

Index

INDEX2

ACRONYMS3

COMPETENCES AND GUARANTEES3

GENERAL CONDITIONS3

UNCERTAINTY4

DATA PROVIDED BY THE CLIENT4

USAGE OF SAMPLES6

TEST SAMPLE DESCRIPTION7

IDENTIFICATION OF THE CLIENT8

TESTING PERIOD AND PLACE8

DOCUMENT HISTORY8

ENVIRONMENTAL CONDITIONS8

REMARKS AND COMMENTS9

TESTING VERDICTS10

SUMMARY10

TEST CONDITIONS12

APPENDIX A: TEST RESULTS OF COMMON REQUIREMENTS FOR ALL BANDS18

APPENDIX B: TESTS RESULTS FOR THE U-NII-1 BAND 5.15–5.25 GHZ90

APPENDIX C: TESTS RESULTS FOR THE U-NII-3: 5.725 GHZ – 5.85 GHZ BAND161

Acronyms

Acronym ID	Acronym Description
Avg Power	Maximum Average Conducted Output Power
DC	Duty Cycle
Ebw	Emission Bandwidth
Freq	Frequency
Max EIRP	Maximum Burst EIRP
Mod	Modulation
Mode	MIMO Mode
Occ Ch BW	Occupied Channel Bandwidth
Operation Band	Operation Band
PSD	Power Spectral Density
Port	Active Port
TPC	TPC

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the radiated emissions of EUT from 30 MHz to 1 GHz is:
Measurement uncertainty $\leq \pm 5,35$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 1 GHz to 17 GHz is:
Measurement uncertainty $\leq \pm 4,32$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 40 GHz is:
Measurement uncertainty $\leq \pm 5,55$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the conducted testing of EUT is:

RF Average Output Power: Measurement uncertainty $\leq \pm 2,01$ dB

Duty Cycle: Measurement uncertainty $\leq \pm 0,84$ ms

Power Spectral Density: Measurement uncertainty $\leq \pm 2,01$ dB

Occupied/26 dBc Bandwidth: Measurement uncertainty

$\leq \pm 57,76$ kHz for BW 20MHz;

$\leq \pm 115,53$ kHz for BW 40MHz; and

$\leq \pm 231,06$ kHz for BW 80MHz.

6 dB Bandwidth: Measurement uncertainty

$\leq \pm 34,67$ kHz for BW 20MHz;

$\leq \pm 46,22$ kHz for BW 40MHz; and

$\leq \pm 80,90$ kHz for BW 80MHz.

Conducted Band-edge spurious emissions: Measurement uncertainty $\leq \pm 2,57$ dB

DFS Channel closing & Move time: Measurement uncertainty $\leq \pm 0,84$ ms

DFS Detection Threshold Level: Measurement uncertainty $\leq \pm 1,81$ dB

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of an Headunit with Display and TP, USB, BT and WLAN.

3. Declaration of similarity for SW version:

HARMAN AUTOMOTIVE DIVISION
HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH
BECKER-GÖRING-STRASSE 16
76307 KARLSBAD, GERMANY
E-MAIL: STEFAN.BLASCHKE@HARMAN.COM



Harman Becker Automotive Systems GmbH | Postfach 2290 | 76303 Karlsbad
To whom it may concern

Karlsbad, 27.11.2024

SW-Declaration for model: SPACE 4 BASE 1.1A

Dear Ladies and Gentlemen,

we, Harman Becker Automotive Systems GmbH herewith confirm, that the product used for RED/FCC testing had the following HW/SW configuration:

Model: SPACE 4 BASE 1.1A
HW: DV2
SW: R11

Hint: On the product label you can find the SW version "SW: RB09.1.1" – this was printed in the production, but before doing the measurements the units have been updated.

In case of any question please do not hesitate and contact us. Thank you

Regards



Stefan Blaschek
Regulatory Compliance Management

Harman Infotainment Division
Harman Becker Automotive Systems GmbH
Becker-Göring-Straße 16
76307 Karlsbad
Mobile: +49 172 94 191 49
Email: stefan.blaschek@harman.com
Web: www.harman.com



Simon Vögele
Regulatory Compliance Management

Harman Infotainment Division
Harman Becker Automotive Systems GmbH
Becker-Göring-Straße 16
76307 Karlsbad
Mobile: +49 175 4366188
Email: simon.voegel@harman.com
Web: www.harman.com



Sitz der Gesellschaft: Karlsbad | Amtsgericht Mannheim: HRB-Nr. 361395

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results. The laboratory is not responsible for such information and it is not covered by accreditation.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	76426_14.1	Headunit	SPACE 4 BASE 1.1A	Z0681A000041379321A0694E0012	2024-09-30	Element Under Test
S/01	76426_15.1	PCB board	--	--	2024-09-30	Auxiliary Element
S/01	76426_16.1	USB cable	--	--	2024-09-30	Auxiliary Element
S/01	76426_17.1	Harness	--	--	2024-09-30	Auxiliary Element
S/02	76426_10.1	Headunit	SPACE 4 BASE 1.1A	Z0681A000041379321A0694E0010	2024-08-21	Element Under Test
S/02	76426_11.1	Harness	--	--	2024-08-21	Auxiliary Element
S/02	76426_12.1	USB cable	--	--	2024-08-21	Auxiliary Element
S/02	76426_13.1	PCB board	--	--	2024-08-21	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Sample used for radiated tests
S/02	Sample used for conducted tests

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾		
		Main Connector	2m	[X]	[]	[]	
		USB Connector		[X]	[X]	[]	
		GPS/FVC/RVC		[X]	[X]	[]	
--							
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:	[]	[]	[]	[]	[]
[X]	DC: 12V car battery /attenuator (9,5-15,5v normal operation)						
Rated Power	--						
Clock frequencies.....	--						
Other parameters	--						
Software version	R11						
Hardware version	DV2						
Dimensions in cm (W x H x D)	--						
Mounting position	[]	Table top equipment					
	[]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					
	[X]	Other: automotive					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		
	--						
Accessories (not part of the test item)	Description		Type		Manufacturer		
	--						
Documents as provided by the applicant	Description		File name		Issue date		
	--						

⁽³⁾ Only for Medical Equipment

Identification of the client

HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH
Becker-Goering-Str. 16
76307, Karlsbad, GERMANY

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2024-10-30
Date (finish)	2024-11-25

Document history

Report number	Date	Description
80708RRF.007	2024-12-11	First release.
80708RRF.007A1	2024-12-19	Second release. Modification to add missing info. This test report replaces and cancels the test report 80708RRF.007

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Carmen Vázquez and Sergio Carrasco.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
06791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	N/A
06792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06609	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2025-04-22
06615	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2025-04-04
07817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2026-07-01
06143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2027-01-22
06142	PRE-AMPLIFIER G>38dB 30MHz-6GHz	BLNA 0360-01N	BONN ELEKTRONIK	2025-07-25
06496	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK	2026-12-01
03783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2025-03-15
04657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2026-06-12
08856	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-4A	BONN ELEKTRONIK	2025-02-27
07445	DC POWER SUPPLY 30V/5A	U8002A	KEYSIGHT TECHNOLOGIES	N/A
07760	DIGITAL MULTIMETER	175	FLUKE	2025-11-07
04848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	N/A
06793	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06611	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2025-04-04
06668	SIGNAL AND SPECTRUM ANALYZER 10Hz-40GHz	FSV40	ROHDE AND SCHWARZ	2024-12-14
08848	OPEN SWITCH UNIT UP TO 7.5 GHz	OSP-B157W8 PLUS	ROHDE & SCHWARZ	2024-12-21
07040	EXTENSION FOR OPEN SWITCH UNIT UP TO 40GHz	OSP-B157Wx	ROHDE AND SCHWARZ	2025-04-19
00922	POWER SUPPLY DC 40 V / 40 A	NGPE 40/40	ROHDE AND SCHWARZ	2027-10-02
05850	DIGITAL MULTIMETER	179	FLUKE	2025-11-04
07798	WMS32	WMS32	ROHDE AND SCHWARZ	N/A

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

Summary

Appendix A. Common requirements for all Bands:

FCC PART 15 PARAGRAPH / RSS-247		
Requirement – Test case	Verdict	Remark
RSS-Gen 6.10. / FCC 15.35 Subclause (c). Transmitter. Duty Cycle	P	--
RSS-Gen section 6.7. Transmitter. 99% Occupied Bandwidth	P	--
RSS-Gen section 6.7 / FCC 15.407 (a)(2). Transmitter. 26 dB Emission Bandwidth (EBW)	P	--
<u>Supplementary information and remarks:</u> None		

Appendix B. U-NII-1: 5.15 GHz – 5.25 GHz Band:

FCC PART 15 PARAGRAPH / RSS-247		
Requirement – Test case	Verdict	Remark
FCC 15.407 (a)(1)(iv) Transmitter Maximum Conducted Output Power	P	--
RSS-247 6.2.1.1 Transmitter Maximum Equivalent Isotropically Radiated Power EIRP	P	--
FCC 15.407 (a)(1)(iv) Transmitter Maximum Power Spectral Density	P	--
RSS-247 6.2.1.1 Transmitter EIRP Spectral Density	P	--
FCC 15.407 (b)(1)(6) / RSS-247 6.2.1.2 Transmitter Out of Band Radiated Emissions	P	--
FCC 15.407 (b)(1) / RSS-247 6.2.1.2 Transmitter Band Edge Radiated Emissions	P	--
<u>Supplementary information and remarks:</u> None.		

Appendix C. U-NII-3: 5.725 GHz – 5.85 GHz Band:

FCC PART 15			
Requirement – Test case		Verdict	Remark
FCC 15.407 (e) / RSS-247 Clause 6.2.4.1	6 dB Bandwidth.	P	--
FCC 15.407 (a)(3) / RSS-247 6.2.4.1	Transmitter Maximum conducted Output Power	P	--
FCC 15.407 (a)(3) / RSS-247 Clause 6.2.4.1	Transmitter Maximum Power Spectral Density	P	--
FCC 15.407 (b) (4) / RSS-247 6.2.4.2	Transmitter Band Edge Radiated Emissions	P	--
FCC 15.407 (b) (4) (6) / RSS-247 6.2.4.2	Transmitter Out of Band Radiated Emissions	P	--
<u>Supplementary information and remarks:</u>			
None.			

TEST CONDITIONS

(*) Declared by the Client.

POWER SUPPLY (*):

Vnominal: 12Vdc
Type of Power Supply: Car battery / alternator

ANTENNA (*):

Type of Antennas: Integral antenna
Maximum Declared Antenna Gain: +5.7 dBi

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

TEST FREQUENCIES (*):

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

Band U-NII-1:

Operating Channel Bandwidth:	20 MHz	
Transmission Channels:	Channels	Channel Frequency (MHz)
	Low (36)	5180
	Middle (44)	5220
	High (48)	5240
Operating Channel Bandwidth:	40 MHz	
Transmission Channels:	Channels	Channel Frequency (MHz)
	Low (38)	5190
	High (46)	5230
Operating Channel Bandwidth:	80 MHz	
Transmission Channels:	Channels	Channel Frequency (MHz)
	Single (42)	5210

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:

FCC:

Mode	POWER CONFIGURED FOR TESTING					
	Ch.36	Ch.44	Ch.48	Ch.149	Ch.157	Ch.165
802.11a	15	15	15	15	15	15
802.11n-20	15	15	15	15	15	15
11ac-20	15	15	15	15	15	15
Mode	Ch.38	Ch.46	Ch.151	Ch.159		
11n-40	15	15	15	15		
11ac-40	15	15	15	15		
Mode	Ch.42	Ch.155				
11ac-80	15	15				

ISED:

Mode	POWER CONFIGURED FOR TESTING					
	Ch.36	Ch.44	Ch.48	Ch.149	Ch.157	Ch.165
802.11a	11	11	11	15	15	15
802.11n-20	11	11	11	15	15	15
11ac-20	11	11	11	15	15	15
Mode	Ch.38	Ch.46	Ch.151	Ch.159		
11n-40	11	11	15	15		
11ac-40	11	11	15	15		
Mode	Ch.42	Ch.155				
11ac-80	11	15				

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 power setting according the table on 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.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing. They correspond to the next data rates:

- 802.11a: 6 Mbps SISO
- 802.11n HT20: MCS0 SISO
- 802.11n HT40: MCS0 SISO
- 802.11ac VHT20: MCS0 SISO
- 802.11ac VHT40: MCS0 SISO
- 802.11ac VHT80: MCS0 SISO

CONDUCTED MEASUREMENTS:

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



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-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

For radiated emissions in the range 17 GHz-26 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.

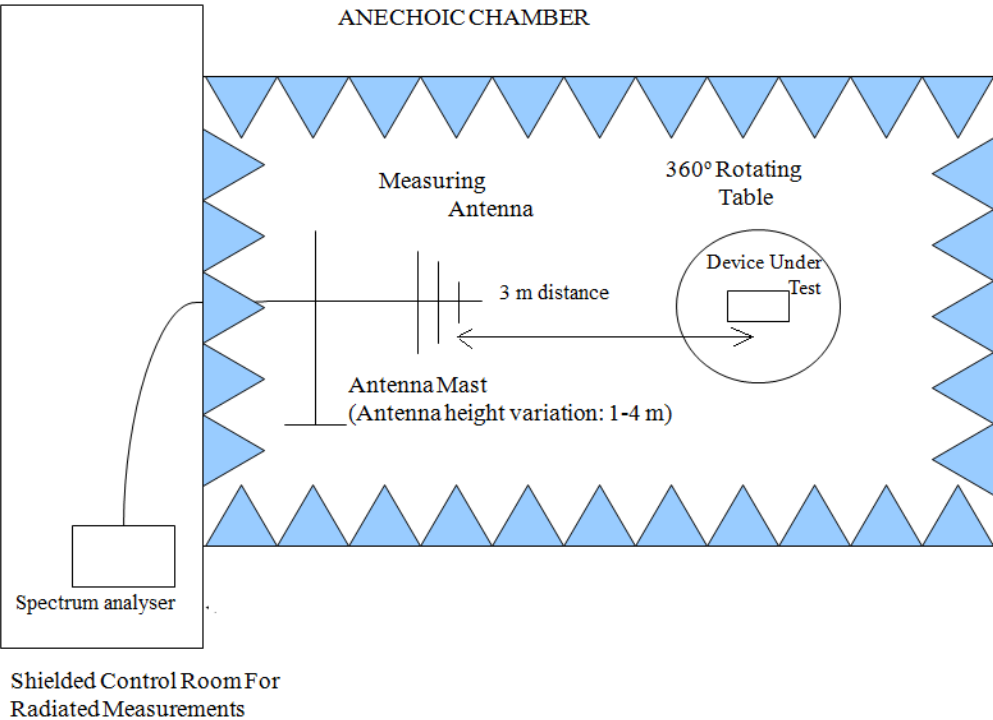
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find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

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

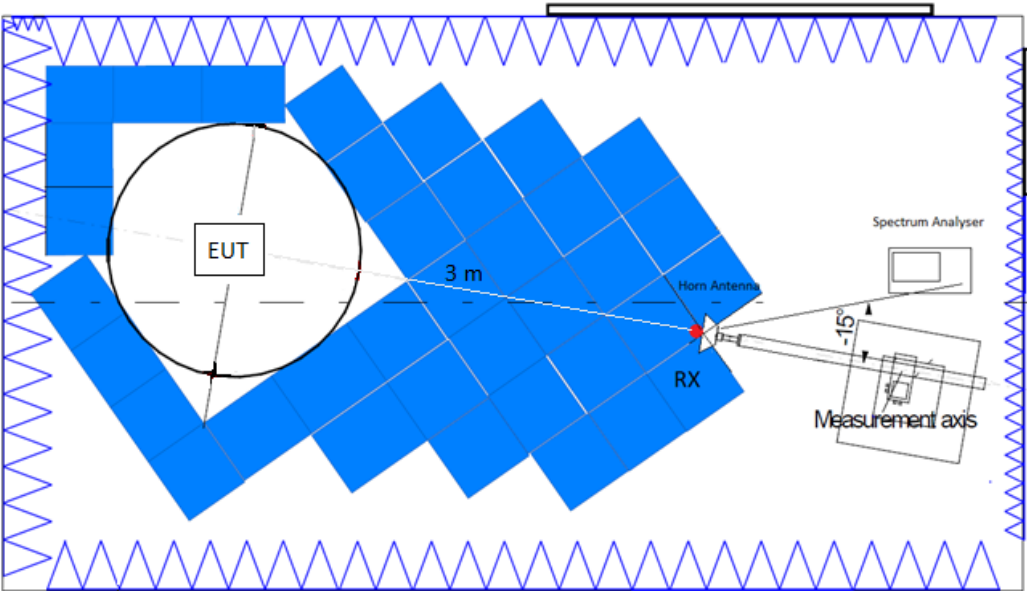
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

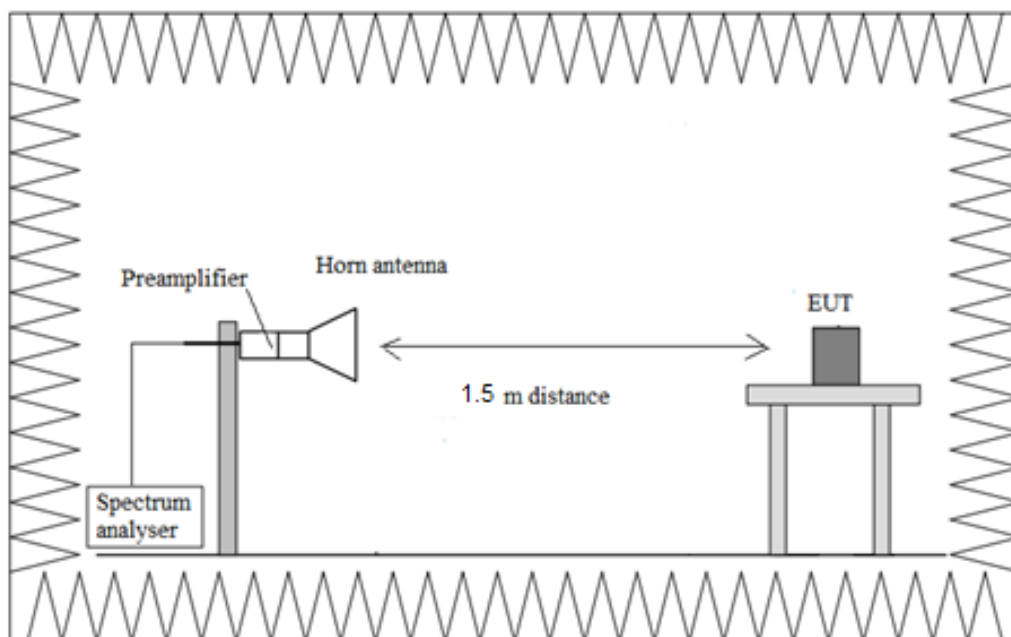
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



Appendix A: Test results of Common requirements for all Bands

INDEX

TEST CASES DETAILS20

RSS-Gen section 6.7. Transmitter. 99% Occupied Bandwidth20

RSS-Gen 6.10. / Section 15.35 Subclause (c) Duty Cycle.....54

RSS-Gen section 6.7 / FCC 15.407 (a)(2). Transmitter. 26 dB Emission Bandwidth (EBW).....56

TEST CASES DETAILS

RSS-Gen section 6.7. Transmitter. 99% Occupied Bandwidth

Limit

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

The following conditions shall be observed for measuring the occupied bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Occ Ch BW (MHz)
[5150, 5250]	1	5180.00000	16.900
		5220.00000	16.900
		5240.00000	16.900
[5725, 5850]		5745.00000	17.000
		5785.00000	16.900
		5825.00000	17.000

Verdict

Pass

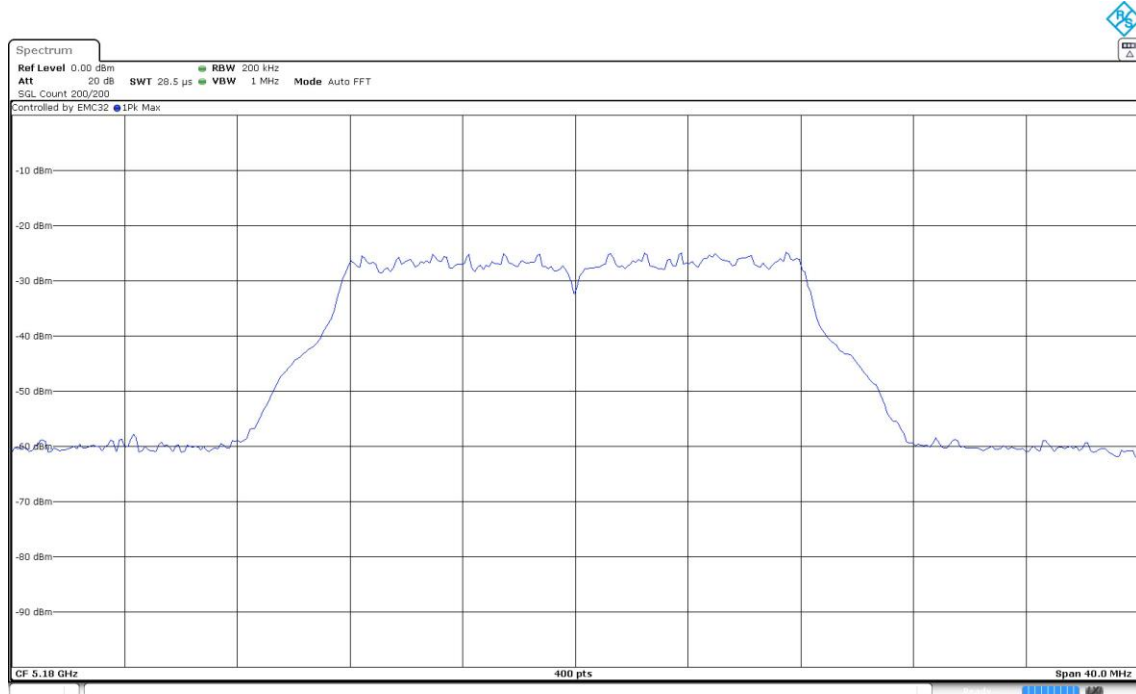
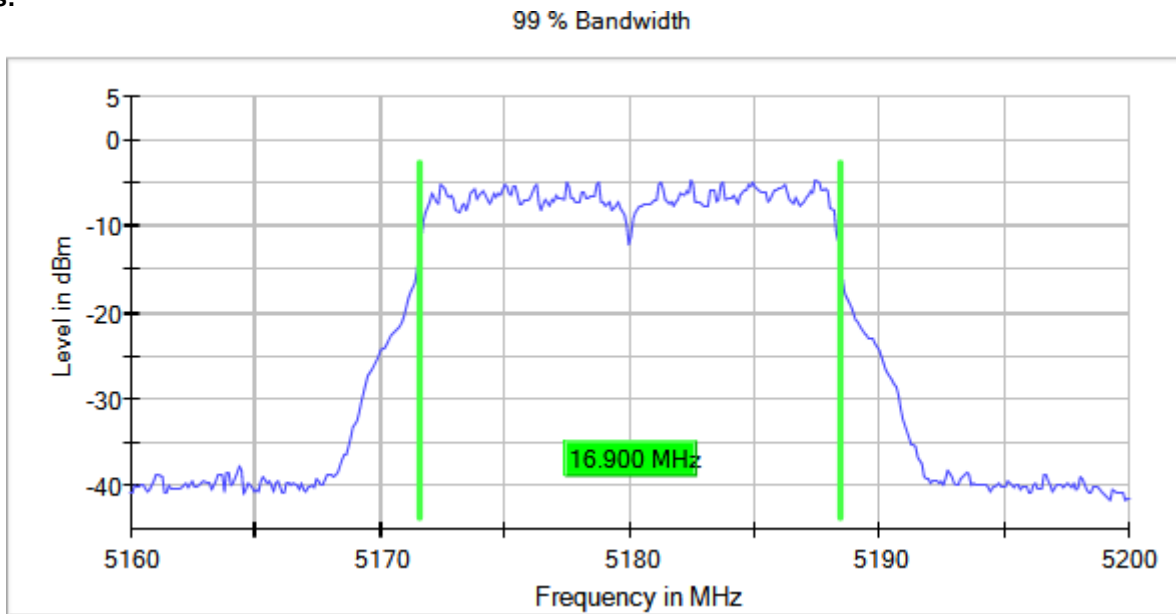
Attachments

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

Frequency MHz = 5180.00000 Modulation = 802.11a (OFDM 6 Mbit/s)

MIMO Mode = SISO

Images:



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

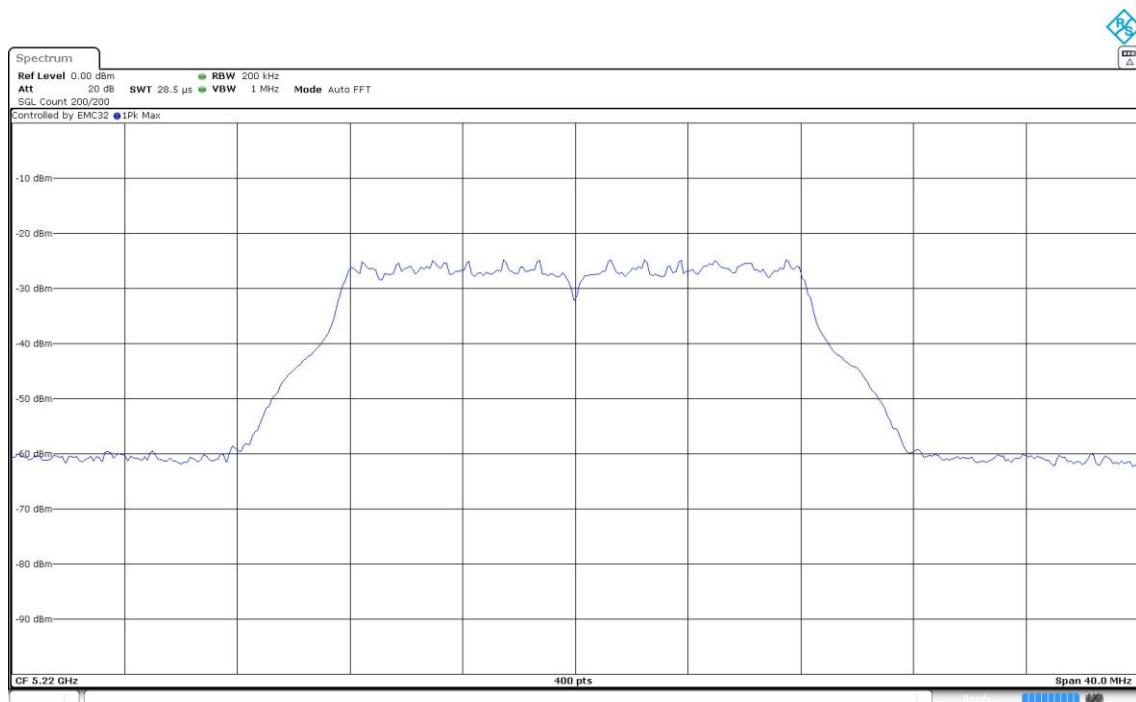
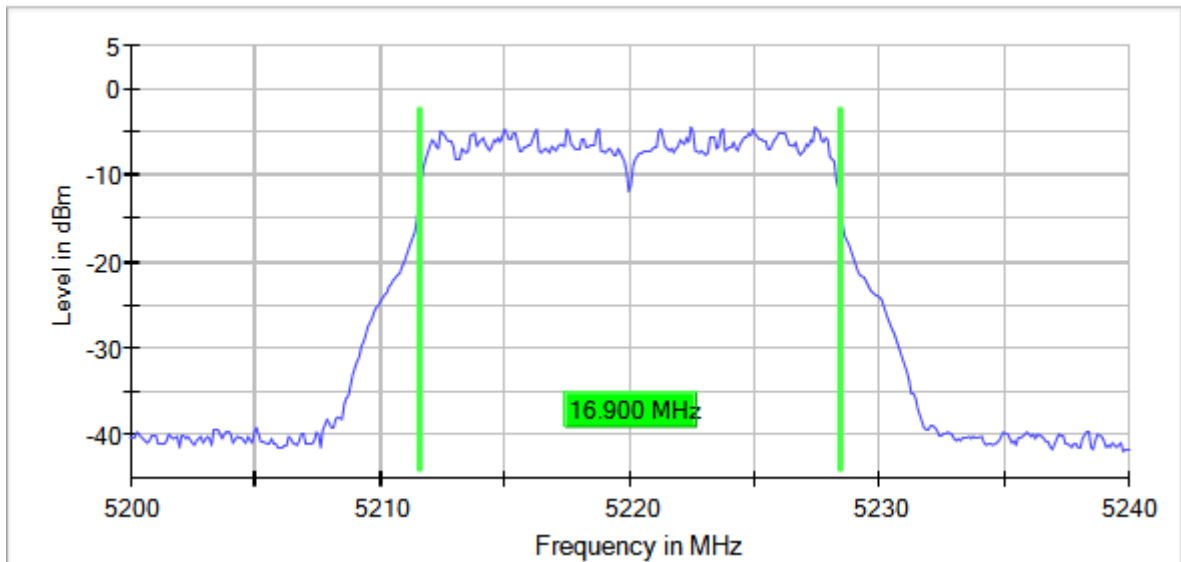
Frequency MHz = 5220.00000

Modulation = 802.11a (OFDM 6 Mbit/s)

