



FCC TEST REPORT

FCC ID: 2ATPH-PHOENIX1

On Behalf of

Juganu LTD

Wireless us part

Model No.: JLED-SL-120W-PHOENIX1-z-Dx, JLED-SL-120W-PHOENIX1-z-ND-P0-Dx-C1 ('z' denotes CCT, and can be '30' for 3000K, '40' for 4000K; 'x' denotes beam angle of LED lens, can be '01', '02', '03', ... '10', such as '01' for 60°, '02' for 70°, '03' for 80°, ... '10' for 150°, 10° for step)

Prepared for : Juganu LTD
Address : 1 Yahadut Canada 1A, terminal center, building A, 2nd Floor, Or Yehuda, Israel

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

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Date of Test : May 13, 2022 – June 16, 2022
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Version Number : V0

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TEST REPORT DECLARATION

Applicant : Juganu LTD
 Address : 1 Yahadut Canada 1A, terminal center, building A, 2nd Floor, Or Yehuda, Israel
 Manufacturer : Juganu LTD
 Address : 1 Yahadut Canada 1A, terminal center, building A, 2nd Floor, Or Yehuda, Israel
 EUT Description : Wireless us part

(A) Model No. : JLED-SL-120W-PHOENIX1-z-Dx, JLED-SL-120W-PHOENIX1-z-ND-P0-Dx-C1 ('z' denotes CCT, and can be '30' for 3000K, '40' for 4000K; 'x' denotes beam angle of LED lens, can be '01', '02', '03', ... '10', such as '01' for 60°, '02' for 70°, '03' for 80°, ... '10' for 150°, 10° for step)

(B) Trademark : 

Measurement Standard Used:

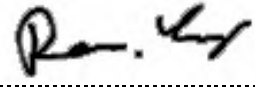
FCC Rules and Regulations Part 15 Subpart E

RSS-247 Issue 2, ANSI C63.4:2014, ANSI C63.10:2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart E limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:	Reak Yang Test Engineer	
Approved by (name + signature).....:	Simple Guan Project Manager	
Date of issue.....	June 17, 2022	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	June 17, 2022	Initial released Issue	Reak Yang

1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	Section 15.203 Section 7.1.4 RSS-Gen Issue 5	PASS
AC Power Line Conducted Emission	Section 15.207 Section 7.2.4 RSS-GEN(8.8), ANSI C63.10	PASS
Peak Transmit Power	Section 15.407(a), RSS-247 5.4(2)	PASS
Power Spectral Density	Section 15.407(a), RSS-247 5.2(2)	PASS
Undesirable Emission	Section 15.407(b), RSS-247 5.5	PASS
Radiated Emission	Section 15.407(b)&15.209 Section 5.5 RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10	PASS
Band Edge	15.205, RSS-247 Issue 2, ANSI C63.10	PASS
Frequency Stability	15.407(f), RSS-GEN(6.11)	PASS

Remark:1.Pass: The EUT complies with the essential requirements in the standard.

2.Frequency Stability: The manufacturer stated in the user's manual.

3. Decision rules for the conclusion of this test report: decision by actual test data without considering measurement uncertainty.

1.1 Measurement Uncertainty

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8} GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

2 General Information

2.1 General Description of EUT

EUT Name	: Wireless us part
Trademark	: 
Model No.	: JLED-SL-120W-PHOENIX1-z-Dx, JLED-SL-120W-PHOENIX1-z-ND-P0-Dx-C1 ('z' denotes CCT, and can be '30' for 3000K, '40' for 4000K; 'x' denotes beam angle of LED lens, can be '01', '02', '03',... '10', such as '01' for 60°, '02' for 70°, '03' for 80°,... '10' for 150°, 10° for step)
DIFF.	: Difference between both two series is 'ND' stand for dali function, only with different power supply, the main test model is JLED-SL-120W-PHOENIX1-40-D01, its power supply model is 'EUM-150S150MG', additional test model is JLED-SL-120W-PHOENIX1-40-ND-P0-D01-C1, its power supply model is 'EUM-150S150BG'.
Power supply	: AC 120V/60Hz

Radio Technology : 5G WIFI

Operation Frequency	: 802.11ac(VHT20): 5180~5240MHz, 5745~5825MHz 802.11ac(VHT40): 5190~5230MHz, 5755~5795MHz 802.11ac(VHT80): 5210MH, 5775MHz
Channel separation	: 20MHz for 802.11ac(VHT20) 40MHz for 802.11ac(VHT40) 80MHz for 802.11ac(VHT80)
Modulation technology:	: IEEE 802.11ac: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	: OMNI Antenna, max gain 2dBi Antenna information is provided by applicant.
Software version	: V1.0
Hardware version	: V1.0
Intend use environment	: Residential, commercial and light industrial environment

Remark 1: The product only use the IEEE 802.11 ac MIMO technology, and it's has two 5G wifi module inside, every module has 4 ports MIMO.

Remark 2: Since the output parameters of the two are the same, this report only adds EUM-150S150BG conducted disturbance and 30MHz-1GHz Radiated Disturbance Test for it.

2.2 Test mode

Transmitting mode Keep the EUT in transmitting with modulation.
EUT was test with 99% duty cycle at its maximum power control level.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 Test Facility

Shenzhen Alpha Product Testing Co., Ltd
Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission
Registration Number: 293961

July 25, 2017 Certificated by IC
Registration Number: CN0085

2.4 Description of Support Units

Accessories : /
Manufacturer : /
Model : /
Ratings : /

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

2.8 Additional instructions

Software (Used for test) from client

Channel	Power level
Lowest	Default
Middle	Default
Highest	Default

3 Test Instruments list

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	N/A	2020.09.02	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2021.08.25	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2021.08.25	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-102082-Wa	2021.08.25	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2021.08.25	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	N/A	VULB 9168#627	2021.08.30	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	N/A	2106	2021.08.30	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	N/A	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	N/A	RE1	2021.08.25	1Year
RF Cable	Resenberger	Cable 2	N/A	RE2	2021.08.25	1Year
RF Cable	Resenberger	Cable 3	N/A	CE1	2021.08.25	1Year
Pre-amplifier	HP	HP8347A	N/A	2834A00455	2021.08.25	1Year
Pre-amplifier	Agilent	8449B	N/A	3008A02664	2021.08.25	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	N/A	8126-466	2021.08.25	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	N/A	101043	2021.08.25	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	N/A	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840-50	N/A	SK2018101801	2021.08.25	1 Year
Power Meter	Agilent	E9300A	N/A	MY41496628	2021.08.25	1 Year
Power Sensor	DARE	RPR3006W	N/A	15100041SNO91	2021.08.25	1 Year
Temp. & Humid. Chamber	Wei Huang	WHTH-1000-40-880	N/A	100631	2022.04.22	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	N/A	20140927-6	2021.08.25	1 Year
Adjustable attenuator	MWRFtest	N/A	N/A	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	N/A	N/A	N/A	N/A

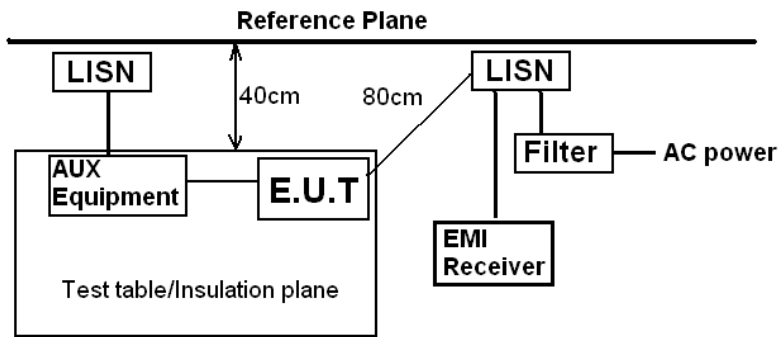
Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	farad	Alpha-3A1
CE	EZ-EMC	farad	Alpha-3A1
RF-CE	MTS 8310	MWRFtest	2.0.0.0

4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	

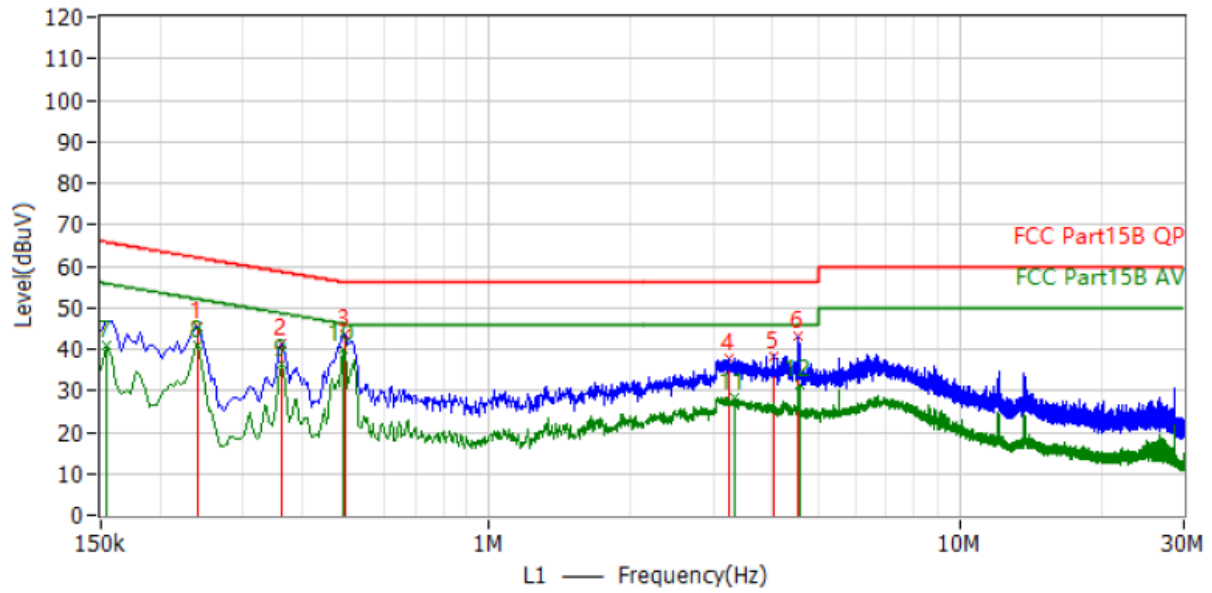
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test setup:	 Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 5.10 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement Data

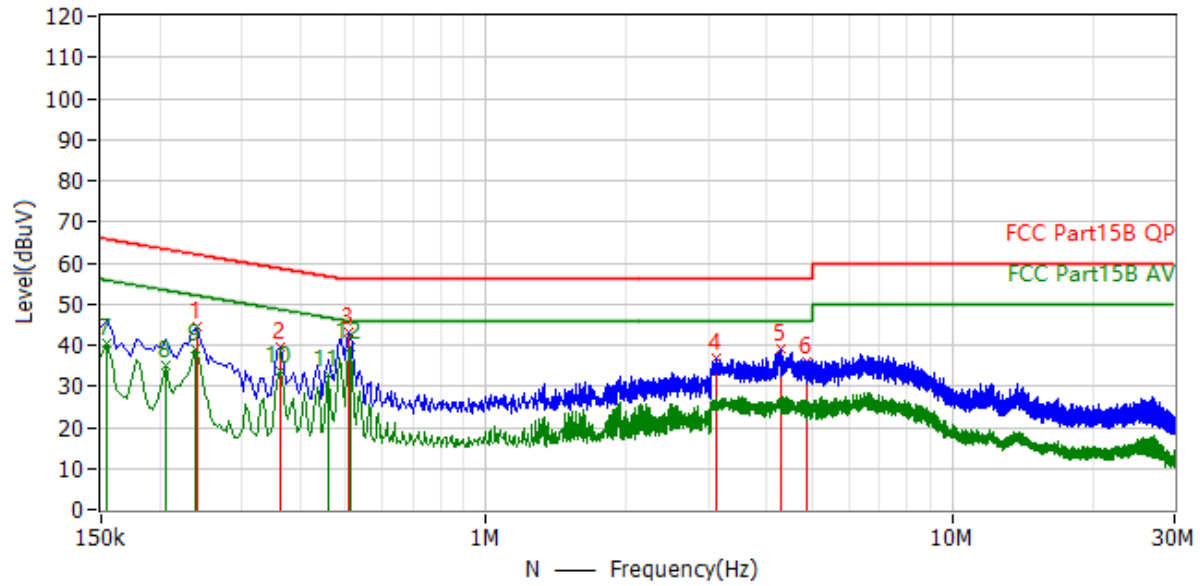
An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Polar
1*	242.000 kHz	62.0	45.5	-16.5	9.7	PK	L1
2*	362.000 kHz	58.7	41.4	-17.3	9.7	PK	L1
3*	494.000 kHz	56.1	43.6	-12.5	9.8	PK	L1
4*	3.230 MHz	56.0	37.6	-18.4	9.9	PK	L1
5*	4.038 MHz	56.0	38.4	-17.6	9.9	PK	L1
6*	4.562 MHz	56.0	43.0	-13.0	9.9	PK	L1
7*	154.000 kHz	55.8	41.1	-14.7	9.7	AV	L1
8*	242.000 kHz	52.0	40.7	-11.3	9.7	AV	L1
9*	362.000 kHz	48.7	36.6	-12.1	9.7	AV	L1
10*	490.000 kHz	46.2	40.1	-6.0	9.8	AV	L1
11*	3.346 MHz	46.0	28.5	-17.5	9.9	AV	L1
12*	4.570 MHz	46.0	31.5	-14.5	9.9	AV	L1

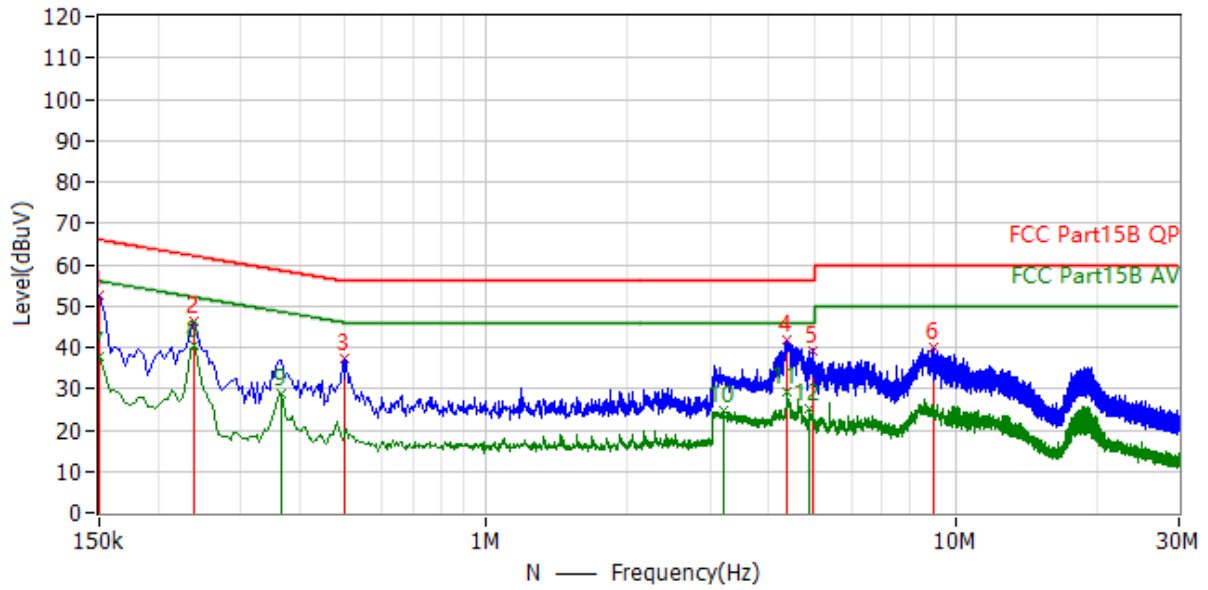
Neutral:



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Polar
1*	242.000 kHz	62.0	44.5	-17.5	9.7	PK	N
2*	362.000 kHz	58.7	39.6	-19.1	9.7	PK	N
3*	510.000 kHz	56.0	43.1	-12.9	9.7	PK	N
4*	3.122 MHz	56.0	36.9	-19.1	9.9	PK	N
5*	4.290 MHz	56.0	39.1	-16.9	9.9	PK	N
6*	4.890 MHz	56.0	36.0	-20.0	9.9	PK	N
7*	154.000 kHz	55.8	40.4	-15.4	9.7	AV	N
8*	206.000 kHz	53.4	35.2	-18.1	9.7	AV	N
9*	238.000 kHz	52.2	39.2	-13.0	9.7	AV	N
10*	362.000 kHz	48.7	33.7	-15.0	9.7	AV	N
11*	462.000 kHz	46.7	32.9	-13.8	9.7	AV	N
12*	514.000 kHz	46.0	39.5	-6.5	9.7	AV	N

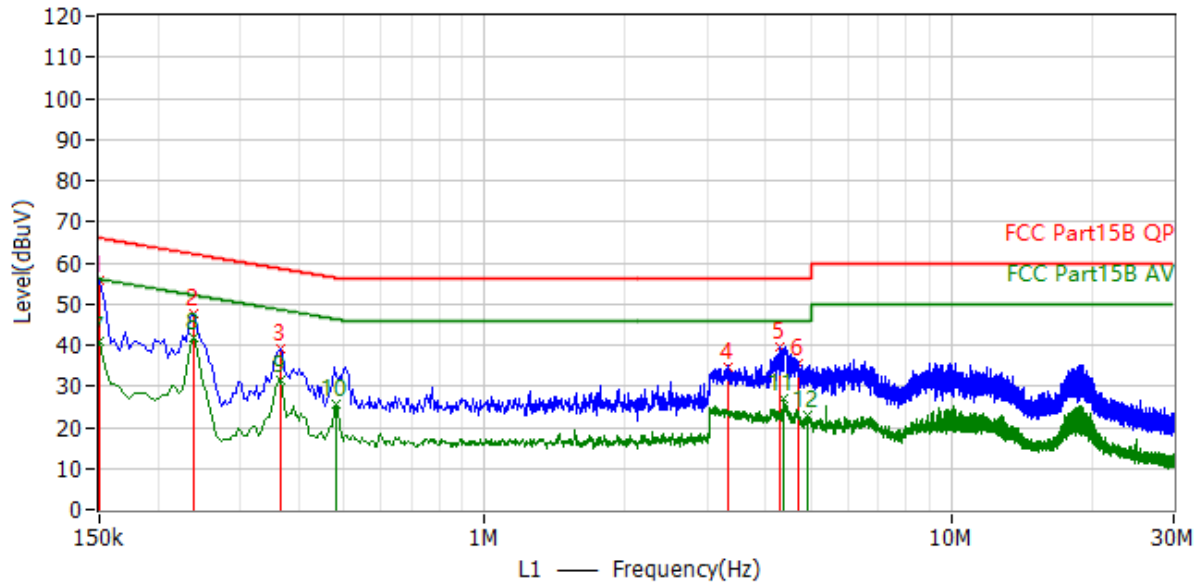
Test Data for EUM-150S150BG

Neutral:



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Polar
1*	150.000 kHz	66.0	52.4	-13.6	9.7	PK	N
2*	238.000 kHz	62.2	46.4	-15.7	9.7	PK	N
3*	498.000 kHz	56.0	37.1	-18.9	9.7	PK	N
4*	4.378 MHz	56.0	41.7	-14.3	9.9	PK	N
5*	4.978 MHz	56.0	39.3	-16.7	9.9	PK	N
6*	8.982 MHz	60.0	40.1	-19.9	9.9	PK	N
7*	150.000 kHz	56.0	37.9	-18.1	9.7	AV	N
8*	238.000 kHz	52.2	40.4	-11.8	9.7	AV	N
9*	366.000 kHz	48.6	28.8	-19.7	9.7	AV	N
10*	3.202 MHz	46.0	24.5	-21.5	9.9	AV	N
11*	4.378 MHz	46.0	29.3	-16.7	9.9	AV	N
12*	4.894 MHz	46.0	25.1	-20.9	9.9	AV	N

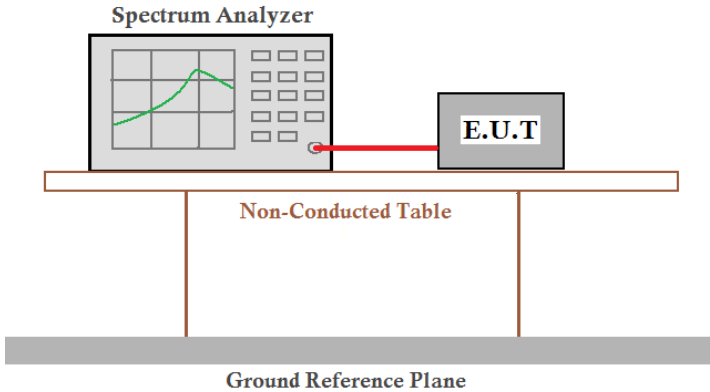
Line:



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Polar
1*	150.000 kHz	66.0	55.9	-10.1	9.7	PK	L1
2*	238.000 kHz	62.2	47.6	-14.6	9.7	PK	L1
3*	366.000 kHz	58.6	39.0	-19.6	9.7	PK	L1
4*	3.318 MHz	56.0	34.8	-21.2	9.9	PK	L1
5*	4.298 MHz	56.0	39.6	-16.4	9.9	PK	L1
6*	4.722 MHz	56.0	35.6	-20.4	10.0	PK	L1
7*	150.000 kHz	56.0	41.0	-15.0	9.7	AV	L1
8*	238.000 kHz	52.2	41.6	-10.5	9.7	AV	L1
9*	366.000 kHz	48.6	31.5	-17.1	9.7	AV	L1
10*	482.000 kHz	46.3	25.6	-20.7	9.8	AV	L1
11*	4.394 MHz	46.0	26.9	-19.1	9.9	AV	L1
12*	4.910 MHz	46.0	22.8	-23.2	10.0	AV	L1

Note: All modes and channels have been tested and only the A 5745MHz mode with the worst data is listed.

4.3 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green trace, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a Non-Conducted Table, which is supported by two vertical legs. Below the table, a Ground Reference Plane is indicated by a thick gray bar.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data:**Module 1****Band 1 (5180-5240 MHz):**

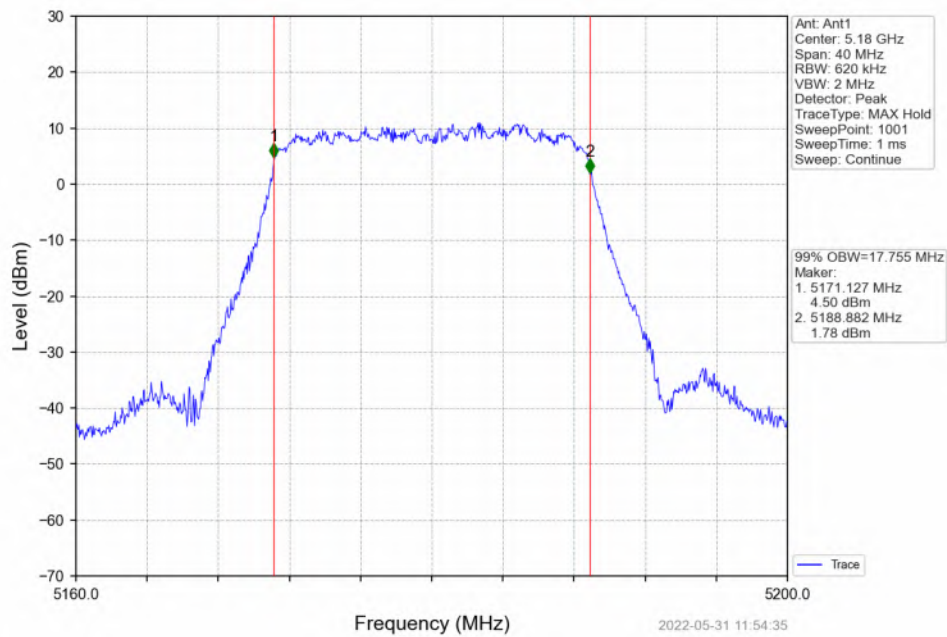
Mode	Frequency (MHz)	Antenna	99% Occupied Bandwidth (MHz)	-26 dB Bandwidth (MHz)	Verdict
ac20	5180	Ant1	17.755	20.804	Pass
ac20	5200	Ant1	17.780	20.965	Pass
ac20	5240	Ant1	17.776	21.003	Pass
ac40	5190	Ant1	36.107	40.340	Pass
ac40	5230	Ant1	36.230	40.396	Pass
ac80	5210	Ant1	76.172	84.495	Pass

Band 4 (5745-5825 MHz):

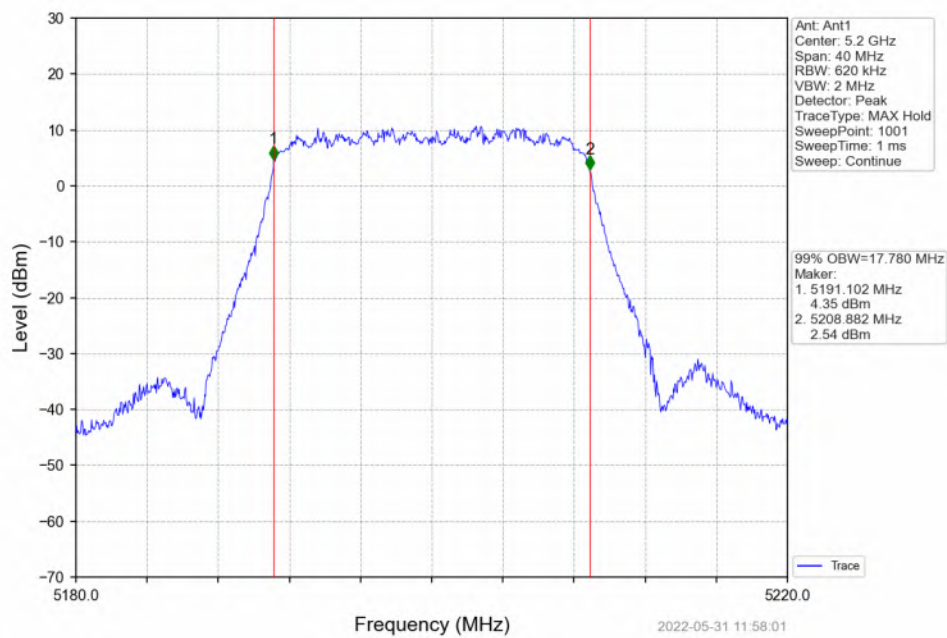
Mode	Frequency (MHz)	Antenna	99% Occupied Bandwidth (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
ac20	5745	Ant1	17.802	17.561	0.5	Pass
ac20	5785	Ant1	17.788	17.447	0.5	Pass
ac20	5825	Ant1	17.786	17.456	0.5	Pass
ac40	5755	Ant1	36.189	36.376	0.5	Pass
ac40	5795	Ant1	36.223	35.175	0.5	Pass
ac80	5775	Ant1	75.949	76.173	0.5	Pass

99% Occupied Bandwidth

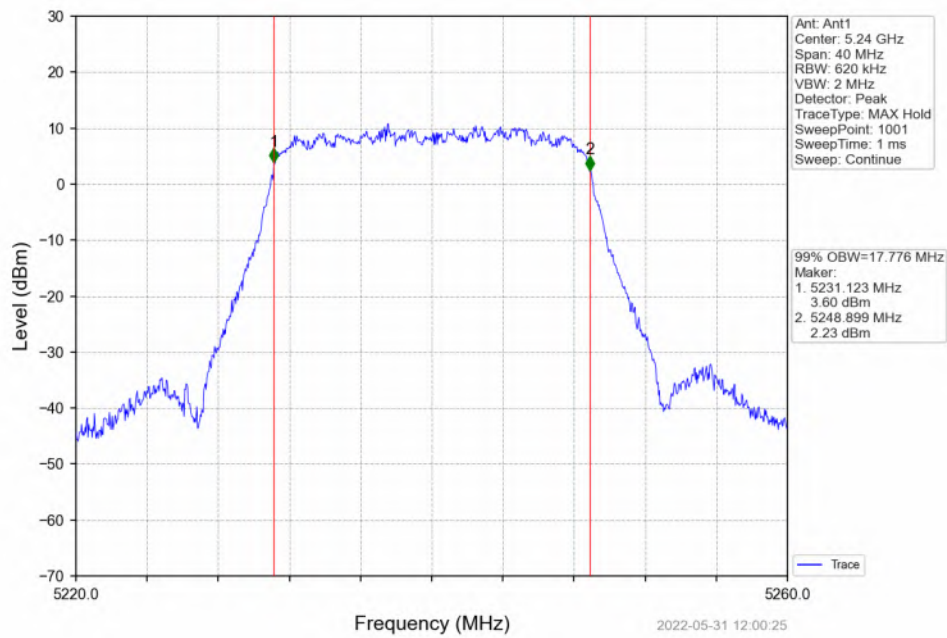
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



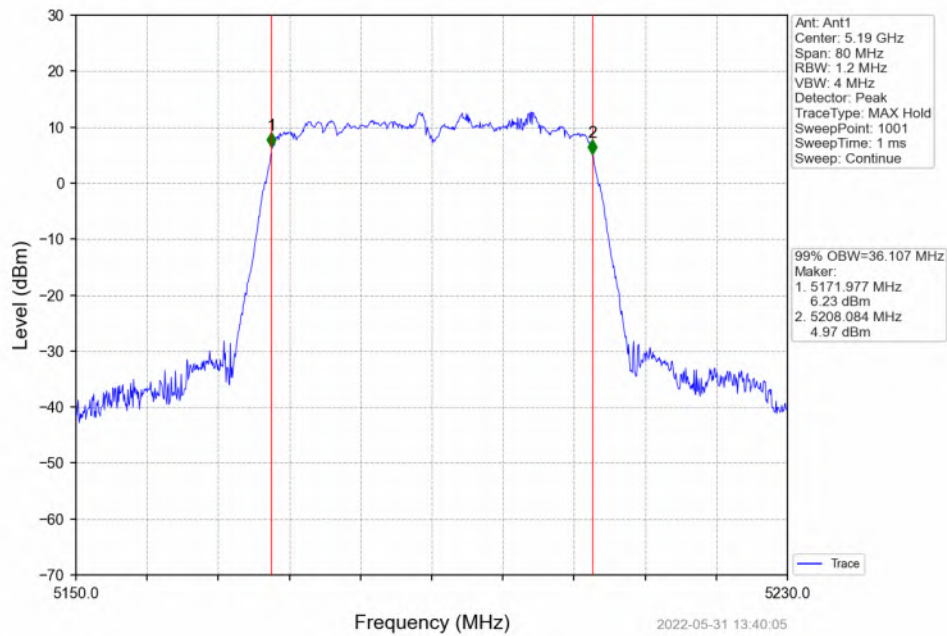
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



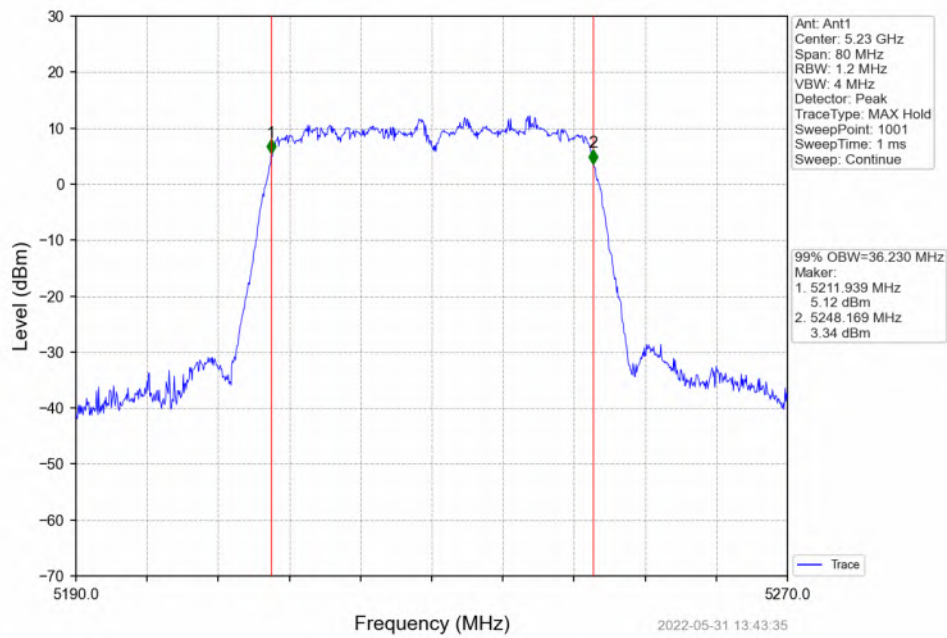
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



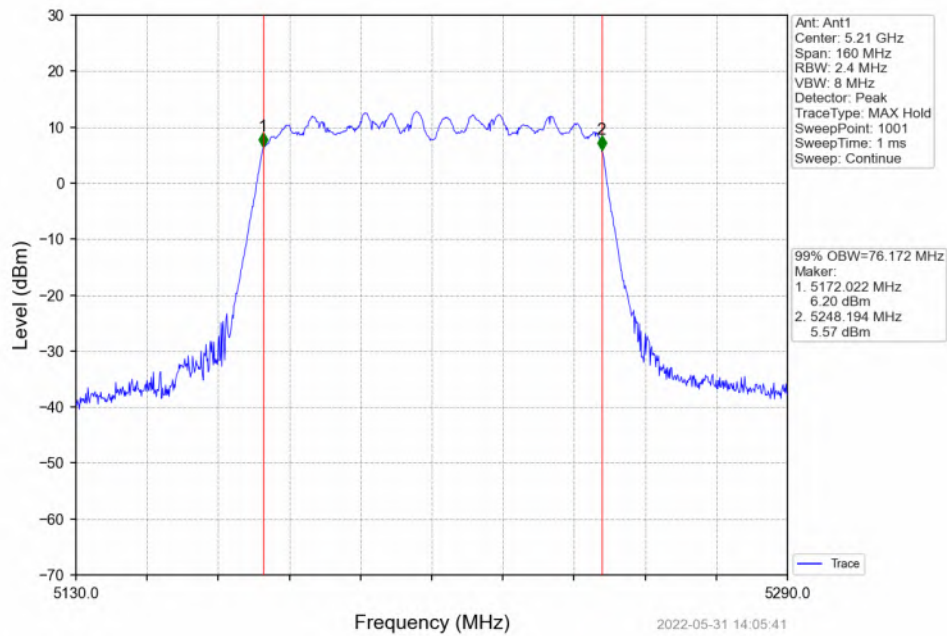
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV

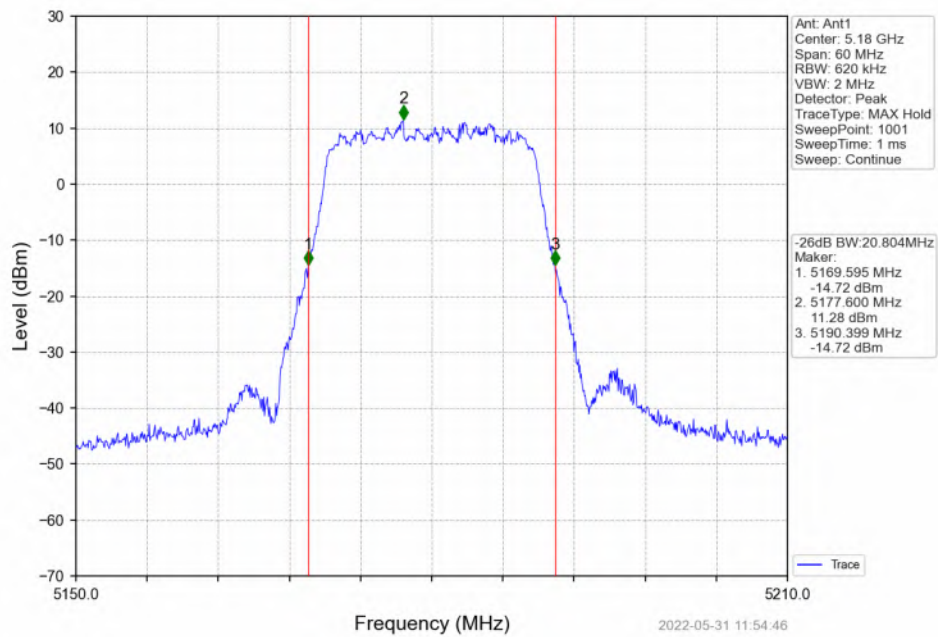


802.11ac(VHT80)_MCH_5210MHz_Ant1_NTNV

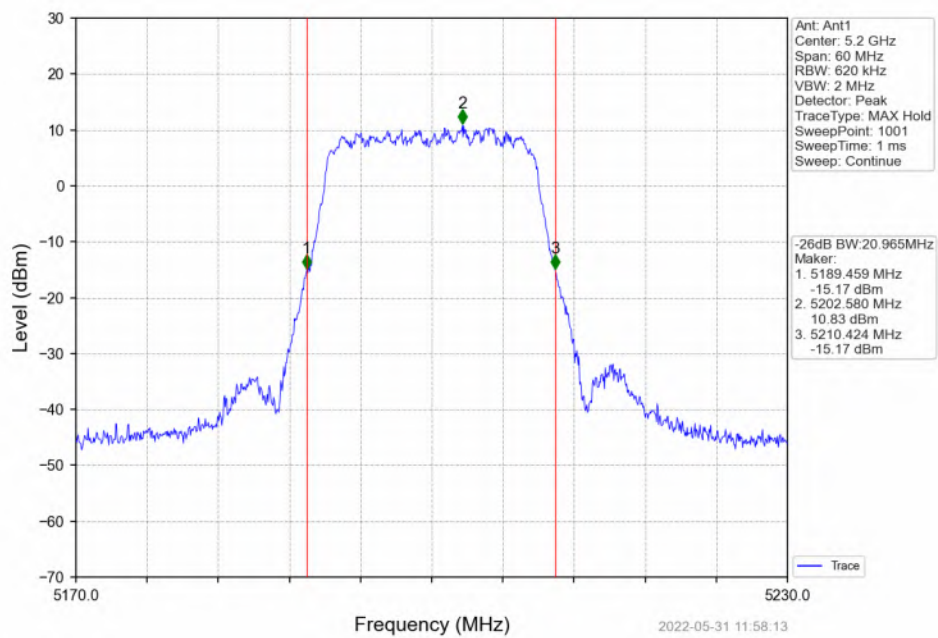


26dB Bandwidth (MHz)

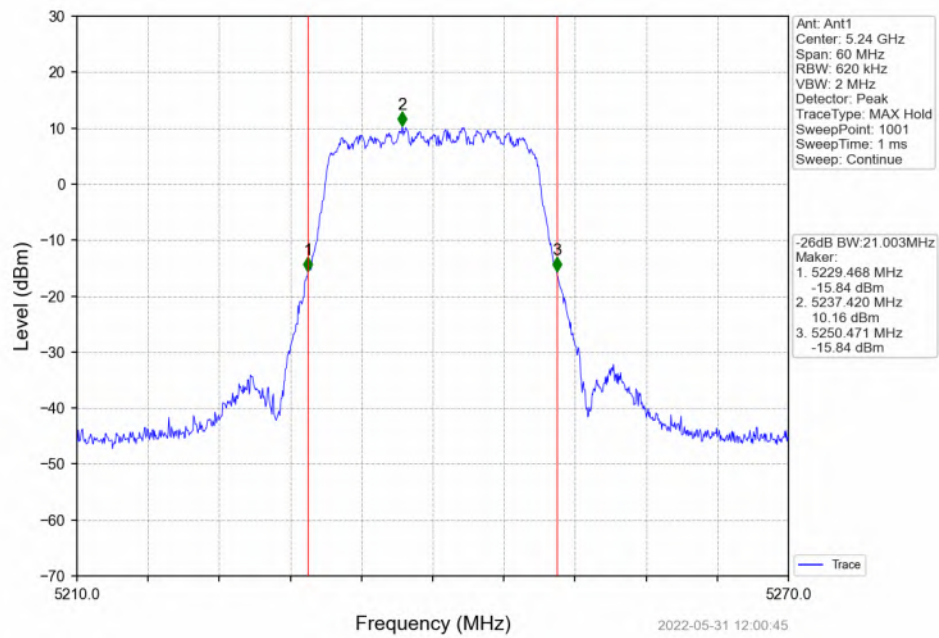
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



