

FCC - TEST REPORT

Report Number : **68.950.23.0962.01** Date of Issue: **2023-12-26**

Model : **TA2C-CS8**

Product Type : **TABLET PC**

Applicant : **ODS Corporation**

Address : **2-5 Kanda suda cho, Chiyoda ku, Tokyo 101-0041, Japan**

Manufacturer : **ODS Corporation**

Address : **2-5 Kanda suda cho, Chiyoda ku, Tokyo 101-0041, Japan**

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : **209**

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

Table of Contents

1.	DETAILS ABOUT THE TEST LABORATORY	3
2.	DESCRIPTION OF THE EQUIPMENT UNDER TEST	4
3.	SUMMARY OF TEST STANDARDS	5
4.	SUMMARY OF TEST RESULTS	6
5.	GENERAL REMARKS	7
6.	TEST SETUPS	8
7.	SYSTEMS TEST CONFIGURATION	10
8.	TECHNICAL REQUIREMENT	11
	8.1 Conducted emission AC power port	11
	8.2 Emission bandwidth	14
	8.3 Maximum conducted output power	100
	8.4 Maximum power spectral density	104
	8.5 Radiated Unwanted Emissions	162
	8.7 Frequencies Stability	195
	8.8 Dynamic Frequency Selection (DFS)	199
9.	TEST EQUIPMENT LIST	208
10.	SYSTEM MEASUREMENT UNCERTAINTY	209

1. Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District Shenzhen 518052 P.R. China
Telephone:	86 755 8828 6998
Fax:	86 755 8288 5299
FCC Registration No.:	514049
FCC Designation Number:	CN5009

2. Description of the Equipment Under Test

Product:	TABLET PC
Model no.:	TA2C-CS8
FCC ID:	2BDQY-TA2C-CS8
Options and accessories:	Adapter Model: ICP30A-050-3000 Input: 100-240VAC 50/60Hz, 0.8A Output: 5VDC, 3A Manufacturer: Shenzhen Shi Ying Yuan Electronics Co., Ltd.
Rating:	3.8VDC, 6000mAh, (Supplied by Rechargeable Li-ion Battery) or 5VDC (Supplied by external adapter for Charging rechargeable battery)
RF transmission frequency:	5.150GHz~5.250GHz 5.250GHz~5.350GHz 5.470GHz~5.725GHz 5.725GHz~5.850GHz Note: until further notice, device subject to this section shall not be capable of transmitting in the band 5600-5650MHz. This restriction is for the protection of Environment weather radars operating in this band.
Antenna Type:	Internal antenna
Antenna 1 Gain:	2.3dBi
Antenna 2 Gain:	4.5dBi
Description of the EUT	EUT is a TABLET PC with Bluetooth Low Energy/Bluetooth BDR+EDR, 2.4GHz Wi-Fi and 5GHz Wi-Fi functions Only 5GHz Wi-Fi included in this report.

3. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart E	PART 15 - RADIO FREQUENCY DEVICES Subpart E - Intentional Radiators

Test Method:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

KDB 905462 D03 Client Without DFS New Rules v01r02

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

4. Summary of Test Results

Test Condition		Test Result		
		Pass	Fail	N/A
§15.207	Conducted Emission AC Power Port	☒	☐	☐
§15.407(a)(2)	Emission bandwidth	☒	☐	☐
§15.407(a)(1), §15.407(a)(3)	Maximum Conducted Output Power	☒	☐	☐
§15.407(a)(1), §15.407(a)(3)	Maximum Power Spectral Density	☒	☐	☐
§15.407(b)(1), §15.407(b)(2), §15.407(b)(3), §15.407(b)(4), §15.407(b)(8), §15.407(b)(9), §15.209	Unwanted Emissions	☒	☐	☐
§15.407(b)(1), §15.407(b)(2), §15.407(b)(3), §15.407(b)(4),	Band edge compliance	☒	☐	☐
§15.407(g) Frequencies Stability	Frequencies Stability	☒	☐	☐
§15.407(h)	Dynamic Frequency Selection (DFS).	☒	☐	☐
§15.203	Antenna Requirement	☒ See note2	☐	☐

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an Internal antenna, which gain is 2.3dBi for ANT1, 4.5dBi for ANT2. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

5. General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BDQY-TA2C-CS8 complies with the FCC Part 15.205, 15.207, 15.209, 15.407 Subpart.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2023-11-17

Testing Start Date: 2023-11-17

Testing End Date: 2023-12-26

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch.

Reviewed by:



John Zhi
Section Manager



Prepared by:



Joe Gu
Project Engineer

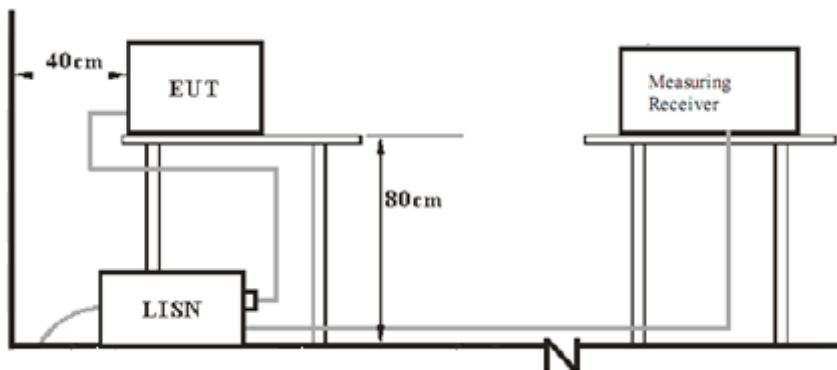
Tested by:



Carry Cai
Test Engineer

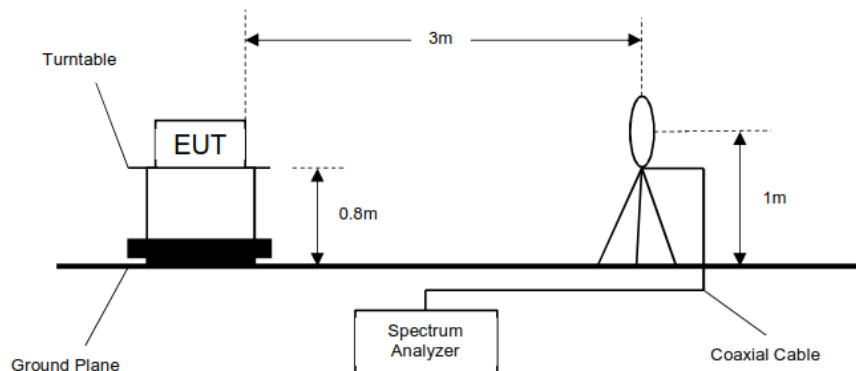
6. Test setups

7.1 AC Power Line Conducted Emission test setups

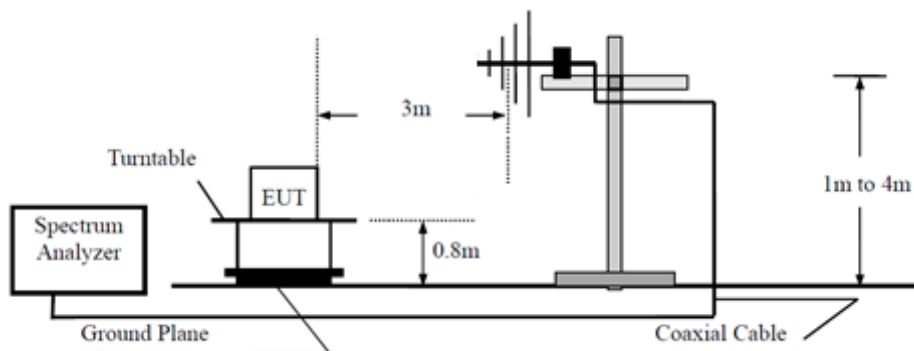


7.2 Radiated test setups

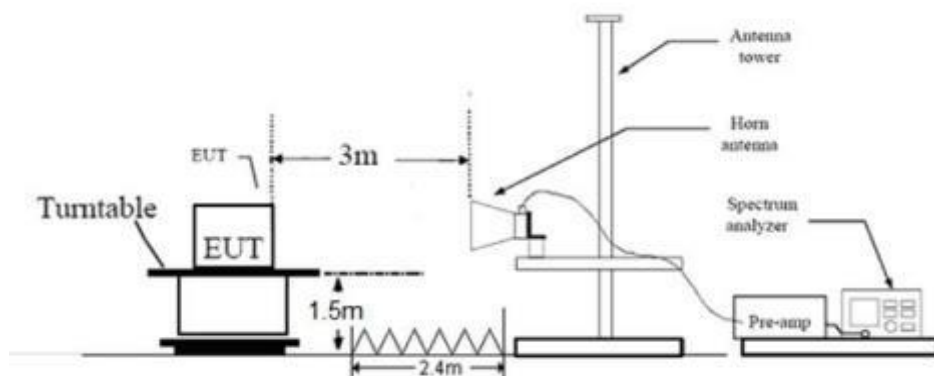
9KHz-30MHz



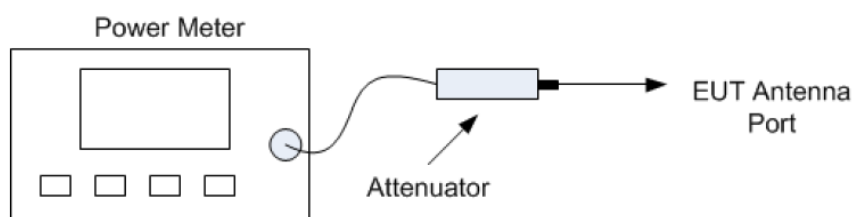
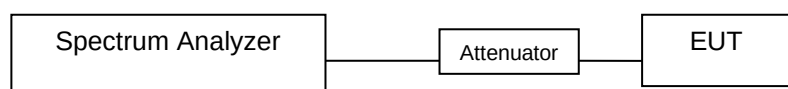
Below 1GHz



Above 1GHz



7.3 Conducted RF test setups



Power meter conducted test setup

7. Systems test configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model No.	S/N
Notebook	Lenovo	X220	429044C

In order to find the worst case condition, pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Band	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS8
802.11n HT40	MCS8
802.11ac HT20	MCS0
802.11ac HT40	MCS0
802.11ac HT80	MCS0

8. Technical Requirement

8.1 Conducted emission AC power port

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

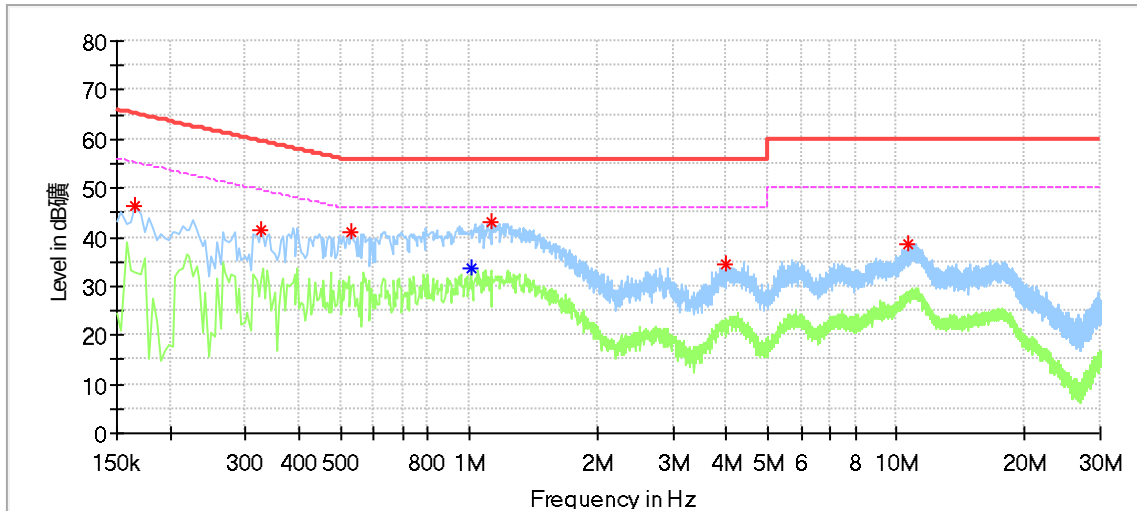
Limit

According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency

Product Type : TABLET PC
 M/N : TA2C-CS8
 Operating Condition : Transmitting mode
 Test specification : Line
 Comment : AC 120V/60Hz(External adapter)



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.166000	46.27	---	65.16	18.89	L1	9.54
0.326000	41.58	---	59.55	17.97	L1	9.57
0.530000	41.00	---	56.00	15.00	L1	9.59
1.010000	---	33.61	46.00	12.39	L1	9.60
1.126000	42.91	---	56.00	13.09	L1	9.60
4.006000	34.58	---	56.00	21.42	L1	9.70
10.594000	38.63	---	60.00	21.37	L1	9.96

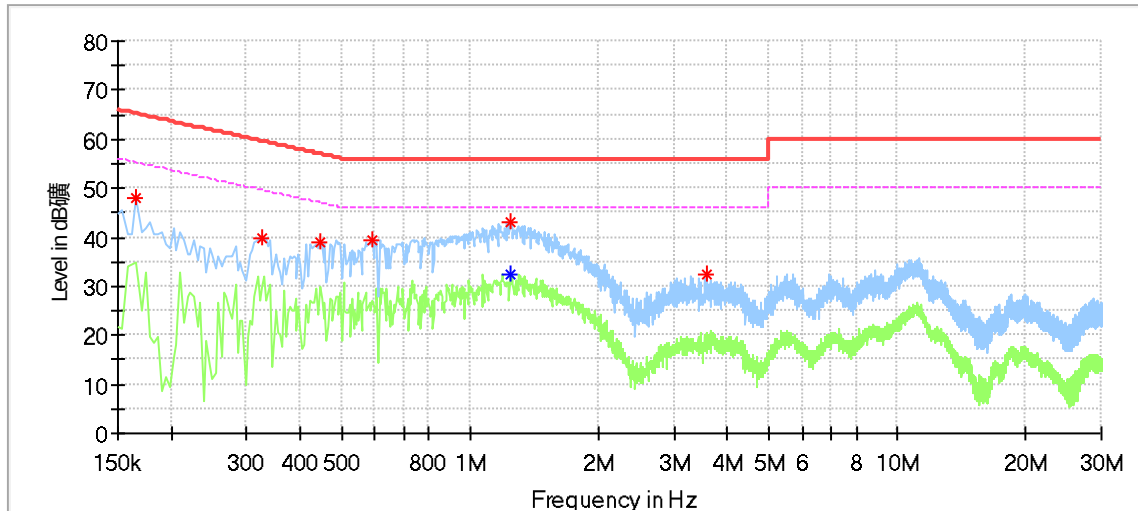
Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Product Type : TABLET PC
 M/N : TA2C-CS8
 Operating Condition : Transmitting mode
 Test specification : Neutral
 Comment : AC 120V/60Hz(External adapter)



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.166000	48.03	---	65.16	17.13	N	9.57
0.326000	39.63	---	59.55	19.93	N	9.60
0.446000	38.97	---	56.95	17.98	N	9.61
0.590000	39.38	---	56.00	16.62	N	9.63
1.246000	---	32.55	46.00	13.45	N	9.63
1.250000	43.05	---	56.00	12.95	N	9.63
3.586000	32.27	---	56.00	23.73	N	9.71

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

8.2 Emission bandwidth

The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

1、 Test Method of 26dB Bandwidth

According to KDB789033 D02

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Limit: No limit

2、 Test Method of 6dB Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set RBW = 100kHz
- c) Set the video bandwidth (VBW) $\geq 3 \times$ RBW
- d) Detector = Peak.
- e) Trace mode = max hold.
- f) Sweep = No faster than coupled (auto) time.
- g) Allow the trace to stabilize.
- h) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Limit: $\geq 500\text{kHz}$

3、 Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1 % to 5 % of the OBW
- d) Set VBW $\geq 3 \cdot$ RBW
- e) Trace mode = max hold.
- f) Sweep = auto couple.
- g) Allow the trace to stabilize.
- h) Use the 99 % power bandwidth function of the instrument.
- i) Record the results in the test report.

