



FCC PART 15.407 TEST REPORT

For

Grandstream Networks, Inc.

126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

FCC ID: YZZGWN7630

Report Type: Original Report	Product Type: Enterprise 802.11ac Wave-2 4×4:4 Wi-Fi Access Point
Report Number: RSZ190328003-00C	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Enterprise 802.11ac Wave-2 4×4:4 Wi-Fi Access Point
Model	GWN7630
Frequency Range	5G WI-FI: 5150-5250 MHz;5725-5850 MHz
Transmit Power	5150-5250 MHz: 21.42dBm (802.11a), 21.28dBm(802.11n20), 21.24 dBm(802.11n40), 21.35dBm (802.11ac20), 21.15dBm(802.11 ac40),20.30dBm(802.11 ac80) 5725-5850 MHz 21.91dBm (802.11a), 21.48dBm(802.11n20), 21.55 dBm(802.11n40), 21.40dBm (802.11ac20), 21.56dBm(802.11 ac40), 21.24 dBm(802.11 ac80)
Modulation Technique	WIFI: OFDM
Antenna Specification	PIFA Antenna: 5dBi@5GHz
Voltage Range	DC 48V from POE
Date of Test	2019/04/25~2019/05/09
Sample serial number	190328003
Received date	2019/03/28
Sample/EUT Status	Good condition

Objective

This type approval report is prepared on behalf of *Grandstream Networks, Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15B JAB and FCC Part 15.247 DTS submissions with FCC ID: YZZGWN7630.

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	Below 1GHz	±4.75dB
	Above 1GHz	±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 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

Note: 802.11a/n20/n40/ac20/ac40/ac80 all support SISO&MIMO mode, the pre-scan result for MIMO mode is the worst, so just test MIMO mode.

EUT Exercise Software

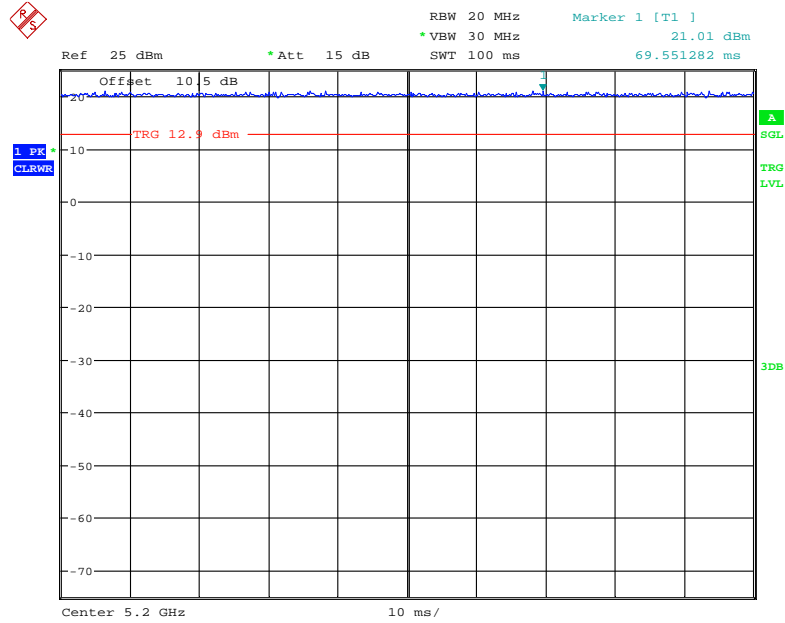
“Putty, QATool” was used in the test. Test frequencies and power level were configured (Ant 0&1&2&3) used the same power level) as below:

U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5150 – 5250MHz	802.11 a	CH36	5180	6	18.5
		CH40	5200	6	18.5
		CH48	5240	6	18.5
	802.11 n20	CH36	5180	MCS0	18.5
		CH40	5200	MCS0	18.5
		CH48	5240	MCS0	18.5
	802.11 n40	CH38	5190	MCS0	18.5
		CH46	5230	MCS0	18.5
	802.11 ac20	CH36	5180	MCS0	18.5
		CH40	5200	MCS0	18.5
		CH48	5240	MCS0	18.5
	802.11 ac40	CH38	5190	MCS0	18.5
		CH46	5230	MCS0	18.5
	802.11 ac80	CH42	5210	MCS0	18.5

U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5725 – 5850MHz	802.11 a	CH149	5745	6	18.5
		CH157	5785	6	18.5
		CH165	5825	6	18.5
	802.11 n20	CH149	5745	MCS0	18.5
		CH157	5785	MCS0	18.5
		CH165	5825	MCS0	18.5
	802.11 n40	CH151	5755	MCS0	18.5
		CH159	5795	MCS0	18.5
	802.11 ac20	CH149	5745	MCS0	18.5
		CH157	5785	MCS0	18.5
		CH165	5825	MCS0	18.5
	802.11 ac40	CH151	5755	MCS0	18.5
		CH159	5795	MCS0	18.5
	802.11 ac80	CH155	5775	MCS0	18.5

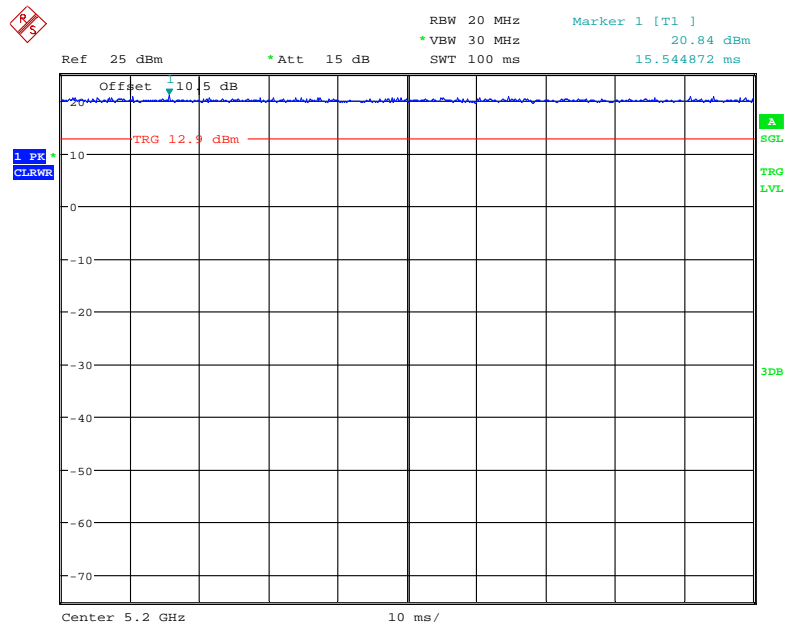
Duty cycle
5150-5250 MHz

802.11a mode



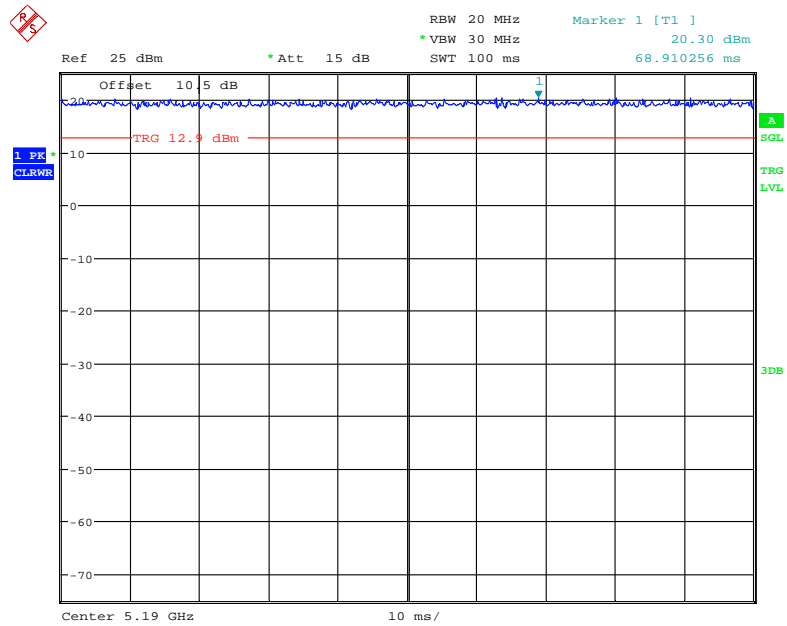
Date: 30.APR.2019 14:46:24

802.11n20 mode



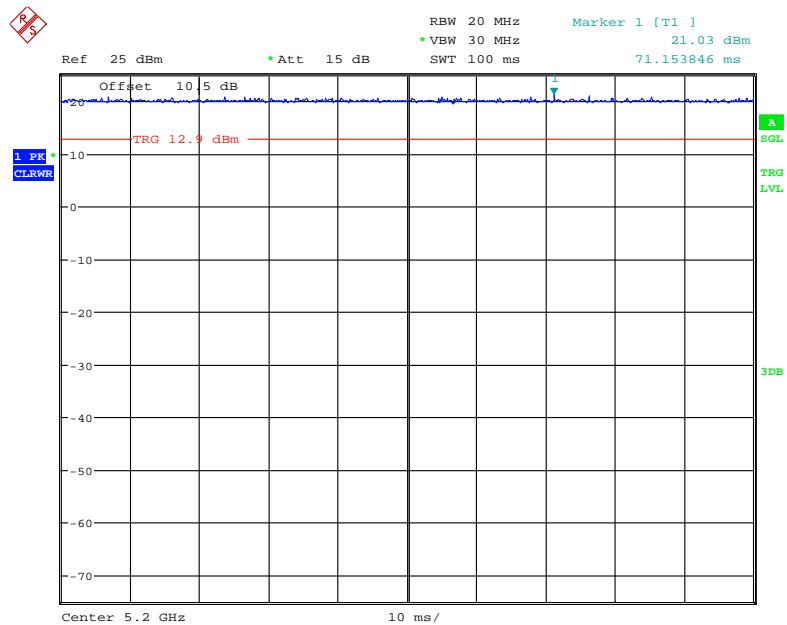
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802.11n40 Mode



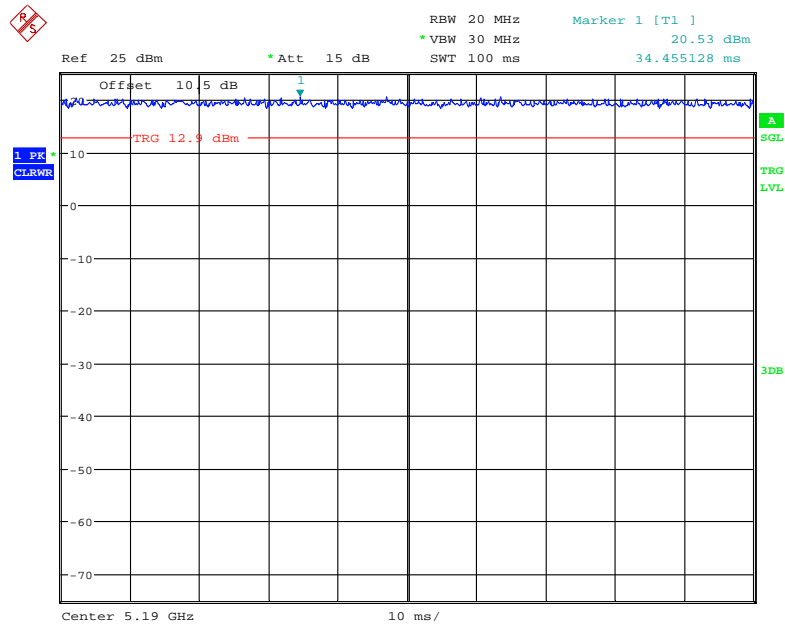
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802.11ac20 Mode



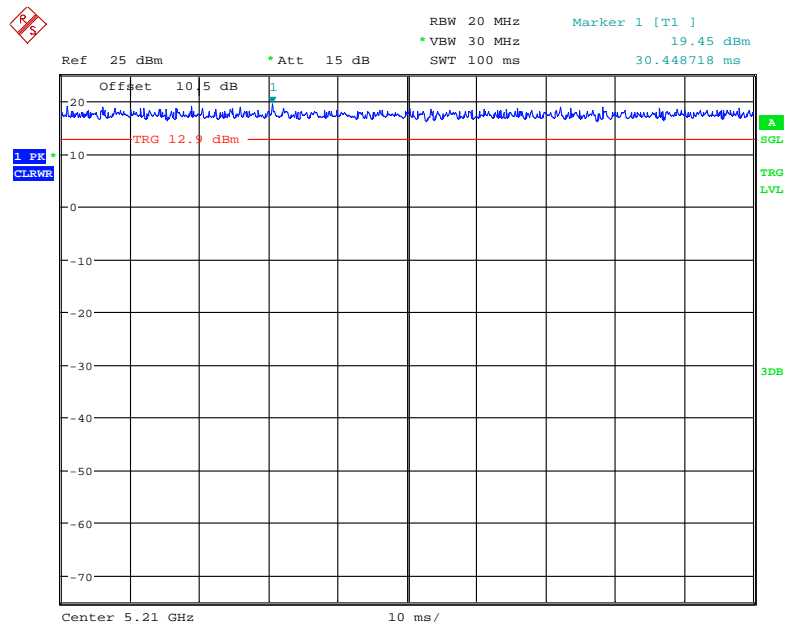
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802.11ac40 Mode



Date: 30.APR.2019 14:45:16

802.11ac80 Mode

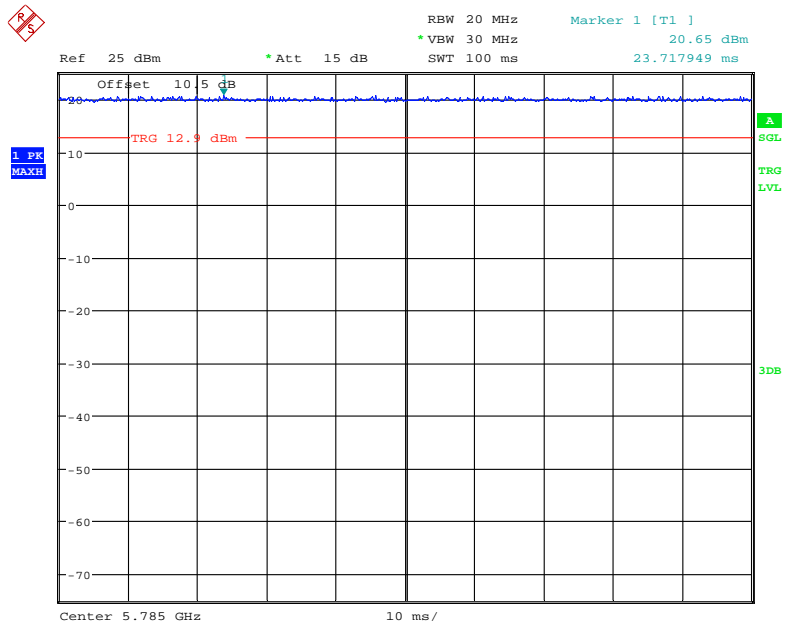


Date: 30.APR.2019 14:44:37

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

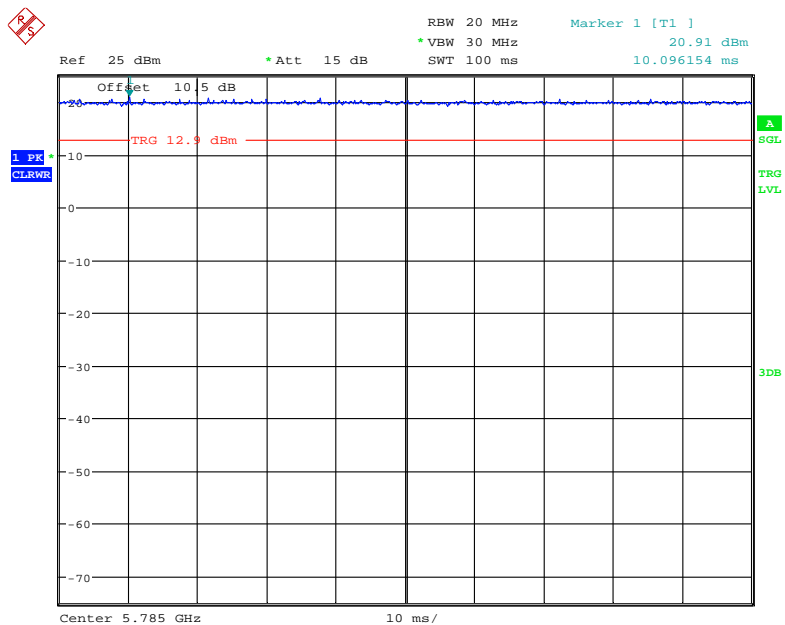
5725-5850 MHz

802.11a mode



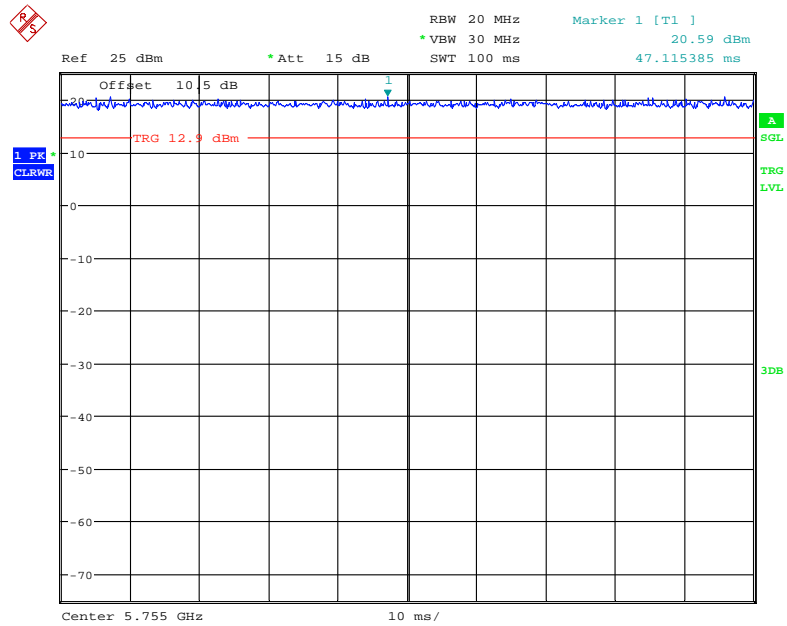
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802.11n20 mode



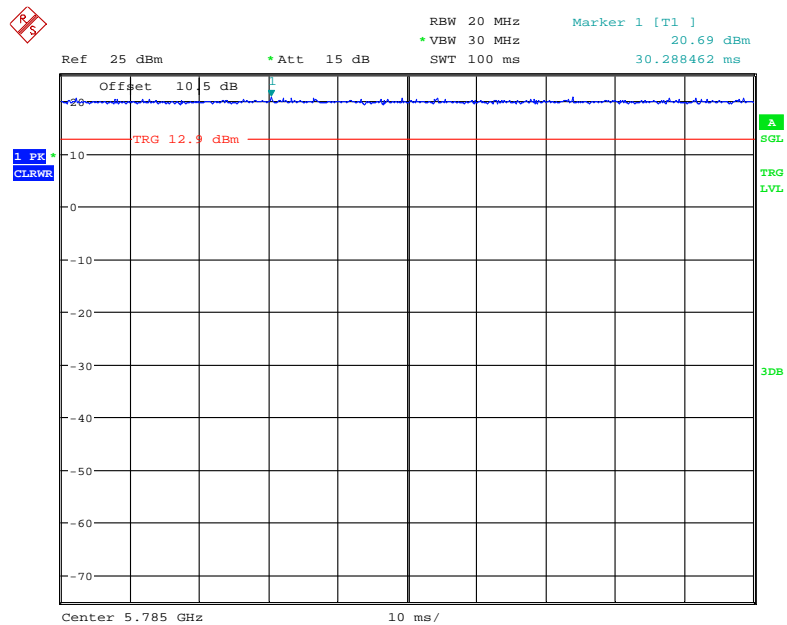
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802.11n40 Mode



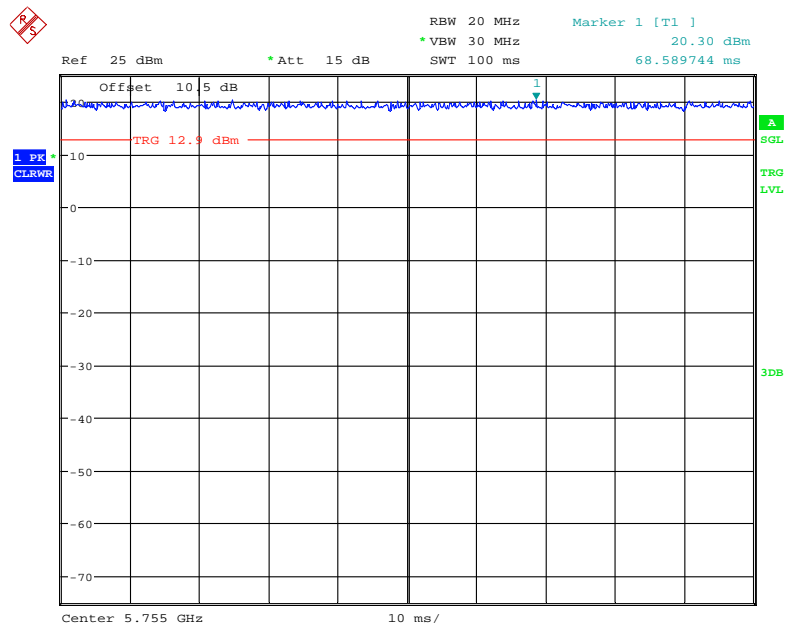
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802.11ac20 Mode



