

Frequency range 30 MHz - 1 GHz

The spurious emissions below 1 GHz do not depend either on the operating channel, the modulation mode selected in the EUT or the Radio selected.

Spurious frequencies detected at less than 20 dB below the limit:

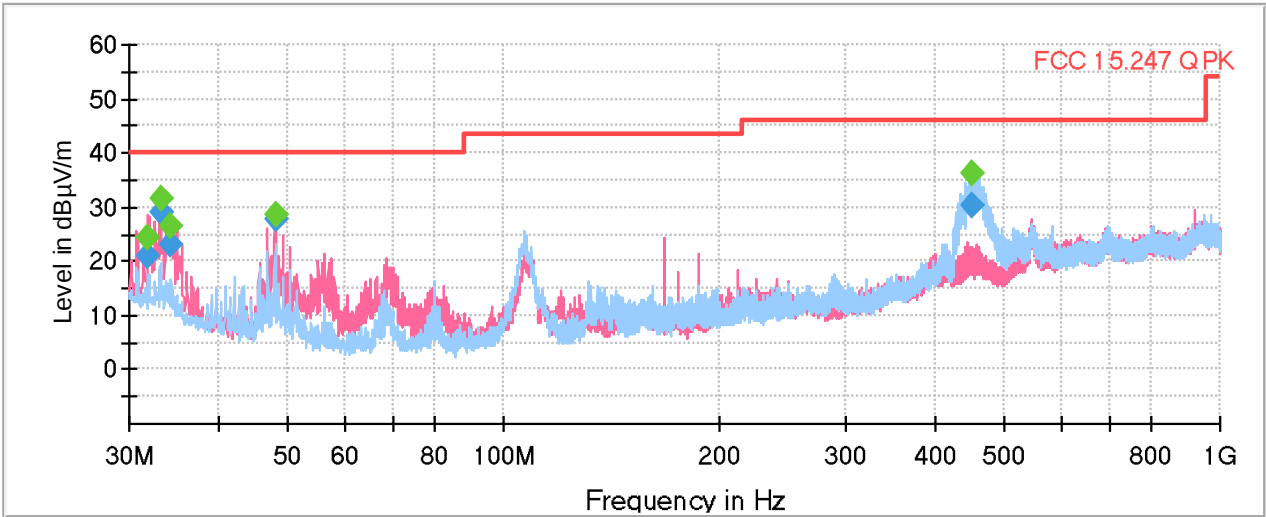
Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Margin (dB)	Pol
31.940000	20.91	---	19.09	V
31.940000	---	24.42	---	V
33.152500	28.83	---	11.17	V
33.152500	---	31.66	---	V
34.316500	23.19	---	16.81	V
34.316500	---	26.61	---	V
47.993500	---	28.55	---	V
47.993500	27.56	---	12.44	V
450.834500	---	36.09	---	H
450.834500	30.29	---	15.71	H

Attachments

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESW 44] 30 MHz - 1 GHz	40 kHz	PK+	100 kHz	0,01 s	0 dB
Frequency Range GHz = [0.03, 1]			Equipment Type = Digital Transmission System (DTS)		
The spurious frequencies detected do not depend on either the modulation or the operation channel					
MIMO Mode = SISO			Active Port = 1		

Images:



Preview Result 2V-AVG	Preview Result 1V-PK+	Preview Result 2H-AVG
Preview Result 1H-PK+	FCC 15.247 QPK	Final_Result QPK
Final_Result PK+		

Frequency range 1 - 40 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.

Worst case: SISO 802.11 a20

Modulation: 802.11a (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5180.00000	5148.100	70.84	V	PK
				5148.100	53.26	V	AVG
			5220.00000	5147.825	48.21	V	AVG
				5147.825	60.06	V	PK
			5240.00000	4999.600	58.02	V	PK
				4999.600	46.79	V	AVG
				5456.375	57.22	V	PK
				5456.375	46.02	V	AVG

Verdict

Pass

Attachments

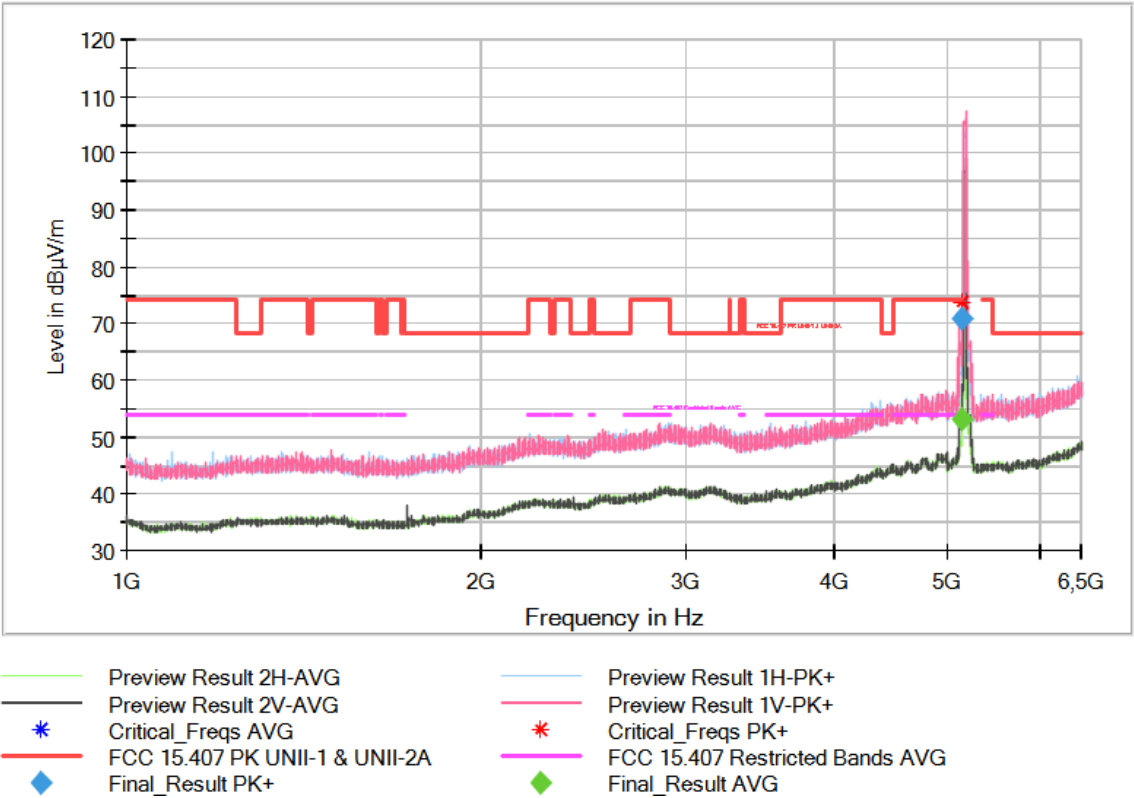
The measurement settings for each range of frequency is as follows:

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

Images:

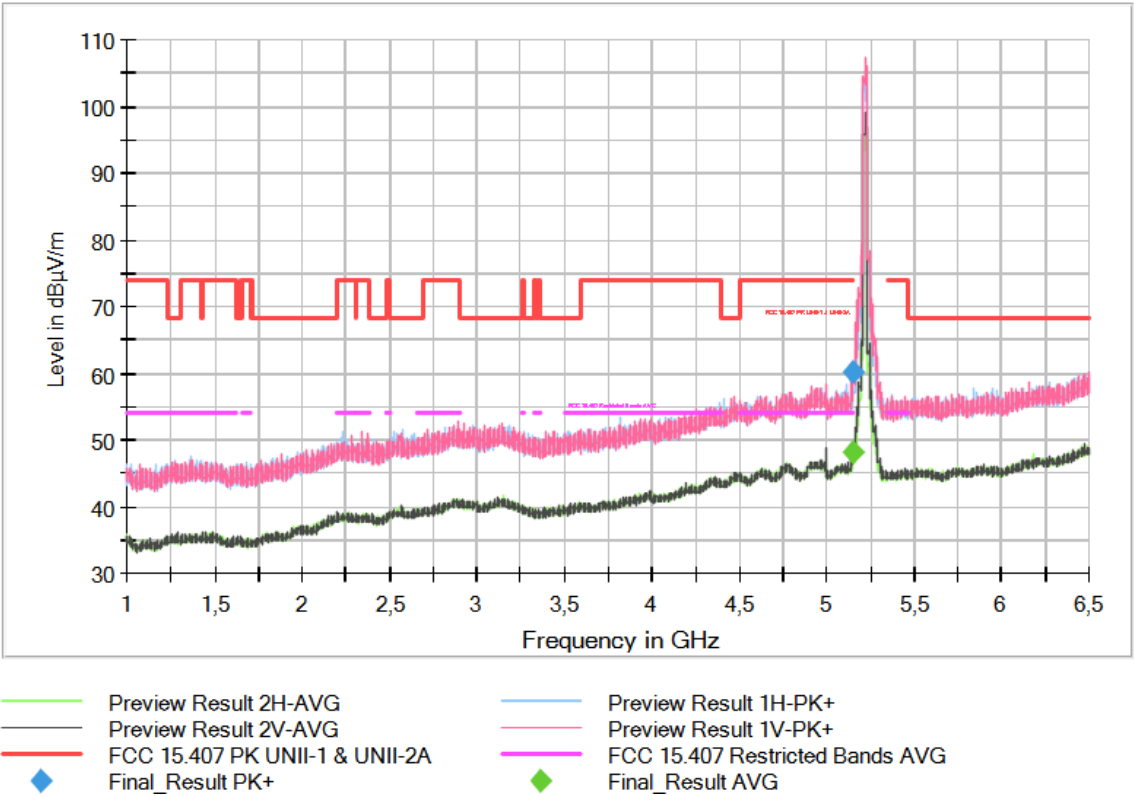
Full Spectrum



Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5220.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:

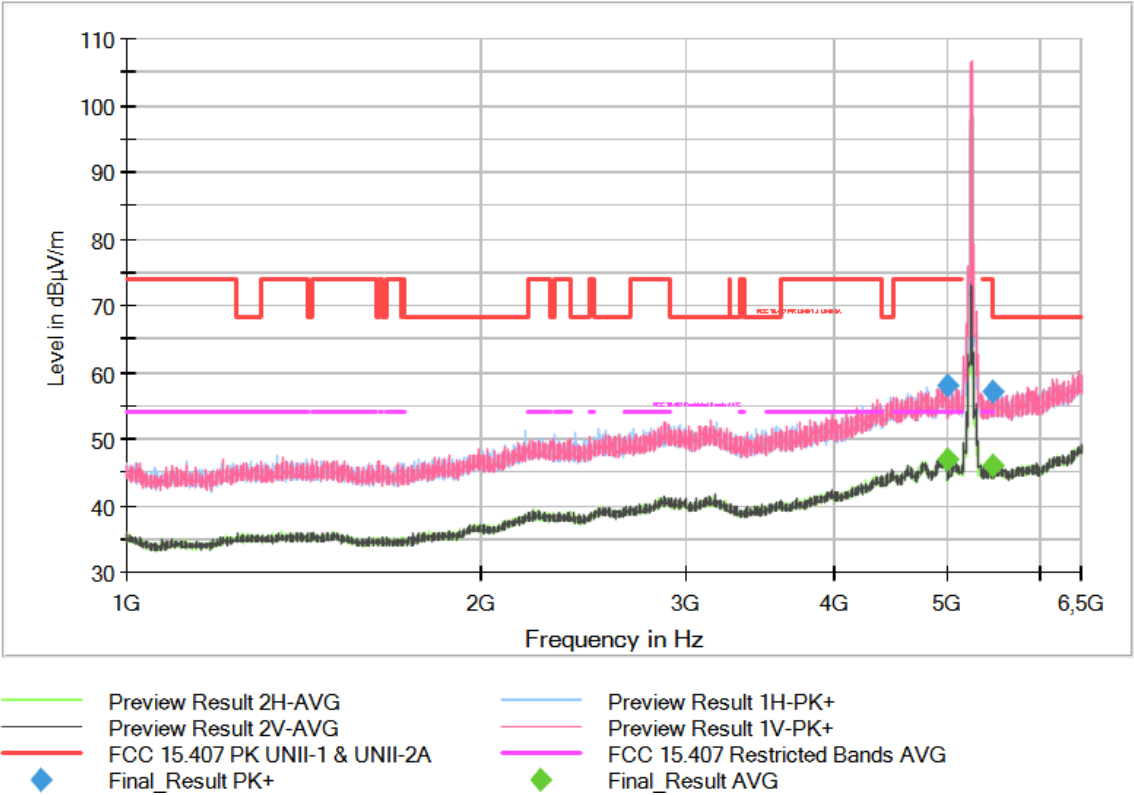
Full Spectrum



Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5240.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

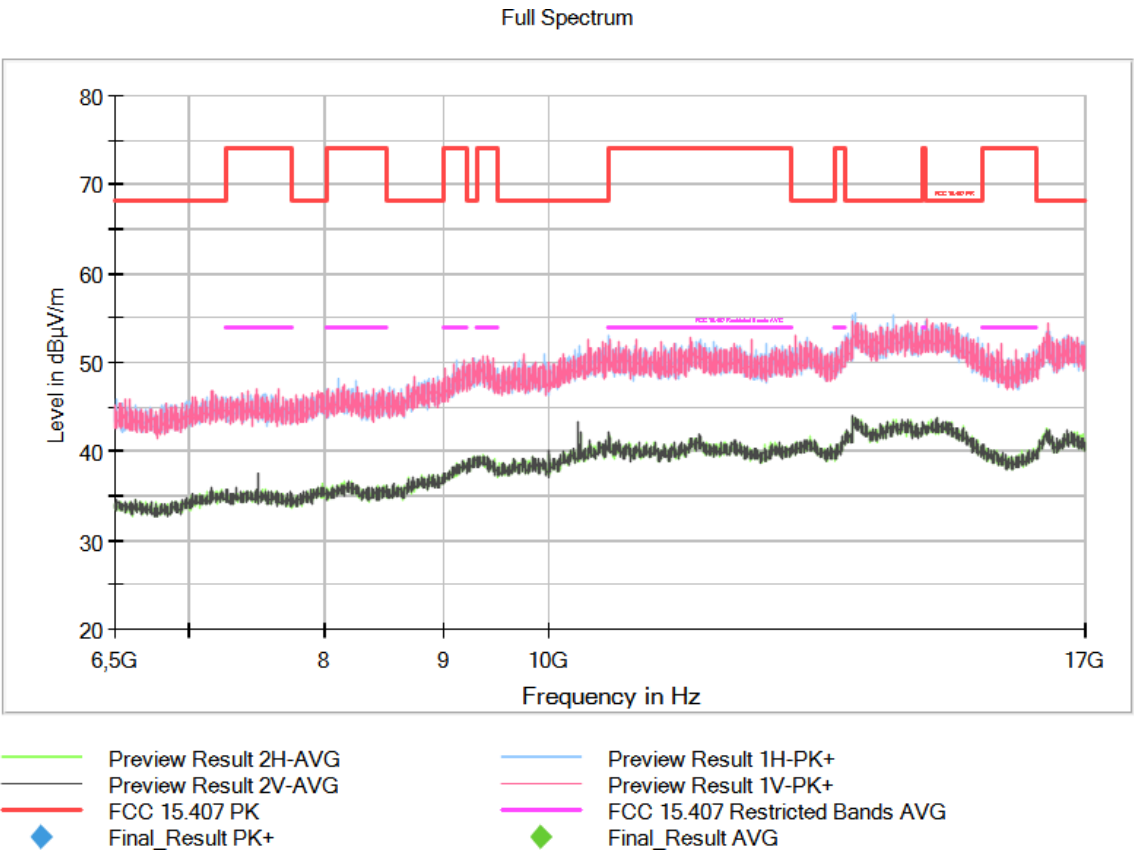
Images:

Full Spectrum



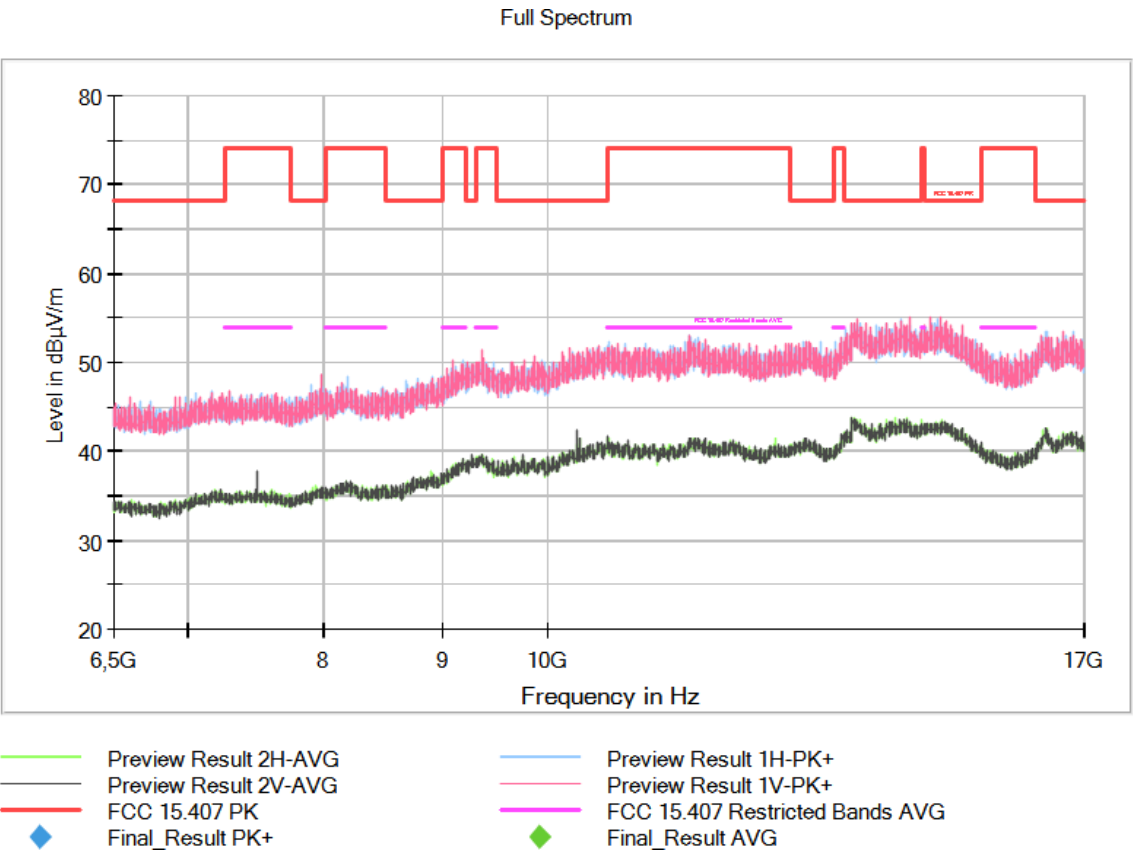
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [6.5, 17] Frequency MHz = 5180.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



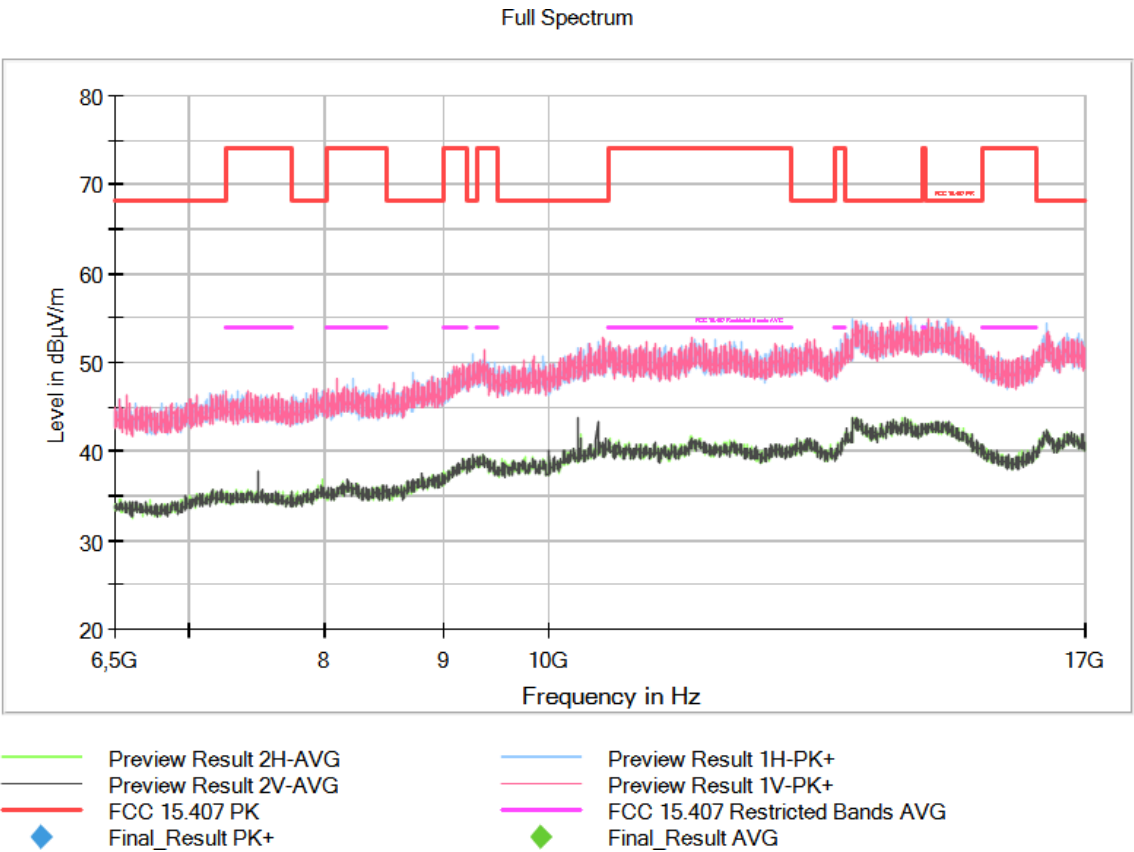
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [6.5, 17] Frequency MHz = 5220.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



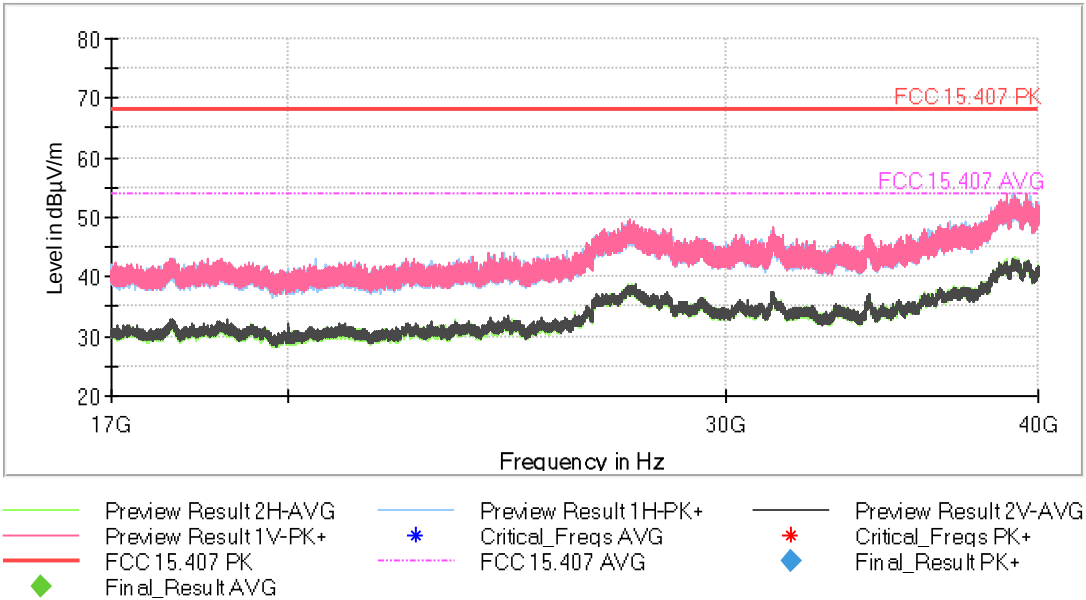
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [6.5, 17] Frequency MHz = 5240.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



FREQUENCY RANGE 17 - 40 GHz:

This plot is valid for Low, Middle and High Channels.



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

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Measurements were made in both horizontal and vertical planes of polarization.

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.

The Lower Band Edge Channel and the Upper Band Edge Channel were tested for all modes.

