DEKRA Certification, Inc.
405 Glenn Dr. Suite 12,
Sterling, VA 20164
United States of America

FCC LISTED, REGISTRATION NUMBER: 2764.01

ISED LISTED REGISTRATION NUMBER: 23595-1

Test Report No:

3844ERM.010

Test report

USA FCC Part 15.407 (U-NII), 15.209; & CANADA RSS-210, RSS-Gen
Unlicensed National Information Infrastructure Devices. General technical requirements.
Licence-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment.
General Requirements and Information for the Certification of Radio Apparatus.

(*) Identification of item tested	Automotive infotainment System
(*) Trademark	Mercedes-Benz
(*) Model and /or type reference	NTG7Q MID LF2
Other identification of the product	FCC ID: 2AOUZNTG7QMIDLF2 IC: 23650-NTG7QMIDLF2
(*) Features	FM/AM/DAB, USB, Bluetooth, WLAN, GNSS. HW Version: D11 SW Version: E329.1
Manufacturer	Continental Automotive Technologies Gmbh VDO-Strasse 1, 64832 Babenhausen, Germany
Test method requested, standard	USA FCC Part 15.407 10-1-21 Edition : Unlicensed National Information Infrastructure Devices. General technical requirements. USA FCC Part 15.209 10-1-21 Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 2 (February 2017). CANADA RSS-Gen Issue 5 (April 2018). 789033 D02 General UNII Test Procedures New Rules v02r01 Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager Digitally signed by Domingo Galvez DN: cn=Domingo Galvez, o=DEKRA Certification Inc., ou=Regulatory Lab, email=dgalvez@dekra.com, c=US
Date of issue	11-29-2022
Report template No	FDT08_23 (*) "Data provided by the client"

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Acronyms

Acronym ID	Acronym Description
# of Tx Chains	Number of Transmission Chains
26Ebw	Emission Bandwidth
Avg Power	Maximum Average Conducted Output Power
DC	Duty Cycle
Freq	Frequency
Max EIRP	Maximum Burst EIRP
Mod	Modulation
Mode	MIMO Mode
Occ Ch BW	Occupied Channel Bandwidth
Operation Band	Operation Band
PSD	Power Spectrum Density
Port	Active Port
TPC	TPC

Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

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

DEKRA Certification Inc. 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 Certification at the time of performance of the test.

DEKRA Certification Inc. 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.

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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 Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U (k=2)	Units
RF Power and PSD	5150-5850	0.88	dB
Occupied Bandwidth		1.87	%
Band Edge		0.64	dB
Radiated Spurious Emission	30-180	4.27	dB
	180-1000	3.14	dB
	1000-18000	3.30	dB
	18000-40000	3.49	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 Automotive head unit to be installed in cars with the following features: FM/AM/DAB, USB, Bluetooth, WLAN and GNSS.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results

Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements, accessories and auxiliary equipment:

Id	Control Number	Description	Model	Serial Nº	Date of Reception	Application
S/01	3844/22	Infotainment Head Unit	NTG7Q MID LF2	COM652NB000375	9/13/2022	Element Under Test
S/01	3844/25	Harness	-	-	9/13/2022	Accessory
S/01	3844/27	Cable 4 in 1 – BT/Wi-Fi (SMA connector)	-	-	9/13/2022	Accessory

1. Sample S/01 Was Used for The Test(S): All Conducted Tests Indicated In Appendix B.

Sample S/02 is composed of the following elements, accessories and auxiliary equipment:

Id	Control Number	Description	Model	Serial Nº	Date of Reception	Application
S/02	3844/01	Infotainment Head Unit	NTG7Q MID LF2	COM652NB000376	9/13/2022	Element Under Test
S/02	3844/05	BT/WLAN Antenna 1	-	-	9/13/2022	Accessory
S/02	3844/06	BT/WLAN Antenna 2	-	-	9/13/2022	Accessory
S/02	3844/07	BT/WLAN Antenna 3	-	-	9/13/2022	Accessory
S/02	3844/08	BT/WLAN Antenna 4	-	-	9/13/2022	Accessory
S/02	3844/26	Harness	-	-	9/13/2022	Accessory
S/02	3844/27	RF antenna cable	-	-	9/13/2022	Accessory

1. Sample S/02 Was Used for The Test(S): All Radiated Tests Indicated In Appendix B.

Test sample description

Test Sample description (compulsory information for EMC and RF testing services

Ports……:	Port name and description	Cable			
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)
	Car Connector A	>3m	[X]	[ ]	[ ]
	Car Connector B	>3m	[X]	[ ]	[ ]
	Display Connector CID/PIP / RVC	>3m	[X]	[X]	[ ]
	USB Connector	<3m	[X]	[X]	[ ]
	Eth Connector	>3m	[X]	[ ]	[ ]
	BT/WLAN-Antenna	>3m	[X]	[X]	[ ]
	FM/AM/DAB Ant	>3m	[X]	[X]	[ ]
	GNSS Antenna	>3m	[X]	[X]	[ ]

Supplementary information to the ports…… :	

Rated power supply ..... :	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[X]	DC: 12V car battery /attenuator (9,5-15,5v normal operation)					

Rated Power ..... :	12V
Clock frequencies..... :	See schematics
Other parameters ..... :	See technical description
Software version ..... :	E329.1
Hardware version ..... :	D11
Dimensions in cm (W x H x D) :	182 x 78 x 160 mm

Mounting position ..... :		
	[ ]	Table top equipment
	[ ]	Wall/Ceiling mounted equipment
	[ ]	Floor standing equipment
	[ ]	Hand-held equipment
	[X]	Other: Automotive Infotainment Head Unit

Modules/parts..... :	Module/parts of test item	Type	Manufacturer
	N/A	.....	.....
	.....	.....	.....

Accessories (not part of the test item)..... :	Description	Type	Manufacturer
	HARMANeco (with Display or headless)		HBAS
	Cable harness		HBAS
	Display		L.G.
	BT/WLAN-Antenna		HIRSCHMANN
Documents as provided by the applicant..... :	Description	File name	Issue date
	Technical description	Technical Description NTG7Q_A20 200717 SOP2 AllVariant_NXP DRAFT.pdf	
	Testing Guide	NTG7QTestsetupScript_220704_v3 2.pdf	
	Declaration Equipment Data	FDT30_16 Declaration Equipment Data_NTG7Q MID LF2_D11_update1_signed	

Copy of marking plate:

Identification of the client

CONTINENTAL AUTOMOTIVE TECHNOLOGIES GMBH
VDO-Strasse 1,
64832 Babenhausen,
Germany

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	10-03-2022
Date (finish)	11-09-2022

Document history

Report number	Date	Description
3844ERM.010	11-29-2022	First release.

Environmental conditions

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

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

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

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

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

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

Remarks and comments

The tests have been performed by the technical personnel: Juliana Cherry, Koji Nishimoto and Victor Albrecht.

Testing verdicts

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

Summary

FCC PART 15 PARAGRAPH / RSS-247			
Requirement	**Test case**	**Verdict**	**Remark**
FCC 15.407 (a) / RSS-247 6.2	Power Limits. Maximum Output Power	P	
FCC 15.407 (a) / RSS-247 6.2	Maximum Power Spectral Density	P	
FCC 2.1049 / RSS-Gen 6.7	99% Occupied Bandwidth	P	
FCC 15.403 / RSS-Gen 6.7	26 dB Emission Bandwidth	P	
FCC 15.407 (b) / RSS-247 6.2	Band-edge Conducted Emissions	P	
FCC 15.407 (e) / RSS 247 6.2.4.1	6 dB Emission Bandwidth	P	Refer 1
FCC 15.407 (b), 15.205 & 15.209 / RSS-Gen 8.9 & 8.10	Undesirable radiated emissions	P	

Supplementary information and remarks:

1. Only applicable to sub-band U-NII-3: 5.725 - 5.85 GHz.

List of equipment used during the test

Conducted Measurements

CONTROL NUMBER	DESCRIPTION	Serial No	LAST CALIBRATION	NEXT CALIBRATION
897	AMETEK PROG DC Power supply	1707A01906	N/A	N/A
1014	FSV40 Signal Analyzer 40GHz	101626	2021-05-19	2023-05-19
1107	Ethernet SNMP Thermometer-RF1 Room	60038026952	2022-10-18	2024-10-18
1313	Wireless Measurement Software R&S EMC32	-	N/A	N/A

Radiated Measurements

CONTROL NUMBER	DESCRIPTION	Serial No	LAST CALIBRATION	NEXT CALIBRATION
878	AMETEK PROG DC Power supply	1707A01783	N/A	N/A
982	Low Noise Preamplifier	1711156C	2020-11-10	2022-11-10
1012	ESR26 EMI Test Receiver	101478	2022-04-12	2024-04-12
1014	FSV40 Signal Analyzer 40GHz	101626	2021-05-19	2023-05-19
1056	3116C Double-Ridged Waveguide Horn Antenna 19-40 GHz	213179	2020-01-10	2023-01-10
1057	3115 Double-Ridged Waveguide Horn Antenna 1-18 GHz	211373	2020-06-03	2023-06-03
1065	3142E Biconilog Antenna	208587	2020-08-13	2023-08-13
1108	Ethernet SNMP Thermometer-CR Room	60038026954	2022-10-18	2024-10-18
1111	Ethernet SNMP Thermometer-SAC	60038026577	2022-10-18	2024-10-18
1179	Semi anechoic Absorber Lined Chamber	F169021	N/A	N/A
1314	Wireless Measurement Software R&S EMC32	1040-OT102236	N/A	N/A
1460	Low Noise Preamplifier	2213857A	2022-06-01	2024-06-01

Appendix A: DUT DESCRIPTION

DUT Description

The following information is provided by the client

Information	Description
Equipment type	Wi-Fi 5GHz
DFS Operating Mode	-
Antenna Specification	Equipment with only one antenna
Operating Frequency Range	U-NII-1: 5150 - 5250 MHz U-NII-3: 5725 - 5825 MHz
Nominal Channel Bandwidth	20/ 40/ 80 MHz
Antenna type	External Antenna
RF Output Power	17 dBm
Antenna gain	2.5 dBi
Supply Voltage	12 Vdc
Modulation:	GFSK, π/4-DPSK and 8-DPSK
Communication Mode:	IP Based (Load Based)
Transmit Data Rate:	802 .11 a/n/ac Rates: IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n: MCS0-8 IEEE 802.11ac: VHT SS1 MCS 0-9 VHT SS2 MCS 0-9

Appendix B: Tests results. Wi-Fi 5GHz

Appendix B

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TEST CONDITIONS

(*): Data provided by the client.

TEST CONDITIONS	DESCRIPTION
TC#01 **(a mode)**	Power supply (V): $V_{nominal}$: 12 Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Lowest range: 5180 MHz Middle channel: 5200 MHz Highest range: 5240 MHz U-NII-3 Lowest range: 5745 MHz Middle channel: 5785 MHz Highest range: 5825 MHz
TC#02 **(n mode)**	Power supply (V): $V_{nominal}$: 12 Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Lowest range: 5180 MHz Middle channel: 5200 MHz Highest range: 5240 MHz U-NII-3 Lowest range: 5745 MHz Middle channel: 5785 MHz Highest range: 5825 MHz Channel Bandwidth: 40 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Lowest range: 5190 MHz Highest range: 5230 MHz U-NII-3 Lowest range: 5755 MHz Highest range: 5795 MHz
03 **(ac mode)**	Power supply (V): $V_{nominal}$: 12 Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Lowest range: 5180 MHz Middle channel: 5200 MHz Highest range: 5240 MHz U-NII-3 Lowest range: 5745 MHz Middle channel: 5785 MHz Highest range: 5825 MHz Channel Bandwidth:40 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Lowest range: 5190 MHz Highest range: 5230 MHz U-NII-3 Lowest range: 5755 MHz Highest range: 5795 MHz Channel Bandwidth: 80 MHz Test Frequencies for Conducted/Radiated tests: U-NII-1 Single range: 5210 MHz U-NII-3 Single range: 5755 MHz

TEST FREQUENCIES (*):

Technology Tested:	WLAN (IEEE 802.11 a, n, ac) / U-NII-1 / U-NII-3	
Modes:	802.11a20: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps	
	802.11n HT20: MCS0 to MCS8	
	802.11n HT40: MCS0 to MCS8	
	802.11ac VHT20: MCS0 to MCS9	
	802.11ac VHT40: MCS0 to MCS9	
	802.11ac VHT80: MCS0 to MCS9	
Setting of cores / ports:	One port.	
Beamforming:	No.	
Frequency Range:	5150 - 5250 MHz / 5725 - 5850 MHz	
Channel Spacing:	20 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Low: 36	5180
	Middle: 40	5200
	High: 48	5240
	Low: 149	5745
	Middle: 157	5785
	High: 165	5825
Channel Spacing:	40 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Low: 38	5190
	High: 46	5230
	Low: 149	5755
	High: 157	5795
Channel Spacing:	80 MHz	
Transmit Channels	Middle: 42	5210
	Middle: 153	5775

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.

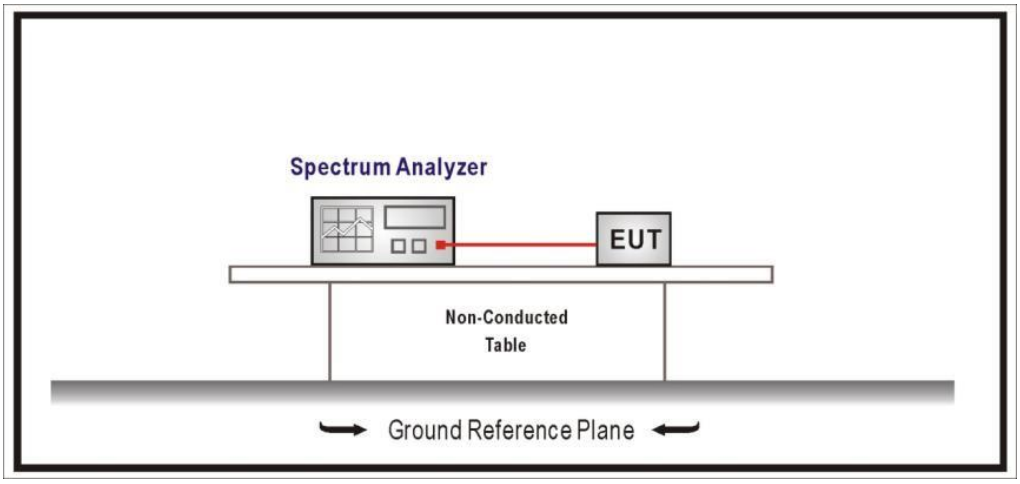
The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

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 document containing the setup instructions.

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

- 802.11 a20: 6 Mbps
- 802.11 n HT20: MCS0
- 802.11 n HT40: MCS0
- 802.11 ac VHT20: MCS0
- 802.11 ac VHT40: MCS0
- 802.11 ac VHT80: MCS0

CONDUCTED MEASUREMENTS:



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 30-1000 MHz (Bilog antenna) and 1-18 GHz Double ridge horn antennas, and 1m for the frequency range 18 GHz- 26 GHz Double ridge horn antenna.

For radiated emissions in the range 18 - 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 360º and the antenna height 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 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.

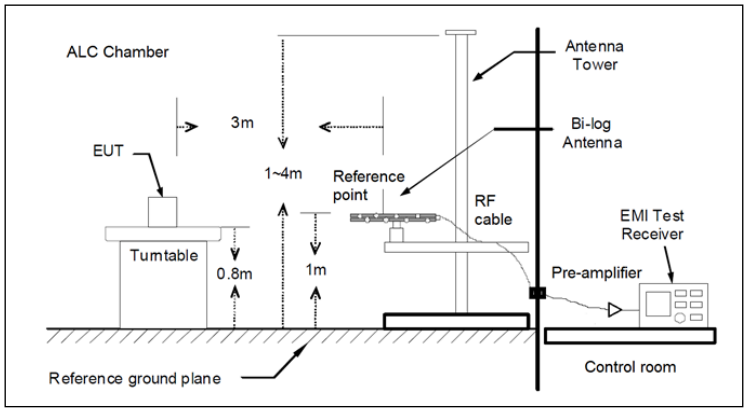


Fig A1: Radiated measurements Setup f < 1 GHz

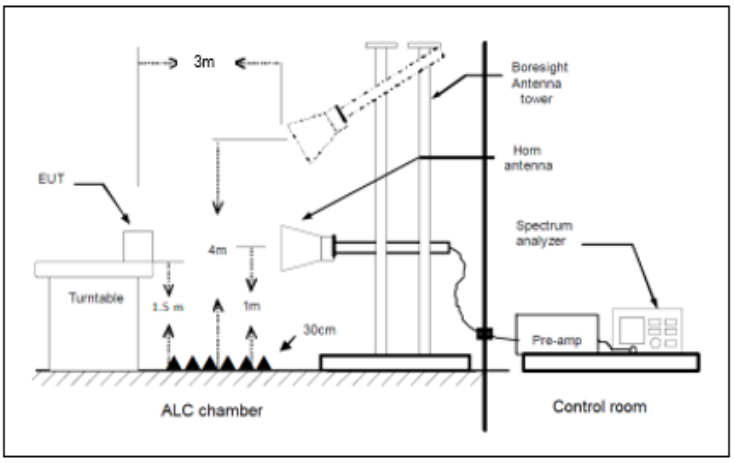


Fig A2: Radiated measurements setup f > 1-18 GHz

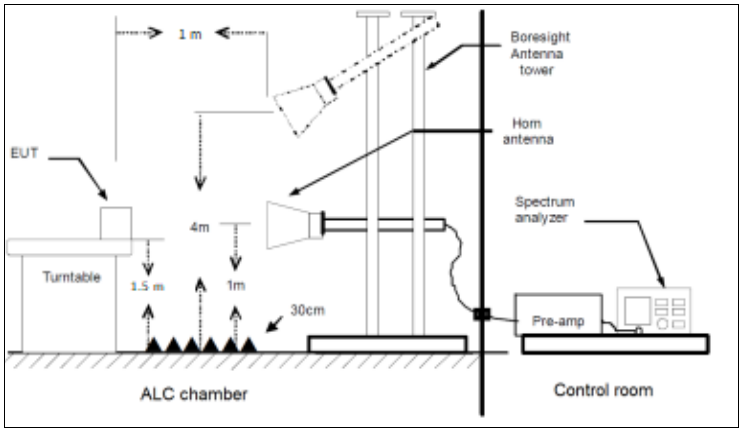


Fig A3: Radiated measurements setup f > 18 GHz

TEST CASES DETAILS

FCC 15.407 (a) / RSS-247 6.2 Power Limits. Maximum Output 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. 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:
For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For devices other than devices installed in vehicles:

For the band 5.15-5.25 GHz, 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.

For the 5.25-5.35 GHz, 5.470-5.6 GHz, and 5.650-5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW (24 dBm) or 11 + 10 log10B, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less

For the band 5.725-5.850 GHz, the maximum conducted output power shall not exceed 1 W. 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.

Maximum declared antenna gain: 2.5 dBi

Note: The following test results are shown based on KDB 662911 D01 Multiple Transmitter Output v02r01 E) 1) In-Band Power Measurements.

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5180.00000	15.6	13.1
		5200.00000	16.2	13.7
		5240.00000	15.5	13.0
U-NII-3	1	5745.00000	18.5	16.0
		5785.00000	17.8	15.3
		5825.00000	17.1	14.6

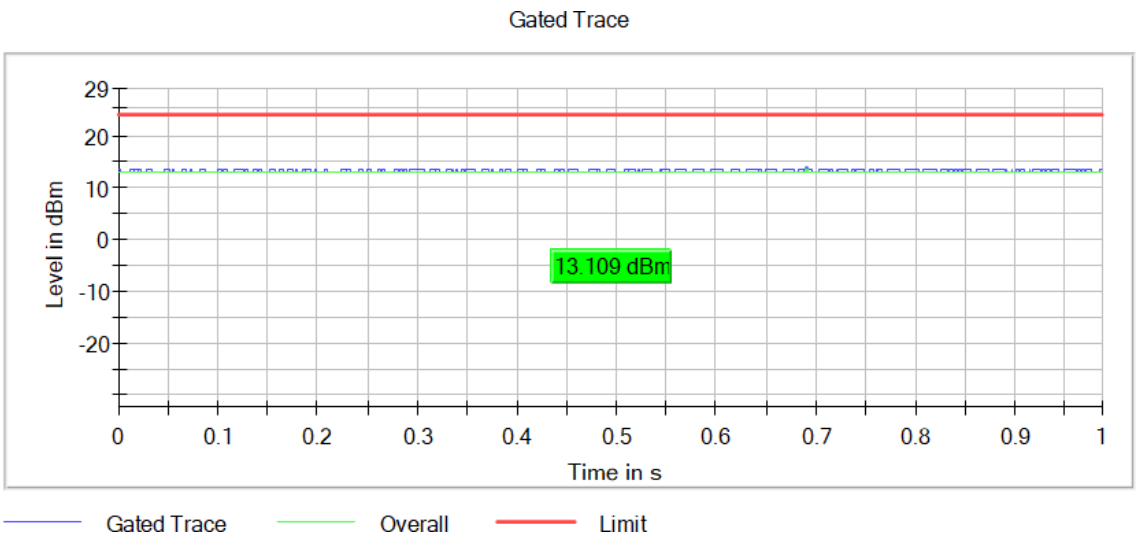
Verdict

Pass

Attachments

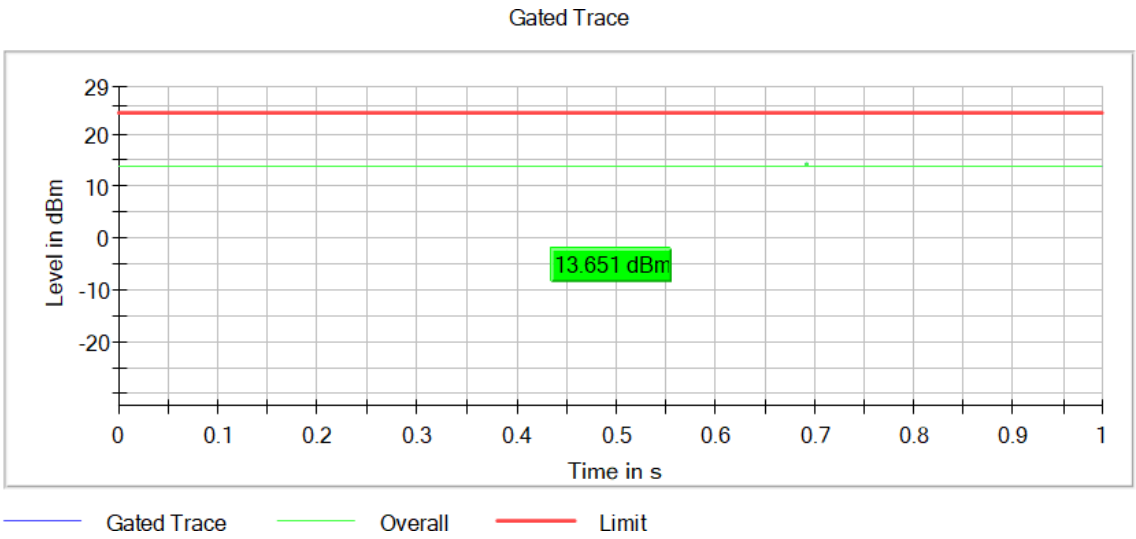
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



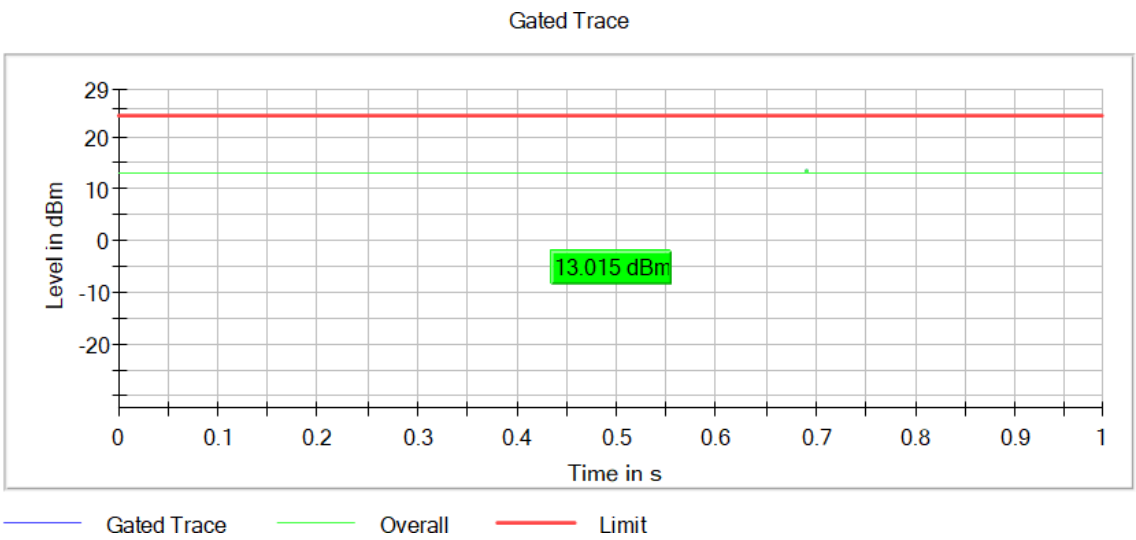
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



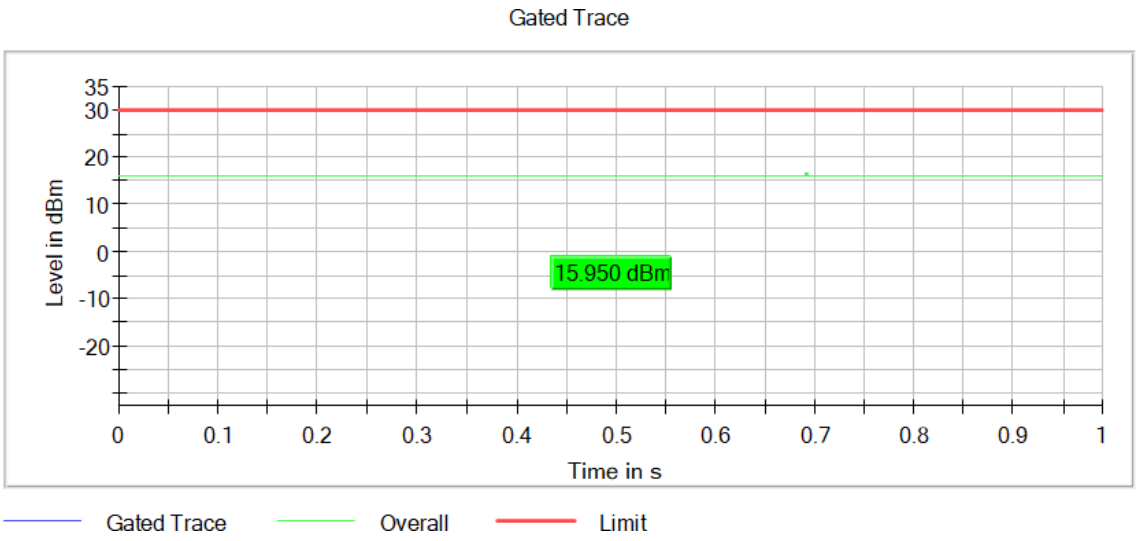
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



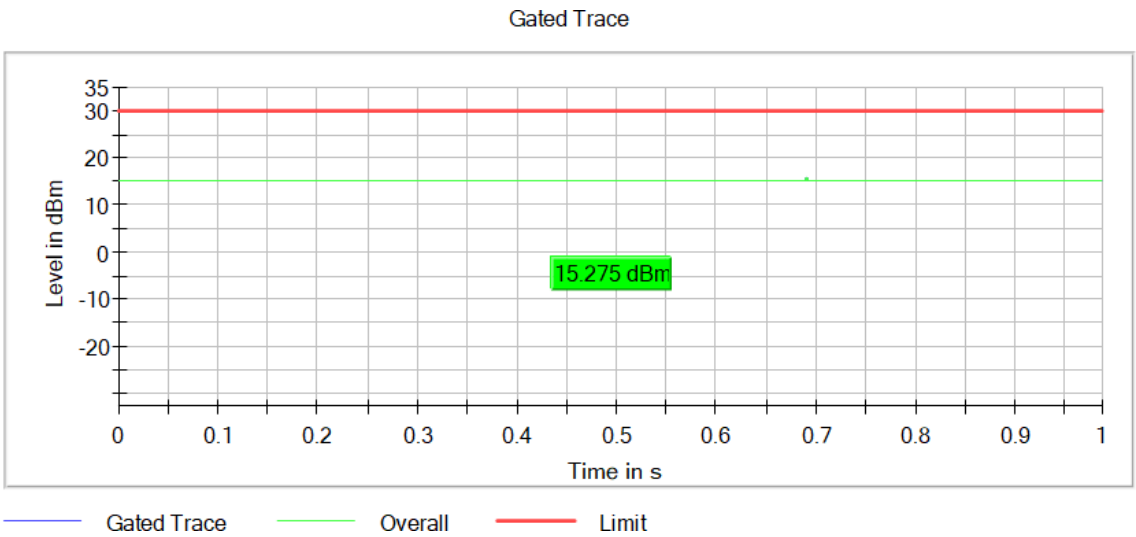
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



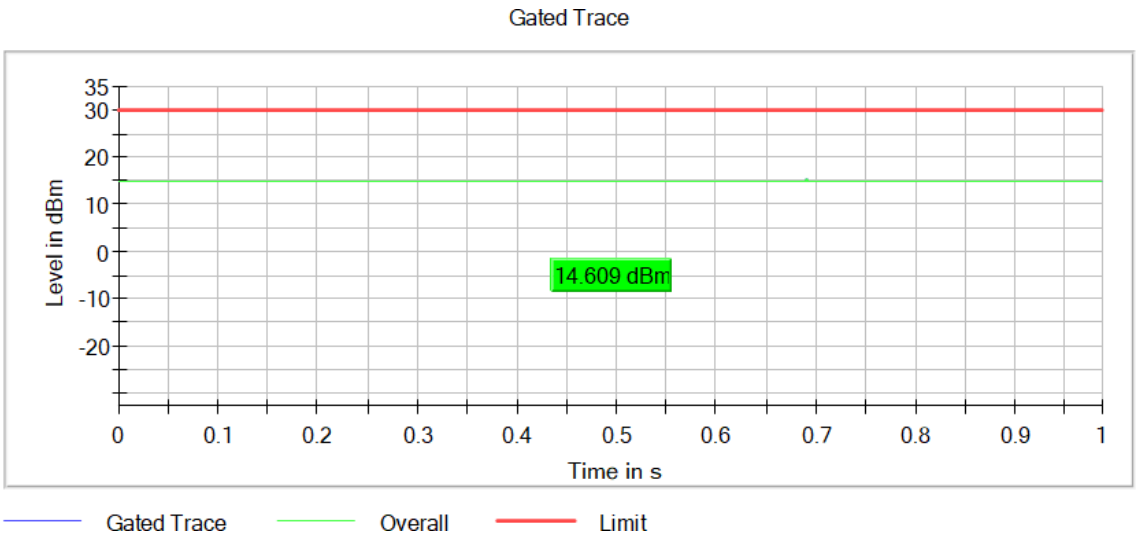
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5180.00000	14.2	11.7
		5200.00000	14.7	12.2
		5240.00000	13.3	10.8
U-NII-3	1	5745.00000	17.9	15.4
		5785.00000	17.2	14.7
		5825.00000	16.5	14.0

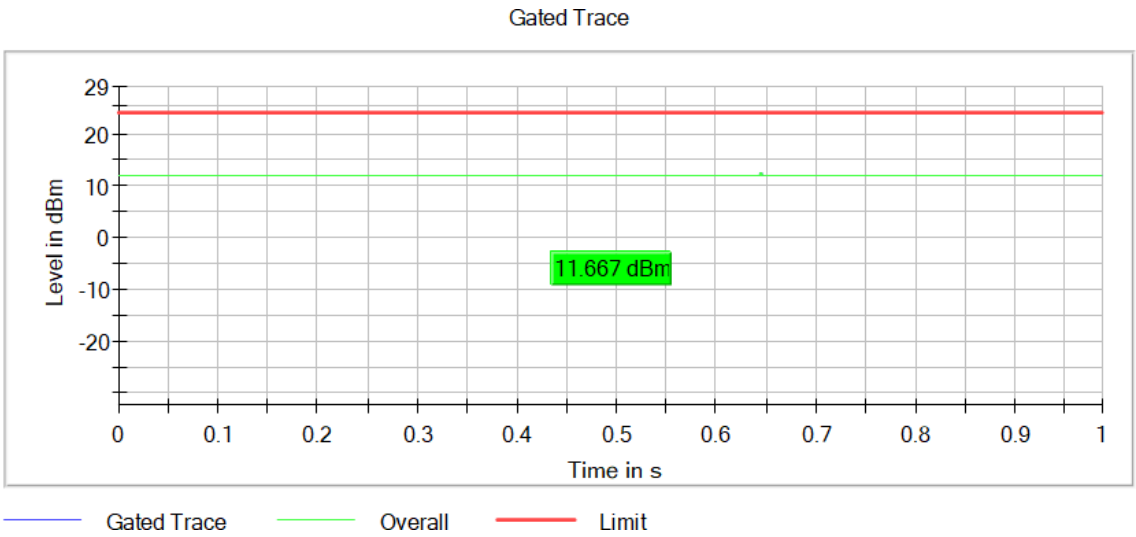
Verdict

Pass

Attachments

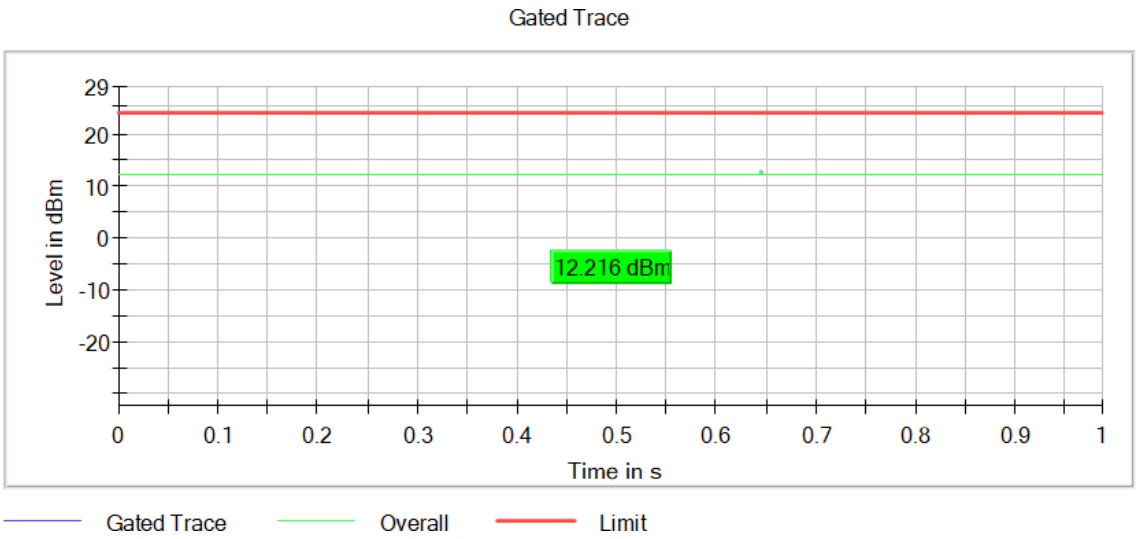
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



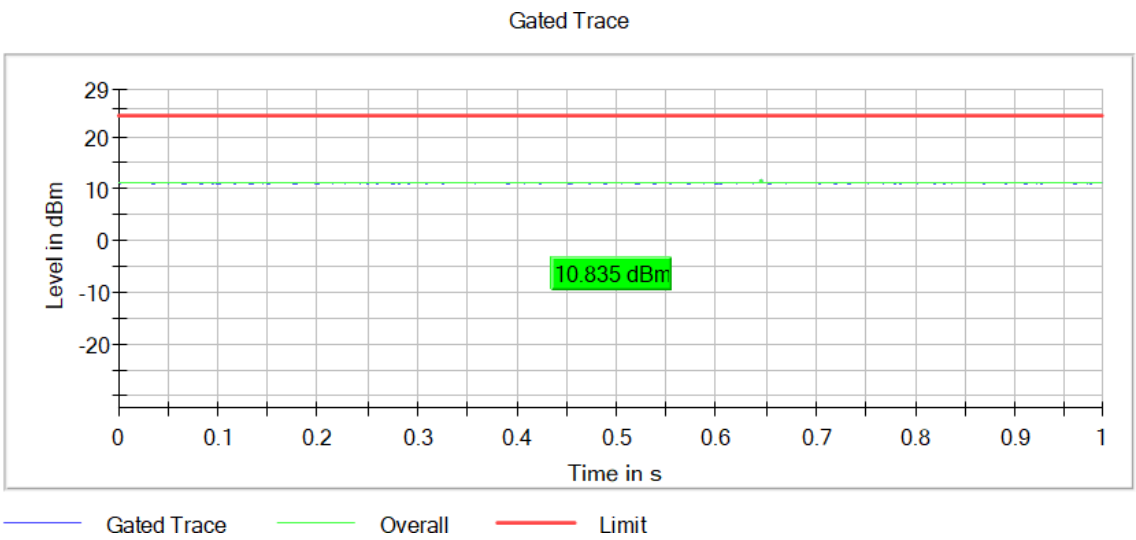
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



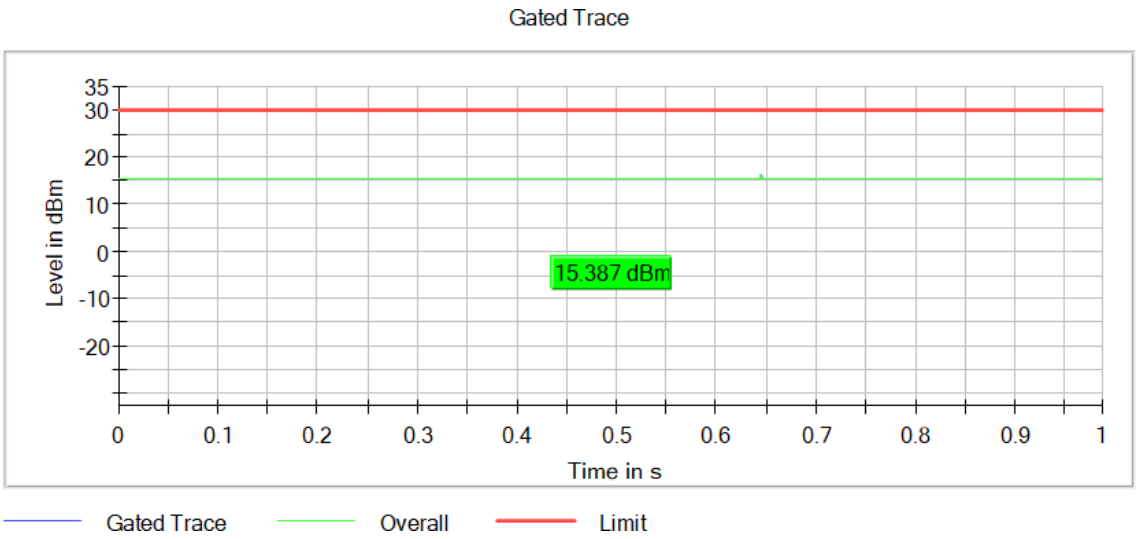
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



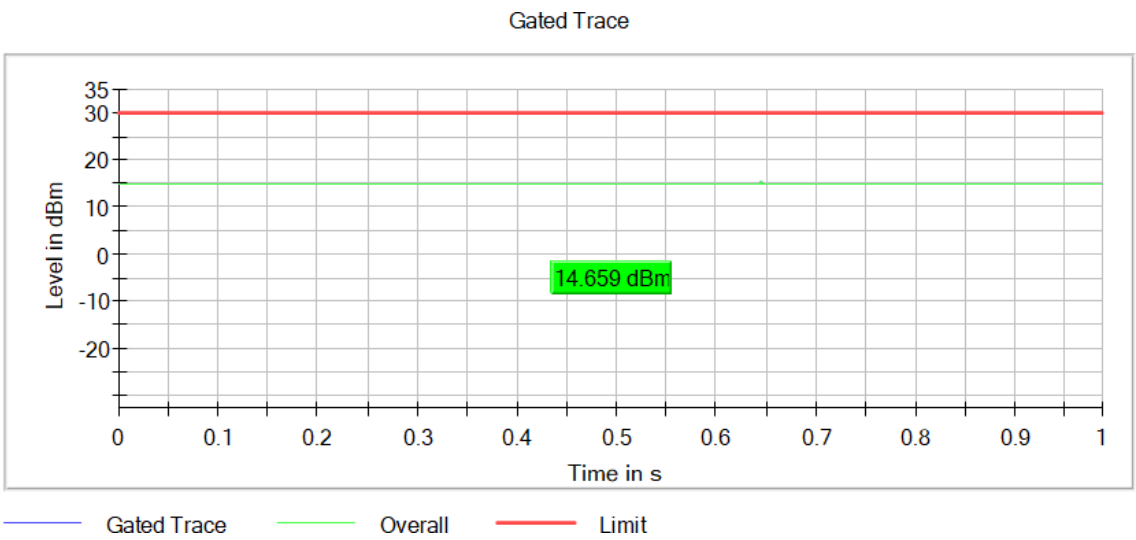
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



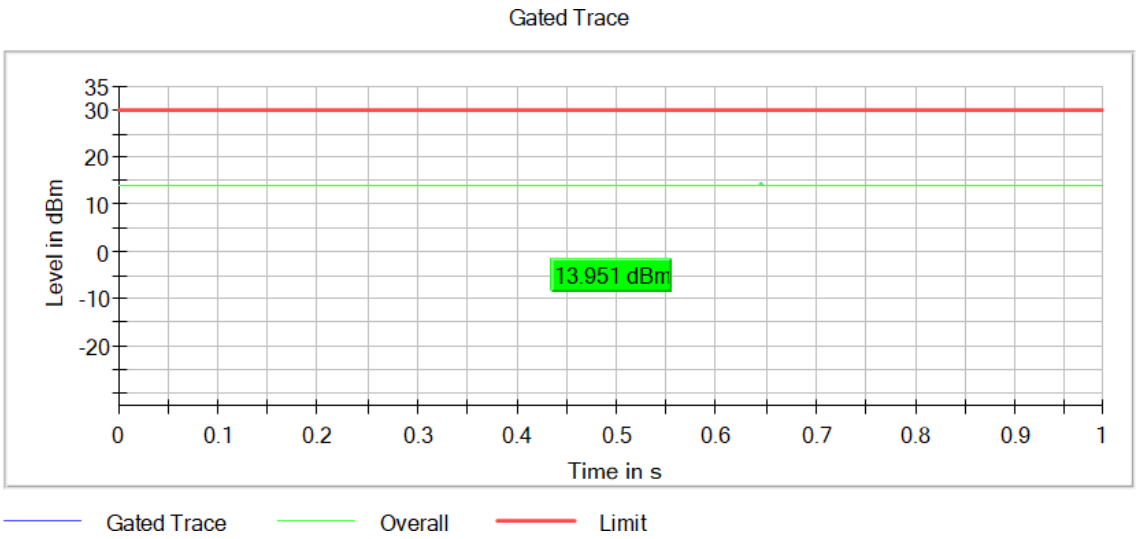
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5190.00000	15.7	13.2
		5230.00000	15.6	13.1
U-NII-3	1	5755.00000	17.7	15.2
		5795.00000	17.3	14.8

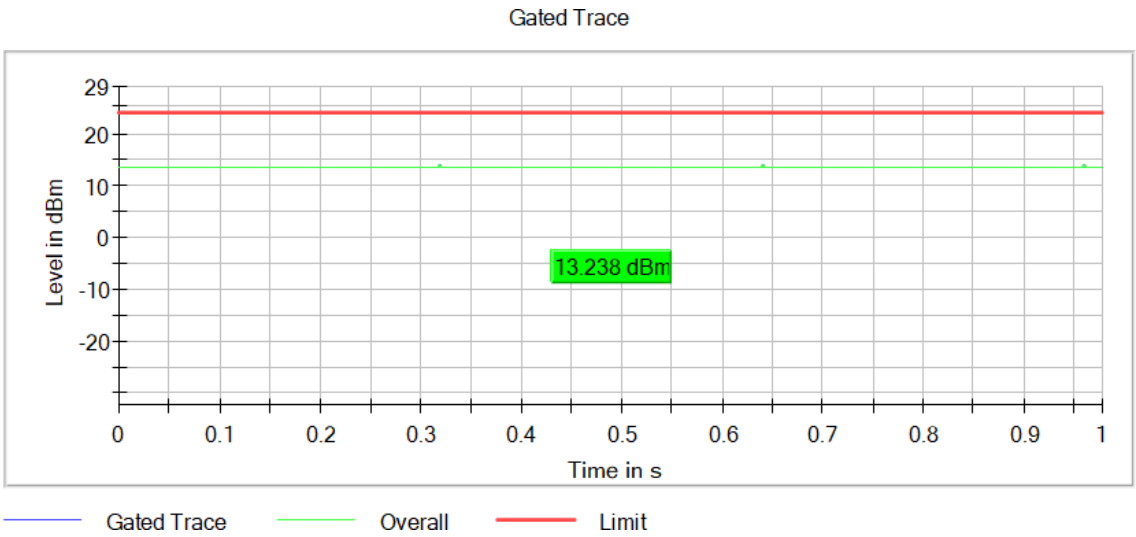
Verdict

Pass

Attachments

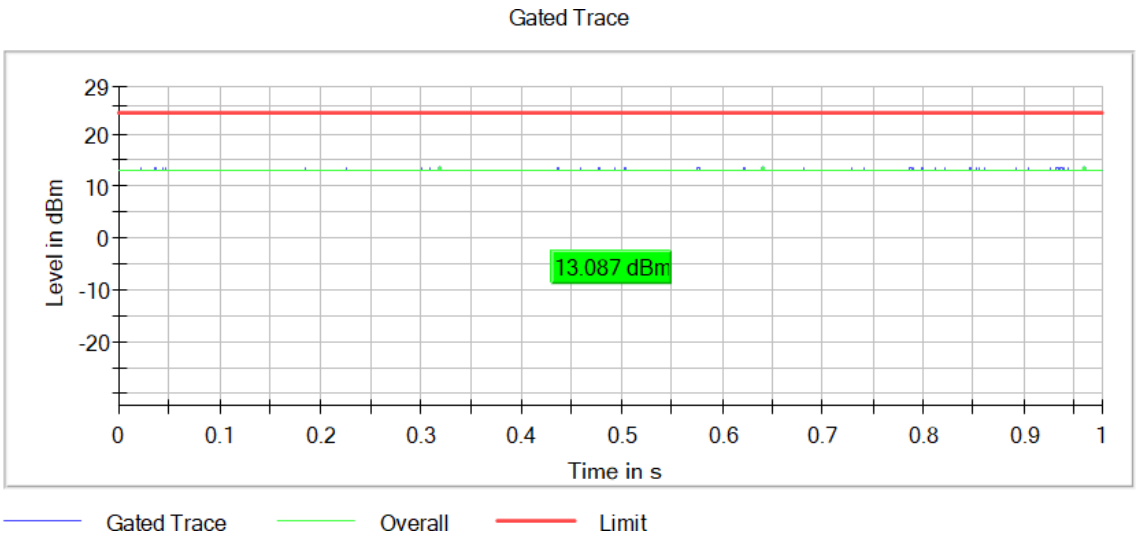
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



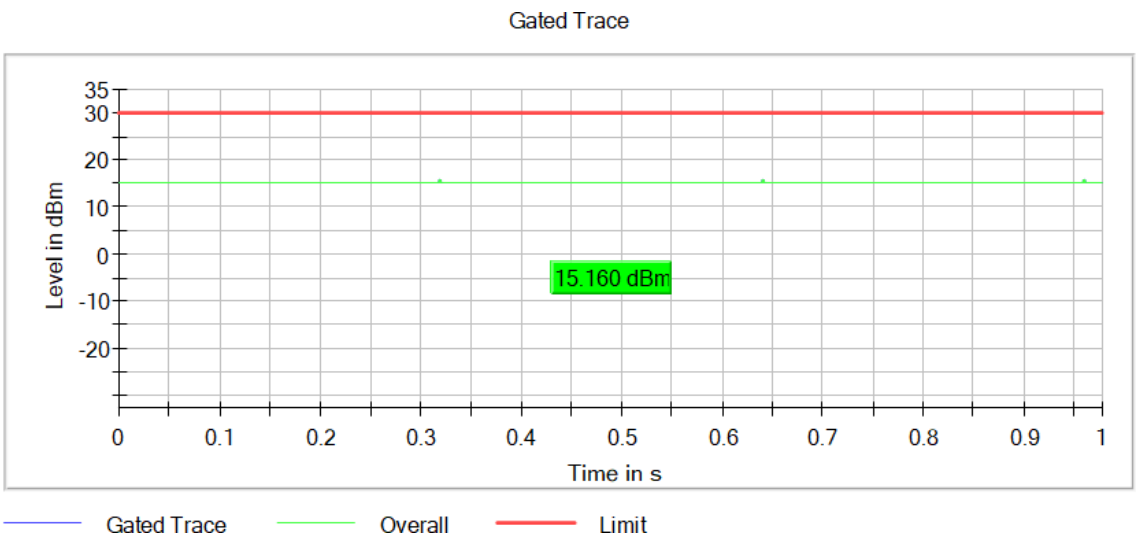
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



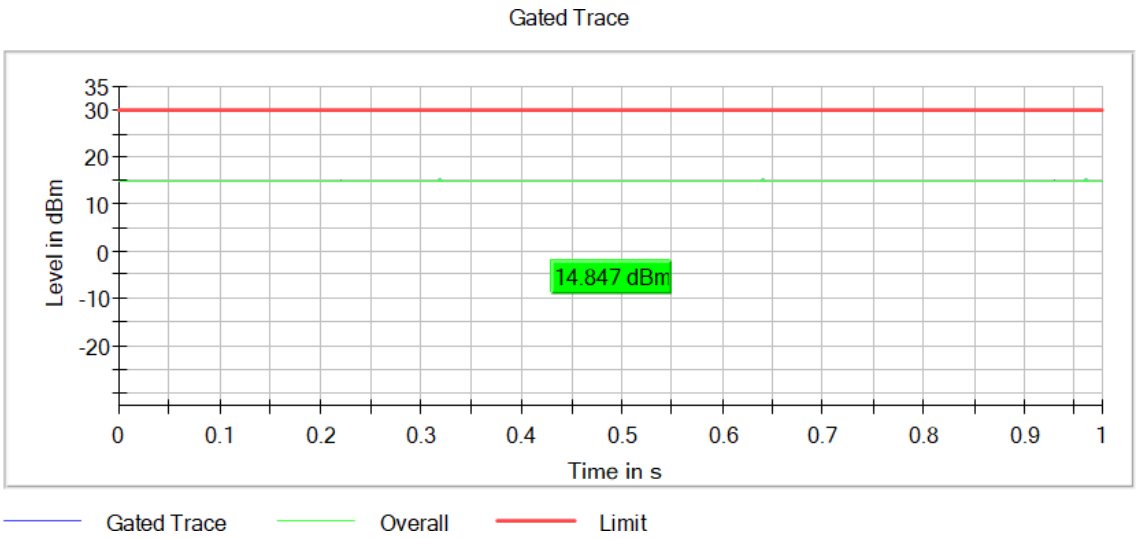
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5180.00000	15.7	13.2
		5200.00000	16.2	13.7
		5240.00000	14.5	12.0
U-NII-3	1	5745.00000	18.5	16.0
		5785.00000	17.2	14.7
		5825.00000	16.5	14.0