Limit: No limit

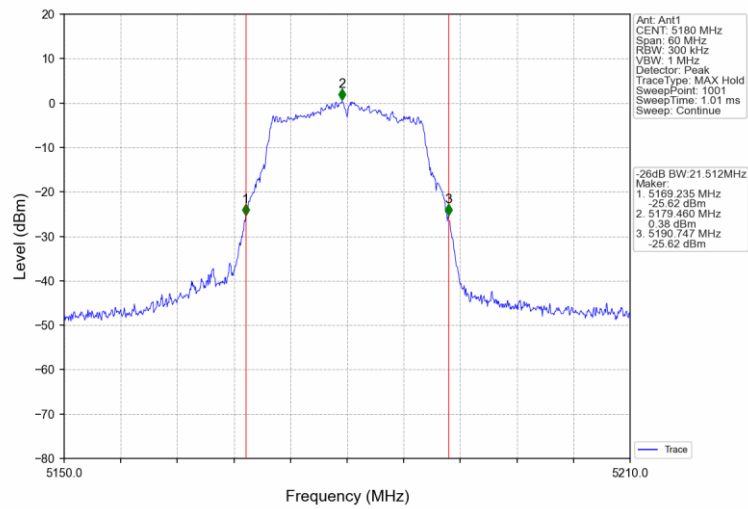
26dB Bandwidth Test result:

Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	21.512	/	Pass
			2	21.254	/	Pass
		5200	1	21.191	/	Pass
			2	21.322	/	Pass
		5240	1	21.492	/	Pass
			2	21.423	/	Pass
		5260	1	21.276	/	Pass
			2	21.308	/	Pass
		5300	1	21.432	/	Pass
			2	21.375	/	Pass
		5320	1	21.320	/	Pass
			2	21.420	/	Pass
		5500	1	21.399	/	Pass
			2	21.444	/	Pass
		5580	1	21.376	/	Pass
			2	21.246	/	Pass
802.11n (HT20)	MIMO	5180	1	21.750	/	Pass
			2	21.293	/	Pass
		5200	1	21.606	/	Pass
			2	21.361	/	Pass
		5240	1	21.939	/	Pass
			2	21.451	/	Pass
		5260	1	21.633	/	Pass
			2	21.269	/	Pass
		5300	1	21.761	/	Pass
			2	21.366	/	Pass
		5320	1	21.536	/	Pass
			2	21.395	/	Pass
		5500	1	21.652	/	Pass
			2	21.417	/	Pass
		5580	1	21.753	/	Pass
			2	21.348	/	Pass
802.11n (HT40)	MIMO	5190	1	41.101	/	Pass
			2	40.564	/	Pass
		5230	1	40.709	/	Pass
			2	40.469	/	Pass
		5270	1	41.527	/	Pass
			2	40.321	/	Pass
		5310	1	41.270	/	Pass
			2	40.464	/	Pass
		5510	1	41.300	/	Pass
			2	40.420	/	Pass
802.11ac (VHT20)	MIMO	5550	1	41.336	/	Pass
			2	40.667	/	Pass
		5670	1	41.271	/	Pass
			2	40.626	/	Pass
		5180	1	21.586	/	Pass
			2	21.424	/	Pass
		5200	1	21.417	/	Pass
			2	21.467	/	Pass
		5240	1	21.779	/	Pass
			2	21.391	/	Pass
802.11ac (VHT20)	MIMO	5260	1	21.573	/	Pass
			2	21.255	/	Pass
		5300	1	21.817	/	Pass
			2	21.311	/	Pass

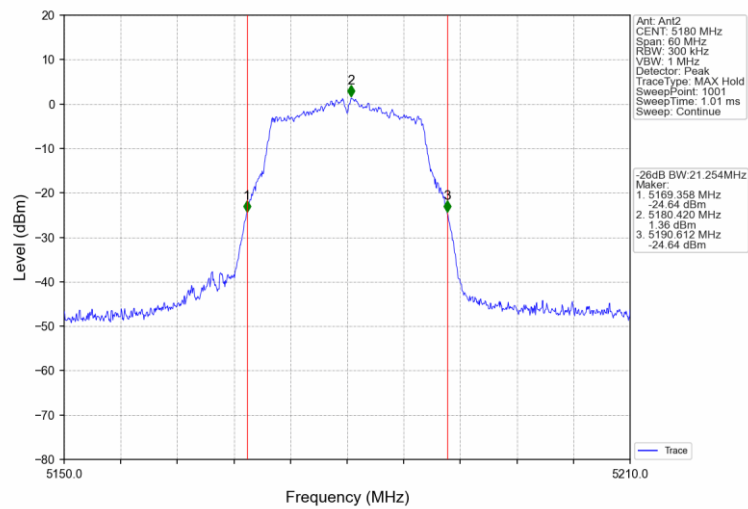
		5320	1	21.464	/	Pass
			2	21.449	/	Pass
		5500	1	21.652	/	Pass
			2	21.449	/	Pass
		5580	1	21.692	/	Pass
			2	21.377	/	Pass
		5700	1	21.679	/	Pass
			2	21.119	/	Pass
802.11ac (VHT40)	MIMO	5190	1	40.970	/	Pass
			2	40.607	/	Pass
		5230	1	40.885	/	Pass
			2	40.277	/	Pass
		5270	1	41.440	/	Pass
			2	40.541	/	Pass
		5310	1	41.081	/	Pass
			2	40.465	/	Pass
		5510	1	41.790	/	Pass
			2	40.412	/	Pass
		5550	1	41.458	/	Pass
			2	40.839	/	Pass
		5670	1	41.231	/	Pass
			2	40.772	/	Pass
802.11ac (VHT80)	MIMO	5210	1	82.041	/	Pass
			2	101.462	/	Pass
		5290	1	81.525	/	Pass
			2	102.647	/	Pass
		5530	1	81.903	/	Pass
			2	80.981	/	Pass
5610	1	81.571	/	Pass		
	2	80.992	/	Pass		