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

Modulation: 802.11a (OFDM 6 Mbit/s)

MIMO Mode: SISO

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5180.00000	5148.100	70.84	V	PK
				5148.100	53.26	V	AVG
			5220.00000	5147.825	48.21	V	AVG
				5147.825	60.06	V	PK
			5240.00000	4999.600	58.02	V	PK
				4999.600	46.79	V	AVG
				5456.375	57.22	V	PK
				5456.375	46.02	V	AVG

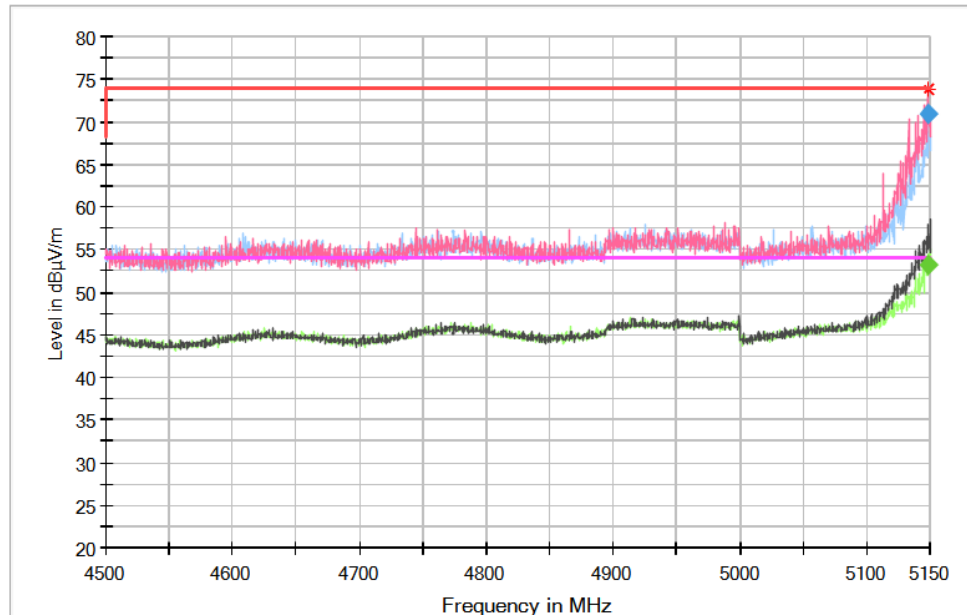
Verdict

Pass

Attachments

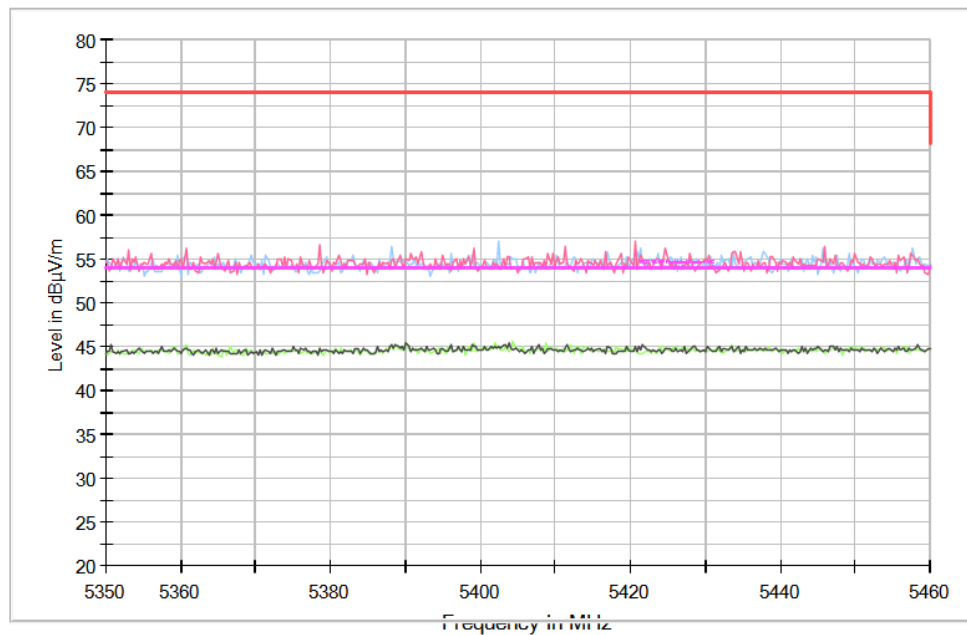
Operation Band MHz = [5150, 5250] Active Port = 1
 Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000
 Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



Preview Result 2H-AVG
 Preview Result 2V-AVG
 * Critical_Freqs AVG
 FCC 15.407 PK UNII-1 & UNII-2A
 ◆ Final_Result PK+

Preview Result 1H-PK+
 Preview Result 1V-PK+
 * Critical_Freqs PK+
 FCC 15.407 Restricted Bands AVG
 ◆ Final_Result AVG



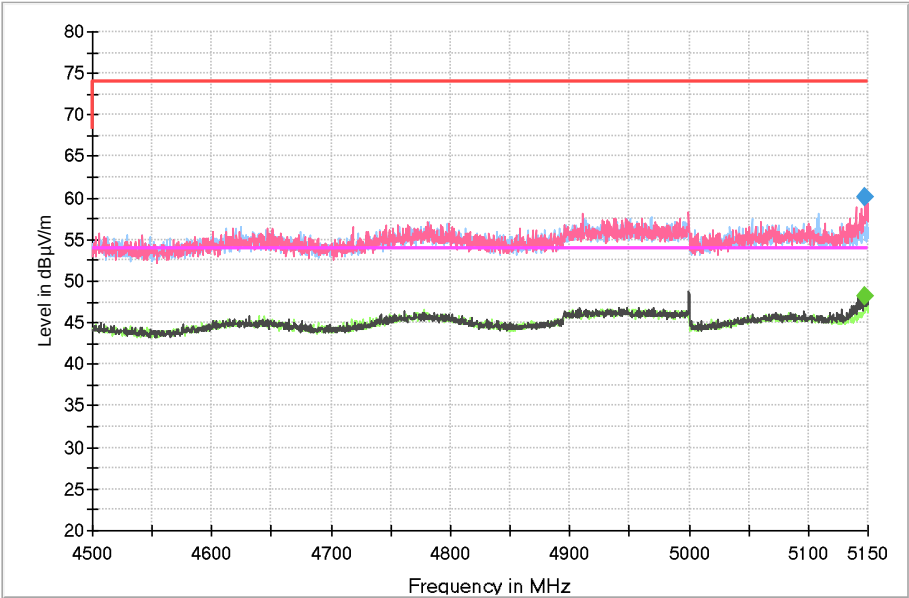
Preview Result 2H-AVG
 Preview Result 2V-AVG
 * Critical_Freqs AVG
 FCC 15.407 PK UNII-1 & UNII-2A
 ◆ Final_Result PK+

Preview Result 1H-PK+
 Preview Result 1V-PK+
 * Critical_Freqs PK+
 FCC 15.407 Restricted Bands AVG
 ◆ Final_Result AVG

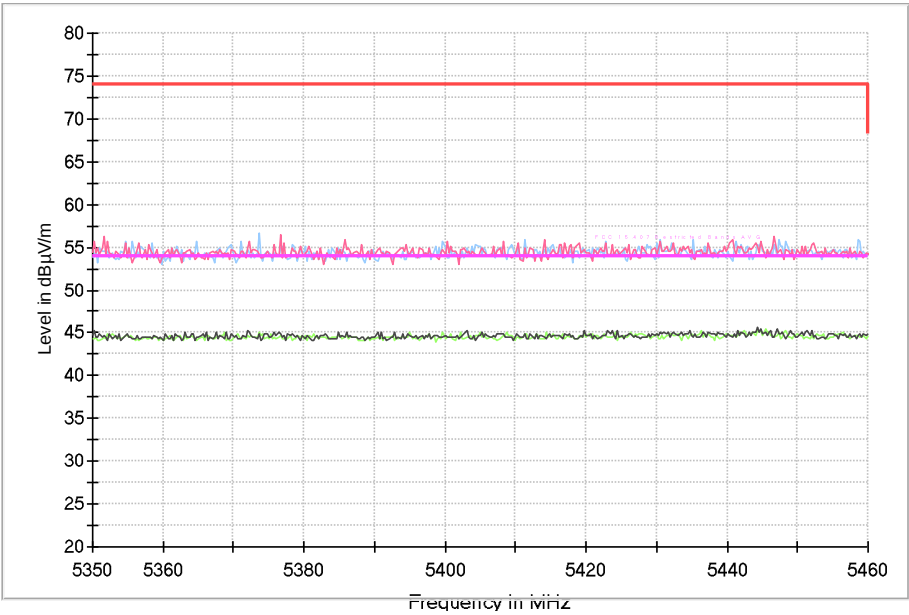
Attachments

Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5220.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



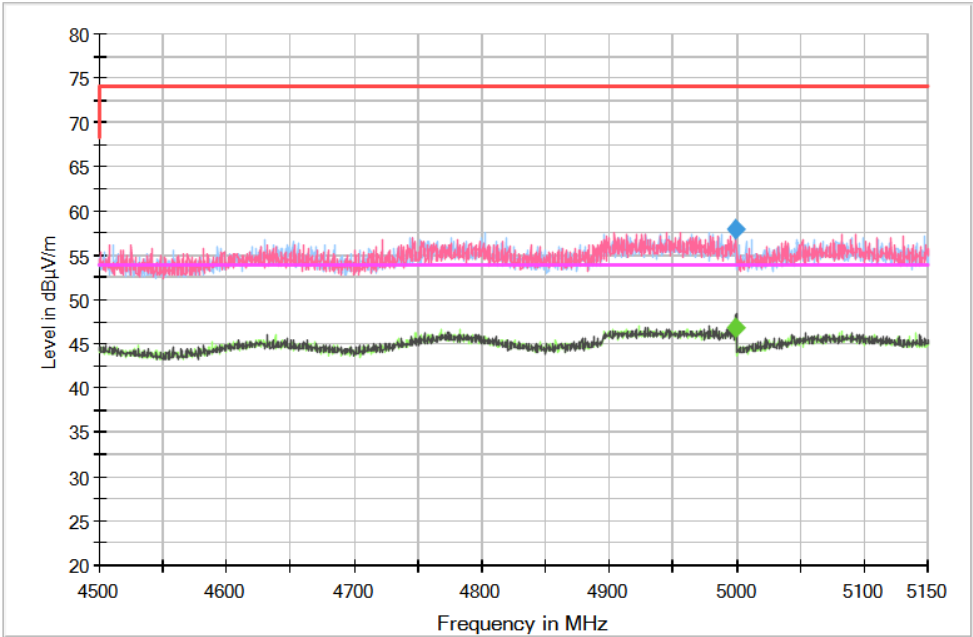
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG



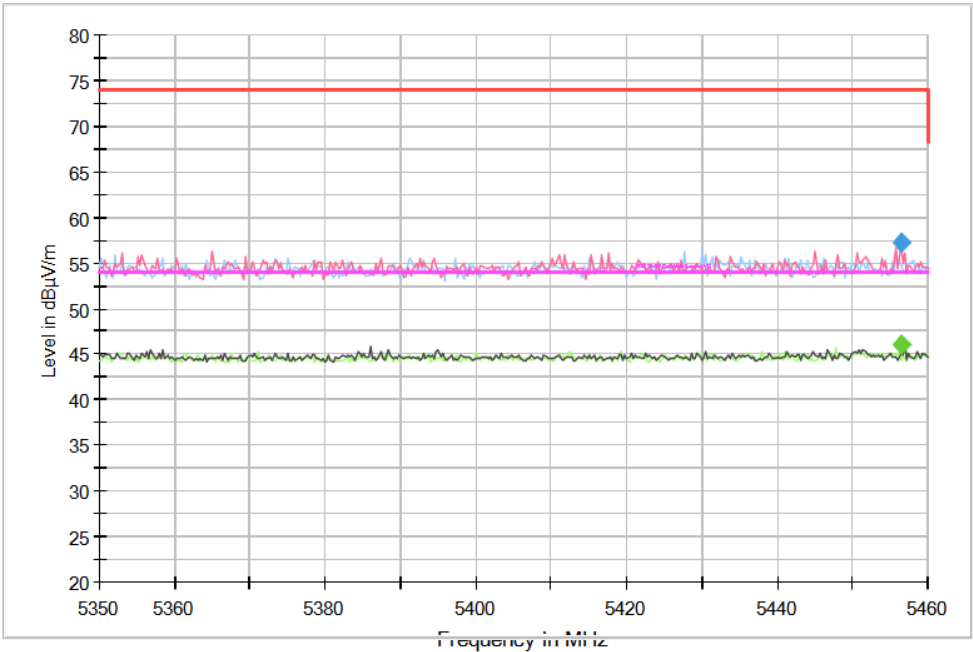
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG

Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5240.00000
Modulation = 802.11a (OFDM 6 Mbit/s) MIMO Mode = SISO

Images:



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

Modulation: 802.11n HT20 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5180.00000	5148.650	53.15	V	AVG
				5148.650	70.84	V	PK
			5220.00000	4997.675	46.70	H	AVG
				4997.675	57.73	H	PK

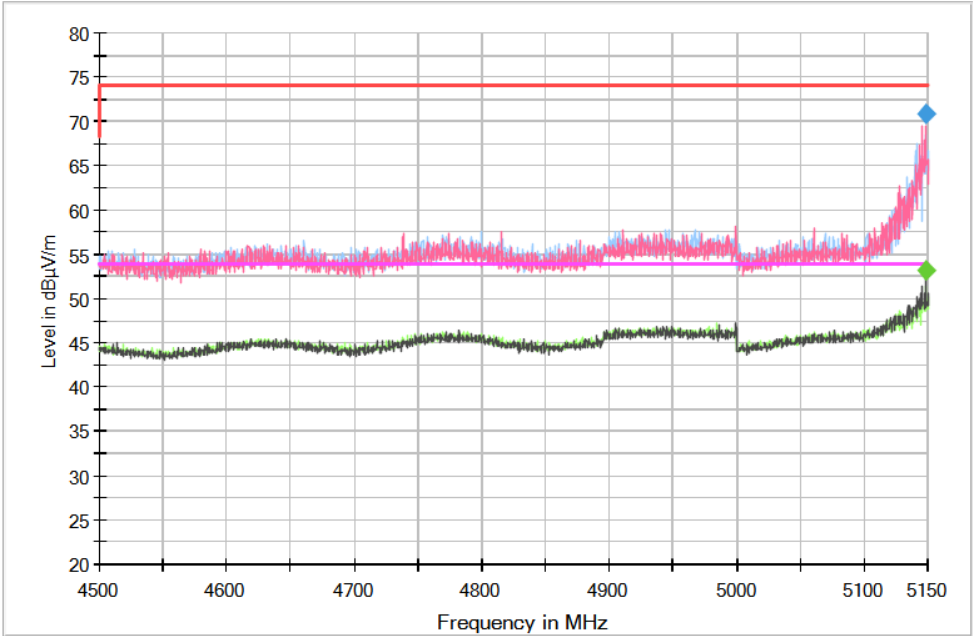
Verdict

Pass

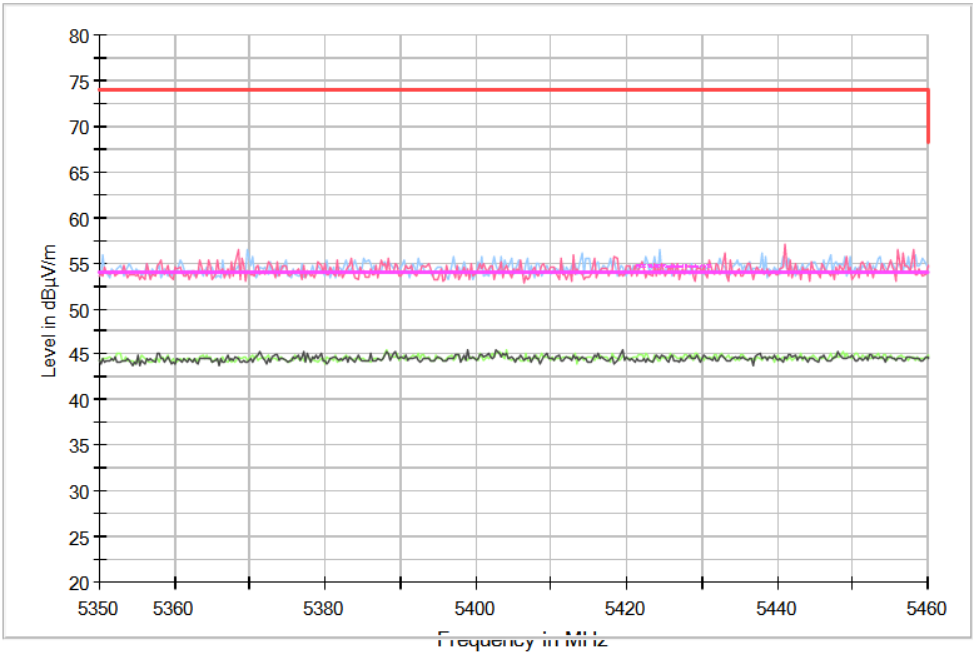
Attachments

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:



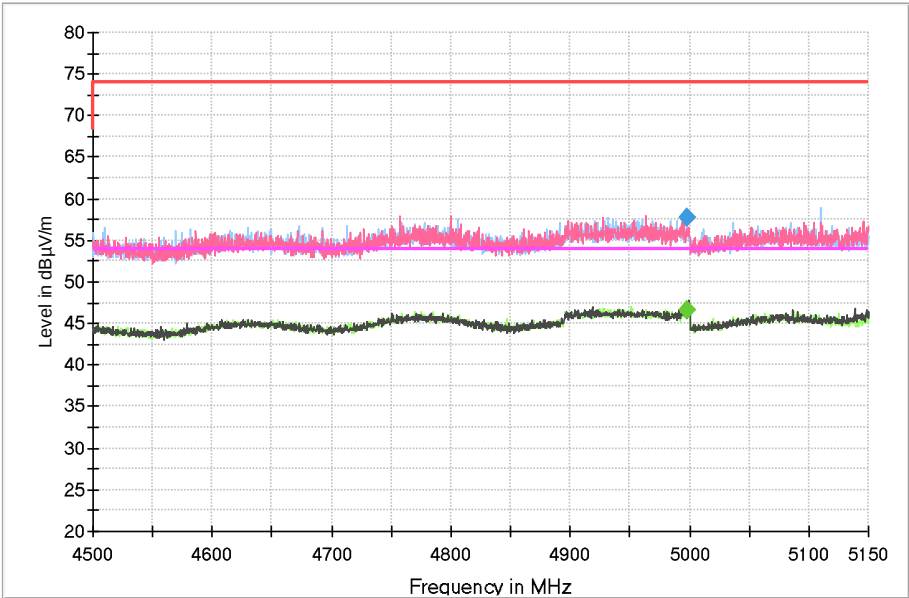
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG



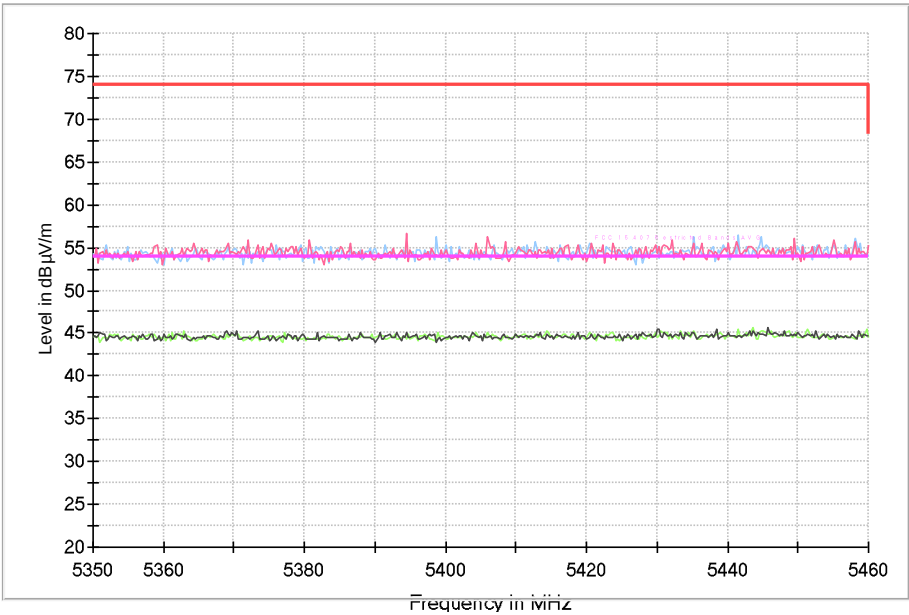
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG

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:



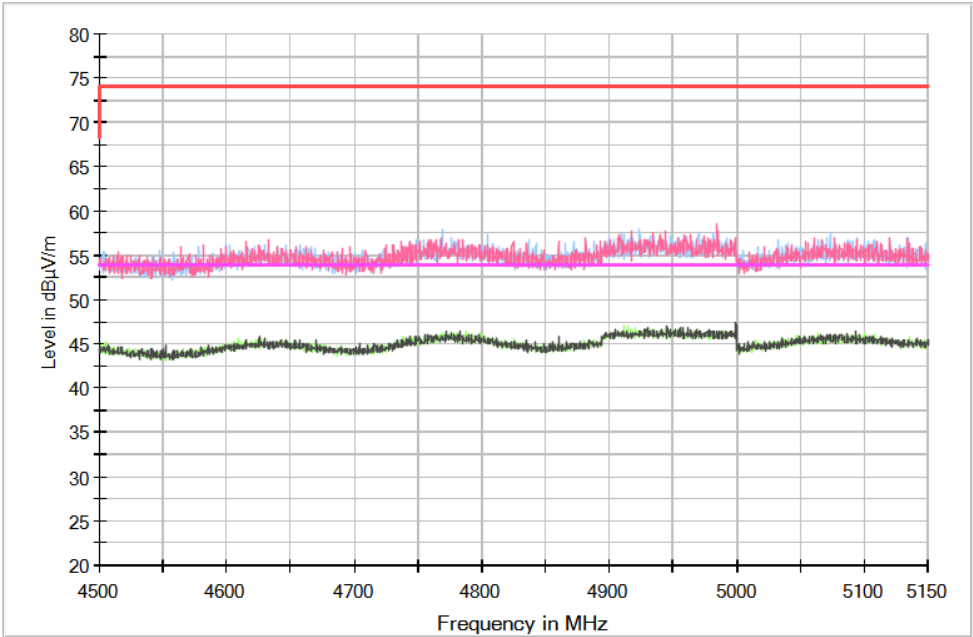
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG



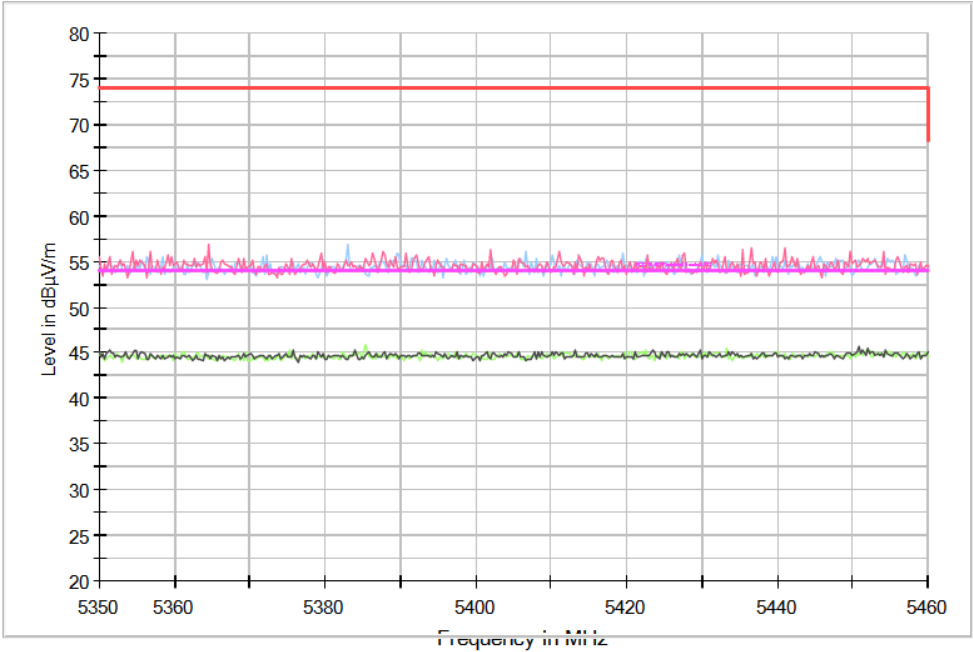
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG

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:



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

Modulation: 802.11ac VHT20 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5180.00000	5144.525	46.80	V	AVG
				5144.525	58.66	V	PK
			5220.00000	4801.600	46.93	H	AVG
				4801.600	57.93	H	PK

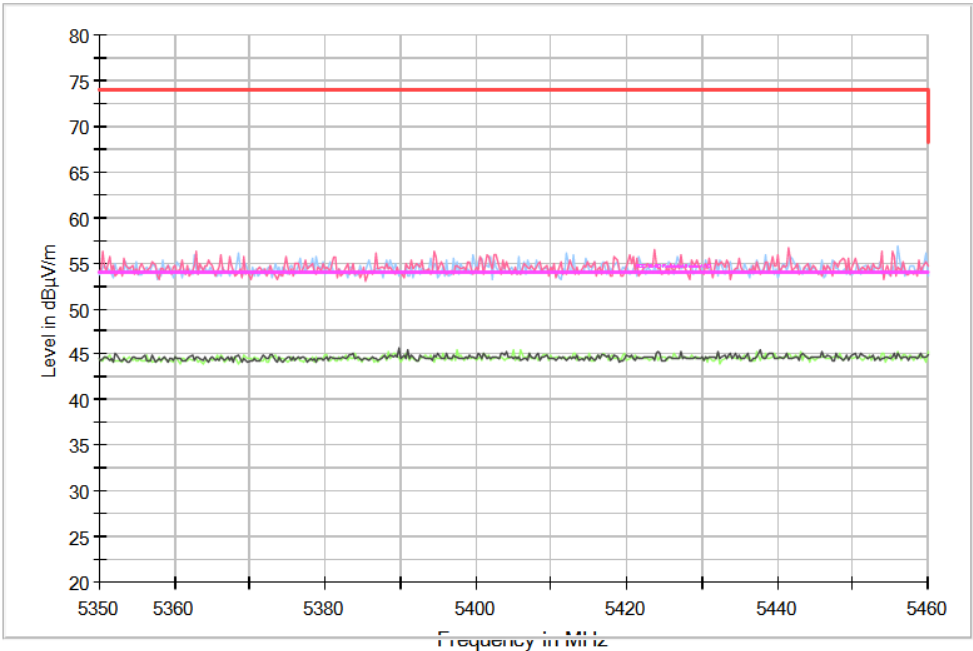
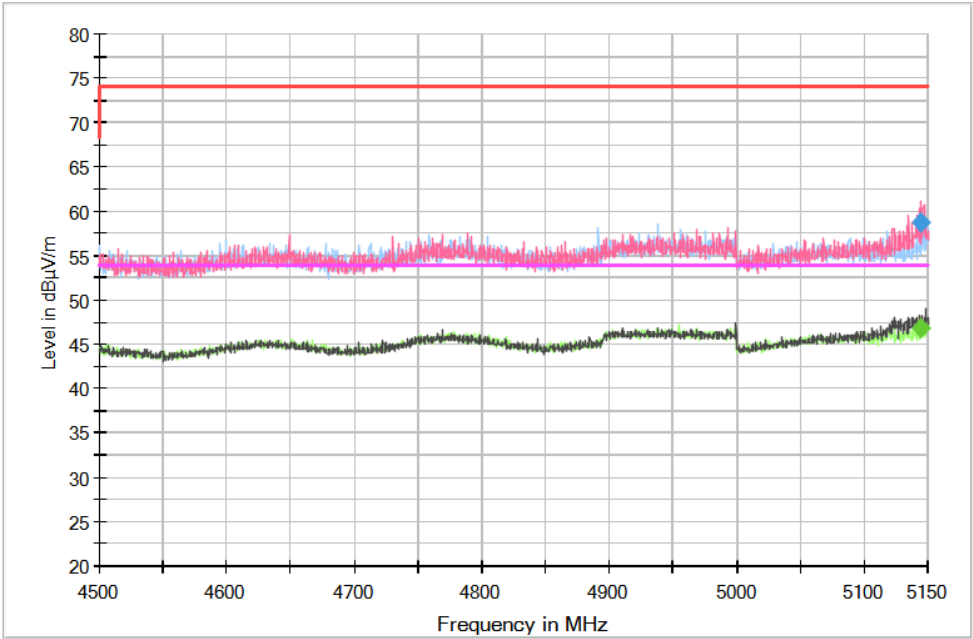
Verdict

Pass

Attachments

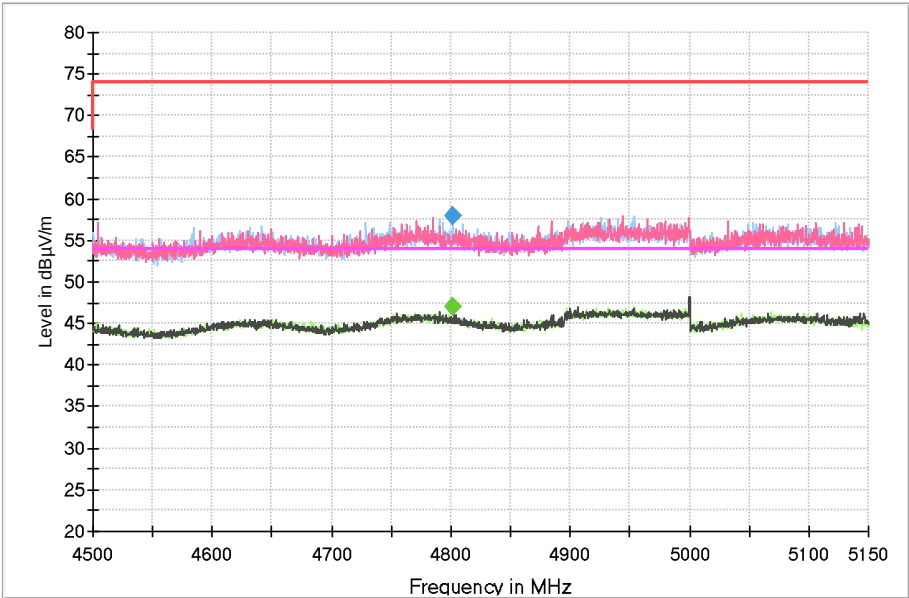
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5180.00000
Modulation = 802.11ac VHT20 (OFDM MCS0) MIMO Mode = SISO