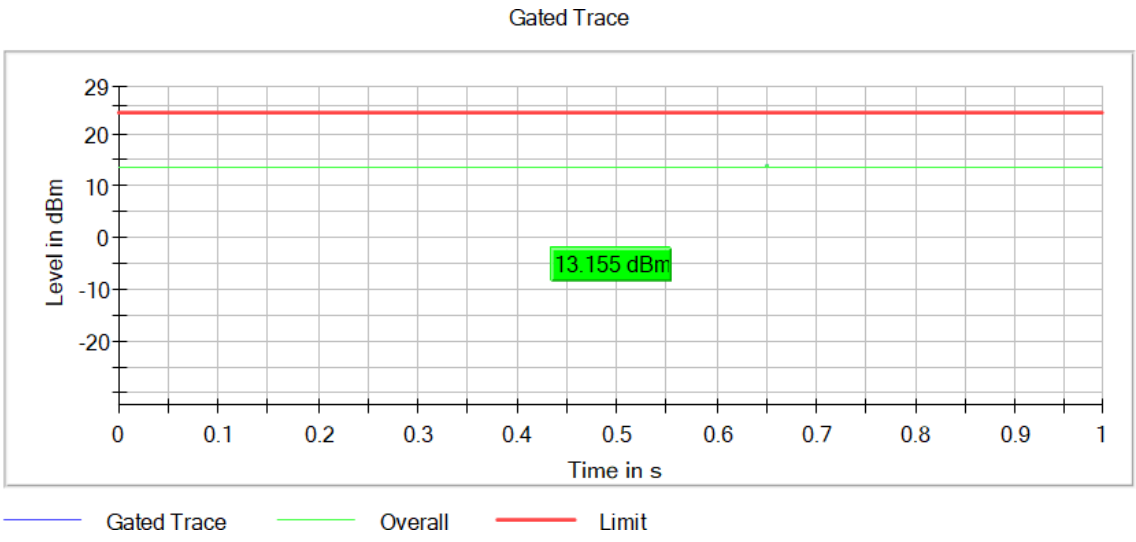
Verdict

Pass

Attachments

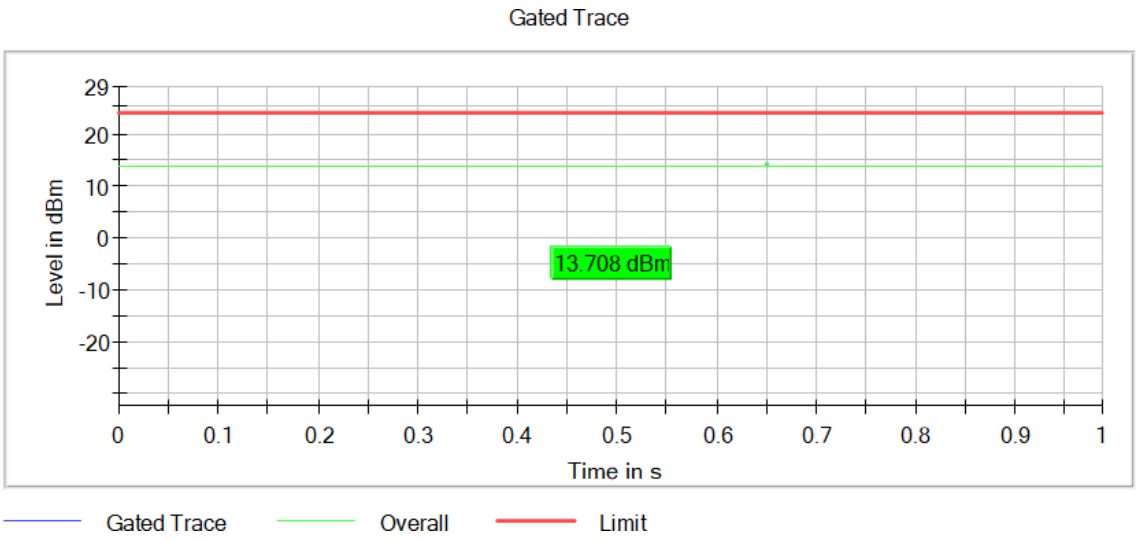
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



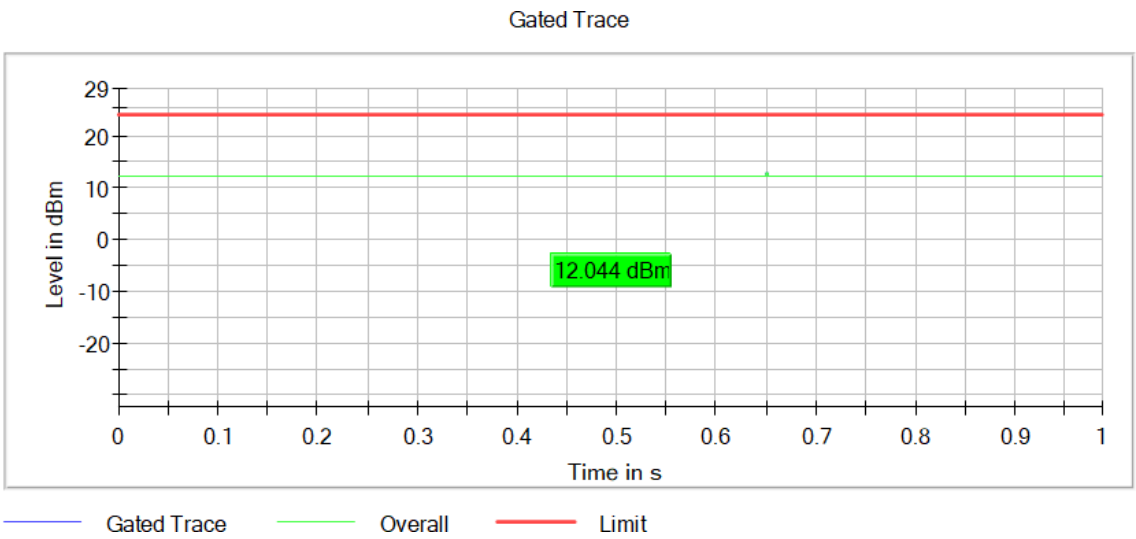
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



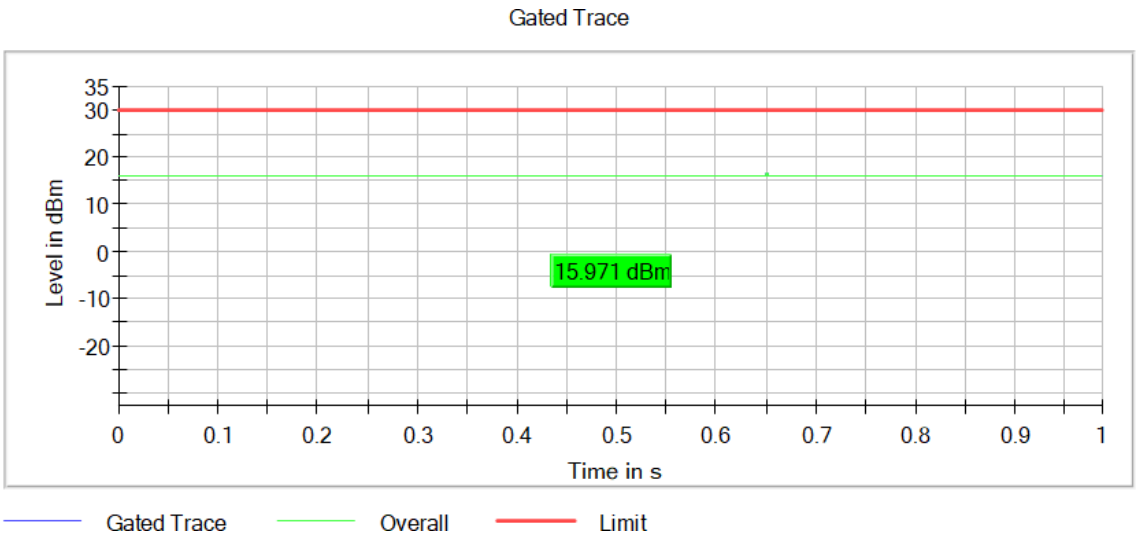
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



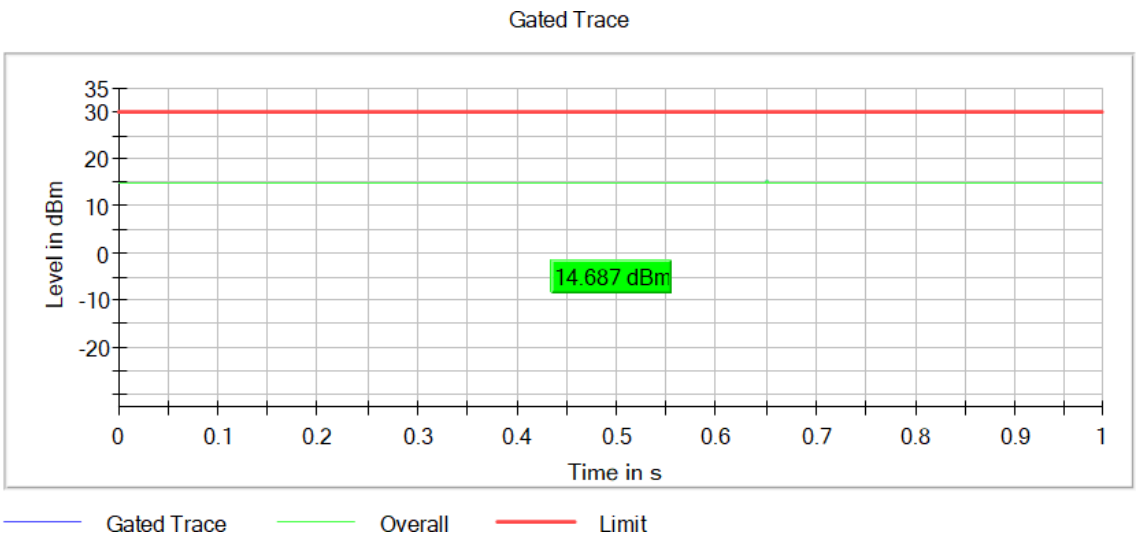
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



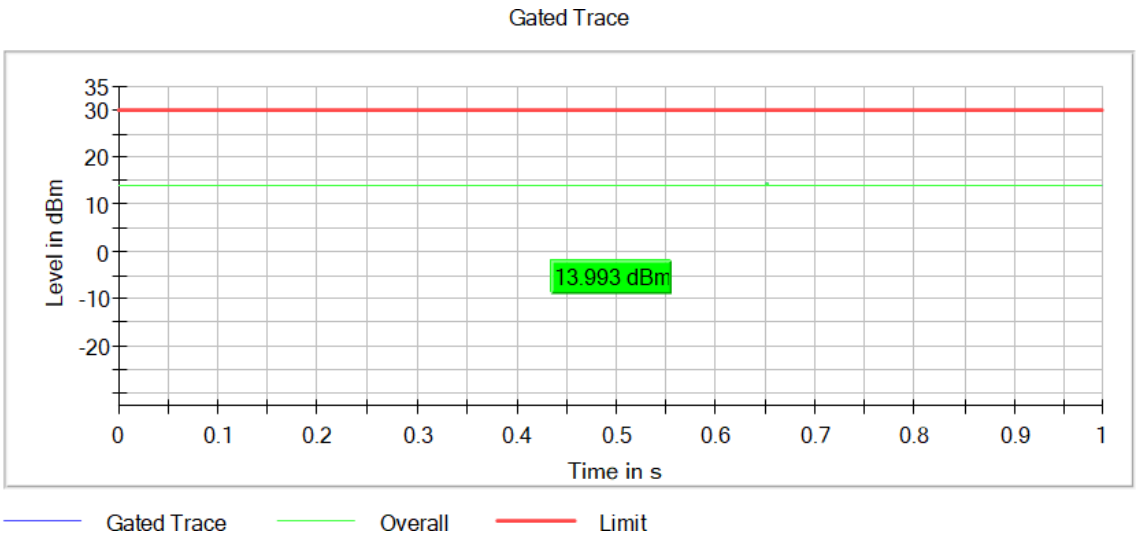
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5190.00000	12.4	9.9
		5230.00000	13.3	10.8
U-NII-3	1	5755.00000	17.5	15.0
		5795.00000	17.1	14.6

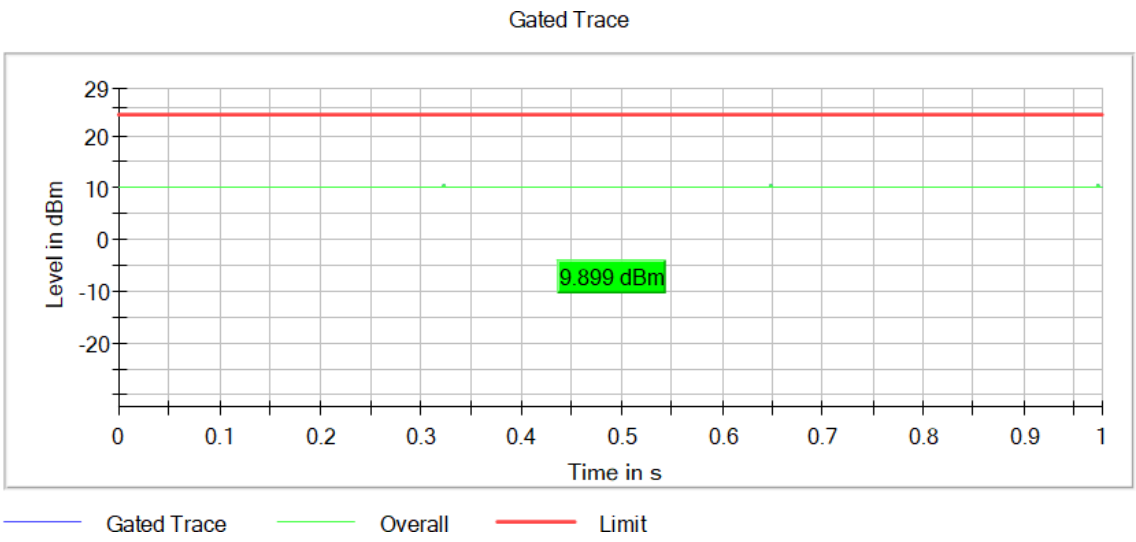
Verdict

Pass

Attachments

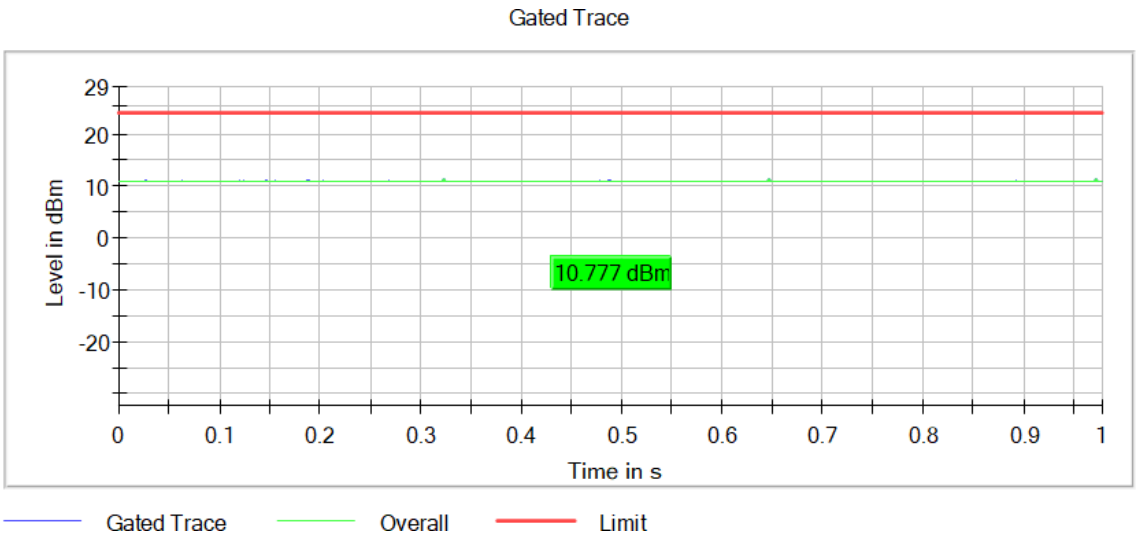
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



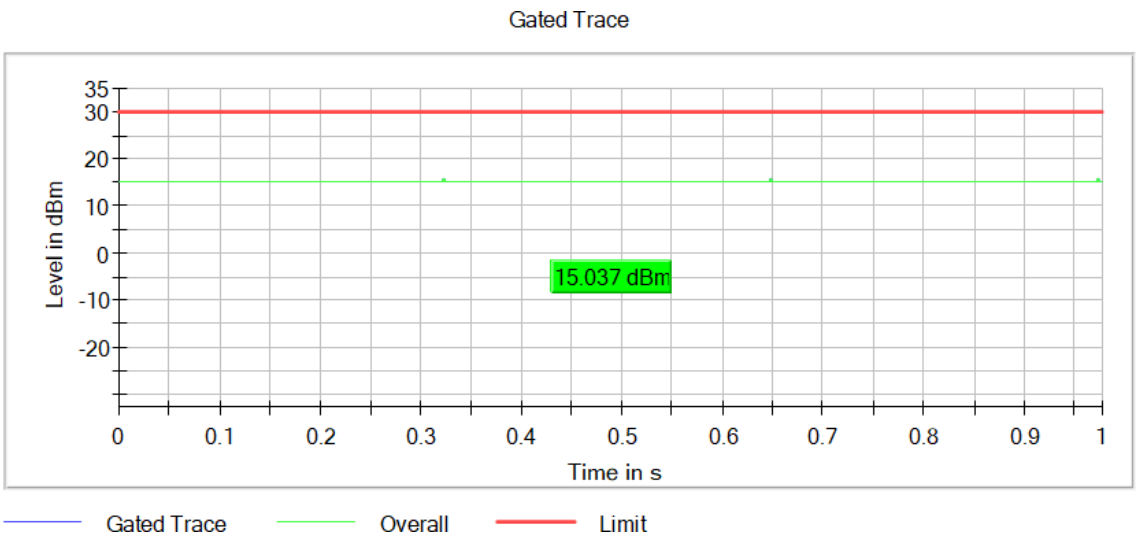
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



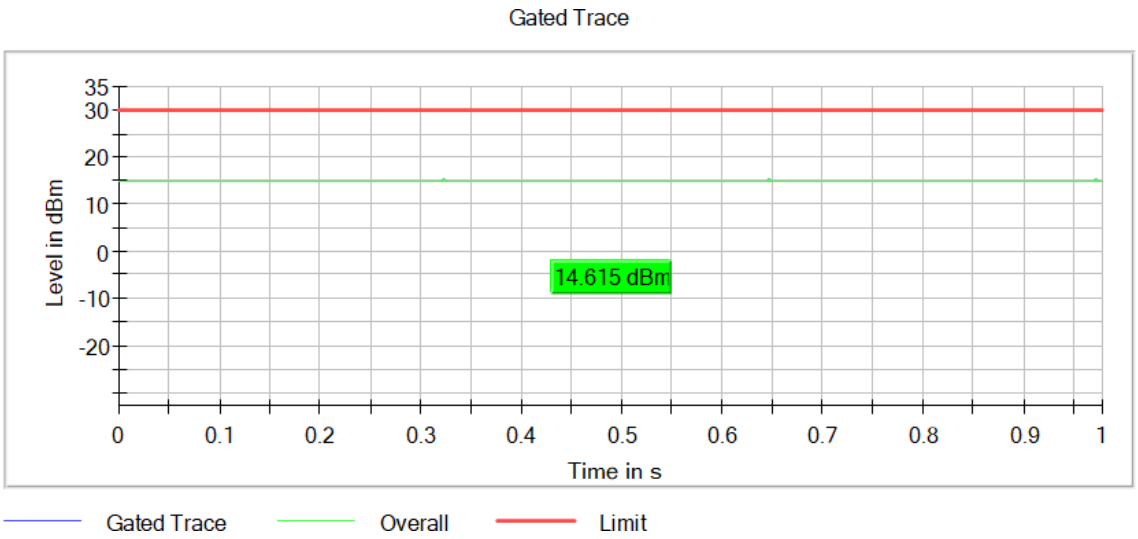
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Max EIRP (dBm)	Avg Power (dBm)
U-NII-1	1	5210.00000	14.9	12.4
U-NII-3	1	5775.00000	17.3	14.8

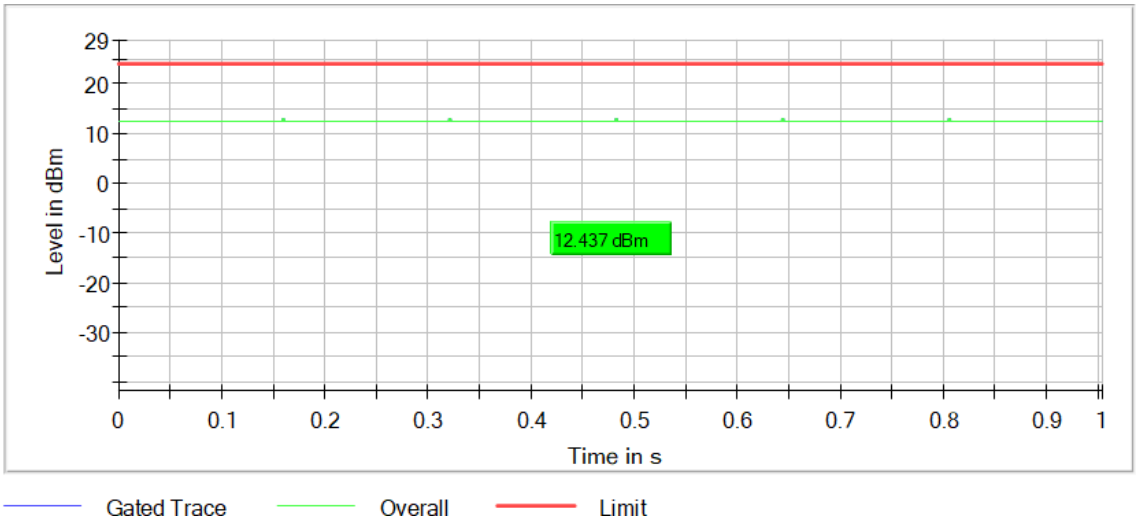
Verdict

Pass

Attachments

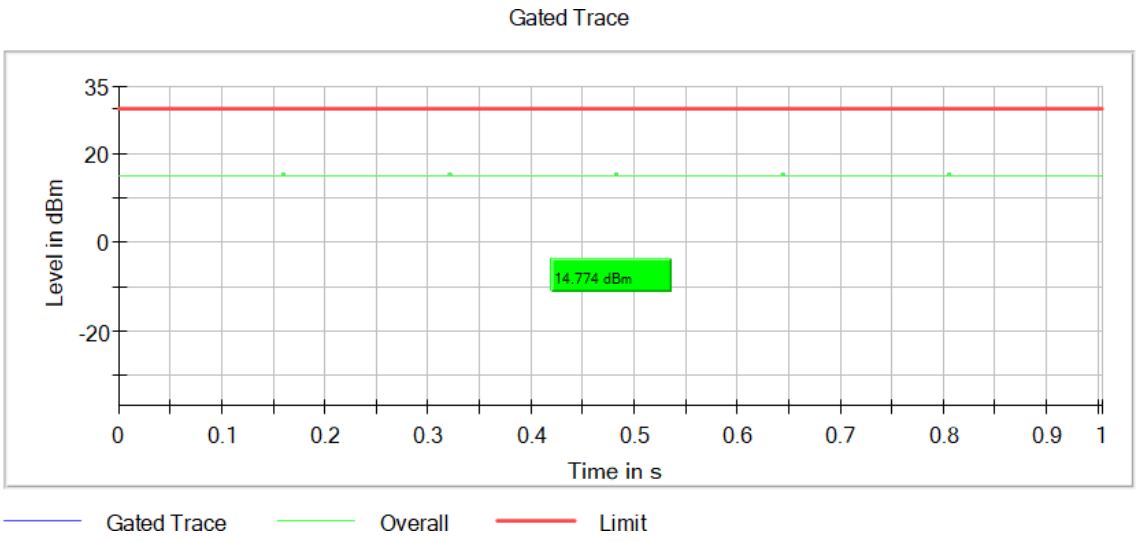
Active Port = 1, Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Spectrum Analyzer Parameters

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

FCC 15.407 (a) / RSS-247 6.2 Maximum Power Spectral Density

Limits

FCC 15.407:

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:

In band 5.15-5.25 GHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5.725-5.850 GHz, 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: 802.11a (OFDM 6 Mbit/s)

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5180.00000	5177.227723	3.10
		5200.00000	5196.831683	3.55
		5240.00000	5237.425743	2.87
U-NII-3	1	5745.00000	5742.425743	3.63
		5785.00000	5792.524752	3.11
		5825.00000	5822.227723	2.24

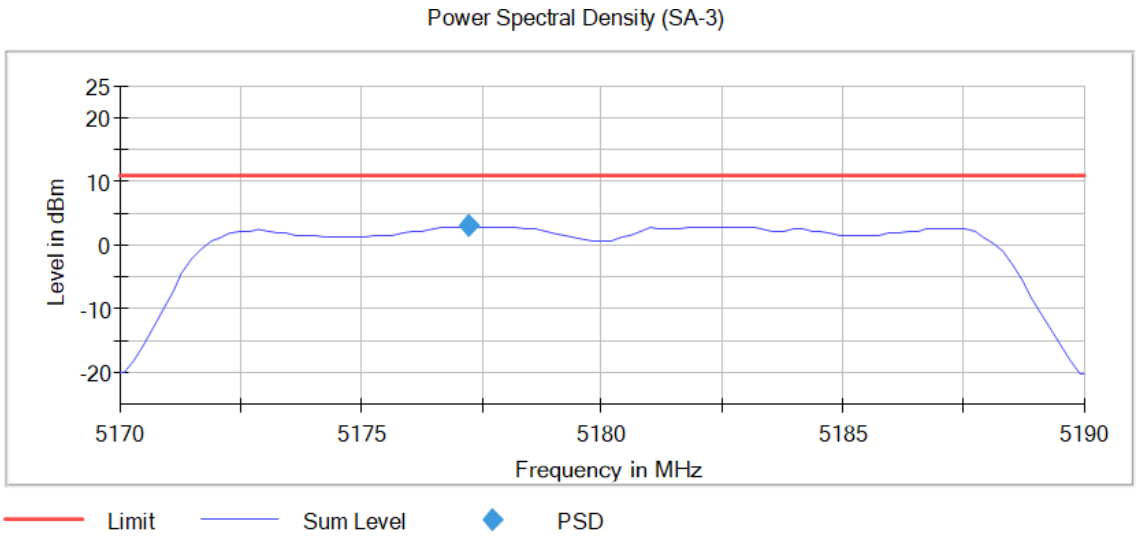
Verdict

Pass

Attachments

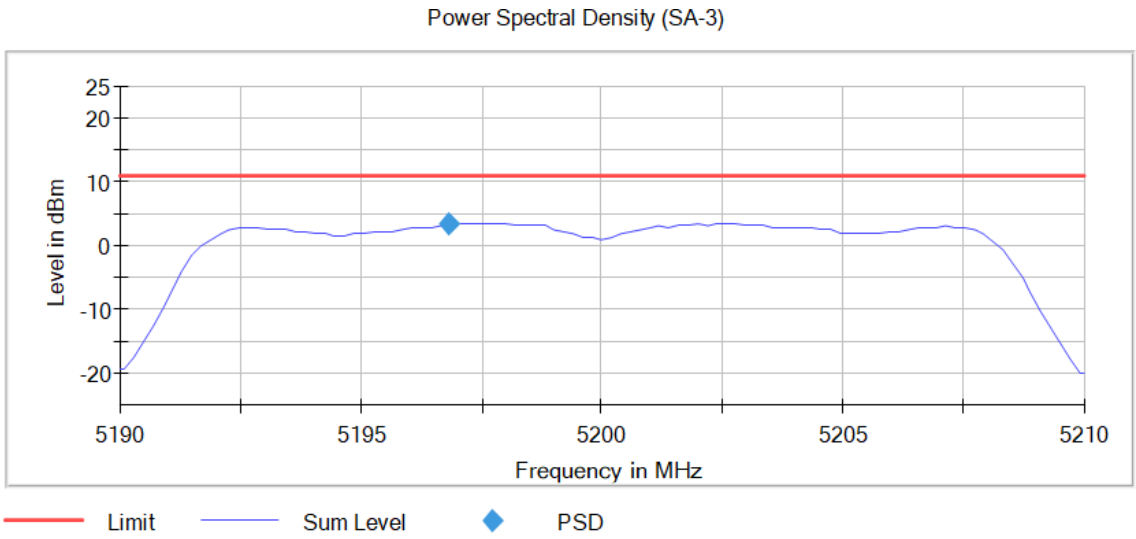
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



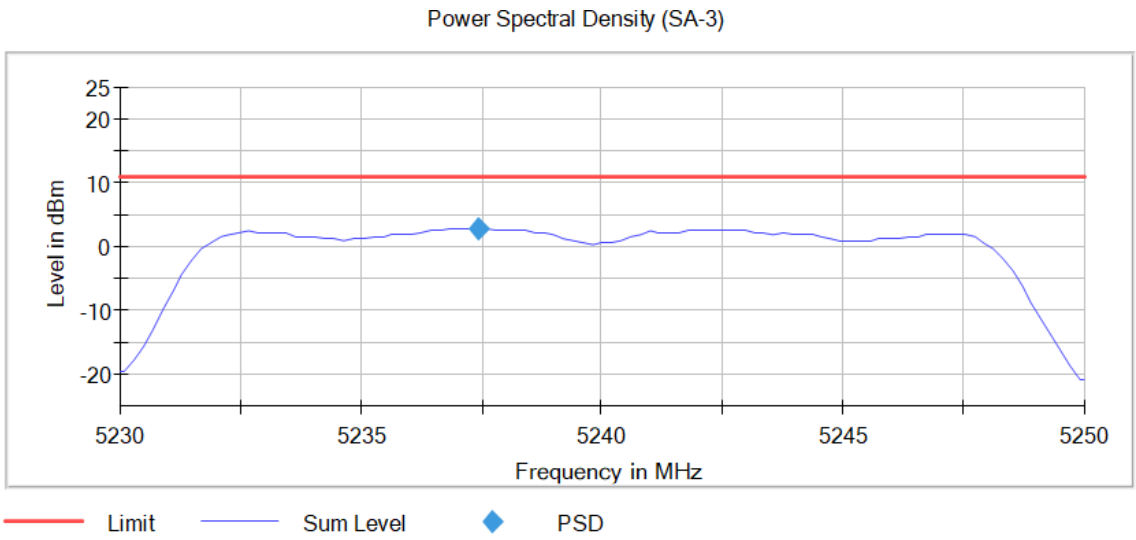
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



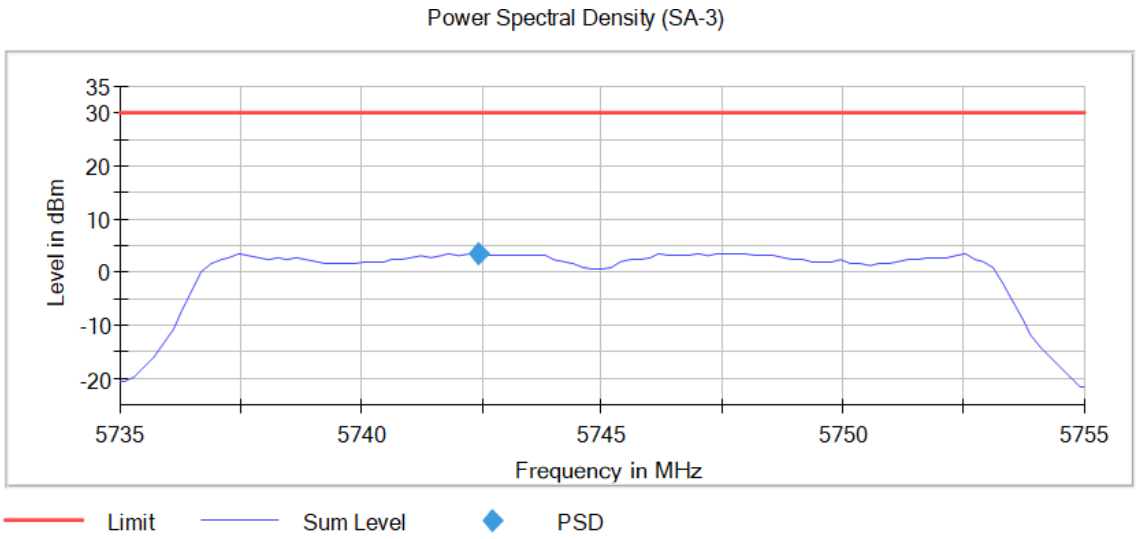
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



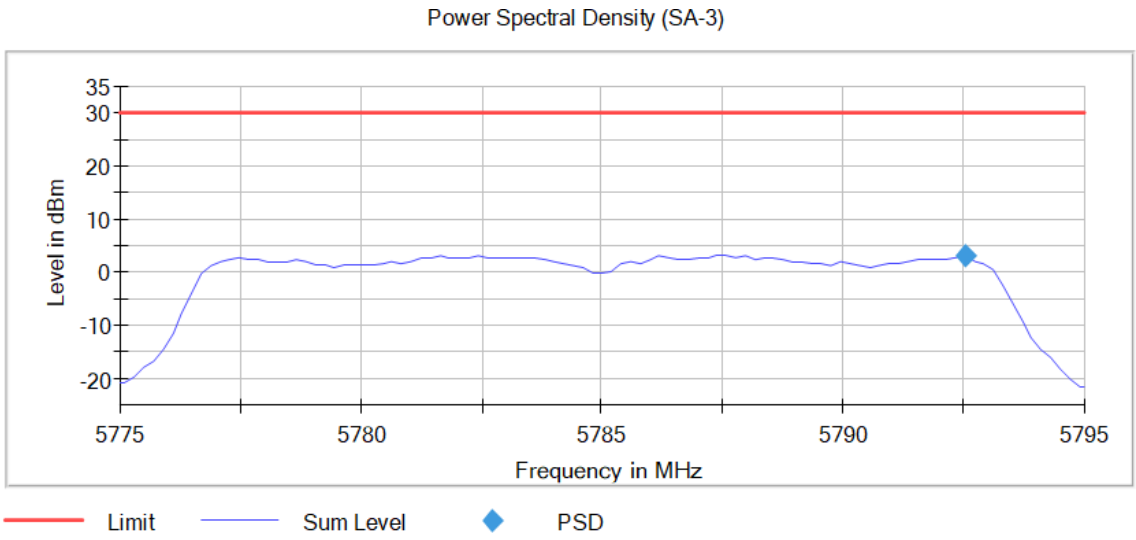
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



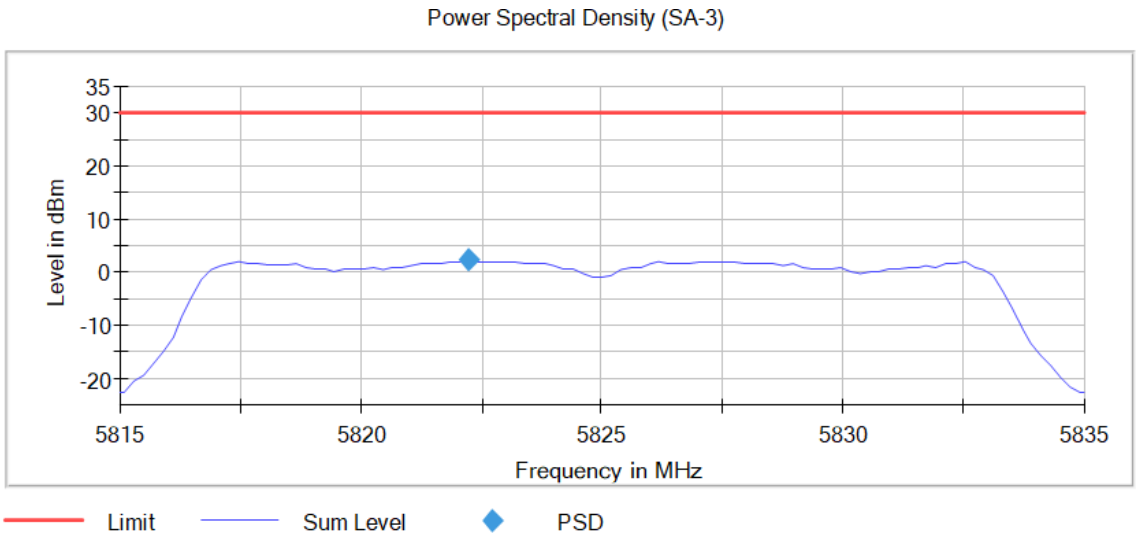
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5180.00000	5182.178218	1.38
		5200.00000	5202.376238	1.90
		5240.00000	5237.227723	0.48
U-NII-3	1	5745.00000	5747.574257	3.30
		5785.00000	5787.574257	2.72
		5825.00000	5827.574257	1.73

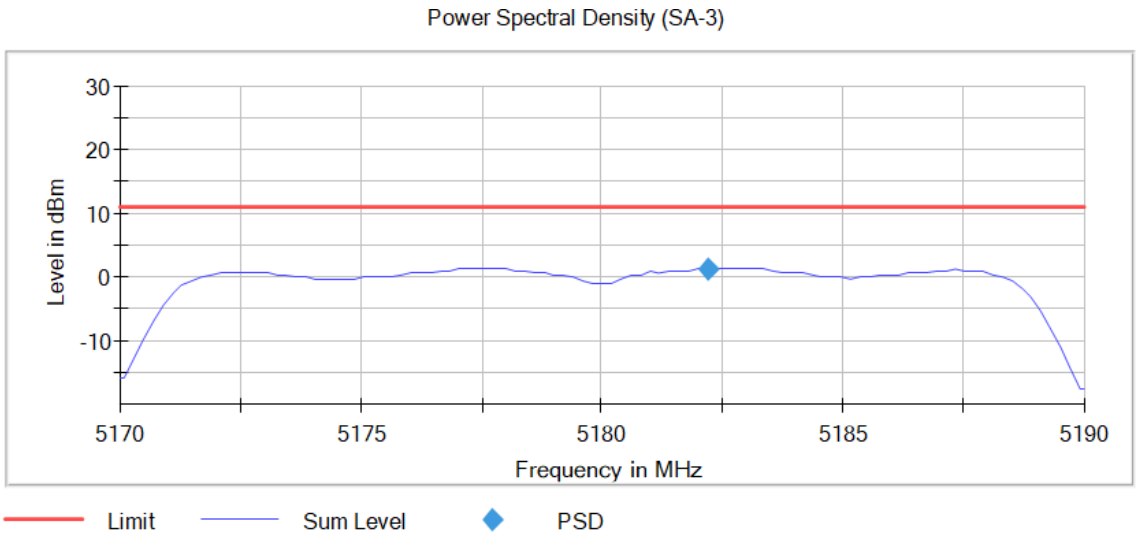
Verdict

Pass

Attachments

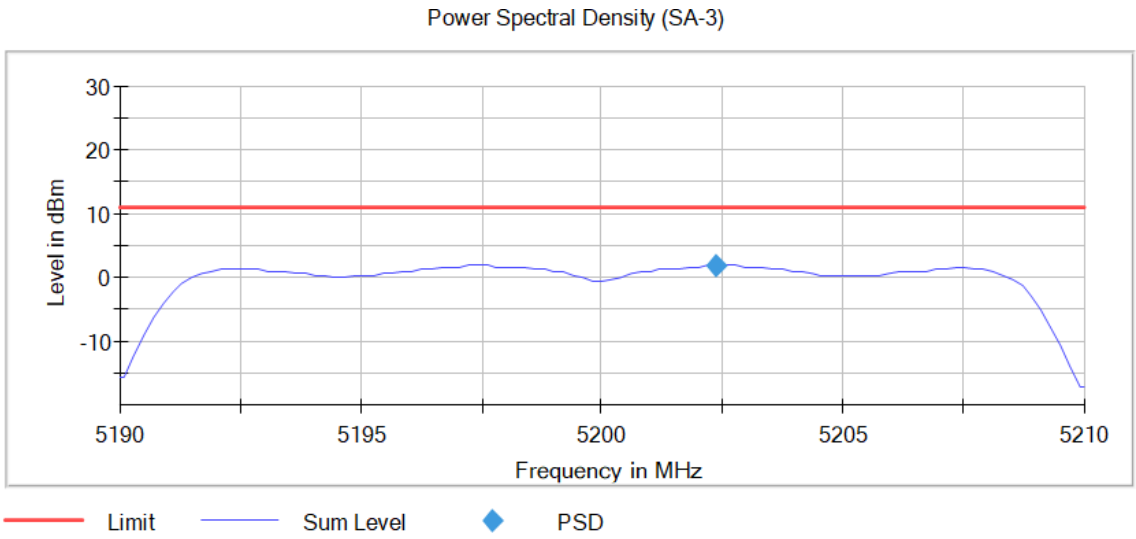
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



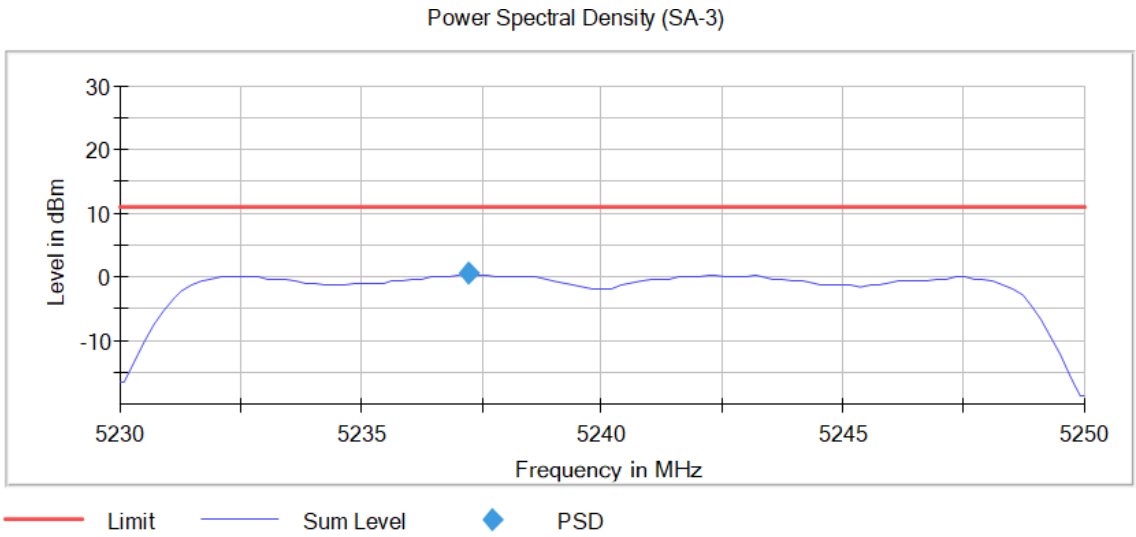
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



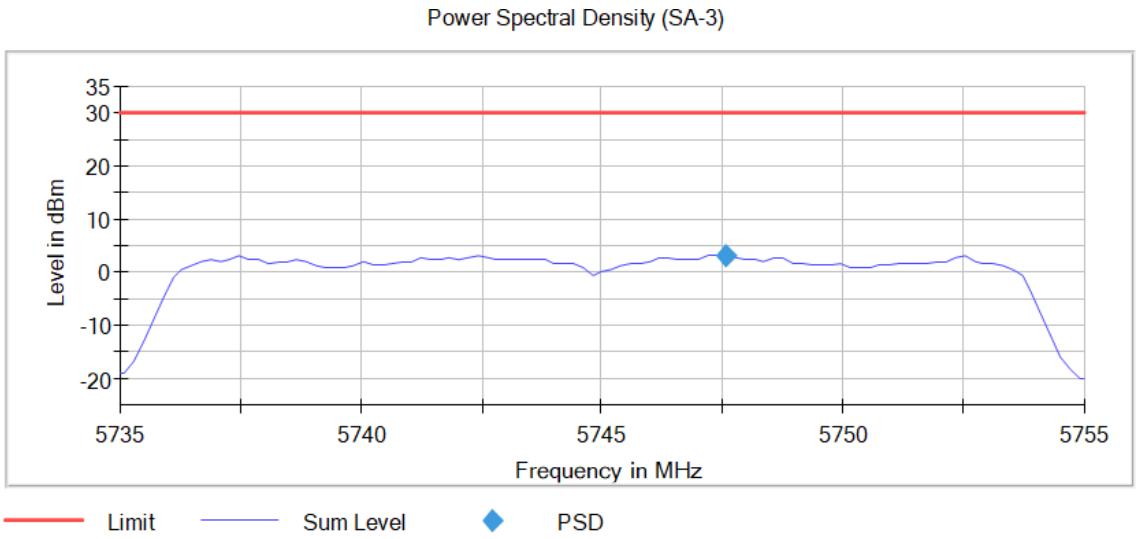
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



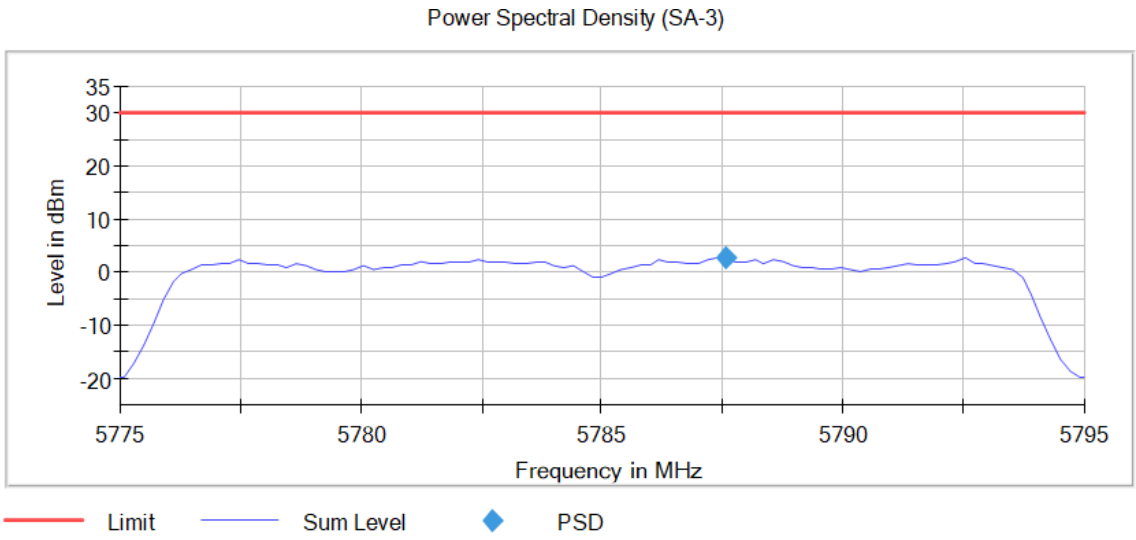
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



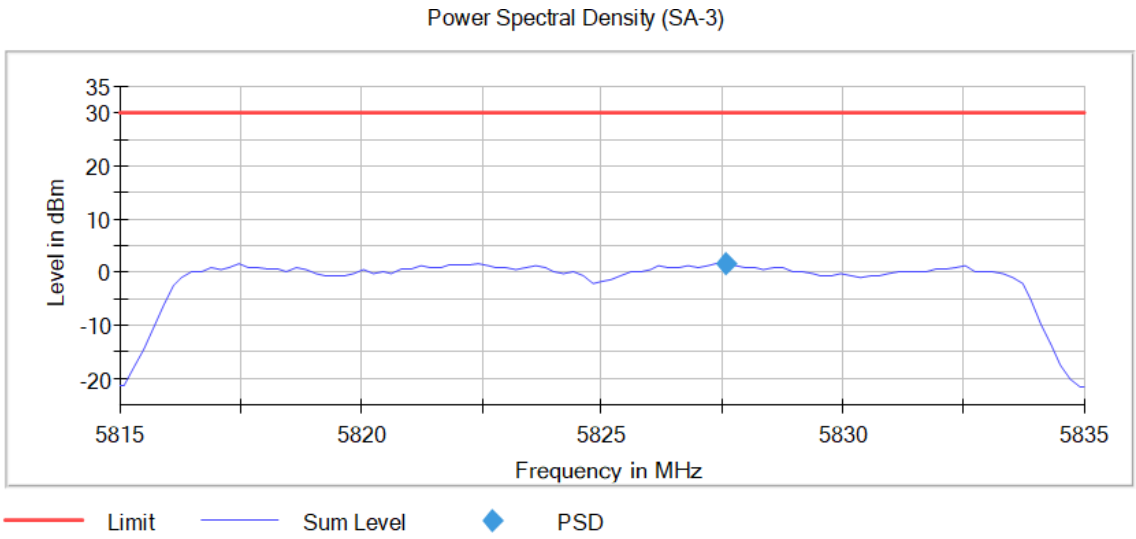
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5190.00000	5205.049505	0.01
		5230.00000	5224.851485	-0.09
U-NII-3	1	5755.00000	5759.875000	-0.25
		5795.00000	5799.875000	-0.09

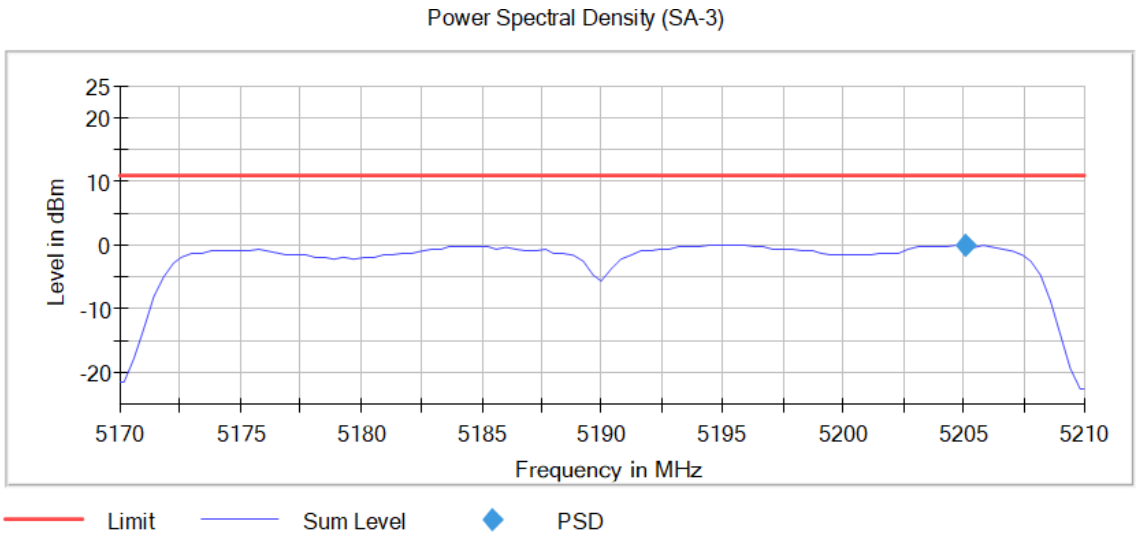
Verdict

Pass

Attachments

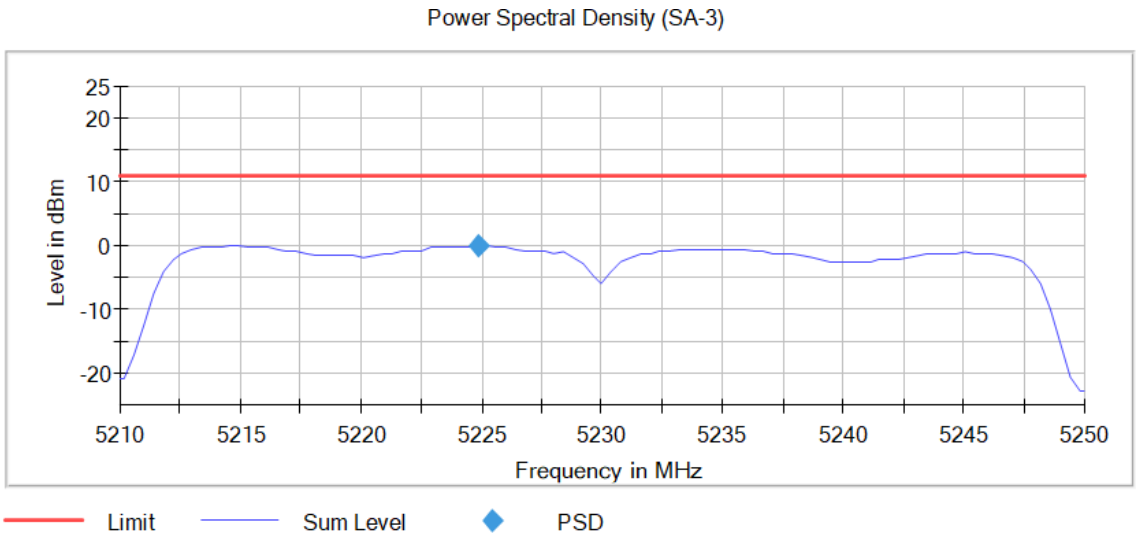
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