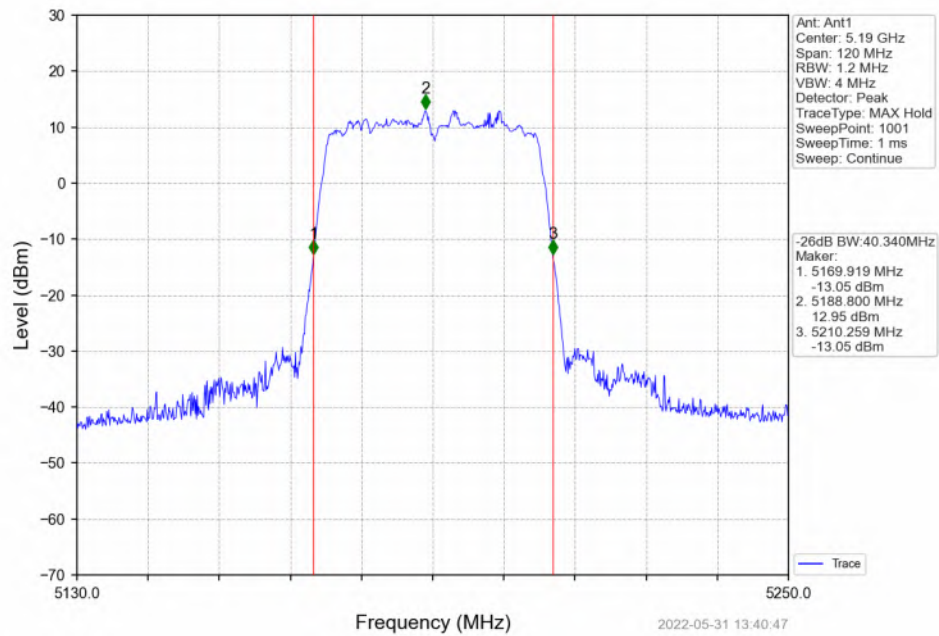
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



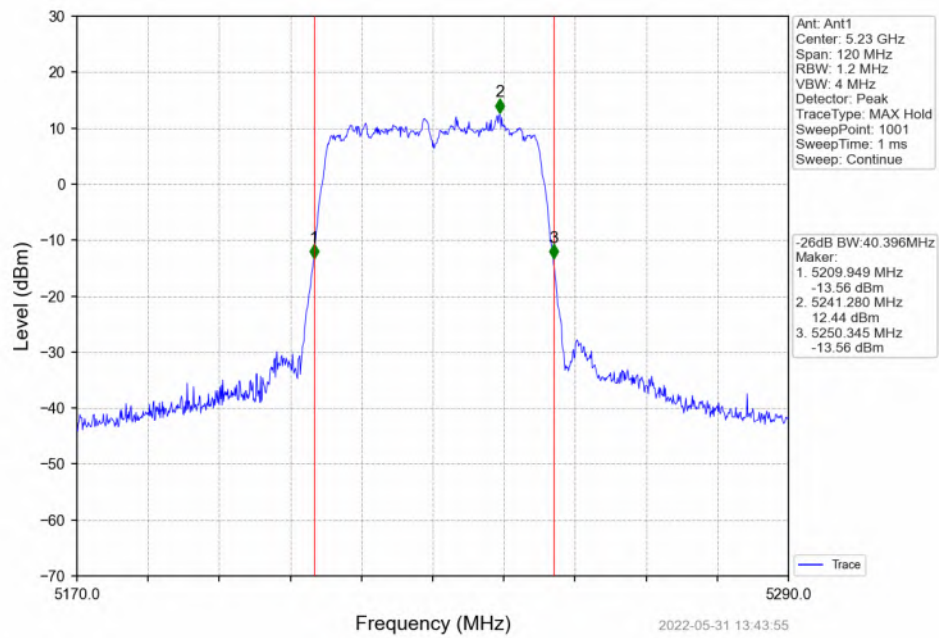
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



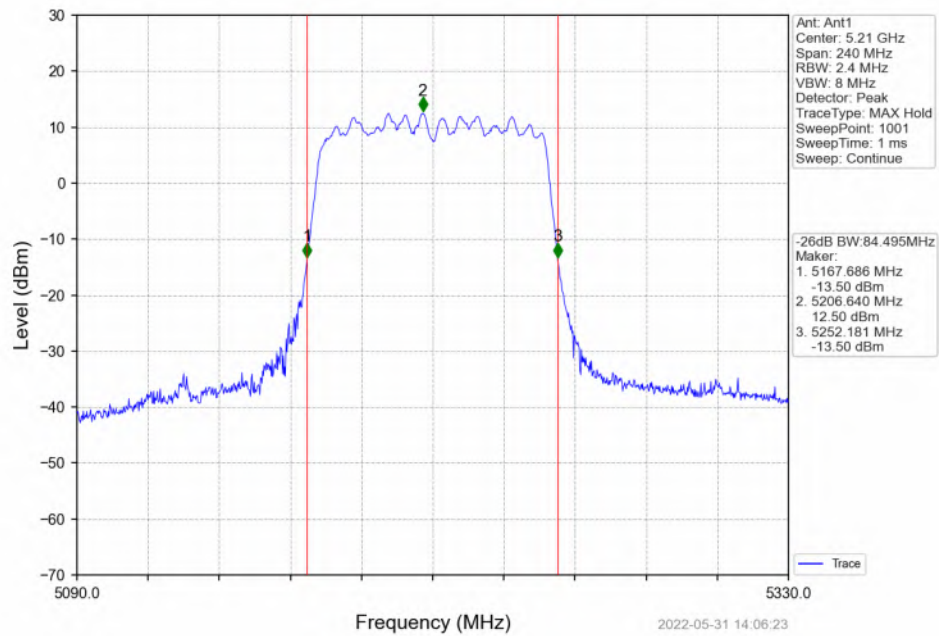
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV

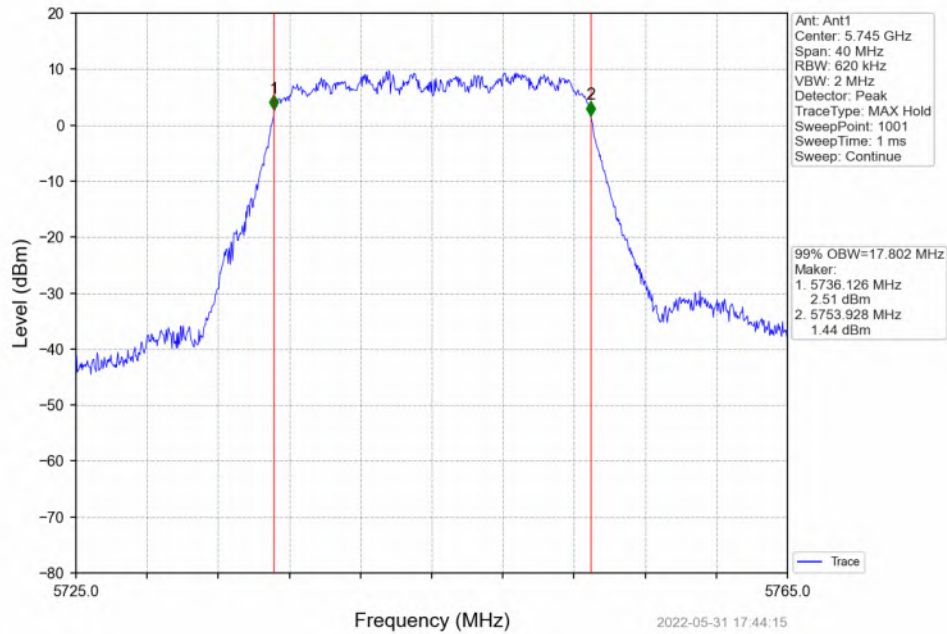


802.11ac(VHT80)_MCH_5210MHz_Ant1_NTNV

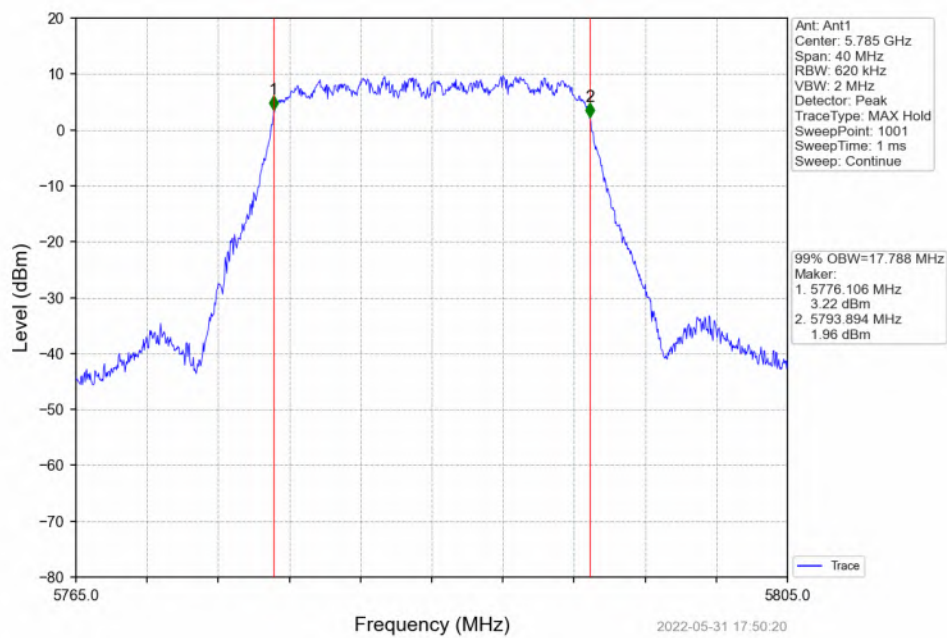


99% Occupied Bandwidth

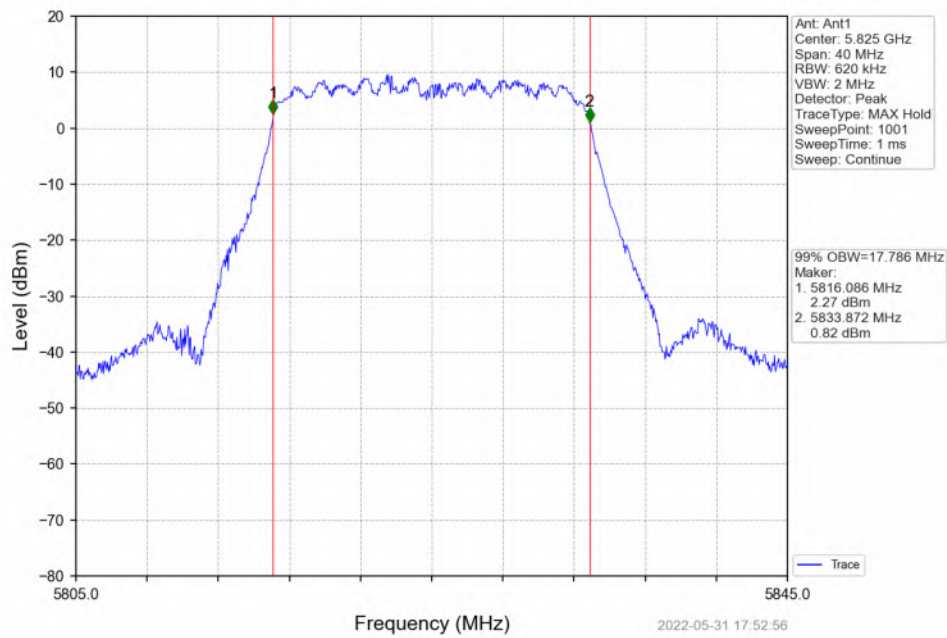
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



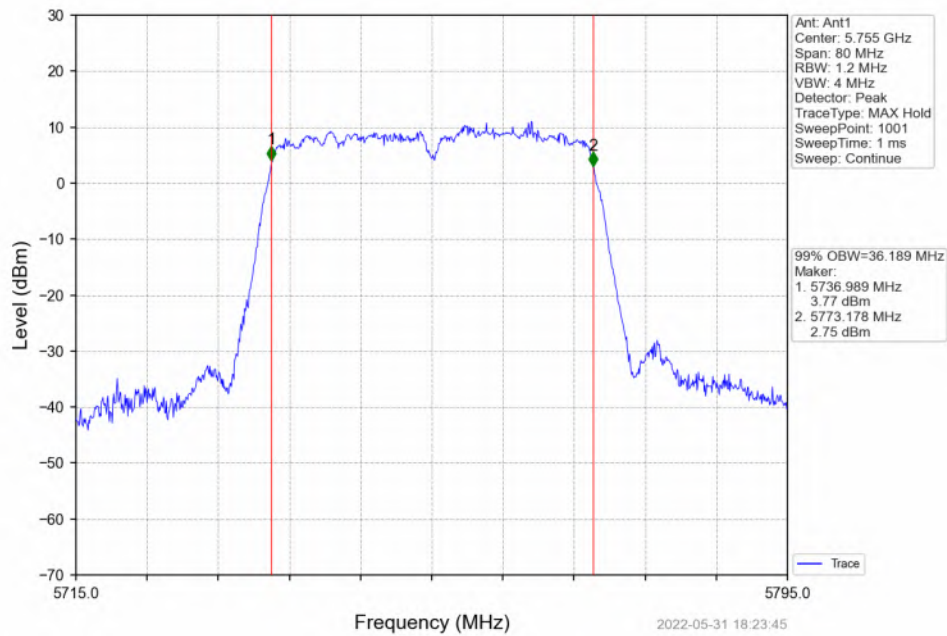
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



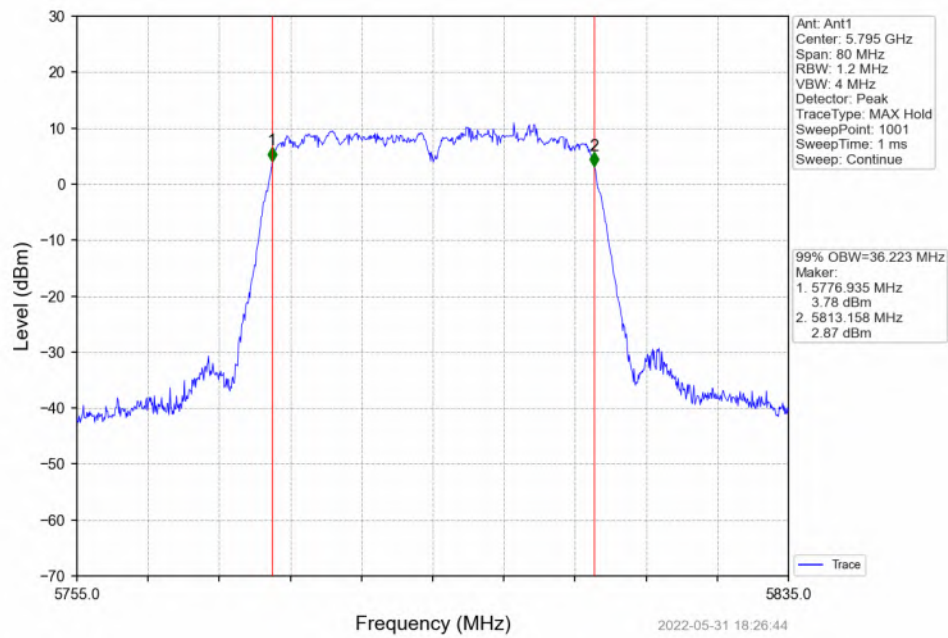
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



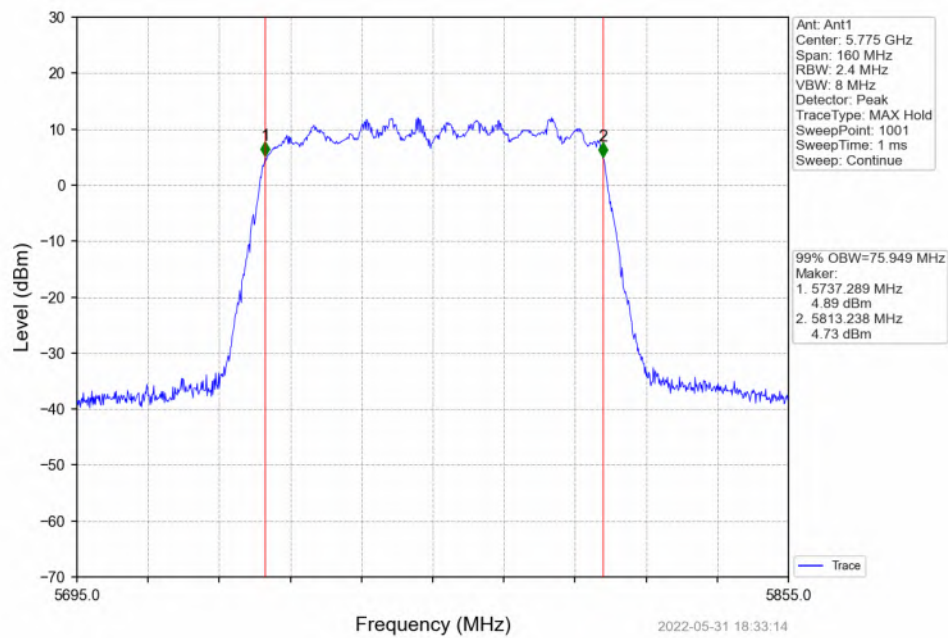
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV

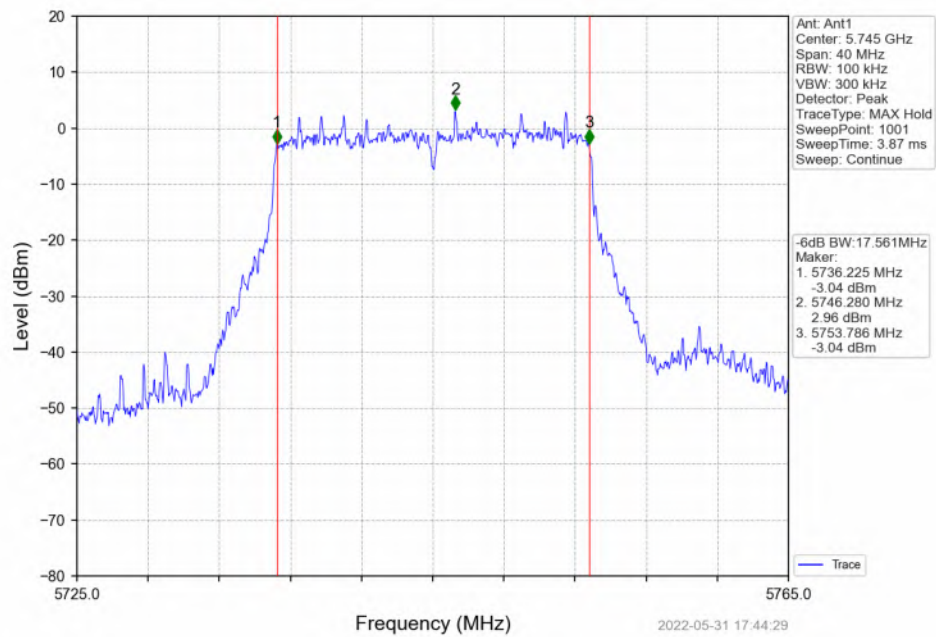


802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV

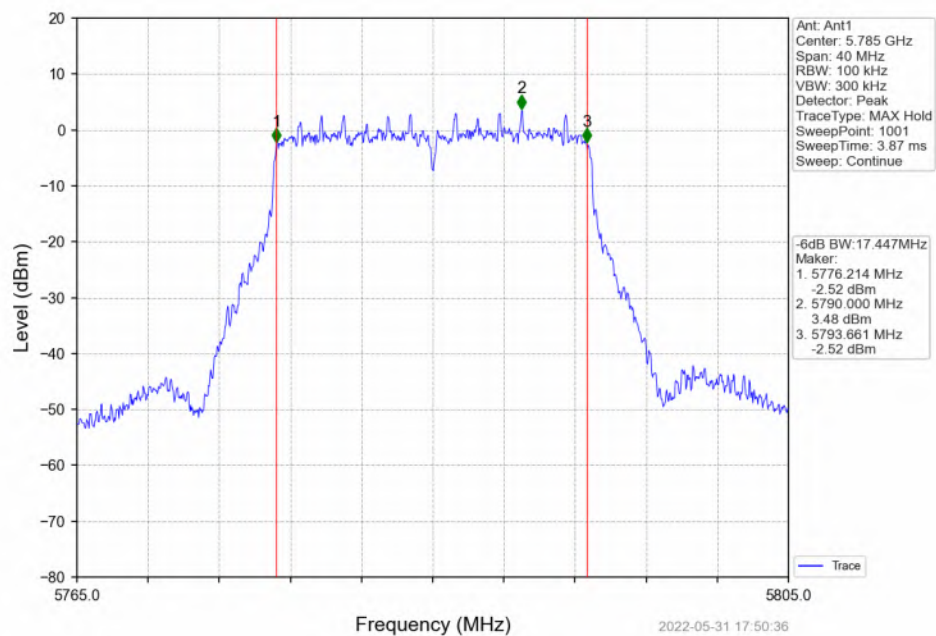


6dB Bandwidth

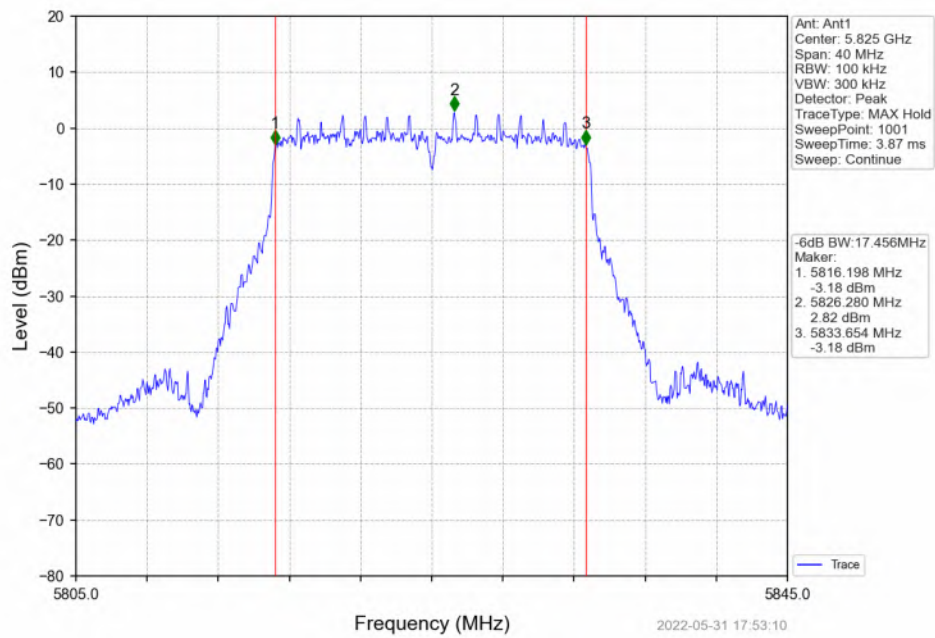
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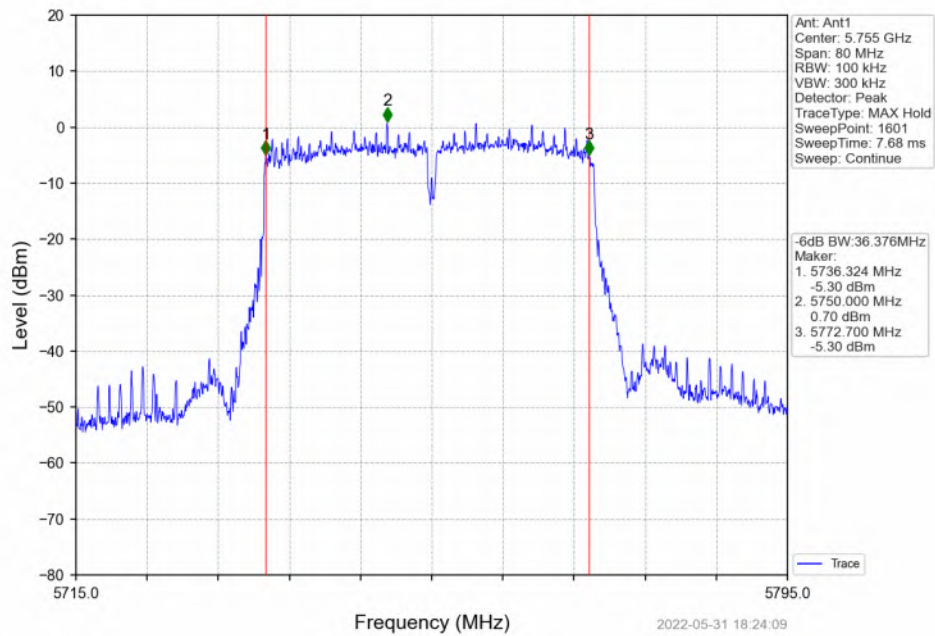
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



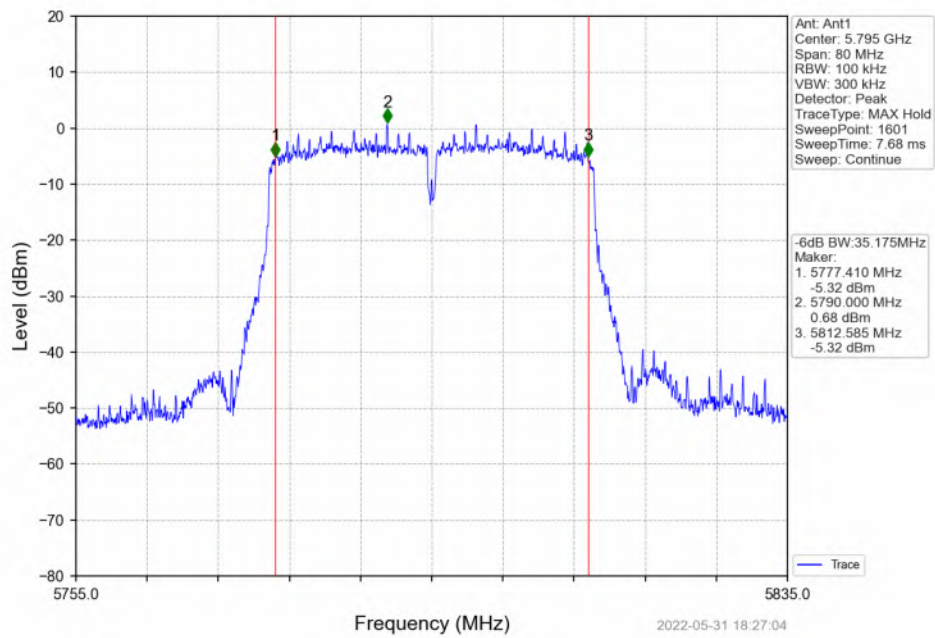
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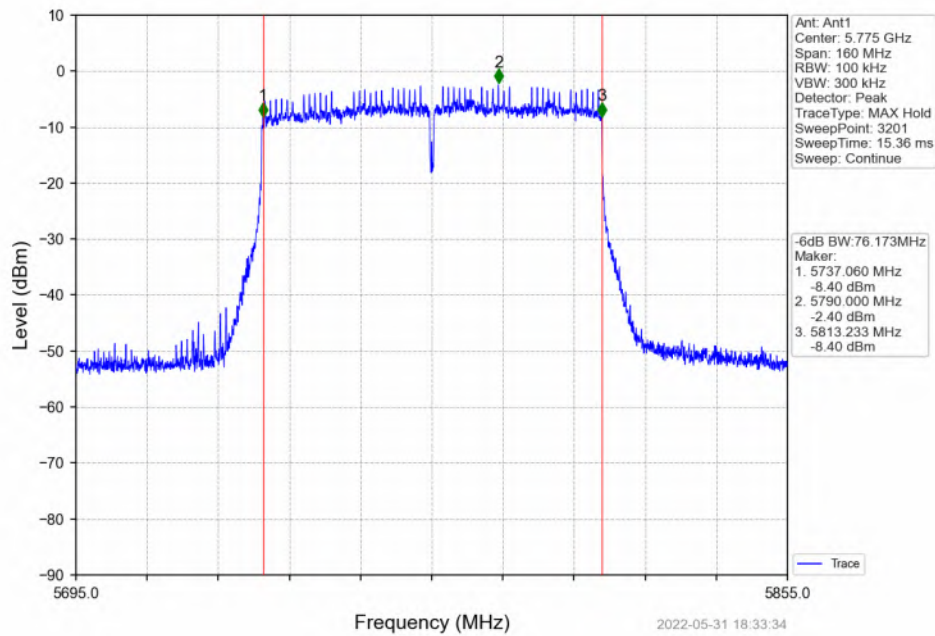
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



Module 2**Band 1 (5180-5240 MHz):**

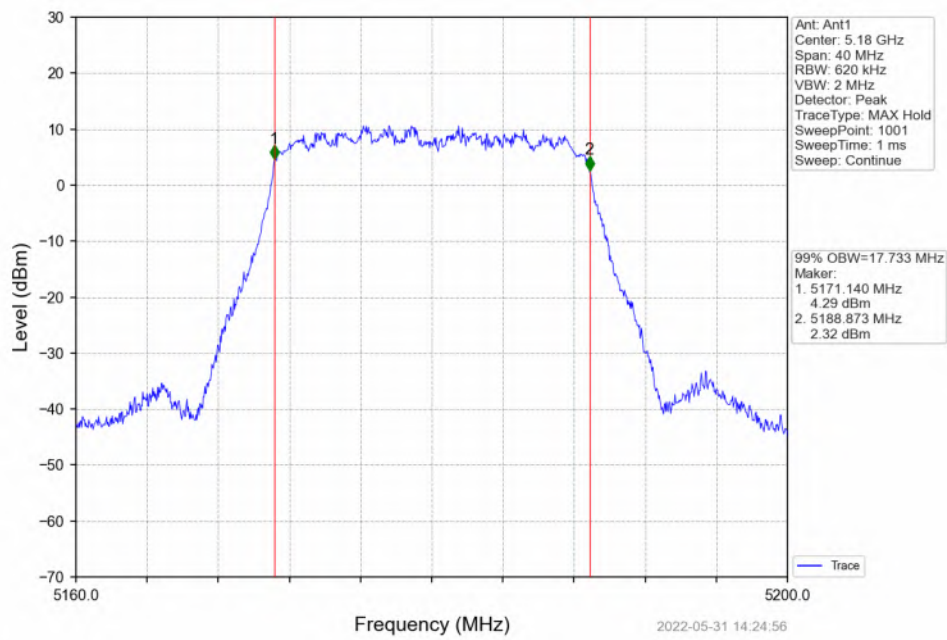
Mode	Frequency (MHz)	Antenna	99% Occupied Bandwidth (MHz)	-26 dB Bandwidth (MHz)	Verdict
ac20	5180	Ant1	17.733	20.719	Pass
ac20	5200	Ant1	17.769	20.601	Pass
ac20	5240	Ant1	17.764	20.715	Pass
ac40	5190	Ant1	36.879	40.022	Pass
ac40	5230	Ant1	36.101	40.334	Pass
ac80	5210	Ant1	76.436	84.405	Pass

Band 4 (5745-5825 MHz):

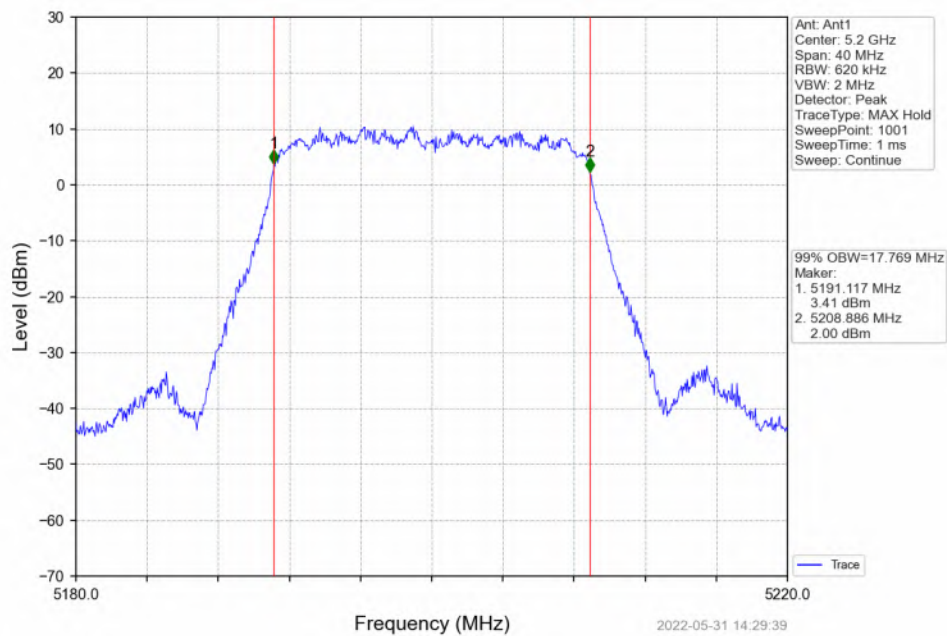
Mode	Frequency (MHz)	Antenna	99% Occupied Bandwidth (MHz)	-6 dB Bandwidth (MHz)	-6 dB Bandwidth Limit (MHz)	Verdict
ac20	5745	Ant1	17.708	16.719	0.5	Pass
ac20	5785	Ant1	17.748	17.422	0.5	Pass
ac20	5825	Ant1	17.772	17.414	0.5	Pass
ac40	5755	Ant1	36.216	35.392	0.5	Pass
ac40	5795	Ant1	36.184	35.125	0.5	Pass
ac80	5775	Ant1	76.093	75.211	0.5	Pass

99% Occupied Bandwidth (MHz)

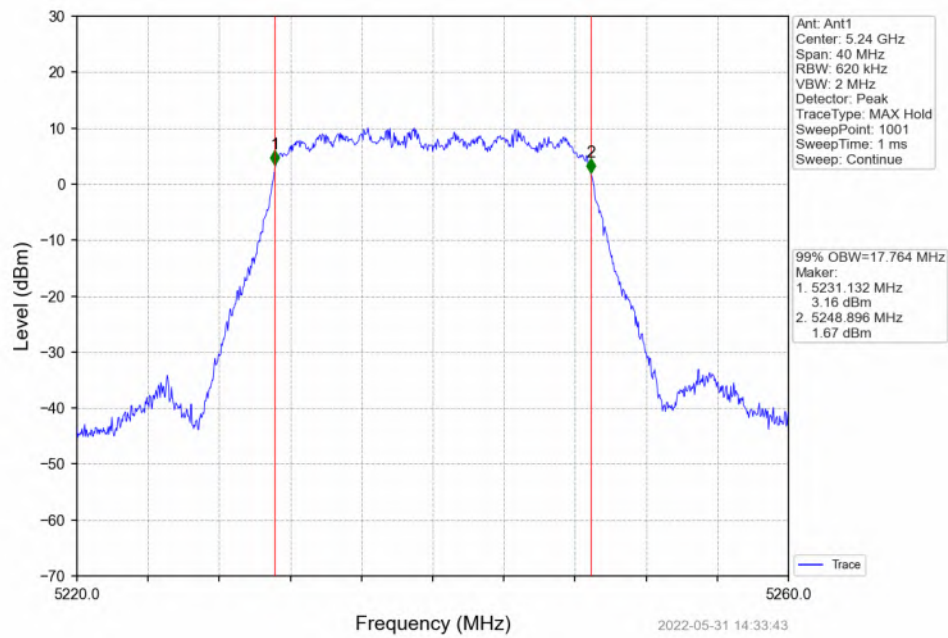
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



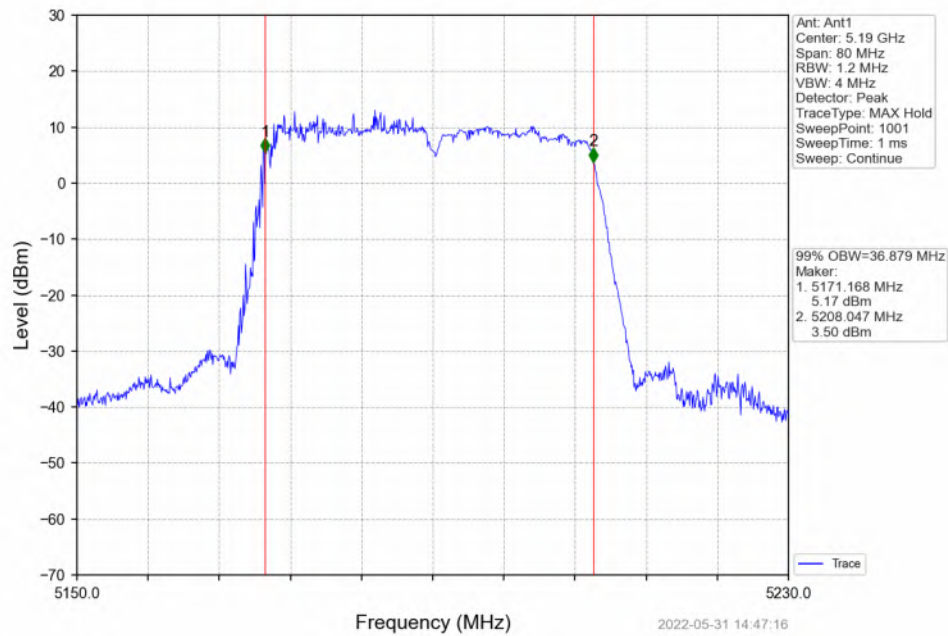
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



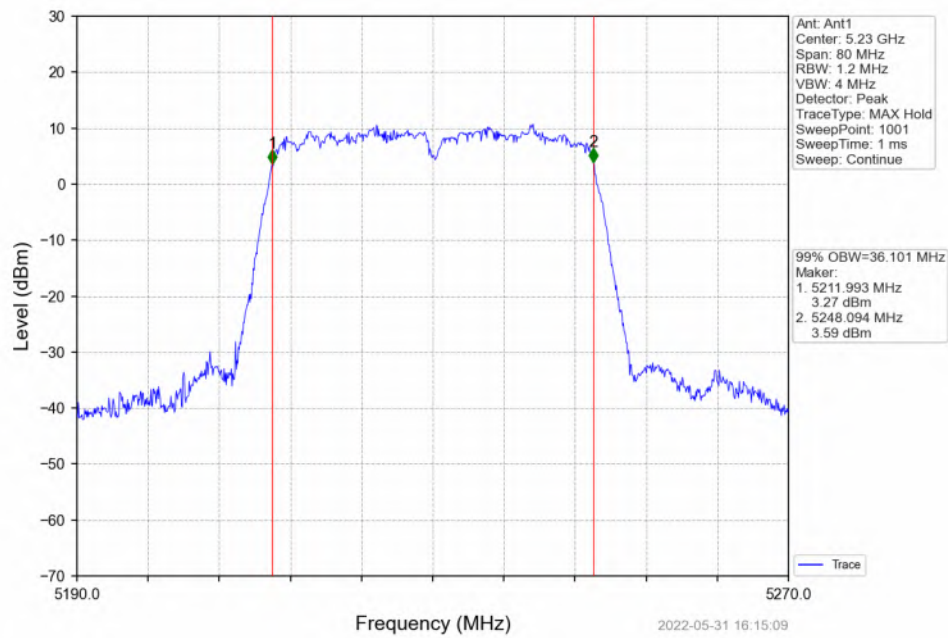
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