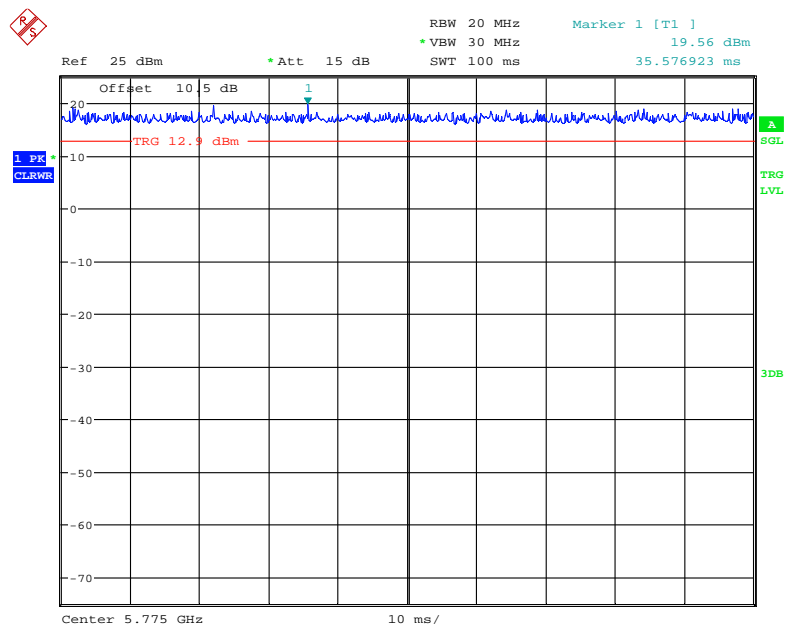
Date: 30.APR.2019 14:39:38

802.11ac40 Mode



Date: 30.APR.2019 14:42:30

802.11ac80 Mode



Date: 30.APR.2019 14:43:29

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

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

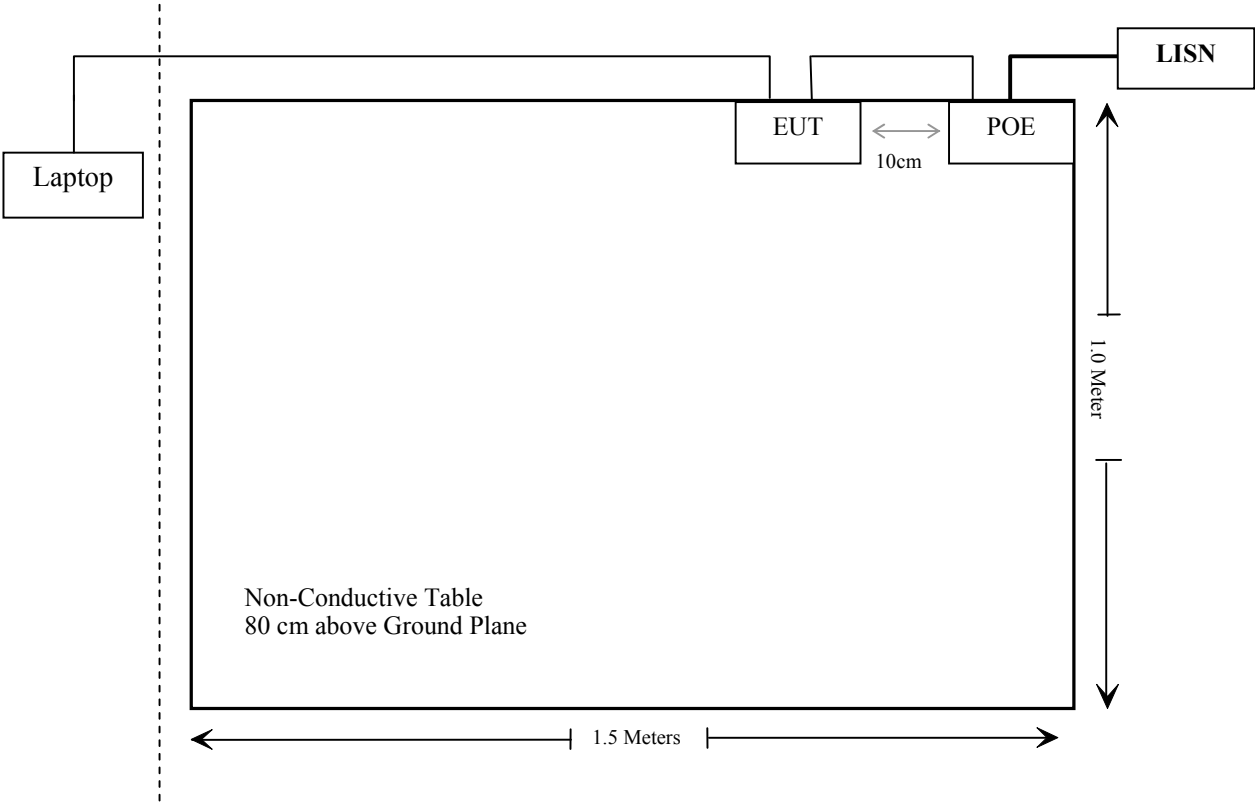
Manufacturer	Description	Model	Serial Number
Dcoma	POE	PSE801G	N/A
HP	Laptop	Compaq CQ45	5CG33407QL

External I/O Cable

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

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1091	Maximum Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1), (4),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (1), (5),(e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliance
§15.407(a)(1), (3)	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1), (3)	Power Spectral Density	Compliance

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	2019-01-25	2020-01-25
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2019-03-02	2020-03-02
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
N/A Unknown	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	2018-09-01	2021-08-31
Rohde & Schwarz	Signal Analyzer	FSV40	101473	2019-01-09	2020-01-08
Agilent	Spectrum Analyzer	8564E	3943A01781	2019-01-04	2020-01-04
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	310 N	186238	2018-11-12	2019-11-12
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2018-07-11	2019-07-11
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-11-12	2019-11-12
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-4223-02	1007726-04	2017-12-29	2020-12-28
Ducommun Technologies	Horn Antenna	ARH-4283-02	1007726-03	2017-12-29	2020-12-28
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-11-12	2019-11-12
Un-known	Band Reject Filter	BSF5150-5850MN-0899-004	Un-known	2018-11-12	2019-11-12

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2018-12-24	2019-12-24
Agilent	USB windebond 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).

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

Applicable Standard

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

Limits for General Population/Uncontrolled Exposure

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

f = frequency in MHz

* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm²)

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

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

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

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
5150-5250	5	3.16	21.50	141.25	20	0.09	1.0
5725-5850	5	3.16	22.00	158.49	20	0.10	1.0

Note:

- 1) The conducted power is the tune-up power of the Max Conducted Output Power.
- 2) 2.4GHz or 5GHz Wi-Fi can't transmit simultaneously for this device.

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

Result: Compliance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

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

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

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

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

Antenna Connector Construction

The EUT has four internal antennas arrangement, which were permanently attached and the antenna gain is 5 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

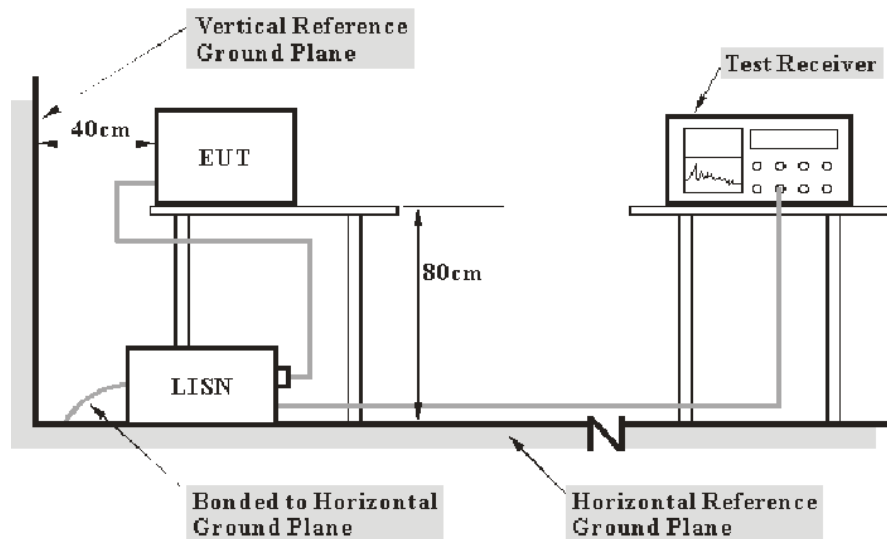
Result: Compliance.

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.

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

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

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.

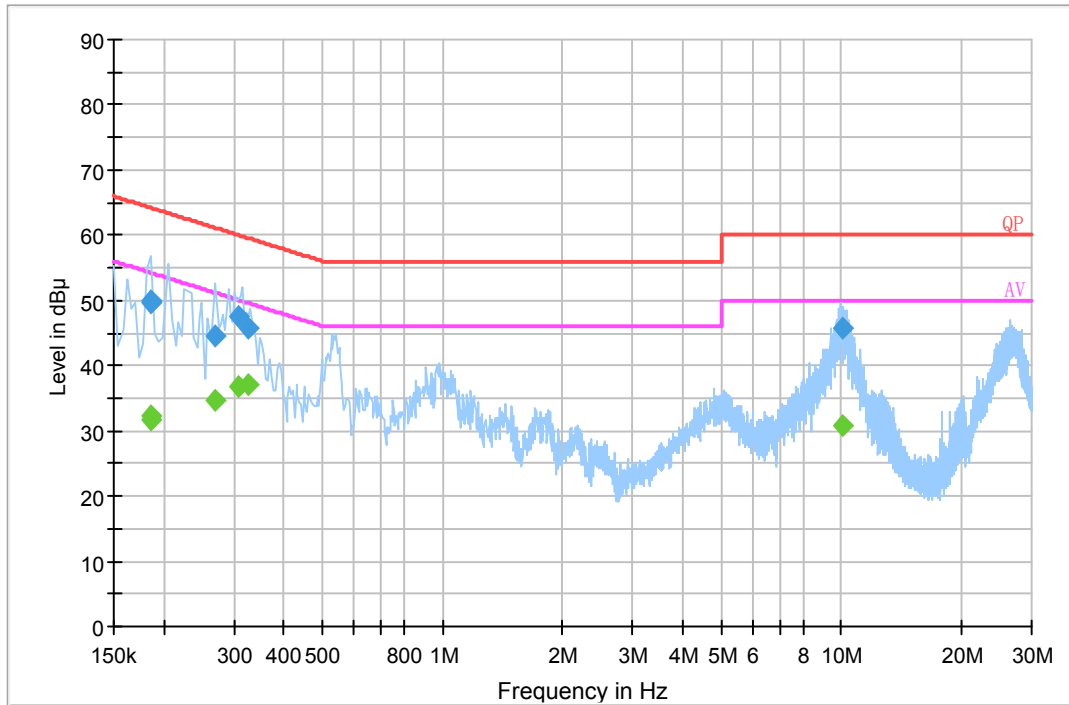
Test Data

Environmental Conditions

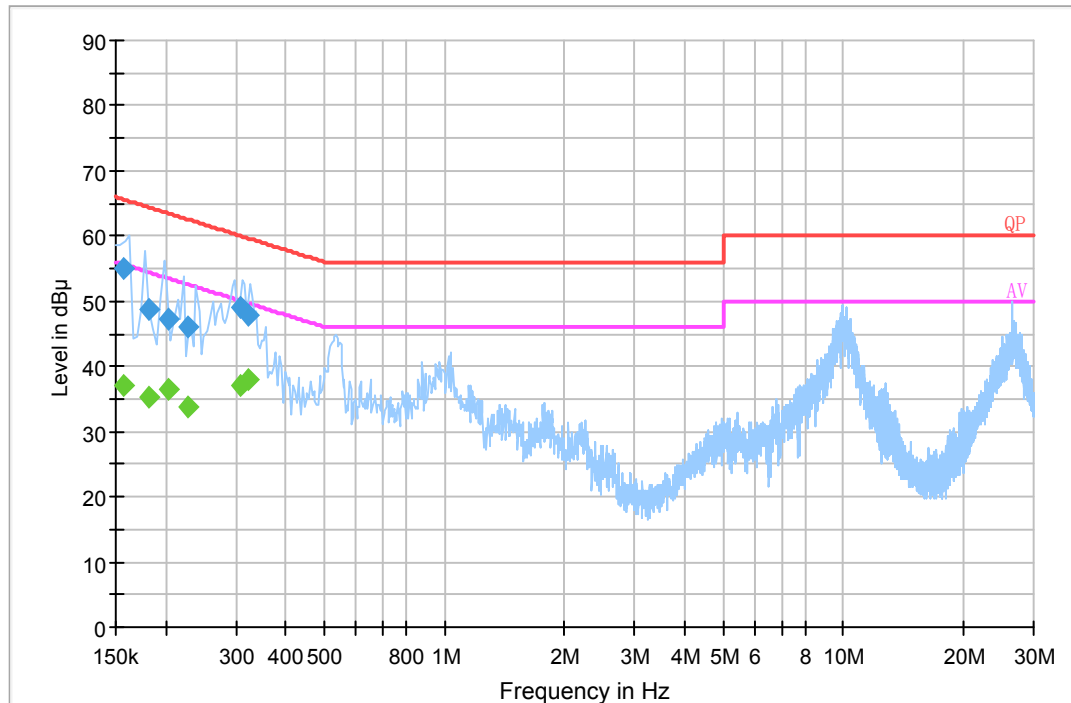
Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2019-04-26.

EUT operation mode: Transmitting (worst case)

AC 120 V/60 Hz, Line:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.185500	50.0	19.8	64.2	14.2	QP
0.186500	49.6	19.8	64.2	14.6	QP
0.269500	44.6	19.8	61.1	16.5	QP
0.309290	47.5	19.7	60.0	12.5	QP
0.325050	45.7	19.8	59.6	13.9	QP
10.100330	45.8	20.0	60.0	14.2	QP
0.185500	31.6	19.8	54.2	22.6	Ave.
0.186500	32.2	19.8	54.2	22.0	Ave.
0.269500	34.6	19.8	51.1	16.5	Ave.
0.309290	36.8	19.7	50.0	13.2	Ave.
0.325050	37.2	19.8	49.6	12.4	Ave.
10.100330	30.8	20.0	50.0	19.2	Ave.

AC 120 V/60 Hz, Neutral:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.157500	55.2	19.8	65.6	10.4	QP
0.181500	48.7	19.8	64.4	15.7	QP
0.202500	47.4	19.8	63.5	16.1	QP
0.226500	45.9	19.8	62.6	16.7	QP
0.309350	49.1	19.7	60.0	10.9	QP
0.321110	48.0	19.8	59.7	11.7	QP
0.157500	37.2	19.8	55.6	18.4	Ave.
0.181500	35.3	19.8	54.4	19.1	Ave.
0.202500	36.4	19.8	53.5	17.1	Ave.
0.226500	33.7	19.8	52.6	18.9	Ave.
0.309350	37.0	19.7	50.0	13.0	Ave.
0.321110	38.0	19.8	49.7	11.7	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), (4), (6), (7) – UNDESIRABLE EMISSION**Applicable Standard**

FCC §15.407 (b) (1) , (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.

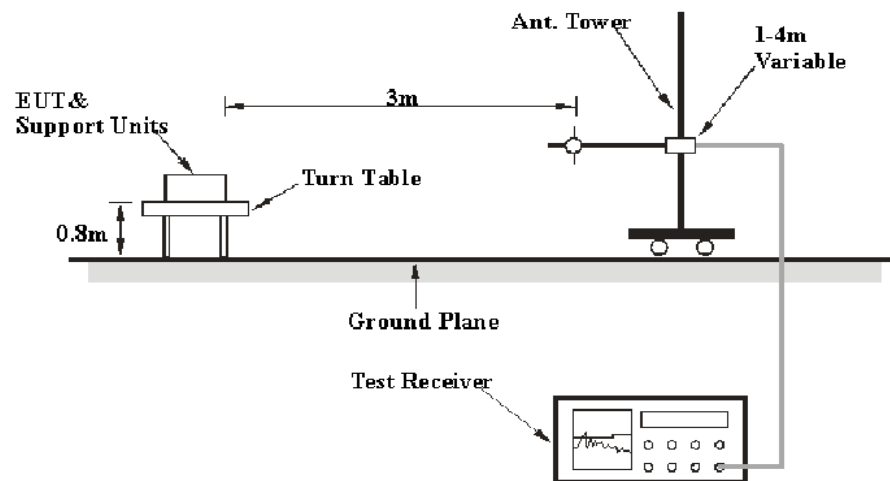
(4) For transmitters operating in the 5.725-5.85 GHz band:

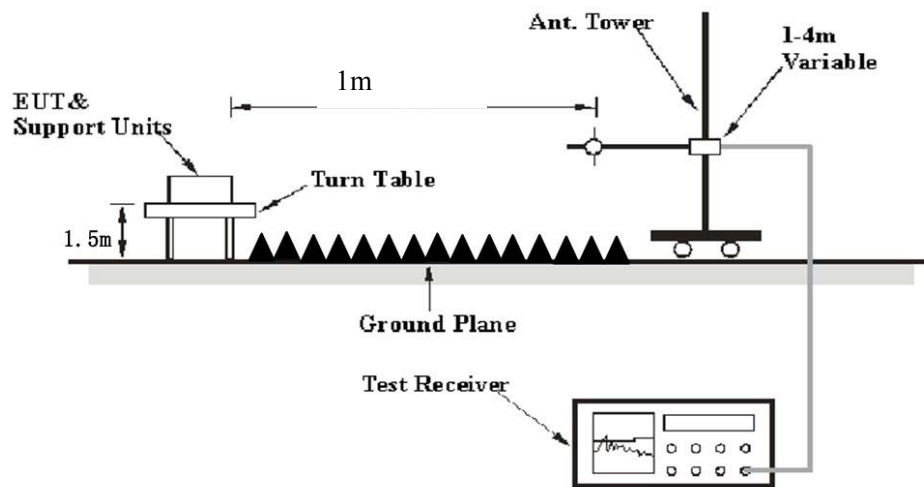
(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

EUT Setup

Below 1 GHz:



Above 1 GHz:

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

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

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

where

$E_{\text{SpecLimit}}$	is the field strength of the emission at the distance specified by the limit, in 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

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

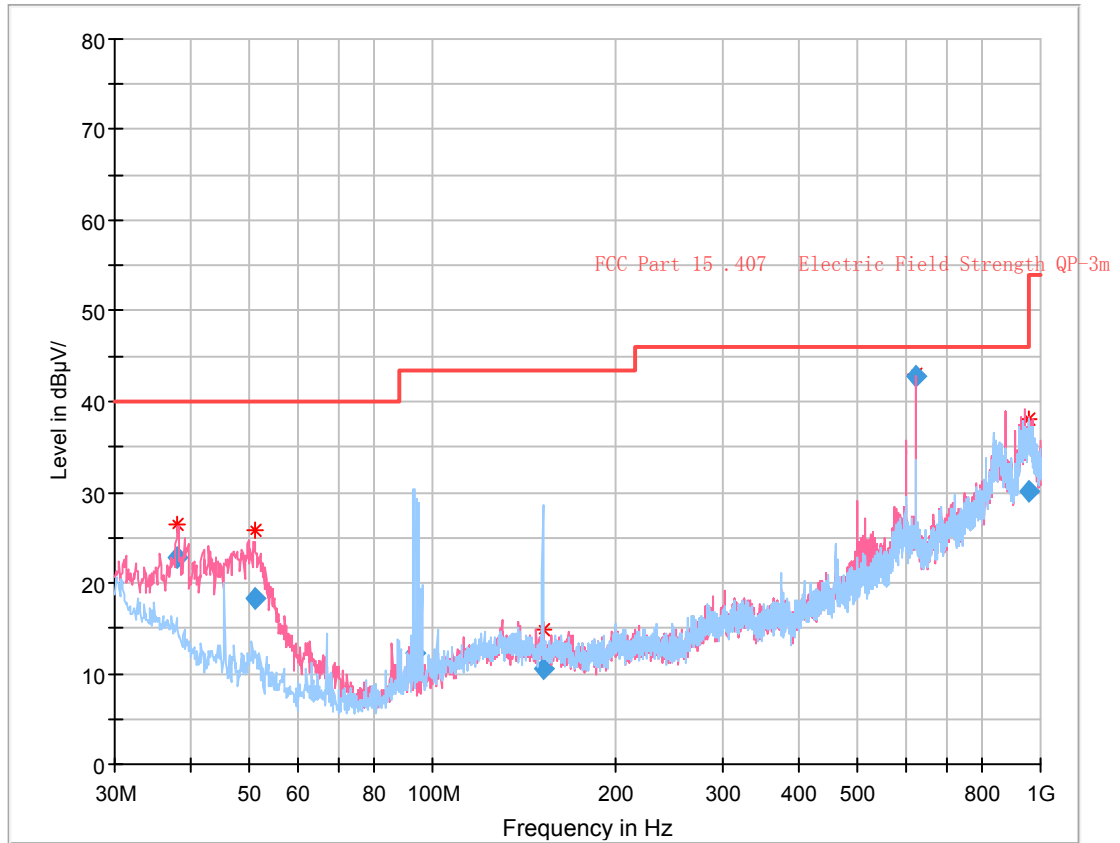
In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data**Environmental Conditions**

Temperature:	24~25 °C
Relative Humidity:	50~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Yooube Zhao and Curry Zhao from 2019-04-23 to 2019-05-09.