Images:

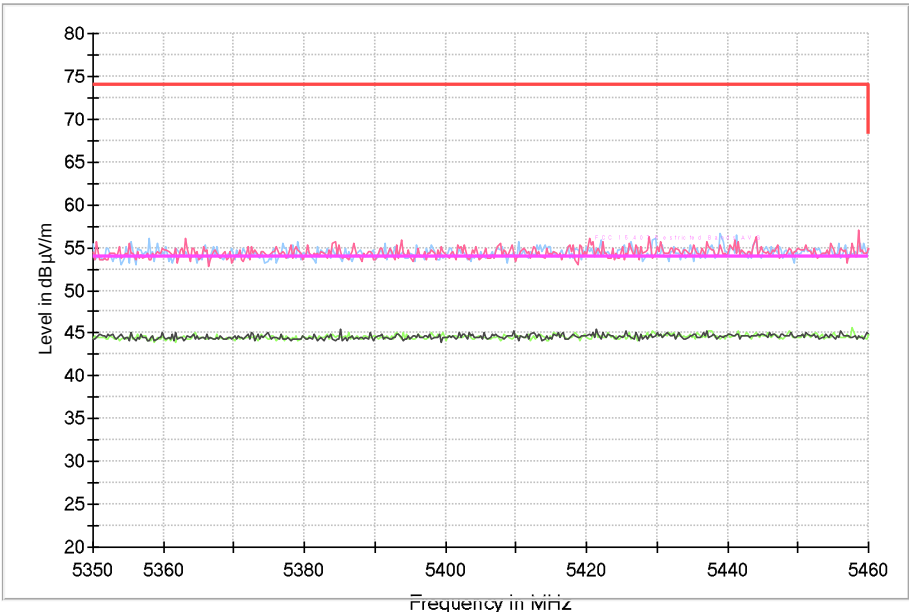


Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5220.00000
Modulation = 802.11ac VHT20 (OFDM MCS0) MIMO Mode = SISO

Images:



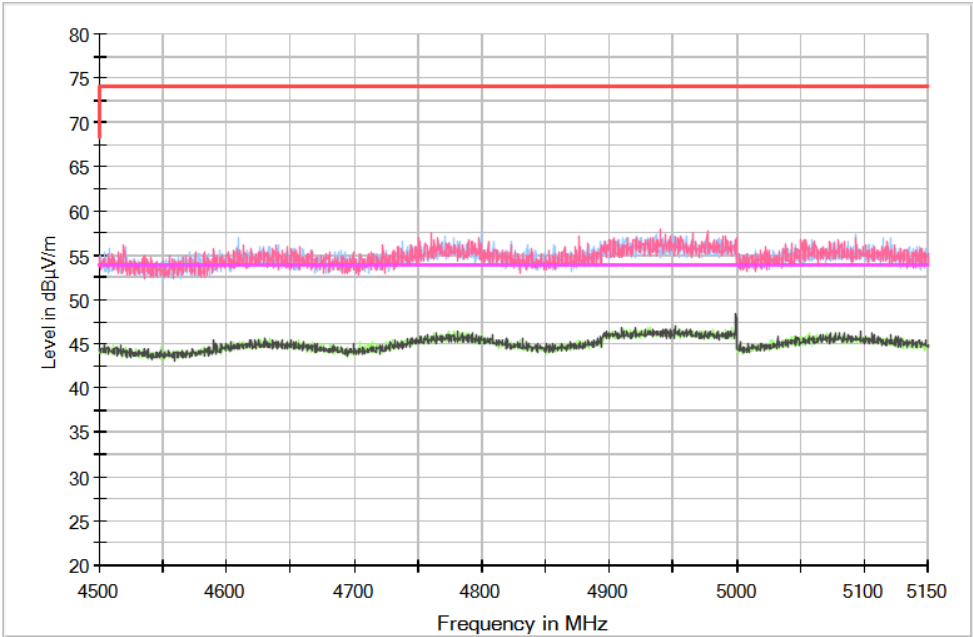
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG



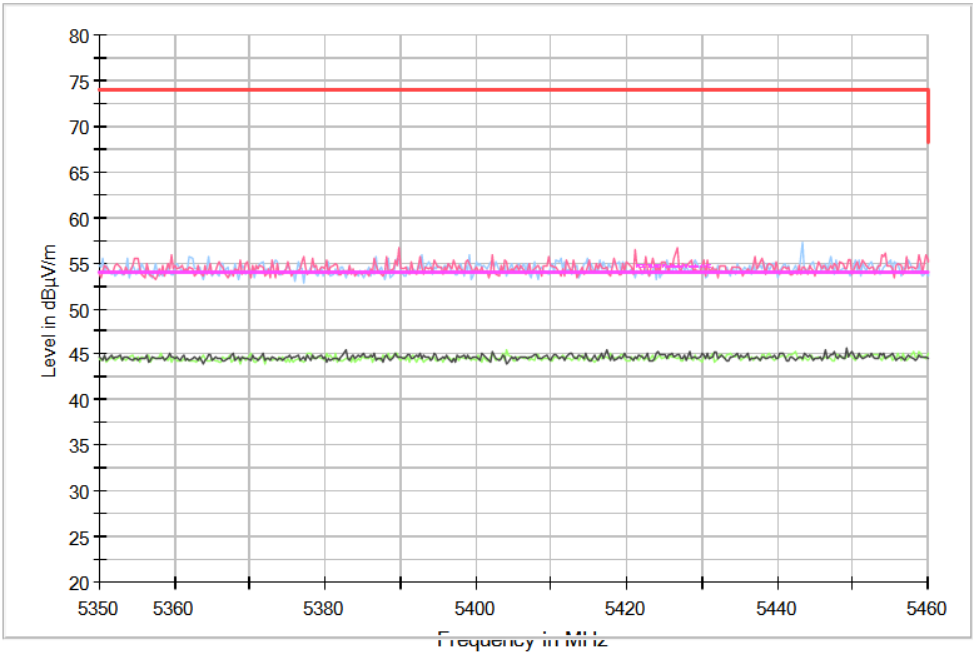
Preview Result 2H-AVG Preview Result 1H-PK+
Preview Result 2V-AVG Preview Result 1V-PK+
FCC 15.407 PK UNII-1 & UNII-2A FCC 15.407 Restricted Bands AVG
Final_Result PK+ Final_Result AVG

Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5240.00000
Modulation = 802.11ac VHT20 (OFDM MCS0) MIMO Mode = SISO

Images:



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

Modulation: 802.11n HT40 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5190.00000	5149.475	53.71	V	AVG
				5149.475	70.68	V	PK
			5230.00000	5149.200	52.87	V	AVG
				5149.200	64.45	V	PK

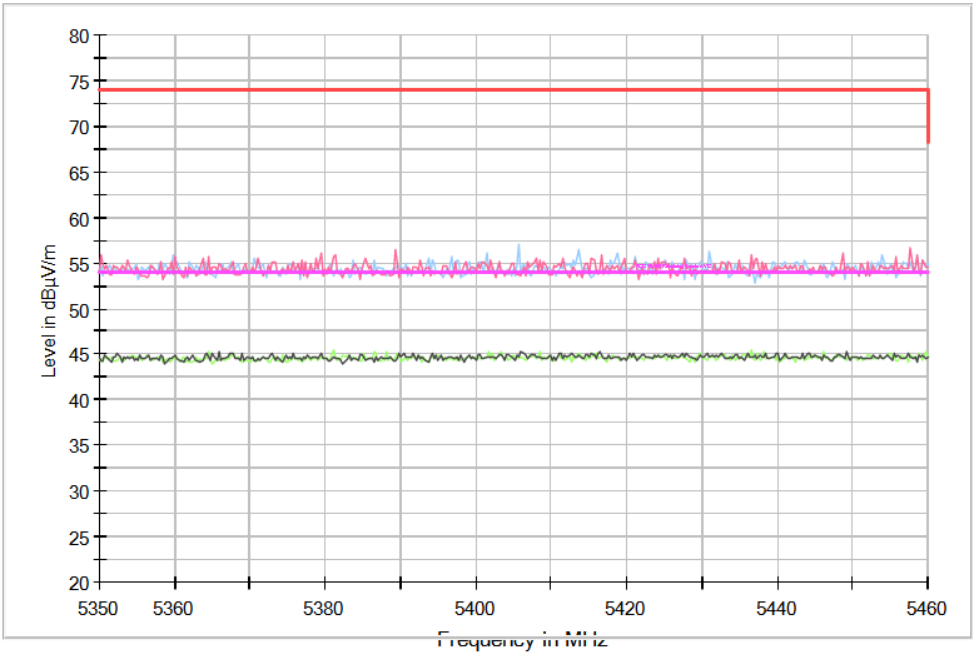
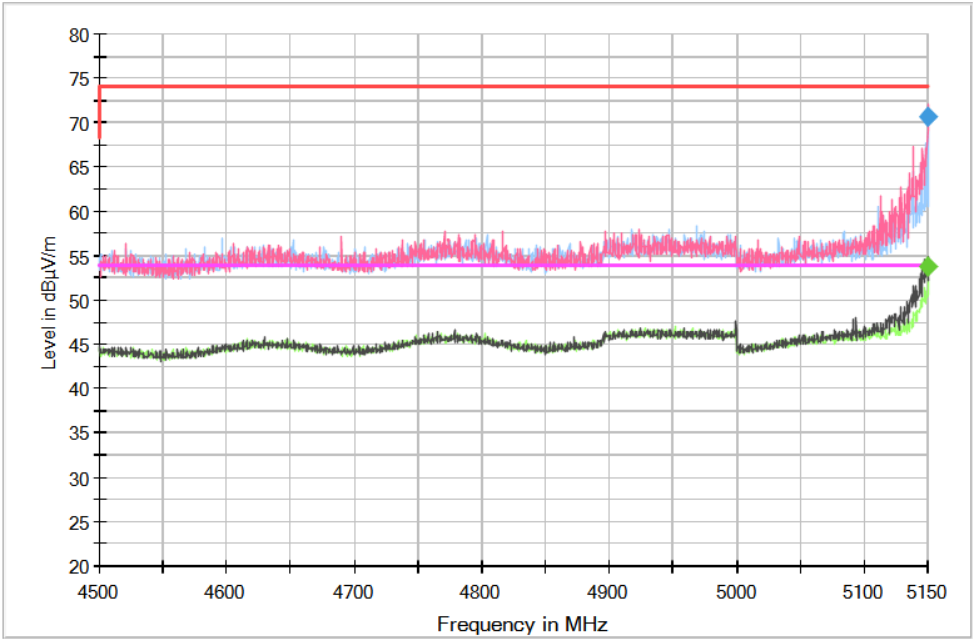
Verdict

Pass

Attachments

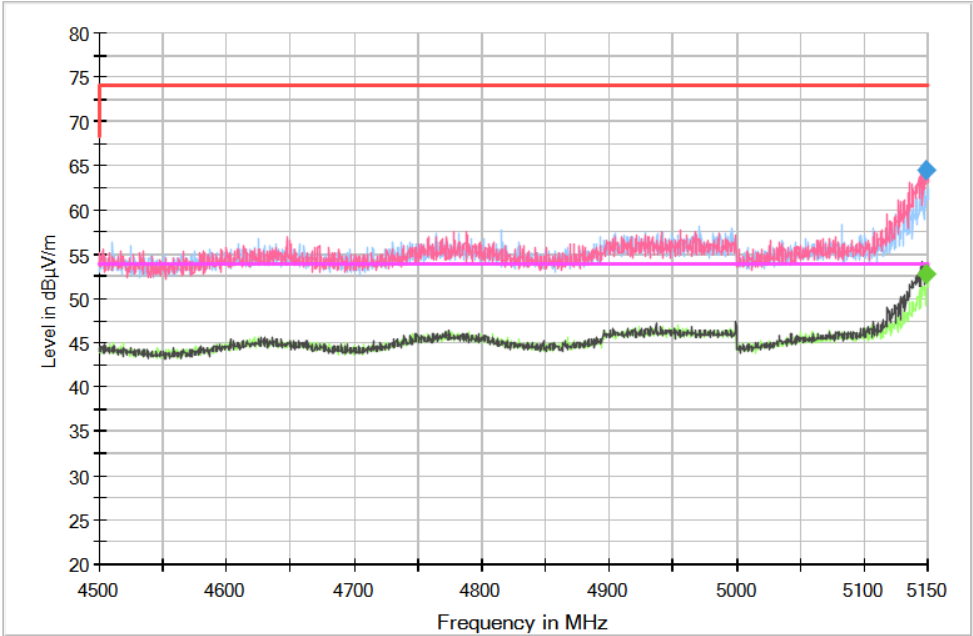
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000
Modulation = 802.11n HT40 (OFDM MCS0) MIMO Mode = SISO

Images:

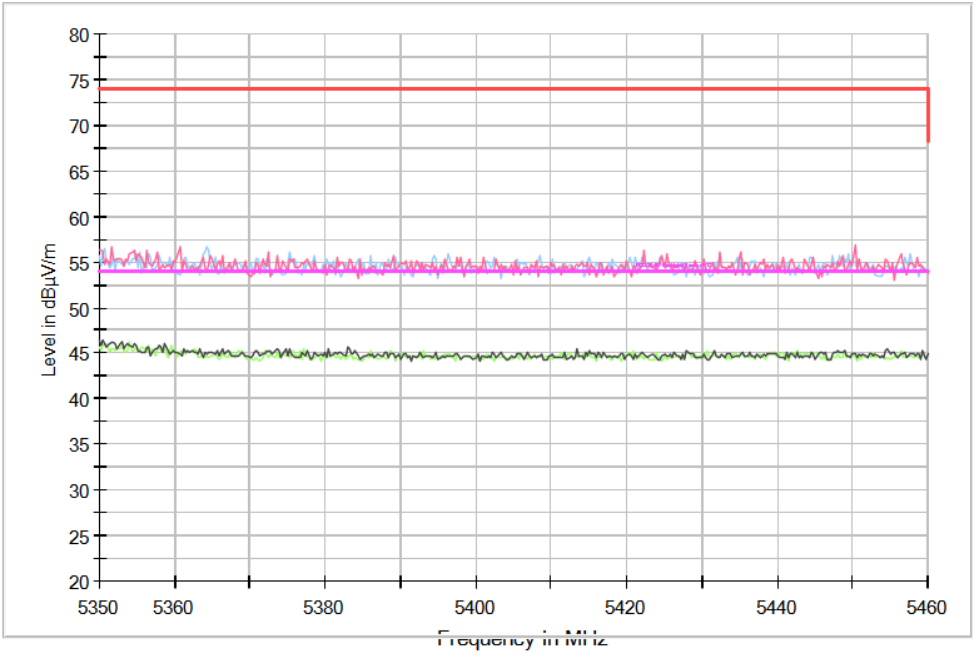


Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5230.00000
Modulation = 802.11n HT40 (OFDM MCS0) MIMO Mode = SISO

Images:



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

Modulation: 802.11ac VHT40 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5190.00000	5148.925	48.35	V	AVG
				5148.925	63.23	V	PK
			5230.00000	5145.900	47.28	V	AVG
				5145.900	61.33	V	PK

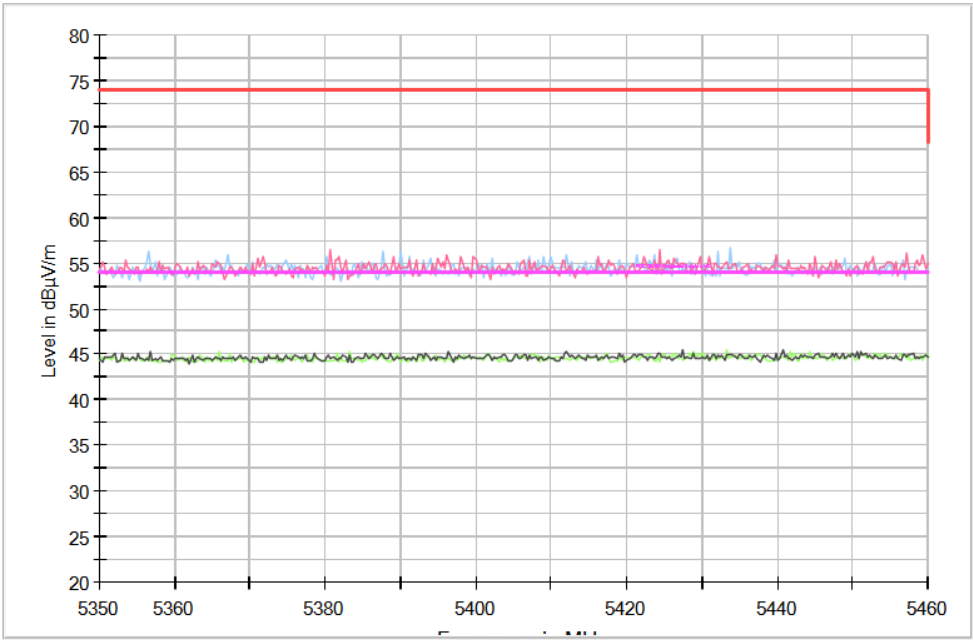
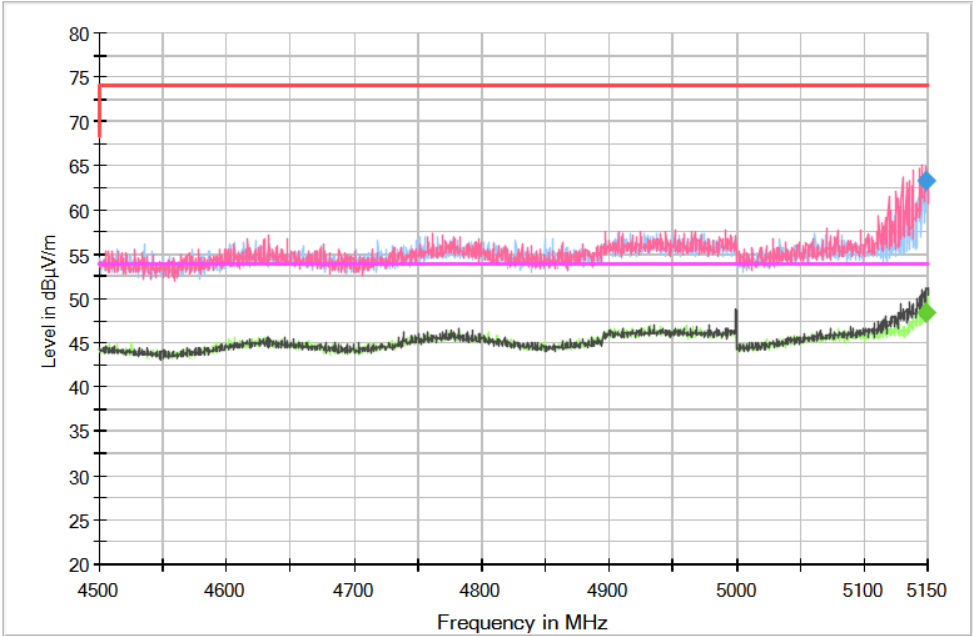
Verdict

Pass

Attachments

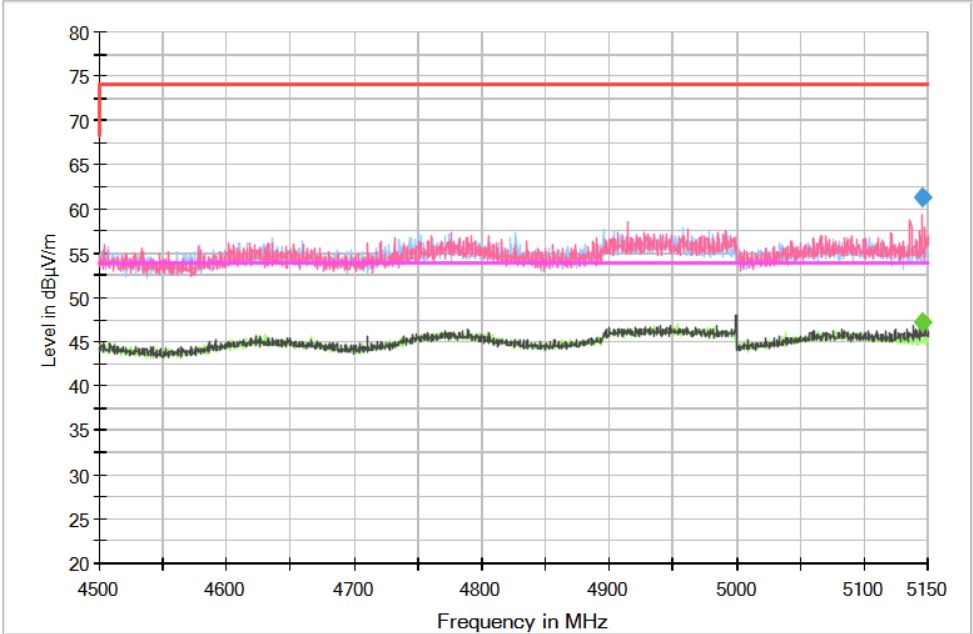
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000
Modulation = 802.11ac VHT40 (OFDM MCS0) MIMO Mode = SISO

Images:

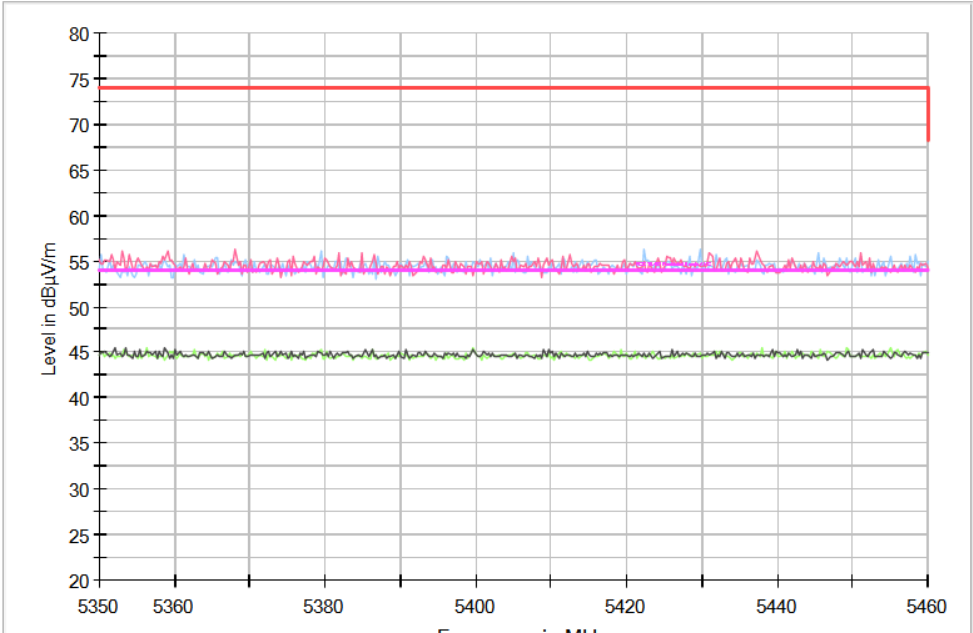


Operation Band MHz = [5150, 5250] Active Port = 1
Frequency Range GHz = [1, 6.5] Frequency MHz = 5230.00000
Modulation = 802.11ac VHT40 (OFDM MCS0) MIMO Mode = SISO

Images:



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

Modulation: 802.11ac VHT80 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	1	[1, 6.5]	5210.00000	5146.725	53.06	V	AVG
				5146.725	67.46	V	PK

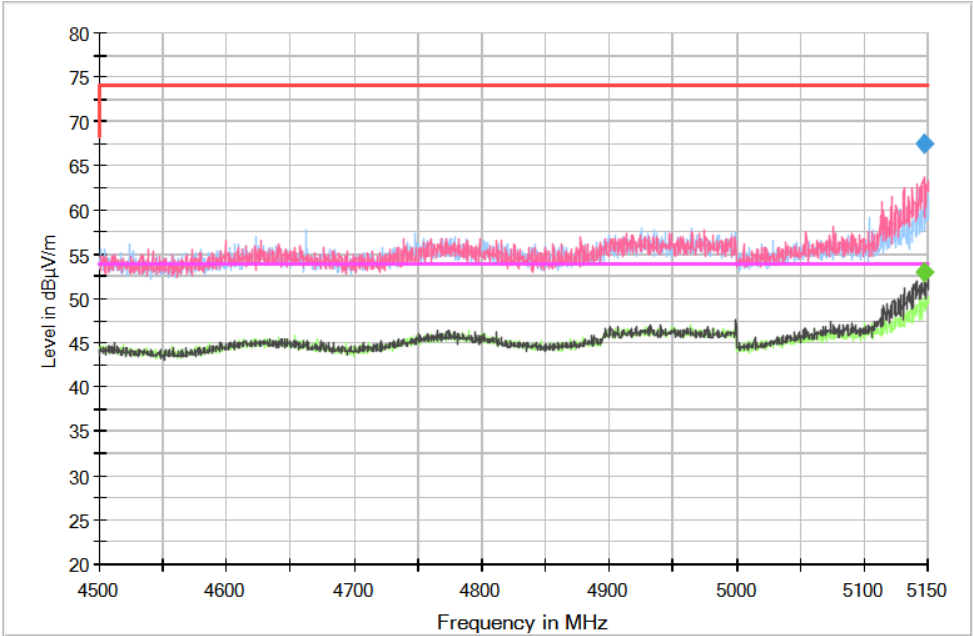
Verdict

Pass

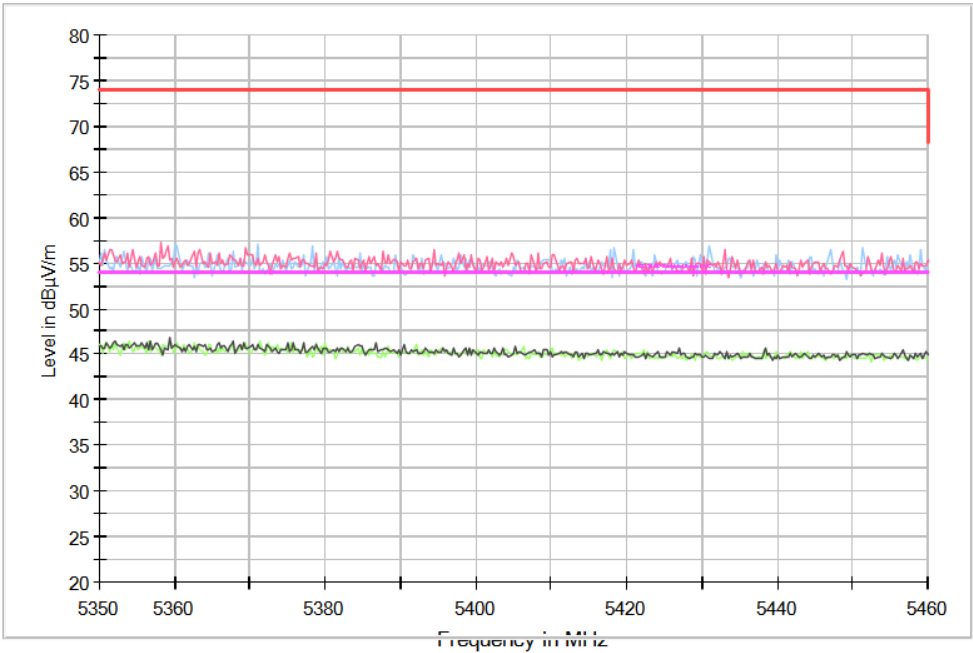
Attachments

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:



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

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

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TEST CONDITIONS148

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 RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Psd] Transmitter Maximum Power Spectral Density UNII-3
 175

 RSS-247 6.2.4.2 / FCC 15.407 (b) (4) (6) [Rse] Transmitter Out of Band Radiated Emissions For
transmitters operating solely in the 5.725-5.850 GHz band195

TEST CONDITIONS

(*) Declared by the Client.