26dB Bandwidth Test Graphs

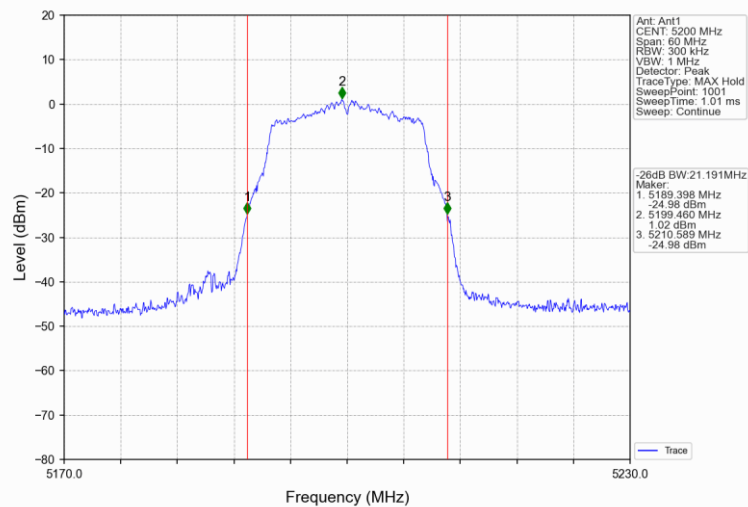
802.11a_LCH_5180MHz_Ant1_NTNV



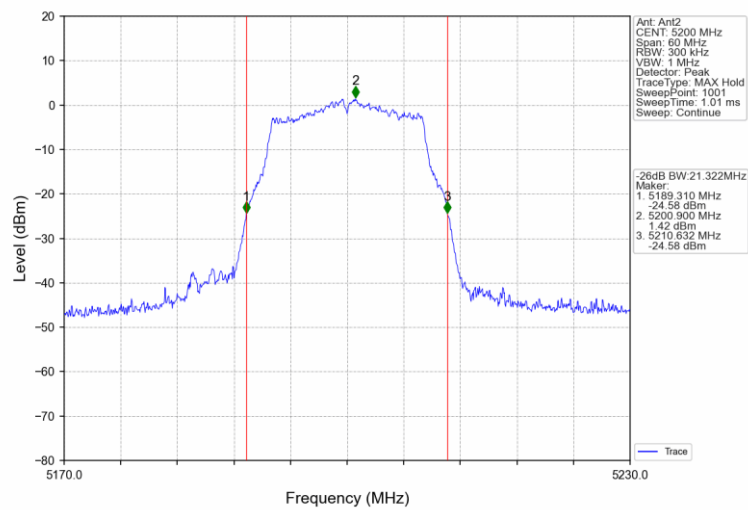
802.11a_LCH_5180MHz_Ant2_NTNV



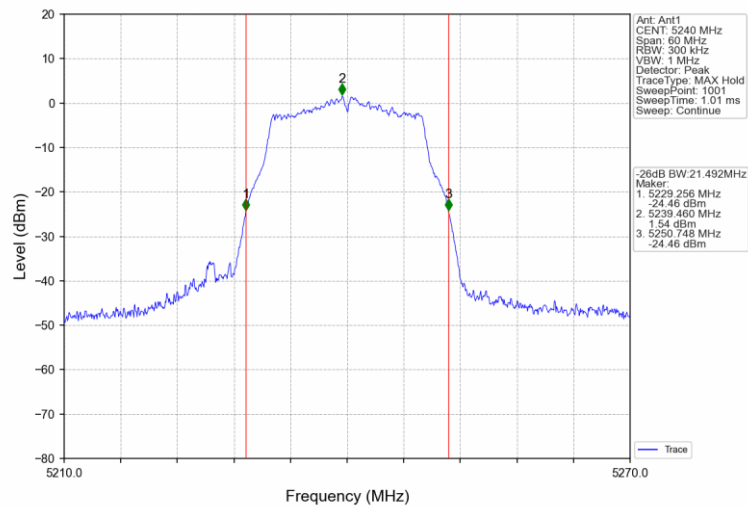
802.11a_MCH_5200MHz_Ant1_NTNV



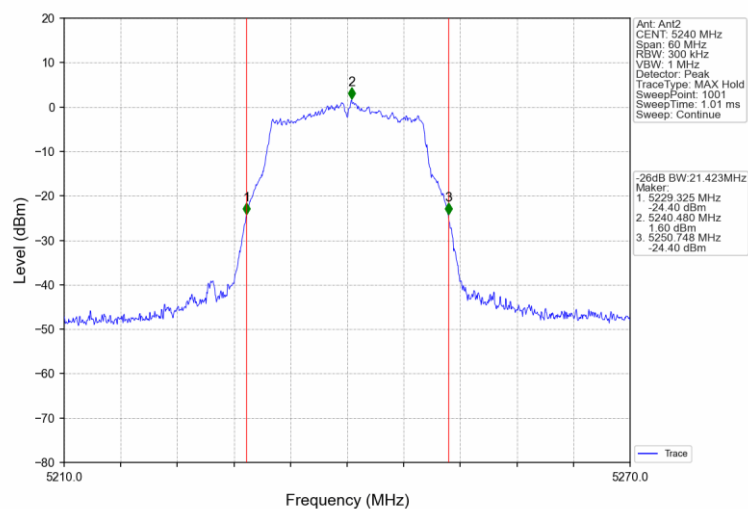
802.11a_MCH_5200MHz_Ant2_NTNV



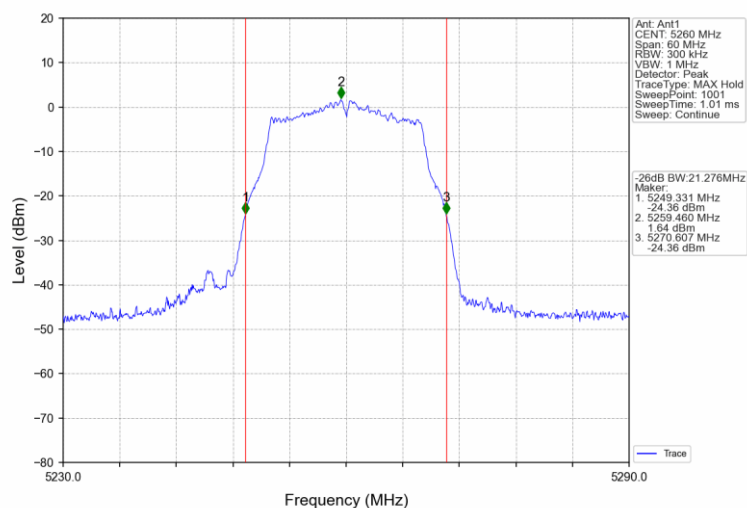
802.11a_HCH_5240MHz_Ant1_NTNV



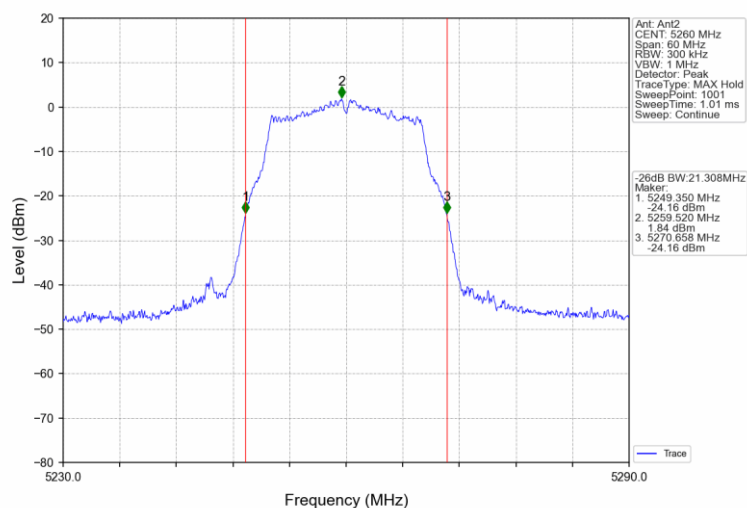
802.11a_HCH_5240MHz_Ant2_NTNV



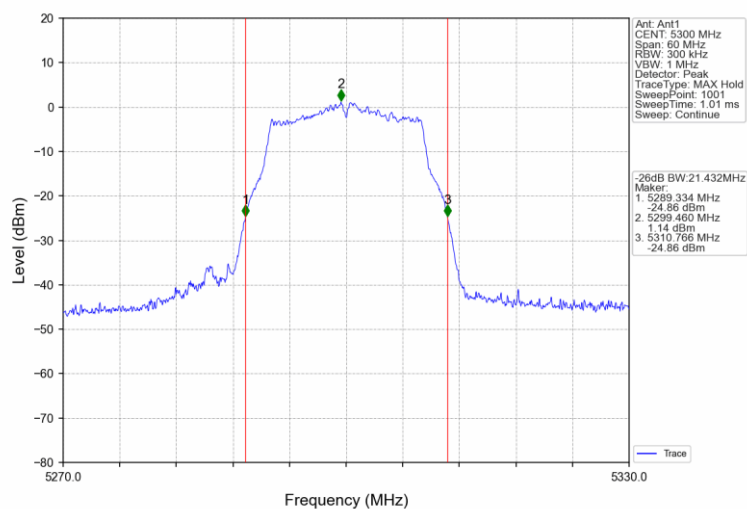
802.11a_LCH_5260MHz_Ant1_NTNV



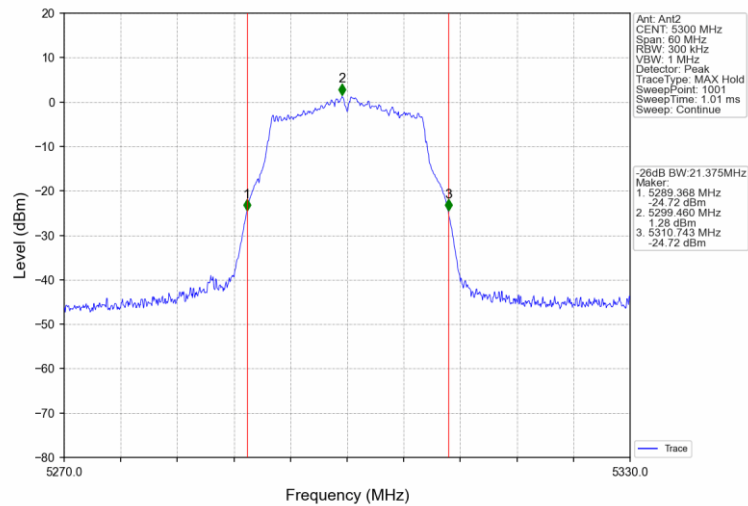
802.11a_LCH_5260MHz_Ant2_NTNV



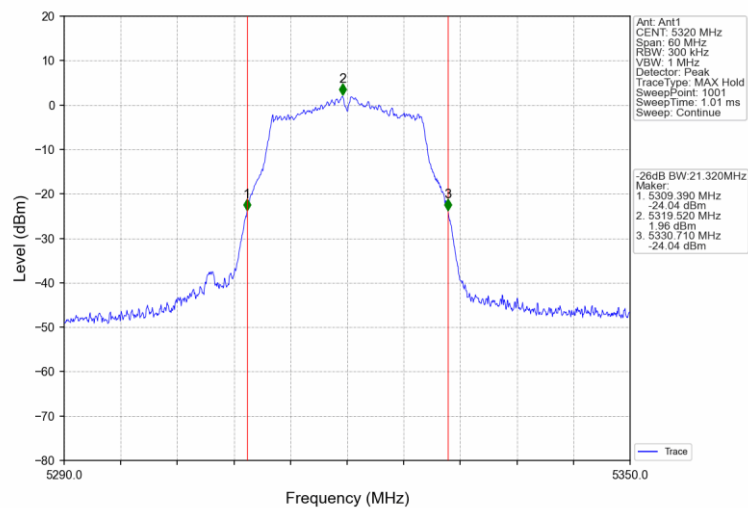
802.11a_MCH_5300MHz_Ant1_NTNV



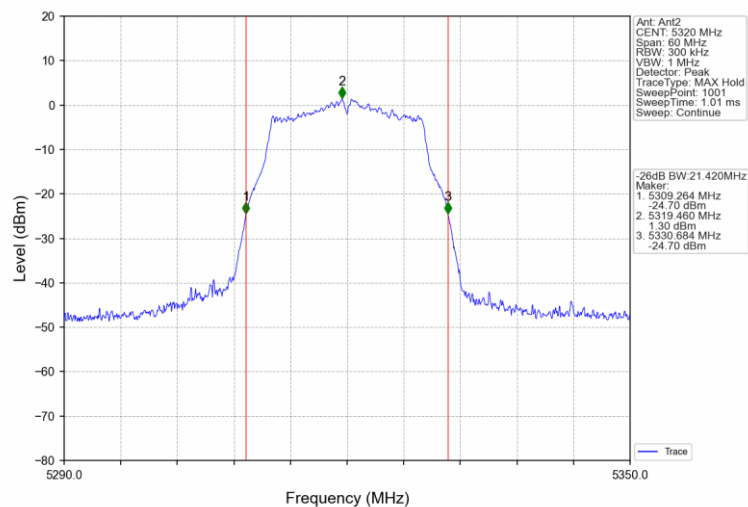
802.11a_MCH_5300MHz_Ant2_NTNV



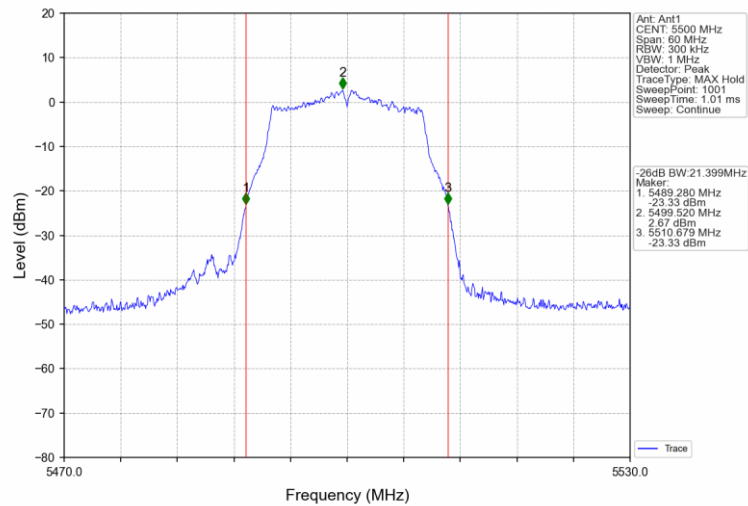
802.11a_HCH_5320MHz_Ant1_NTNV



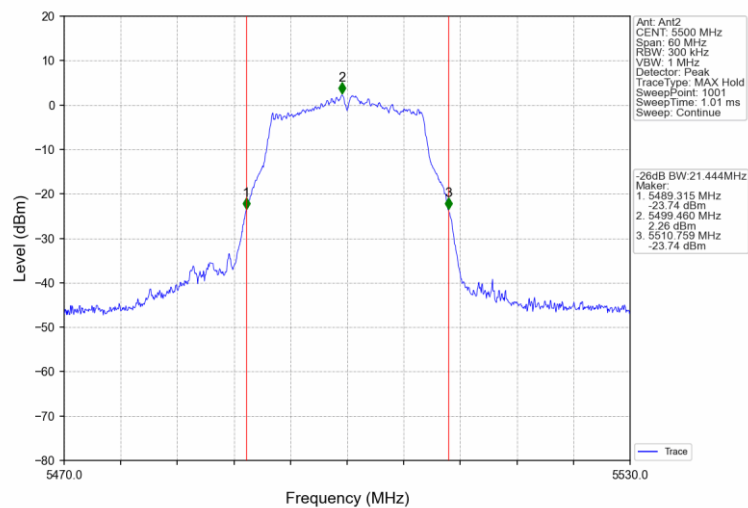
802.11a_HCH_5320MHz_Ant2_NTNV