MIMO Mode = SISO

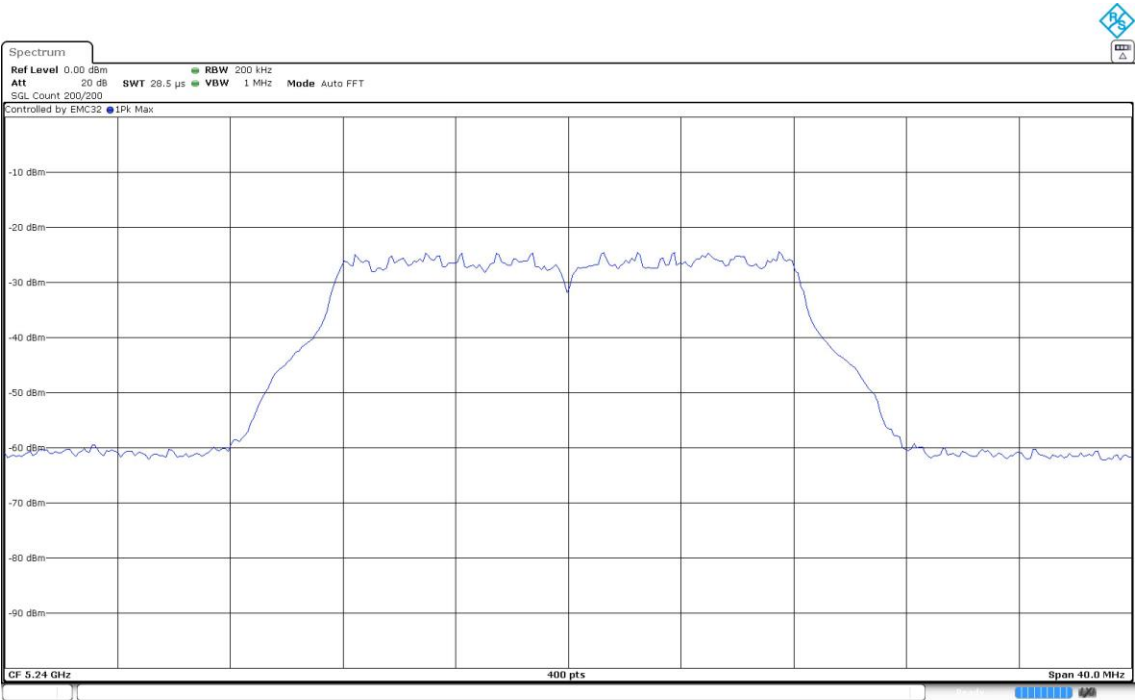
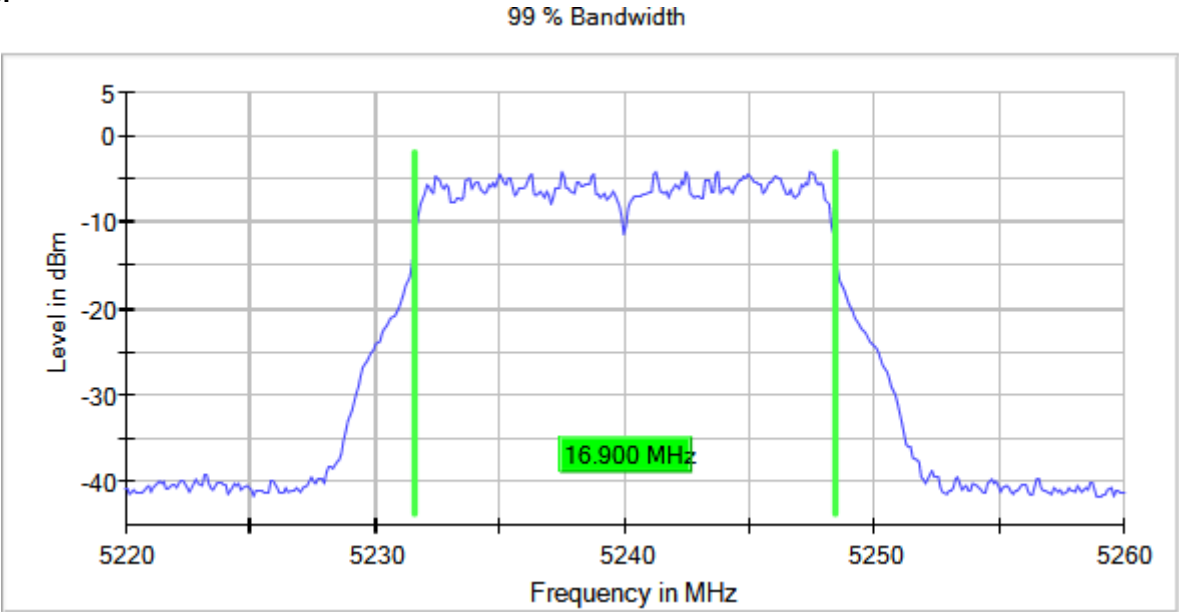
Images:

99 % Bandwidth



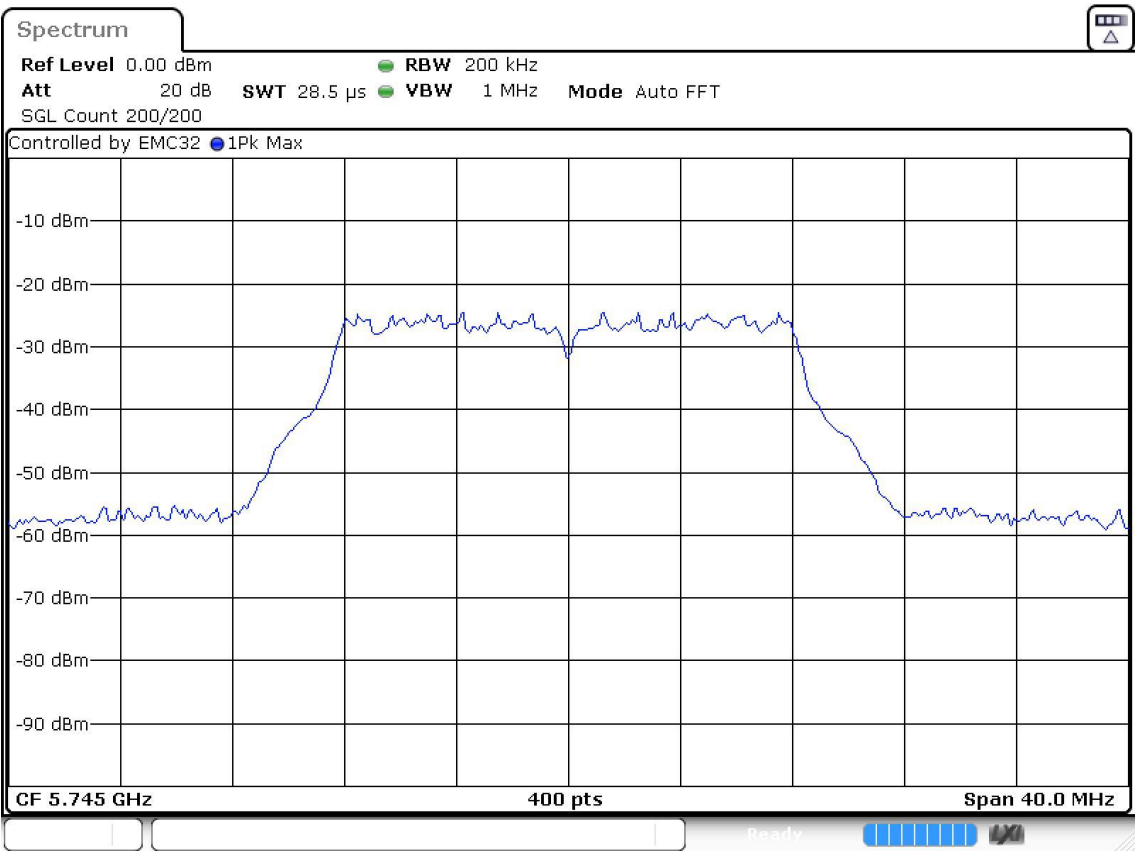
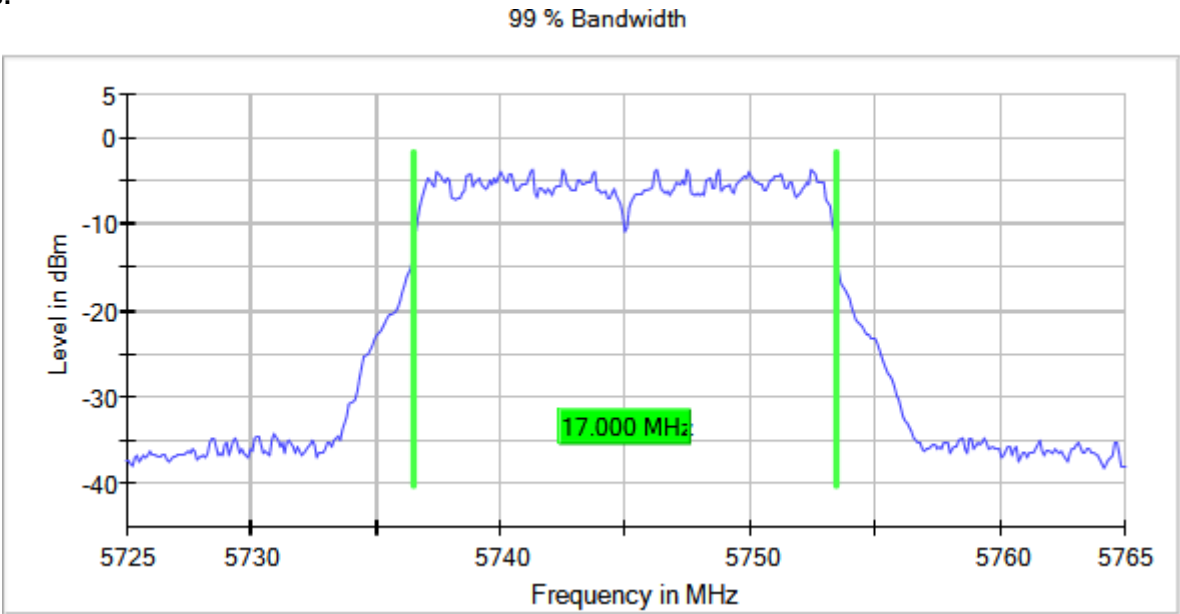
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5240.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



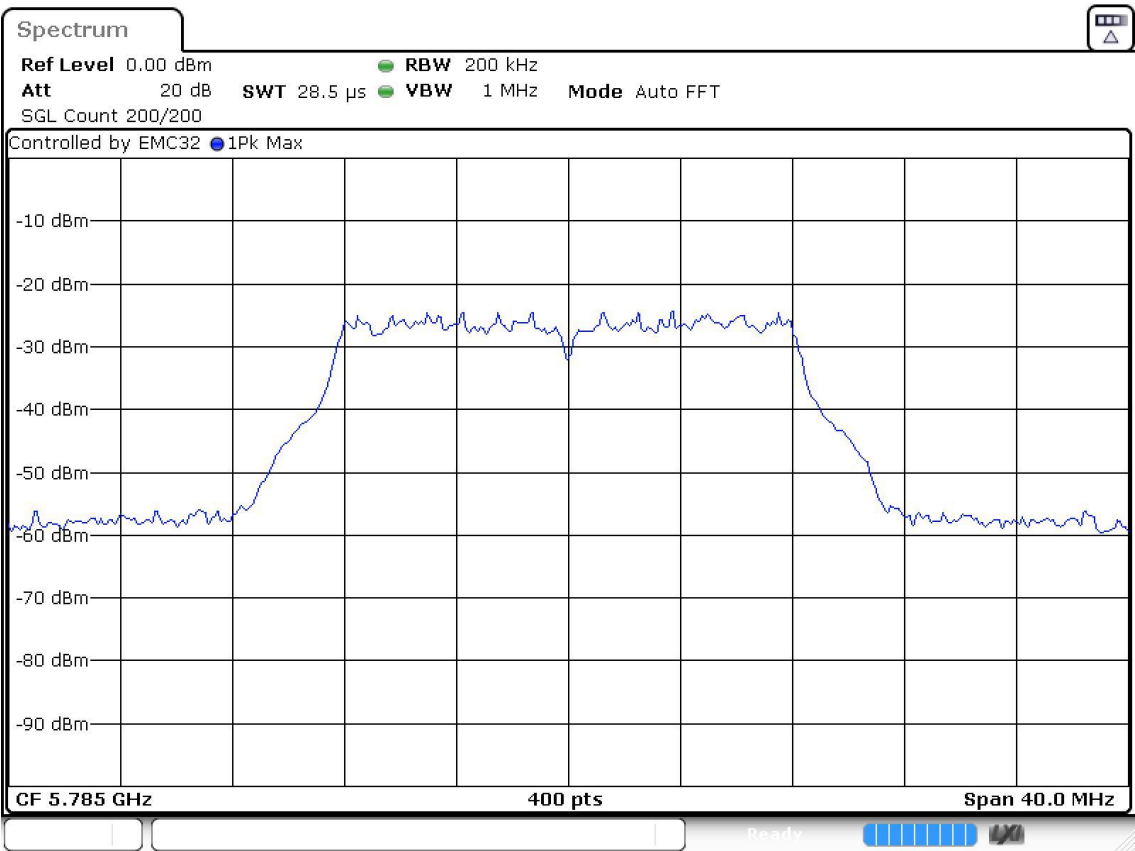
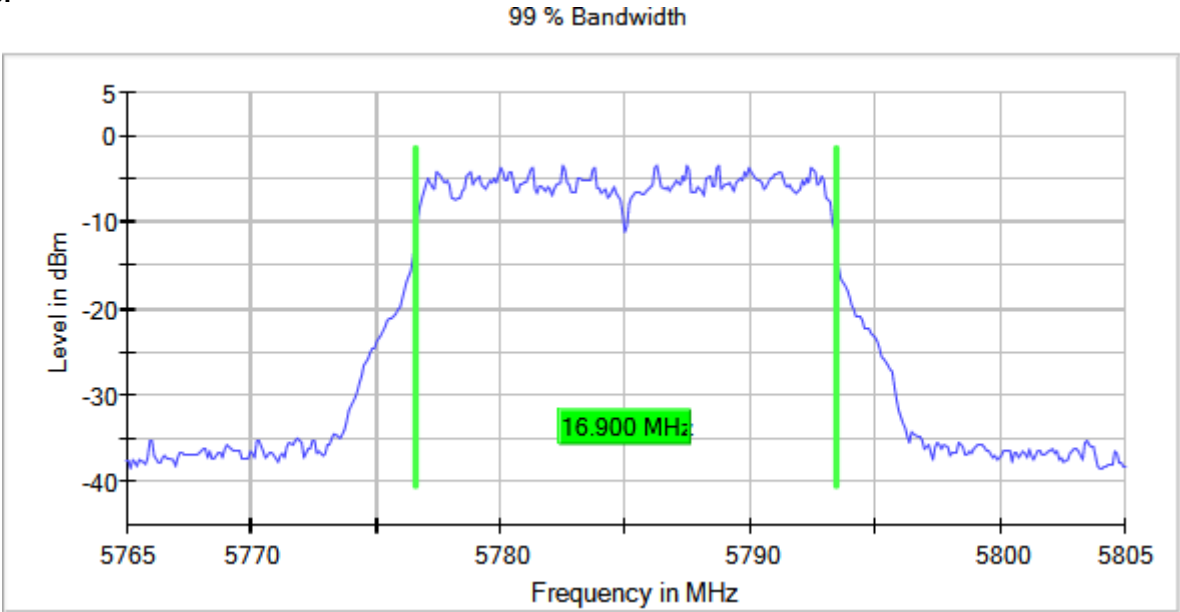
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



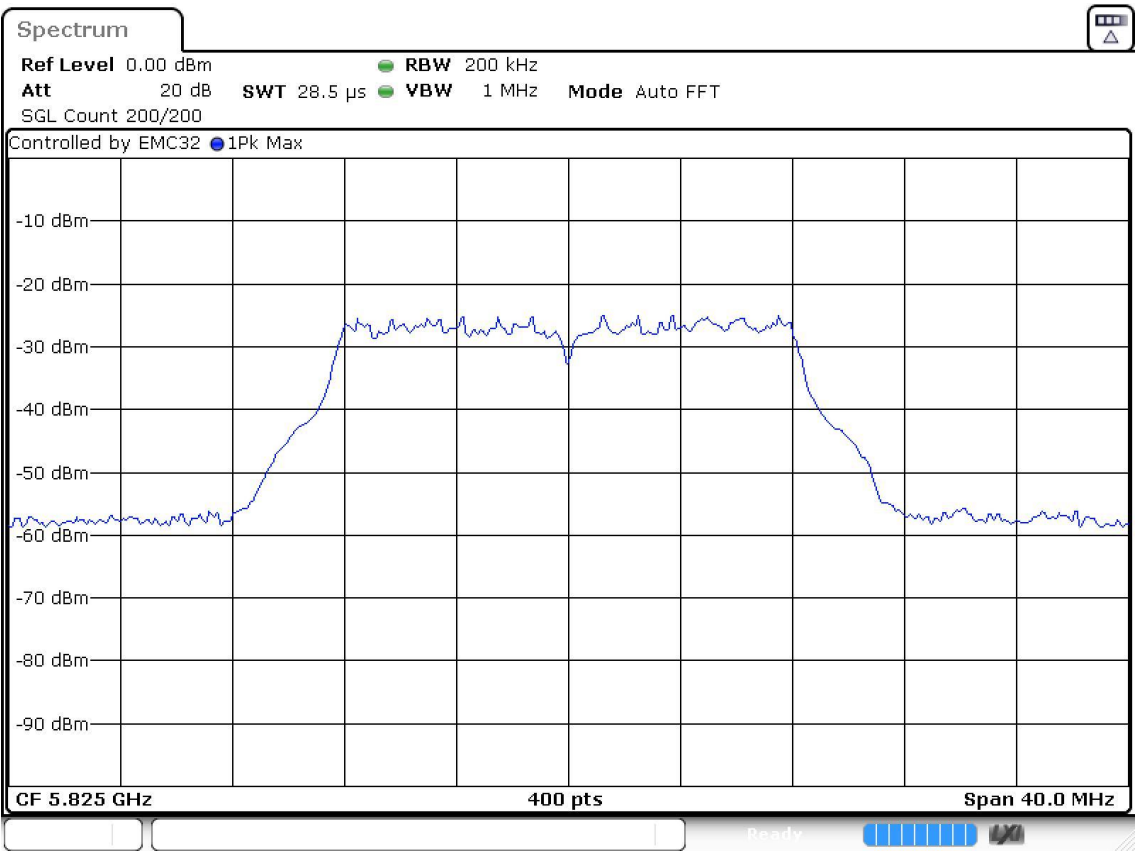
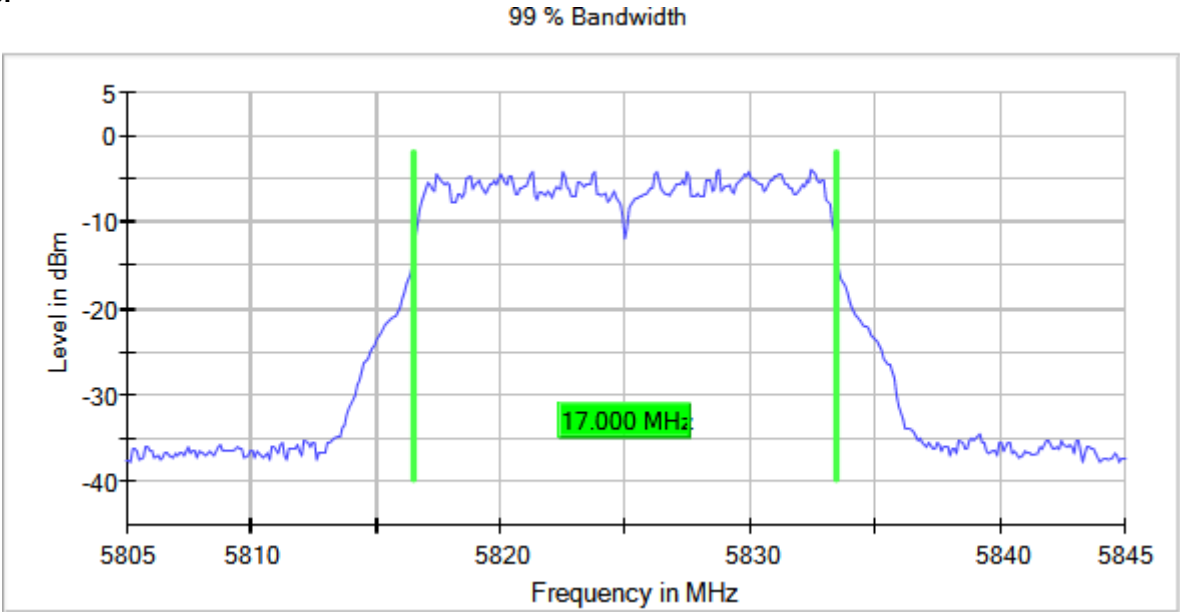
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

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)	Occ Ch BW (MHz)
[5150, 5250]	1	5180.00000	18.100
		5220.00000	18.100
		5240.00000	18.000
[5725, 5850]		5745.00000	18.000
		5785.00000	18.200
		5825.00000	18.200

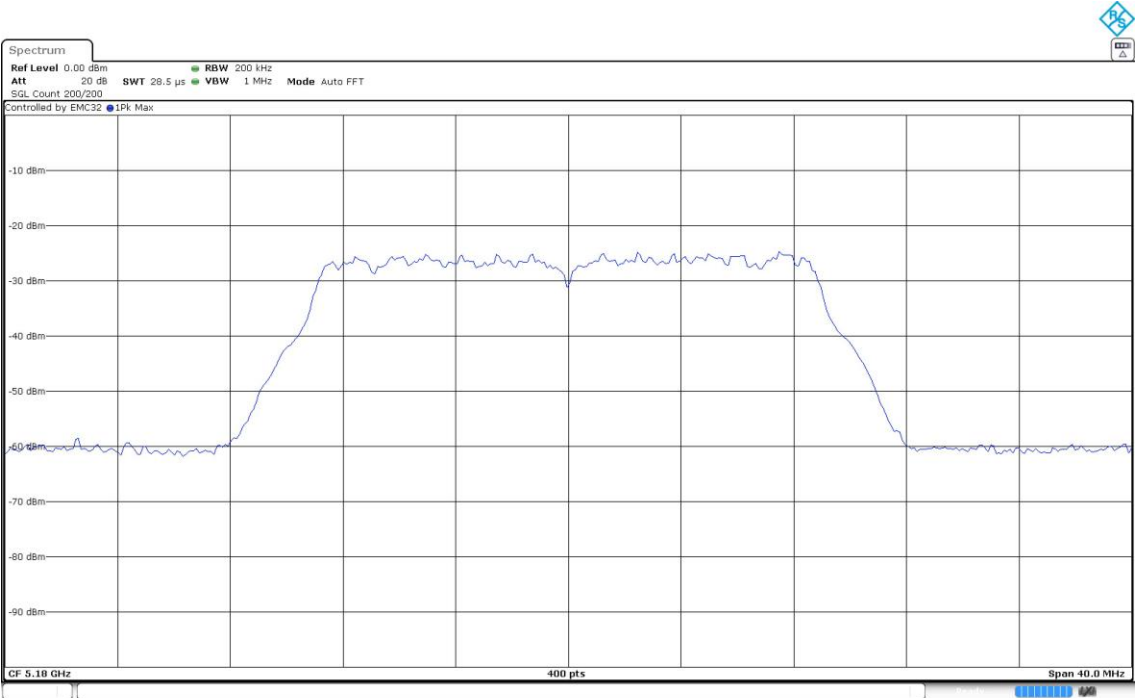
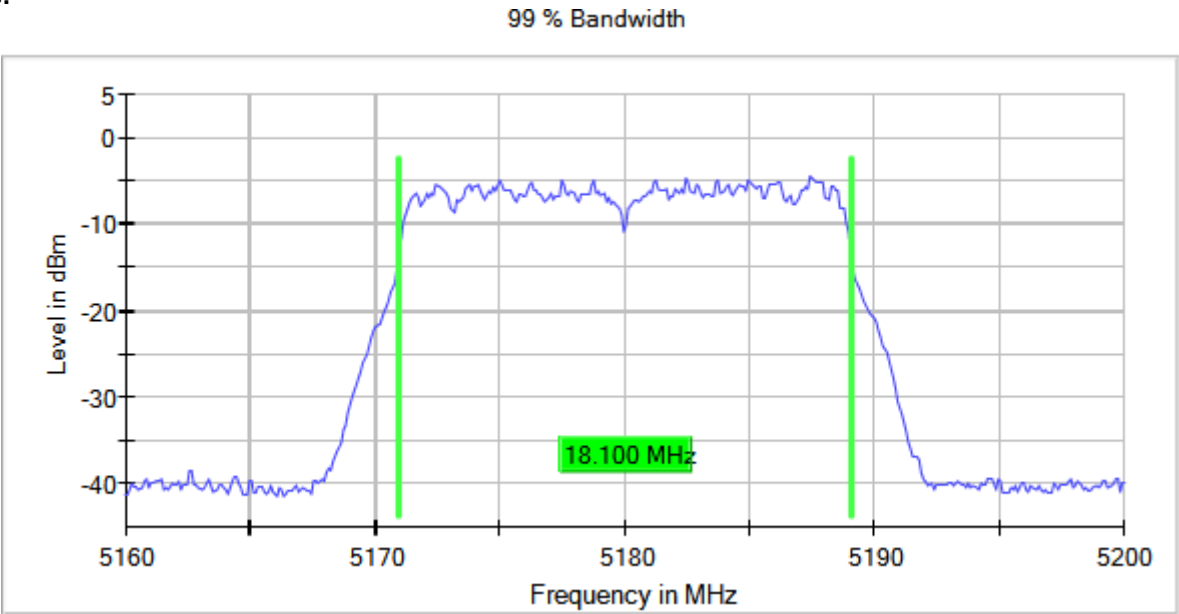
Verdict

Pass

Attachments

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

Images:



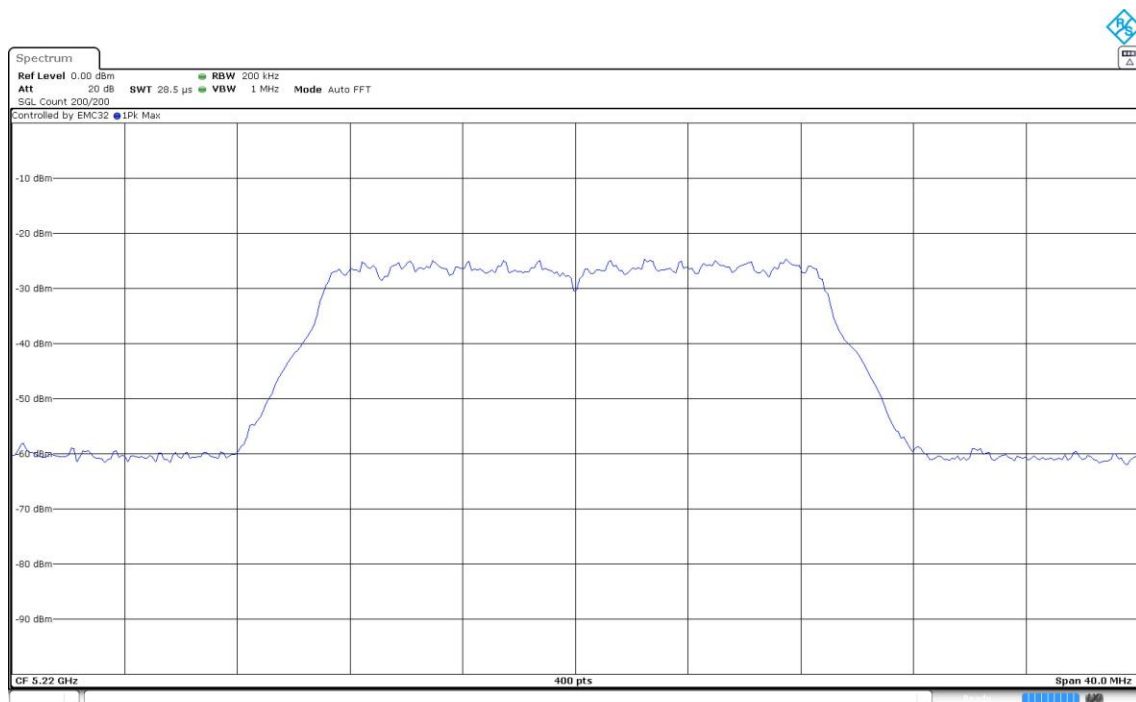
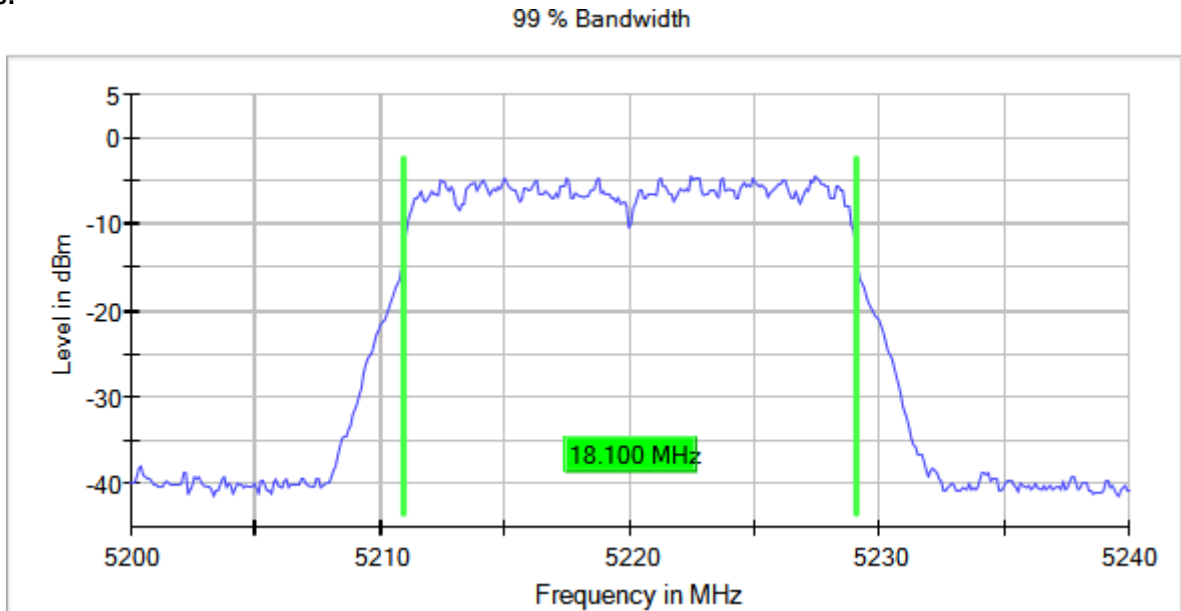
Operation Band MHz = [5150, 5250] Active Port = 1

