



FCC PART 15.407

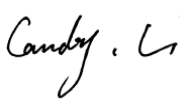
TEST REPORT

For

Shenzhen Huafurui Technology Co., Ltd

Unit 1401 14/F, Jin qi zhi gu mansion Liu xian street, Xili, Nan shan district, Shenzhen, China

FCC ID: 2AHZ5SW10

Report Type: Original Report	Product Type: Projector
Report Number: SZ1210918-48944E-00C	
Report Date: 2021-11-02	
Reviewed By: RF Engineer	Candy Li 
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Projector
Trademark	SUREWHEEL
Tested Model	SW10
Frequency Range	5G Wi-Fi: 5150-5250 MHz
Maximum Average Conducted Output Power	5G Wi-Fi: 5150-5250 MHz 18.01dBm (802.11a), 18.09dBm(802.11n20), 17.44dBm(802.11n40) 17.64dBm (802.11ac20), 16.99dBm (802.11ac40), 16.42dBm (802.11ac80)
Modulation Technique	OFDM
Antenna Specification*	Internal Antenna 0&1: -0.99dBi(provided by the applicant)
Voltage Range	AC 100-240V, 50-60Hz
Date of Test	2021-10-11 to 2021-10-31
Sample serial number	SZ1210918-48944E-RF-S1 (Assigned by ATC)
Received date	2021-09-18
Sample/EUT Status	Good condition

Objective

This type approval 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 KDB789033D02 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.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	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-2.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The device only supports 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes, which was declared 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, 802.11n20, 802.11ac20 channel 36, 40, 48 were tested;

For 802.11n40/ac40 channel 38, 46 were tested.

For 802.11ac80 channel 42 was tested

EUT Exercise Software

“REALTEK”* software was used to test and power level as below:

Ant0:

Frequency Range (MHz)	Mode	Data rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150-5250	802.11a	6Mbps	65	65	65
	802.11n20	MCS0	65	65	65
	802.11n40	MCS0	65	65	65
	802.11 ac20	MCS0	65	65	65
	802.11 ac40	MCS0	65	65	65
	802.11 ac80	MCS0	65	65	65

Ant1:

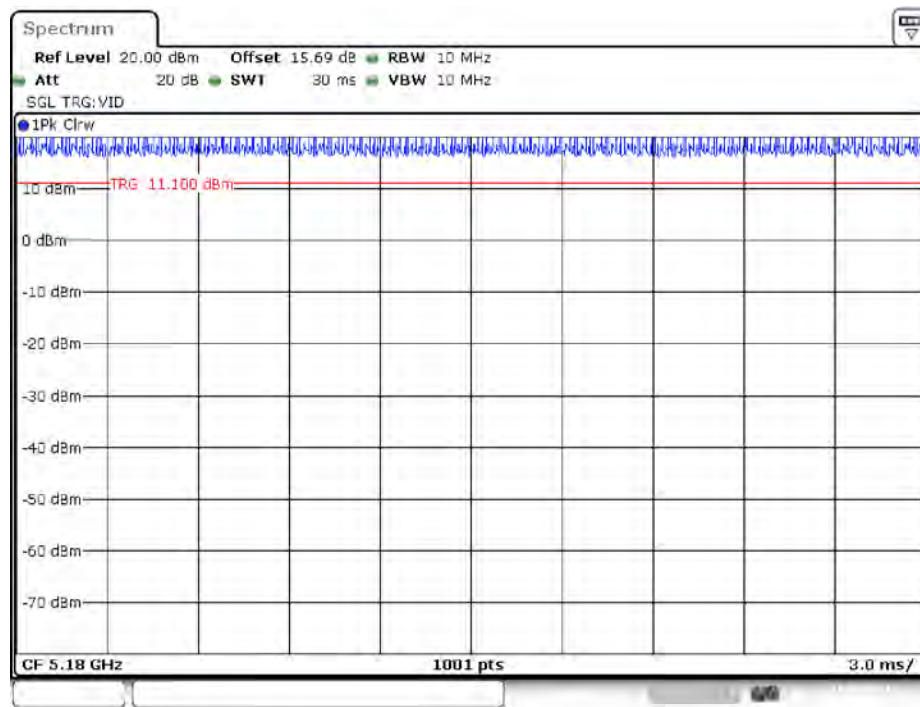
Frequency Range (MHz)	Mode	Data rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150-5250	802.11a	6Mbps	60	60	60
	802.11n20	MCS0	60	60	60
	802.11n40	MCS0	60	60	60
	802.11 ac20	MCS0	60	60	60
	802.11 ac40	MCS0	60	60	60
	802.11 ac80	MCS0	60	60	60

The worst-case data rates are determined to be as above for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths and modulations. The device supports SISO and MIMO 2T2R in all modes. Per pretest, 2TX mode was the worst mode and recorded in this report.

Duty cycle

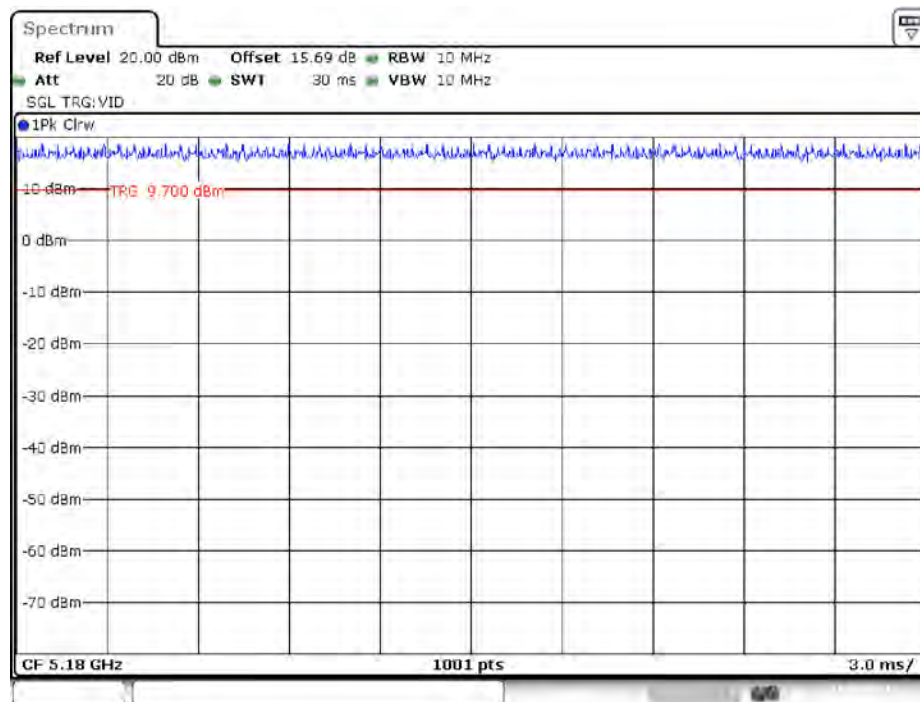
Mode	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	10*log(1/duty cycle) (dB)
802.11a	30.00	30.00	100	0
802.11n20	30.00	30.00	100	0
802.11n40	30.00	30.00	100	0
802.11ac20	30.00	30.00	100	0
802.11ac40	30.00	30.00	100	0
802.11ac80	30.00	30.00	100	0

802.11a mode

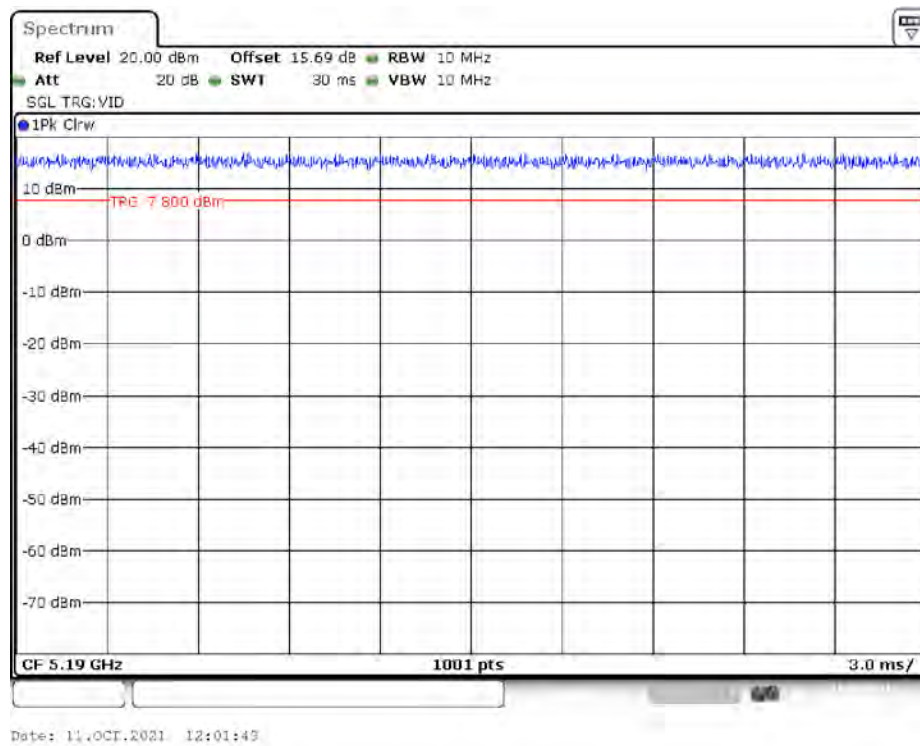
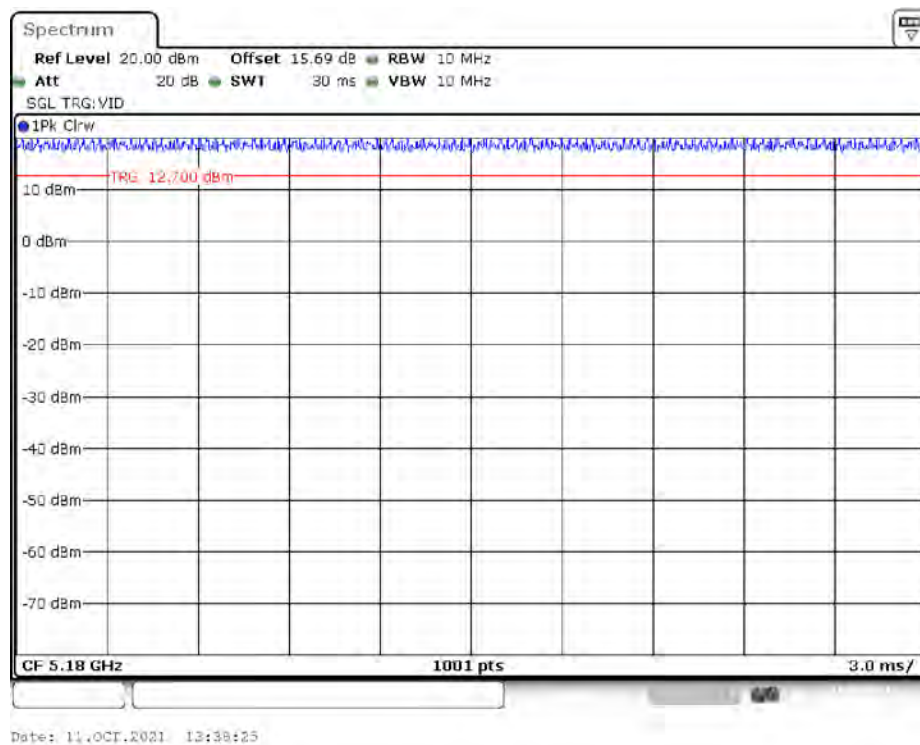


Date: 11.OCT.2021 11:44:45

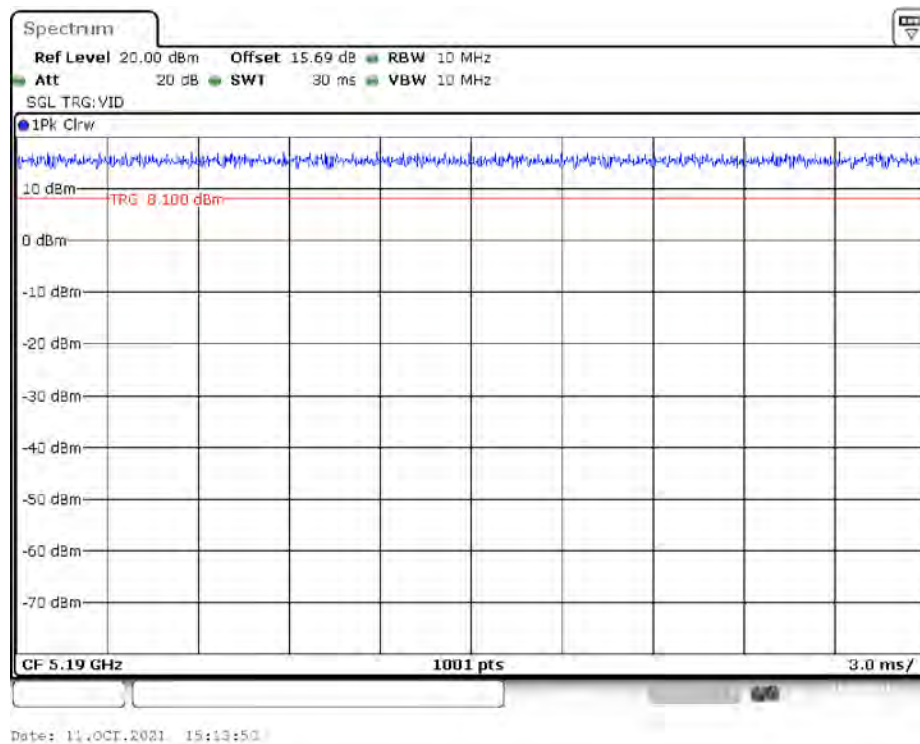
802.11n20 mode



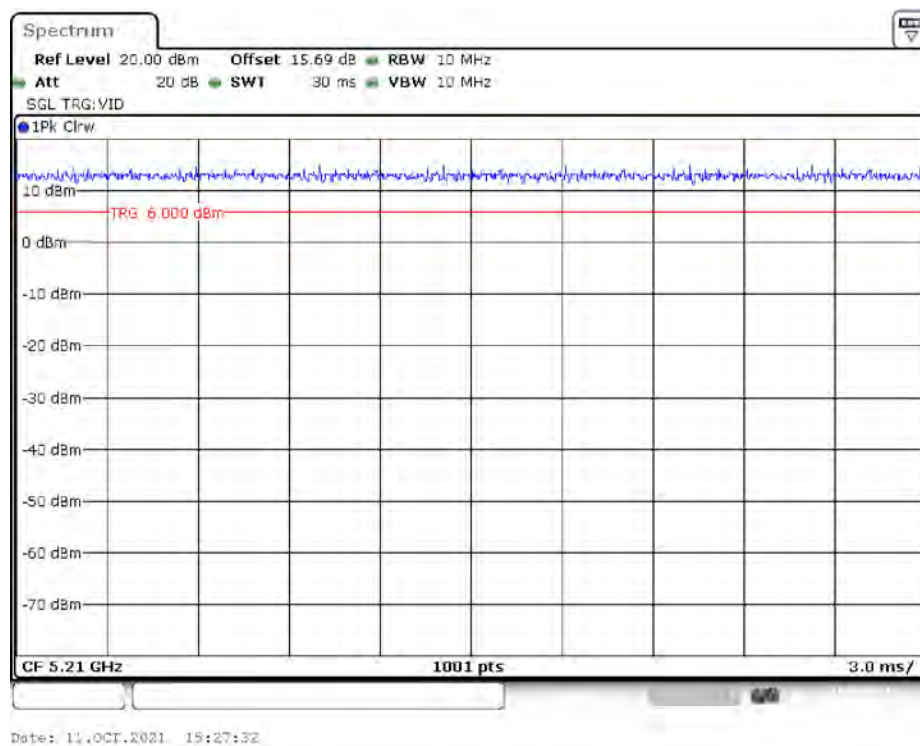
Date: 11.OCT.2021 11:53:52

802.11n40 mode**802.11ac20 Mode**

802.11ac40 Mode



802.11ac80 Mode



Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

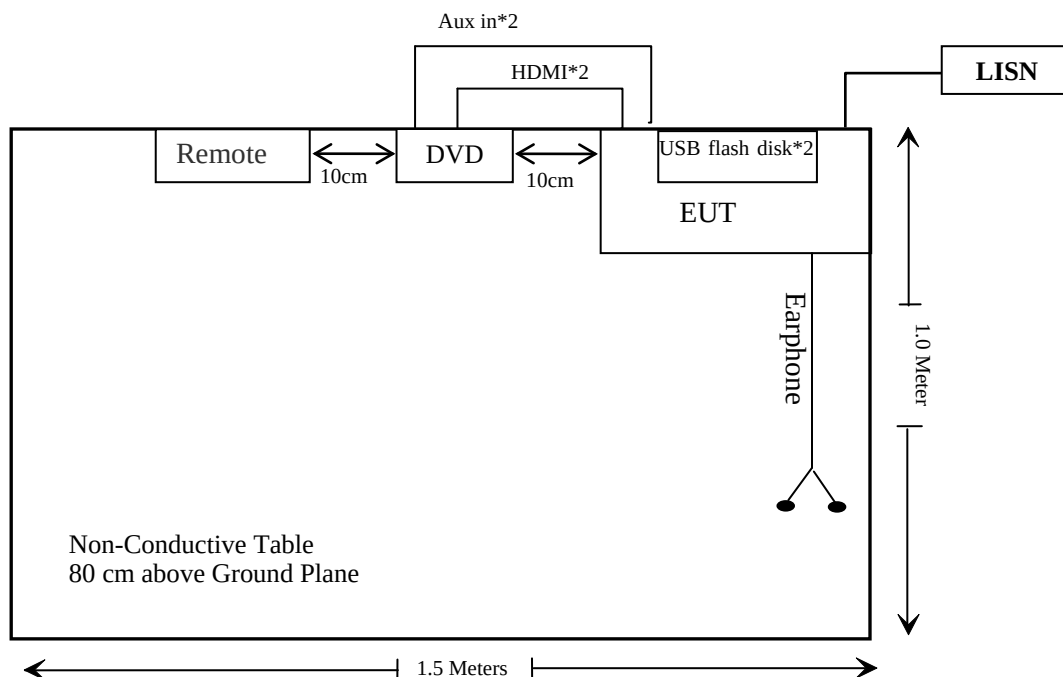
Manufacturer	Description	Model	Serial Number
GIEC	DVD	BDP-G4308	Unknown
HUAWEI	Earphone	Unknown	Unknown
Unknown	USB flash disk*2	Unknown	Unknown

External I/O Cable

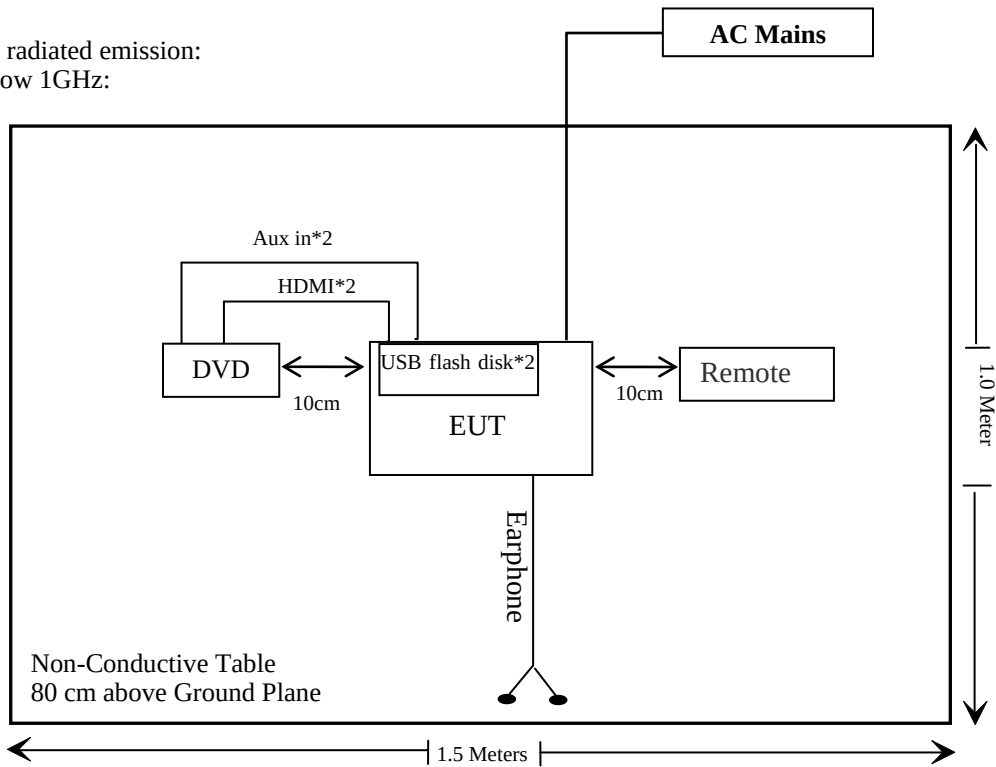
Cable Description	Length (m)	From/Port	To
Un-Shielding Detachable AC power Cable	1.5	EUT	LISN
Un-Shielding Detachable AUX IN Cable 1	0.2	EUT	AUX IN Cable 2
Un-Shielding Detachable AUX IN Cable 2	1.0	AUX IN Cable 1	DVD
Un-Shielding Detachable Earphone Cable	0.75	EUT	Earphone
Un-Shielding Detachable HDMI Cable*2	1.45	EUT	DVD

Block Diagram of Test Setup

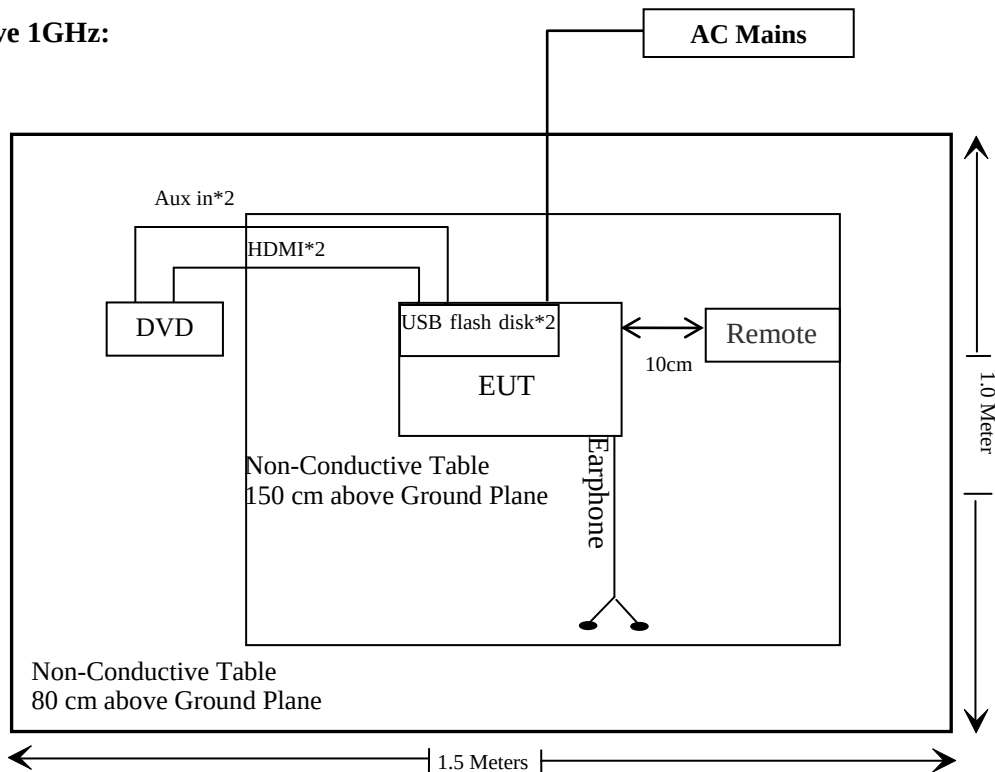
For conducted emission:



For radiated emission:
Below 1GHz:



Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(8) & §15.207(a)	Conducted Emissions	Compliant
§15.205 & §15.209 & §15.407(b) (1), (4), (7), (8), (9), (10)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (12), (e)	Bandwidth	Compliant
§15.407(a) (1), (3)	Conducted Transmitter Output Power	Compliant
§15.407 (a) (1), (3)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	Test Receiver	ESPI3	100396	2020/12/24	2021/12/23
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50Ω Coaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Conducted Emission Test Software: e3 19821b(V9)					
Radiated Emissions Test					
Rohde&Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/07/08	2022/07/07
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.15/5.3 5g-45	075	2020/12/25	2021/12/24
CD	High Pass Filter	WHNX6.0/26. 5G-6SS	4	2020/12/25	2021/12/24
Radiated Emission Test Software: EZ EMC V 1.1.4.2 & e3 19821b(V9)					
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
Rohde & Schwarz	Open Switch and Control Unit	OSP120 +OSP -B157	101244 + 100866	2020/12/24	2021/12/23
OREGON SCIENTIFIC	Temperature & Humidity Meter	JB913R	GZ-WS004	2020/01/02	2023/01/01

*** 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 §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

For worst case:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
5G Wi-Fi	5150-5250	-0.99	0.8	18.5	70.79	20	0.011	1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

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 two internal antennas used arrangement for Wi-Fi, which was permanently attached and the antenna gain is -0.99dBi, fulfill the requirement of this section. Please refer to the EUT photos.

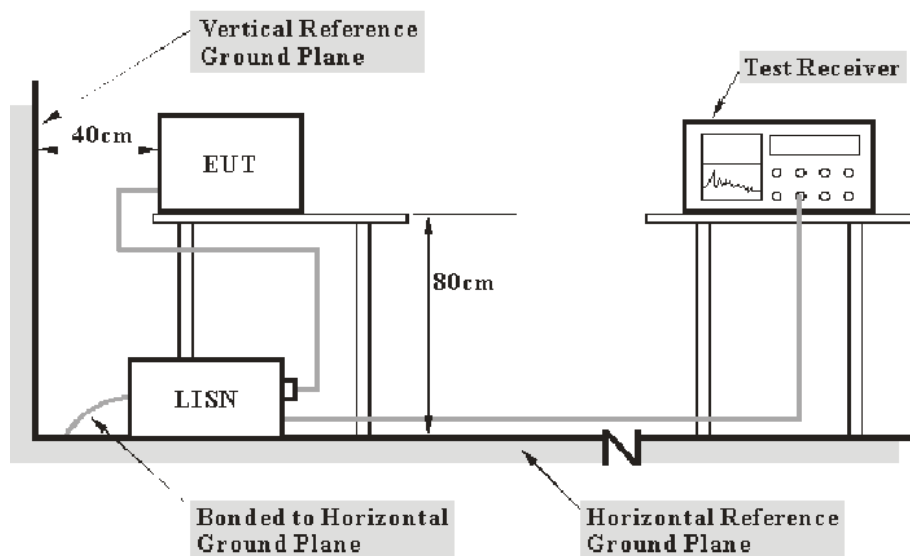
Result: Compliant.

FCC §15.407 (B) (8) §15.207 (A) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (8)

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 device 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.

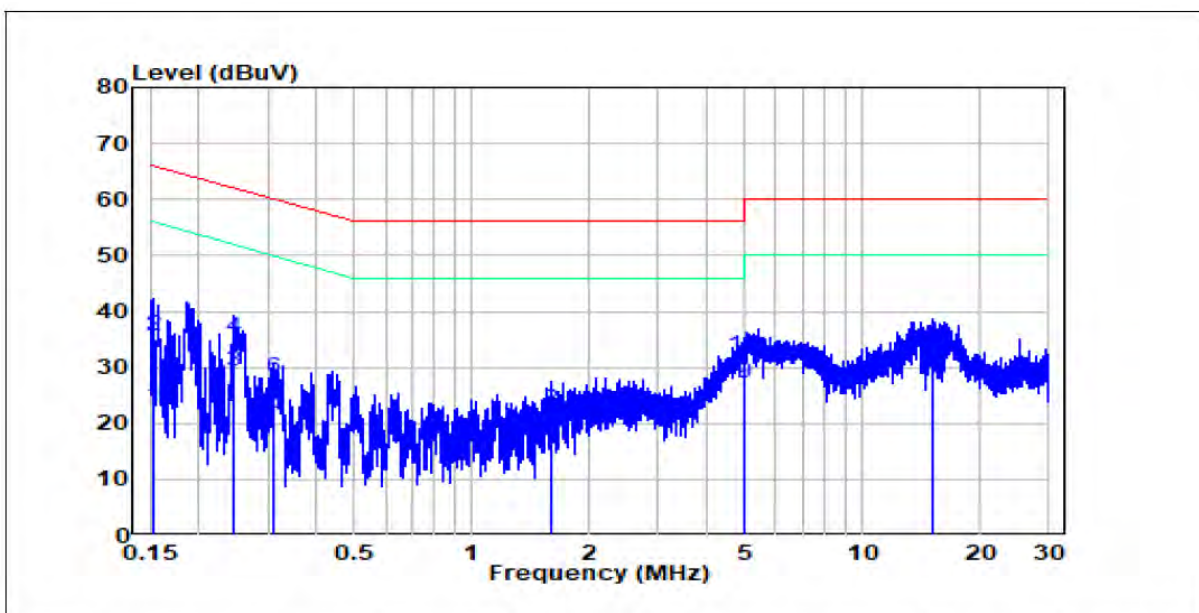
Test Data**Environmental Conditions**

Temperature:	23 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

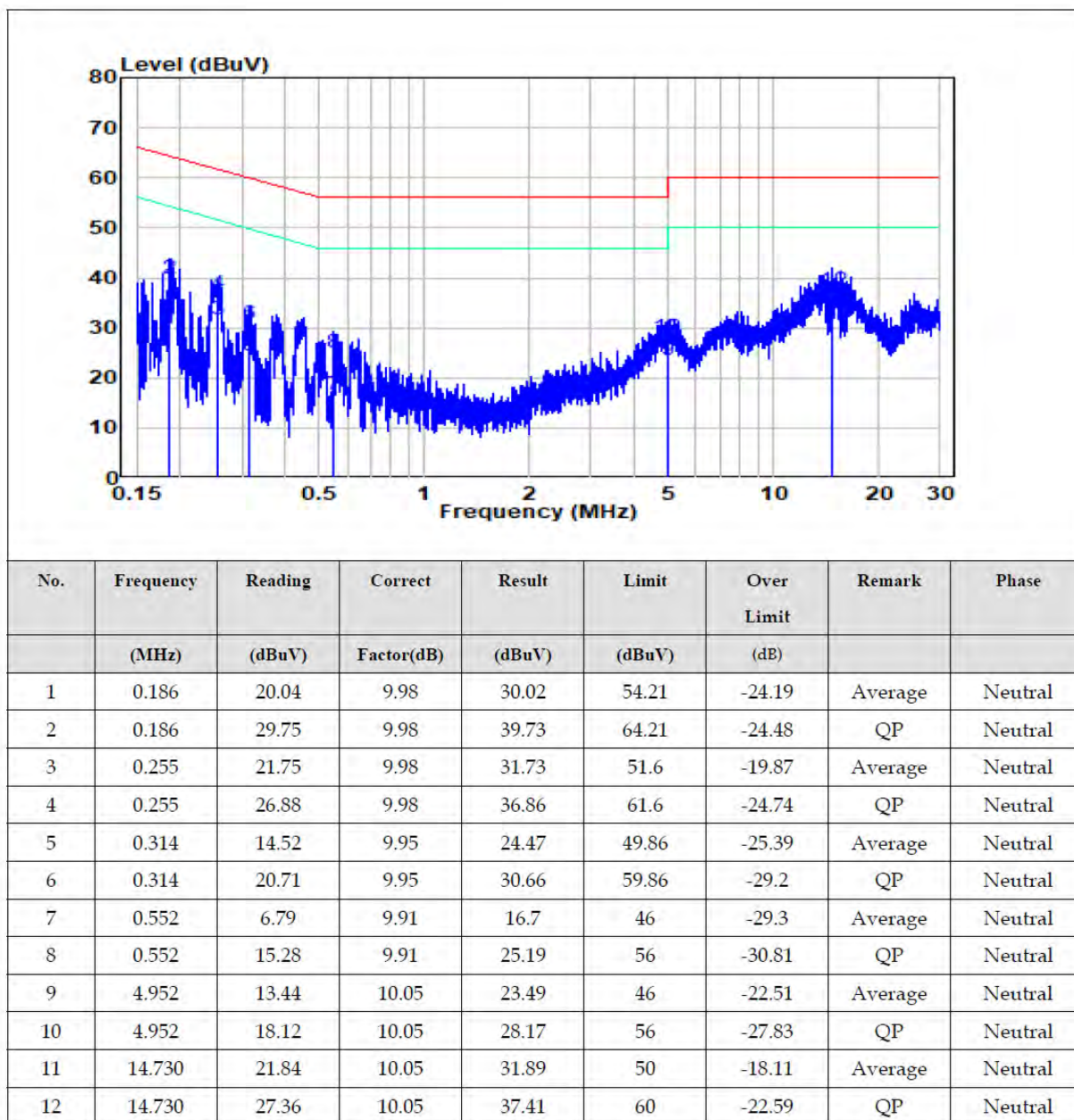
The testing was performed by Fan Yang on 2021-10-29

EUT operation mode: 802.11a Middle Channel (Worst case)

AC 120V/60 Hz, Line



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)		
1	0.152	13.06	9.90	22.96	55.89	-32.93	Average	Line
2	0.152	25.74	9.90	35.64	65.89	-30.25	QP	Line
3	0.246	19.57	9.80	29.37	51.89	-22.52	Average	Line
4	0.246	25.41	9.80	35.21	61.89	-26.68	QP	Line
5	0.310	11.95	9.80	21.75	49.97	-28.22	Average	Line
6	0.310	18.22	9.80	28.02	59.97	-31.95	QP	Line
7	1.592	4.71	9.88	14.59	46	-31.41	Average	Line
8	1.592	12.57	9.88	22.45	56	-33.55	QP	Line
9	4.952	17.08	9.99	27.07	46	-18.93	Average	Line
10	4.952	21.99	9.99	31.98	56	-24.02	QP	Line
11	15.126	17.82	10.05	27.87	50	-22.13	Average	Line
12	15.126	23.23	10.05	33.28	60	-26.72	QP	Line

AC 120V/60 Hz, Neutral

§15.205 & §15.209 & §15.407(B) (1), (4), (7), (8) , (9), (10) – UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b) (1), (4), (7), (8), (9), (10); §15.209; §15.205;

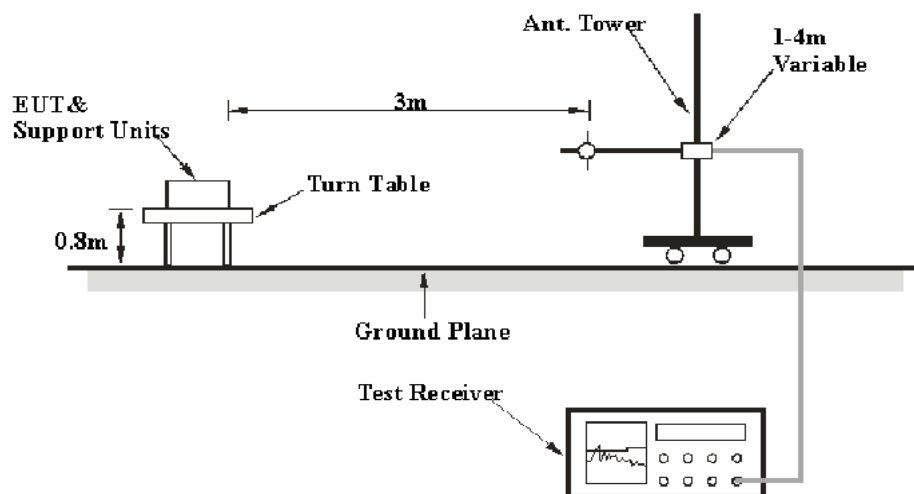
(b) Undesirable emission limits. Except as shown in paragraph (b) (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

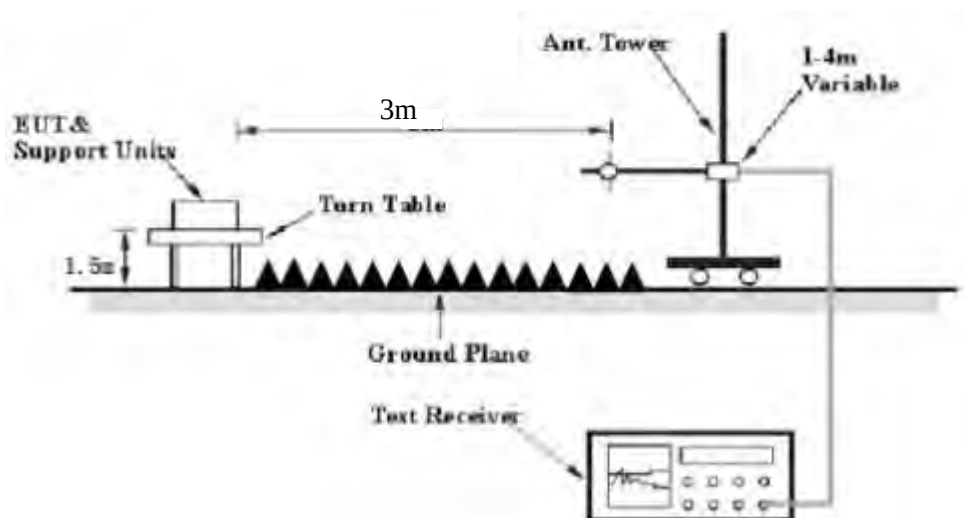
- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
- (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above 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.

EMI Test Receiver & Spectrum Analyzer Setup

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**

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

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 $20 \cdot \lg(1/3) = -9.5$ dB

Factor & Margin Calculation

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

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

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

$$\begin{aligned} \text{Margin} &= \text{Result} / \text{Corrected Amplitude} - \text{Limit} \\ \text{Result} / \text{Corrected Amplitude} &= \text{Reading} + \text{Factor} \end{aligned}$$

Test Data

Environmental Conditions

Temperature:	23-25 °C
Relative Humidity:	48-52 %
ATM Pressure:	101.0 kPa

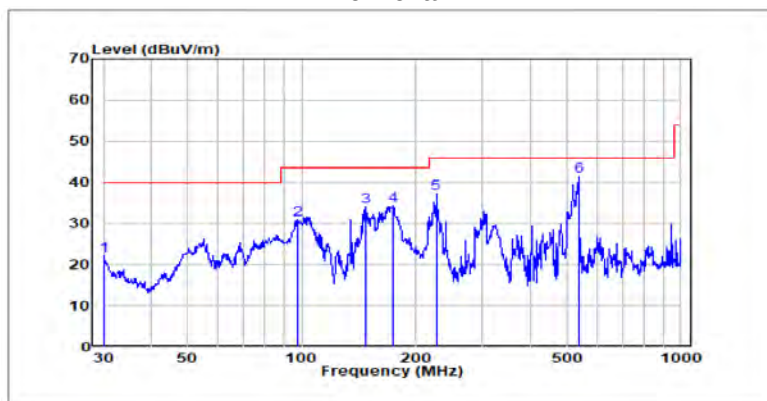
The testing was performed by Fan Yang on 2021-10-31 for below 1GHz and 2021-10-13 for above 1GHz.

EUT operation mode: Transmitting

30 MHz~1 GHz:

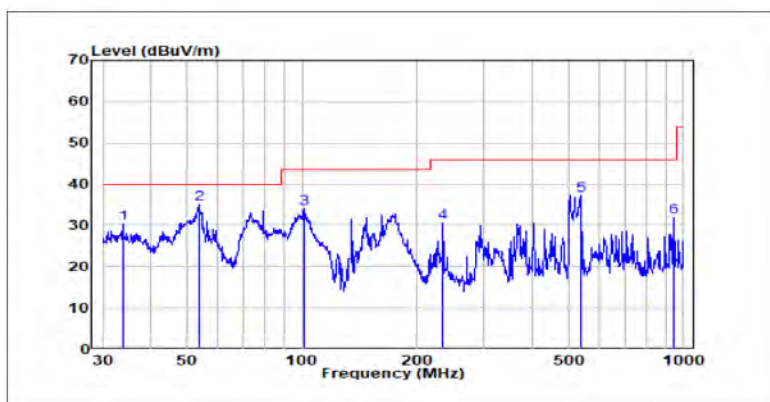
802.11a Middle Channel (Worst case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Over	Detector	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	30.000	42.71	-20.55	22.16	40.00	-17.84	QP	HORIZONTAL
2	97.798	50.52	-19.62	30.9	43.5	-12.6	QP	HORIZONTAL
3	146.888	55.88	-21.7	34.18	43.5	-9.32	QP	HORIZONTAL
4	174.424	55.52	-21.15	34.37	43.5	-9.13	QP	HORIZONTAL
5	226.099	56.09	-18.93	37.16	46.00	-8.84	QP	HORIZONTAL
6	537.589	54.73	-13.15	41.58	46.00	-4.42	QP	HORIZONTAL

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Over	Detector	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	33.799	50.08	-19.71	30.37	40.00	-9.63	QP	VERTICAL
2	53.505	53.18	-18.04	35.14	40.00	-4.86	QP	VERTICAL
3	101.644	53.36	-19.17	34.19	43.50	-9.31	QP	VERTICAL
4	234.168	49.48	-18.79	30.69	46.00	-15.31	QP	VERTICAL
5	537.589	50.50	-13.15	37.35	46.00	-8.65	QP	VERTICAL
6	945.440	40.02	-8.01	32.01	46.00	-13.99	QP	VERTICAL

2TX Mode (Worst case)**1 ~ 40 GHz:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit	Margin
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)			(dBμV/m)	(dB)
5G 11A BAND1, Low Channel									
4500	46.2	PK	306	1.7	H	1.89	48.09	74	-25.91
4500	46.44	PK	74	2	V	1.89	48.33	74	-25.67
5150	46.61	PK	21	2.5	H	3.37	49.98	74	-24.02
5150	47.06	PK	110	1.6	V	3.37	50.43	74	-23.57
10360	32.92	PK	191	1.3	H	14.41	47.33	68.2	-20.87
10360	35.08	PK	16	2.3	V	14.41	49.49	68.2	-18.71
5G 11A BAND1, Middle Channel									
10400	32.74	PK	144	1	H	14.46	47.2	68.2	-21
10400	33.95	PK	280	2	V	14.46	48.41	68.2	-19.79
5G 11A BAND1, High Channel									
5350	47.34	PK	344	1.1	H	3.43	50.77	74	-23.23
5350	46.9	PK	341	1.6	V	3.43	50.33	74	-23.67
5460	48.88	PK	61	2.2	H	3.58	52.46	74	-26.28
5460	50.62	PK	91	1.1	V	3.58	54.2	74	-26.46
10480	27.39	PK	71	2.2	H	14.53	41.92	68.2	-21.54
10480	27.21	PK	118	2.5	V	14.53	41.74	68.2	-19.8
5G 11N20 BAND1, Low Channel									
4500	47.58	PK	20	1.6	H	1.89	49.47	74	-24.53
4500	47.8	PK	141	1.2	V	1.89	49.69	74	-24.31
5150	48.6	PK	172	2	H	3.37	51.97	74	-22.03
5150	48.49	PK	80	1.1	V	3.37	51.86	74	-22.14
10360	32.85	PK	34	1.7	H	14.41	47.26	68.2	-20.94
10360	34.17	PK	309	1.1	V	14.41	48.58	68.2	-19.62
5G 11N20 BAND1, Middle Channel									
10400	32.05	PK	310	1.5	H	14.46	46.51	68.2	-21.69
10400	34.8	PK	172	2.5	V	14.46	49.26	68.2	-18.94
5G 11N20 BAND1, High Channel									
5350	47.68	PK	214	1.5	H	3.43	51.11	74	-22.89
5350	47.61	PK	98	1	V	3.43	51.04	74	-22.96
5460	45.74	PK	300	1.9	H	3.58	49.32	74	-24.68
5460	45.55	PK	51	1.7	V	3.58	49.13	74	-24.87
10480	31.99	PK	293	1.4	H	14.53	46.52	68.2	-21.68
10480	33.8	PK	33	1.4	V	14.53	48.33	68.2	-19.87
5G 11N40 BAND1, Low Channel									
4500	46.18	PK	151	2	H	1.89	48.07	74	-25.93
4500	45.84	PK	148	2.3	V	1.89	47.73	74	-26.27
5150	47.55	PK	192	1.1	H	3.37	50.92	74	-23.08
5150	48.27	PK	162	1.3	V	3.37	51.64	74	-22.36

10380	32.09	PK	58	2.3	H	14.43	46.52	68.2	-21.68
10380	34.4	PK	248	1.7	V	14.43	48.83	68.2	-19.37
5G 11N40 BAND1, High Channel									
5350	47.34	PK	162	1.5	H	3.43	50.77	74	-23.23
5350	48.38	PK	212	1.7	V	3.43	51.81	74	-22.19
5460	45.9	PK	232	1.3	H	3.58	49.48	74	-24.52
5460	45.54	PK	41	2	V	3.58	49.12	74	-24.88
10460	32.1	PK	132	2.1	H	14.5	46.6	68.2	-21.6
10460	34.91	PK	174	1.8	V	14.5	49.41	68.2	-18.79
5G 11ac20 BAND1, Low Channel									
4500	46.06	PK	93	2.1	H	1.89	47.95	74	-26.05
4500	46.33	PK	221	1.6	V	1.89	48.22	74	-25.78
5150	48.64	PK	190	1.5	H	3.37	52.01	74	-21.99
5150	49.03	PK	93	2.2	V	3.37	52.4	74	-21.6
10360	32.92	PK	15	2	H	14.41	47.33	68.2	-20.87
10360	34.52	PK	320	1.6	V	14.41	48.93	68.2	-19.27
5G 11ac20 BAND1, Middle Channel									
10400	32.74	PK	278	1.2	H	14.46	47.2	68.2	-21
10400	34.48	PK	209	1.3	V	14.46	48.94	68.2	-19.26
5G 11ac20 BAND1, High Channel									
5350	48.62	PK	307	1.1	H	3.43	52.05	74	-21.95
5350	48.44	PK	254	1.6	V	3.43	51.87	74	-22.13
5460	44.95	PK	194	2	H	3.58	48.53	74	-25.47
5460	44.44	PK	212	1.3	V	3.58	48.02	74	-25.98
10480	32.56	PK	250	1.8	H	14.53	47.09	68.2	-21.11
10480	34.19	PK	253	1.5	V	14.53	48.72	68.2	-19.48
5G 11ac40 BAND1, Low Channel									
4500	47.68	PK	308	1.4	H	1.89	49.57	74	-24.43
4500	46.24	PK	275	1.3	V	1.89	48.13	74	-25.87
5150	49.55	PK	234	1.7	H	3.37	52.92	74	-21.08
5150	49.54	PK	247	2	V	3.37	52.91	74	-21.09
10380	32.25	PK	315	1	H	14.43	46.68	68.2	-21.52
10380	33.73	PK	83	1.9	V	14.43	48.16	68.2	-20.04
5G 11ac40 BAND1, High Channel									
5350	48.12	PK	173	2.4	H	3.43	51.55	74	-22.45
5350	47.69	PK	344	1.4	V	3.43	51.12	74	-22.88
5460	44.57	PK	304	2.3	H	3.58	48.15	74	-25.85
5460	44.17	PK	340	2.5	V	3.58	47.75	74	-26.25
10460	31.85	PK	246	1.5	H	14.5	46.35	68.2	-21.85
10460	34.43	PK	36	1.1	V	14.5	48.93	68.2	-19.27
5G 11AC80 BAND1									
4500	45.52	PK	93	2.1	H	1.89	47.41	74	-26.59
4500	44.99	PK	221	1.6	V	1.89	46.88	74	-27.12
5150	47.25	PK	190	1.5	H	3.37	50.62	74	-23.38
5150	48.46	PK	93	2.2	V	3.37	51.83	74	-22.17
5350	46.79	PK	15	2	H	3.43	50.22	74	-23.78
5350	47.95	PK	320	1.6	V	3.43	51.38	74	-22.62

5460	44.61	PK	57	1.5	H	3.58	48.19	74	-25.81
5460	42.88	PK	278	1.2	V	3.58	46.46	74	-27.54
10420	32.35	PK	209	1.3	H	14.49	46.84	68.2	-21.36
10420	33.61	PK	211	2.2	V	14.49	48.1	68.2	-20.1

Note:

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

Corrected Amplitude = Corrected Factor + Reading

Margin = Corrected Amplitude – Limit

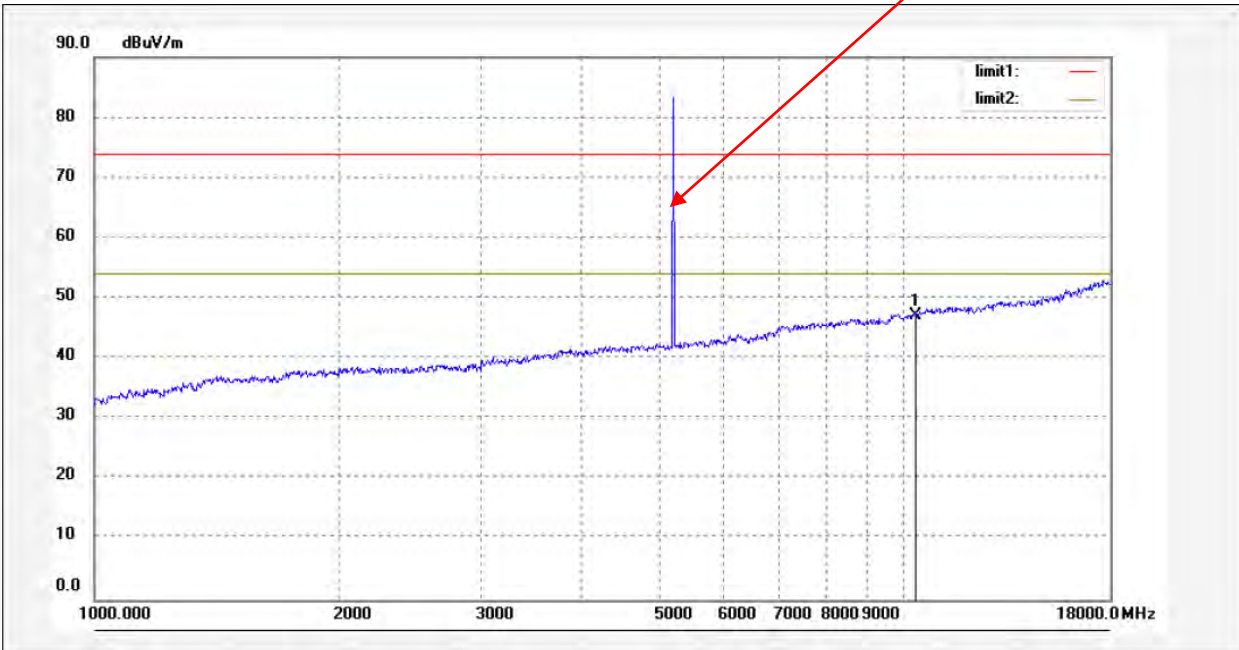
The other spurious emission which is in the noise floor level was not recorded.

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

1-18 GHz:

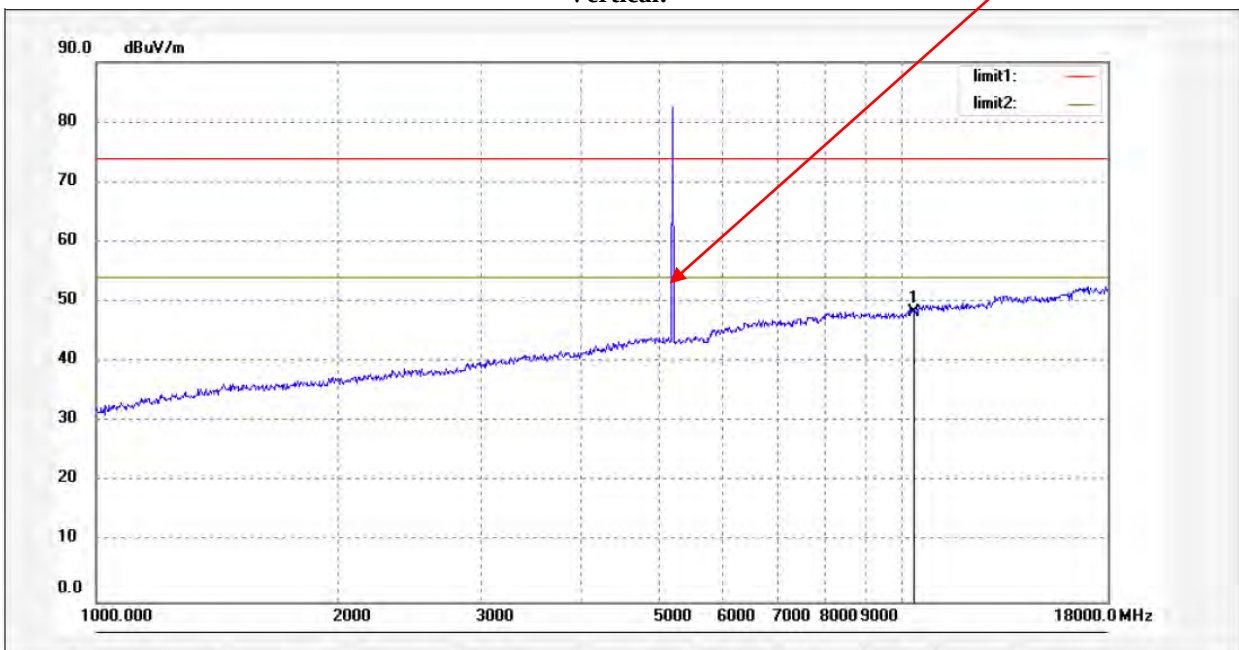
Pre-scan for Peak
802.11a 5180MHz
Horizontal:

Fundamental With High Pass
Filter



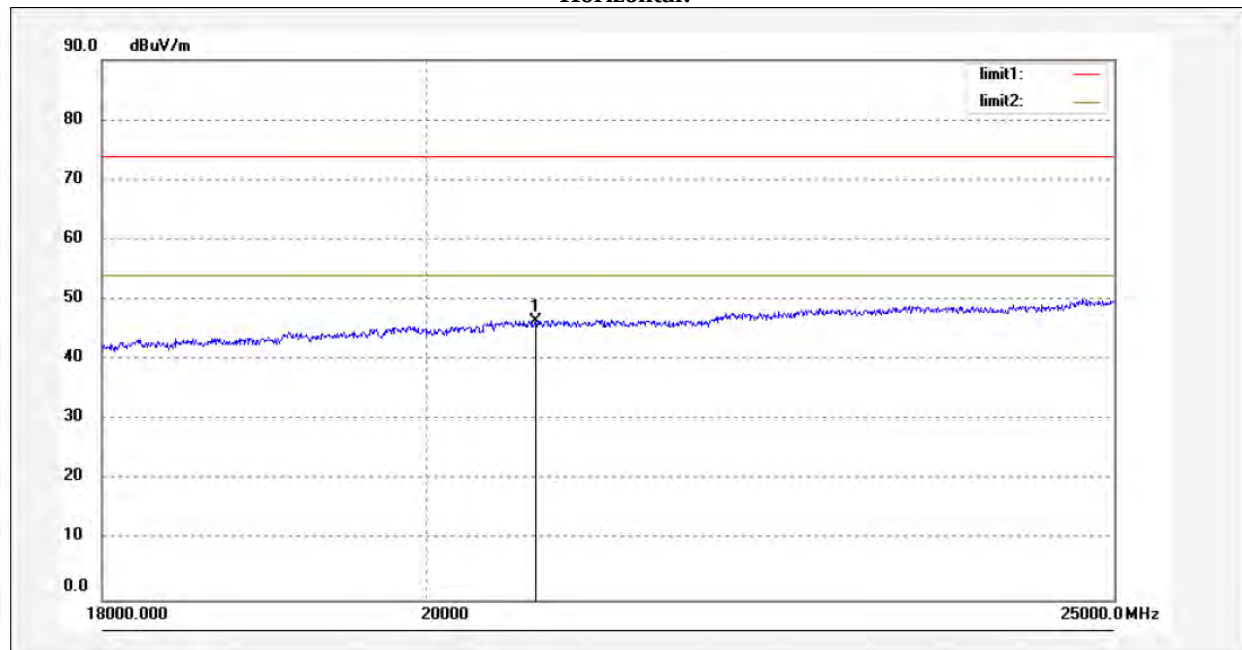
Vertical:

Fundamental With High Pass
Filter

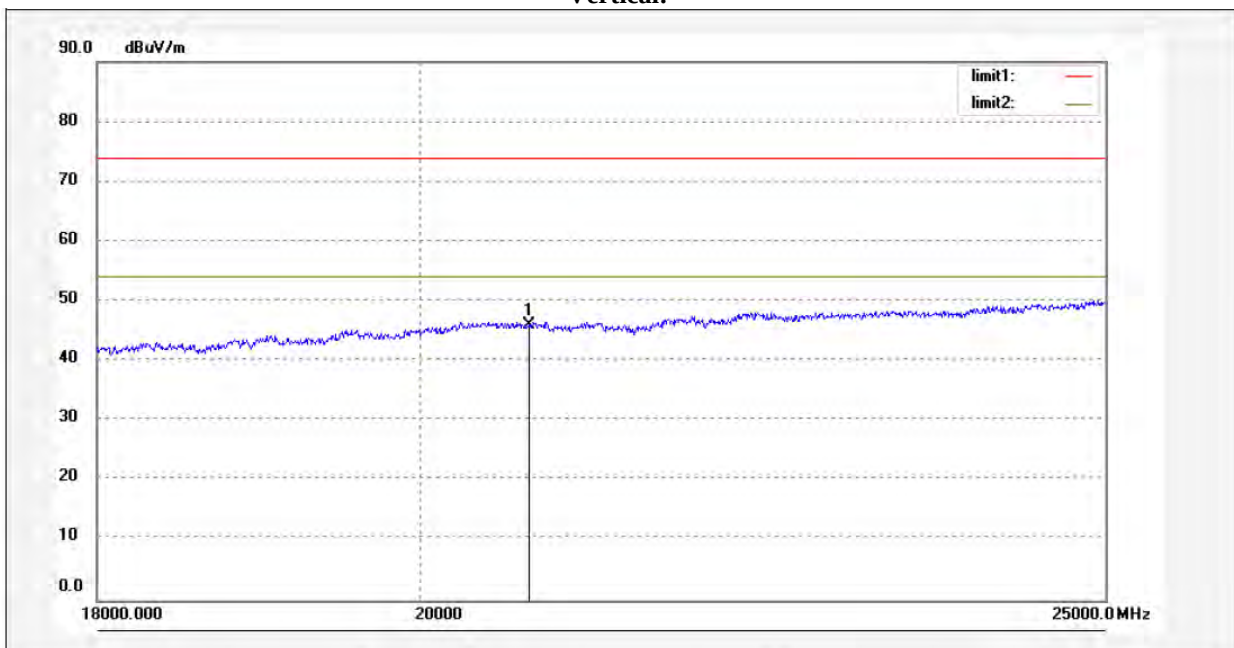


18-25 GHz:

Pre-scan for Peak
802.11a 5180MHz
Horizontal:

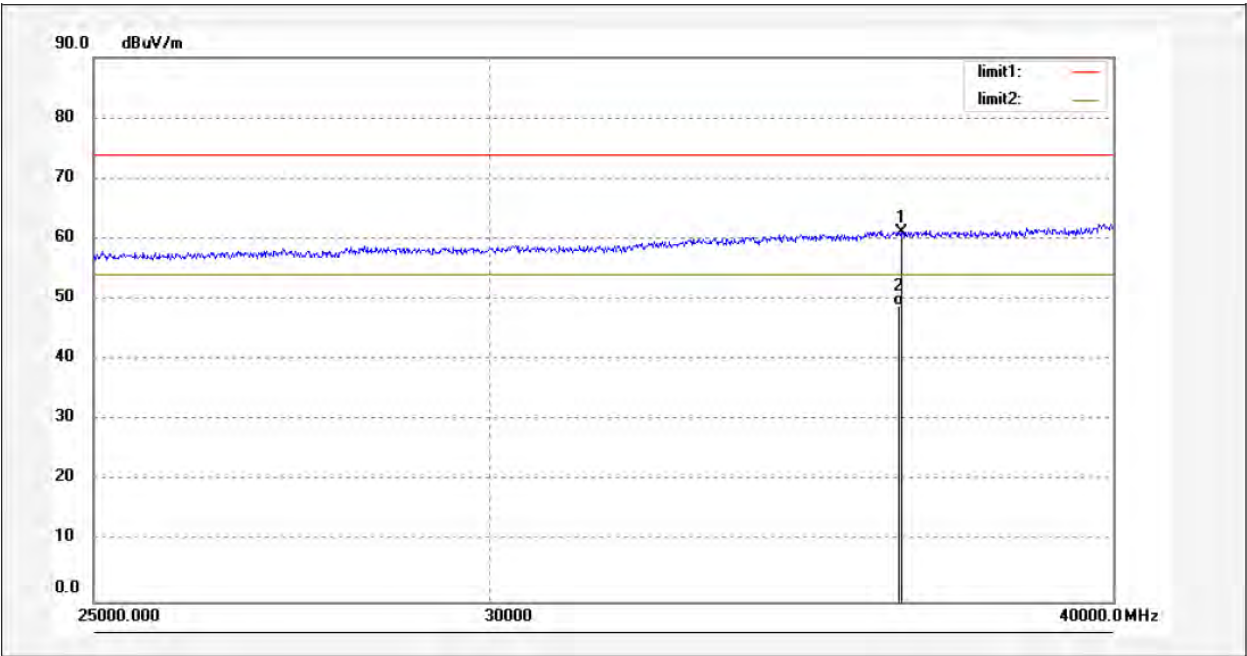


Vertical:

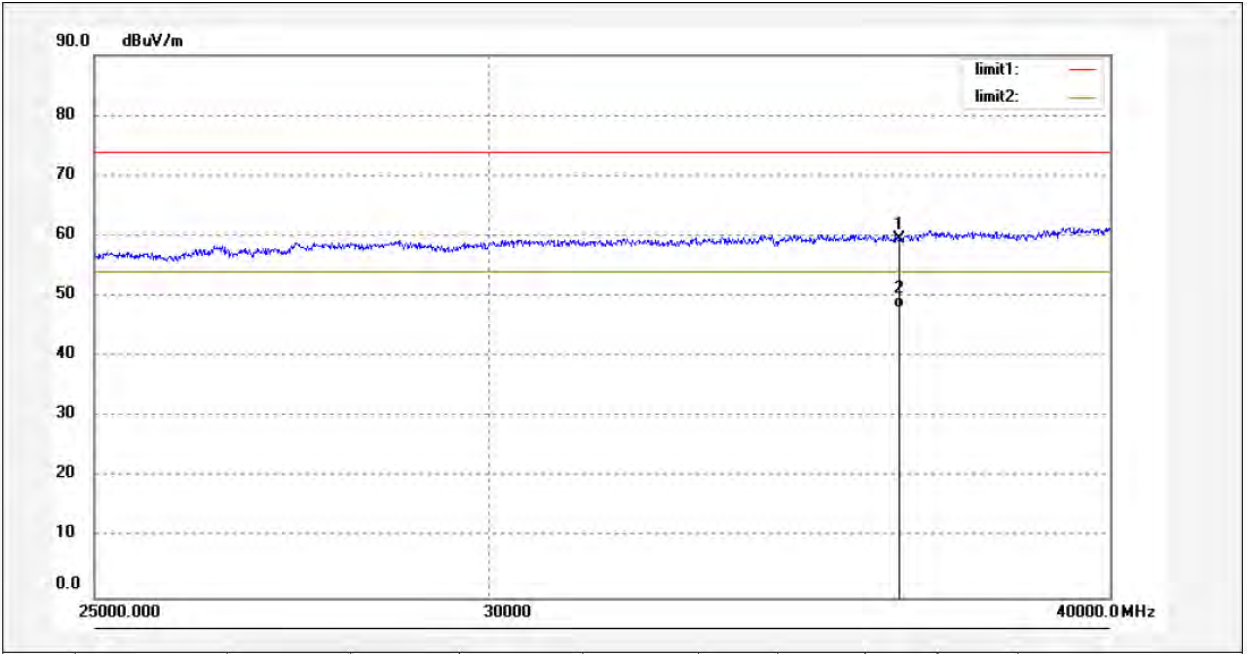


25-40 GHz:

Pre-scan for Peak
802.11a 5180MHz
Horizontal:



Vertical:



FCC §15.407(a)(e) – 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.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

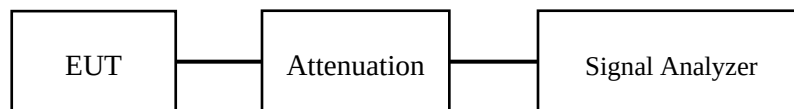
1. Emission Bandwidth (EBW)

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

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang from 2021-10-9 to 2021-10-11.

EUT operation mode: Transmitting

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

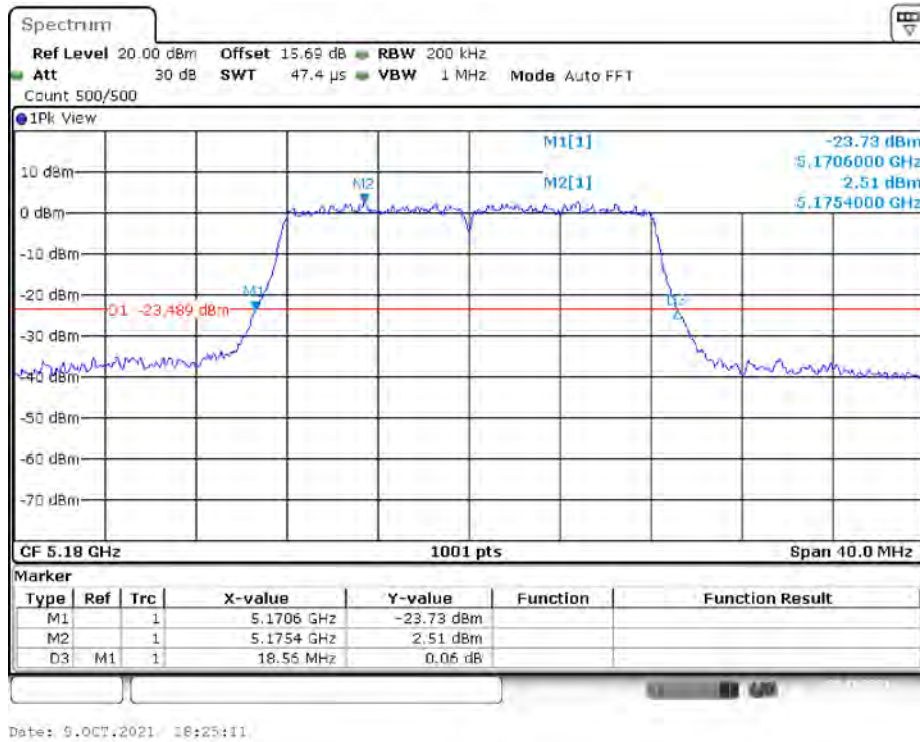
Antenna 0:**5150 MHz - 5250 MHz:**

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	18.560	16.623	
5200	18.640	16.583	
5240	18.520	16.583	
802.11n20			
5180	19.520	17.702	
5200	19.520	17.702	
5240	19.480	17.702	
802.11n40			
5190	42.080	36.523	
5230	42.080	36.523	
802.11ac20			
5180	19.600	17.702	
5200	19.520	17.702	
5240	19.520	17.702	
802.11ac40			
5190	42.400	36.523	
5230	42.080	36.444	
802.11ac80			
5210	82.400	74.486	

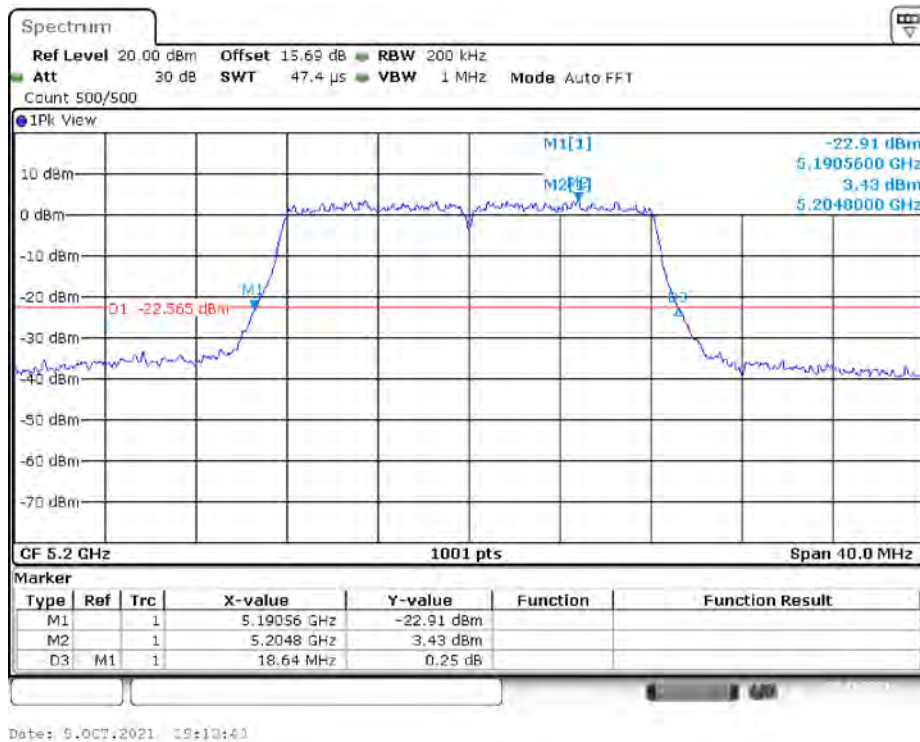
Antenna 1:**5150 MHz - 5250 MHz:**

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	18.560	16.623	
5200	18.680	16.623	
5240	18.600	16.623	
802.11n20			
5180	19.480	17.702	
5200	19.440	17.702	
5240	19.480	17.702	
802.11n40			
5190	42.240	36.523	
5230	42.480	36.603	
802.11ac20			
5180	19.600	17.702	
5200	19.480	17.702	
5240	19.520	17.702	
802.11ac40			
5190	42.080	36.444	
5230	42.000	36.444	
802.11ac80			
5210	82.880	74.645	

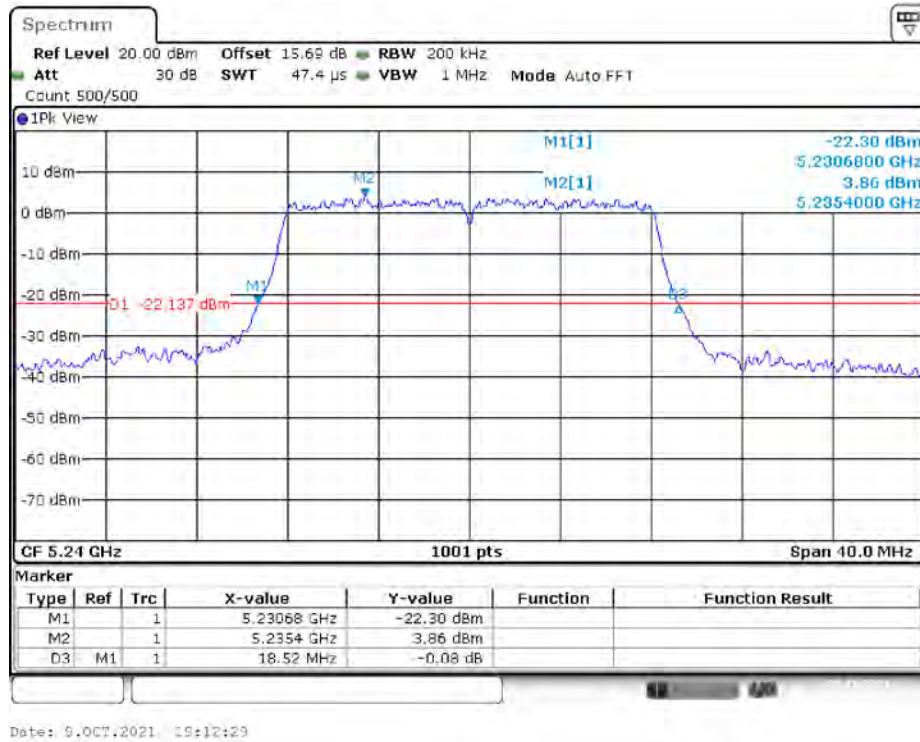
802.11a mode, 26 dB Emissions, 5180 MHz



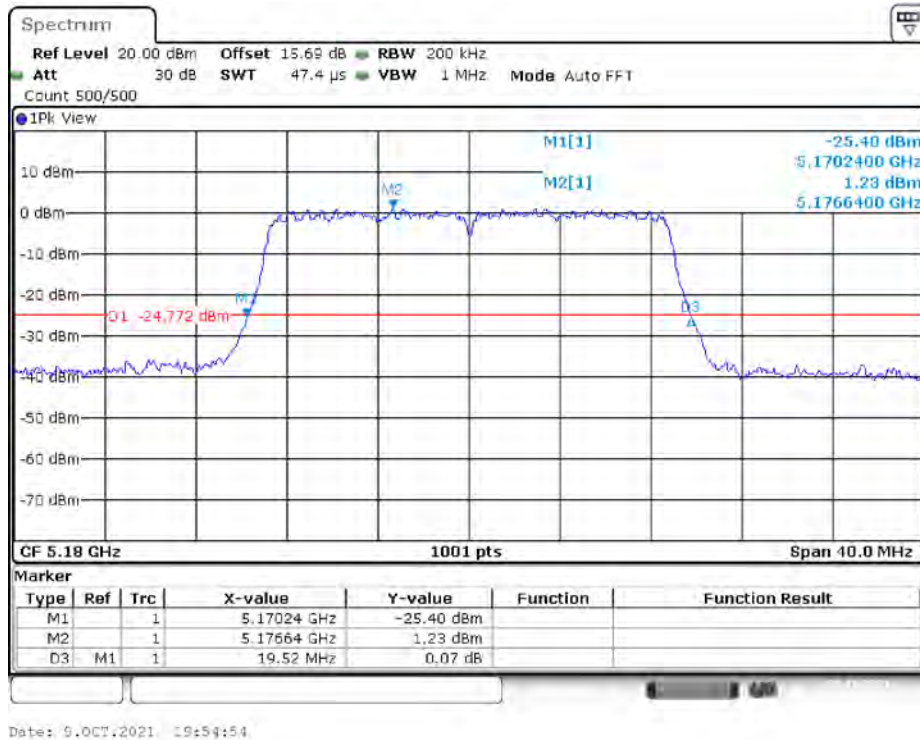
802.11a mode, 26 dB Emissions, 5200 MHz



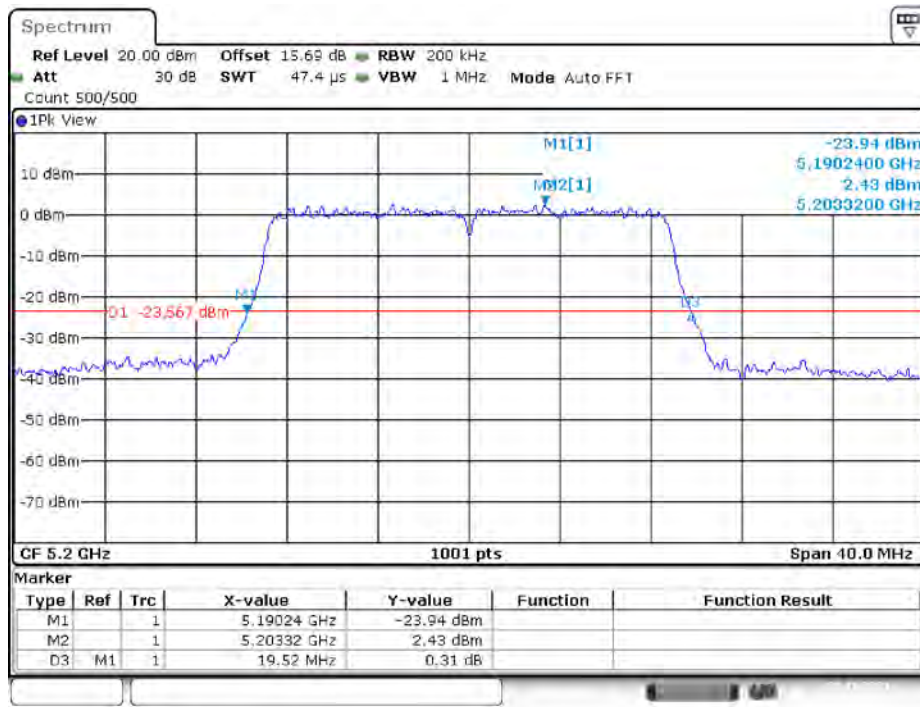
802.11a mode, 26 dB Emissions, 5240 MHz



802.11n20 mode, 26 dB Emissions, 5180 MHz

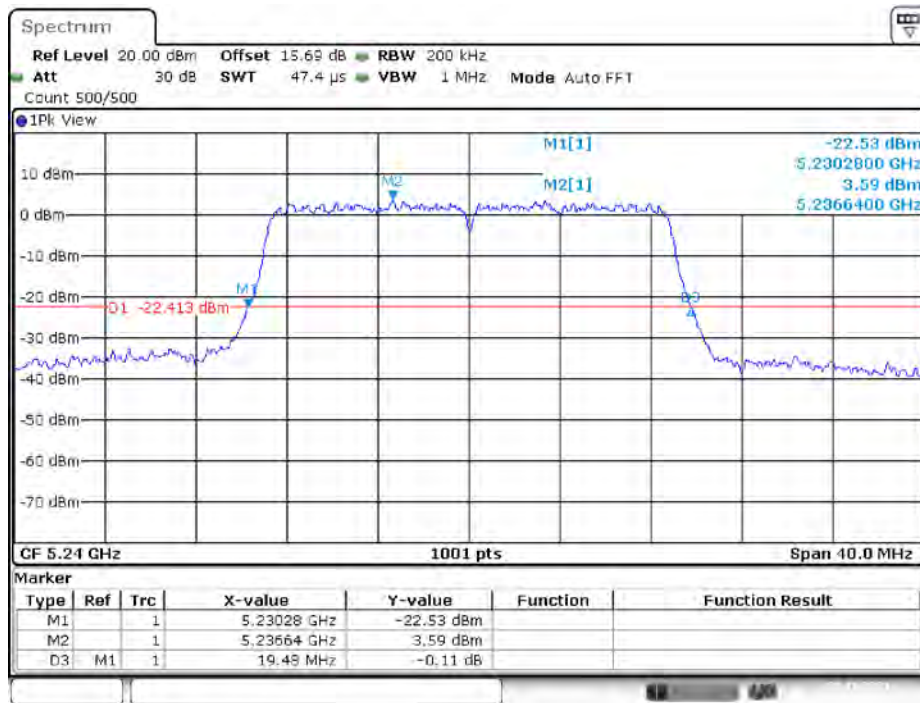


802.11n20 mode, 26 dB Emissions, 5200 MHz



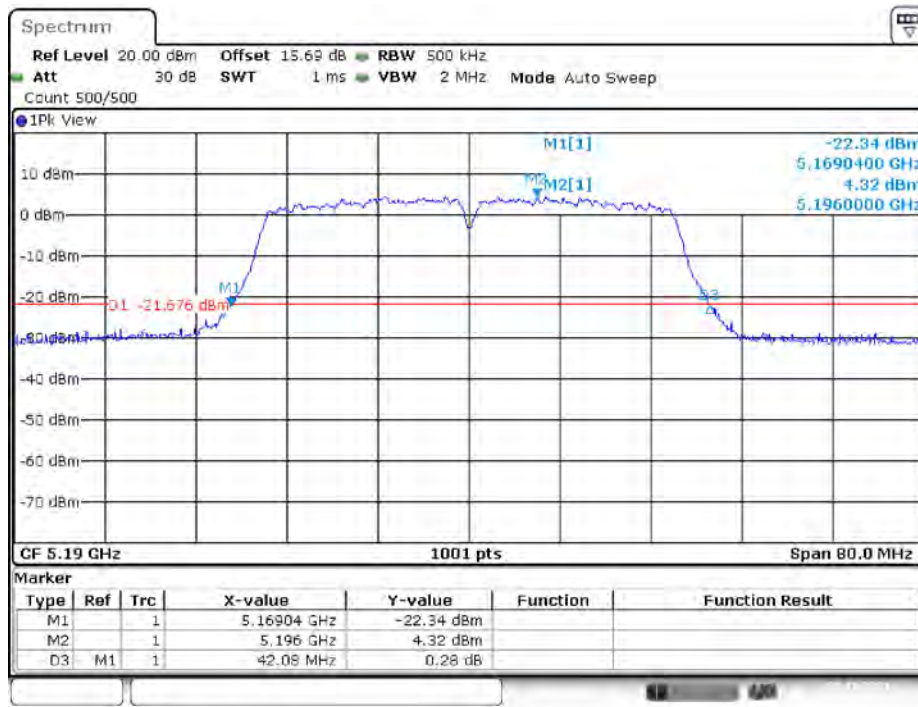
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802.11n20 mode, 26 dB Emissions, 5240 MHz

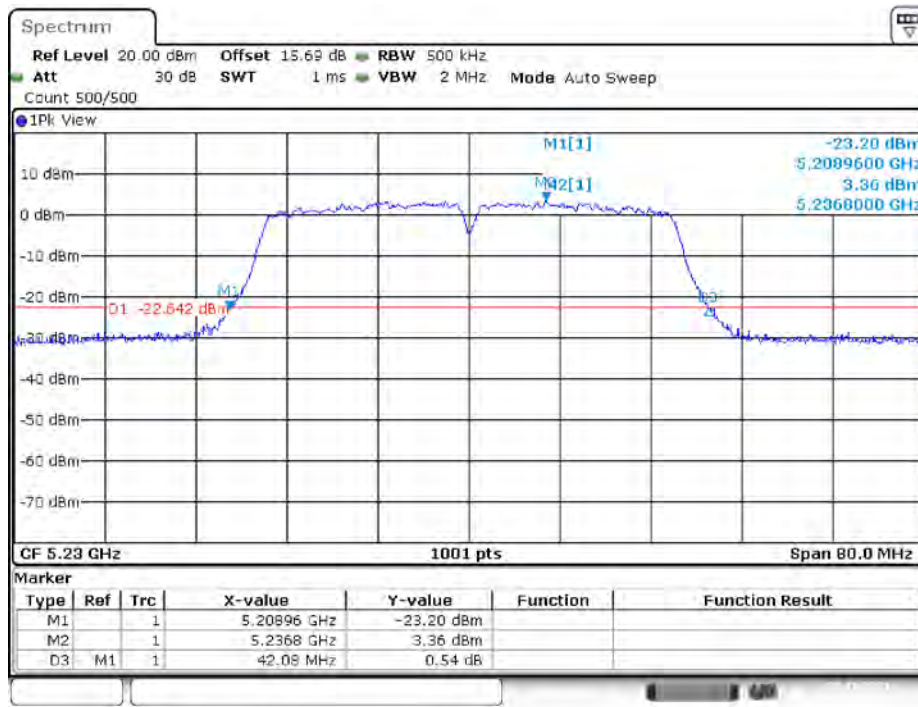


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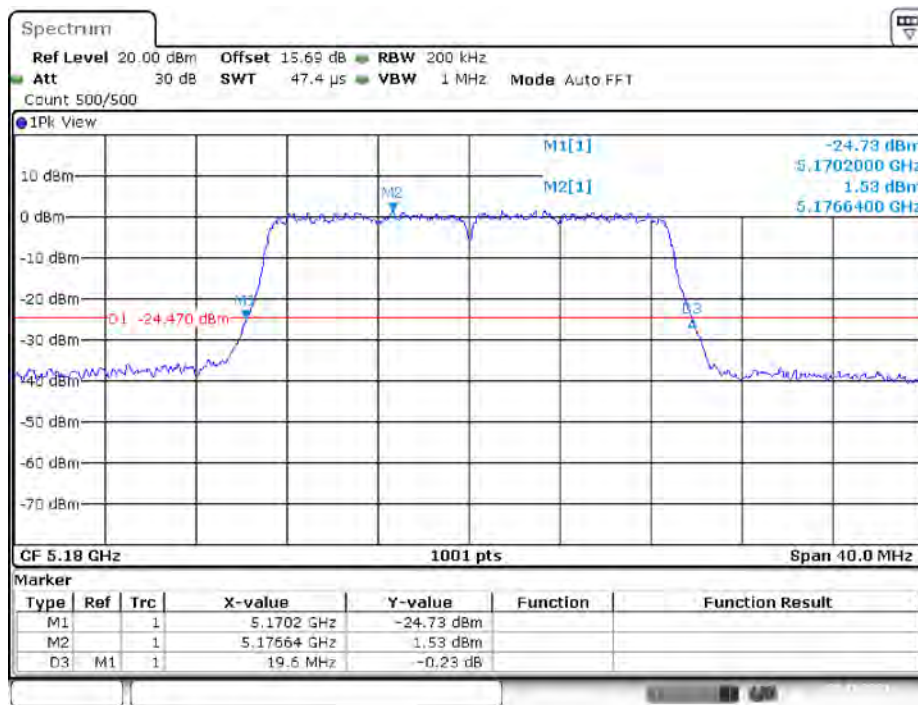
802.11n40 mode, 26 dB Emissions, 5190 MHz



802.11n40 mode, 26 dB Emissions, 5230 MHz

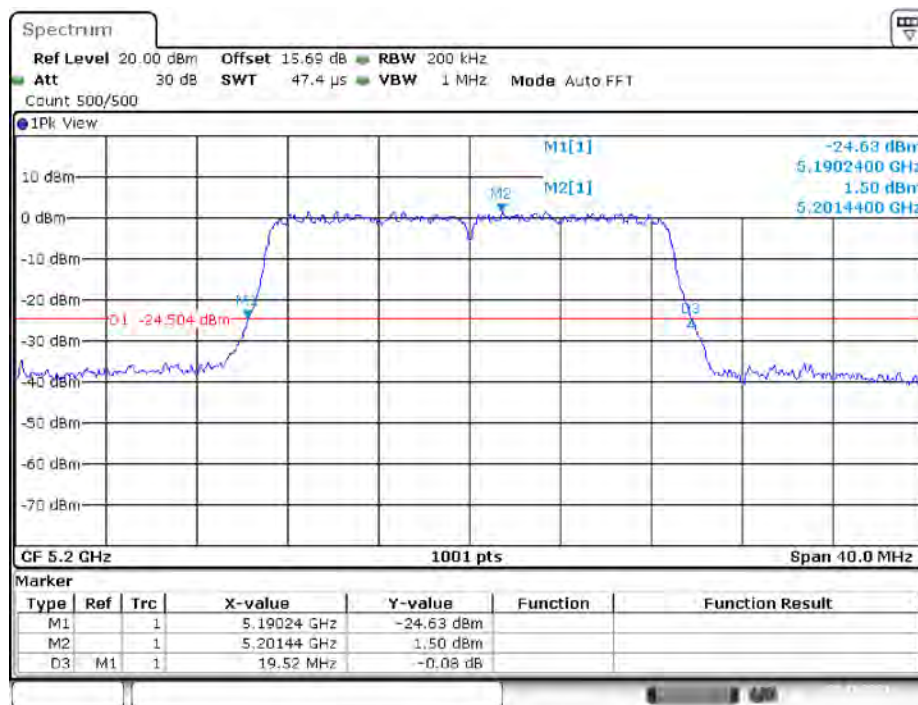


802.11ac20 mode, 26 dB Emissions, 5180 MHz



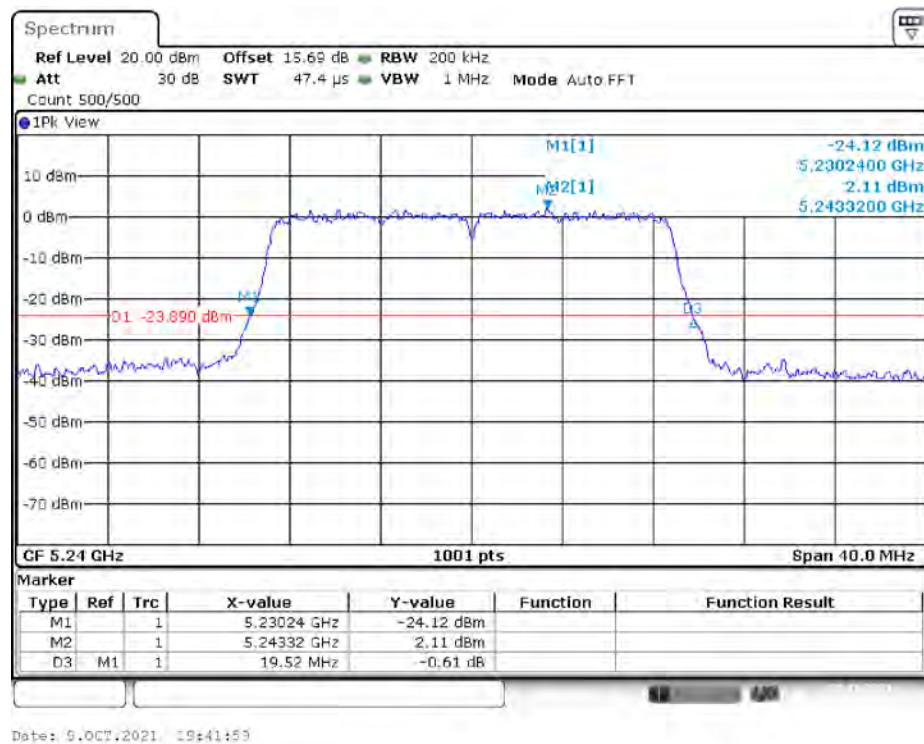
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802.11ac20 mode, 26 dB Emissions, 5200 MHz

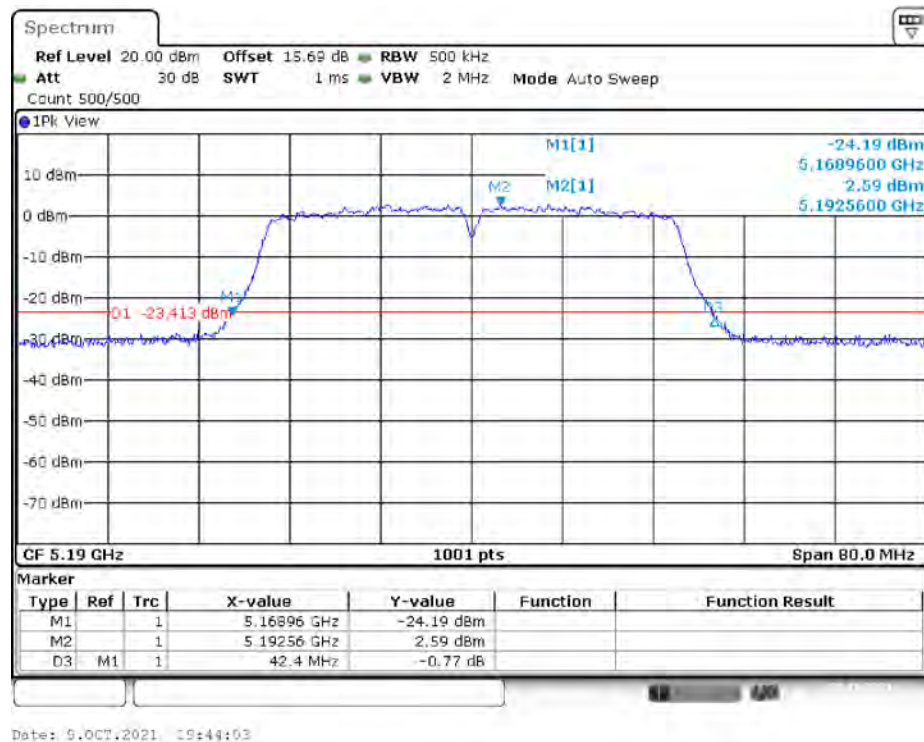


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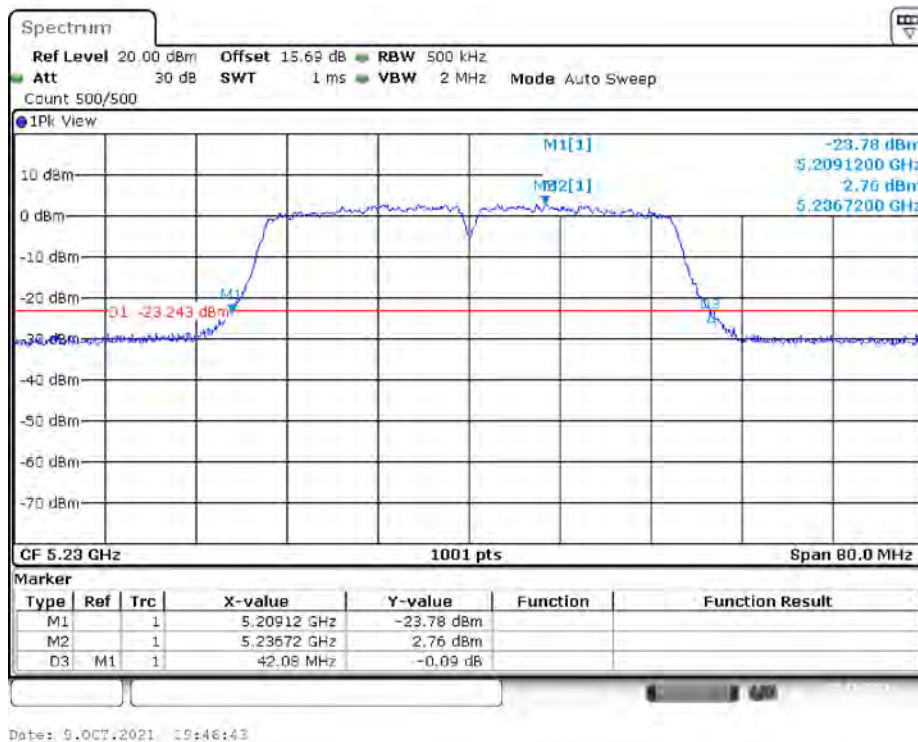
802.11ac20 mode, 26 dB Emissions, 5240 MHz



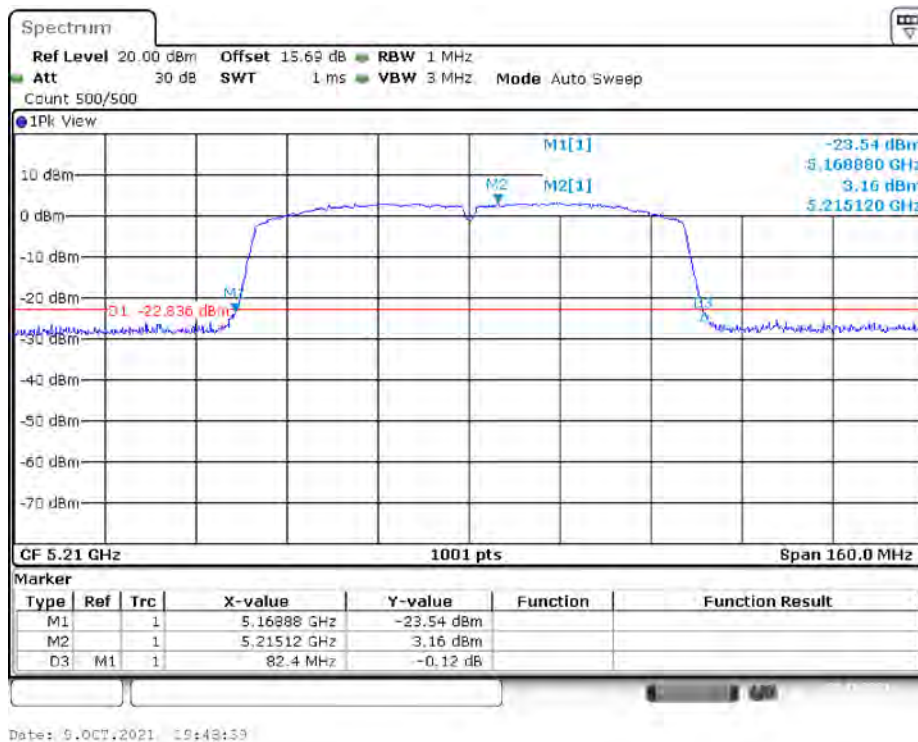
802.11ac40 mode, 26 dB Emissions, 5190 MHz



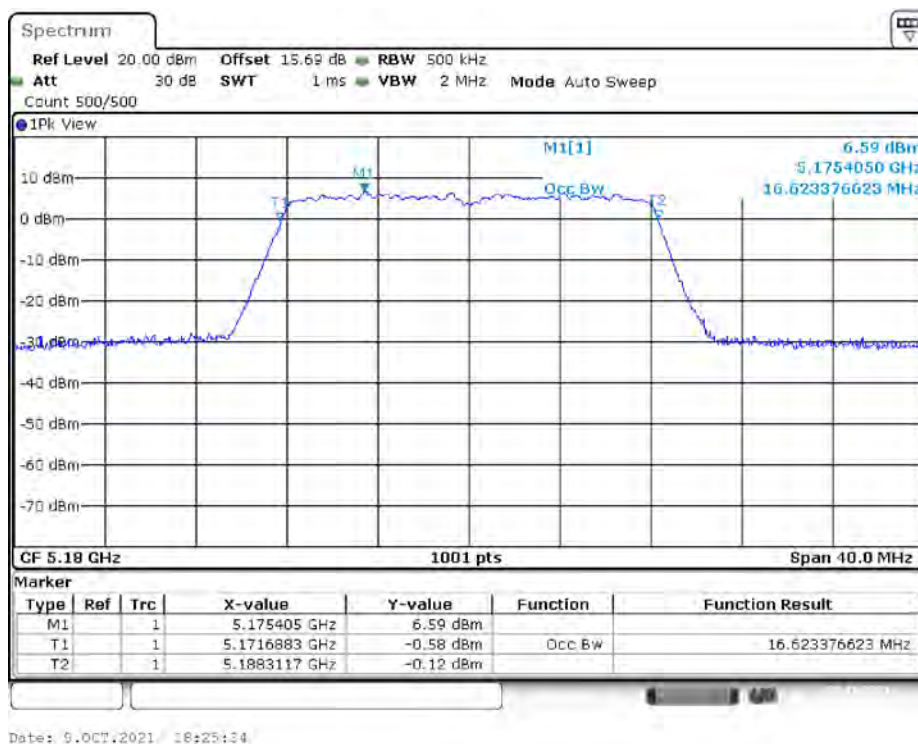
802.11ac40 mode, 26 dB Emissions, 5230 MHz



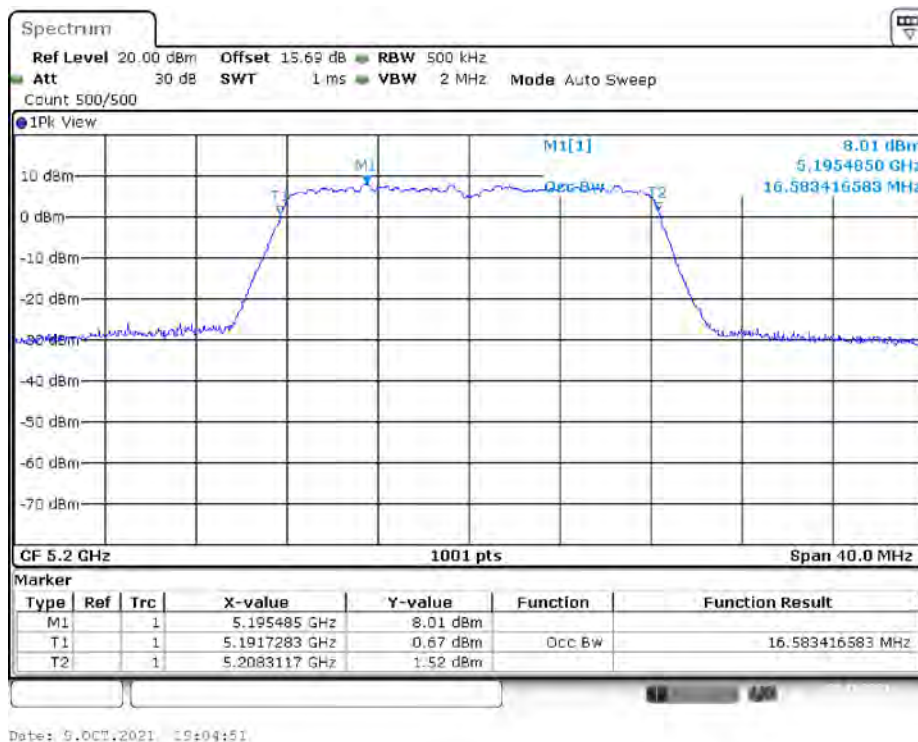
802.11ac80 mode, 26 dB Emissions, 5210 MHz



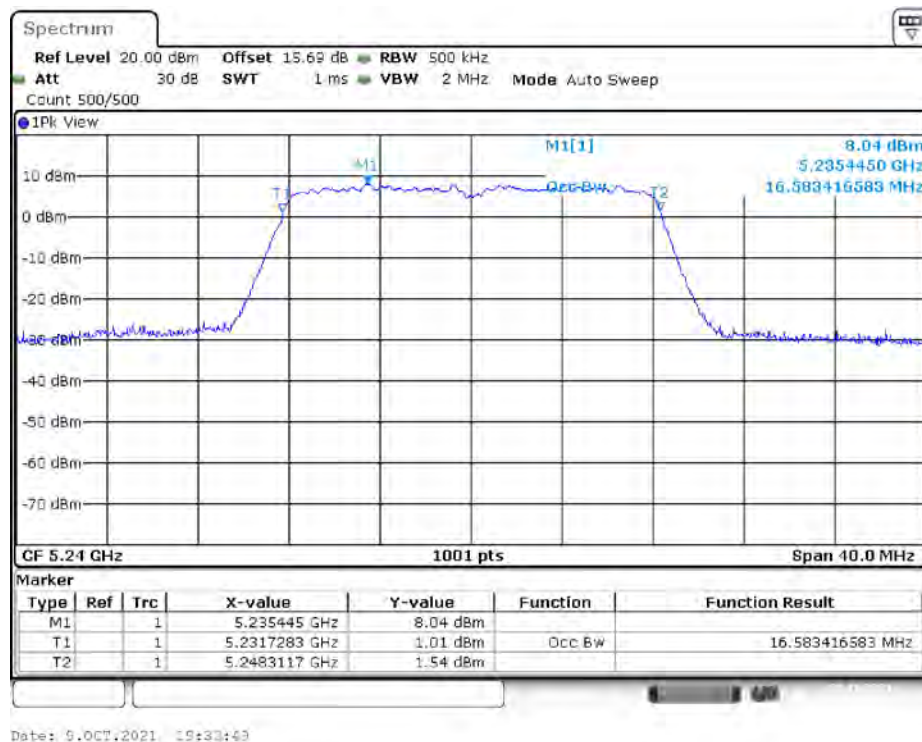
802.11a mode, 99% Occupied Bandwidth, 5180 MHz



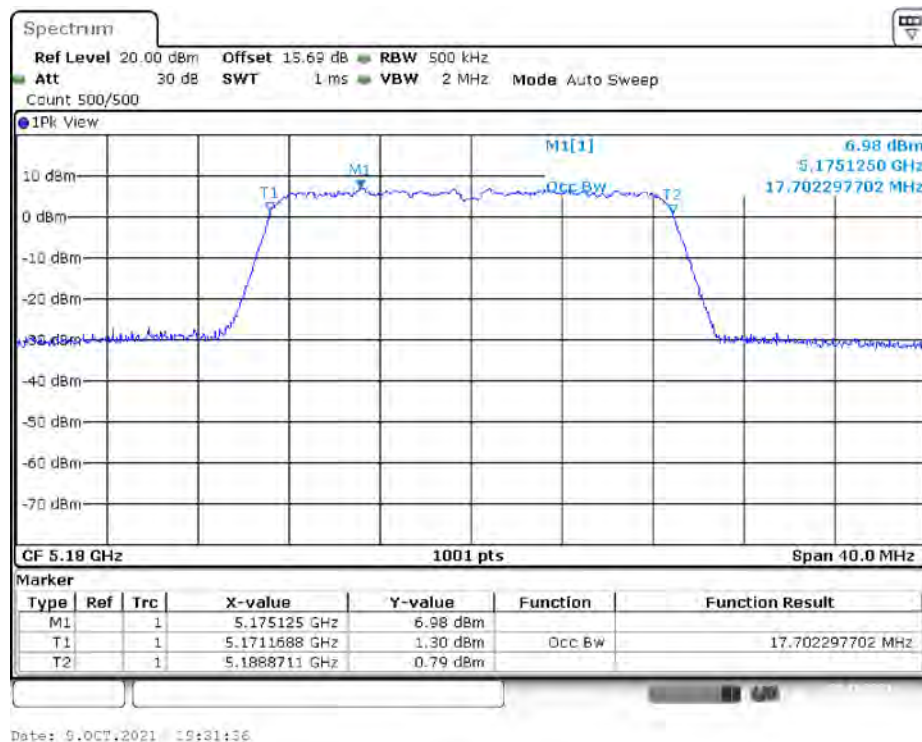
802.11a mode, 99% Occupied Bandwidth, 5200 MHz



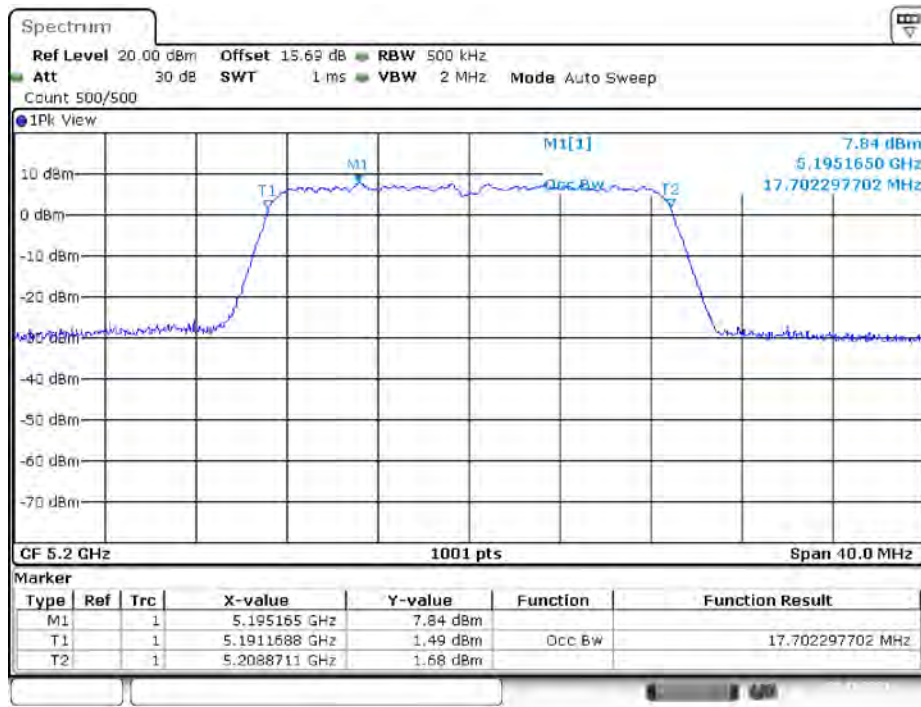
802.11a mode, 99% Occupied Bandwidth, 5240 MHz



802.11n20 mode, 99% Occupied Bandwidth, 5180 MHz

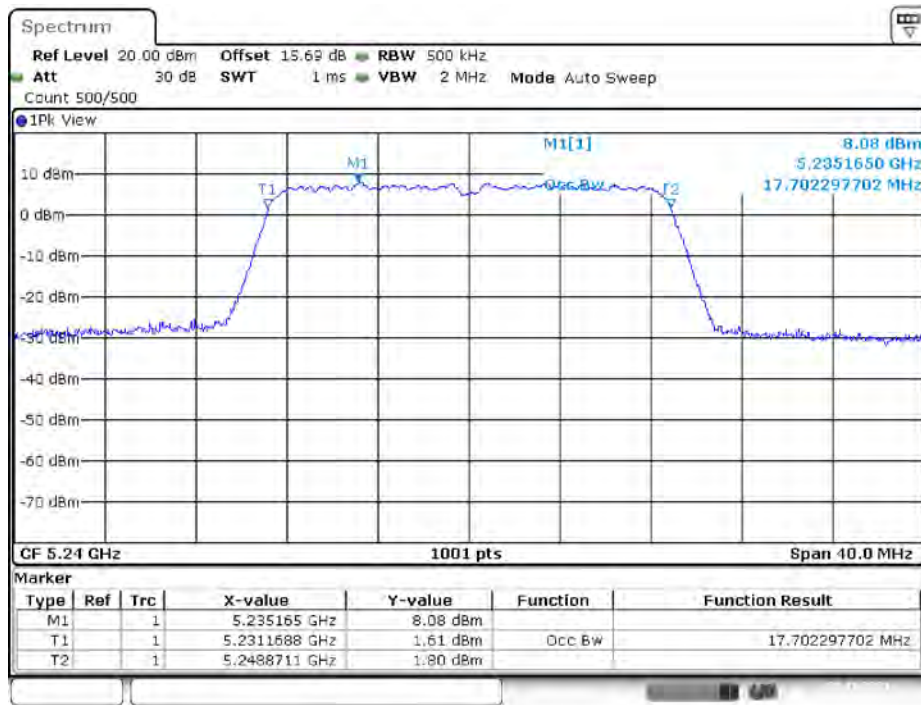


802.11n20 mode, 99% Occupied Bandwidth, 5200 MHz



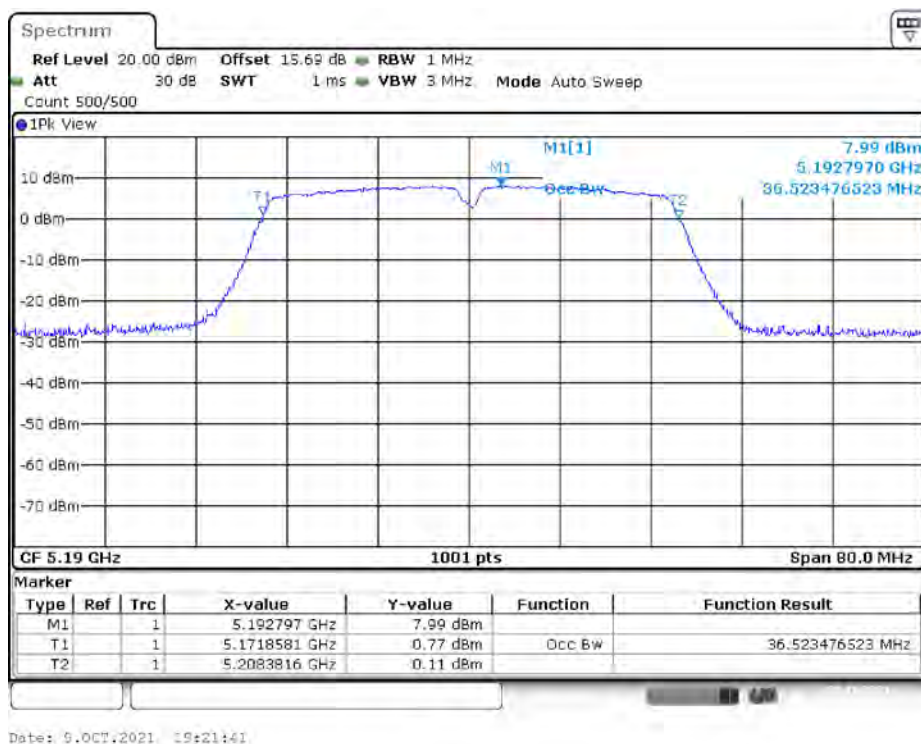
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802.11n20 mode, 99% Occupied Bandwidth, 5240 MHz

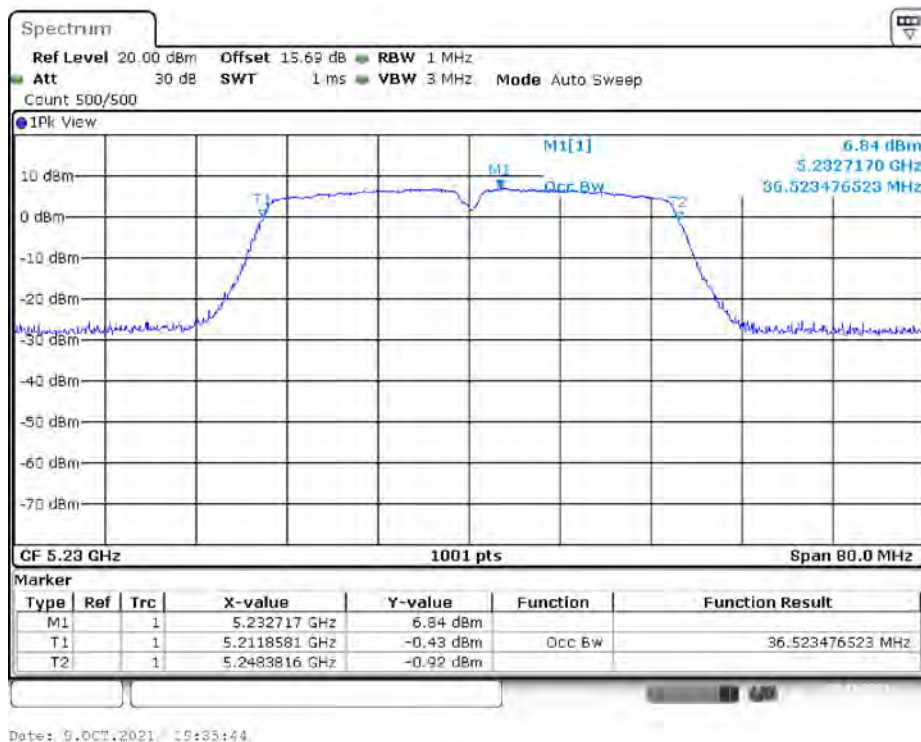


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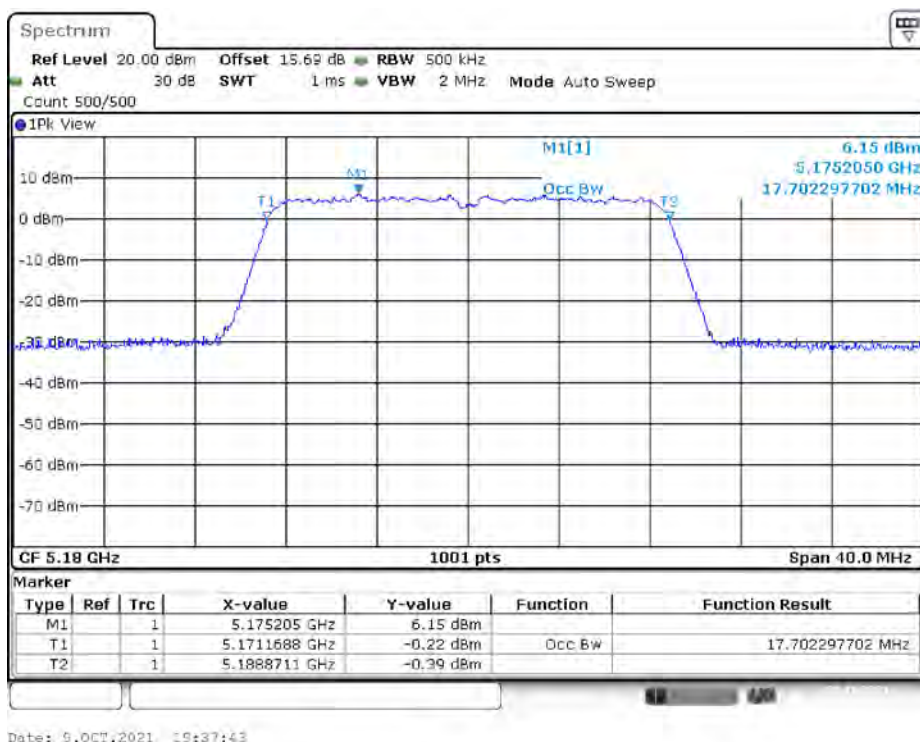
802.11n40 mode, 99% Occupied Bandwidth, 5190 MHz



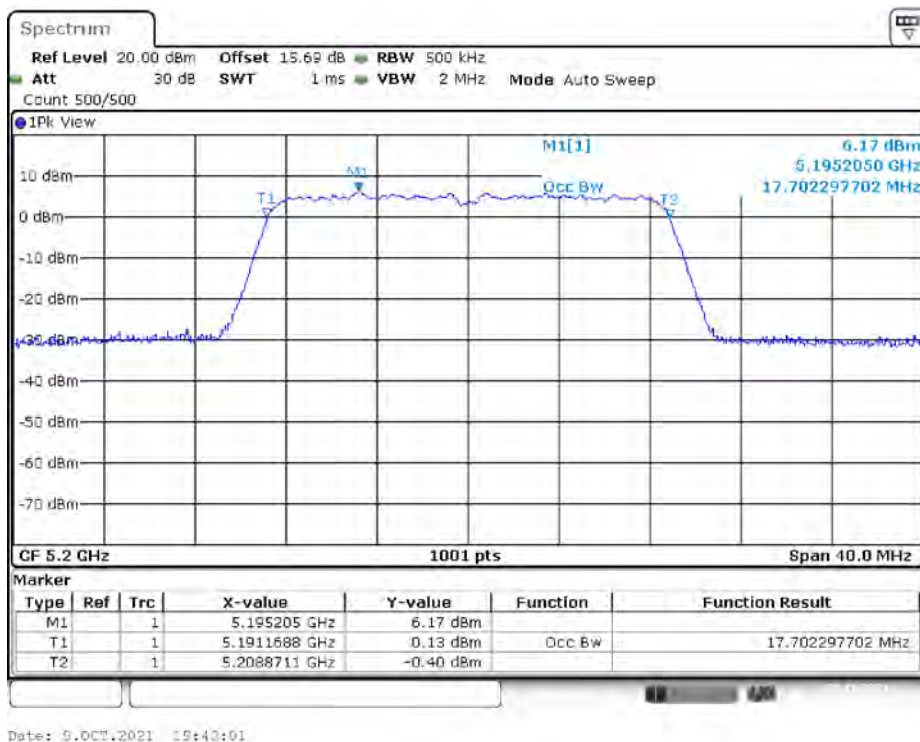
802.11n40 mode, 99% Occupied Bandwidth, 5230 MHz

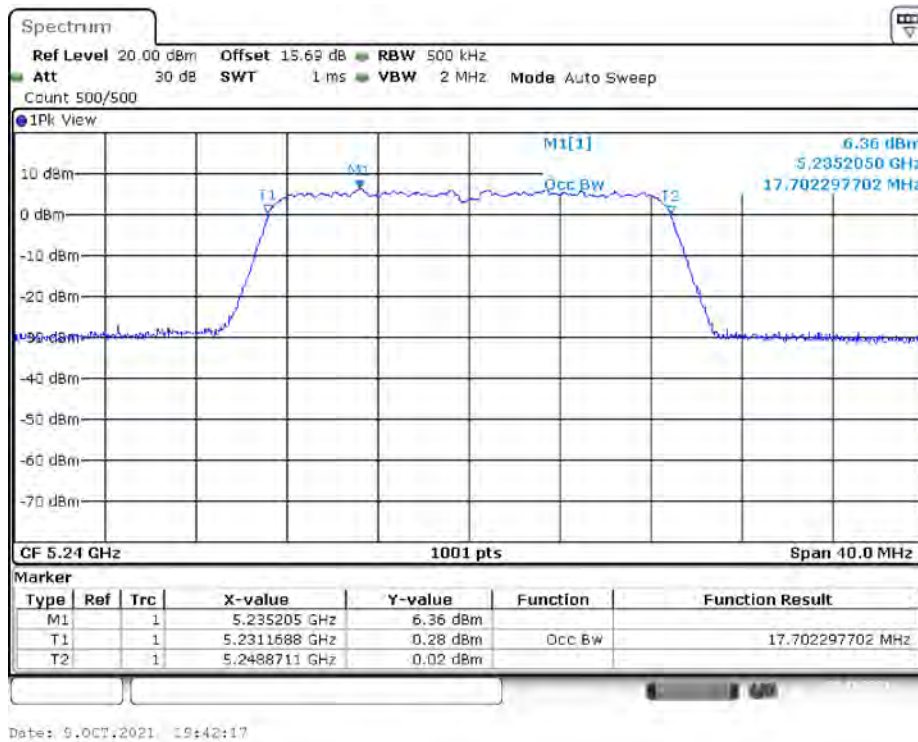
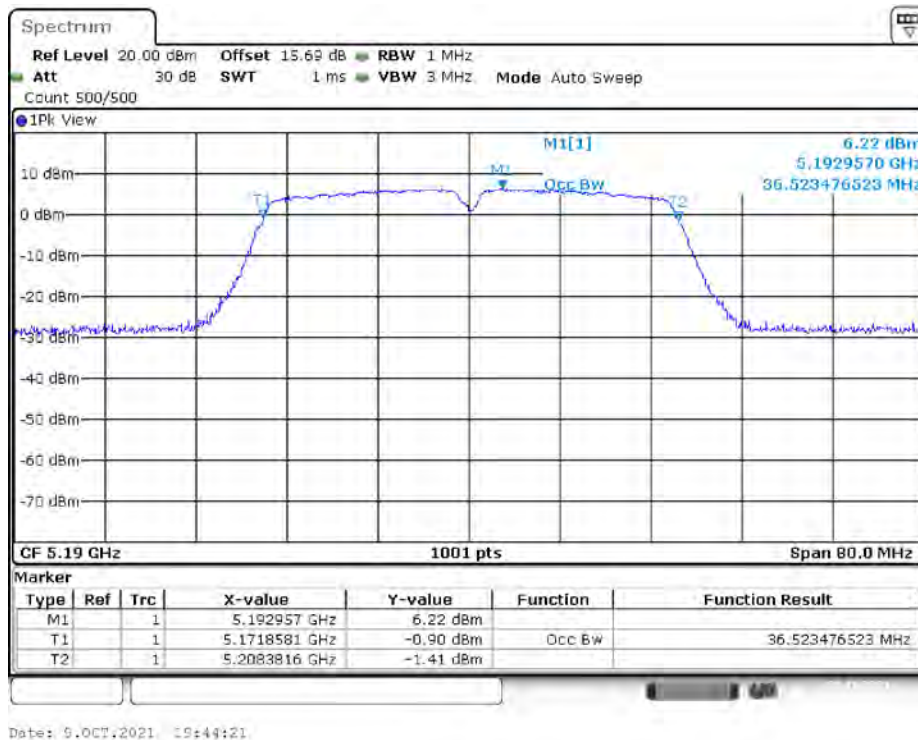


802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz

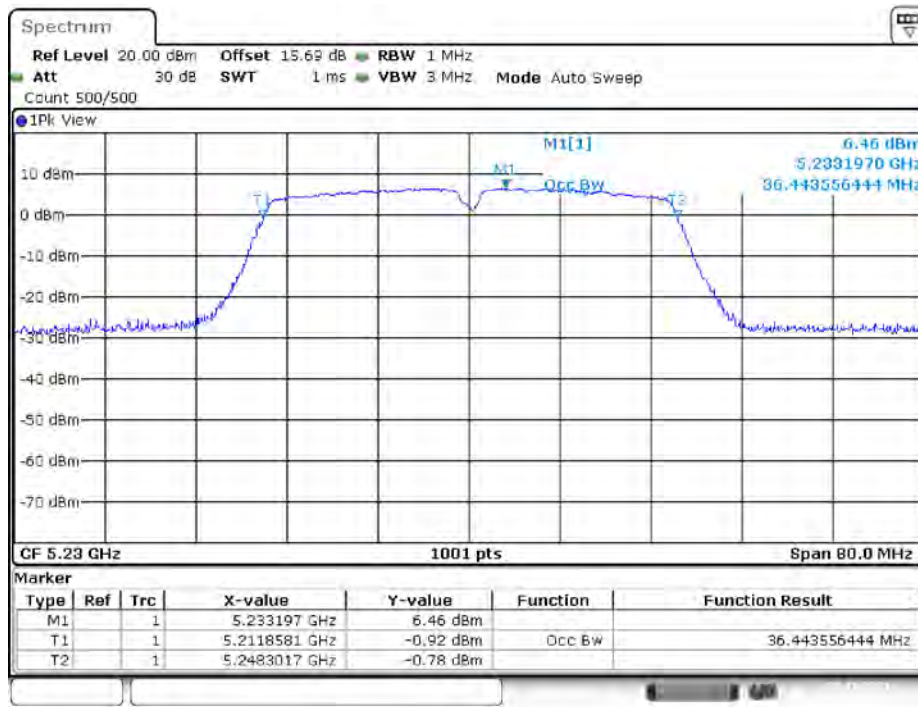


802.11ac20 mode, 99% Occupied Bandwidth, 5200 MHz



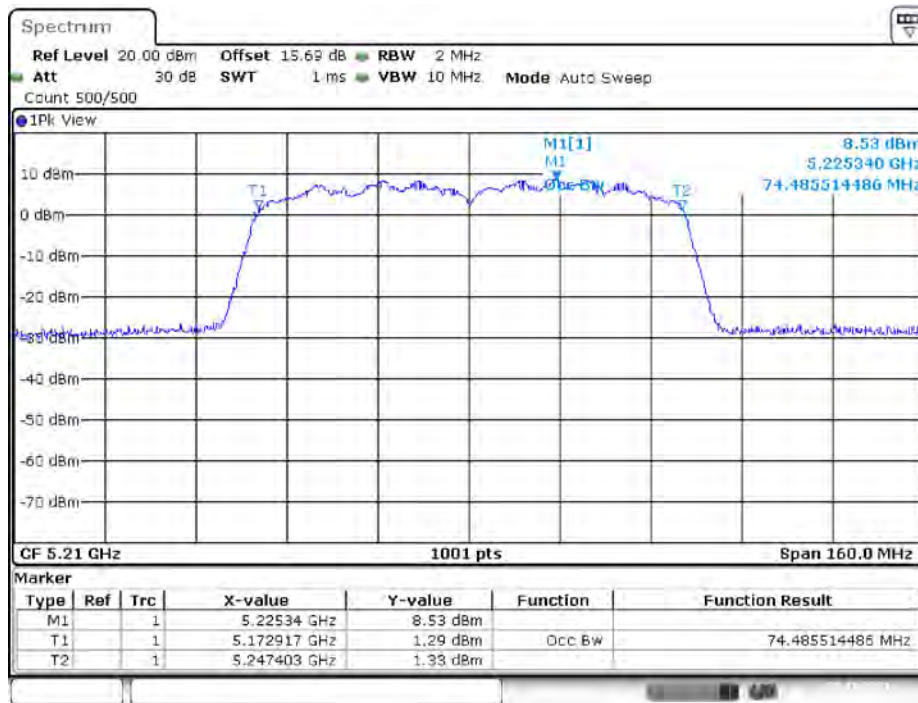
802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz**802.11ac40 mode, 99% Occupied Bandwidth, 5190 MHz**

802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz



Date: 9.OCT.2021 19:47:03

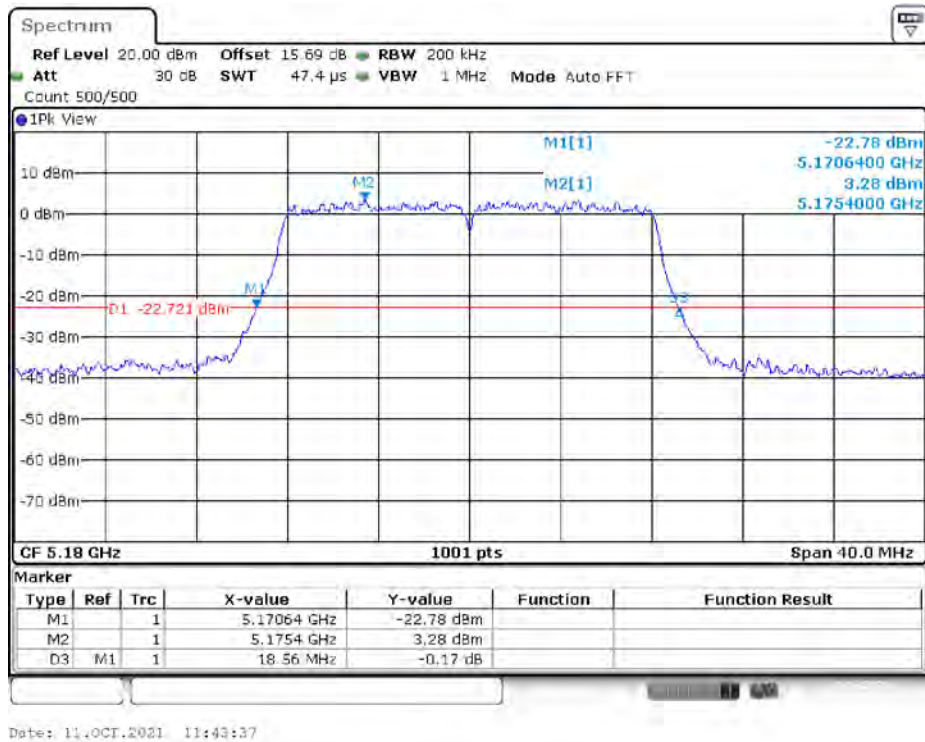
802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz



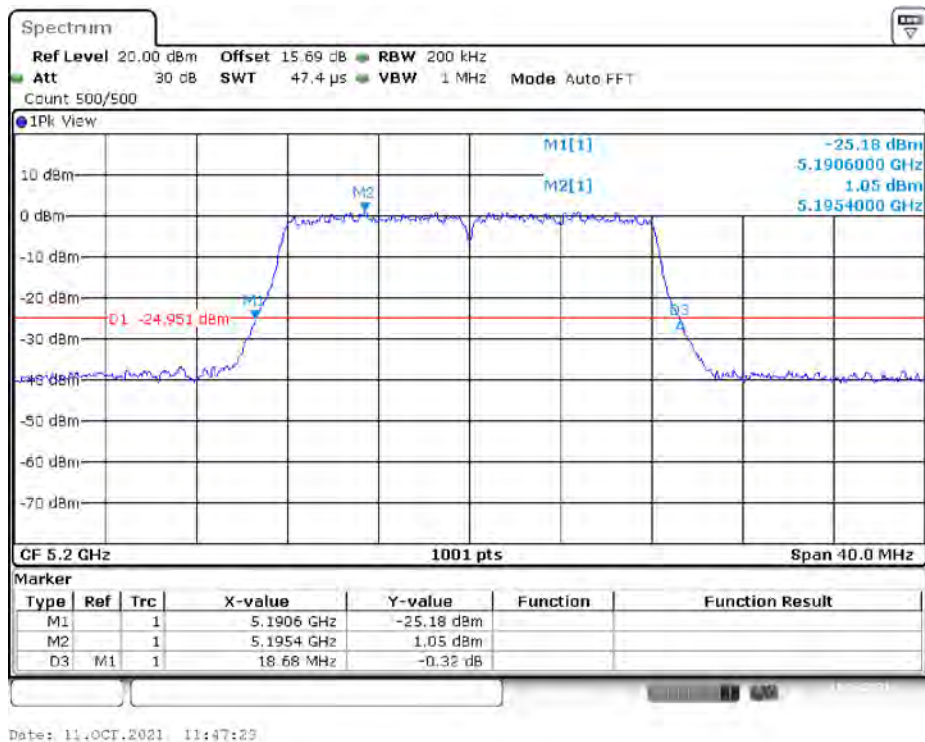
Date: 9.OCT.2021 19:48:56

Antenna 1:

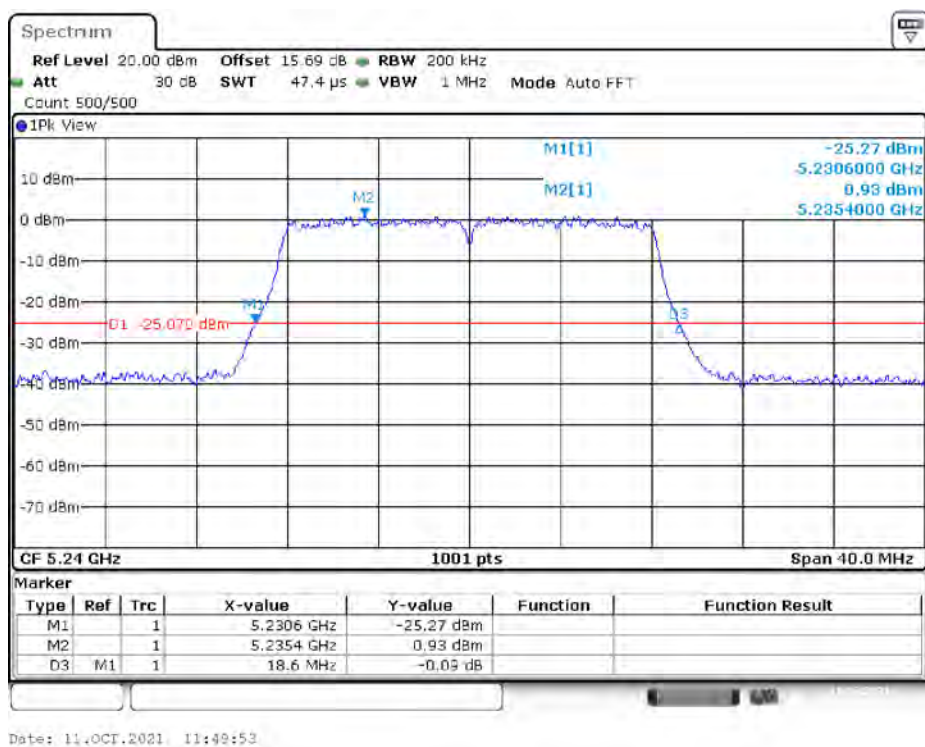
802.11a mode, 26 dB Emissions, 5180 MHz



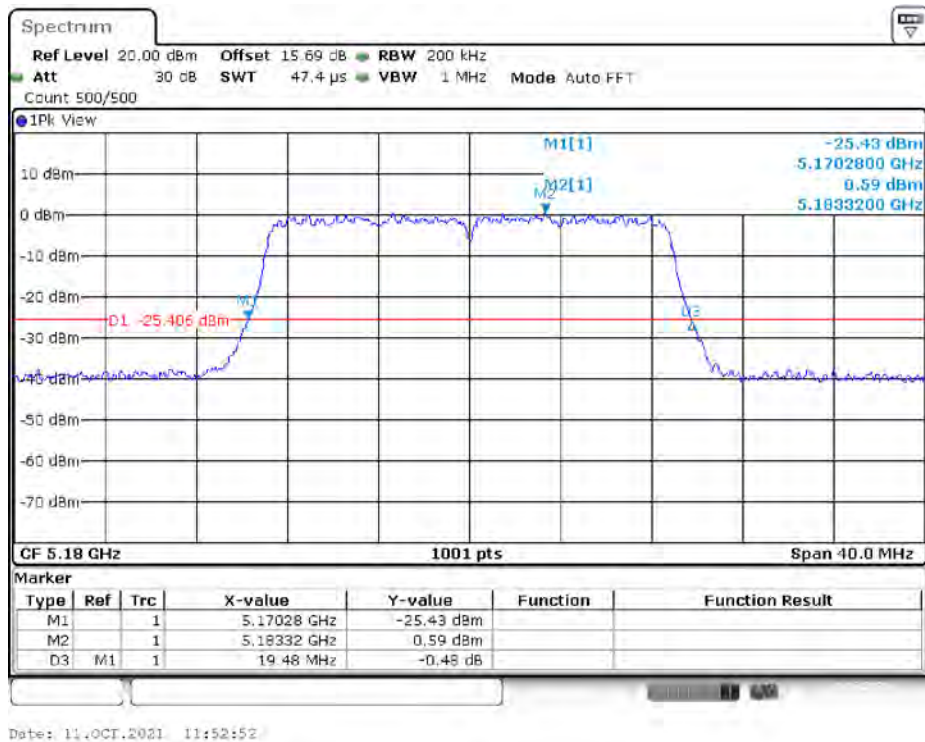
802.11a mode, 26 dB Emissions, 5200 MHz



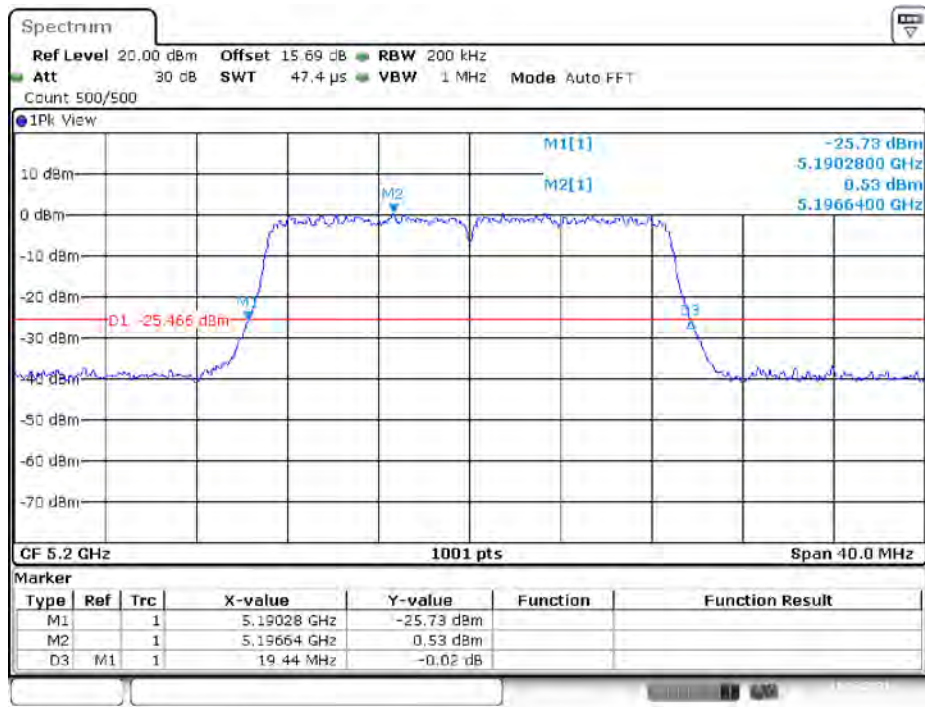
802.11a mode, 26 dB Emissions, 5240 MHz



802.11n20 mode, 26 dB Emissions, 5180 MHz

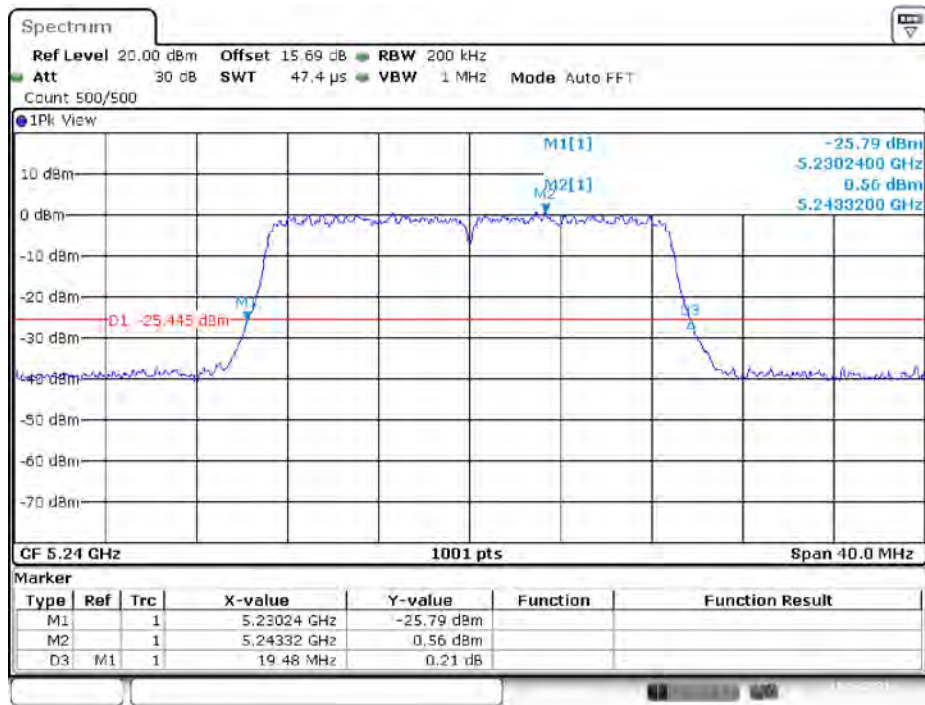


802.11n20 mode, 26 dB Emissions, 5200 MHz



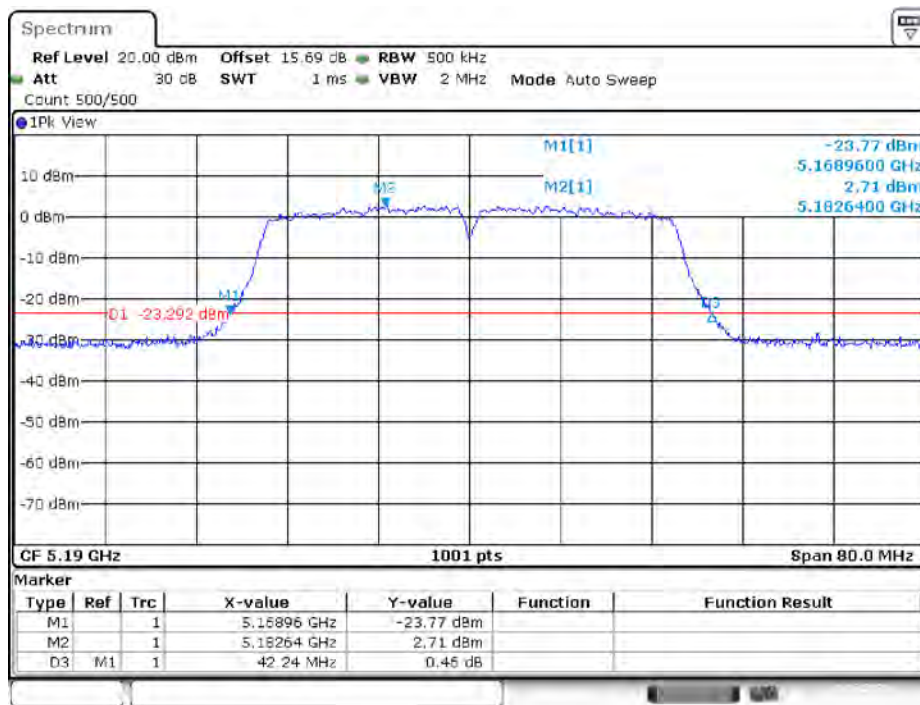
Date: 11.OCT.2021 11:55:45

802.11n20 mode, 26 dB Emissions, 5240 MHz



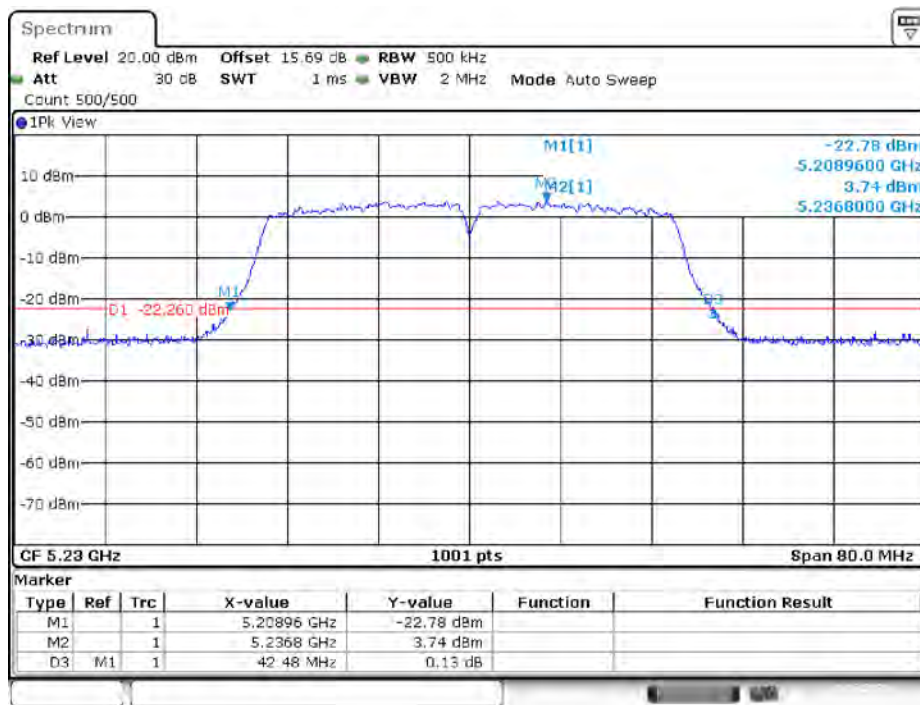
Date: 11.OCT.2021 11:58:23

802.11n40 mode, 26 dB Emissions, 5190 MHz



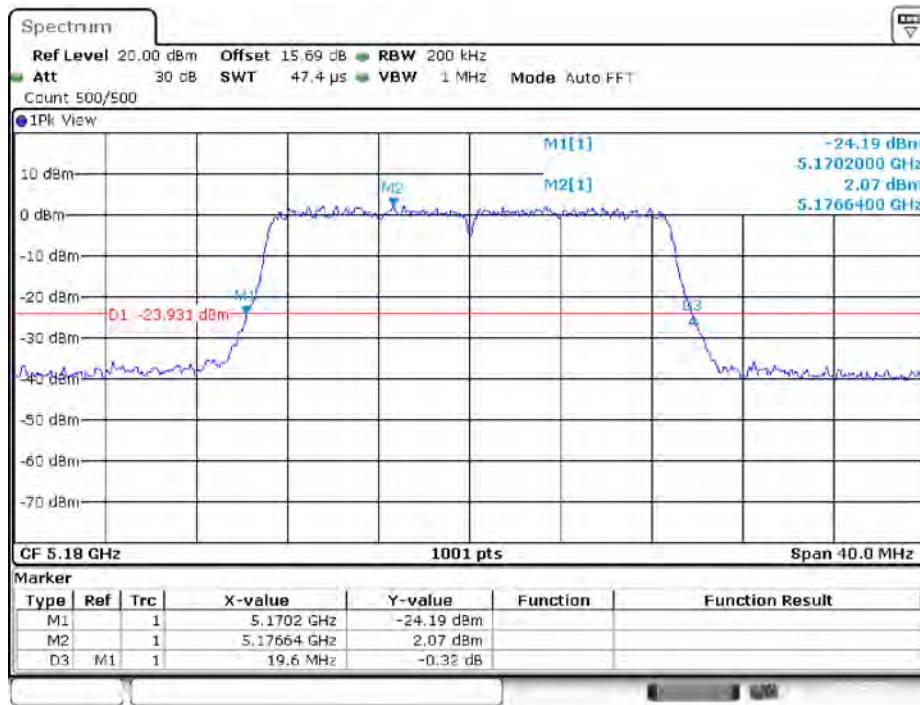
Date: 11.OCT.2021 12:00:49

802.11n40 mode, 26 dB Emissions, 5230 MHz



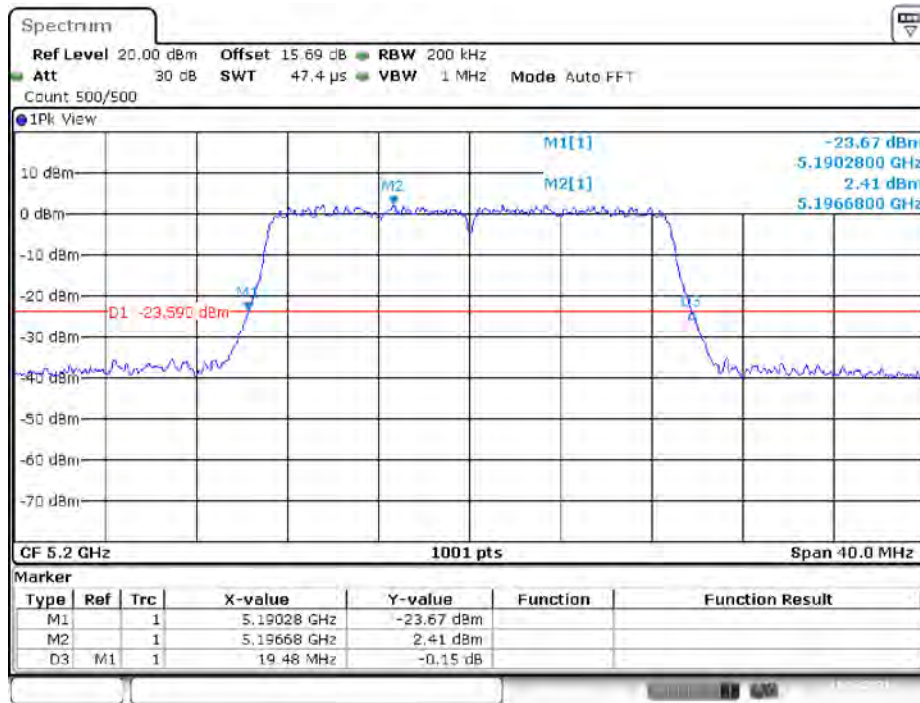
Date: 11.OCT.2021 13:34:53

802.11ac20 mode, 26 dB Emissions, 5180 MHz



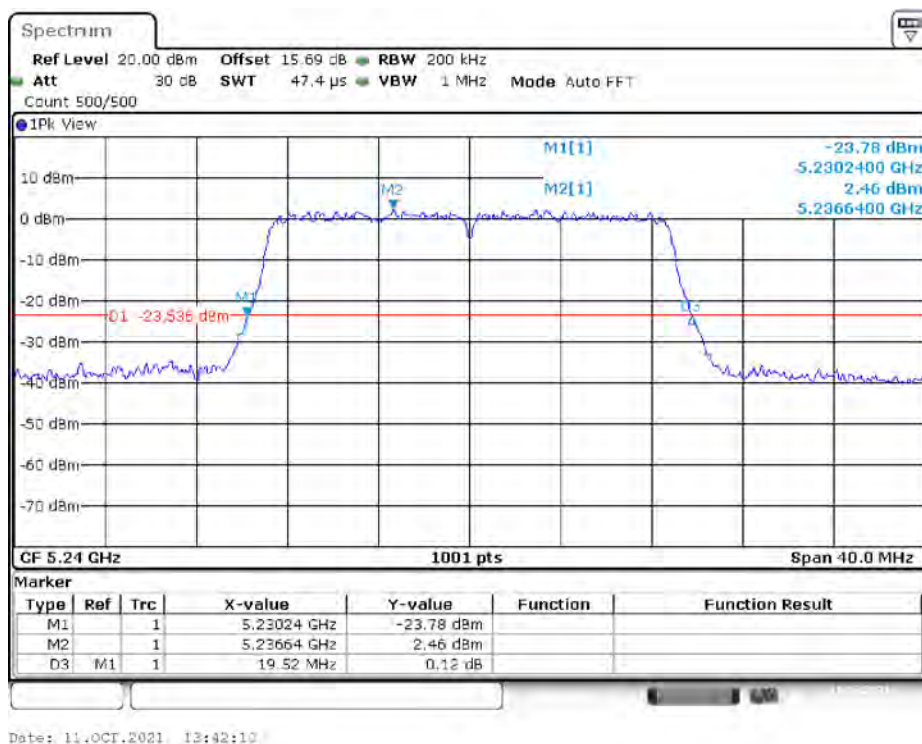
Date: 11.OCT.2021 13:37:38

802.11ac20 mode, 26 dB Emissions, 5200 MHz

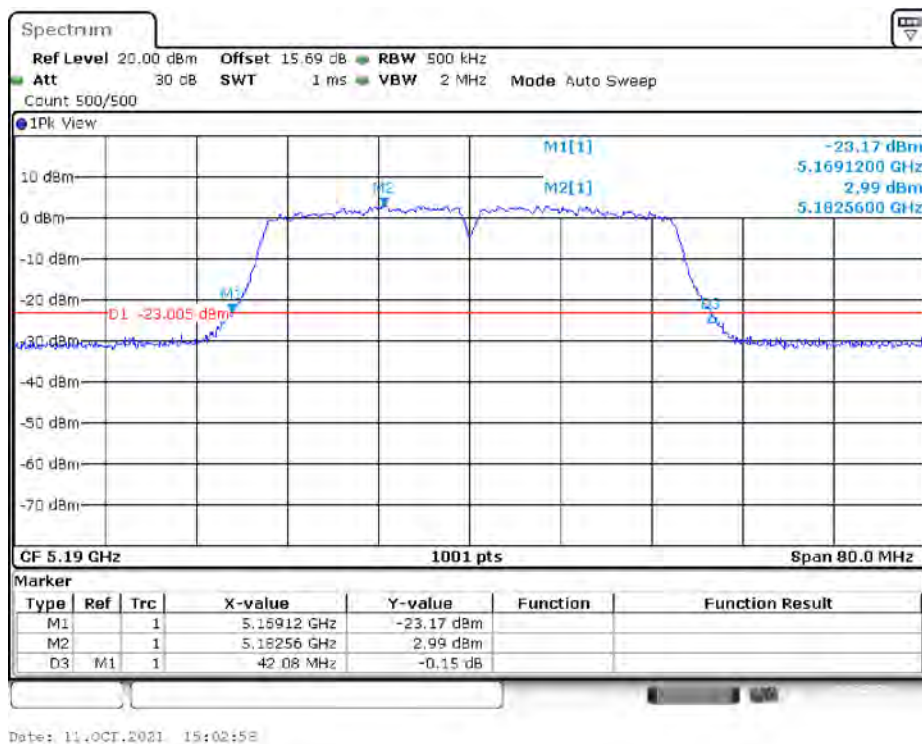


Date: 11.OCT.2021 13:40:05

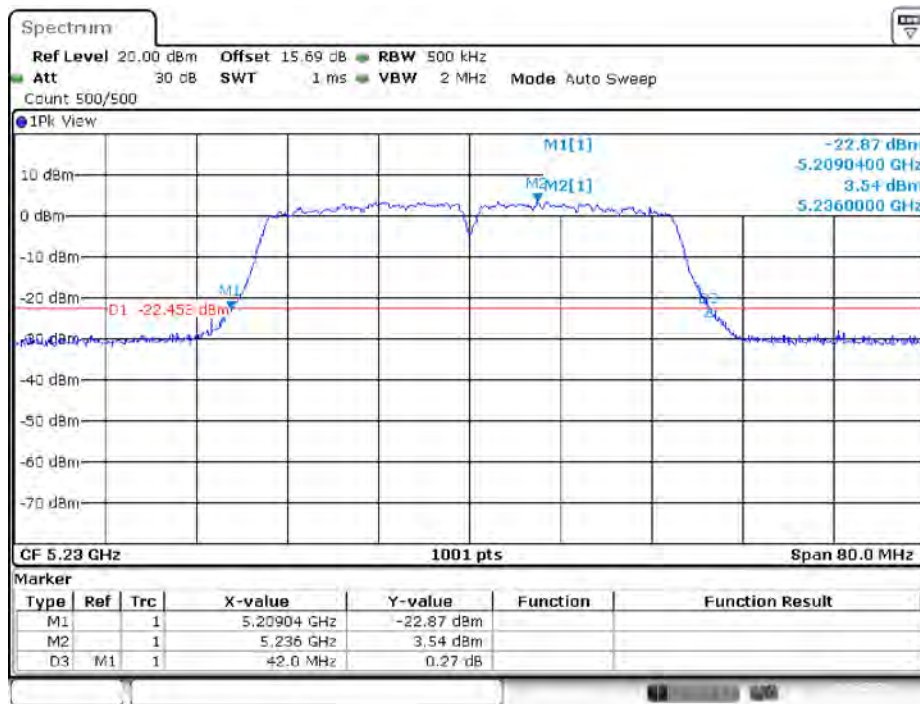
802.11ac20 mode, 26 dB Emissions, 5240 MHz



802.11ac40 mode, 26 dB Emissions, 5190 MHz

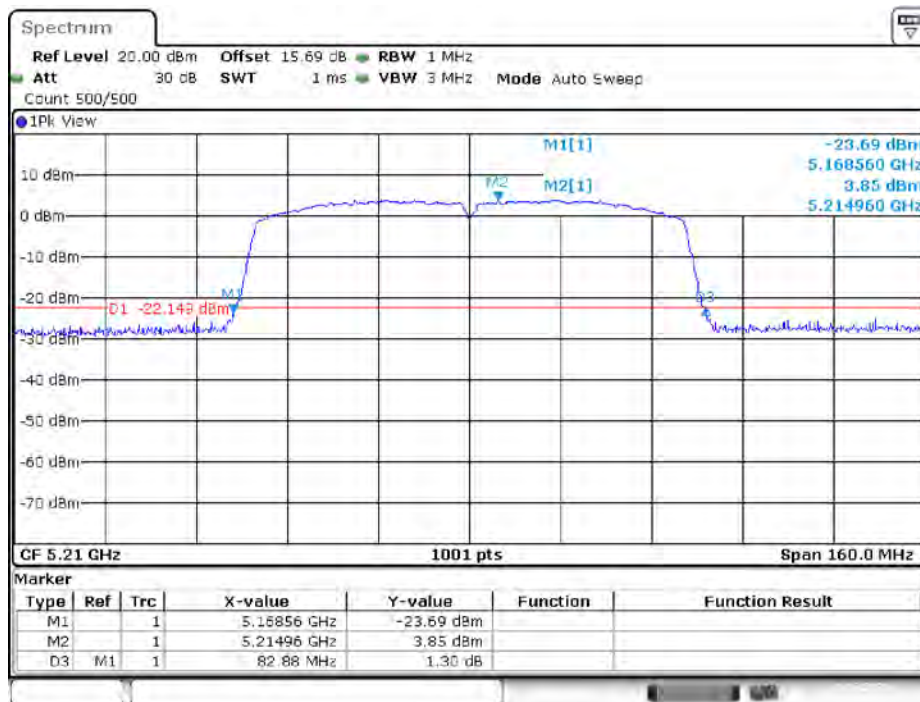


802.11ac40 mode, 26 dB Emissions, 5230 MHz



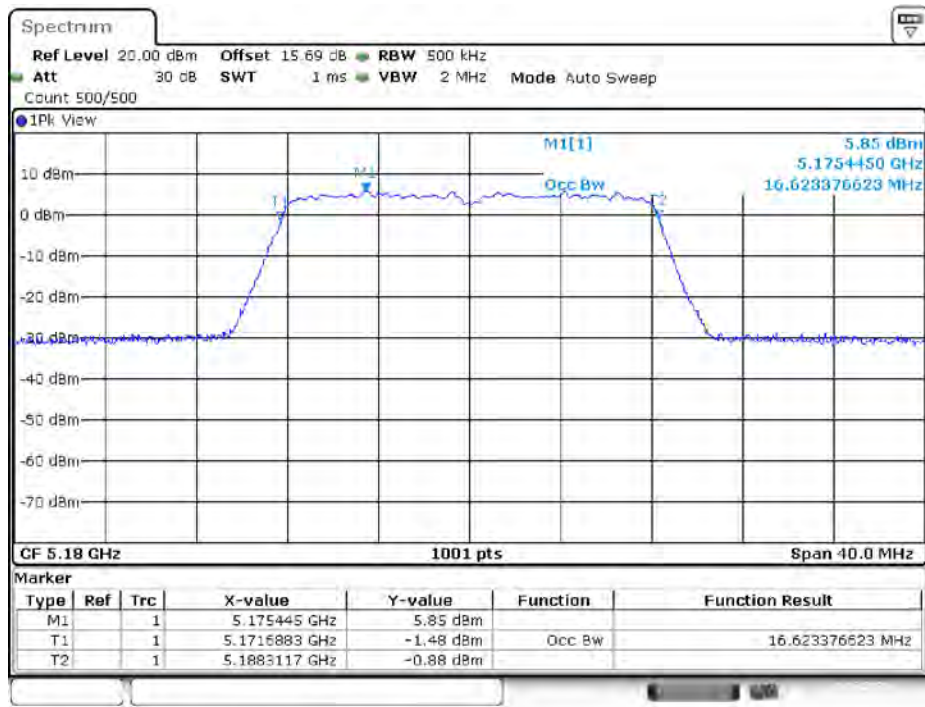
Date: 11.OCT.2021 15:24:11

802.11ac80 mode, 26 dB Emissions, 5210 MHz



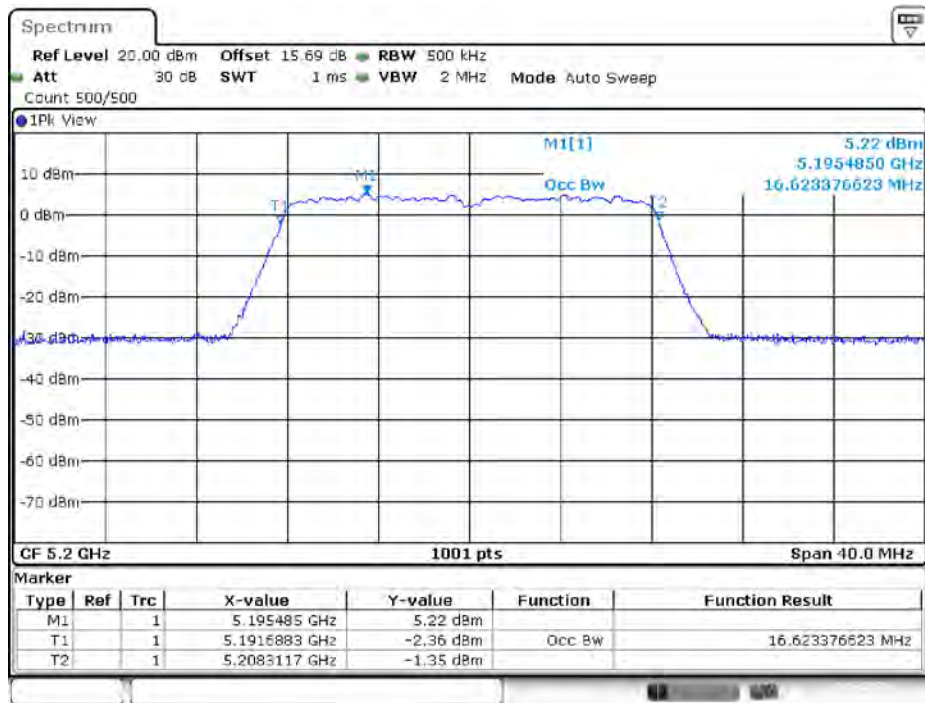
Date: 11.OCT.2021 15:26:34

802.11a mode, 99% Occupied Bandwidth, 5180 MHz

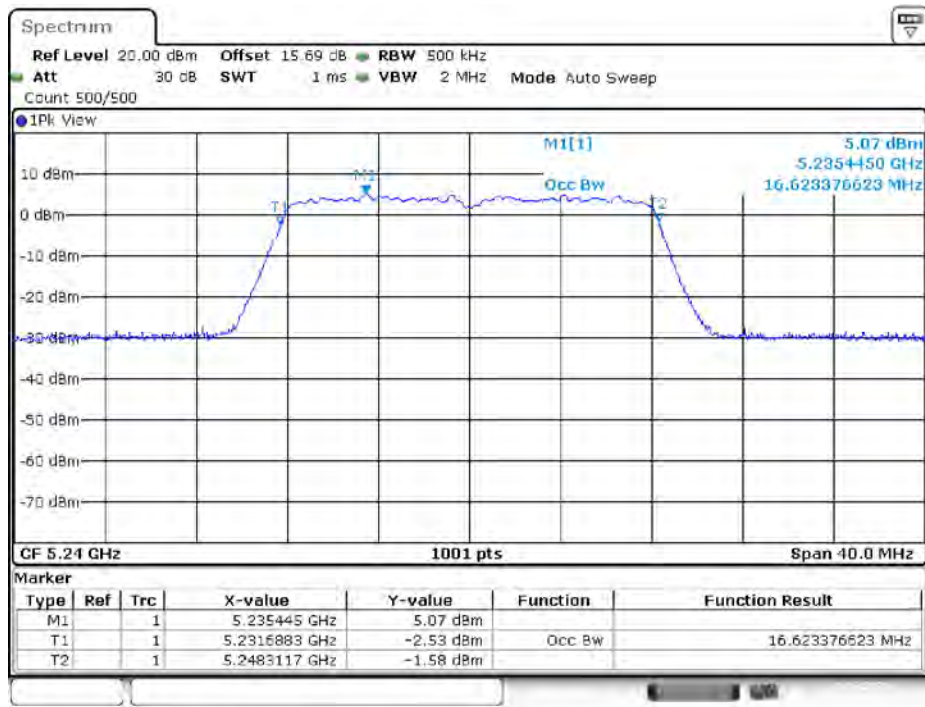


Date: 11.OCT.2021 11:44:25

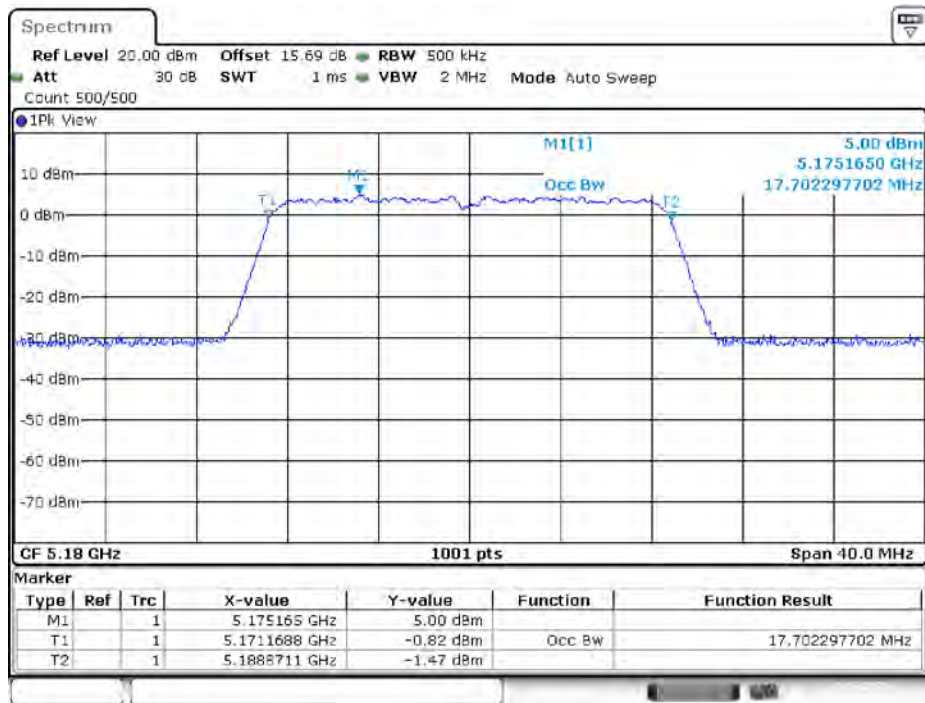
802.11a mode, 99% Occupied Bandwidth, 5200 MHz



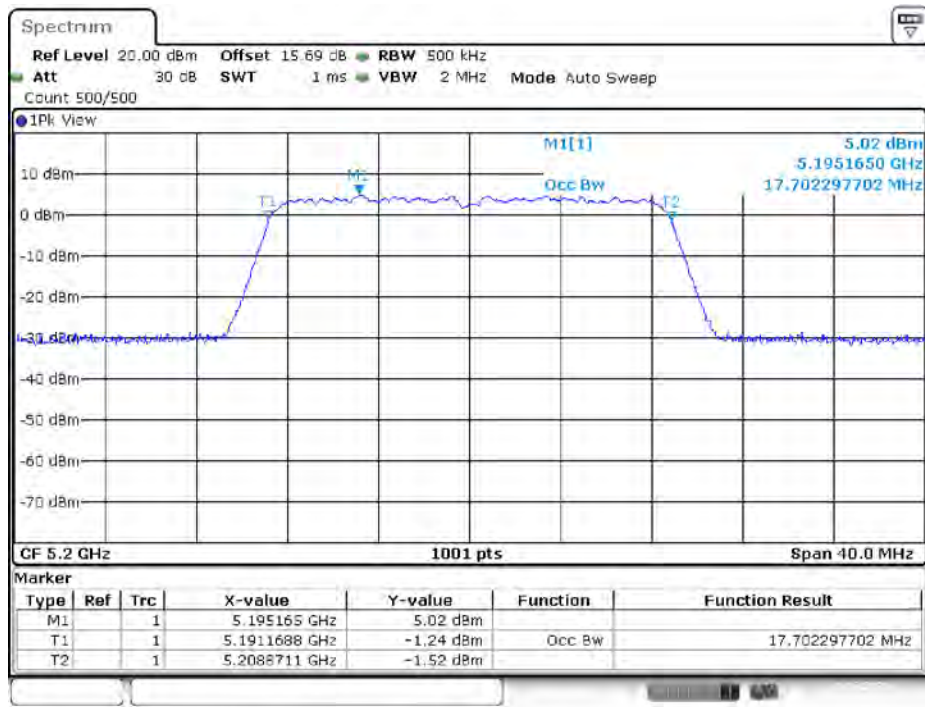
Date: 11.OCT.2021 11:47:54

802.11a mode, 99% Occupied Bandwidth, 5240 MHz

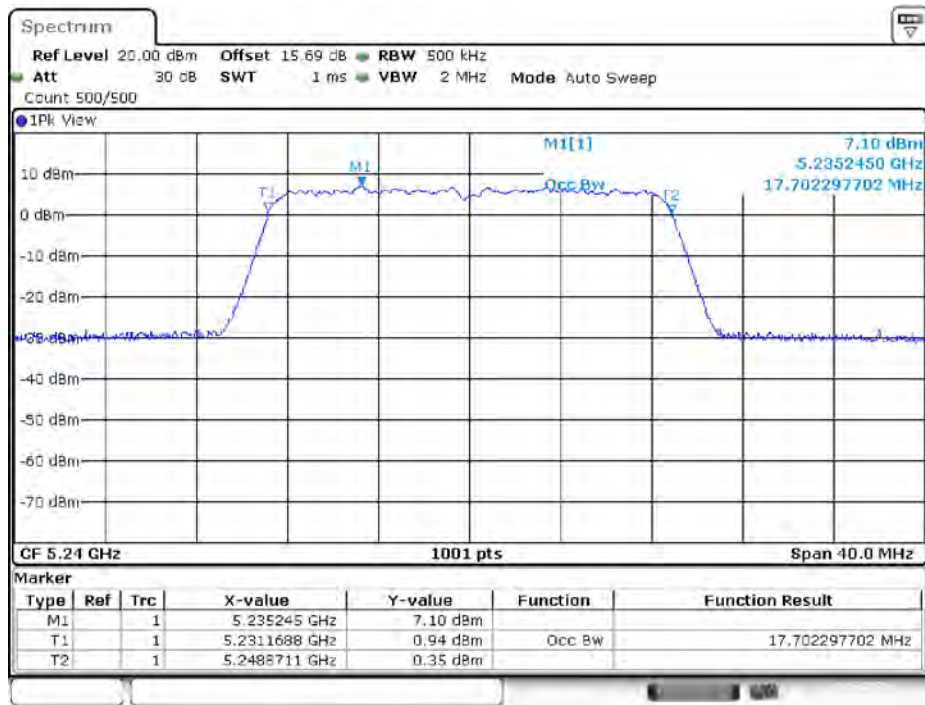
Date: 11.OCT.2021 11:50:38

802.11n20 mode, 99% Occupied Bandwidth, 5180 MHz

Date: 11.OCT.2021 11:50:12

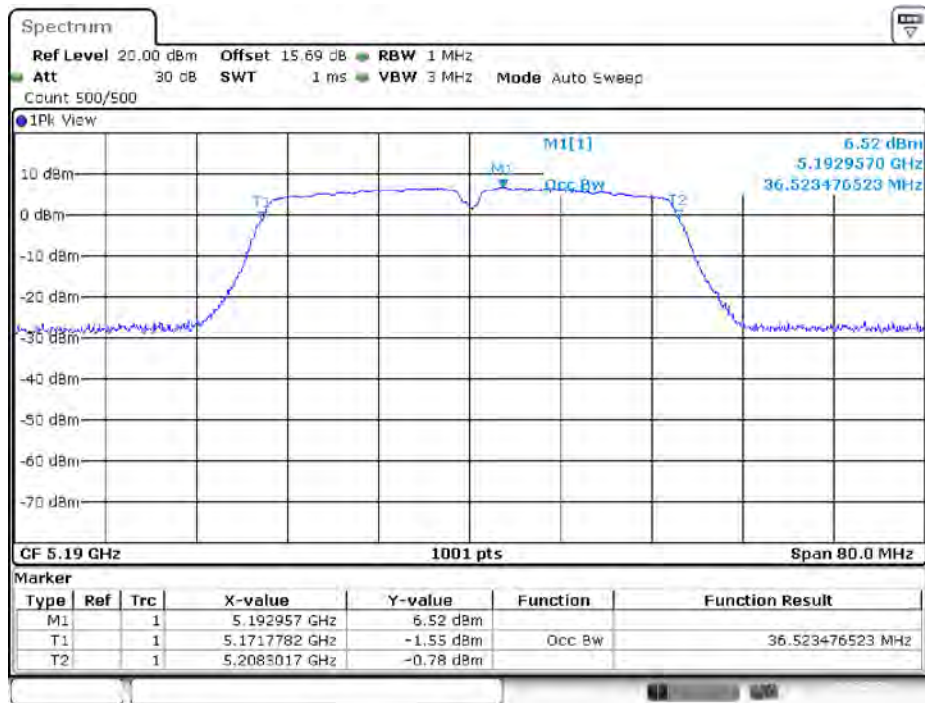
802.11n20 mode, 99% Occupied Bandwidth, 5200 MHz

Date: 11.OCT.2021 11:56:11

802.11n20 mode, 99% Occupied Bandwidth, 5240 MHz

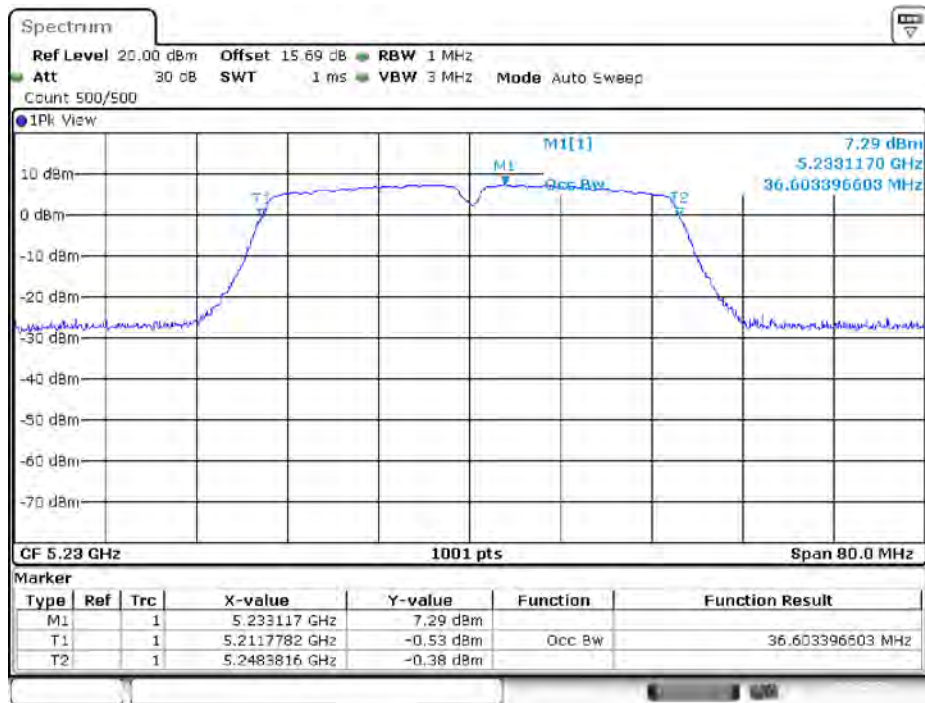
Date: 11.OCT.2021 15:33:50

802.11n40 mode, 99% Occupied Bandwidth, 5190 MHz



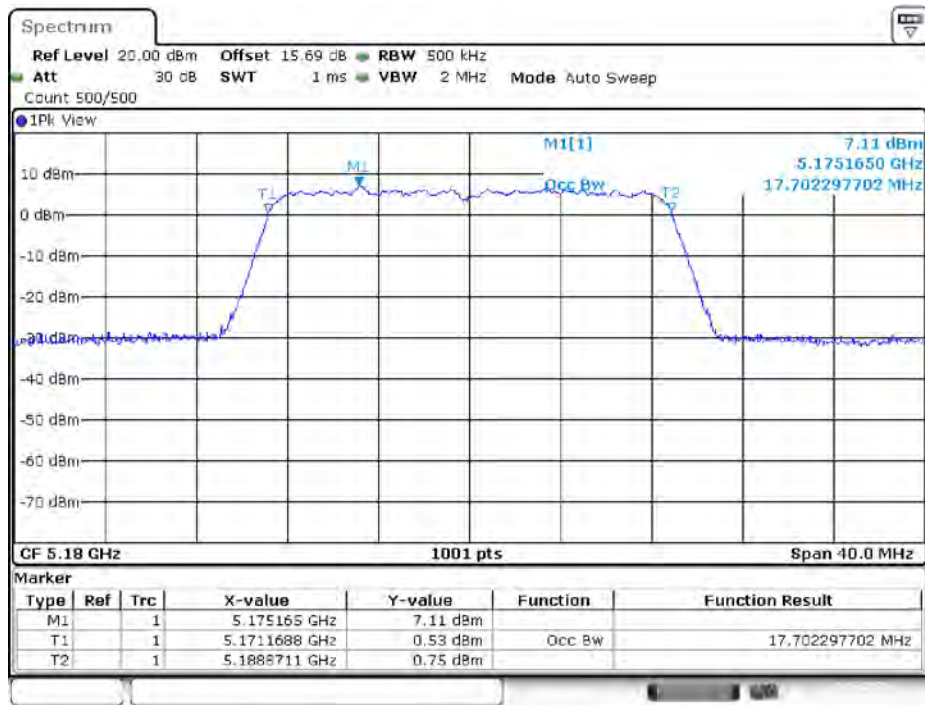
Date: 11.OCT.2021 12:01:15

802.11n40 mode, 99% Occupied Bandwidth, 5230 MHz



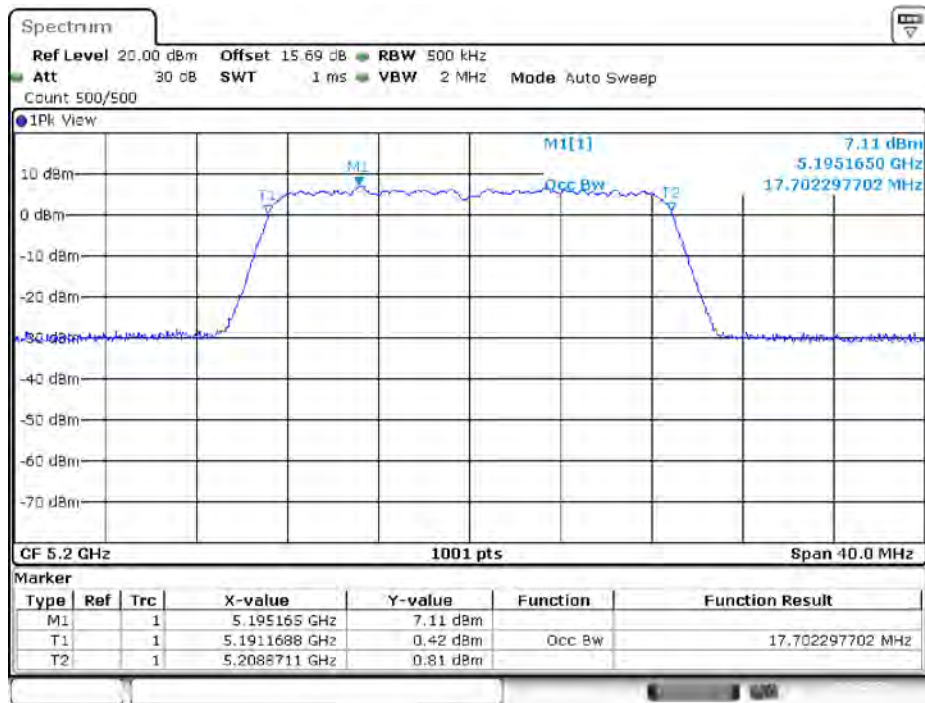
Date: 11.OCT.2021 13:35:27

802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz



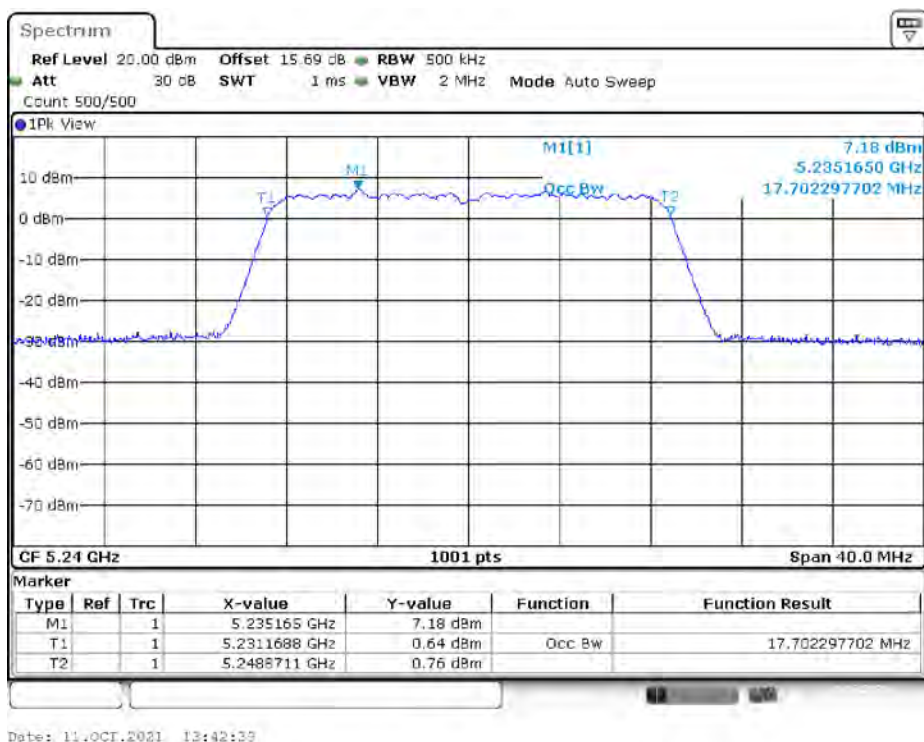
Date: 11.OCT.2021 13:38:07

802.11ac20 mode, 99% Occupied Bandwidth, 5200 MHz

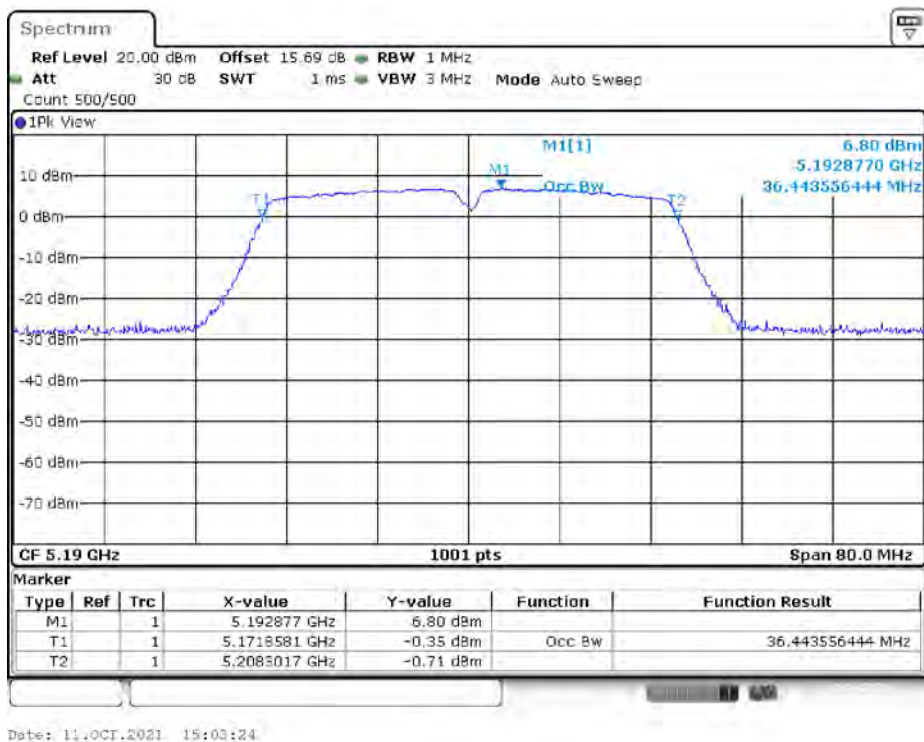


Date: 11.OCT.2021 13:40:31

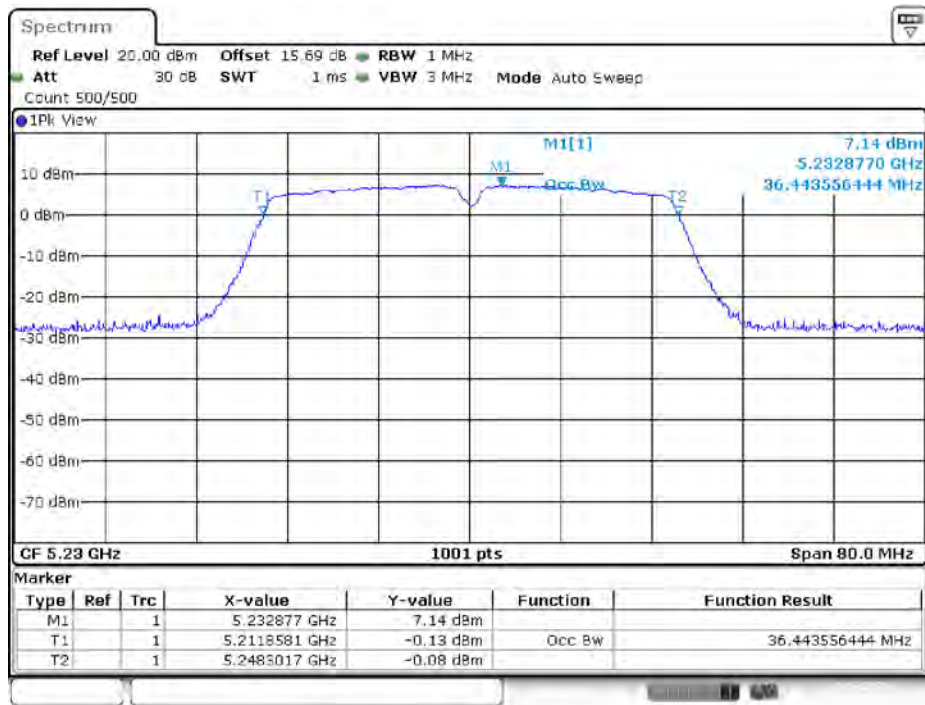
802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz



802.11ac40 mode, 99% Occupied Bandwidth, 5190 MHz

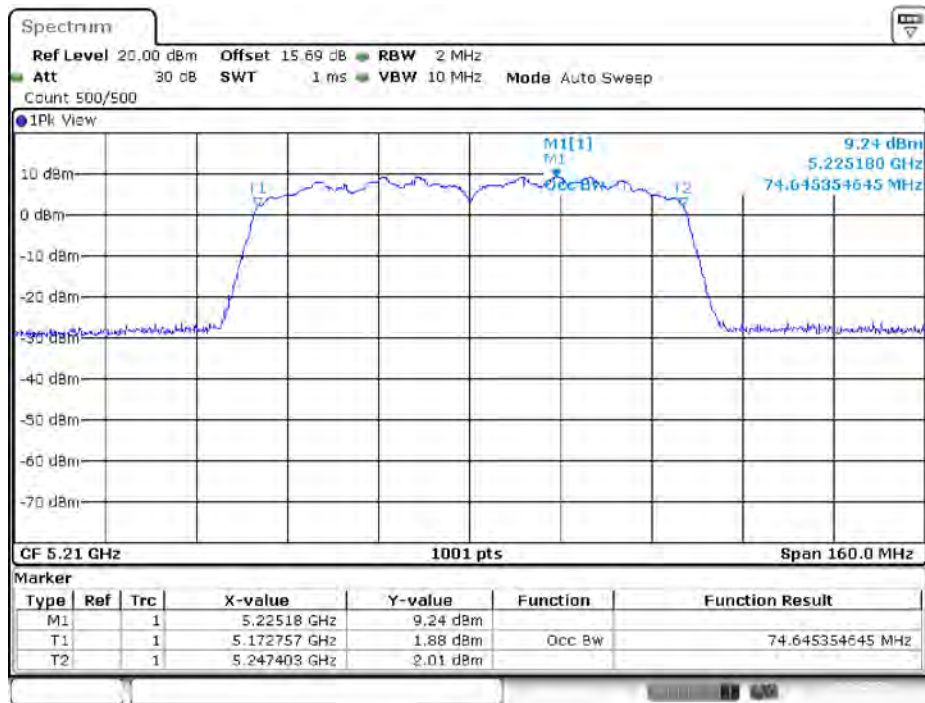


802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz



Date: 11.OCT.2021 15:24:38

802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz



Date: 11.OCT.2021 15:26:58

FCC §15.407(a) (1) (3) – CONDUCTED TRANSMITTER OUTPUT POWER

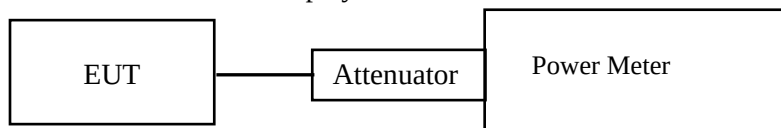
Applicable Standard

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 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

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



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2021-10-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

5150 MHz – 5250 MHz

TestMode	Frequency (MHz)	Conducted Output Average Power (dBm)			Limit (dBm)
		Chain 0	Chain 1	Total	
802.11a	5180	14.12	13.7	16.92	23.98
	5200	15.54	13.2	17.54	
	5240	16.14	13.44	18.01	
802.11n20	5180	13.33	12.78	16.07	23.98
	5200	15.46	12.81	17.34	
	5240	16.05	13.83	18.09	
802.11n40	5190	14.92	13.87	17.44	23.98
	5230	13.86	14.48	17.19	
802.11ac20	5180	13.58	14.49	17.07	23.98
	5200	13.65	14.56	17.14	
	5240	14.23	14.99	17.64	
802.11ac40	5190	13.07	14.05	16.6	23.98
	5230	13.52	14.4	16.99	
802.11ac80	5210	12.89	13.87	16.42	23.98

Note 1: This product is used for client device.

Note 2: The maximum antenna gain is -0.99 dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0dB (i.e., no array gain) For $N_{ANT} \leq 4$;

So: Directional gain = -0.99dBi < 6dBi

FCC §15.407(a) (1) (3) - POWER SPECTRAL DENSITY

Applicable Standard

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 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 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.1.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log(500 \text{ kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ kHz})$ 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 $10 \log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ 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:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang from 2021-10-9 to 2021-10-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

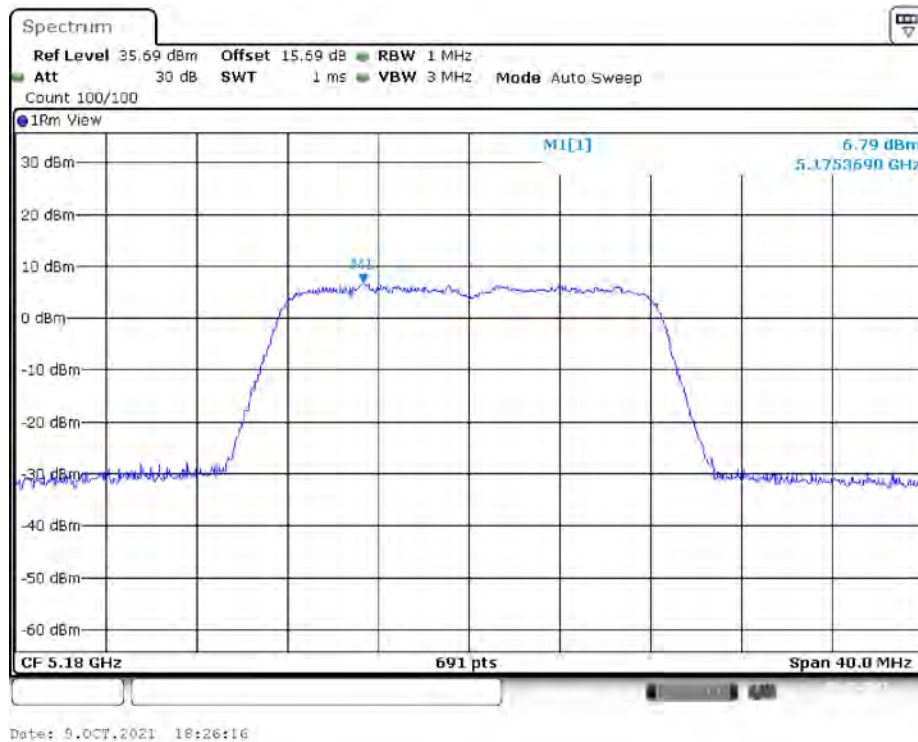
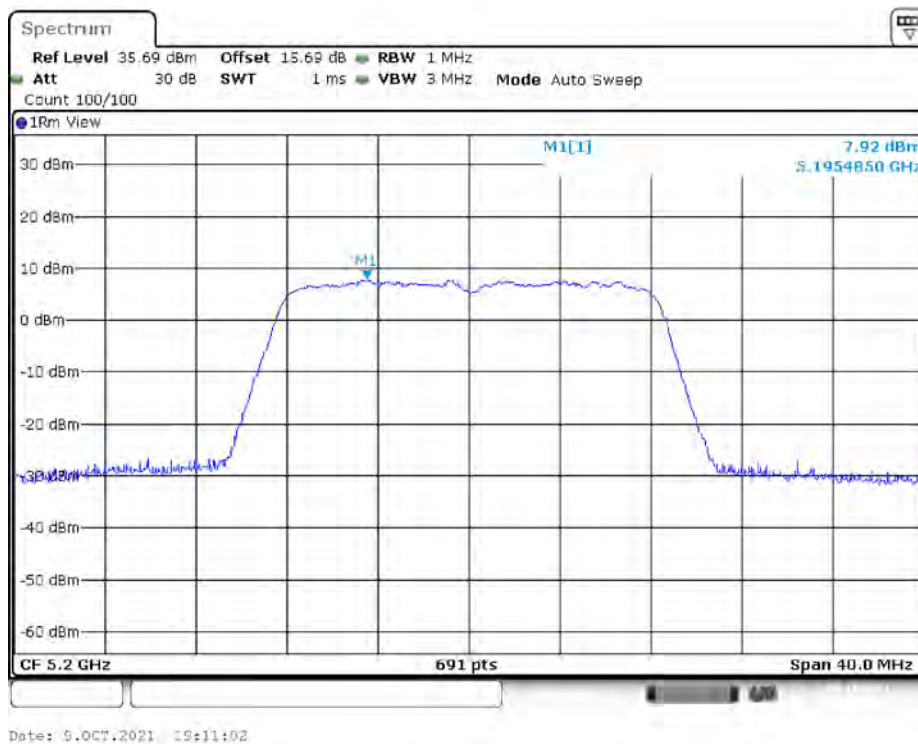
5150 – 5250 MHz

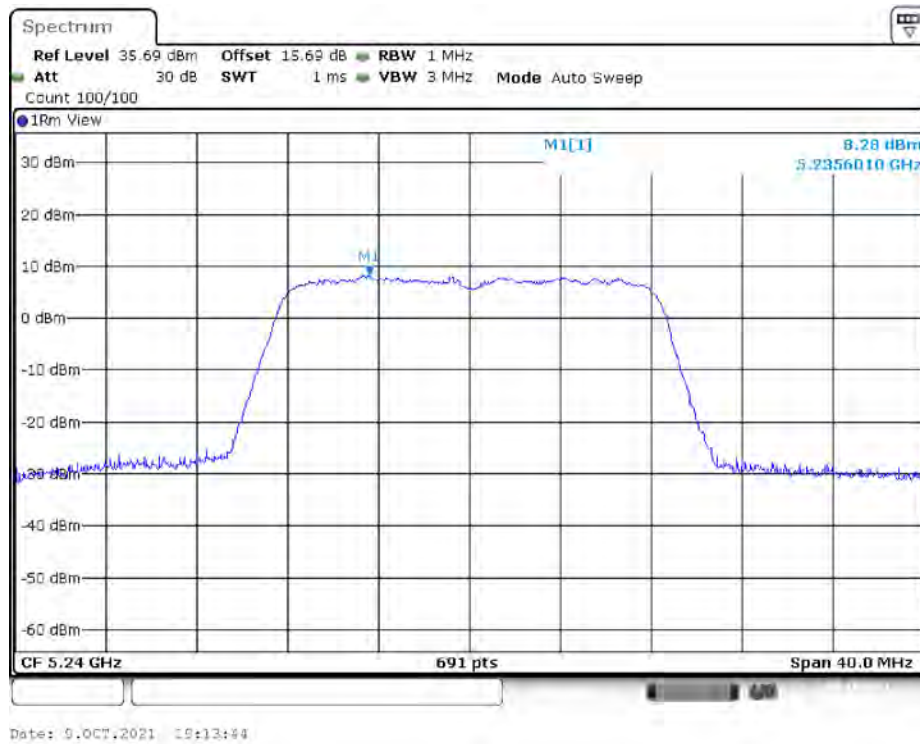
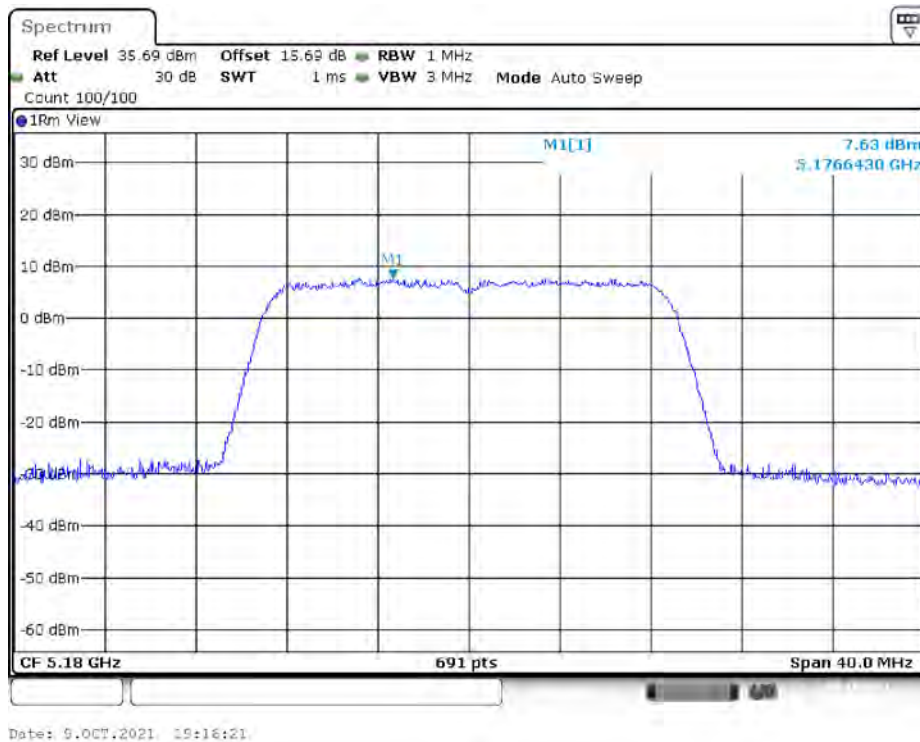
TestMode	Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm)
		Chain 0	Chain 1	Total	
802.11a	5180	6.79	5.84	9.36	11
	5200	7.92	5.23	9.79	
	5240	8.28	5.33	10.06	
802.11n20	5180	7.63	5.01	9.52	11
	5200	7.72	4.79	9.51	
	5240	7.92	5.68	9.95	
802.11n40	5190	4.46	3.25	6.9	11
	5230	3.3	3.89	6.62	
802.11ac20	5180	5.86	7.31	9.65	11
	5200	6	6.92	9.49	
	5240	6.22	6.84	9.55	
802.11ac40	5190	2.88	3.58	6.25	11
	5230	3.05	3.88	6.49	
802.11ac80	5210	-0.54	0.35	2.92	11

Note 1: The maximum antenna gain is -0.99 dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices

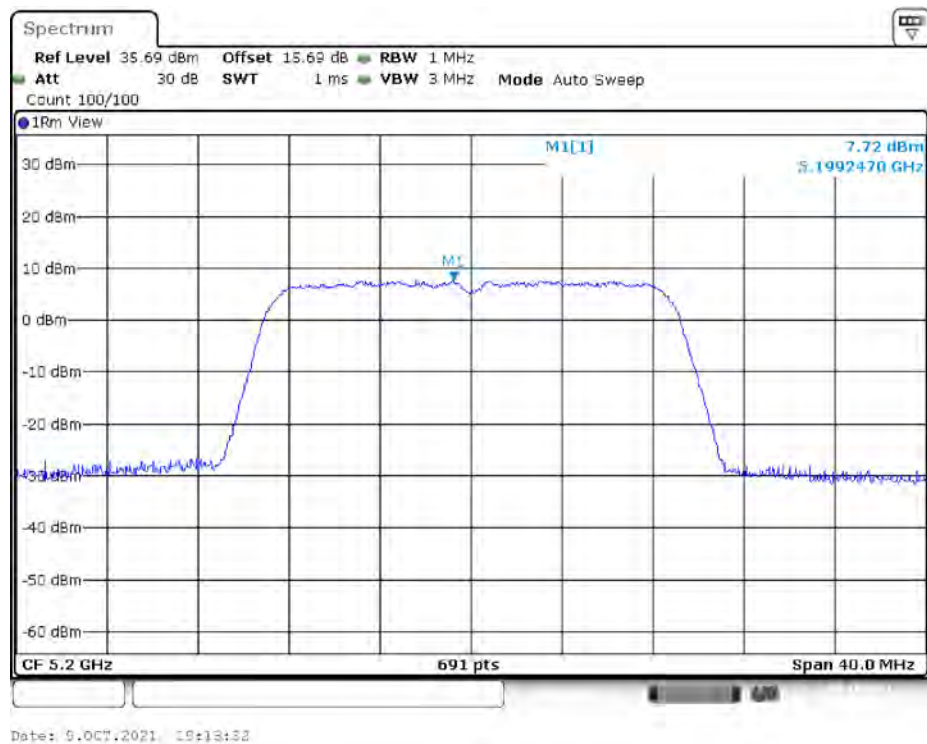
$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{ss}})\text{dB}$$

$$\text{So: Directional gain} = G_{\text{ANT}} + \text{Array Gain} = -0.99 + 10 \cdot \log(2/1) = 2.02\text{dBi}$$

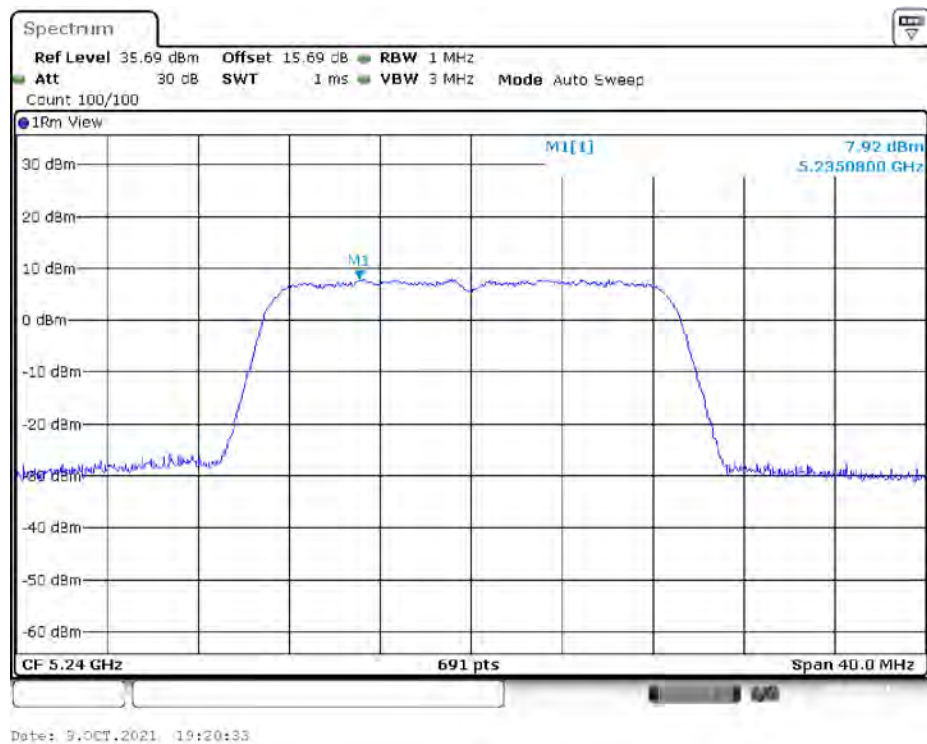
Antenna 0:**802.11a mode, Power Spectral Density, 5180 MHz****802.11a mode, Power Spectral Density, 5200 MHz**

802.11a mode, Power Spectral Density, 5240 MHz**802.11n20 mode, Power Spectral Density, 5180 MHz**

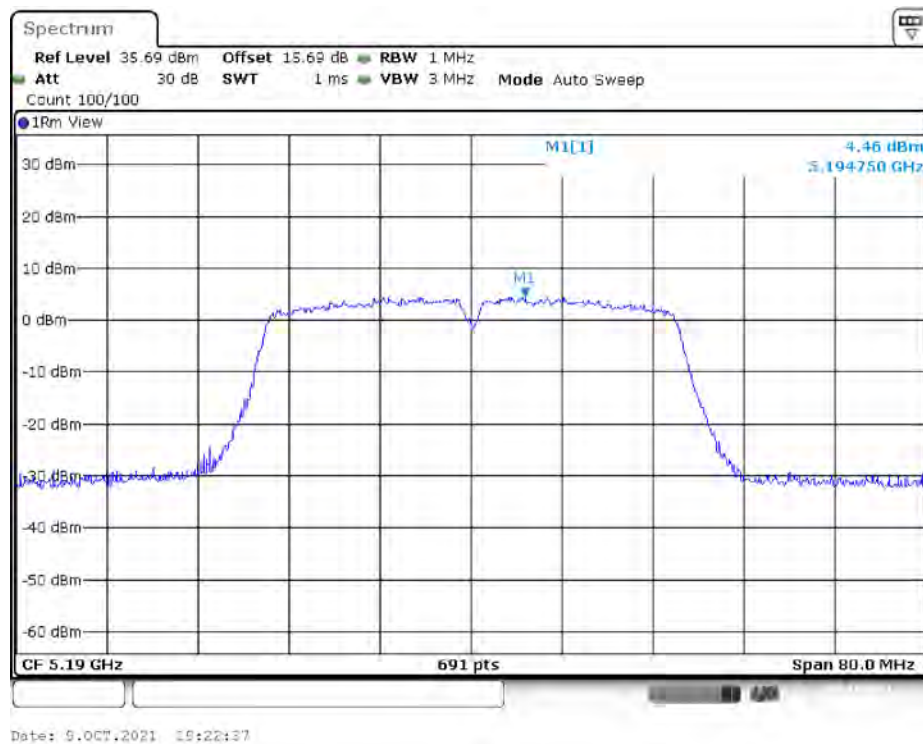
802.11n20 mode, Power Spectral Density, 5200 MHz



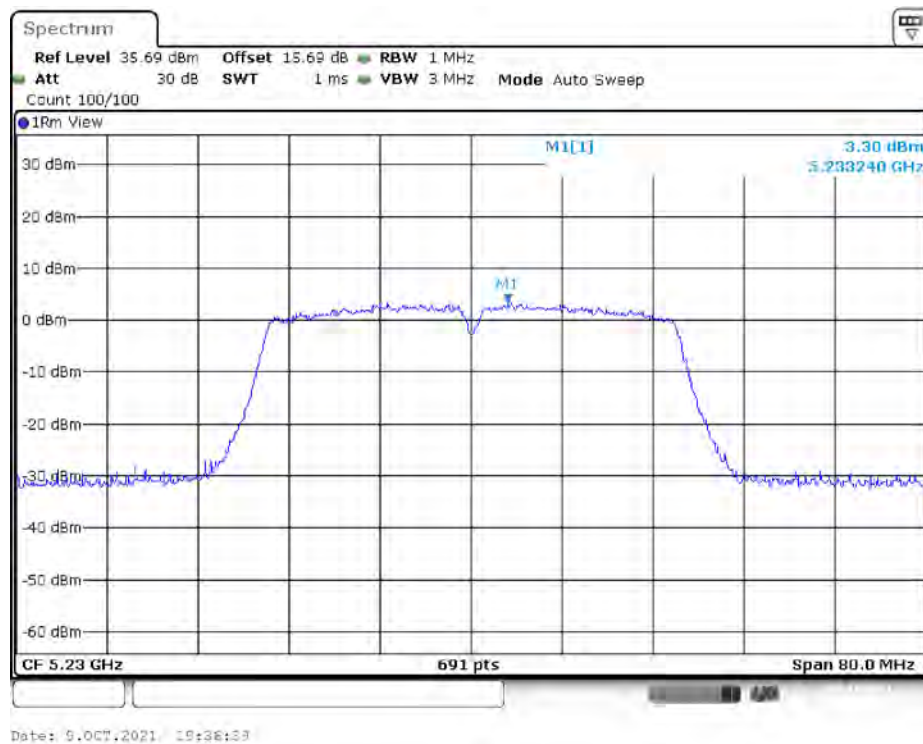
802.11n20 mode, Power Spectral Density, 5240 MHz

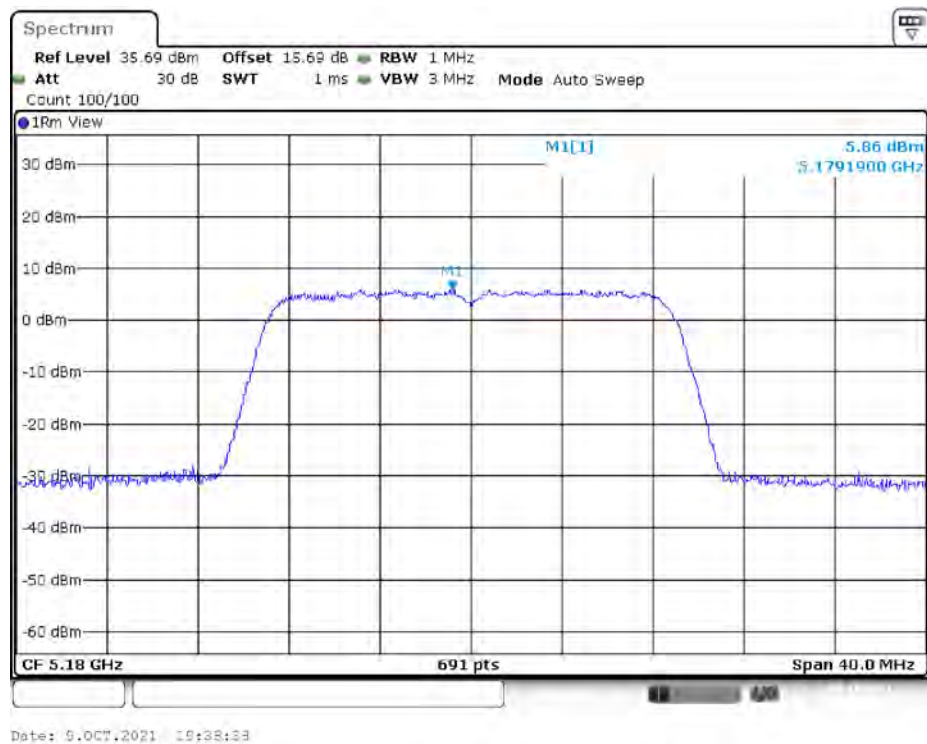
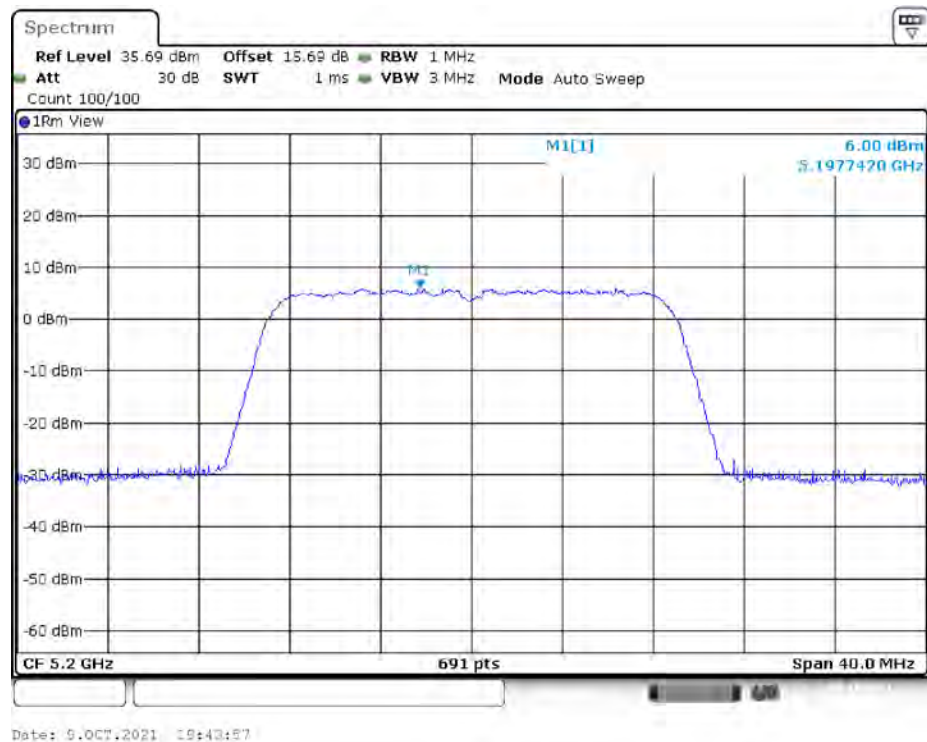


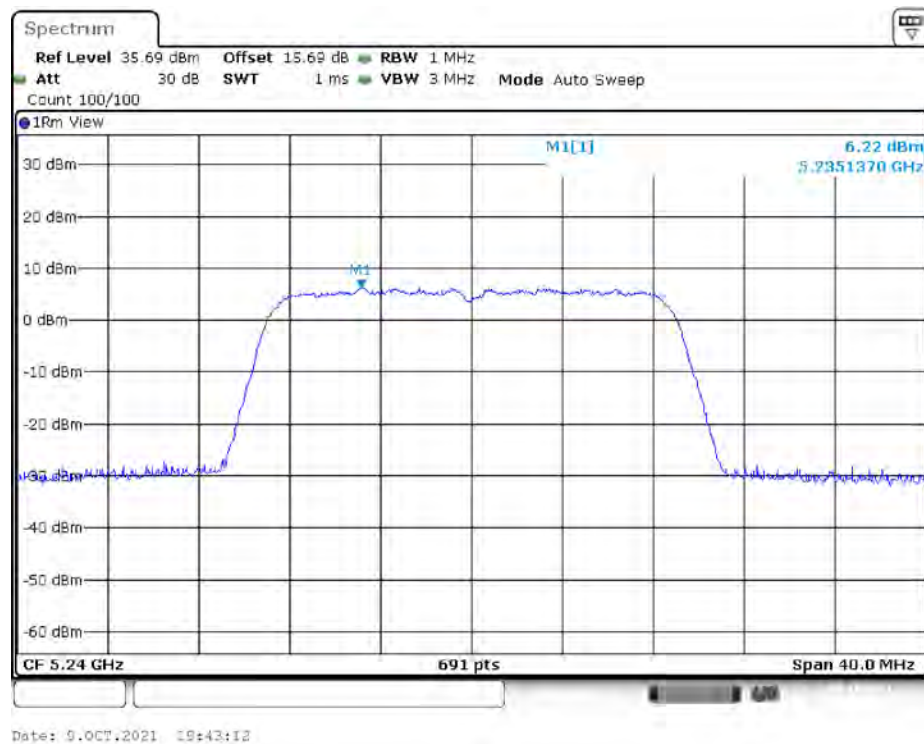
802.11n40 mode, Power Spectral Density, 5190 MHz

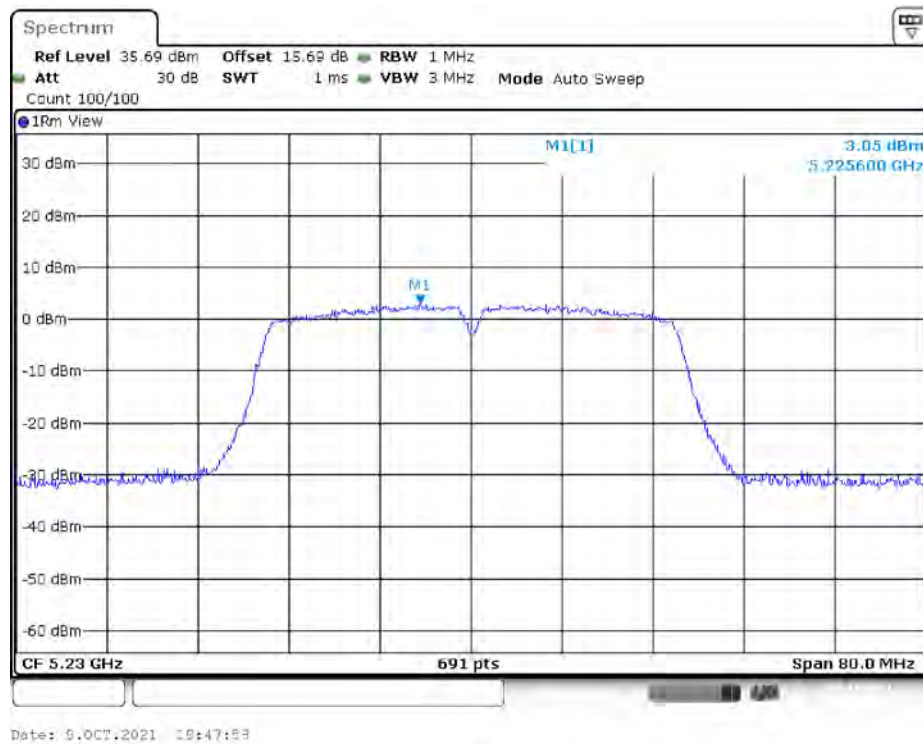
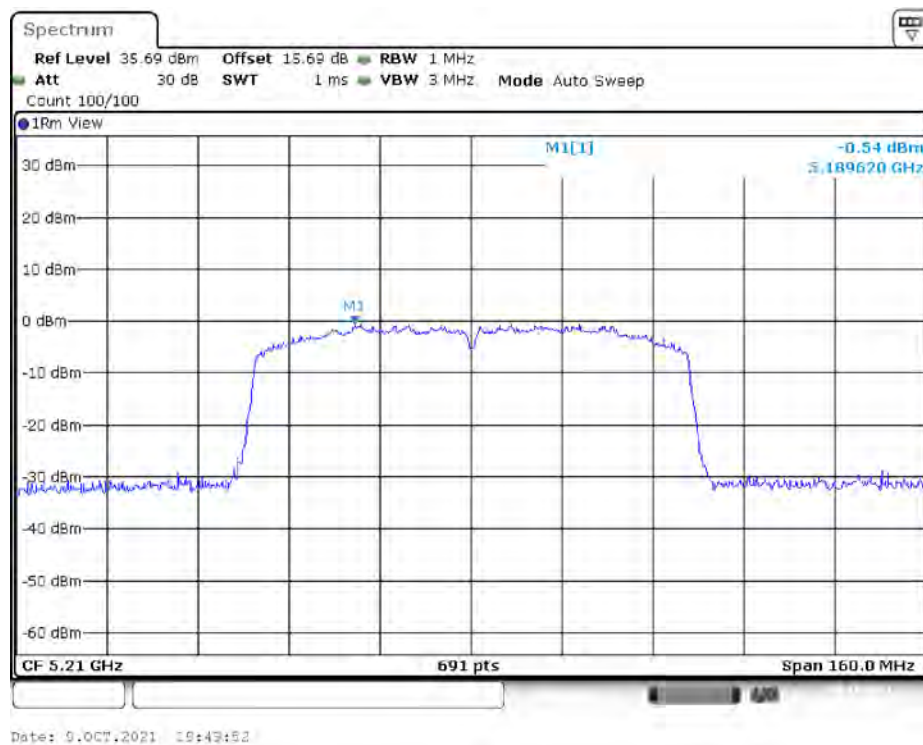


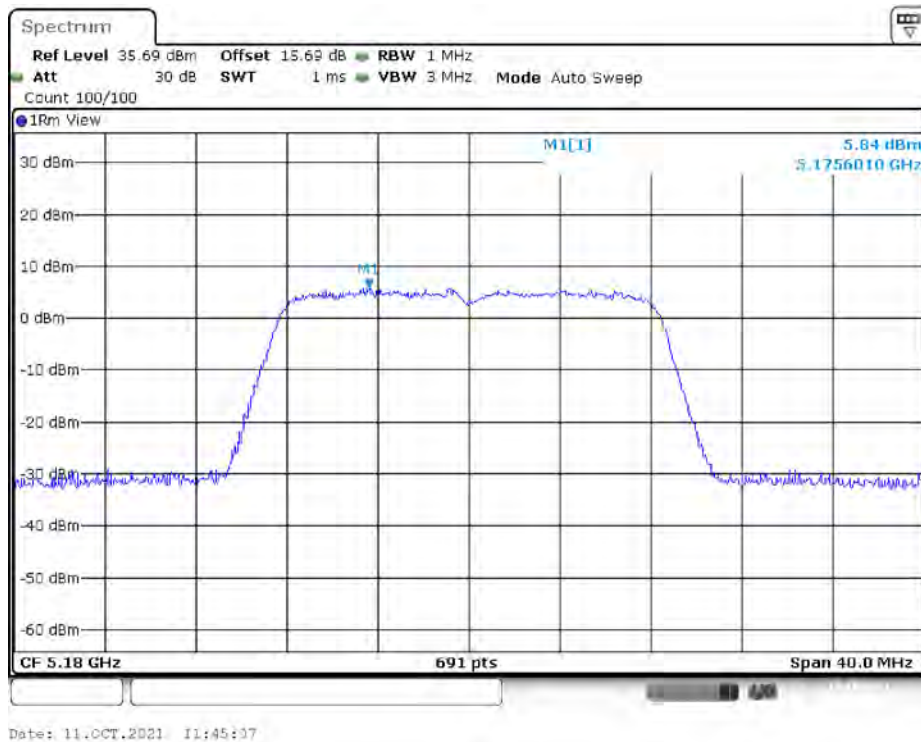
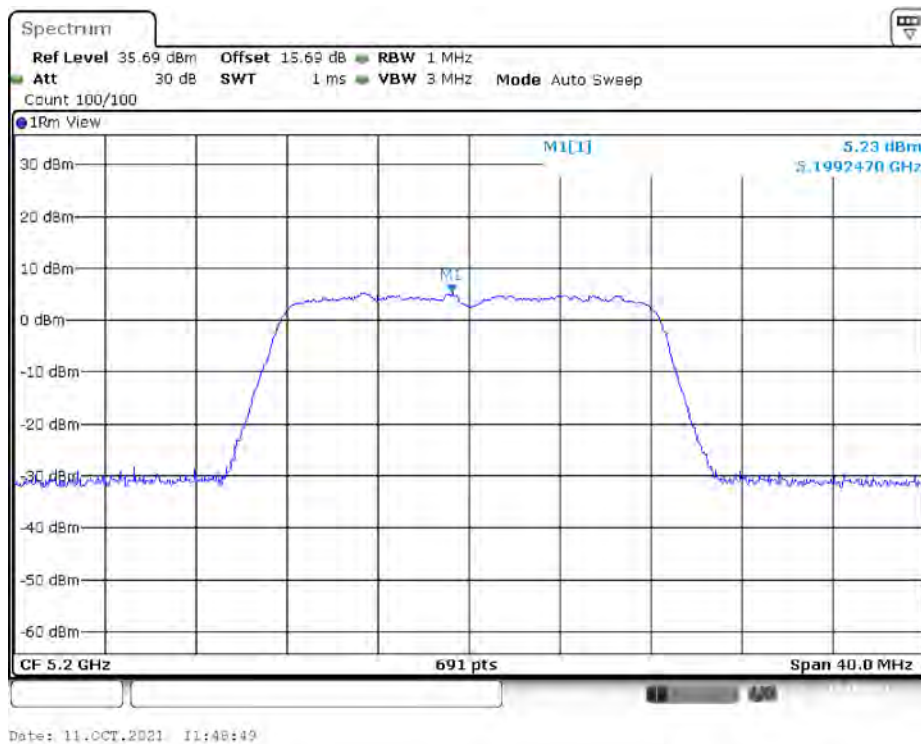
802.11n40 mode, Power Spectral Density, 5230 MHz

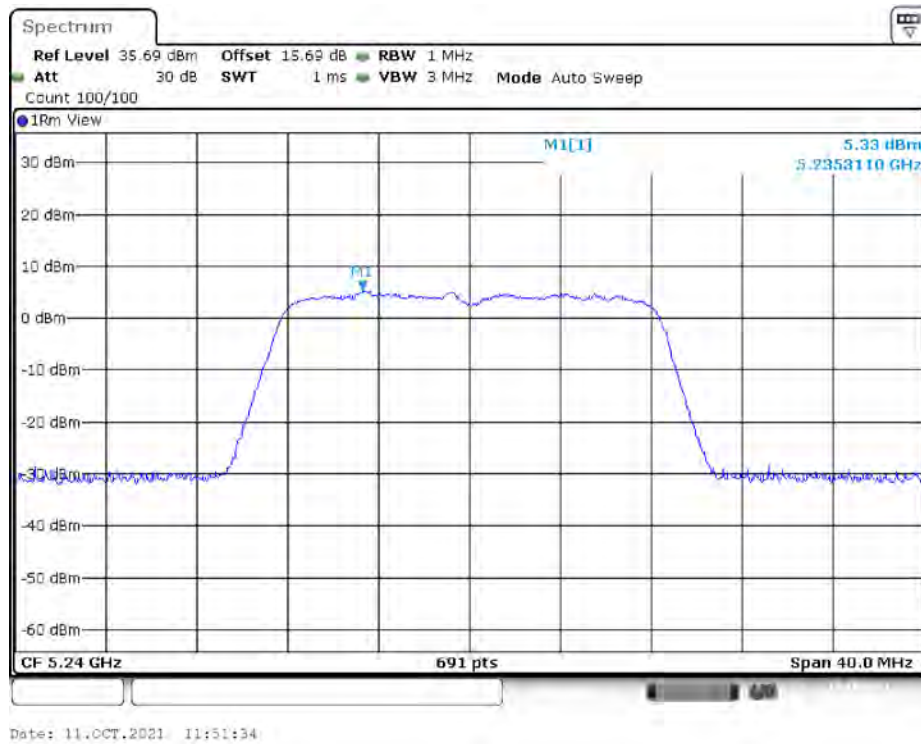
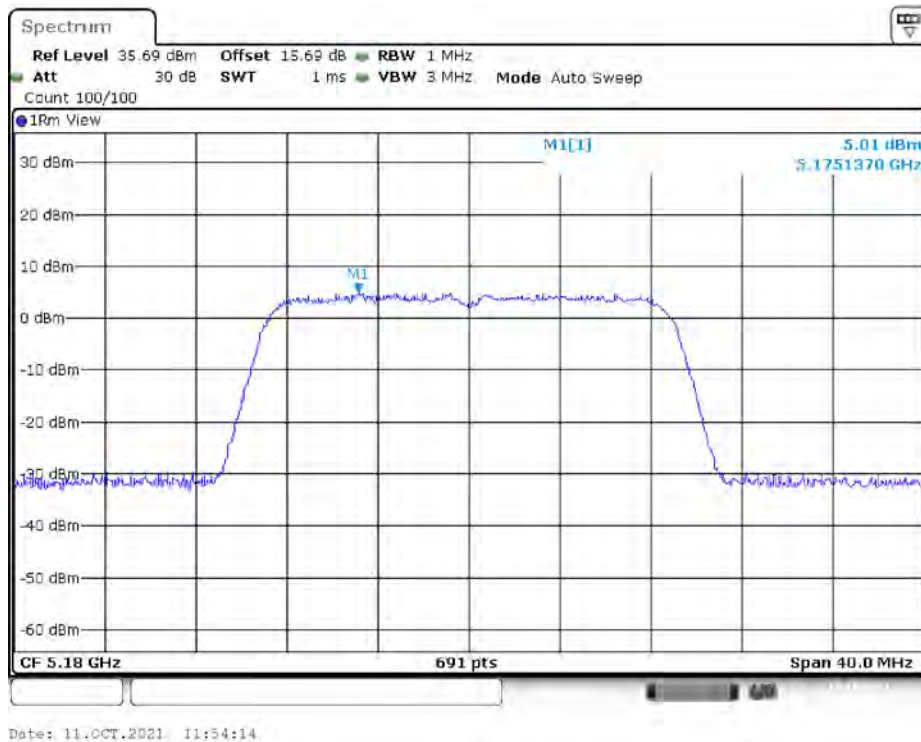


802.11ac20 mode, Power Spectral Density, 5180 MHz**802.11ac20 mode, Power Spectral Density, 5200 MHz**

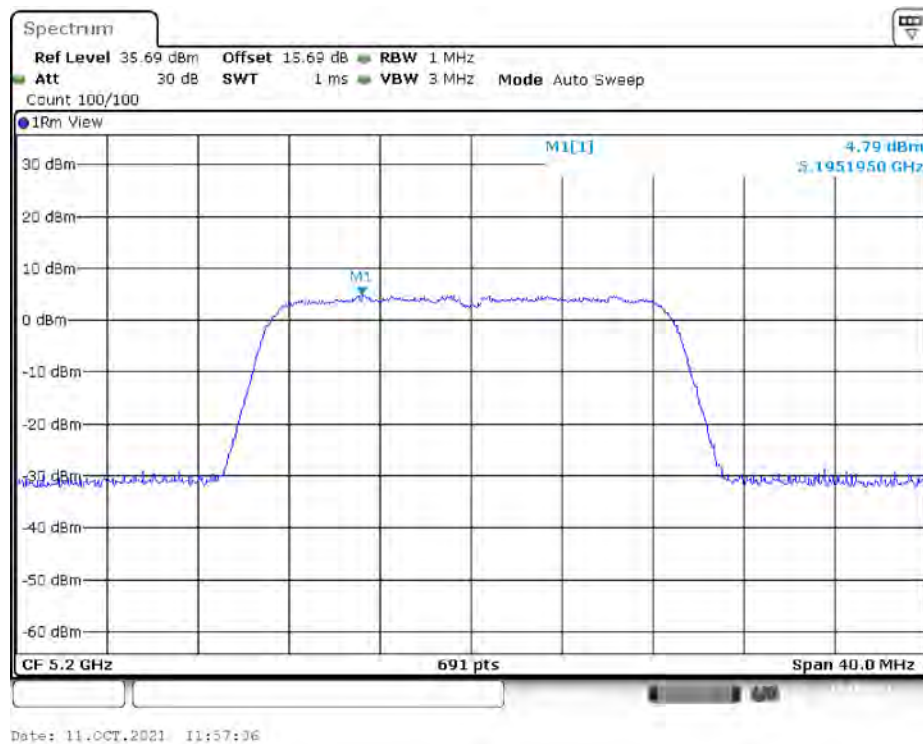
802.11ac20 mode, Power Spectral Density, 5240 MHz**802.11ac40 mode, Power Spectral Density, 5190 MHz**

802.11ac40 mode, Power Spectral Density, 5230 MHz**802.11ac80 mode, Power Spectral Density, 5210 MHz**

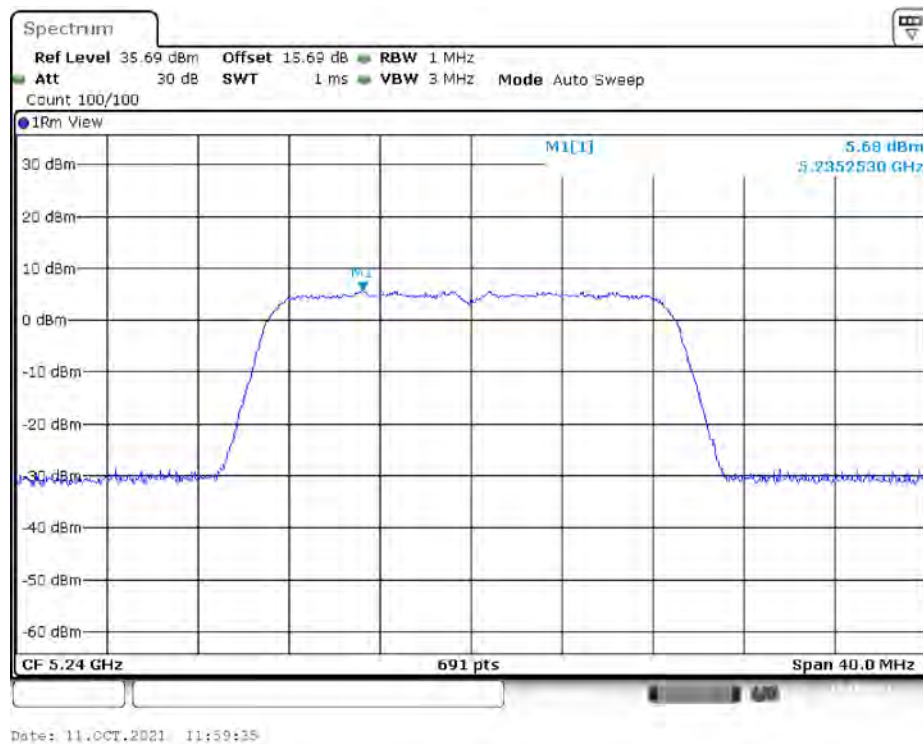
Antenna 1:**802.11a mode, Power Spectral Density, 5180 MHz****802.11a mode, Power Spectral Density, 5200 MHz**

802.11a mode, Power Spectral Density, 5240 MHz**802.11n20 mode, Power Spectral Density, 5180 MHz**

802.11n20 mode, Power Spectral Density, 5200 MHz



802.11n20 mode, Power Spectral Density, 5240 MHz

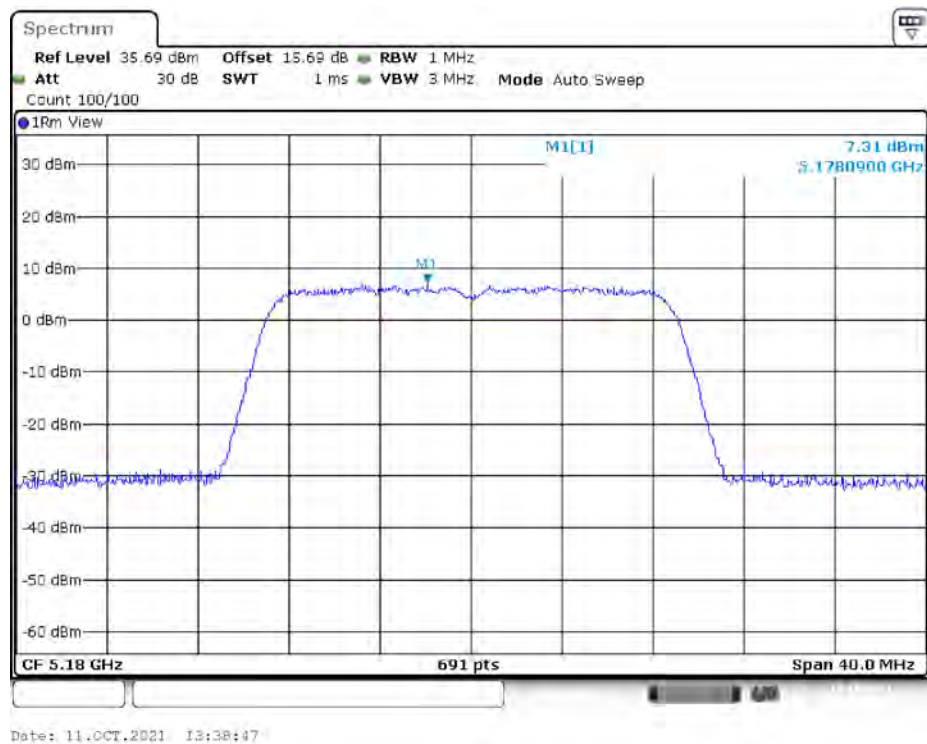
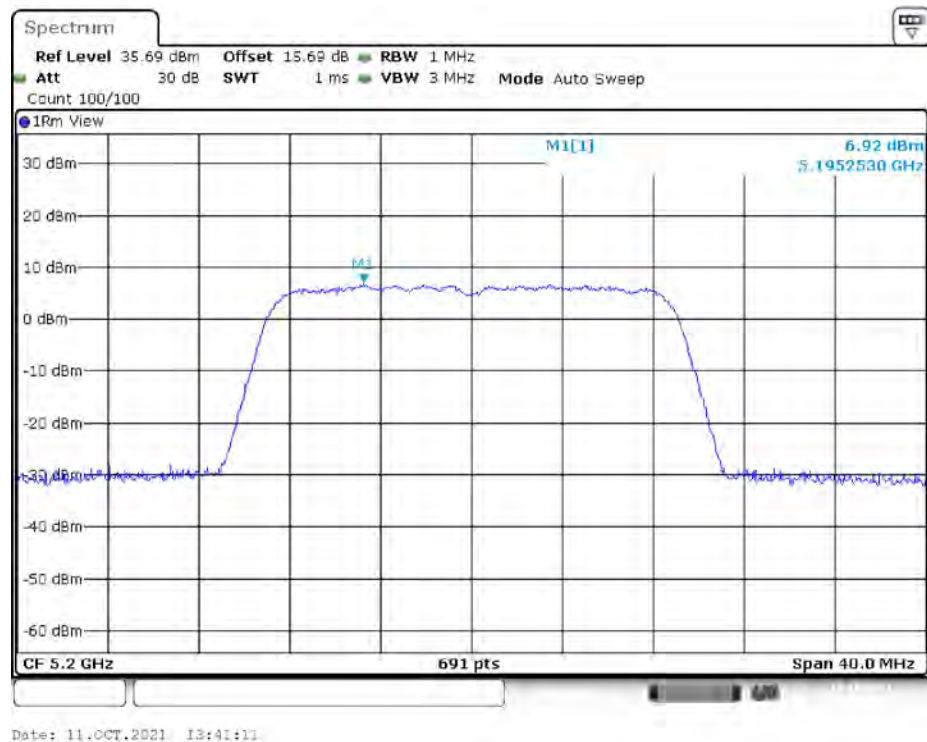


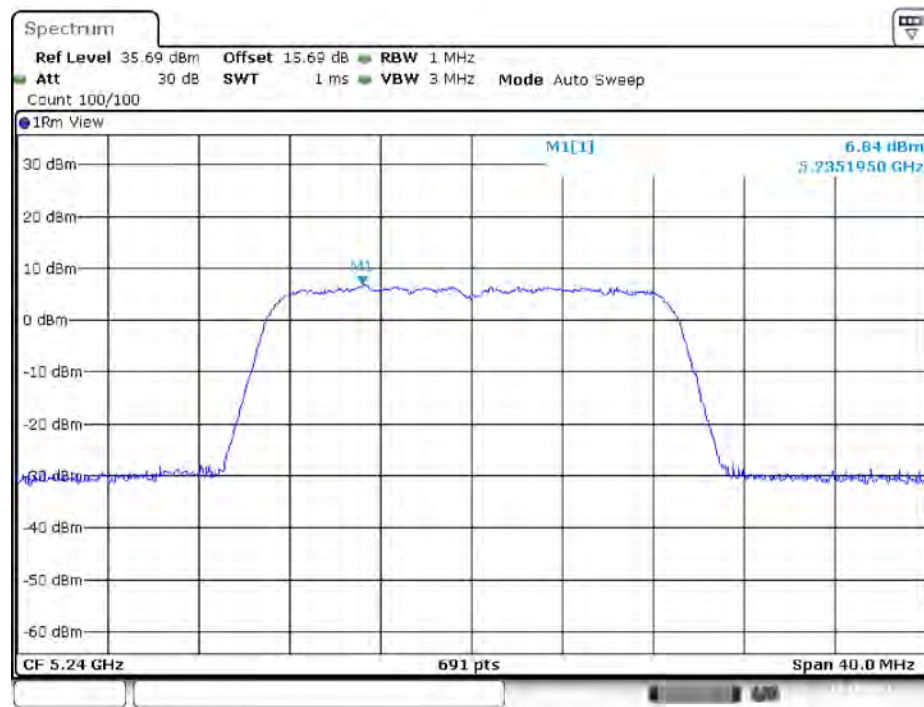
802.11n40 mode, Power Spectral Density, 5190 MHz



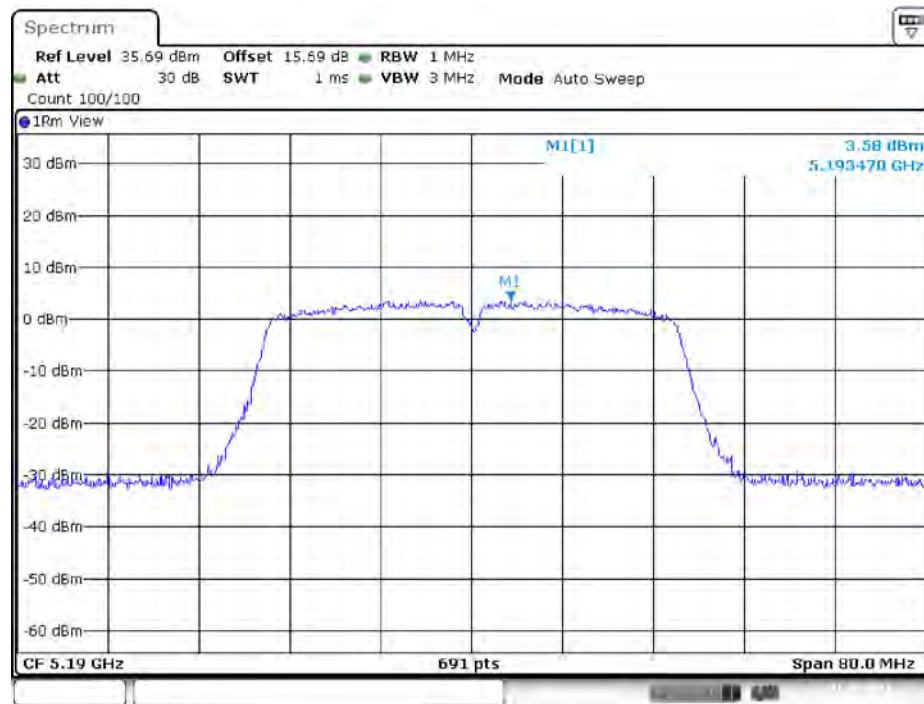
802.11n40 mode, Power Spectral Density, 5230 MHz



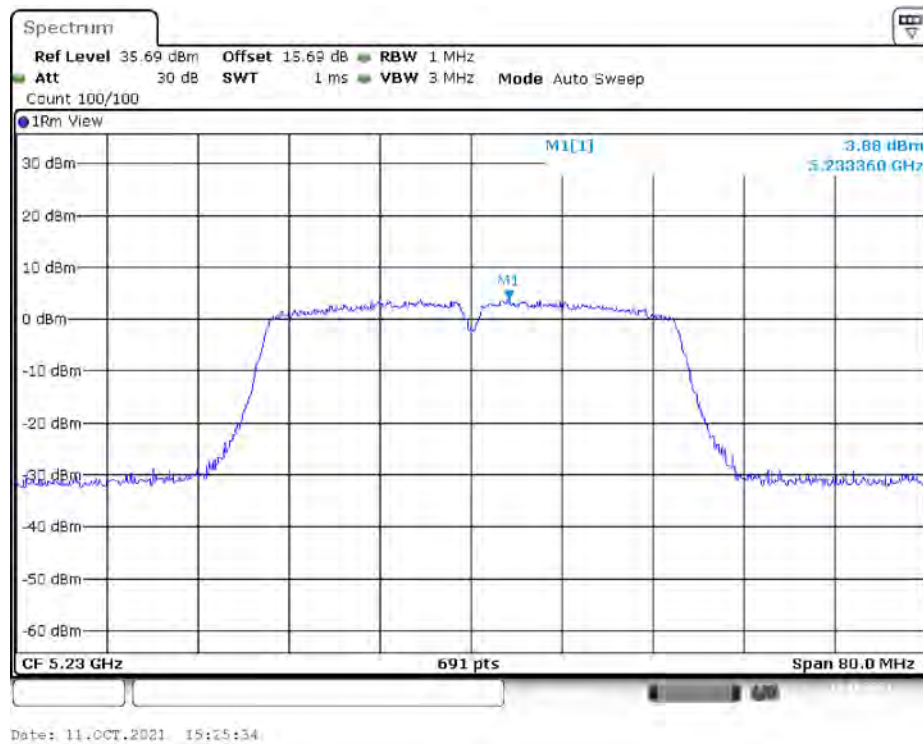
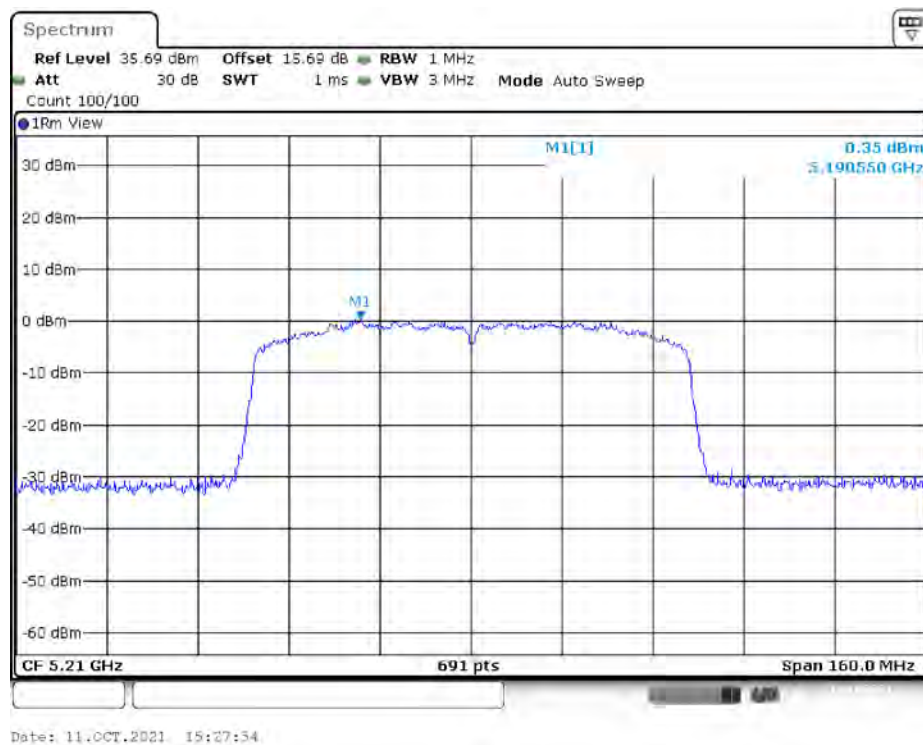
802.11ac20 mode, Power Spectral Density, 5180 MHz**802.11ac20 mode, Power Spectral Density, 5200 MHz**

802.11ac20 mode, Power Spectral Density, 5240 MHz

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802.11ac40 mode, Power Spectral Density, 5190 MHz

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802.11ac40 mode, Power Spectral Density, 5230 MHz**802.11ac80 mode, Power Spectral Density, 5210 MHz********* END OF REPORT *******