EUT operation mode: Transmitting

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)
38.088125	22.80	127.0	V	340.0	-12.6	40.00	17.20
51.108000	18.24	310.0	V	68.0	-19.7	40.00	21.76
93.410875	12.30	339.0	H	0.0	-18.4	43.50	31.20
152.118250	10.54	195.0	H	263.0	-14.2	43.50	32.96
625.021625	42.80	100.0	V	269.0	-2.6	46.00	3.20
954.143000	30.12	195.0	V	26.0	9.6	46.00	15.88

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

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
5148.69	69.30	PK	187	1.7	V	7.86	77.16	83.5	6.34
5148.69	49.51	Ave.	187	1.7	V	7.86	57.37	63.5	6.13
5357.49	47.51	PK	70	1.5	V	8.92	56.43	83.5	27.07
5357.49	37.51	Ave.	70	1.5	V	8.92	46.43	63.5	17.07
3905.60	51.53	PK	103	1.5	V	4.06	55.59	63.5	7.91
10360.00	44.34	PK	31	1.0	V	21.69	66.03	77.7	11.67
5200 MHz									
3905.66	51.83	PK	55	1.8	V	4.06	55.89	63.5	7.61
10400.00	50.32	PK	343	1.7	V	21.79	72.11	77.7	5.59
5240 MHz									
5240.00	84.14	PK	317	1.8	H	38.60	122.74	/	/
5240.00	70.13	Ave.	317	1.8	H	38.60	108.73	/	/
5240.00	85.86	PK	203	1.4	V	38.60	124.46	/	/
5240.00	71.43	Ave.	203	1.4	V	38.60	110.03	/	/
5148.69	54.05	PK	278	2.0	V	7.86	61.91	83.5	21.59
5148.69	41.50	Ave.	278	2.0	V	7.86	49.36	63.5	14.14
5394.74	52.42	PK	350	1.0	V	9.02	61.44	83.5	22.06
5394.74	40.68	Ave.	350	1.0	V	9.02	49.70	63.5	13.80
3905.54	51.36	PK	158	1.8	V	4.06	55.42	63.5	8.08
10480.00	49.27	PK	165	1.3	V	21.49	70.76	77.7	6.94
802.11n20									
5180 MHz									
5150.00	57.74	PK	170	1.5	V	8.05	65.79	83.5	17.71
5150.00	42.90	Ave.	170	1.5	V	8.05	50.95	63.5	12.55
5350.00	43.08	PK	202	1.5	V	8.92	52.00	83.5	31.50
5350.00	30.93	Ave.	202	1.5	V	8.92	39.85	63.5	23.65
3905.78	52.10	PK	355	1.9	V	4.06	56.16	63.5	7.34
10360.00	45.37	PK	176	2.1	V	21.69	67.06	77.7	10.64
5200 MHz									
3905.48	51.94	PK	182	1.5	V	4.06	56.00	63.5	7.50
10400.00	43.67	PK	107	1.9	V	21.79	65.46	77.7	12.24
5240 MHz									
5112.24	52.54	PK	146	2.4	V	7.76	60.30	83.5	23.20
5112.24	39.26	Ave.	146	2.4	V	7.76	47.02	63.5	16.48
5351.46	50.15	PK	153	1.3	V	8.92	59.07	83.5	24.43
5351.46	38.51	Ave.	153	1.3	V	8.92	47.43	63.5	16.07
3905.58	51.23	PK	17	1.8	V	4.06	55.29	63.5	8.21
10480.00	42.36	PK	181	2.2	V	21.49	63.85	77.7	13.85

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15.407/205/209	
	Reading (dBµV)	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11n40									
5190 MHz									
5147.39	65.66	PK	359	1.2	V	7.86	73.52	83.5	9.98
5146.05	48.43	Ave.	359	1.2	V	7.86	56.29	63.5	7.21
5351.98	46.53	PK	113	1.1	V	8.92	55.45	83.5	28.05
5351.98	32.85	Ave.	113	1.1	V	8.92	41.77	63.5	21.73
3905.68	51.80	PK	334	1.6	V	4.06	55.86	63.5	7.64
10380.00	42.28	PK	253	2.3	V	21.69	63.97	77.7	13.73
5230 MHz									
5140.86	54.74	PK	283	2.0	V	7.86	62.60	83.5	20.90
5140.86	40.20	Ave.	283	2.0	V	7.86	48.06	63.5	15.44
5359.91	50.64	PK	166	1.6	V	8.92	59.56	83.5	23.94
5359.91	38.12	Ave.	166	1.6	V	8.92	47.04	63.5	16.46
3905.80	52.93	PK	301	1.7	V	4.06	56.99	63.5	6.51
10460.00	40.81	PK	135	2.1	V	21.39	62.20	77.7	15.50
802.11ac20									
5180 MHz									
5148.69	61.81	PK	105	1.4	V	7.86	69.67	83.5	13.83
5148.69	48.47	Ave.	105	1.4	V	7.86	56.33	63.5	7.17
5362.67	45.35	PK	215	1.5	V	8.92	54.27	83.5	29.23
5362.67	33.52	Ave.	215	1.5	V	8.92	42.44	63.5	21.06
3905.81	52.48	PK	131	2.5	V	4.06	56.54	63.5	6.96
10360.00	44.62	PK	68	1.7	V	21.69	66.31	77.7	11.39
5200 MHz									
3905.58	52.33	PK	127	1.2	V	4.06	56.39	63.5	7.11
10400.00	44.56	PK	138	2.1	V	21.79	66.35	77.7	11.35

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
5240 MHz									
5095.62	51.08	PK	264	1.1	V	7.76	58.84	83.5	24.66
5095.62	39.20	Ave.	264	1.1	V	7.76	46.96	63.5	16.54
5360.52	47.07	PK	160	1.3	V	8.92	55.99	83.5	27.51
5360.52	32.56	Ave.	160	1.3	V	8.92	41.48	63.5	22.02
3905.83	53.05	PK	193	1.3	V	4.06	57.11	63.5	6.39
10480.00	43.65	PK	80	1.8	V	21.79	65.44	77.7	12.26
802.11ac40									
5190 MHz									
5150.00	66.42	PK	38	2.1	V	8.05	74.47	83.5	9.03
5150.00	47.96	Ave.	38	2.1	V	8.05	56.01	63.5	7.49
5360.52	44.80	PK	106	1.4	V	8.92	53.72	83.5	29.78
5360.52	31.34	Ave.	106	1.4	V	8.92	40.26	63.5	23.24
3905.81	52.40	PK	202	1.0	V	3.61	56.01	63.5	7.49
10380.00	39.39	PK	94	2.3	V	20.57	59.96	77.7	17.74
5230 MHz									
5148.69	51.42	PK	356	2.3	V	7.86	59.28	83.5	24.22
5148.69	39.48	Ave.	356	2.3	V	7.86	47.34	63.5	16.16
5365.11	47.00	PK	52	2.4	V	8.92	55.92	83.5	27.58
5365.11	35.66	Ave.	52	2.4	V	8.92	44.58	63.5	18.92
3905.74	52.69	PK	310	1.8	V	3.61	56.30	63.5	7.20
10460.00	39.11	PK	310	1.8	V	20.81	59.92	77.7	17.78
802.11ac80									
5210 MHz									
5146.92	68.55	PK	129	1.0	V	7.86	76.41	83.5	7.09
5146.92	45.58	Ave.	129	1.0	V	7.86	53.44	63.5	10.06
5352.76	62.23	PK	87	1.4	V	8.92	71.15	83.5	12.35
5352.76	32.29	Ave.	87	1.4	V	8.92	41.21	63.5	22.29
3905.37	52.41	PK	278	2.5	V	4.06	56.47	63.5	7.03
10420.00	38.85	PK	174	1.7	V	21.79	60.64	77.7	17.06

5725-5850 MHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5698.10	41.68	PK	193	1.6	V	39.49	81.17	113.29	32.12
5717.88	52.19	PK	317	1.4	V	39.49	91.68	119.71	28.03
5724.99	57.06	PK	330	2.2	V	39.49	96.55	131.68	35.13
11490.00	51.24	PK	133	1.3	V	17.47	68.71	83.5	14.79
11490.00	36.93	Ave.	133	1.3	V	17.47	54.40	63.5	9.10
5785 MHz									
11570.00	48.37	PK	236	1.2	V	17.51	65.88	83.5	17.62
11570.00	33.17	Ave.	236	1.2	V	17.51	50.68	63.5	12.82
5825 MHz									
5850.26	53.55	PK	104	1.4	V	39.87	93.42	131.11	37.69
5856.08	49.64	PK	132	1.2	V	39.87	89.51	120	30.49
5876.40	39.72	PK	174	1.1	V	39.87	79.59	113.66	34.07
11650.00	47.58	PK	355	1.8	V	16.18	63.76	83.5	19.74
11650.00	33.11	Ave.	355	1.8	V	16.18	49.29	63.5	14.21
802.11n20									
5745 MHz									
5698.90	36.49	PK	158	2.0	V	39.49	75.98	113.89	37.91
5718.32	45.05	PK	302	1.5	V	39.49	84.54	119.83	35.29
5724.61	55.30	PK	64	2.2	V	39.49	94.79	130.81	36.02
11490.00	43.03	PK	122	1.8	V	17.47	60.50	83.5	23.00
11490.00	27.32	Ave.	122	1.8	V	17.47	44.79	63.5	18.71
5785 MHz									
11570.00	41.30	PK	179	2.2	V	17.51	58.81	83.5	24.69
11570.00	25.32	Ave.	179	2.2	V	17.51	42.83	63.5	20.67
5825 MHz									
5850.15	46.50	PK	288	1.7	V	39.87	86.37	131.36	44.99
5859.29	45.26	PK	337	2.5	V	39.87	85.13	119.1	33.97
5875.90	36.80	PK	355	2.0	V	39.87	76.67	114.03	37.36
11650.00	41.58	PK	166	2.0	V	16.18	57.76	83.5	25.74
11650.00	26.98	Ave.	166	2.0	V	16.18	43.16	63.5	20.34

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5755 MHz									
5697.55	40.80	PK	1	1.1	V	39.49	80.29	112.55	32.26
5720.00	51.65	PK	38	2.2	V	39.49	91.14	120.3	29.16
5723.16	53.72	PK	80	2.0	V	39.49	93.21	127.5	34.29
11510.00	42.45	PK	204	1.5	V	17.47	59.92	83.5	23.58
11510.00	26.73	Ave.	204	1.5	V	17.47	44.20	63.5	19.30
5795 MHz									
5850.74	40.49	PK	95	1.6	V	39.87	80.36	130.01	49.65
5860.37	38.99	PK	65	1.7	V	39.87	78.86	118.8	39.94
5875.70	34.88	PK	137	1.2	V	39.87	74.75	114.18	39.43
11590.00	42.13	PK	285	2.1	V	17.51	59.64	83.5	23.86
11590.00	26.84	Ave.	285	2.1	V	17.51	44.35	63.5	19.15
802.11ac20									
5745 MHz									
5699.00	35.90	PK	191	2.4	V	39.49	75.39	113.96	38.57
5720.00	44.49	PK	318	1.7	V	39.49	83.98	120.3	36.32
5724.12	55.29	PK	176	1.3	V	39.49	94.78	129.69	34.91
11490.00	42.83	PK	237	1.6	V	17.47	60.30	83.5	23.20
11490.00	26.94	Ave.	237	1.6	V	17.47	44.41	63.5	19.09
5785 MHz									
11570.00	42.63	PK	256	2.0	V	17.51	60.14	83.5	23.36
11570.00	27.10	Ave.	256	2.0	V	17.51	44.61	63.5	18.89
5825 MHz									
5850.03	46.60	PK	29	2.2	V	39.87	86.47	131.63	45.16
5857.48	44.82	PK	84	1.5	V	39.87	84.69	119.61	34.92
5875.80	36.24	PK	290	1.0	V	39.87	76.11	114.11	38.00
11650.00	43.31	PK	144	2.0	V	16.18	59.49	83.5	24.01
11650.00	26.40	Ave.	144	2.0	V	16.18	42.58	63.5	20.92

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5755 MHz									
5696.99	41.43	PK	183	2.5	V	39.49	80.92	112.47	31.55
5719.88	51.65	PK	345	2.5	V	39.49	91.14	120.27	29.13
5723.09	53.66	PK	232	1.4	V	39.49	93.15	127.35	34.20
11510.00	43.00	PK	123	1.4	V	17.47	60.47	83.5	23.03
11510.00	26.70	Ave.	123	1.4	V	17.47	44.17	63.5	19.33
5795 MHz									
5852.14	39.81	PK	45	1.6	V	39.87	79.68	126.82	47.14
5855.24	39.71	PK	133	1.7	V	39.87	79.58	120.23	40.65
5875.90	35.23	PK	167	1.8	V	39.87	75.10	114.03	38.93
11590.00	40.34	PK	238	1.7	V	17.51	57.85	83.5	25.65
11590.00	26.38	Ave.	238	1.7	V	17.51	43.89	63.5	19.61
802.11ac80									
5775 MHz									
5698.30	46.92	PK	301	2.3	V	39.49	86.41	113.44	27.03
5716.15	51.28	PK	122	2.2	V	39.49	90.77	119.12	28.35
5724.52	52.40	PK	85	2.3	V	39.49	91.89	130.61	38.72
5850.05	45.81	PK	94	1.9	V	39.87	85.68	131.59	45.91
5856.80	44.81	PK	318	2.3	V	39.87	84.68	119.8	35.12
5876.80	38.69	PK	326	1.1	V	39.87	78.56	113.37	34.81
11550.00	40.87	PK	233	1.9	V	17.51	58.38	83.5	25.12
11550.00	26.43	Ave.	233	1.9	V	17.51	43.94	63.5	19.56

Note:

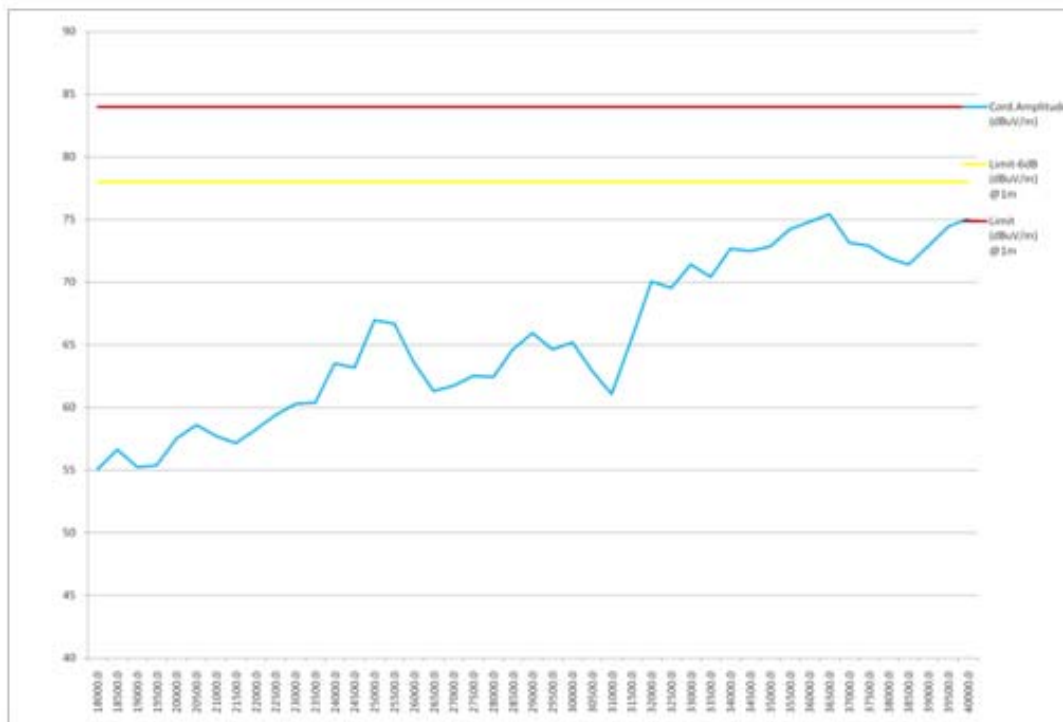
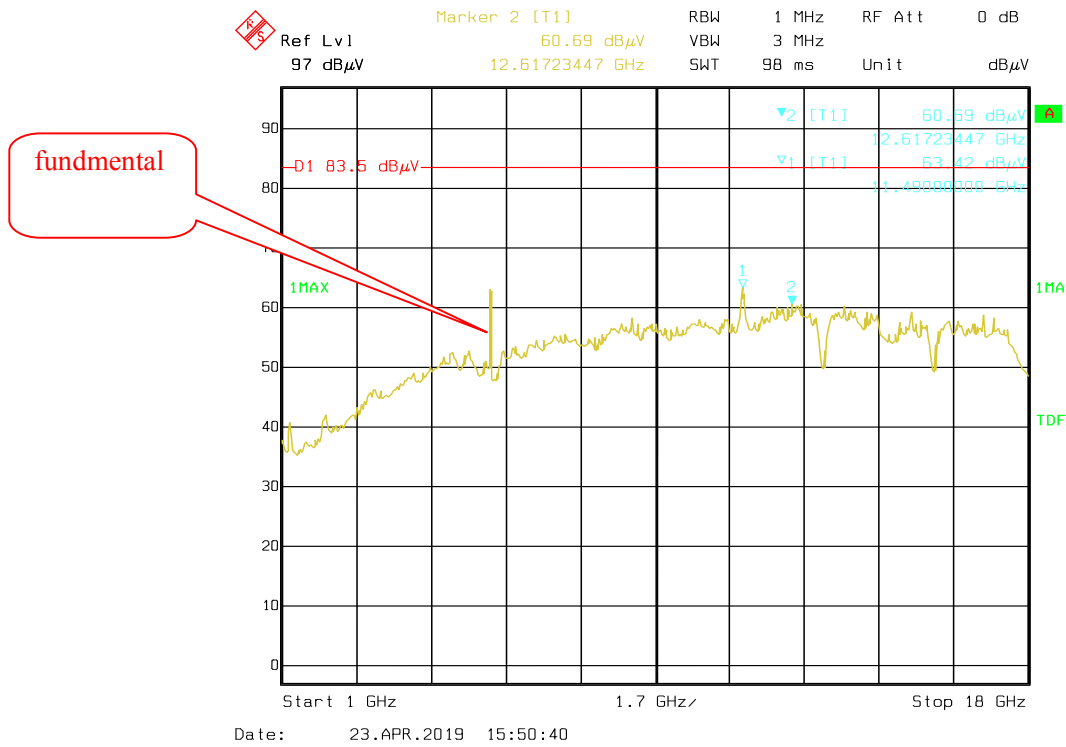
Corrected Amplitude = Corrected Factor + Reading

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

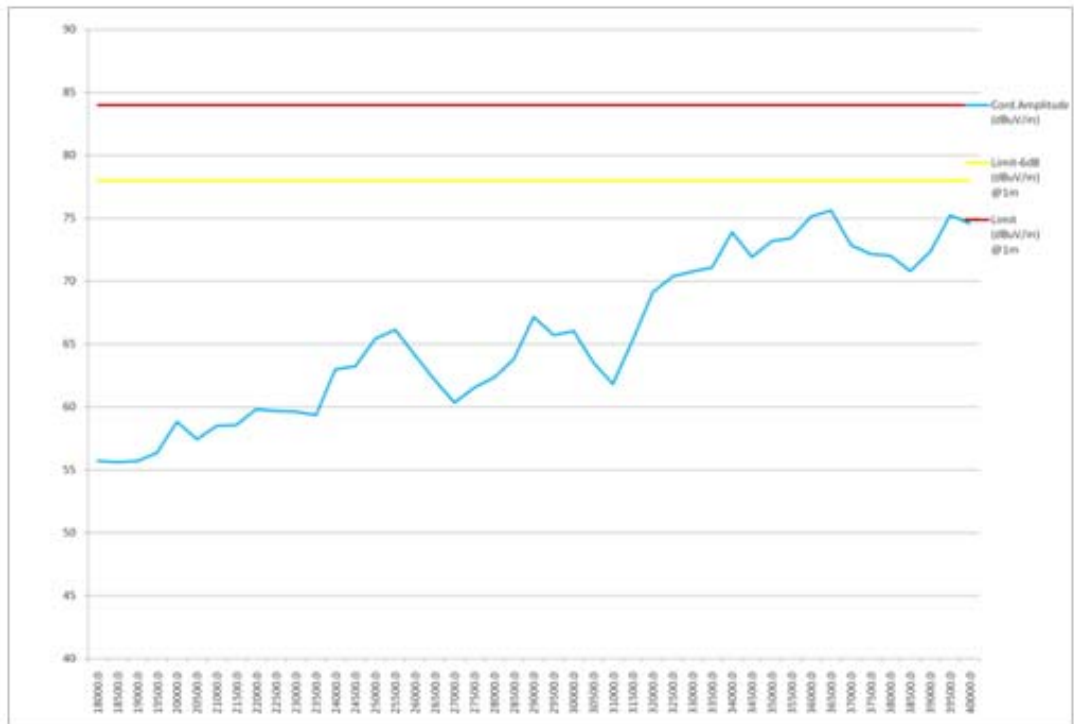
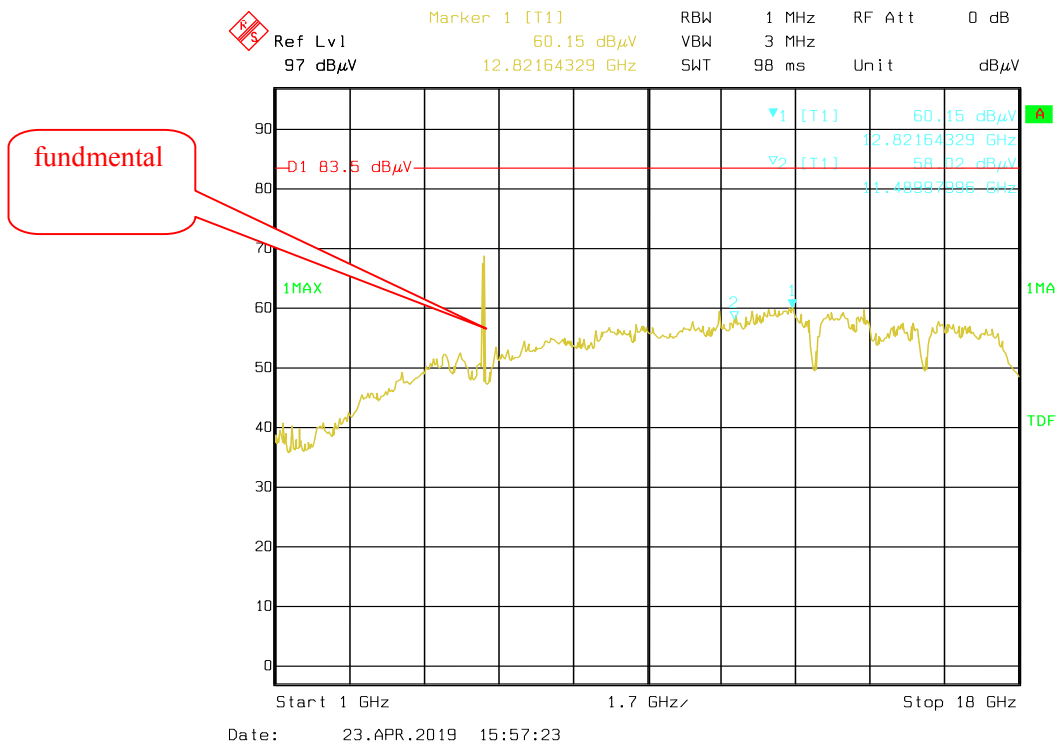
Margin = Limit- Corr. Amplitude