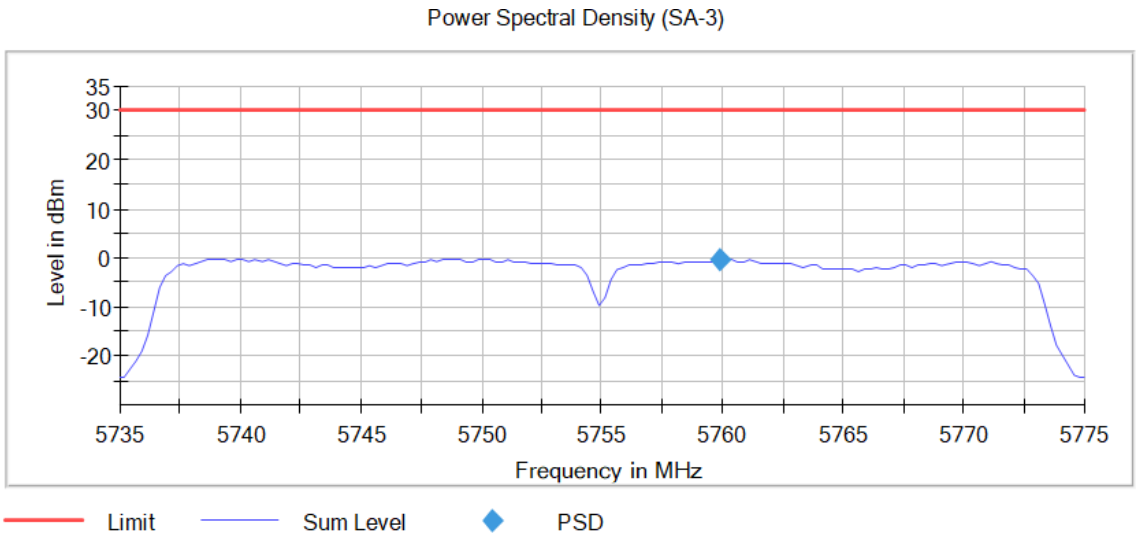
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



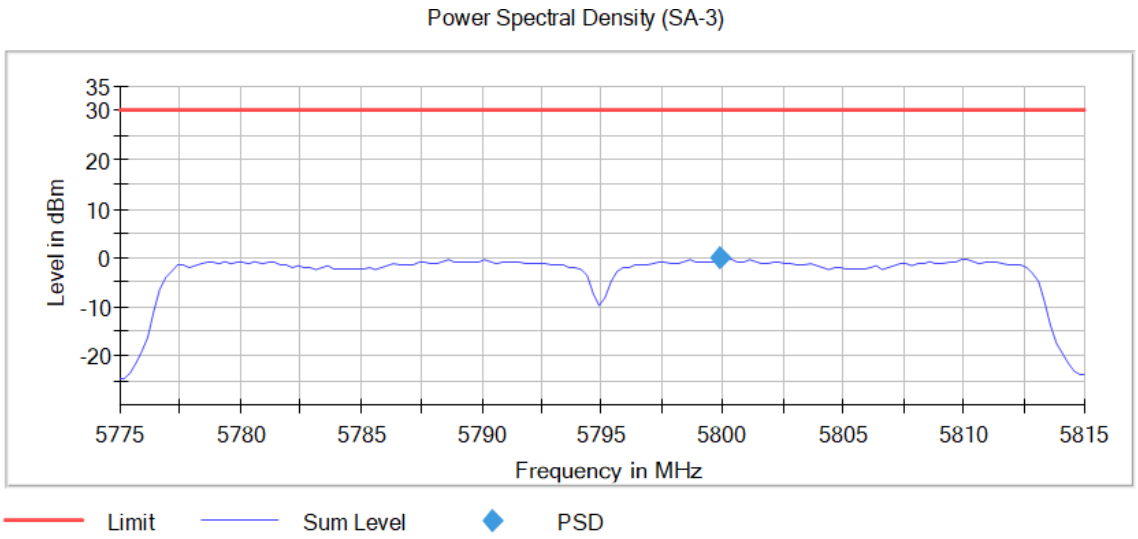
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5180.00000	5182.376238	2.94
		5200.00000	5202.376238	3.52
		5240.00000	5237.425743	1.52
U-NII-3	1	5745.00000	5752.524752	3.89
		5785.00000	5792.524752	2.85
		5825.00000	5832.524752	1.59

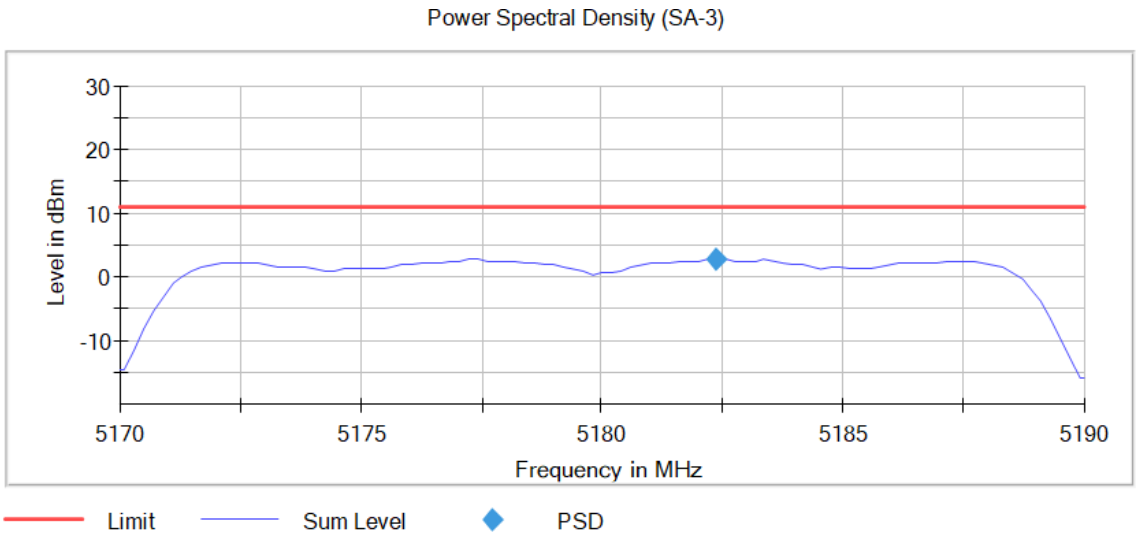
Verdict

Pass

Attachments

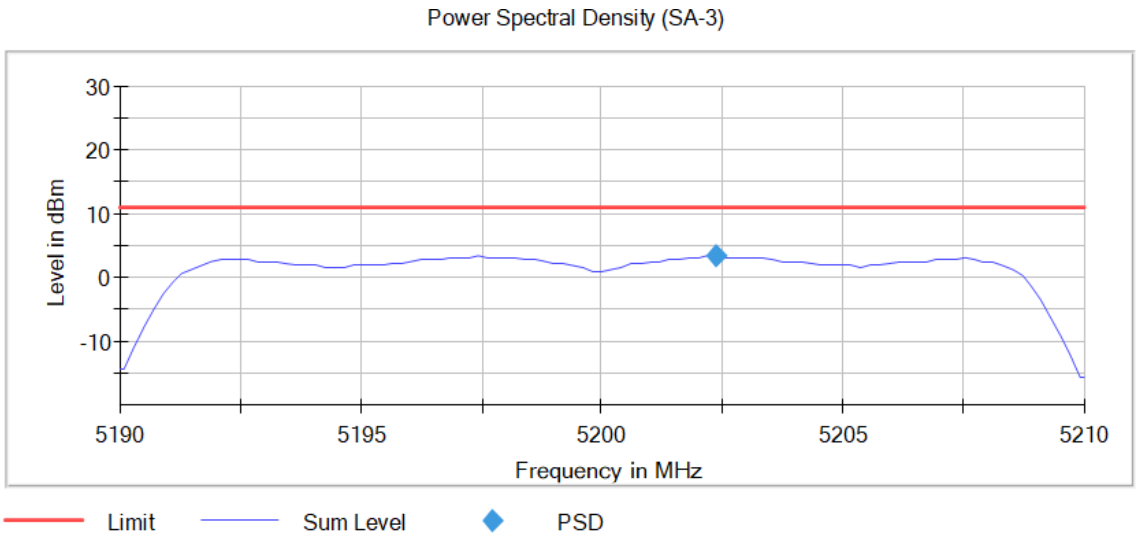
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



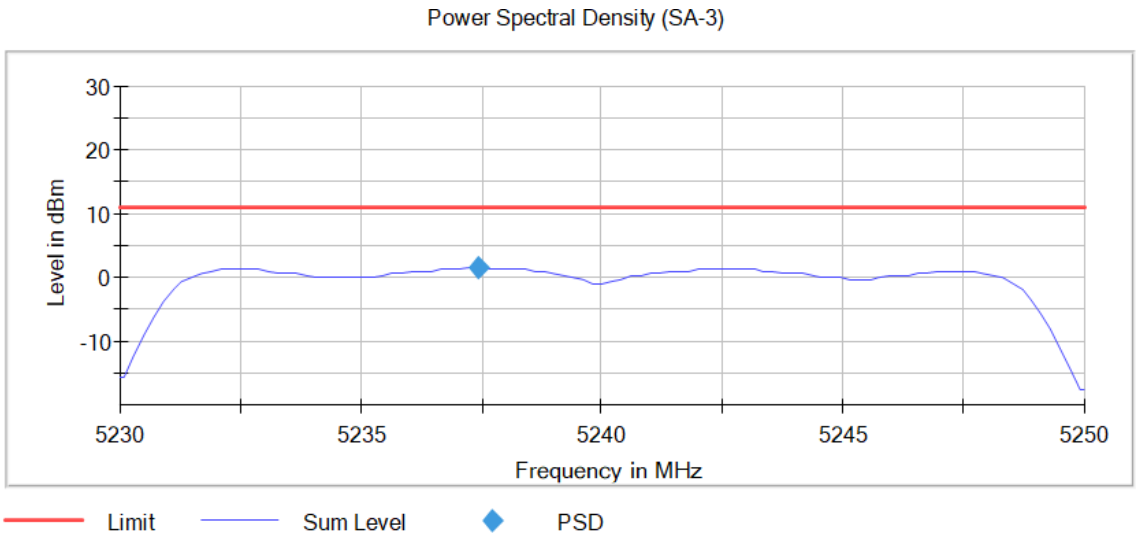
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



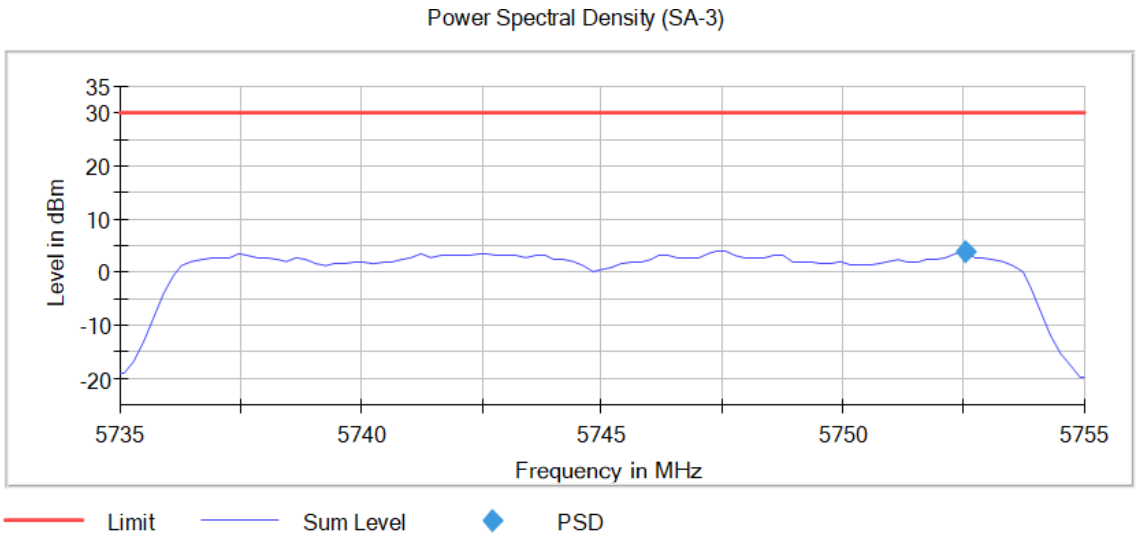
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



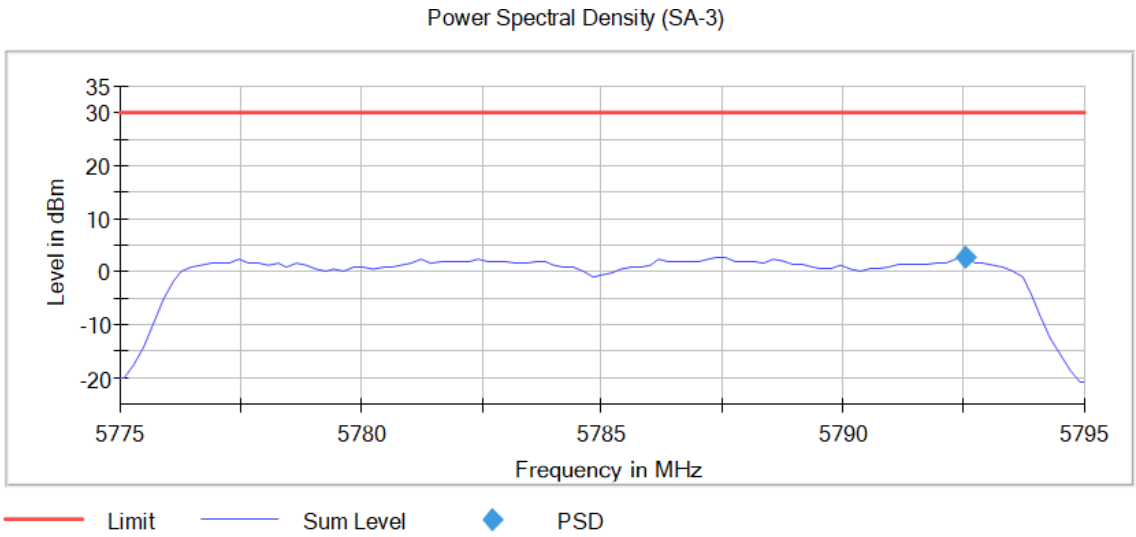
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



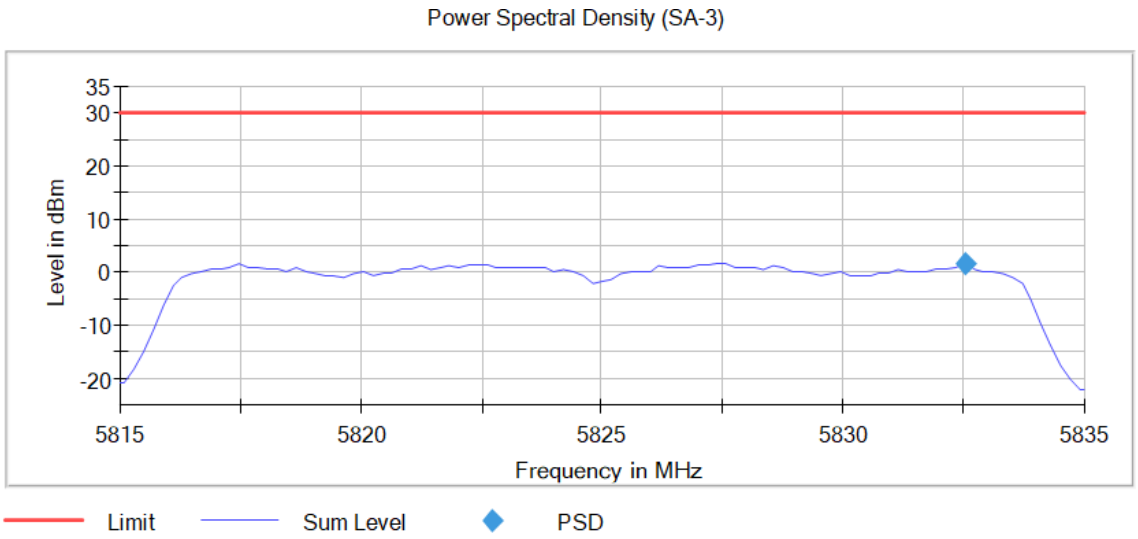
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5190.00000	5193.960396	-3.24
		5230.00000	5213.762376	-1.98
U-NII-3	1	5755.00000	5738.875000	0.53
		5795.00000	5778.875000	-0.21

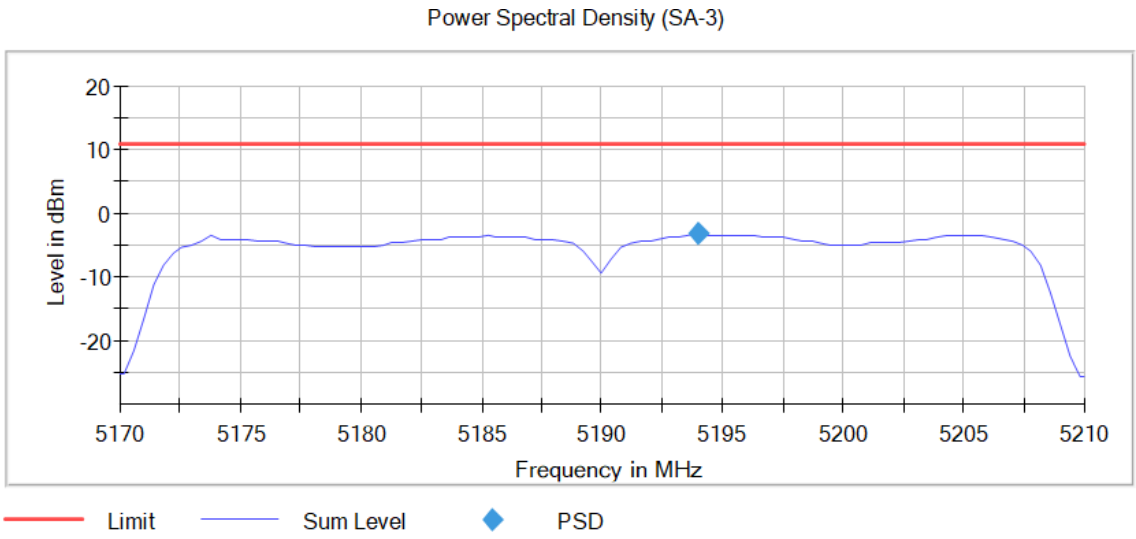
Verdict

Pass

Attachments

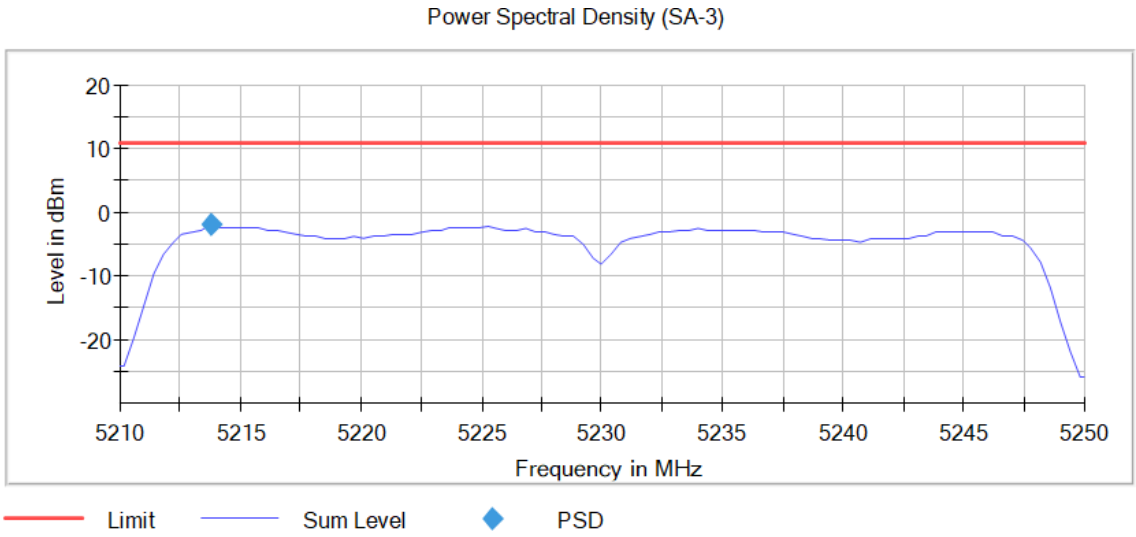
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



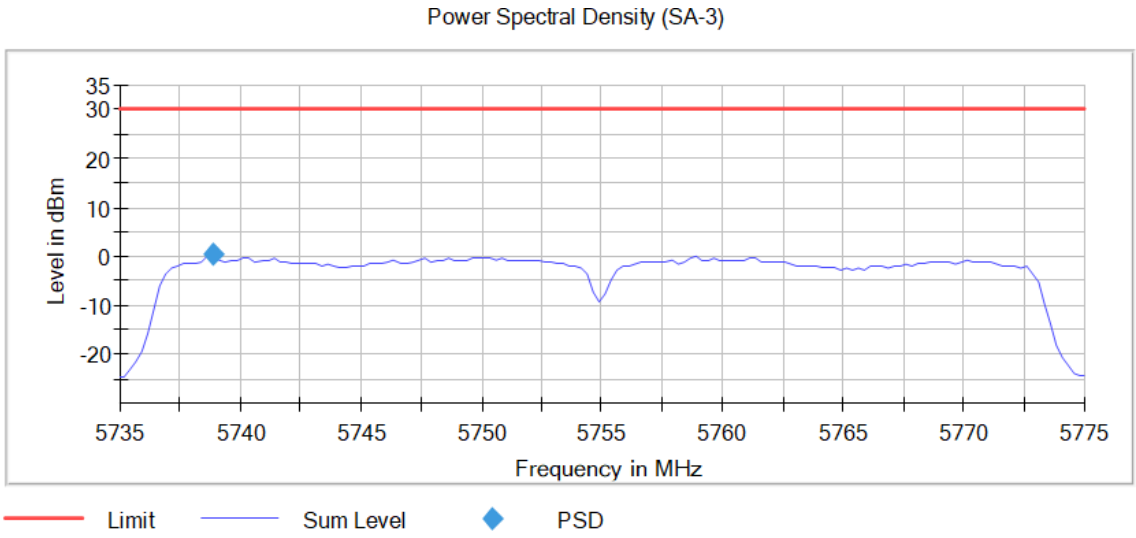
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



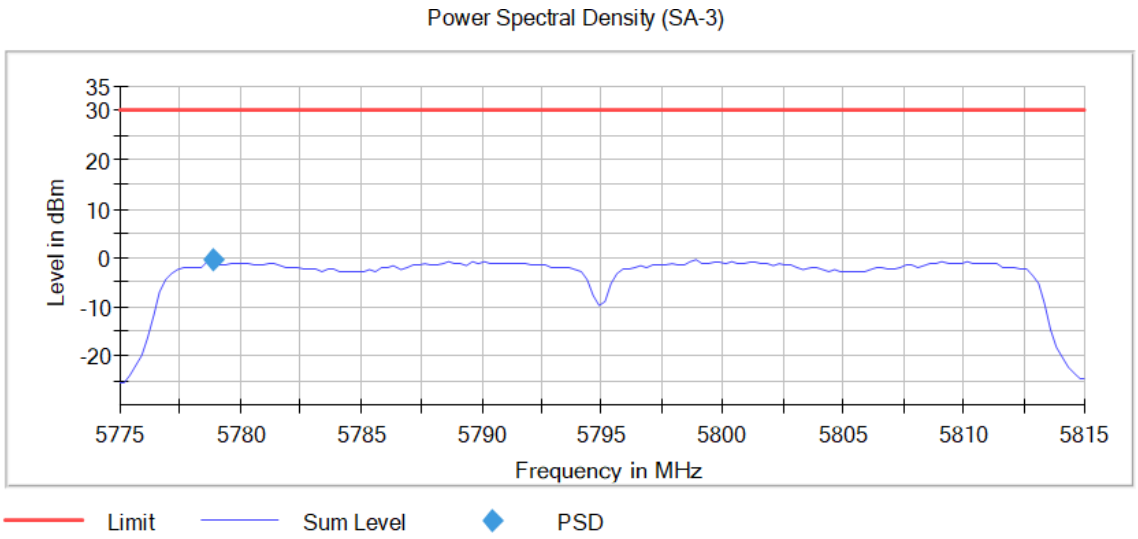
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Freq (MHz)	PSD (dBm)
U-NII-1	1	5210.00000	5222.250000	-4.48
U-NII-3	1	5775.00000	5763.625000	-3.92

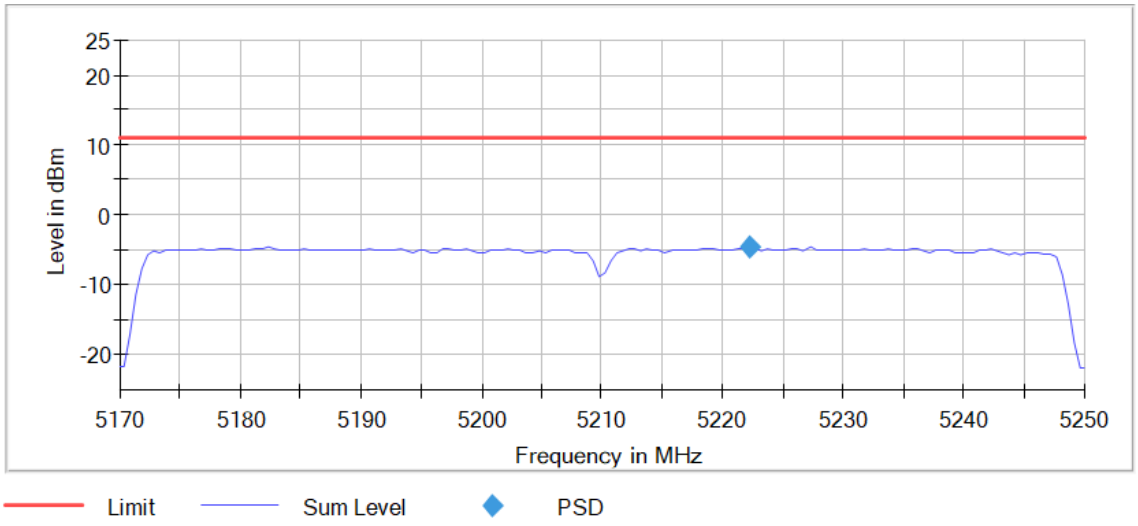
Verdict

Pass

Attachments

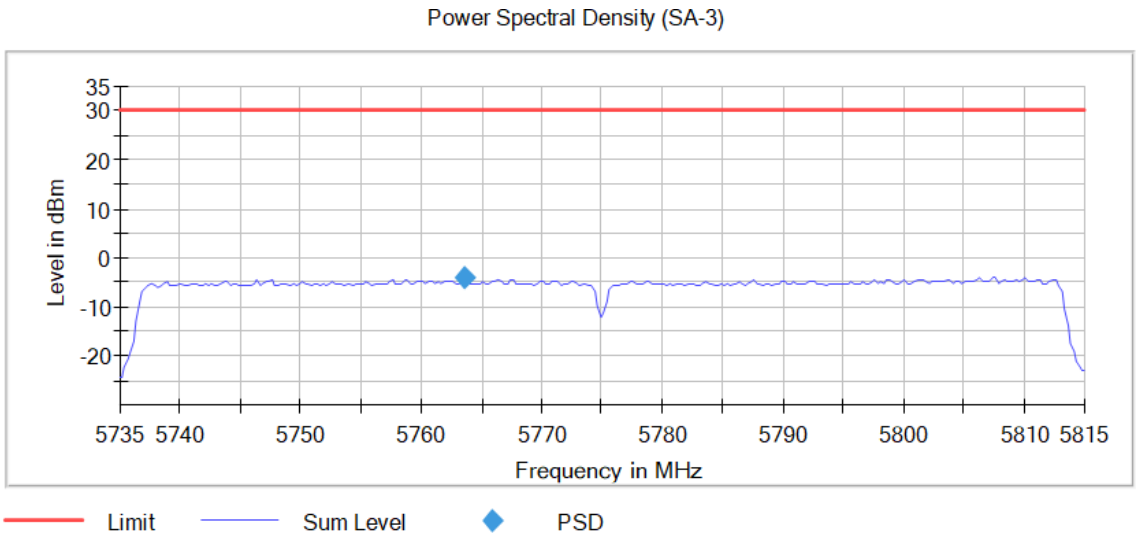
Active Port = 1, Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), TPC = No, MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.17000 GHz	5.19000 GHz	5.23000 GHz
Stop Frequency	5.19000 GHz	5.21000 GHz	5.25000 GHz
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	1.000 MHz	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz	3.000 MHz
Sweep Points	101	101	101
Sweep time	11.000 µs	11.000 µs	11.000 µs
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	RMS	RMS	RMS
Sweep Count	0	0	0
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	13 / max. 15	15 / max. 15	13 / max. 15
Stable	3 / 3	1 / 3	3 / 3
Max Stable Difference	0.00 dB	0.00 dB	0.00 dB

Measurement Setup

Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.73500 GHz	5.77500 GHz	5.81500 GHz
Stop Frequency	5.75500 GHz	5.79500 GHz	5.83500 GHz
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	500.000 kHz	500.000 kHz	500.000 kHz
VBW	2.000 MHz	2.000 MHz	2.000 MHz
Sweep Points	101	101	101
Sweep time	11.000 µs	11.000 µs	11.000 µs
Reference Level	0.000 dBm	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
Sweep Count	0	0	0
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	15 / max. 15	15 / max. 15	15 / max. 15
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.00 dB	0.00 dB	0.00 dB

FCC 2.1049 / RSS-Gen 6.7 99% Occupied Bandwidth

Specification:
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).

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

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5180.00000	16.600
		5200.00000	16.600
		5240.00000	16.600
U-NII-3	1	5745.00000	16.600
		5785.00000	16.600
		5825.00000	16.600

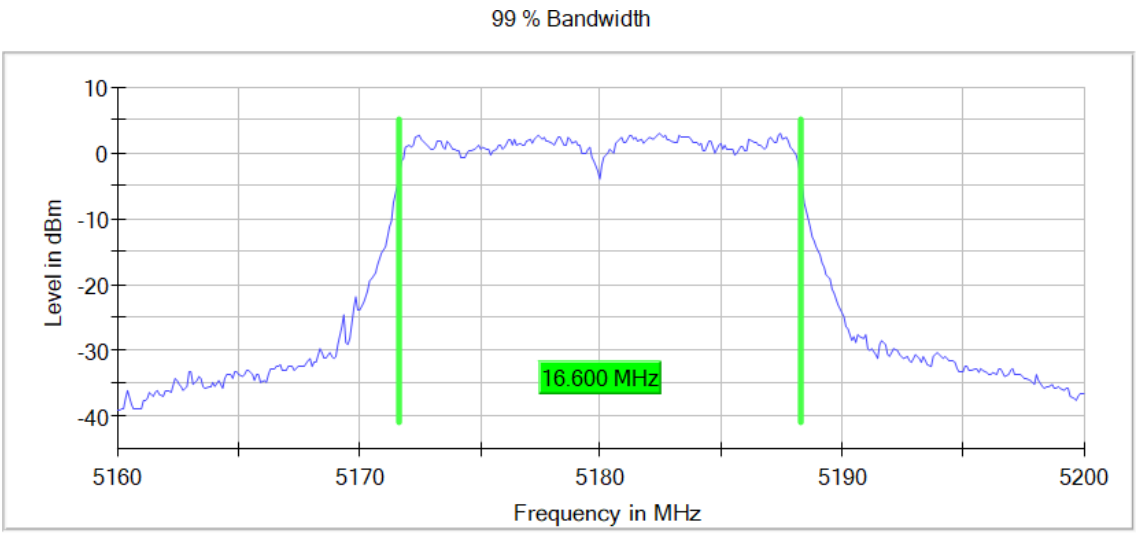
Verdict

Pass

Attachments

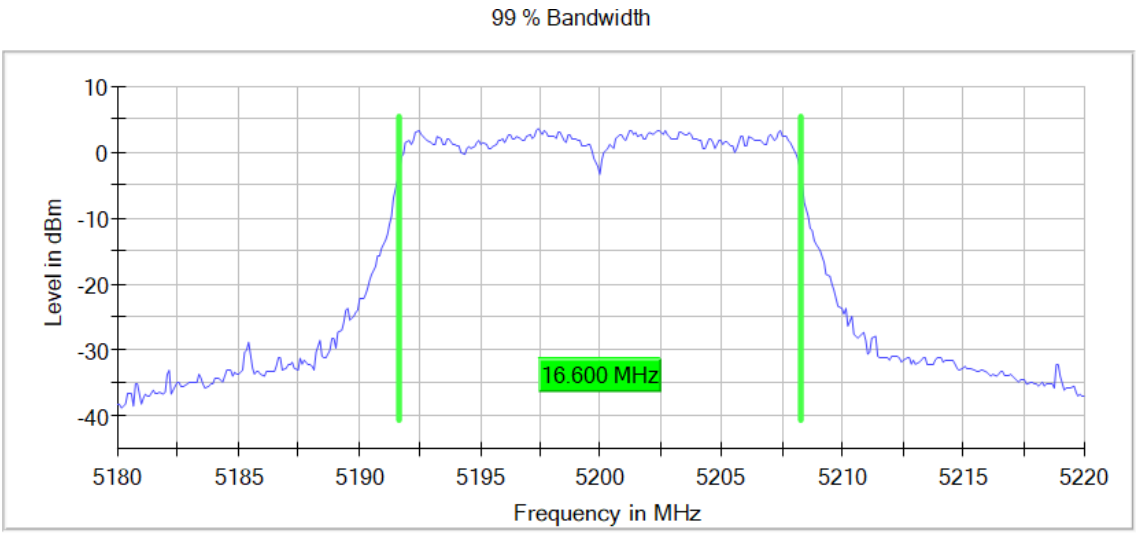
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



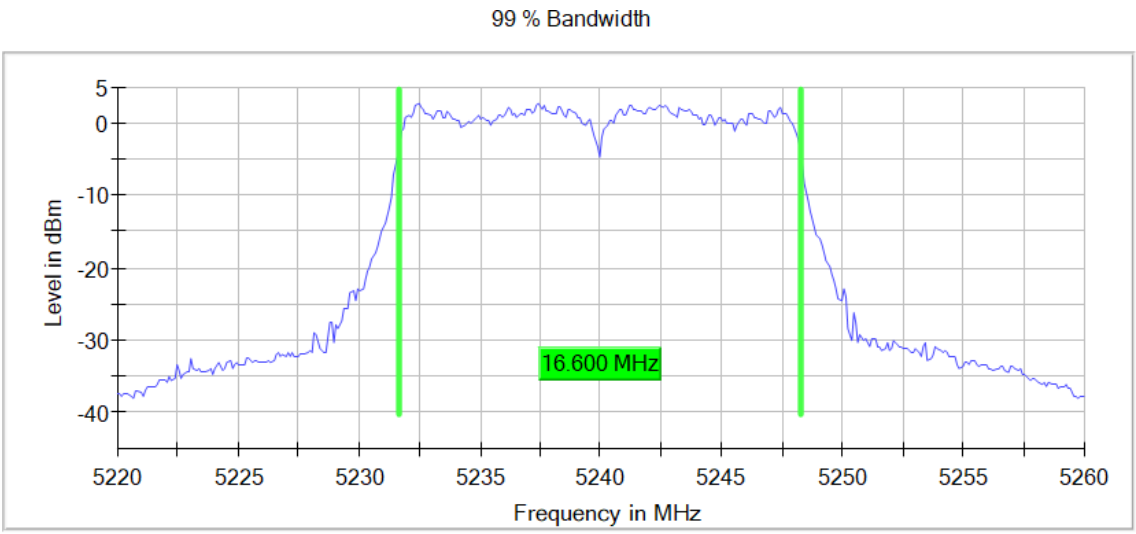
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



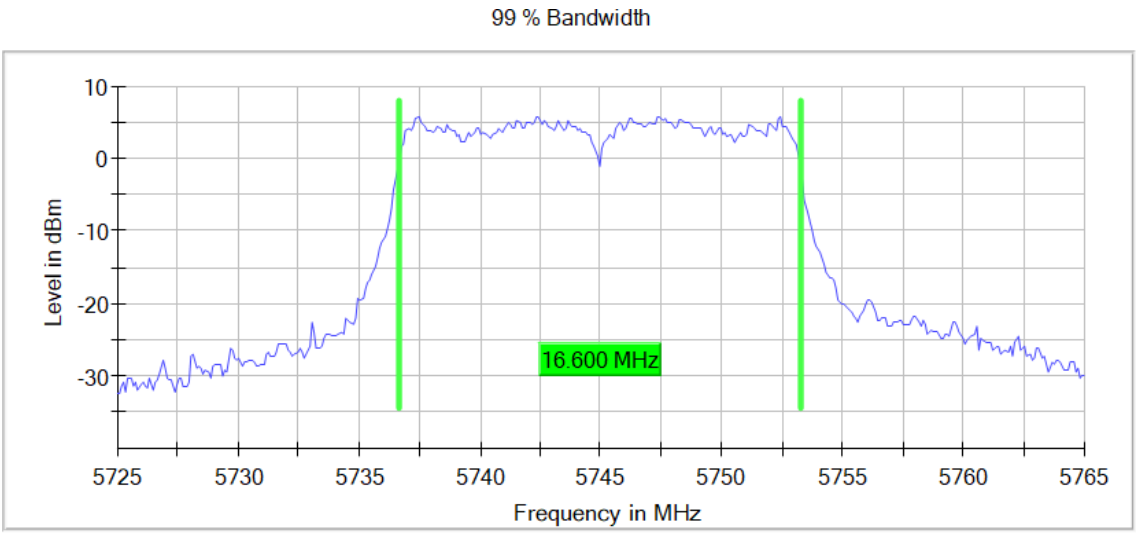
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



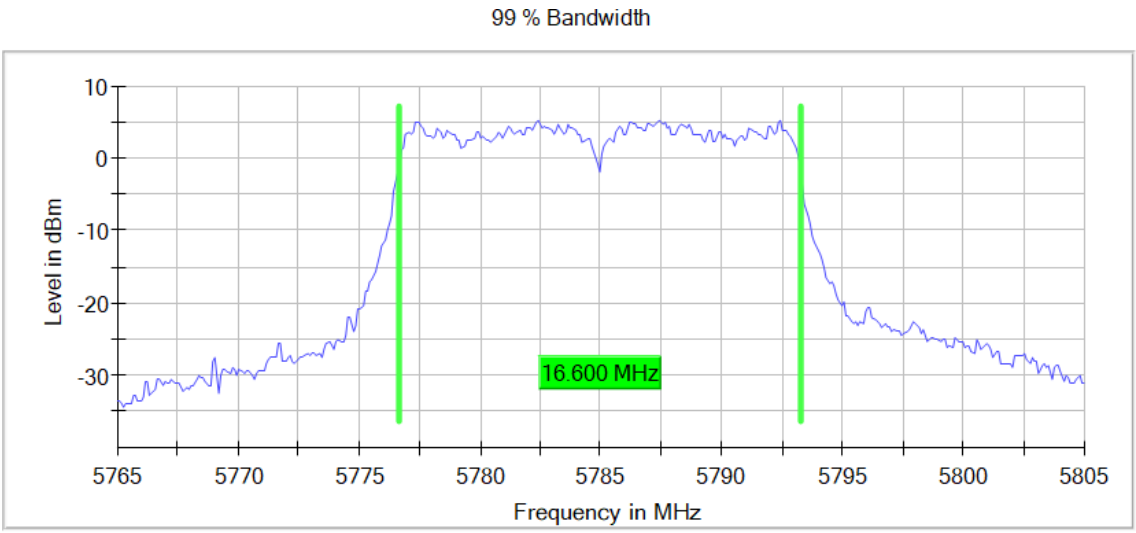
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



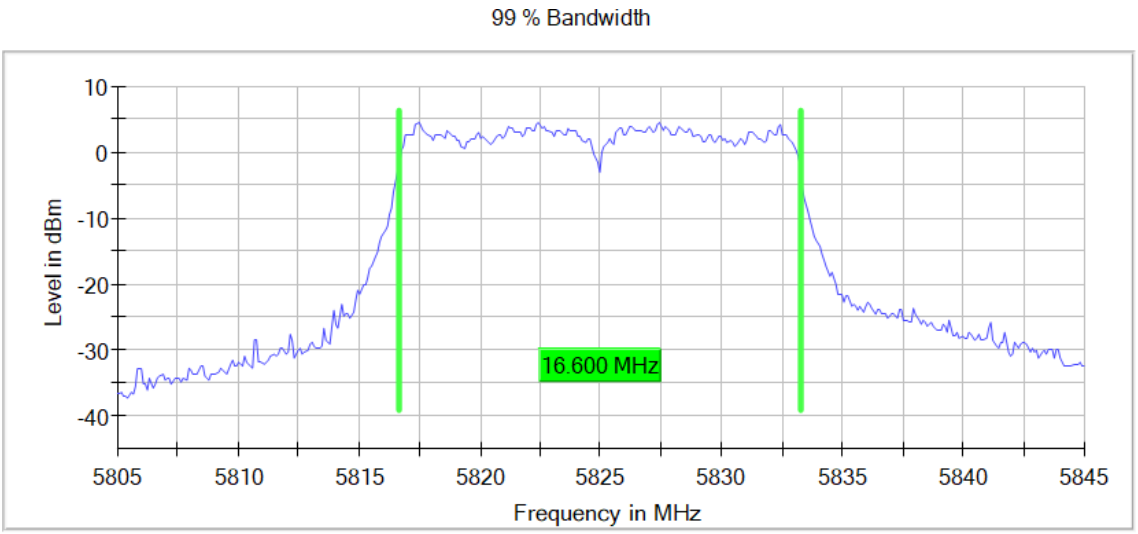
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5180.00000	17.600
		5200.00000	17.600
		5240.00000	17.600
U-NII-3	1	5745.00000	17.800
		5785.00000	17.700
		5825.00000	17.700

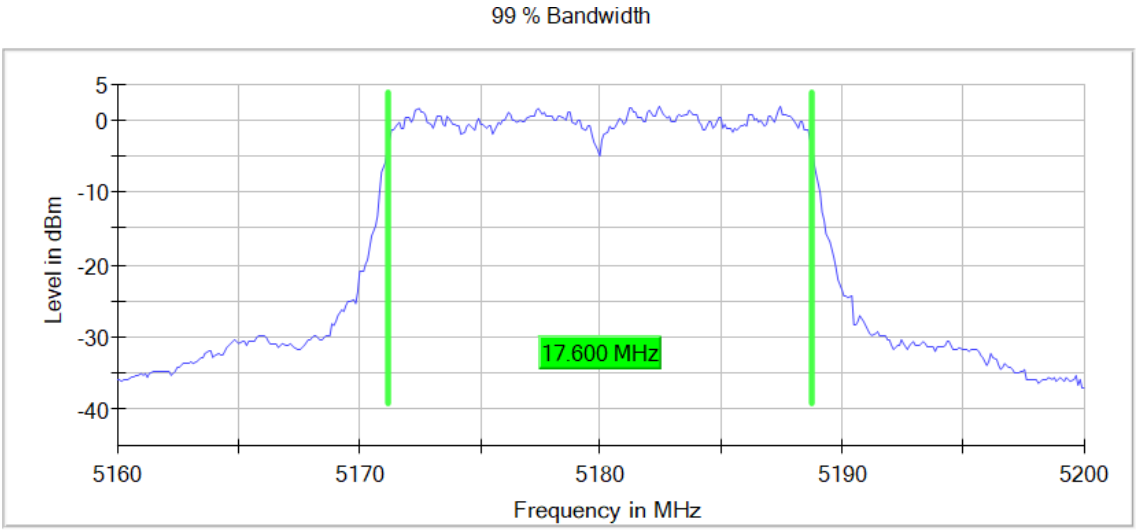
Verdict

Pass

Attachments

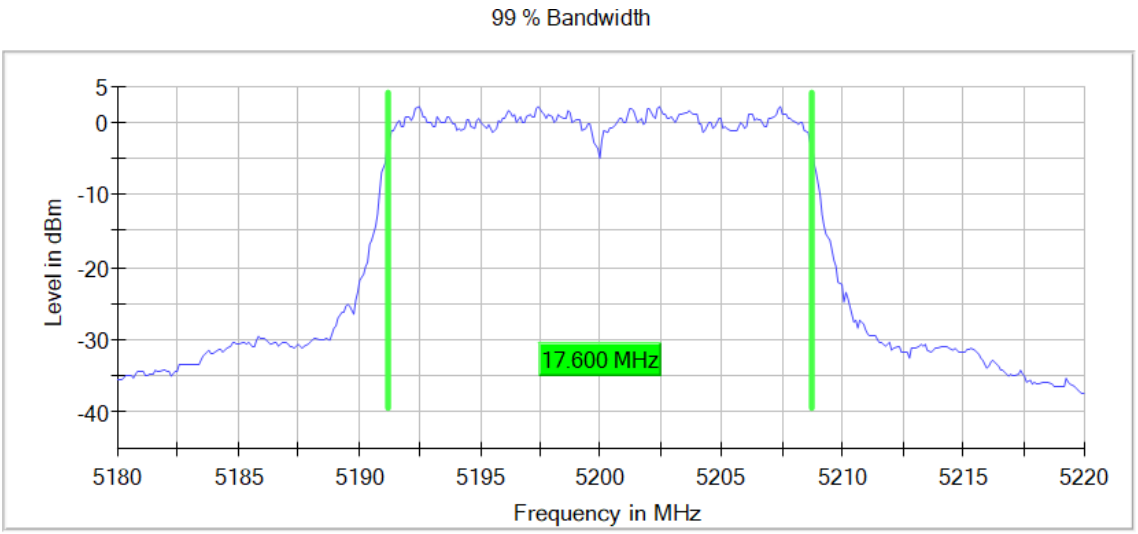
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



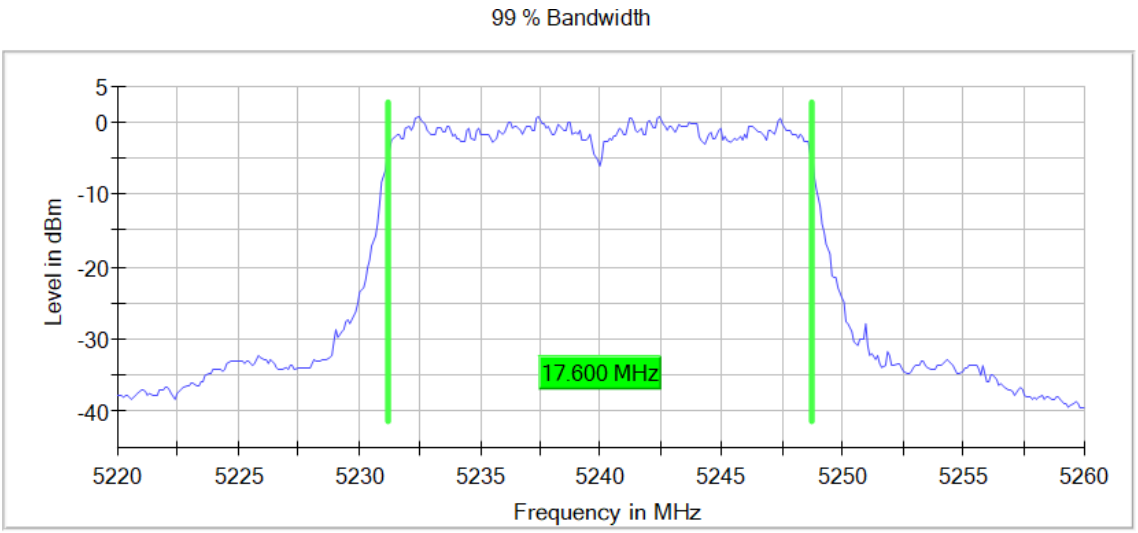
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



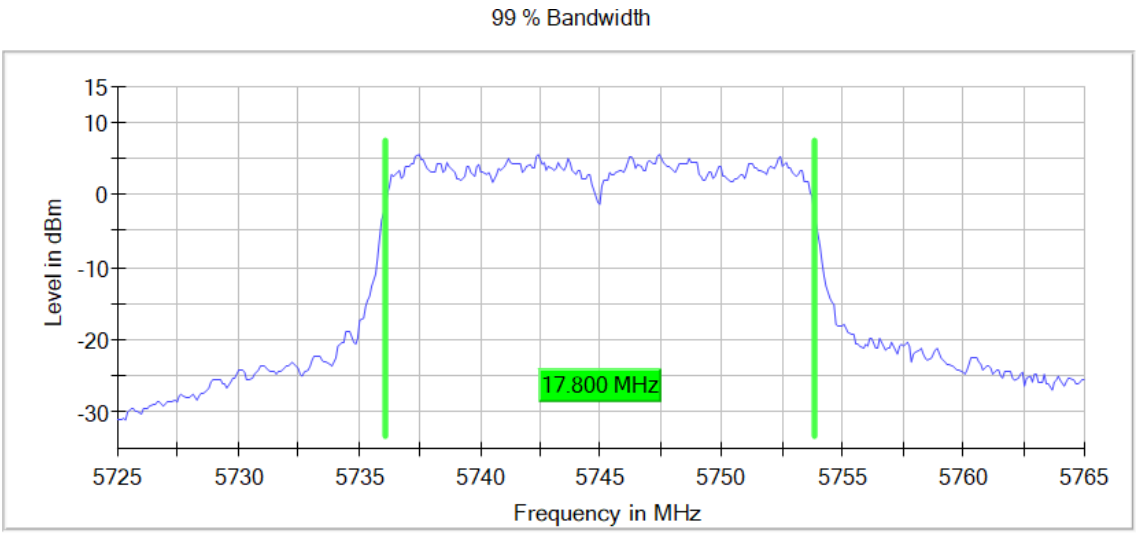
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



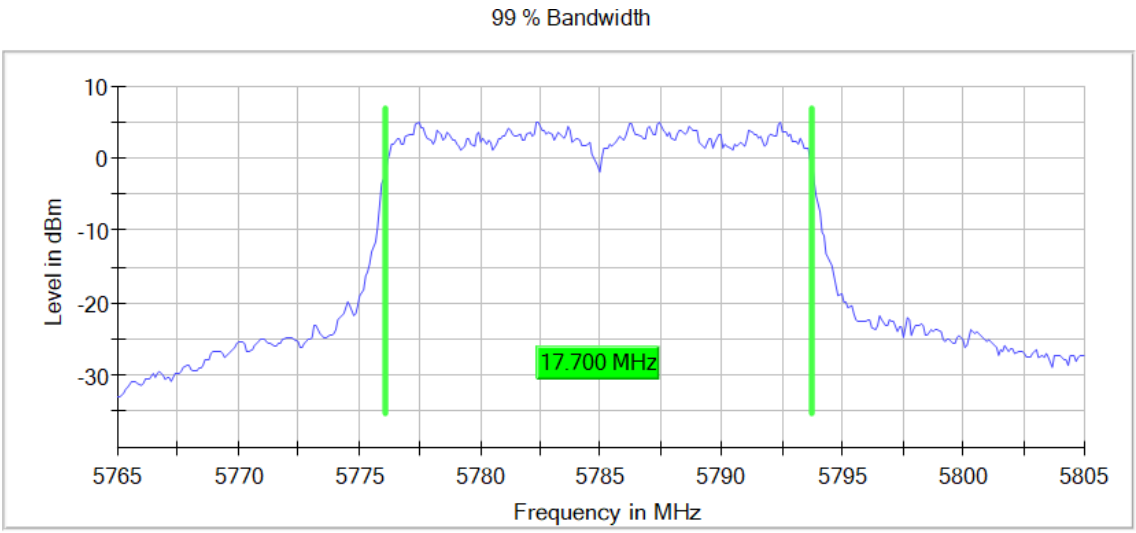
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



