

TEST REPORT

Applicant Name : Vuzix Corporation
Address : 25 Hendrix Rd, West Henrietta, New York, United States 14586
Report Number : SZNS220630-29398E-RF-00
FCC ID: 2AA9D-492

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type: Shield
Model No.: 492
Multiple Model(s) No.: N/A
Trade Mark: Vuzix
Date Received: 2022/06/30
Report Date: 2022/08/29

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:



Nick Fang
EMC Engineer

Approved By:



Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*" .

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Shenzhen Accurate Technology Co., Ltd.

1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Tel: +86 755-26503290 Fax: +86 755-26503396 Web: www.atc-lab.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5G Wi-Fi: 5150-5250MHz; 5250-5350MHz ; 5470-5725MHz ; 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Output Power	5150-5250MHz: 15.75dBm 5250-5350MHz: 15.03dBm 5470-5725MHz: 16.14dBm 5725-5850MHz: 15.95dBm
Modulation Technique	OFDM
Antenna Specification*	1.4dBi (provided by the applicant)
Voltage Range	DC 3.8V from battery or DC 5.0V from USB Port
Sample serial number	SZNS220630-29398E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		0.082×10^{-7}
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1°C
Humidity		6%
Supply voltages		0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a/n20/ac20 mode: channel 36, 40, 48 were tested;

For 802.11n40/ac40 mode: channel 38, 46 were tested;

For 802.11ac80 mode, channel 42 was tested.

For 5250-5350MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
54	5270	62	5310
56	5280	64	5320
58	5290	/	/

For 802.11a, 802.11n20/ac20 mode: channel 52, 56, 64 were tested;

For 802.11n40/ac40 mode: channel 54, 62 were tested;

For 802.11ac80 mode, channel 58 was tested.

For 5470-5725MHz Band, 18 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	120	5600
102	5510	122	5610
104	5520	124	5620
106	5530	126	5630
108	5540	128	5640
110	5550	132	5660
112	5560	134	5670
116	5580	136	5680
118	5590	140	5700

For 802.11a, 802.11n20/ac20 mode: channel 100, 116, 140 were tested;

For 802.11n40/ac40 mode: channel 102, 110, 134 were tested.

For 802.11ac80 mode, channel 106, 122 was tested.

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a/n20/ac20 mode: channel 149, 157, 165 were tested;

For 802.11n40/ac40 mode: channel 151, 159 were tested;

For 802.11ac80 mode, channel 155 was tested

EUT Exercise Software

“QRCT4 ”** exercise software was used. The software and power level was provided by the applicant.

The worst case was performed under:

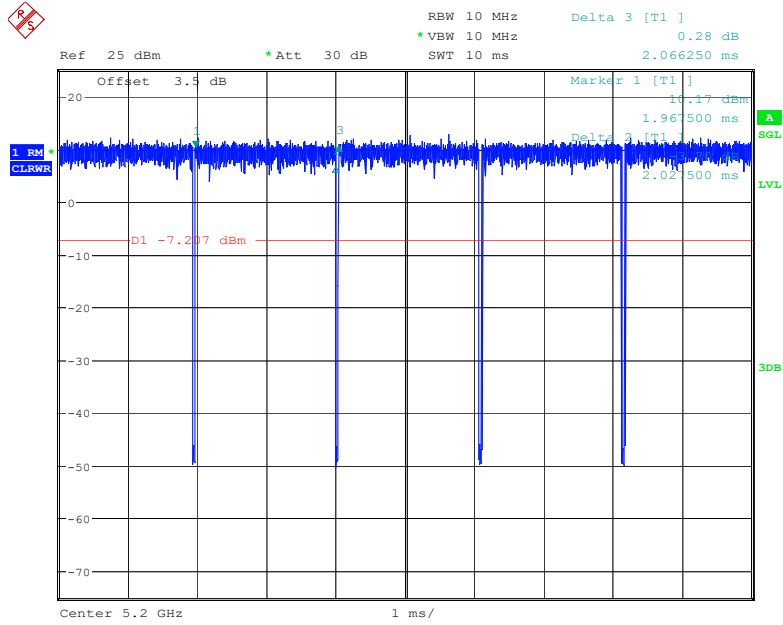
U-NII	Mode	Data rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150 – 5250MHz	802.11a	6Mbps	15	15	15
	802.11n-HT20	MCS0	15	15	15
	802.11n-HT40	MCS0	15	/	15
	802.11ac20	MCS0	15	15	15
	802.11ac40	MCS0	15	/	15
	802.11ac80	MCS0	/	15	/
5250-5350MHz	802.11a	6Mbps	15	15	15
	802.11n-HT20	MCS0	15	15	15
	802.11n-HT40	MCS0	15	/	15
	802.11ac20	MCS0	15	15	15
	802.11ac40	MCS0	15	/	15
	802.11ac80	MCS0	/	15	/
5470 – 5725MHz	802.11a	6Mbps	15	15	15
	802.11n-HT20	MCS0	15	15	15
	802.11n-HT40	MCS0	15	15	15
	802.11ac20	MCS0	15	15	15
	802.11ac40	MCS0	15	15	15
	802.11ac80	MCS0	15	/	15
5725 – 5850MHz	802.11a	6Mbps	15	15	15
	802.11n-HT20	MCS0	15	15	15
	802.11n-HT40	MCS0	15	/	15
	802.11ac20	MCS0	15	15	15
	802.11ac40	MCS0	15	/	15
	802.11ac80	MCS0	/	15	/

The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the output power and PSD across all data rated bandwidths, and modulations.

Duty cycle**5150 MHz – 5250 MHz:**

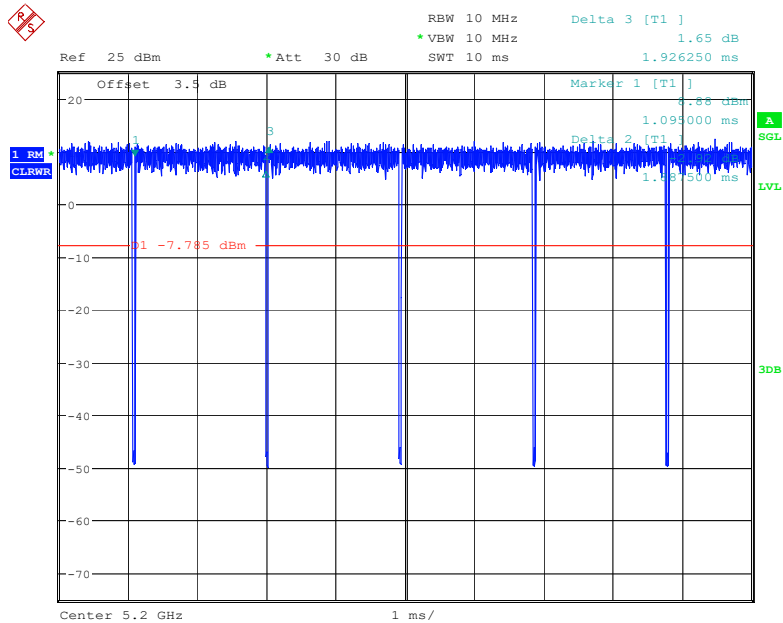
Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11a	2.028	2.066	98.16
802.11n20	1.888	1.926	98.03
802.11n40	0.928	0.965	96.17
802.11ac20	1.900	1.939	97.99
802.11ac40	0.936	0.974	96.10
802.11ac80	0.458	0.495	92.53

802.11a mode



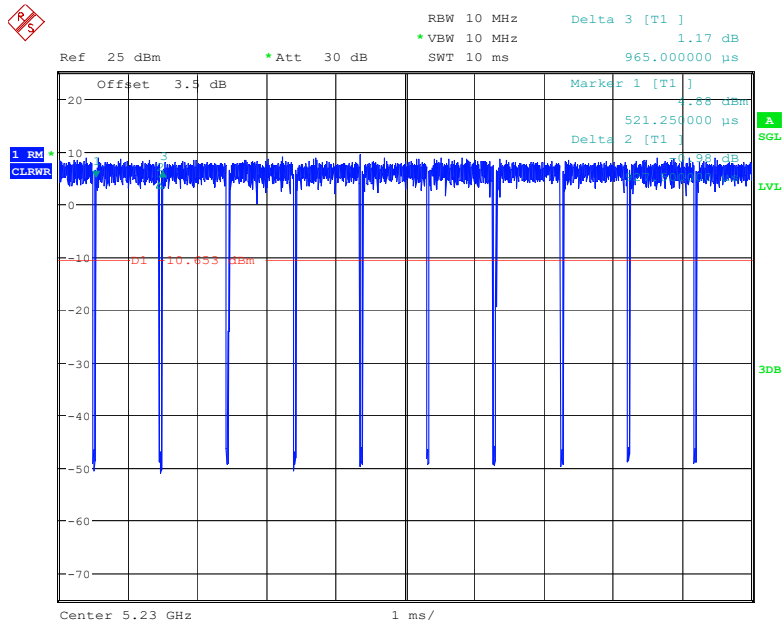
Date: 28.JUL.2022 21:59:41

802.11n20 mode



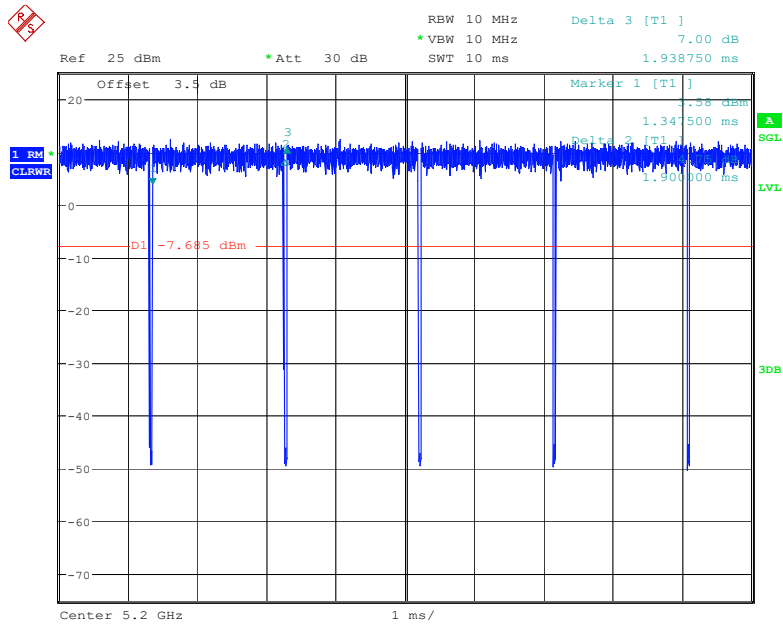
Date: 28.JUL.2022 23:33:07

802.11n40 mode



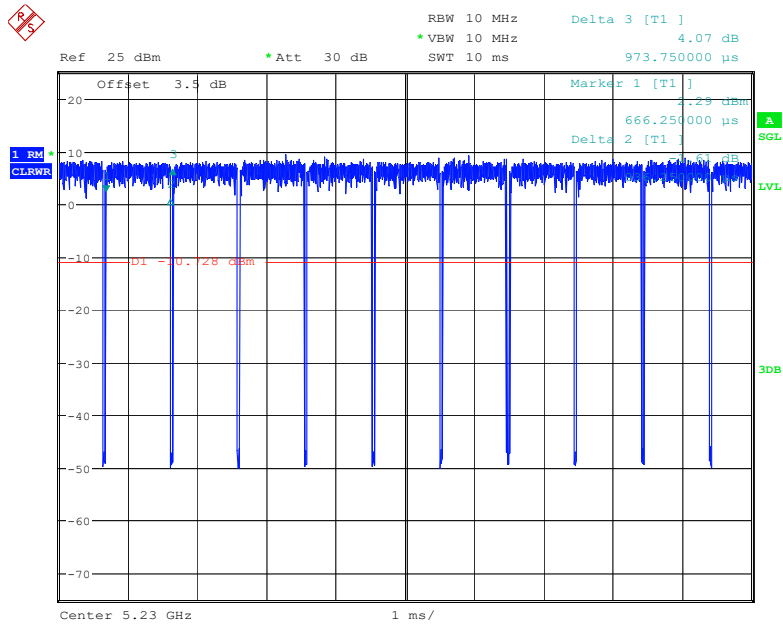
Date: 29.JUL.2022 00:05:29

802.11ac20 mode



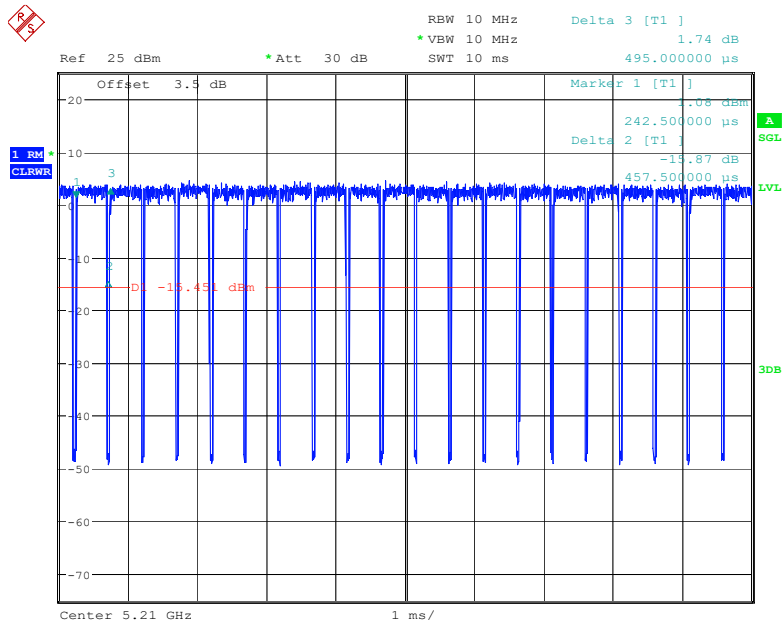
Date: 28.JUL.2022 21:10:42

802.11ac40 mode



Date: 28.JUL.2022 22:36:22

802.11ac80 Mode

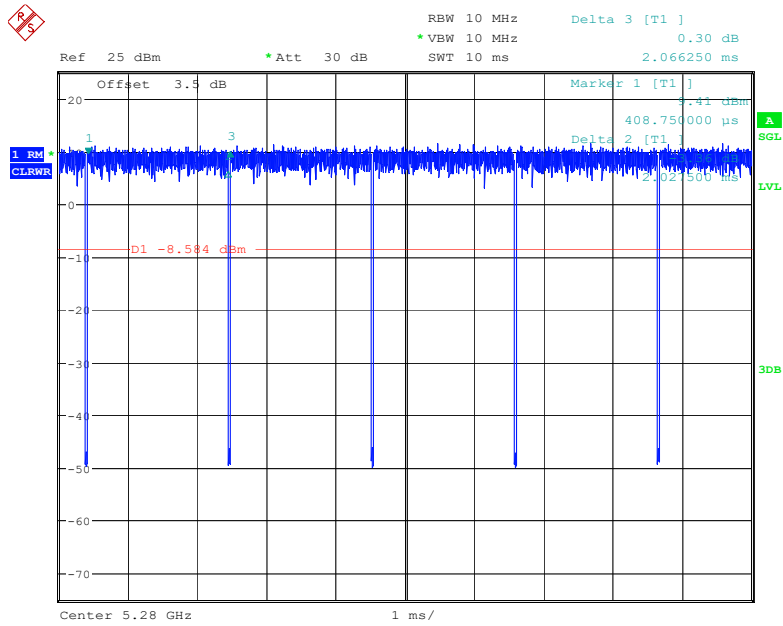


Date: 28.JUL.2022 23:04:27

5250 MHz – 5350 MHz:

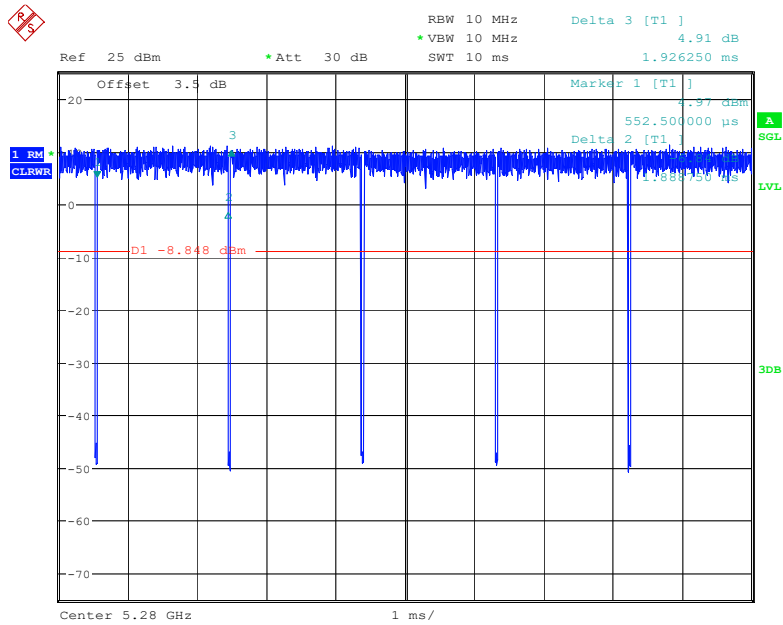
Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11a	2.028	2.066	98.16
802.11n20	1.889	1.926	98.08
802.11n40	0.928	0.965	96.17
802.11ac20	1.900	1.939	97.99
802.11ac40	0.935	0.973	96.09
802.11ac80	0.456	0.494	92.31

802.11a mode



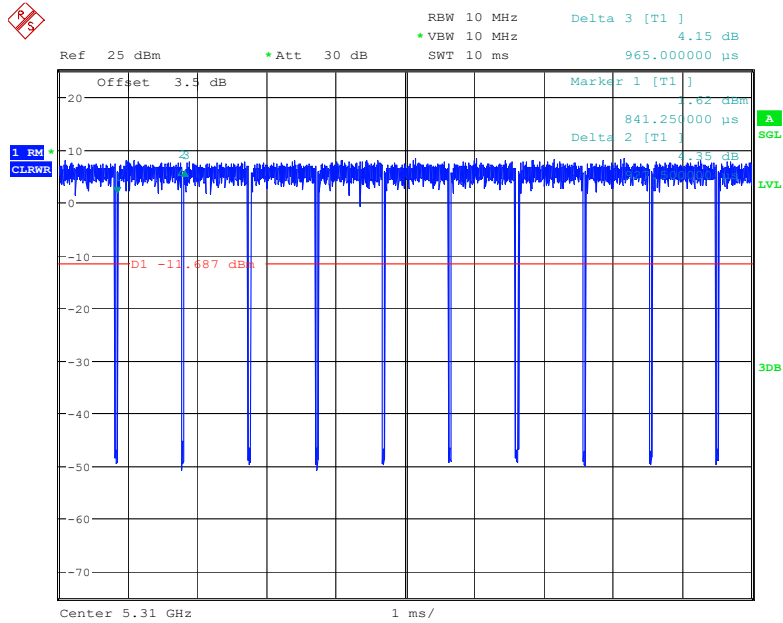
Date: 28.JUL.2022 22:07:51

802.11n20 mode



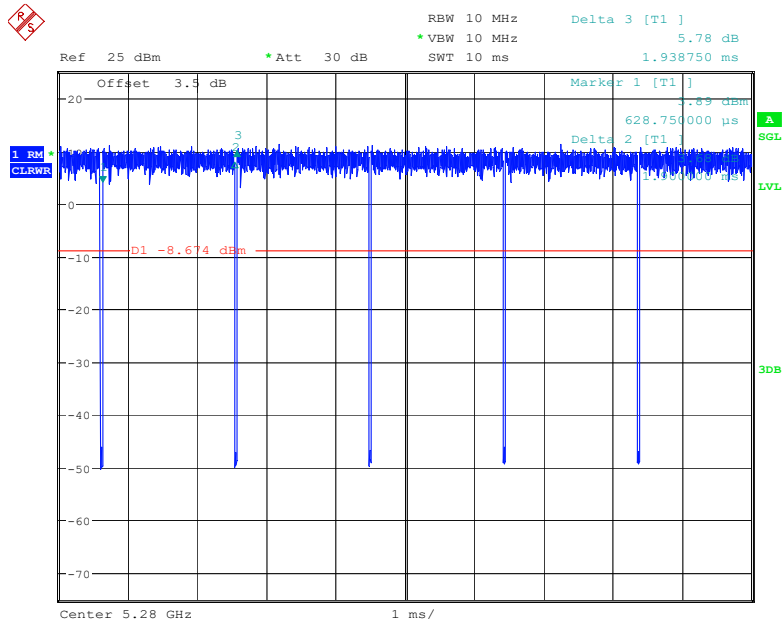
Date: 28.JUL.2022 23:41:24

802.11n40 mode



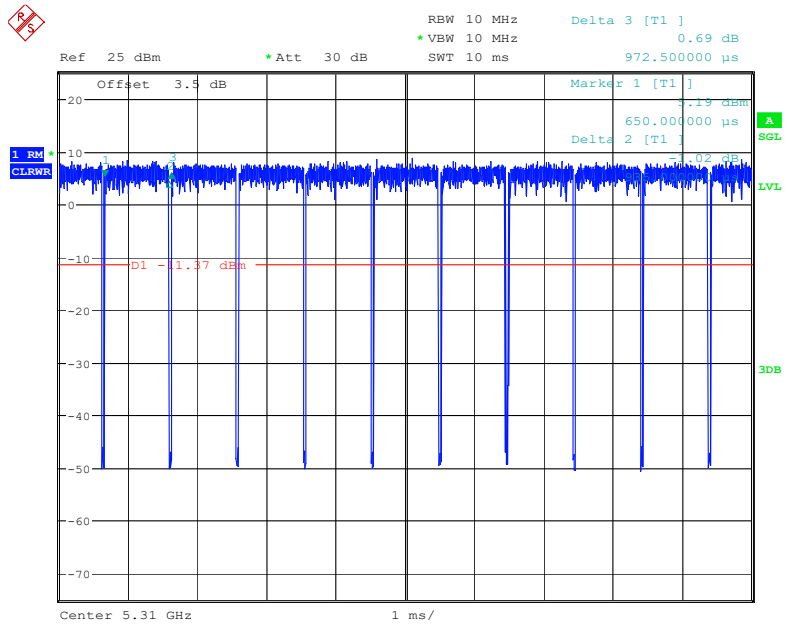
Date: 29.JUL.2022 00:11:12

802.11ac20 mode



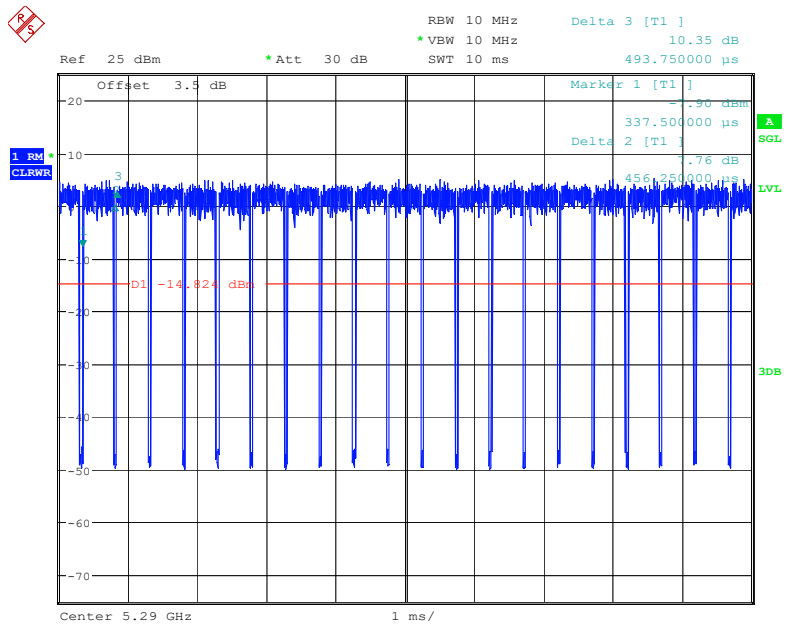
Date: 28.JUL.2022 21:32:17

802.11ac40 mode



Date: 28.JUL.2022 22:41:55

802.11ac80 Mode

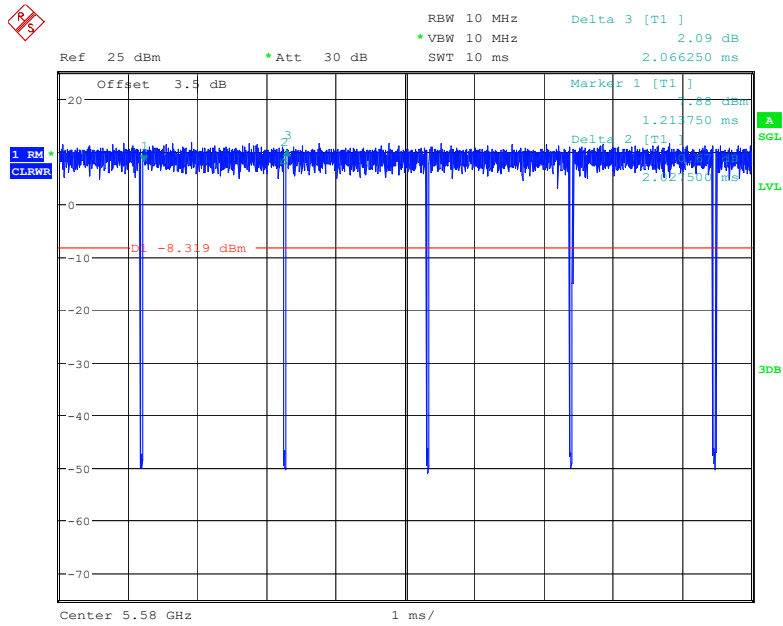


Date: 28.JUL.2022 23:07:24

5470 MHz – 5725 MHz:

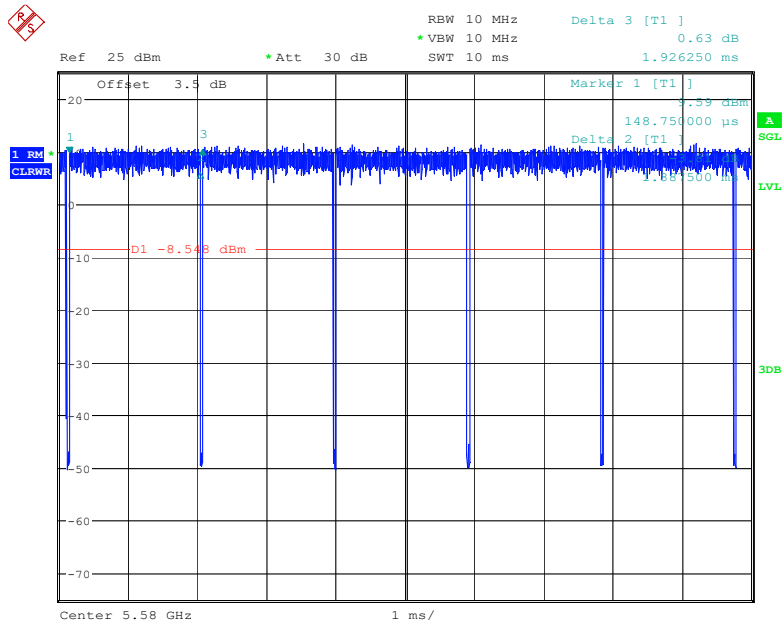
Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11a	2.028	2.066	98.16
802.11n20	1.888	1.926	98.03
802.11n40	0.929	0.965	96.27
802.11ac20	1.900	1.939	97.99
802.11ac40	0.935	0.973	96.09
802.11ac80	0.456	0.493	92.49

802.11a mode



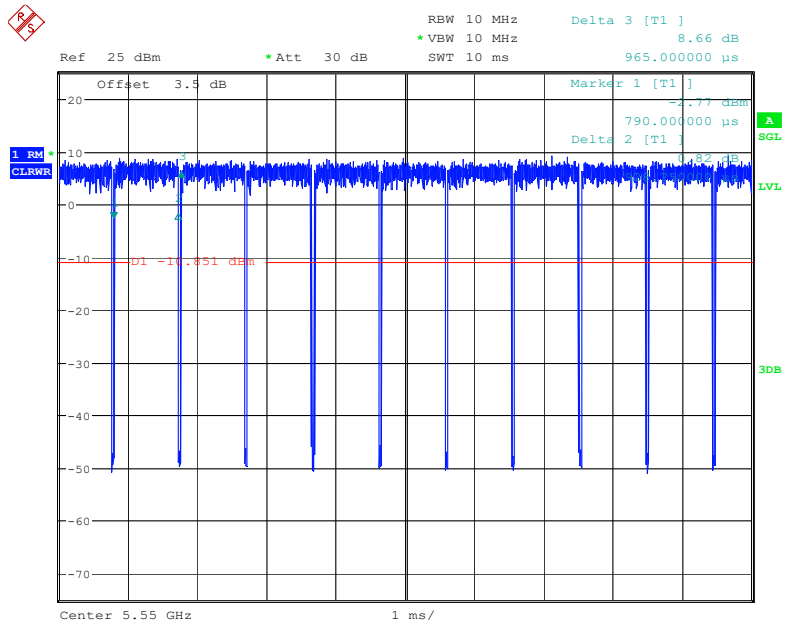
Date: 28.JUL.2022 22:17:04

802.11n20 mode



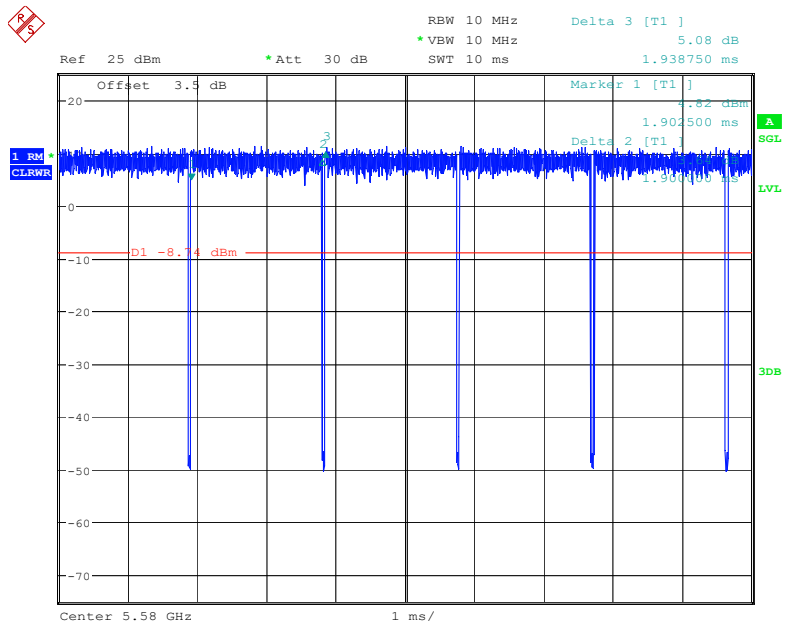
Date: 28.JUL.2022 23:49:34

802.11n40 mode



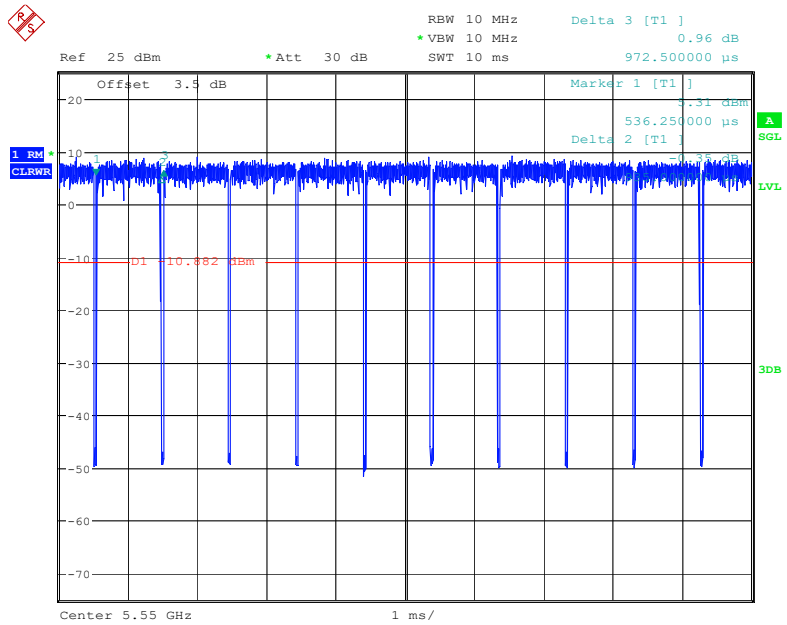
Date: 29.JUL.2022 00:16:47

802.11ac20 mode



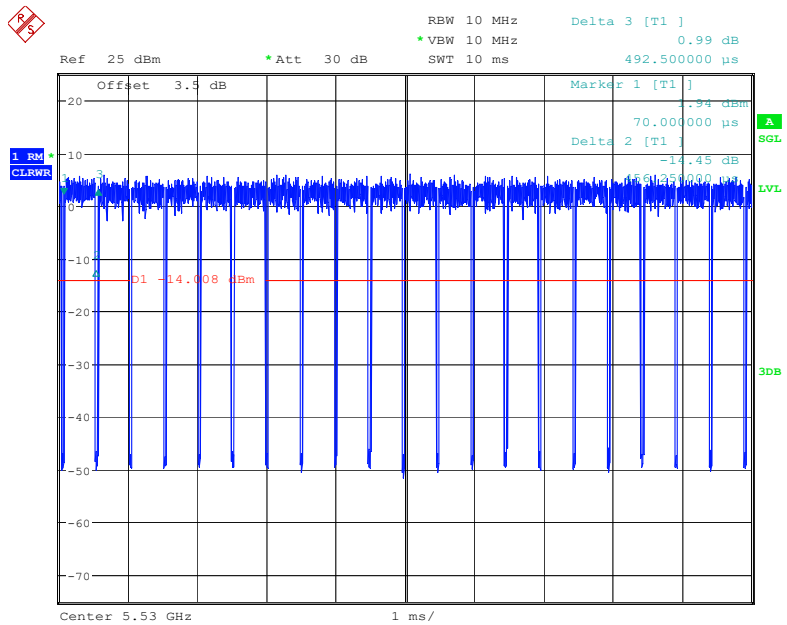
Date: 28.JUL.2022 21:40:03

802.11ac40 mode



Date: 28.JUL.2022 22:47:44

802.11ac80 Mode

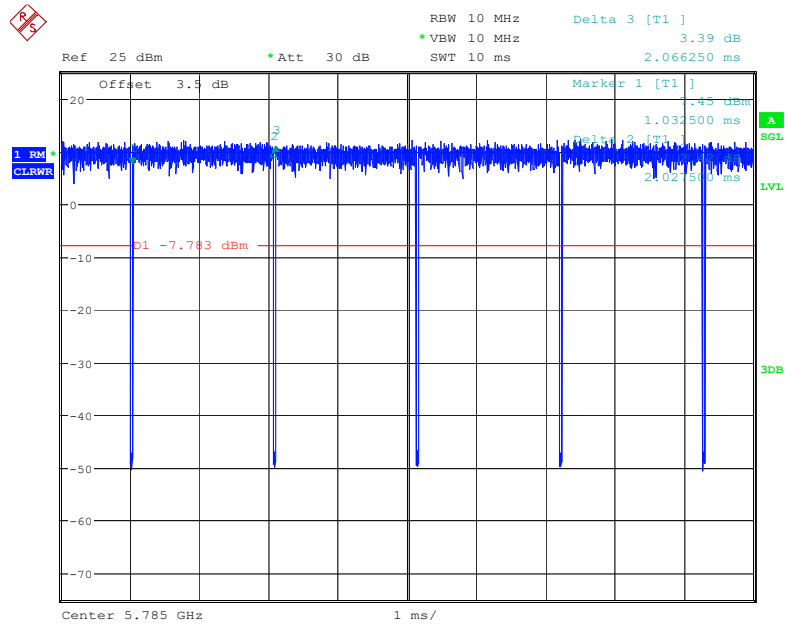


Date: 28.JUL.2022 23:10:02

5725 MHz – 5850 MHz:

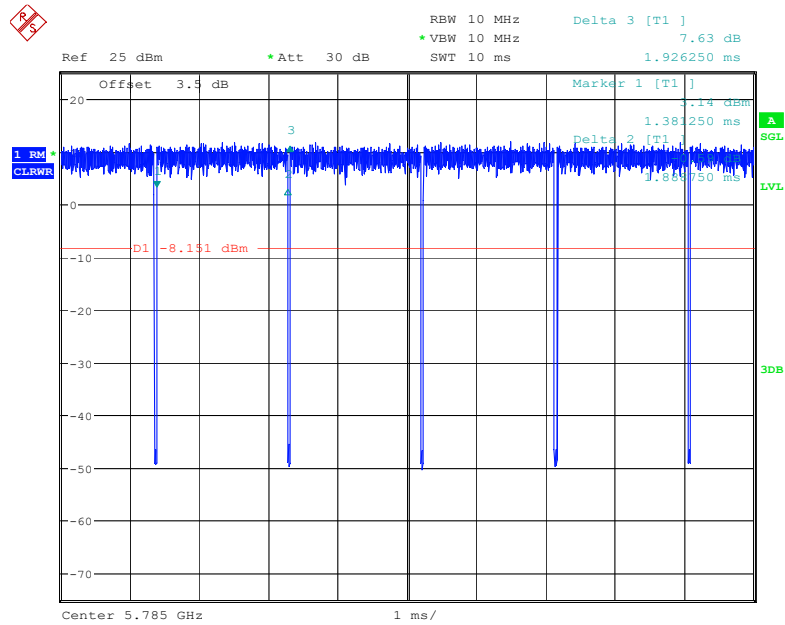
Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11a	2.028	2.066	98.16
802.11n20	1.889	1.926	98.08
802.11n40	0.928	0.965	96.17
802.11ac20	1.900	1.938	98.04
802.11ac40	0.935	0.973	96.09
802.11ac80	0.456	0.494	92.31

802.11a mode



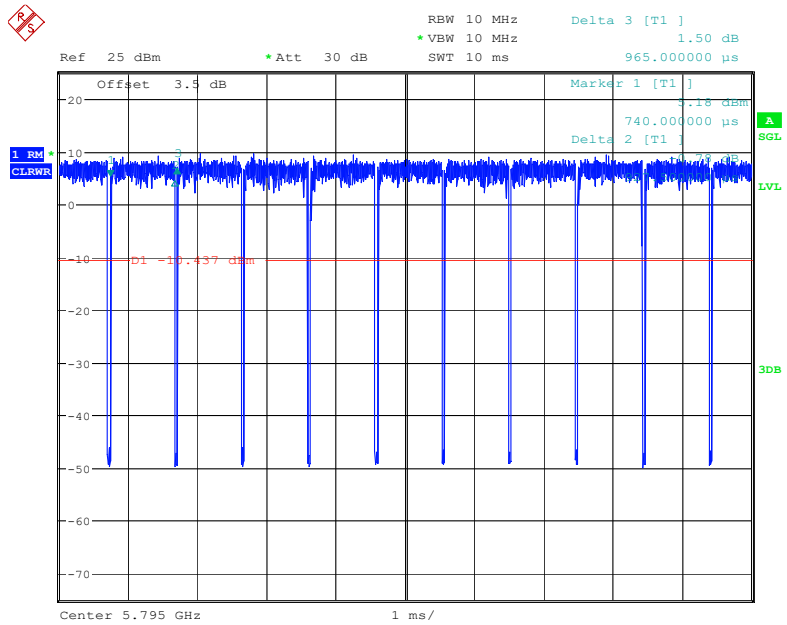
Date: 28.JUL.2022 22:25:35

802.11n20 mode



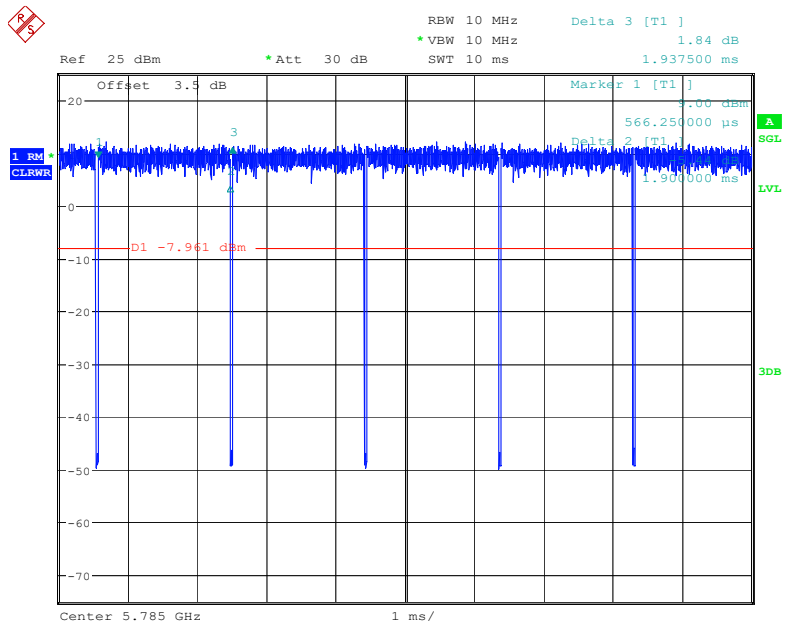
Date: 28.JUL.2022 23:57:21

802.11n40 mode



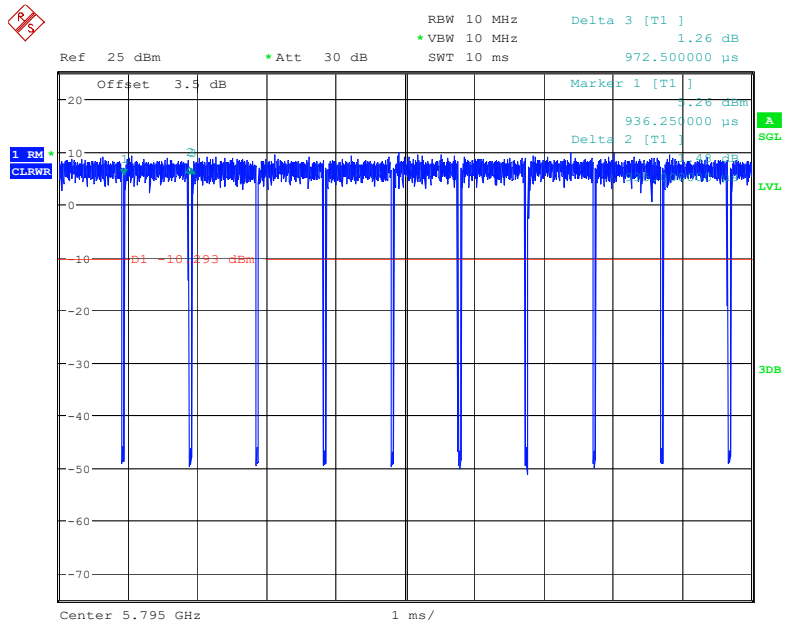
Date: 29.JUL.2022 00:25:56

802.11ac20 mode



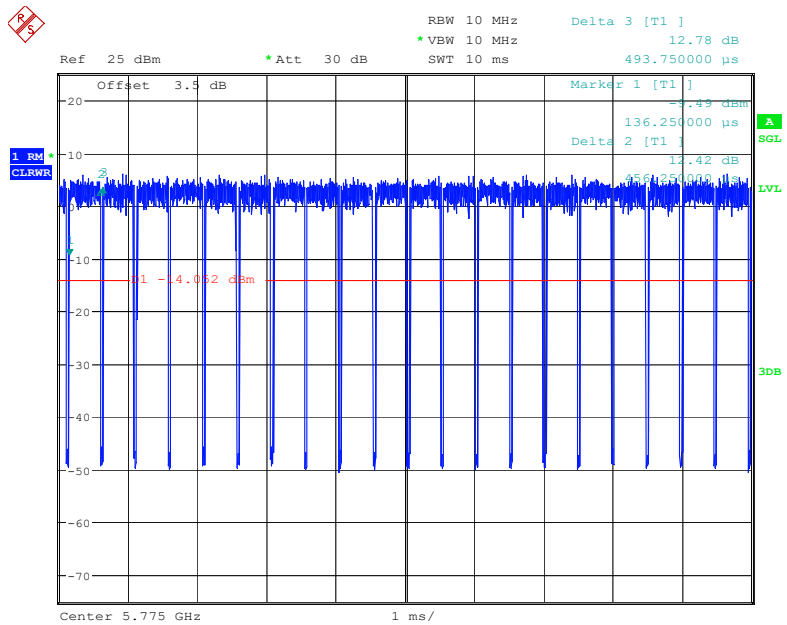
Date: 28.JUL.2022 21:48:38

802.11ac40 mode



Date: 28.JUL.2022 22:56:26

802.11ac80 Mode



Date: 28.JUL.2022 23:15:36

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

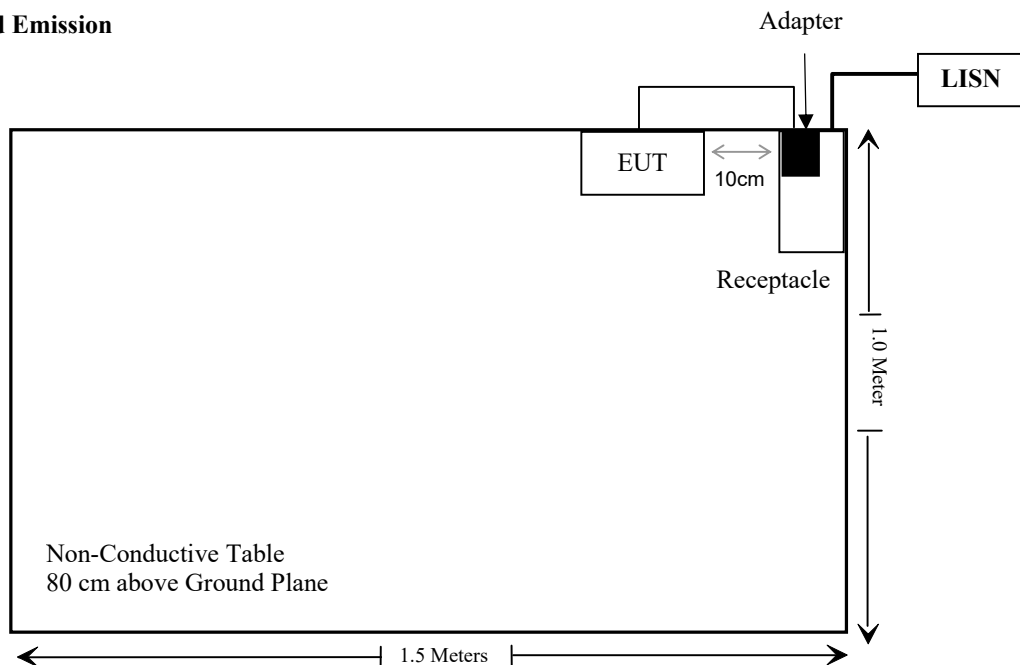
Manufacturer	Description	Model	Serial Number
Epik	Adapter	E250	Unknown

External I/O Cable

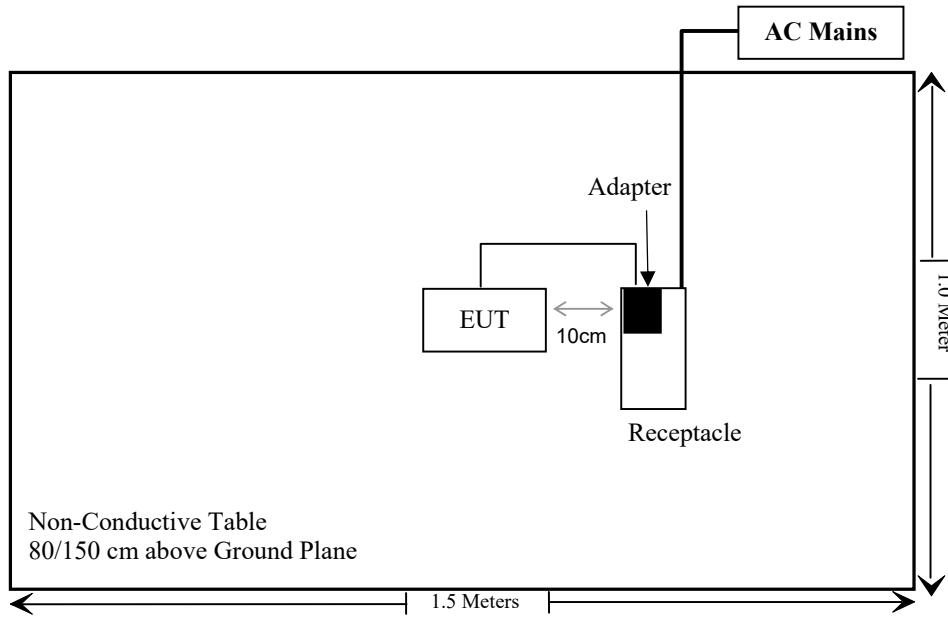
Cable Description	Length (m)	From Port	To
Un-shield Detachable USB Cable	1.0	Adapter	EUT

Block Diagram of Test Setup

For Conducted Emission



For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Compliant
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Compliant*

Not Applicable: the EUT has no TPC function which was declared by the applicant.

Compliant*: Please refer to the report: SZNS220630-29398E-RFC

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12
Rohde & Schwarz	L.I.S.N.	ESH3-Z5	100305	2021/12/13	2022/12/12
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12
Rohde & Schwarz	Absorbing Clamp	MDS21	100142	2021/12/22	2022/12/21
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.18	N0850	2021/12/14	2022/12/13
Conducted Emission Test Software: e3 19821b (V9)					
Radiated Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Radiated Emission Test Software: e3 19821b (V9)					
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.47/5.725G-45	055	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.725/5.875G-45	065	2021/12/14	2022/12/13

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Open Switch and Control Unit	OSP120 + OSP-B157	101244 + 100866	2021/12/13	2022/12/12
SPECTRUM ANALYZER	Rohde & Schwarz	FSU26	200982	2022/07/05	2023/07/04
WEINSCHTEL	3dB Attenuator	Unknown	F-03-EM121	2021/11/28	2022/11/27
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12

* **Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307 (b) (1) & §2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Measurement Result

Please refer to SAR test report: SZNS220630-29398E-SA.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna arrangement for 5G Wi-Fi which were permanently attached. Please refer to the EUT photos.

Type	Antenna Gain	Impedance	Frequency Range
Integral	1.4dBi	50 Ω	5150-5850MHz

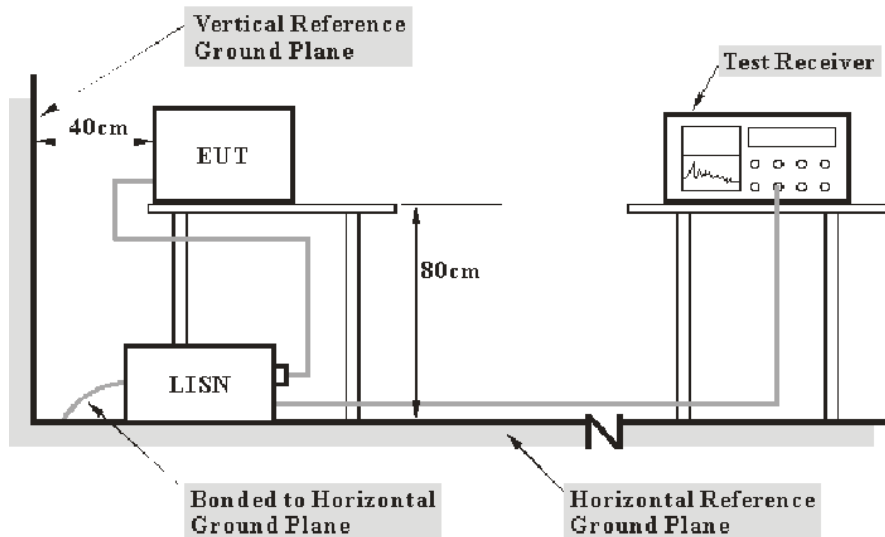
Result: Compliant.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and Average detection mode.

Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

Test Data

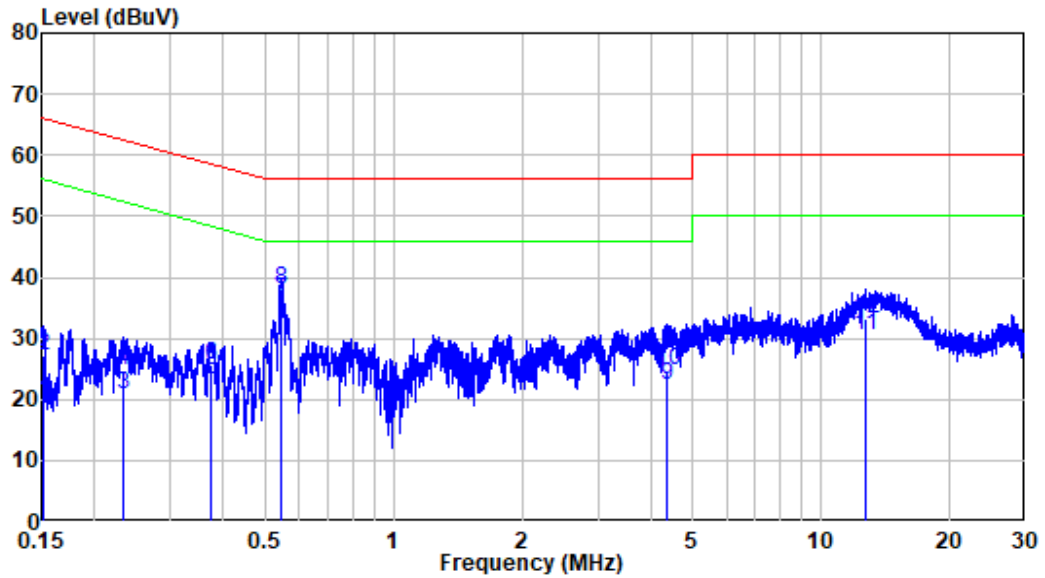
Environmental Conditions

Temperature:	24 °C
Relative Humidity:	49 %
ATM Pressure:	101.0 kPa

The testing was performed by Jason on 2022-08-11.

EUT operation mode: Transmitting (worst case is 802.11a, 5200MHz)

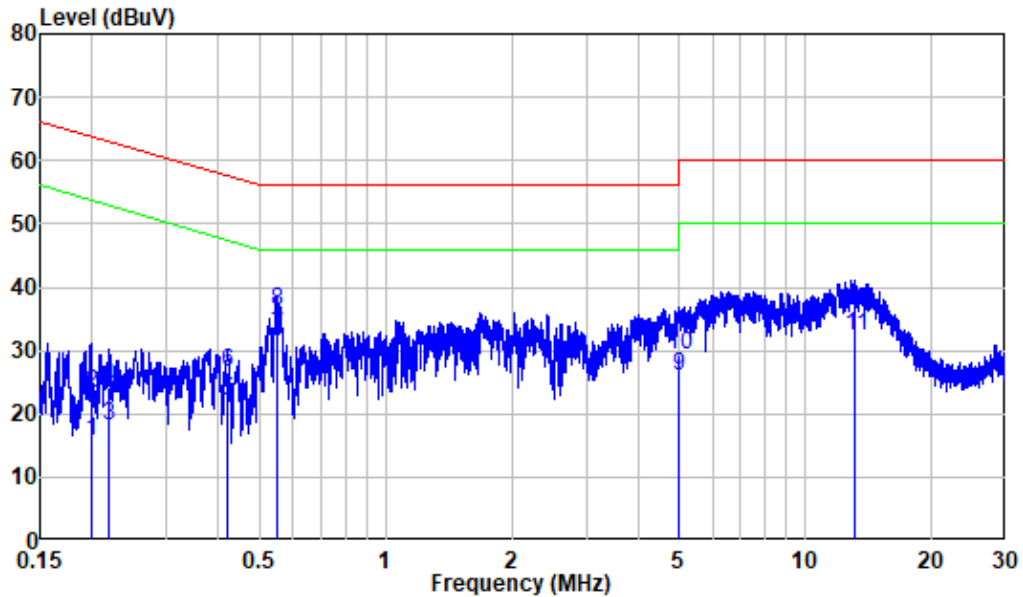
AC 120V/60 Hz, Line:



Site : Shielding Room
 Condition: Line
 Mode : 5G WIFI
 Model : 492
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.151	9.80	9.92	19.72	55.93	-36.21	Average
2	0.151	9.80	17.45	27.25	65.93	-38.68	QP
3	0.233	9.80	11.10	20.90	52.35	-31.45	Average
4	0.233	9.80	15.06	24.86	62.35	-37.49	QP
5	0.375	9.80	13.48	23.28	48.38	-25.10	Average
6	0.375	9.80	15.88	25.68	58.38	-32.70	QP
7	0.548	9.81	26.30	36.11	46.00	-9.89	Average
8	0.548	9.81	28.14	37.95	56.00	-18.05	QP
9	4.343	9.84	12.63	22.47	46.00	-23.53	Average
10	4.343	9.84	14.90	24.74	56.00	-31.26	QP
11	12.649	9.93	20.64	30.57	50.00	-19.43	Average
12	12.649	9.93	23.38	33.31	60.00	-26.69	QP

AC 120V/60 Hz, Neutral:



Site : Shielding Room
 Condition: Neutral
 Mode : 5G WIFI
 Model : 492
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.200	9.80	5.75	15.55	53.63	-38.08	Average
2	0.200	9.80	13.44	23.24	63.63	-40.39	QP
3	0.220	9.80	8.39	18.19	52.83	-34.64	Average
4	0.220	9.80	14.33	24.13	62.83	-38.70	QP
5	0.419	9.80	12.27	22.07	47.47	-25.40	Average
6	0.419	9.80	16.81	26.61	57.47	-30.86	QP
7	0.549	9.81	22.39	32.20	46.00	-13.80	Average
8	0.549	9.81	26.52	36.33	56.00	-19.67	QP
9	4.985	9.89	16.06	25.95	46.00	-20.05	Average
10	4.985	9.89	19.39	29.28	56.00	-26.72	QP
11	13.136	10.03	22.18	32.21	50.00	-17.79	Average
12	13.136	10.03	26.23	36.26	60.00	-23.74	QP

§15.205 & §15.209 & §15.407(B)– UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b); §15.209; §15.205;

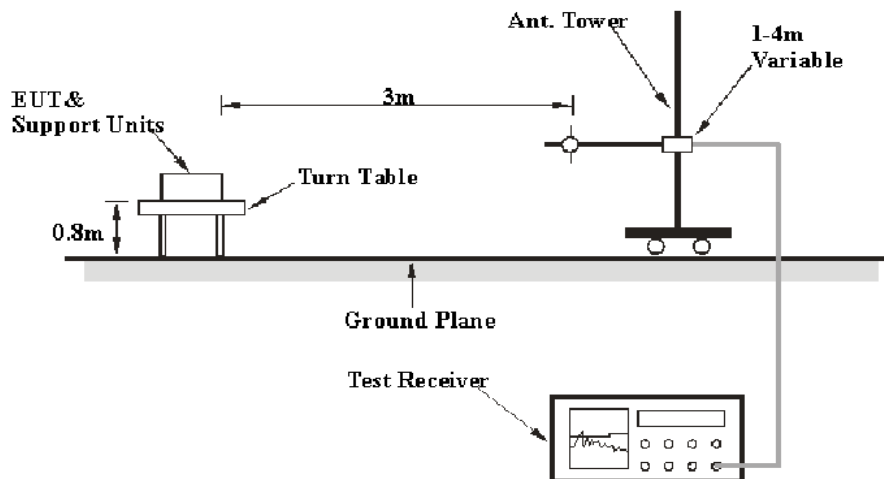
(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

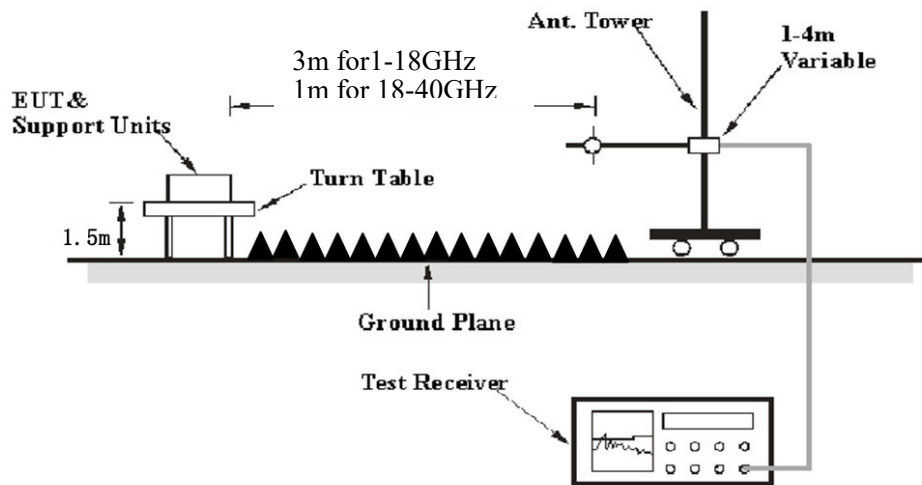
- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) 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.
- (4) 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.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



Above 1 GHz:

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz ^{Note 1}	/	Average
	1MHz	> 1/T ^{Note 2}	/	Average

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

Test Procedure**Radiated Spurious Emission**

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

According to ANSI C63.10-2013,9.4: For field strength measurements made at other than the distance at which the applicable limit is specified, extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance). In some cases, a different distance correction factor may be required;

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20 \log \left(\frac{d_{\text{Meas}}}{d_{\text{SpecLimit}}} \right)$$

where

$E_{\text{SpecLimit}}$	is the field strength of the emission at the distance specified by the limit, in dB μ V/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dB μ V/m
d_{Meas}	is the measurement distance, in m
$d_{\text{SpecLimit}}$	is the distance specified by the limit, in m

So the extrapolation factor of 1m is $20 * \log(1/3) = -9.5$ dB, for 18-40GHz range, the limit of 1m distance was added by 9.5dB from limit of 3m to compared with the result measurement at 1m distance.

Factor & Margin Calculation

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

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

$$\begin{aligned} \text{Over Limit/Margin} &= \text{Level / Corrected Amplitude} - \text{Limit} \\ \text{Level / Corrected Amplitude} &= \text{Read Level} + \text{Factor} \end{aligned}$$

Test Data

Environmental Conditions

Temperature:	26.8~28°C
Relative Humidity:	52~68%
ATM Pressure:	101.0 kPa

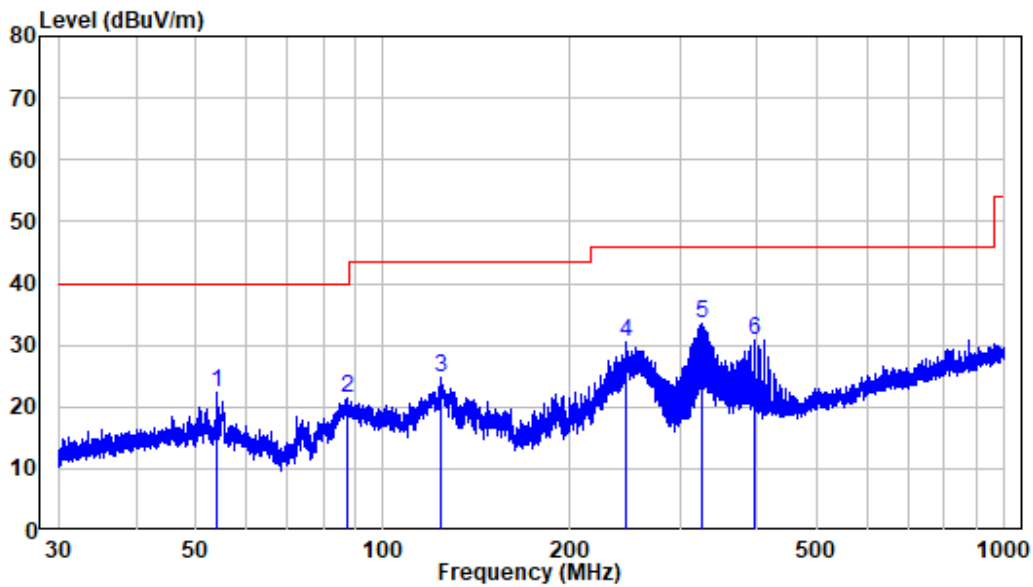
The testing was performed by Lexel Li on 2022-08-11 for below 1GHz, 2022-07-29 and 2022-07-31 for above 1GHz.

EUT operation mode: Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case X-axes of orientation was recorded)

30 MHz – 1 GHz: (worst case is 802.11a, 5200MHz)

Note: When the test result of peak was less than the limit of QP more than 6dB, just peak value were recorded.

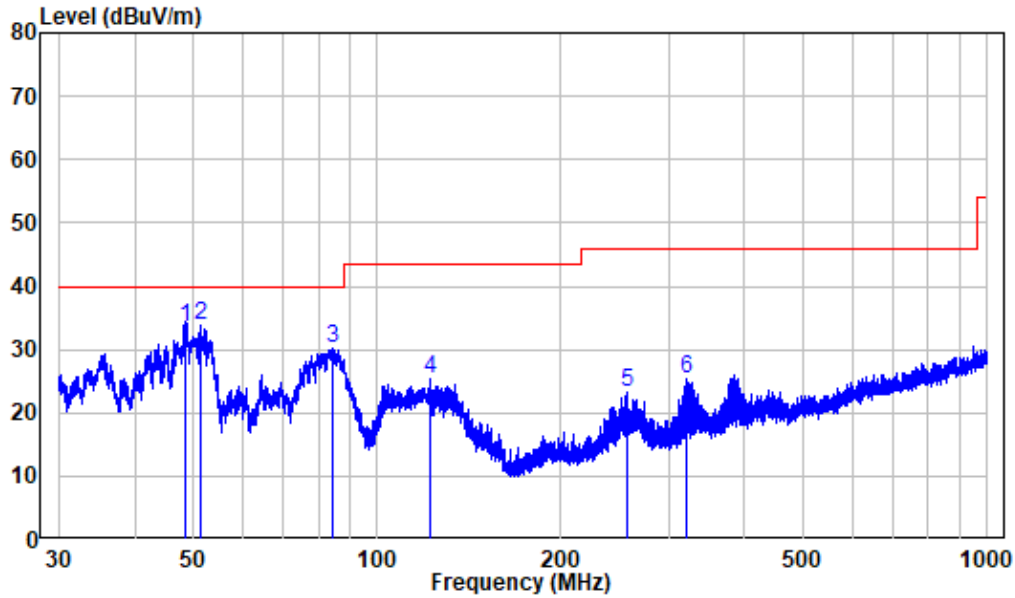
Horizontal



Site : chamber
 Condition: 3m HORIZONTAL
 Job No. : SZNS220630-29398E-RF
 Test Mode: 5G WIFI

	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	54.118	-10.34	32.70	22.36	40.00	-17.64	Peak
2	87.265	-14.80	36.10	21.30	40.00	-18.70	Peak
3	123.699	-14.16	38.80	24.64	43.50	-18.86	Peak
4	246.383	-10.63	41.02	30.39	46.00	-15.61	Peak
5	325.739	-8.23	41.80	33.57	46.00	-12.43	Peak
6	396.068	-6.79	37.68	30.89	46.00	-15.11	Peak

Vertical



Site : chamber
 Condition: 3m VERTICAL
 Job No. : SZNS220630-29398E-RF
 Test Mode: 5G WIFI

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	48.544	-9.97	43.52	33.55	40.00	-6.45	QP
2	51.278	-9.95	43.75	33.80	40.00	-6.20	Peak
3	84.665	-15.76	45.85	30.09	40.00	-9.91	Peak
4	121.869	-13.90	39.21	25.31	43.50	-18.19	Peak
5	257.309	-10.59	33.98	23.39	46.00	-22.61	Peak
6	321.906	-8.38	33.59	25.21	46.00	-20.79	Peak

Above 1GHz:**5150-5250 MHz:**

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part 15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11a									
5180 MHz									
4500	63.05	PK	275	1.3	H	-4.72	58.33	74	-15.67
4500	50.37	AV	275	1.3	H	-4.72	45.65	54	-8.35
4500	62.96	PK	175	1.4	V	-4.72	58.24	74	-15.76
4500	50.29	AV	175	1.4	V	-4.72	45.57	54	-8.43
5150	64.27	PK	225	1.7	H	-2.73	61.54	74	-12.46
5150	50.5	AV	225	1.7	H	-2.73	47.77	54	-6.23
5150	64.18	PK	159	2.1	V	-2.73	61.45	74	-12.55
5150	50.44	AV	159	2.1	V	-2.73	47.71	54	-6.29
10360	42.56	PK	165	2.3	H	8.1	50.66	68.2	-17.54
10360	44.74	PK	165	2.3	V	8.1	52.84	68.2	-15.36
802.11a, 5200MHz									
10400	42.11	PK	264	2.2	H	8.24	50.35	68.2	-17.85
10400	44.26	PK	264	2.2	V	8.24	52.5	68.2	-15.7
5240 MHz									
5350	65.27	PK	185	2.1	H	-2.33	62.94	74	-11.06
5350	51.16	AV	185	2.1	H	-2.33	48.83	54	-5.17
5350	65.19	PK	185	2	V	-2.33	62.86	74	-11.14
5350	51.08	AV	185	2	V	-2.33	48.75	54	-5.25
5460	63.65	PK	42	2.3	H	-2.3	61.35	74	-12.65
5460	50.96	AV	42	2.3	H	-2.3	48.66	54	-5.34
5460	63.59	PK	109	1.6	V	-2.3	61.29	74	-12.71
5460	50.88	AV	109	1.6	V	-2.3	48.58	54	-5.42
10480	41.7	PK	258	2.2	H	8.6	50.3	68.2	-17.9
10480	43.97	PK	258	2.2	V	8.6	52.57	68.2	-15.63

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n20									
5180MHz									
4500	63.1	PK	333	2.2	H	-4.72	58.38	74	-15.62
4500	50.43	AV	333	2.2	H	-4.72	45.71	54	-8.29
4500	63.02	PK	239	2.4	V	-4.72	58.3	74	-15.7
4500	50.38	AV	239	2.4	V	-4.72	45.66	54	-8.34
5150	64.38	PK	230	2.2	H	-2.73	61.65	74	-12.35
5150	50.57	AV	230	2.2	H	-2.73	47.84	54	-6.16
5150	64.29	PK	140	1.3	V	-2.73	61.56	74	-12.44
5150	50.48	AV	140	1.3	V	-2.73	47.75	54	-6.25
10360	42.65	PK	311	1.9	H	8.1	50.75	68.2	-17.45
10360	44.81	PK	311	1.9	V	8.1	52.91	68.2	-15.29
5200MHz									
10400	41.69	PK	346	1.3	H	8.24	49.93	68.2	-18.27
10400	44.2	PK	346	1.3	V	8.24	52.44	68.2	-15.76
5240MHz									
5350	65.48	PK	33	2.3	H	-2.33	63.15	74	-10.85
5350	51.19	AV	33	2.3	H	-2.33	48.86	54	-5.14
5350	65.37	PK	126	1.9	V	-2.33	63.04	74	-10.96
5350	51.1	AV	126	1.9	V	-2.33	48.77	54	-5.23
5460	63.71	PK	74	1.6	H	-2.3	61.41	74	-12.59
5460	51.02	AV	74	1.6	H	-2.3	48.72	54	-5.28
5460	63.63	PK	248	1.2	V	-2.3	61.33	74	-12.67
5460	50.94	AV	248	1.2	V	-2.3	48.64	54	-5.36
10480	41.69	PK	234	1.5	H	8.6	50.29	68.2	-17.91
10480	42.5	PK	234	1.5	V	8.6	51.1	68.2	-17.1

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n40									
5190MHz									
4500	63.37	PK	198	1.1	H	-4.72	58.65	74	-15.35
4500	50.59	AV	198	1.1	H	-4.72	45.87	54	-8.13
4500	63.28	PK	104	1.7	V	-4.72	58.56	74	-15.44
4500	50.5	AV	104	1.7	V	-4.72	45.78	54	-8.22
5150	64.66	PK	204	1.1	H	-2.73	61.93	74	-12.07
5150	52.89	AV	204	1.1	H	-2.73	50.16	54	-3.84
5150	64.56	PK	332	1.6	V	-2.73	61.83	74	-12.17
5150	51.9	AV	332	1.6	V	-2.73	49.17	54	-4.83
10380	41.57	PK	57	2.1	H	8.2	49.77	68.2	-18.43
10380	43.5	PK	57	2.1	V	8.2	51.7	68.2	-16.5
5230MHz									
5350	65.6	PK	358	1.9	H	-2.33	63.27	74	-10.73
5350	51.59	AV	358	1.9	H	-2.33	49.26	54	-4.74
5350	65.31	PK	95	1.7	V	-2.33	62.98	74	-11.02
5350	51.48	AV	95	1.7	V	-2.33	49.15	54	-4.85
5460	63.8	PK	3	1.7	H	-2.3	61.5	74	-12.5
5460	51.39	AV	3	1.7	H	-2.3	49.09	54	-4.91
5460	63.68	PK	10	1	V	-2.3	61.38	74	-12.62
5460	51.32	AV	10	1	V	-2.3	49.02	54	-4.98
10460	41.46	PK	118	2.4	H	8.43	49.89	68.2	-18.31
10460	42.61	PK	118	2.4	V	8.43	51.04	68.2	-17.16

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	63.1	PK	45	2	H	-4.72	58.38	74	-15.62
4500	50.39	AV	45	2	H	-4.72	45.67	54	-8.33
4500	63.01	PK	107	1	V	-4.72	58.29	74	-15.71
4500	50.3	AV	107	1	V	-4.72	45.58	54	-8.42
5150	64.31	PK	333	1.9	H	-2.73	61.58	74	-12.42
5150	50.65	AV	333	1.9	H	-2.73	47.92	54	-6.08
5150	64.22	PK	41	1.7	V	-2.73	61.49	74	-12.51
5150	50.56	AV	41	1.7	V	-2.73	47.83	54	-6.17
10360	42.67	PK	329	1.2	H	8.1	50.77	68.2	-17.43
10360	44.73	PK	329	1.2	V	8.1	52.83	68.2	-15.37
5200MHz									
10400	42.3	PK	24	1.4	H	8.24	50.54	68.2	-17.66
10400	44.21	PK	24	1.4	V	8.24	52.45	68.2	-15.75
5240MHz									
5350	65.35	PK	234	2.4	H	-2.33	63.02	74	-10.98
5350	51.19	AV	234	2.4	H	-2.33	48.86	54	-5.14
5350	65.27	PK	80	1.9	V	-2.33	62.94	74	-11.06
5350	51.1	AV	80	1.9	V	-2.33	48.77	54	-5.23
5460	63.71	PK	213	2	H	-2.3	61.41	74	-12.59
5460	51.06	AV	213	2	H	-2.3	48.76	54	-5.24
5460	63.62	PK	251	1.9	V	-2.3	61.32	74	-12.68
5460	50.97	AV	251	1.9	V	-2.3	48.67	54	-5.33
10480	41.6	PK	218	1.2	H	8.6	50.2	68.2	-18
10480	43.39	PK	218	1.2	V	8.6	51.99	68.2	-16.21

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac40									
5190 MHz									
4500	63.34	PK	88	1.4	H	-4.72	58.62	74	-15.38
4500	50.7	AV	88	1.4	H	-4.72	45.98	54	-8.02
4500	63.22	PK	270	2.2	V	-4.72	58.5	74	-15.5
4500	50.57	AV	270	2.2	V	-4.72	45.85	54	-8.15
5150	64.86	PK	206	1.7	H	-2.73	62.13	74	-11.87
5150	52.48	AV	206	1.7	H	-2.73	49.75	54	-4.25
5150	64.61	PK	2	1.8	V	-2.73	61.88	74	-12.12
5150	52.12	AV	2	1.8	V	-2.73	49.39	54	-4.61
10380	42.14	PK	192	1.5	H	8.2	50.34	68.2	-17.86
10380	43.26	PK	192	1.5	V	8.2	51.46	68.2	-16.74
5230MHz									
5350	65.46	PK	98	1.1	H	-2.33	63.13	74	-10.87
5350	51.54	AV	98	1.1	H	-2.33	49.21	54	-4.79
5350	65.35	PK	170	2.4	V	-2.33	63.02	74	-10.98
5350	51.46	AV	170	2.4	V	-2.33	49.13	54	-4.87
5460	63.8	PK	270	1.6	H	-2.3	61.5	74	-12.5
5460	51.38	AV	270	1.6	H	-2.3	49.08	54	-4.92
5460	63.72	PK	59	1.3	V	-2.3	61.42	74	-12.58
5460	51.29	AV	59	1.3	V	-2.3	48.99	54	-5.01
10460	41.46	PK	138	1.8	H	8.43	49.89	68.2	-18.31
10460	42.57	PK	138	1.8	V	8.43	51	68.2	-17.2

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac80									
5210 MHz									
4500	63.11	PK	252	1.3	H	-4.72	58.39	74	-15.61
4500	50.97	AV	252	1.3	H	-4.72	46.25	54	-7.75
4500	63.02	PK	181	2	V	-4.72	58.3	74	-15.7
4500	50.88	AV	181	2	V	-4.72	46.16	54	-7.84
5150	64.47	PK	188	1.6	H	-2.73	61.74	74	-12.26
5150	51.96	AV	188	1.6	H	-2.73	49.23	54	-4.77
5150	64.32	PK	31	2	V	-2.73	61.59	74	-12.41
5150	51.75	AV	31	2	V	-2.73	49.02	54	-4.98
5350	65.44	PK	114	1.4	H	-2.33	63.11	74	-10.89
5350	51.9	AV	114	1.4	H	-2.33	49.57	54	-4.43
5350	65.36	PK	267	1.5	V	-2.33	63.03	74	-10.97
5350	51.81	AV	267	1.5	V	-2.33	49.48	54	-4.52
5460	63.65	PK	138	1.7	H	-2.3	61.35	74	-12.65
5460	51.7	AV	138	1.7	H	-2.3	49.4	54	-4.6
5460	63.58	PK	322	1	V	-2.3	61.28	74	-12.72
5460	51.62	AV	322	1	V	-2.3	49.32	54	-4.68
10420	41.62	PK	90	1.3	H	8.32	49.94	68.2	-18.26
10420	42.23	PK	90	1.3	V	8.32	50.55	68.2	-17.65

5250 MHz – 5350 MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11a									
5260 MHz									
4500	63.25	PK	332	2.4	H	-4.72	58.53	74	-15.47
4500	50.22	AV	332	2.4	H	-4.72	45.5	54	-8.5
4500	63.14	PK	122	1.9	V	-4.72	58.42	74	-15.58
4500	50.13	AV	122	1.9	V	-4.72	45.41	54	-8.59
5150	64.77	PK	255	2	H	-2.73	62.04	74	-11.96
5150	50.54	AV	255	2	H	-2.73	47.81	54	-6.19
5150	64.61	PK	256	2.4	V	-2.73	61.88	74	-12.12
5150	50.45	AV	256	2.4	V	-2.73	47.72	54	-6.28
10520	42.59	PK	99	2.1	H	8.65	51.24	68.2	-16.96
10520	42.85	PK	84	2.2	V	8.65	51.5	68.2	-16.7
5280 MHz									
10560	43	PK	87	1.1	H	8.65	51.65	68.2	-16.55
10560	43.27	PK	102	2	V	8.65	51.92	68.2	-16.28
5320 MHz									
5350	65.38	PK	30	2	H	-2.33	63.05	74	-10.95
5350	51.13	AV	30	2	H	-2.33	48.8	54	-5.2
5350	65.19	PK	169	1.2	V	-2.33	62.86	74	-11.14
5350	51.04	AV	169	1.2	V	-2.33	48.71	54	-5.29
5460	63.71	PK	183	1.7	H	-2.3	61.41	74	-12.59
5460	51	AV	183	1.7	H	-2.3	48.7	54	-5.3
5460	63.62	PK	46	1.9	V	-2.3	61.32	74	-12.68
5460	50.91	AV	46	1.9	V	-2.3	48.61	54	-5.39
10640	42.93	PK	6	1.5	H	8.93	51.86	74	-22.14
10640	43.17	PK	351	1.9	V	8.93	52.1	74	-21.9

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n20									
5260MHz									
4500	63.01	PK	149	1.1	H	-4.72	58.29	74	-15.71
4500	50.19	AV	149	1.1	H	-4.72	45.47	54	-8.53
4500	62.92	PK	224	2.1	V	-4.72	58.2	74	-15.8
4500	50.1	AV	224	2.1	V	-4.72	45.38	54	-8.62
5150	64.34	PK	192	1.9	H	-2.73	61.61	74	-12.39
5150	50.47	AV	192	1.9	H	-2.73	47.74	54	-6.26
5150	64.25	PK	104	2.1	V	-2.73	61.52	74	-12.48
5150	50.38	AV	104	2.1	V	-2.73	47.65	54	-6.35
10520	41.85	PK	336	1.7	H	8.65	50.5	68.2	-17.7
10520	42.34	PK	145	1.4	V	8.65	50.99	68.2	-17.21
5280MHz									
10560	42.3	PK	304	2	H	8.65	50.95	68.2	-17.25
10560	43.11	PK	324	1.6	V	8.65	51.76	68.2	-16.44
5320MHz									
5350	65.29	PK	294	1.7	H	-2.33	62.96	74	-11.04
5350	51.18	AV	294	1.7	H	-2.33	48.85	54	-5.15
5350	65.16	PK	163	1.7	V	-2.33	62.83	74	-11.17
5350	51.07	AV	163	1.7	V	-2.33	48.74	54	-5.26
5460	63.86	PK	8	1.7	H	-2.3	61.56	74	-12.44
5460	51.02	AV	8	1.7	H	-2.3	48.72	54	-5.28
5460	63.75	PK	112	1.9	V	-2.3	61.45	74	-12.55
5460	50.94	AV	112	1.9	V	-2.3	48.64	54	-5.36
10640	42.53	PK	277	2.1	H	8.93	51.46	74	-22.54
10640	42.74	PK	129	1.5	V	8.93	51.67	74	-22.33

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n40									
5270MHz									
4500	63.21	PK	119	2.5	H	-4.72	58.49	74	-15.51
4500	51.04	AV	119	2.5	H	-4.72	46.32	54	-7.68
4500	63.12	PK	28	1.2	V	-4.72	58.4	74	-15.6
4500	50.95	AV	28	1.2	V	-4.72	46.23	54	-7.77
5150	64.54	PK	221	2	H	-2.73	61.81	74	-12.19
5150	50.95	AV	221	2	H	-2.73	48.22	54	-5.78
5150	64.46	PK	62	1.9	V	-2.73	61.73	74	-12.27
5150	50.87	AV	62	1.9	V	-2.73	48.14	54	-5.86
10540	41.42	PK	40	2.4	H	8.65	50.07	68.2	-18.13
10540	42.03	PK	339	2	V	8.65	50.68	68.2	-17.52
5310MHz									
5350	70	PK	17	1.3	H	-2.33	67.67	74	-6.33
5350	55.04	AV	17	1.3	H	-2.33	52.71	54	-1.29
5350	68.87	PK	30	1.2	V	-2.33	66.54	74	-7.46
5350	54.78	AV	30	1.2	V	-2.33	52.45	54	-1.55
5460	64.01	PK	353	1.5	H	-2.3	61.71	74	-12.29
5460	51.5	AV	353	1.5	H	-2.3	49.2	54	-4.8
5460	63.89	PK	73	1.1	V	-2.3	61.59	74	-12.41
5460	51.36	AV	73	1.1	V	-2.3	49.06	54	-4.94
10620	42.87	PK	111	1.9	H	8.8	51.67	74	-22.33
10620	43.08	PK	19	1.6	V	8.8	51.88	74	-22.12

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac20									
5260MHz									
4500	63.1	PK	135	1.1	H	-4.72	58.38	74	-15.62
4500	50.31	AV	135	1.1	H	-4.72	45.59	54	-8.41
4500	62.99	PK	291	1.7	V	-4.72	58.27	74	-15.73
4500	50.22	AV	291	1.7	V	-4.72	45.5	54	-8.5
5150	64.45	PK	262	1.7	H	-2.73	61.72	74	-12.28
5150	50.59	AV	262	1.7	H	-2.73	47.86	54	-6.14
5150	64.36	PK	169	1.6	V	-2.73	61.63	74	-12.37
5150	50.5	AV	169	1.6	V	-2.73	47.77	54	-6.23
10520	41.79	PK	114	2.3	H	8.65	50.44	68.2	-17.76
10520	42.28	PK	140	1.3	V	8.65	50.93	68.2	-17.27
5280MHz									
10560	42.33	PK	344	1.7	H	8.65	50.98	68.2	-17.22
10560	43.21	PK	225	1.2	V	8.65	51.86	68.2	-16.34
5320MHz									
5350	65.37	PK	156	1.9	H	-2.33	63.04	74	-10.96
5350	51.28	AV	156	1.9	H	-2.33	48.95	54	-5.05
5350	65.21	PK	271	1.8	V	-2.33	62.88	74	-11.12
5350	51.15	AV	271	1.8	V	-2.33	48.82	54	-5.18
5460	63.88	PK	104	1.1	H	-2.3	61.58	74	-12.42
5460	51.09	AV	104	1.1	H	-2.3	48.79	54	-5.21
5460	63.77	PK	114	1.2	V	-2.3	61.47	74	-12.53
5460	51	AV	114	1.2	V	-2.3	48.7	54	-5.3
10640	42.47	PK	34	1.5	H	8.93	51.4	74	-22.6
10640	42.9	PK	16	2.3	V	8.93	51.83	74	-22.17

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac40									
5270MHz									
4500	63.24	PK	166	2.5	H	-4.72	58.52	74	-15.48
4500	50.8	AV	166	2.5	H	-4.72	46.08	54	-7.92
4500	63.15	PK	209	2.3	V	-4.72	58.43	74	-15.57
4500	50.71	AV	209	2.3	V	-4.72	45.99	54	-8.01
5150	64.46	PK	346	2.1	H	-2.73	61.73	74	-12.27
5150	50.94	AV	346	2.1	H	-2.73	48.21	54	-5.79
5150	64.35	PK	174	2.4	V	-2.73	61.62	74	-12.38
5150	50.86	AV	174	2.4	V	-2.73	48.13	54	-5.87
10540	41.72	PK	162	1.2	H	8.65	50.37	68.2	-17.83
10540	42.11	PK	347	1.4	V	8.65	50.76	68.2	-17.44
5310MHz									
5350	70.31	PK	16	2.3	H	-2.33	67.98	74	-6.02
5350	55.24	AV	16	2.3	H	-2.33	52.91	54	-1.09
5350	69.15	PK	358	1.7	V	-2.33	66.82	74	-7.18
5350	54.87	AV	358	1.7	V	-2.33	52.54	54	-1.46
5460	64.13	PK	98	1.7	H	-2.3	61.83	74	-12.17
5460	51.57	AV	98	1.7	H	-2.3	49.27	54	-4.73
5460	63.98	PK	232	2.1	V	-2.3	61.68	74	-12.32
5460	51.41	AV	232	2.1	V	-2.3	49.11	54	-4.89
10620	42.35	PK	53	2.3	H	8.8	51.15	74	-22.85
10620	42.68	PK	123	2.3	V	8.8	51.48	74	-22.52

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac80									
5290MHz									
4500	63.13	PK	212	1.7	H	-4.72	58.41	74	-15.59
4500	50	AV	212	1.7	H	-4.72	45.28	54	-8.72
4500	63.06	PK	39	1.3	V	-4.72	58.34	74	-15.66
4500	49.92	AV	39	1.3	V	-4.72	45.2	54	-8.8
5150	64.41	PK	263	1.3	H	-2.73	61.68	74	-12.32
5150	51.48	AV	263	1.3	H	-2.73	48.75	54	-5.25
5150	64.32	PK	71	2	V	-2.73	61.59	74	-12.41
5150	51.38	AV	71	2	V	-2.73	48.65	54	-5.35
5350	69.28	PK	306	2.3	H	-2.33	66.95	74	-7.05
5350	55.33	AV	306	2.3	H	-2.33	53.00	54	-1.00
5350	68.09	PK	28	1.6	V	-2.33	65.76	74	-8.24
5350	54.64	AV	28	1.6	V	-2.33	52.31	54	-1.69
5460	64.04	PK	282	1.1	H	-2.3	61.74	74	-12.26
5460	51.92	AV	282	1.1	H	-2.3	49.62	54	-4.38
5460	63.9	PK	261	1.8	V	-2.3	61.6	74	-12.4
5460	51.76	AV	261	1.8	V	-2.3	49.46	54	-4.54
10580	42.45	PK	112	2.3	H	8.7	51.15	68.2	-17.05
10580	42.78	PK	218	1.2	V	8.7	51.48	68.2	-16.72

5470 MHz – 5725 MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part15.407	
	Reading (dBµV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11a									
5500 MHZ									
5460	64.46	PK	285	2.5	H	-2.26	62.2	74	-11.8
5460	50.88	AV	285	2.5	H	-2.26	48.62	54	-5.38
5460	64.64	PK	64	1.8	V	-2.26	62.38	74	-11.62
5460	51.02	AV	64	1.8	V	-2.26	48.76	54	-5.24
5470	66.21	PK	112	2.2	H	-2.22	63.99	68.2	-4.21
5470	67.02	AV	169	2.2	V	-2.22	64.8	68.2	-3.4
11000	43.13	PK	234	2.3	V	9.67	52.8	74	-21.2
11000	42.48	PK	5	1.2	H	9.67	52.15	74	-21.85
5580 MHZ									
11160	44.53	PK	184	2.3	H	8.68	53.21	74	-20.79
11160	43.49	PK	97	1.6	V	8.68	52.17	74	-21.83
5700 MHZ									
5725	66.77	PK	24	2.2	H	-1.96	64.81	68.2	-3.39
5725	67.09	PK	135	2.3	V	-1.96	65.13	68.2	-3.07
5745	64.68	PK	274	1.7	H	-1.91	62.77	68.2	-5.43
5745	64.95	PK	236	1.8	V	-1.91	63.04	68.2	-5.16
11400	46.12	PK	96	2.3	H	7.26	53.38	74	-20.62
11400	45.45	PK	171	1.7	V	7.26	52.71	74	-21.29

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n20									
5500 MHZ									
5460	64.58	PK	66	1.1	H	-2.26	62.32	74	-11.68
5460	50.97	AV	66	1.1	H	-2.26	48.71	54	-5.29
5460	64.82	PK	167	1.4	V	-2.26	62.56	74	-11.44
5460	51.06	AV	167	1.4	V	-2.26	48.8	54	-5.2
5470	66.55	PK	253	2.5	H	-2.22	64.33	68.2	-3.87
5470	67.21	AV	318	1.4	V	-2.22	64.99	68.2	-3.21
11000	43.06	PK	98	1.1	V	9.67	52.73	74	-21.27
11000	42.33	PK	165	1.1	H	9.67	52	74	-22
5580 MHZ									
11160	44.48	PK	223	1.7	H	8.68	53.16	74	-20.84
11160	43.36	PK	134	2.2	V	8.68	52.04	74	-21.96
5700 MHZ									
5725	66.88	PK	10	1.7	H	-1.96	64.92	68.2	-3.28
5725	67.16	PK	350	1.4	V	-1.96	65.2	68.2	-3
5745	64.81	PK	155	2.2	H	-1.91	62.9	68.2	-5.3
5745	65.07	PK	50	1	V	-1.91	63.16	68.2	-5.04
11400	45.93	PK	295	1	H	7.26	53.19	74	-20.81
11400	45.31	PK	351	1.1	V	7.26	52.57	74	-21.43

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n40									
5510 MHZ									
5460	64.67	PK	46	1.2	H	-2.26	62.41	74	-11.59
5460	51.45	AV	46	1.2	H	-2.26	49.19	54	-4.81
5460	64.91	PK	255	1.4	V	-2.26	62.65	74	-11.35
5460	51.68	AV	255	1.4	V	-2.26	49.42	54	-4.58
5470	66.96	PK	218	1.2	H	-2.22	64.74	68.2	-3.46
5470	67.34	AV	156	1.9	V	-2.22	65.12	68.2	-3.08
11020	42.22	PK	327	1.4	V	9.57	51.79	74	-22.21
11020	41.31	PK	55	1.5	H	9.57	50.88	74	-23.12
5550 MHZ									
11100	42.18	PK	140	2.4	H	9.12	51.3	74	-22.7
11100	41.06	PK	42	1.9	V	9.12	50.18	74	-23.82
5670 MHZ									
5725	66.9	PK	165	2.3	H	-1.96	64.94	68.2	-3.26
5725	67.22	PK	305	1.8	V	-1.96	65.26	68.2	-2.94
5745	64.91	PK	348	2.3	H	-1.91	63	68.2	-5.2
5745	65.12	PK	107	2.5	V	-1.91	63.21	68.2	-4.99
11340	44.77	PK	35	1.1	H	7.67	52.44	74	-21.56
11340	44.14	PK	165	1.5	V	7.67	51.81	74	-22.19

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac20									
5500 MHz									
5460	64.68	PK	32	1.6	H	-2.26	62.42	74	-11.58
5460	51.04	AV	32	1.6	H	-2.26	48.78	54	-5.22
5460	64.91	PK	159	1.4	V	-2.26	62.65	74	-11.35
5460	51.15	AV	159	1.4	V	-2.26	48.89	54	-5.11
5470	66.72	PK	358	2	H	-2.22	64.5	68.2	-3.7
5470	67.29	AV	85	1.9	V	-2.22	65.07	68.2	-3.13
11000	42.94	PK	169	1.2	V	9.67	52.61	74	-21.39
11000	42.41	PK	172	1.6	H	9.67	52.08	74	-21.92
5580 MHz									
11160	44.35	PK	117	1.9	H	8.68	53.03	74	-20.97
11160	43.43	PK	163	1.2	V	8.68	52.11	74	-21.89
5700 MHz									
5725	66.93	PK	232	1.5	H	-1.96	64.97	68.2	-3.23
5725	67.14	PK	137	1.3	V	-1.96	65.18	68.2	-3.02
5745	64.77	PK	272	1.3	H	-1.91	62.86	68.2	-5.34
5745	65.02	PK	128	1.6	V	-1.91	63.11	68.2	-5.09
11400	45.84	PK	97	1.3	H	7.26	53.1	74	-20.9
11400	45.42	PK	82	2.2	V	7.26	52.68	74	-21.32

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac40									
5510 MHz									
5460	64.81	PK	54	2	H	-2.26	62.55	74	-11.45
5460	51.52	AV	54	2	H	-2.26	49.26	54	-4.74
5460	65	PK	266	2.4	V	-2.26	62.74	74	-11.26
5460	51.75	AV	266	2.4	V	-2.26	49.49	54	-4.51
5470	67.03	PK	66	2.1	H	-2.22	64.81	68.2	-3.39
5470	67.4	AV	291	2.2	V	-2.22	65.18	68.2	-3.02
11020	42.28	PK	48	2	V	9.57	51.85	74	-22.15
11020	41.53	PK	140	1.4	H	9.57	51.1	74	-22.9
5550 MHz									
11100	42.27	PK	38	1.1	H	9.12	51.39	74	-22.61
11100	41.18	PK	53	1.2	V	9.12	50.3	74	-23.7
5670 MHz									
5725	66.97	PK	273	1.9	H	-1.96	65.01	68.2	-3.19
5725	67.34	PK	7	1.7	V	-1.96	65.38	68.2	-2.82
5745	64.88	PK	95	1.6	H	-1.91	62.97	68.2	-5.23
5745	65.05	PK	63	2.5	V	-1.91	63.14	68.2	-5.06
11340	44.74	PK	216	1.2	H	7.67	52.41	74	-21.59
11340	44.11	PK	345	1.5	V	7.67	51.78	74	-22.22

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
802.11ac80									
5530 MHz									
5460	64.82	PK	224	1.3	H	-2.26	62.56	74	-11.44
5460	51.98	AV	224	1.3	H	-2.26	49.72	54	-4.28
5460	65	PK	335	1.6	V	-2.26	62.74	74	-11.26
5460	52.14	AV	335	1.6	V	-2.26	49.88	54	-4.12
5470	66.01	PK	117	2	H	-2.22	63.79	68.2	-4.41
5470	66.73	AV	174	1.9	V	-2.22	64.51	68.2	-3.69
11060	41.63	PK	310	2.1	V	9.37	51	74	-23
11060	41.32	PK	228	1.9	H	9.37	50.69	74	-23.31
5610 MHz									
5725	66.91	PK	241	1.9	H	-1.96	64.95	68.2	-3.25
5725	67.49	PK	100	1.8	V	-1.96	65.53	68.2	-2.67
5745	65.01	PK	119	1.9	H	-1.91	63.1	68.2	-5.1
5745	65.13	PK	197	2.1	V	-1.91	63.22	68.2	-4.98
11220	43.16	PK	73	1	H	8.33	51.49	74	-22.51
11220	42.88	PK	247	2.4	V	8.33	51.21	74	-22.79

5725 MHz – 5850MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11a									
5745MHz									
5650	66.05	PK	291	2.3	H	-1.95	64.1	68.2	-4.1
5650	65.81	PK	291	2.3	V	-1.95	63.86	68.2	-4.34
5700	66.7	PK	176	1.9	H	-2.02	64.68	105.2	-40.52
5700	66.55	PK	176	1.9	V	-2.02	64.53	105.2	-40.67
5720	66.87	PK	28	1.4	H	-2	64.87	110.8	-45.93
5720	66.68	PK	275	2.5	V	-2	64.68	110.8	-46.12
5725	68.54	PK	113	1.9	H	-2	66.54	122.2	-55.66
5725	67.11	PK	113	1.9	V	-2	65.11	122.2	-57.09
11490	45.62	PK	73	1.7	H	6.58	52.2	74	-21.8
11490	44.63	PK	157	1.5	V	6.58	51.21	74	-22.79
5785MHz									
11570	46.56	PK	99	2.2	H	6.6	53.16	74	-20.84
11570	45.95	PK	66	1.4	V	6.6	52.55	74	-21.45
5825MHz									
5850	68.03	PK	242	1.1	H	-1.81	66.22	122.2	-55.98
5850	67.81	PK	205	1.8	V	-1.81	66	122.2	-56.2
5855	67.4	PK	175	1.2	H	-1.81	65.59	110.8	-45.21
5855	67.3	PK	120	2.1	V	-1.81	65.49	110.8	-45.31
5875	67.22	PK	337	2.4	H	-1.84	65.38	105.2	-39.82
5875	67.1	PK	337	2.4	V	-1.84	65.26	105.2	-39.94
5925	66.63	PK	206	1	H	-1.8	64.83	68.2	-3.37
5925	66.52	PK	206	1	V	-1.8	64.72	68.2	-3.48
11650	44.77	PK	337	2	H	6.77	51.54	74	-22.46
11650	44.1	PK	45	2.4	V	6.77	50.87	74	-23.13

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n20									
5745MHz									
5650	65.98	PK	39	1.6	H	-1.95	64.03	68.2	-4.17
5650	65.83	PK	39	1.6	V	-1.95	63.88	68.2	-4.32
5700	66.53	PK	50	1.4	H	-2.02	64.51	105.2	-40.69
5700	66.37	PK	50	1.4	V	-2.02	64.35	105.2	-40.85
5720	67.04	PK	131	1.6	H	-2	65.04	110.8	-45.76
5720	66.86	PK	24	1.1	V	-2	64.86	110.8	-45.94
5725	67.27	PK	111	2.4	H	-2	65.27	122.2	-56.93
5725	67.1	PK	111	2.4	V	-2	65.1	122.2	-57.1
11490	44.8	PK	162	2.3	H	6.58	51.38	74	-22.62
11490	44.63	PK	331	1.3	V	6.58	51.21	74	-22.79
5785MHz									
11570	46.35	PK	201	1.2	H	6.6	52.95	74	-21.05
11570	45.1	PK	348	2.1	V	6.6	51.7	74	-22.3
5825MHz									
5850	68.19	PK	349	2.2	H	-1.81	66.38	122.2	-55.82
5850	68.07	PK	212	2.4	V	-1.81	66.26	122.2	-55.94
5855	67.96	PK	313	1	H	-1.81	66.15	110.8	-44.65
5855	67.82	PK	256	1.8	V	-1.81	66.01	110.8	-44.79
5875	67.75	PK	205	1.9	H	-1.84	65.91	105.2	-39.29
5875	67.66	PK	205	1.9	V	-1.84	65.82	105.2	-39.38
5925	66.7	PK	187	1.1	H	-1.8	64.9	68.2	-3.3
5925	66.59	PK	187	1.1	V	-1.8	64.79	68.2	-3.41
11650	44.52	PK	157	1.2	H	6.77	51.29	74	-22.71
11650	43.43	PK	203	1.5	V	6.77	50.2	74	-23.8

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11n40									
5755MHz									
5650	66.15	PK	10	2.1	H	-1.95	64.2	68.2	-4
5650	65.97	PK	10	2.1	V	-1.95	64.02	68.2	-4.18
5700	66.76	PK	40	2	H	-2.02	64.74	105.2	-40.46
5700	66.65	PK	40	2	V	-2.02	64.63	105.2	-40.57
5720	67.46	PK	261	2	H	-2	65.46	110.8	-45.34
5720	67.24	PK	249	1.8	V	-2	65.24	110.8	-45.56
5725	70.93	PK	209	2.4	H	-2	68.93	122.2	-53.27
5725	68.95	PK	209	2.4	V	-2	66.95	122.2	-55.25
11510	45.12	PK	9	2	H	6.5	51.62	74	-22.38
11510	44.64	PK	23	2.1	V	6.5	51.14	74	-22.86
5795MHz									
5850	68.35	PK	259	2.5	H	-1.81	66.54	122.2	-55.66
5850	68.06	PK	250	1.4	V	-1.81	66.25	122.2	-55.95
5855	67.96	PK	313	2.1	H	-1.81	66.15	110.8	-44.65
5855	67.87	PK	240	1.5	V	-1.81	66.06	110.8	-44.74
5875	67.75	PK	302	1.1	H	-1.84	65.91	105.2	-39.29
5875	67.57	PK	302	1.1	V	-1.84	65.73	105.2	-39.47
5925	66.72	PK	142	2.1	H	-1.8	64.92	68.2	-3.28
5925	66.61	PK	142	2.1	V	-1.8	64.81	68.2	-3.39
11590	45.27	PK	21	2.2	H	6.58	51.85	74	-22.15
11590	44.98	PK	286	2.1	V	6.58	51.56	74	-22.44

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac20									
5745MHz									
5650	66.19	PK	162	1.4	H	-1.95	64.24	68.2	-3.96
5650	66.06	PK	162	1.4	V	-1.95	64.11	68.2	-4.09
5700	66.79	PK	308	2.2	H	-2.02	64.77	105.2	-40.43
5700	66.67	PK	308	2.2	V	-2.02	64.65	105.2	-40.55
5720	67.38	PK	324	2.1	H	-2	65.38	110.8	-45.42
5720	67.23	PK	115	1.1	V	-2	65.23	110.8	-45.57
5725	68.43	PK	306	1.5	H	-2	66.43	122.2	-55.77
5725	67.92	PK	306	1.5	V	-2	65.92	122.2	-56.28
11490	44.81	PK	284	1.9	H	6.58	51.39	74	-22.61
11490	44.43	PK	44	1.9	V	6.58	51.01	74	-22.99
5785MHz									
11570	46.29	PK	125	1.1	H	6.6	52.89	74	-21.11
11570	45.12	PK	334	1.2	V	6.6	51.72	74	-22.28
5825MHz									
5850	68.55	PK	197	1.7	H	-1.81	66.74	122.2	-55.46
5850	68.23	PK	80	1.9	V	-1.81	66.42	122.2	-55.78
5855	67.86	PK	70	2.1	H	-1.81	66.05	110.8	-44.75
5855	67.72	PK	306	1.3	V	-1.81	65.91	110.8	-44.89
5875	67.63	PK	134	2.2	H	-1.84	65.79	105.2	-39.41
5875	67.48	PK	134	2.2	V	-1.84	65.64	105.2	-39.56
5925	66.68	PK	307	2.2	H	-1.8	64.88	68.2	-3.32
5925	66.57	PK	307	2.2	V	-1.8	64.77	68.2	-3.43
11650	44.36	PK	152	1.8	H	6.77	51.13	74	-22.87
11650	43.27	PK	325	1.3	V	6.77	50.04	74	-23.96

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac40									
5755MHz									
5650	66.21	PK	201	2.3	H	-1.95	64.26	68.2	-3.94
5650	66.09	PK	201	2.3	V	-1.95	64.14	68.2	-4.06
5700	66.77	PK	331	1.8	H	-2.02	64.75	105.2	-40.45
5700	66.65	PK	331	1.8	V	-2.02	64.63	105.2	-40.57
5720	67.91	PK	141	1.9	H	-2	65.91	110.8	-44.89
5720	67.77	PK	230	1.8	V	-2	65.77	110.8	-45.03
5725	70.8	PK	123	1.5	H	-2	68.8	122.2	-53.4
5725	69.42	PK	123	1.5	V	-2	67.42	122.2	-54.78
11510	45.5	PK	114	2.4	H	6.5	52	74	-22
11510	45.25	PK	96	2.5	V	6.5	51.75	74	-22.25
5795MHz									
5850	68.63	PK	330	1.2	H	-1.81	66.82	122.2	-55.38
5850	68.39	PK	293	1.9	V	-1.81	66.58	122.2	-55.62
5855	68.07	PK	60	2.2	H	-1.81	66.26	110.8	-44.54
5855	67.93	PK	165	1.9	V	-1.81	66.12	110.8	-44.68
5875	67.85	PK	294	2	H	-1.84	66.01	105.2	-39.19
5875	67.75	PK	294	2	V	-1.84	65.91	105.2	-39.29
5925	66.75	PK	169	2.3	H	-1.8	64.95	68.2	-3.25
5925	66.64	PK	169	2.3	V	-1.8	64.84	68.2	-3.36
11590	45.82	PK	149	1.3	H	6.58	52.4	74	-21.6
11590	45.32	PK	158	1.5	V	6.58	51.9	74	-22.1

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part15.407	
	Reading (dB μ V)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Pol ar (H / V)			Limit (dB μ V/m)	Margin (dB)
802.11ac80									
5775MHz									
5650	66.02	PK	18	2.5	H	-1.95	64.07	68.2	-4.13
5650	65.89	PK	18	2.5	V	-1.95	63.94	68.2	-4.26
5700	67.13	PK	55	1.9	H	-2.02	65.11	105.2	-40.09
5700	66.95	PK	55	1.9	V	-2.02	64.93	105.2	-40.27
5720	68.78	PK	214	1.5	H	-2	66.78	110.8	-44.02
5720	67.95	PK	331	1.7	V	-2	65.95	110.8	-44.85
5725	69.26	PK	31	2.5	H	-2	67.26	122.2	-54.94
5725	68.38	PK	31	2.5	V	-2	66.38	122.2	-55.82
5850	70.45	PK	172	1.8	H	-1.81	68.64	122.2	-53.56
5850	70.06	PK	138	1.2	V	-1.81	68.25	122.2	-53.95
5855	69.76	PK	247	1.6	H	-1.81	67.95	110.8	-42.85
5855	68.74	PK	18	1.3	V	-1.81	66.93	110.8	-43.87
5875	67.7	PK	152	1.3	H	-1.84	65.86	105.2	-39.34
5875	67.46	PK	152	1.3	V	-1.84	65.62	105.2	-39.58
5925	66.81	PK	244	1.5	H	-1.8	65.01	68.2	-3.19
5925	66.7	PK	244	1.5	V	-1.8	64.9	68.2	-3.3
11550	45.02	PK	141	1.9	H	6.61	51.63	74	-22.37
11550	44.68	PK	317	1.9	V	6.61	51.29	74	-22.71

Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

Margin = Corrected. Amplitude - Limit

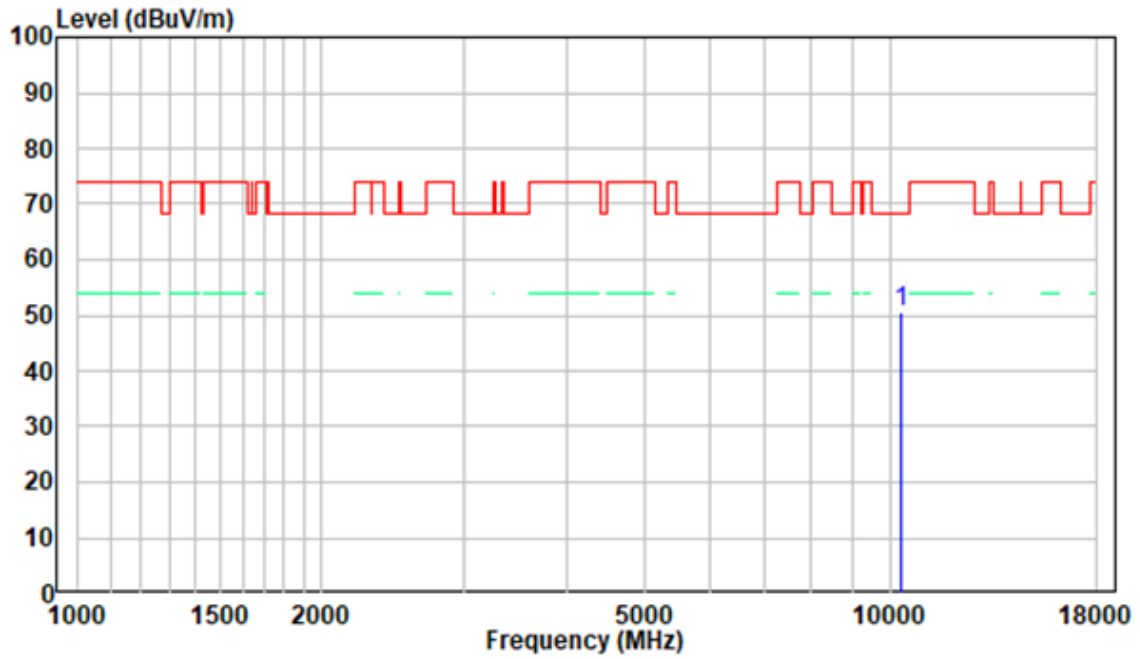
The other spurious emission which is in the noise floor level was not recorded.