POWER SUPPLY (*):

Vnominal: -48 V DC
Type of Power Supply: DC power

ANTENNA (*):

Type of Antennas: Rod Antenna
Maximum Declared Antenna Gain: +2 dBi

U-NII-1 & U-NII-3:

TEST FREQUENCIES (*):

Technology Tested:	WLAN (IEEE 802.11 a20 / n2040 / ac204080 1x1 & 2x2)
Modes:	802.11a: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps (SISO)
	802.11n HT20: MCS0 to MCS23
	802.11n HT40: MCS0 to MCS23
	802.11ac VHT20: MCS0 to MCS9
	802.11ac VHT40: MCS0 to MCS9
	802.11ac VHT80: MCS0 to MCS9
Beamforming:	No.

Band U-NII-3:

Operating Channel Bandwidth:	20 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (149)	5745
	Middle (157)	5785
	High (165)	5825
Operating Channel Bandwidth:	40 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (151)	5755
	High (159)	5795
Operating Channel Bandwidth:	80 MHz	
Transmission Channels:	Single (155)	5775

POWER SETTING (*):

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied instructions to configure the EUT. The customer supplied a power setting table with the maximum level for each mode and band:

Mode	POWER CONFIGURED FOR TESTING		
	Ch.149	Ch.157	Ch.165
802.11a	16	16	16
802.11n-20	15,5	15,5	15,5
11ac-20	13,5	13,5	13,5
Mode	Ch.151	Ch.159	
11n-40	16	16	
11ac-40	13,5	13,5	
Mode	Ch.155		
11ac-80	18		

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and connected to the TS8997 using a low-loss RF cable. The reading in the spectrum analyzer is corrected taking into account the internal and external RF cable loss.

For all modes:



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz) and 1 GHz-18 GHz Double ridge horn antenna is situated at a distance of 3 m and a distance of 1.5 m for the frequency range 17 GHz-40 GHz (18 GHz-40 GHz horn antenna).

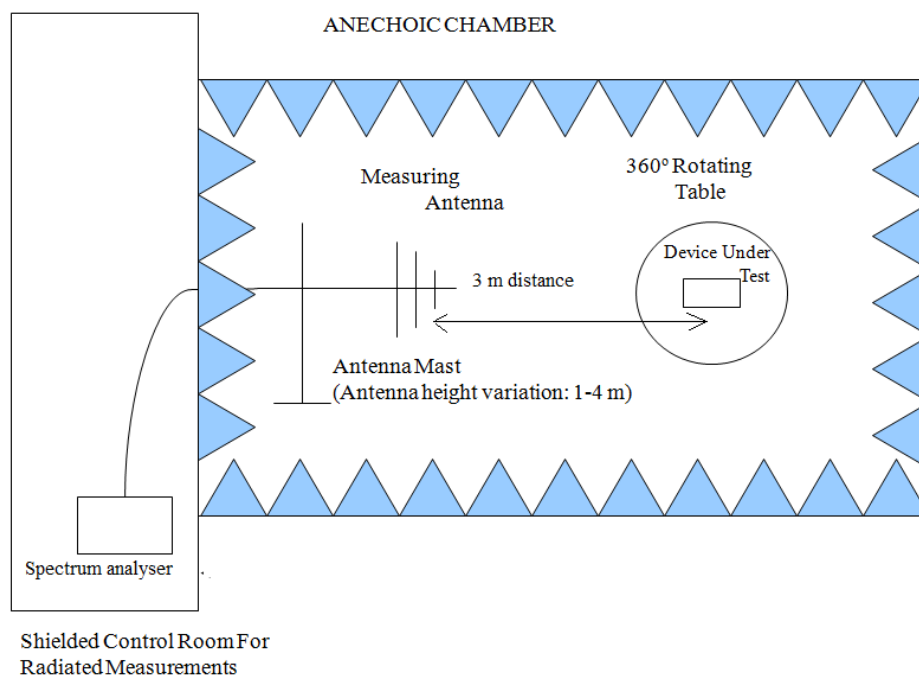
For radiated emissions in the range 17 GHz-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

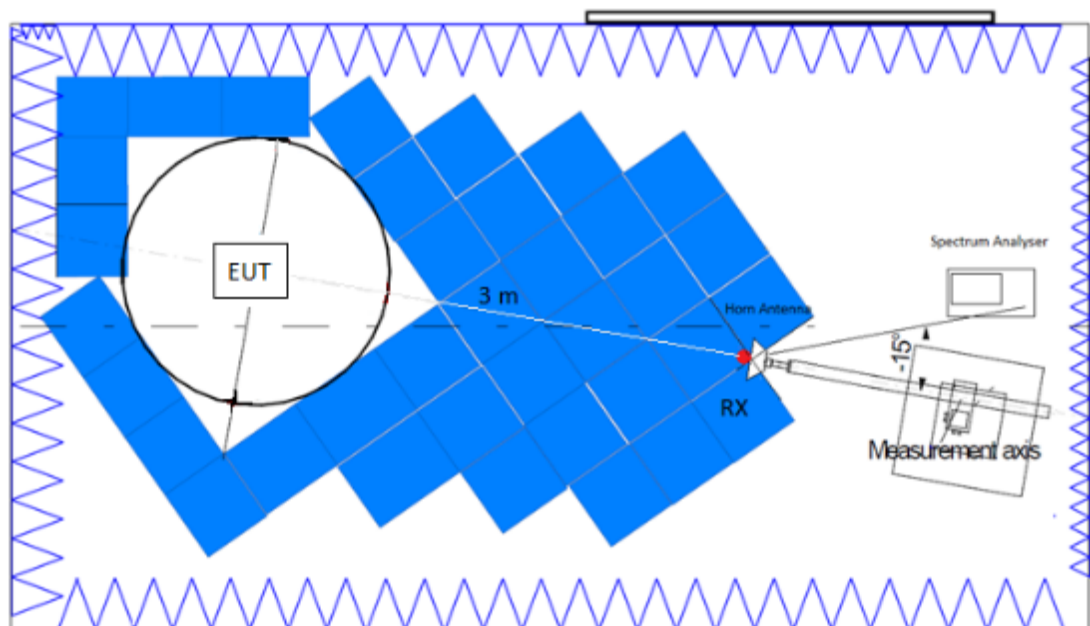
Measurements were made in both horizontal and vertical planes of polarization.

The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

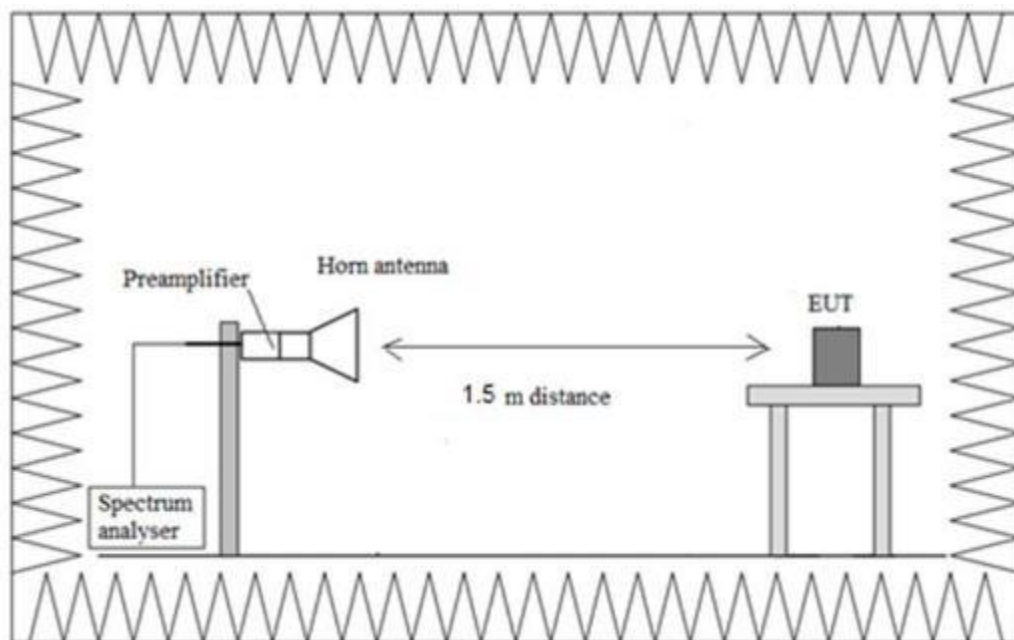
Radiated measurements setup $f < 1$ GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



RSS-247 6.2.4.1 / FCC 15.407 (e) [6dBw] 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: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5745.00000	17.650
		5785.00000	17.650
		5825.00000	17.650

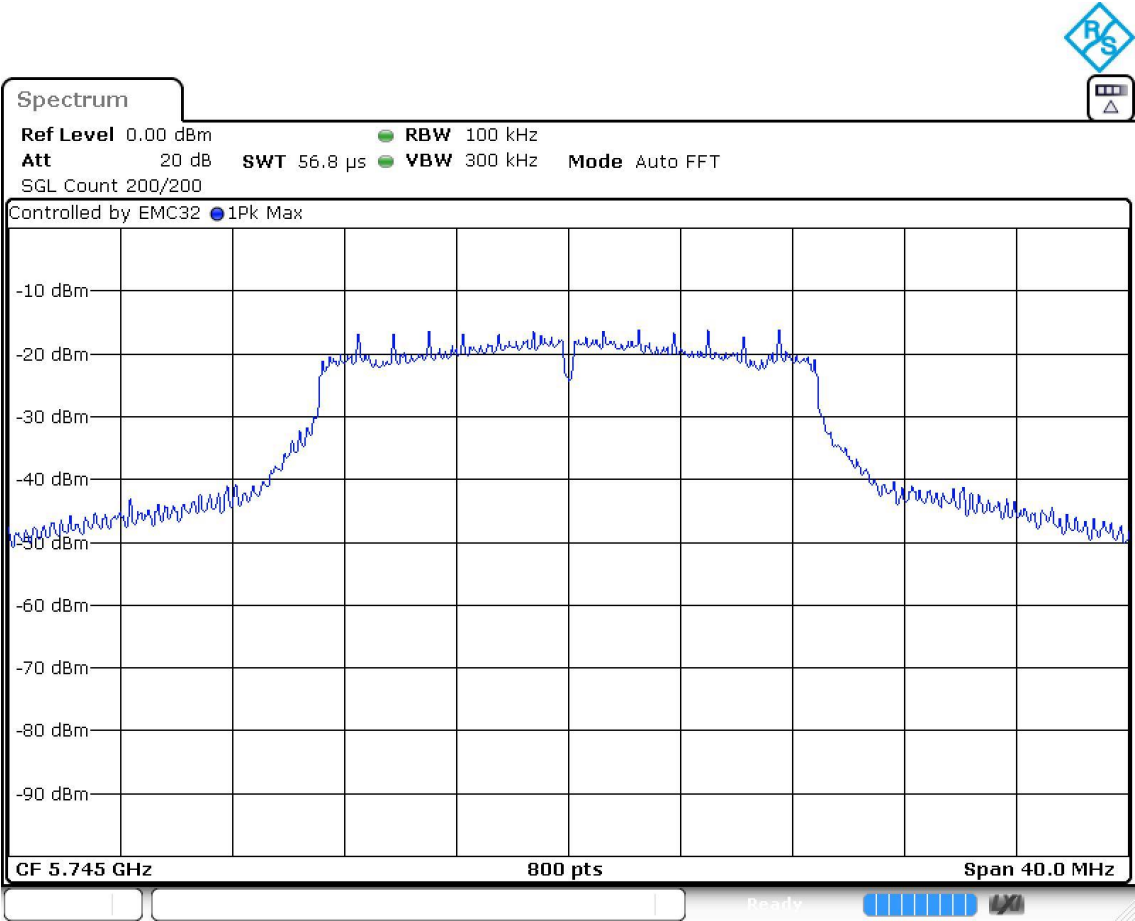
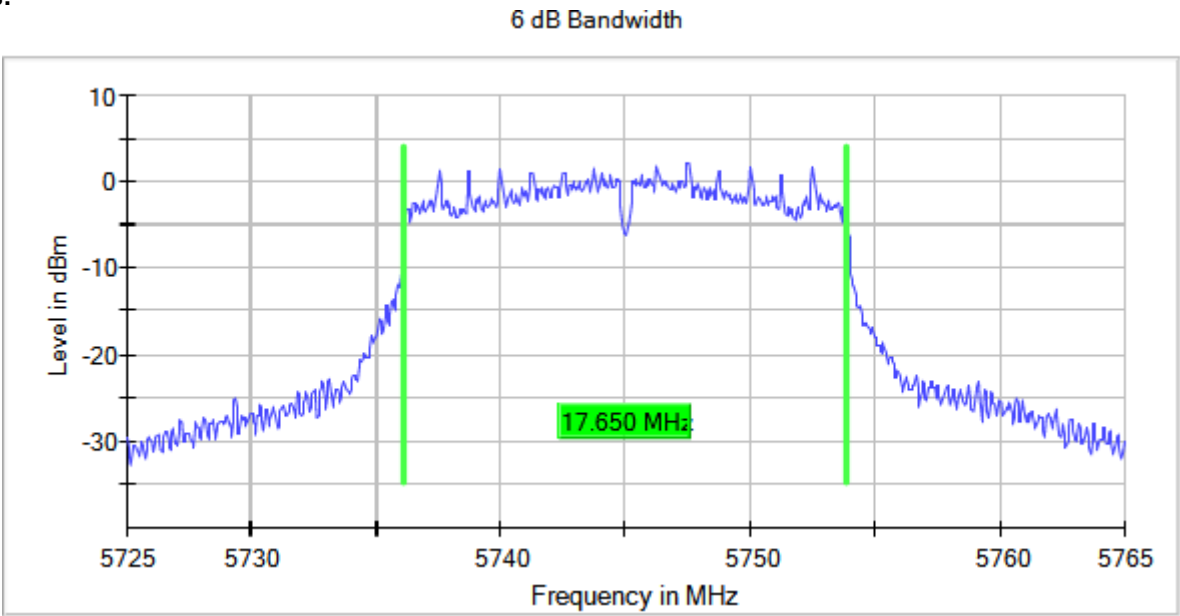
Verdict

Pass

Attachments

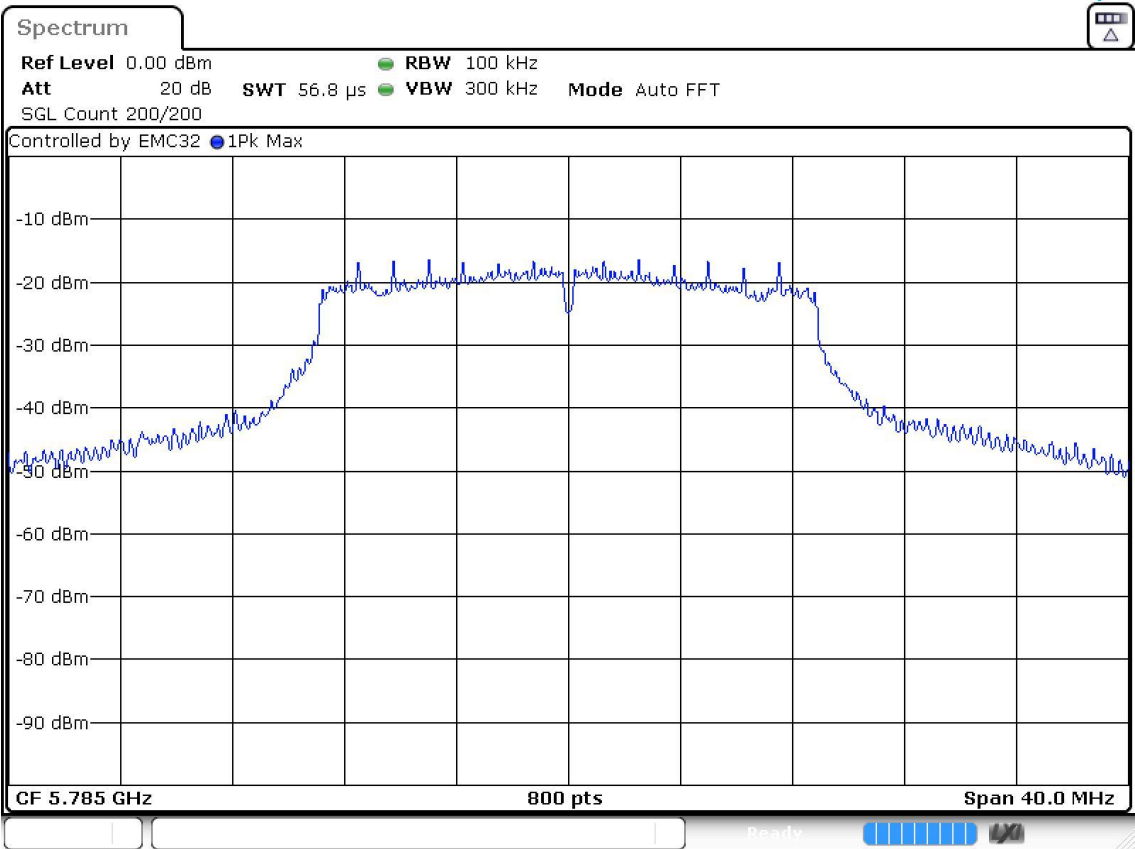
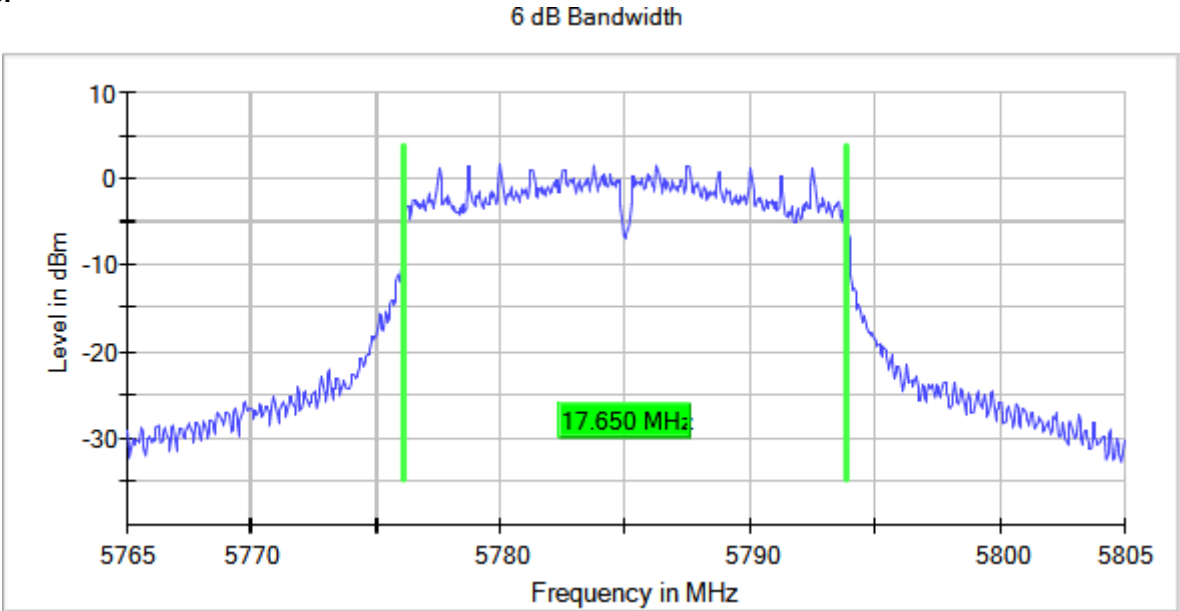
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

Images:



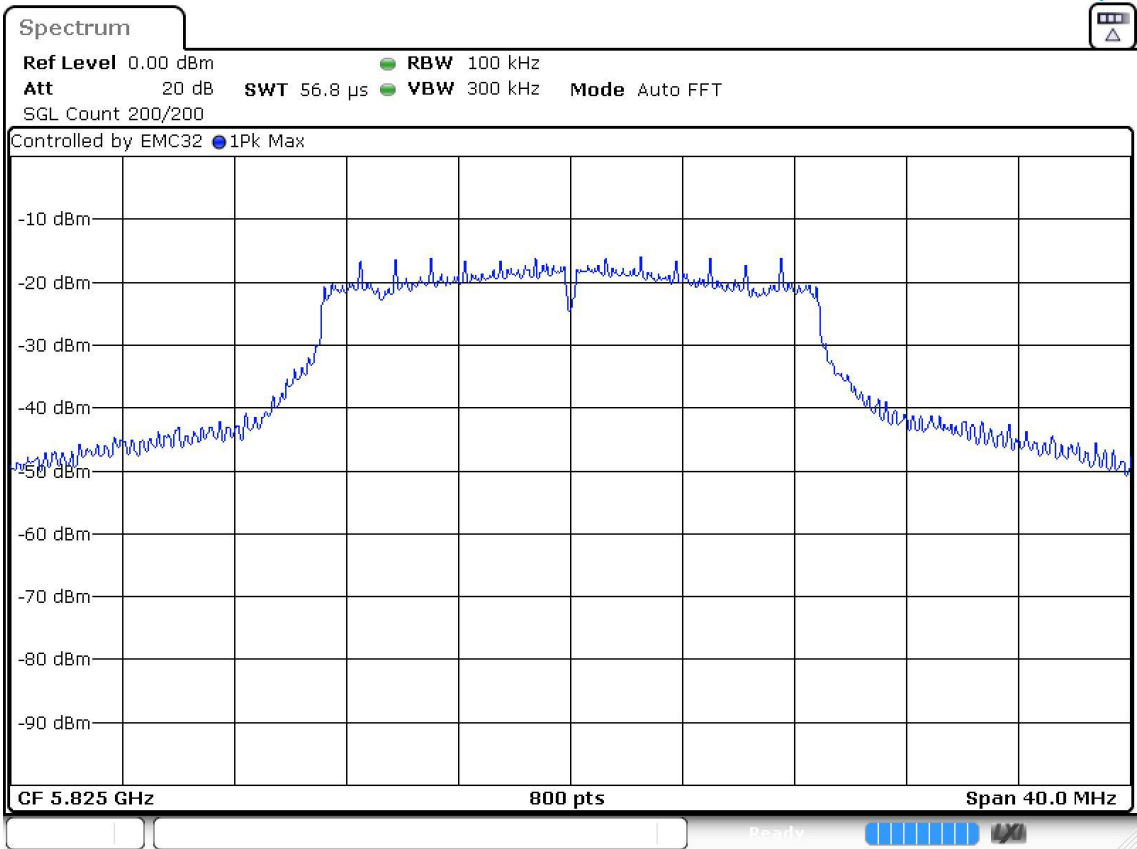
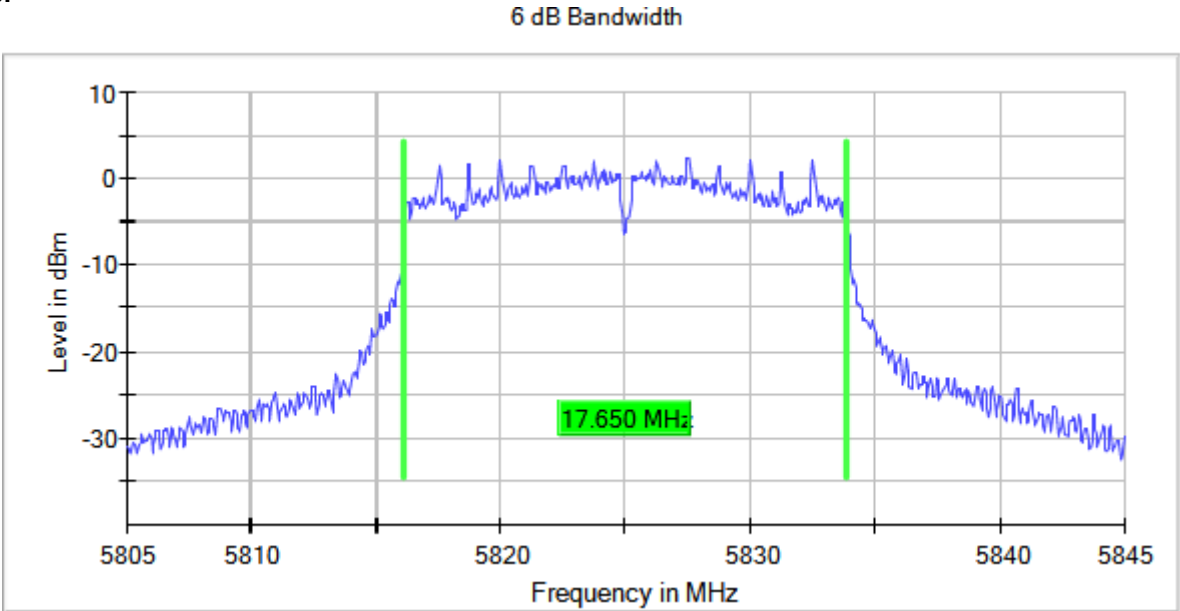
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

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

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5755.00000	35.850
		5795.00000	36.100

