ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 15.407

TEST REPORT

For

Grandstream Networks, Inc.

126 Brookline Ave, 3rd Floor, Boston, Massachusetts, United States

FCC ID: YZZGWN7605

Report Type:	**Product Type:**
Class II Permissive Change	802.11ac Wave-2 2×2:2 Wi-Fi Access Point

Report Number: RSZ200312003-00A1

Report Date: 2020-04-21

Reviewed By: Jimmy Xiao, RF Engineer

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TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	802.11ac Wave-2 2×2:2 Wi-Fi Access Point
Model	GWN7605
Frequency Range	5G Wi-Fi: 5250-5350MHz, 5470-5725MHz
Maximum Conducted Average Ouput Power	5250-5350MHz: 18.35dBm (802.11a), 18.13dBm(802.11n20), 19.04 dBm(802.11n40) 18.49dBm (802.11ac20), 18.86dBm(802.11 ac40), 11.93dBm(802.11 ac80) 5470-5725MHz: 18.78dBm (802.11a), 17.86dBm(802.11n20), 18.92dBm(802.11n40) 17.75dBm (802.11ac20), 18.80dBm(802.11 ac40), 11.81dBm(802.11 ac80)
Modulation Technique	OFDM
Antenna Specification	4.0 dBi
Voltage Range	DC 48V from POE
Date of Test	2020-03-18 to 2020-04-14
Sample serial number	RSZ200312003-RFA1-S1(Assigned by BACL, Shenzhen)
Received date	2020-03-12
Sample/EUT Status	Good condition

Objective

This type approval report is prepared on behalf of *Grandstream Networks, Inc.* 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.

This is a CIIPC application of the device; the differences between the original device and the current one are as follows:

1. Adding DFS Bands (Band 2: 5250-5350 MHz, Band 3: 5470-5725 MHz) to existing certificate through a software operation.

For the change made to the device, the required test items were performed.

Related Submittal(s)/Grant(s)

FCC original certificed on 03/26/2020, FCC ID: YZZGWN7605.

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 Bay Area Compliance Laboratories Corp. (Shenzhen). 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 with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, 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.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The device supports Beamforming and non-beamforming mode for 5G Wi-Fi.And these two modes share the same power declared by the applicant.

The EUT has two antennas for 5G Wi-Fi, it can operate in 802.11a/n20/n40/ac20/ac40/ac80 modes.

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

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

The device supports SISO and MIMO mode, per pre-test, MIMO 2TX mode was the worst and reported.

EUT Exercise Software

"Putty, QATool" exercise software was used.

Test frequencies and power level were configured as below:

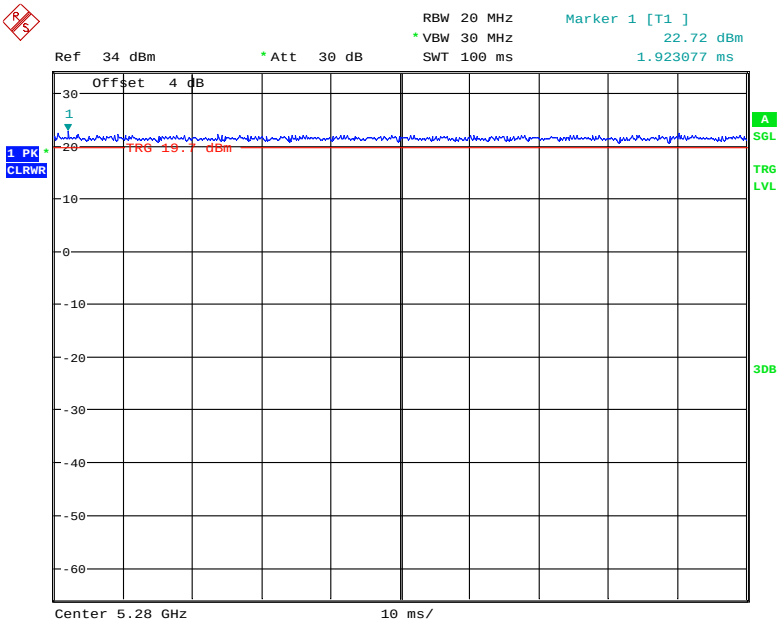
U-NII	Mode	Frequency (MHz)	Rate (Mbps)	Power Level
5250 – 5350MHz	802.11 a	5260	6	21.5
		5280	6	21.5
		5320	6	20.5
	802.11 n20	5260	MCS0	22.5
		5280	MCS0	22.5
		5320	MCS0	23
	802.11 n40	5270	MCS0	24
		5310	MCS0	22
	802.11 ac20	5260	MCS0	23
		5280	MCS0	22.5
		5320	MCS0	22
	802.11 ac40	5270	MCS0	24
		5310	MCS0	21
	802.11 ac80	5290	MCS0	17

U-NII	Mode	Frequency (MHz)	Rate (Mbps)	Power Level
5470 – 5725MHz	802.11 a	5500	6	18
		5580	6	22
		5700	6	18
	802.11 n20	5500	MCS0	22
		5580	MCS0	22
		5700	MCS0	21
	802.11 n40	5510	MCS0	19
		5550	MCS0	24
		5670	MCS0	22
	802.11 ac20	5500	MCS0	21
		5580	MCS0	22
		5700	MCS0	21
	802.11 ac40	5510	MCS0	19
		5550	MCS0	24
		5670	MCS0	22
	802.11 ac80	5530	MCS0	18
		5610	MCS0	19

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

Duty cycle
5250-5350MHz

802.11a mode



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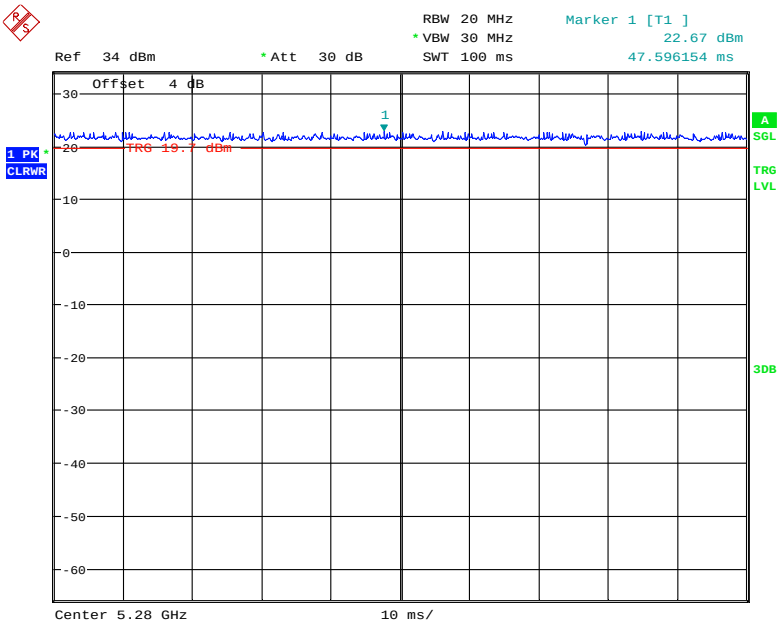
802.11n20 mode



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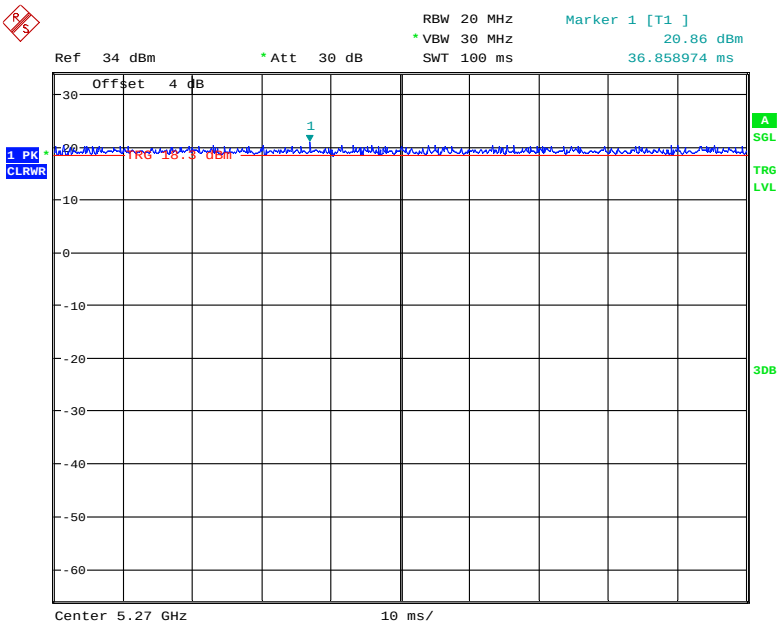
802.11n40 mode



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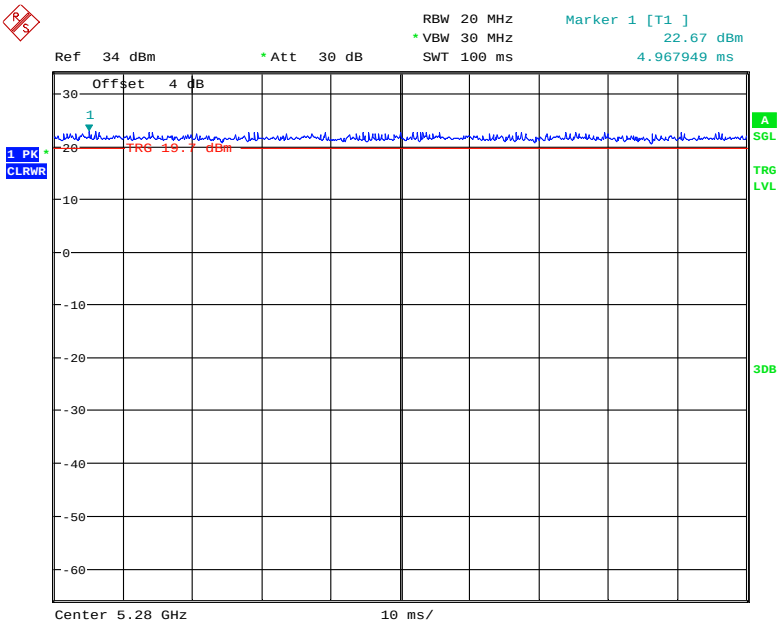
802.11ac20 Mode



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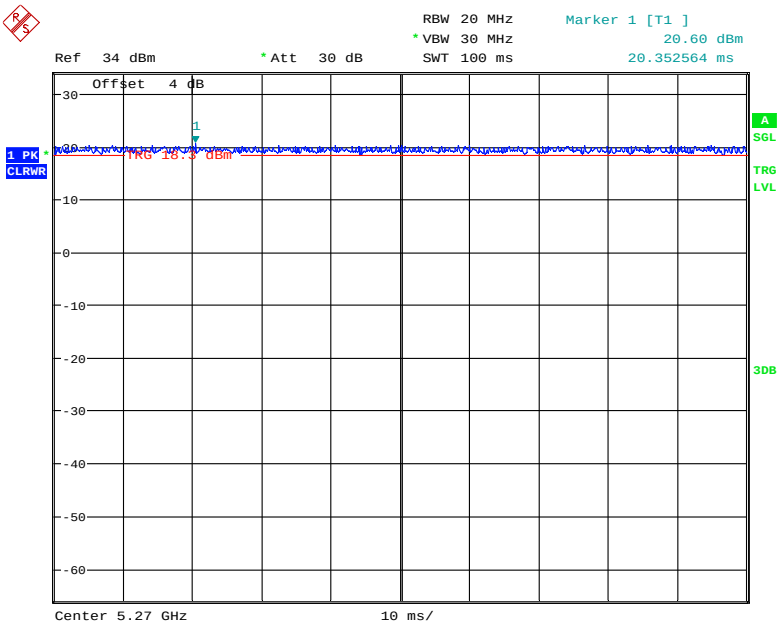
802.11ac40 Mode



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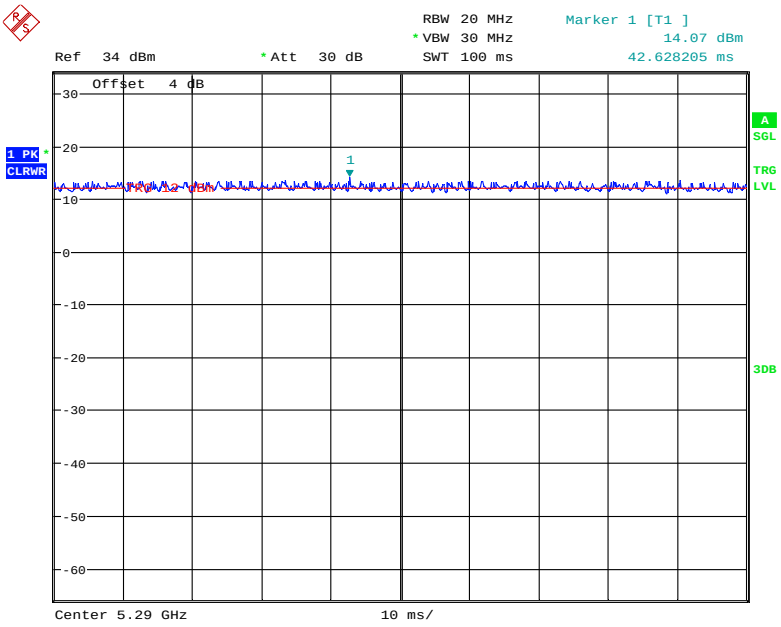
802.11ac80 Mode



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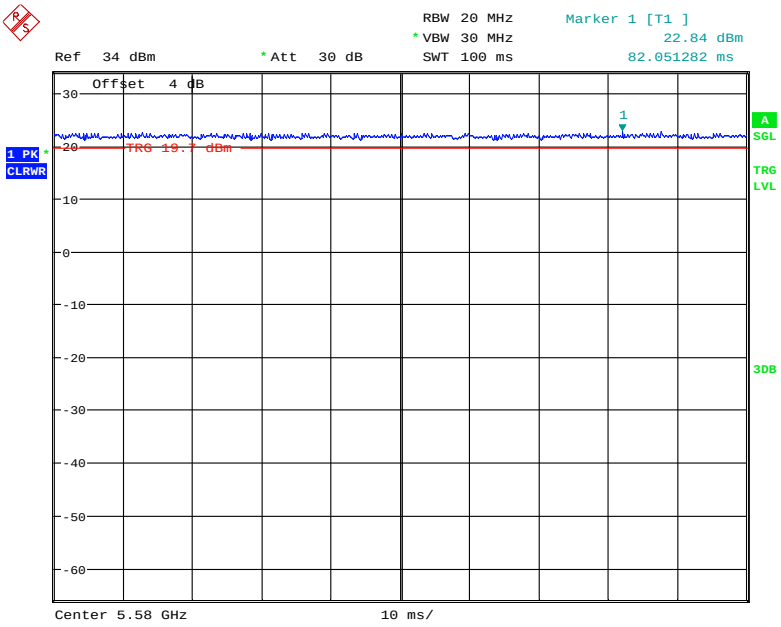
5470 – 5725MHz

802.11a mode



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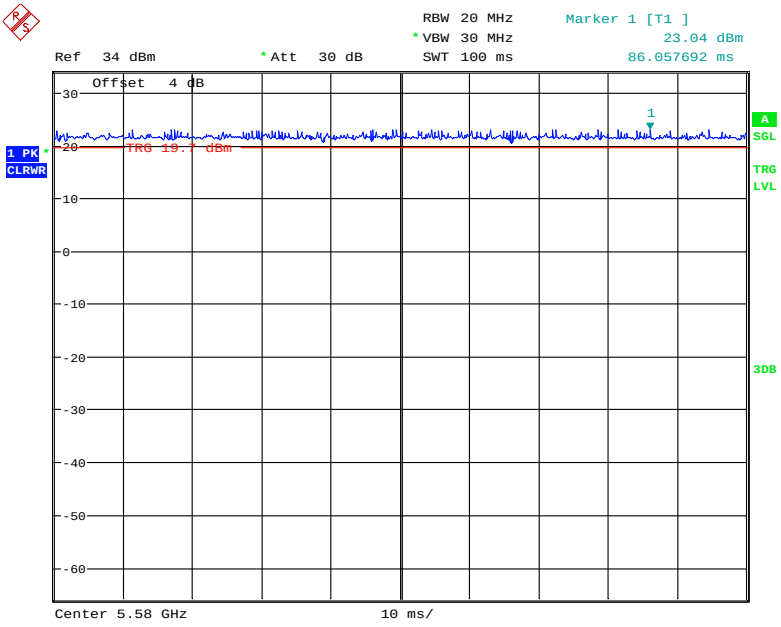
802.11n20 mode



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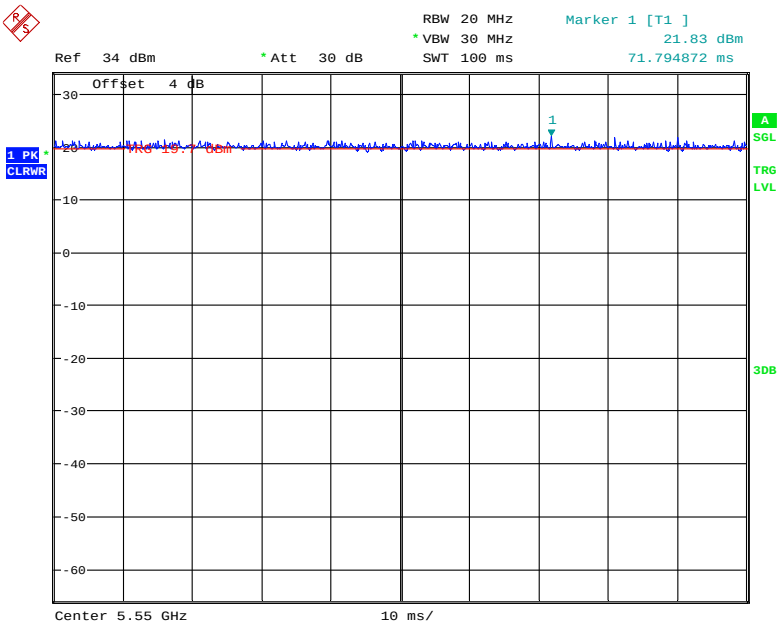
802.11n40 mode



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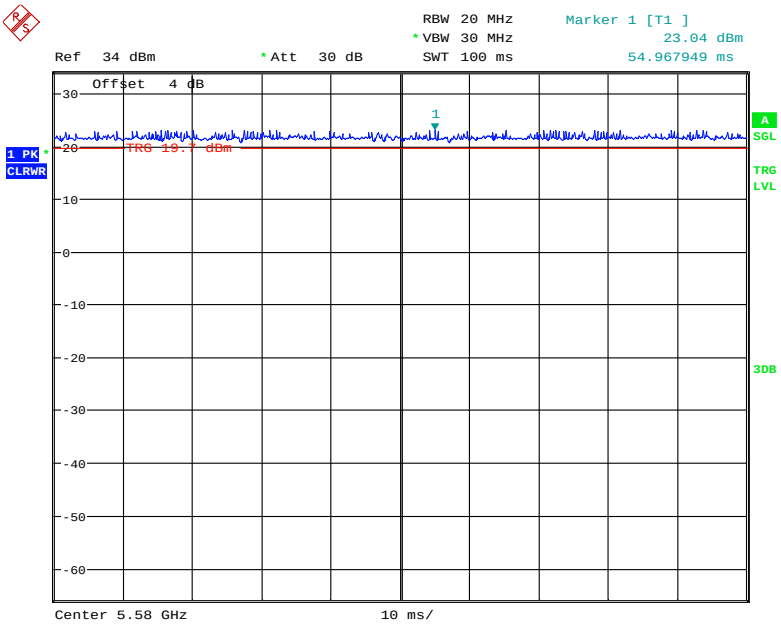
802.11ac20 Mode



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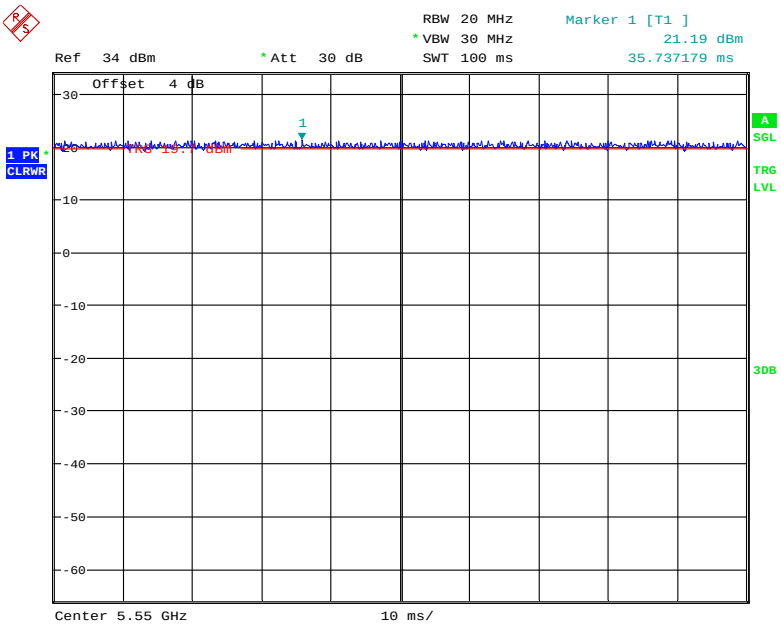
802.11ac40 Mode



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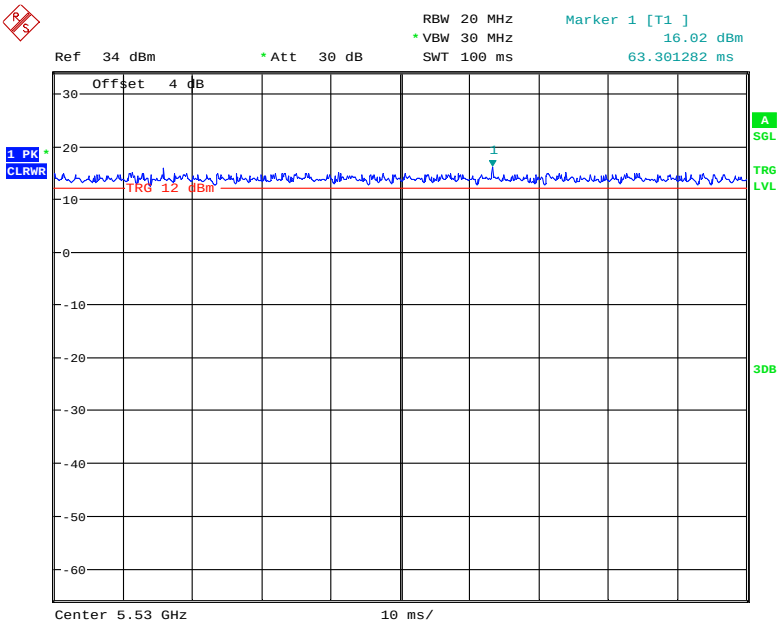
802.11ac80 Mode



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Band	Duty Cycle (%)	T(ms)	1/T(kHz)	VBW Setting	10log(1/x)
802.11a	100	-	-	10Hz	-
802.11n20	100	-	-	10Hz	-
802.11n40	100	-	-	10Hz	-
802.11ac20	100	-	-	10Hz	-
802.11ac40	100	-	-	10Hz	-
802.11ac80	100	-	-	10Hz	-

Equipment Modifications

No modification was made to the EUT tested.

External I/O Cable

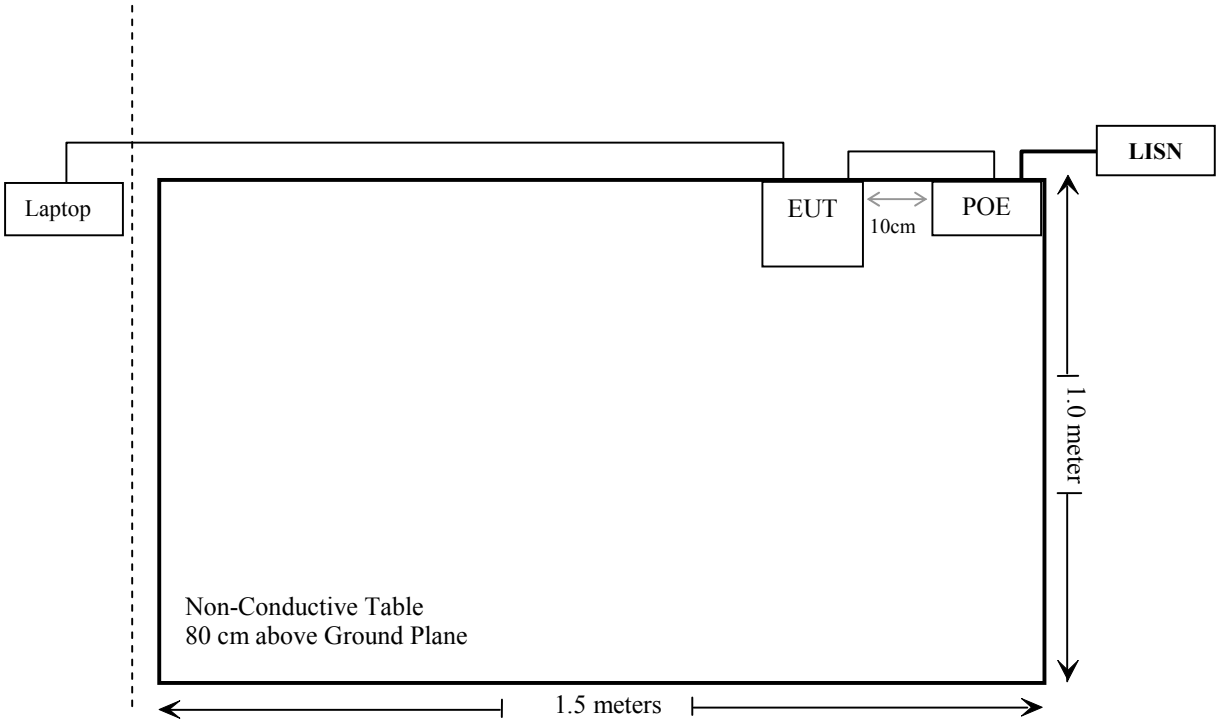
Manufacturer	Description	Model	Serial Number
Unknown	POE	VX-Pl1000GB	Pl1000
HP	Laptop	Compaq CQ45	5CG33407QL

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded detachable AC Cable	1.0	LISN	POE
Unshielded detachable RJ45 Cable	1.2	POE	EUT
Unshielded detachable RJ45 Cable	8.0	EUT	Laptop

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1091	MaximuM Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (2), (3), (6) (7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (5)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliance
§15.407(a) (2)	Conducted Transmitter Output Power	Compliance
§15.407 (a) (2)	Power Spectral Density	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2019/7/9	2020/7/8
Rohde & Schwarz	LISN	ENV216	101613	2020/1/22	2021/1/21
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2019/11/29	2020/11/28
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2019/11/29	2020/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2019/7/9	2020/7/8
Sonoma instrument	Pre-amplifier	310 N	186238	2019/4/20	2020/4/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017/12/22	2020/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2019/11/29	2020/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2019/11/29	2020/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2019/7/22	2020/7/21
COM-POWER	Pre-amplifier	PA-122	181919	2019/11/29	2020/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2019/11/29	2020/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017/12/22	2020/12/21
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2019/11/29	2020/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2019/11/29	2020/11/28
Ducommun technologies	RF Cable	RG-214	1	2019-11-12	2020-11-12
Ducommun technologies	RF Cable	RG-214	2	2019-11-12	2020-11-12
SNSD	Band Reject filter	BSF5150-5850MN-0899-004	5G filter	2019/4/20	2020/4/20
Ducommun Technolagies	Horn antenna	ARH-4223-02	1007726-02 1304	2017/12/6	2020/12/5
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-03	2017/12/6	2020/12/5

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Agilent	USB Wideband Power Sensor	U2021XA	MY54250003	2019/7/10	2020/7/9
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2020/3/2	2021/3/1
WEINSCHEL	3dB Attenuator	Unknown	Unknown	2019/11/29	2020/11/28
Tonscend Corporation	RF control Unit	JS0806-2	19D8060154	2019/7/10	2020/7/9
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2019/7/22	2020/7/21
Unknown	RF Cable	Unknown	2301 276	2019/11/29	2020/11/28

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
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)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBi)	(numeric)	(dBm)	(mW)			
2412-2462	3.0	2.0	24	251.2	20	0.10	1
5250-5350	4.0	2.5	20	100.0	20	0.05	1
5470-5725	4.0	2.5	19	79.4	20	0.04	1

Note:

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

2) 2.4GHz or 5GHz Wi-Fi can transmit simultaneously for this device.

3) Please refer to the DTS report of the original FCC ID for the 2.4G Wi-Fi output power.

4) Simultaneous transmitting consideration:

The ratio=MPE_{DTS}/limit+MPE_{NII}/limit=0.10+0.05=0.15＜1.0, so simultaneous exposure is not required.

Result: Compliance

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 arrangement for 5G Wi-Fi, which was permanently attached and the antenna gain is 4.0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

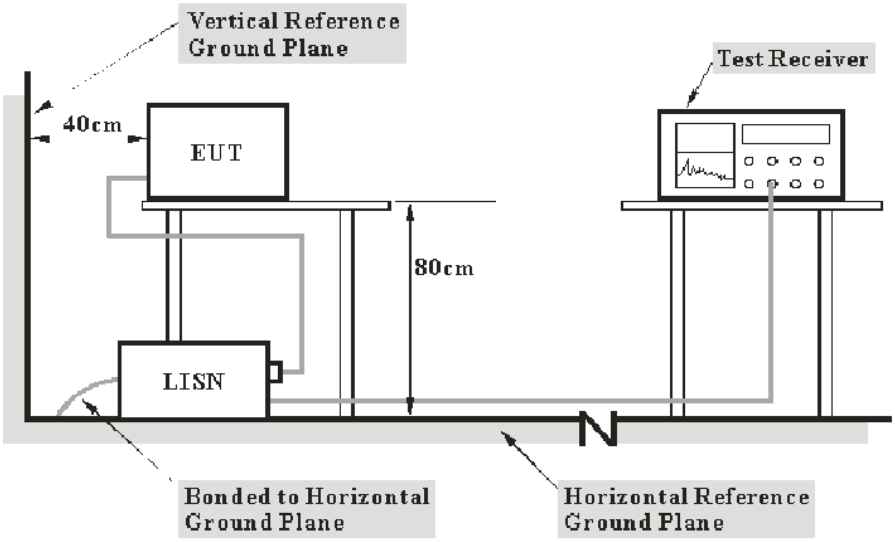
Result: Compliance.

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.

Test Results Summary

According to the EUT complied with the FCC Part 15.207.

Test Data

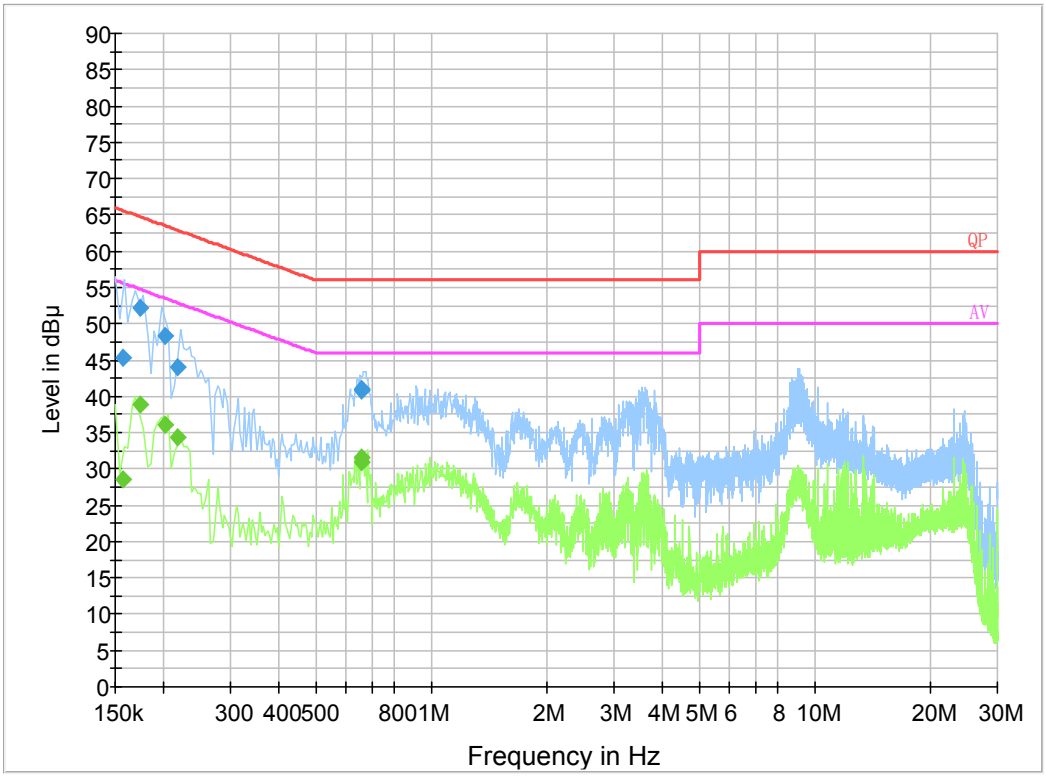
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2020-03-18.

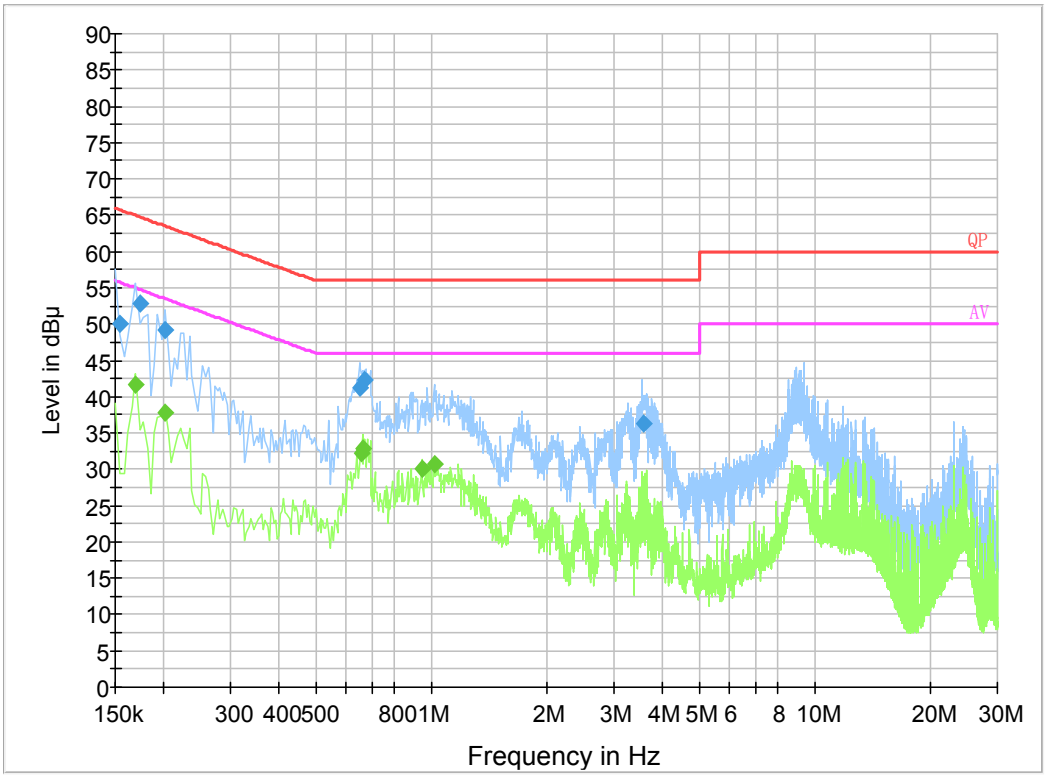
EUT operation mode: Transmitting (worst case is 802.11a mode 5280 MHz)

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.157500	45.3	19.8	65.6	20.3	QP
0.174500	52.2	19.9	64.7	12.5	QP
0.202500	48.3	19.8	63.5	15.2	QP
0.217500	44.1	19.8	62.9	18.8	QP
0.656190	40.8	19.8	56.0	15.2	QP
0.660010	41.1	19.8	56.0	14.9	QP
0.157500	28.7	19.8	55.6	26.9	Ave.
0.174500	38.8	19.9	54.7	15.9	Ave.
0.202500	36.1	19.8	53.5	17.4	Ave.
0.217500	34.4	19.8	52.9	18.5	Ave.
0.656190	30.9	19.8	46.0	15.1	Ave.
0.660010	31.5	19.8	46.0	14.5	Ave.

AC120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	50.0	19.8	65.8	15.8	QP
0.174500	52.8	19.8	64.7	11.9	QP
0.201500	49.2	19.8	63.5	14.3	QP
0.652250	41.2	19.8	56.0	14.8	QP
0.667890	42.3	19.8	56.0	13.7	QP
3.596810	36.3	19.9	56.0	19.7	QP
0.170000	41.7	19.9	55.0	13.3	Ave.
0.202000	37.7	19.8	53.5	15.8	Ave.
0.658000	32.2	19.8	46.0	13.8	Ave.
0.662000	32.8	19.8	46.0	13.2	Ave.
0.946000	30.1	19.8	46.0	15.9	Ave.
1.022000	30.7	19.8	46.0	15.3	Ave.

Note:
1) Correction Factor =LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
2) Corrected Amplitude = Reading + Correction Factor
3) Margin = Limit – Corrected Amplitude

§15.205 & §15.209 & §15.407(B), (2), (3),(6),(7) – UNDESIRABLE EMISSION

Applicable Standard

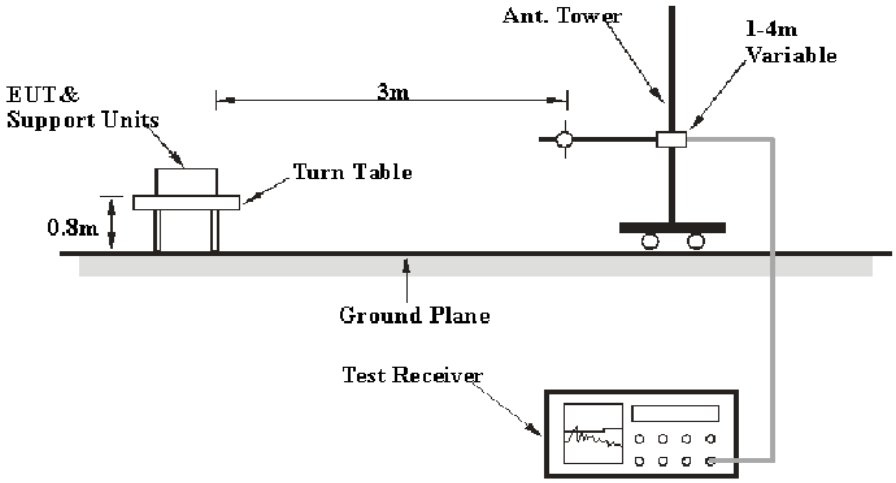
FCC §15.407 (b), (2), (3), (6), (7); §15.209; §15.205;

(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:
(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.

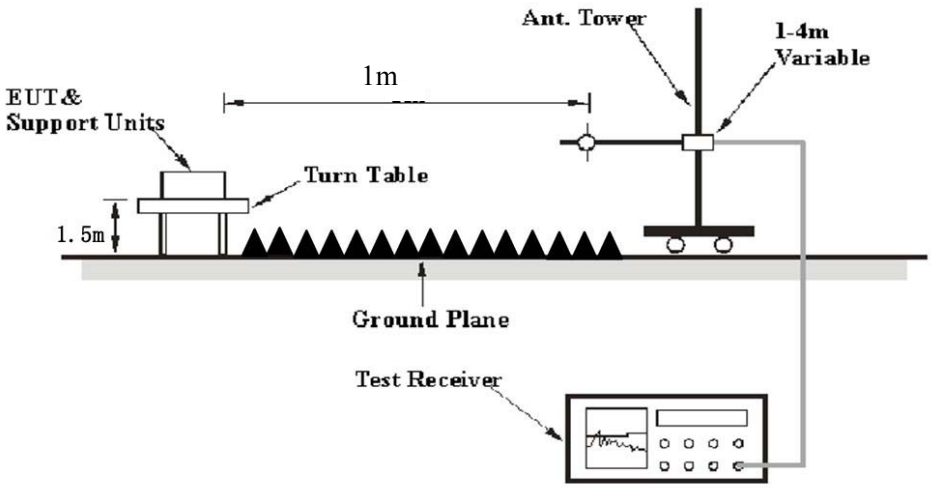
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

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.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude 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:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart E, section 15.205, 15.209 and 15.407 rules.

Test Data

Environmental Conditions

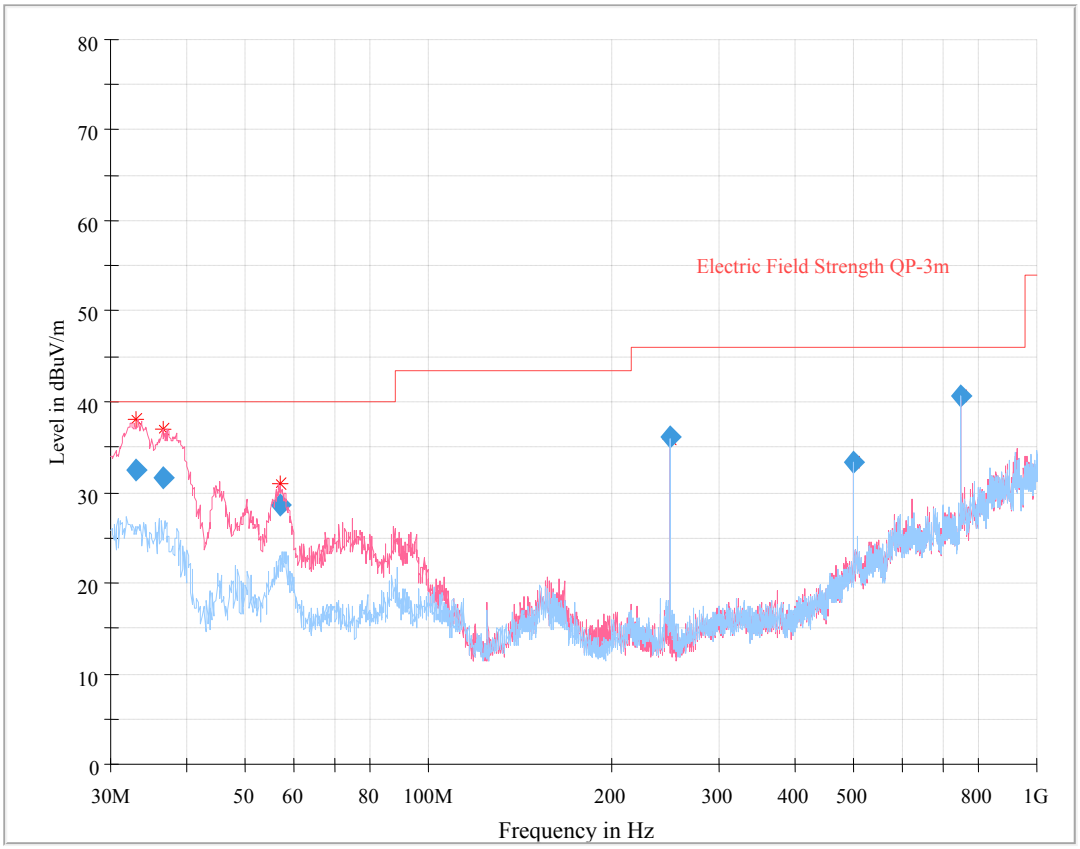
Temperature:	24℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2020-03-18 for below 1G and Leo Huang on 2020-03-19.

EUT operation mode: Transmitting

Note: Non-Beam Forming mode share the same power with the Beam Forming mode. Pre-scan the two modes, the Beam Forming mode was the worst case, so only reported the data for this mode as below:

30 MHz – 1 GHz: *(worst case is 802.11a mode 5280 MHz)*



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
33.066750	32.42	115.0	V	317.0	-9.6	40.00	7.58
36.741250	31.69	100.0	V	153.0	-11.5	40.00	8.31
56.933875	28.59	117.0	V	64.0	-20.0	40.00	11.41
250.010875	36.21	119.0	H	110.0	-14.1	46.00	9.79
500.024000	33.33	187.0	H	161.0	-5.2	46.00	12.67
750.017500	40.70	107.0	H	170.0	-0.4	46.00	5.30

1 ~ 40 GHz:

Note: The test distance is 1m, so the correct factor from 3m to 1m is 20log(3/1)=9.5dB which was added into the final limit.

5250-5350 MHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5260 MHz									
5147.96	32.24	PK	142	2.4	V	38.36	70.60	83.5	12.90
5147.96	16.53	Ave.	142	2.4	V	38.36	54.89	63.5	8.61
5351.67	33.57	PK	64	1.1	V	39.09	72.66	83.5	10.84
5351.67	17.55	Ave.	64	1.1	V	39.09	56.64	63.5	6.86
10520.00	53.21	PK	243	1.3	V	17.25	70.46	77.7	7.24
5280 MHz									
10560.00	53.44	PK	72	2.3	V	17.91	71.35	77.7	6.35
5320 MHz									
5148.62	29.32	PK	9	1.8	V	38.36	67.68	83.5	15.82
5148.62	16.83	Ave.	9	1.8	V	38.36	55.19	63.5	8.31
5351.99	42.27	PK	66	1.6	V	39.09	81.36	83.5	2.14
5351.99	21.32	Ave.	66	1.6	V	39.09	60.41	63.5	3.09
10640.00	51.67	PK	16	2.4	V	18.01	69.68	83.5	13.82
10640.00	36.27	AV	16	2.4	V	18.01	54.28	63.5	9.22
802.11n20									
5260 MHz									
5148.26	32.08	PK	314	2.2	V	38.36	70.44	83.5	13.06
5148.26	16.32	Ave.	314	2.2	V	38.36	54.68	63.5	8.82
5361.53	32.54	PK	276	1.6	V	39.09	71.63	83.5	11.87
5361.53	16.86	Ave.	276	1.6	V	39.09	55.95	63.5	7.55
10520.00	48.66	PK	66	2.4	V	17.25	65.91	77.7	11.79
5280 MHz									
10560.00	48.28	PK	220	1.1	V	17.91	66.19	77.7	11.51
5320 MHz									
5149.13	31.02	PK	259	2.0	V	38.36	69.38	83.5	14.12
5149.13	16.34	Ave.	259	2.0	V	38.36	54.70	63.5	8.80
5350.24	42.44	PK	64	2.2	V	39.09	81.53	83.5	1.97
5350.24	22.11	Ave.	64	2.2	V	39.09	61.20	63.5	2.30
10640.00	46.01	PK	190	2.3	V	18.01	64.02	83.5	19.48
10640.00	28.34	Ave.	190	2.3	V	18.01	46.35	63.5	17.15

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5270MHz									
5138.82	32.71	PK	323	1.2	V	38.36	71.07	83.5	12.43
5138.82	16.76	Ave.	323	1.2	V	38.36	55.12	63.5	8.38
5350.04	35.32	PK	265	2.0	V	39.09	74.41	83.5	9.09
5350.04	18.71	Ave.	265	2.0	V	39.09	57.80	63.5	5.70
10540.00	47.11	PK	116	1.3	V	17.25	64.36	77.7	13.34
5310MHz									
5148.65	30.37	PK	191	1.2	V	38.36	68.73	83.5	14.77
5148.65	16.81	Ave.	191	1.2	V	38.36	55.17	63.5	8.33
5351.99	42.54	PK	84	2.1	V	39.09	81.63	83.5	1.87
5351.99	22.02	Ave.	84	2.1	V	39.09	61.11	63.5	2.39
10620.00	42.22	PK	260	1.4	V	18.01	60.23	83.5	23.27
10620.00	29.14	Ave.	260	1.4	V	18.01	47.15	63.5	16.35
802.11ac20									
5260 MHz									
5149.23	30.57	PK	161	1.1	V	38.36	68.93	83.5	14.57
5149.23	16.42	Ave.	161	1.1	V	38.36	54.78	63.5	8.72
5350.00	27.71	PK	185	1.9	V	39.09	66.80	83.5	16.70
5350.00	13.51	Ave.	185	1.9	V	39.09	52.60	63.5	10.90
10520.00	40.44	PK	168	2.4	V	17.25	57.69	77.7	20.01
5280 MHz									
10560.00	40.17	PK	58	1.1	V	17.91	58.08	77.7	19.62
5320 MHz									
5146.35	28.47	PK	175	2.5	V	38.36	66.83	83.5	16.67
5146.35	15.98	Ave.	175	2.5	V	38.36	54.34	63.5	9.16
5351.03	40.58	PK	36	2.3	V	39.09	79.67	83.5	3.83
5351.03	20.91	Ave.	36	2.3	V	39.09	60.00	63.5	3.50
10640.00	39.77	PK	338	2.4	V	18.01	57.78	83.5	25.72
10640.00	25.24	Ave.	338	2.4	V	18.01	43.25	63.5	20.25

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5270 MHz									
5145.77	32.97	PK	114	1.0	V	38.36	71.33	83.5	12.17
5145.77	17.82	Ave.	114	1.0	V	38.36	56.18	63.5	7.32
5359.63	39.72	PK	227	1.2	V	39.09	78.81	83.5	4.69
5359.63	22.38	Ave.	227	1.2	V	39.09	61.47	63.5	2.03
10540.00	44.87	PK	5	1.0	V	17.25	62.12	77.7	15.58
5310 MHz									
5124.13	30.55	PK	161	1.3	V	38.36	68.91	83.5	14.59
5124.13	16.87	Ave.	161	1.3	V	38.36	55.23	63.5	8.27
5351.35	42.99	PK	168	2.4	V	39.09	82.08	83.5	1.42
5351.35	21.96	Ave.	168	2.4	V	39.09	61.05	63.5	2.45
10620.00	41.55	PK	42	1.0	V	18.01	59.56	83.5	23.94
10620.00	28.17	Ave.	42	1.0	V	18.01	46.18	63.5	17.32
802.11ac80									
5290MHz									
5147.56	35.37	PK	8	2.1	V	38.36	73.73	83.5	9.77
5147.56	16.87	Ave.	8	2.1	V	38.36	55.23	63.5	8.27
5357.08	42.87	PK	312	1.2	V	39.09	81.96	83.5	1.54
5357.08	18.80	Ave.	312	1.2	V	39.09	57.89	63.5	5.61
10580.00	40.49	PK	71	2.0	V	17.91	58.40	77.7	19.30

5470-5725MHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5500 MHz									
5470.00	36.22	PK	26	1.4	V	39.37	75.59	77.7	2.11
5733.74	32.46	PK	16	2.3	V	39.49	71.95	77.7	5.75
11000.00	46.09	PK	49	1.6	V	17.66	63.75	83.5	19.75
11000.00	30.29	Ave.	49	1.6	V	17.66	47.95	63.5	15.55
5580 MHz									
11160.00	57.51	PK	151	1.2	V	17.39	74.90	83.5	8.60
11160.00	42.08	Ave.	151	1.2	V	17.39	59.47	63.5	4.03
5700 MHz									
5467.33	30.12	PK	9	2.4	V	39.37	69.49	77.7	8.21
5725.00	36.97	PK	323	2.2	V	39.49	76.46	77.7	1.24
11400.00	45.7	PK	63	1.4	V	17.73	63.43	83.5	20.07
11400.00	30.94	Ave.	63	1.4	V	17.73	48.67	63.5	14.83
802.11n20									
5500 MHz									
5468.87	35.06	PK	19	1.0	V	39.37	74.43	77.7	3.27
5726.38	31.36	PK	85	1.0	V	39.49	70.85	77.7	6.85
11000.00	45.79	PK	47	2.3	V	17.66	63.45	83.5	20.05
11000.00	30.45	Ave.	47	2.3	V	17.66	48.11	63.5	15.39
5580 MHz									
11160.00	48.81	PK	304	1.2	V	17.39	66.20	83.5	17.30
11160.00	33.5	Ave.	304	1.2	V	17.39	50.89	63.5	12.61
5700MHz									
5468.92	31.49	PK	340	1.3	V	39.37	70.86	77.7	6.84
5725.81	36.51	PK	336	1.4	V	39.49	76.00	77.7	1.70
11400.00	47.04	PK	263	1.6	V	17.73	64.77	83.5	18.73
11400.00	31.42	Ave.	263	1.6	V	17.73	49.15	63.5	14.35

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5510 MHz									
5462.53	35.07	PK	333	1.4	H	39.37	74.44	77.7	3.26
5727.56	33.30	PK	20	2.3	V	39.49	72.79	77.7	4.91
11020.00	41.66	PK	292	2.3	V	17.66	59.32	83.5	24.18
11020.00	28.42	Ave.	292	2.3	V	17.66	46.08	63.5	17.42
5550 MHz									
11100.00	45.59	PK	356	1.3	V	16.72	62.31	83.5	21.19
11100.00	31.16	Ave.	356	1.3	V	16.72	47.88	63.5	15.62
5670 MHz									
5470.00	31.48	PK	202	1.3	V	39.37	70.85	77.7	6.85
5725.71	35.51	PK	303	1.6	V	39.49	75.00	77.7	2.70
11340.00	44.98	PK	187	1.4	V	17.43	62.41	83.5	21.09
11340.00	30.07	Ave.	187	1.4	V	17.43	47.50	63.5	16.00
802.11ac20									
5745 MHz									
5468.35	35.87	PK	42	1.2	V	39.37	75.24	77.7	2.46
5799.19	36.05	PK	253	1.4	V	39.61	75.66	77.7	2.04
11000.00	45.84	PK	78	2.4	V	17.66	63.50	83.5	20.00
11000.00	30.15	Ave.	78	2.4	V	17.66	47.81	63.5	15.69
5580 MHz									
11160.00	47.61	PK	14	1.9	V	17.39	65.00	83.5	18.50
11160.00	32.7	Ave.	14	1.9	V	17.39	50.09	63.5	13.41
5700 MHz									
5464.16	31.49	PK	122	1.2	V	39.37	70.86	77.7	6.84
5726.14	36.05	PK	350	1.1	V	39.49	75.54	77.7	2.16
11400.00	46.57	PK	345	2.3	V	17.73	64.30	83.5	19.20
11400.00	31.36	Ave.	345	2.3	V	17.73	49.09	63.5	14.41

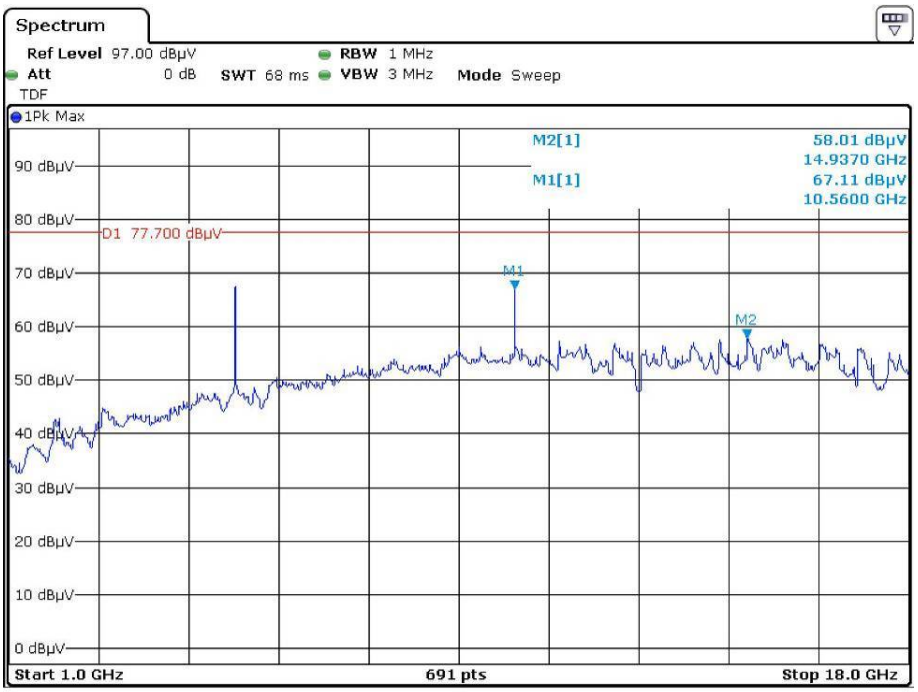
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5510 MHz									
5468.52	35.51	PK	29	1.6	V	39.37	74.88	77.7	2.82
5727.52	34.12	PK	164	1.4	V	39.49	73.61	77.7	4.09
11020.00	41.58	PK	273	1.1	V	17.66	59.24	83.5	24.26
11020.00	28.16	Ave.	273	1.1	V	17.66	45.82	63.5	17.68
5550 MHz									
11100.00	45.08	PK	224	2.4	V	16.72	61.80	83.5	21.70
11100.00	31.64	Ave.	224	2.4	V	16.72	48.36	63.5	15.14
5670 MHz									
5467.33	32.11	PK	115	2.3	V	39.37	71.48	77.7	6.22
5727.83	36.60	PK	300	1.7	V	39.49	76.09	77.7	1.61
11340.00	44.74	PK	68	1.3	V	17.43	62.17	83.5	21.33
11340.00	30.18	Ave.	68	1.3	V	17.43	47.61	63.5	15.89
802.11ac80									
5530MHz									
5437.79	42.66	PK	329	2.3	V	39.29	81.95	83.5	1.55
5437.79	18.19	Ave.	329	2.3	V	39.29	57.48	63.5	6.02
5726.25	32.67	PK	168	1.8	V	39.49	72.16	77.7	5.54
11060.00	41.47	PK	168	1.4	V	16.72	58.19	83.5	25.31
11060.00	28.17	Ave.	168	1.4	V	16.72	44.89	63.5	18.61
5610 MHz									
5454.83	38.75	PK	281	1.9	V	39.37	78.12	83.5	5.38
5454.83	17.15	Ave.	281	1.9	V	39.37	56.52	63.5	6.98
5733.85	35.96	PK	345	2.5	V	39.49	75.45	77.7	2.25
11220.00	41.57	PK	332	2.1	V	17.39	58.96	83.5	24.54
11220.00	28.39	Ave.	332	2.1	V	17.39	45.78	63.5	17.72

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude
All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

Peak

Pre-scan with 802.11a 5280MHz

Horizontal



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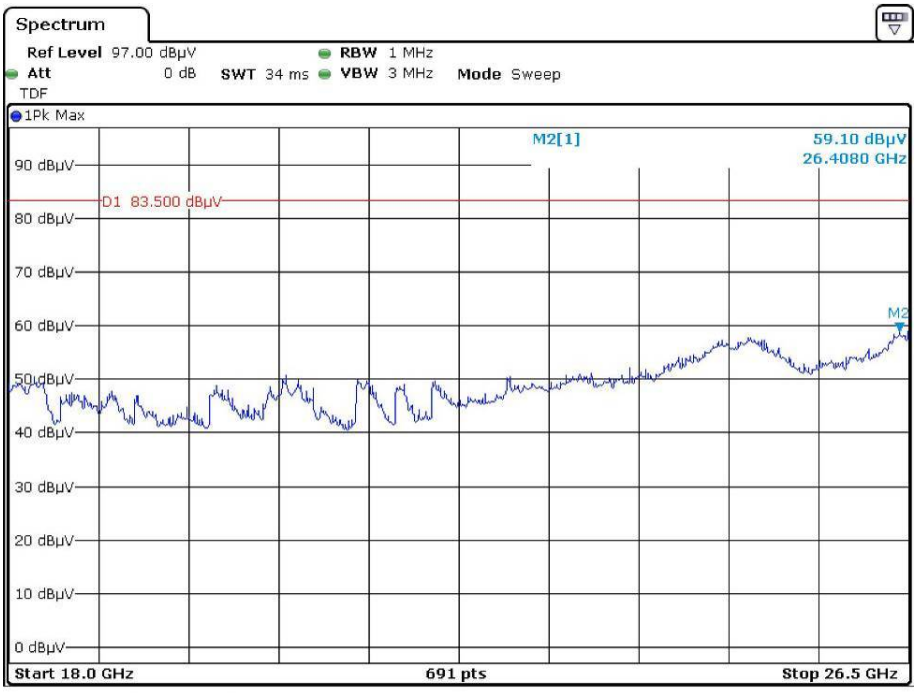

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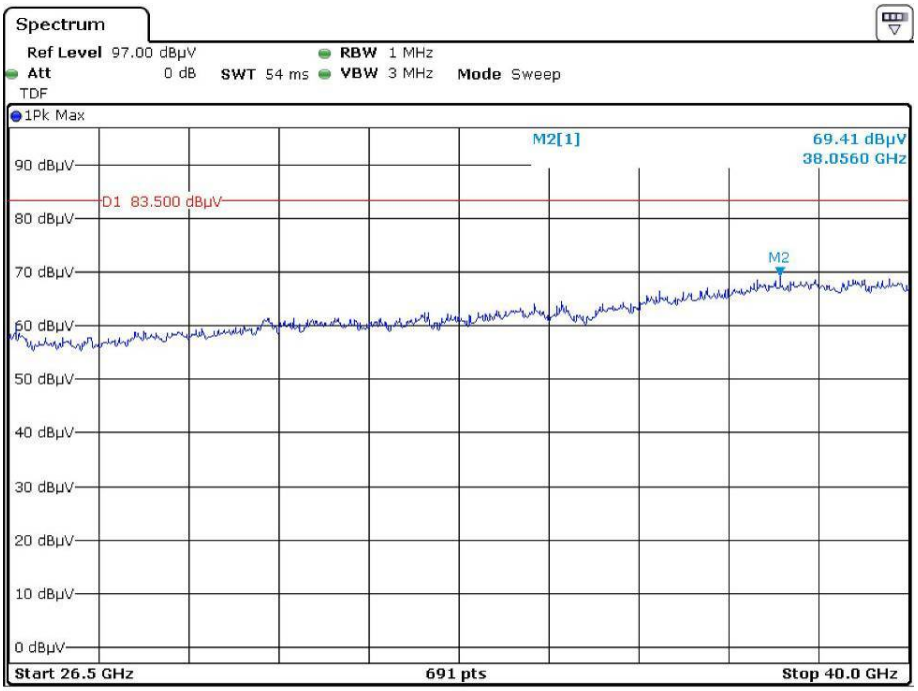

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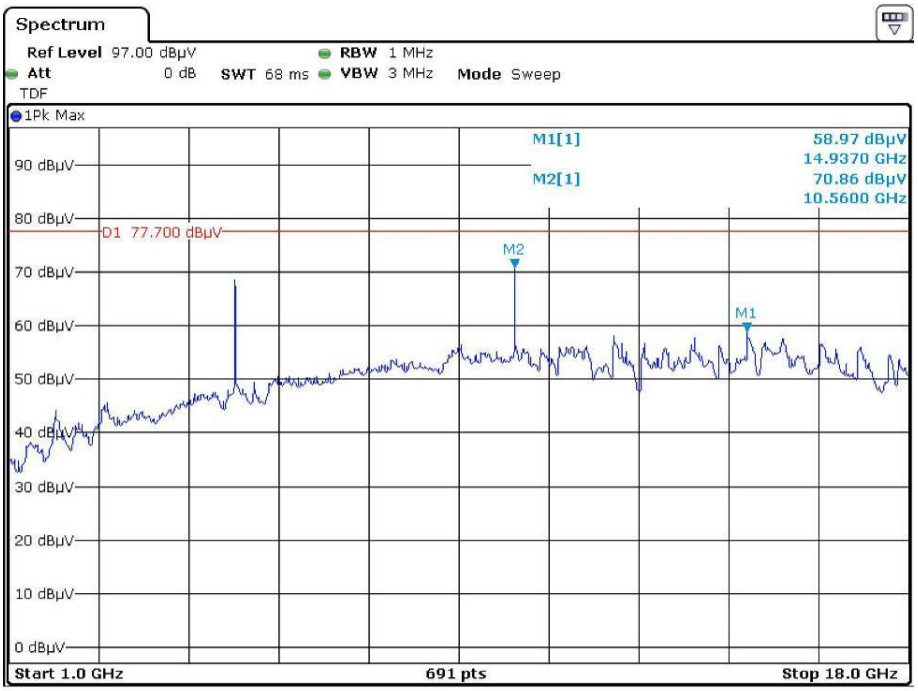
Vertical



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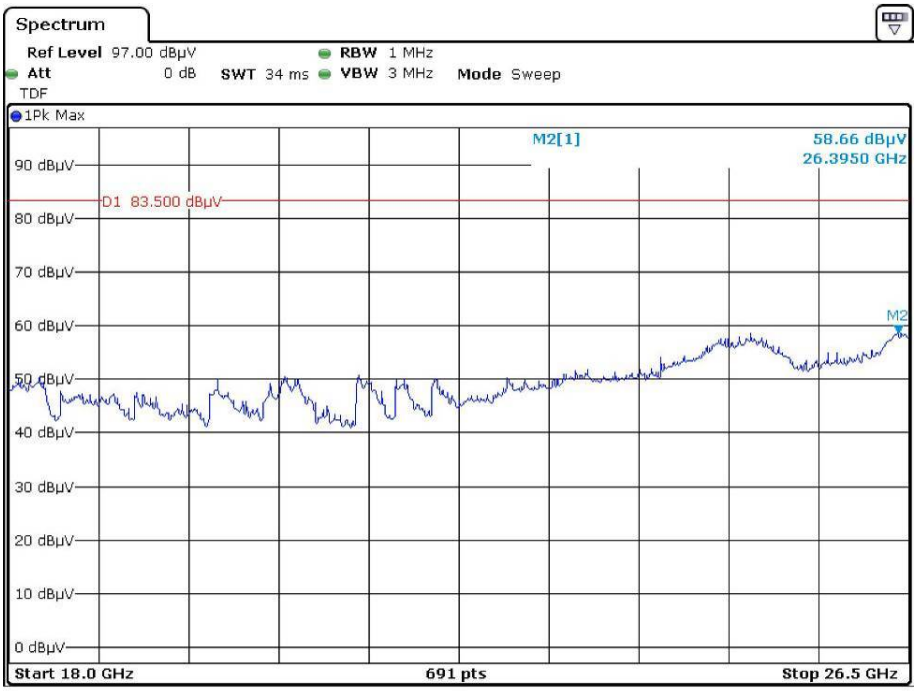

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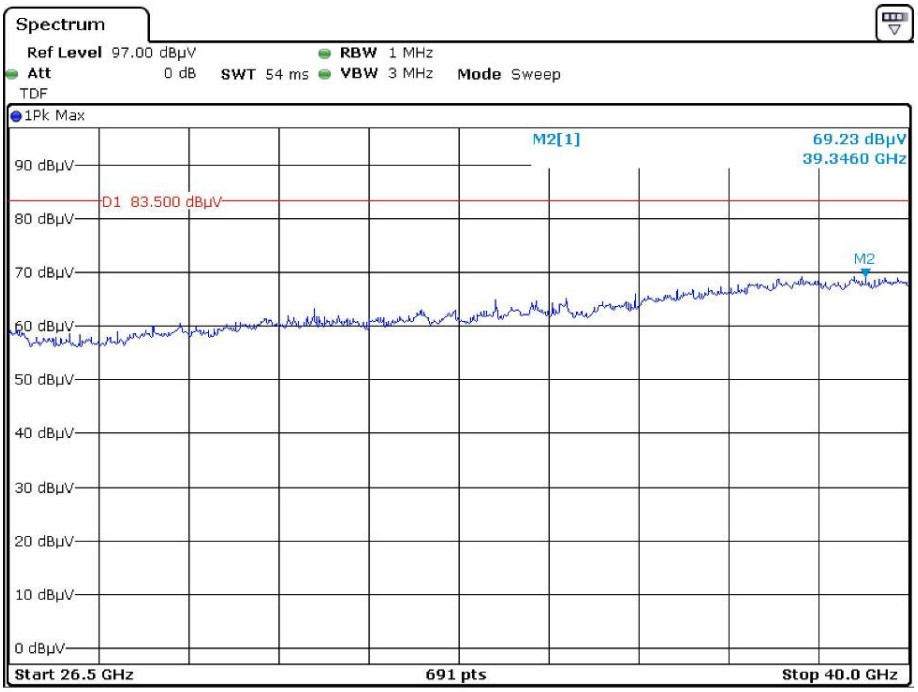
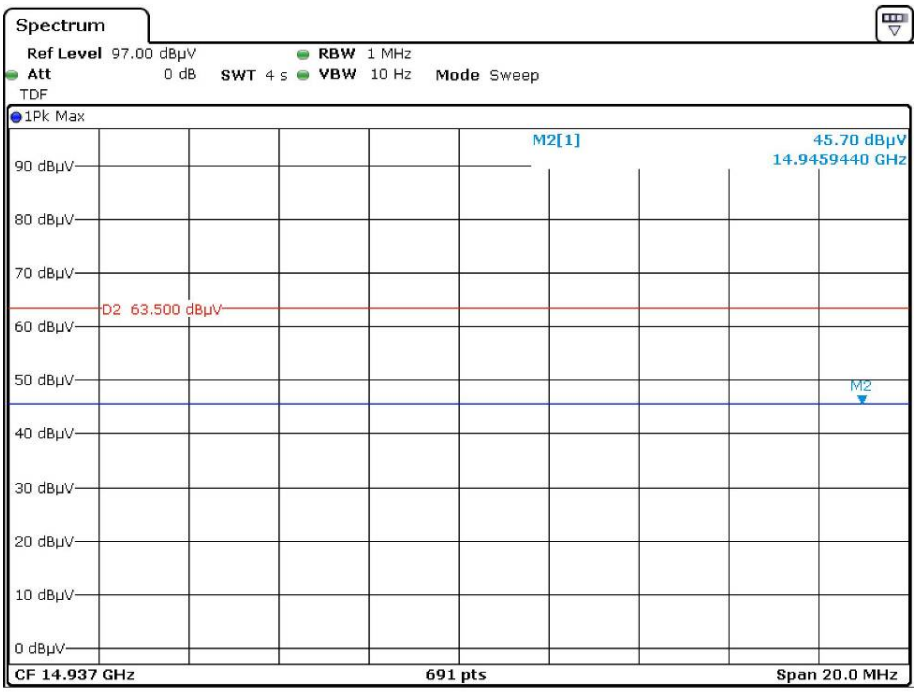


Date: 19.MAR.2020 09:07:48

Average
Horizontal



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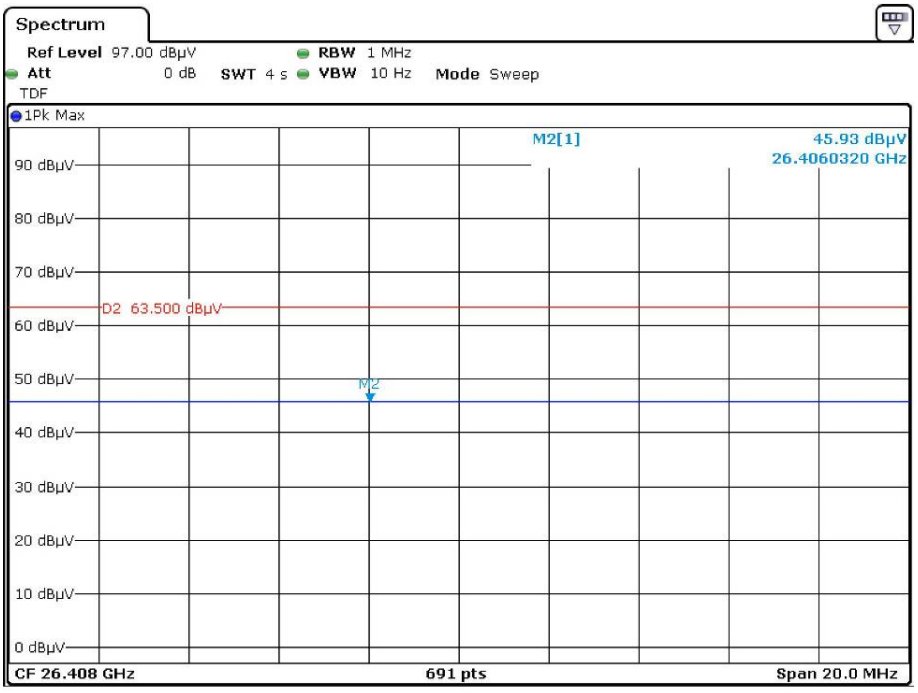

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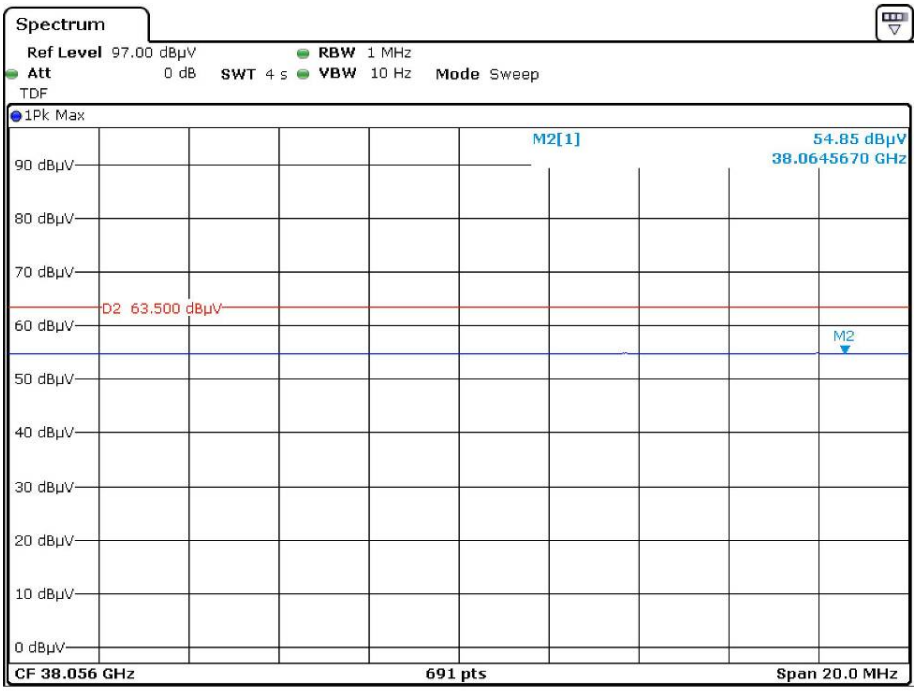
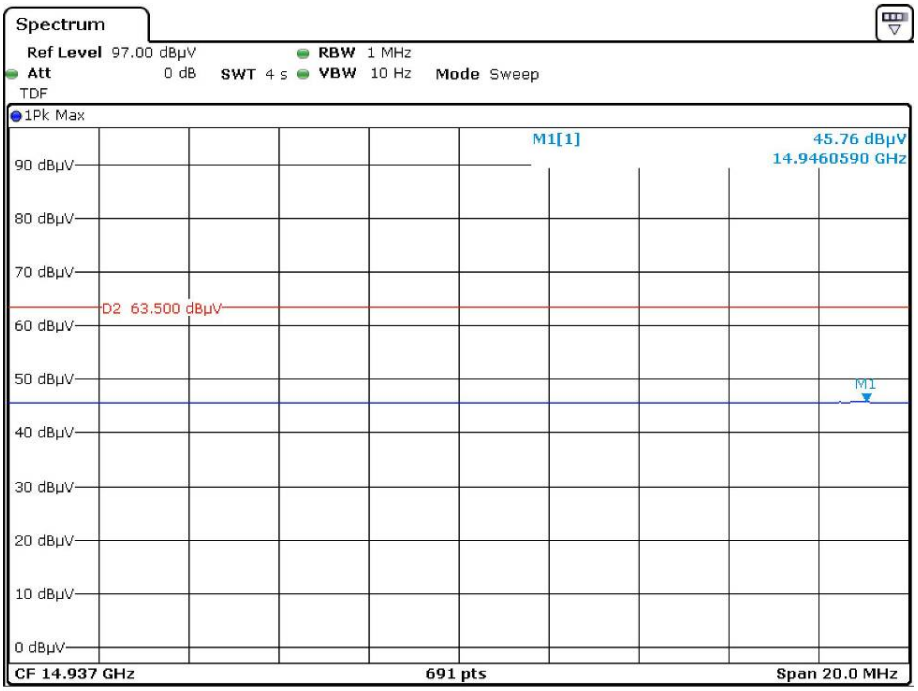


Date: 19.MAR.2020 09:17:46

Vertical



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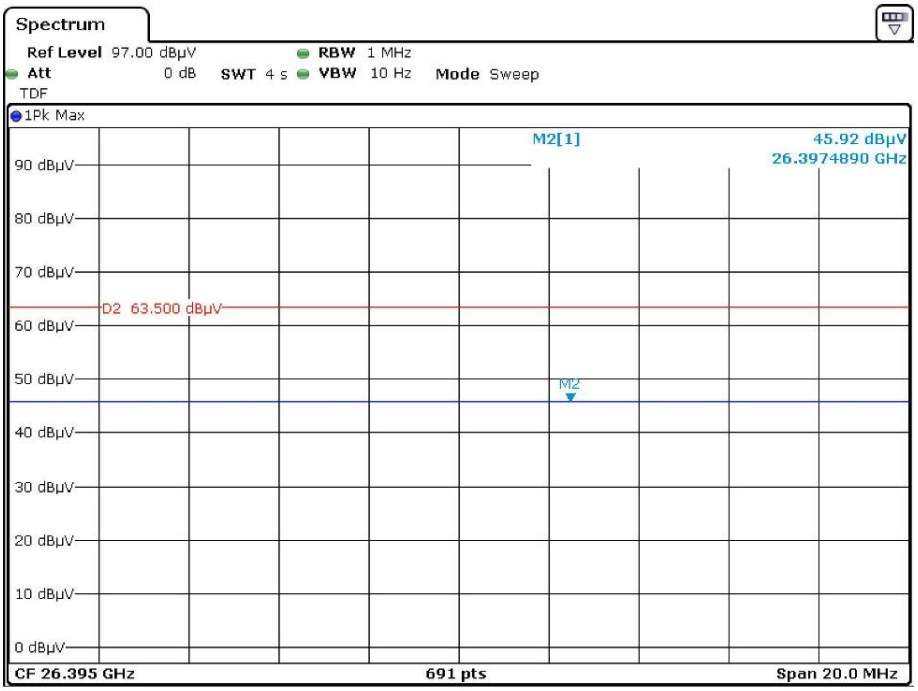

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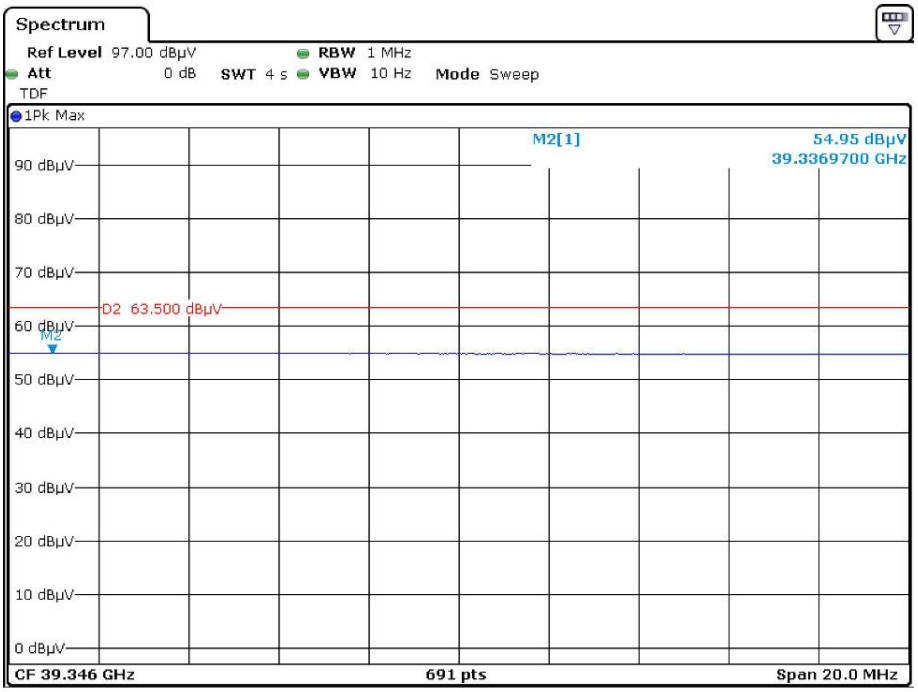


Date: 19.MAR.2020 09:11:27

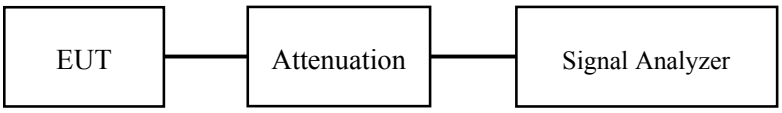
FCC §15.407(a) (5) – 26 dB EMISSION BANDWIDTH

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

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%.



Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Gary Guan from 2020-03-19 to 2020-03-23.

EUT operation mode: Transmitting (Test at the antenna 0)

Test Result: Compliant. Please refer to the AppendixNII.

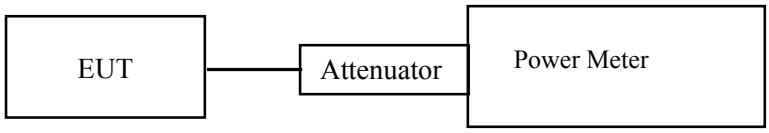
FCC §15.407(a) (2) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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 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.

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 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong and Gavin Guo from 2020-04-03 to 2020-04-14.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Note: For Beam-Forming
*Directional gain = array gain+Ant gain=10*log(Nant/Nss)+4dBi=7dBi>6dBi,*
So Limit$_{BF}$ should be reduced (7-6)dB.

5250 MHz – 5350 MHz

Frequency (MHz)	Antenna	Average Output Power (dBm)	Total Power (dBm)	Non-BF Limit (dBm)	BF Limit (dBm)
802.11a					
5260	0	15.09	18.35	23.90	22.90
	1	15.58			
5280	0	15.00	18.16		
	1	15.30			
5320	0	14.35	17.33		
	1	14.28			
802.11n20					
5260	0	14.88	18.11	24	23
	1	15.31			
5280	0	15.04	17.97		
	1	14.88			
5320	0	15.31	18.13		
	1	14.92			
802.11n40					
5270	0	15.37	19.04	24	23
	1	16.61			
5310	0	14.02	17.09		
	1	14.13			
802.11ac20					
5260	0	15.26	18.49	24	23
	1	15.68			
5280	0	14.92	18.06		
	1	15.17			
5320	0	13.97	17.07		
	1	14.15			
802.11ac40					
5270	0	15.43	18.86	24	23
	1	16.24			
5310	0	13.42	16.16		
	1	12.87			
802.11ac80					
5290	0	9.15	11.93	24	23
	1	8.67			

5470 MHz – 5725 MHz

Frequency (MHz)	Antenna	Average Output Power (dBm)	Total Power (dBm)	Non-BF Limit (dBm)	BF Limit (dBm)
802.11a					
5500	0	12.05	14.67	23.95	22.95
	1	11.23			
5580	0	16.24	18.78		
	1	15.25			
5700	0	12.24	14.87		
	1	11.45			
802.11n20					
5500	0	14.12	16.76	24	23
	1	13.35			
5580	0	15.32	17.86		
	1	14.32			
5700	0	14.02	16.70		
	1	13.34			
802.11n40					
5510	0	11.73	14.25	24	23
	1	10.68			
5550	0	16.24	18.92		
	1	15.56			
5670	0	14.61	17.59		
	1	14.54			
802.11ac20					
5500	0	13.97	16.53	24	23
	1	13.02			
5580	0	15.24	17.75		
	1	14.17			
5700	0	13.98	16.63		
	1	13.23			
802.11ac40					
5510	0	11.64	14.27	24	23
	1	10.84			
5550	0	16.17	18.80		
	1	15.38			
5670	0	14.53	17.49		
	1	14.42			
802.11ac80					
5530	0	8.94	11.57	24	23
	1	8.14			
5610	0	9.21	11.81		
	1	8.34			

FCC §15.407(a) (2) - POWER SPECTRAL DENSITY

Applicable Standard

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 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.

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 ≥ 1/T, where T is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (< 500 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 (1MHz/RBW) to the measured result, whereas RBW (< 1 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 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong and Gavin Guo from 2020-04-03 to 2020-04-14.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Note:

*(1)Directional gain = array gain+Ant gain=10*log(Nant/Nss)+4dBi=7dBi>6dBi, So Limit$_{BF}$=11-(7-6)dBm/MHz=10dBm/MHz*

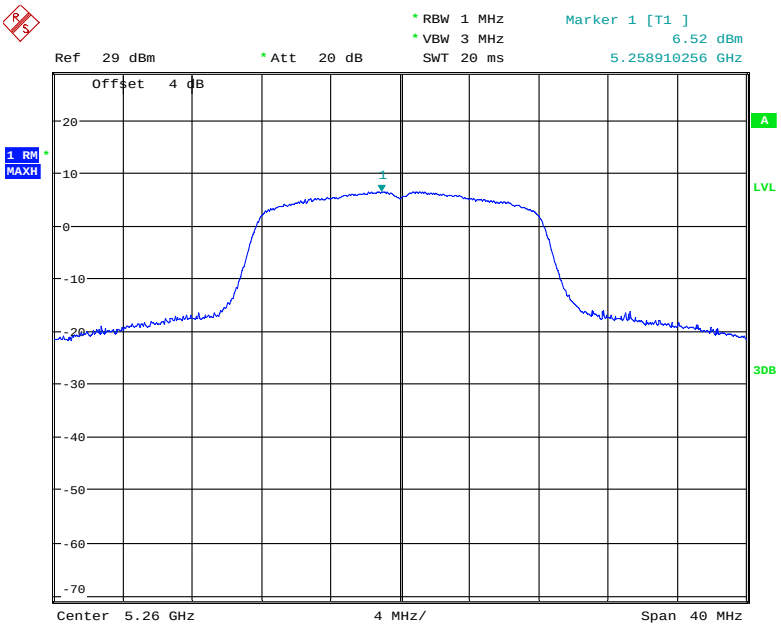
(2)Non-Beam Forming mode share the same power with the Beam Forming mode.

5250 MHz – 5350 MHz:

Frequency (MHz)	Antenna	Power Spectral Density (dBm/MHz)	Total Power Spectral (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5260	0	6.52	9.76	10
	1	6.97		
5280	0	6.17	9.48	
	1	6.75		
5320	0	5.91	9.16	
	1	6.38		
802.11n20				
5260	0	6.19	9.50	10
	1	6.77		
5280	0	6.22	9.47	
	1	6.68		
5320	0	6.91	9.75	
	1	6.57		
802.11n40				
5270	0	4.05	7.69	10
	1	5.23		
5310	0	3.66	6.37	
	1	3.03		
802.11ac20				
5260	0	6.60	9.95	10
	1	7.26		
5280	0	6.41	9.61	
	1	6.78		
5320	0	6.20	9.21	
	1	6.20		
802.11ac40				
5270	0	4.54	7.72	10
	1	4.87		
5310	0	2.62	5.45	
	1	2.26		
802.11ac80				
5290	0	-3.26	-0.54	10
	1	-3.86		

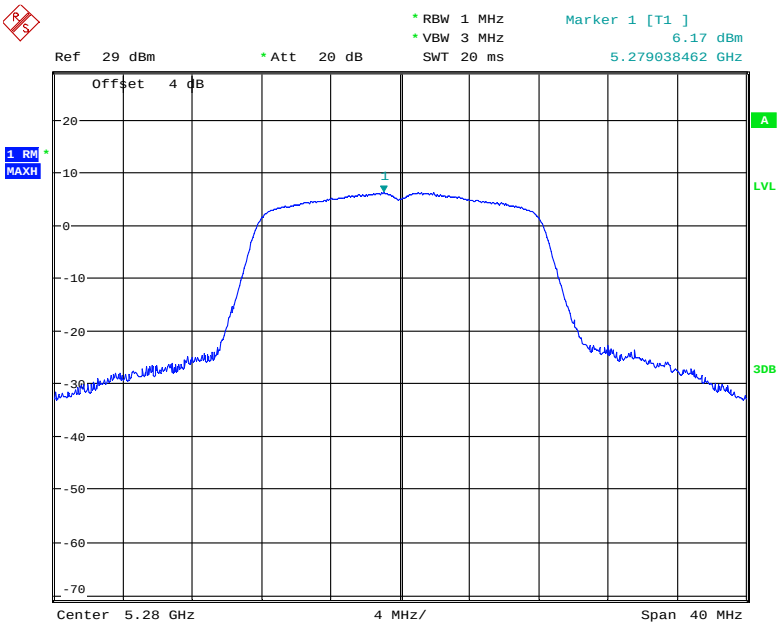
For antenna 0

802.11a mode, Power Spectral Density, 5260 MHz



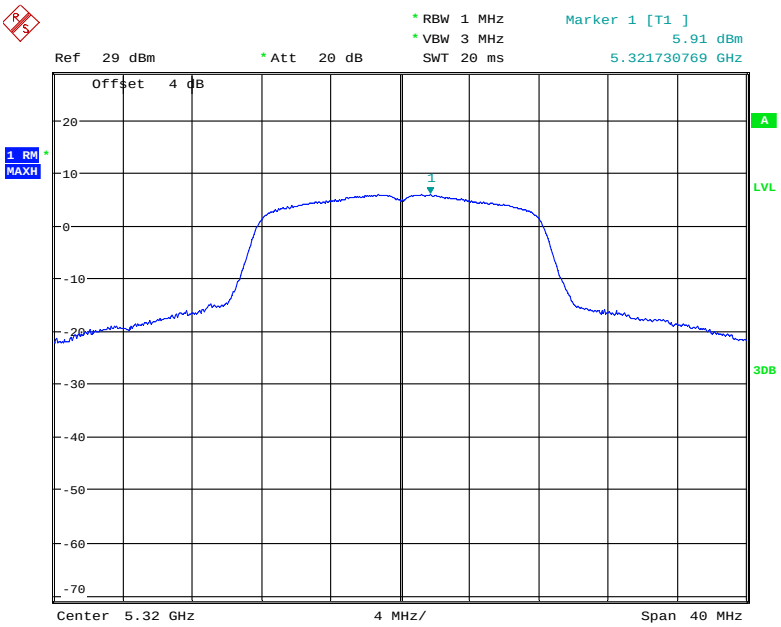
Date: 3.APR.2020 23:26:13

802.11a mode, Power Spectral Density, 5280 MHz



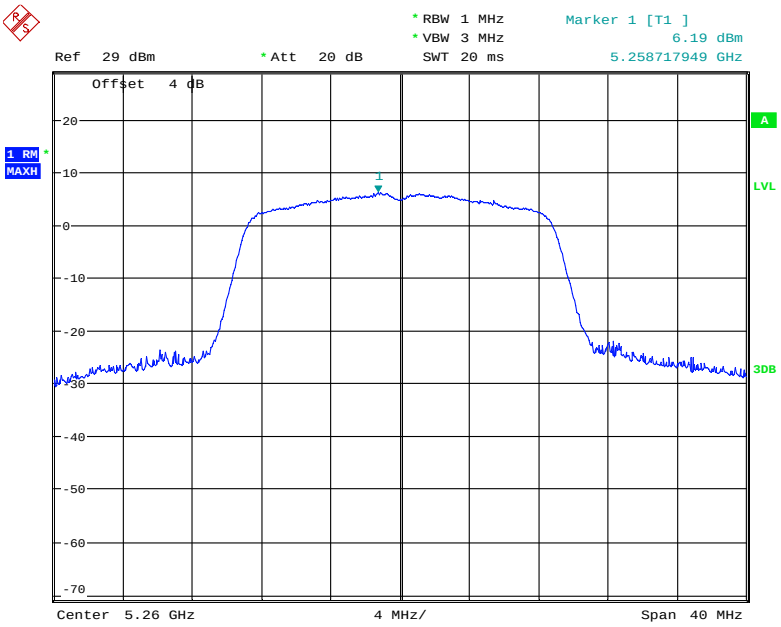
Date: 3.APR.2020 23:27:41

802.11a mode, Power Spectral Density, 5320 MHz



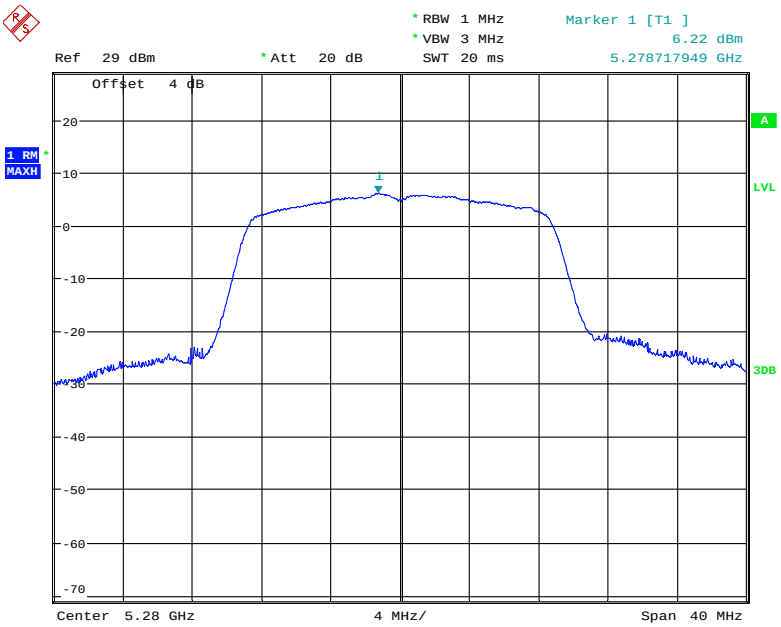
Date: 13.APR.2020 22:23:40

802.11n20 mode, Power Spectral Density, 5260 MHz



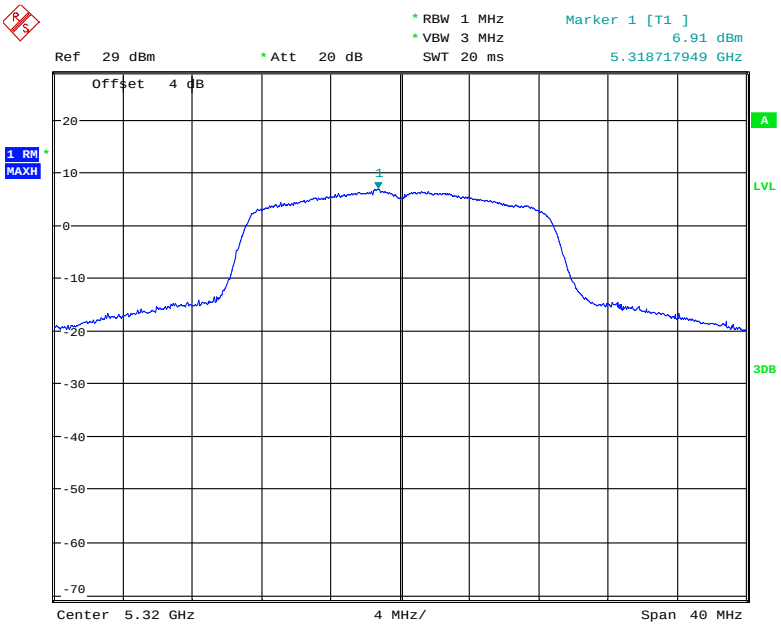
Date: 3.APR.2020 23:31:11

802.11n20 mode, Power Spectral Density, 5280 MHz



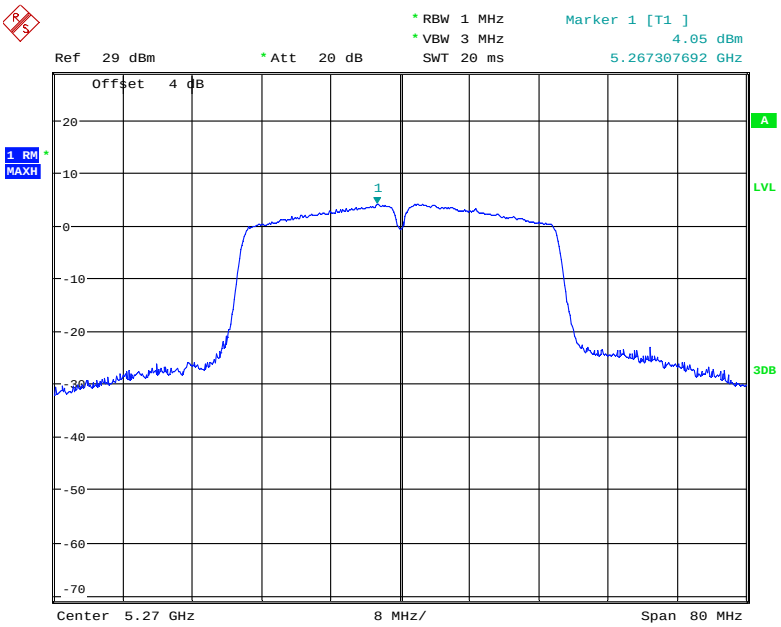
Date: 18.APR.2020 20:05:15

802.11n20 mode, Power Spectral Density, 5320 MHz



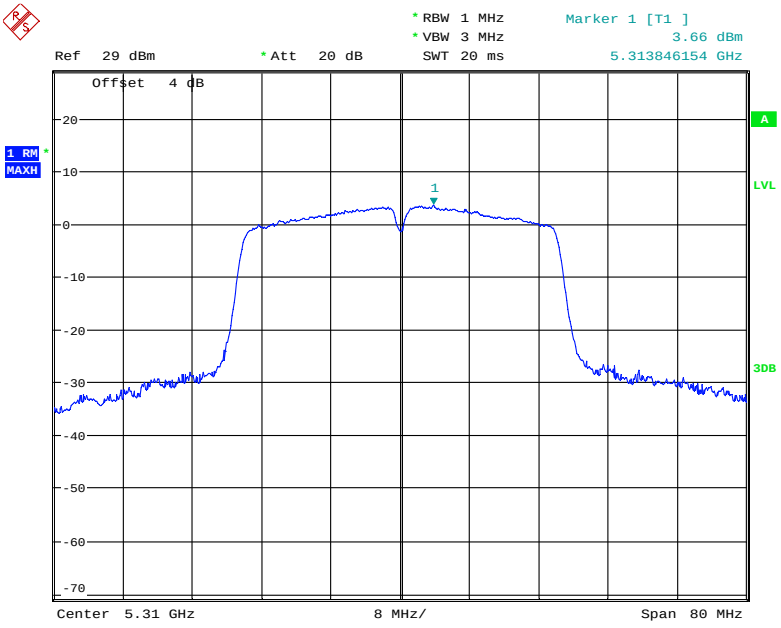
Date: 3.APR.2020 23:35:58

802.11n40 mode, Power Spectral Density, 5270 MHz



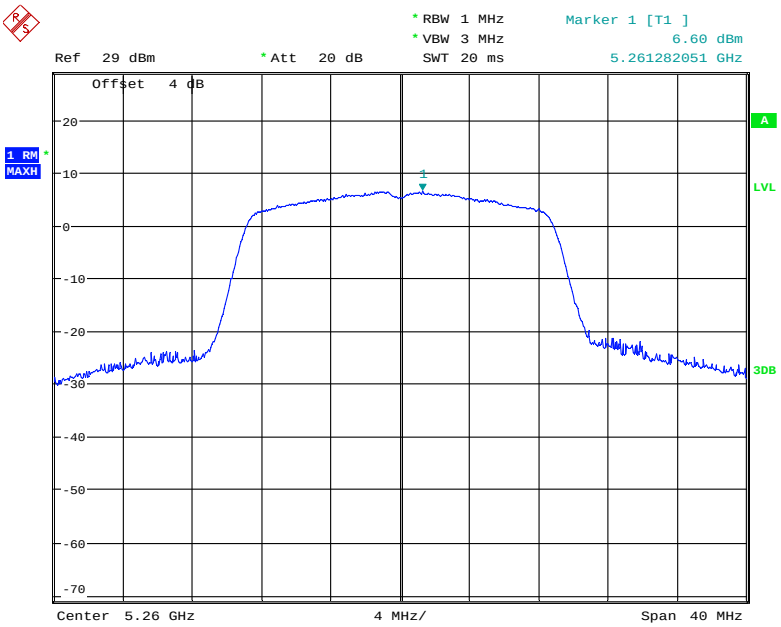
Date: 3.APR.2020 22:18:41

802.11n40 mode, Power Spectral Density, 5310 MHz



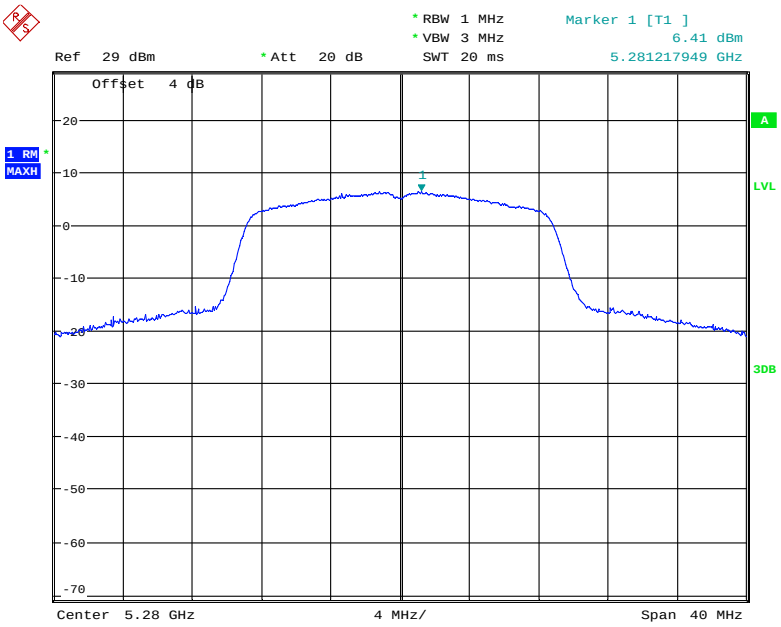
Date: 13.APR.2020 22:29:04

802.11ac20 mode, Power Spectral Density, 5260 MHz



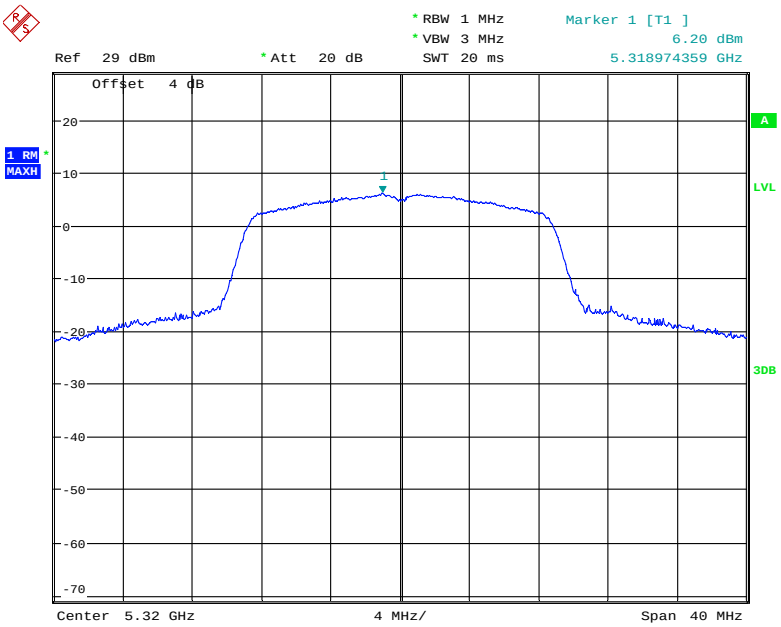
Date: 3.APR.2020 23:41:46

802. 11ac20 mode, Power Spectral Density, 5280 MHz



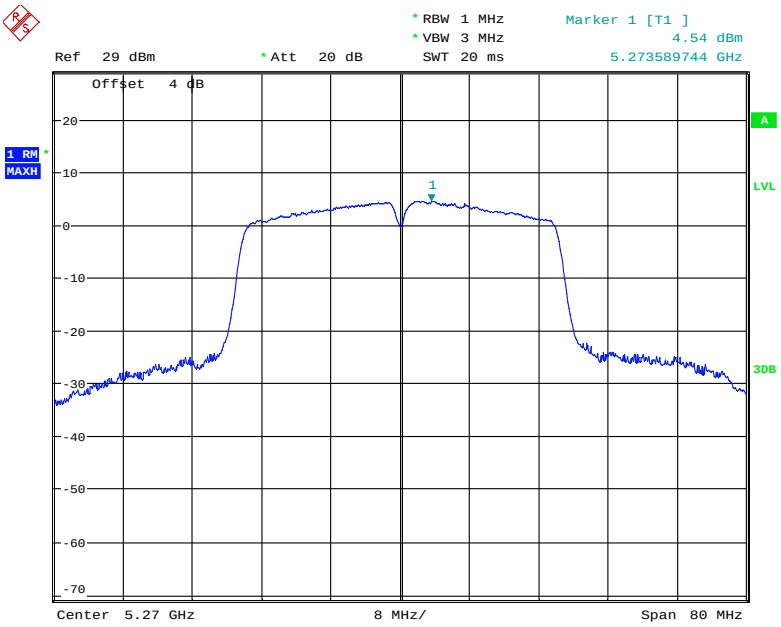
Date: 3.APR.2020 23:40:23

802. 11ac20 mode, Power Spectral Density, 5320 MHz



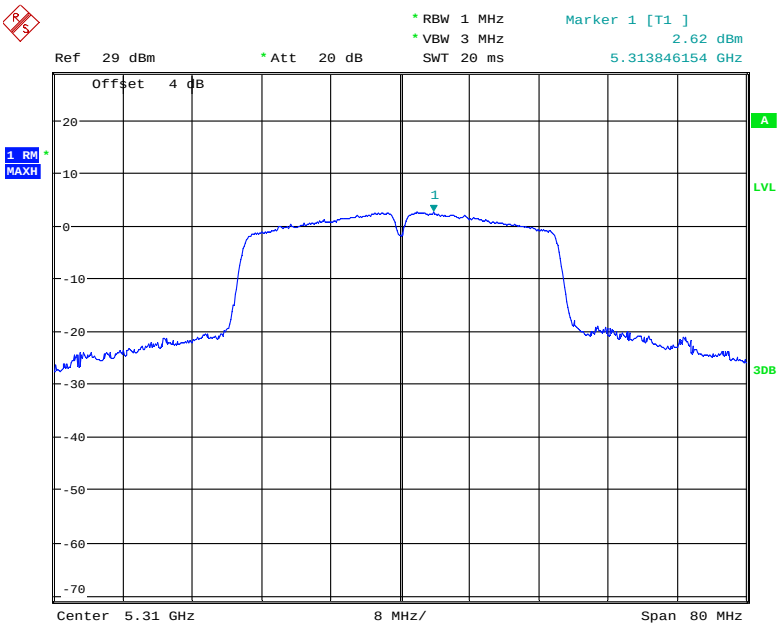
Date: 13.APR.2020 22:27:20

802. 11ac40 mode, Power Spectral Density, 5270 MHz



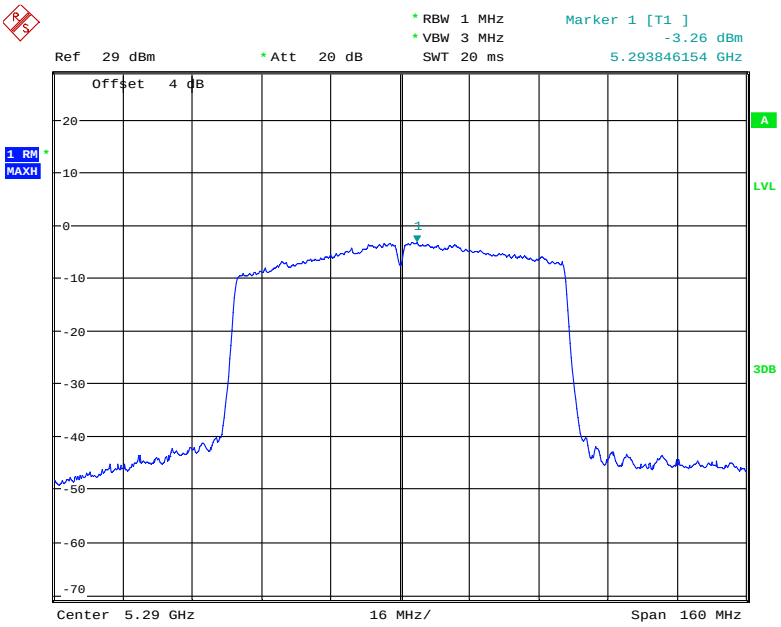
Date: 14.APR.2020 22:24:44

802. 11ac40 mode, Power Spectral Density, 5310 MHz



Date: 14.APR.2020 22:28:13

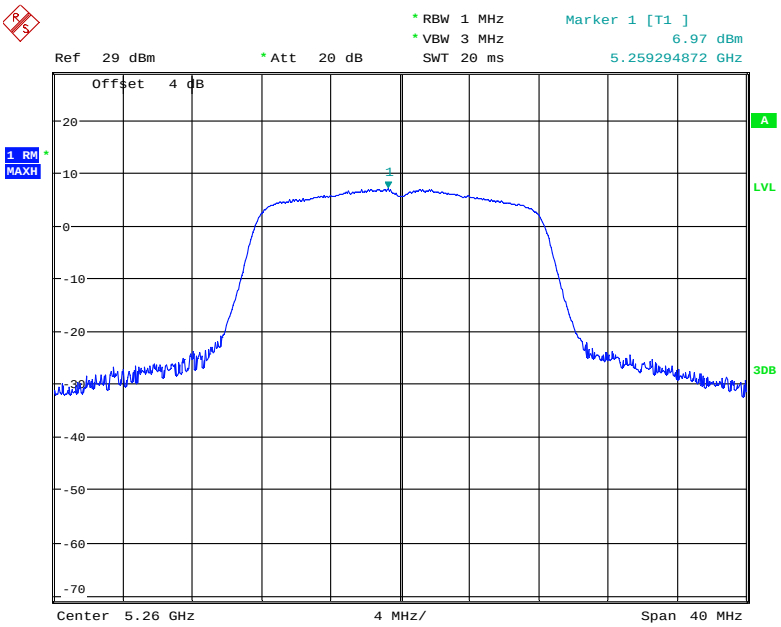
802. 11ac80 mode, Power Spectral Density, 5290 MHz



Date: 14.APR.2020 22:29:23

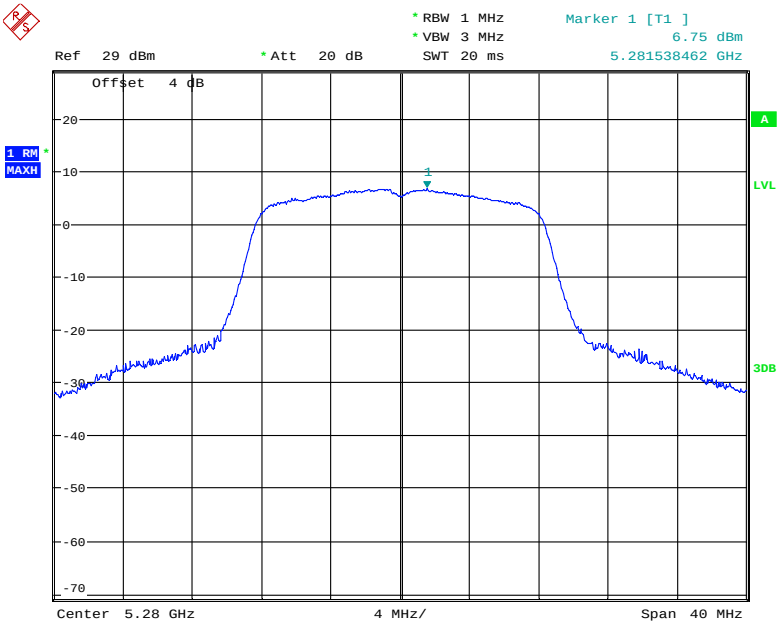
For antenna 1

802.11a mode, Power Spectral Density, 5260 MHz



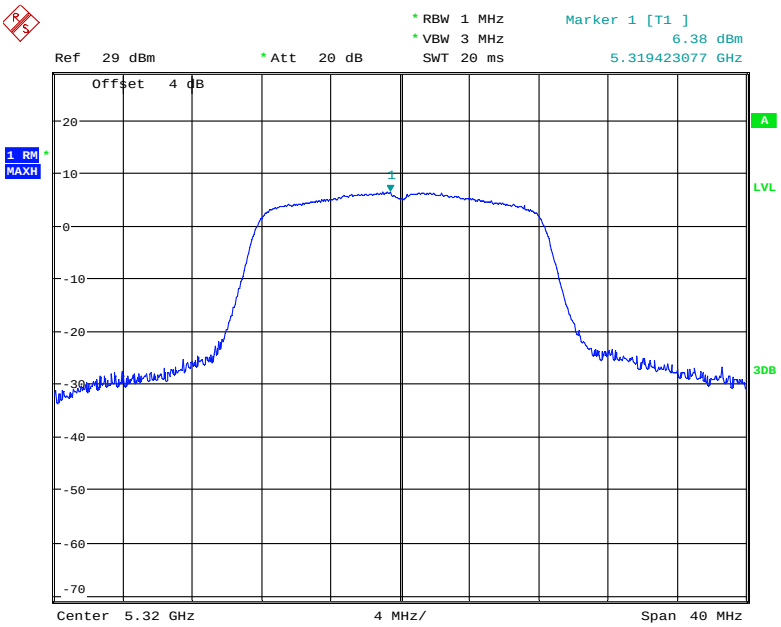
Date: 3.APR.2020 23:25:13

802.11a mode, Power Spectral Density, 5280 MHz



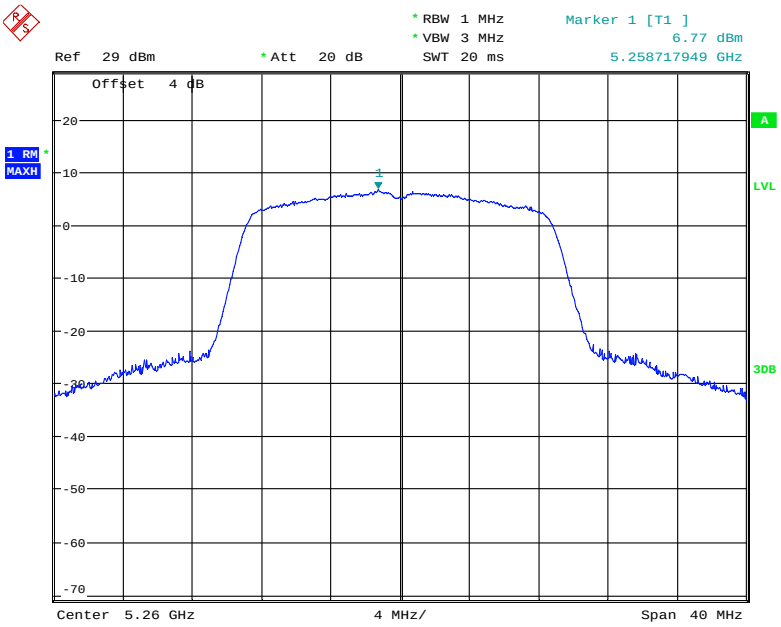
Date: 3.APR.2020 23:27:02

802.11a mode, Power Spectral Density, 5320 MHz



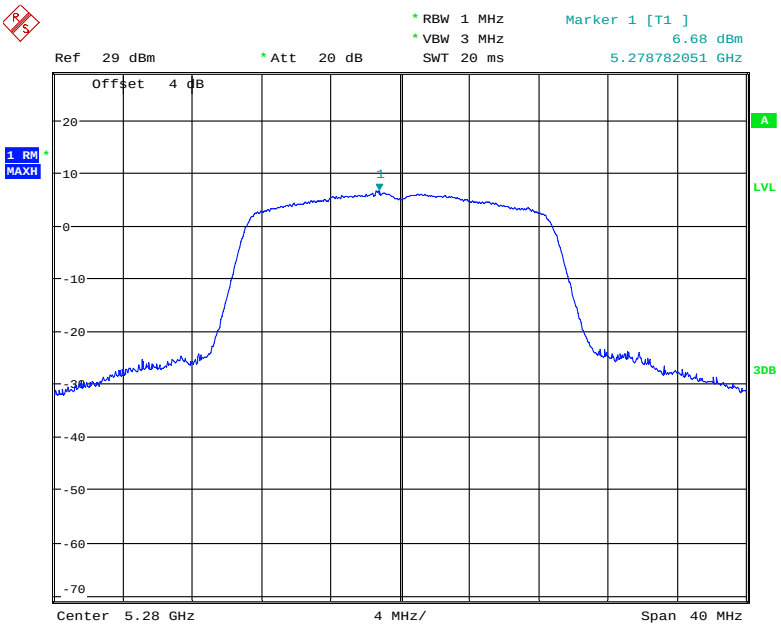
Date: 13.APR.2020 22:24:51

802.11n20 mode, Power Spectral Density, 5260 MHz



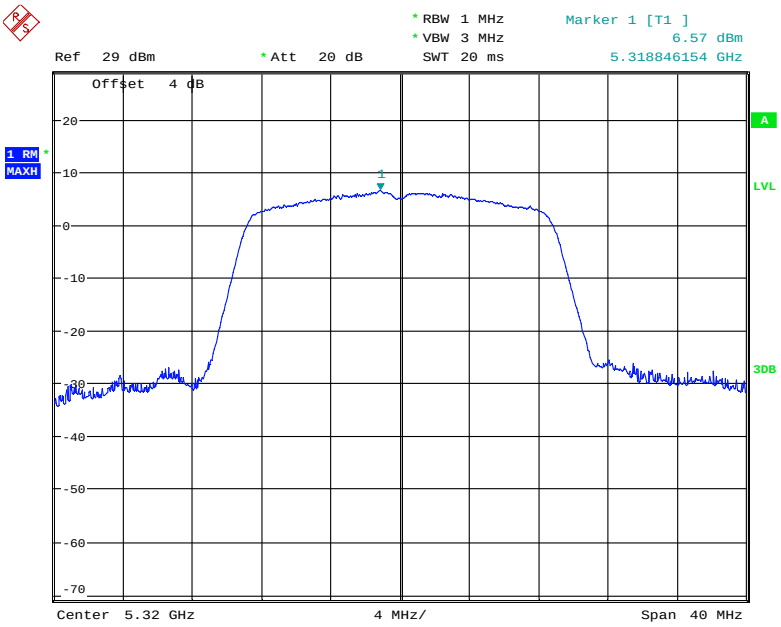
Date: 3.APR.2020 23:30:11

802.11n20 mode, Power Spectral Density, 5280 MHz



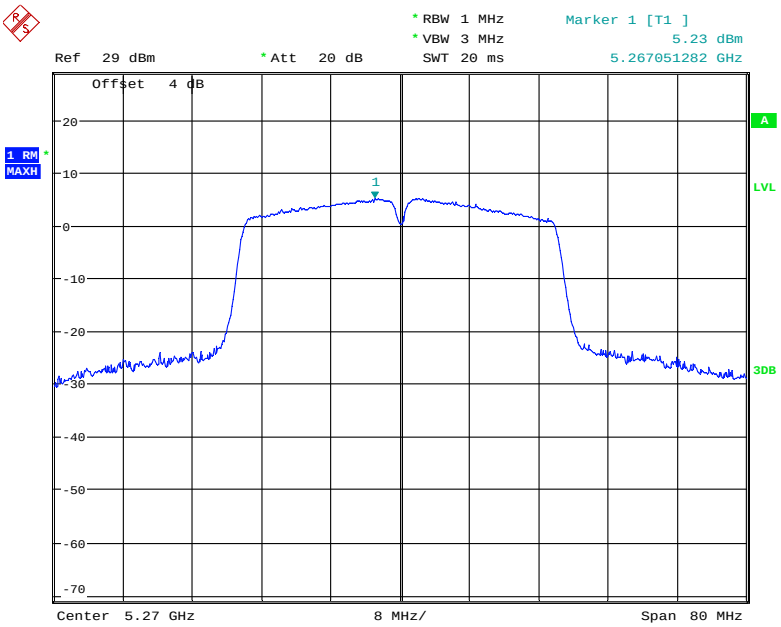
Date: 3.APR.2020 23:33:41

802.11n20 mode, Power Spectral Density, 5320 MHz



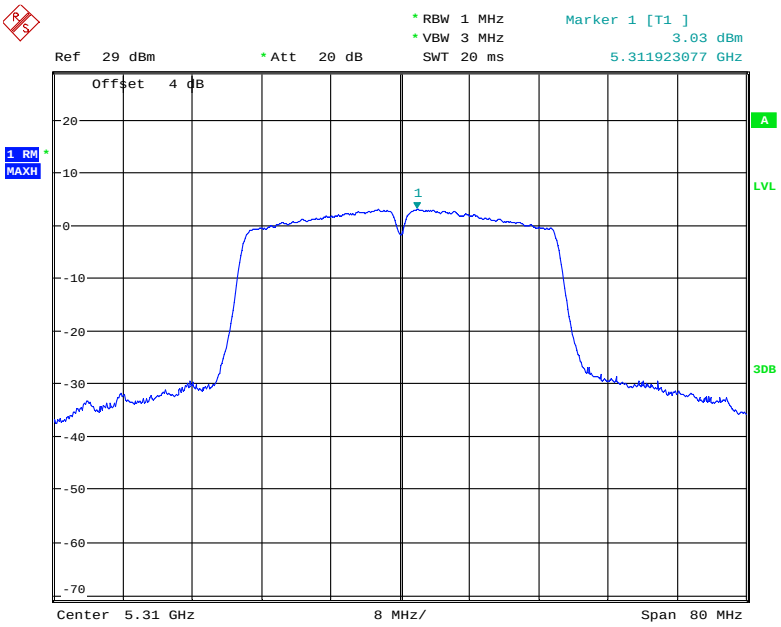
Date: 3.APR.2020 23:34:52

802.11n40 mode, Power Spectral Density, 5270 MHz



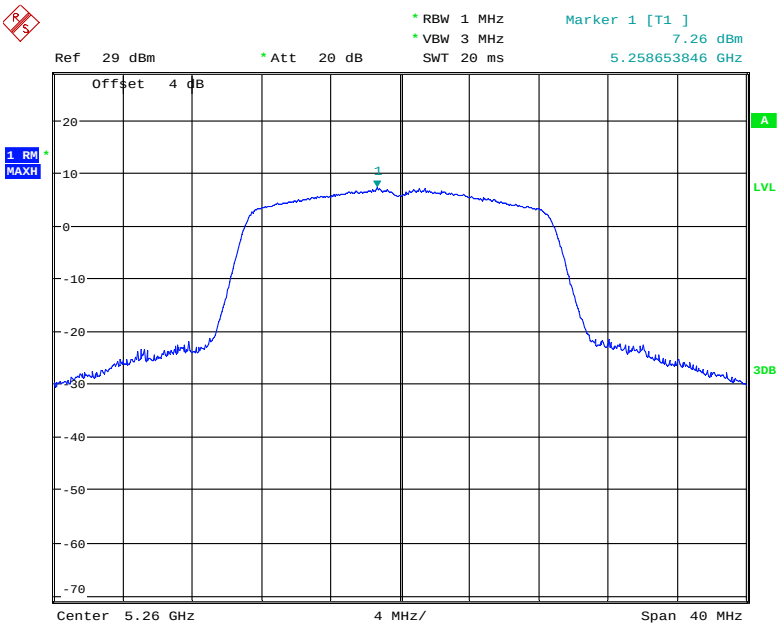
Date: 3.APR.2020 21:54:15

802.11n40 mode, Power Spectral Density, 5310 MHz



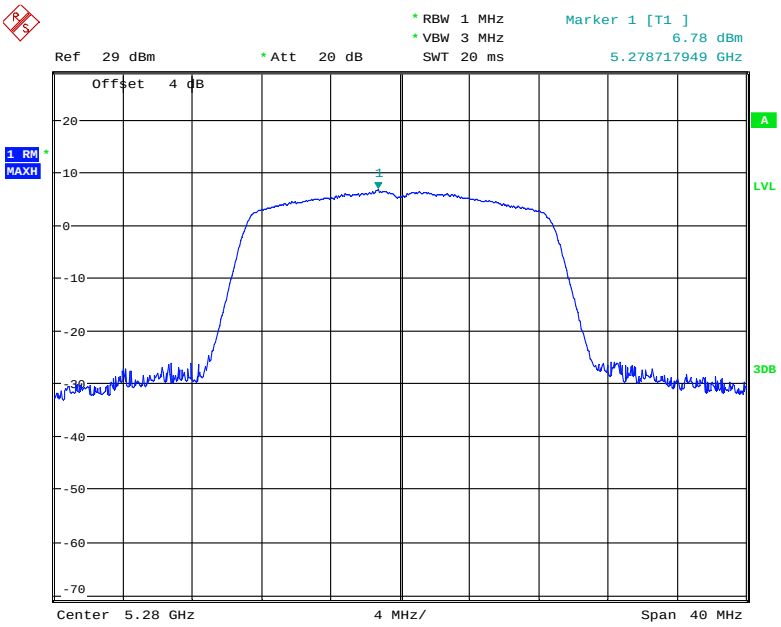
Date: 13.APR.2020 22:35:58

802.11ac20 mode, Power Spectral Density, 5260 MHz



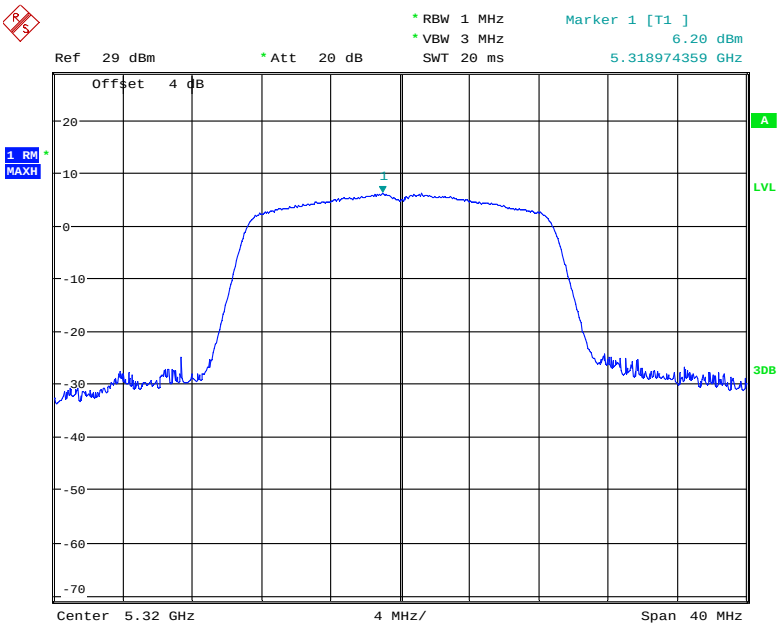
Date: 3.APR.2020 23:42:21

802. 11ac20 mode, Power Spectral Density, 5280 MHz



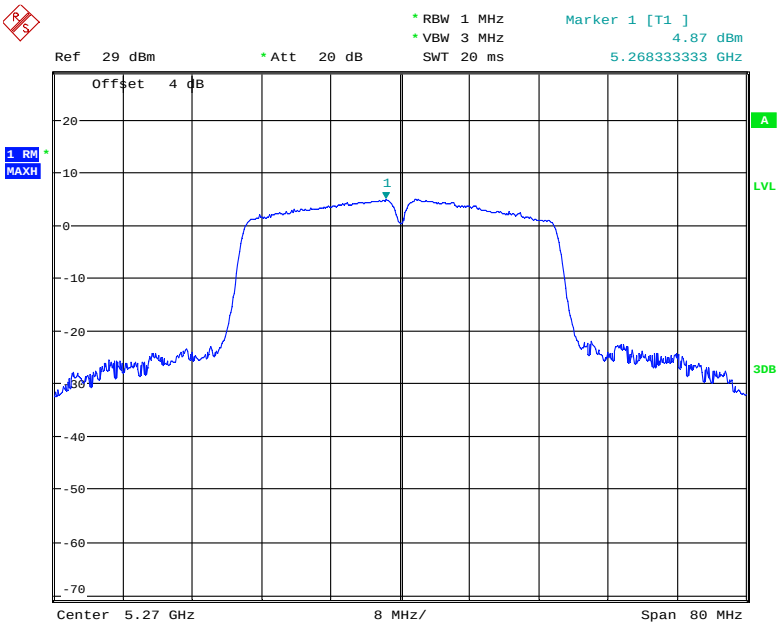
Date: 3.APR.2020 23:39:40

802. 11ac20 mode, Power Spectral Density, 5320 MHz



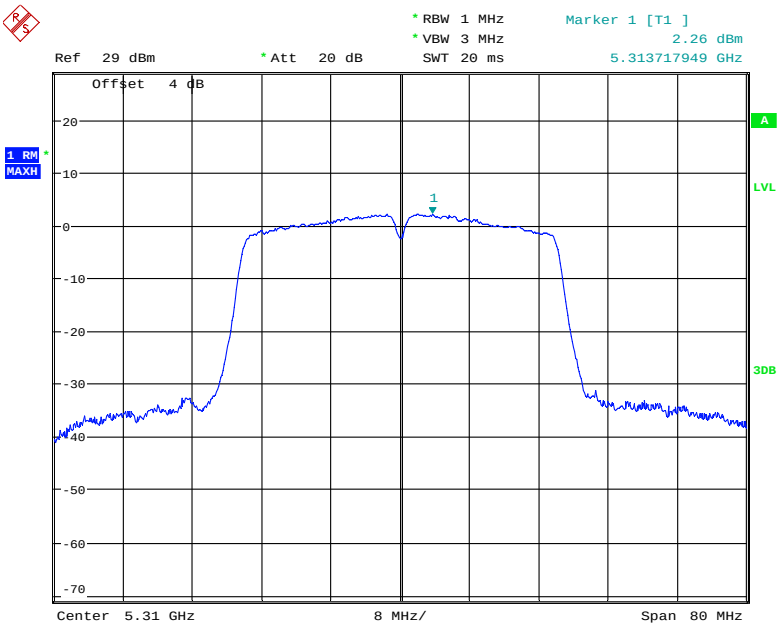
Date: 13.APR.2020 22:26:30

802. 11ac40 mode, Power Spectral Density, 5270 MHz



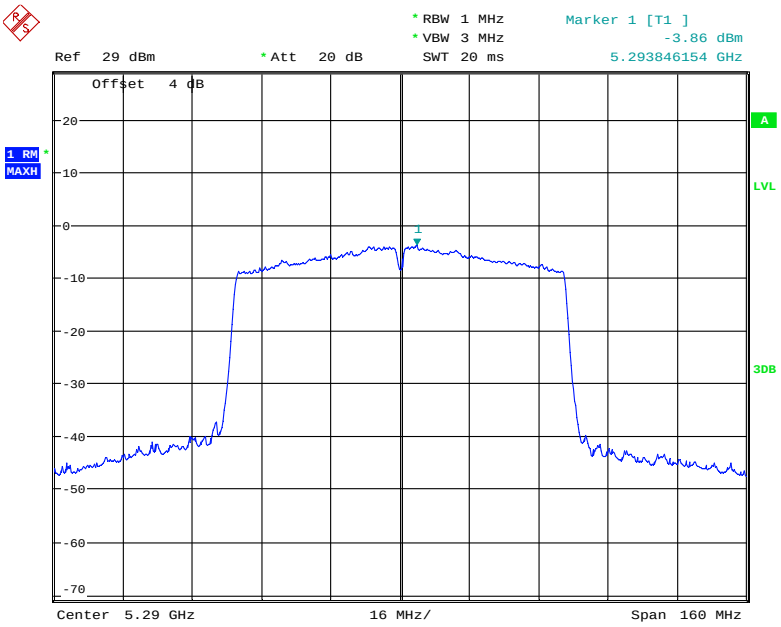
Date: 14.APR.2020 22:26:14

802. 11ac40 mode, Power Spectral Density, 5310 MHz



Date: 14.APR.2020 22:27:39

802. 11ac80 mode, Power Spectral Density, 5290 MHz



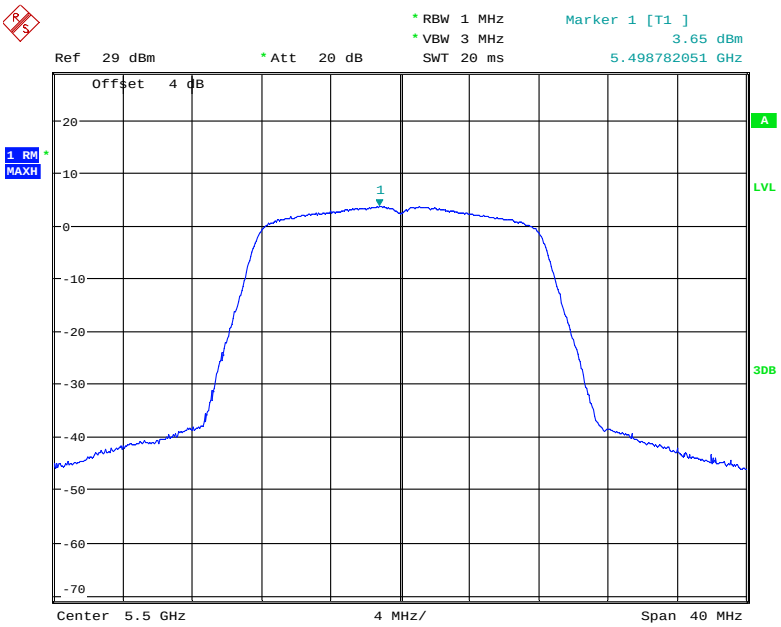
Date: 14.APR.2020 22:30:03

5470 MHz – 5725 MHz:

Frequency (MHz)	Antenna	Power Spectral Density (dBm/MHz)	Total Power Spectral (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5500	0	3.65	6.31	10
	1	2.91		
5580	0	6.89	9.73	
	1	6.54		
5700	0	2.92	5.89	
	1	2.83		
802.11n20				
5500	0	6.84	9.37	10
	1	5.82		
5580	0	6.66	9.26	
	1	5.79		
5700	0	4.02	7.28	
	1	4.50		
802.11n40				
5510	0	0.95	3.89	10
	1	0.80		
5550	0	5.47	7.98	
	1	4.40		
5670	0	3.18	6.18	
	1	3.15		
802.11ac20				
5500	0	6.82	9.40	10
	1	5.91		
5580	0	6.57	9.35	
	1	6.09		
5700	0	4.28	7.34	
	1	4.37		
802.11ac40				
5510	0	0.81	3.79	10
	1	0.75		
5550	0	5.43	8.00	
	1	4.49		
5670	0	3.01	6.11	
	1	3.19		
802.11ac80				
5530	0	-1.86	0.71	10
	1	-2.78		
5610	0	-1.24	1.44	
	1	-1.93		

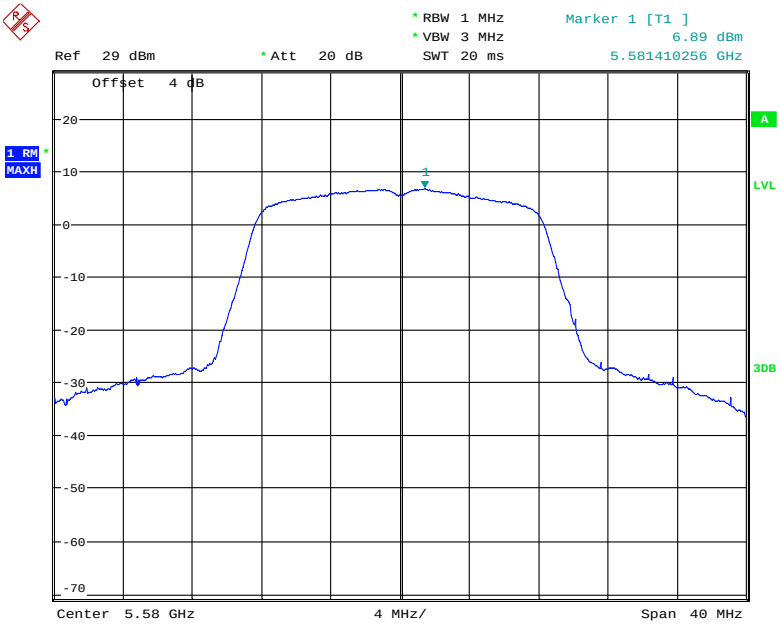
For antenna 0

802.11a mode, Power Spectral Density, 5500 MHz



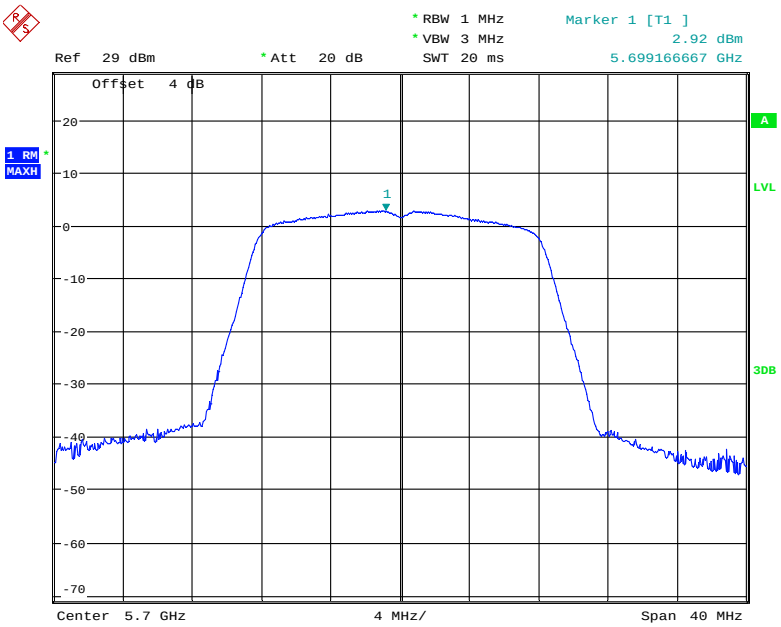
Date: 13.APR.2020 23:19:55

802.11a mode, Power Spectral Density, 5580 MHz



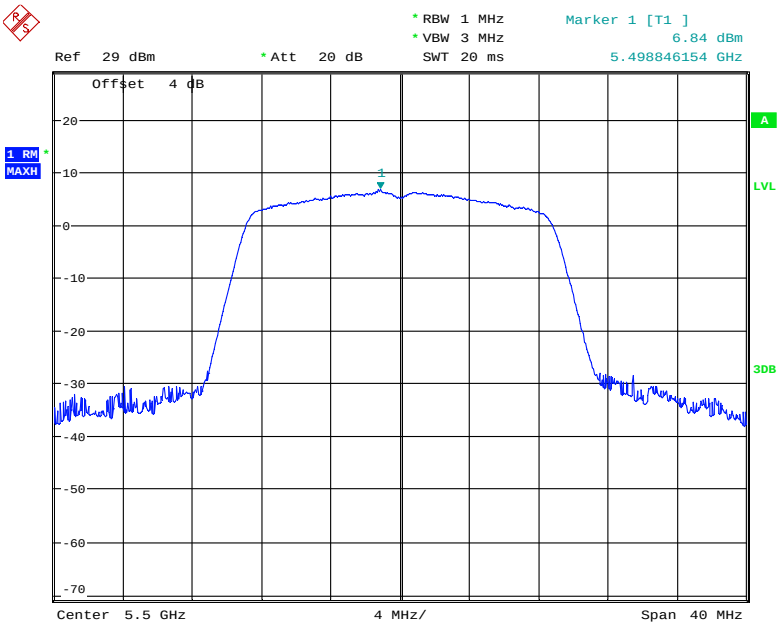
Date: 13.APR.2020 23:18:04

802.11a mode, Power Spectral Density, 5700 MHz



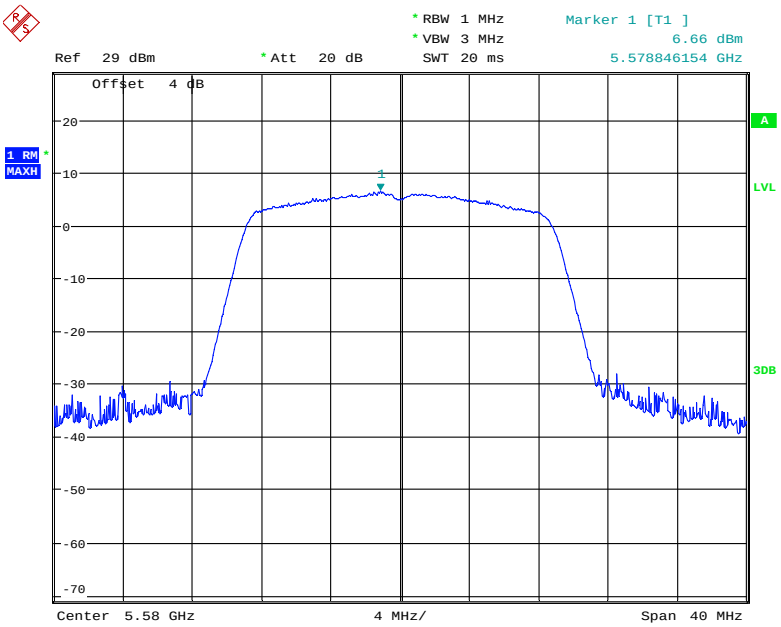
Date: 13.APR.2020 23:20:51

802.11n20 mode, Power Spectral Density, 5500 MHz



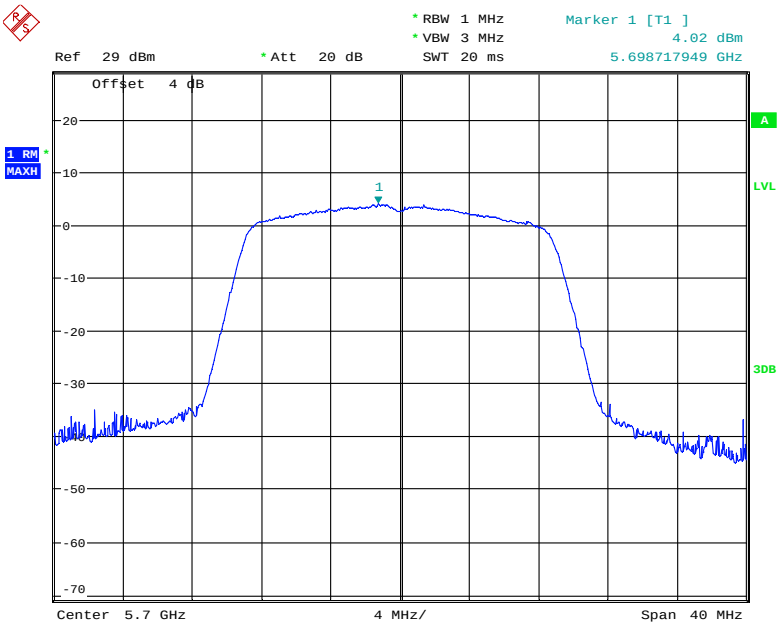
Date: 13.APR.2020 23:21:52

802.11n20 mode, Power Spectral Density, 5580 MHz



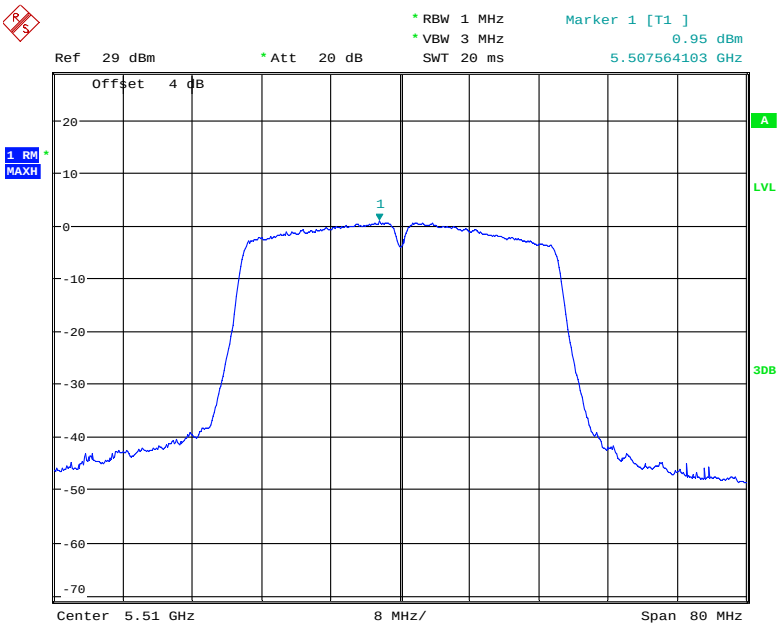
Date: 13.APR.2020 23:23:37

802.11n20 mode, Power Spectral Density, 5700 MHz



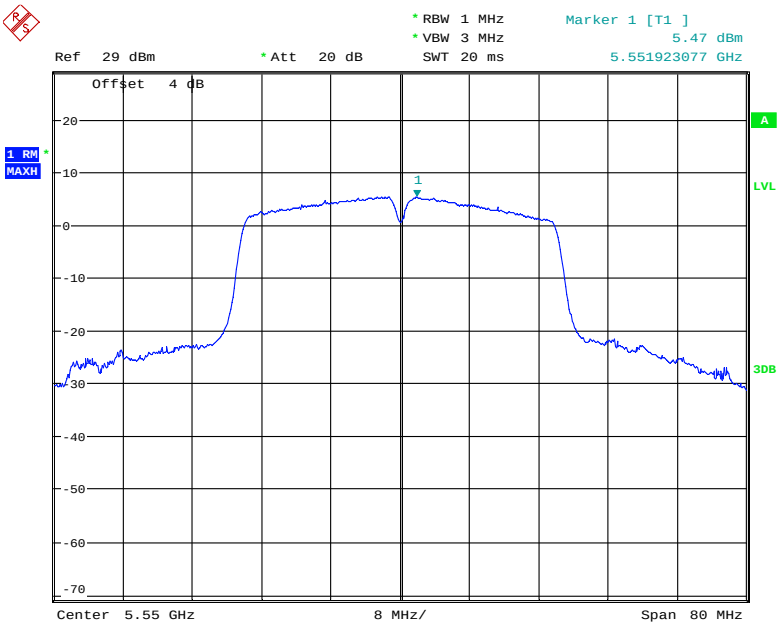
Date: 13.APR.2020 23:24:07

802.11n40 mode, Power Spectral Density, 5510 MHz



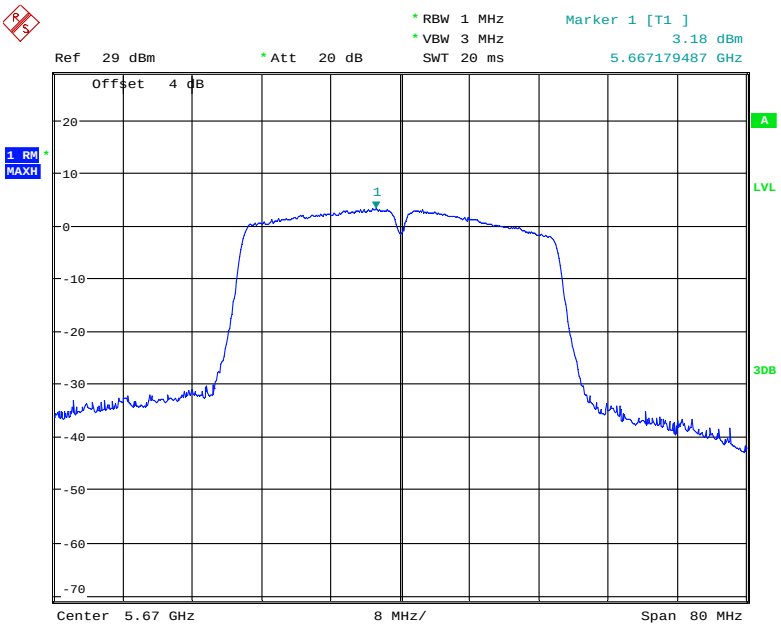
Date: 13.APR.2020 23:49:39

802.11n40 mode, Power Spectral Density, 5550 MHz



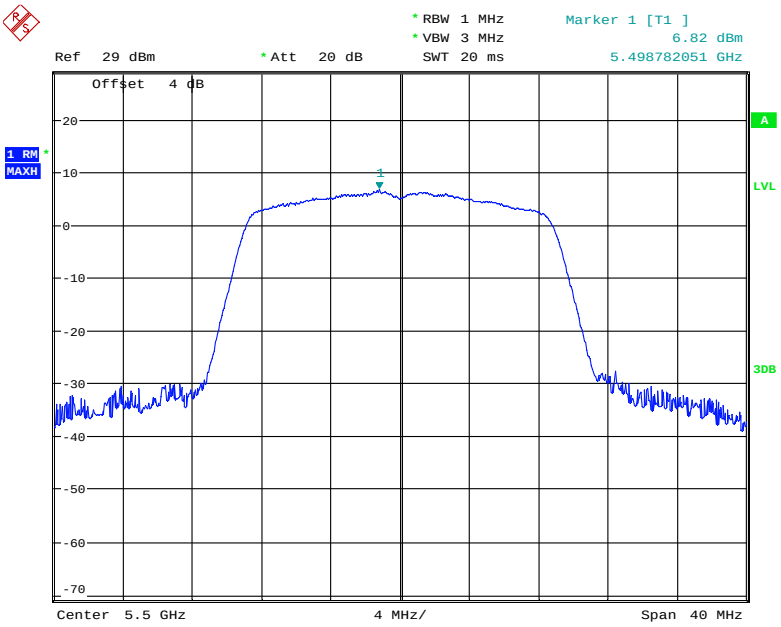
Date: 13.APR.2020 23:53:23

802.11n40 mode, Power Spectral Density, 5670 MHz



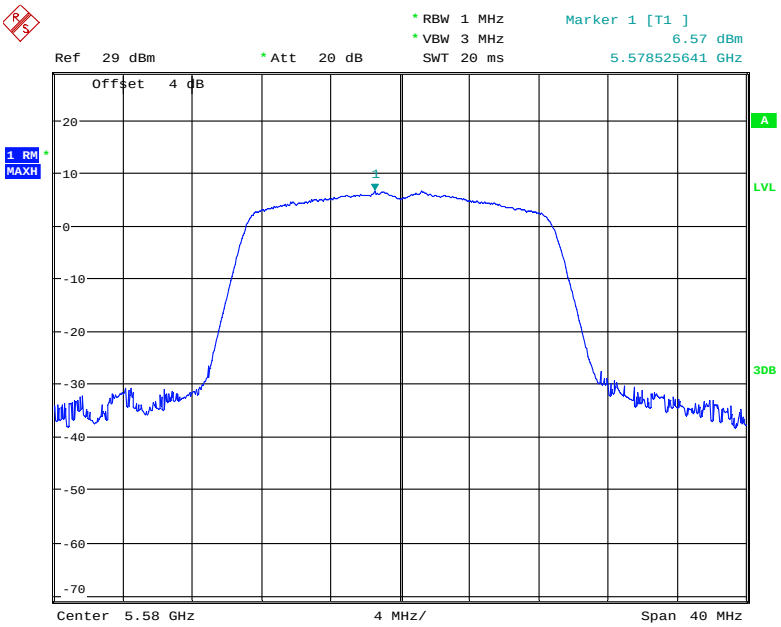
Date: 13.APR.2020 23:55:22

802.11ac20 mode, Power Spectral Density, 5500 MHz



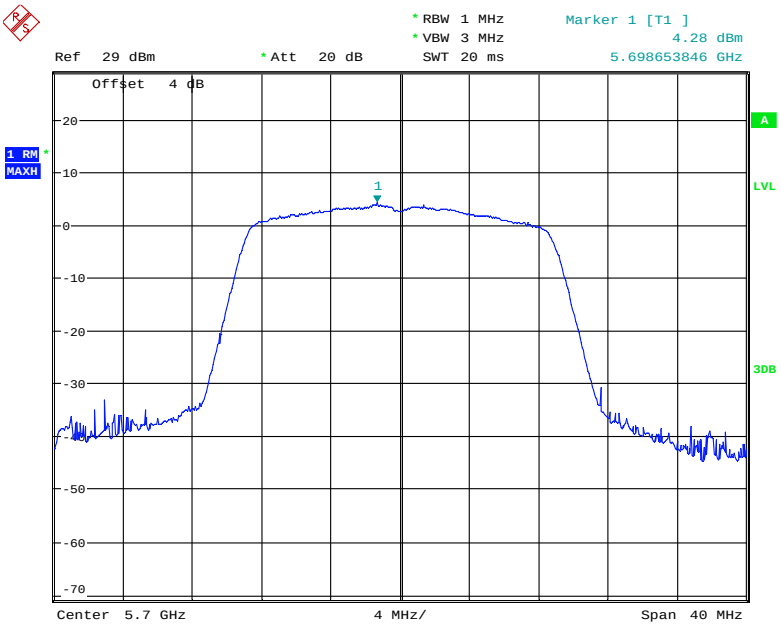
Date: 13.APR.2020 23:22:38

802. 11ac20 mode, Power Spectral Density, 5580 MHz



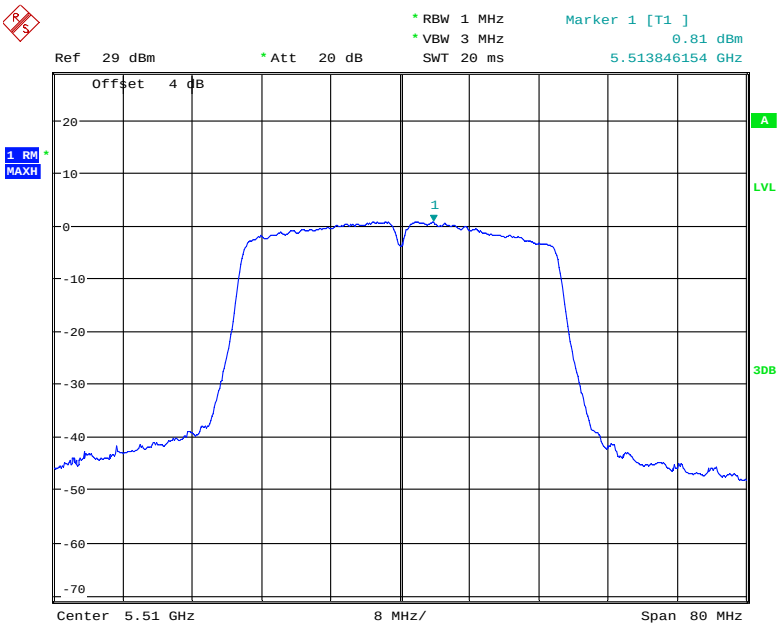
Date: 13.APR.2020 23:23:23

802. 11ac20 mode, Power Spectral Density, 5700 MHz



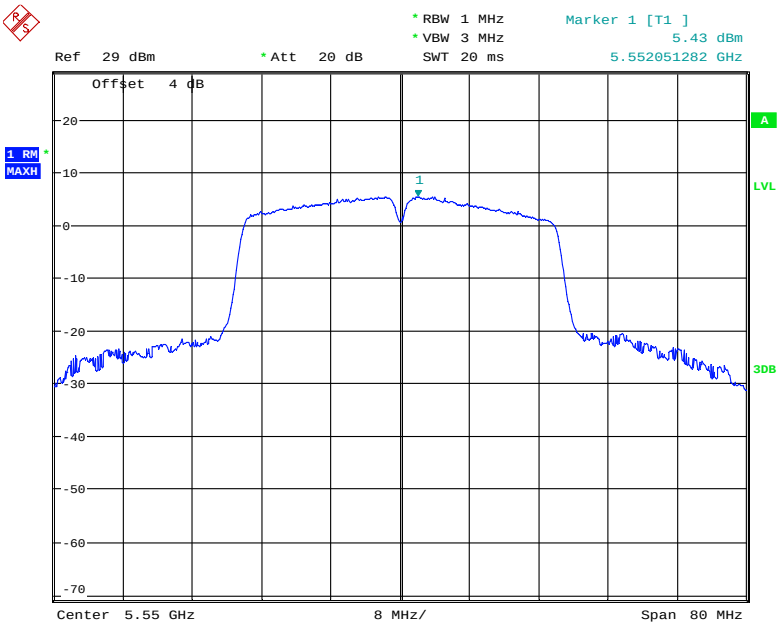
Date: 13.APR.2020 23:24:56

802. 11ac40 mode, Power Spectral Density, 5510 MHz



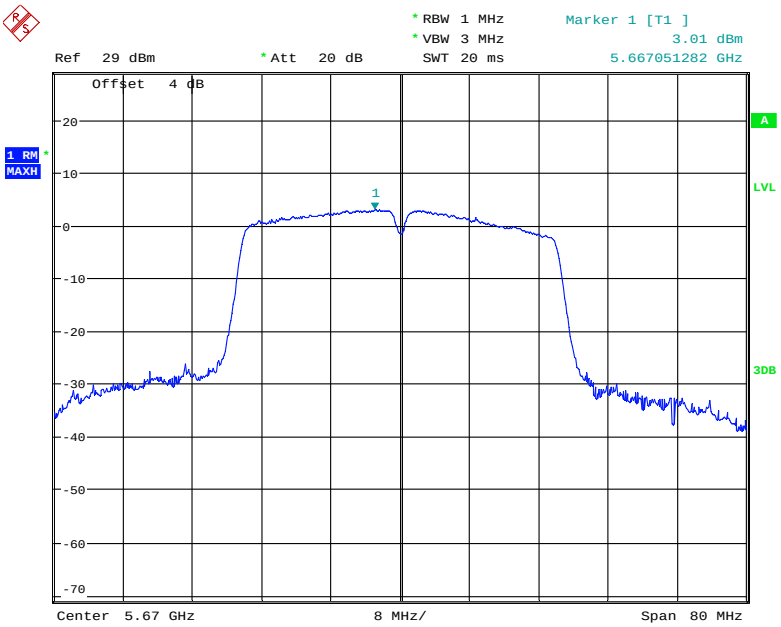
Date: 13.APR.2020 23:49:09

802. 11ac40 mode, Power Spectral Density, 5590 MHz



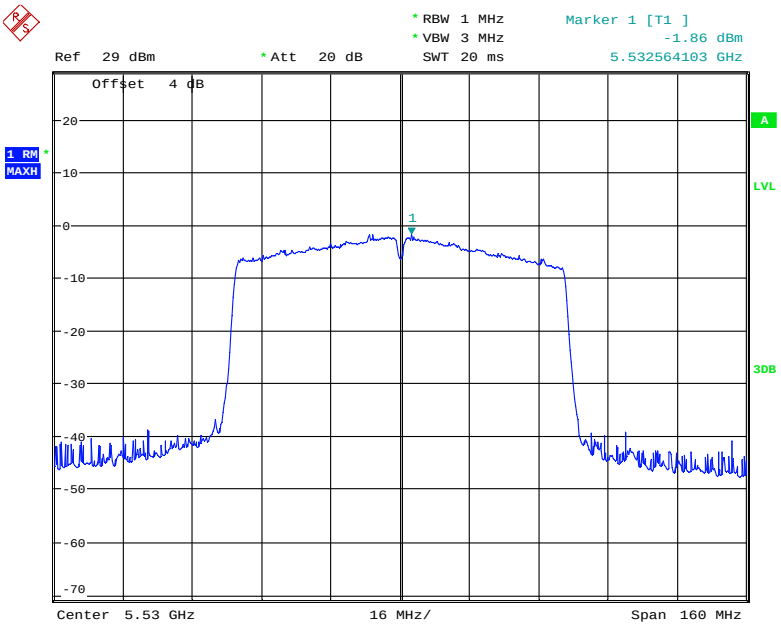
Date: 13.APR.2020 23:53:43

802. 11ac40 mode, Power Spectral Density, 5670 MHz



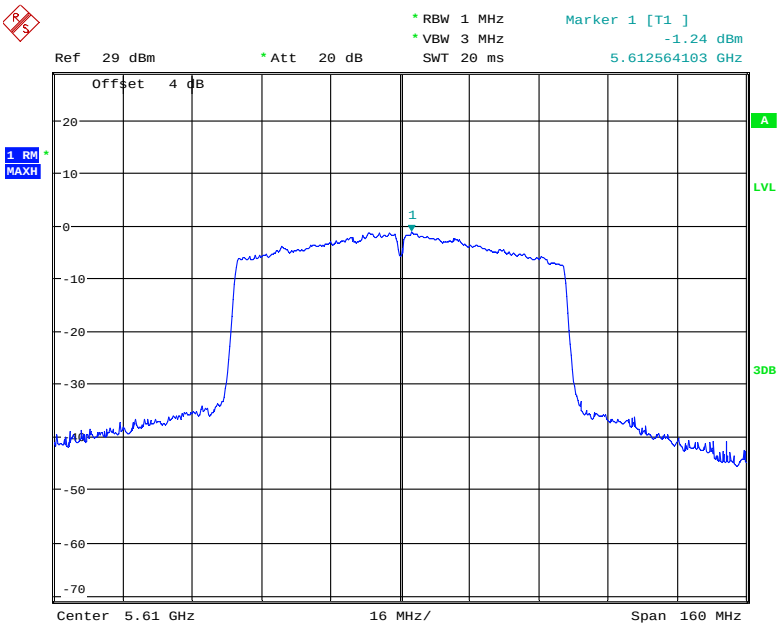
Date: 13.APR.2020 23:55:06

802. 11ac80 mode, Power Spectral Density, 5530 MHz



Date: 13.APR.2020 23:46:27

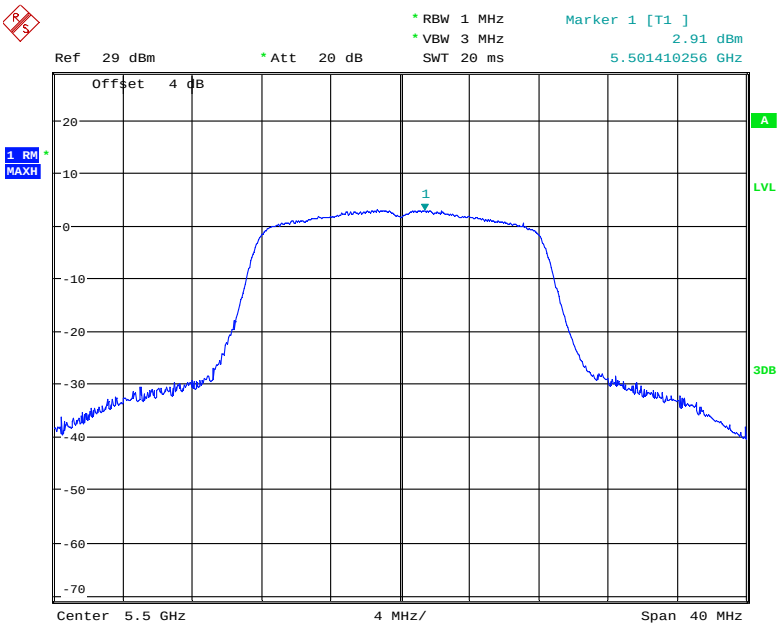
802. 11ac80 mode, Power Spectral Density, 5610 MHz



Date: 13.APR.2020 23:45:01

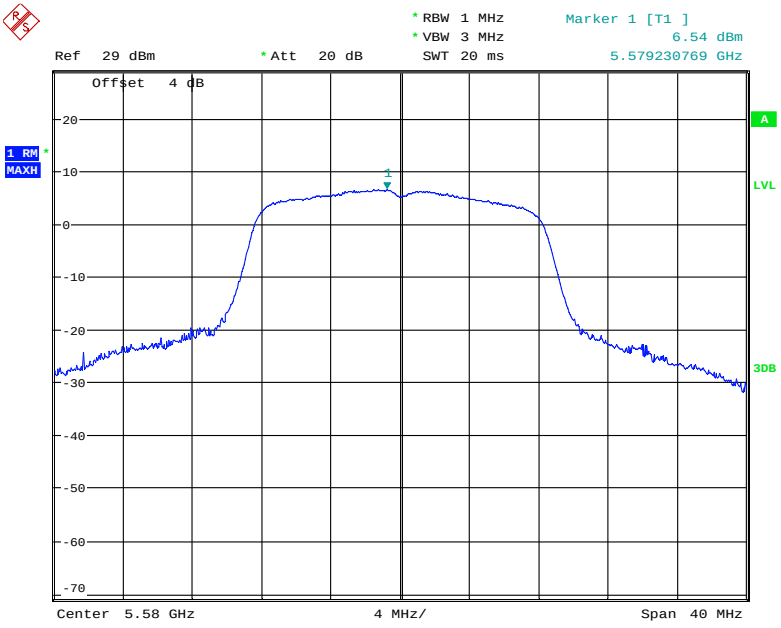
For antenna 1

802.11a mode, Power Spectral Density, 5500 MHz



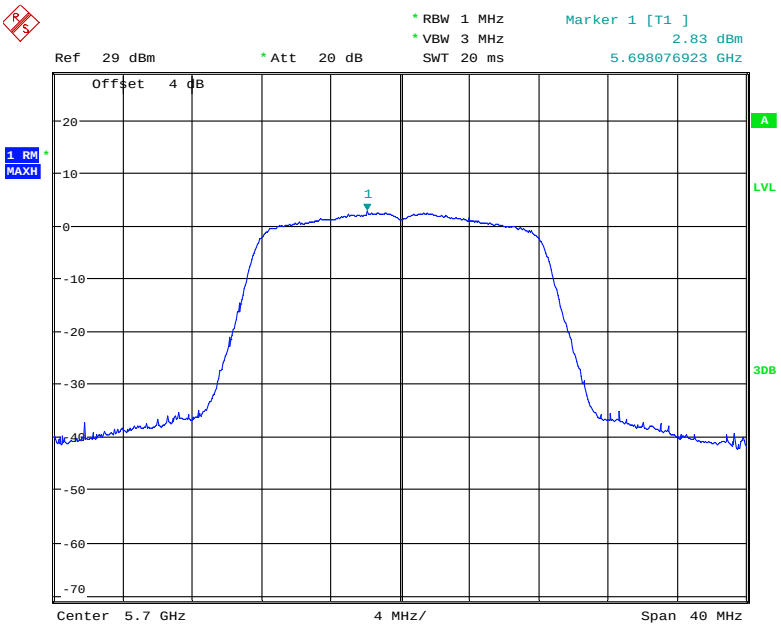
Date: 13.APR.2020 23:40:12

802.11a mode, Power Spectral Density, 5580 MHz



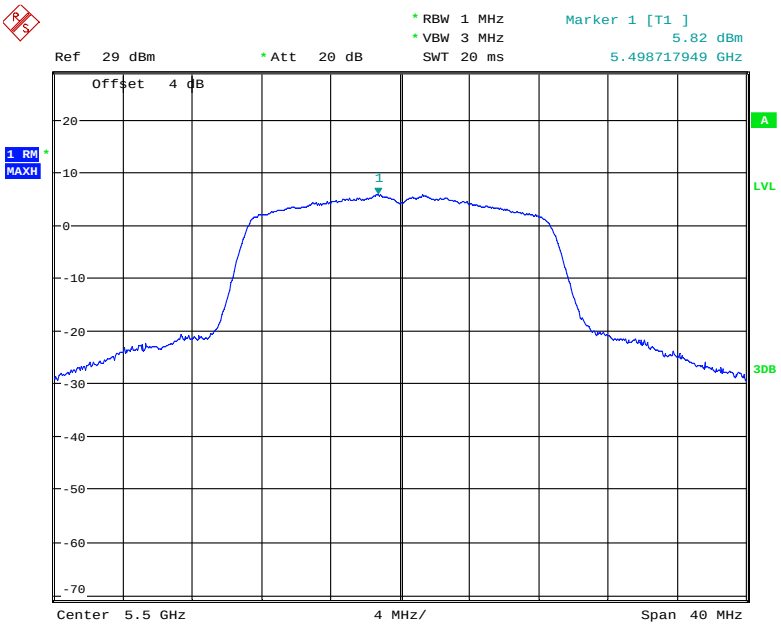
Date: 13.APR.2020 23:35:11

802.11a mode, Power Spectral Density, 5700 MHz



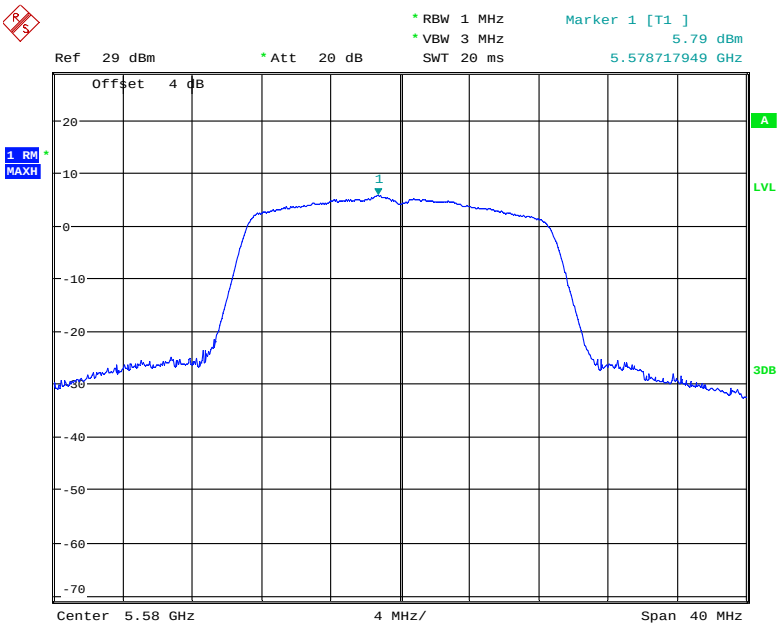
Date: 13.APR.2020 23:34:37

802.11n20 mode, Power Spectral Density, 5500 MHz



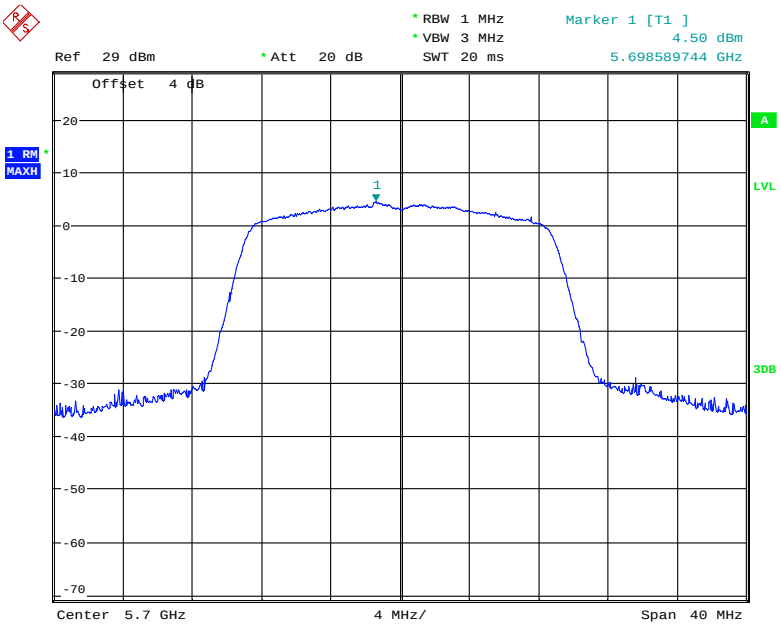
Date: 13.APR.2020 23:41:38

802.11n20 mode, Power Spectral Density, 5580 MHz



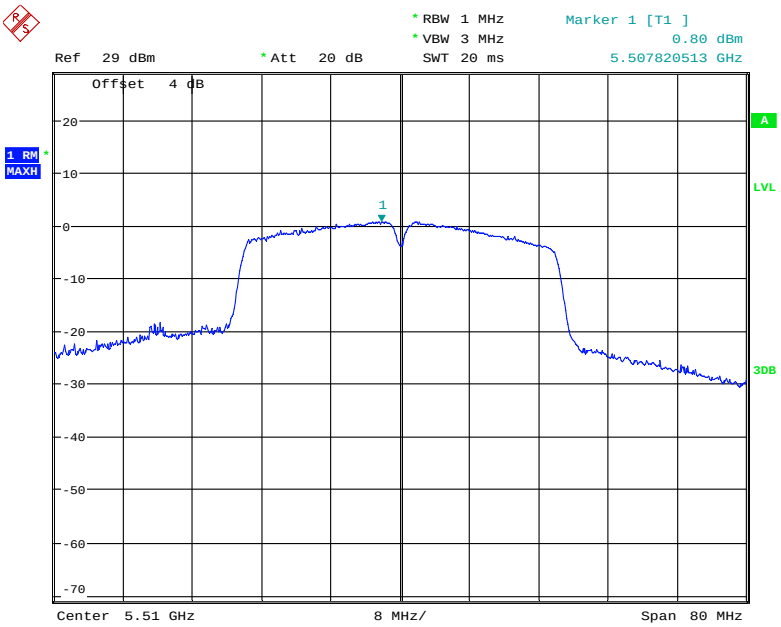
Date: 13.APR.2020 23:35:53

802.11n20 mode, Power Spectral Density, 5700 MHz



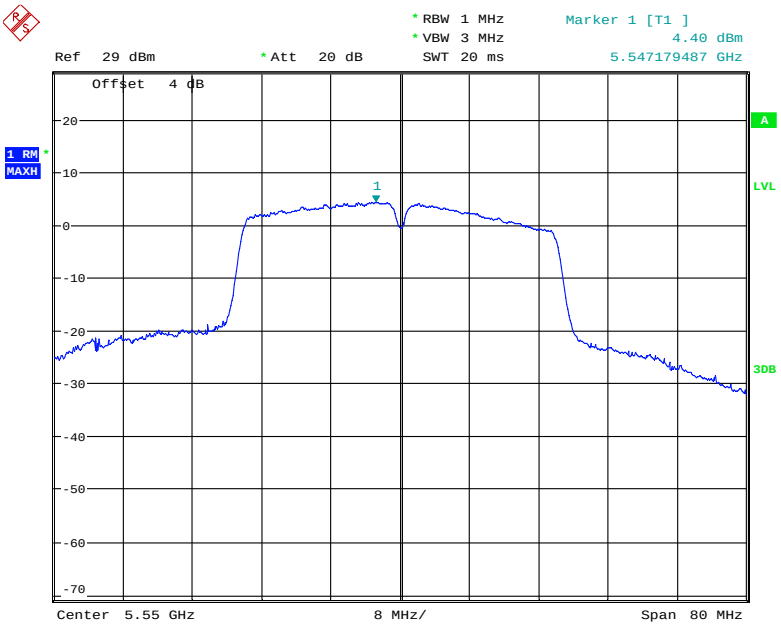
Date: 13.APR.2020 23:32:00

802.11n40 mode, Power Spectral Density, 5510 MHz



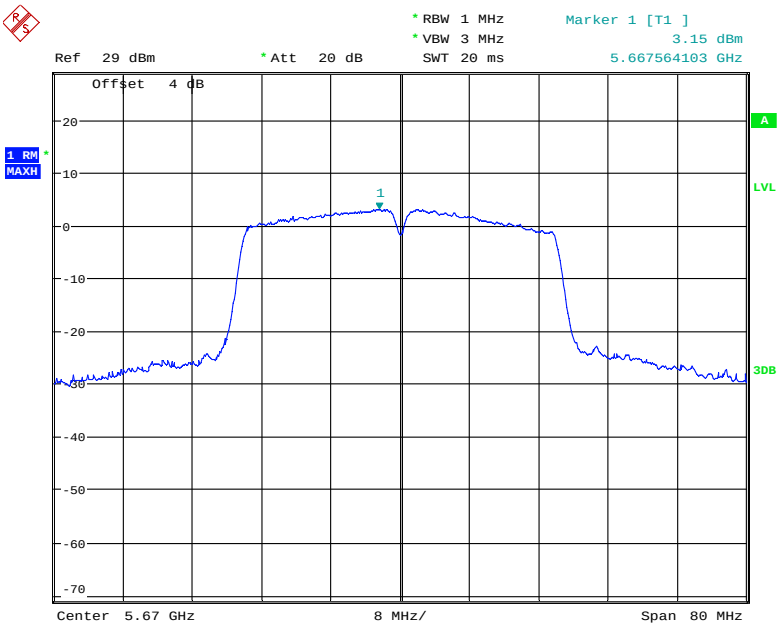
Date: 13.APR.2020 23:50:27

802.11n40 mode, Power Spectral Density, 5550 MHz



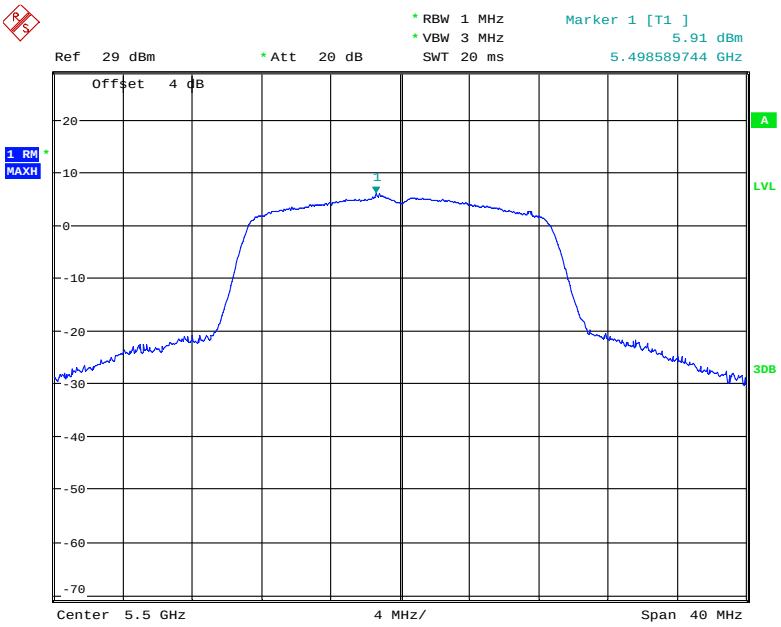
Date: 13.APR.2020 23:52:21

802.11n40 mode, Power Spectral Density, 5670 MHz



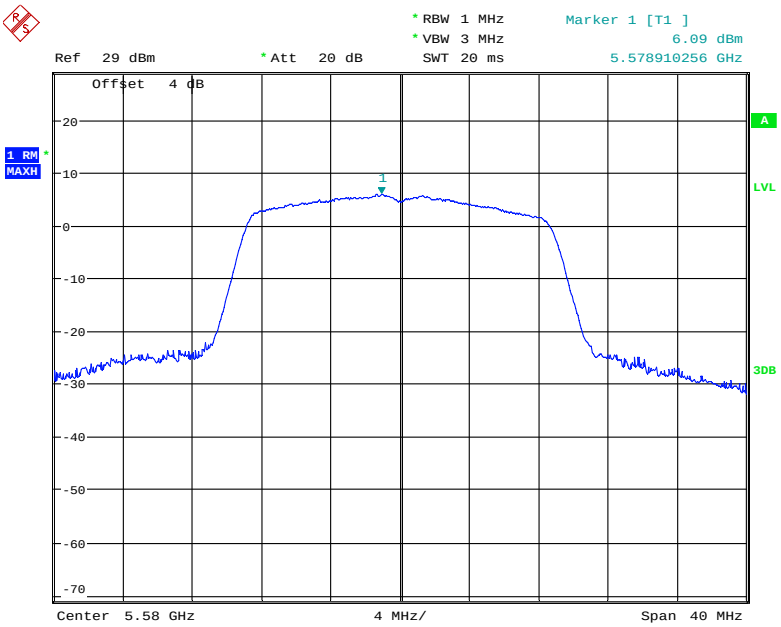
Date: 13.APR.2020 23:55:45

802.11ac20 mode, Power Spectral Density, 5500 MHz



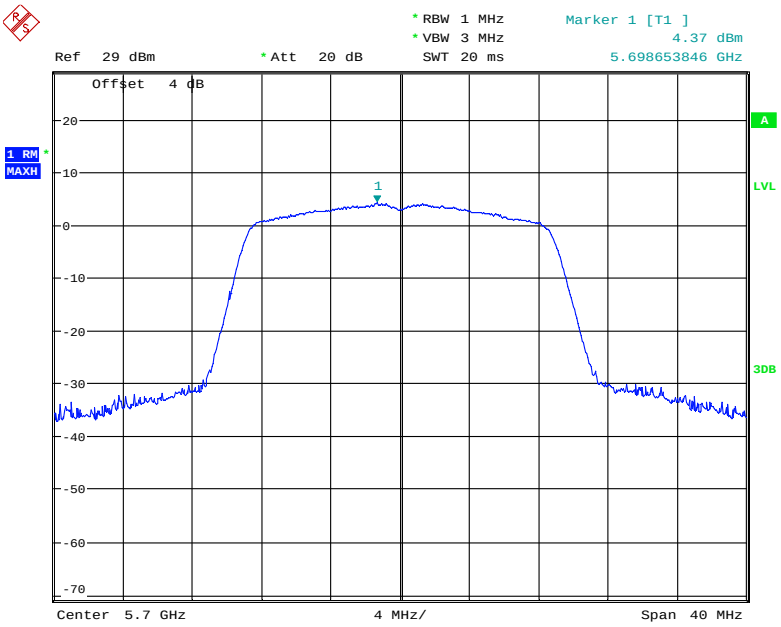
Date: 13.APR.2020 23:40:53

802. 11ac20 mode, Power Spectral Density, 5580 MHz



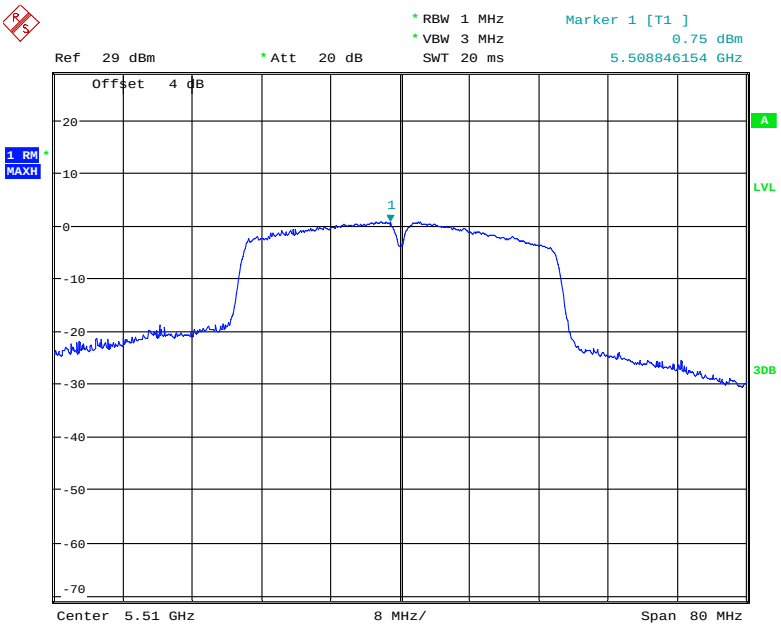
Date: 13.APR.2020 23:38:05

802. 11ac20 mode, Power Spectral Density, 5700 MHz



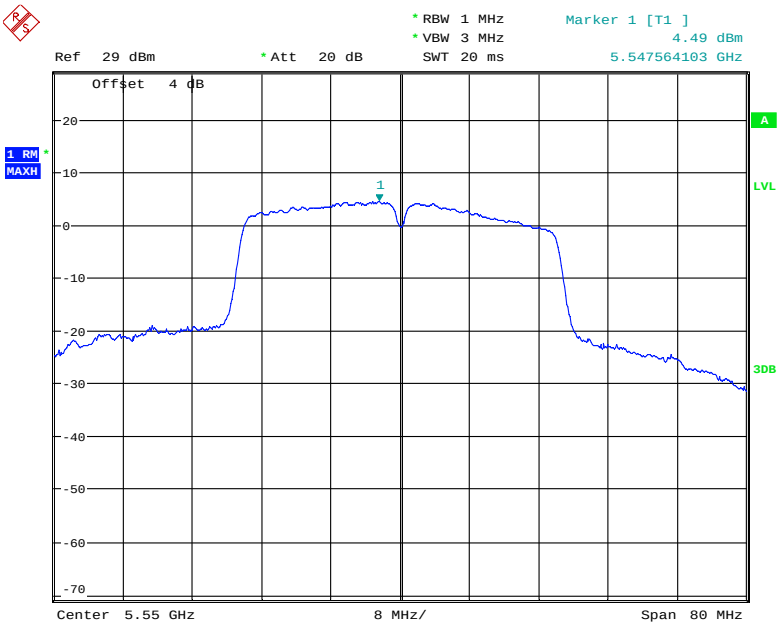
Date: 13.APR.2020 23:28:26

802. 11ac40 mode, Power Spectral Density, 5510 MHz



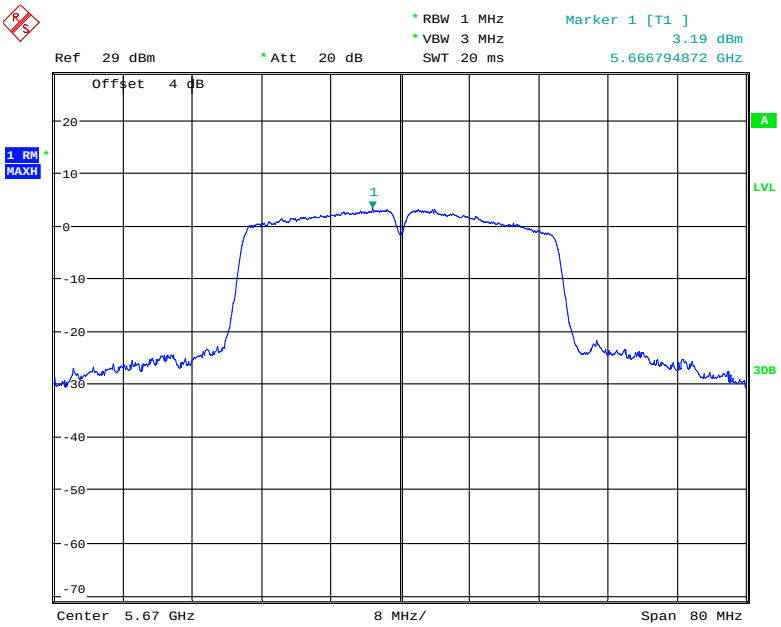
Date: 13.APR.2020 23:50:49

802. 11ac40 mode, Power Spectral Density, 5590 MHz



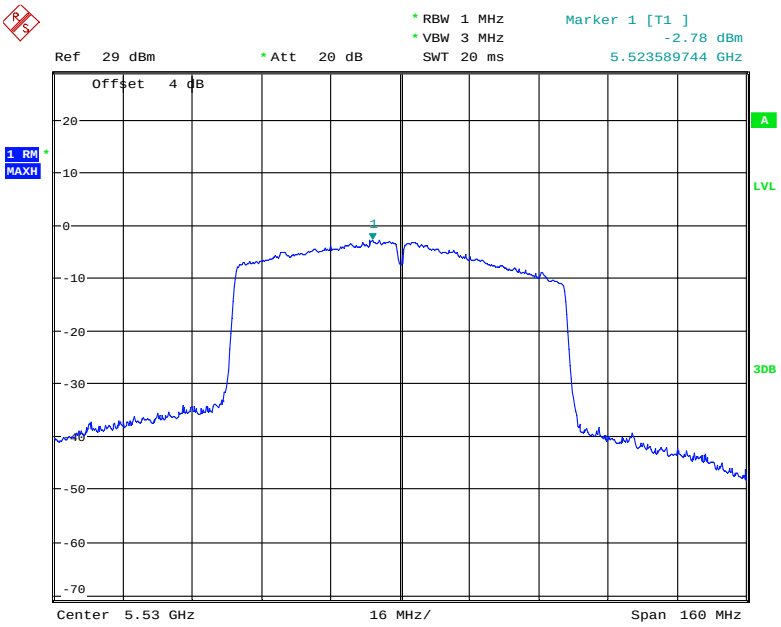
Date: 13.APR.2020 23:51:48

802. 11ac40 mode, Power Spectral Density, 5670 MHz



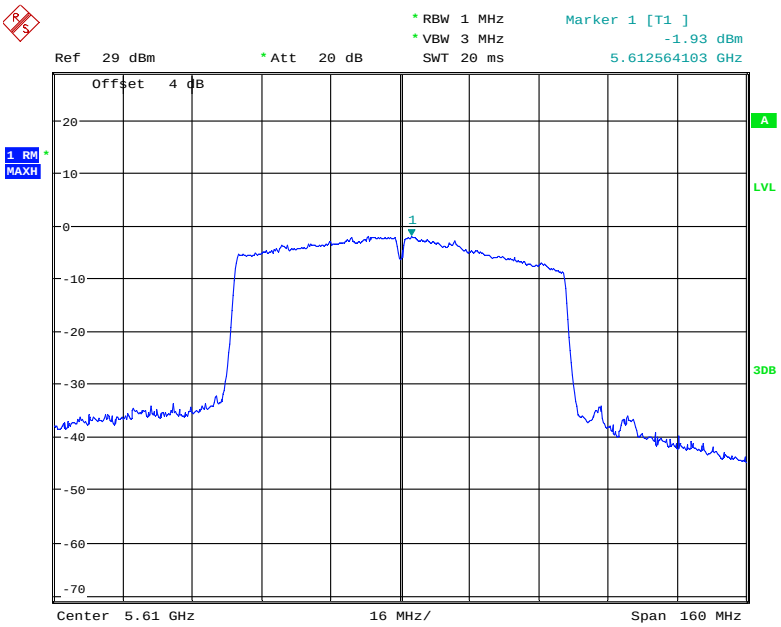
Date: 13.APR.2020 23:56:06

802. 11ac80 mode, Power Spectral Density, 5530 MHz



Date: 13.APR.2020 23:43:39

802. 11ac80 mode, Power Spectral Density, 5610 MHz



Date: 13.APR.2020 23:44:22

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