TEST REPORT

Reference No.	:	WTD24D06151831W005
FCC ID	:	2ALBPET1040
Applicant	:	BESTOM TECHNOLOGY(HK) CO., LIMITED
Address	:	R718 BuildingB1, Huayuan S&TP, No.168 BY Road, XiXiang Street, Shenzhen, China
Manufacturer	:	BESTOM TECHNOLOGY(HK) CO., LIMITED
Address	:	R718 BuildingB1, Huayuan S&TP, No.168 BY Road, XiXiang Street, Shenzhen, China
Product Name	:	Tablet
Model No. .	:	ET1040
Standards	:	FCC 47CFR Part 15 Section 15.407
Date of Receipt sample	:	2024-07-08
Date of Test	:	2024-07-08 to 2024-07-26
Date of Issue	:	2024-08-20
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
Waltek Testing Group Co., Ltd.
Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China
Tel: +86-769-2267 6998
Fax: +86-769-2267 6828

Compiled by:

Ford Wang

Ford Wang / Project Engineer

Approved by:

Deval Qin / Designated Reviewer

2 Contents

3 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD24D06151831W005	2024-07-08	2024-07-08 to 2024-07-26	2024-08-20	Original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Tablet
Model(s):	ET1040
Model Description:	N/A
Test Sample No.:	1-1/1
Wi-Fi Specification:	802.11a/ n(HT20/40)/ ac (HT20/HT40/80)/ ax (HT20/HT40/80)
Hardware Version:	V1.1
Software Version:	T104 A13-update-20240801

4.2 Details of E.U.T.

Operation Frequency:	802.11a/n/ac/ax (HT20): U-NII-1: 5150-5250MHz, U-NII-3:5725-5850MHz 802.11n/ac/ax (HT40): U-NII-1: 5190-5230MHz, U-NII-3: 5755-5795MHz 802.11ac/ax (HT80): U-NII-1: 5210MHz, U-NII-3: 5775MHz
Max. RF output power:	U-NII-1: Ant 0: 19.34dBm, Ant 1: 19.30dBm, Ant 0+ Ant 1: 21.98dBm U-NII-3: Ant 0: 19.13dBm, Ant 1: 14.58dBm, Ant 0+ Ant 1: 20.16dBm
Type of Modulation:	OFDM
Antenna installation:	FPC Antenna
Antenna Gain:	U-NII-1: Ant 0: 5.77dBi, Ant 1: 5.37dBi U-NII-3: Ant 0: 5.77dBi, Ant 1: 5.37dBi

Note:
#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:	5V, 5A from USB

4.3 Channel List

U-NII-1 (5.15-5.25GHz)			
channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
36	5180	38	5190
40	5200	42	5210
44	5220	46	5230
48	5240		

U-NII-3 (5.725-5.85GHz)			
channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
149	5745	151	5755
153	5765	155	5775
157	5785	159	5795
161	5805	165	5825

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11a/n/ac/ax (HT20):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
36	5180	40	5200
48	5240		

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
149	5745	157	5785
165	5825		

For 802.11n/ac/ax (HT40):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
38	5190	46	5230

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
151	5755	159	5795

For 802.11ac/ax (HT80):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
42	5210		

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
155	5775		

4.4 Test Mode Description

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Transmitting duty cycle is no less 98%.

The software is TermAssist and SecureCRT tool Use together.

Test Items	Mode	Data Rate	TX/RX
Radiated Emissions	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
Duty Cycle	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
Band Edge	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
6dB Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
26dB Bandwidth and 99% Occupied Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
Conducted Output Power	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
Power Spectral Density	802.11a (HT20)	6 Mbps	TX
	802.11n/ac(HT20/40/80)	MCS0	TX
	802.11ax(HT20/40/80)	MCS8	TX
Frequency Stability	Un-modulation	/	TX

4.5 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Equipment Used during Test

5.1 Equipments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date	Calibration Due Date
Conducted emissions from the AC mains power ports 2#						
1	EMI Test Receiver	R&S	ESCI	101155	2023-07-27	2024-07-26
2	LISN	SCHWARZBECK	NSLK 8128	8128-259	2023-10-31	2024-10-30
3	Limiter	CYBERTEK	EM5010	261115-001-0024	2023-07-27	2024-07-26
4	Cable	Laplace	RF300	-	2023-07-27	2024-07-26
3m Semi-anechoic Chamber for Radiation Emissions 1#						
1	Spectrum Analyzer	R&S	FSP30	100091	2024-04-22	2025-04-21
2	Amplifier	Agilent	8447D	2944A10178	2023-07-27	2024-07-26
3	Tri-log Broadband Antenna	SCHWARZBECK	VULB9163	336	2023-08-07	2024-08-06
4	Coaxial Cable	Top	TYPE16(13M)	-	2024-04-22	2025-04-21
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	667	2024-01-23	2025-01-22
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2023-08-02	2024-08-01
7	Broadband Preamplifier	COMPLIANCE	PAP-1G18	2004	2023-07-27	2024-07-26
8	Coaxial Cable	Top	ZT26-NJ-NJ-8M/FA	-	2024-04-22	2025-04-21
9	Microwave Amplifier	SCHWARZBECK	BBV 9721	100472	2023-07-27	2024-07-26
10	Coaxial Cable	Top	ZT40-2.92J-2.92J-2.0M	17100919	2024-04-22	2025-04-21
3m Semi-anechoic Chamber for Radiation Emissions 2#						
1	Test Receiver	R&S	ESCI	101296	2024-04-22	2025-04-21
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2023-11-04	2024-11-03
3	Active Loop Antenna	Com-Power	AL-130R	10160007	2024-04-27	2025-04-26
4	Amplifier	ANRITSU	MH648A	M43381	2024-04-22	2025-04-21
5	Cable	HUBER+SUHNER	CBL2	525178	2024-04-22	2025-04-21
RF Conducting						
1	Spectrum Analyzer	R&S	FSP40	100501	2023-07-27	2024-07-26
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-07-27	2024-07-26

Test Software:

Test Item	Software name	Software version
Conducted Emission Radiated Emission(3m)	EZ-EMC	EZ-EMC(RA-03A1-1)

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

6 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.207(a)	PASS
Radiated Emissions	15.407(a) 15.205(a) 15.209(a)	PASS
Duty Cycle	KDB 789033	PASS
6dB Bandwidth	15.407(a)	PASS
26 dB Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	PASS
Maximum Conducted Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Restricted bands around fundamental frequency	15.407(a)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

7 Duty cycle

Test Requirement:	FCC 47CFR Part 15 Section 15.407 KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section (B)
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	Through Pre-scan, and found 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.

7.1 Summary of Test Results

Ant 0:

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
U-NII-1 802.11a	0.110	0.276	0.40	39.86	4.00	-7.99
U-NII-1 802.11n(HT20)	0.426	1.418	0.30	30.04	5.22	-10.45
U-NII-1 802.11n(HT40)	0.246	0.374	0.66	65.78	1.82	-3.64
U-NII-1 802.11ac(HT20)	1.110	1.420	0.78	78.17	1.07	-2.14
U-NII-1 802.11ac(HT40)	0.790	1.420	0.56	55.63	2.55	-5.09
U-NII-1 802.11ac(HT80)	0.206	0.426	0.48	48.36	3.16	-6.31
U-NII-1 802.11ax(HT20)	0.154	0.218	0.71	70.64	1.51	-3.02
U-NII-1 802.11ax(HT40)	0.136	0.188	0.72	72.34	1.41	-2.81
U-NII-1 802.11ax(HT80)	0.117	0.179	0.65	65.36	1.85	-3.69

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
U-NII-3 802.11a	0.140	0.266	0.53	52.63	2.79	-5.58
U-NII-3 802.11n(HT20)	0.920	1.946	0.47	47.28	3.25	-6.51
U-NII-3 802.11n(HT40)	0.252	0.648	0.39	38.89	4.10	-8.20
U-NII-3 802.11ac(HT20)	1.924	1.956	0.98	98.36	0.07	-0.14
U-NII-3 802.11ac(HT40)	0.462	0.758	0.61	60.95	2.15	-4.30
U-NII-3 802.11ac(HT80)	0.064	0.426	0.15	15.02	8.23	-16.46
U-NII-3 802.11ax(HT20)	0.216	0.220	0.98	98.18	0.08	-0.16
U-NII-3 802.11ax(HT40)	0.402	0.590	0.68	68.14	1.67	-3.33
U-NII-3 802.11ax(HT80)	0.370	0.550	0.67	67.27	1.72	-3.44

Ant 1:

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
U-NII-1 802.11a	0.349	0.620	0.56	56.29	2.50	-4.99
U-NII-1 802.11n(HT20)	0.763	1.949	0.39	39.15	4.07	-8.15
U-NII-1 802.11n(HT40)	0.311	0.540	0.58	57.59	2.40	-4.79
U-NII-1 802.11ac(HT20)	0.693	1.949	0.36	35.56	4.49	-8.98
U-NII-1 802.11ac(HT40)	0.647	0.759	0.85	85.24	0.69	-1.39
U-NII-1 802.11ac(HT80)	0.202	0.426	0.47	47.42	3.24	-6.48
U-NII-1 802.11ax(HT20)	0.083	0.219	0.38	37.90	4.21	-8.43
U-NII-1 802.11ax(HT40)	0.300	0.488	0.61	61.48	2.11	-4.23
U-NII-1 802.11ax(HT80)	0.398	0.576	0.69	69.10	1.61	-3.21

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
U-NII-3 802.11a	0.180	0.268	0.67	67.16	1.73	-3.46
U-NII-3 802.11n(HT20)	1.220	1.948	0.63	62.63	2.03	-4.06
U-NII-3 802.11n(HT40)	0.258	0.354	0.73	72.88	1.37	-2.75
U-NII-3 802.11ac(HT20)	1.070	1.958	0.55	54.65	2.62	-5.25
U-NII-3 802.11ac(HT40)	0.588	0.748	0.79	78.61	1.05	-2.09
U-NII-3 802.11ac(HT80)	0.300	0.424	0.71	70.75	1.50	-3.00
U-NII-3 802.11ax(HT20)	0.216	0.220	0.98	98.18	0.08	-0.16
U-NII-3 802.11ax(HT40)	0.162	0.186	0.87	87.10	0.60	-1.20
U-NII-3 802.11ax(HT80)	0.166	0.178	0.93	93.26	0.30	-0.61

Remark:

Duty cycle=On Time/period;

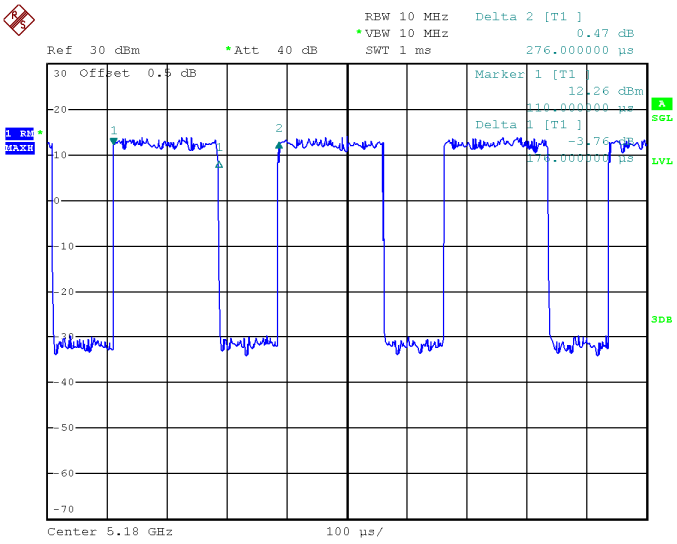
Duty cycle factor=10*log (1/Duty cycle);

Average factor=$20\log_{10}$Duty cycle

Test result plots shown as follows:

Ant 0:

802.11a U-NII-1 Low channel



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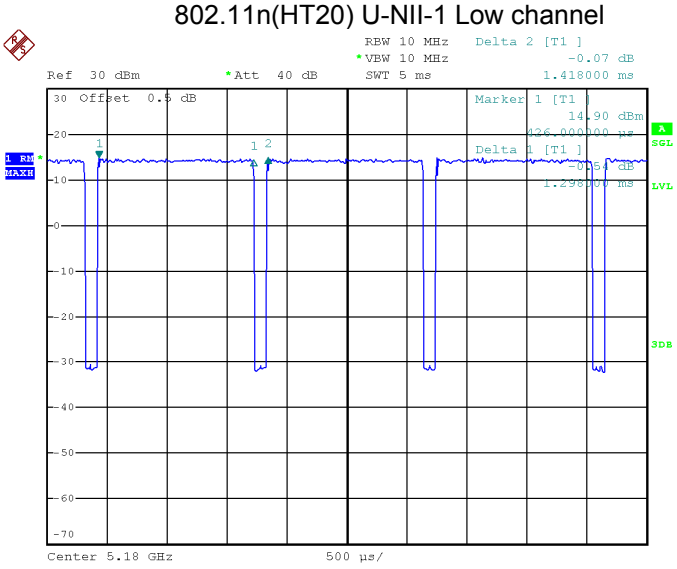
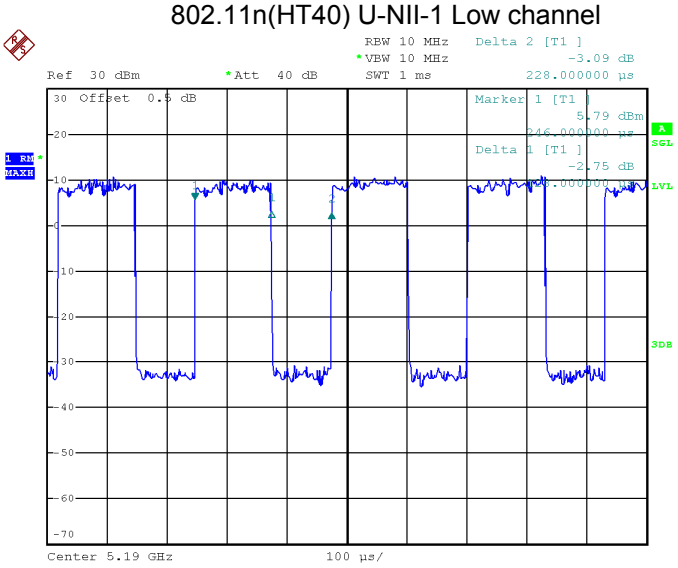
802.11n(HT20) U-NII-1 Low channel



Date: 18.JUL.2024 17:44:16

802.11n(HT40) U-NII-1 Low channel



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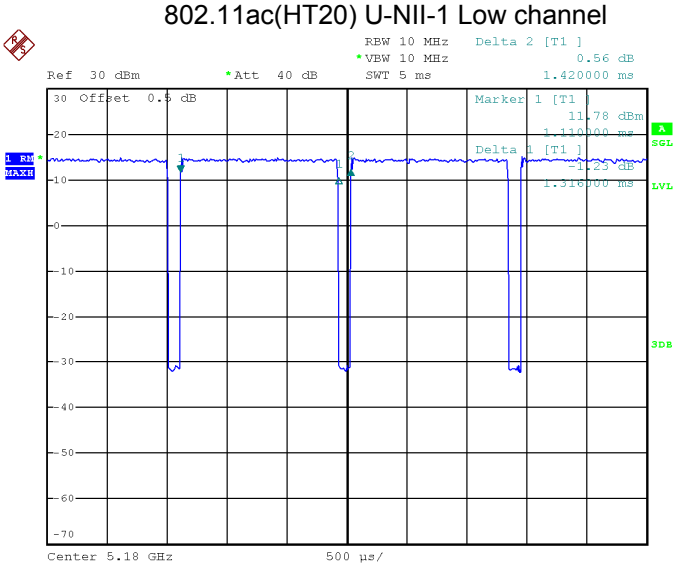
802.11ac(HT20) U-NII-1 Low channel



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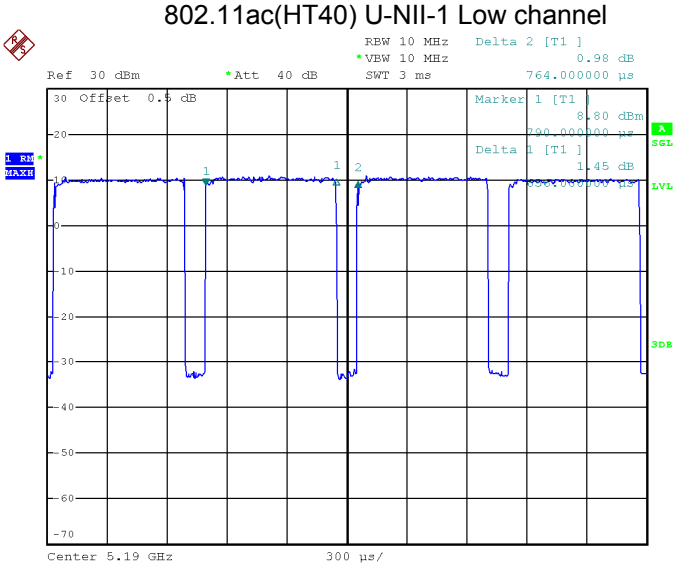

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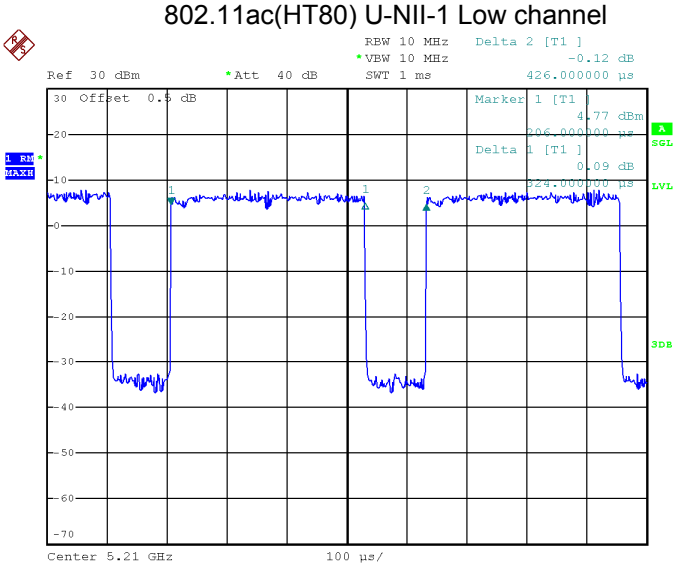
802.11ac(HT80) U-NII-1 Low channel



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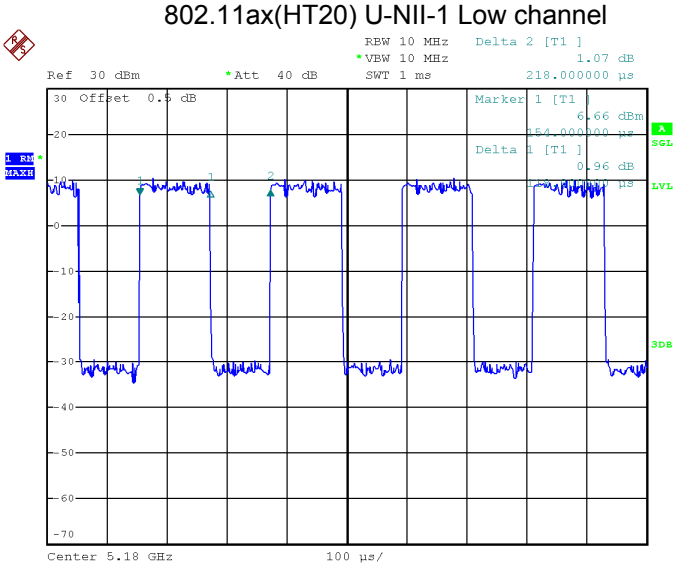
802.11ax(HT20) U-NII-1 Low channel



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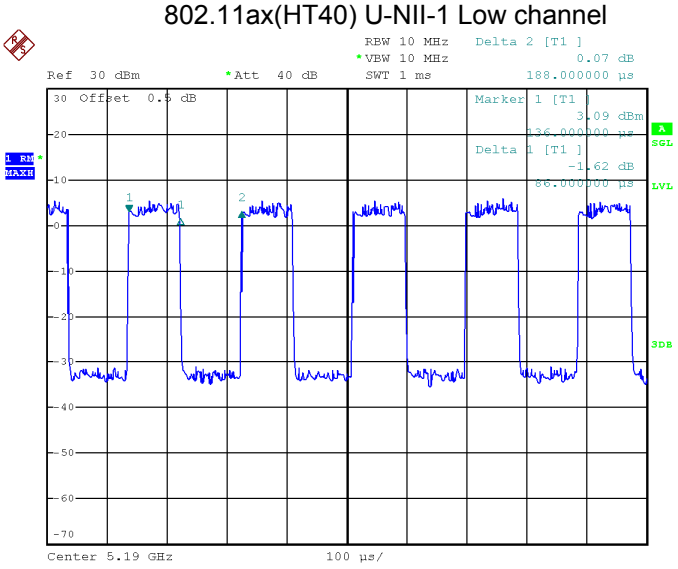
802.11ax(HT40) U-NII-1 Low channel



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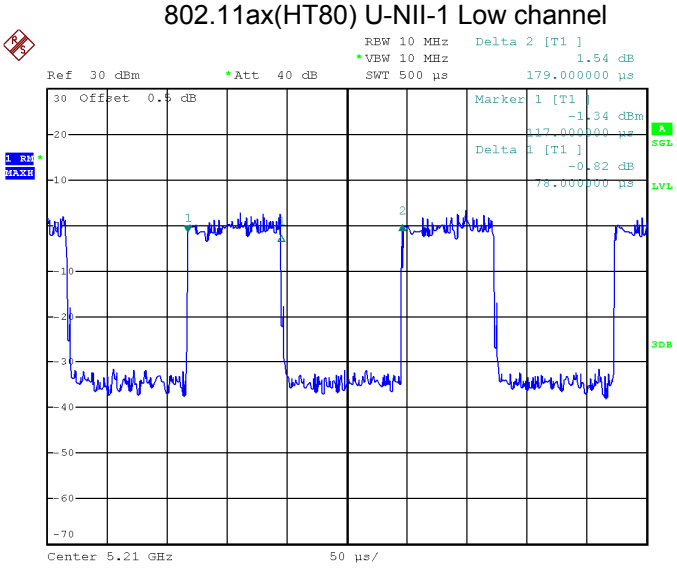
802.11ax(HT80) U-NII-1 Low channel



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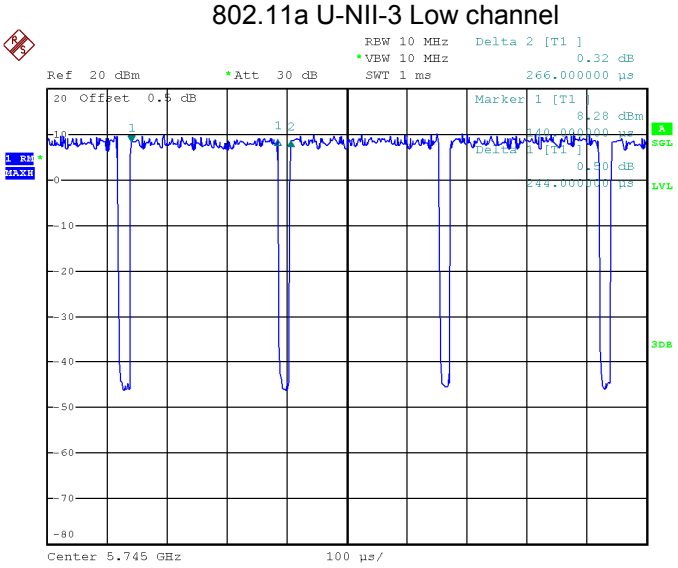
802.11a U-NII-3 Low channel



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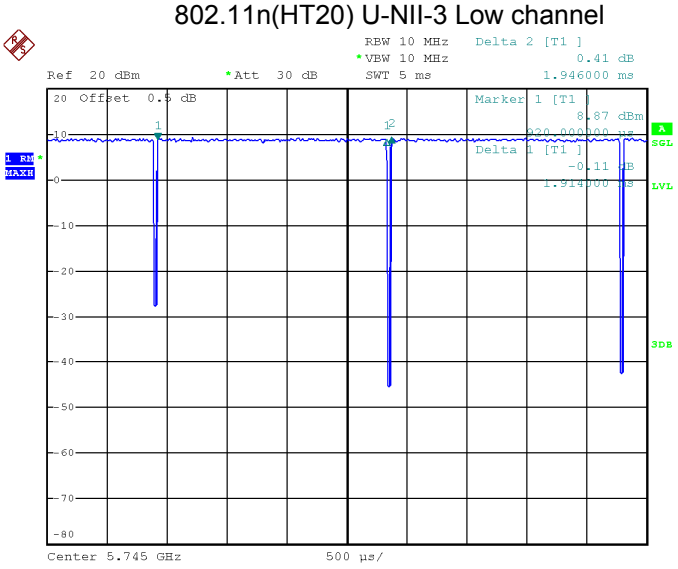
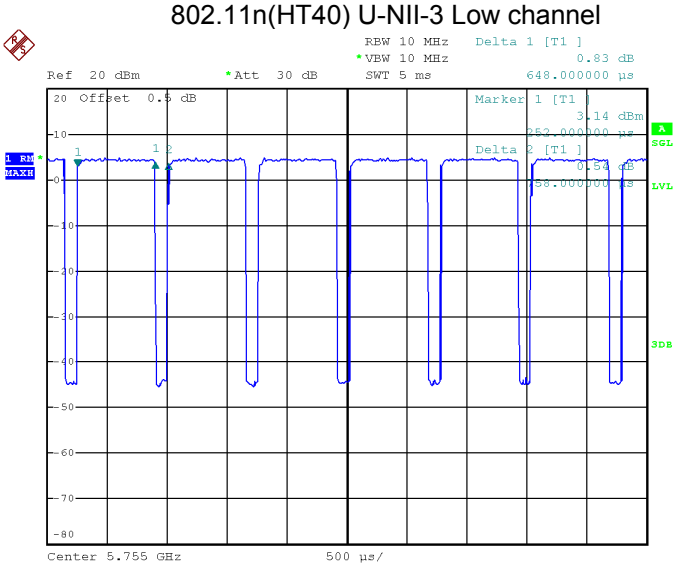
802.11n(HT20) U-NII-3 Low channel



Date: 23.JUL.2024 10:18:09

802.11n(HT40) U-NII-3 Low channel



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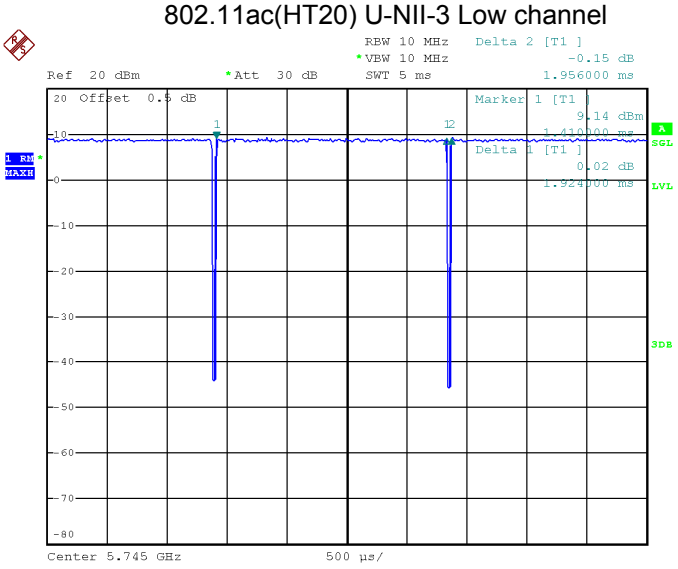
802.11ac(HT20) U-NII-3 Low channel



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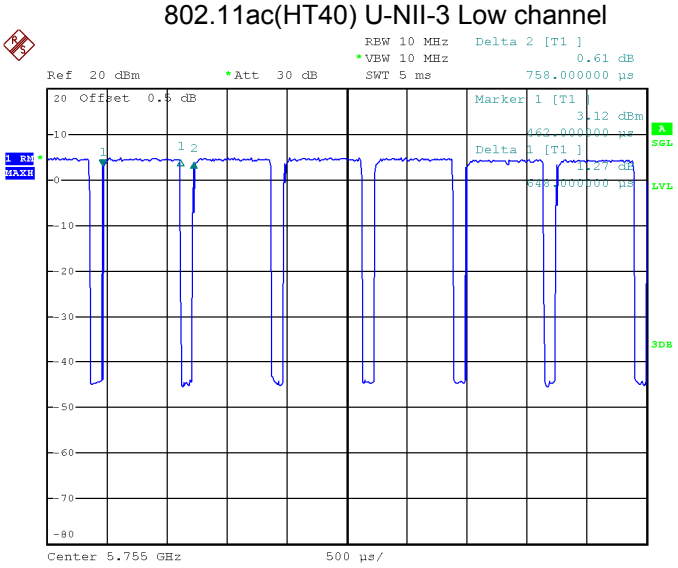
802.11ac(HT40) U-NII-3 Low channel



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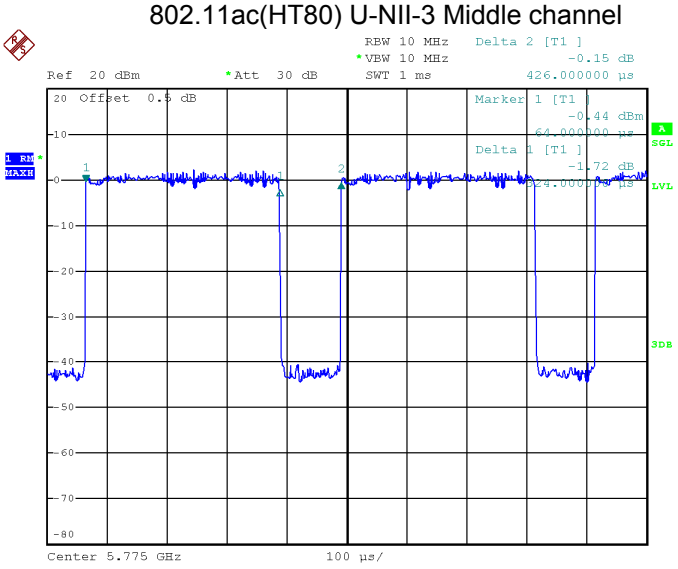
802.11ac(HT80) U-NII-3 Middle channel



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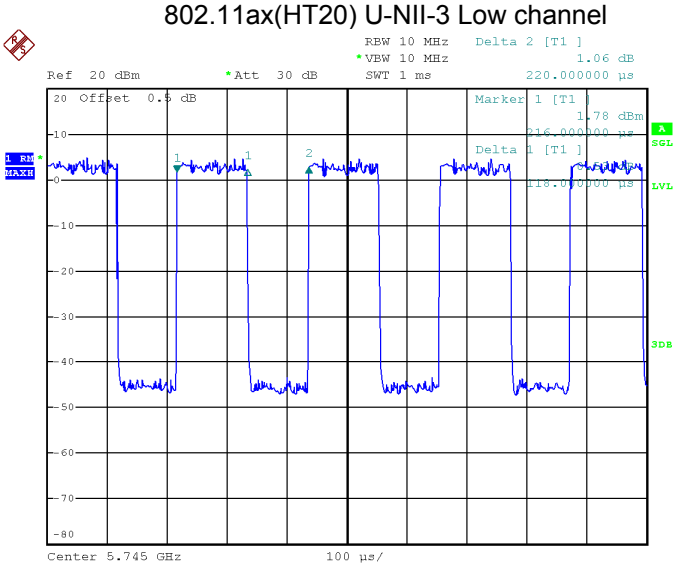
802.11ax(HT20) U-NII-3 Low channel



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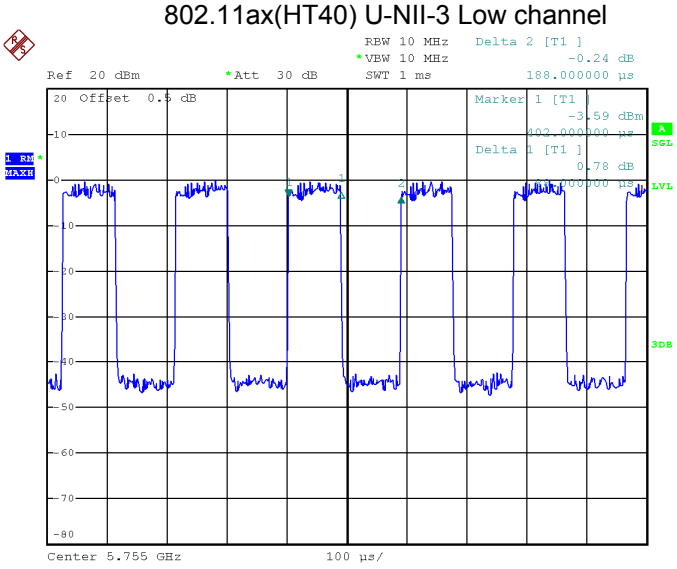
802.11ax(HT40) U-NII-3 Low channel



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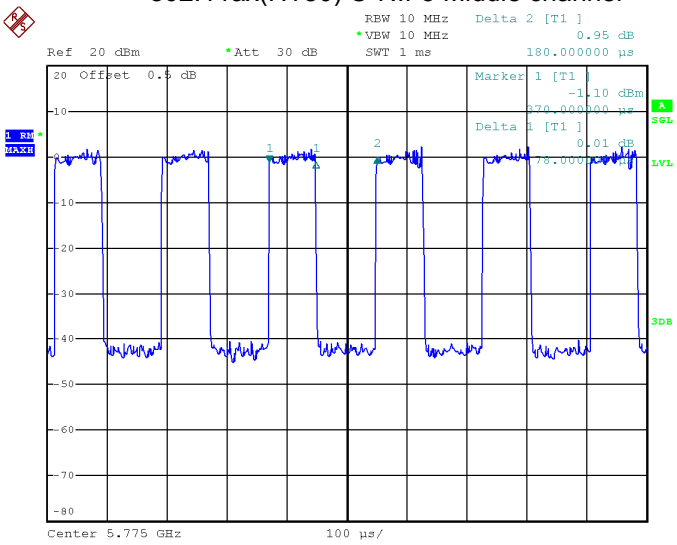
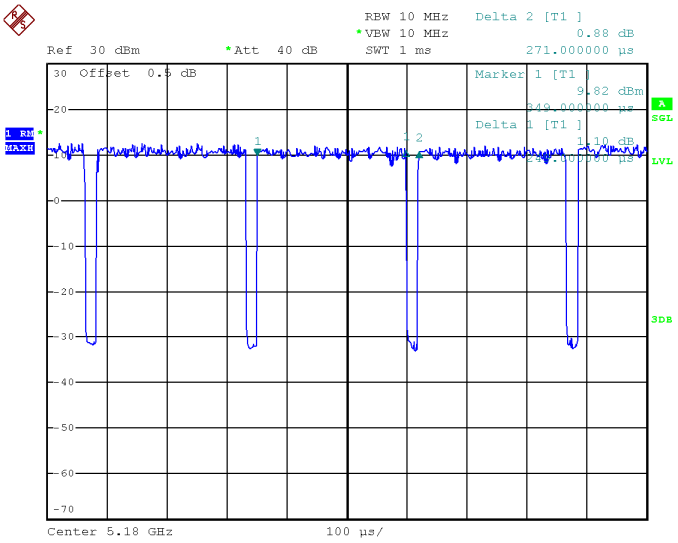
802.11ax(HT80) U-NII-3 Middle channel



Date: 23.JUL.2024 10:11:10

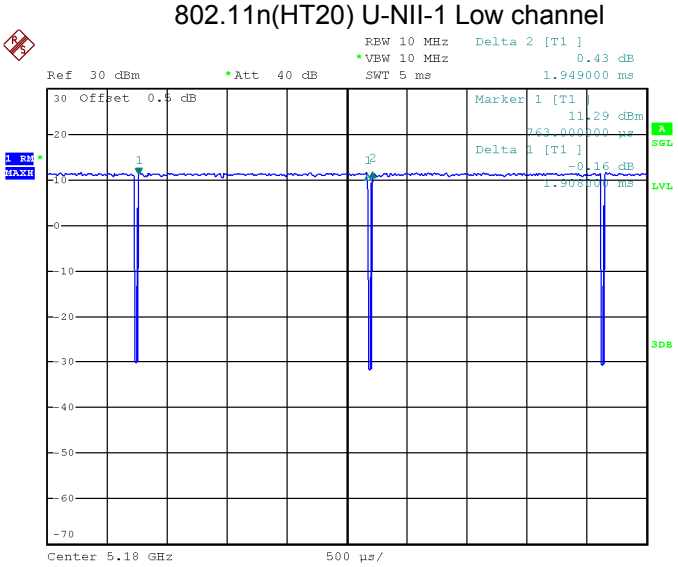
Ant 1:

802.11a U-NII-1 Low channel



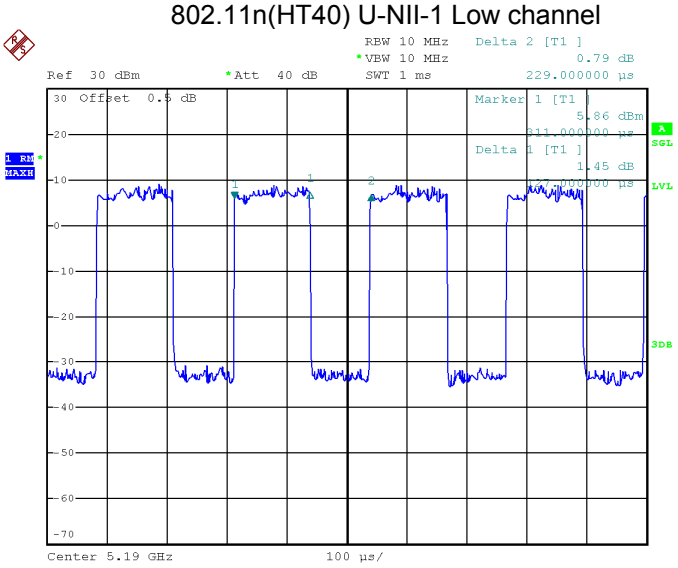
Date: 22.JUL.2024 11:58:10

802.11n(HT20) U-NII-1 Low channel



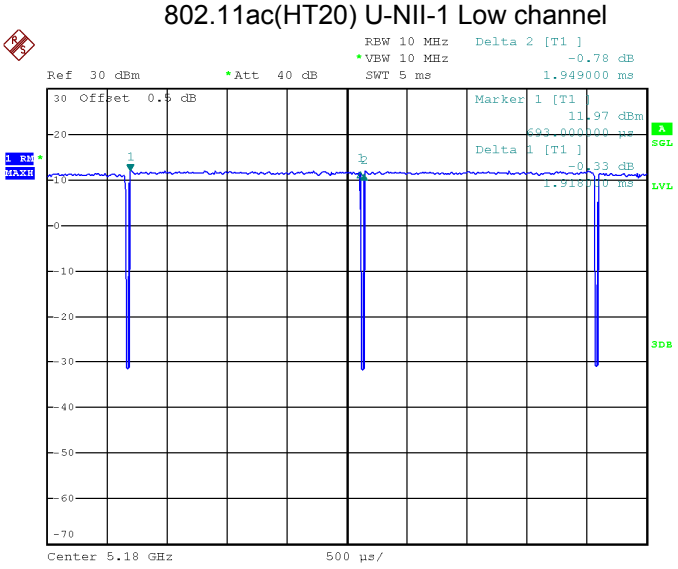
Date: 22.JUL.2024 11:57:10

802.11n(HT40) U-NII-1 Low channel



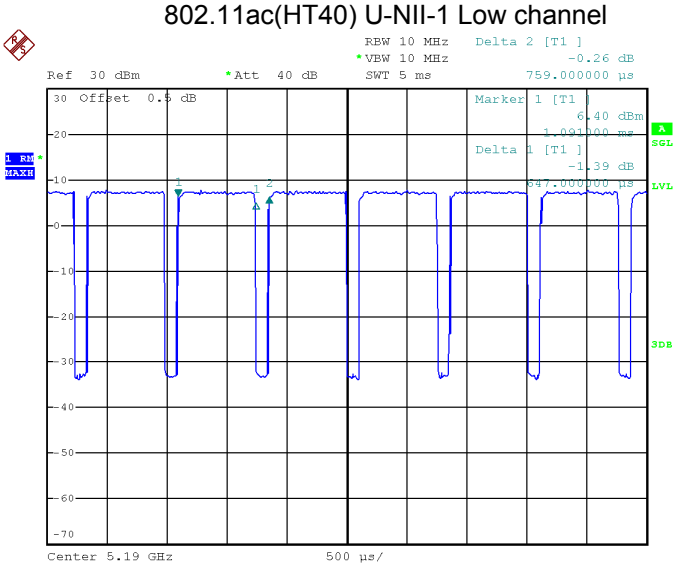
Date: 22.JUL.2024 11:59:10

802.11ac(HT20) U-NII-1 Low channel



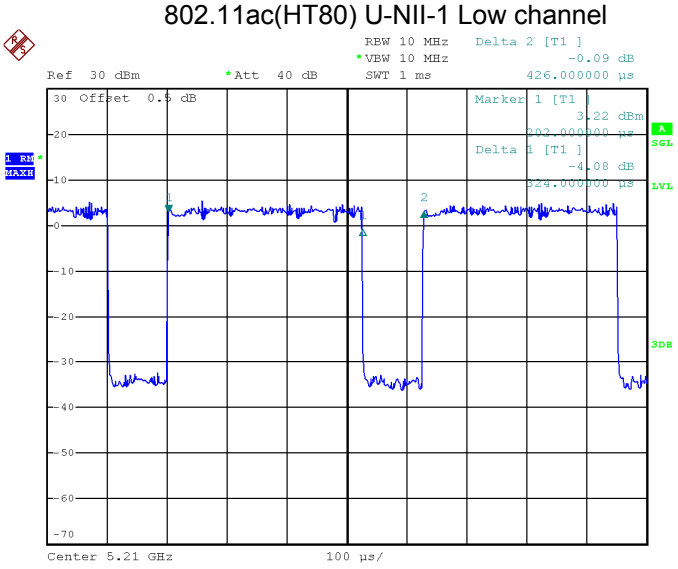
Date: 22.JUL.2024 11:56:32

802.11ac(HT40) U-NII-1 Low channel



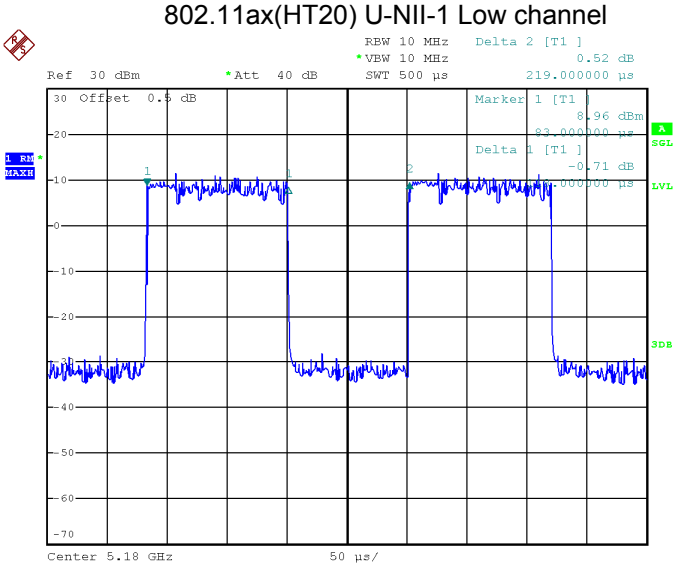
Date: 22.JUL.2024 12:00:14

802.11ac(HT80) U-NII-1 Low channel



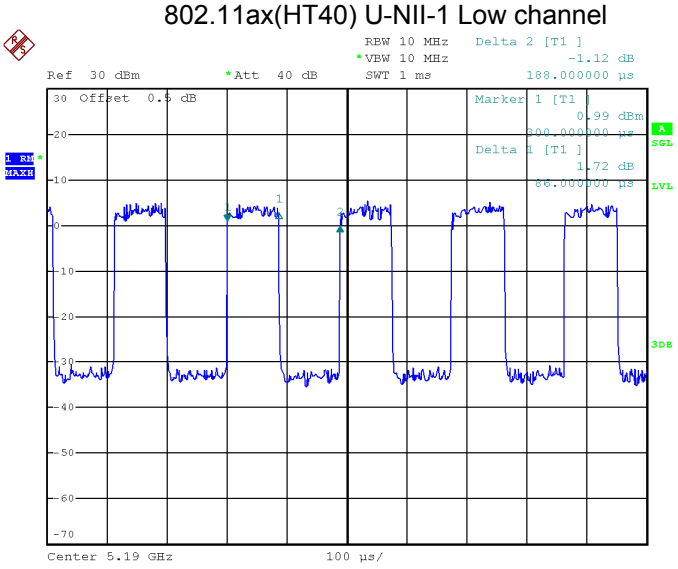
Date: 22.JUL.2024 12:02:37

802.11ax(HT20) U-NII-1 Low channel



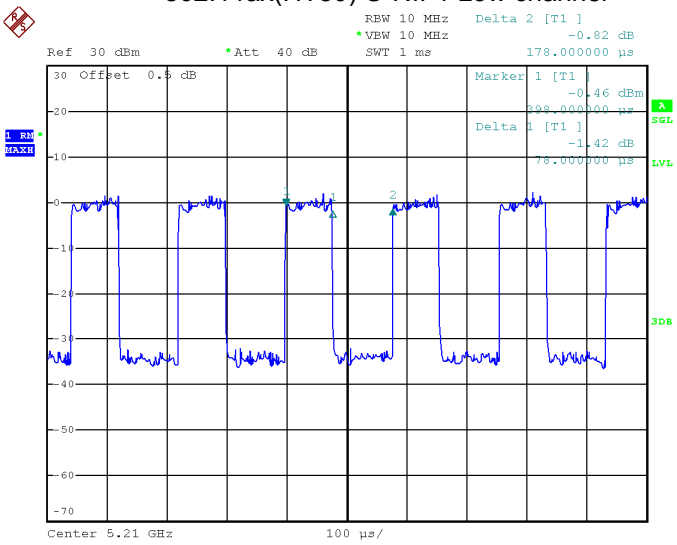
Date: 22.JUL.2024 11:55:10

802.11ax(HT40) U-NII-1 Low channel



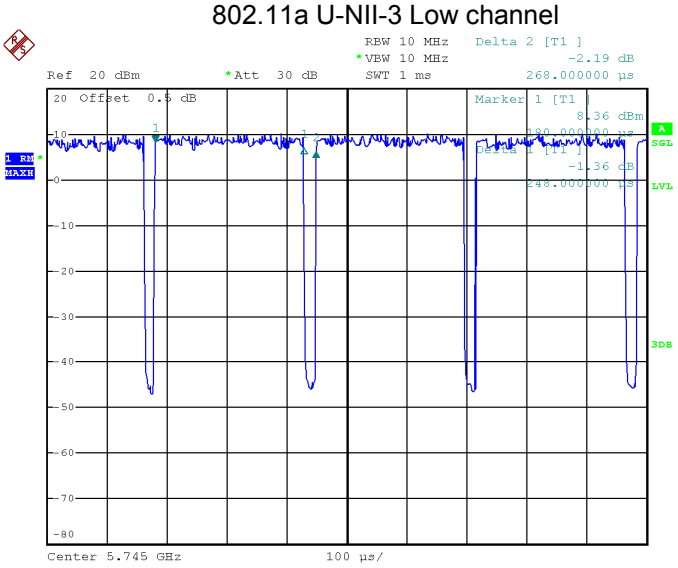
Date: 22.JUL.2024 12:01:09

802.11ax(HT80) U-NII-1 Low channel



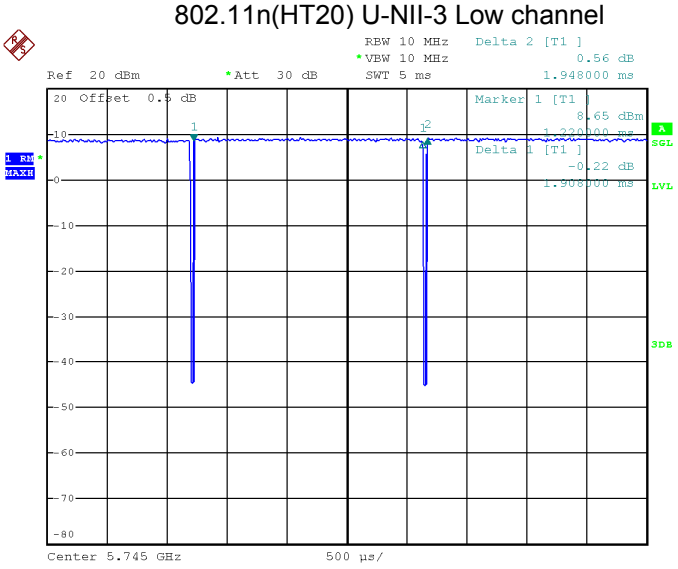
Date: 22.JUL.2024 12:02:00

802.11a U-NII-3 Low channel



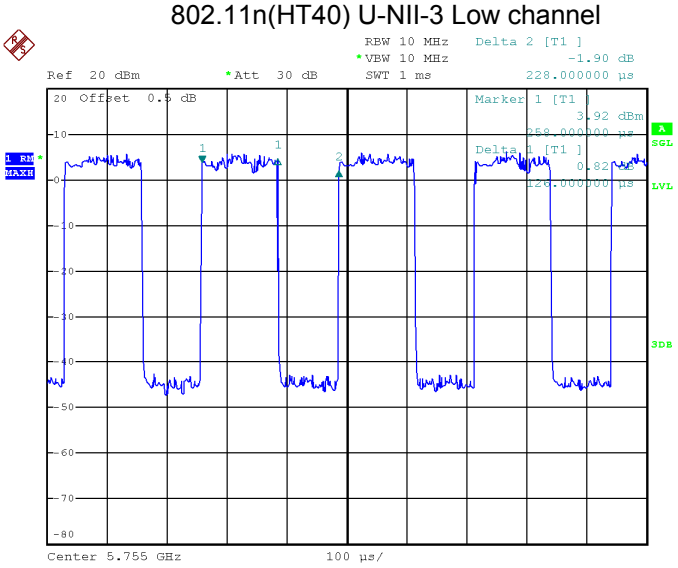
Date: 23.JUL.2024 10:28:58

802.11n(HT20) U-NII-3 Low channel



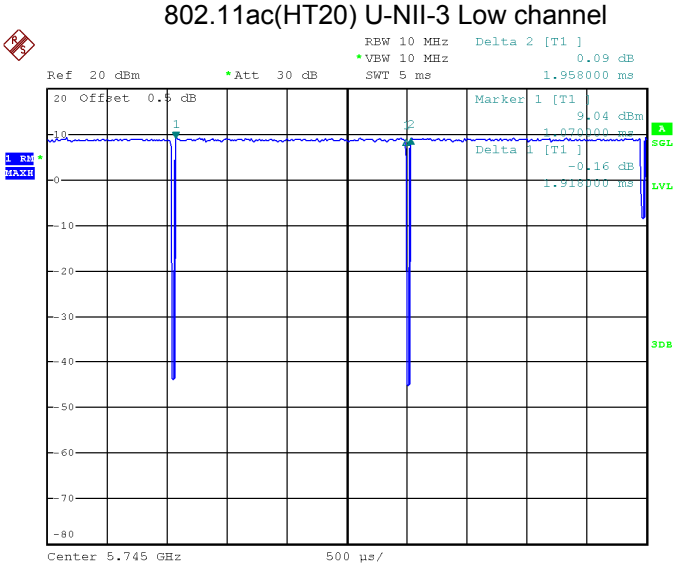
Date: 23.JUL.2024 10:30:24

802.11n(HT40) U-NII-3 Low channel



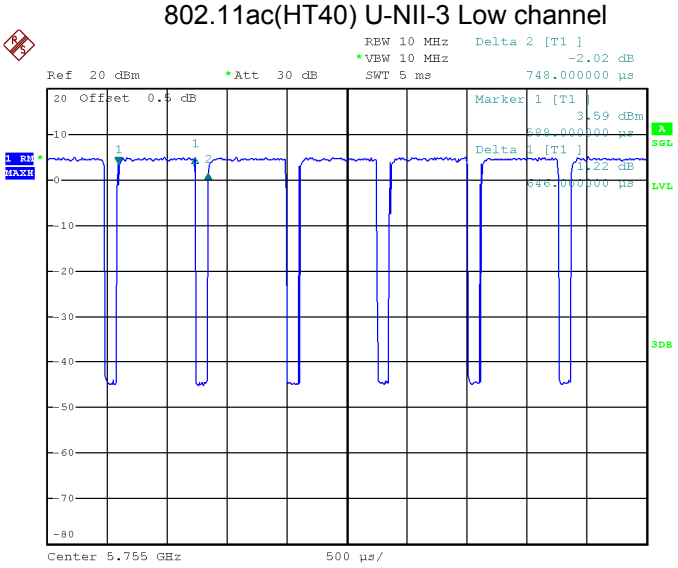
Date: 23.JUL.2024 10:33:55

802.11ac(HT20) U-NII-3 Low channel



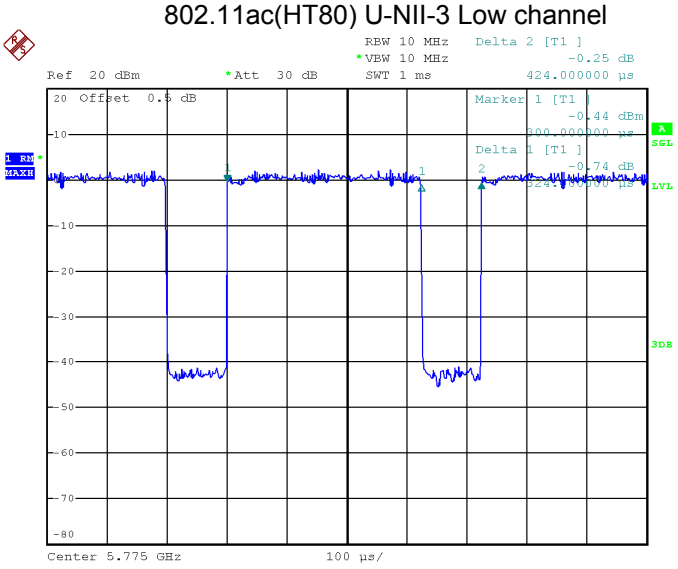
Date: 23.JUL.2024 10:31:26

802.11ac(HT40) U-NII-3 Low channel



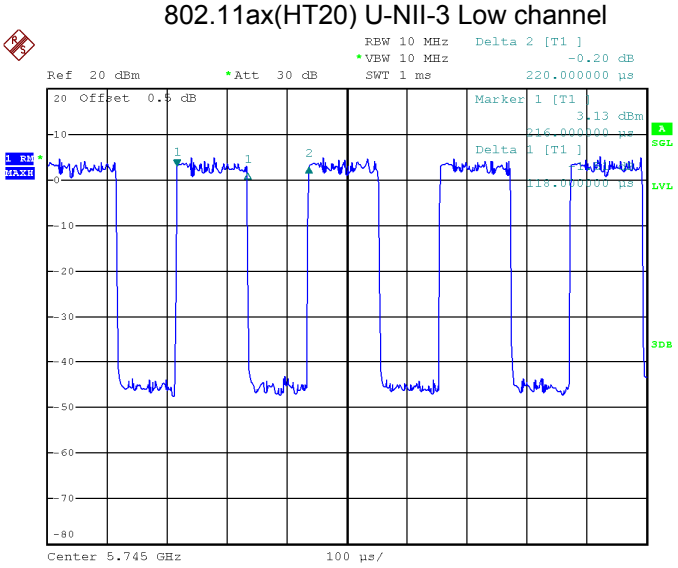
Date: 23.JUL.2024 10:34:58

802.11ac(HT80) U-NII-3 Low channel



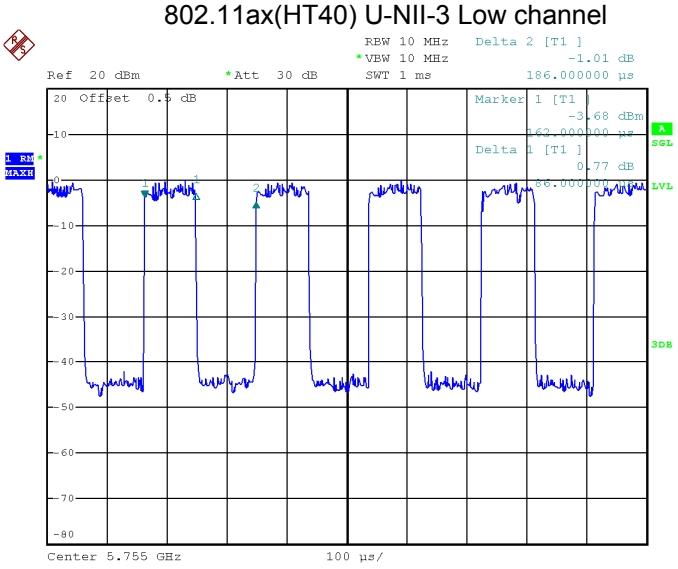
Date: 23.JUL.2024 10:37:31

802.11ax(HT20) U-NII-3 Low channel



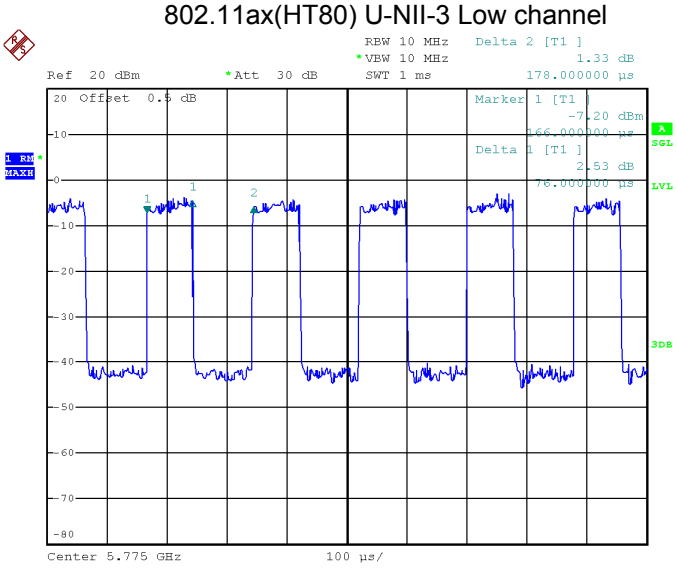
Date: 23.JUL.2024 10:32:31

802.11ax(HT40) U-NII-3 Low channel



Date: 23.JUL.2024 10:36:22

802.11ax(HT80) U-NII-3 Low channel



Date: 23.JUL.2024 10:36:59

8 Conducted Emission

Test Requirement: 47CFR FCC Part15 Subpart C §15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Limit:

Frequency (MHz)	Conducted Li it (dBμV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 t 5.0	56	46
5.0 to 30	60	50
*Decreases with the logarithm of the frequency.		

8.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C

Humidity: 46.3 % RH

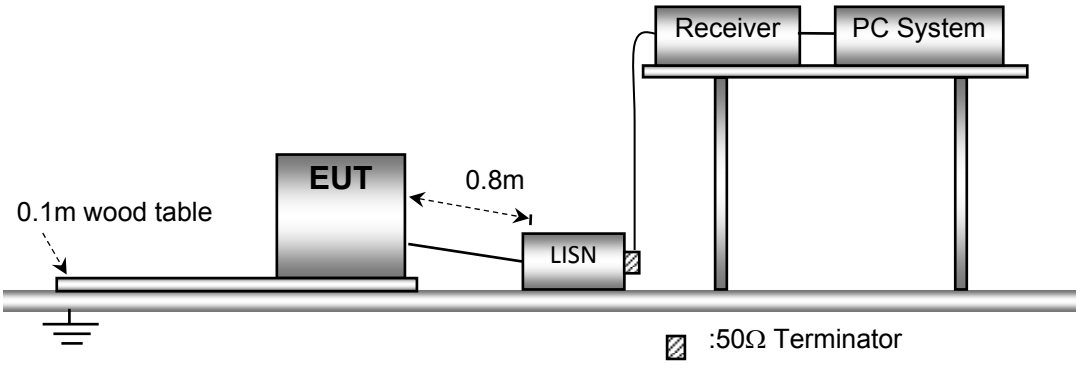
Atmospheric Pressure: 101.2kPa

EUT Operation:

The test was performed in Transmitting mode, the worst test data were shown in the report.