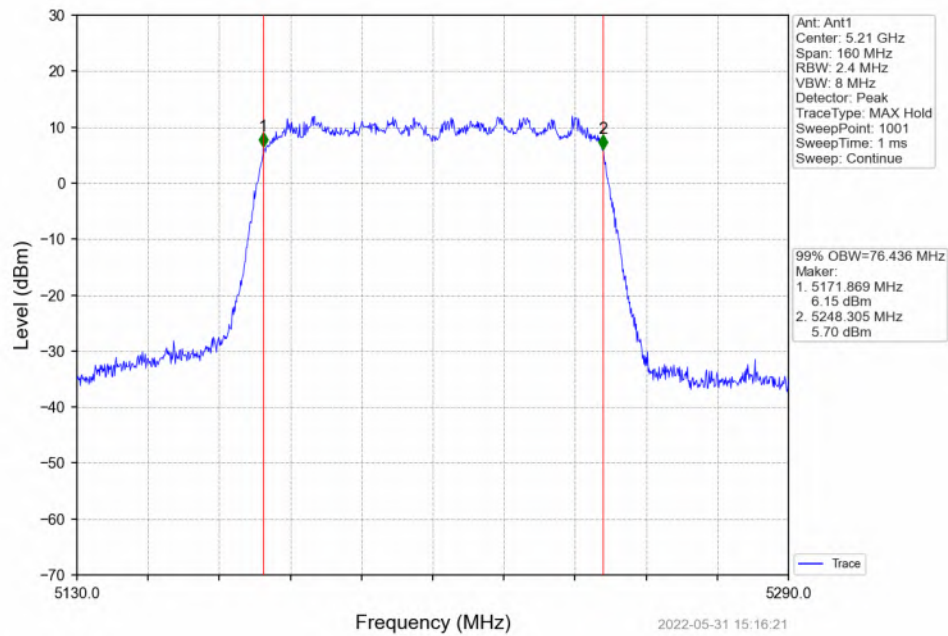
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV

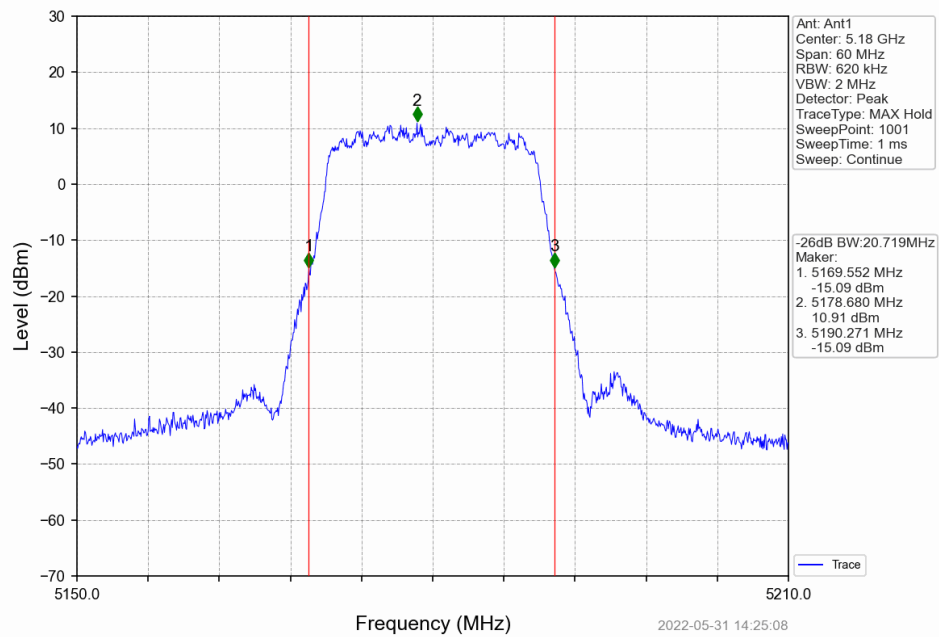


802.11ac(VHT80)_MCH_5210MHz_Ant1_NTNV

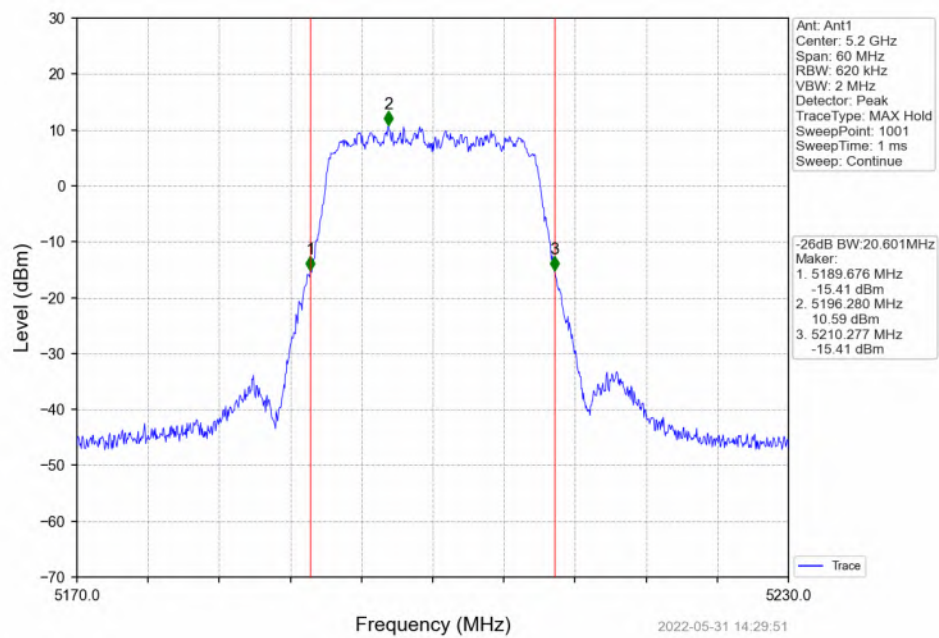


26dB Bandwidth

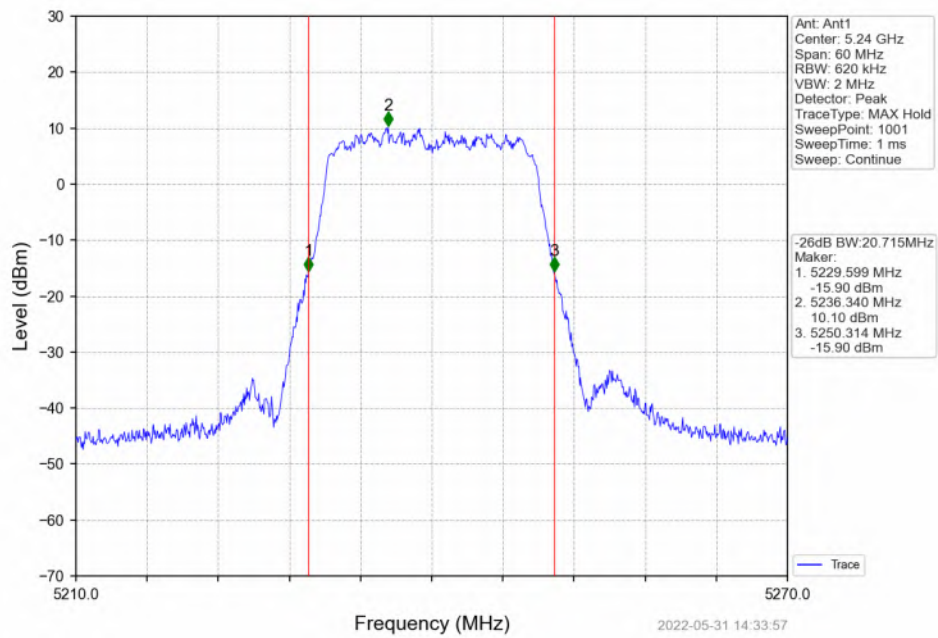
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



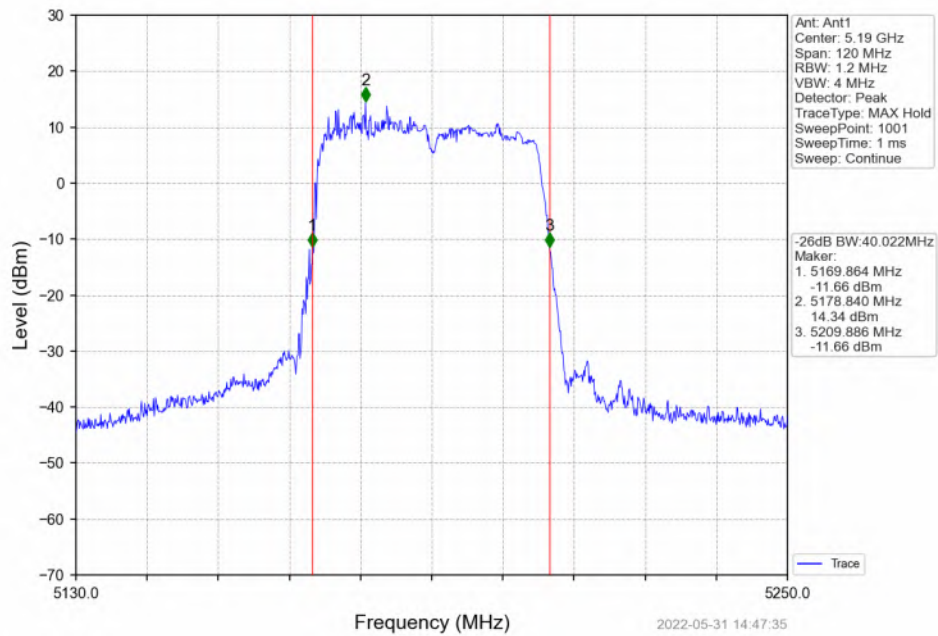
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



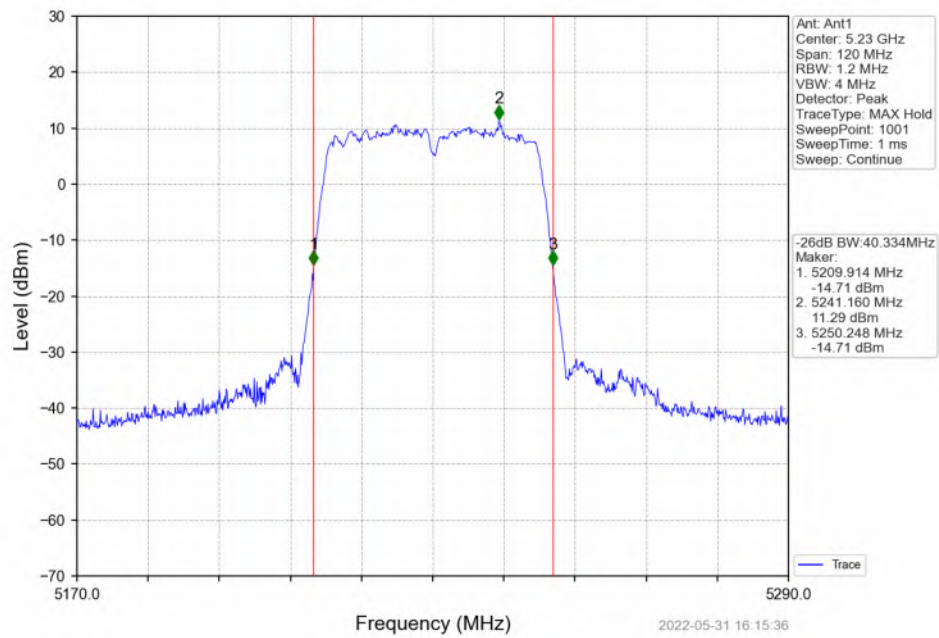
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



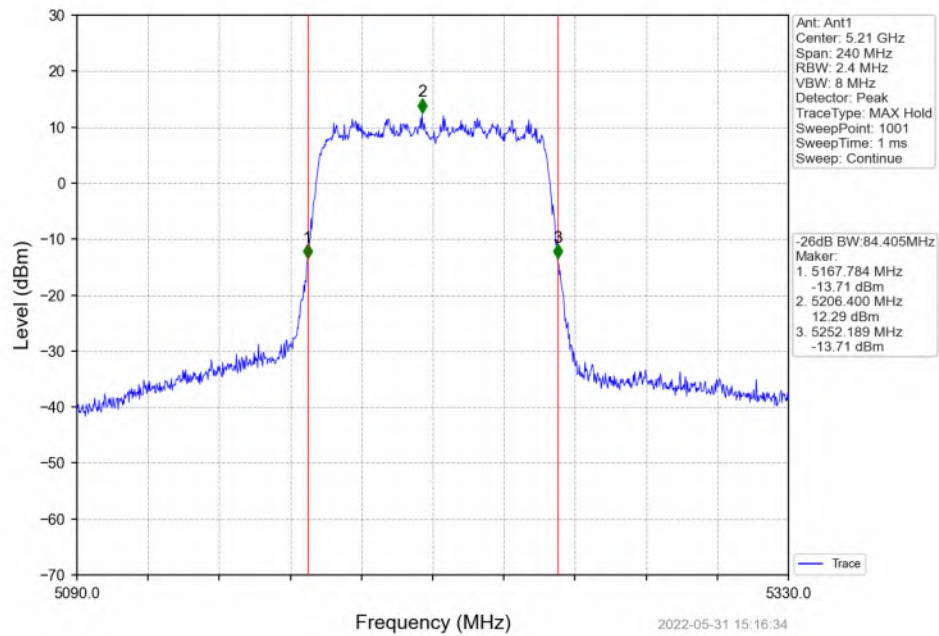
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV

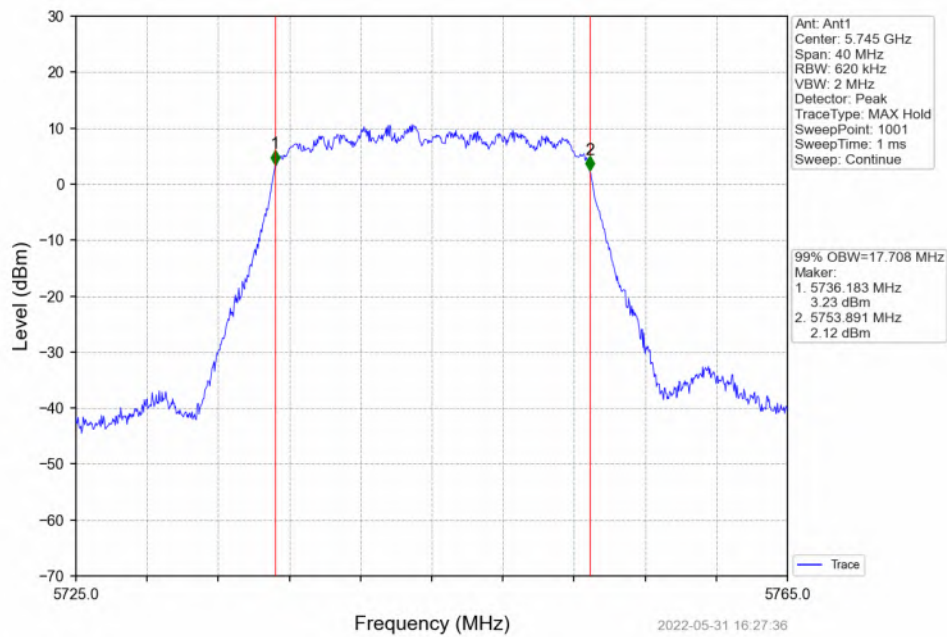


802.11ac(VHT80)_MCH_5210MHz_Ant1_NTNV

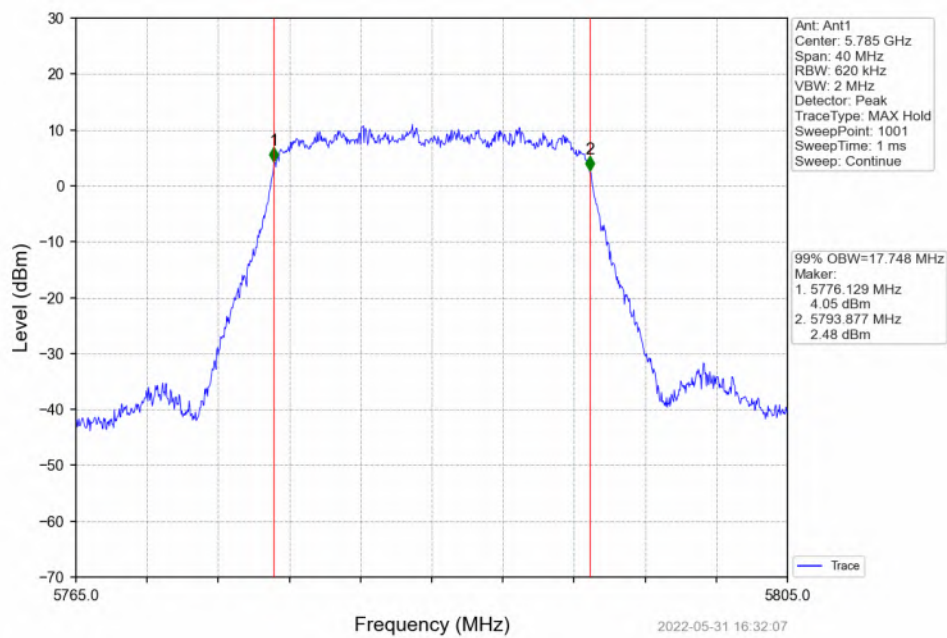


99% Occupied Bandwidth

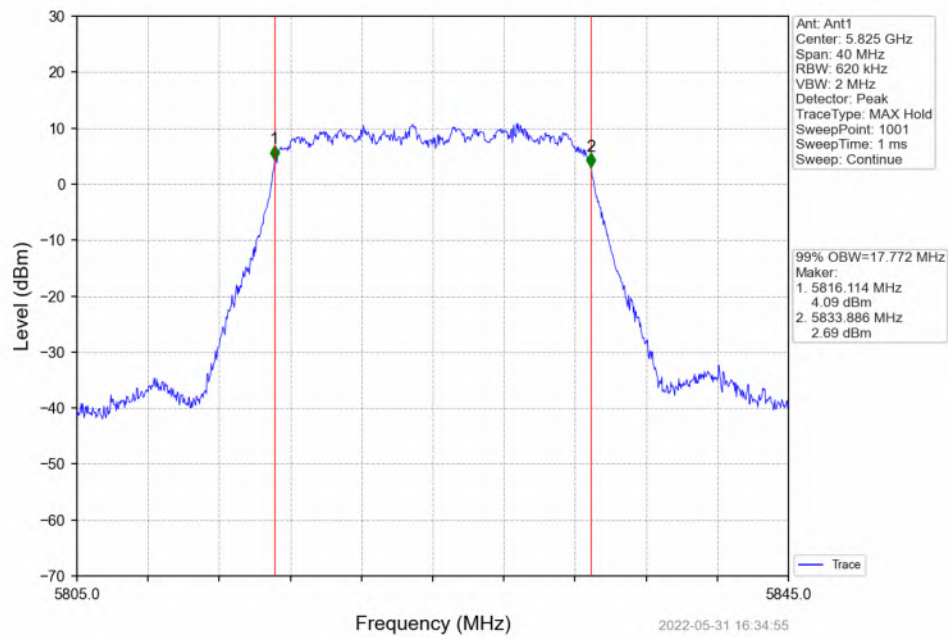
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



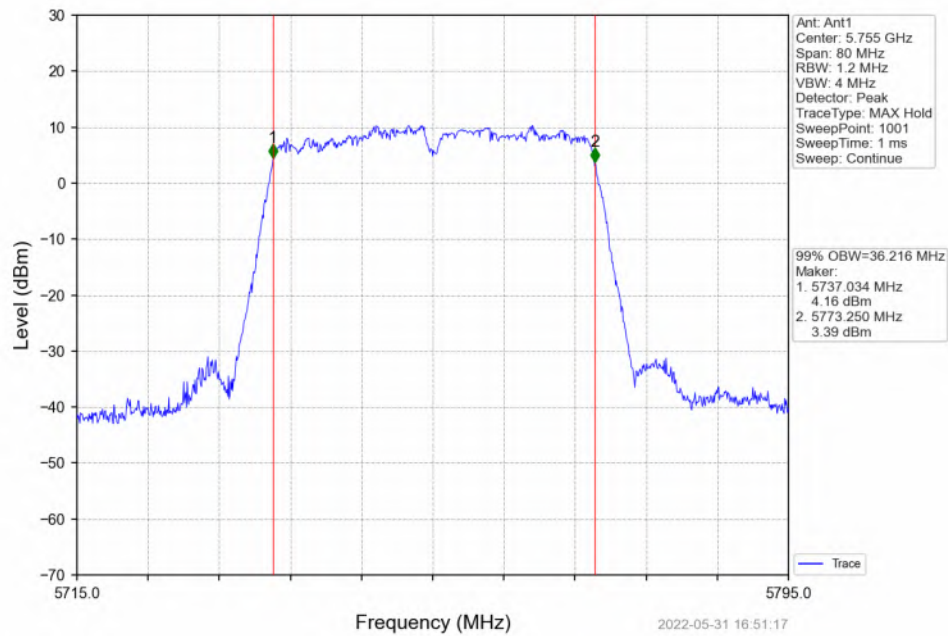
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



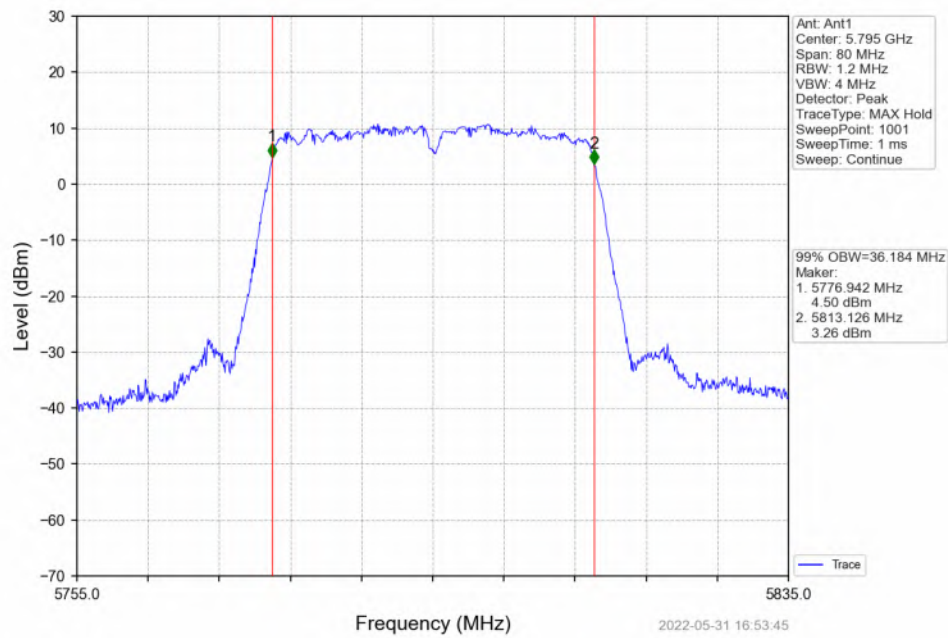
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



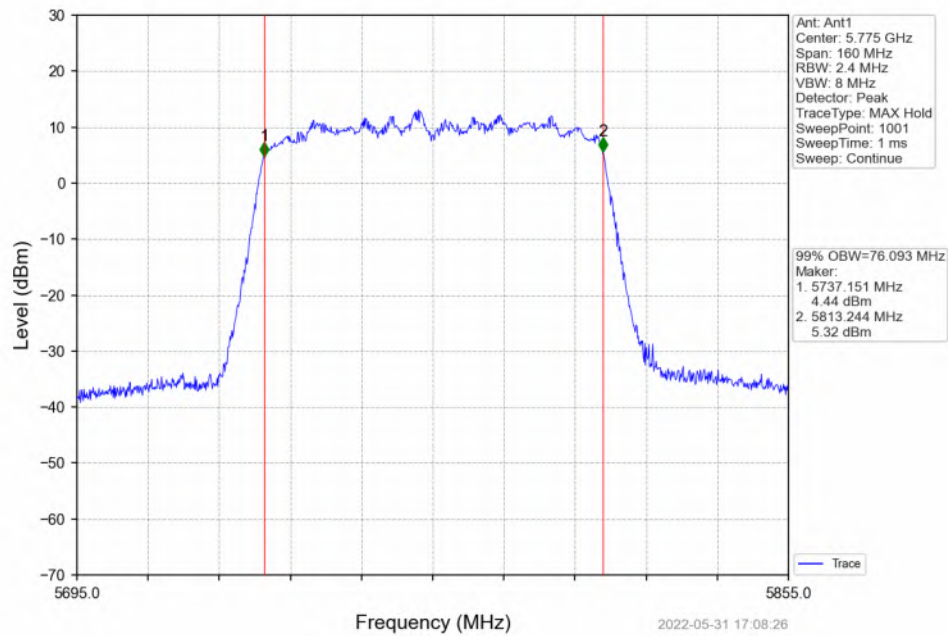
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV

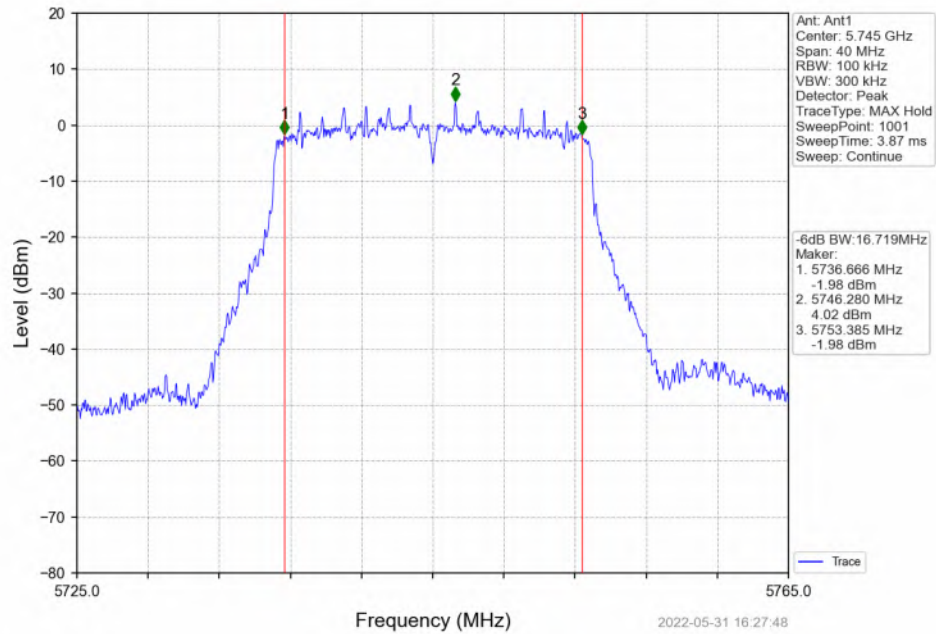


802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV

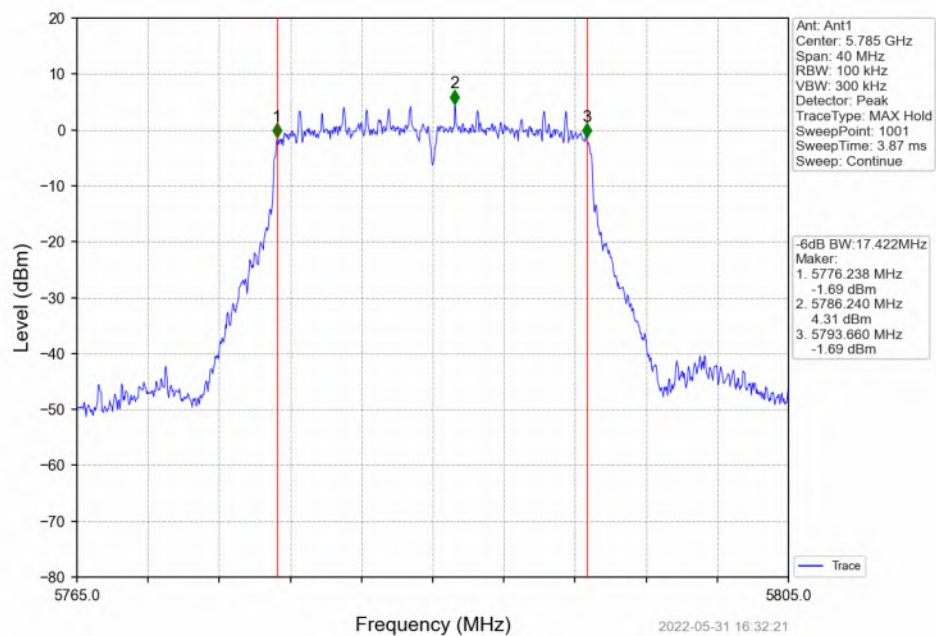


6dB Bandwidth

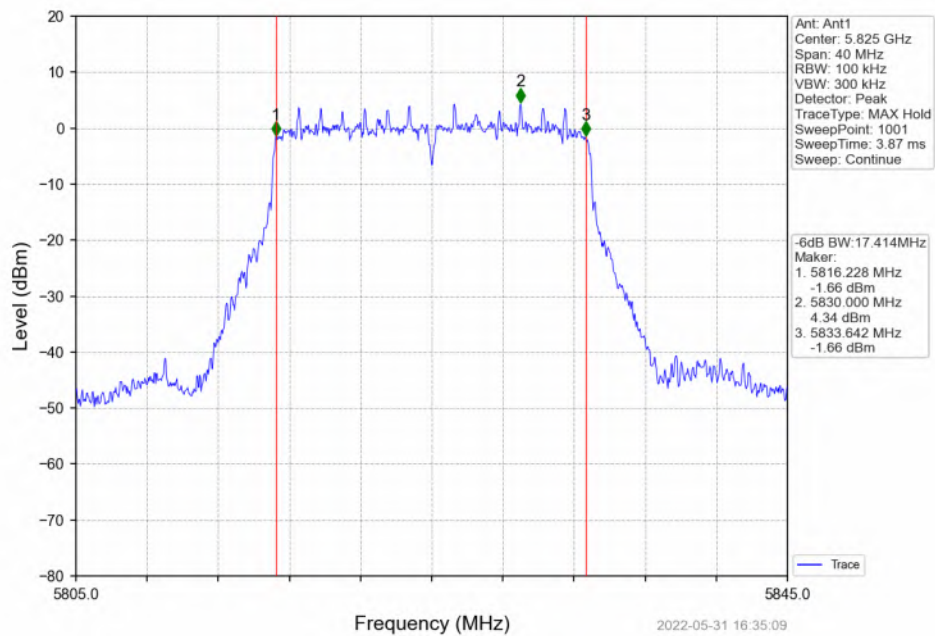
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



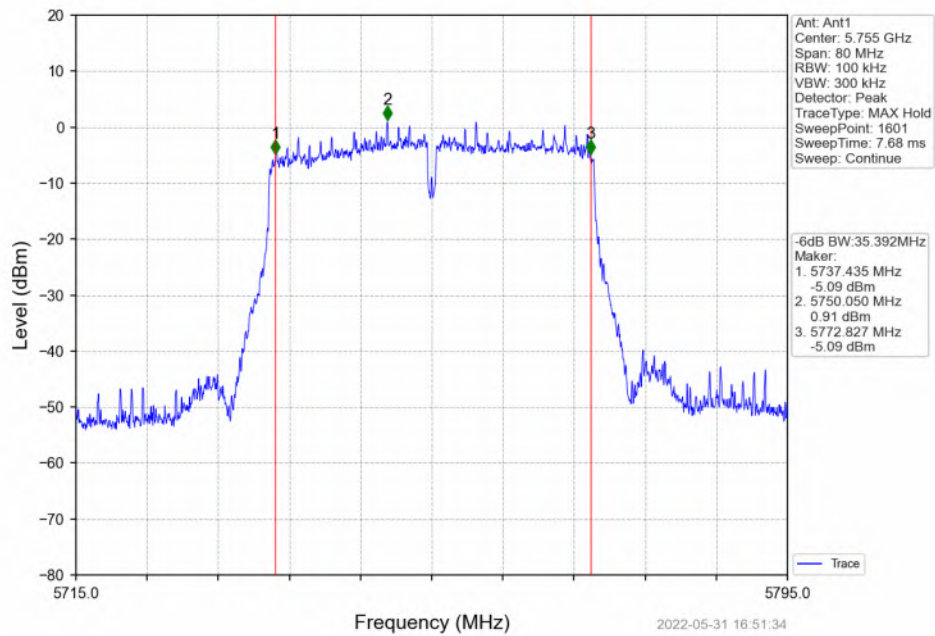
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



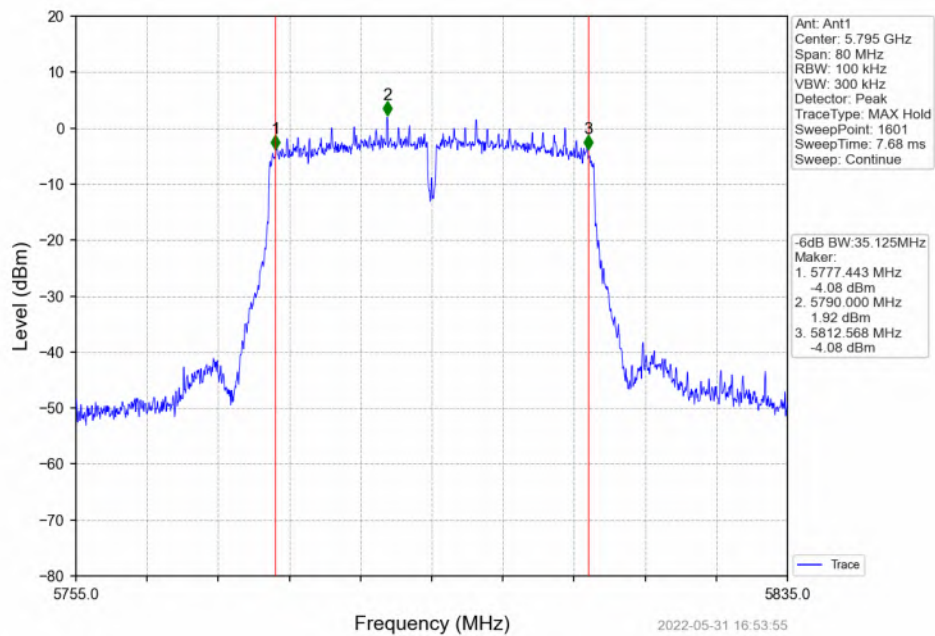
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



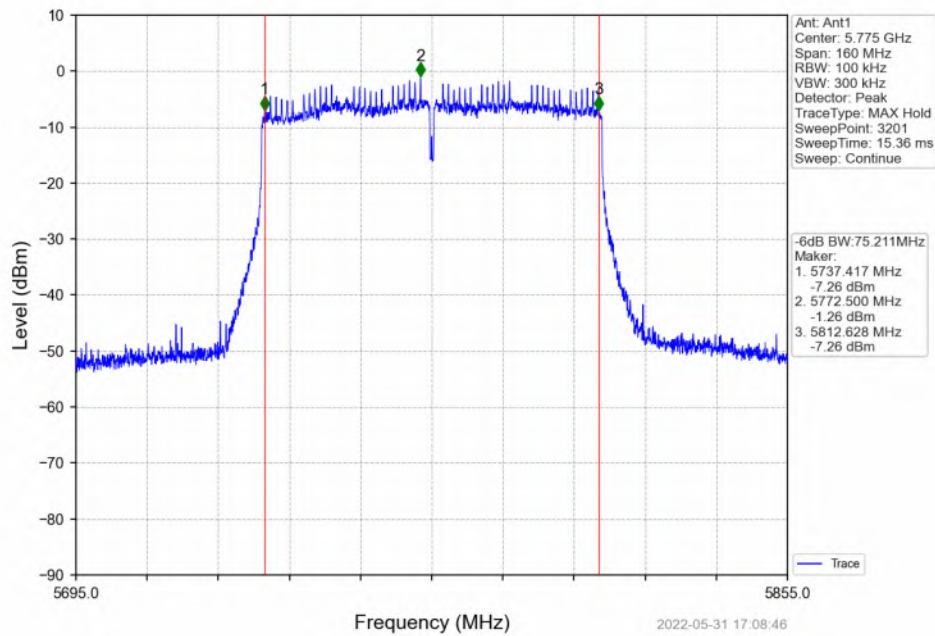
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



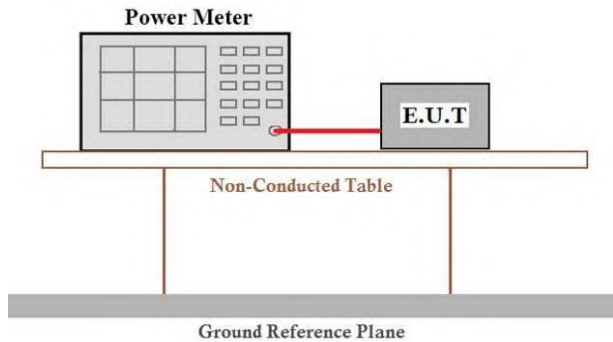
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



4.4 Transmit Power

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	For the band 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.725-5.85GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 1W.
Test setup:	 The diagram illustrates the test setup. A 'Power Meter' is connected to an 'E.U.T.' (Equipment Under Test) via a red cable. Both components are placed on a 'Non-Conducted Table'. The table is supported by two vertical legs. Below the table is a 'Ground Reference Plane'.
Test procedure:	Measurement using an RF average power meter (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five. (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B). (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter. (iv) Adjust the measurement in dBm by adding $10 \log(1/x)$ where x is the duty cycle (e.g., $10 \log(1/0.25)$ if the duty cycle is 25 percent).
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data**Module 1****Band 1 (5180 - 5240)**

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5180	15.21	14.66	14.82	15.36	21.04	<=23.98	Pass
		5200	14.90	15.14	14.69	15.15	20.99	<=23.98	Pass
		5240	14.32	15.06	14.49	15.04	20.76	<=23.98	Pass
802.11ac (VHT40)	MIMO	5190	15.93	15.59	15.09	15.49	21.56	<=23.98	Pass
		5230	15.07	15.45	14.85	15.19	21.17	<=23.98	Pass
802.11ac (VHT80)	MIMO	5210	15.87	13.40	12.86	13.16	19.52	<=23.98	Pass

Band 4 (5745 - 5825)

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5745	14.72	15.54	14.54	16.36	20.43	<=30	Pass
		5785	13.93	14.24	14.03	14.99	20.34	<=30	Pass
		5825	13.34	13.69	13.59	14.26	19.75	<=30	Pass
802.11ac (VHT40)	MIMO	5755	14.16	15.19	14.05	15.64	20.83	<=30	Pass
		5795	14.19	14.63	14.40	15.36	20.69	<=30	Pass
802.11ac (VHT80)	MIMO	5775	15.35	16.35	15.16	15.98	21.76	<=30	Pass

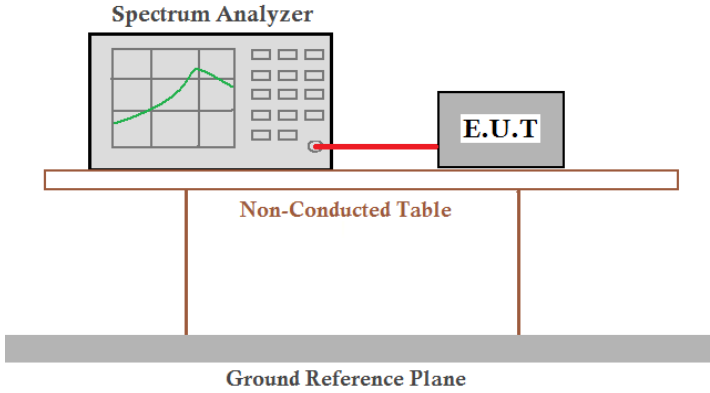
Module 2**Band 1 (5180 - 5240)**

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5180	14.59	15.15	14.21	13.80	20.49	<=23.98	Pass
		5200	14.47	15.20	14.17	13.66	20.43	<=23.98	Pass
		5240	13.91	14.62	13.97	13.78	20.10	<=23.98	Pass
802.11ac (VHT40)	MIMO	5190	14.42	15.64	14.69	14.18	20.79	<=23.98	Pass
		5230	14.64	16.09	14.87	16.25	21.54	<=23.98	Pass
802.11ac (VHT80)	MIMO	5210	15.43	16.52	15.51	14.80	21.63	<=23.98	Pass

Band 4 (5745 - 5825)