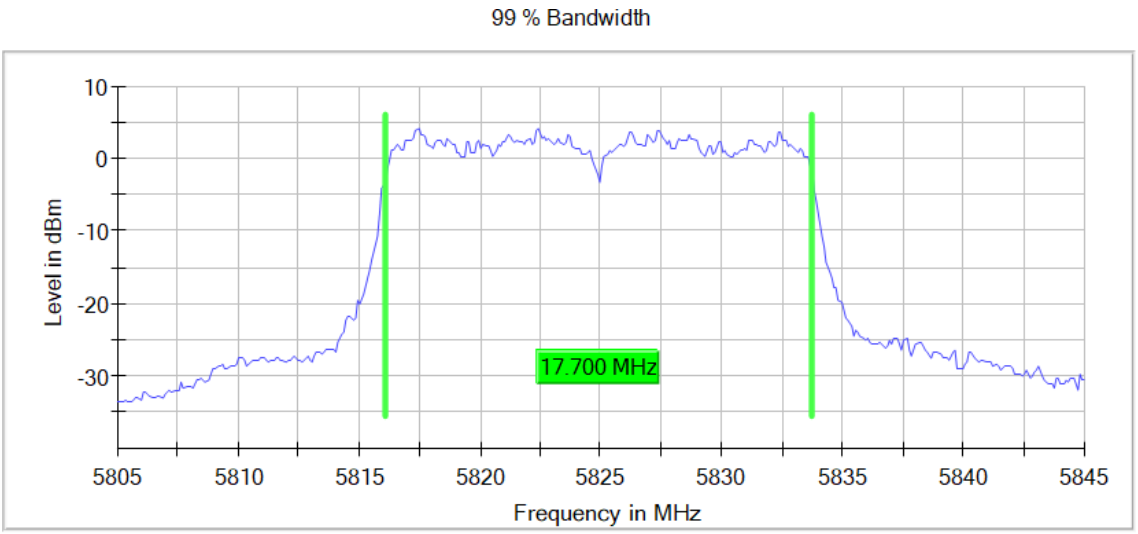
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5190.00000	36.500
		5230.00000	36.500
U-NII-3	1	5755.00000	36.500
		5795.00000	36.750

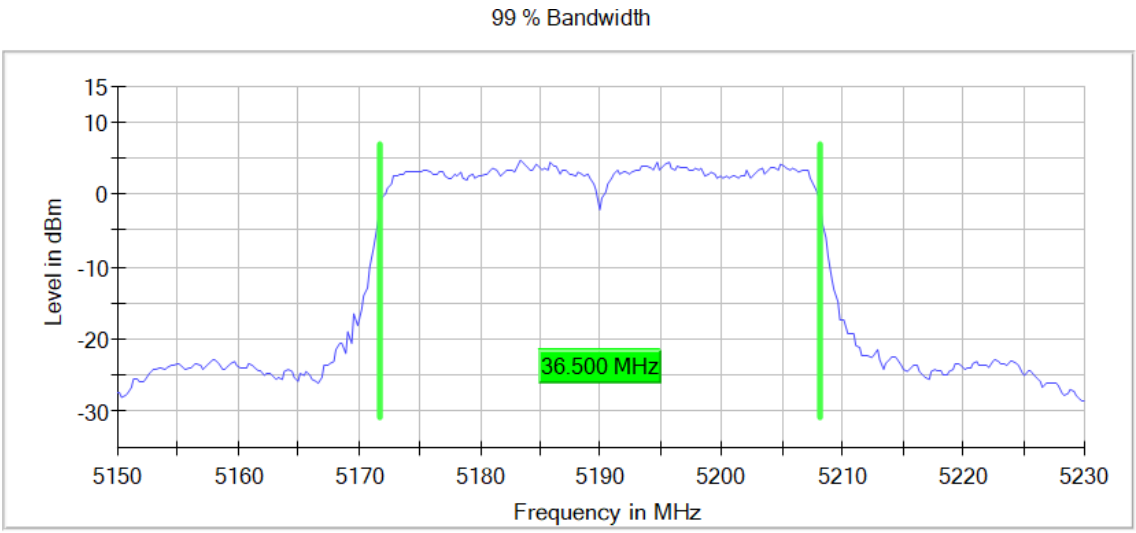
Verdict

Pass

Attachments

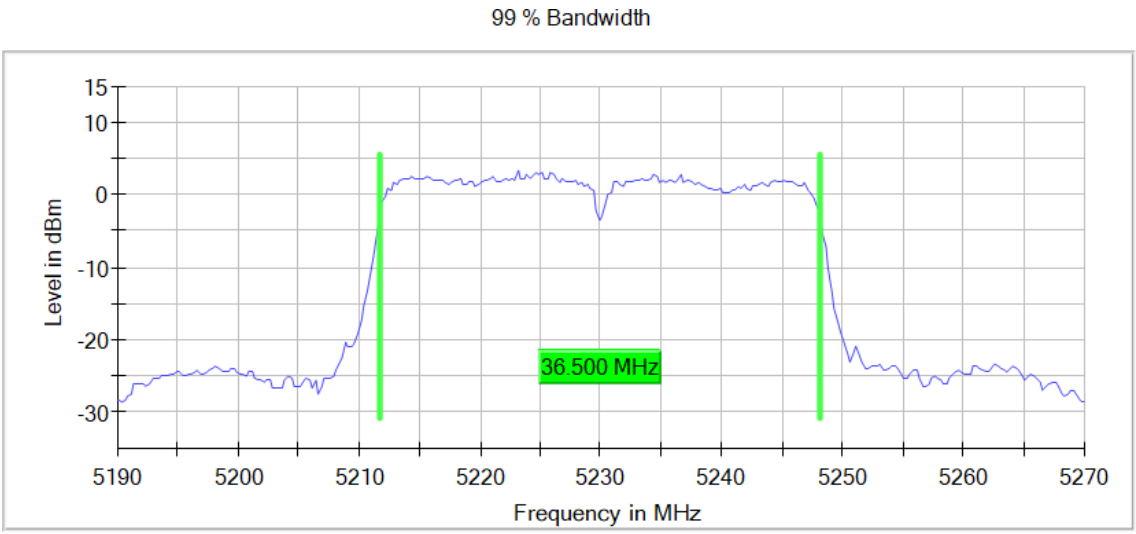
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



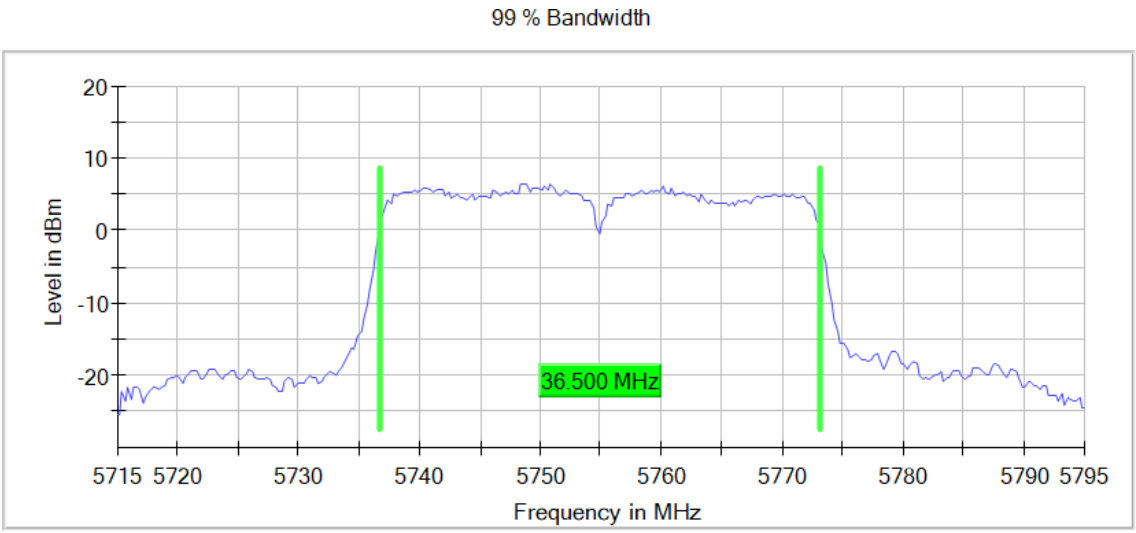
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



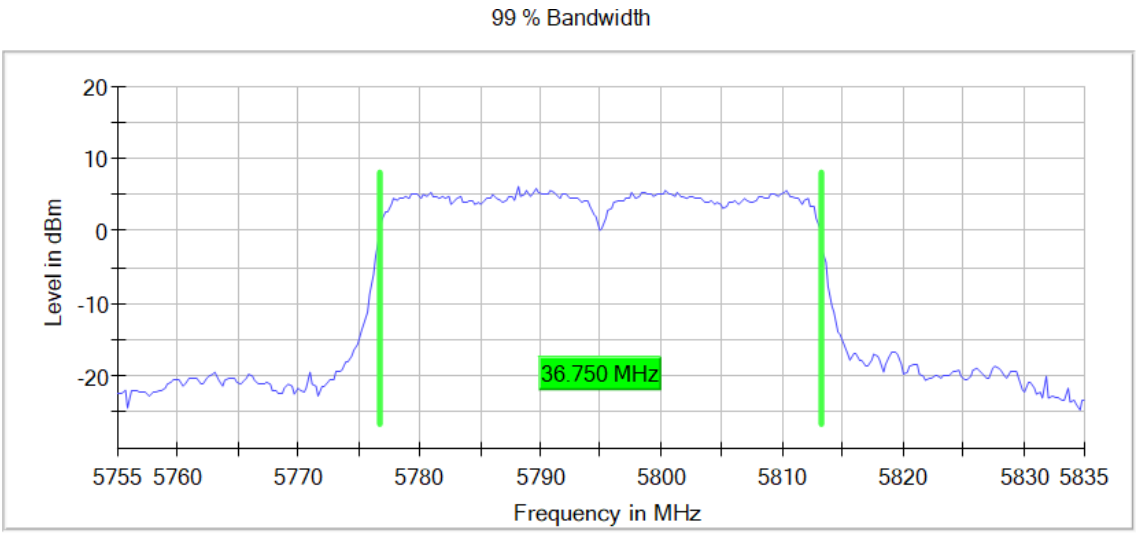
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5180.00000	17.600
		5200.00000	17.600
		5240.00000	17.600
U-NII-3	1	5745.00000	17.800
		5785.00000	17.700
		5825.00000	17.600

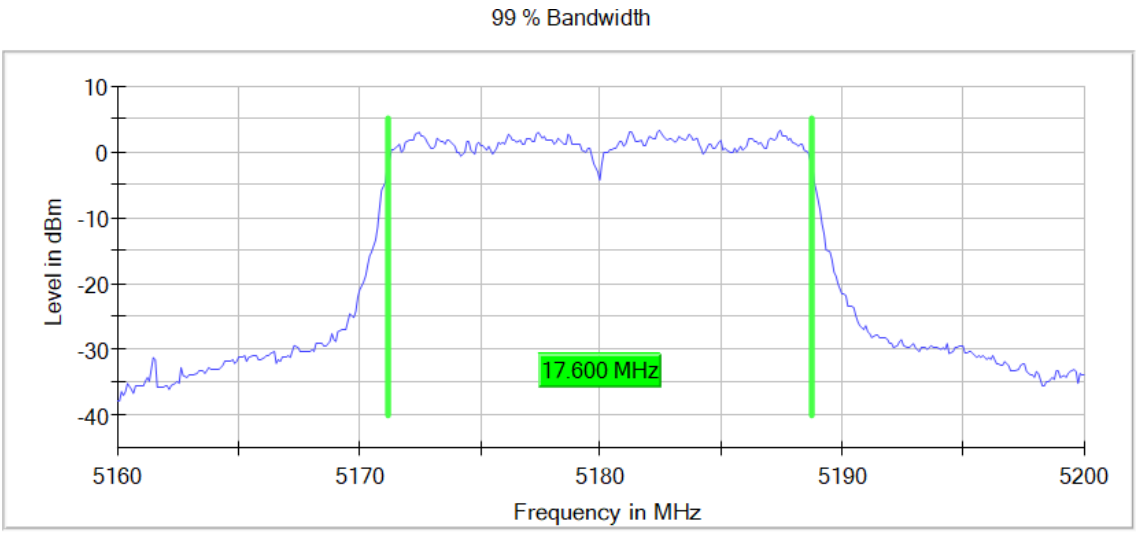
Verdict

Pass

Attachments

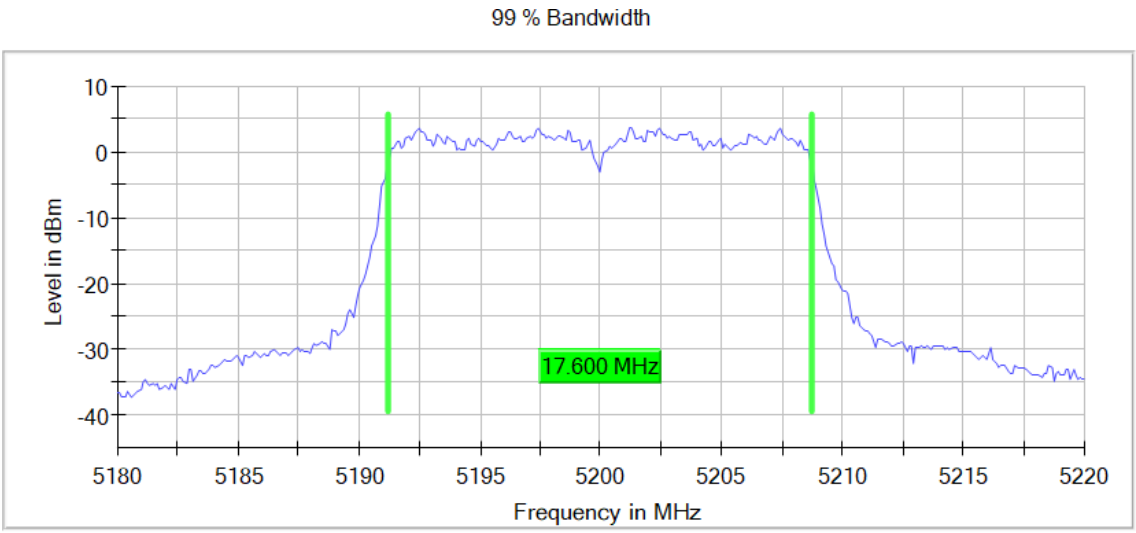
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



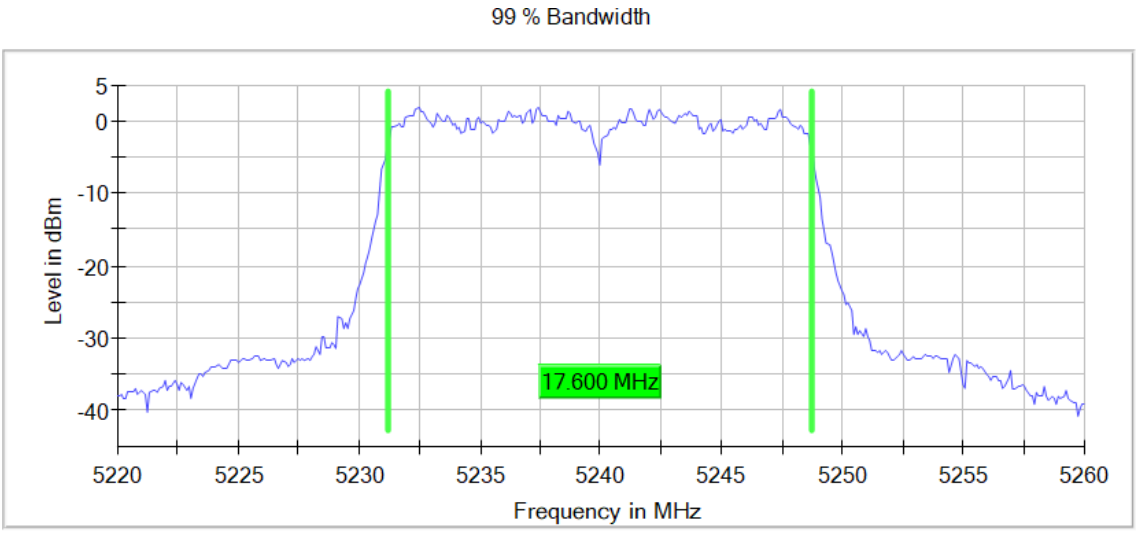
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



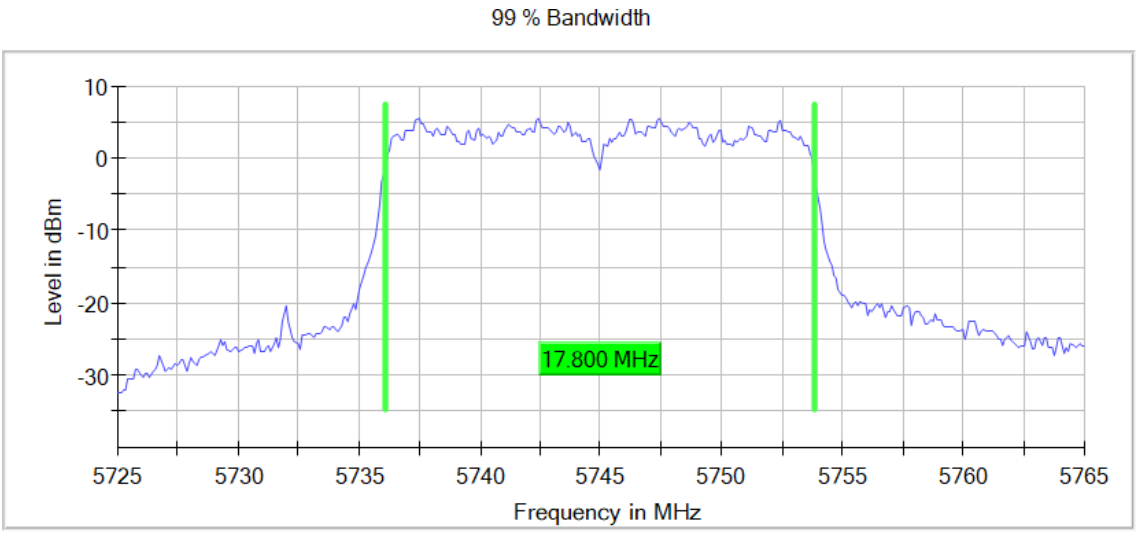
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



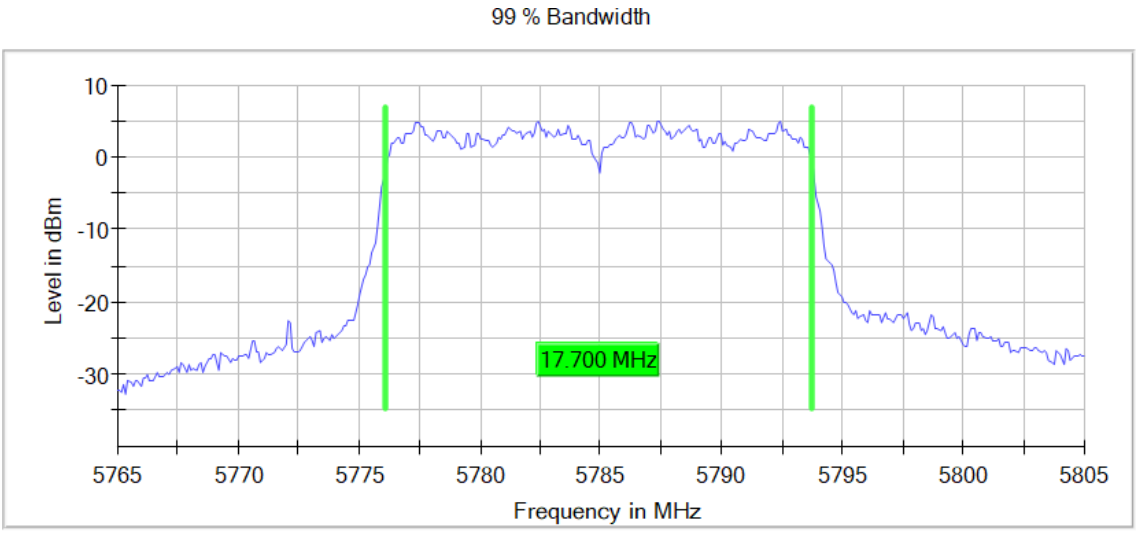
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



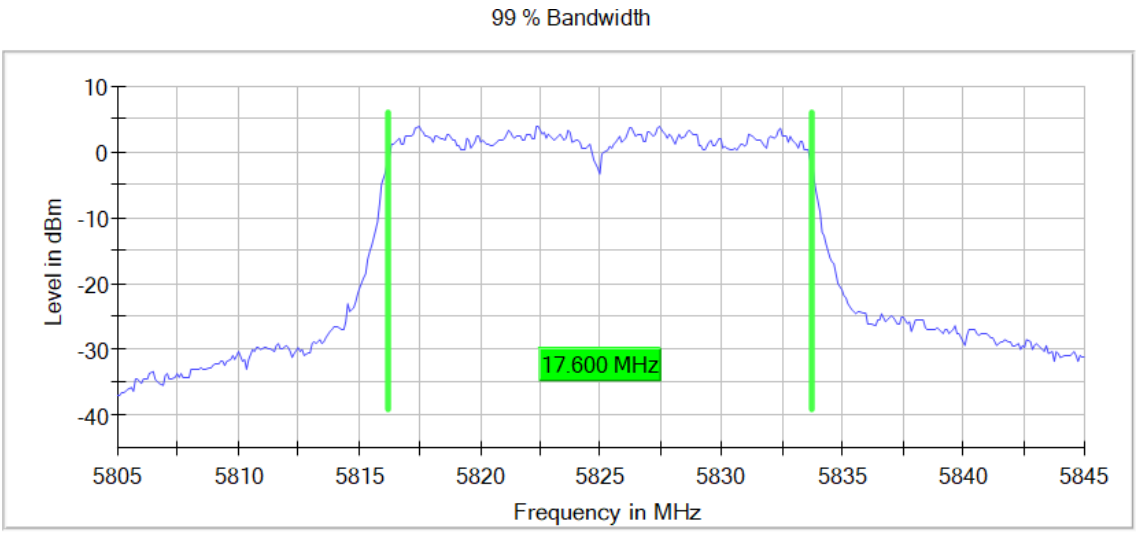
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5190.00000	36.250
		5230.00000	36.500
U-NII-3	1	5755.00000	36.500
		5795.00000	36.500

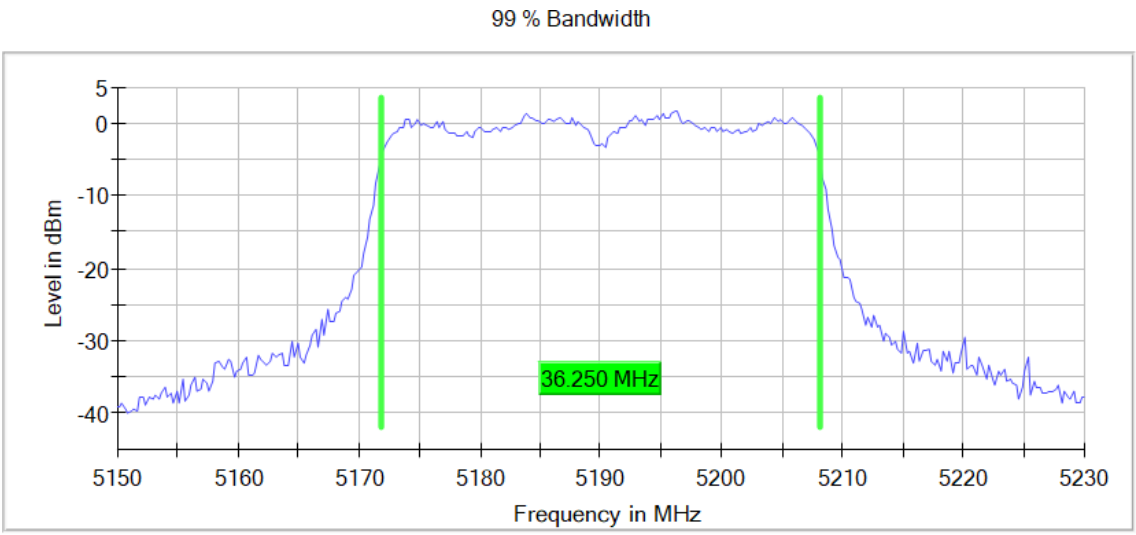
Verdict

Pass

Attachments

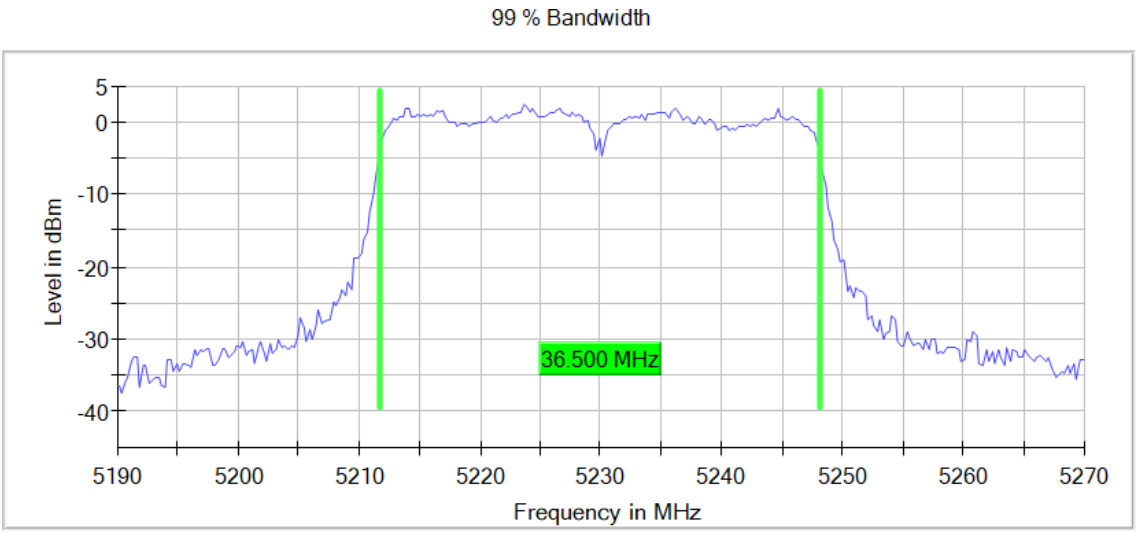
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



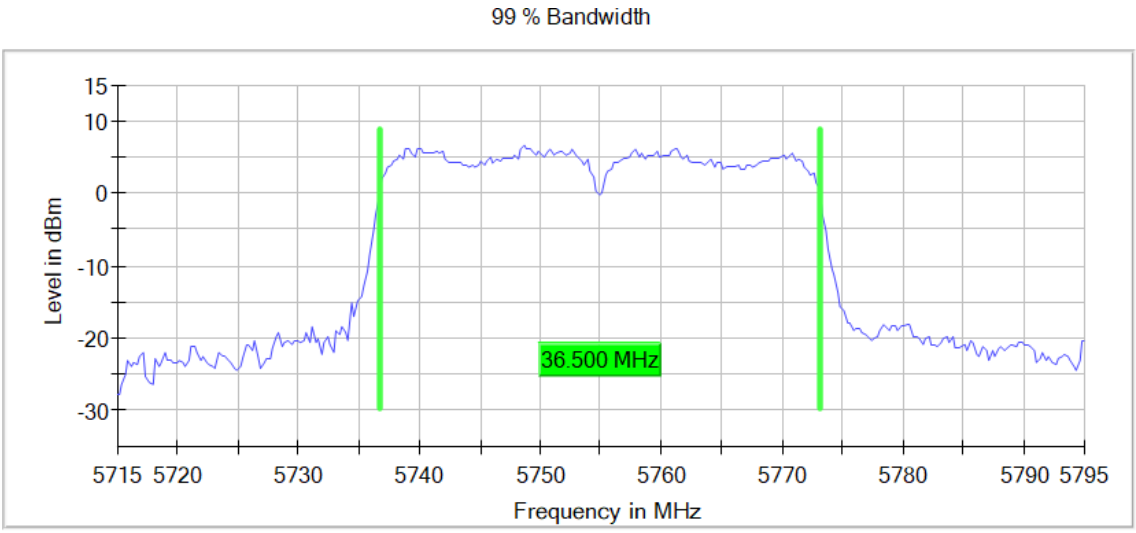
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



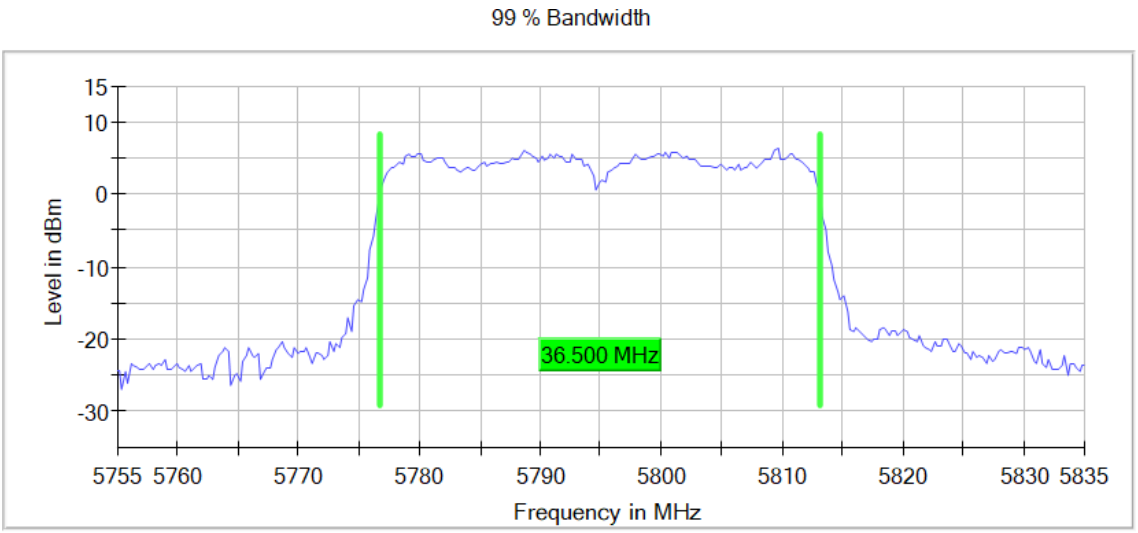
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	Occ Ch BW (MHz)
U-NII-1	1	5210.00000	76.500
U-NII-3	1	5775.00000	77.500

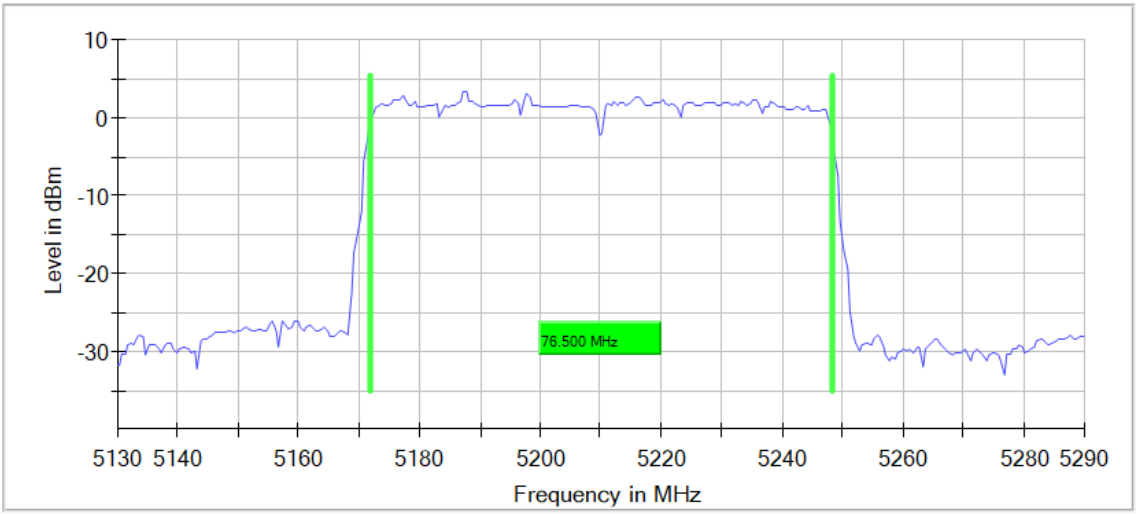
Verdict

Pass

Attachments

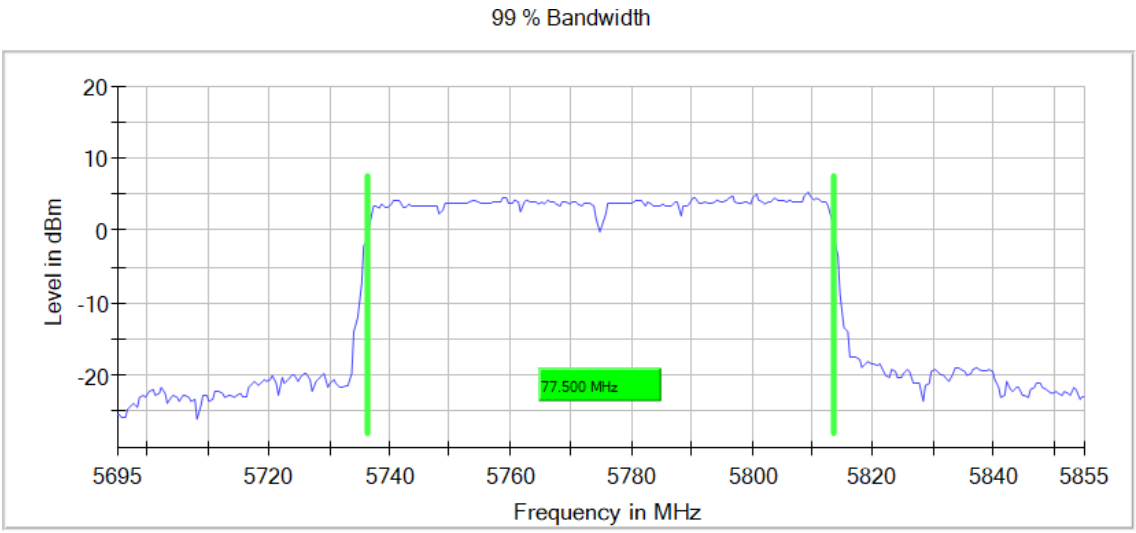
Active Port = 1, Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
Sweep Points	400	400	400
Sweep time	28.477 µs	28.477 µs	28.477 µs
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	Max Peak	Max Peak	Max Peak
Sweep Count	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	40 / max. 150	66 / max. 150	43 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.23 dB	0.18 dB

Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
Sweep Points	400	400	400
Sweep time	28.477 µs	28.477 µs	28.477 µs
Reference Level	0.000 dBm	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	Max Peak	Max Peak	Max Peak
Sweep Count	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	108 / max. 150	68 / max. 150	80 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.00 dB	0.07 dB

FCC 15.403 / RSS-Gen 6.7 26 dB Emission Bandwidth

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.

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5180.00000	19.900
		5200.00000	19.800
		5240.00000	19.800
U-NII-3	1	5745.00000	21.300
		5785.00000	20.100
		5825.00000	20.000

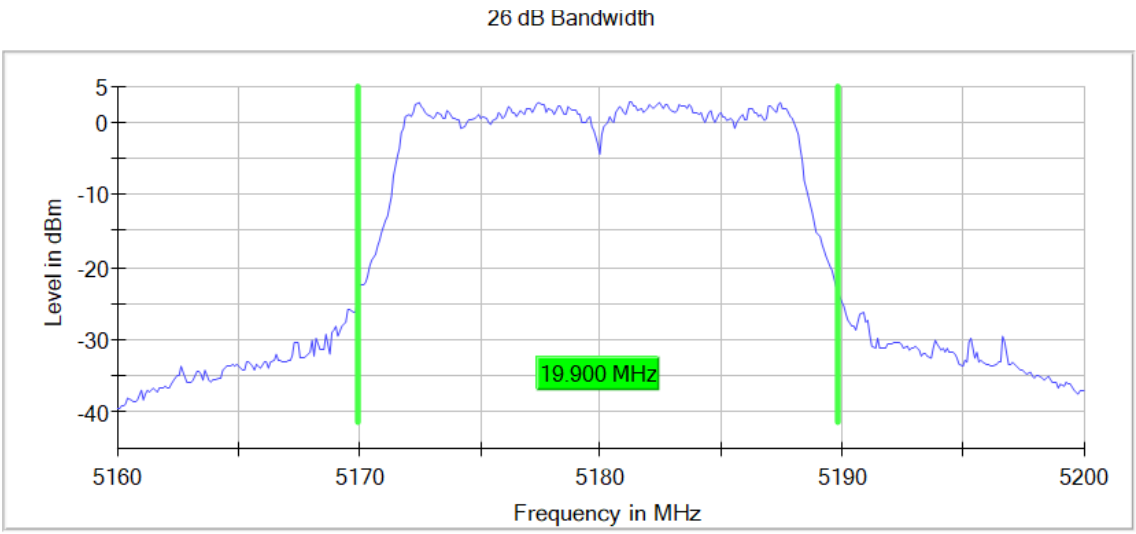
Verdict

Pass

Attachments

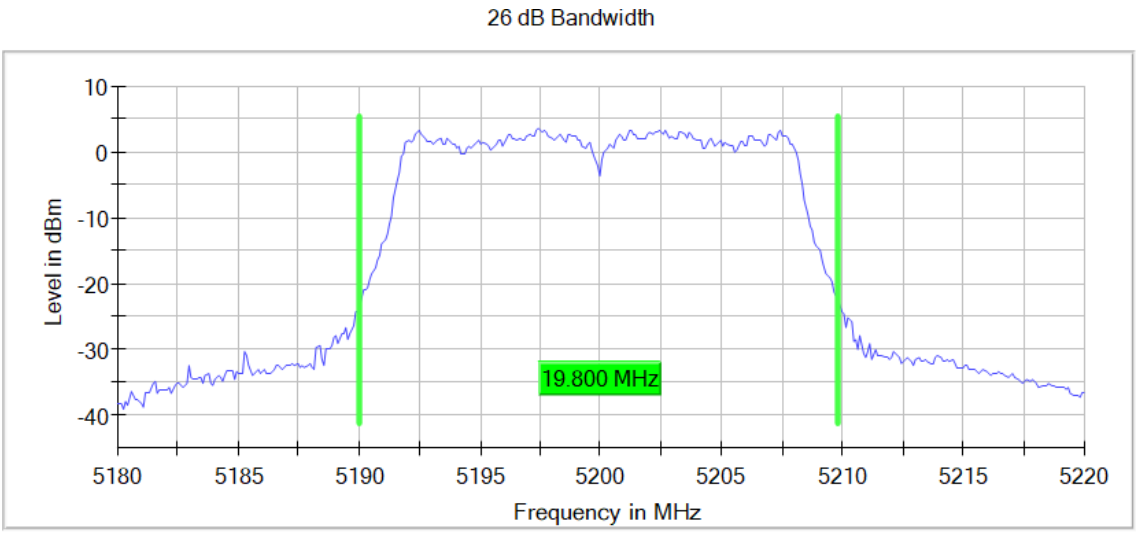
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



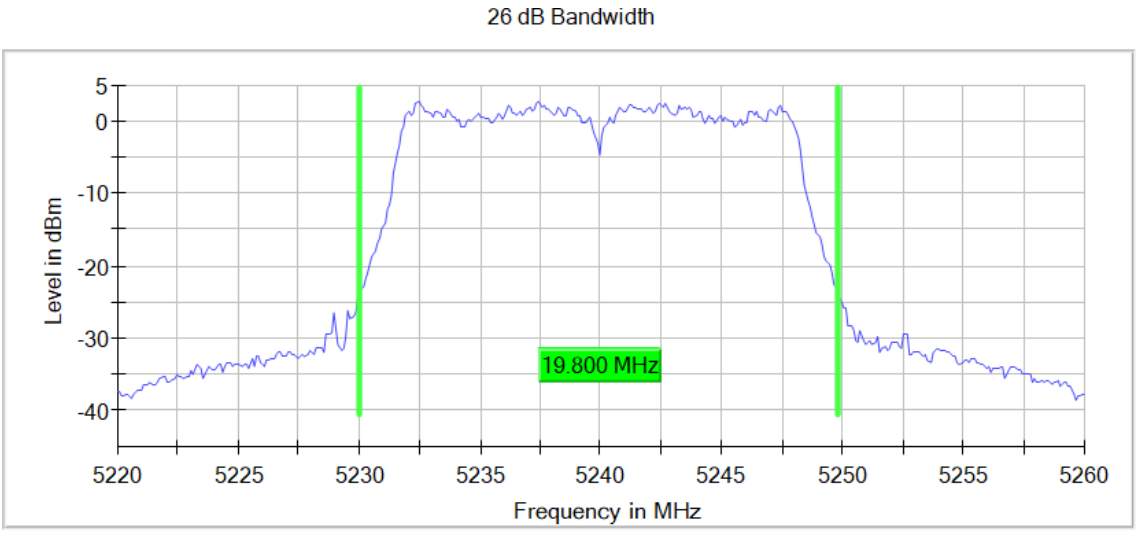
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



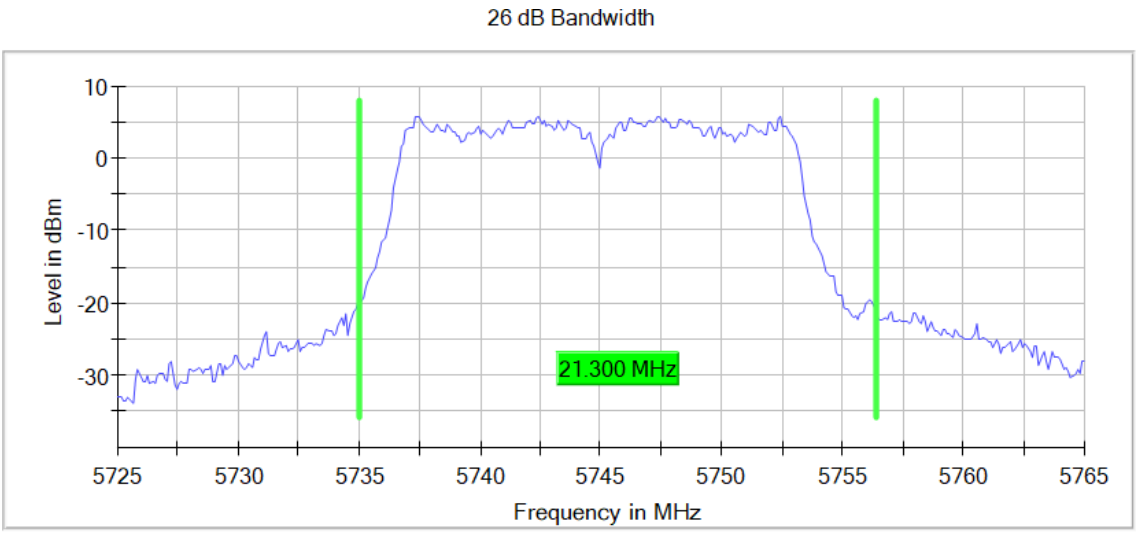
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



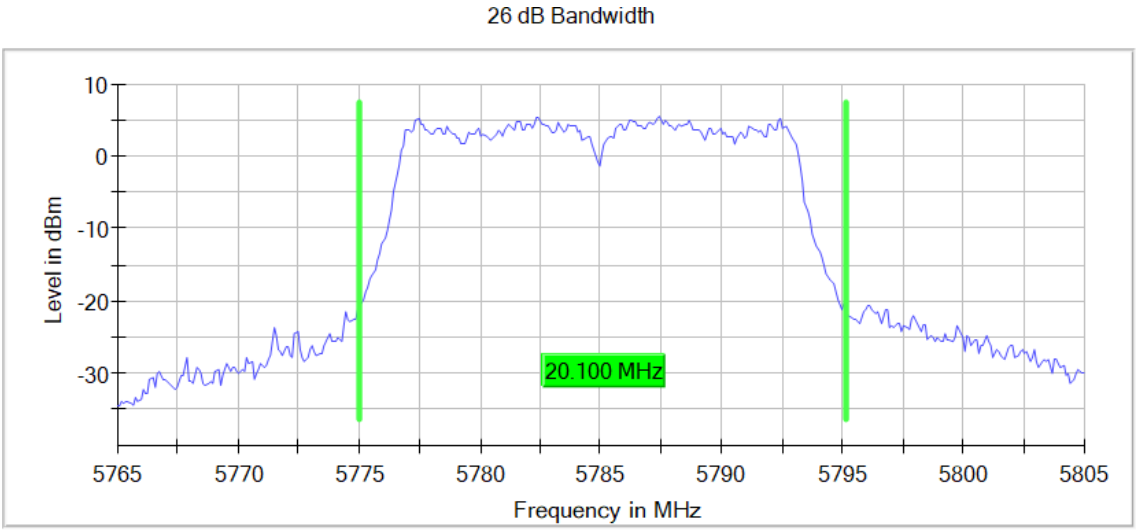
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



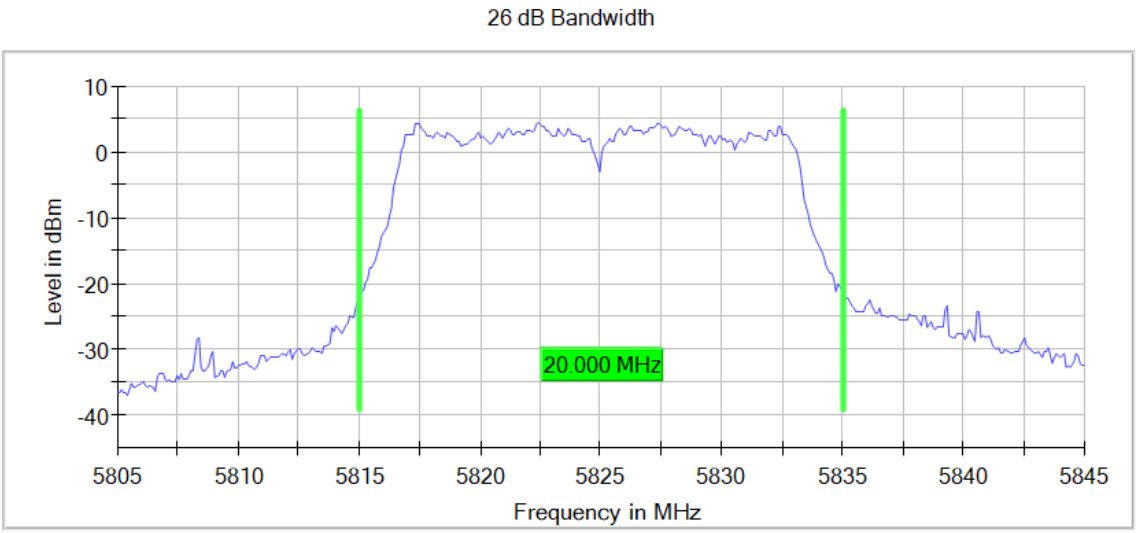
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5180.00000	21.000
		5200.00000	20.400
		5240.00000	20.300
U-NII-3	1	5745.00000	21.800
		5785.00000	21.000
		5825.00000	20.700

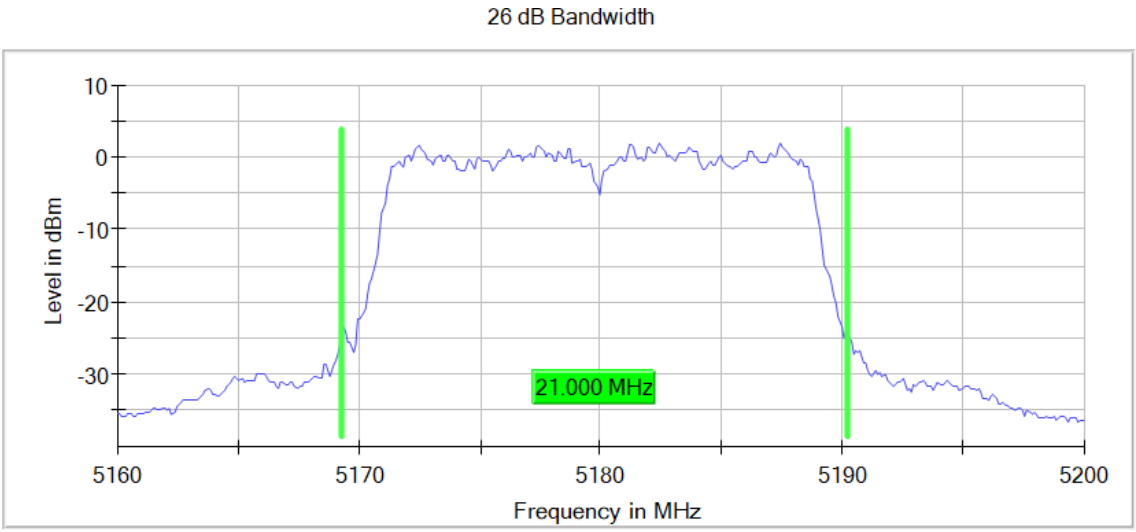
Verdict

Pass

Attachments

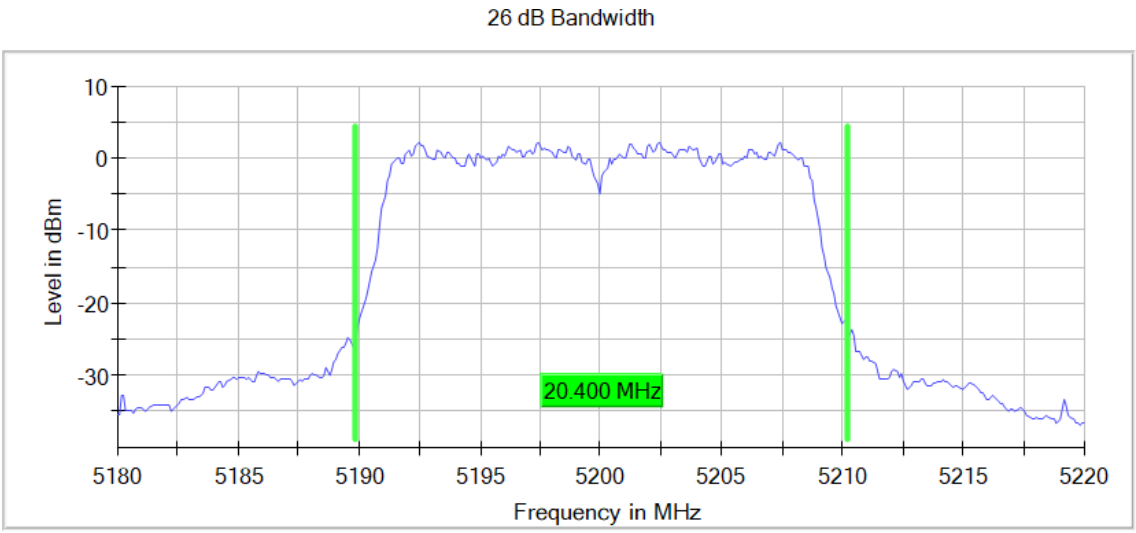
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



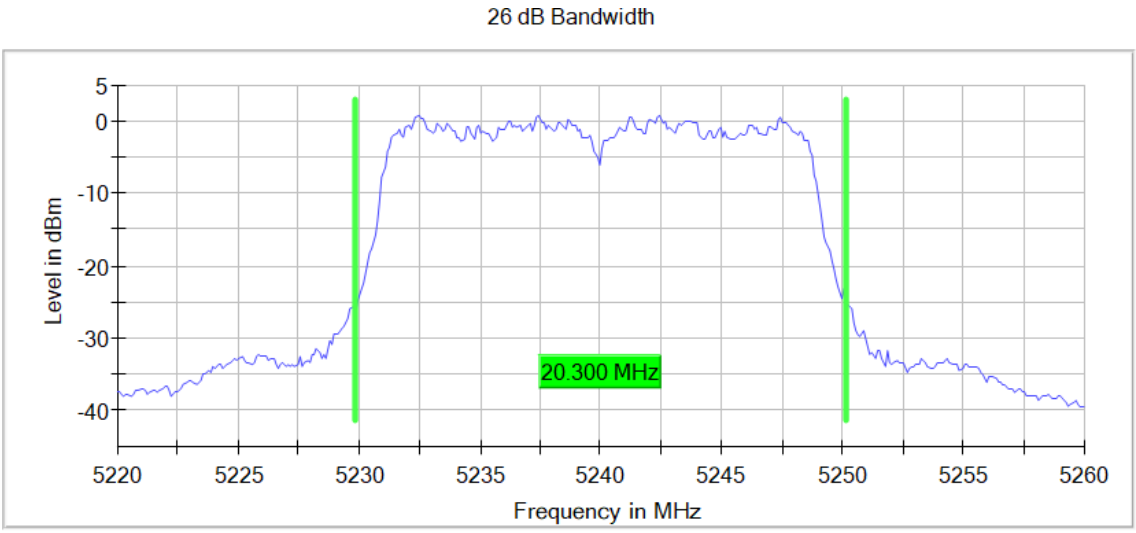
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