Frequency MHz = 5220.00000

Modulation = 802.11ac VHT20 (OFDM MCS0)

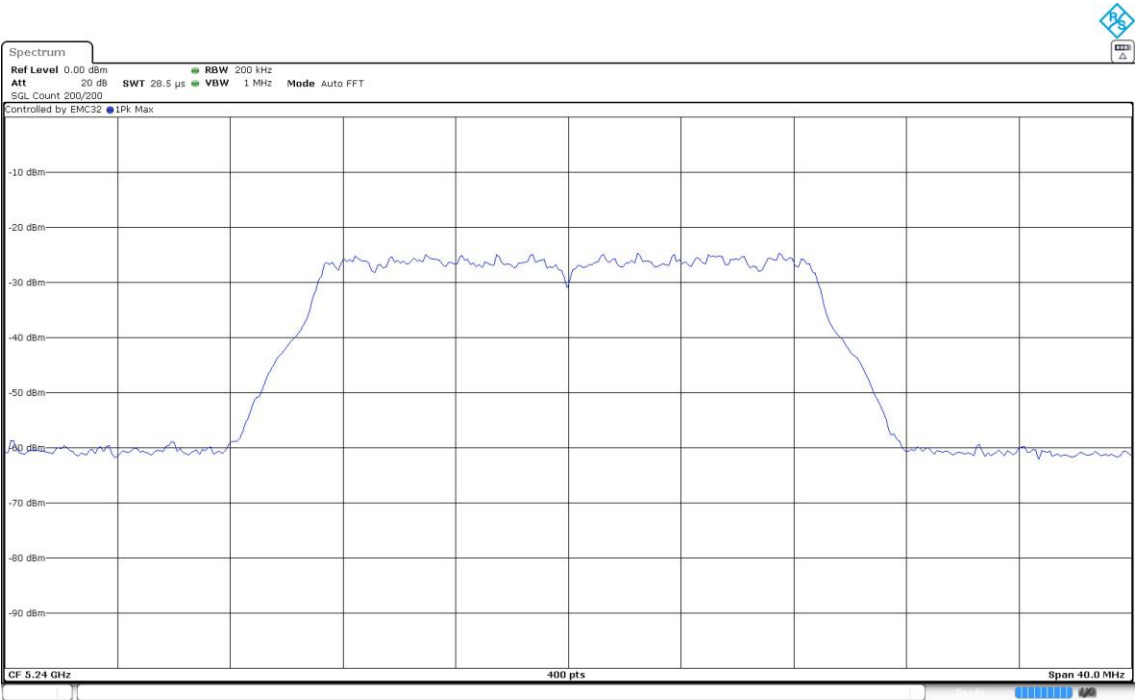
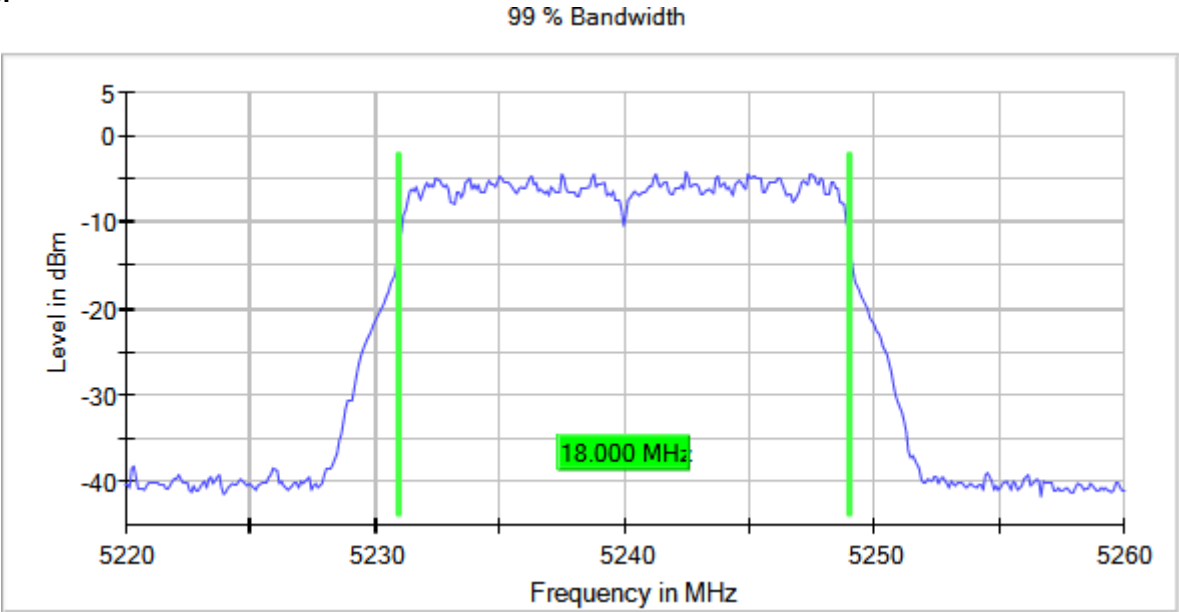
MIMO Mode = SISO

Images:



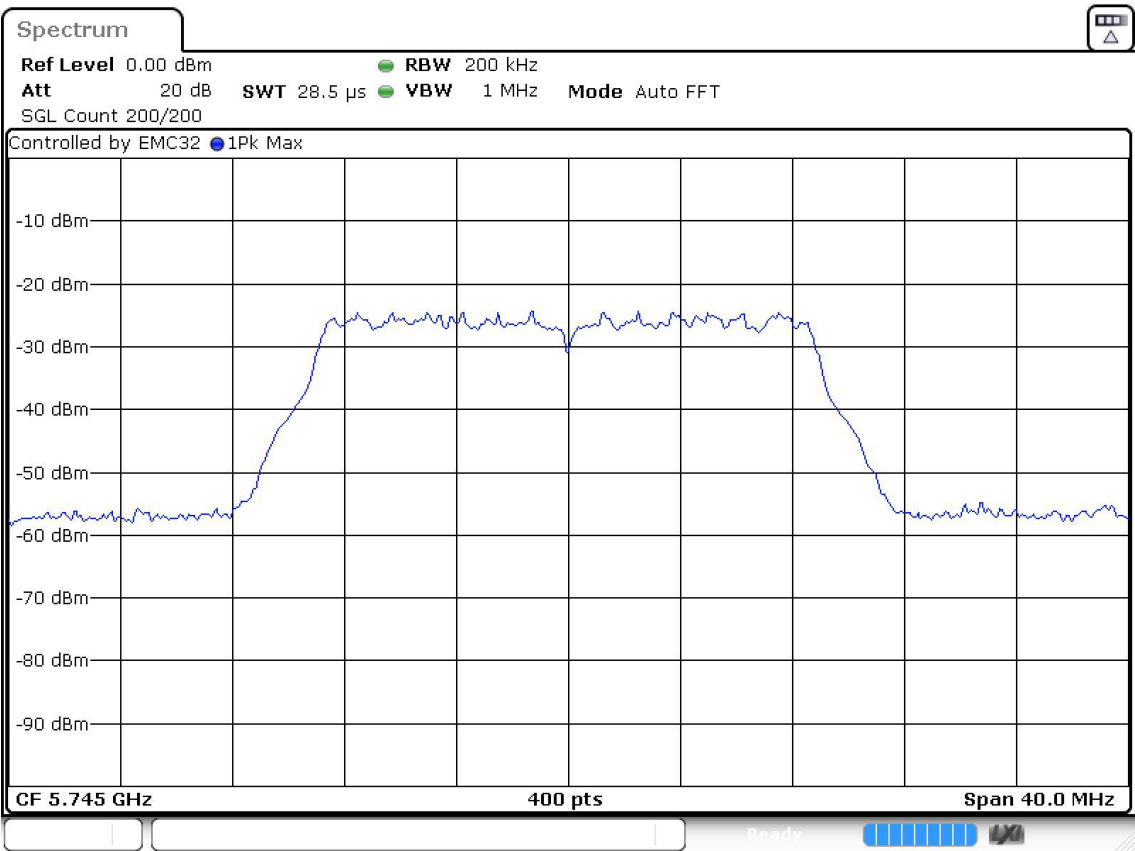
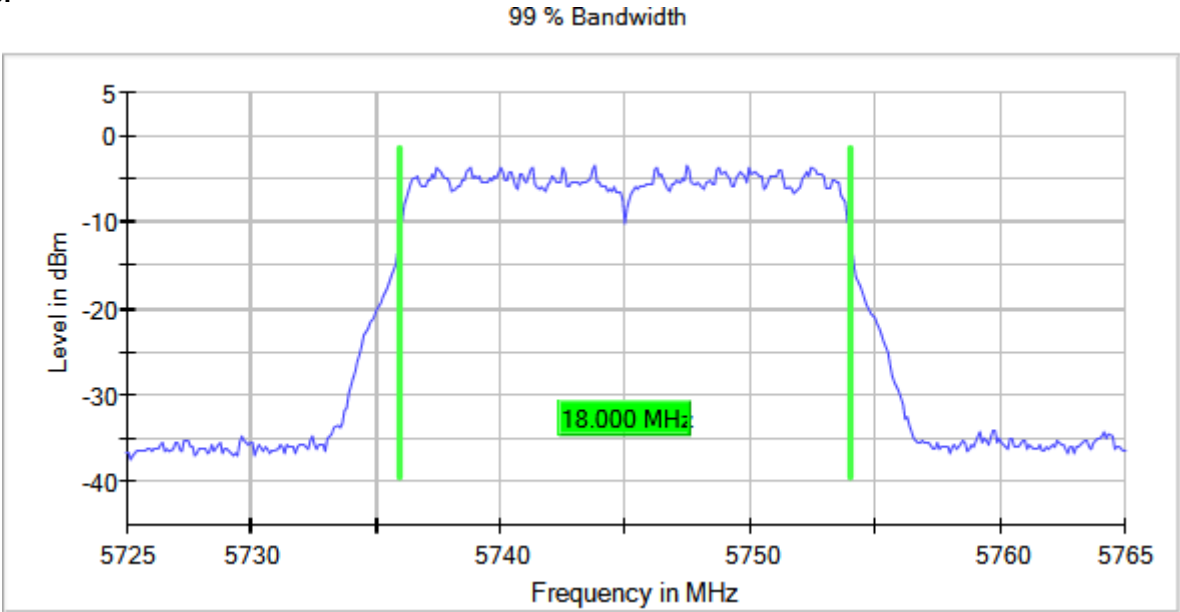
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5240.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



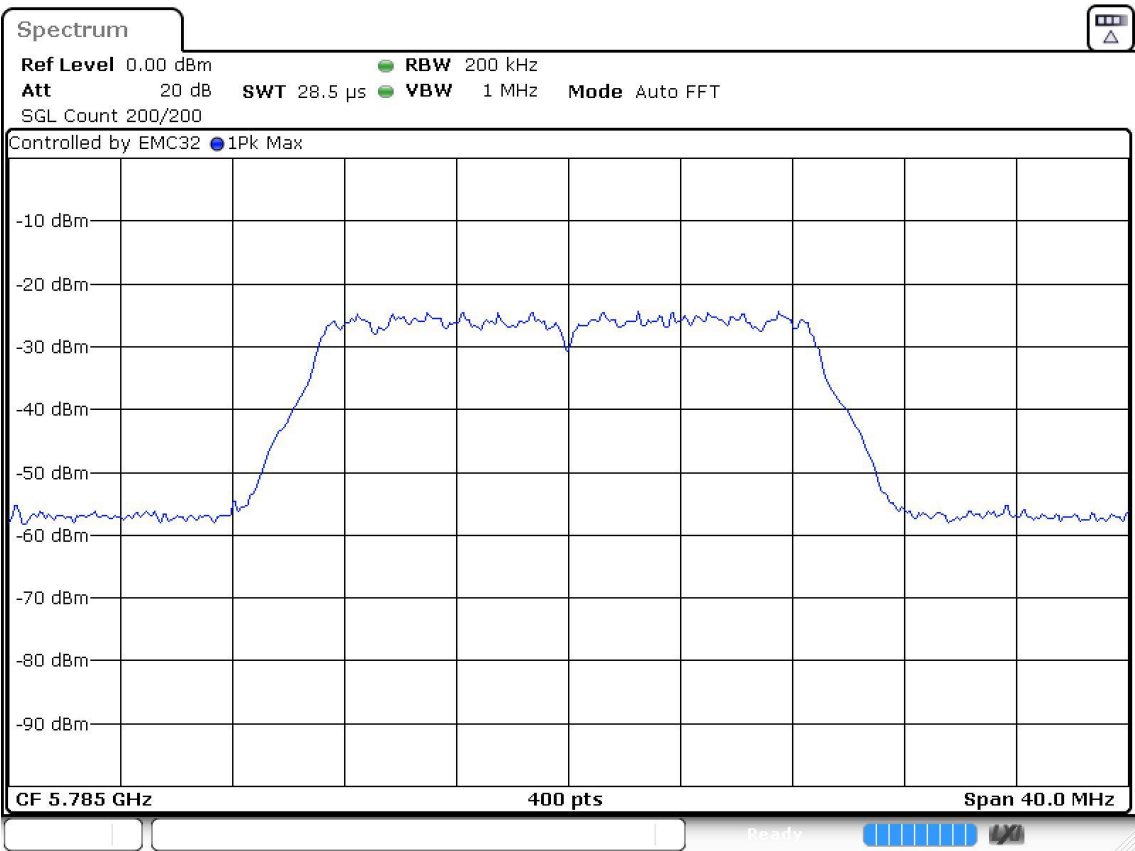
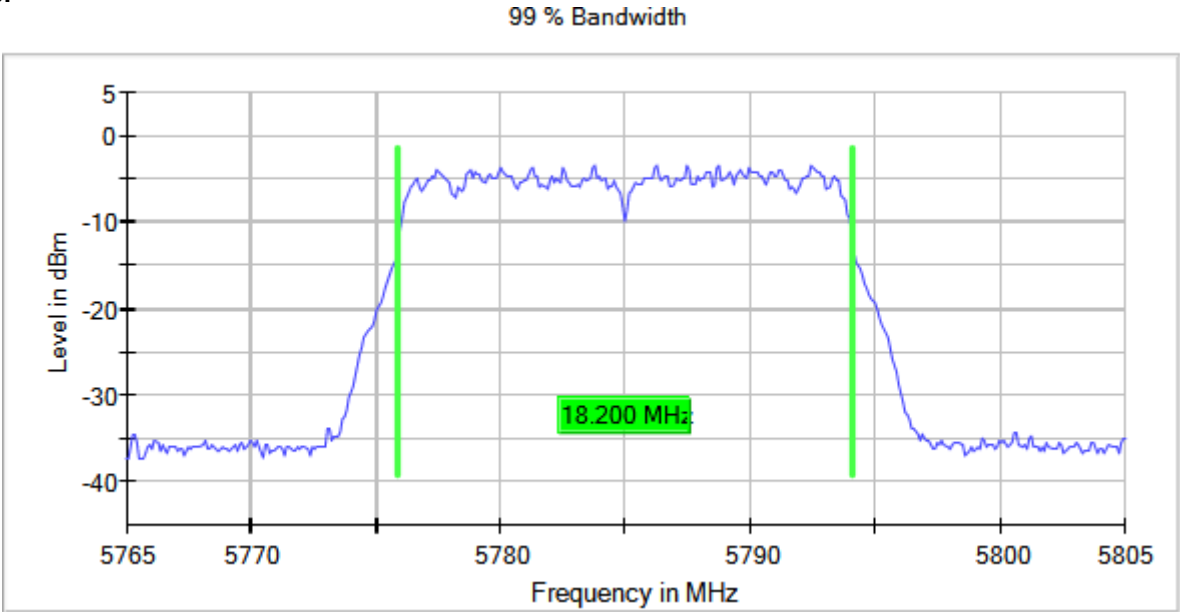
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



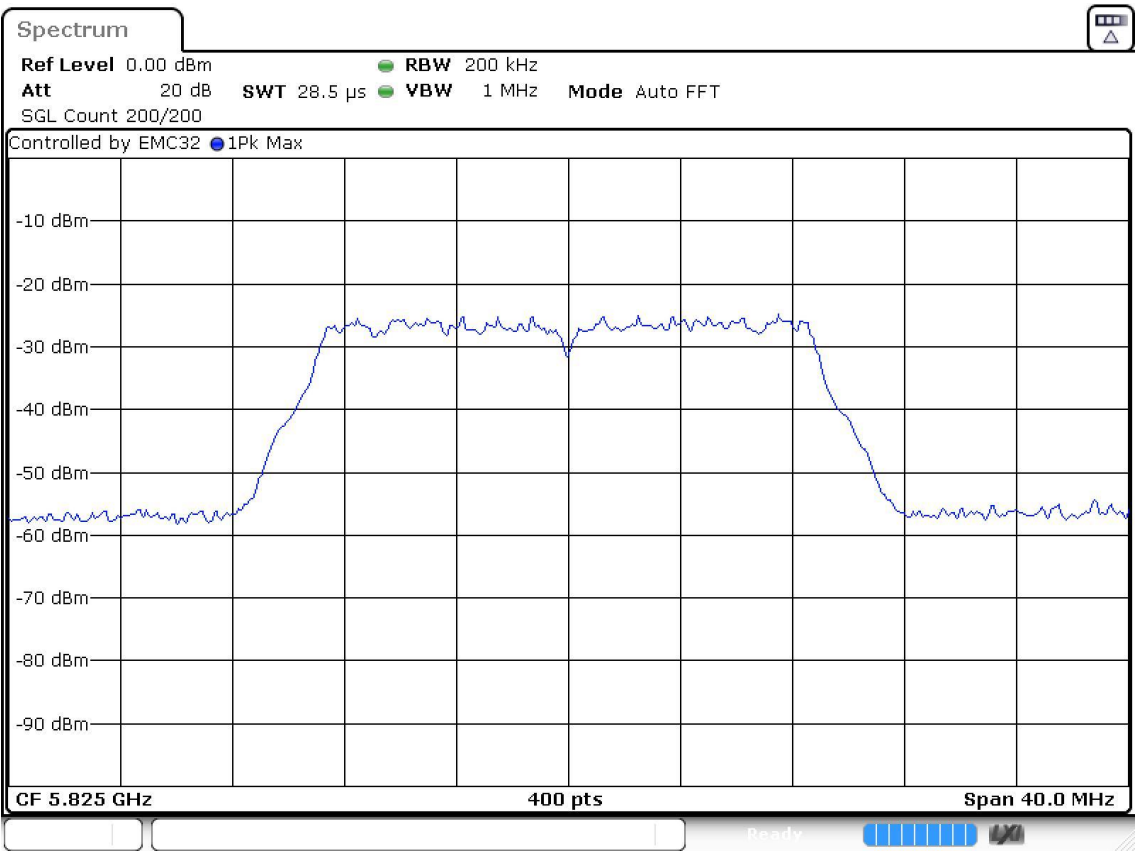
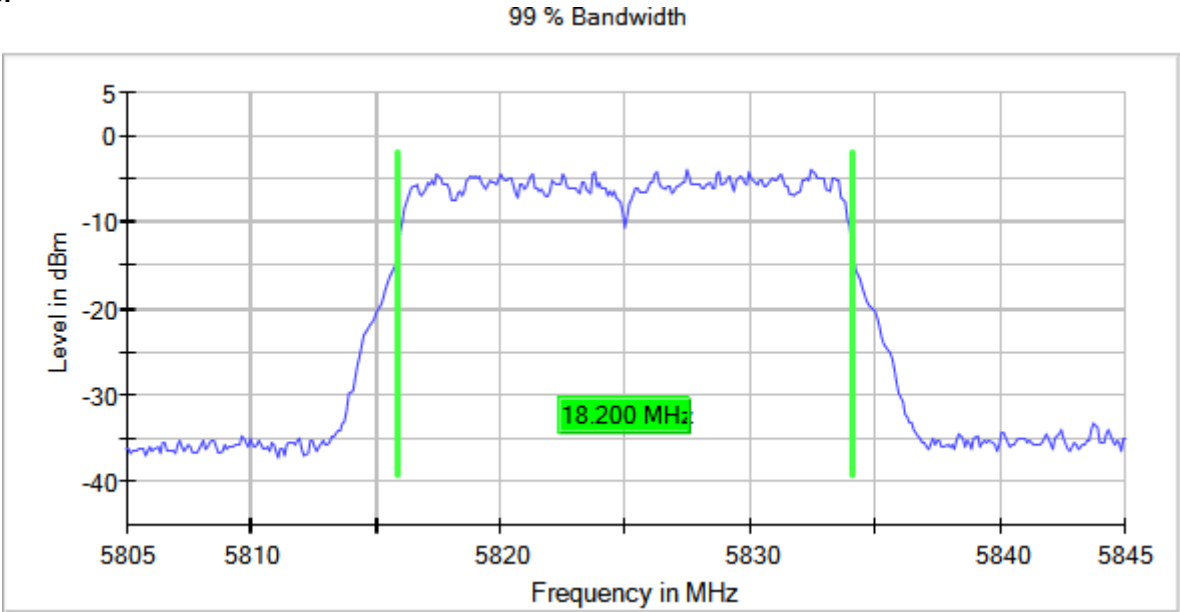
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



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

Images:



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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Occ Ch BW (MHz)
[5150, 5250]	1	5180.00000	18.000
		5220.00000	18.000
		5240.00000	18.200
[5725, 5850]		5745.00000	18.200
		5785.00000	18.100
		5825.00000	18.300

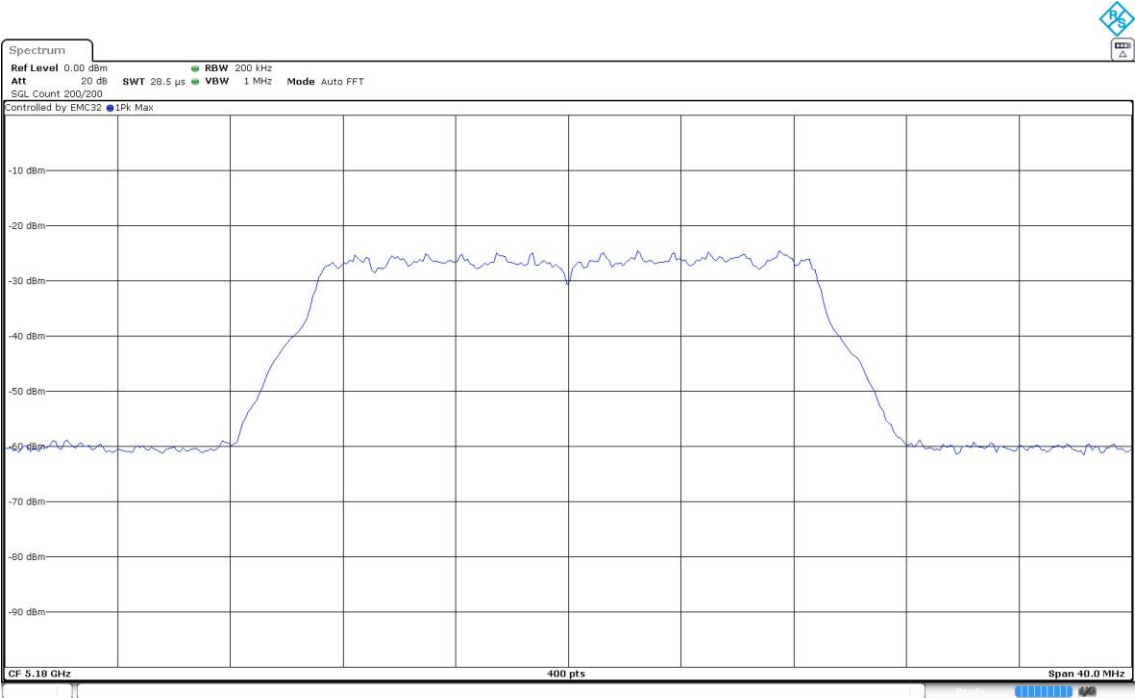
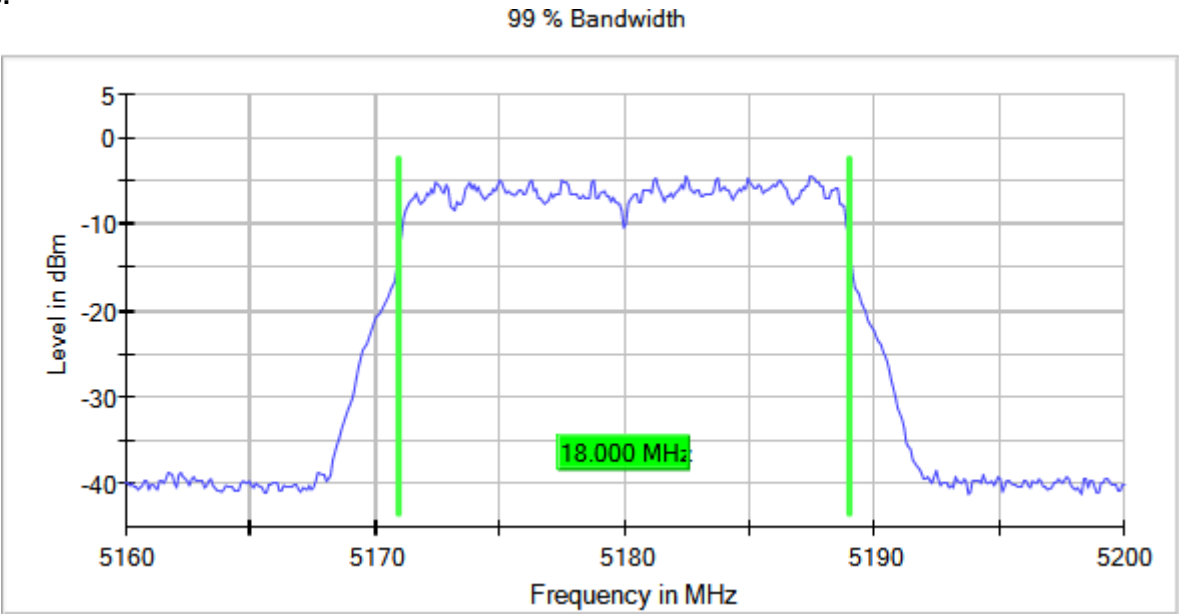
Verdict

Pass

Attachments

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

Images:



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

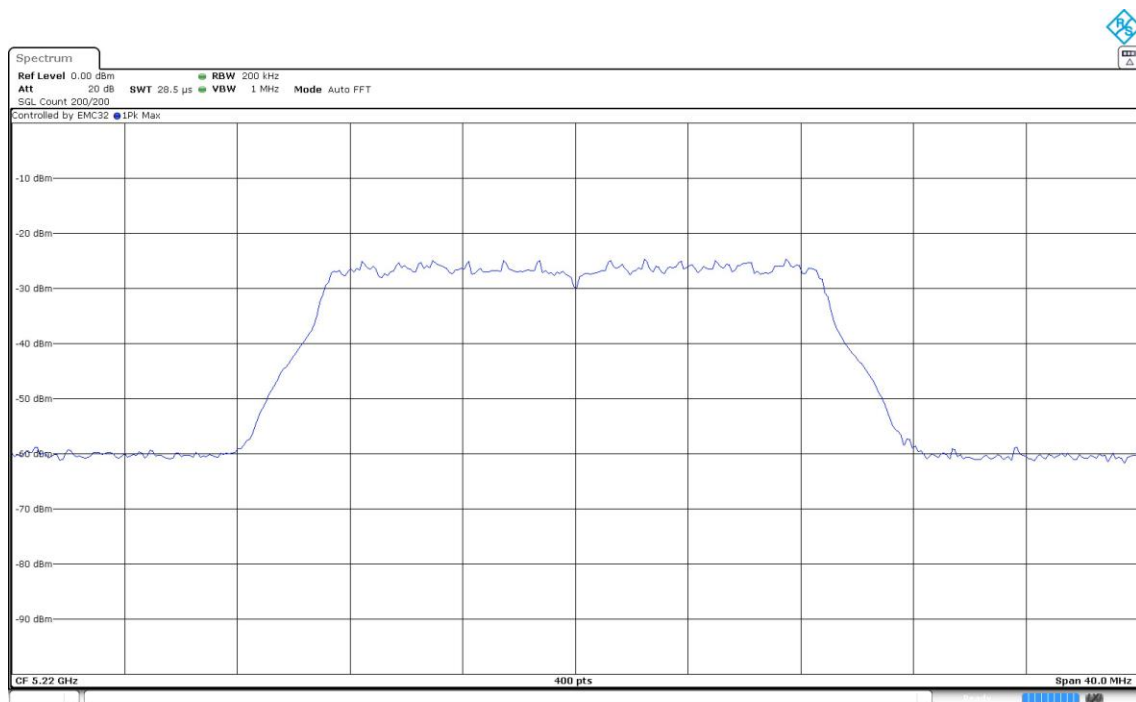
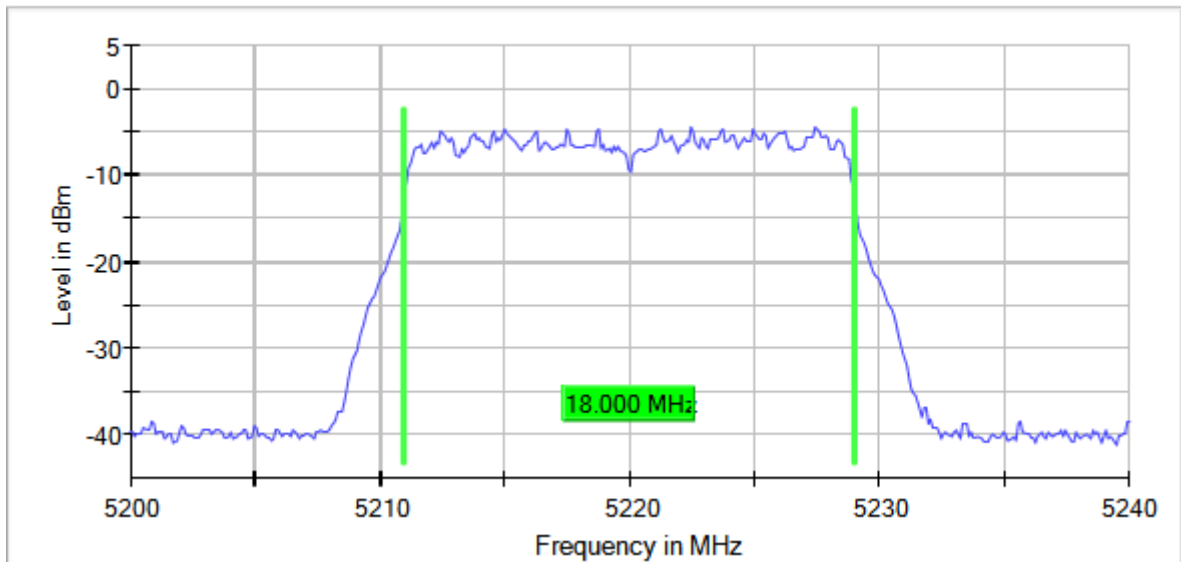
Frequency MHz = 5220.00000