The test result of peak was less than the limit of average, so just peak value were recorded.

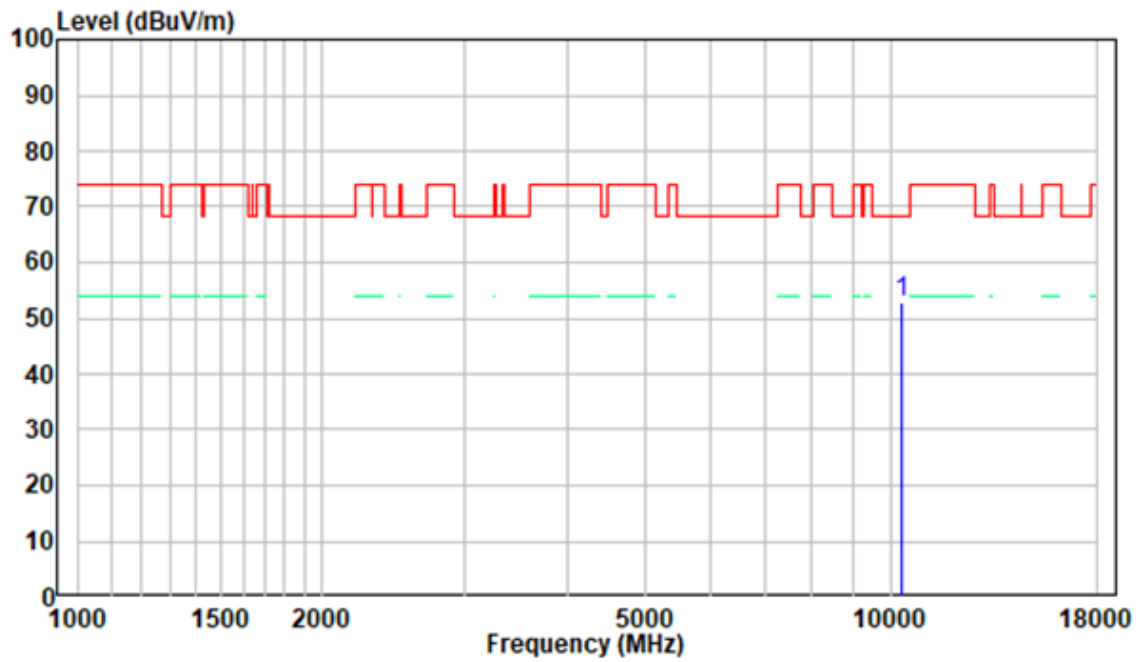
1 GHz - 18 GHz: (Pre-Scan plots)

802.11 n20, 5180MHz

Horizontal



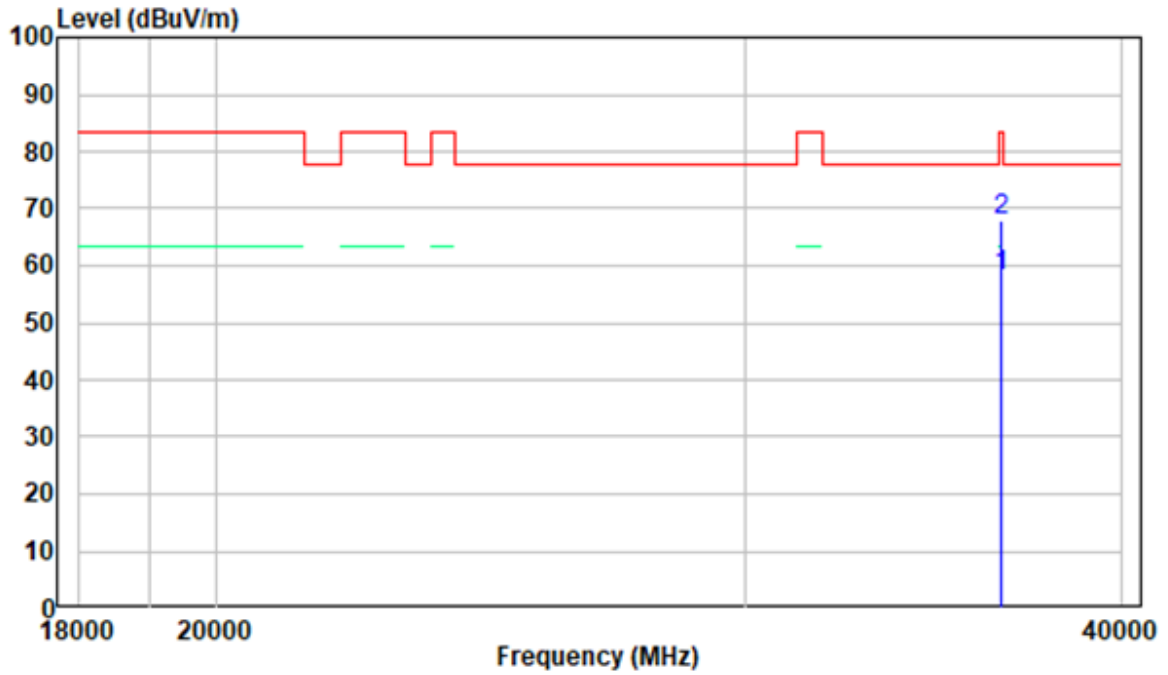
Vertical



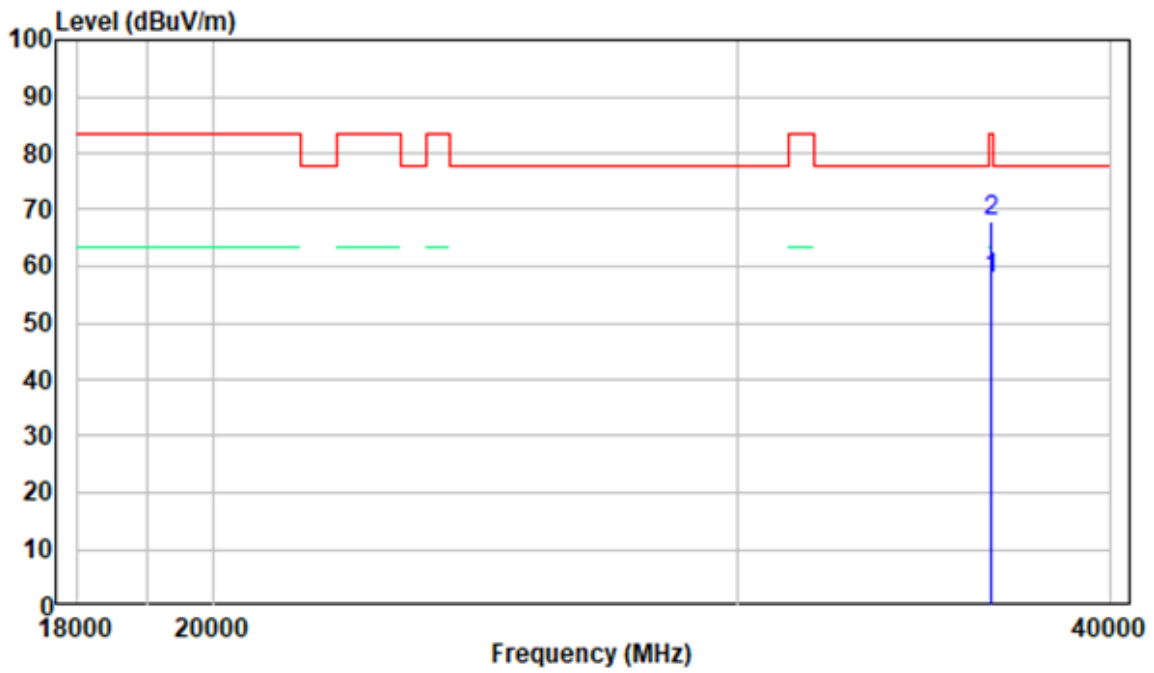
18-40GHz: (Pre-Scan plots)

802.11 n20, 5180MHz

Horizontal



Vertical



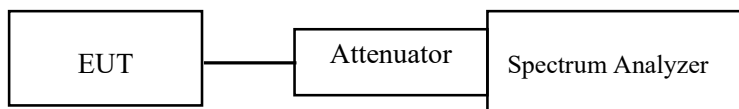
FCC §15.407(a),(e) –EMISSION BANDWIDTH& 99% OCCUPIED BANDWIDTH

Applicable Standard

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Test Procedure

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- for the 99% occupied bandwidth, use the OBW function of spectrum analyzer.



Test Data

Environmental Conditions

Temperature:	27.1 °C
Relative Humidity:	58 %
ATM Pressure:	101.3 kPa

The testing was performed by Roger Ling from 2022-07-28 to 2022-08-27.

EUT operation mode: Transmitting

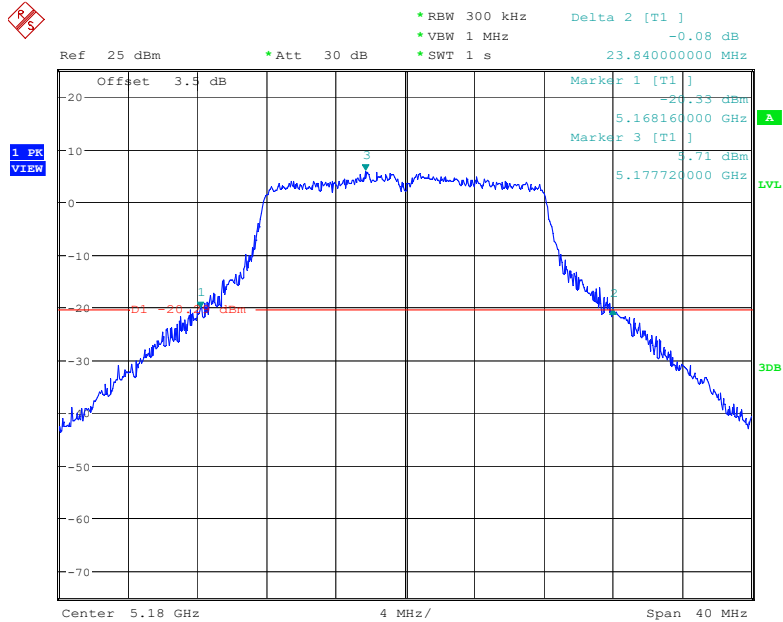
Test Result: Pass; please refer to the following tables and plots.

5150 MHz - 5250 MHz:

Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Remark
802.11a			No transmitted signal in the 99% bandwidth extends into the U-NII-2A band
5180	23.84	16.96	
5200	23.60	16.96	
5240	23.64	16.96	
802.11n20			
5180	25.44	18.04	
5200	25.28	18.04	
5240	25.12	18.08	
802.11n40			
5190	41.84	36.40	
5230	42.16	36.48	
802.11ac20			
5180	25.32	18.04	
5200	25.16	18.04	
5240	25.68	18.08	
802.11ac40			
5190	42.32	36.32	
5230	42.16	36.48	
11ac80			
5210	84.32	75.68	