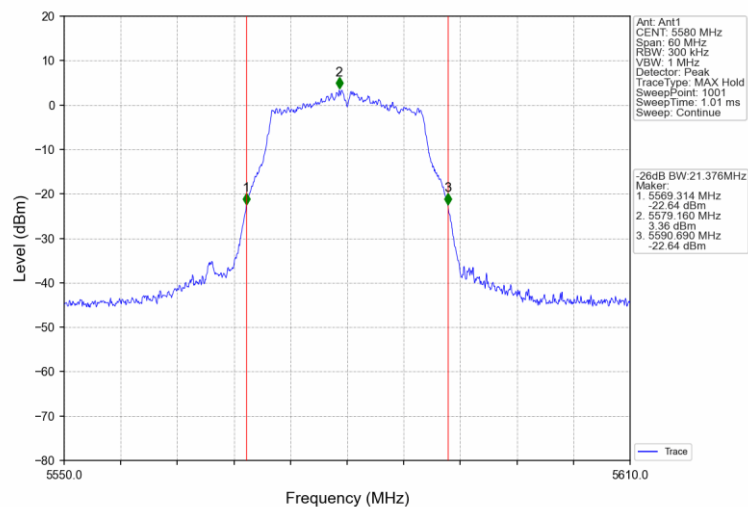
802.11a_LCH_5500MHz_Ant1_NTNV



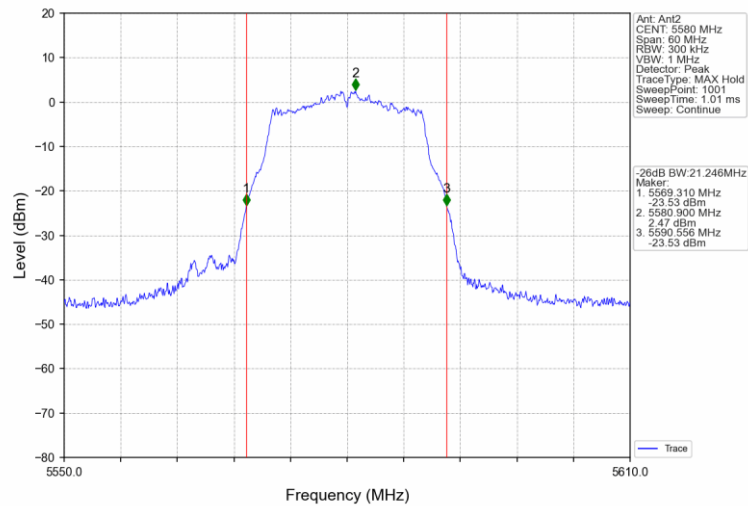
802.11a_LCH_5500MHz_Ant2_NTNV



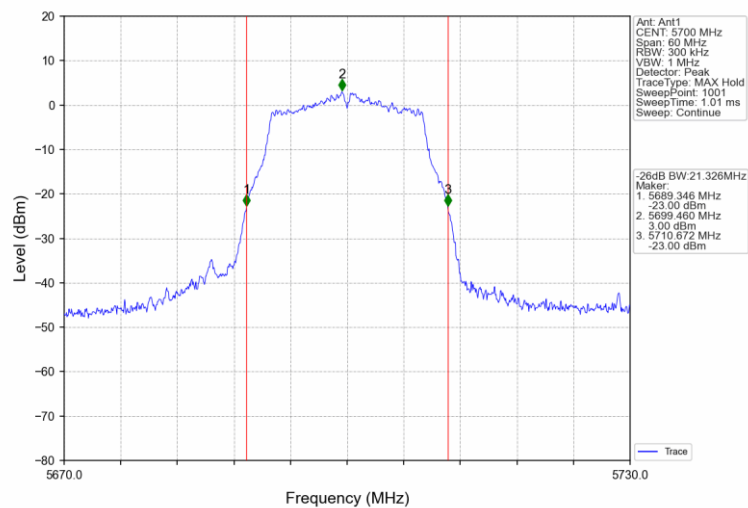
802.11a_MCH_5580MHz_Ant1_NTNV



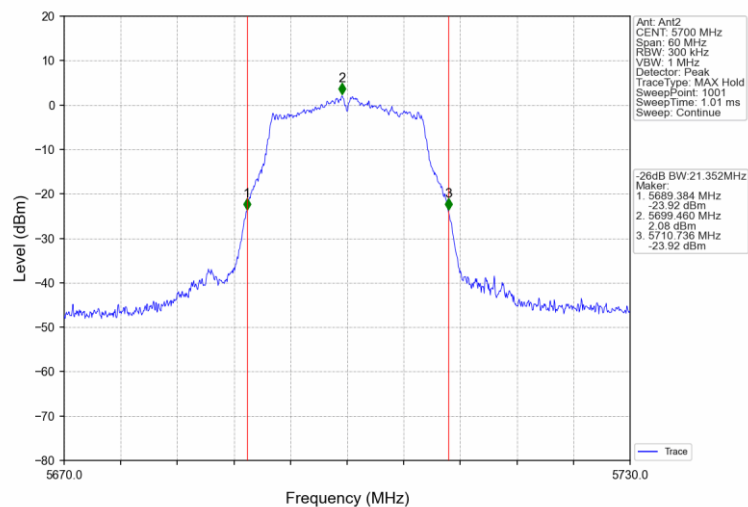
802.11a_MCH_5580MHz_Ant2_NTNV



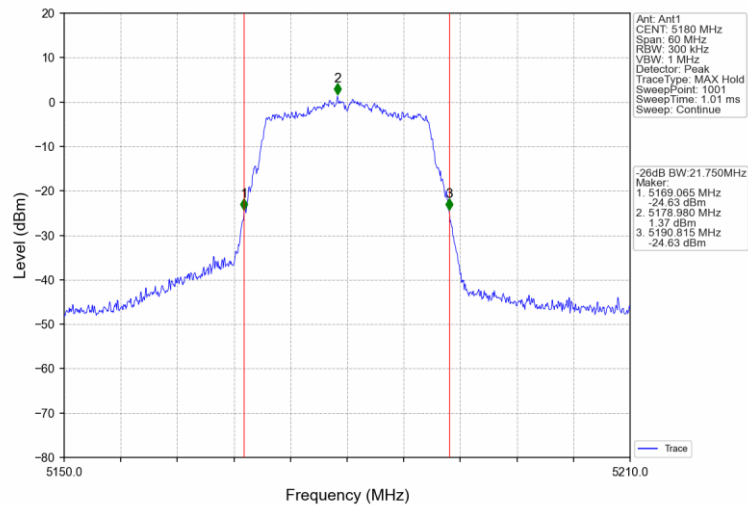
802.11a_HCH_5700MHz_Ant1_NTNV



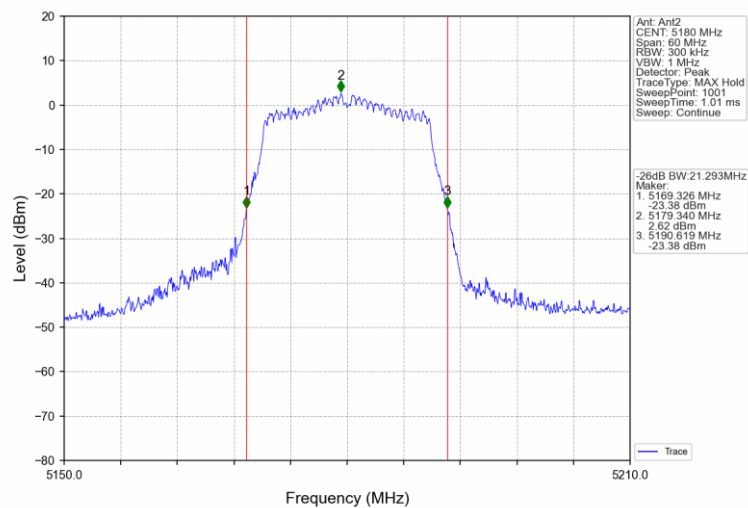
802.11a_HCH_5700MHz_Ant2_NTNV



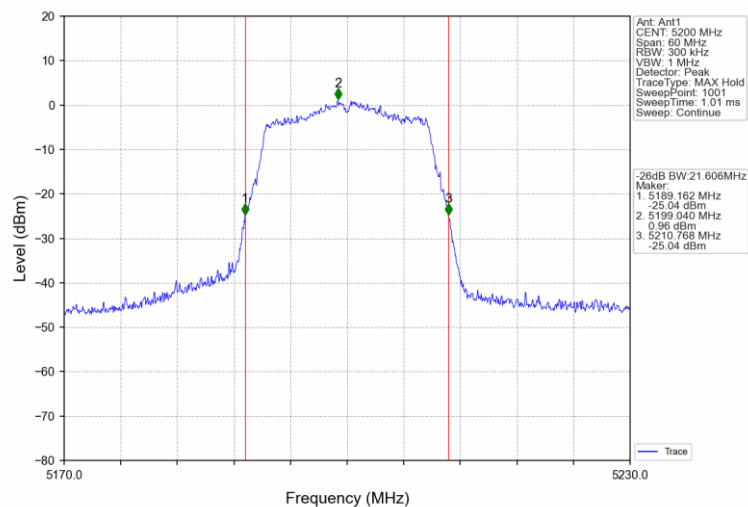
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



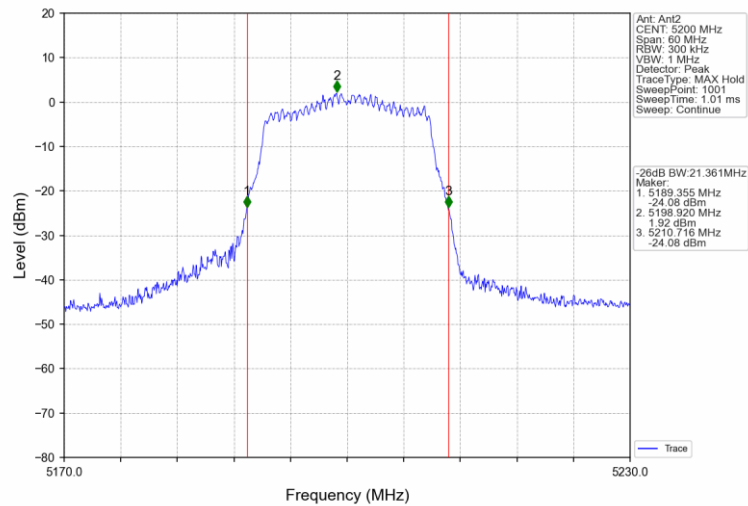
802.11n(HT20)_LCH_5180MHz_Ant2_NTNV



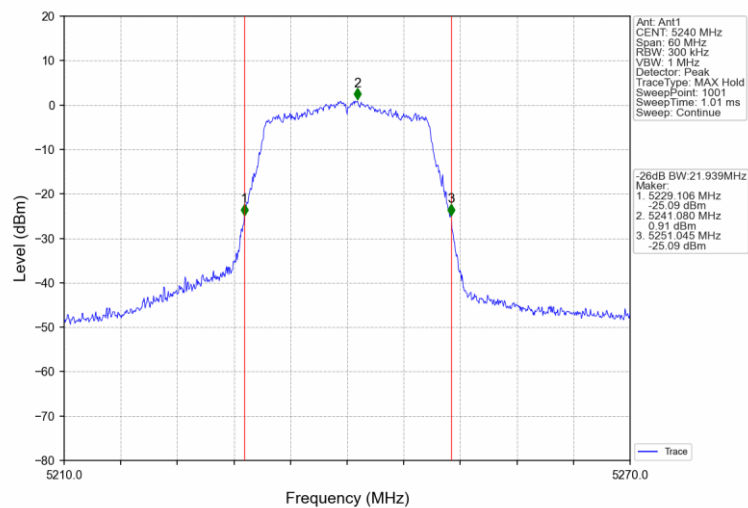
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



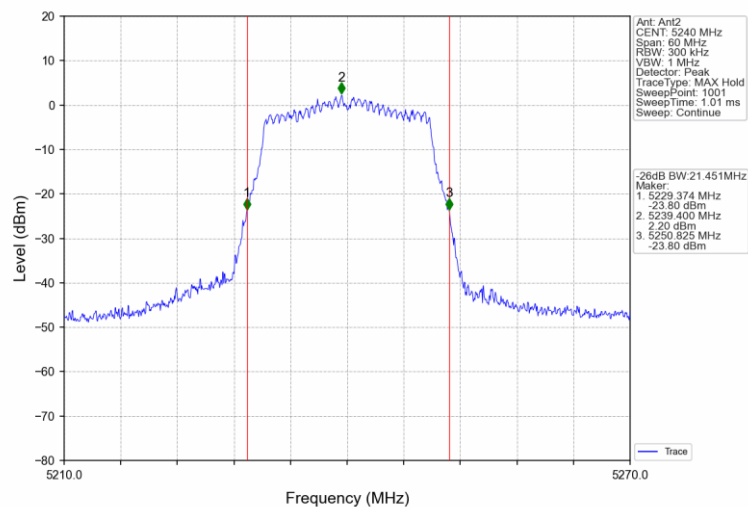
802.11n(HT20)_MCH_5200MHz_Ant2_NTNV



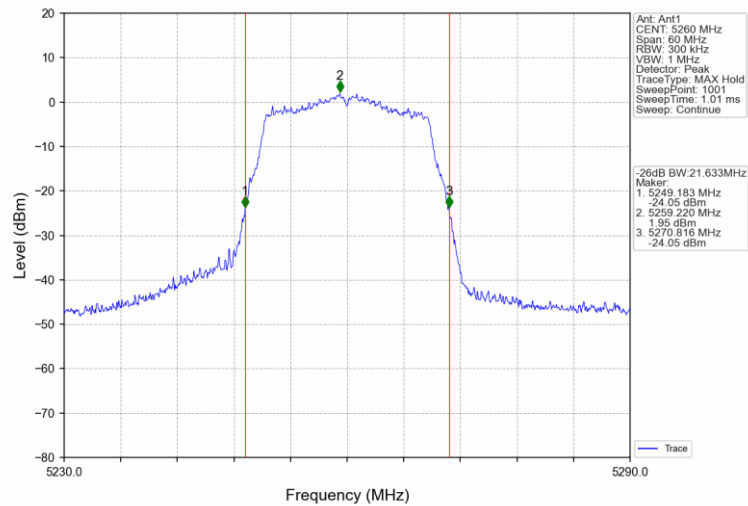
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