8.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



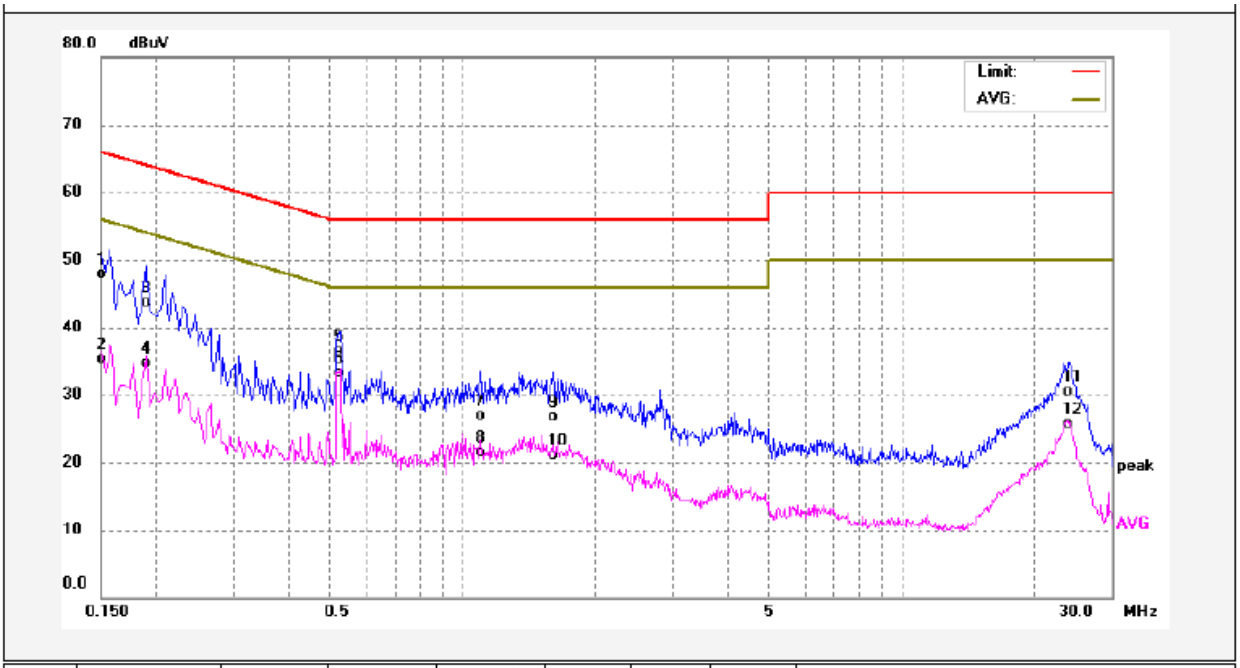
8.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

8.4 Conducted Emission Test Result

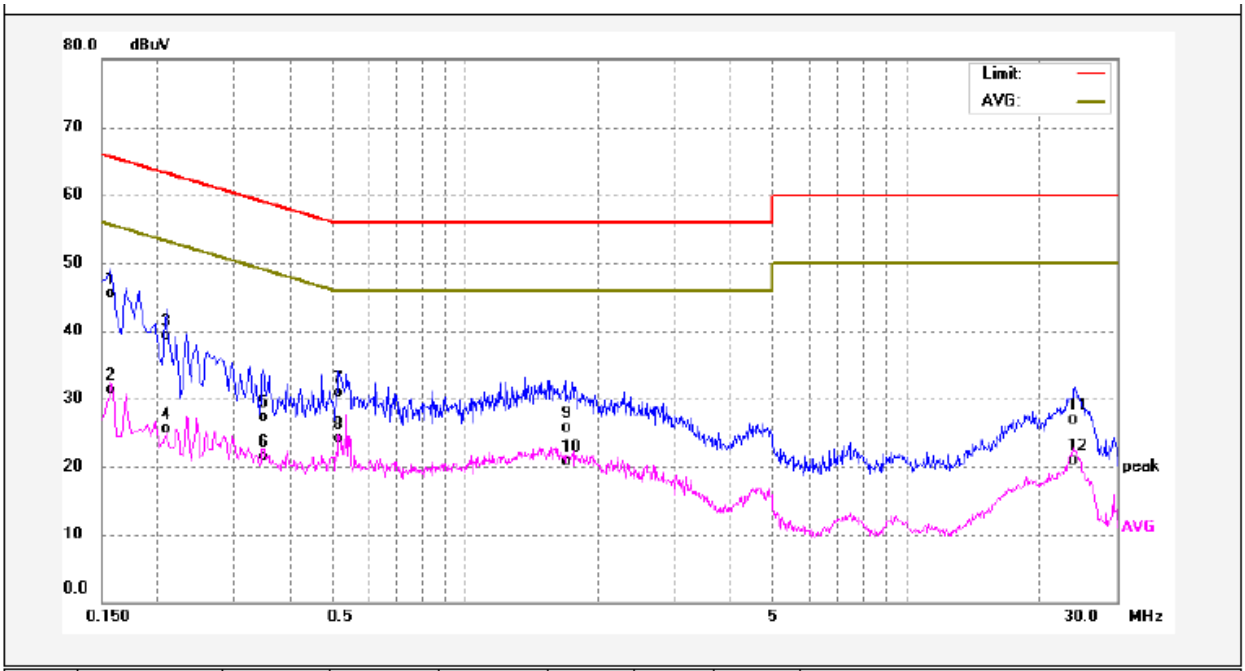
Remark: only the worst data (Ant 0+Ant1 U-NII-1 802.11a High channel mode) were reported

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	37.86	10.10	47.96	65.99	-18.03	QP	
2	0.1500	25.12	10.10	35.22	55.99	-20.77	AVG	
3	0.1900	33.18	10.48	43.66	64.03	-20.37	QP	
4	0.1900	24.22	10.48	34.70	54.03	-19.33	AVG	
5	0.5220	25.67	10.74	36.41	56.00	-19.59	QP	
6	0.5220	22.60	10.74	33.34	46.00	-12.66	AVG	
7	1.0980	15.73	11.13	26.86	56.00	-29.14	QP	
8	1.0980	10.28	11.13	21.41	46.00	-24.59	AVG	
9	1.6019	15.45	11.23	26.68	56.00	-29.32	QP	
10	1.6019	9.94	11.23	21.17	46.00	-24.83	AVG	
11	23.8900	19.31	11.15	30.46	60.00	-29.54	QP	
12	23.8900	14.55	11.15	25.70	50.00	-24.30	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1580	35.34	10.13	45.47	65.56	-20.09	QP	
2	0.1580	21.12	10.13	31.25	55.56	-24.31	AVG	
3	0.2100	28.84	10.45	39.29	63.20	-23.91	QP	
4	0.2100	15.03	10.45	25.48	53.20	-27.72	AVG	
5	0.3500	16.94	10.32	27.26	58.96	-31.70	QP	
6	0.3500	11.15	10.32	21.47	48.96	-27.49	AVG	
7	0.5180	20.27	10.66	30.93	56.00	-25.07	QP	
8	0.5180	13.39	10.66	24.05	46.00	-21.95	AVG	
9	1.6860	14.74	10.91	25.65	56.00	-30.35	QP	
10	1.6860	9.71	10.91	20.62	46.00	-25.38	AVG	
11	24.0700	16.00	10.98	26.98	60.00	-33.02	QP	
12	24.0700	9.98	10.98	20.96	50.00	-29.04	AVG	

9 Radiated Emissions

Test Requirement: FCC 47CFR Part 15 Section 15.209 & 15.407

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Distance	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

9.1 EUT Operation

Operating Environment **:**

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

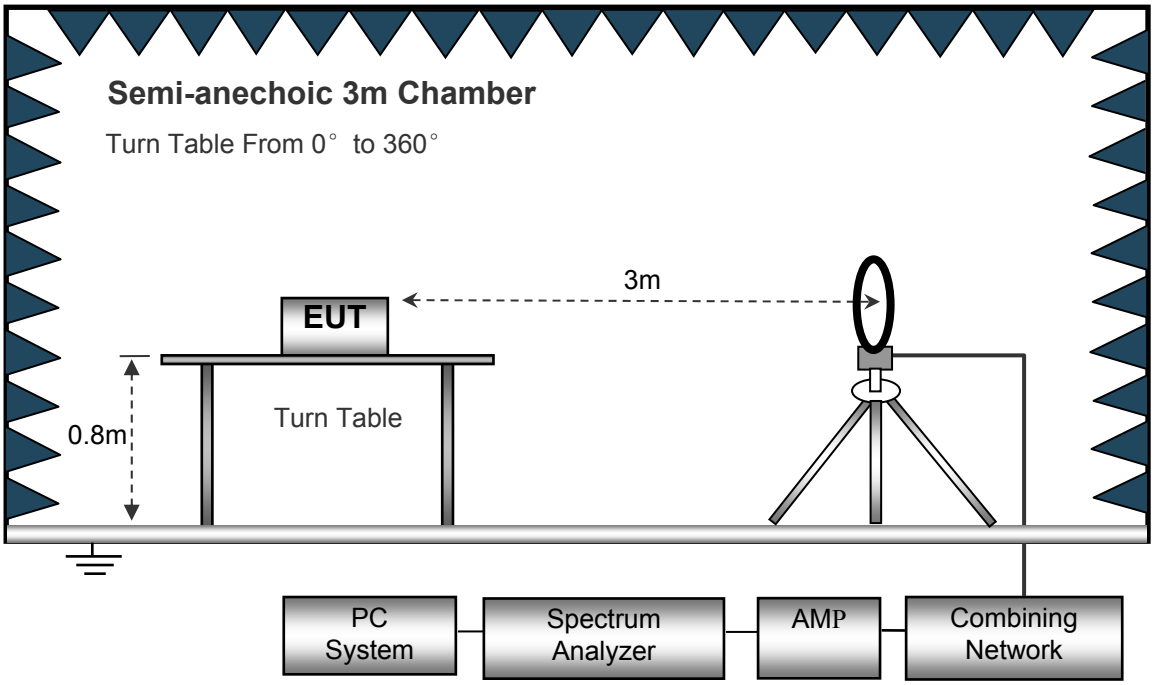
EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

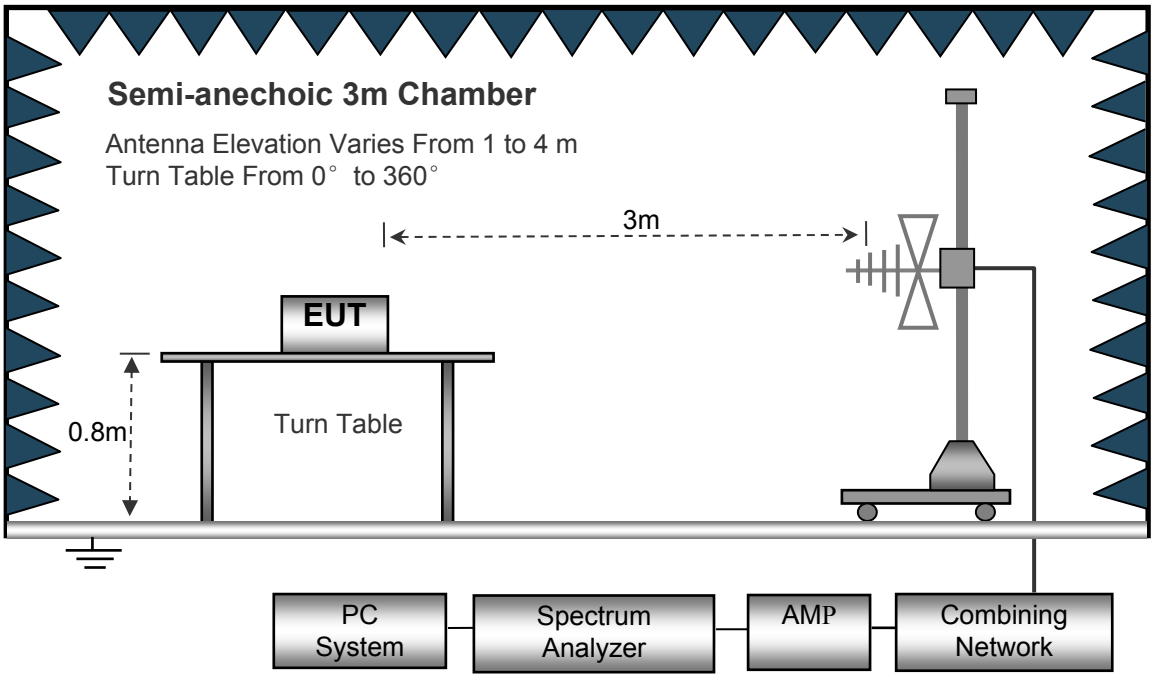
9.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

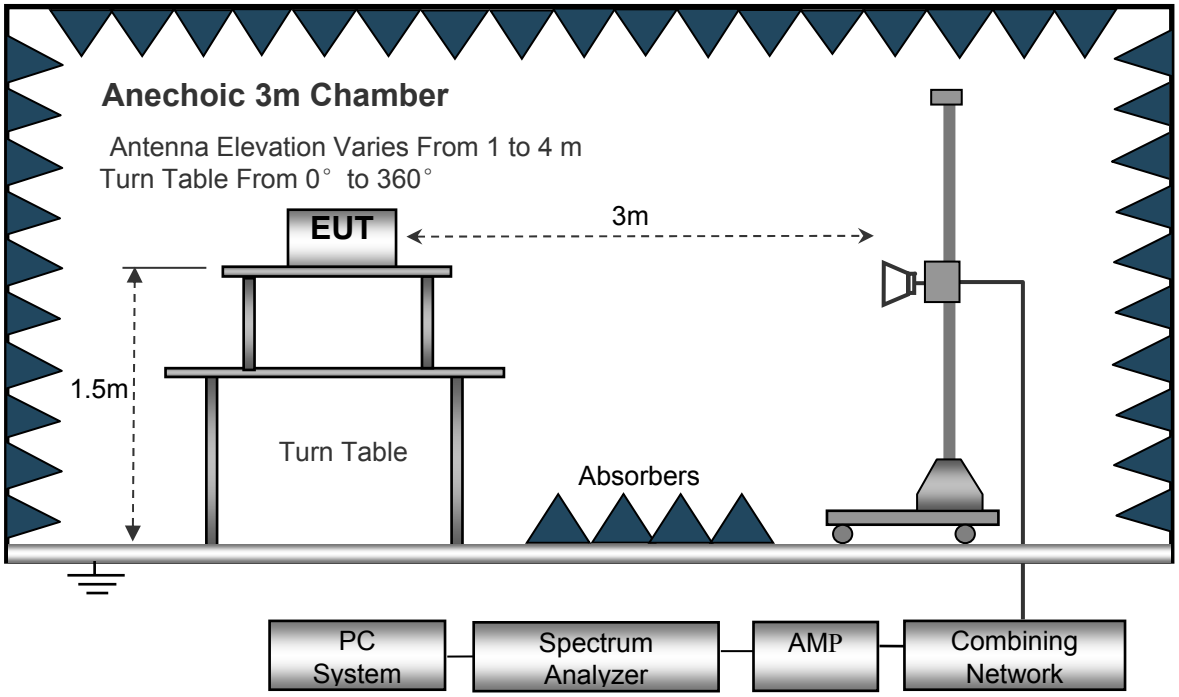
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



9.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz
Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector ..... Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

9.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

9.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

9.6 Summary of Test Results

Test Frequency: 9KHz~30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 18GHz

Ant 0:

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 Low Channel 5180MHz									
326.25	39.78	QP	225	1.0	H	-11.62	28.16	46.00	-17.84
326.25	42.57	QP	78	1.4	V	-11.62	30.95	46.00	-15.05
4511.20	54.14	PK	346	1.6	H	-2.03	52.11	74.00	-21.89
4511.20	43.57	Ave	346	1.6	H	-2.03	41.54	54.00	-12.46
5132.24	53.38	PK	204	1.7	H	-1.02	52.36	74.00	-21.64
5132.24	44.41	Ave	204	1.7	H	-1.02	43.39	54.00	-10.61
10360.00	41.37	PK	142	1.9	H	5.33	46.70	74.00	-27.30
10360.00	37.81	Ave	142	1.9	H	5.33	43.14	54.00	-10.86
802.11a U-NII-1 Middle channel 5200MHz									
326.25	40.35	QP	58	1.7	H	-11.62	28.73	46.00	-17.27
326.25	42.06	QP	7	1.5	V	-11.62	30.44	46.00	-15.56
4530.41	53.24	PK	158	1.4	H	-1.94	51.30	74.00	-22.70
4530.41	42.58	Ave	158	1.4	H	-1.94	40.64	54.00	-13.36
5125.86	52.87	PK	110	1.5	H	-1.06	51.81	74.00	-22.19
5125.86	45.42	Ave	110	1.5	H	-1.06	44.36	54.00	-9.64
10400.00	39.91	PK	156	1.3	H	5.21	45.12	74.00	-28.88
10400.00	38.58	Ave	156	1.3	H	5.21	43.79	54.00	-10.21

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 High channel 5240MHz									
326.25	39.08	QP	341	1.8	H	-11.62	27.46	46.00	-18.54
326.25	41.87	QP	154	1.6	V	-11.62	30.25	46.00	-15.75
4526.80	53.56	PK	2	1.4	H	-2.24	51.32	74.00	-22.68
4526.80	42.59	Ave	2	1.4	H	-2.24	40.35	54.00	-13.65
5132.93	53.58	PK	49	1.2	H	-1.09	52.49	74.00	-21.51
5132.93	45.87	Ave	49	1.2	H	-1.09	44.78	54.00	-9.22
10480.00	42.58	PK	85	1.0	H	5.14	47.72	74.00	-26.28
10480.00	38.59	Ave	85	1.0	H	5.14	43.73	54.00	-10.27
802.11a U-NII-3 Low Channel 5745MHz									
326.25	39.22	QP	30	1.5	H	-11.62	27.60	46.00	-18.40
326.25	42.57	QP	40	1.7	V	-11.62	30.95	46.00	-15.05
4519.91	53.38	PK	58	1.8	H	-2.06	51.32	74.00	-22.68
4519.91	41.97	Ave	58	1.8	H	-2.06	39.91	54.00	-14.09
5385.23	40.96	PK	248	1.6	H	5.93	46.89	74.00	-27.11
5385.23	37.37	Ave	248	1.6	H	5.93	43.30	54.00	-10.70
11490.00	46.26	PK	67	1.9	H	-1.25	45.01	74.00	-28.99
11490.00	39.43	Ave	67	1.9	H	-1.25	38.18	54.00	-15.82

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 middle channel 5785MHz									
326.25	40.12	QP	183	1.0	H	-11.62	28.50	46.00	-17.50
326.25	42.56	QP	243	1.1	V	-11.62	30.94	46.00	-15.06
4512.22	53.25	PK	275	1.9	H	-2.03	51.22	74.00	-22.78
4512.22	42.92	Ave	275	1.9	H	-2.03	40.89	54.00	-13.11
5388.46	42.32	PK	47	1.6	H	5.81	48.13	74.00	-25.87
5388.46	37.47	Ave	47	1.6	H	5.81	43.28	54.00	-10.72
11570.00	45.48	PK	215	1.4	H	-1.22	44.26	74.00	-29.74
11570.00	37.21	Ave	215	1.4	H	-1.22	35.99	54.00	-18.01
802.11a U-NII-3 High channel 5825MHz									
326.25	40.61	QP	293	2.0	H	-11.62	28.99	46.00	-17.01
326.25	43.21	QP	75	1.9	V	-11.62	31.59	46.00	-14.41
4523.71	52.82	PK	109	1.7	H	-1.84	50.98	74.00	-23.02
4523.71	42.53	Ave	109	1.7	H	-1.84	40.69	54.00	-13.31
5355.21	40.13	PK	4	1.9	H	5.84	45.97	74.00	-28.03
5355.21	37.02	Ave	4	1.9	H	5.84	42.86	54.00	-11.14
11650.00	45.69	PK	352	1.4	H	-1.30	44.39	74.00	-29.61
11650.00	39.54	Ave	352	1.4	H	-1.30	38.24	54.00	-15.76

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 Low Channel 5180MHz									
326.25	39.34	QP	22	1.2	H	-11.62	27.72	46.00	-18.28
326.25	44.61	QP	94	1.3	V	-11.62	32.99	46.00	-13.01
4500.22	53.29	PK	357	1.3	H	-2.14	51.15	74.00	-22.85
4500.22	41.14	Ave	357	1.3	H	-2.14	39.00	54.00	-15.00
5127.83	45.69	PK	73	1.3	H	-1.06	44.63	74.00	-29.37
5127.83	38.53	Ave	73	1.3	H	-1.06	37.47	54.00	-16.53
10360.00	42.42	PK	167	1.6	H	5.33	47.75	74.00	-26.25
10360.00	38.00	Ave	167	1.6	H	5.33	43.33	54.00	-10.67
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
326.25	38.11	QP	91	1.7	H	-11.62	26.49	46.00	-19.51
326.25	43.30	QP	113	1.3	V	-11.62	31.68	46.00	-14.32
4535.43	54.44	PK	47	1.9	H	-2.12	52.32	74.00	-21.68
4535.43	41.92	Ave	47	1.9	H	-2.12	39.80	54.00	-14.20
5127.90	47.41	PK	241	1.8	H	-1.06	46.35	74.00	-27.65
5127.90	38.09	Ave	241	1.8	H	-1.06	37.03	54.00	-16.97
10400.00	41.61	PK	290	1.9	H	5.21	46.82	74.00	-27.18
10400.00	38.97	Ave	290	1.9	H	5.21	44.18	54.00	-9.82

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
326.25	39.11	QP	248	1.3	H	-11.62	27.49	46.00	-18.51
326.25	43.90	QP	34	1.3	V	-11.62	32.28	46.00	-13.72
4502.46	53.21	PK	19	1.9	H	-1.96	51.25	74.00	-22.75
4502.46	40.52	Ave	19	1.9	H	-1.96	38.56	54.00	-15.44
5138.58	47.94	PK	312	1.8	H	-1.06	46.88	74.00	-27.12
5138.58	39.74	Ave	312	1.8	H	-1.06	38.68	54.00	-15.32
10480.00	41.82	PK	312	1.6	H	5.14	46.96	74.00	-27.04
10480.00	38.26	Ave	312	1.6	H	5.14	43.40	54.00	-10.60
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
326.25	44.48	QP	351	1.6	H	-11.62	32.86	46.00	-13.14
326.25	49.74	QP	101	1.8	V	-11.62	38.12	46.00	-7.88
4537.78	41.62	PK	37	1.5	H	-2.06	39.56	74.00	-34.44
4537.78	46.88	Ave	37	1.5	H	-2.06	44.82	54.00	-9.18
5364.90	38.22	PK	282	1.7	H	5.93	44.15	74.00	-29.85
5364.90	37.78	Ave	282	1.7	H	5.93	43.71	54.00	-10.29
11490.00	45.16	PK	91	2.0	H	-1.25	43.91	74.00	-30.09
11490.00	39.26	Ave	91	2.0	H	-1.25	38.01	54.00	-15.99

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-3 middle channel 5785MHz									
326.25	45.35	QP	71	1.2	H	-11.62	33.73	46.00	-12.27
326.25	43.60	QP	211	1.4	V	-11.62	31.98	46.00	-14.02
4509.11	40.21	PK	186	1.4	H	-2.03	38.18	74.00	-35.82
4509.11	46.70	Ave	186	1.4	H	-2.03	44.67	54.00	-9.33
5351.42	37.19	PK	306	1.5	H	5.81	43.00	74.00	-31.00
5351.42	39.62	Ave	306	1.5	H	5.81	45.43	54.00	-8.57
11570.00	46.00	PK	1	1.2	H	-1.22	44.78	74.00	-29.22
11570.00	37.67	Ave	1	1.2	H	-1.22	36.45	54.00	-17.55
802.11n(HT20) U-NII-3 High channel 5825MHz									
326.25	44.70	QP	349	1.8	H	-11.62	33.08	46.00	-12.92
326.25	42.24	QP	256	1.7	V	-11.62	30.62	46.00	-15.38
4517.84	40.34	PK	171	1.2	H	-1.84	38.50	74.00	-35.50
4517.84	45.63	Ave	171	1.2	H	-1.84	43.79	54.00	-10.21
5363.11	39.33	PK	279	1.3	H	5.84	45.17	74.00	-28.83
5363.11	39.37	Ave	279	1.3	H	5.84	45.21	54.00	-8.79
11650.00	45.83	PK	217	1.8	H	-1.30	44.53	74.00	-29.47
11650.00	38.96	Ave	217	1.8	H	-1.30	37.66	54.00	-16.34

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
326.25	38.12	QP	186	2.0	H	-11.62	26.50	46.00	-19.50
326.25	37.73	QP	322	1.8	V	-11.62	26.11	46.00	-19.89
4539.81	39.09	PK	305	2.0	H	-1.89	37.20	74.00	-36.80
4539.81	35.78	Ave	305	2.0	H	-1.89	33.89	54.00	-20.11
5119.36	44.58	PK	96	1.4	H	-1.06	43.52	74.00	-30.48
5119.36	39.69	Ave	96	1.4	H	-1.06	38.63	54.00	-15.37
10380.00	39.23	PK	54	1.5	H	5.26	44.49	74.00	-29.51
10380.00	35.85	Ave	54	1.5	H	5.26	41.11	54.00	-12.89
802.11n(HT40) U-NII-1 High channel 5230MHz									
326.25	37.55	QP	167	1.6	H	-11.62	25.93	46.00	-20.07
326.25	36.79	QP	290	1.8	V	-11.62	25.17	46.00	-20.83
4517.30	38.75	PK	240	1.3	H	-1.94	36.81	74.00	-37.19
4517.30	35.28	Ave	240	1.3	H	-1.94	33.34	54.00	-20.66
5135.58	45.28	PK	276	1.6	H	-1.06	44.22	74.00	-29.78
5135.58	40.75	Ave	276	1.6	H	-1.06	39.69	54.00	-14.31
10460.00	40.55	PK	132	1.4	H	5.28	45.83	74.00	-28.17
10460.00	37.67	Ave	132	1.4	H	5.28	42.95	54.00	-11.05

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-3 Low Channel 5755MHz									
326.25	36.17	QP	42	1.6	H	-11.62	24.55	46.00	-21.45
326.25	35.58	QP	53	1.5	V	-11.62	23.96	46.00	-22.04
4511.47	37.35	PK	241	1.7	H	-1.96	35.39	74.00	-38.61
4511.47	33.11	Ave	241	1.7	H	-1.96	31.15	54.00	-22.85
5383.97	39.79	PK	253	1.5	H	5.88	45.67	74.00	-28.33
5383.97	35.98	Ave	253	1.5	H	5.88	41.86	54.00	-12.14
11510.00	45.72	PK	107	1.2	H	-1.01	44.71	74.00	-29.29
11510.00	39.56	Ave	107	1.2	H	-1.01	38.55	54.00	-15.45
802.11n(HT40) U-NII-3 High Channel 5795MHz									
326.25	35.42	QP	82	1.5	H	-11.62	23.80	46.00	-22.20
326.25	36.39	QP	52	1.7	V	-11.62	24.77	46.00	-21.23
4523.34	37.97	PK	340	2.0	H	-1.92	36.05	74.00	-37.95
4523.34	33.61	Ave	340	2.0	H	-1.92	31.69	54.00	-22.31
5357.46	40.90	PK	193	1.4	H	5.63	46.53	74.00	-27.47
5357.46	38.78	Ave	193	1.4	H	5.63	44.41	54.00	-9.59
11590.00	46.16	PK	67	1.8	H	-1.04	45.12	74.00	-28.88
11590.00	37.87	Ave	67	1.8	H	-1.04	36.83	54.00	-17.17

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Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 Low Channel 5180MHz									
326.25	40.60	QP	211	1.4	H	-11.62	28.98	46.00	-17.02
326.25	42.13	QP	18	1.3	V	-11.62	30.51	46.00	-15.49
4505.23	54.16	PK	3	1.8	H	-2.03	52.13	74.00	-21.87
4505.23	43.34	Ave	3	1.8	H	-2.03	41.31	54.00	-12.69
5141.52	53.65	PK	196	1.3	H	-1.02	52.63	74.00	-21.37
5141.52	44.40	Ave	196	1.3	H	-1.02	43.38	54.00	-10.62
10360.00	41.83	PK	63	1.2	H	5.33	47.16	74.00	-26.84
10360.00	37.30	Ave	63	1.2	H	5.33	42.63	54.00	-11.37
802.11a U-NII-1 Middle channel 5200MHz									
326.25	41.59	QP	177	1.0	H	-11.62	29.97	46.00	-16.03
326.25	43.57	QP	129	1.5	V	-11.62	31.95	46.00	-14.05
4509.77	54.87	PK	251	1.2	H	-1.94	52.93	74.00	-21.07
4509.77	43.11	Ave	251	1.2	H	-1.94	41.17	54.00	-12.83
5140.07	53.32	PK	250	1.9	H	-1.06	52.26	74.00	-21.74
5140.07	44.95	Ave	250	1.9	H	-1.06	43.89	54.00	-10.11
10400.00	41.66	PK	118	1.4	H	5.21	46.87	74.00	-27.13
10400.00	37.74	Ave	118	1.4	H	5.21	42.95	54.00	-11.05

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 High channel 5240MHz									
326.25	40.66	QP	277	1.7	H	-11.62	29.04	46.00	-16.96
326.25	44.57	QP	95	1.4	V	-11.62	32.95	46.00	-13.05
4509.09	53.76	PK	328	1.3	H	-2.24	51.52	74.00	-22.48
4509.09	43.59	Ave	328	1.3	H	-2.24	41.35	54.00	-12.65
5132.64	53.38	PK	330	1.4	H	-1.09	52.29	74.00	-21.71
5132.64	44.13	Ave	330	1.4	H	-1.09	43.04	54.00	-10.96
10480.00	40.93	PK	163	1.8	H	5.14	46.07	74.00	-27.93
10480.00	37.32	Ave	163	1.8	H	5.14	42.46	54.00	-11.54
802.11a U-NII-3 Low Channel 5745MHz									
326.25	40.58	QP	255	1.4	H	-11.62	28.96	46.00	-17.04
326.25	43.37	QP	353	1.3	V	-11.62	31.75	46.00	-14.25
4534.25	54.87	PK	9	1.0	H	-2.06	52.81	74.00	-21.19
4534.25	42.23	Ave	9	1.0	H	-2.06	40.17	54.00	-13.83
5363.21	42.31	PK	46	1.5	H	5.93	48.24	74.00	-25.76
5363.21	36.94	Ave	46	1.5	H	5.93	42.87	54.00	-11.13
11490.00	45.80	PK	258	1.9	H	-1.25	44.55	74.00	-29.45
11490.00	39.21	Ave	258	1.9	H	-1.25	37.96	54.00	-16.04

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 middle channel 5785MHz									
326.25	39.20	QP	301	1.8	H	-11.62	27.58	46.00	-18.42
326.25	43.66	QP	202	1.3	V	-11.62	32.04	46.00	-13.96
4524.28	53.73	PK	194	1.1	H	-2.03	51.70	74.00	-22.30
4524.28	42.40	Ave	194	1.1	H	-2.03	40.37	54.00	-13.63
5358.95	43.20	PK	64	1.6	H	5.81	49.01	74.00	-24.99
5358.95	38.25	Ave	64	1.6	H	5.81	44.06	54.00	-9.94
11570.00	46.72	PK	105	1.1	H	-1.22	45.50	74.00	-28.50
11570.00	37.20	Ave	105	1.1	H	-1.22	35.98	54.00	-18.02
802.11a U-NII-3 High channel 5825MHz									
326.25	39.41	QP	25	1.7	H	-11.62	27.79	46.00	-18.21
326.25	42.70	QP	57	1.6	V	-11.62	31.08	46.00	-14.92
4533.82	52.92	PK	293	1.9	H	-1.84	51.08	74.00	-22.92
4533.82	41.96	Ave	293	1.9	H	-1.84	40.12	54.00	-13.88
5352.65	42.42	PK	149	1.6	H	5.84	48.26	74.00	-25.74
5352.65	37.58	Ave	149	1.6	H	5.84	43.42	54.00	-10.58
11650.00	46.63	PK	221	1.9	H	-1.30	45.33	74.00	-28.67
11650.00	39.81	Ave	221	1.9	H	-1.30	38.51	54.00	-15.49

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 Low Channel 5180MHz									
326.25	38.44	QP	24	2.0	H	-11.62	26.82	46.00	-19.18
326.25	42.04	QP	37	1.3	V	-11.62	30.42	46.00	-15.58
4519.95	52.32	PK	326	1.5	H	-2.14	50.18	74.00	-23.82
4519.95	41.55	Ave	326	1.5	H	-2.14	39.41	54.00	-14.59
5128.92	47.34	PK	245	1.2	H	-1.06	46.28	74.00	-27.72
5128.92	40.30	Ave	245	1.2	H	-1.06	39.24	54.00	-14.76
10360.00	42.56	PK	356	1.2	H	5.33	47.89	74.00	-26.11
10360.00	37.55	Ave	356	1.2	H	5.33	42.88	54.00	-11.12
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
326.25	38.98	QP	42	1.0	H	-11.62	27.36	46.00	-18.64
326.25	42.50	QP	126	1.0	V	-11.62	30.88	46.00	-15.12
4512.73	53.28	PK	188	1.5	H	-2.12	51.16	74.00	-22.84
4512.73	40.53	Ave	188	1.5	H	-2.12	38.41	54.00	-15.59
5144.42	46.95	PK	279	2.0	H	-1.06	45.89	74.00	-28.11
5144.42	40.35	Ave	279	2.0	H	-1.06	39.29	54.00	-14.71
10400.00	42.35	PK	256	1.1	H	5.21	47.56	74.00	-26.44
10400.00	38.71	Ave	256	1.1	H	5.21	43.92	54.00	-10.08

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
326.25	39.05	QP	32	1.8	H	-11.62	27.43	46.00	-18.57
326.25	43.58	QP	249	1.4	V	-11.62	31.96	46.00	-14.04
4530.19	54.24	PK	65	1.5	H	-1.96	52.28	74.00	-21.72
4530.19	39.85	Ave	65	1.5	H	-1.96	37.89	54.00	-16.11
5147.89	48.20	PK	344	1.1	H	-1.06	47.14	74.00	-26.86
5147.89	39.72	Ave	344	1.1	H	-1.06	38.66	54.00	-15.34
10480.00	43.42	PK	81	1.1	H	5.14	48.56	74.00	-25.44
10480.00	39.28	Ave	81	1.1	H	5.14	44.42	54.00	-9.58
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
326.25	42.11	QP	237	1.2	H	-11.62	30.49	46.00	-15.51
326.25	51.57	QP	47	1.7	V	-11.62	39.95	46.00	-6.05
4503.68	41.06	PK	49	1.9	H	-2.06	39.00	74.00	-35.00
4503.68	48.53	Ave	49	1.9	H	-2.06	46.47	54.00	-7.53
5374.57	36.93	PK	172	1.3	H	5.93	42.86	74.00	-31.14
5374.57	38.82	Ave	172	1.3	H	5.93	44.75	54.00	-9.25
11490.00	46.85	PK	188	1.7	H	-1.25	45.60	74.00	-28.40
11490.00	38.91	Ave	188	1.7	H	-1.25	37.66	54.00	-16.34

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-3 middle channel 5785MHz									
326.25	43.61	QP	119	1.6	H	-11.62	31.99	46.00	-14.01
326.25	45.95	QP	202	2.0	V	-11.62	34.33	46.00	-11.67
4532.09	40.70	PK	112	1.1	H	-2.03	38.67	74.00	-35.33
4532.09	48.14	Ave	112	1.1	H	-2.03	46.11	54.00	-7.89
5365.40	38.67	PK	97	1.3	H	5.81	44.48	74.00	-29.52
5365.40	40.45	Ave	97	1.3	H	5.81	46.26	54.00	-7.74
11570.00	45.63	PK	200	1.1	H	-1.22	44.41	74.00	-29.59
11570.00	37.05	Ave	200	1.1	H	-1.22	35.83	54.00	-18.17
802.11n(HT20) U-NII-3 High channel 5825MHz									
326.25	42.77	QP	339	1.7	H	-11.62	31.15	46.00	-14.85
326.25	47.34	QP	19	1.8	V	-11.62	35.72	46.00	-10.28
4525.26	40.14	PK	181	1.1	H	-1.84	38.30	74.00	-35.70
4525.26	47.61	Ave	181	1.1	H	-1.84	45.77	54.00	-8.23
5379.73	37.76	PK	304	1.7	H	5.84	43.60	74.00	-30.40
5379.73	38.72	Ave	304	1.7	H	5.84	44.56	54.00	-9.44
11650.00	46.25	PK	162	1.2	H	-1.30	44.95	74.00	-29.05
11650.00	39.71	Ave	162	1.2	H	-1.30	38.41	54.00	-15.59

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
326.25	39.10	QP	43	1.1	H	-11.62	27.48	46.00	-18.52
326.25	39.22	QP	253	1.8	V	-11.62	27.60	46.00	-18.40
4507.61	42.65	PK	332	1.3	H	-1.89	40.76	74.00	-33.24
4507.61	36.71	Ave	332	1.3	H	-1.89	34.82	54.00	-19.18
5130.88	45.89	PK	66	1.2	H	-1.06	44.83	74.00	-29.17
5130.88	38.71	Ave	66	1.2	H	-1.06	37.65	54.00	-16.35
10380.00	40.45	PK	222	1.7	H	5.26	45.71	74.00	-28.29
10380.00	35.70	Ave	222	1.7	H	5.26	40.96	54.00	-13.04
802.11n(HT40) U-NII-1 High channel 5230MHz									
326.25	38.29	QP	63	1.6	H	-11.62	26.67	46.00	-19.33
326.25	38.63	QP	269	1.2	V	-11.62	27.01	46.00	-18.99
4511.32	43.23	PK	56	1.0	H	-1.94	41.29	74.00	-32.71
4511.32	35.93	Ave	56	1.0	H	-1.94	33.99	54.00	-20.01
5129.46	45.96	PK	11	1.9	H	-1.06	44.90	74.00	-29.10
5129.46	39.98	Ave	11	1.9	H	-1.06	38.92	54.00	-15.08
10460.00	42.80	PK	294	1.8	H	5.28	48.08	74.00	-25.92
10460.00	38.71	Ave	294	1.8	H	5.28	43.99	54.00	-10.01

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-3 Low Channel 5755MHz									
326.25	39.49	QP	136	1.4	H	-11.62	27.87	46.00	-18.13
326.25	37.22	QP	59	1.4	V	-11.62	25.60	46.00	-20.40
4536.52	41.77	PK	15	1.2	H	-1.96	39.81	74.00	-34.19
4536.52	33.17	Ave	15	1.2	H	-1.96	31.21	54.00	-22.79
5372.46	39.98	PK	274	1.5	H	5.88	45.86	74.00	-28.14
5372.46	35.08	Ave	274	1.5	H	5.88	40.96	54.00	-13.04
11510.00	45.35	PK	284	1.9	H	-1.01	44.34	74.00	-29.66
11510.00	39.00	Ave	284	1.9	H	-1.01	37.99	54.00	-16.01
802.11n(HT40) U-NII-3 High Channel 5795MHz									
326.25	38.87	QP	295	1.2	H	-11.62	27.25	46.00	-18.75
326.25	36.26	QP	152	1.3	V	-11.62	24.64	46.00	-21.36
4502.34	42.67	PK	306	1.1	H	-1.92	40.75	74.00	-33.25
4502.34	33.92	Ave	306	1.1	H	-1.92	32.00	54.00	-22.00
5388.25	43.16	PK	22	1.1	H	5.63	48.79	74.00	-25.21
5388.25	38.76	Ave	22	1.1	H	5.63	44.39	54.00	-9.61
11590.00	45.80	PK	297	1.2	H	-1.04	44.76	74.00	-29.24
11590.00	38.23	Ave	297	1.2	H	-1.04	37.19	54.00	-16.81

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Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 Low Channel 5180MHz									
326.25	40.63	QP	226	1.9	H	-11.62	29.01	46.00	-16.99
326.25	41.98	QP	295	1.3	V	-11.62	30.36	46.00	-15.64
4524.48	54.27	PK	185	1.4	H	-2.03	52.24	74.00	-21.76
4524.48	43.84	Ave	185	1.4	H	-2.03	41.81	54.00	-12.19
5134.48	53.10	PK	321	1.1	H	-1.02	52.08	74.00	-21.92
5134.48	44.66	Ave	321	1.1	H	-1.02	43.64	54.00	-10.36
10360.00	41.95	PK	267	1.6	H	5.33	47.28	74.00	-26.72
10360.00	37.78	Ave	267	1.6	H	5.33	43.11	54.00	-10.89
802.11a U-NII-1 Middle channel 5200MHz									
326.25	41.14	QP	204	1.9	H	-11.62	29.52	46.00	-16.48
326.25	42.21	QP	323	1.5	V	-11.62	30.59	46.00	-15.41
4500.39	55.39	PK	73	1.0	H	-1.94	53.45	74.00	-20.55
4500.39	43.70	Ave	73	1.0	H	-1.94	41.76	54.00	-12.24
5140.86	53.78	PK	166	1.2	H	-1.06	52.72	74.00	-21.28
5140.86	46.12	Ave	166	1.2	H	-1.06	45.06	54.00	-8.94
10400.00	42.92	PK	354	1.1	H	5.21	48.13	74.00	-25.87
10400.00	36.88	Ave	354	1.1	H	5.21	42.09	54.00	-11.91

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 High channel 5240MHz									
326.25	41.95	QP	109	1.7	H	-11.62	30.33	46.00	-15.67
326.25	40.88	QP	118	2.0	V	-11.62	29.26	46.00	-16.74
4526.10	55.99	PK	3	1.0	H	-2.24	53.75	74.00	-20.25
4526.10	44.85	Ave	3	1.0	H	-2.24	42.61	54.00	-11.39
5126.54	53.46	PK	112	1.6	H	-1.09	52.37	74.00	-21.63
5126.54	45.55	Ave	112	1.6	H	-1.09	44.46	54.00	-9.54
10480.00	41.33	PK	47	1.7	H	5.14	46.47	74.00	-27.53
10480.00	37.86	Ave	47	1.7	H	5.14	43.00	54.00	-11.00
802.11a U-NII-3 Low Channel 5745MHz									
326.25	43.35	QP	153	2.0	H	-11.62	31.73	46.00	-14.27
326.25	42.19	QP	216	2.0	V	-11.62	30.57	46.00	-15.43
4525.71	57.18	PK	88	1.6	H	-2.06	55.12	74.00	-18.88
4525.71	45.03	Ave	88	1.6	H	-2.06	42.97	54.00	-11.03
5384.99	43.01	PK	140	1.9	H	5.93	48.94	74.00	-25.06
5384.99	38.00	Ave	140	1.9	H	5.93	43.93	54.00	-10.07
11490.00	46.66	PK	34	1.9	H	-1.25	45.41	74.00	-28.59
11490.00	37.45	Ave	34	1.9	H	-1.25	36.20	54.00	-17.80

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 middle channel 5785MHz									
326.25	42.00	QP	114	1.5	H	-11.62	30.38	46.00	-15.62
326.25	43.11	QP	219	2.0	V	-11.62	31.49	46.00	-14.51
4520.56	56.04	PK	196	1.6	H	-2.03	54.01	74.00	-19.99
4520.56	45.54	Ave	196	1.6	H	-2.03	43.51	54.00	-10.49
5354.51	43.29	PK	56	1.1	H	5.81	49.10	74.00	-24.90
5354.51	38.13	Ave	56	1.1	H	5.81	43.94	54.00	-10.06
11570.00	46.52	PK	97	1.6	H	-1.22	45.30	74.00	-28.70
11570.00	39.35	Ave	97	1.6	H	-1.22	38.13	54.00	-15.87
802.11a U-NII-3 High channel 5825MHz									
326.25	41.89	QP	228	1.8	H	-11.62	30.27	46.00	-15.73
326.25	42.77	QP	181	1.8	V	-11.62	31.15	46.00	-14.85
4529.62	56.41	PK	262	1.9	H	-1.84	54.57	74.00	-19.43
4529.62	44.28	Ave	262	1.9	H	-1.84	42.44	54.00	-11.56
5369.26	42.06	PK	112	1.1	H	5.84	47.90	74.00	-26.10
5369.26	38.10	Ave	112	1.1	H	5.84	43.94	54.00	-10.06
11650.00	45.59	PK	262	1.2	H	-1.30	44.29	74.00	-29.71
11650.00	39.60	Ave	262	1.2	H	-1.30	38.30	54.00	-15.70

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 Low Channel 5180MHz									
326.25	40.46	QP	196	1.3	H	-11.62	28.84	46.00	-17.16
326.25	43.71	QP	73	1.4	V	-11.62	32.09	46.00	-13.91
4503.79	56.87	PK	251	1.0	H	-2.14	54.73	74.00	-19.27
4503.79	43.55	Ave	251	1.0	H	-2.14	41.41	54.00	-12.59
5116.01	46.45	PK	209	1.2	H	-1.06	45.39	74.00	-28.61
5116.01	39.35	Ave	209	1.2	H	-1.06	38.29	54.00	-15.71
10360.00	41.56	PK	100	1.6	H	5.33	46.89	74.00	-27.11
10360.00	39.00	Ave	100	1.6	H	5.33	44.33	54.00	-9.67
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
326.25	40.01	QP	146	1.3	H	-11.62	28.39	46.00	-17.61
326.25	43.82	QP	52	1.3	V	-11.62	32.20	46.00	-13.80
4524.59	57.34	PK	228	1.4	H	-2.12	55.22	74.00	-18.78
4524.59	44.25	Ave	228	1.4	H	-2.12	42.13	54.00	-11.87
5123.30	47.10	PK	53	1.8	H	-1.06	46.04	74.00	-27.96
5123.30	40.12	Ave	53	1.8	H	-1.06	39.06	54.00	-14.94
10400.00	40.79	PK	300	1.6	H	5.21	46.00	74.00	-28.00
10400.00	38.37	Ave	300	1.6	H	5.21	43.58	54.00	-10.42

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
326.25	39.70	QP	265	1.9	H	-11.62	28.08	46.00	-17.92
326.25	42.79	QP	305	1.1	V	-11.62	31.17	46.00	-14.83
4504.02	56.41	PK	202	1.7	H	-1.96	54.45	74.00	-19.55
4504.02	44.14	Ave	202	1.7	H	-1.96	42.18	54.00	-11.82
5145.92	46.63	PK	175	2.0	H	-1.06	45.57	74.00	-28.43
5145.92	40.39	Ave	175	2.0	H	-1.06	39.33	54.00	-14.67
10480.00	43.33	PK	20	1.5	H	5.14	48.47	74.00	-25.53
10480.00	38.15	Ave	20	1.5	H	5.14	43.29	54.00	-10.71
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
326.25	44.17	QP	193	1.4	H	-11.62	32.55	46.00	-13.45
326.25	52.43	QP	243	2.0	V	-11.62	40.81	46.00	-5.19
4510.31	44.06	PK	227	1.0	H	-2.06	42.00	74.00	-32.00
4510.31	45.26	Ave	227	1.0	H	-2.06	43.20	54.00	-10.80
5371.10	39.27	PK	353	1.3	H	5.93	45.20	74.00	-28.80
5371.10	40.25	Ave	353	1.3	H	5.93	46.18	54.00	-7.82
11490.00	45.93	PK	355	1.2	H	-1.25	44.68	74.00	-29.32
11490.00	39.35	Ave	355	1.2	H	-1.25	38.10	54.00	-15.90

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-3 middle channel 5785MHz									
326.25	44.44	QP	105	1.5	H	-11.62	32.82	46.00	-13.18
326.25	46.05	QP	137	1.8	V	-11.62	34.43	46.00	-11.57
4537.03	45.29	PK	195	1.3	H	-2.03	43.26	74.00	-30.74
4537.03	45.23	Ave	195	1.3	H	-2.03	43.20	54.00	-10.80
5377.67	38.83	PK	269	1.9	H	5.81	44.64	74.00	-29.36
5377.67	40.91	Ave	269	1.9	H	5.81	46.72	54.00	-7.28
11570.00	45.52	PK	78	1.1	H	-1.22	44.30	74.00	-29.70
11570.00	39.12	Ave	78	1.1	H	-1.22	37.90	54.00	-16.10
802.11n(HT20) U-NII-3 High channel 5825MHz									
326.25	43.22	QP	113	1.4	H	-11.62	31.60	46.00	-14.40
326.25	45.69	QP	135	1.4	V	-11.62	34.07	46.00	-11.93
4537.22	45.32	PK	234	1.5	H	-1.84	43.48	74.00	-30.52
4537.22	44.95	Ave	234	1.5	H	-1.84	43.11	54.00	-10.89
5375.29	38.94	PK	166	1.9	H	5.84	44.78	74.00	-29.22
5375.29	40.58	Ave	166	1.9	H	5.84	46.42	54.00	-7.58
11650.00	46.72	PK	281	1.5	H	-1.30	45.42	74.00	-28.58
11650.00	39.34	Ave	281	1.5	H	-1.30	38.04	54.00	-15.96

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
326.25	42.90	QP	80	1.3	H	-11.62	31.28	46.00	-14.72
326.25	40.56	QP	230	1.6	V	-11.62	28.94	46.00	-17.06
4532.51	45.34	PK	125	1.4	H	-1.89	43.45	74.00	-30.55
4532.51	36.94	Ave	125	1.4	H	-1.89	35.05	54.00	-18.95
5112.47	47.18	PK	339	1.4	H	-1.06	46.12	74.00	-27.88
5112.47	41.93	Ave	339	1.4	H	-1.06	40.87	54.00	-13.13
10380.00	40.86	PK	62	1.7	H	5.26	46.12	74.00	-27.88
10380.00	36.52	Ave	62	1.7	H	5.26	41.78	54.00	-12.22
802.11n(HT40) U-NII-1 High channel 5230MHz									
326.25	42.47	QP	220	2.0	H	-11.62	30.85	46.00	-15.15
326.25	39.82	QP	114	1.8	V	-11.62	28.20	46.00	-17.80
4532.10	46.18	PK	118	1.1	H	-1.94	44.24	74.00	-29.76
4532.10	37.57	Ave	118	1.1	H	-1.94	35.63	54.00	-18.37
5143.96	47.17	PK	150	1.4	H	-1.06	46.11	74.00	-27.89
5143.96	43.62	Ave	150	1.4	H	-1.06	42.56	54.00	-11.44
10460.00	41.40	PK	319	1.9	H	5.28	46.68	74.00	-27.32
10460.00	38.67	Ave	319	1.9	H	5.28	43.95	54.00	-10.05

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-3 Low Channel 5755MHz									
326.25	43.06	QP	227	1.7	H	-11.62	31.44	46.00	-14.56
326.25	39.88	QP	359	1.7	V	-11.62	28.26	46.00	-17.74
4524.65	44.64	PK	280	1.5	H	-1.96	42.68	74.00	-31.32
4524.65	34.85	Ave	280	1.5	H	-1.96	32.89	54.00	-21.11
5375.81	40.09	PK	69	1.8	H	5.88	45.97	74.00	-28.03
5375.81	34.89	Ave	69	1.8	H	5.88	40.77	54.00	-13.23
11510.00	46.97	PK	125	1.6	H	-1.01	45.96	74.00	-28.04
11510.00	39.24	Ave	125	1.6	H	-1.01	38.23	54.00	-15.77
802.11n(HT40) U-NII-3 High Channel 5795MHz									
326.25	42.56	QP	172	1.8	H	-11.62	30.94	46.00	-15.06
326.25	40.30	QP	323	1.7	V	-11.62	28.68	46.00	-17.32
4526.74	44.44	PK	343	1.1	H	-1.92	42.52	74.00	-31.48
4526.74	34.25	Ave	343	1.1	H	-1.92	32.33	54.00	-21.67
5389.41	41.14	PK	273	1.5	H	5.63	46.77	74.00	-27.23
5389.41	36.93	Ave	273	1.5	H	5.63	42.56	54.00	-11.44
11590.00	45.08	PK	113	1.9	H	-1.04	44.04	74.00	-29.96
11590.00	37.81	Ave	113	1.9	H	-1.04	36.77	54.00	-17.23

Test Frequency: 12GHz~40GHz

The measurements were more than 20 dB below the limit and not reported.

10 Band Edge

Test Requirement:	FCC 47CFR Part 15 Section 15.407
Test Method:	ANSI C63.10 2013
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27dBm/MHz. For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.725-5.85 GHz band: (i) 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. (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
Test Result:	PASS

10.1 Test Produce

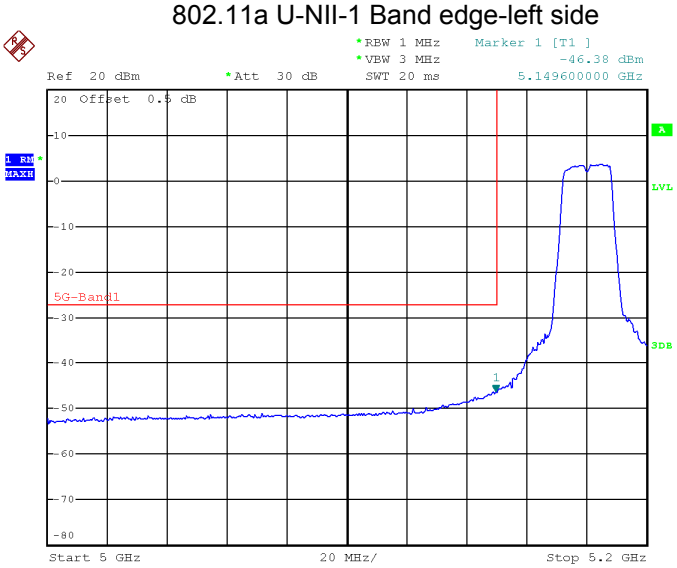
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

10.2 Test Result

Test result plots shown as follows:

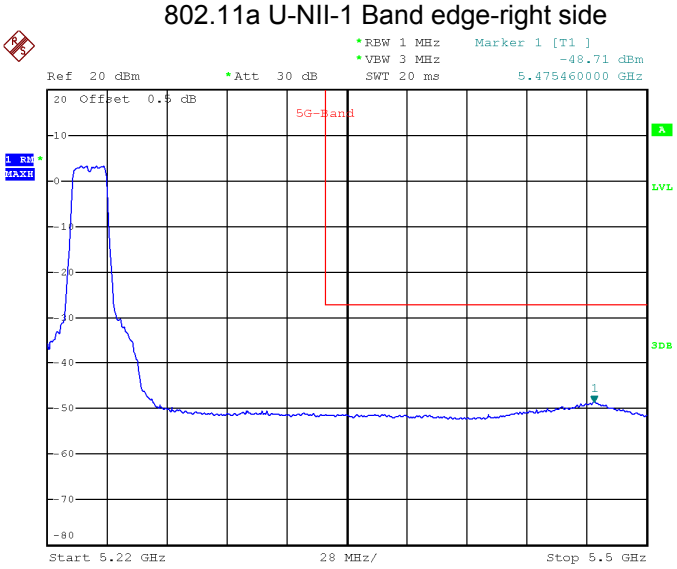
Ant 0:

802.11a U-NII-1 Band edge-left side



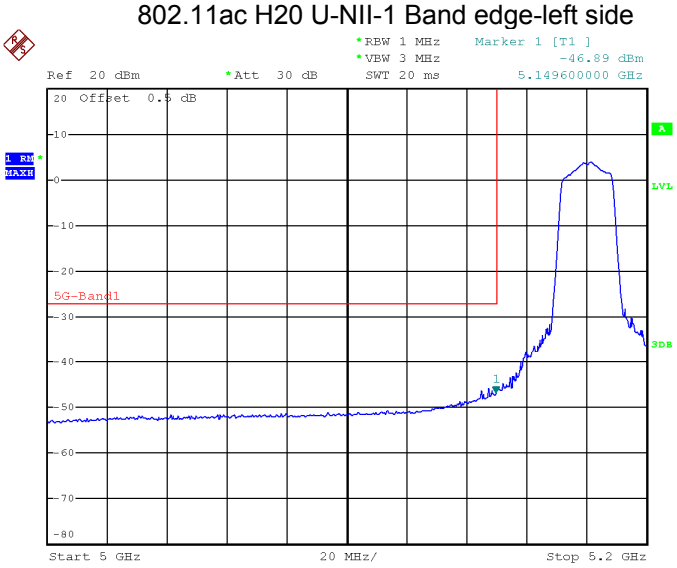
Date: 19.JUL.2024 14:42:51

802.11a U-NII-1 Band edge-right side



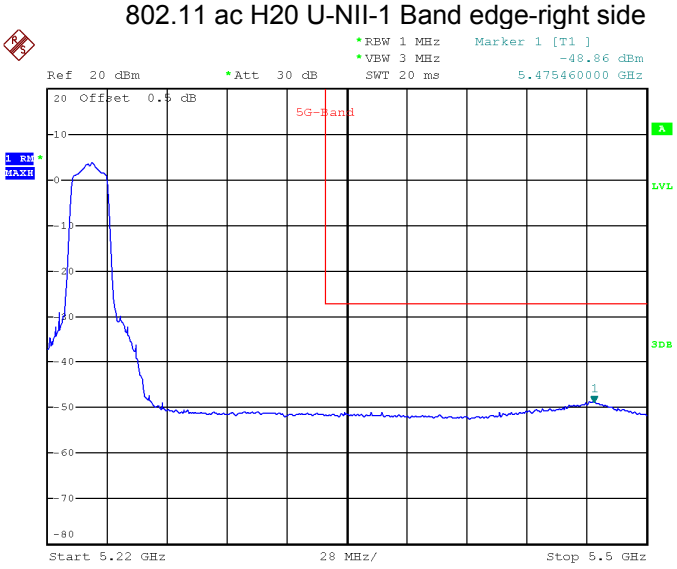
Date: 19.JUL.2024 15:22:24

802.11ac H20 U-NII-1 Band edge-left side



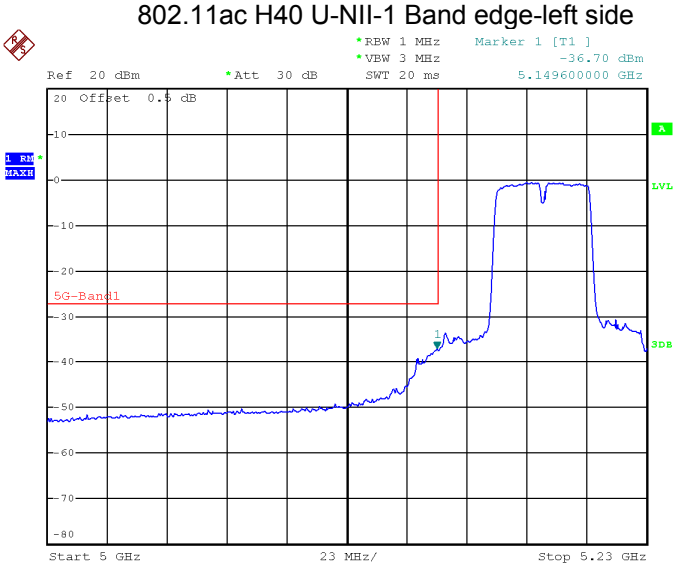
Date: 19.JUL.2024 14:44:50

802.11 ac H20 U-NII-1 Band edge-right side



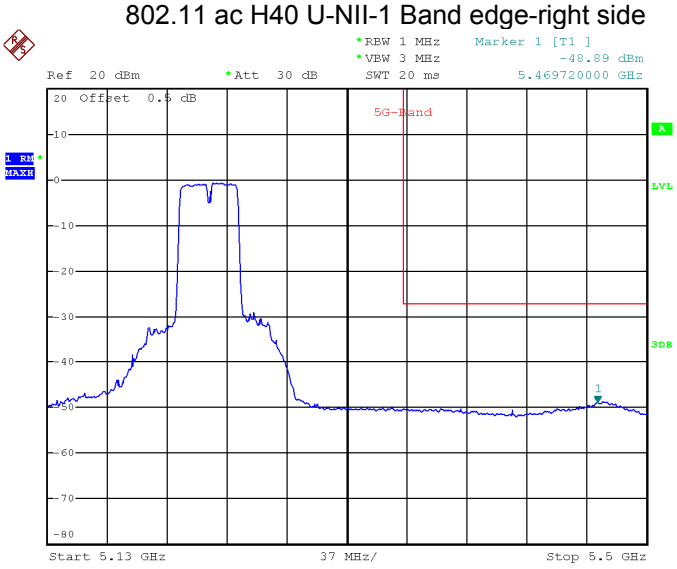
Date: 19.JUL.2024 15:23:45

802.11ac H40 U-NII-1 Band edge-left side



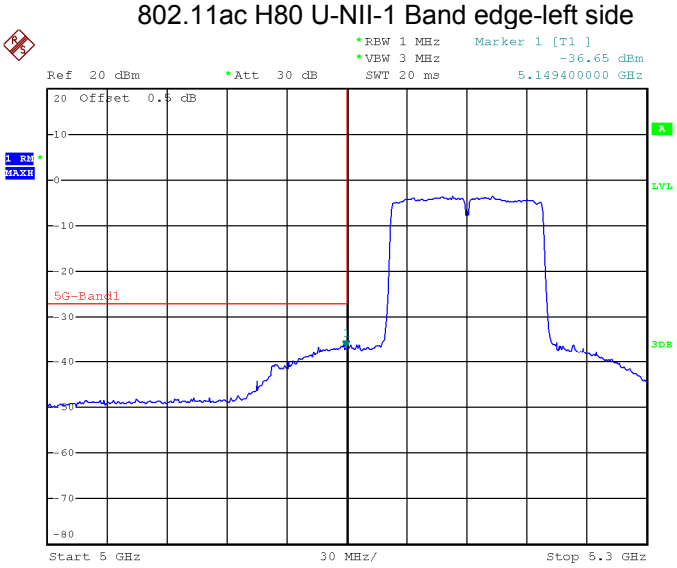
Date: 19.JUL.2024 14:47:03

802.11 ac H40 U-NII-1 Band edge-right side



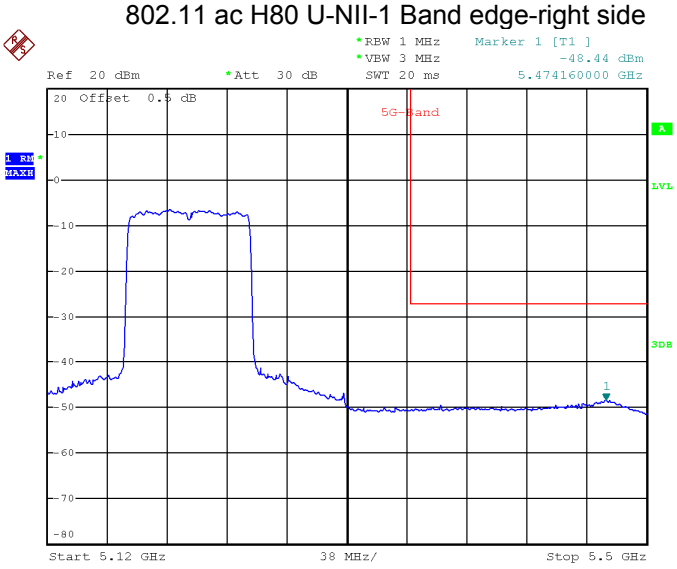
Date: 19.JUL.2024 15:20:18

802.11ac H80 U-NII-1 Band edge-left side



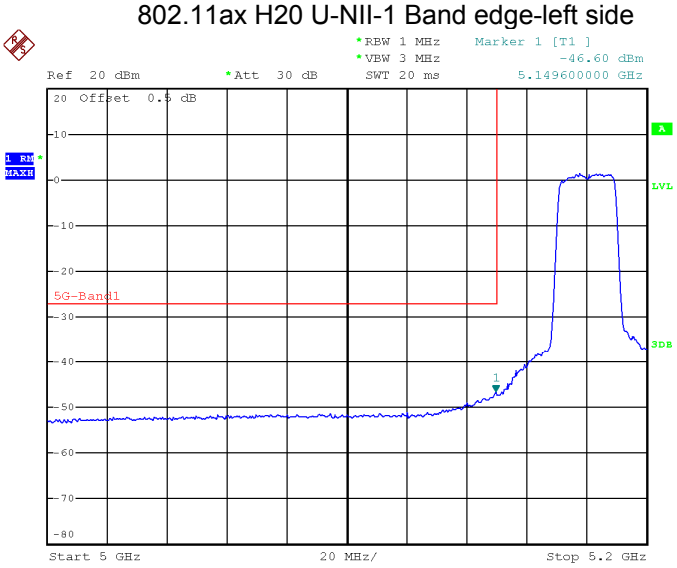
Date: 19.JUL.2024 14:50:22

802.11 ac H80 U-NII-1 Band edge-right side



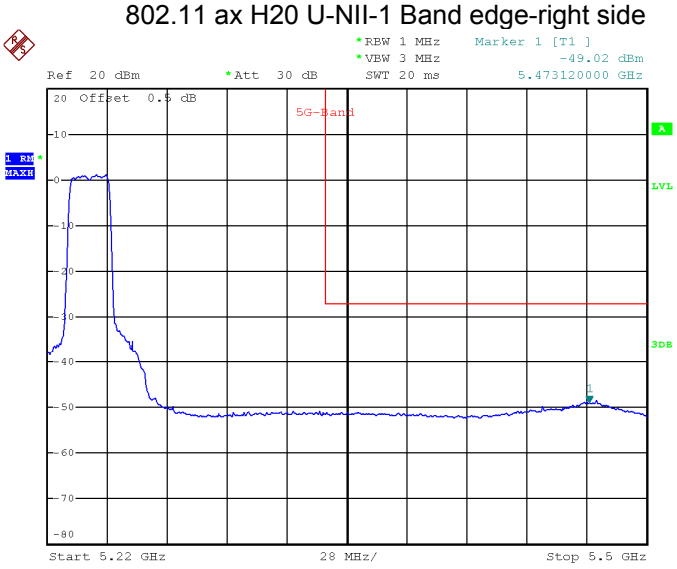
Date: 19.JUL.2024 15:17:56

802.11ax H20 U-NII-1 Band edge-left side



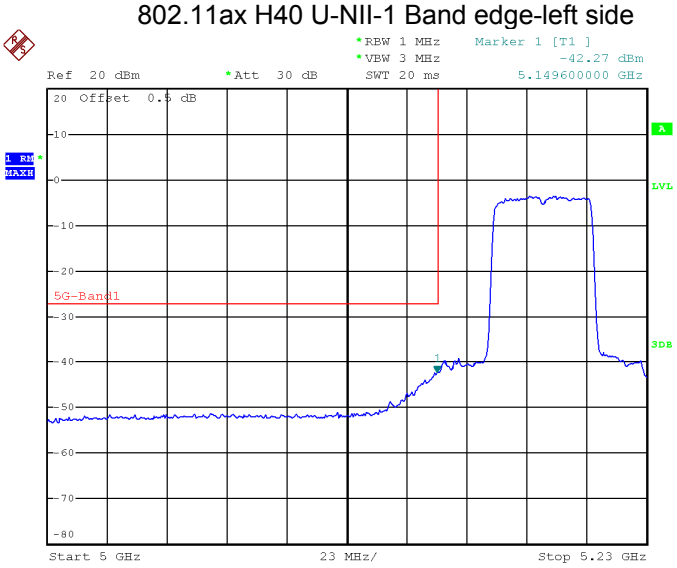
Date: 19.JUL.2024 14:45:18

802.11 ax H20 U-NII-1 Band edge-right side



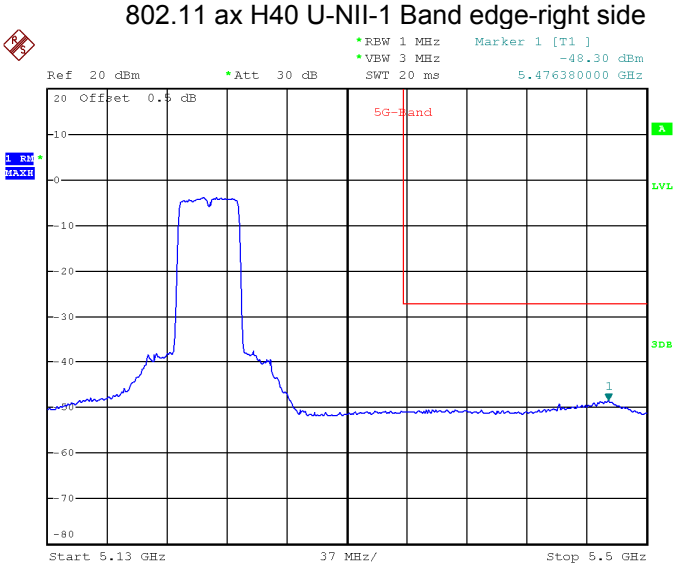
Date: 19.JUL.2024 15:24:25

802.11ax H40 U-NII-1 Band edge-left side



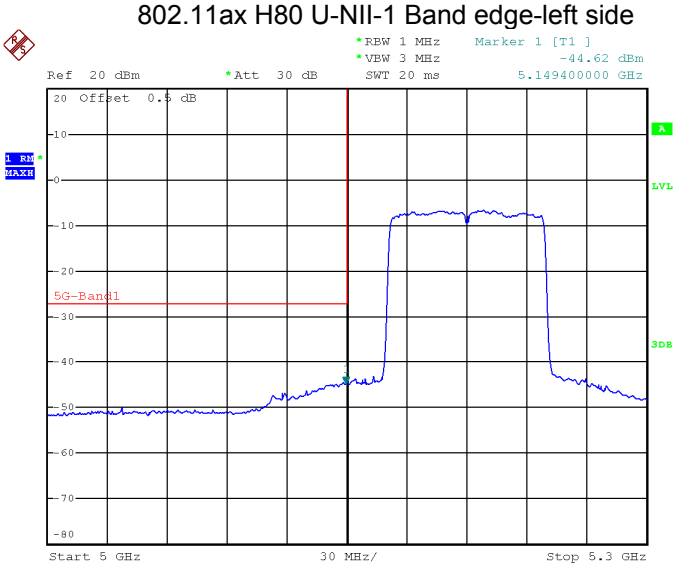
Date: 19.JUL.2024 14:47:32

802.11 ax H40 U-NII-1 Band edge-right side



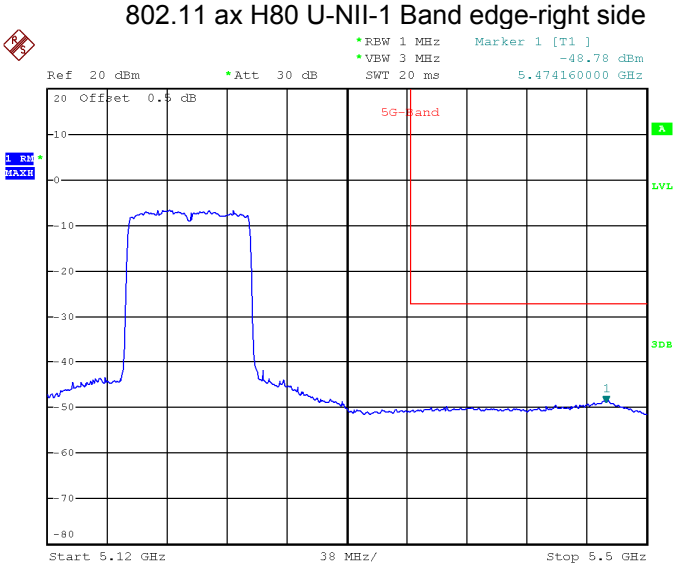
Date: 19.JUL.2024 15:19:33

802.11ax H80 U-NII-1 Band edge-left side



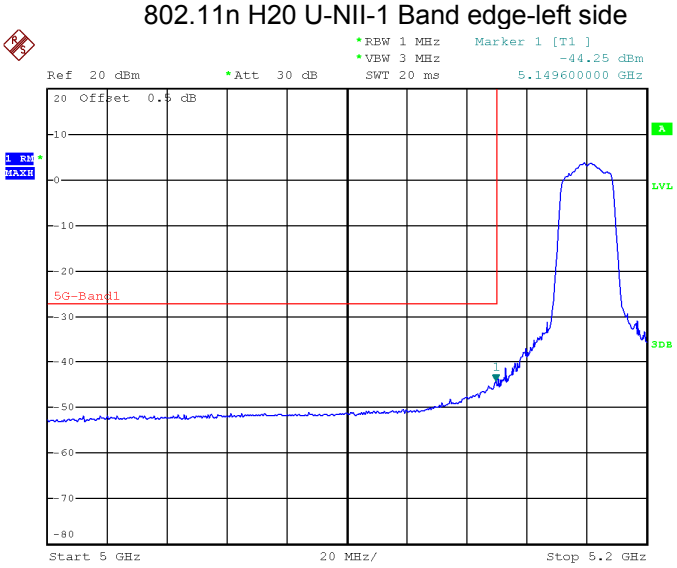
Date: 19.JUL.2024 14:49:54

802.11 ax H80 U-NII-1 Band edge-right side



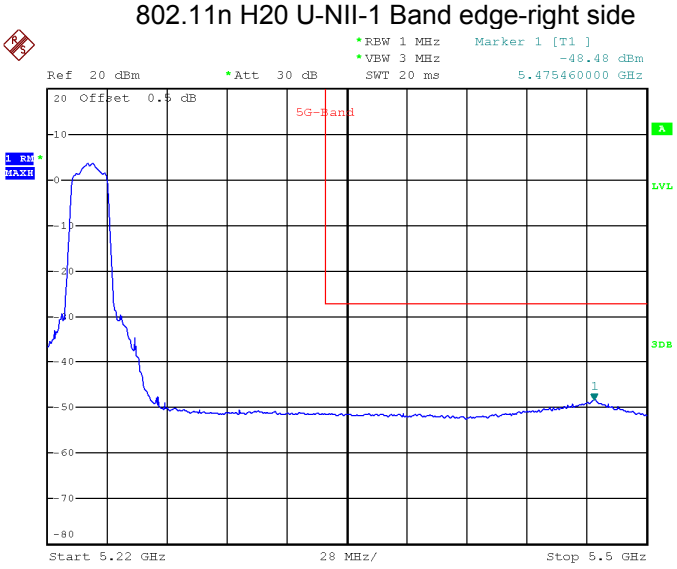
Date: 19.JUL.2024 15:18:30

802.11n H20 U-NII-1 Band edge-left side



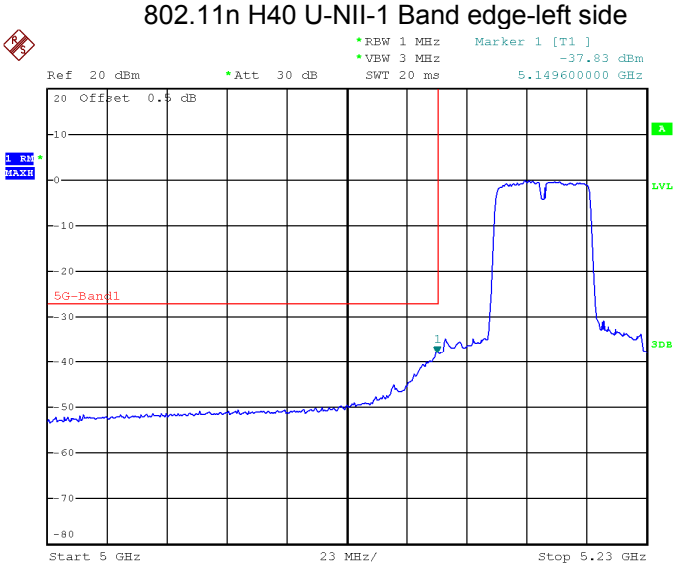
Date: 19.JUL.2024 14:44:03

802.11n H20 U-NII-1 Band edge-right side



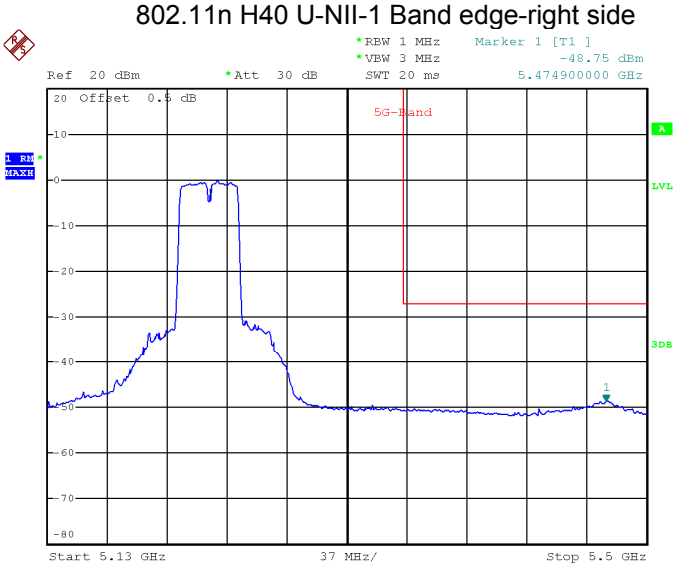
Date: 19.JUL.2024 15:23:11

802.11n H40 U-NII-1 Band edge-left side



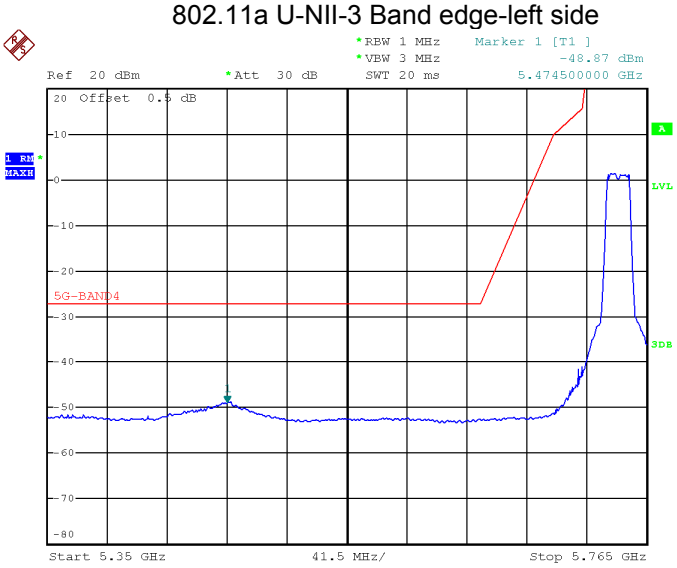
Date: 19.JUL.2024 14:46:39

802.11n H40 U-NII-1 Band edge-right side



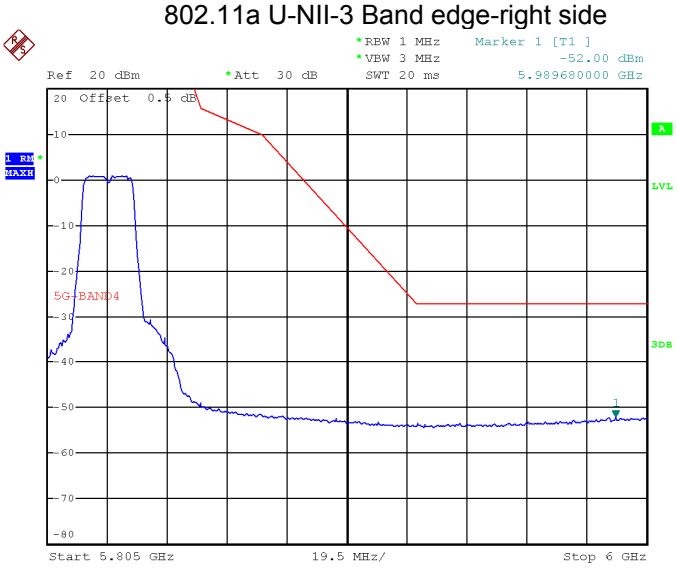
Date: 19.JUL.2024 15:20:57

802.11a U-NII-3 Band edge-left side



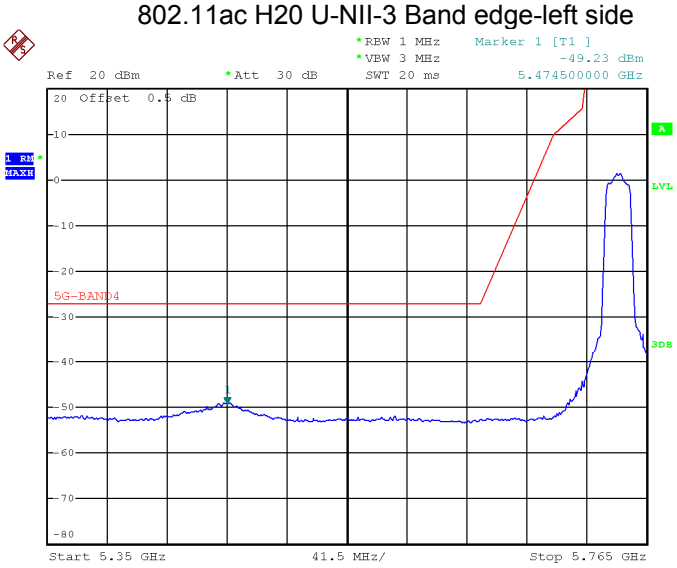
Date: 23.JUL.2024 12:04:19

802.11a U-NII-3 Band edge-right side



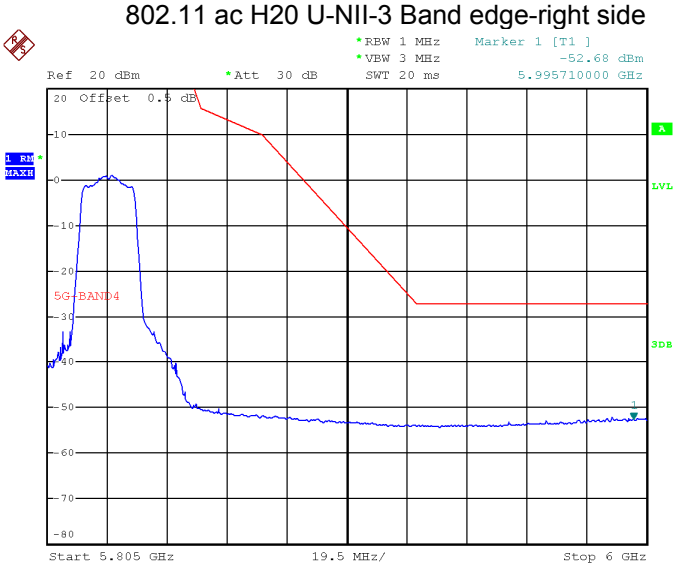
Date: 23.JUL.2024 12:19:55

802.11ac H20 U-NII-3 Band edge-left side



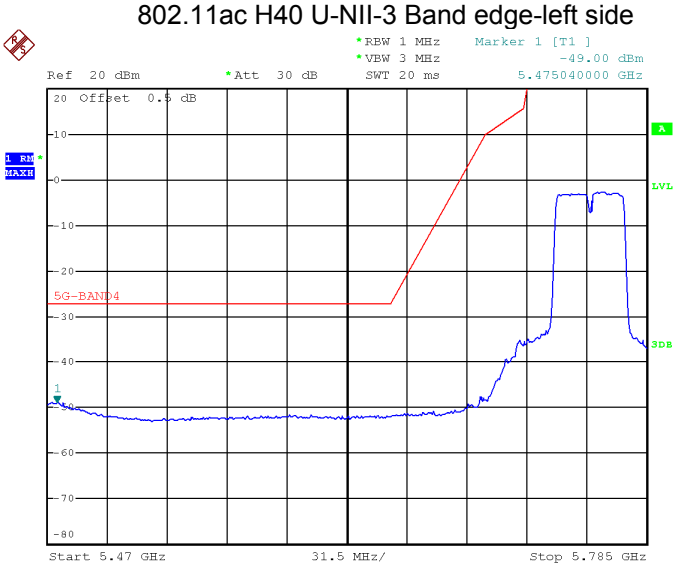
Date: 23.JUL.2024 12:05:55

802.11 ac H20 U-NII-3 Band edge-right side



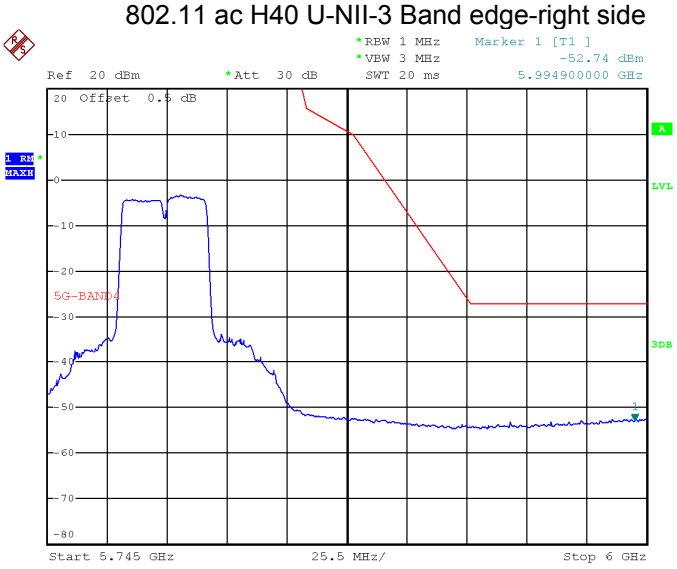
Date: 23.JUL.2024 12:22:05

802.11ac H40 U-NII-3 Band edge-left side



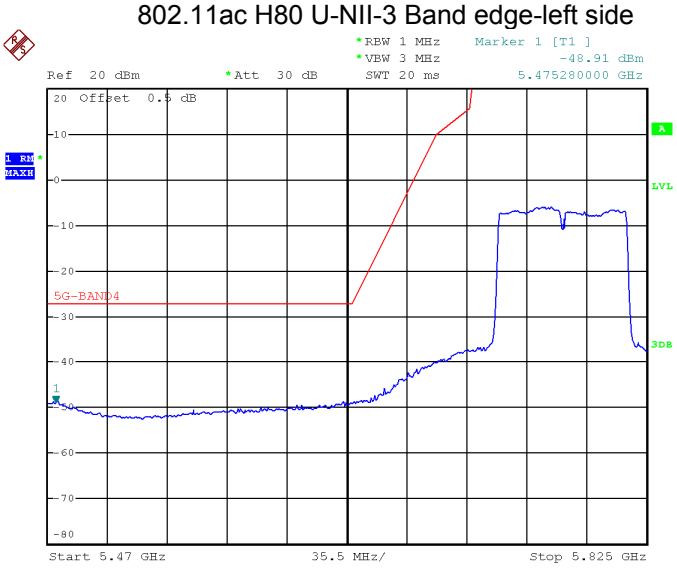
Date: 23.JUL.2024 12:09:20

802.11 ac H40 U-NII-3 Band edge-right side



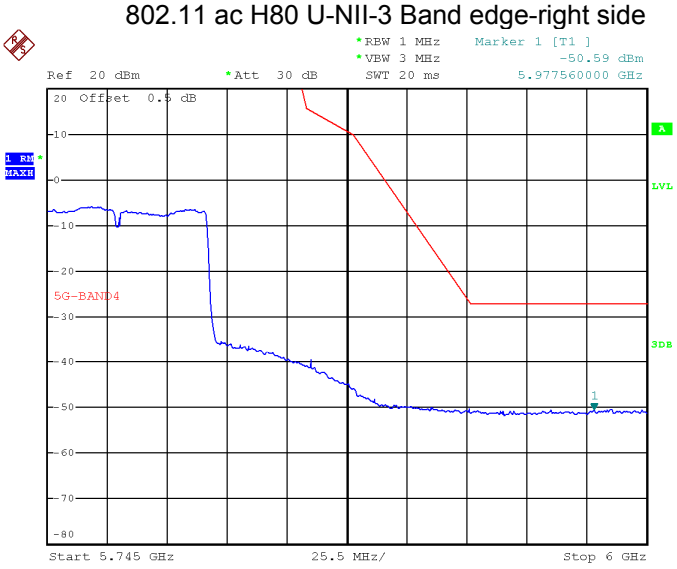
Date: 23.JUL.2024 12:18:03

802.11ac H80 U-NII-3 Band edge-left side



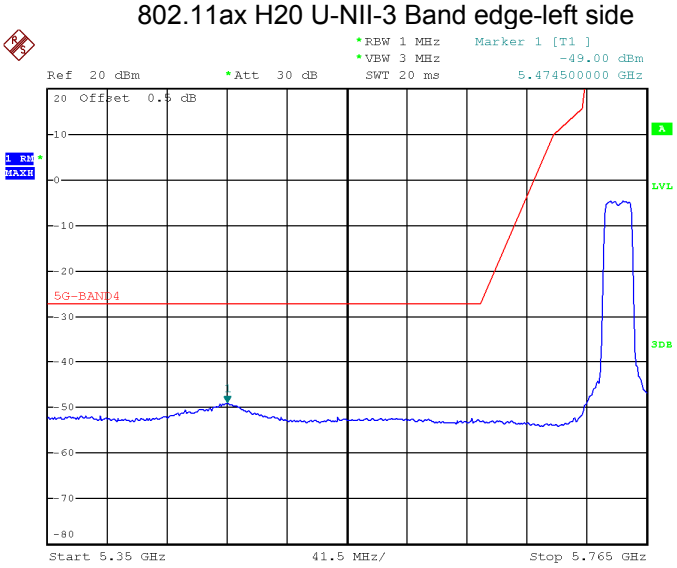
Date: 23.JUL.2024 12:12:13

802.11 ac H80 U-NII-3 Band edge-right side



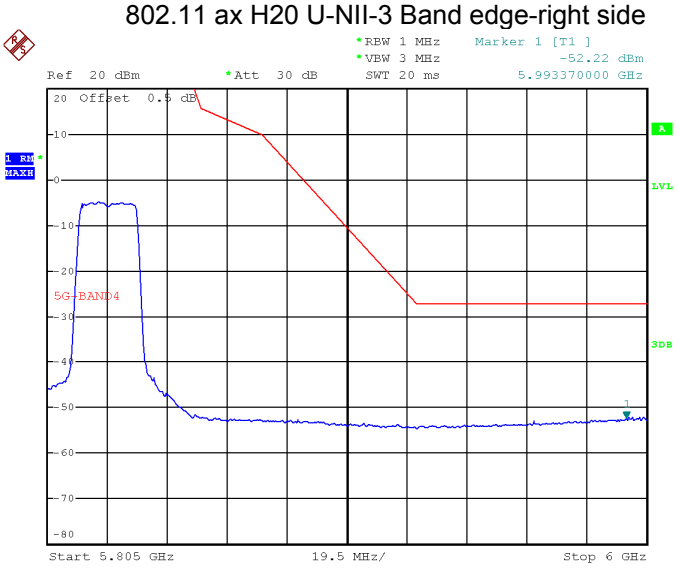
Date: 23.JUL.2024 12:14:38

802.11ax H20 U-NII-3 Band edge-left side



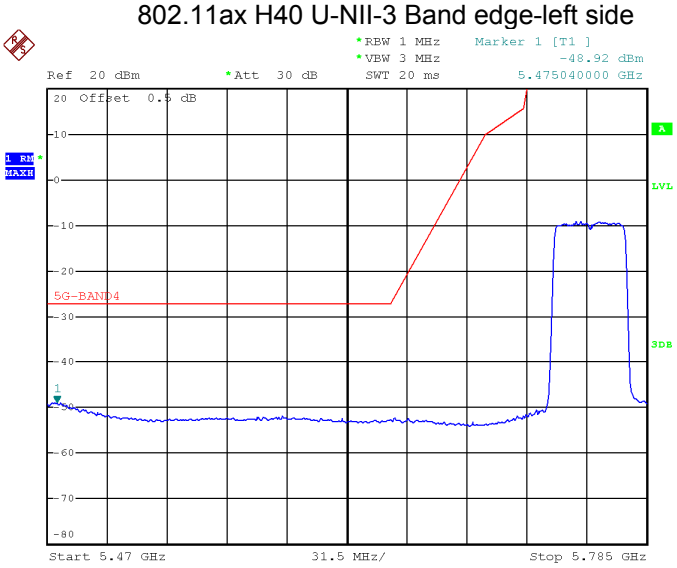
Date: 23.JUL.2024 12:06:41

802.11 ax H20 U-NII-3 Band edge-right side



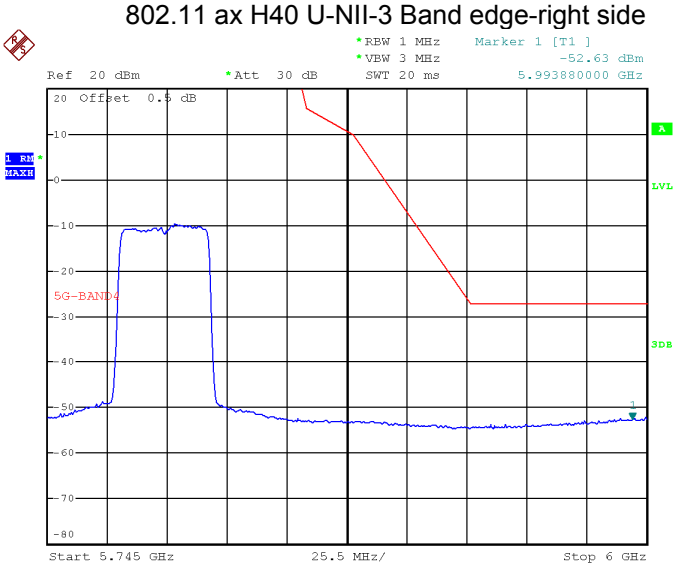
Date: 23.JUL.2024 12:22:57

802.11ax H40 U-NII-3 Band edge-left side



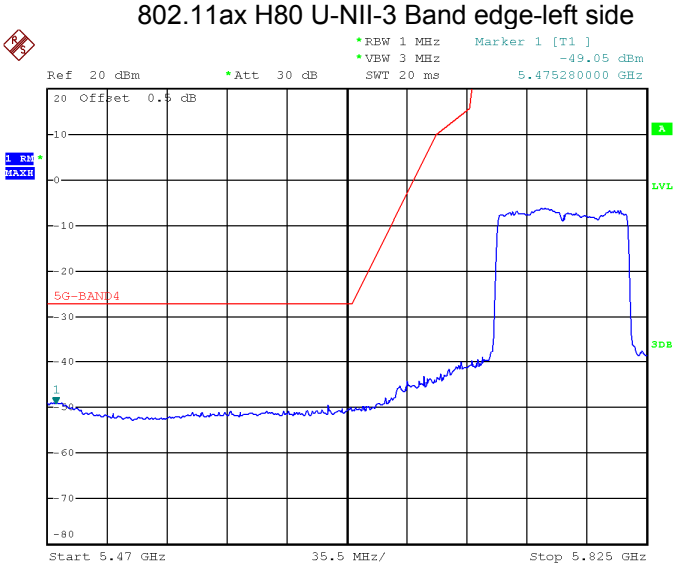
Date: 23.JUL.2024 12:10:21

802.11 ax H40 U-NII-3 Band edge-right side



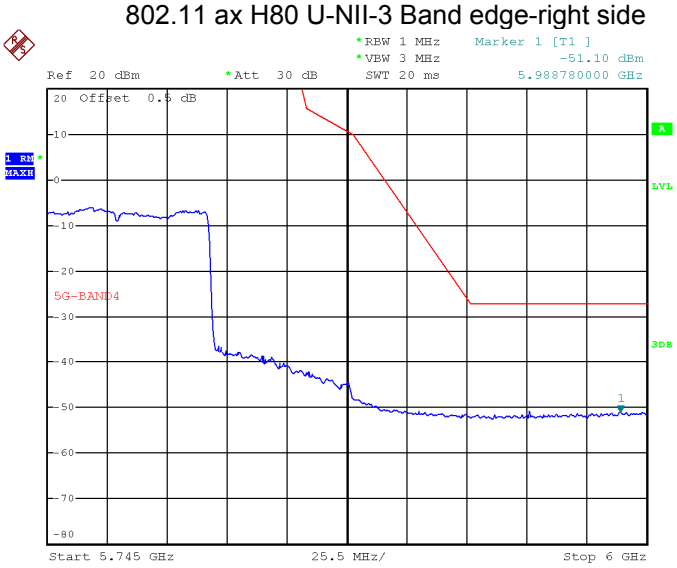
Date: 23.JUL.2024 12:16:45

802.11ax H80 U-NII-3 Band edge-left side



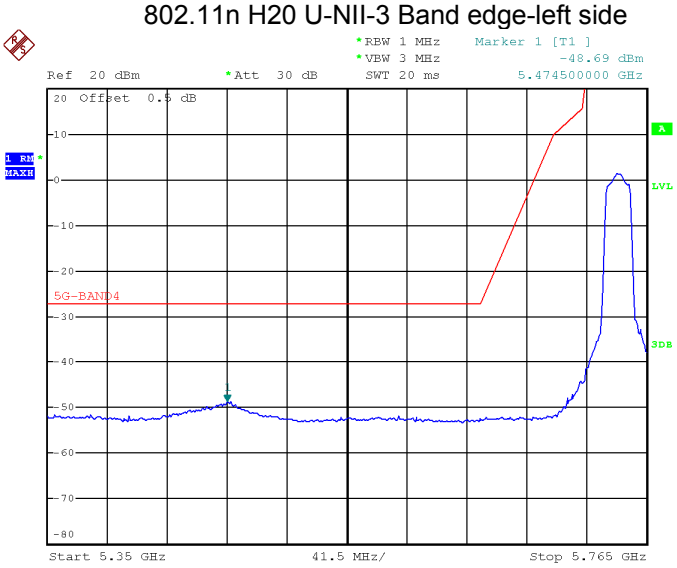
Date: 23.JUL.2024 12:12:51

802.11 ax H80 U-NII-3 Band edge-right side



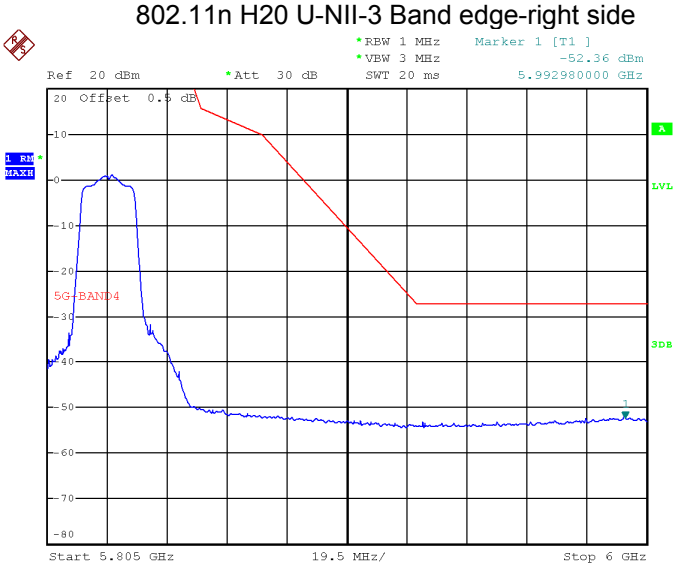
Date: 23.JUL.2024 12:13:44

802.11n H20 U-NII-3 Band edge-left side



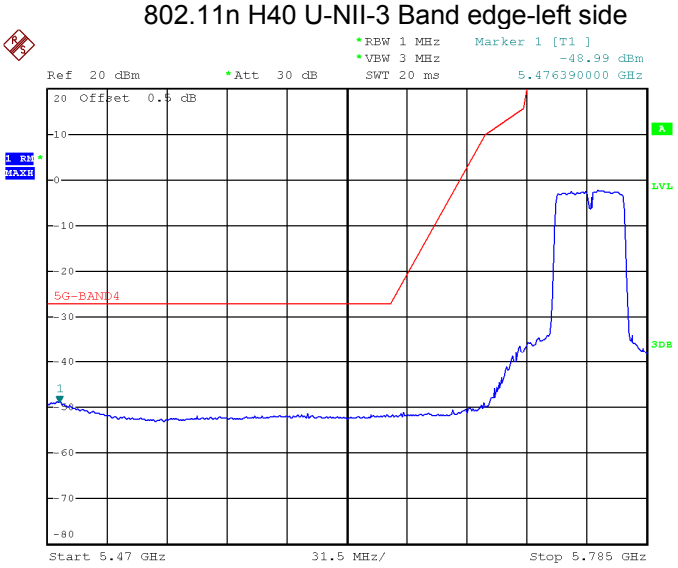
Date: 23.JUL.2024 12:05:10

802.11n H20 U-NII-3 Band edge-right side



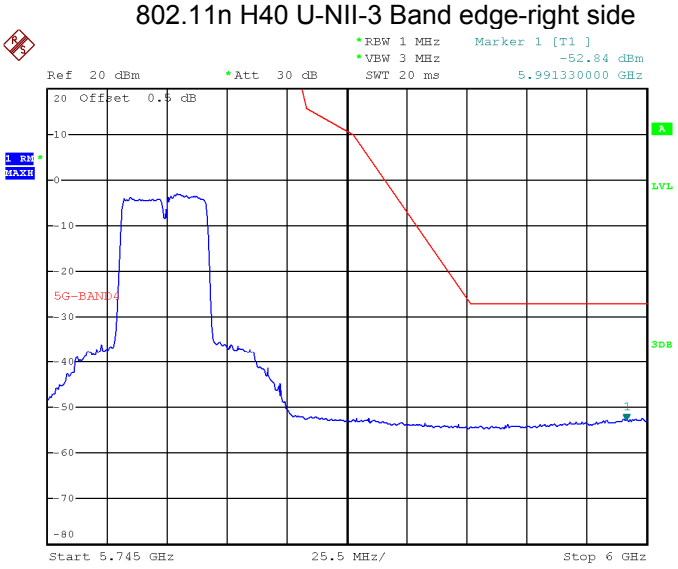
Date: 23.JUL.2024 12:21:20

802.11n H40 U-NII-3 Band edge-left side



Date: 23.JUL.2024 12:08:22

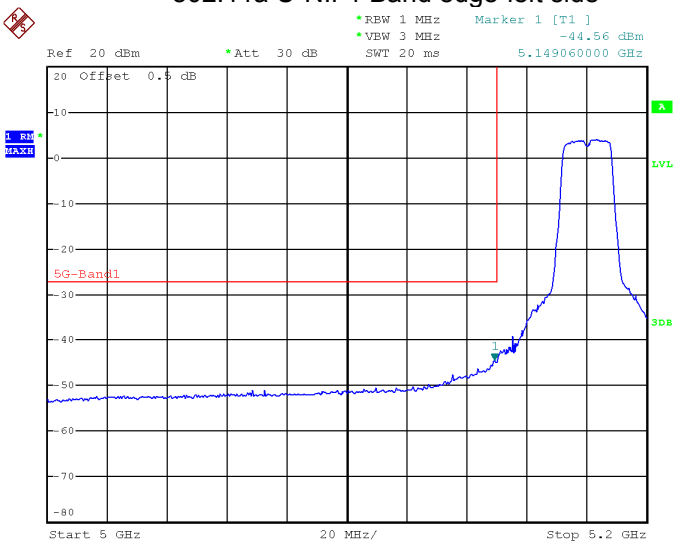
802.11n H40 U-NII-3 Band edge-right side



Date: 23.JUL.2024 12:18:47

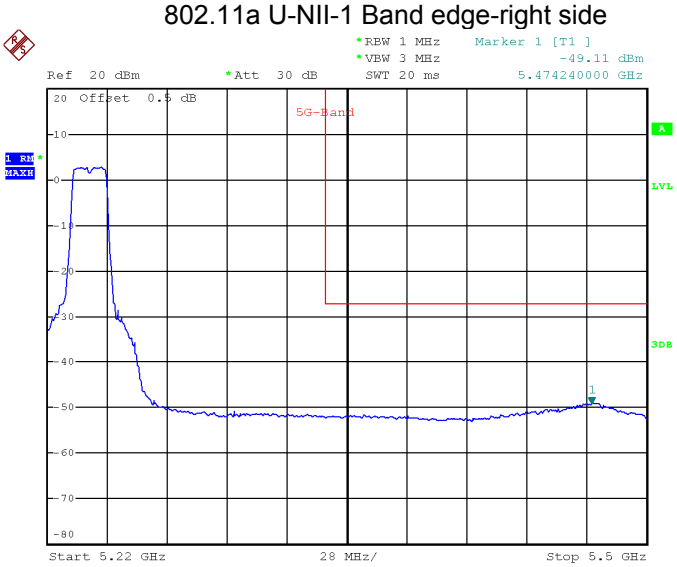
Ant 1:

802.11a U-NII-1 Band edge-left side



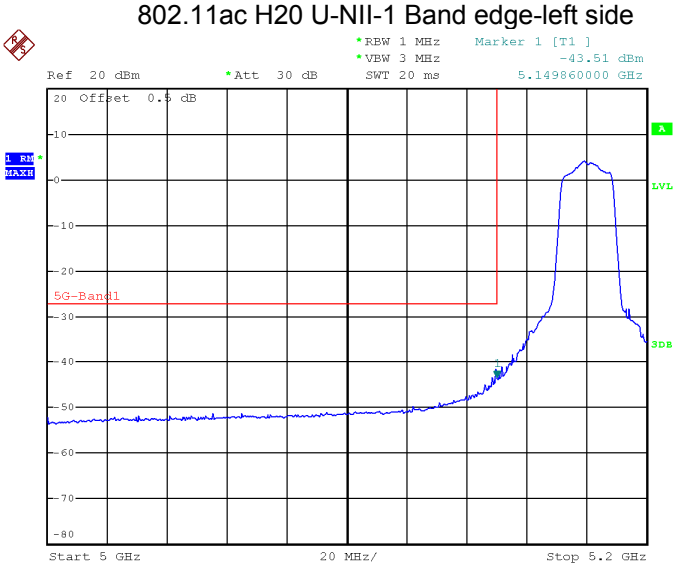
Date: 22.JUL.2024 11:13:39

802.11a U-NII-1 Band edge-right side



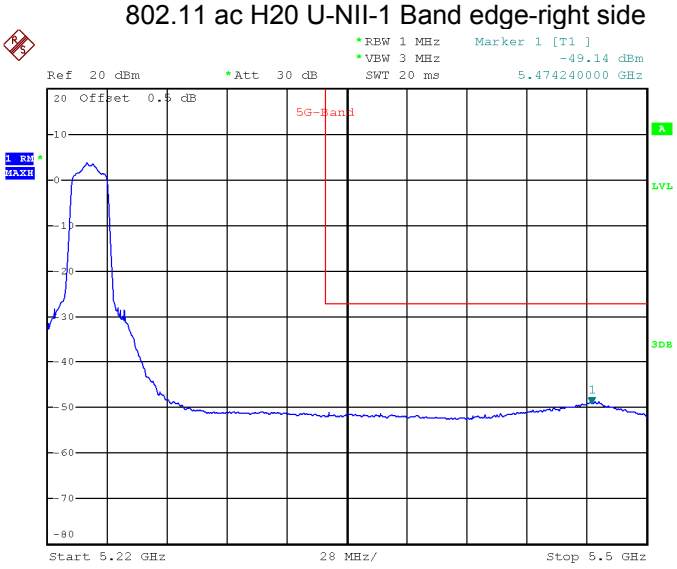
Date: 22.JUL.2024 11:19:00

802.11ac H20 U-NII-1 Band edge-left side



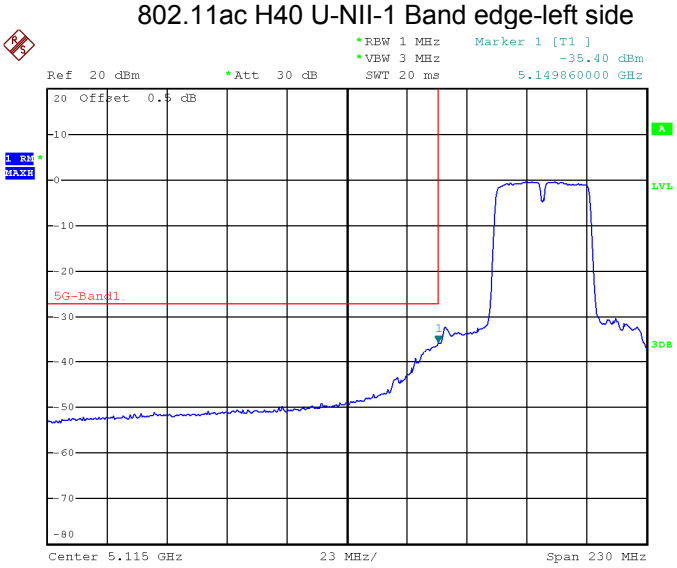
Date: 22.JUL.2024 11:15:04

802.11 ac H20 U-NII-1 Band edge-right side



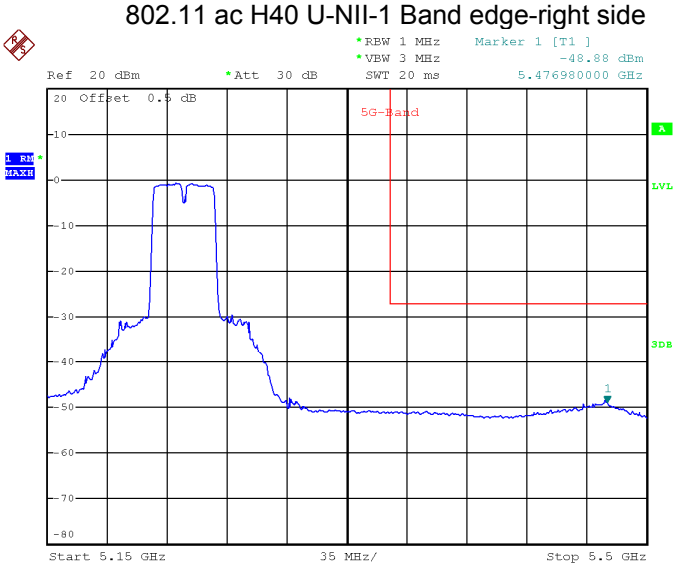
Date: 22.JUL.2024 11:18:01

802.11ac H40 U-NII-1 Band edge-left side



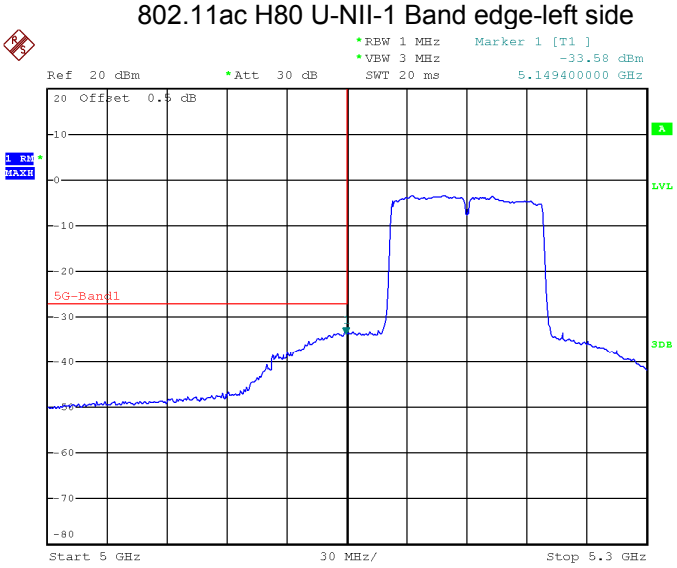
Date: 22.JUL.2024 11:11:41

802.11 ac H40 U-NII-1 Band edge-right side



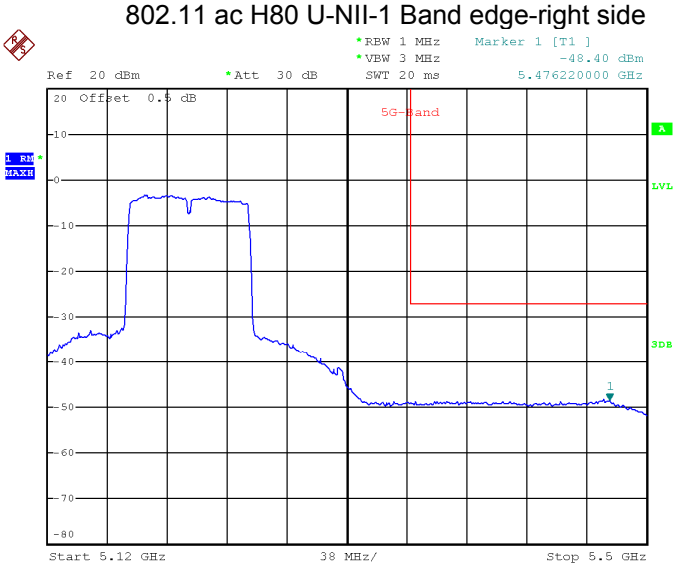
Date: 22.JUL.2024 11:24:01

802.11ac H80 U-NII-1 Band edge-left side



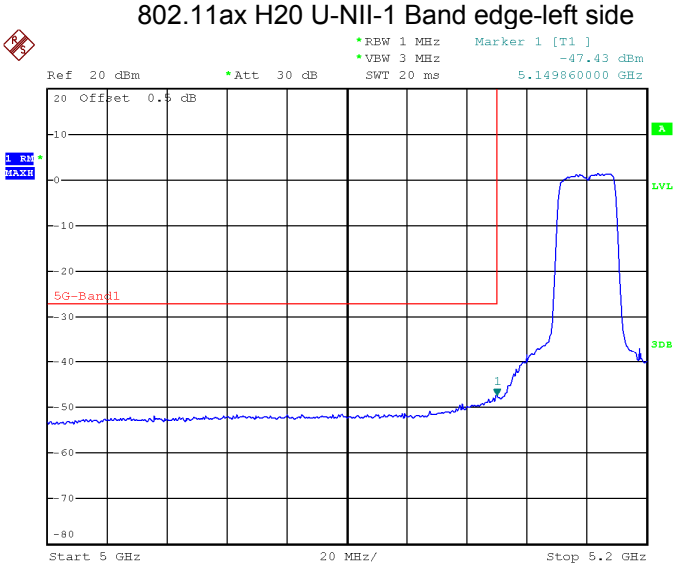
Date: 22.JUL.2024 11:08:13

802.11 ac H80 U-NII-1 Band edge-right side



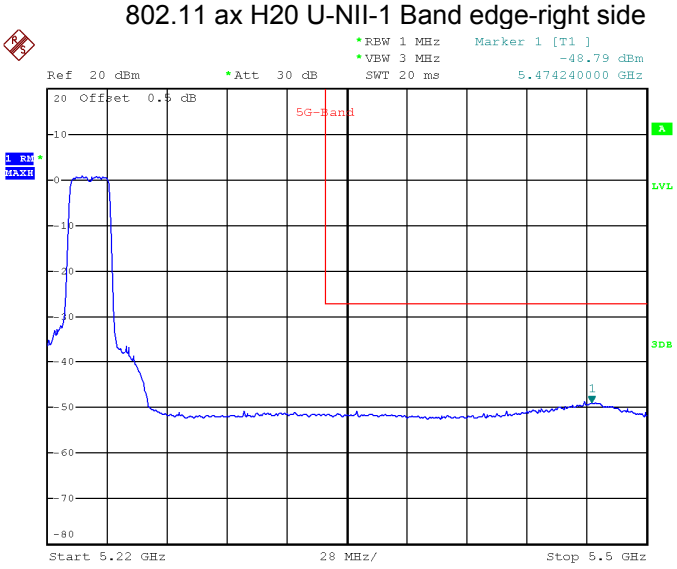
Date: 22.JUL.2024 11:25:28

802.11ax H20 U-NII-1 Band edge-left side



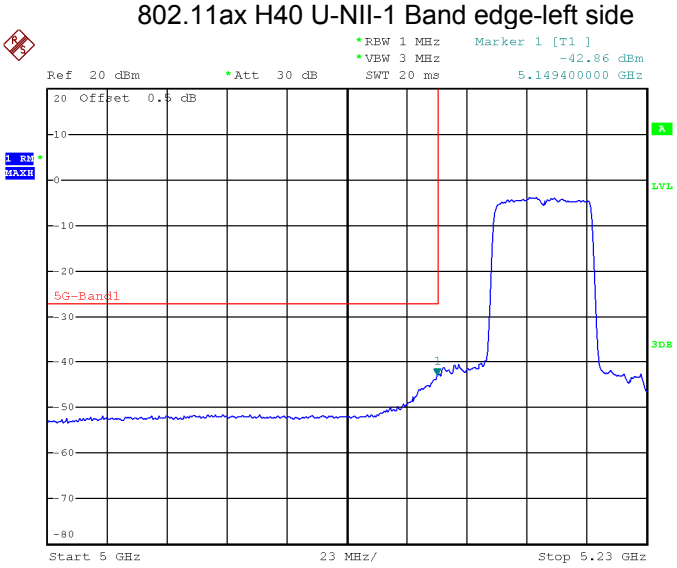
Date: 22.JUL.2024 11:15:41

802.11 ax H20 U-NII-1 Band edge-right side



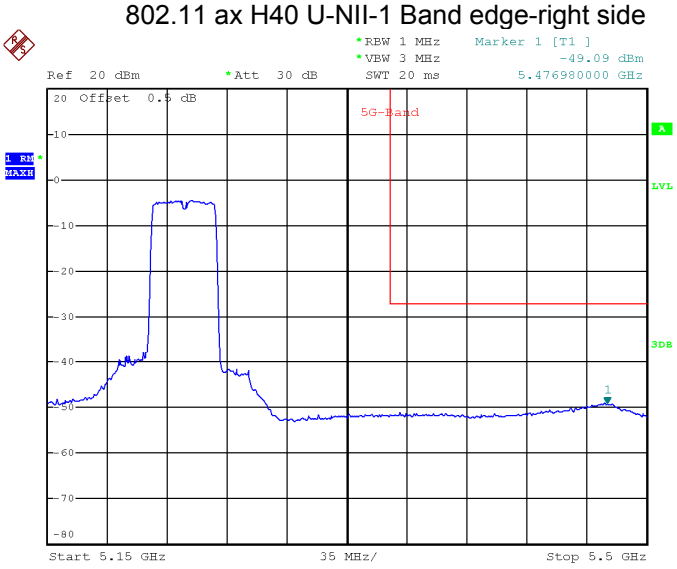
Date: 22.JUL.2024 11:17:08

802.11ax H40 U-NII-1 Band edge-left side



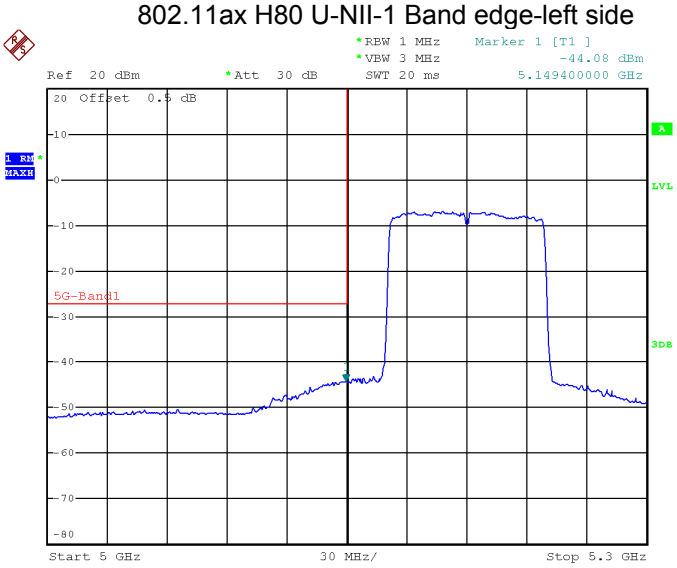
Date: 22.JUL.2024 11:09:31

802.11 ax H40 U-NII-1 Band edge-right side



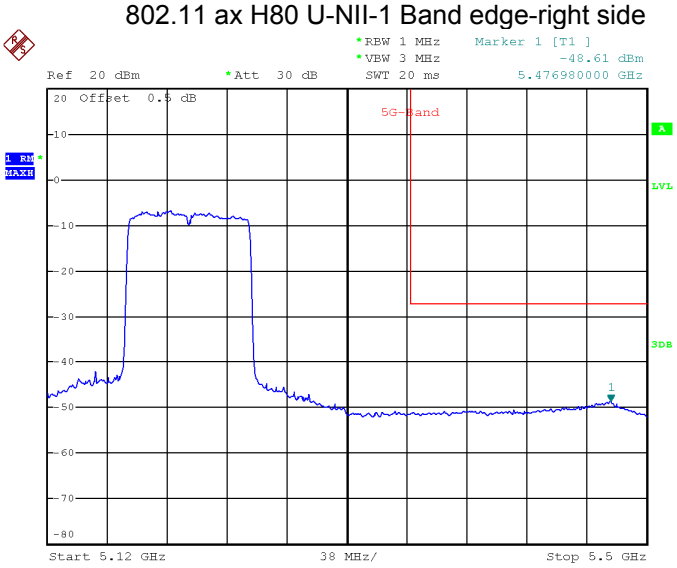
Date: 22.JUL.2024 11:24:28

802.11ax H80 U-NII-1 Band edge-left side



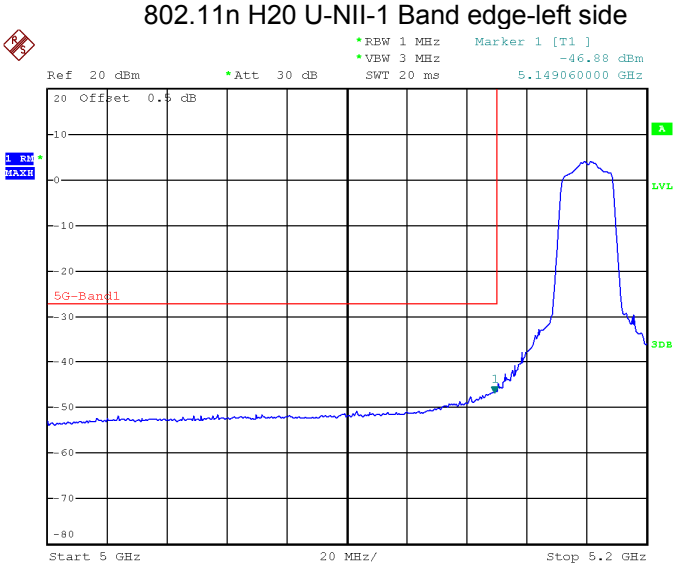
Date: 22.JUL.2024 11:07:32

802.11 ax H80 U-NII-1 Band edge-right side



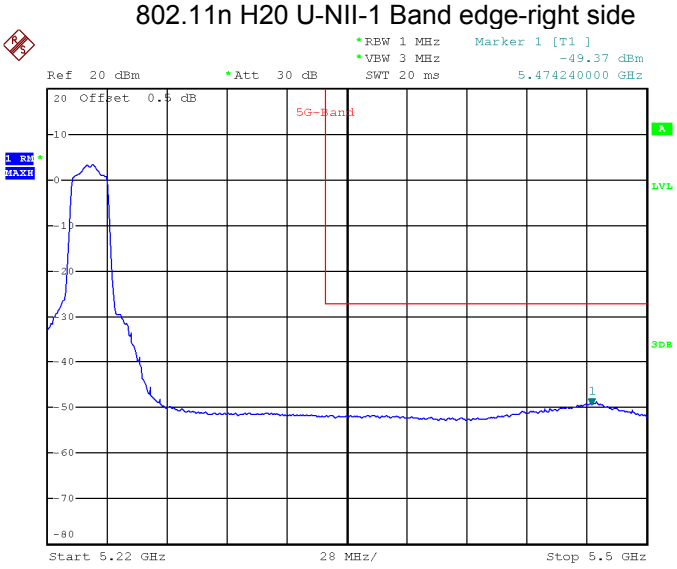
Date: 22.JUL.2024 11:25:03

802.11n H20 U-NII-1 Band edge-left side



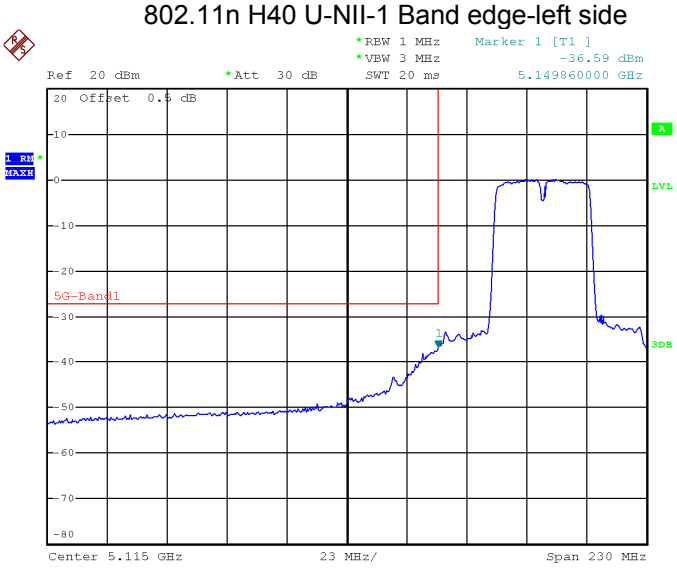
Date: 22.JUL.2024 11:14:16

802.11n H20 U-NII-1 Band edge-right side



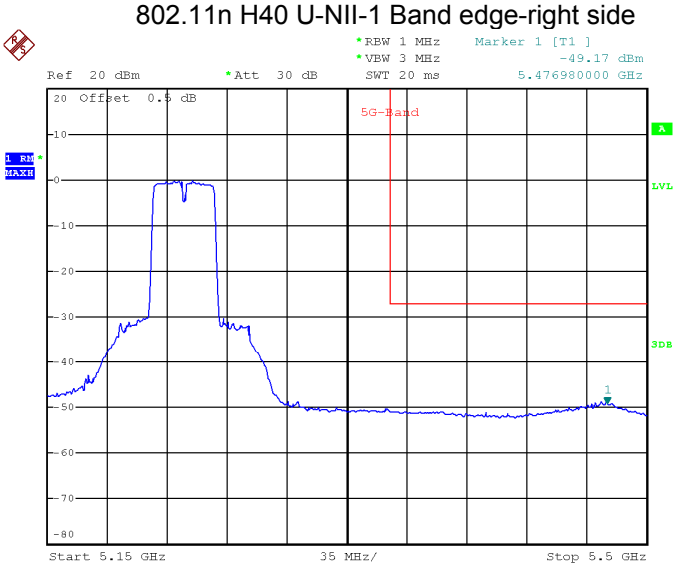
Date: 22.JUL.2024 11:18:36

802.11n H40 U-NII-1 Band edge-left side



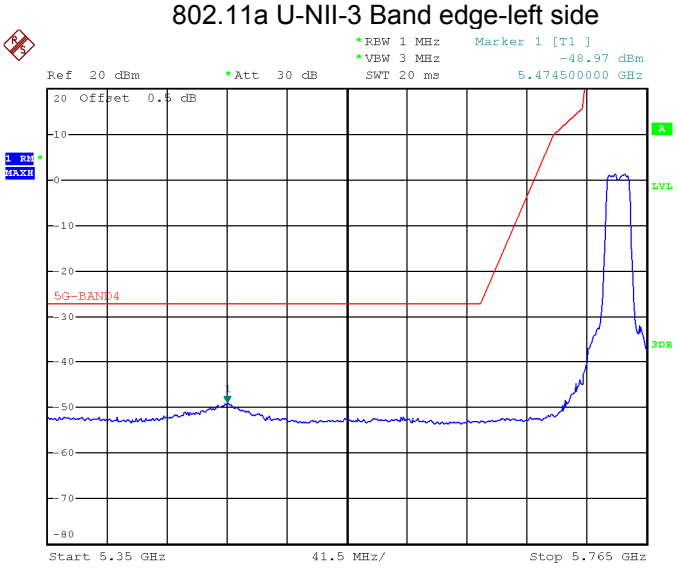
Date: 22.JUL.2024 11:12:33

802.11n H40 U-NII-1 Band edge-right side



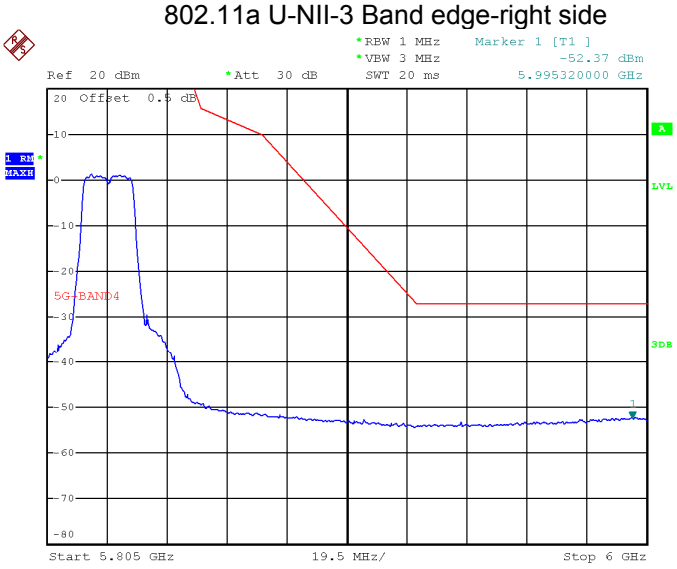
Date: 22.JUL.2024 11:20:08

802.11a U-NII-3 Band edge-left side



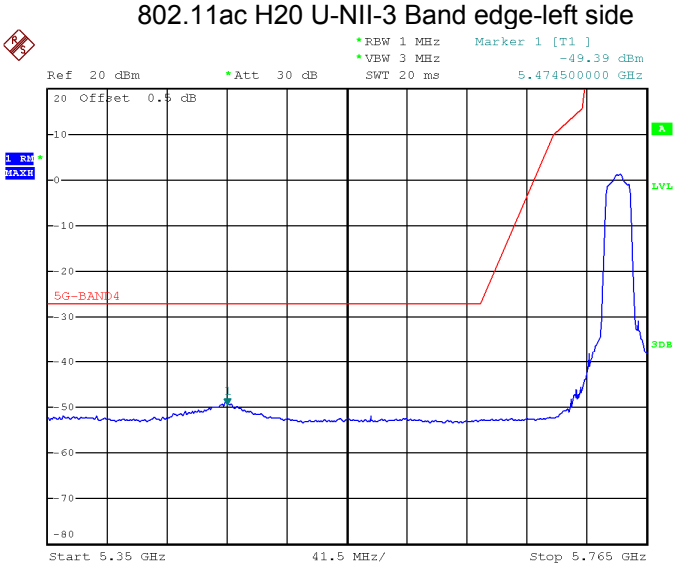
Date: 23.JUL.2024 12:04:33

802.11a U-NII-3 Band edge-right side



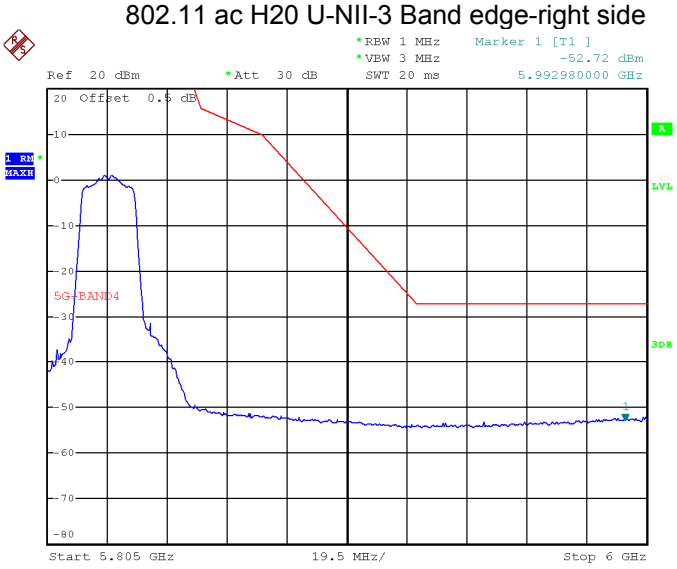
Date: 23.JUL.2024 12:20:25

802.11ac H20 U-NII-3 Band edge-left side



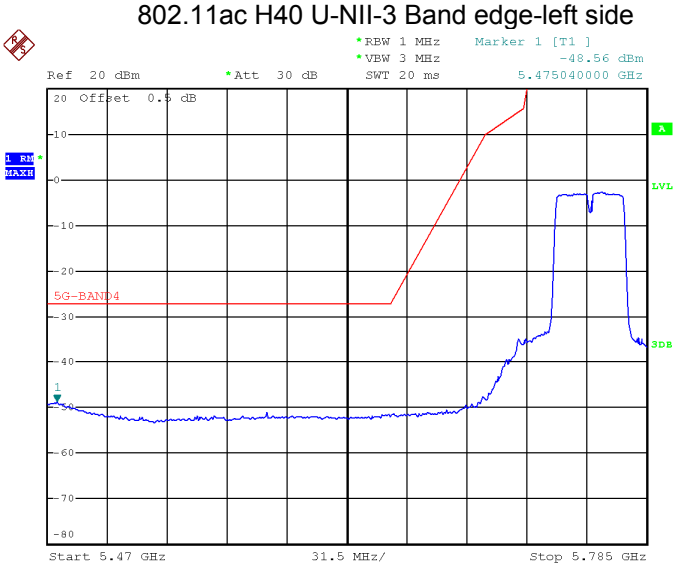
Date: 23.JUL.2024 12:06:20

802.11 ac H20 U-NII-3 Band edge-right side



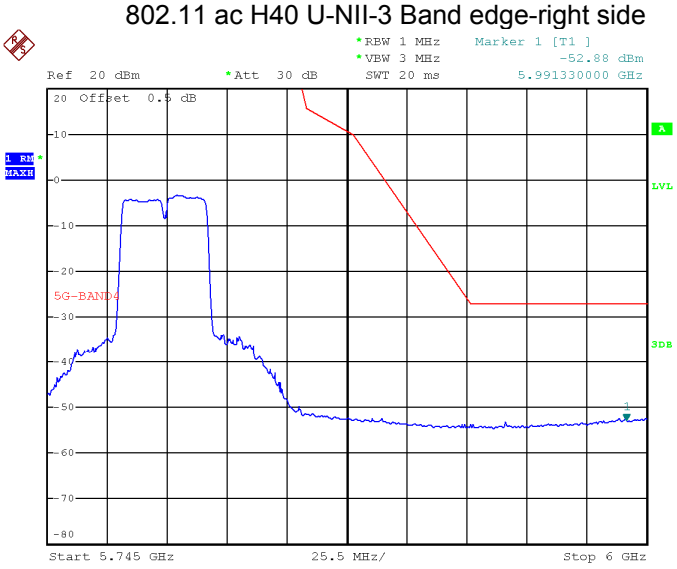
Date: 23.JUL.2024 12:22:21

802.11ac H40 U-NII-3 Band edge-left side



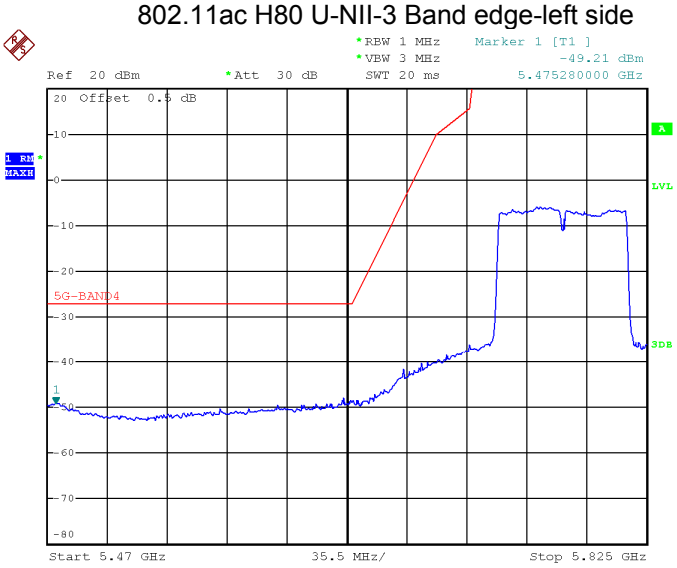
Date: 23.JUL.2024 12:09:48

802.11 ac H40 U-NII-3 Band edge-right side



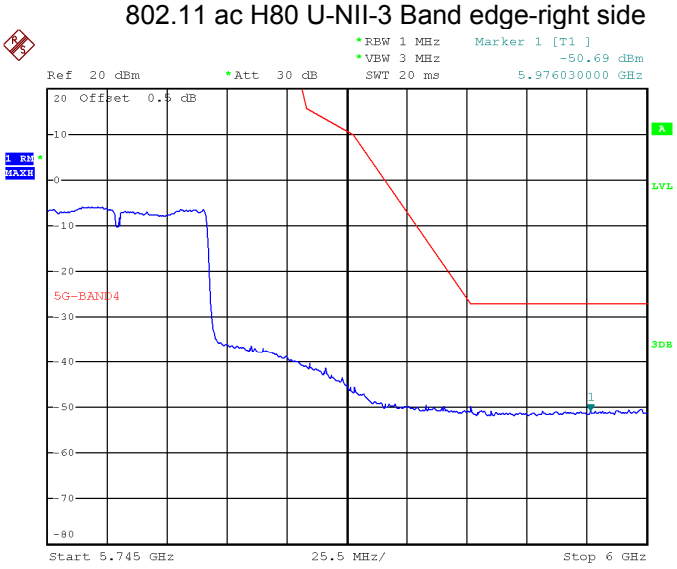
Date: 23.JUL.2024 12:18:19

802.11ac H80 U-NII-3 Band edge-left side



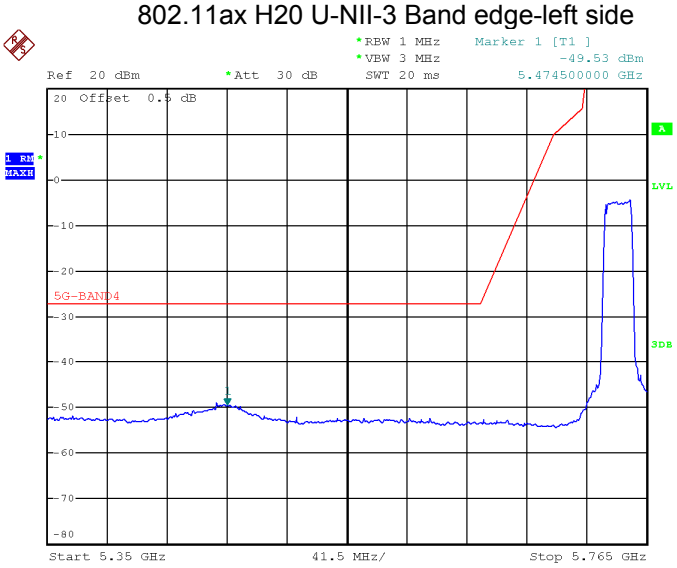
Date: 23.JUL.2024 12:12:29

802.11 ac H80 U-NII-3 Band edge-right side



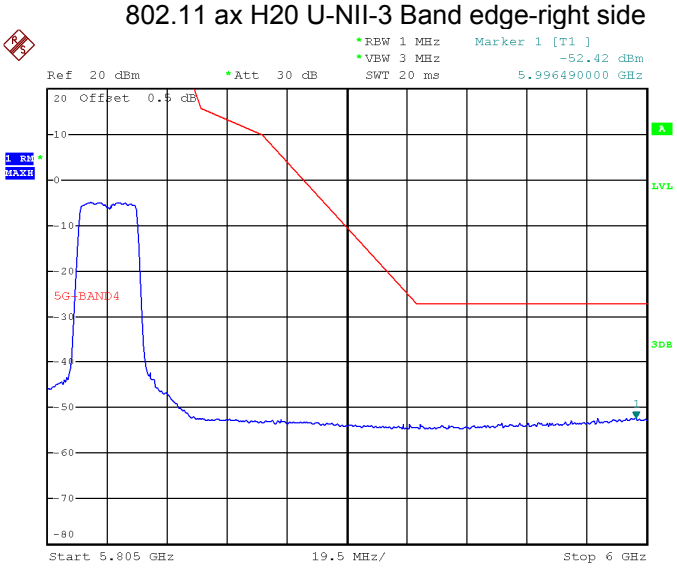
Date: 23.JUL.2024 12:14:52

802.11ax H20 U-NII-3 Band edge-left side



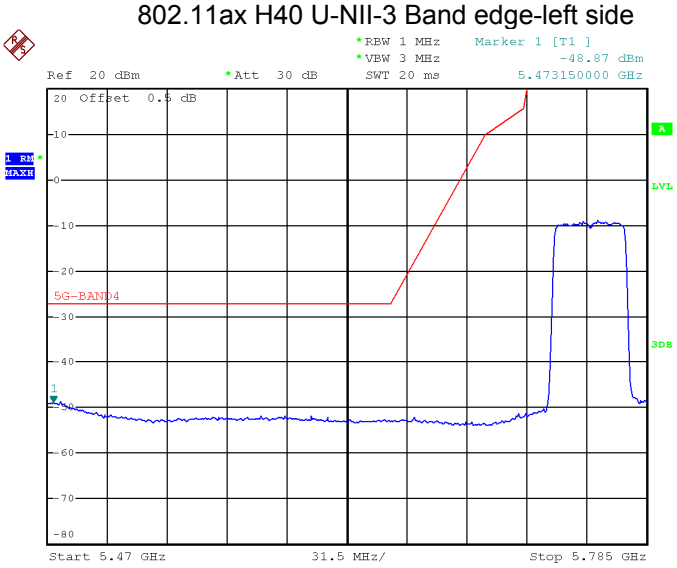
Date: 23.JUL.2024 12:06:51

802.11 ax H20 U-NII-3 Band edge-right side



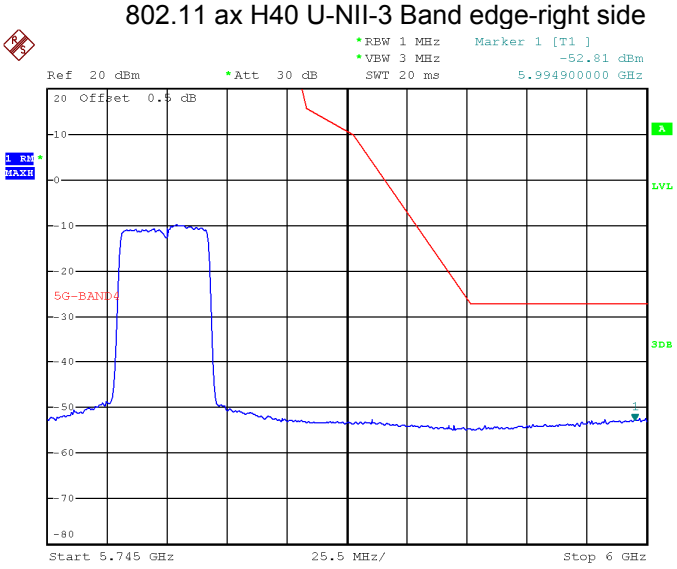
Date: 23.JUL.2024 12:23:11

802.11ax H40 U-NII-3 Band edge-left side



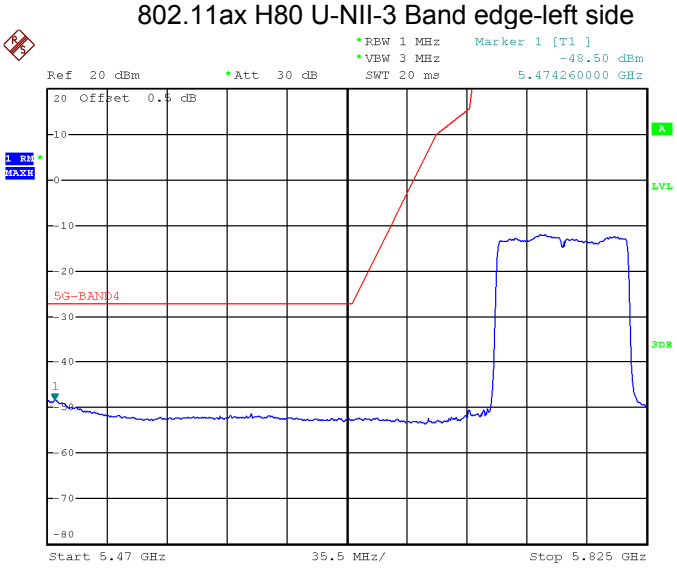
Date: 23.JUL.2024 12:10:50

802.11 ax H40 U-NII-3 Band edge-right side



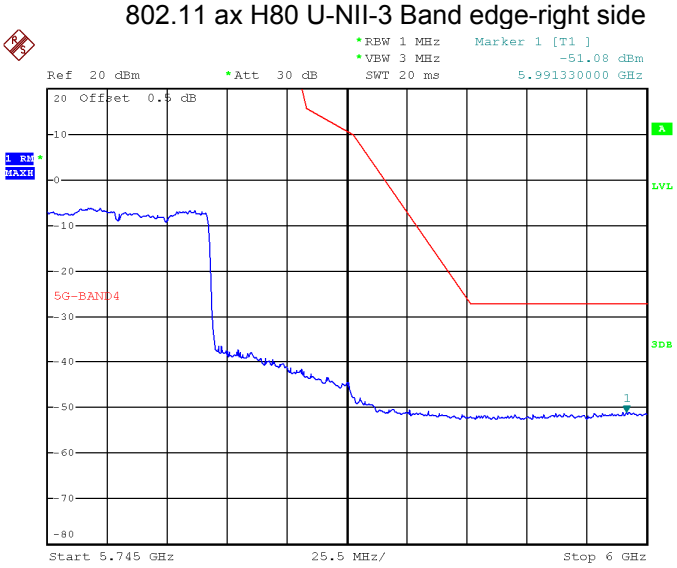
Date: 23.JUL.2024 12:17:08

802.11ax H80 U-NII-3 Band edge-left side



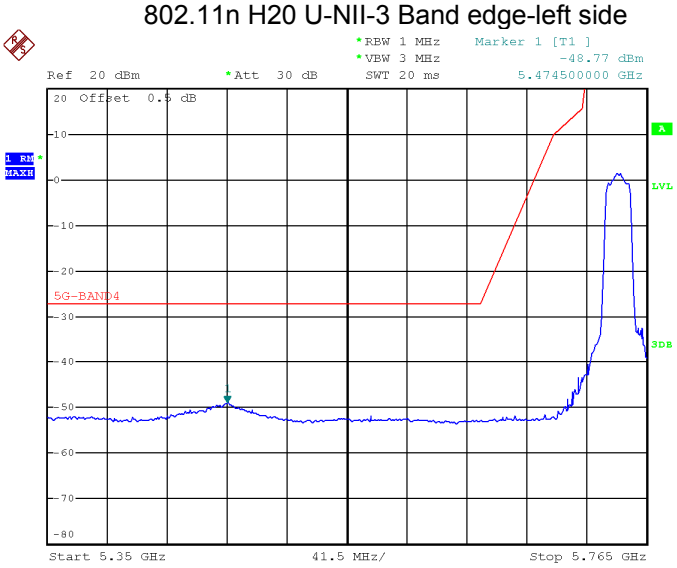
Date: 23.JUL.2024 12:29:55

802.11 ax H80 U-NII-3 Band edge-right side



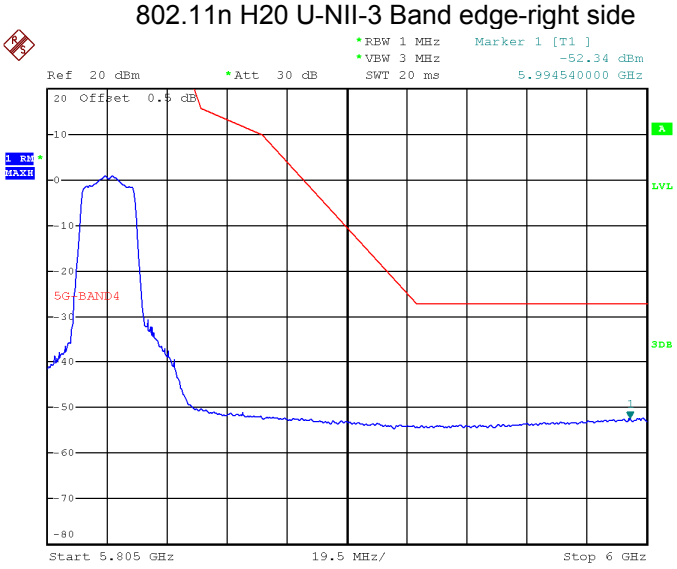
Date: 23.JUL.2024 12:14:01

802.11n H20 U-NII-3 Band edge-left side



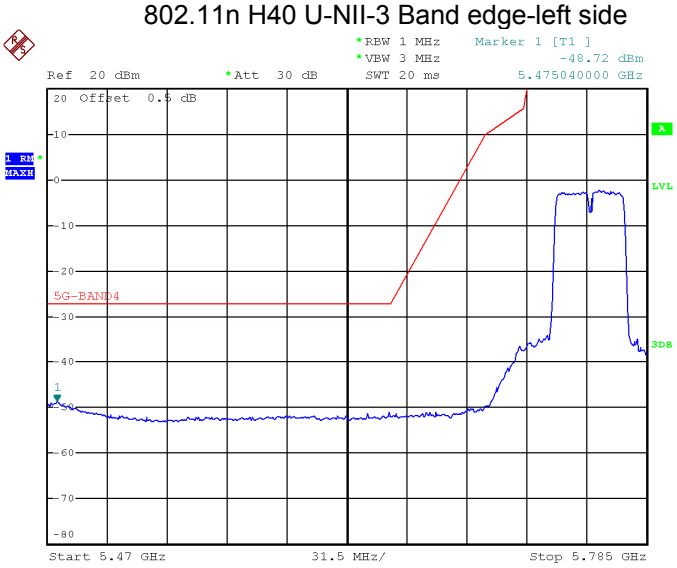
Date: 23.JUL.2024 12:05:23

802.11n H20 U-NII-3 Band edge-right side



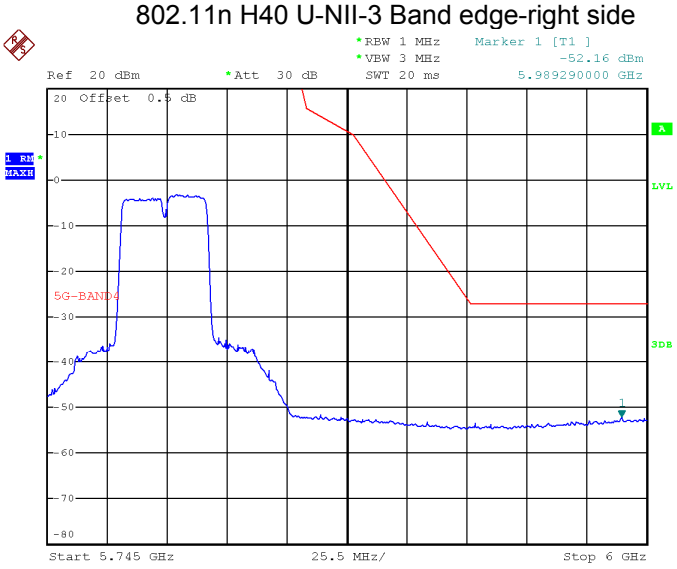
Date: 23.JUL.2024 12:21:34

802.11n H40 U-NII-3 Band edge-left side



Date: 23.JUL.2024 12:08:44

802.11n H40 U-NII-3 Band edge-right side



Date: 23.JUL.2024 12:19:04

11 6 dB Bandwidth

Test Requirement:	FCC 47CFR Part 15 Section 15.407(e) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section C
Test Limit:	≥ 500 kHz
Test Result:	PASS

11.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

11.2 Test Result

Ant 0:

Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.560	16.560	16.560
	802.11n(HT20)	17.700	17.700	17.700
	802.11n(HT40)	36.480	/	36.600
	802.11ac(HT20)	17.700	17.760	17.640
	802.11ac(HT40)	36.480	/	36.600
	802.11ac(HT80)	/	76.320	/
	802.11ax(HT20)	19.200	19.200	19.200
	802.11ax(HT40)	37.920	/	37.920
	802.11ax(HT80)	/	77.520	/