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5745	14.48	16.65	16.48	16.37	22.10	<=30	Pass
		5785	15.00	17.39	16.25	15.56	22.16	<=30	Pass
		5825	14.87	17.59	15.26	15.14	21.88	<=30	Pass
802.11ac (VHT40)	MIMO	5755	14.40	17.26	16.32	16.02	22.14	<=30	Pass
		5795	15.13	18.09	16.20	16.40	22.61	<=30	Pass
802.11ac (VHT80)	MIMO	5775	15.10	17.84	15.48	16.89	22.49	<=30	Pass

4.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	$\leq 11.00\text{dBm/MHz}$ for 5150MHz-5250MHz, 5250-5350MHz and 5470-5725 MHz $\leq 30.00\text{dBm/500KHz}$ for 5725MHz-5850MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power..." 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data
Module 1

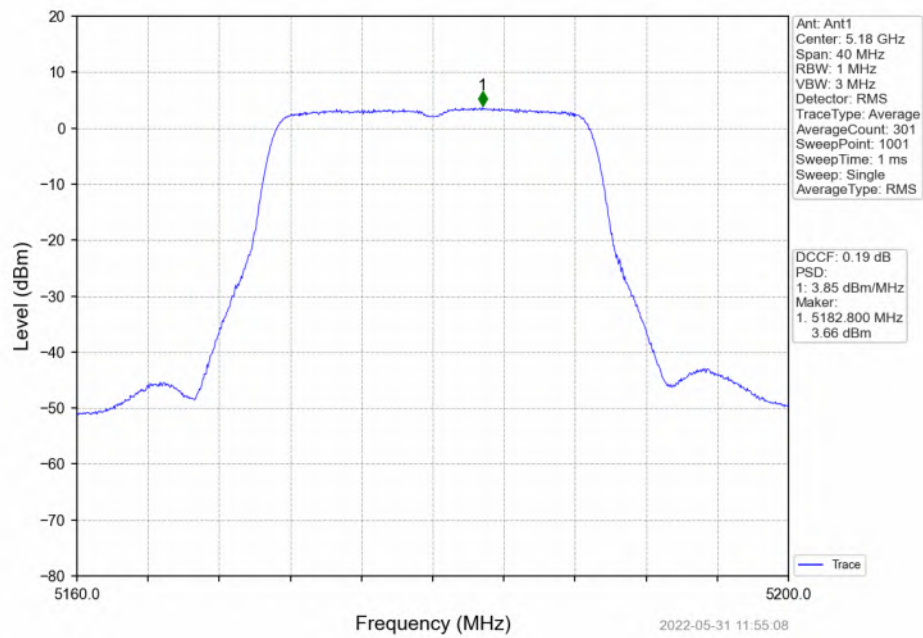
Band 1 (5180 - 5240)

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/MHz)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5180	3.85	3.18	3.41	4.02	9.45	<=11	Pass
		5200	3.43	3.77	3.27	3.78	9.42	<=11	Pass
		5240	2.90	3.58	3.19	3.71	9.21	<=11	Pass
802.11ac (VHT40)	MIMO	5190	1.73	1.30	0.92	1.30	7.14	<=11	Pass
		5230	0.56	1.15	0.71	1.05	6.74	<=11	Pass
802.11ac (VHT80)	MIMO	5210	-1.73	-0.13	-2.20	-1.80	4.41	<=11	Pass

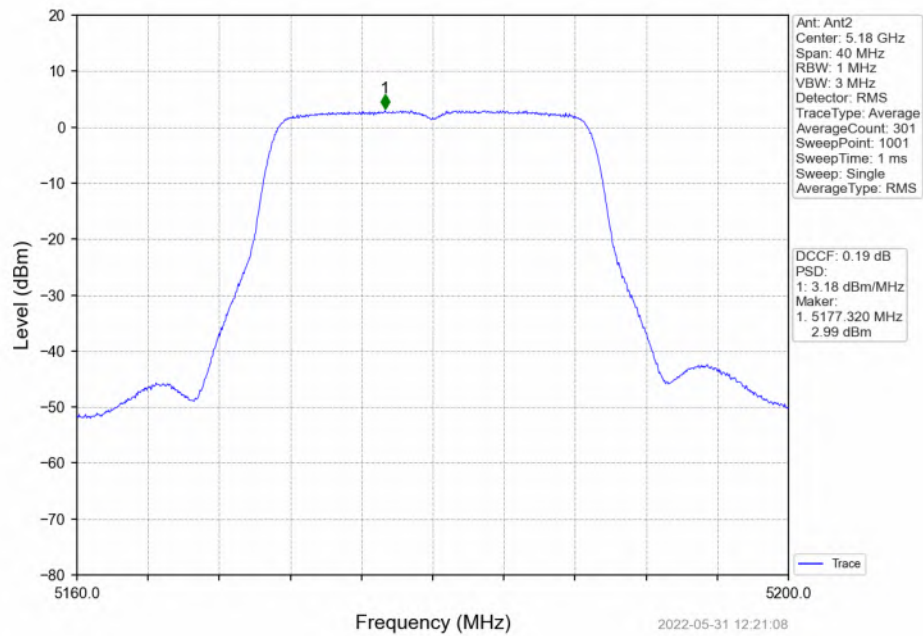
Band 4 (5745 - 5825)

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5745	-6.75	0.93	0.39	1.97	5.90	<=30	Pass
		5785	-0.36	0.04	-0.07	1.04	5.96	<=30	Pass
		5825	-1.00	-0.47	-0.52	0.29	5.46	<=30	Pass
802.11ac (VHT40)	MIMO	5755	-2.62	-1.88	-2.78	-1.28	3.75	<=30	Pass
		5795	-2.84	-2.41	-2.90	-1.75	3.25	<=30	Pass
802.11ac (VHT80)	MIMO	5775	-0.46	1.43	-0.19	1.46	4.68	<=30	Pass

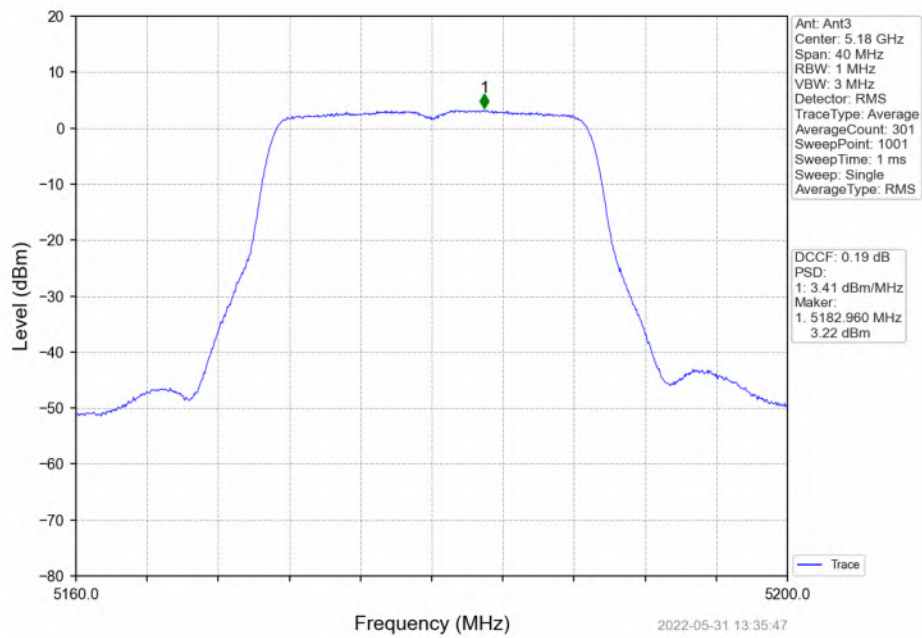
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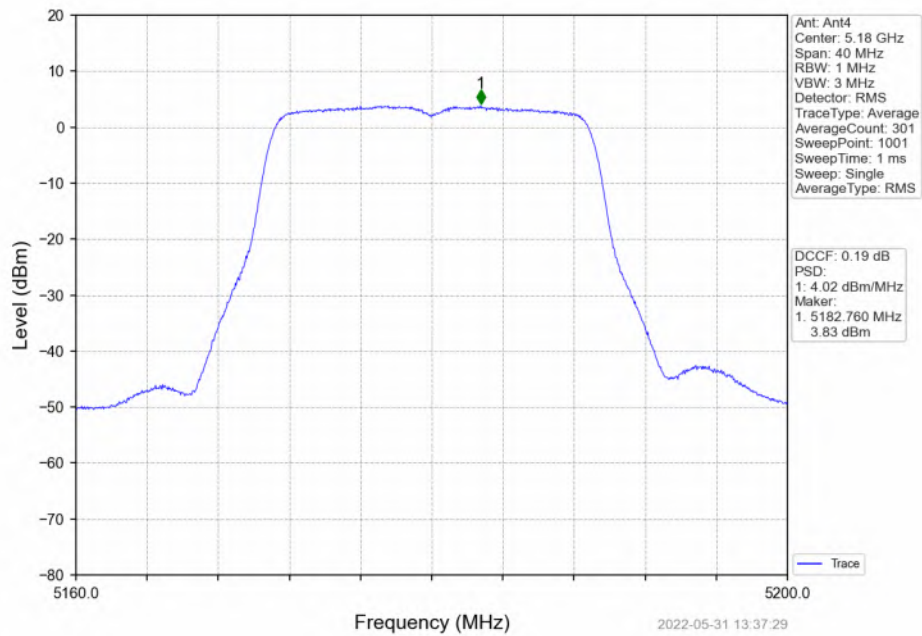
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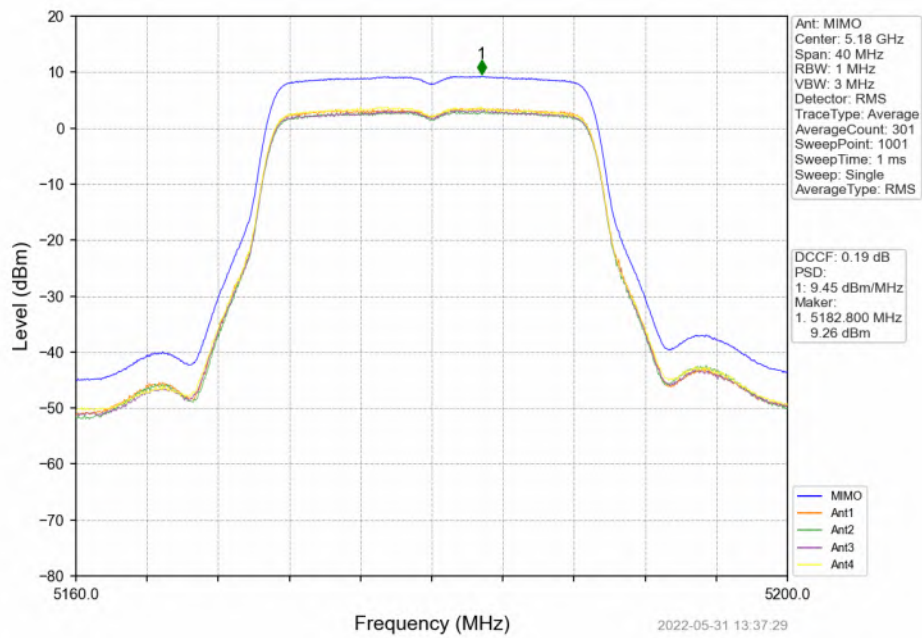
802.11ac(VHT20)_LCH_5180MHz_Ant3_NTNV



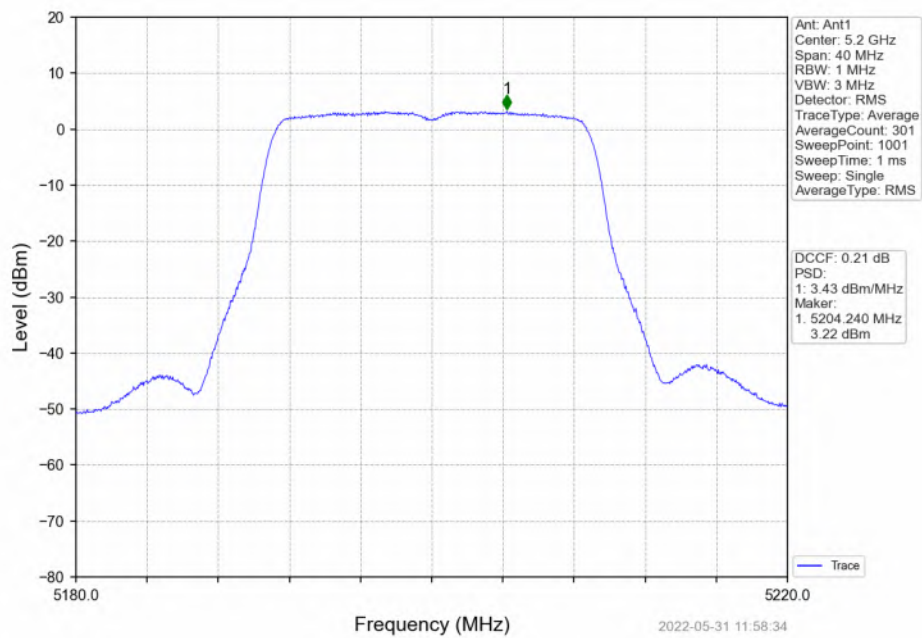
802.11ac(VHT20)_LCH_5180MHz_Ant4_NTNV



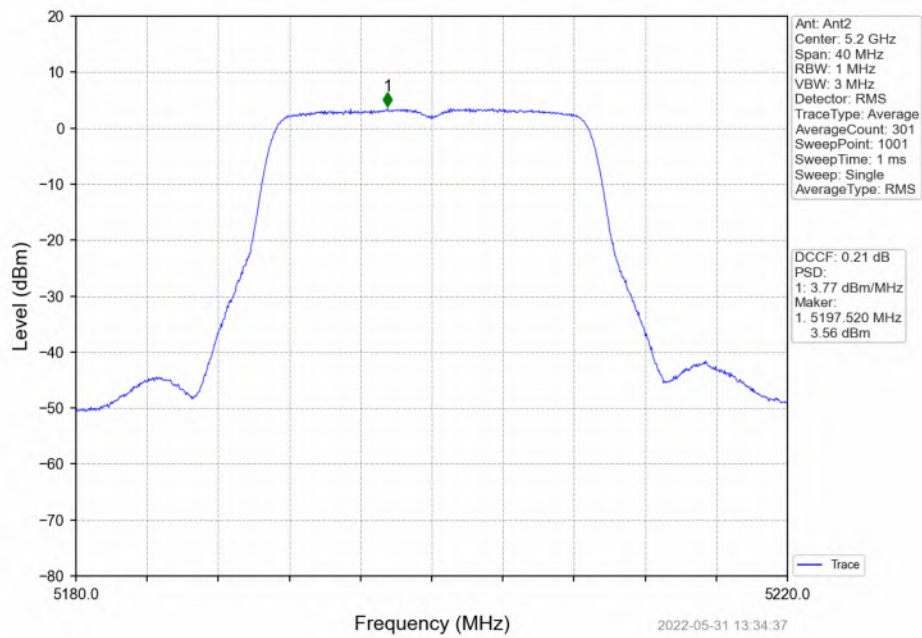
802.11ac(VHT20)_LCH_5180MHz_MIMO_NTNV



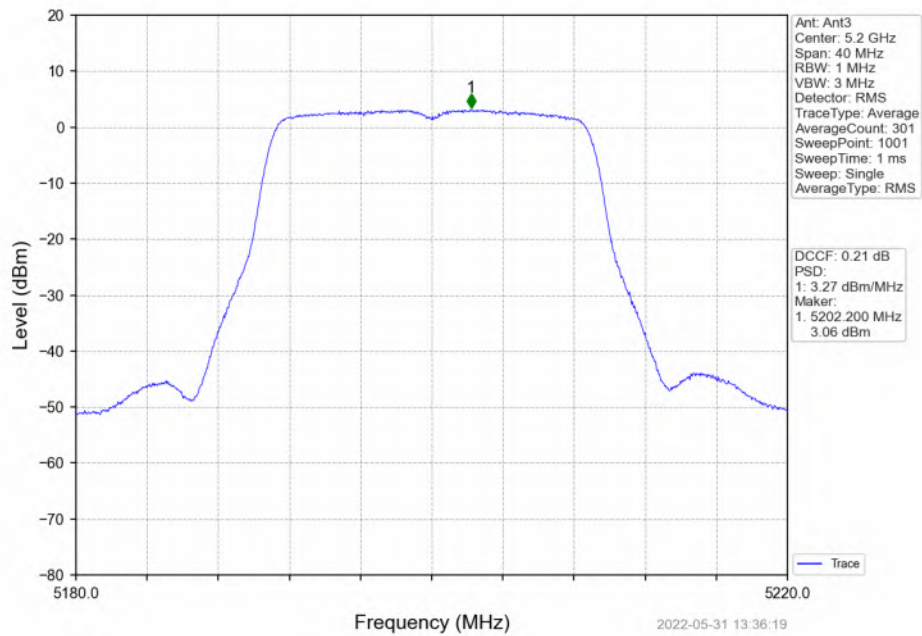
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



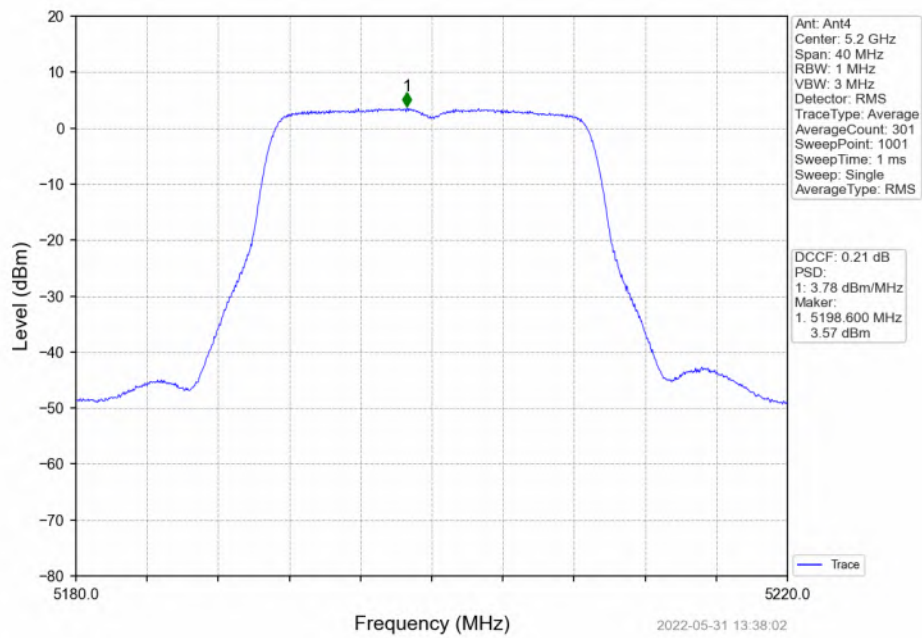
802.11ac(VHT20)_MCH_5200MHz_Ant2_NTNV



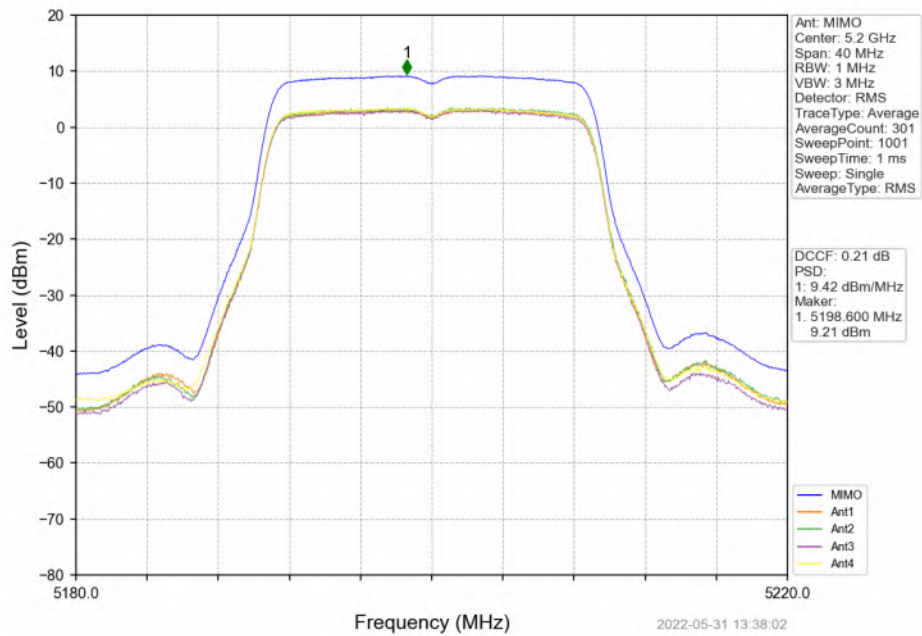
802.11ac(VHT20)_MCH_5200MHz_Ant3_NTNV



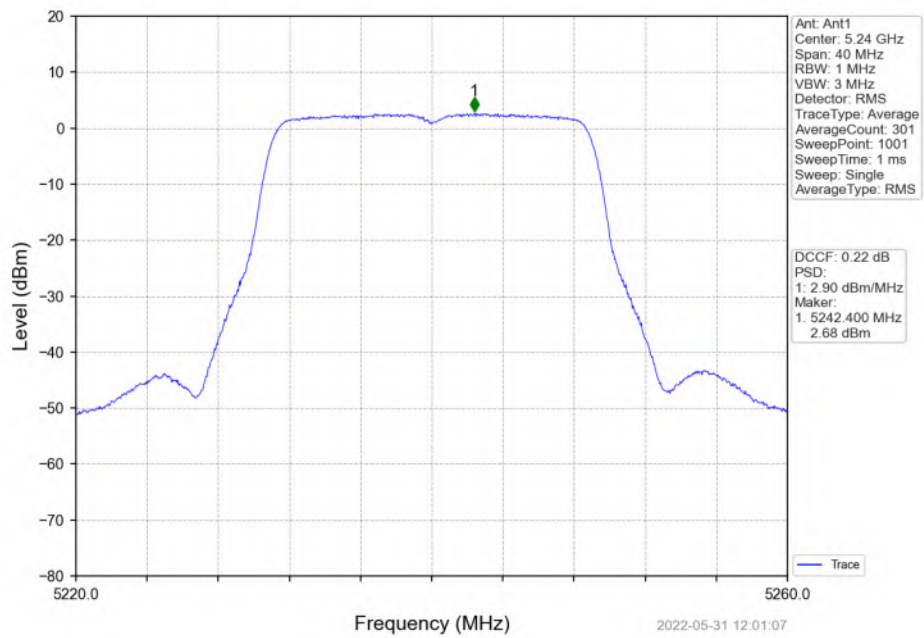
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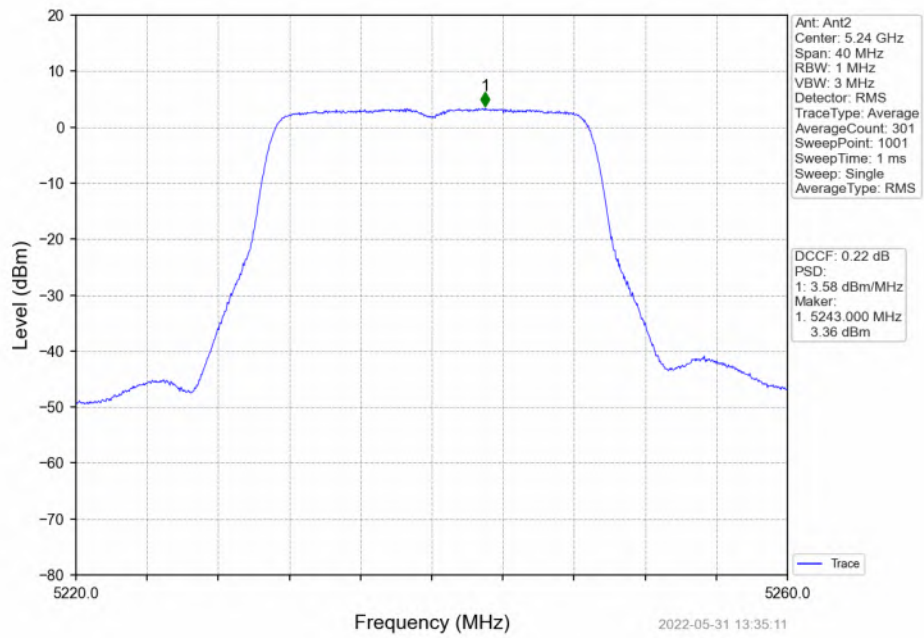
802.11ac(VHT20)_MCH_5200MHz_MIMO_NTNV



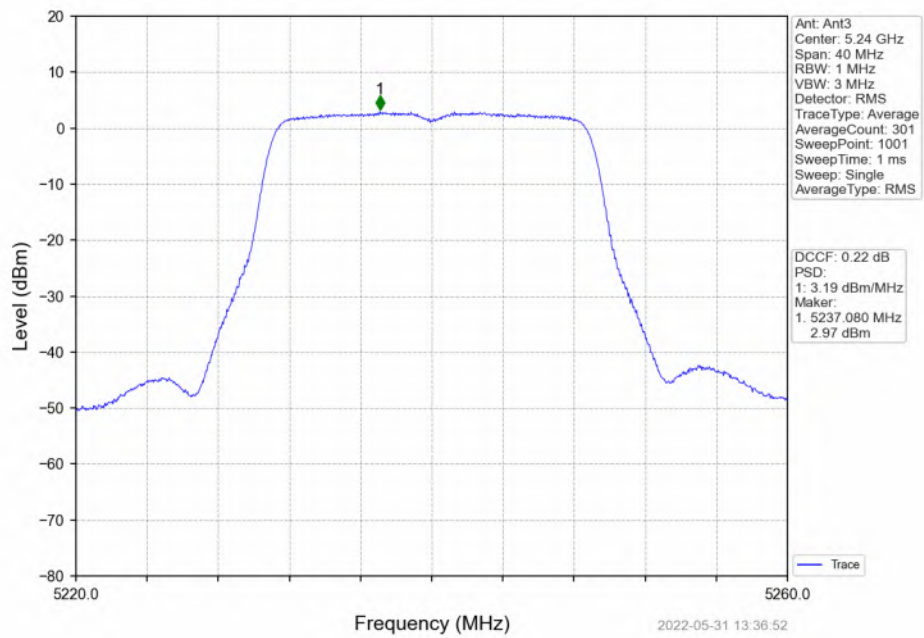
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



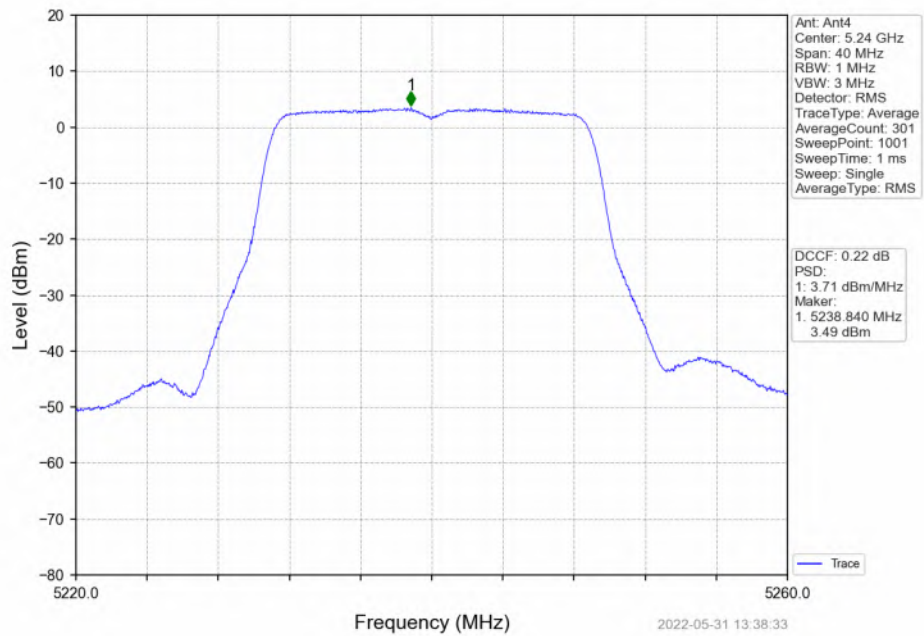
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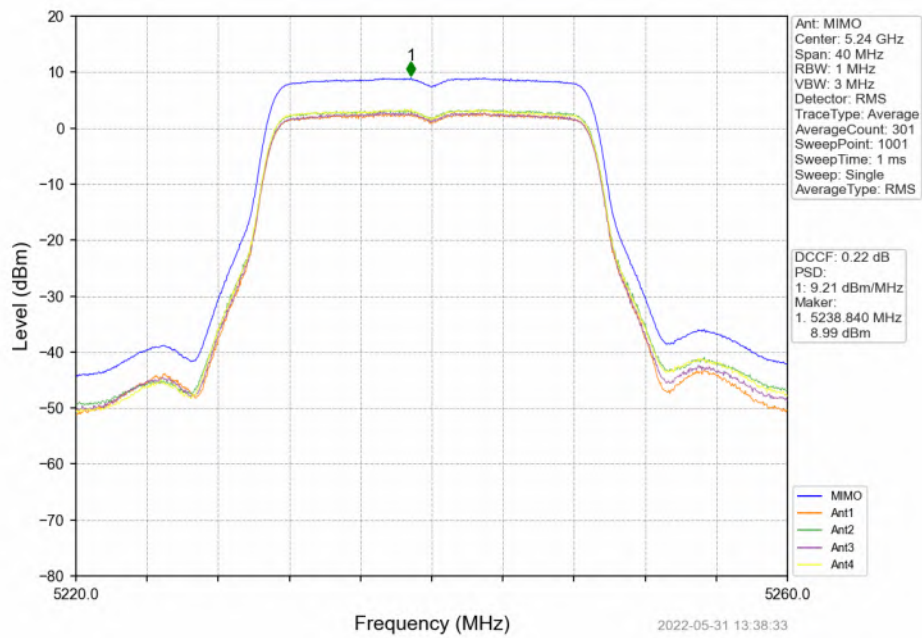
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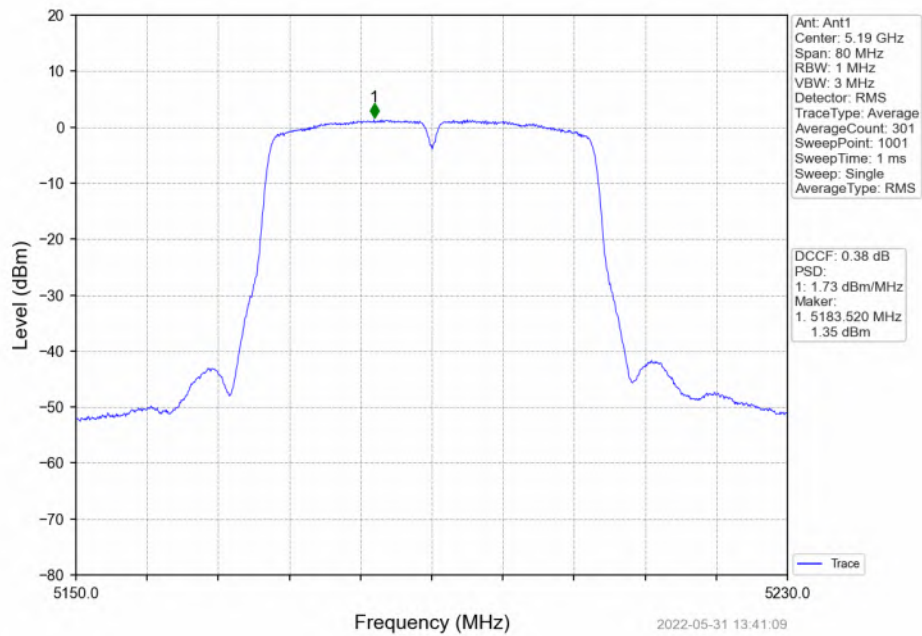
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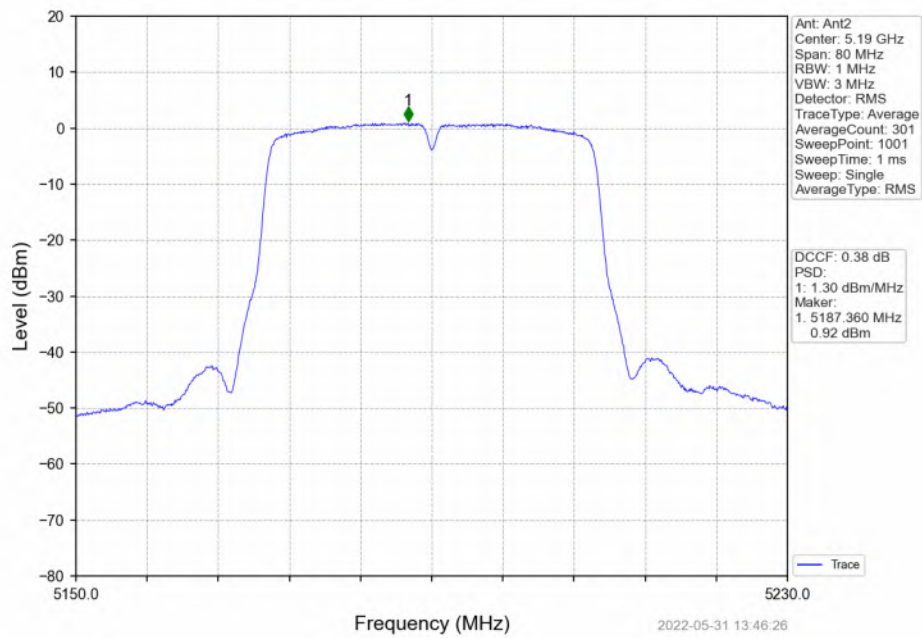
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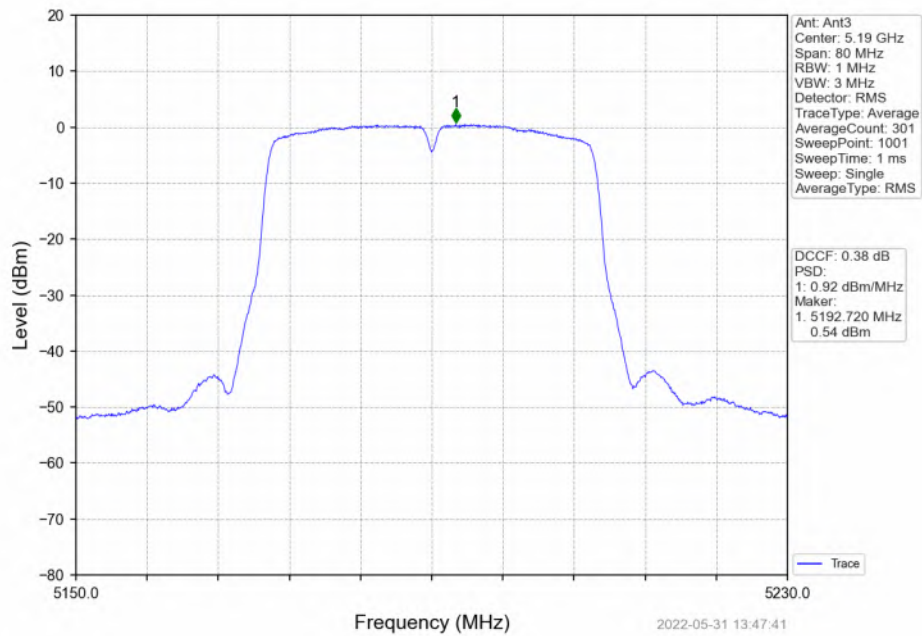
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



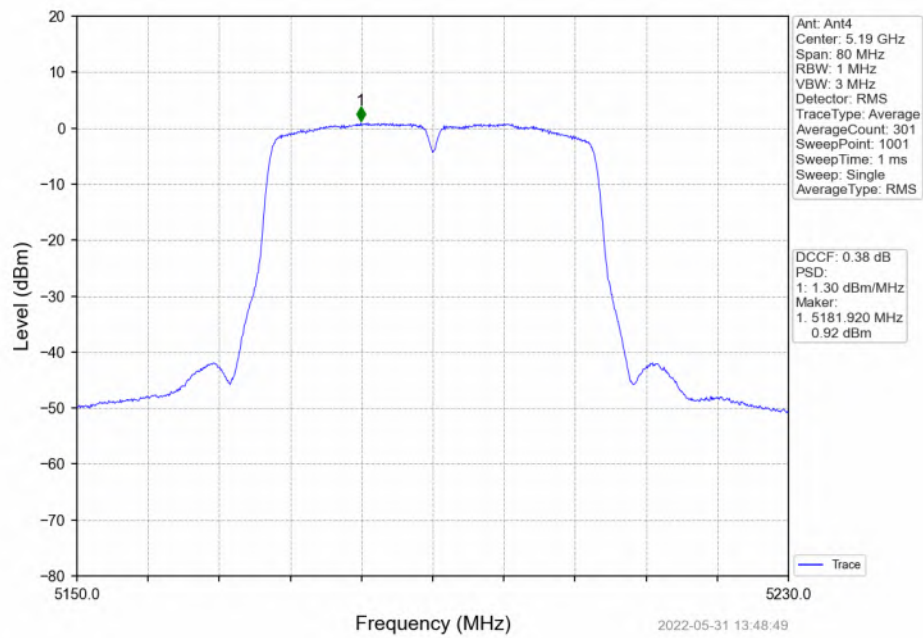
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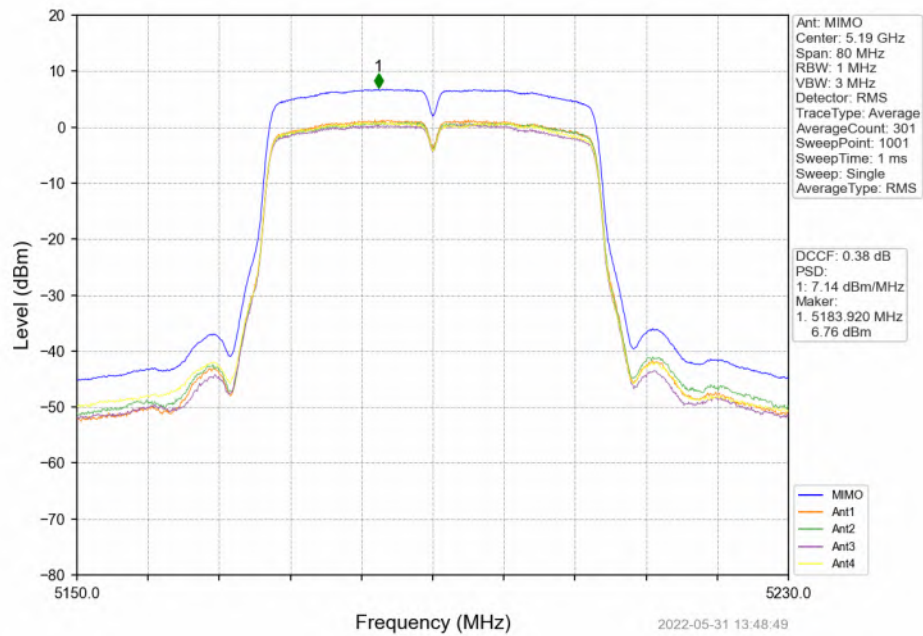
802.11ac(VHT40)_LCH_5190MHz_Ant3_NTNV