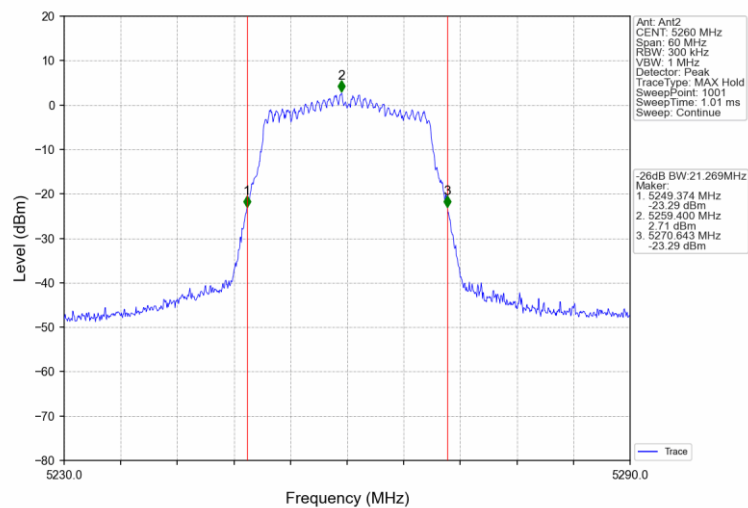
802.11n(HT20)_HCH_5240MHz_Ant2_NTNV



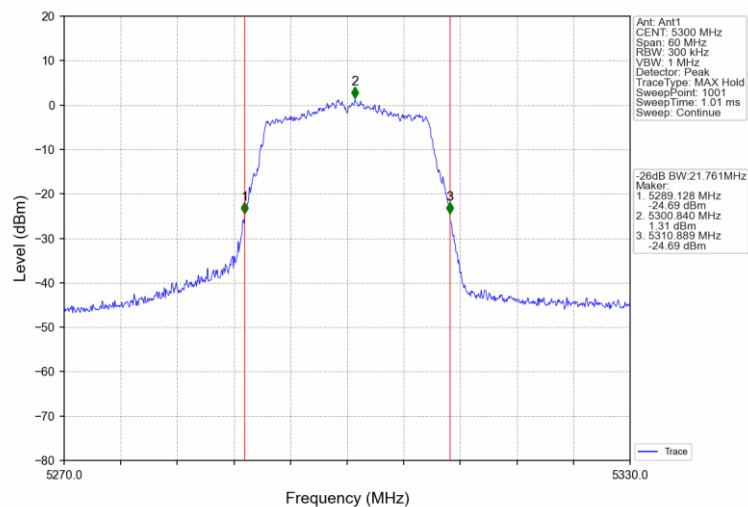
802.11n(HT20)_LCH_5260MHz_Ant1_NTNV



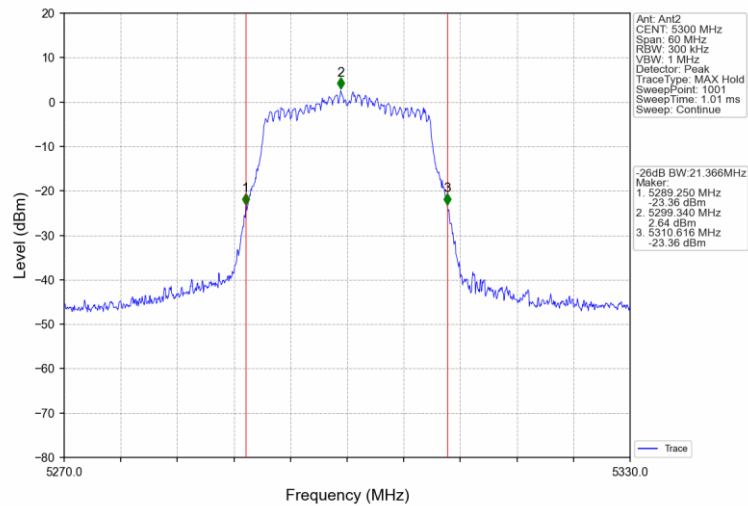
802.11n(HT20)_LCH_5260MHz_Ant2_NTNV



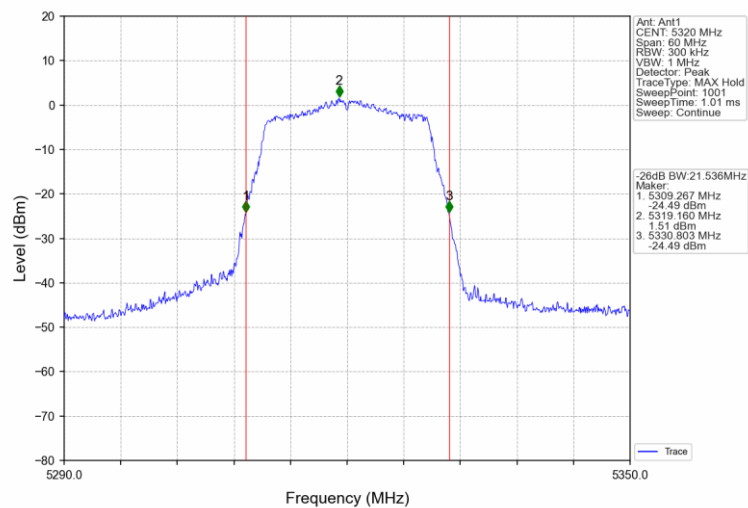
802.11n(HT20)_MCH_5300MHz_Ant1_NTNV



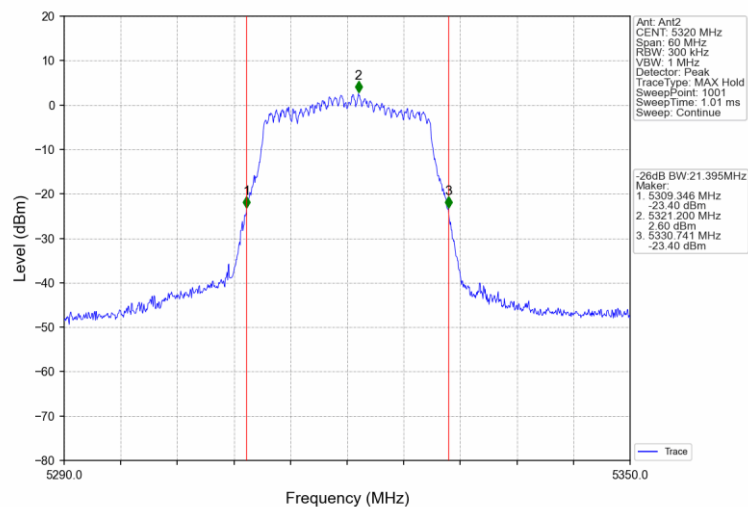
802.11n(HT20)_MCH_5300MHz_Ant2_NTNV



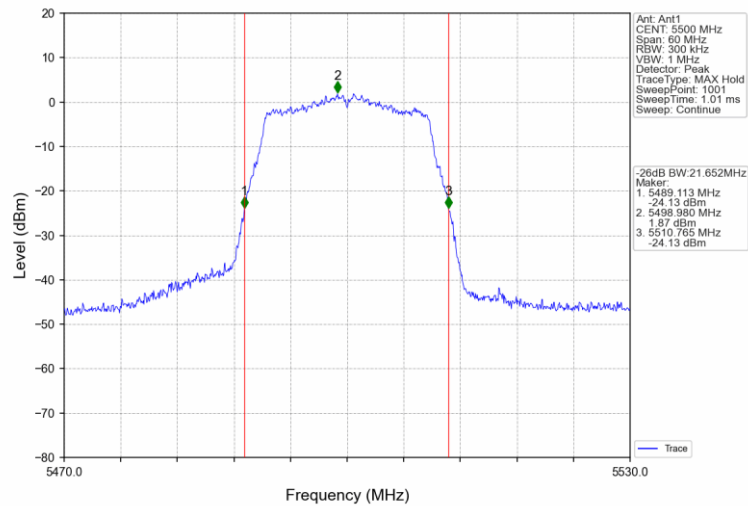
802.11n(HT20)_HCH_5320MHz_Ant1_NTNV



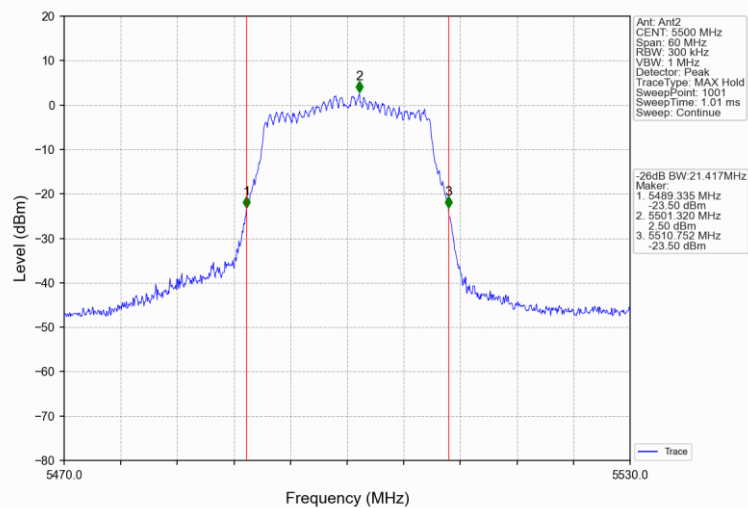
802.11n(HT20)_HCH_5320MHz_Ant2_NTNV



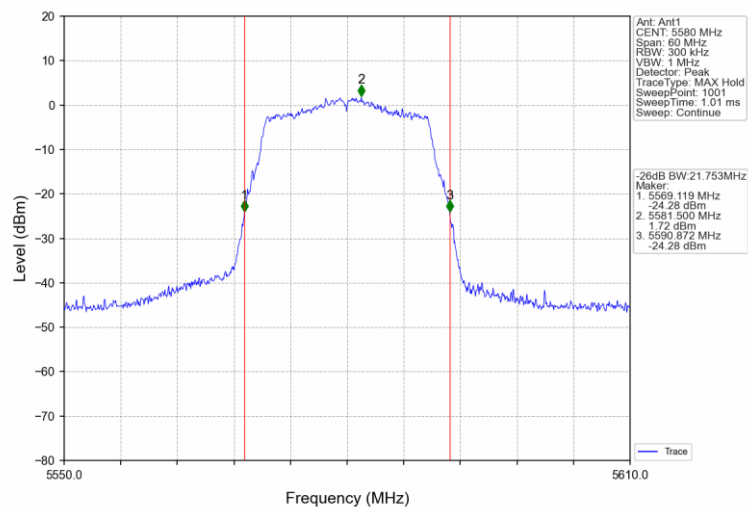
802.11n(HT20)_LCH_5500MHz_Ant1_NTNV



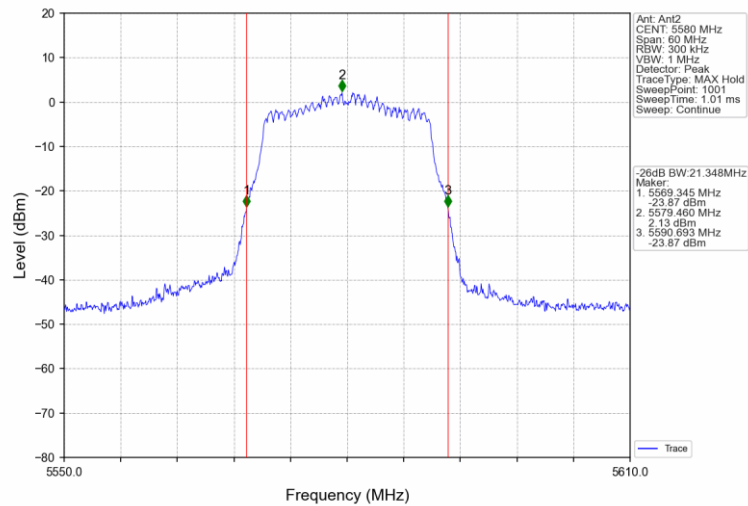
802.11n(HT20)_LCH_5500MHz_Ant2_NTNV



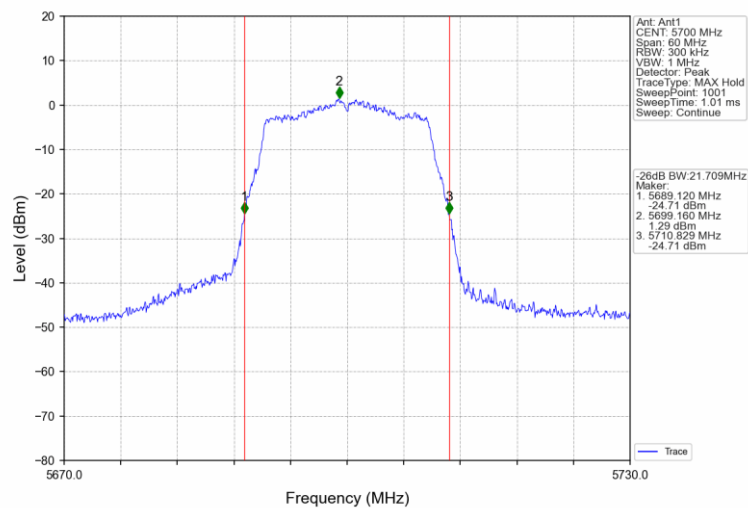
802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