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

MIMO Mode = SISO

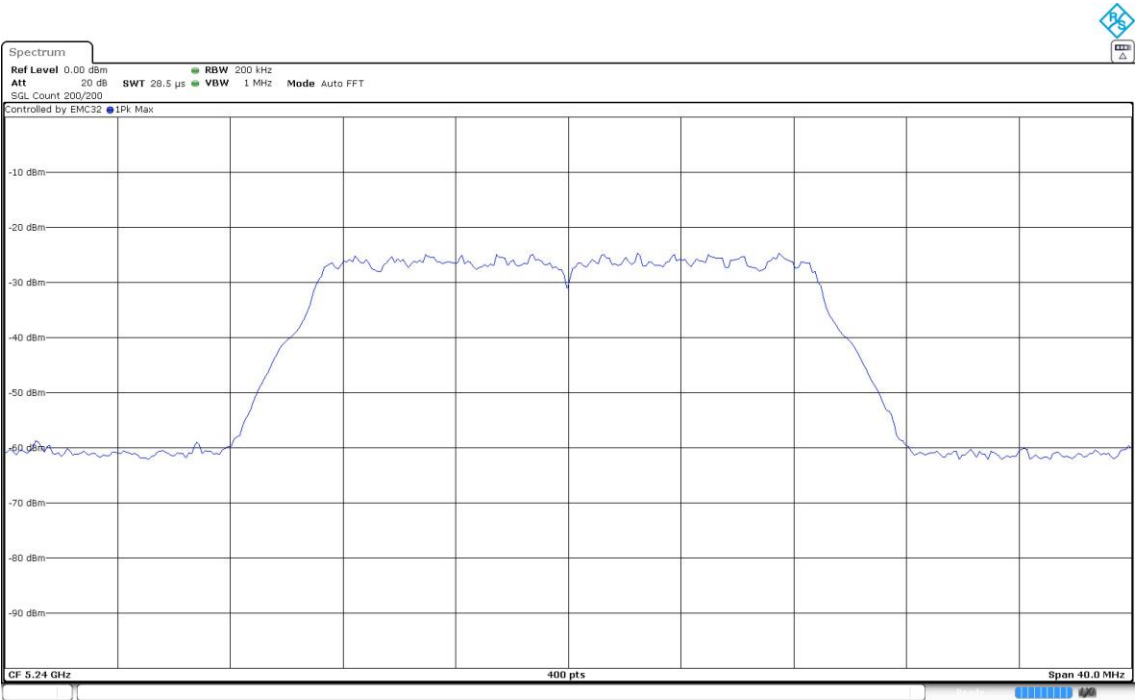
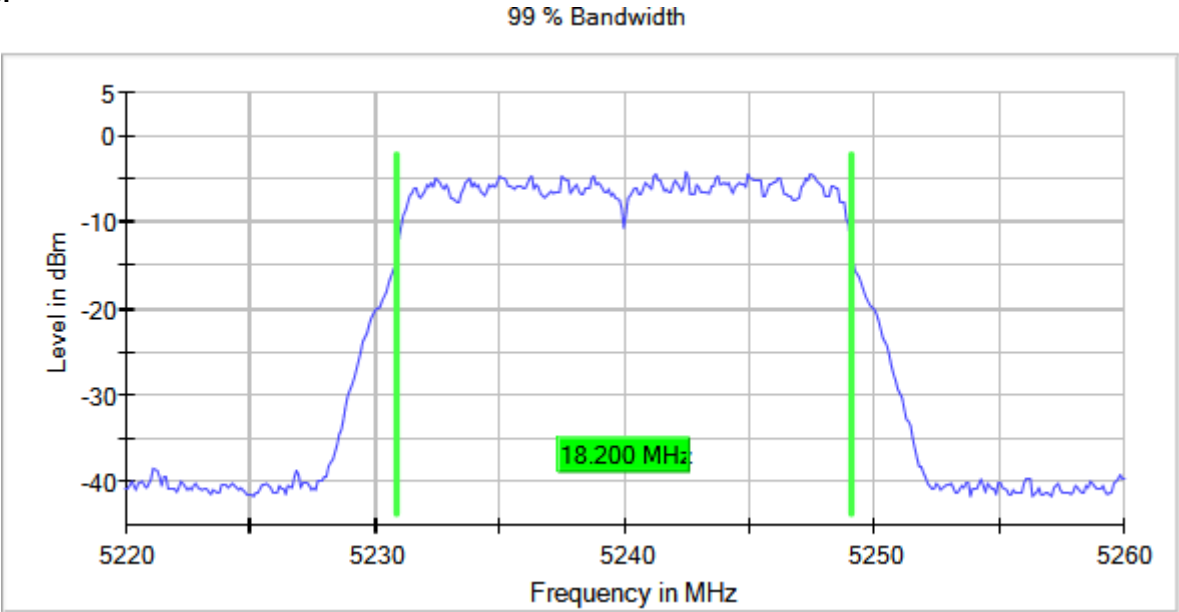
Images:

99 % Bandwidth



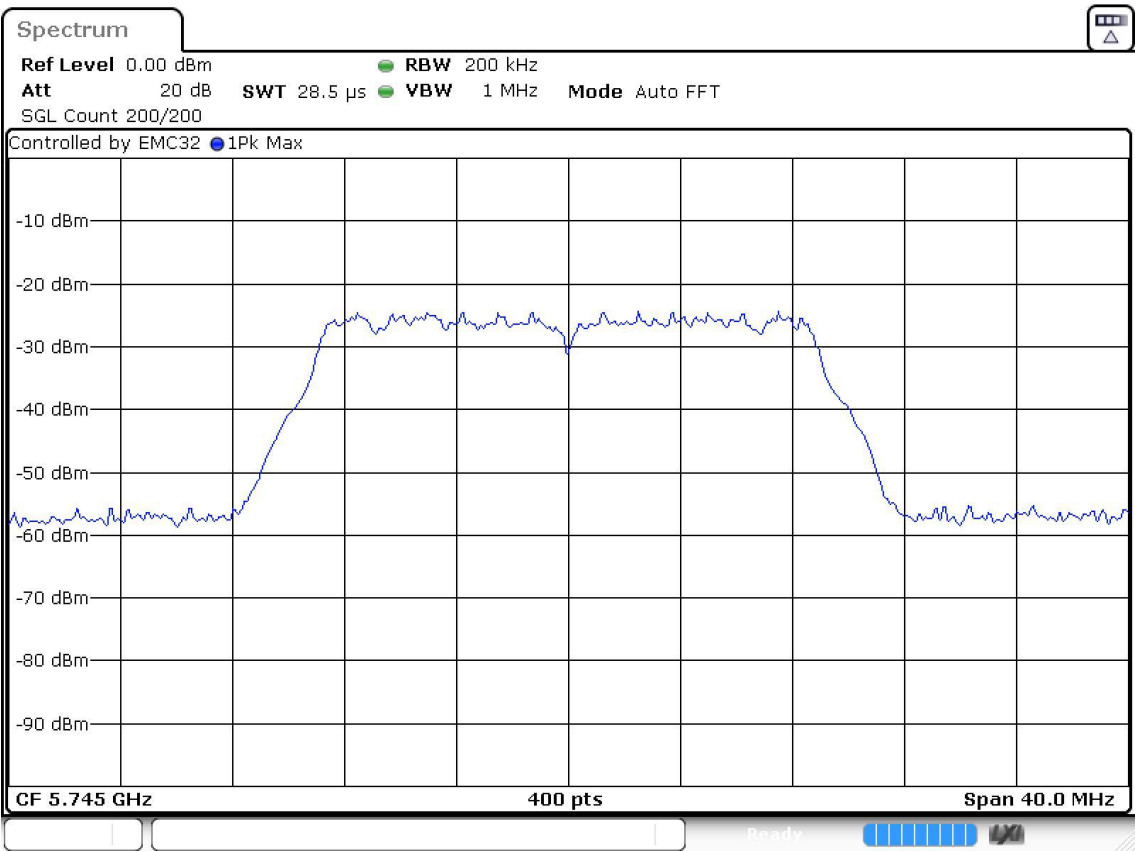
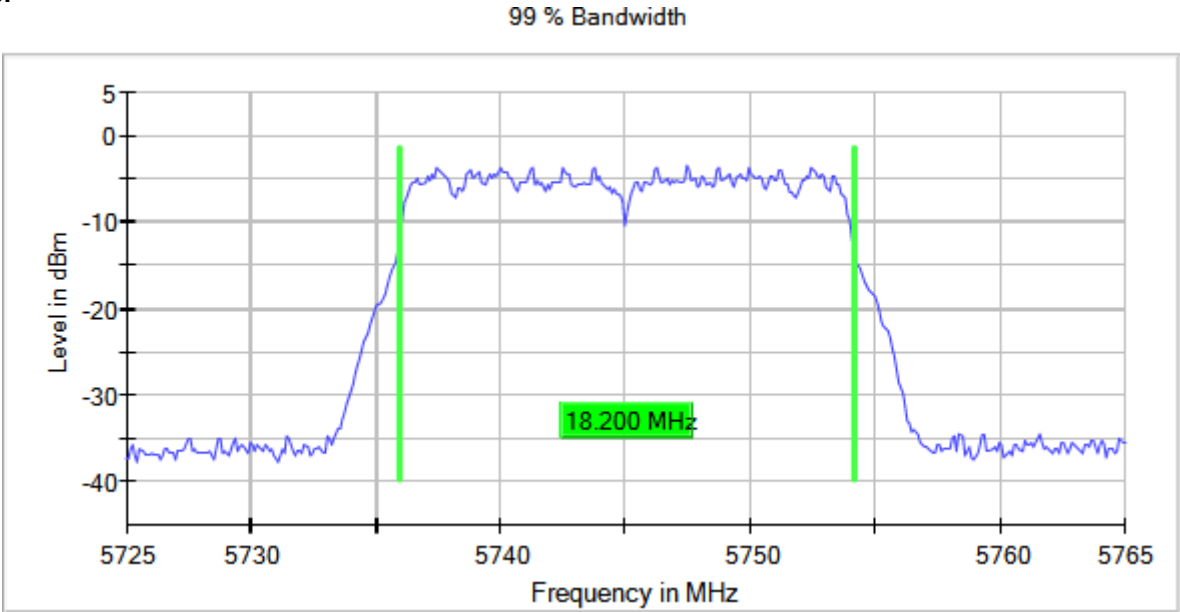
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5240.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

Images:



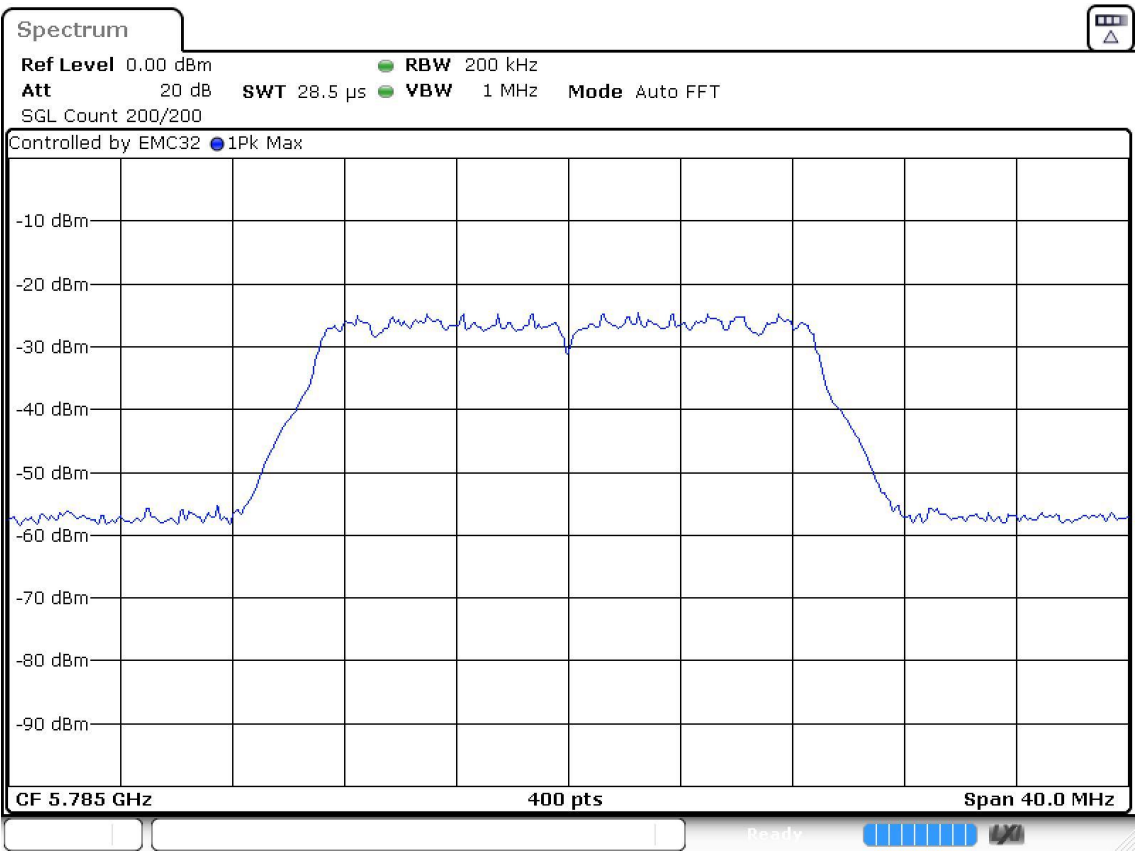
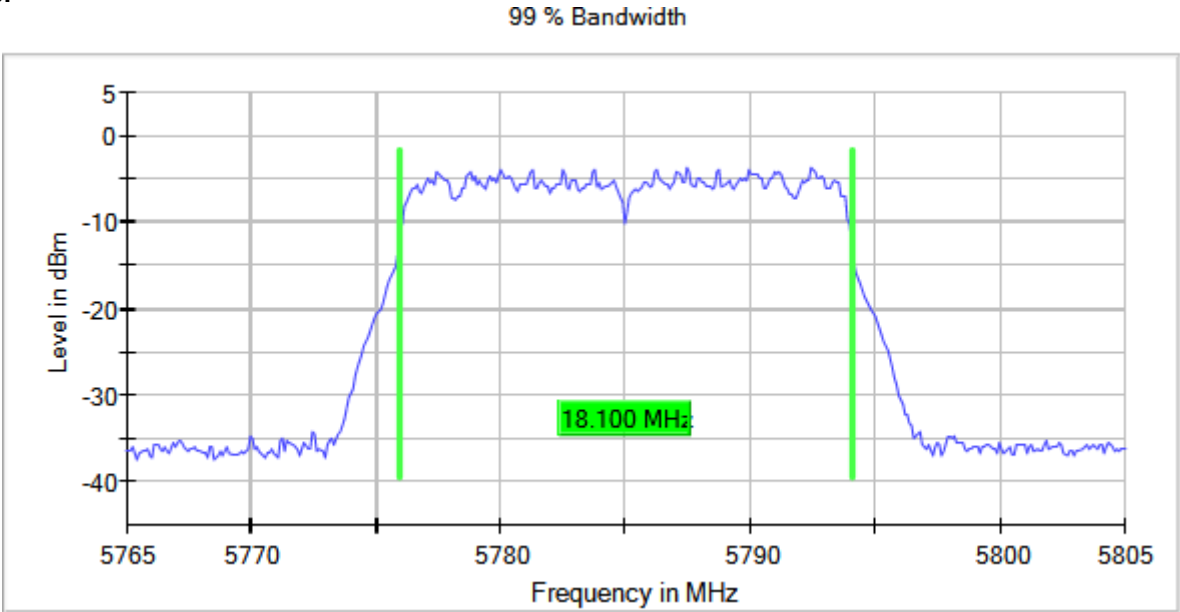
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

Images:



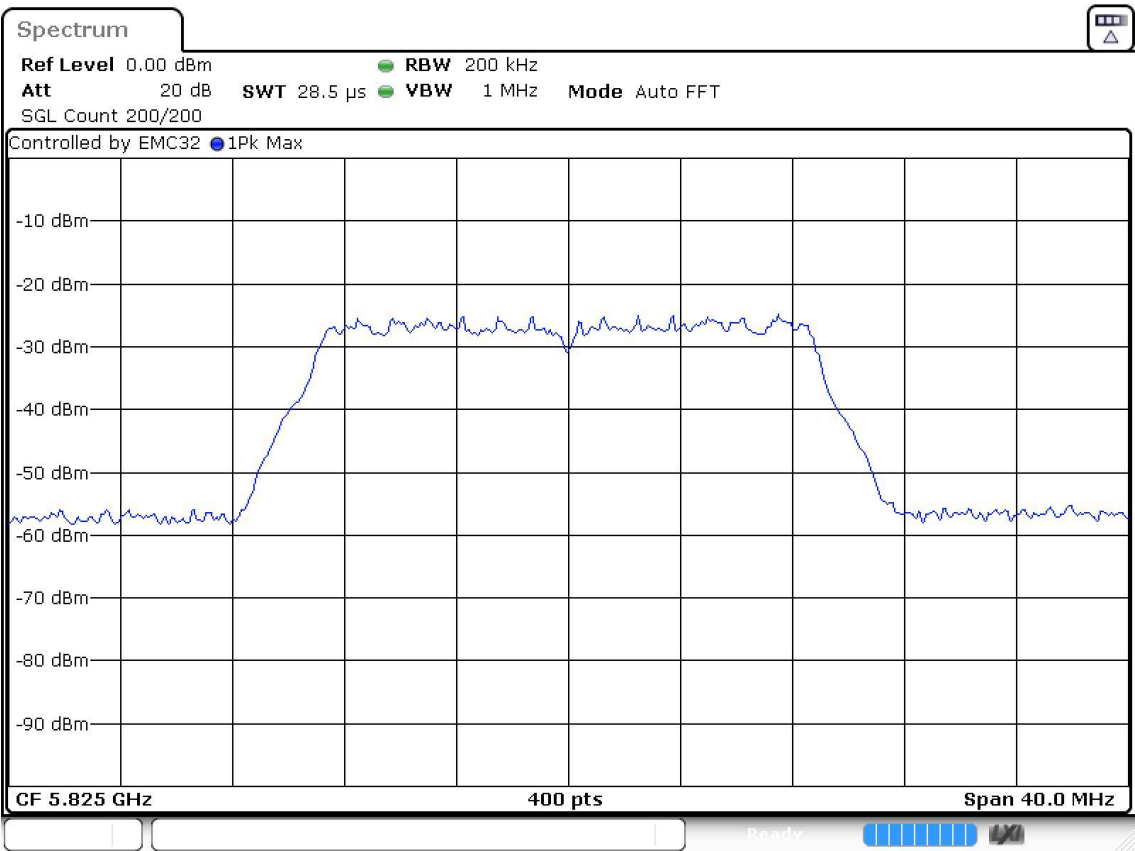
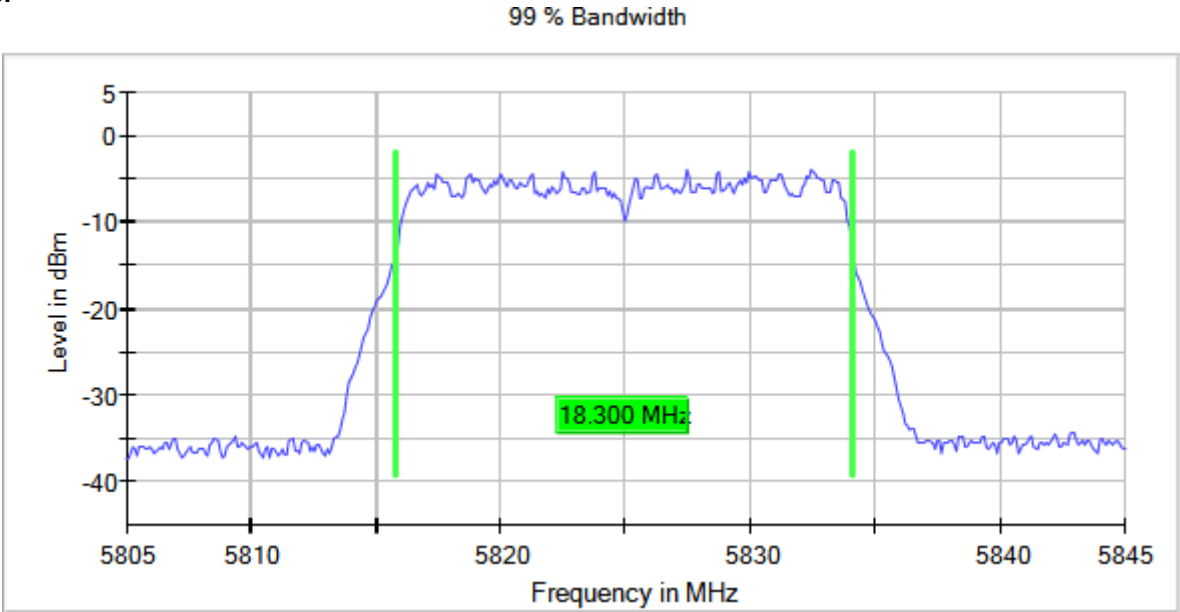
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

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)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Occ Ch BW (MHz)
[5150, 5250]	1	5190.00000	36.750
		5230.00000	36.750
[5725, 5850]		5755.00000	36.750
		5795.00000	36.750

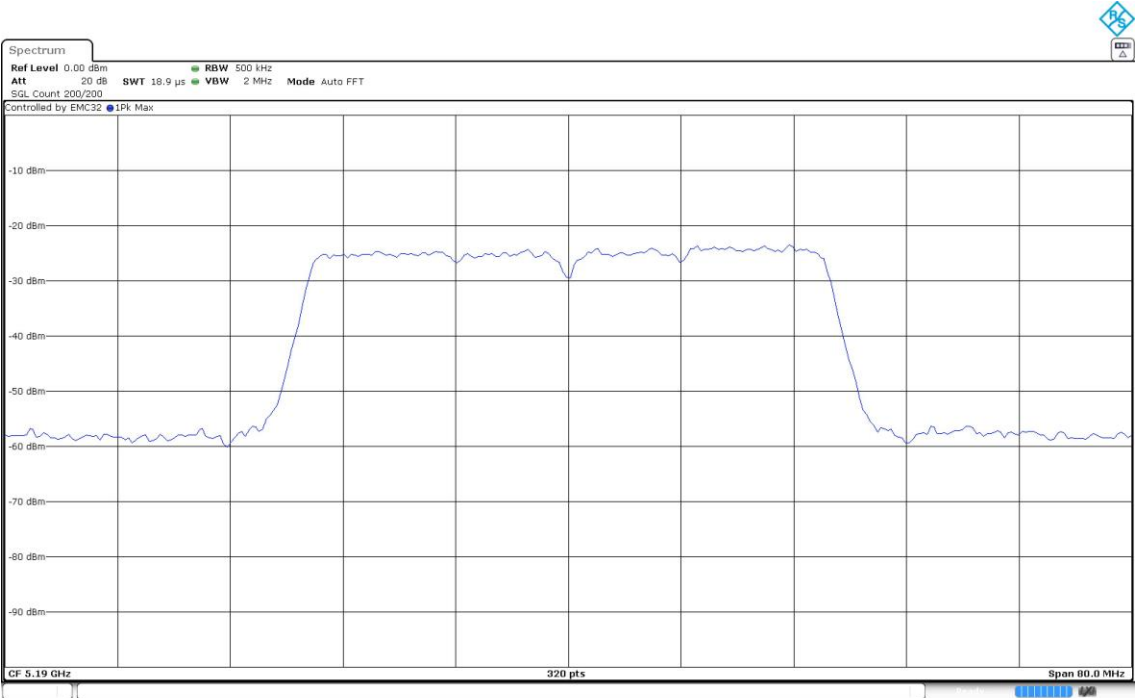
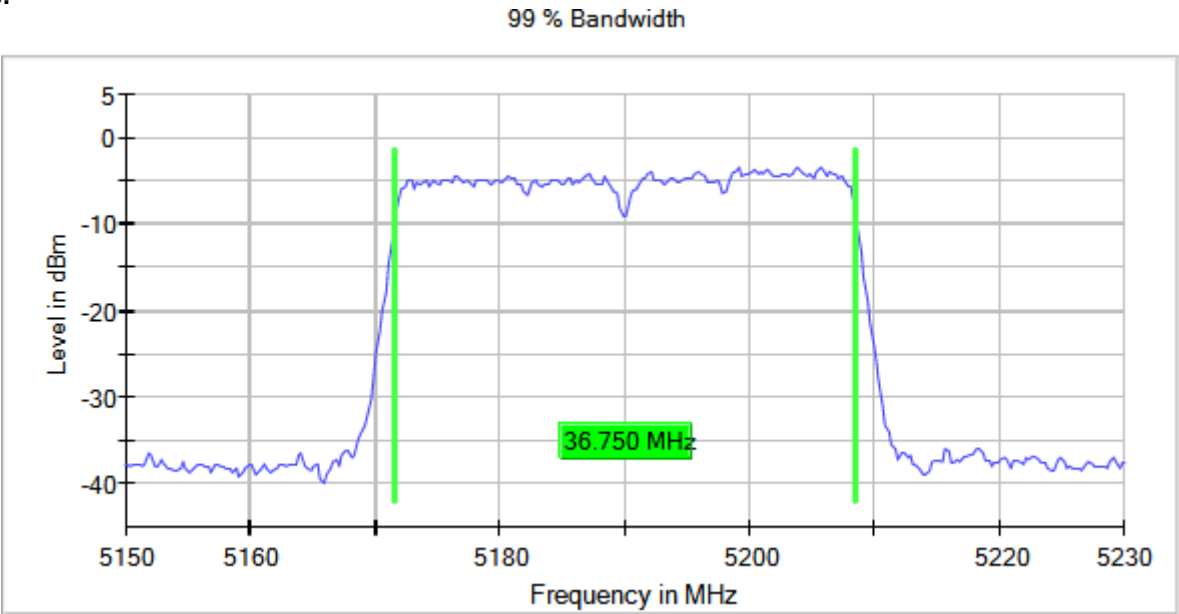
Verdict

