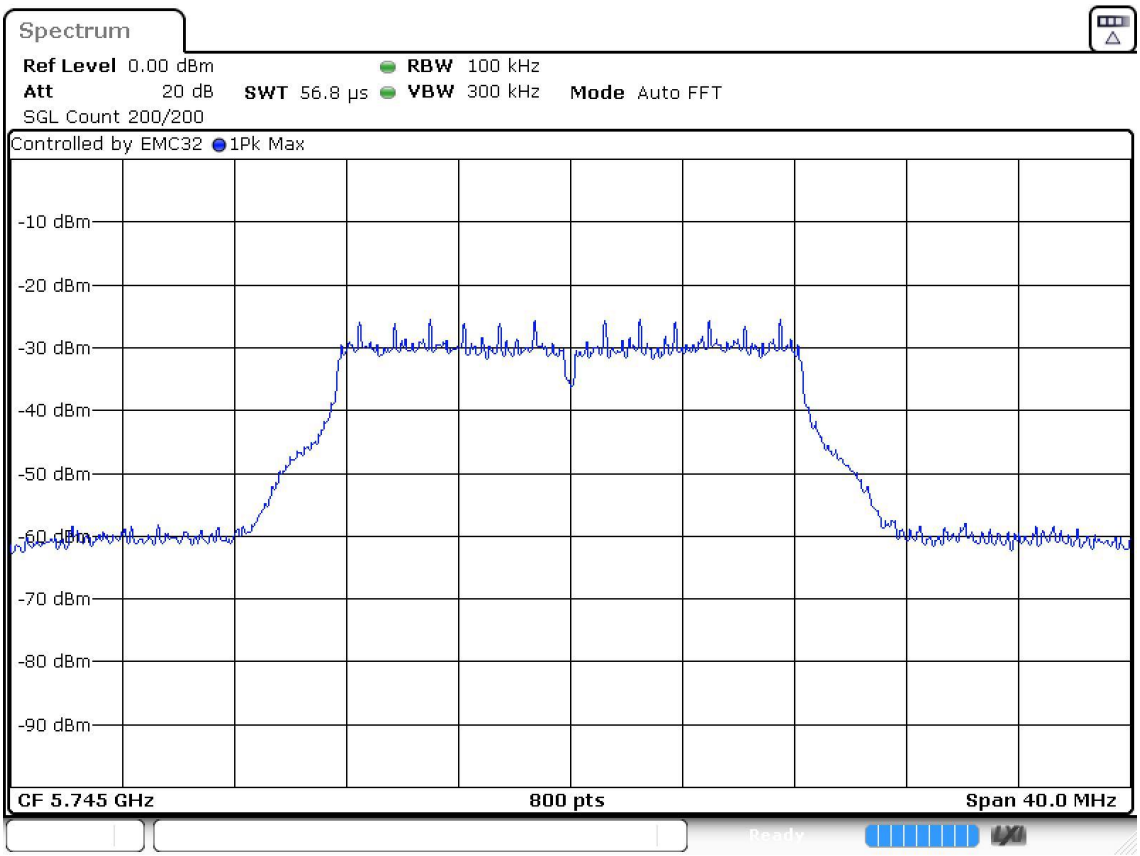
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5745.00000 Modulation = 802.11a (OFDM 6 Mbit/s)

MIMO Mode = SISO

Images:



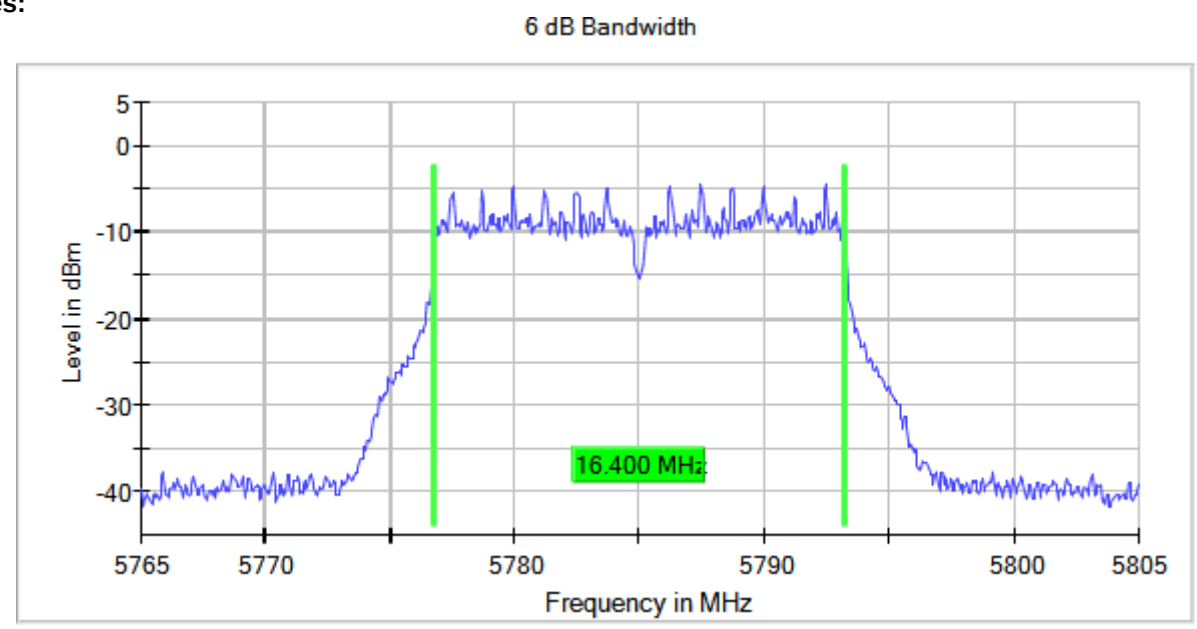


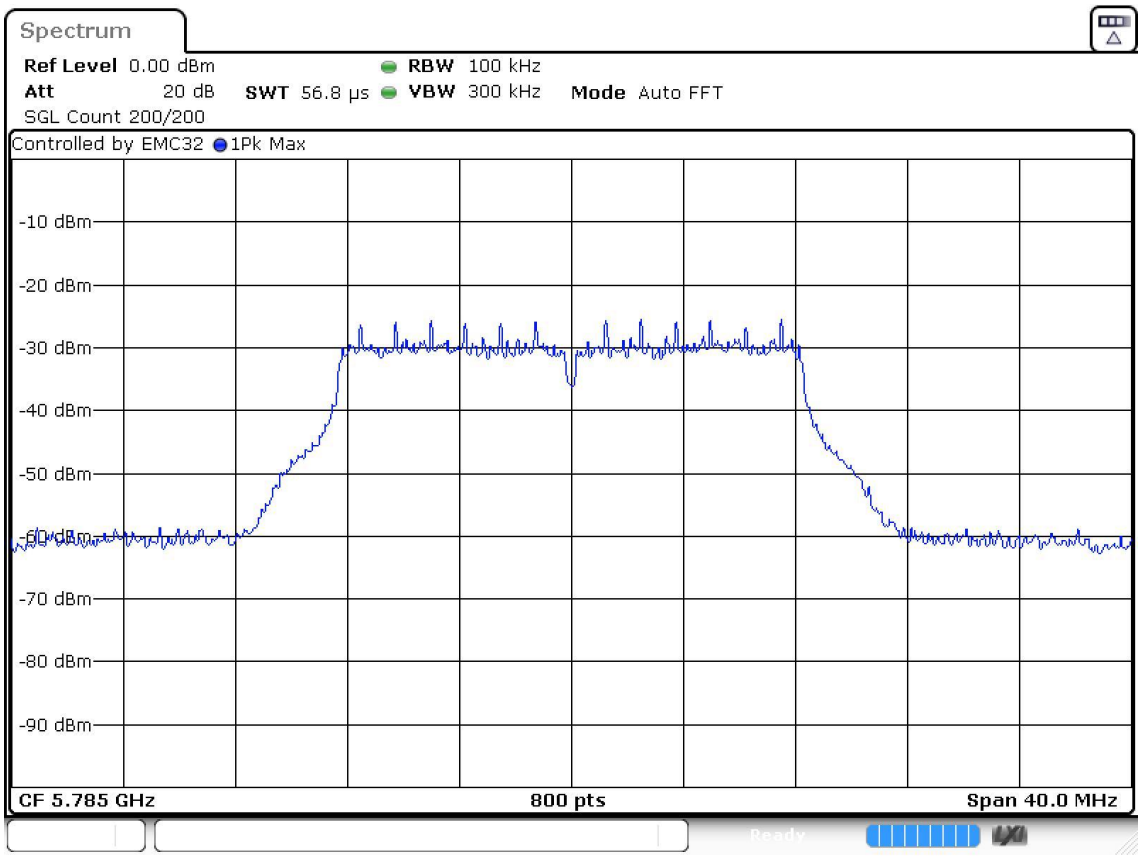
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5785.00000 Modulation = 802.11a (OFDM 6 Mbit/s)

MIMO Mode = SISO

Images:



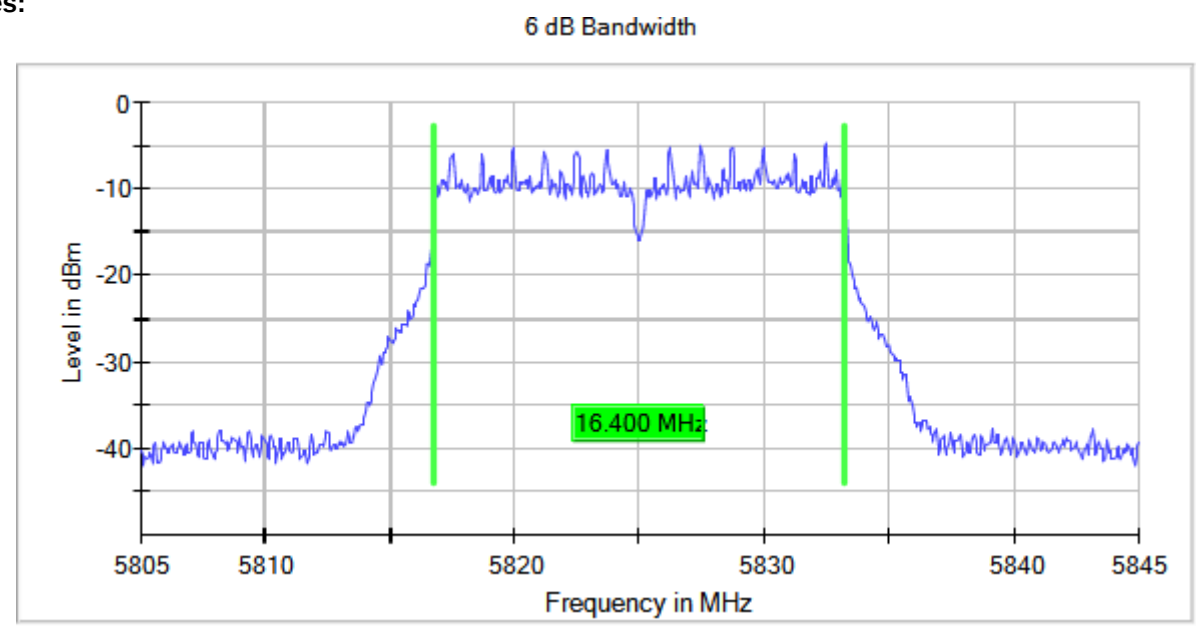


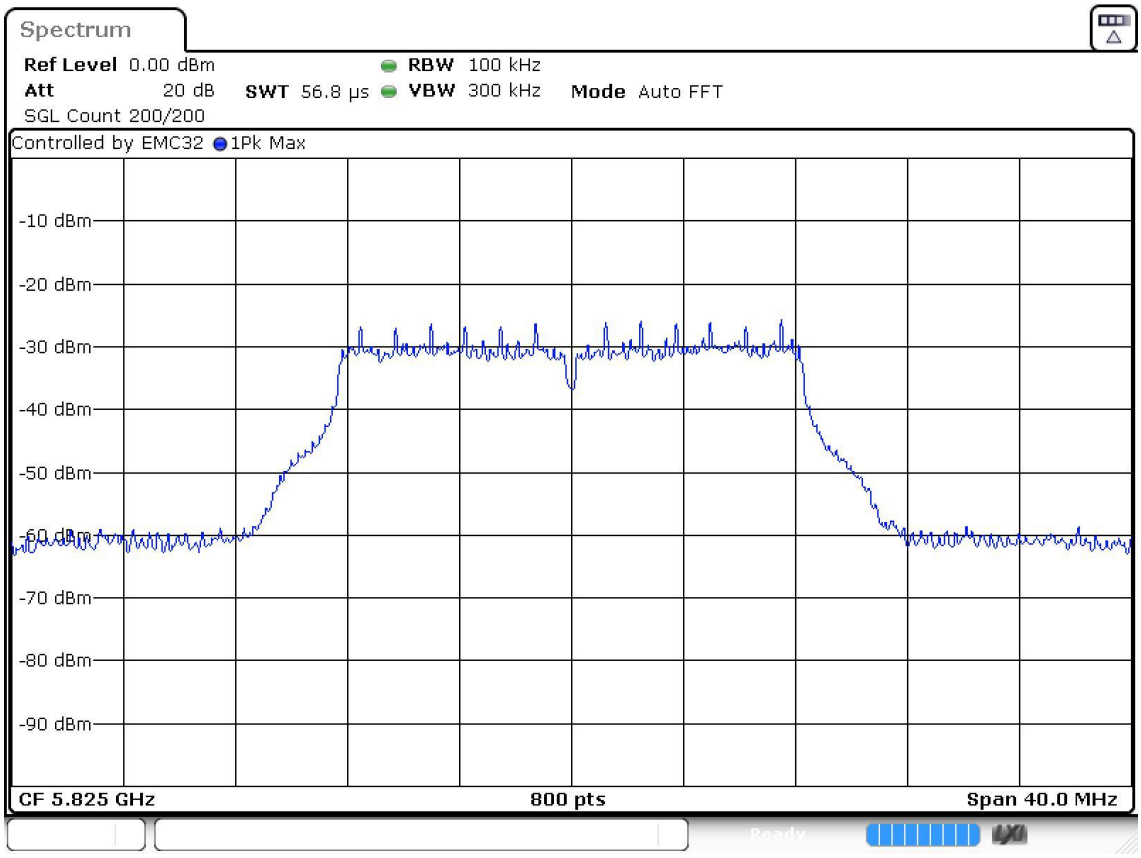
Operation Band MHz = [5725, 5850] Active Port = 1

Frequency MHz = 5825.00000 Modulation = 802.11a (OFDM 6 Mbit/s)

MIMO Mode = SISO

Images:





Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5745.00000	17.700
		5785.00000	17.700
		5825.00000	17.700

Verdict

Pass