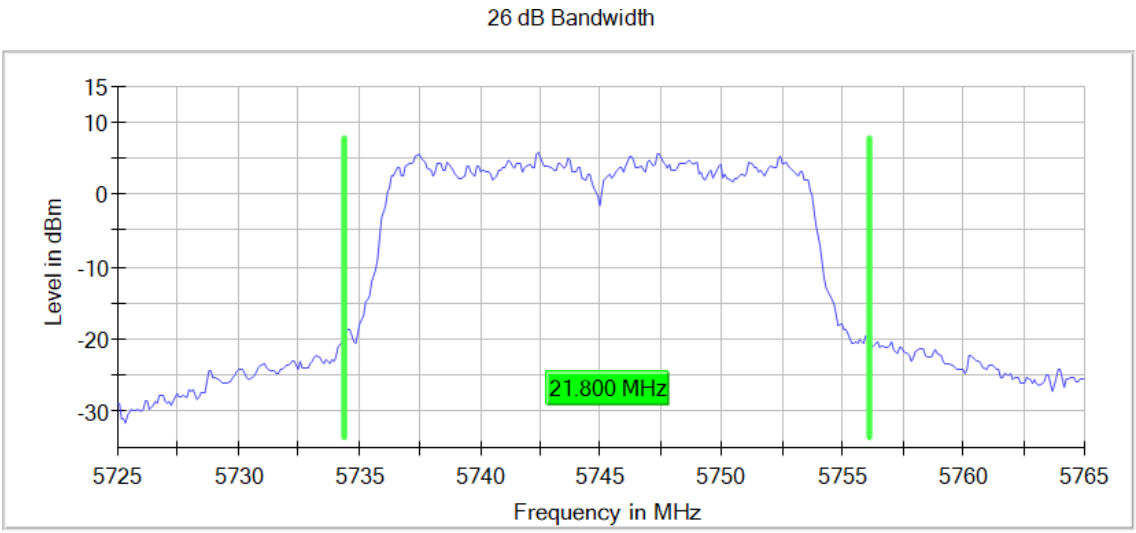
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



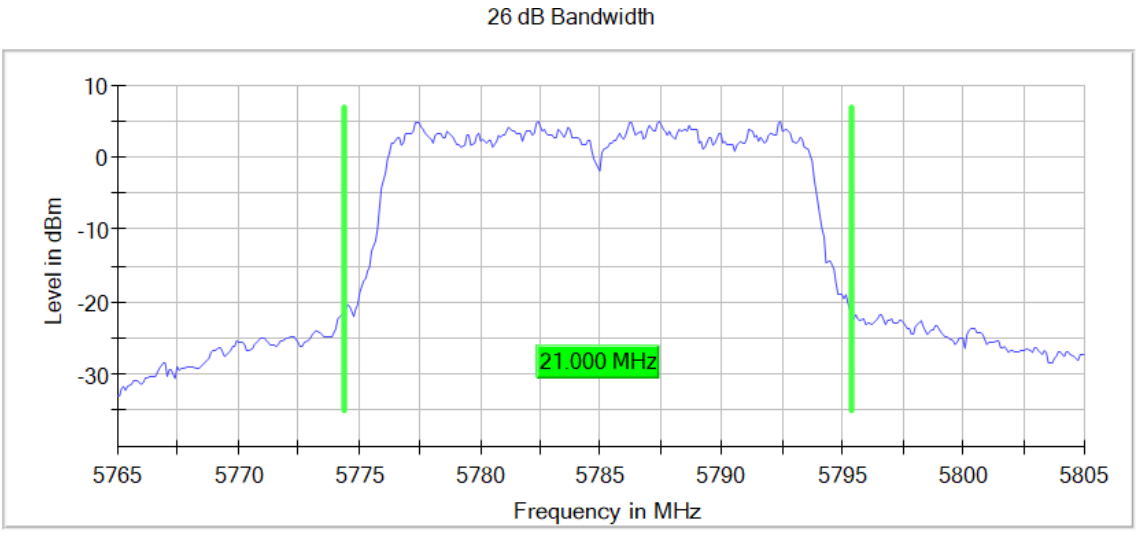
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



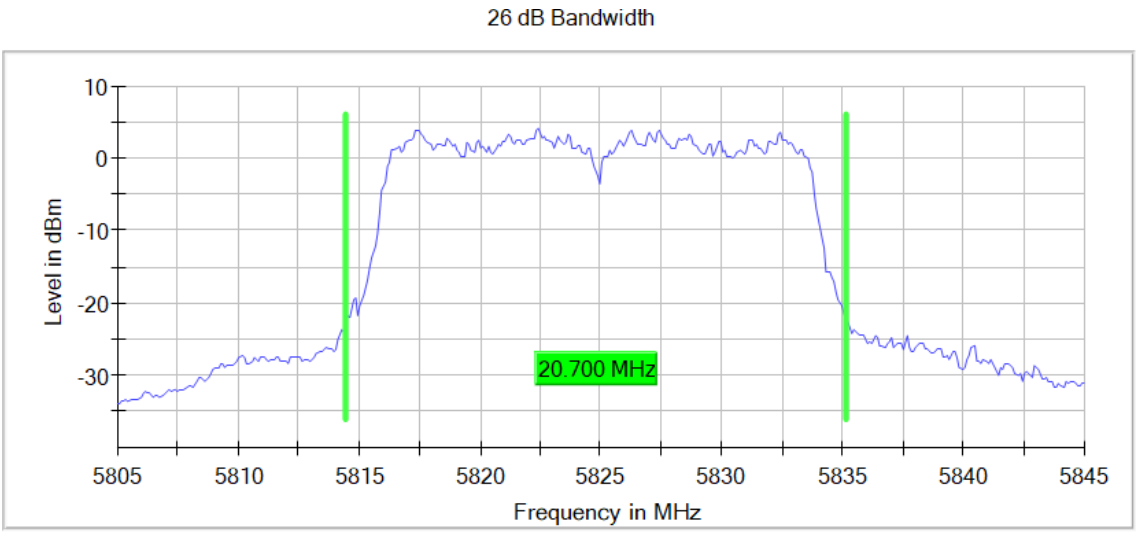
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



MIMO Mode: SISO

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

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5190.00000	41.426
		5230.00000	42.326
U-NII-3	1	5755.00000	62.139
		5795.00000	54.184

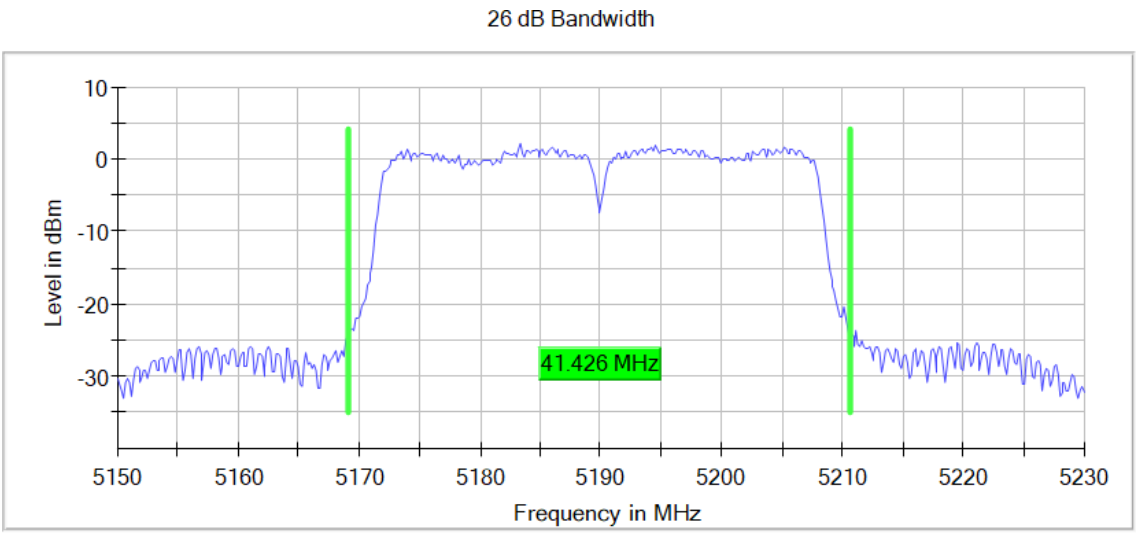
Verdict

Pass

Attachments

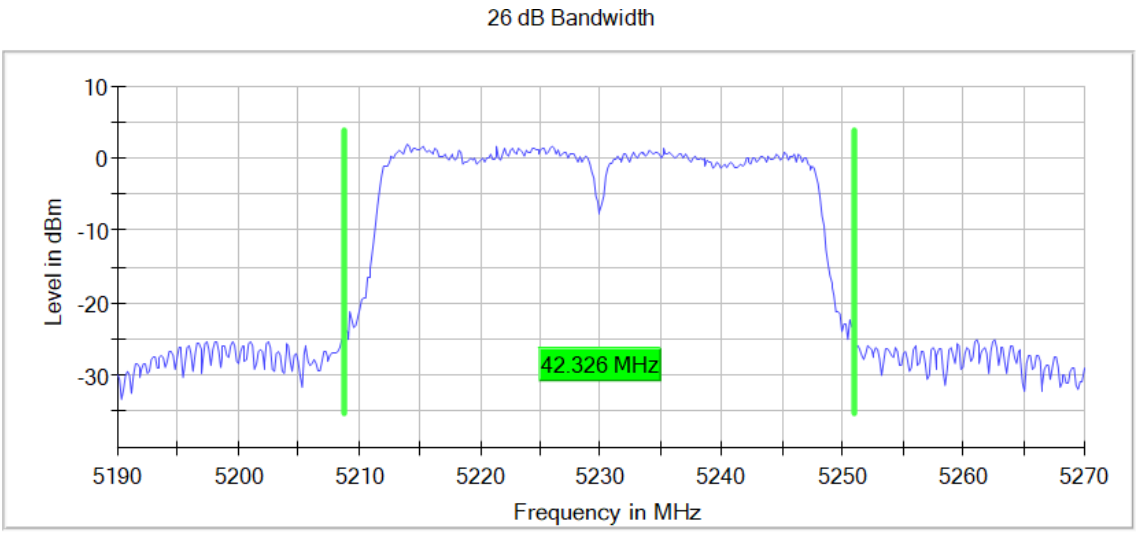
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



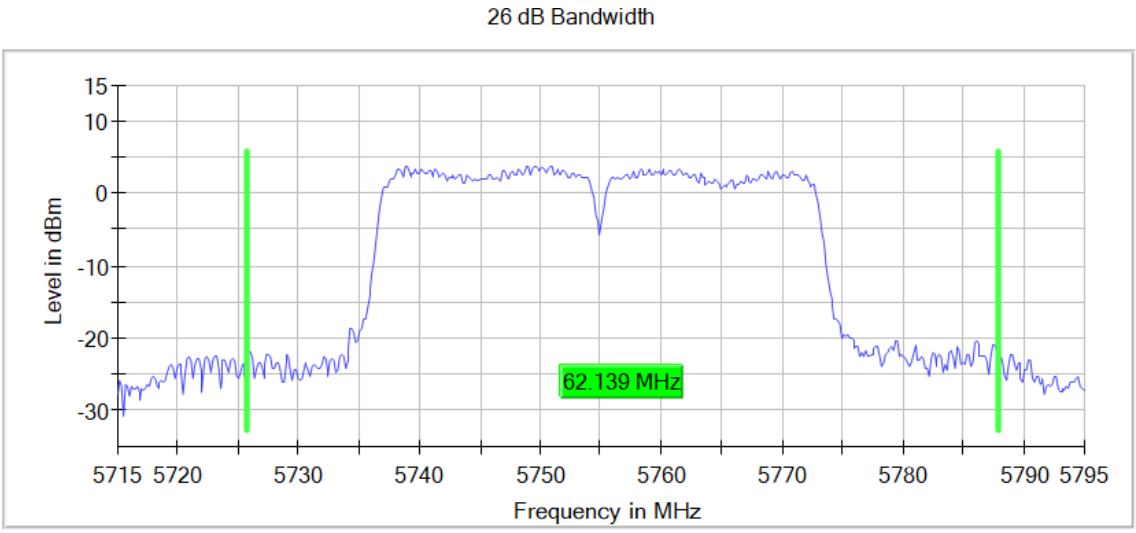
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



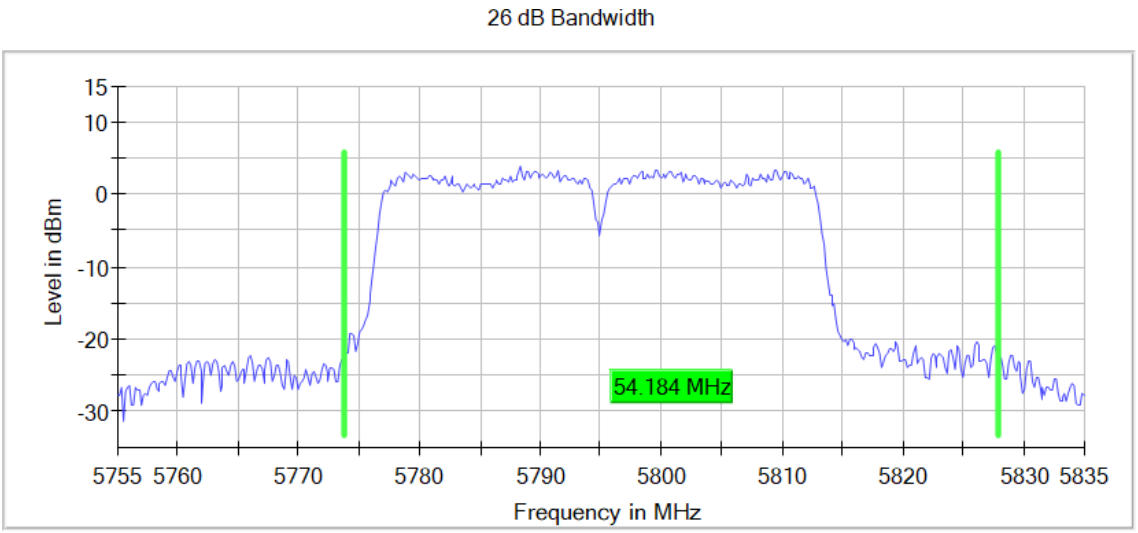
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5180.00000	20.400
		5200.00000	20.500
		5240.00000	20.200
U-NII-3	1	5745.00000	22.200
		5785.00000	20.500
		5825.00000	20.600

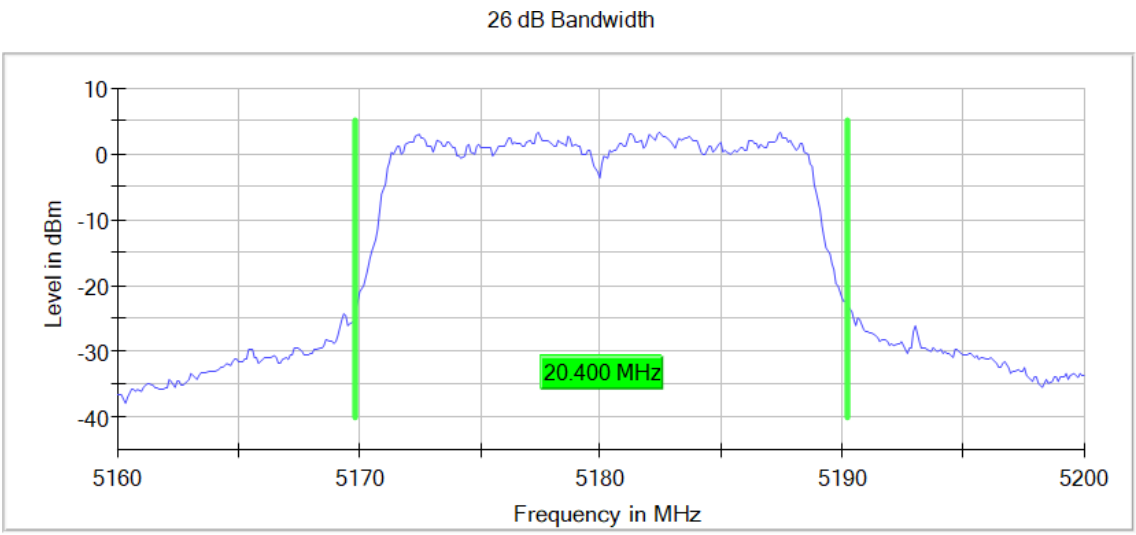
Verdict

Pass

Attachments

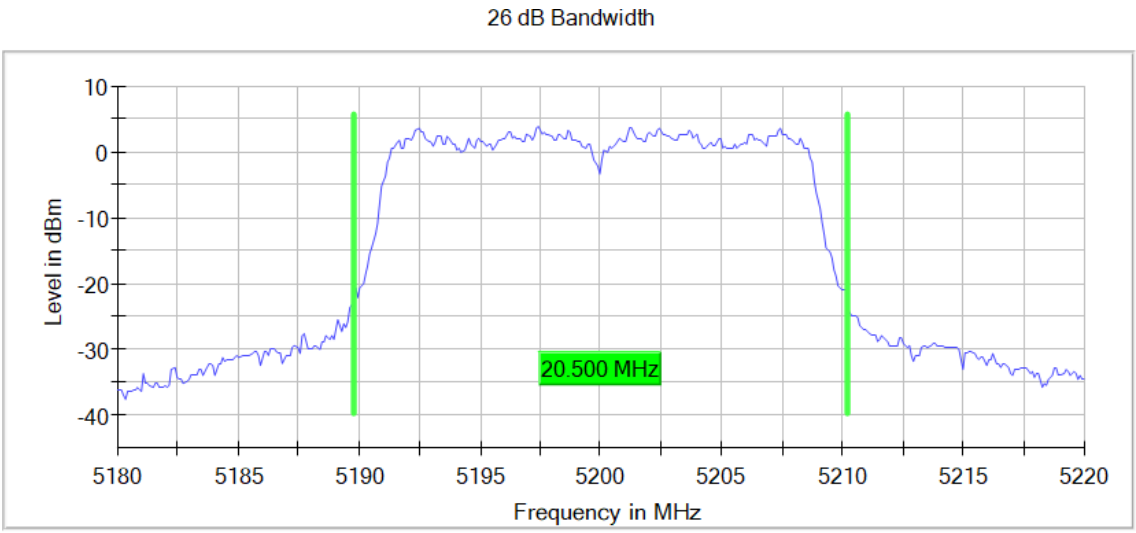
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



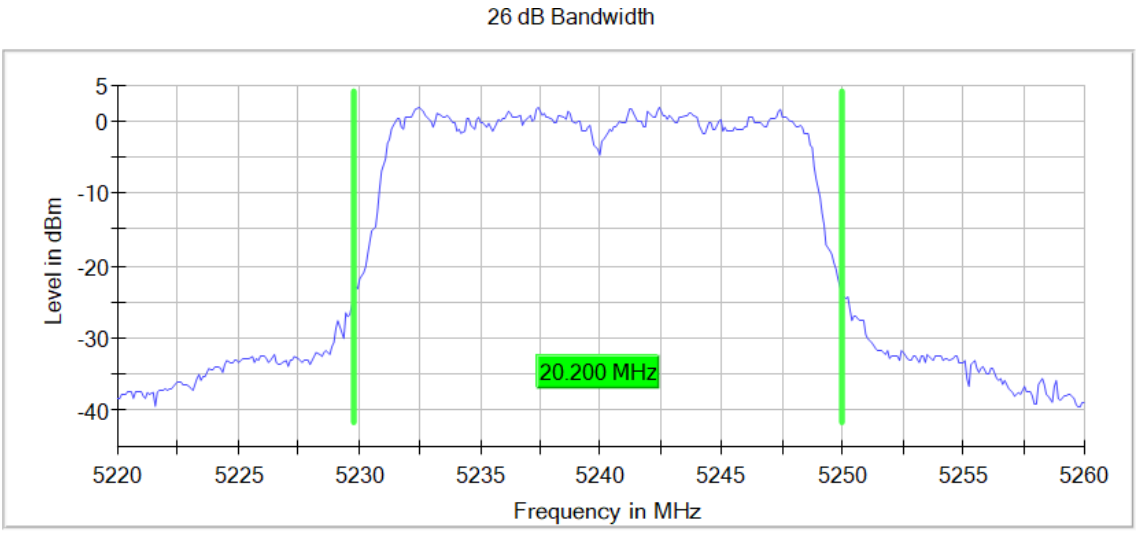
Active Port = 1, Frequency MHz = 5200.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



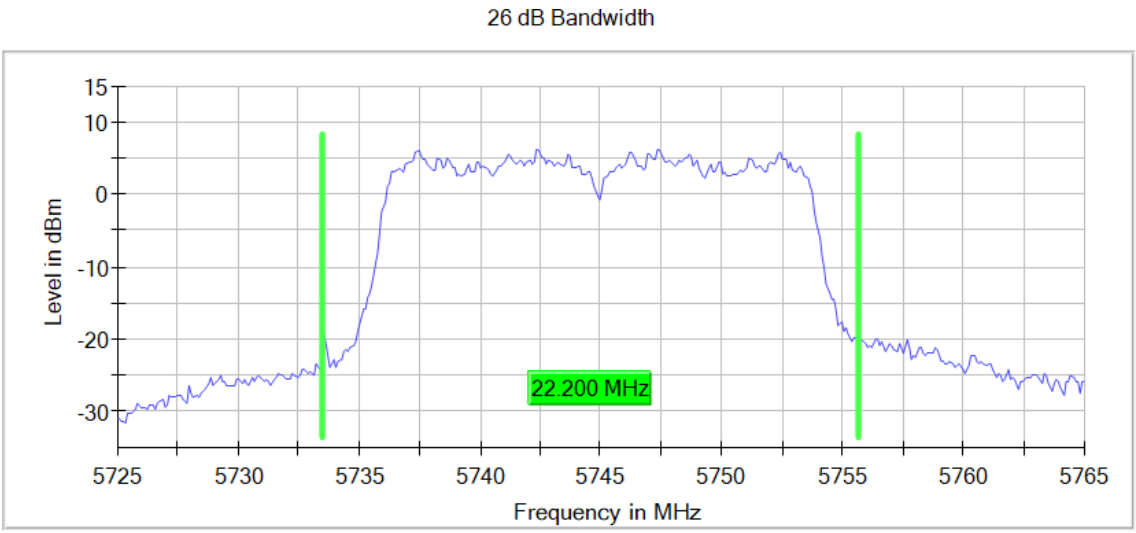
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



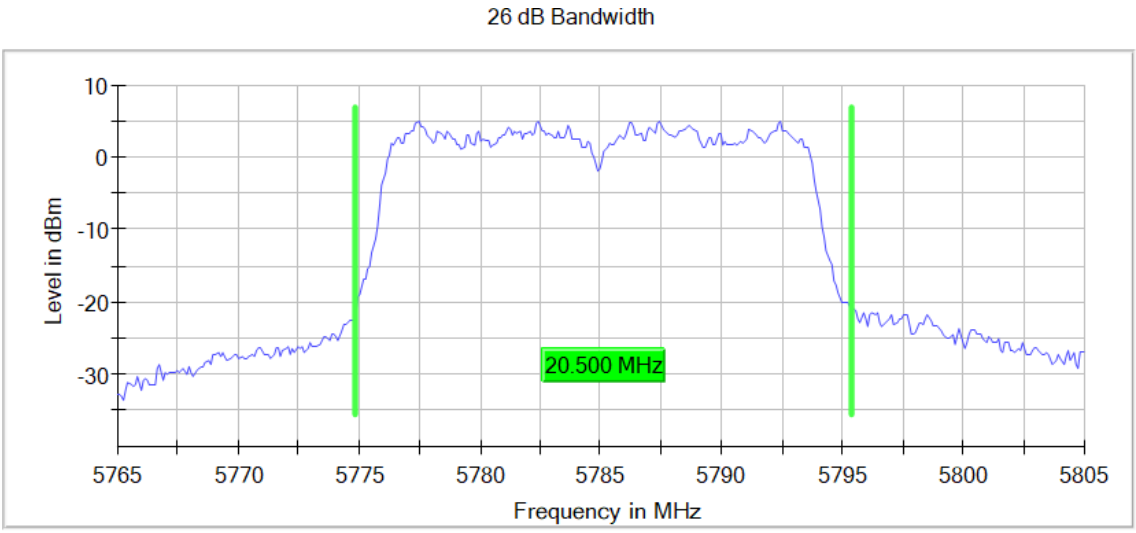
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



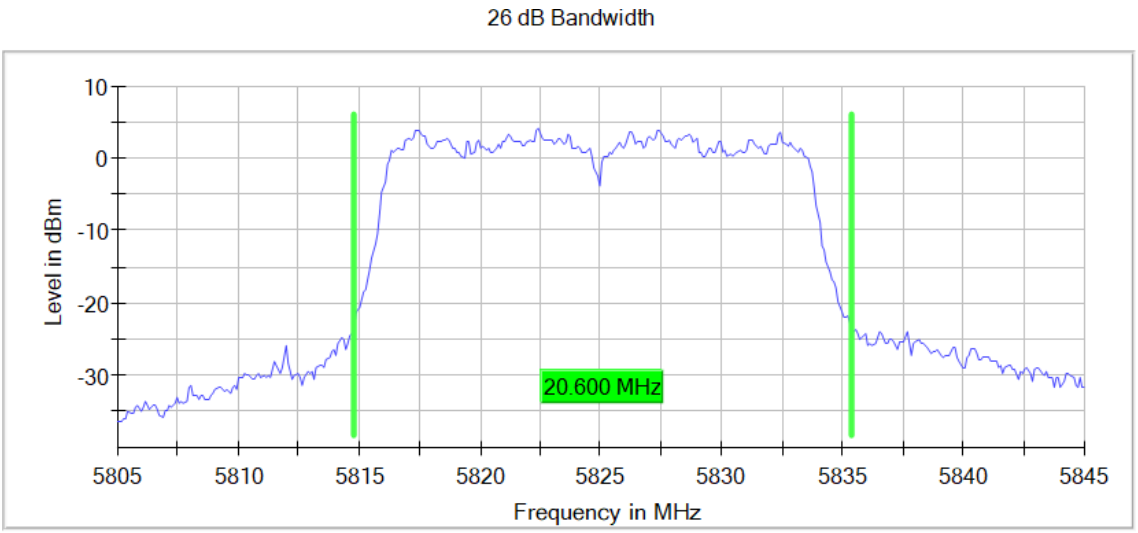
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5190.00000	40.375
		5230.00000	40.525
U-NII-3	1	5755.00000	46.529
		5795.00000	46.229

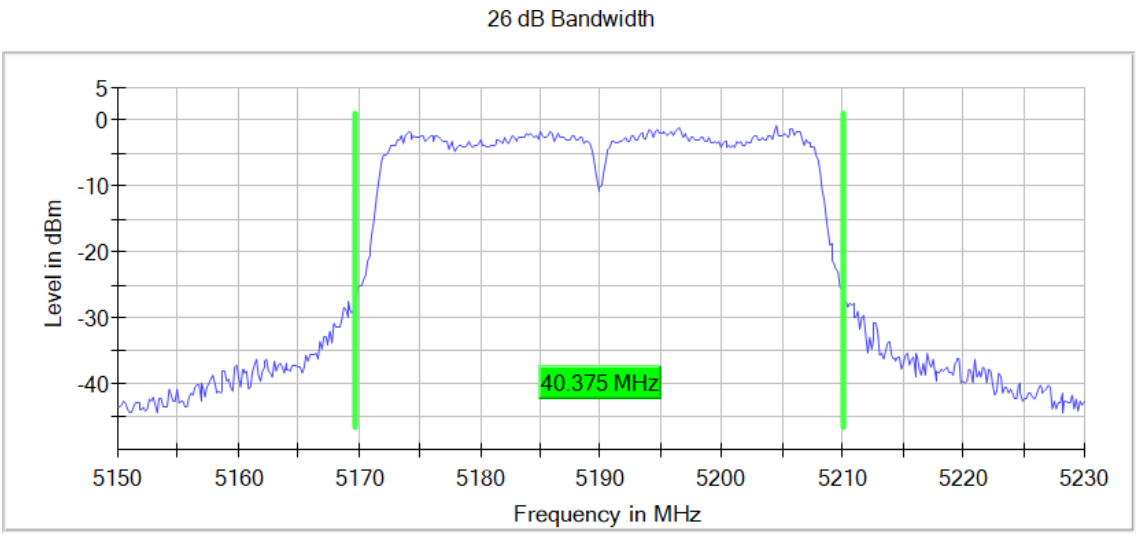
Verdict

Pass

Attachments

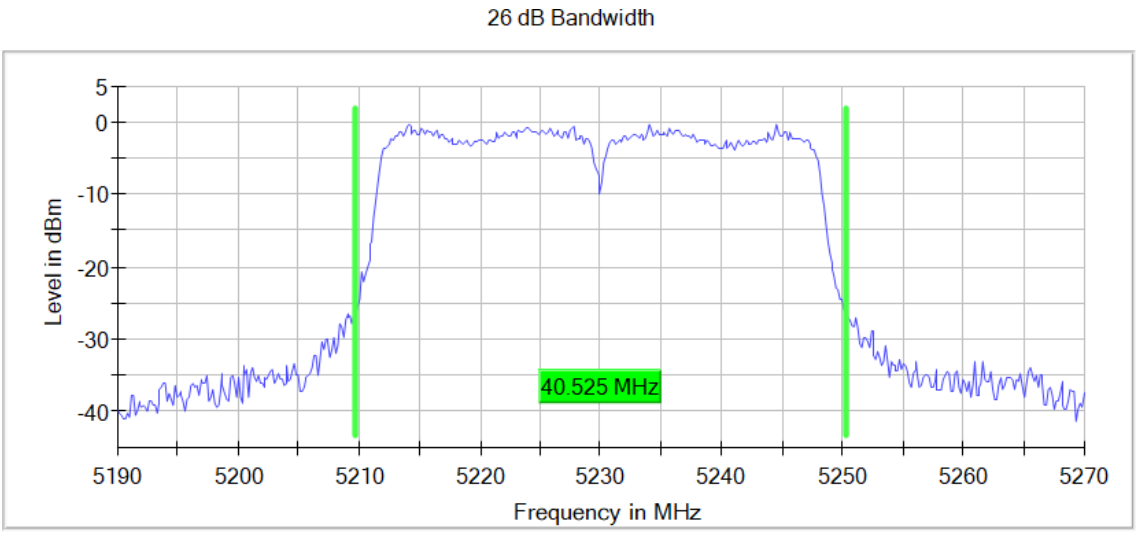
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



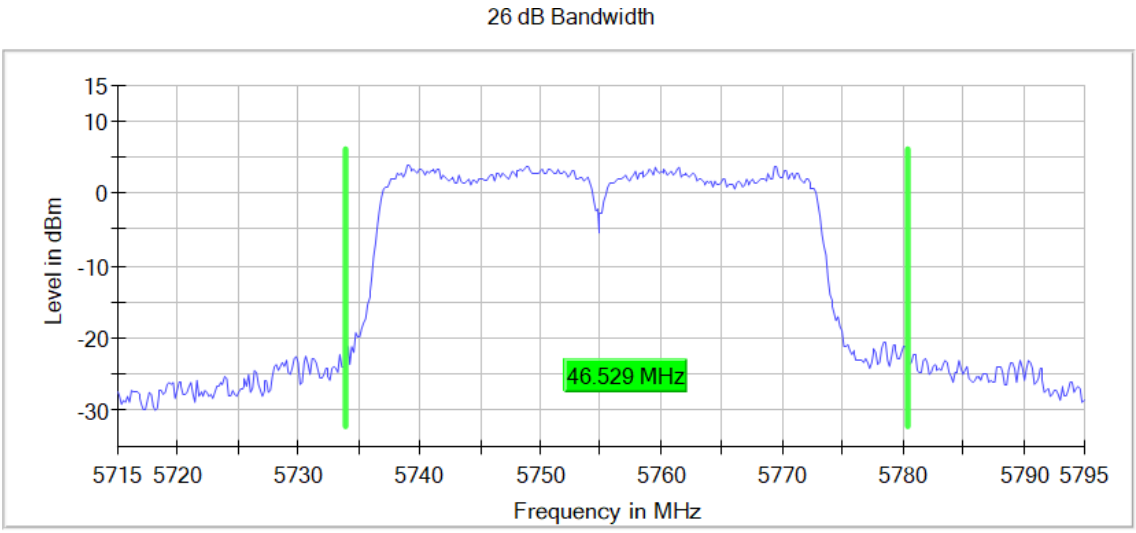
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



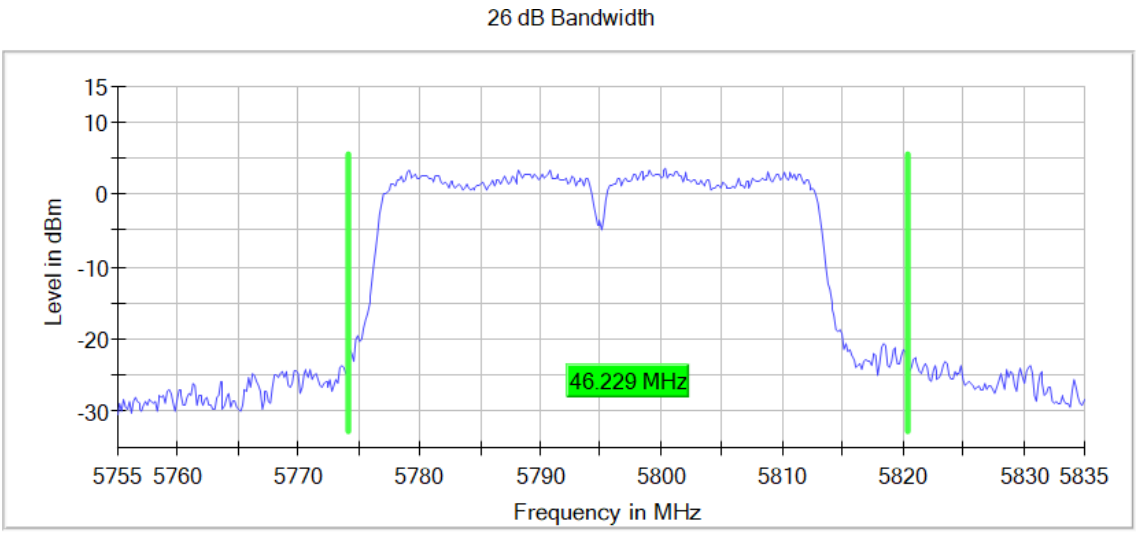
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

Band	Port	Freq (MHz)	26Ebw (MHz)
U-NII-1	1	5210.00000	83.000
U-NII-3	1	5775.00000	113.000

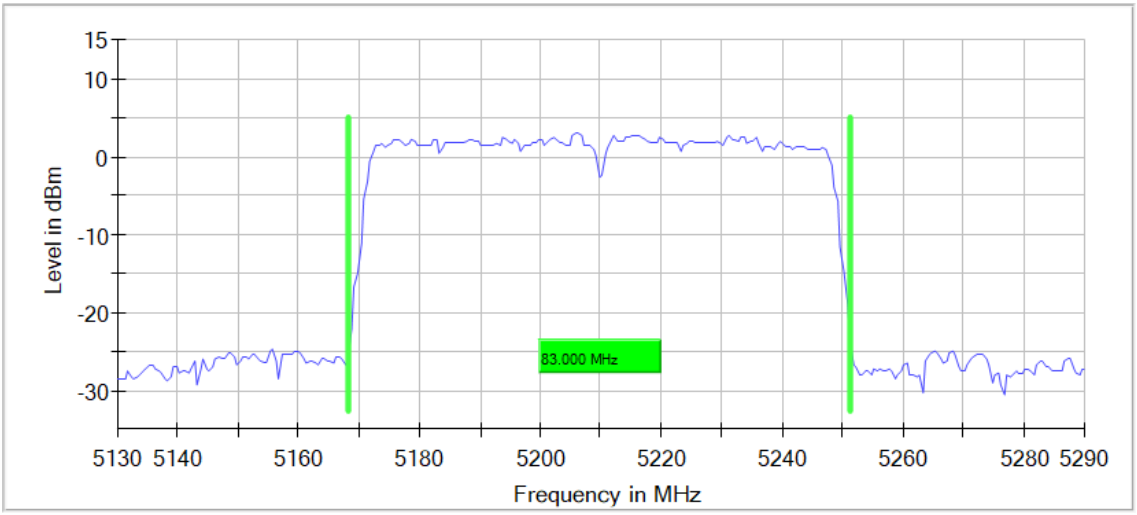
Verdict

Pass

Attachments

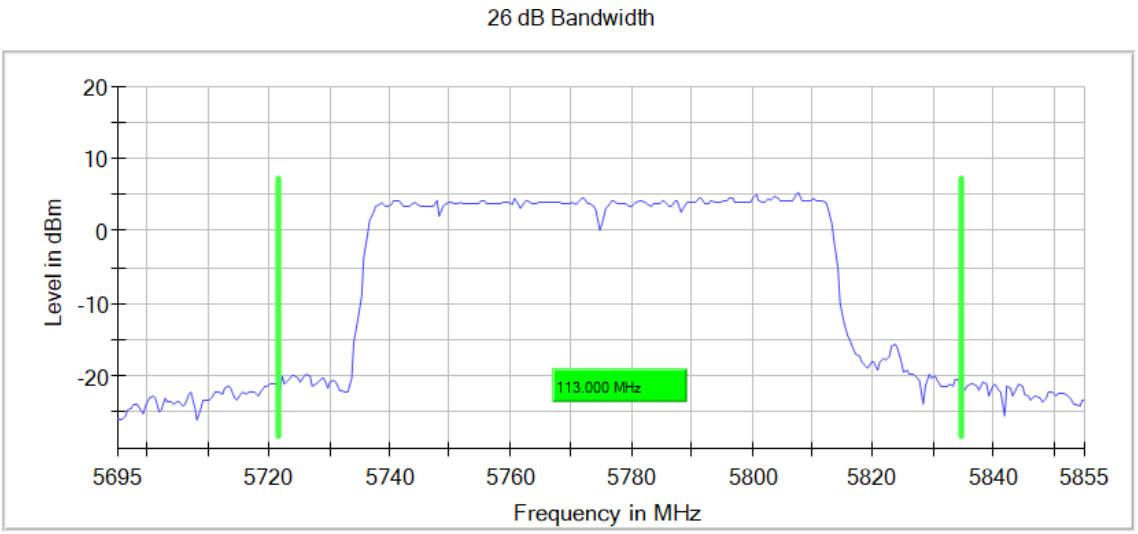
Active Port = 1, Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
Sweep Points	400	400	400
Sweep time	28.477 µs	28.477 µs	28.477 µs
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	Max Peak	Max Peak	Max Peak
Sweep Count	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	67 / max. 150	82 / max. 150	92 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.01 dB	0.19 dB

Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
Sweep Points	400	400	400
Sweep time	28.477 µs	28.477 µs	28.477 µs
Reference Level	0.000 dBm	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	Max Peak	Max Peak	Max Peak
Sweep Count	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	39 / max. 150	82 / max. 150	45 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.18 dB	0.07 dB	0.29 dB

FCC 15.407 (b) / RSS-247 6.2 Band-edge Conducted Emissions

Limits

FCC 15.407:
For transmitters operating in the 5.15–5.25 and 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.20 dBµV/m at 3 m distance).

For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

RSS 247:
For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. 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.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

a. 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
b. 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
c. 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
d. -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

U-NII-1

DUT Frequency	Result
5180.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.250000	-46.4	19.4	-27.0	PASS
5149.750000	-46.9	19.9	-27.0	PASS
5147.750000	-47.2	20.2	-27.0	PASS
5148.250000	-47.2	20.2	-27.0	PASS
5148.750000	-47.3	20.3	-27.0	PASS
5147.250000	-47.7	20.7	-27.0	PASS
5146.250000	-47.7	20.7	-27.0	PASS
5144.750000	-47.8	20.8	-27.0	PASS
5146.750000	-48.0	21.0	-27.0	PASS
5144.250000	-48.0	21.0	-27.0	PASS
5145.750000	-48.3	21.3	-27.0	PASS
5143.250000	-48.7	21.7	-27.0	PASS
5137.250000	-48.9	21.9	-27.0	PASS
5145.250000	-48.9	21.9	-27.0	PASS
5142.750000	-48.9	21.9	-27.0	PASS

DUT Frequency	Result
5240.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5364.250000	-54.0	27.0	-27.0	PASS
5355.250000	-54.4	27.4	-27.0	PASS
5353.250000	-54.4	27.4	-27.0	PASS
5364.750000	-54.5	27.5	-27.0	PASS
5355.750000	-54.6	27.6	-27.0	PASS
5362.250000	-54.9	27.9	-27.0	PASS
5368.750000	-55.1	28.1	-27.0	PASS
5368.250000	-55.2	28.2	-27.0	PASS
5384.750000	-55.7	28.7	-27.0	PASS
5353.750000	-55.7	28.7	-27.0	PASS
5357.250000	-55.7	28.7	-27.0	PASS
5365.250000	-55.7	28.7	-27.0	PASS
5367.250000	-55.9	28.9	-27.0	PASS
5354.250000	-55.9	28.9	-27.0	PASS
5354.750000	-56.0	29.0	-27.0	PASS

U-NII-3

DUT Frequency	Result
5745.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5650.750000	-46.8	20.4	-26.4	PASS
5643.750000	-47.5	20.5	-27.0	PASS
5651.250000	-47.0	20.9	-26.1	PASS
5635.250000	-48.3	21.3	-27.0	PASS
5649.750000	-48.4	21.4	-27.0	PASS
5647.750000	-48.5	21.5	-27.0	PASS
5647.250000	-48.7	21.7	-27.0	PASS
5639.250000	-48.8	21.8	-27.0	PASS
5650.250000	-48.7	21.9	-26.8	PASS
5648.750000	-48.9	21.9	-27.0	PASS
5651.750000	-47.6	21.9	-25.7	PASS
5645.250000	-49.0	22.0	-27.0	PASS
5638.750000	-49.2	22.2	-27.0	PASS
5648.250000	-49.2	22.2	-27.0	PASS
5652.750000	-47.2	22.3	-25.0	PASS

DUT Frequency	Result
5825.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5934.750000	-50.4	23.4	-27.0	PASS
5929.250000	-50.5	23.5	-27.0	PASS
5930.250000	-50.8	23.8	-27.0	PASS
5931.750000	-51.0	24.0	-27.0	PASS
5932.250000	-51.3	24.3	-27.0	PASS
5933.750000	-51.3	24.3	-27.0	PASS
5935.250000	-51.3	24.3	-27.0	PASS
5926.250000	-51.4	24.4	-27.0	PASS
5931.250000	-51.5	24.5	-27.0	PASS
5929.750000	-51.5	24.5	-27.0	PASS
5926.750000	-51.6	24.6	-27.0	PASS
5928.250000	-51.6	24.6	-27.0	PASS
5927.250000	-51.7	24.7	-27.0	PASS
5934.250000	-51.8	24.8	-27.0	PASS
5939.750000	-51.8	24.8	-27.0	PASS

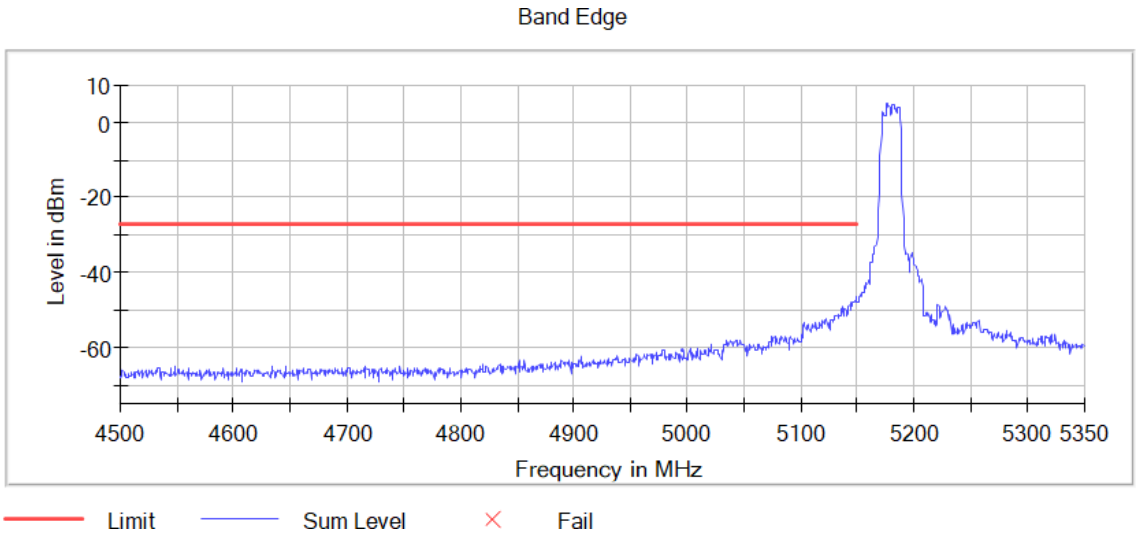
Verdict

Pass

Attachments

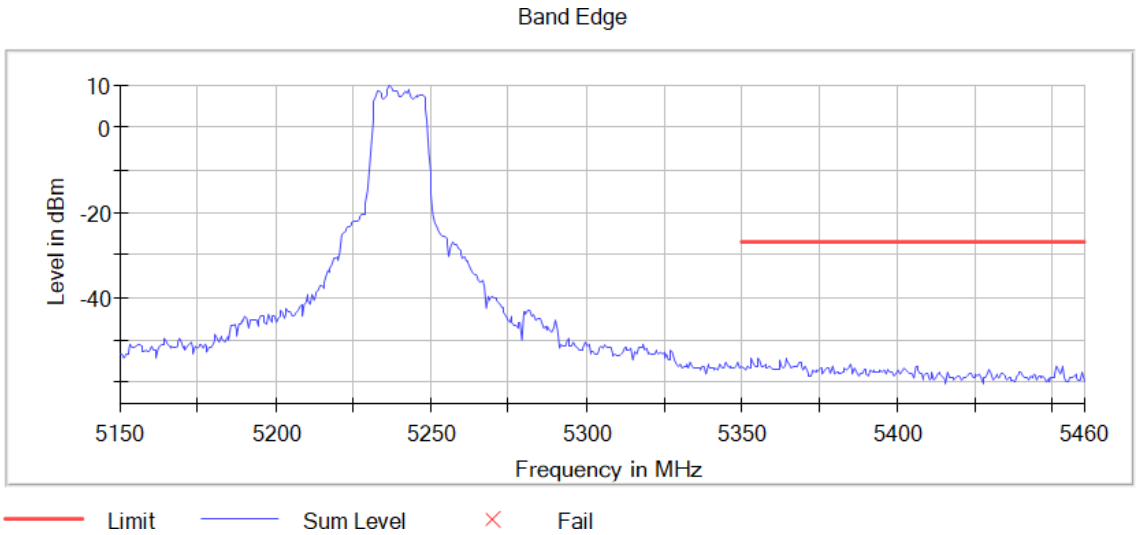
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

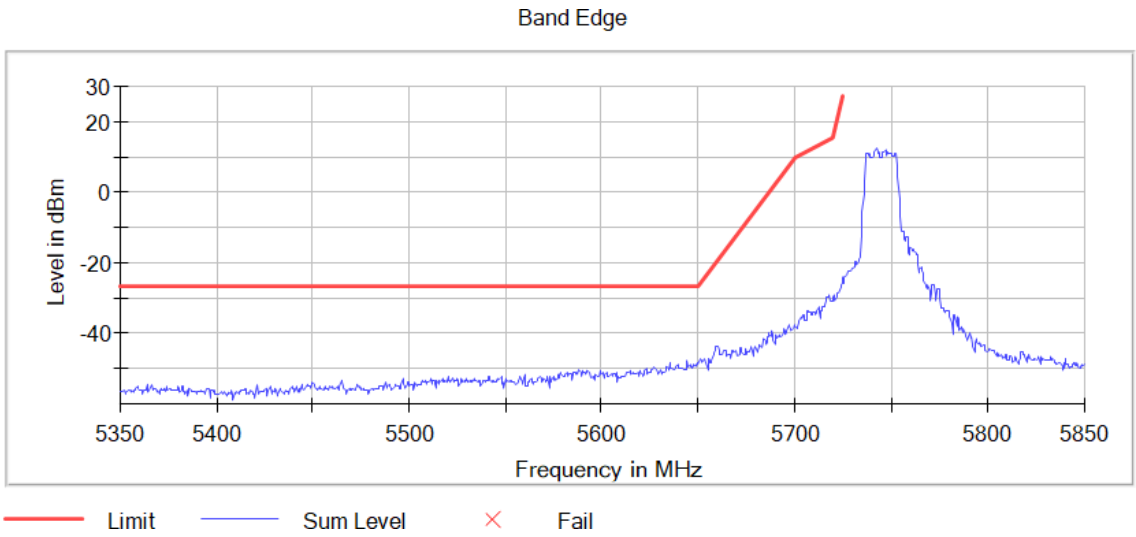
Images:



Tables:

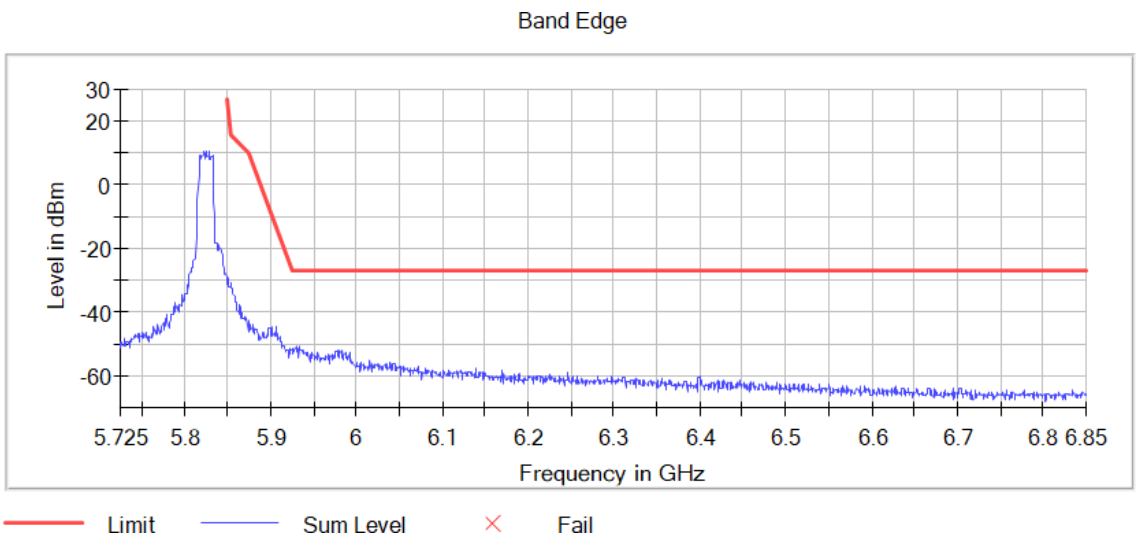
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



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

Results

U-NII-1

DUT Frequency	Result
5180.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.750000	-37.4	10.4	-27.0	PASS
5149.250000	-39.2	12.2	-27.0	PASS
5148.750000	-39.4	12.4	-27.0	PASS
5146.750000	-39.5	12.5	-27.0	PASS
5146.250000	-39.6	12.6	-27.0	PASS
5145.750000	-39.8	12.8	-27.0	PASS
5148.250000	-39.8	12.8	-27.0	PASS
5147.250000	-40.0	13.0	-27.0	PASS
5142.250000	-40.6	13.6	-27.0	PASS
5142.750000	-41.2	14.2	-27.0	PASS
5147.750000	-41.5	14.5	-27.0	PASS
5145.250000	-41.8	14.8	-27.0	PASS
5141.750000	-41.9	14.9	-27.0	PASS
5144.750000	-42.2	15.2	-27.0	PASS
5143.250000	-42.5	15.5	-27.0	PASS