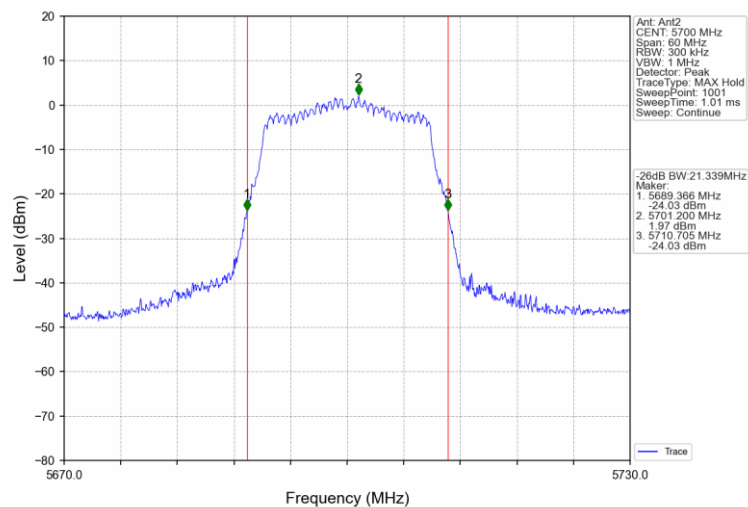
802.11n(HT20)_MCH_5580MHz_Ant2_NTNV



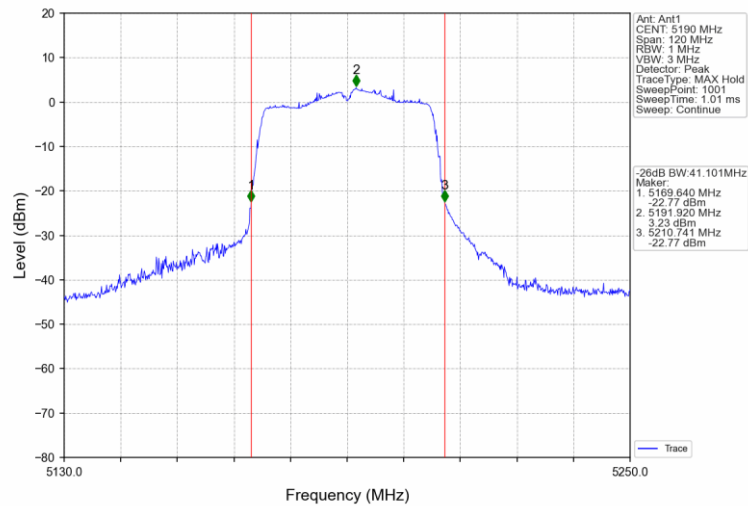
802.11n(HT20)_HCH_5700MHz_Ant1_NTNV



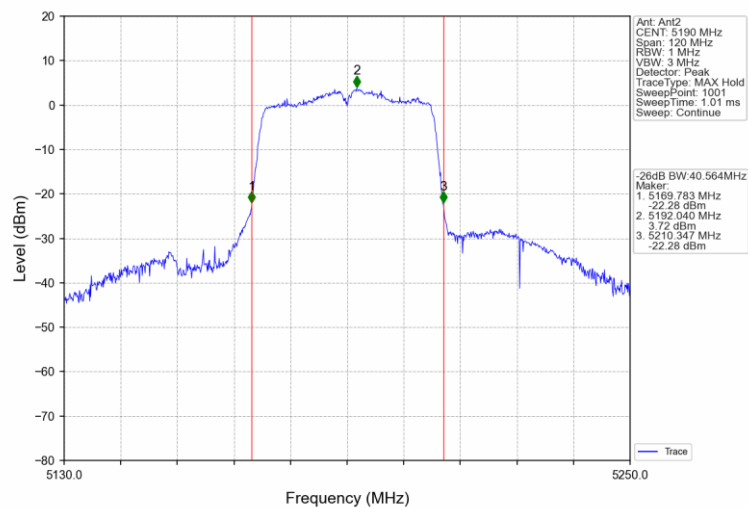
802.11n(HT20)_HCH_5700MHz_Ant2_NTNV



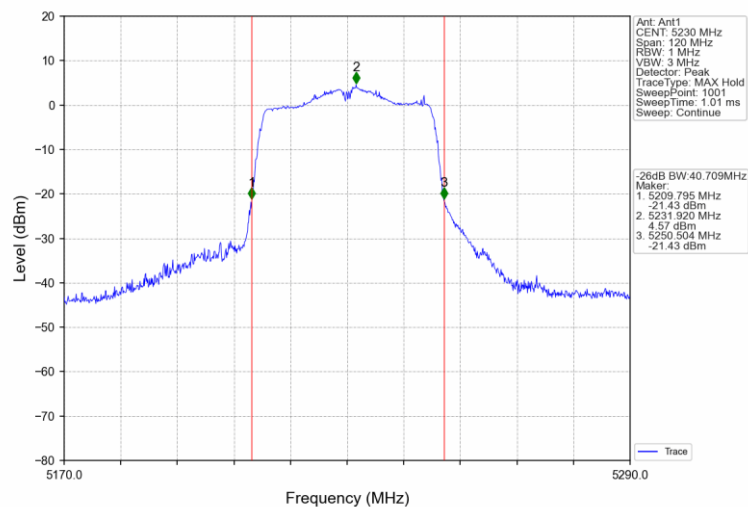
802.11n(HT40)_LCH_5190MHz_Ant1_NTNV



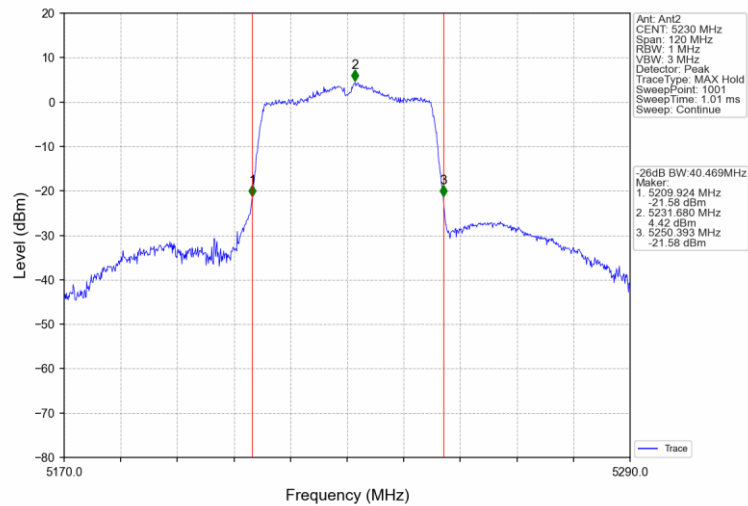
802.11n(HT40)_LCH_5190MHz_Ant2_NTNV



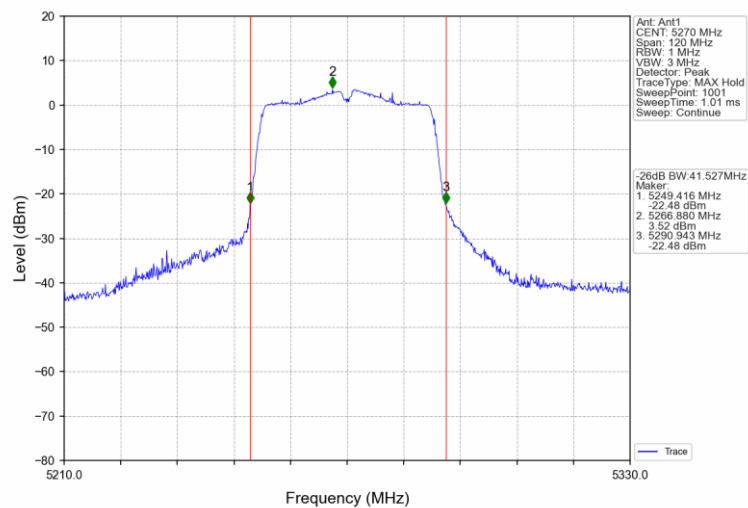
802.11n(HT40)_HCH_5230MHz_Ant1_NTNV



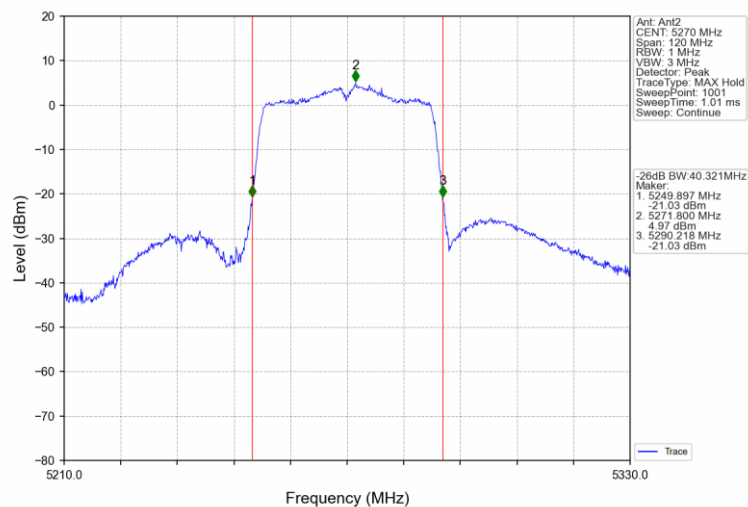
802.11n(HT40)_HCH_5230MHz_Ant2_NTNV



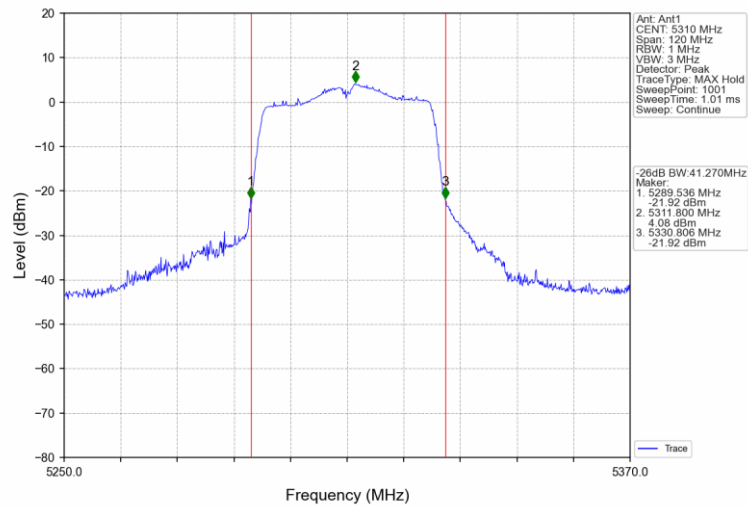
802.11n(HT40)_LCH_5270MHz_Ant1_NTNV



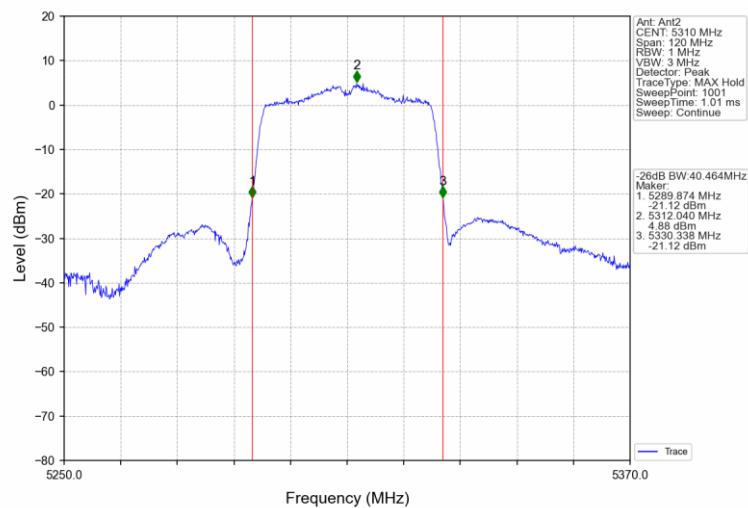
802.11n(HT40)_LCH_5270MHz_Ant2_NTNV



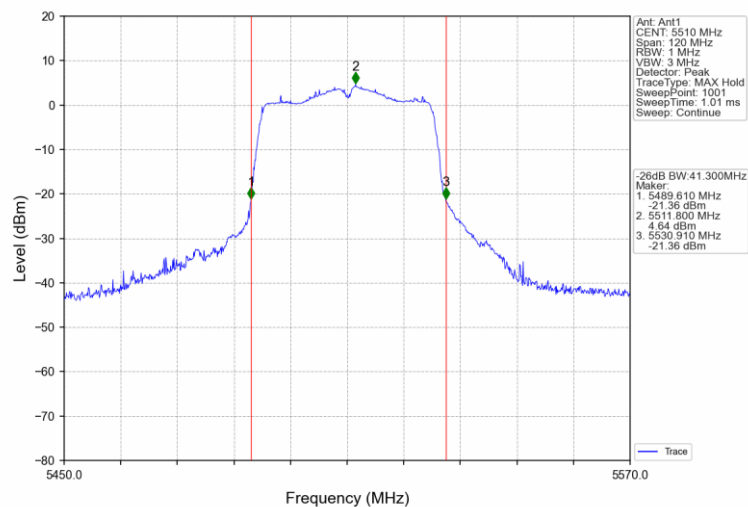
802.11n(HT40)_HCH_5310MHz_Ant1_NTNV



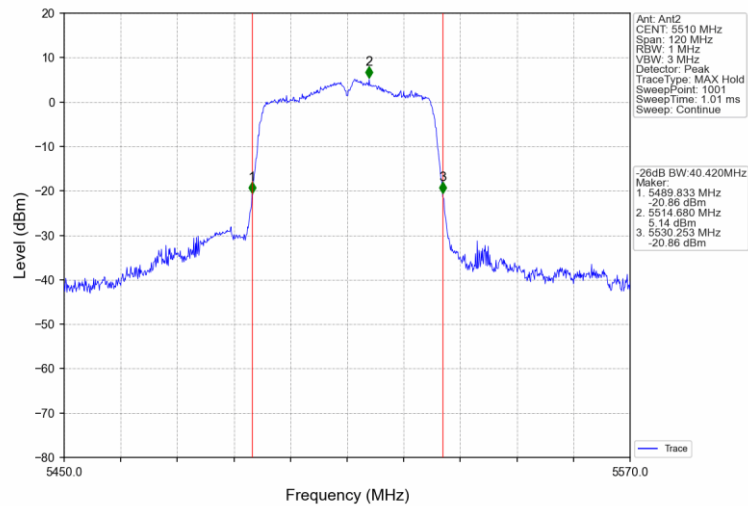
802.11n(HT40)_HCH_5310MHz_Ant2_NTNV



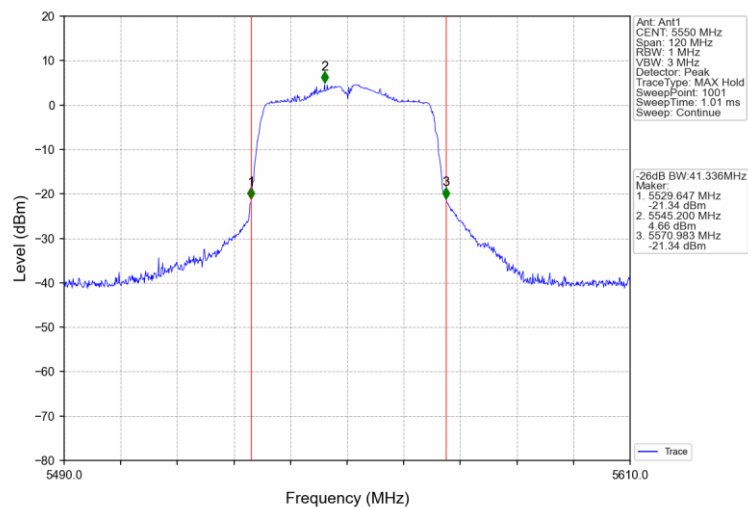