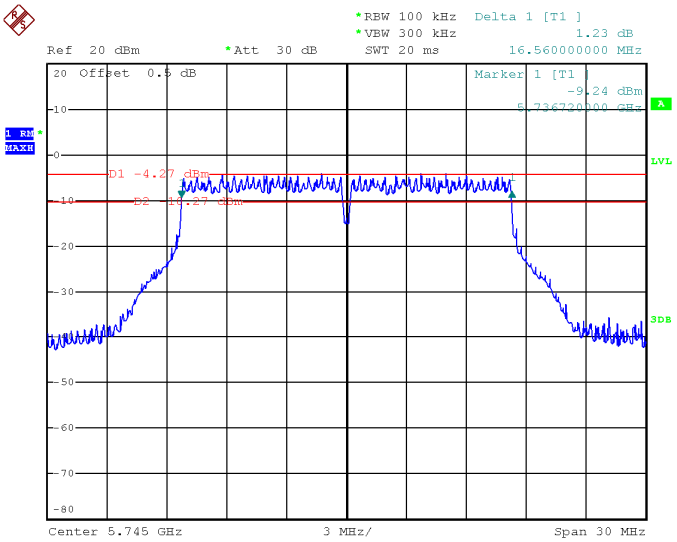
Ant 1:

Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.560	16.560	16.560
	802.11n(HT20)	17.760	17.700	17.640
	802.11n(HT40)	36.240	/	36.480
	802.11ac(HT20)	17.700	17.760	17.700
	802.11ac(HT40)	36.480	/	36.480
	802.11ac(HT80)	/	76.320	/
	802.11ax(HT20)	19.140	19.080	19.200
	802.11ax(HT40)	37.920	/	37.920
	802.11ax(HT80)	/	77.760	/

Test result plots shown as follows:

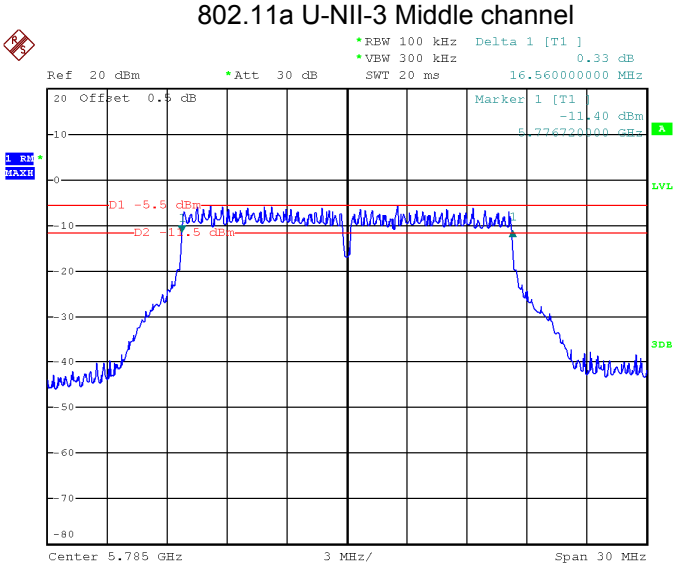
Ant 0

802.11a U-NII-3 Low channel



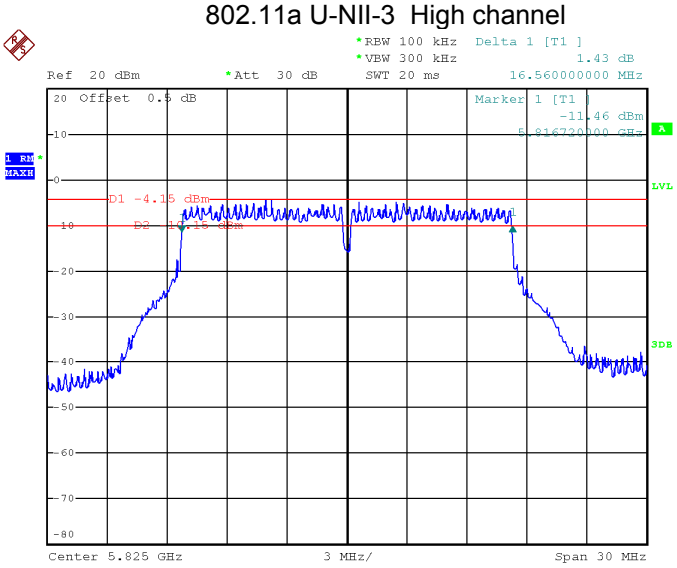
Date: 22.JUL.2024 17:37:27

802.11a U-NII-3 Middle channel



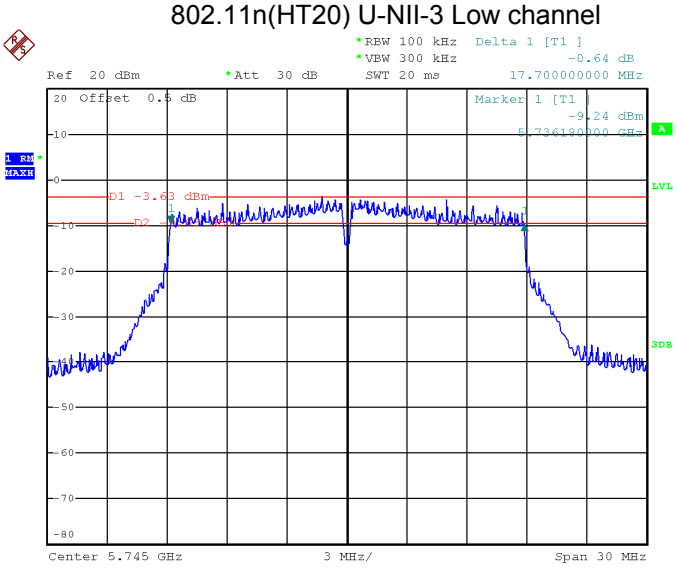
Date: 22.JUL.2024 17:39:28

802.11a U-NII-3 High channel



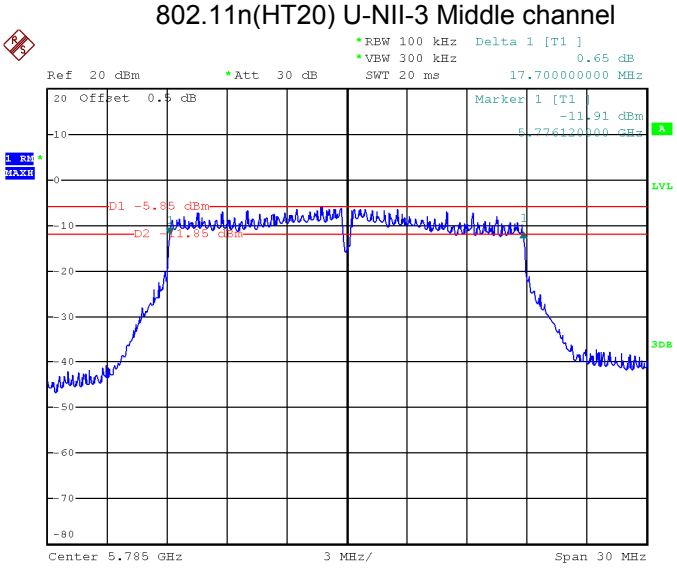
Date: 22.JUL.2024 17:41:08

802.11n(HT20) U-NII-3 Low channel



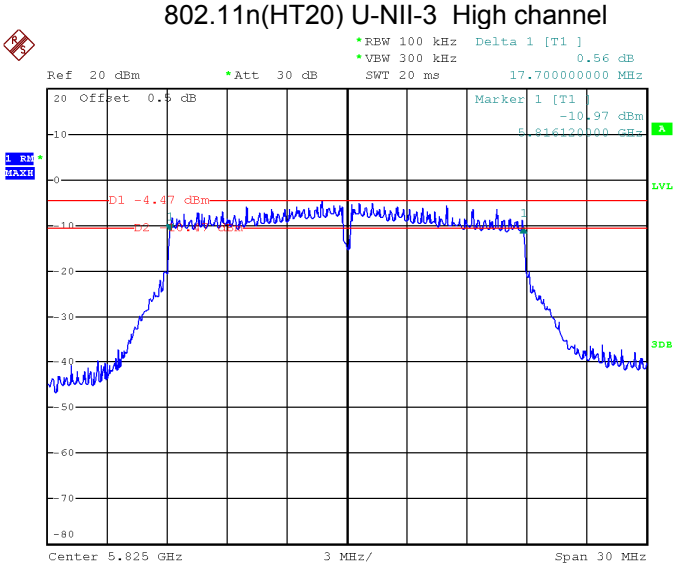
Date: 22.JUL.2024 18:09:54

802.11n(HT20) U-NII-3 Middle channel



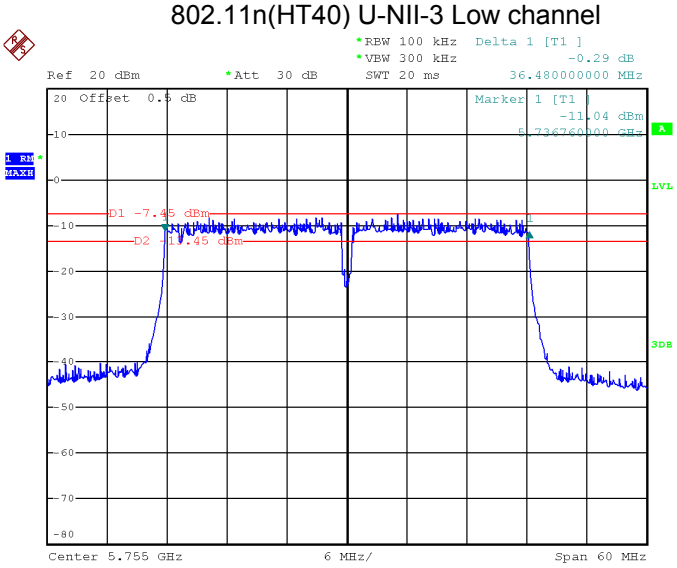
Date: 22.JUL.2024 17:44:00

802.11n(HT20) U-NII-3 High channel



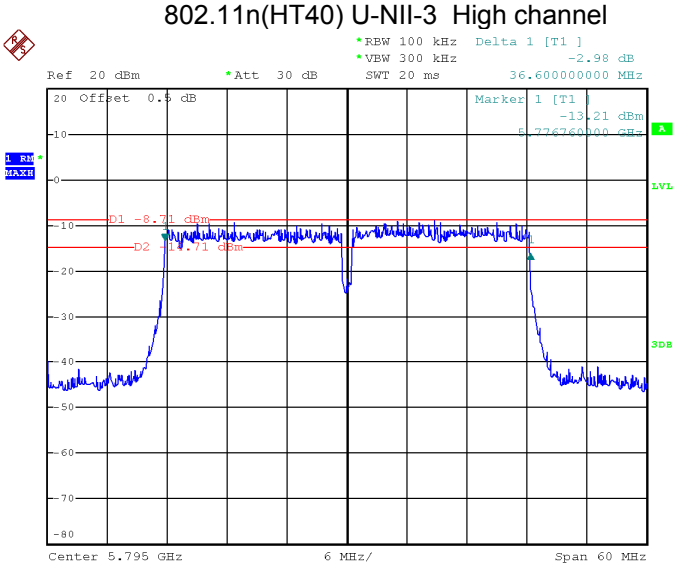
Date: 22.JUL.2024 17:45:37

802.11n(HT40) U-NII-3 Low channel



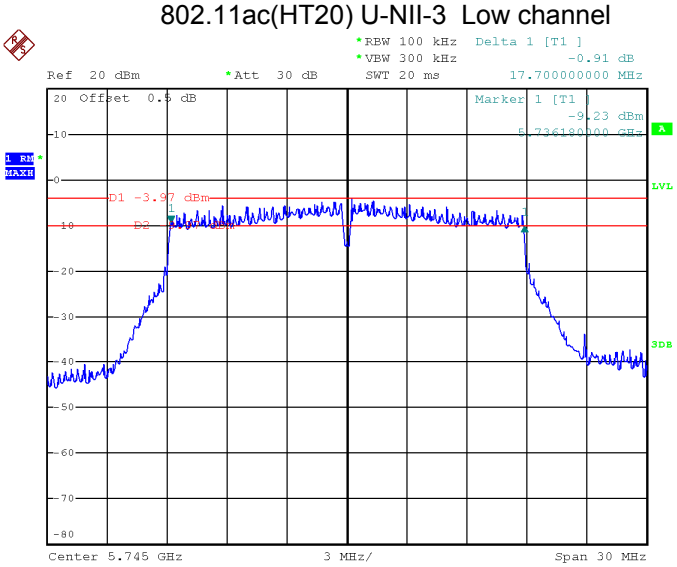
Date: 22.JUL.2024 17:35:09

802.11n(HT40) U-NII-3 High channel



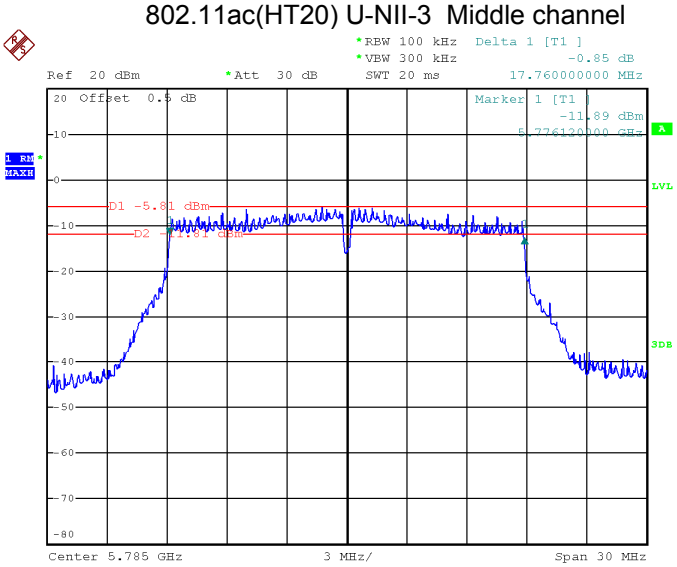
Date: 22.JUL.2024 18:08:25

802.11ac(HT20) U-NII-3 Low channel



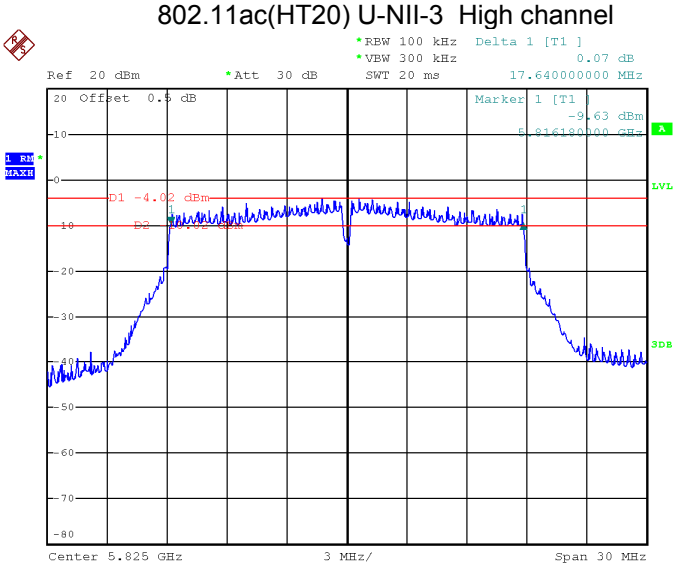
Date: 22.JUL.2024 17:47:49

802.11ac(HT20) U-NII-3 Middle channel



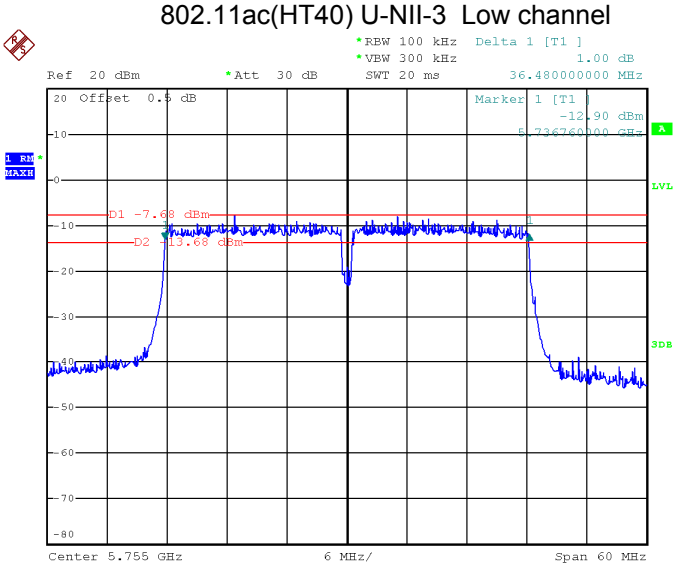
Date: 22.JUL.2024 17:48:44

802.11ac(HT20) U-NII-3 High channel



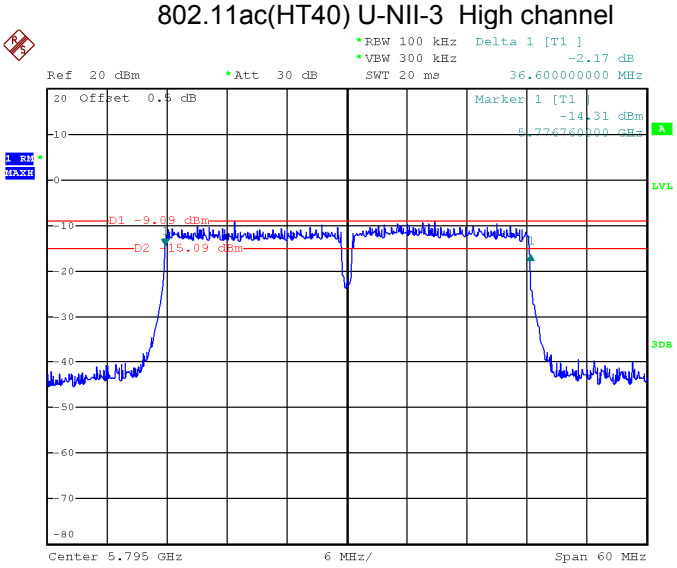
Date: 22.JUL.2024 18:01:24

802.11ac(HT40) U-NII-3 Low channel



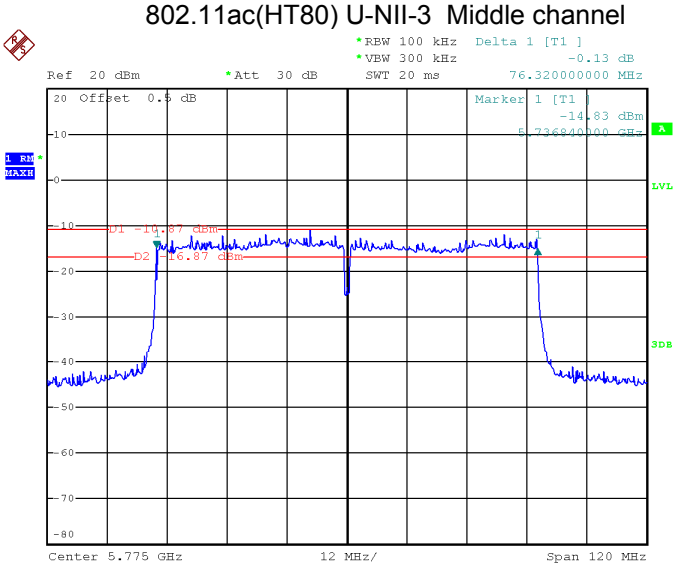
Date: 22.JUL.2024 17:30:59

802.11ac(HT40) U-NII-3 High channel



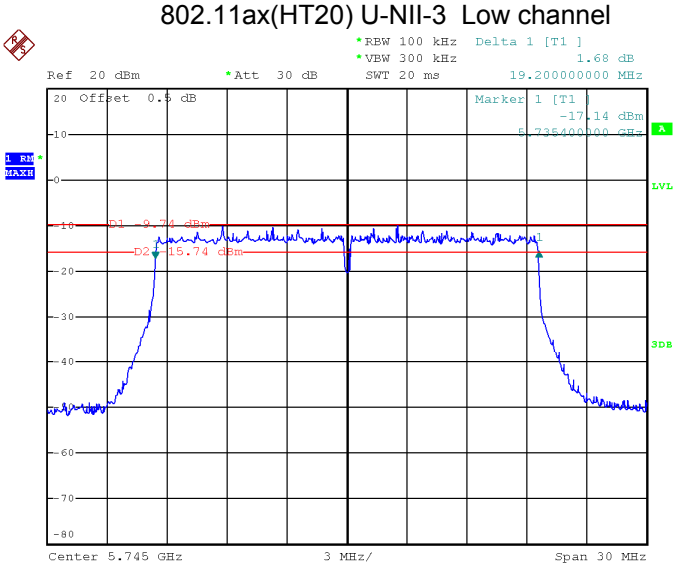
Date: 22.JUL.2024 17:32:20

802.11ac(HT80) U-NII-3 Middle channel



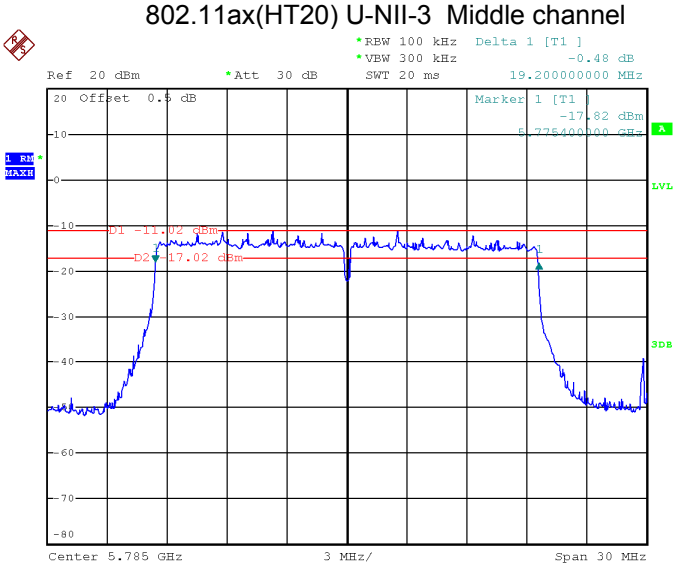
Date: 22.JUL.2024 18:16:04

802.11ax(HT20) U-NII-3 Low channel



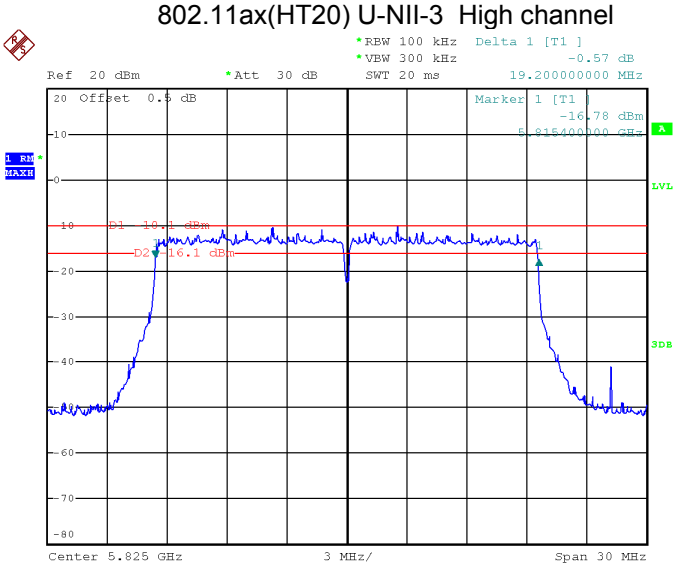
Date: 22.JUL.2024 18:03:05

802.11ax(HT20) U-NII-3 Middle channel



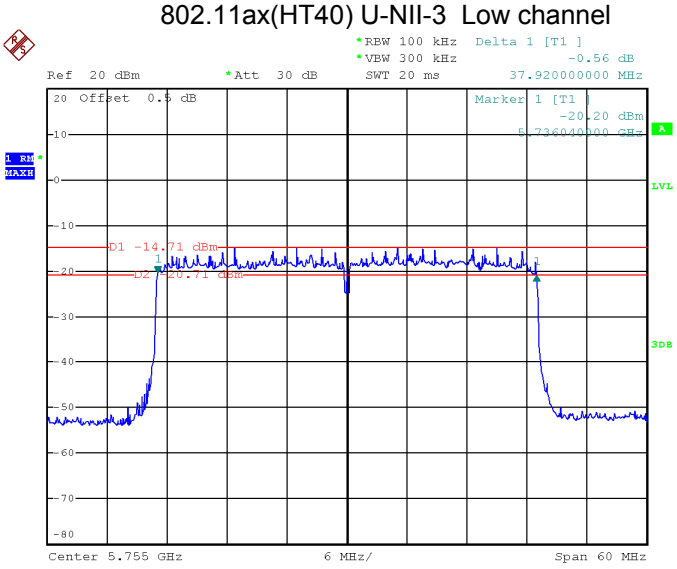
Date: 22.JUL.2024 18:04:03

802.11ax(HT20) U-NII-3 High channel



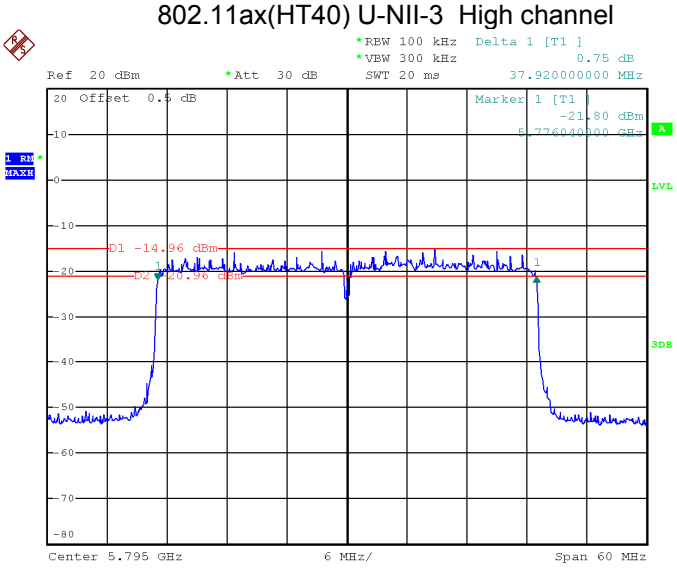
Date: 22.JUL.2024 18:05:16

802.11ax(HT40) U-NII-3 Low channel



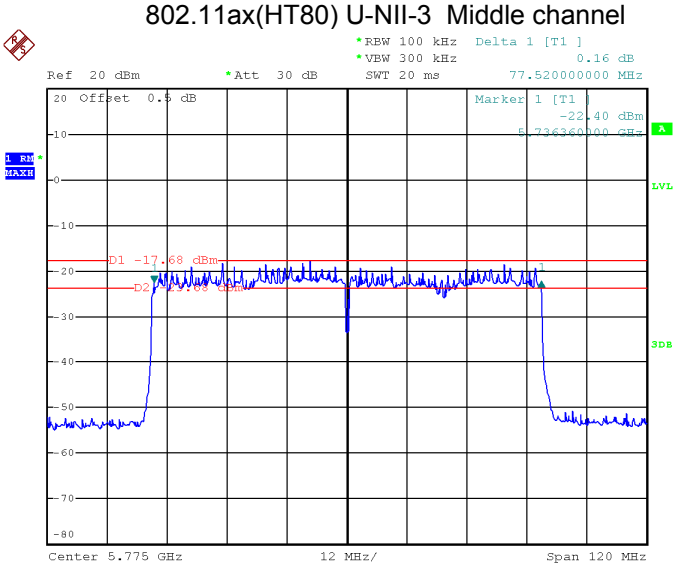
Date: 22.JUL.2024 18:11:19

802.11ax(HT40) U-NII-3 High channel



Date: 22.JUL.2024 18:12:44

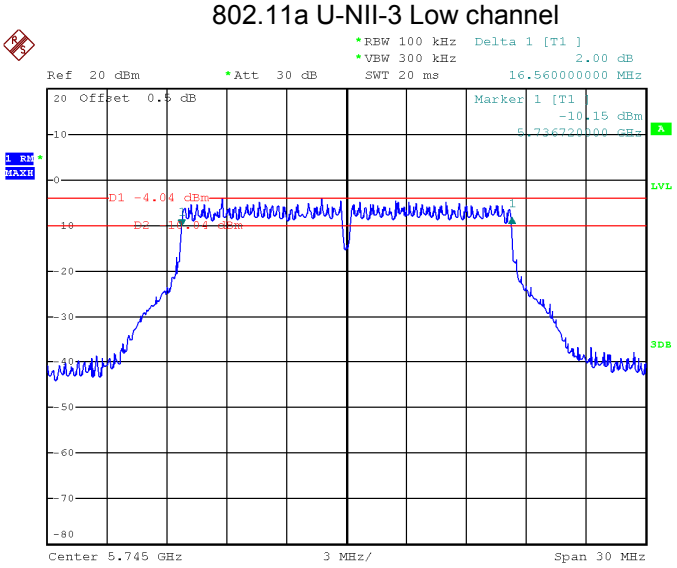
802.11ax(HT80) U-NII-3 Middle channel



Date: 22.JUL.2024 18:14:04

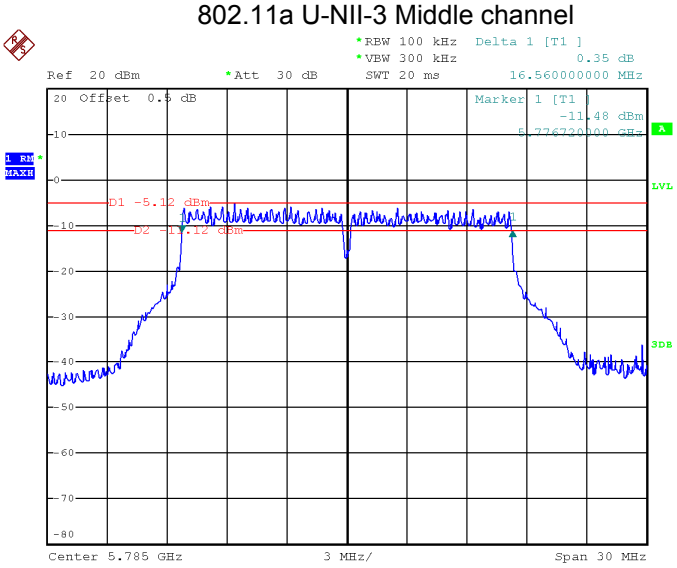
Ant 1

802.11a U-NII-3 Low channel



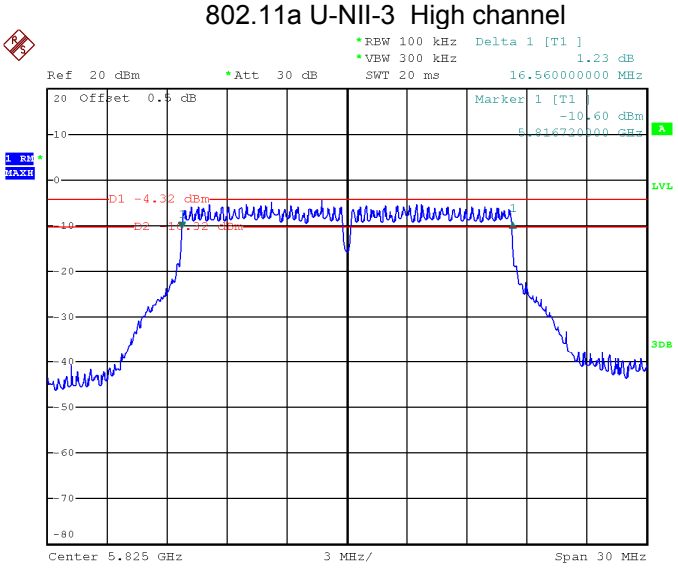
Date: 23.JUL.2024 11:43:05

802.11a U-NII-3 Middle channel



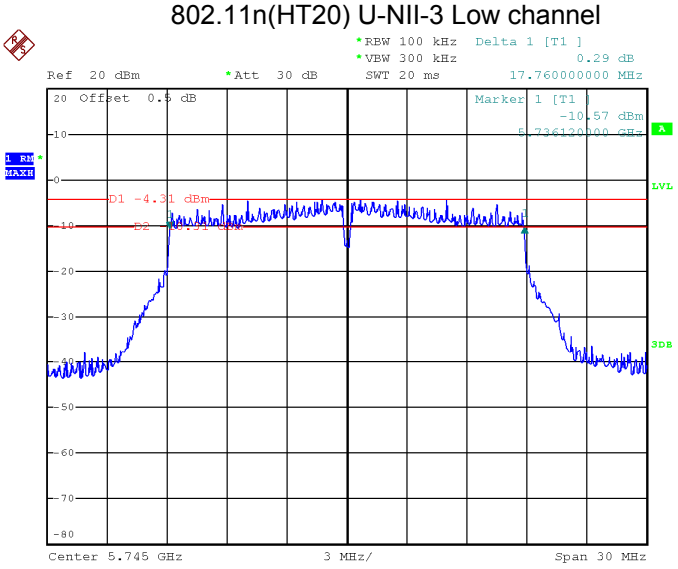
Date: 23.JUL.2024 11:43:59

802.11a U-NII-3 High channel



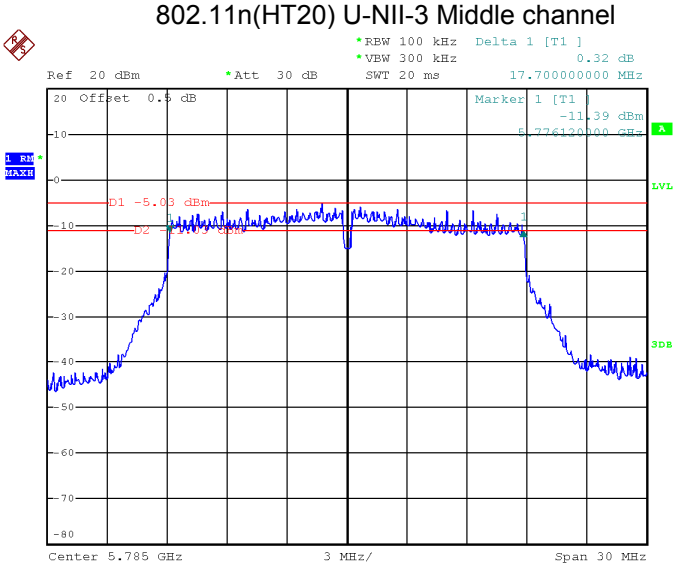
Date: 23.JUL.2024 11:44:47

802.11n(HT20) U-NII-3 Low channel



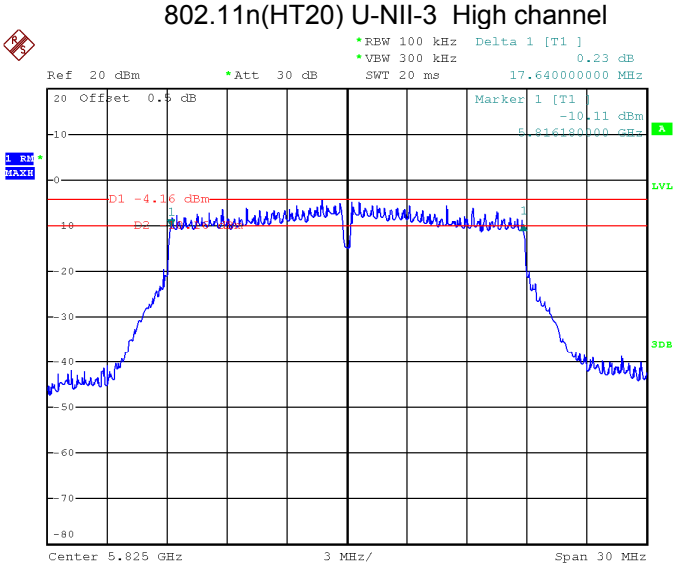
Date: 23.JUL.2024 11:45:57

802.11n(HT20) U-NII-3 Middle channel



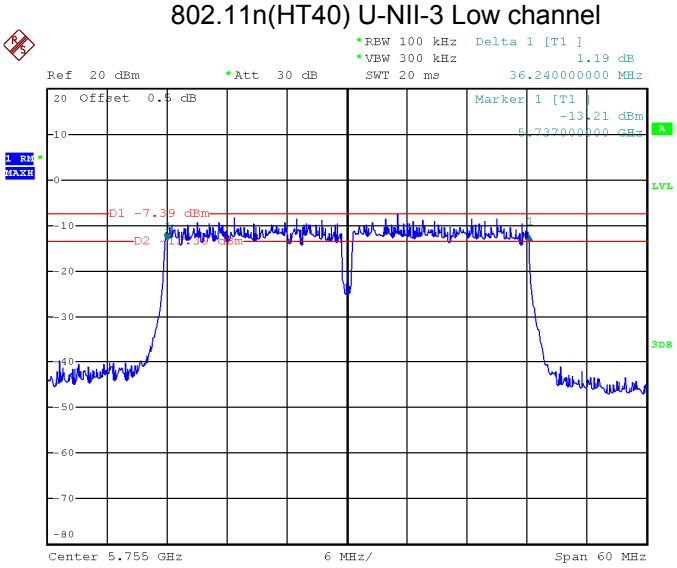
Date: 23.JUL.2024 11:46:50

802.11n(HT20) U-NII-3 High channel



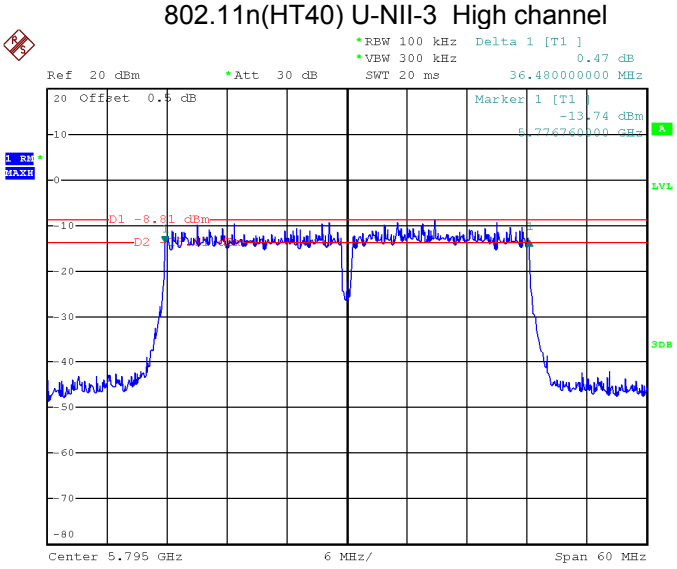
Date: 23.JUL.2024 11:47:43

802.11n(HT40) U-NII-3 Low channel



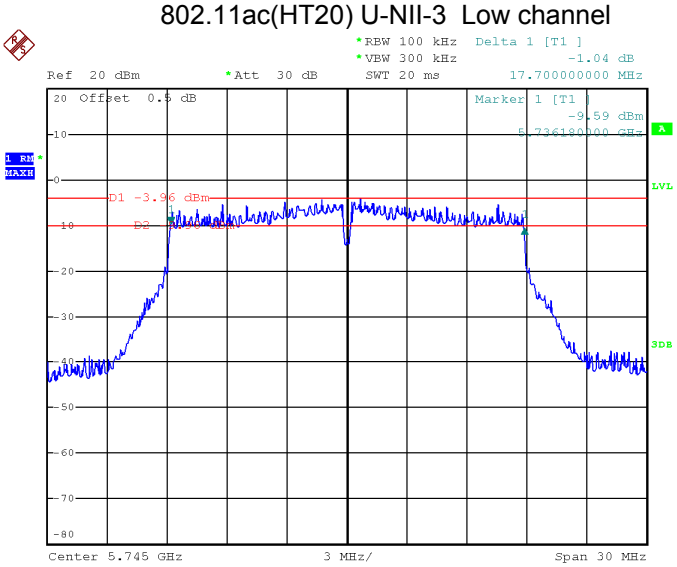
Date: 23.JUL.2024 11:39:55

802.11n(HT40) U-NII-3 High channel



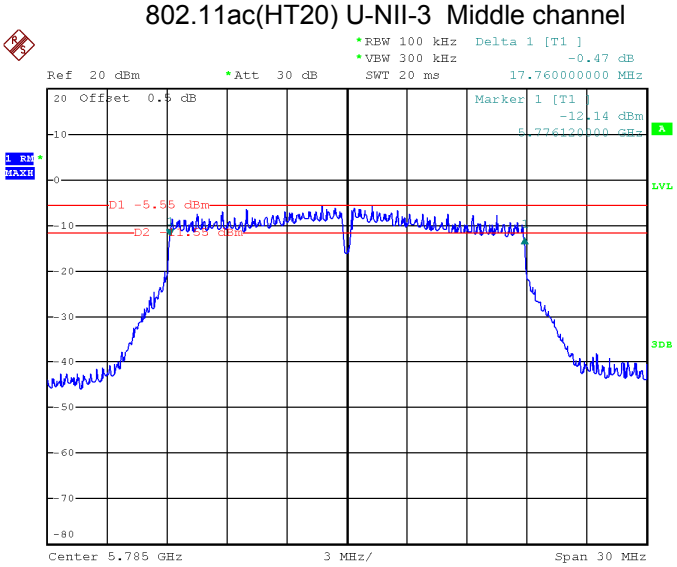
Date: 23.JUL.2024 11:41:07

802.11ac(HT20) U-NII-3 Low channel



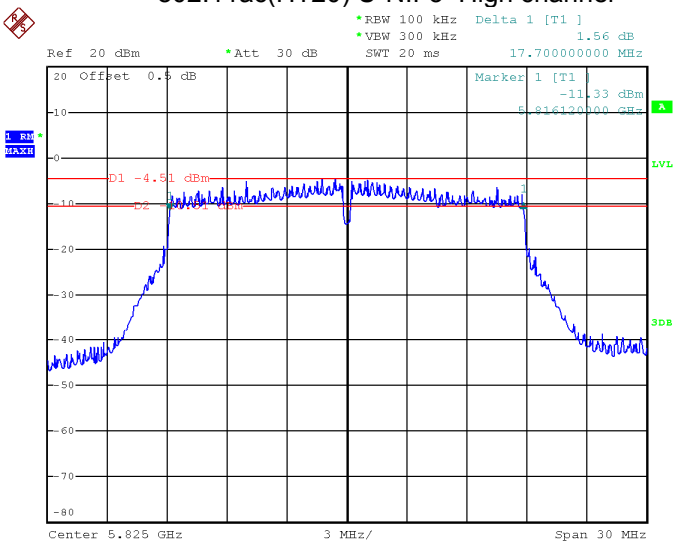
Date: 23.JUL.2024 11:48:40

802.11ac(HT20) U-NII-3 Middle channel



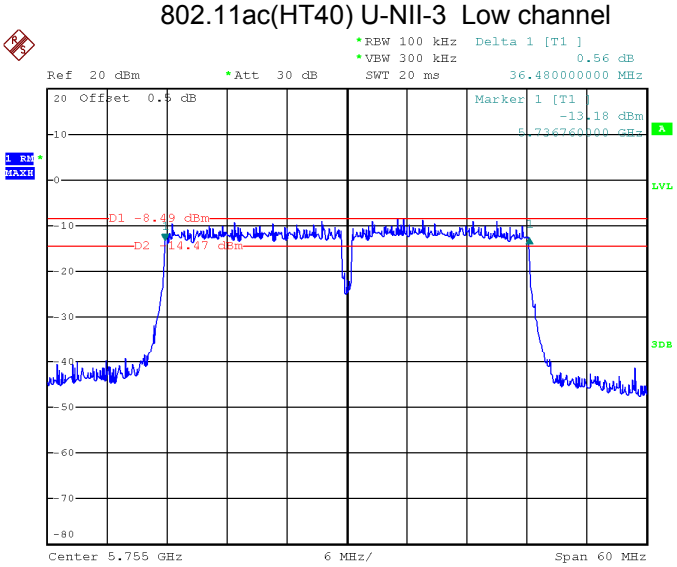
Date: 23.JUL.2024 11:49:27

802.11ac(HT20) U-NII-3 High channel



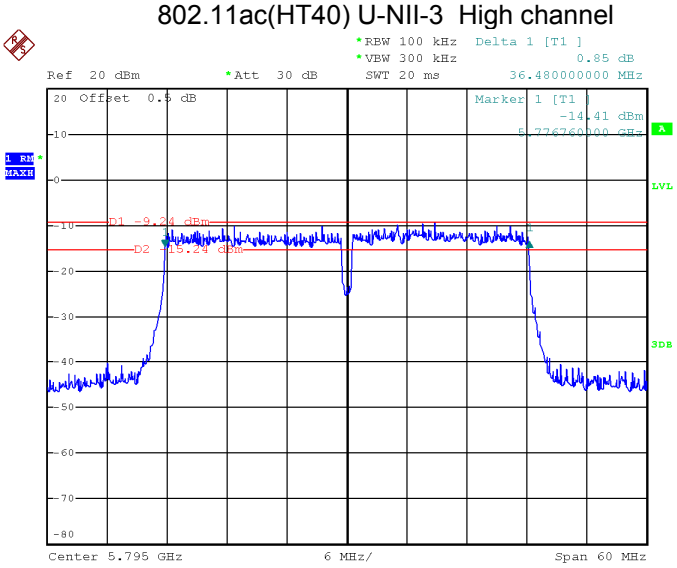
Date: 23.JUL.2024 11:50:17

802.11ac(HT40) U-NII-3 Low channel



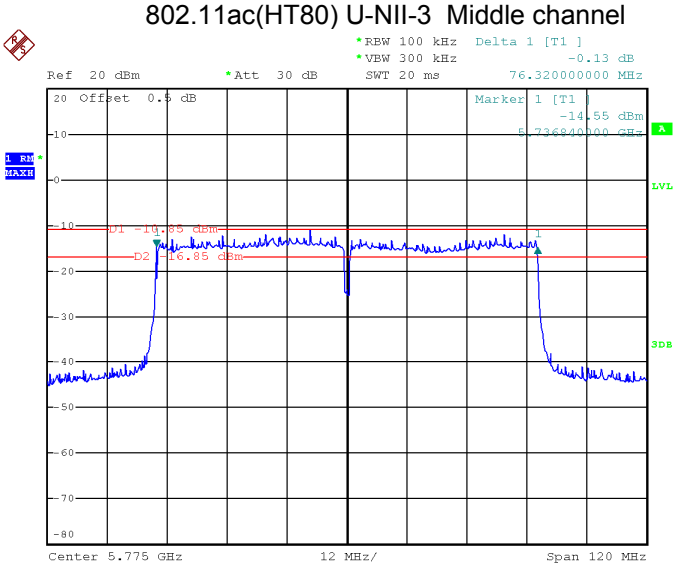
Date: 23.JUL.2024 11:38:58

802.11ac(HT40) U-NII-3 High channel



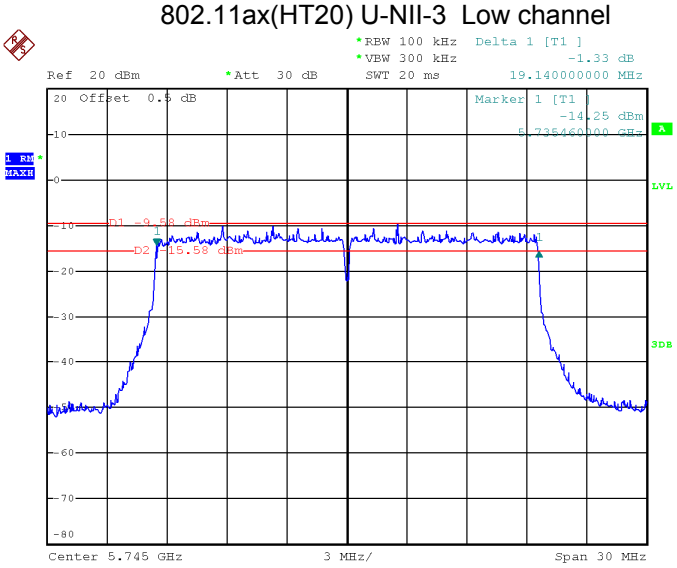
Date: 23.JUL.2024 11:37:47

802.11ac(HT80) U-NII-3 Middle channel



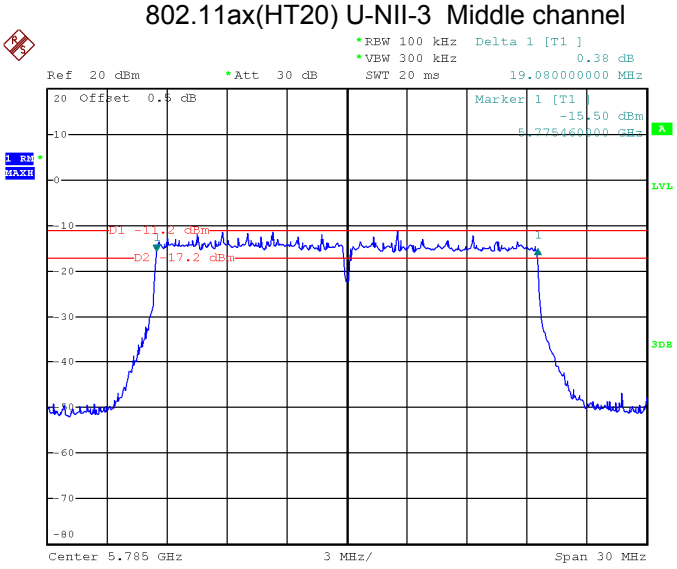
Date: 23.JUL.2024 11:33:11

802.11ax(HT20) U-NII-3 Low channel



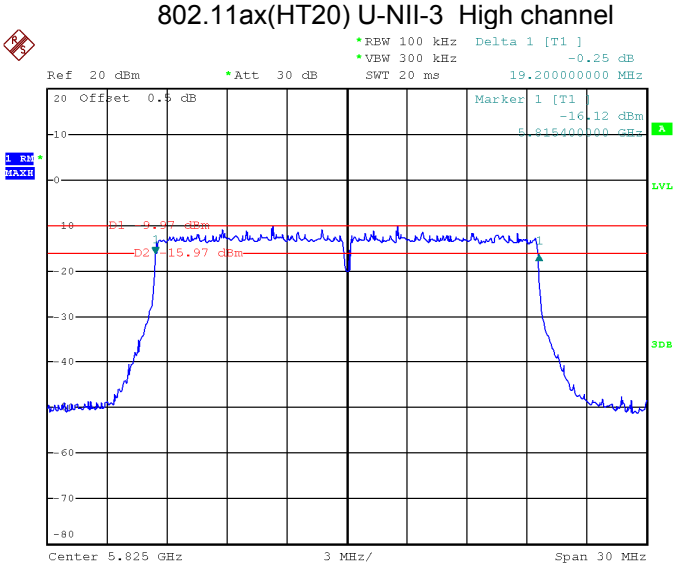
Date: 23.JUL.2024 11:51:28

802.11ax(HT20) U-NII-3 Middle channel



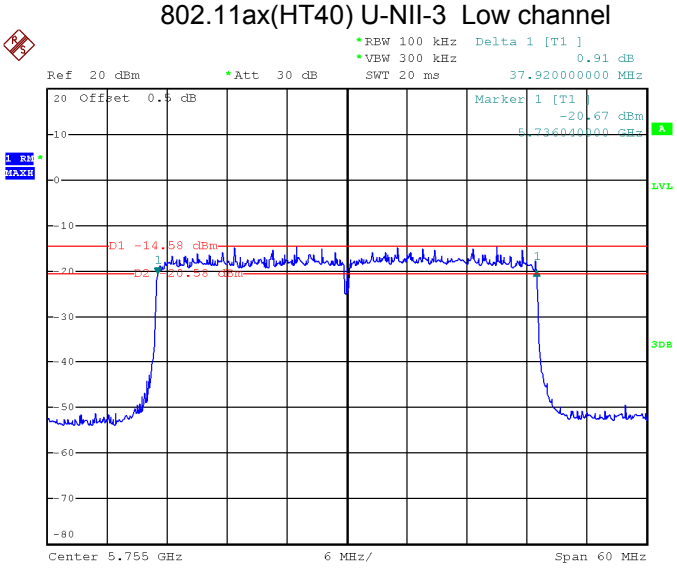
Date: 23.JUL.2024 11:52:29

802.11ax(HT20) U-NII-3 High channel



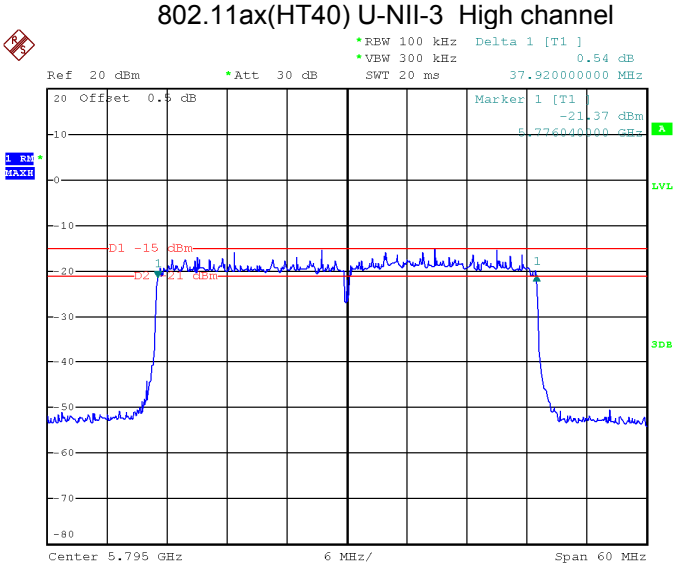
Date: 23.JUL.2024 11:55:03

802.11ax(HT40) U-NII-3 Low channel



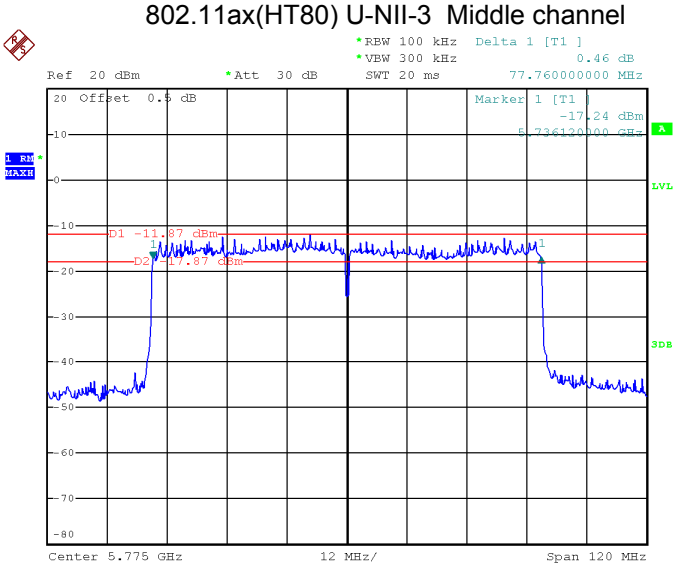
Date: 23.JUL.2024 11:36:05

802.11ax(HT40) U-NII-3 High channel



Date: 23.JUL.2024 11:37:00

802.11ax(HT80) U-NII-3 Middle channel



Date: 23.JUL.2024 11:34:44

12 26 dB Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC 47CFR Part 15 Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section D
Test Limit:	No restriction limits
Test Result:	PASS

12.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer: RBW = 1% to 5% of the OBW, VBW = 3x RBW

12.2 Test Result

Ant 0:

Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	21.36	21.12	21.24	16.68	16.68	16.68
	802.11n(HT20)	21.06	21.24	21.30	17.82	17.88	17.94
	802.11n(HT40)	40.44	/	40.56	36.72	/	36.84
	802.11ac(HT20)	21.18	21.36	21.24	17.88	17.88	17.88
	802.11ac(HT40)	40.56	/	40.56	36.84	/	37.08
	802.11ac(HT80)	80.88	/	/	/	76.08	/
	802.11ax(HT20)	21.42	21.18	21.24	19.08	19.14	19.08
	802.11ax(HT40)	41.28	/	41.40	37.08	/	38.04
	802.11ax(HT80)	81.60	/	/	/	77.28	/

Band	Operation mode	99% Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.74	16.68	16.68
	802.11n(HT20)	17.88	17.88	17.88
	802.11n(HT40)	36.72	/	36.84
	802.11ac(HT20)	17.88	17.88	17.88
	802.11ac(HT40)	36.72	/	36.84
	802.11ac(HT80)	/	76.32	/
	802.11ax(HT20)	19.02	19.02	18.96
	802.11ax(HT40)	38.16	/	38.04
	802.11ax(HT80)	/	77.76	/

Ant 1:

Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	21.12	21.24	21.36	16.62	16.68	16.68
	802.11n(HT20)	21.18	21.36	21.54	17.76	17.82	17.82
	802.11n(HT40)	40.44	/	40.56	36.60	/	36.72
	802.11ac(HT20)	21.24	21.48	21.60	17.76	17.82	17.82
	802.11ac(HT40)	40.56	/	40.80	36.60	/	36.72
	802.11ac(HT80)	/	81.12	/	/	/	75.84
	802.11ax(HT20)	21.06	21.18	21.24	19.08	19.08	19.08
	802.11ax(HT40)	41.28	/	41.40	37.80	/	38.04
	802.11ax(HT80)	/	81.60	/	/	/	77.28

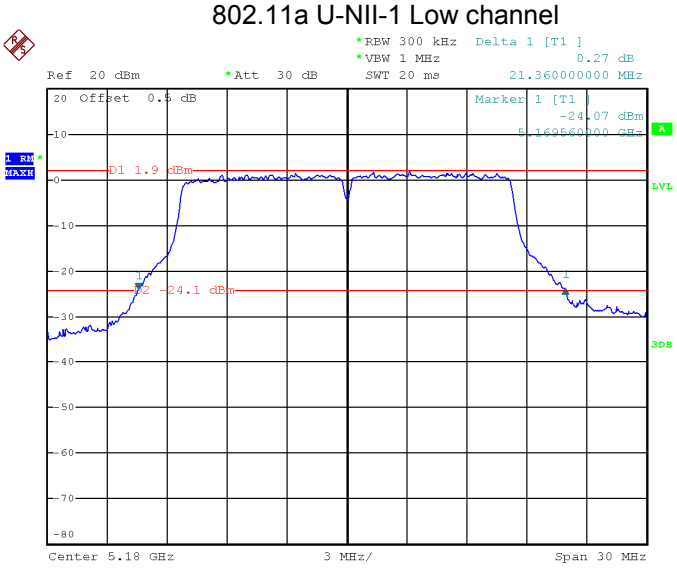
Band	Operation mode	99% Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.68	16.74	16.68
	802.11n(HT20)	17.88	17.88	17.88
	802.11n(HT40)	36.84	/	36.72
	802.11ac(HT20)	17.88	17.88	17.88
	802.11ac(HT40)	36.72	/	36.72
	802.11ac(HT80)	/	76.32	/
	802.11ax(HT20)	18.96	19.02	18.96
	802.11ax(HT40)	38.16	/	38.04
	802.11ax(HT80)	/	77.76	/

Test result plots shown as follows:

Ant 0

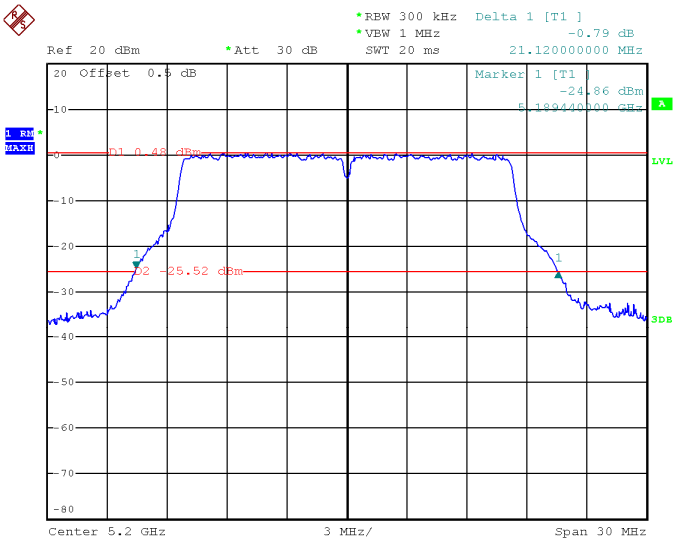
26 dB Bandwidth

802.11a U-NII-1 Low channel



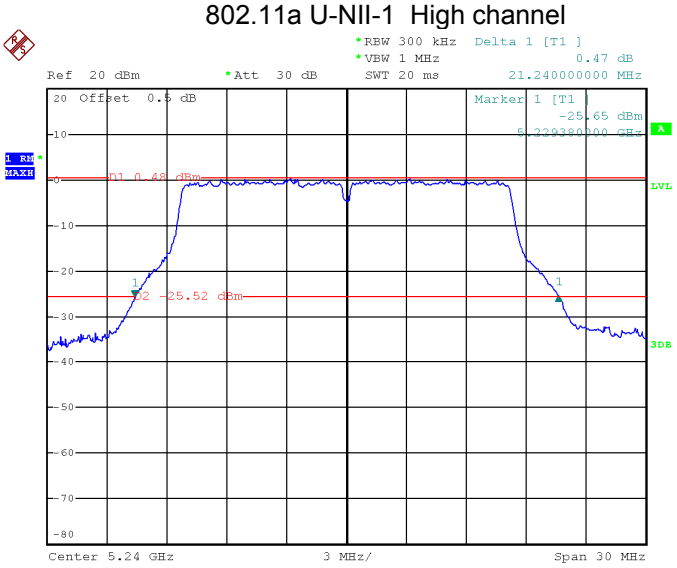
Date: 19.JUL.2024 11:30:50

802.11a U-NII-1 Middle channel



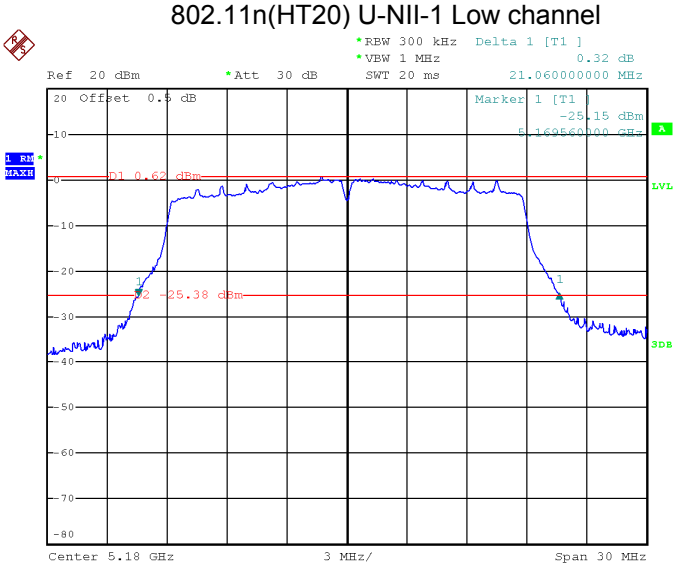
Date: 22.JUL.2024 15:13:27

802.11a U-NII-1 High channel



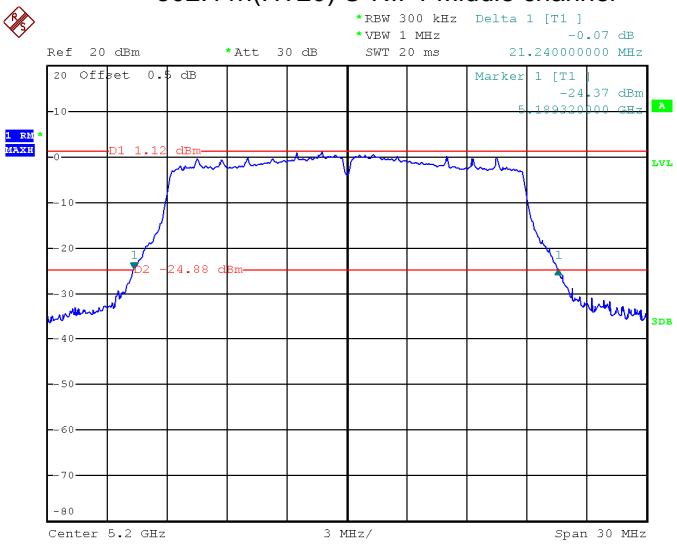
Date: 22.JUL.2024 15:12:30

802.11n(HT20) U-NII-1 Low channel



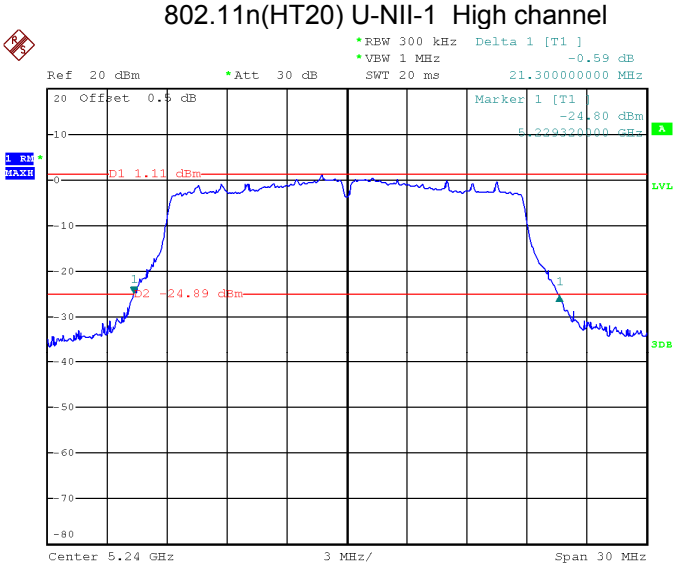
Date: 19.JUL.2024 11:29:03

802.11n(HT20) U-NII-1 Middle channel



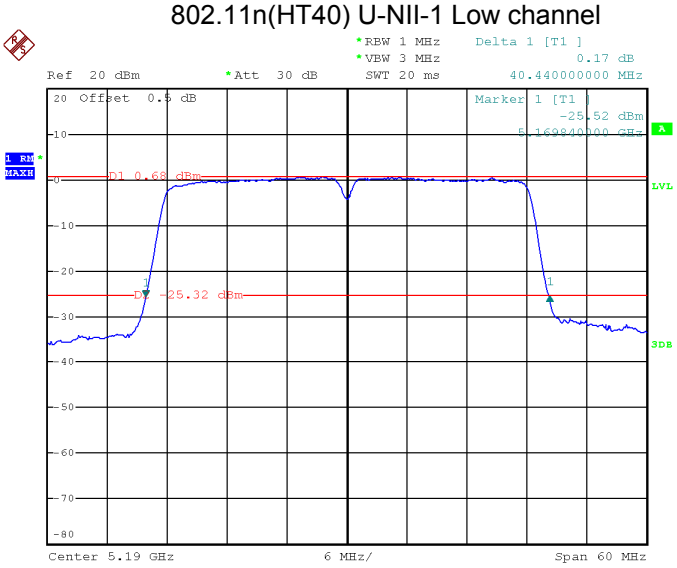
Date: 22.JUL.2024 15:09:38

802.11n(HT20) U-NII-1 High channel



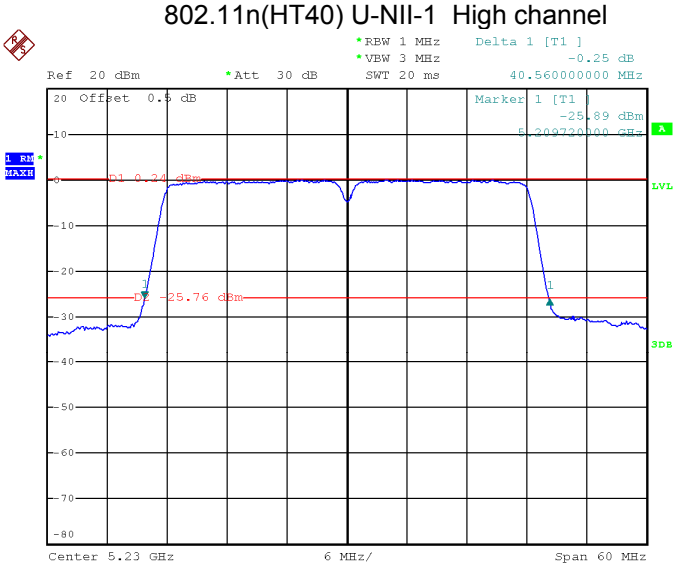
Date: 22.JUL.2024 15:10:59

802.11n(HT40) U-NII-1 Low channel



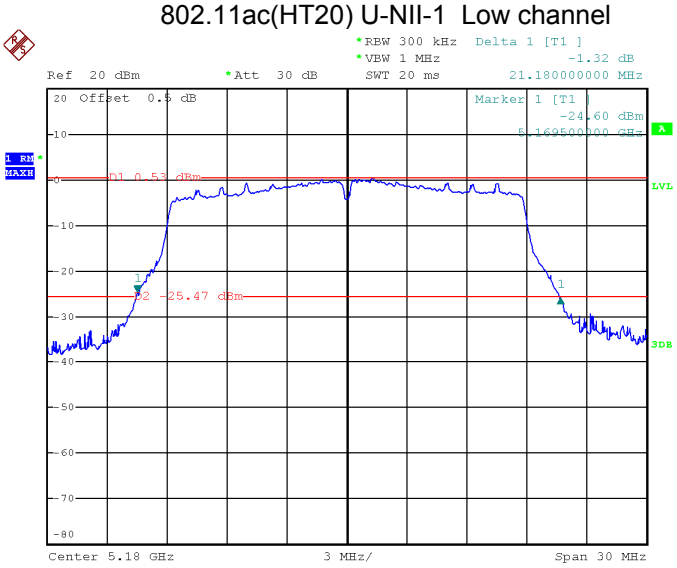
Date: 22.JUL.2024 14:49:22

802.11n(HT40) U-NII-1 High channel



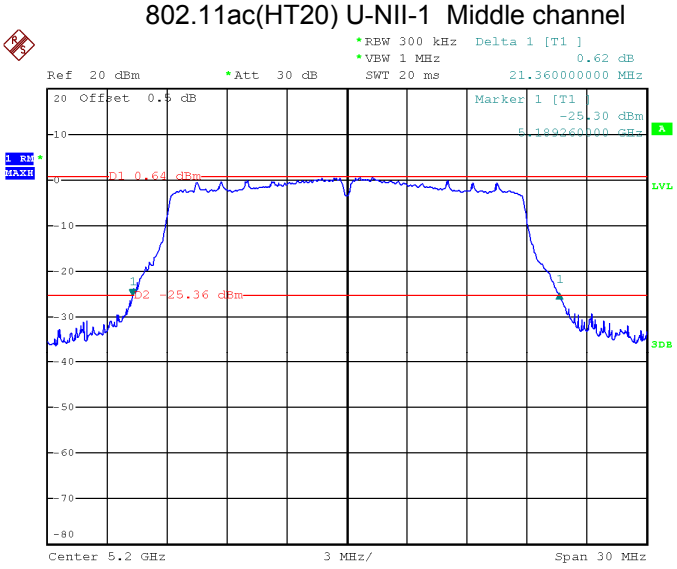
Date: 22.JUL.2024 14:54:05

802.11ac(HT20) U-NII-1 Low channel



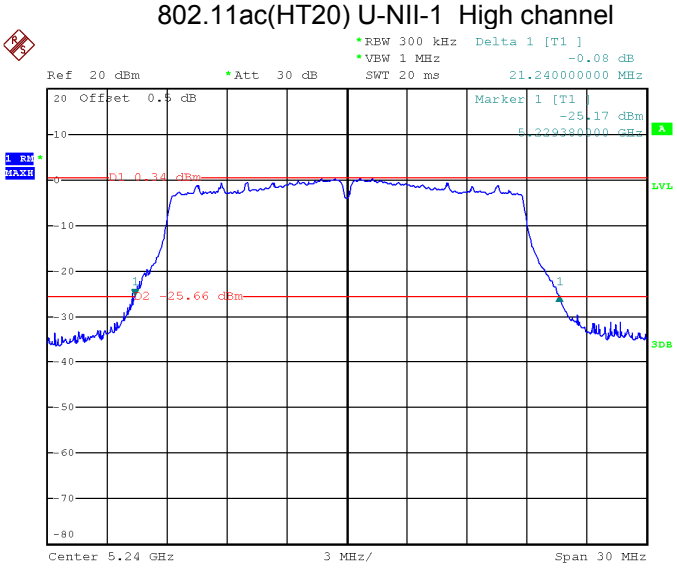
Date: 19.JUL.2024 11:27:16

802.11ac(HT20) U-NII-1 Middle channel



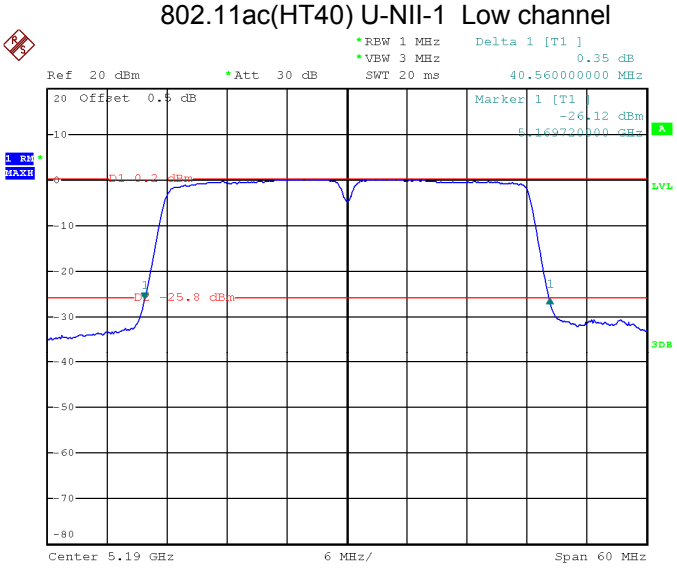
Date: 22.JUL.2024 15:14:36

802.11ac(HT20) U-NII-1 High channel



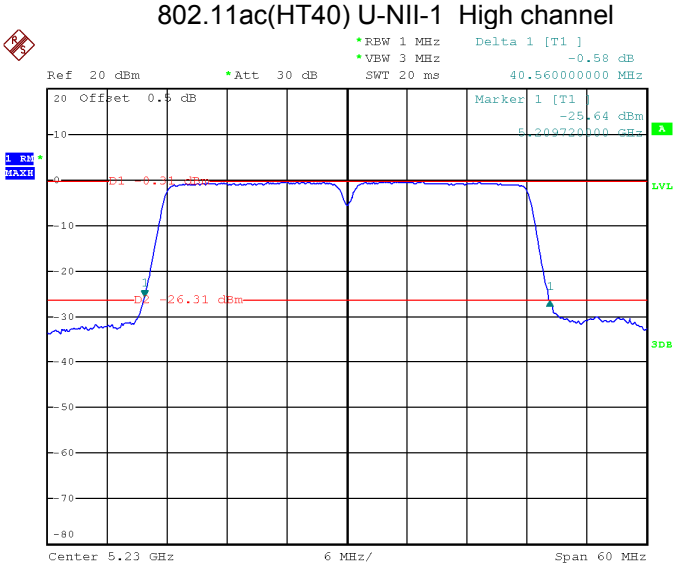
Date: 22.JUL.2024 15:15:54

802.11ac(HT40) U-NII-1 Low channel



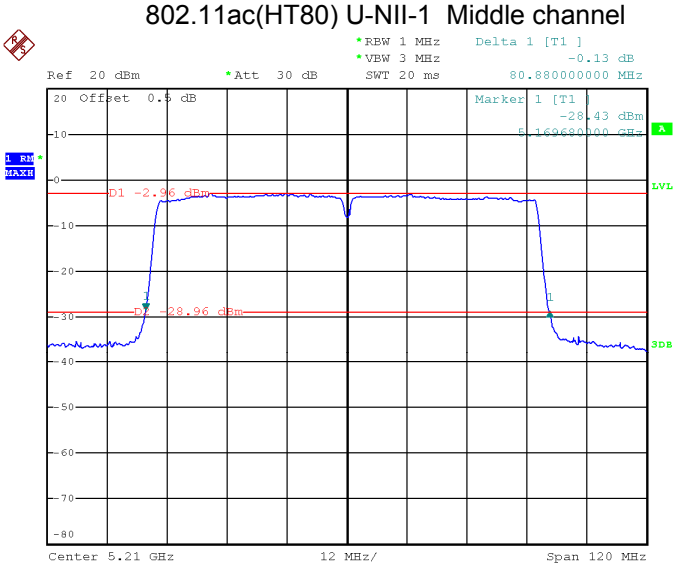
Date: 22.JUL.2024 14:51:16

802.11ac(HT40) U-NII-1 High channel



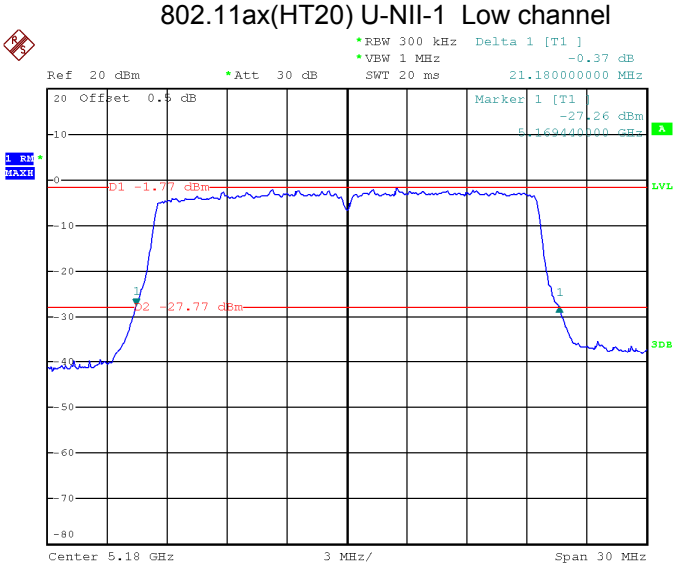
Date: 22.JUL.2024 14:52:26

802.11ac(HT80) U-NII-1 Middle channel



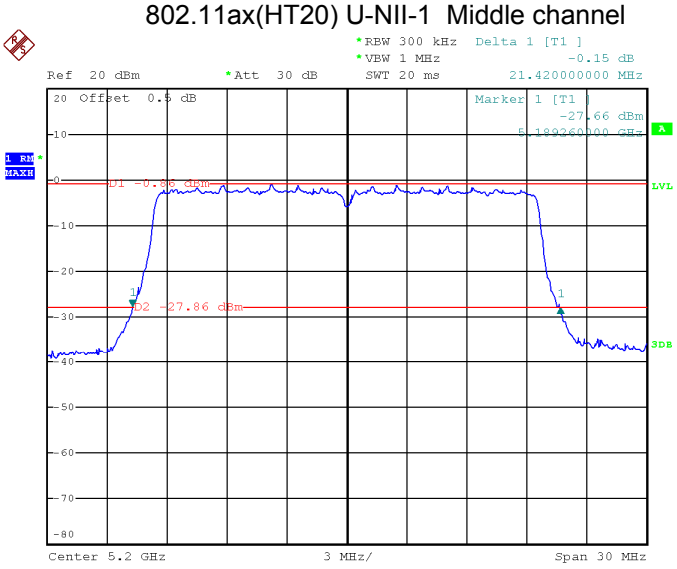
Date: 22.JUL.2024 14:59:50

802.11ax(HT20) U-NII-1 Low channel



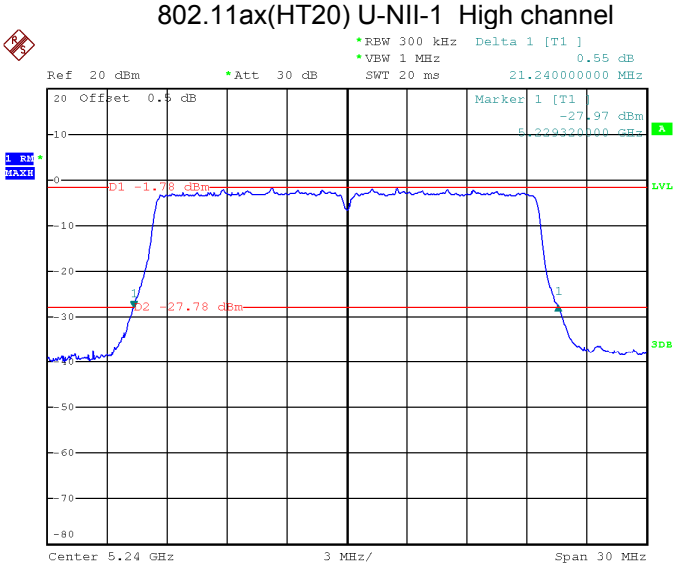
Date: 19.JUL.2024 11:26:03

802.11ax(HT20) U-NII-1 Middle channel



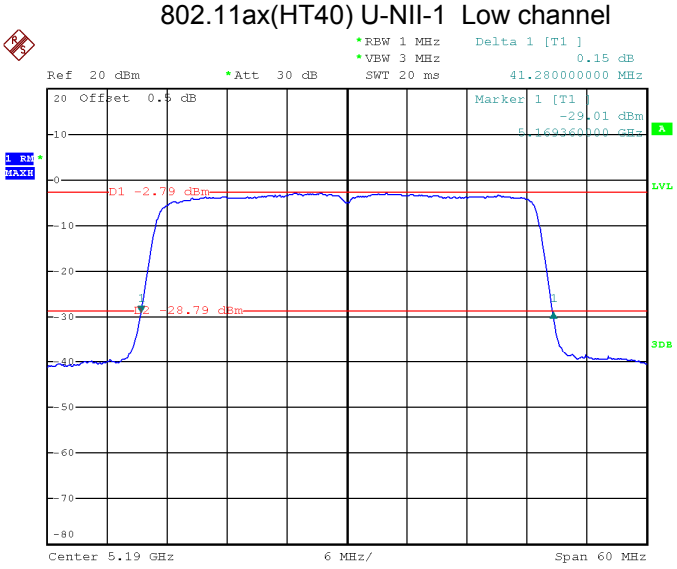
Date: 22.JUL.2024 15:18:59

802.11ax(HT20) U-NII-1 High channel



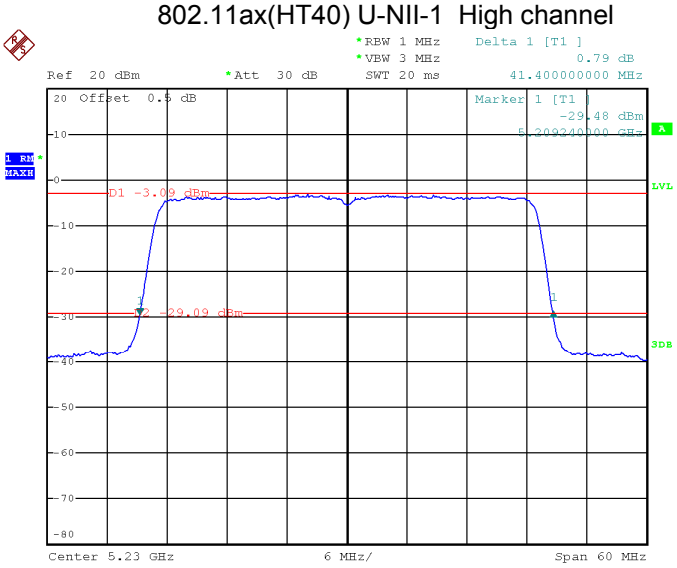
Date: 22.JUL.2024 15:17:44

802.11ax(HT40) U-NII-1 Low channel



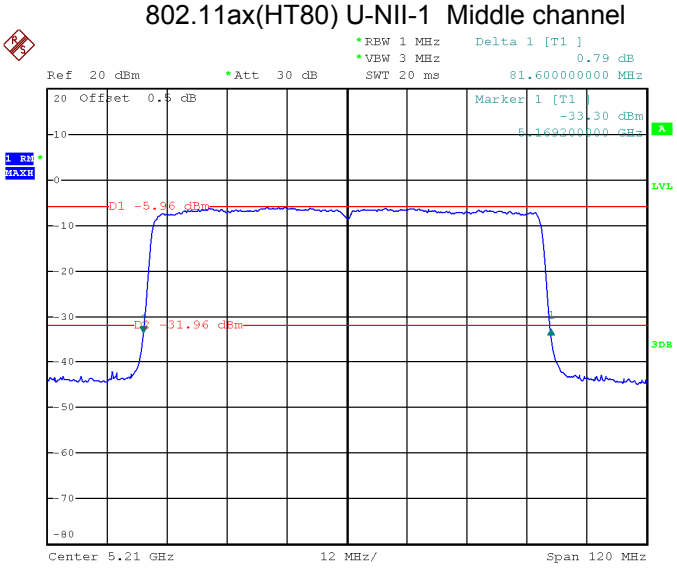
Date: 22.JUL.2024 14:56:30

802.11ax(HT40) U-NII-1 High channel



Date: 22.JUL.2024 14:55:17

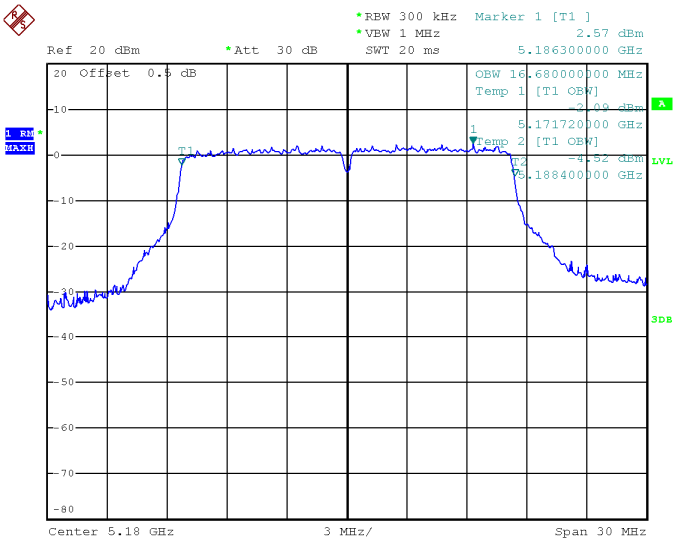
802.11ax(HT80) U-NII-1 Middle channel



Date: 22.JUL.2024 14:58:13

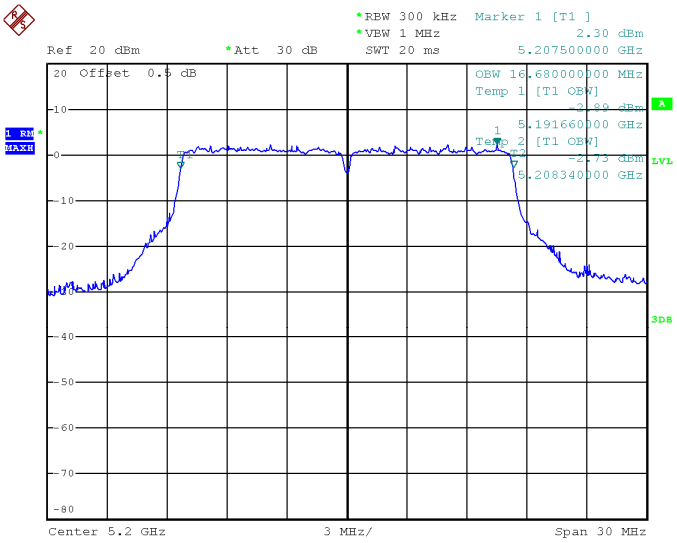
99% Occupied Bandwidth

802.11a U-NII-1 Low channel



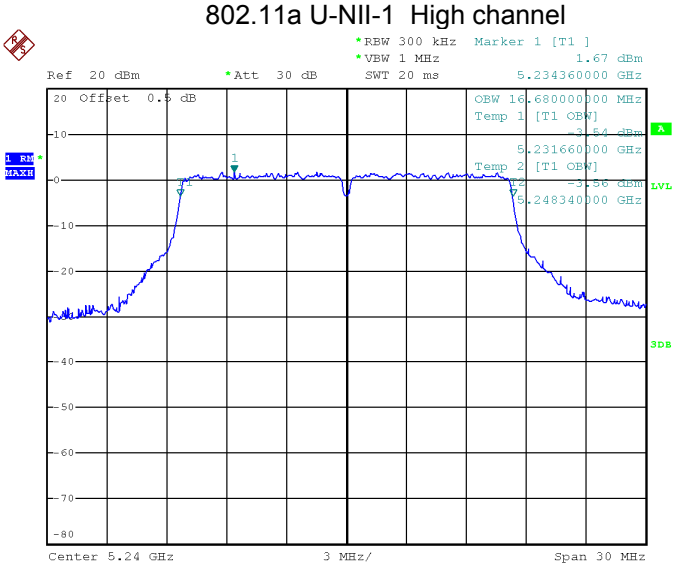
Date: 18.JUL.2024 17:07:59

802.11a U-NII-1 Middle channel



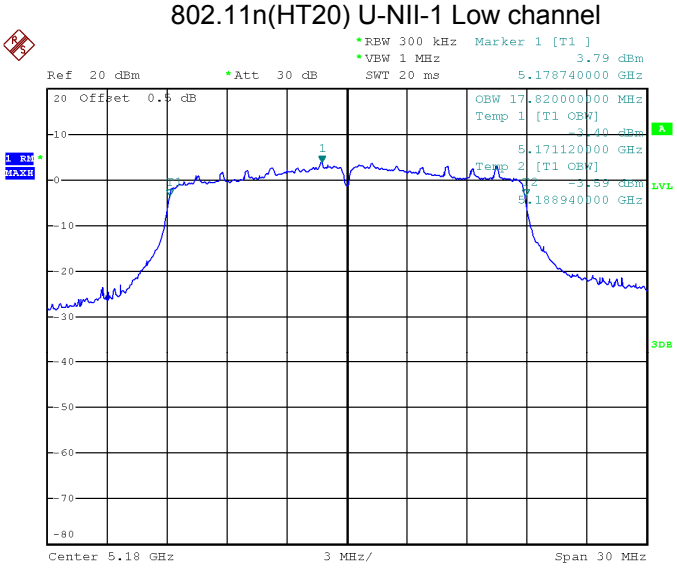
Date: 18.JUL.2024 17:07:17

802.11a U-NII-1 High channel



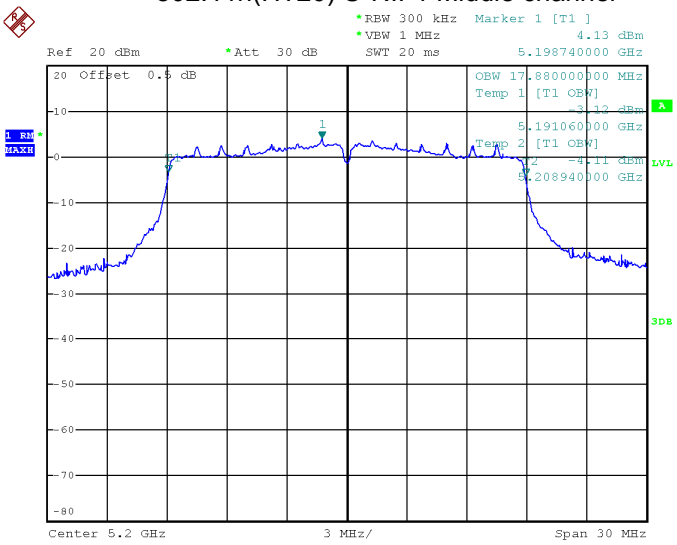
Date: 18.JUL.2024 17:08:37

802.11n(HT20) U-NII-1 Low channel



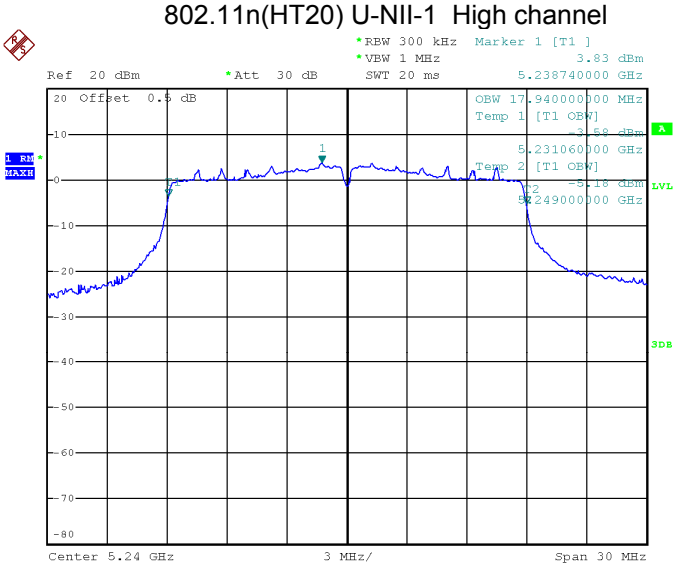
Date: 18.JUL.2024 17:14:09

802.11n(HT20) U-NII-1 Middle channel



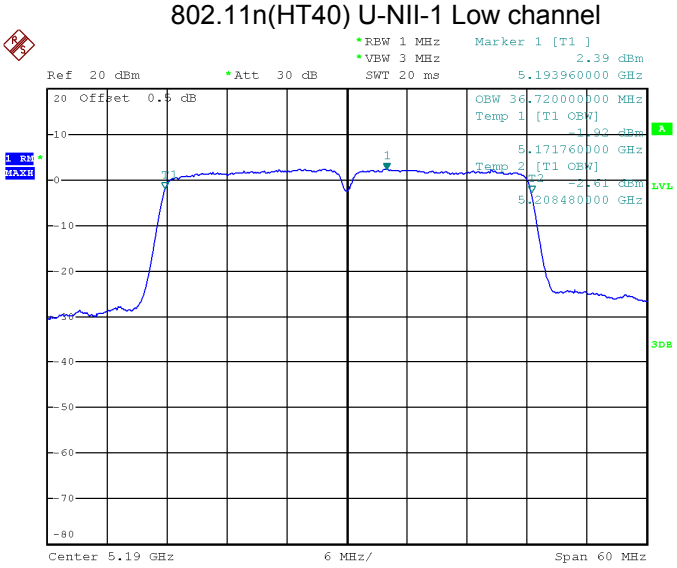
Date: 18.JUL.2024 17:12:58

802.11n(HT20) U-NII-1 High channel



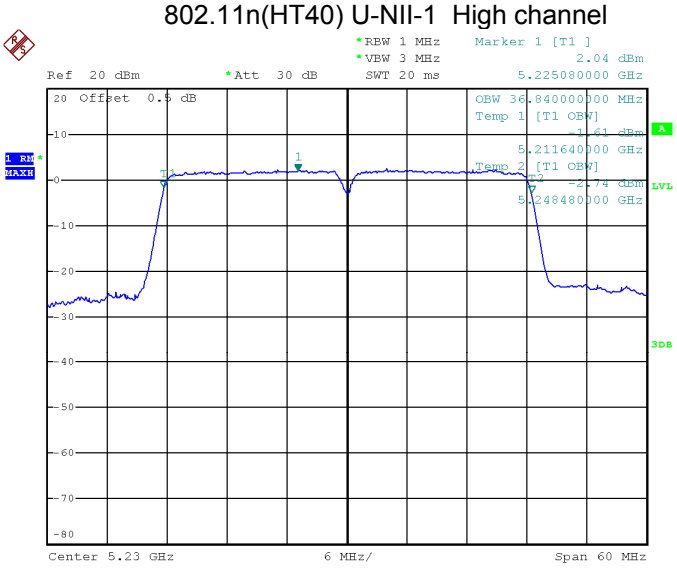
Date: 18.JUL.2024 17:11:21

802.11n(HT40) U-NII-1 Low channel



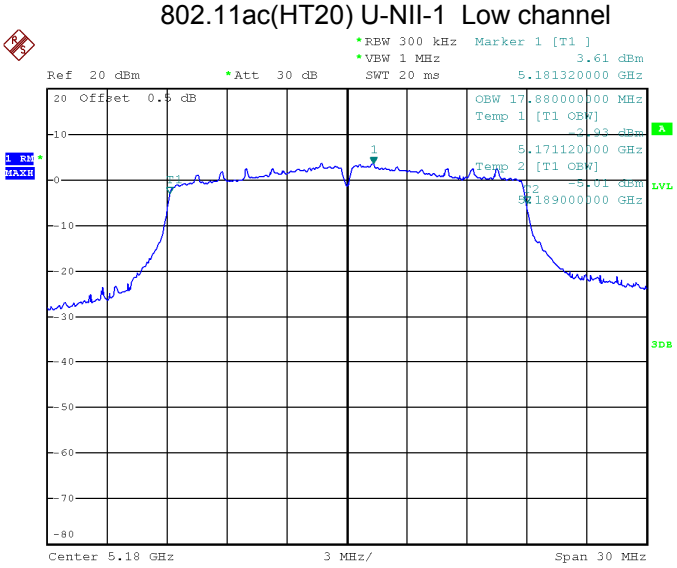
Date: 18.JUL.2024 17:28:59

802.11n(HT40) U-NII-1 High channel



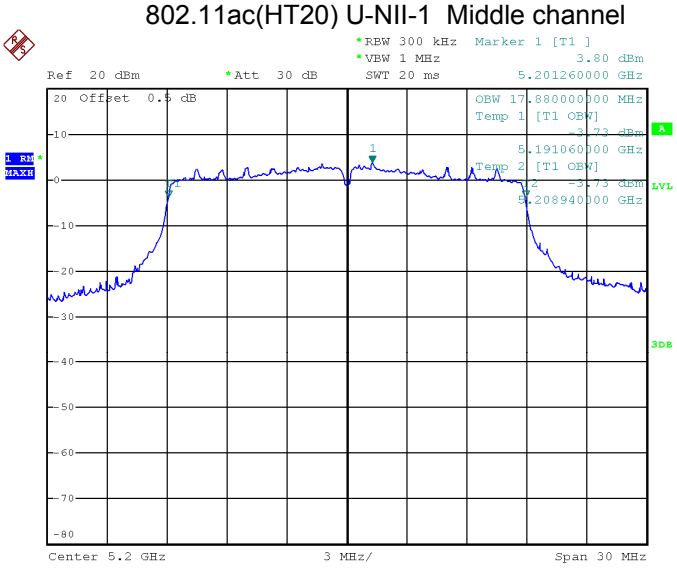
Date: 18.JUL.2024 17:30:10

802.11ac(HT20) U-NII-1 Low channel



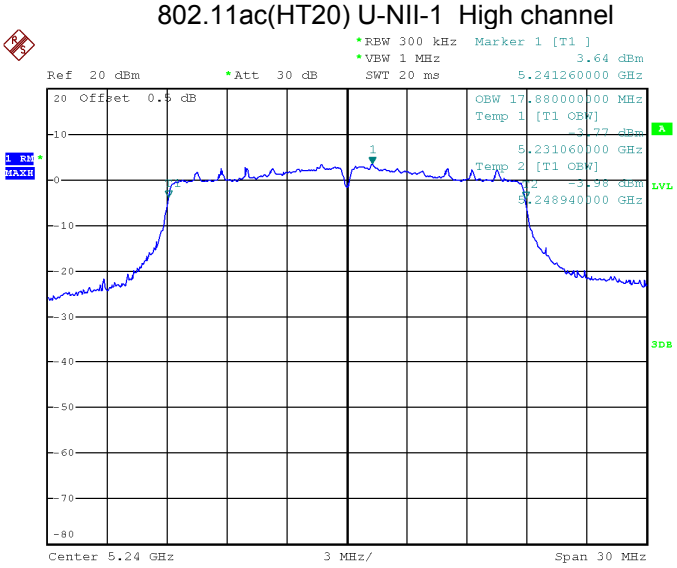
Date: 18.JUL.2024 17:16:30

802.11ac(HT20) U-NII-1 Middle channel



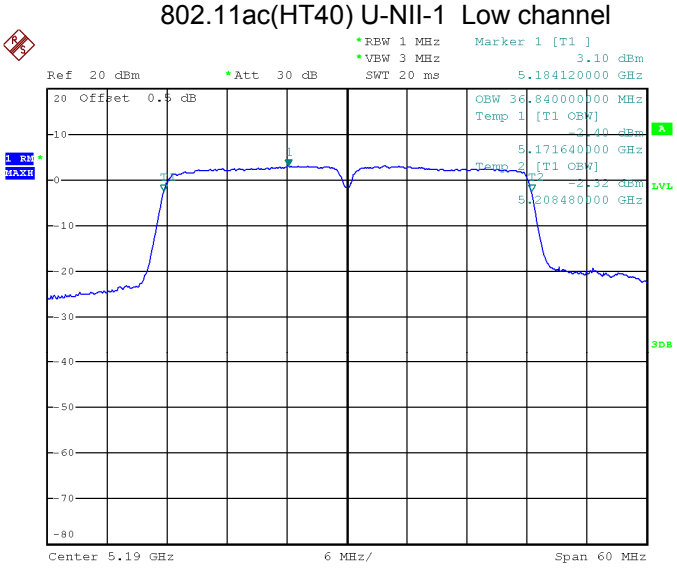
Date: 18.JUL.2024 17:19:09

802.11ac(HT20) U-NII-1 High channel



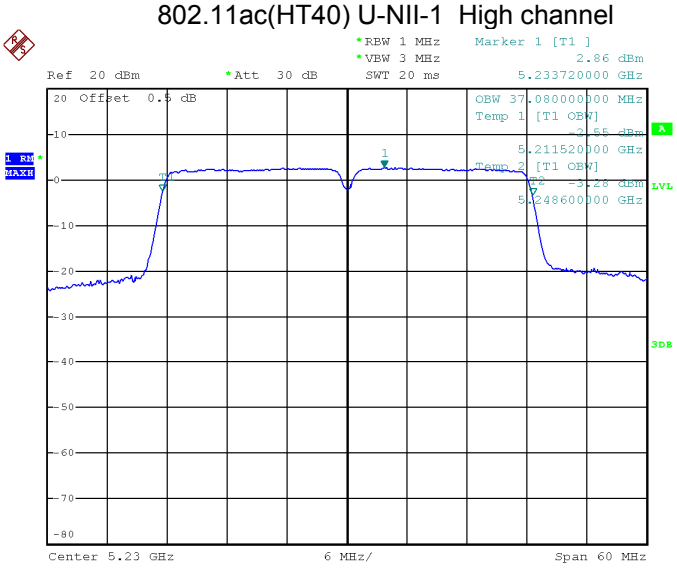
Date: 18.JUL.2024 17:21:12

802.11ac(HT40) U-NII-1 Low channel



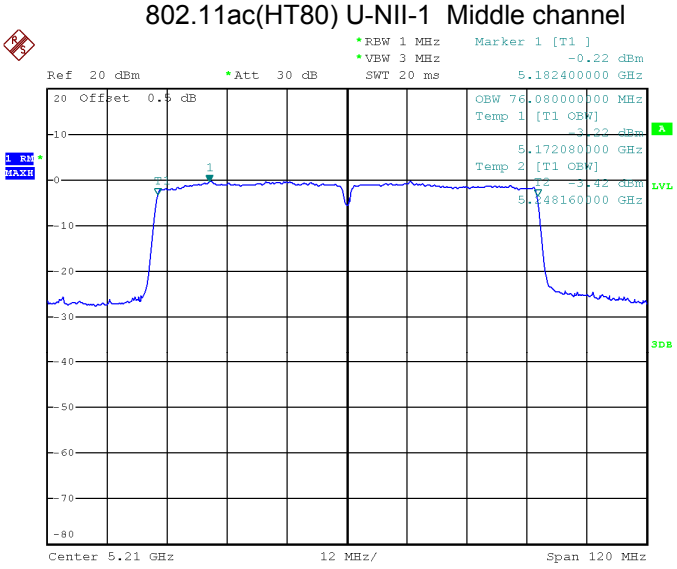
Date: 18.JUL.2024 17:32:10

802.11ac(HT40) U-NII-1 High channel



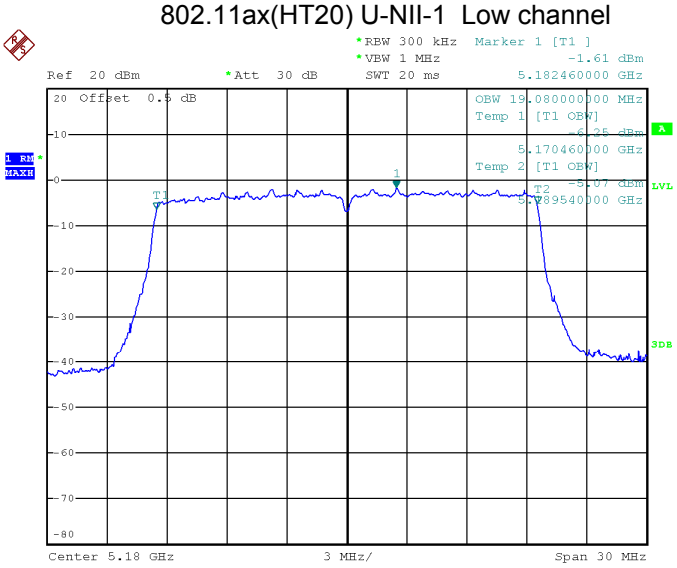
Date: 18.JUL.2024 17:31:32

802.11ac(HT80) U-NII-1 Middle channel



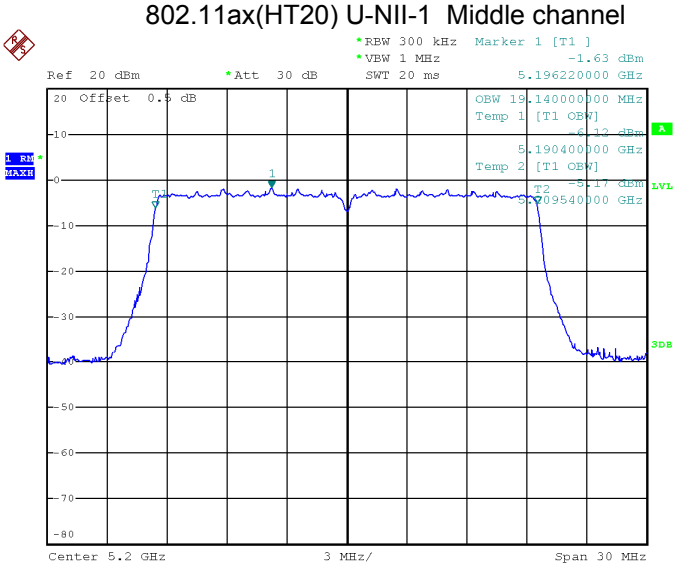
Date: 18.JUL.2024 17:37:42

802.11ax(HT20) U-NII-1 Low channel



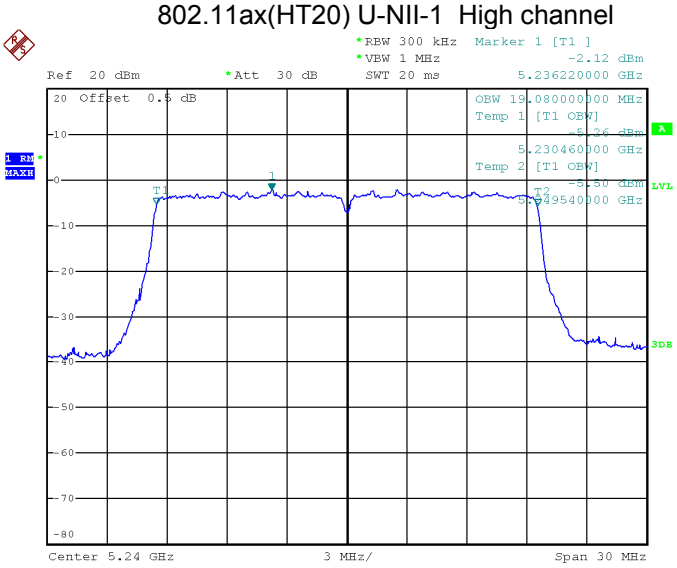
Date: 18.JUL.2024 17:26:42

802.11ax(HT20) U-NII-1 Middle channel



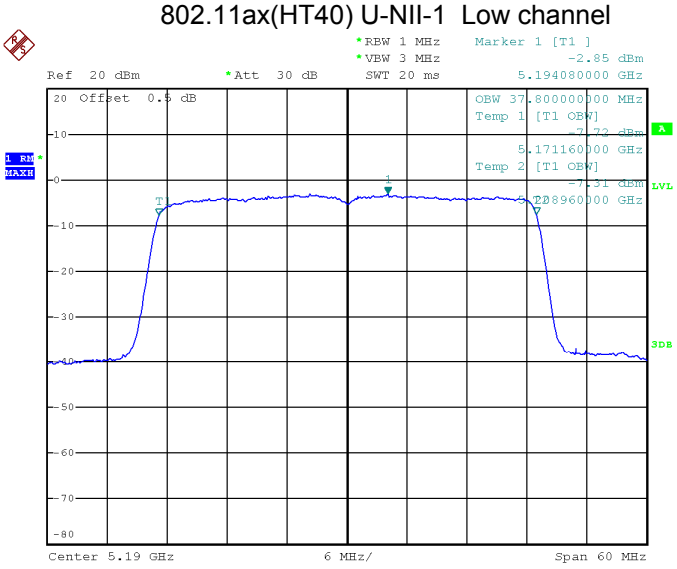
Date: 18.JUL.2024 17:26:00

802.11ax(HT20) U-NII-1 High channel



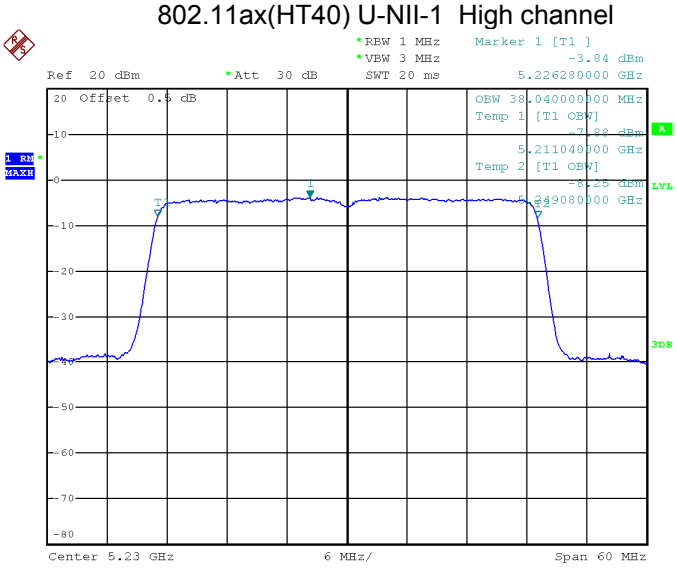
Date: 18.JUL.2024 17:25:18

802.11ax(HT40) U-NII-1 Low channel



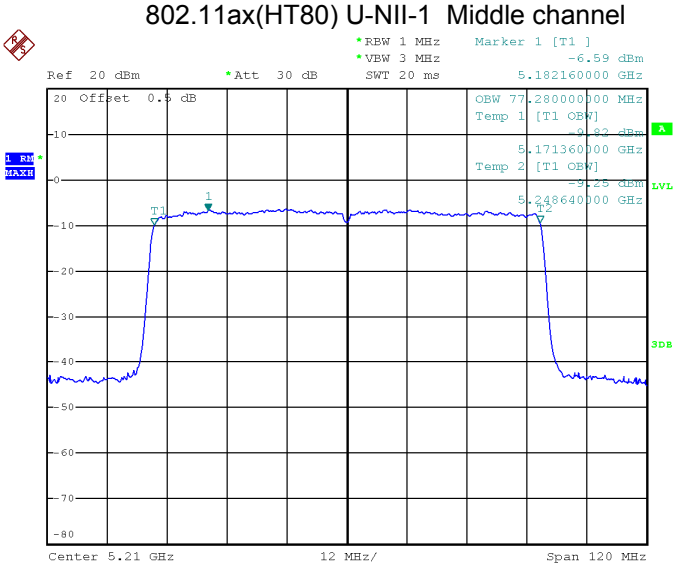
Date: 18.JUL.2024 17:33:27

802.11ax(HT40) U-NII-1 High channel



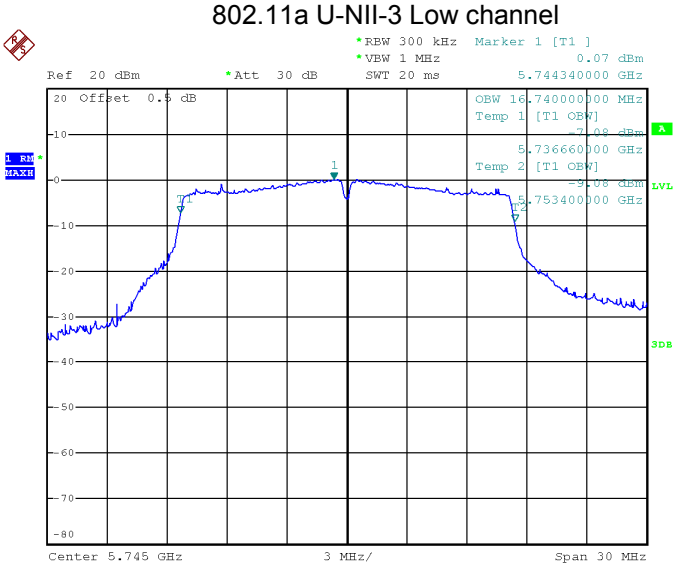
Date: 18.JUL.2024 17:34:08

802.11ax(HT80) U-NII-1 Middle channel



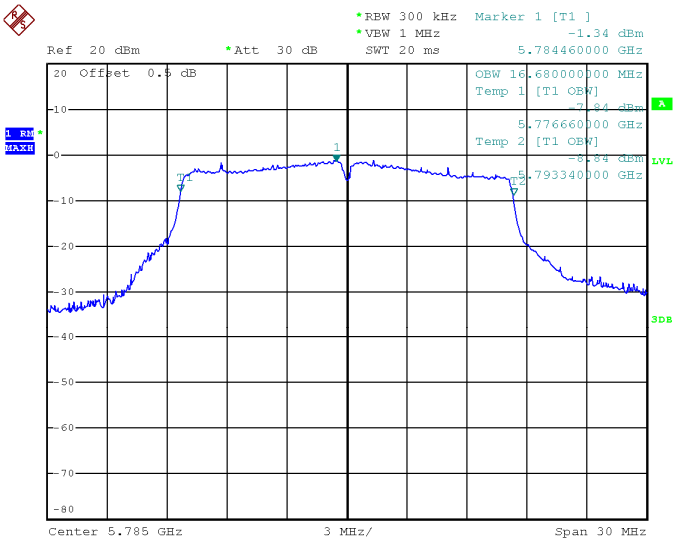
Date: 18.JUL.2024 17:37:01

802.11a U-NII-3 Low channel



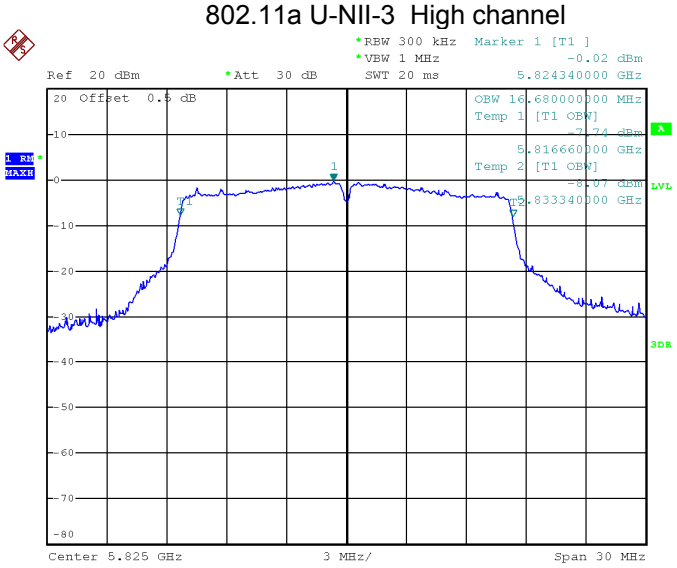
Date: 19.JUL.2024 16:45:30

802.11a U-NII-3 Middle channel



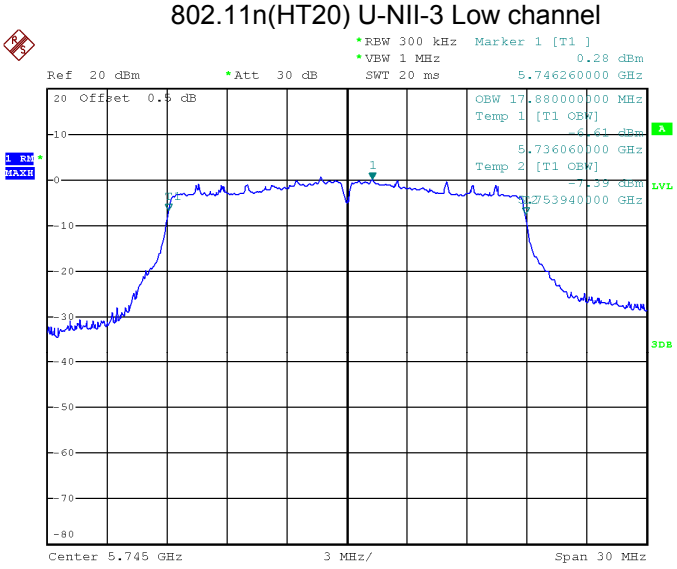
Date: 19.JUL.2024 17:26:13

802.11a U-NII-3 High channel



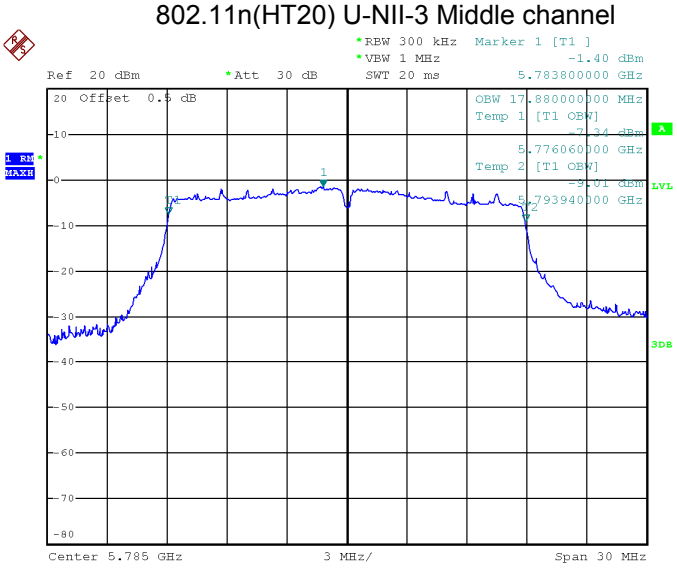
Date: 19.JUL.2024 17:21:31

802.11n(HT20) U-NII-3 Low channel



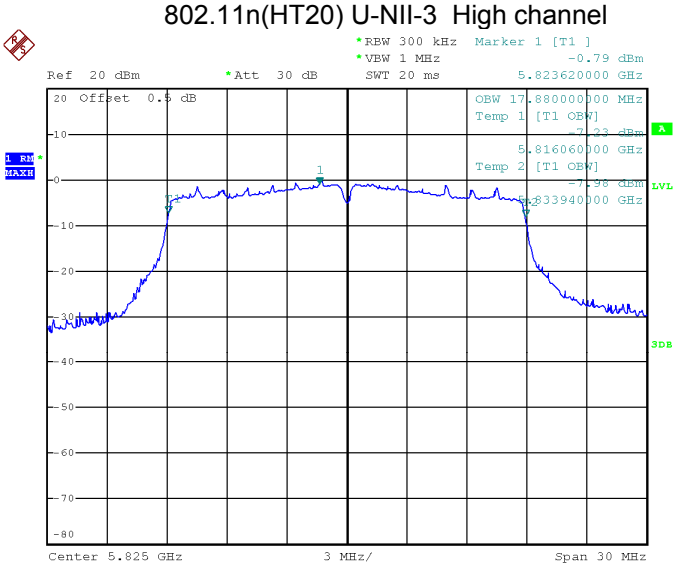
Date: 19.JUL.2024 16:46:14

802.11n(HT20) U-NII-3 Middle channel



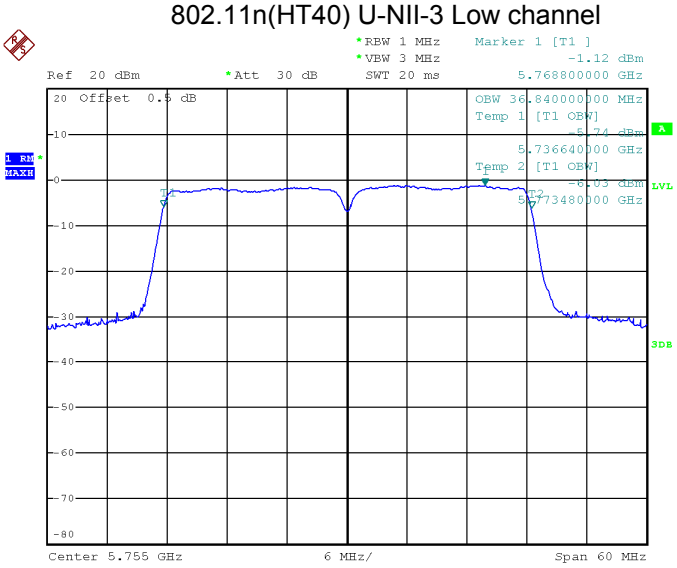
Date: 19.JUL.2024 17:25:25

802.11n(HT20) U-NII-3 High channel



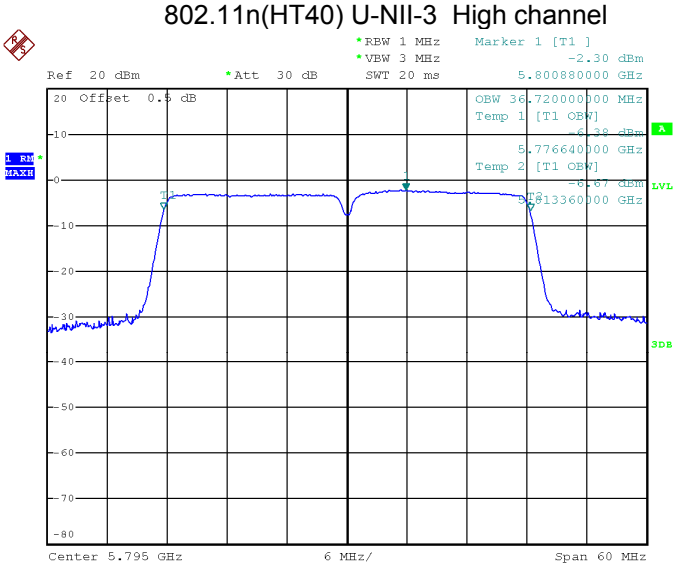
Date: 19.JUL.2024 17:22:14

802.11n(HT40) U-NII-3 Low channel



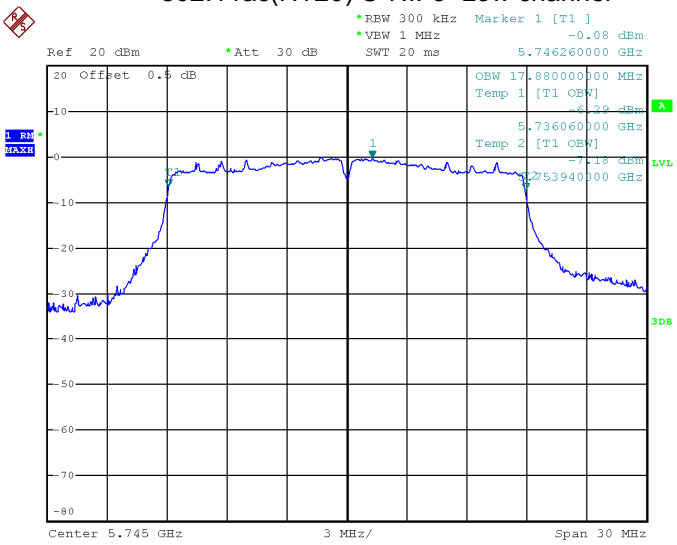
Date: 19.JUL.2024 17:05:46

802.11n(HT40) U-NII-3 High channel



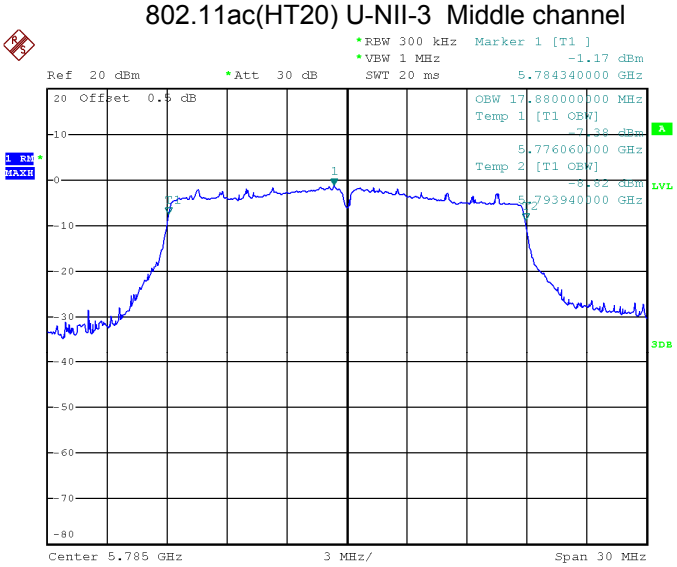
Date: 19.JUL.2024 17:19:23

802.11ac(HT20) U-NII-3 Low channel



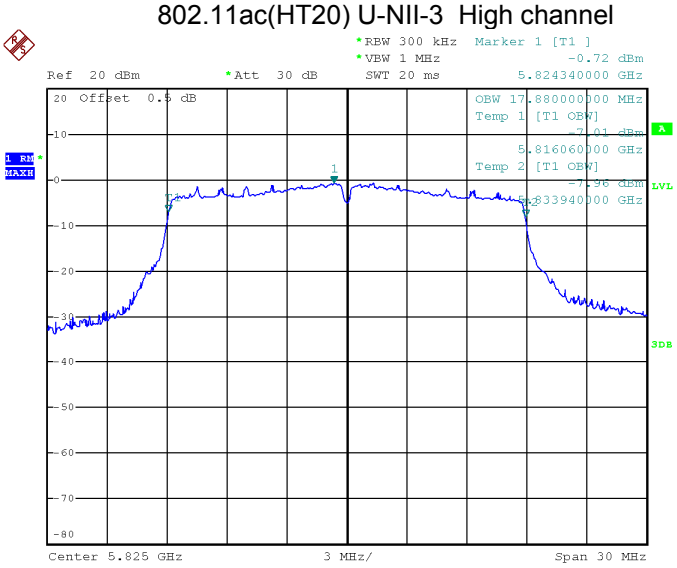
Date: 19.JUL.2024 16:47:07

802.11ac(HT20) U-NII-3 Middle channel



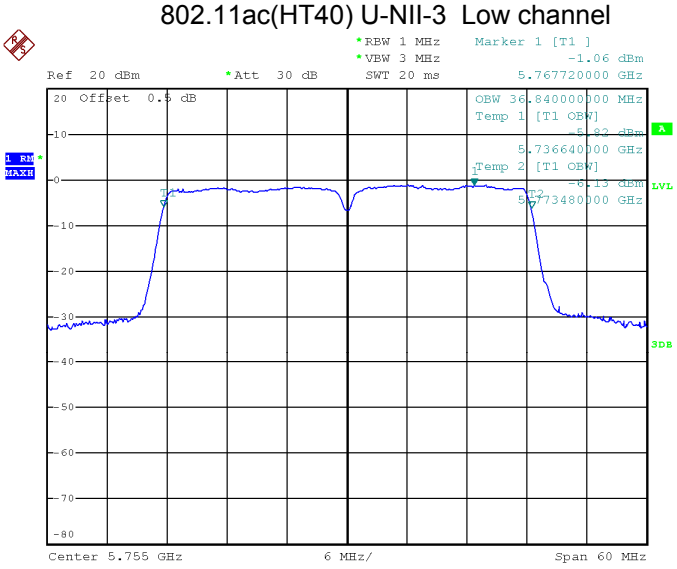
Date: 19.JUL.2024 17:24:45

802.11ac(HT20) U-NII-3 High channel



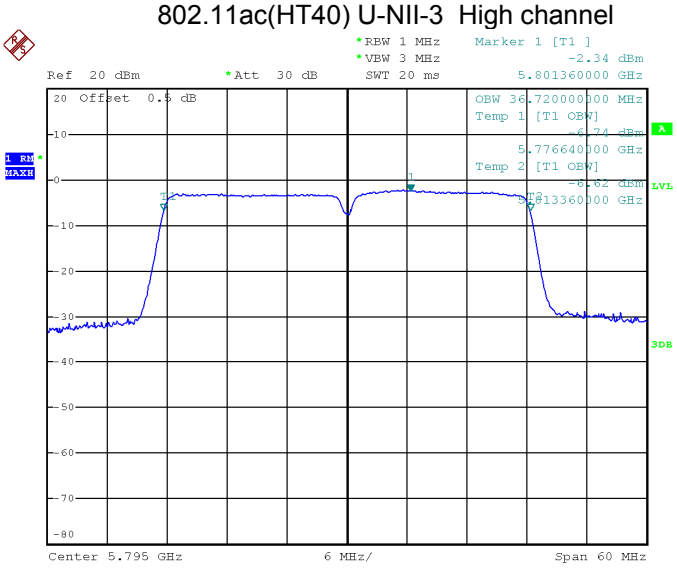
Date: 19.JUL.2024 17:22:50

802.11ac(HT40) U-NII-3 Low channel



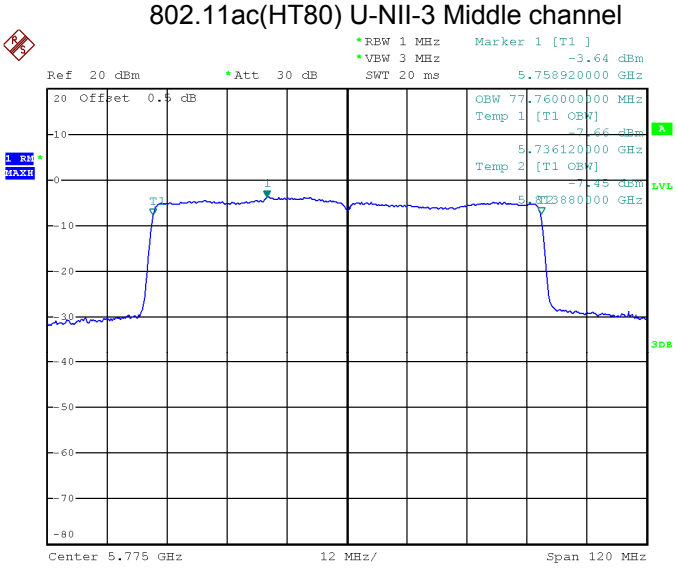
Date: 19.JUL.2024 17:06:42

802.11ac(HT40) U-NII-3 High channel



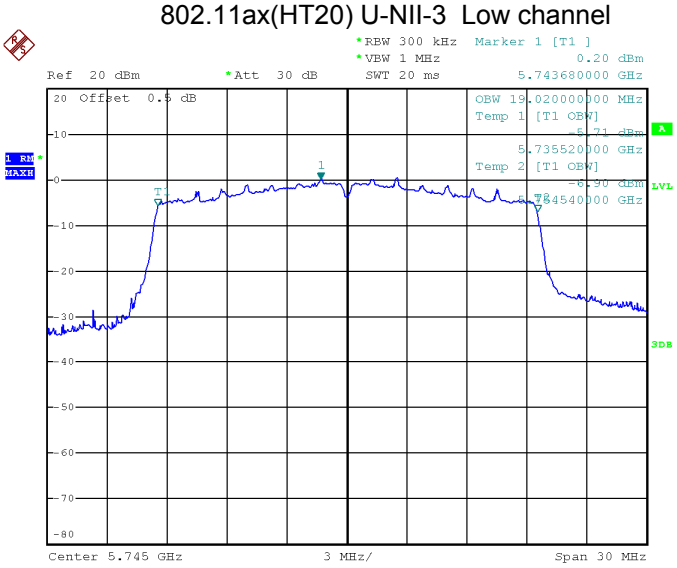
Date: 19.JUL.2024 17:18:38

802.11ac(HT80) U-NII-3 Middle channel



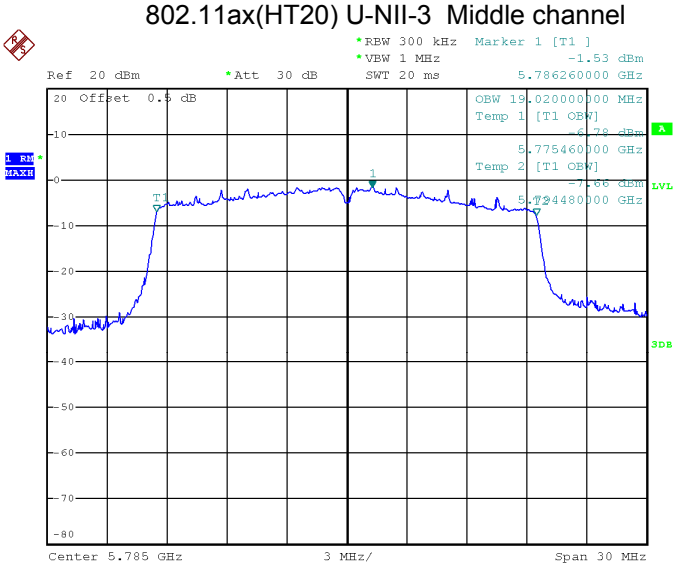
Date: 19.JUL.2024 17:03:18

802.11ax(HT20) U-NII-3 Low channel



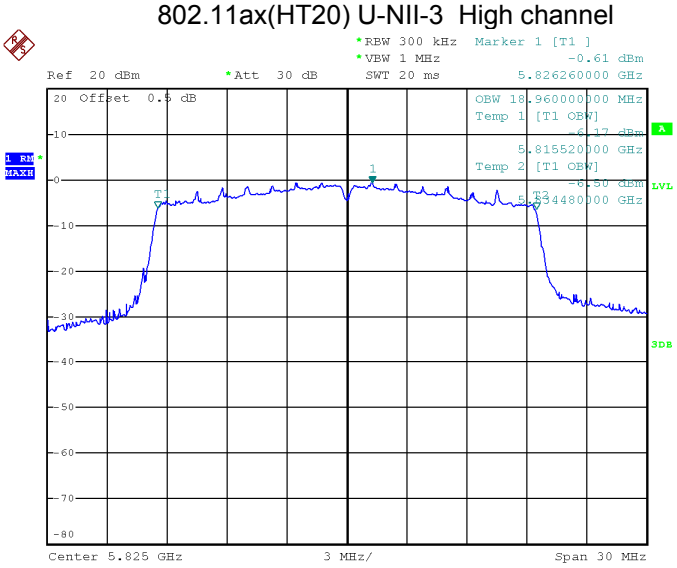
Date: 19.JUL.2024 16:48:26

802.11ax(HT20) U-NII-3 Middle channel



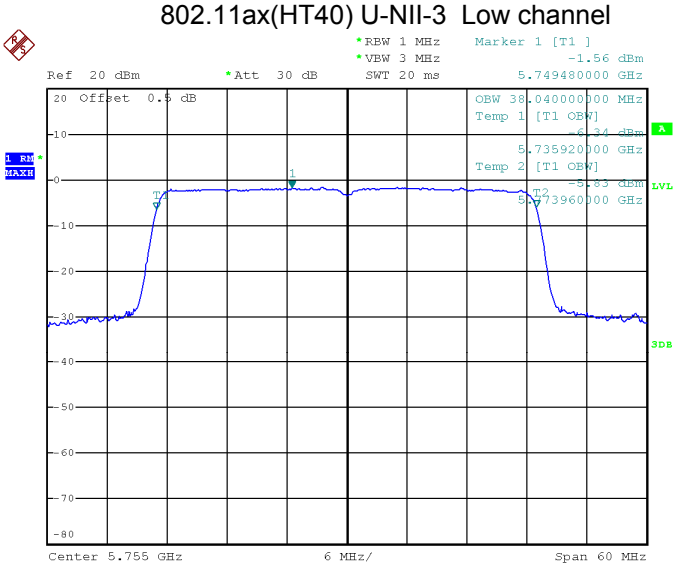
Date: 19.JUL.2024 17:24:01

802.11ax(HT20) U-NII-3 High channel



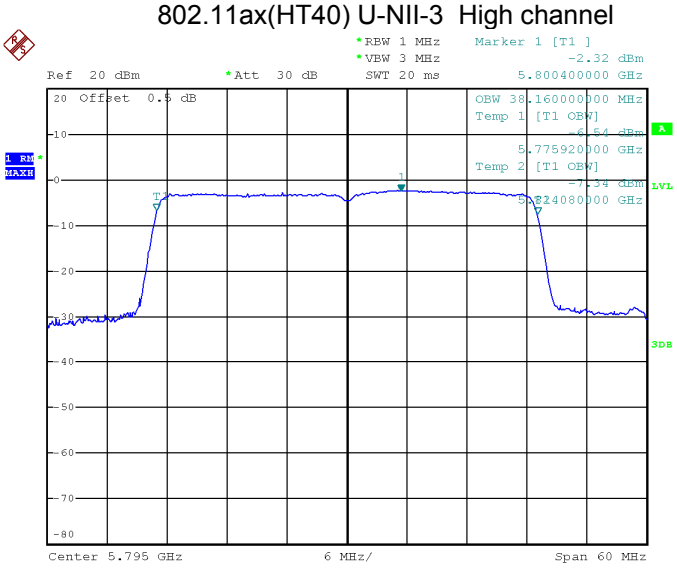
Date: 19.JUL.2024 17:23:20

802.11ax(HT40) U-NII-3 Low channel



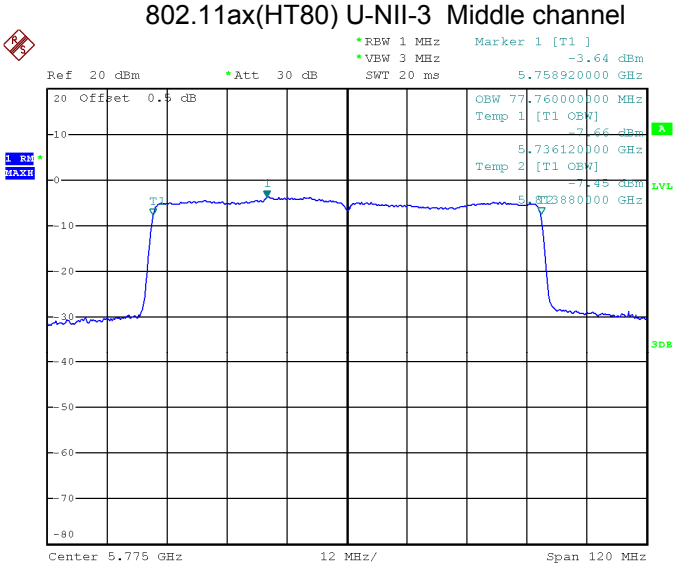
Date: 19.JUL.2024 17:07:15

802.11ax(HT40) U-NII-3 High channel



Date: 19.JUL.2024 17:18:09

802.11ax(HT80) U-NII-3 Middle channel

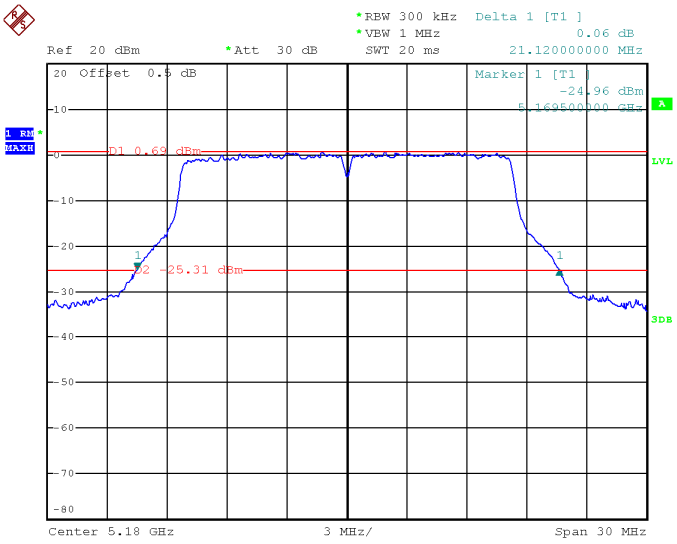


Date: 19.JUL.2024 17:03:18

ANT 1

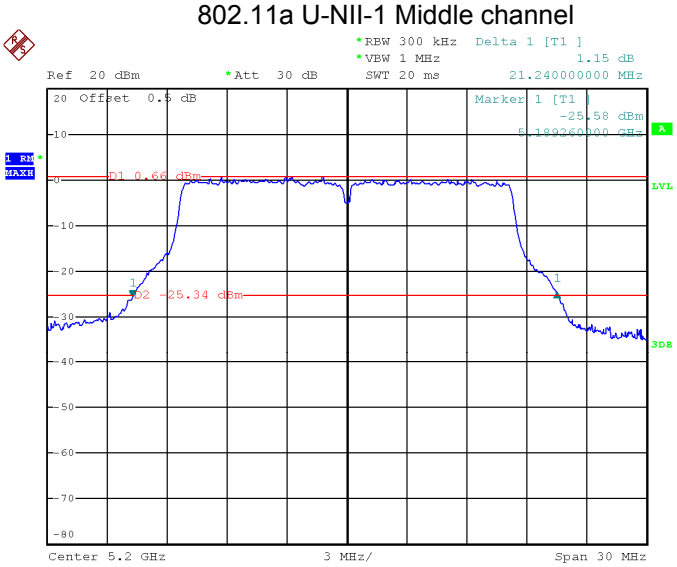
26 dB Bandwidth

802.11a U-NII-1 Low channel



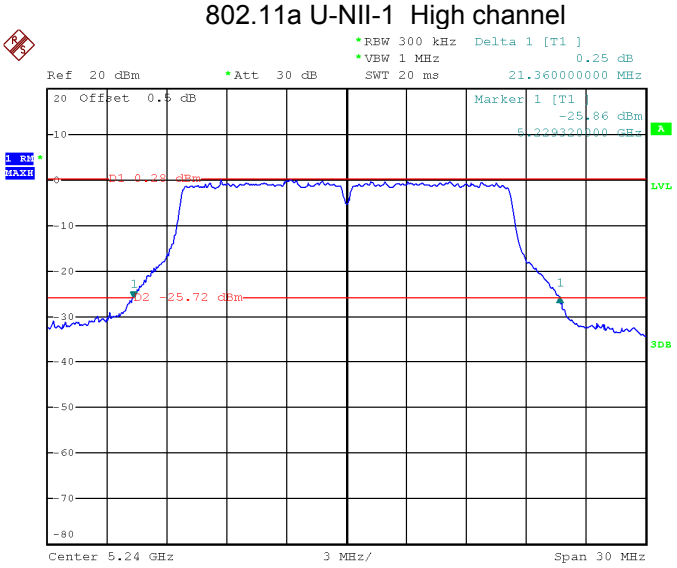
Date: 22.JUL.2024 10:20:30

802.11a U-NII-1 Middle channel



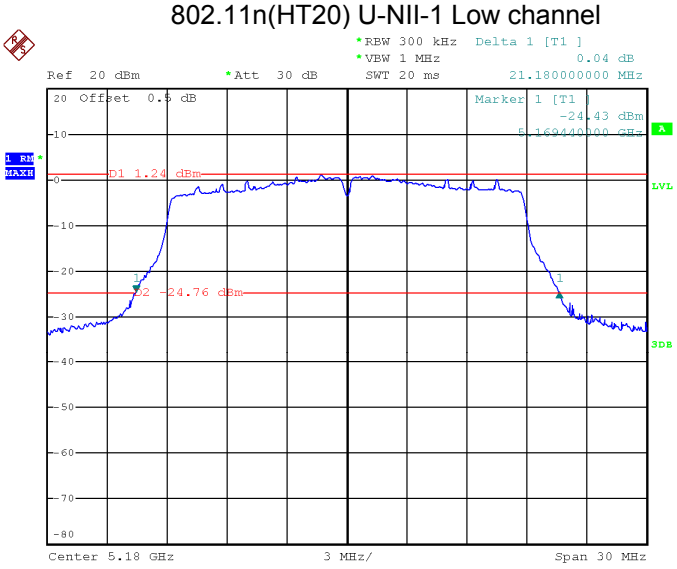
Date: 22.JUL.2024 10:18:41

802.11a U-NII-1 High channel



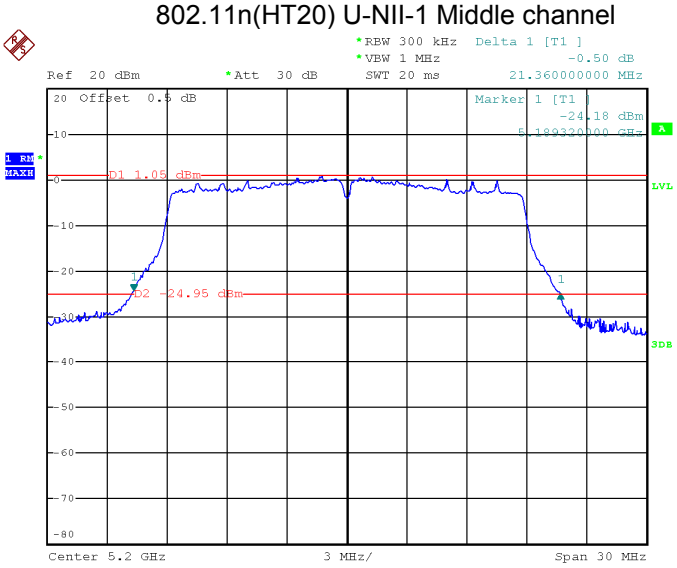
Date: 22.JUL.2024 10:01:47

802.11n(HT20) U-NII-1 Low channel