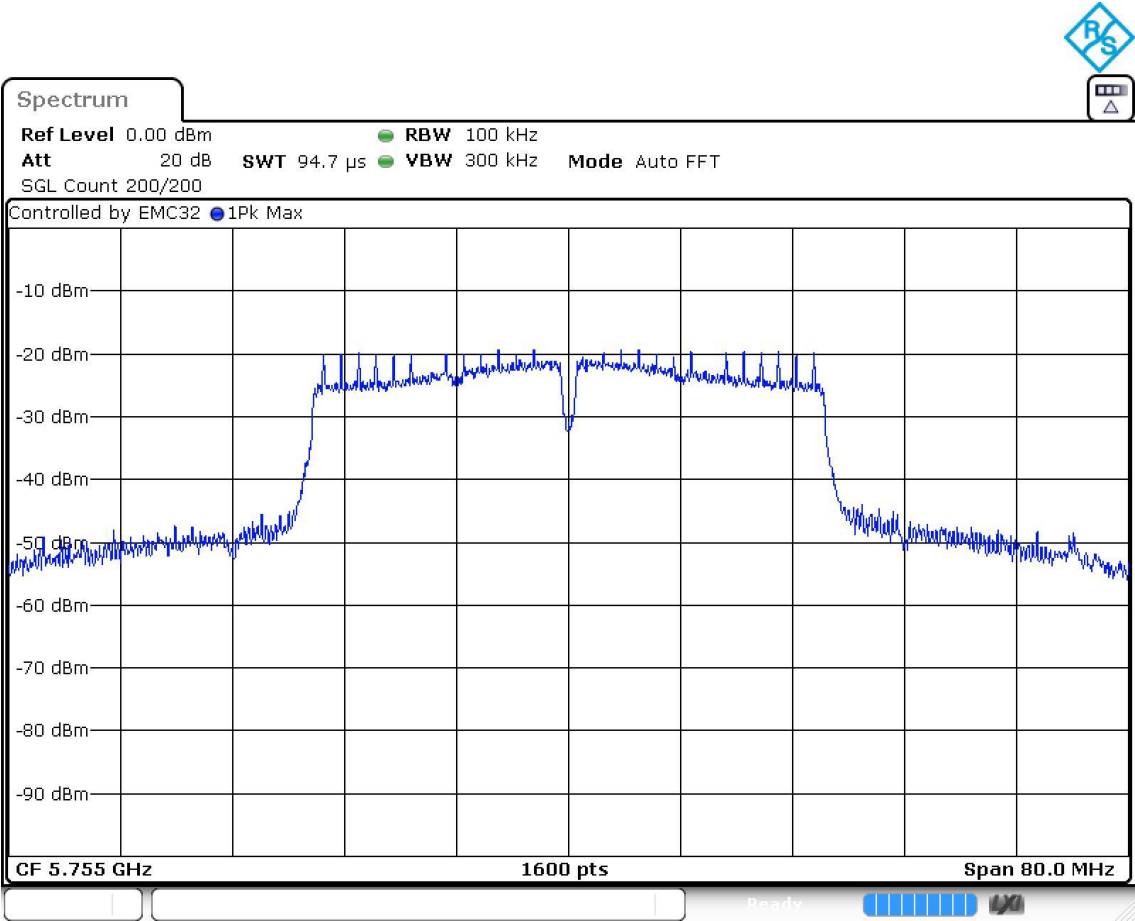
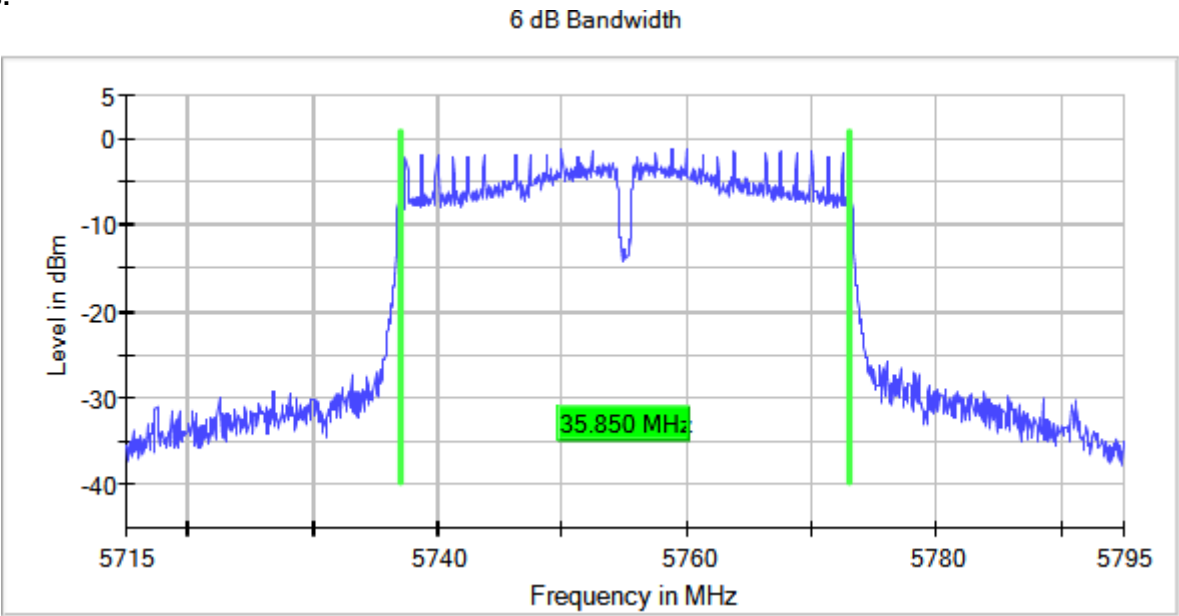
Verdict

Pass

Attachments

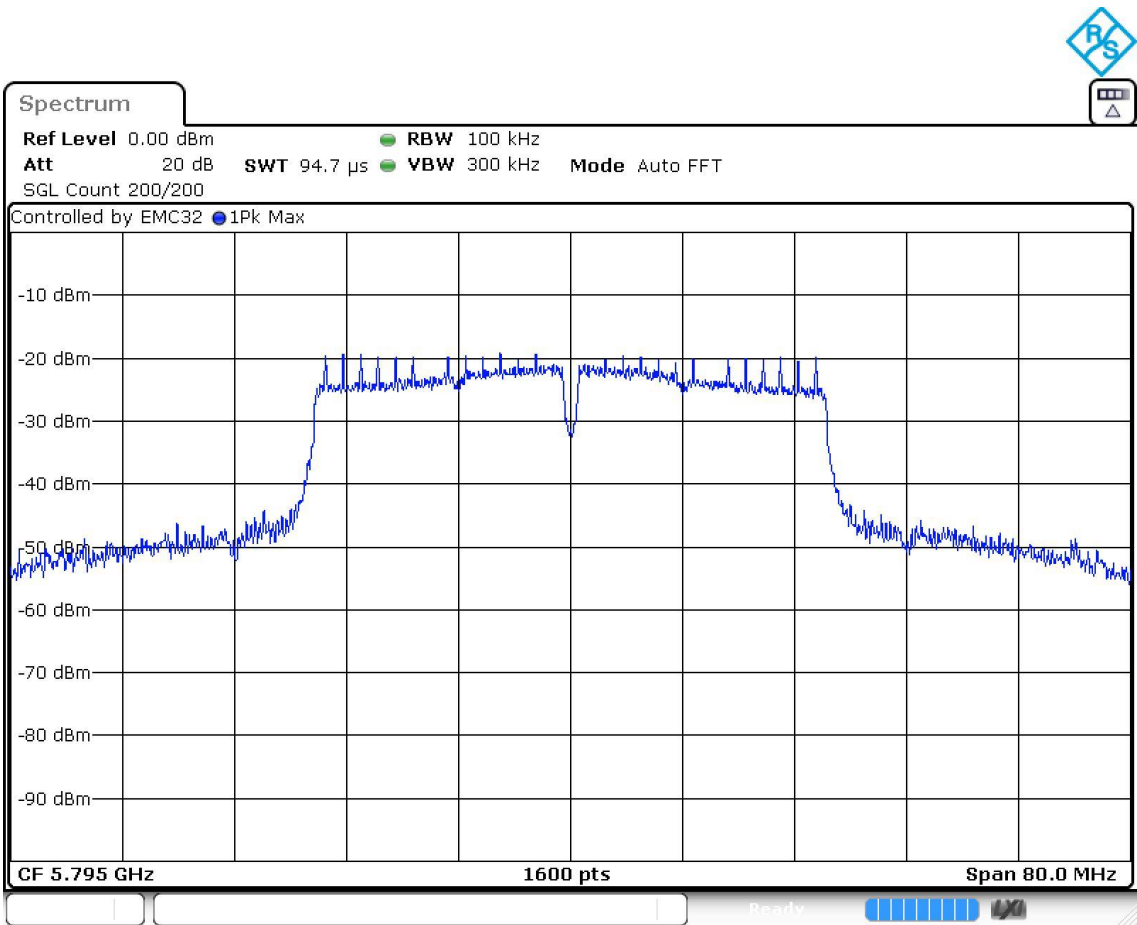
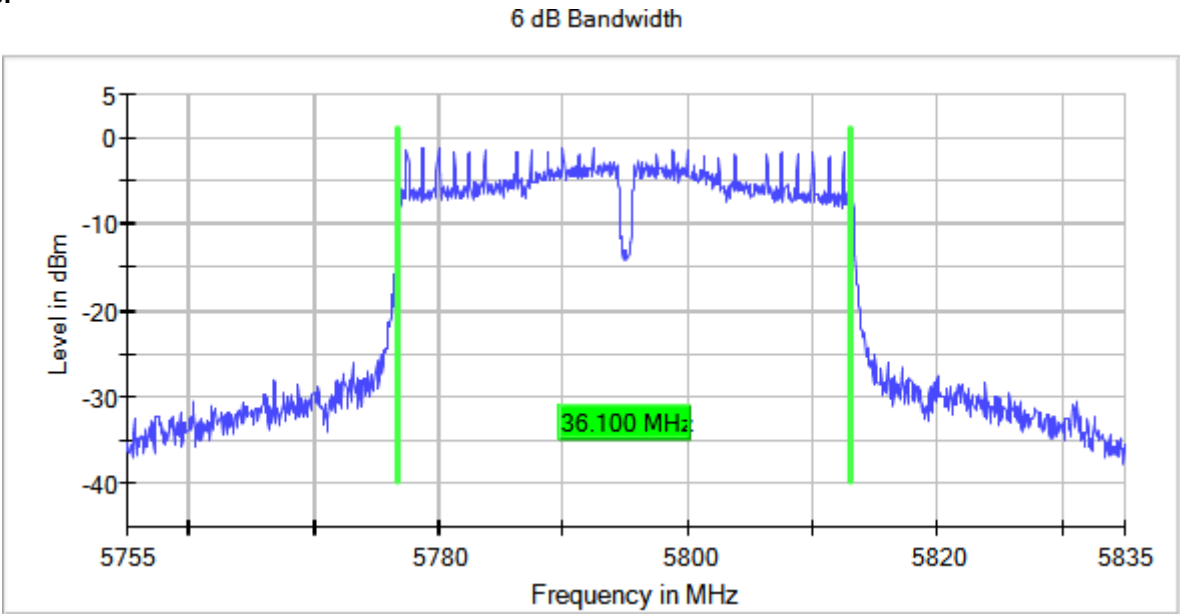
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5755.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
MIMO Mode = SISO

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: 802.11a (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5745.00000	16.400
		5785.00000	16.400
		5825.00000	16.350

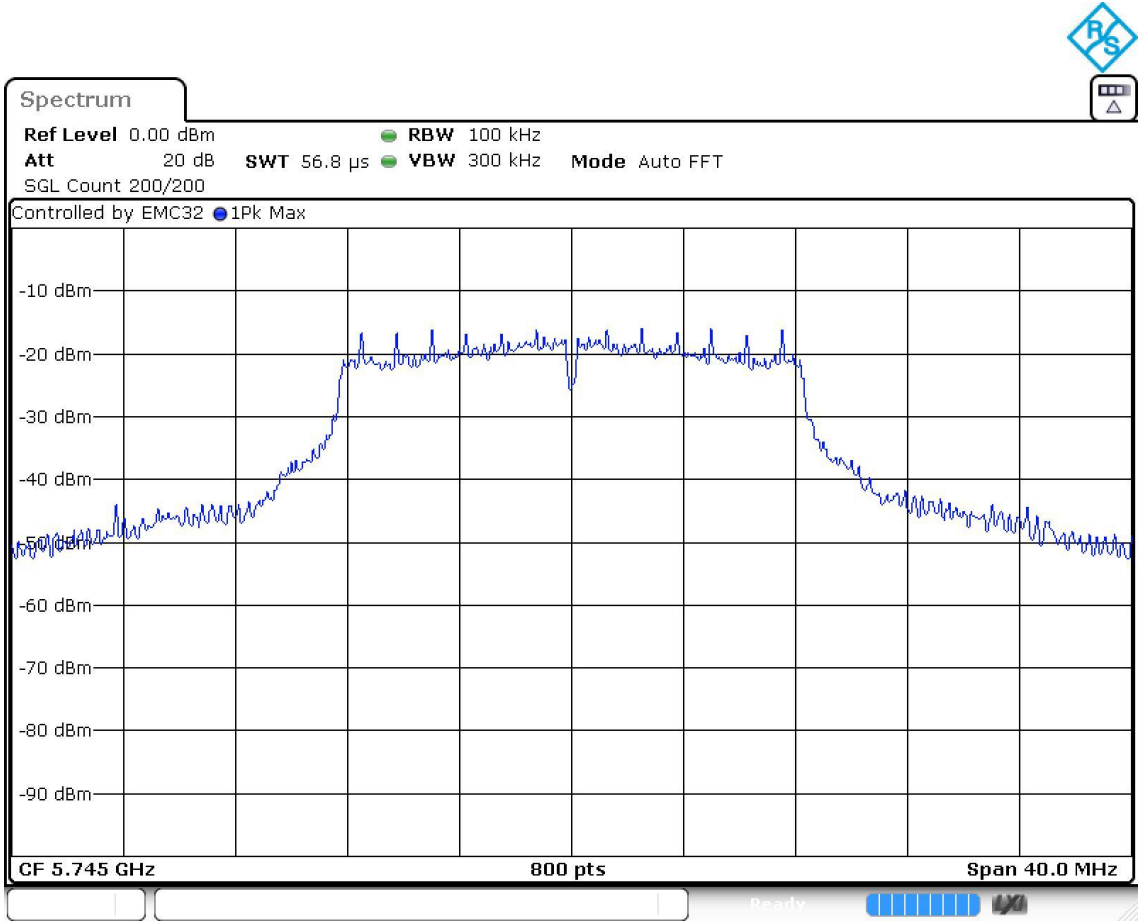
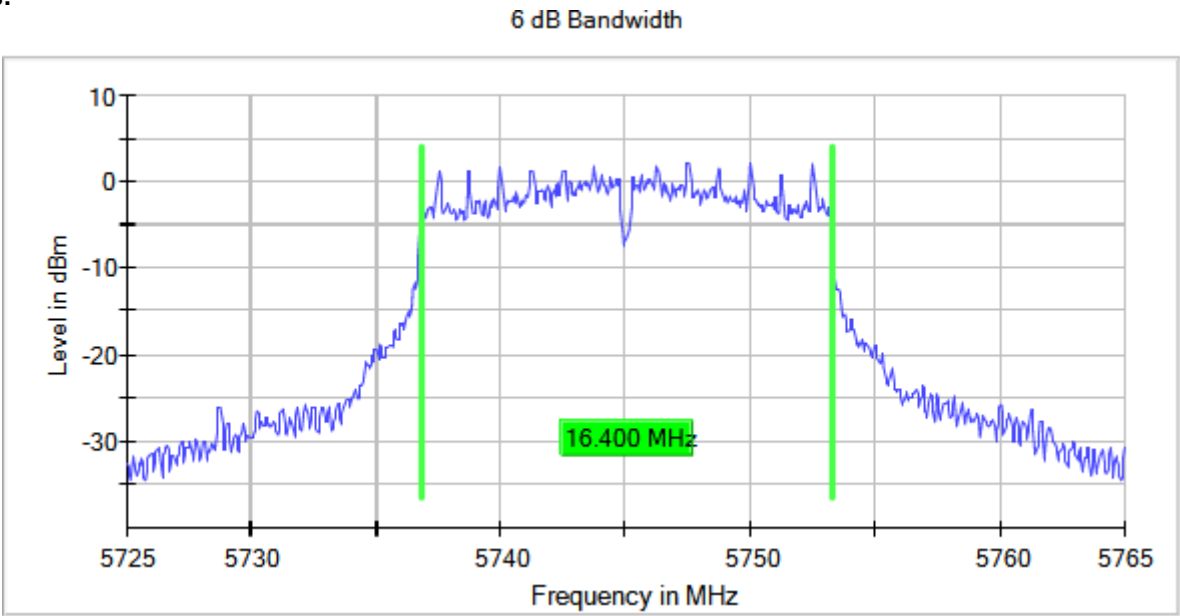
Verdict

Pass

Attachments

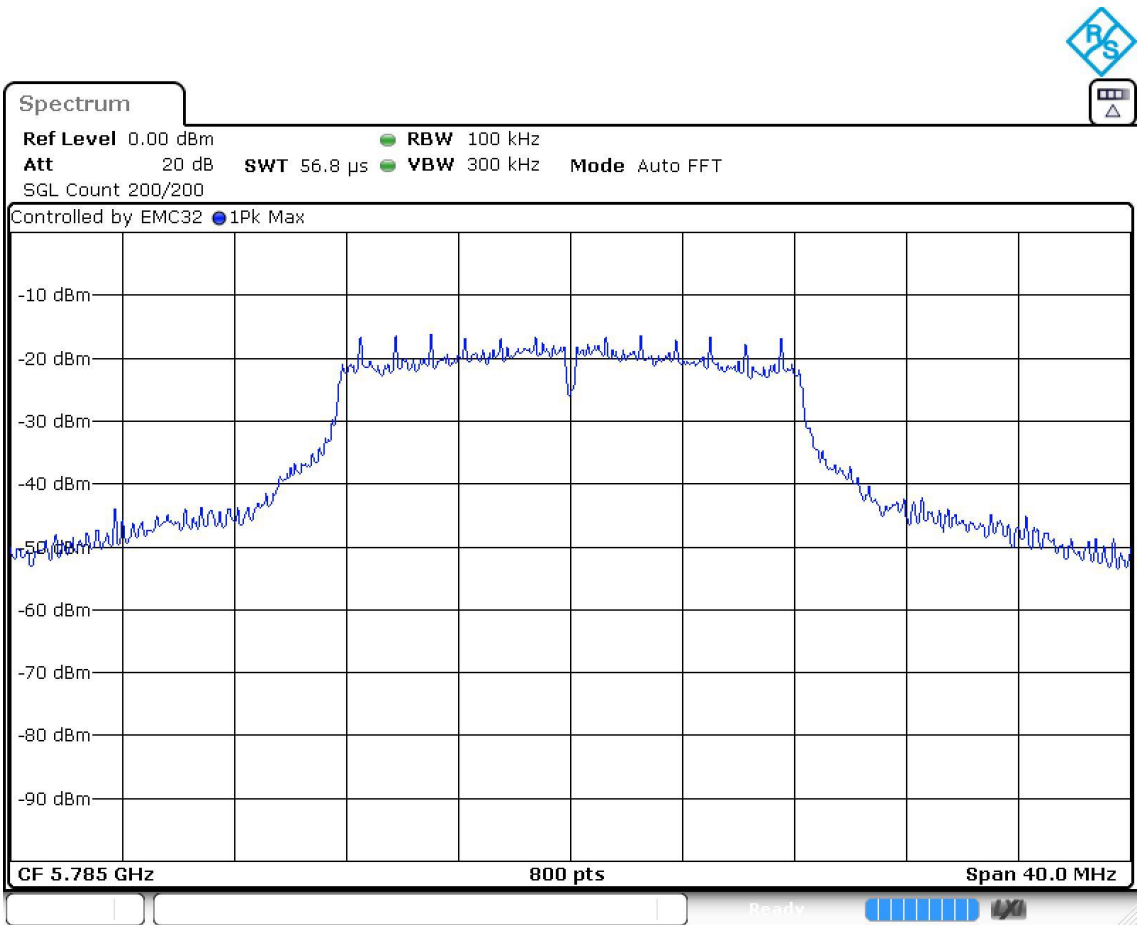
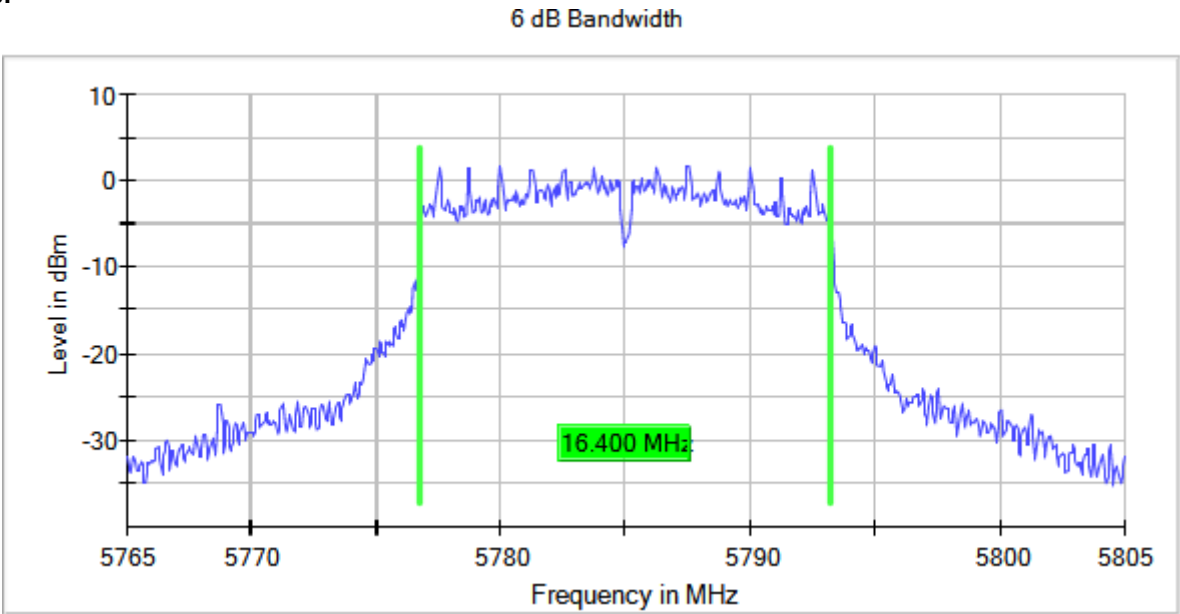
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



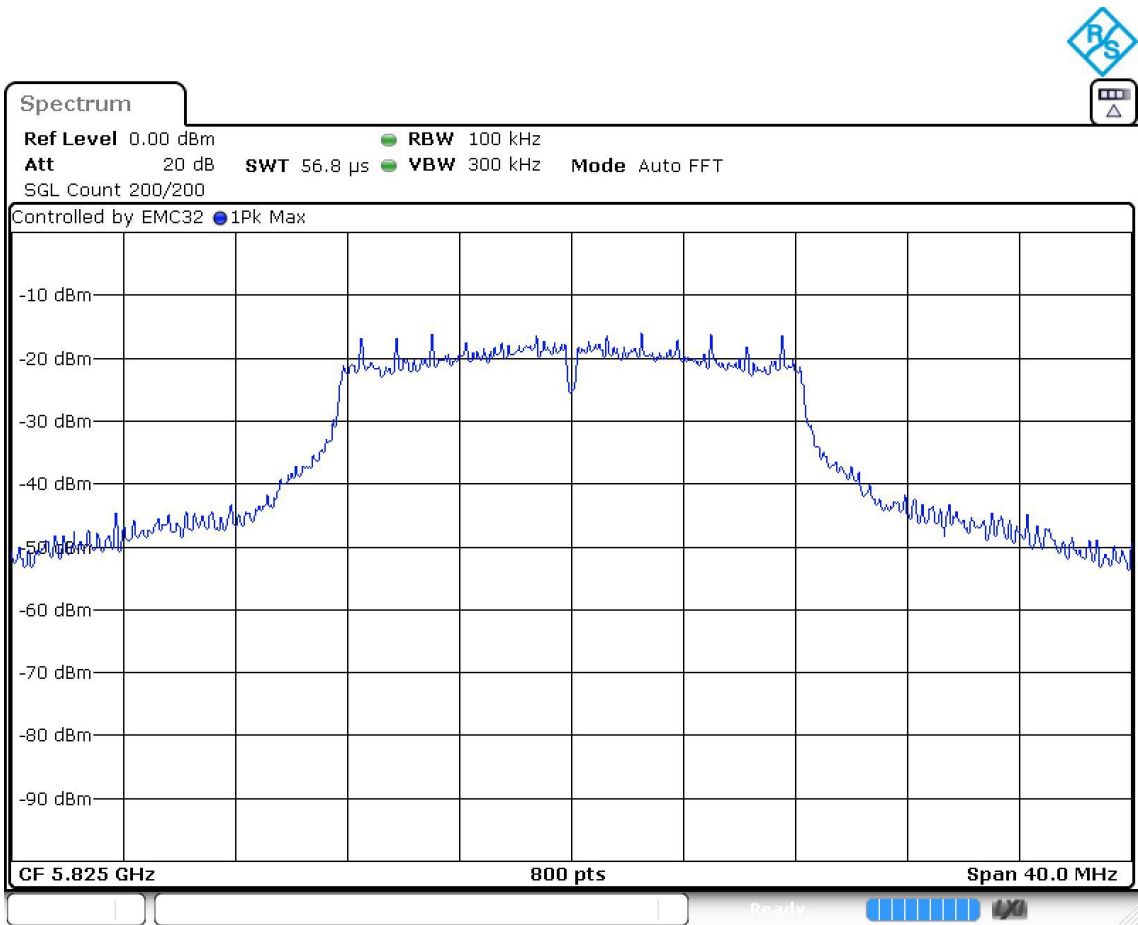
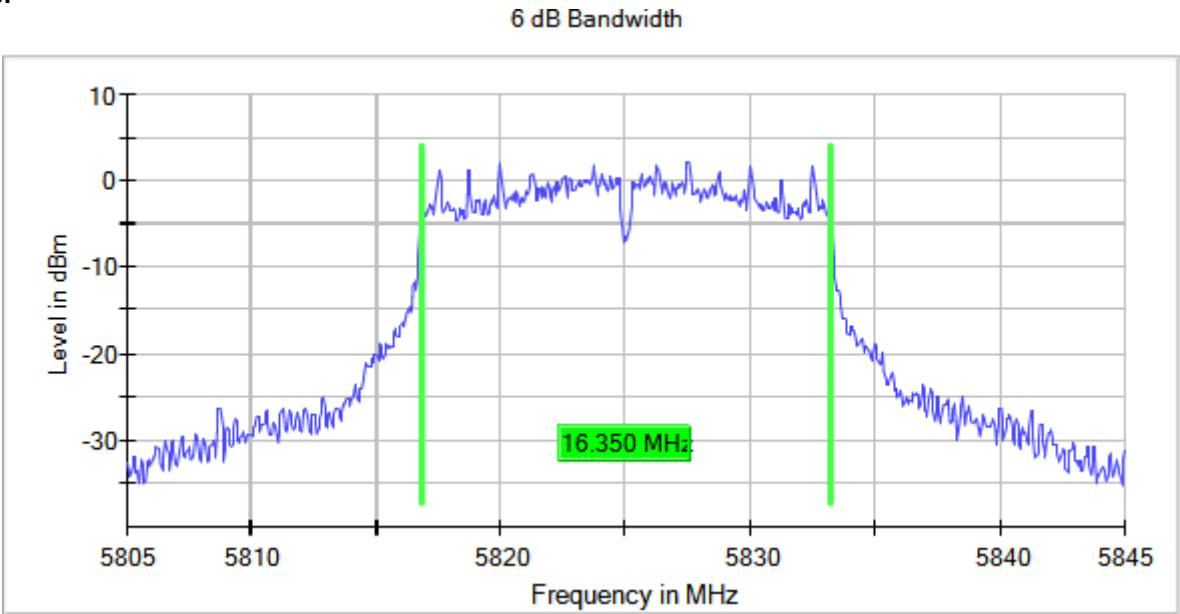
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

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)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5745.00000	17.650
		5785.00000	17.650
		5825.00000	17.650