802.11n(HT40)_LCH_5510MHz_Ant1_NTNV



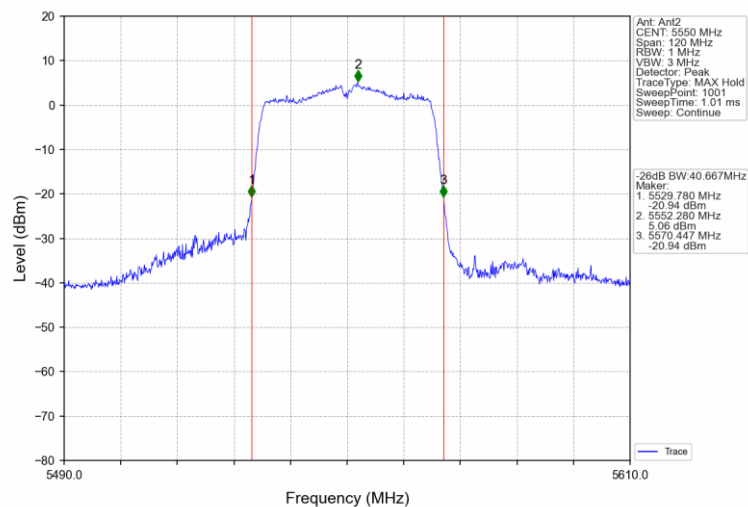
802.11n(HT40)_LCH_5510MHz_Ant2_NTNV



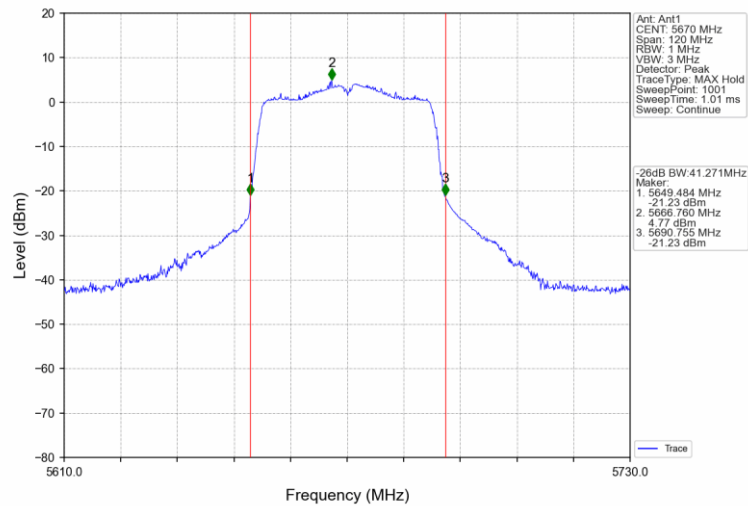
802.11n(HT40)_MCH_5550MHz_Ant1_NTNV



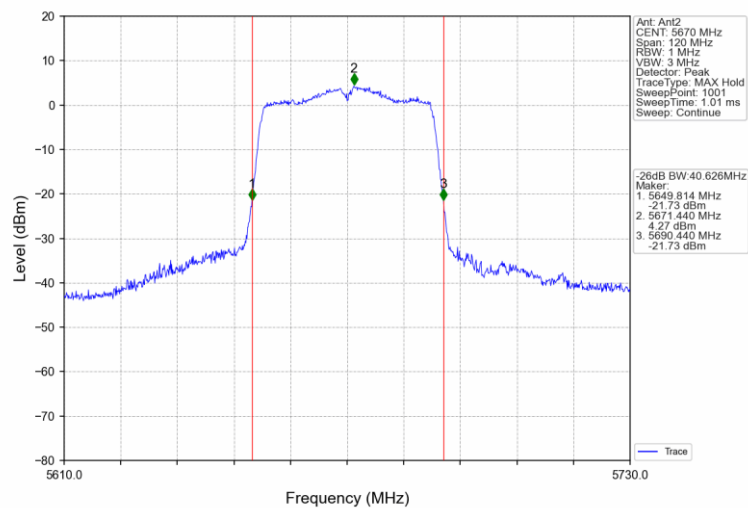
802.11n(HT40)_MCH_5550MHz_Ant2_NTNV



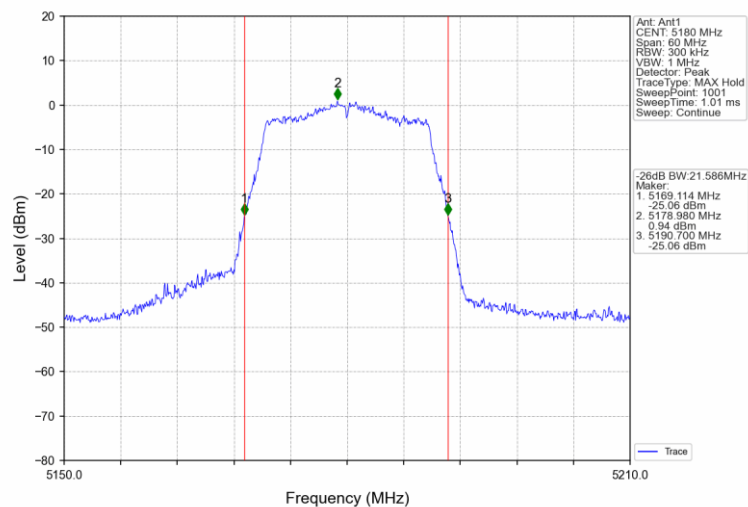
802.11n(HT40)_HCH_5670MHz_Ant1_NTNV



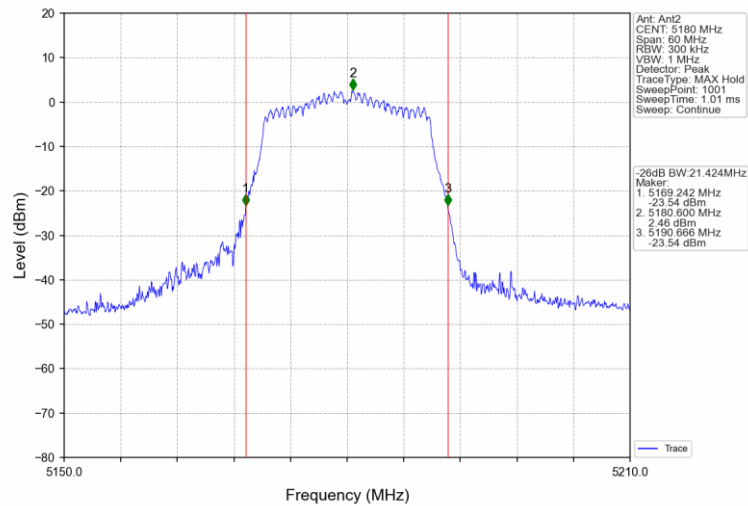
802.11n(HT40)_HCH_5670MHz_Ant2_NTNV



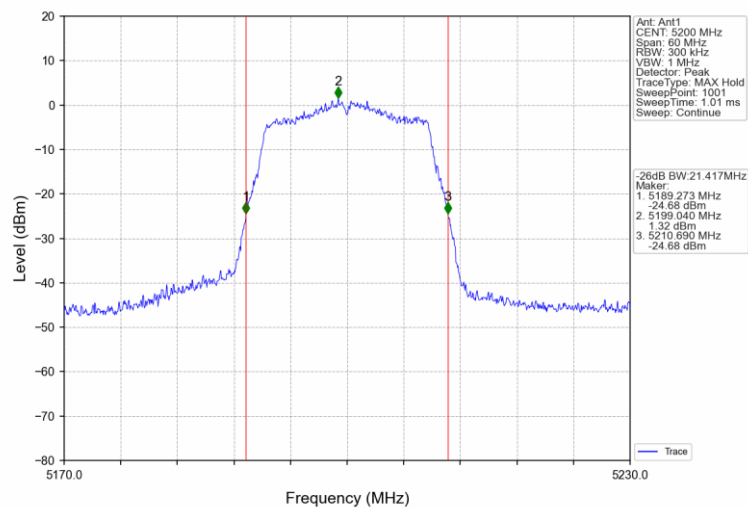
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



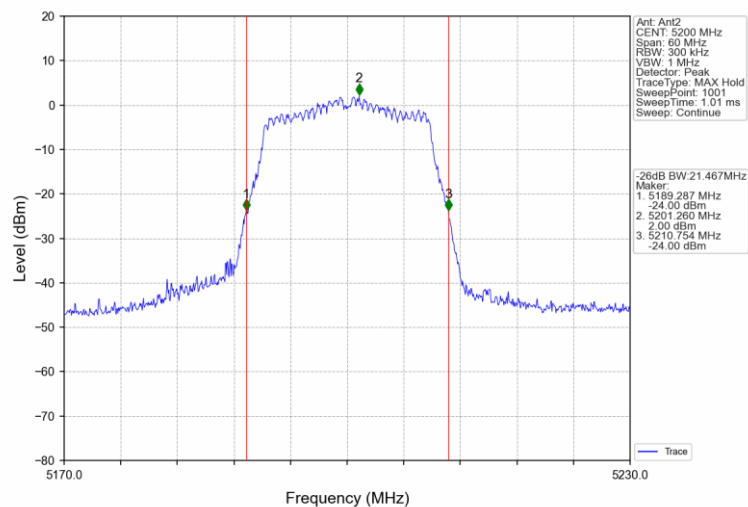
802.11ac(VHT20)_LCH_5180MHz_Ant2_NTNV



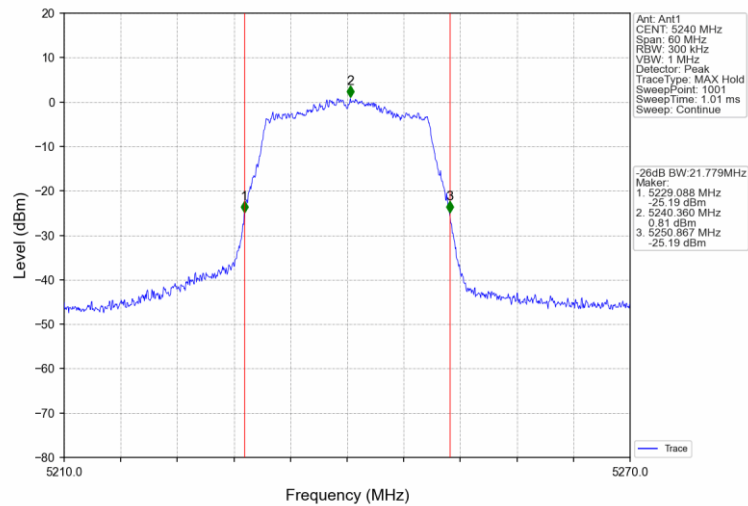
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



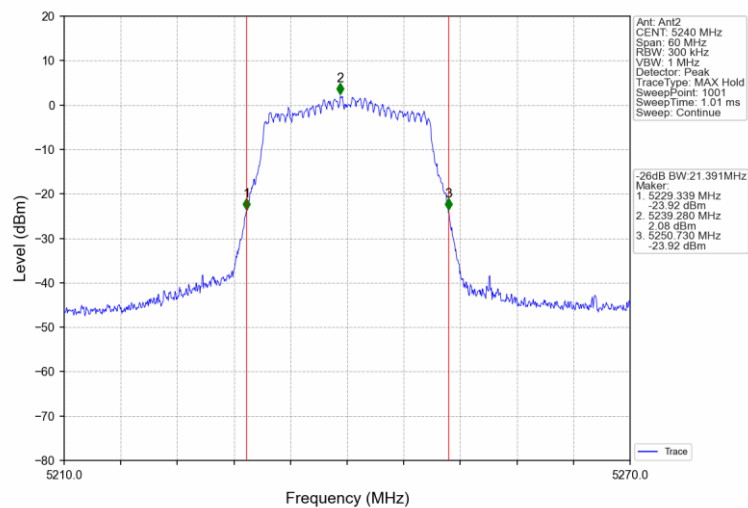
802.11ac(VHT20)_MCH_5200MHz_Ant2_NTNV



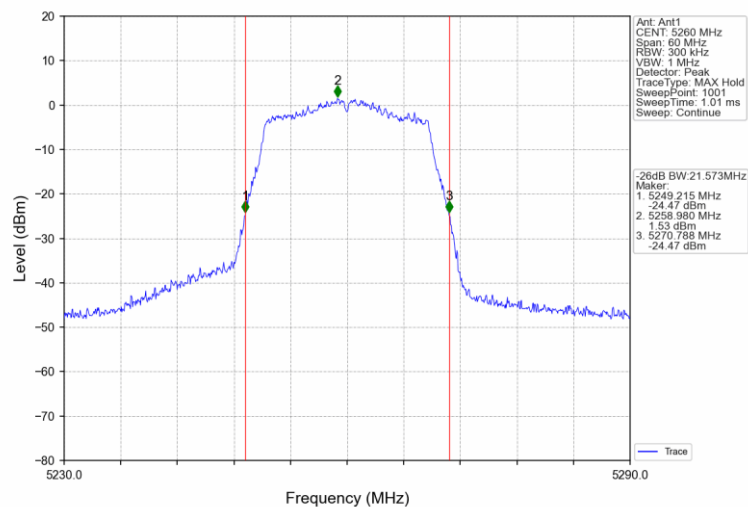
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