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

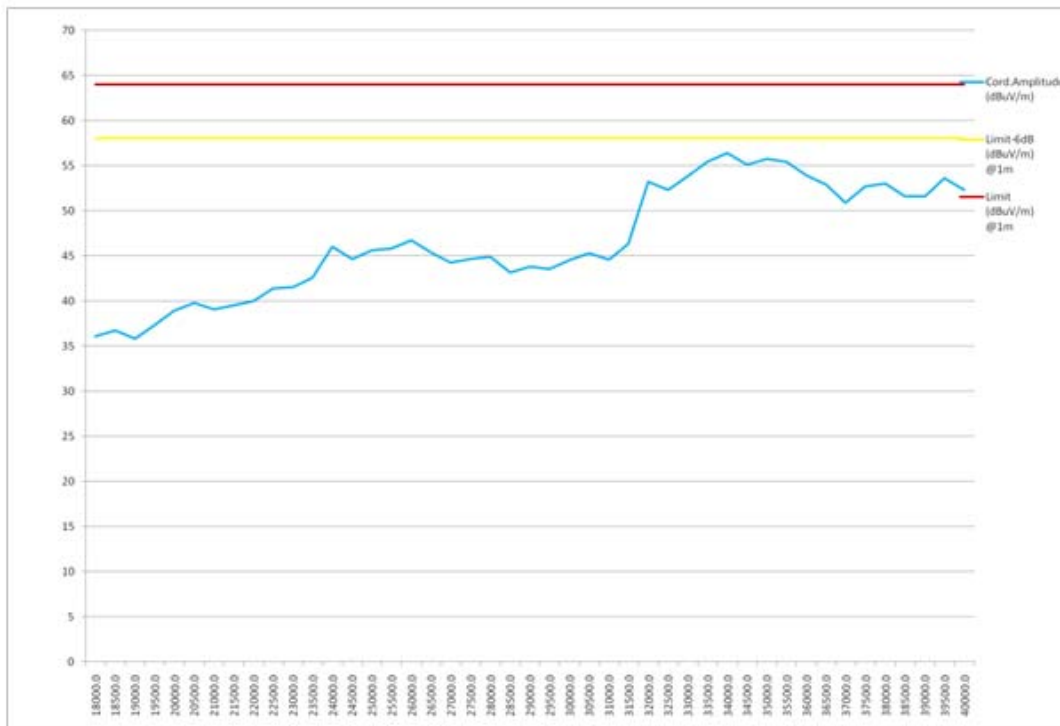
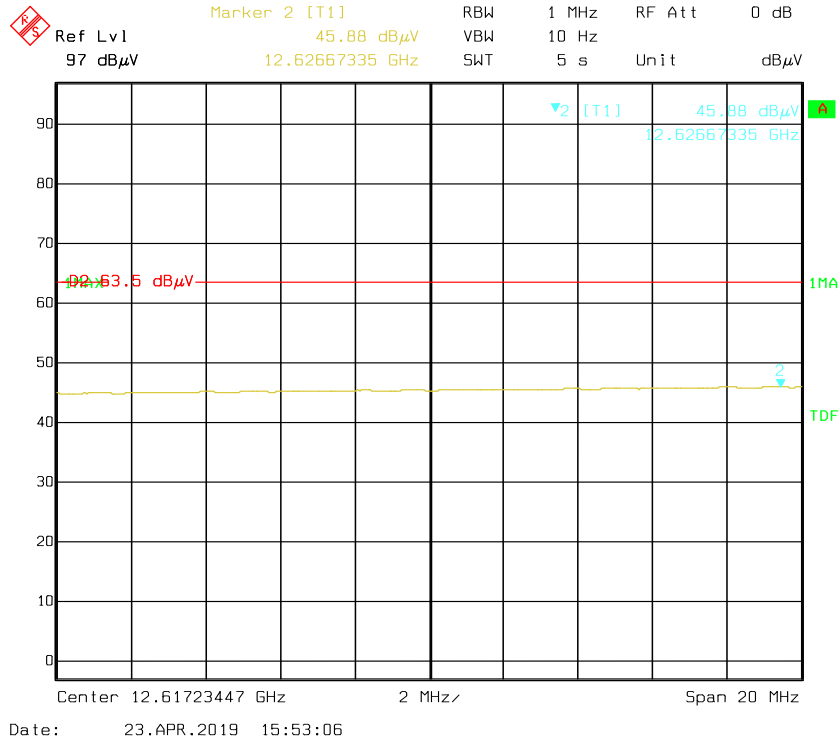
Pre-scan with 802.11a 5745MHz, for Peak
Horizontal



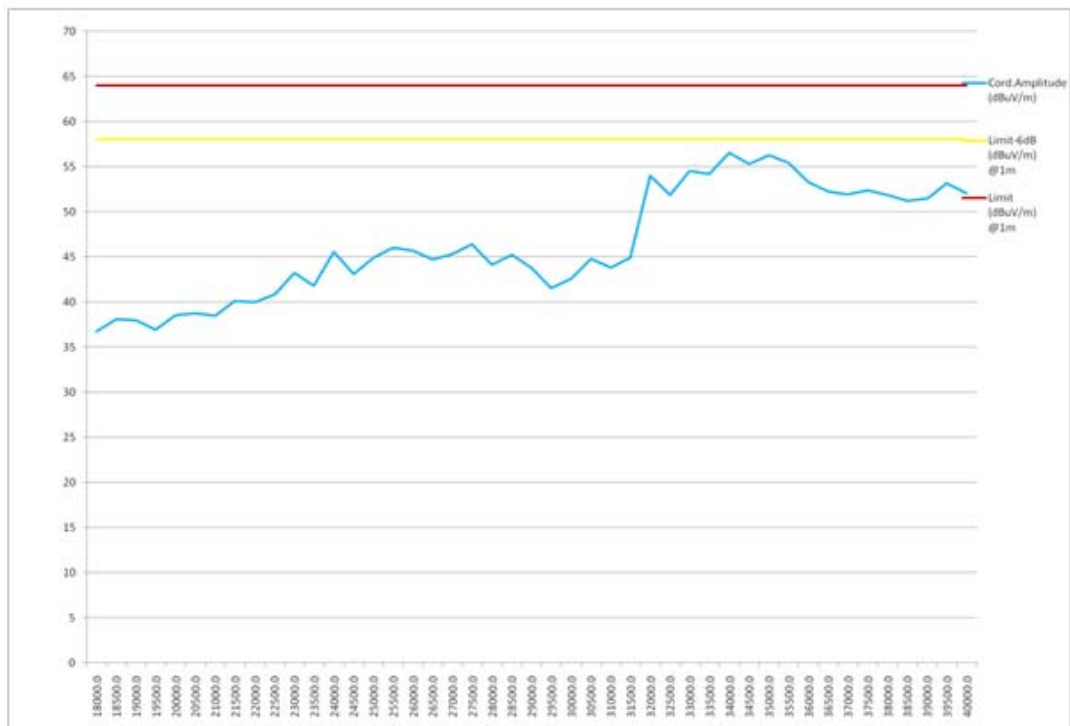
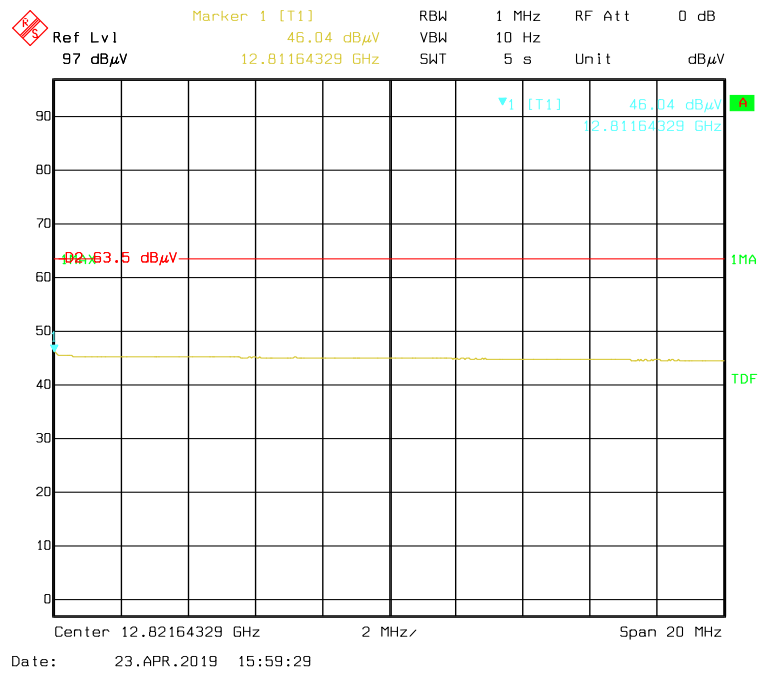
Vertical



Pre-scan with 802.11a 5745MHz, for **Average**
Horizontal



Vertical



FCC §15.407(a) (1) (5), (e) – 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

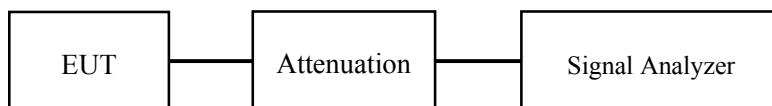
1. Emission Bandwidth (EBW)

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

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

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

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



Test Data**Environmental Conditions**

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

The testing was performed by Kieron Luo from 2019-04-25 to 2019-05-09.

EUT operation mode: Transmitting

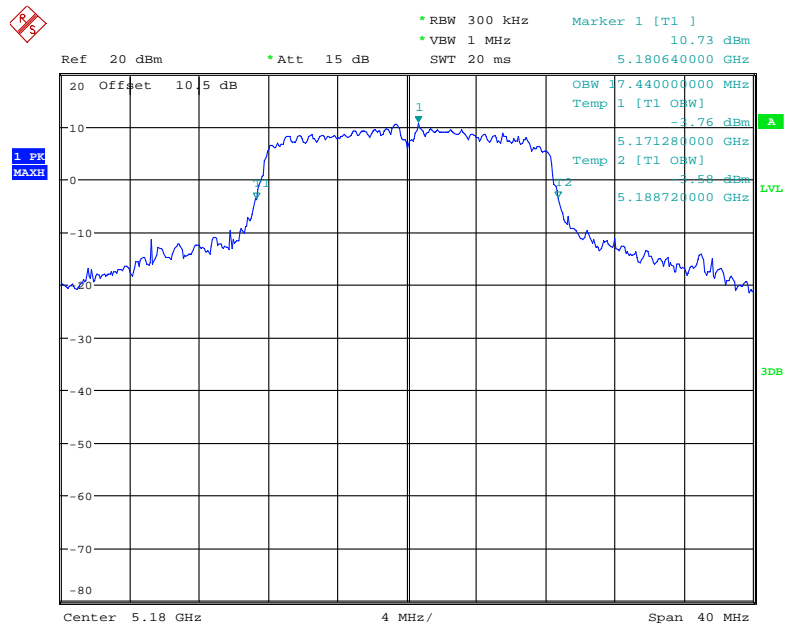
Test Result: Pass; please refer to the following tables and plots.

For Antenna 3:

5120 MHz - 5250 MHz:

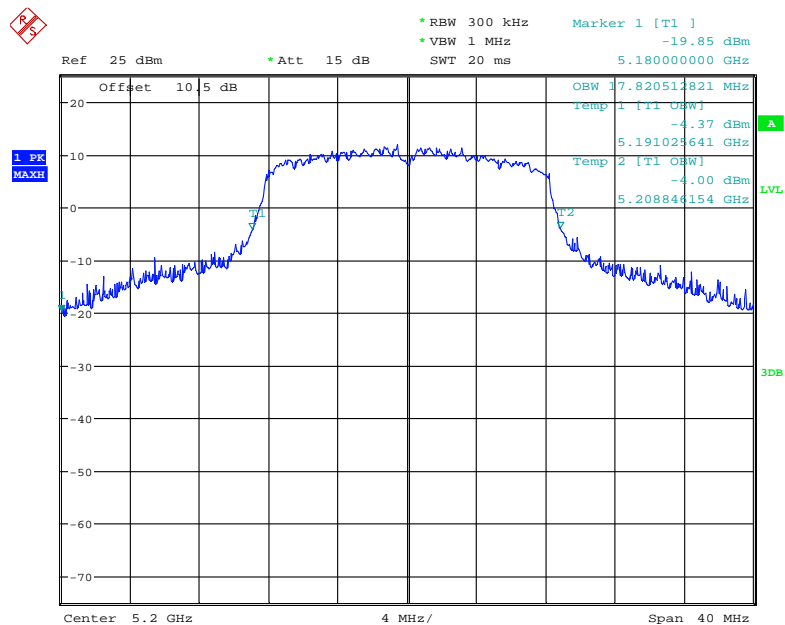
Frequency (MHz)	26dB bandwidth (MHz)	99% Bandwidth (MHz)	Remark
802.11a			No transmitted signal in the 99% bandwidth extends into the U-NII-2A band
5180	37.069	17.440	
5200	20.963	17.821	
5240	20.897	17.628	
802.11n20			
5180	33.718	18.320	
5200	31.474	18.560	
5240	30.641	18.640	
802.11n40			
5190	64.359	37.280	
5230	63.747	37.440	
802.11ac20			
5180	32.692	18.480	
5200	33.333	18.400	
5240	33.333	18.560	
802.11ac40			
5190	63.718	36.800	
5230	55.897	37.280	
802.11ac80			
5210	108.665	75.840	

802.11a mode, 99% Occupied Bandwidth, 5180 MHz



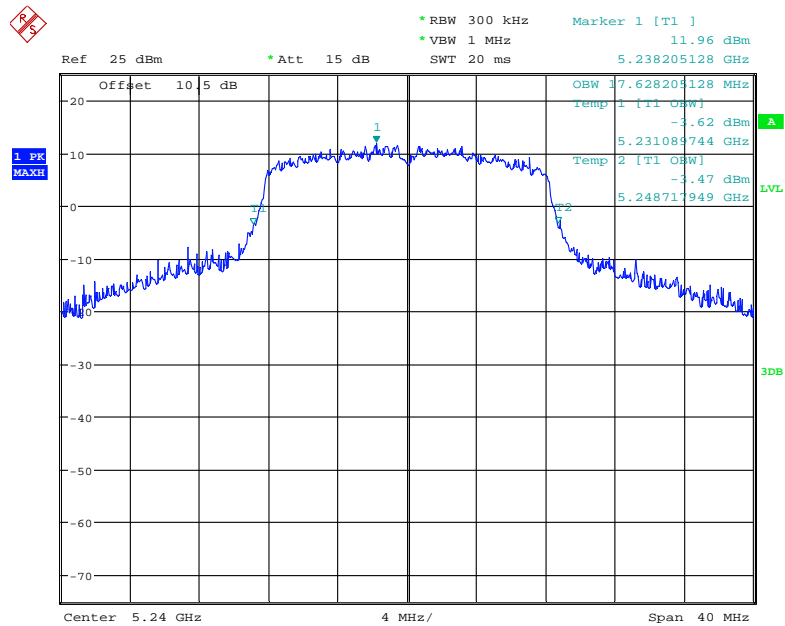
Date: 25.APR.2019 13:56:08

802.11a mode, 99% Occupied Bandwidth, 5200 MHz



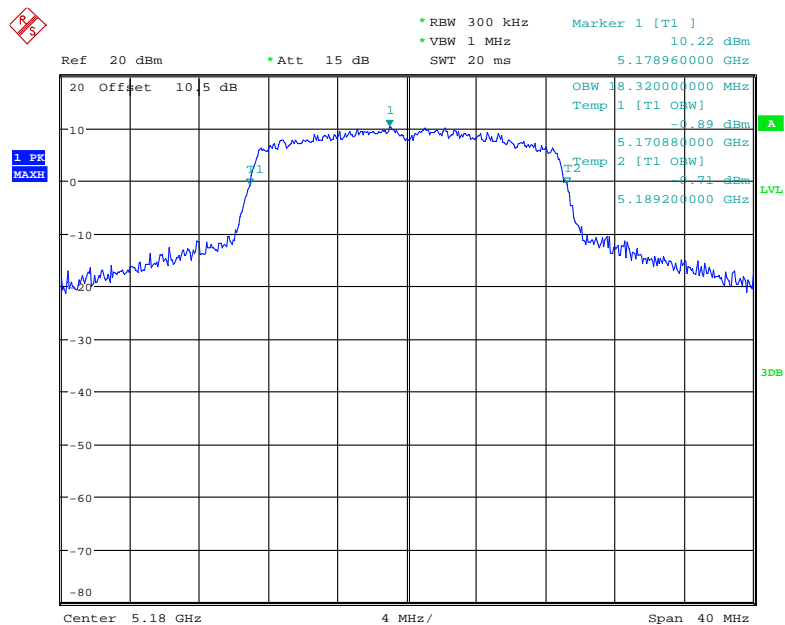
Date: 9.MAY.2019 16:08:22

802.11a mode, 99% Occupied Bandwidth, 5240 MHz



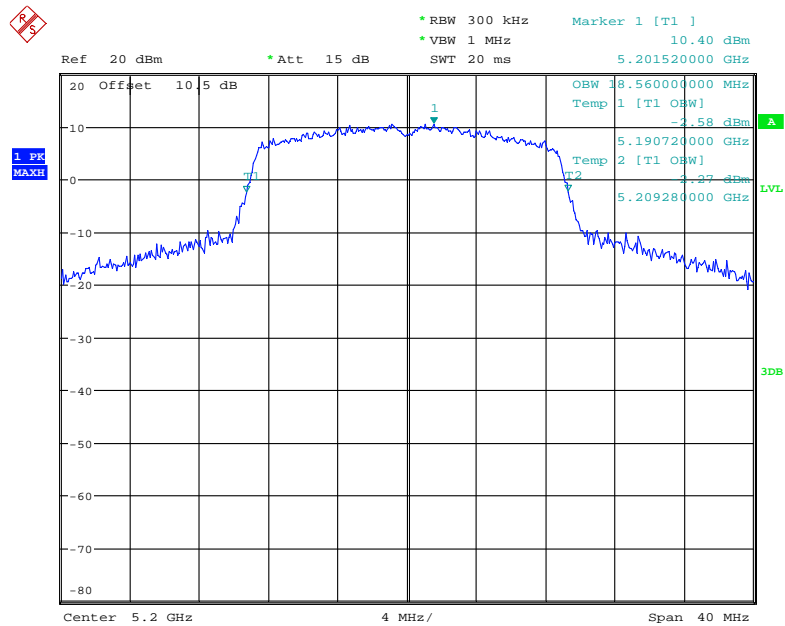
Date: 9.MAY.2019 16:09:12

802.11n20 mode, 99% Occupied Bandwidth, 5180 MHz



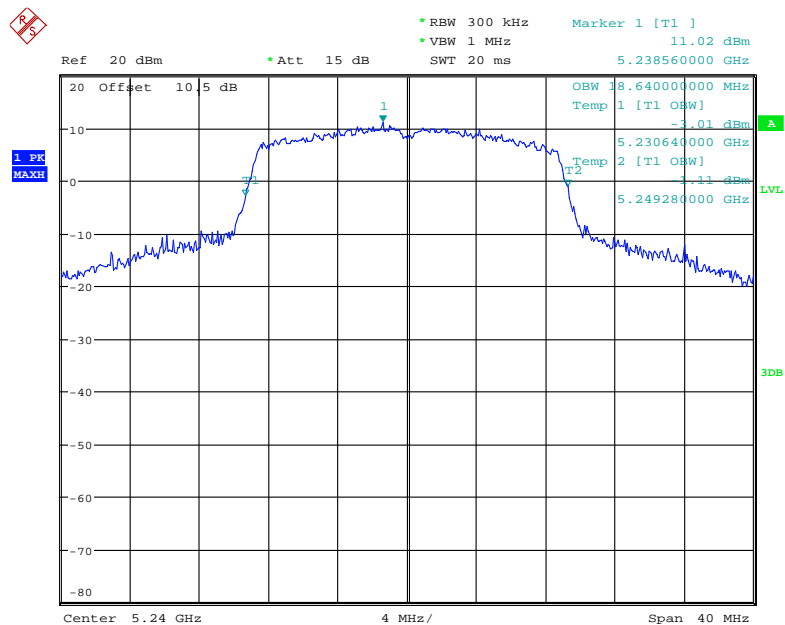
Date: 25.APR.2019 16:20:22

802.11n20 mode, 99% Occupied Bandwidth, 5200 MHz



Date: 25.APR.2019 16:16:13

802.11n20 mode, 99% Occupied Bandwidth, 5240 MHz



Date: 25.APR.2019 16:02:11

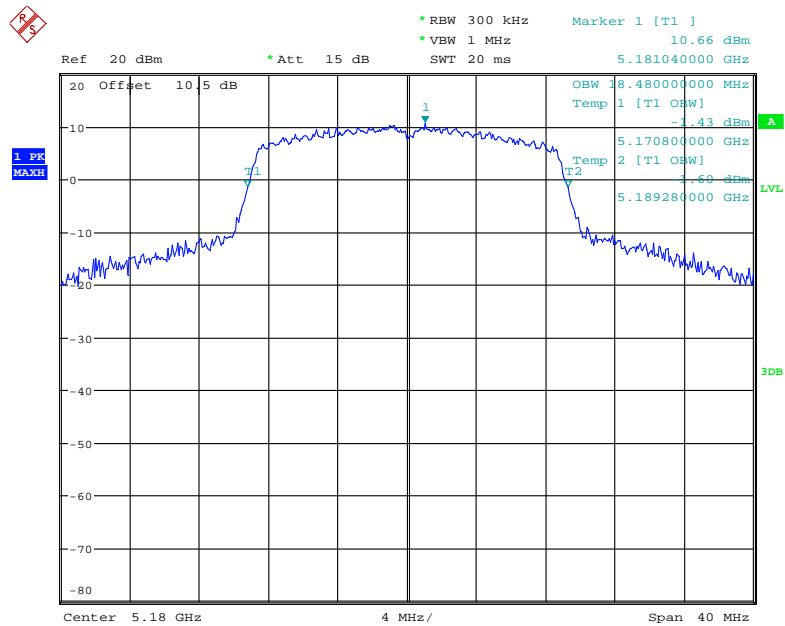
[illegible]

Date: 25.APR.2019 16:26:21

[illegible]