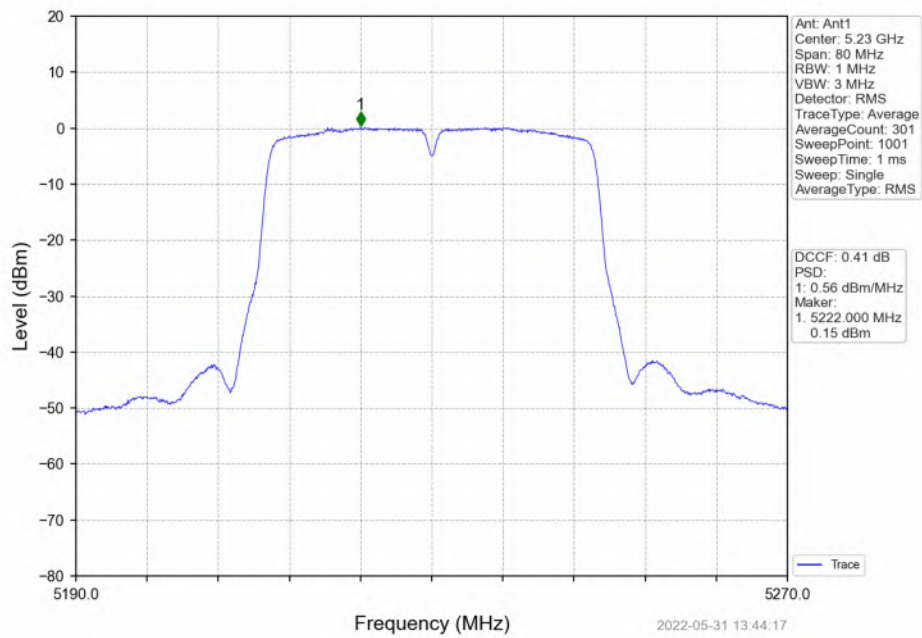
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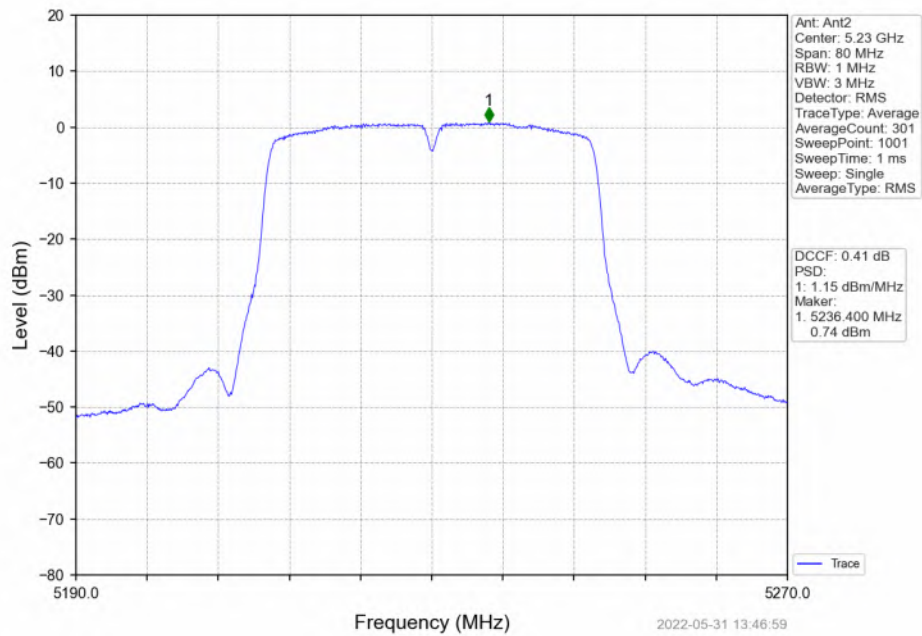
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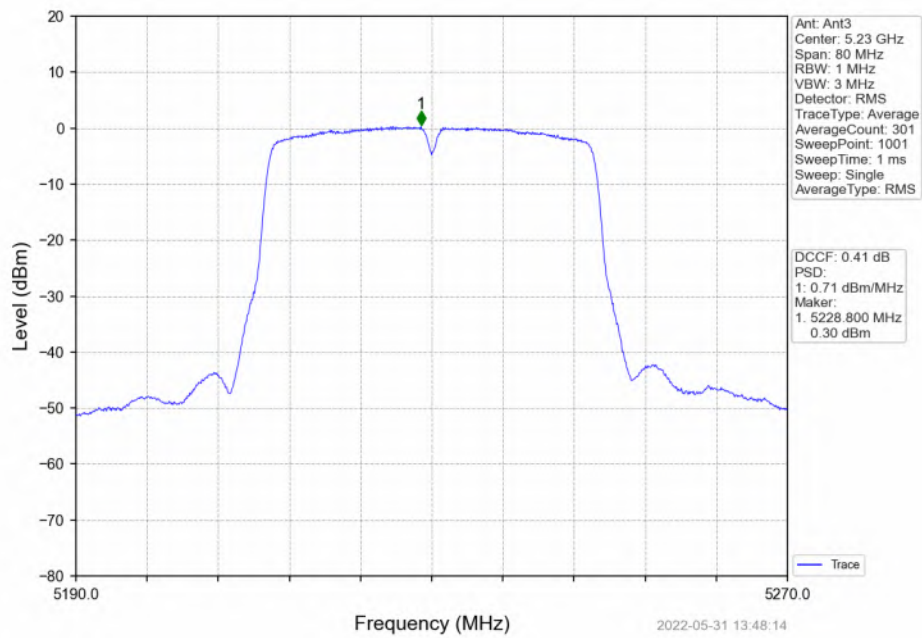
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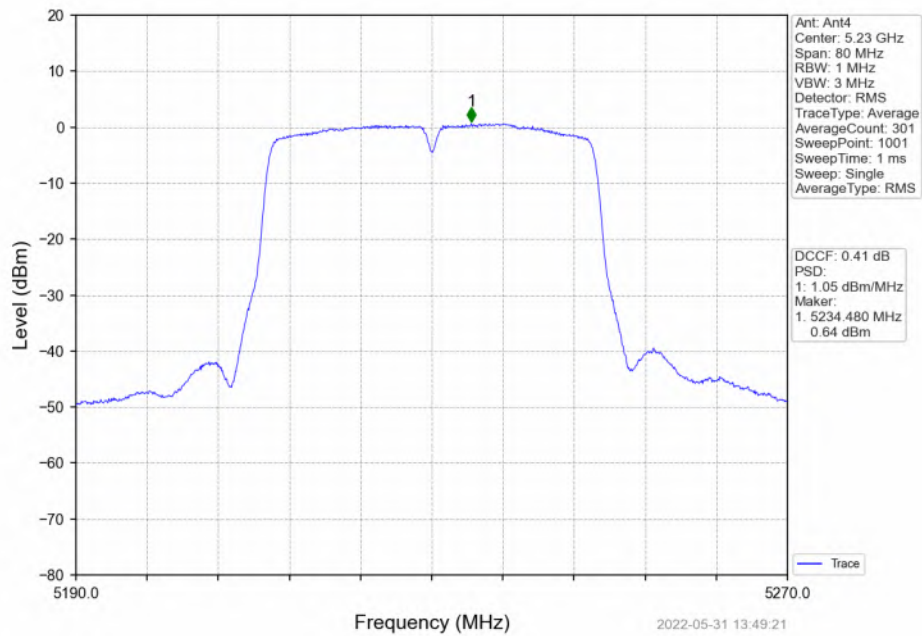
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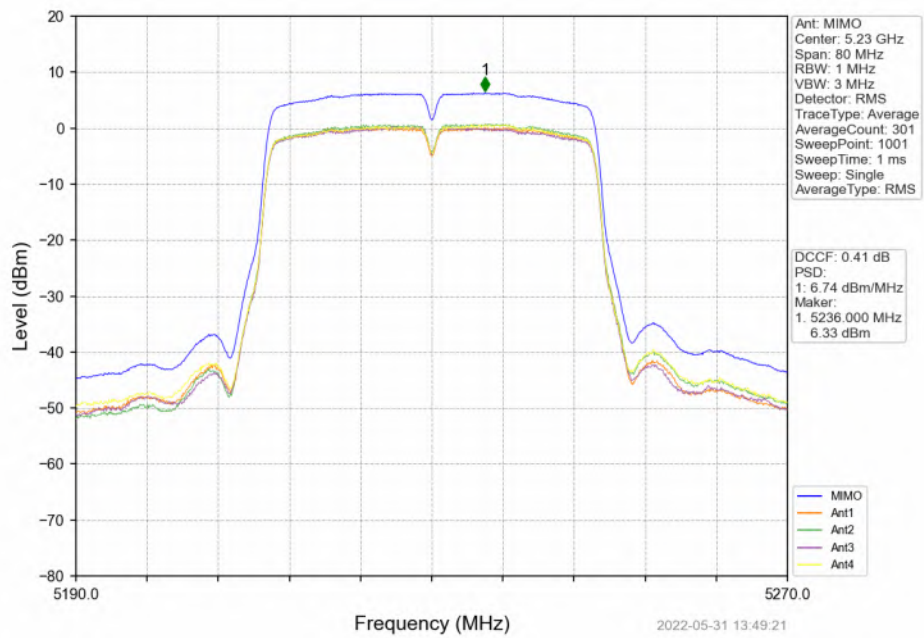
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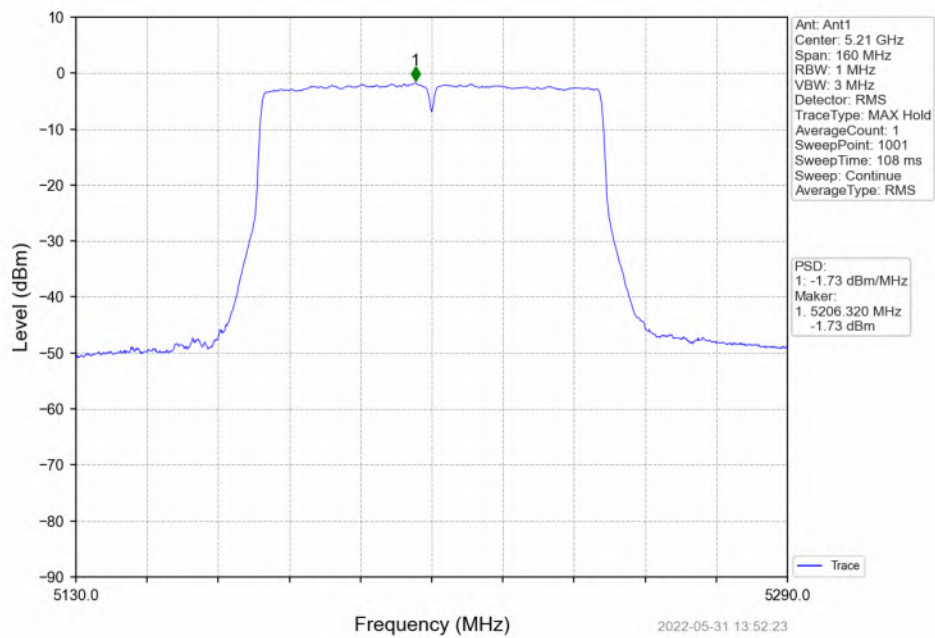
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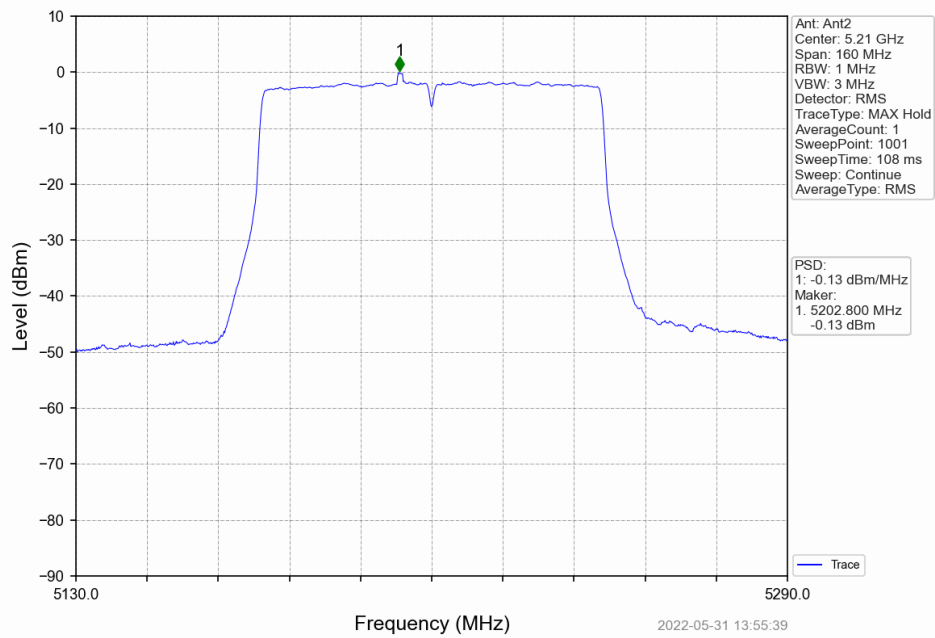
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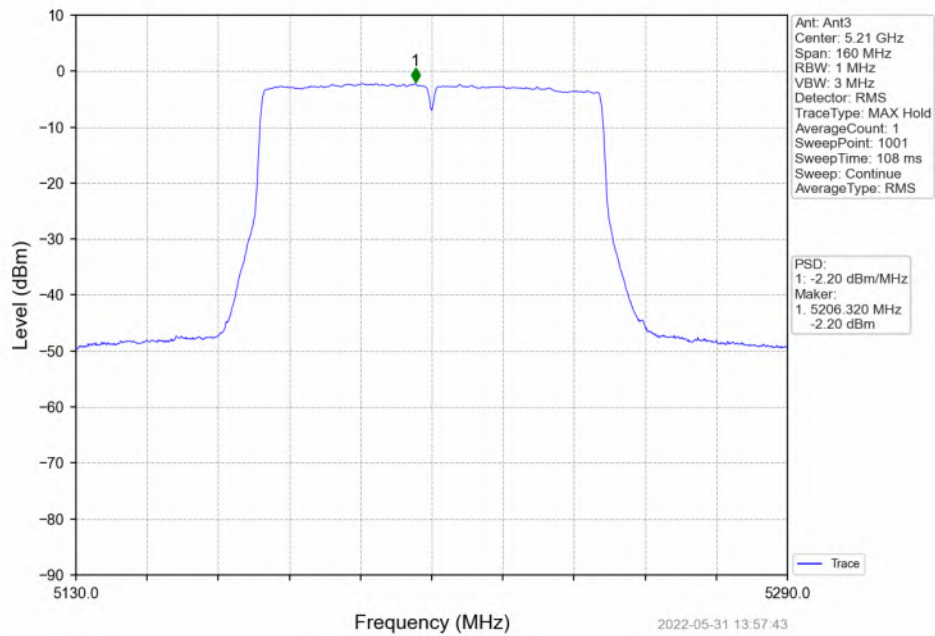
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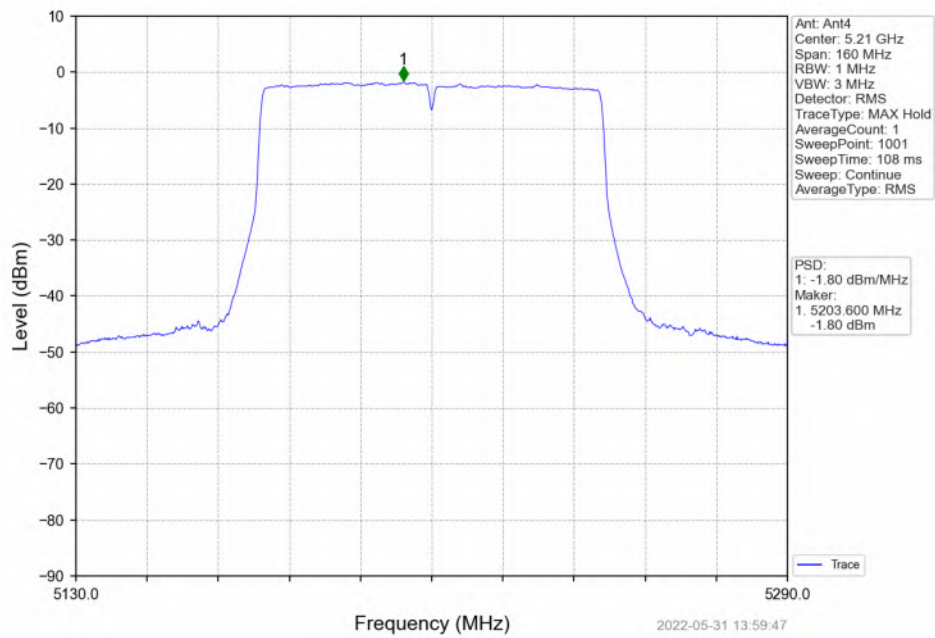
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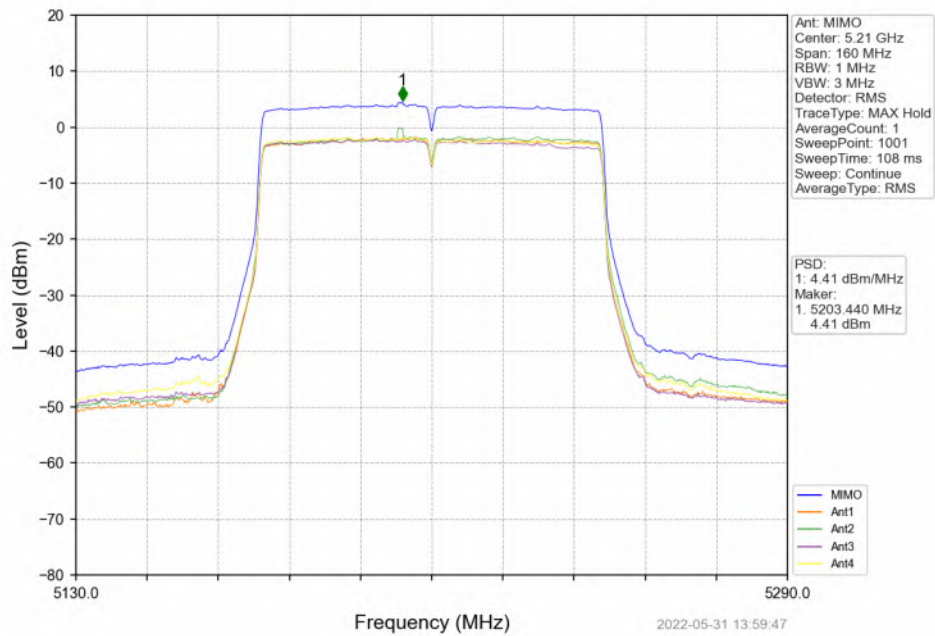
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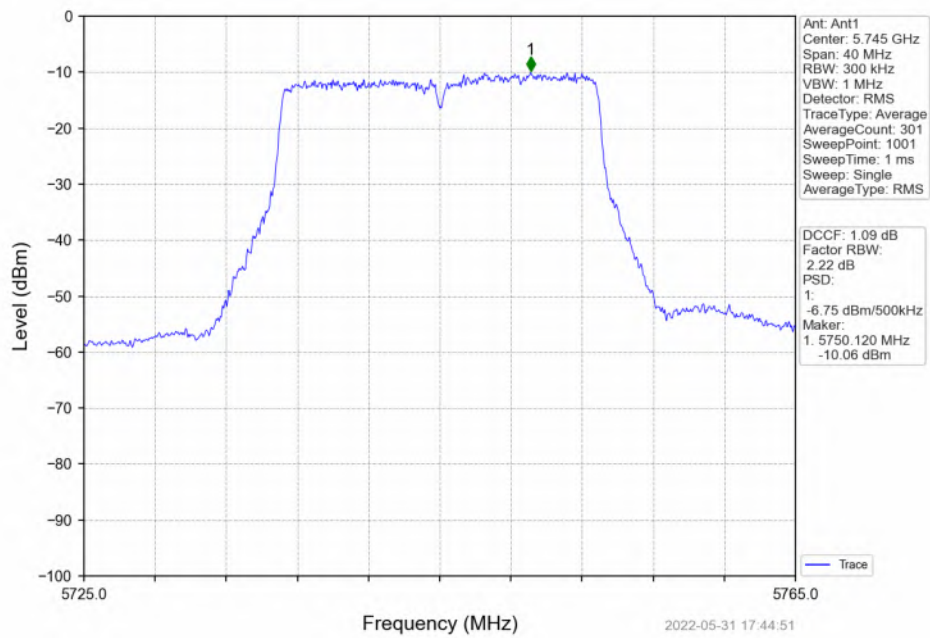
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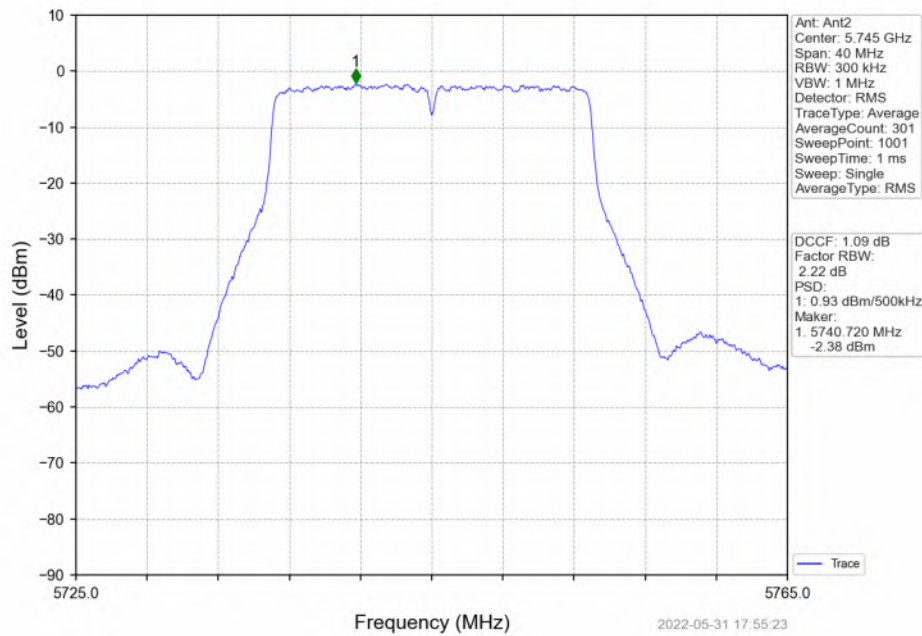
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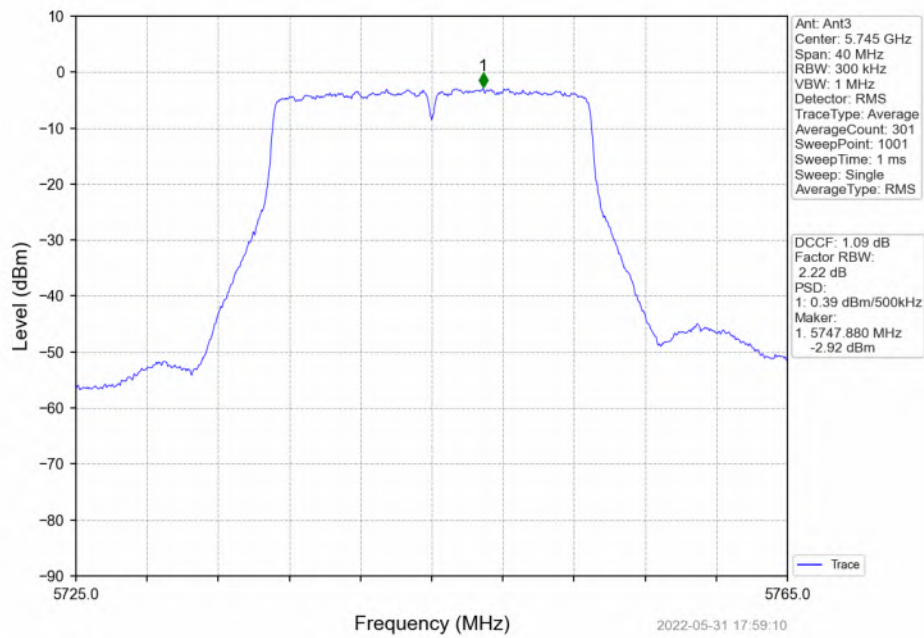
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



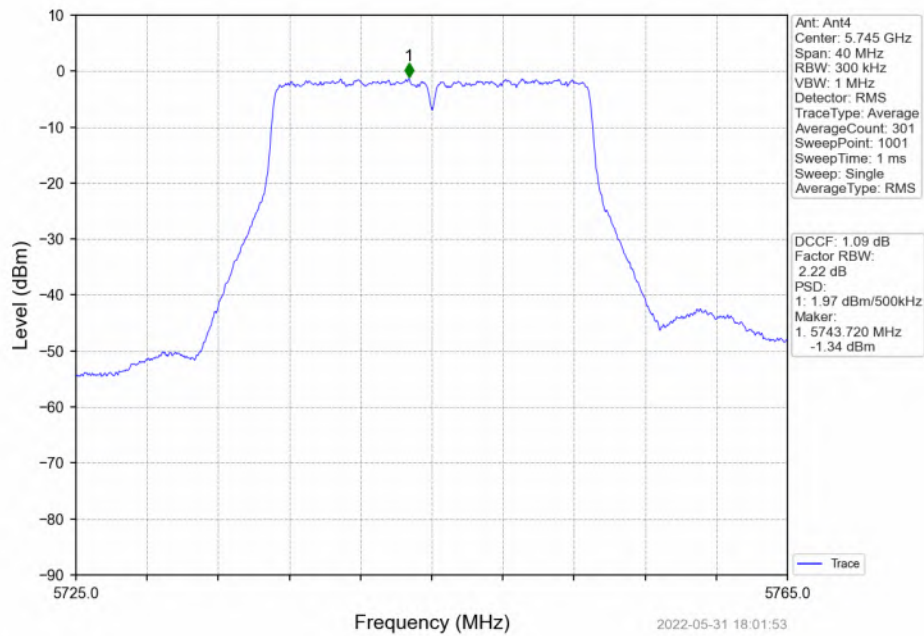
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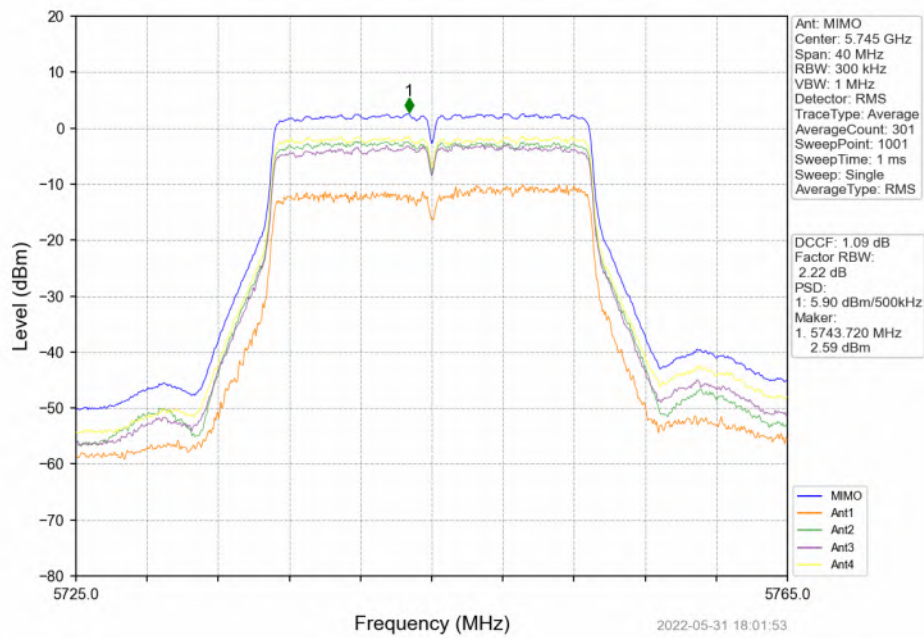
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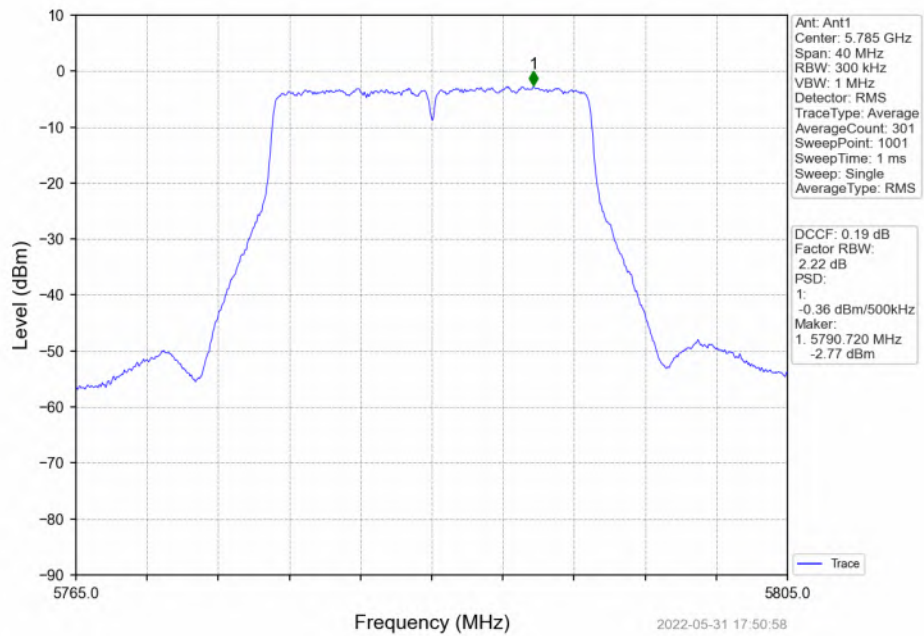
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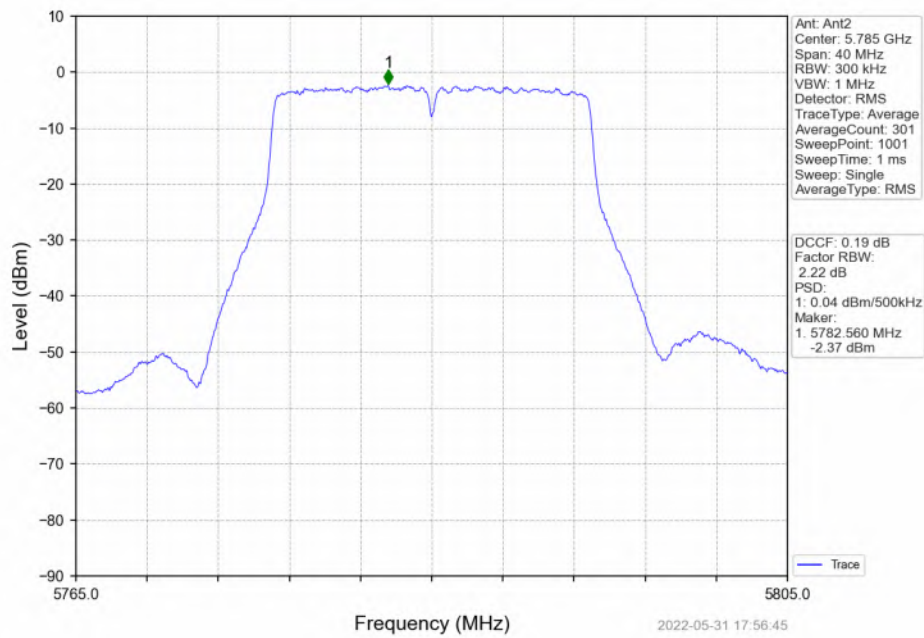
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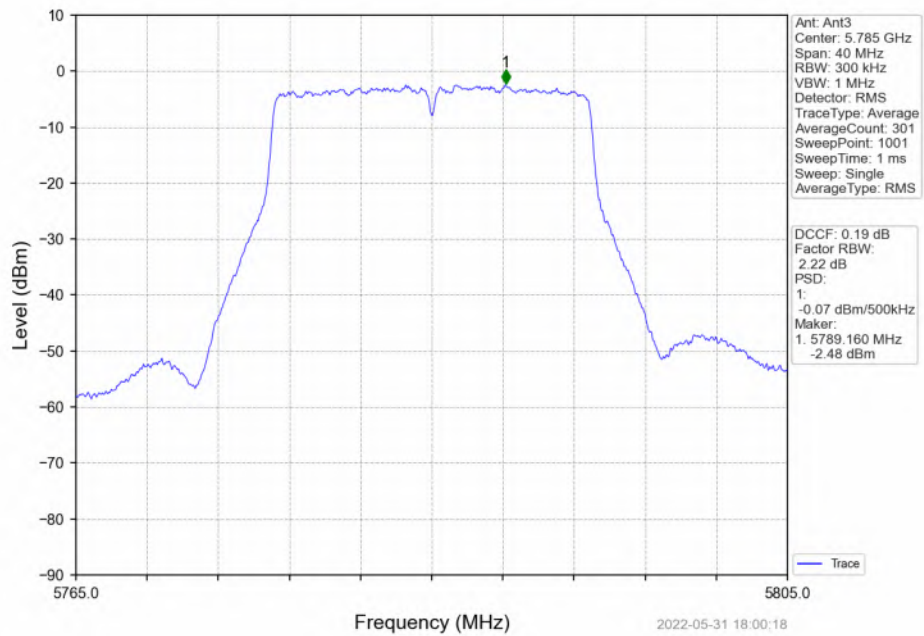
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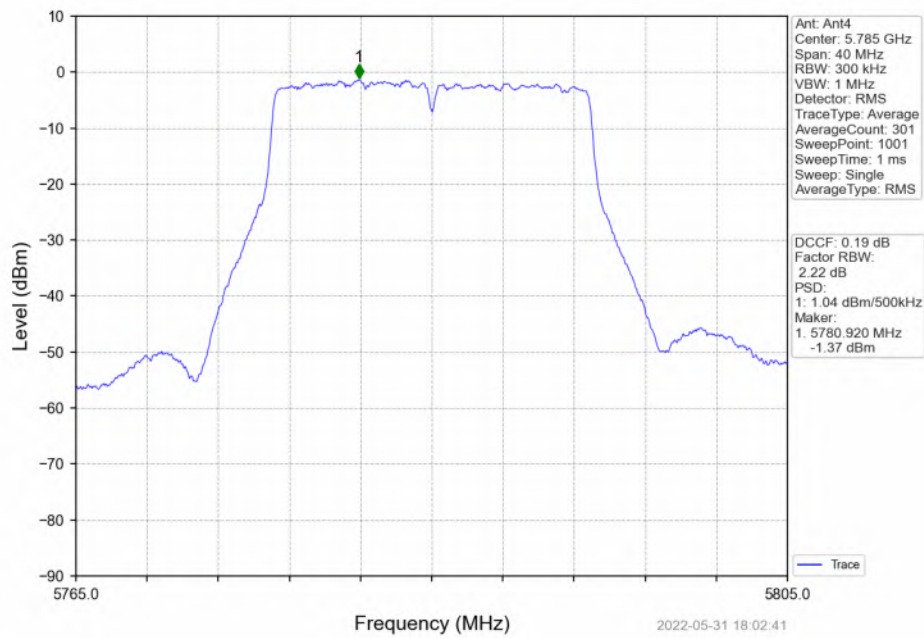
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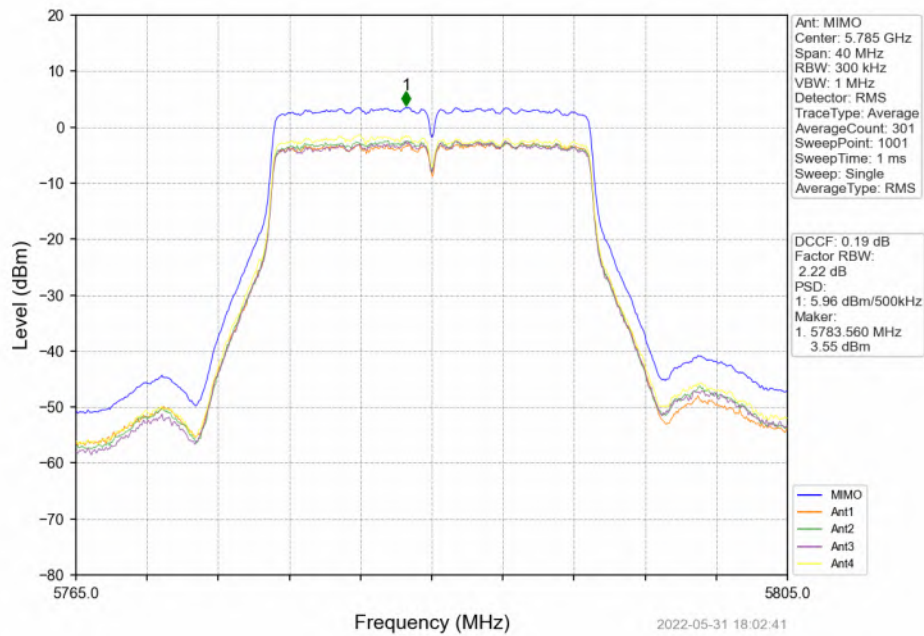
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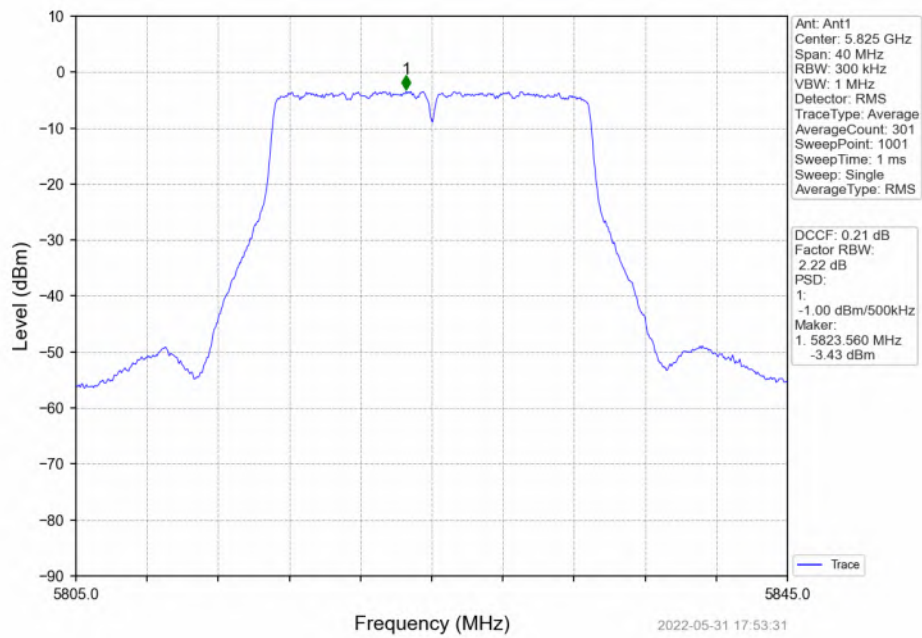
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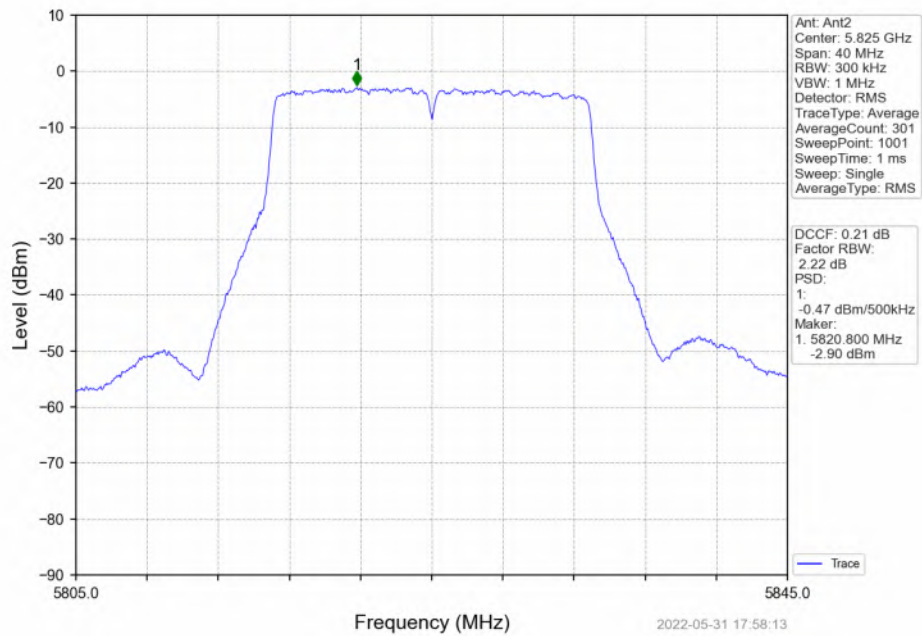
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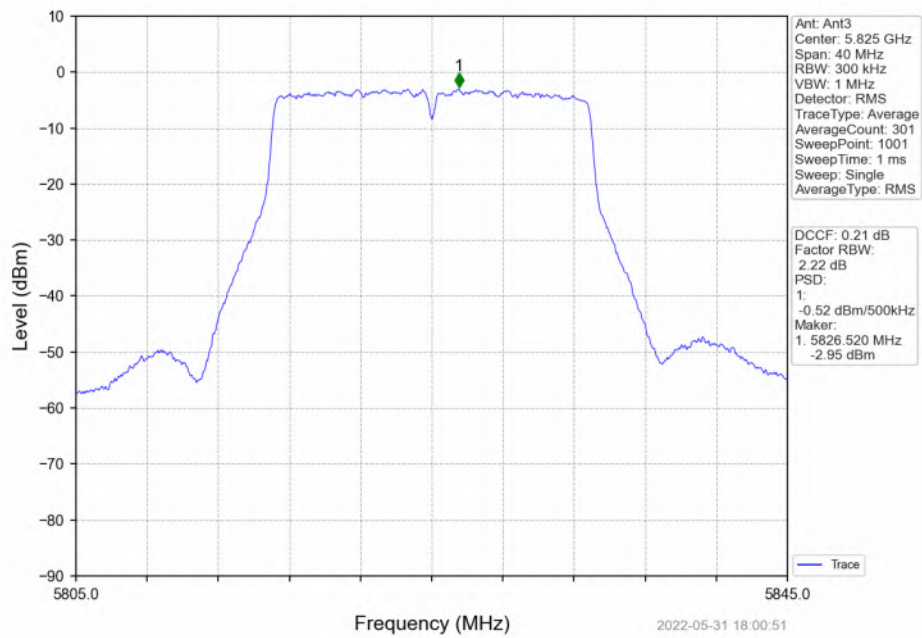
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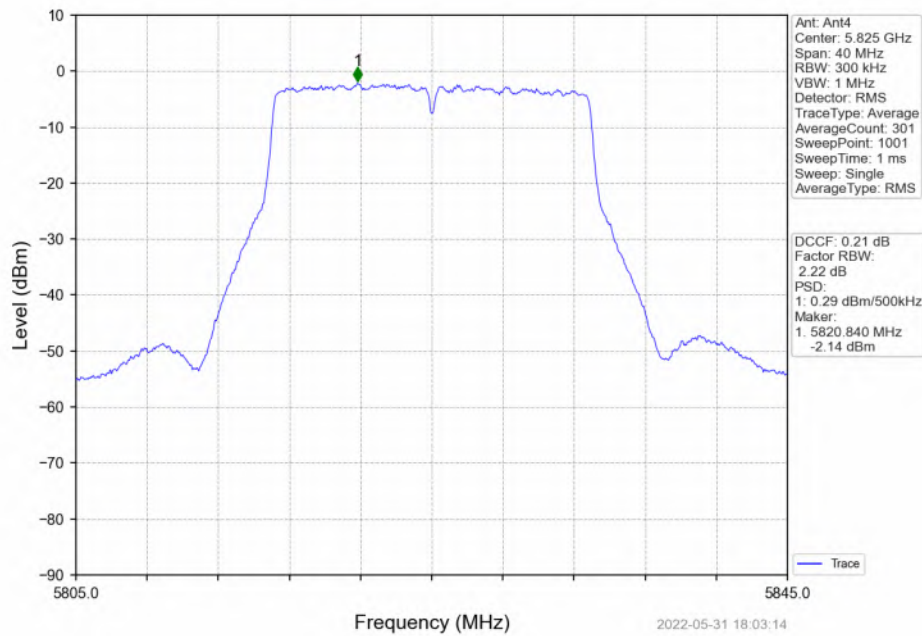
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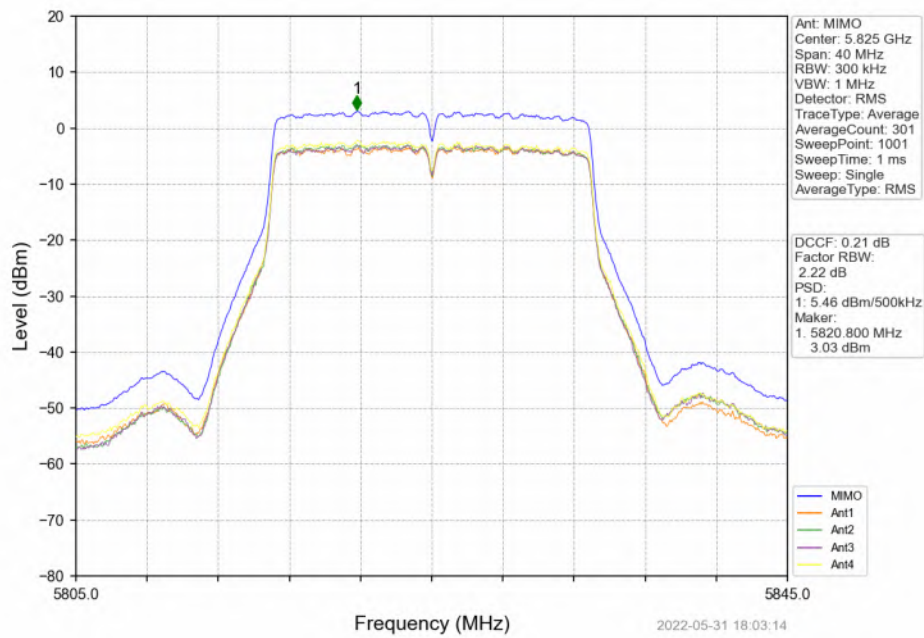
802.11ac(VHT20)_HCH_5825MHz_Ant3_NTNV