DUT Frequency	Result
5240.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5360.250000	-56.1	29.1	-27.0	PASS
5356.750000	-56.6	29.6	-27.0	PASS
5379.250000	-56.7	29.7	-27.0	PASS
5359.750000	-56.8	29.8	-27.0	PASS
5352.250000	-57.0	30.0	-27.0	PASS
5379.750000	-57.4	30.4	-27.0	PASS
5388.750000	-57.4	30.4	-27.0	PASS
5356.250000	-57.5	30.5	-27.0	PASS
5357.250000	-57.5	30.5	-27.0	PASS
5378.250000	-57.6	30.6	-27.0	PASS
5350.250000	-57.6	30.6	-27.0	PASS
5362.250000	-57.7	30.7	-27.0	PASS
5351.250000	-57.9	30.9	-27.0	PASS
5351.750000	-57.9	30.9	-27.0	PASS
5384.250000	-58.0	31.0	-27.0	PASS

U-NII-3

DUT Frequency	Result
5745.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5646.250000	-48.7	21.7	-27.0	PASS
5622.750000	-49.4	22.4	-27.0	PASS
5646.750000	-49.7	22.7	-27.0	PASS
5651.750000	-48.4	22.7	-25.7	PASS
5628.250000	-49.7	22.7	-27.0	PASS
5643.750000	-50.0	23.0	-27.0	PASS
5638.750000	-50.1	23.1	-27.0	PASS
5623.250000	-50.3	23.3	-27.0	PASS
5640.250000	-50.3	23.3	-27.0	PASS
5632.250000	-50.3	23.3	-27.0	PASS
5637.750000	-50.4	23.4	-27.0	PASS
5652.250000	-48.7	23.4	-25.3	PASS
5649.750000	-50.4	23.4	-27.0	PASS
5645.750000	-50.4	23.4	-27.0	PASS
5644.750000	-50.4	23.4	-27.0	PASS

DUT Frequency	Result
5825.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5927.750000	-50.5	23.5	-27.0	PASS
5926.750000	-50.7	23.7	-27.0	PASS
5926.250000	-50.9	23.9	-27.0	PASS
5931.250000	-51.0	24.0	-27.0	PASS
5927.250000	-51.1	24.1	-27.0	PASS
5928.250000	-51.2	24.2	-27.0	PASS
5931.750000	-51.4	24.4	-27.0	PASS
5924.750000	-51.3	24.5	-26.8	PASS
5932.750000	-51.6	24.6	-27.0	PASS
5924.250000	-51.1	24.6	-26.4	PASS
5981.750000	-51.7	24.7	-27.0	PASS
5928.750000	-51.7	24.7	-27.0	PASS
5925.750000	-51.7	24.7	-27.0	PASS
5929.250000	-51.7	24.7	-27.0	PASS
5925.250000	-51.8	24.8	-27.0	PASS

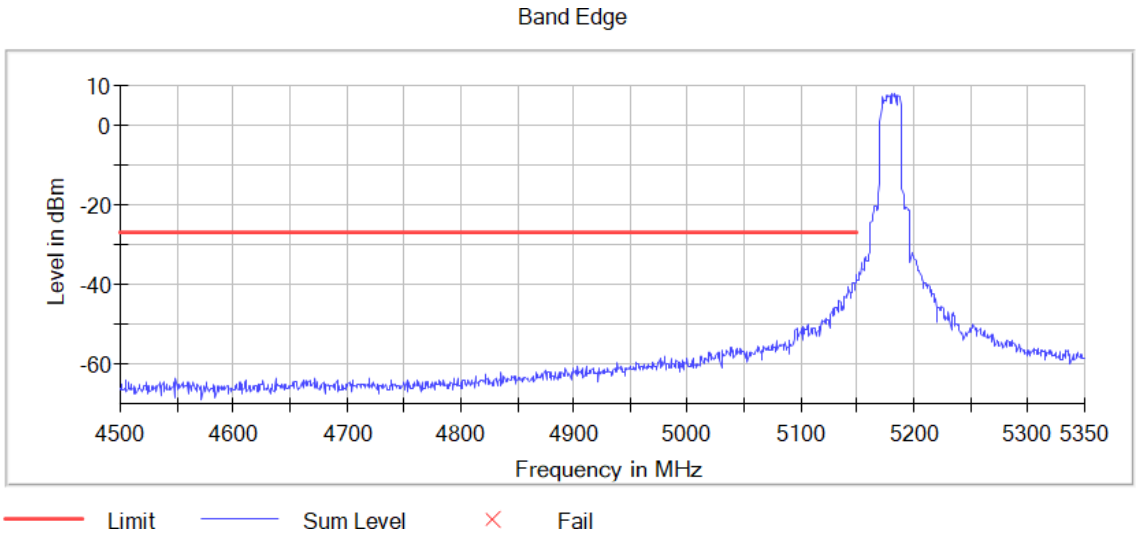
Verdict

Pass

Attachments

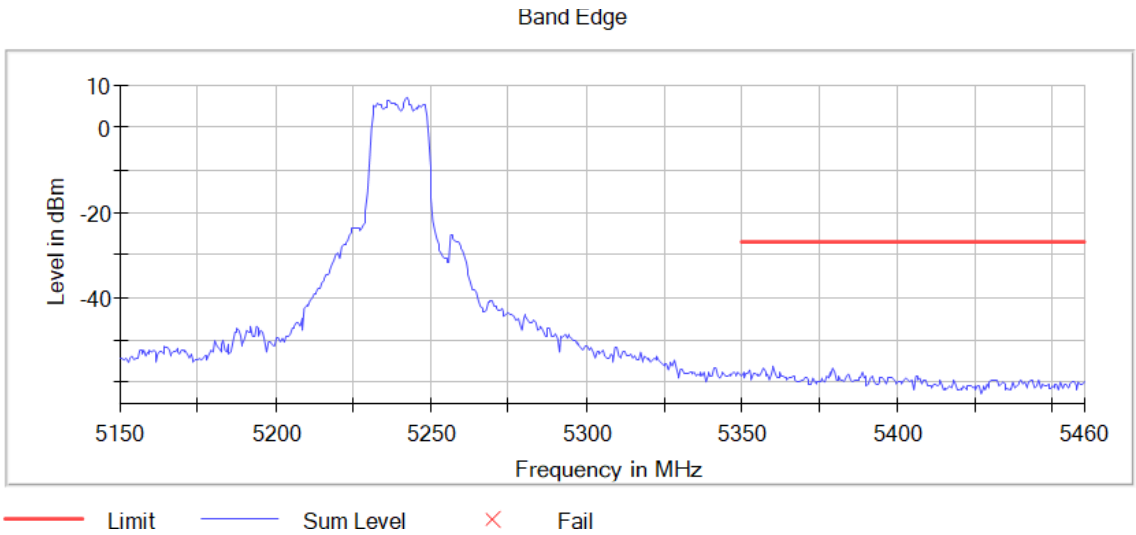
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



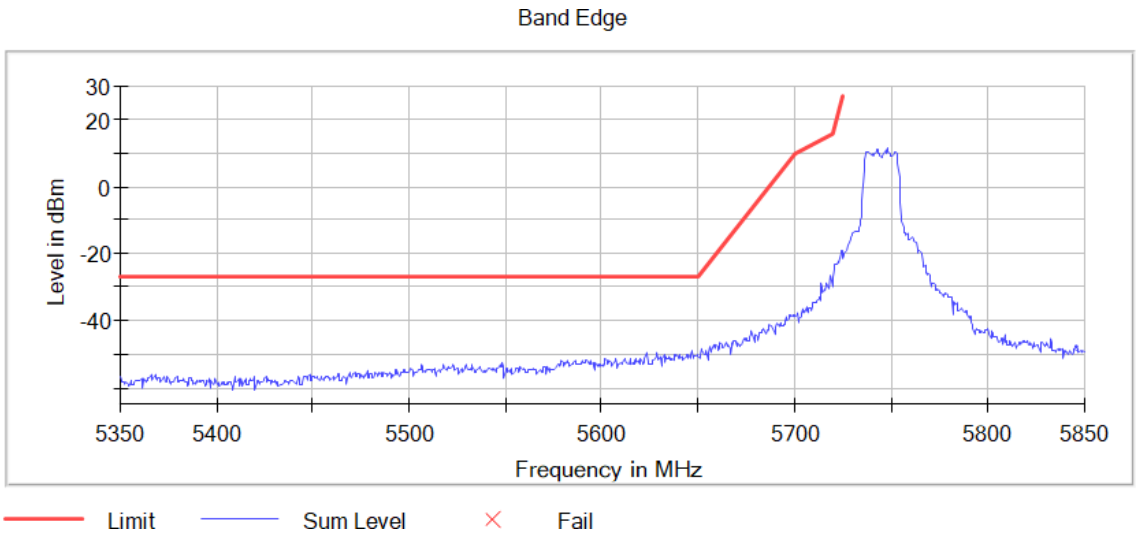
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



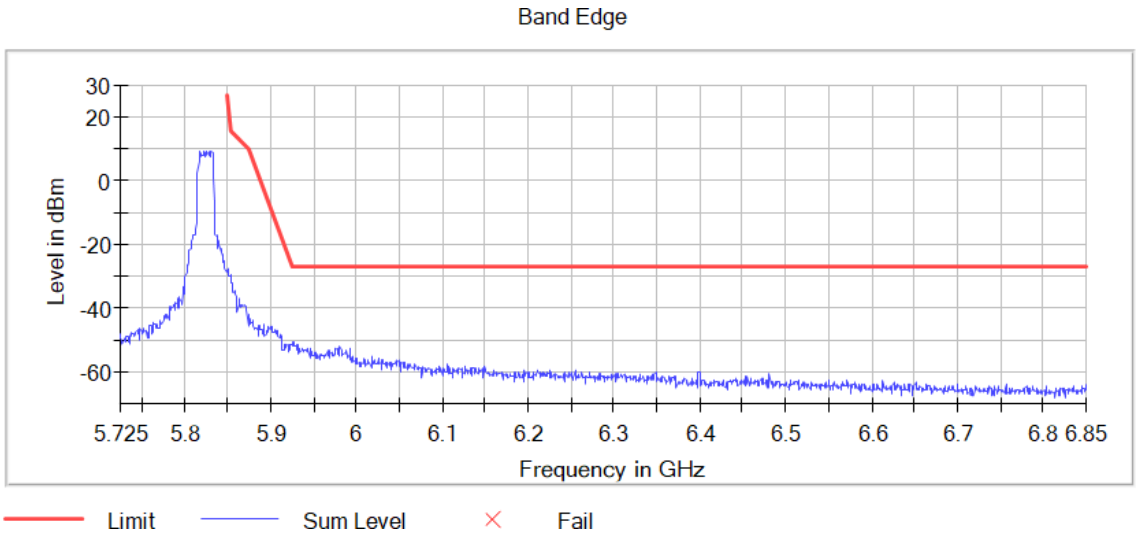
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



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

Results

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DUT Frequency	Result
5190.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5148.250000	-37.5	10.5	-27.0	PASS
5149.750000	-37.6	10.6	-27.0	PASS
5148.750000	-37.8	10.8	-27.0	PASS
5149.250000	-37.9	10.9	-27.0	PASS
5145.250000	-38.1	11.1	-27.0	PASS
5147.750000	-38.6	11.6	-27.0	PASS
5146.750000	-38.6	11.6	-27.0	PASS
5145.750000	-39.1	12.1	-27.0	PASS
5146.250000	-39.2	12.2	-27.0	PASS
5147.250000	-39.5	12.5	-27.0	PASS
5144.750000	-40.1	13.1	-27.0	PASS
5144.250000	-40.4	13.4	-27.0	PASS
5143.250000	-41.9	14.9	-27.0	PASS
5141.750000	-42.2	15.2	-27.0	PASS
5143.750000	-42.5	15.5	-27.0	PASS

DUT Frequency	Result
5230.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5362.750000	-52.8	25.8	-27.0	PASS
5357.750000	-53.4	26.4	-27.0	PASS
5389.250000	-53.6	26.6	-27.0	PASS
5361.750000	-53.6	26.6	-27.0	PASS
5362.250000	-53.7	26.7	-27.0	PASS
5357.250000	-53.8	26.8	-27.0	PASS
5389.750000	-53.9	26.9	-27.0	PASS
5363.250000	-54.0	27.0	-27.0	PASS
5363.750000	-54.0	27.0	-27.0	PASS
5390.750000	-54.2	27.2	-27.0	PASS
5355.750000	-54.4	27.4	-27.0	PASS
5356.250000	-54.4	27.4	-27.0	PASS
5361.250000	-54.4	27.4	-27.0	PASS
5358.250000	-54.6	27.6	-27.0	PASS
5353.250000	-55.0	28.0	-27.0	PASS

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DUT Frequency	Result
5755.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5646.750000	-40.8	13.8	-27.0	PASS
5647.250000	-41.5	14.5	-27.0	PASS
5640.750000	-41.5	14.5	-27.0	PASS
5641.250000	-41.5	14.5	-27.0	PASS
5649.250000	-41.7	14.7	-27.0	PASS
5655.250000	-37.8	14.7	-23.1	PASS
5620.250000	-41.7	14.7	-27.0	PASS
5640.250000	-41.7	14.7	-27.0	PASS
5650.250000	-41.6	14.8	-26.8	PASS
5620.750000	-41.9	14.9	-27.0	PASS
5655.750000	-37.8	15.0	-22.7	PASS
5639.250000	-42.1	15.1	-27.0	PASS
5647.750000	-42.2	15.2	-27.0	PASS
5650.750000	-41.7	15.2	-26.4	PASS
5626.750000	-42.3	15.3	-27.0	PASS

DUT Frequency	Result
5795.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5933.750000	-44.0	17.0	-27.0	PASS
5934.250000	-44.2	17.2	-27.0	PASS
5930.250000	-44.9	17.9	-27.0	PASS
5929.750000	-44.9	17.9	-27.0	PASS
5939.750000	-45.0	18.0	-27.0	PASS
5931.750000	-45.2	18.2	-27.0	PASS
5938.250000	-45.2	18.2	-27.0	PASS
5939.250000	-45.4	18.4	-27.0	PASS
5937.250000	-45.5	18.5	-27.0	PASS
5936.250000	-45.5	18.5	-27.0	PASS
5938.750000	-45.6	18.6	-27.0	PASS
5936.750000	-45.6	18.6	-27.0	PASS
5932.750000	-45.7	18.7	-27.0	PASS
5932.250000	-45.9	18.9	-27.0	PASS
5935.250000	-46.1	19.1	-27.0	PASS

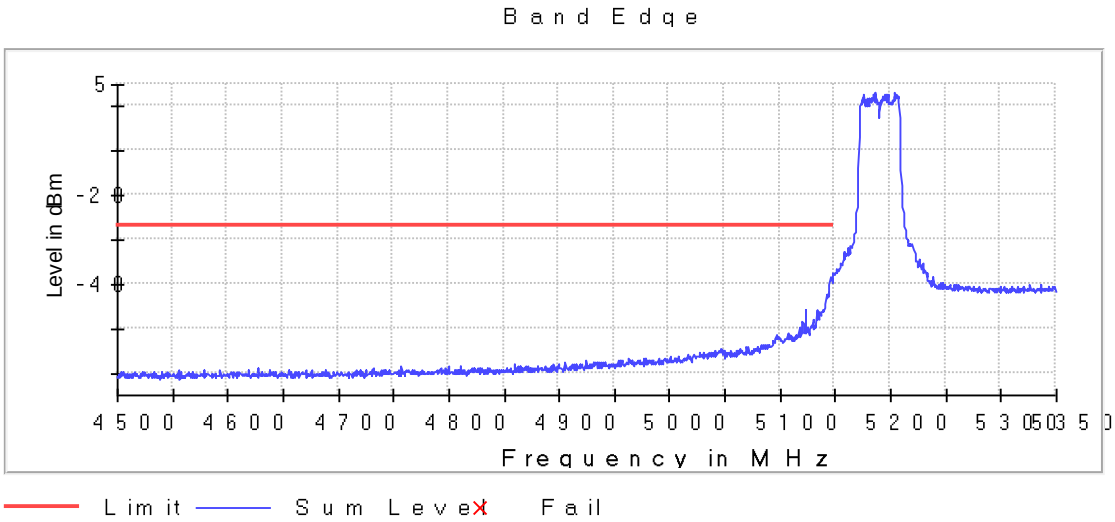
Verdict

Pass

Attachments

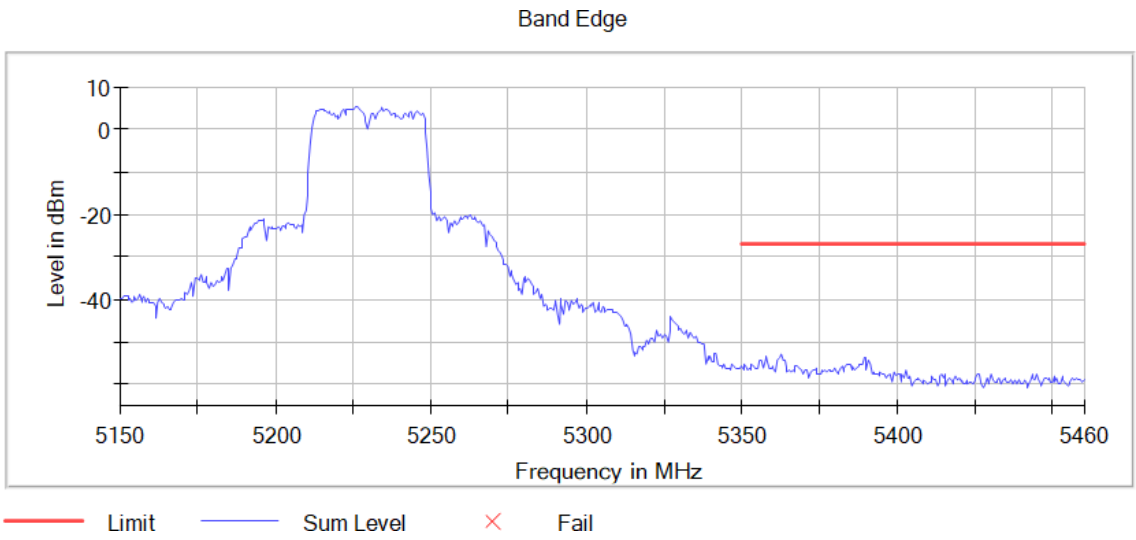
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



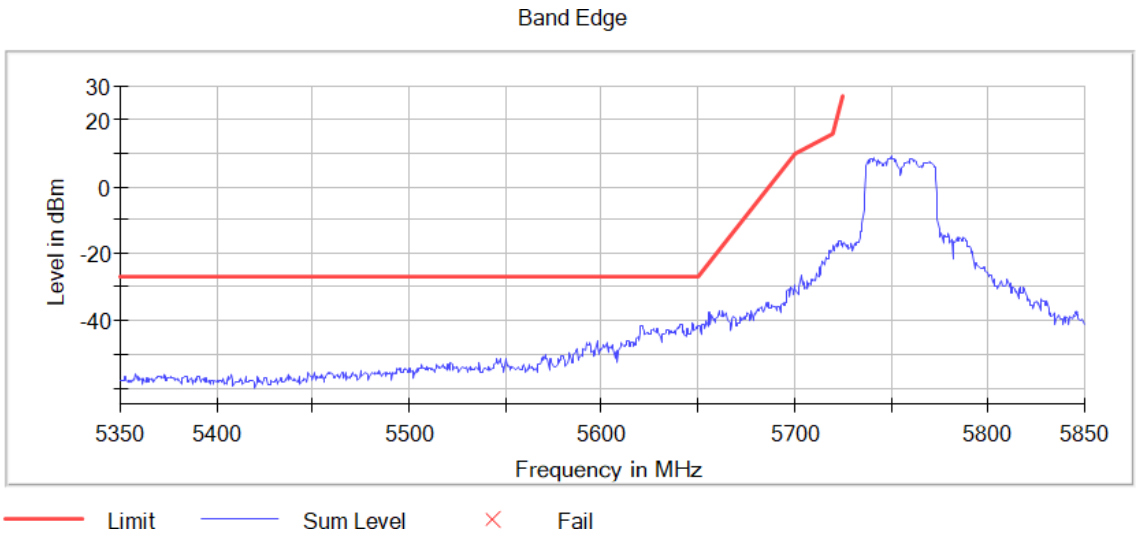
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



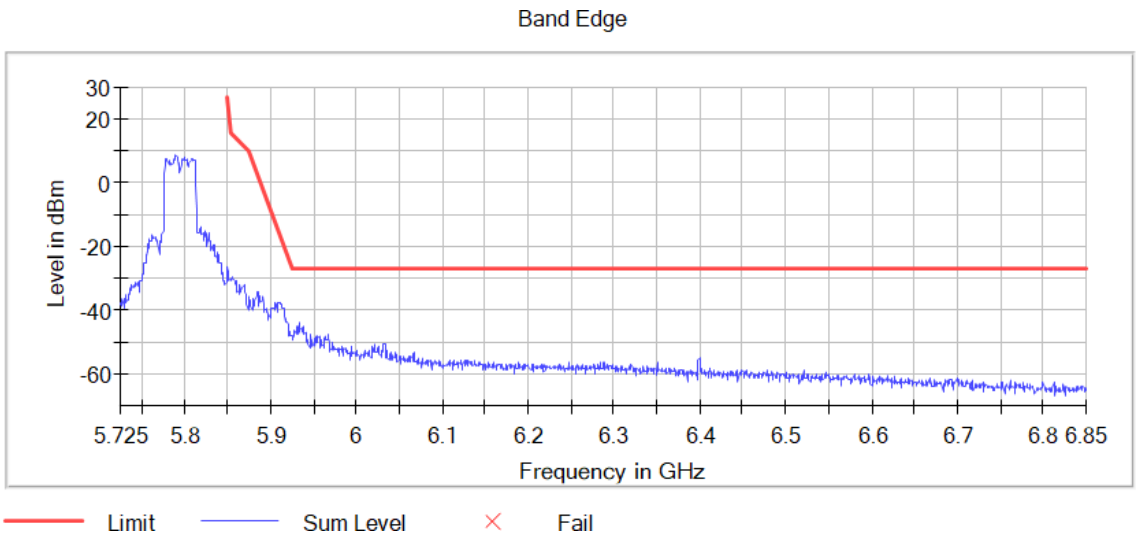
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Measurement Point = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

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DUT Frequency	Result
5180.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.250000	-46.5	19.5	-27.0	PASS
5149.750000	-46.8	19.8	-27.0	PASS
5147.750000	-47.0	20.0	-27.0	PASS
5148.250000	-47.0	20.0	-27.0	PASS
5146.750000	-47.2	20.2	-27.0	PASS
5146.250000	-47.3	20.3	-27.0	PASS
5148.750000	-47.3	20.3	-27.0	PASS
5145.750000	-47.4	20.4	-27.0	PASS
5143.250000	-47.8	20.8	-27.0	PASS
5144.750000	-47.9	20.9	-27.0	PASS
5147.250000	-48.0	21.0	-27.0	PASS
5142.750000	-48.0	21.0	-27.0	PASS
5145.250000	-48.0	21.0	-27.0	PASS
5144.250000	-48.6	21.6	-27.0	PASS
5143.750000	-48.9	21.9	-27.0	PASS

DUT Frequency	Result
5240.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5354.750000	-55.4	28.4	-27.0	PASS
5353.250000	-55.5	28.5	-27.0	PASS
5364.250000	-55.5	28.5	-27.0	PASS
5359.750000	-55.7	28.7	-27.0	PASS
5359.250000	-55.7	28.7	-27.0	PASS
5356.250000	-55.8	28.8	-27.0	PASS
5361.750000	-56.0	29.0	-27.0	PASS
5351.250000	-56.0	29.0	-27.0	PASS
5368.750000	-56.0	29.0	-27.0	PASS
5352.250000	-56.0	29.0	-27.0	PASS
5352.750000	-56.1	29.1	-27.0	PASS
5358.250000	-56.1	29.1	-27.0	PASS
5373.750000	-56.2	29.2	-27.0	PASS
5353.750000	-56.2	29.2	-27.0	PASS
5354.250000	-56.2	29.2	-27.0	PASS

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DUT Frequency	Result
5745.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5648.250000	-48.5	21.5	-27.0	PASS
5647.250000	-48.9	21.9	-27.0	PASS
5641.250000	-49.3	22.3	-27.0	PASS
5632.250000	-49.4	22.4	-27.0	PASS
5636.250000	-49.5	22.5	-27.0	PASS
5642.250000	-49.5	22.5	-27.0	PASS
5628.750000	-49.7	22.7	-27.0	PASS
5640.250000	-49.7	22.7	-27.0	PASS
5640.750000	-49.7	22.7	-27.0	PASS
5648.750000	-49.7	22.7	-27.0	PASS
5628.250000	-49.8	22.8	-27.0	PASS
5646.750000	-49.8	22.8	-27.0	PASS
5641.750000	-49.9	22.9	-27.0	PASS
5649.750000	-49.9	22.9	-27.0	PASS
5643.750000	-49.9	22.9	-27.0	PASS

DUT Frequency	Result
5825.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5928.250000	-50.2	23.2	-27.0	PASS
5937.250000	-50.5	23.5	-27.0	PASS
5936.750000	-50.5	23.5	-27.0	PASS
5940.750000	-50.5	23.5	-27.0	PASS
5927.750000	-50.8	23.8	-27.0	PASS
5934.750000	-51.2	24.2	-27.0	PASS
5942.750000	-51.4	24.4	-27.0	PASS
5938.750000	-51.4	24.4	-27.0	PASS
5943.250000	-51.6	24.6	-27.0	PASS
5925.250000	-51.8	24.8	-27.0	PASS
5932.250000	-51.8	24.8	-27.0	PASS
5928.750000	-51.9	24.9	-27.0	PASS
5929.250000	-52.0	25.0	-27.0	PASS
5986.750000	-52.0	25.0	-27.0	PASS
5926.250000	-52.1	25.1	-27.0	PASS

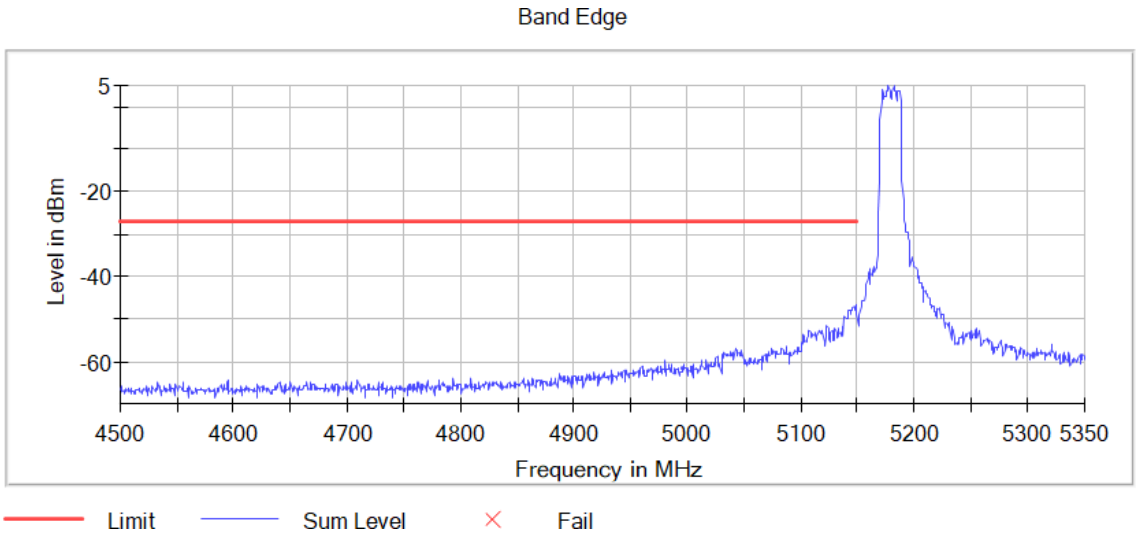
Verdict

Pass

Attachments

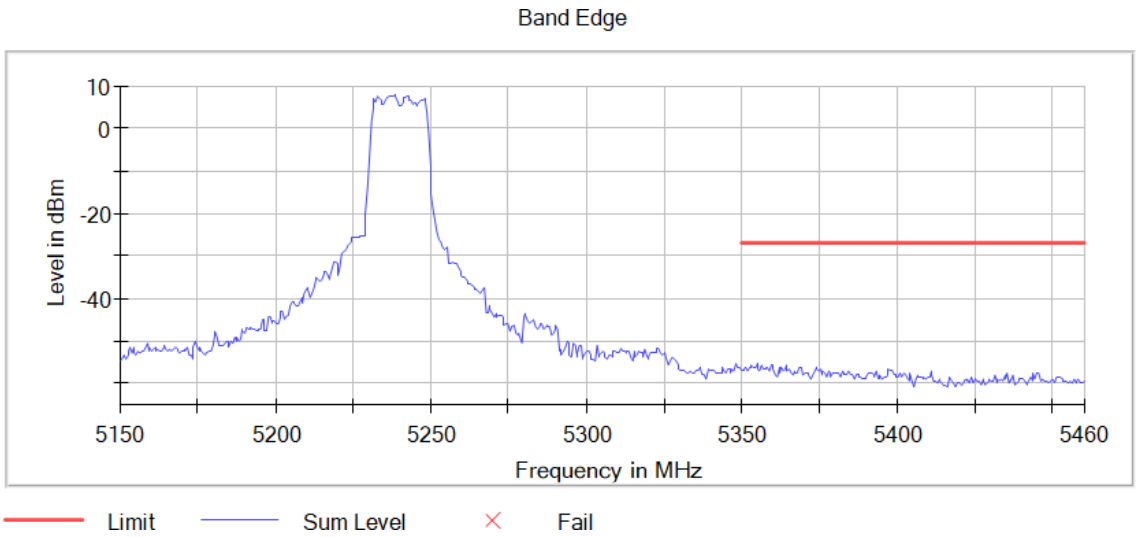
Active Port = 1, Frequency MHz = 5180.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



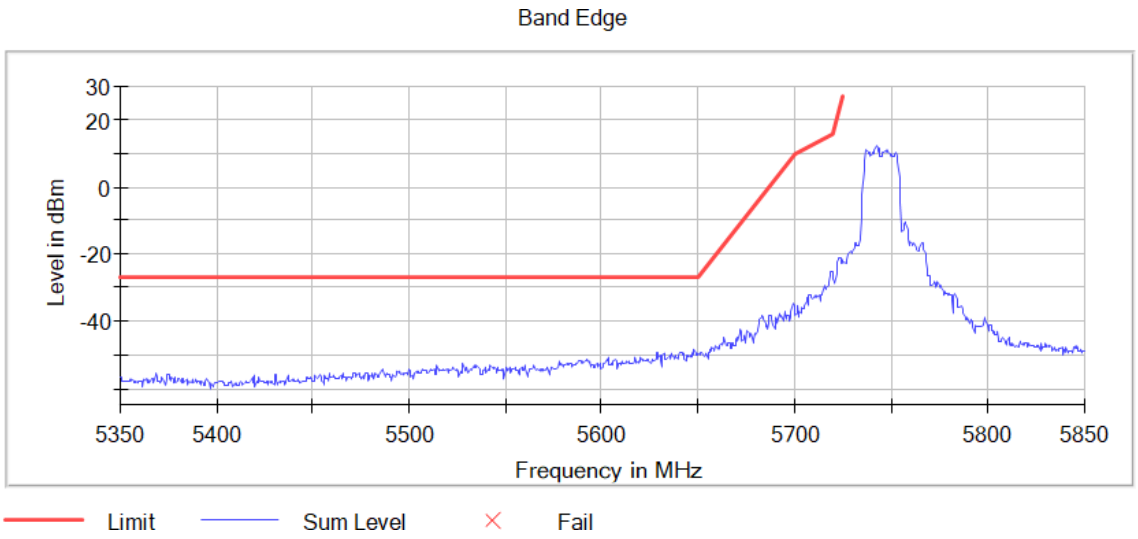
Active Port = 1, Frequency MHz = 5240.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



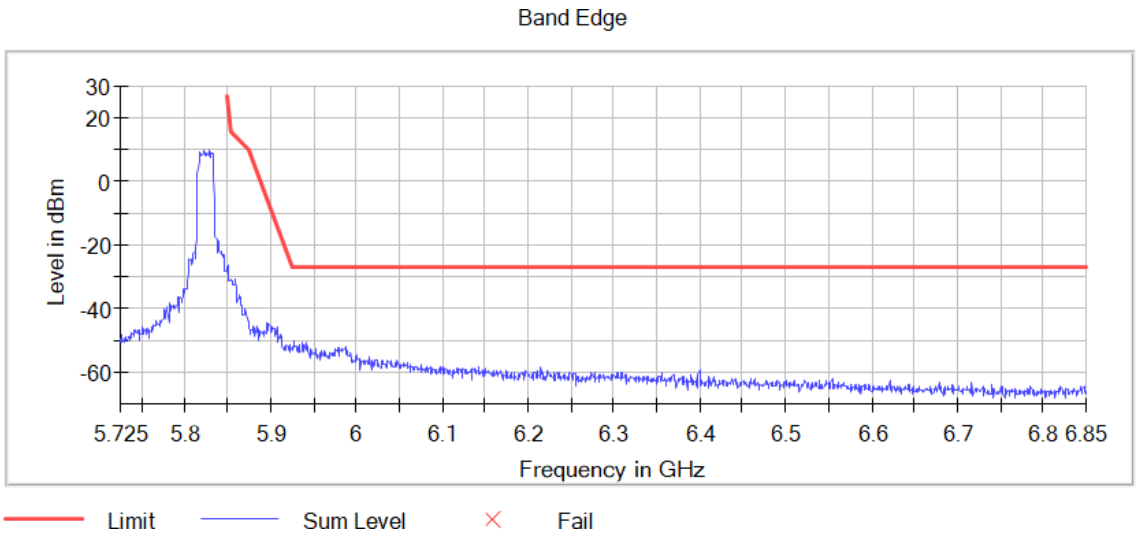
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

U-NII-1

DUT Frequency	Result
5190.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.750000	-30.6	3.6	-27.0	PASS
5148.750000	-30.6	3.6	-27.0	PASS
5149.250000	-31.7	4.7	-27.0	PASS
5146.750000	-32.1	5.1	-27.0	PASS
5146.250000	-32.5	5.5	-27.0	PASS
5148.250000	-33.2	6.2	-27.0	PASS
5147.250000	-33.5	6.5	-27.0	PASS
5144.750000	-33.7	6.7	-27.0	PASS
5142.750000	-34.5	7.5	-27.0	PASS
5144.250000	-34.9	7.9	-27.0	PASS
5141.250000	-35.1	8.1	-27.0	PASS
5140.750000	-35.1	8.1	-27.0	PASS
5145.750000	-35.1	8.1	-27.0	PASS
5141.750000	-35.2	8.2	-27.0	PASS
5143.750000	-35.3	8.3	-27.0	PASS

DUT Frequency	Result
5230.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5370.750000	-55.2	28.2	-27.0	PASS
5354.750000	-55.8	28.8	-27.0	PASS
5356.750000	-55.9	28.9	-27.0	PASS
5370.250000	-55.9	28.9	-27.0	PASS
5358.250000	-56.1	29.1	-27.0	PASS
5357.250000	-56.2	29.2	-27.0	PASS
5375.750000	-56.2	29.2	-27.0	PASS
5375.250000	-56.5	29.5	-27.0	PASS
5353.750000	-56.5	29.5	-27.0	PASS
5392.250000	-56.5	29.5	-27.0	PASS
5353.250000	-56.6	29.6	-27.0	PASS
5406.750000	-56.7	29.7	-27.0	PASS
5371.750000	-56.7	29.7	-27.0	PASS
5366.750000	-56.8	29.8	-27.0	PASS
5360.250000	-56.8	29.8	-27.0	PASS

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DUT Frequency	Result
5755.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5647.750000	-44.0	17.0	-27.0	PASS
5649.750000	-44.3	17.3	-27.0	PASS
5650.250000	-44.5	17.7	-26.8	PASS
5646.750000	-44.8	17.8	-27.0	PASS
5646.250000	-44.8	17.8	-27.0	PASS
5645.750000	-45.2	18.2	-27.0	PASS
5649.250000	-45.3	18.3	-27.0	PASS
5644.250000	-45.6	18.6	-27.0	PASS
5645.250000	-45.6	18.6	-27.0	PASS
5650.750000	-45.2	18.7	-26.4	PASS
5648.250000	-45.8	18.8	-27.0	PASS
5647.250000	-45.9	18.9	-27.0	PASS
5644.750000	-46.0	19.0	-27.0	PASS
5638.750000	-46.3	19.3	-27.0	PASS
5651.250000	-45.4	19.3	-26.1	PASS

DUT Frequency	Result
5795.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5924.750000	-45.0	18.2	-26.8	PASS
5924.250000	-44.7	18.2	-26.4	PASS
5923.750000	-44.8	18.7	-26.1	PASS
5923.250000	-44.7	19.0	-25.7	PASS
5922.750000	-45.2	19.9	-25.3	PASS
5925.250000	-47.1	20.1	-27.0	PASS
5926.250000	-47.2	20.2	-27.0	PASS
5925.750000	-47.4	20.4	-27.0	PASS
5922.250000	-45.8	20.9	-25.0	PASS
5926.750000	-48.4	21.4	-27.0	PASS
5928.750000	-48.6	21.6	-27.0	PASS
5928.250000	-48.8	21.8	-27.0	PASS
5927.750000	-49.3	22.3	-27.0	PASS
5935.250000	-49.7	22.7	-27.0	PASS
5927.250000	-49.8	22.8	-27.0	PASS

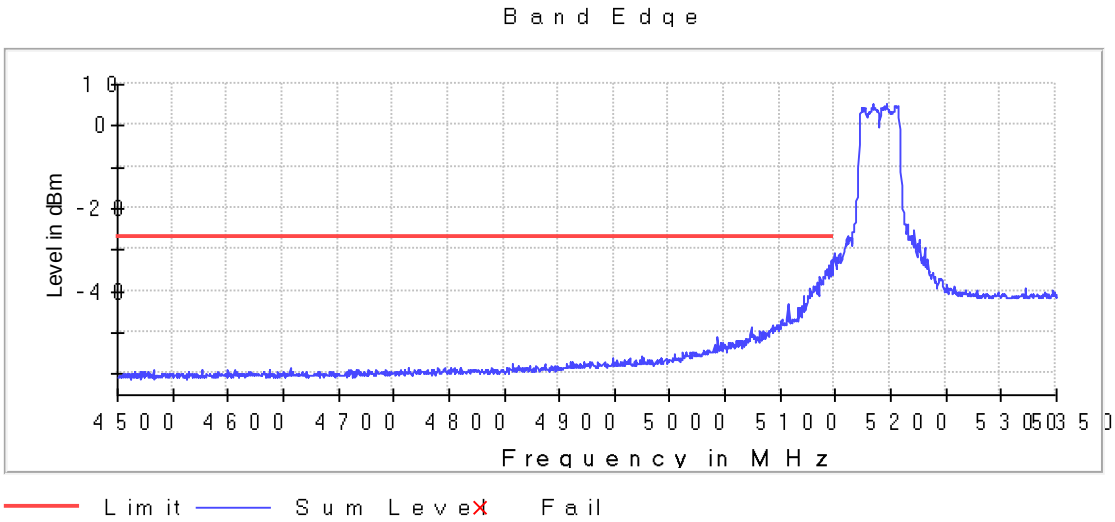
Verdict

Pass

Attachments

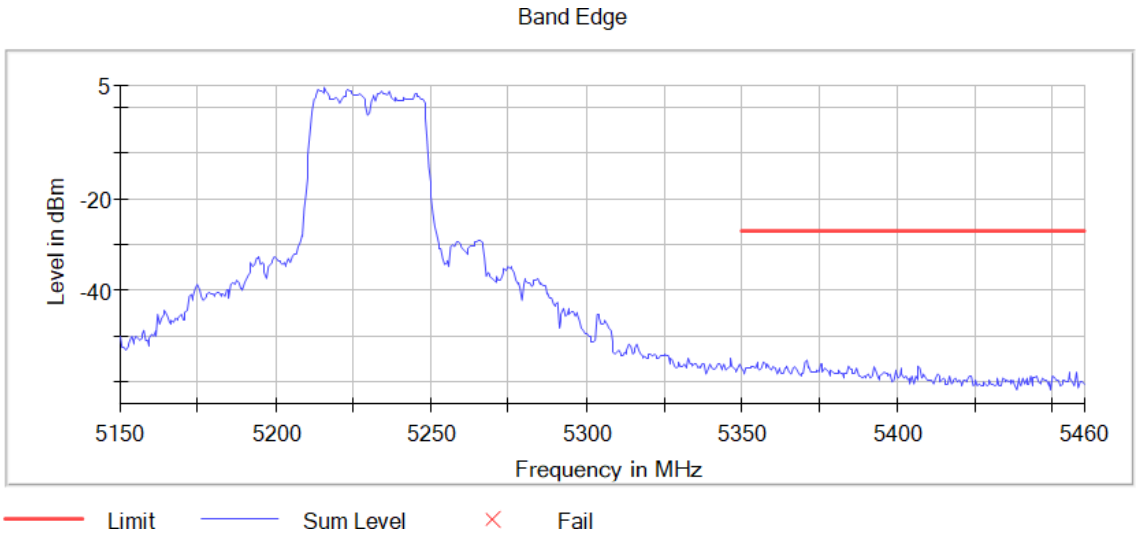
Active Port = 1, Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



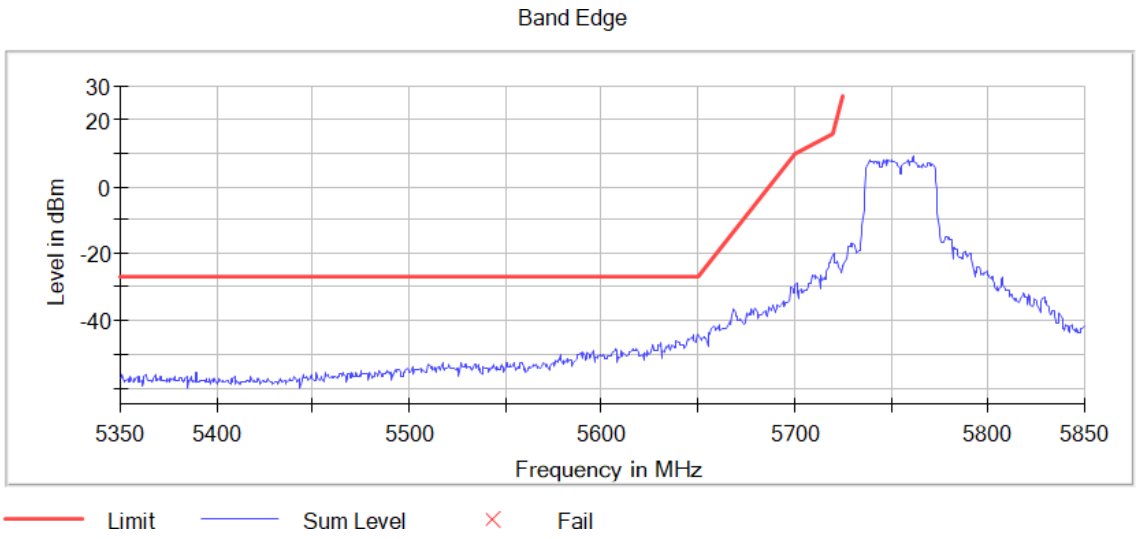
Active Port = 1, Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



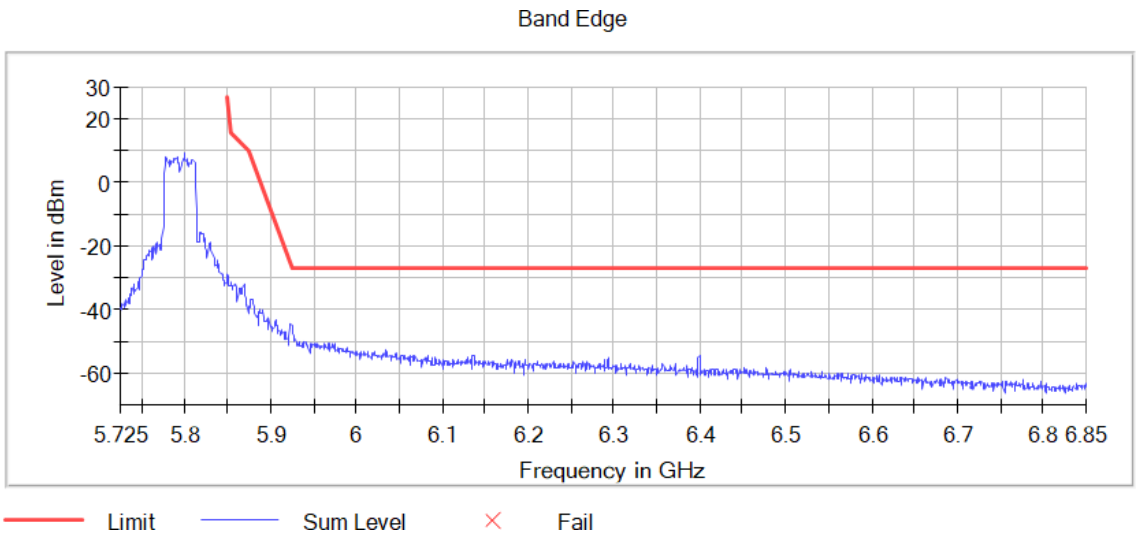
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

U-NII-1

DUT Frequency	Result
5210.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.250000	-27.7	0.7	-27.0	PASS
5141.750000	-27.9	0.9	-27.0	PASS
5114.750000	-28.3	1.3	-27.0	PASS
5140.250000	-28.4	1.4	-27.0	PASS
5131.750000	-28.4	1.4	-27.0	PASS
5126.750000	-28.4	1.4	-27.0	PASS
5147.250000	-28.6	1.6	-27.0	PASS
5148.750000	-28.6	1.6	-27.0	PASS
5130.750000	-28.7	1.7	-27.0	PASS
5135.750000	-28.9	1.9	-27.0	PASS
5135.250000	-28.9	1.9	-27.0	PASS
5146.750000	-28.9	1.9	-27.0	PASS
5137.250000	-28.9	1.9	-27.0	PASS
5144.750000	-28.9	1.9	-27.0	PASS
5133.750000	-28.9	1.9	-27.0	PASS

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DUT Frequency	Result
5755.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5645.750000	-28.6	1.6	-27.0	PASS
5641.750000	-29.5	2.5	-27.0	PASS
5646.250000	-30.2	3.2	-27.0	PASS
5643.750000	-30.5	3.5	-27.0	PASS
5644.250000	-30.8	3.8	-27.0	PASS
5648.750000	-30.9	3.9	-27.0	PASS
5649.750000	-31.2	4.2	-27.0	PASS
5649.250000	-31.2	4.2	-27.0	PASS
5642.250000	-31.2	4.2	-27.0	PASS
5639.250000	-31.2	4.2	-27.0	PASS
5639.750000	-31.4	4.4	-27.0	PASS
5636.750000	-31.5	4.5	-27.0	PASS
5651.750000	-30.2	4.5	-25.7	PASS
5653.250000	-29.2	4.6	-24.6	PASS
5634.250000	-31.6	4.6	-27.0	PASS

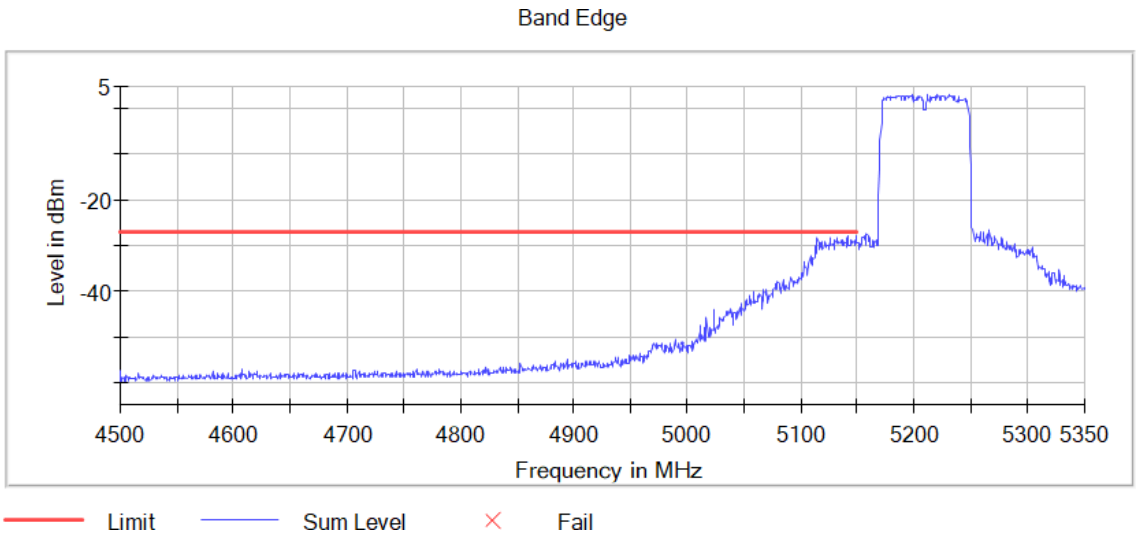
Verdict

Pass

Attachments

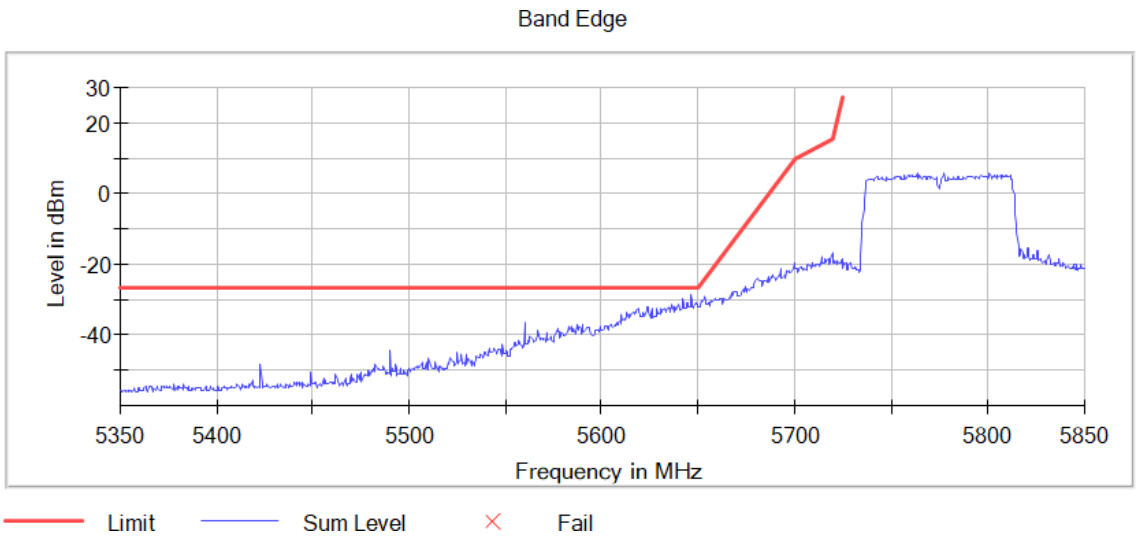
Active Port = 1, Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Measurement Point = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	5.15000 GHz	5.72500 GHz
Stop Frequency	5.35000 GHz	5.85000 GHz
Span	200.000 MHz	125.000 MHz
RBW	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz
SweepPoints	400	250
Sweeptime	40.000 ms	25.000 ms
Reference Level	0.000 dBm	10.000 dBm
Attenuation	20.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	Channel	Channel
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	14 / max. 150	11 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.03 dB	0.09 dB