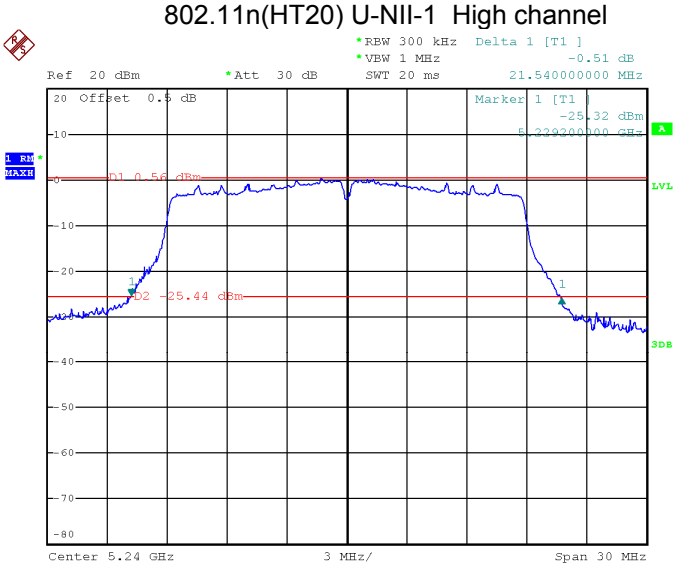
Date: 22.JUL.2024 10:23:44

802.11n(HT20) U-NII-1 Middle channel



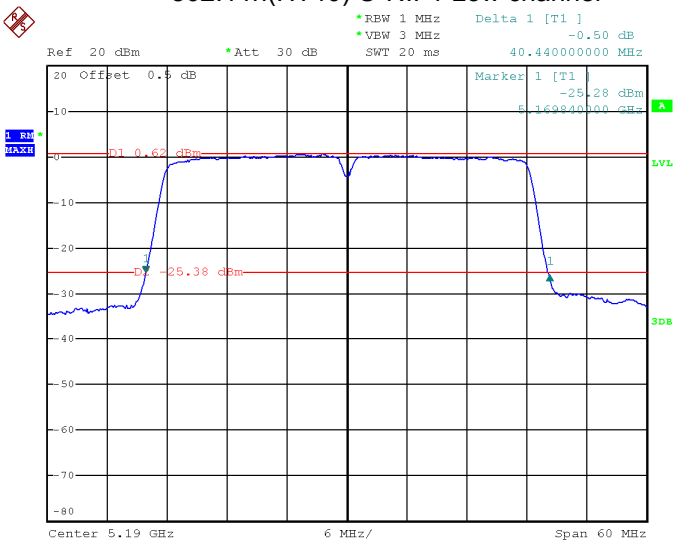
Date: 22.JUL.2024 10:24:49

802.11n(HT20) U-NII-1 High channel



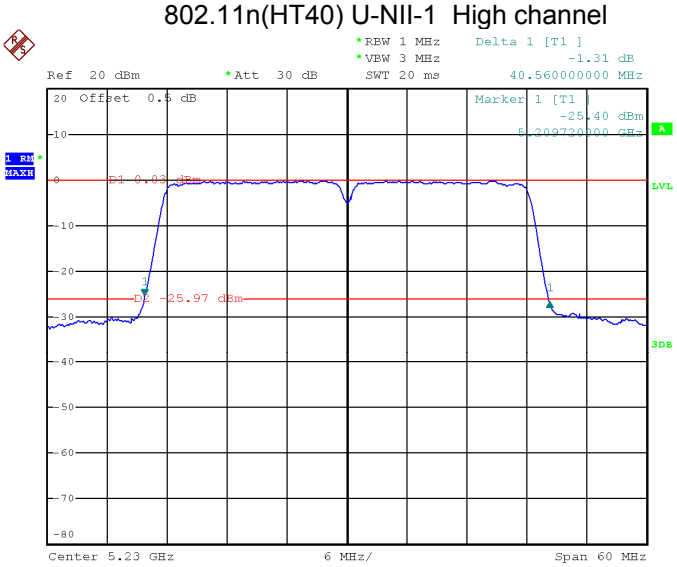
Date: 22.JUL.2024 10:26:10

802.11n(HT40) U-NII-1 Low channel



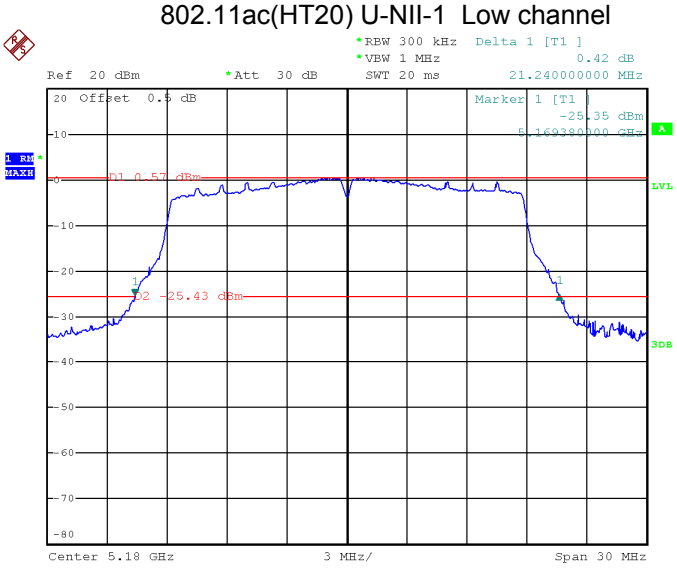
Date: 22.JUL.2024 10:56:50

802.11n(HT40) U-NII-1 High channel



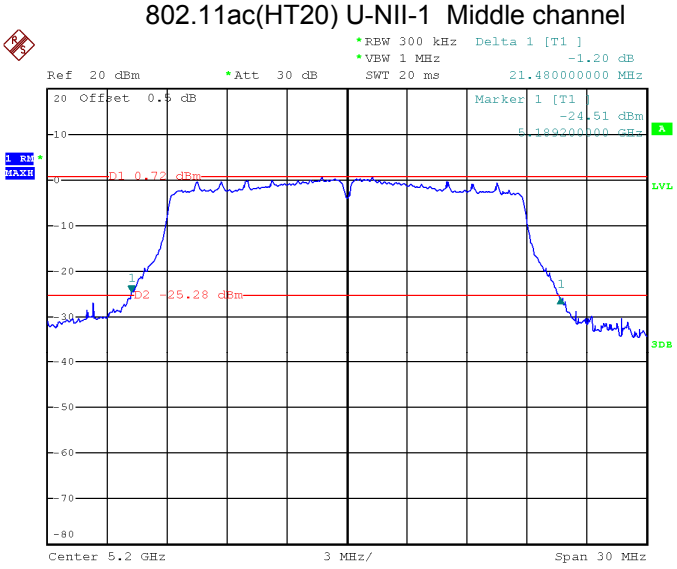
Date: 22.JUL.2024 10:59:05

802.11ac(HT20) U-NII-1 Low channel



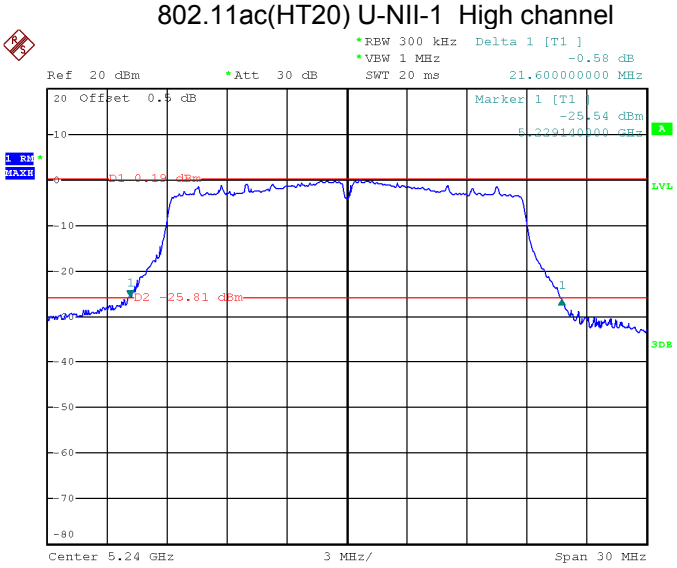
Date: 22.JUL.2024 10:31:20

802.11ac(HT20) U-NII-1 Middle channel



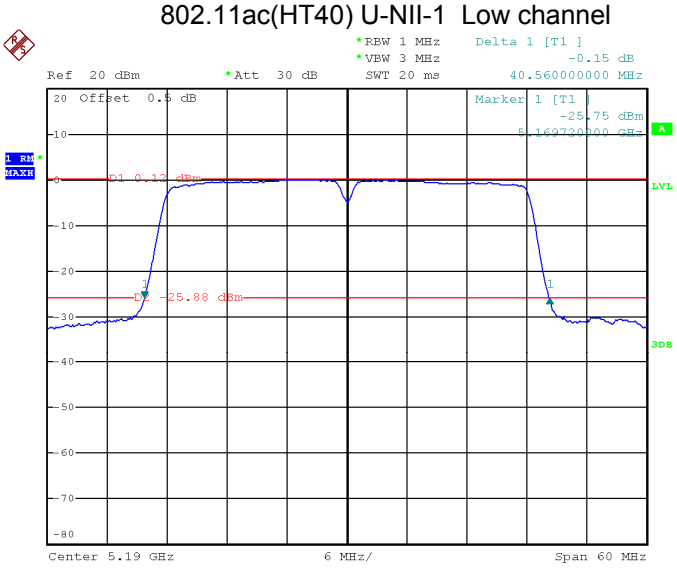
Date: 22.JUL.2024 10:30:11

802.11ac(HT20) U-NII-1 High channel



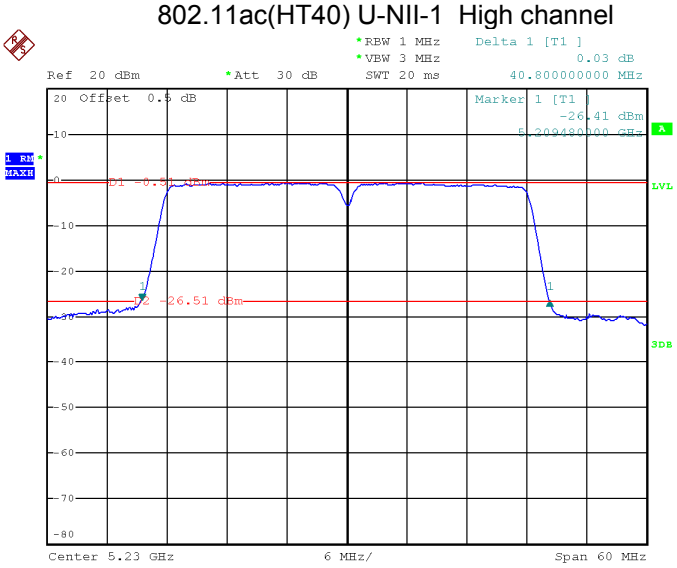
Date: 22.JUL.2024 10:28:25

802.11ac(HT40) U-NII-1 Low channel



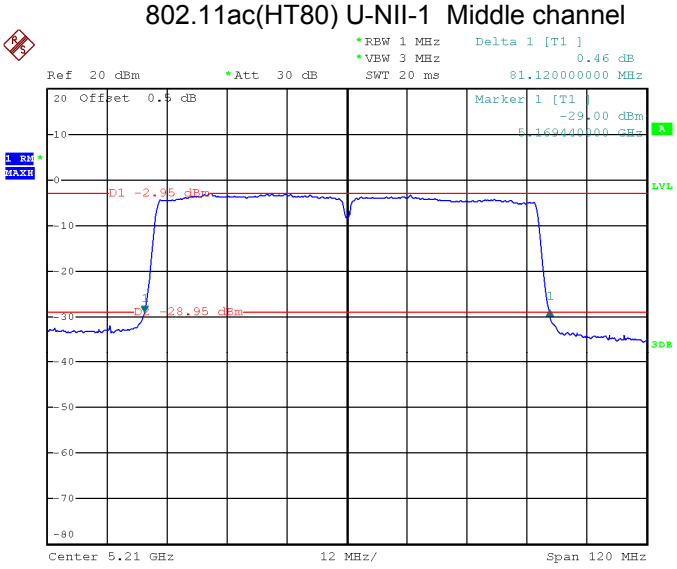
Date: 22.JUL.2024 10:55:04

802.11ac(HT40) U-NII-1 High channel



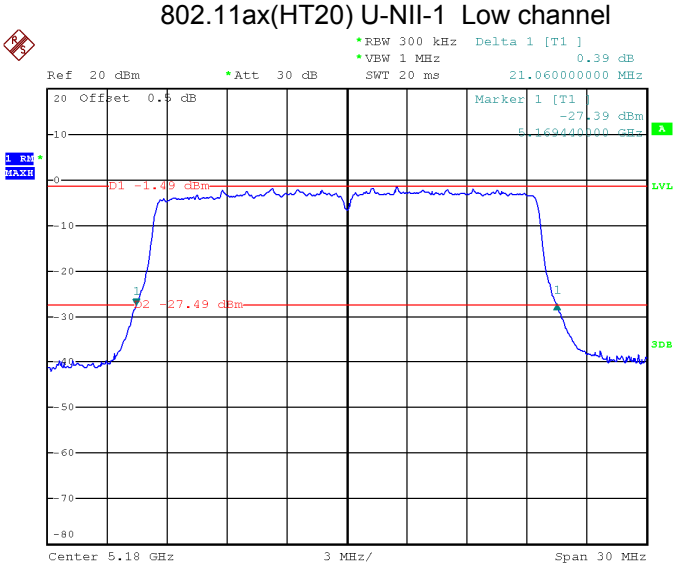
Date: 22.JUL.2024 10:53:22

802.11ac(HT80) U-NII-1 Middle channel



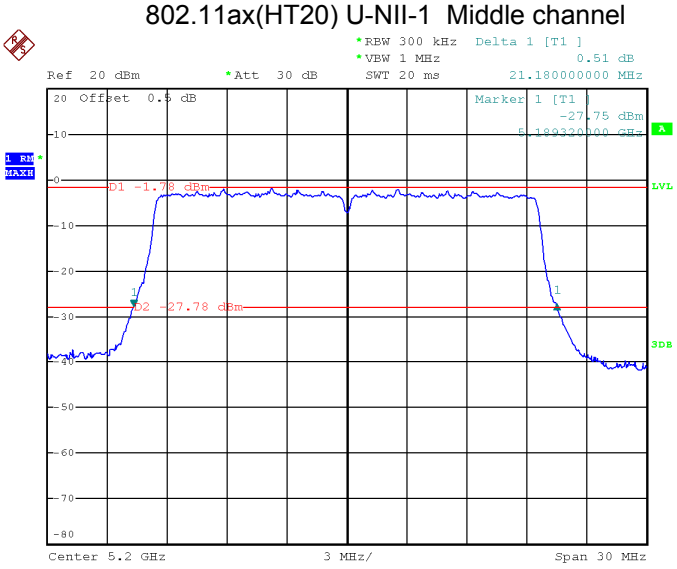
Date: 22.JUL.2024 11:01:08

802.11ax(HT20) U-NII-1 Low channel



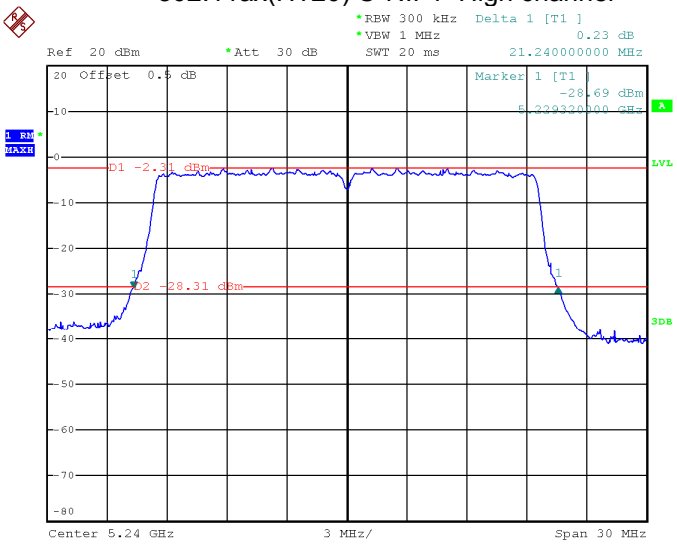
Date: 22.JUL.2024 10:34:20

802.11ax(HT20) U-NII-1 Middle channel



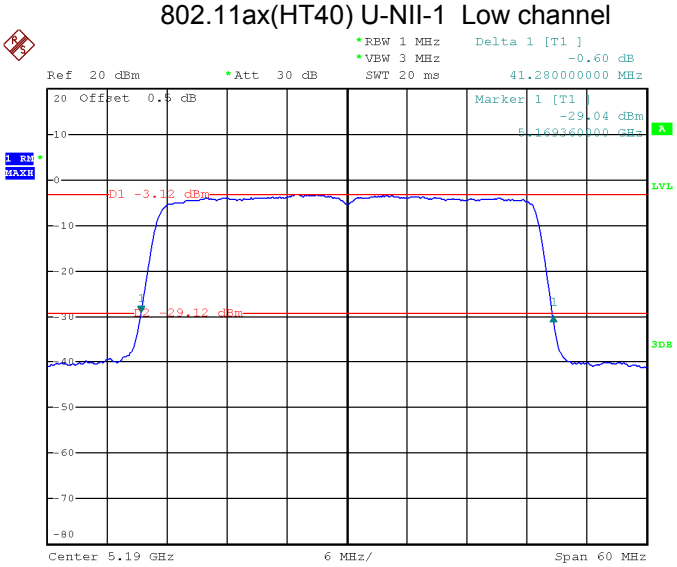
Date: 22.JUL.2024 10:45:04

802.11ax(HT20) U-NII-1 High channel



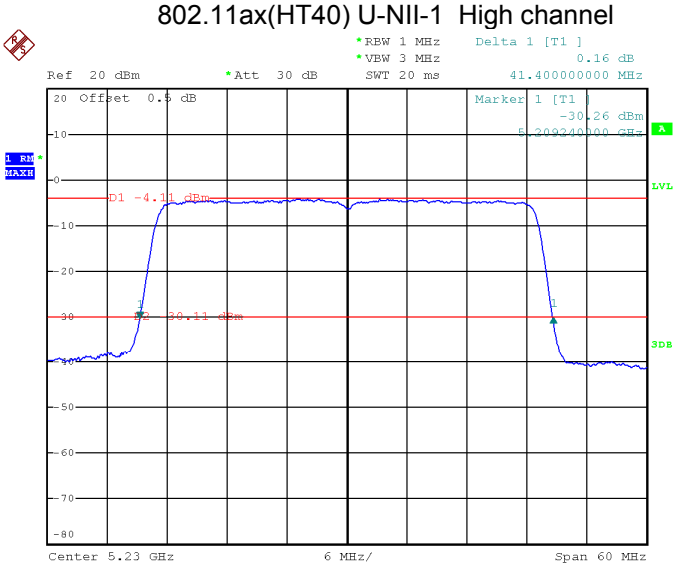
Date: 22.JUL.2024 10:43:44

802.11ax(HT40) U-NII-1 Low channel



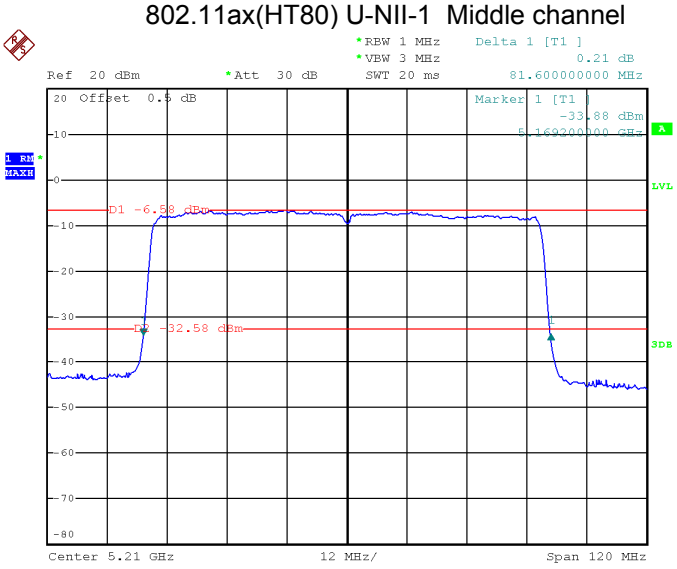
Date: 22.JUL.2024 10:50:04

802.11ax(HT40) U-NII-1 High channel



Date: 22.JUL.2024 10:47:28

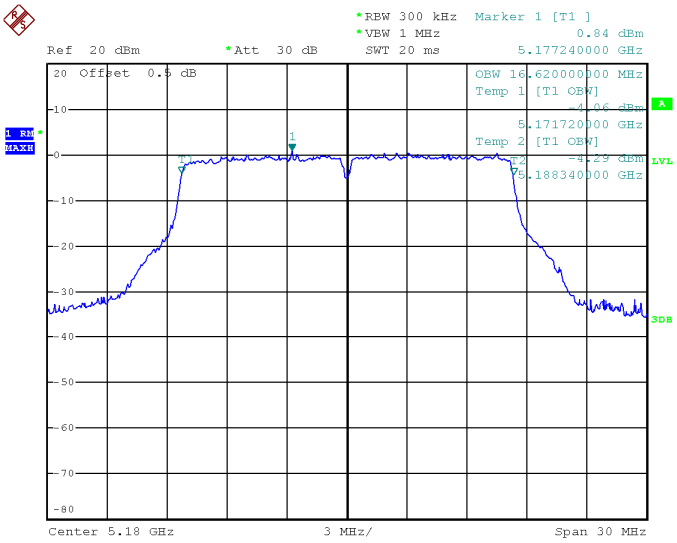
802.11ax(HT80) U-NII-1 Middle channel



Date: 22.JUL.2024 11:03:04

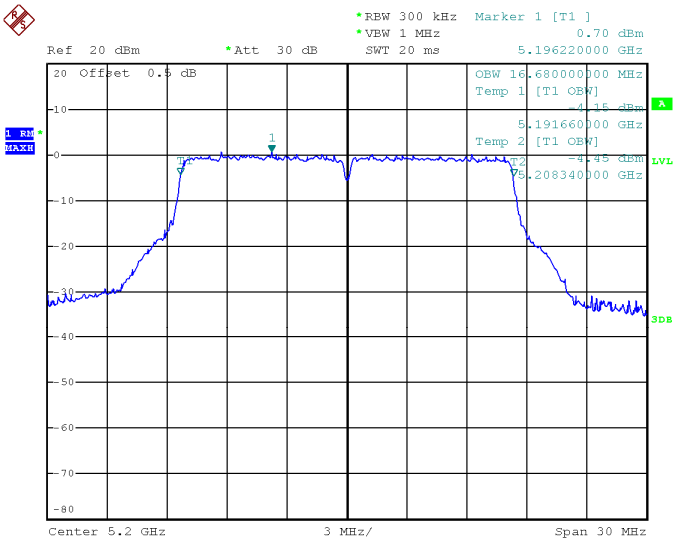
99% Occupied Bandwidth

802.11a U-NII-1 Low channel



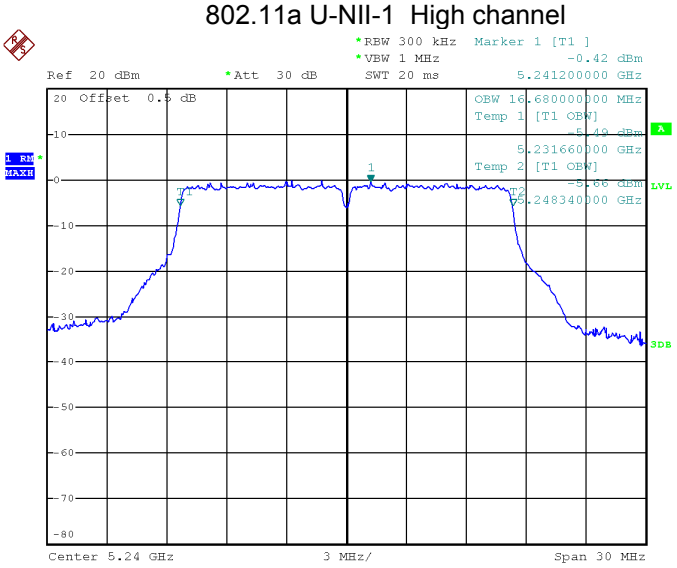
Date: 22.JUL.2024 11:49:12

802.11a U-NII-1 Middle channel



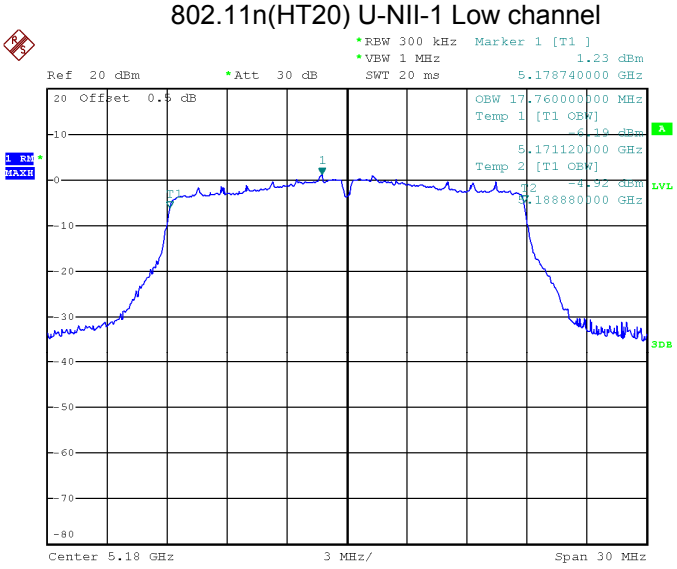
Date: 22.JUL.2024 11:49:40

802.11a U-NII-1 High channel



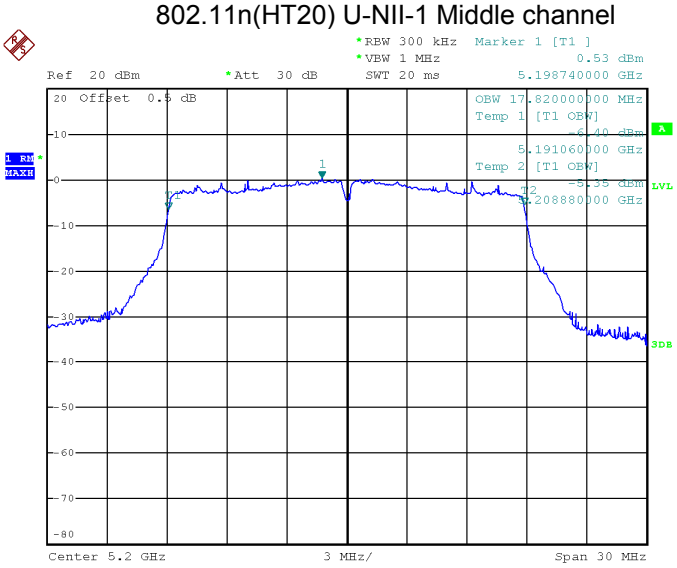
Date: 22.JUL.2024 11:50:15

802.11n(HT20) U-NII-1 Low channel



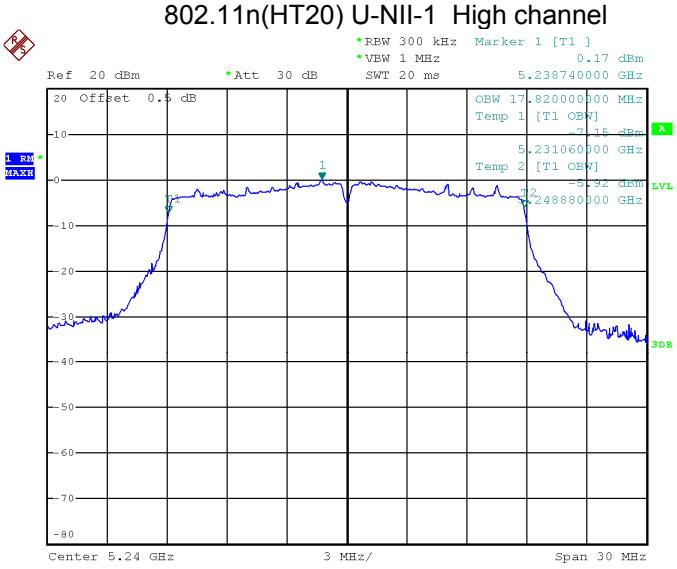
Date: 22.JUL.2024 11:48:34

802.11n(HT20) U-NII-1 Middle channel



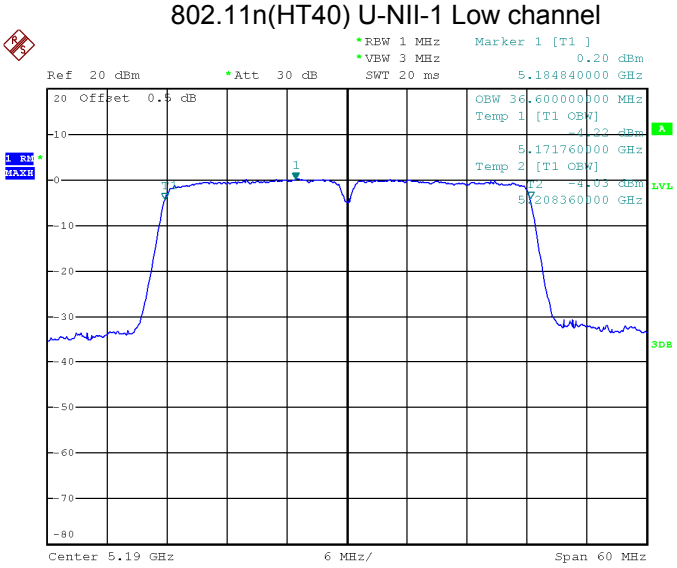
Date: 22.JUL.2024 11:48:05

802.11n(HT20) U-NII-1 High channel



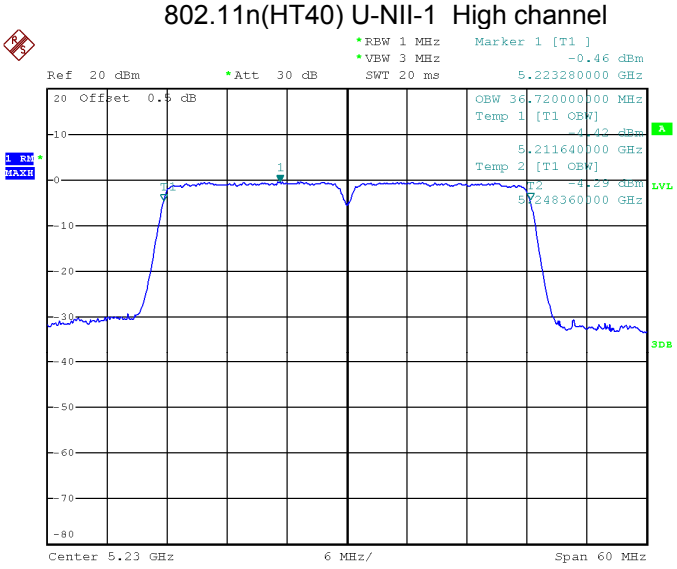
Date: 22.JUL.2024 11:47:32

802.11n(HT40) U-NII-1 Low channel



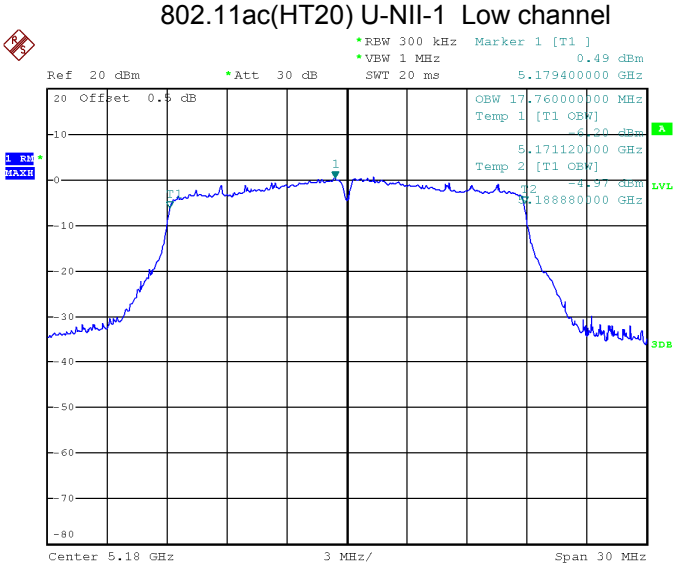
Date: 22.JUL.2024 11:43:13

802.11n(HT40) U-NII-1 High channel



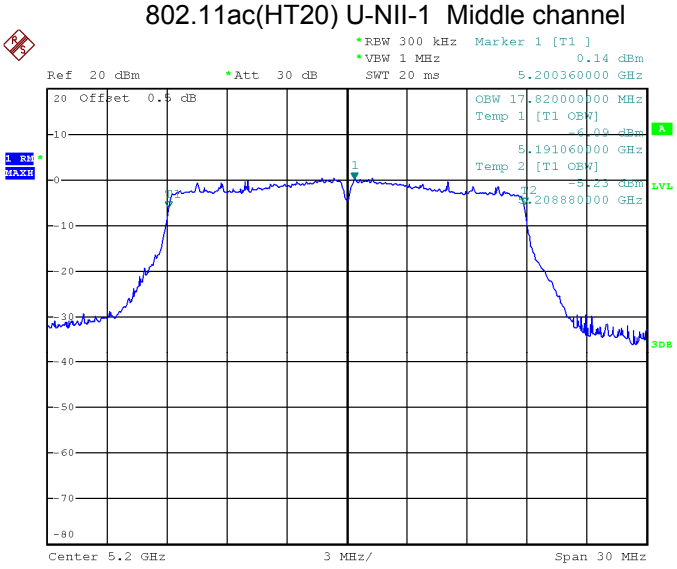
Date: 22.JUL.2024 11:42:38

802.11ac(HT20) U-NII-1 Low channel



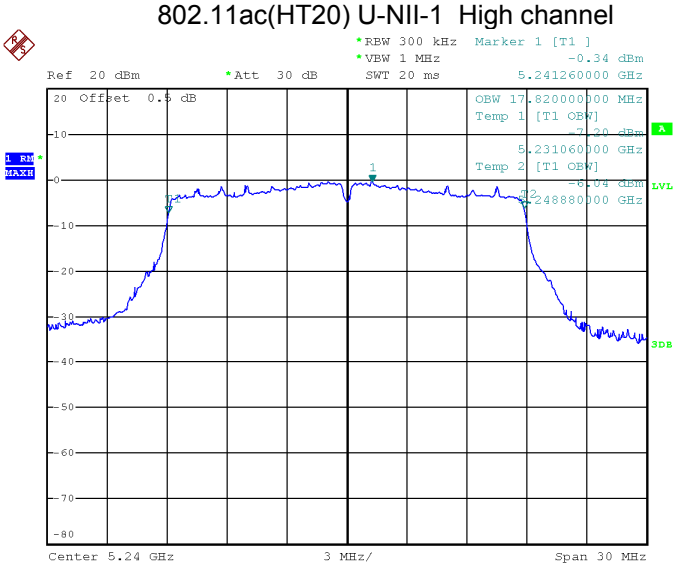
Date: 22.JUL.2024 11:51:39

802.11ac(HT20) U-NII-1 Middle channel



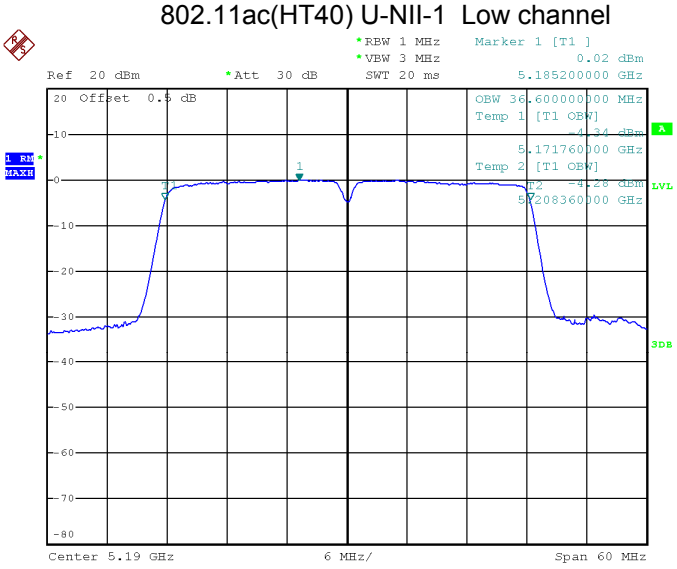
Date: 22.JUL.2024 11:51:09

802.11ac(HT20) U-NII-1 High channel



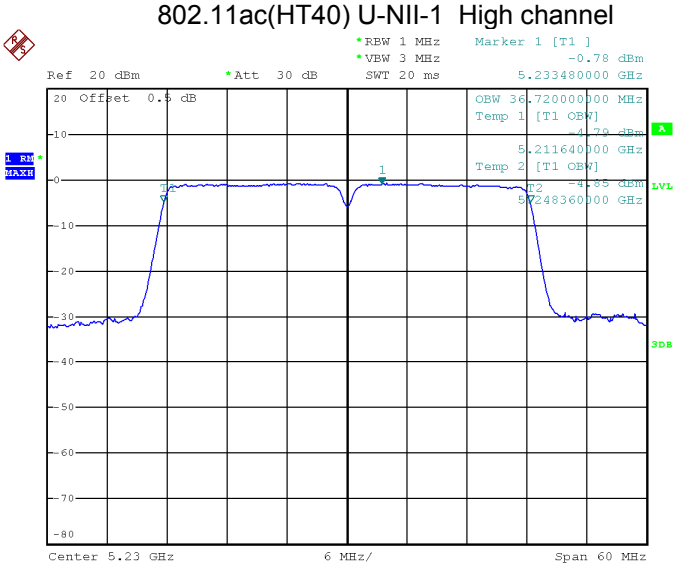
Date: 22.JUL.2024 11:50:40

802.11ac(HT40) U-NII-1 Low channel



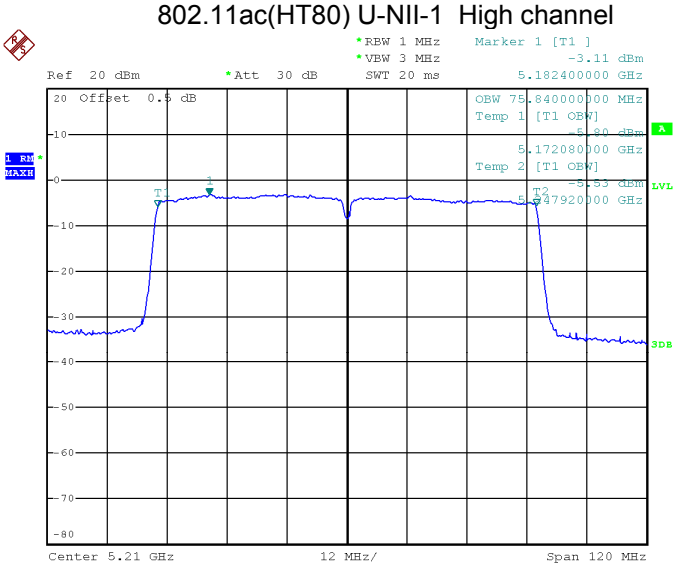
Date: 22.JUL.2024 11:41:41

802.11ac(HT40) U-NII-1 High channel



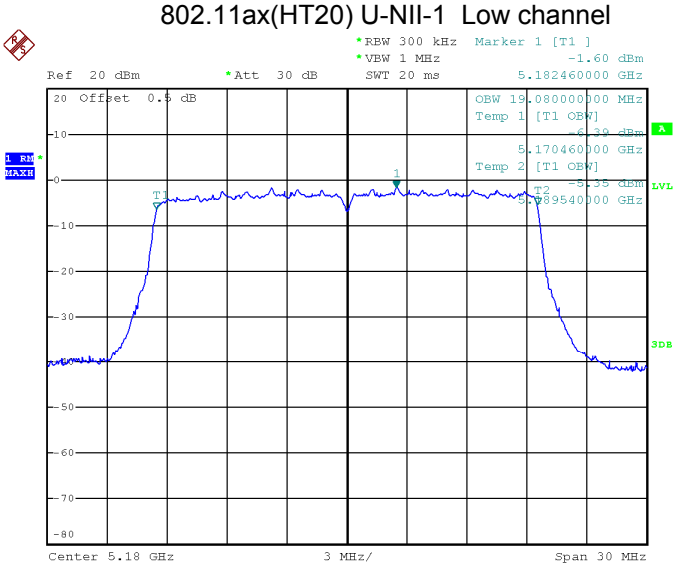
Date: 22.JUL.2024 11:42:11

802.11ac(HT80) U-NII-1 High channel



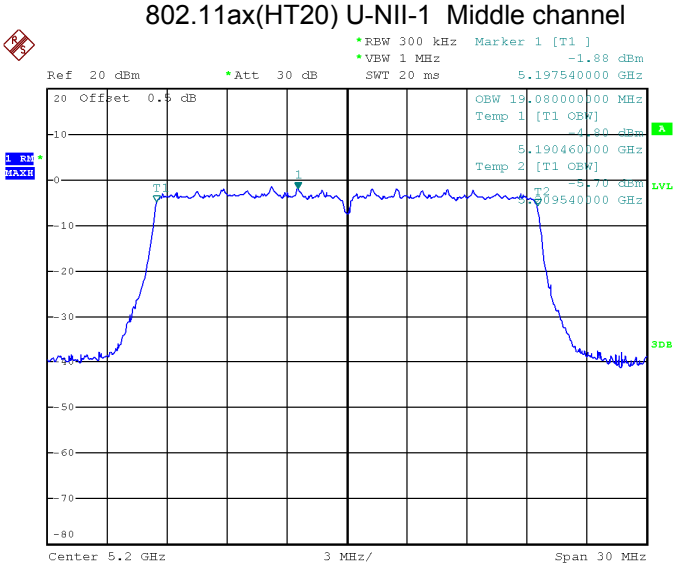
Date: 22.JUL.2024 11:27:22

802.11ax(HT20) U-NII-1 Low channel



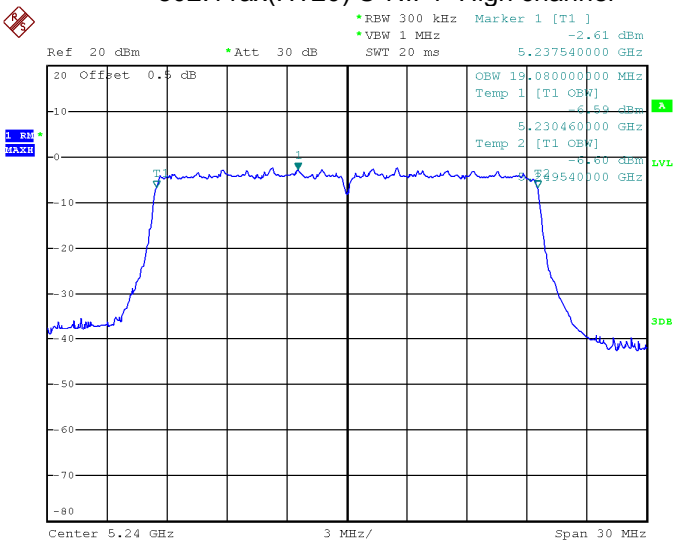
Date: 22.JUL.2024 11:52:17

802.11ax(HT20) U-NII-1 Middle channel



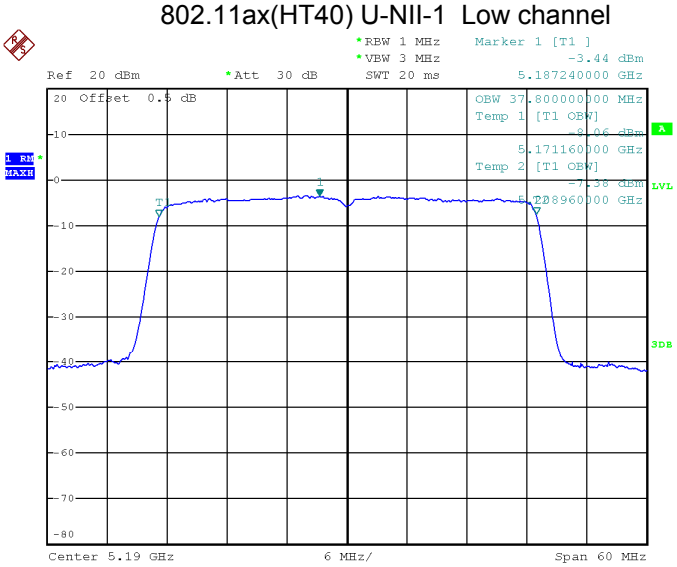
Date: 22.JUL.2024 11:52:50

802.11ax(HT20) U-NII-1 High channel



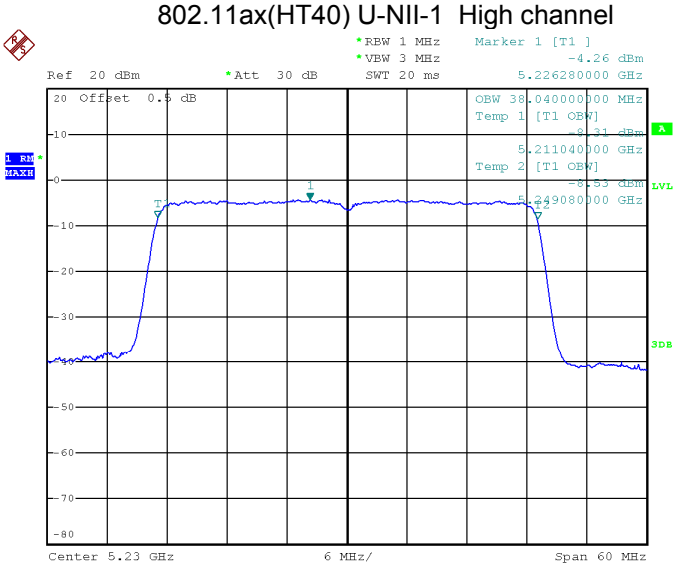
Date: 22.JUL.2024 11:53:15

802.11ax(HT40) U-NII-1 Low channel



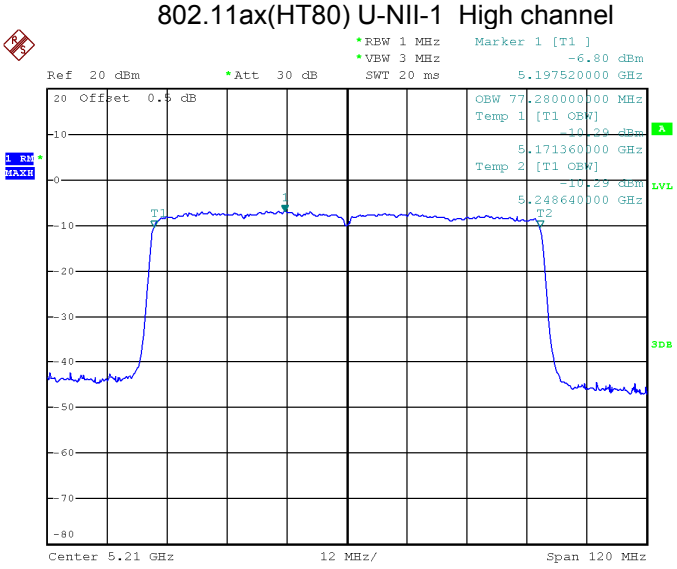
Date: 22.JUL.2024 11:40:30

802.11ax(HT40) U-NII-1 High channel



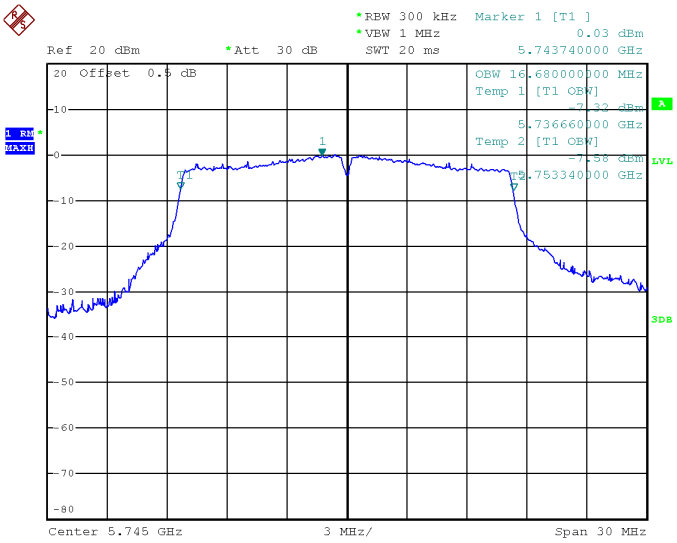
Date: 22.JUL.2024 11:39:10

802.11ax(HT80) U-NII-1 High channel



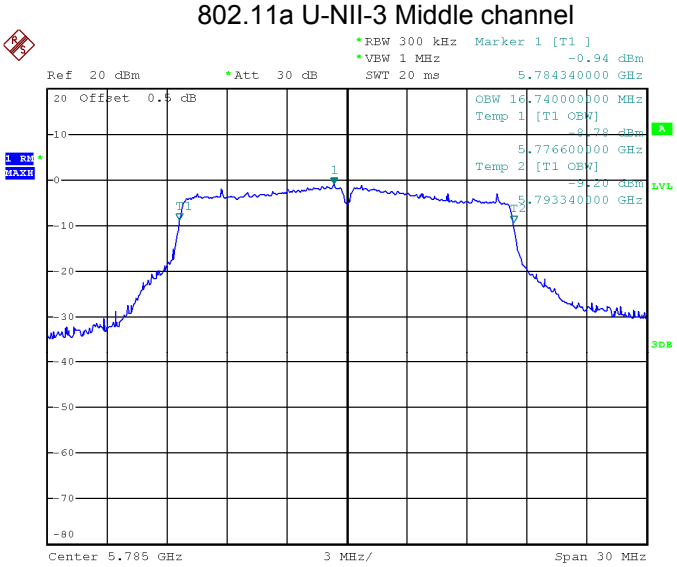
Date: 22.JUL.2024 11:27:57

802.11a U-NII-3 Low channel



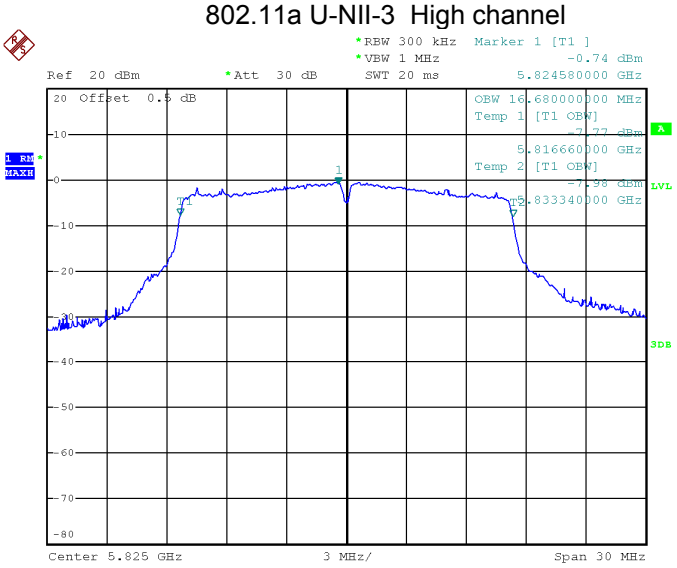
Date: 19.JUL.2024 16:45:43

802.11a U-NII-3 Middle channel



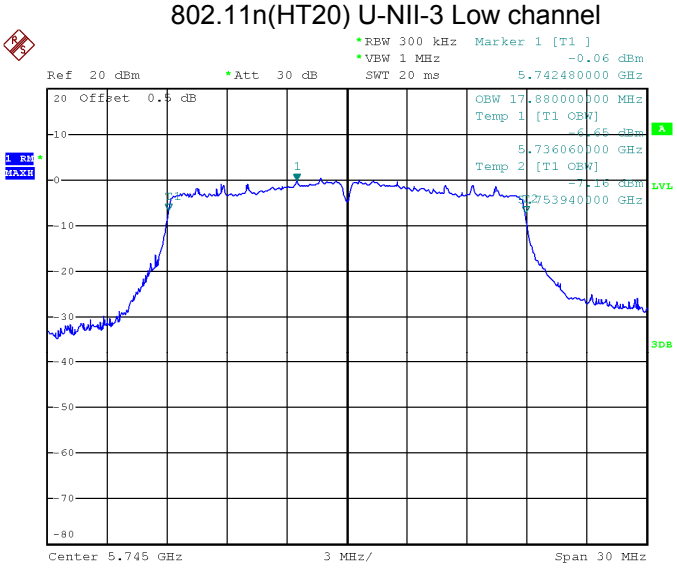
Date: 19.JUL.2024 17:26:36

802.11a U-NII-3 High channel



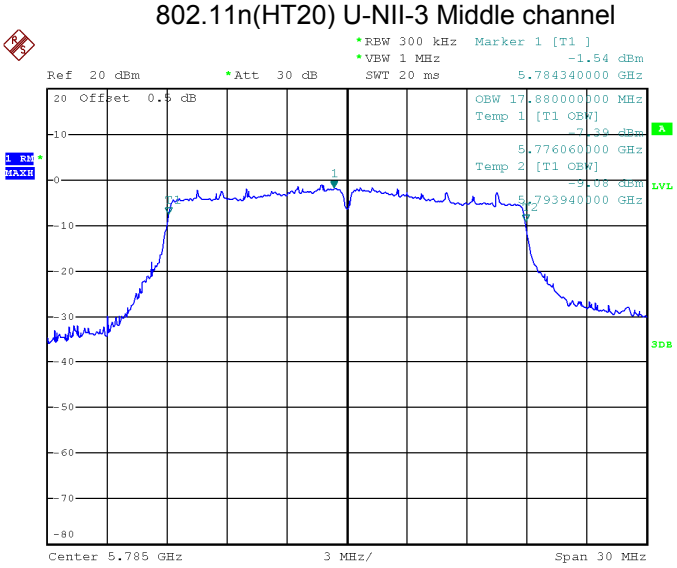
Date: 19.JUL.2024 17:21:51

802.11n(HT20) U-NII-3 Low channel



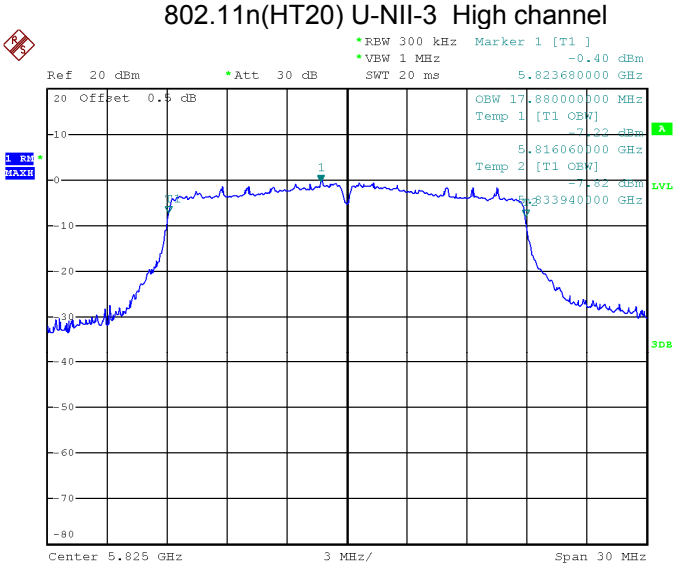
Date: 19.JUL.2024 16:46:29

802.11n(HT20) U-NII-3 Middle channel



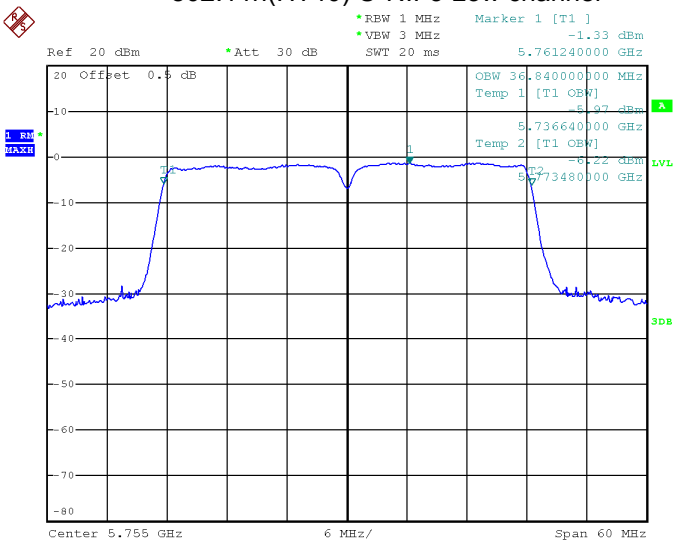
Date: 19.JUL.2024 17:25:39

802.11n(HT20) U-NII-3 High channel



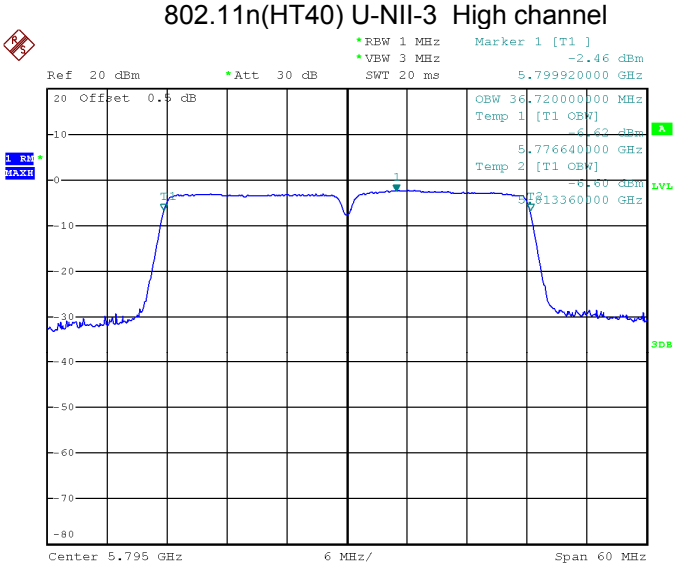
Date: 19.JUL.2024 17:22:28

802.11n(HT40) U-NII-3 Low channel



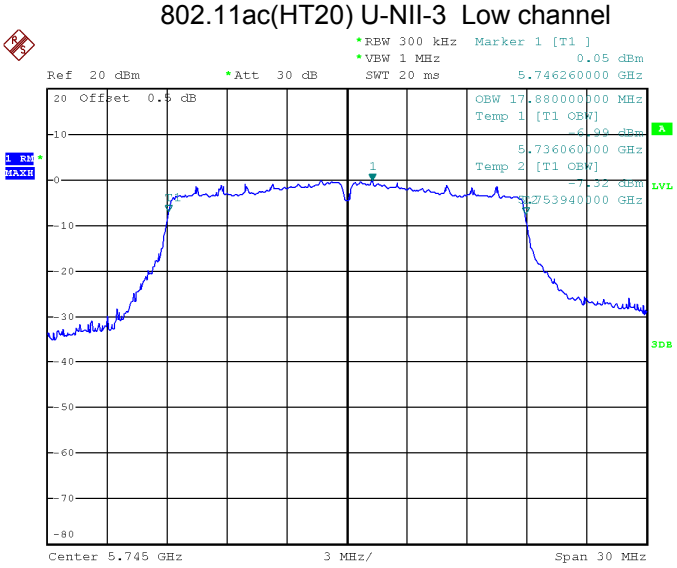
Date: 19.JUL.2024 17:06:17

802.11n(HT40) U-NII-3 High channel



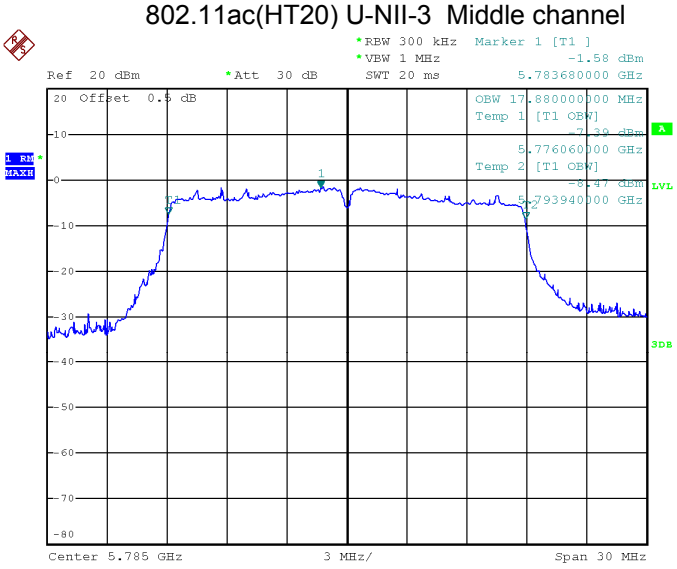
Date: 19.JUL.2024 17:19:44

802.11ac(HT20) U-NII-3 Low channel



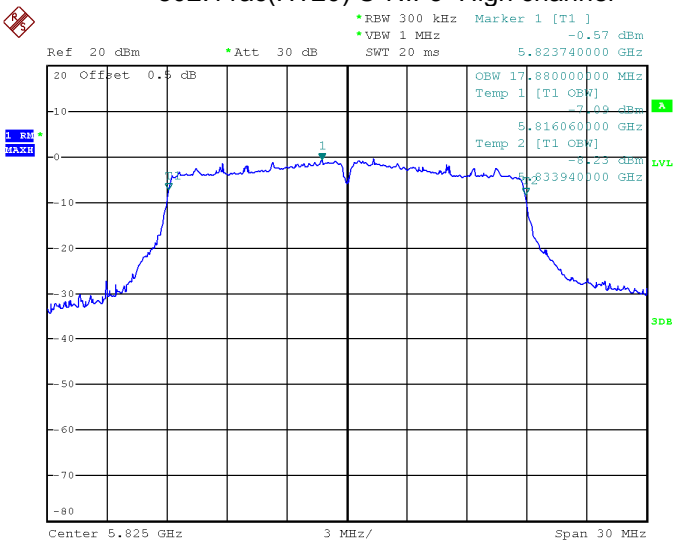
Date: 19.JUL.2024 16:47:52

802.11ac(HT20) U-NII-3 Middle channel



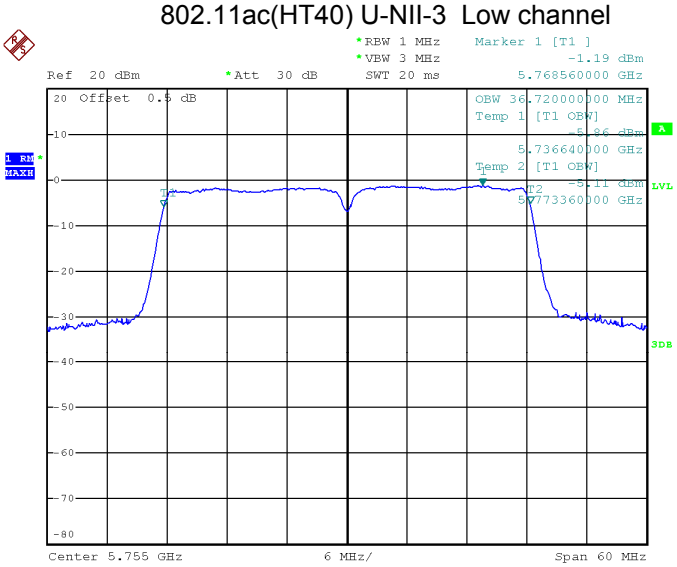
Date: 19.JUL.2024 17:24:58

802.11ac(HT20) U-NII-3 High channel



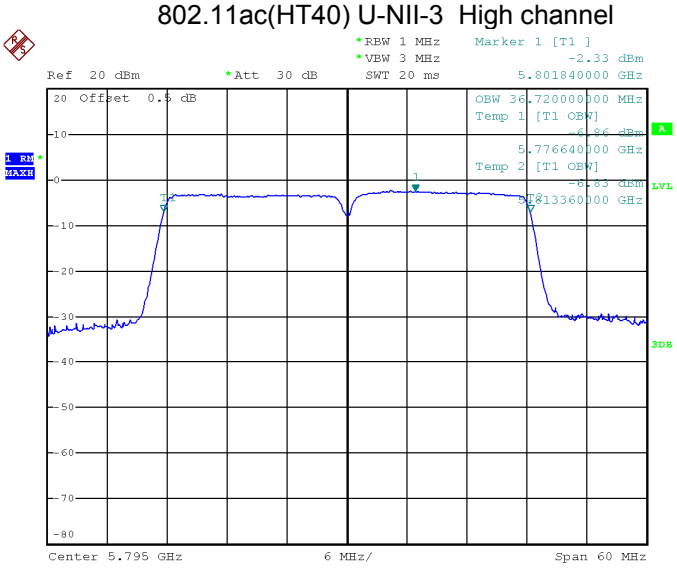
Date: 19.JUL.2024 17:23:00

802.11ac(HT40) U-NII-3 Low channel



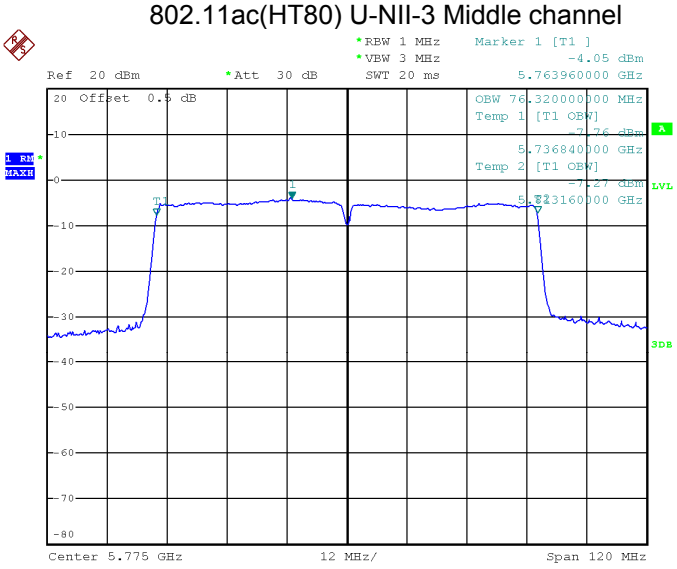
Date: 19.JUL.2024 17:06:52

802.11ac(HT40) U-NII-3 High channel



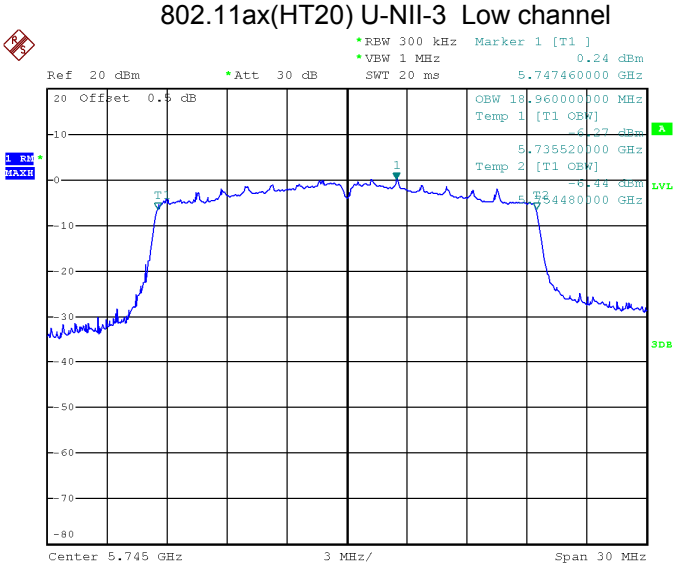
Date: 19.JUL.2024 17:18:52

802.11ac(HT80) U-NII-3 Middle channel



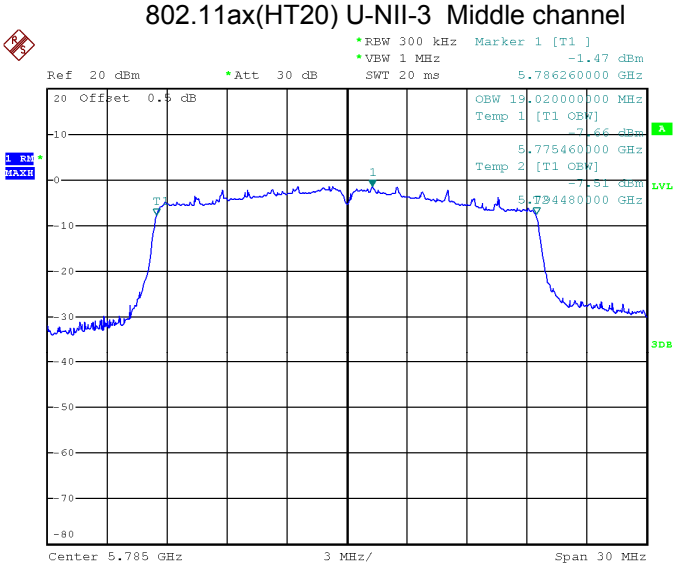
Date: 19.JUL.2024 17:05:16

802.11ax(HT20) U-NII-3 Low channel



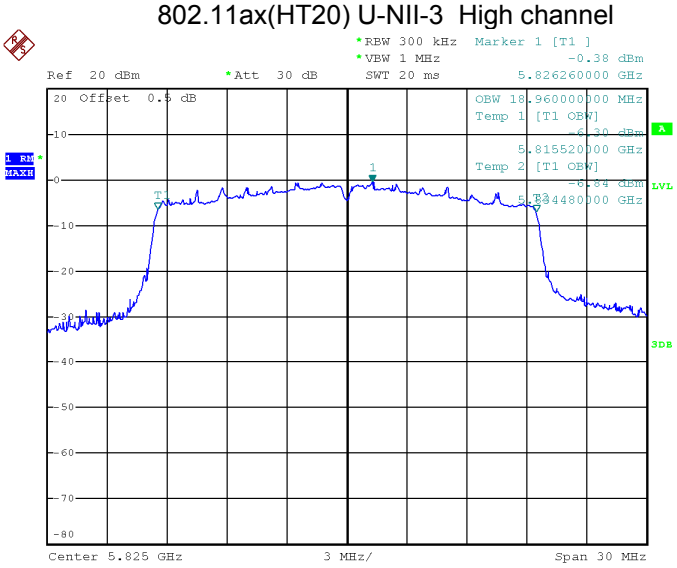
Date: 19.JUL.2024 16:49:04

802.11ax(HT20) U-NII-3 Middle channel



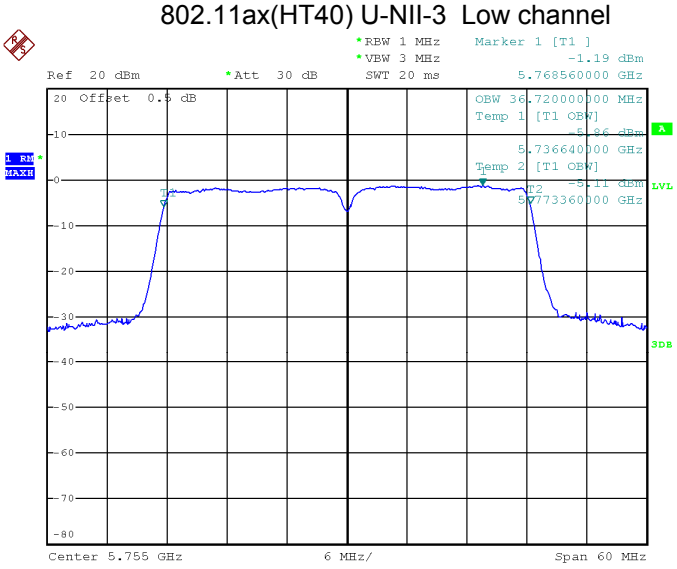
Date: 19.JUL.2024 17:24:14

802.11ax(HT20) U-NII-3 High channel



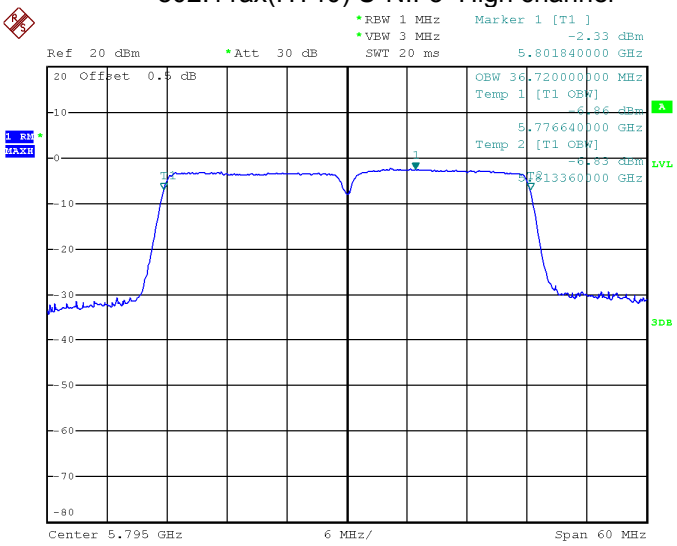
Date: 19.JUL.2024 17:23:31

802.11ax(HT40) U-NII-3 Low channel



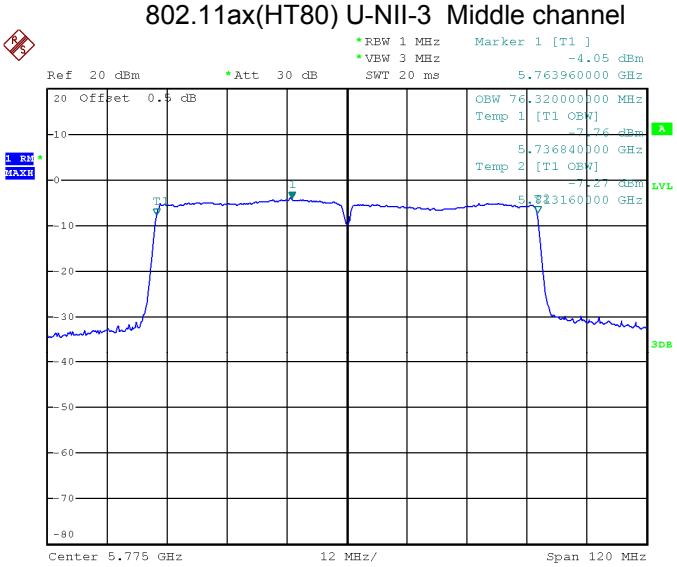
Date: 19.JUL.2024 17:06:52

802.11ax(HT40) U-NII-3 High channel



Date: 19.JUL.2024 17:18:52

802.11ax(HT80) U-NII-3 Middle channel



Date: 19.JUL.2024 17:05:16

13 Conducted Output Power

Test Requirement:	FCC 47CFR Part 15 Section 15.407(a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section E
Test Limit:	U-NII-1 250mW(24dBm) U-NII-2A 250mW(24dBm) U-NII-2C 250mW(24dBm) U-NII-3 1W(30dBm)
Test Result:	PASS
Remark:	Conducted output power= measurement power+10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power

13.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

13.2 Test Result

Note:
[1] According to ANSI C63.10 clause 14.6.3.2.4,

a) If transmit signals are correlated, then:

$$\text{Directional gain} = 10\log\left[\left(10^{G_1/20}+10^{G_2/20}+\ldots+10^{G_N/20}\right)^2 / N_{ANT}\right] \text{ dBi} \quad (40)$$

NOTE— the purpose of the factor 20 in the denominator of each exponent and the square of the sum of terms is to combine the signal levels coherently.