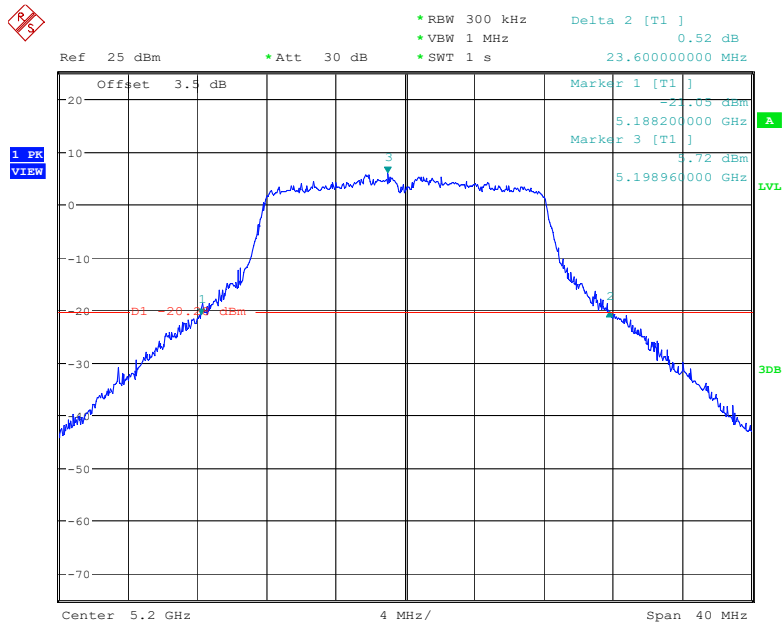
26 dB Emission Bandwidth

802.11a mode, 5180 MHz



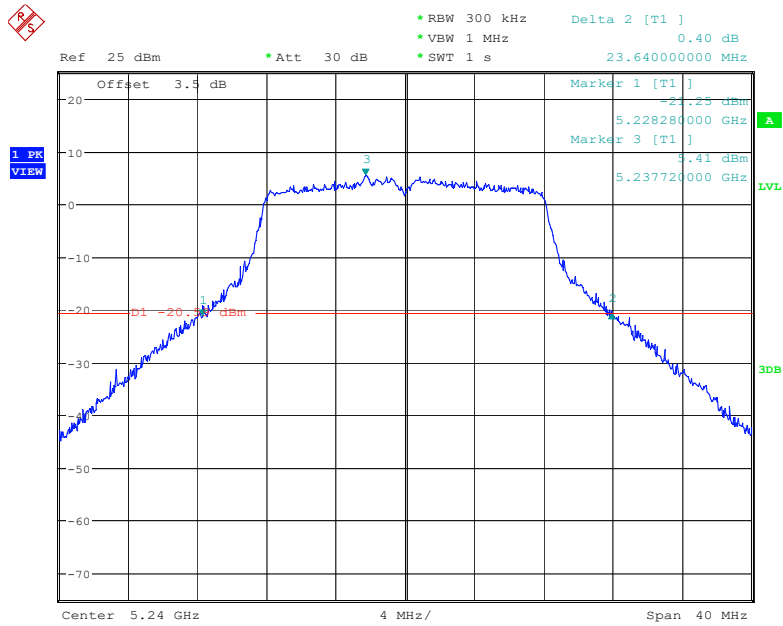
Date: 28.JUL.2022 21:57:58

802.11a mode, 5200 MHz



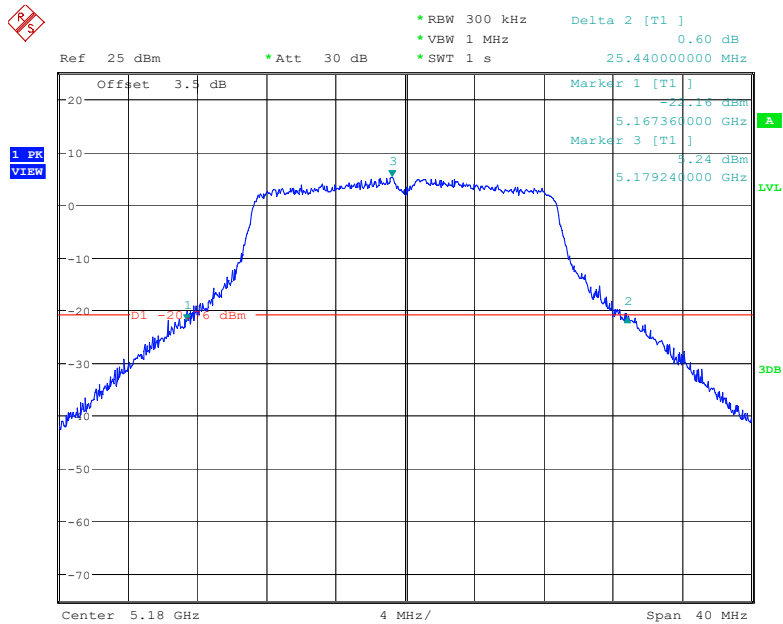
Date: 28.JUL.2022 22:01:05

802.11a mode, 5240 MHz



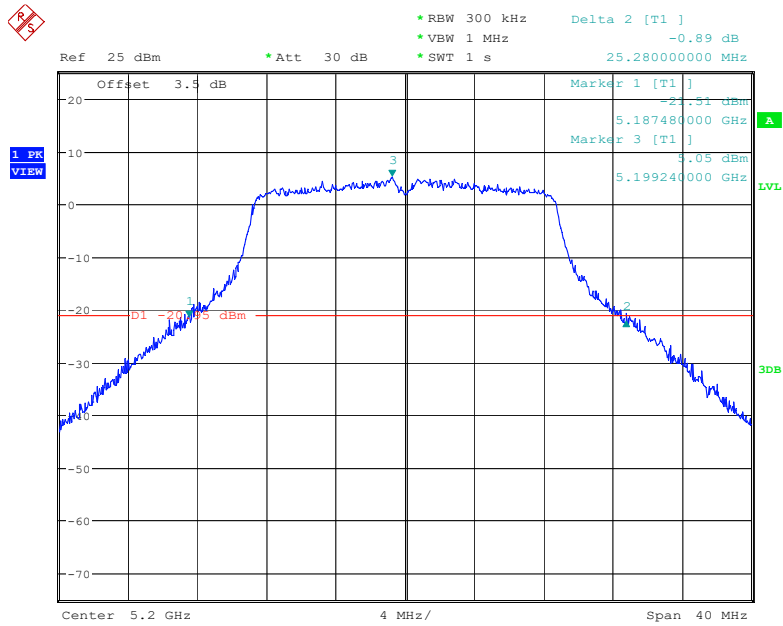
Date: 28.JUL.2022 22:03:36

802.11n20 mode, 5180 MHz



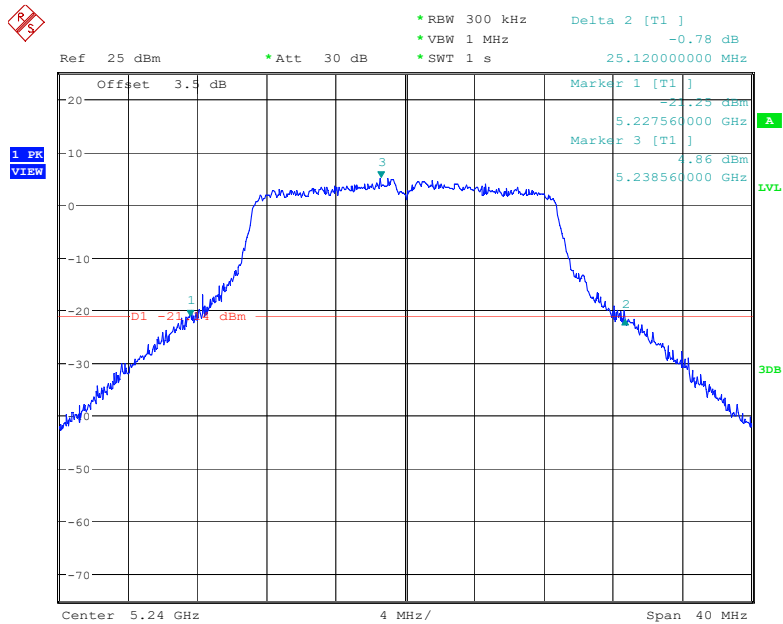
Date: 28.JUL.2022 23:31:59

802.11n20 mode, 5200 MHz



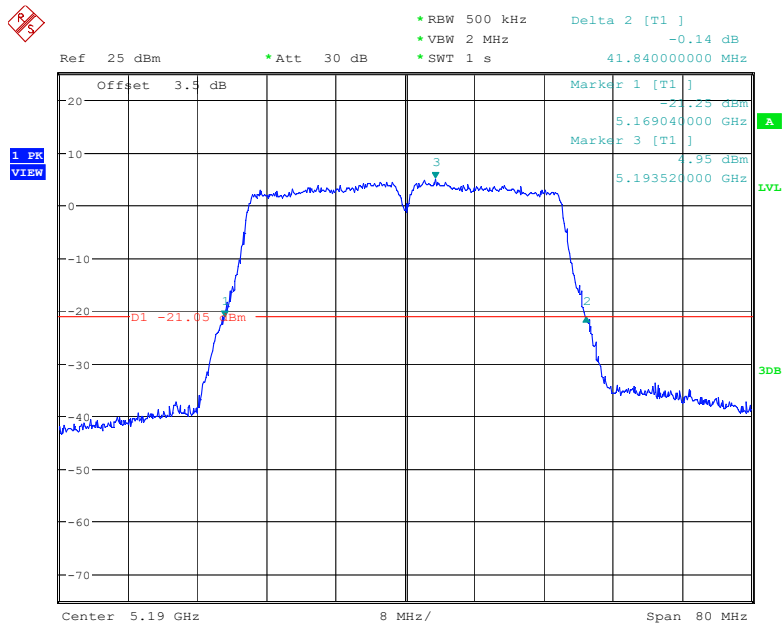
Date: 28.JUL.2022 23:34:31

802.11n20 mode, 5240 MHz



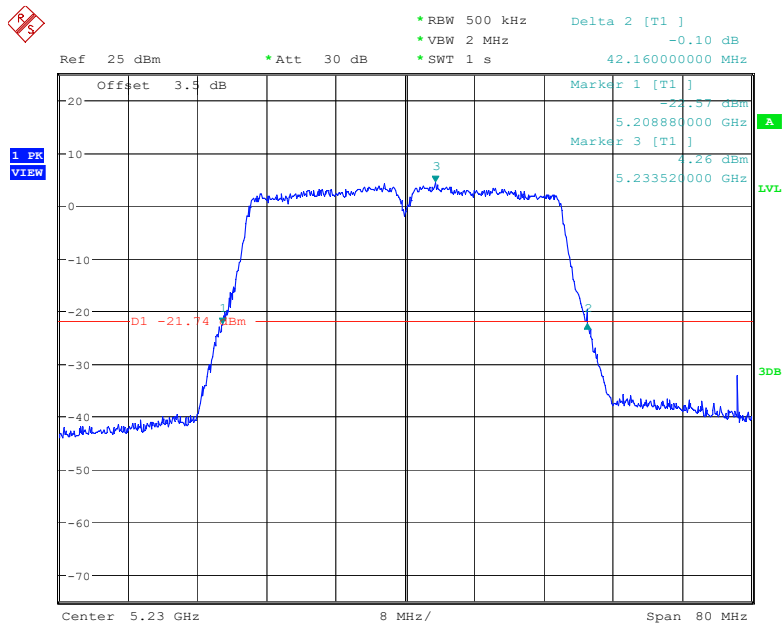
Date: 28.JUL.2022 23:37:07

802.11n40 mode, 5190 MHz



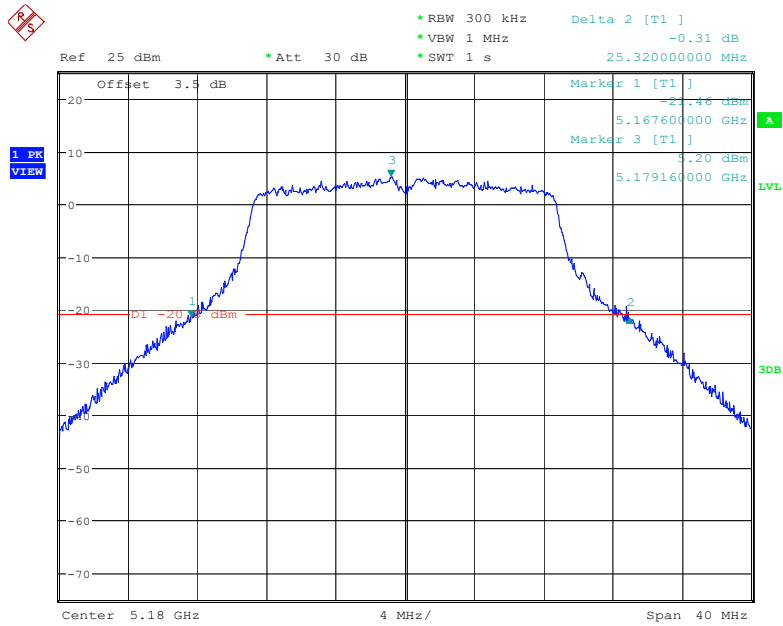
Date: 29.JUL.2022 00:04:20

802.11n40 mode, 5230 MHz



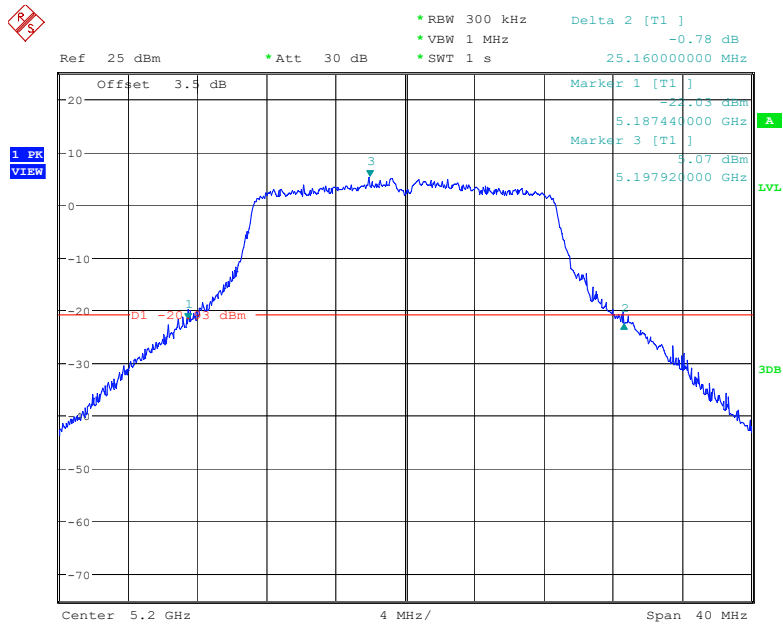
Date: 29.JUL.2022 00:06:52

802.11ac20 mode, 5180 MHz



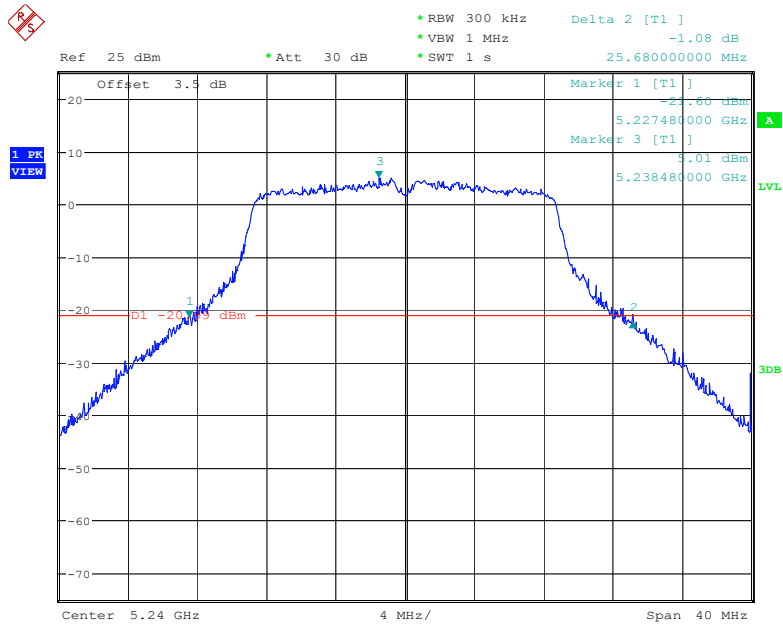
Date: 28.JUL.2022 21:09:01

802.11ac20 mode, 5200 MHz



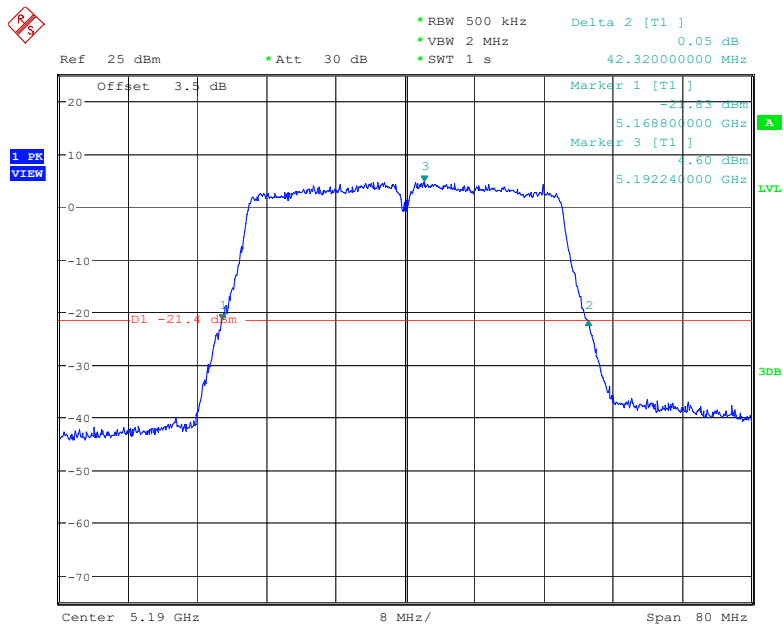
Date: 28.JUL.2022 21:12:06

802.11ac20 mode, 5240 MHz



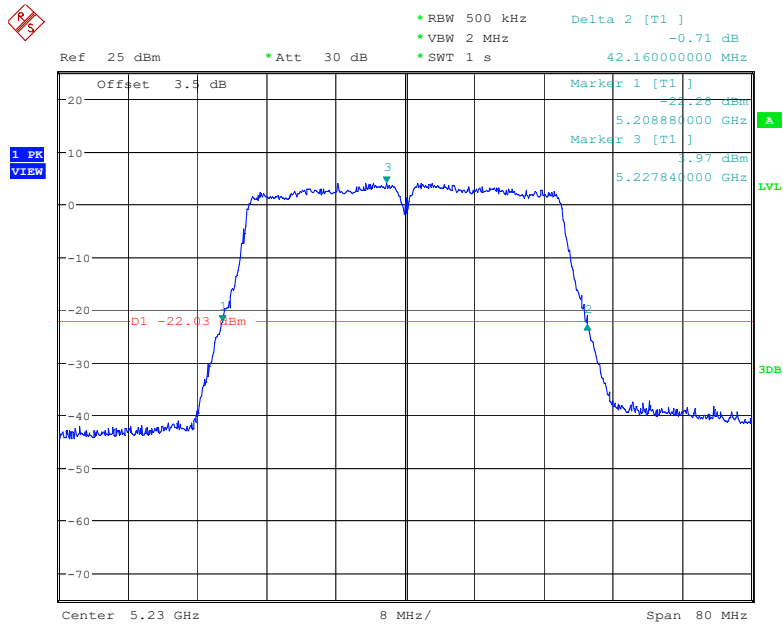
Date: 28.JUL.2022 21:15:04

802.11ac40 mode, 5190 MHz



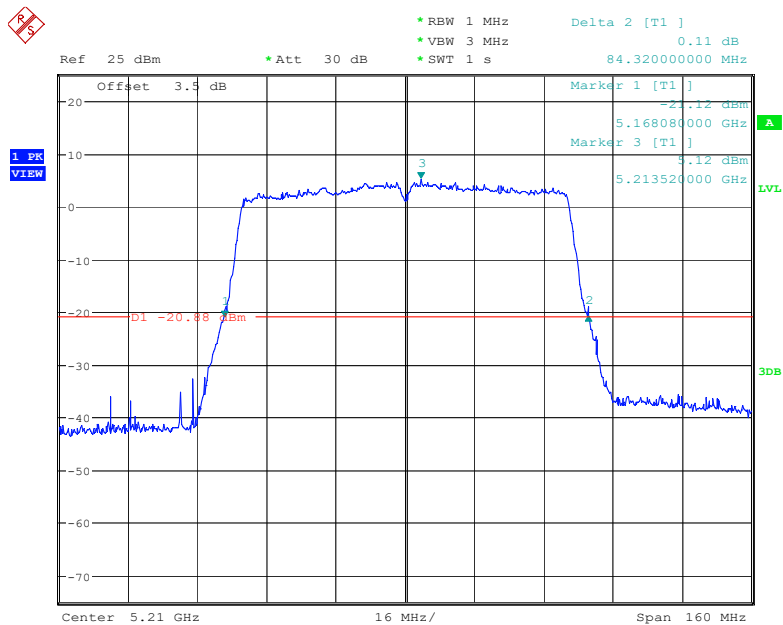
Date: 28.JUL.2022 22:34:46

802.11ac40 mode, 5230 MHz



Date: 28.JUL.2022 22:37:45

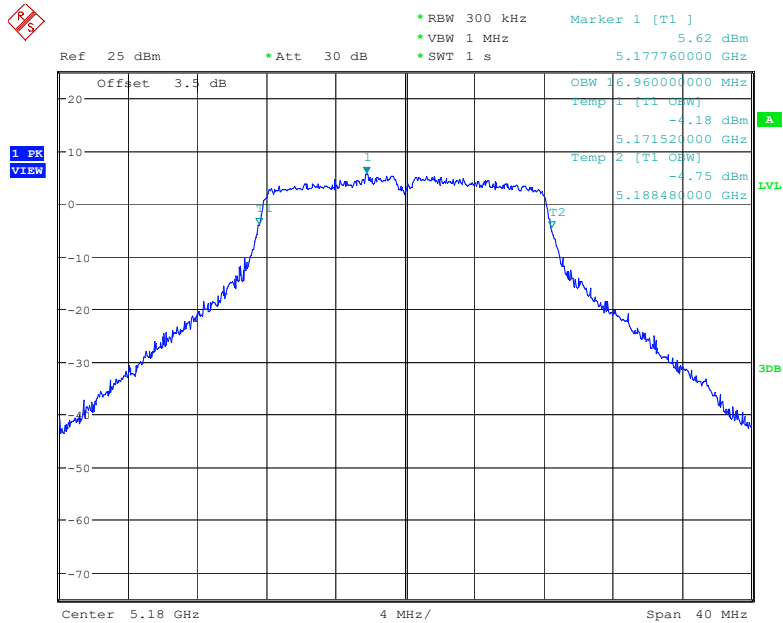
802.11ac80 mode, 5210 MHz



Date: 28.JUL.2022 23:05:51

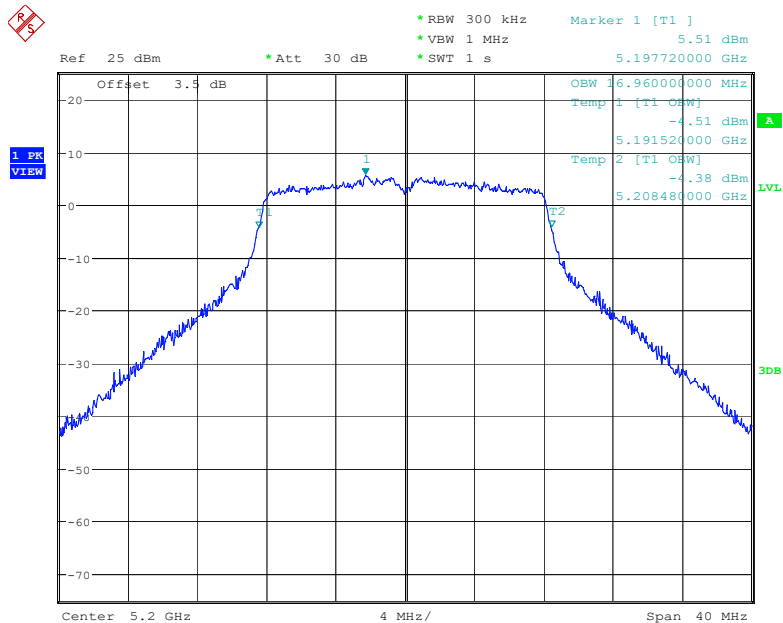
99% Occupied Bandwidth

802.11a mode, 5180 MHz



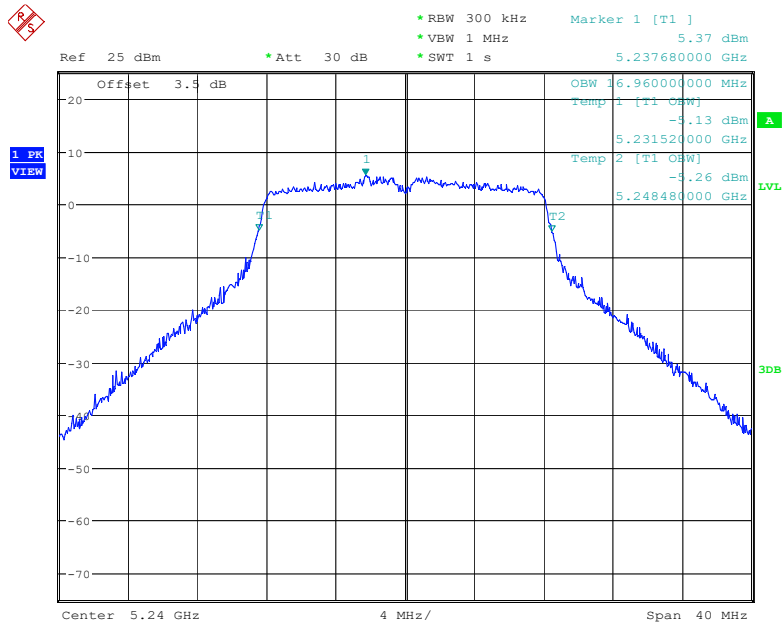
Date: 28.JUL.2022 21:57:31

802.11a mode, 5200 MHz



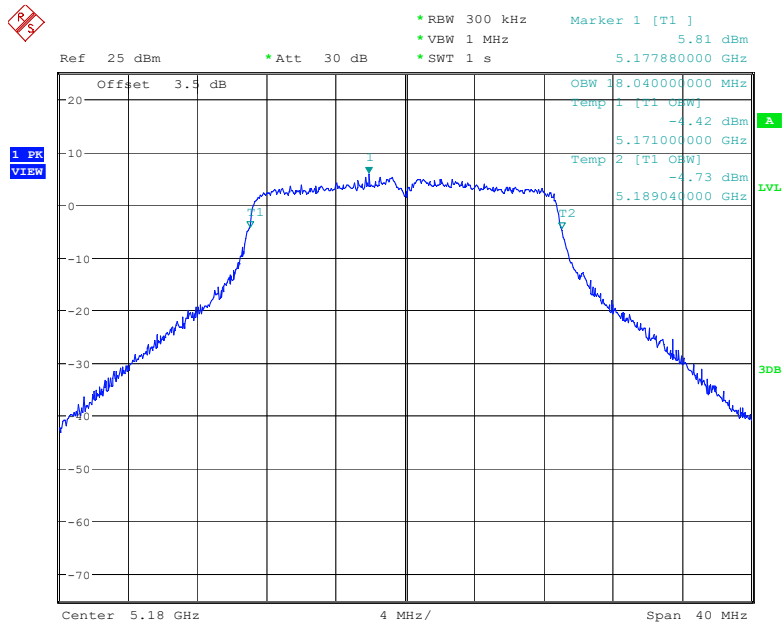
Date: 28.JUL.2022 22:00:38

802.11a mode, 5240 MHz



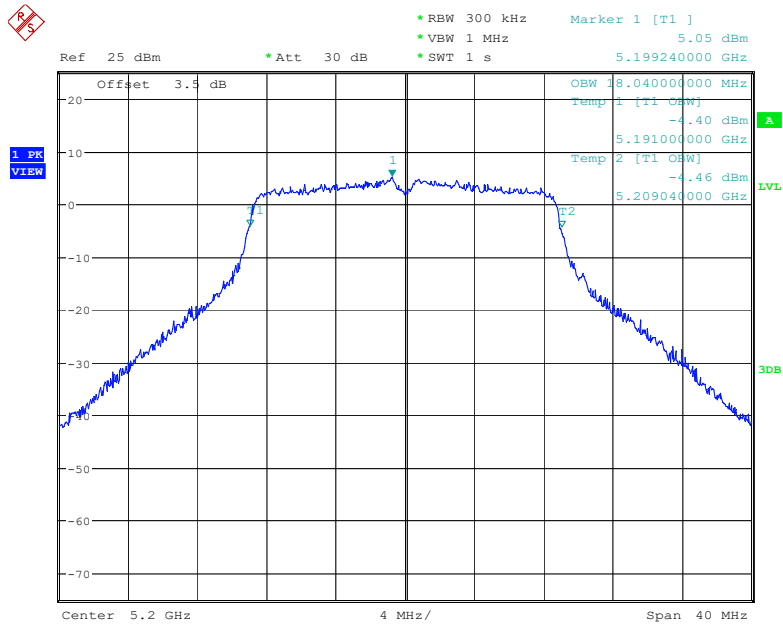
Date: 28.JUL.2022 22:03:09

802.11n20 mode, 5180 MHz



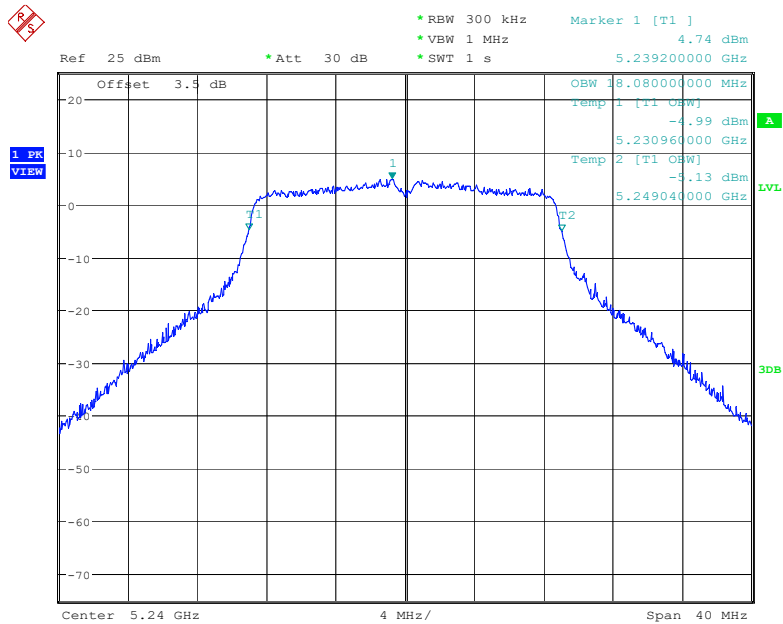
Date: 28.JUL.2022 23:31:31

802.11n20 mode, 5200 MHz



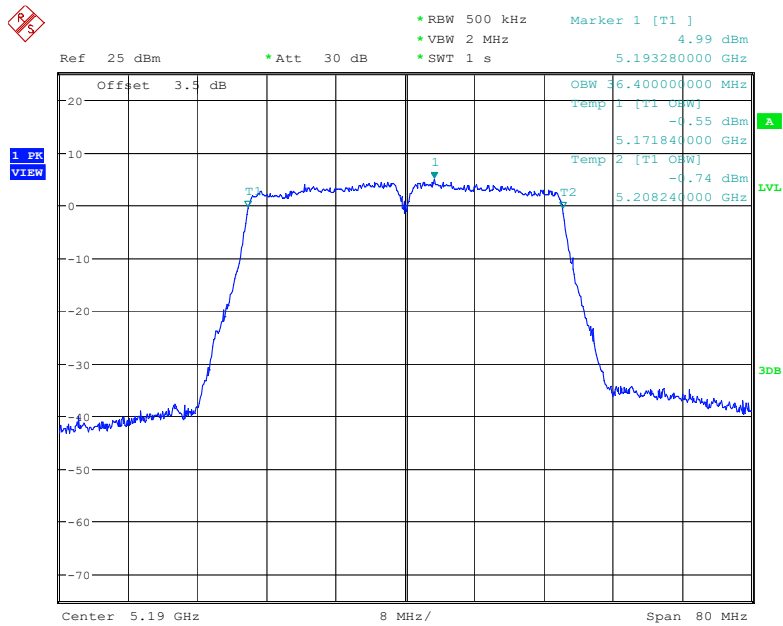
Date: 28.JUL.2022 23:34:03

802.11n20 mode, 5240 MHz



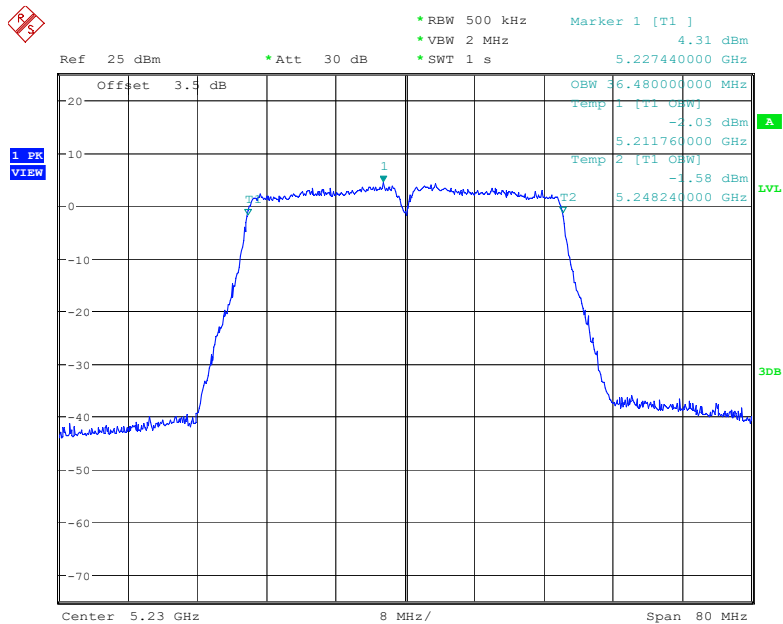
Date: 28.JUL.2022 23:36:39

802.11n40 mode, 5190 MHz



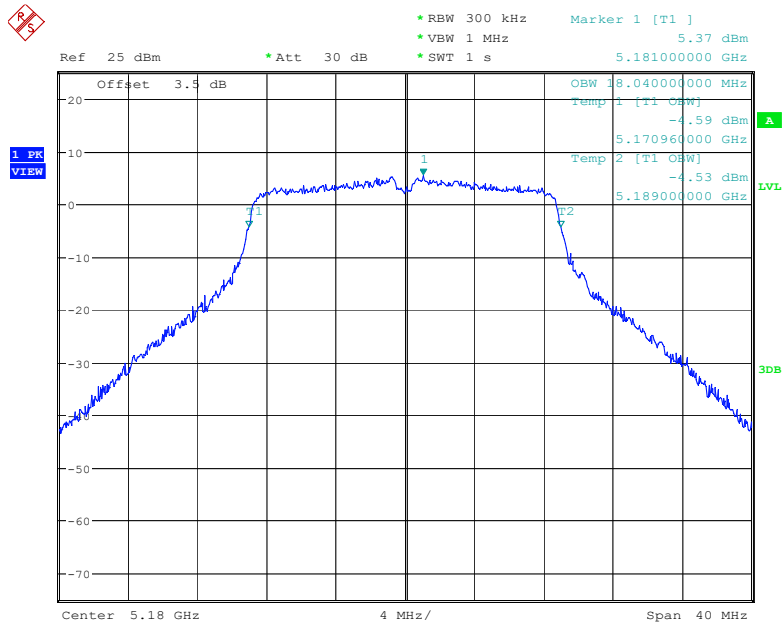
Date: 29.JUL.2022 00:03:52

802.11n40 mode, 5230 MHz



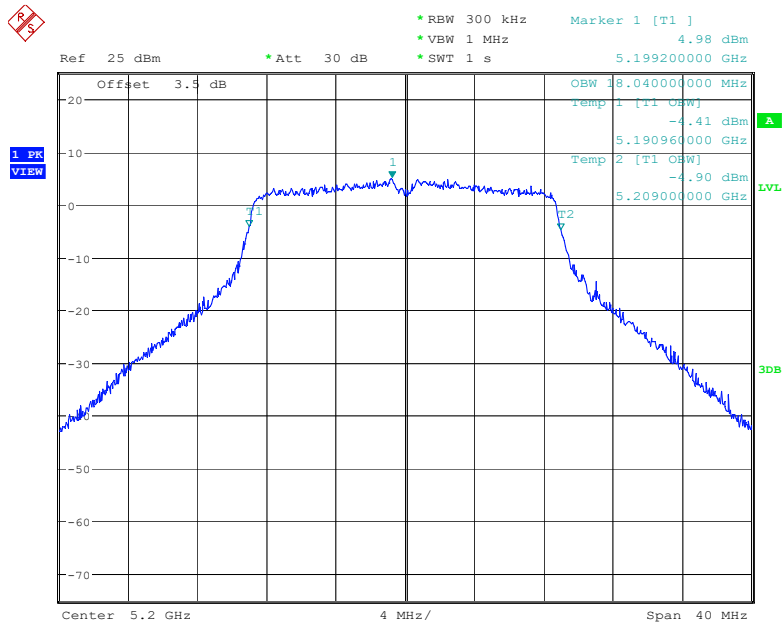
Date: 29.JUL.2022 00:06:25

802.11ac20 mode, 5180 MHz



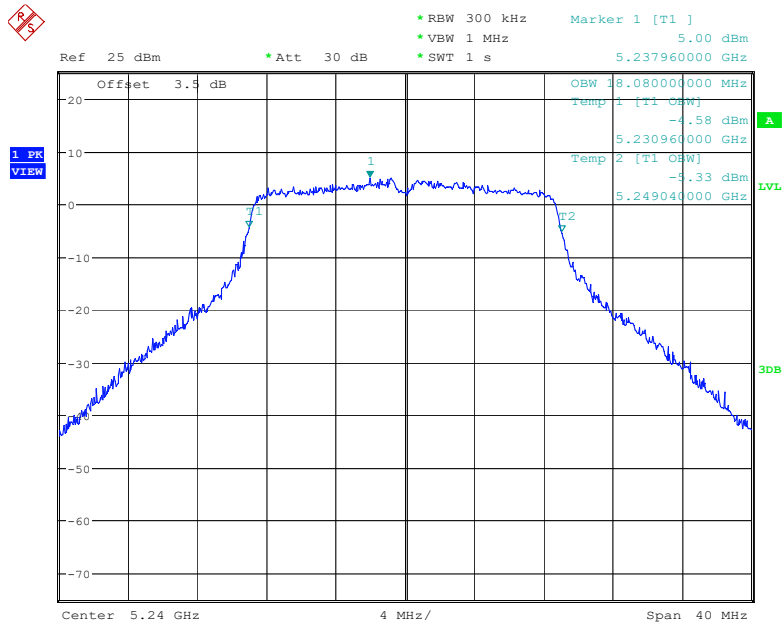
Date: 28.JUL.2022 21:08:33

802.11ac20 mode, 5200 MHz



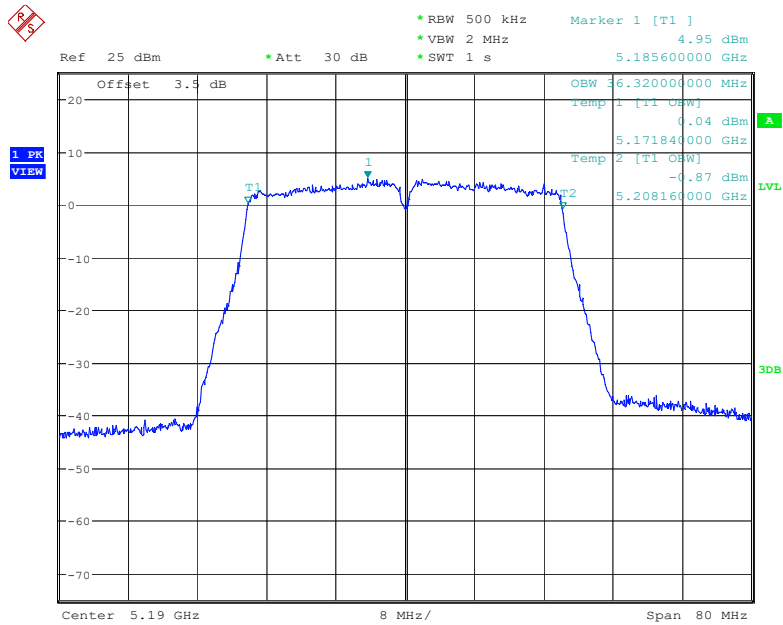
Date: 28.JUL.2022 21:11:38

802.11ac20 mode, 5240 MHz



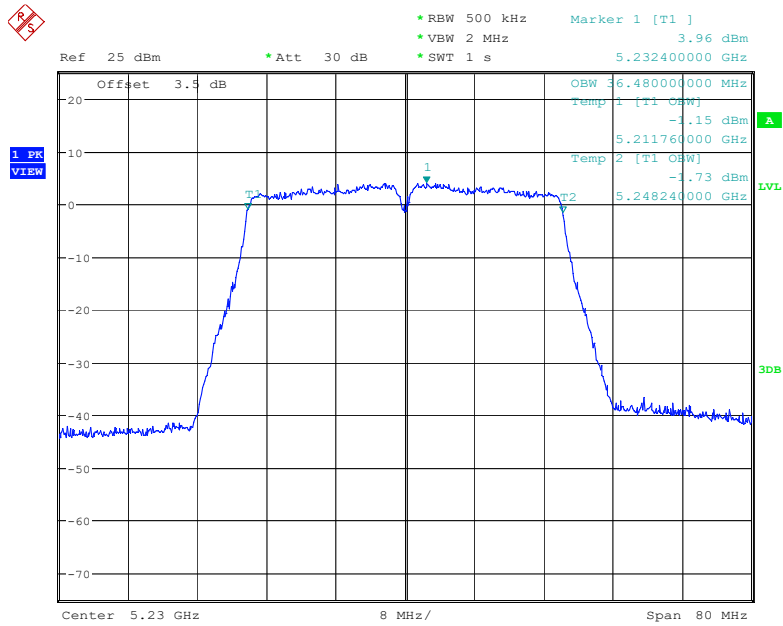
Date: 28.JUL.2022 21:14:36

802.11ac40 mode, 5190 MHz



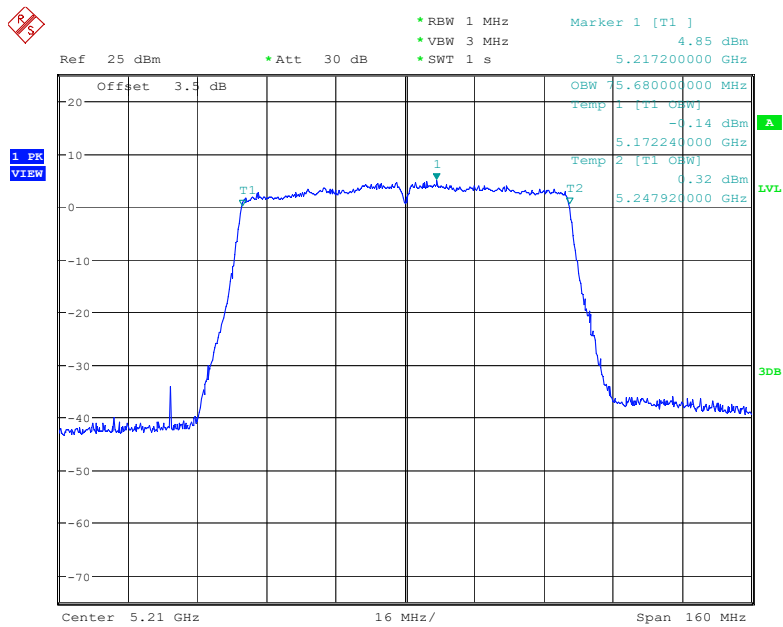
Date: 28.JUL.2022 22:34:18

802.11ac40 mode, 5230 MHz



Date: 28.JUL.2022 22:37:18

802.11ac80 mode, 5210 MHz



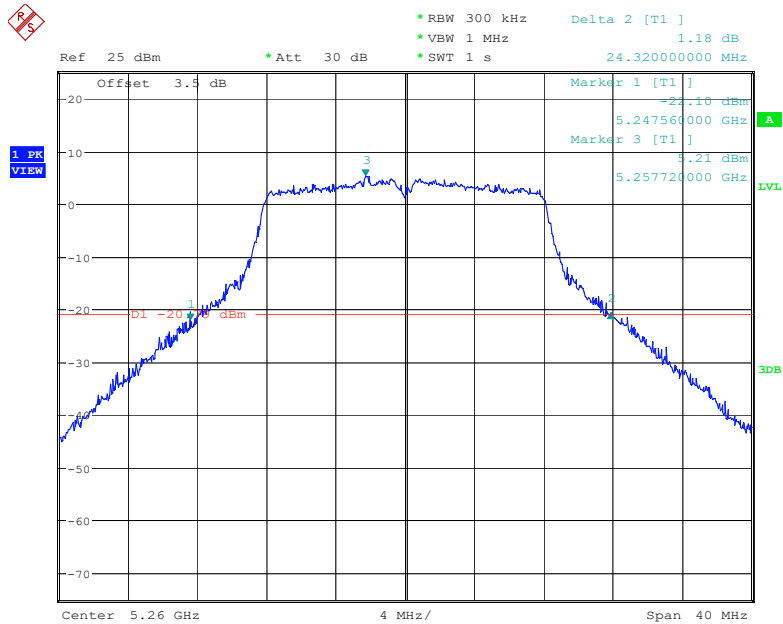
Date: 28.JUL.2022 23:05:23

5250 MHz - 5350 MHz:

Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a		
5260	24.32	16.92
5280	23.76	16.88
5320	23.96	16.96
802.11n20		
5260	25.16	18.04
5280	25.36	18.04
5320	25.12	18.08
802.11n40		
5270	42.08	36.32
5310	42.24	36.48
802.11ac20		
5260	25.44	18.04
5280	25.00	18.04
5320	25.12	18.08
802.11ac40		
5270	42.32	36.40
5310	42.00	36.48
11ac80		
5290	85.28	78.84

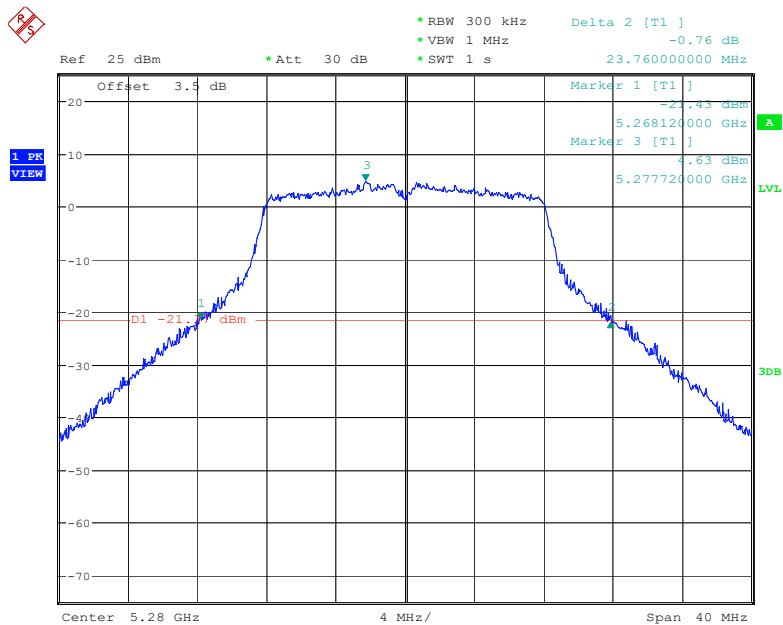
26 dB Emissions

802.11a mode, 5260MHz



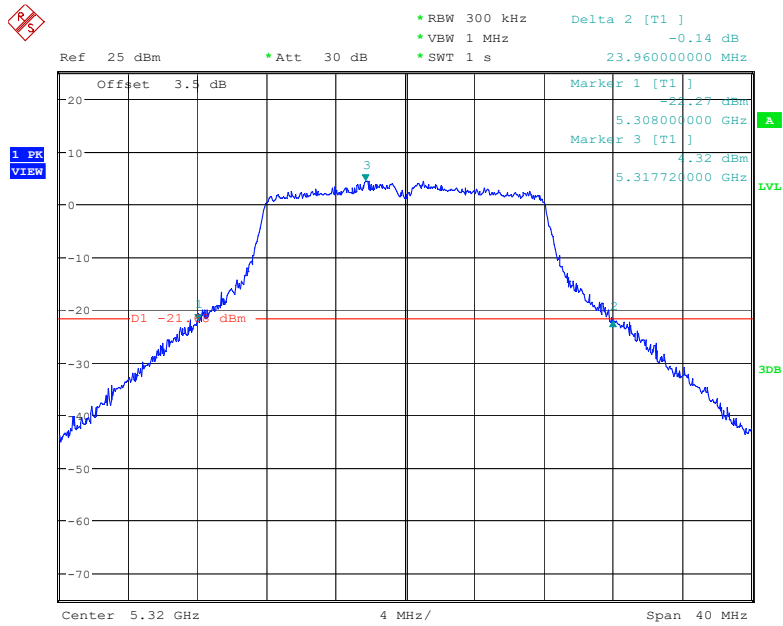
Date: 28.JUL.2022 22:06:19

802.11a mode, 5280MHz



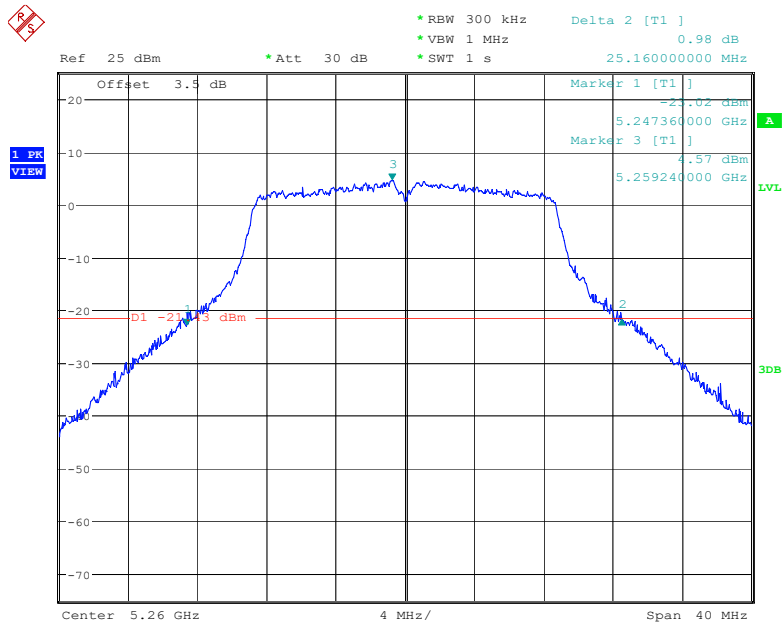
Date: 28.JUL.2022 22:09:15

802.11a mode, 5320MHz



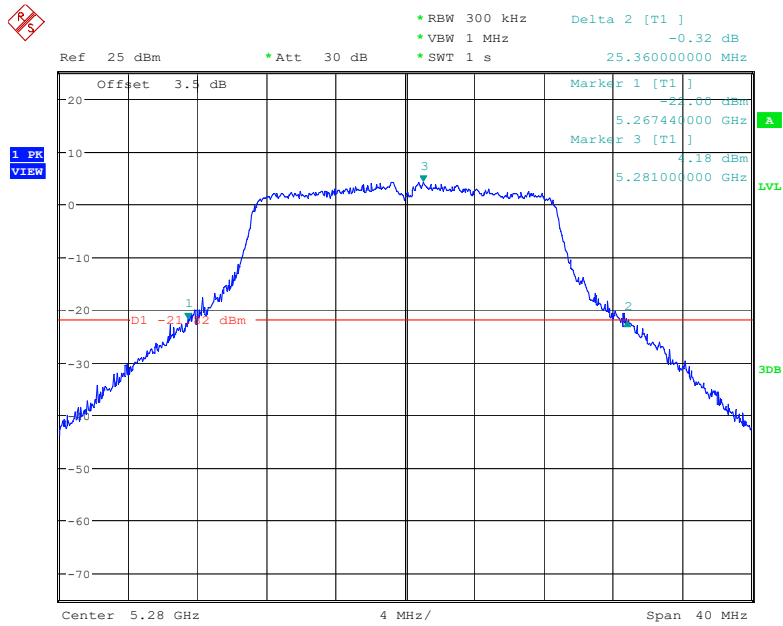
Date: 28.JUL.2022 22:13:08

802.11n20 mode, 5260 MHz



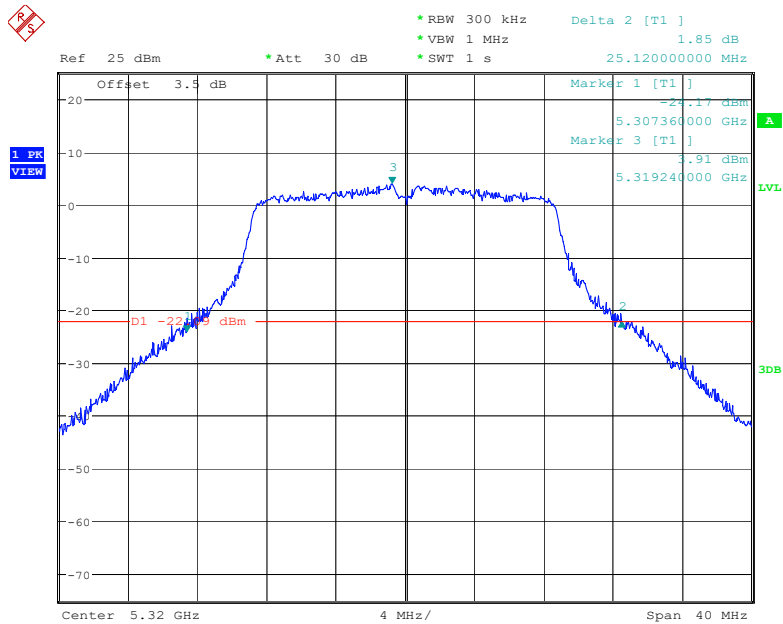
Date: 28.JUL.2022 23:39:45

802.11n20 mode, 5280MHz



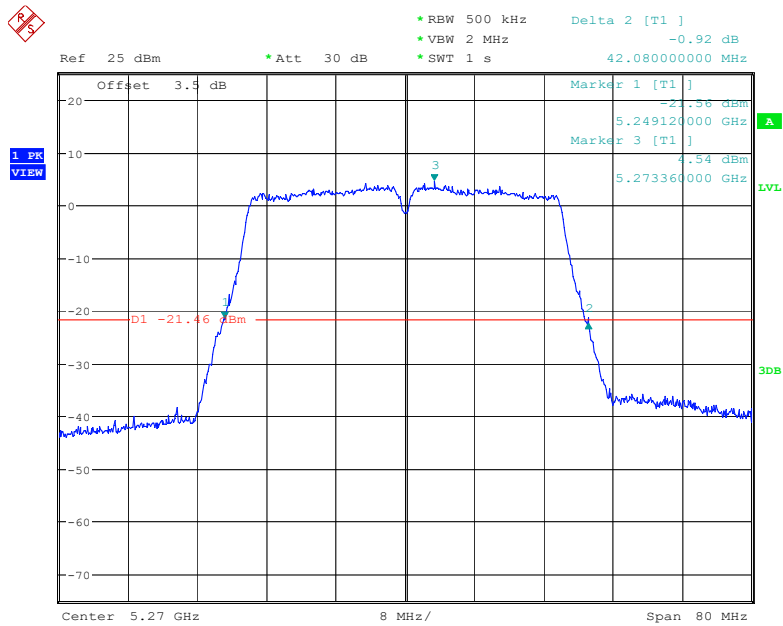
Date: 28.JUL.2022 23:42:47

802.11n20 mode, 5320MHz



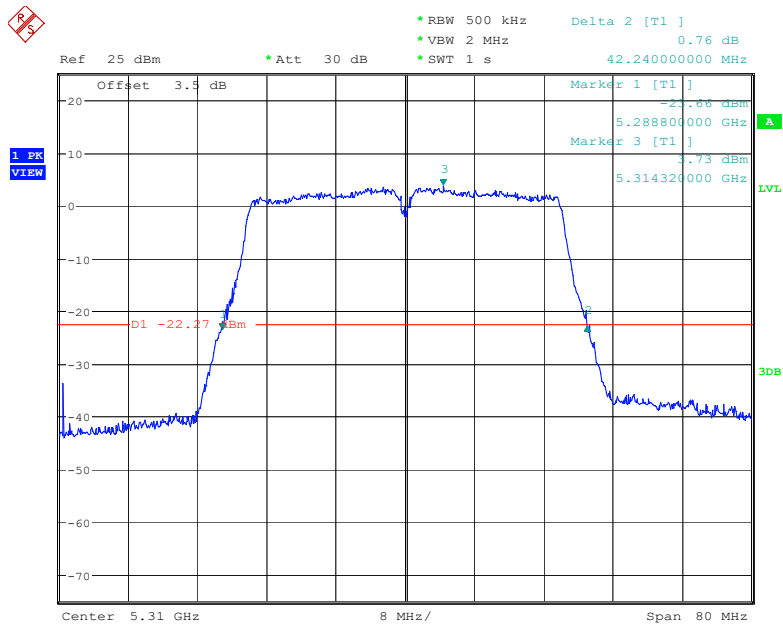
Date: 28.JUL.2022 23:45:19

802.11n40 mode, 5270 MHz



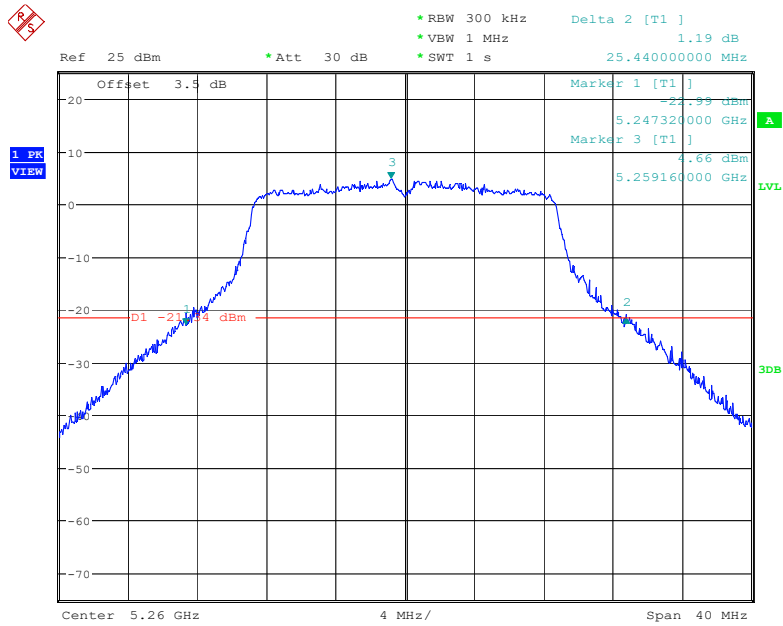
Date: 29.JUL.2022 00:09:37

802.11n40 mode, 5310 MHz



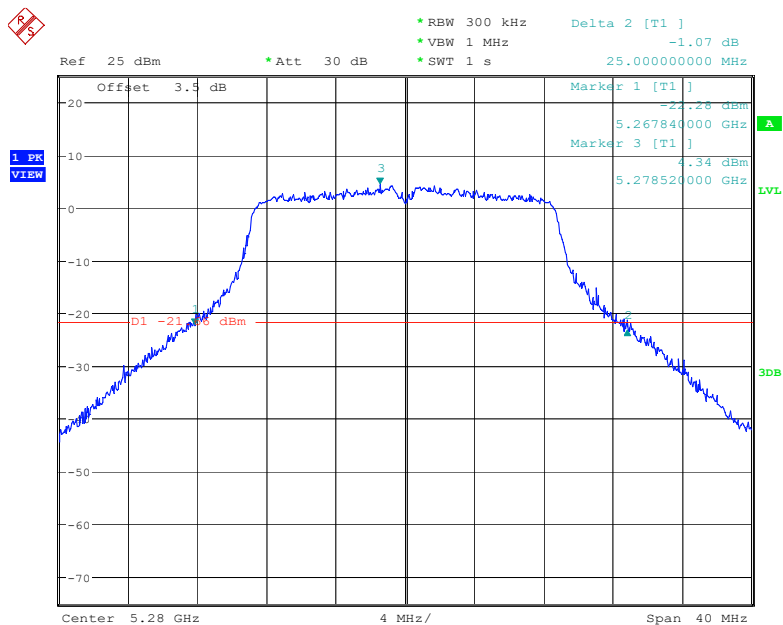
Date: 29.JUL.2022 00:12:36

802.11ac20 mode, 5260MHz



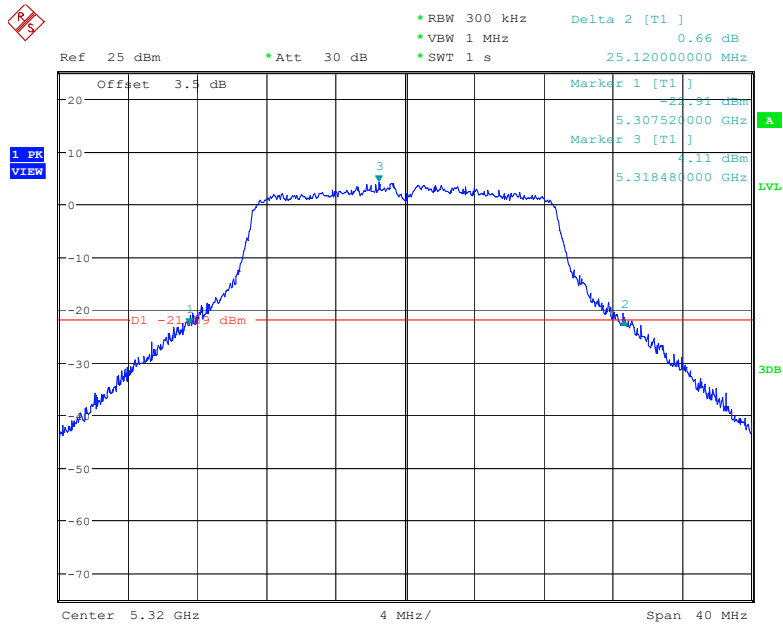
Date: 28.JUL.2022 21:36:13

802.11ac20 mode, 5280MHz



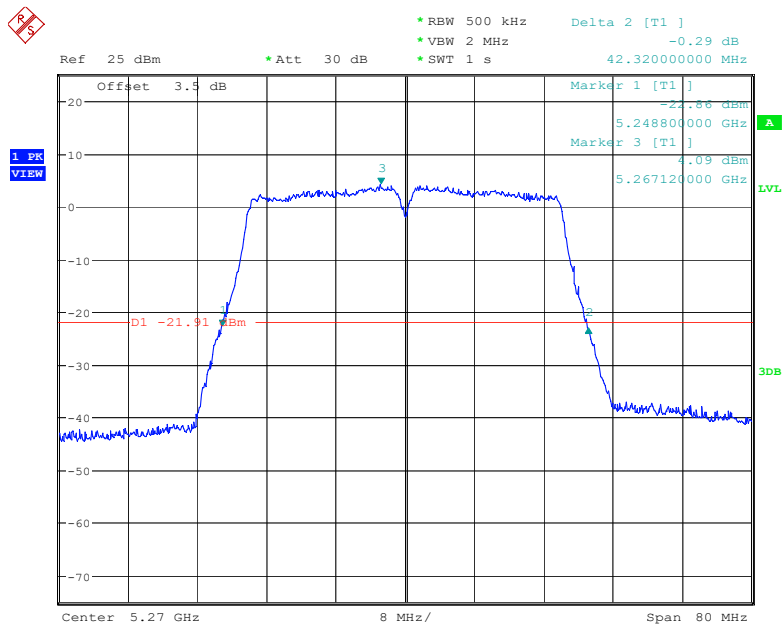
Date: 28.JUL.2022 21:33:40

802.11ac20 mode, 5320 MHz



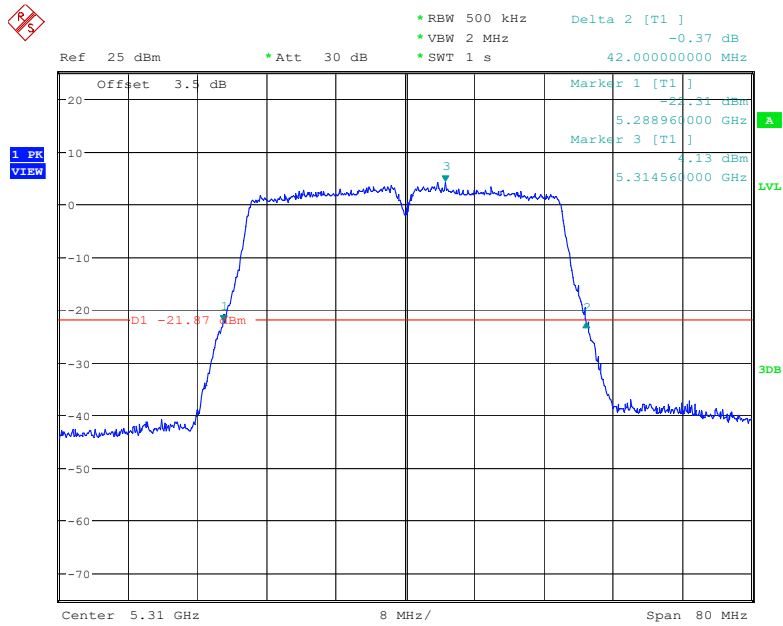
Date: 28.JUL.2022 21:30:48

802.11ac40 mode, 5270MHz



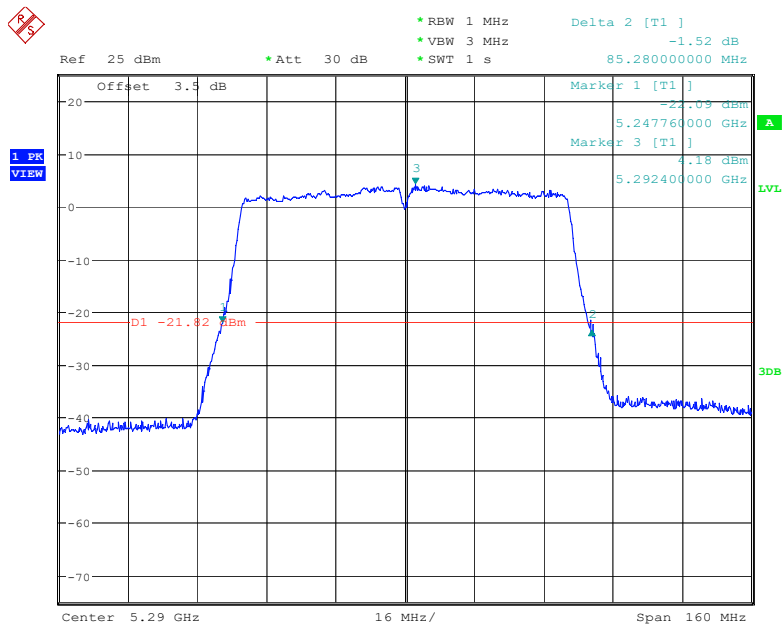
Date: 28.JUL.2022 22:40:42

802.11ac40 mode, 5310MHz



Date: 28.JUL.2022 22:43:19

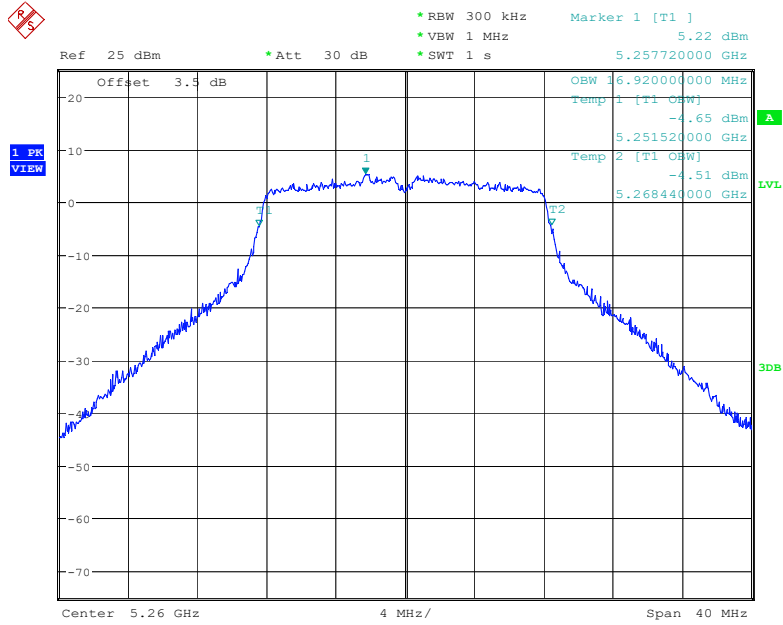
802.11ac80 mode, 5290MHz



Date: 28.JUL.2022 23:08:47

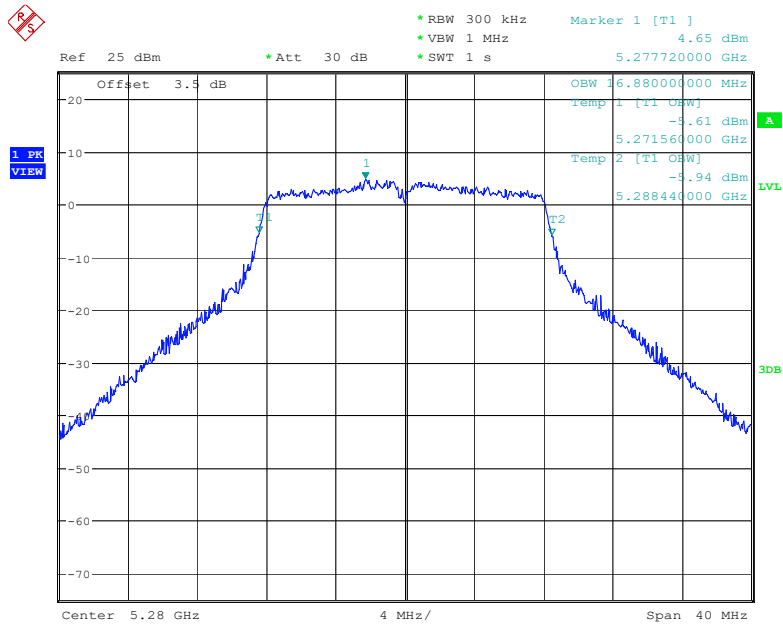
99% Occupied Bandwidth

802.11a mode, 5260MHz



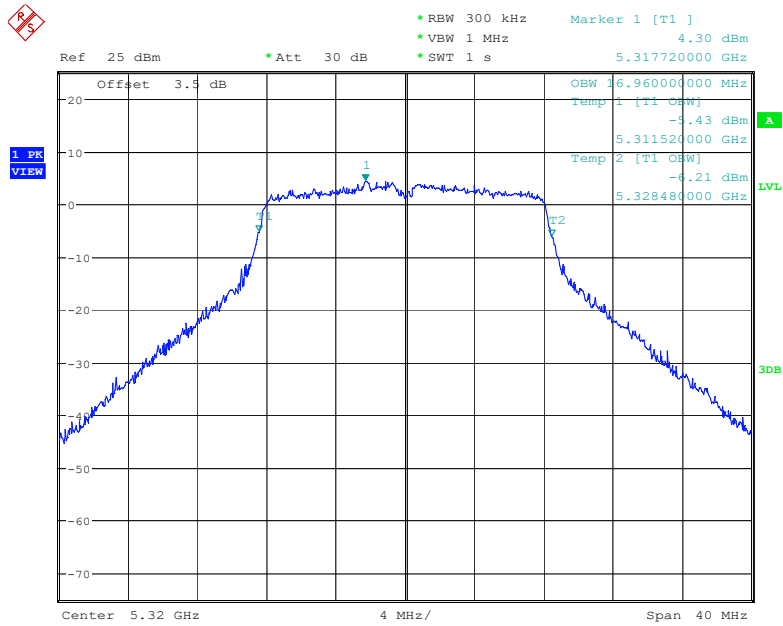
Date: 28.JUL.2022 22:05:51

802.11a mode, 5280MHz



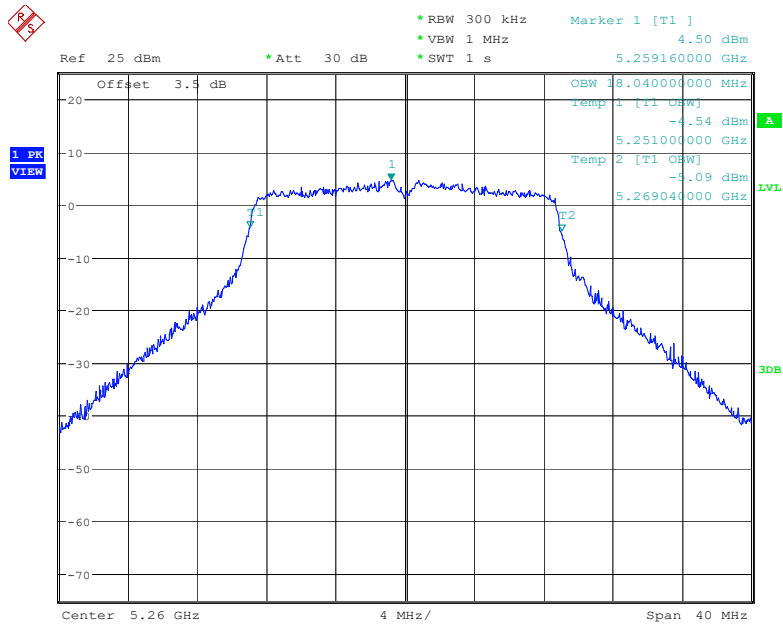
Date: 28.JUL.2022 22:08:47

802.11a mode, 5320MHz



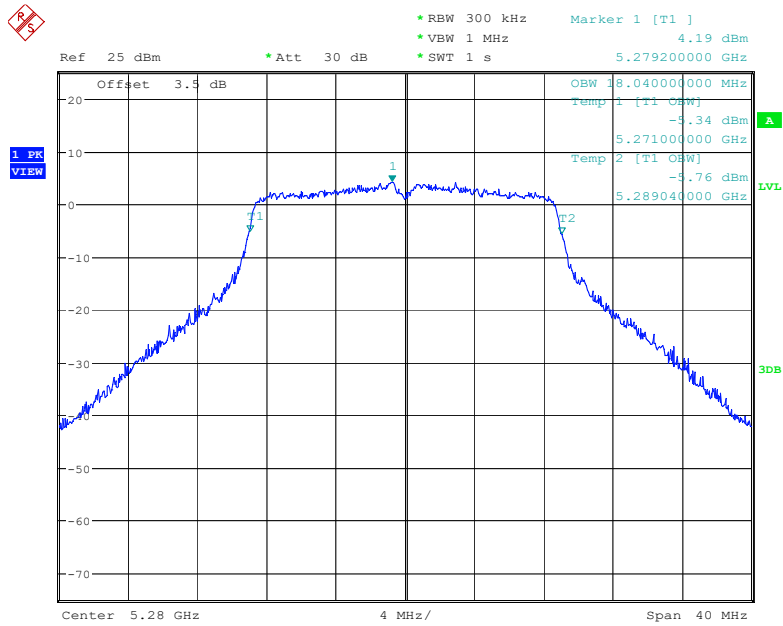
Date: 28.JUL.2022 22:12:40

802.11n20 mode, 5260 MHz



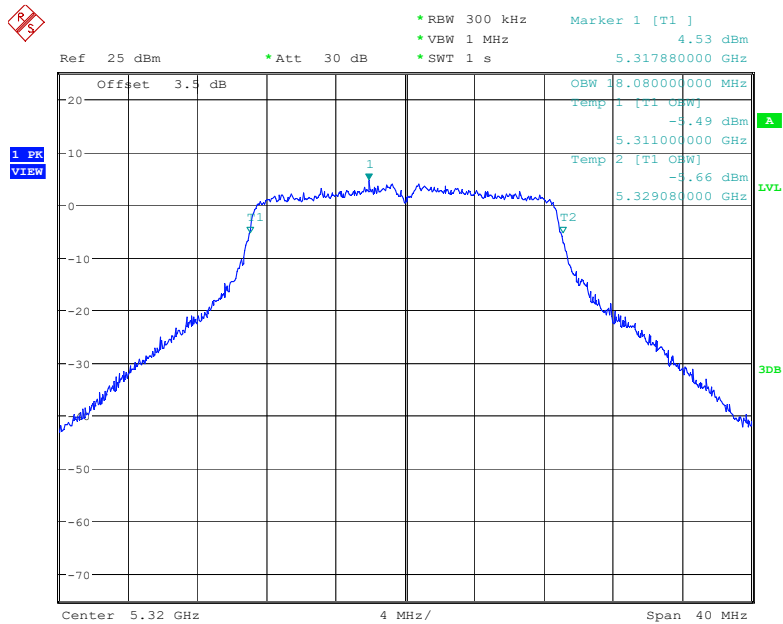
Date: 28.JUL.2022 23:39:17

802.11n20 mode, 5280MHz



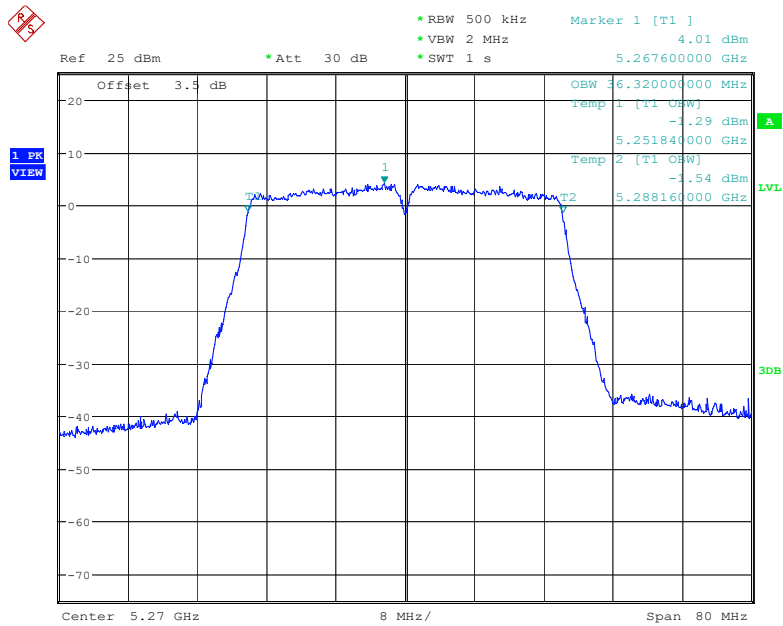
Date: 28.JUL.2022 23:42:20

802.11n20 mode, 5320MHz



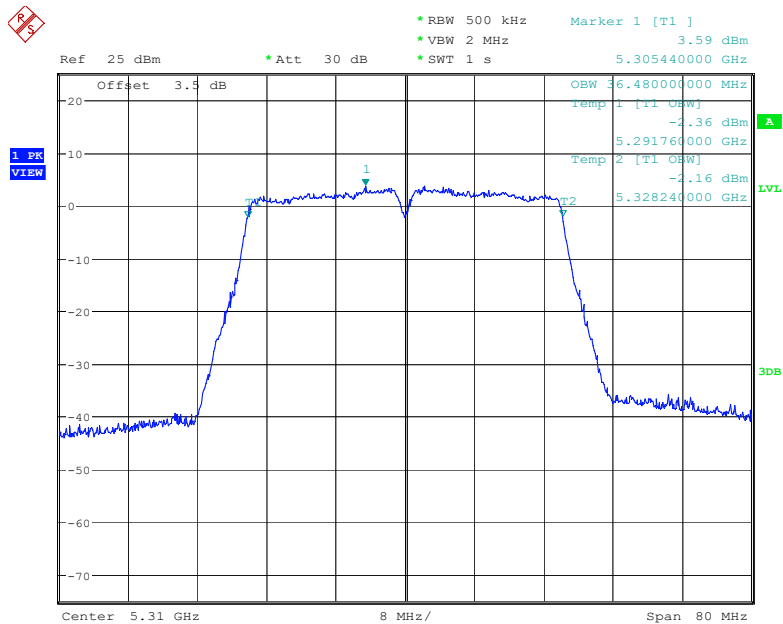
Date: 28.JUL.2022 23:44:52

802.11n40 mode, 5270 MHz



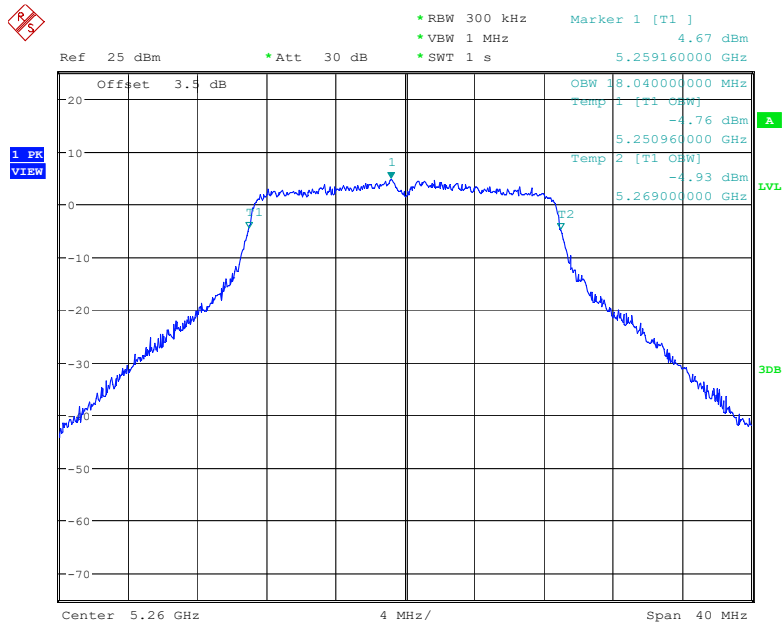
Date: 29.JUL.2022 00:09:09

802.11n40 mode, 5310 MHz



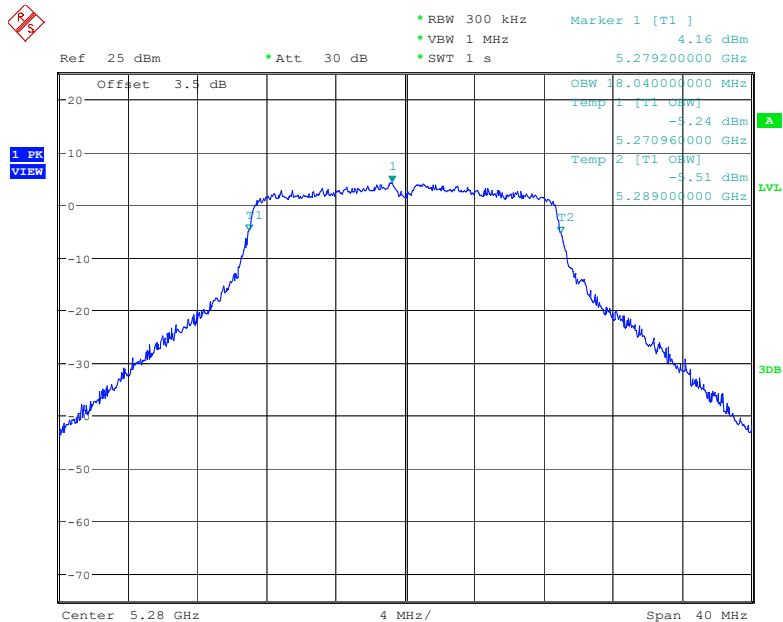
Date: 29.JUL.2022 00:12:08

802.11ac20 mode, 5260MHz



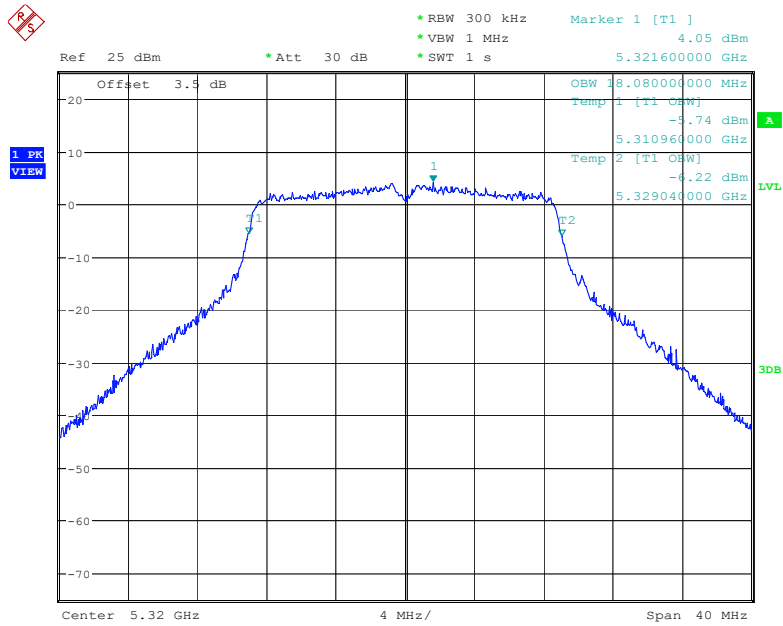
Date: 28.JUL.2022 21:35:45

802.11ac20 mode, 5280MHz



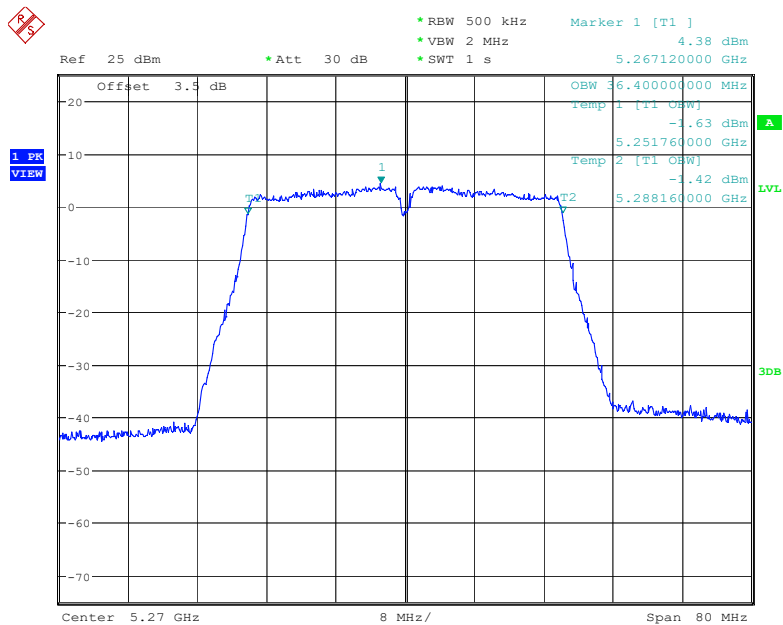
Date: 28.JUL.2022 21:33:13

802.11ac20 mode, 5320 MHz



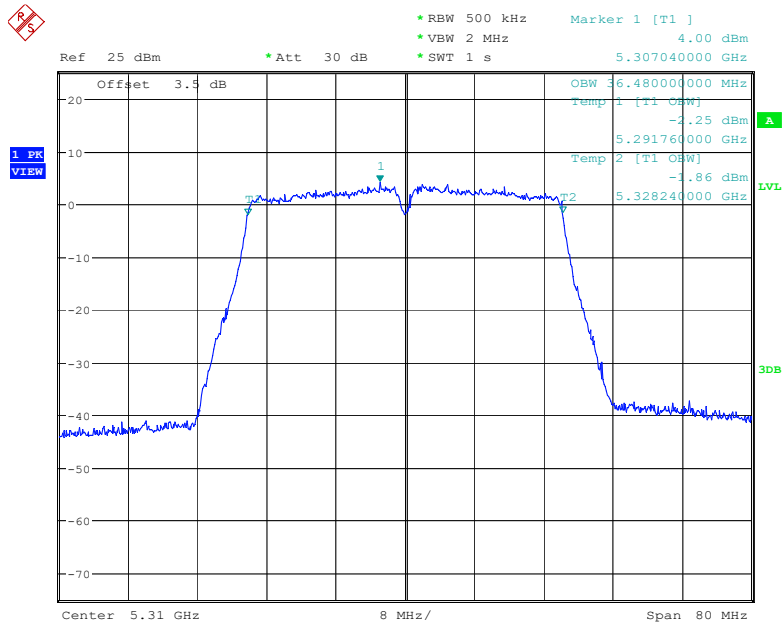
Date: 28.JUL.2022 21:30:21

802.11ac40 mode, 5270MHz



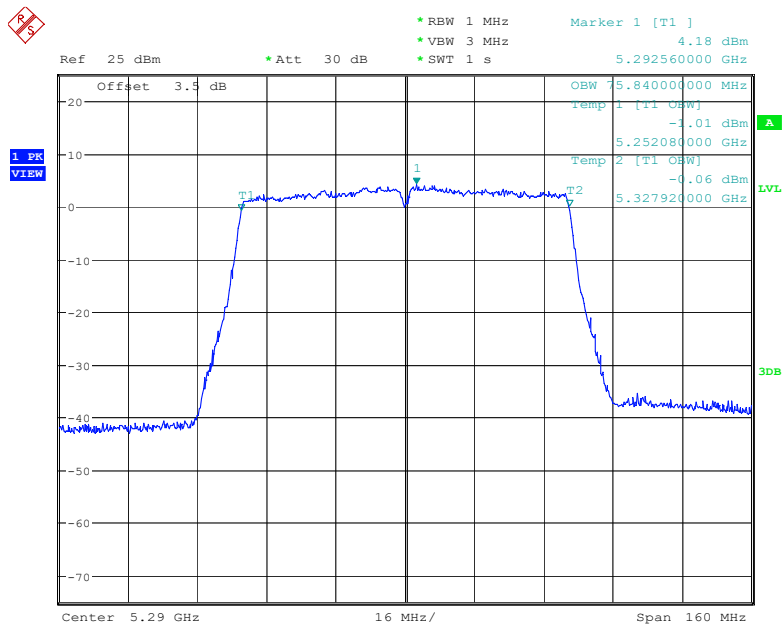
Date: 28.JUL.2022 22:40:14

802.11ac40 mode, 5310MHz



Date: 28.JUL.2022 22:42:51

802.11ac80 mode, 5290MHz



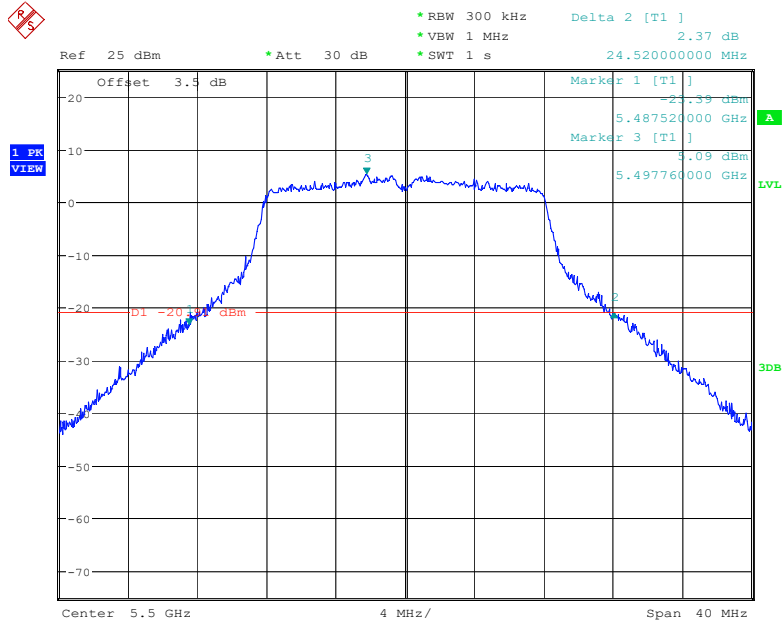
Date: 28.JUL.2022 23:08:20

5470 MHz – 5725 MHz:

Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a		
5500	24.52	16.96
5580	24.60	16.92
5700	23.72	16.96
802.11n20		
5500	25.00	18.08
5580	25.64	18.04
5700	25.36	18.08
802.11n40		
5510	42.16	36.40
5550	42.08	36.32
5670	42.32	36.40
802.11ac20		
5500	25.32	18.04
5580	25.76	18.08
5700	24.80	18.08
802.11ac40		
5510	42.24	36.40
5550	42.16	36.40
5670	42.00	36.40
11ac80		
5530	84.16	75.84
5610	84.16	75.84