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

Limits
FCC 15.407:
Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

RSS-247:
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)
Results

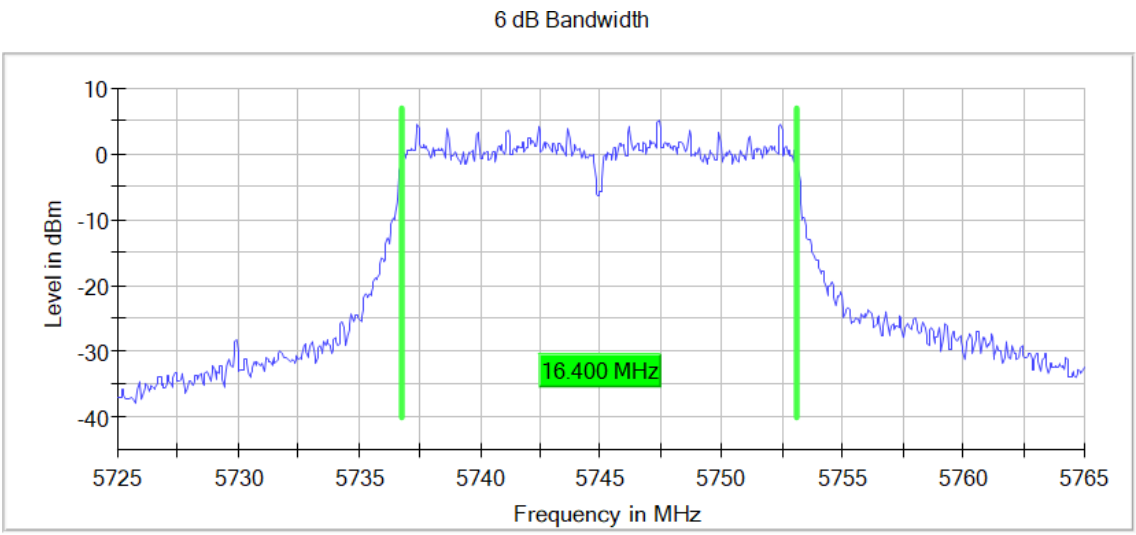
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5745.00000	1	16.400
	1	5785.00000	1	16.400
	1	5825.00000	1	16.400

Verdict

Pass

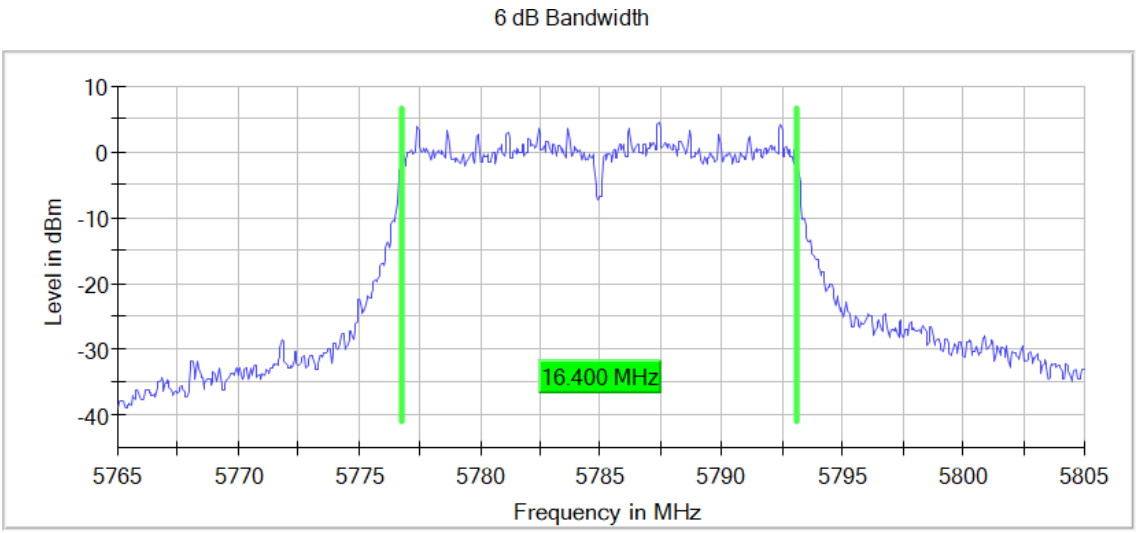
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



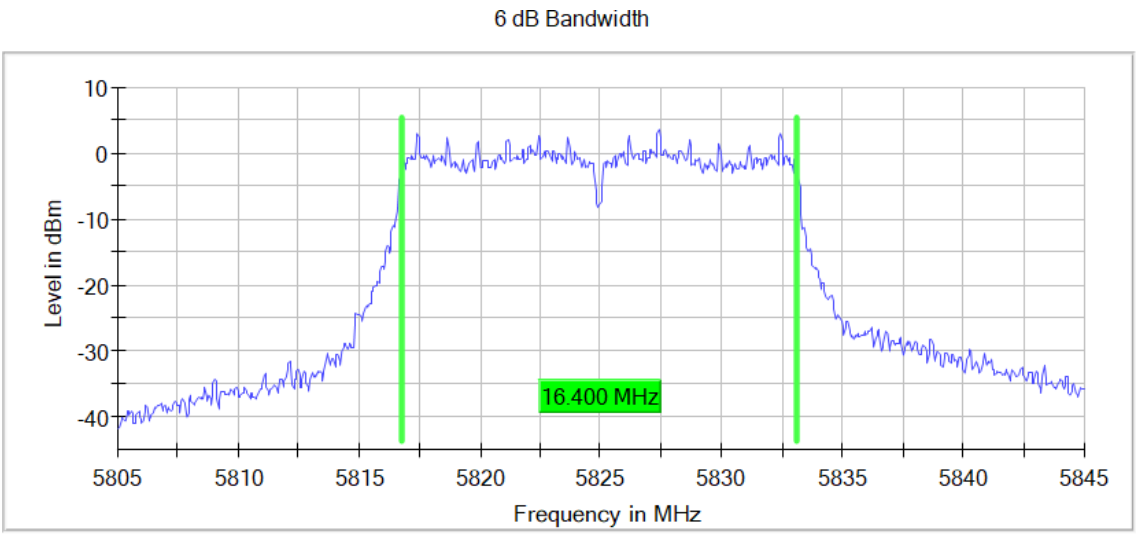
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11a (OFDM 6 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

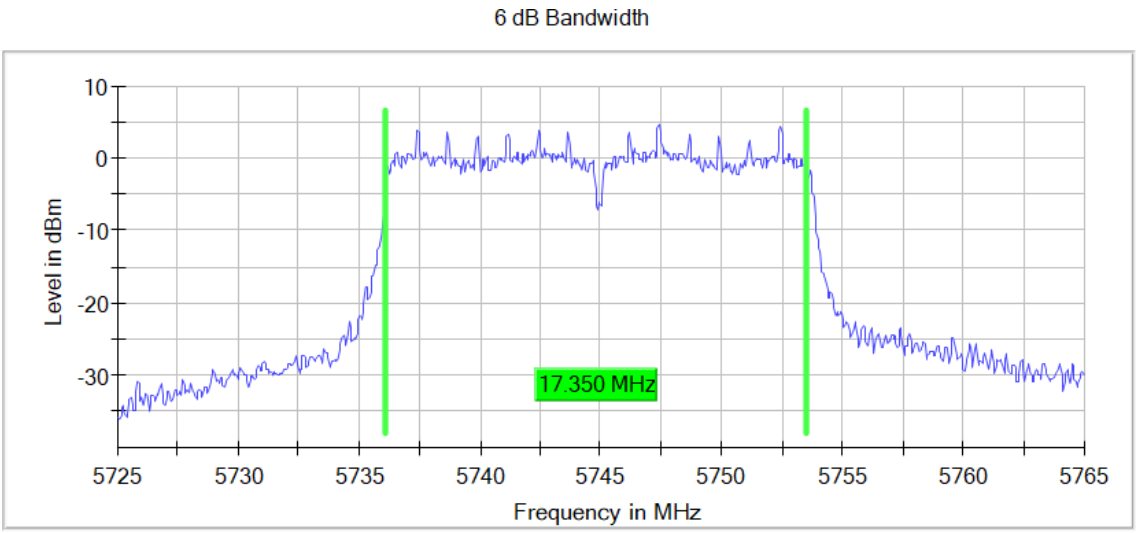
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5745.00000	1	17.350
	1	5785.00000	1	17.200
	1	5825.00000	1	17.400

Verdict

Pass

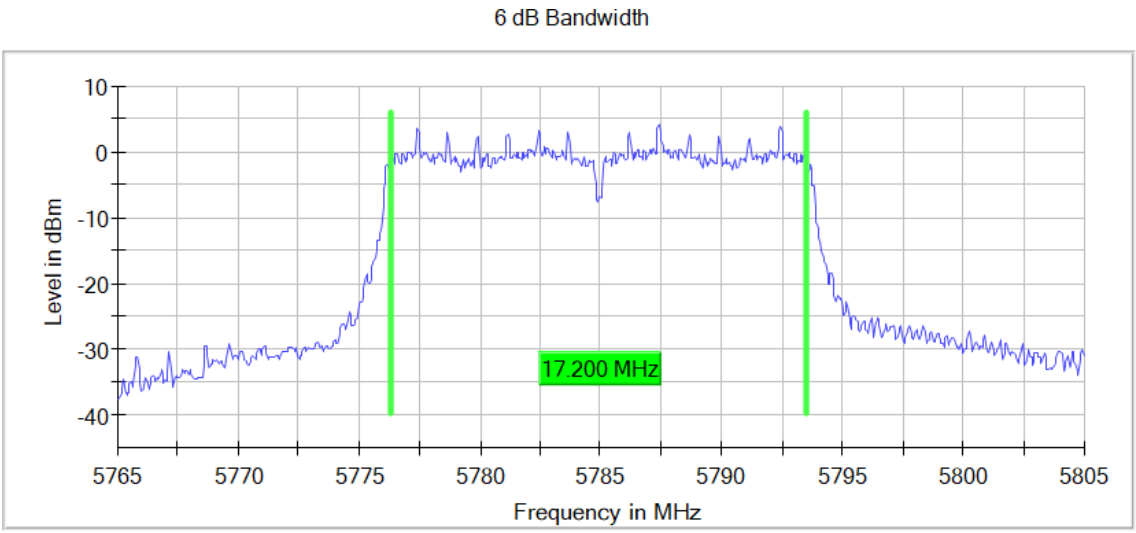
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



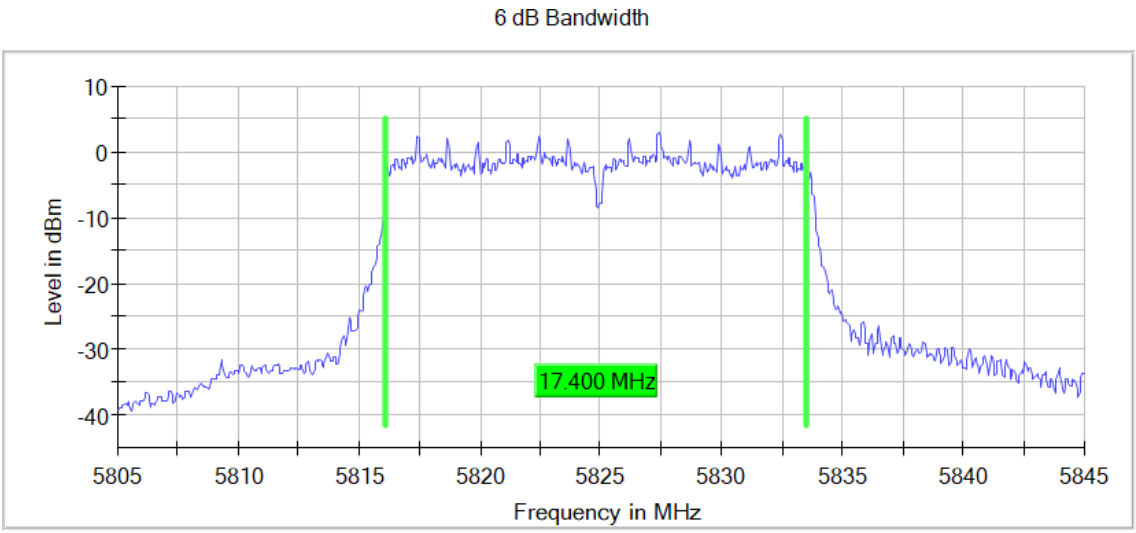
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



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

Results

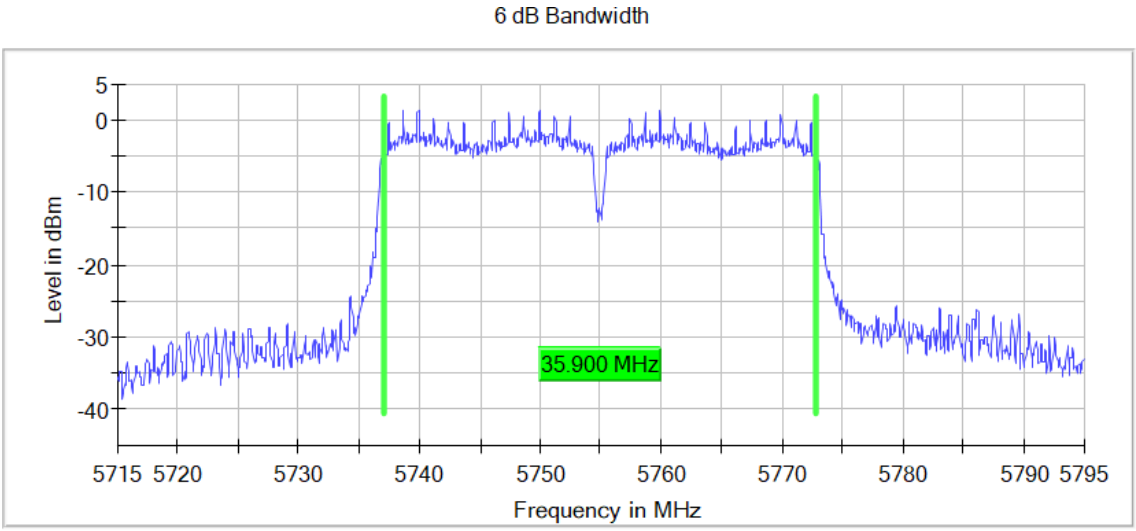
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5755.00000	1	35.900
	1	5795.00000	1	35.800

Verdict

Pass

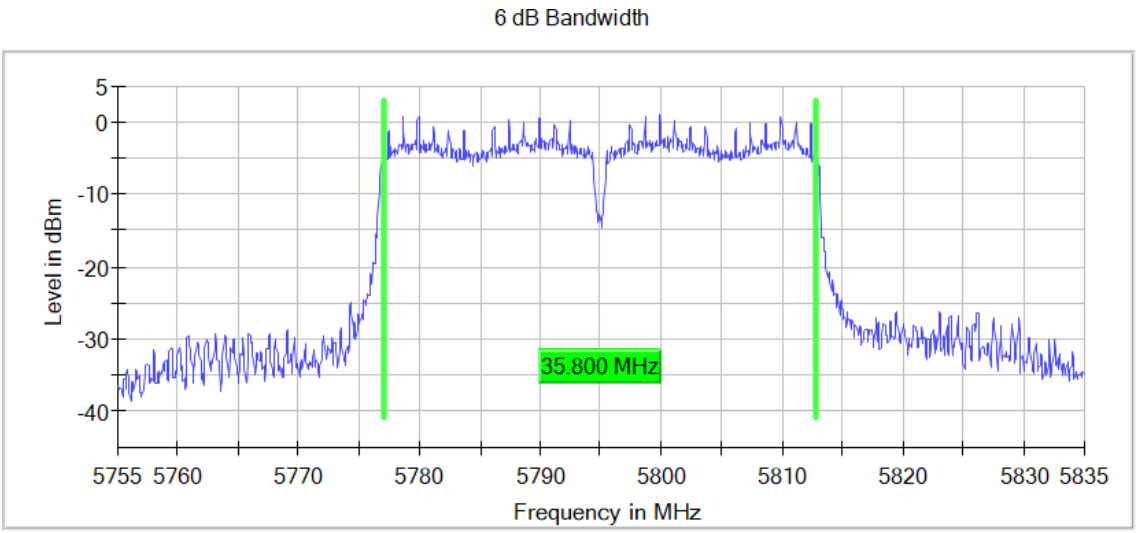
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11n HT40 (OFDM MCS0 13.5 Mbit/s), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

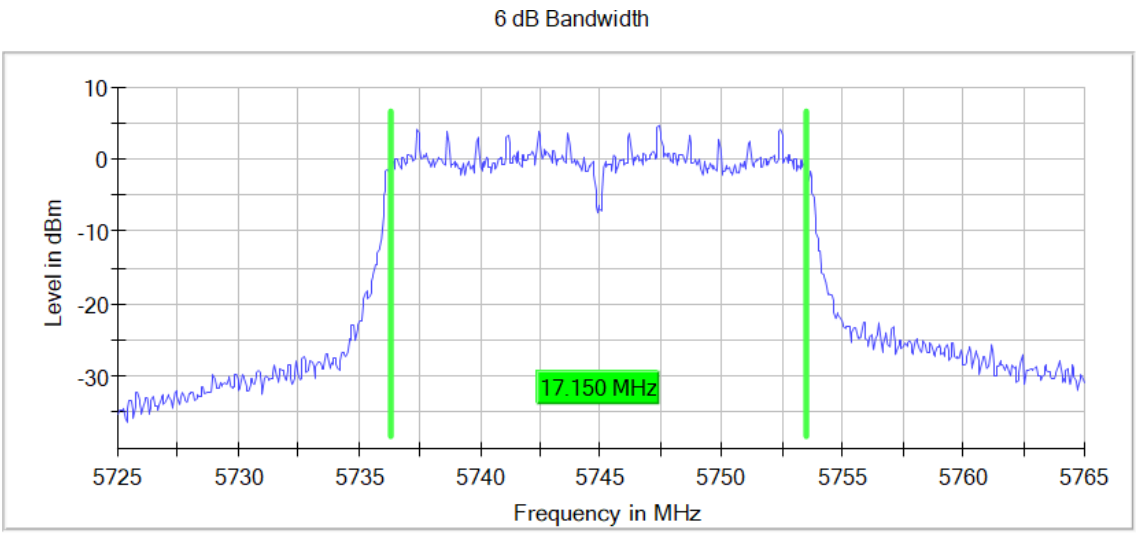
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5745.00000	1	17.150
	1	5785.00000	1	17.200
	1	5825.00000	1	17.400

Verdict

Pass

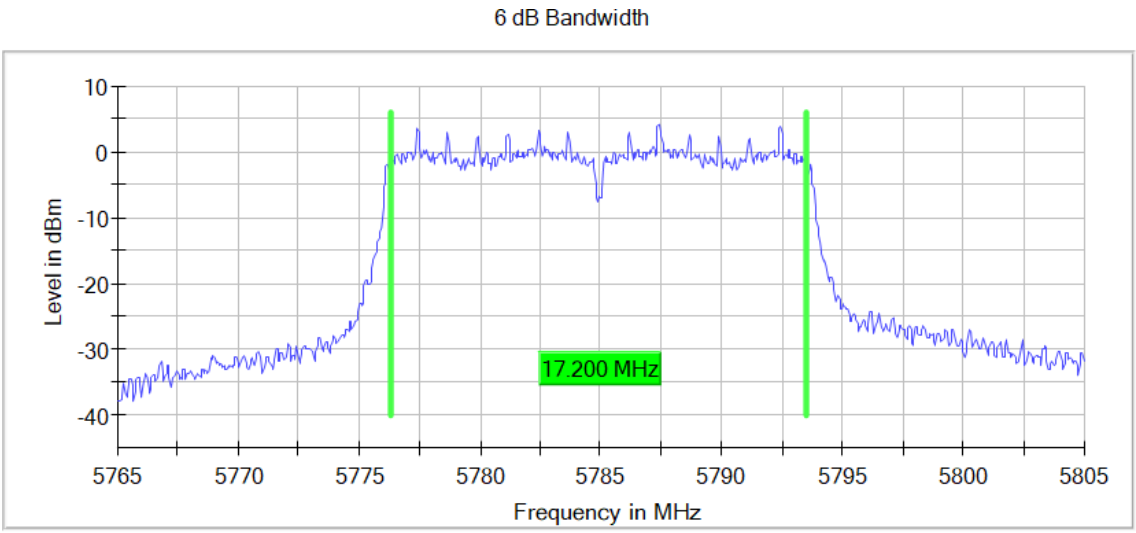
Active Port = 1, Frequency MHz = 5745.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



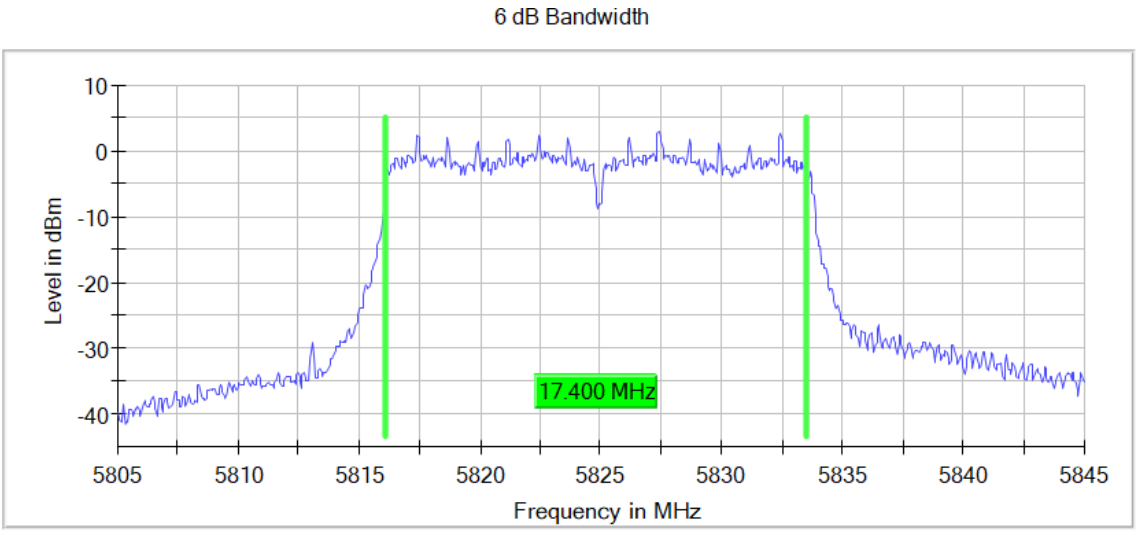
Active Port = 1, Frequency MHz = 5785.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5825.00000, Modulation = 802.11ac VHT20 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

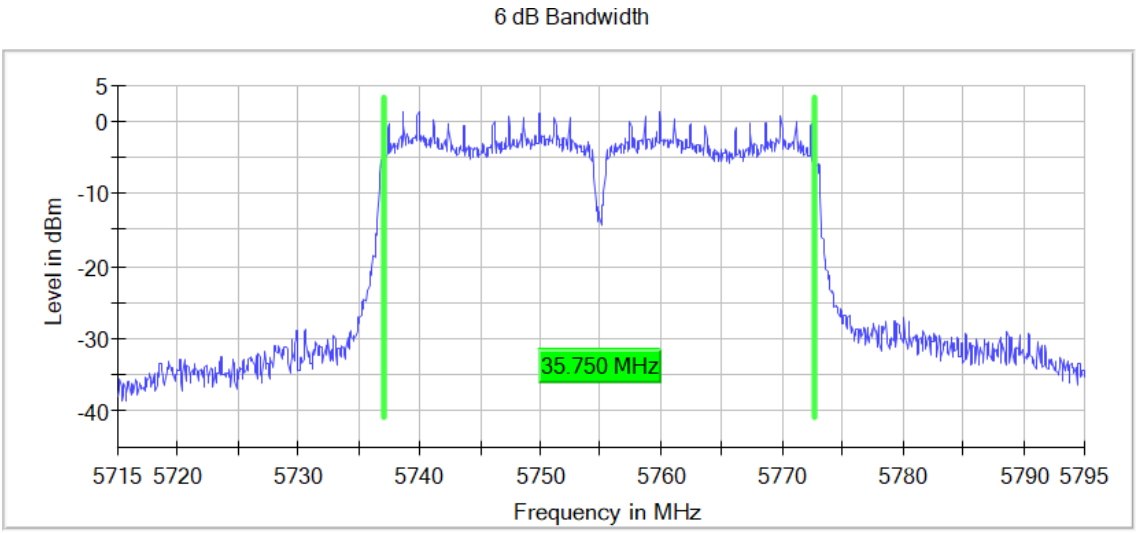
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5755.00000	1	35.750
	1	5795.00000	1	35.850

Verdict

Pass

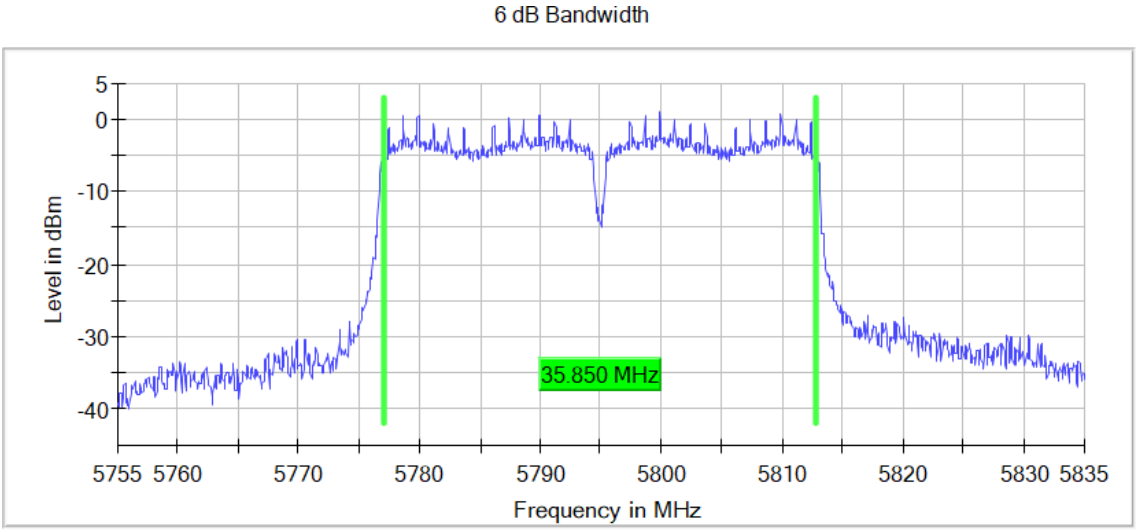
Active Port = 1, Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Active Port = 1, Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

Results

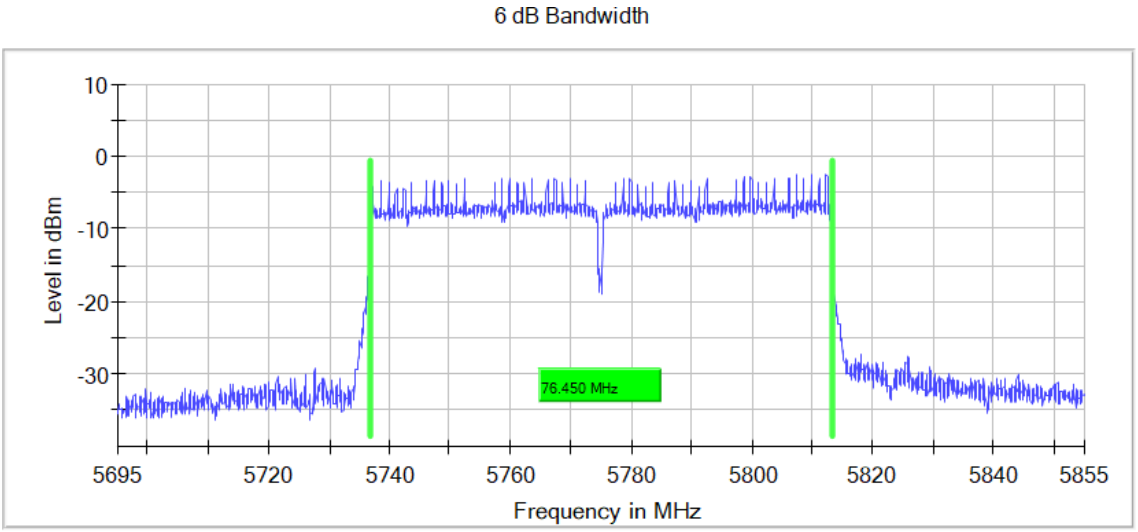
Band	Port	Freq (MHz)	# of Tx Chains	6dB BW (MHz)
U-NII-3	1	5775.00000	1	76.450

Verdict

Pass

Active Port = 1, Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = SISO, Number of Transmission Chains = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	100.000 kHz	200.000 kHz	200.000 kHz
VBW	300.000 kHz	300.000 kHz	300.000 kHz
Sweep Points	800	800	800
Sweep time	56.836 µs	56.836 µs	56.836 µs
Reference Level	0.000 dBm	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	Max Peak	Max Peak	Max Peak
Sweep Count	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep type	FFT	FFT	FFT
Preamp	off	off	off
Stable mode	Trace	Trace	Trace
Stable value	0.30 dB	0.30 dB	0.30 dB
Run	50 / max. 150	72 / max. 150	62 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.19 dB	0.14 dB	0.19 dB

FCC 15.407 (b), 15.205 & 15.209 / RSS-Gen 8.9 & 8.10 Undesirable radiated emissions

Limits

For transmitters operating in the 5.725–5.85 GHz band:

All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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 - 25000	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.

Verdict

Pass

U-NII-1: 5.15 GHz – 5.25 GHz Band

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

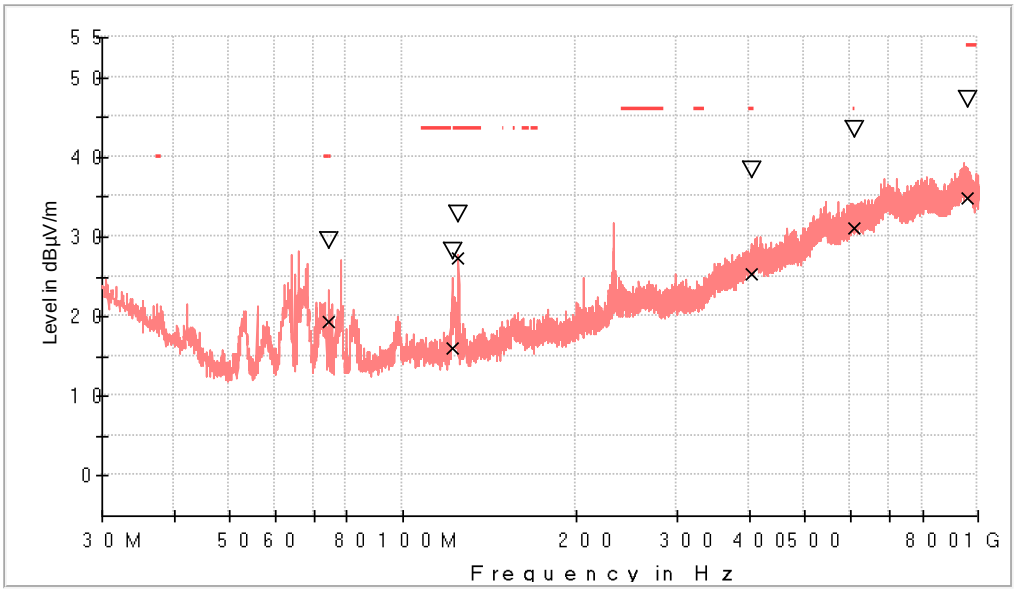
Results

Frequency range 0.03 - 1 GHz
The spurious emissions below 1 GHz do not depend on the operating channel selected in the EUT.

Middle Channel

Active Port = 1, Frequency Range GHz = [0.03, 1], Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 6

Images:



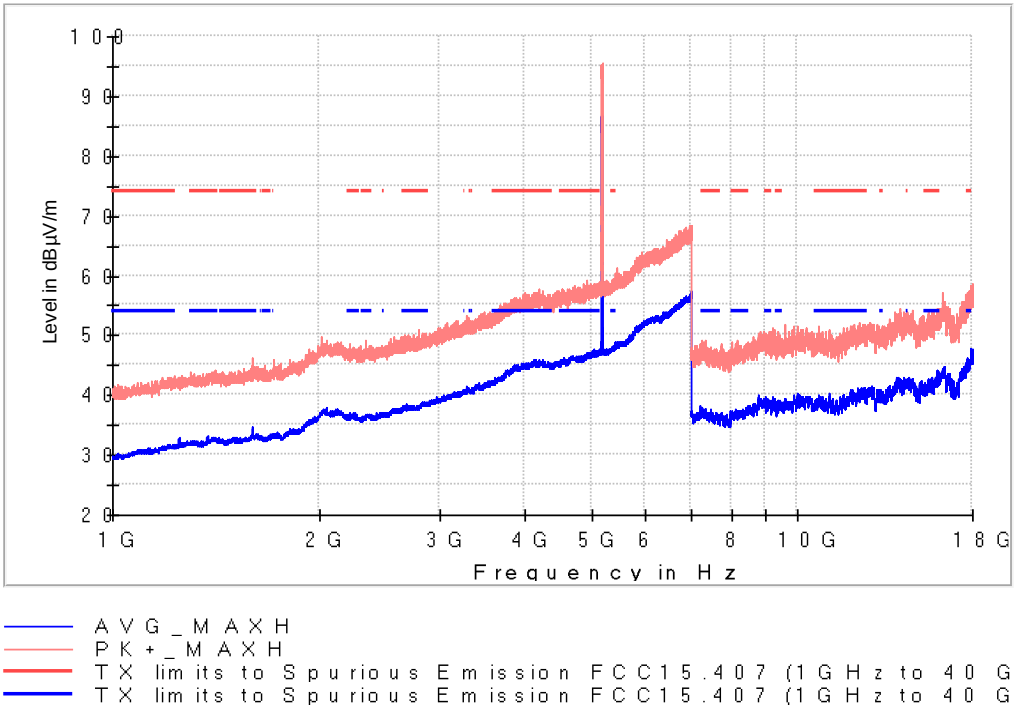
Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBµV/m)
74.426000	29.4	19.4	V	20.6	40.0
121.616500	28.1	16.1	H	27.4	43.5
125.011500	32.9	27.3	H	16.2	43.5
403.935000	38.3	25.4	V	20.6	46.0
608.702000	43.4	31.0	H	15.0	46.0
960.763500	47.2	34.9	H	19.1	54.0

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



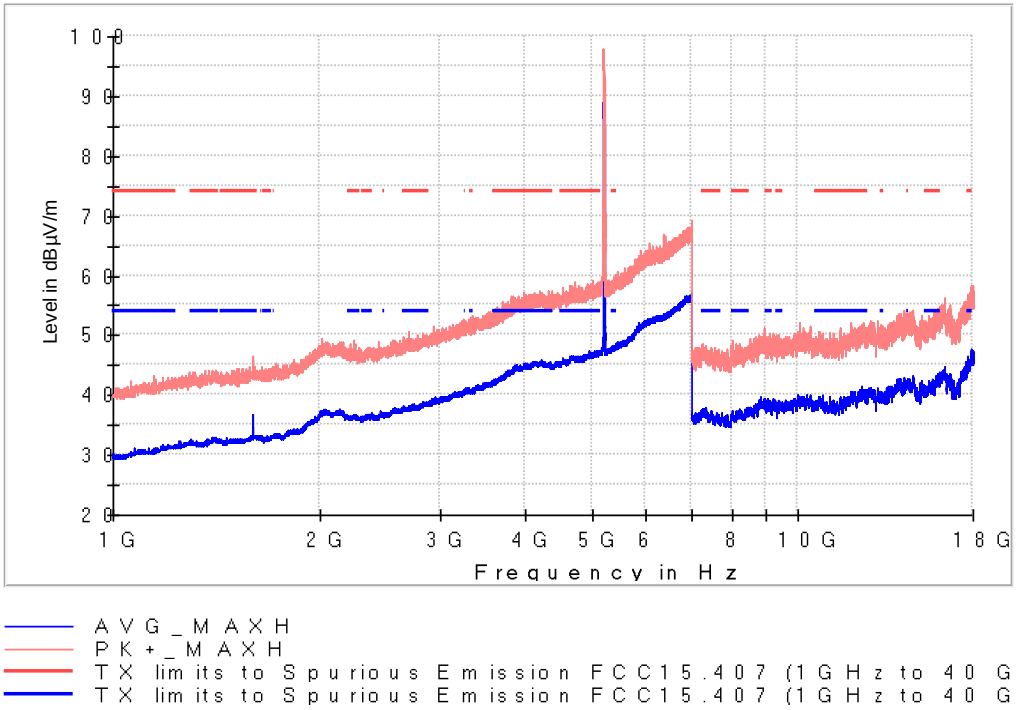
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
4916.500000	59.2	46.6	H	7.4	54.0	
5183.500000	95.5	86.3	H	---	---	Fundamental
17789.50000	57.4	45.6	H	8.4	54.0	

Frequency range 1 - 18 GHz

Middle Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



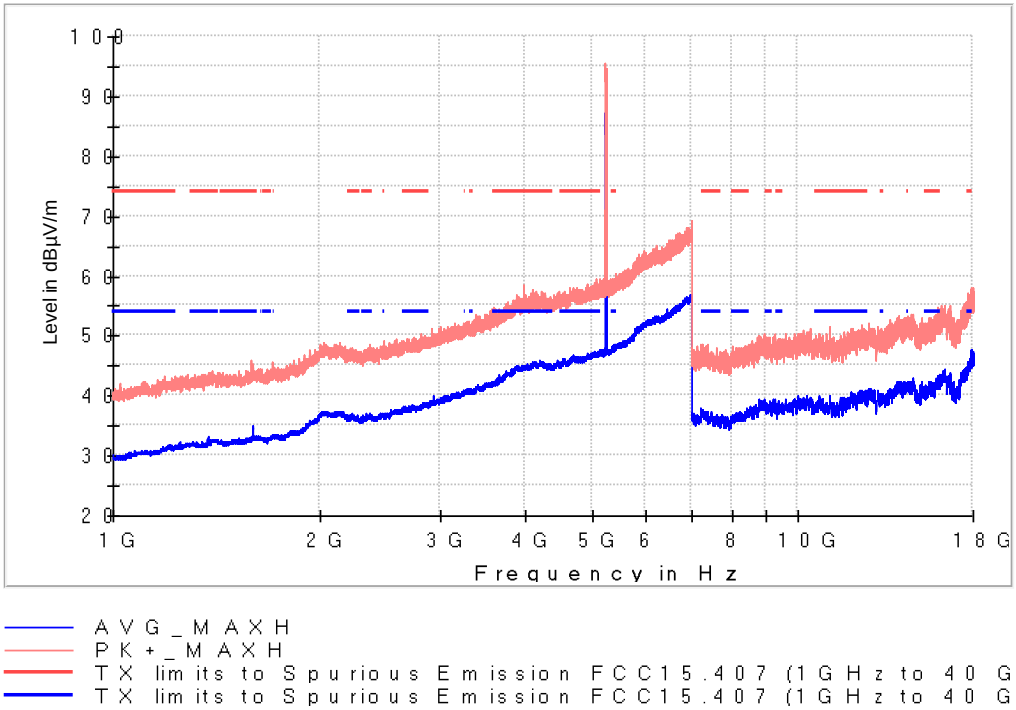
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
4636.500000	58.5	45.6	V	8.4	54.0	
5207.500000	98.0	88.8	H	---	---	Fundamental
16075.50000	54.9	42.9	H	11.1	54.0	

Frequency range 1 - 18 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



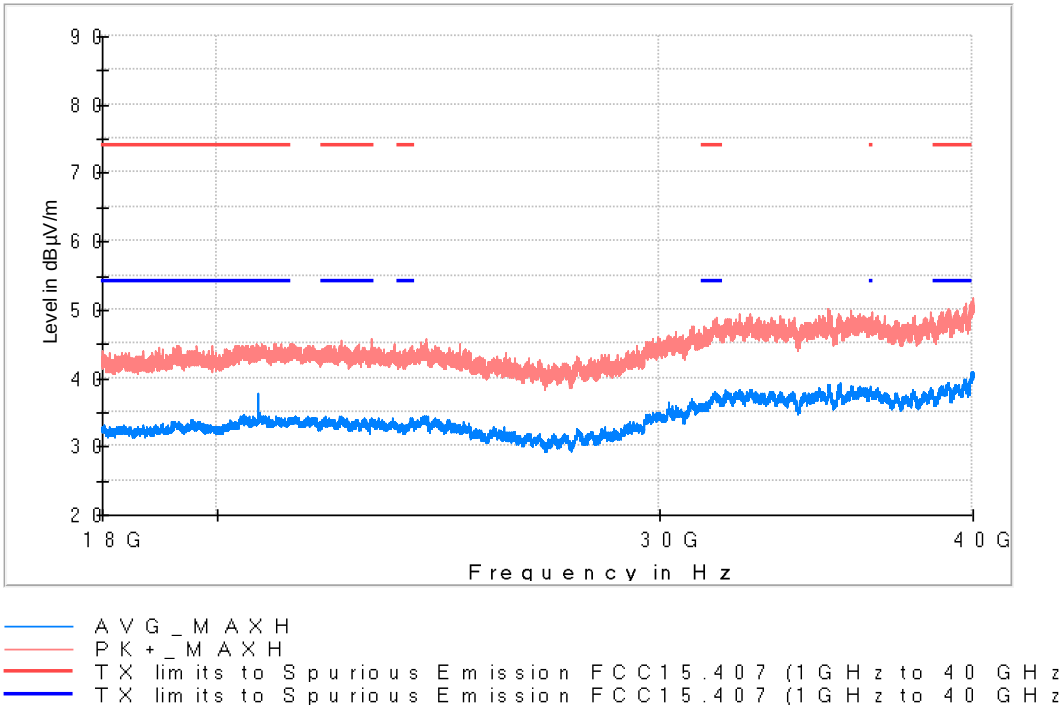
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
3985.000000	58.8	45.0	V	9.0	54.0	
5237.000000	95.5	86.3	H	---	---	Fundamental
15973.50000	55.0	43.2	H	10.8	54.0	

Frequency range 18 - 40 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



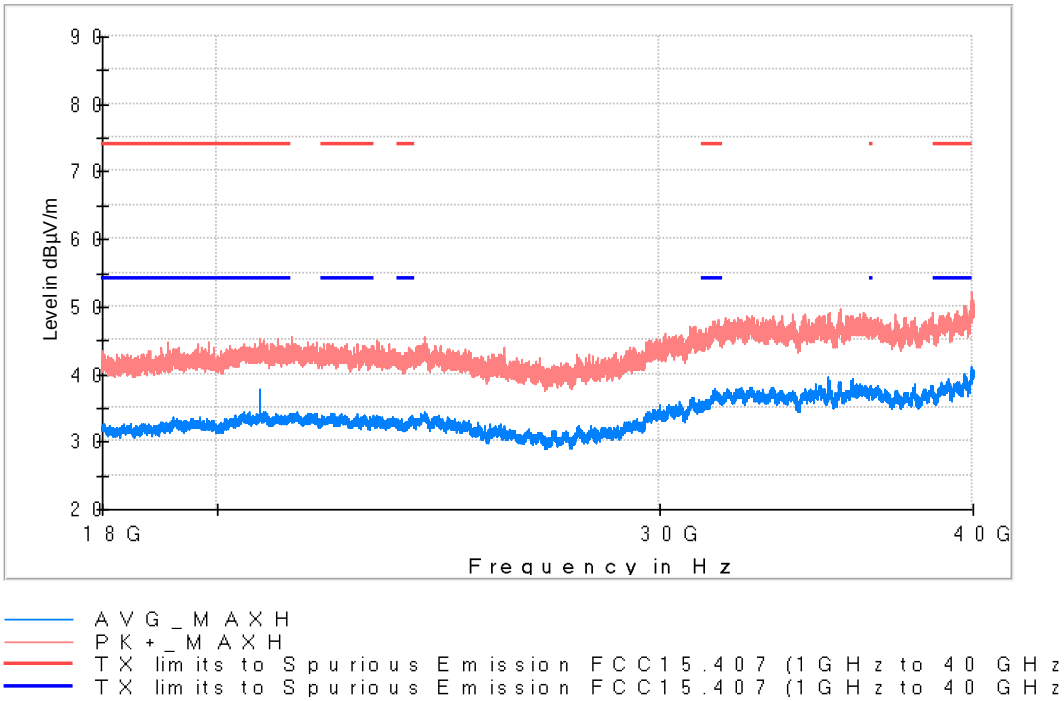
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20759.620000	43.2	37.6	H	16.4	54.0

Frequency range 18 - 40 GHz

Middle Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



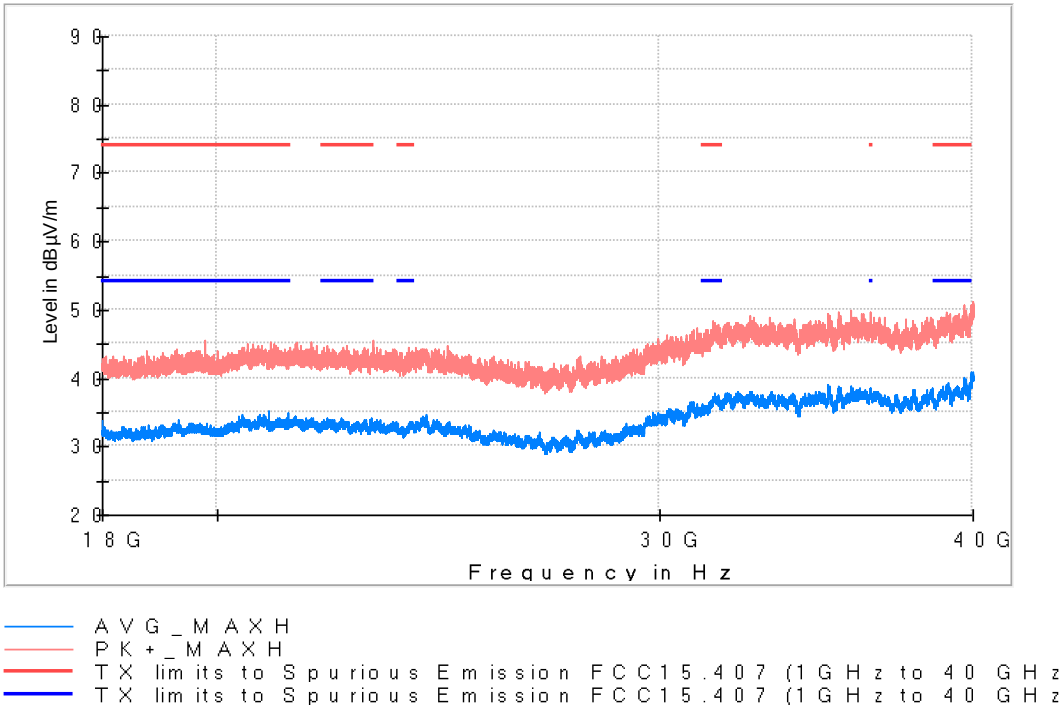
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20799.510000	44.7	37.7	V	16.3	54.0

Frequency range 18 - 40 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:

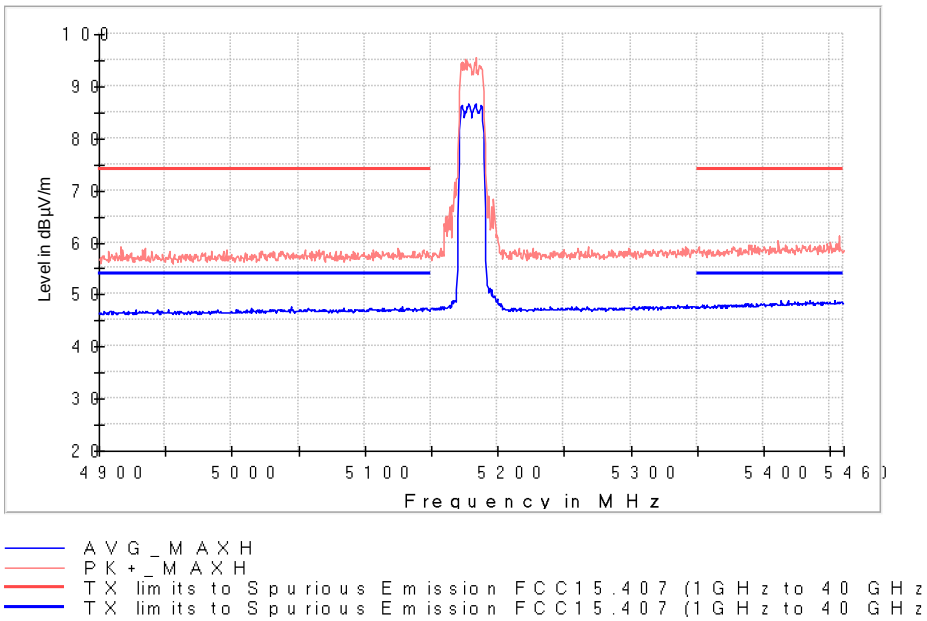


Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20959.689000	43.4	35.1	V	18.9	54.0

Restricted Bands (4.9 GHz - 5.46 GHz)

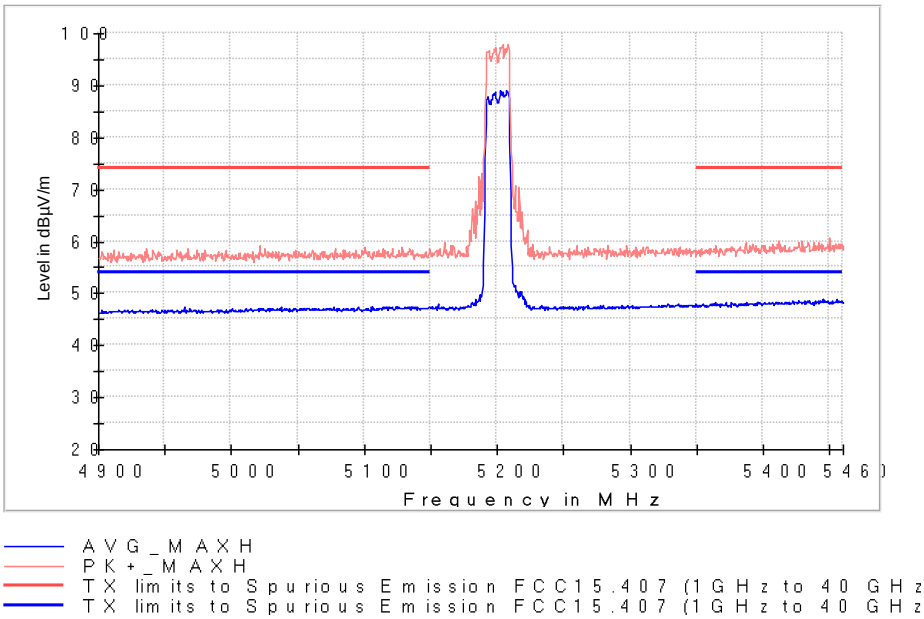
Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5180.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



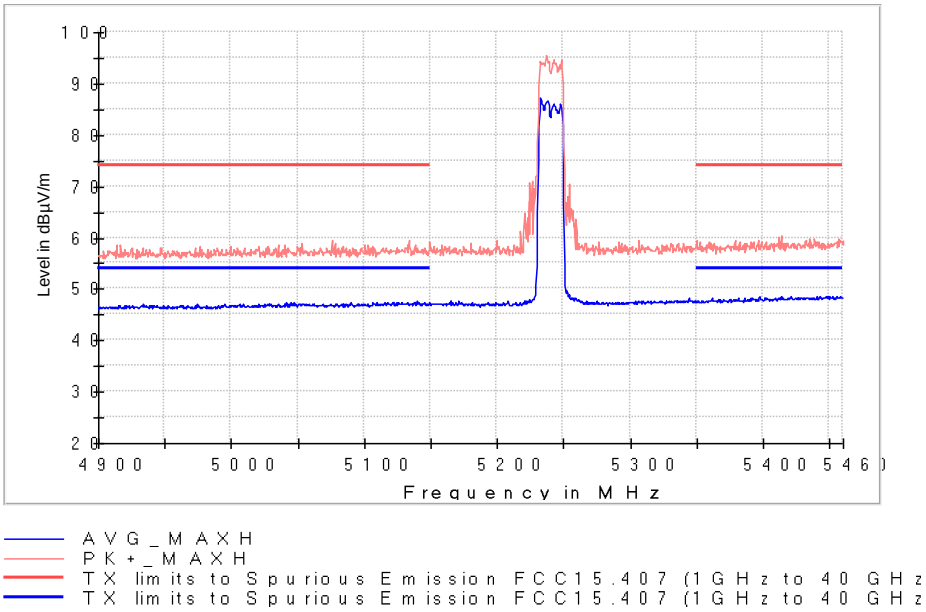
Middle Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5200.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5240.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