According to ANSI C63.10 clause 11.7,
For those cases where it is specified that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6dBi, the output power effective limit shall be calculated as follows in Equation:

$$P_{out} = P_{Limit} - (G_{TX} - 6)$$

For U-NII-1: the Directional gain is 7.86dBi that greater than 6dBi, Limit of power (SUM) is **22.14dBm**.

For U-NII-3: the Directional gain is 7.86dBi that greater than 6dBi, Limit of power (SUM) is **28.14dBm**.

Ant 0:

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-1	802.11a	Low	14.69	4.00	18.69
		Middle	14.50		18.50
		High	14.25		18.25
	802.11n(HT20)	Low	14.12	5.22	**19.34**
		Middle	13.93		19.15
		High	13.66		18.88
	802.11n(HT40)	Low	13.92	1.82	15.74
		High	13.81		15.63
	802.11ac(HT20)	Low	13.89	1.07	14.96
		Middle	14.21		15.28
		High	13.69		14.76
	802.11ac(HT40)	Low	13.88	2.55	16.43
		High	13.69		16.24
	802.11ac(HT80)	Middle	13.61	3.16	16.77
	802.11ax(HT20)	Low	12.78	1.51	14.29
		Middle	13.06		14.57
		High	12.69		14.20
	802.11ax(HT40)	Low	10.95	1.41	12.36
		High	10.64		12.05
	802.11ax(HT80)	Low	10.74	1.85	12.59

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-3	802.11a	Low	10.98	2.79	13.77
		Middle	10.23		13.02
		High	10.84		13.63
	802.11n(HT20)	Low	11.70	3.25	14.95
		Middle	10.40		13.65
		High	11.49		14.74
	802.11n(HT40)	Low	12.11	4.10	16.21
		High	11.47		15.57
	802.11ac(HT20)	Low	13.82	0.07	13.89
		Middle	12.49		12.56
		High	13.25		13.32
	802.11ac(HT40)	Low	11.64	2.15	13.79
		High	10.49		12.64
	802.11ac(HT80)	Middle	11.07	8.23	**19.30**
	802.11ax(HT20)	Low	7.07	0.08	7.15
		Middle	5.82		5.90
		High	6.88		6.96
	802.11ax(HT40)	Low	5.17	1.67	6.84
		High	4.37		6.04
	802.11ax(HT80)	Middle	5.05	1.72	6.77

Ant 1:

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-1	802.11a	Low	15.11	2.50	17.61
		Middle	15.21		17.71
		High	14.30		16.80
	802.11n(HT20)	Low	14.50	4.07	18.57
		Middle	14.46		18.53
		High	13.79		17.86
	802.11n(HT40)	Low	14.63	2.40	17.03
		High	14.04		16.44
	802.11ac(HT20)	Low	14.32	4.49	18.81
		Middle	14.64		**19.13**
		High	13.80		18.29
	802.11ac(HT40)	Low	14.15	0.69	14.84
		High	13.77		14.46
	802.11ac(HT80)	Middle	14.10	3.24	17.34
	802.11ax(HT20)	Low	12.82	4.21	17.03
		Middle	13.28		17.49
		High	12.51		16.72
	802.11ax(HT40)	Low	10.79	2.11	12.90
		High	10.28		12.39
	802.11ax(HT80)	Middle	10.56	1.61	12.17

Band	Operation mode	Channel	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)
U-NII-3	802.11a	Low	12.47	1.73	14.2
		Middle	11.22		12.95
		High	12.15		13.88
	802.11n(HT20)	Low	12.00	2.03	14.03
		Middle	10.78		12.81
		High	11.56		13.59
	802.11n(HT40)	Low	12.07	1.37	13.44
		High	11.18		12.55
	802.11ac(HT20)	Low	11.96	2.62	**14.58**
		Middle	10.78		13.40
		High	11.52		14.14
	802.11ac(HT40)	Low	11.82	1.05	12.87
		High	10.82		11.87
	802.11ac(HT80)	Middle	11.20	1.50	12.7
	802.11ax(HT20)	Low	7.40	0.08	7.48
		Middle	6.00		6.08
		High	6.92		7.00
	802.11ax(HT40)	Low	5.51	0.60	6.11
		High	4.48		5.08
	802.11ax(HT80)	Middle	5.17	0.30	5.47

Ant 0+Ant 1:

Band	Operation mode	Channel	Conducted Output Power (dBm)	Limit
U-NII-1	802.11n(HT20)	Low	21.98	22.14dBm
		Middle	21.86	22.14dBm
		High	21.41	22.14dBm
	802.11n(HT40)	Low	19.44	22.14dBm
		High	19.06	22.14dBm
	802.11ac(HT20)	Low	20.31	22.14dBm
		Middle	20.63	22.14dBm
		High	19.88	22.14dBm
	802.11ac(HT40)	Low	18.72	22.14dBm
		High	18.45	22.14dBm
	802.11ac(HT80)	Middle	20.07	22.14dBm
	802.11ax(HT20)	Low	18.88	22.14dBm
		Middle	19.28	22.14dBm
		High	18.65	22.14dBm
	802.11ax(HT40)	Low	15.65	22.14dBm
		High	15.23	22.14dBm
	802.11ax(HT80)	Middle	15.40	22.14dBm

Band	Operation mode	Channel	Conducted Output Power (dBm)	Limit
U-NII-3	802.11n(HT20)	Low	17.52	28.14dBm
		Middle	16.26	28.14dBm
		High	17.21	28.14dBm
	802.11n(HT40)	Low	18.05	28.14dBm
		High	17.33	28.14dBm
	802.11ac(HT20)	Low	17.26	28.14dBm
		Middle	16.01	28.14dBm
		High	16.76	28.14dBm
	802.11ac(HT40)	Low	16.36	28.14dBm
		High	15.28	28.14dBm
	802.11ac(HT80)	Middle	20.16	28.14dBm
	802.11ax(HT20)	Low	10.33	28.14dBm
		Middle	9.00	28.14dBm
		High	9.99	28.14dBm
	802.11ax(HT40)	Low	9.50	28.14dBm
		High	8.60	28.14dBm
	802.11ax(HT80)	Middle	9.18	28.14dBm

Note:

1. Conducted Output Power = Measurements + Duty Cycle Factor

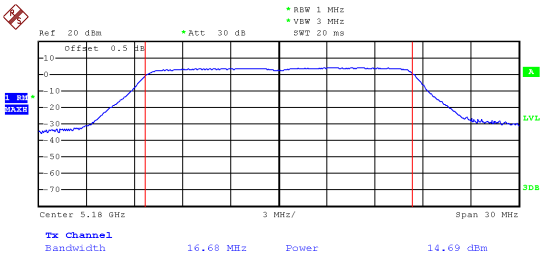
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

Ant 0

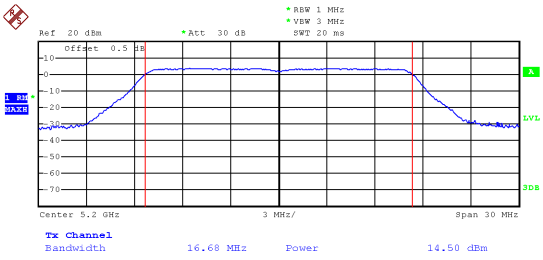
802.11a U-NII-1

802.11a low channel



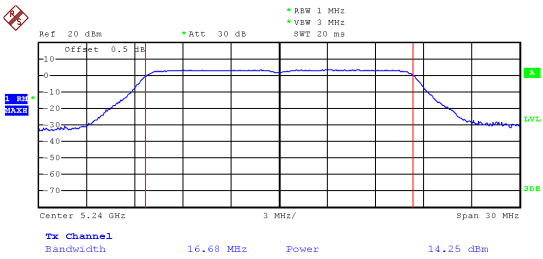
Date: 19.JUL.2024 11:51:57

802.11a middle channel



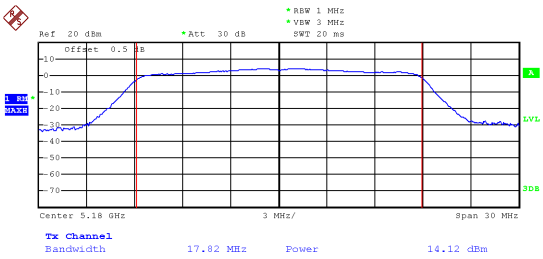
Date: 19.JUL.2024 11:53:20

802.11a high channel



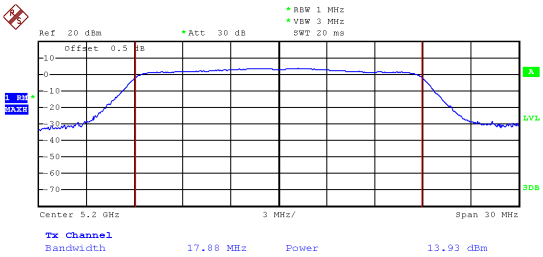
Date: 19.JUL.2024 11:55:01

802.11n(HT20) low channel



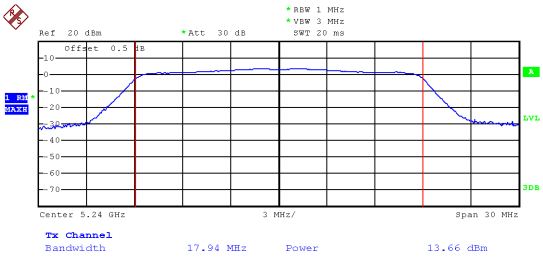
Date: 19.JUL.2024 11:57:57

802.11n(HT20) middle channel



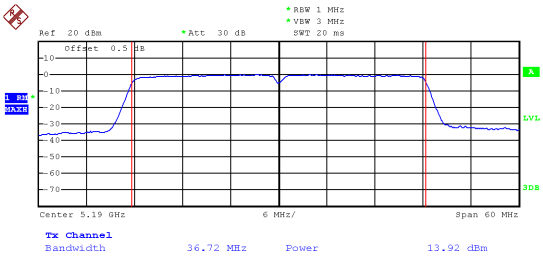
Date: 19.JUL.2024 12:00:44

802.11n(HT20) high channel



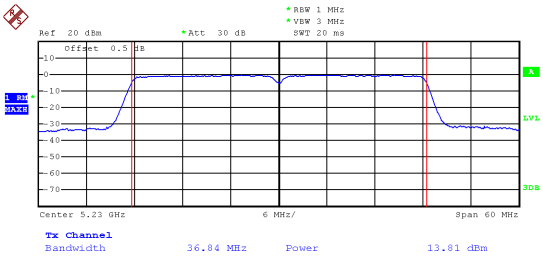
Date: 19.JUL.2024 12:02:12

802.11n(HT40) low channel



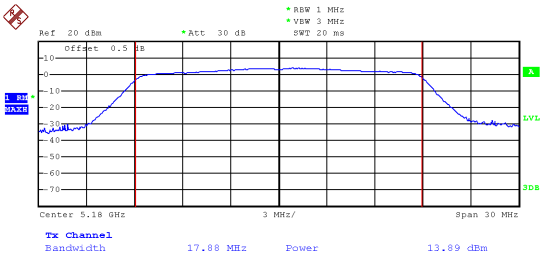
Date: 19.JUL.2024 12:15:46

802.11n(HT40) high channel



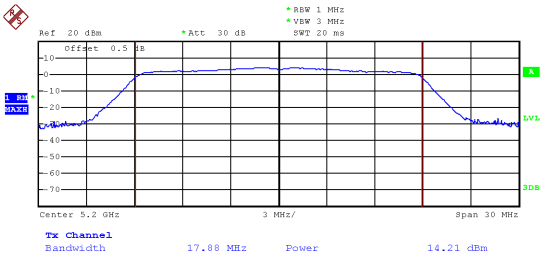
Date: 19.JUL.2024 12:16:56

802.11ac(HT20) low channel



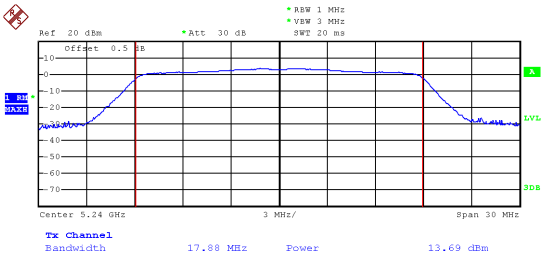
Date: 19.JUL.2024 12:08:56

802.11ac(HT20) Middle channel



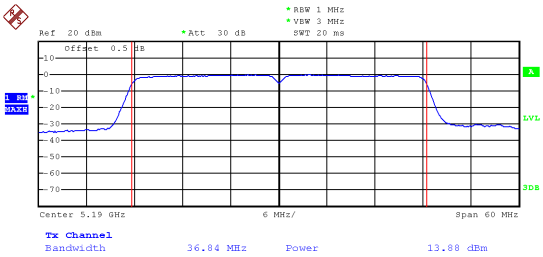
Date: 19.JUL.2024 12:09:54

802.11ac(HT20) High channel



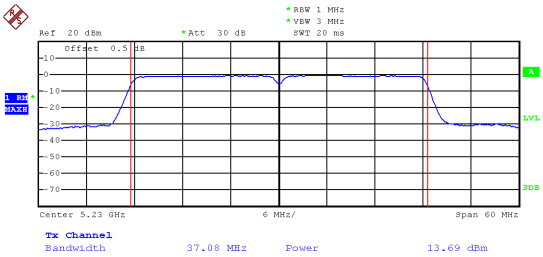
Date: 19.JUL.2024 12:10:26

802.11ac(HT40) low channel



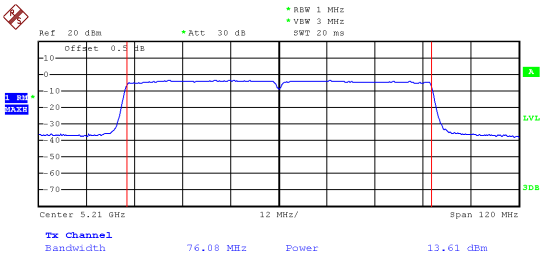
Date: 19.JUL.2024 12:20:11

802.11ac(HT40) High channel



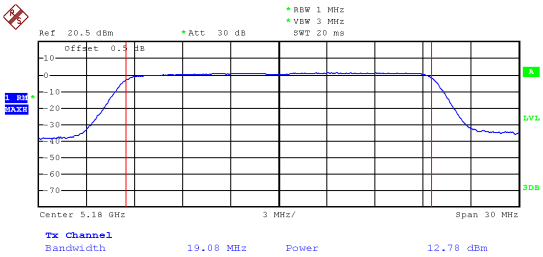
Date: 19.JUL.2024 12:18:29

802.11ac(HT80) Middle channel



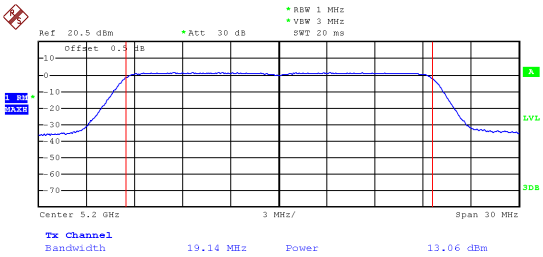
Date: 19.JUL.2024 12:21:41

802.11ax(HT20) low channel



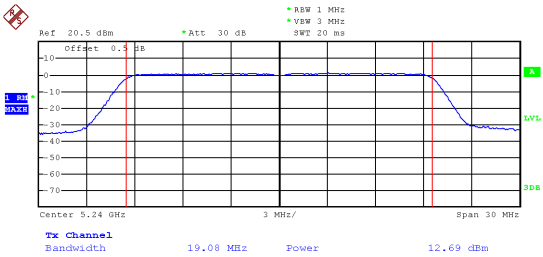
Date: 19.JUL.2024 10:23:50

802.11ax(HT20) Middle channel



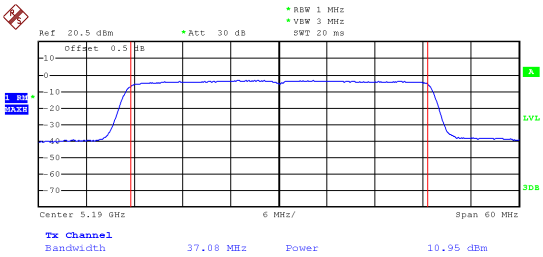
Date: 19.JUL.2024 10:24:55

802.11ax(HT20) High channel



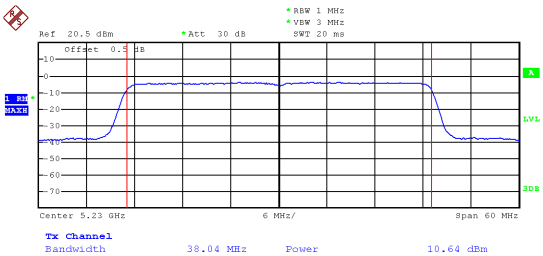
Date: 19.JUL.2024 10:23:17

802.11ax(HT40) low channel



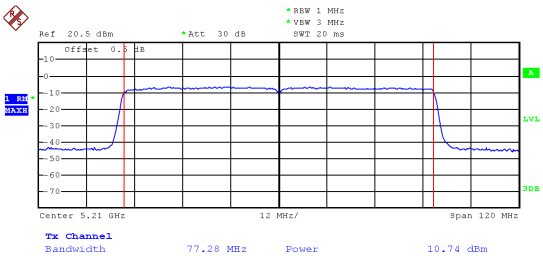
Date: 19.JUL.2024 10:31:52

802.11ax(HT40) High channel



Date: 19.JUL.2024 10:30:42

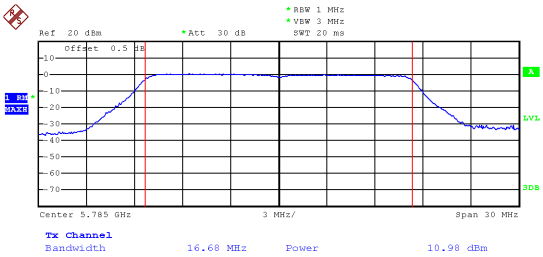
802.11ax(HT80) Low channel



Date: 19.JUL.2024 10:33:22

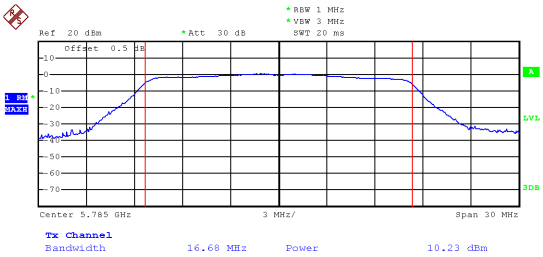
802.11a U-NII-3

802.11a low channel



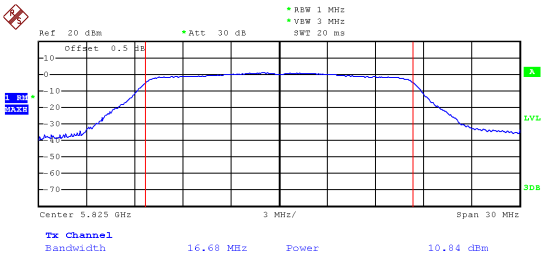
Date: 22.JUL.2024 15:28:11

802.11a middle channel



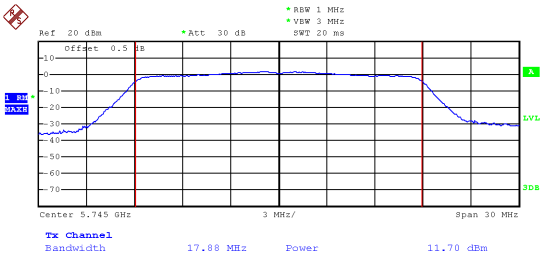
Date: 22.JUL.2024 15:49:24

802.11a high channel



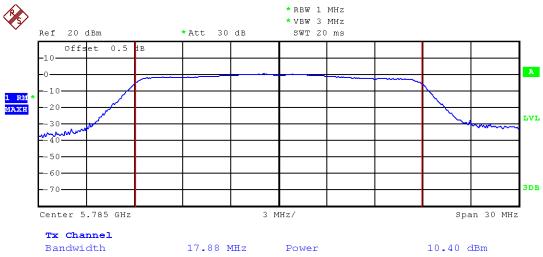
Date: 22.JUL.2024 15:50:26

802.11n(HT20) low channel



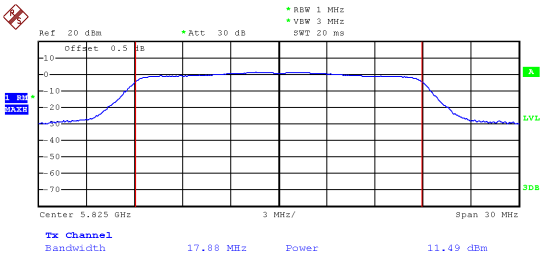
Date: 22.JUL.2024 15:56:54

802.11n(HT20) middle channel



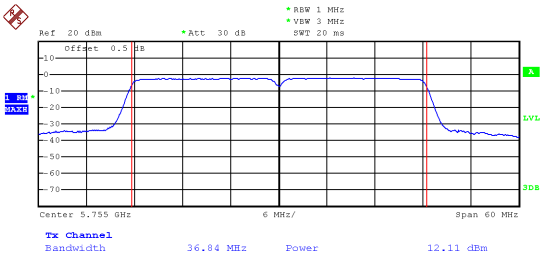
Date: 22.JUL.2024 15:56:14

802.11n(HT20) high channel



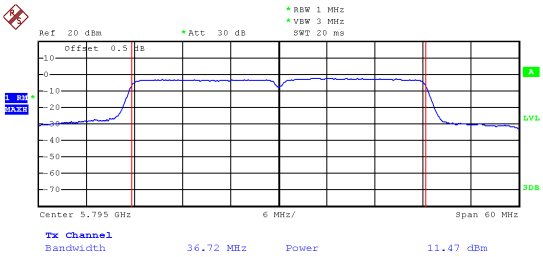
Date: 22.JUL.2024 15:55:40

802.11n(HT40) low channel



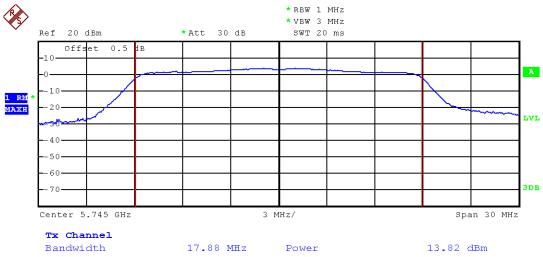
Date: 23.JUL.2024 09:42:17

802.11n(HT40) high channel



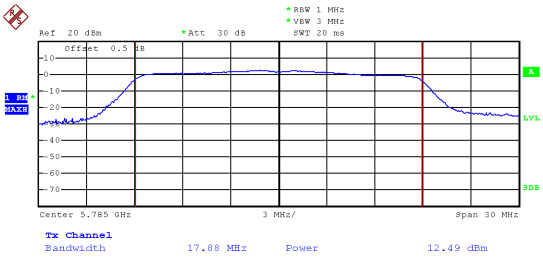
Date: 23.JUL.2024 09:39:41

802.11ac(HT20) low channel



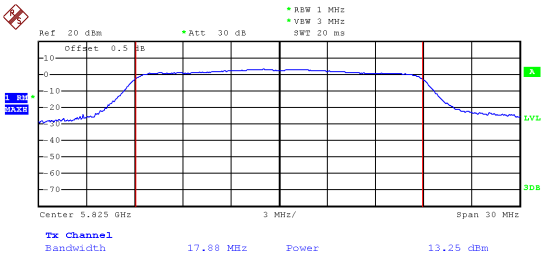
Date: 22.JUL.2024 15:58:33

802.11ac(HT20) Middle channel



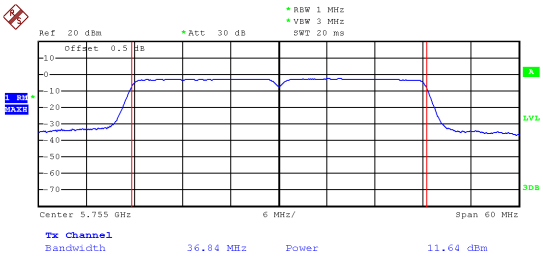
Date: 22.JUL.2024 15:59:01

802.11ac(HT20) High channel



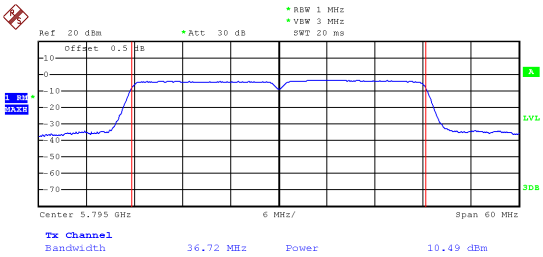
Date: 22.JUL.2024 15:59:30

802.11ac(HT40) low channel



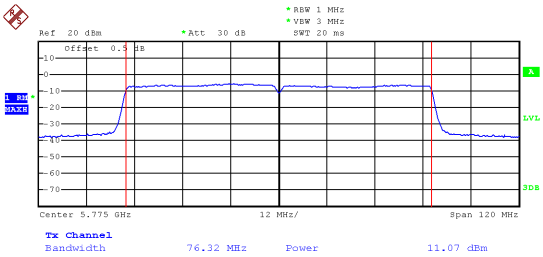
Date: 23.JUL.2024 09:43:35

802.11ac(HT40) High channel



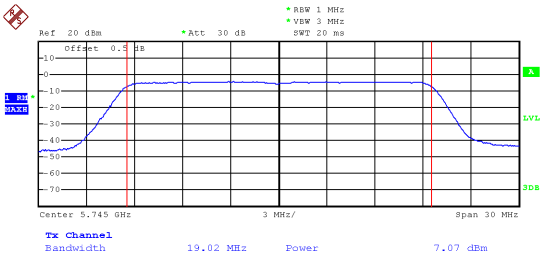
Date: 23.JUL.2024 09:44:33

802.11ac(HT80) Middle channel



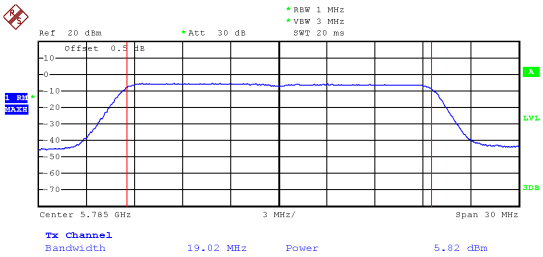
Date: 23.JUL.2024 09:50:43

802.11ax(HT20) low channel



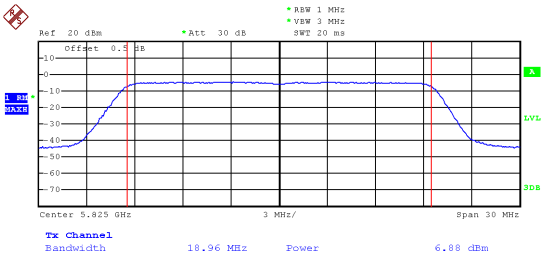
Date: 23.JUL.2024 09:53:59

802.11ax(HT20) Middle channel



Date: 23.JUL.2024 09:53:30

802.11ax(HT20) High channel



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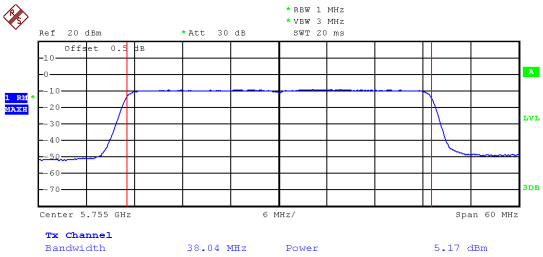
802.11ax(HT40) low channel



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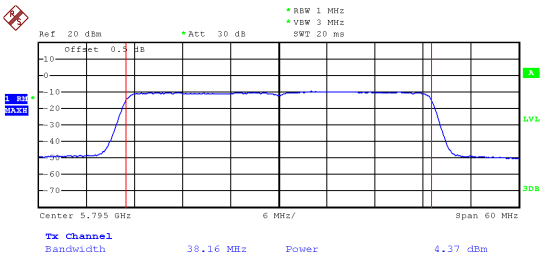
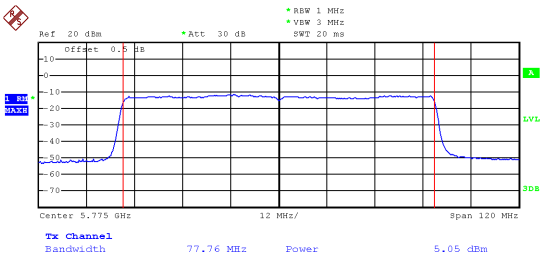
802.11ax(HT40) High channel



Date: 23.JUL.2024 09:47:43

802.11ax(HT80) Middle channel

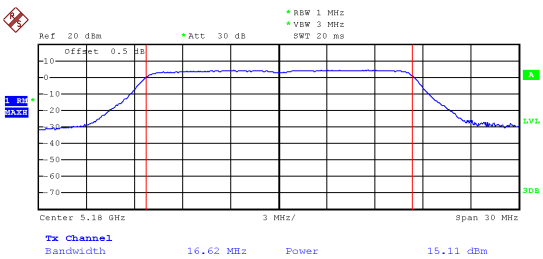


Date: 23.JUL.2024 09:49:51

Ant 1

802.11a U-NII-1

802.11a low channel



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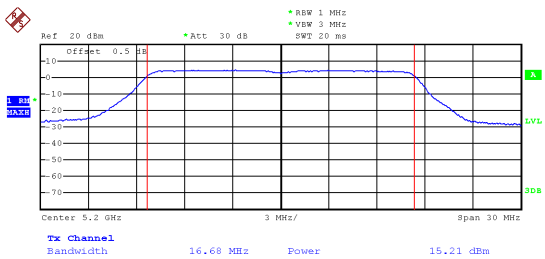
802.11a middle channel



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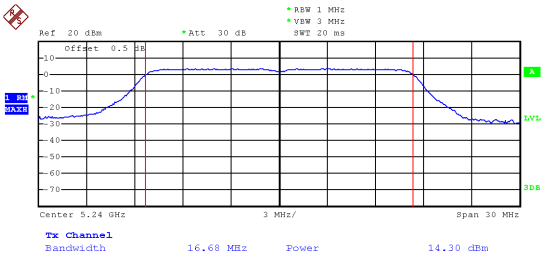
802.11a high channel



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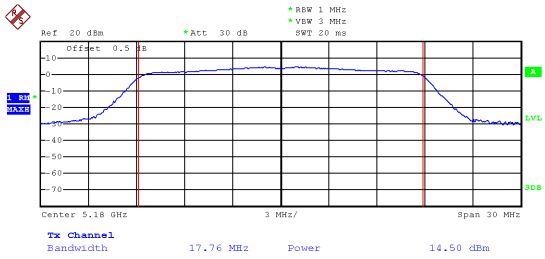
802.11n(HT20) low channel



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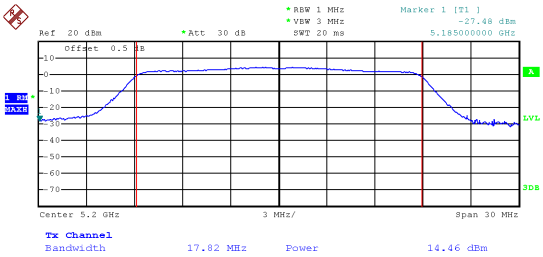
802.11n(HT20) middle channel



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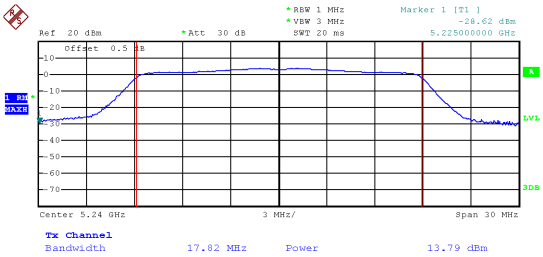
802.11n(HT20) high channel



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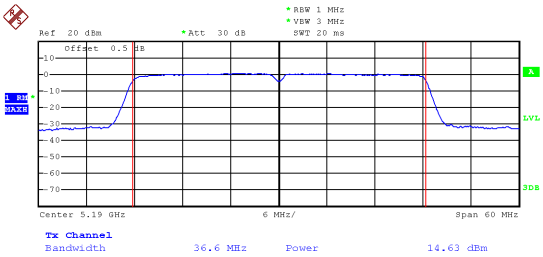
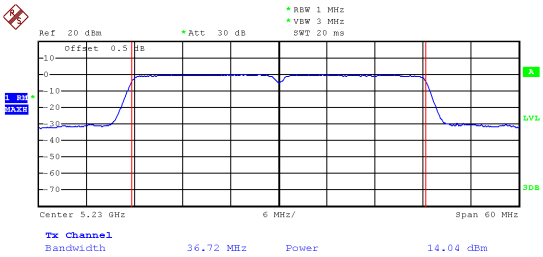
802.11n(HT40) low channel



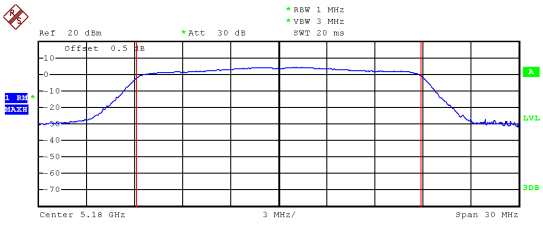
Date: 22.JUL.2024 12:24:12

802.11n(HT40) high channel



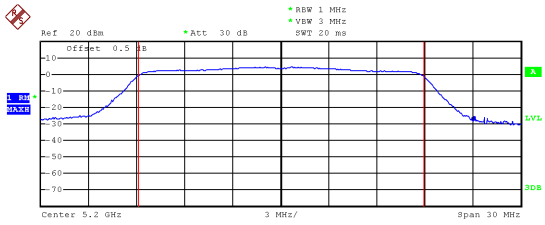
Date: 22.JUL.2024 12:24:57

802.11ac(HT20) low channel



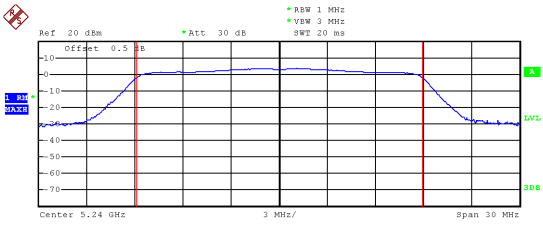
Date: 22.JUL.2024 14:14:16

802.11ac(HT20) Middle channel



Date: 22.JUL.2024 14:13:18

802.11ac(HT20) High channel



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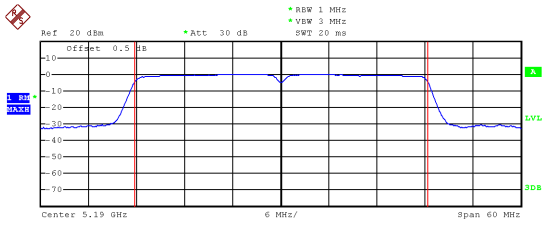
802.11ac(HT40) low channel



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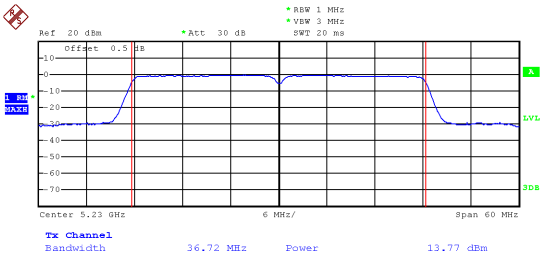
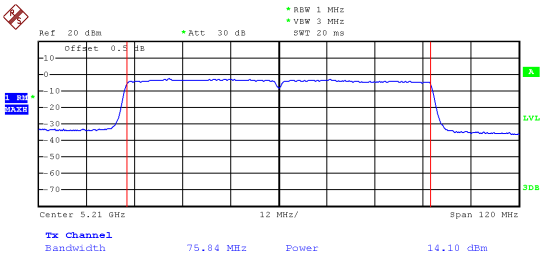
802.11ac(HT40) High channel



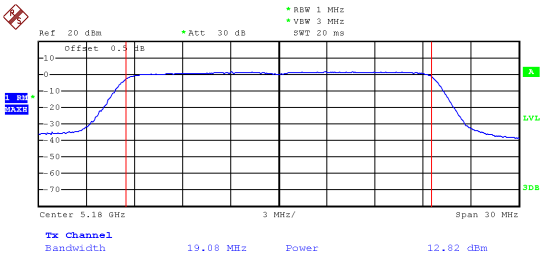
Date: 22.JUL.2024 12:14:16

802.11ac(HT80) Middle channel



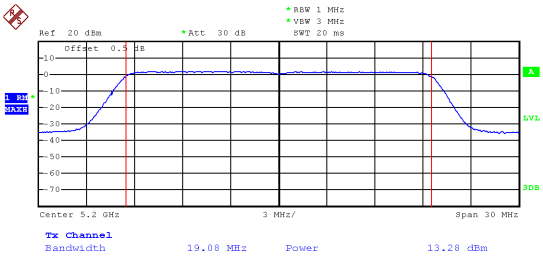
Date: 22.JUL.2024 12:09:28

802.11ax(HT20) low channel



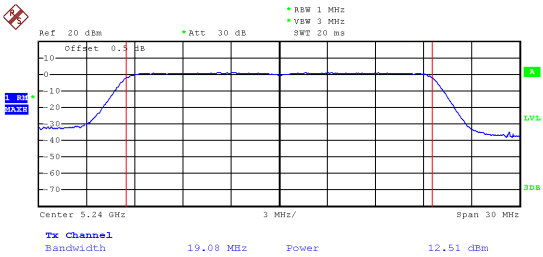
Date: 22.JUL.2024 14:15:01

802.11ax(HT20) Middle channel



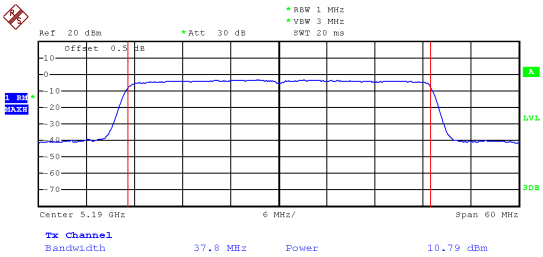
Date: 22.JUL.2024 14:15:56

802.11ax(HT20) High channel



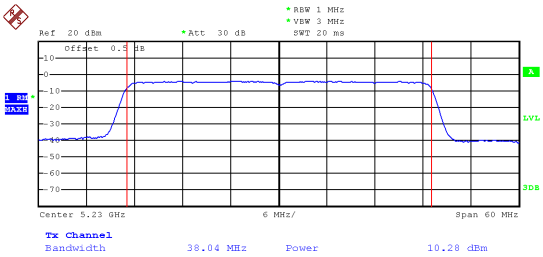
Date: 22.JUL.2024 14:16:47

802.11ax(HT40) low channel



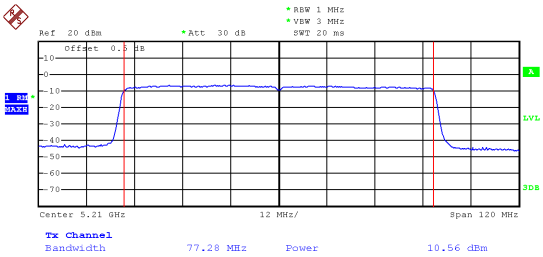
Date: 22.JUL.2024 12:12:13

802.11ax(HT40) High channel



Date: 22.JUL.2024 12:13:16

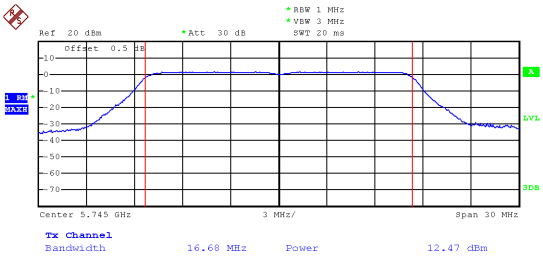
802.11ax(HT80) Middle channel



Date: 22.JUL.2024 12:11:10

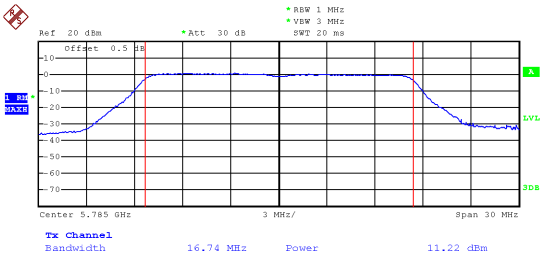
802.11a U-NII-3

802.11a low channel



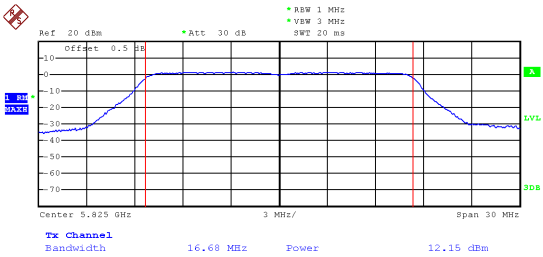
Date: 23.JUL.2024 14:15:51

802.11a middle channel



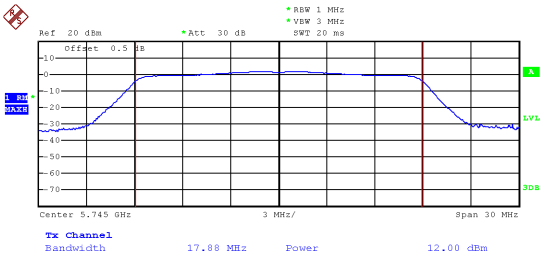
Date: 23.JUL.2024 14:15:16

802.11a high channel



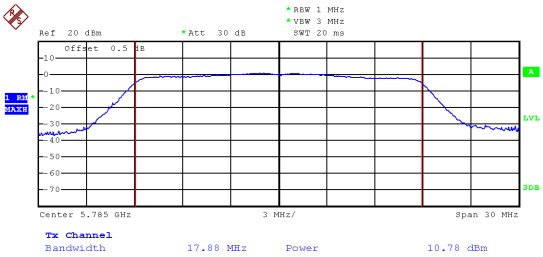
Date: 23.JUL.2024 14:13:09

802.11n(HT20) low channel



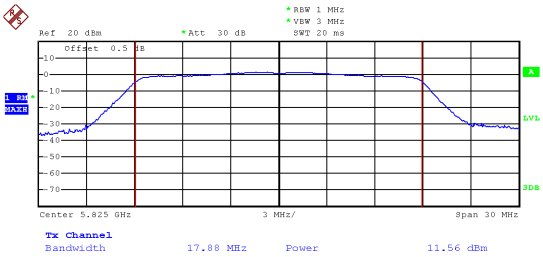
Date: 23.JUL.2024 14:16:36

802.11n(HT20) middle channel



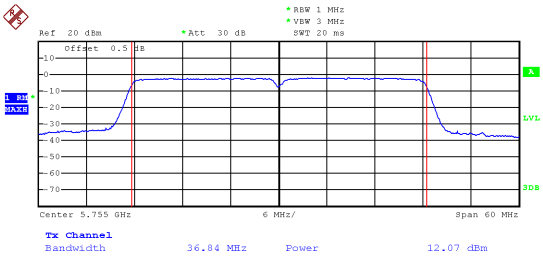
Date: 23.JUL.2024 14:17:13

802.11n(HT20) high channel



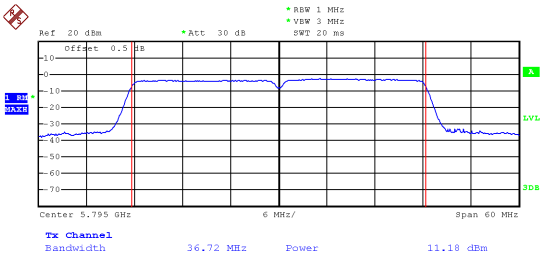
Date: 23.JUL.2024 14:20:07

802.11n(HT40) low channel



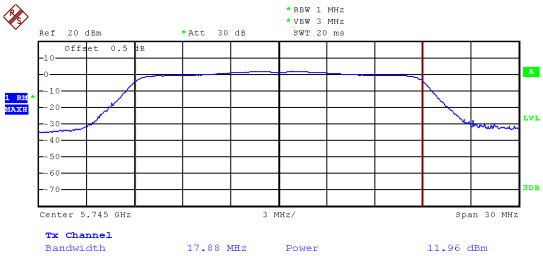
Date: 23.JUL.2024 14:25:56

802.11n(HT40) high channel



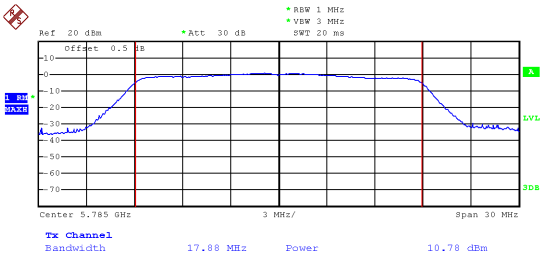
Date: 23.JUL.2024 14:25:11

802.11ac(HT20) low channel



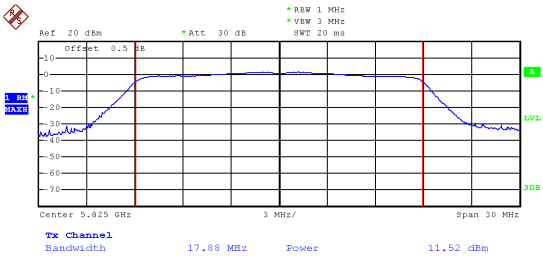
Date: 23.JUL.2024 14:21:21

802.11ac(HT20) Middle channel



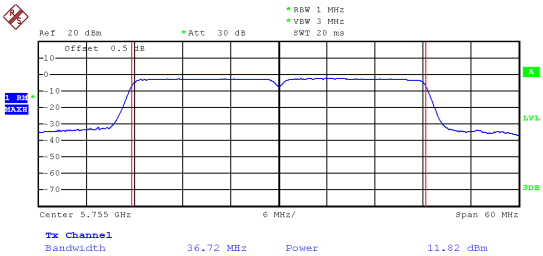
Date: 23.JUL.2024 14:20:57

802.11ac(HT20) High channel



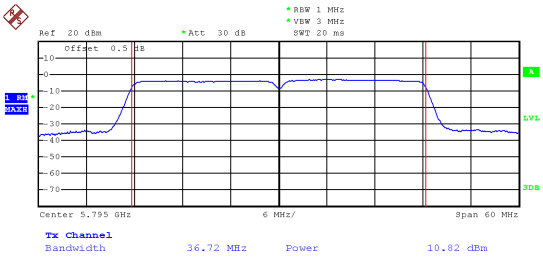
Date: 23.JUL.2024 14:19:26

802.11ac(HT40) low channel



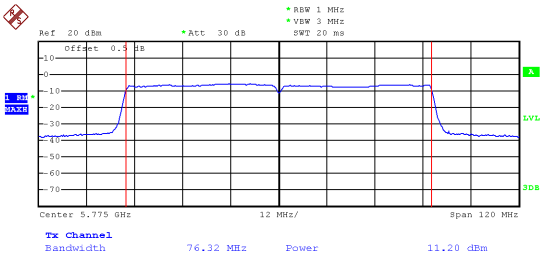
Date: 23.JUL.2024 14:27:08

802.11ac(HT40) High channel



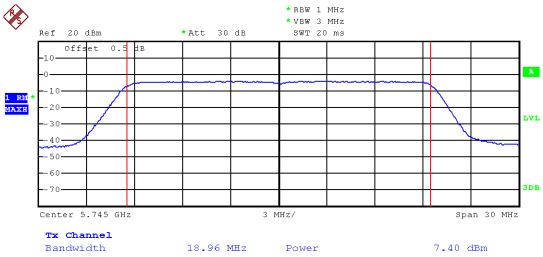
Date: 23.JUL.2024 14:27:38

802.11ac(HT80) Middle channel



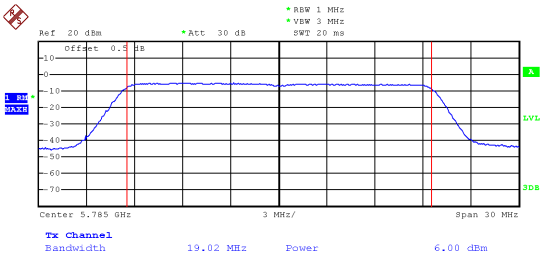
Date: 23.JUL.2024 14:30:34

802.11ax(HT20) low channel



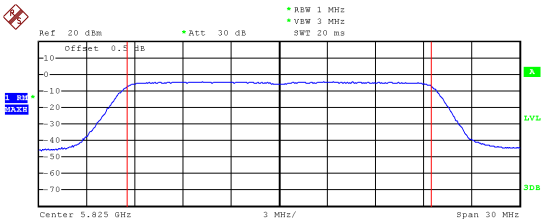
Date: 23.JUL.2024 14:22:21

802.11ax(HT20) Middle channel



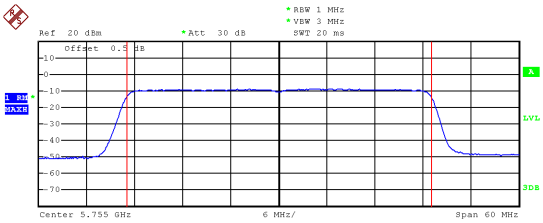
Date: 23.JUL.2024 14:22:56

802.11ax(HT20) High channel



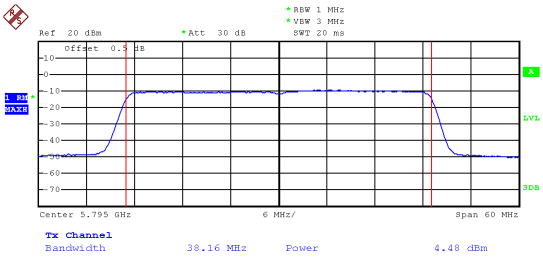
Date: 23.JUL.2024 14:23:45

802.11ax(HT40) low channel



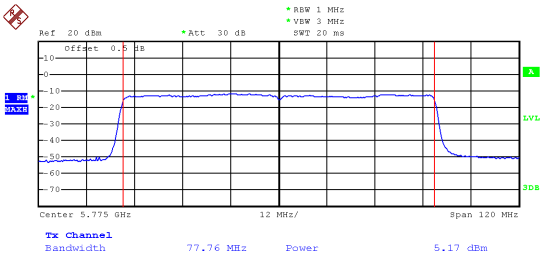
Date: 23.JUL.2024 14:29:10

802.11ax(HT40) High channel



Date: 23.JUL.2024 14:28:21

802.11ax(HT80) Middle channel



Date: 23.JUL.2024 14:29:53

14 Power Spectral density

Test Requirement:	FCC 47CFR Part 15 Section 15.407(a)
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Test Limit:	≤11dBm/MHz for Operation in the U-NII-1(5150MHz-5250MHz,5250-5350MHz and 5470-5725MHz)of device; ≤30dBm/500kHz for Operation in the U-NII-3(5725MHz-5850MHz)of device
Test Result:	PASS

14.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer:

U-NII-1

RBW = 1MHz, VBW ≥3* RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.

U-NII-3

RBW = 510KHz, VBW ≥3* RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

14.2 Test Result

Note:
[1] According to ANSI C63.10 clause 14.6.3.2.4,

a) If transmit signals are correlated, then:

$$\text{Directional gain} = 10\log\left[\left(10^{G_1/20}+10^{G_2/20}+\ldots+10^{G_N/20}\right)^2 / N_{ANT}\right] \text{ dBi} \quad (40)$$

NOTE— the purpose of the factor 20 in the denominator of each exponent and the square of the sum of terms is to combine the signal levels coherently.

According to ANSI C63.10 clause 11.7,
For those cases where it is specified that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6dBi, the output power effective limit shall be calculated as follows in Equation:

$$P_{out} = P_{Limit} - (G_{TX} - 6)$$

For U-NII-1: the Directional gain is 7.86dBi that greater than 6dBi, Limit of power (SUM) is **9.14 dBm/MHz**.

For U-NII-3: the Directional gain is 7.86dBi that greater than 6dBi, Limit of power (SUM) is **28.14 dBm/500kHz**

Ant 0:

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Conducted Output Power Spectral Density (dBm/MHz)
U-NII-1	802.11a	Low	4.17	4.00	8.17
		Middle	4.40		**8.40**
		High	3.68		7.68
	802.11n(HT20)	Low	0.95	5.22	6.17
		Middle	0.33		5.55
		High	0.13		5.35
	802.11n(HT40)	Low	0.37	1.82	2.19
		High	0.07		1.89
	802.11ac(HT20)	Low	4.56	1.07	5.63
		Middle	4.28		5.35
		High	4.18		5.25
	802.11ac(HT40)	Low	0.13	2.55	2.68
		High	-0.24		2.31
	802.11ac(HT80)	Middle	-2.96	3.16	0.20
	802.11ax(HT20)	Low	1.97	1.51	3.48
		Middle	2.10		3.61
		High	1.74		3.25
	802.11ax(HT40)	Low	-2.92	1.41	-1.51
		High	-3.52		-2.11
	802.11ax(HT80)	Middle	-6.06	1.85	-4.21

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Conducted Output Power Spectral Density (dBm/MHz)
U-NII-3	802.11a	Low	2.19	2.79	4.98
		Middle	2.59		5.38
		High	2.90		5.69
	802.11n(HT20)	Low	2.27	3.25	5.52
		Middle	2.73		5.98
		High	1.73		4.98
	802.11n(HT40)	Low	0.39	4.10	4.49
		High	1.93		6.03
	802.11ac(HT20)	Low	1.73	0.07	1.80
		Middle	2.31		2.38
		High	2.53		2.60
	802.11ac(HT40)	Low	0.81	2.15	2.96
		High	1.52		3.67
	802.11ac(HT80)	Low	-2.89	8.23	5.34
	802.11ax(HT20)	Low	-0.65	0.08	-0.57
		Middle	1.34		1.42
		High	0.56		0.64
	802.11ax(HT40)	Low	-4.45	1.67	-2.78
		High	-3.75		-2.08
	802.11ax(HT80)	Low	-1.34	1.72	0.39

Ant 1:

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Conducted Output Power Spectral Density (dBm/MHz)
U-NII-1	802.11a	Low	4.21	2.50	6.71
		Middle	4.24		6.74
		High	3.34		5.84
	802.11n(HT20)	Low	0.28	4.07	4.35
		Middle	-0.18		3.89
		High	-0.36		3.71
	802.11n(HT40)	Low	0.56	2.40	2.96
		High	-0.04		2.36
	802.11ac(HT20)	Low	1.10	4.49	5.59
		Middle	0.35		4.84
		High	0.10		4.59
	802.11ac(HT40)	Low	-0.13	0.69	0.56
		High	-0.62		0.07
	802.11ac(HT80)	Middle	-3.00	3.24	0.24
	802.11ax(HT20)	Low	1.62	4.21	5.83
		Middle	1.26		5.47
		High	1.14		5.35
	802.11ax(HT40)	Low	-3.51	2.11	-1.4
		High	-4.17		-2.06
	802.11ax(HT80)	Middle	-6.63	1.61	-5.02

Band	Operation mode	Channel	Measurements (dBm/MHz)	Duty Cycle Factor (dB)	Conducted Output Power Spectral Density (dBm/MHz)
U-NII-3	802.11a	Low	1.84	1.73	3.57
		Middle	2.92		4.65
		High	2.95		4.68
	802.11n(HT20)	Low	2.15	2.03	4.18
		Middle	2.57		4.60
		High	2.81		4.84
	802.11n(HT40)	Low	-1.14	1.37	0.23
		High	-0.03		1.34
	802.11ac(HT20)	Low	2.23	2.62	4.85
		Middle	2.59		5.21
		High	2.74		5.36
	802.11ac(HT40)	Low	-1.52	1.05	-0.47
		High	-0.81		0.24
	802.11ac(HT80)	Low	-4.25	1.50	-2.75
	802.11ax(HT20)	Low	-0.17	0.08	-0.09
		Middle	0.81		0.89
		High	0.41		0.49
	802.11ax(HT40)	Low	-4.38	0.60	-3.78
		High	-3.50		-2.90
	802.11ax(HT80)	Low	-2.72	0.30	-2.42

Ant 0+Ant 1:

Band	Operation mode	Channel	Conducted Output Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
U-NII-1	802.11n(HT20)	Low	8.36	9.14
		Middle	7.81	9.14
		High	7.62	9.14
	802.11n(HT40)	Low	5.60	9.14
		High	5.14	9.14
	802.11ac(HT20)	Low	8.62	9.14
		Middle	8.11	9.14
		High	7.94	9.14
	802.11ac(HT40)	Low	4.76	9.14
		High	4.34	9.14
	802.11ac(HT80)	Middle	3.23	9.14
	802.11ax(HT20)	Low	7.82	9.14
		Middle	7.65	9.14
		High	7.44	9.14
	802.11ax(HT40)	Low	1.56	9.14
		High	0.93	9.14
	802.11ax(HT80)	Middle	-1.59	9.14

Band	Operation mode	Channel	Conducted Output Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
U-NII-3	802.11n(HT20)	Low	7.91	28.14
		Middle	8.35	28.14
		High	7.92	28.14
	802.11n(HT40)	Low	5.87	28.14
		High	7.30	28.14
	802.11ac(HT20)	Low	6.60	28.14
		Middle	7.03	28.14
		High	7.21	28.14
	802.11ac(HT40)	Low	4.59	28.14
		High	5.30	28.14
	802.11ac(HT80)	Middle	5.97	28.14
	802.11ax(HT20)	Low	2.69	28.14
		Middle	4.17	28.14
		High	3.58	28.14
	802.11ax(HT40)	Low	-0.24	28.14
		High	0.54	28.14
	802.11ax(HT80)	Middle	2.22	28.14

Note:

1. Conducted Output Power Spectral Density = Measurements + Duty Cycle Factor

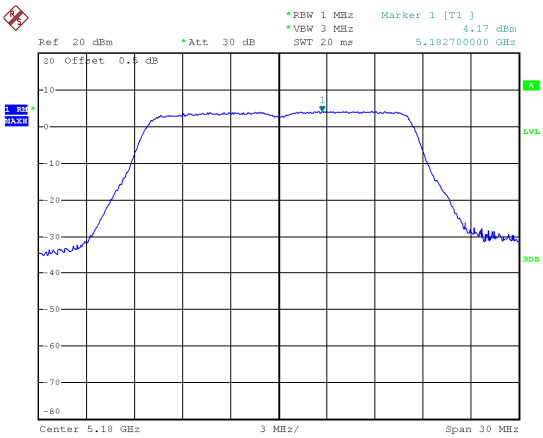
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

Ant 0

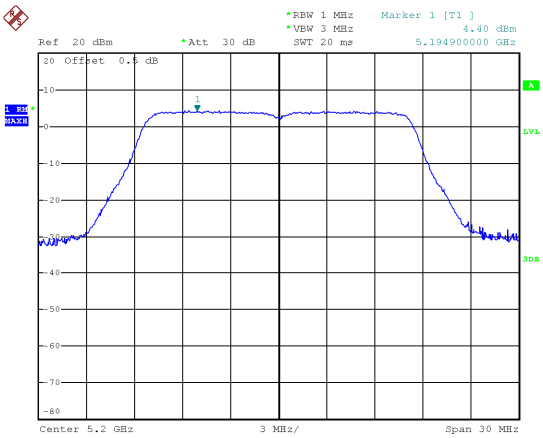
802.11a U-NII-1

802.11a low channel



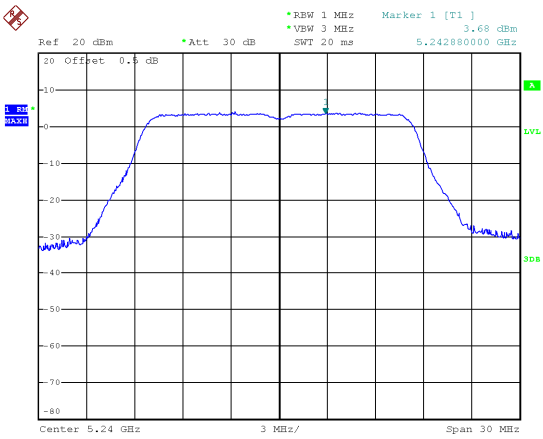
Date: 22.JUL.2024 14:39:01

802.11a middle channel



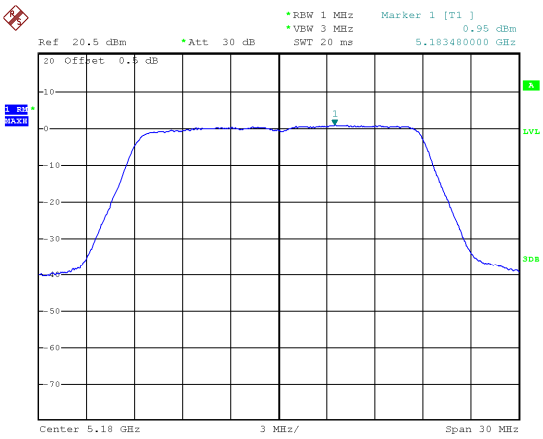
Date: 22.JUL.2024 14:38:36

802.11a high channel



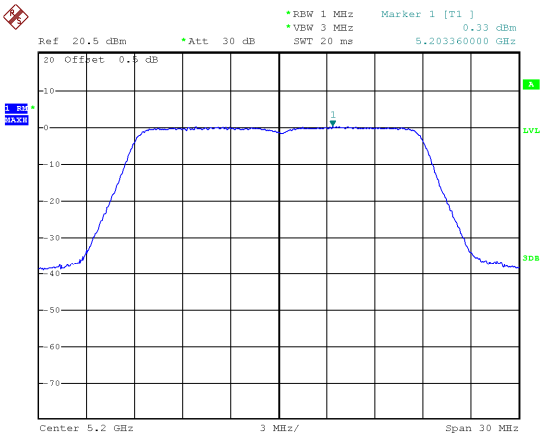
Date: 22.JUL.2024 14:37:58

802.11n(HT20) low channel



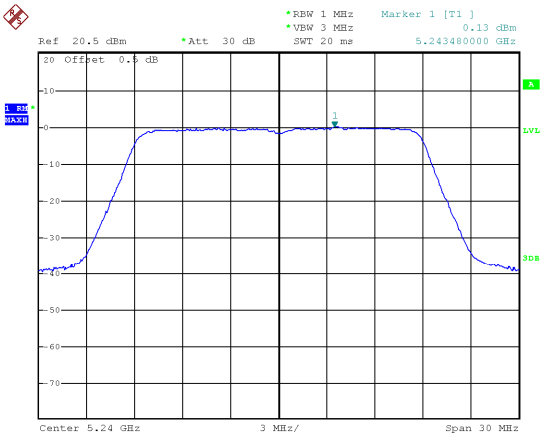
Date: 1.AUG.2024 17:36:45

802.11n(HT20) middle channel



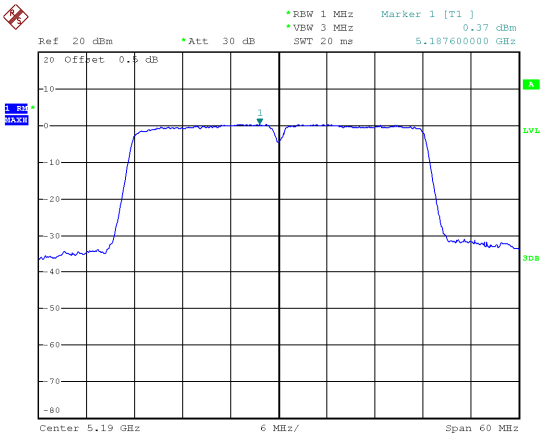
Date: 1.AUG.2024 17:37:34

802.11n(HT20) high channel



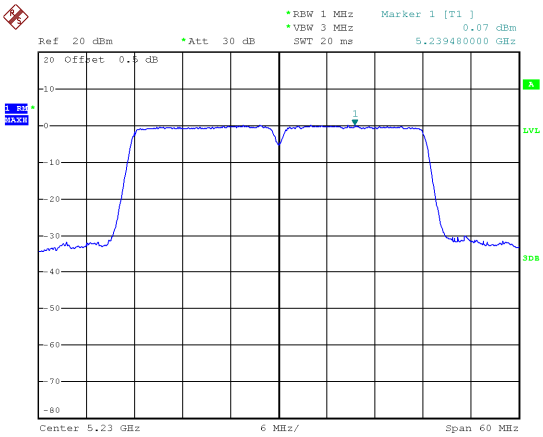
Date: 1.AUG.2024 17:38:23

802.11n(HT40) low channel



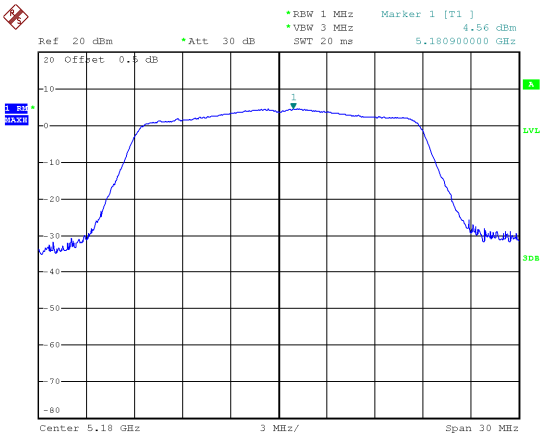
Date: 22.JUL.2024 14:36:51

802.11n(HT40) high channel



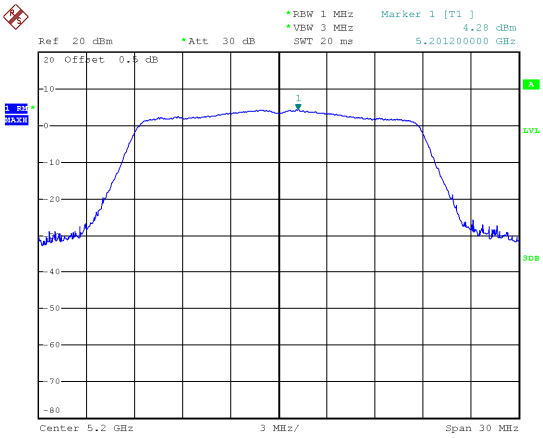
Date: 22.JUL.2024 14:37:21

802.11ac(HT20) low channel



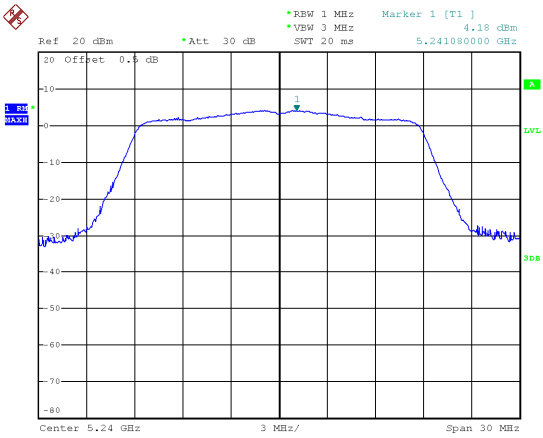
Date: 22.JUL.2024 14:43:35

802.11ac(HT20) Middle channel



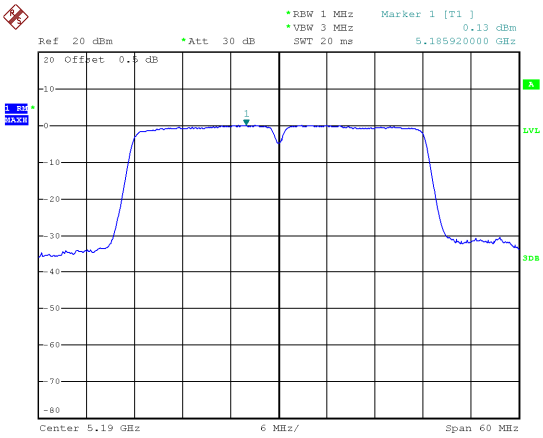
Date: 22.JUL.2024 14:43:01

802.11ac(HT20) High channel



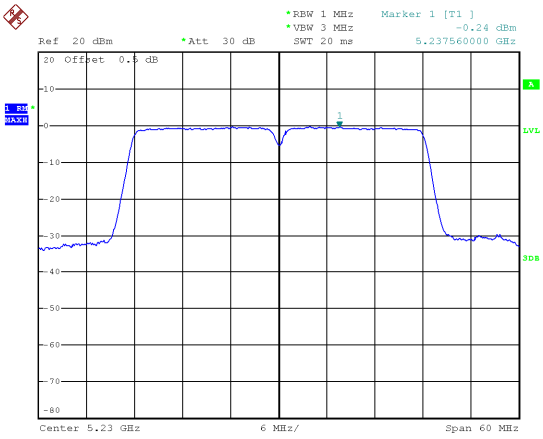
Date: 22.JUL.2024 14:42:30

802.11ac(HT40) low channel



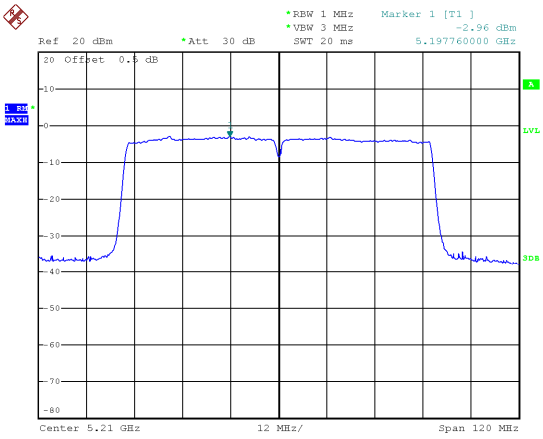
Date: 22.JUL.2024 14:36:22

802.11ac(HT40) High channel



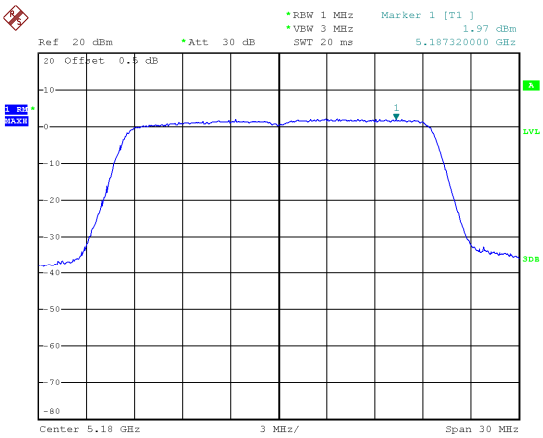
Date: 22.JUL.2024 14:35:51

802.11ac(HT80) Middle channel



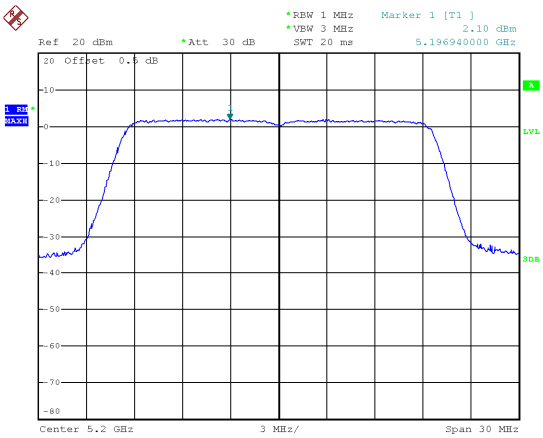
Date: 22.JUL.2024 14:33:55

802.11ax(HT20) low channel



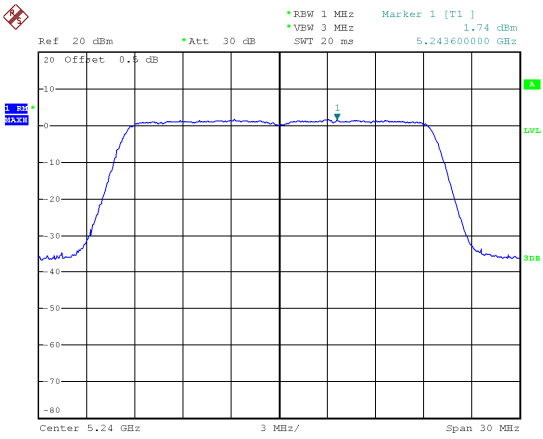
Date: 22.JUL.2024 14:44:11

802.11ax(HT20) Middle channel



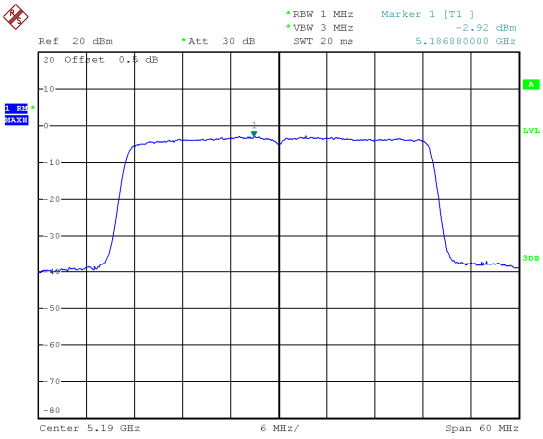
Date: 22.JUL.2024 14:44:39

802.11ax(HT20) High channel



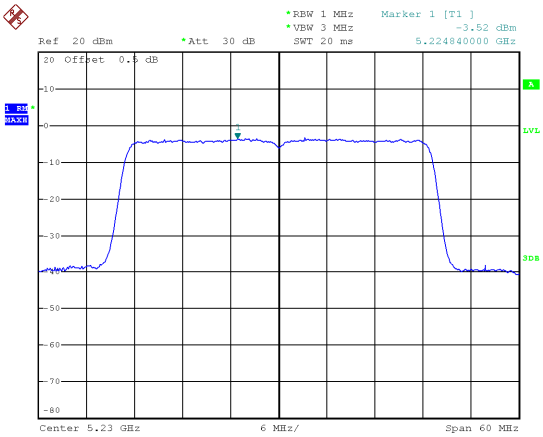
Date: 22.JUL.2024 14:45:09

802.11ax(HT40) low channel



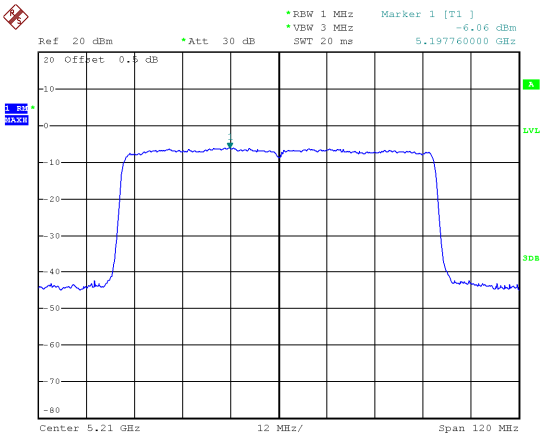
Date: 22.JUL.2024 14:34:54

802.11ax(HT40) High channel



Date: 22.JUL.2024 14:35:14

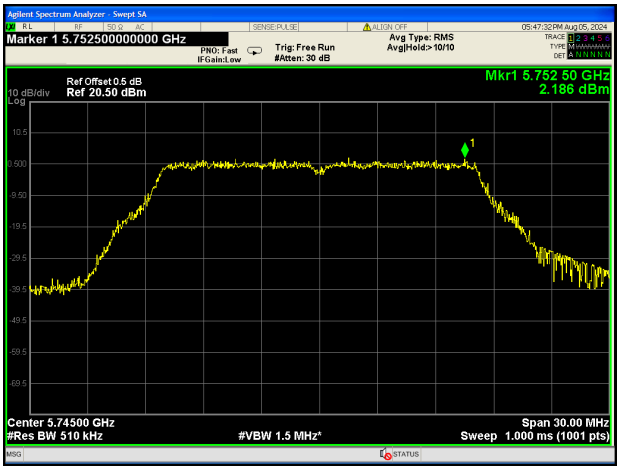
802.11ax(HT80) Low channel



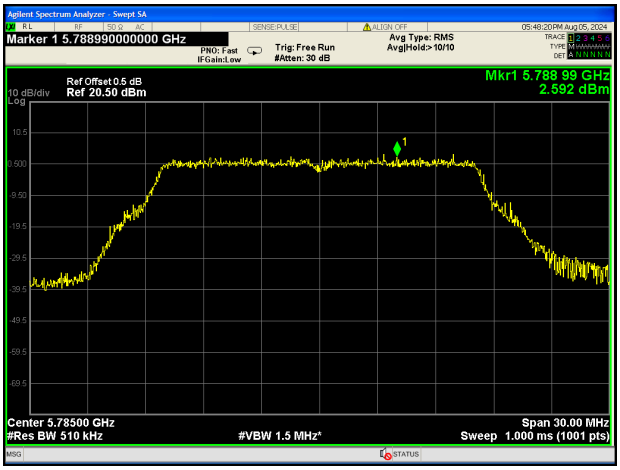
Date: 22.JUL.2024 14:34:23

802.11a U-NII-3

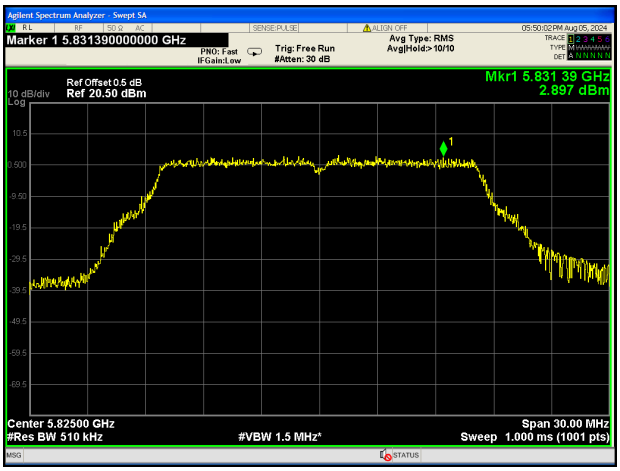
802.11a low channel



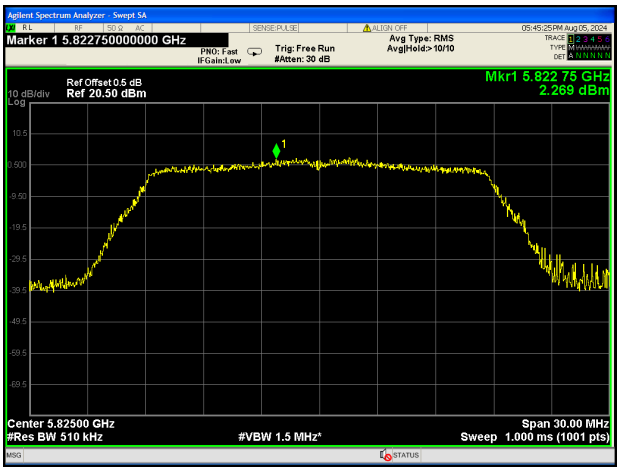
802.11a middle channel



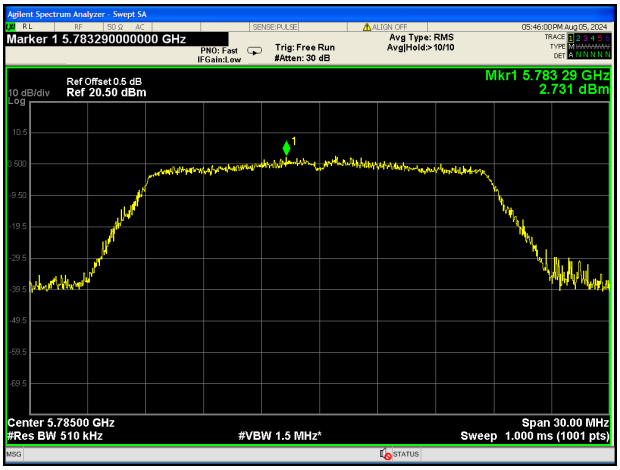
802.11a high channel



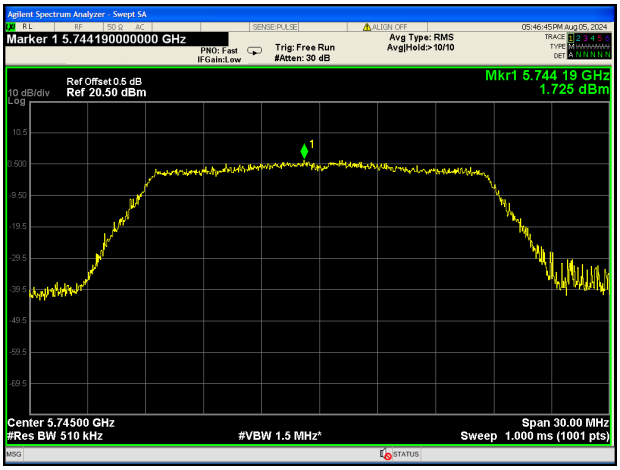
802.11n(HT20) low channel



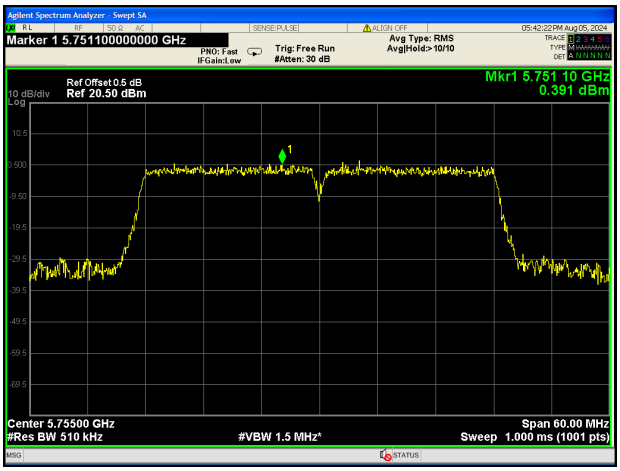
802.11n(HT20) middle channel



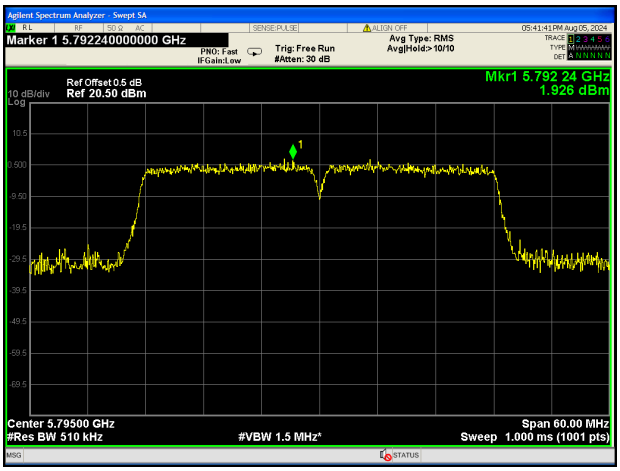
802.11n(HT20) high channel



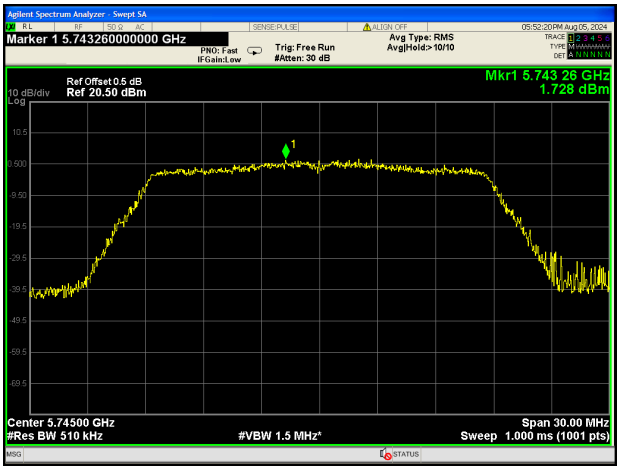
802.11n(HT40) low channel



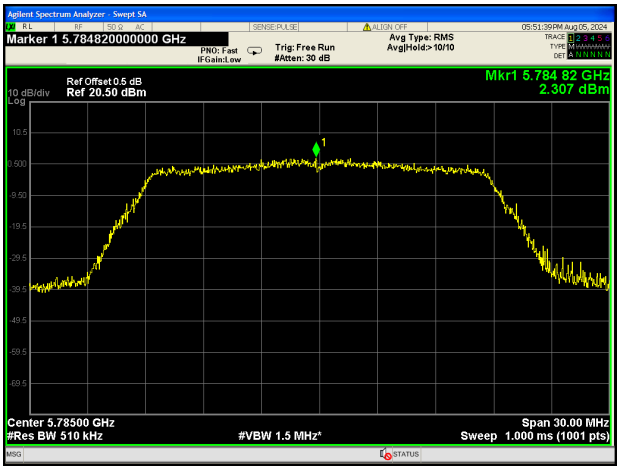
802.11n(HT40) high channel



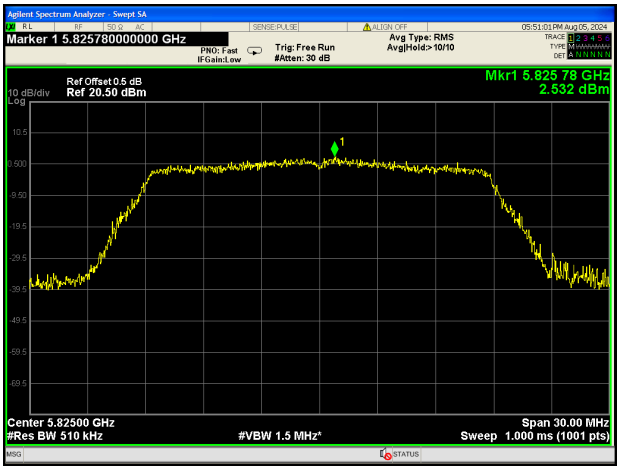
802.11ac(HT20) low channel



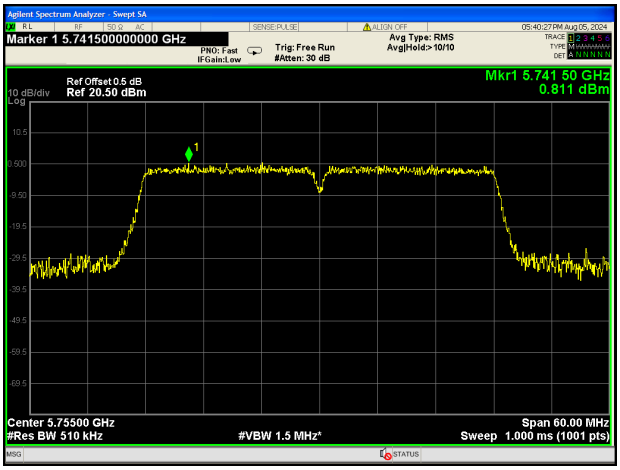
802.11ac(HT20) Middle channel



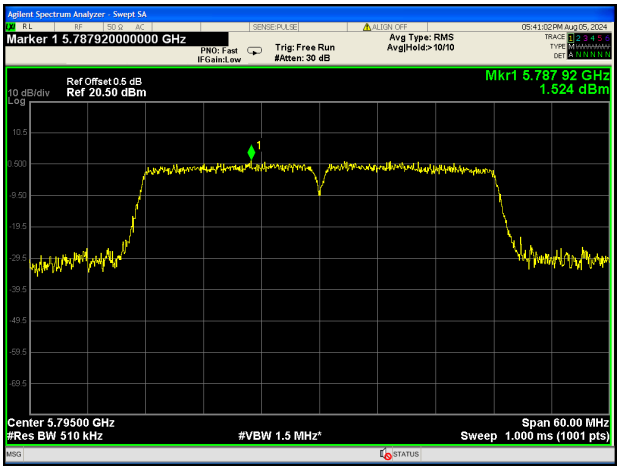
802.11ac(HT20) High channel



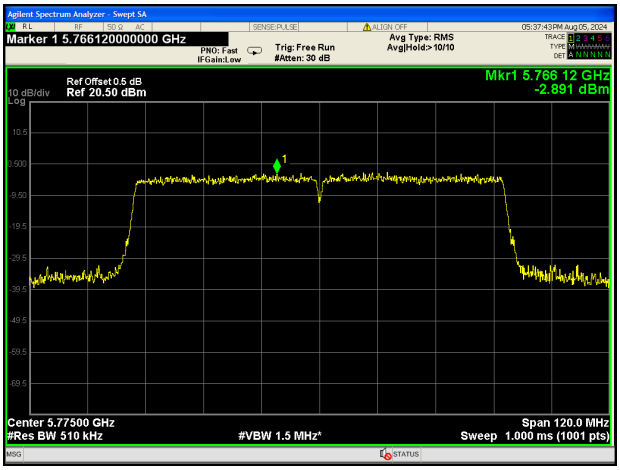
802.11ac(HT40) low channel



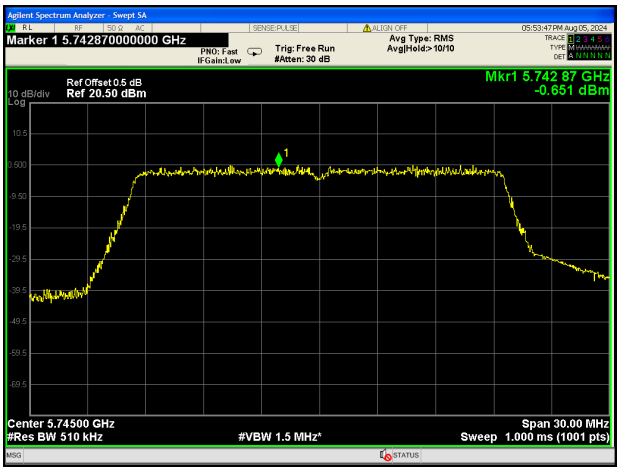
802.11ac(HT40) High channel



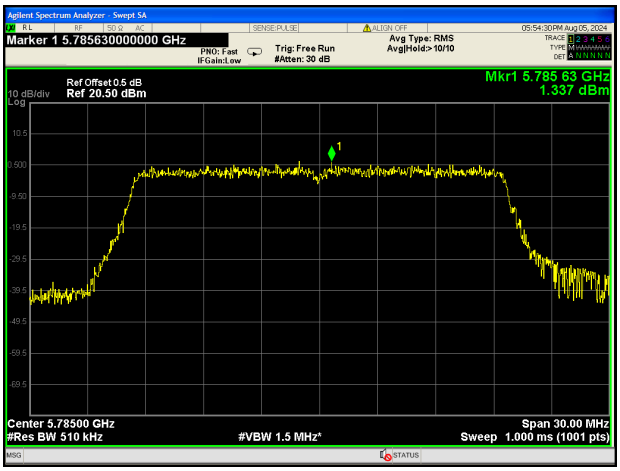
802.11ac(HT80) Low channel



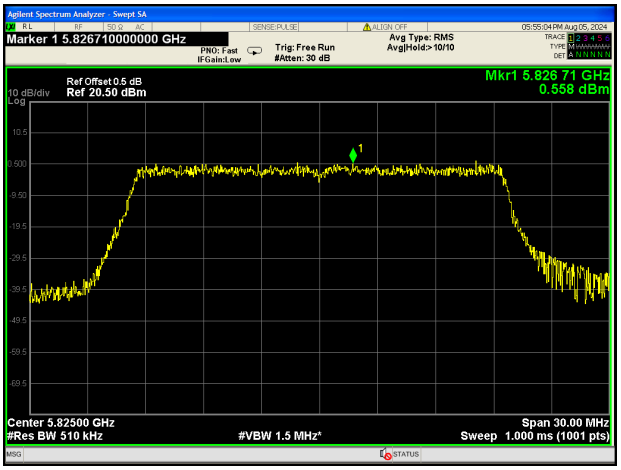
802.11ax(HT20) low channel



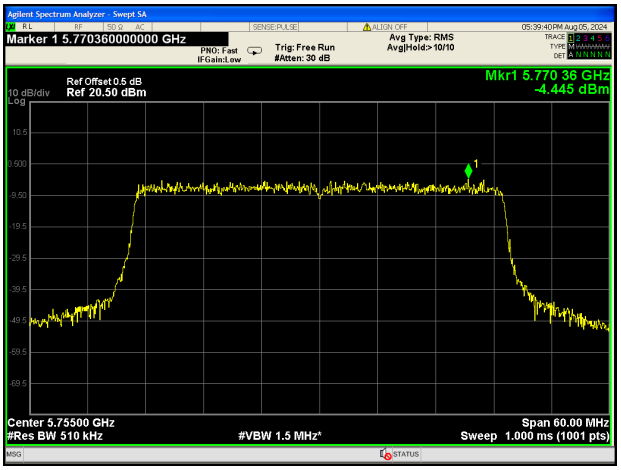
802.11ax(HT20) Middle channel



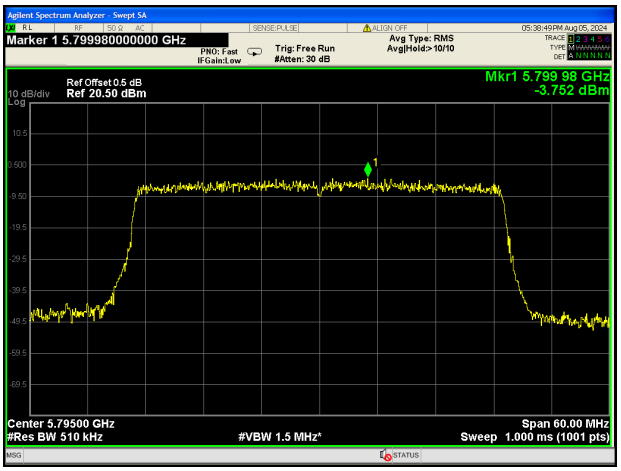
802.11ax(HT20) High channel



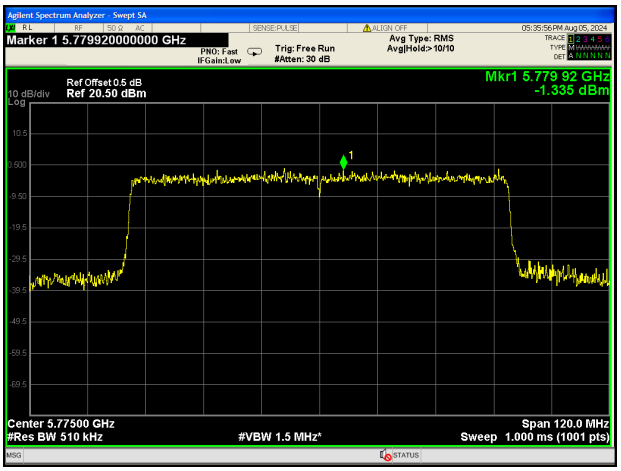
802.11ax(HT40) low channel



802.11ax(HT40) High channel



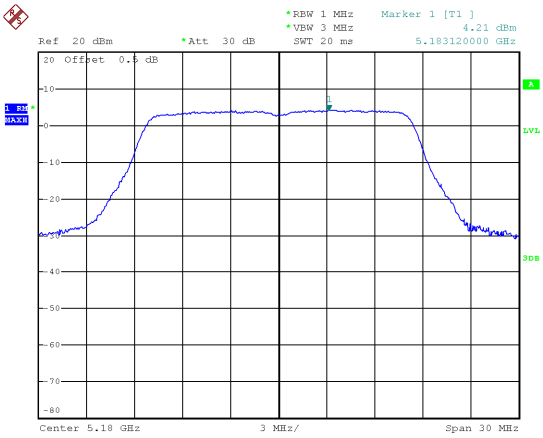
802.11ax(HT80) Low channel



Ant 1

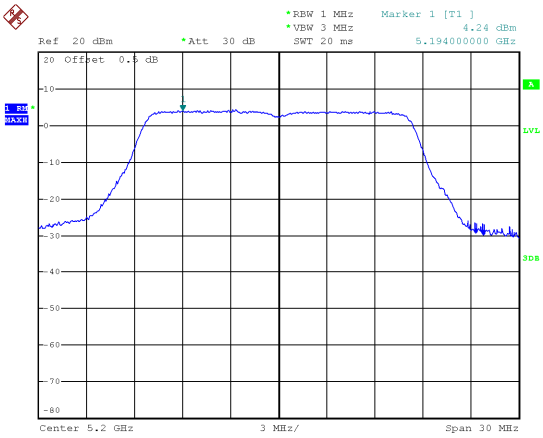
802.11a U-NII-1

802.11a low channel



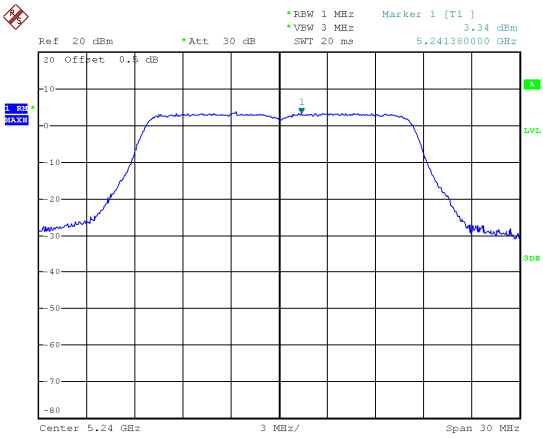
Date: 22.JUL.2024 14:23:20

802.11a middle channel



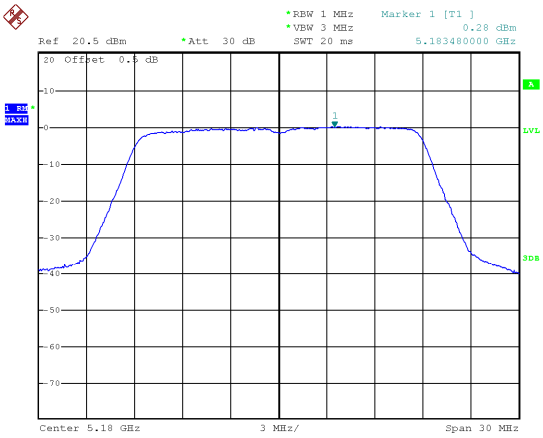
Date: 22.JUL.2024 14:24:01

802.11a high channel



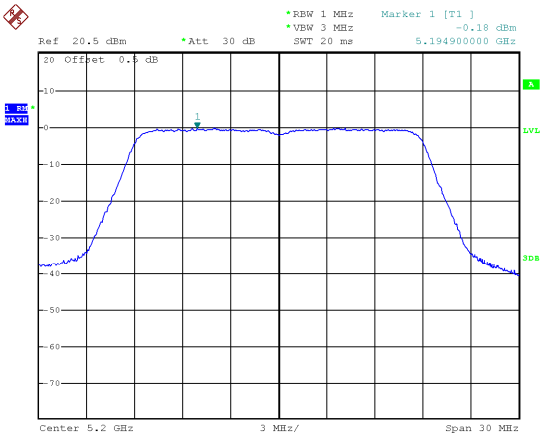
Date: 22.JUL.2024 14:24:25

802.11n(HT20) low channel



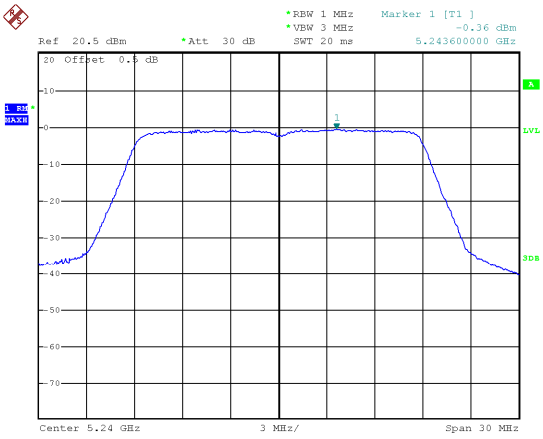
Date: 1.AUG.2024 17:43:37

802.11n(HT20) middle channel



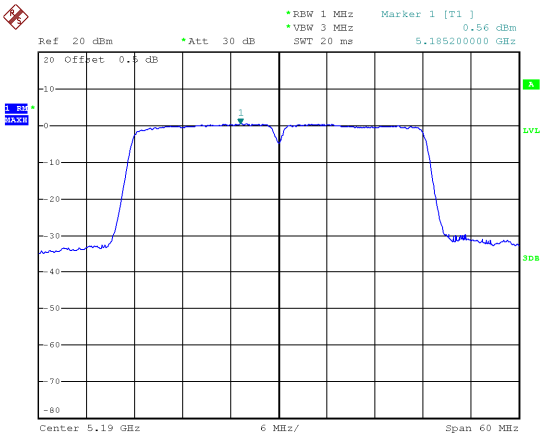
Date: 1.AUG.2024 17:42:35

802.11n(HT20) high channel



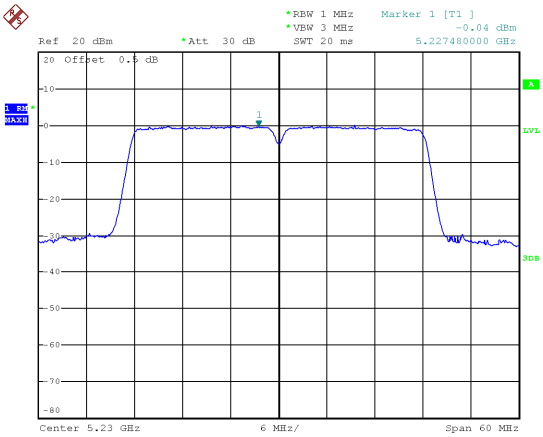
Date: 1.AUG.2024 17:41:40

802.11n(HT40) low channel



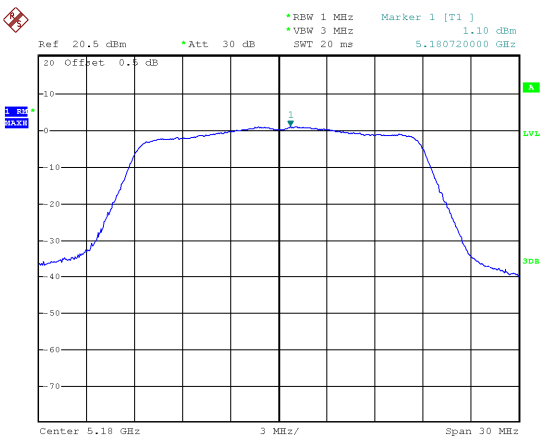
Date: 22.JUL.2024 14:26:04

802.11n(HT40) high channel



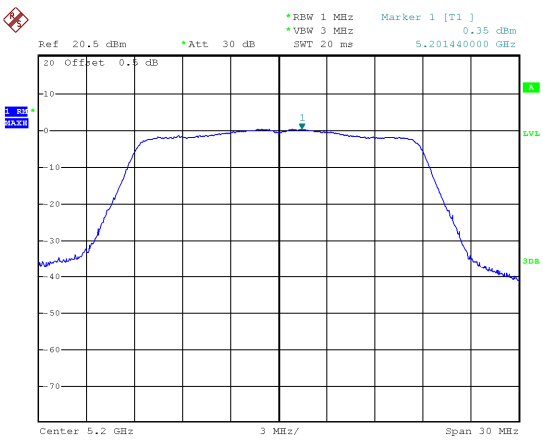
Date: 22.JUL.2024 14:25:28

802.11ac(HT20) low channel



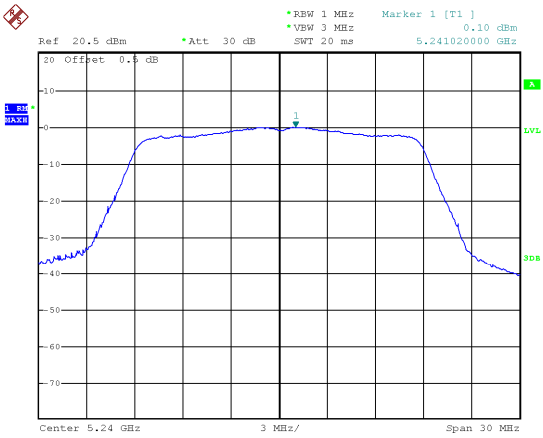
Date: 1.AUG.2024 17:49:40

802.11ac(HT20) Middle channel



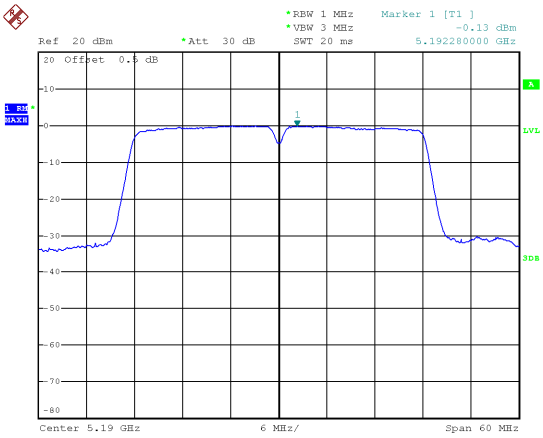
Date: 1.AUG.2024 17:50:20

802.11ac(HT20) High channel



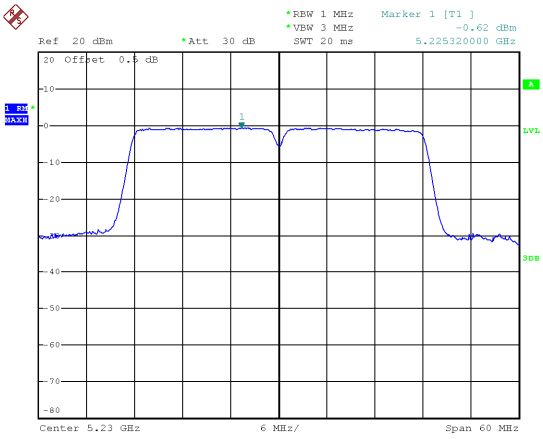
Date: 1.AUG.2024 17:51:02

802.11ac(HT40) low channel



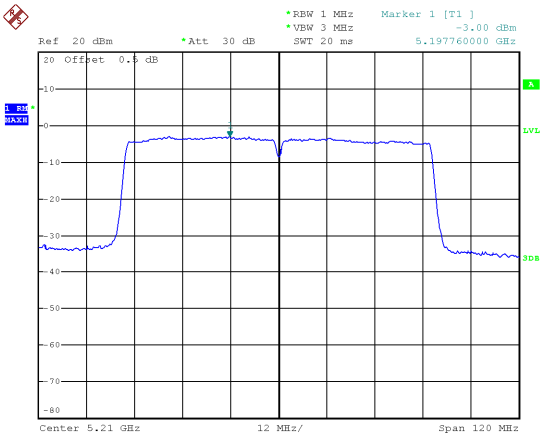
Date: 22.JUL.2024 14:26:31

802.11ac(HT40) High channel



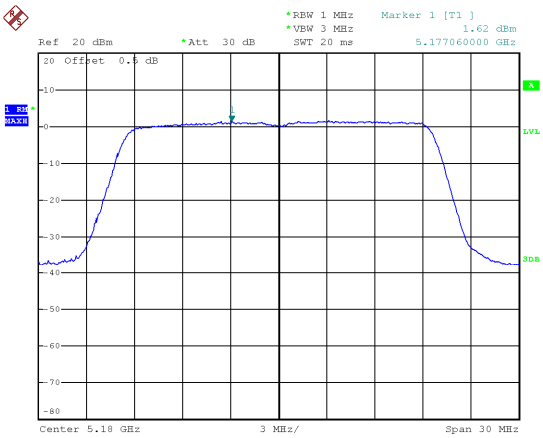
Date: 22.JUL.2024 14:26:58

802.11ac(HT80) Low channel



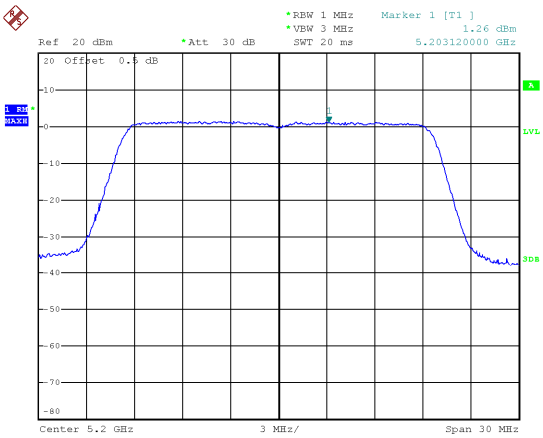
Date: 22.JUL.2024 14:28:55

802.11ax(HT20) low channel



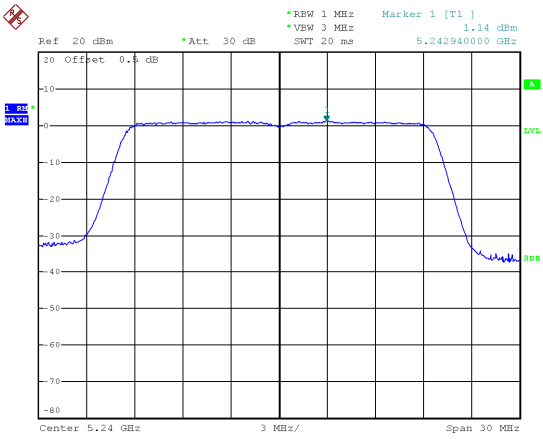
Date: 22.JUL.2024 14:20:09

802.11ax(HT20) Middle channel



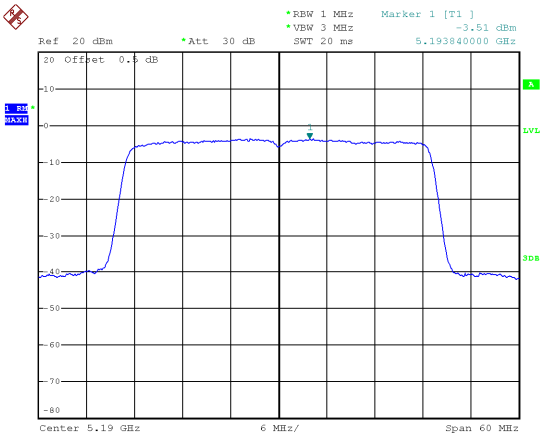
Date: 22.JUL.2024 14:19:41

802.11ax(HT20) High channel



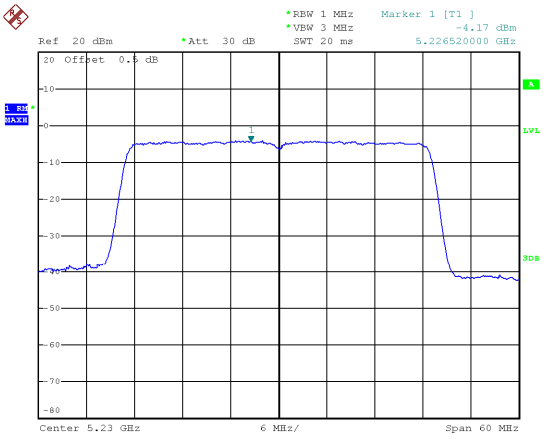
Date: 22.JUL.2024 14:18:43

802.11ax(HT40) low channel



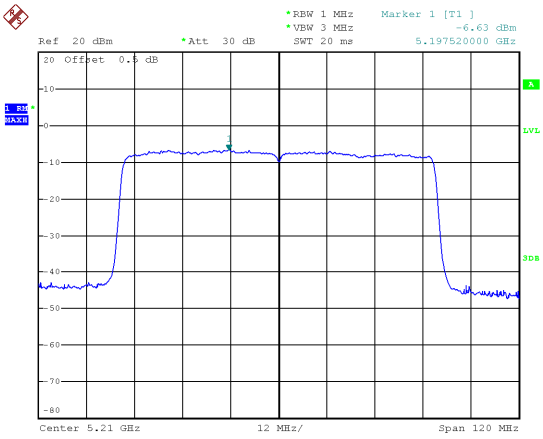
Date: 22.JUL.2024 14:27:52

802.11ax(HT40) High channel



Date: 22.JUL.2024 14:27:23

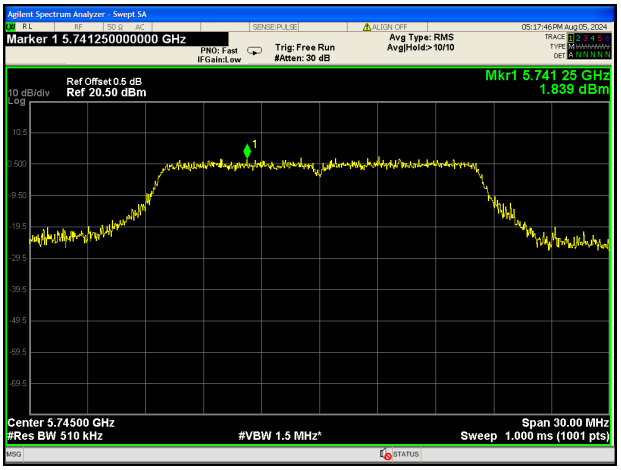
802.11ax(HT80) Low channel



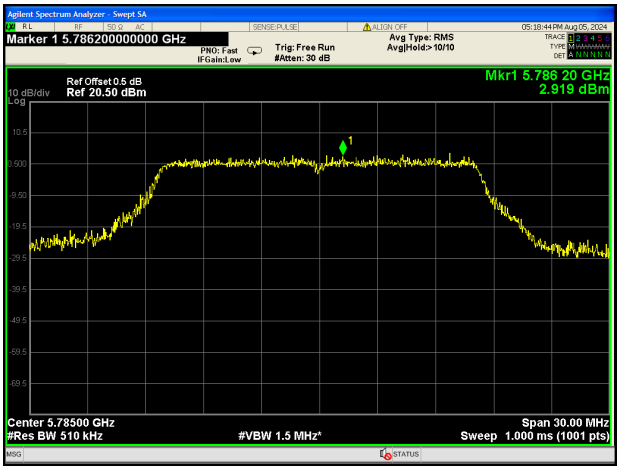
Date: 22.JUL.2024 14:28:25

802.11a U-NII-3

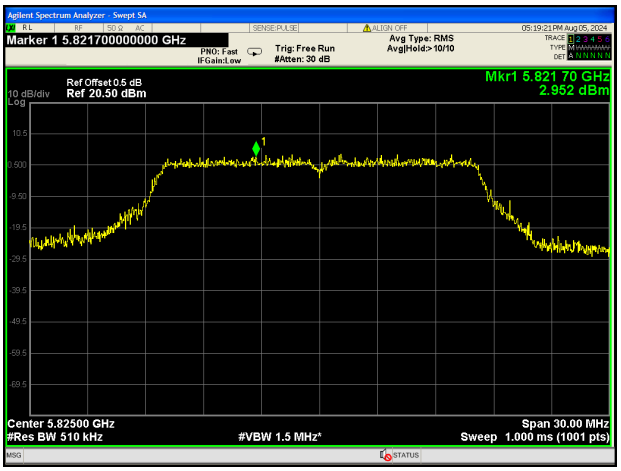
802.11a low channel



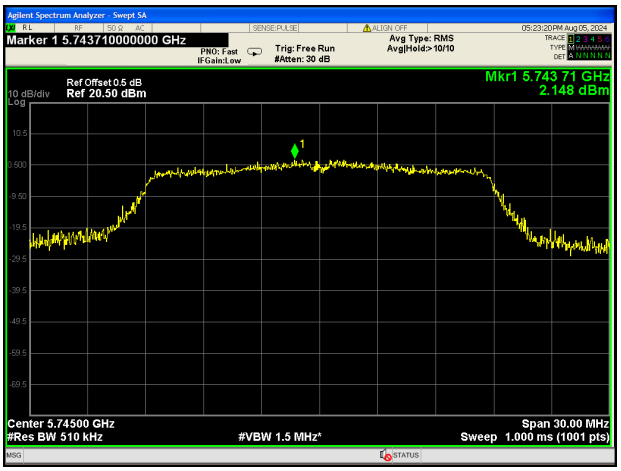
802.11a middle channel



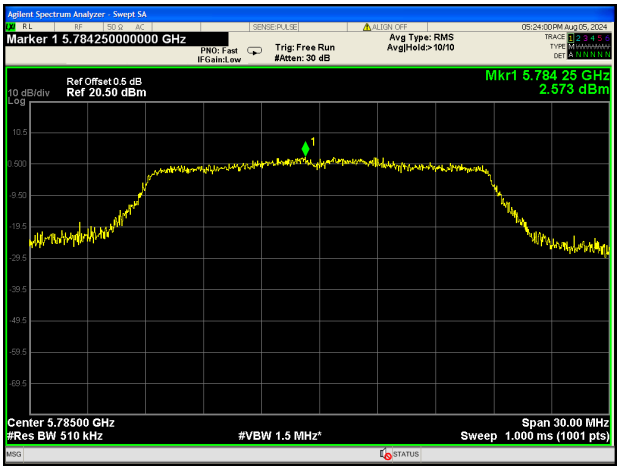
802.11a high channel



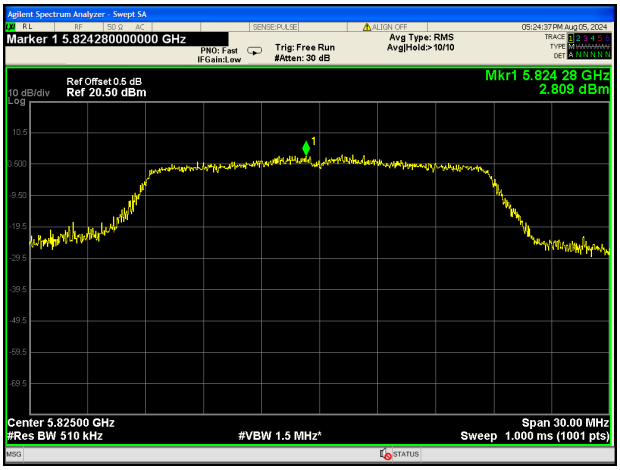
802.11n(HT20) low channel



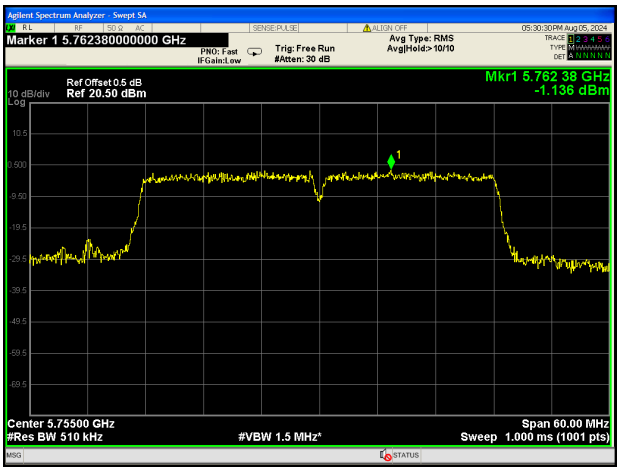
802.11n(HT20) middle channel



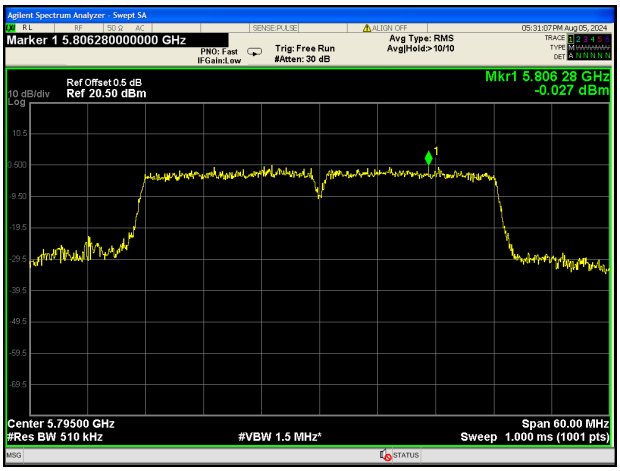
802.11n(HT20) high channel



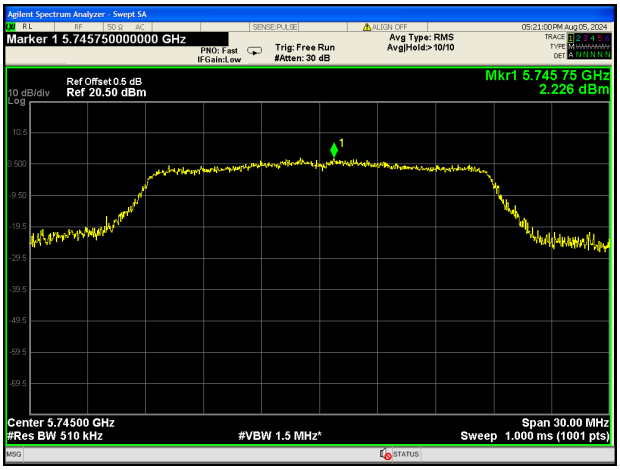
802.11n(HT40) low channel



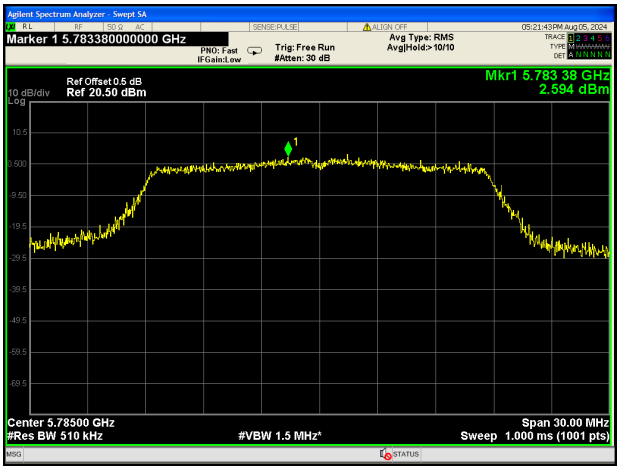
802.11n(HT40) high channel



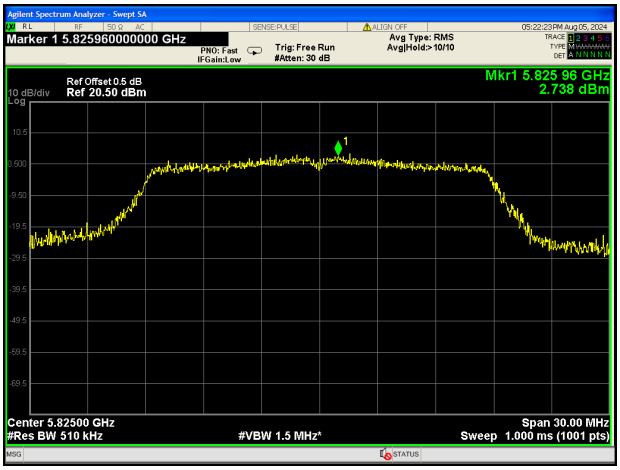
802.11ac(HT20) low channel



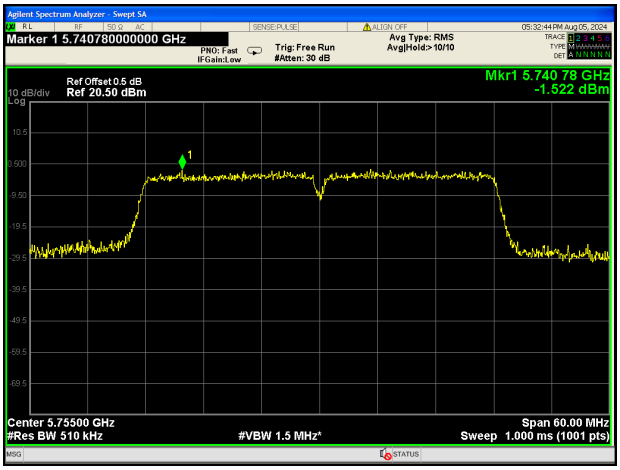
802.11ac(HT20) Middle channel



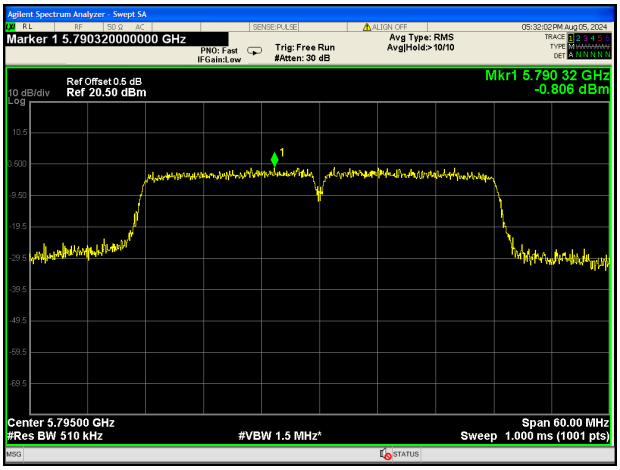
802.11ac(HT20) High channel



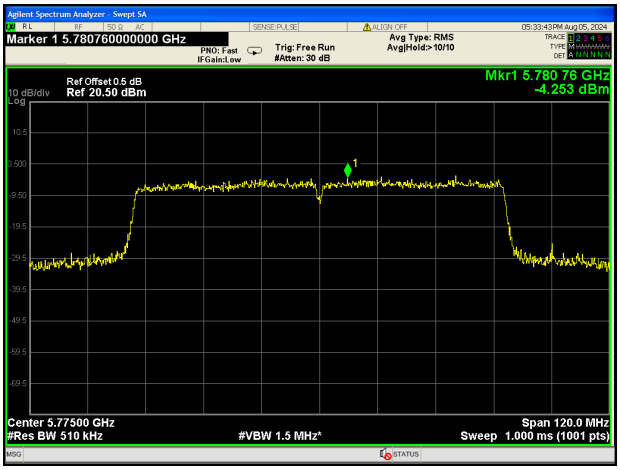
802.11ac(HT40) low channel



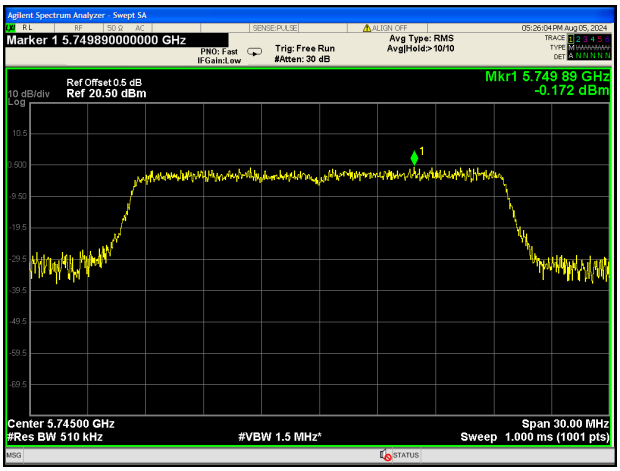
802.11ac(HT40) High channel



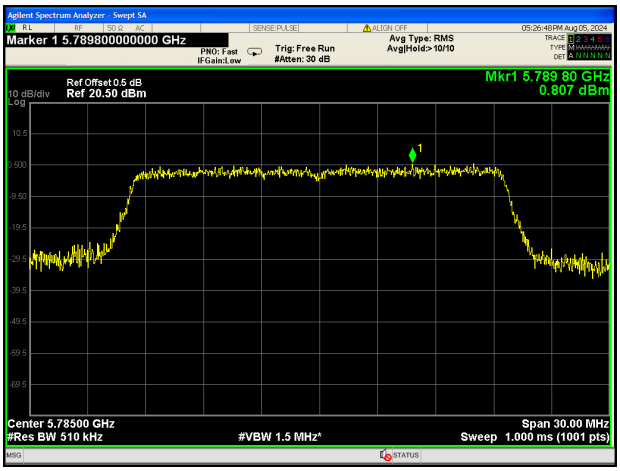
802.11ac(HT80) Low channel



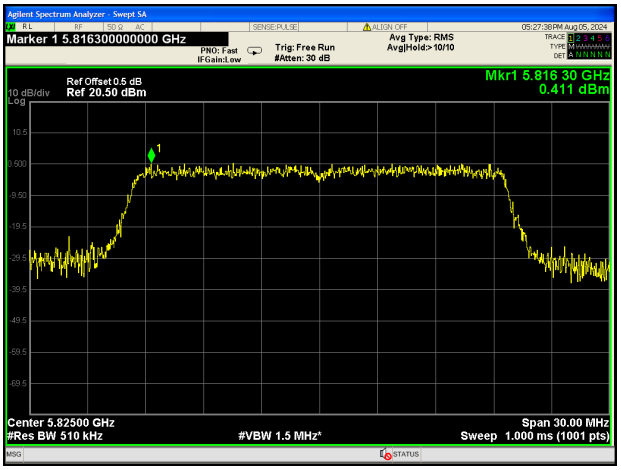
802.11ax(HT20) low channel



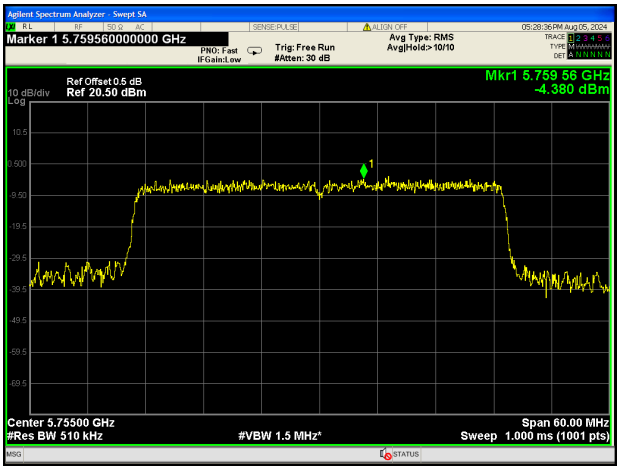
802.11ax(HT20) Middle channel



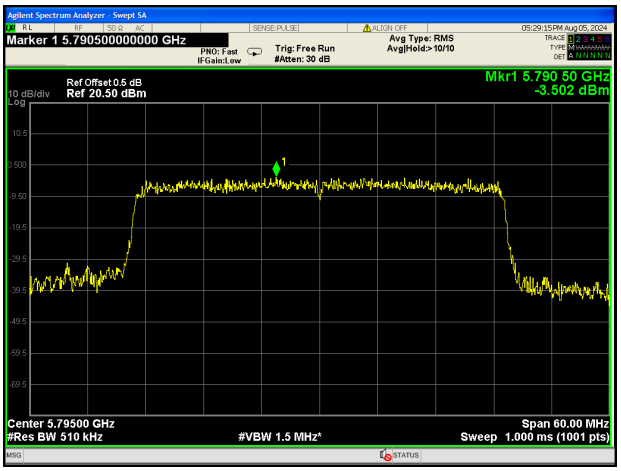
802.11ax(HT20) High channel



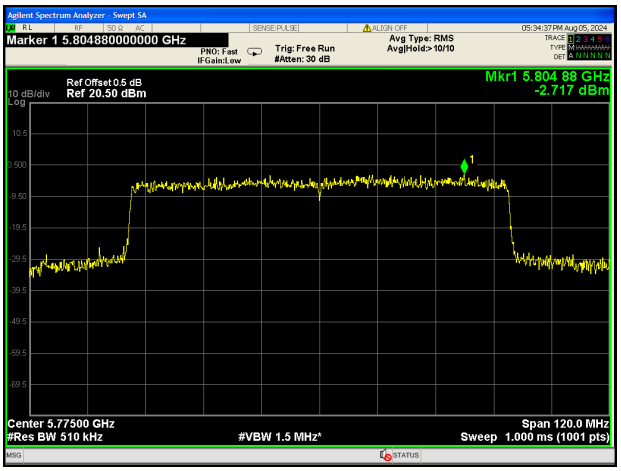
802.11ax(HT40) low channel



802.11ax(HT40) High channel



802.11ax(HT80) Low channel



15 Frequency Stability

Test Requirement:	FCC 47CFR Part 15 Section 15.407(g)
Test Method:	ANSI C63.10:2013
Test Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual or 20ppm.
Test Result:	PASS

15.1 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
   EUT have transmitted absence of unmodulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

2. Extreme temperature rule is 0°C~ 50°C.

15.2 Test Result

U-NII-1 Test Frequency:5180MHz				
Temperature (℃)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	0.0058	1.12	20
45		0.0032	0.62	20
30		-0.0041	-0.80	20
20		0.0000	0.00	20
10		-0.0006	-0.11	20
0		0.0074	1.42	20
20	108	0.0036	0.70	20
20	132	-0.0042	-0.81	20

U-NII-3 Test Frequency:5785MHz				
Temperature (℃)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	0.0046	0.79	20
45		-0.0037	-0.64	20
30		0.0082	1.41	20
20		0.0000	0.00	20
10		-0.0010	-0.17	20
0		0.0037	0.64	20
20	108	0.0043	0.74	20
20	132	-0.0042	-0.73	20

16 Antenna 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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

This product has a FPC Antenna fulfil the requirement of this section.

Note: Please refer to EUT photos for more details.

17 RF Exposure

Remark: refer to MPE test report: WTD24D06151831W006.

18 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix-ET1040-Photos.

======End of Report======