Pass

Attachments

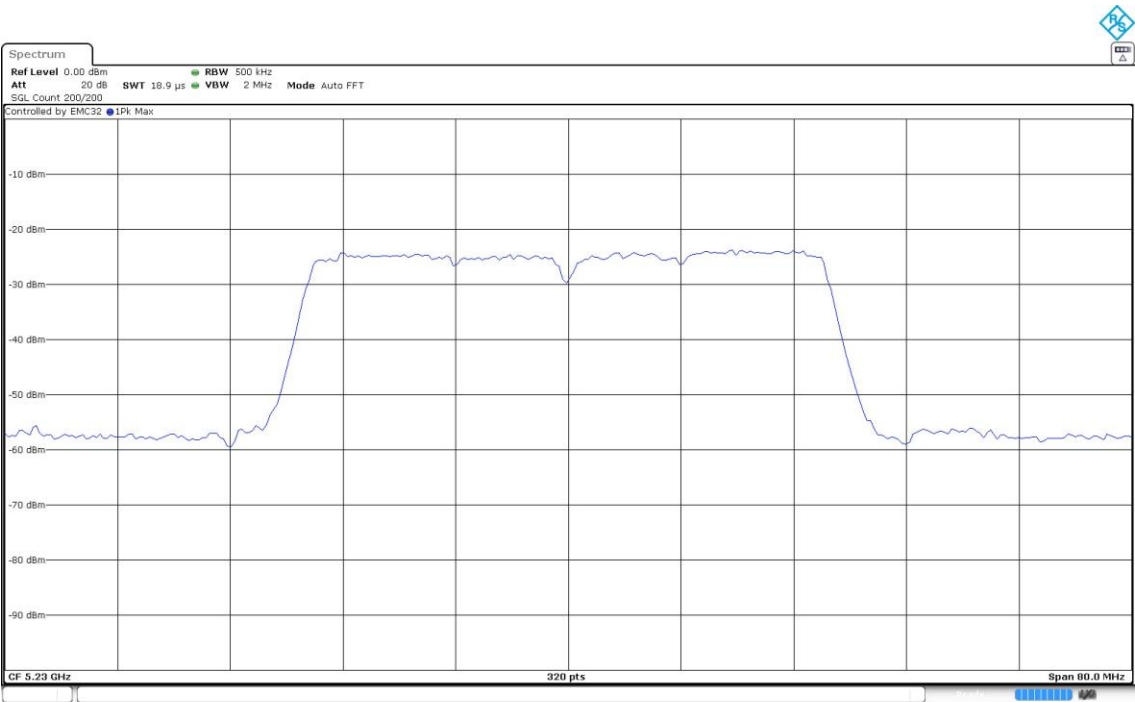
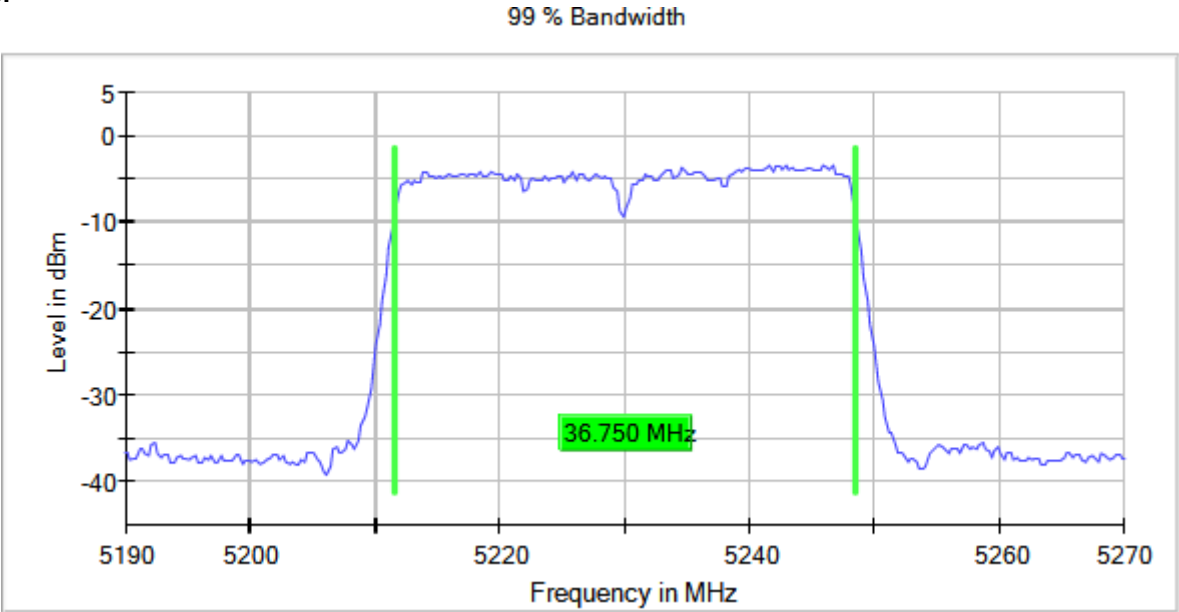
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5190.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
MIMO Mode = SISO

Images:



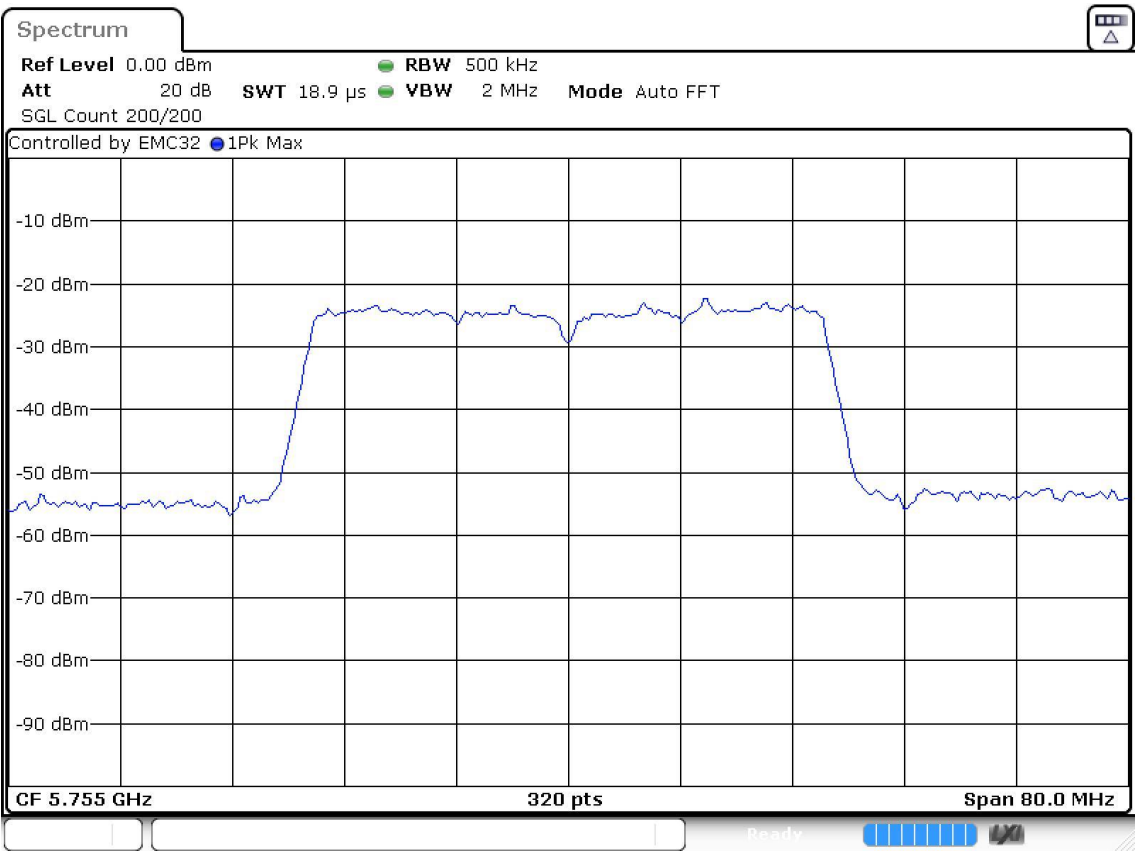
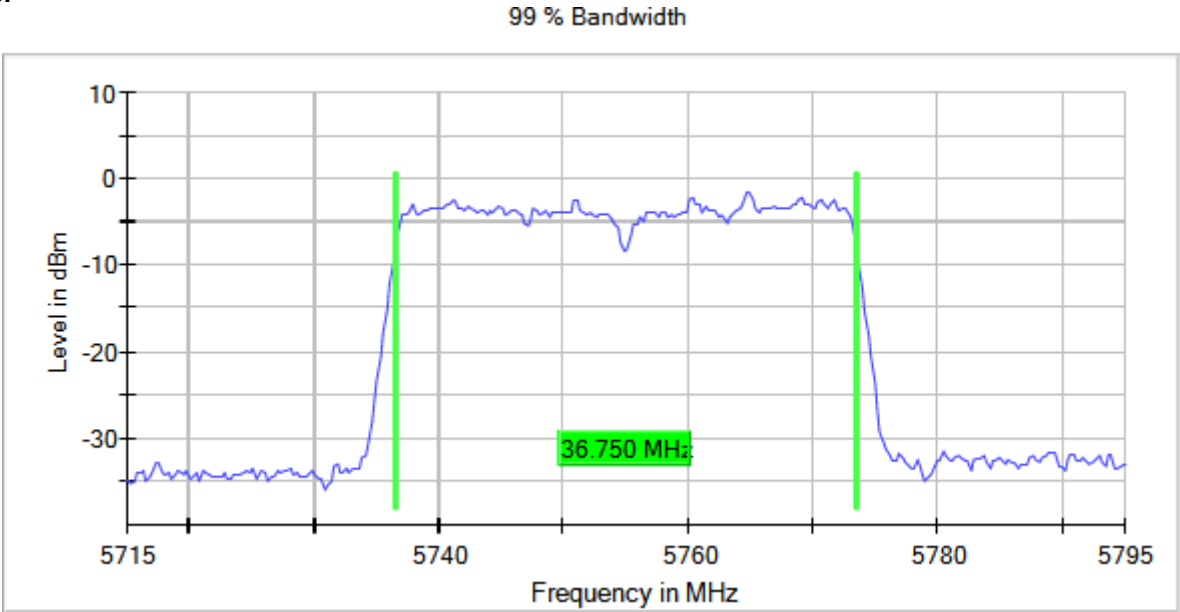
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5230.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
MIMO Mode = SISO

Images:



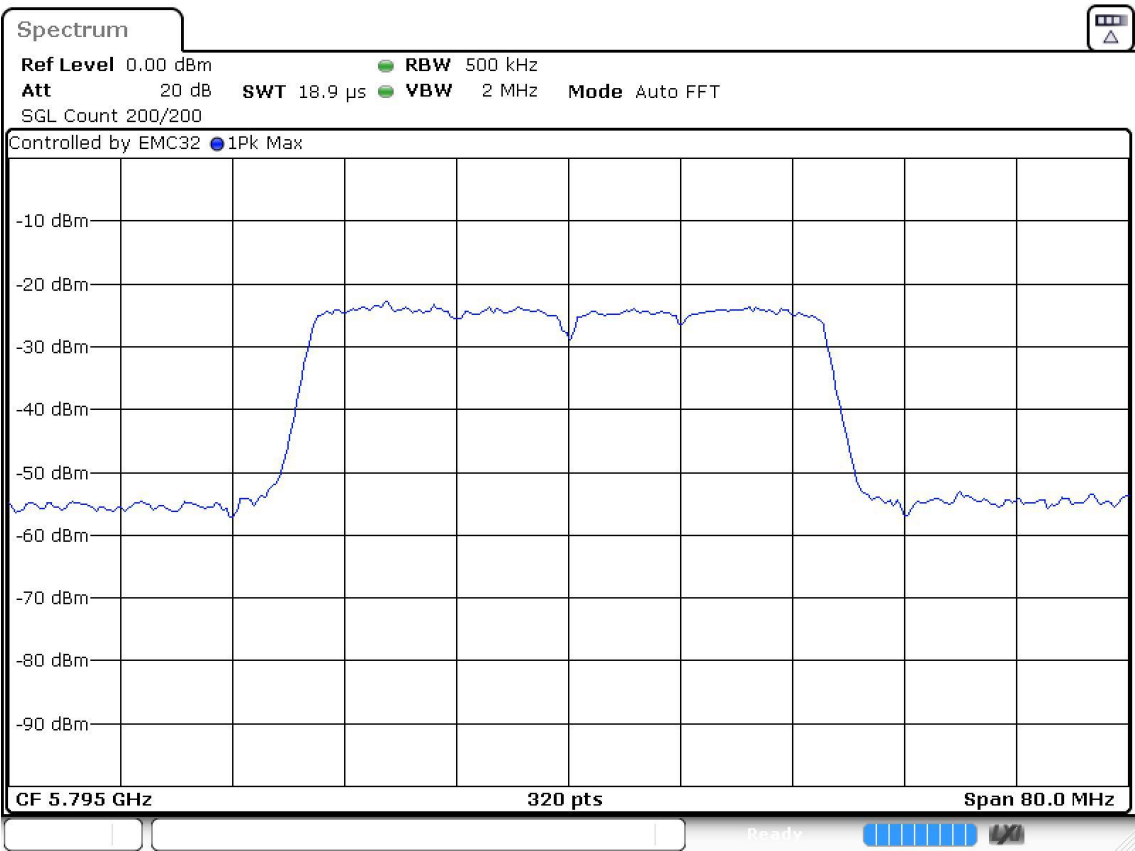
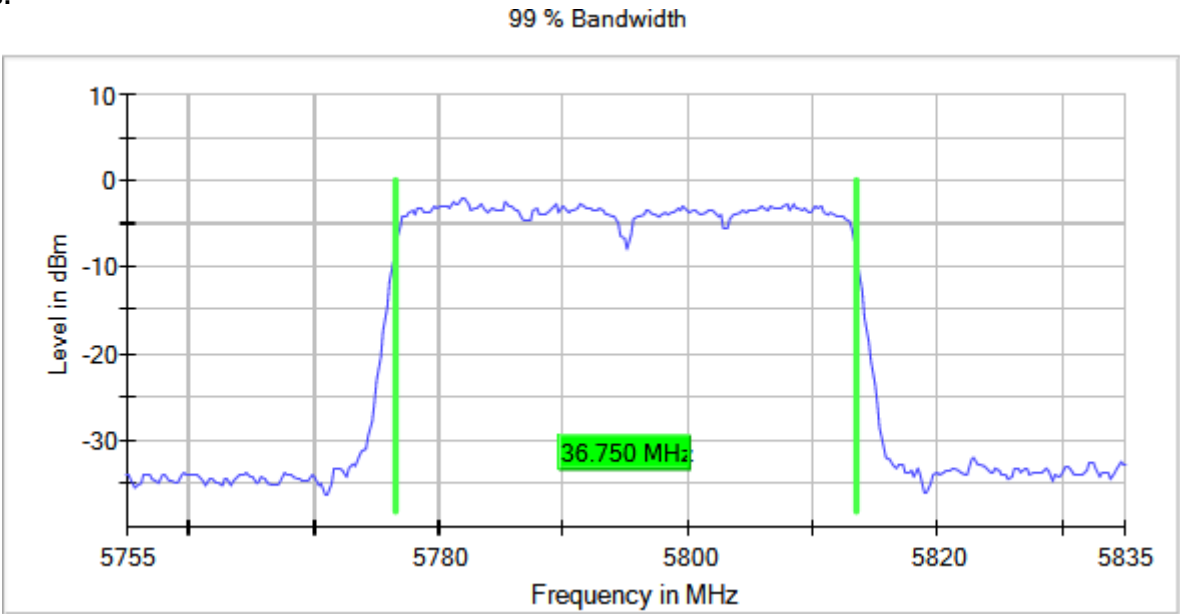
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5755.00000 Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)
MIMO Mode = SISO

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 VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Occ Ch BW (MHz)
[5150, 5250]	1	5190.00000	36.750
		5230.00000	36.750
[5725, 5850]		5755.00000	36.750
		5795.00000	36.750

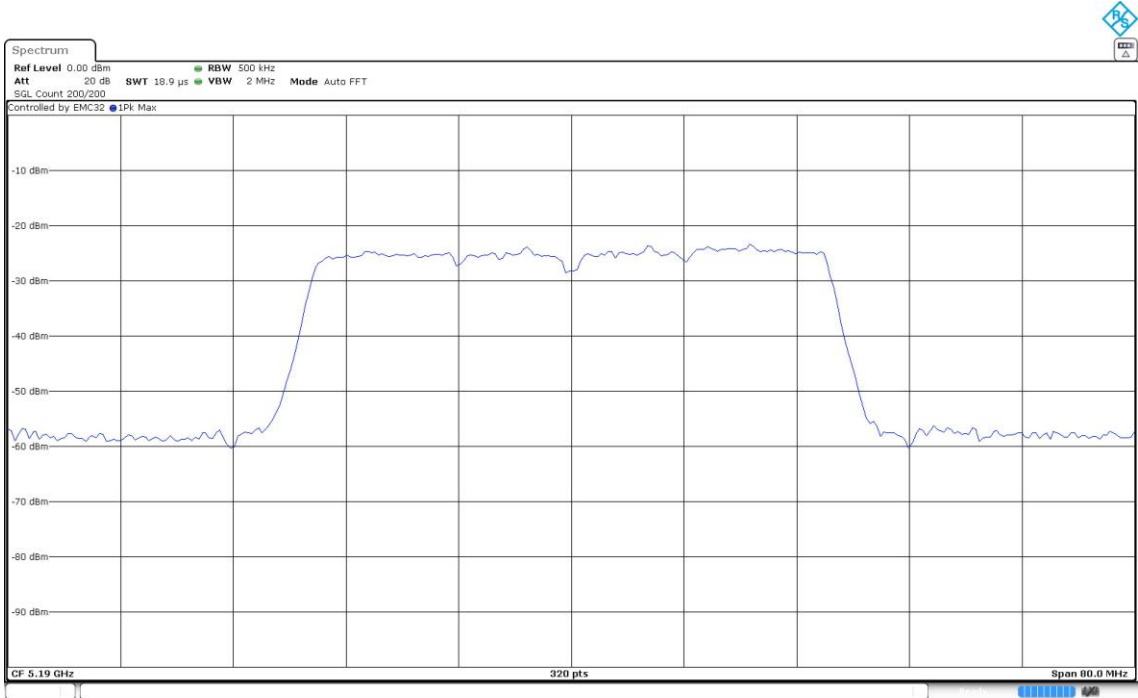
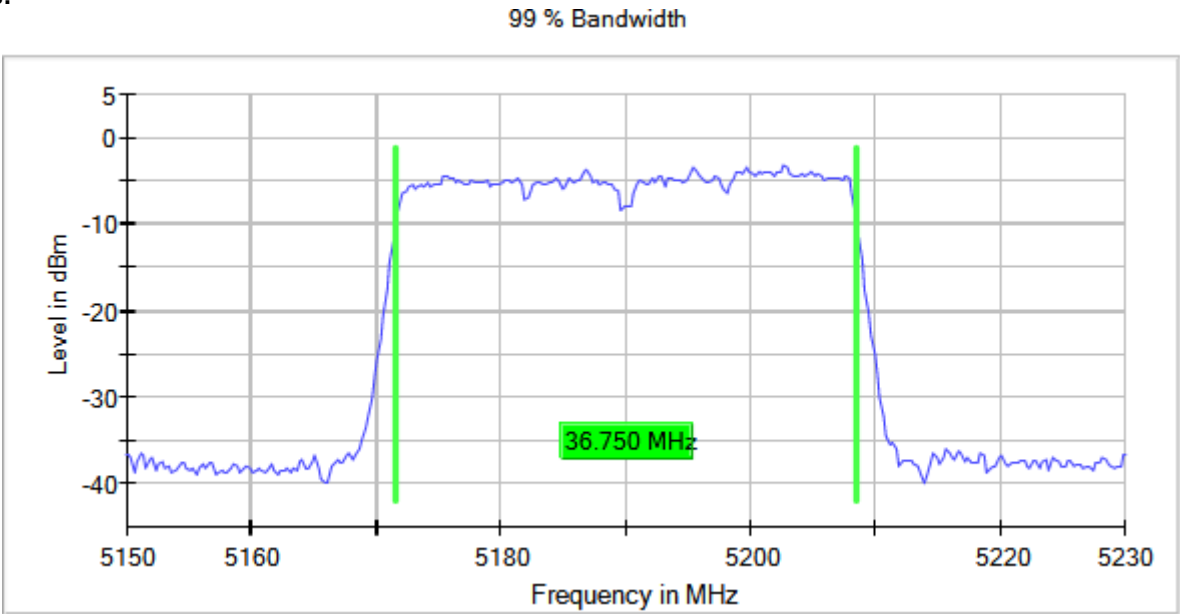
Verdict

Pass

Attachments

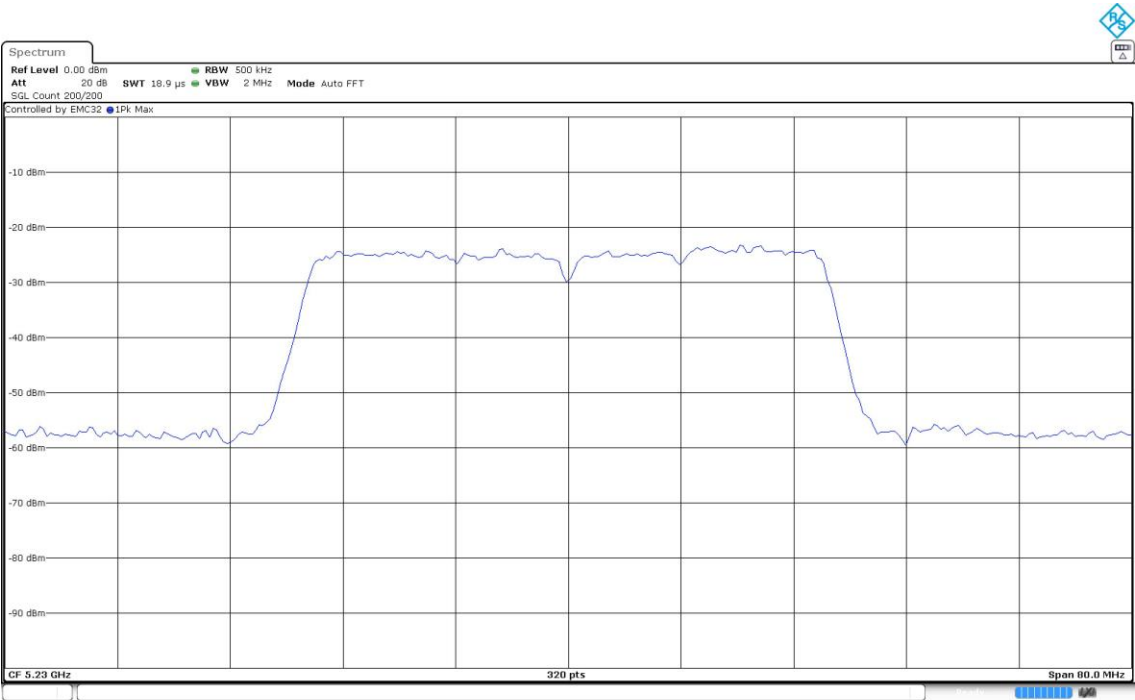
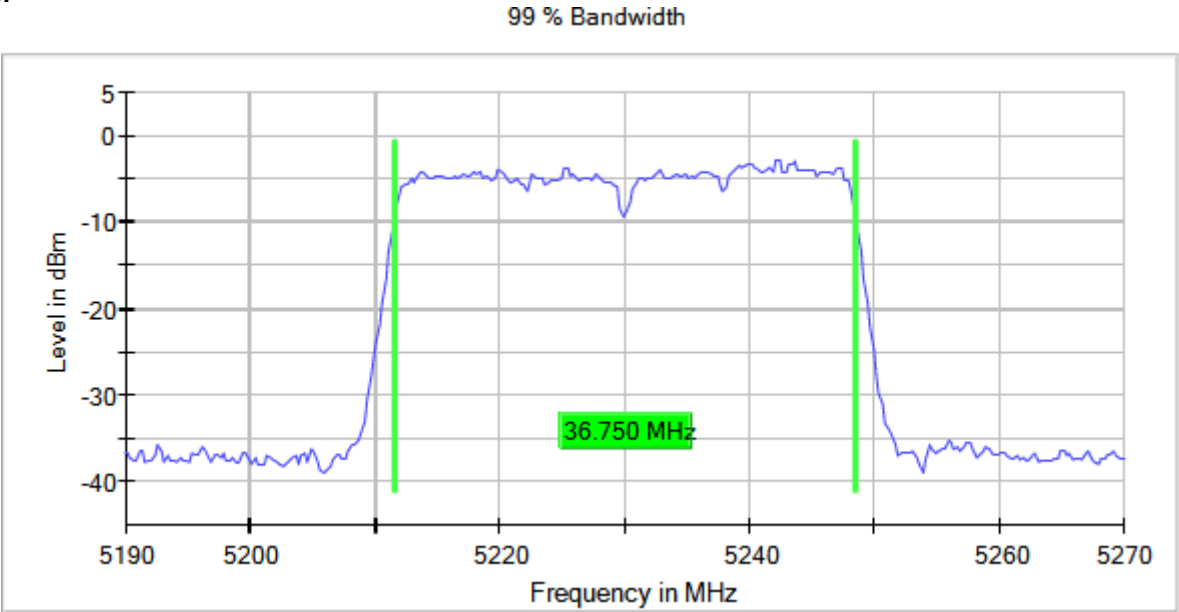
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5190.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
MIMO Mode = SISO

Images:



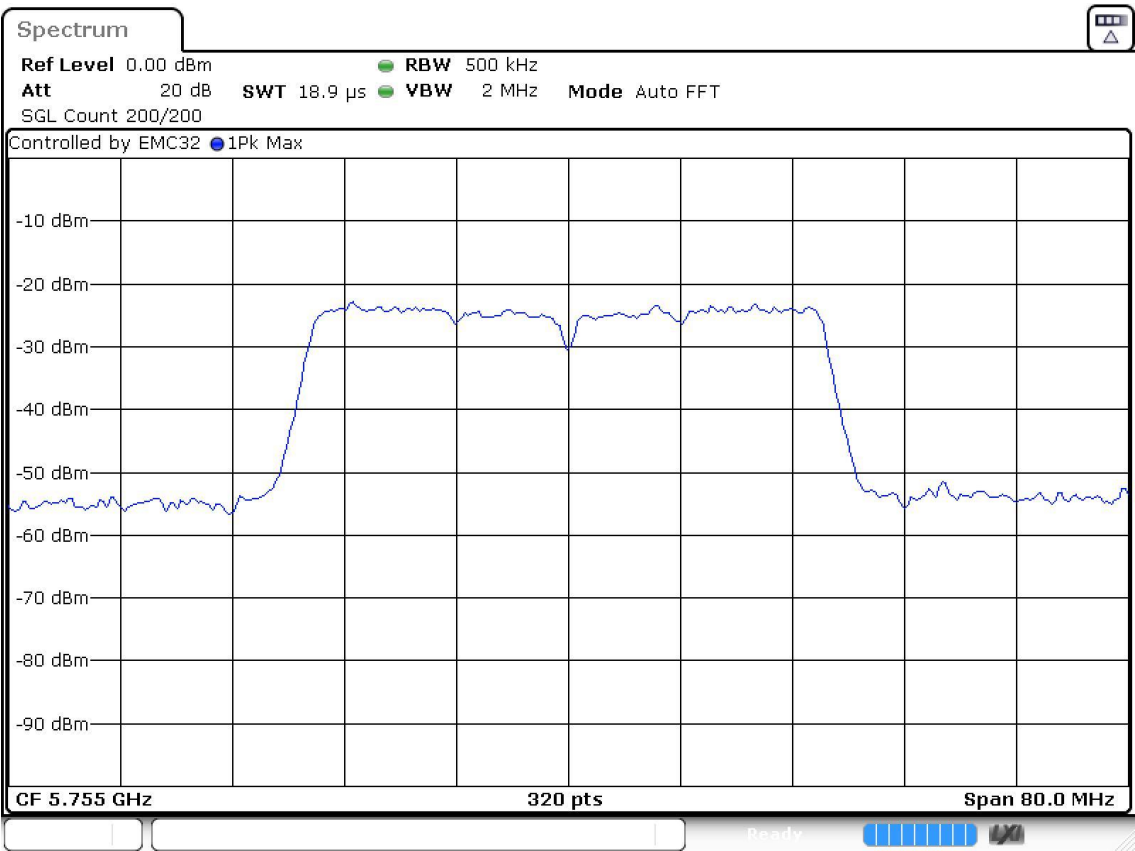
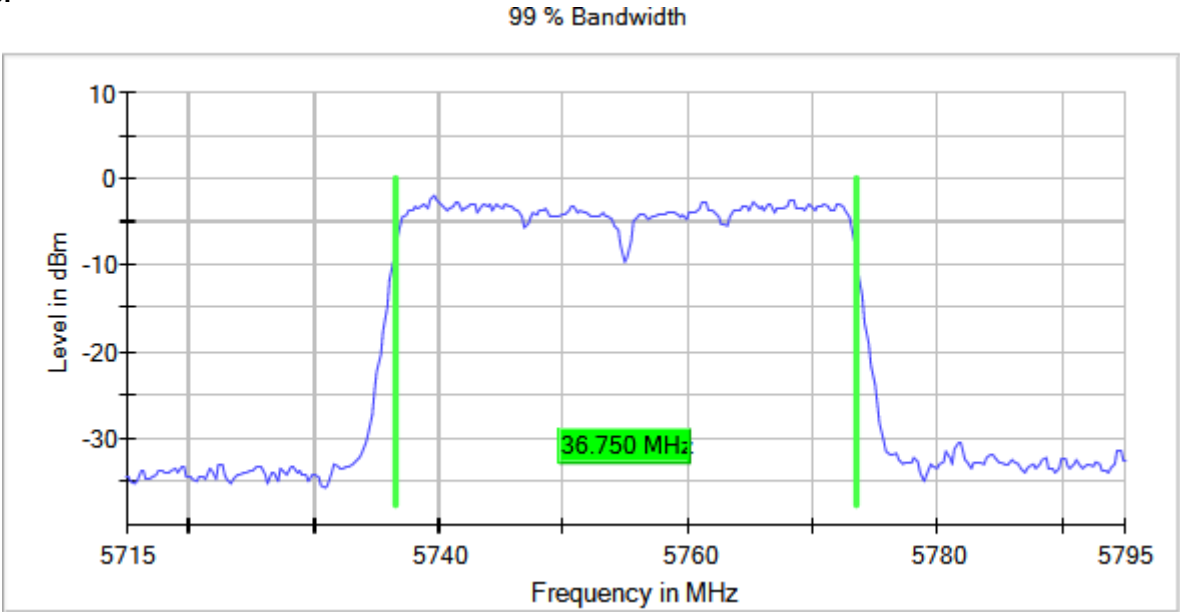
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5230.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
MIMO Mode = SISO

Images:



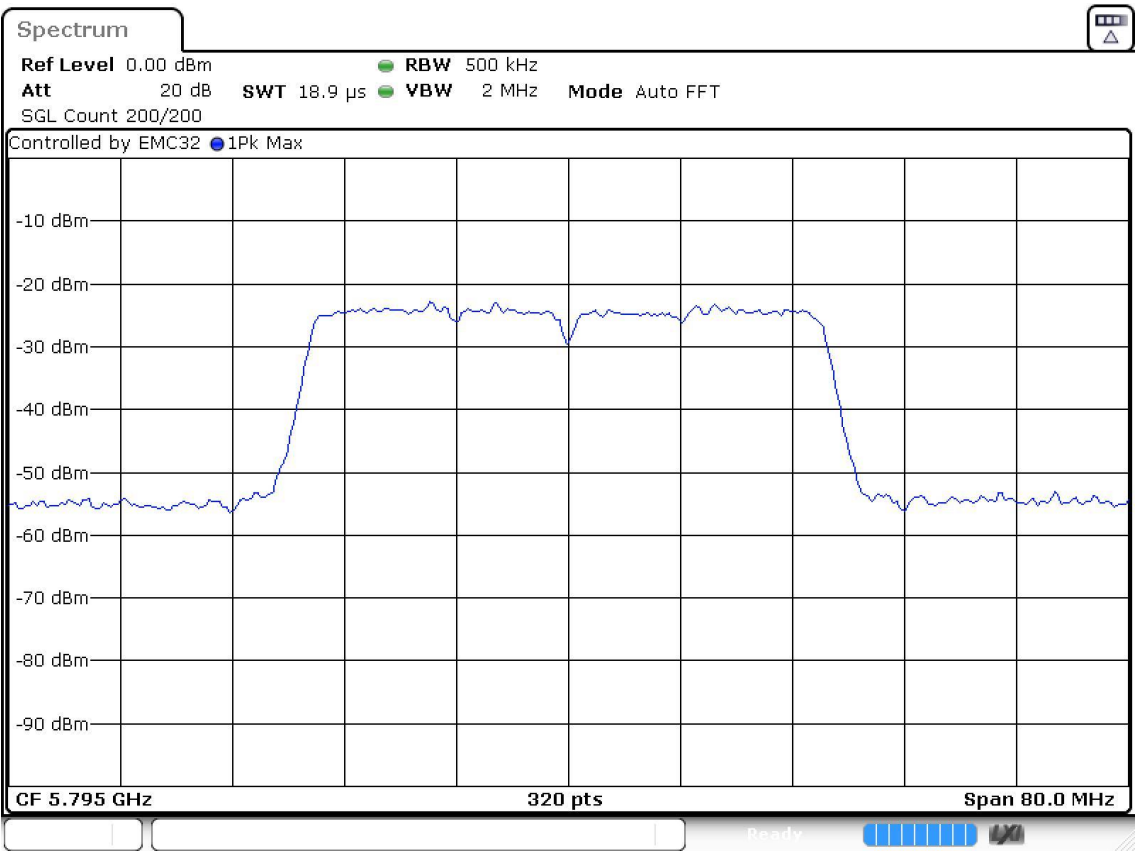
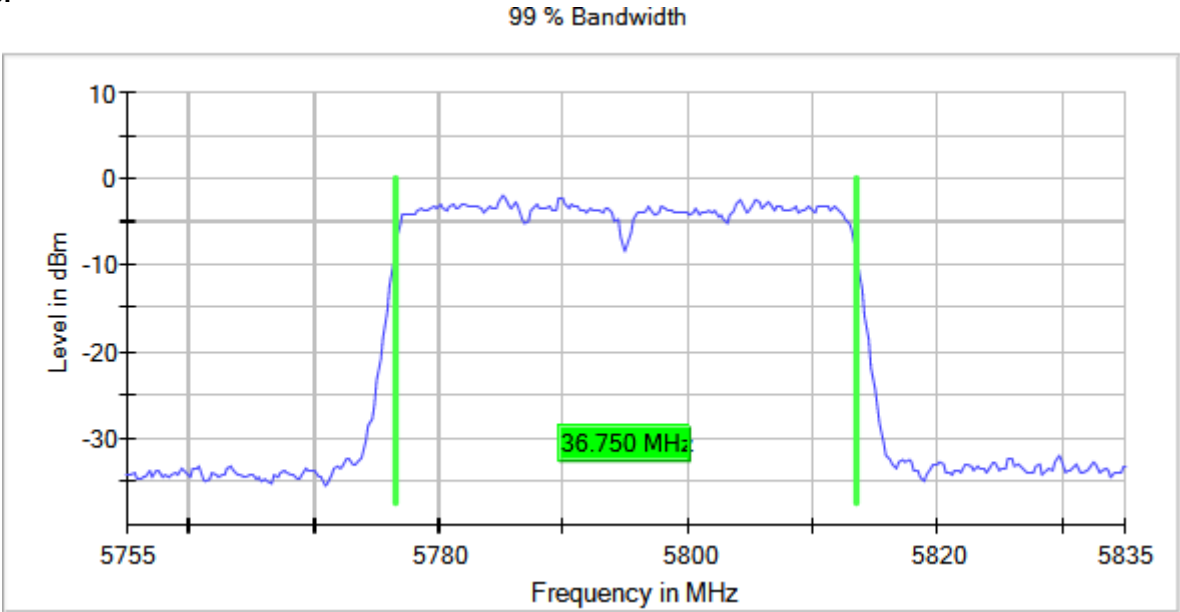
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5755.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
MIMO Mode = SISO

Images:



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

Images:



Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Occ Ch BW (MHz)
[5150, 5250]	1	5210.00000	76.500
[5725, 5850]		5775.00000	76.500

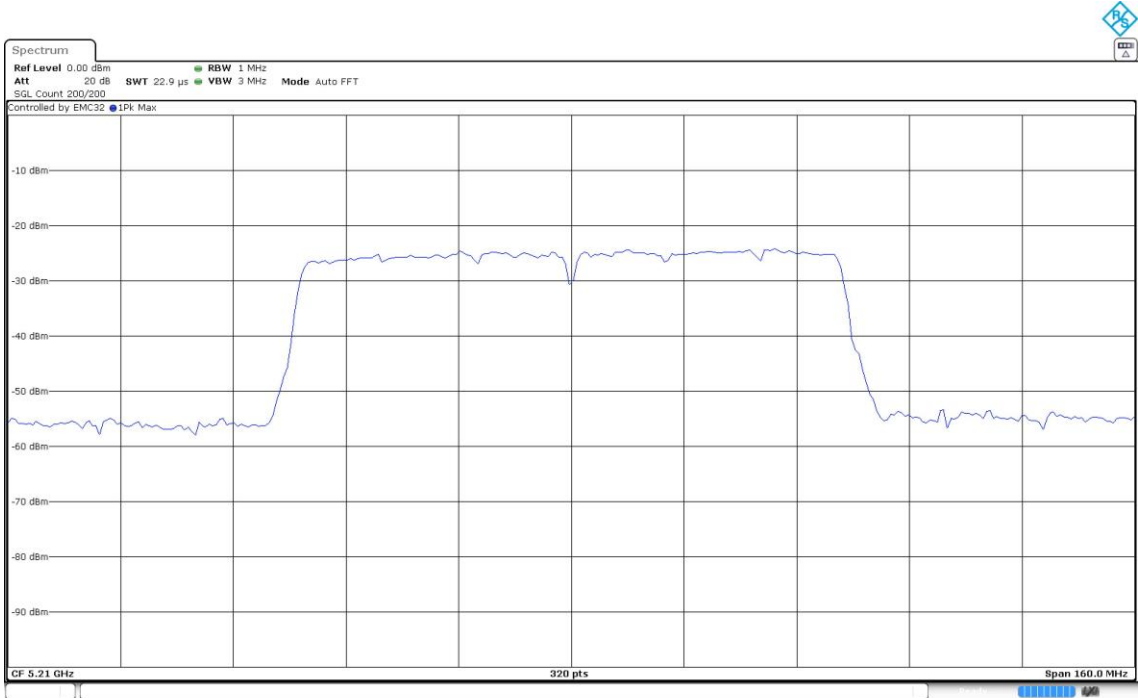
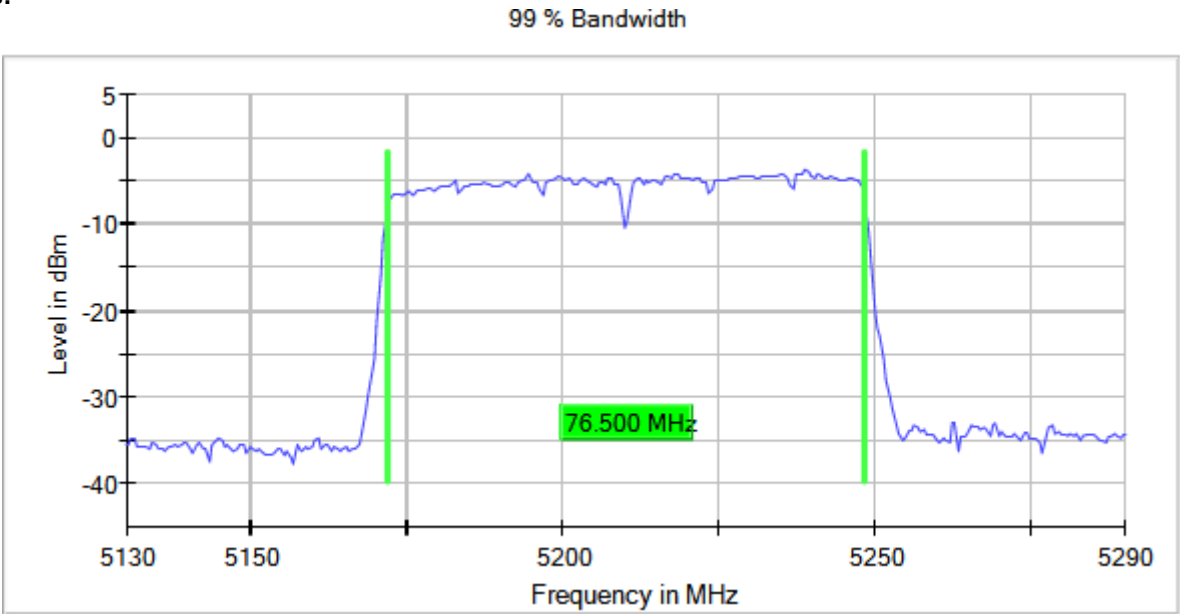
Verdict

Pass

Attachments

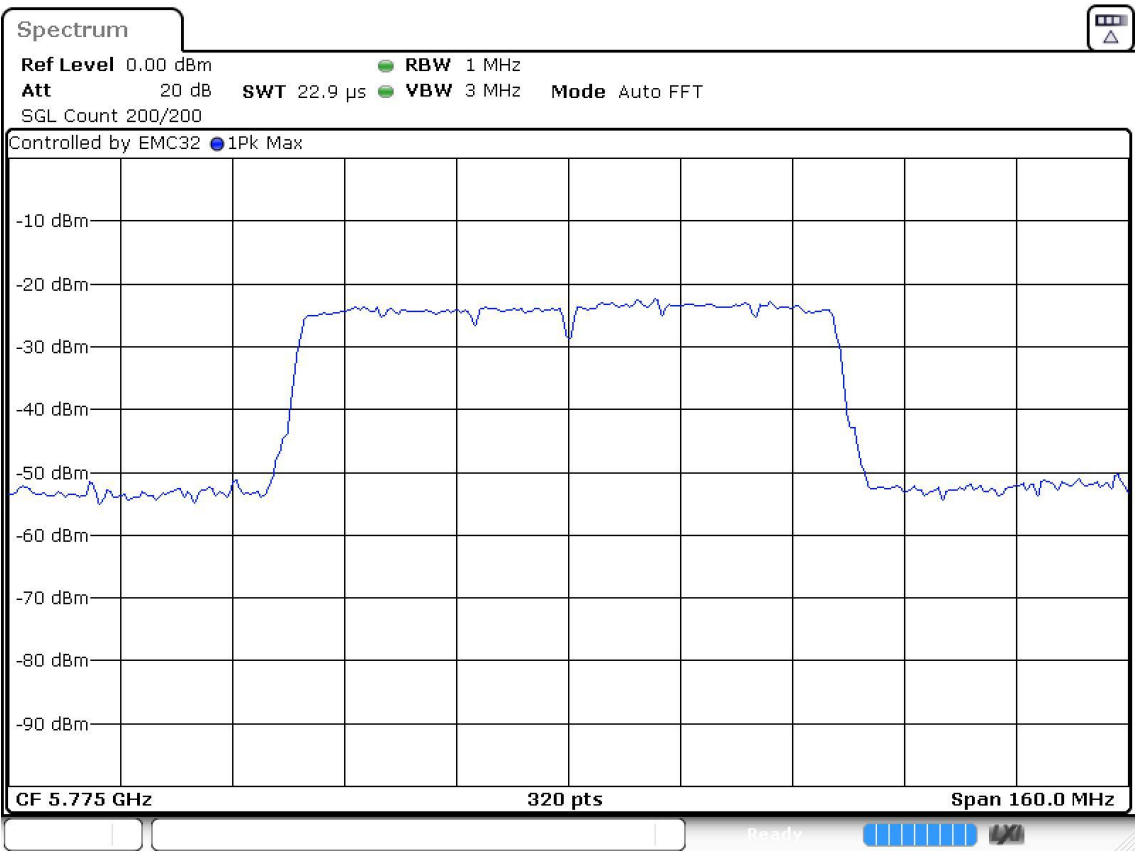
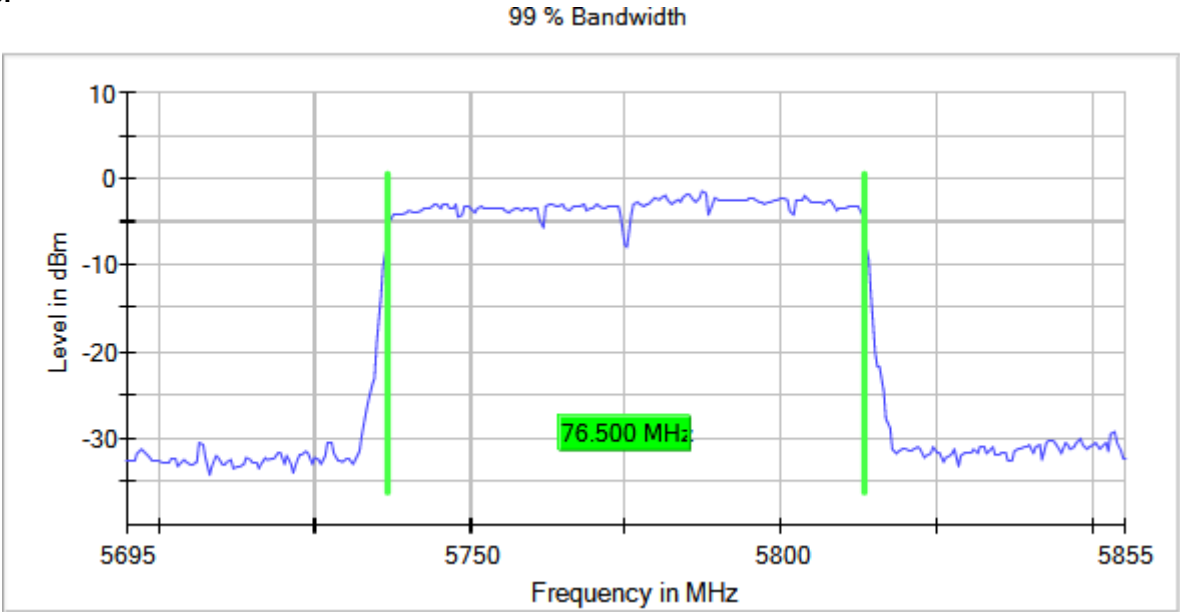
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5210.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)
MIMO Mode = SISO

Images:



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

Images:



RSS-Gen 6.10. / Section 15.35 Subclause (c) Duty Cycle

Limits

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

Modulation: 802.11a (OFDM 6 Mbit/s)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5180.00000	78.20
		5220.00000	78.20
		5240.00000	78.20
[5725, 5850]		5745.00000	78.20
		5785.00000	78.20
		5825.00000	78.20

Modulation: 802.11ac VHT20 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5180.00000	77.16
		5220.00000	77.16
		5240.00000	77.15
[5725, 5850]		5745.00000	77.12
		5785.00000	77.15
		5825.00000	77.16

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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5180.00000	77.05
		5220.00000	77.05
		5240.00000	77.05
[5725, 5850]		5745.00000	77.05
		5785.00000	77.05
		5825.00000	77.05

Modulation: 802.11ac VHT40 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5190.00000	62.70
		5230.00000	62.70
[5725, 5850]		5755.00000	62.70
		5795.00000	62.70

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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5190.00000	62.56
		5230.00000	62.56
[5725, 5850]		5755.00000	62.56
		5795.00000	62.56

Modulation: 802.11ac VHT80 (OFDM MCS0)

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	DC (%)
[5150, 5250]	1	5210.00000	45.59
[5725, 5850]		5775.00000	45.59

Verdict

Pass

RSS-Gen section 6.7 / FCC 15.407 (a)(2). Transmitter. 26 dB Emission Bandwidth (EBW)

Specification

The 26 dB Emission Bandwidth was measured using the method according to clause C) 1) of 789033 D02 General UNII Test Procedures New Rules v02r01.

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

Results

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

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	1	5180.00000	21.500
		5220.00000	21.600
		5240.00000	21.500
[5725, 5850]		5745.00000	21.800
		5785.00000	21.600
		5825.00000	21.700

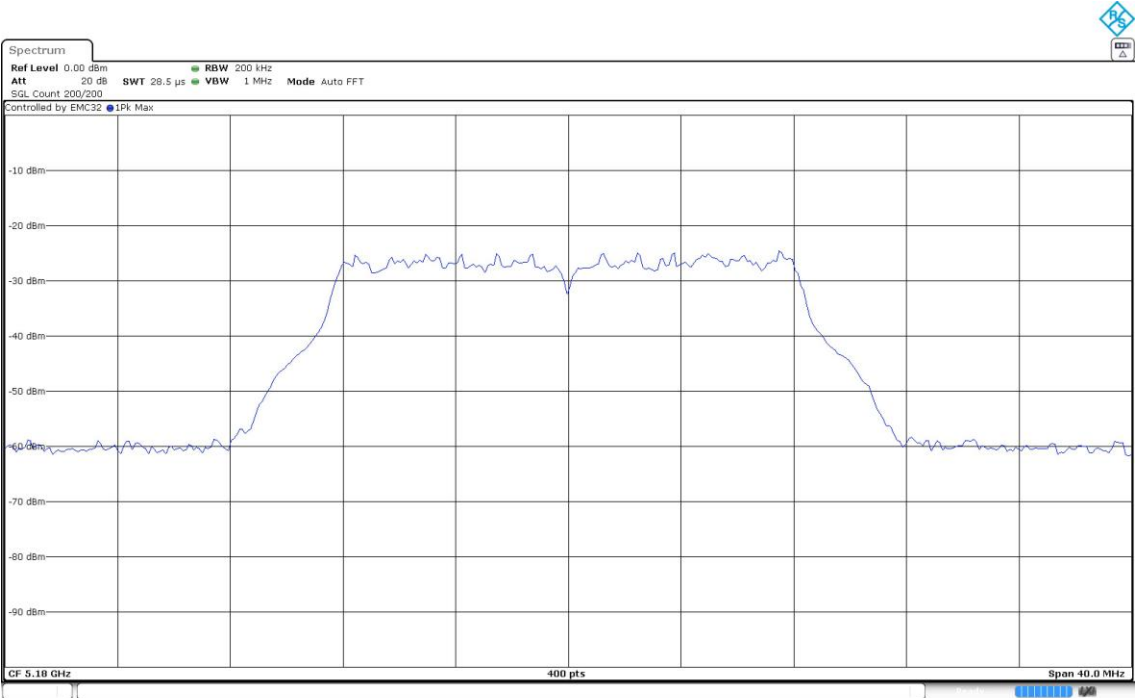
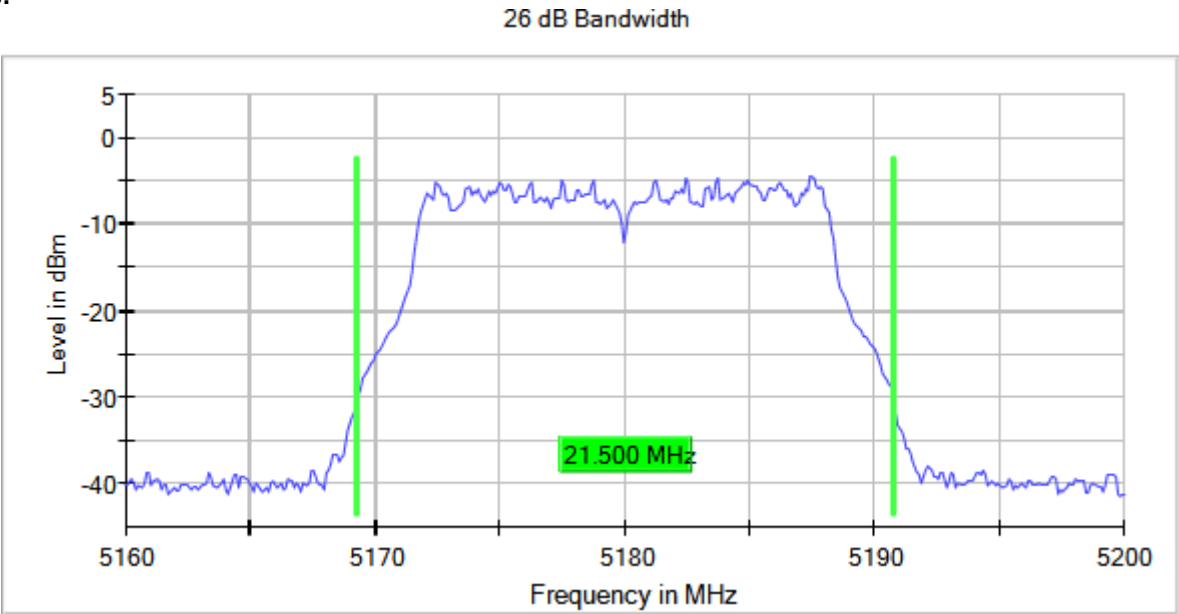
Verdict

Pass

Attachments

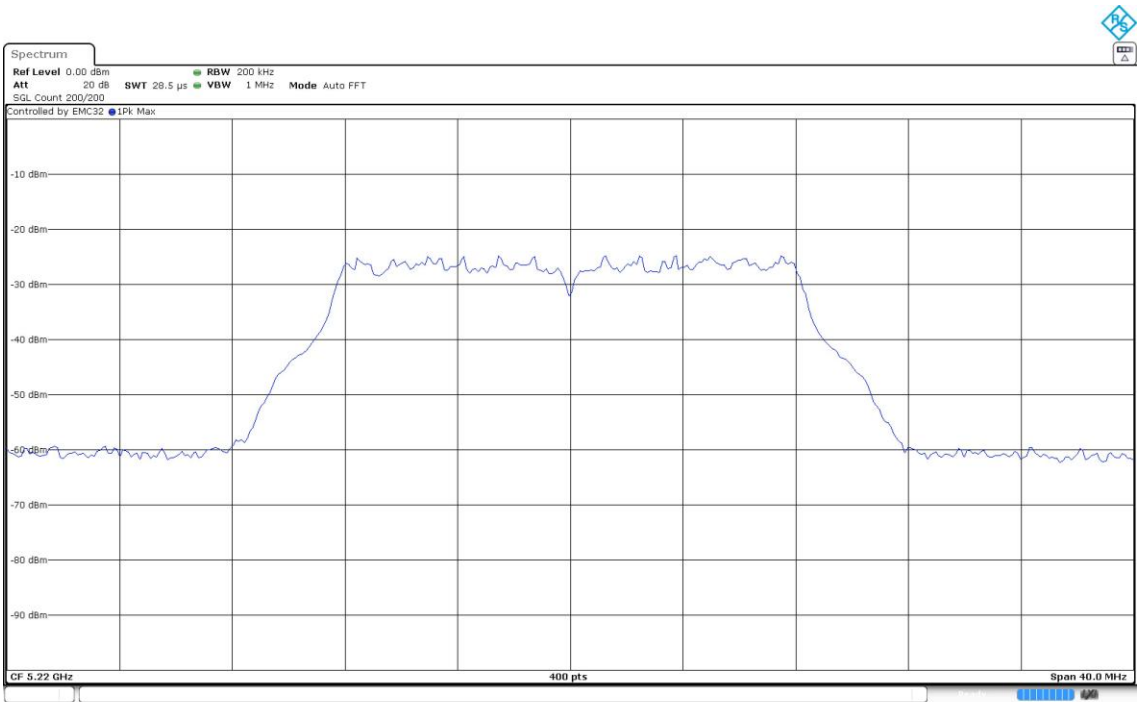
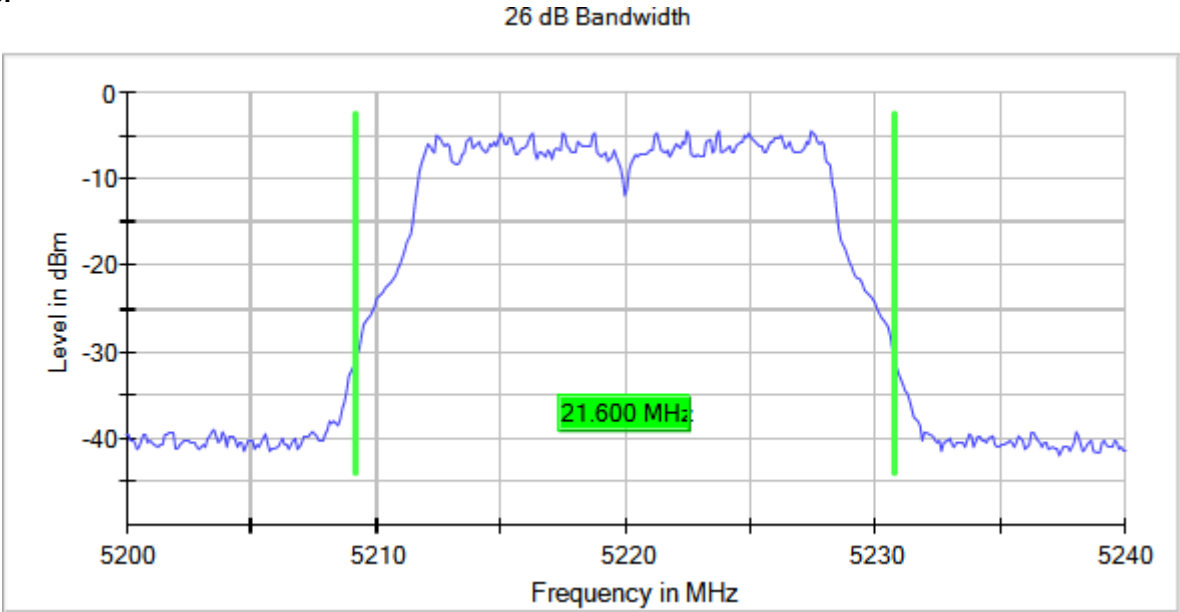
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5180.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



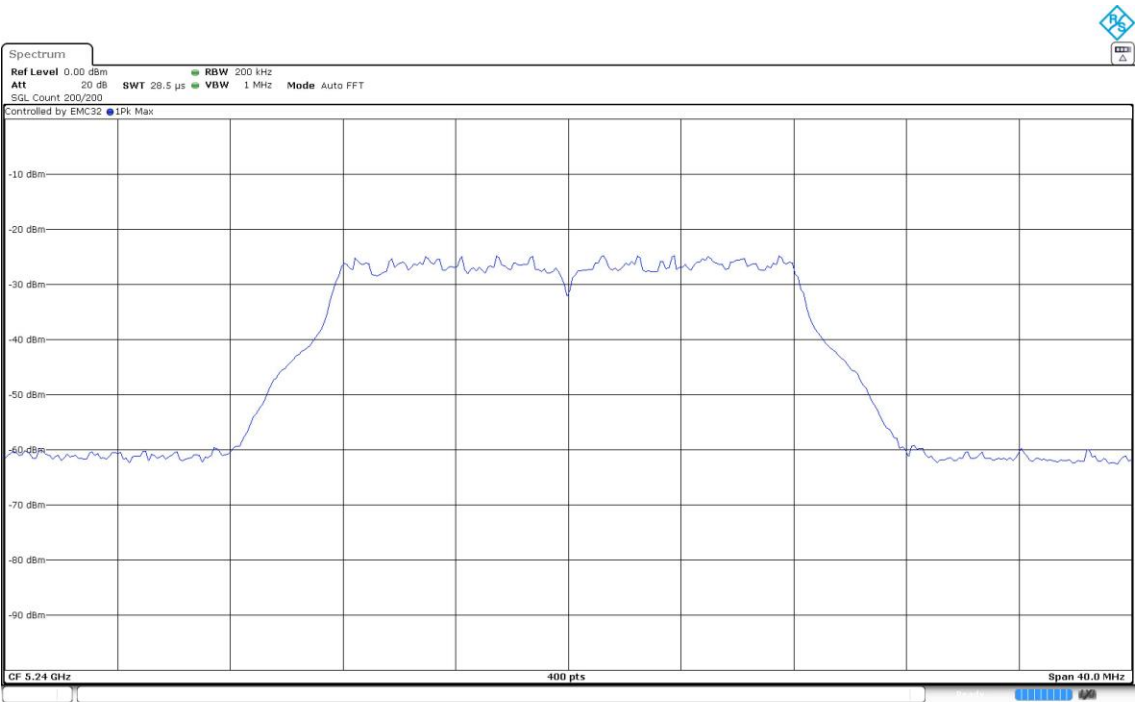
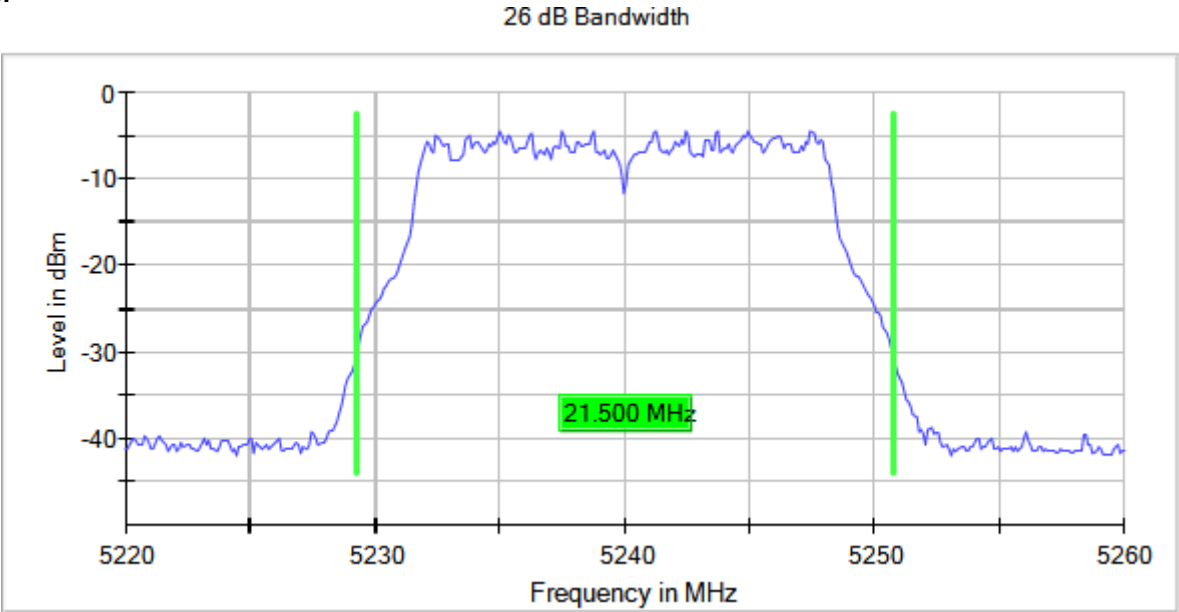
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5220.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