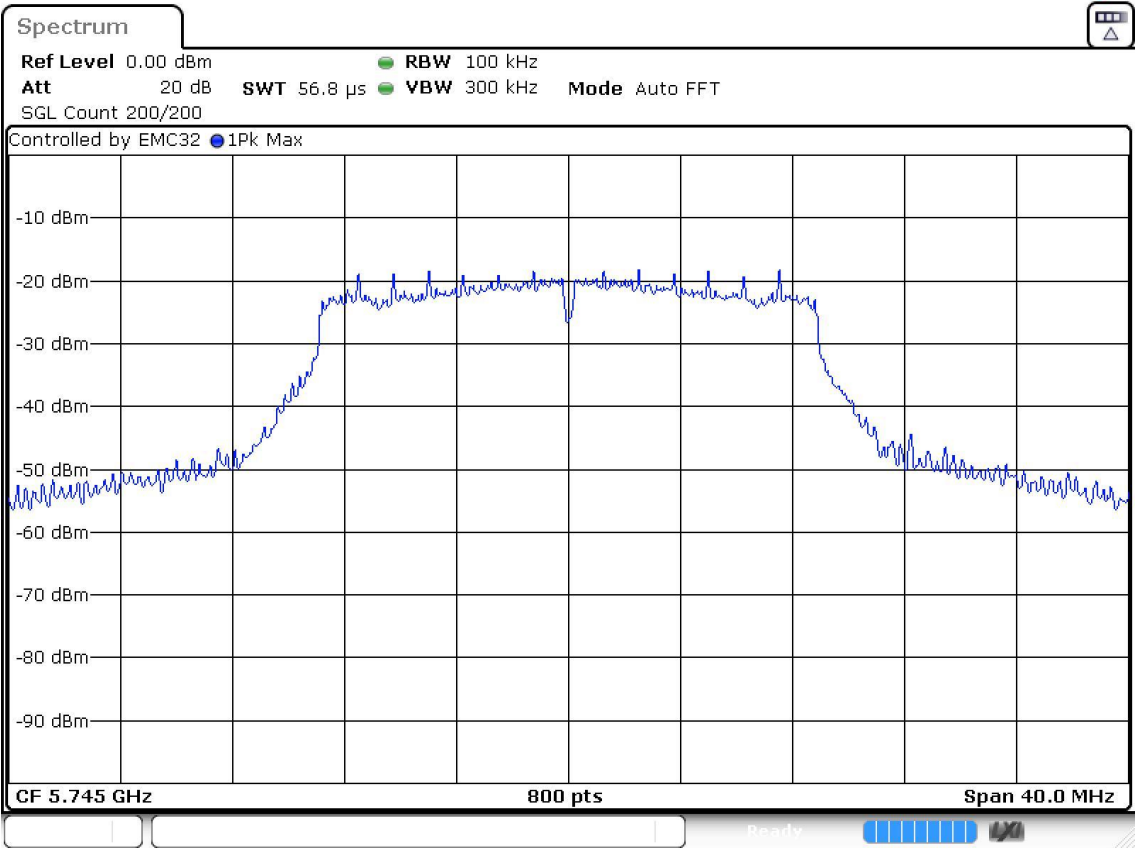
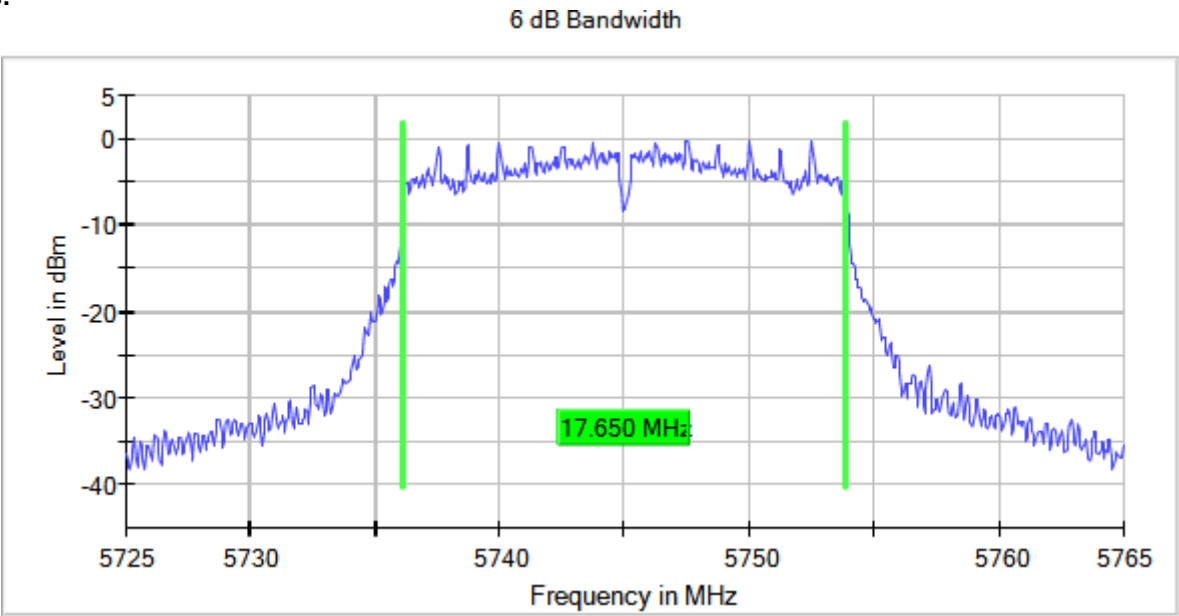
Verdict

Pass

Attachments

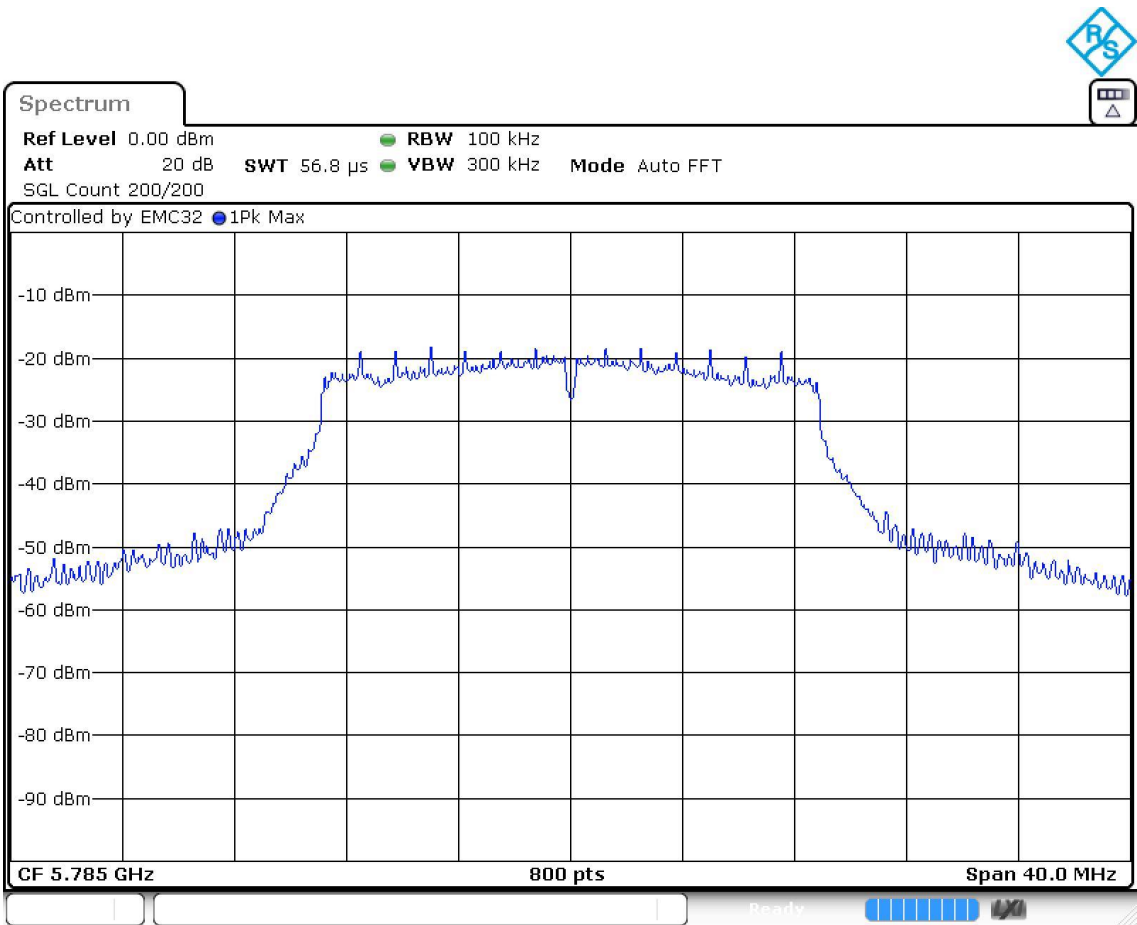
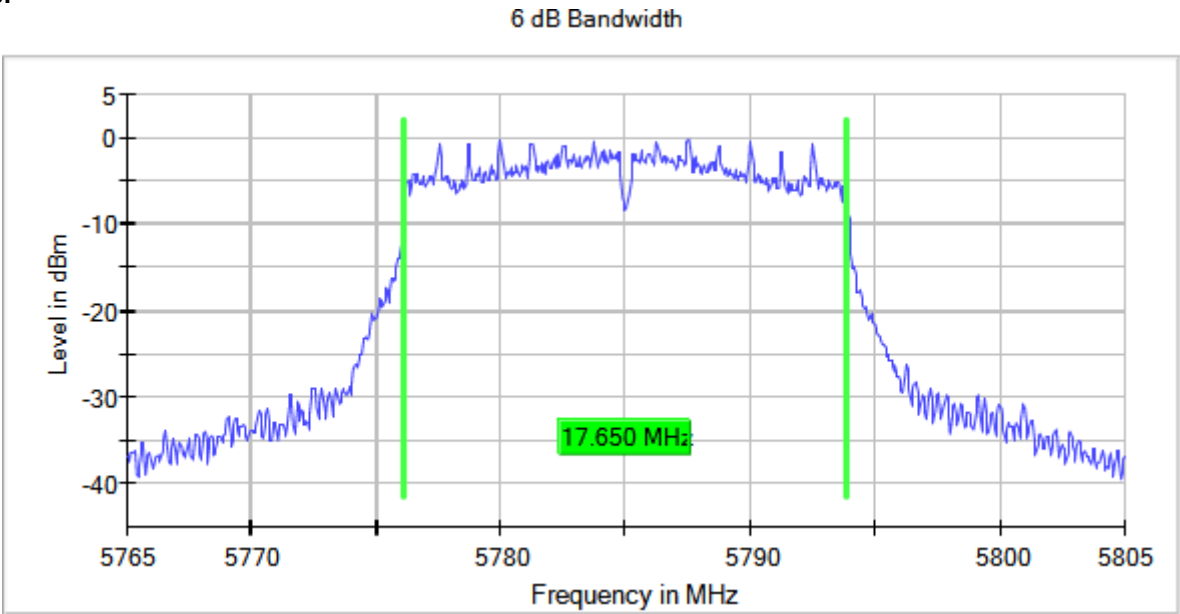
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



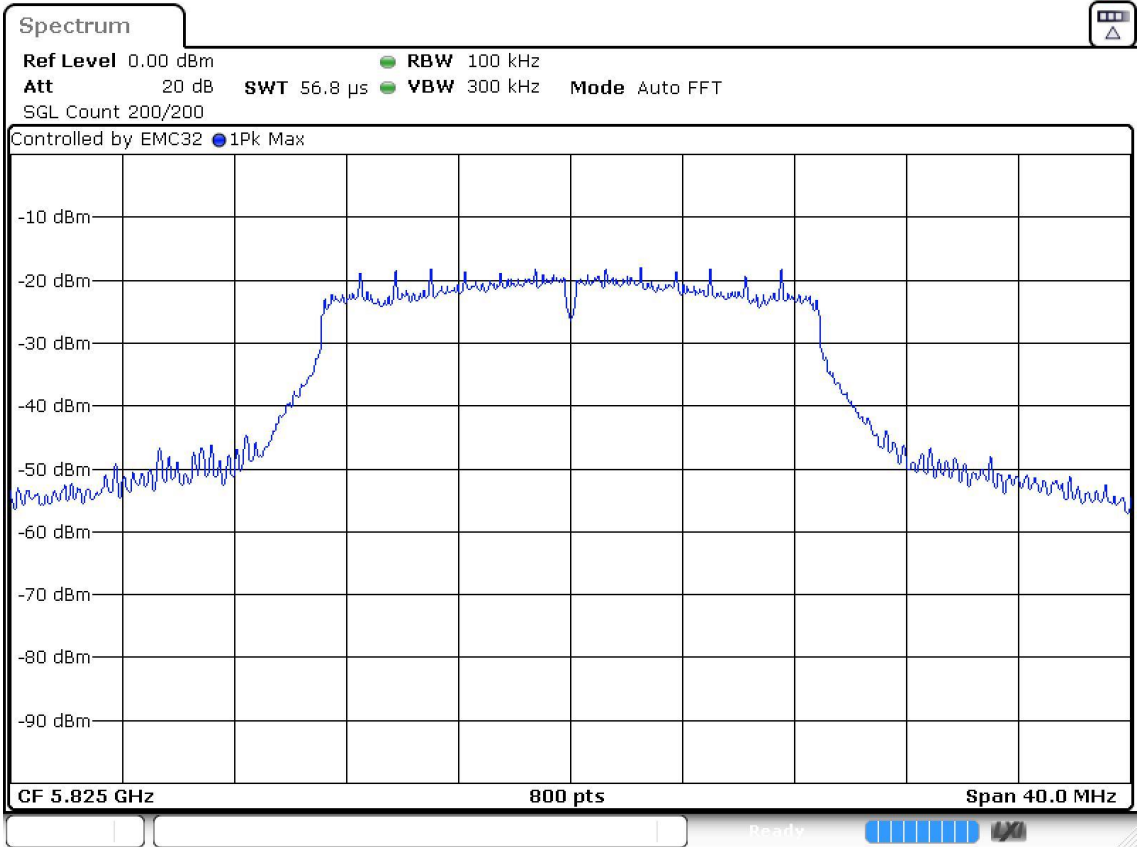
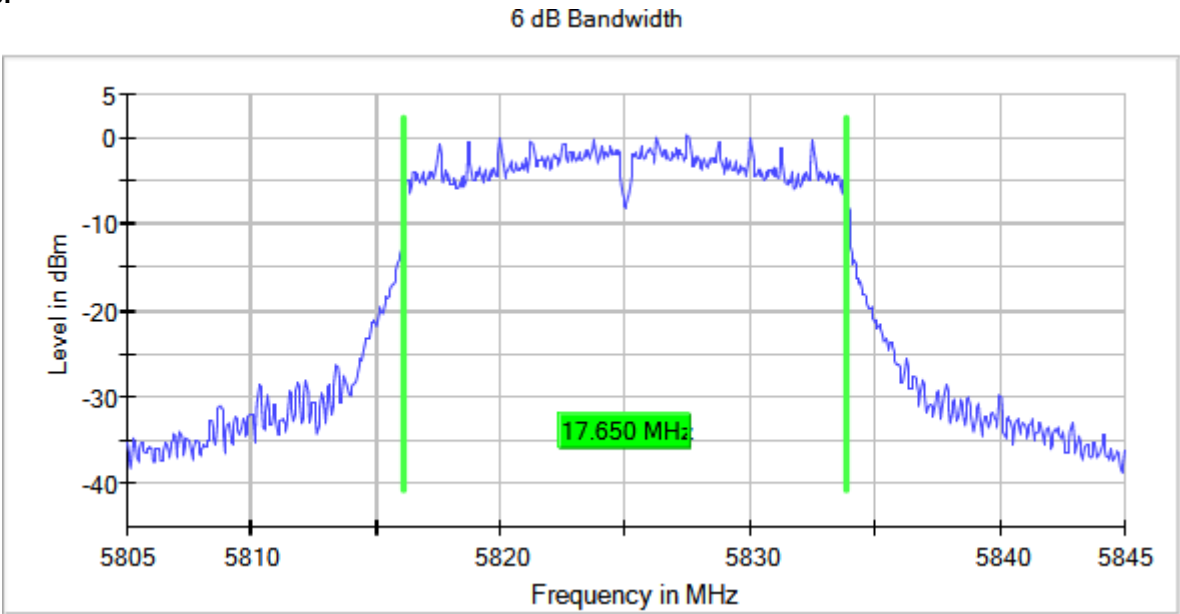
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5825.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



Modulation: 802.11ac VHT40 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5755.00000	35.850
		5795.00000	36.100

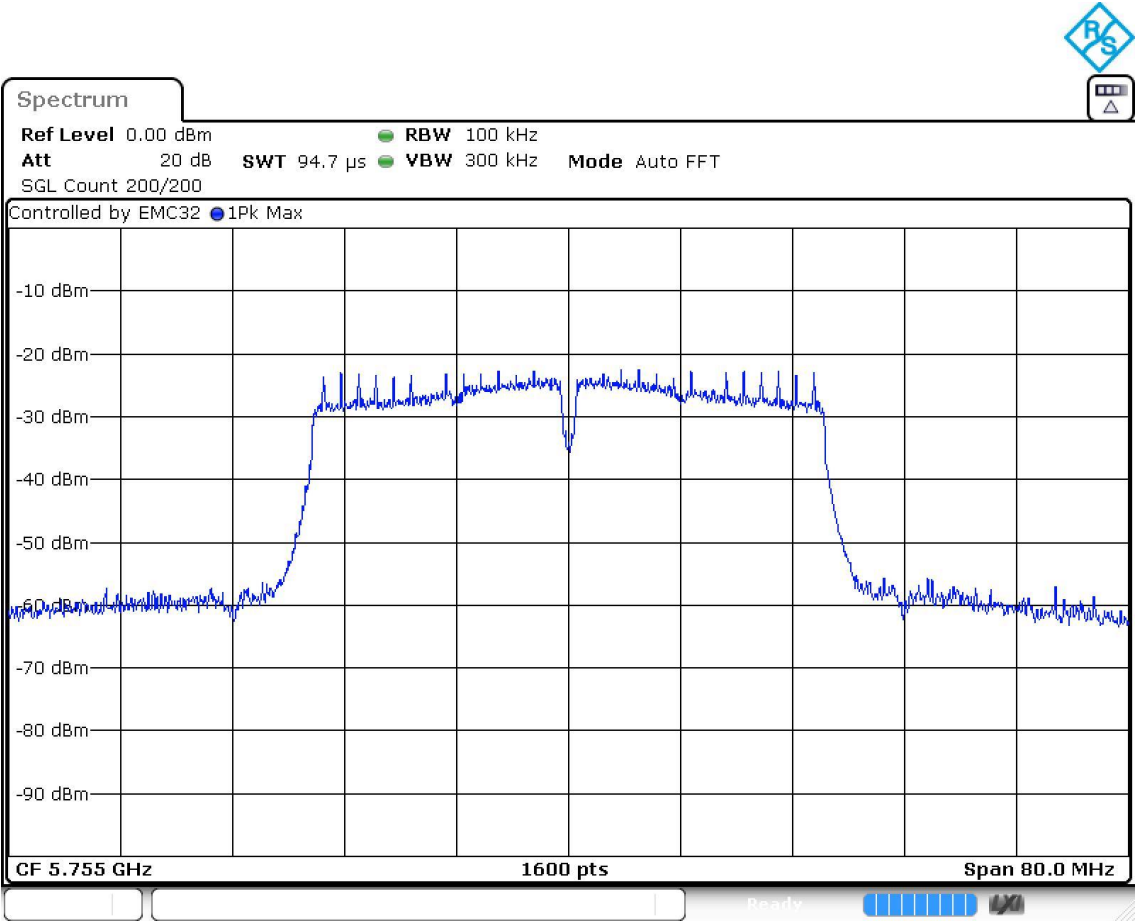
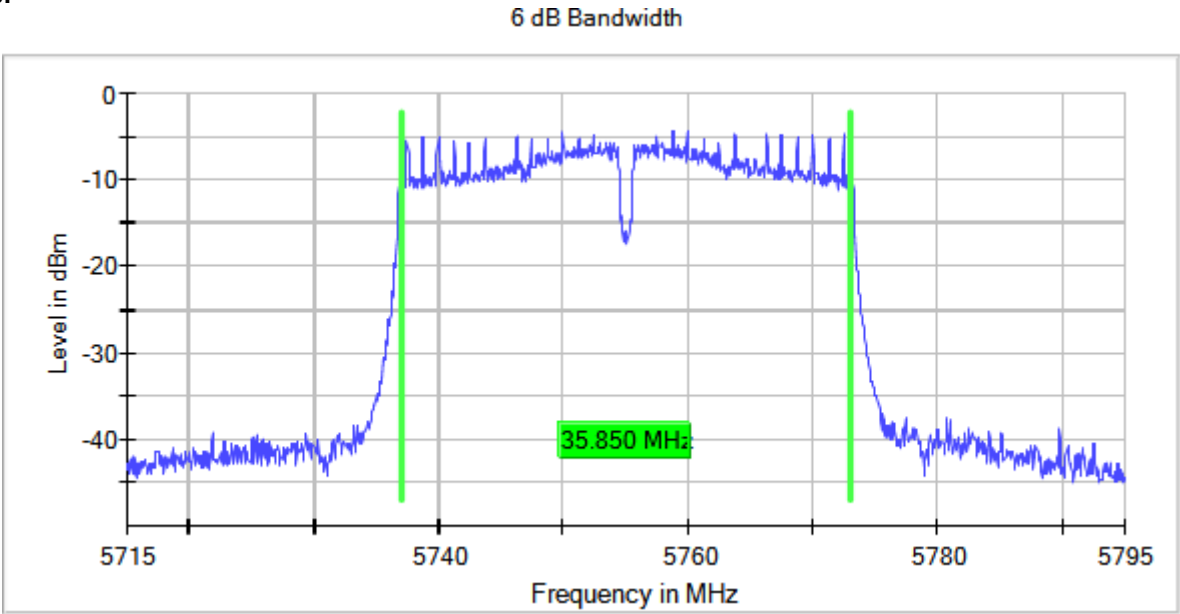
Verdict

Pass

Attachments

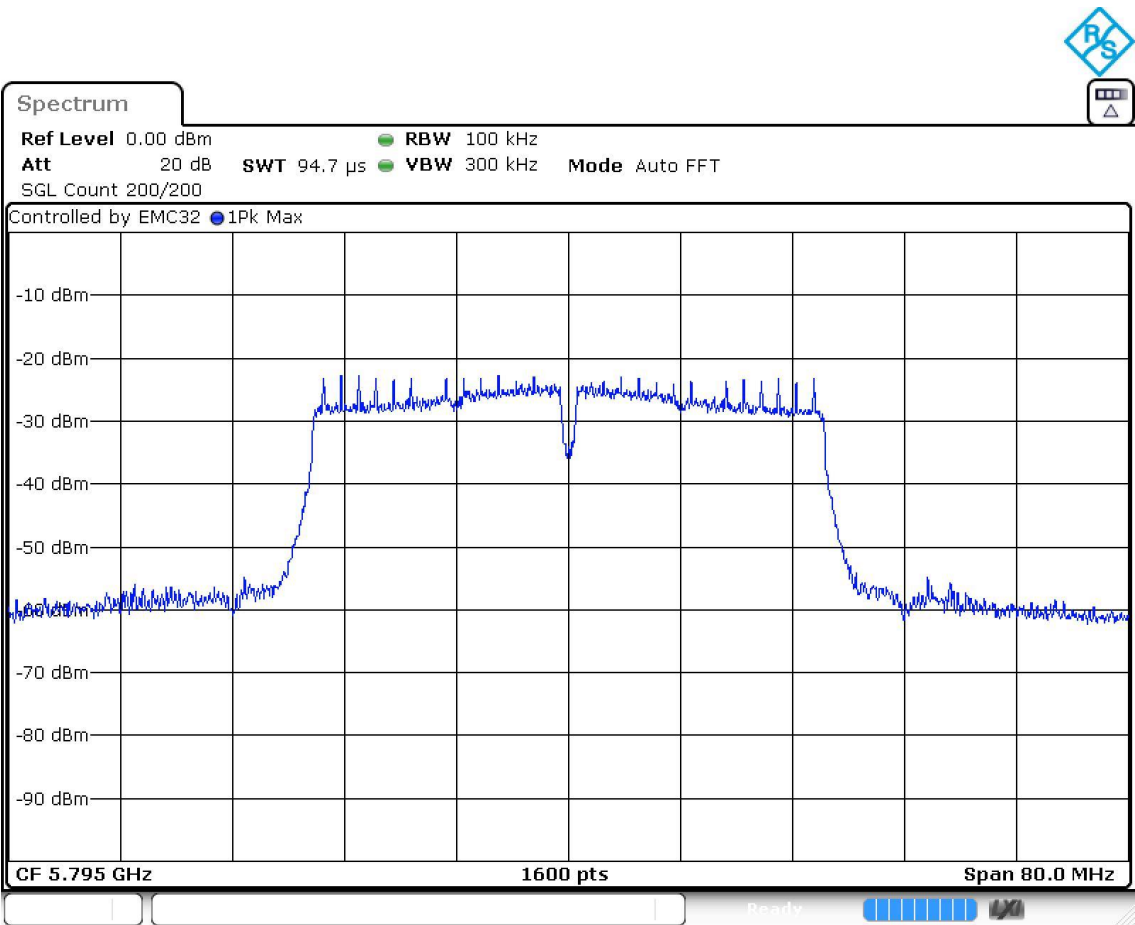
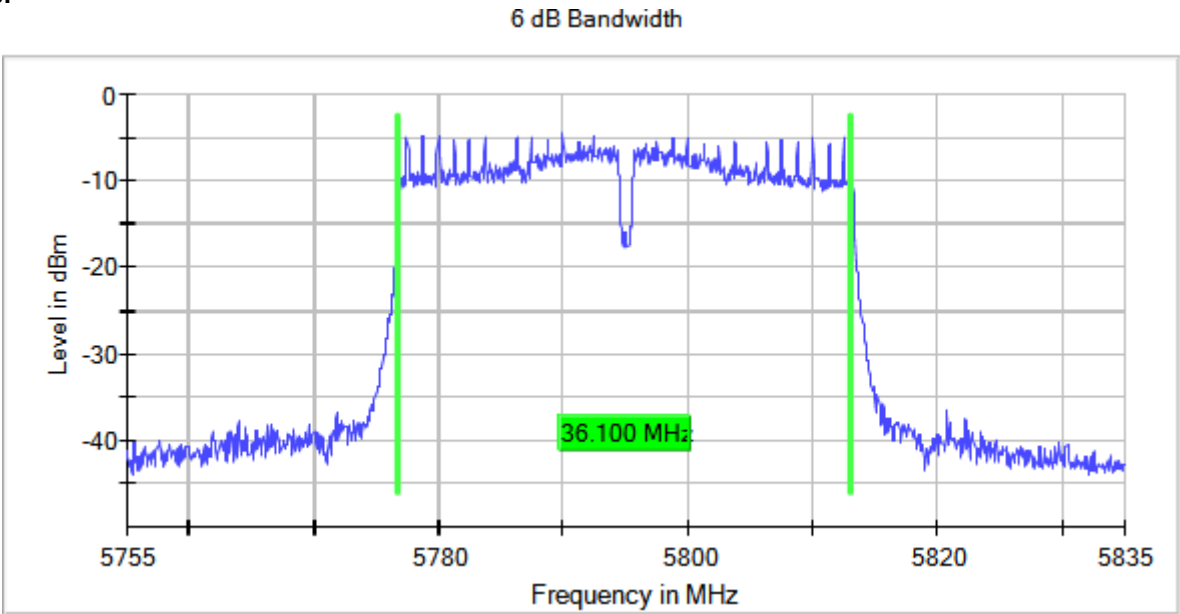
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5755.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
MIMO Mode = SISO

Images:



Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5795.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
MIMO Mode = SISO

Images:



Modulation: 802.11ac VHT80 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5725, 5850]	1	5775.00000	75.450

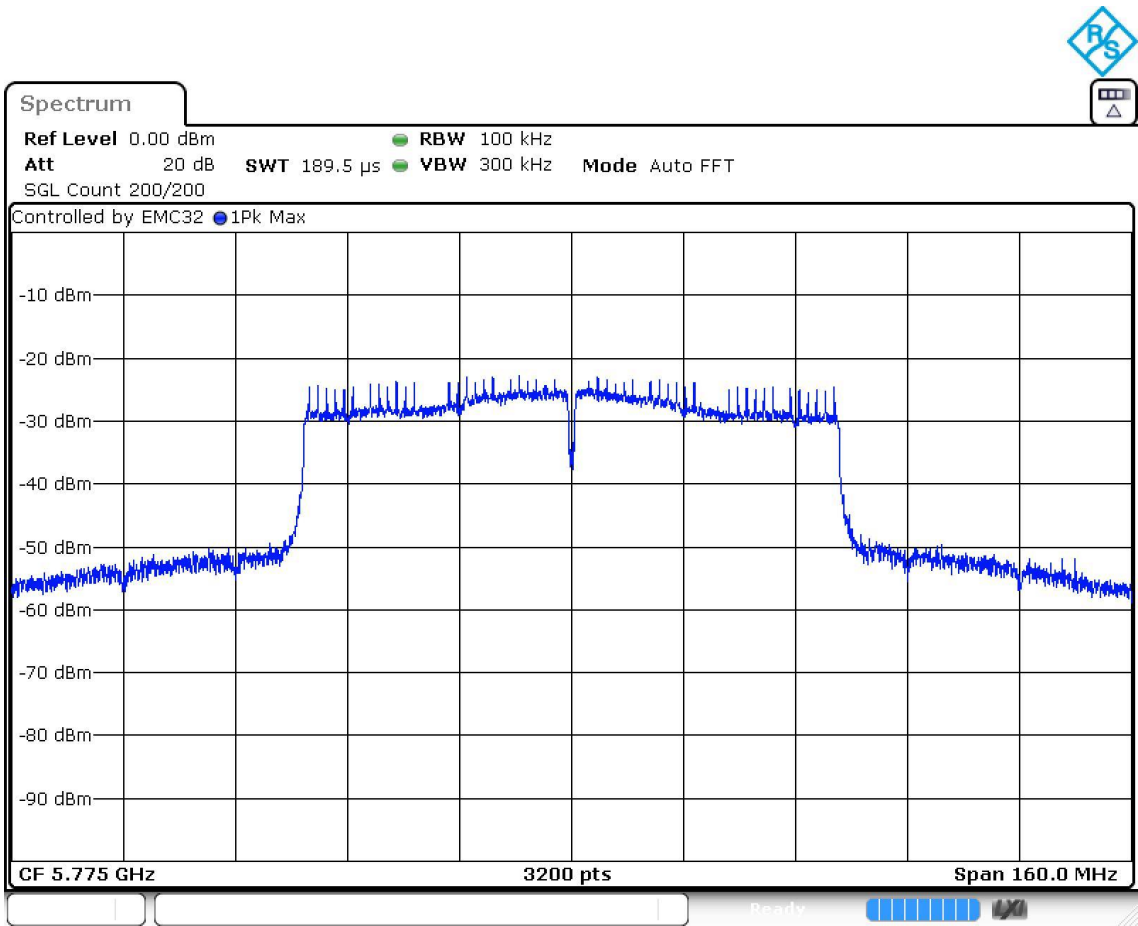
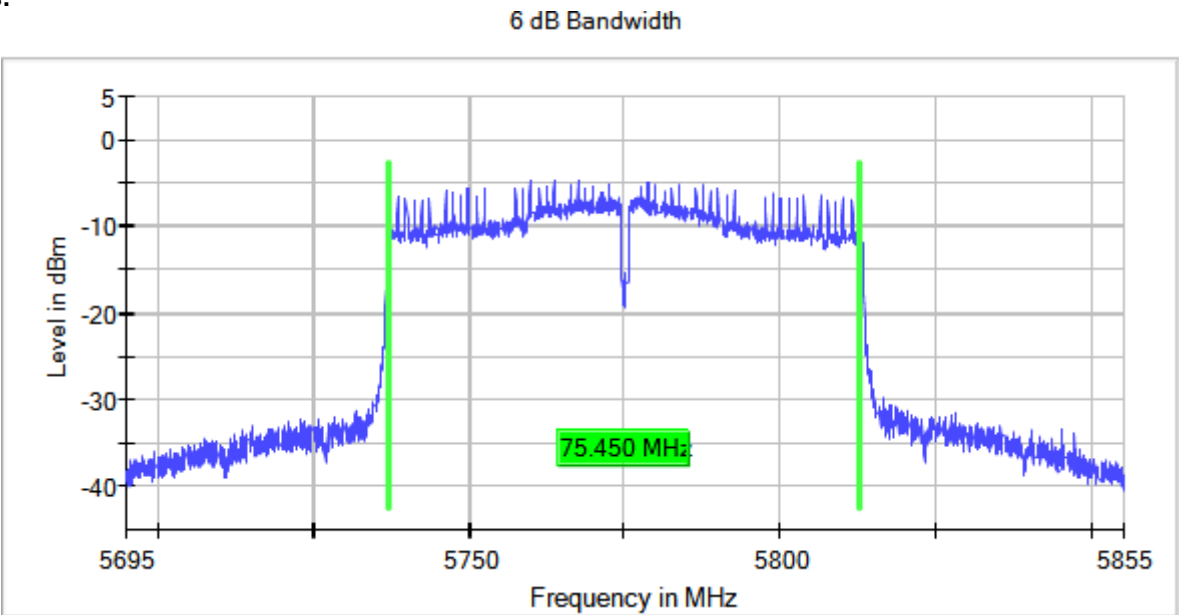
Verdict

Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5775.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)
MIMO Mode = SISO

Images:



RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Avcp] Maximum Conducted output power UNII-3

Limits

FCC 15.407: For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

RSS-247: The maximum conducted output power shall not exceed 1 W.

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

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5745.00000	No	14.77	16.77
		5785.00000		14.31	16.31
		5825.00000		14.83	16.83

Results

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

MIMO Mode: SISO

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5755.00000	No	14.08	16.08
		5795.00000		13.90	15.90

Results

Modulation: 802.11a (OFDM 6 Mbit/s)

MIMO Mode: SISO

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5745.00000	No	15.01	17.01
		5785.00000		14.37	16.37
		5825.00000		14.85	16.85

Results

Modulation: 802.11ac VHT20 (OFDM MCS0)

MIMO Mode: SISO

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5745.00000	No	12.81	14.81
		5785.00000		12.39	14.39
		5825.00000		12.96	14.96

Results

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

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5755.00000	No	10.99	12.99
		5795.00000		10.56	12.56

Results

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

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	1	5775.00000	No	12.97	14.97

Verdict

Pass

RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Psd] Transmitter Maximum Power Spectral Density UNII-3

Limits

FCC 15.407: The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-247: The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC 15.407: For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band.

RSS-247: The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC 15.407: For an indoor access point operating in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 20 dBm e.i.r.p. in any 1-megahertz band.

RSS-247: The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC 15.407: For a subordinate device operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 20 dBm e.i.r.p. in any 1-megahertz band.

RSS-247: The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	1	5745.00000	No	5744.207921	-0.10
		5785.00000		5784.207921	-0.03
		5825.00000		5825.594059	0.29

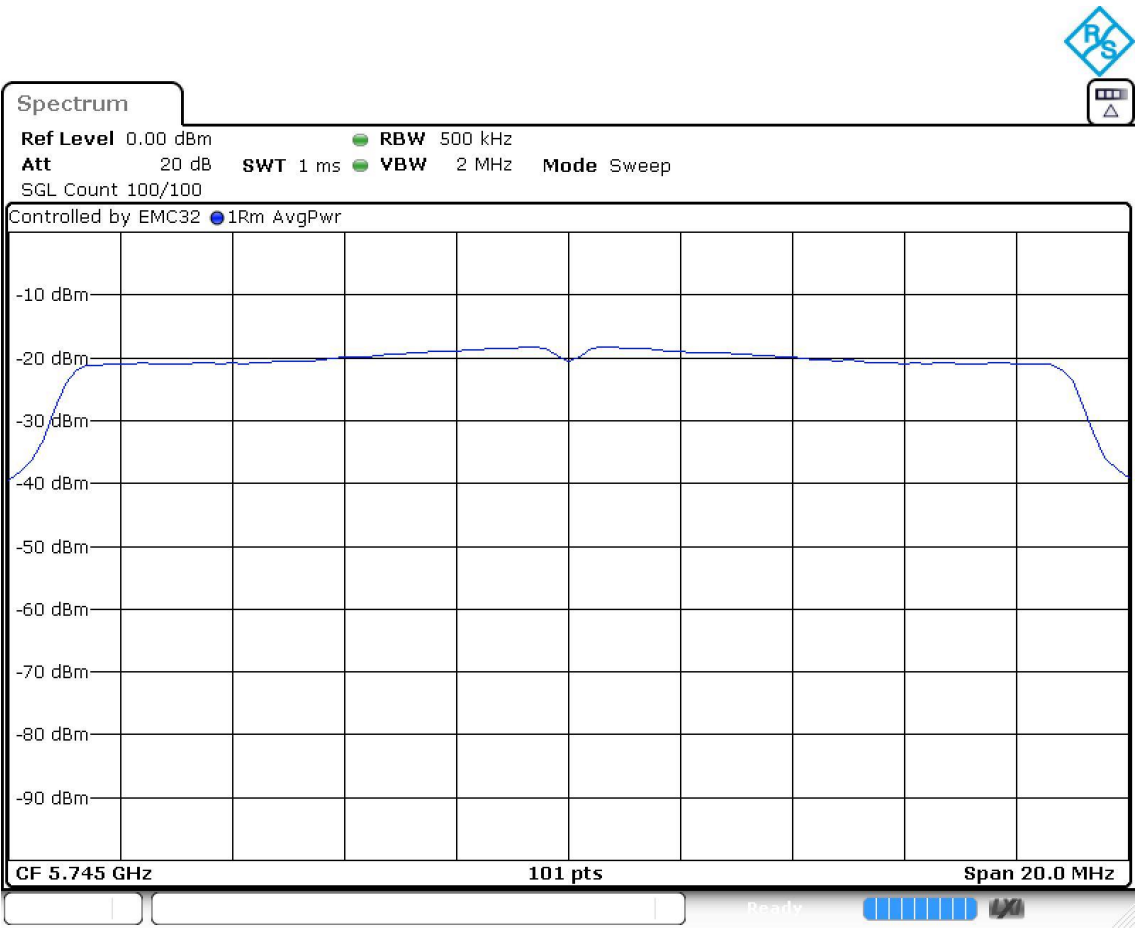
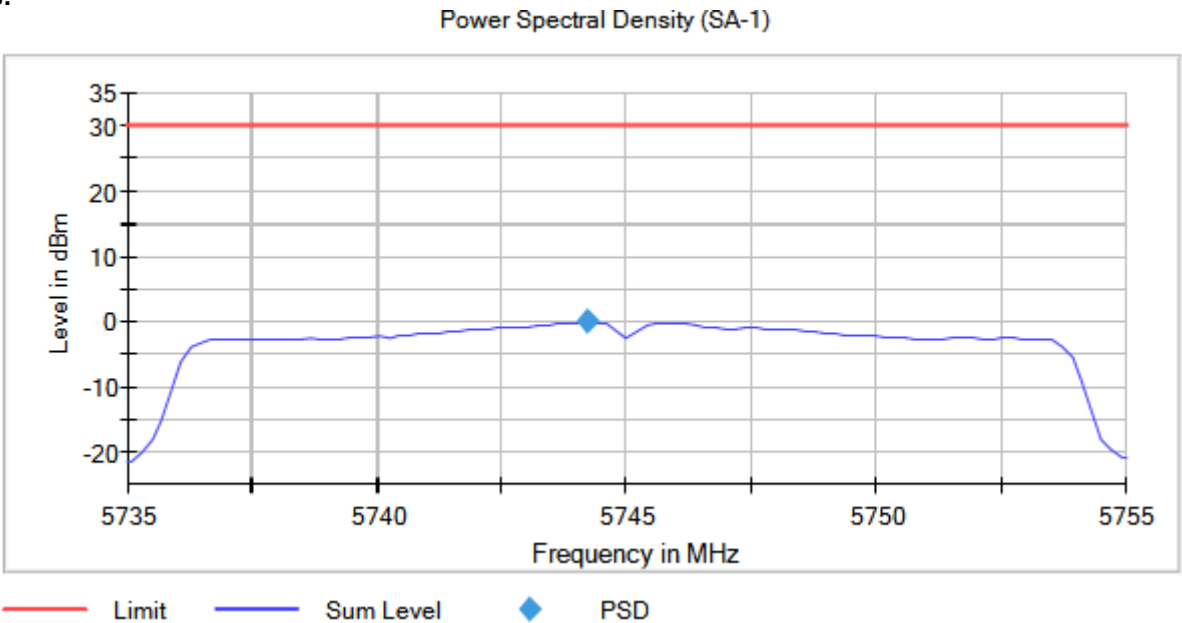
Verdict

Pass

Attachments

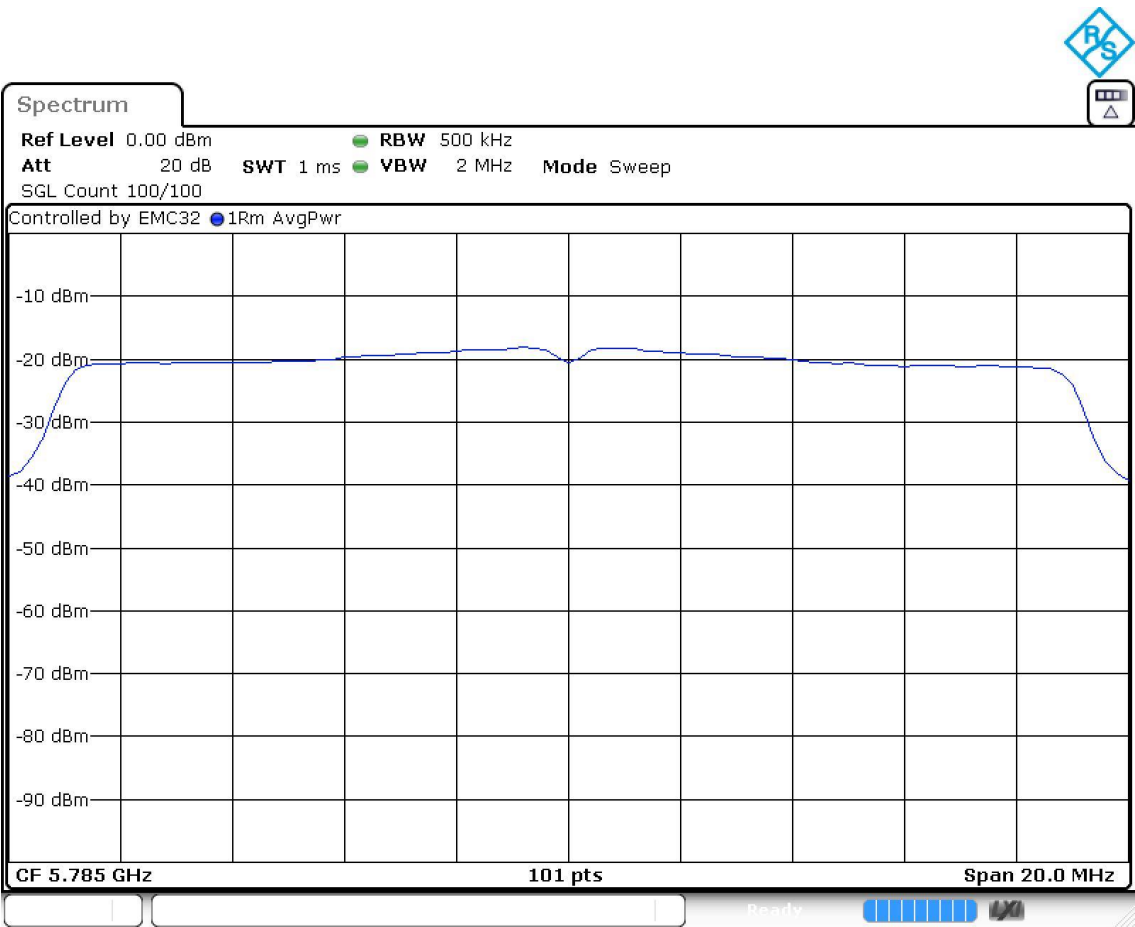
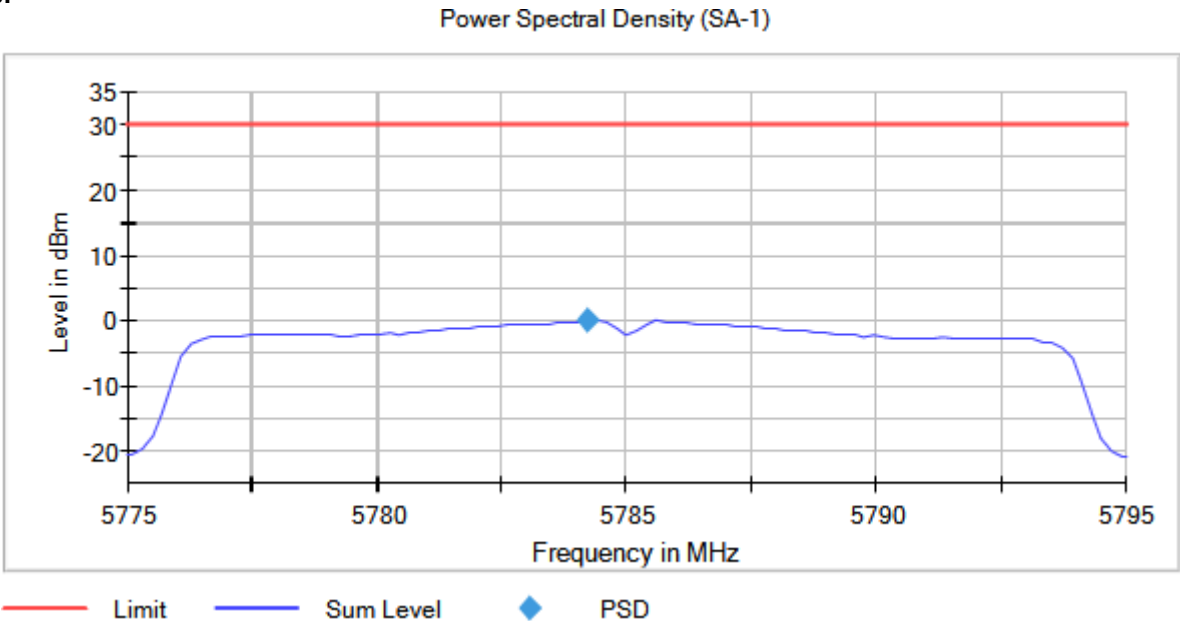
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



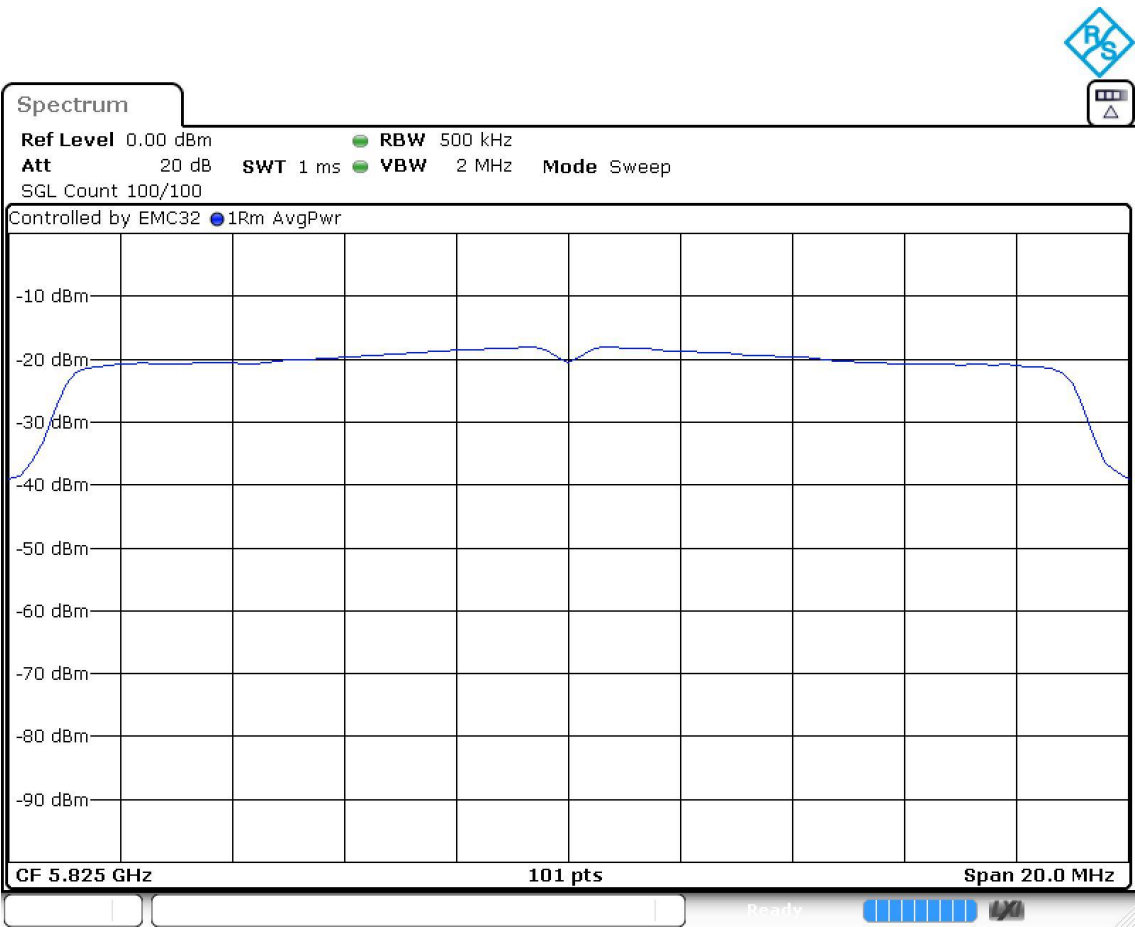
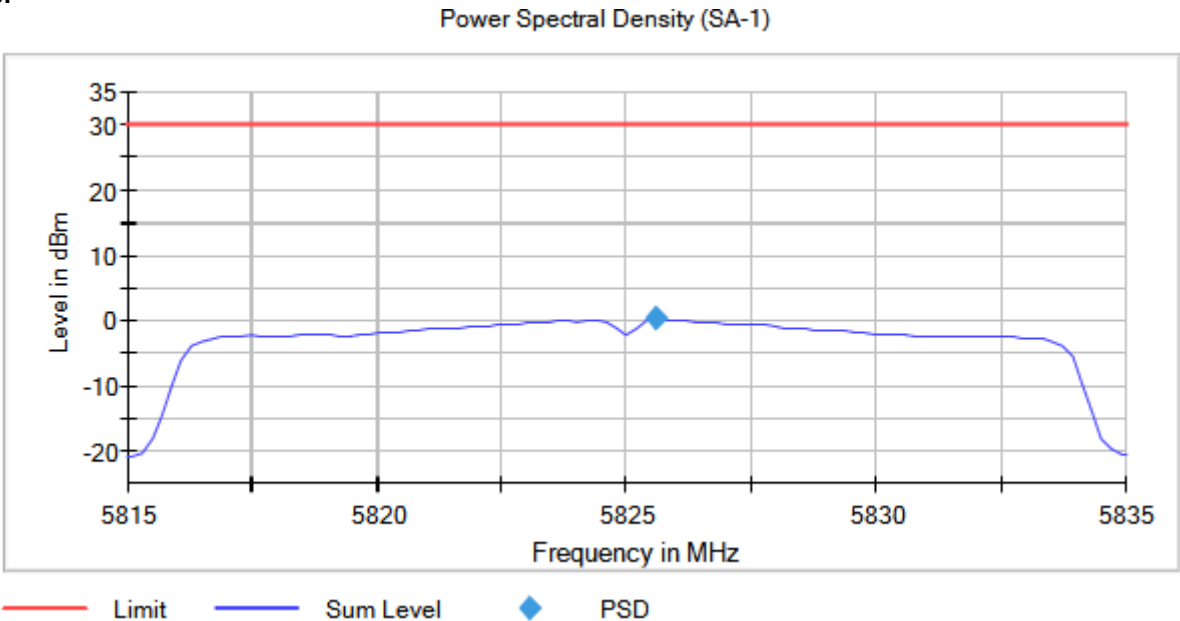
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5825.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



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

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	1	5755.00000	No	5756.375000	-3.50
		5795.00000		5793.875000	-3.67