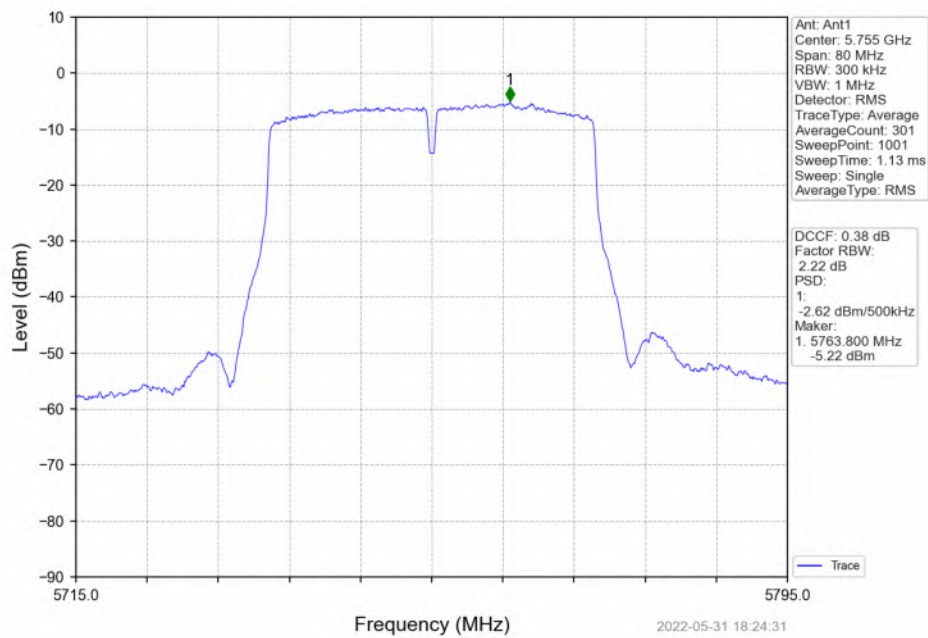
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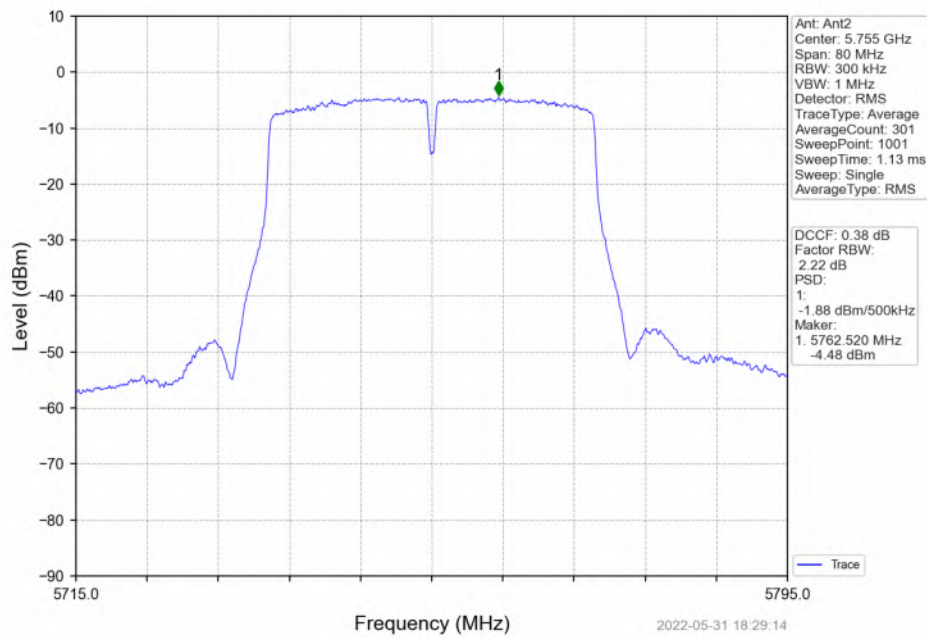
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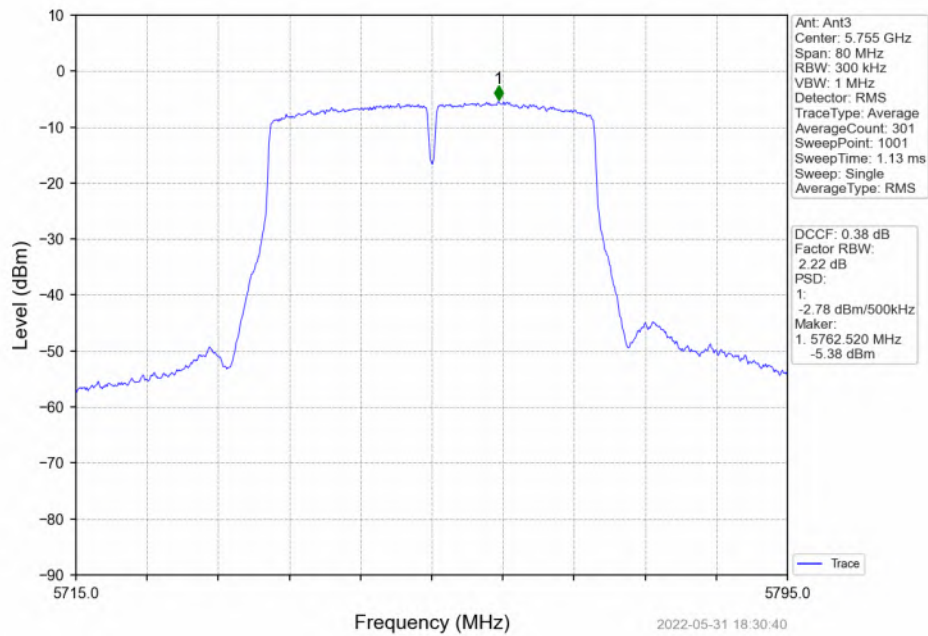
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



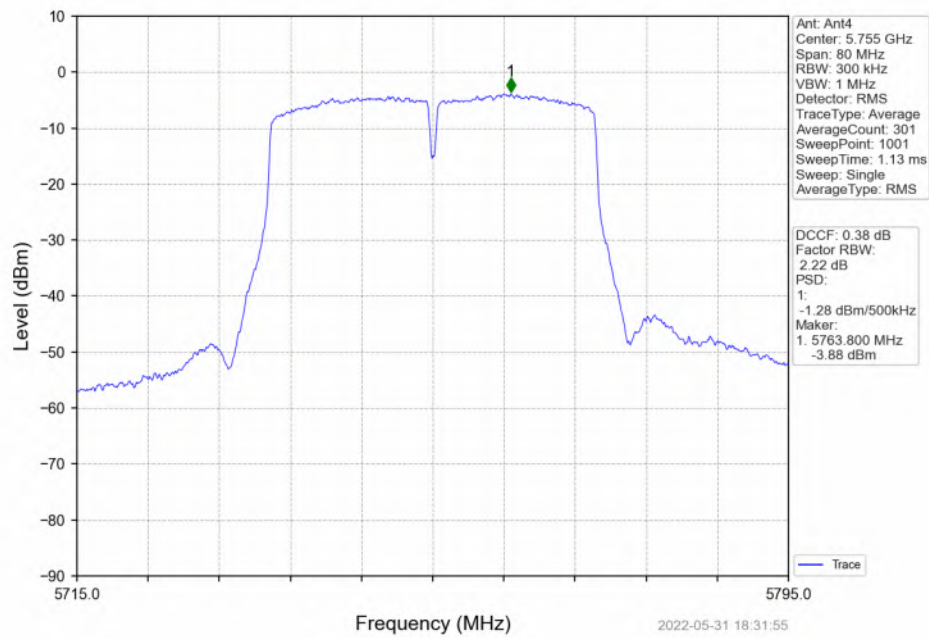
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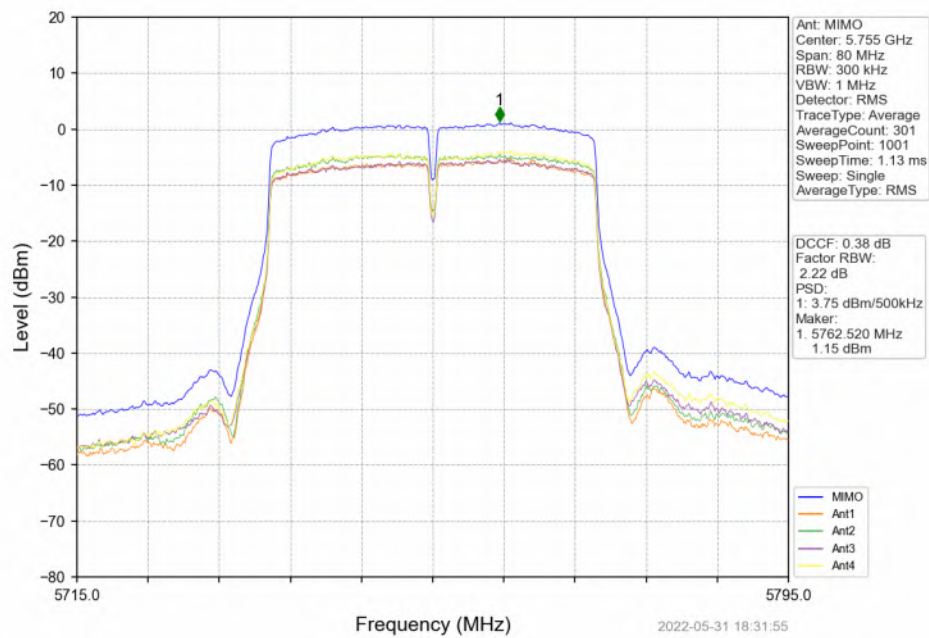
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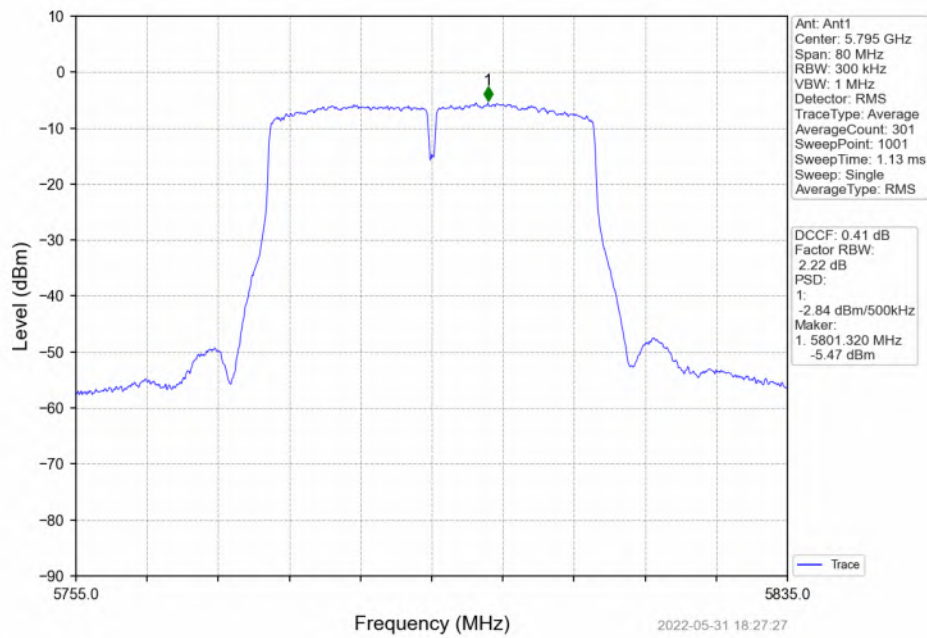
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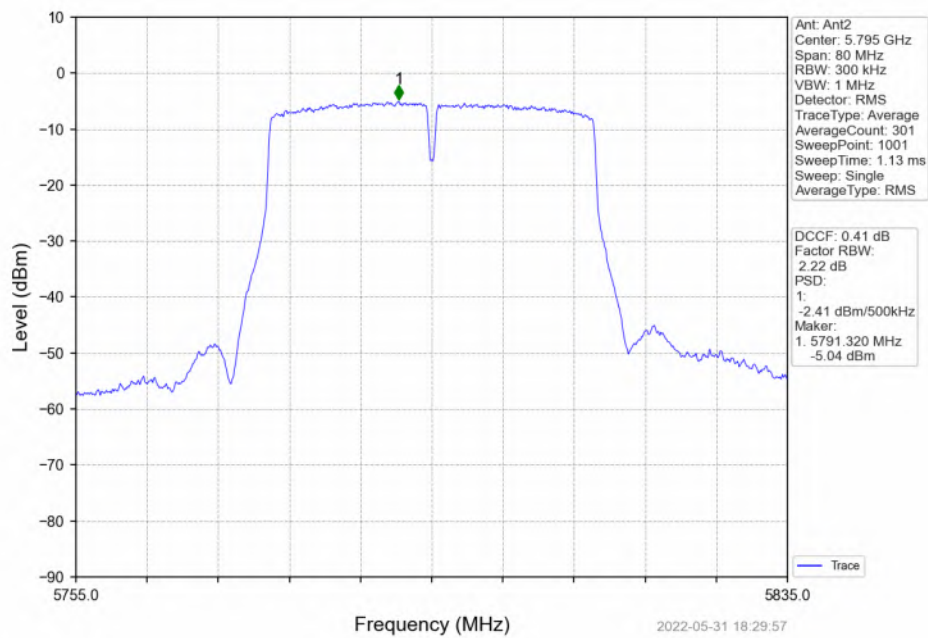
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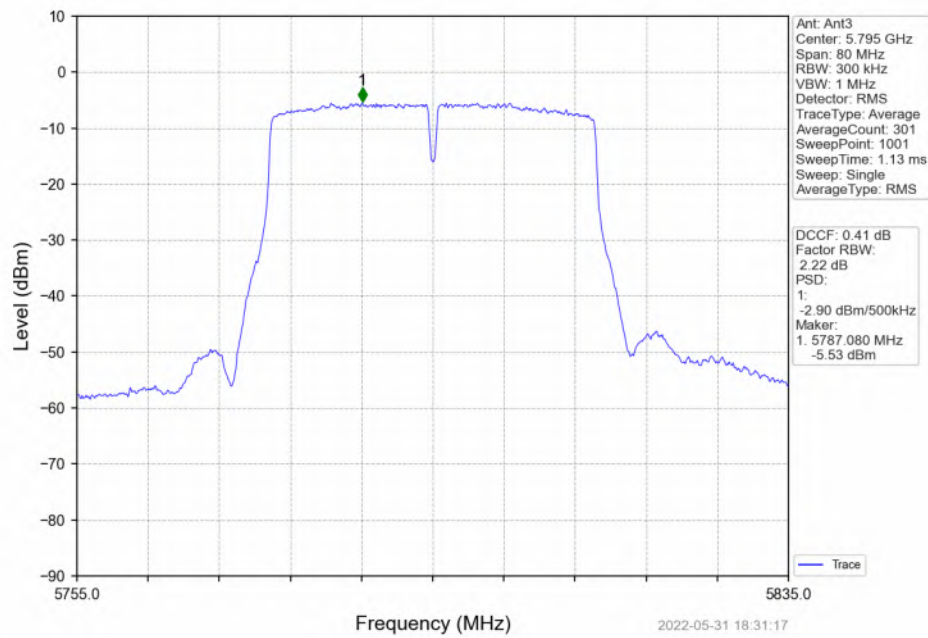
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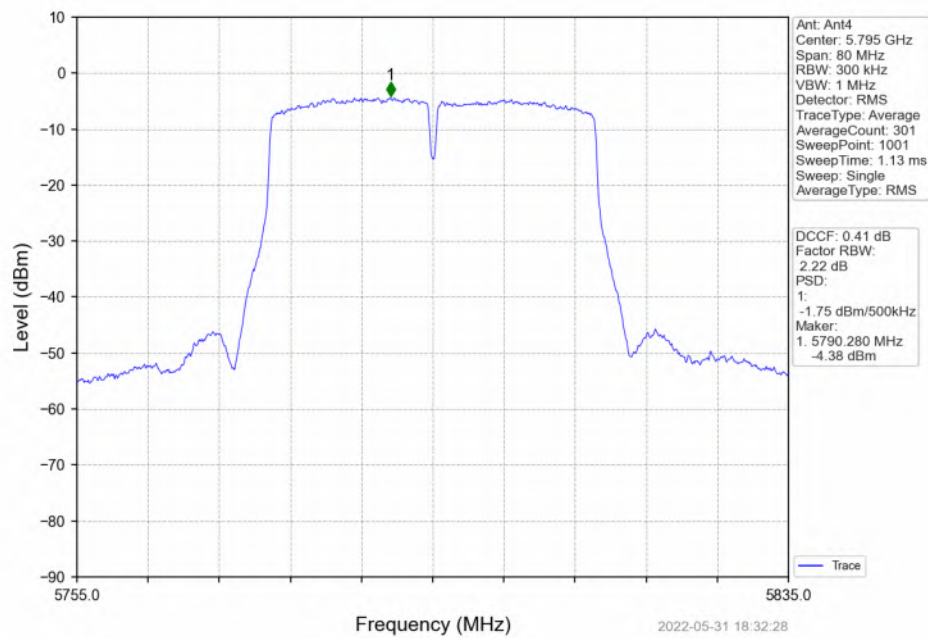
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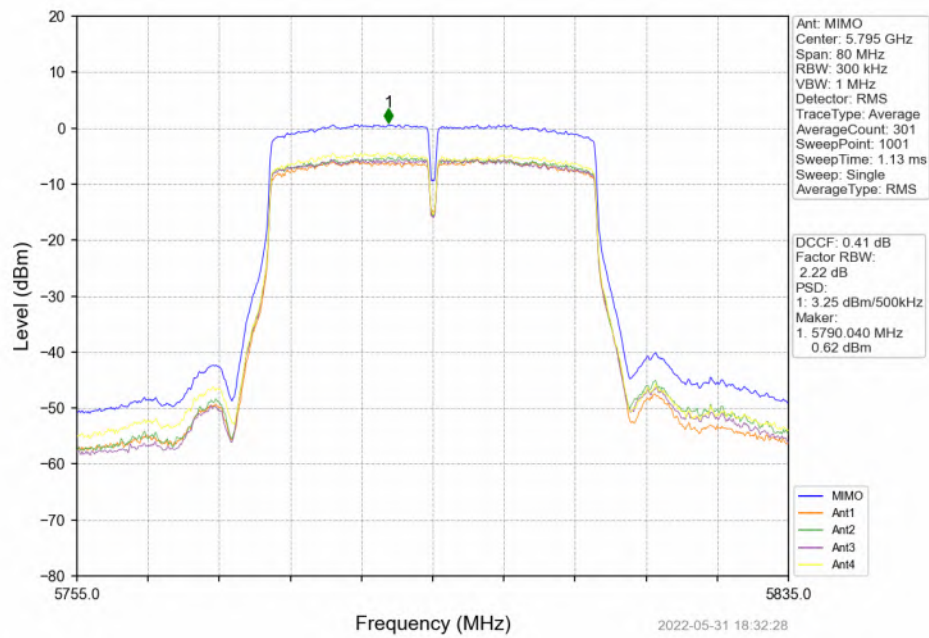
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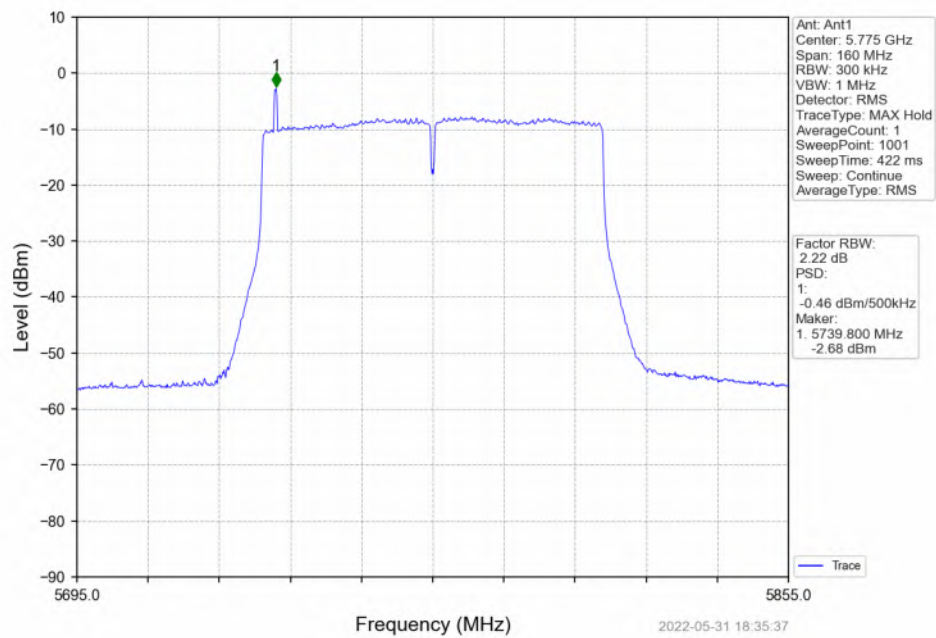
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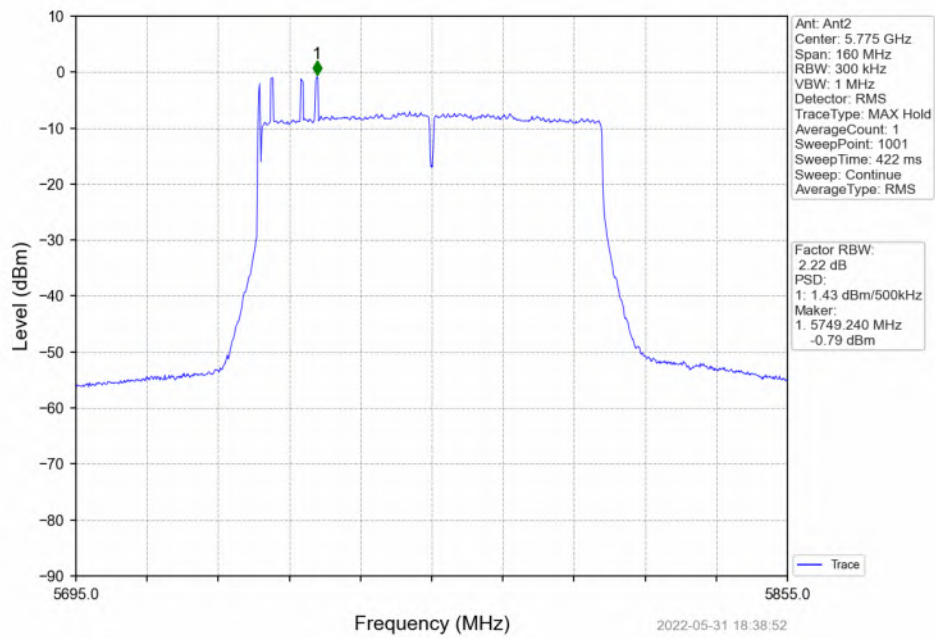
802.11ac(VHT40)_HCH_5795MHz_MIMO_NTNV



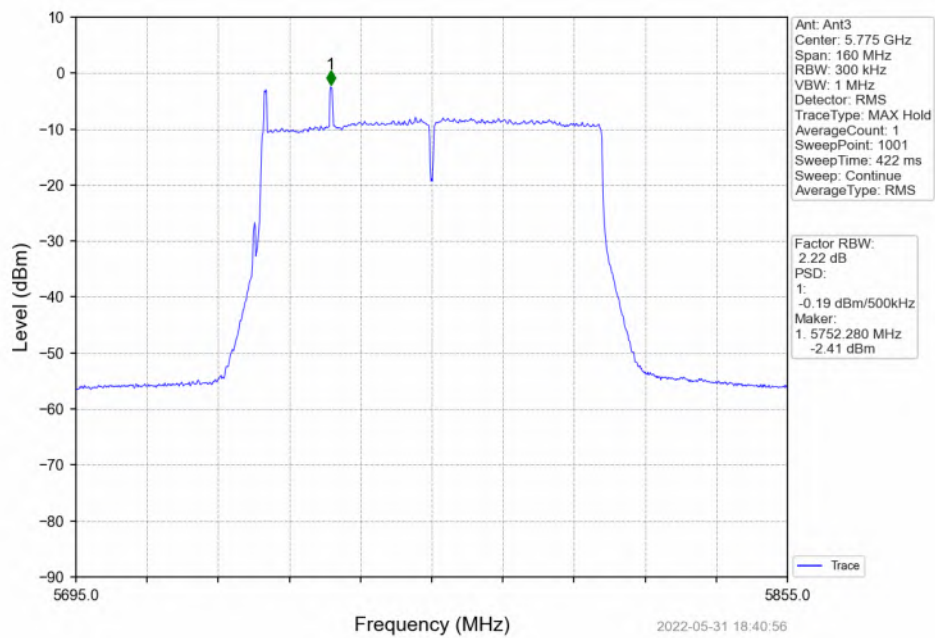
802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



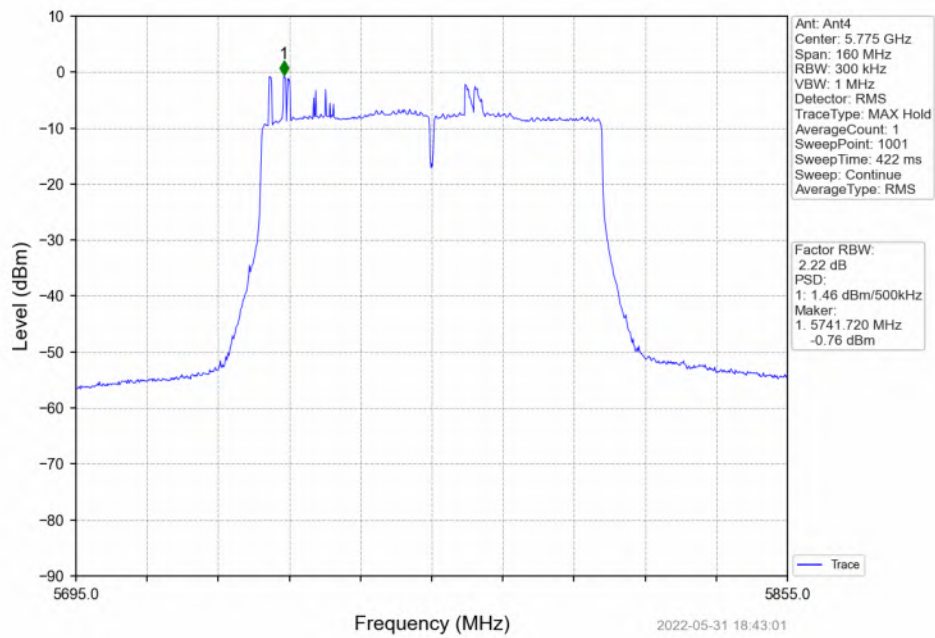
802.11ac(VHT80)_MCH_5775MHz_Ant2_NTNV



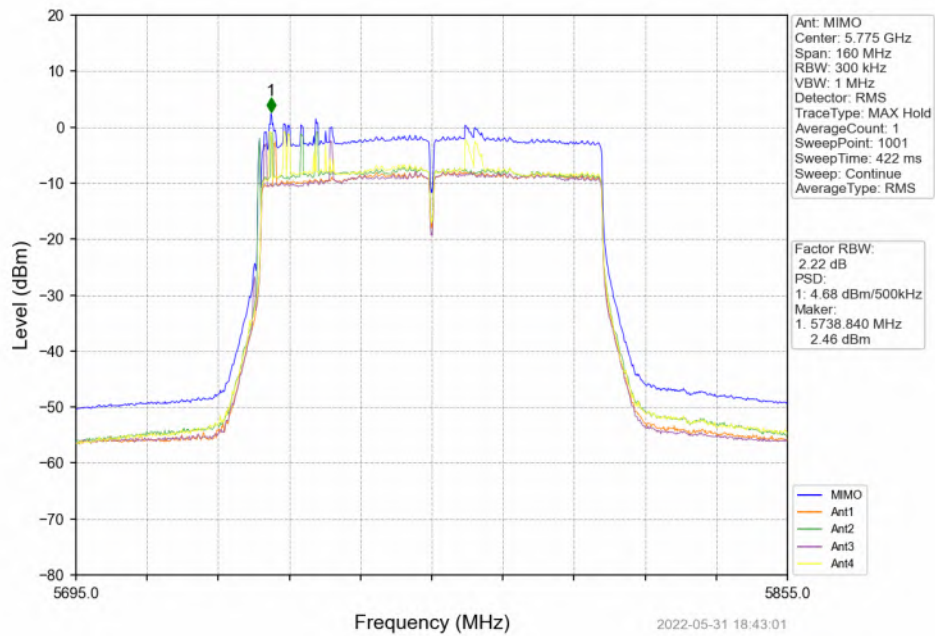
802.11ac(VHT80)_MCH_5775MHz_Ant3_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant4_NTNV



802.11ac(VHT80)_MCH_5775MHz_MIMO_NTNV



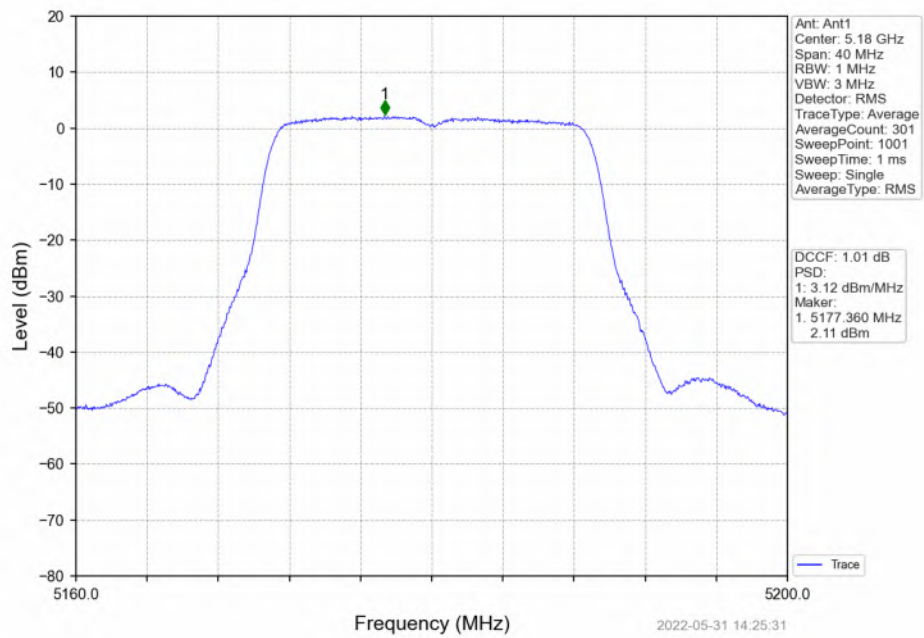
Module 2**Band 1 (5180 - 5240)**

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/MHz)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5180	3.12	3.69	2.70	2.56	8.92	<=11	Pass
		5200	3.15	3.82	2.83	2.37	8.86	<=11	Pass
		5240	2.66	3.36	2.63	2.47	8.56	<=11	Pass
802.11ac (VHT40)	MIMO	5190	0.79	1.72	0.42	-0.12	6.55	<=11	Pass
		5230	0.26	5.52	0.52	4.32	8.15	<=11	Pass
802.11ac (VHT80)	MIMO	5210	-1.75	-1.04	-2.38	-2.84	3.73	<=11	Pass

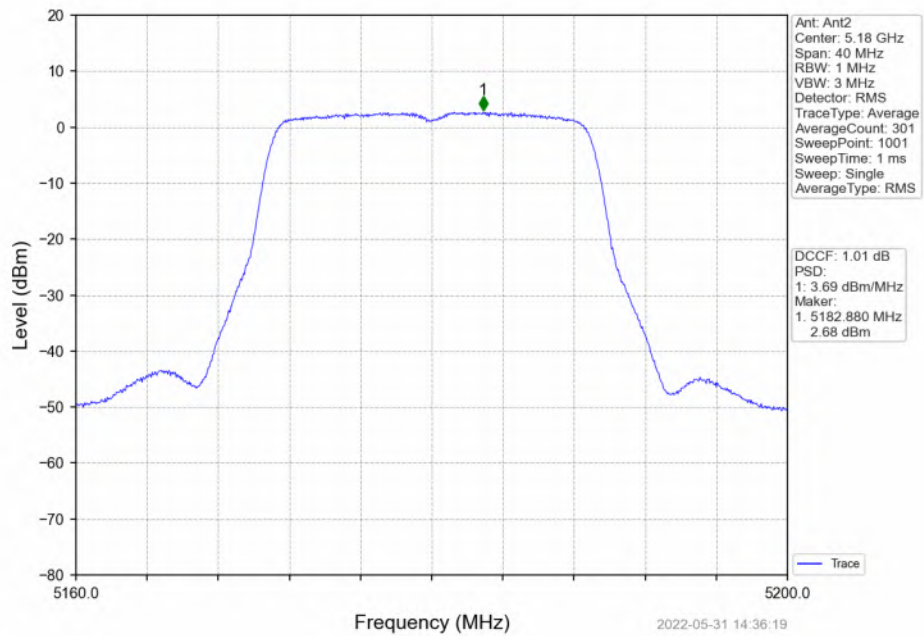
Band 4 (5745 - 5825)

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)						Verdict
			ANT1	ANT2	ANT3	ANT4	MIMO	Limit	
802.11ac (VHT20)	MIMO	5745	0.68	2.40	2.22	2.24	7.81	<=30	Pass
		5785	0.98	3.35	2.05	1.60	8.01	<=30	Pass
		5825	1.02	3.72	1.10	1.21	7.67	<=30	Pass
802.11ac (VHT40)	MIMO	5755	-2.48	0.19	-0.73	-0.89	4.98	<=30	Pass
		5795	-2.01	4.40	-3.12	3.22	6.51	<=30	Pass
802.11ac (VHT80)	MIMO	5775	-5.11	-2.89	-4.85	-3.72	1.58	<=30	Pass