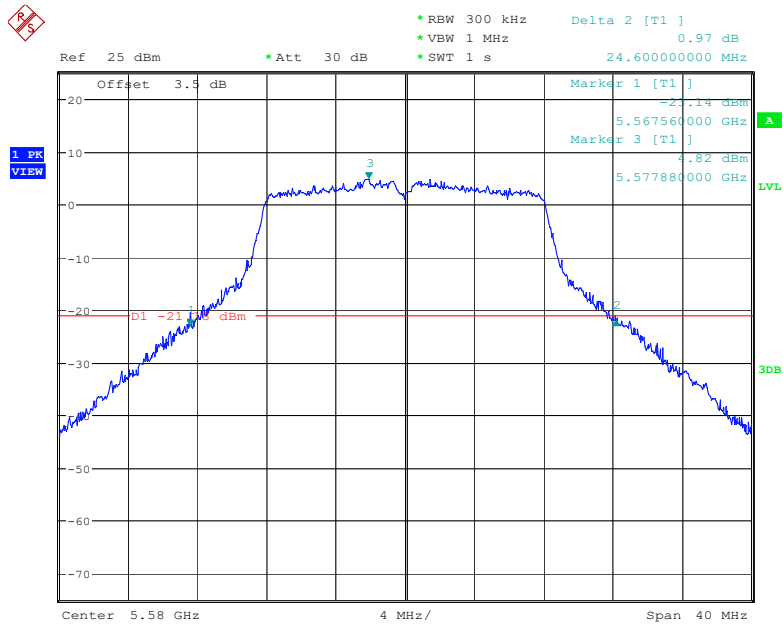
26 dB Bandwidth

802.11a mode, 5500MHz



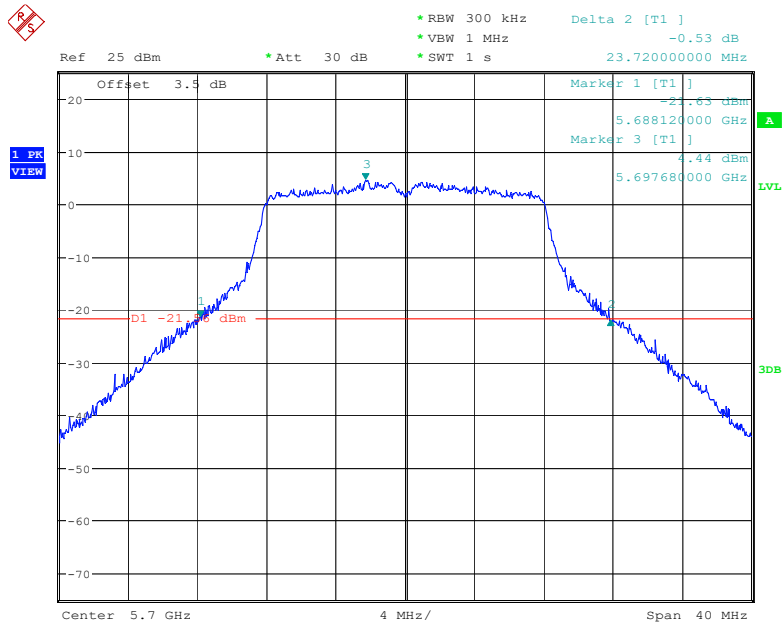
Date: 28.JUL.2022 22:15:48

802.11a mode, 5580MHz



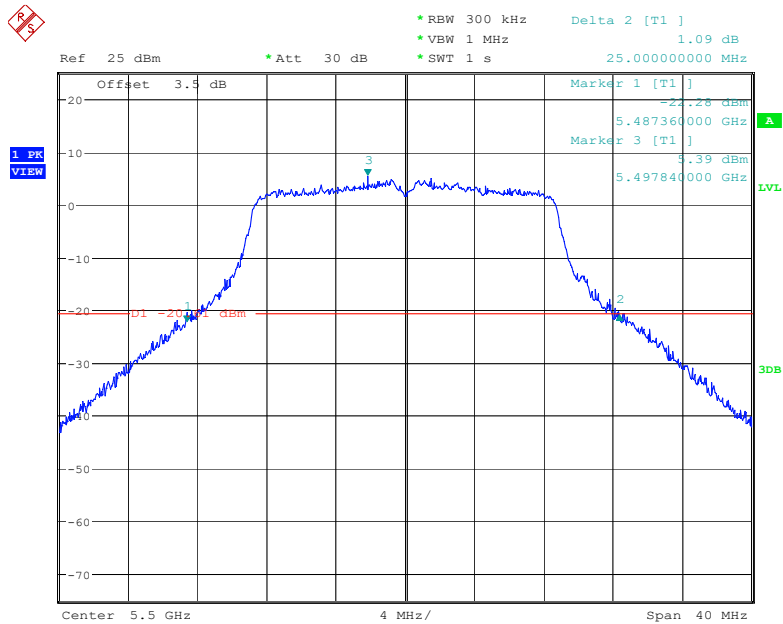
Date: 28.JUL.2022 22:18:27

802.11a mode,5700MHz



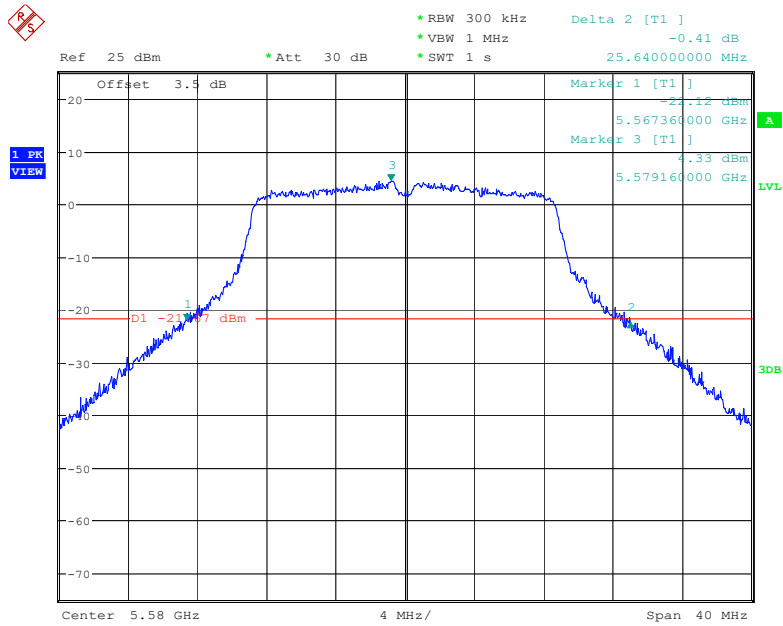
Date: 28.JUL.2022 22:21:25

802.11n20 mode,5500MHz



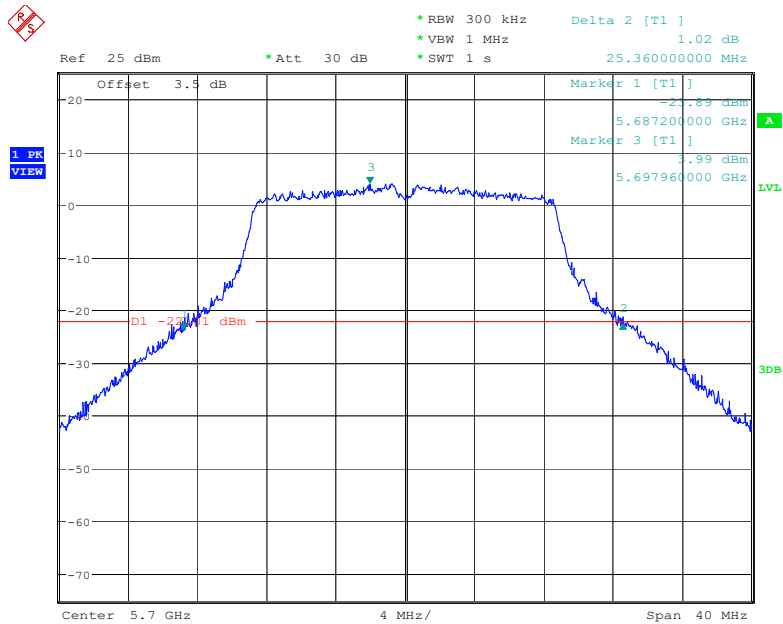
Date: 28.JUL.2022 23:47:59

802.11n20 mode, 5580MHz



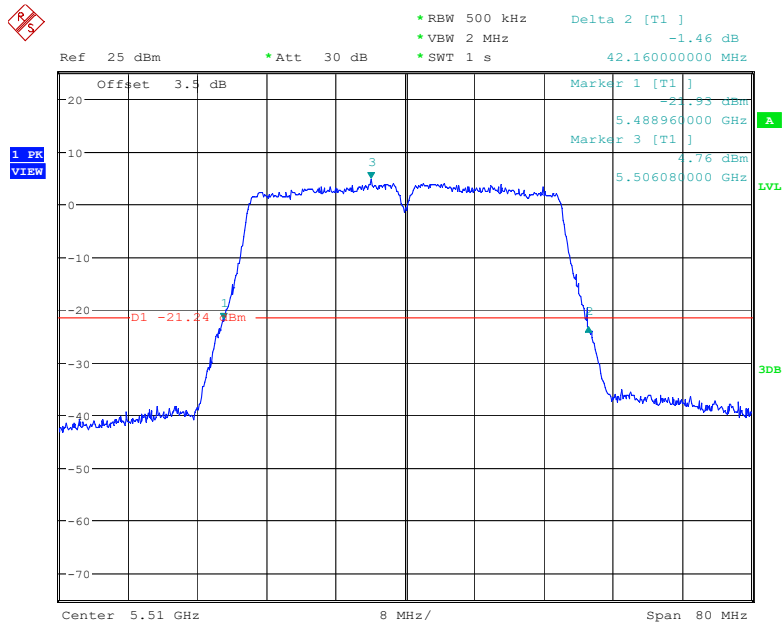
Date: 28.JUL.2022 23:50:58

802.11n20 mode,5700MHz



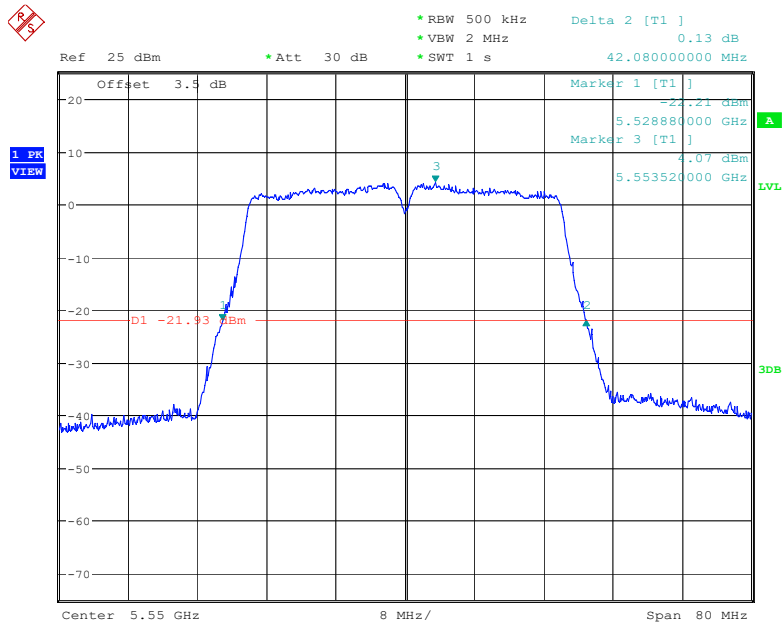
Date: 28.JUL.2022 23:53:29

802.11n40 mode, 5510 MHz



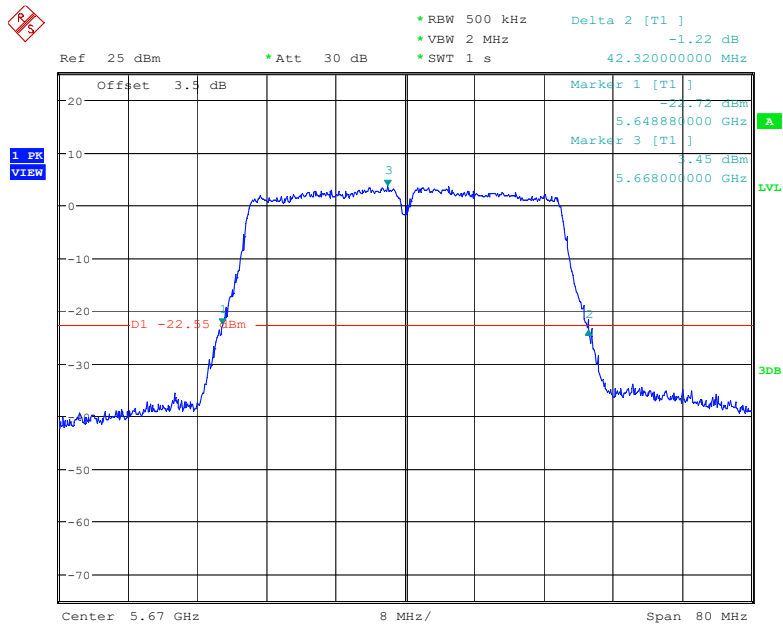
Date: 29.JUL.2022 00:15:28

802.11n40 mode, 5550 MHz



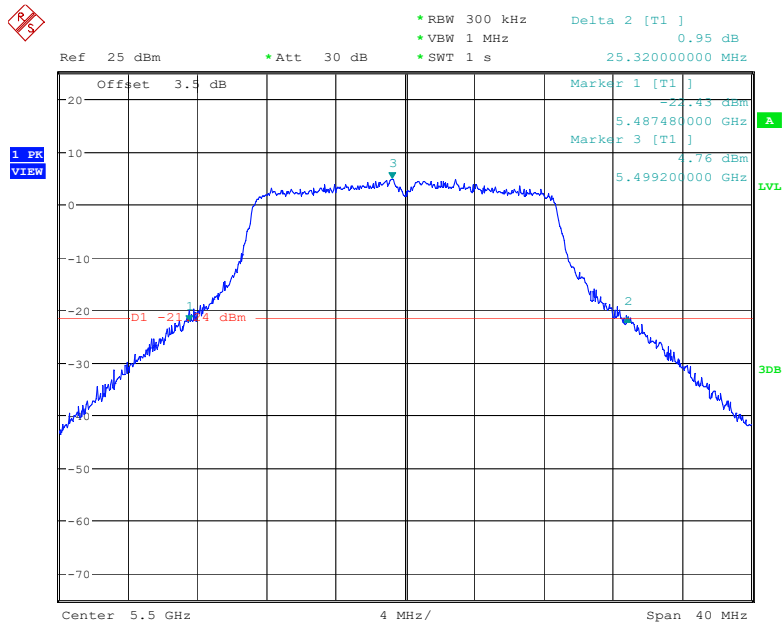
Date: 29.JUL.2022 00:18:10

802.11n40 mode, 5670MHz



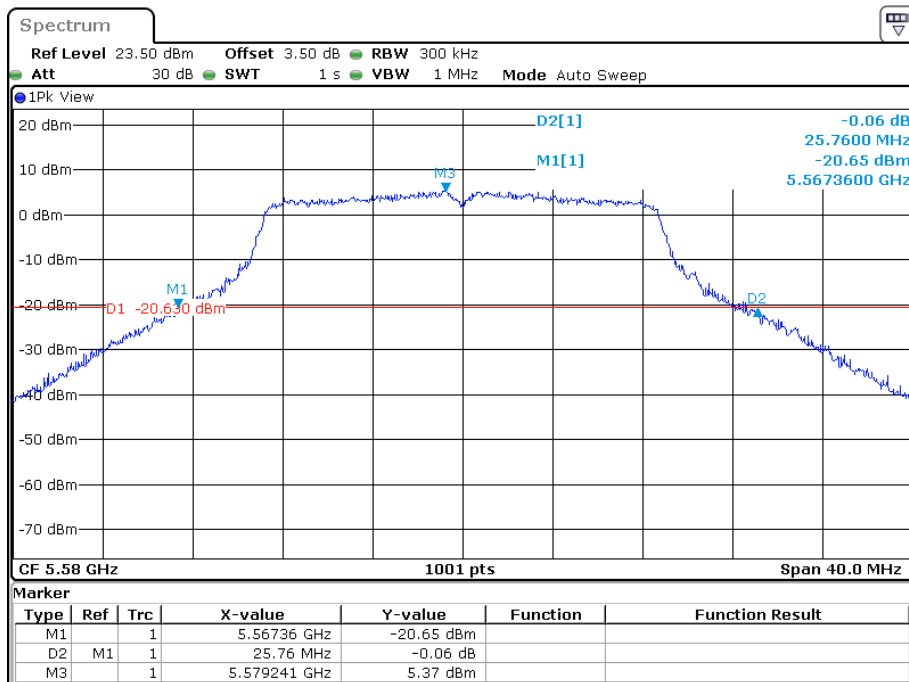
Date: 29.JUL.2022 00:20:50

802.11ac20 mode, 5500MHz



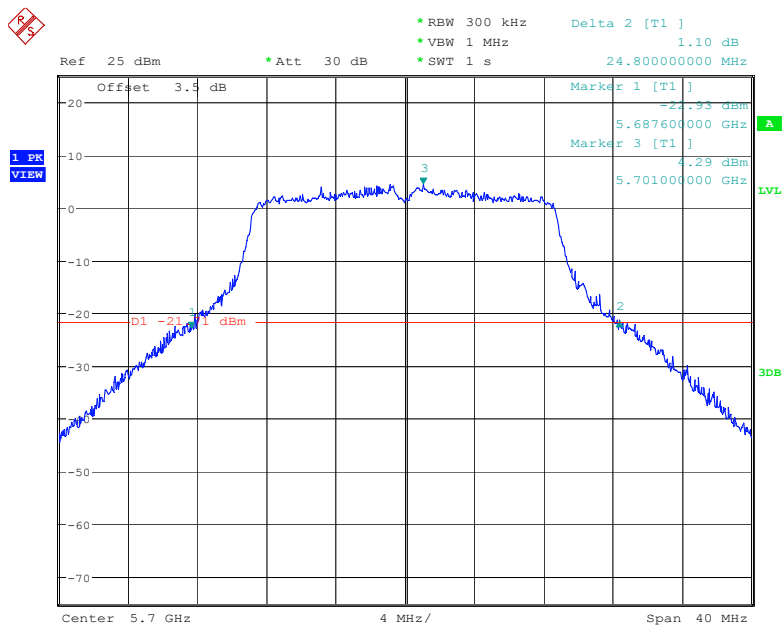
Date: 28.JUL.2022 21:38:51

802.11ac20 mode, 5580MHz



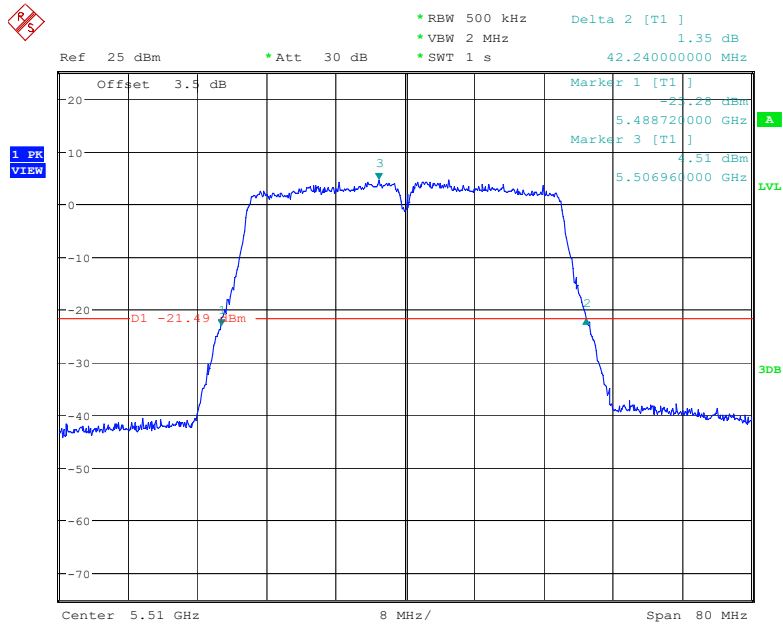
Date: 27.AUG.2022 21:03:58

802.11ac20 mode, 5700 MHz



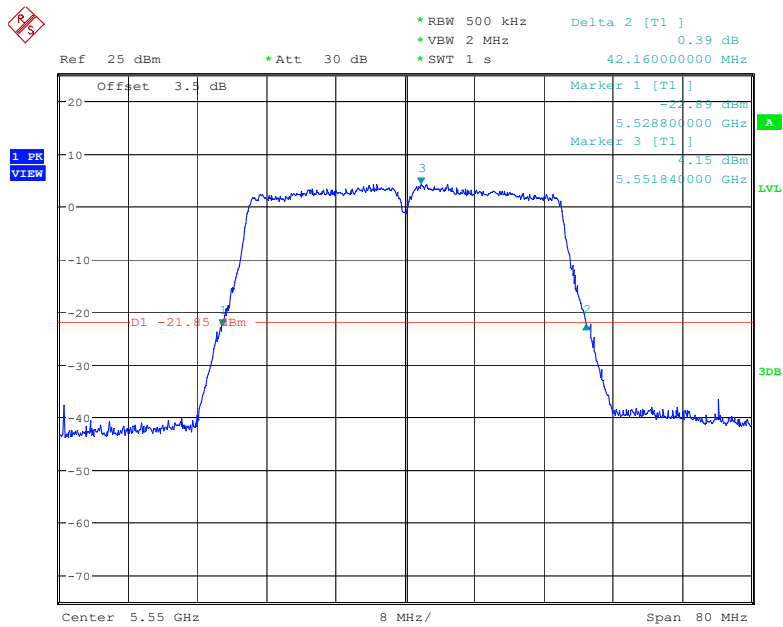
Date: 28.JUL.2022 21:44:12

802.11ac40 mode, 5510MHz



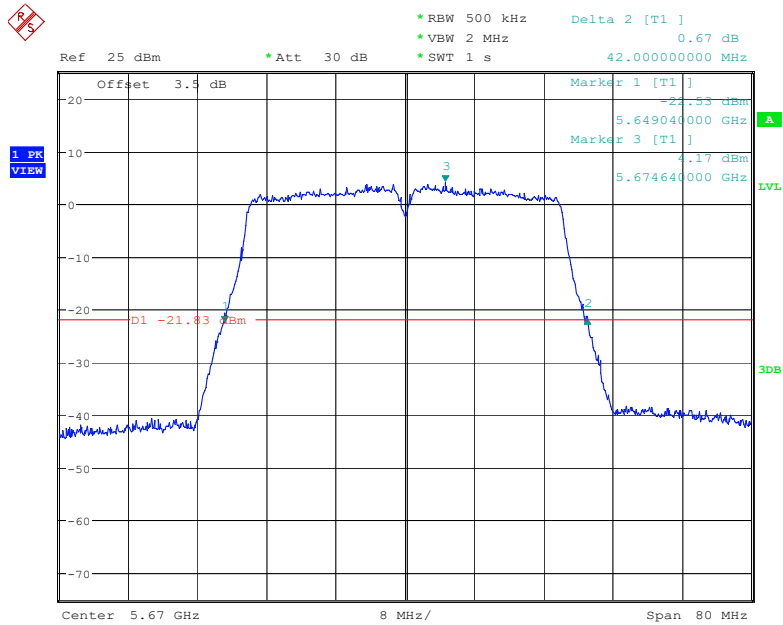
Date: 28.JUL.2022 22:45:58

802.11ac40 mode, 5550MHz



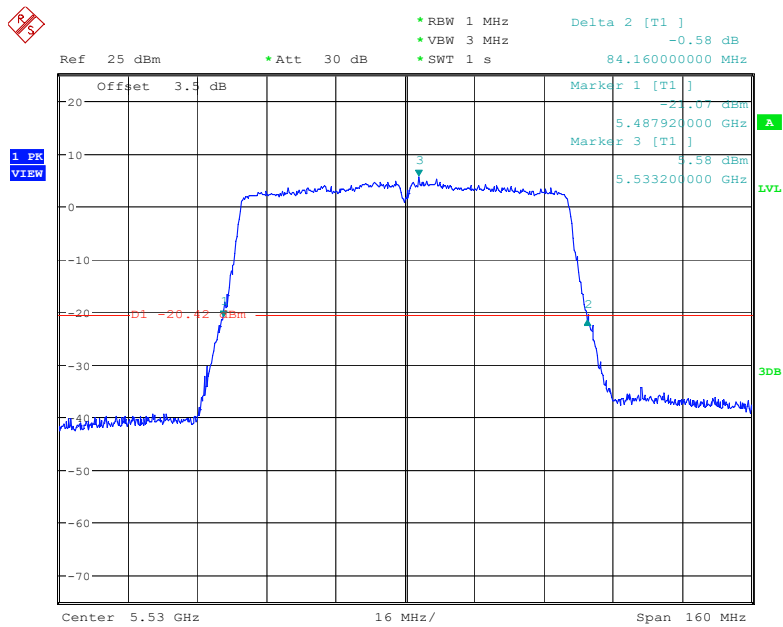
Date: 28.JUL.2022 22:49:08

802.11ac40 mode, 5670MHz



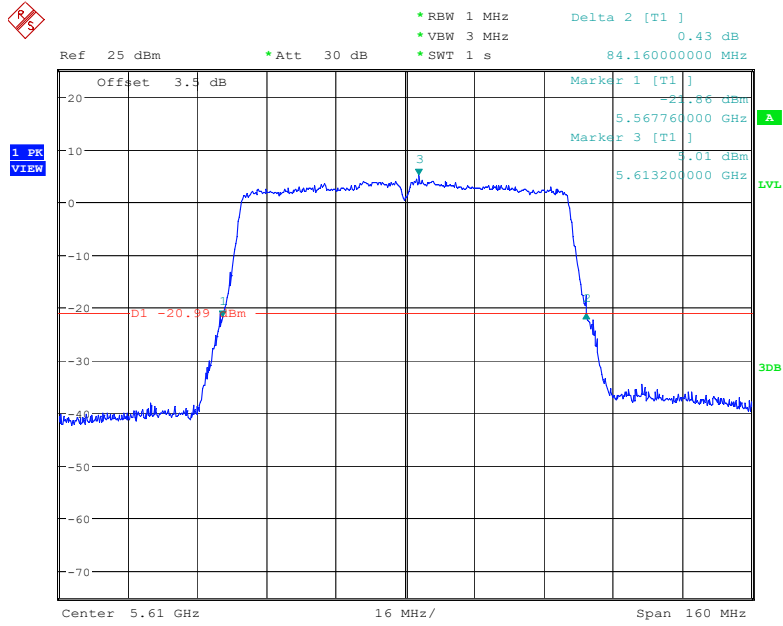
Date: 28.JUL.2022 22:52:00

802.11ac80 mode, 5530MHz



Date: 28.JUL.2022 23:11:26

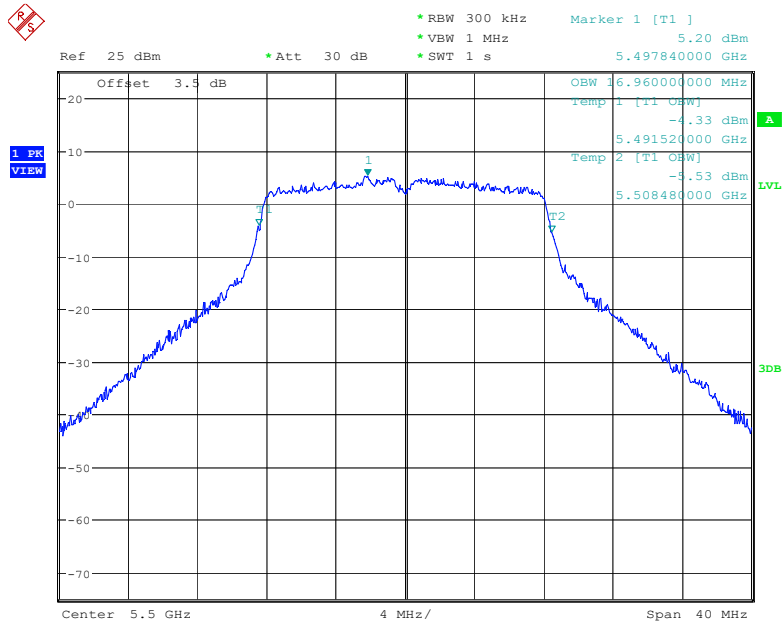
802.11ac80 mode, 5610MHz



Date: 28.JUL.2022 23:14:10

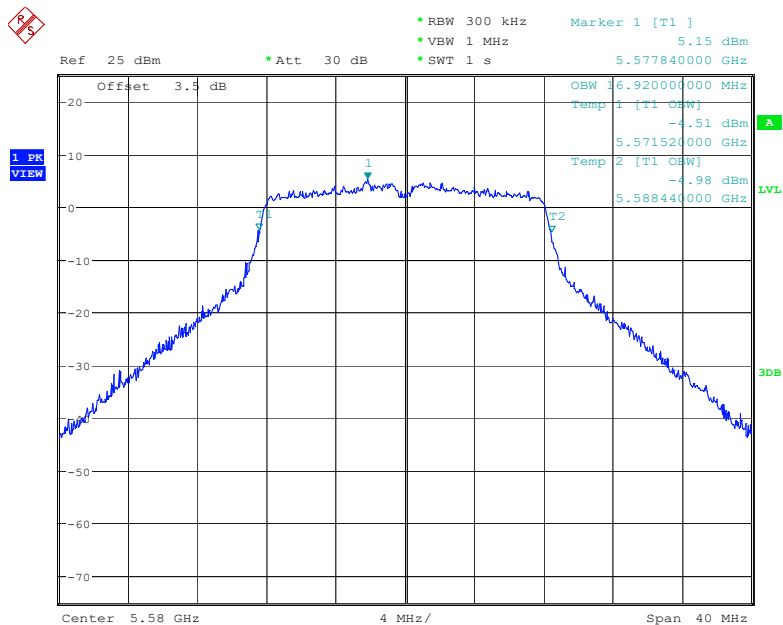
99% Bandwidth

802.11a mode, 5500MHz



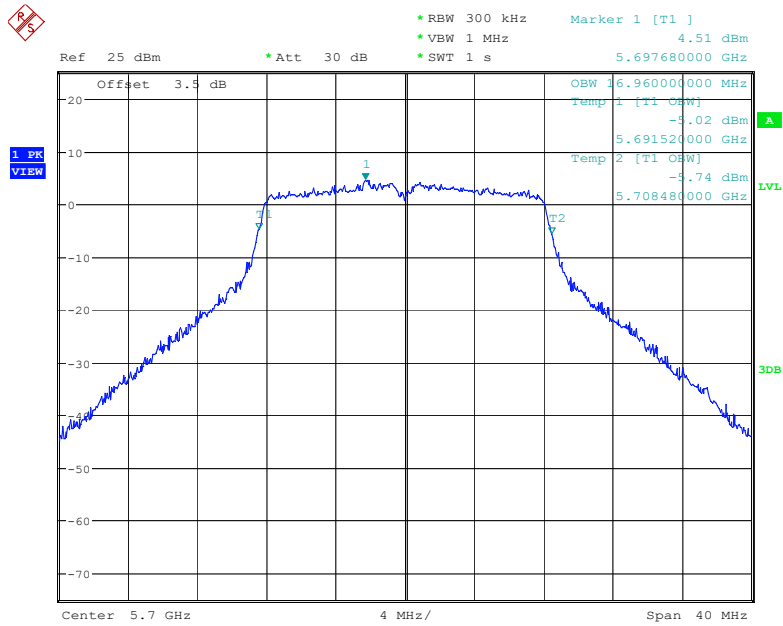
Date: 28.JUL.2022 22:15:21

802.11a mode, 5580MHz



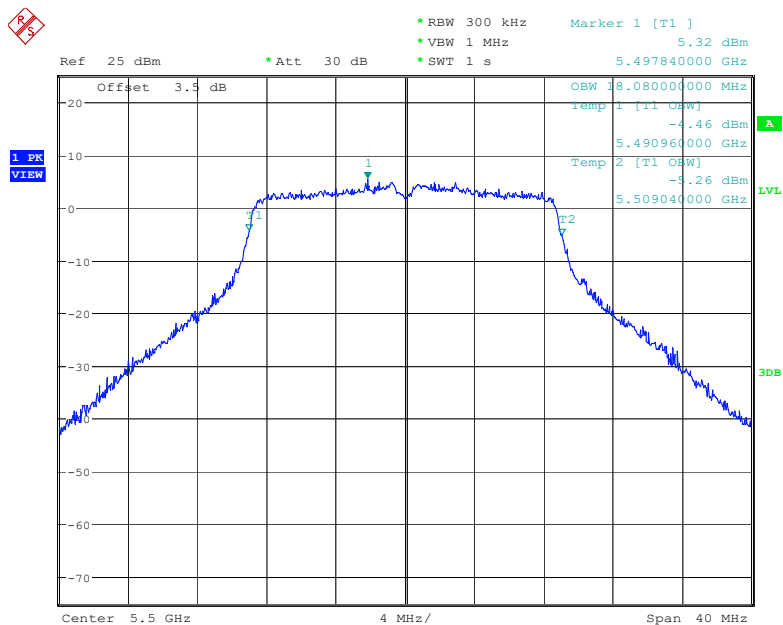
Date: 28.JUL.2022 22:18:00

802.11a mode,5700MHz



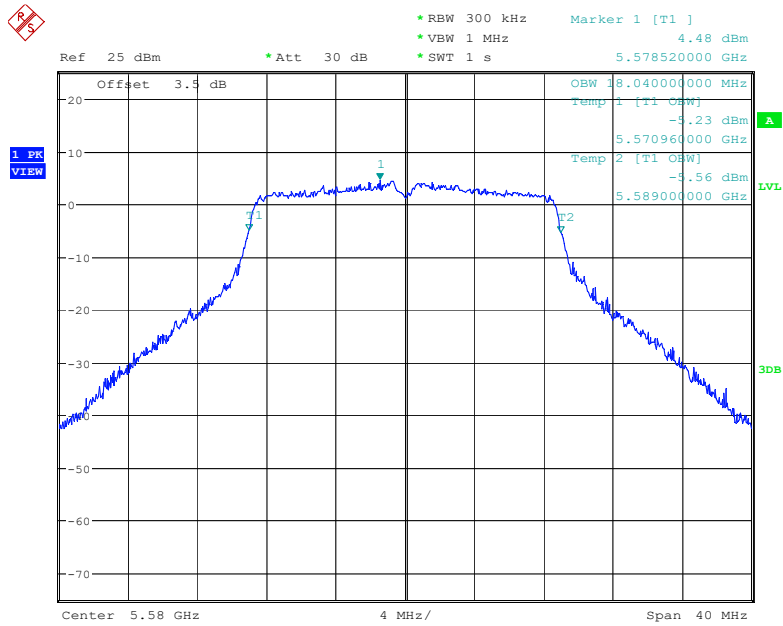
Date: 28.JUL.2022 22:20:58

802.11n20 mode,5500MHz



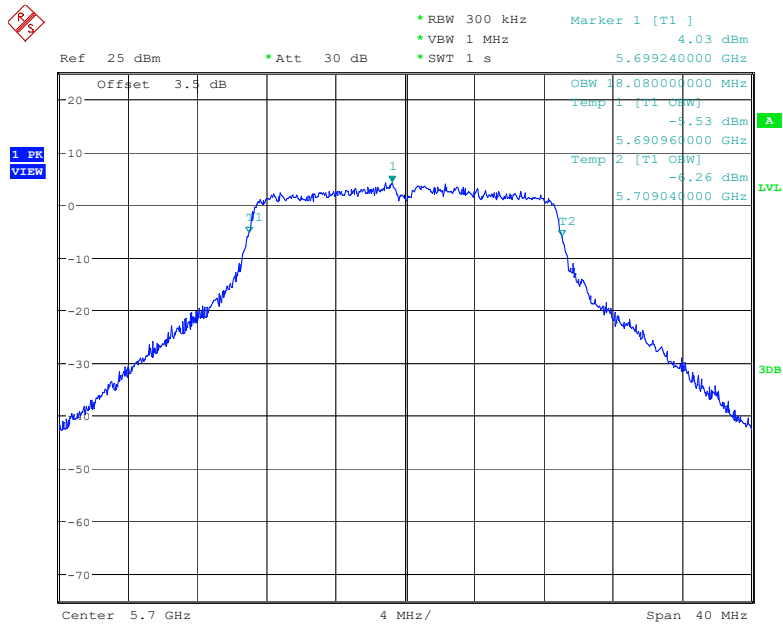
Date: 28.JUL.2022 23:47:31

802.11n20 mode, 5580MHz



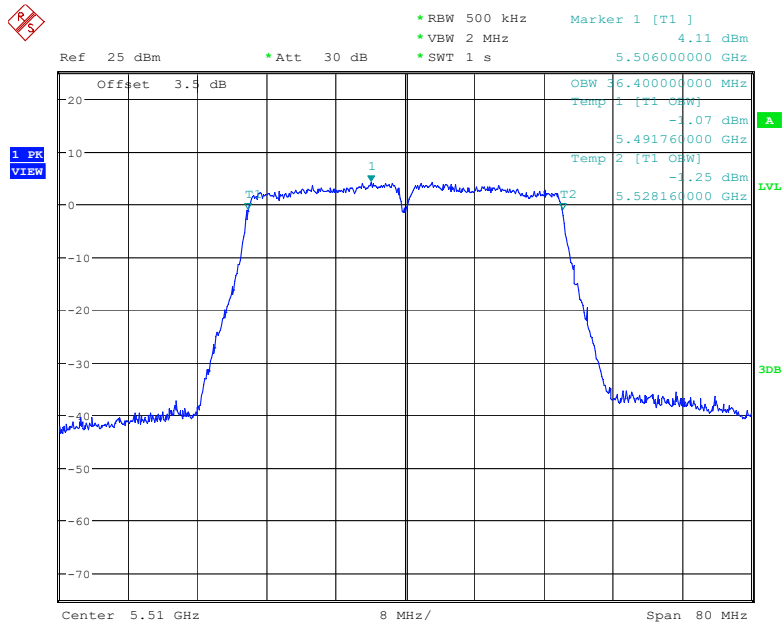
Date: 28.JUL.2022 23:50:30

802.11n20 mode, 5700MHz



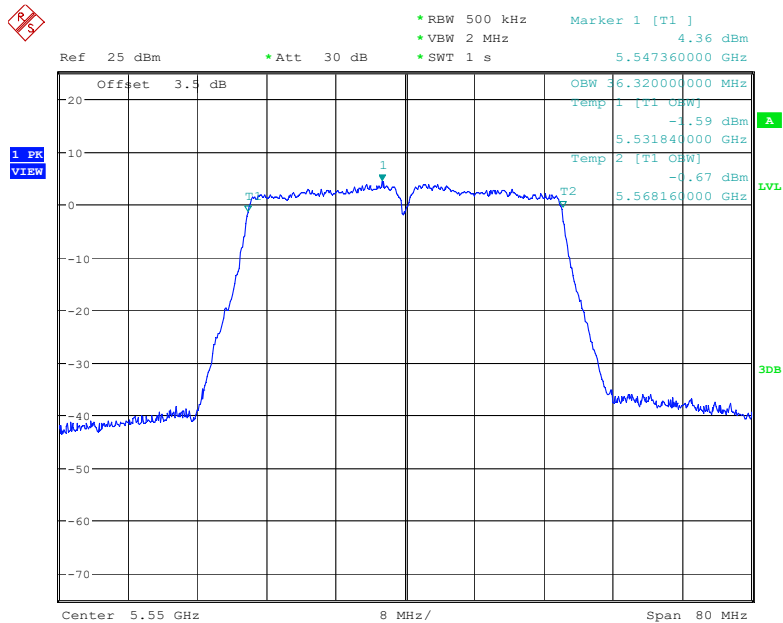
Date: 28.JUL.2022 23:53:02

802.11n40 mode, 5510 MHz



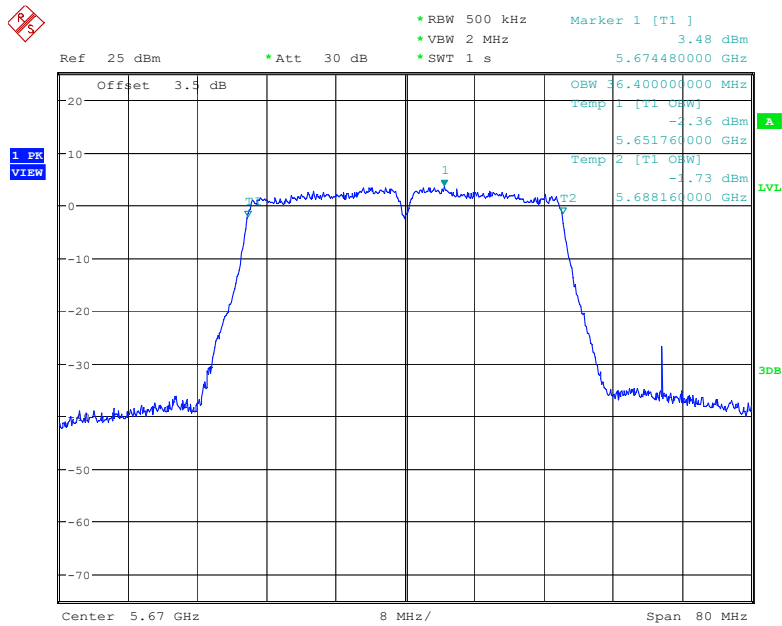
Date: 29.JUL.2022 00:15:00

802.11n40 mode, 5550 MHz



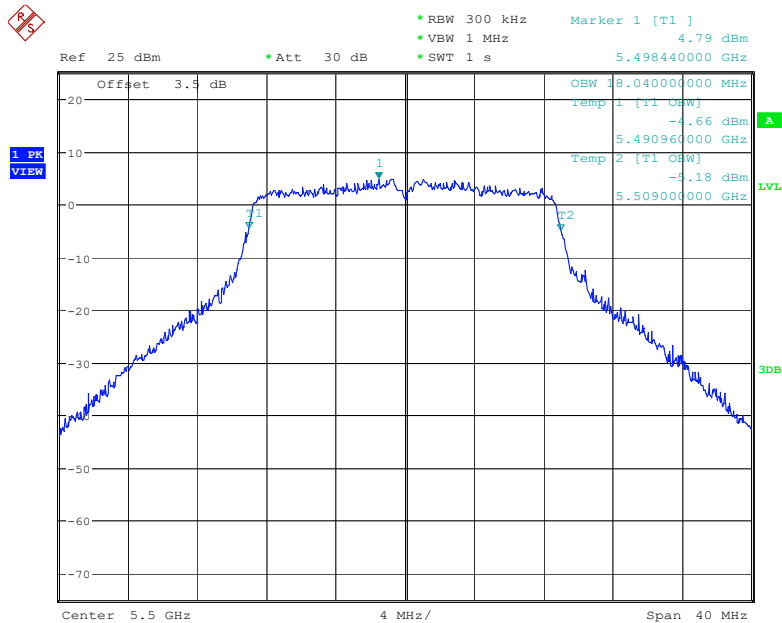
Date: 29.JUL.2022 00:17:43

802.11n40 mode, 5670MHz



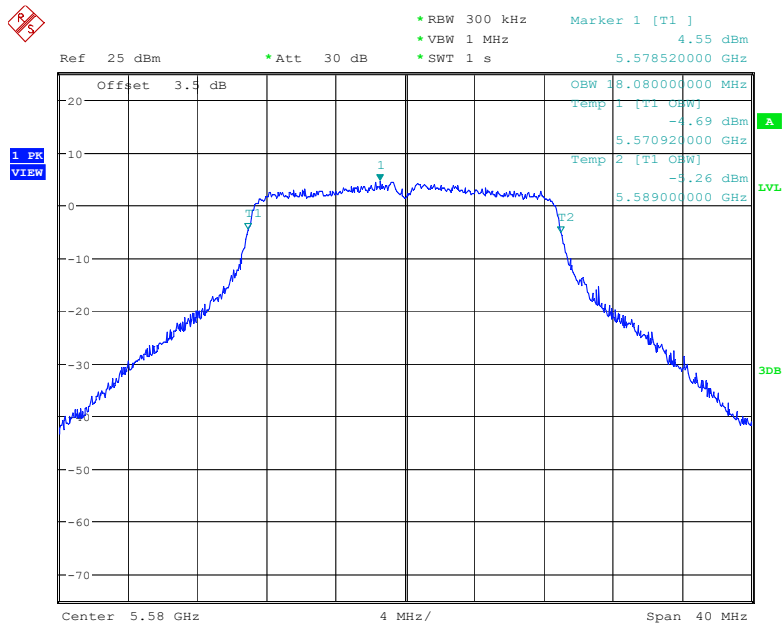
Date: 29.JUL.2022 00:20:23

802.11ac20 mode, 5500MHz



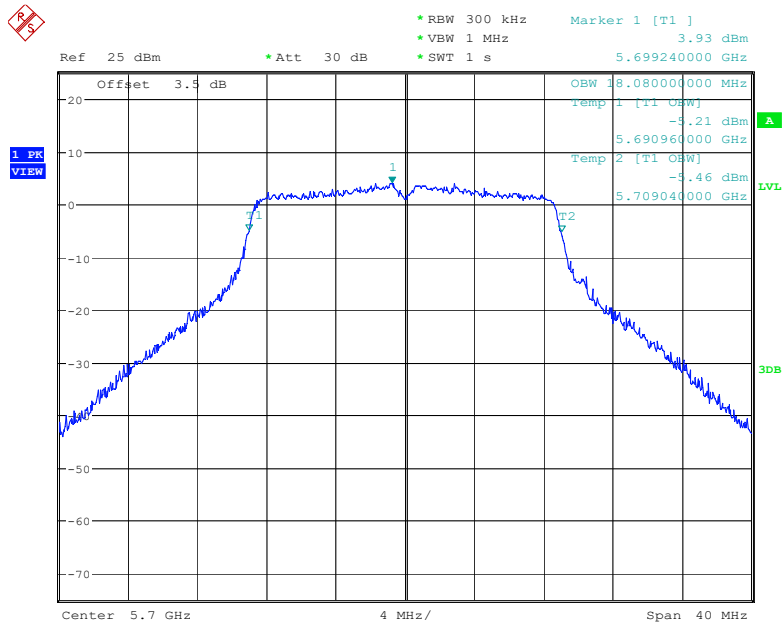
Date: 28.JUL.2022 21:38:24

802.11ac20 mode, 5580MHz



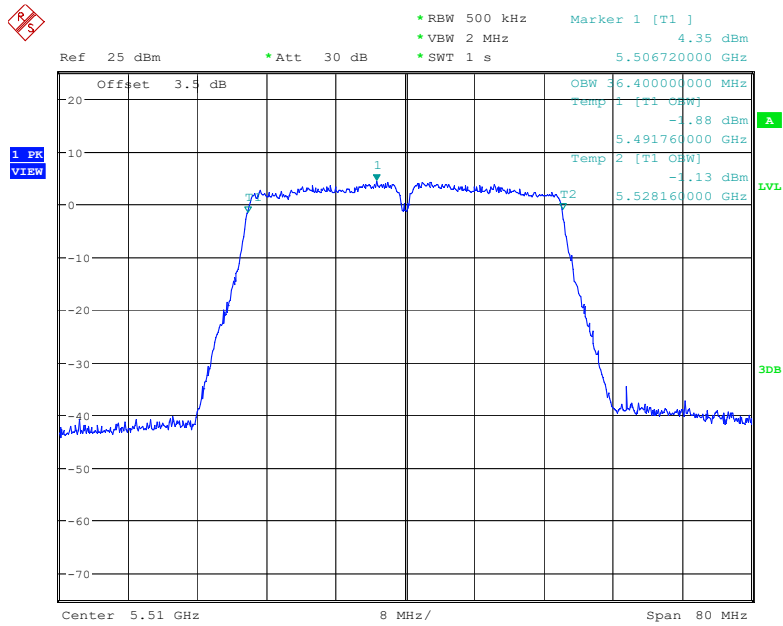
Date: 28.JUL.2022 21:40:59

802.11ac20 mode, 5700 MHz



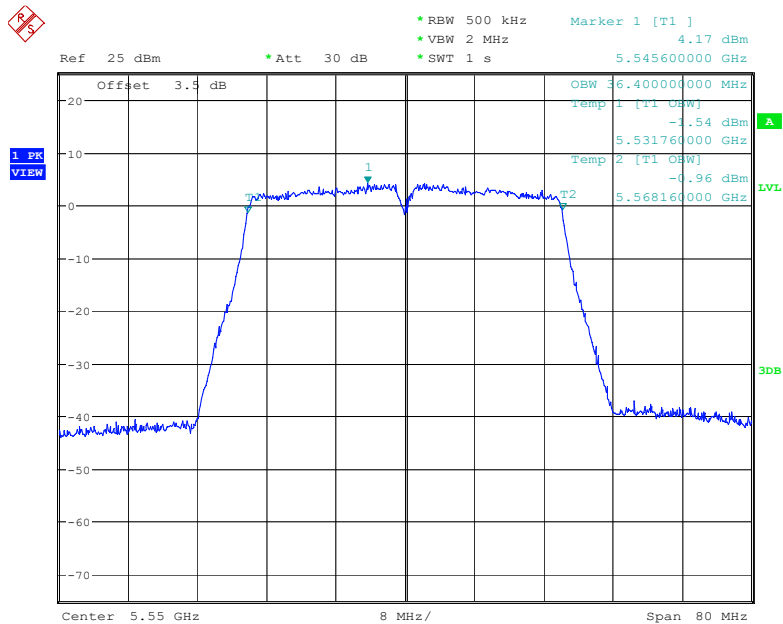
Date: 28.JUL.2022 21:43:44

802.11ac40 mode, 5510MHz



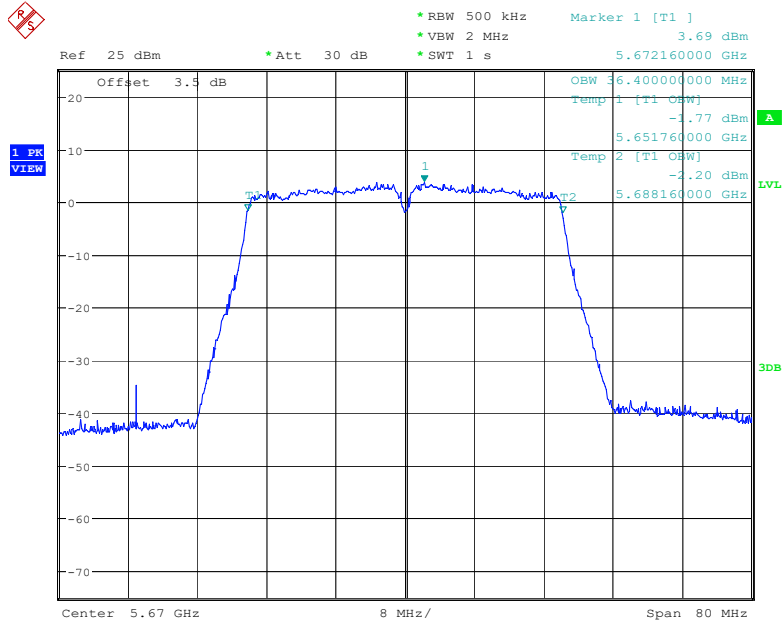
Date: 28.JUL.2022 22:45:31

802.11ac40 mode, 5550MHz



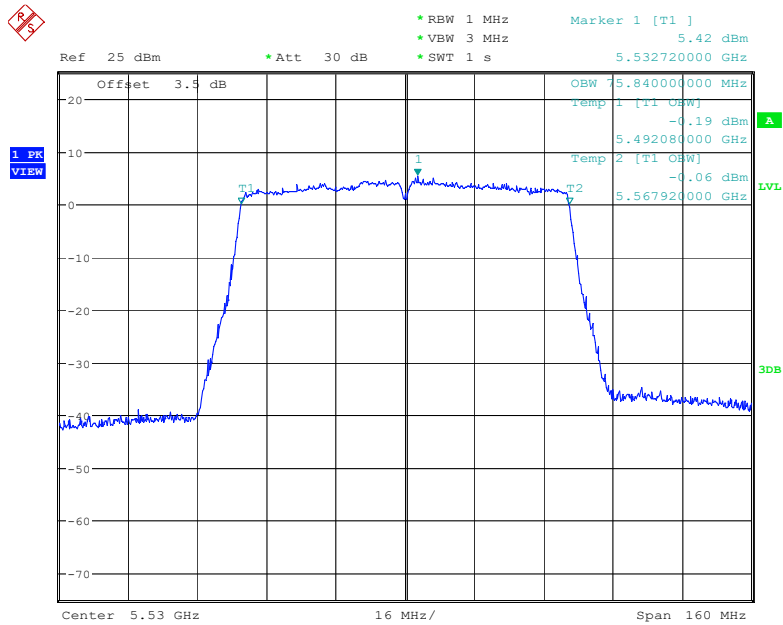
Date: 28.JUL.2022 22:48:41

802.11ac40 mode, 5670MHz



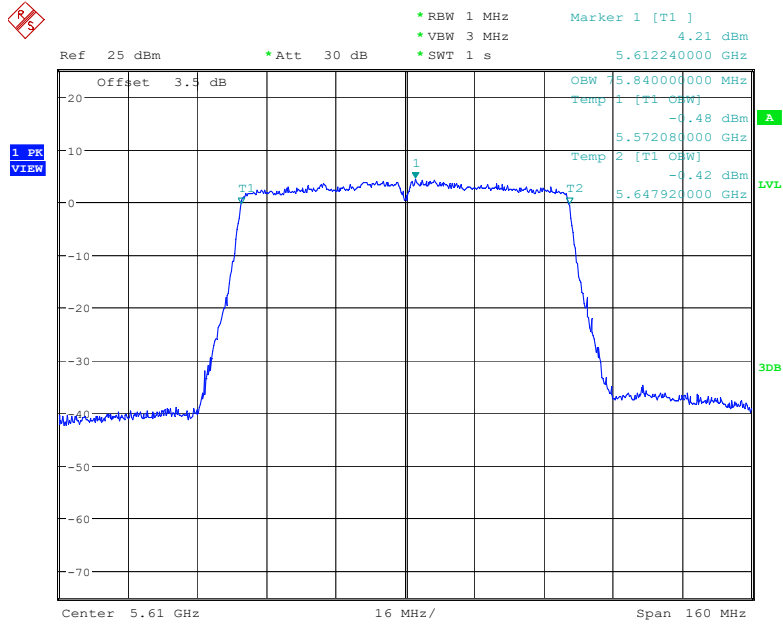
Date: 28.JUL.2022 22:51:32

802.11ac80 mode, 5530MHz



Date: 28.JUL.2022 23:10:59

802.11ac80 mode, 5610MHz



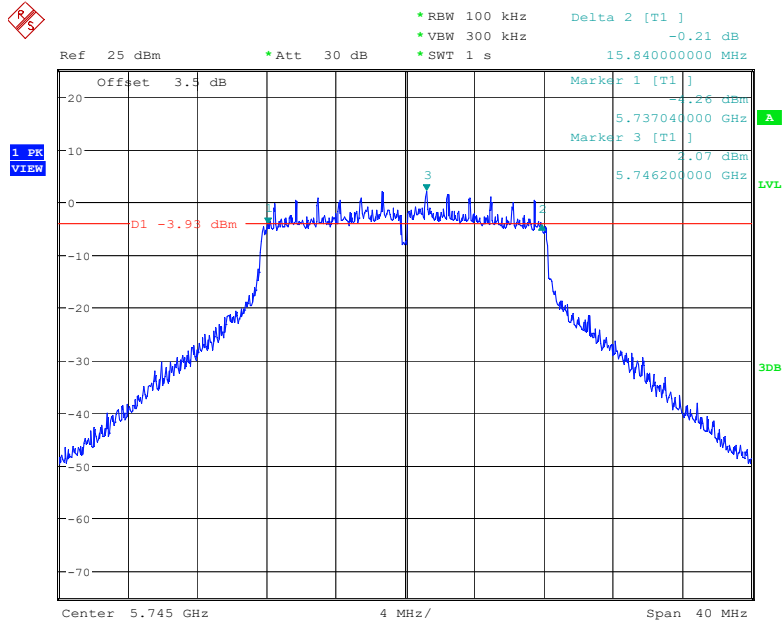
Date: 28.JUL.2022 23:13:43

5725 MHz – 5850 MHz:

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Remark
802.11a				No transmitted signal in the 99% bandwidth extends into the U-NII-2C band
5745	15.84	16.92	0.5	
5785	15.96	16.92	0.5	
5825	16.08	16.92	0.5	
802.11n20				
5745	16.60	18.08	0.5	
5785	16.60	18.08	0.5	
5825	16.80	18.08	0.5	
802.11n40				
5755	36.00	36.40	0.5	
5795	35.44	36.40	0.5	
802.11ac20				
5745	16.60	18.04	0.5	
5785	16.92	18.04	0.5	
5825	16.84	18.08	0.5	
802.11ac40				
5755	35.84	36.40	0.5	
5795	35.76	36.40	0.5	
11ac80				
5775	75.48	75.84	0.5	

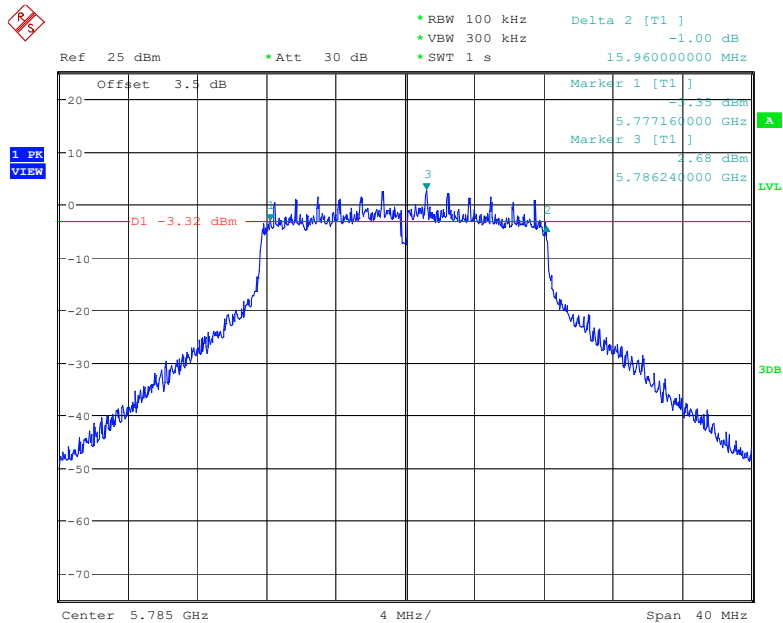
6 dB Bandwidth

802.11a mode, 5745MHz



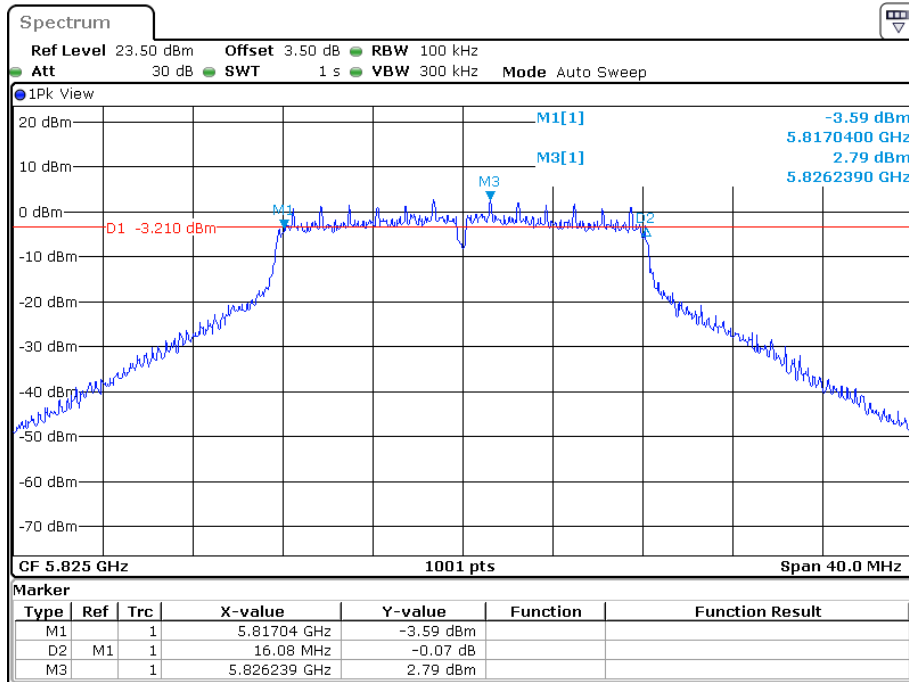
Date: 28.JUL.2022 22:24:13

802.11a mode, 5785MHz



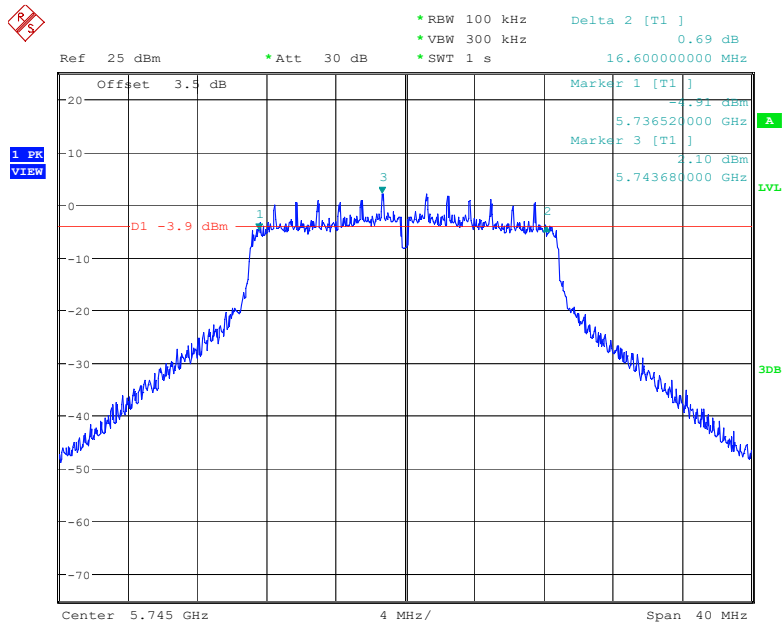
Date: 28.JUL.2022 22:26:58

802.11a mode,5825MHz



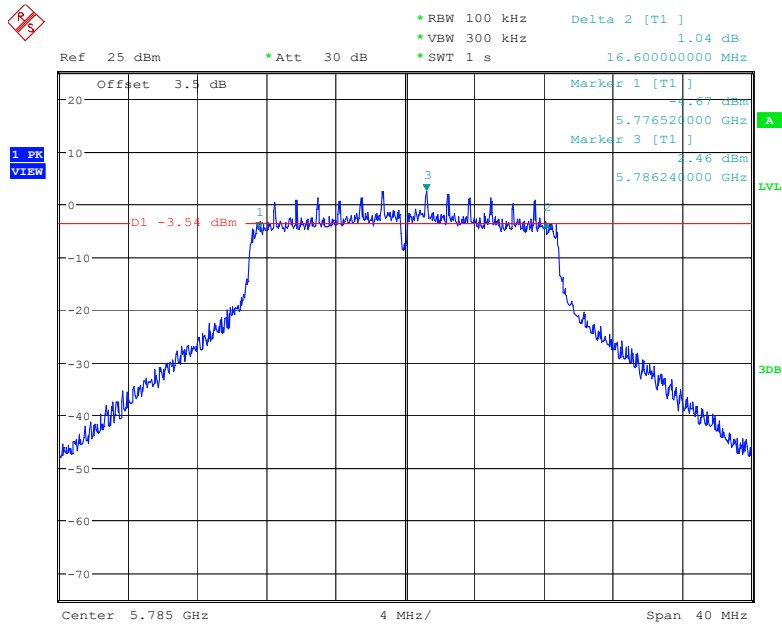
Date: 27.AUG.2022 21:01:36

802.11n20 mode,5745MHz



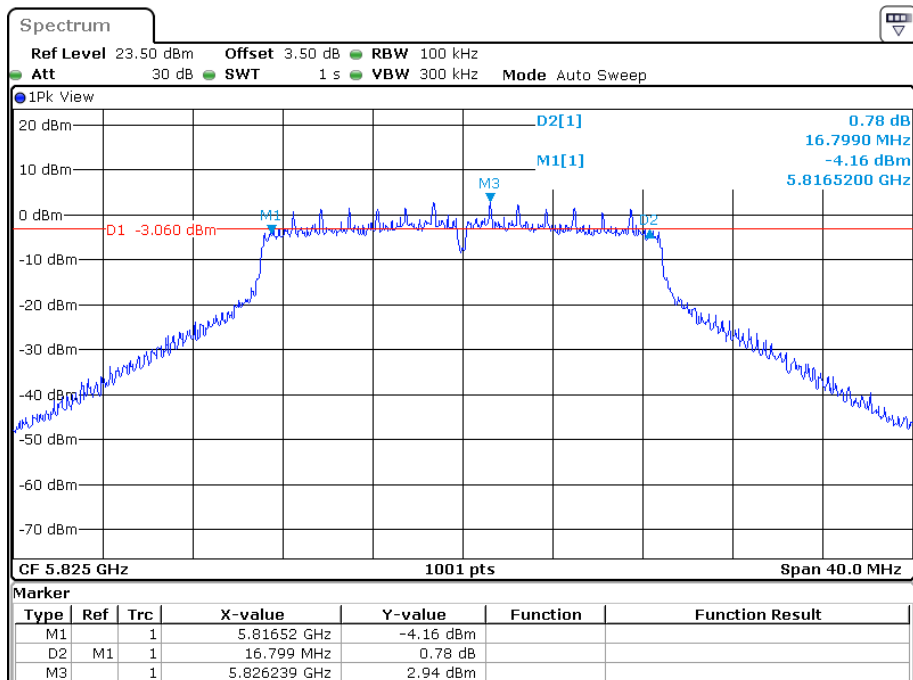
Date: 28.JUL.2022 23:56:02

802.11n20 mode, 5785MHz



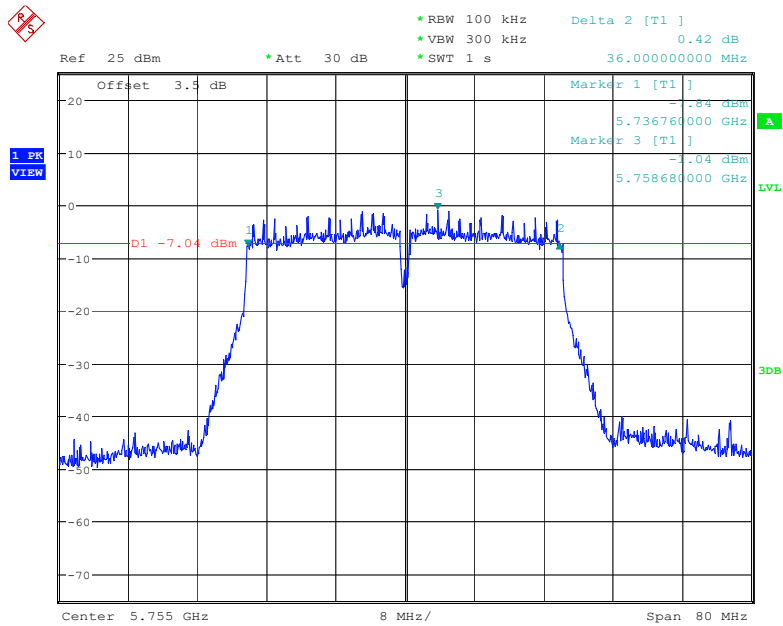
Date: 28.JUL.2022 23:58:45

802.11n20 mode, 5825Hz



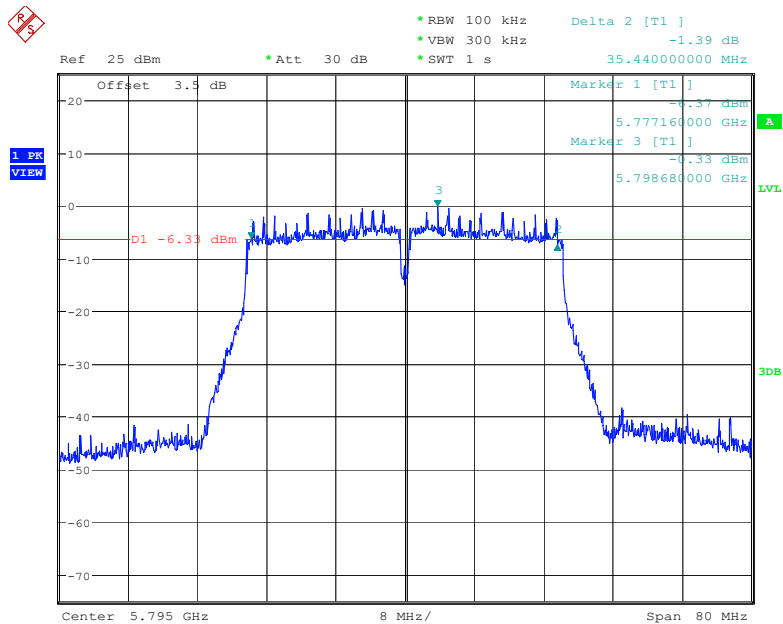
Date: 27.AUG.2022 21:06:47

802.11n40 mode, 5755MHz



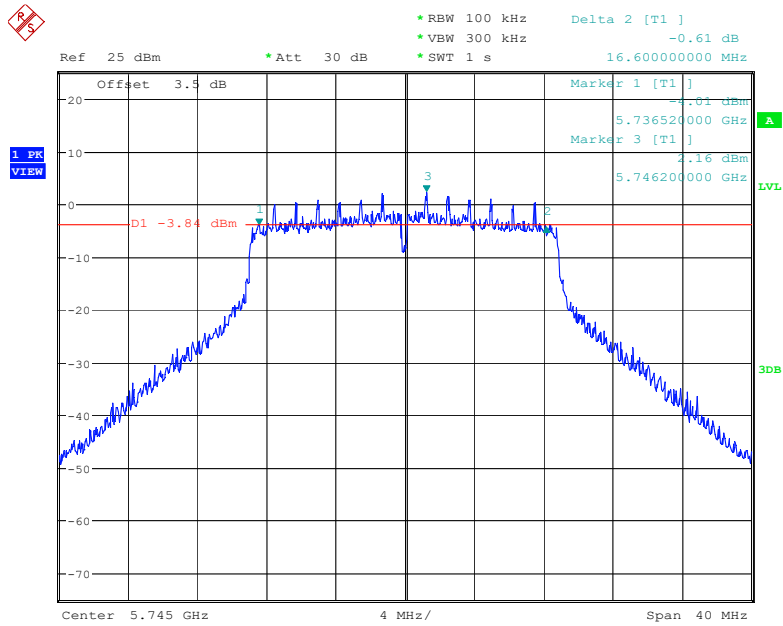
Date: 29.JUL.2022 00:24:23

802.11n40 mode, 5795MHz



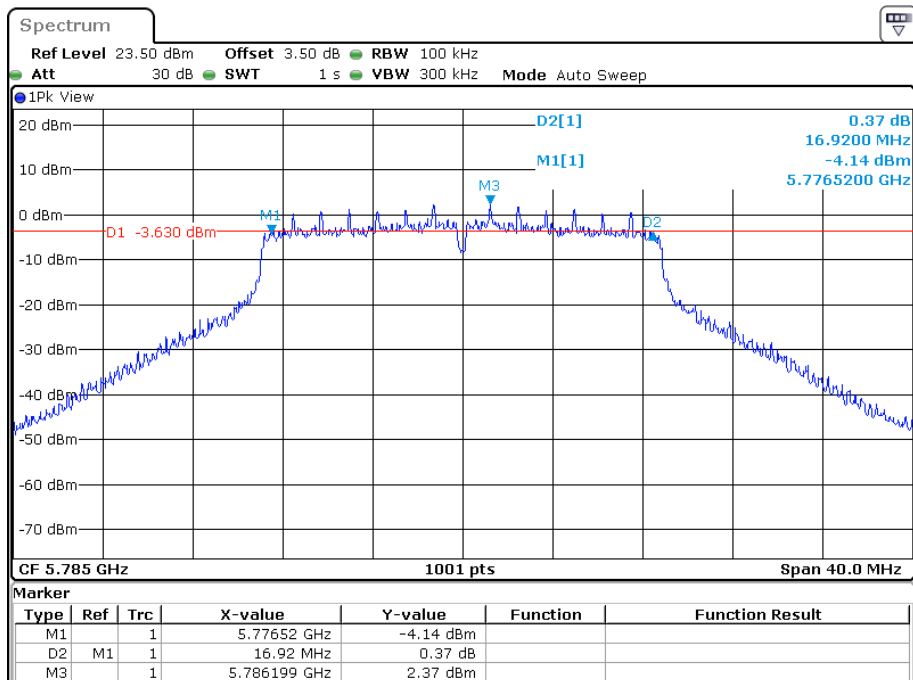
Date: 29.JUL.2022 00:27:19

802.11ac20 mode, 5745MHz



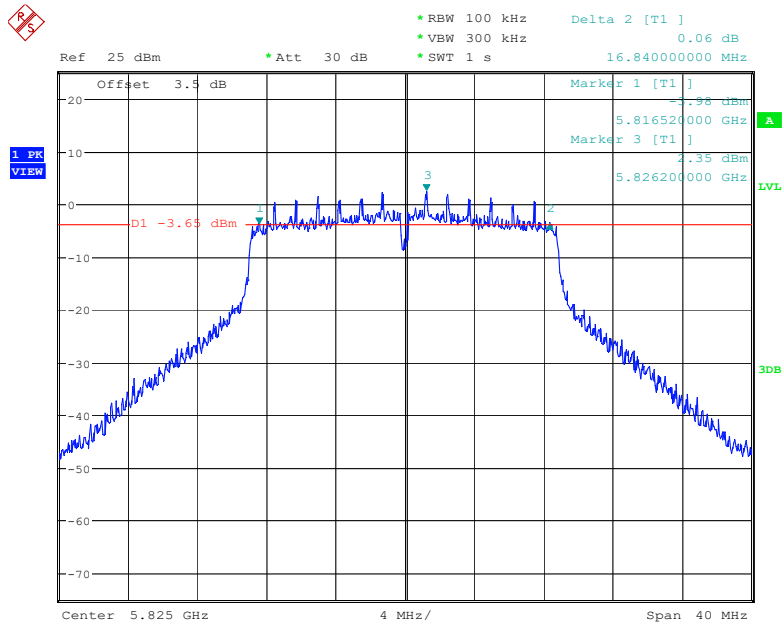
Date: 28.JUL.2022 21:47:11

802.11ac20 mode, 5785MHz



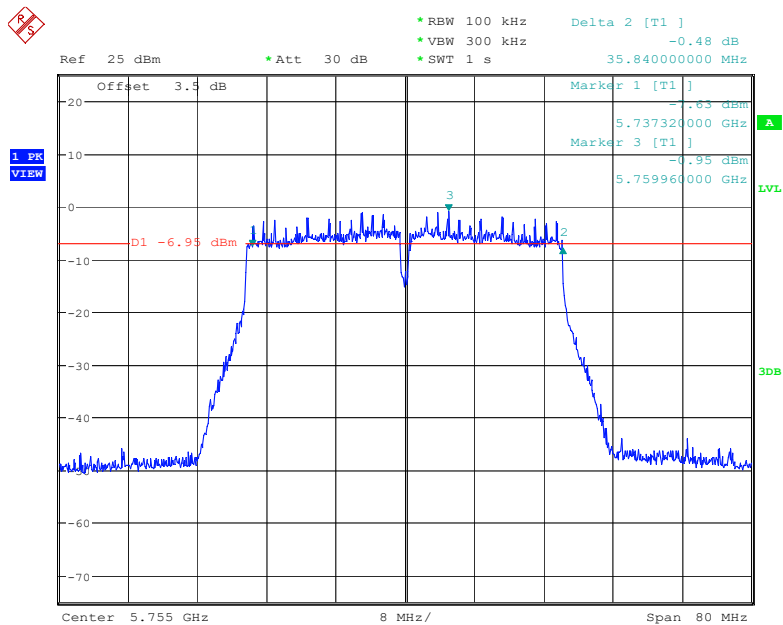
Date: 27.AUG.2022 21:09:29

802.11ac20 mode, 5825 MHz



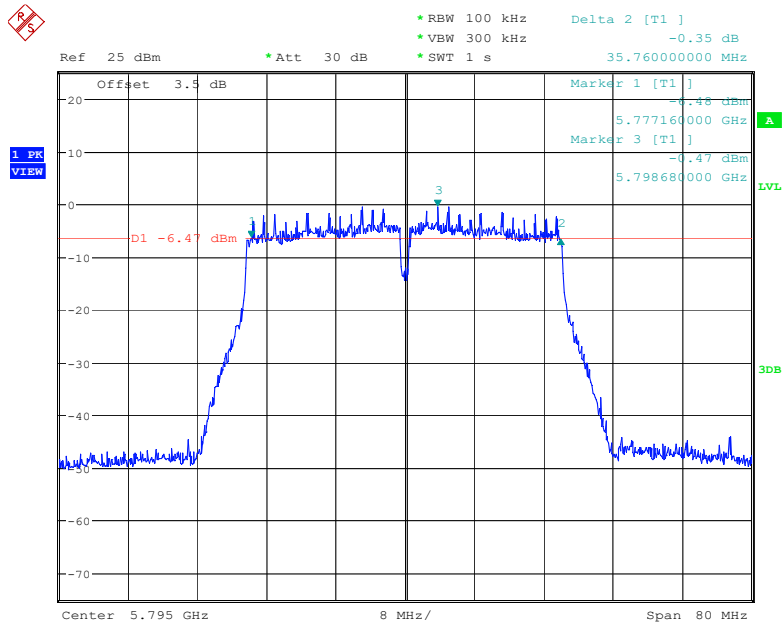
Date: 28.JUL.2022 21:52:46

802.11ac40 mode, 5755MHz



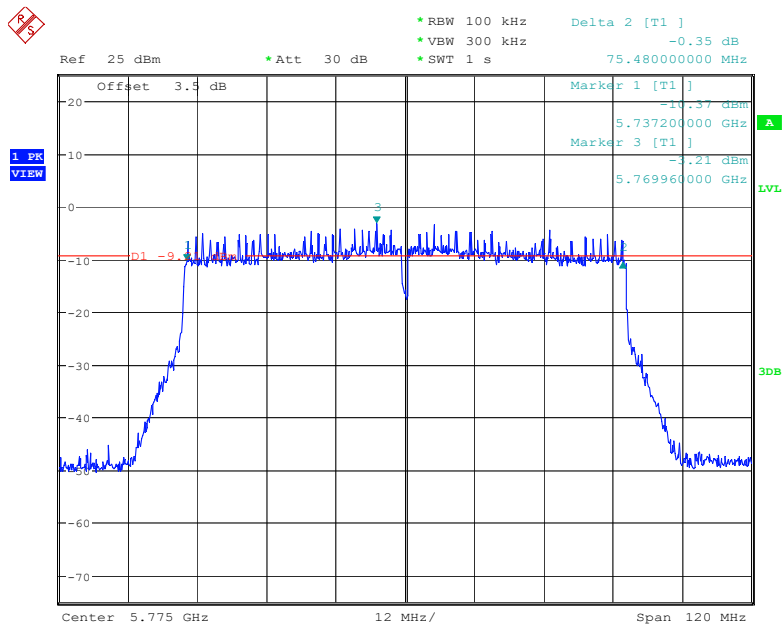
Date: 28.JUL.2022 22:55:17

802.11ac40 mode, 5795MHz



Date: 28.JUL.2022 22:57:49

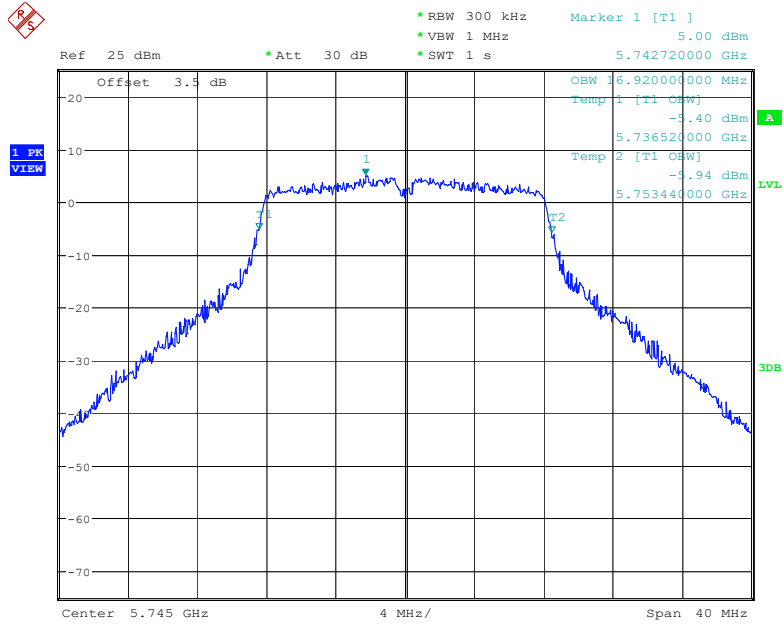
802.11ac80 mode, 5775MHz



Date: 28.JUL.2022 23:17:00

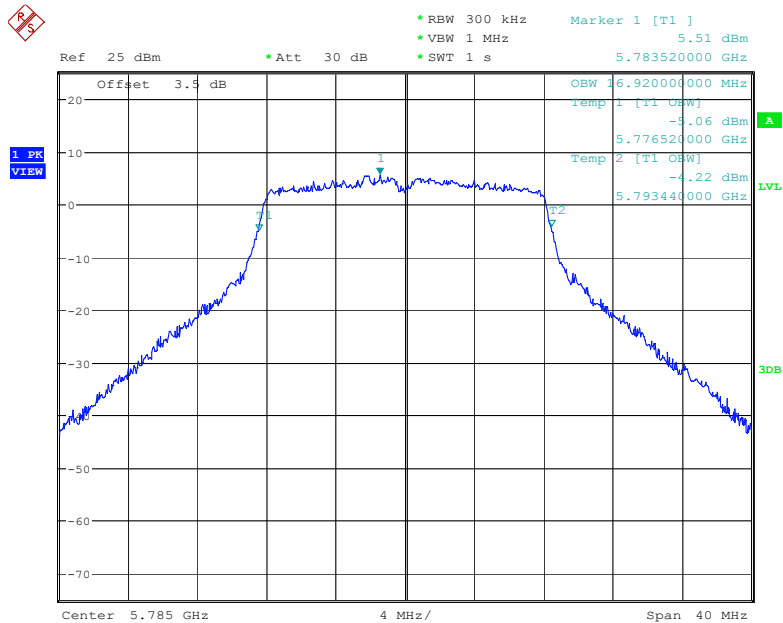
99% Bandwidth

802.11a mode, 5745MHz



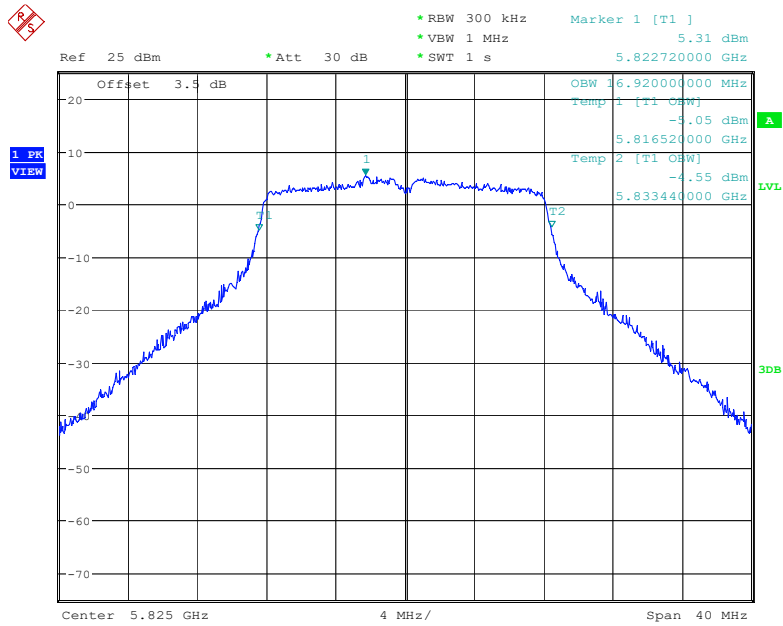
Date: 28.JUL.2022 22:23:45

802.11a mode, 5785MHz



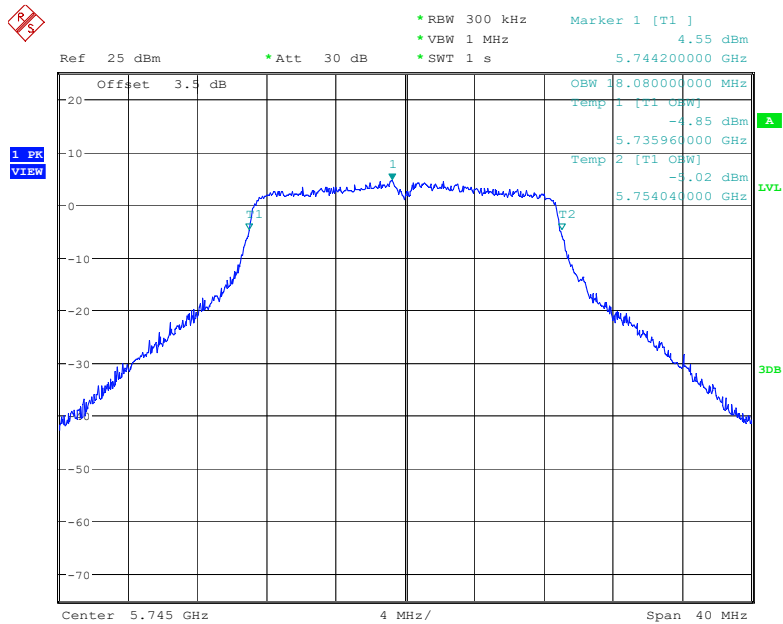
Date: 28.JUL.2022 22:26:31

802.11a mode,5825MHz



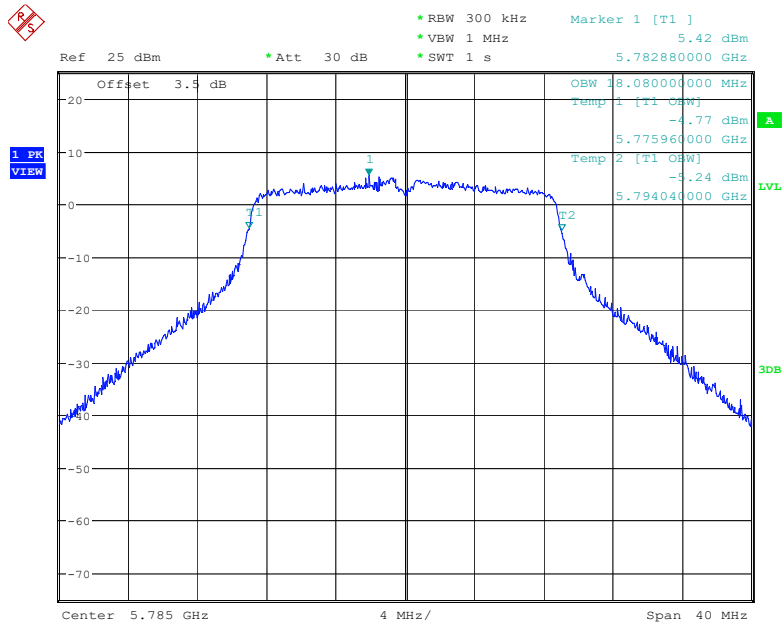
Date: 28.JUL.2022 22:29:33

802.11n20 mode,5745MHz



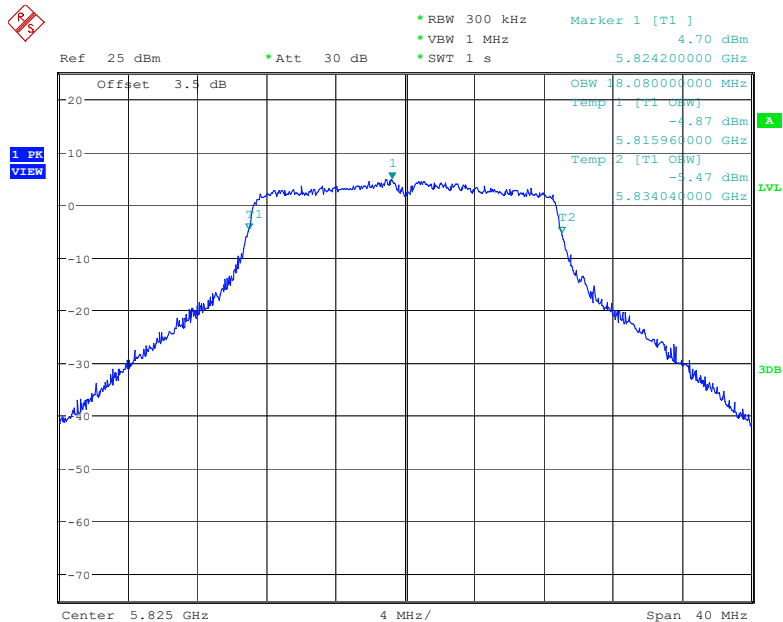
Date: 28.JUL.2022 23:55:35

802.11n20 mode, 5785MHz



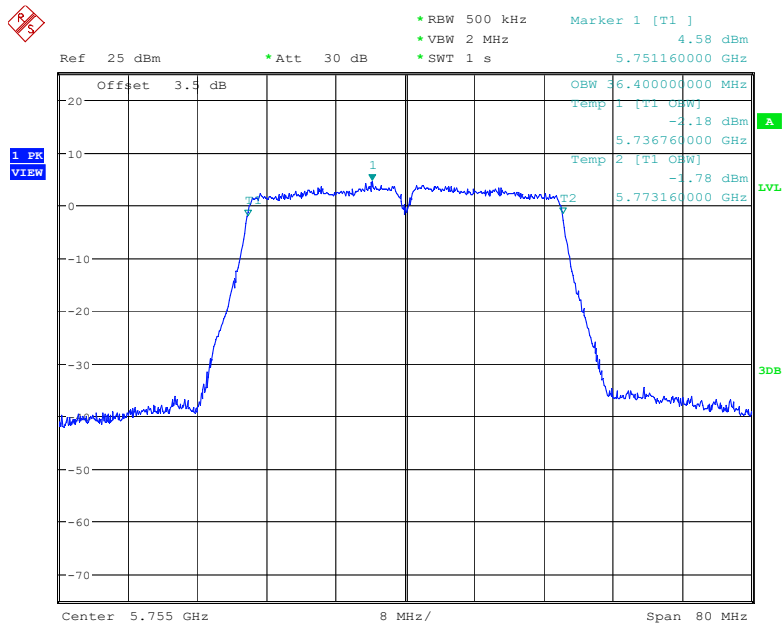
Date: 28.JUL.2022 23:58:17

802.11n20 mode, 5825Hz



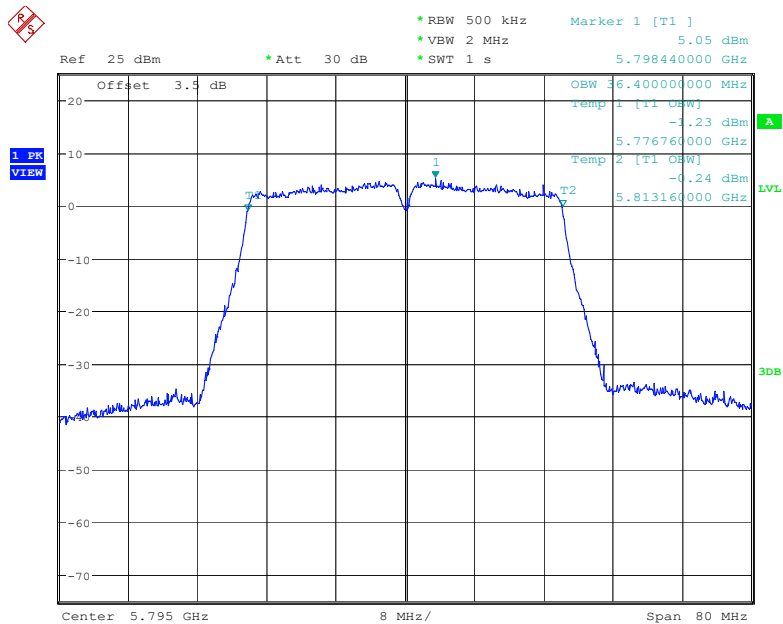
Date: 29.JUL.2022 00:00:51

802.11n40 mode, 5755MHz



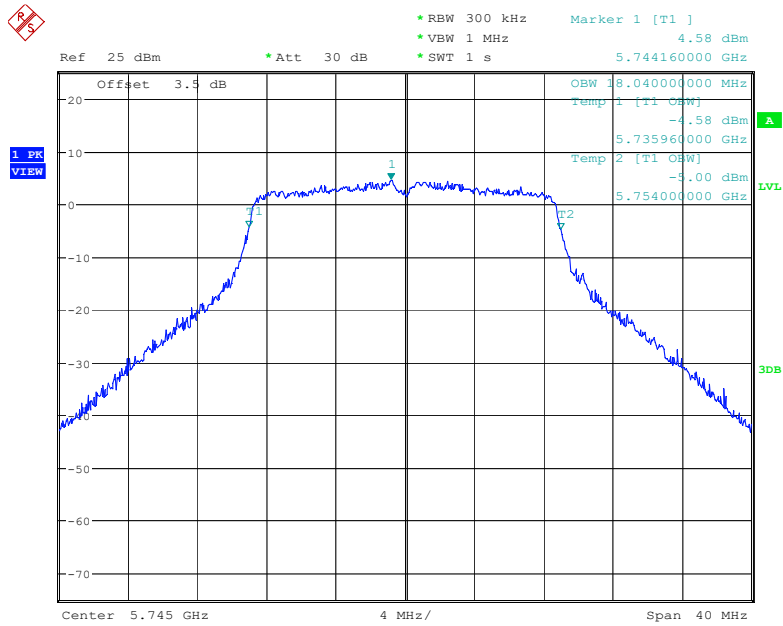
Date: 29.JUL.2022 00:23:56

802.11n40 mode, 5795MHz



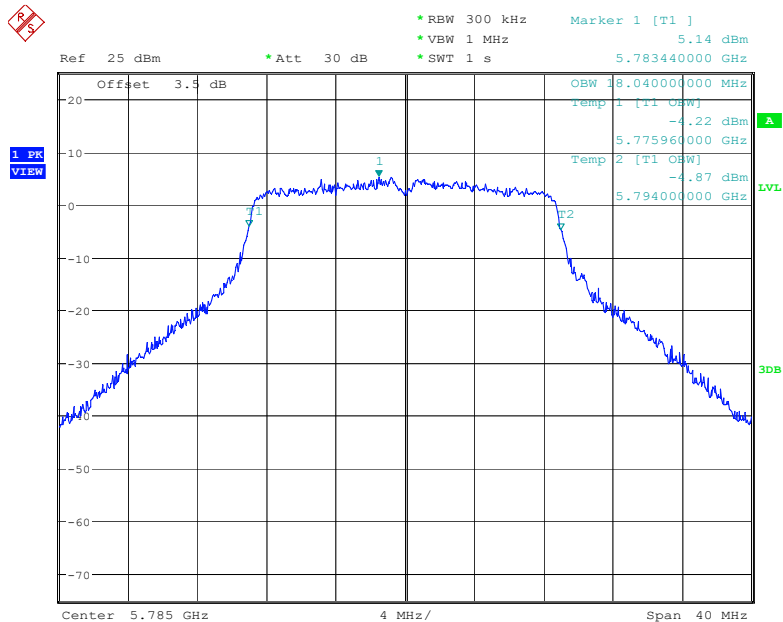
Date: 29.JUL.2022 00:26:52

802.11ac20 mode, 5745MHz



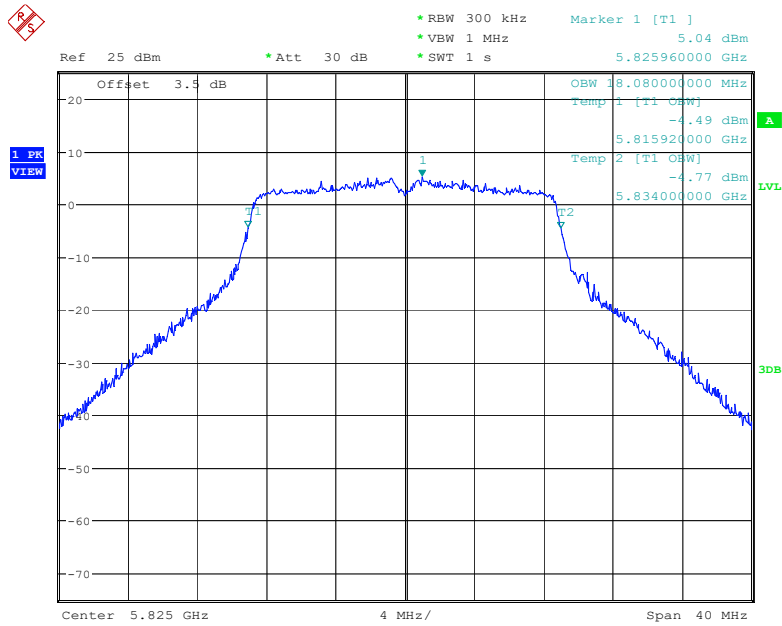
Date: 28.JUL.2022 21:46:43

802.11ac20 mode, 5785MHz



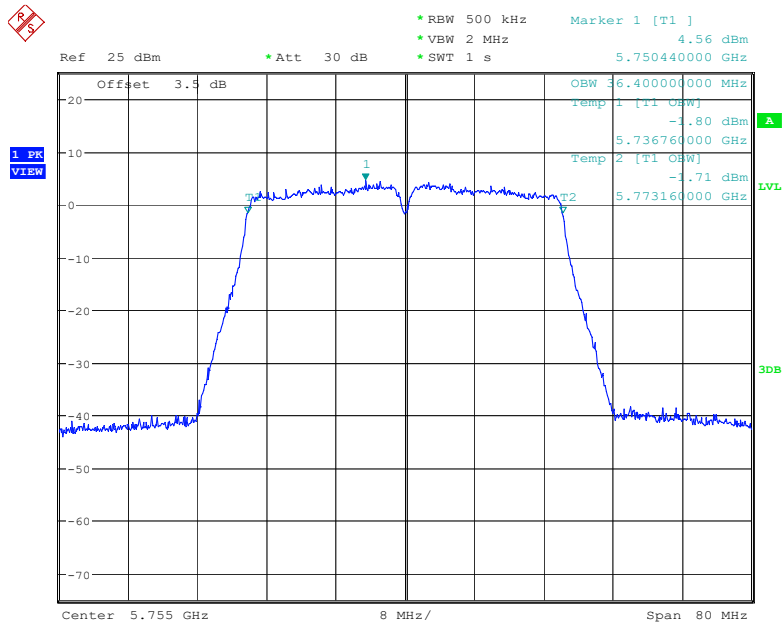
Date: 28.JUL.2022 21:49:34

802.11ac20 mode, 5825 MHz



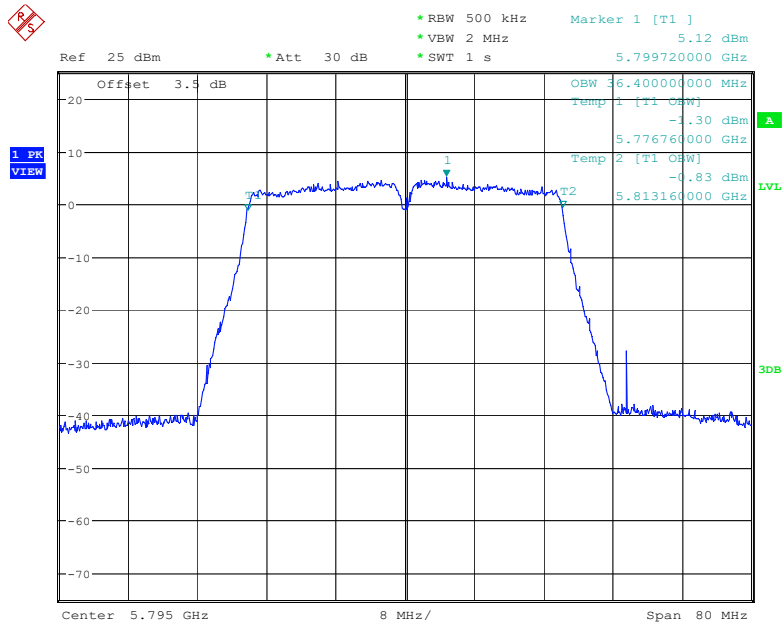
Date: 28.JUL.2022 21:52:19

802.11ac40 mode, 5755MHz



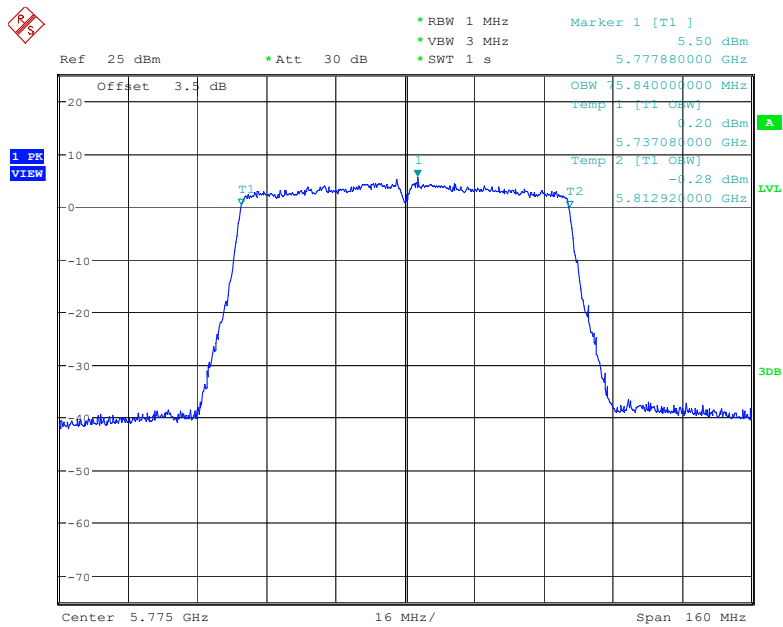
Date: 28.JUL.2022 22:54:50

802.11ac40 mode, 5795MHz



Date: 28.JUL.2022 22:57:22

802.11ac80 mode, 5775MHz



Date: 28.JUL.2022 23:16:32

FCC §15.407(a) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

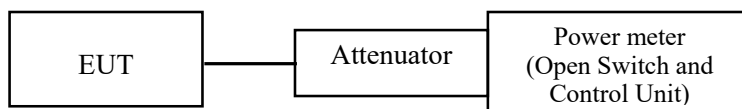
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

- c. Place the EUT on a bench and set it in transmitting mode.
- d. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- e. Add a correction factor to the display.



Note: the Open Switch and Control Unit has a built-in power sensor.

Test Data**Environmental Conditions**

Temperature:	27.1 °C
Relative Humidity:	58 %
ATM Pressure:	101.3 kPa

The testing was performed by Roger Ling on 2022-08-05.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

5150 MHz – 5250 MHz

Frequency (MHz)	Conducted Average Output Power (dBm)	Limit (dBm)
802.11a		
5180	15.17	24
5200	15.09	24
5240	14.63	24
802.11n20		
5180	15.14	24
5200	15.10	24
5240	14.49	24
802.11n40		
5190	15.75	24
5230	15.42	24
802.11ac20		
5180	15.12	24
5200	15.01	24
5240	14.48	24
802.11ac40		
5190	15.75	24
5230	15.42	24
802.11ac80		
5210	14.93	24

Note: the duty cycle factor has added into result.

5250 MHz – 5350 MHz

Frequency (MHz)	Conducted Average Output Power (dBm)	FCC Limit (dBm)
802.11a		
5260	14.48	24
5280	14.42	24
5320	14.53	24
802.11n20		
5260	14.44	24
5280	14.23	24
5320	14.29	24
802.11n40		
5270	15.03	24
5310	14.94	24
802.11ac20		
5260	14.32	24
5280	14.21	24
5320	14.35	24
802.11ac40		
5270	14.94	24
5310	14.92	24
802.11ac40		
5290	14.28	24

Note: the duty cycle factor has added into result.

5470 MHz – 5725 MHz

Frequency (MHz)	Conducted Average Output Power (dBm)	FCC Limit (dBm)
802.11a		
5500	15.56	24
5580	15.00	24
5700	14.68	24
802.11n20		
5500	15.50	24
5580	14.83	24
5700	14.47	24
802.11n40		
5510	16.14	24
5550	15.76	24
5670	15.07	24
802.11ac20		
5500	15.47	24
5580	14.82	24
5700	14.57	24
802.11ac40		
5510	16.11	24
5550	15.69	24
5670	15.06	24
802.11ac80		
5530	15.34	24
5610	14.69	24

Note: the duty cycle factor has added into result.

5725 MHz – 5850 MHz:

Frequency (MHz)	Conducted Average Output Power (dBm)	FCC Limit (dBm)
802.11a		
5745	14.89	30
5785	15.41	30
5825	15.21	30
802.11n20		
5745	14.74	30
5785	15.36	30
5825	15.08	30
802.11n40		
5755	15.51	30
5795	15.95	30
802.11ac20		
5745	14.76	30
5785	15.25	30
5825	15.03	30
802.11ac40		
5755	15.49	30
5795	15.88	30
802.11ac80		
5755	15.12	30

Note: the duty cycle factor has added into result.

FCC §15.407(a) - POWER SPECTRAL DENSITY

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

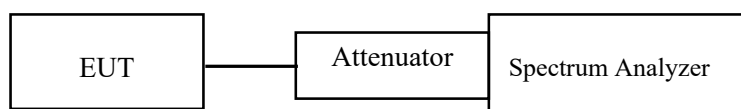
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth ($< 1 \text{ MHz}$, or $< 500 \text{ kHz}$) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

- a) Set $\text{RBW} \geq 1/T$, where T is defined in section II.B.1.a).
- b) Set $\text{VBW} \geq 3 \text{ RBW}$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500 \text{ kHz}/\text{RBW})$ to the measured result, whereas $\text{RBW} (< 500 \text{ kHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log (1\text{MHz}/\text{RBW})$ to the measured result, whereas $\text{RBW} (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.



Test Data**Environmental Conditions**

Temperature:	27.1 °C
Relative Humidity:	58 %
ATM Pressure:	101.3 kPa

The testing was performed by Roger Ling on 2022-08-05.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

5150 MHz – 5250 MHz:

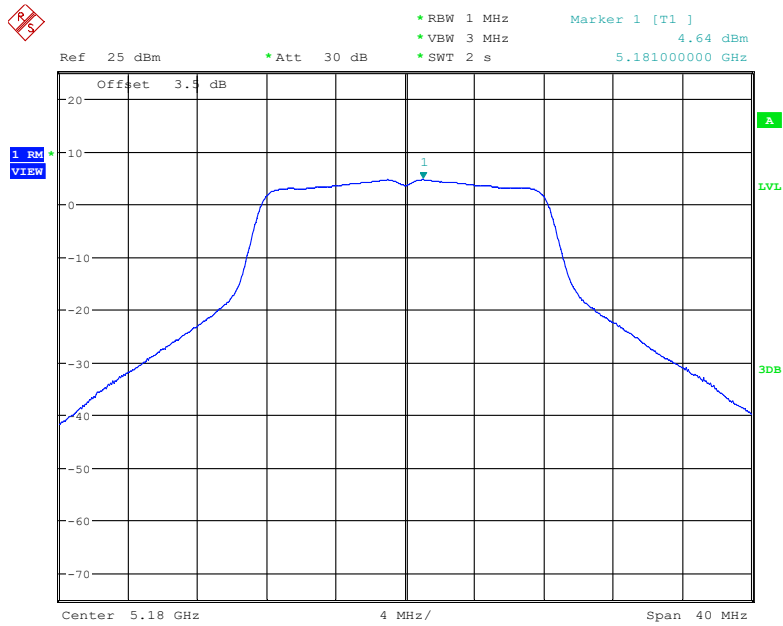
Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5180	4.64	0.08	4.72	11
5200	4.61	0.08	4.69	11
5240	4.12	0.08	4.20	11
802.11n20				
5180	4.31	0.09	4.40	11
5200	4.26	0.09	4.35	11
5240	3.67	0.09	3.76	11
802.11n40				
5190	1.95	0.17	2.12	11
5230	1.54	0.17	1.71	11
802.11ac20				
5180	4.23	0.09	4.32	11
5200	4.13	0.09	4.22	11
5240	3.63	0.09	3.72	11
802.11ac40				
5190	1.93	0.17	2.10	11
5230	1.55	0.17	1.72	11
802.11ac80				
5210	-1.96	0.34	-1.62	11

Note:

1) Power Spectral Density = Reading + Duty Cycle Factor.

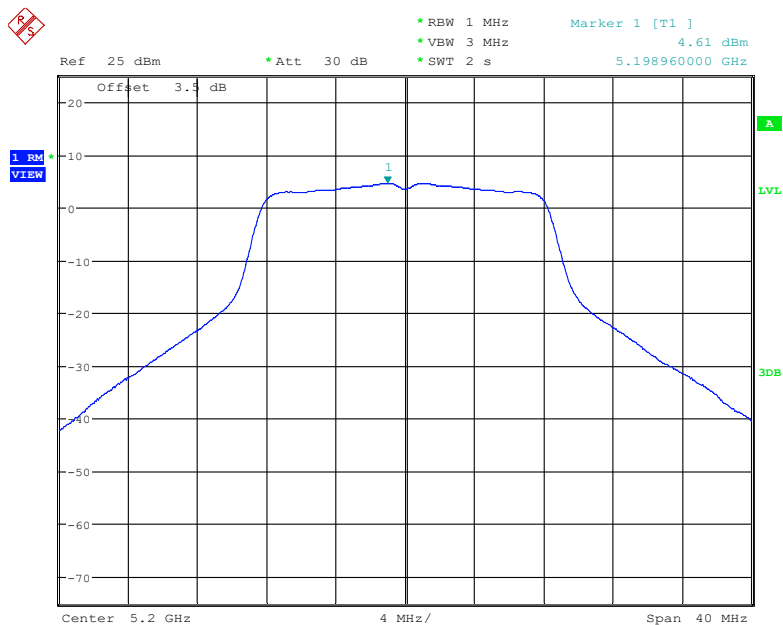
2) Duty Cycle Factor = $10 \log(1/D)$, D =Duty Cycle

802.11a mode, Power Spectral Density, 5180 MHz



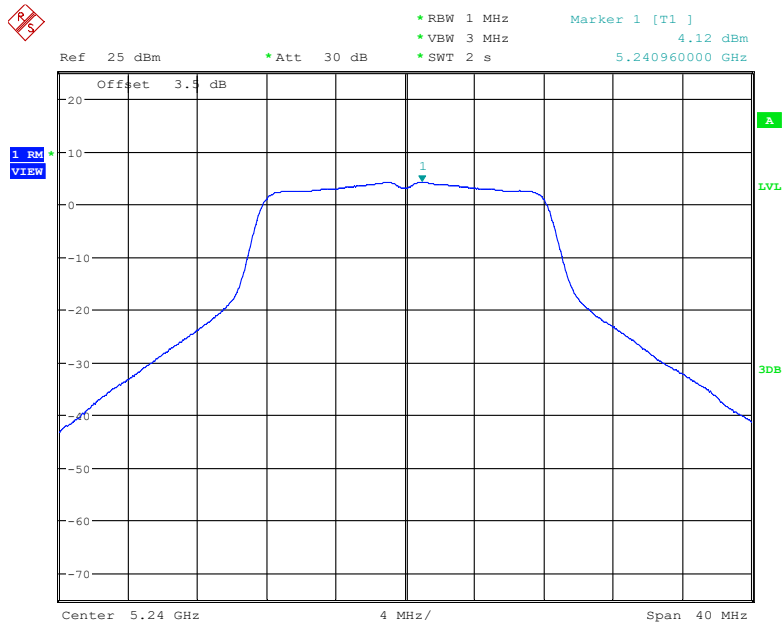
Date: 5.AUG.2022 14:07:13

802.11a mode, Power Spectral Density, 5200 MHz



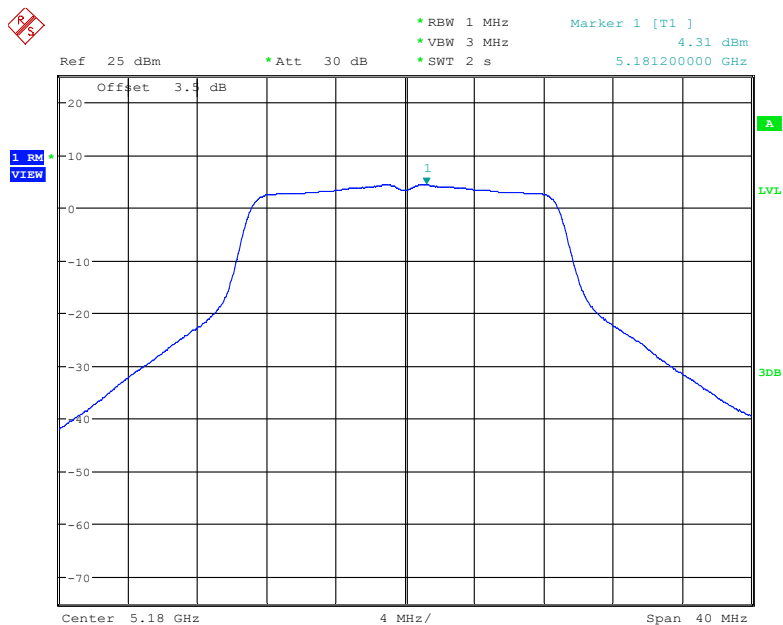
Date: 5.AUG.2022 14:10:56

802.11a mode, Power Spectral Density, 5240 MHz



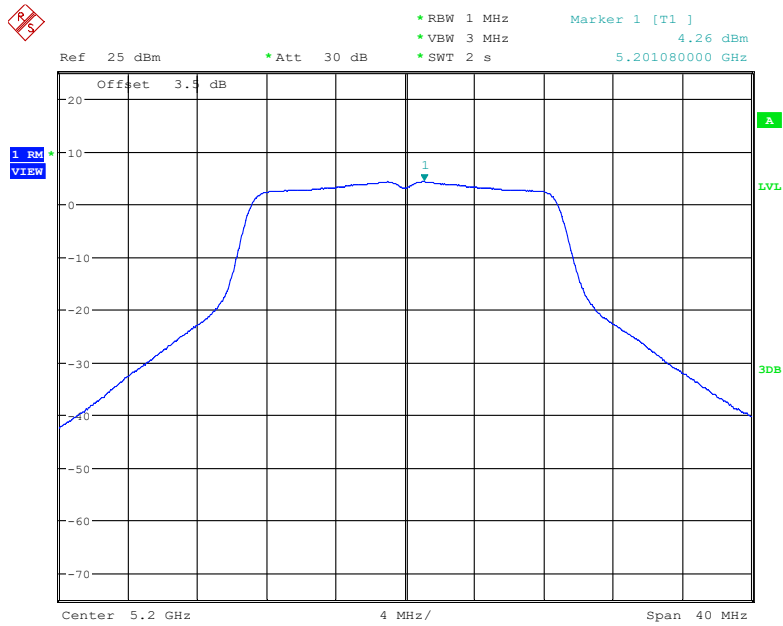
Date: 5.AUG.2022 14:13:32

802.11n20 mode, Power Spectral Density, 5180 MHz



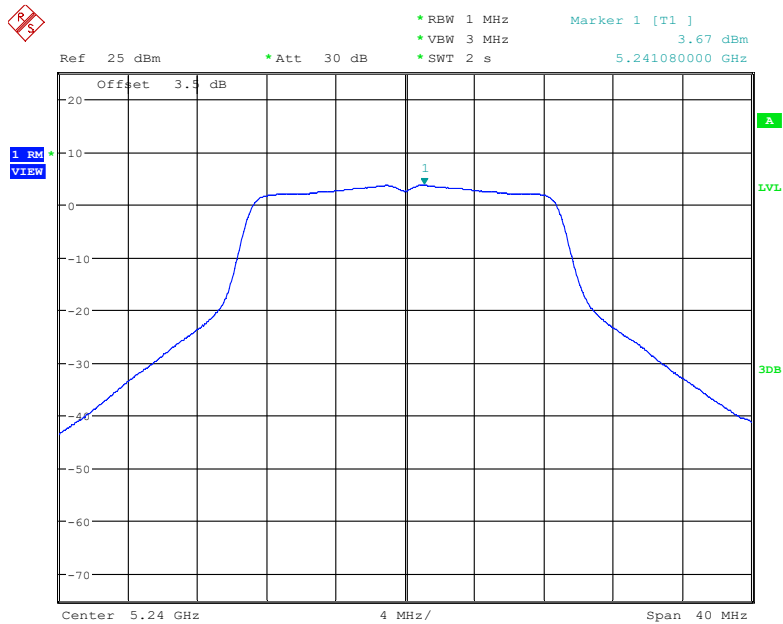
Date: 5.AUG.2022 15:28:38

802.11n20 mode, Power Spectral Density, 5200 MHz



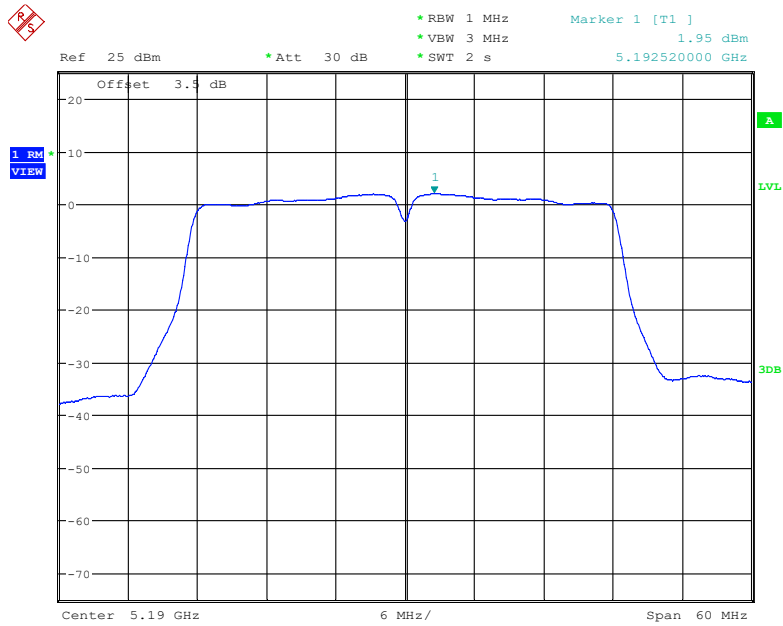
Date: 5.AUG.2022 15:30:06

802.11n20 mode, Power Spectral Density, 5240 MHz



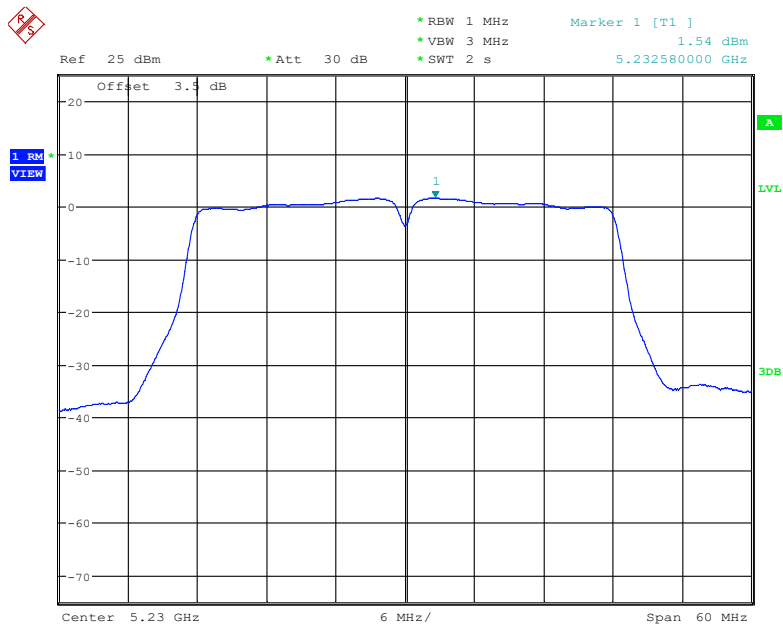
Date: 5.AUG.2022 15:31:39

802.11n40 mode, Power Spectral Density, 5190 MHz



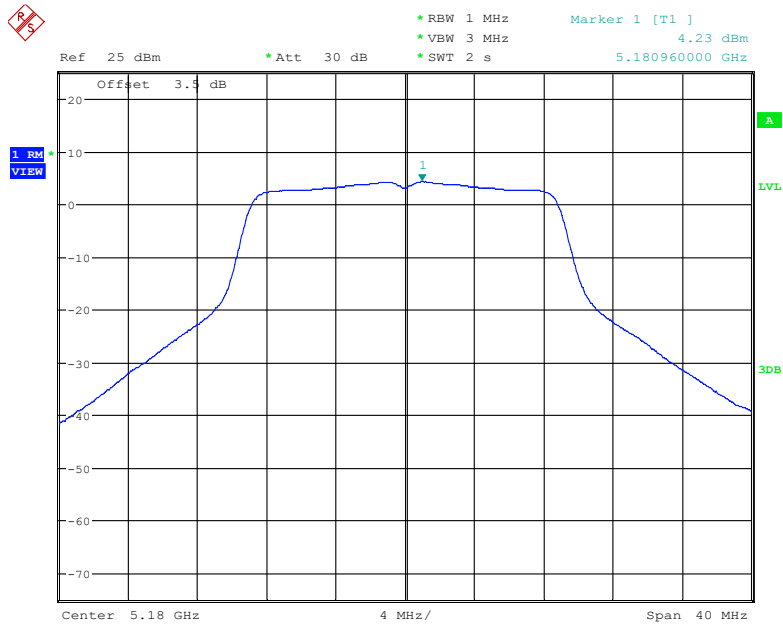
Date: 5.AUG.2022 15:48:10

802.11n40 mode, Power Spectral Density, 5230 MHz



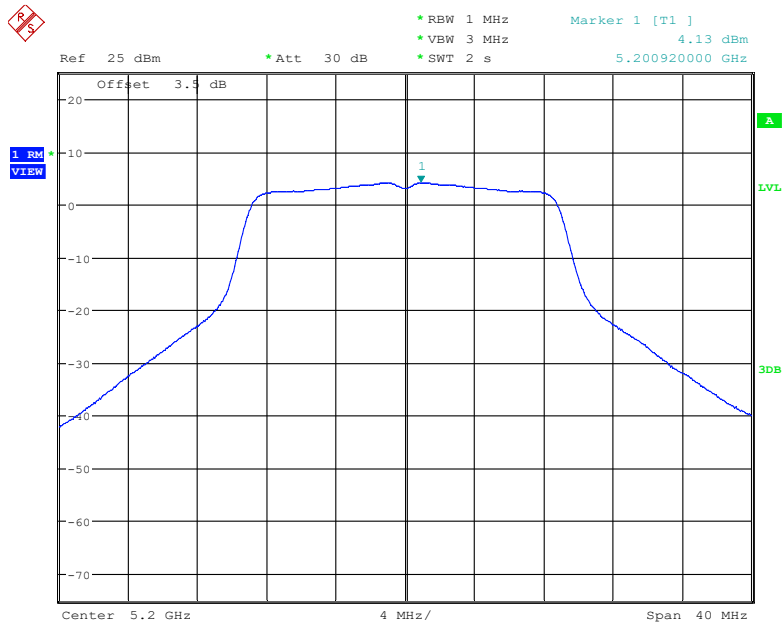
Date: 5.AUG.2022 15:49:32

802.11ac20 mode, Power Spectral Density, 5180 MHz



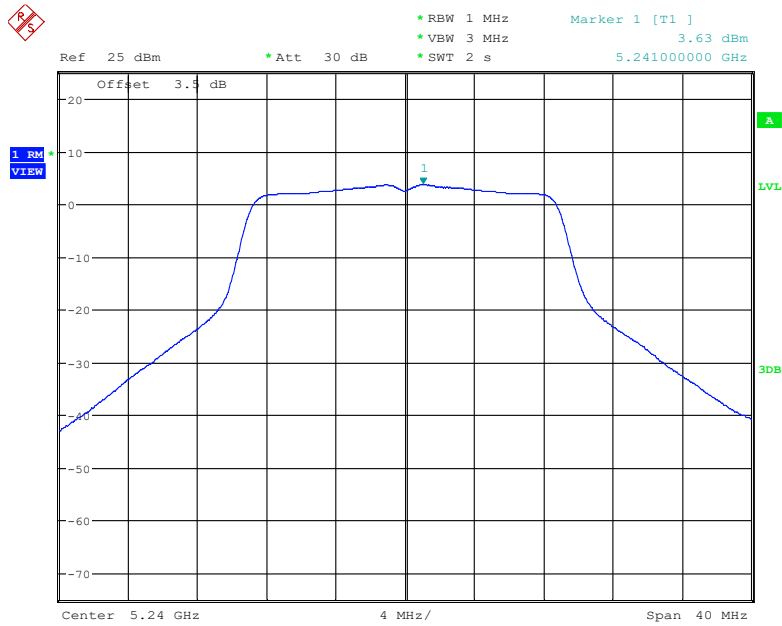
Date: 5.AUG.2022 14:47:11

802.11ac20 mode, Power Spectral Density, 5200 MHz



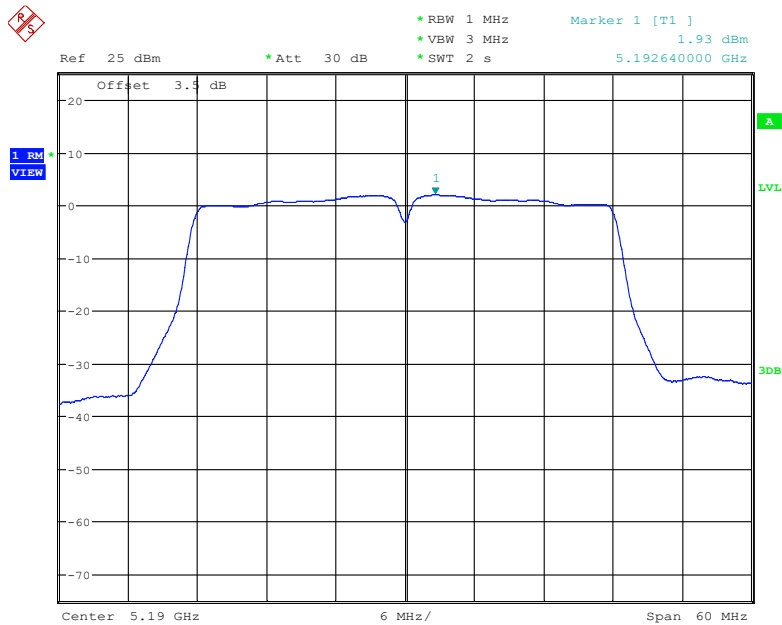
Date: 5.AUG.2022 14:48:33

802.11ac20 mode, Power Spectral Density, 5240 MHz



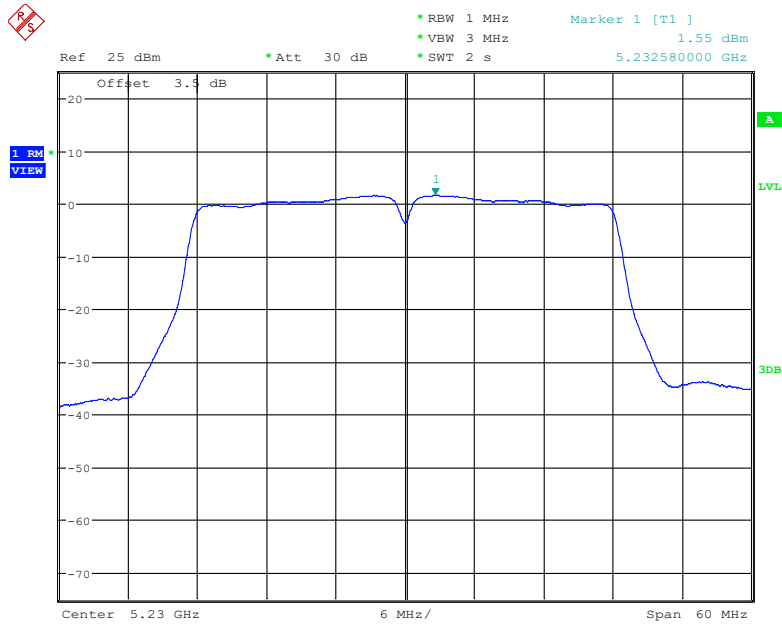
Date: 5.AUG.2022 14:50:29

802.11ac40 mode, Power Spectral Density, 5190 MHz



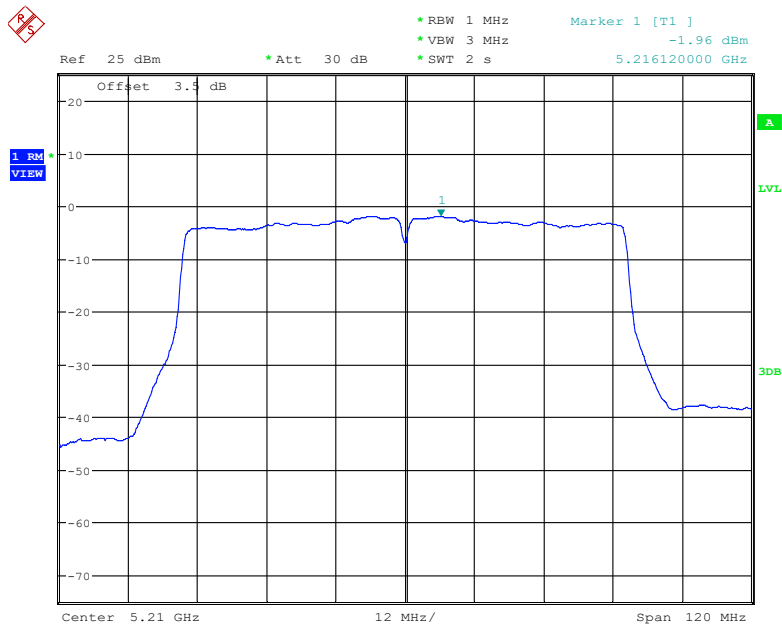
Date: 5.AUG.2022 15:07:22

802.11ac40 mode, Power Spectral Density, 5230 MHz



Date: 5.AUG.2022 15:08:43

802.11ac80 mode, Power Spectral Density, 5210 MHz



Date: 5.AUG.2022 15:20:26

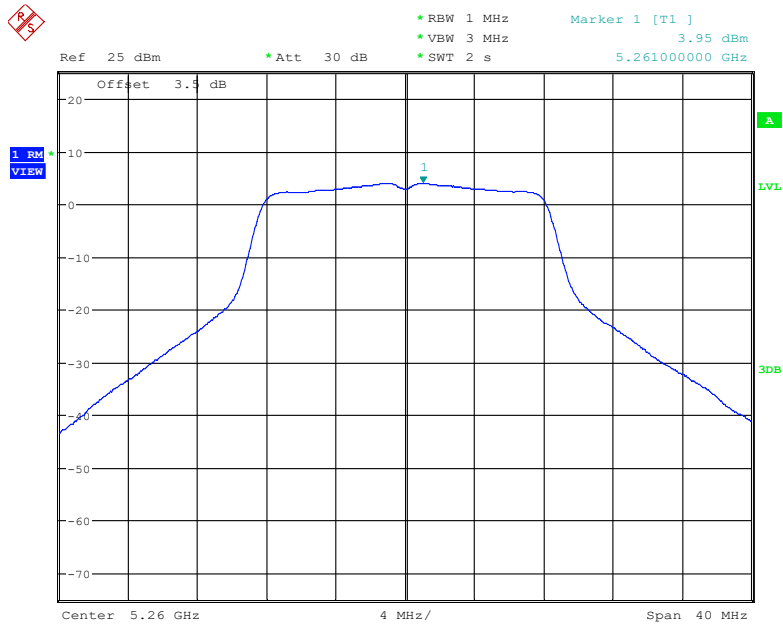
5250 MHz – 5350 MHz:

Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5260	3.95	0.08	4.03	11
5280	3.88	0.08	3.96	11
5320	3.98	0.08	4.06	11
802.11n20				
5260	3.52	0.08	3.60	11
5280	3.41	0.08	3.49	11
5320	3.48	0.08	3.56	11
802.11n40				
5270	1.16	0.17	1.33	11
5310	1.13	0.17	1.30	11
802.11ac20				
5260	3.47	0.09	3.56	11
5280	3.37	0.09	3.46	11
5320	3.51	0.09	3.60	11
802.11ac40				
5270	1.09	0.17	1.26	11
5310	1.07	0.17	1.24	11
802.11ac80				
5290	-2.69	0.35	-2.34	11

Note:

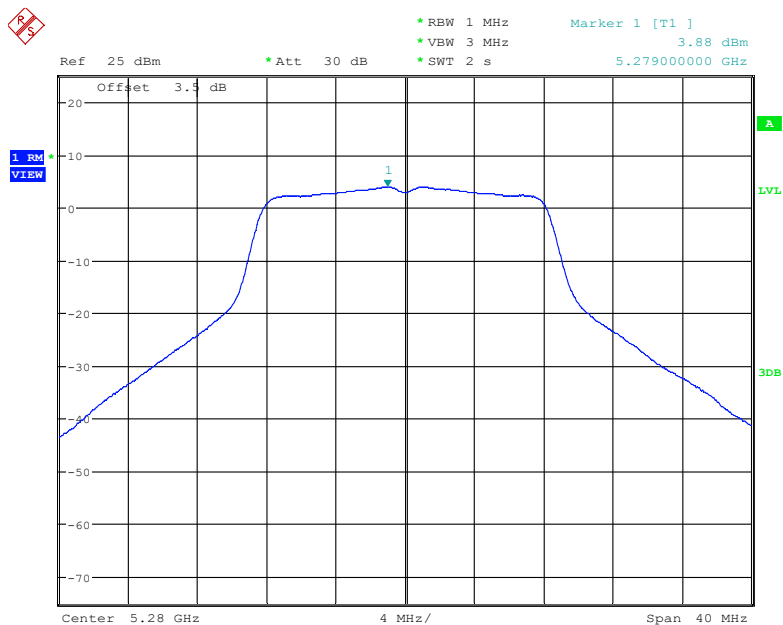
- 1) Power Spectral Density = Reading + Duty Cycle Factor.
- 2) Duty Cycle Factor = $10 \log (1 / D)$, D=Duty Cycle

802.11a mode, Power Spectral Density, 5260MHz



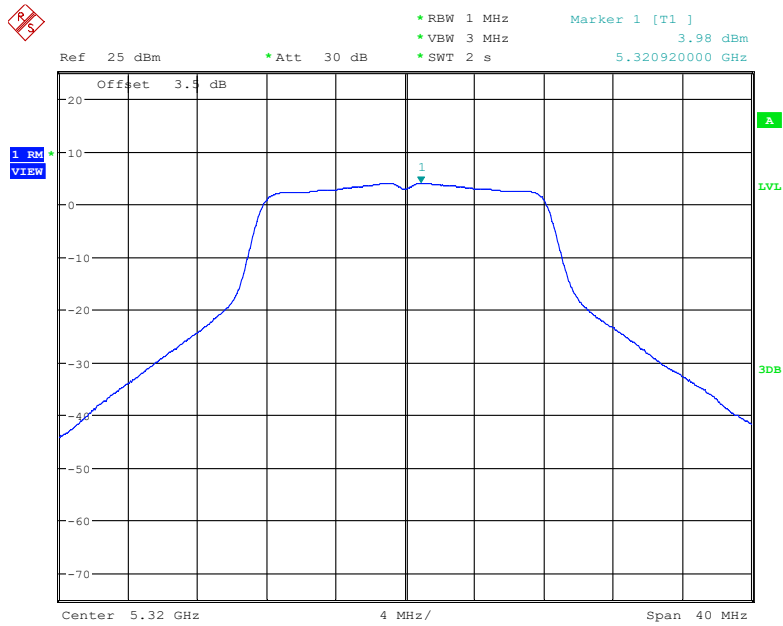
Date: 5.AUG.2022 14:16:08

802.11a mode, Power Spectral Density, 5280MHz



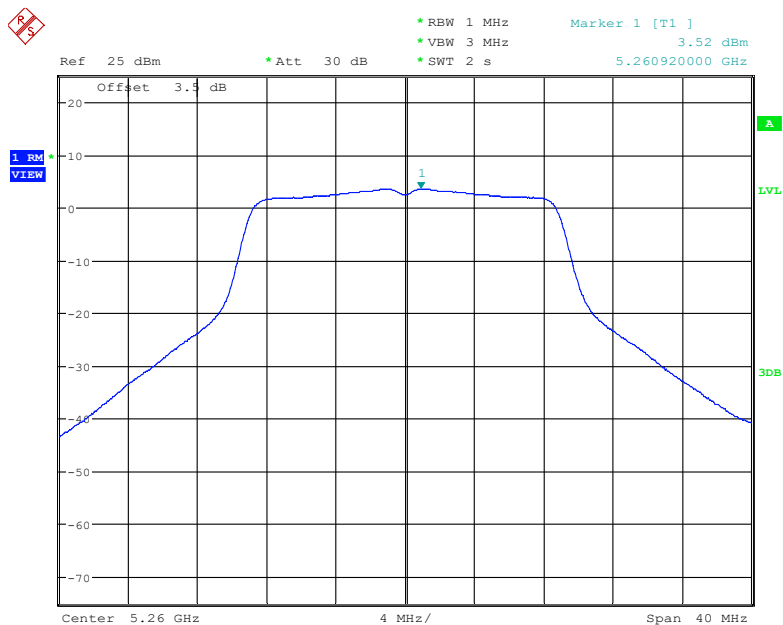
Date: 5.AUG.2022 14:34:43

802.11a mode, Power Spectral Density, 5320 MHz



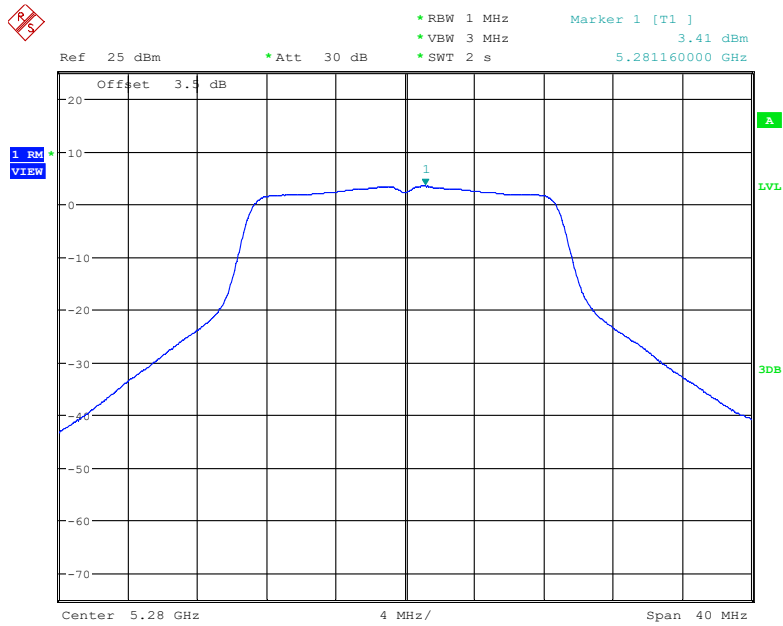
Date: 5.AUG.2022 16:03:57

802.11n20 mode, Power Spectral Density, 5260 MHz



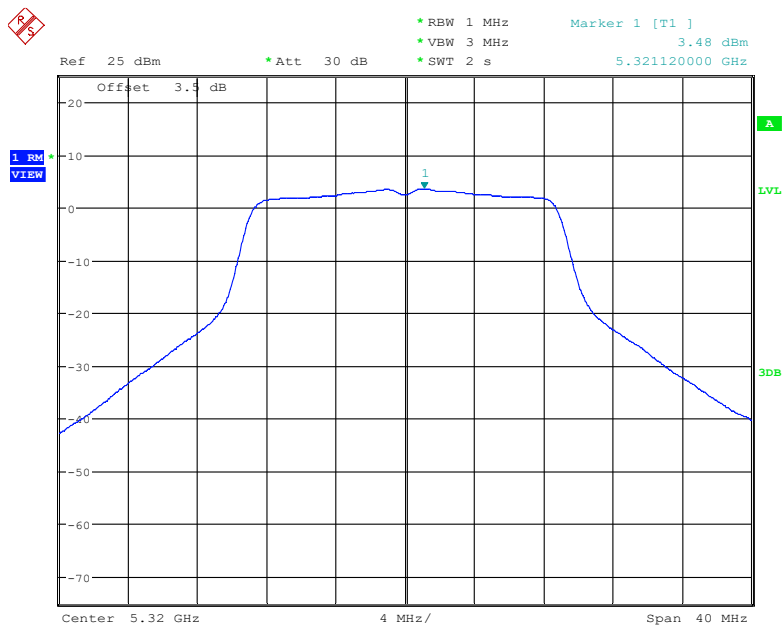
Date: 5.AUG.2022 15:33:08

802.11n20 mode, Power Spectral Density, 5280MHz



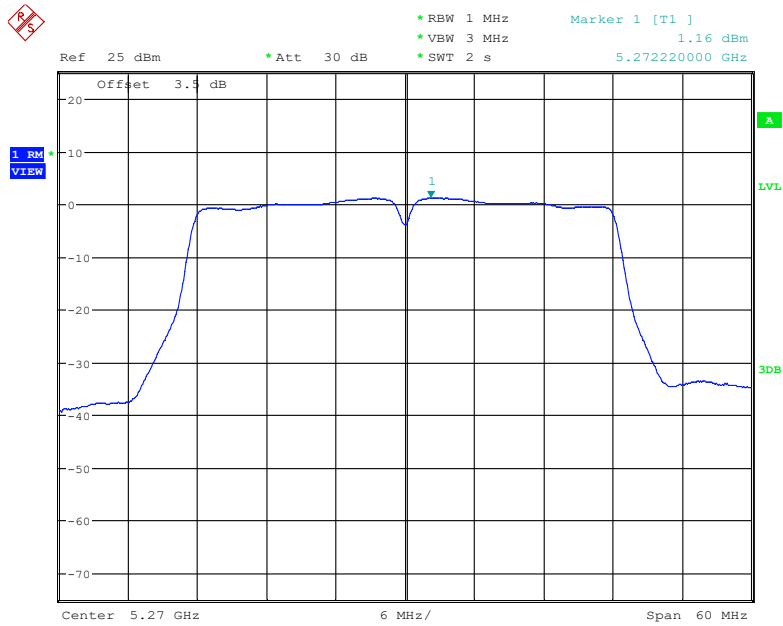
Date: 5.AUG.2022 15:34:30

802.11n20 mode, Power Spectral Density, 5320MHz



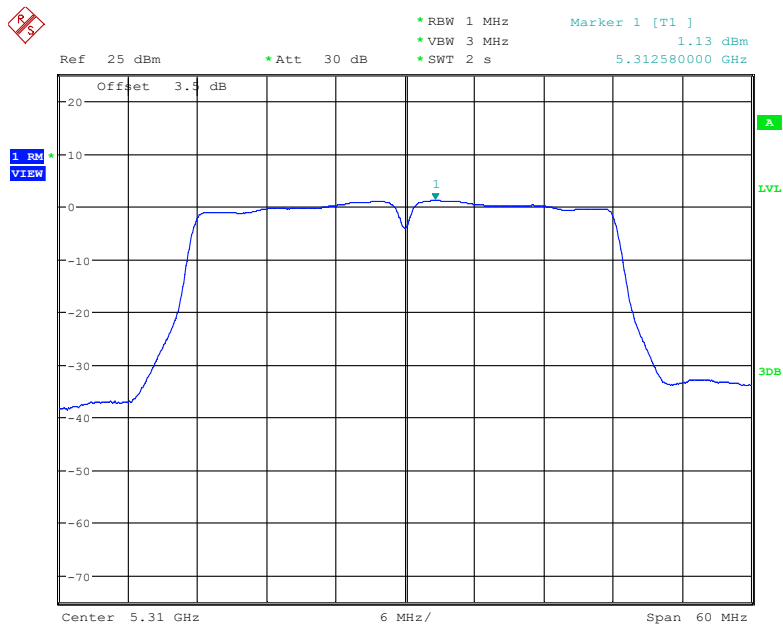
Date: 5.AUG.2022 15:37:46

802.11n40 mode, Power Spectral Density, 5270MHz



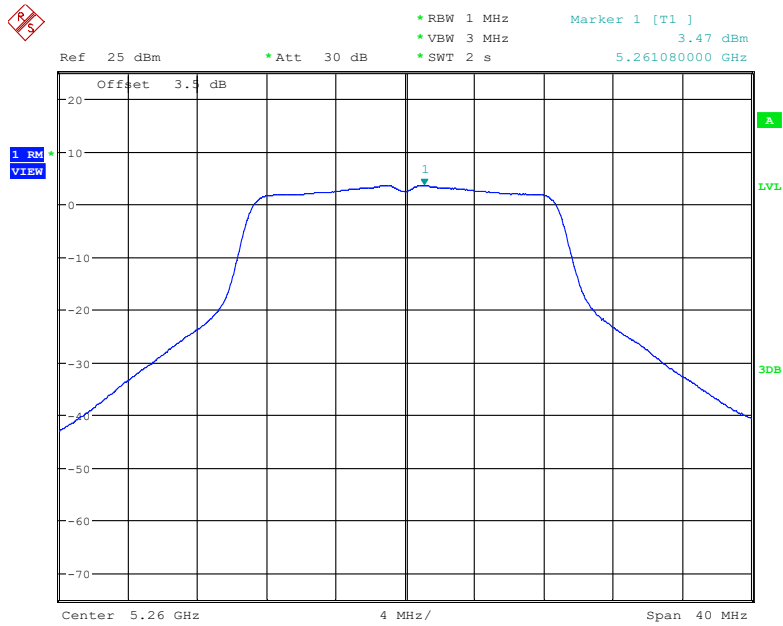
Date: 5.AUG.2022 15:50:56

802.11n40 mode, Power Spectral Density, 5310MHz



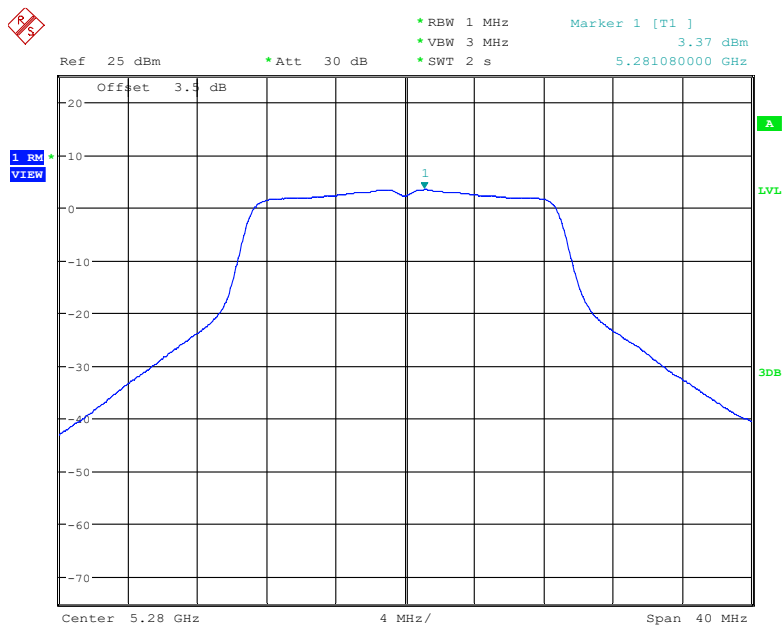
Date: 5.AUG.2022 15:52:28

802.11ac20 mode, Power Spectral Density, 5260 MHz



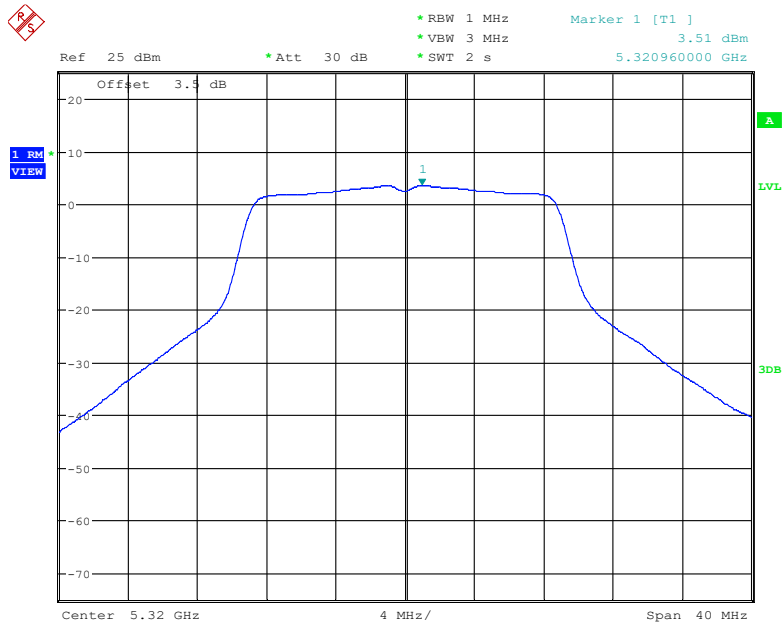
Date: 5.AUG.2022 14:51:52

802.11ac20 mode, Power Spectral Density, 5280MHz



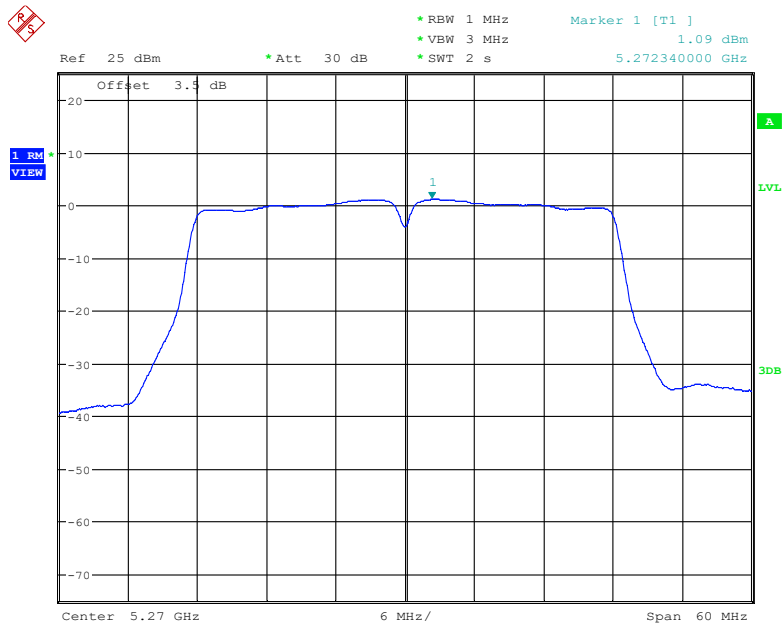
Date: 5.AUG.2022 14:53:26

802.11ac20 mode, Power Spectral Density, 5320MHz



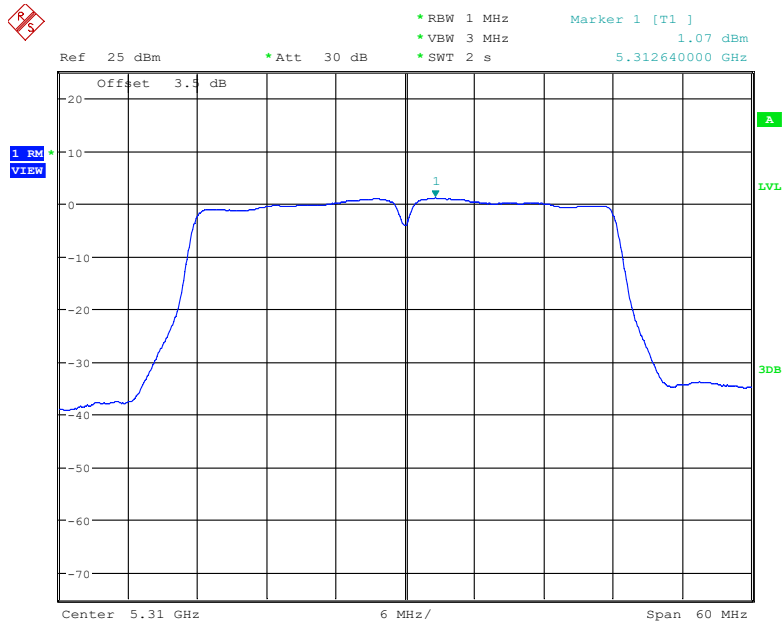
Date: 5.AUG.2022 16:05:36

802.11ac40 mode, Power Spectral Density, 5270MHz



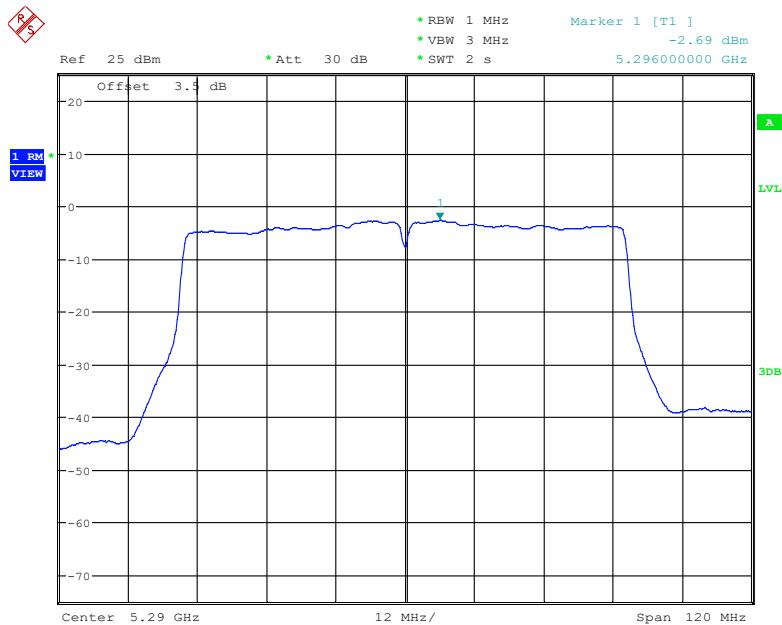
Date: 5.AUG.2022 15:10:04

802.11ac40 mode, Power Spectral Density, 5310 MHz



Date: 5.AUG.2022 15:11:36

802.11ac80 mode, Power Spectral Density, 5290 MHz



Date: 5.AUG.2022 15:22:10

5470 MHz – 5725 MHz:

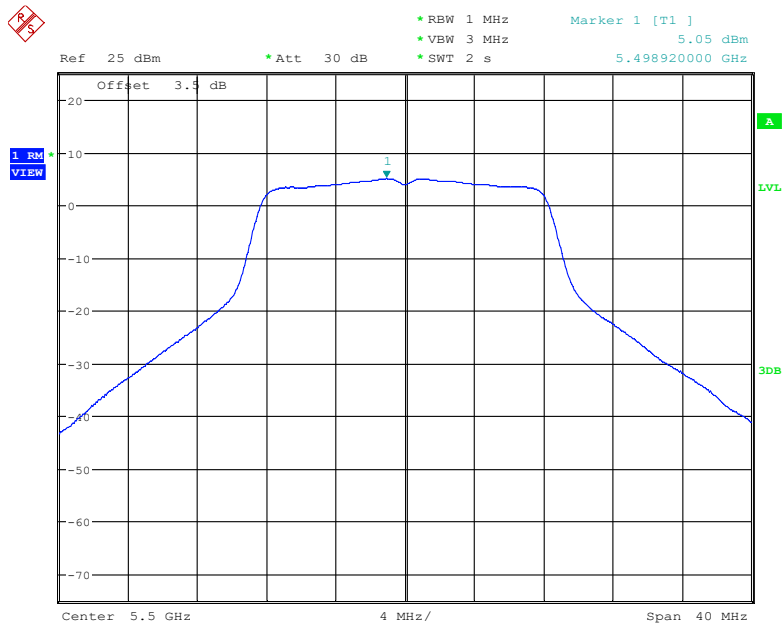
Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5500	5.05	0.08	5.13	11
5580	4.44	0.08	4.52	11
5700	4.16	0.08	4.24	11
802.11n20				
5500	4.68	0.09	4.77	11
5580	3.96	0.09	4.05	11
5700	3.68	0.09	3.77	11
802.11n40				
5510	2.22	0.17	2.39	11
5550	1.90	0.17	2.07	11
5670	1.23	0.17	1.40	11
802.11ac20				
5500	4.65	0.09	4.74	11
5580	3.95	0.09	4.04	11
5700	3.66	0.09	3.75	11
802.11ac40				
5510	2.31	0.17	2.48	11
5550	1.84	0.17	2.01	11
5670	1.21	0.17	1.38	11
802.11ac80				
5530	-1.57	0.34	-1.23	11
5610	-2.30	0.34	-1.96	11

Note:

1) Power Spectral Density = Reading + Duty Cycle Factor.

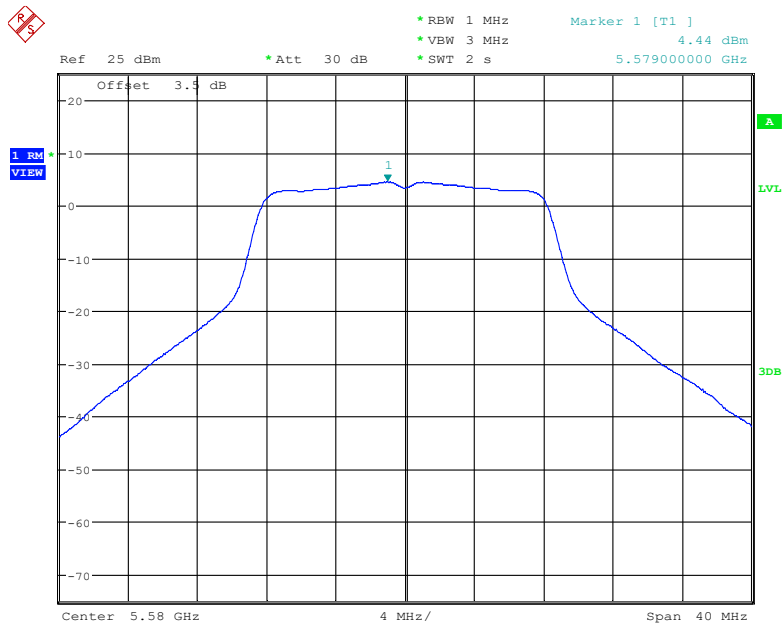
2) Duty Cycle Factor = $10 \log(1 / D)$, D=Duty Cycle

802.11a mode, Power Spectral Density, 5500MHz



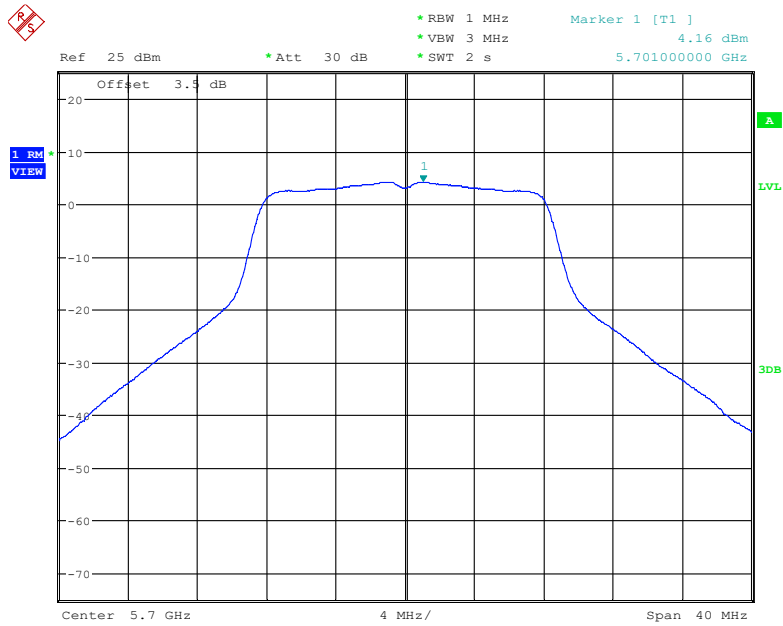
Date: 5.AUG.2022 14:37:35

802.11a mode, Power Spectral Density, 5580MHz



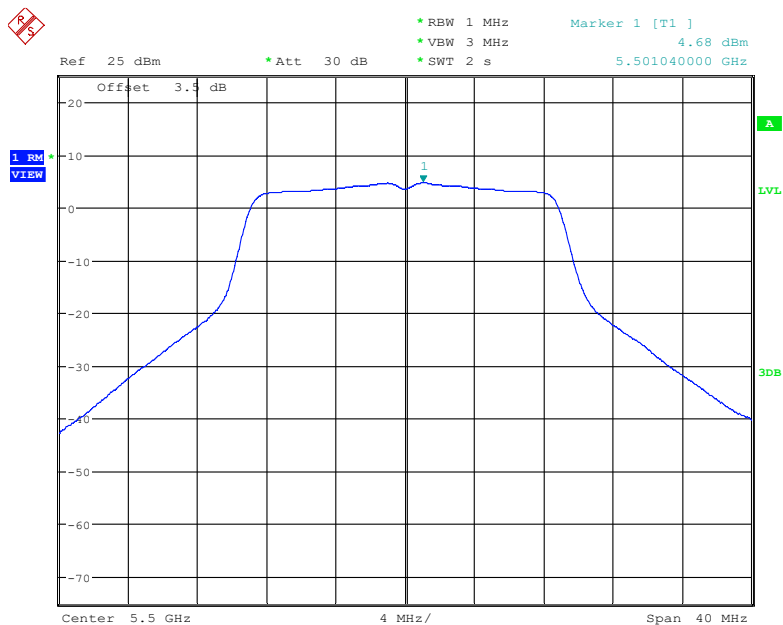
Date: 5.AUG.2022 14:38:59

802.11a mode, Power Spectral Density, 5700MHz



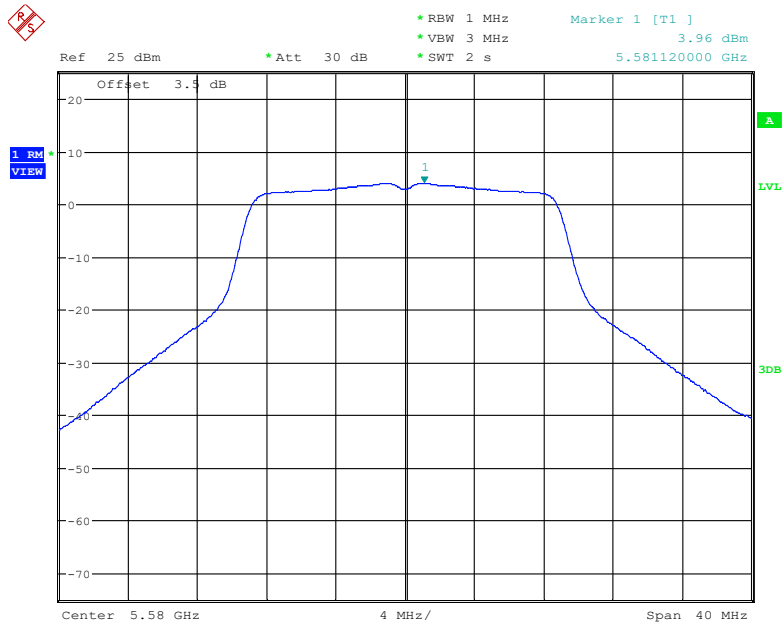
Date: 5.AUG.2022 14:40:22

802.11n20 mode, Power Spectral Density, 5500 MHz



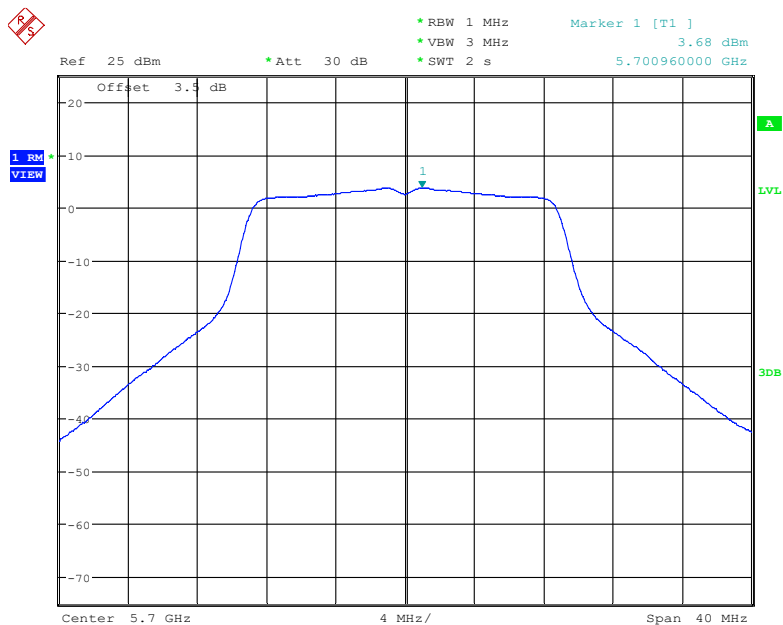
Date: 5.AUG.2022 15:39:15

802.11n20 mode, Power Spectral Density, 5580MHz



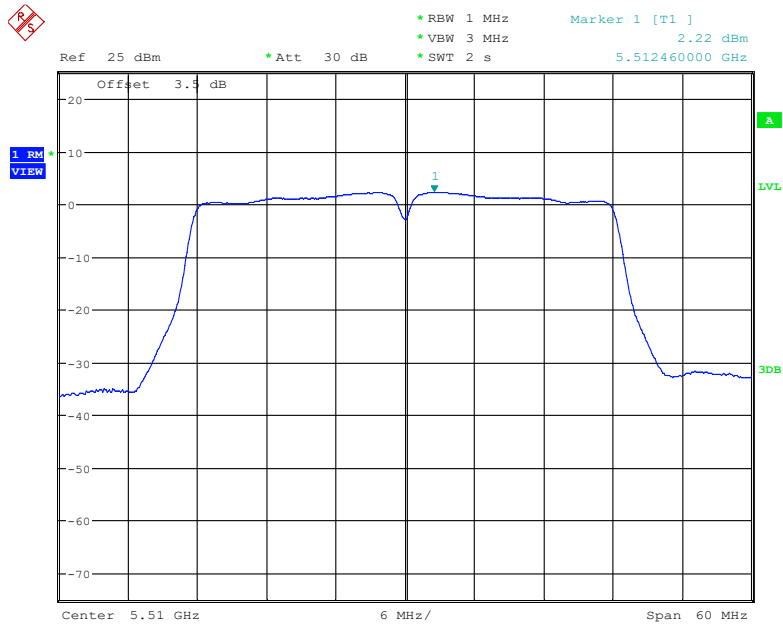
Date: 5.AUG.2022 15:40:42

802.11n20 mode, Power Spectral Density, 5700MHz



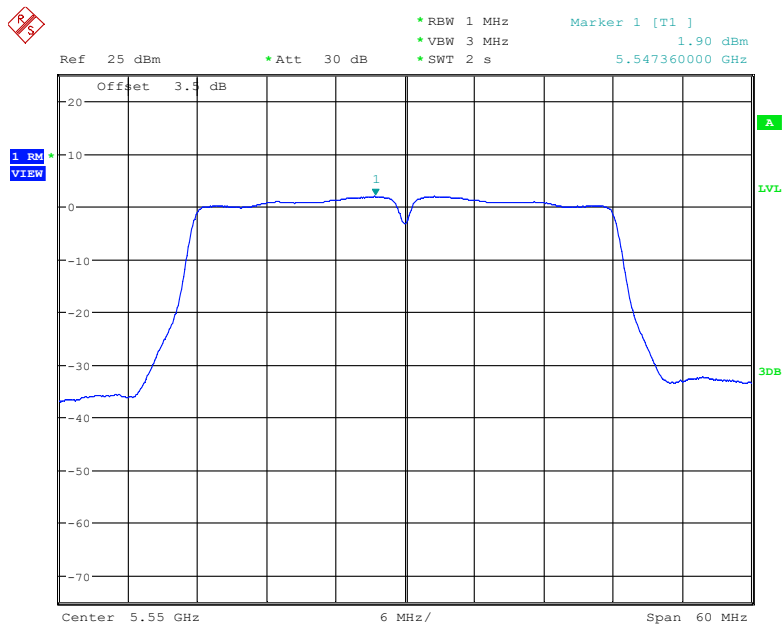
Date: 5.AUG.2022 15:42:09

802.11n40 mode, Power Spectral Density, 5510MHz



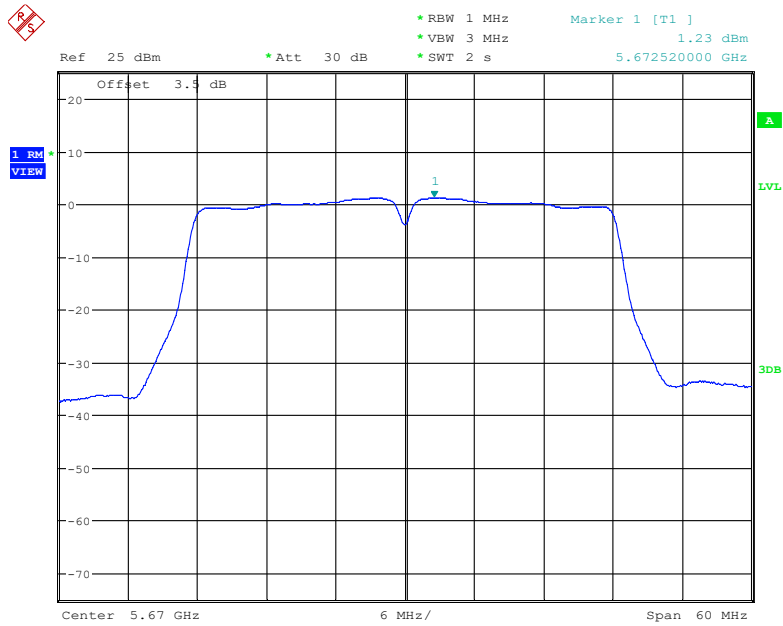
Date: 5.AUG.2022 15:54:19

802.11n40 mode, Power Spectral Density, 5550MHz



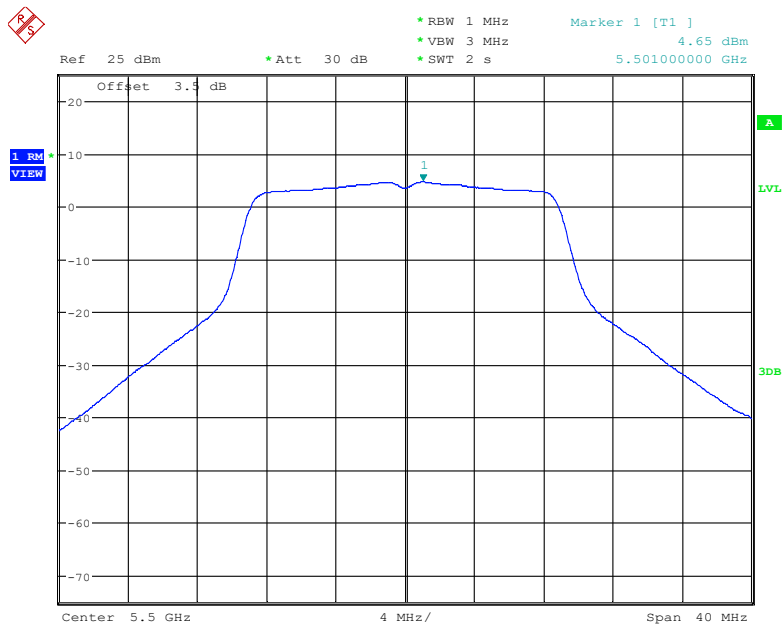
Date: 5.AUG.2022 15:55:46

802.11n40 mode, Power Spectral Density, 5670MHz



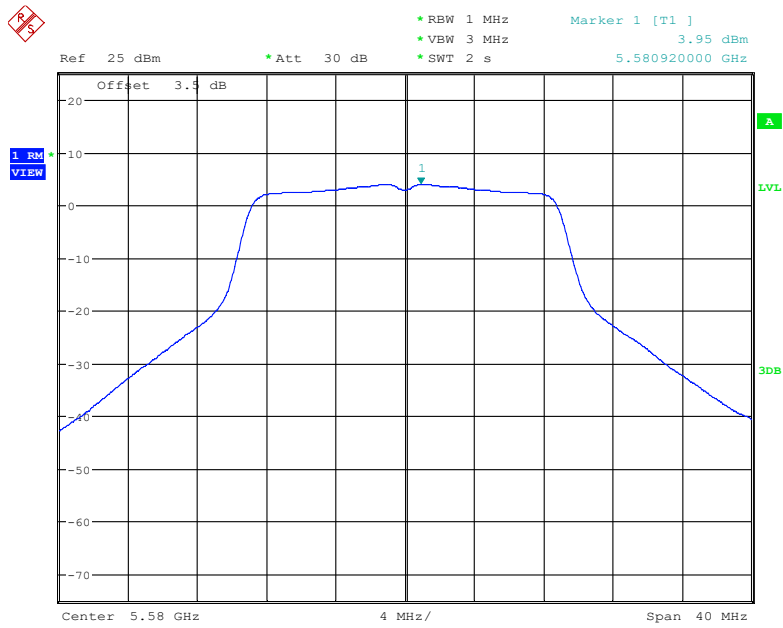
Date: 5.AUG.2022 15:57:11

802.11ac20 mode, Power Spectral Density, 5500 MHz



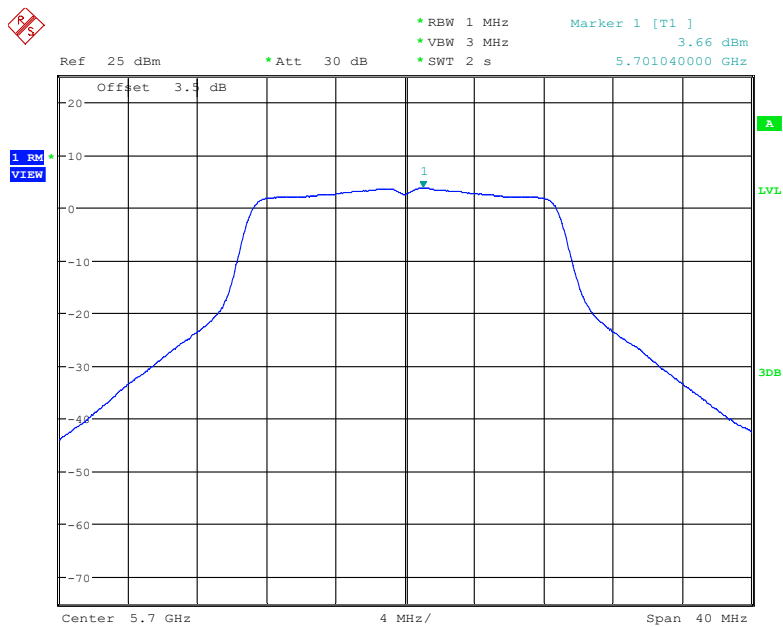
Date: 5.AUG.2022 14:56:51

802.11ac20 mode, Power Spectral Density, 5580MHz



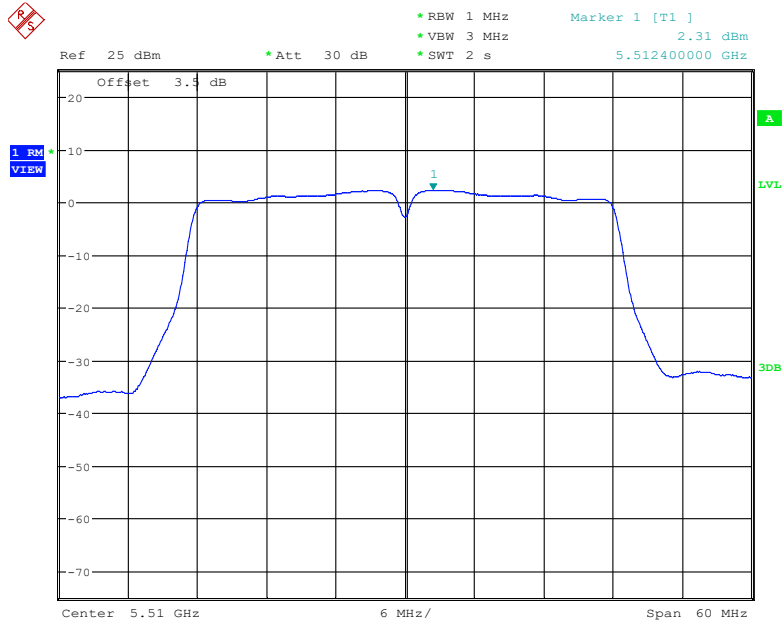
Date: 5.AUG.2022 14:58:15

802.11ac20 mode, Power Spectral Density, 5700MHz



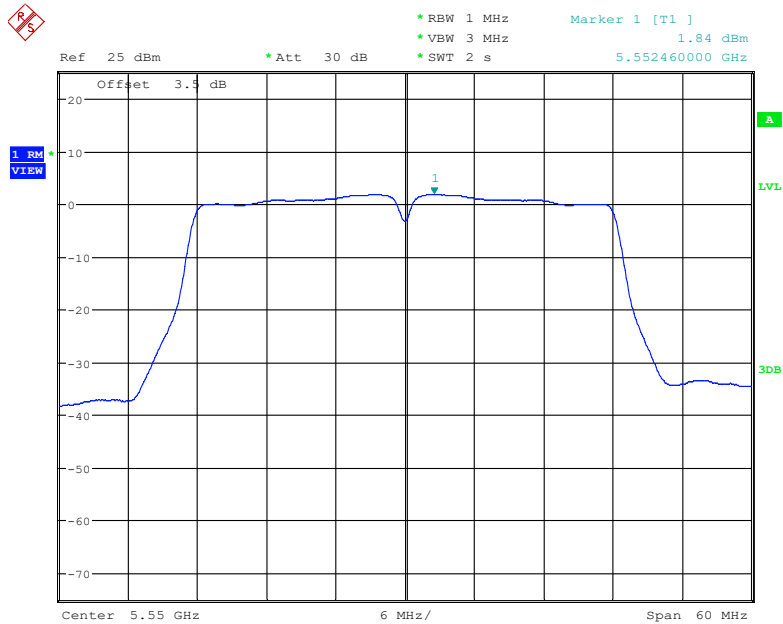
Date: 5.AUG.2022 14:59:58

802.11ac40 mode, Power Spectral Density, 5510MHz



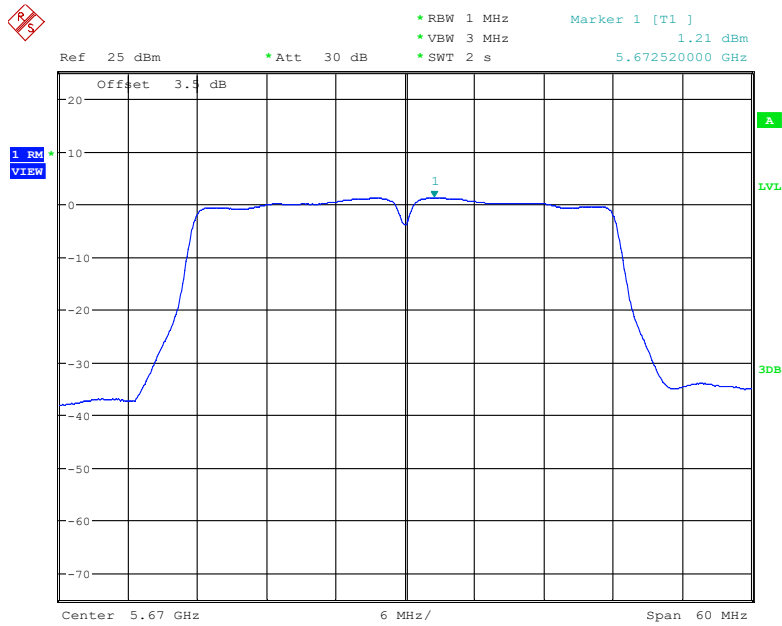
Date: 5.AUG.2022 15:12:58

802.11ac40 mode, Power Spectral Density, 5550 MHz



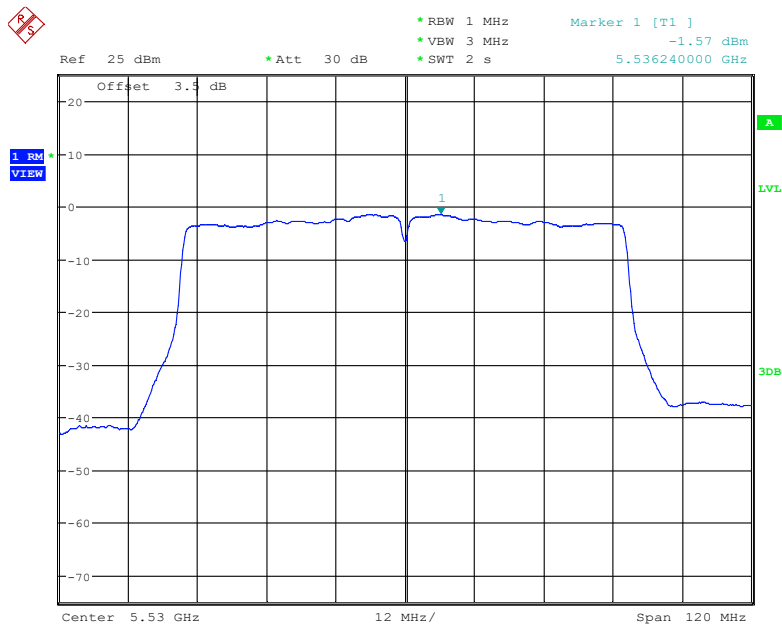
Date: 5.AUG.2022 15:14:20

802.11ac40 mode, Power Spectral Density, 5670MHz



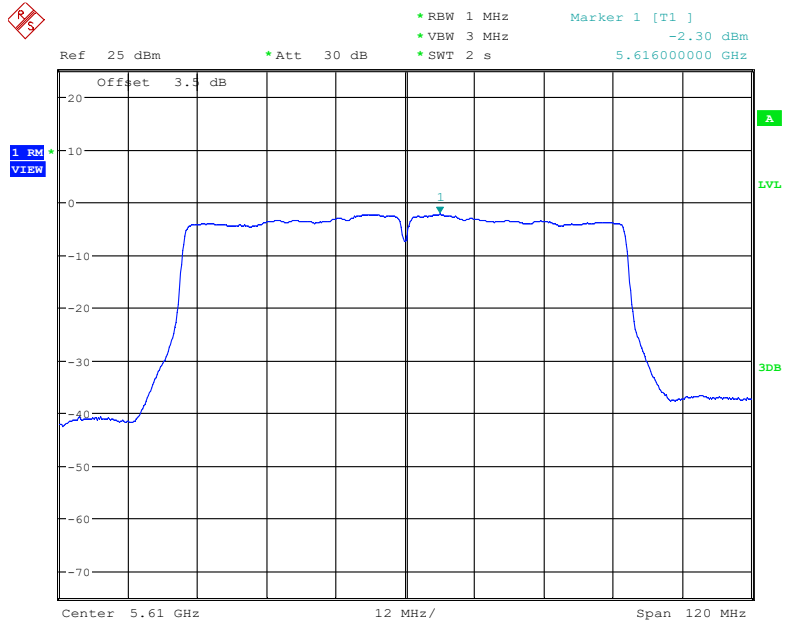
Date: 5.AUG.2022 15:15:46

802.11ac80 mode, Power Spectral Density, 5530 MHz



Date: 5.AUG.2022 15:23:46

802.11ac80 mode, Power Spectral Density, 5610MHz



Date: 5.AUG.2022 15:25:10

5725 MHz – 5850MHz:

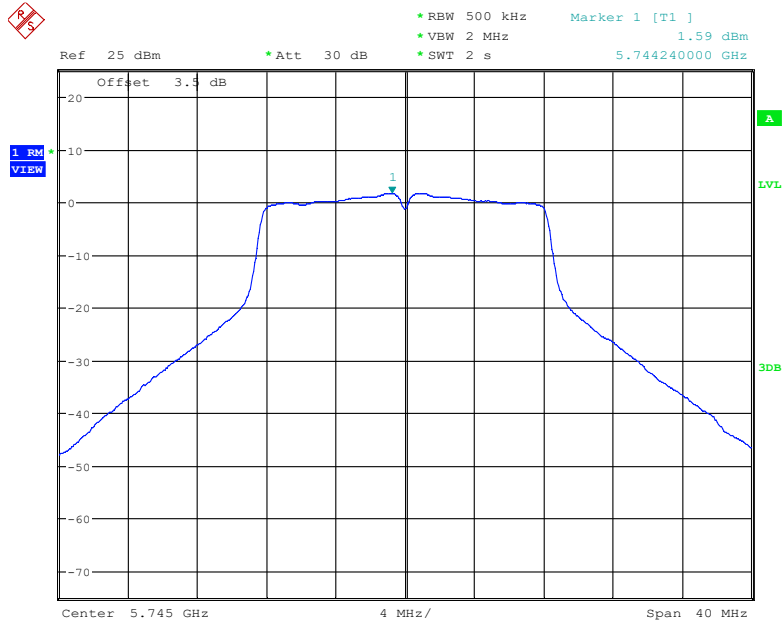
Frequency (MHz)	Reading (dBm/500kHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
802.11a				
5745	1.59	0.08	1.67	30
5785	2.12	0.08	2.20	30
5825	1.93	0.08	2.01	30
802.11n20				
5745	1.13	0.08	1.21	30
5785	1.79	0.08	1.87	30
5825	1.46	0.08	1.54	30
802.11n40				
5755	-1.16	0.17	-0.99	30
5795	-0.78	0.17	-0.61	30
802.11ac20				
5745	1.17	0.09	1.26	30
5785	1.66	0.09	1.75	30
5825	1.45	0.09	1.54	30
802.11ac40				
5755	-1.24	0.17	-1.07	30
5795	-0.9	0.17	-0.73	30
802.11ac80				
5775	-4.59	0.35	-4.24	30

Note:

1) Power Spectral Density = Reading + Duty Cycle Factor.

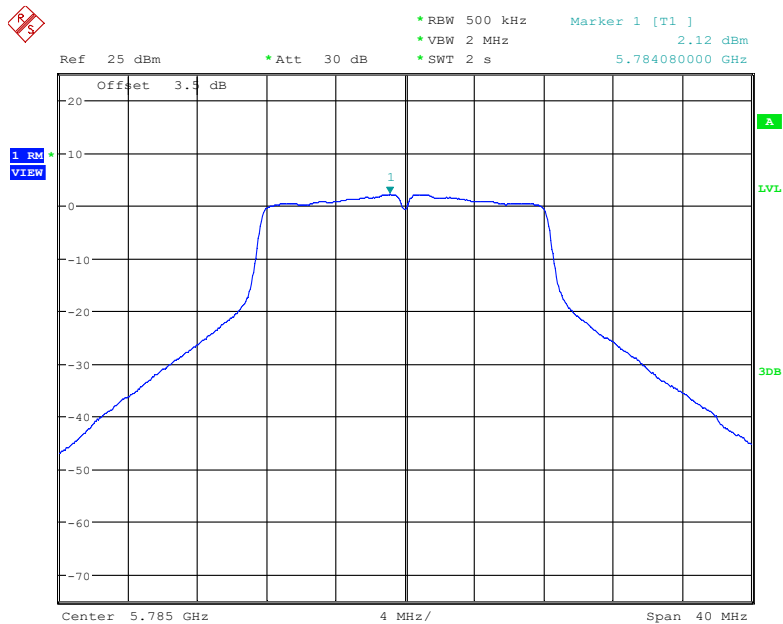
2) Duty Cycle Factor = $10 \log(1/D)$, D=Duty Cycle

802.11a mode, Power Spectral Density, 5745MHz



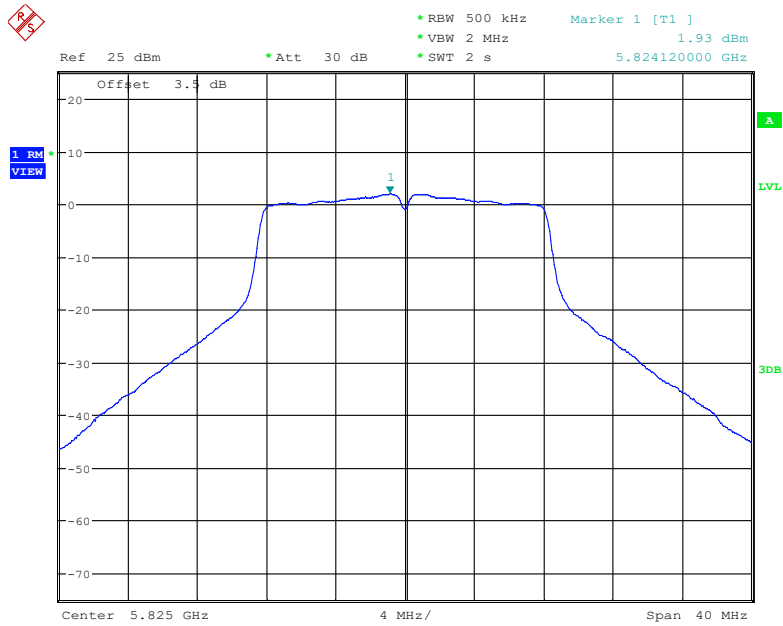
Date: 5.AUG.2022 14:42:36

802.11a mode, Power Spectral Density, 5785MHz



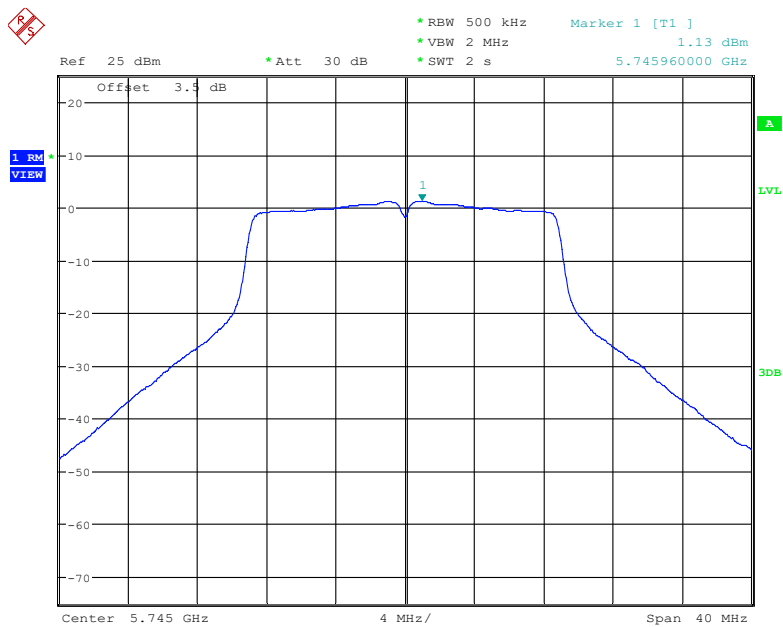
Date: 5.AUG.2022 14:44:06

802.11a mode, Power Spectral Density, 5825MHz



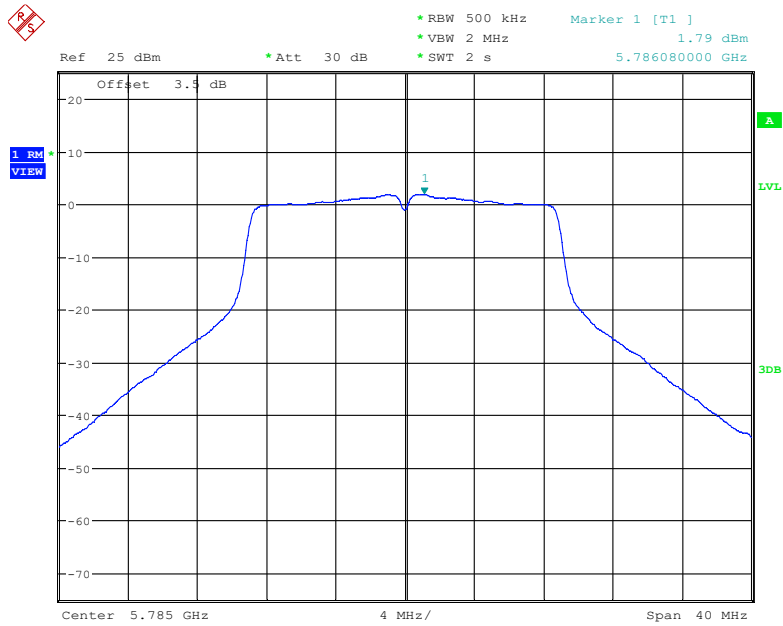
Date: 5.AUG.2022 14:45:29

802.11n20 mode, Power Spectral Density, 5745MHz



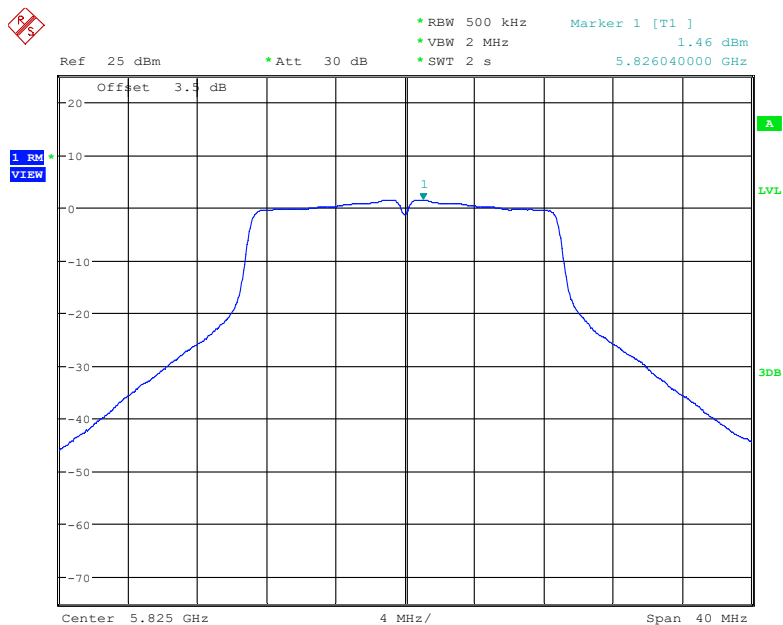
Date: 5.AUG.2022 15:43:34

802.11n20 mode, Power Spectral Density, 5785MHz



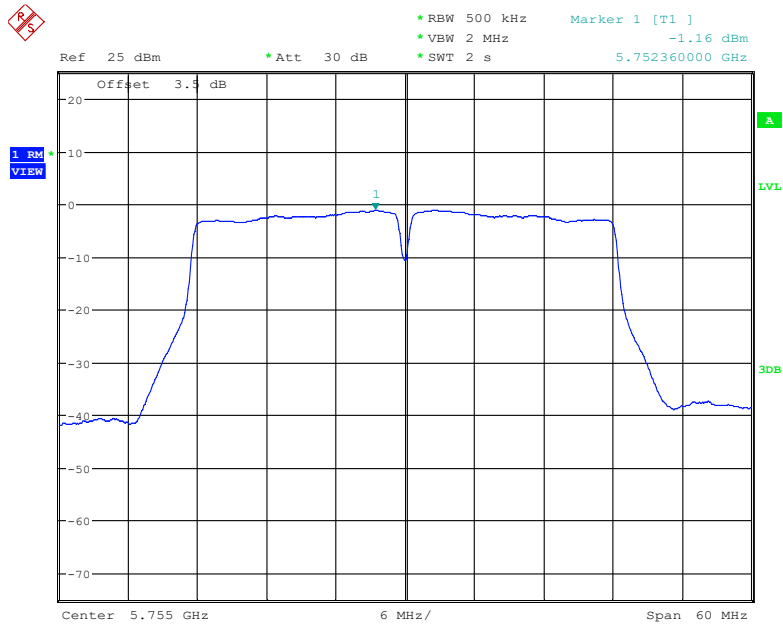
Date: 5.AUG.2022 15:44:58

802.11n20 mode, Power Spectral Density, 5825MHz



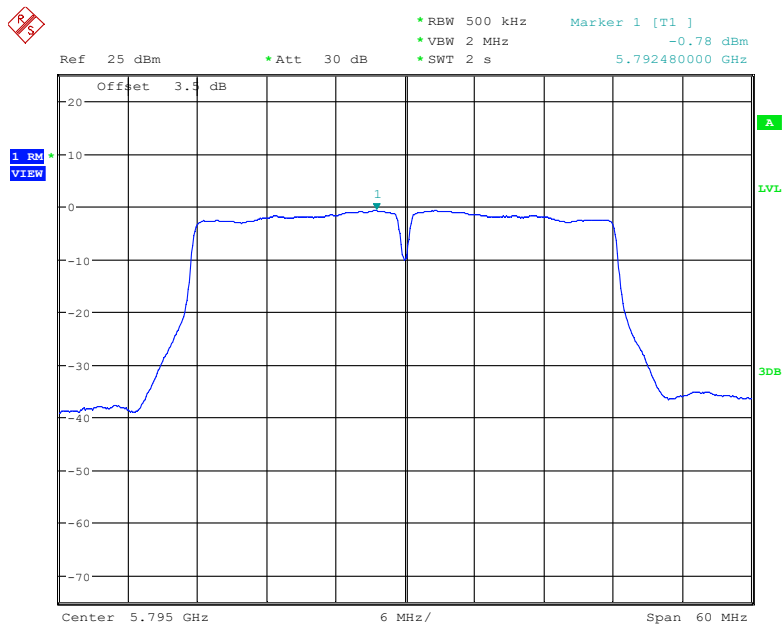
Date: 5.AUG.2022 15:46:28

802.11n40 mode, Power Spectral Density, 5755MHz



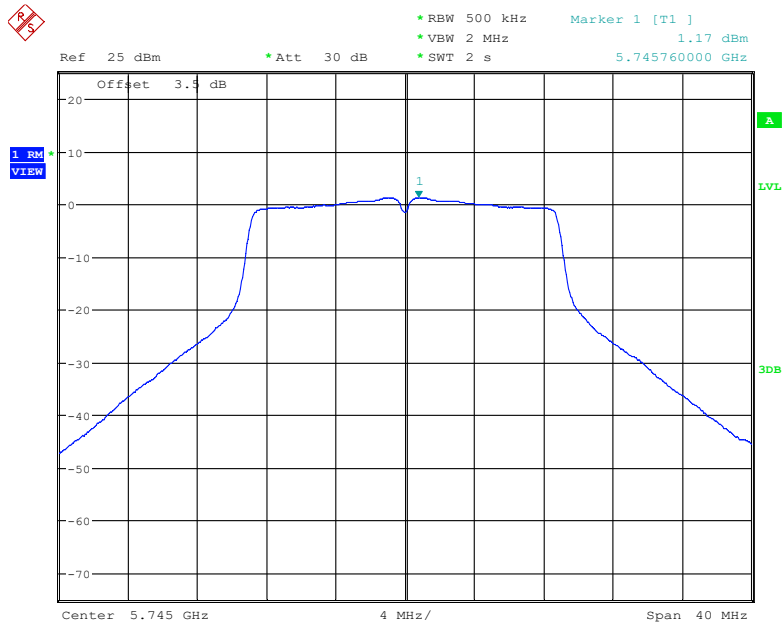
Date: 5.AUG.2022 15:59:03

802.11n40 mode, Power Spectral Density, 5795MHz



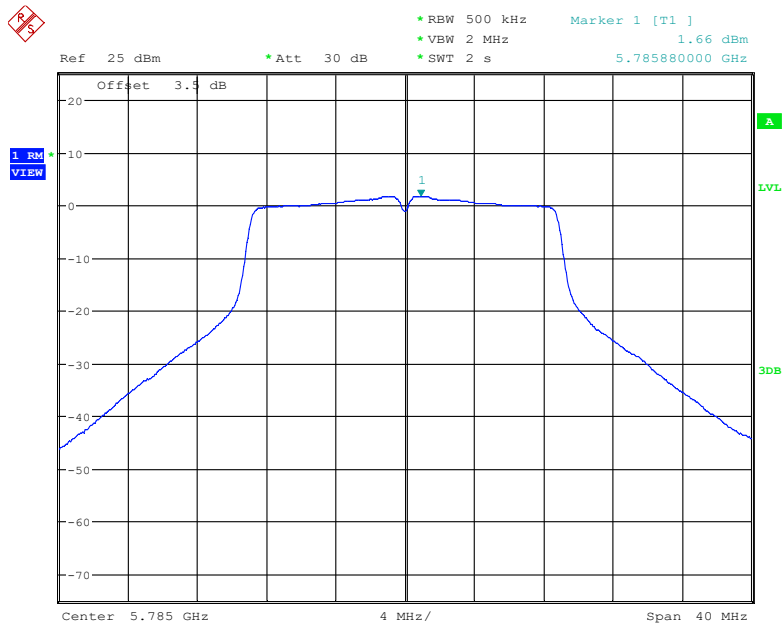
Date: 5.AUG.2022 16:00:27

802.11ac20 mode, Power Spectral Density, 5745 MHz



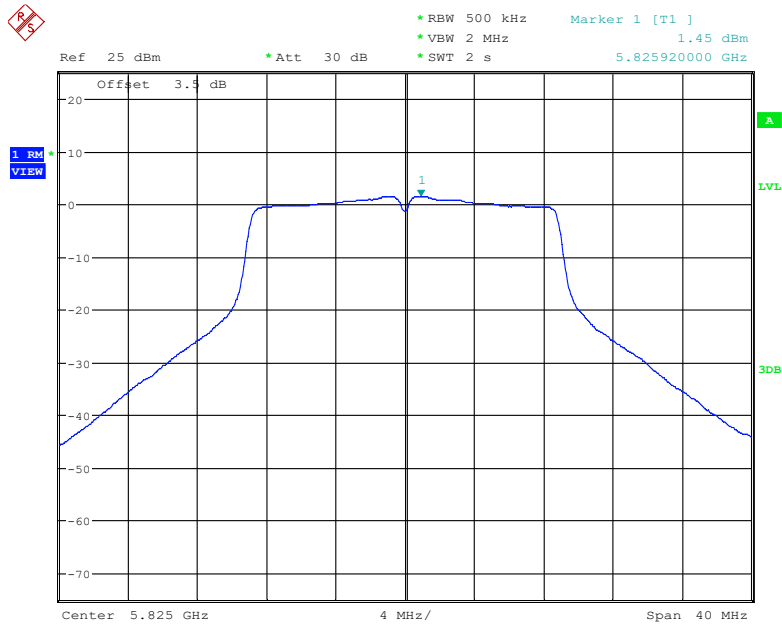
Date: 5.AUG.2022 15:01:24

802.11ac20 mode, Power Spectral Density, 5785MHz



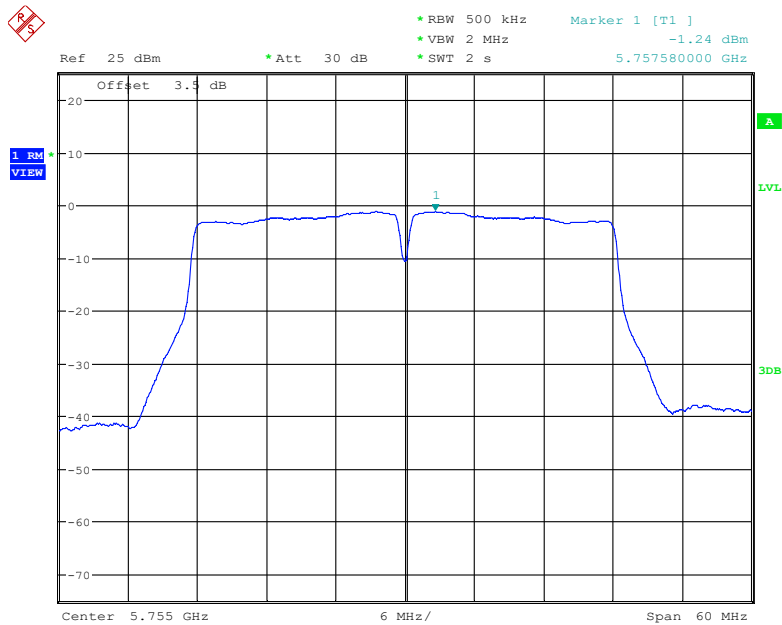
Date: 5.AUG.2022 15:03:49

802.11ac20 mode, Power Spectral Density, 5825MHz



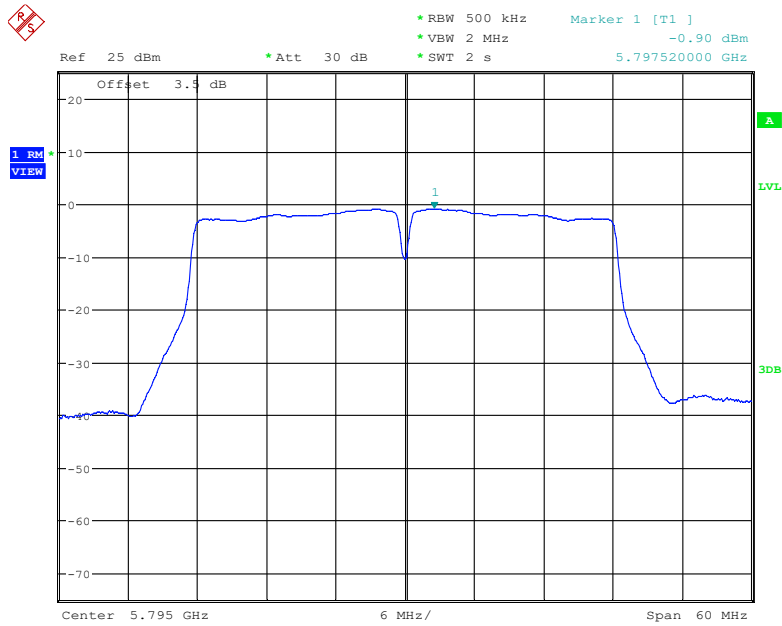
Date: 5.AUG.2022 15:05:14

802.11ac40 mode, Power Spectral Density, 5755MHz



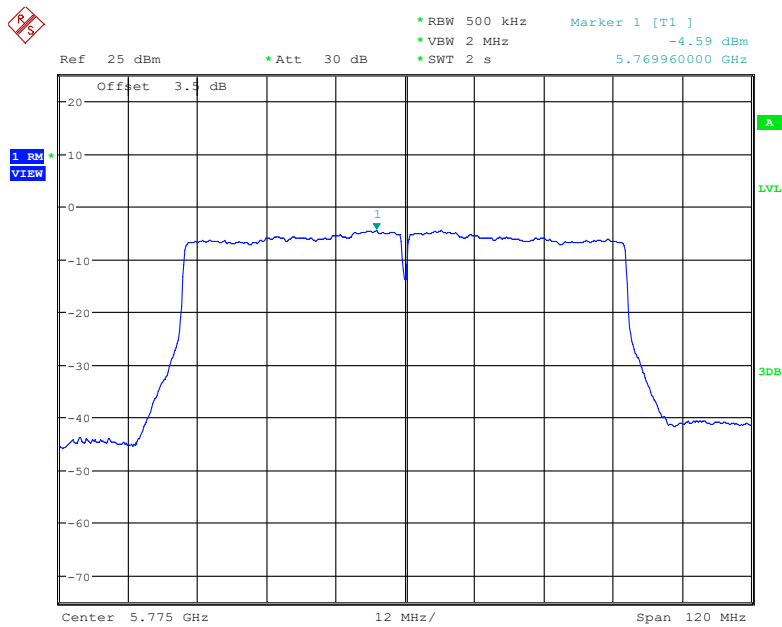
Date: 5.AUG.2022 15:17:09

802.11ac40 mode, Power Spectral Density, 5795MHz



Date: 5.AUG.2022 15:18:31

802.11ac80 mode, Power Spectral Density, 5775 MHz



Date: 5.AUG.2022 15:26:42

***** END OF REPORT *****