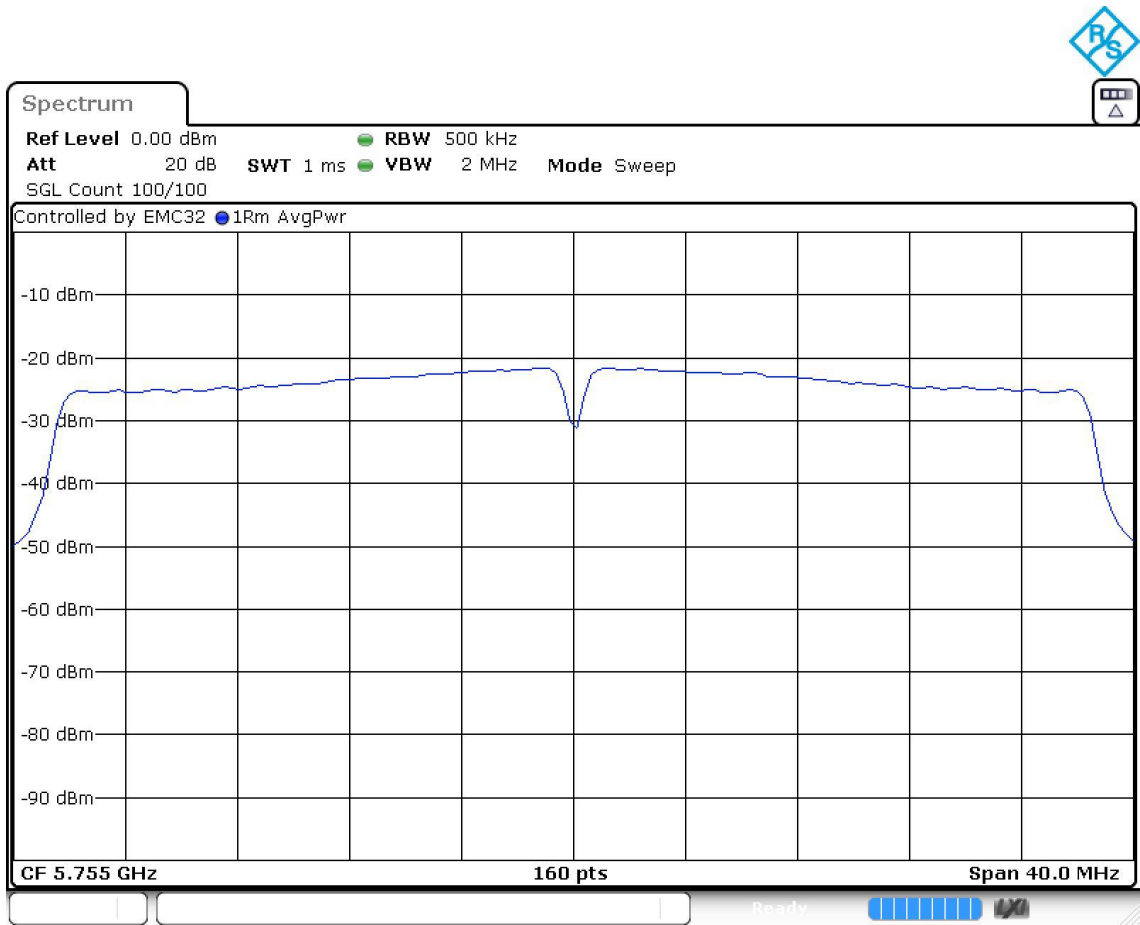
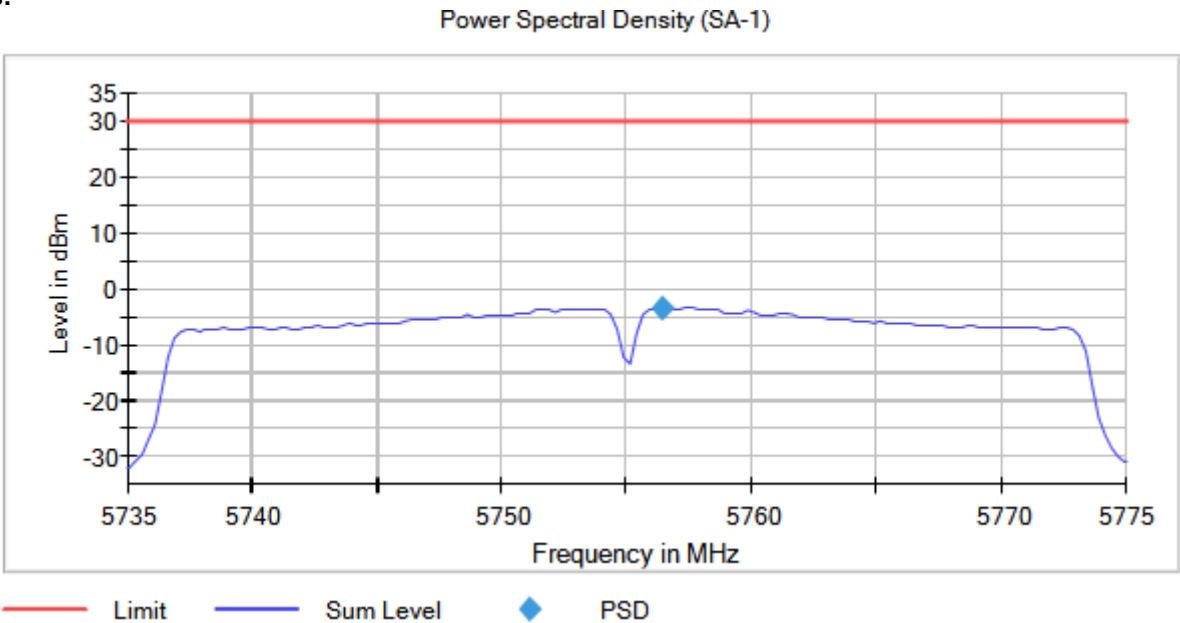
Verdict

Pass

Attachments

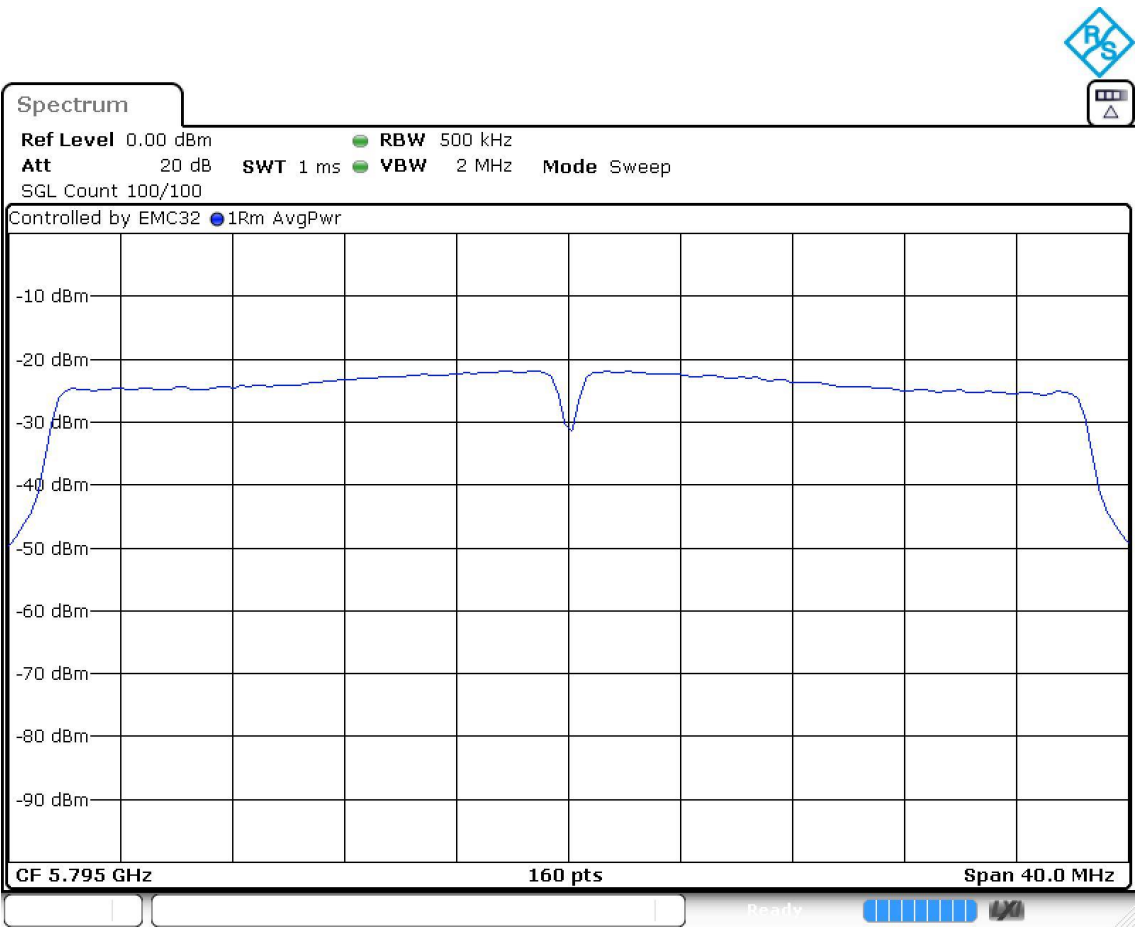
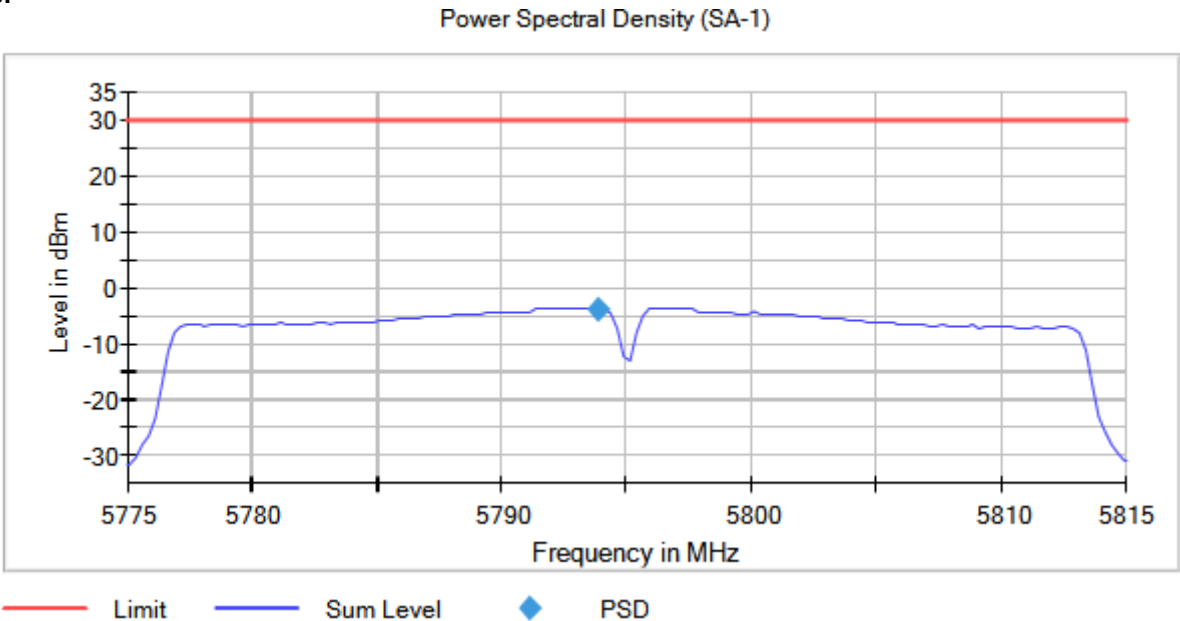
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5755.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5795.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



Modulation: 802.11a (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	1	5745.00000	No	5745.792079	0.40
		5785.00000		5784.405941	0.08
		5825.00000		5825.594059	0.53

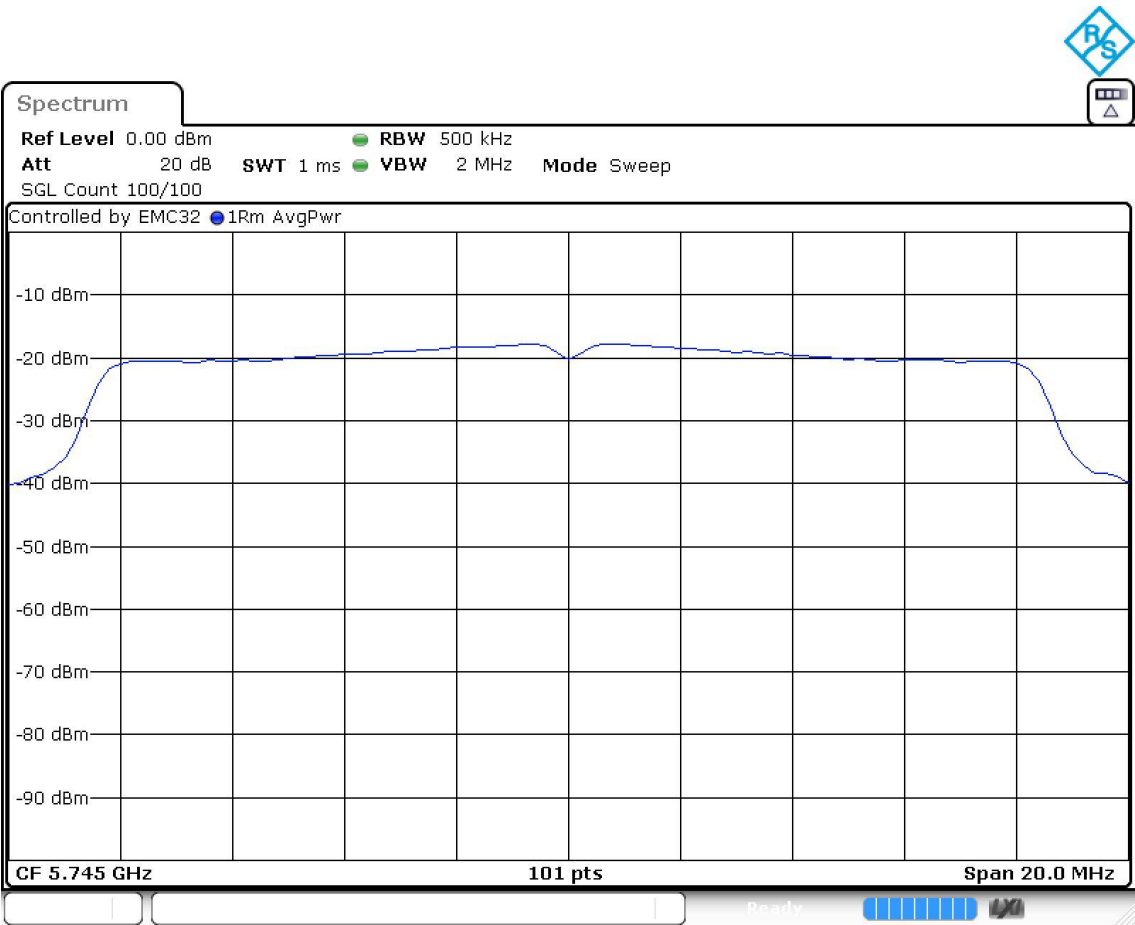
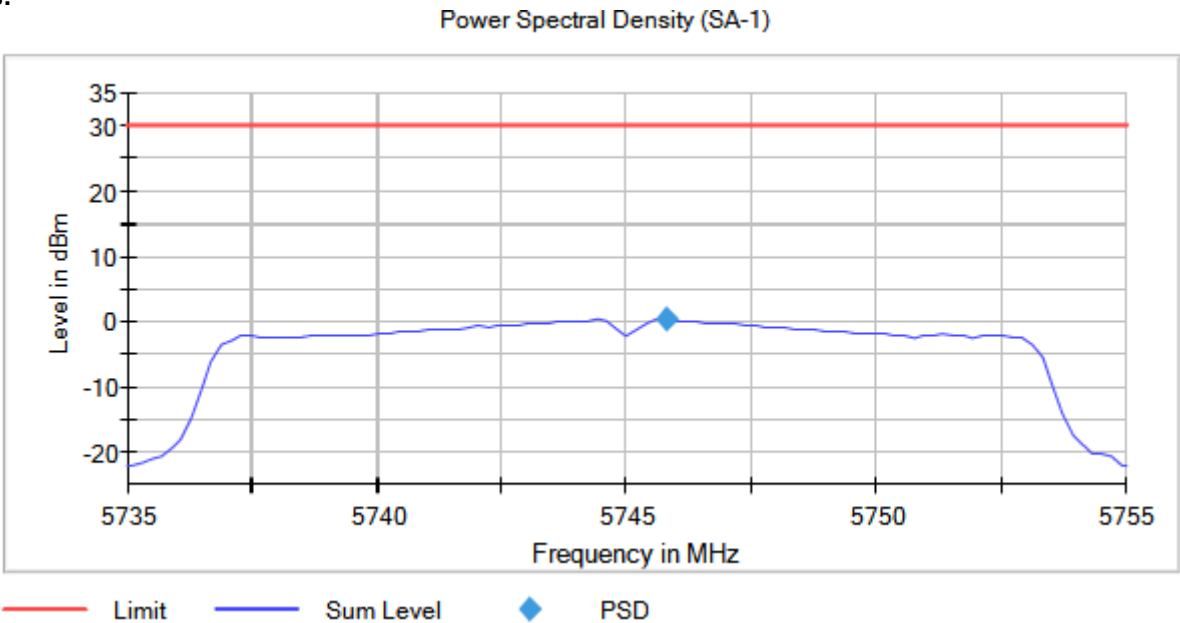
Verdict

Pass

Attachments

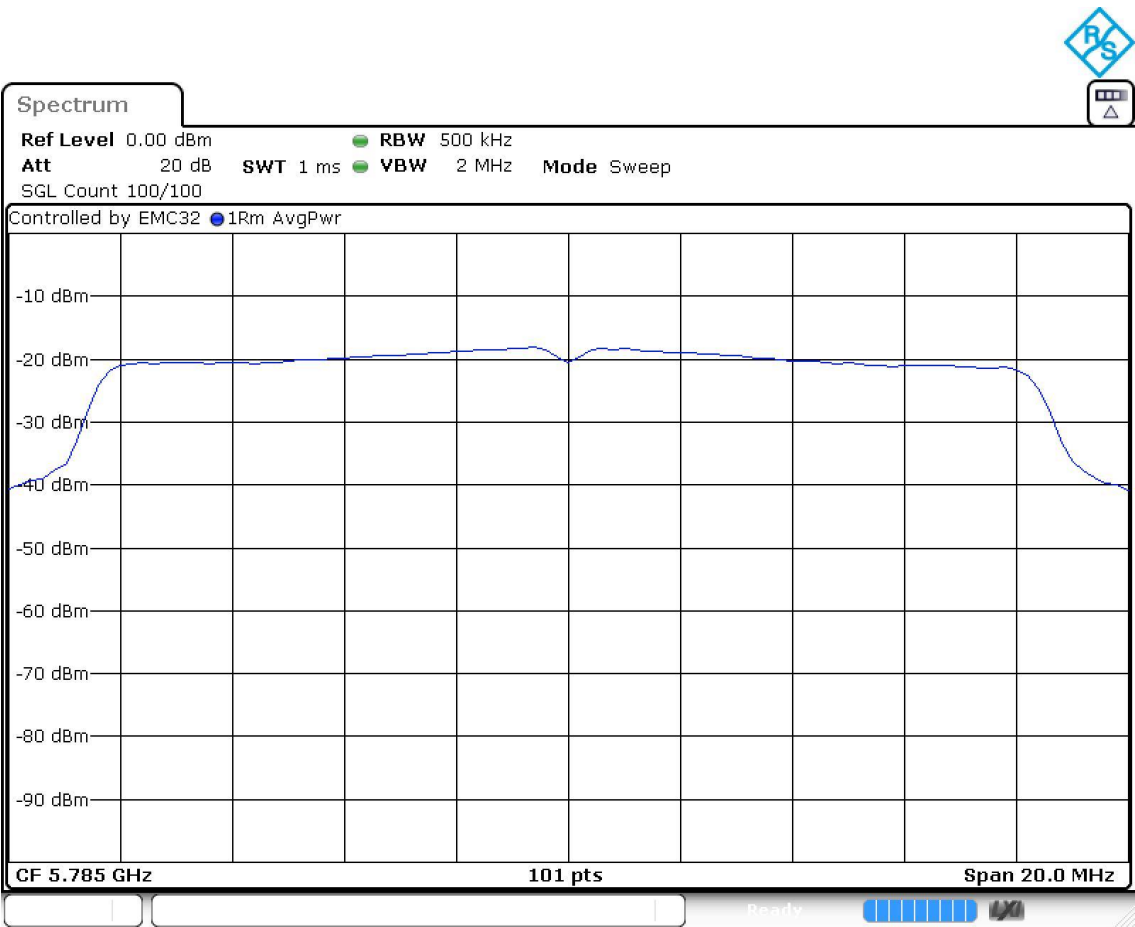
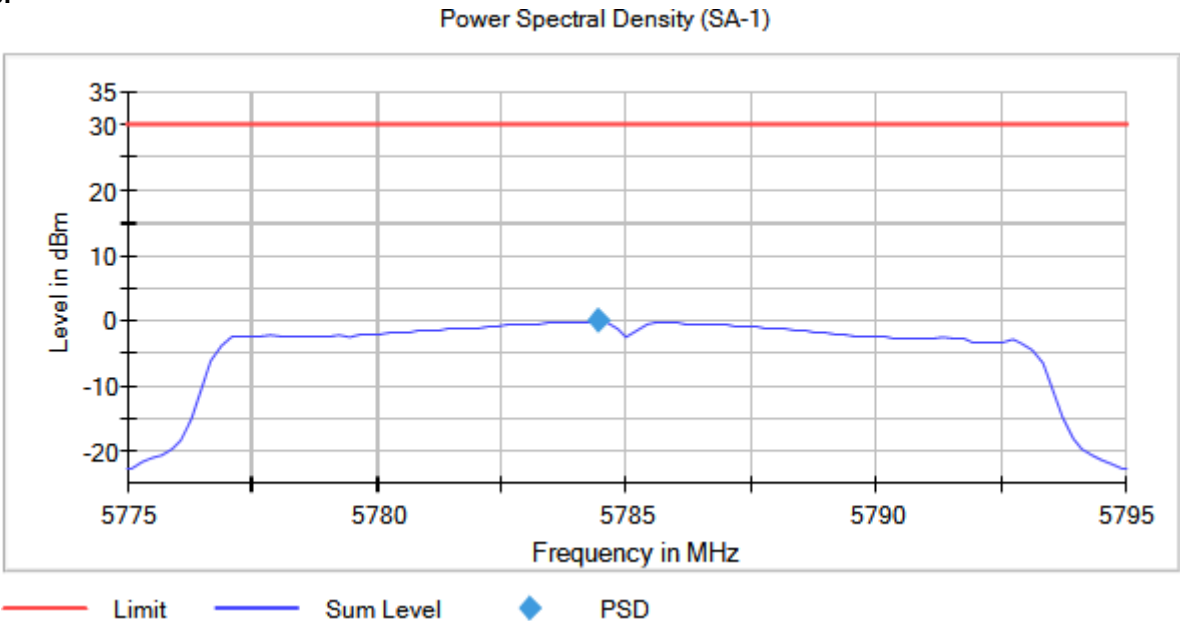
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



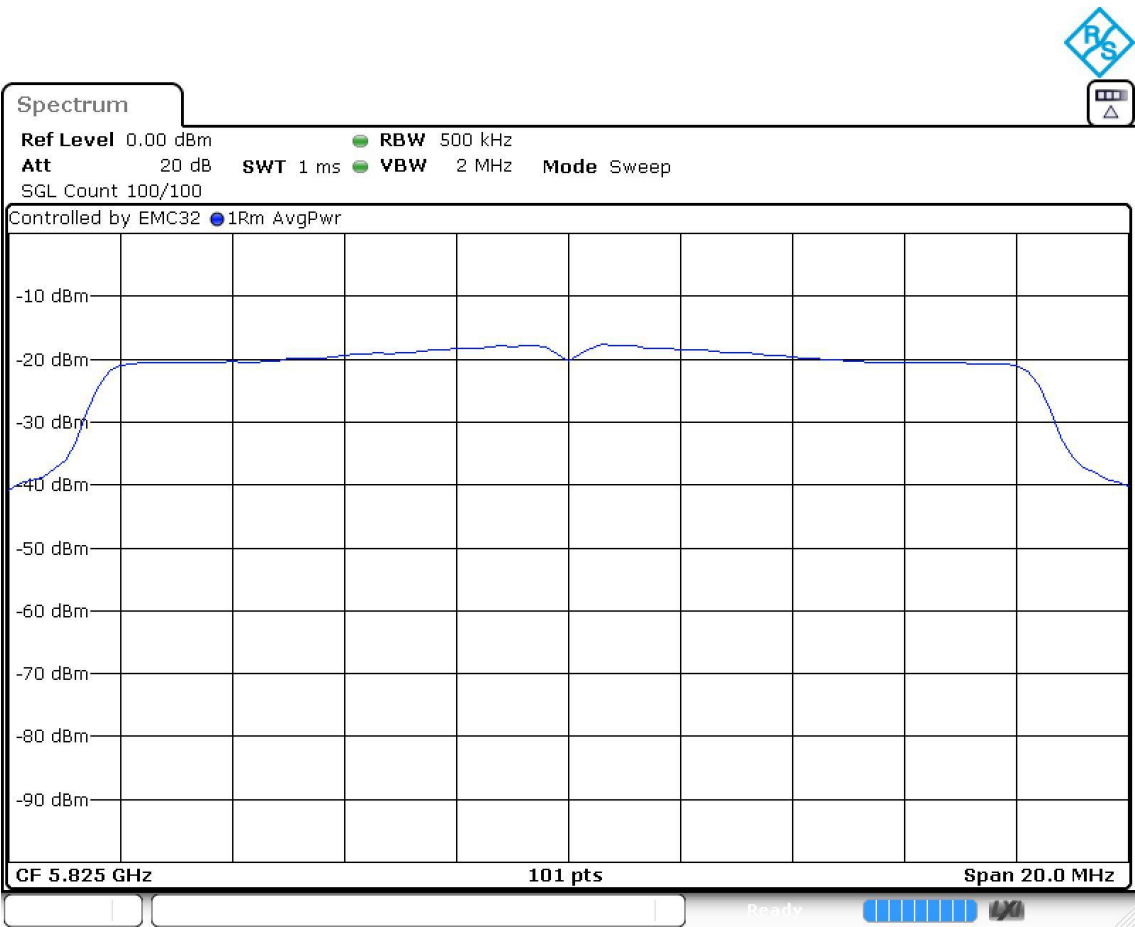
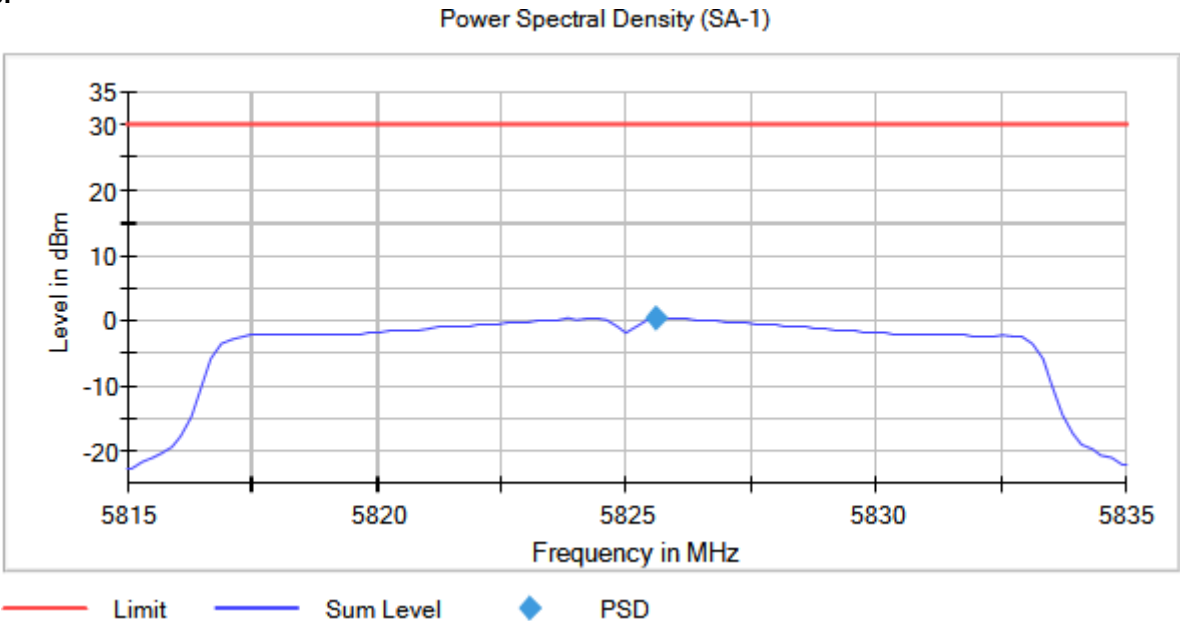
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5825.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
TPC = No MIMO Mode = SISO

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

MIMO Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	1	5745.00000	No	5745.594059	-2.13
		5785.00000		5785.594059	-2.20
		5825.00000		5824.405941	-1.57

Verdict

Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No MIMO Mode = SISO

Images:

