



TESTING LABORATORY
CERTIFICATE # 4821.01



FCC PART 15.407

TEST REPORT

For

Shenzhen Jingwah Information Technology Co., Ltd.

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FCC ID: RBD-M11550

Report Type: Original Report	Product Type: Tablet PC
Report Number: RGMA181211001-00C	
Report Date: 2019-01-22	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Tablet PC
Tested Model	M11550
Multiple Model [#]	ST11550
Frequency Range	5150-5250 MHz 5250-5350 MHz 5470-5725 MHz 5725-5850 MHz
Transmit Power	5150-5250 MHz: 7.42dBm 5250-5350 MHz: 7.63 dBm 5470-5725 MHz: 10.21 dBm 5725-5850 MHz: 13.11 dBm
Modulation Technique	OFDM
Antenna Specification	5.0dBi
Voltage Range	DC 3.7 V battery or DC5.0V from Adapter
Date of Test	2018-12-19 to 2019-01-09
Sample serial number	181211001
Received date	2018-12-11
Sample/EUT Status	Good condition
Adapter Information	Model:TPA-46050200UU Input:100-240V,50/60Hz,0.3A Output:5.0V,2.0A

Notes: This series products model: ST11550 and M11550 are electrically identical, the differences between them is the model number. Model M11550 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

Objective

This type approval report is prepared on behalf of *Shenzhen Jingwah Information Technology Co., Ltd.* 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.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, DTS submissions with FCC ID: RBD-M11550.

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

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	±4.75dB	±4.75dB
	±4.88dB	±4.88dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

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

The device support 802.11a/n20/n40/ac20/ac40/ac80 modes.

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 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	/	/

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

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

EUT Exercise Software

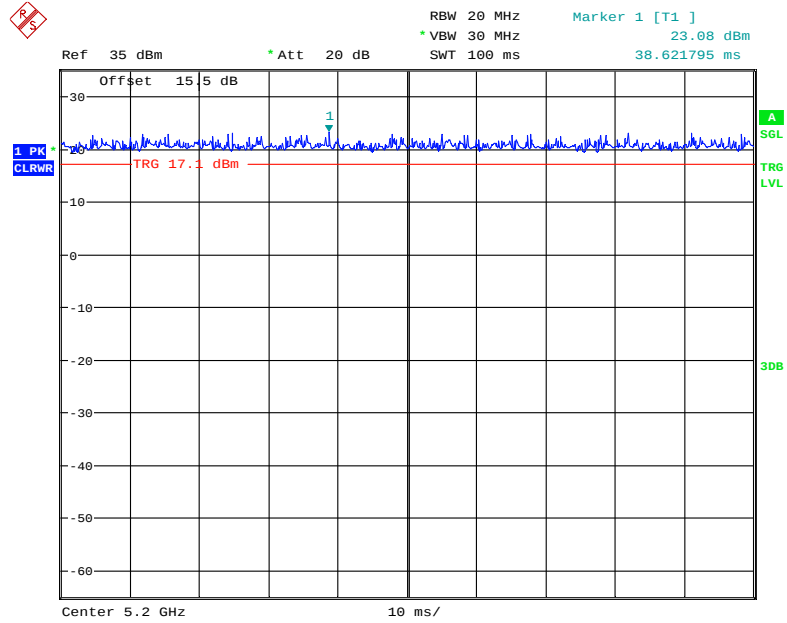
The system was configured for testing in an engineering mode. Test frequencies and power level were configured as below:

U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5150 – 5250MHz	802.11 a	CH36	5180	6	15
		CH40	5200	6	15
		CH48	5240	6	15
	802.11 n20	CH36	5180	MCS0	15
		CH40	5200	MCS0	15
		CH48	5240	MCS0	15
	802.11 n40	CH38	5190	MCS0	15
		CH46	5230	MCS0	15
	802.11 ac20	CH36	5180	MCS0	15
		CH40	5200	MCS0	15
		CH48	5240	MCS0	15
	802.11 ac40	CH38	5190	MCS0	15
		CH46	5230	MCS0	15
5250 – 5350MHz	802.11 a	CH42	5210	MCS0	15
		CH52	5260	6	15
		CH56	5280	6	15
	802.11 n20	CH64	5320	6	15
		CH52	5260	MCS0	17
		CH56	5280	MCS0	17
	802.11 n40	CH64	5320	MCS0	17
		CH54	5270	MCS0	17
		CH62	5310	MCS0	17
	802.11 ac20	CH52	5260	MCS0	17
		CH56	5280	MCS0	17
		CH64	5320	MCS0	17
	802.11 ac40	CH54	5270	MCS0	17
		CH62	5310	MCS0	17
	802.11 ac80	CH58	5290	MCS0	17

U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5470 – 5725MHz	802.11 a	CH100	5500	6	15
		CH120	5600	6	15
		CH140	5700	6	15
	802.11 n20	CH100	5500	MCS0	12
		CH120	5600	MCS0	12
		CH140	5700	MCS0	12
	802.11 n40	CH102	5510	MCS0	10
		CH118	5590	MCS0	10
	802.11 ac20	CH100	5500	MCS0	12
		CH120	5600	MCS0	12
		CH140	5700	MCS0	12
	802.11 ac40	CH102	5510	MCS0	10
		CH118	5590	MCS0	10
		CH134	5670	MCS0	10
	802.11 ac80	CH106	5530	MCS0	12
		CH122	5610	MCS0	12
5725 – 5850MHz	802.11 a	CH149	5745	6	15
		CH157	5785	6	15
		CH165	5825	6	15
	802.11 n20	CH149	5745	MCS0	12
		CH157	5785	MCS0	12
		CH165	5825	MCS0	12
	802.11 n40	CH151	5755	MCS0	12
		CH159	5795	MCS0	12
	802.11 ac20	CH149	5745	MCS0	12
		CH157	5785	MCS0	12
		CH165	5825	MCS0	12
	802.11 ac40	CH151	5755	MCS0	12
		CH159	5795	MCS0	12
	802.11 ac80	CH155	5775	MCS0	12

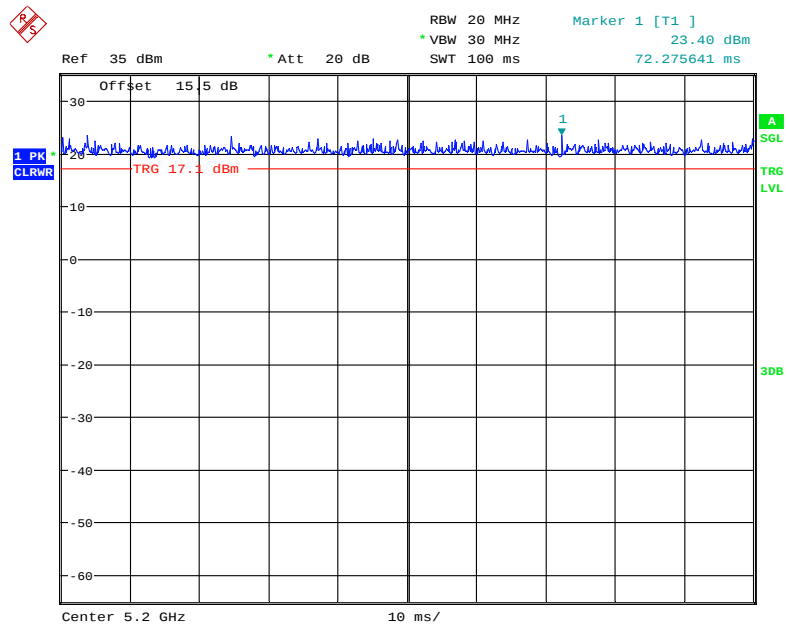
Duty cycle
5150-5250 MHz

802.11a mode



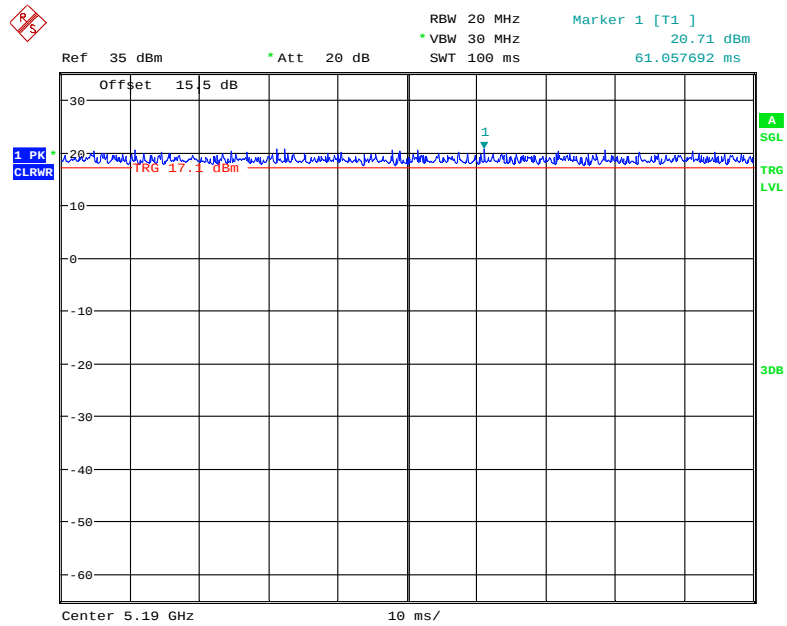
Date: 29.DEC.2018 22:47:53

802.11n20 mode



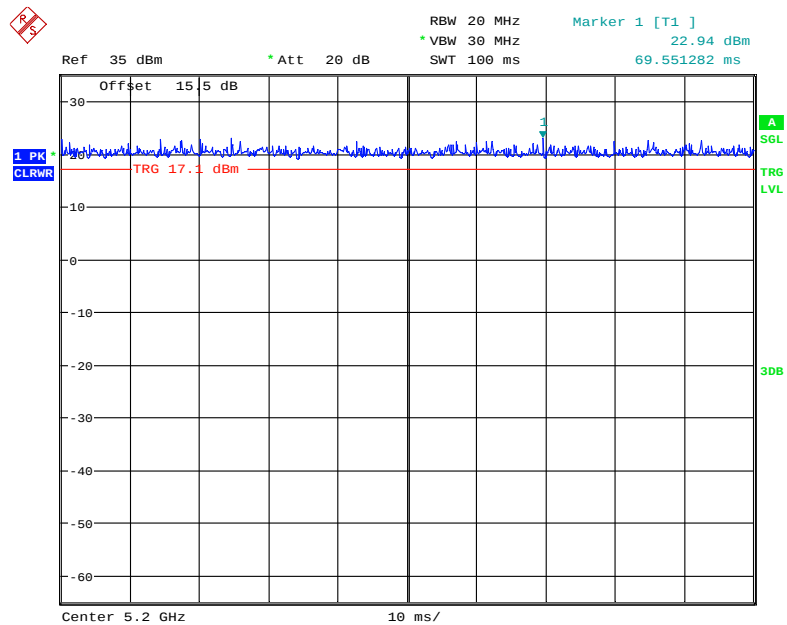
Date: 29.DEC.2018 22:48:44

802.11n40 Mode



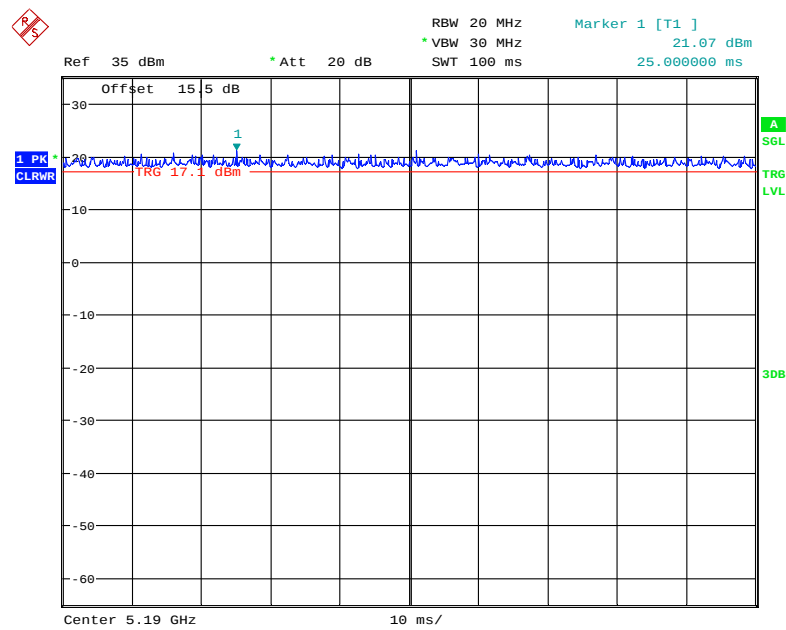
Date: 29.DEC.2018 22:54:27

802.11ac20 Mode



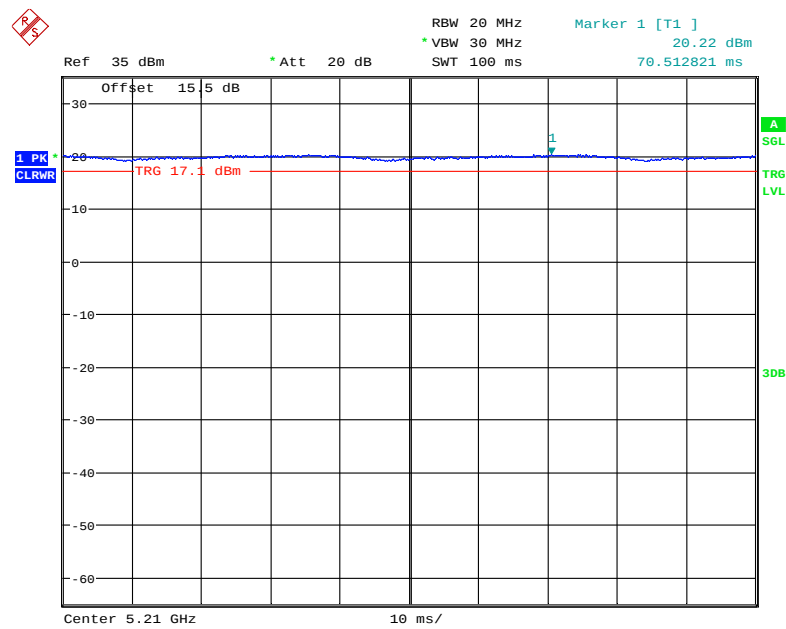
Date: 29.DEC.2018 22:49:03

802.11ac40 Mode



Date: 29.DEC.2018 22:54:55

802.11ac80 Mode



Date: 29.DEC.2018 23:00:46

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

Note: 5250-5350MHz band, 5470-5725MHz band and 5725-5850MHz band was used the same duty cycle to test for each mode.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

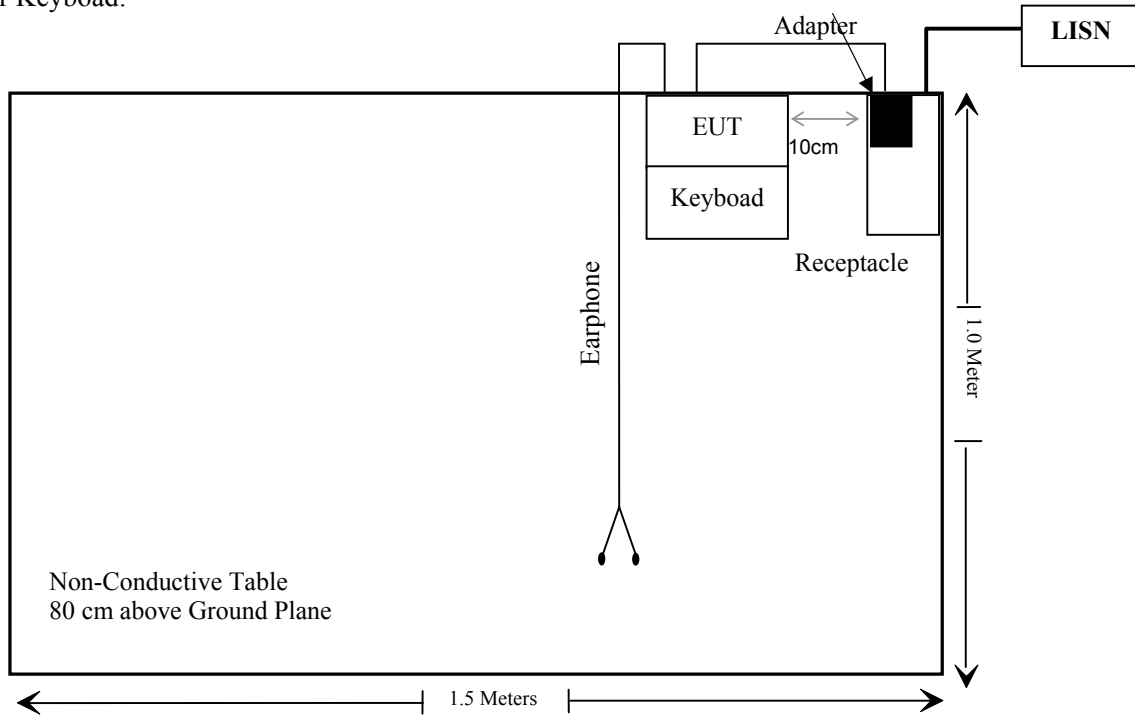
External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Un-detachable DC Cable	1.5	EUT	Adapter

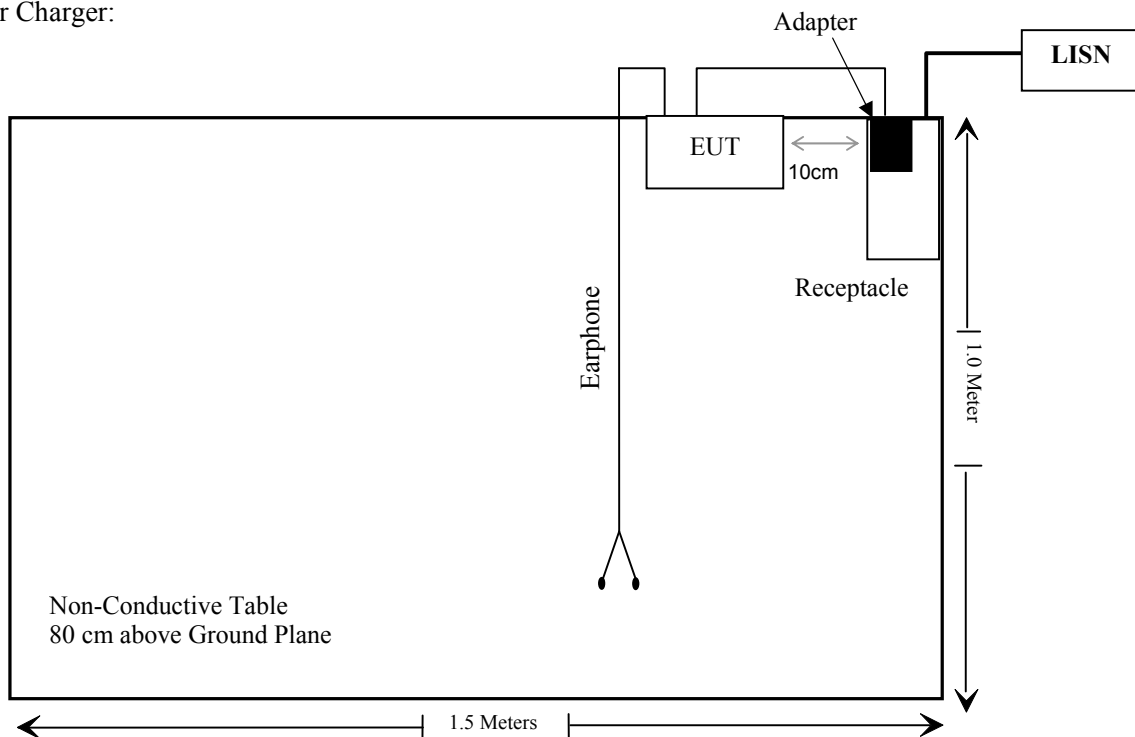
Block Diagram of Test Setup

For conducted emission:

For Keyboard:



For Charger:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1), (2), (3), (4),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b) (1), (2), (3), (4)	Out Of Band Emission	Compliance
§15.407(a) (1), (5),(e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliance
§15.407(a)(1),(2), (3)	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1), (2), (3)	Power Spectral Density	Compliance

Note:

1. DFS report please refer to RGMA190411001-00E issued by Bay Area Compliance Laboratories Corp. (Dongguan).

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2018-07-11	2019-07-11
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2018-12-21	2019-12-21
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2018-11-12	2019-11-12
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
N/A	Conducted Emission Cable	78652	UF A210B-1-0720-504504	2018-11-12	2019-11-12
Radiated Emission Test					
A.H.System	Horn Antenna	SAS-200/571	135	2018-08-18	2021-08-17
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Agilent	Spectrum Analyzer	8564E	3943A01781	2018-01-04	2019-01-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-11-12	2019-11-12
Sonoma instrument	Amplifier	310N	186238	2018-11-12	2019-11-12
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-08-01	2019-02-01
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-08-01	2019-02-01
Ducommun technologies	RF Cable	104PEA	218124002	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	RG-214	1	2018-11-19	2019-05-21
Ducommun technologies	RF Cable	RG-214	2	2018-11-12	2019-11-12
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-03	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-03	2017-12-29	2020-12-28
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-11-12	2019-11-12
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2018-12-24	2019-12-24
Agilent	USB wideband power meter	U2021XA	MY54250003	2018-06-23	2019-06-23
Ducommun technologies	RF Cable	RG-214	3	Each Time	
WEINSCHL	10dB Attenuator	5324	AU 3842	Each Time	

* **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).

FCC §1.1307(b) & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RGMA190225001-20A

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

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

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

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

Antenna Connector Construction

The EUT has one internal antenna arrangement, which was permanently attached and the antenna gain is 5.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

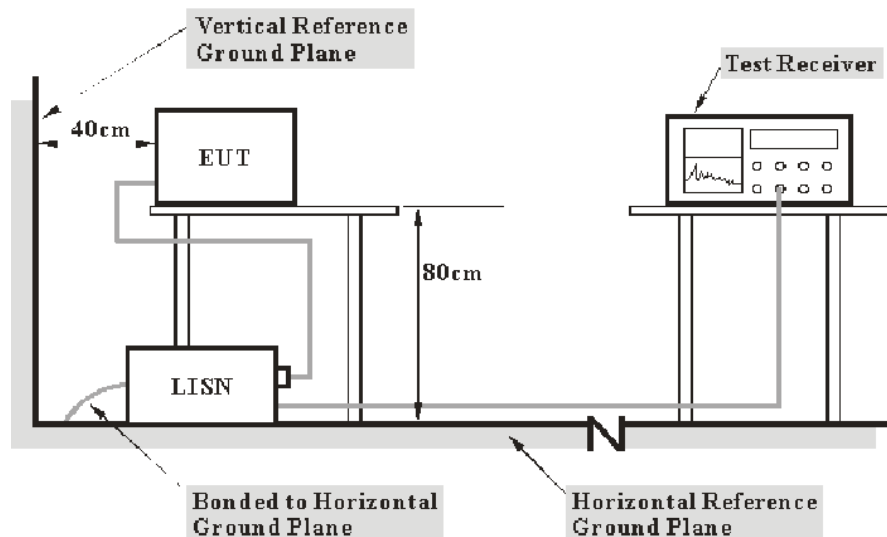
Result: Compliance.

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.

The adapter was connected to a AC120V/60 Hz power source.

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 recorded data in following table, the EUT complied with the FCC Part 15.207.

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(L_m)} \leq L_{\text{lim}} + U_{\text{cispr}}$$

In BACL, $U_{(L_m)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

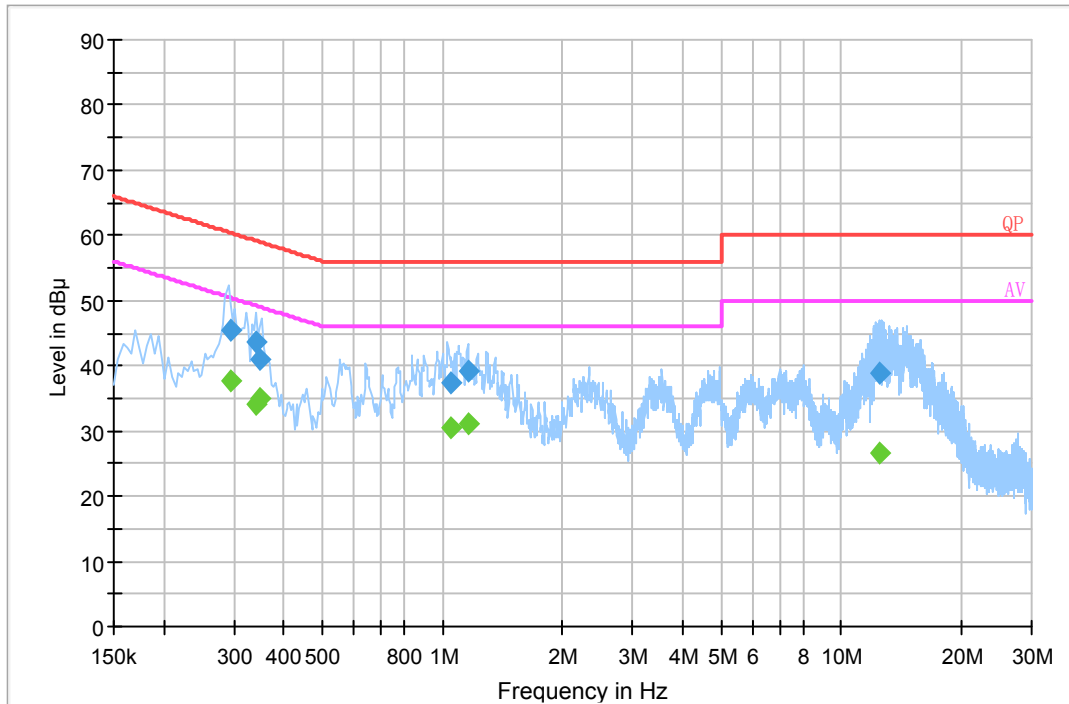
Test Data

Environmental Conditions

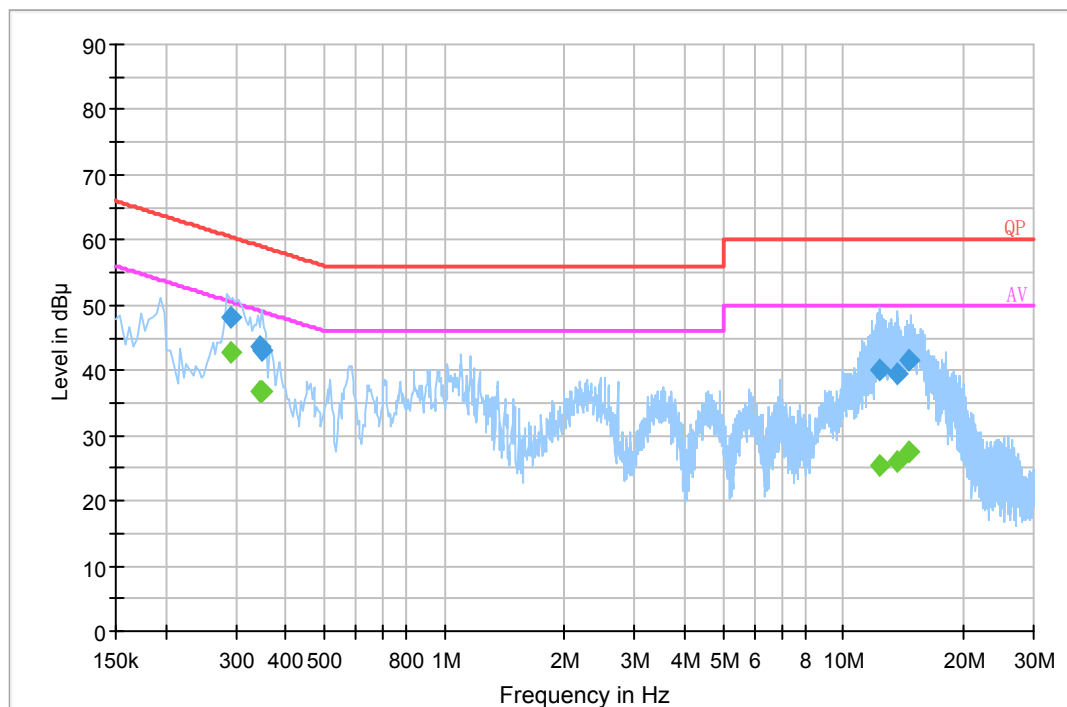
Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2019-01-16.

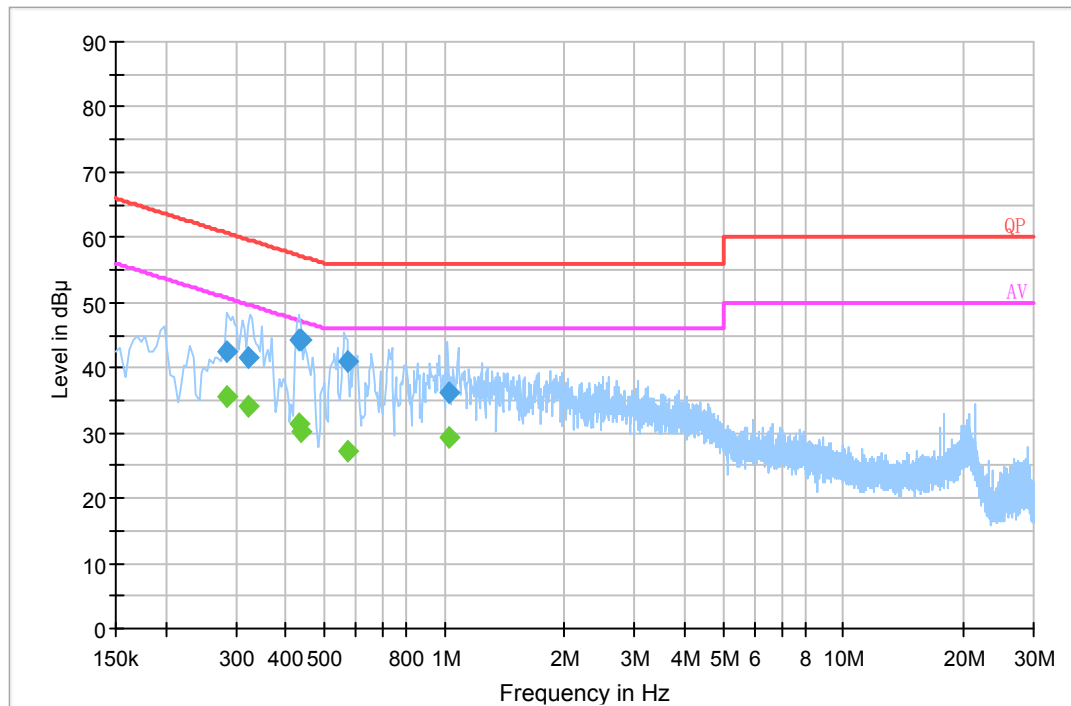
EUT operation mode: Transmitting&charging (worst case)

For Charger:**AC 120V/60 Hz, Line:**

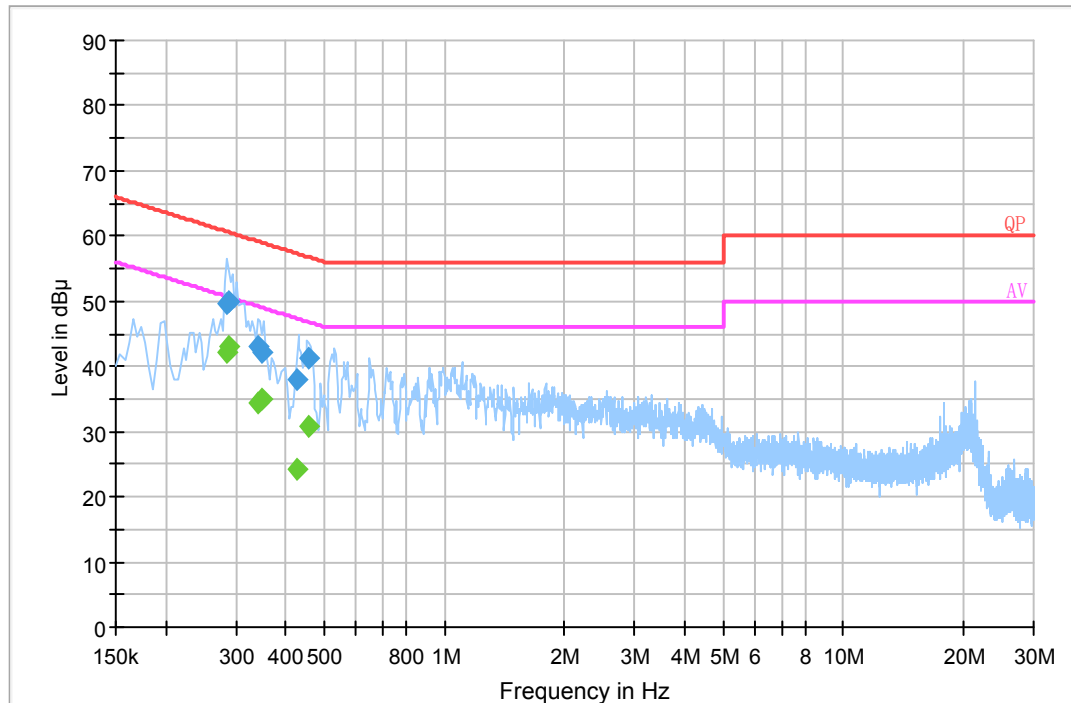
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.294500	45.4	19.8	60.4	15.0	QP
0.340870	43.7	19.7	59.2	15.5	QP
0.348690	41.0	19.7	59.0	18.0	QP
1.045450	37.4	19.8	56.0	18.6	QP
1.164630	39.1	19.8	56.0	16.9	QP
12.541150	38.9	20.2	60.0	21.1	QP
0.294500	37.8	19.8	50.4	12.6	Ave.
0.340870	34.0	19.7	49.2	15.2	Ave.
0.348690	35.0	19.7	49.0	14.0	Ave.
1.045450	30.6	19.8	46.0	15.4	Ave.
1.164630	31.2	19.8	46.0	14.8	Ave.
12.541150	26.7	20.2	50.0	23.3	Ave.

AC 120V/60 Hz, Neutral:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.290500	48.3	19.8	60.5	12.2	QP
0.344750	43.8	19.7	59.1	15.3	QP
0.348690	43.0	19.7	59.0	16.0	QP
12.308030	40.0	20.2	60.0	20.0	QP
13.713850	39.5	20.2	60.0	20.5	QP
14.548690	41.4	20.2	60.0	18.6	QP
0.290500	42.7	19.8	50.5	7.8	Ave.
0.344750	36.9	19.7	49.1	12.2	Ave.
0.348690	36.7	19.7	49.0	12.3	Ave.
12.308030	25.6	20.2	50.0	24.4	Ave.
13.713850	26.1	20.2	50.0	23.9	Ave.
14.548690	27.6	20.2	50.0	22.4	Ave.

For Keyboard:**AC 120V/60 Hz, Line:**

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.285500	42.5	19.8	60.7	18.2	QP
0.321110	41.6	19.8	59.7	18.1	QP
0.431490	44.3	19.7	57.2	12.9	QP
0.436450	44.4	19.7	57.1	12.7	QP
0.570430	41.0	19.7	56.0	15	QP
1.022730	36.1	19.8	56.0	19.9	QP
0.285500	35.5	19.8	50.7	15.2	Ave.
0.321110	34.1	19.8	49.7	15.6	Ave.
0.431490	31.3	19.7	47.2	15.9	Ave.
0.436450	30.1	19.7	47.1	17	Ave.
0.570430	27.3	19.7	46.0	18.7	Ave.
1.022730	29.2	19.8	46.0	16.8	Ave.

AC 120V/60 Hz, Neutral:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.285500	49.7	19.8	60.7	11	QP
0.286500	50.1	19.8	60.6	10.5	QP
0.340870	42.9	19.7	59.2	16.3	QP
0.348690	42.0	19.7	59.0	17	QP
0.427550	37.8	19.7	57.3	19.5	QP
0.455190	41.3	19.7	56.8	15.5	QP
0.285500	42.2	19.8	50.7	8.5	Ave.
0.286500	43.0	19.8	50.6	7.6	Ave.
0.340870	34.3	19.7	49.2	14.9	Ave.
0.348690	35.1	19.7	49.0	13.9	Ave.
0.427550	24.1	19.7	47.3	23.2	Ave.
0.455190	30.7	19.7	46.8	16.1	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) (1), (2), (3), (4),(6),(7) – UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4), (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:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

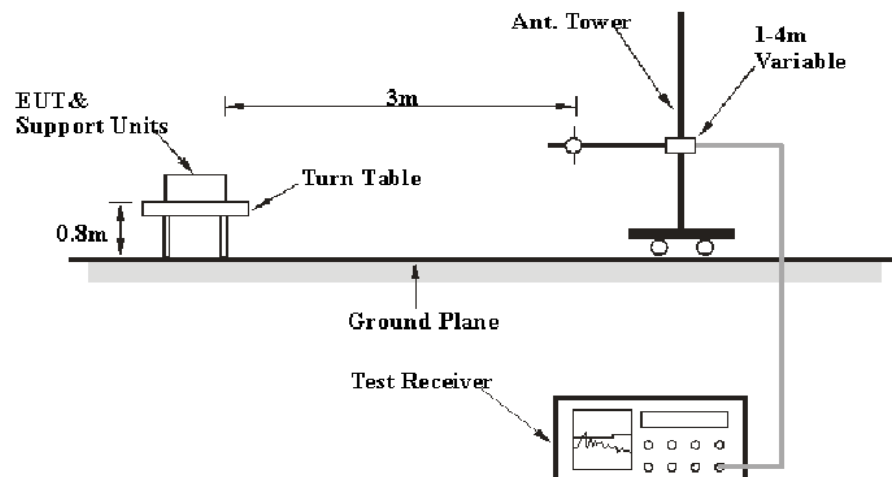
KDB 789033 D02 General UNII Test Procedures New Rules v02r01, clause G),

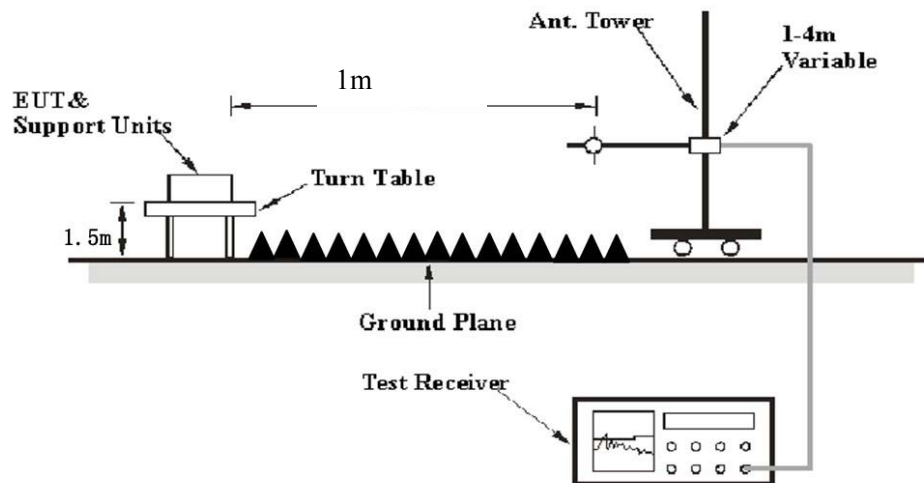
$E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{m}]) + 104.77$, where E = field strength and d = distance at which field strength limit is specified.

For FCC §15.407 (b) (1), (2), (3), $d=1\text{m}$, non-Restricted bands limit $= -27 - 20 \cdot \log(1) + 104.77 = 77.77 \text{ dB}\mu\text{V}/\text{m}$

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.

The adapter was connected to a 120VAC/60 Hz power source,

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	Measurements
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz ^{Note 1}	/	Average
	1MHz	> 1/T ^{Note 2}	/	Average

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

Note 2: when duty cycle is less than 98%

Test Procedure

Radiated Spurious Emission

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

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

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

According to ANSI C63.10-2013: 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 dBμV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBμV/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 $20 \cdot \log(1/3) = -9.5$ dB

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:

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

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{\text{lim}} + U_{\text{cispr}}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data**Environmental Conditions**

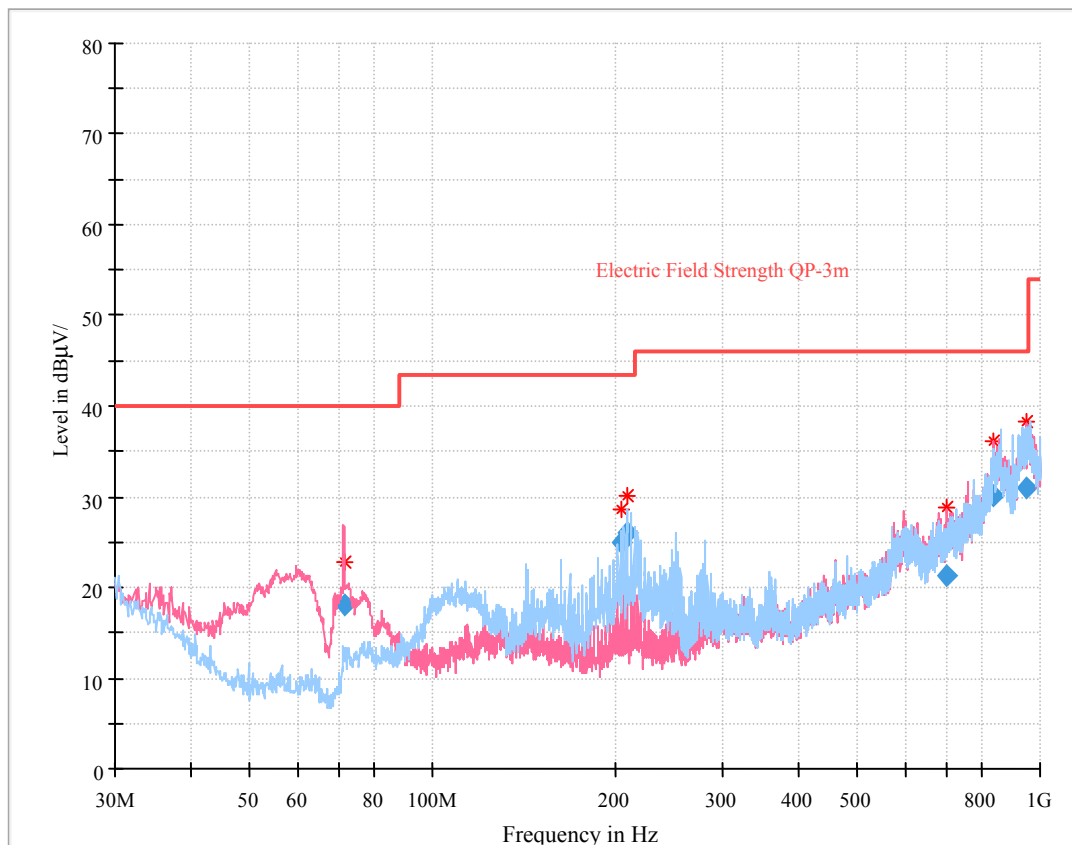
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Leo Huang on 2019-01-10.

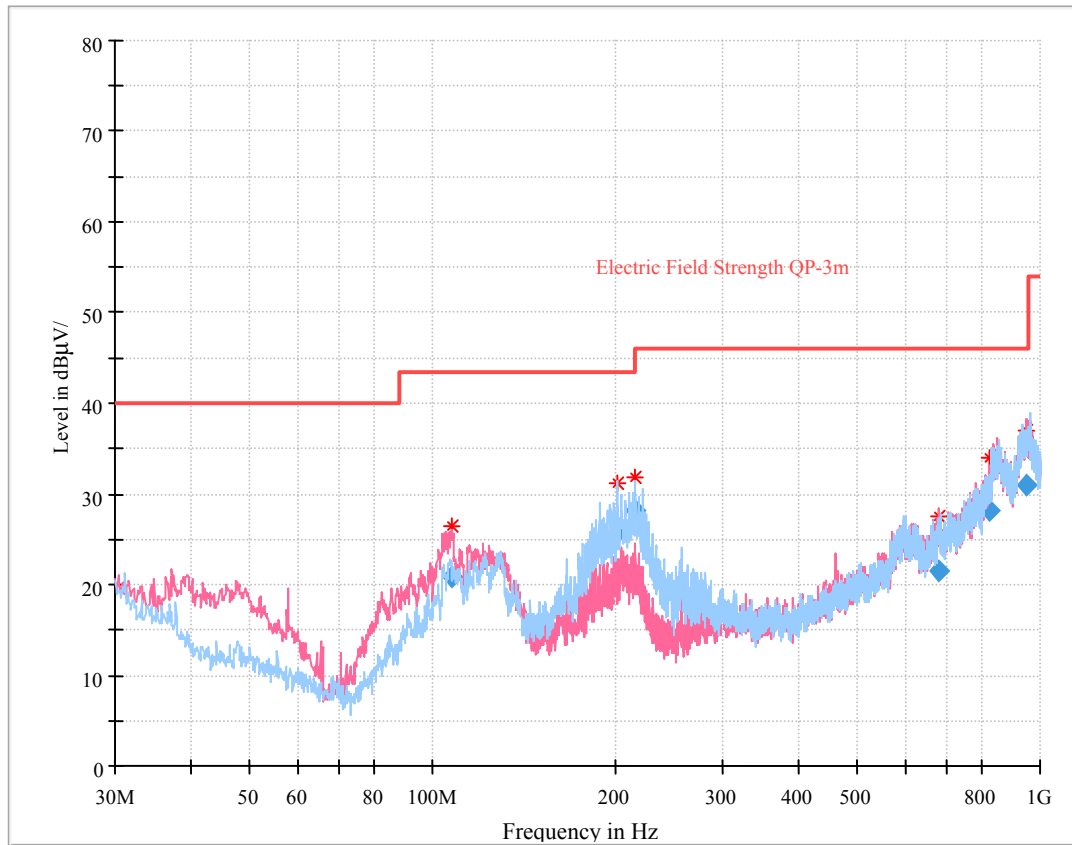
EUT operation mode: Transmitting

For Keyboard:

30 MHz – 1 GHz: (worst case)



Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
71.680875	18.02	100.0	V	66.0	-20.5	40.00	21.98
203.966500	25.05	164.0	H	240.0	-13.8	43.50	18.45
209.369250	25.94	165.0	H	232.0	-13.9	43.50	17.56
703.777375	21.28	140.0	V	78.0	-1.1	46.00	24.72
837.493000	30.13	279.0	V	301.0	5.7	46.00	15.87
947.114375	31.02	258.0	V	0.0	9.6	46.00	14.98

For Charger:**30 MHz – 1 GHz: (worst case)**

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
107.390750	20.80	100.0	V	332.0	-15.9	43.50	22.70
201.725875	25.89	163.0	H	291.0	-13.8	43.50	17.61
215.751375	28.21	148.0	H	104.0	-13.9	43.50	15.29
680.030500	21.55	332.0	V	201.0	-2.1	46.00	24.45
825.781125	28.19	324.0	H	129.0	4.5	46.00	17.81
950.194125	30.89	307.0	V	90.0	9.9	46.00	15.11

1GHz ~ 40 GHz:**5150-5250 MHz:**

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11a									
5180 MHz									
5149.00	28.55	PK	310	1.4	V	41.60	70.15	83.5	13.35
5149.00	14.03	Ave.	310	1.4	V	41.60	55.63	63.5	7.87
5350.00	27.84	PK	31	1.6	V	42.06	69.90	83.5	13.60
5350.00	13.87	Ave.	31	1.6	V	42.06	55.93	63.5	7.57
10360.00	46.26	PK	89	2.4	V	21.69	67.95	77.7	9.75
15540.00	55.05	PK	4	2.4	V	21.94	76.99	83.5	6.51
15540.00	37.70	Ave.	4	2.4	V	21.94	59.64	63.5	3.86
5200 MHz									
10400.00	46.45	PK	245	1.1	V	21.79	68.24	77.7	9.46
15600.00	53.46	PK	81	1.9	V	23.35	76.81	83.5	6.69
15600.00	36.52	Ave.	81	1.9	V	23.35	59.87	63.5	3.63
5240 MHz									
5150.00	27.49	PK	165	1.4	V	41.43	68.92	83.5	14.58
5150.00	14.05	Ave.	165	1.4	V	41.43	55.48	63.5	8.02
5350.00	27.45	PK	219	1.9	V	42.06	69.51	83.5	13.99
5350.00	14.01	Ave.	219	1.9	V	42.06	56.07	63.5	7.43
10480.00	45.56	PK	43	2.0	V	21.49	67.05	77.7	10.65
15720.00	53.52	PK	269	1.0	V	23.82	77.34	83.5	6.16
15720.00	36.32	Ave.	269	1.0	V	23.82	60.14	63.5	3.36
802.11n20									
5180 MHz									
5150.00	27.49	PK	234	1.3	H	41.43	68.92	83.5	14.58
5150.00	13.60	Ave.	234	1.3	H	41.43	55.03	63.5	8.47
5350.00	27.90	PK	113	1.3	H	42.06	69.96	83.5	13.54
5350.00	13.68	Ave.	113	1.3	H	42.06	55.74	63.5	7.76
10360.00	42.50	PK	197	2.5	H	21.69	64.19	77.7	13.51
15540.00	45.20	PK	133	1.1	H	21.94	67.14	83.5	16.36
15540.00	31.24	Ave.	133	1.1	H	21.94	53.18	63.5	10.32
5200 MHz									
10400.00	43.71	PK	162	1.2	H	21.79	65.50	77.7	12.20
15600.00	51.02	PK	67	1.7	H	23.35	74.37	83.5	9.13
15600.00	33.27	Ave.	67	1.7	H	23.35	56.62	63.5	6.88
5240 MHz									
5150.00	27.60	PK	90	2.1	H	41.43	69.03	83.5	14.47
5150.00	13.84	Ave.	90	2.1	H	41.43	55.27	63.5	8.23
5350.00	27.48	PK	141	1.5	H	42.06	69.54	83.5	13.96
5350.00	13.59	Ave.	141	1.5	H	42.06	55.65	63.5	7.85
10480.00	35.61	PK	147	1.1	H	21.49	57.10	77.7	20.60
15720.00	54.01	PK	147	2.2	H	23.82	77.83	83.5	5.67
15720.00	35.84	AV	147	2.2	H	23.82	59.66	63.5	3.84

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBµV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBµV/m) @1m	Margin (dB)
802.11n40									
5190 MHz									
5147.00	31.35	PK	220	1.8	H	41.60	72.95	83.5	10.55
5147.00	15.90	Ave.	220	1.8	H	41.60	57.50	63.5	6.00
5350.00	28.41	PK	142	1.1	H	42.06	70.47	83.5	13.03
5350.00	13.70	Ave.	142	1.1	H	42.06	55.76	63.5	7.74
10380.00	44.03	PK	3	1.2	H	21.69	65.72	77.7	11.98
15570.00	50.20	PK	301	2.4	H	23.25	73.45	83.5	10.05
15570.00	33.47	Ave.	301	2.4	H	23.25	56.72	63.5	6.78
5230 MHz									
5150.00	27.48	PK	134	1.6	H	41.43	68.91	83.5	14.59
5150.00	13.90	Ave.	134	1.6	H	41.43	55.33	63.5	8.17
5350.00	29.40	PK	83	1.0	H	42.06	71.46	83.5	12.04
5350.00	13.50	Ave.	83	1.0	H	42.06	55.56	63.5	7.94
10460.00	43.76	PK	161	1.9	H	21.39	65.15	77.7	12.55
15690.00	51.43	PK	10	2.3	H	23.72	75.15	83.5	8.35
15690.00	36.20	Ave.	10	2.3	H	23.72	59.92	63.5	3.58

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac20									
5180 MHz									
5150.00	27.60	PK	312	2.2	H	41.43	69.03	83.5	14.47
5150.00	13.70	Ave.	312	2.2	H	41.43	55.13	63.5	8.37
5350.00	27.46	PK	208	1.4	H	42.06	69.52	83.5	13.98
5350.00	13.50	Ave.	208	1.4	H	42.06	55.56	63.5	7.94
10360.00	48.60	PK	44	2.3	H	21.69	70.29	77.7	7.41
15540.00	55.97	PK	201	2.2	H	21.94	77.91	83.5	5.59
15540.00	38.42	Ave.	201	2.2	H	21.94	60.36	63.5	3.14
5200 MHz									
10400.00	46.03	PK	290	1.9	H	21.79	67.82	77.7	9.88
15600.00	54.10	PK	142	1.7	H	23.35	77.45	83.5	6.05
15600.00	36.35	Ave.	142	1.7	H	23.35	59.70	63.5	3.80
5240 MHz									
5150.00	27.40	PK	344	2.4	H	41.43	68.83	83.5	14.67
5150.00	13.60	Ave.	344	2.4	H	41.43	55.03	63.5	8.47
5350.00	27.60	PK	64	1.4	H	42.06	69.66	83.5	13.84
5350.00	13.74	Ave.	64	1.4	H	42.06	55.80	63.5	7.70
10480.00	46.50	PK	102	1.5	H	21.49	67.99	77.7	9.71
15720.00	53.40	PK	207	1.4	H	23.82	77.22	83.5	6.28
15720.00	36.10	Ave.	207	1.4	H	23.82	59.92	63.5	3.58

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac40									
5190 MHz									
5150.00	30.59	PK	223	1.5	H	41.43	72.02	83.5	11.48
5150.00	14.26	Ave.	223	1.5	H	41.43	55.69	63.5	7.81
5350.00	27.48	PK	74	1.7	H	42.06	69.54	83.5	13.96
5350.00	13.50	Ave.	74	1.7	H	42.06	55.56	63.5	7.94
10380.00	45.06	PK	123	2.4	H	21.69	66.75	77.7	10.95
15570.00	48.25	PK	270	1.1	H	23.25	71.50	83.5	12.00
15570.00	32.80	Ave.	270	1.1	H	23.25	56.05	63.5	7.45
5230 MHz									
5150.00	27.46	PK	348	1.6	H	41.43	68.89	83.5	14.61
5150.00	13.50	Ave.	348	1.6	H	41.43	54.93	63.5	8.57
5350.00	27.47	PK	355	1.3	H	42.06	69.53	83.5	13.97
5350.00	13.60	Ave.	355	1.3	H	42.06	55.66	63.5	7.84
10460.00	43.87	PK	245	1.2	H	21.39	65.26	77.7	12.44
15690.00	49.87	PK	305	1.4	H	23.72	73.59	83.5	9.91
15690.00	35.94	Ave.	305	1.4	H	23.72	59.66	63.5	3.84
802.11ac80									
5210MHz									
5146.00	34.22	PK	53	1.2	H	41.60	75.82	83.5	7.68
5146.00	18.02	Ave.	53	1.2	H	41.60	59.62	63.5	3.88
5725.00	28.05	PK	30	1.9	H	42.78	70.83	77.7	6.87
10420.00	41.80	PK	101	1.6	H	21.79	63.59	77.7	14.11

5250-5350 MHz & 5470-5725 MHz:

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
5250 MHz ~ 5350 MHz									
802.11a									
5260 MHz									
5150.00	27.94	PK	6	2.2	H	41.43	69.37	83.5	14.13
5150.00	13.80	Ave.	6	2.2	H	41.43	55.23	63.5	8.27
5350.00	27.58	PK	275	1.3	H	42.06	69.64	83.5	13.86
5350.00	13.89	Ave.	275	1.3	H	42.06	55.95	63.5	7.55
10520.00	45.81	PK	81	1.0	H	21.49	67.30	77.7	10.40
15780.00	52.14	PK	23	1.7	H	22.09	74.23	83.5	9.27
15780.00	37.05	Ave.	23	1.7	H	22.09	59.14	63.5	4.36
5280 MHz									
10560.00	43.60	PK	149	1.2	H	21.94	65.54	77.7	12.16
15840.00	45.10	PK	119	1.5	H	22.19	67.29	83.5	16.21
15840.00	30.28	Ave.	119	1.5	H	22.19	52.47	63.5	11.03
5320 MHz									
5150.00	27.80	PK	244	2.4	H	41.43	69.23	83.5	14.27
5150.00	13.50	Ave.	244	2.4	H	41.43	54.93	63.5	8.57
5350.00	28.46	PK	236	1.9	H	42.06	70.52	83.5	12.98
5350.00	14.24	Ave.	236	1.9	H	42.06	56.30	63.5	7.20
10640.00	45.97	PK	326	1.6	H	22.04	68.01	83.5	15.49
10640.00	30.90	Ave.	326	1.6	H	22.04	52.94	63.5	10.56
15960.00	46.10	PK	183	2.0	H	23.10	69.20	83.5	14.30
15960.00	31.25	Ave.	183	2.0	H	23.10	54.35	63.5	9.15

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
5470 MHz ~ 5725 MHz									
5500 MHz									
5460.00	28.53	PK	134	2.4	H	42.36	70.89	83.5	12.61
5460.00	14.96	Ave.	134	2.4	H	42.36	57.32	63.5	6.18
5725.00	27.84	PK	105	2.4	H	42.78	70.62	77.7	7.08
11000.00	47.15	PK	215	1.7	H	22.24	69.39	83.5	14.11
11000.00	32.36	Ave.	215	1.7	H	22.24	54.60	63.5	8.90
5600 MHz									
11200.00	44.51	PK	217	2.1	H	22.48	66.99	83.5	16.51
11200.00	29.01	Ave.	217	2.1	H	22.48	51.49	63.5	12.01
5700 MHz									
5460.00	28.01	PK	194	1.9	H	42.36	70.37	83.5	13.13
5460.00	13.69	Ave.	194	1.9	H	42.36	56.05	63.5	7.45
5725.00	29.44	PK	240	1.9	H	42.78	72.22	77.7	5.48
11400.00	44.14	PK	216	1.5	H	23.33	67.47	83.5	16.03
11400.00	28.63	Ave.	216	1.5	H	23.33	51.96	63.5	11.54

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11n20									
5250 MHz ~ 5350 MHz									
5260MHz									
5150.00	27.49	PK	128	2.0	H	41.43	68.92	83.5	14.58
5150.00	13.84	Ave.	128	2.0	H	41.43	55.27	63.5	8.23
5350.00	27.65	PK	193	1.3	H	42.06	69.71	83.5	13.79
5350.00	13.90	Ave.	193	1.3	H	42.06	55.96	63.5	7.54
10520.00	45.58	PK	251	2.1	H	21.49	67.07	77.7	10.63
15780.00	48.31	PK	107	2.4	H	22.09	70.40	83.5	13.10
15780.00	30.61	Ave.	107	2.4	H	22.09	52.70	63.5	10.80
5280 MHz									
10560.00	48.25	PK	85	2.1	H	21.94	70.19	77.7	7.51
15840.00	45.60	PK	109	2.2	H	22.19	67.79	83.5	15.71
15840.00	27.59	Ave.	109	2.2	H	22.19	49.78	63.5	13.72
5320 MHz									
5150.00	27.84	PK	70	1.7	H	41.43	69.27	83.5	14.23
5150.00	13.60	Ave.	70	1.7	H	41.43	55.03	63.5	8.47
5350.00	27.90	PK	111	1.2	H	42.06	69.96	83.5	13.54
5350.00	13.70	Ave.	111	1.2	H	42.06	55.76	63.5	7.74
10640.00	47.30	PK	228	1.2	H	22.04	69.34	83.5	14.16
10640.00	32.19	Ave.	228	1.2	H	22.04	54.23	63.5	9.27
15960.00	44.04	PK	117	2.1	H	23.10	67.14	83.5	16.36
15960.00	26.79	Ave.	117	2.1	H	23.10	49.89	63.5	13.61

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
5470 MHz ~ 5725MHz									
5500 MHz									
5460.00	28.10	PK	158	1.3	H	42.36	70.46	83.5	13.04
5460.00	13.90	Ave.	158	1.3	H	42.36	56.26	63.5	7.24
5725.00	27.84	PK	170	1.2	H	42.78	70.62	77.7	7.08
11000.00	47.30	PK	235	2.2	H	22.24	69.54	83.5	13.96
11000.00	31.48	Ave.	235	2.2	H	22.24	53.72	63.5	9.78
5600 MHz									
11200.00	45.80	PK	127	2.1	H	22.48	68.28	83.5	15.22
11200.00	30.94	Ave.	127	2.1	H	22.48	53.42	63.5	10.08
5700 MHz									
5460.00	27.40	PK	74	1.9	H	42.36	69.76	83.5	13.74
5460.00	13.60	Ave.	74	1.9	H	42.36	55.96	63.5	7.54
5725.00	28.15	PK	0	2.0	H	42.78	70.93	77.7	6.77
11400.00	43.85	PK	101	2.5	H	23.33	67.18	83.5	16.32
11400.00	28.70	Ave.	101	2.5	H	23.33	52.03	63.5	11.47

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11n40									
5250 MHz ~ 5350 MHz									
5270MHz									
5150.00	27.46	PK	229	2.3	H	41.43	68.89	83.5	14.61
5150.00	13.55	Ave.	229	2.3	H	41.43	54.98	63.5	8.52
5353.00	30.54	PK	42	1.9	H	42.06	72.60	83.5	10.90
5353.00	13.68	Ave.	42	1.9	H	42.06	55.74	63.5	7.76
10540.00	40.10	PK	140	1.0	H	21.49	61.59	77.7	16.11
5310 MHz									
5150.00	27.45	PK	41	1.1	H	41.43	68.88	83.5	14.62
5150.00	13.20	Ave.	41	1.1	H	41.43	54.63	63.5	8.87
5353.00	32.31	PK	64	2.0	H	42.06	74.37	83.5	9.13
5353.00	15.05	Ave.	64	2.0	H	42.06	57.11	63.5	6.39
10620.00	41.09	PK	3	1.4	H	22.04	63.13	83.5	20.37
10620.00	27.95	Ave.	3	1.4	H	22.04	49.99	63.5	13.51
5470 MHz ~5725 MHz									
5510 MHz									
5460.00	27.80	PK	245	1.7	H	42.36	70.16	83.5	13.34
5460.00	13.96	Ave.	245	1.7	H	42.36	56.32	63.5	7.18
5725.00	28.35	PK	212	1.0	H	42.78	71.13	77.7	6.57
11020.00	45.73	PK	293	1.1	H	22.24	67.97	83.5	15.53
11020.00	28.44	Ave.	293	1.1	H	22.24	50.68	63.5	12.82
5590 MHz									
11180.00	43.02	PK	181	2.1	H	22.48	65.50	83.5	18.00
11180.00	27.50	Ave.	181	2.1	H	22.48	49.98	63.5	13.52
5670 MHz									
5460.00	27.49	PK	347	1.3	H	42.36	69.85	83.5	13.65
5460.00	13.50	Ave.	347	1.3	H	42.36	55.86	63.5	7.64
5725.00	28.60	PK	261	2.0	H	42.78	71.38	77.7	6.32
11340.00	40.50	PK	214	2.5	H	23.09	63.59	83.5	19.91
11340.00	27.30	Ave.	214	2.5	H	23.09	50.39	63.5	13.11

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac20									
5250 MHz ~ 5350 MHz									
5260MHz									
5150.00	27.40	PK	146	2.0	H	41.43	68.83	83.5	14.67
5150.00	13.60	Ave.	146	2.0	H	41.43	55.03	63.5	8.47
5350.00	27.45	PK	191	1.4	H	42.06	69.51	83.5	13.99
5350.00	13.61	Ave.	191	1.4	H	42.06	55.67	63.5	7.83
10520.00	46.20	PK	42	2.2	H	21.49	67.69	77.7	10.01
15780.00	50.60	PK	112	1.4	H	22.09	72.69	83.5	10.81
15780.00	31.19	Ave.	112	1.4	H	22.09	53.28	63.5	10.22
5280 MHz									
10560.00	45.79	PK	347	1.6	H	21.94	67.73	77.7	9.97
15840.00	49.73	PK	45	1.9	H	22.19	71.92	83.5	11.58
15840.00	31.06	Ave.	45	1.9	H	22.19	53.25	63.5	10.25
5320 MHz									
5150.00	27.46	PK	69	1.6	H	41.43	68.89	83.5	14.61
5150.00	13.69	Ave.	69	1.6	H	41.43	55.12	63.5	8.38
5350.00	28.30	PK	333	2.2	H	42.06	70.36	83.5	13.14
5350.00	13.99	Ave.	333	2.2	H	42.06	56.05	63.5	7.45
10640.00	45.52	PK	83	1.3	H	22.04	67.56	83.5	15.94
10640.00	29.41	Ave.	83	1.3	H	22.04	51.45	63.5	12.05
15960.00	48.90	PK	112	1.1	H	23.10	72.00	83.5	11.50
15960.00	30.50	Ave.	112	1.1	H	23.10	53.60	63.5	9.90

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
5470 MHz ~5725 MHz									
5500MHz									
5460.00	27.49	PK	285	1.3	H	42.36	69.85	83.5	13.65
5460.00	13.69	Ave.	285	1.3	H	42.36	56.05	63.5	7.45
5725.00	27.43	PK	45	1.7	H	42.78	70.21	77.7	7.49
11000.00	46.86	PK	1	1.7	H	22.24	69.10	83.5	14.40
11000.00	29.83	Ave.	1	1.7	H	22.24	52.07	63.5	11.43
16500.00	40.20	PK	312	1.2	H	26.52	66.72	83.5	16.78
16500.00	22.96	Ave.	312	1.2	H	26.52	49.48	63.5	14.02
5600 MHz									
11200.00	39.89	PK	59	1.3	H	22.48	62.37	83.5	21.13
11200.00	26.27	Ave.	59	1.3	H	22.48	48.75	63.5	14.75
5700 MHz									
5460.00	27.49	PK	213	1.3	H	42.36	69.85	83.5	13.65
5460.00	13.58	Ave.	213	1.3	H	42.36	55.94	63.5	7.56
5725.00	27.31	PK	320	1.4	H	42.78	70.09	77.7	7.61
11400.00	40.02	PK	21	1.4	H	23.33	63.35	83.5	20.15
11400.00	26.59	Ave.	21	1.4	H	23.33	49.92	63.5	13.58

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac40									
5250 MHz ~ 5350 MHz									
5270 MHz									
5150.00	27.49	PK	210	1.6	H	41.43	68.92	83.5	14.58
5150.00	13.60	Ave.	210	1.6	H	41.43	55.03	63.5	8.47
5350.00	27.30	PK	242	1.7	H	42.06	69.36	83.5	14.14
5350.00	13.50	Ave.	242	1.7	H	42.06	55.56	63.5	7.94
10540.00	43.89	PK	311	1.8	H	21.49	65.38	77.7	12.32
5310 MHz									
5150.00	27.46	PK	49	2.3	H	41.43	68.89	83.5	14.61
5150.00	13.50	Ave.	49	2.3	H	41.43	54.93	63.5	8.57
5350.00	33.10	PK	156	1.6	H	42.06	75.16	83.5	8.34
5350.00	14.84	Ave.	156	1.6	H	42.06	56.90	63.5	6.60
10620.00	43.29	PK	184	1.4	H	22.04	65.33	83.5	18.17
10620.00	27.60	Ave.	184	1.4	H	22.04	49.64	63.5	13.86
5470 MHz ~ 5725 MHz									
5510MHz									
5467.00	31.58	PK	170	2.0	H	42.36	73.94	77.7	3.76
5725.00	27.10	PK	214	2.0	H	42.78	69.88	77.7	7.82
11020.00	44.28	PK	188	2.2	H	22.24	66.52	83.5	16.98
11020.00	29.61	Ave.	188	2.2	H	22.24	51.85	63.5	11.65
5590 MHz									
11180.00	43.87	PK	276	2.1	H	22.48	66.35	83.5	17.15
11180.00	28.90	Ave.	276	2.1	H	22.48	51.38	63.5	12.12
5670 MHz									
5467.00	27.49	PK	54	2.1	H	42.36	69.85	77.7	7.85
5725.00	28.10	PK	272	1.5	H	42.78	70.88	77.7	6.82
11340.00	41.07	PK	228	1.2	H	23.09	64.16	83.5	19.34
11340.00	27.10	Ave.	228	1.2	H	23.09	50.19	63.5	13.31

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac80									
5250 MHz ~ 5350 MHz									
5290 MHz									
5150.00	27.40	PK	151	1.9	H	41.43	68.83	83.5	14.67
5150.00	13.61	Ave.	151	1.9	H	41.43	55.04	63.5	8.46
5355.00	34.31	PK	348	1.3	H	42.06	76.37	83.5	7.13
5355.00	15.90	Ave.	348	1.3	H	42.06	57.96	63.5	5.54
10580.00	41.20	PK	94	1.9	H	21.94	63.14	77.7	14.56
5470 MHz ~ 5725 MHz									
5530MHz									
5462.00	27.65	PK	265	1.4	V	42.36	70.01	77.7	7.69
5725.00	27.31	PK	279	2.3	H	42.78	70.09	77.7	7.61
11060.00	44.10	PK	250	1.9	H	21.97	66.07	83.5	17.43
11060.00	30.24	Ave.	250	1.9	H	21.97	52.21	63.5	11.29
5610MHz									
5470.00	27.20	PK	202	1.8	H	42.36	69.56	77.7	8.14
5725.60	29.30	PK	228	2.1	H	42.78	72.08	77.7	5.62
11220.00	41.36	PK	84	1.6	H	22.48	63.84	83.5	19.66
11220.00	28.40	Ave.	84	1.6	H	22.48	50.88	63.5	12.62

5725-5850 MHz:

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11a									
5745 MHz									
5725.00	38.65	PK	291	1.5	H	42.78	81.43	131.7	50.27
5720.00	32.10	PK	291	1.5	H	42.78	74.88	120.3	45.42
5650.00	27.45	PK	305	2.0	H	42.78	70.23	77.70	7.47
5850.00	28.30	PK	73	2.4	H	42.87	71.17	131.7	60.53
11490.00	39.78	PK	283	2.1	H	24.17	63.95	83.5	19.55
11490.00	26.05	Ave.	283	2.1	H	24.17	50.22	63.5	13.28
5785 MHz									
11570.00	39.80	PK	230	2.2	H	23.10	62.90	83.5	20.60
11570.00	26.32	Ave.	230	2.2	H	23.10	49.42	63.5	14.08
5825 MHz									
5850.00	30.32	PK	164	1.3	H	42.87	73.19	131.7	58.51
5855.00	28.04	PK	164	1.3	H	42.87	70.91	120.3	49.39
5925.00	28.01	PK	247	1.7	H	42.97	70.98	77.70	6.72
5725.00	27.86	PK	346	1.2	H	42.78	70.64	131.7	61.06
11650.00	40.03	PK	12	1.6	H	22.37	62.40	83.5	21.10
11650.00	26.55	Ave.	12	1.6	H	22.37	48.92	63.5	14.58
802.11n20									
5745 MHz									
5725.00	31.20	PK	155	1.2	H	42.78	73.98	131.7	57.72
5720.00	28.74	PK	155	1.2	H	42.78	71.52	120.3	48.78
5650.00	27.30	PK	35	1.7	H	42.78	70.08	77.70	7.62
5850.00	27.45	PK	35	1.7	H	42.87	70.32	131.7	61.38
11490.00	40.10	PK	266	2.1	H	24.17	64.27	83.5	19.23
11490.00	26.04	Ave.	266	2.1	H	24.17	50.21	63.5	13.29
5785 MHz									
11570.00	39.80	PK	305	1.8	H	23.10	62.90	83.5	20.60
11570.00	26.13	Ave.	305	1.8	H	23.10	49.23	63.5	14.27
5825 MHz									
5850.00	30.07	PK	143	2.1	H	42.87	72.94	131.7	58.76
5855.00	29.65	PK	143	2.1	H	42.87	72.52	120.3	47.78
5925.00	27.01	PK	94	1.5	H	42.97	69.98	77.70	7.72
5725.00	27.90	PK	94	1.5	H	42.78	70.68	131.7	61.02
11650.00	40.31	PK	80	1.1	H	22.37	62.68	83.5	20.82
11650.00	26.25	Ave.	80	1.1	H	22.37	48.62	63.5	14.88

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11n40									
5755 MHz									
5725.00	32.20	PK	131	1.3	H	42.78	74.98	131.7	56.72
5720.00	28.65	PK	131	1.3	H	42.78	71.43	120.3	48.87
5650.00	27.32	PK	306	2.3	H	42.78	70.10	77.70	7.60
5850.00	27.84	PK	306	2.3	H	42.87	70.71	131.7	60.99
11510.00	40.20	PK	319	1.7	H	24.17	64.37	83.5	19.13
11510.00	25.40	Ave.	319	1.7	H	24.17	49.57	63.5	13.93
5795 MHz									
5850.00	27.46	PK	188	1.6	H	42.87	70.33	131.7	61.37
5855.00	27.80	PK	188	1.6	H	42.87	70.67	120.3	49.63
5925.00	27.35	PK	215	1.3	H	42.97	70.32	77.70	7.38
5725.00	27.50	PK	215	1.3	H	42.78	70.28	131.7	61.42
11590.00	38.90	PK	135	1.1	H	23.10	62.00	83.5	21.50
11590.00	25.79	Ave.	135	1.1	H	23.10	48.89	63.5	14.61
802.11ac20									
5745 MHz									
5725.00	28.10	PK	139	1.7	H	42.78	70.88	131.7	60.82
5720.00	27.69	PK	139	1.7	H	42.78	70.47	120.3	49.83
5650.00	27.89	PK	120	1.4	H	42.78	70.67	77.70	7.03
5850.00	27.69	PK	120	1.4	H	42.87	70.56	131.7	61.14
11490.00	41.50	PK	283	1.0	H	24.17	65.67	83.5	17.83
11490.00	26.70	Ave.	283	1.0	H	24.17	50.87	63.5	12.63
5785 MHz									
11570.00	40.36	PK	242	2.2	H	23.10	63.46	83.5	20.04
11570.00	26.20	Ave.	242	2.2	H	23.10	49.30	63.5	14.20
5825 MHz									
5850.00	28.10	PK	25	1.1	H	42.87	70.97	131.7	60.73
5855.00	29.60	PK	25	1.1	H	42.87	72.47	120.3	47.83
5925.00	27.59	PK	327	2.3	H	42.97	70.56	77.70	7.14
5725.00	27.84	PK	327	2.3	H	42.78	70.62	131.7	61.08
11650.00	40.69	PK	237	1.3	H	22.37	63.06	83.5	20.44
11650.00	27.80	Ave.	237	1.3	H	22.37	50.17	63.5	13.33

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m) @1m	Margin (dB)
802.11ac40									
5755 MHz									
5725.00	35.99	PK	341	1.0	H	42.78	78.77	131.7	52.93
5720.00	31.62	PK	341	1.0	H	42.78	74.40	120.3	45.90
5650.00	27.50	PK	74	2.2	H	42.78	70.28	77.70	7.42
5850.00	27.43	PK	74	2.2	H	42.87	70.30	131.7	61.40
11510.00	41.36	PK	117	1.8	H	24.17	65.53	83.5	17.97
11510.00	27.05	Ave.	117	1.8	H	24.17	51.22	63.5	12.28
5795MHz									
5850.00	27.84	PK	211	2.0	H	42.87	70.71	131.7	60.99
5855.00	27.60	PK	211	2.0	H	42.87	70.47	120.3	49.83
5925.00	27.13	PK	155	2.3	H	42.97	70.10	77.70	7.60
5725.00	27.44	PK	155	2.3	H	42.78	70.22	131.7	61.48
11590.00	40.56	PK	274	2.2	H	23.10	63.66	83.5	19.84
11590.00	27.50	Ave.	274	2.2	H	23.10	50.60	63.5	12.90
802.11ac80									
5775MHz									
5725.00	34.10	PK	205	1.6	H	42.78	76.88	131.7	54.82
5720.00	33.20	PK	205	1.6	H	42.78	75.98	120.3	44.32
5650.00	28.15	PK	16	2.3	H	42.78	70.93	77.70	6.77
5850.00	30.20	PK	185	2.3	H	42.87	73.07	131.7	58.63
5855.00	29.54	PK	185	2.3	H	42.87	72.41	120.3	47.89
5925.00	27.60	PK	240	1.5	H	42.97	70.57	77.70	7.13
11550.00	40.93	PK	272	1.3	H	23.10	64.03	83.5	19.47
11550.00	26.75	Ave.	272	1.3	H	23.10	49.85	63.5	13.65

Note:

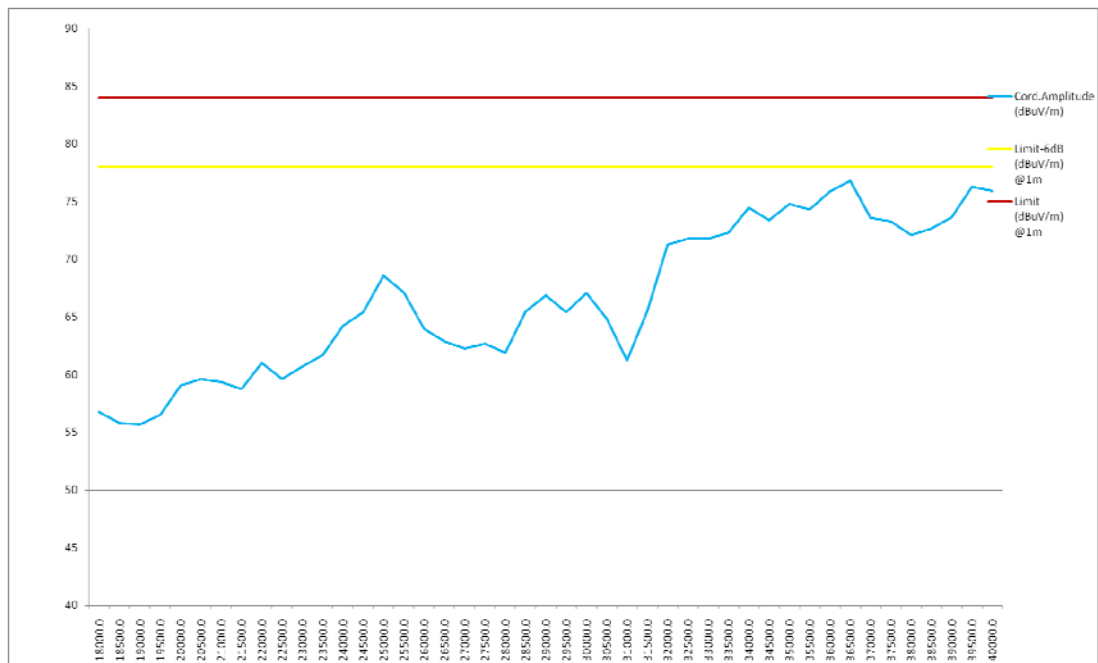
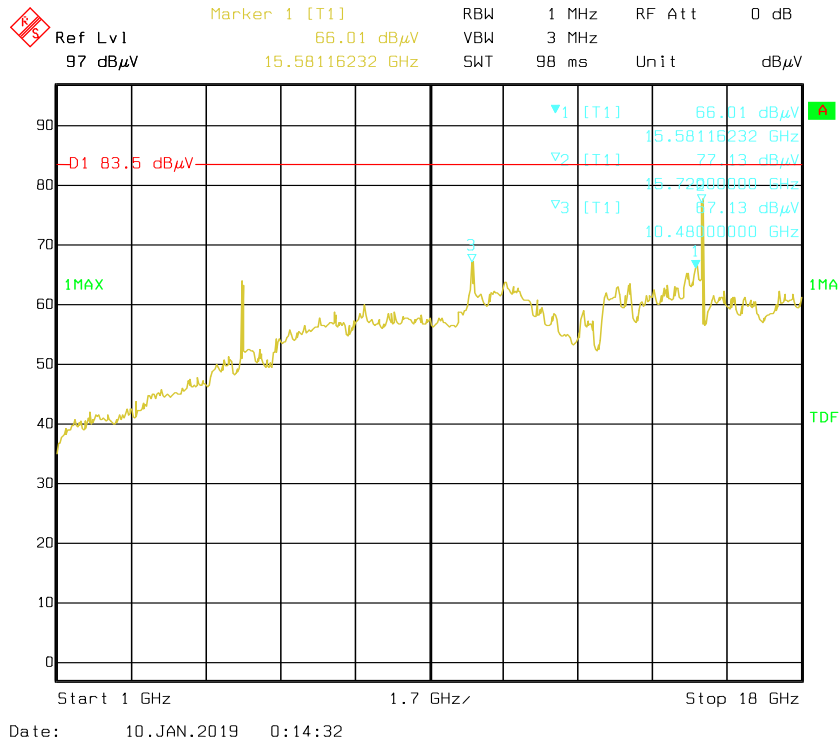
Corrected Amplitude = Corrected Factor + Reading

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

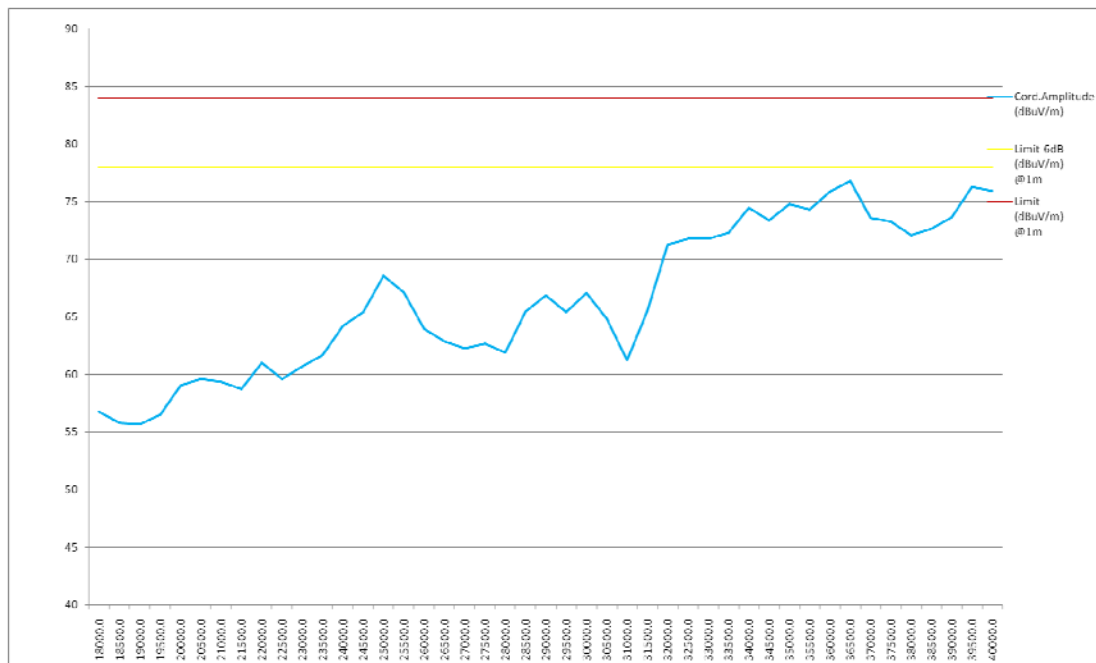
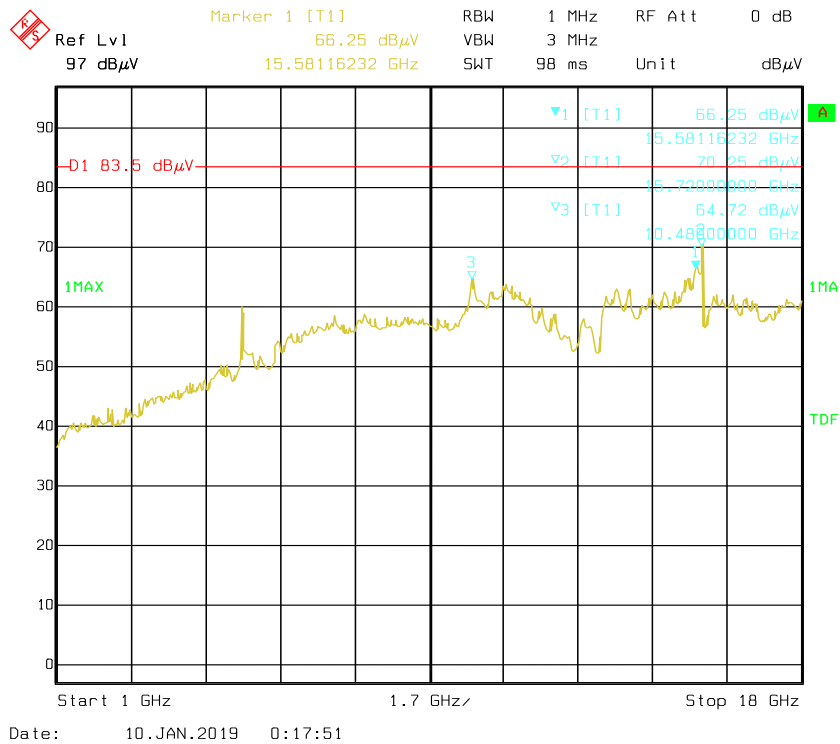
Margin = Limit- Corr. Amplitude

All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

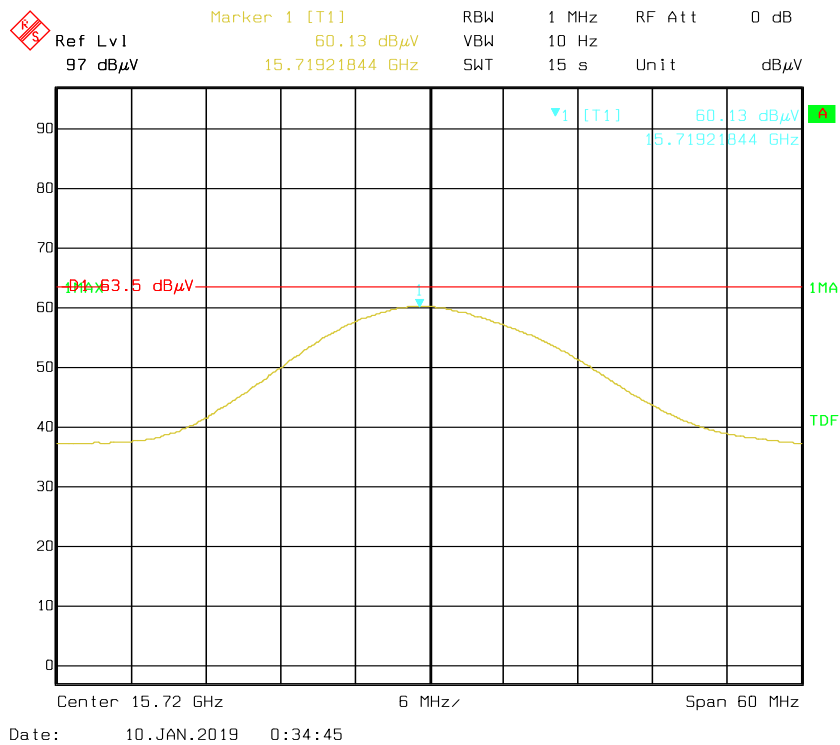
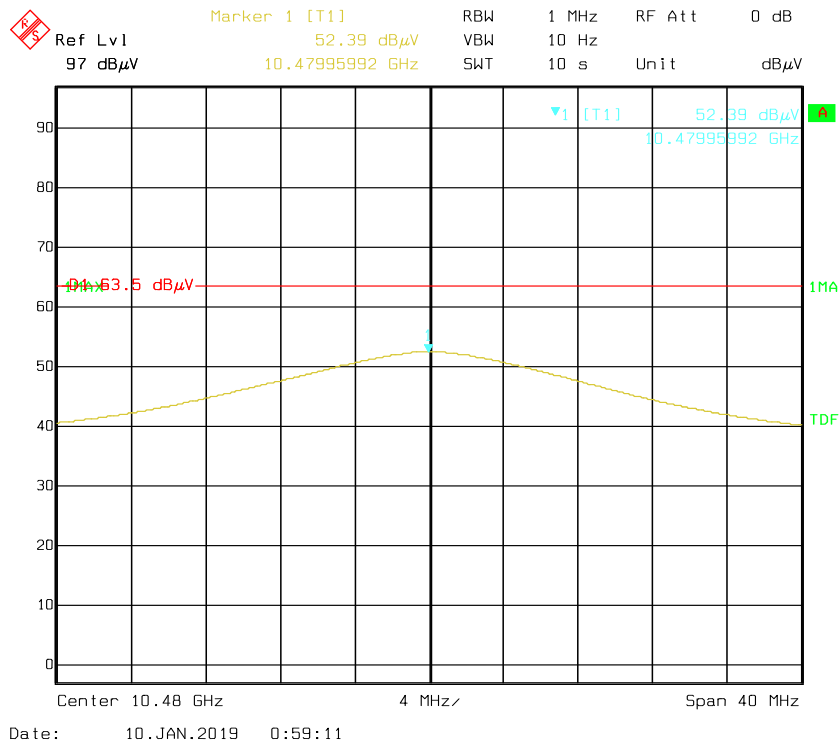
Pre-scan with 802.11ac 5240MHz, for Peak
Horizontal



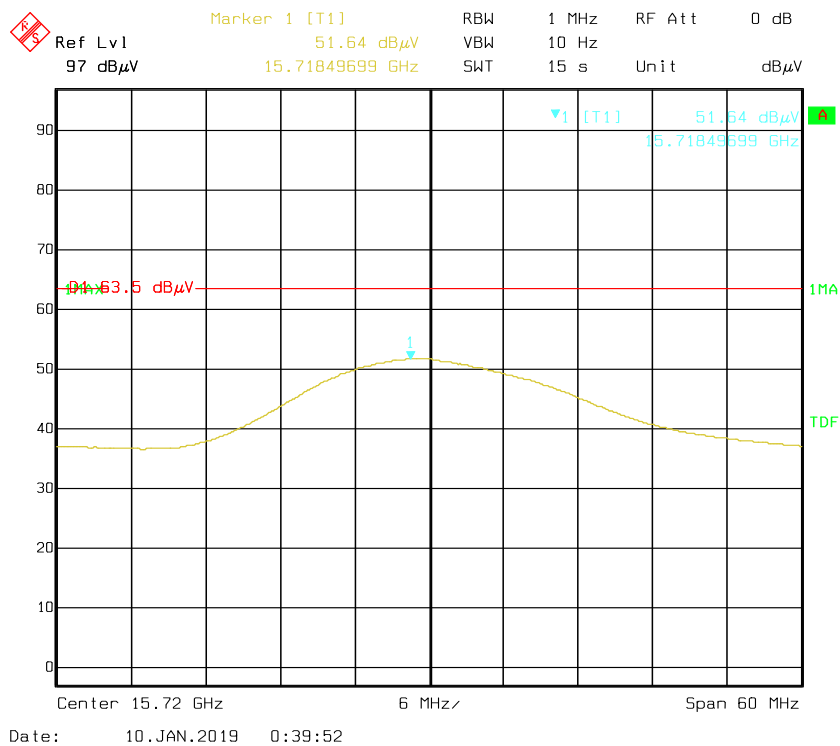
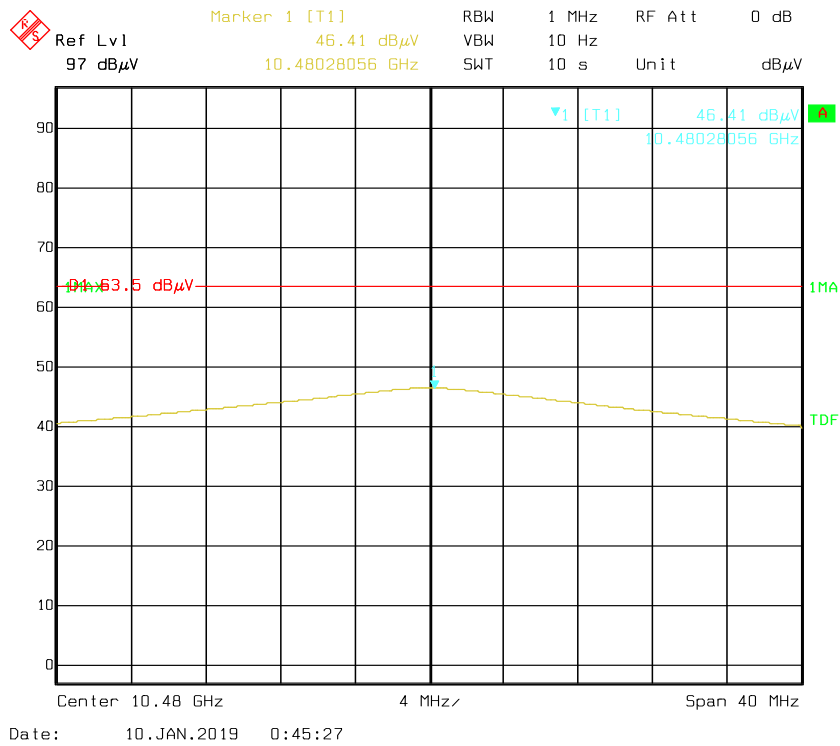
Vertical



Pre-scan with 802.11ac 5240MHz, for Average
Horizontal



Vertical



§15.407(B) (1), (2), (3), (4) –OUT OF BAND EMISSION

Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4);

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 EIRP of –27dBm/MHz.

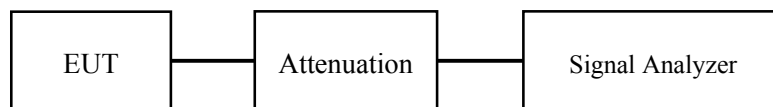
For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of –27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of –27 dBm/MHz.

For transmitters operating in the 5.725–5.825 GHz band: 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.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The Resolution bandwidth is set to 1MHz, The Video bandwidth is set to ≥ 1 MHz, report the peak value out of the oprating band.
3. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

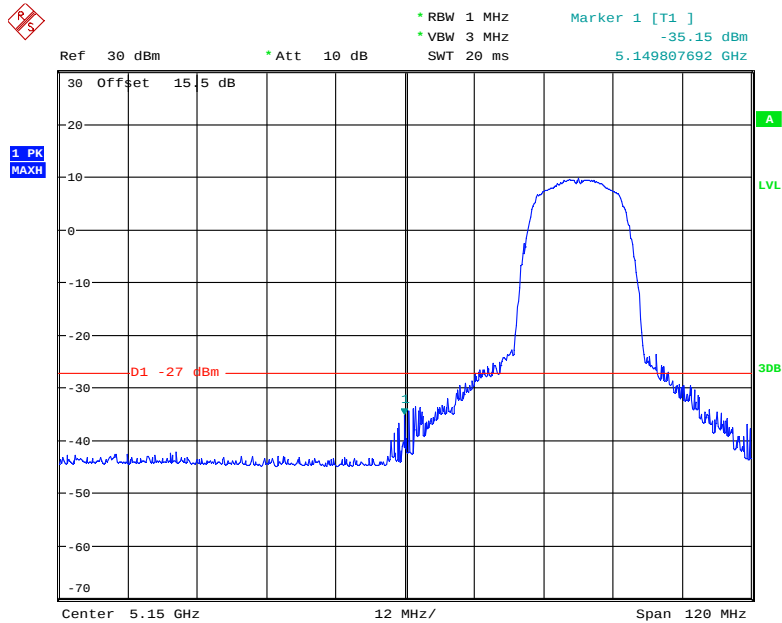
The testing was performed by Tracy Hu on 2018-12-29.

EUT operation mode: Transmitting

Note: Antenna gain was added into the test result.

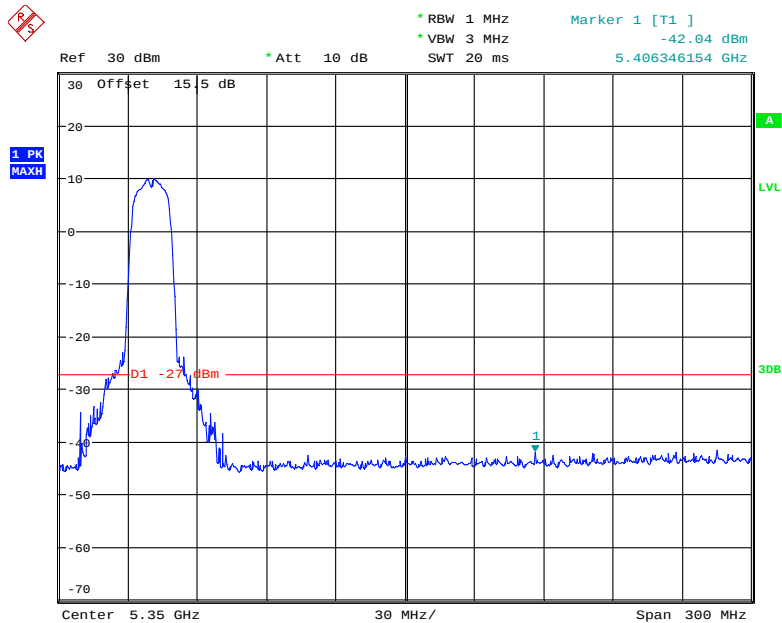
5150 – 5250 MHz:

802.11a mode, Band Edge, Left Side



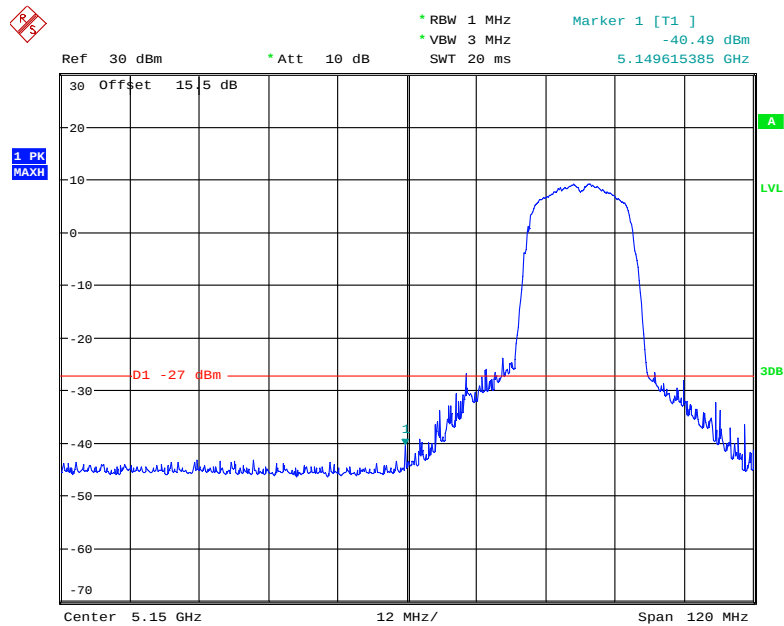
Date: 29.DEC.2018 21:25:30

802.11a mode, Band Edge, Right Side



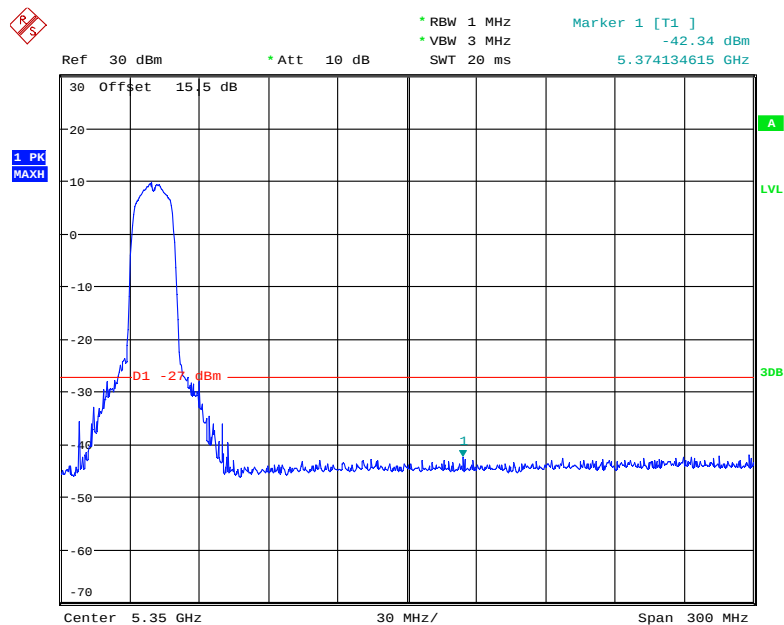
Date: 29.DEC.2018 21:27:09

802.11n20 mode, Band Edge, Left Side



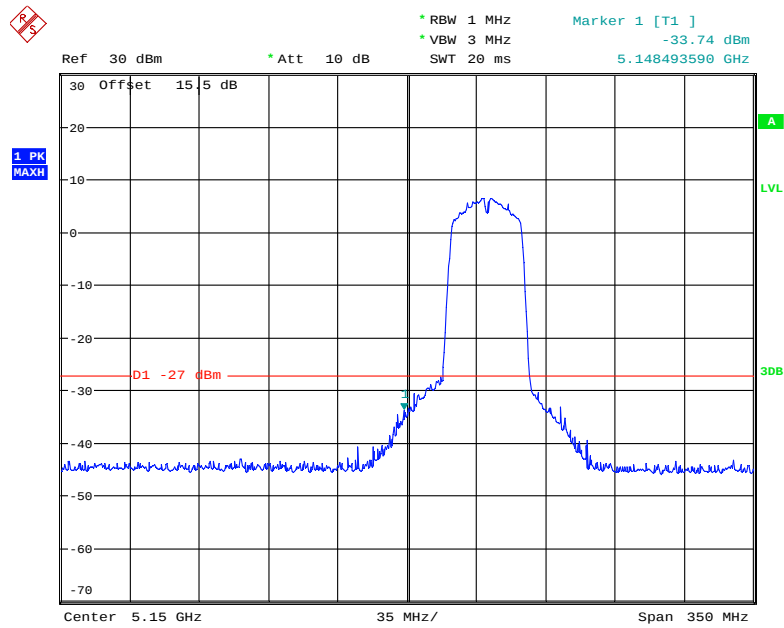
Date: 29.DEC.2018 21:34:19

802.11n20 mode, Band Edge, Right Side



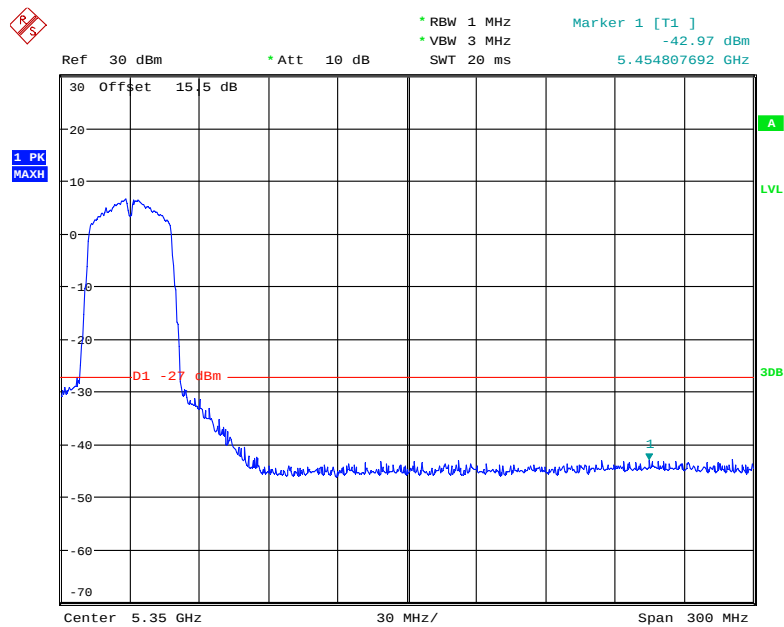
Date: 29.DEC.2018 21:32:24

802.11n40 mode, Band Edge, Left Side



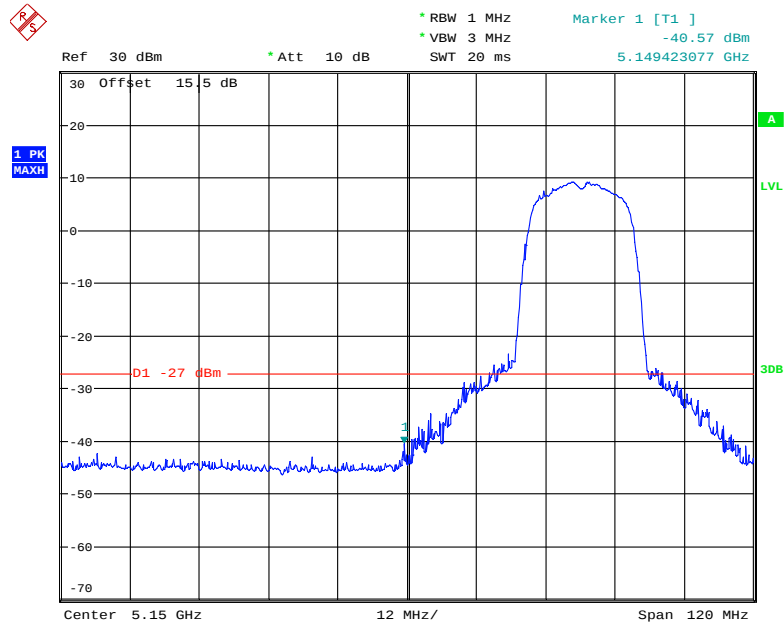
Date: 29.DEC.2018 21:35:42

802.11n40 mode, Band Edge, Right Side



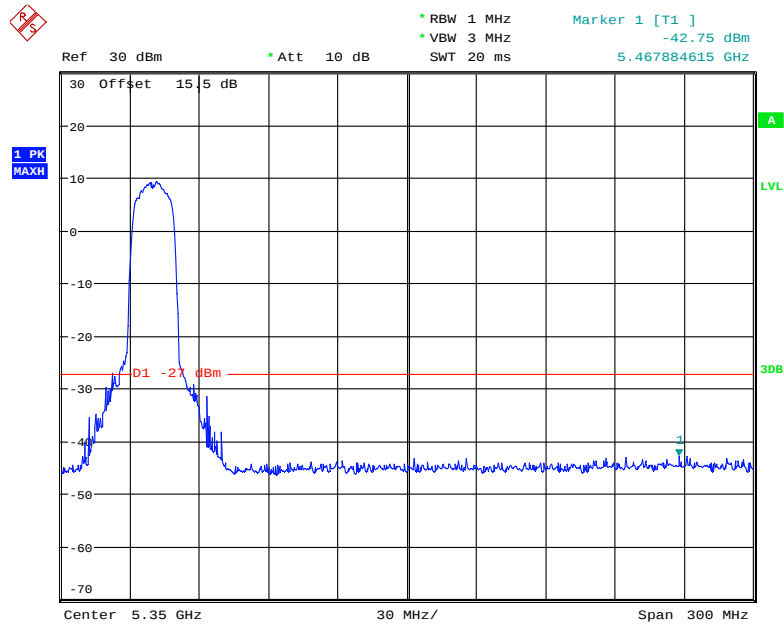
Date: 29.DEC.2018 21:37:34

802.11ac20 mode, Band Edge, Left Side



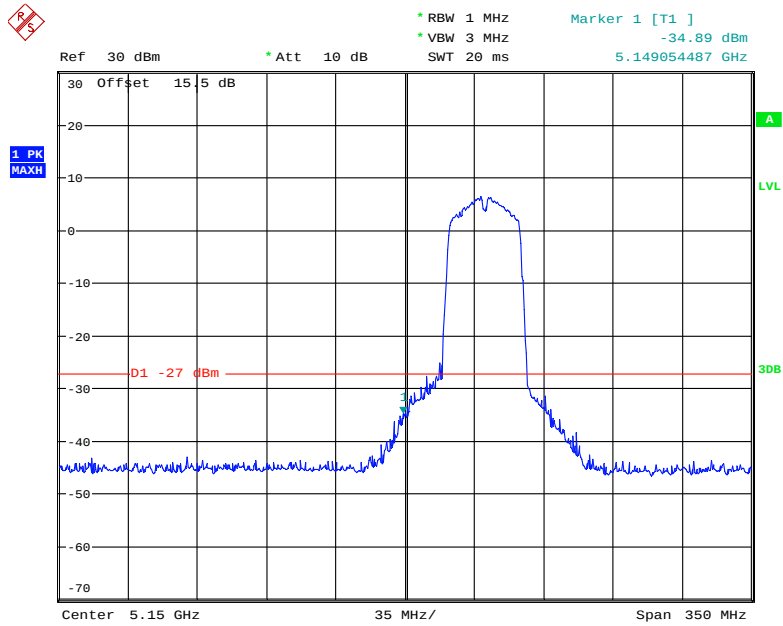
Date: 29.DEC.2018 21:33:33

802.11ac20 mode, Band Edge, Right Side



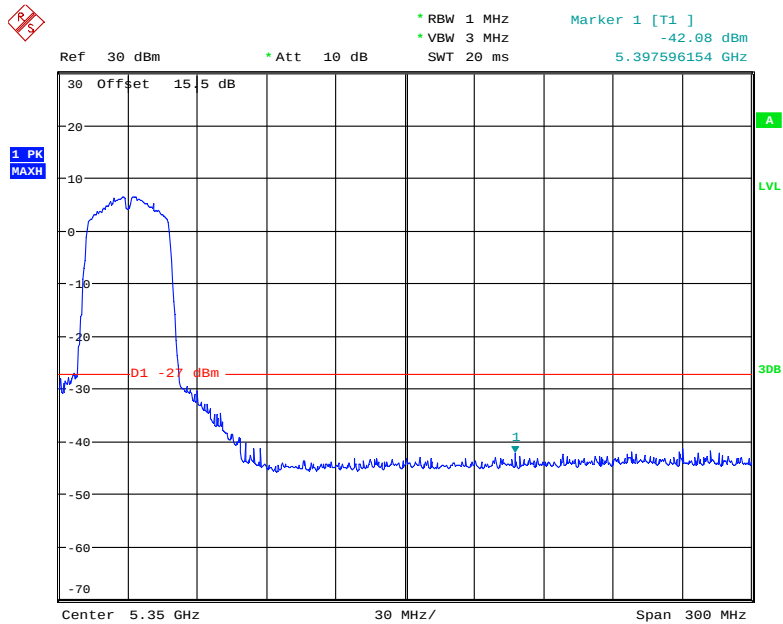
Date: 29.DEC.2018 21:32:51

802.11ac40 mode, Band Edge, Left Side



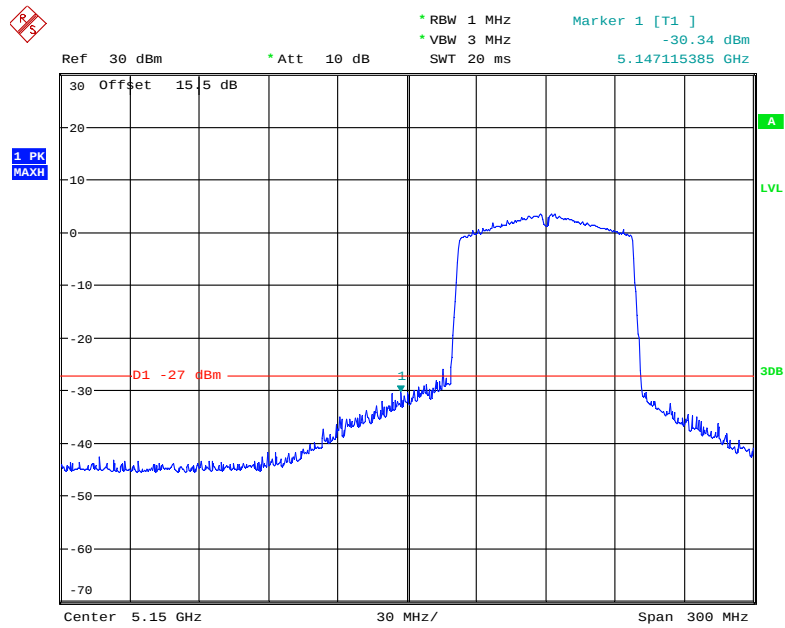
Date: 29.DEC.2018 21:36:18

802.11ac40 mode, Band Edge, Right Side



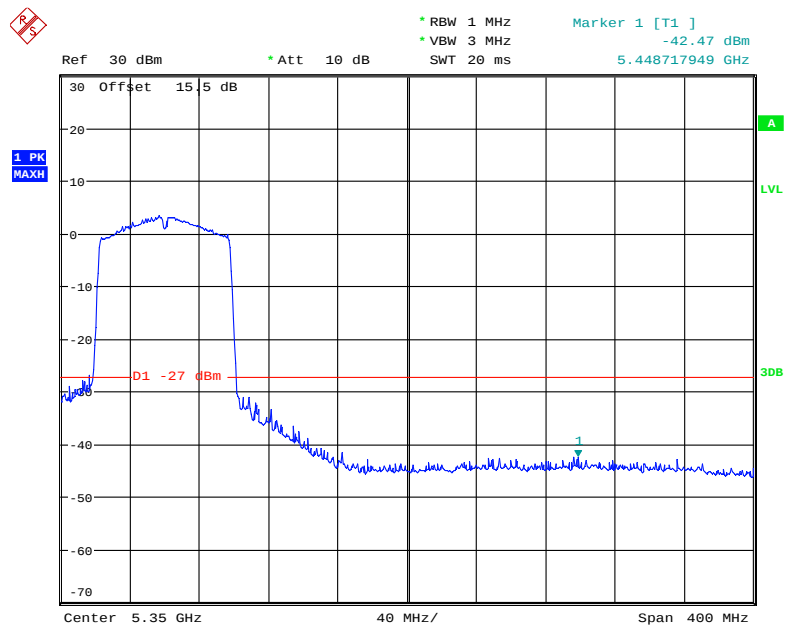
Date: 29.DEC.2018 21:37:06

802.11ac80 mode, Band Edge, Left Side



Date: 29.DEC.2018 21:38:38

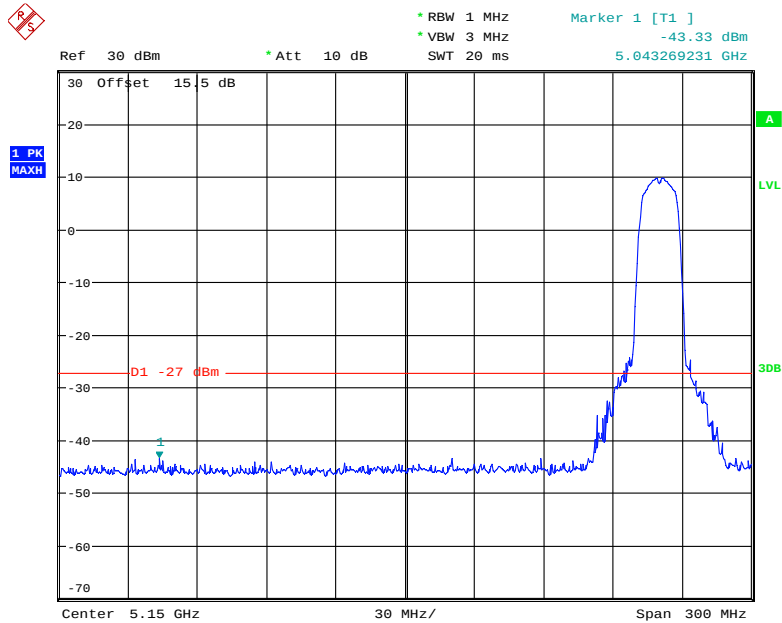
802.11ac80 mode, Band Edge, Right Side



Date: 29.DEC.2018 21:39:24

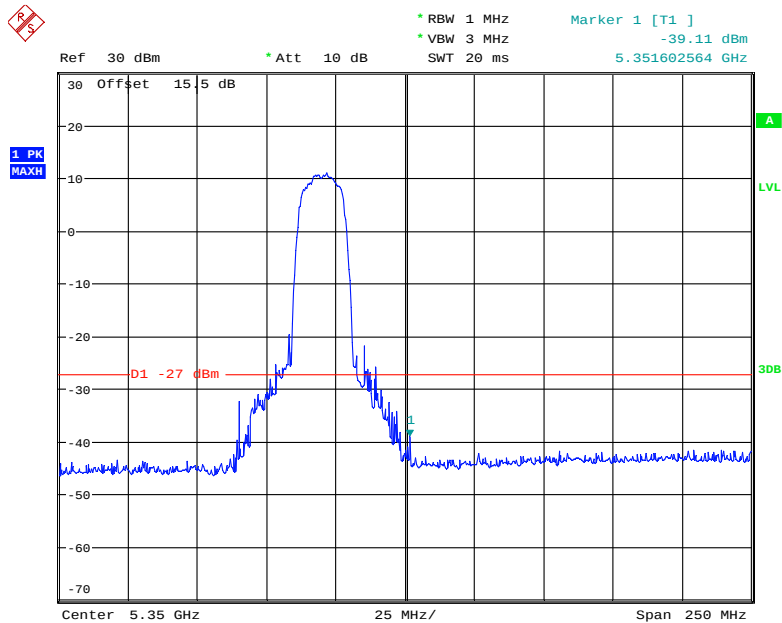
5250 – 5350 MHz:

802.11a mode, Band Edge, Left Side



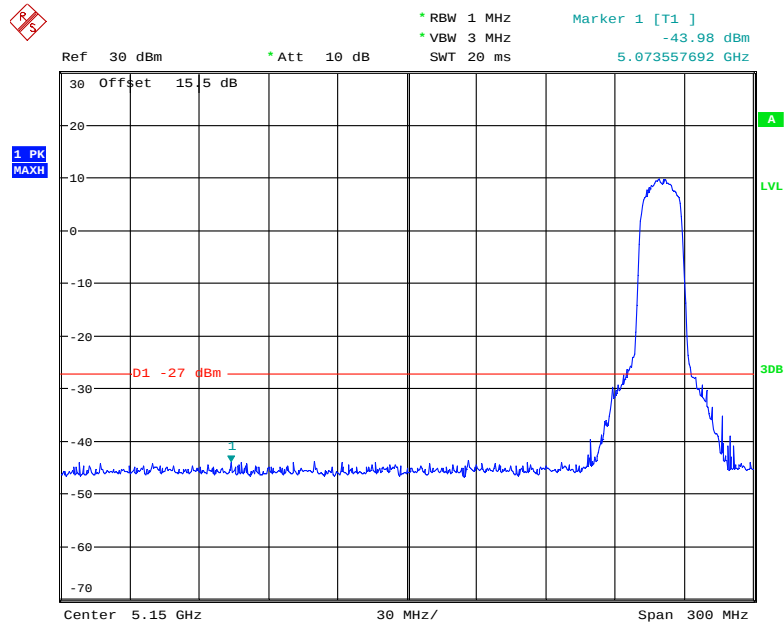
Date: 29.DEC.2018 21:55:42

802.11a mode, Band Edge, Right Side



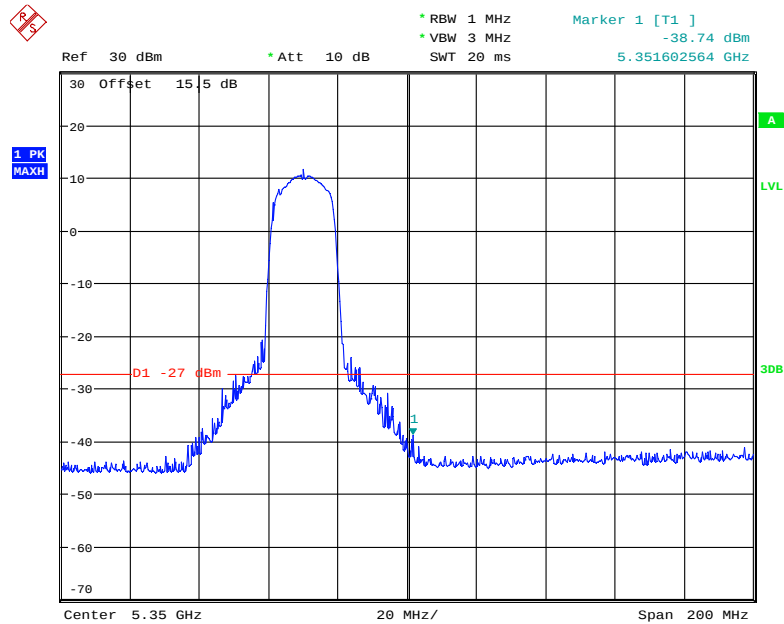
Date: 29.DEC.2018 21:56:30

802.11n20 mode, Band Edge, Left Side



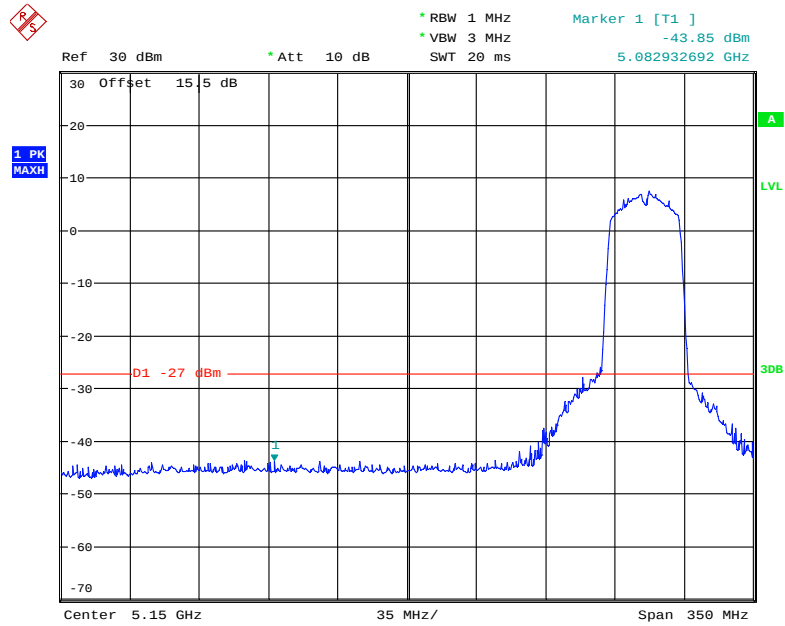
Date: 29.DEC.2018 21:58:44

802.11n20 mode, Band Edge, Right Side



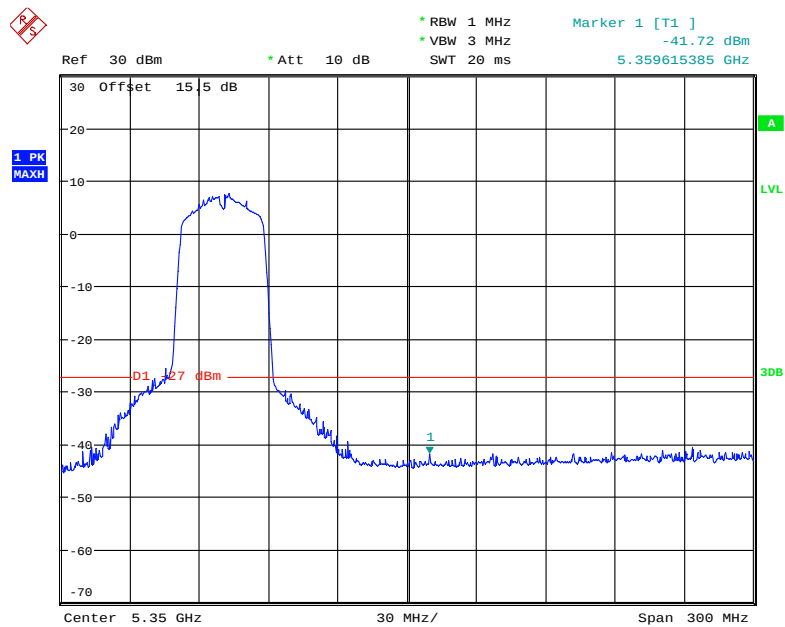
Date: 29.DEC.2018 22:00:26

802.11n40 mode, Band Edge, Left Side



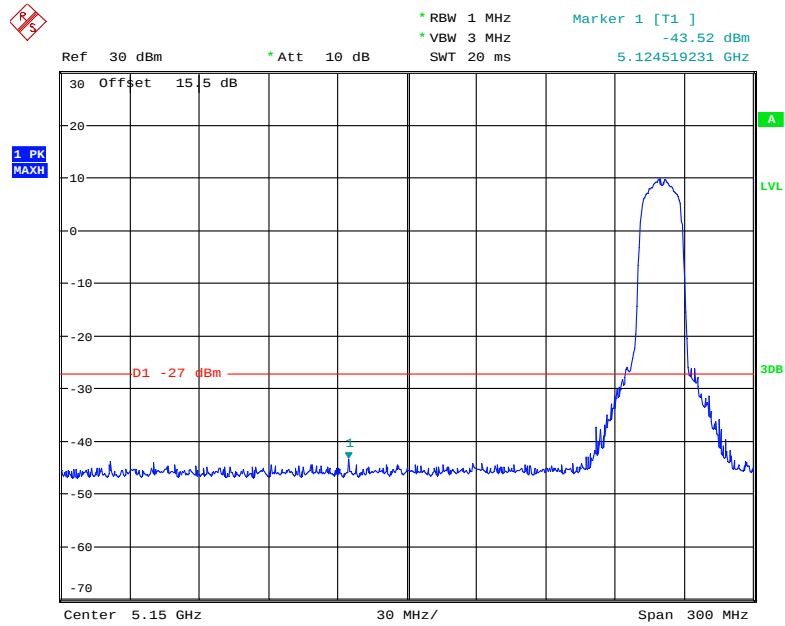
Date: 29.DEC.2018 21:53:57

802.11n40 mode, Band Edge, Right Side



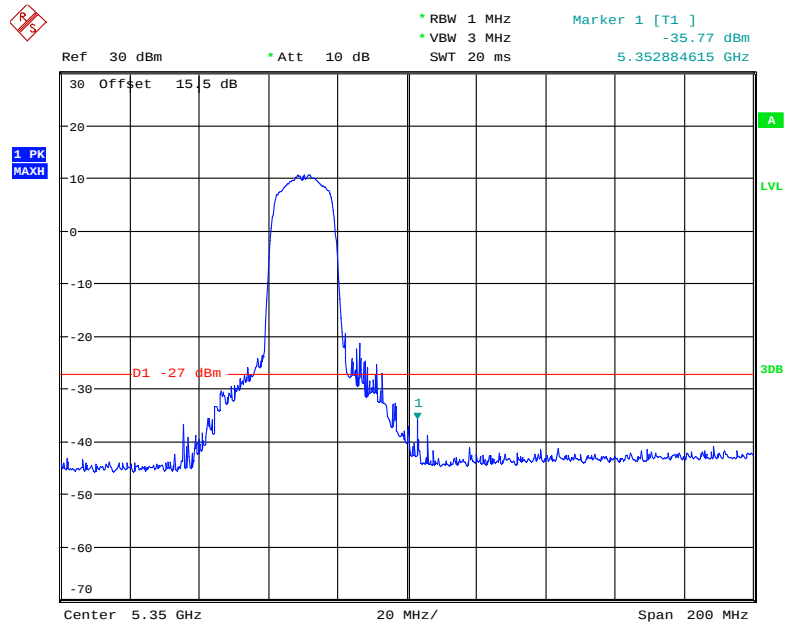
Date: 29.DEC.2018 21:53:15

802.11ac20 mode, Band Edge, Left Side



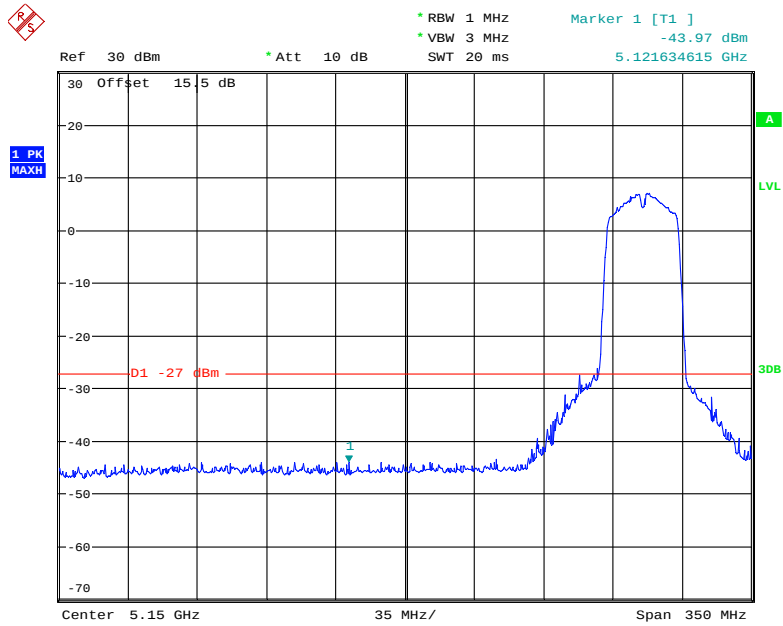
Date: 29.DEC.2018 21:59:12

802.11ac20 mode, Band Edge, Right Side



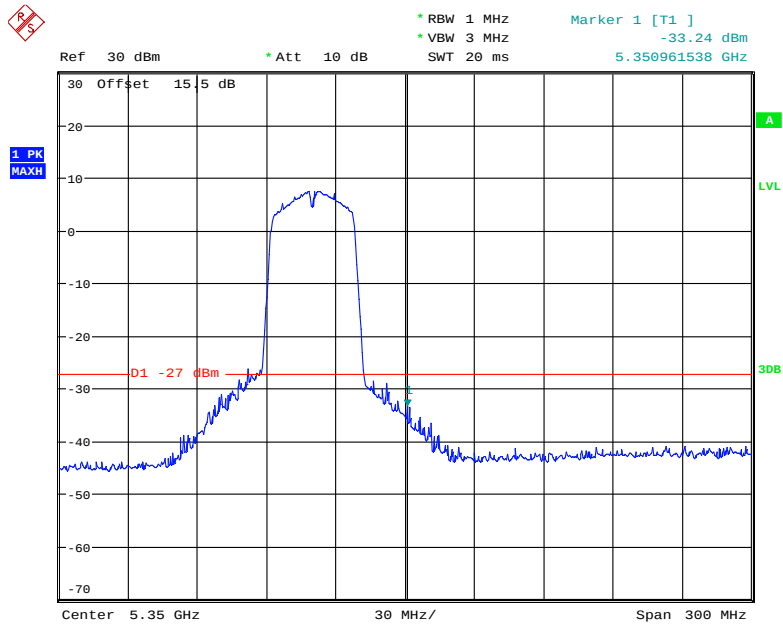
Date: 29.DEC.2018 22:00:02

802.11ac40 mode, Band Edge, Left Side



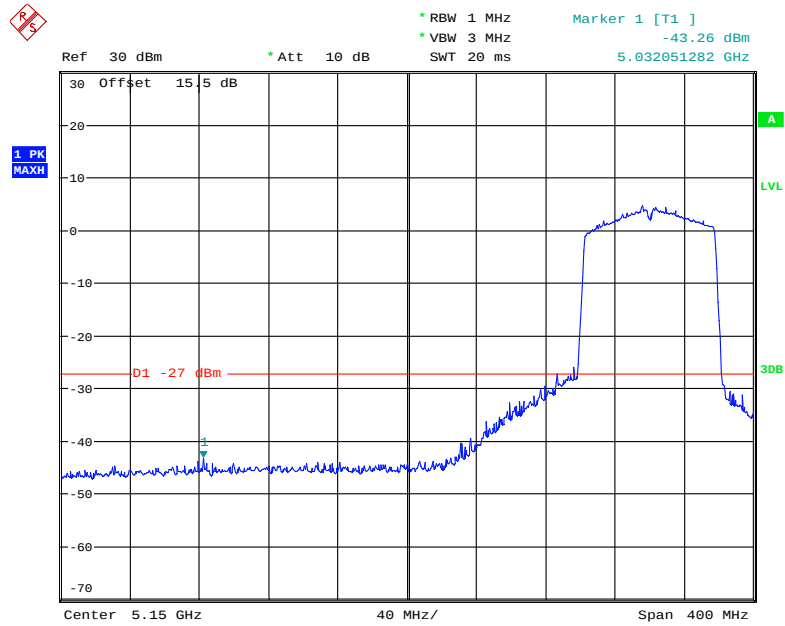
Date: 29.DEC.2018 21:54:25

802.11ac40 mode, Band Edge, Right Side



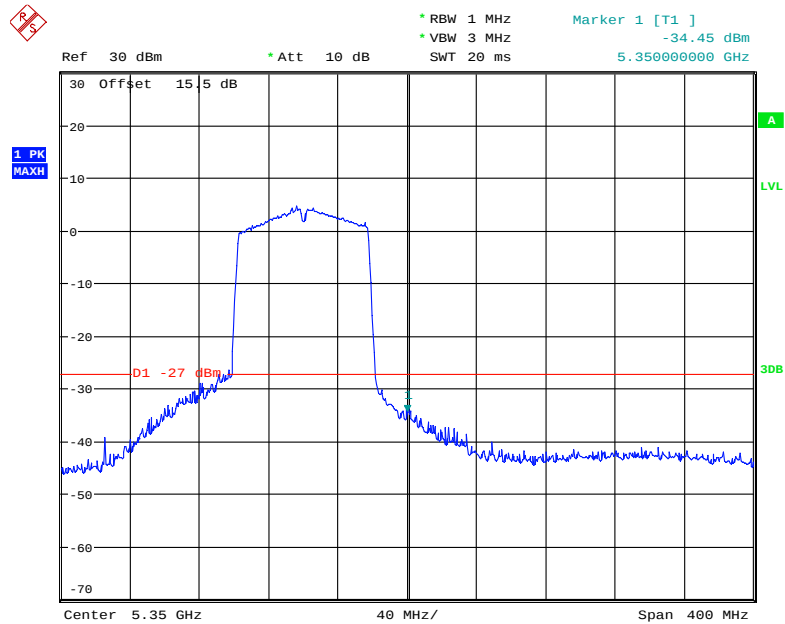
Date: 29.DEC.2018 21:51:43

802.11ac80 mode, Band Edge, Left Side



Date: 29.DEC.2018 21:46:44

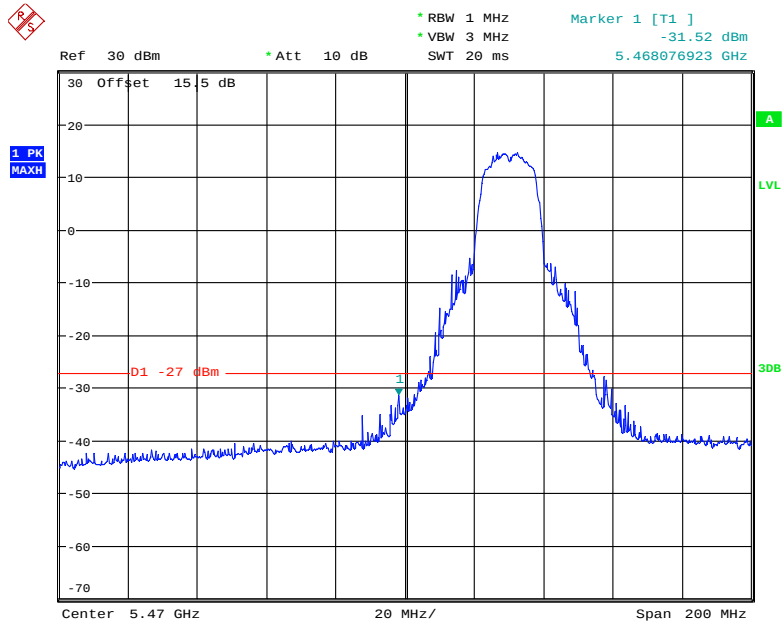
802.11ac80 mode, Band Edge, Right Side



Date: 29.DEC.2018 21:45:30

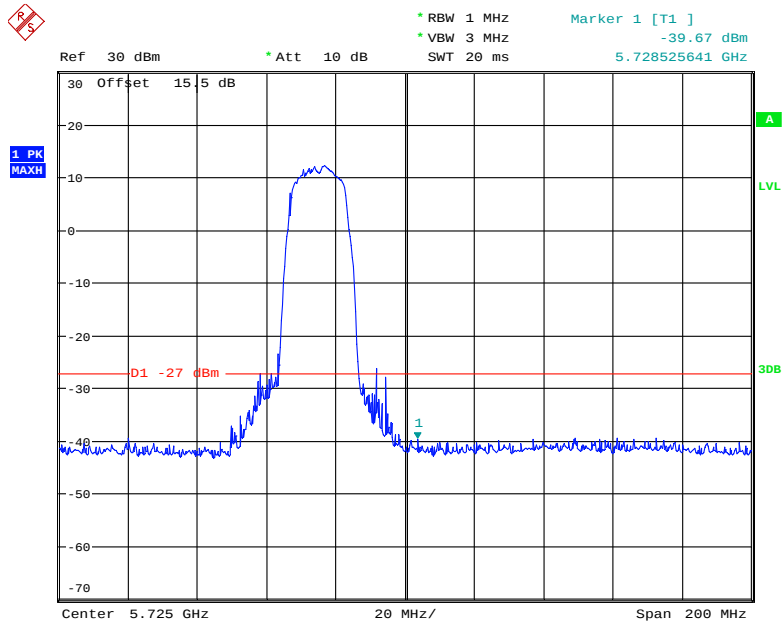
5470 – 5725 MHz:

802.11a mode, Band Edge, Left Side



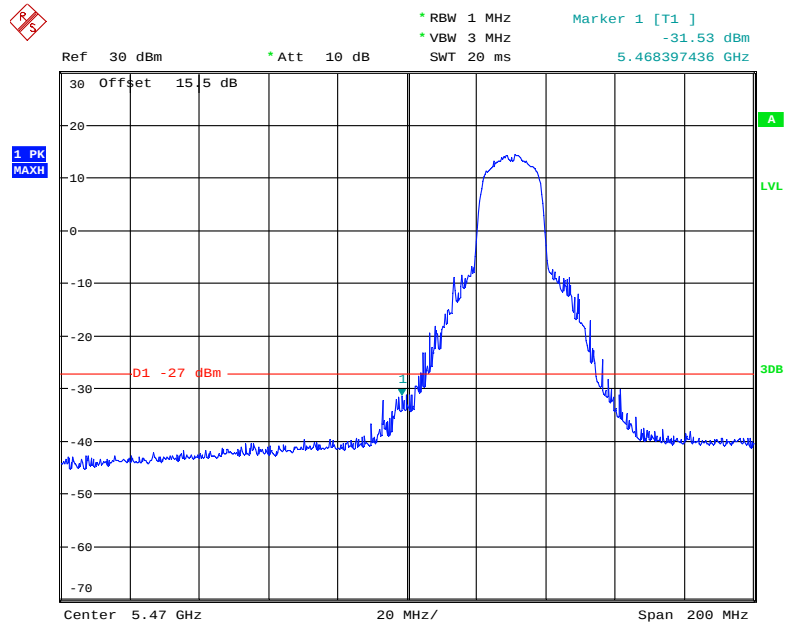
Date: 29.DEC.2018 22:14:20

802.11a mode, Band Edge, Right Side



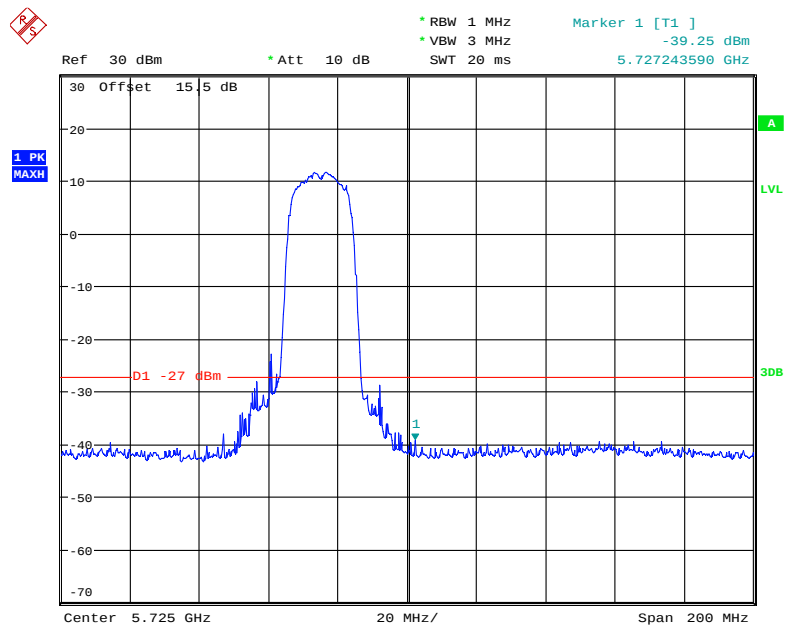
Date: 29.DEC.2018 22:13:41

802.11n20 mode, Band Edge, Left Side



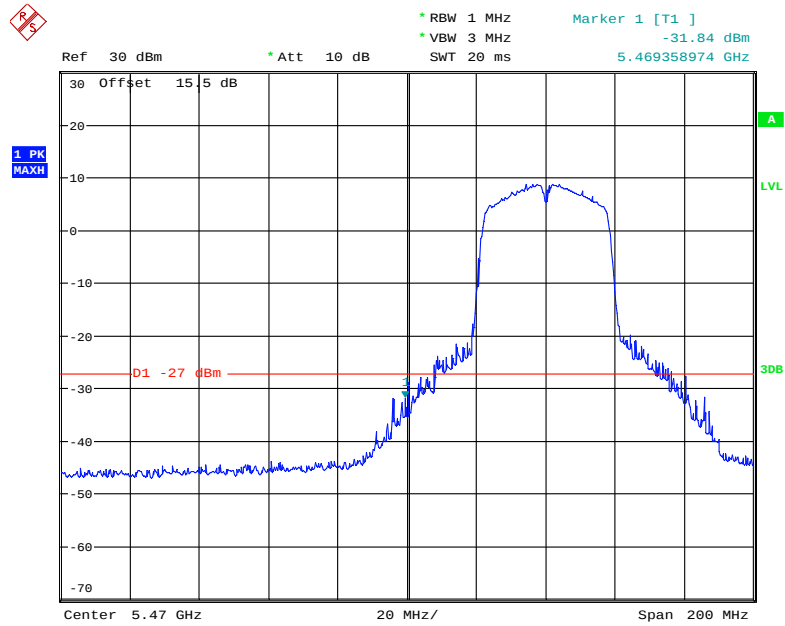
Date: 29.DEC.2018 22:10:19

802.11n20 mode, Band Edge, Right Side



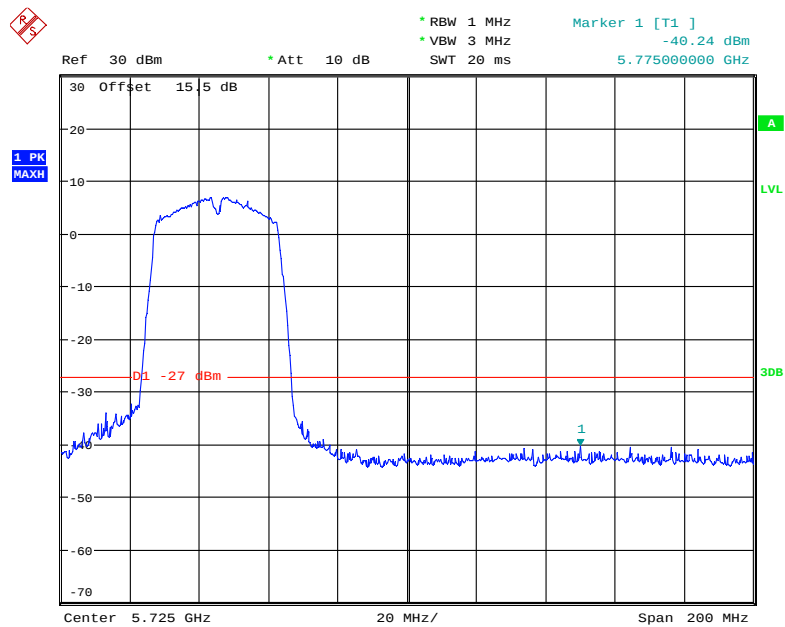
Date: 29.DEC.2018 22:12:54

802.11n40 mode, Band Edge, Left Side



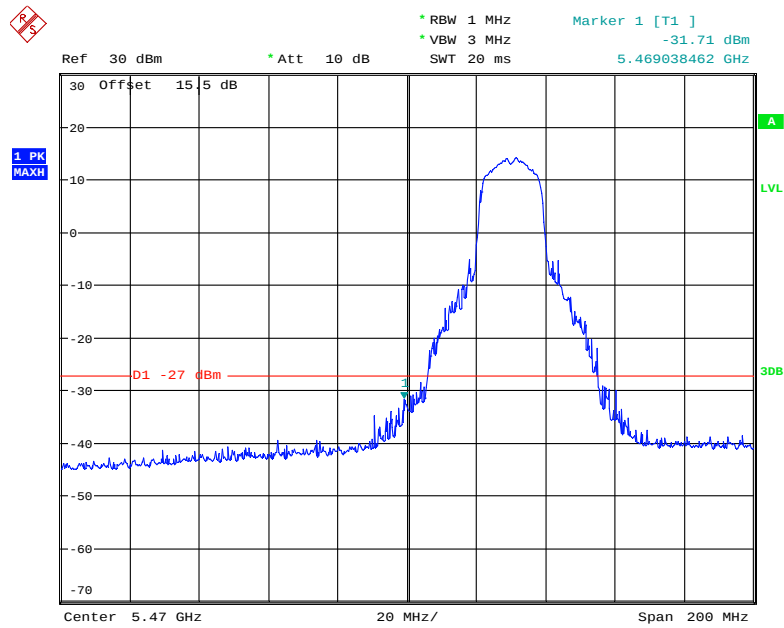
Date: 29.DEC.2018 22:16:37

802.11n40 mode, Band Edge, Right Side



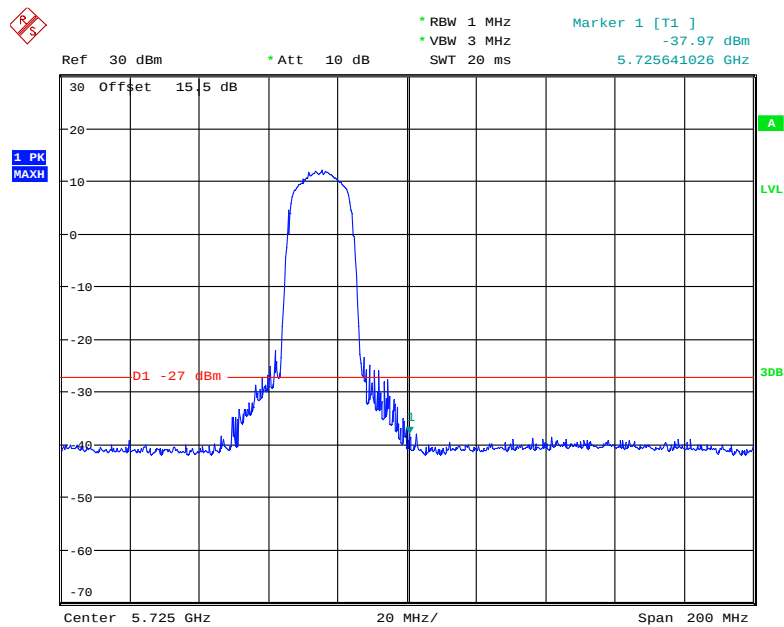
Date: 29.DEC.2018 22:20:04

802.11ac20 mode, Band Edge, Left Side



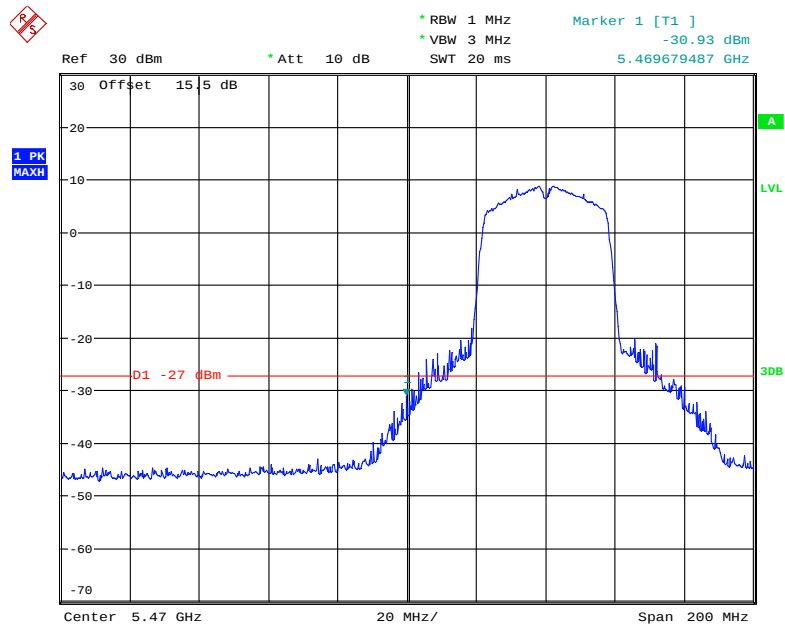
Date: 29.DEC.2018 22:11:10

802.11ac20 mode, Band Edge, Right Side



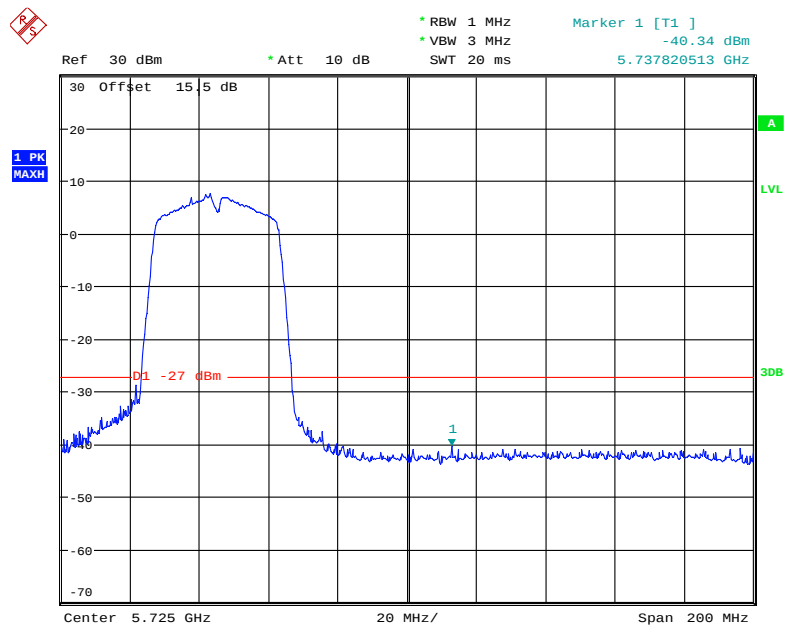
Date: 29.DEC.2018 22:12:27

802.11ac40 mode, Band Edge, Left Side



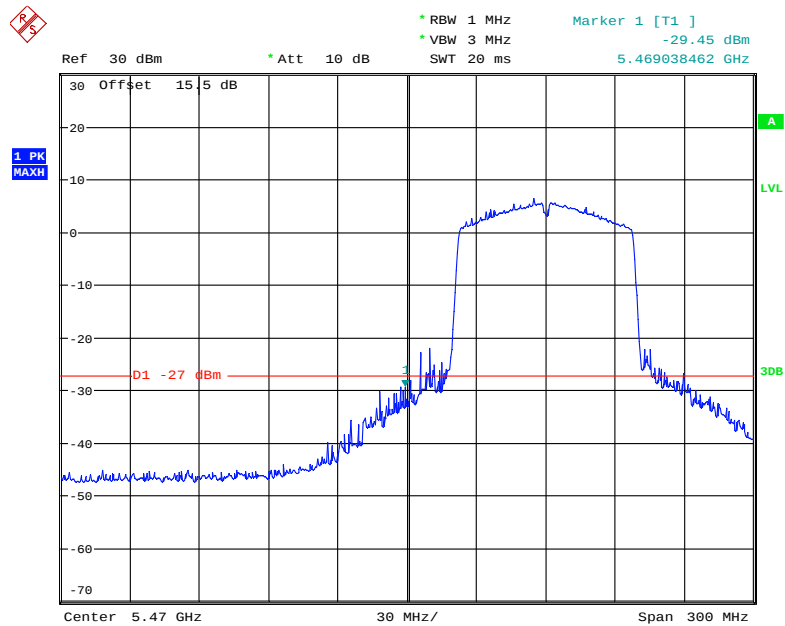
Date: 29.DEC.2018 22:18:29

802.11ac40 mode, Band Edge, Right Side



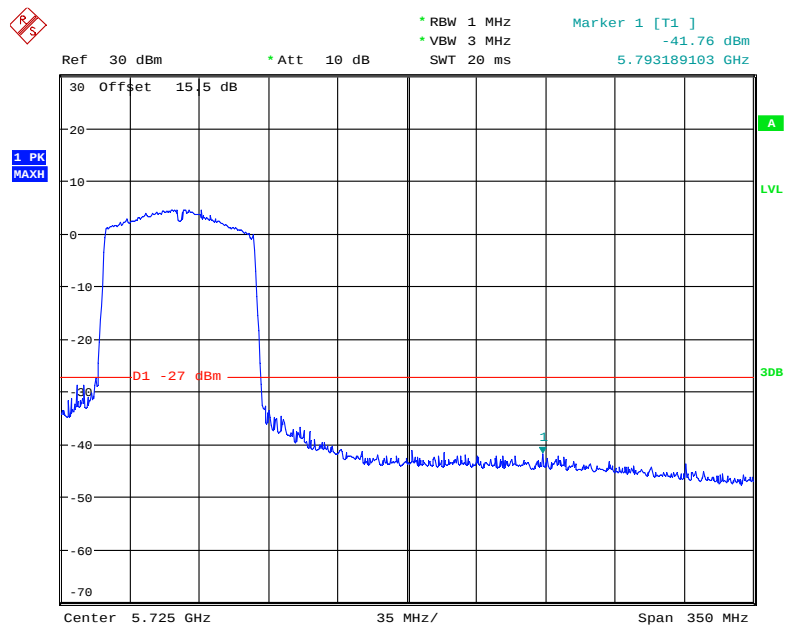
Date: 29.DEC.2018 22:19:44

802.11ac80 mode, Band Edge, Left Side



Date: 29.DEC.2018 22:21:32

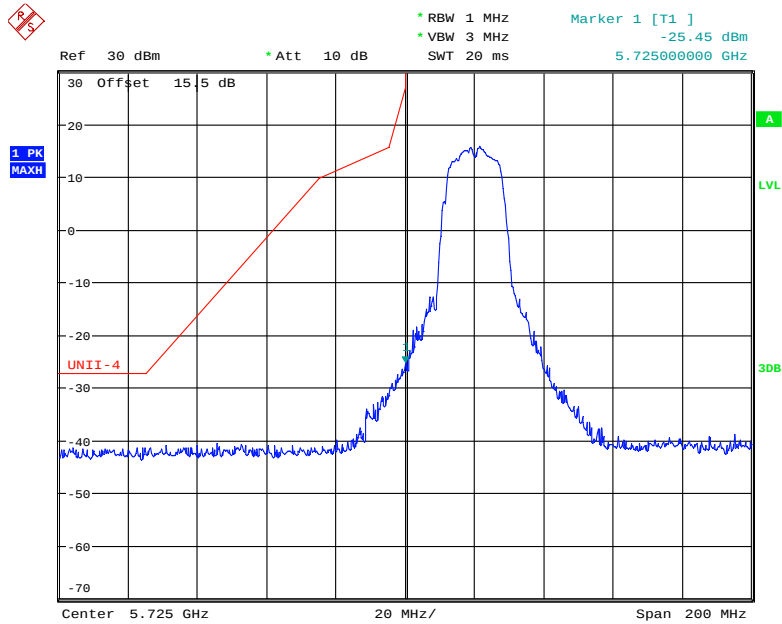
802.11ac80 mode, Band Edge, Right Side



Date: 29.DEC.2018 22:22:12

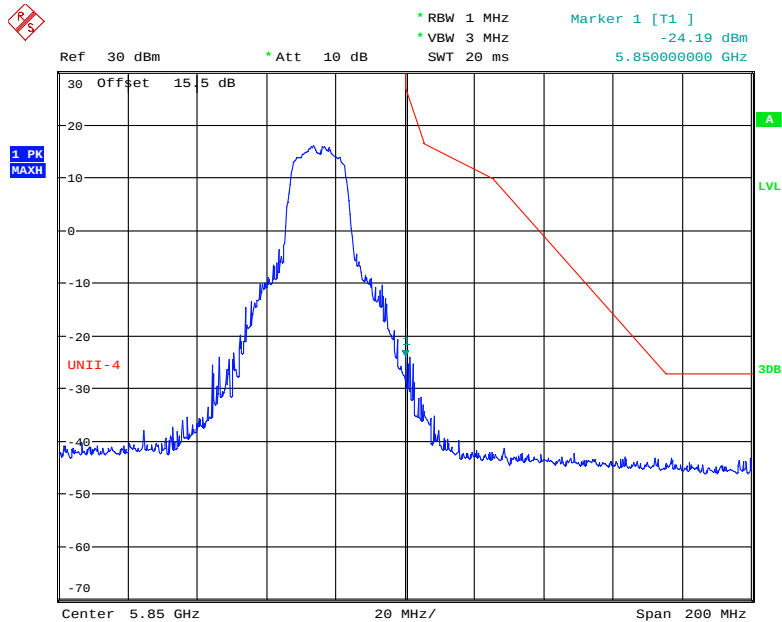
5725 – 5850 MHz:

802.11a mode, Band Edge, Left Side



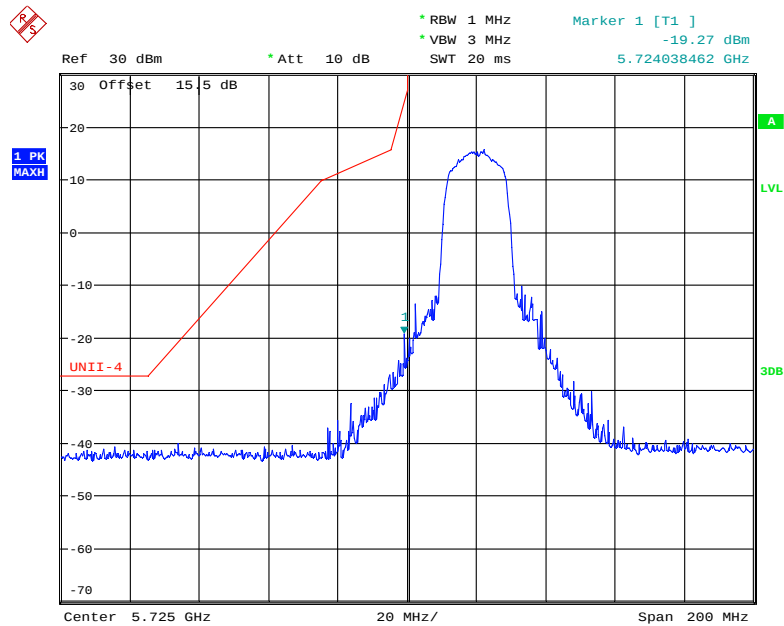
Date: 29.DEC.2018 22:32:28

802.11a mode, Band Edge, Right Side



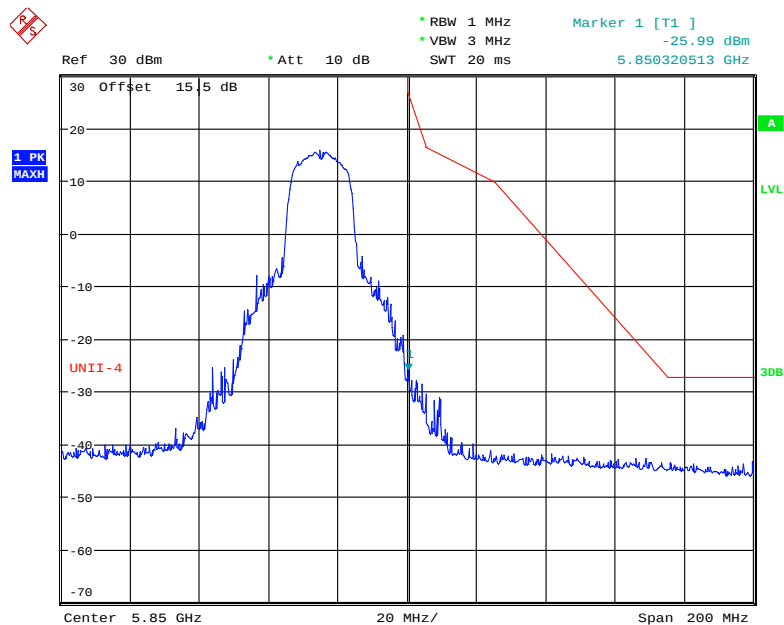
Date: 29.DEC.2018 22:33:03

802.11n20 mode, Band Edge, Left Side



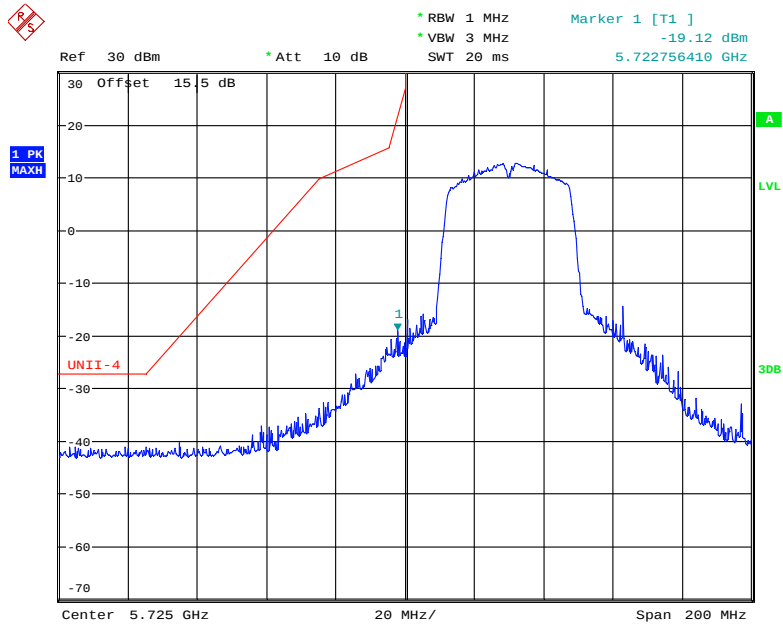
Date: 29.DEC.2018 22:34:08

802.11n20 mode, Band Edge, Right Side



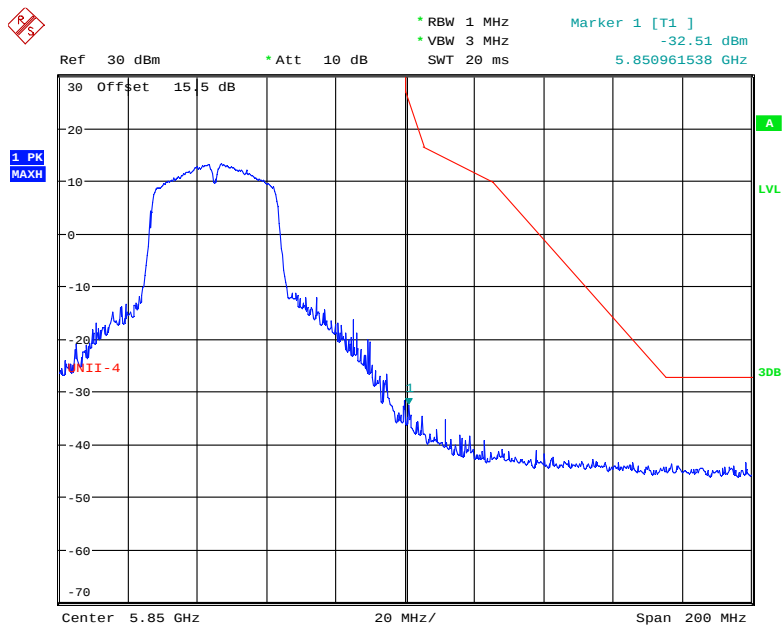
Date: 29.DEC.2018 22:35:51

802.11n40 mode, Band Edge, Left Side



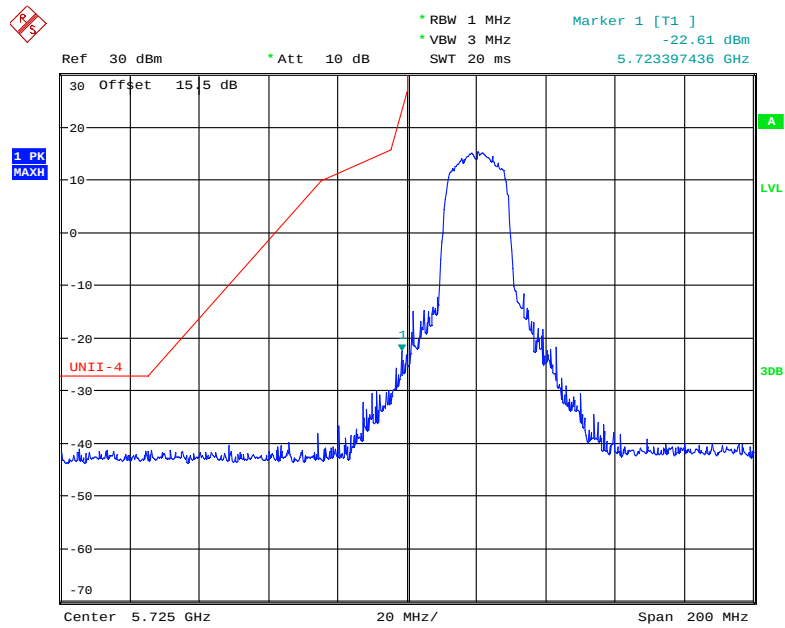
Date: 29.DEC.2018 22:31:21

802.11n40 mode, Band Edge, Right Side



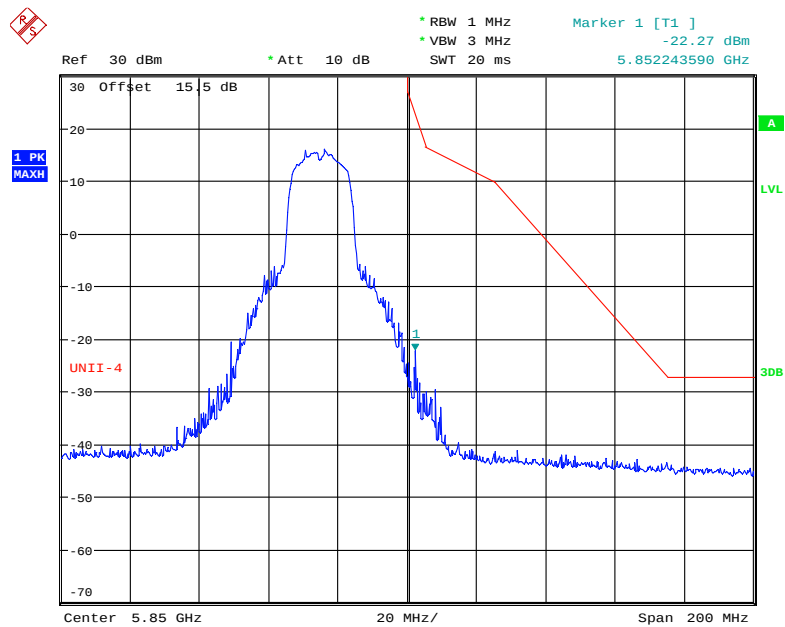
Date: 29.DEC.2018 22:30:40

802.11ac20 mode, Band Edge, Left Side



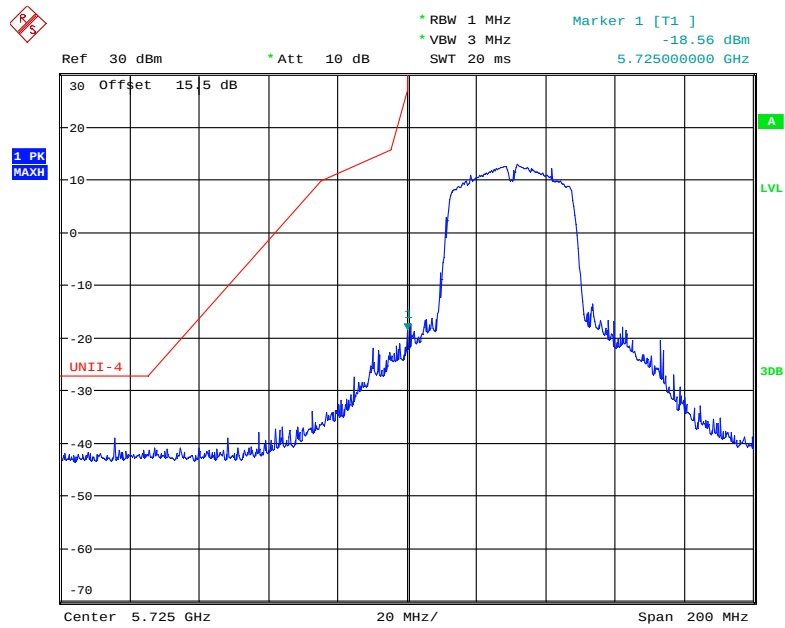
Date: 29.DEC.2018 22:34:40

802.11ac20 mode, Band Edge, Right Side



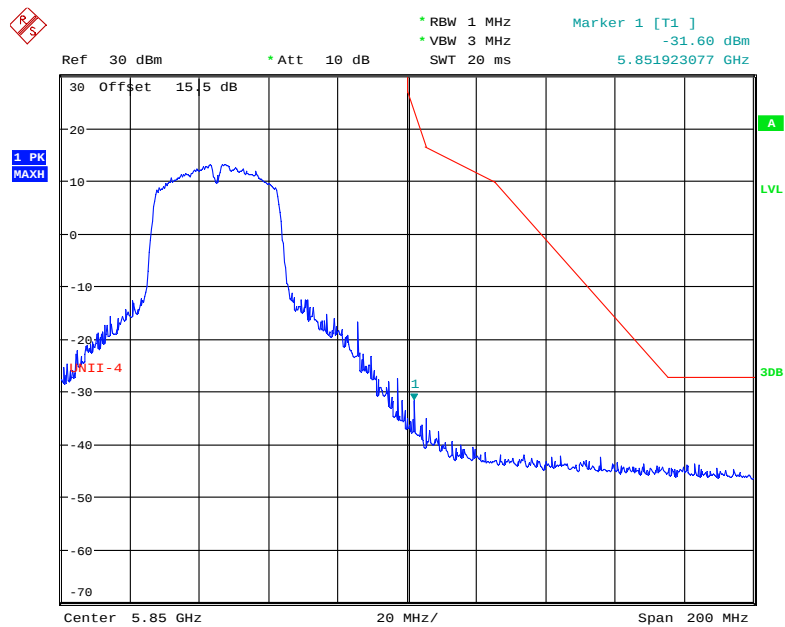
Date: 29.DEC.2018 22:35:16

802.11ac40 mode, Band Edge, Left Side



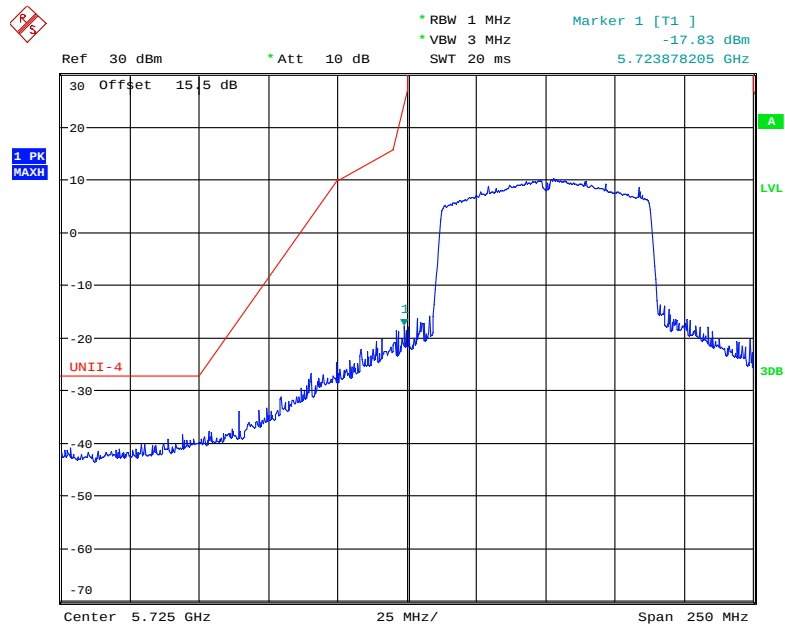
Date: 29.DEC.2018 22:31:49

802.11ac40 mode, Band Edge, Right Side



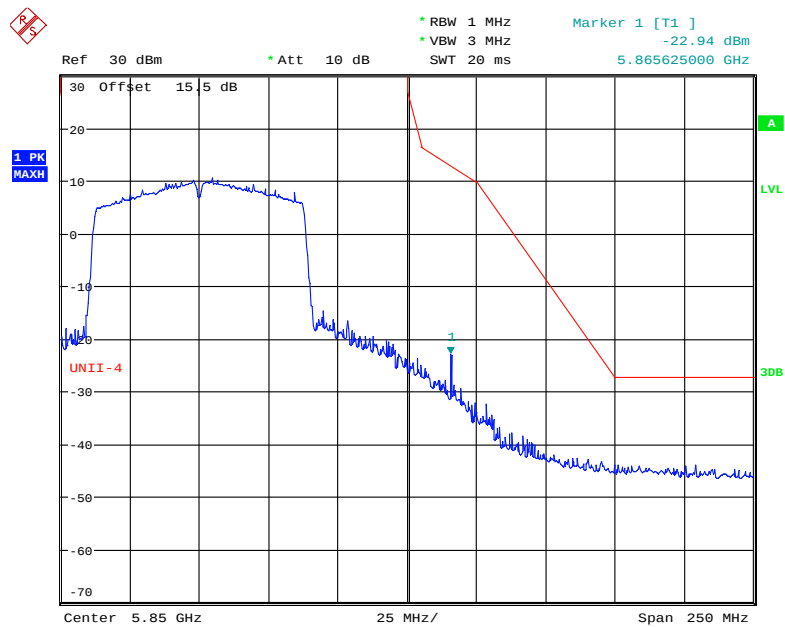
Date: 29.DEC.2018 22:30:15

802.11ac80 mode, Band Edge, Left Side



Date: 29.DEC.2018 22:25:39

802.11ac80 mode, Band Edge, Right Side



Date: 29.DEC.2018 22:26:31

FCC §15.407(a) (1) – 26 dB & 6dB 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.

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

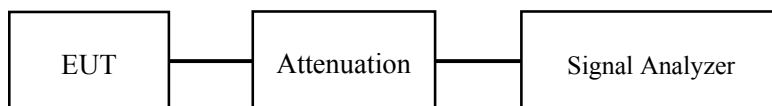
1. Emission Bandwidth (EBW)

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

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:

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- 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:	23.5~25 °C
Relative Humidity:	49~56 %
ATM Pressure:	109.0~101.0 kPa

The testing was performed by Tracy Hu from 2018-12-19 to 2018-12-20.

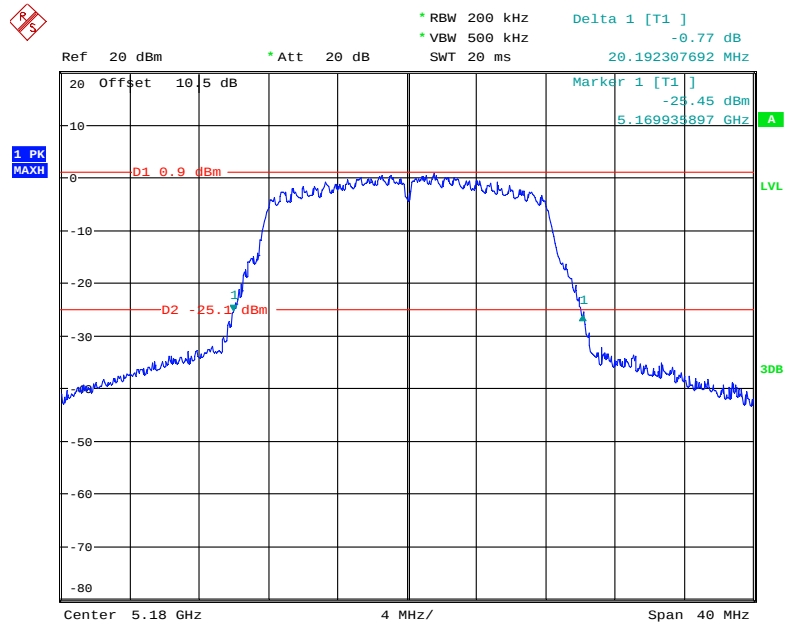
EUT operation mode: Transmitting

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

5120 MHz - 5250 MHz:

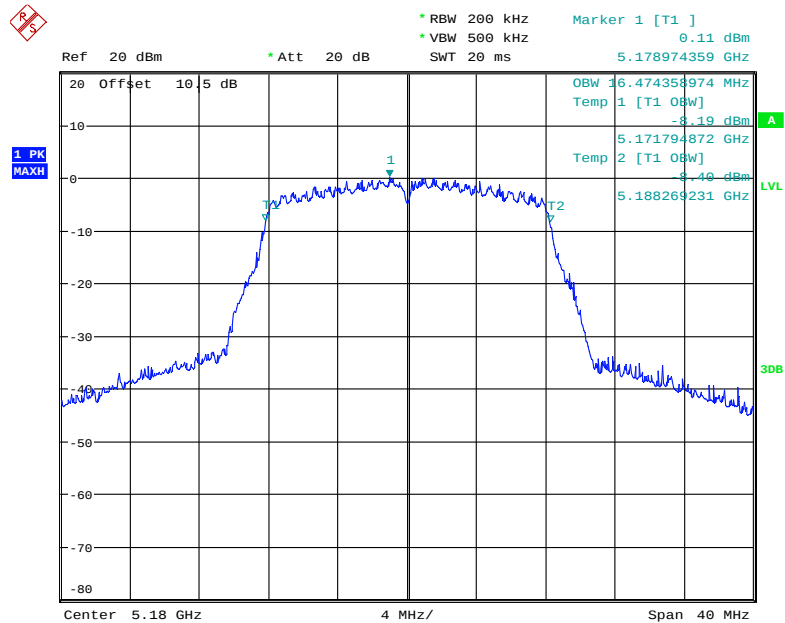
Frequency (MHz)	26dB bandwidth (MHz)	99% Bandwidth (MHz)	Remark
802.11a			No transmitted signal in the 99% bandwidth extends into the U-NII-2A band
5180	20.19	16.47	
5200	20.26	16.47	
5240	20.13	16.60	
802.11n20			
5180	20.38	17.63	
5200	20.38	17.63	
5240	20.32	17.63	
802.11n40			
5190	41.41	36.28	
5230	41.28	36.28	
802.11ac20			
5180	20.38	17.63	
5200	20.45	17.63	
5240	20.38	17.63	
802.11ac40			
5190	40.90	36.28	
5230	41.28	36.28	
802.11ac80			
5210	81.79	75.38	

802.11a mode, 26 dB Emissions, 5180 MHz



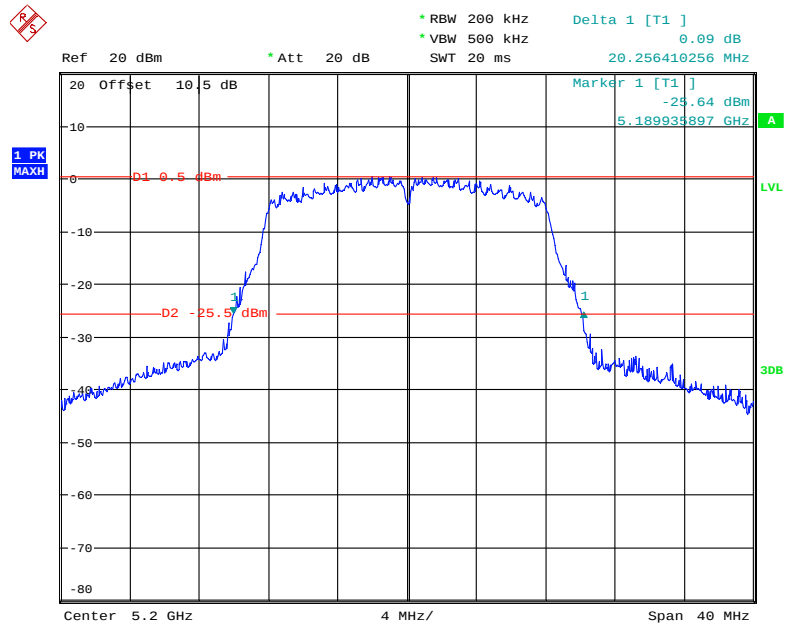
Date: 19.DEC.2018 20:24:21

802.11a mode, Occupied Bandwidth, 5180 MHz



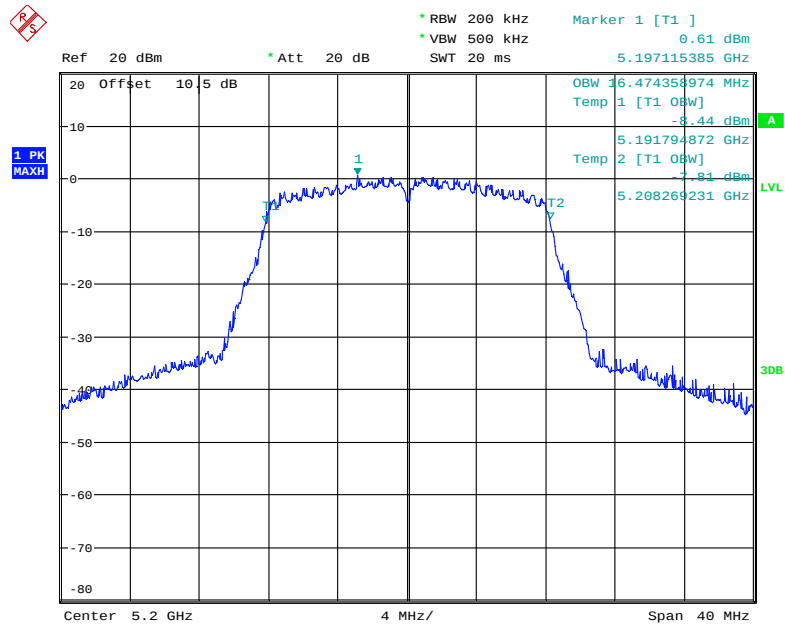
Date: 19.DEC.2018 20:28:23

802.11a mode, 26 dB Emissions, 5200 MHz



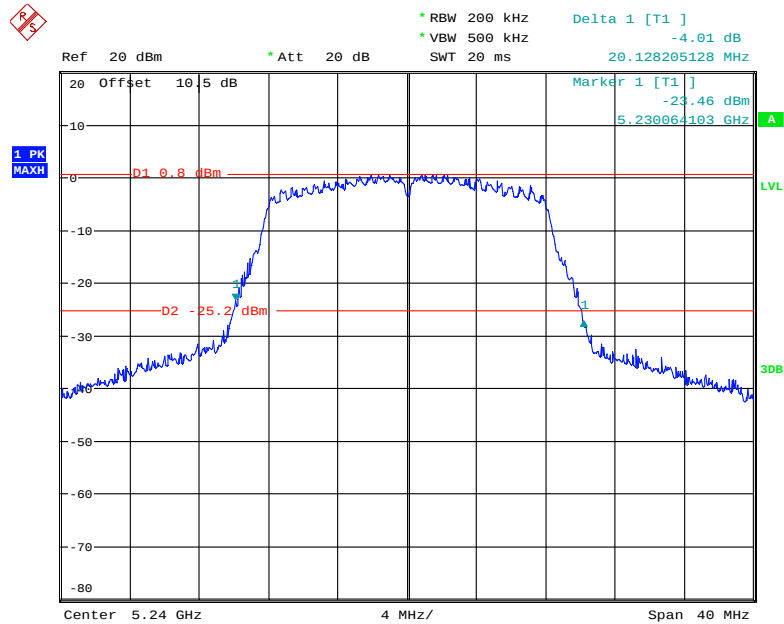
Date: 19.DEC.2018 20:15:08

802.11a mode, Occupied Bandwidth, 5200 MHz



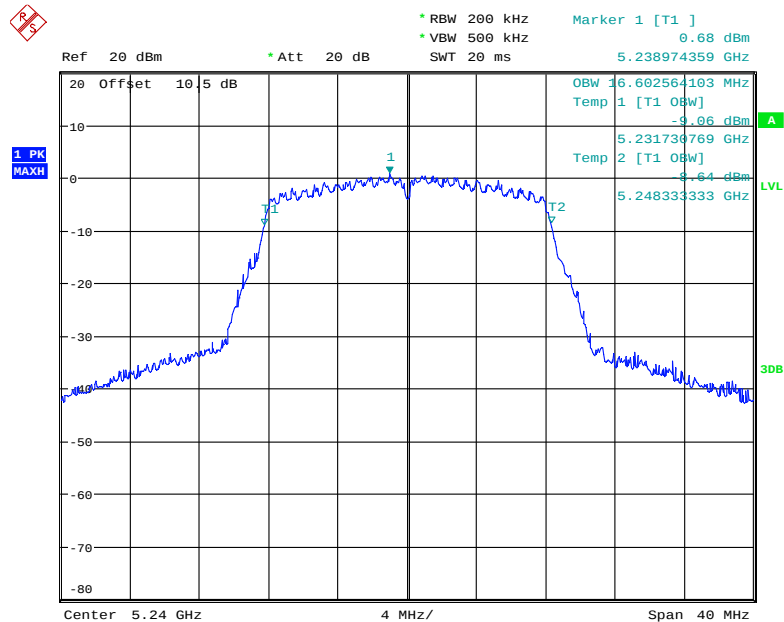
Date: 19.DEC.2018 20:27:57

802.11a mode, 26 dB Emissions, 5240 MHz



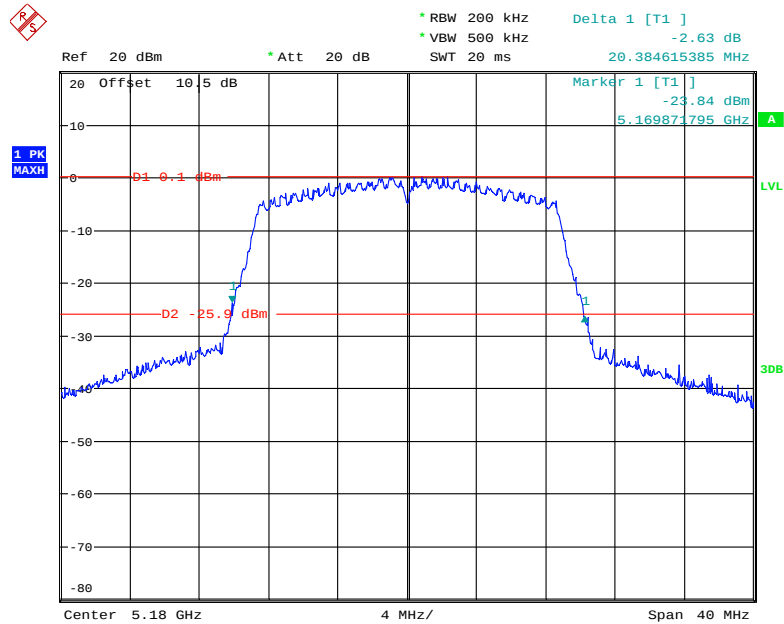
Date: 19.DEC.2018 20:25:50

802.11a mode, 99% Occupied Bandwidth, 5240 MHz



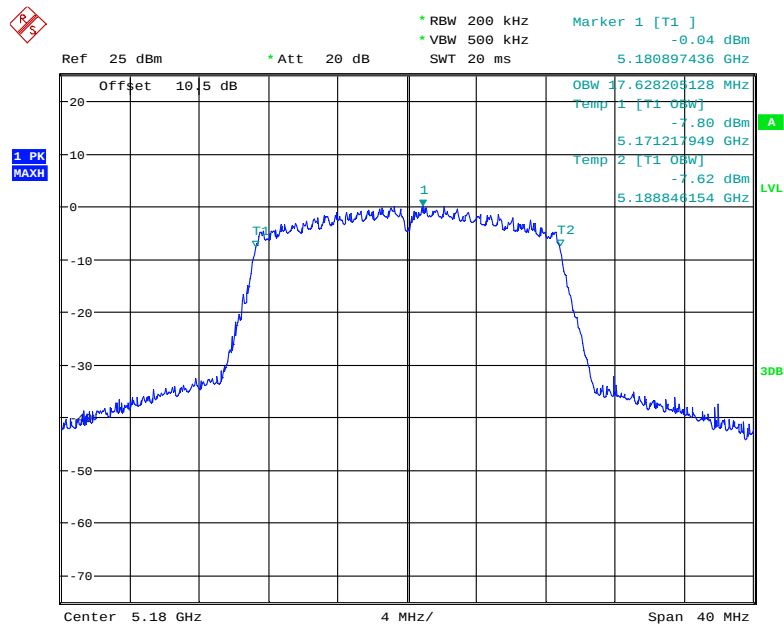
Date: 19.DEC.2018 20:27:21

802.11n20 mode, 26 dB Emissions, 5180 MHz



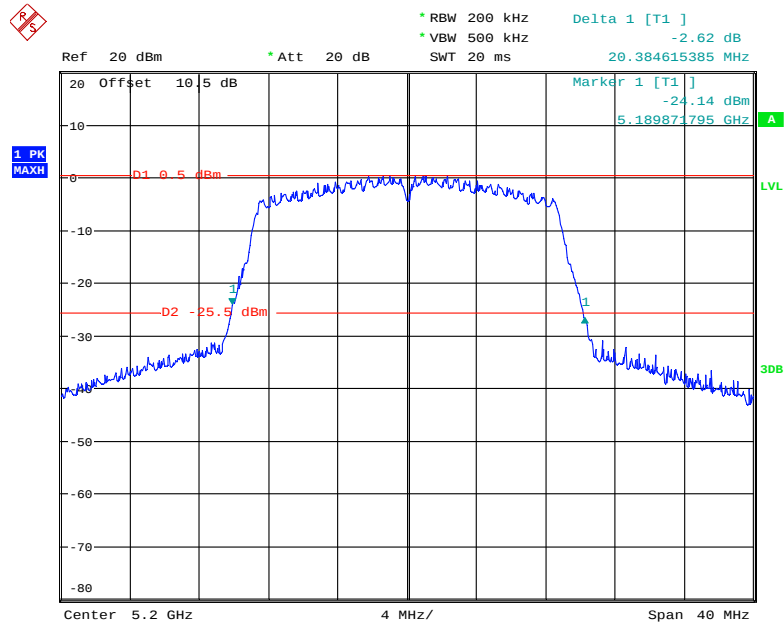
Date: 19.DEC.2018 20:04:28

802.11n20 mode, Occupied Bandwidth, 5180 MHz



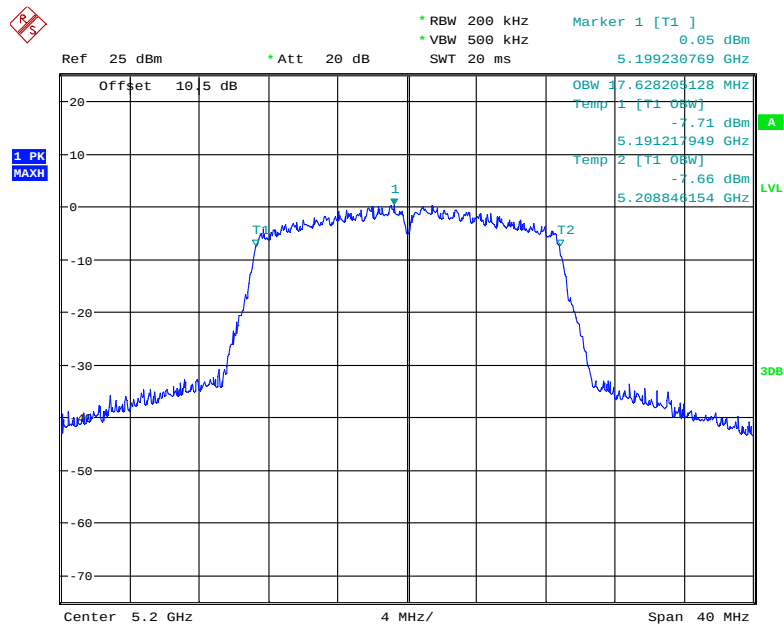
Date: 19.DEC.2018 20:01:25

802.11n20 mode, 26 dB Emissions, 5200 MHz



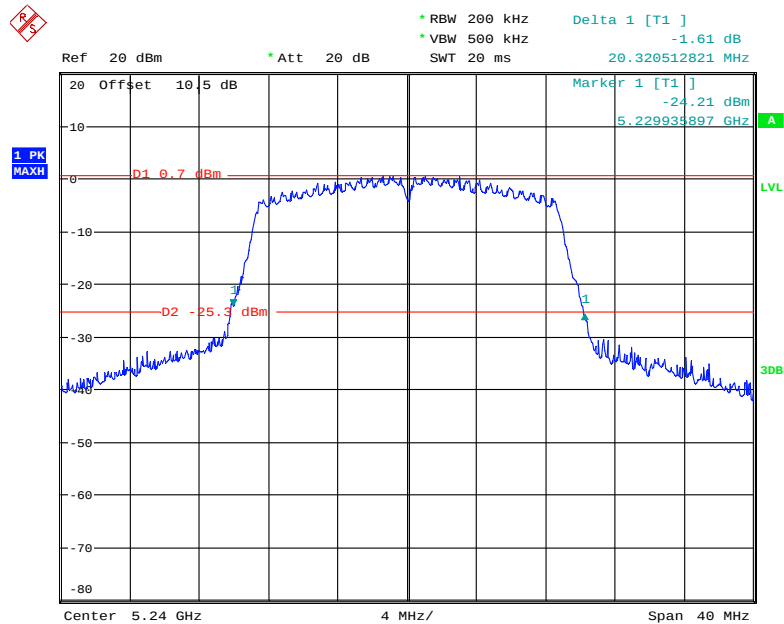
Date: 19.DEC.2018 20:05:33

802.11n20 mode, Occupied Bandwidth, 5200 MHz



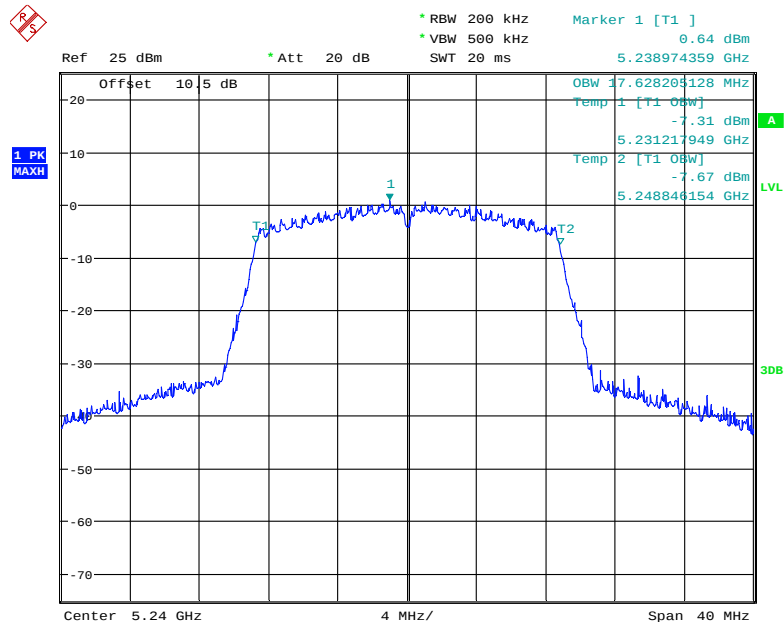
Date: 19.DEC.2018 20:00:52

802.11n20 mode, 26 dB Emissions, 5240 MHz



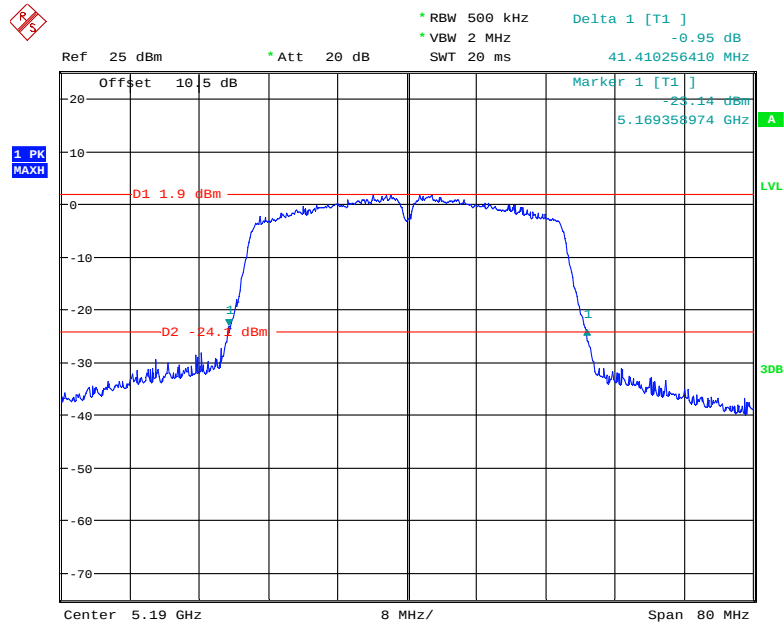
Date: 19.DEC.2018 20:07:51

802.11n20 mode, Occupied Bandwidth, 5240 MHz



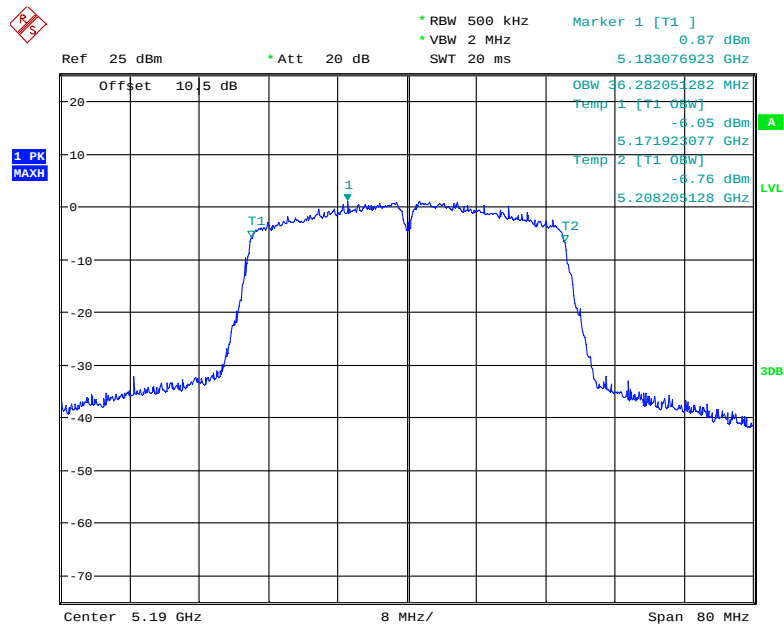
Date: 19.DEC.2018 20:00:26

802.11n40 mode, 26 dB Emissions, 5190 MHz



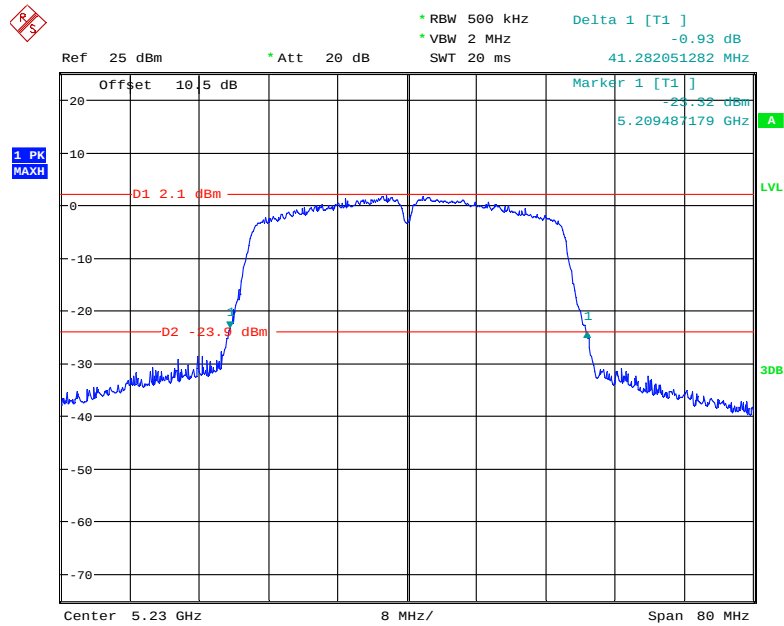
Date: 19.DEC.2018 19:43:50

802.11n40 mode, Occupied Bandwidth, 5190 MHz



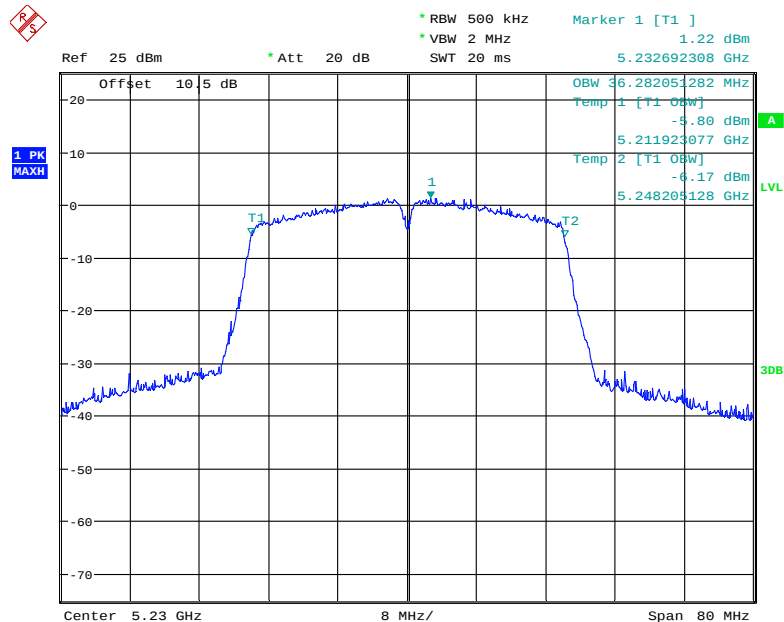
Date: 19.DEC.2018 19:44:37

802.11n40 mode, 26 dB Emissions, 5230 MHz



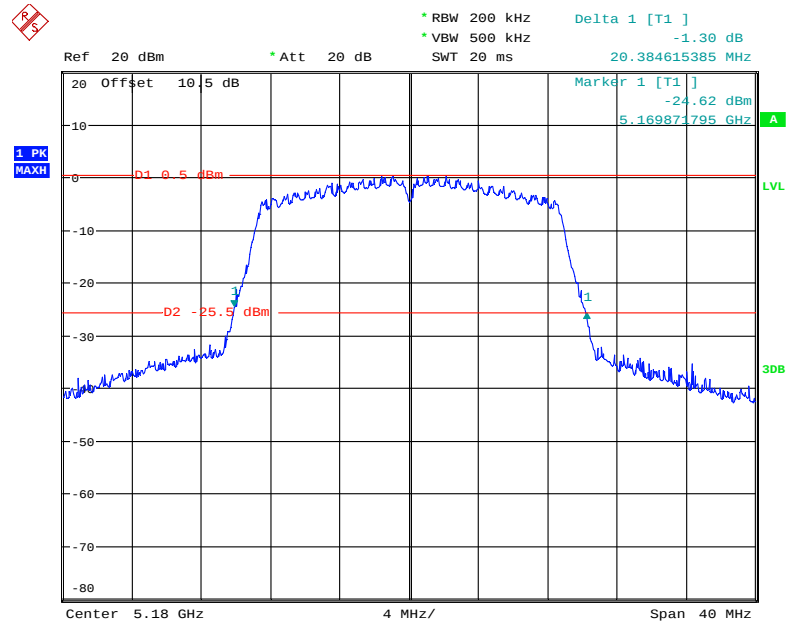
Date: 19.DEC.2018 19:37:27

802.11n40 mode, Occupied Bandwidth, 5230 MHz



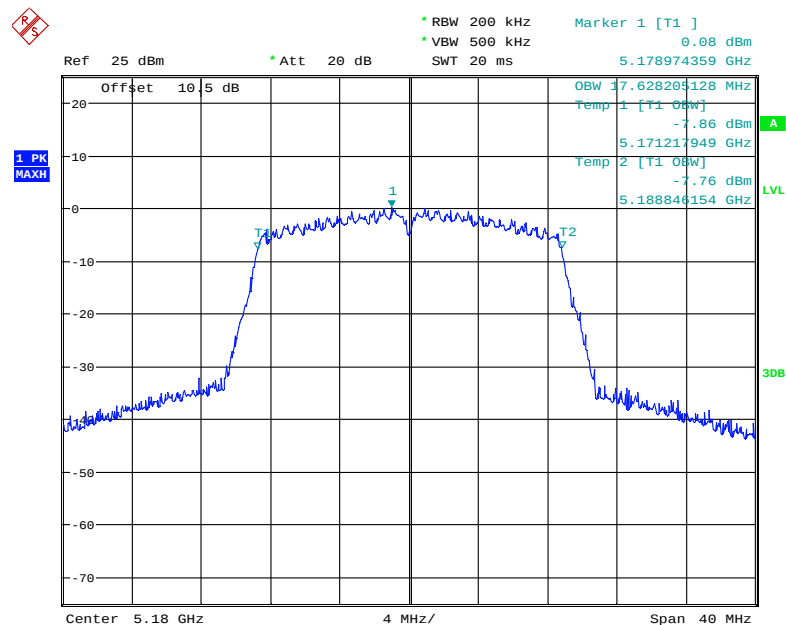
Date: 19.DEC.2018 19:45:38

802.11ac20 mode, 26 dB Emissions, 5180 MHz



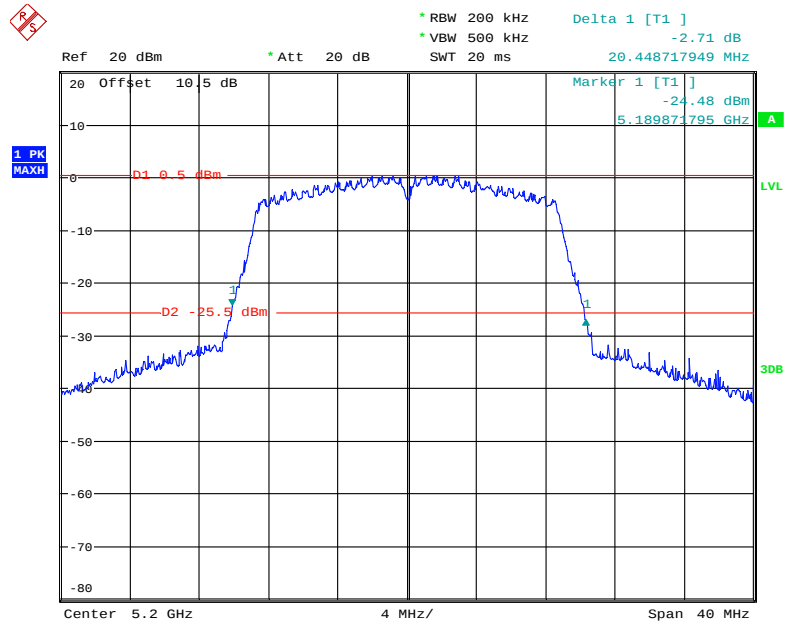
Date: 19.DEC.2018 20:12:24

802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz



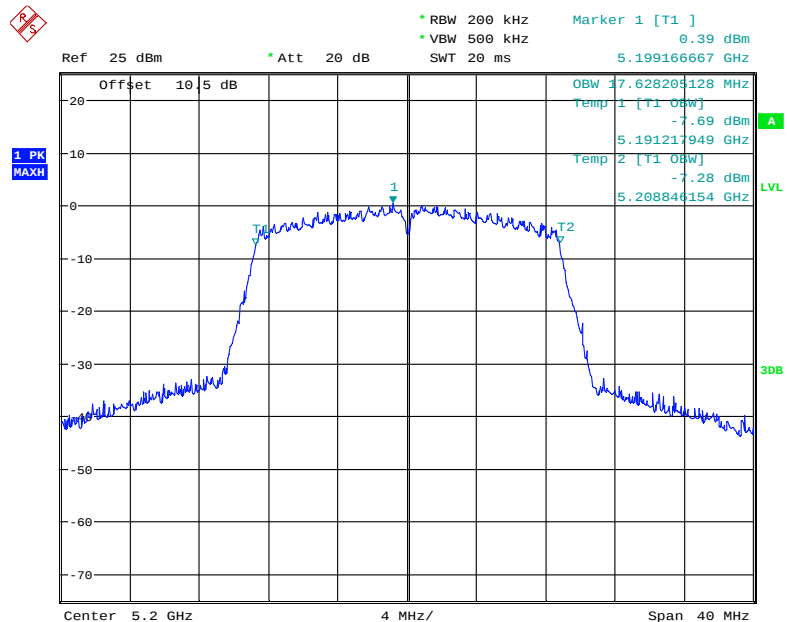
Date: 19.DEC.2018 19:58:58

802.11ac20 mode, 26 dB Emissions, 5200 MHz



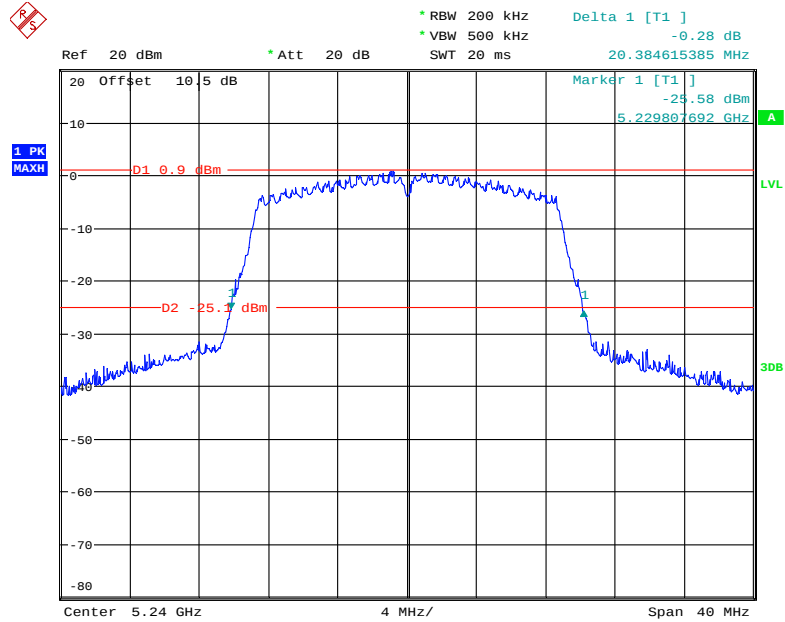
Date: 19.DEC.2018 20:11:23

802.11ac20 mode, 99% Occupied Bandwidth, 5200 MHz



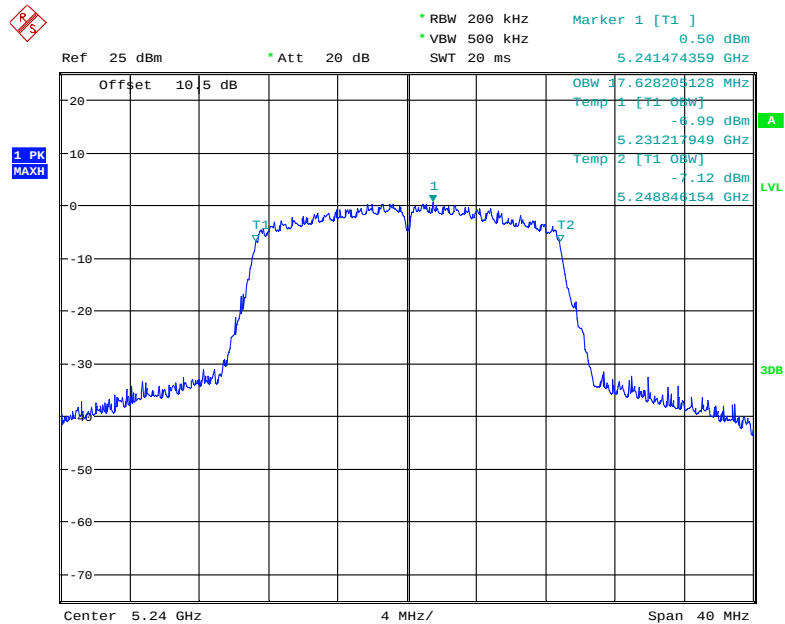
Date: 19.DEC.2018 19:59:19

802.11ac20 mode, 26 dB Emissions, 5240 MHz



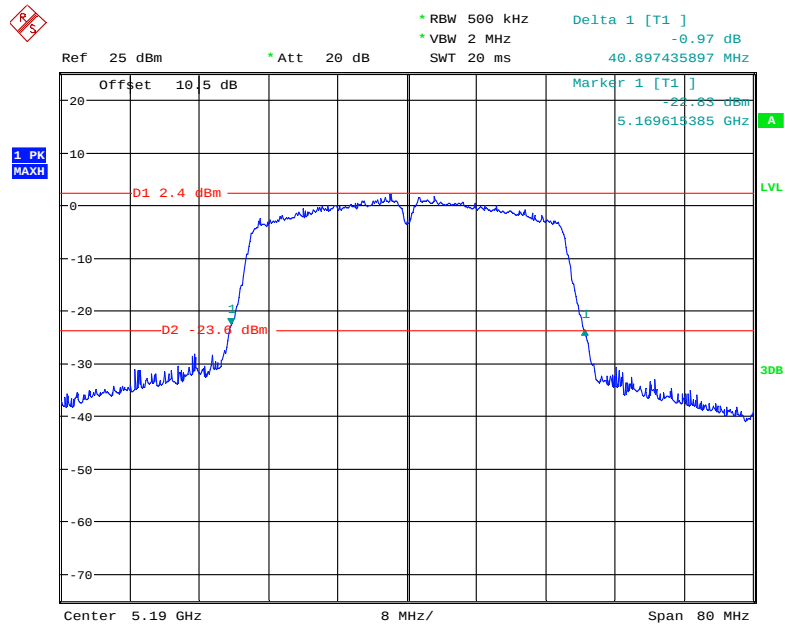
Date: 19.DEC.2018 20:09:53

802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz



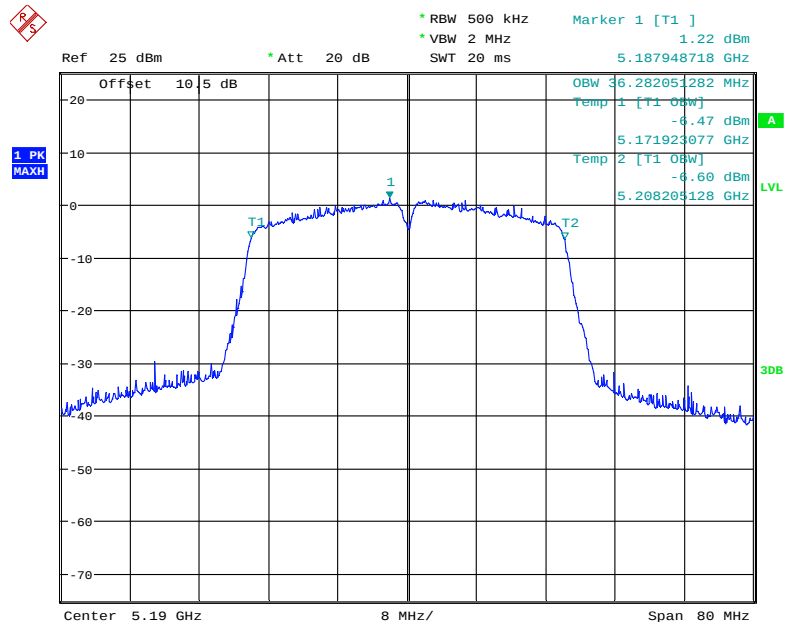
Date: 19.DEC.2018 19:59:47

802.11ac40 mode, 26 dB Emissions, 5190 MHz



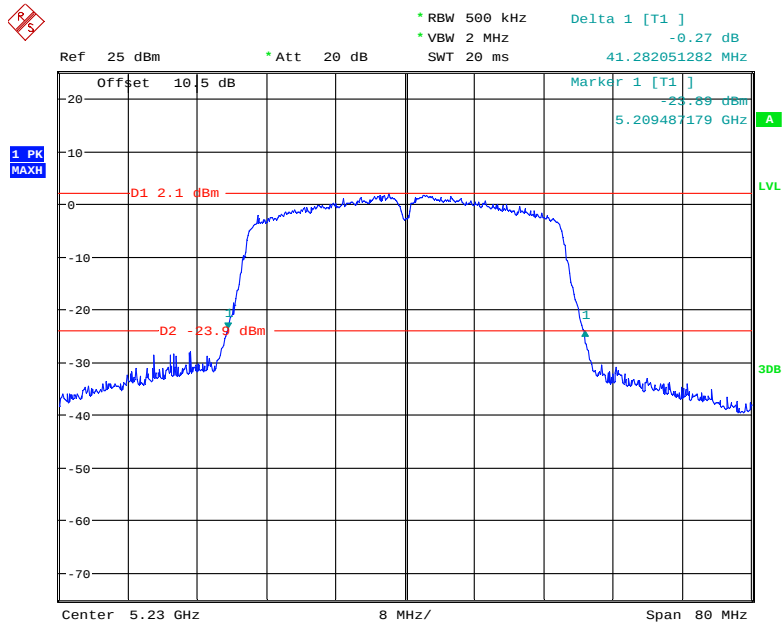
Date: 19.DEC.2018 19:32:02

802.11ac40 mode, Occupied Bandwidth, 5190 MHz



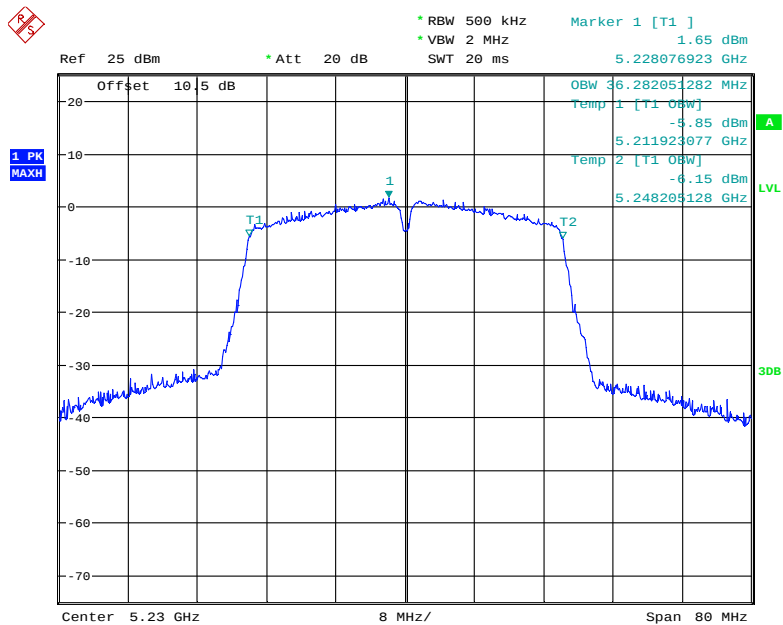
Date: 19.DEC.2018 19:32:44

802.11ac40 mode, 26 dB Emissions, 5230 MHz



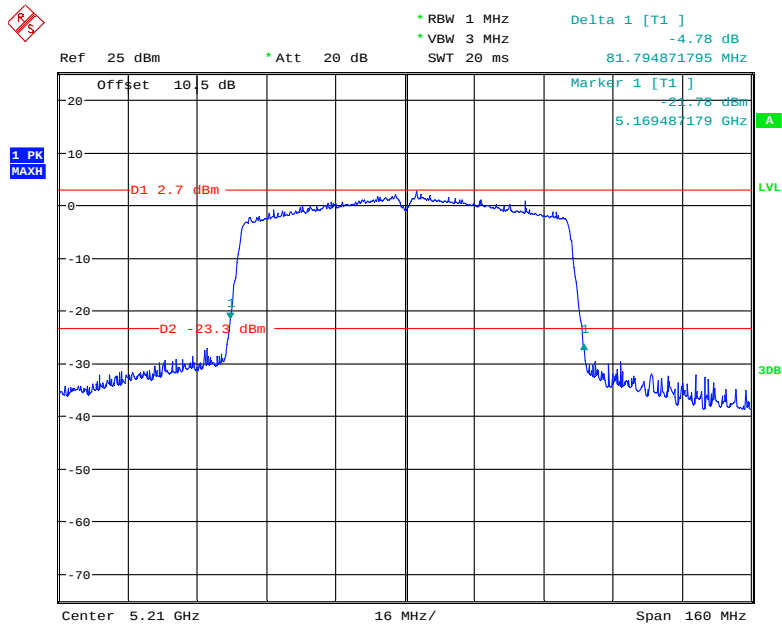
Date: 19.DEC.2018 19:35:07

802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz



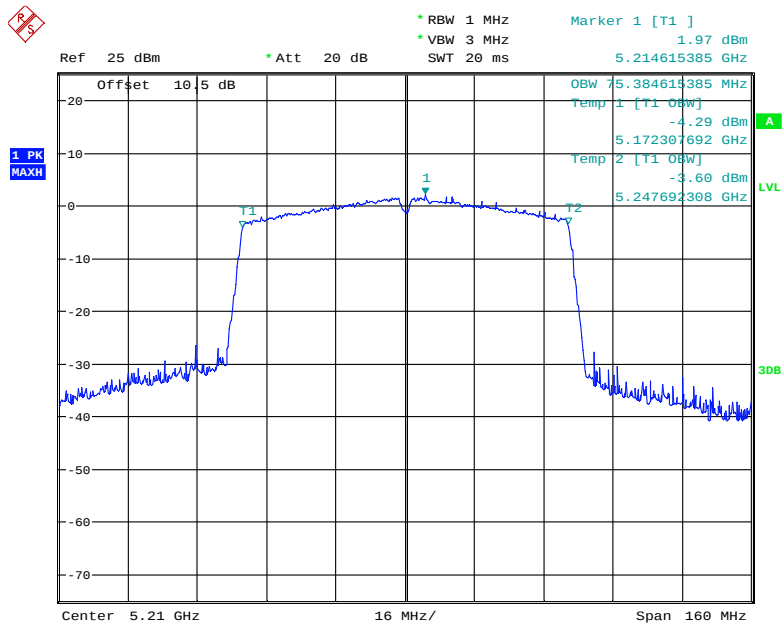
Date: 19.DEC.2018 19:33:28

802.11ac80 mode, 26 dB Emissions, 5210 MHz



Date: 19.DEC.2018 19:28:17

802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz

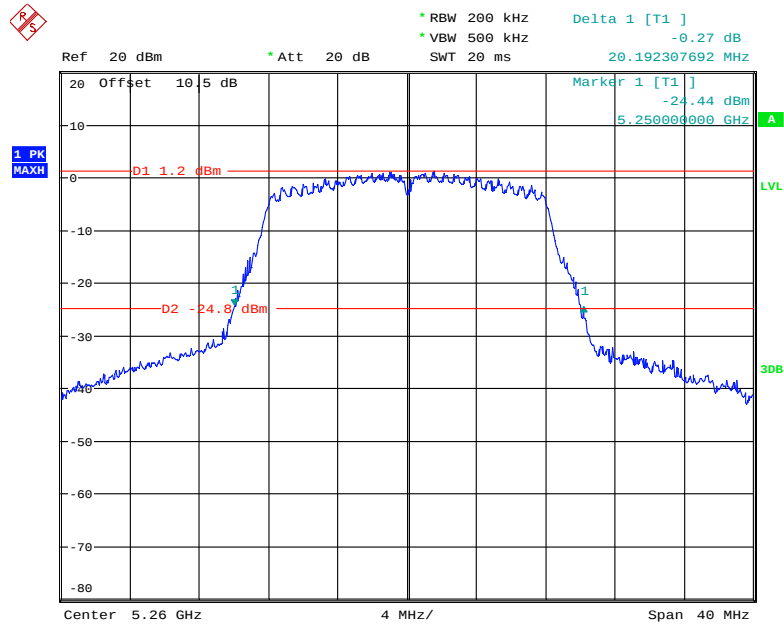


Date: 19.DEC.2018 19:25:55

5250 MHz - 5350 MHz:

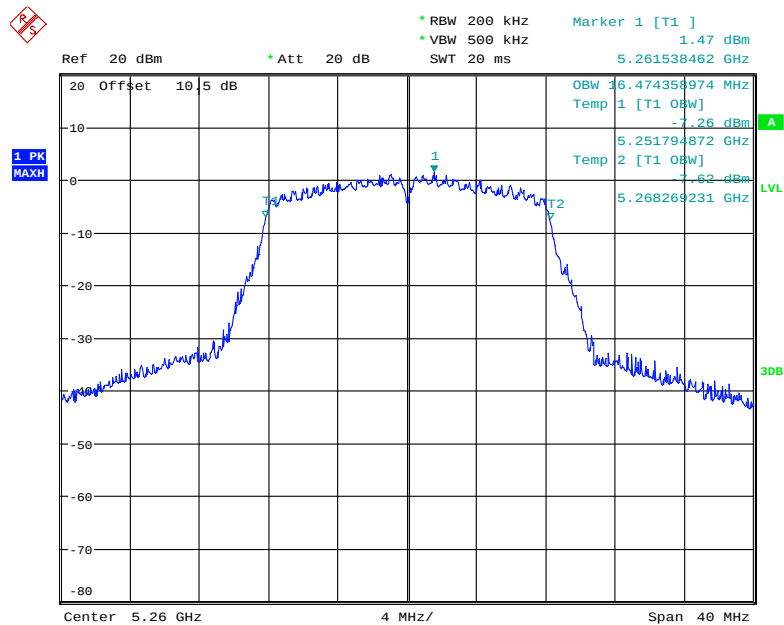
Frequency (MHz)	26dB bandwidth (MHz)	99% Bandwidth (MHz)
802.11a		
5260	20.19	16.47
5280	20.56	16.54
5320	20.26	16.47
802.11n20		
5260	20.26	17.63
5280	20.51	17.63
5320	20.45	17.63
802.11n40		
5270	41.54	36.28
5310	41.28	36.15
802.11ac20		
5260	20.45	17.63
5280	20.45	17.63
5320	20.32	17.63
802.11ac40		
5270	41.15	36.28
5310	41.03	36.28
802.11ac80		
5290	81.79	75.64

802.11a mode, 26 dB Emissions, 5260 MHz



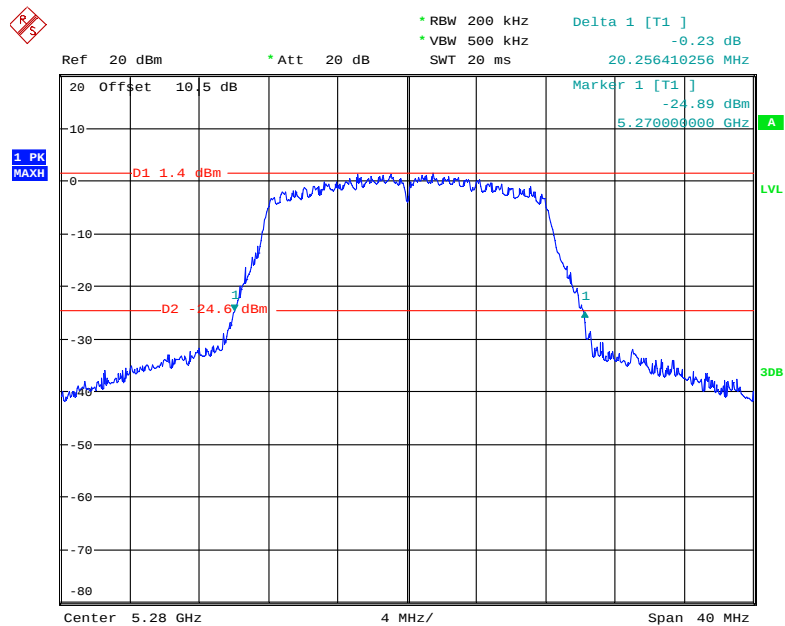
Date: 19.DEC.2018 21:24:13

802.11a mode, Occupied Bandwidth, 5260 MHz



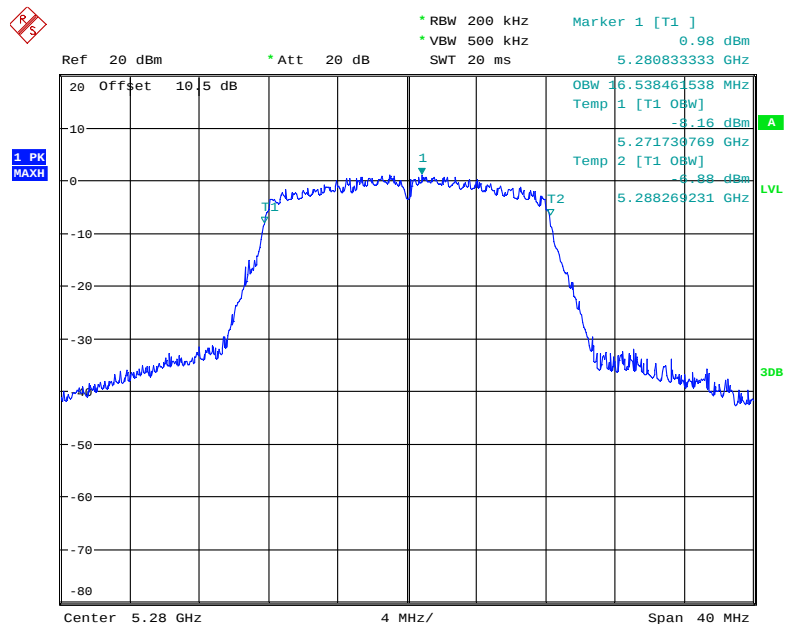
Date: 19.DEC.2018 21:46:49

802.11a mode, 26 dB Emissions, 5280 MHz



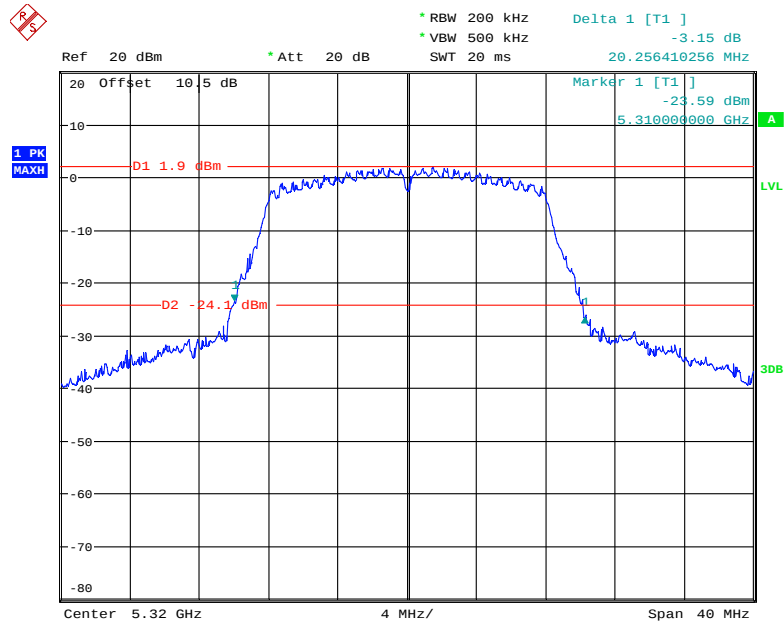
Date: 19.DEC.2018 21:25:29

802.11a mode, Occupied Bandwidth, 5280 MHz



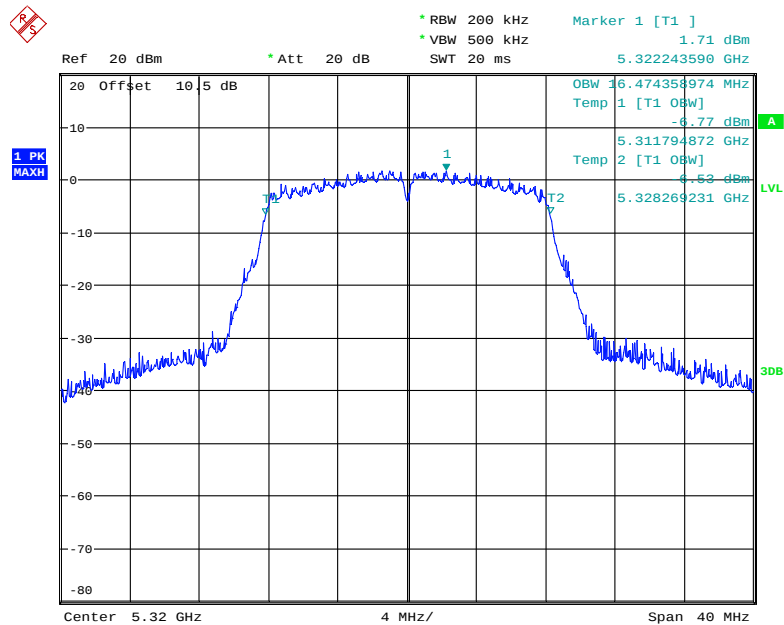
Date: 19.DEC.2018 21:47:26

802.11a mode, 26 dB Emissions, 5320 MHz



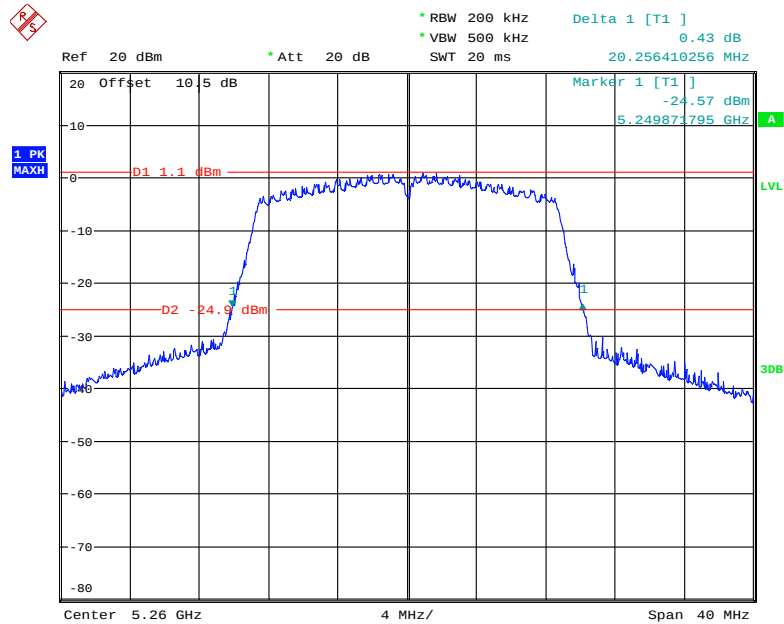
Date: 19.DEC.2018 21:26:52

802.11a mode, 99% Occupied Bandwidth, 5320 MHz



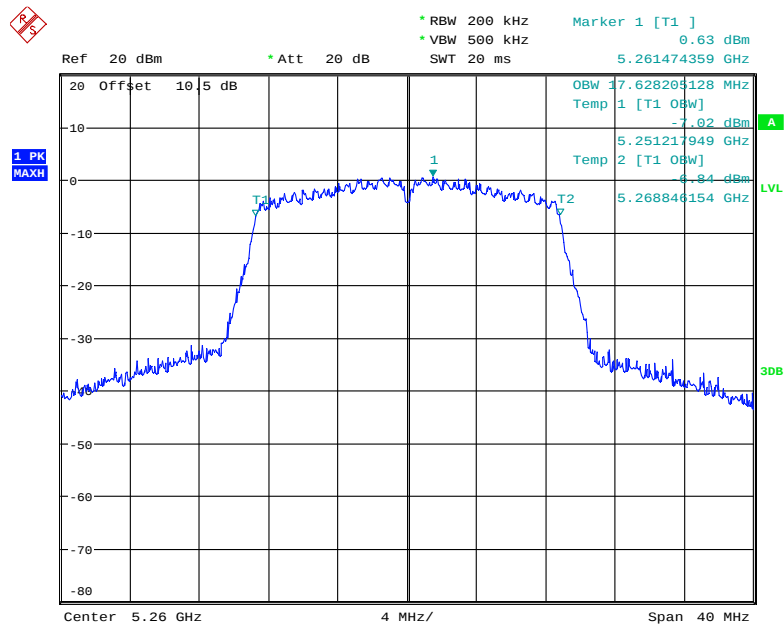
Date: 19.DEC.2018 21:47:54

802.11n20 mode, 26 dB Emissions, 5260 MHz



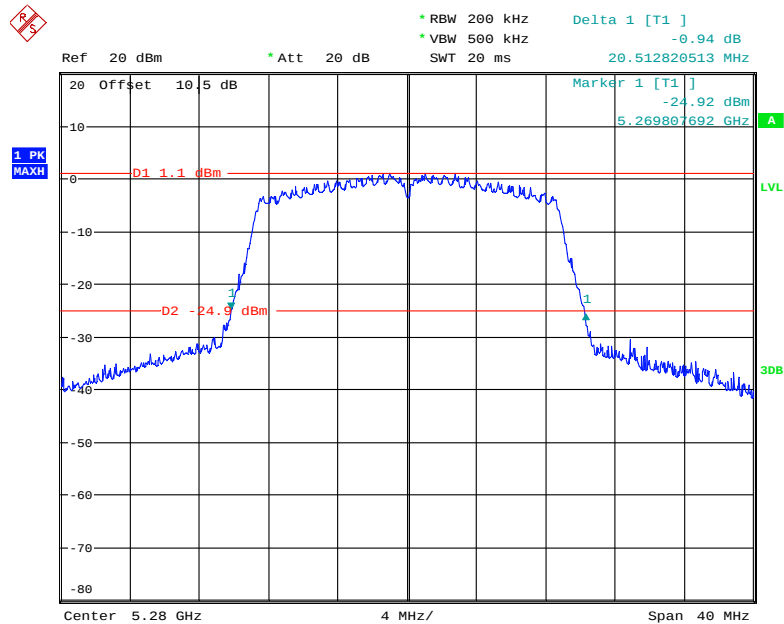
Date: 19.DEC.2018 21:37:00

802.11n20 mode, Occupied Bandwidth, 5260 MHz



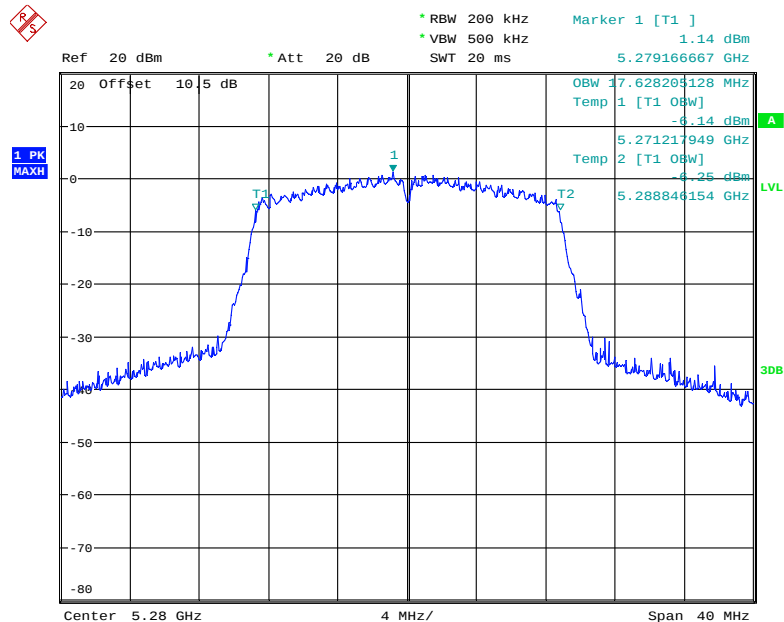
Date: 19.DEC.2018 21:45:04

802.11n20 mode, 26 dB Emissions, 5280 MHz



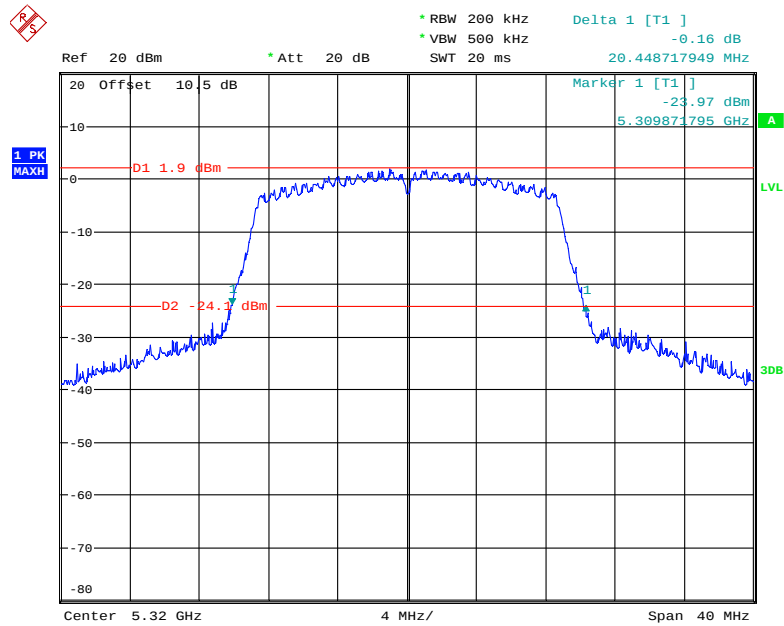
Date: 19.DEC.2018 21:33:36

802.11n20 mode, Occupied Bandwidth, 5280 MHz



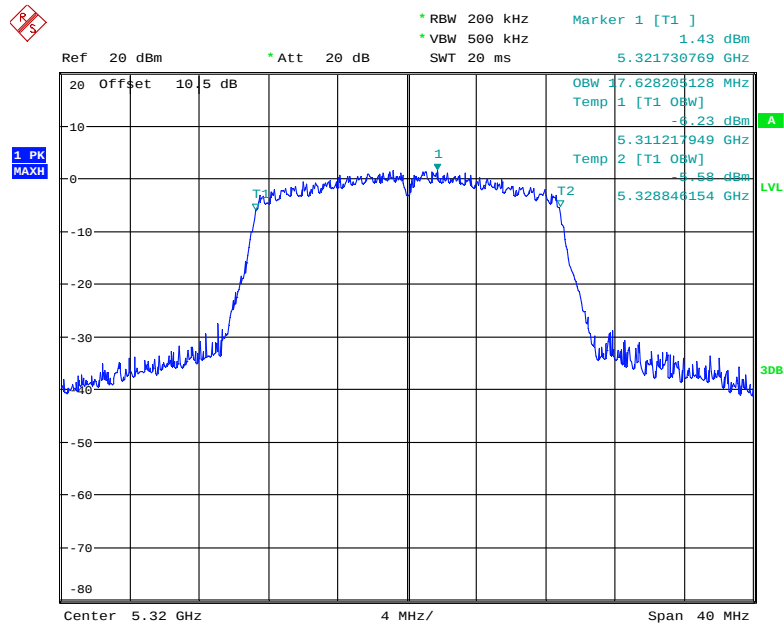
Date: 19.DEC.2018 21:45:32

802.11n20 mode, 26 dB Emissions, 5320 MHz



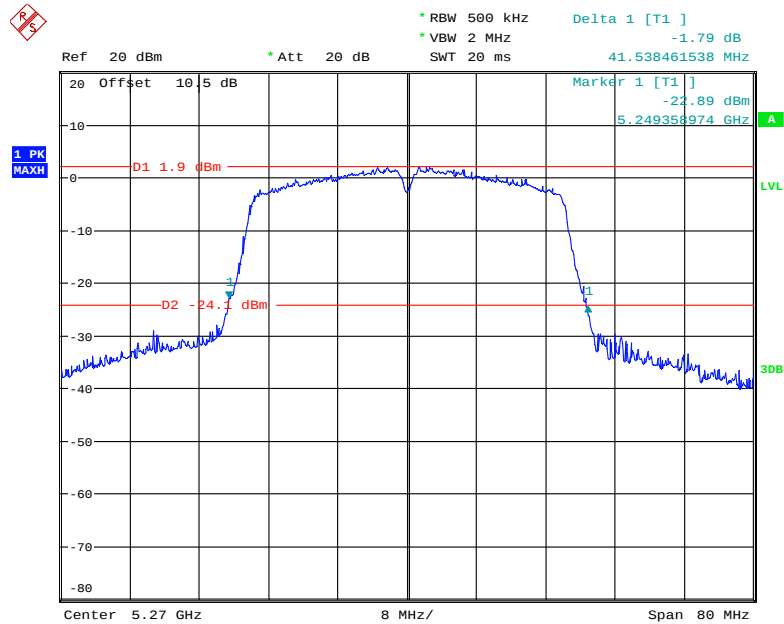
Date: 19.DEC.2018 21:31:52

802.11n20 mode, Occupied Bandwidth, 5320 MHz



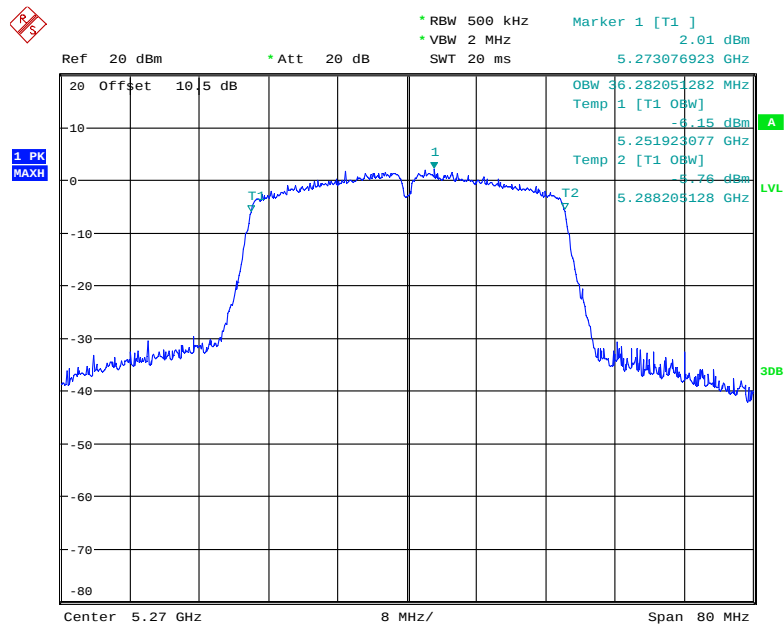
Date: 19.DEC.2018 21:45:58

802.11n40 mode, 26 dB Emissions, 5270 MHz



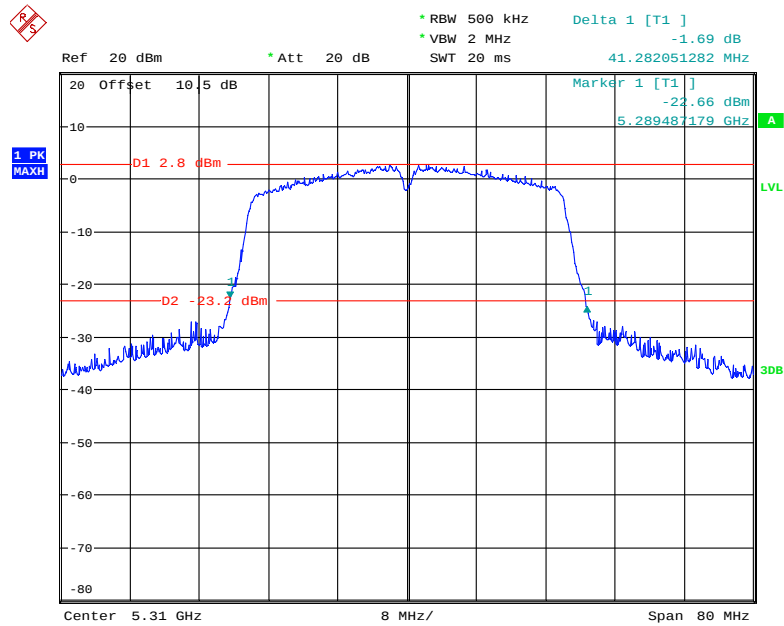
Date: 19.DEC.2018 21:17:19

802.11n40 mode, Occupied Bandwidth, 5270 MHz



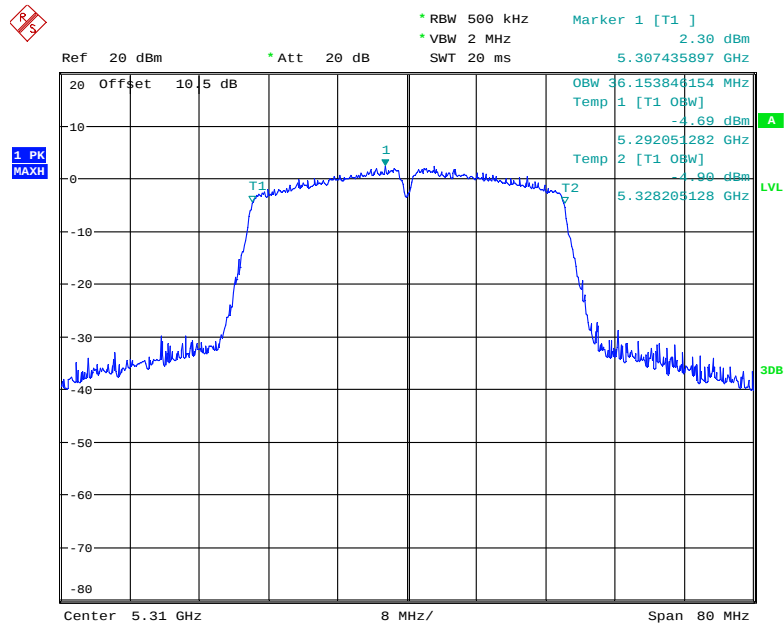
Date: 19.DEC.2018 21:15:47

802.11n40 mode, 26 dB Emissions, 5310 MHz



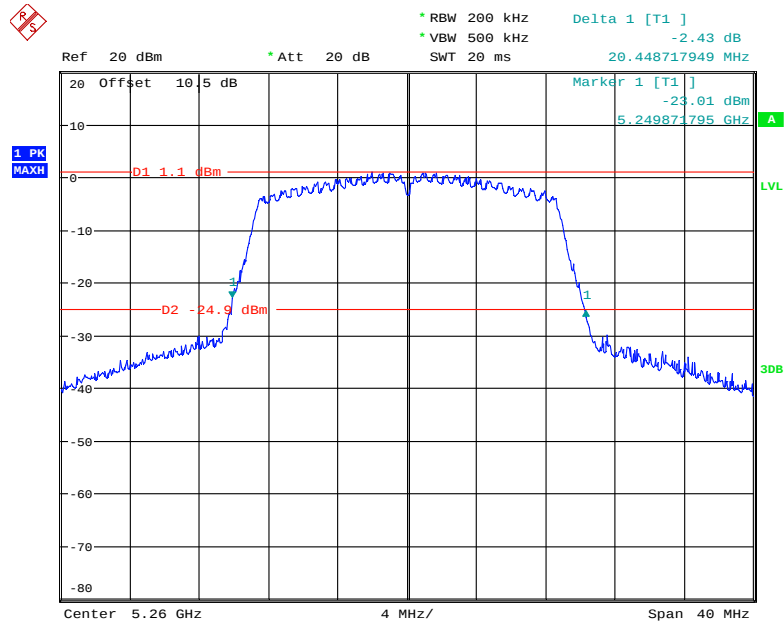
Date: 19.DEC.2018 21:18:24

802.11n40 mode, Occupied Bandwidth, 5310 MHz



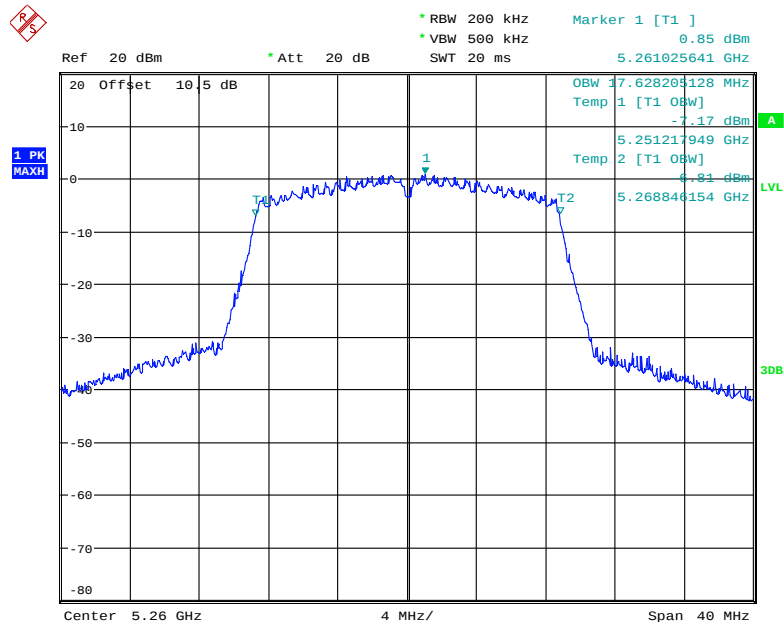
Date: 19.DEC.2018 21:15:09

802.11ac20 mode, 26 dB Emissions, 5260 MHz



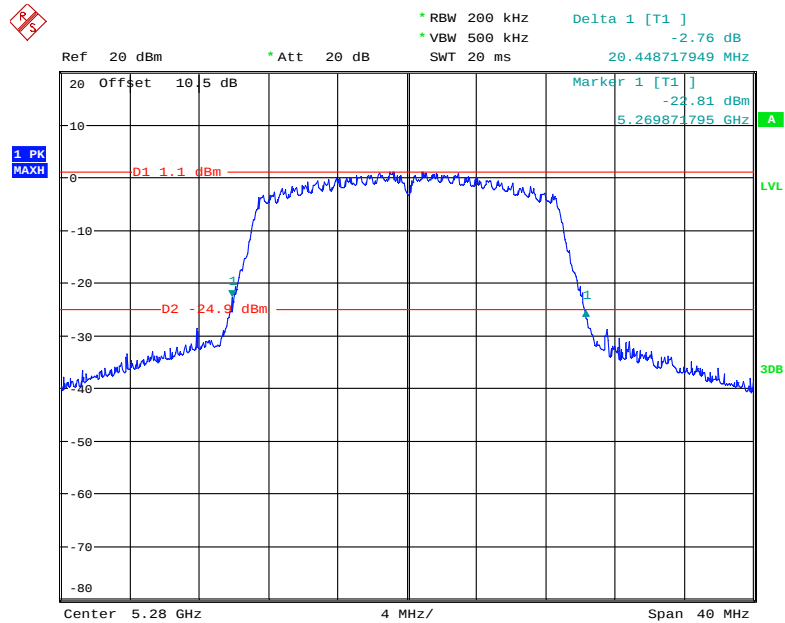
Date: 19.DEC.2018 21:38:59

802.11ac20 mode, 99% Occupied Bandwidth, 5260 MHz



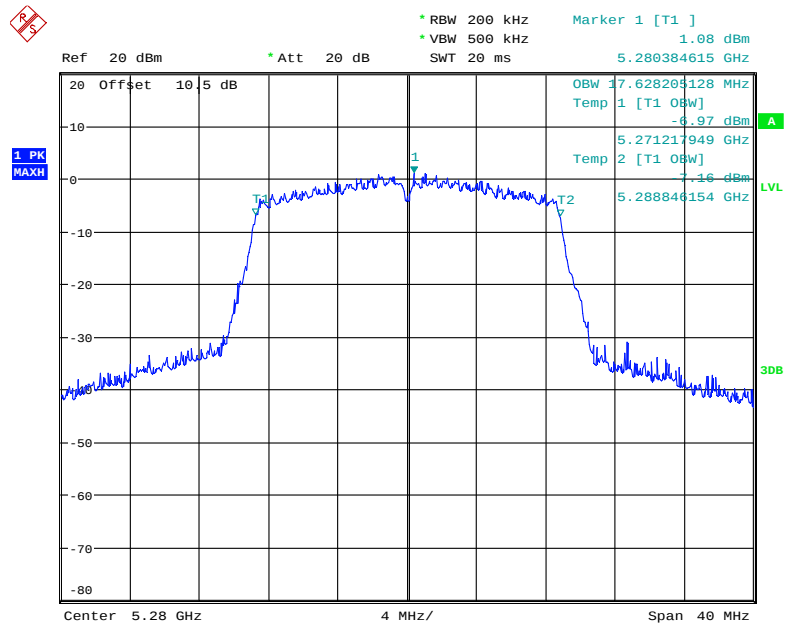
Date: 19.DEC.2018 21:44:03

802.11ac20 mode, 26 dB Emissions, 5280 MHz



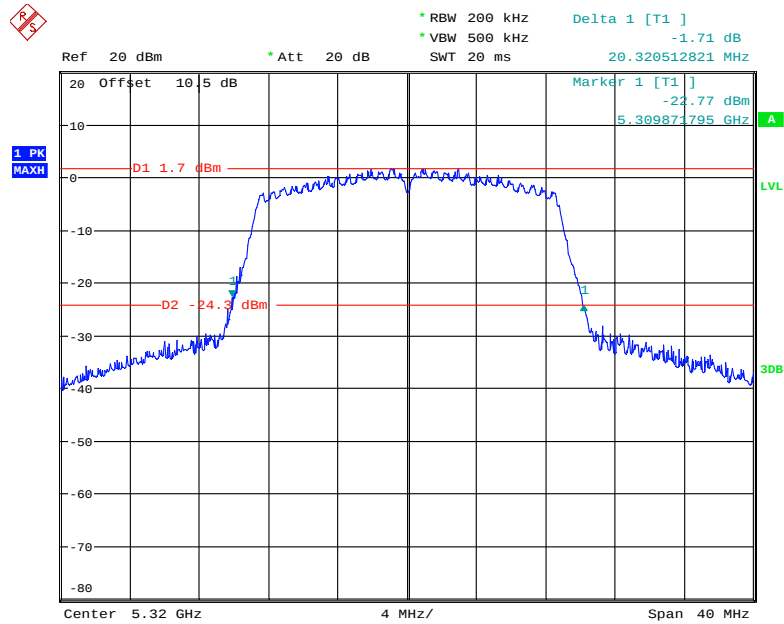
Date: 19.DEC.2018 21:40:47

802.11ac20 mode, 99% Occupied Bandwidth, 5280 MHz



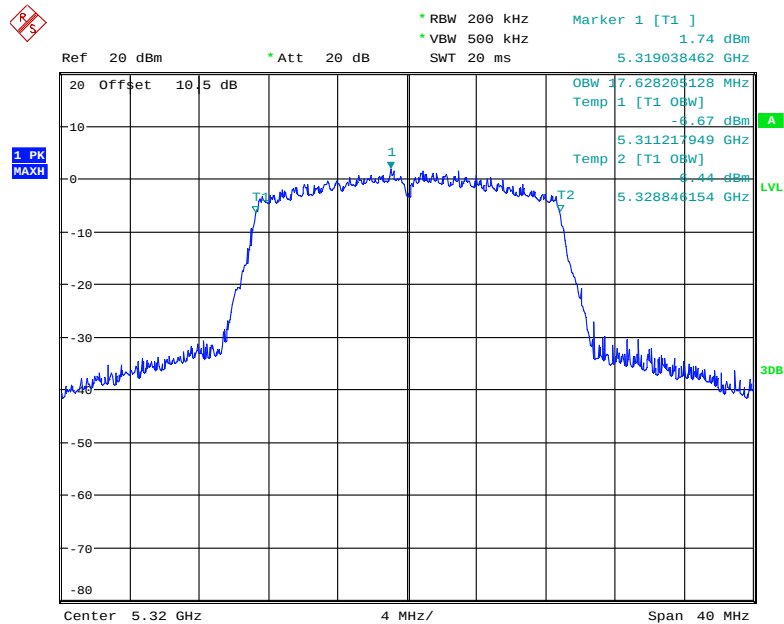
Date: 19.DEC.2018 21:43:26

802.11ac20 mode, 26 dB Emissions, 5320MHz



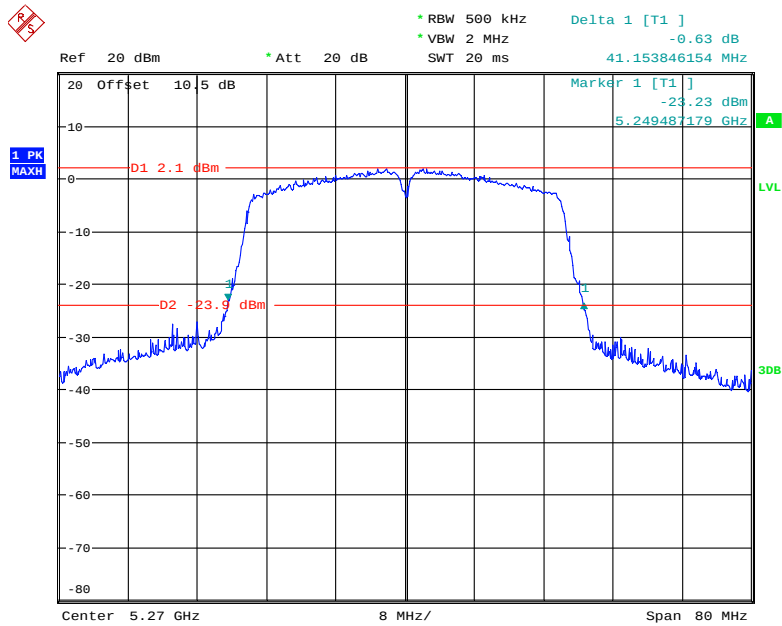
Date: 19.DEC.2018 21:42:20

802.11ac20 mode, 99% Occupied Bandwidth, 5320 MHz



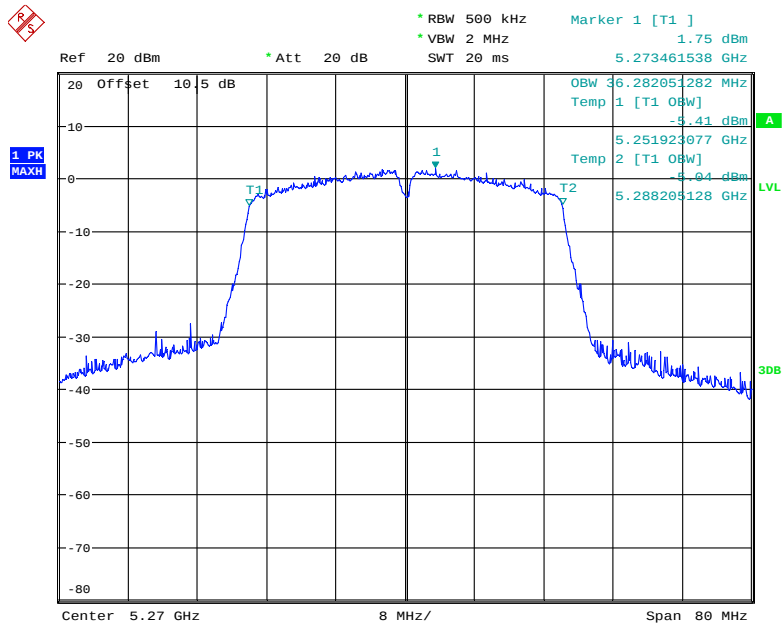
Date: 19.DEC.2018 21:43:04

802.11ac40 mode, 26 dB Emissions, 5270 MHz



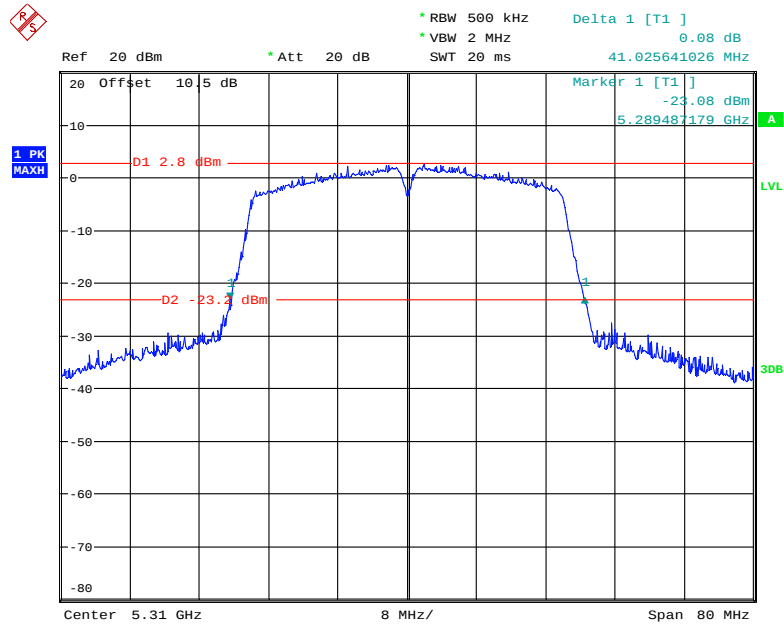
Date: 19.DEC.2018 21:21:03

802.11ac40 mode, Occupied Bandwidth, 5270MHz



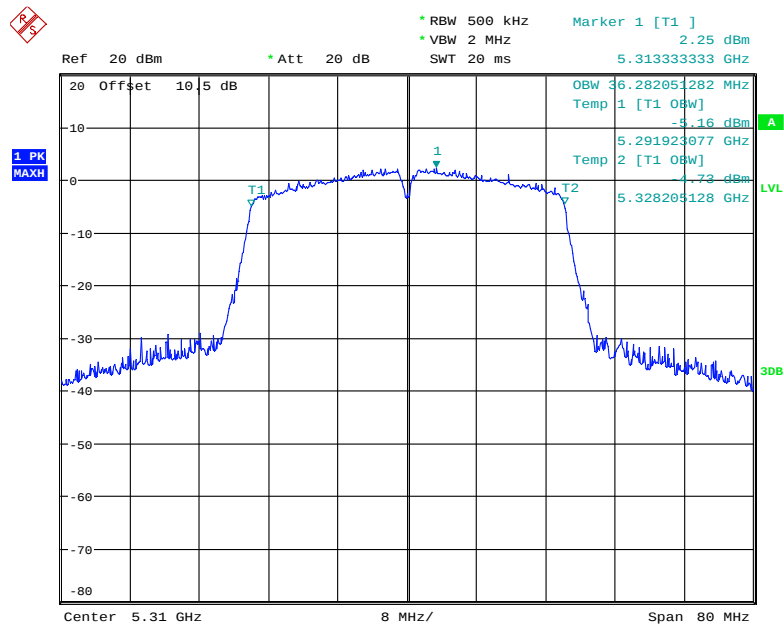
Date: 19.DEC.2018 21:11:26

802.11ac40 mode, 26 dB Emissions, 5310 MHz



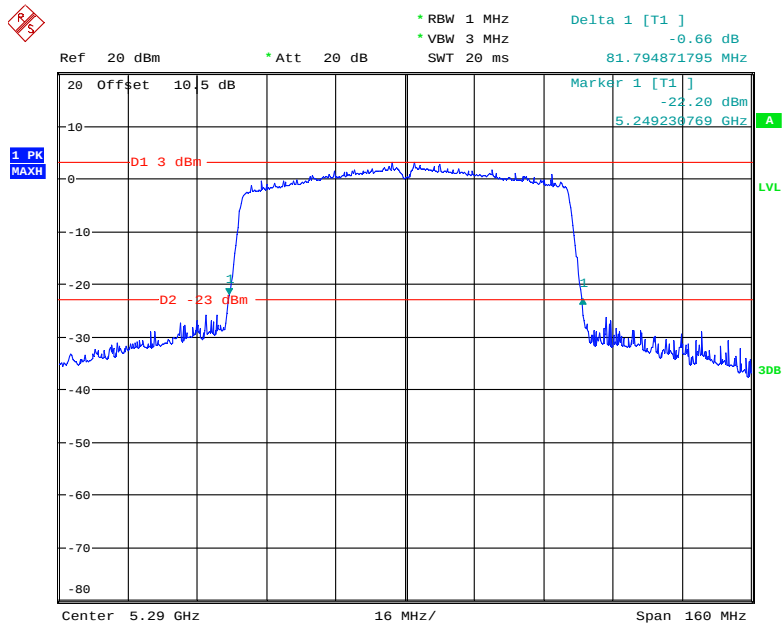
Date: 19.DEC.2018 21:19:54

802.11ac40 mode, 99% Occupied Bandwidth, 5310MHz



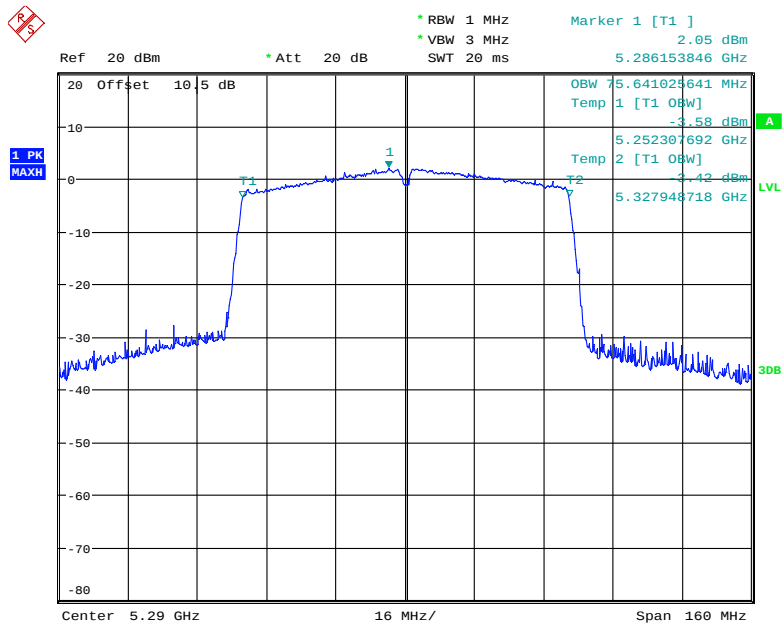
Date: 19.DEC.2018 21:12:31

802.11ac80 mode, 26 dB Emissions, 5290 MHz



Date: 19.DEC.2018 21:08:55

802.11ac80 mode, 99% Occupied Bandwidth, 5290 MHz

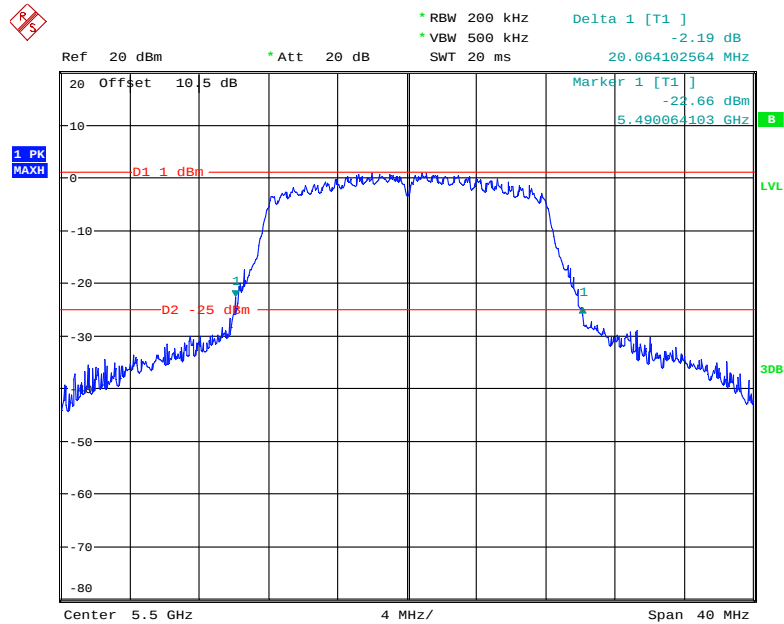


Date: 19.DEC.2018 21:06:59

5470 MHz – 5725 MHz:

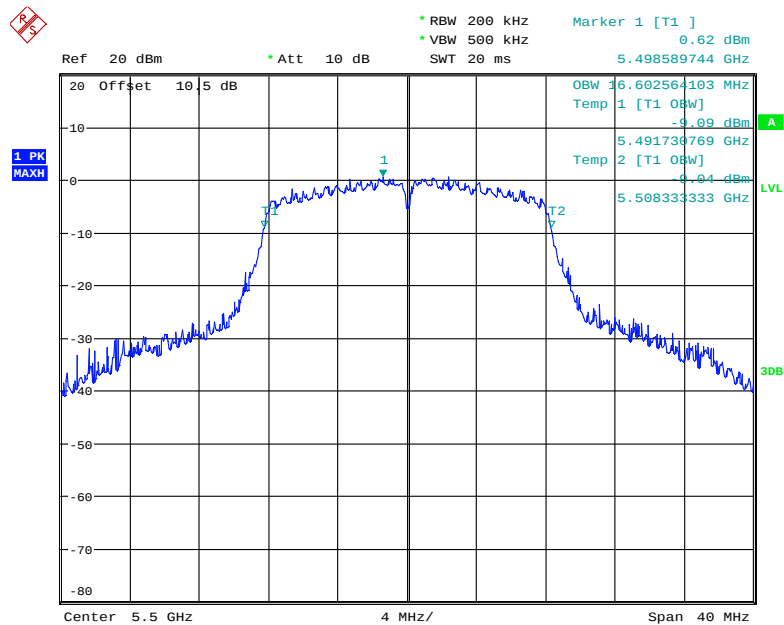
Frequency (MHz)	26dB bandwidth (MHz)	99% Bandwidth (MHz)
802.11a		
5500	20.00	16.60
5600	20.26	16.60
5700	20.19	16.54
802.11n20		
5500	20.26	17.63
5600	20.45	17.63
5700	20.45	17.63
802.11n40		
5510	41.03	36.28
5590	41.28	36.15
5670	41.53	36.28
802.11ac20		
5500	22.37	17.77
5600	20.38	17.63
5700	20.44	17.63
802.11ac40		
5510	41.28	36.28
5590	41.03	36.58
5670	41.03	36.15
802.11ac80		
5530	90.77	75.38
5610	81.79	75.64

802.11a mode, 26 dB Emissions, 5500 MHz



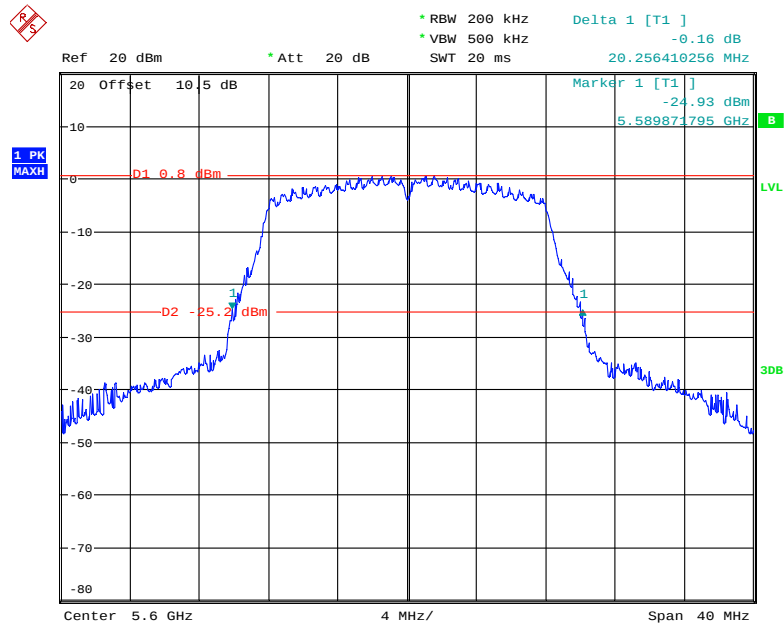
Date: 19.DEC.2018 23:54:10

802.11a mode, Occupied Bandwidth, 5500 MHz



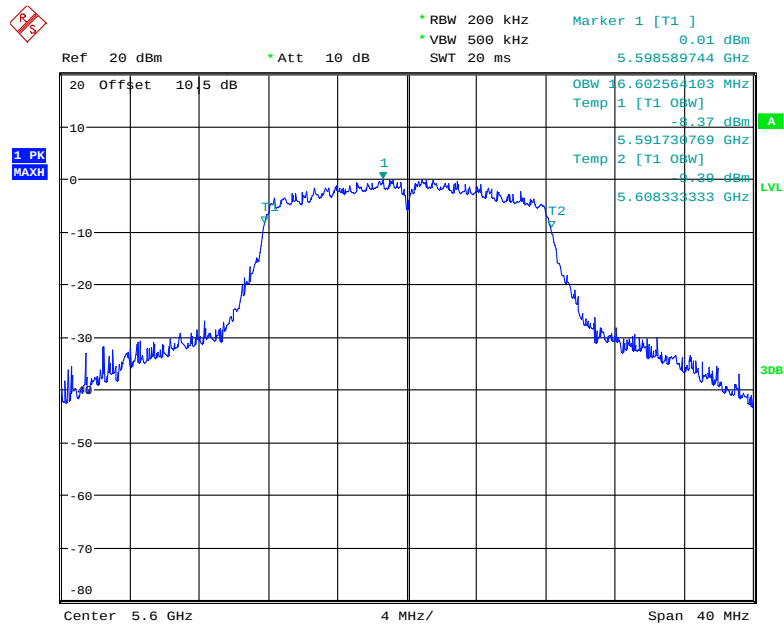
Date: 20.DEC.2018 21:31:20

802.11a mode, 26 dB Emissions, 5600 MHz



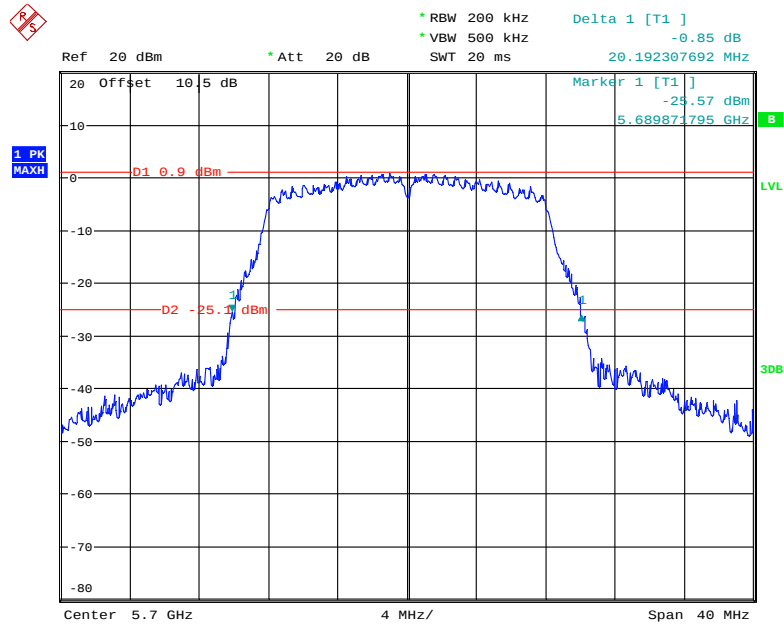
Date: 19.DEC.2018 23:52:10

802.11a mode, 99% Occupied Bandwidth, 5600 MHz



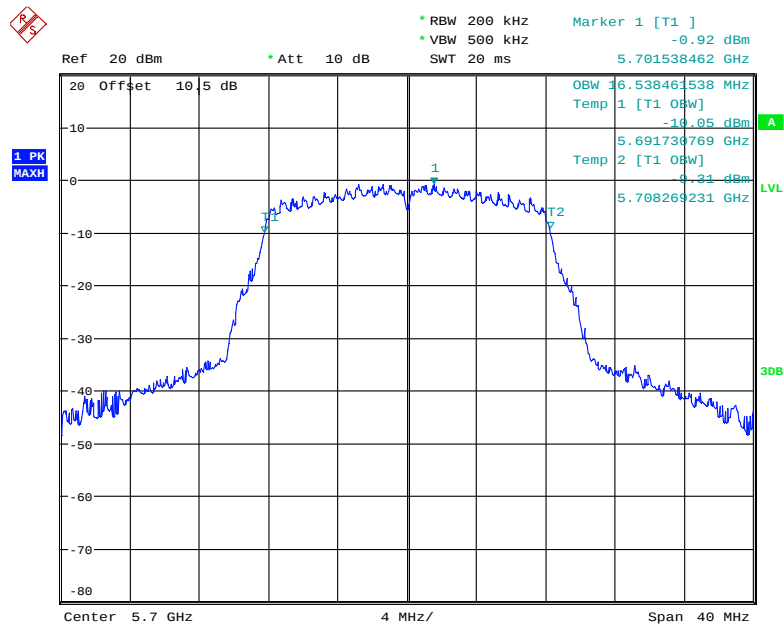
Date: 20.DEC.2018 21:33:13

802.11n20 mode, 26 dB Emissions, 5700 MHz



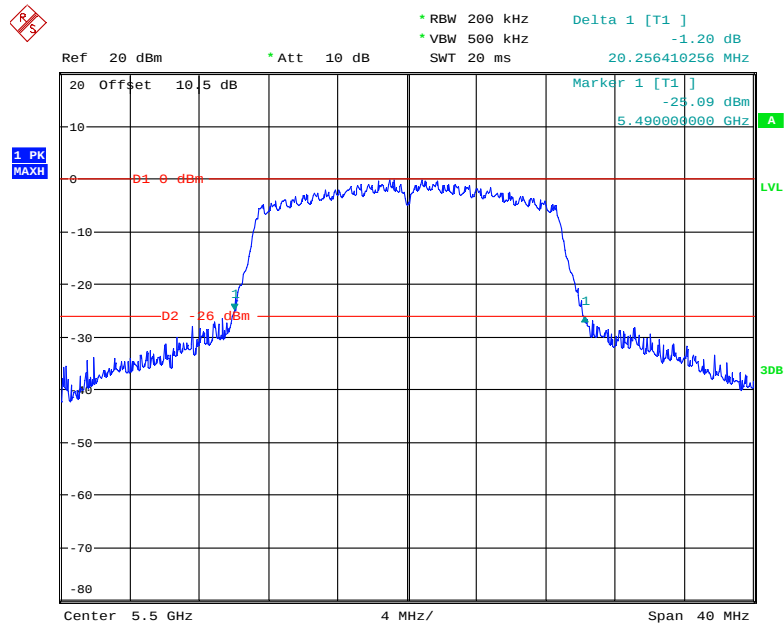
Date: 19.DEC.2018 23:51:05

802.11n20 mode, Occupied Bandwidth, 5700 MHz



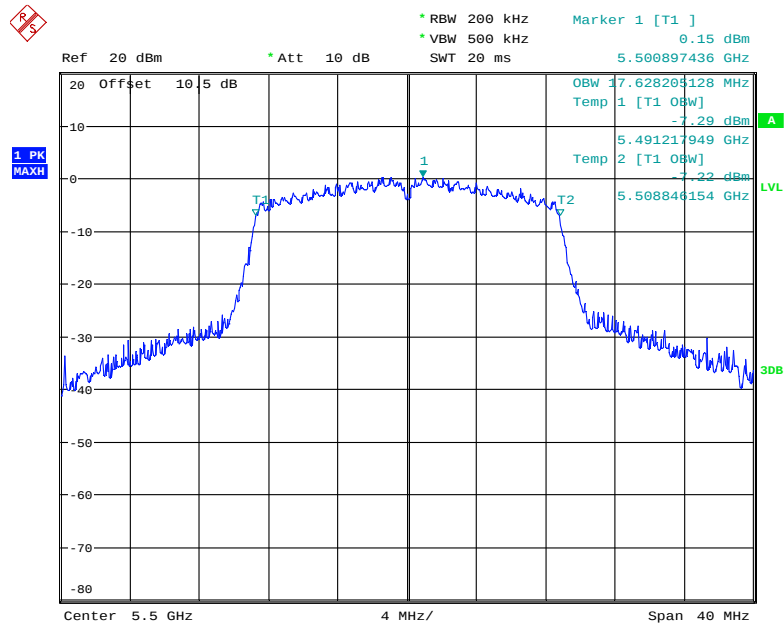
Date: 20.DEC.2018 21:34:41

802.11n20 mode, 26 dB Emissions, 5500 MHz



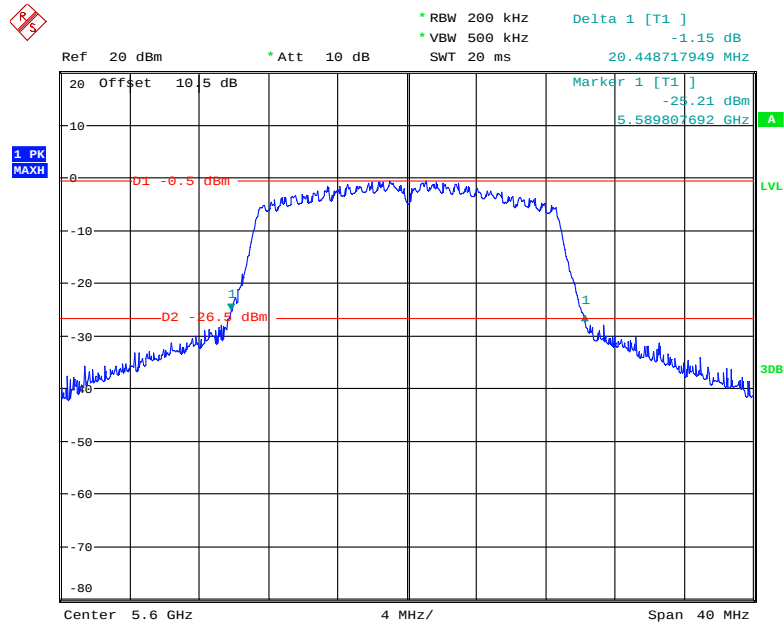
Date: 20.DEC.2018 21:40:25

802.11n20 mode, Occupied Bandwidth, 5500 MHz



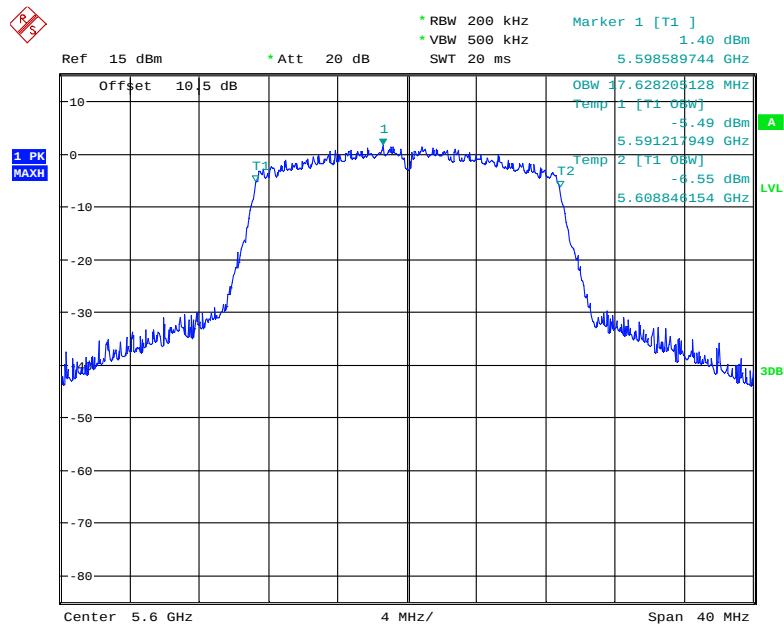
Date: 20.DEC.2018 21:23:23

802.11n20 mode, 26 dB Emissions, 5600 MHz



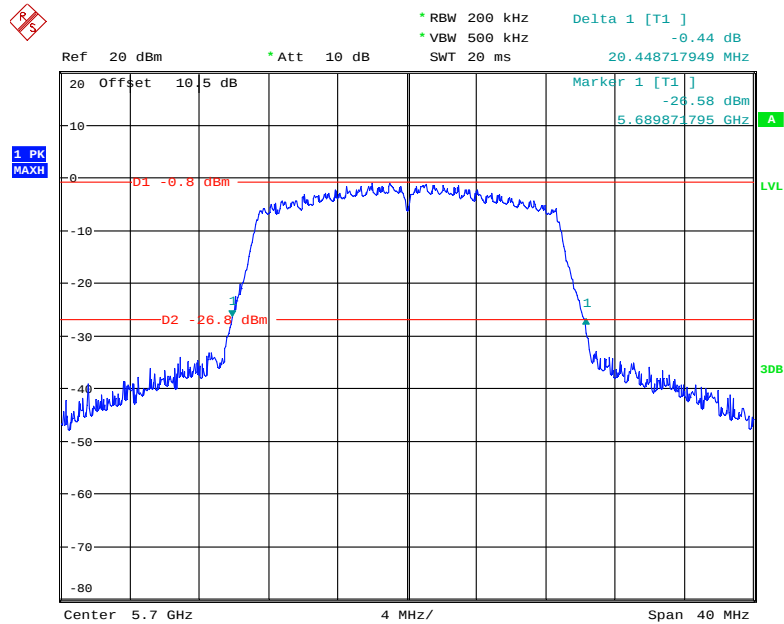
Date: 20.DEC.2018 21:42:12

802.11n20 mode, Occupied Bandwidth, 5600 MHz



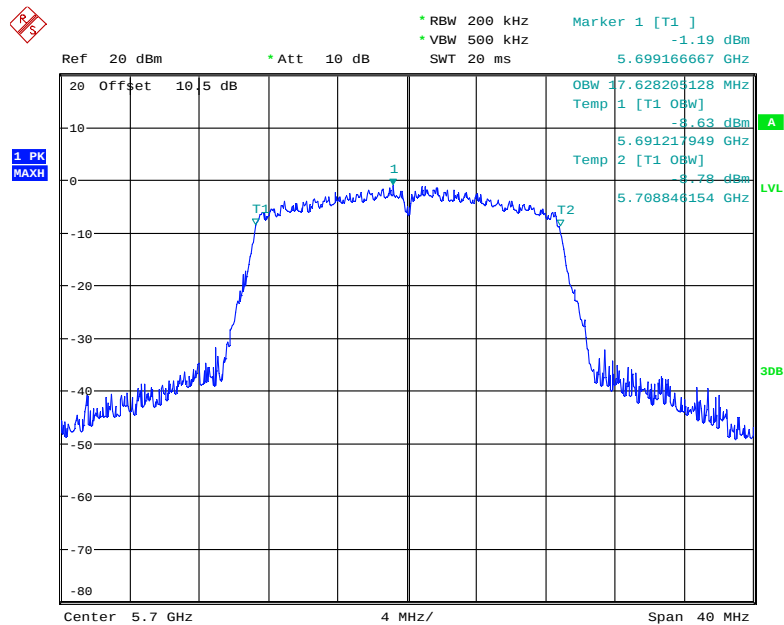
Date: 23.DEC.2018 19:00:51

802.11n20 mode, 26 dB Emissions, 5700 MHz



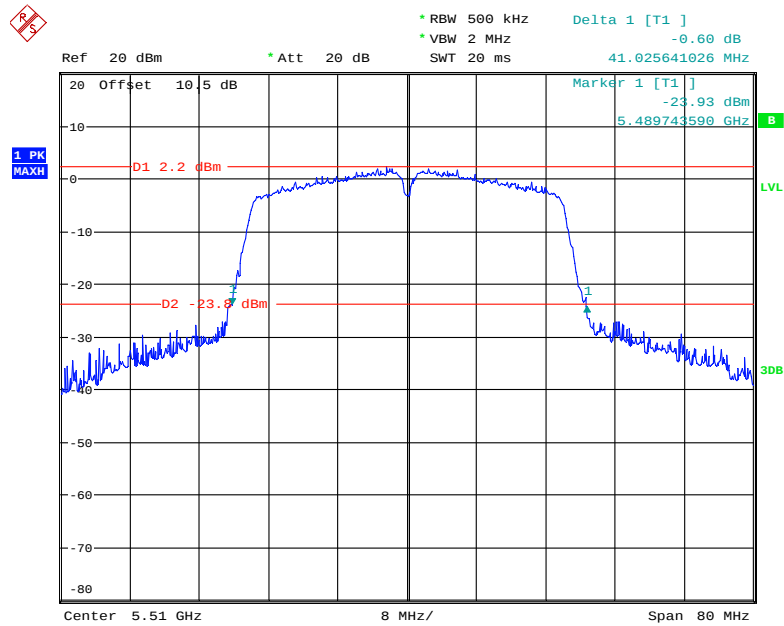
Date: 20.DEC.2018 21:43:53

802.11n20 mode, Occupied Bandwidth, 5700 MHz



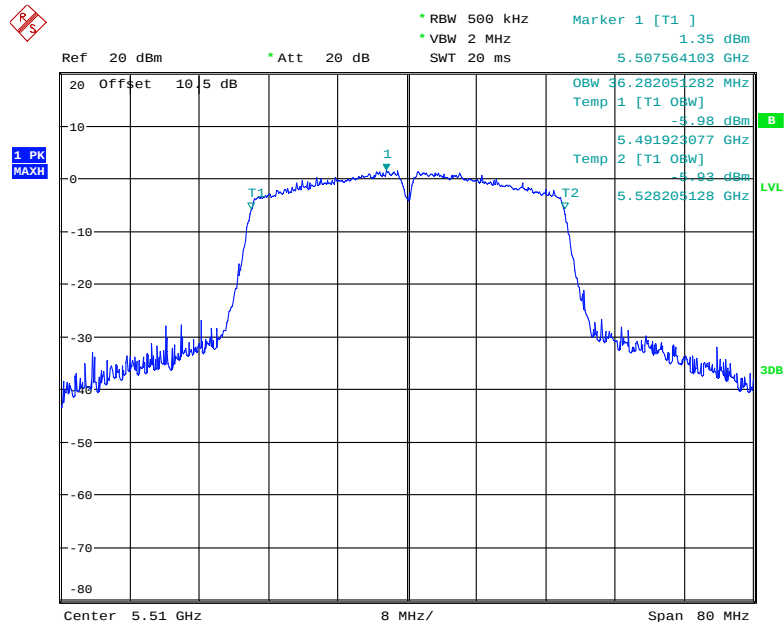
Date: 20.DEC.2018 21:26:32

802.11n40 mode, 26 dB Emissions, 5510 MHz



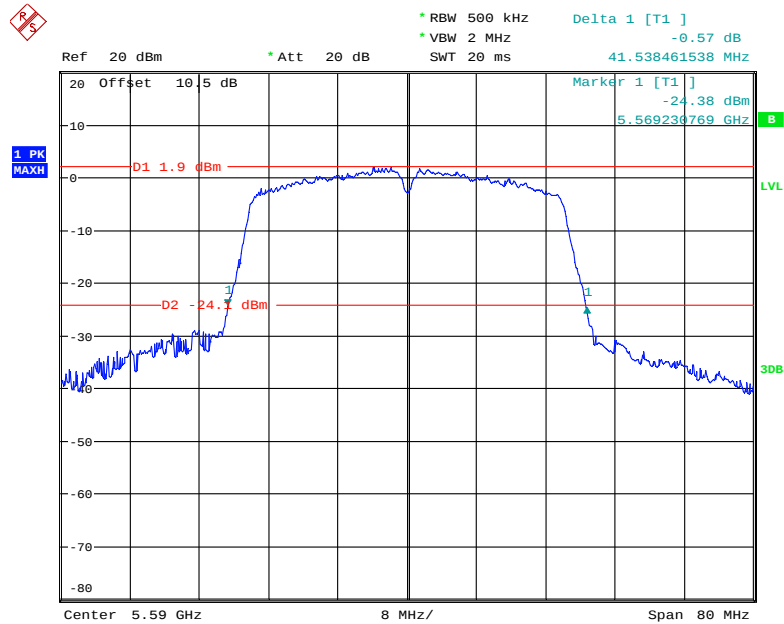
Date: 19.DEC.2018 23:41:51

802.11n40 mode, Occupied Bandwidth, 5510 MHz



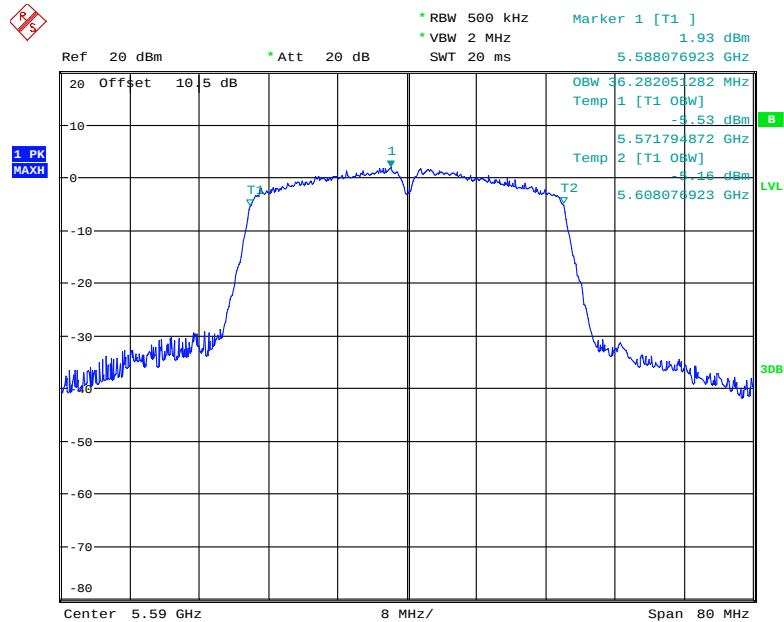
Date: 19.DEC.2018 23:17:51

802.11n40 mode, 26 dB Emissions, 5590 MHz



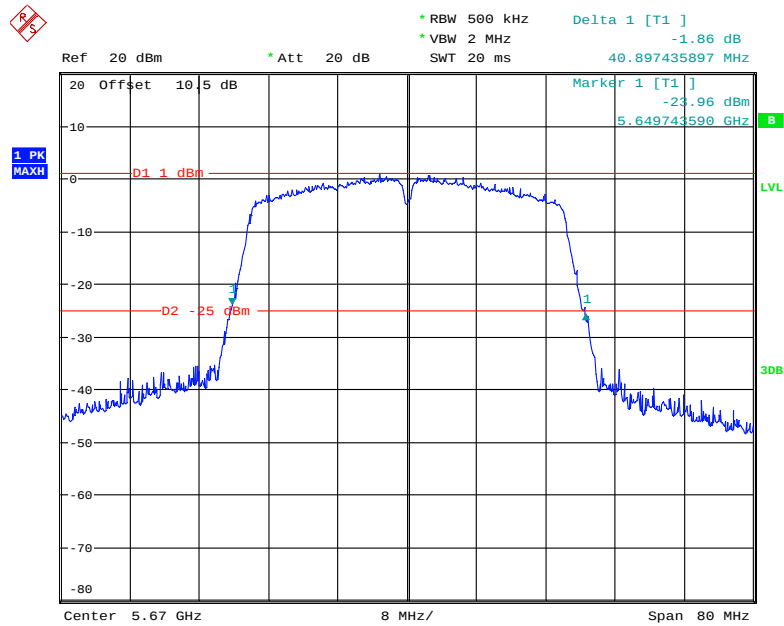
Date: 19.DEC.2018 23:39:43

802.11n40 mode, Occupied Bandwidth, 5590 MHz



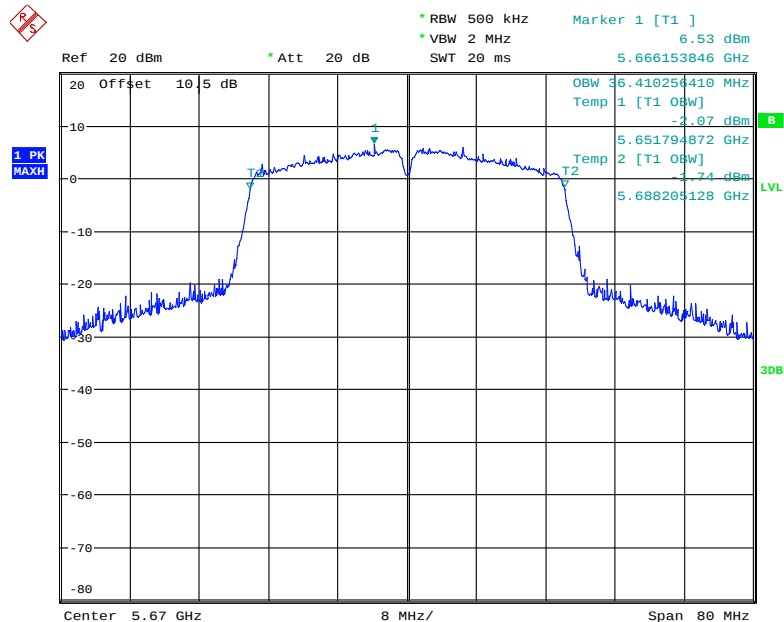
Date: 19.DEC.2018 23:20:29

802.11n40 mode, 26 dB Emissions, 5670 MHz



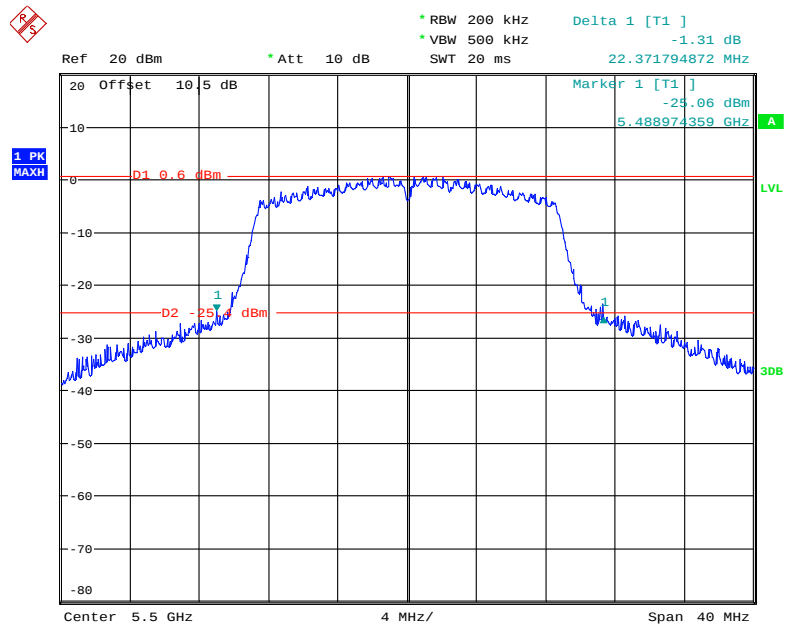
Date: 19.DEC.2018 23:31:13

802.11n40 mode, Occupied Bandwidth, 5670 MHz



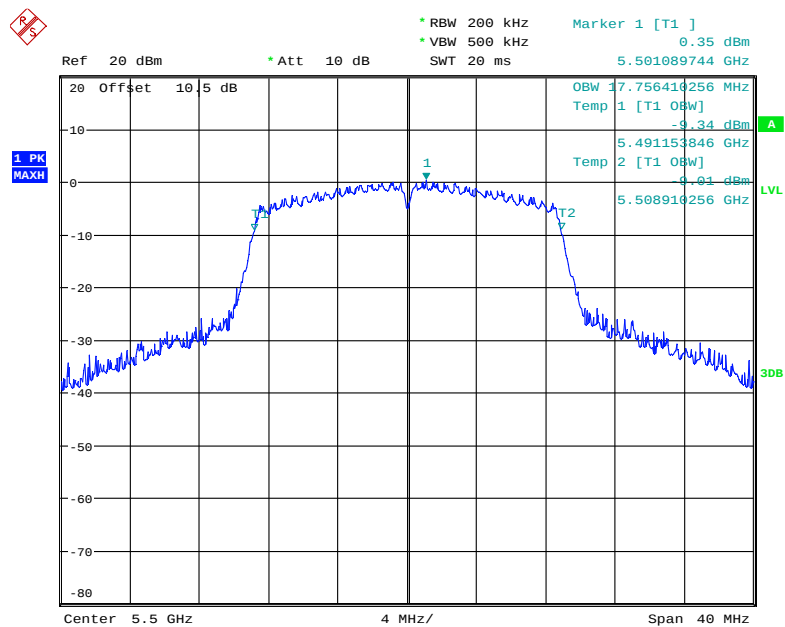
Date: 19.DEC.2018 23:20:55

802.11ac20 mode, 26 dB Emissions, 5500 MHz



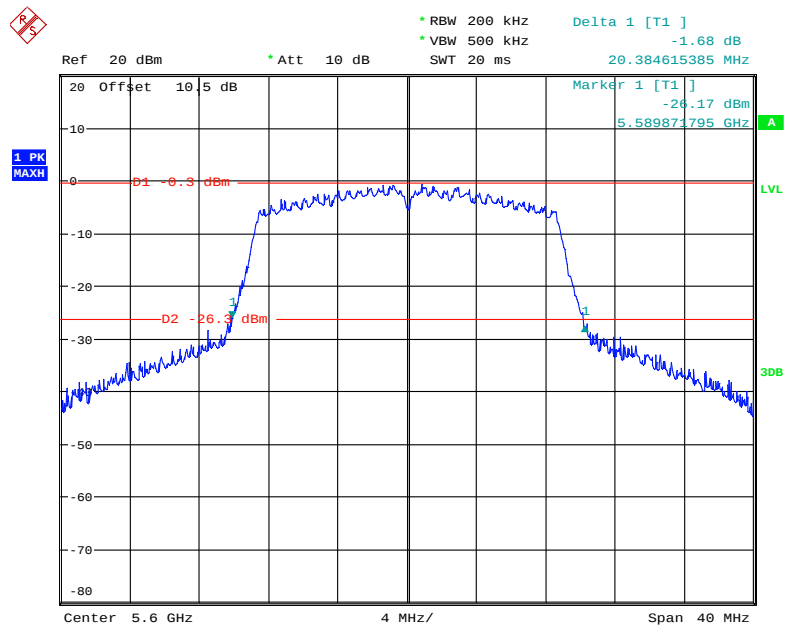
Date: 20.DEC.2018 21:54:32

802.11ac20 mode, 99% Occupied Bandwidth, 5500 MHz



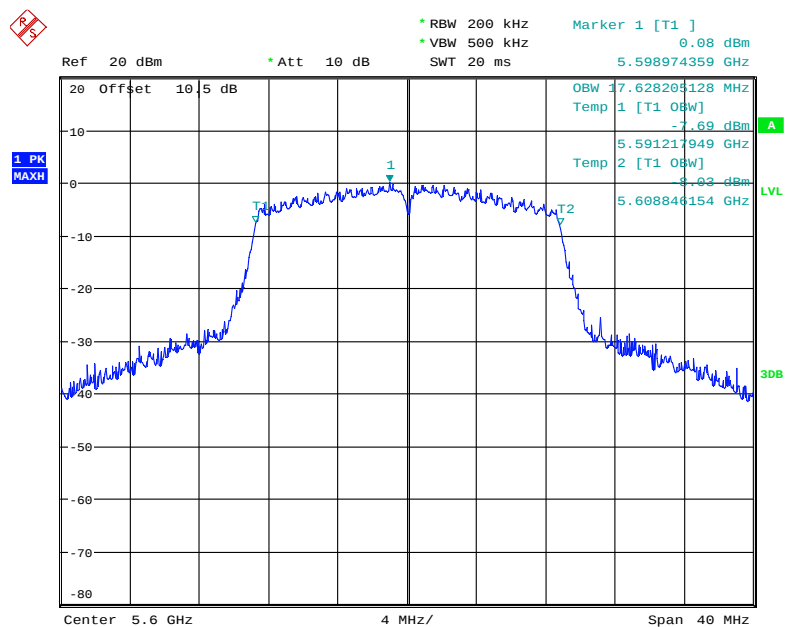
Date: 20.DEC.2018 21:30:28

802.11ac20 mode, 26 dB Emissions, 5600MHz



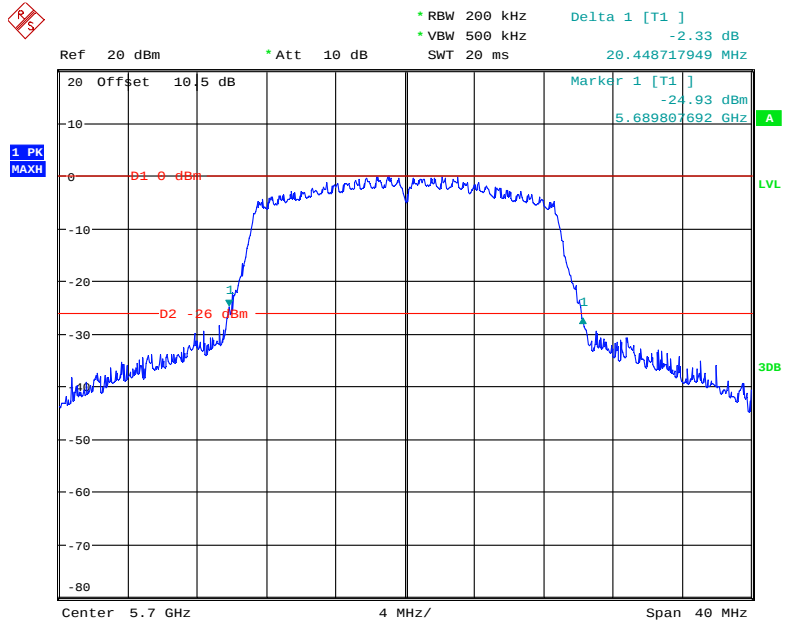
Date: 20.DEC.2018 21:49:46

802.11ac20 mode, 99% Occupied Bandwidth, 5600 MHz



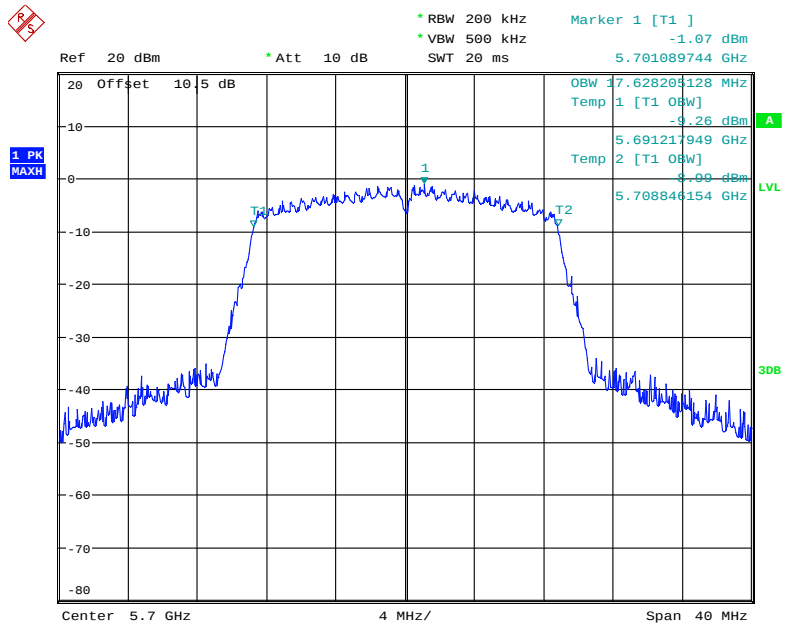
Date: 20.DEC.2018 21:28:12

802.11ac20 mode, 26 dB Emissions, 5700 MHz



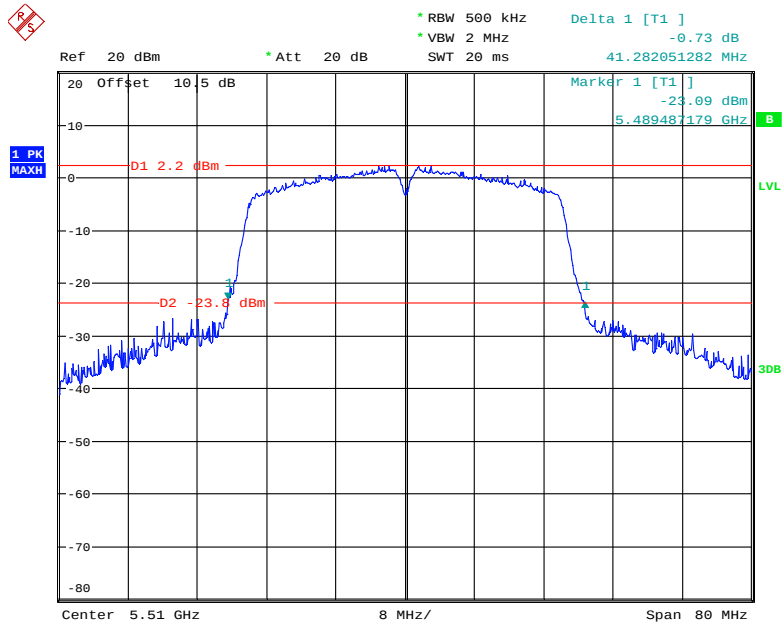
Date: 20.DEC.2018 21:51:16

802.11ac20 mode, Occupied Bandwidth, 5700MHz



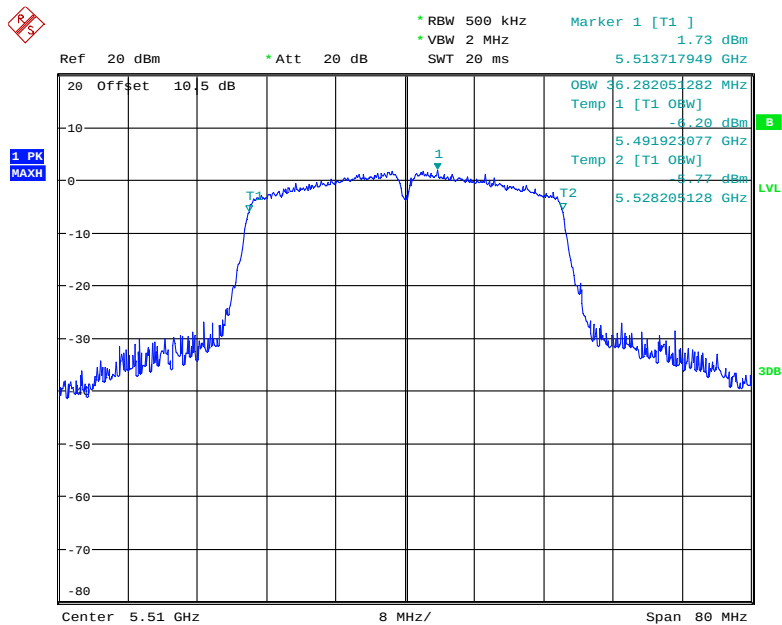
Date: 20.DEC.2018 21:27:44

802.11ac40 mode, 26 dB Emissions, 5510 MHz



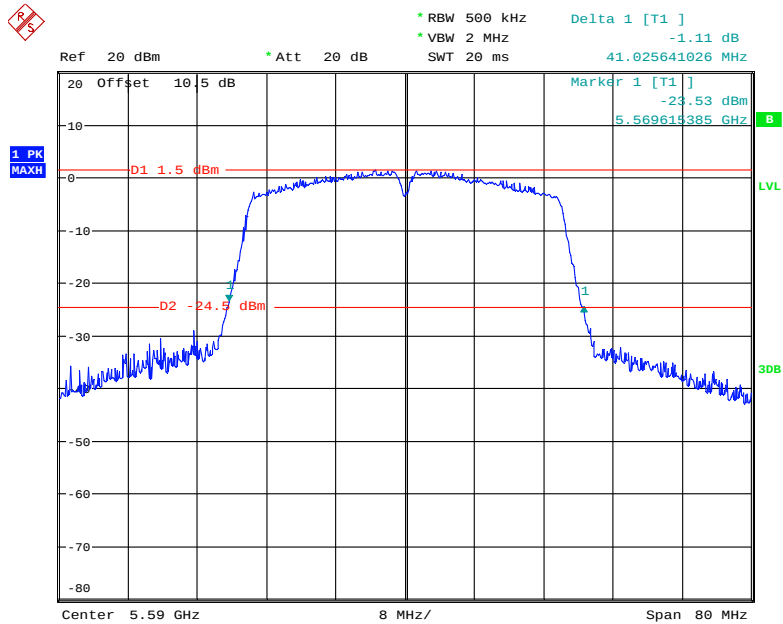
Date: 19.DEC.2018 23:26:46

802.11ac40 mode, 99% Occupied Bandwidth, 5510MHz



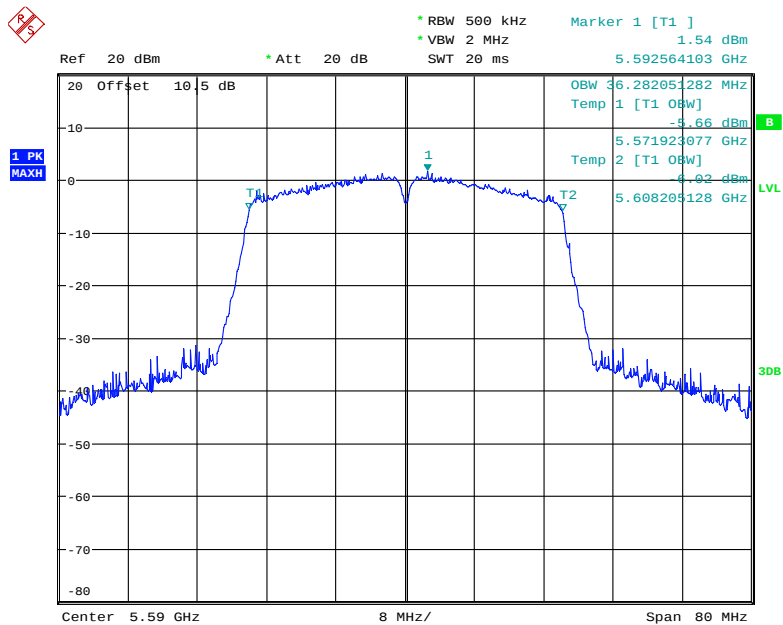
Date: 19.DEC.2018 23:24:43

802.11ac40 mode, 26 dB Emissions, 5590 MHz



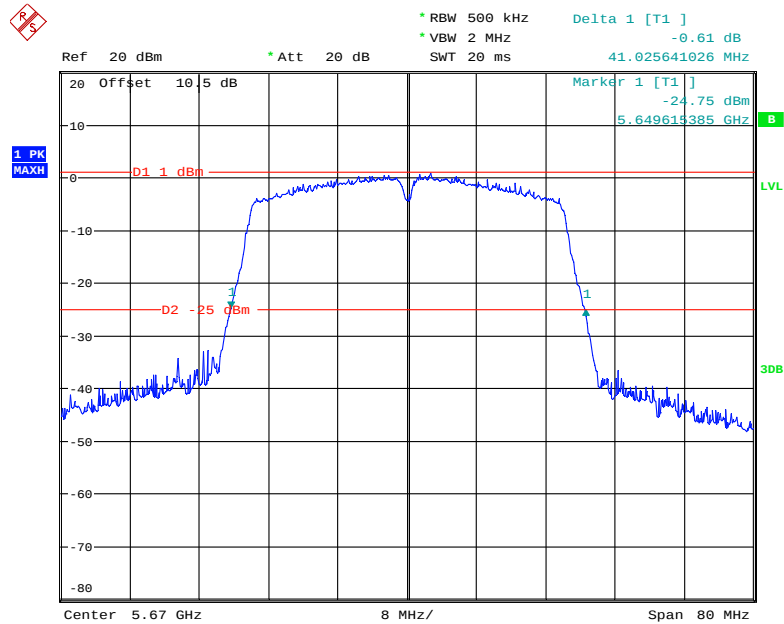
Date: 19.DEC.2018 23:28:57

802.11ac40 mode, 99% Occupied Bandwidth, 5590MHz



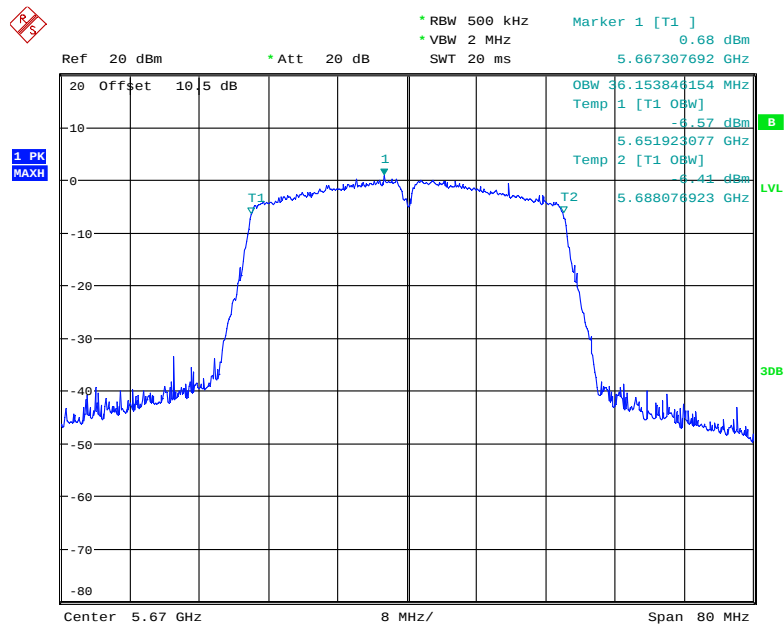
Date: 19.DEC.2018 23:22:49

802.11ac40 mode, 26 dB Emissions, 5670 MHz



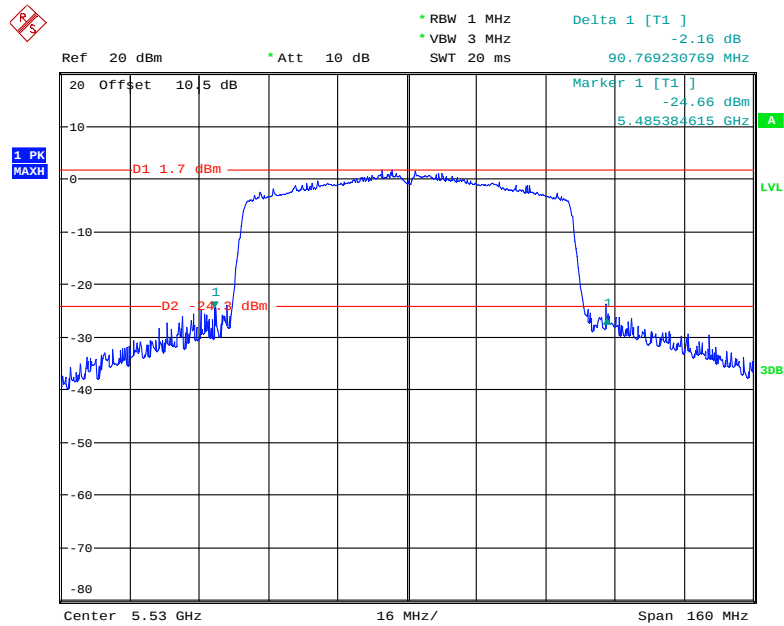
Date: 19.DEC.2018 23:30:13

802.11ac40 mode, 99% Occupied Bandwidth, 5670MHz



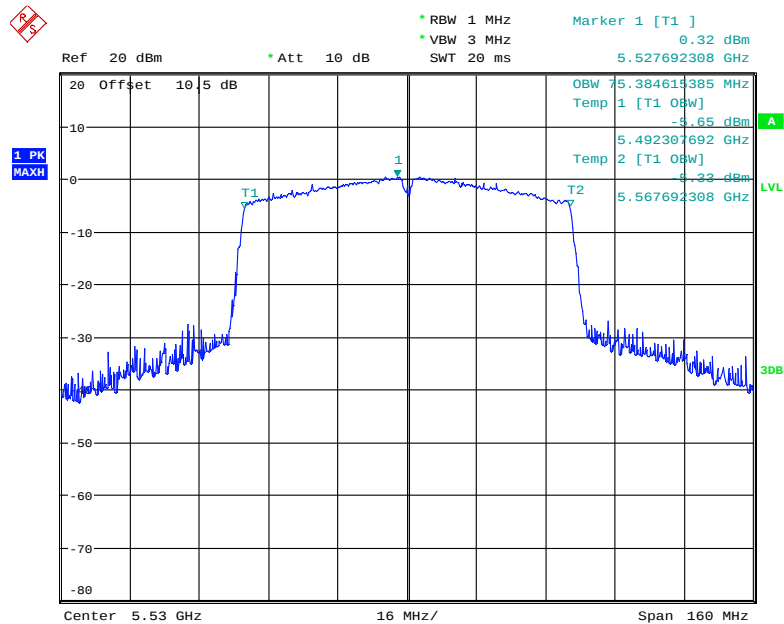
Date: 19.DEC.2018 23:21:51

802.11ac80 mode, 26 dB Emissions, 5530MHz



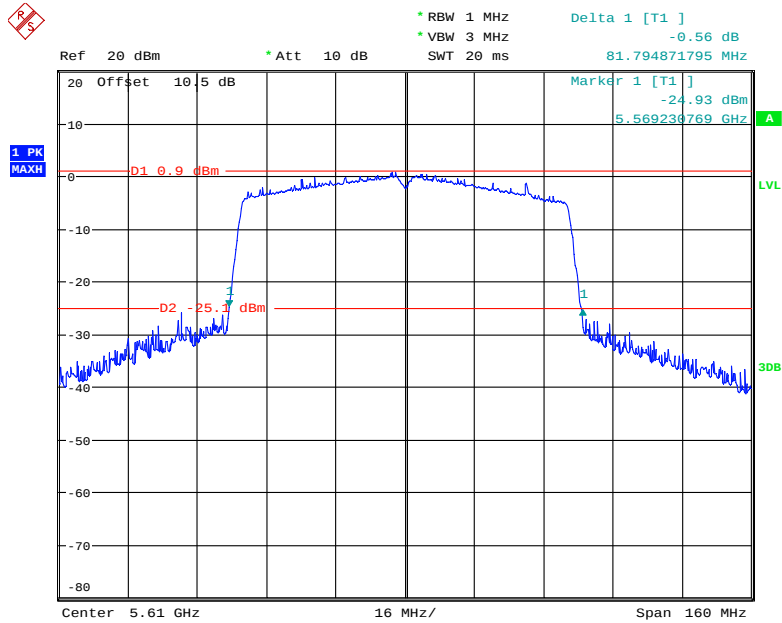
Date: 20.DEC.2018 22:37:19

802.11ac80 mode, 99% Occupied Bandwidth, 5530 MHz



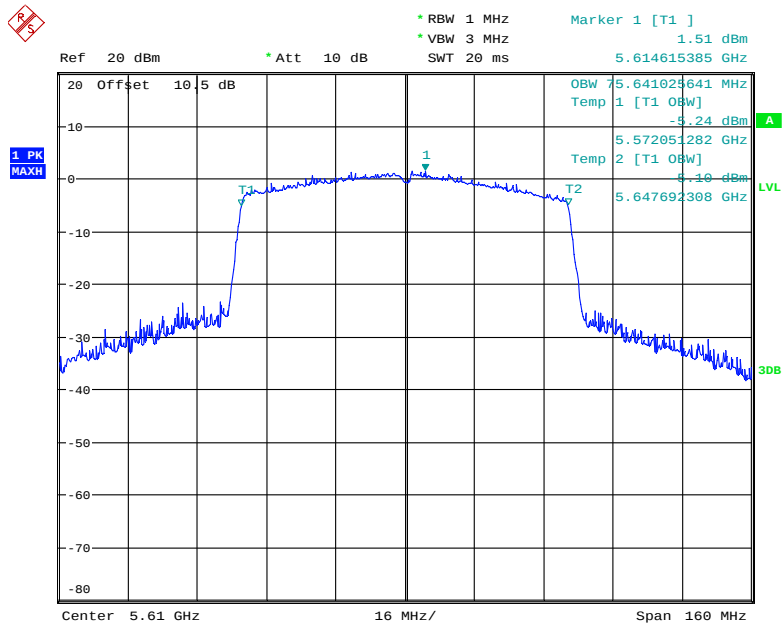
Date: 20.DEC.2018 22:38:00

802.11ac80 mode, 26 dB Emissions, 5610MHz



Date: 20.DEC.2018 22:34:16

802.11ac80 mode, 99% Occupied Bandwidth, 5610 MHz



Date: 20.DEC.2018 22:32:51

5725 MHz – 5850 MHz:

Frequency (MHz)	6dB bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Remark
802.11a				No transmitted signal in the 99% bandwidth extends into the U-NII-2C band
5745	16.35	16.60	0.5	
5785	16.35	16.73	0.5	
5825	16.35	16.60	0.5	
802.11n20				
5745	17.63	17.63	0.5	
5785	17.56	17.63	0.5	
5825	17.63	17.69	0.5	
802.11n40				
5755	35.83	36.28	0.5	
5795	36.54	36.28	0.5	
802.11ac20				
5745	17.63	17.69	0.5	
5785	17.56	17.76	0.5	
5825	17.63	17.69	0.5	
802.11ac40				
5755	36.22	36.28	0.5	
5795	36.03	36.15	0.5	
802.11ac80				
5775	76.15	75.90	0.5	

Ref 15 dBm * Att 10 dB * RBW 100 kHz VBW 300 kHz SWT 20 ms Delta 1 [T1] -1.79 dB 16.346153846 MHz

Offset 10 5 dB Marker 1 [T1] 5.736923077 GHz

1 PK MAXH

D1 -3.1 dBm D2 -9.1 dBm

Center 5.745 GHz 4 MHz/ Span 40 MHz

Date: 20.DEC.2018 23:39:08

RBW 200 kHz
 VBW 500 kHz
 SWT 20 ms
 Marker 1 [T1]
 3.70 dBm
 5.746089744 GHz

Ref 25 dBm
 Att 20 dB

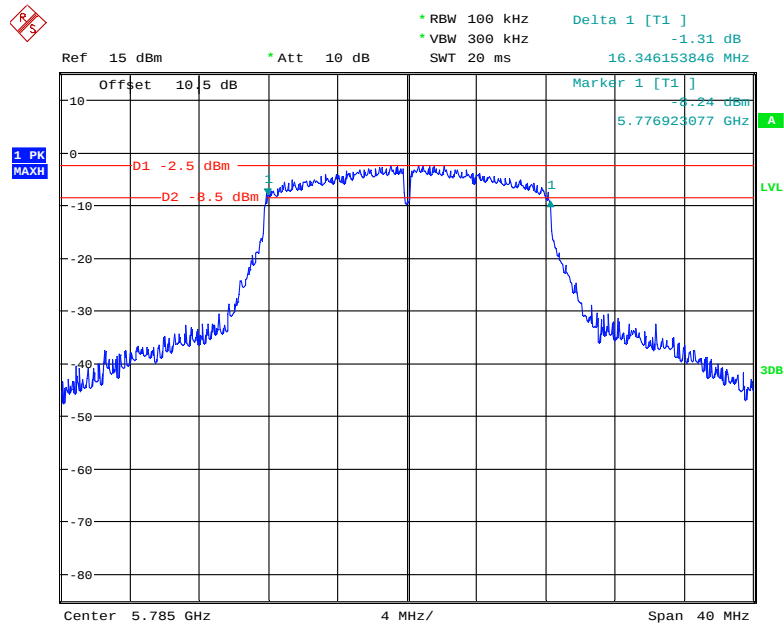
Offset 10 5 dB
 1 PK MAXH
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OBW 16.602564103 MHz
 Temp 1 [T1 OBW]
 -4.09 dBm
 5.736730769 GHz
 Temp 2 [T1 OBW]
 -5.75 dBm
 5.753333333 GHz

Center 5.745 GHz
 4 MHz/
 Span 40 MHz

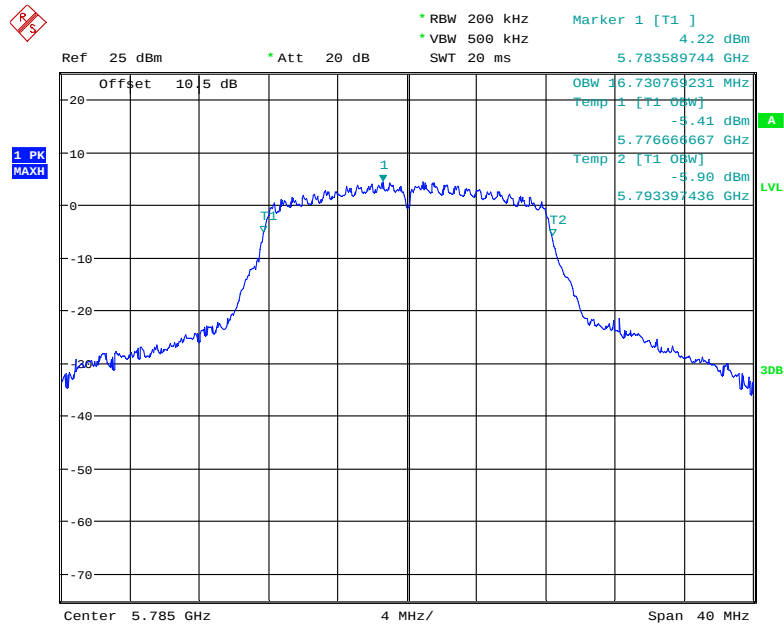
Date: 21.DEC.2018 21:42:24

802.11a mode, 6 dB Emissions, 5785 MHz



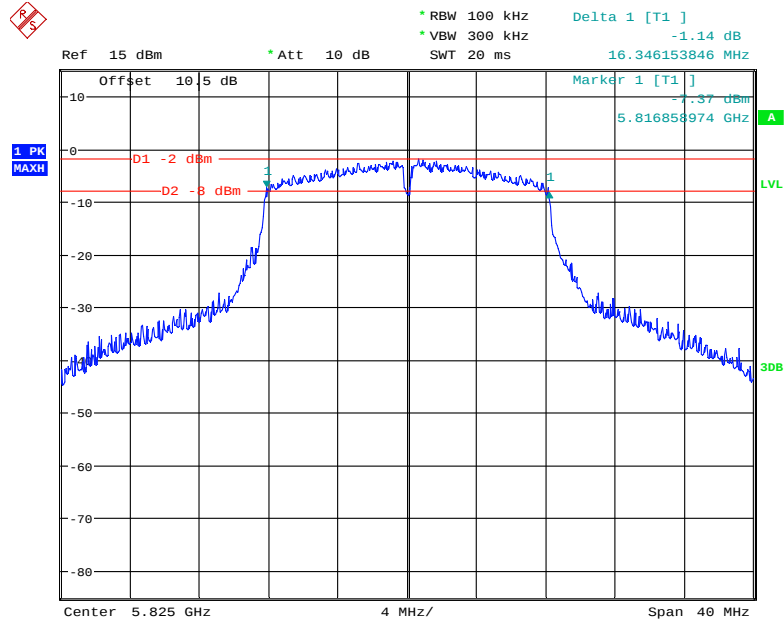
Date: 20.DEC.2018 23:40:16

802.11a mode, Occupied Bandwidth, 5785 MHz



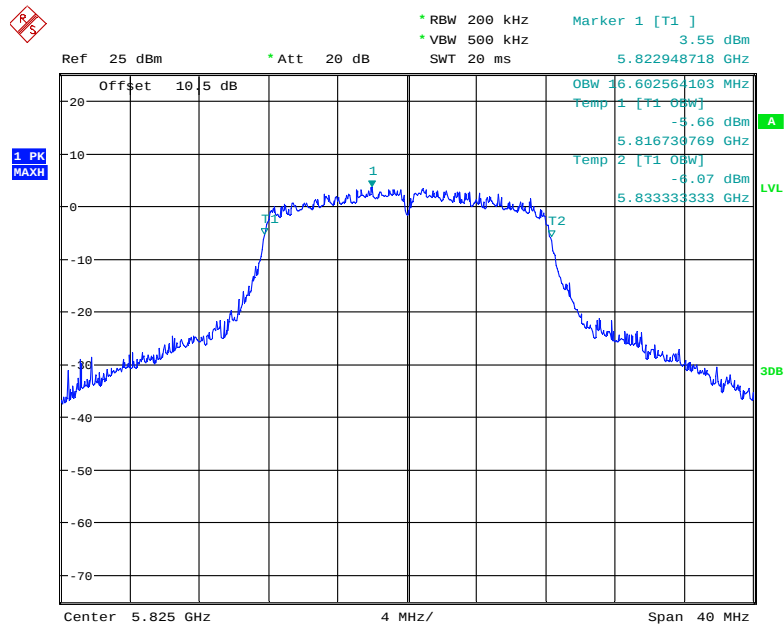
Date: 21.DEC.2018 21:47:10

802.11a mode, 6 dB Emissions, 5825 MHz



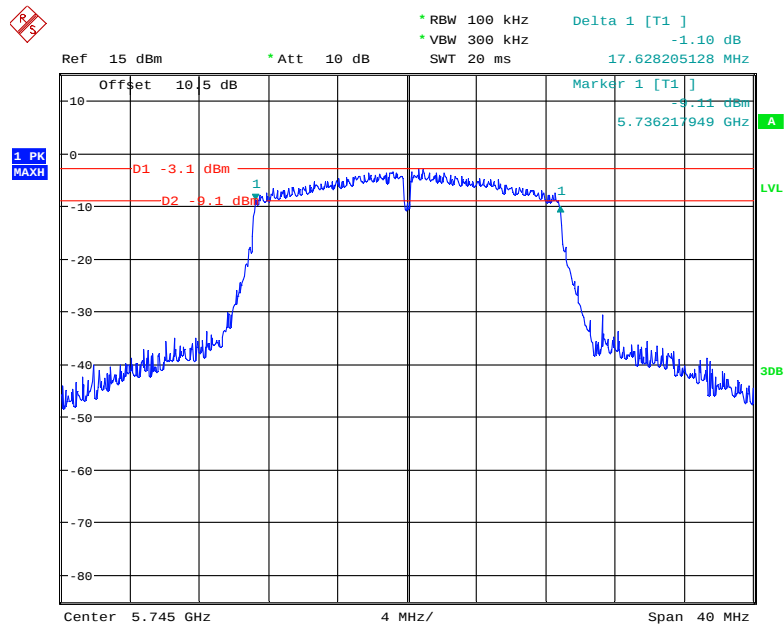
Date: 20.DEC.2018 23:41:33

802.11a mode, 99% Occupied Bandwidth, 5825 MHz



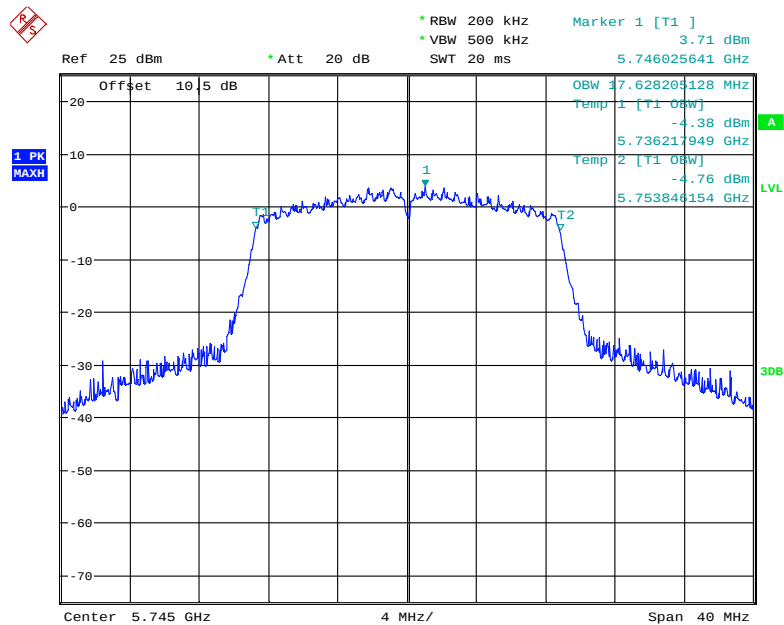
Date: 21.DEC.2018 21:47:46

802.11n20 mode, 6 dB Emissions, 5745 MHz



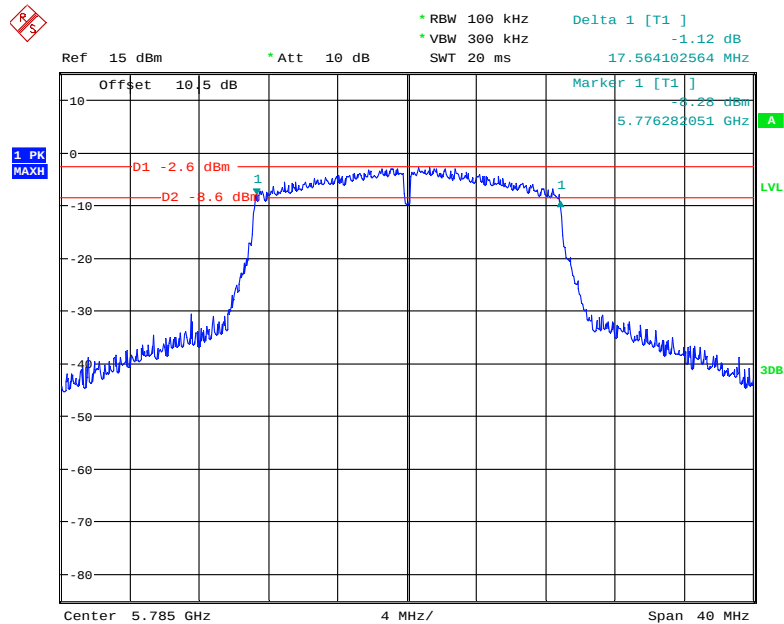
Date: 20.DEC.2018 23:26:11

802.11n20 mode, Occupied Bandwidth, 5745 MHz



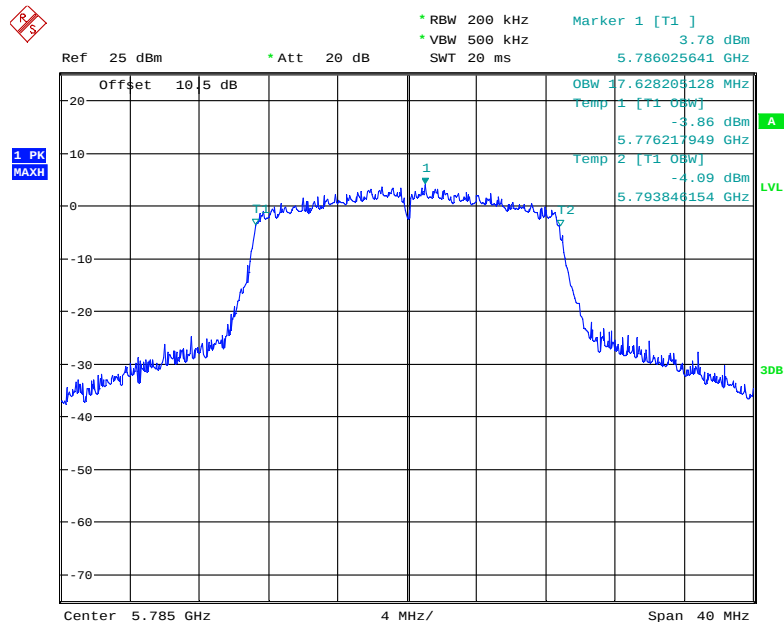
Date: 21.DEC.2018 21:48:27

802.11n20 mode, 6 dB Emissions, 5785 MHz



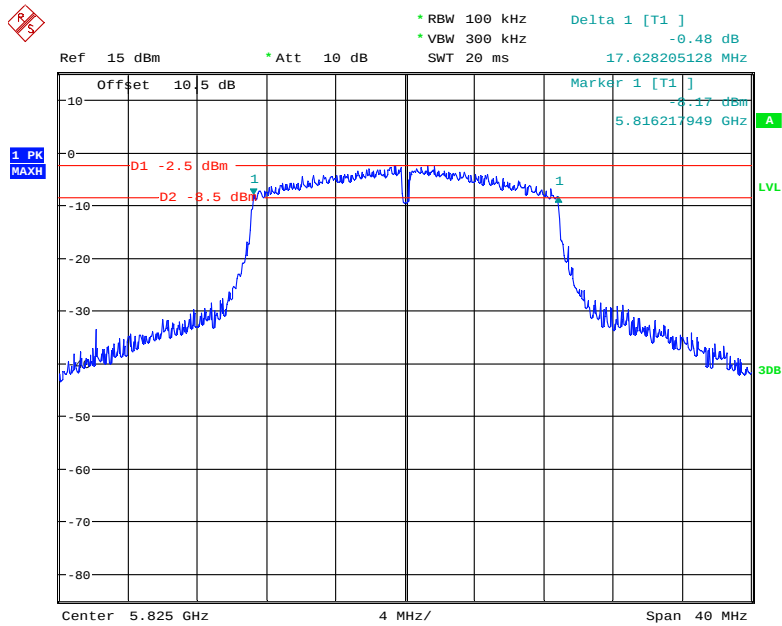
Date: 20.DEC.2018 23:23:15

802.11n20 mode, Occupied Bandwidth, 5785 MHz



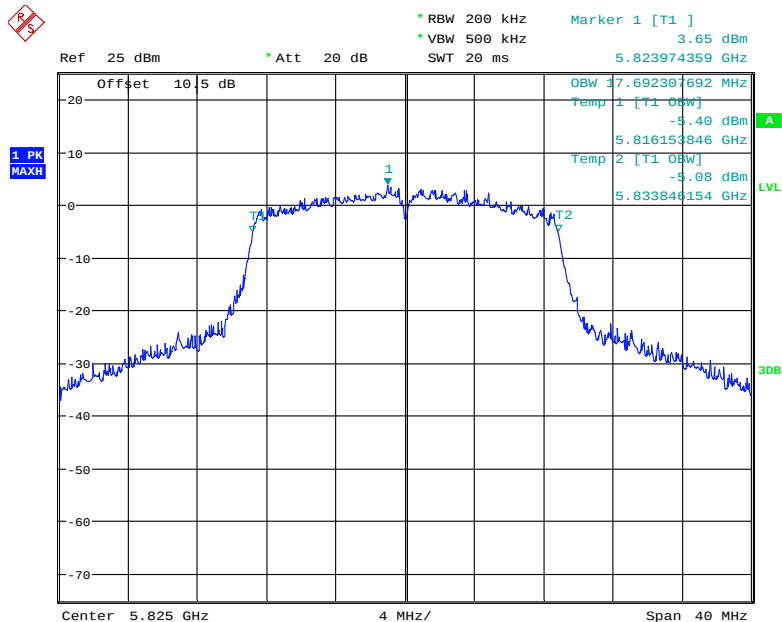
Date: 21.DEC.2018 21:48:57

802.11n20 mode, 6 dB Emissions, 5825 MHz



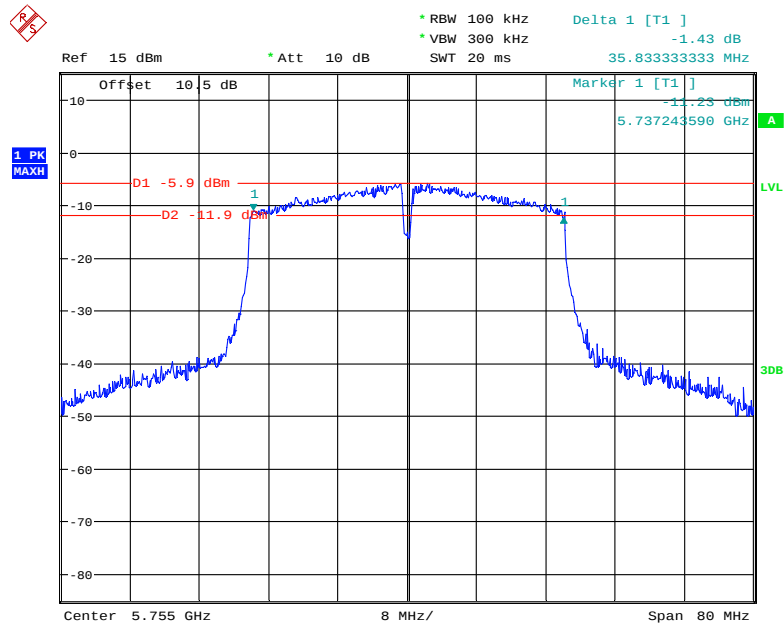
Date: 20.DEC.2018 23:21:16

802.11n20 mode, Occupied Bandwidth, 5825 MHz



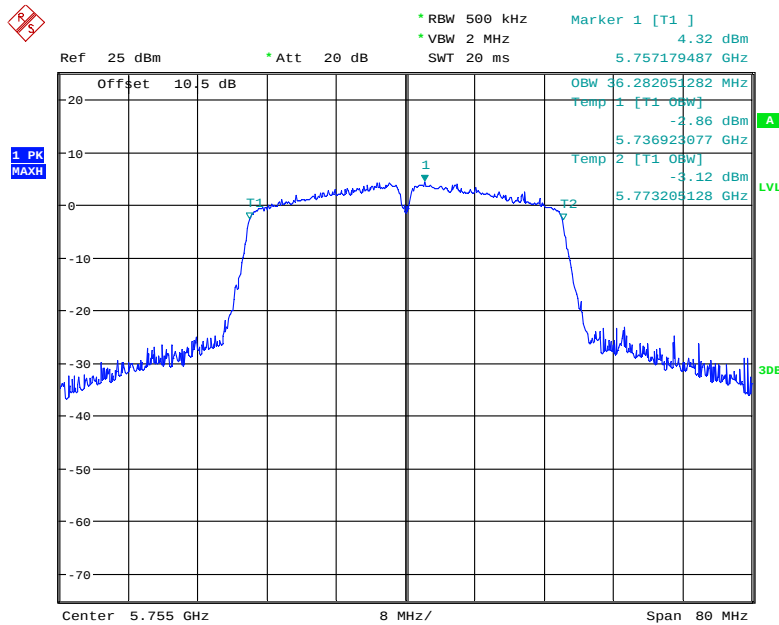
Date: 21.DEC.2018 21:49:22

802.11n40 mode, 6 dB Emissions, 5755 MHz

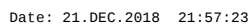
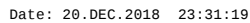


Date: 20.DEC.2018 23:29:45

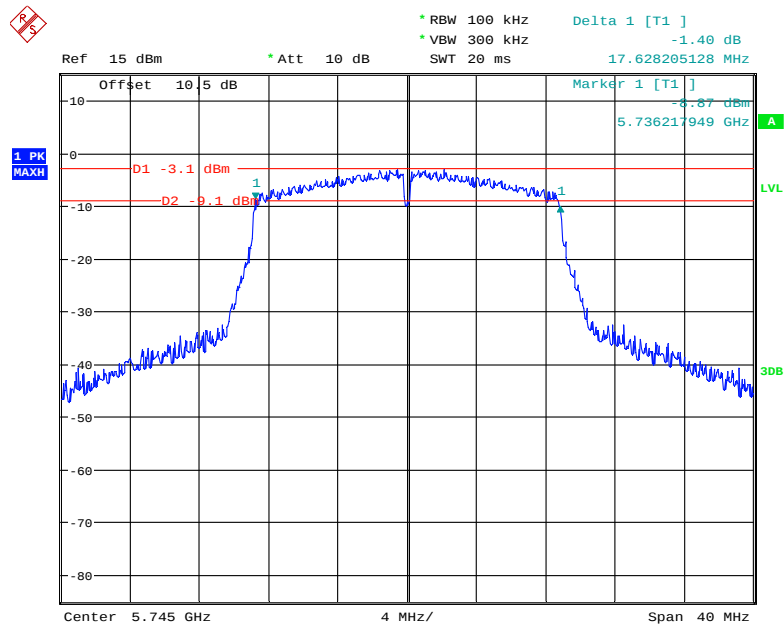
802.11n40 mode, Occupied Bandwidth, 5755 MHz



Date: 21.DEC.2018 21:56:55

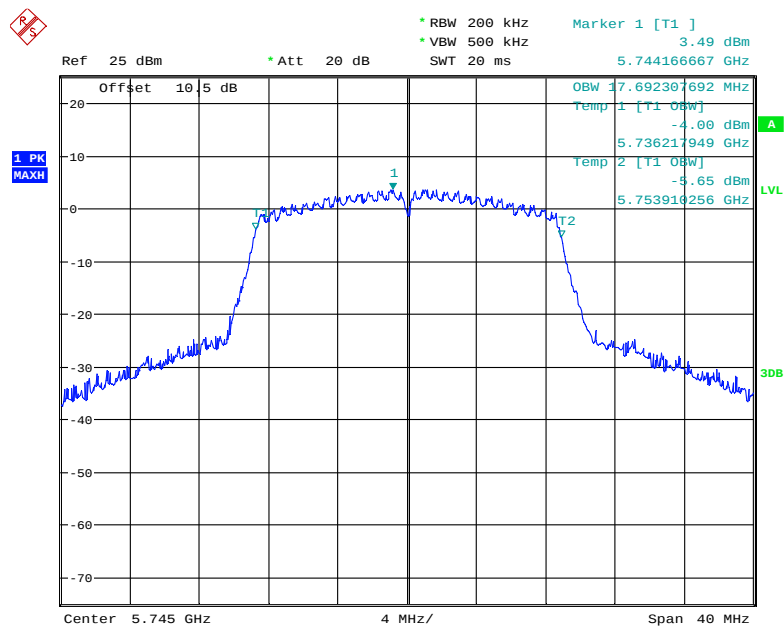


802.11ac20 mode, 6 dB Emissions, 5745 MHz



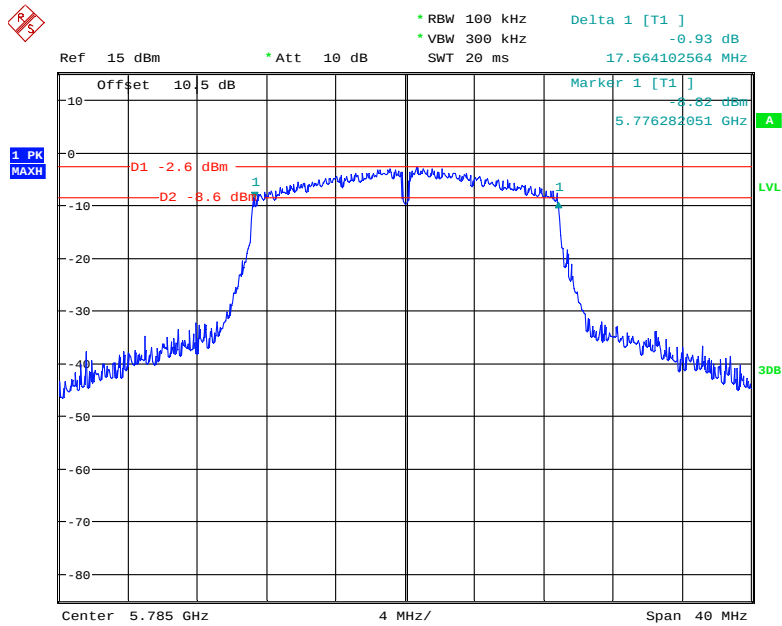
Date: 20.DEC.2018 23:25:38

802.11ac20 mode, 99% Occupied Bandwidth,5745MHz



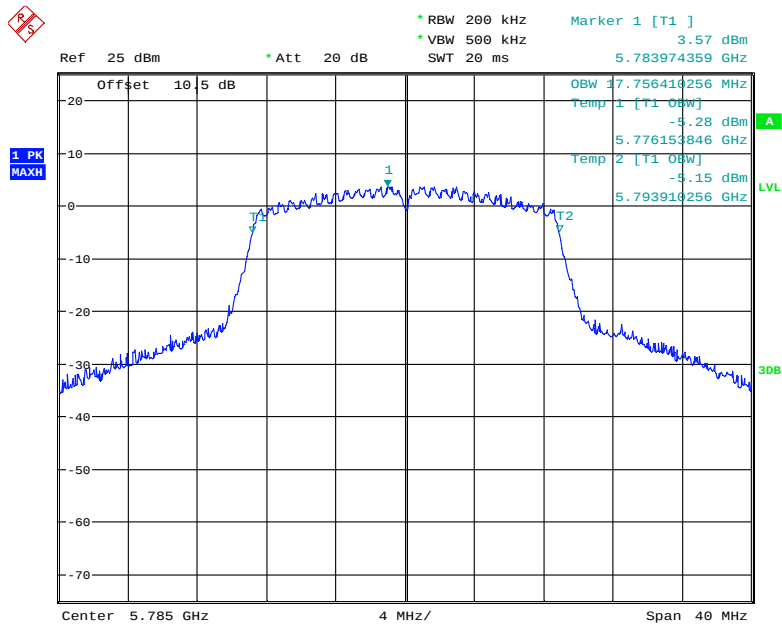
Date: 21.DEC.2018 21:54:47

802.11ac20 mode, 6 dB Emissions, 5785MHz



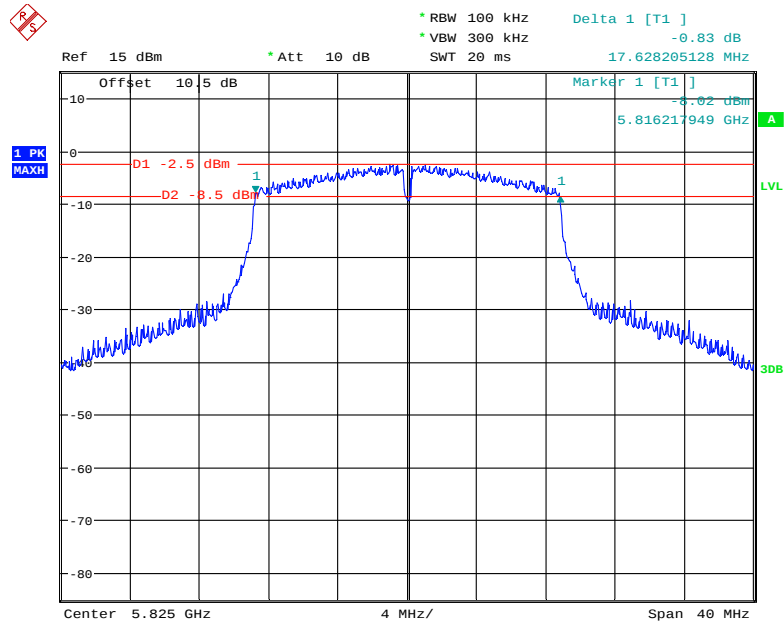
Date: 20.DEC.2018 23:24:15

802.11ac20 mode, 99% Occupied Bandwidth, 5785MHz



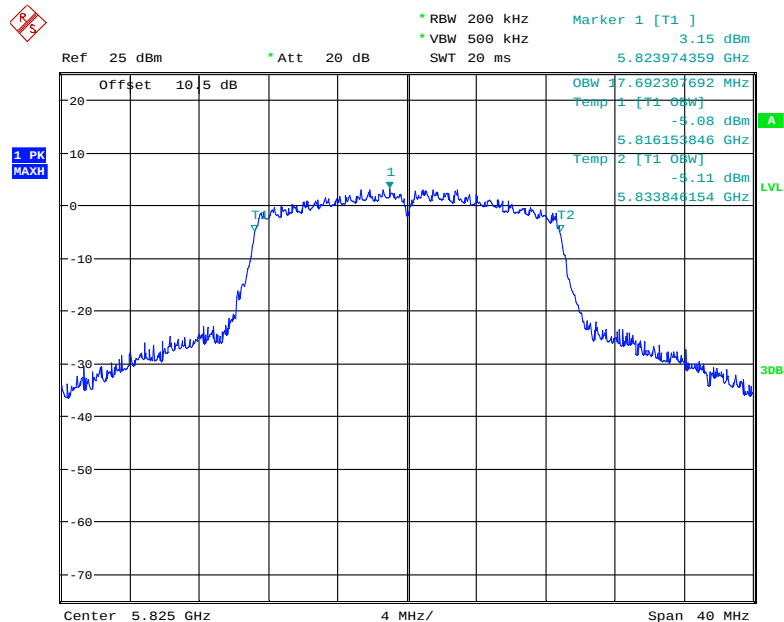
Date: 21.DEC.2018 21:52:47

802.11ac20 mode, 6 dB Emissions, 5825MHz



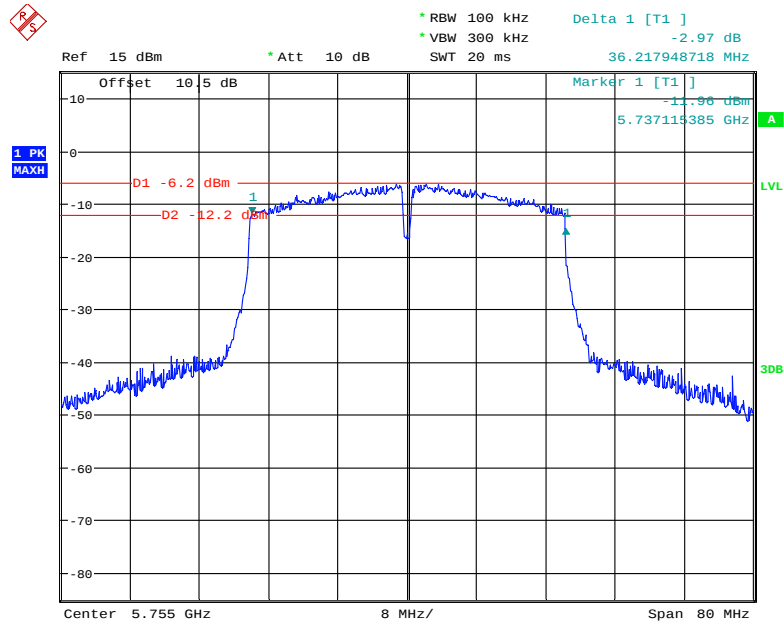
Date: 20.DEC.2018 23:20:31

802.11ac20 mode, 99% Occupied Bandwidth, 5825MHz



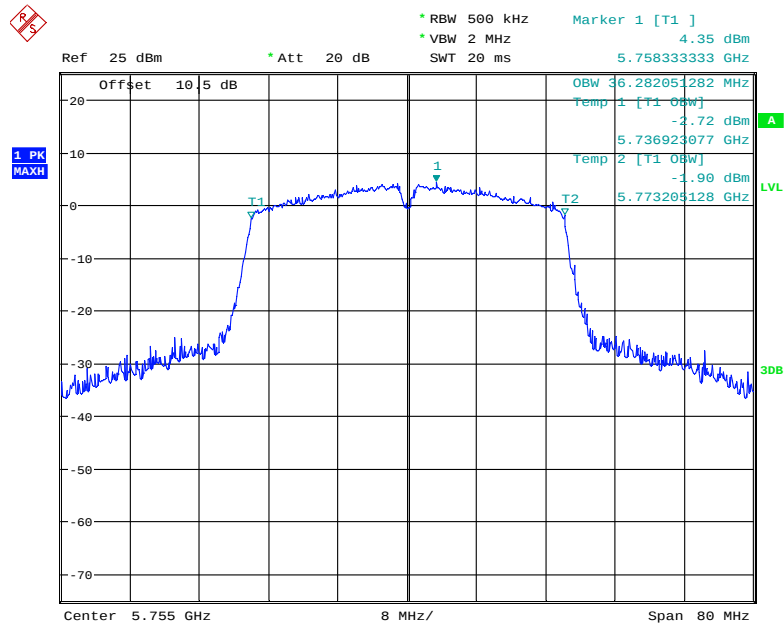
Date: 21.DEC.2018 21:49:49

802.11ac40 mode, 6 dB Emissions, 5755 MHz



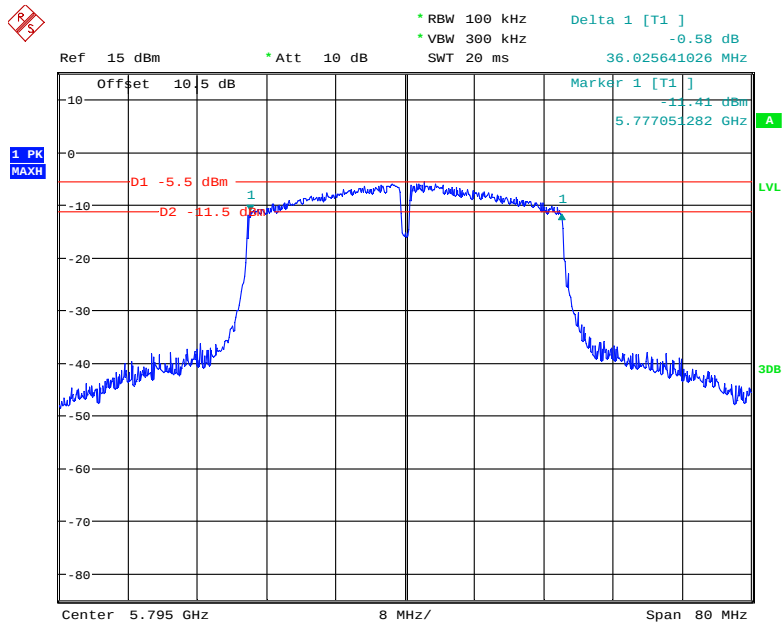
Date: 20.DEC.2018 23:28:41

802.11ac40 mode, 99% Occupied Bandwidth, 5755MHz



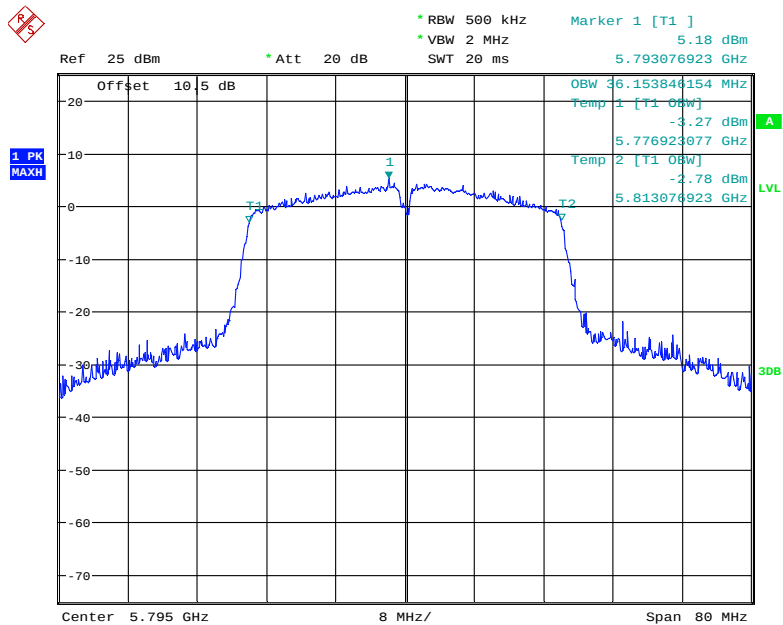
Date: 21.DEC.2018 21:56:23

802.11ac40 mode, 6 dB Emissions, 5795MHz



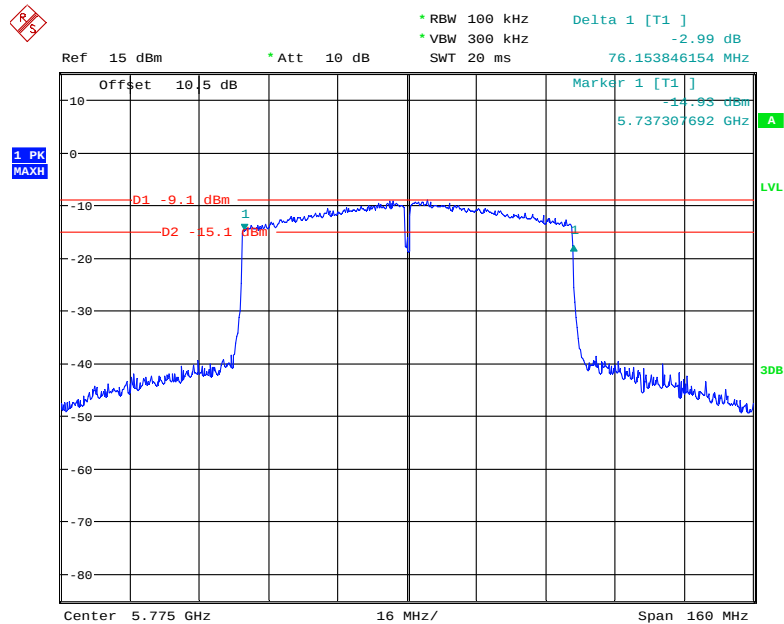
Date: 20.DEC.2018 23:32:01

802.11ac40 mode, 99% Occupied Bandwidth, 5795MHz



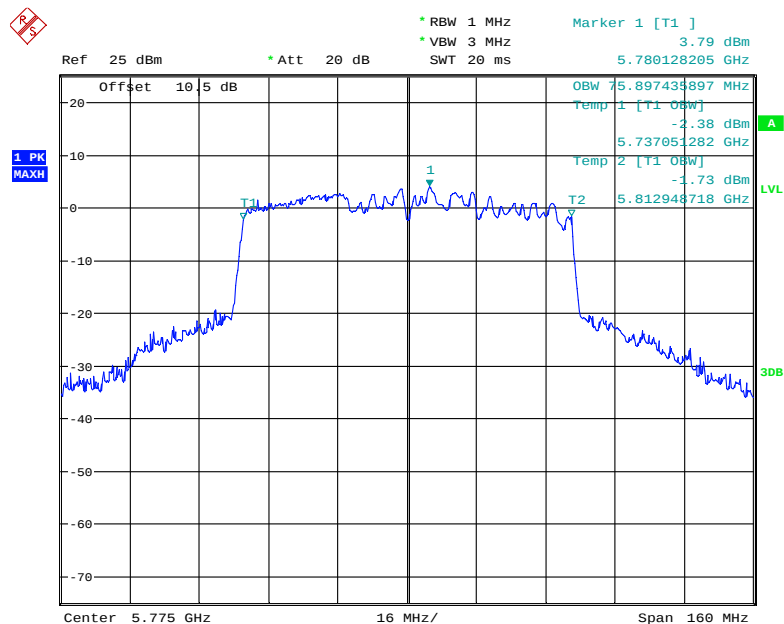
Date: 21.DEC.2018 21:57:46

802.11ac80 mode, 6 dB Emissions, 5775MHz



Date: 20.DEC.2018 23:33:34

802.11ac80 mode, 99% Occupied Bandwidth, 5775MHz



Date: 21.DEC.2018 22:35:25

FCC §15.407(a) (1) (2)(3) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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

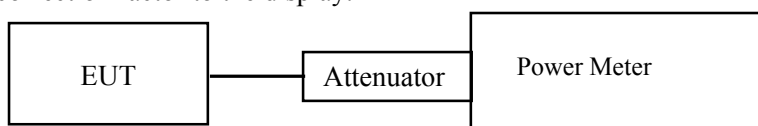
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting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

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

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

Test Procedure

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:	23 °C
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2018-12-19.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

5150 MHz – 5250 MHz(this is a client device)

Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
802.11a		
5180	7.26	24
5200	6.95	
5240	7.13	
802.11n20		
5180	7.34	24
5200	7.11	
5240	7.28	
802.11n40		
5190	6.89	24
5230	6.94	
802.11ac20		
5180	7.42	24
5200	7.33	
5240	7.18	
802.11ac40		
5190	6.87	24
5230	6.92	
802.11ac80		
5210	7.01	24

5250 MHz – 5350 MHz:

Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
802.11a		
5260	7.34	24
5280	7.28	
5320	7.36	
802.11n20		
5260	7.55	24
5280	7.59	
5320	7.47	
802.11n40		
5270	7.13	24
5310	7.21	
802.11ac20		
5260	7.54	24
5280	7.63	
5320	7.55	
802.11ac40		
5270	7.08	24
5310	7.11	
802.11ac80		
5290	7.12	24

5470 MHz – 5725 MHz:

Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
802.11a		
5500	9.86	24
5600	10.02	
5700	9.95	
802.11n20		
5500	9.39	24
5600	9.93	
5700	10.21	
802.11n40		
5510	8.86	24
5590	8.92	
5670	8.73	
802.11ac20		
5500	9.89	24
5600	10.01	
5700	9.93	
802.11ac40		
5510	9.01	24
5590	8.81	
5670	8.94	
802.11ac80		
5530	9.58	24
5610	9.65	

5725 MHz – 5850 MHz:

Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
802.11a		
5745	12.74	30
5785	13.08	
5825	12.97	
802.11n20		
5745	11.56	30
5785	12.23	
5825	11.89	
802.11n40		
5755	12.56	30
5795	12.80	
802.11ac20		
5745	12.48	30
5785	13.11	
5825	12.71	
802.11ac40		
5755	12.57	30
5795	12.42	
802.11ac80		
5775	12.75	30

FCC §15.407(a) (1) (2) (3) - POWER SPECTRAL DENSITY

Applicable Standard

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

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

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

Test Procedure

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

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

Test Data**Environmental Conditions**

Temperature:	23.5~25 °C
Relative Humidity:	49~56 %
ATM Pressure:	109.0~101.0 kPa

The testing was performed by Tracy Hu from 2018-12-19 to 2018-12-23.

EUT operation mode: Transmitting

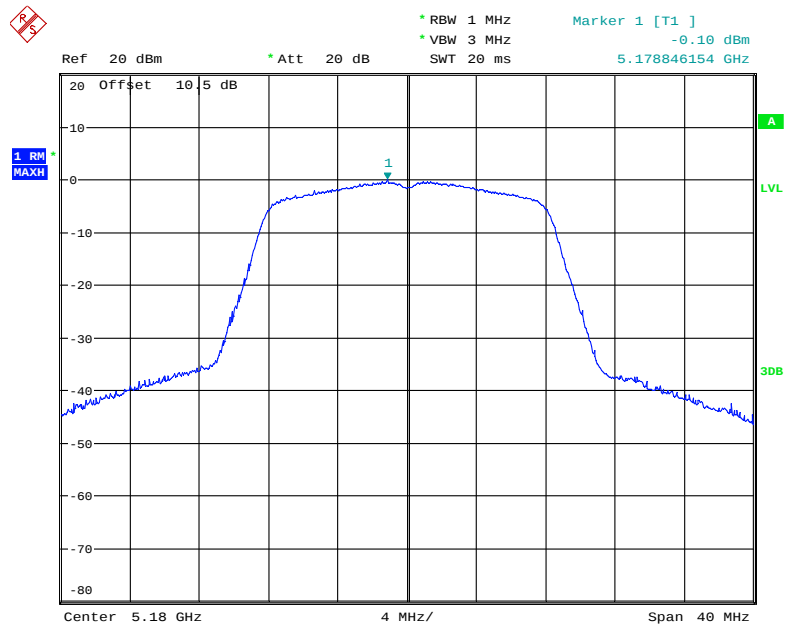
Test Result: Pass

Please refer to the following tables and plots.

5150 MHz – 5250 MHz(this is a client device):

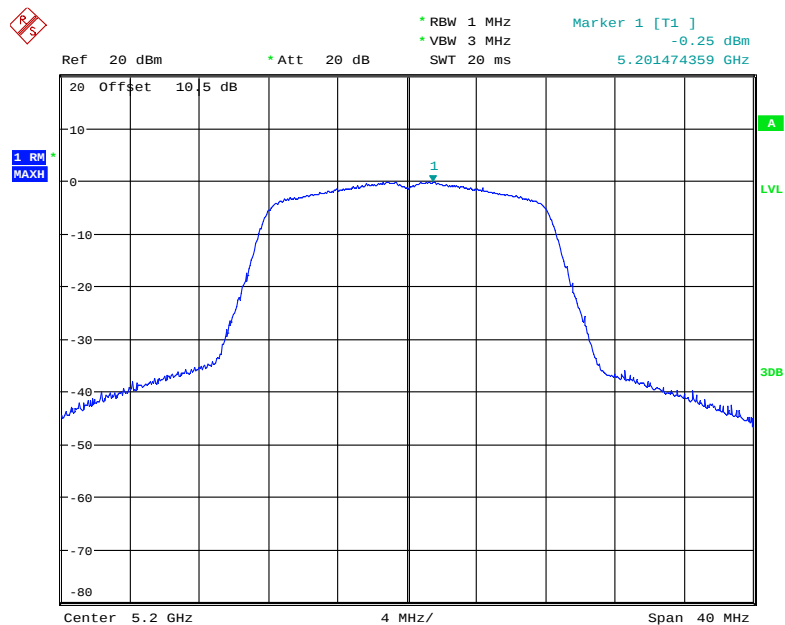
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5180	-0.10	11
5200	-0.25	
5240	0.23	
802.11n20		
5180	-0.58	11
5200	-0.44	
5240	-0.22	
802.11n40		
5190	-3.54	11
5230	-6.47	
802. 11ac20		
5180	-0.41	11
5200	-0.54	
5240	-0.25	
802. 11ac40		
5190	-3.51	11
5230	-3.35	
802. 11ac80		
5210	-11.23	11

802.11a mode, Power Spectral Density, 5180 MHz



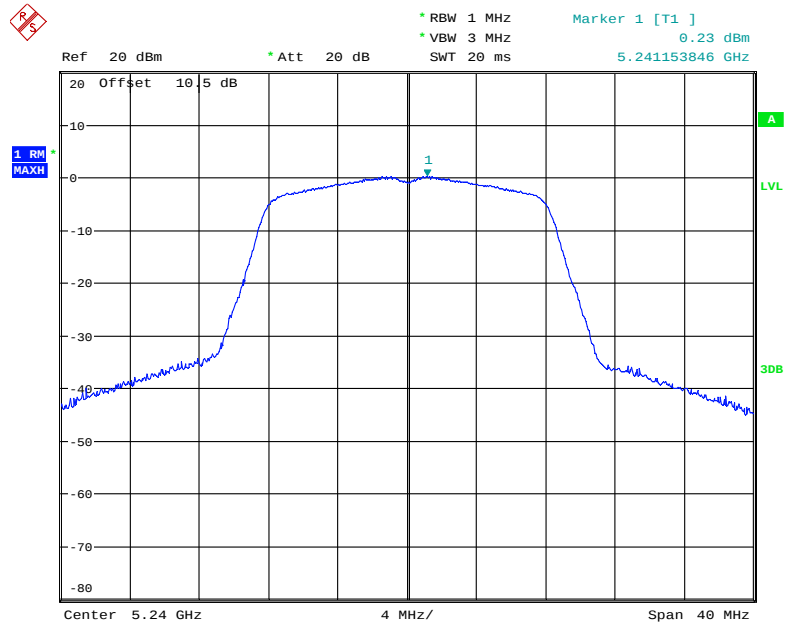
Date: 19.DEC.2018 20:30:51

802.11a mode, Power Spectral Density, 5200 MHz



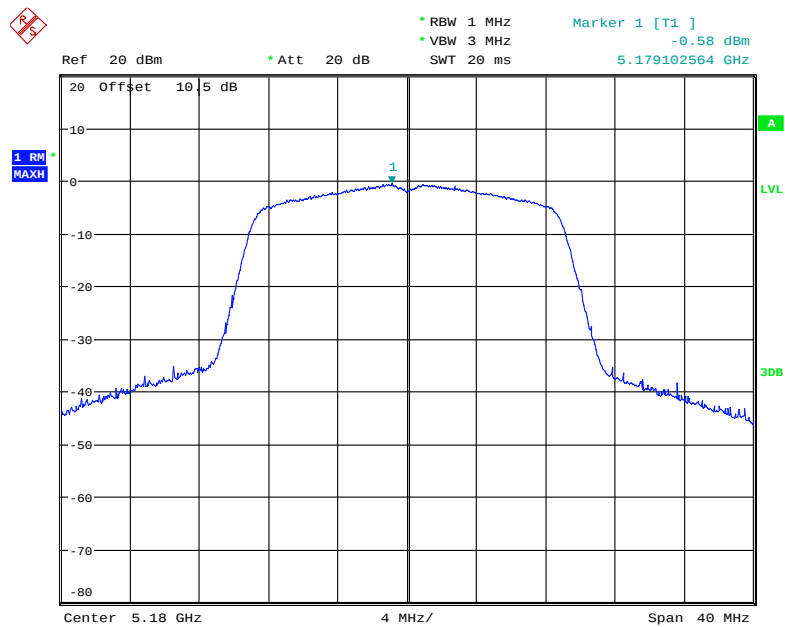
Date: 19.DEC.2018 20:31:33

802.11a mode, Power Spectral Density, 5240 MHz



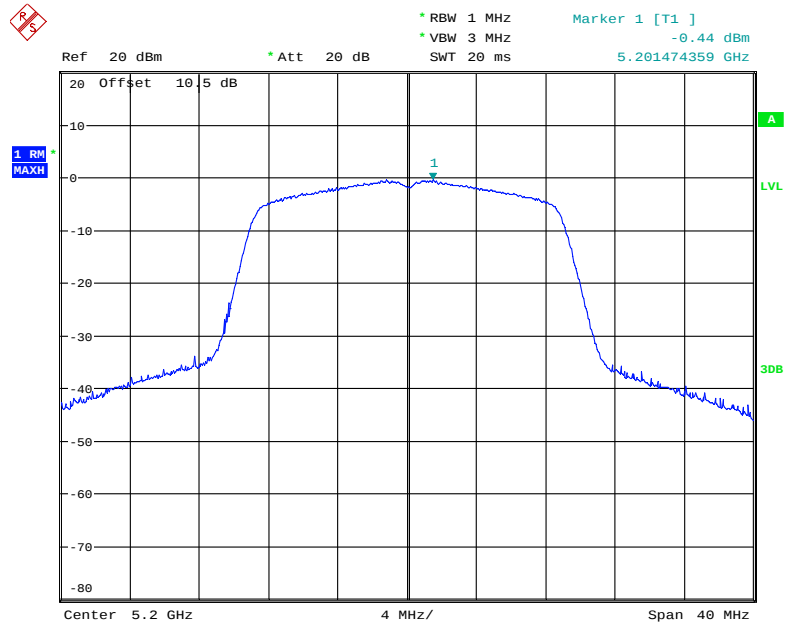
Date: 19.DEC.2018 20:32:10

802.11n20 mode, Power Spectral Density, 5180 MHz



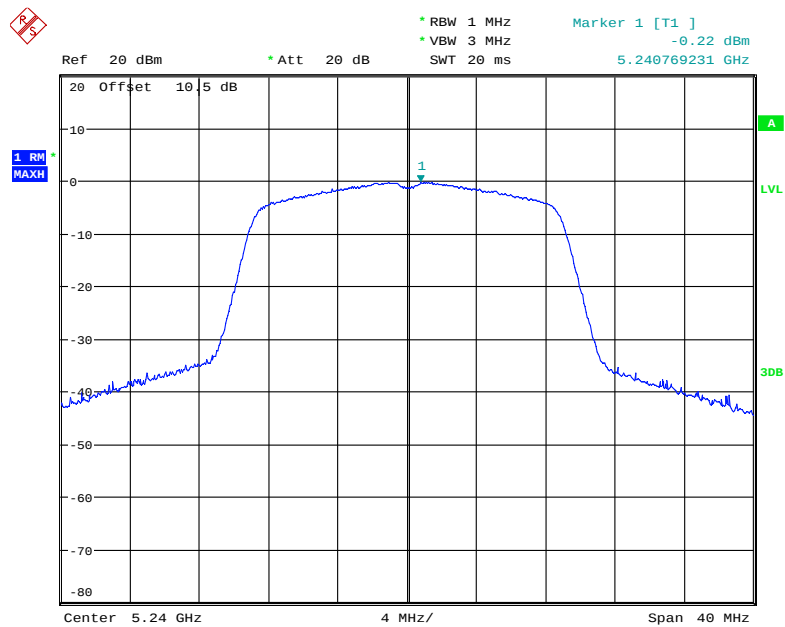
Date: 19.DEC.2018 20:32:56

802.11n20 mode, Power Spectral Density, 5200 MHz



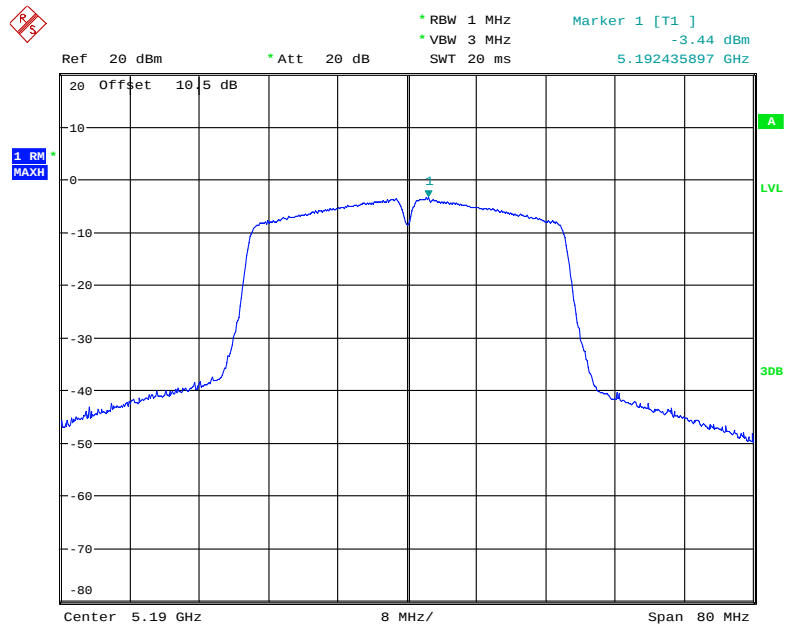
Date: 19.DEC.2018 20:33:31

802.11n20 mode, Power Spectral Density, 5240 MHz



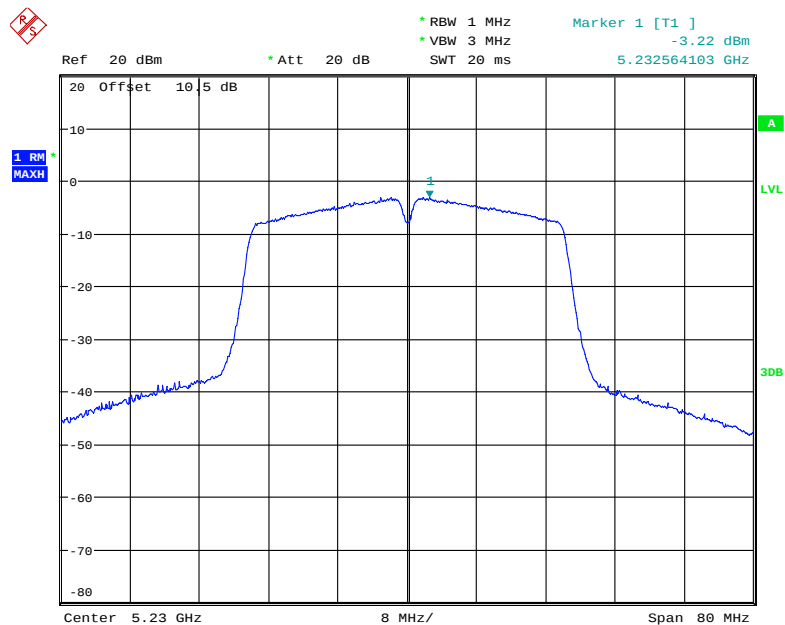
Date: 19.DEC.2018 20:34:05

802.11n40 mode, Power Spectral Density, 5190 MHz



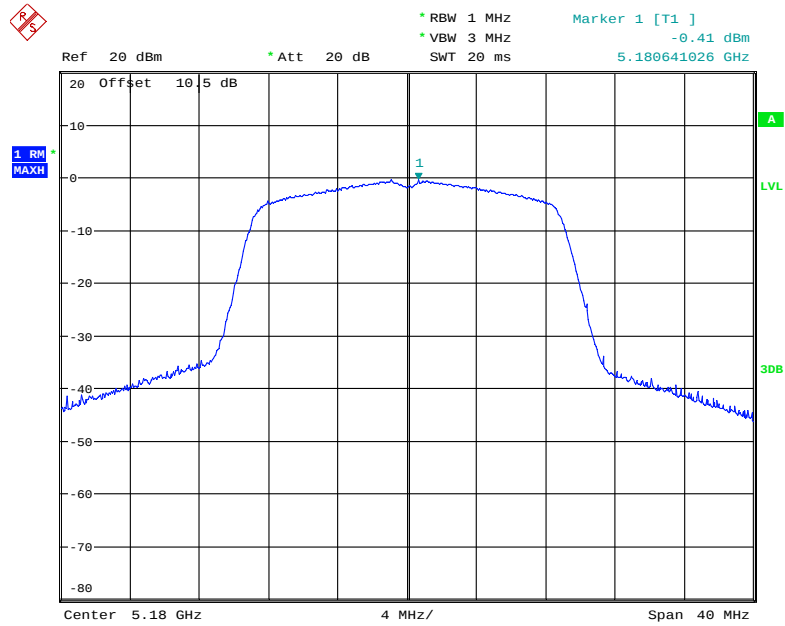
Date: 19.DEC.2018 20:39:32

802.11n40 mode, Power Spectral Density, 5230 MHz



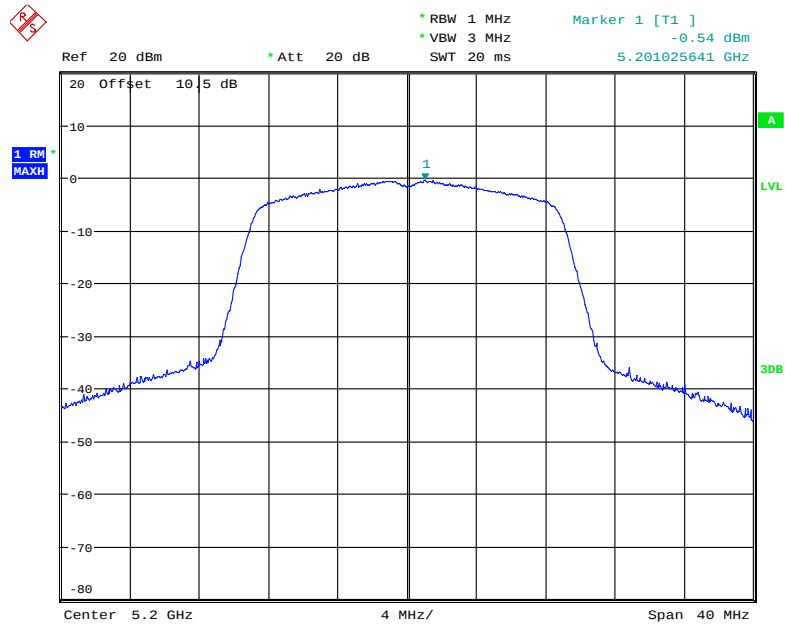
Date: 19.DEC.2018 20:38:30

802.11ac20 mode, Power Spectral Density, 5180 MHz



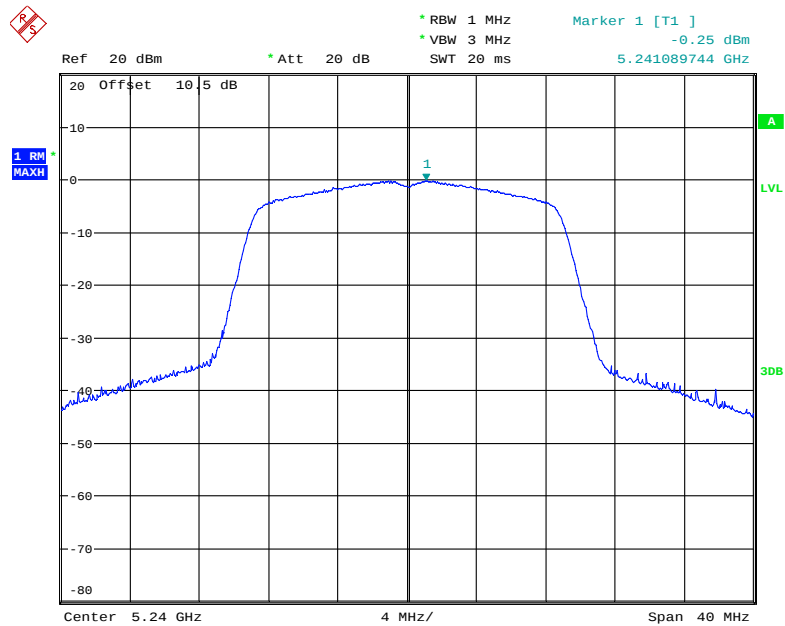
Date: 19.DEC.2018 20:36:35

802.11ac20 mode, Power Spectral Density, 5200 MHz



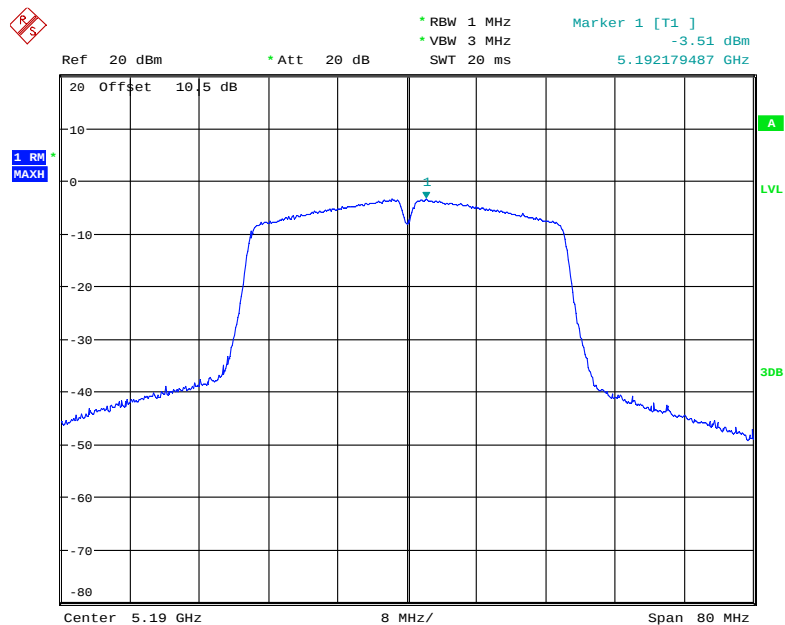
Date: 19.DEC.2018 20:36:15

802. 11ac20 mode, Power Spectral Density, 5240 MHz



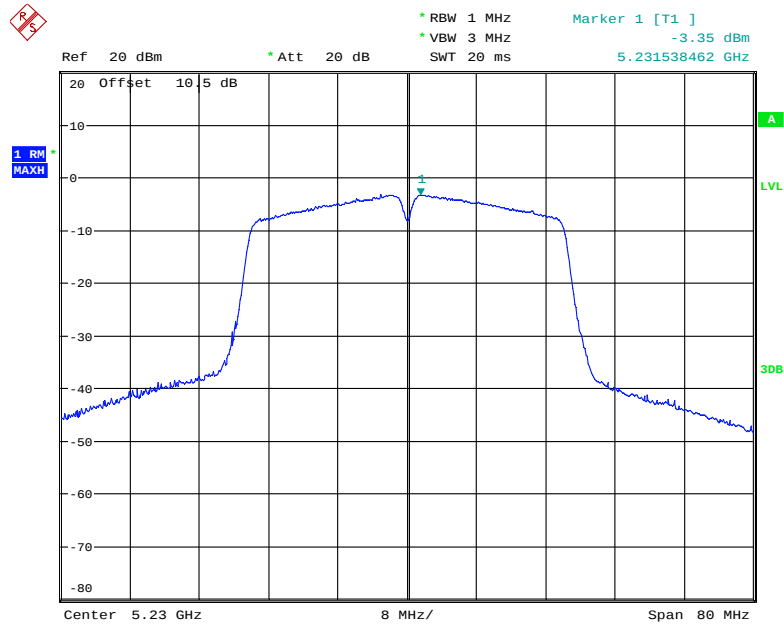
Date: 19.DEC.2018 20:34:55

802. 11ac40 mode, Power Spectral Density, 5190 MHz



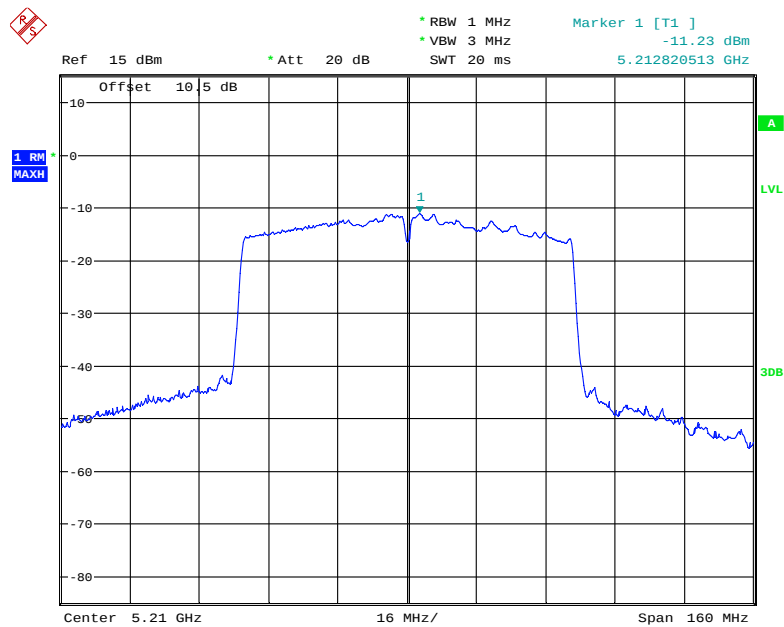
Date: 19.DEC.2018 20:37:18

802. 11ac40 mode, Power Spectral Density, 5230 MHz



Date: 19.DEC.2018 20:38:11

802. 11ac80 mode, Power Spectral Density, 5210 MHz

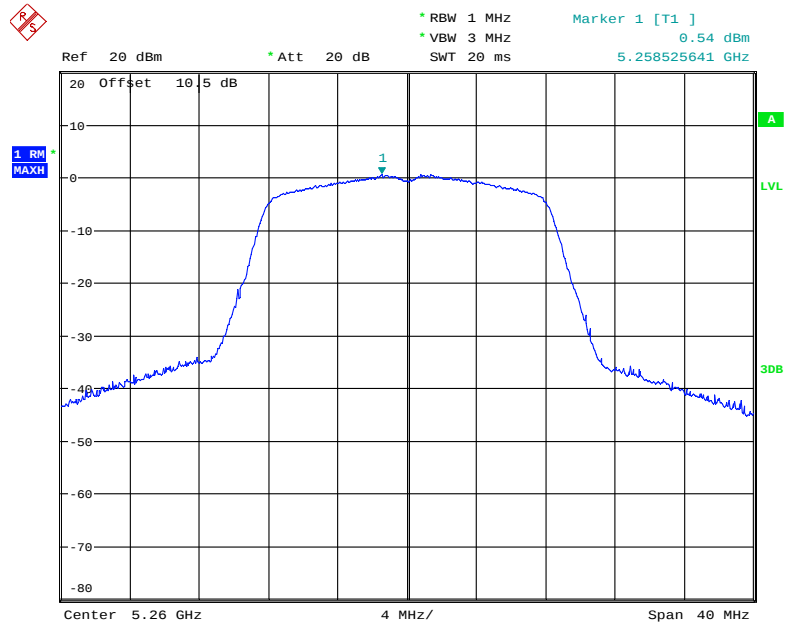


Date: 23.DEC.2018 18:26:44

5250 MHz – 5350 MHz

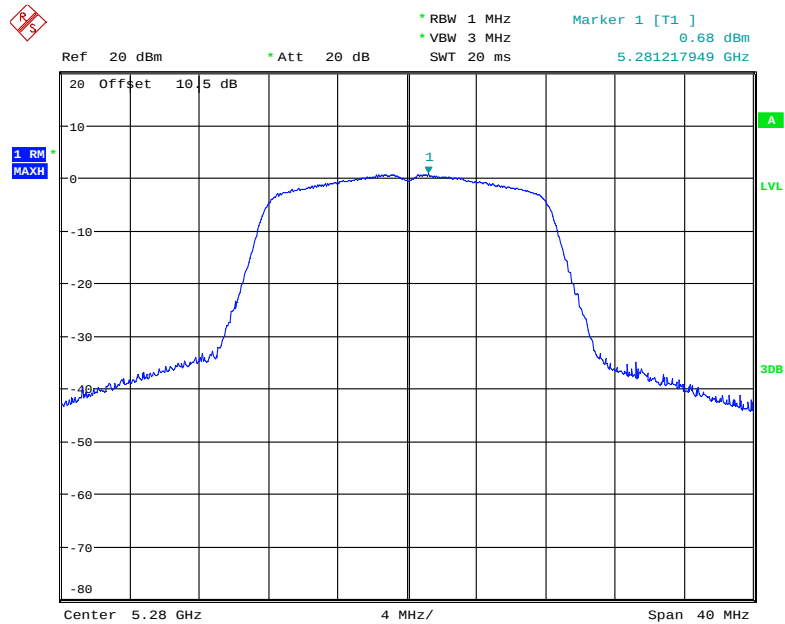
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5260	0.54	11
5280	0.68	
5320	1.45	
802.11n20		
5260	0.15	11
5280	0.37	
5320	1.13	
802.11n40		
5270	-2.69	11
5310	-2.14	
802. 11ac20		
5260	0.16	11
5280	0.64	
5320	1.01	
802. 11ac40		
5270	-2.73	11
5310	-2.06	
802. 11ac80		
5290	-6.04	11

802.11a mode, Power Spectral Density, 5260 MHz



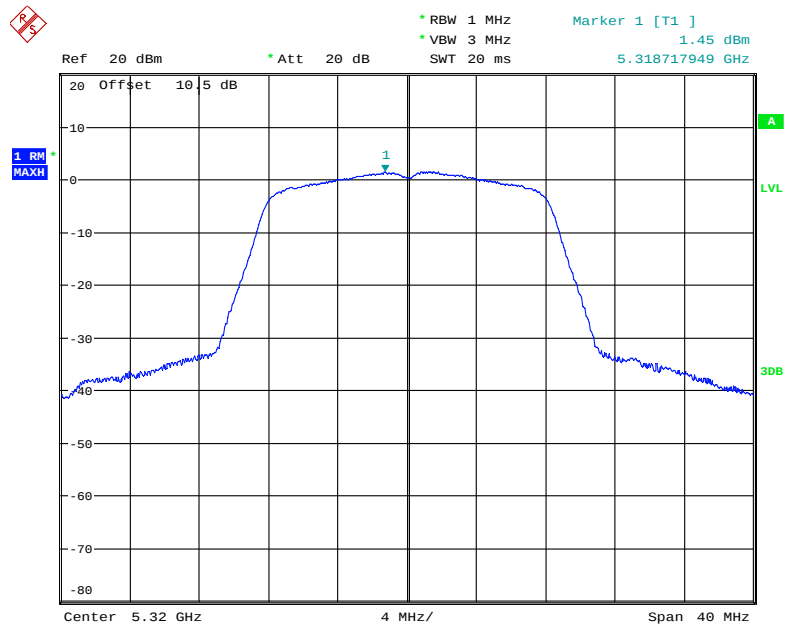
Date: 19.DEC.2018 22:00:11

802.11a mode, Power Spectral Density, 5280 MHz



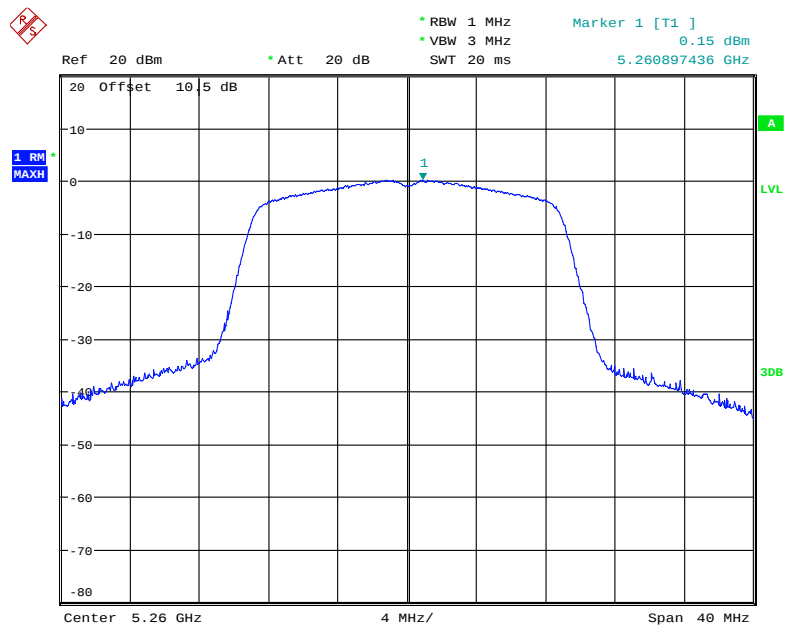
Date: 19.DEC.2018 21:59:38

802.11a mode, Power Spectral Density, 5320 MHz



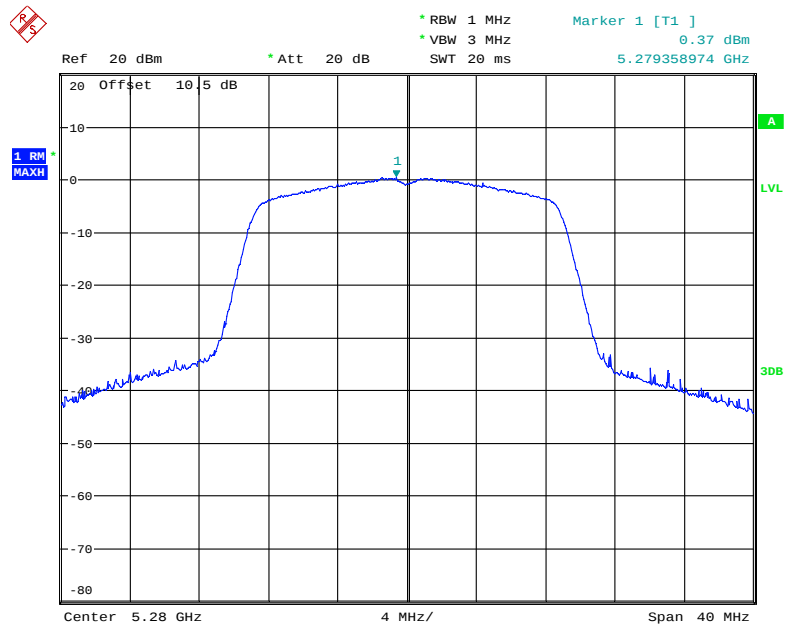
Date: 19.DEC.2018 21:58:51

802.11n20 mode, Power Spectral Density, 5260 MHz



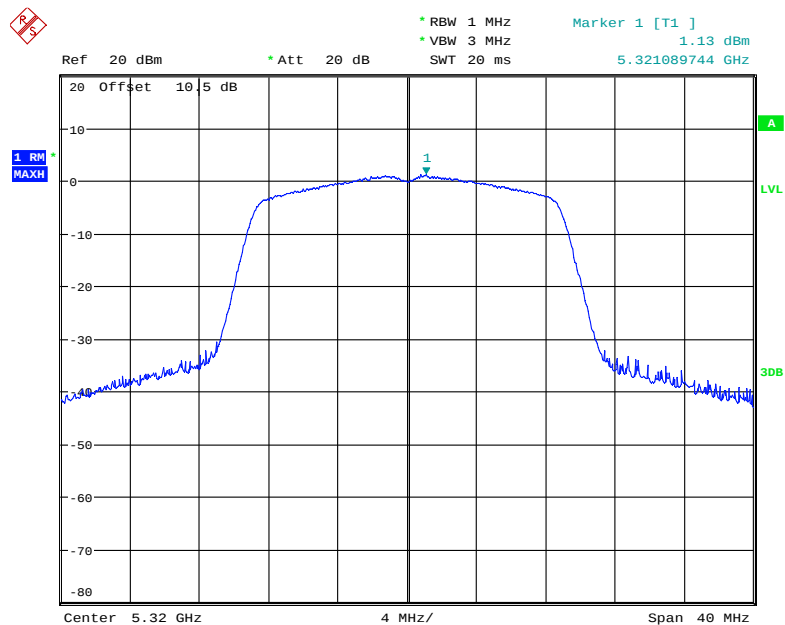
Date: 19.DEC.2018 22:02:57

802.11n20 mode, Power Spectral Density, 5280 MHz



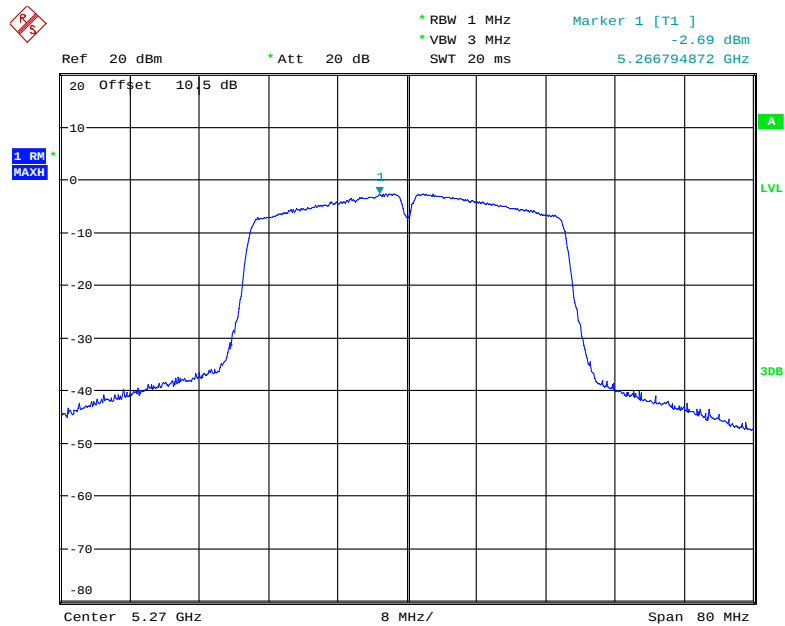
Date: 19.DEC.2018 22:03:41

802.11n20 mode, Power Spectral Density, 5320 MHz



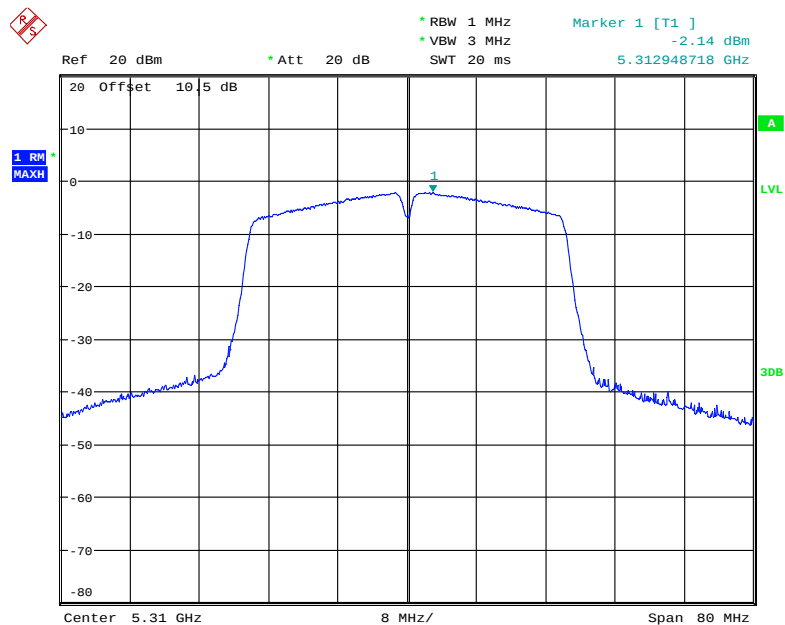
Date: 19.DEC.2018 22:04:07

802.11n40 mode, Power Spectral Density, 5270 MHz



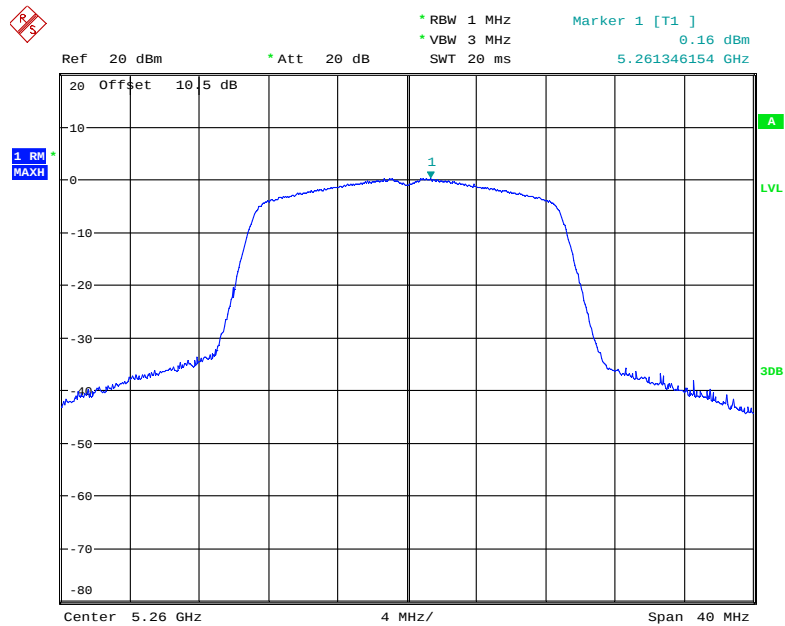
Date: 19.DEC.2018 22:09:15

802.11n40 mode, Power Spectral Density, 5310 MHz



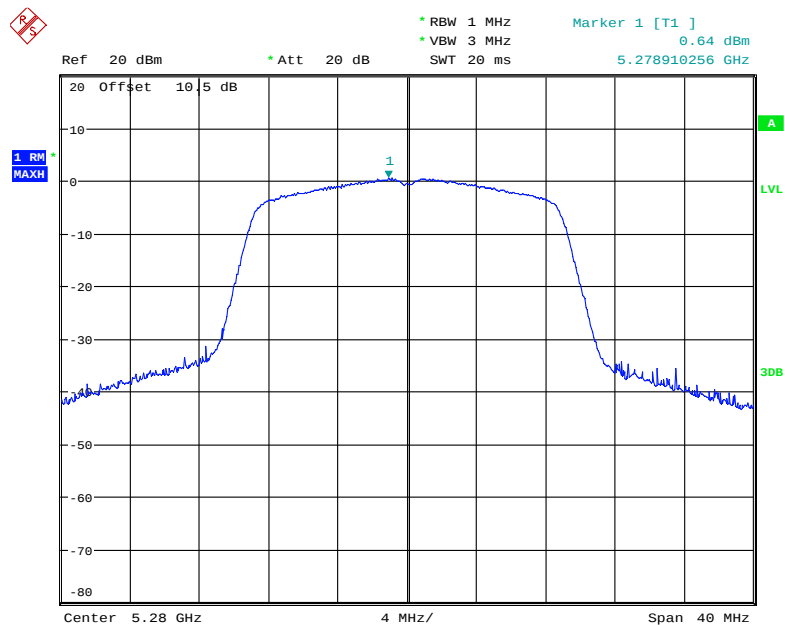
Date: 19.DEC.2018 22:08:39

802.11ac20 mode, Power Spectral Density, 5260 MHz



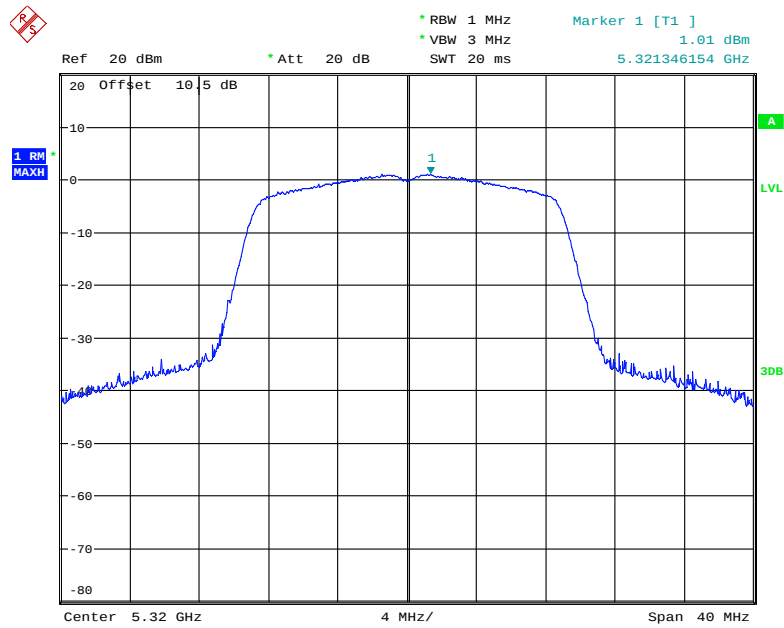
Date: 19.DEC.2018 22:06:23

802.11ac20 mode, Power Spectral Density, 5280 MHz



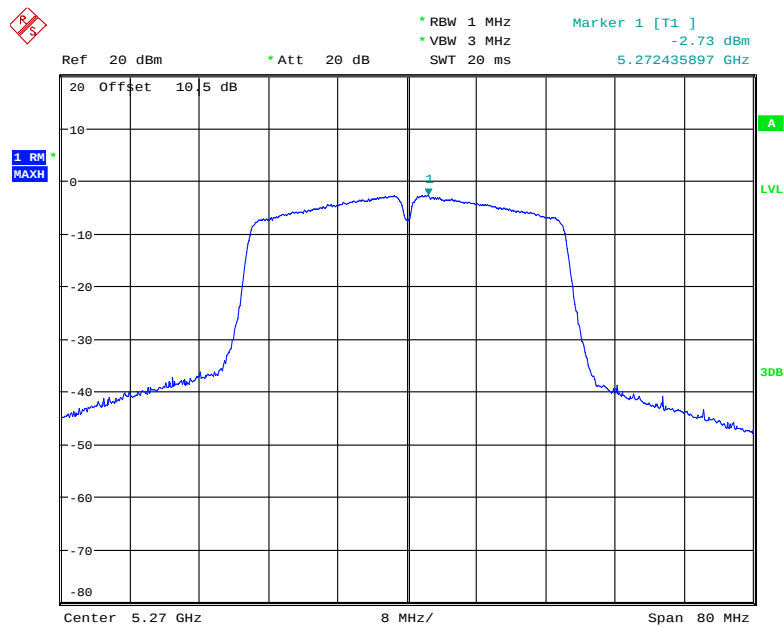
Date: 19.DEC.2018 22:05:10

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



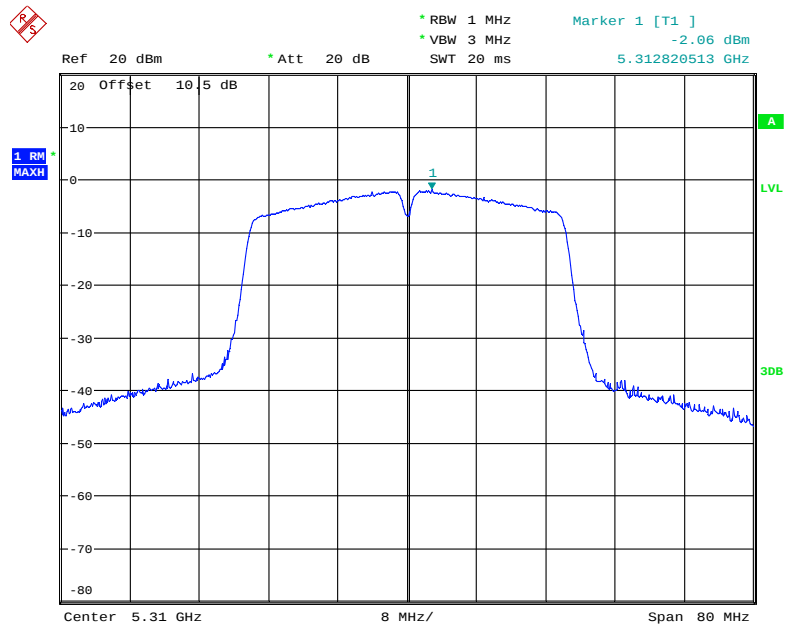
Date: 19.DEC.2018 22:04:39

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



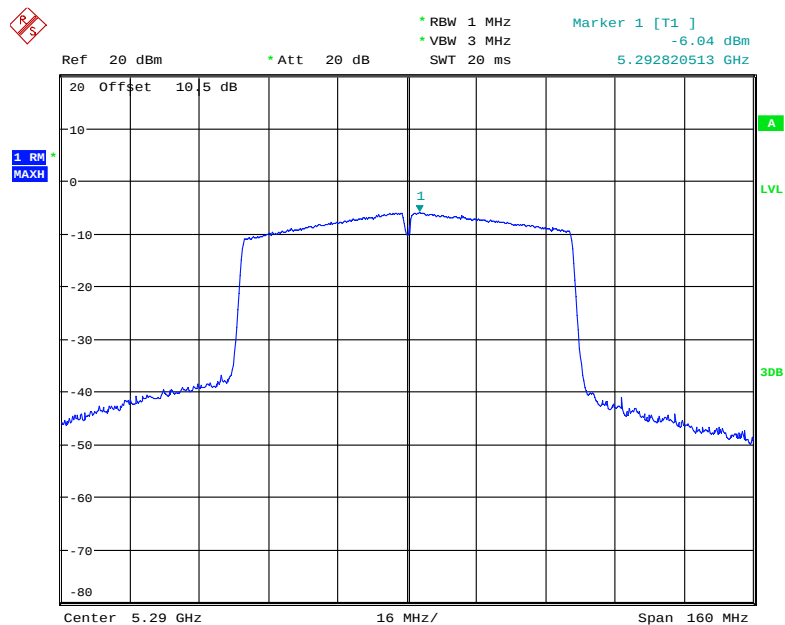
Date: 19.DEC.2018 22:07:42

802.11ac40 mode, Power Spectral Density, 5310 MHz



Date: 19.DEC.2018 22:08:09

802.11ac80 mode, Power Spectral Density, 5290 MHz

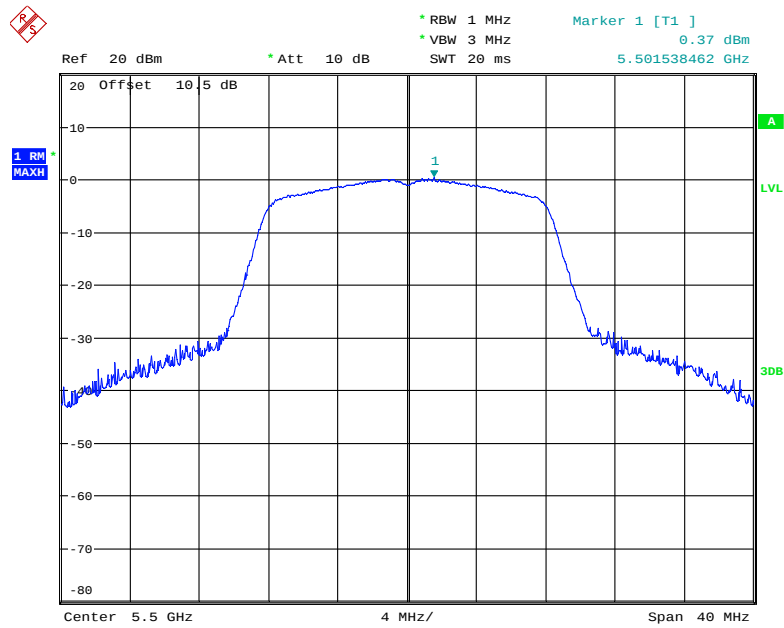


Date: 19.DEC.2018 22:11:47

5470 MHz – 5725 MHz:

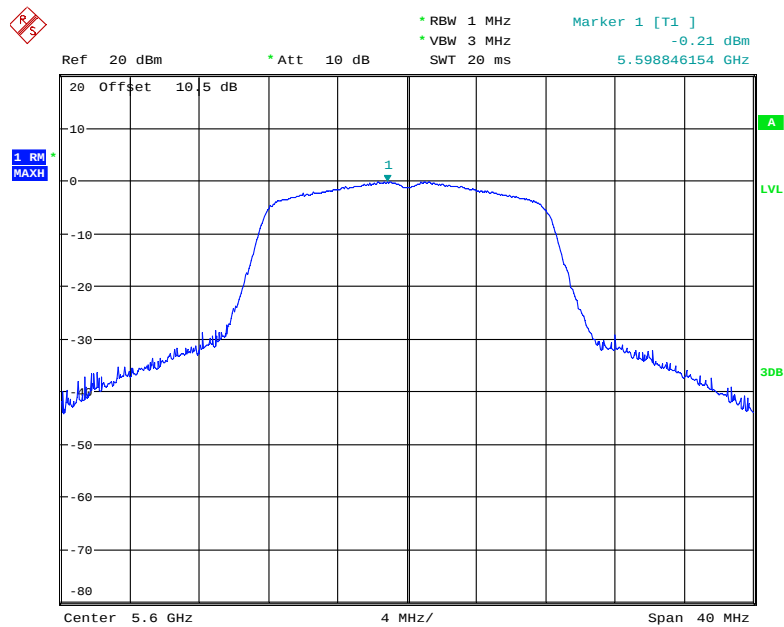
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5500	0.37	11
5600	-0.21	
5700	-1.33	
802.11n20		
5500	-0.24	11
5600	-0.44	
5700	-1.84	
802.11n40		
5510	-3.08	11
5590	-2.94	
5670	-3.18	
802.11ac20		
5500	-0.18	11
5600	-0.40	
5700	-1.87	
802.11ac40		
5510	-2.90	11
5590	-3.40	
5670	-4.79	
802.11ac80		
5530	-6.06	11
5610	-6.82	

802.11a mode, Power Spectral Density, 5500 MHz



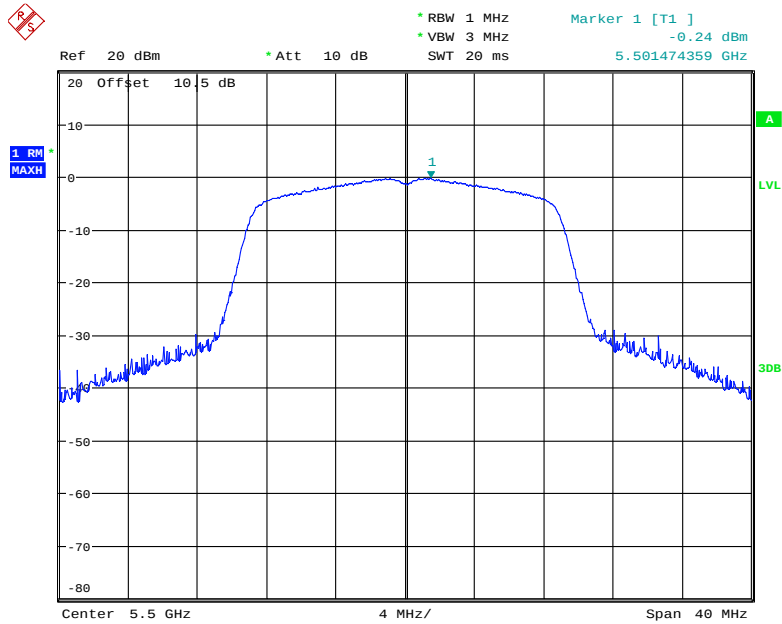
Date: 20.DEC.2018 22:18:43

802.11a mode, Power Spectral Density, 5600 MHz



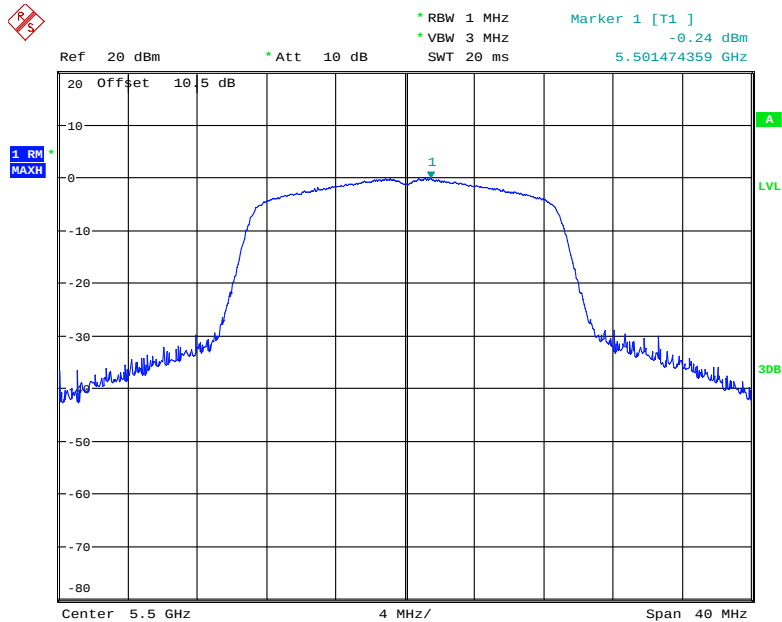
Date: 20.DEC.2018 22:19:18

802.11a mode, Power Spectral Density, 5700 MHz



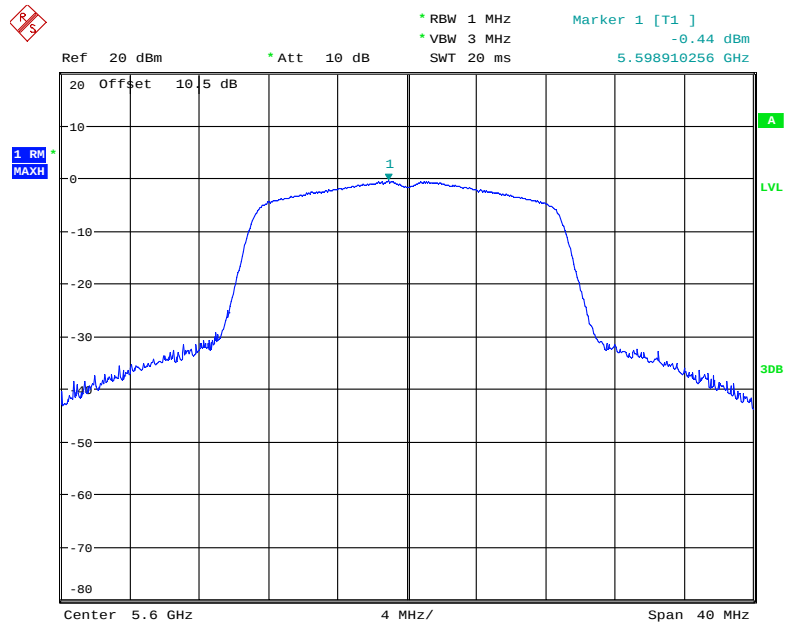
Date: 20.DEC.2018 22:16:32

802.11n20 mode, Power Spectral Density, 5500 MHz



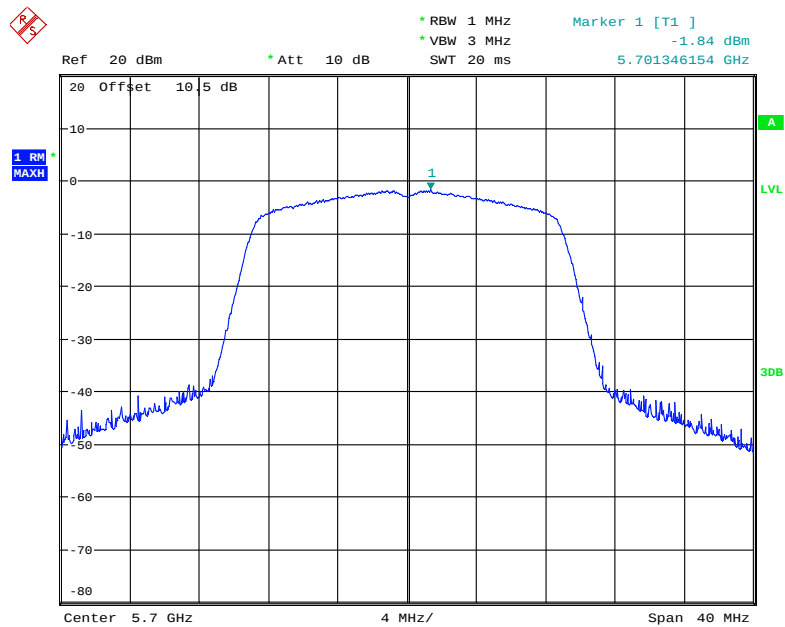
Date: 20.DEC.2018 22:16:32

802.11n20 mode, Power Spectral Density, 5600 MHz



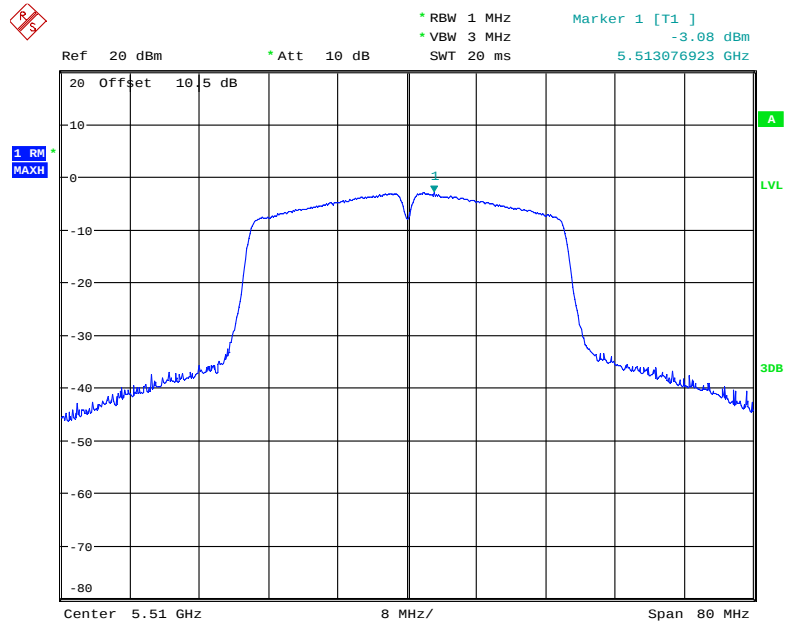
Date: 20.DEC.2018 22:15:38

802.11n20 mode, Power Spectral Density, 5700 MHz



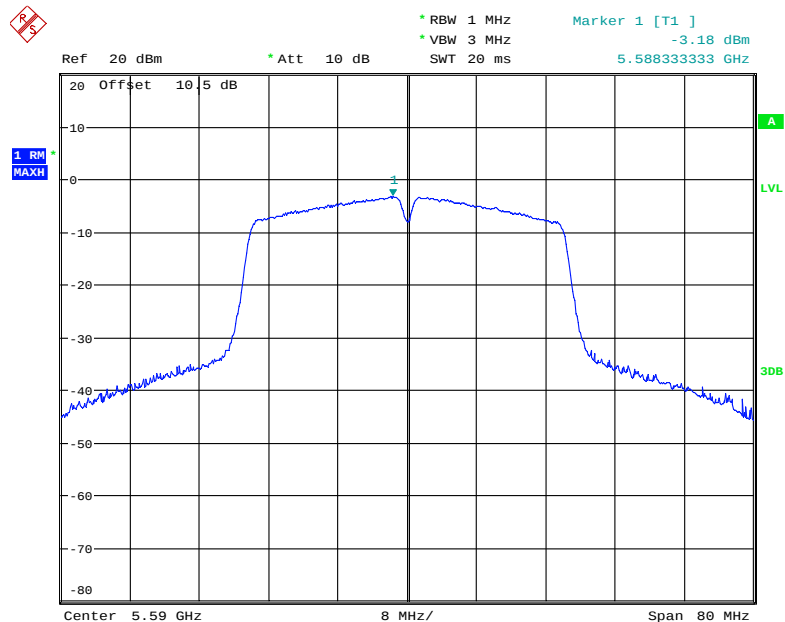
Date: 20.DEC.2018 22:15:13

802.11n40 mode, Power Spectral Density, 5510 MHz



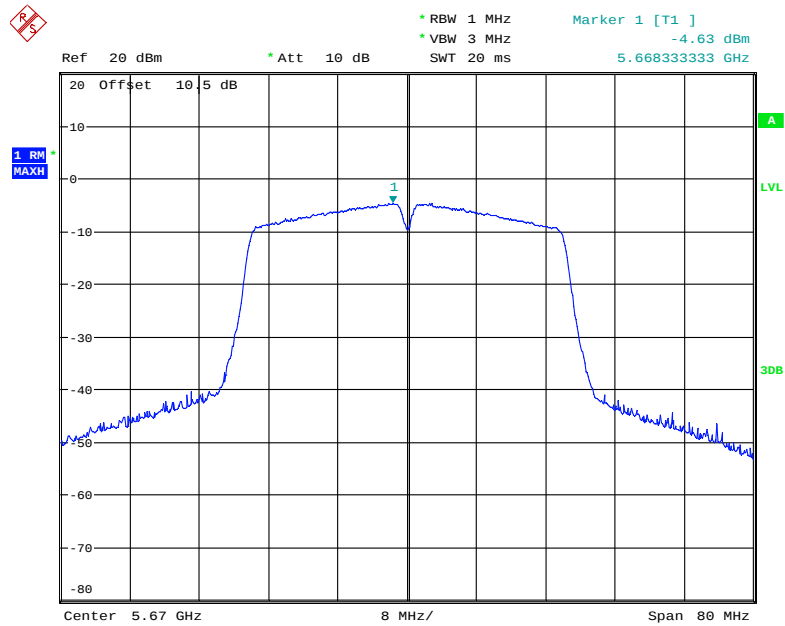
Date: 20.DEC.2018 22:21:32

802.11n40 mode, Power Spectral Density, 5590 MHz



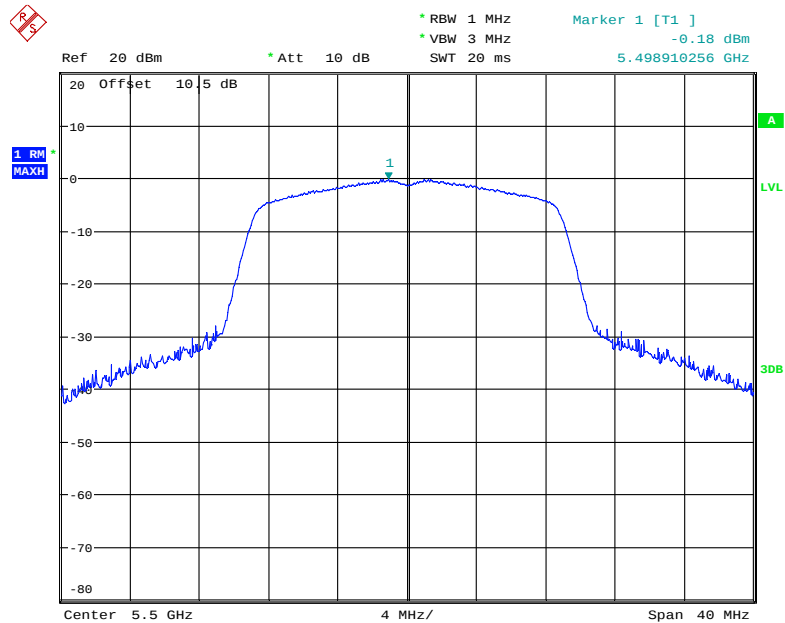
Date: 20.DEC.2018 22:24:37

802.11n40 mode, Power Spectral Density, 5670 MHz



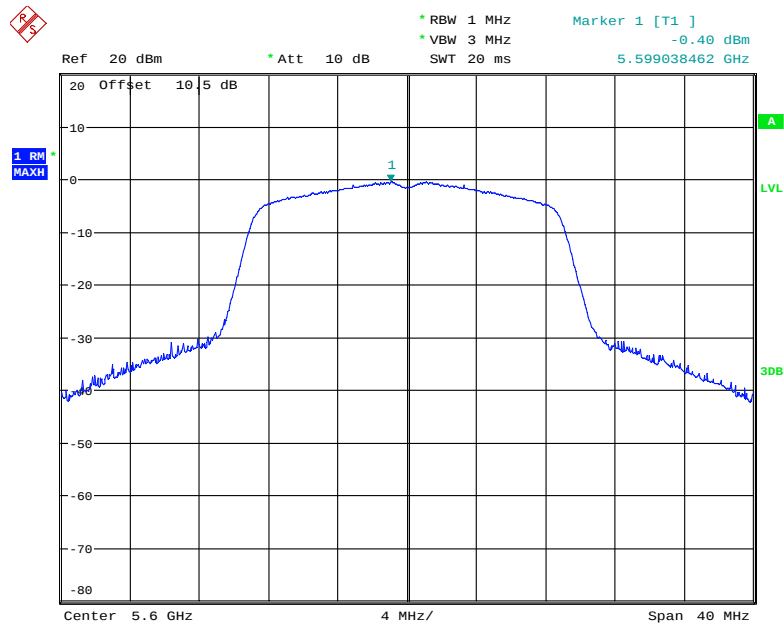
Date: 20.DEC.2018 22:30:14

802.11ac20 mode, Power Spectral Density, 5500 MHz



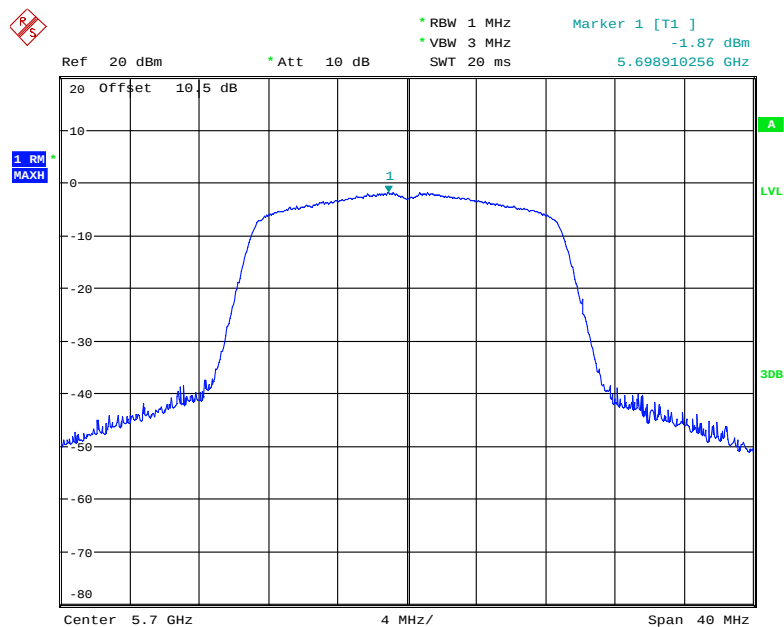
Date: 20.DEC.2018 22:10:54

802. 11ac20 mode, Power Spectral Density, 5600 MHz



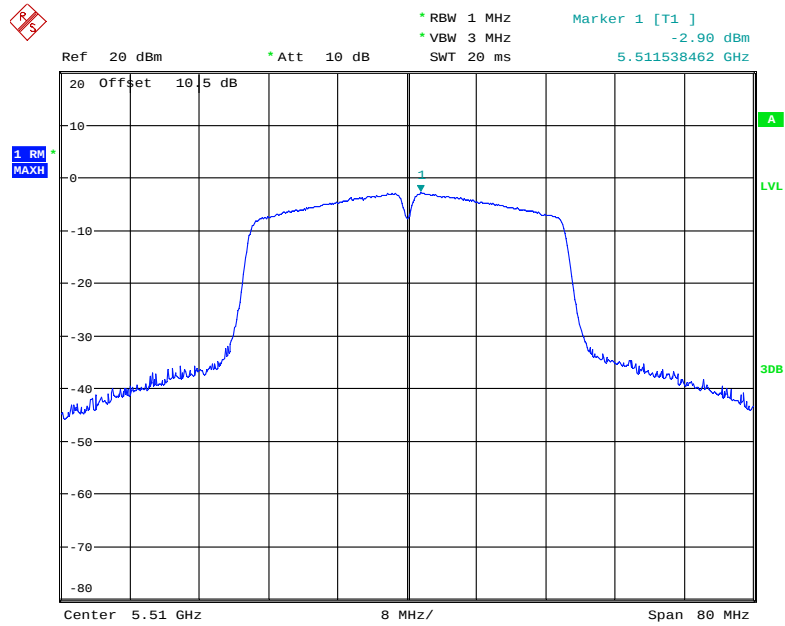
Date: 20.DECEMBER 2018 22:14:10

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



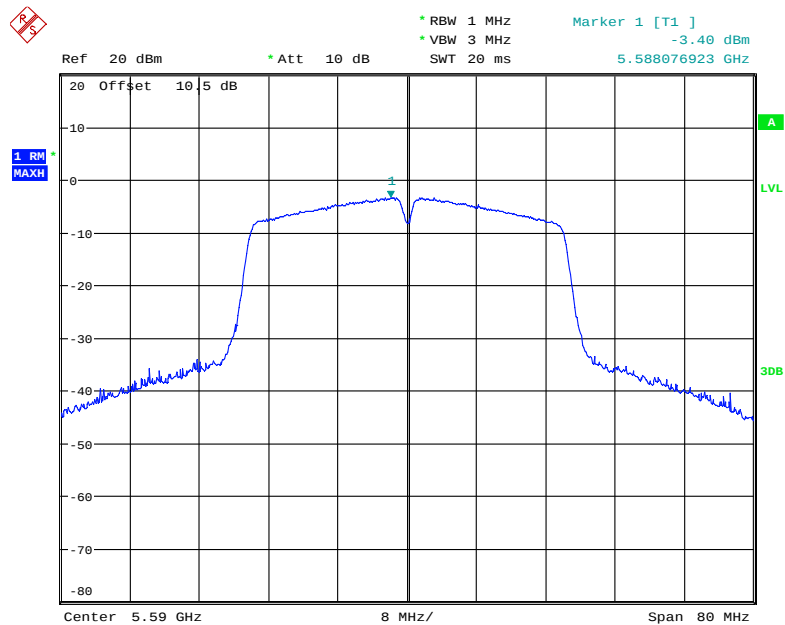
Date: 20.DECEMBER 2018 22:14:41

802.11ac40 mode, Power Spectral Density, 5510 MHz

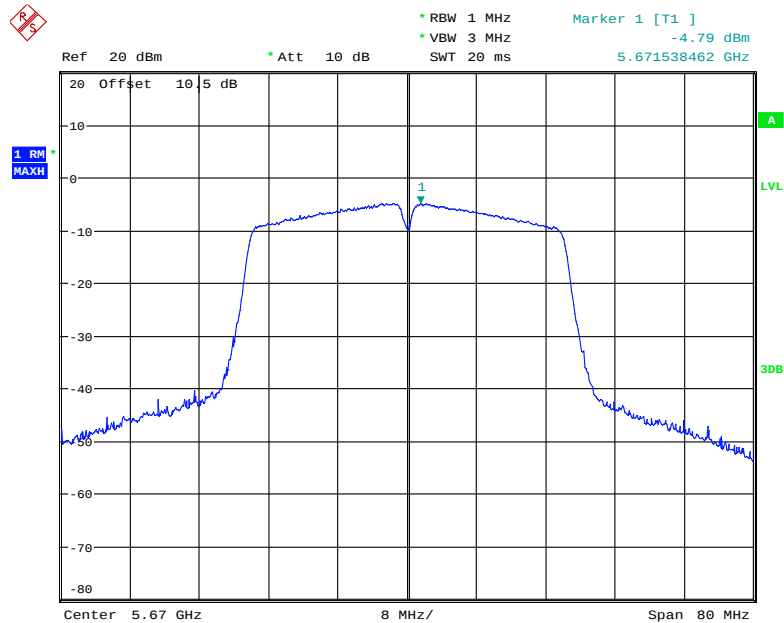


Date: 20.DEC.2018 22:23:06

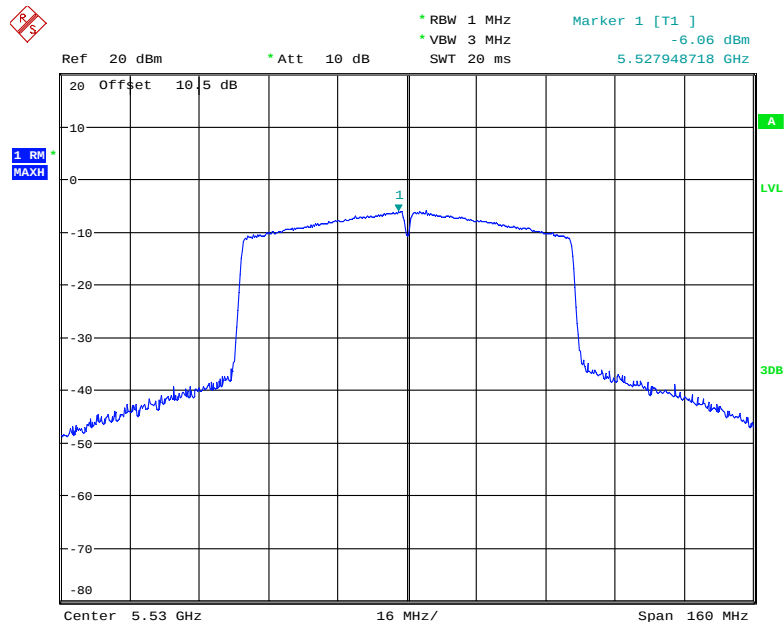
802.11ac40 mode, Power Spectral Density, 5590 MHz



Date: 20.DEC.2018 22:24:58

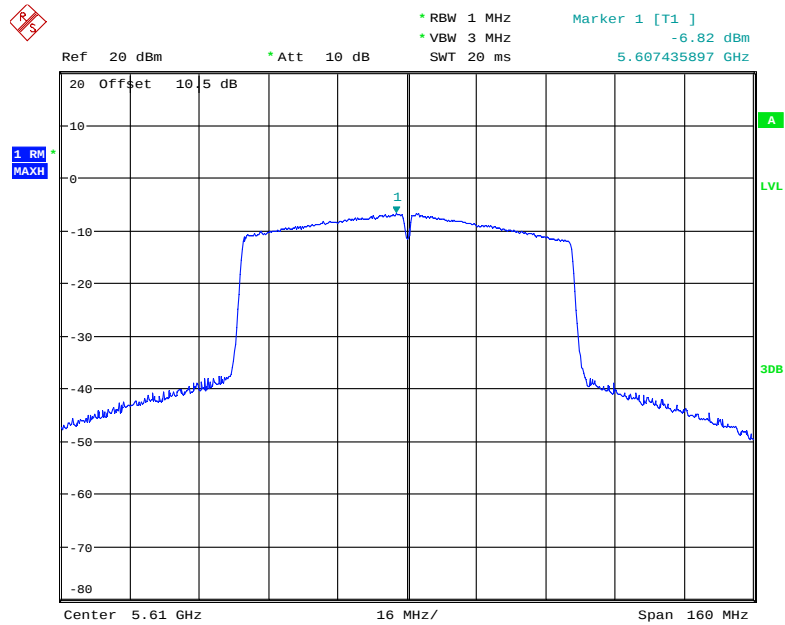
802.11ac40 mode, Power Spectral Density, 5670 MHz

Date: 20.DEC.2018 22:29:43

802.11ac80 mode, Power Spectral Density, 5530 MHz

Date: 20.DEC.2018 22:30:58

802.11ac80 mode, Power Spectral Density, 5610 MHz

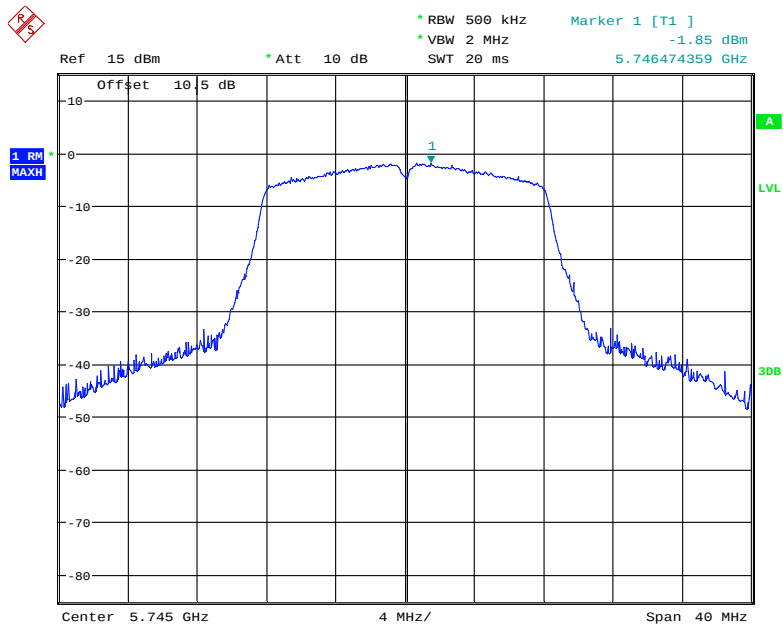


Date: 20.DEC.2018 22:31:29

5725 MHz – 5850 MHz:

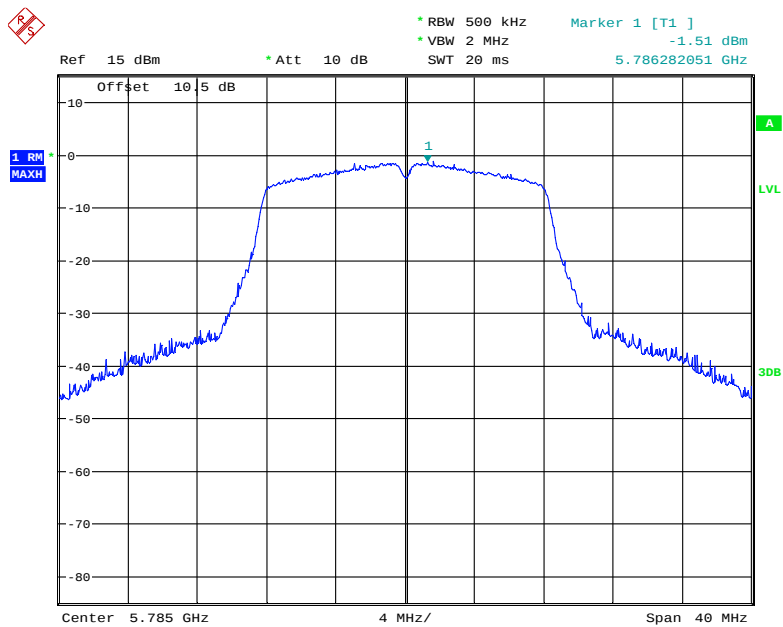
Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
802.11a		
5745	-1.85	30
5785	-1.51	
5825	-1.27	
802.11n20		
5745	-1.85	30
5785	-1.53	
5825	-0.99	
802.11n40		
5755	-5.20	30
5795	-4.78	
802. 11ac20		
5745	-1.54	30
5785	-1.79	
5825	-1.53	
802. 11ac40		
5755	-5.08	30
5795	-5.06	
802. 11ac80		
5775	-8.51	30

802.11a mode, Power Spectral Density, 5745 MHz



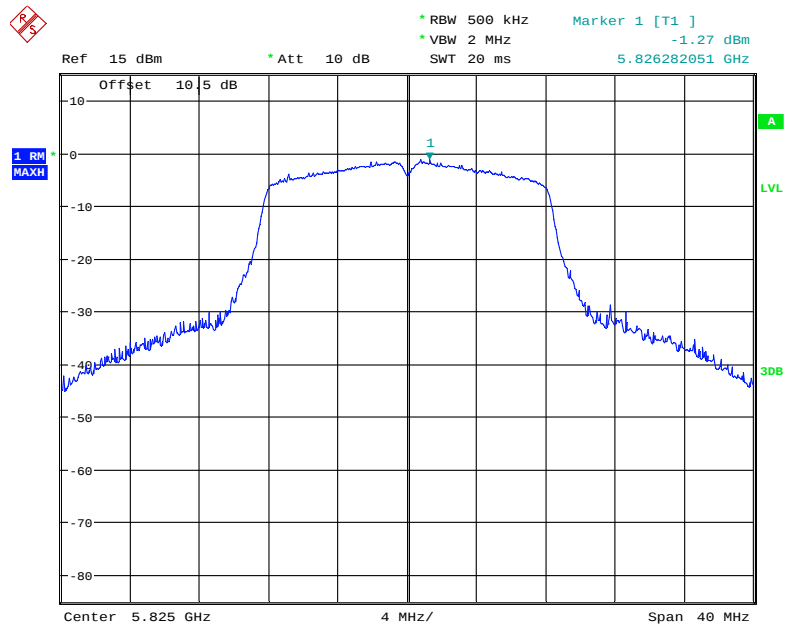
Date: 20.DEC.2018 23:12:04

802.11a mode, Power Spectral Density, 5785 MHz



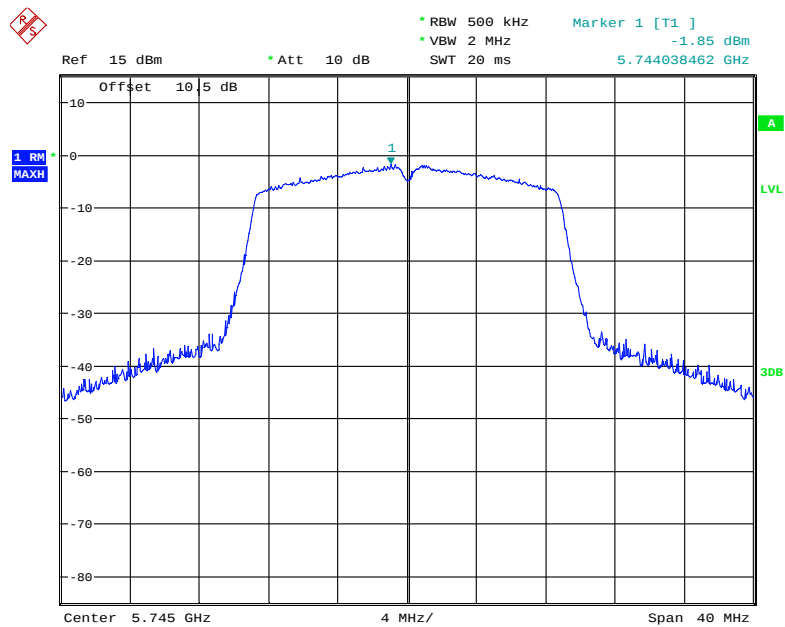
Date: 20.DEC.2018 23:12:37

802.11a mode, Power Spectral Density, 5825 MHz



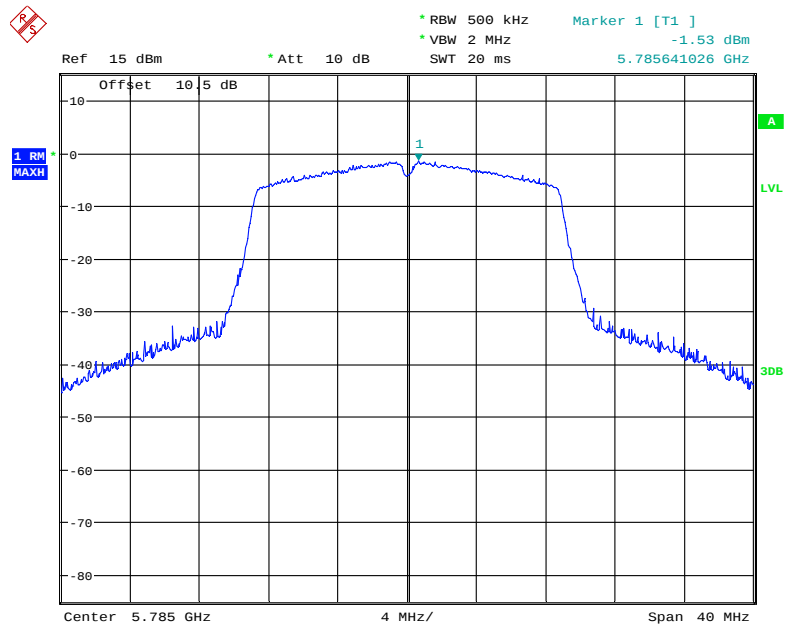
Date: 20.DEC.2018 23:13:04

802.11n20 mode, Power Spectral Density, 5745 MHz



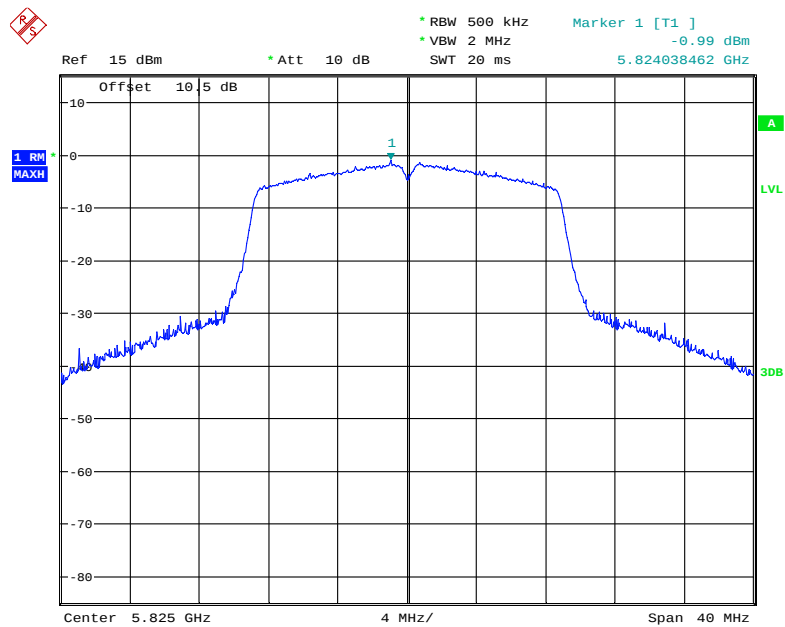
Date: 20.DEC.2018 23:13:51

802.11n20 mode, Power Spectral Density, 5785 MHz



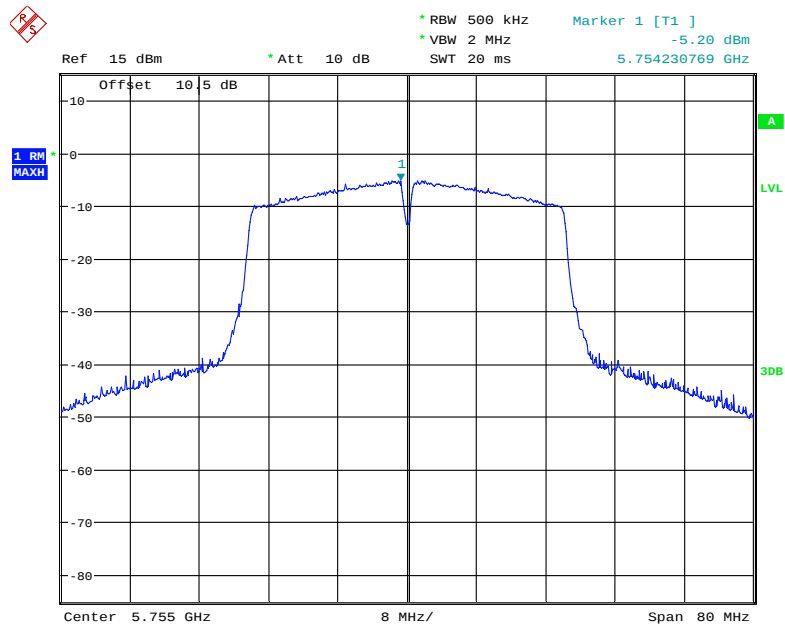
Date: 20.DEC.2018 23:15:08

802.11n20 mode, Power Spectral Density, 5825 MHz



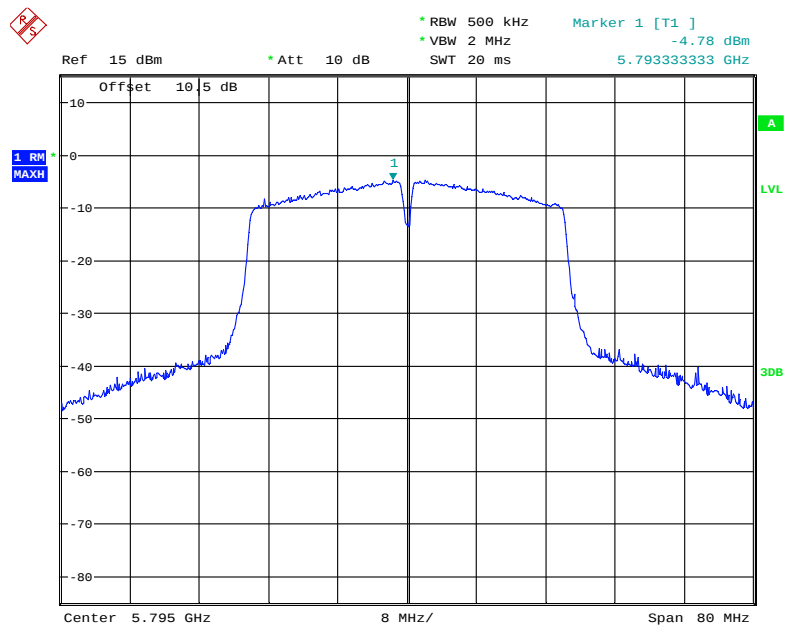
Date: 20.DEC.2018 23:15:32

802.11n40 mode, Power Spectral Density, 5755 MHz



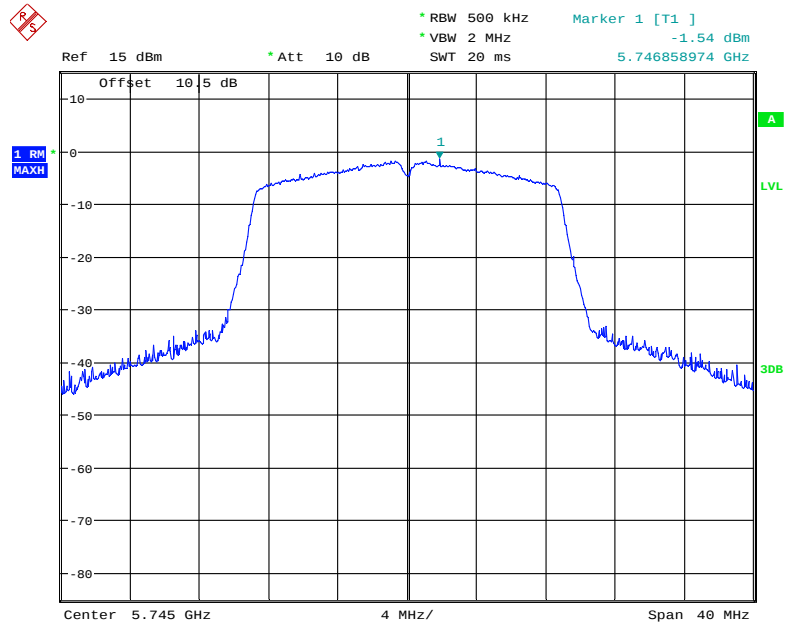
Date: 20.DEC.2018 23:07:40

802.11n40 mode, Power Spectral Density, 5795 MHz



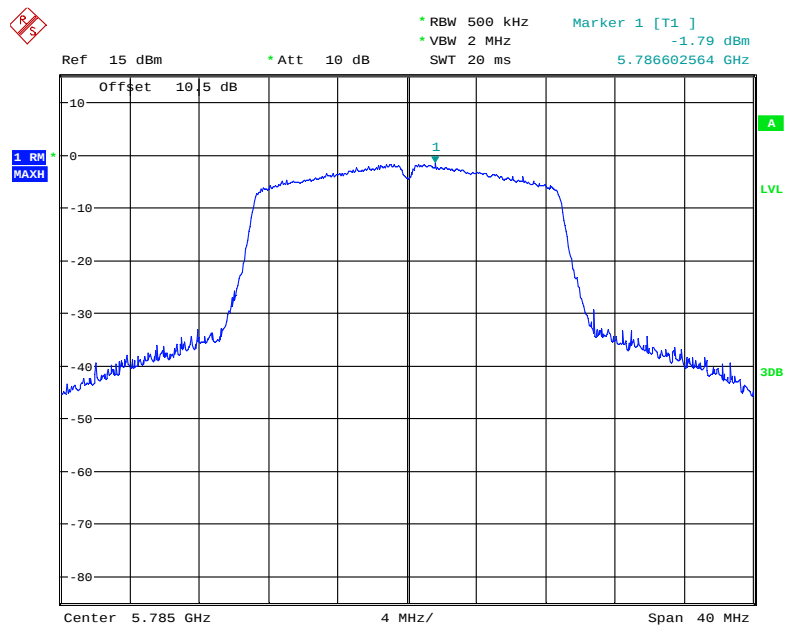
Date: 20.DEC.2018 23:07:13

802.11ac20 mode, Power Spectral Density, 5745 MHz



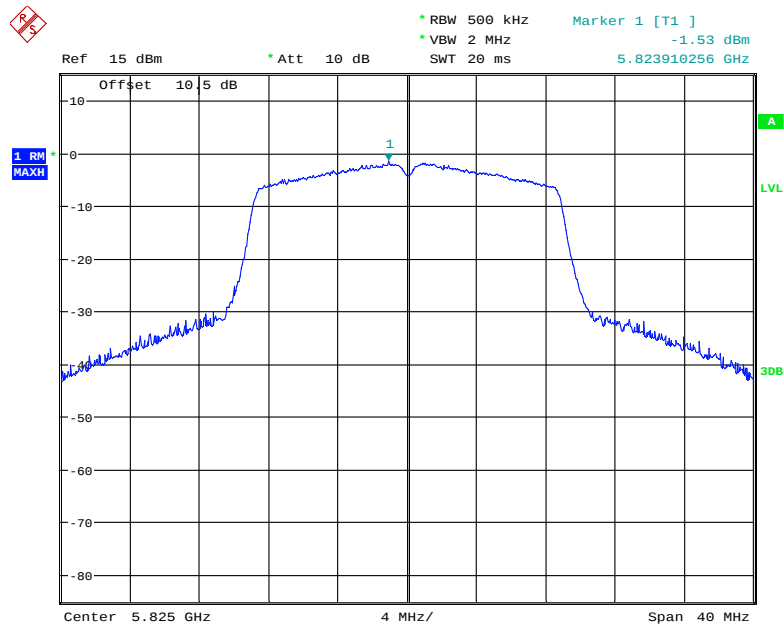
Date: 20.DEC.2018 23:14:29

802.11ac20 mode, Power Spectral Density, 5785 MHz



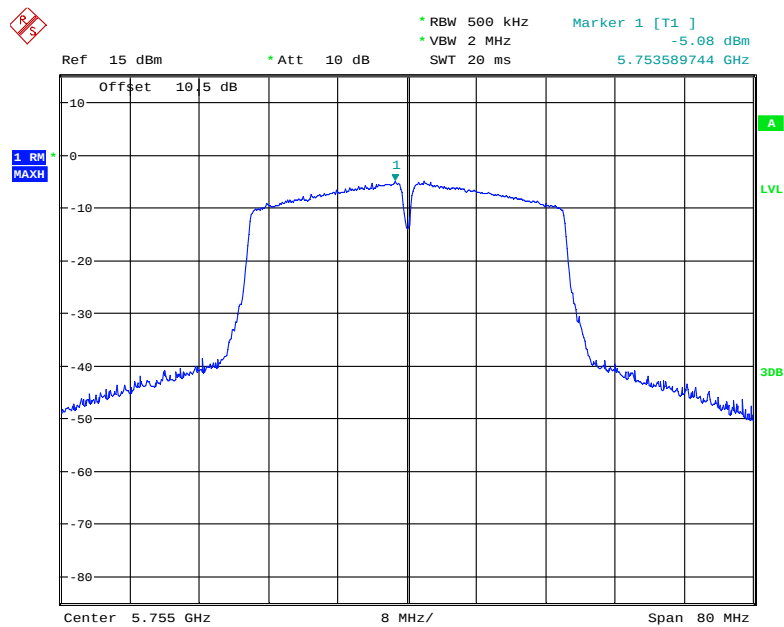
Date: 20.DEC.2018 23:14:52

802.11ac20 mode, Power Spectral Density, 5825 MHz



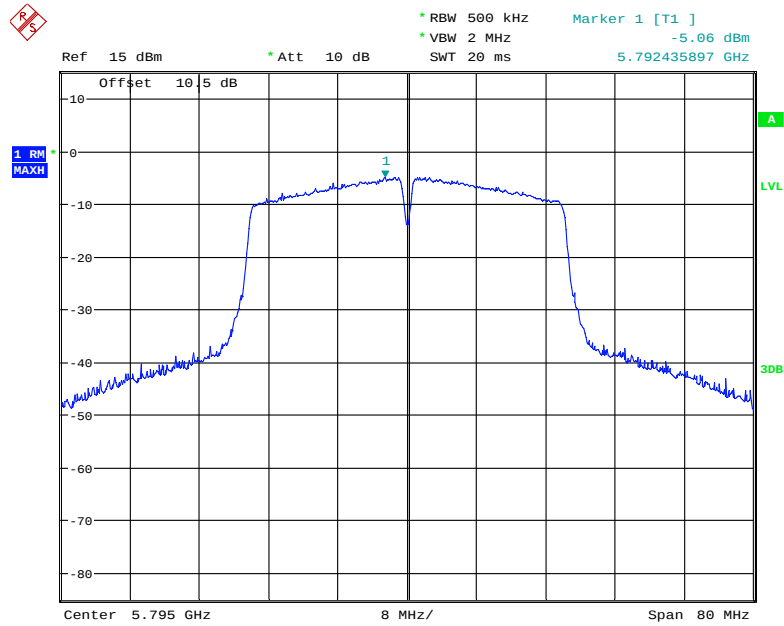
Date: 20.DEC.2018 23:15:59

802.11ac40 mode, Power Spectral Density, 5755 MHz



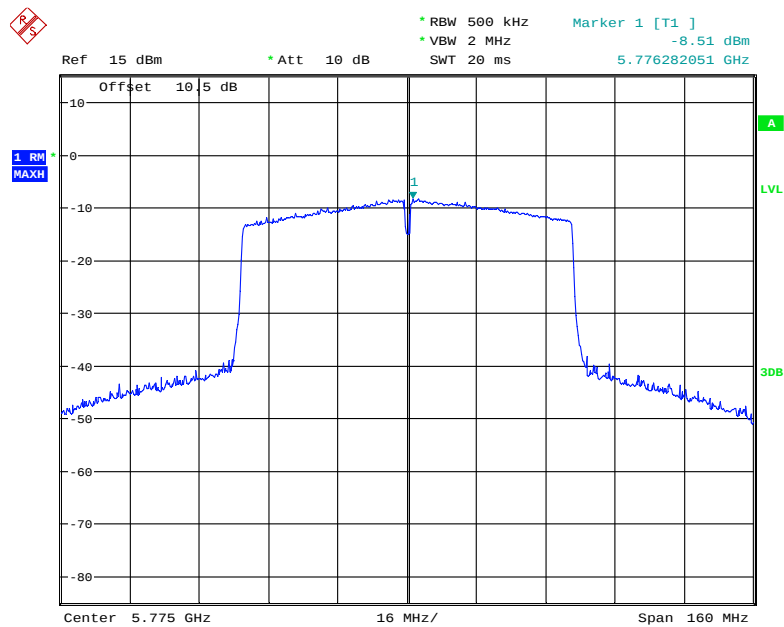
Date: 20.DEC.2018 23:06:24

802. 11ac40 mode, Power Spectral Density, 5795 MHz



Date: 20.DEC.2018 23:06:50

802. 11ac80 mode, Power Spectral Density, 5775 MHz



Date: 20.DEC.2018 23:05:19

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