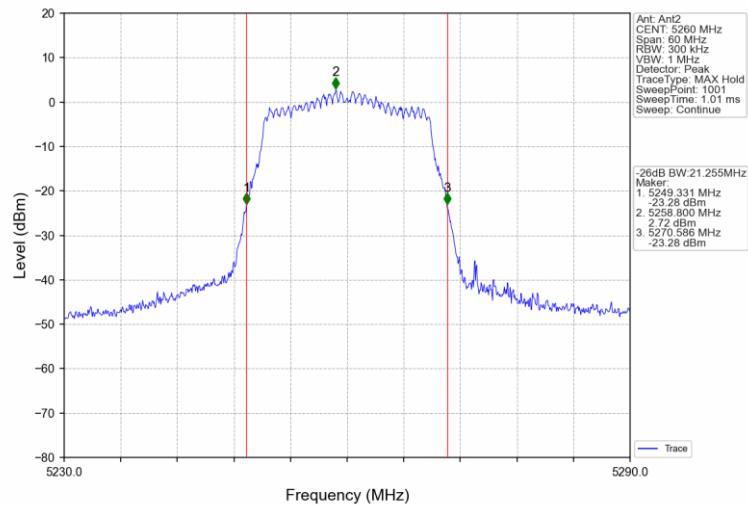
802.11ac(VHT20)_HCH_5240MHz_Ant2_NTNV



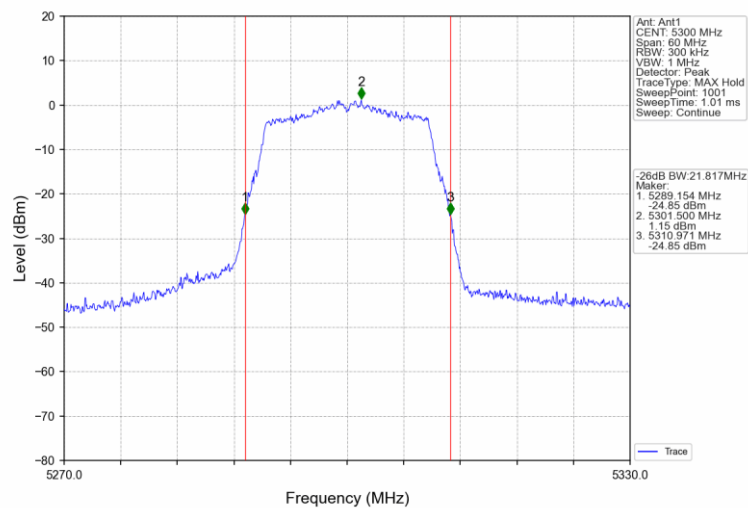
802.11ac(VHT20)_LCH_5260MHz_Ant1_NTNV



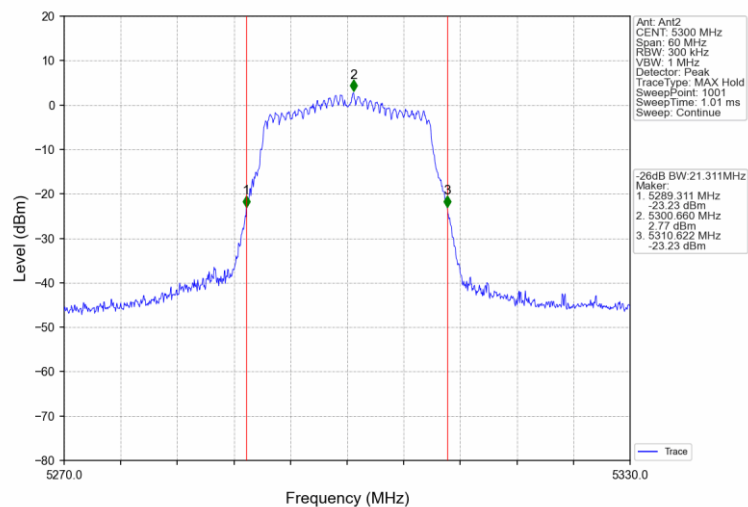
802.11ac(VHT20)_LCH_5260MHz_Ant2_NTNV



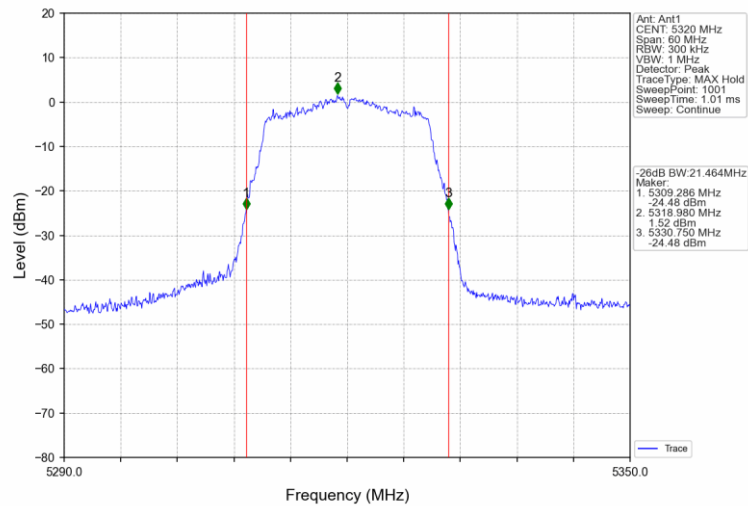
802.11ac(VHT20)_MCH_5300MHz_Ant1_NTNV



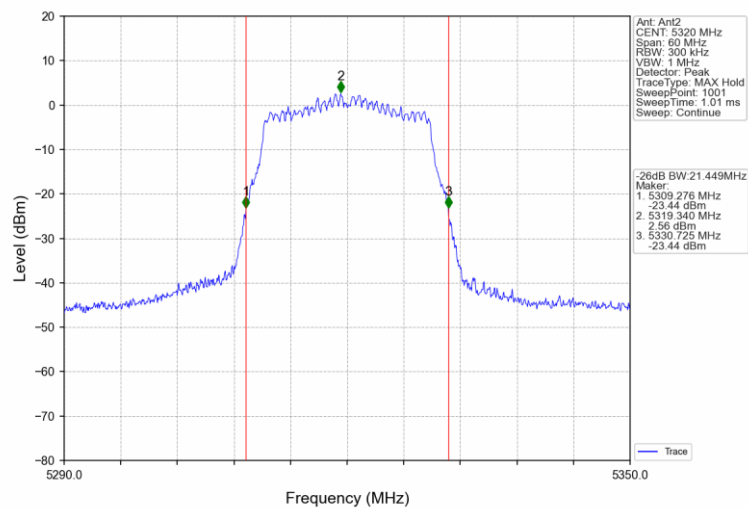
802.11ac(VHT20)_MCH_5300MHz_Ant2_NTNV



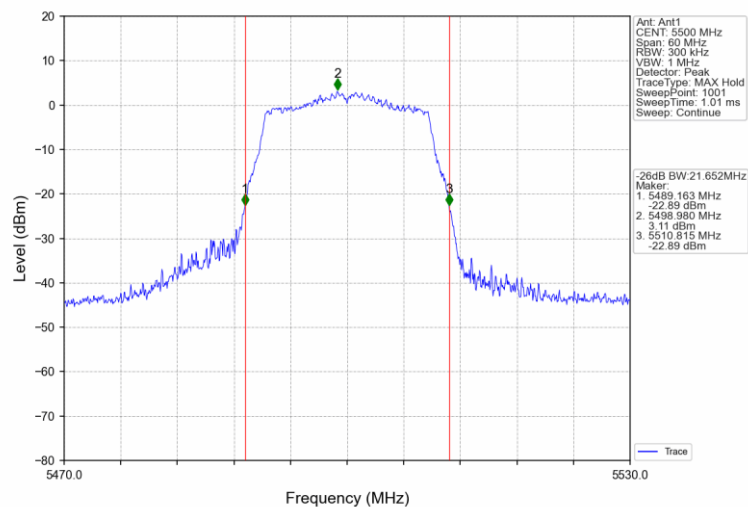
802.11ac(VHT20)_HCH_5320MHz_Ant1_NTNV



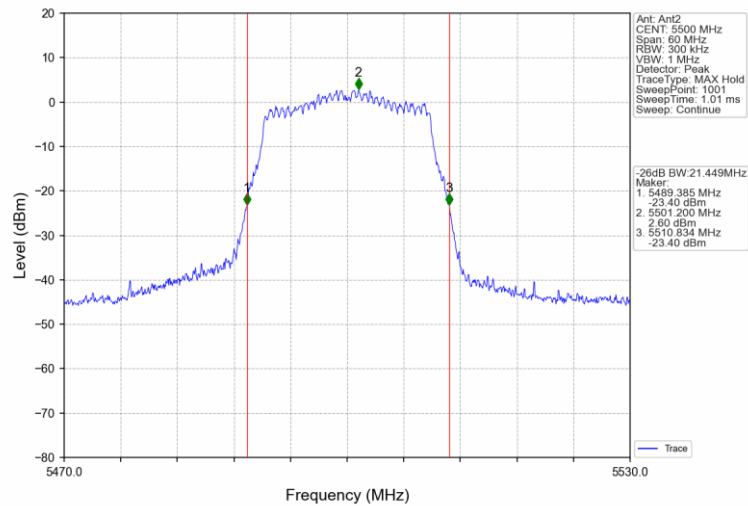
802.11ac(VHT20)_HCH_5320MHz_Ant2_NTNV



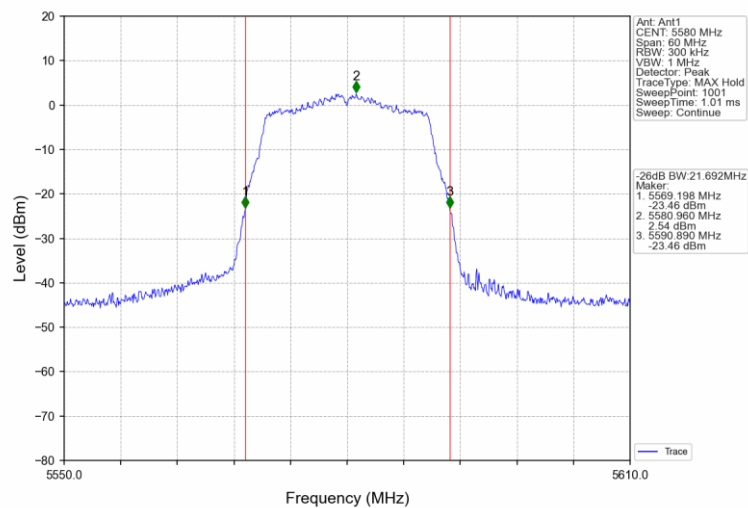
802.11ac(VHT20)_LCH_5500MHz_Ant1_NTNV



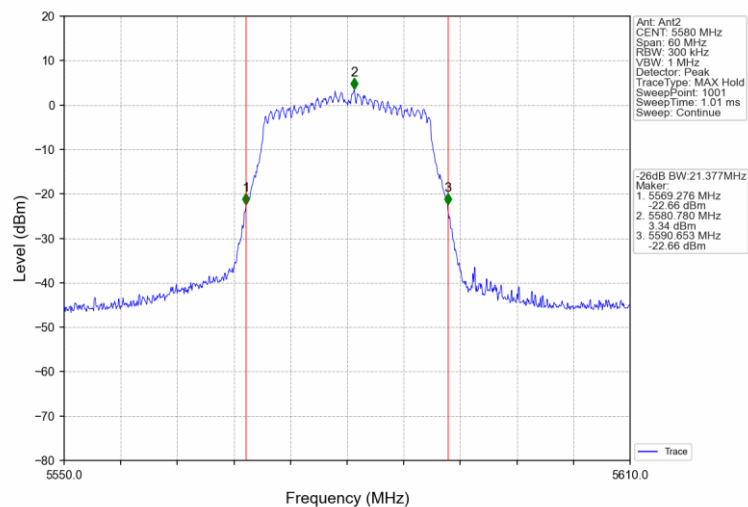
802.11ac(VHT20)_LCH_5500MHz_Ant2_NTNV



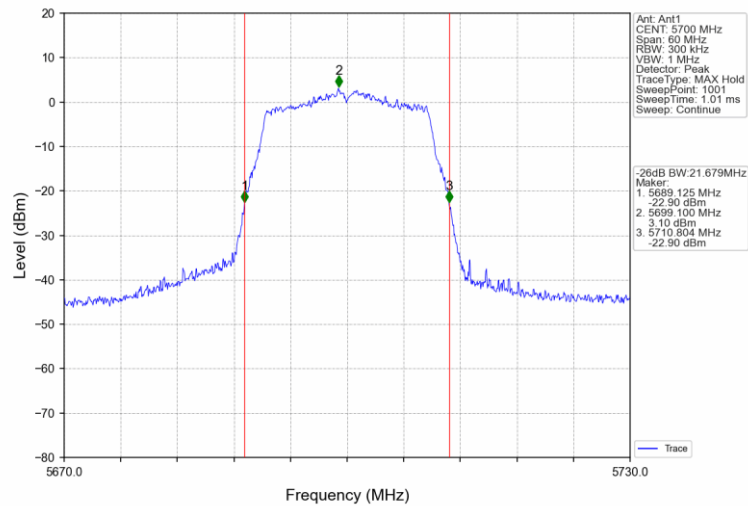
802.11ac(VHT20)_MCH_5580MHz_Ant1_NTNV



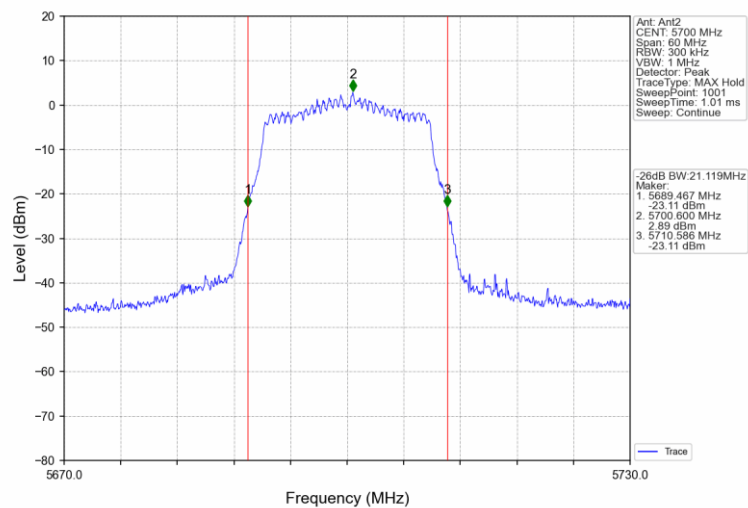
802.11ac(VHT20)_MCH_5580MHz_Ant2_NTNV



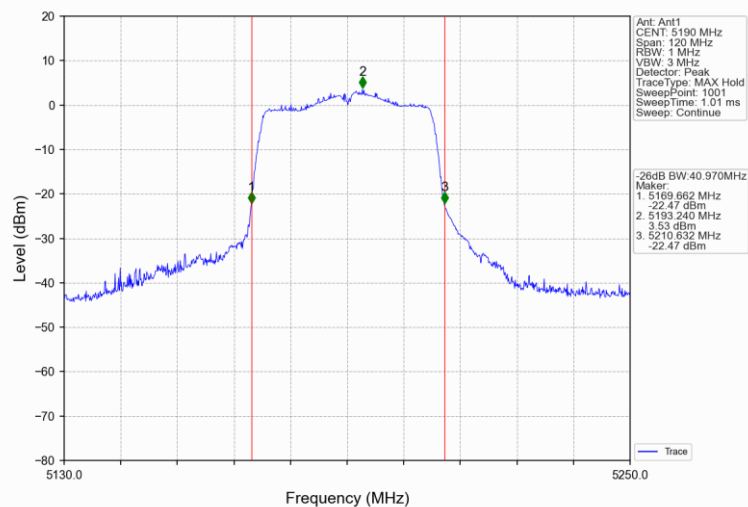
802.11ac(VHT20)_HCH_5700MHz_Ant1_NTNV



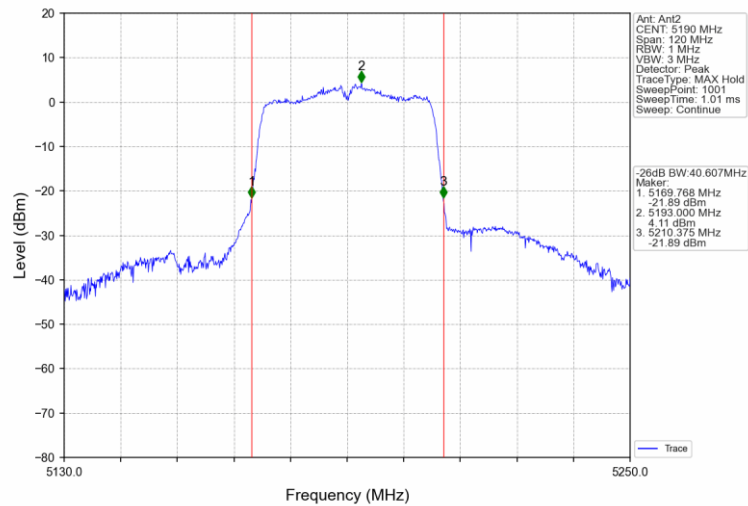
802.11ac(VHT20)_HCH_5700MHz_Ant2_NTNV



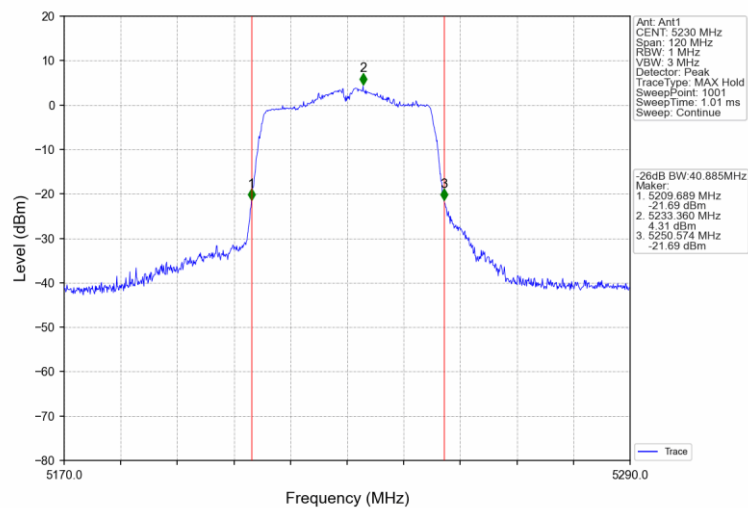
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



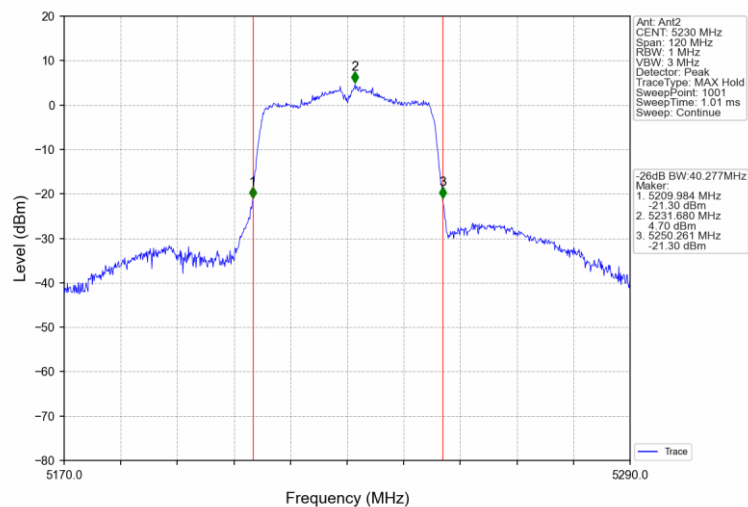
802.11ac(VHT40)_LCH_5190MHz_Ant2_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5230MHz_Ant2_NTNV



802.11ac(VHT40)_LCH_5270MHz_Ant1_NTNV