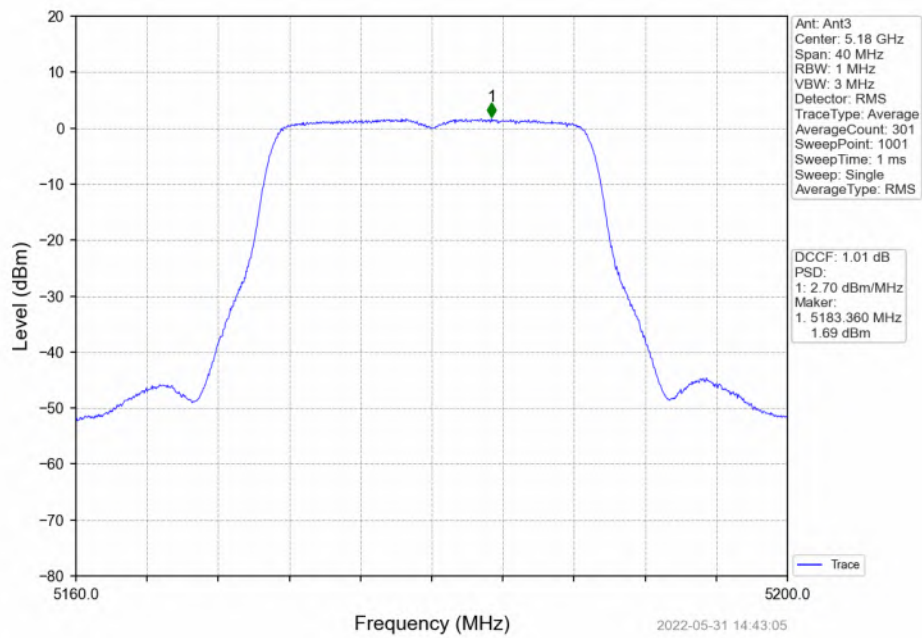
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



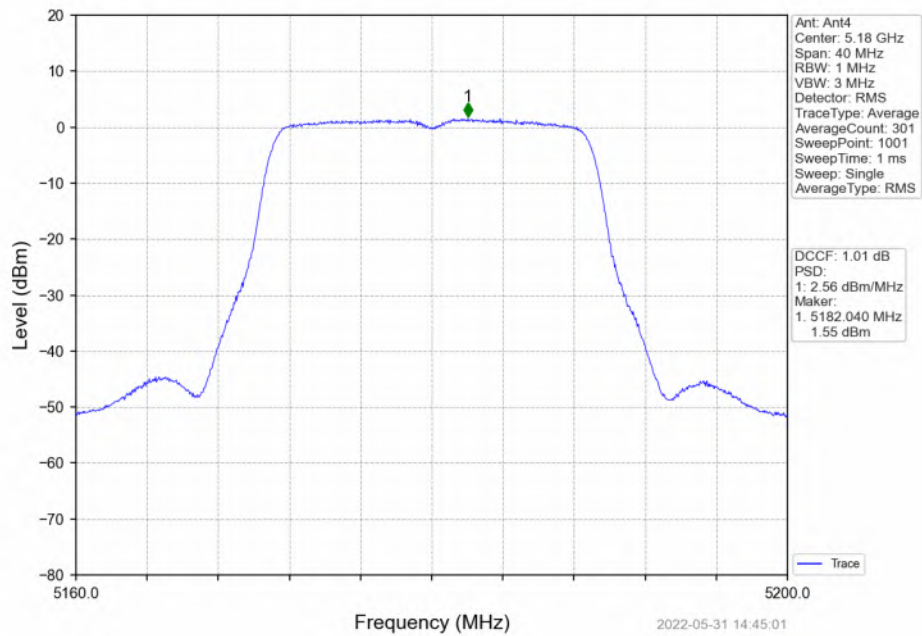
802.11ac(VHT20)_LCH_5180MHz_Ant2_NTNV



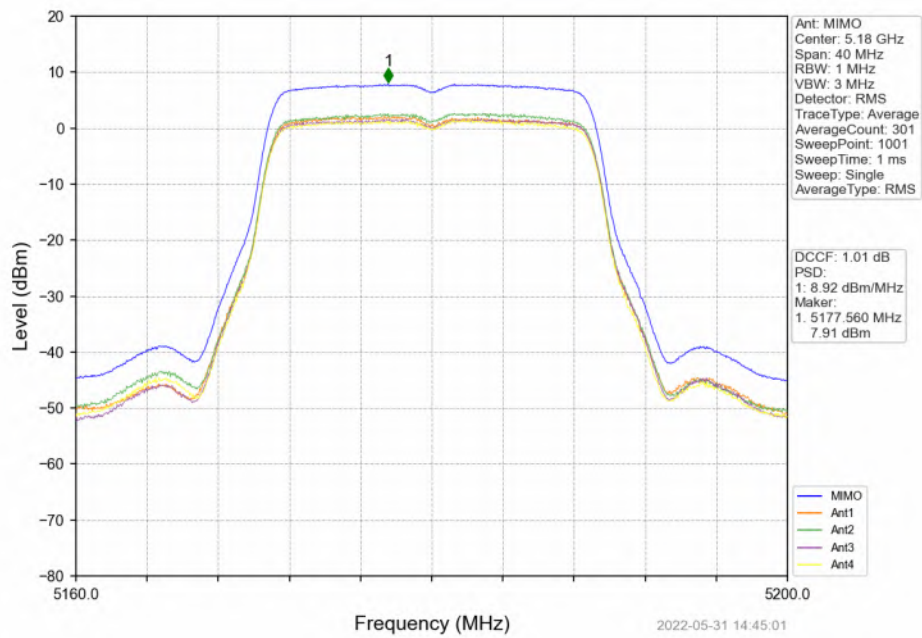
802.11ac(VHT20)_LCH_5180MHz_Ant3_NTNV



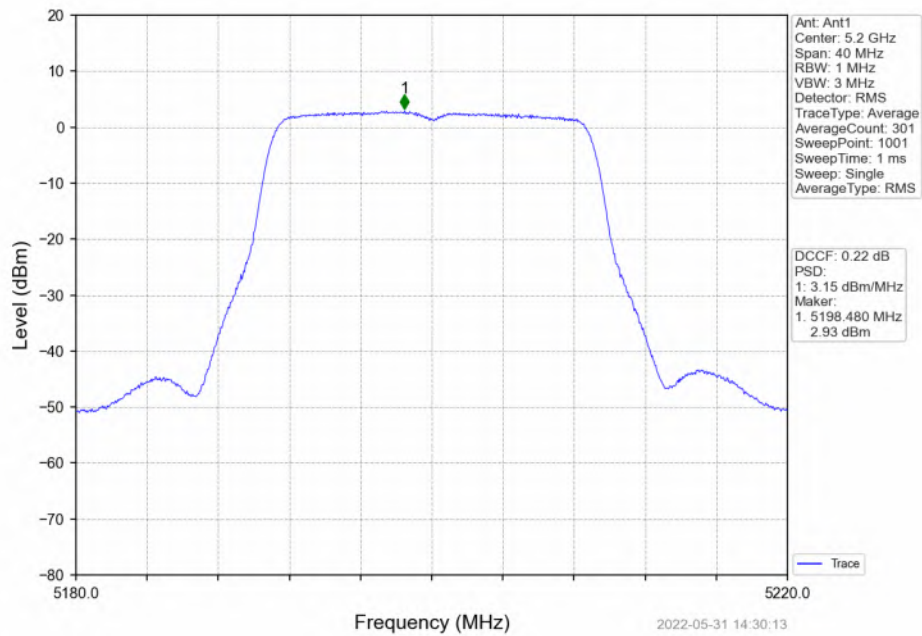
802.11ac(VHT20)_LCH_5180MHz_Ant4_NTNV



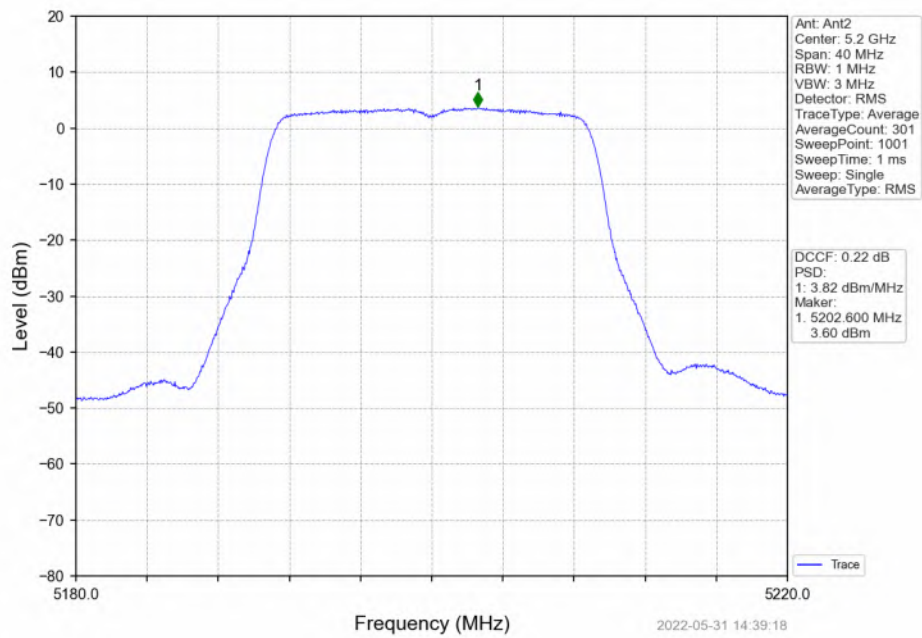
802.11ac(VHT20)_LCH_5180MHz_MIMO_NTNV



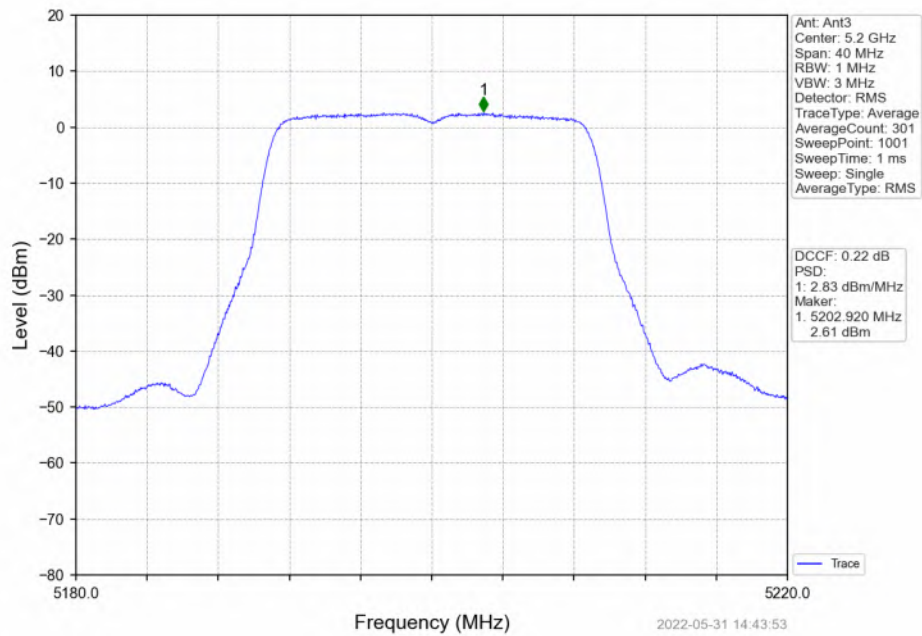
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



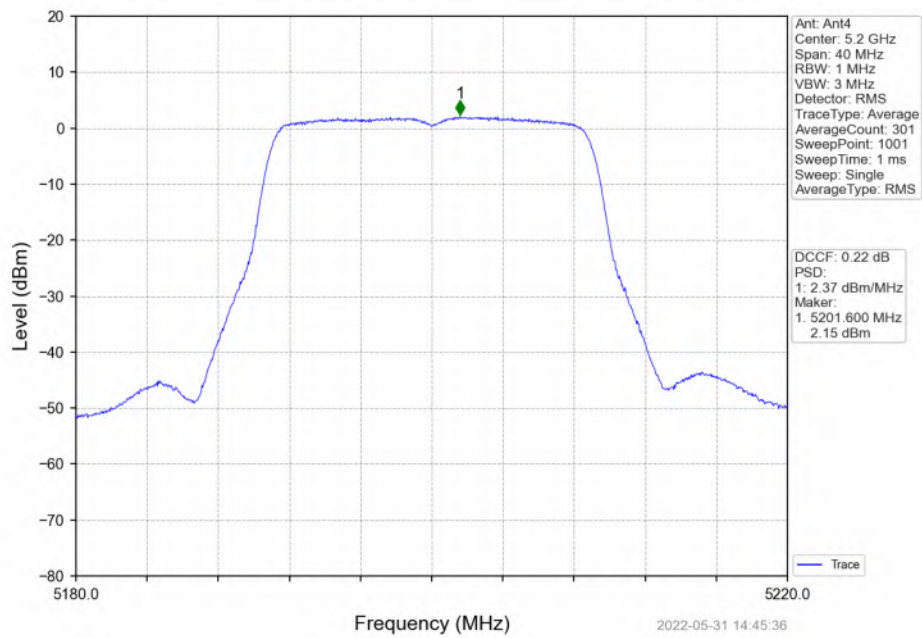
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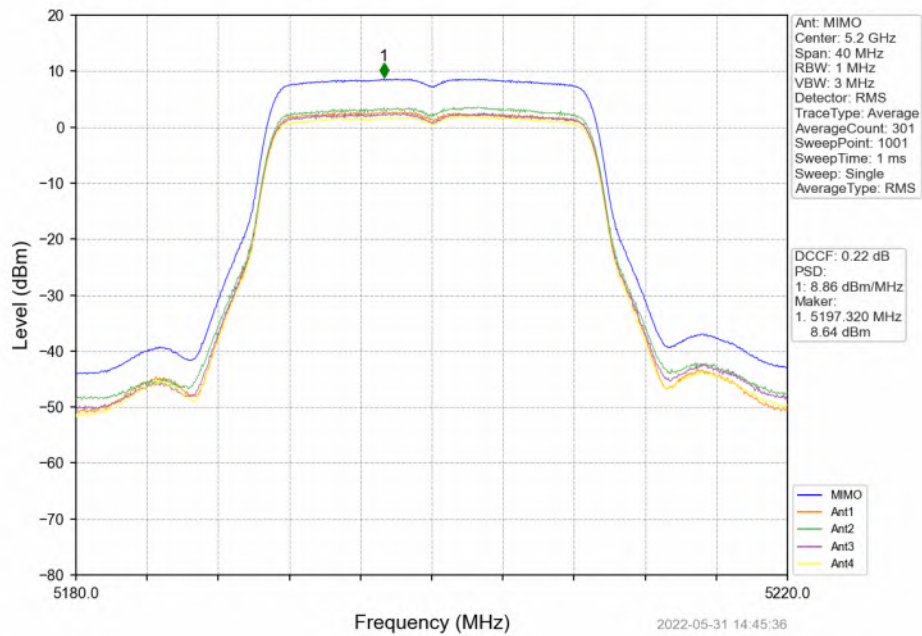
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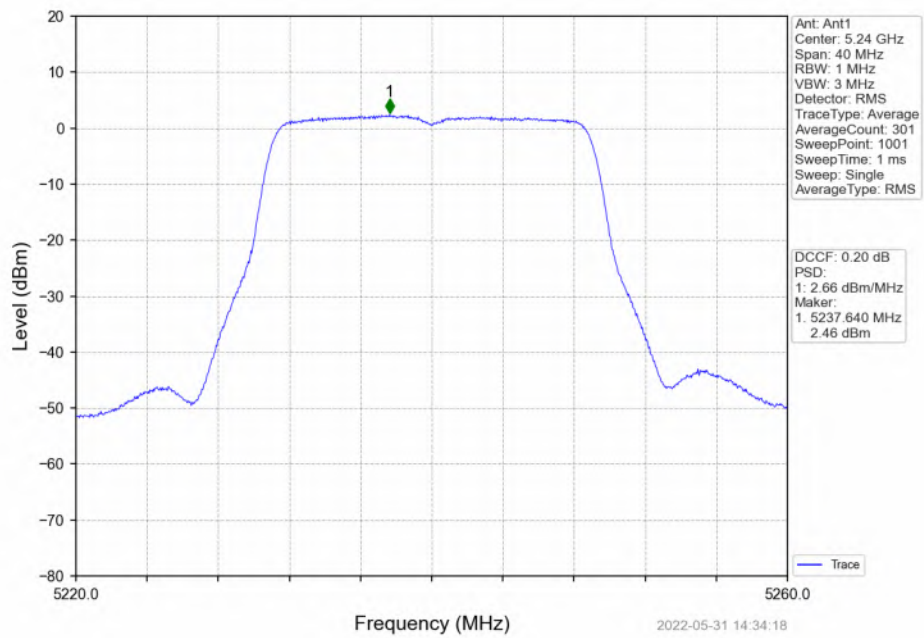
802.11ac(VHT20)_MCH_5200MHz_Ant4_NTNV



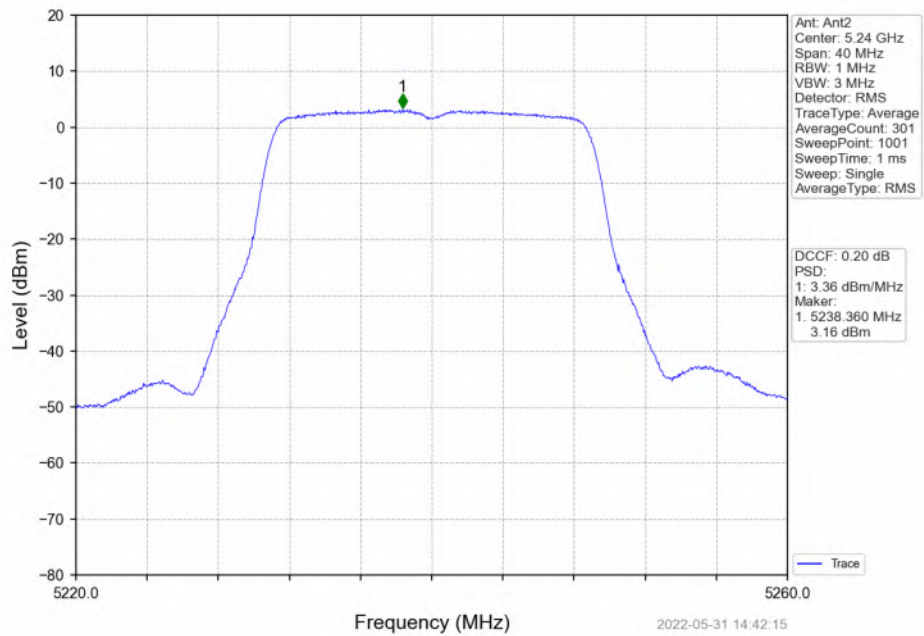
802.11ac(VHT20)_MCH_5200MHz_MIMO_NTNV



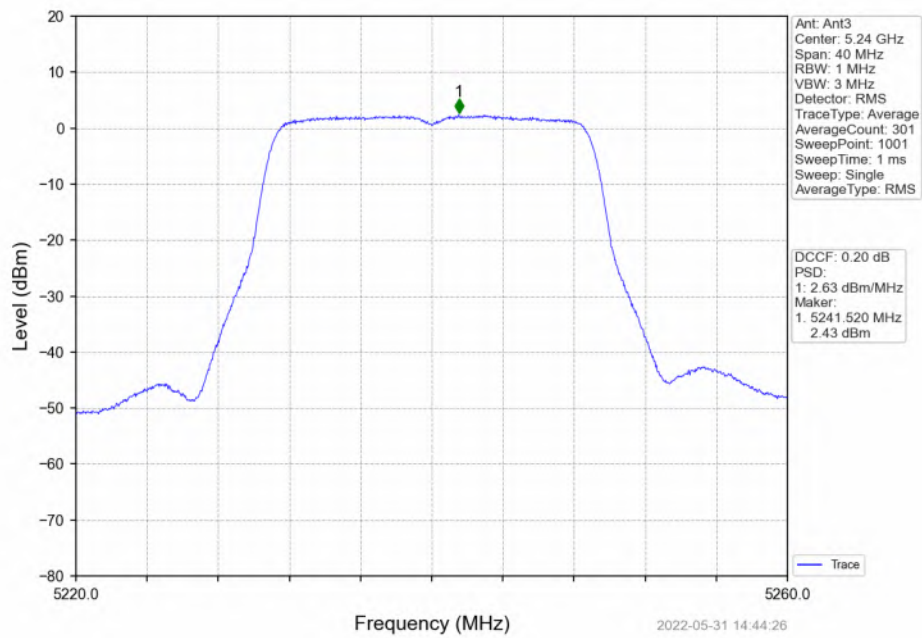
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



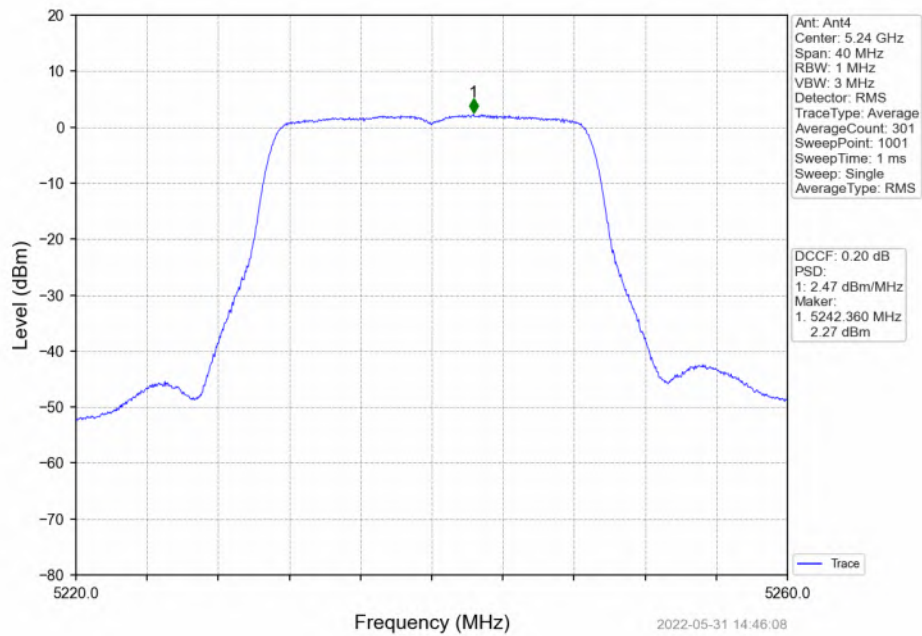
802.11ac(VHT20)_HCH_5240MHz_Ant2_NTNV



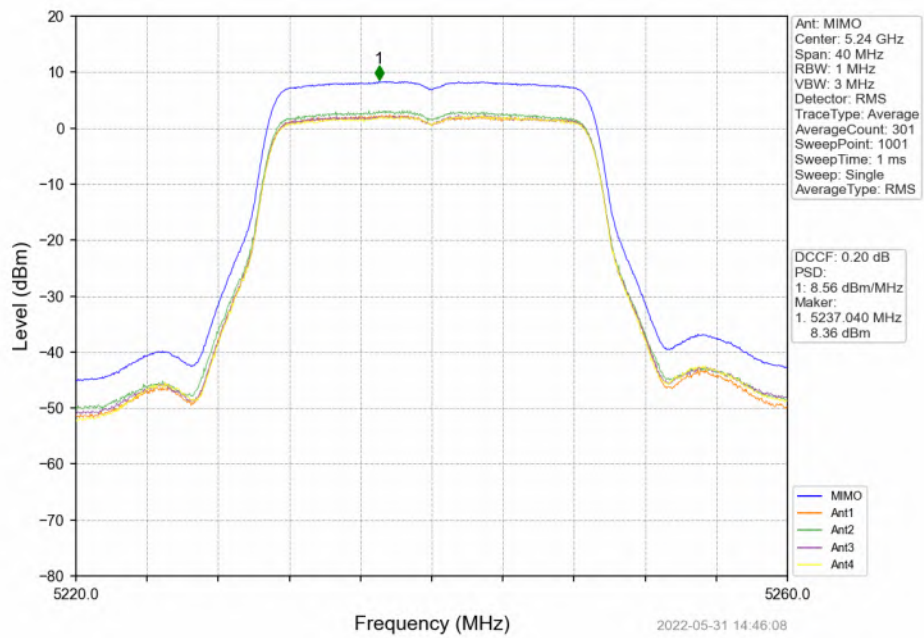
802.11ac(VHT20)_HCH_5240MHz_Ant3_NTNV



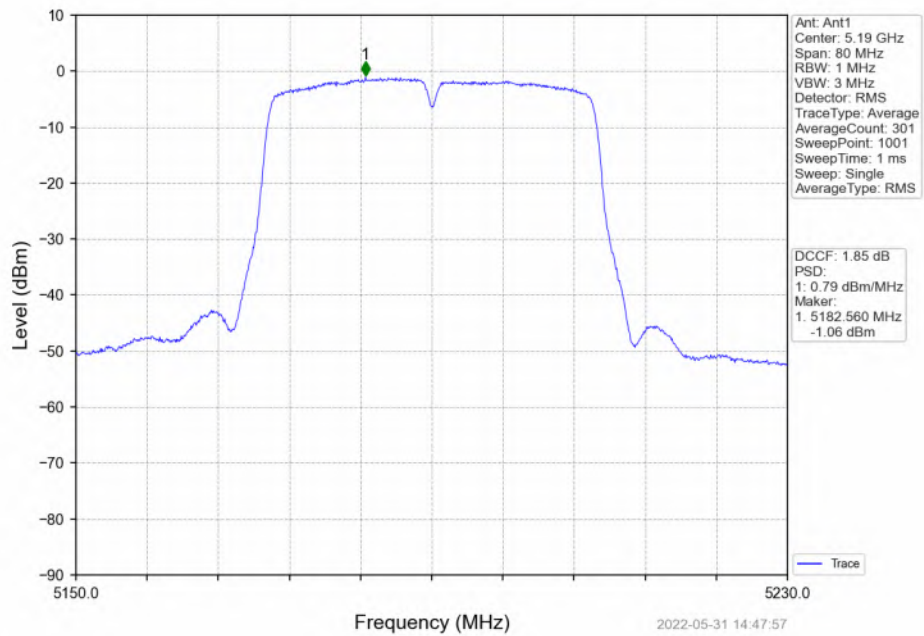
802.11ac(VHT20)_HCH_5240MHz_Ant4_NTNV



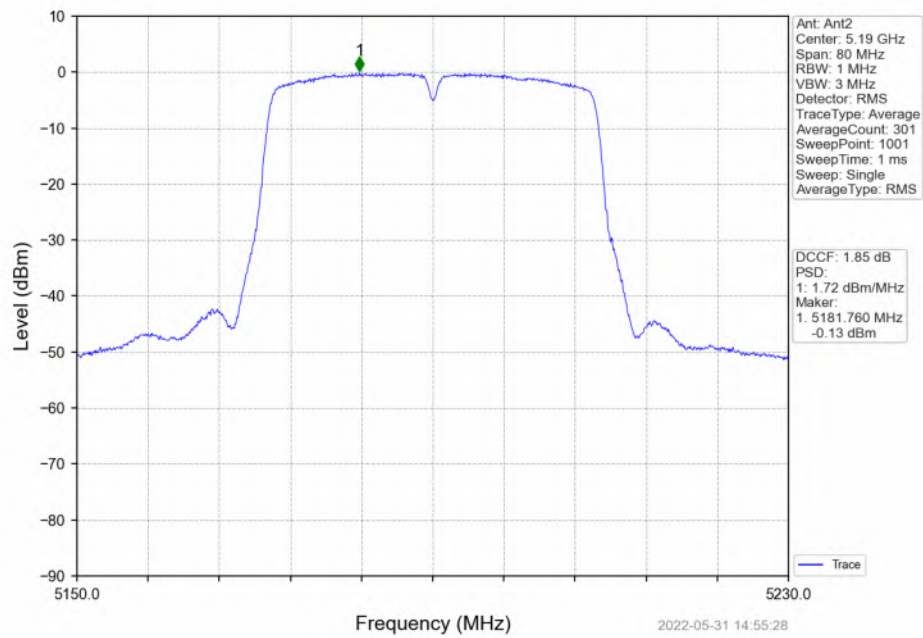
802.11ac(VHT20)_HCH_5240MHz_MIMO_NTNV



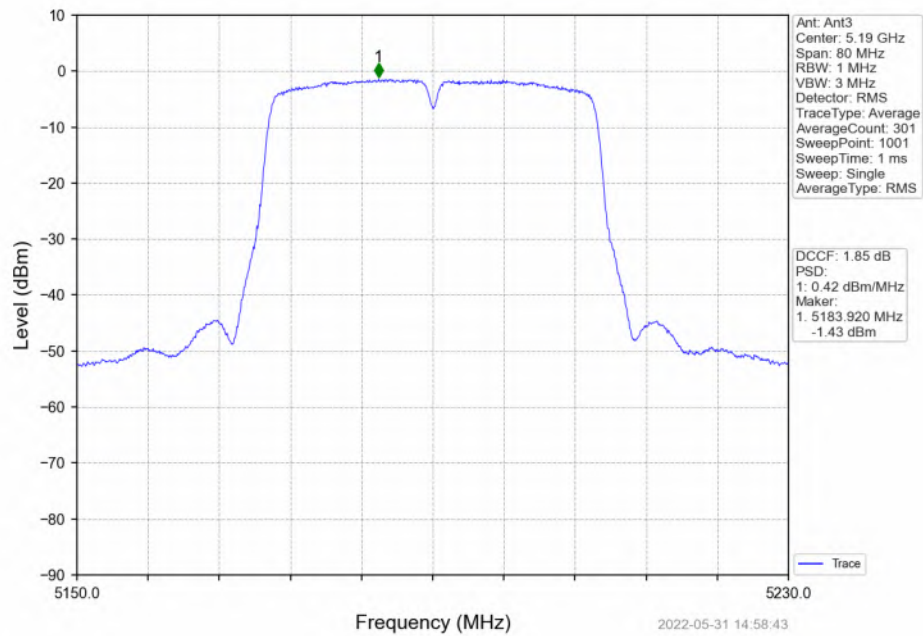
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



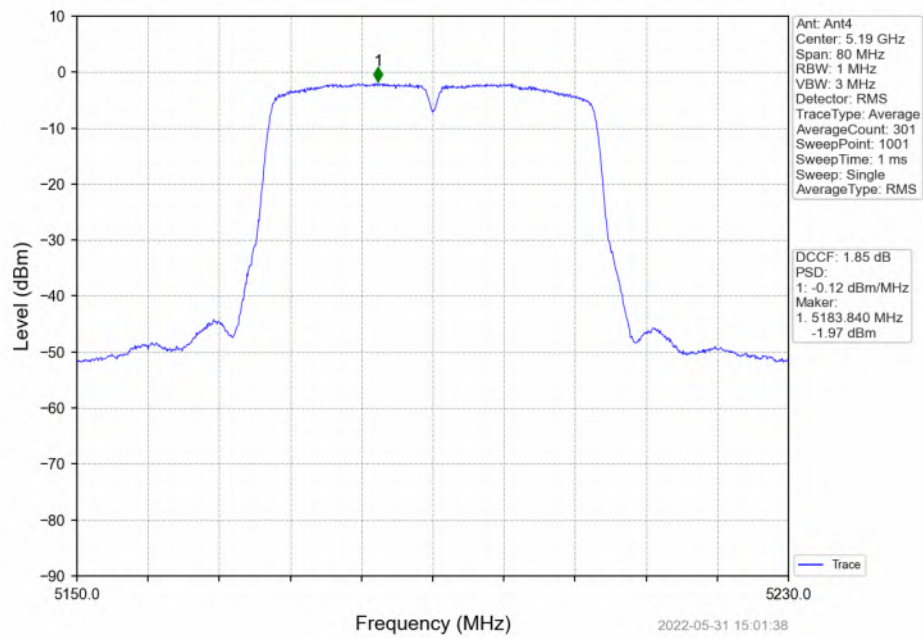
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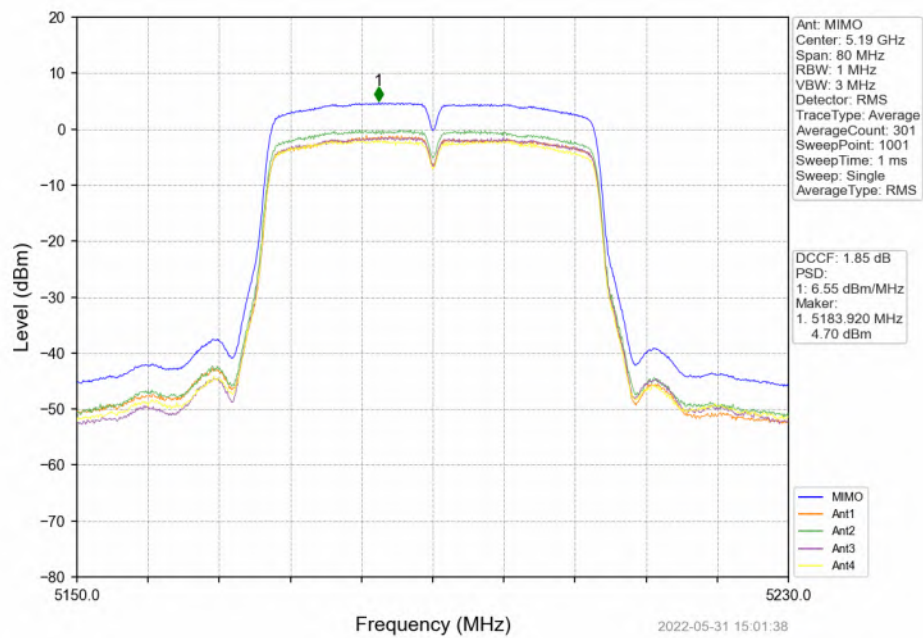
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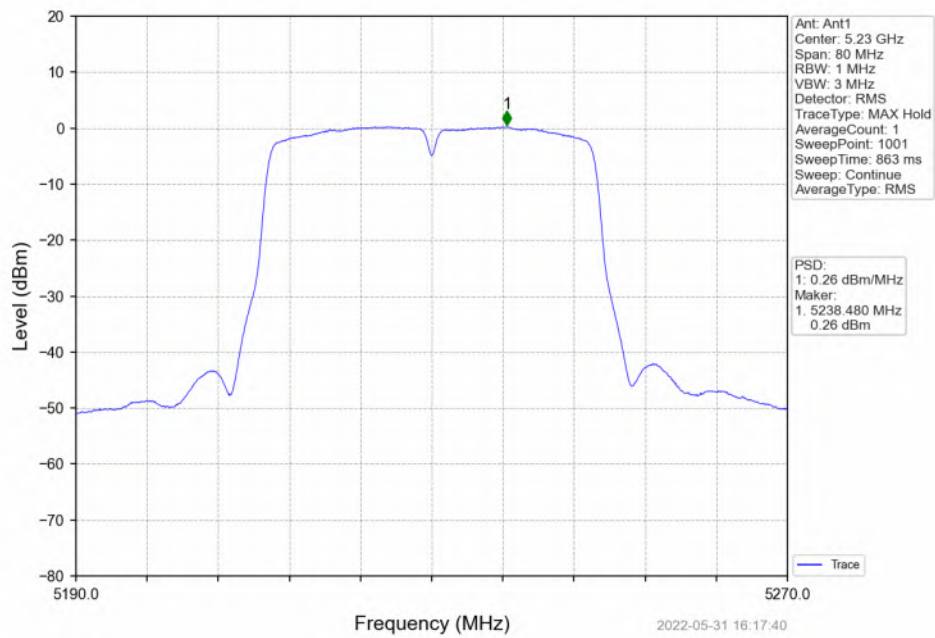
802.11ac(VHT40) LCH 5190MHz Ant4 NTN



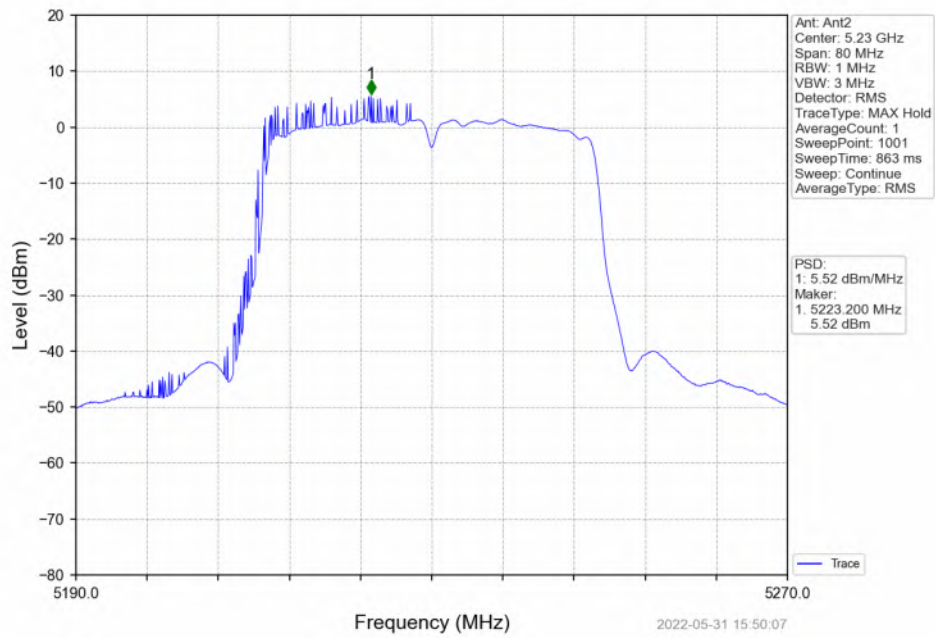
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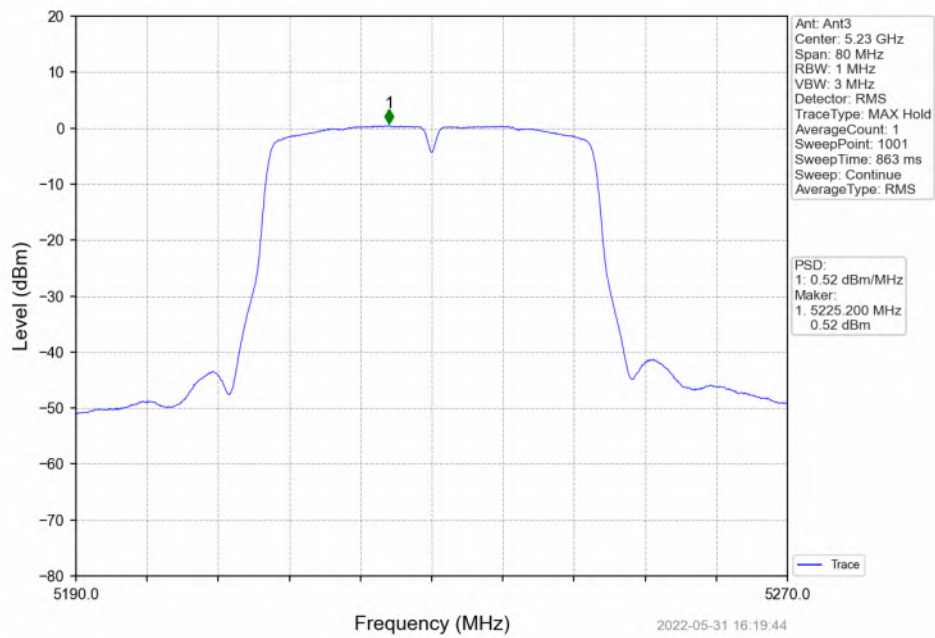
802.11ac(VHT40) _HCH_ 5230MHz _Ant1_ NTN