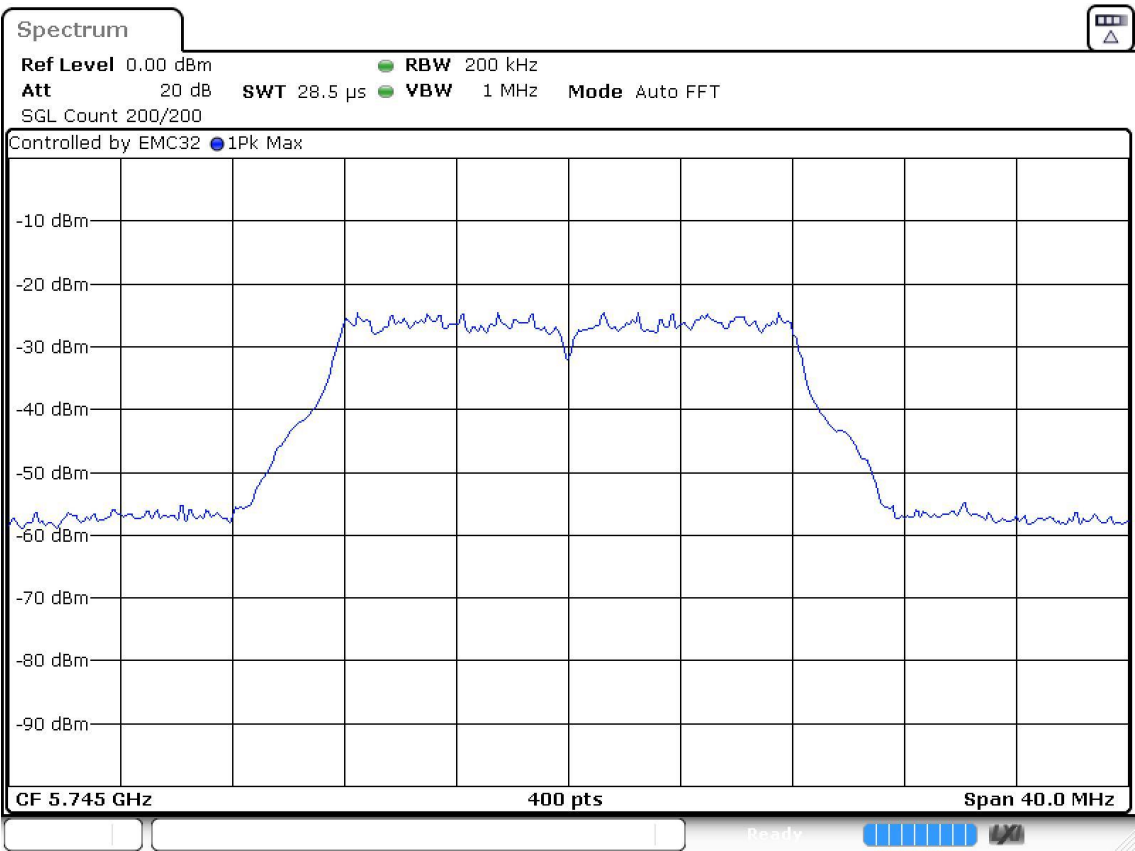
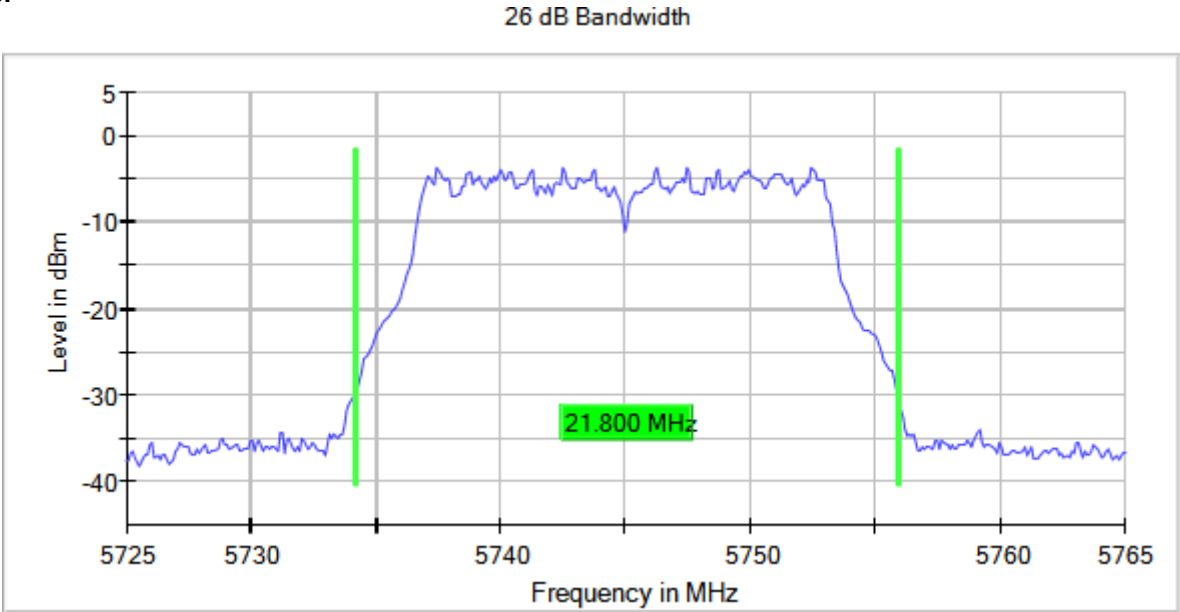
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5240.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



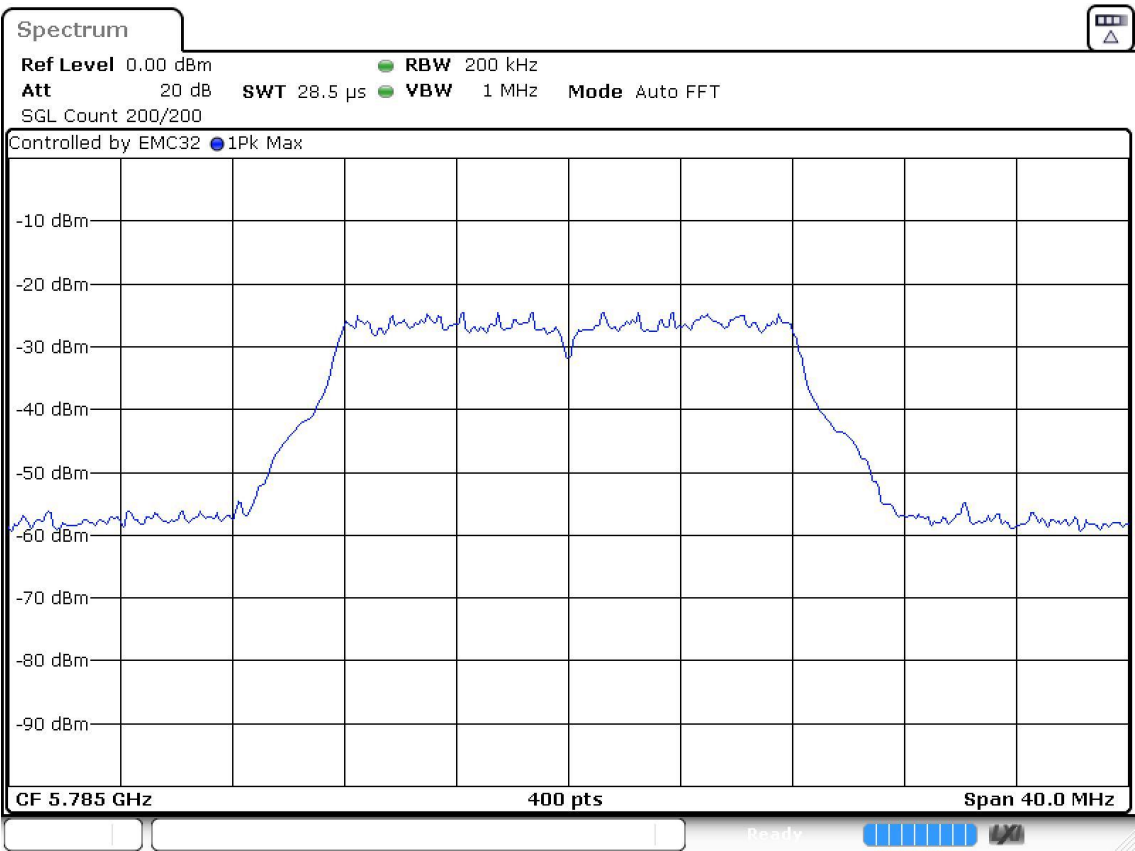
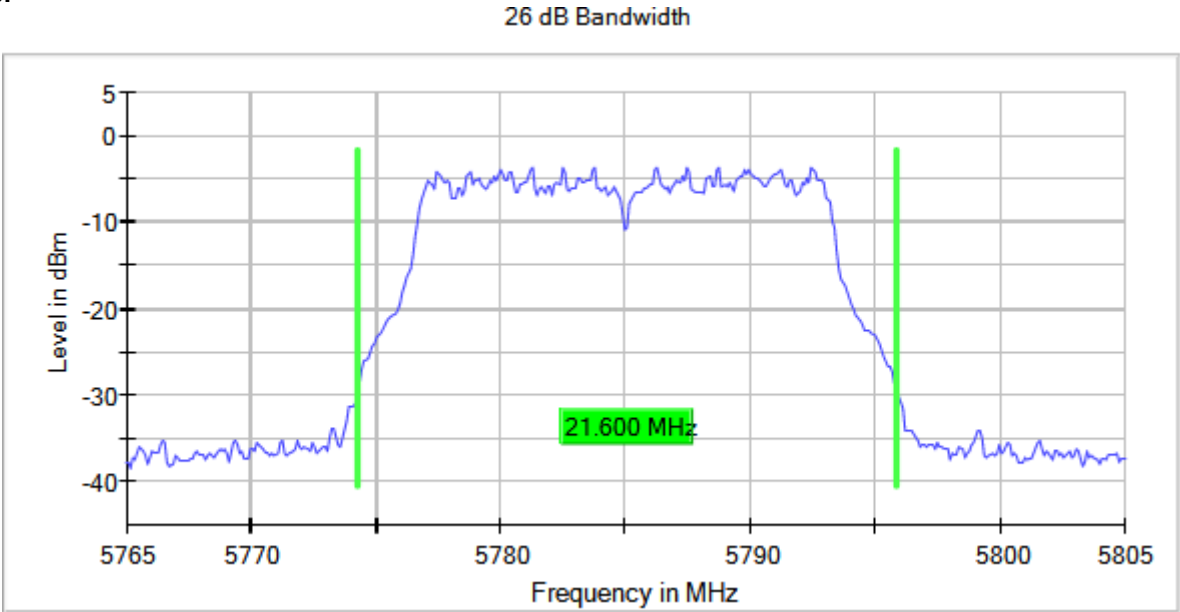
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

Images:



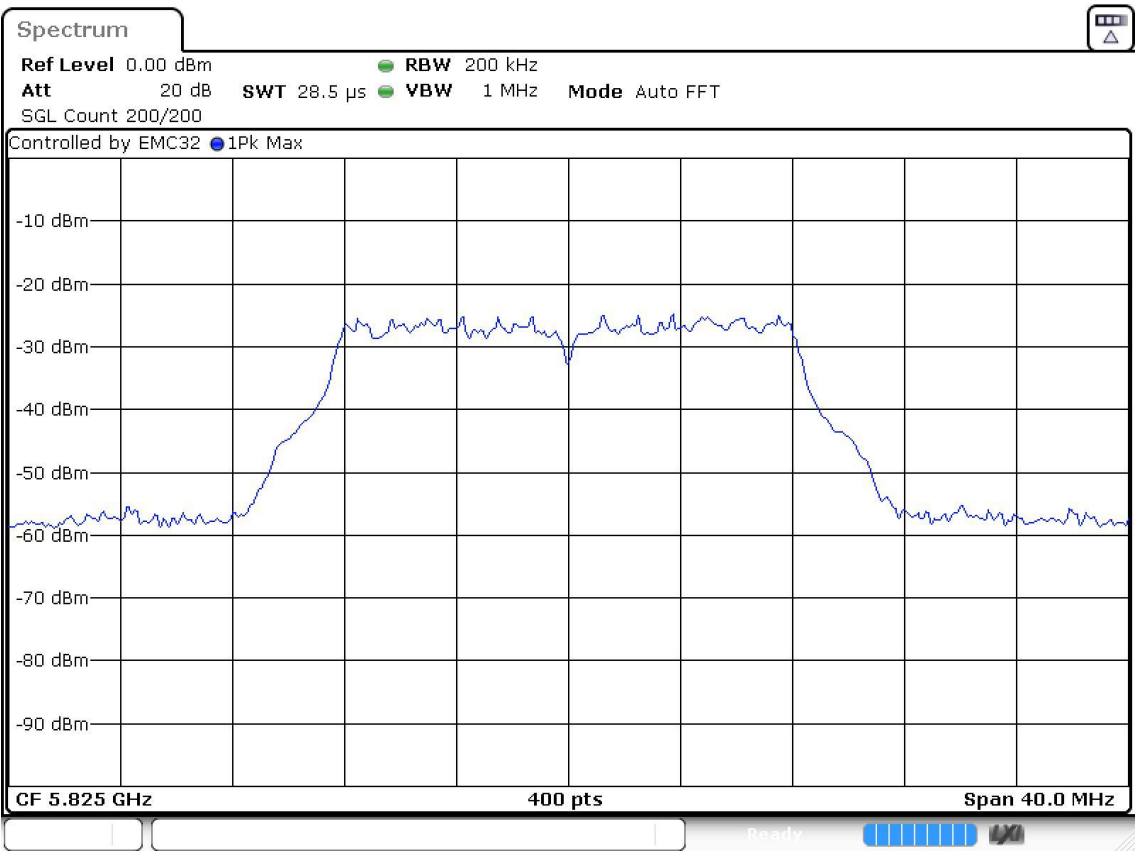
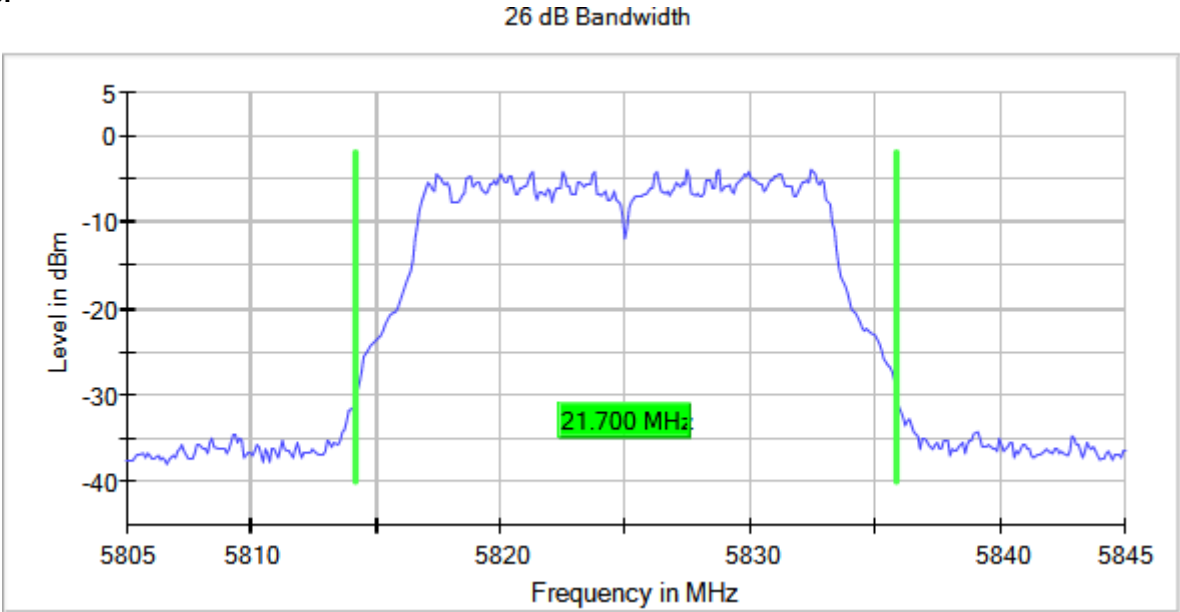
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11a (OFDM 6 Mbit/s)
MIMO Mode = SISO

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)
[5150, 5250]	1	5180.00000	21.800
		5220.00000	22.000
		5240.00000	22.000
[5725, 5850]		5745.00000	22.000
		5785.00000	22.100
		5825.00000	22.000

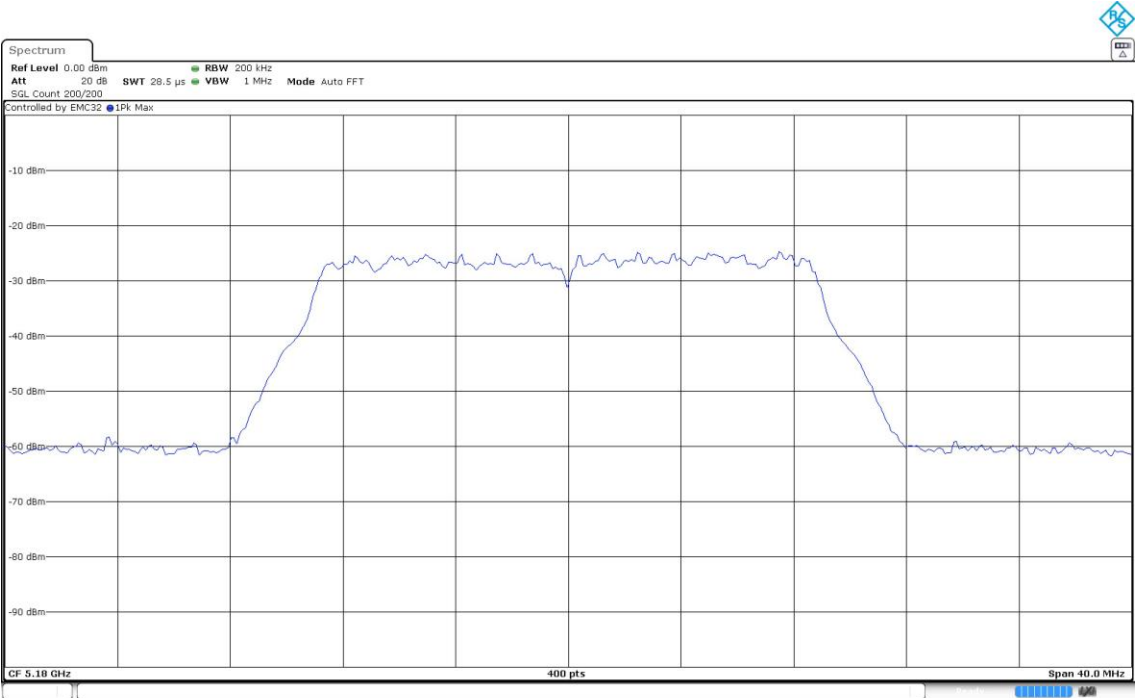
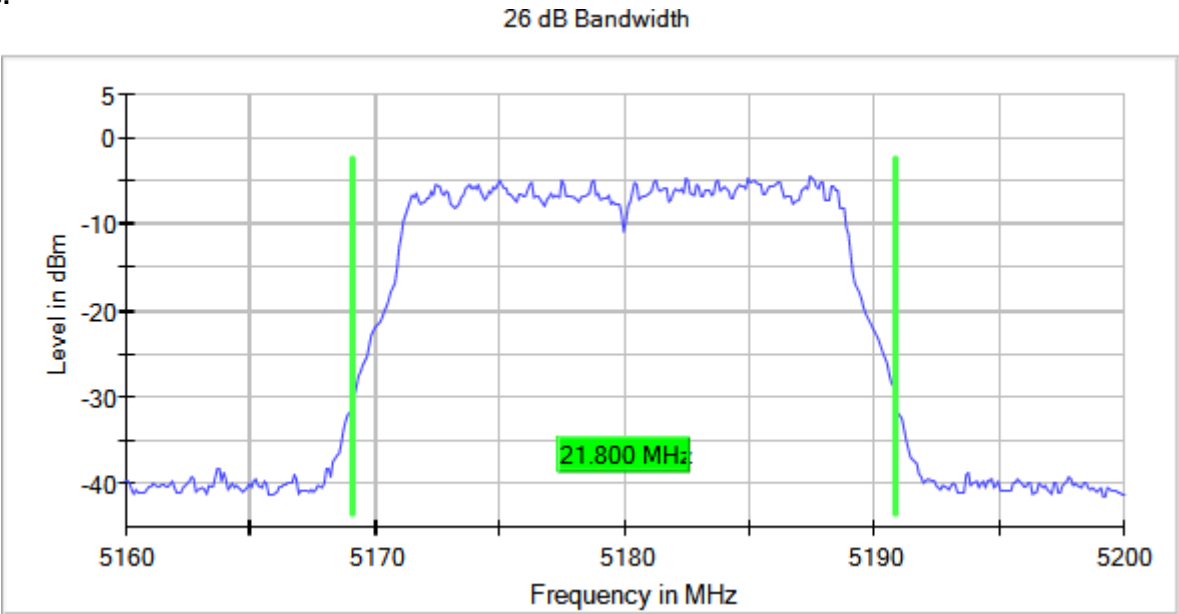
Verdict

Pass

Attachments

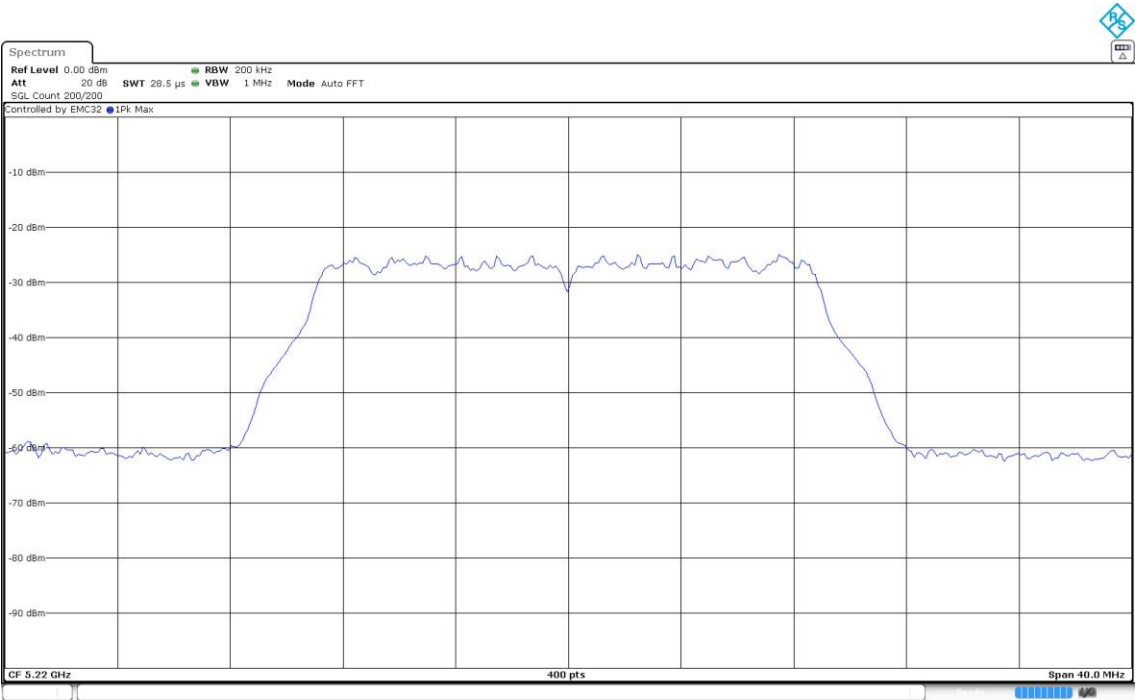
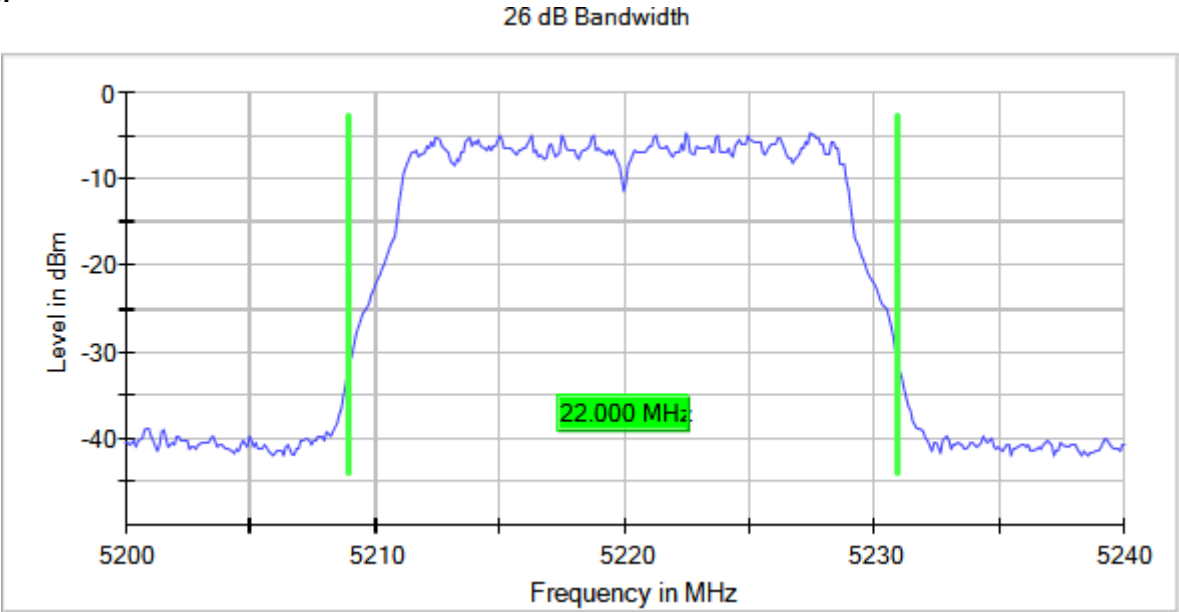
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5180.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



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

Images:



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

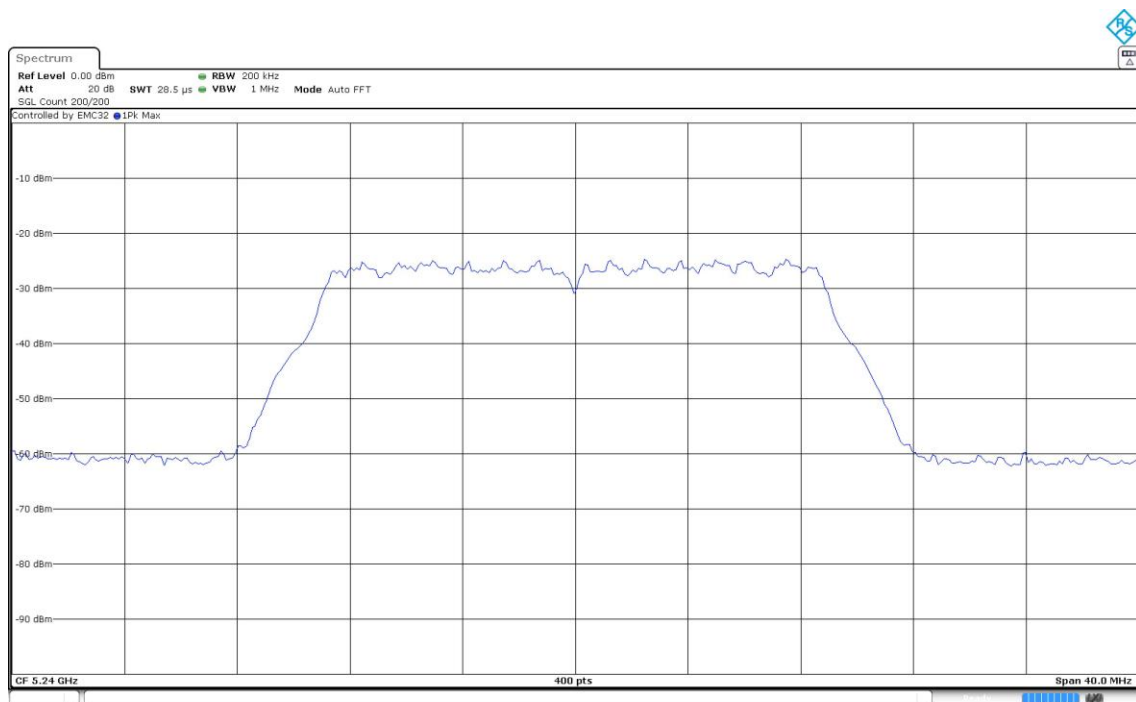
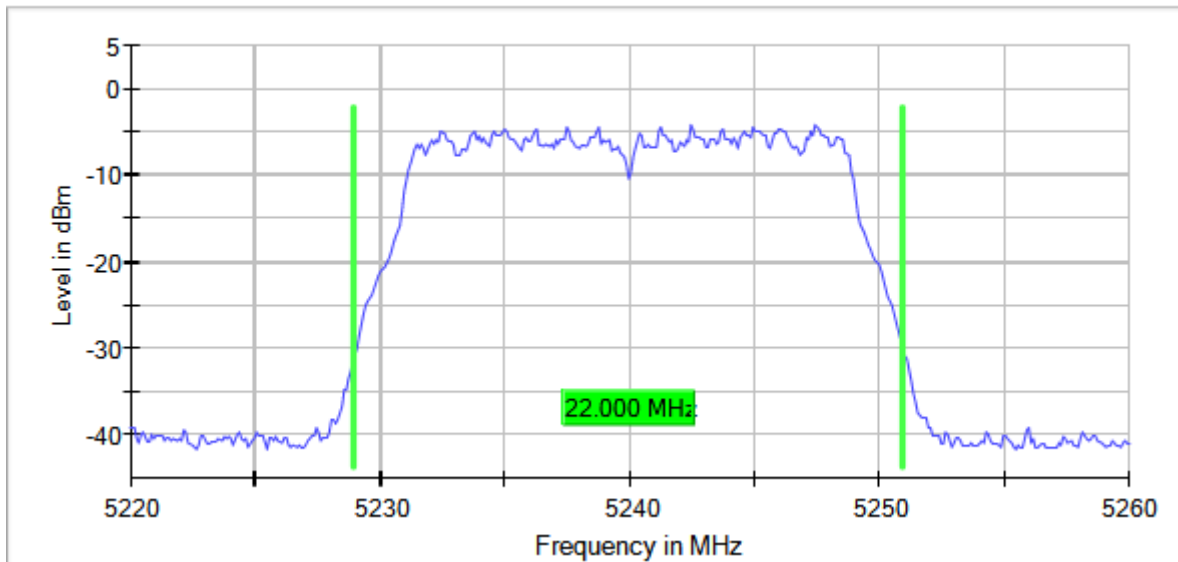
Frequency MHz = 5240.00000

Modulation = 802.11ac VHT20 (OFDM MCS0)

MIMO Mode = SISO

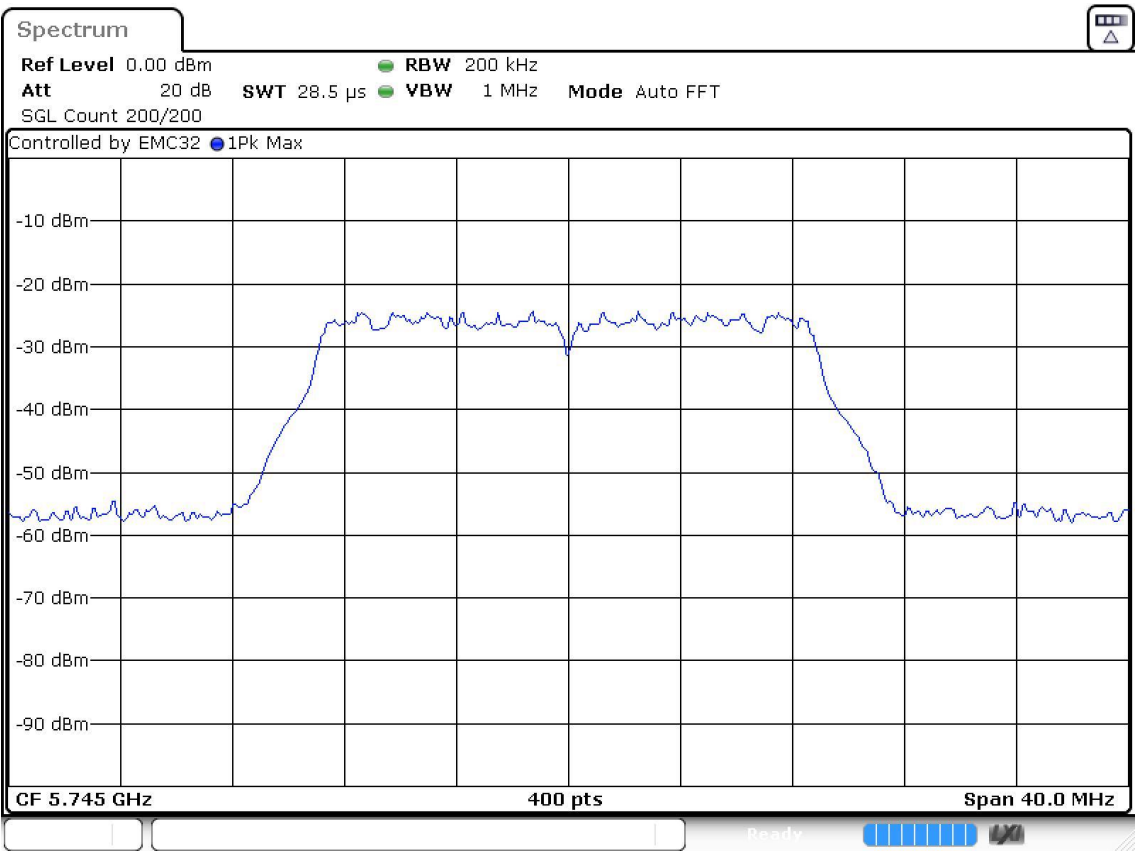
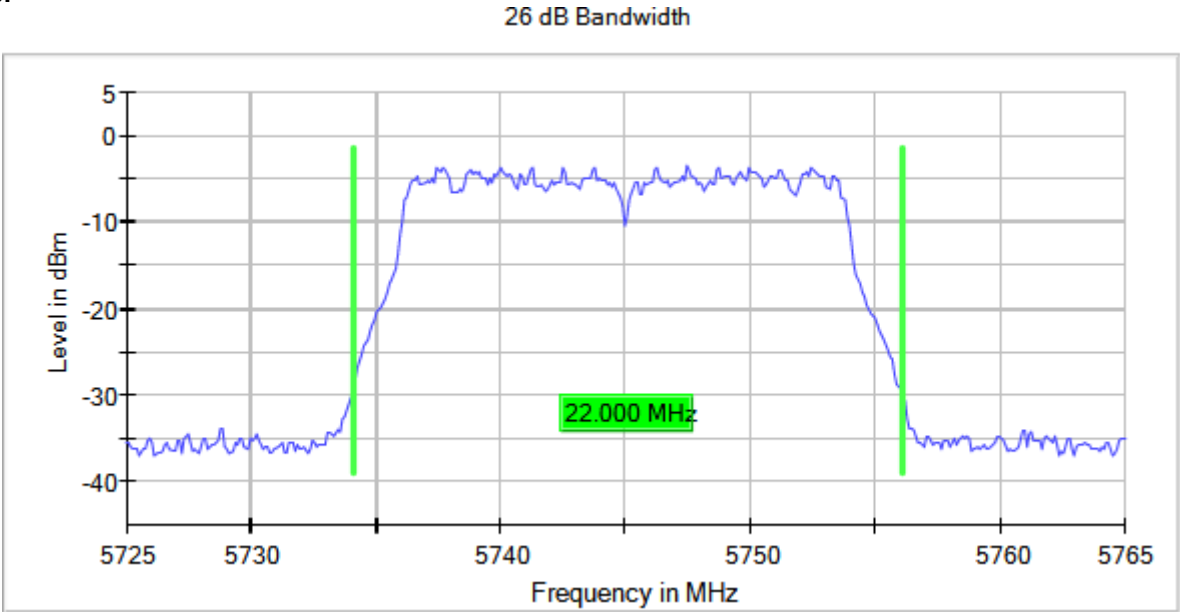
Images:

26 dB Bandwidth



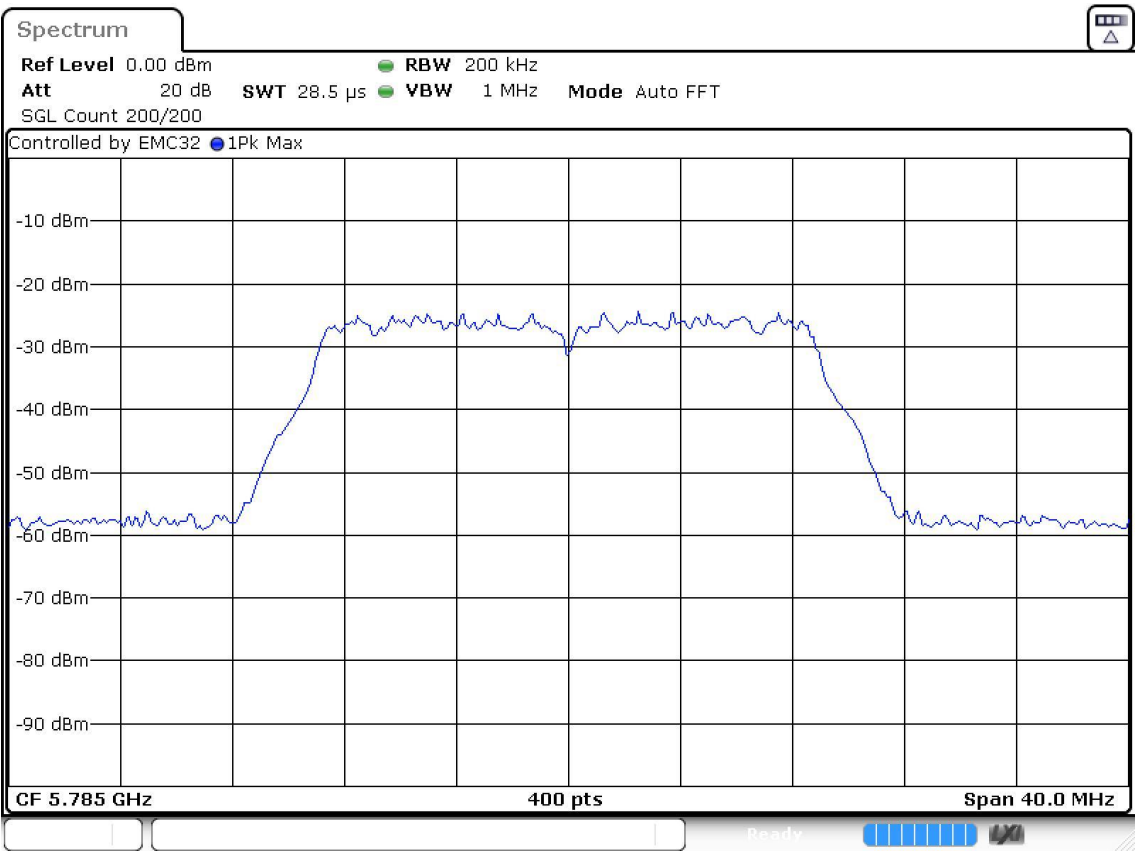
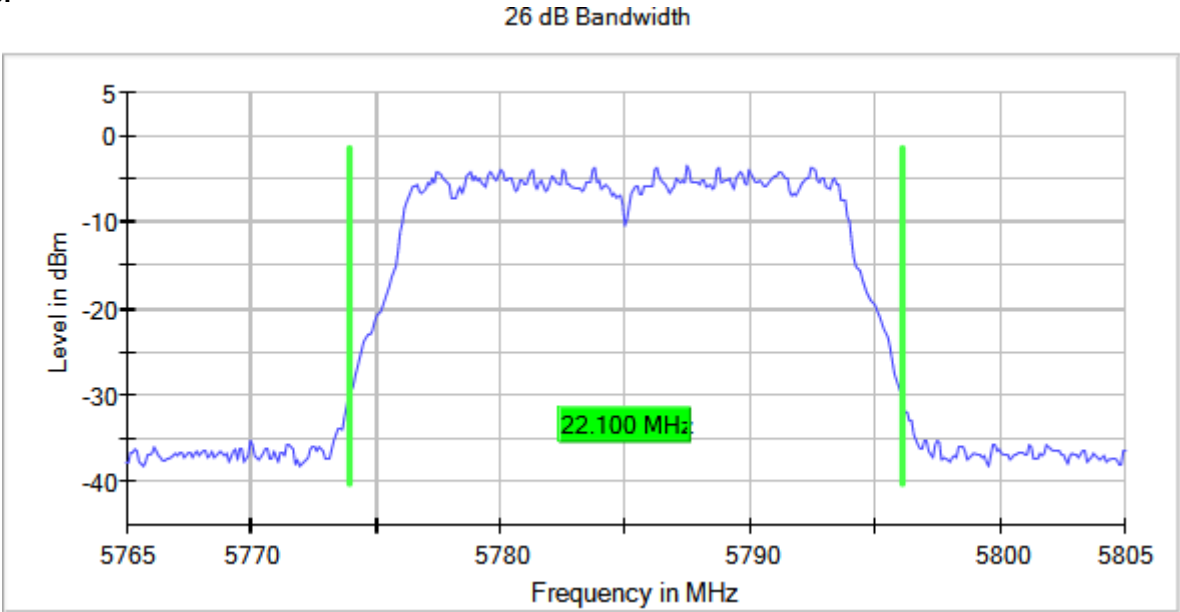
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5745.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



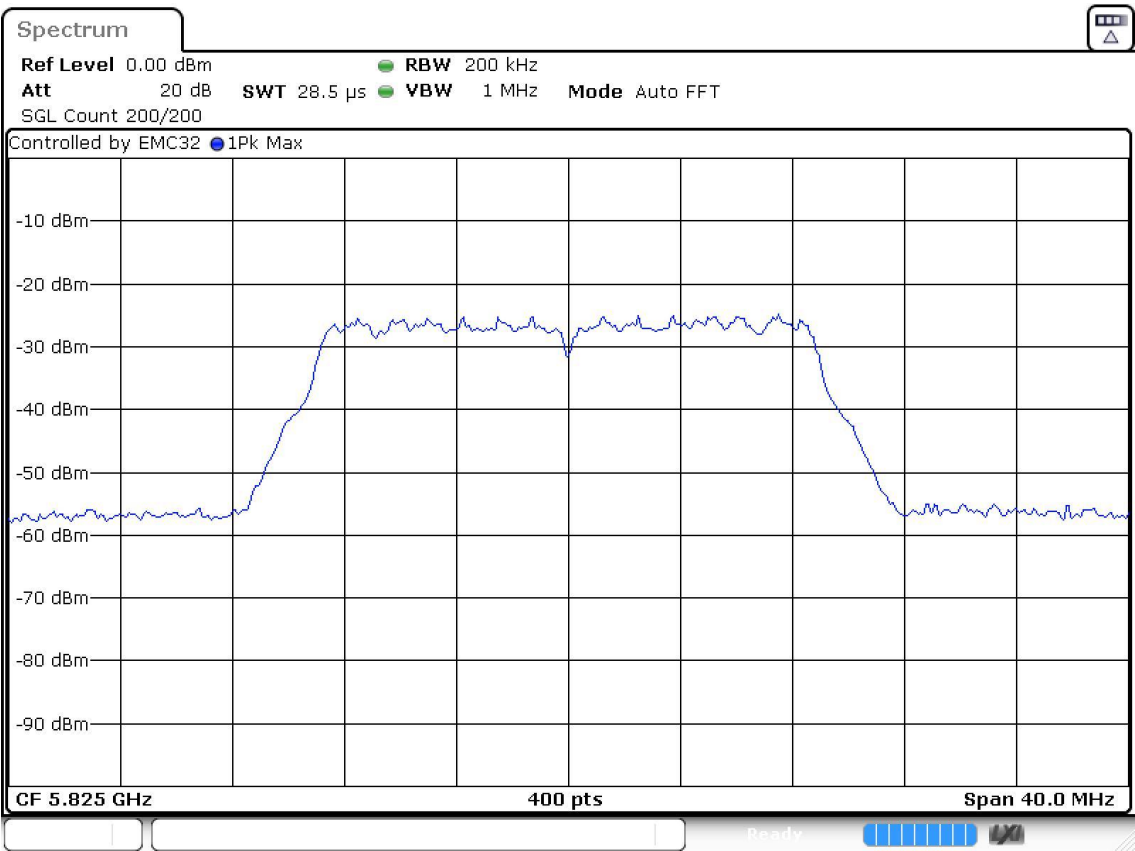
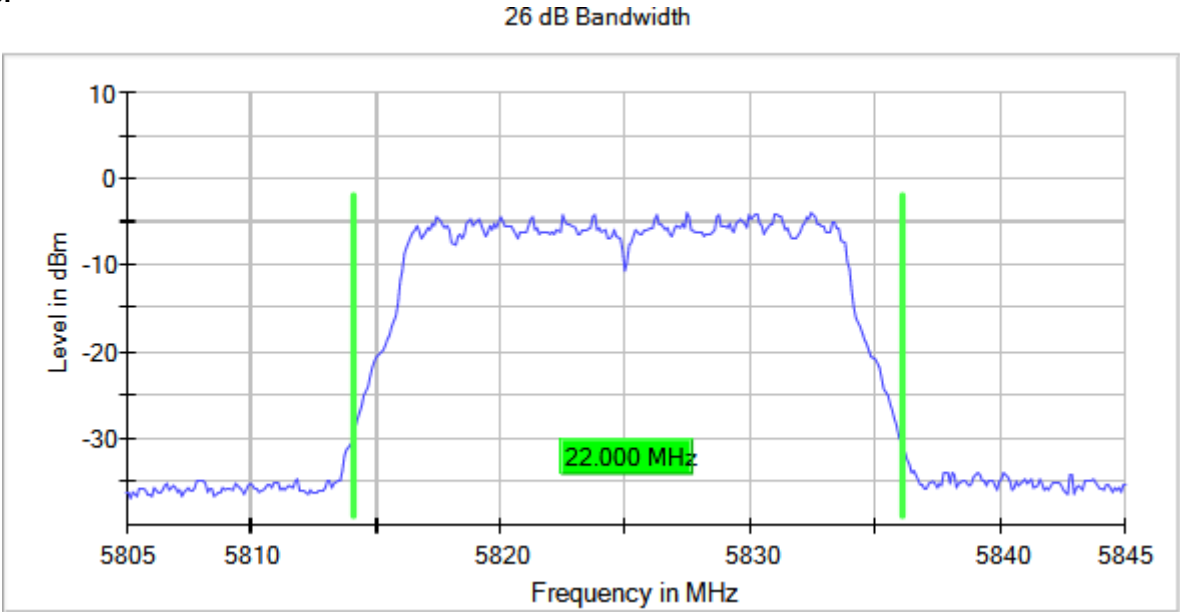
Operation Band MHz = [5725, 5850] Active Port = 1
Frequency MHz = 5785.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
MIMO Mode = SISO

Images:



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

Images:



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

Mode: SISO

Results

Operation Band (MHz)	Port	Freq (MHz)	Ebw (MHz)
[5150, 5250]	1	5180.00000	21.900
		5220.00000	22.000
		5240.00000	22.200
[5725, 5850]		5745.00000	22.000
		5785.00000	22.200
		5825.00000	22.100

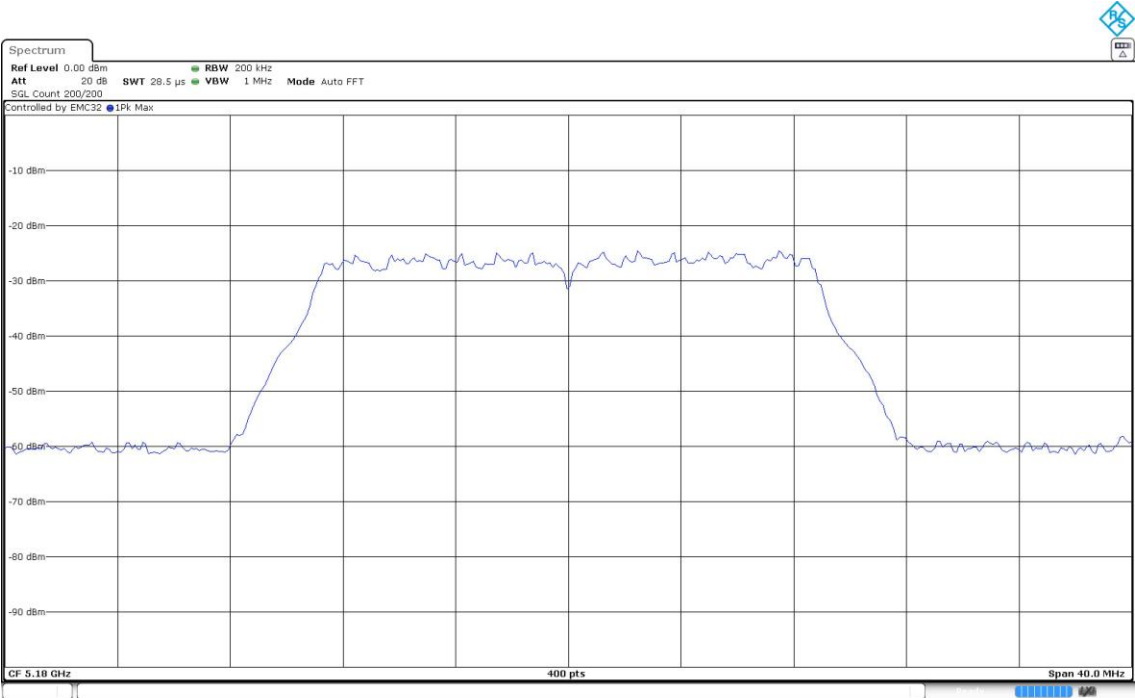
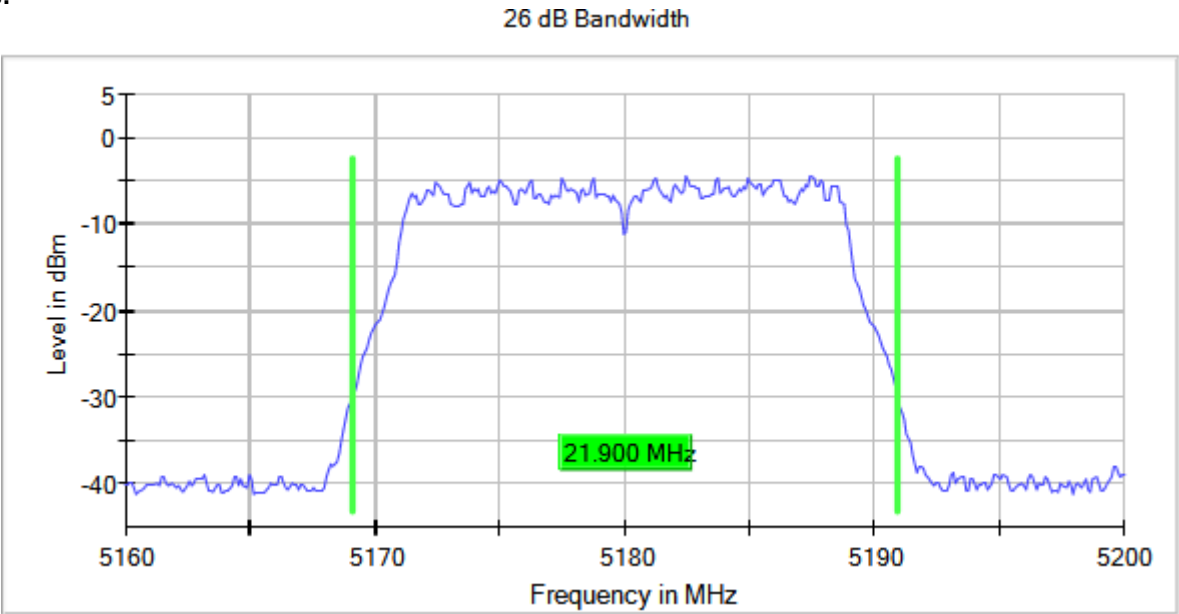
Verdict

Pass

Attachments

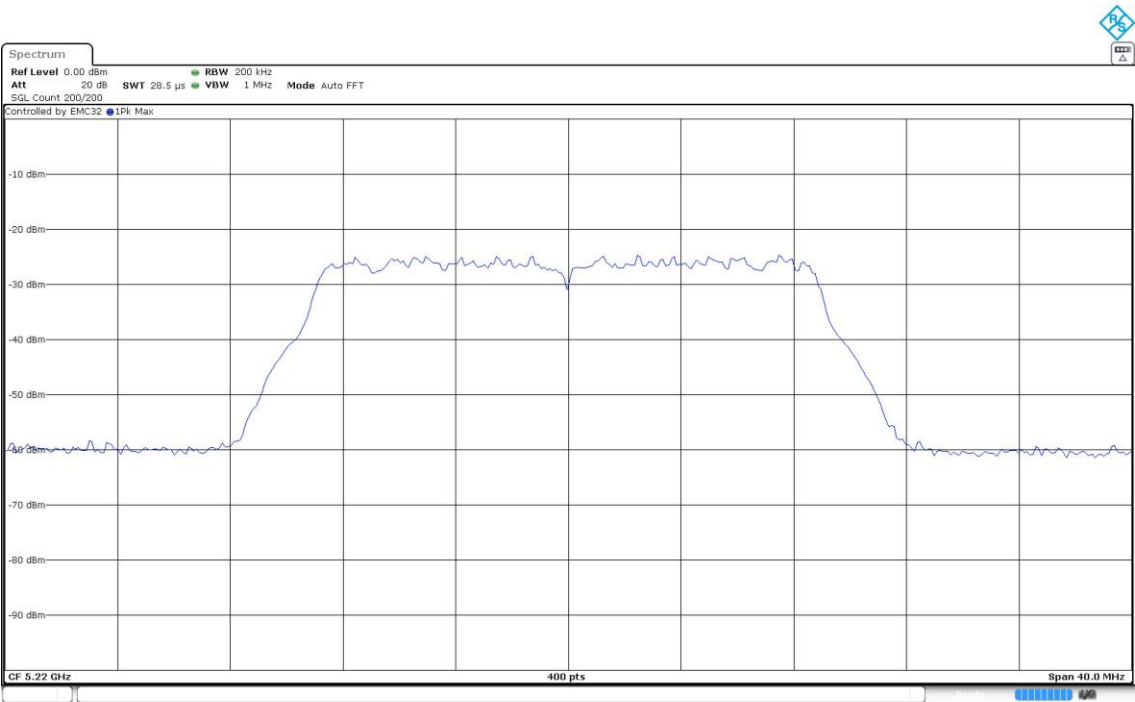
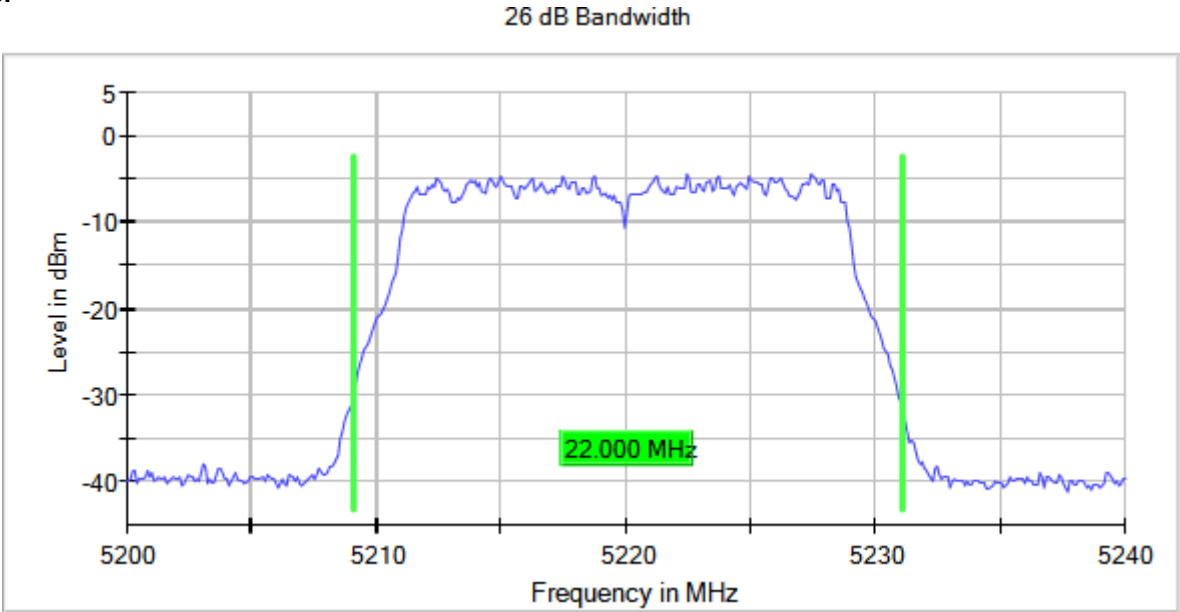
Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5180.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO

Images:



Operation Band MHz = [5150, 5250] Active Port = 1
Frequency MHz = 5220.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
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)

MIMO Mode = SISO

Images:

26 dB Bandwidth