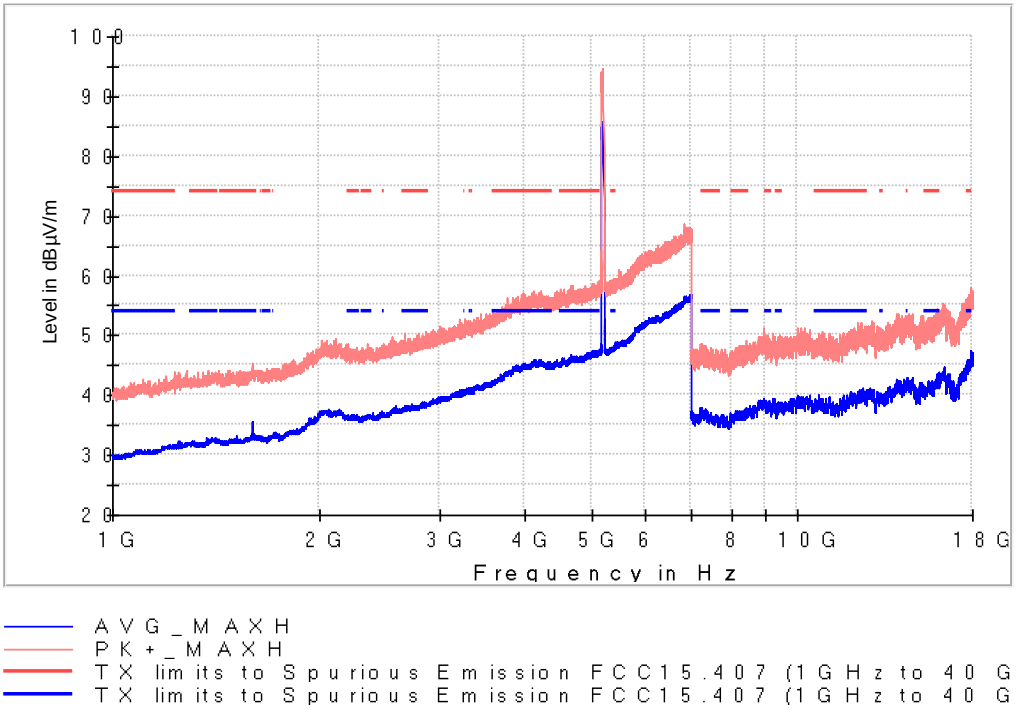
Results

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



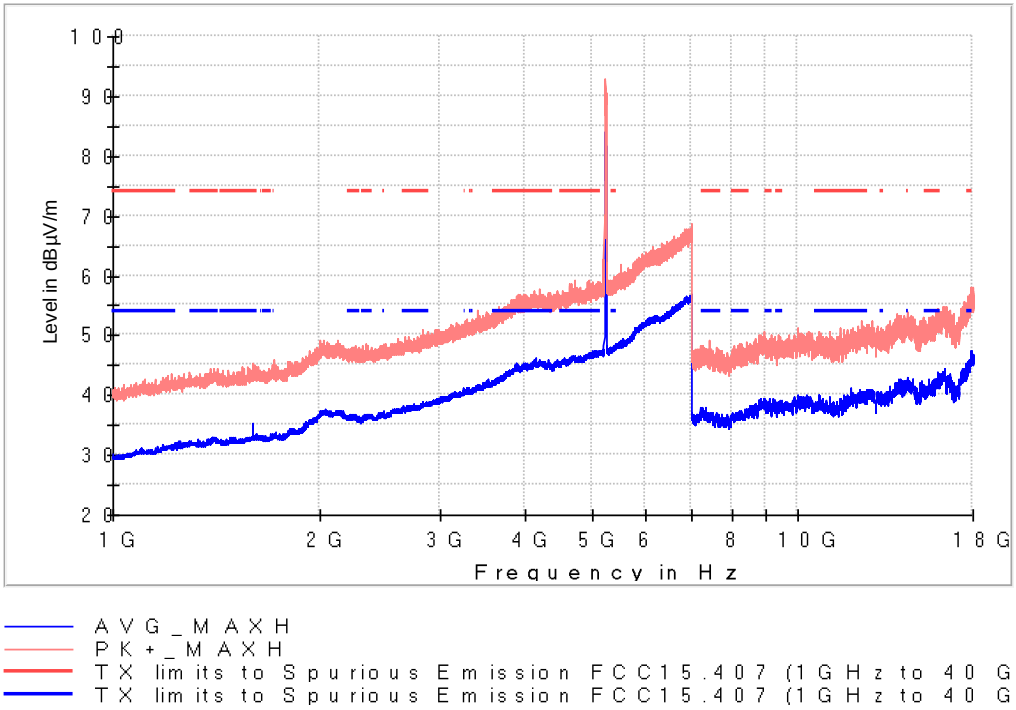
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
4659.500000	58.5	46.2	V	7.8	54.0	
5205.000000	94.6	85.4	H	---	---	Fundamental
15994.50000	54.5	42.6	V	11.4	54.0	

Frequency range 1 - 18 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



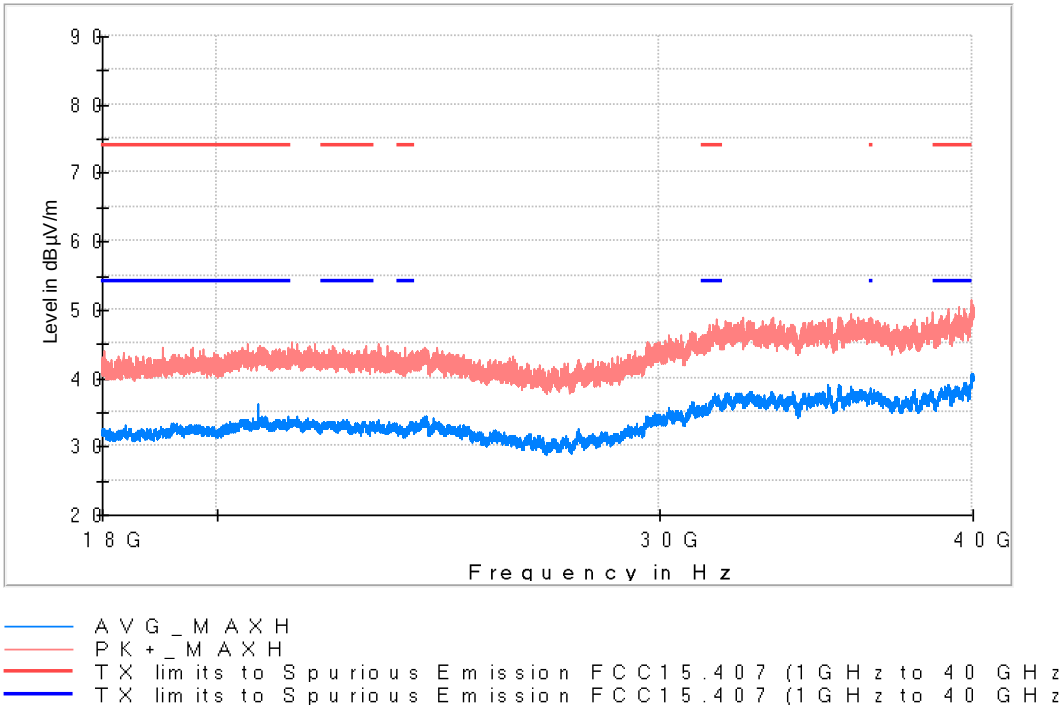
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
4711.000000	59.1	46.0	H	8.0	54.0	
5215.500000	92.8	83.2	H	---	---	Fundamental
17950.00000	58.2	46.9	V	7.1	54.0	

Frequency range 18 - 40 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



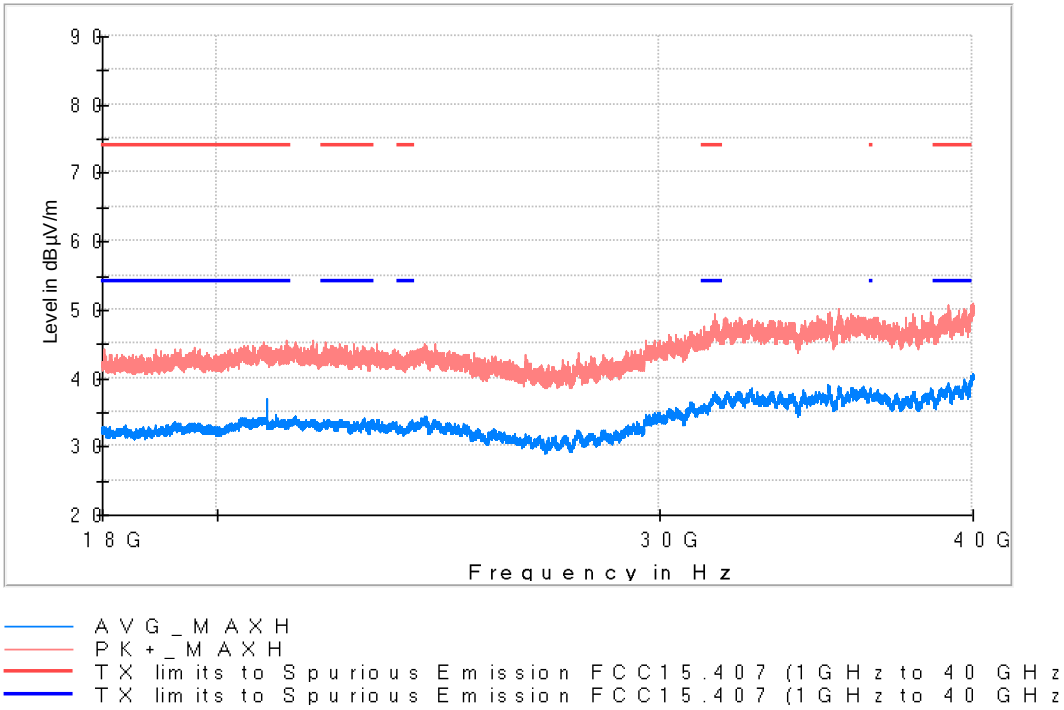
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20759.630000	44.4	36.2	V	17.8	54.0

Frequency range 18 - 40 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:

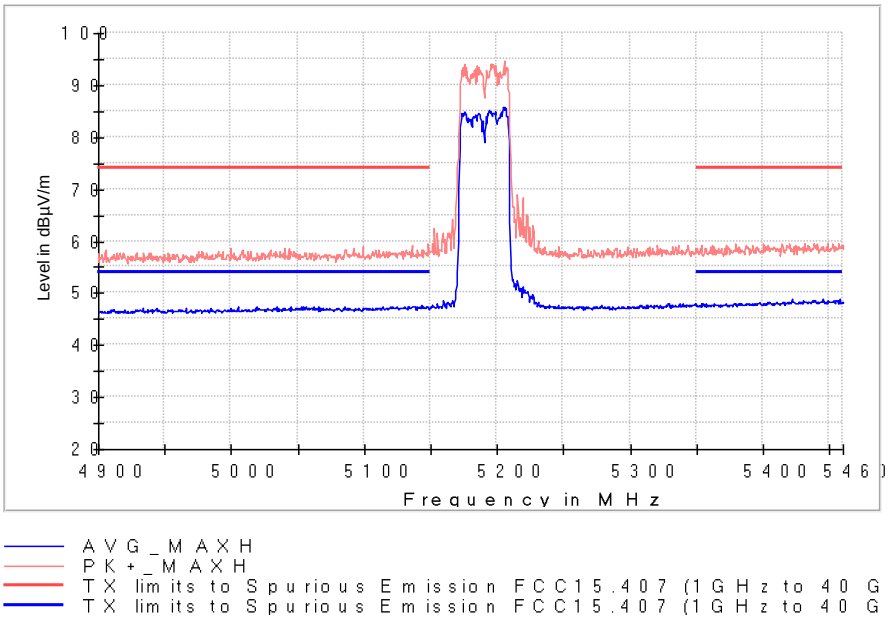


Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20919.812700	44.3	36.7	V	17.3	54.0

Restricted Bands (4.9 GHz - 5.46 GHz)

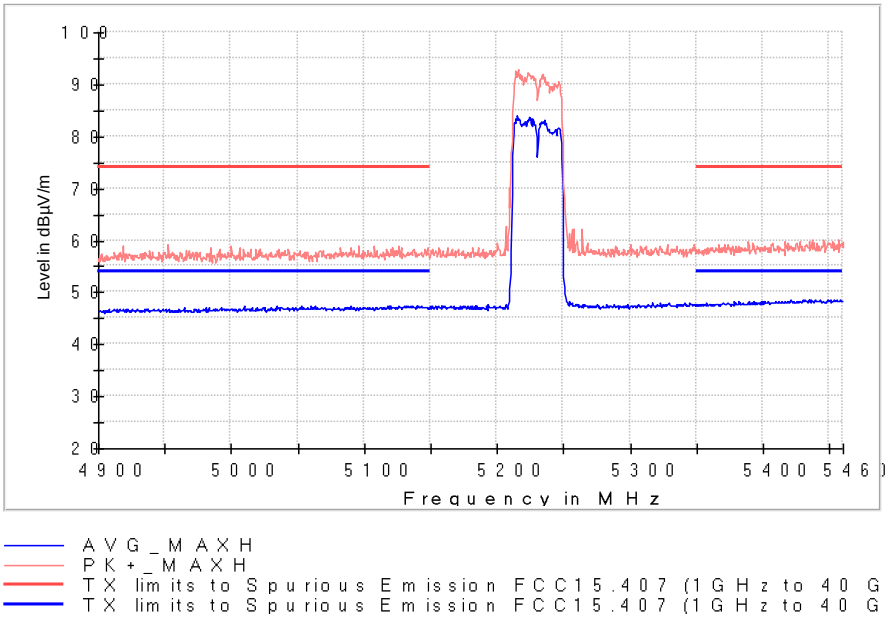
Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5190.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5230.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

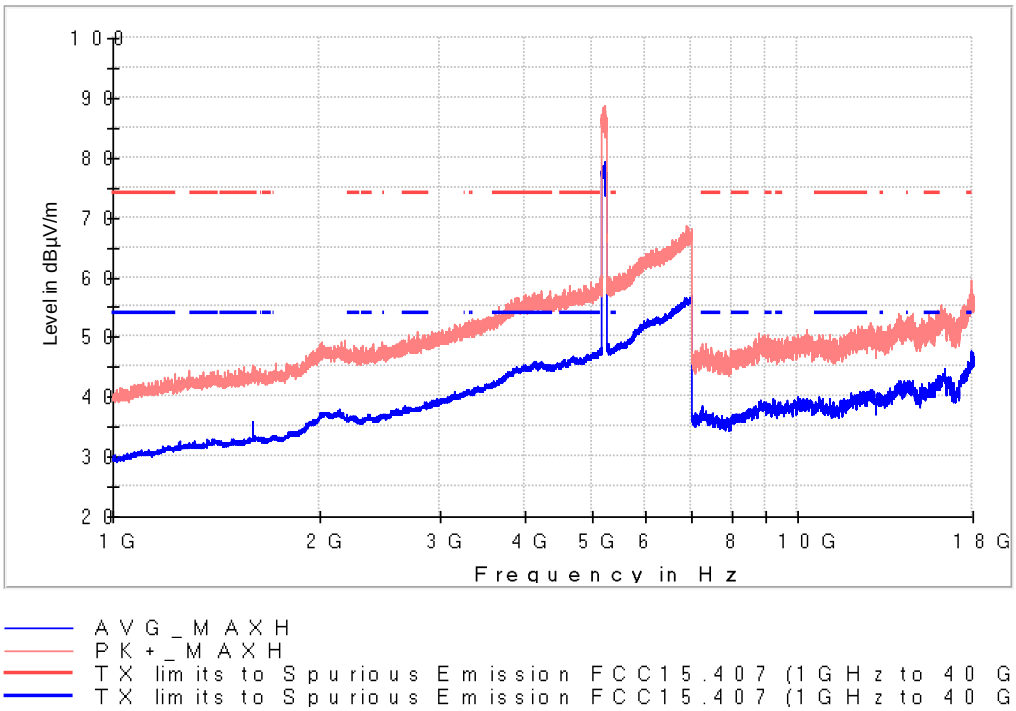
Results

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



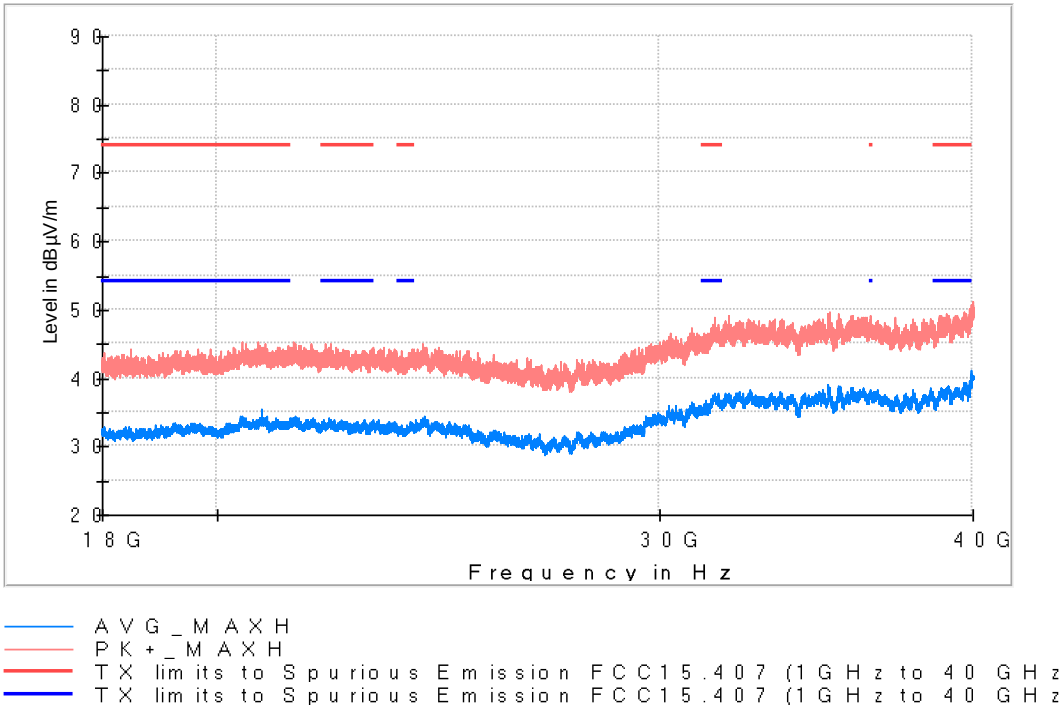
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
3659.000000	55.3	42.4	H	11.6	54.0	
5216.500000	88.7	78.5	H	---	---	Fundamental
16125.50000	55.5	42.9	H	11.1	54.0	

Frequency range 18 - 40 GHz

Single Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:

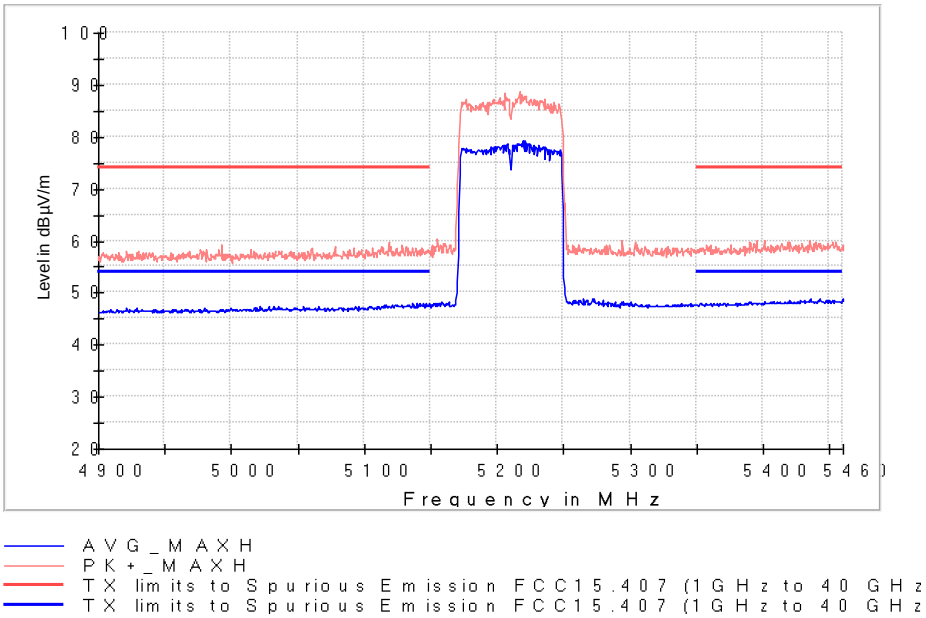


Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20840.063000	44.1	35.3	V	18.7	54.0

Restricted Bands (4.9 GHz - 5.46 GHz)

Single Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5210.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3



U-NII-3: 5.725 GHz – 5.85GHz Band

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

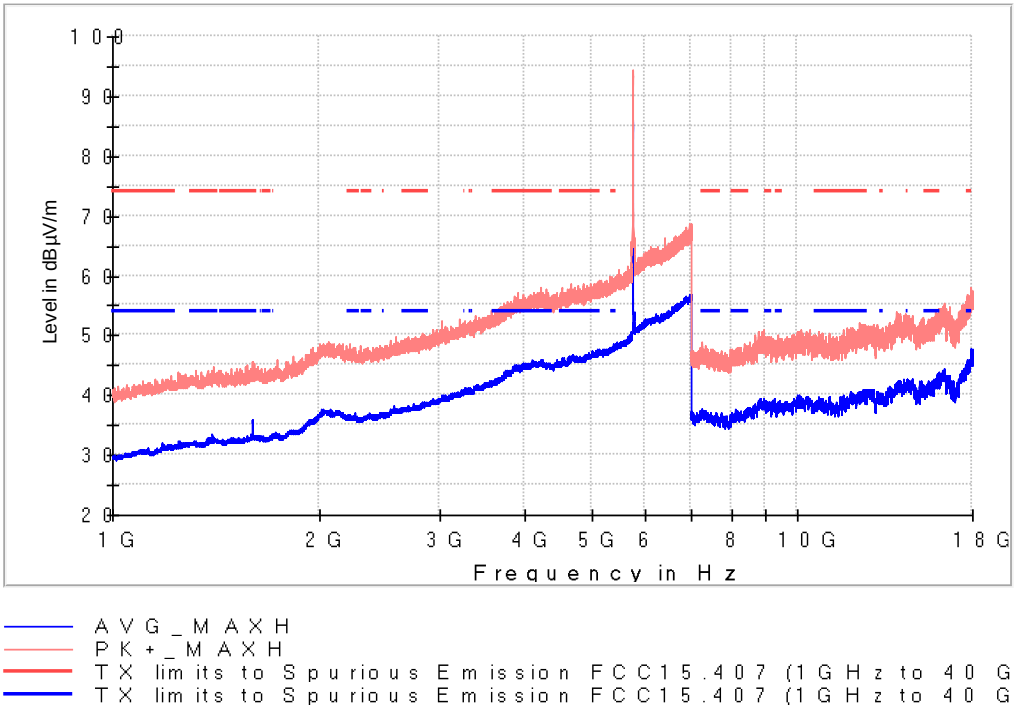
Results

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



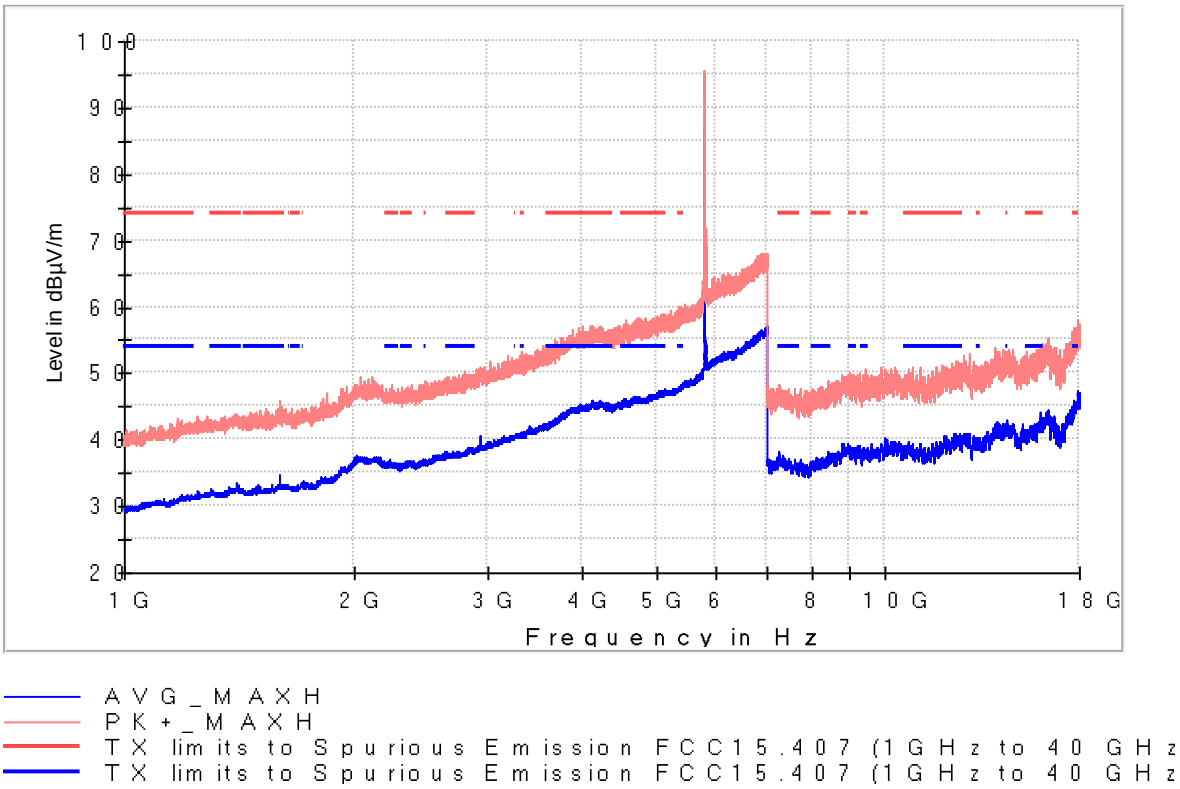
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
3910.500000	57.2	44.9	H	9.1	54.0	
5737.500000	94.5	85.9	V	---	---	Fundamental
17863.00000	56.6	45.1	V	8.9	54.0	

Frequency range 1 - 18 GHz

Middle Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



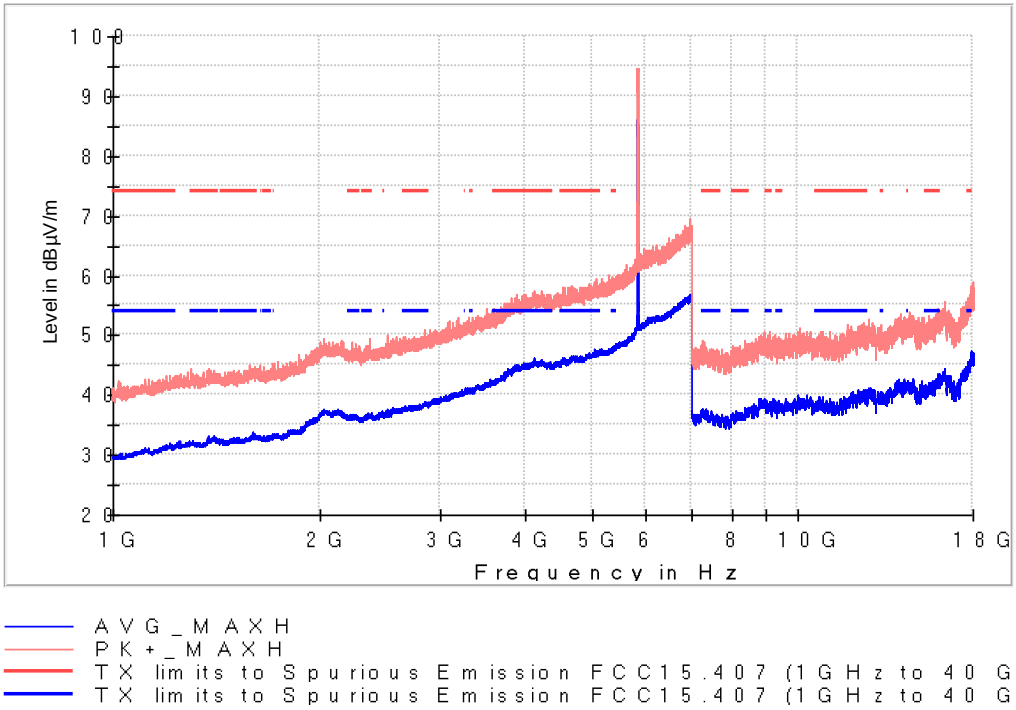
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
3877.500000	56.6	44.7	H	9.3	54.0	
5781.500000	95.6	86.1	H	---	---	Fundamental
12686.00000	52.9	40.2	V	13.8	54.0	

Frequency range 1 - 18 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



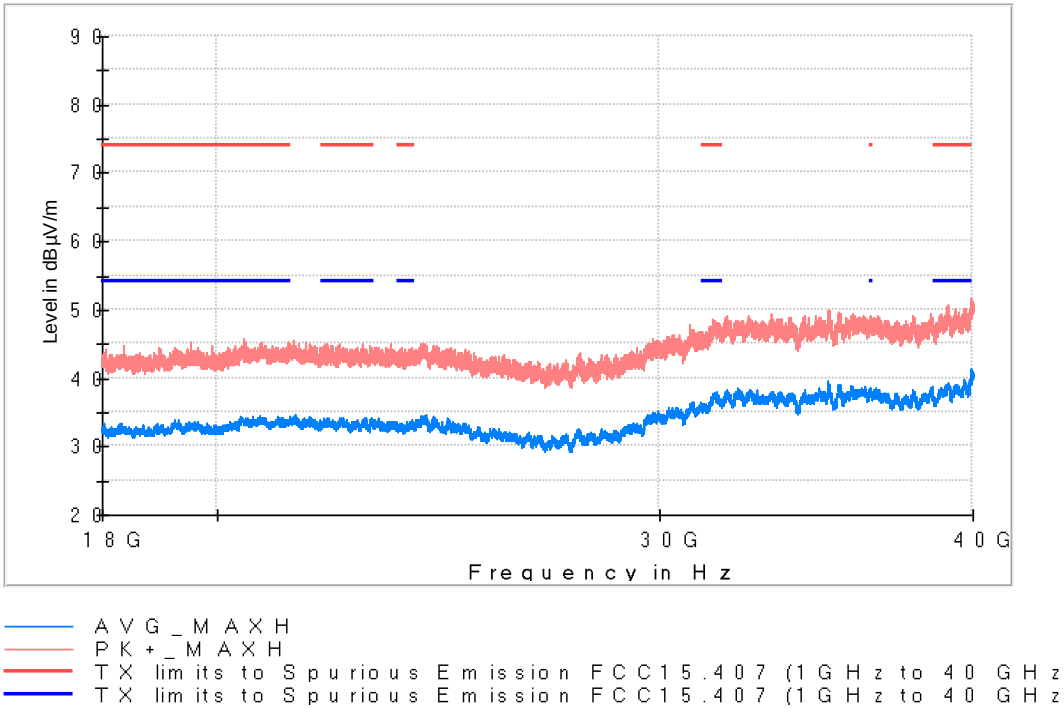
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
4536.500000	58.2	46.0	H	8.0	54.0	
5823.000000	94.7	85.3	H	---	---	Fundamental
15972.50000	54.4	43.4	V	10.6	54.0	

Frequency range 18 - 40 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5745.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



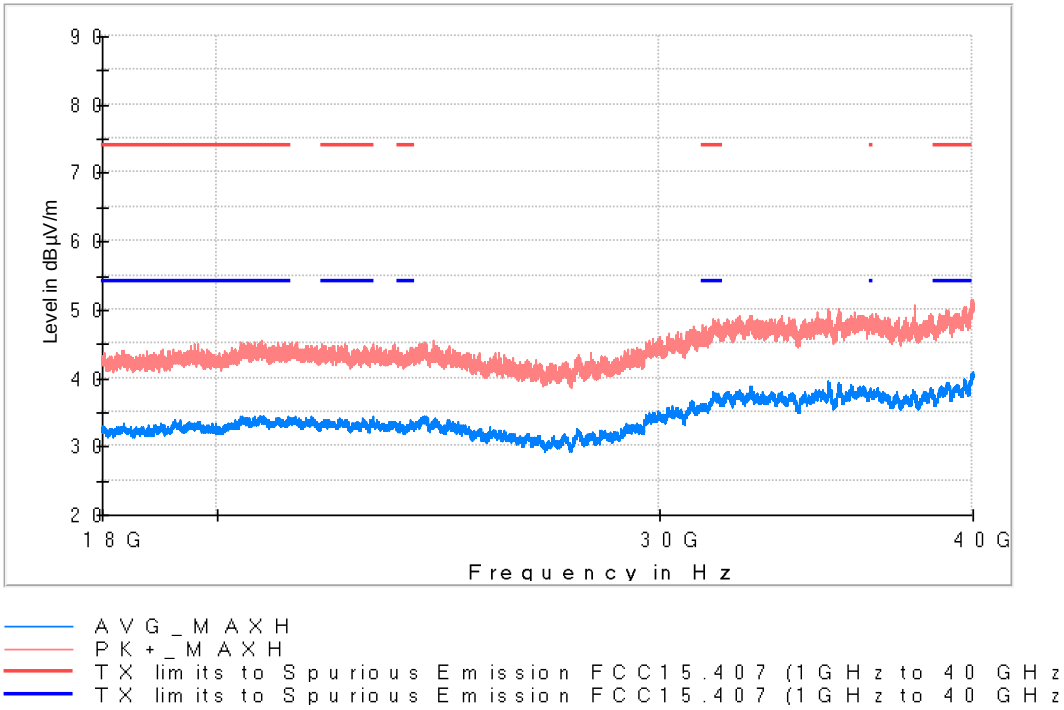
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
24205.380000	43.8	34.7	V	---	---
39960.813000	50.7	41.2	V	12.8	54.0

Frequency range 18 - 40 GHz

Middle Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5785.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



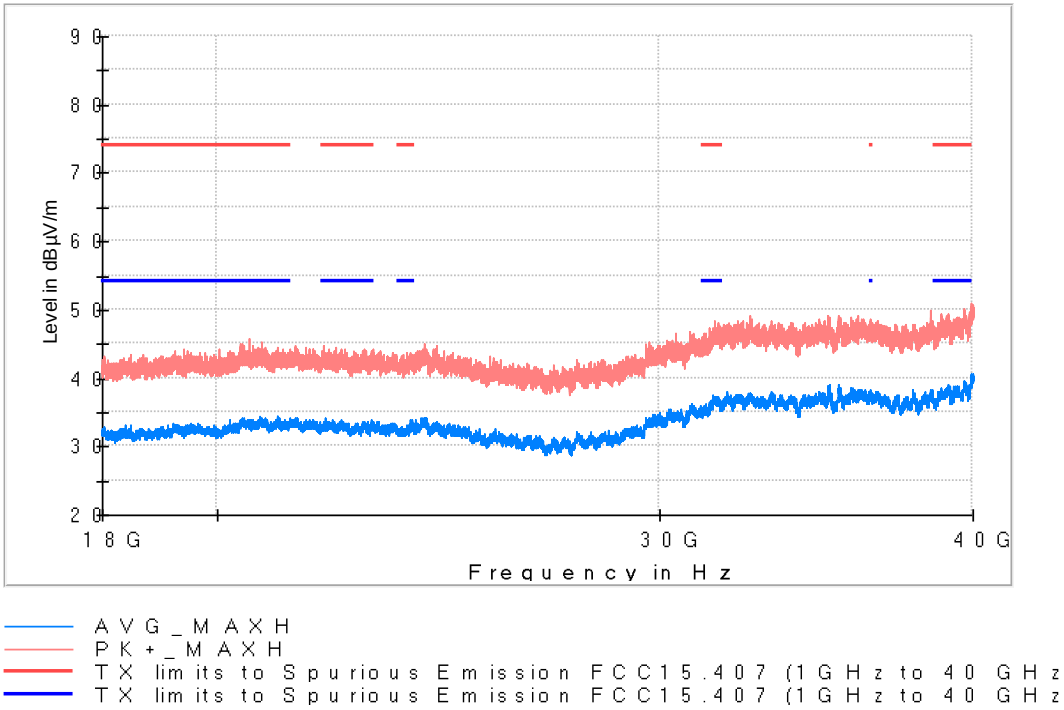
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
24205.379000	43.8	34.7	V	---	---
39960.813000	50.7	41.3	V	12.7	54.0

Frequency range 18 - 40 GHz

Highest Channel

Active Port = 1+2, Frequency Range GHz = [18, 40], Frequency MHz = 5825.00000, Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
22100.937000	41.9	34.1	H	19.9	54.0

Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

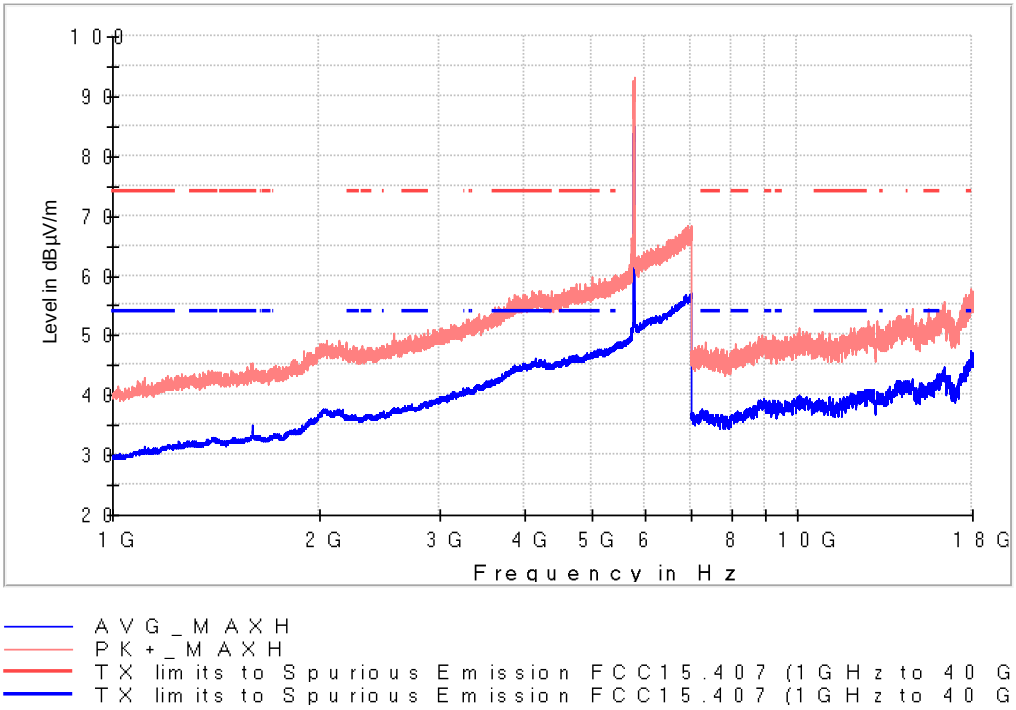
Results

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



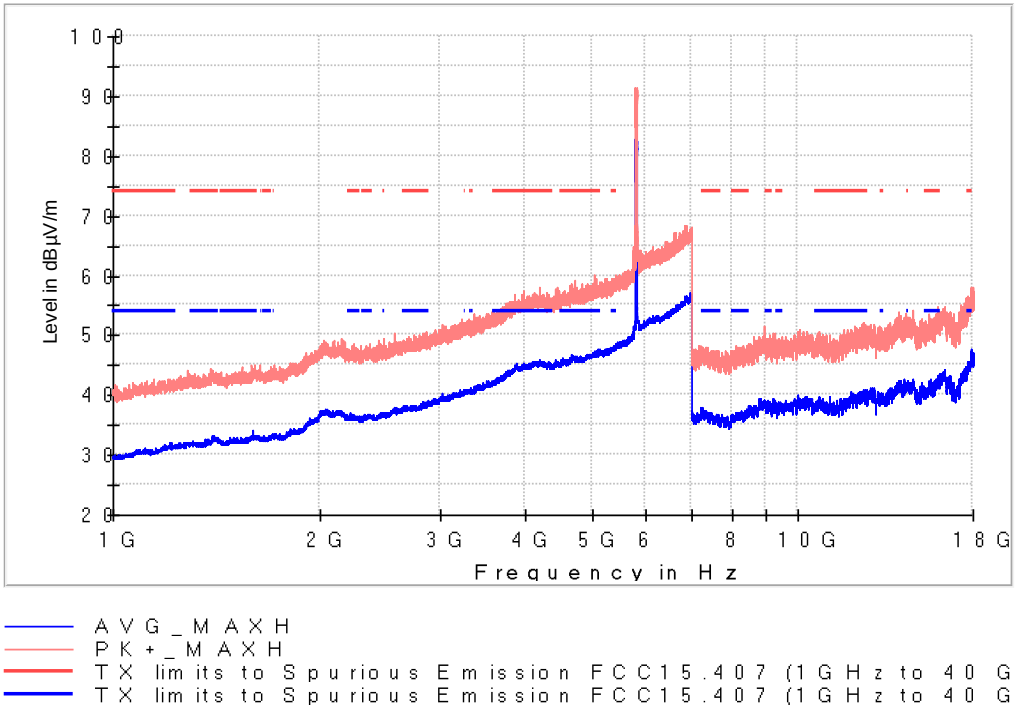
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
5025.000000	59.7	46.5	V	7.5	54.0	
5770.000000	93.3	84.7	H	---	---	Fundamental
15553.50000	54.6	41.6	V	12.4	54.0	

Frequency range 1 - 18 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



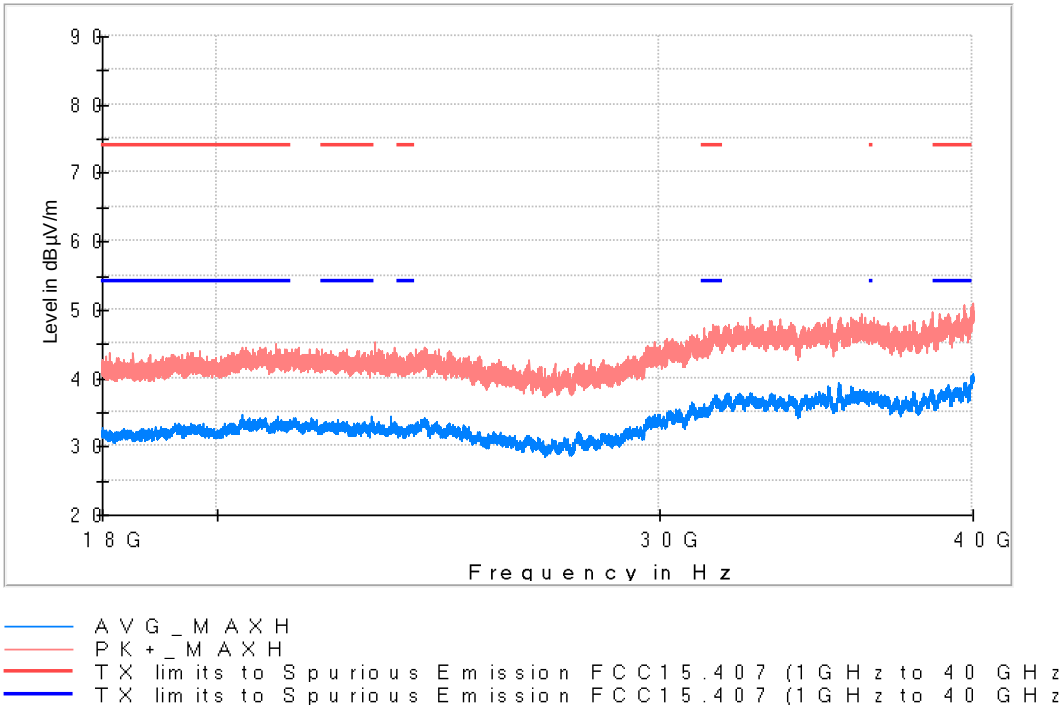
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
3855.500000	56.6	44.6	V	9.4	54.0	
5780.500000	91.4	82.0	H	---	---	Fundamental
15977.00000	54.8	43.2	V	10.8	54.0	

Frequency range 18 - 40 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



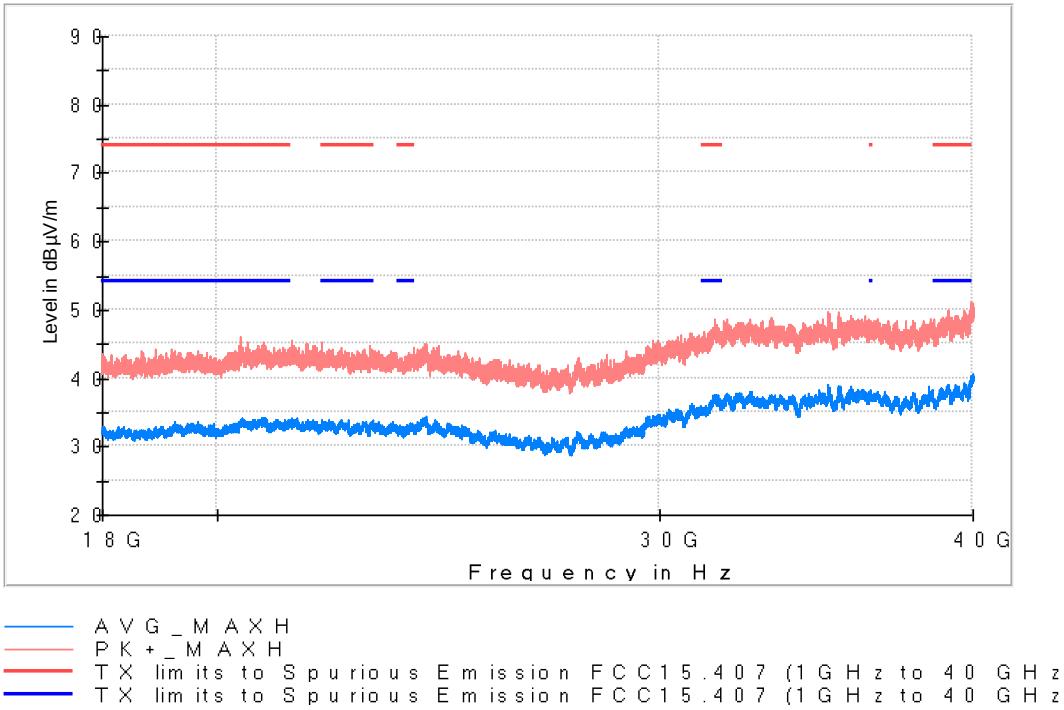
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
22100.938000	41.9	34.1	H	19.9	54.0

Frequency range 18 - 40 GHz

Highest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20840.063000	42.9	34.2	V	19.8	54.0

Modulation: 802.11ac VHT80 SS1 (OFDM MCS0)

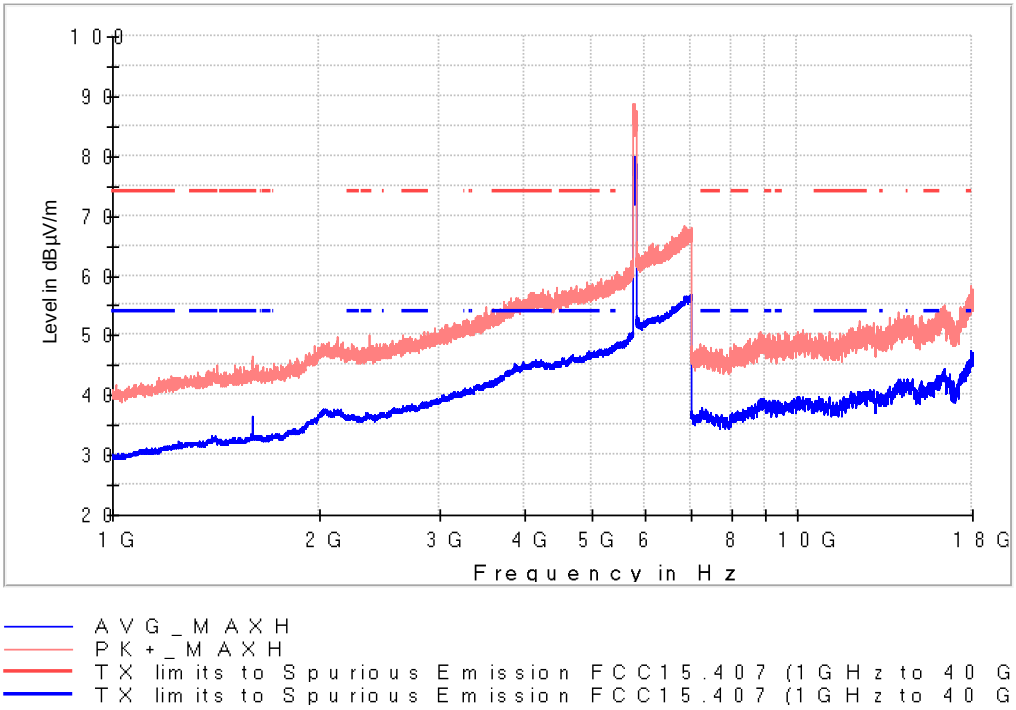
Results

Frequency range 1 - 18 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [1, 18], Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



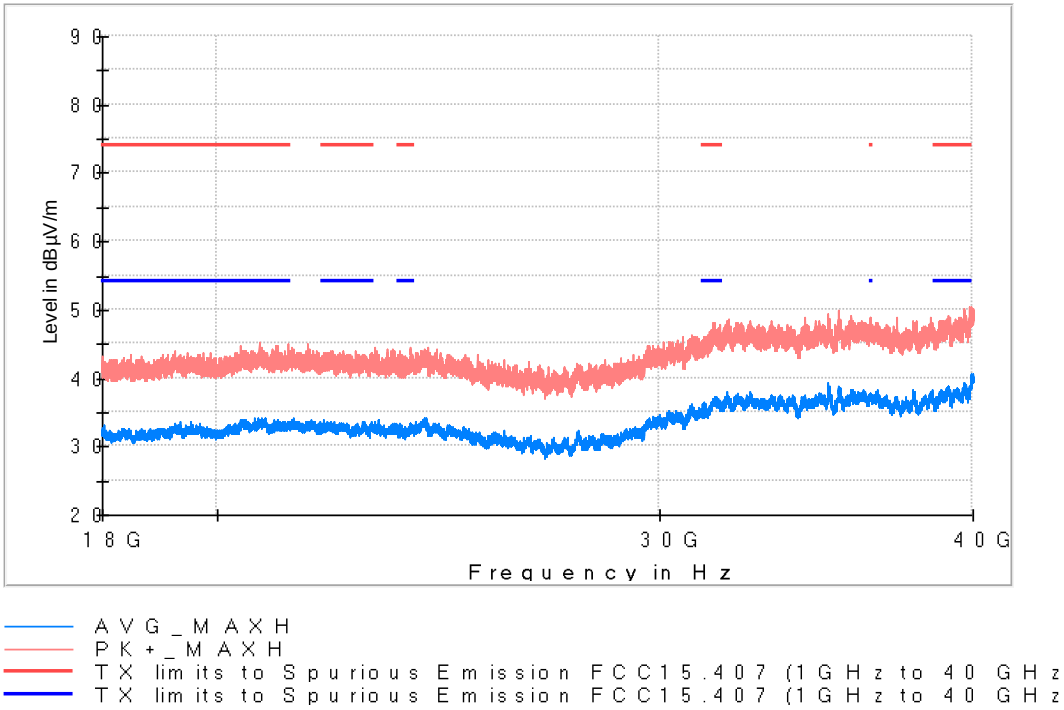
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
2809.500000	50.0	37.9	H	16.1	54.0	
5778.500000	88.8	79.4	H	---	---	Fundamental
17827.50000	56.8	44.3	V	9.7	54.0	

Frequency range 18 - 40 GHz

Lowest Channel

Active Port = 1, Frequency Range GHz = [18, 40], Frequency MHz = 5775.00000, Modulation = 802.11ac VHT80 SS1 (OFDM MCS0), MIMO Mode = MIMO CCD Mode 2x2, Measurement Point = 3

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
23099.189000	42.4	33.4	V	20.6	54.0

Spectrum Analyzer Parameters

Subrange	Detectors	Bandwidth	Preamp
30 MHz - 1 GHz	PK+	100 kHz	20 dB

Spectrum Analyzer Parameters

Subrange	Detectors	Bandwidth	Preamp
1 GHz - 7 GHz	PK+ ; AVG	1 MHz	20 dB
7 GHz - 18 GHz	PK+ ; AVG	1 MHz	20 dB

Spectrum Analyzer Parameters

Subrange	Detectors	Bandwidth	Preamp
18 GHz - 40 GHz	PK+ ; AVG	1 MHz	20 dB