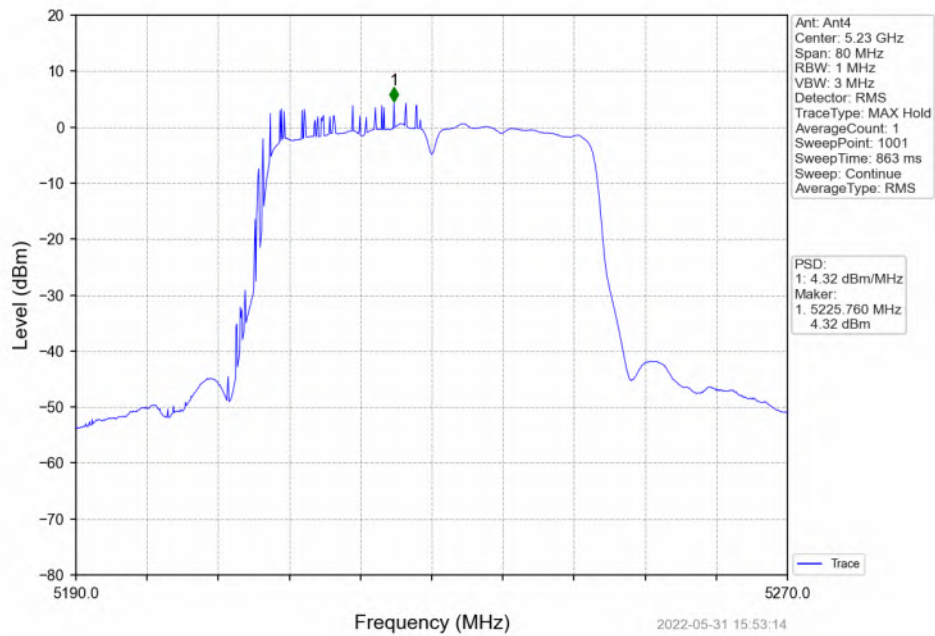
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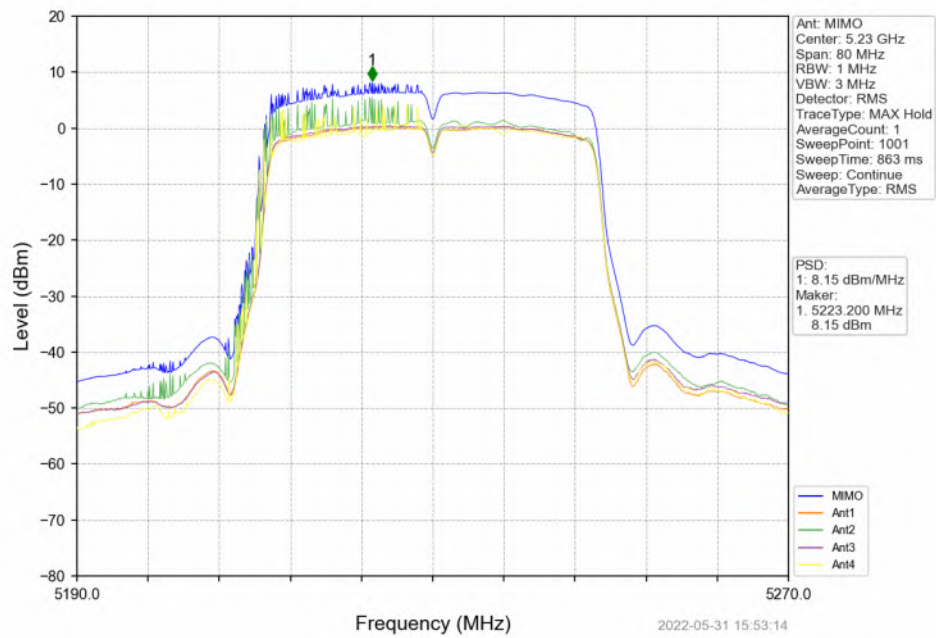
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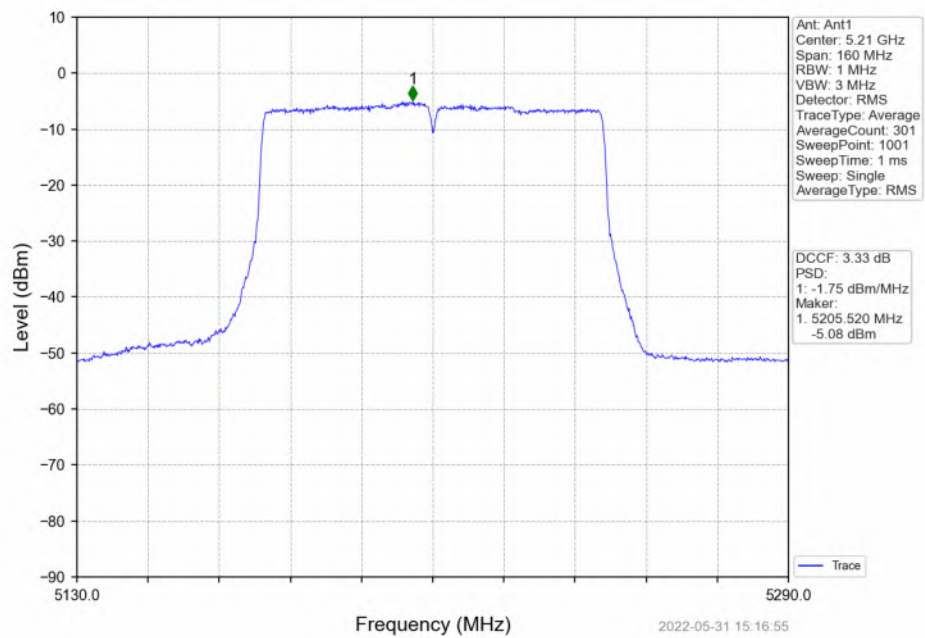
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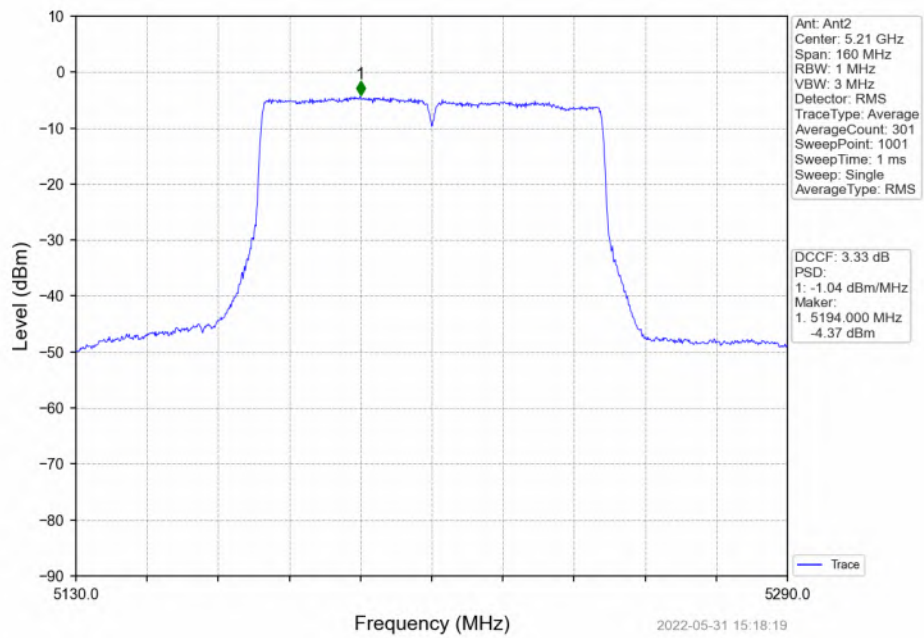
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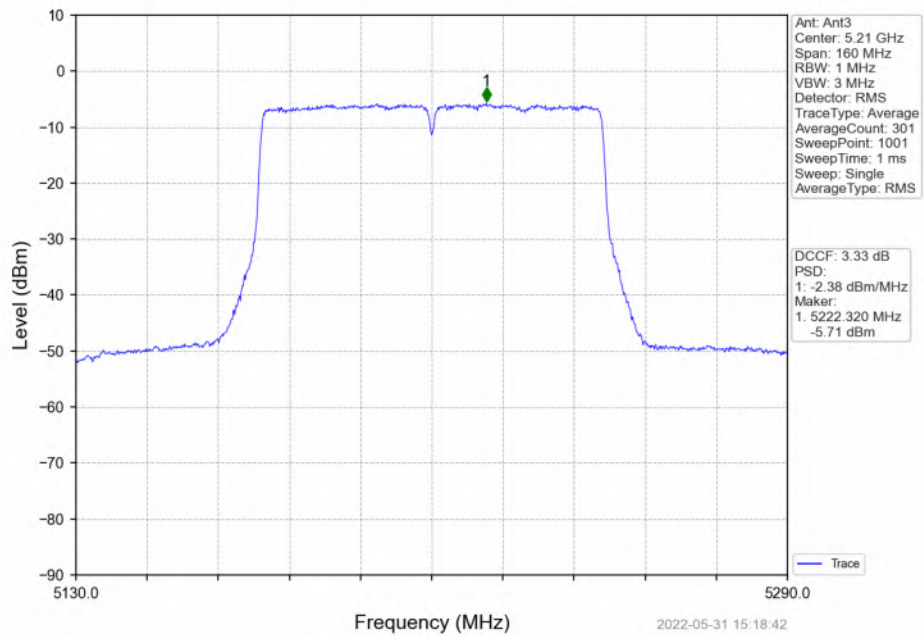
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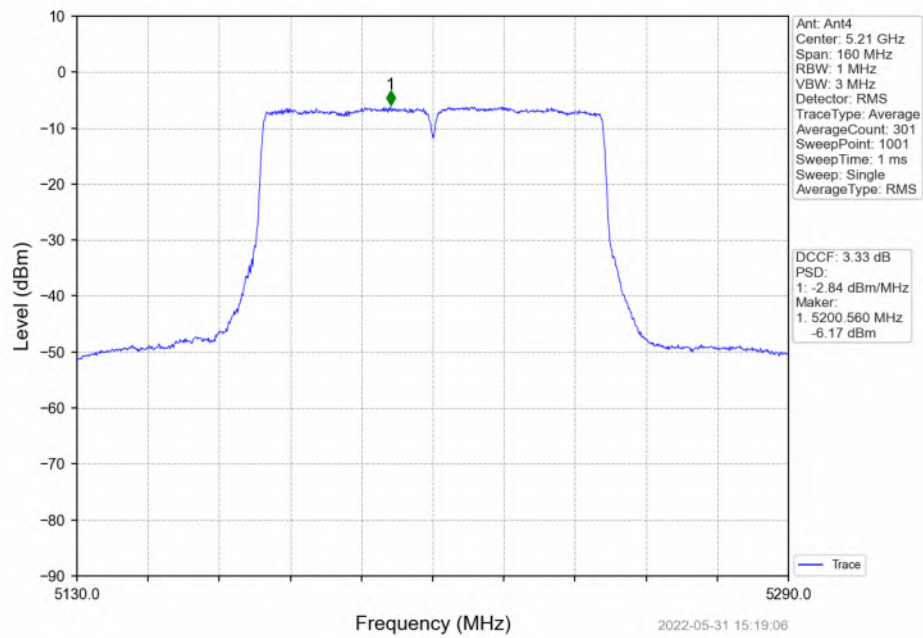
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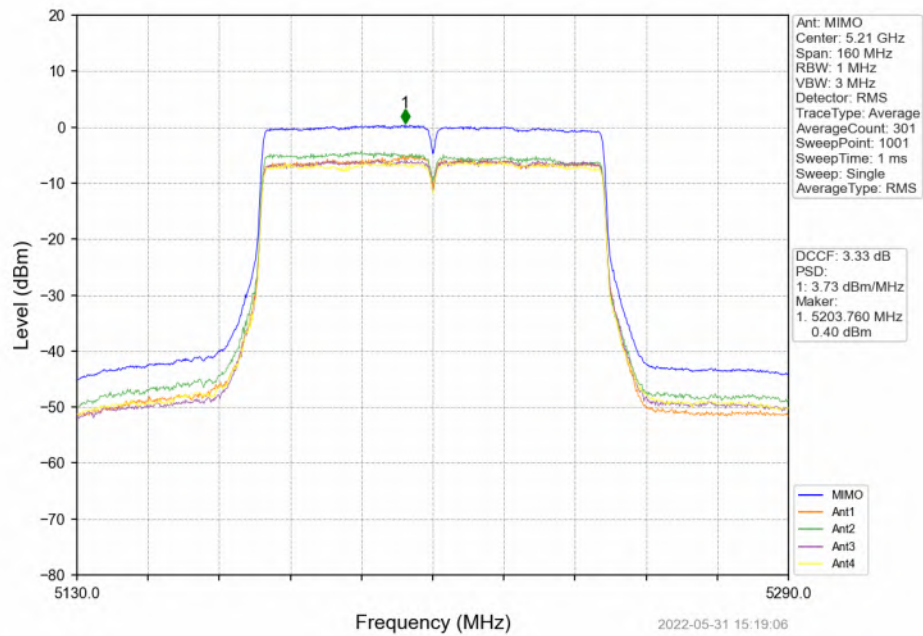
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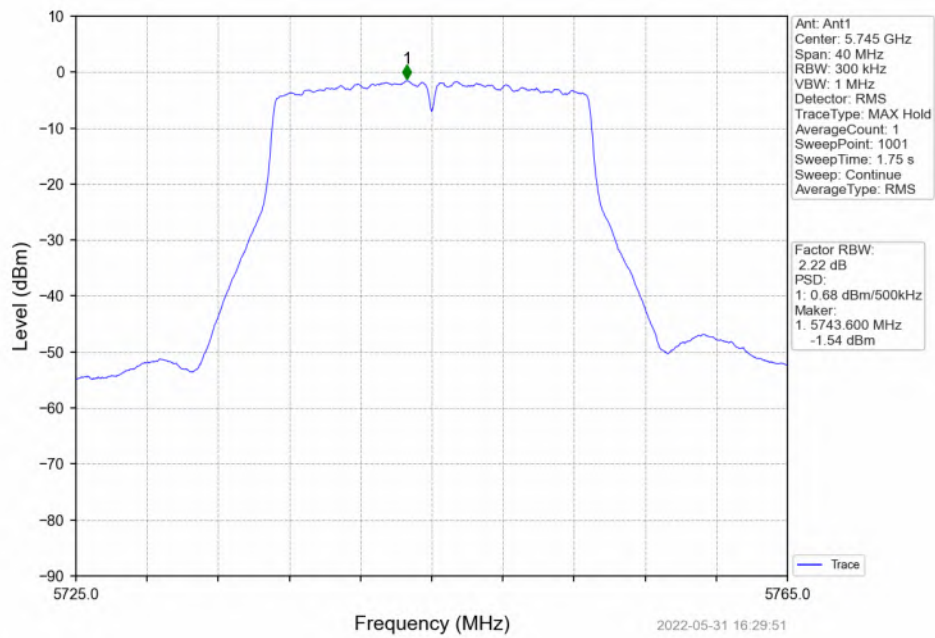
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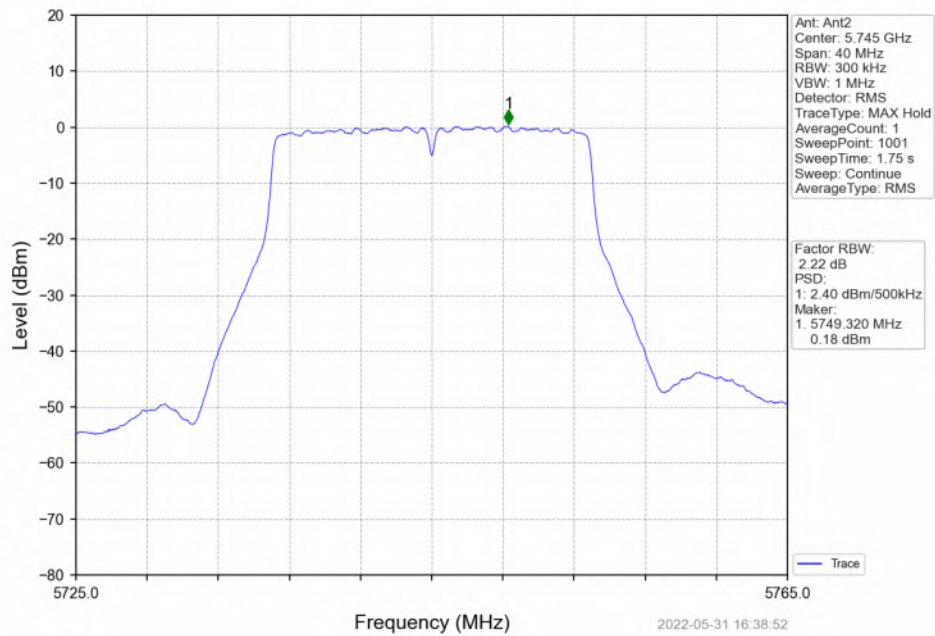
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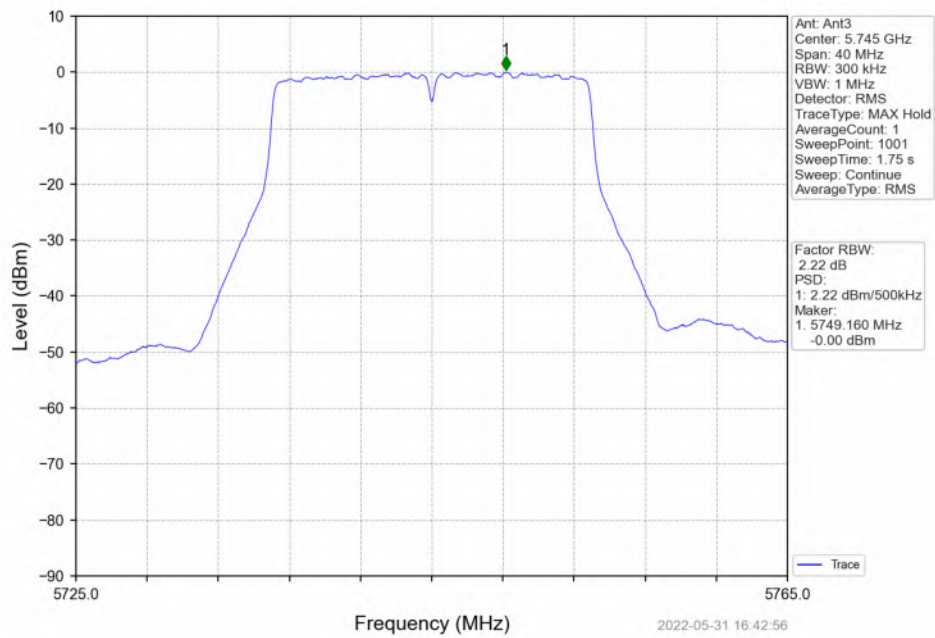
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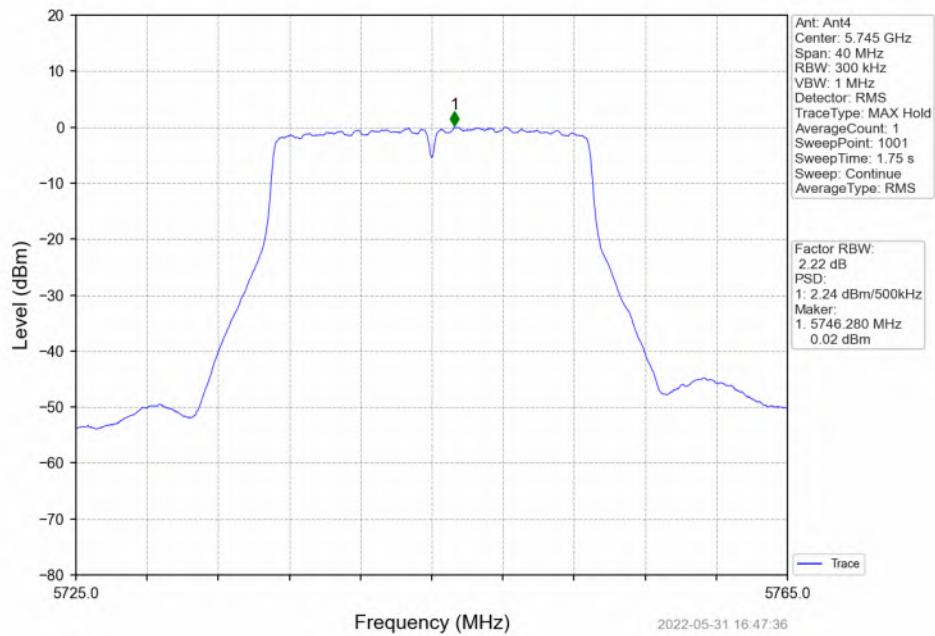
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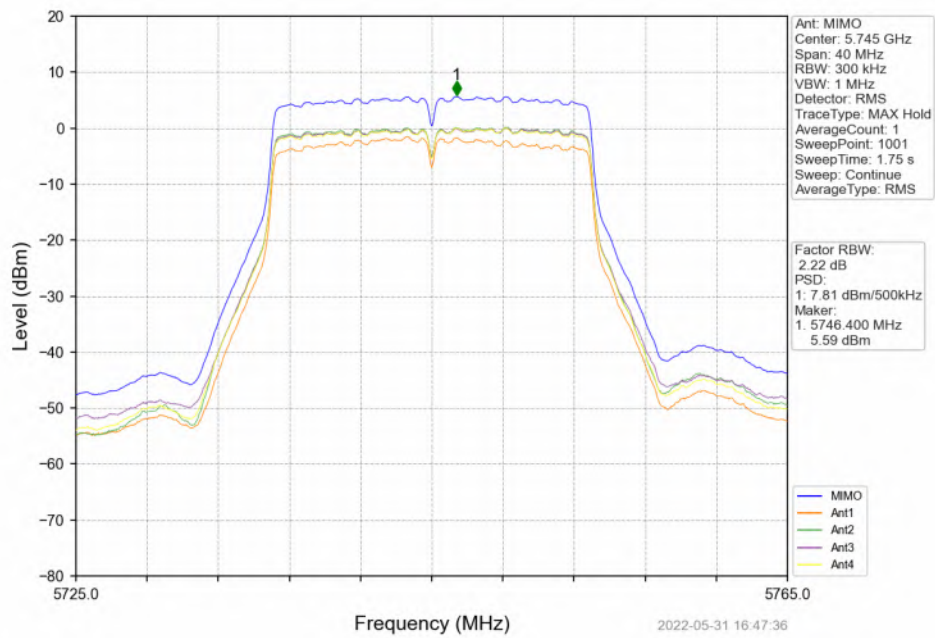
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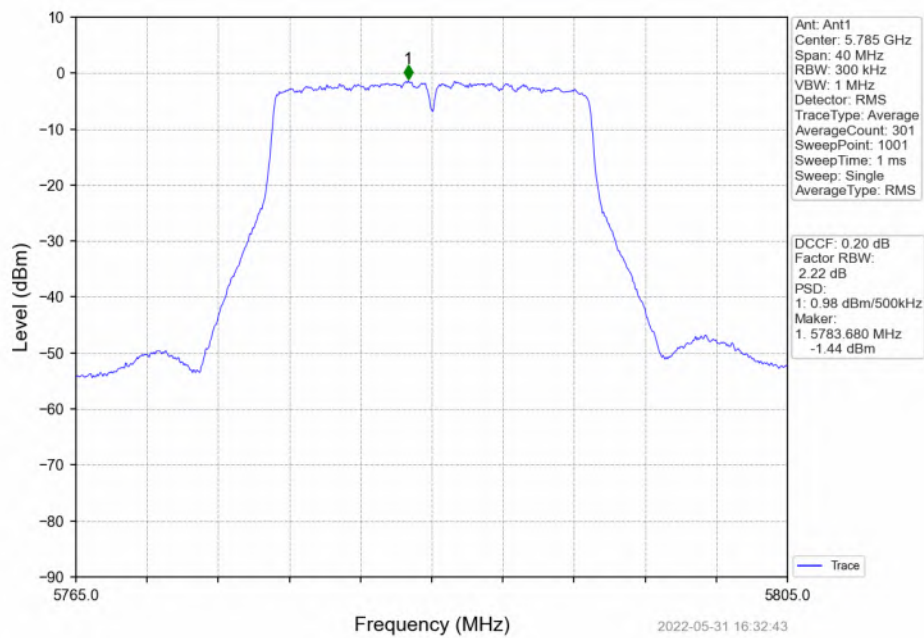
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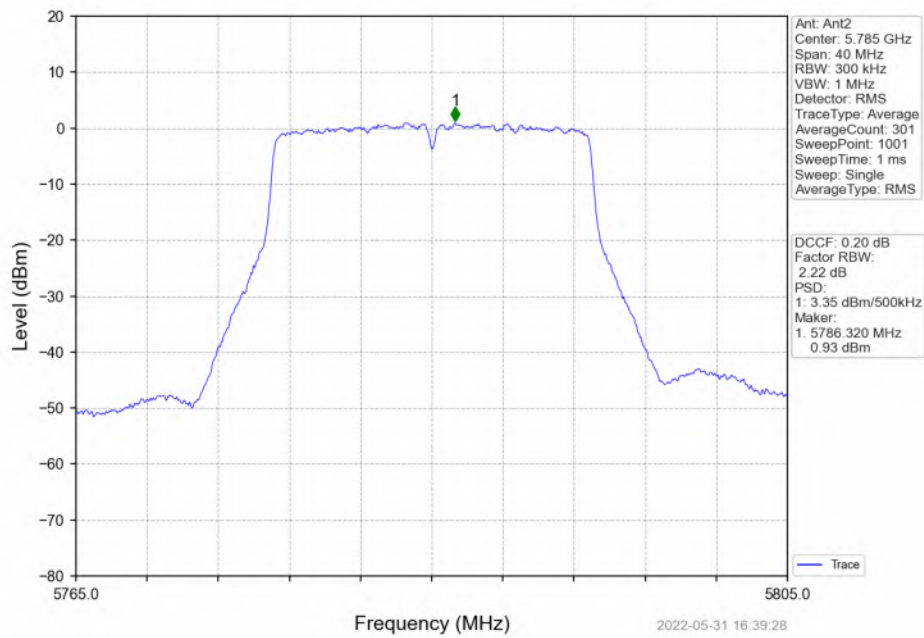
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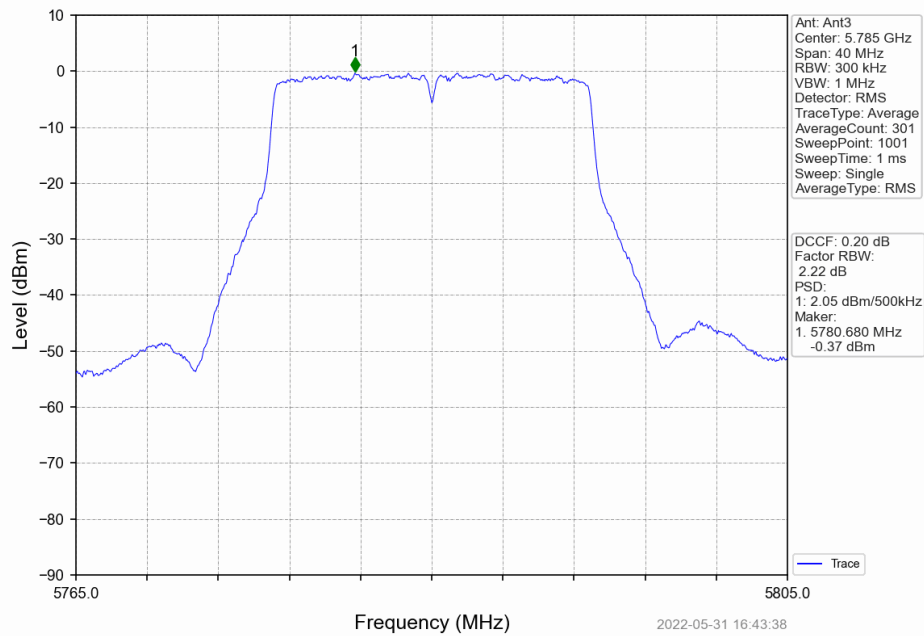
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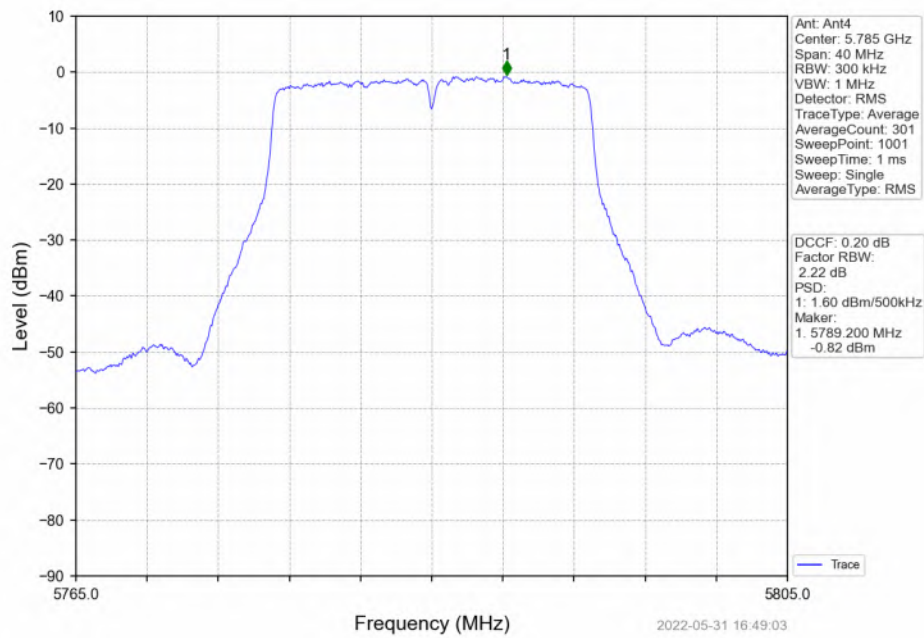
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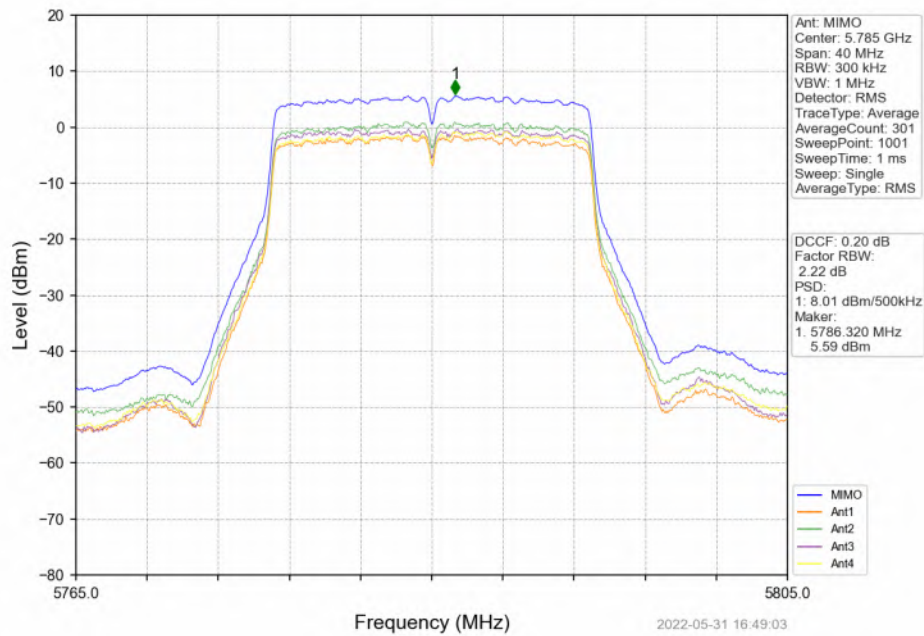
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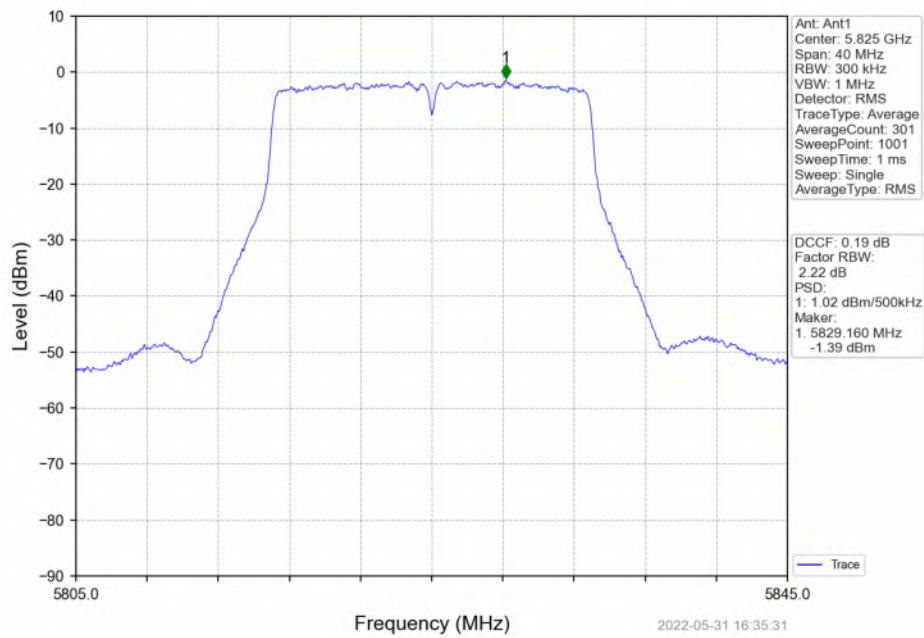
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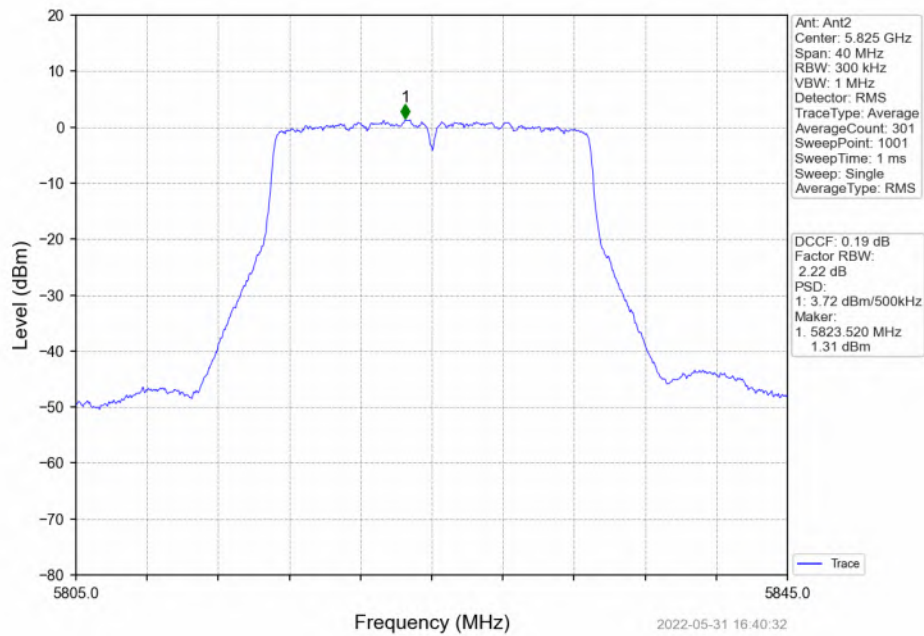
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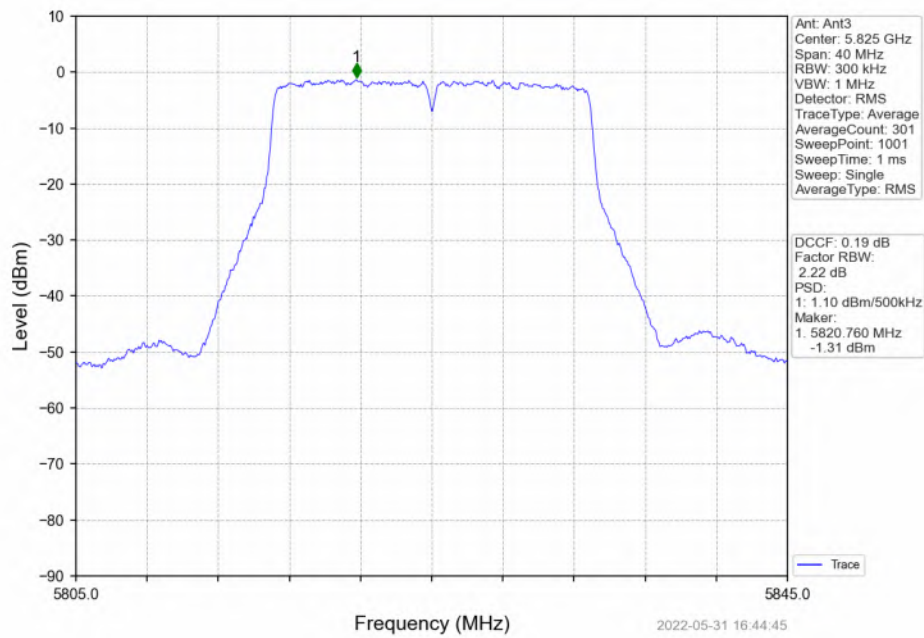
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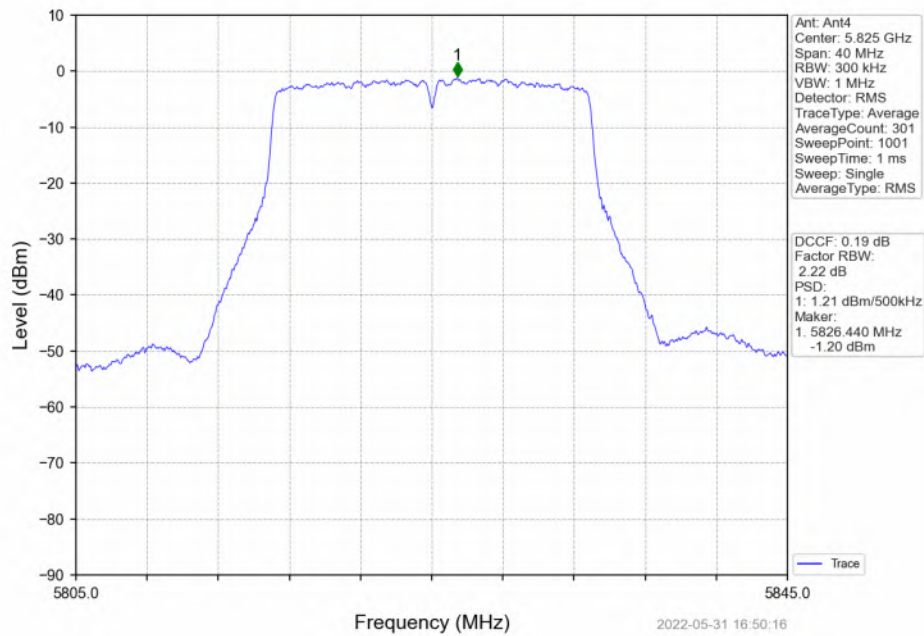
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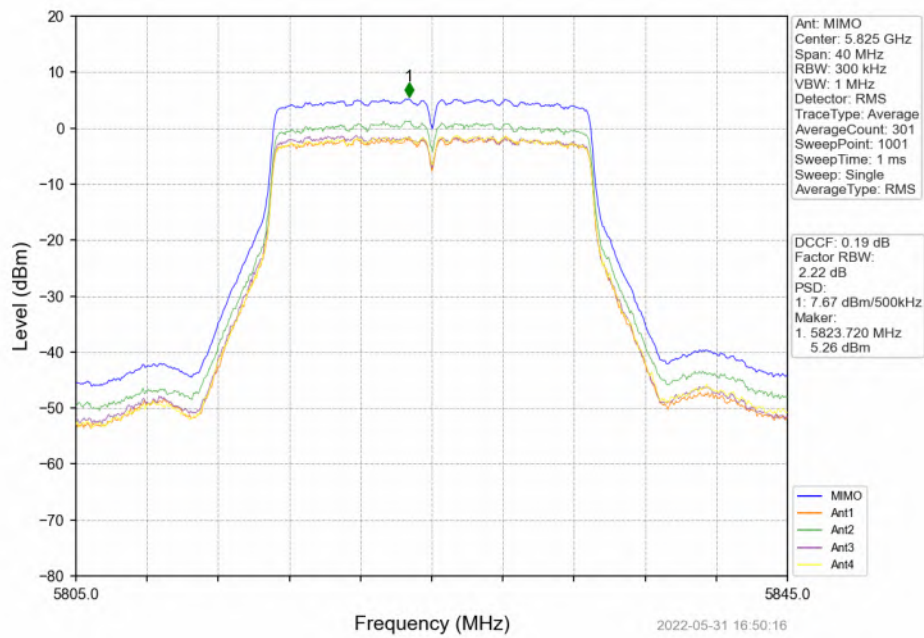
802.11ac(VHT20)_HCH_5825MHz_Ant3_NTNV



802.11ac(VHT20)_HCH_5825MHz_Ant4_NTNV



802.11ac(VHT20)_HCH_5825MHz_MIMO_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV