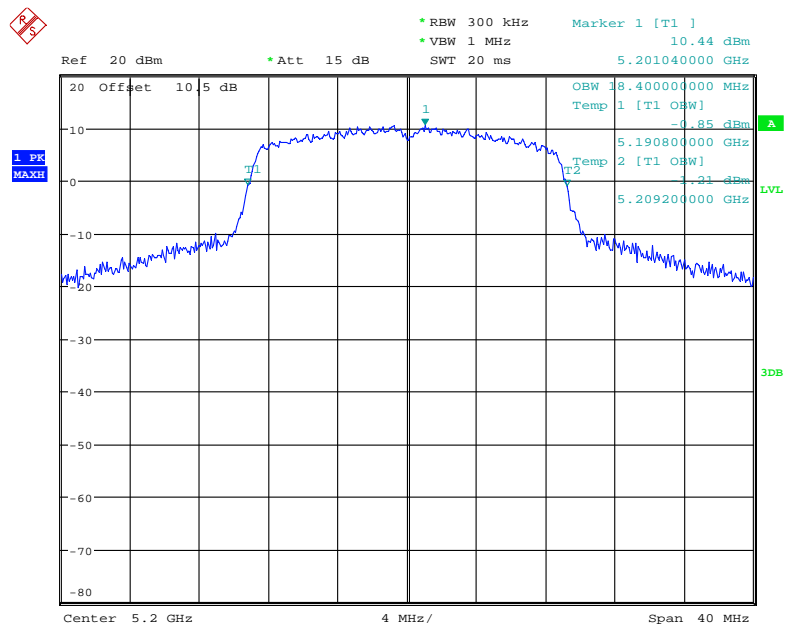
Date: 25.APR.2019 16:29:42

802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz



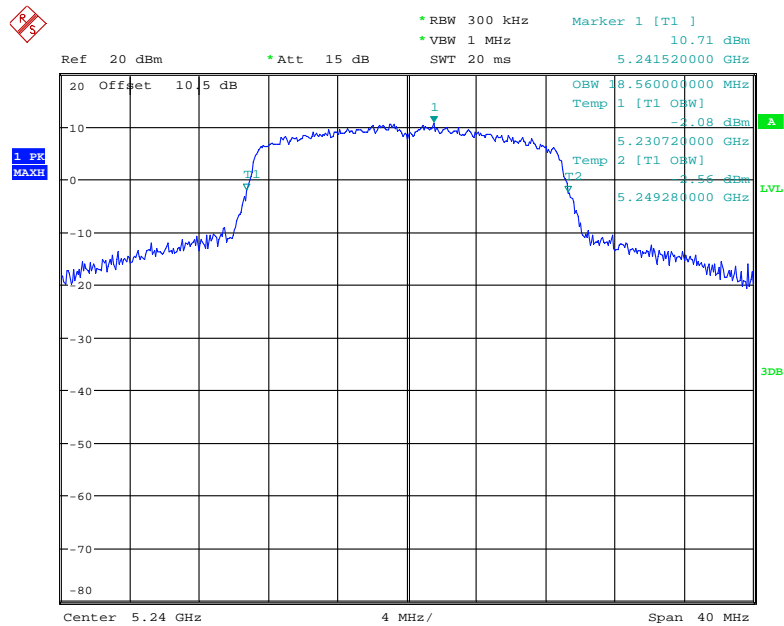
Date: 25.APR.2019 16:47:02

802.11ac20 mode, 99% Occupied Bandwidth, 5200 MHz



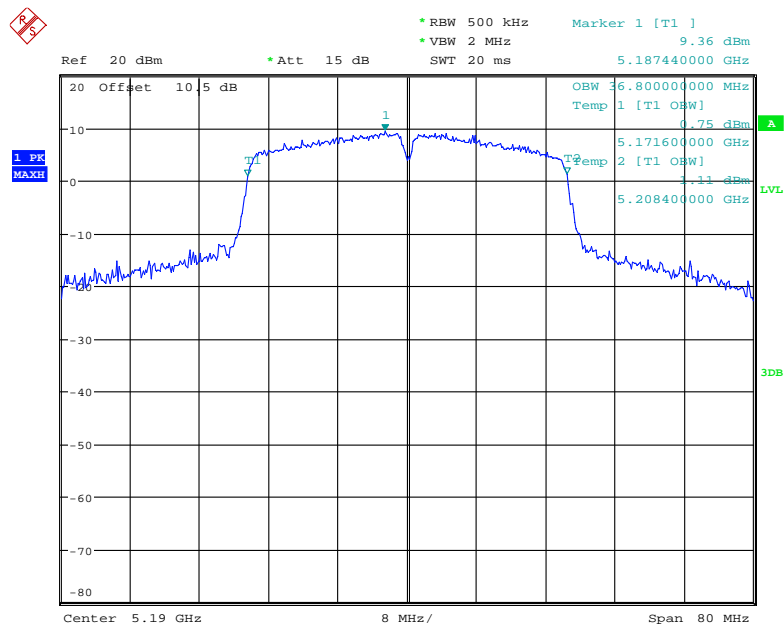
Date: 25.APR.2019 16:52:01

802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz



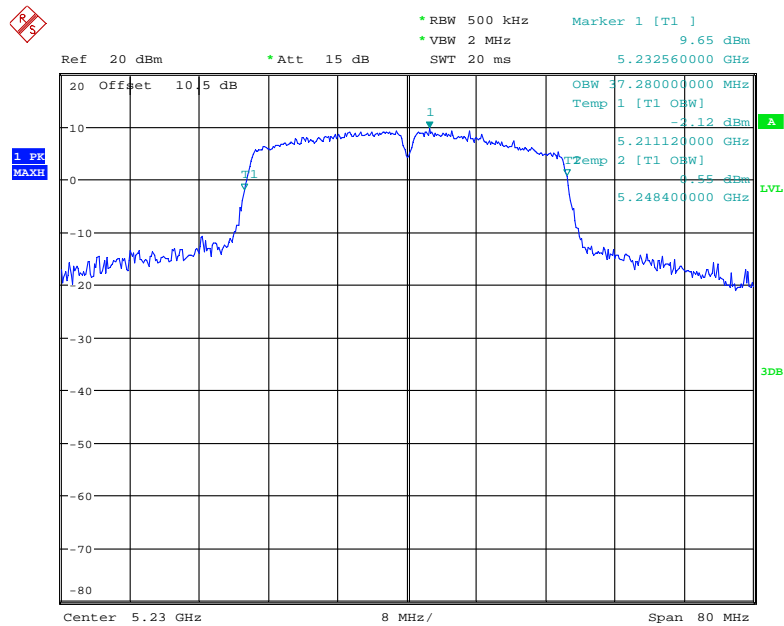
Date: 25.APR.2019 16:56:36

802.11ac40 mode, 99% Occupied Bandwidth, 5190 MHz



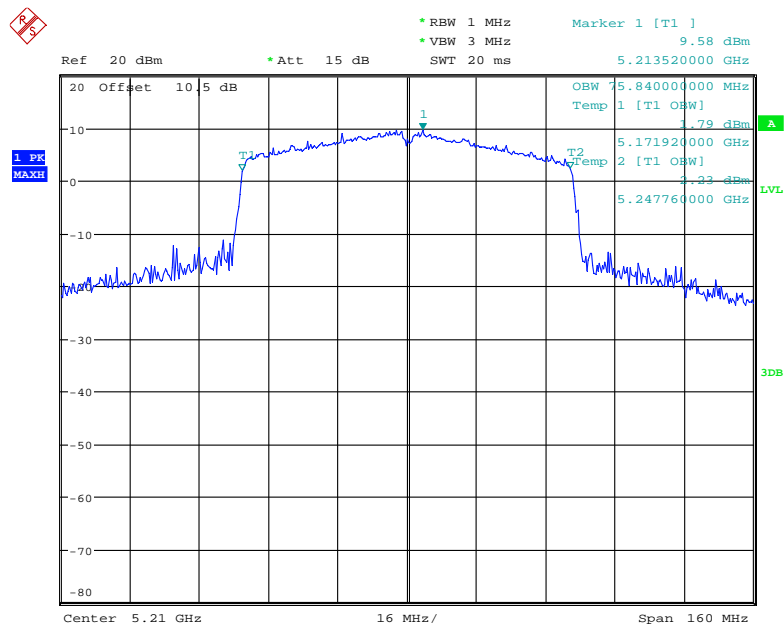
Date: 25.APR.2019 16:59:04

802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz



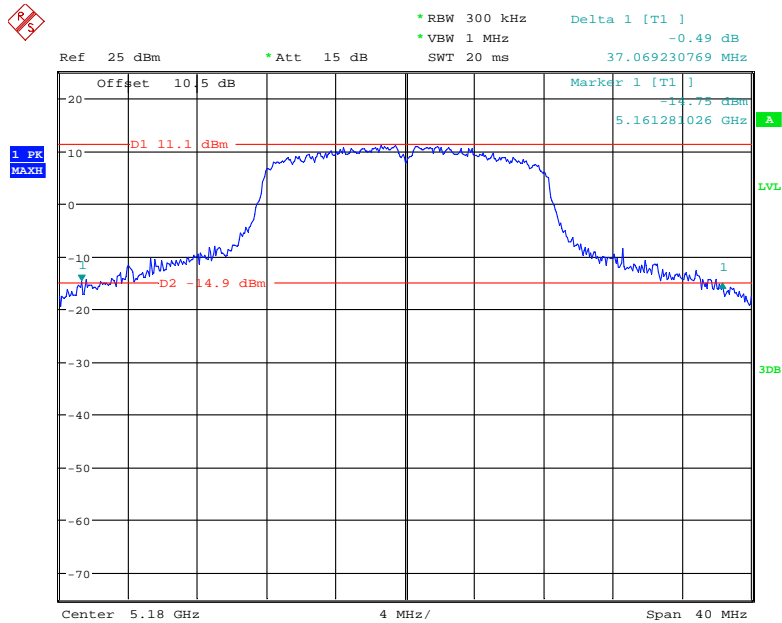
Date: 25.APR.2019 17:02:57

802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz



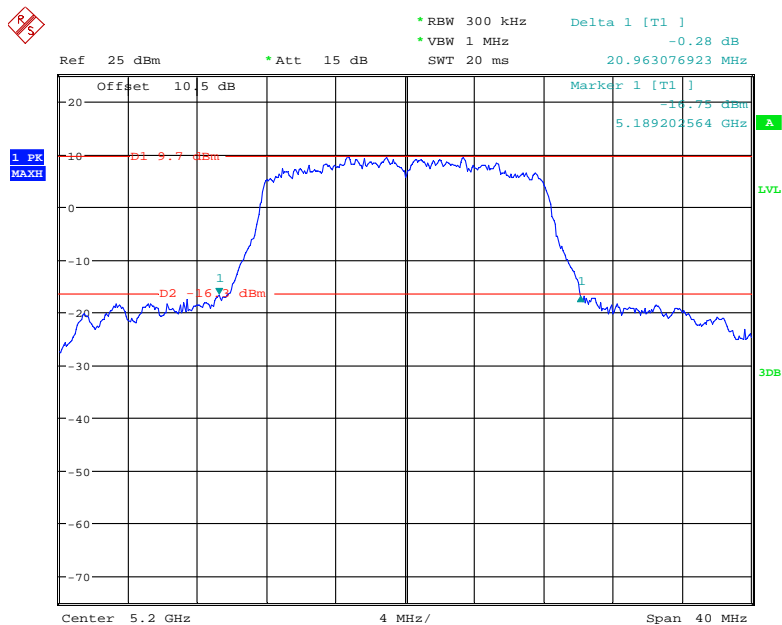
Date: 25.APR.2019 16:36:43

802.11a mode, 26 dB Emissions Bandwidth, 5180 MHz



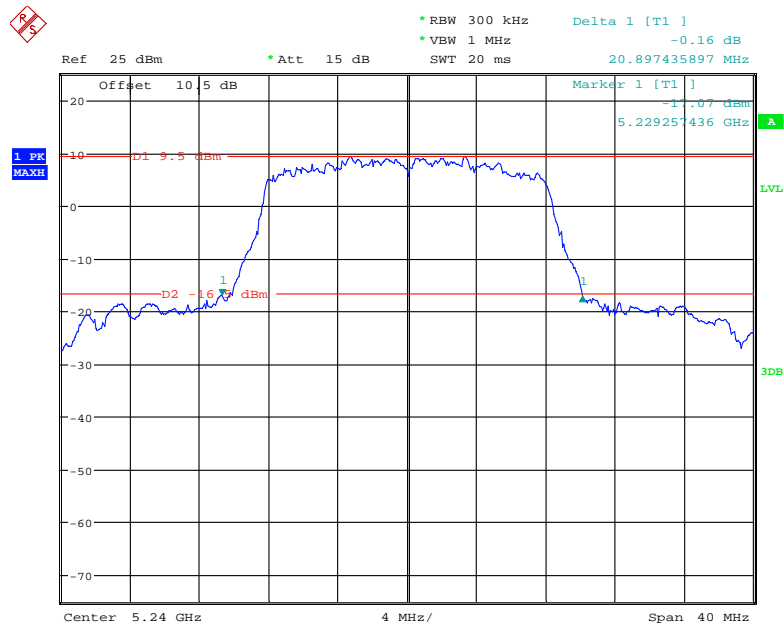
Date: 26.APR.2019 10:24:00

802.11a mode, 26 dB Emissions Bandwidth, 5200 MHz



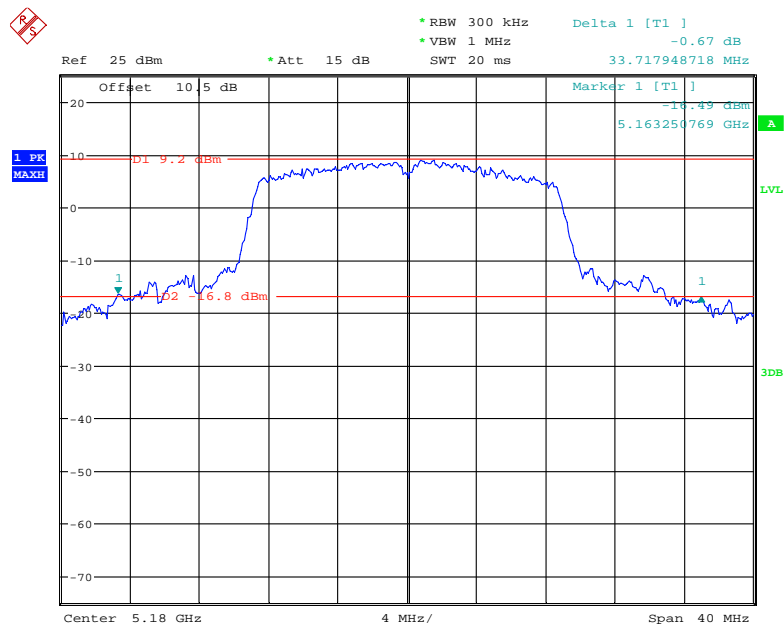
Date: 26.APR.2019 10:27:26

802.11a mode, 26 dB Emissions Bandwidth, 5240 MHz



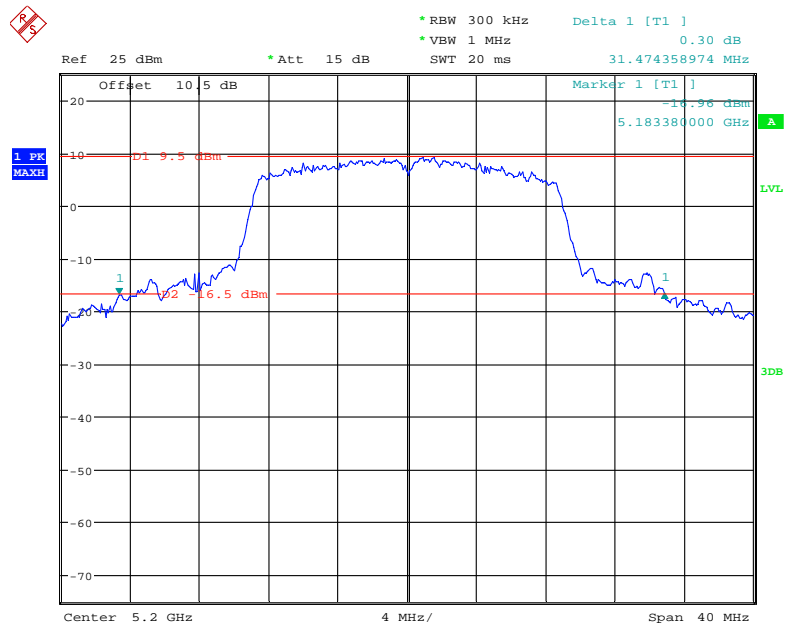
Date: 26.APR.2019 10:28:30

802.11n20 mode, 26 dB Emissions Bandwidth, 5180 MHz



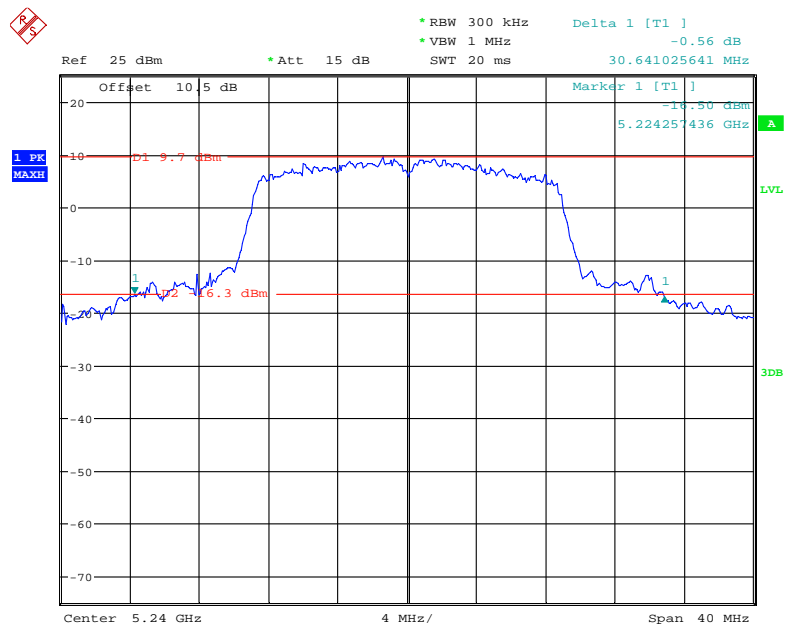
Date: 26.APR.2019 10:36:01

802.11n20 mode, 26 dB Emissions Bandwidth, 5200 MHz



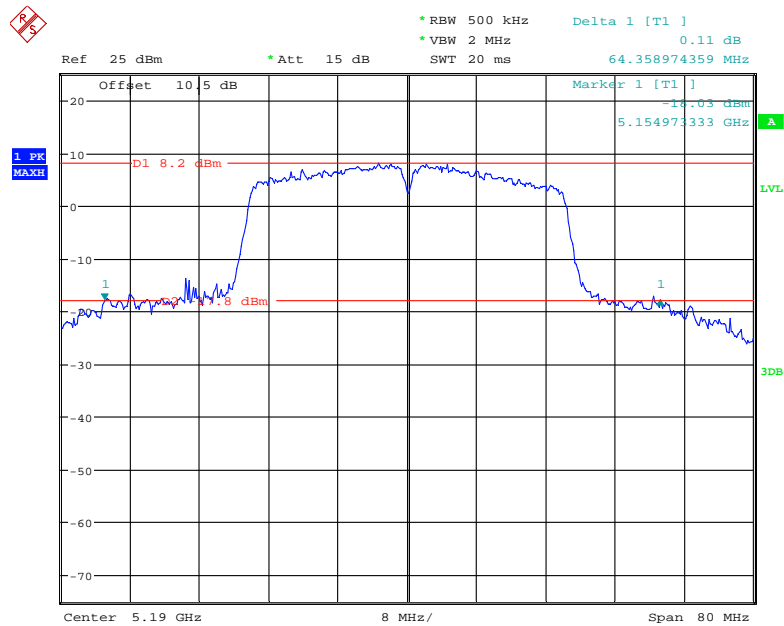
Date: 26.APR.2019 10:34:51

802.11n20 mode, 26 dB Emissions Bandwidth, 5240 MHz



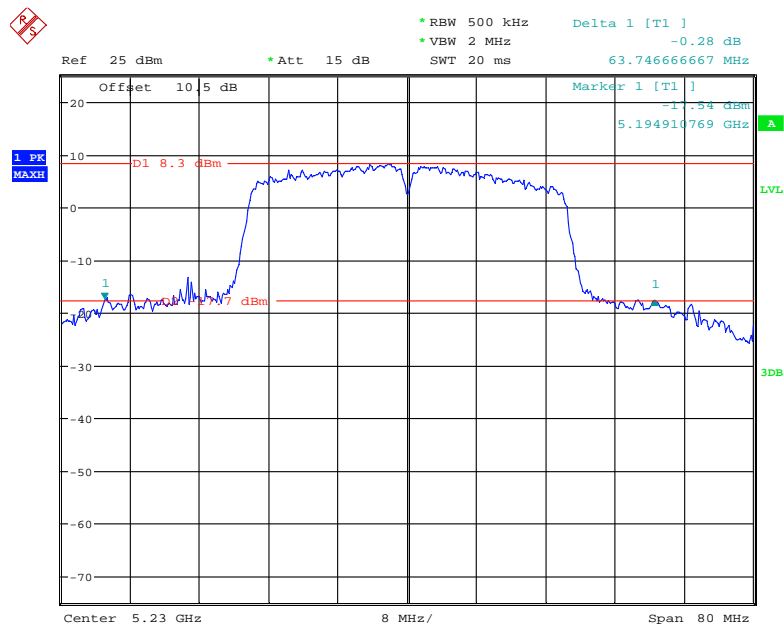
Date: 26.APR.2019 10:33:44

802.11n40 mode, 26 dB Emissions Bandwidth, 5190 MHz



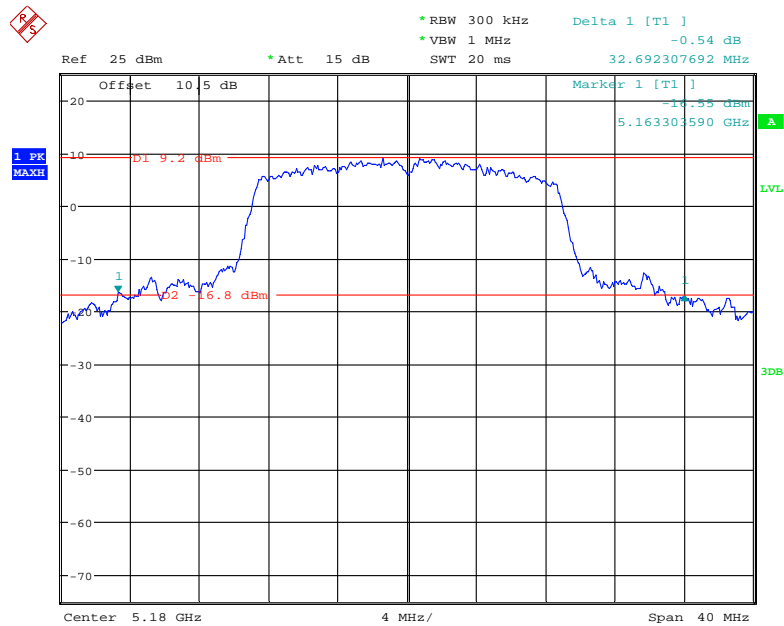
Date: 26.APR.2019 10:53:09

802.11n40 mode, 26 dB Emissions Bandwidth, 5230 MHz



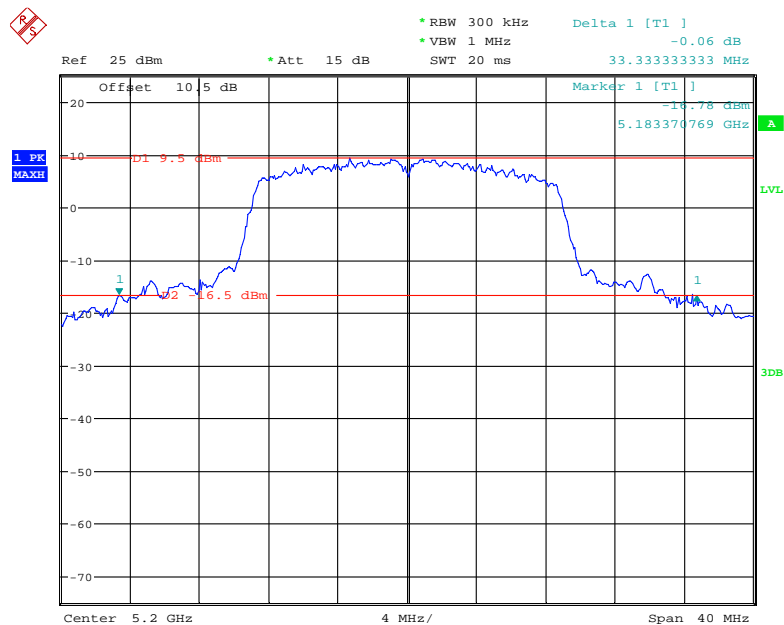
Date: 26.APR.2019 10:51:53

802.11ac20 mode, 26 dB Emissions Bandwidth, 5180 MHz



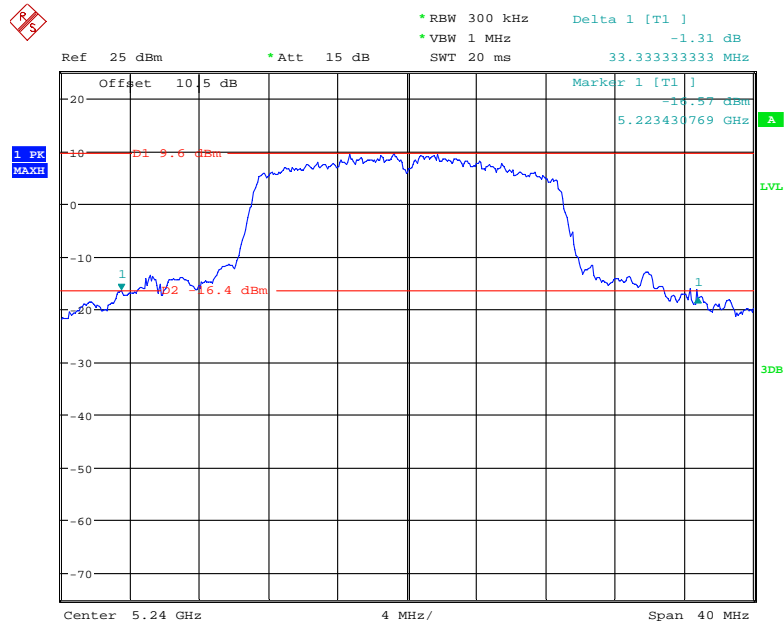
Date: 26.APR.2019 10:37:09

802.11ac20 mode, 26 dB Emissions Bandwidth, 5200 MHz



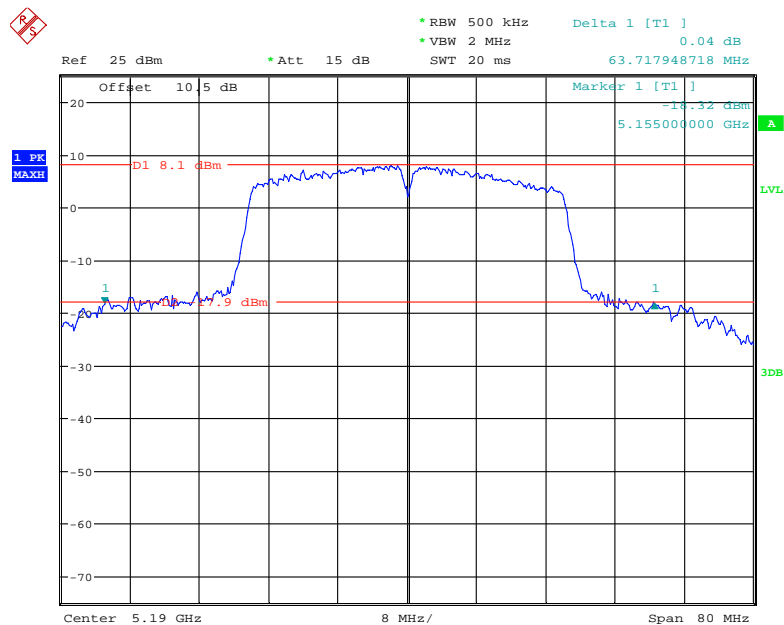
Date: 26.APR.2019 10:38:40

802.11ac20 mode, 26 dB Emissions Bandwidth, 5240 MHz



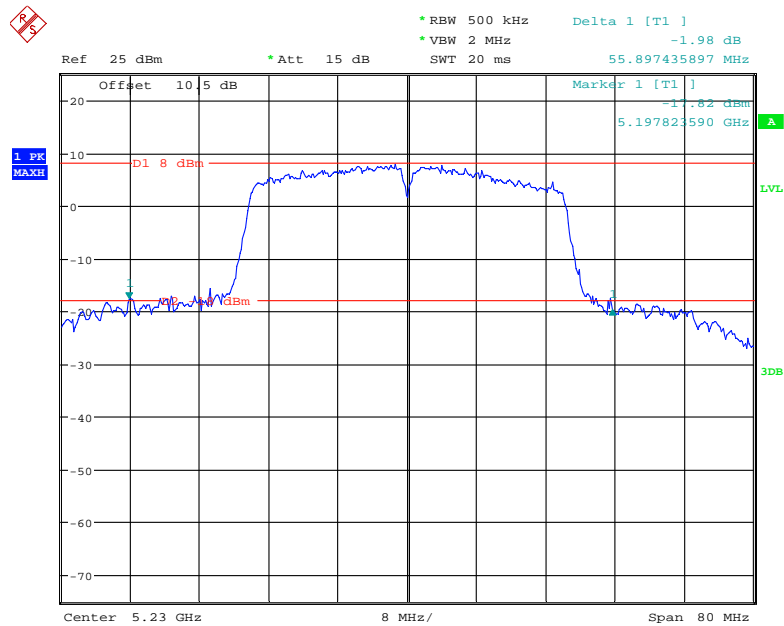
Date: 26.APR.2019 10:39:46

802.11ac40 mode, 26 dB Emissions Bandwidth, 5190 MHz



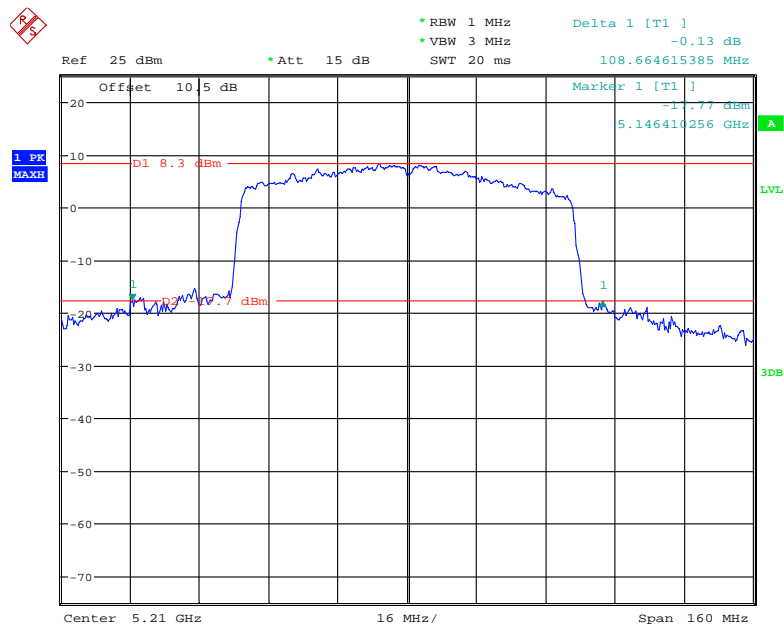
Date: 26.APR.2019 10:44:53

802.11ac40 mode, 26 dB Emissions Bandwidth, 5230 MHz



Date: 26.APR.2019 10:50:13

802.11ac80 mode, 26 dB Emissions Bandwidth, 5210 MHz

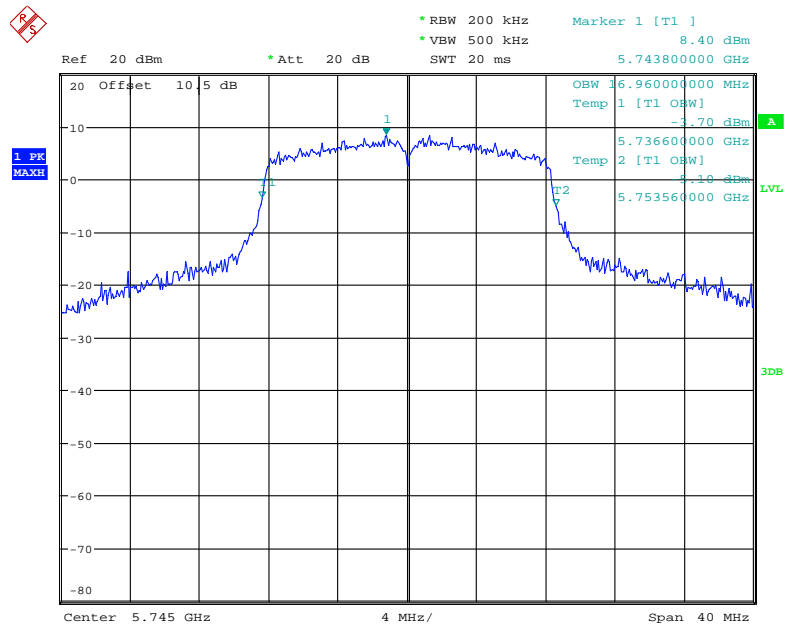


Date: 26.APR.2019 10:54:43

5725 MHz – 5850 MHz:

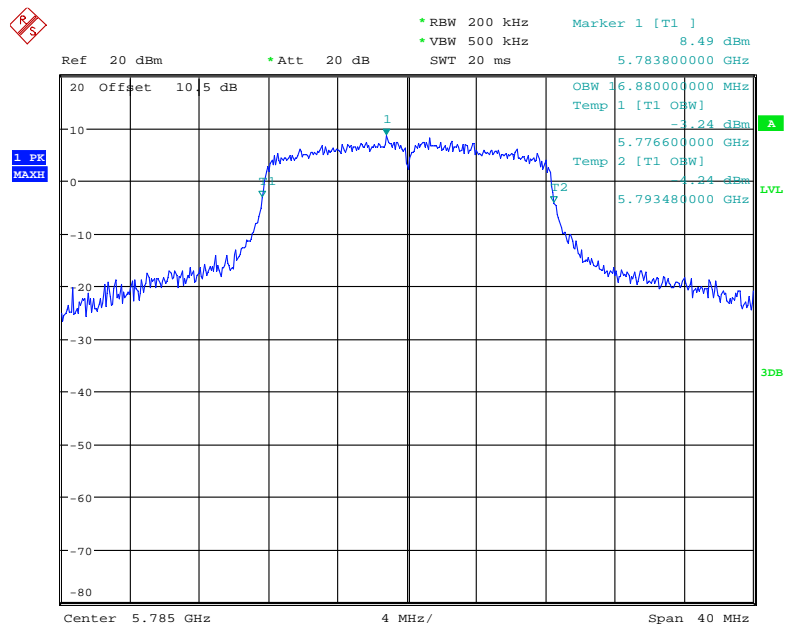
Frequency (MHz)	6dB bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Remark
802.11a				No transmitted signal in the 99% bandwidth extends into the U-NII-2C band
5745	15.325	16.960	0.5	
5785	15.707	16.880	0.5	
5825	15.451	16.960	0.5	
802.11n20				
5745	15.196	17.760	0.5	
5785	15.190	17.840	0.5	
5825	15.256	17.920	0.5	
802.11n40				
5755	35.292	36.640	0.5	
5795	35.292	36.640	0.5	
802.11ac20				
5745	15.192	17.840	0.5	
5785	15.196	17.840	0.5	
5825	15.341	17.840	0.5	
802.11ac40				
5755	35.292	36.640	0.5	
5795	35.292	36.640	0.5	
802.11ac80				
5775	75.378	75.840	0.5	

802.11a mode, 99% Occupied Bandwidth, 5745 MHz



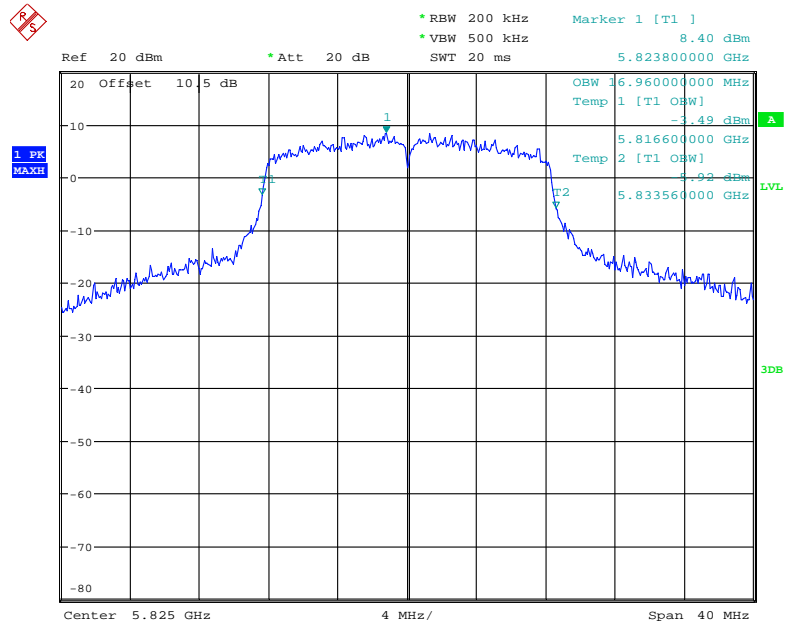
Date: 26.APR.2019 15:04:24

802.11a mode, 99% Occupied Bandwidth, 5785 MHz



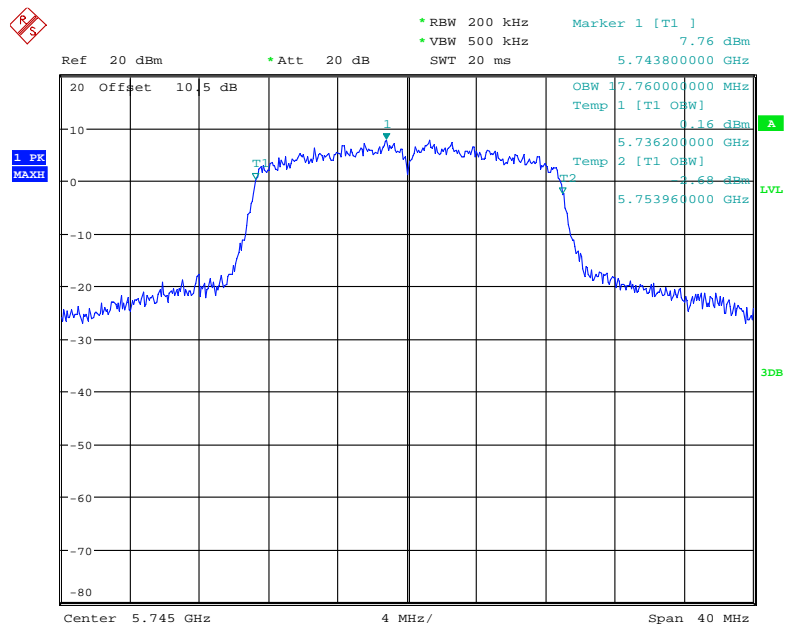
Date: 26.APR.2019 15:04:43

802.11a mode, 99% Occupied Bandwidth, 5825 MHz



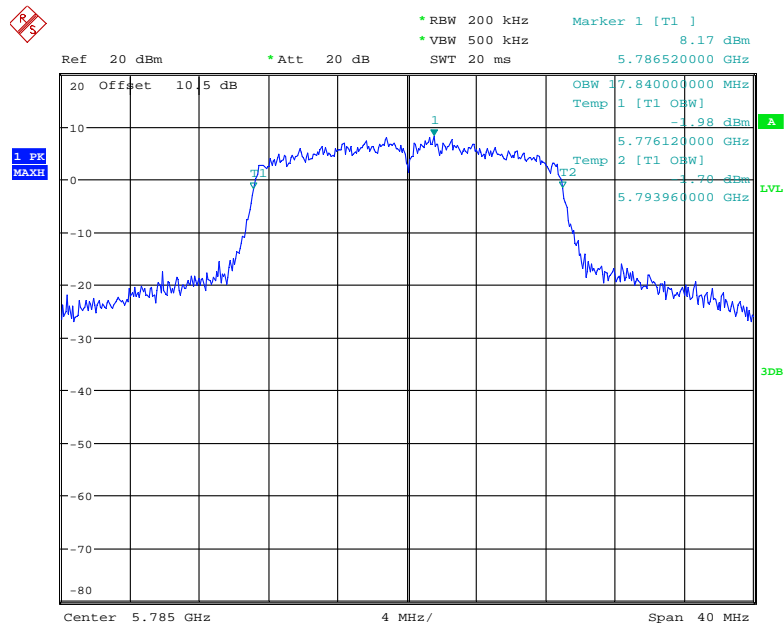
Date: 26.APR.2019 15:05:03

802.11n20 mode, 99% Occupied Bandwidth, 5745 MHz



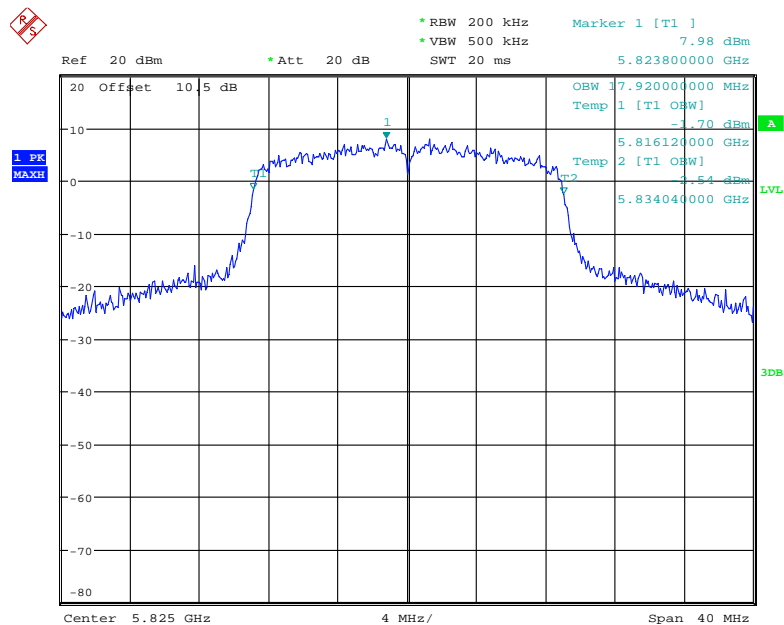
Date: 26.APR.2019 15:01:43

802.11n20 mode, 99% Occupied Bandwidth, 5785 MHz



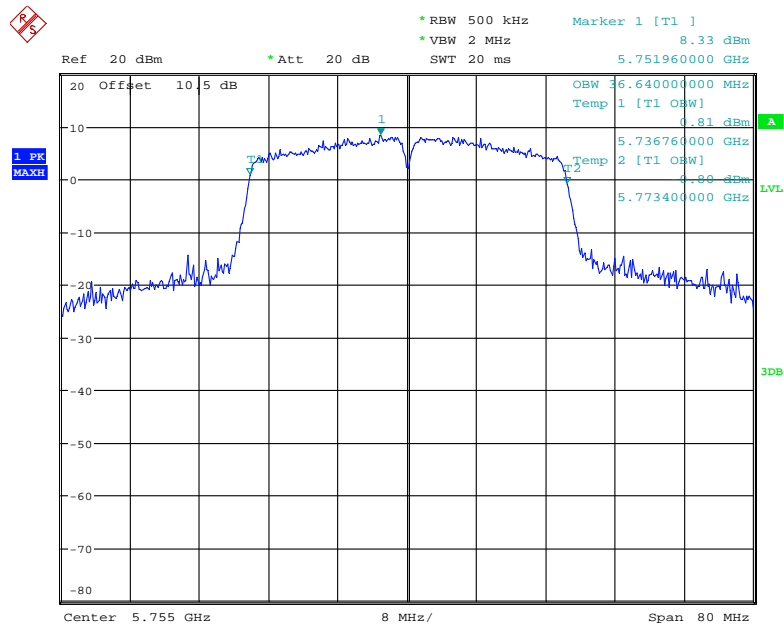
Date: 26.APR.2019 15:02:07

802.11n20 mode, 99% Occupied Bandwidth, 5825 MHz



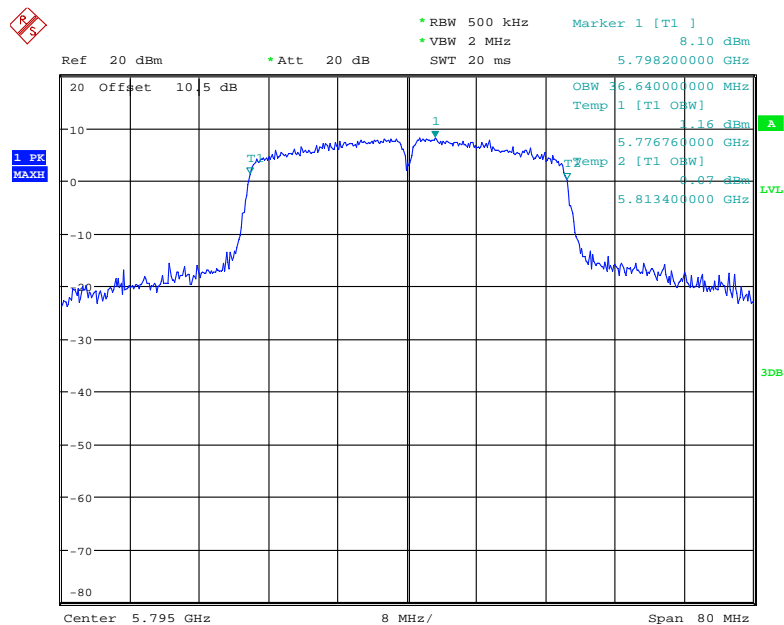
Date: 26.APR.2019 15:02:28

802.11n40 mode, 99% Occupied Bandwidth, 5755 MHz



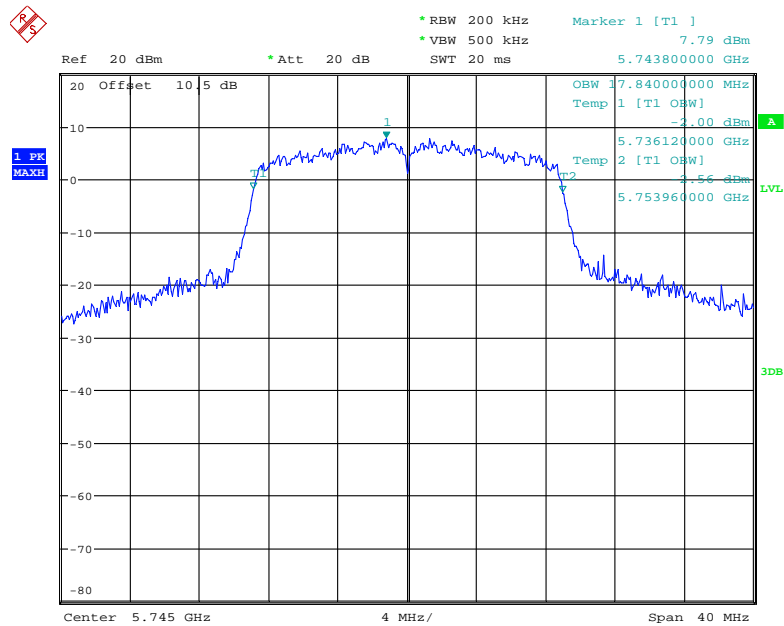
Date: 26.APR.2019 15:01:06

802.11n40 mode, 99% Occupied Bandwidth, 5795 MHz



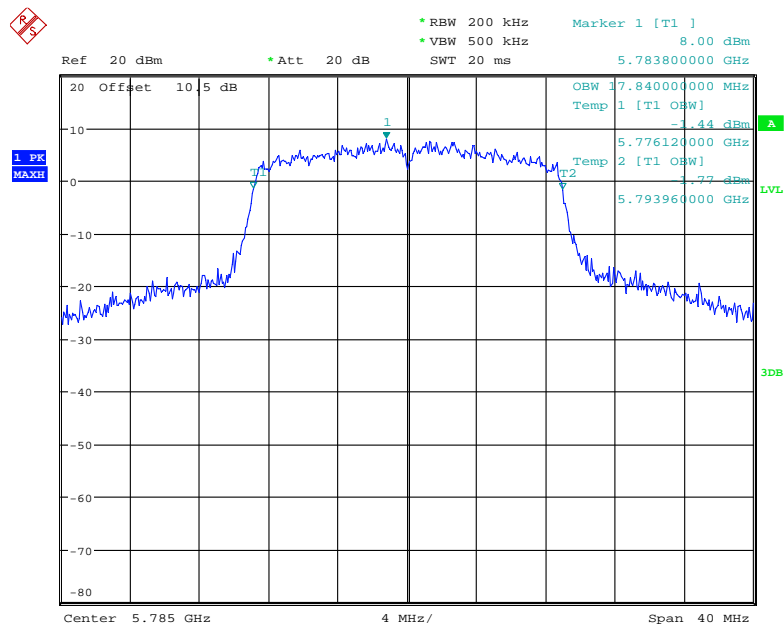
Date: 26.APR.2019 15:00:41

802.11ac20 mode, 99% Occupied Bandwidth, 5745 MHz



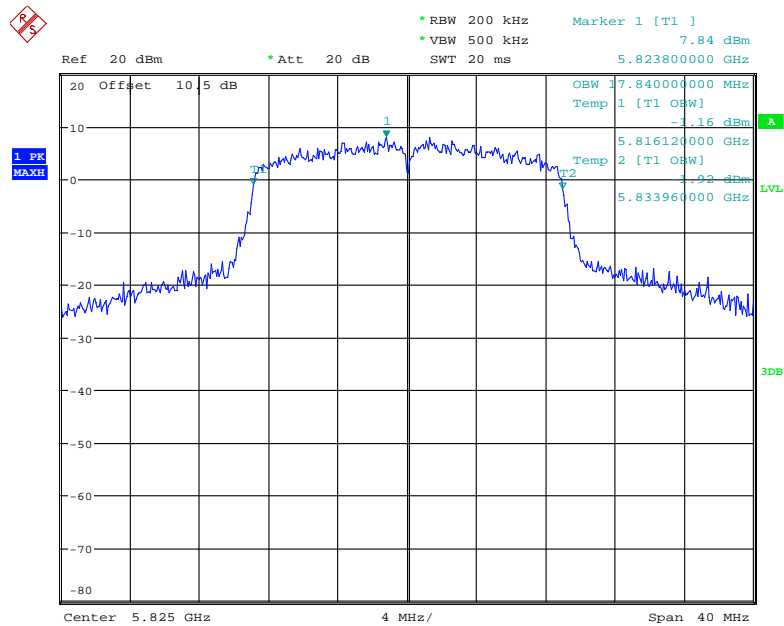
Date: 26.APR.2019 15:03:57

802.11ac20 mode, 99% Occupied Bandwidth, 5785 MHz



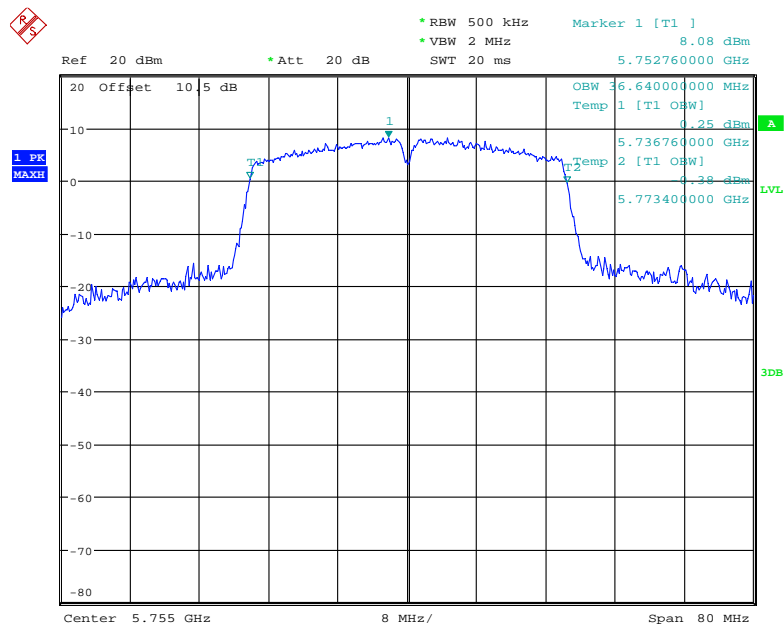
Date: 26.APR.2019 15:03:35

802.11ac20 mode, 99% Occupied Bandwidth, 5825 MHz



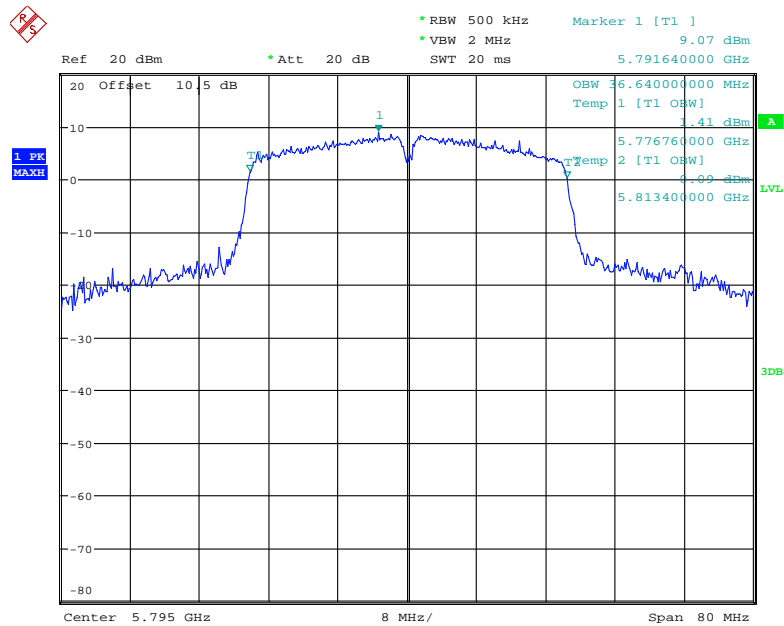
Date: 26.APR.2019 15:02:58

802.11ac40 mode, 99% Occupied Bandwidth, 5755 MHz



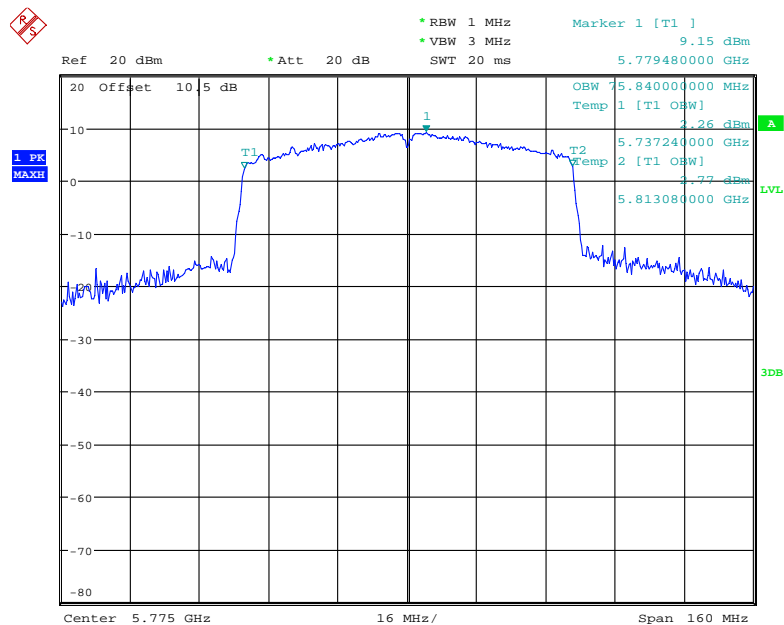
Date: 26.APR.2019 14:59:49

802.11ac40 mode, 99% Occupied Bandwidth, 5795 MHz



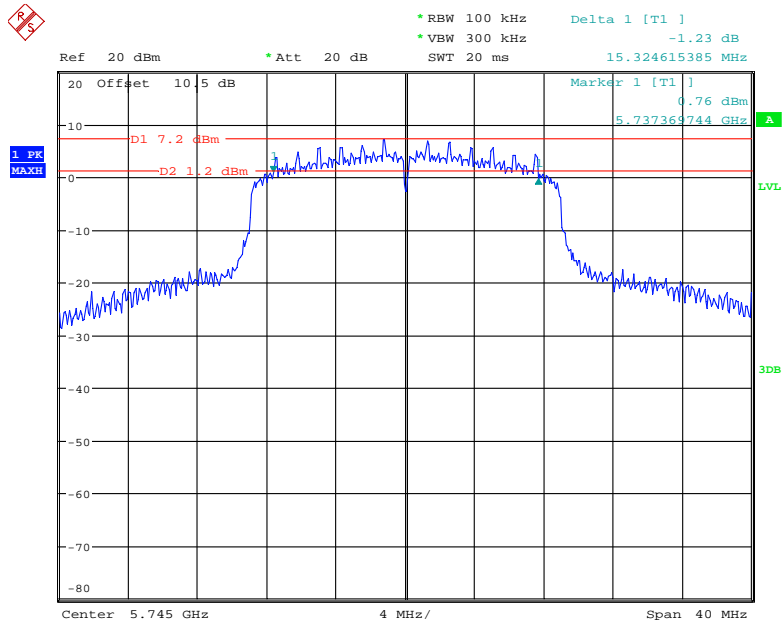
Date: 26.APR.2019 15:00:19

802.11ac80 mode, 99% Occupied Bandwidth, 5775 MHz



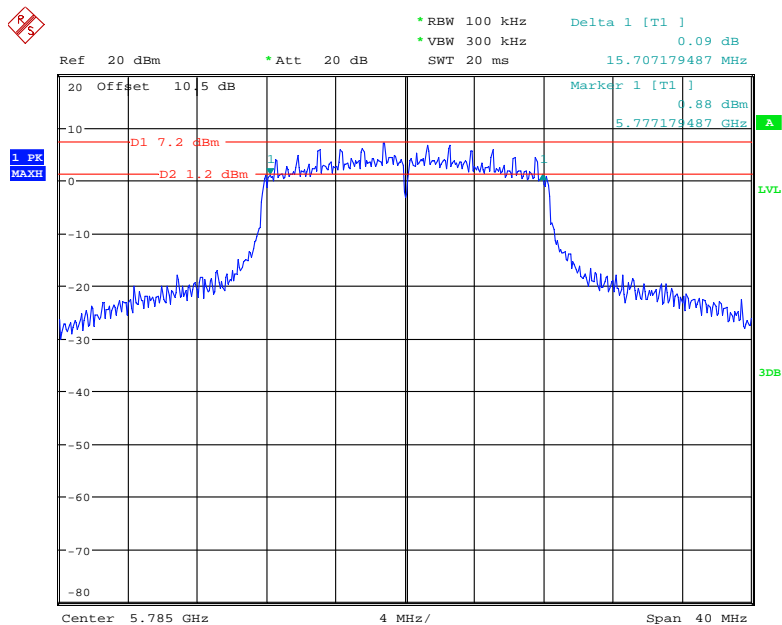
Date: 26.APR.2019 14:58:39

802.11a mode, 6 dB Emissions Bandwidth, 5745 MHz



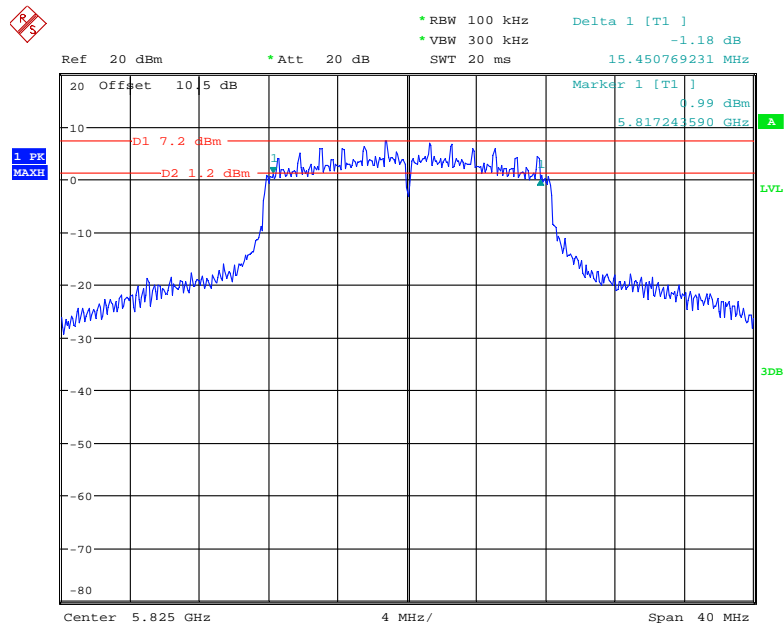
Date: 26.APR.2019 14:27:08

802.11a mode, 6 dB Emissions Bandwidth, 5785 MHz



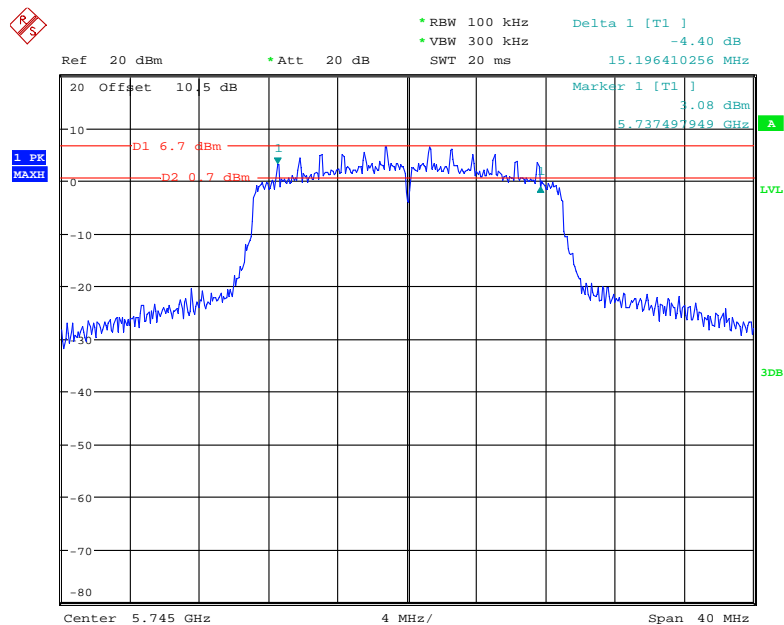
Date: 26.APR.2019 14:27:54

802.11a mode, 6 dB Emissions Bandwidth, 5825 MHz



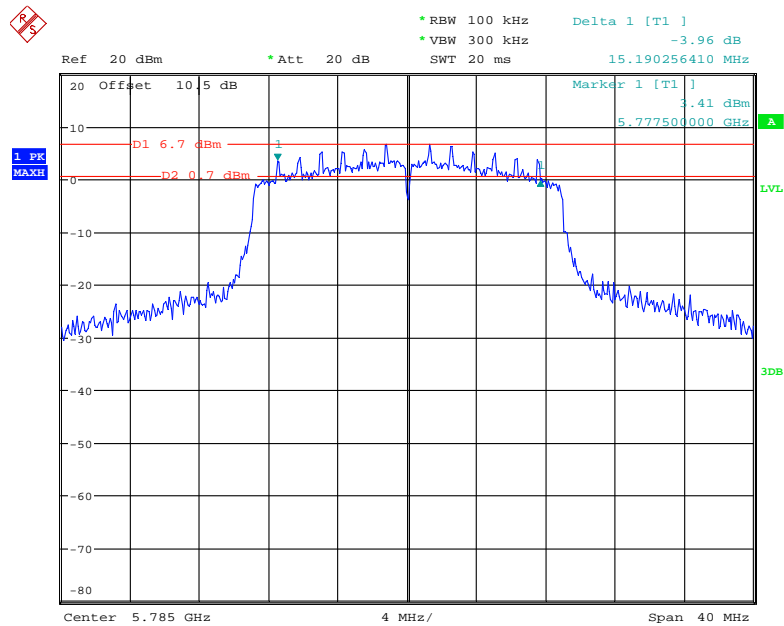
Date: 26.APR.2019 14:28:43

802.11n20 mode, 6 dB Emissions Bandwidth, 5745 MHz



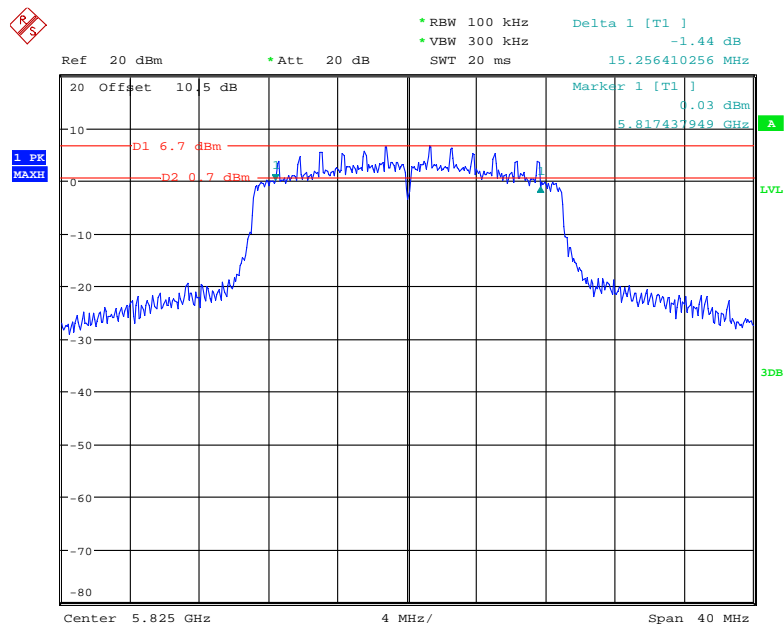
Date: 26.APR.2019 14:24:32

802.11n20 mode, 6 dB Emissions Bandwidth, 5785 MHz



Date: 26.APR.2019 14:23:50

802.11n20 mode, 6 dB Emissions Bandwidth, 5825 MHz



Date: 26.APR.2019 14:22:57

Ref 20 dBm * Att 20 dB * RBW 100 kHz Delta 1 [T1] -3.09 dB
 * VBW 300 kHz 35.292307692 MHz
 SWT 20 ms

20 Offset 10.5 dB Marker 1 [T1]
 -1.10 dBm
 5.737435897 GHz

1 PK
 MAXH

D1 4.2 dBm
 D2 -1.8 dBm

1

LVL

3DB

Center 5.755 GHz 8 MHz/
 Span 80 MHz

Ref 20 dBm * Att 20 dB

* RBW 100 kHz Delta 1 [T1] -3.26 dB
 * VBW 300 kHz
 SWT 20 ms 35.292307692 MHz

20 Offset 10.5 dB

Marker 1 [T1] -0.15 dBm
 5.777435897 GHz

1 PK MAX

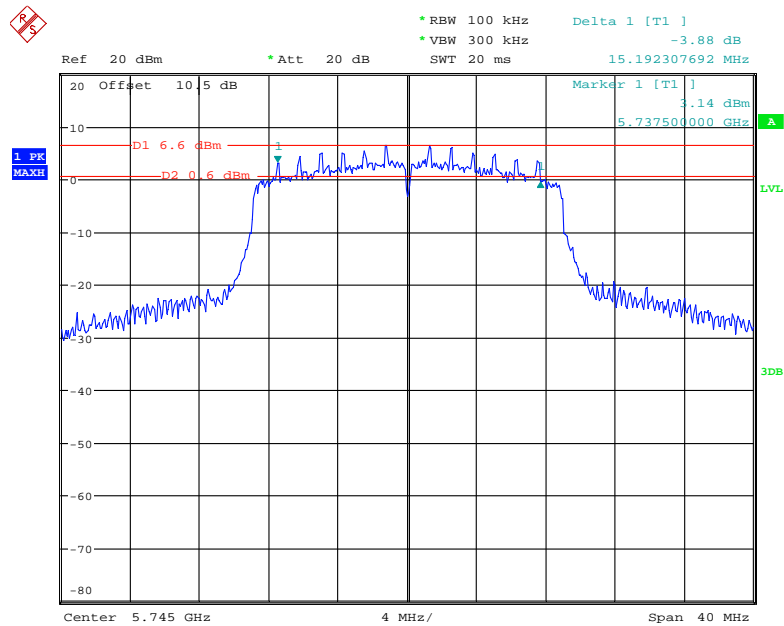
D1 4.3 dBm
 D2 -1.7 dBm

1

Center 5.795 GHz 8 MHz/ Span 80 MHz

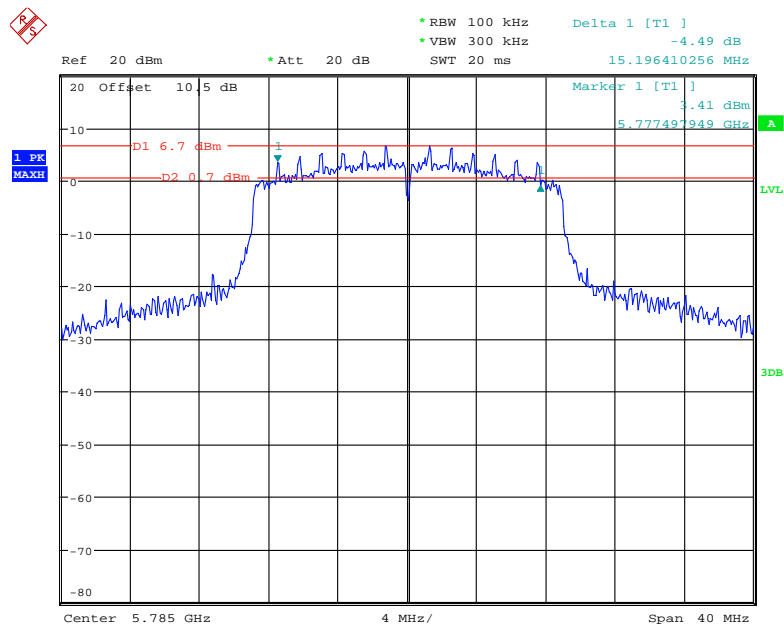
Page 68 of 139

802.11ac20 mode, 6 dB Emissions Bandwidth, 5745 MHz



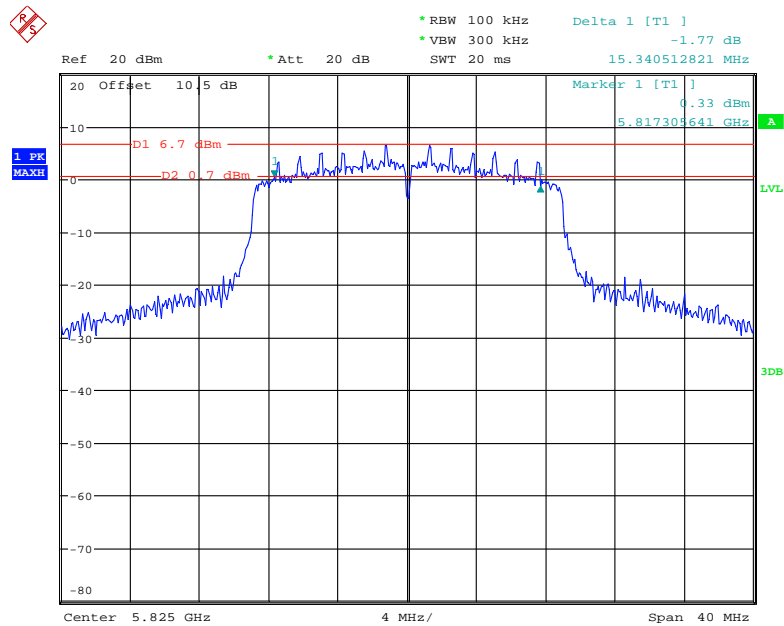
Date: 26.APR.2019 14:15:04

802.11ac20 mode, 6 dB Emissions Bandwidth, 5785 MHz



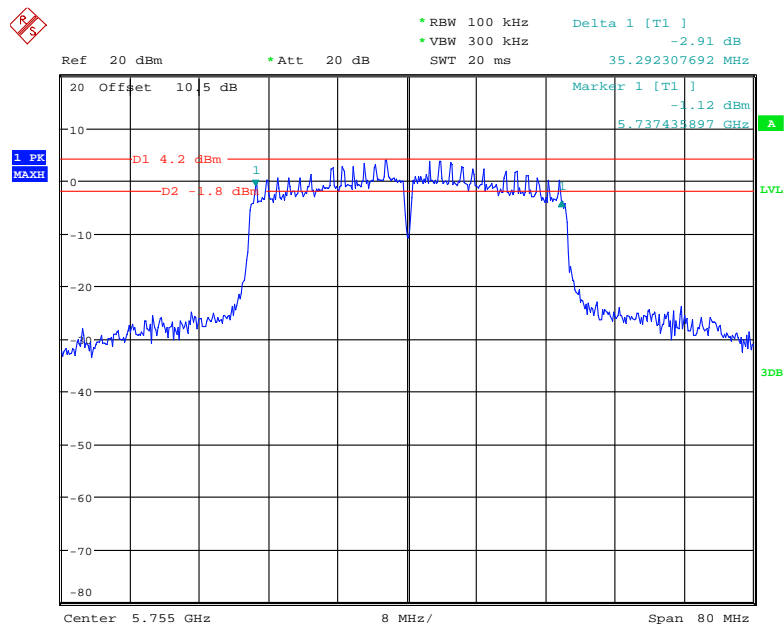
Date: 26.APR.2019 14:16:05

802.11ac20 mode, 6 dB Emissions Bandwidth, 5825 MHz



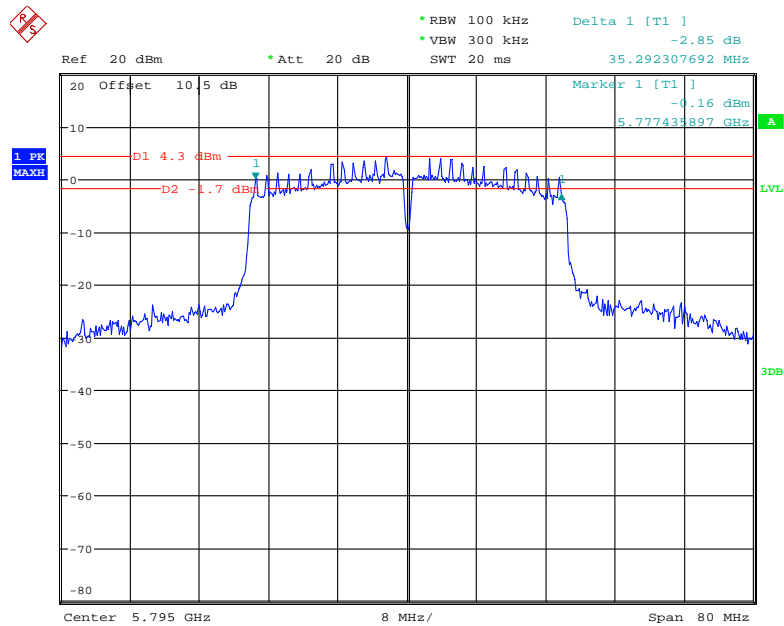
Date: 26.APR.2019 14:16:48

802.11ac40 mode, 6 dB Emissions Bandwidth, 5755 MHz



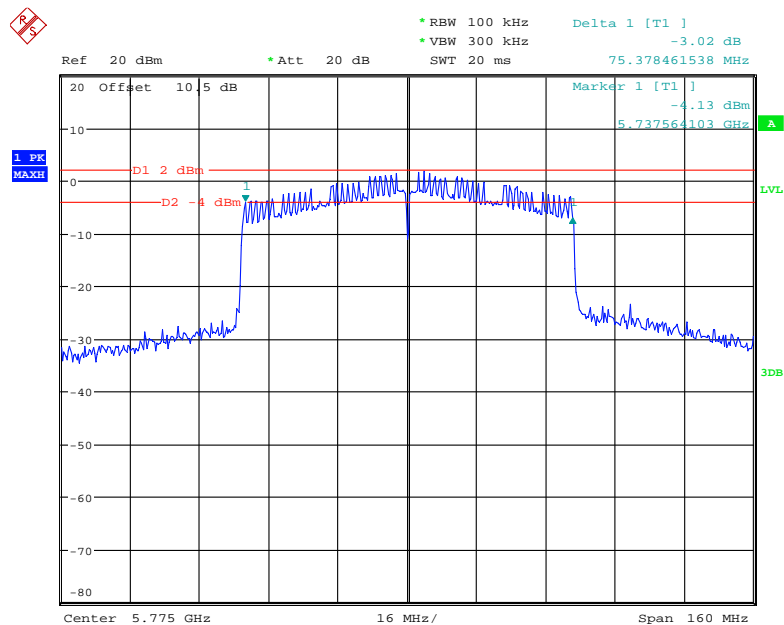
Date: 26.APR.2019 14:11:26

802.11ac40 mode, 6 dB Emissions Bandwidth, 5795 MHz



Date: 26.APR.2019 14:10:35

802.11ac80 mode, 6 dB Emissions Bandwidth, 5775 MHz



Date: 26.APR.2019 14:09:06

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

Applicable Standard

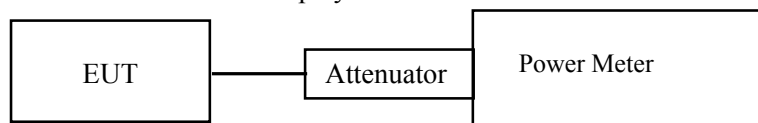
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz 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 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 Kieron Luo from 2019-04-25 to 2019-04-30.

EUT operation mode: Transmitting

Note: According to KDB 662911 D01 v02r01, For power measurement on IEEE 802.11 devices
 Array Gain = 0 dB (i.e., no array gain) for $N_{Ant} \leq 4$; So the directional gain in this chapter is 5dBi, it's less than 6dBi.

Test Result: Pass

Please refer to the following tables.

5150 MHz – 5250 MHz (this is a indoor access point)

Frequency(MHz)	Antenna Port	Average Output Power (dBm)	Total Power (dBm)	Limit (dBm)
802.11a				
5180	0	14.13	21.42	30
	1	13.68		
	2	15.18		
	3	17.52		
5200	0	14.11	21.40	
	1	13.62		
	2	14.96		
	3	17.63		
5240	0	14.24	21.36	
	1	13.55		
	2	14.25		
	3	17.86		

Frequency(MHz)	Antenna Port	Average Output Power (dBm)	Total Power (dBm)	Limit (dBm)
802.11n20				
5180	0	13.68	21.15	30
	1	13.25		
	2	14.58		
	3	17.56		
5200	0	13.75	21.28	
	1	13.46		
	2	14.36		
	3	17.85		
5240	0	13.84	21.18	
	1	13.52		
	2	13.95		
	3	17.76		
802.11n40				
5190	0	13.83	21.24	30
	1	13.52		
	2	14.62		
	3	17.58		
5230	0	13.91	21.22	
	1	13.56		
	2	14.31		
	3	17.65		
802.11ac20				
5180	0	13.52	21.28	30
	1	13.59		
	2	14.39		
	3	17.88		
5200	0	13.65	21.20	
	1	13.56		
	2	14.11		
	3	17.79		
5240	0	13.85	21.35	
	1	13.62		
	2	14.43		
	3	17.88		

Frequency(MHz)	Antenna Port	Average Output Power (dBm)	Total Power (dBm)	Limit (dBm)
802.11ac40				
5190	0	13.86	21.14	30
	1	13.46		
	2	14.37		
	3	17.49		
5230	0	13.89	21.15	
	1	13.59		
	2	14.16		
	3	17.56		
802.11ac80				
5210	0	12.65	20.30	30
	1	12.54		
	2	14.44		
	3	16.33		

5725 MHz – 5850 MHz:

Frequency(MHz)	Antenna Port	Average Output Power (dBm)	Total Power (dBm)	Limit (dBm)
802.11a				
5745	0	13.34	21.91	30
	1	14.71		
	2	16.77		
	3	17.53		
5785	0	13.30	21.89	
	1	14.75		
	2	16.73		
	3	17.49		
5825	0	13.37	21.85	
	1	14.42		
	2	16.70		
	3	17.55		
802.11n20				
5745	0	12.95	21.36	30
	1	14.01		
	2	16.07		
	3	17.10		
5785	0	13.05	21.48	
	1	14.20		
	2	16.11		
	3	17.26		
5825	0	13.08	21.12	
	1	13.78		
	2	15.34		
	3	17.07		
802.11n40				
5755	0	12.84	21.55	30
	1	14.34		
	2	16.33		
	3	17.28		
5795	0	12.91	21.54	
	1	14.35		
	2	16.09		
	3	17.42		

Frequency(MHz)	Antenna Port	Average Output Power (dBm)	Total Power (dBm)	Limit (dBm)
802.11ac20				
5745	0	13.13	21.39	30
	1	14.03		
	2	16.15		
	3	17.06		
5785	0	12.89	21.40	
	1	14.15		
	2	16.16		
	3	17.09		
5825	0	12.95	21.10	
	1	13.75		
	2	15.28		
	3	17.12		
802.11ac40				
5755	0	12.88	21.52	30
	1	14.26		
	2	16.32		
	3	17.24		
5795	0	12.95	21.56	
	1	14.33		
	2	16.16		
	3	17.41		
802.11ac80				
5775	0	12.98	21.24	30
	1	14.46		
	2	14.79		
	3	17.42		

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

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

Test Data**Environmental Conditions**

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

The testing was performed by Kieron Luo from 2019-04-25 to 2019-04-30.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

5150 MHz – 5250 MHz (this is a indoor access point):

Note: directional gain=array gain+Ant gain=10*log(Nant/Nss)+5 dBi=11 dBi

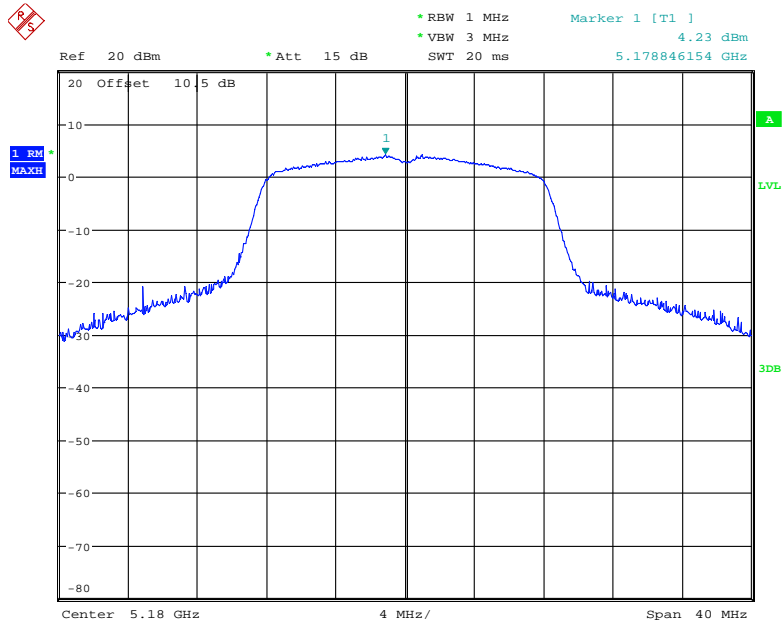
Limit_{psd}=17-(directional gain-6) dBm/MHz =12 dBm/MHz

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Total Power Spectral (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5180	0	4.23	11.38	12
	1	3.24		
	2	4.98		
	3	7.66		
5200	0	4.10	11.80	
	1	3.45		
	2	4.57		
	3	8.75		
5240	0	3.79	11.54	
	1	3.28		
	2	4.00		
	3	8.58		
802.11n20				
5180	0	3.37	11.09	12
	1	2.67		
	2	4.29		
	3	7.88		
5200	0	3.54	11.21	
	1	2.76		
	2	3.88		
	3	8.21		
5240	0	3.42	11.12	
	1	2.67		
	2	3.54		
	3	8.21		
802.11n40				
5190	0	0.68	8.26	12
	1	-0.01		
	2	1.16		
	3	5.08		
5230	0	0.89	8.30	
	1	-0.31		
	2	0.61		
	3	5.38		

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Total Power Spectral (dBm/MHz)	Limit (dBm/MHz)
802.11ac20				
5180	0	3.20	10.97	12
	1	2.68		
	2	4.07		
	3	7.79		
5200	0	3.47	11.02	
	1	2.78		
	2	3.64		
	3	7.94		
5240	0	3.28	11.00	
	1	2.95		
	2	3.55		
	3	7.95		
802.11ac40				
5190	0	0.67	7.82	12
	1	-0.41		
	2	0.91		
	3	4.39		
5230	0	0.54	7.95	
	1	-0.16		
	2	0.61		
	3	4.75		
802.11ac80				
5210	0	-2.93	4.72	12
	1	-3.80		
	2	-1.60		
	3	1.29		

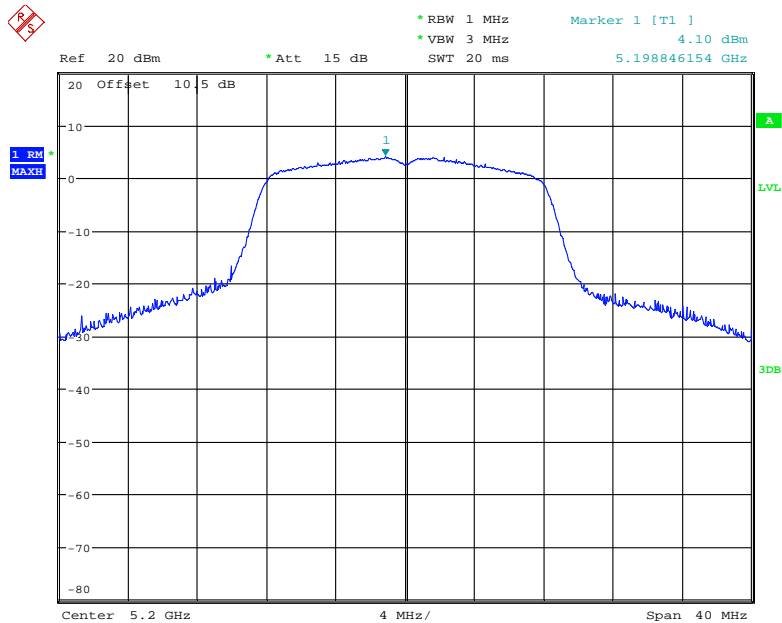
Antenna 0

802.11a mode, Power Spectral Density, 5180 MHz



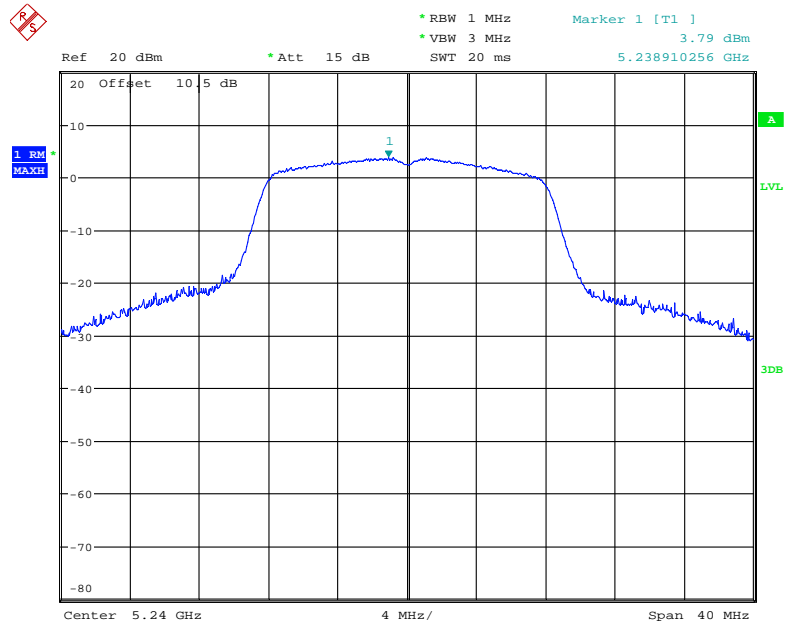
Date: 30.APR.2019 13:58:12

802.11a mode, Power Spectral Density, 5200 MHz



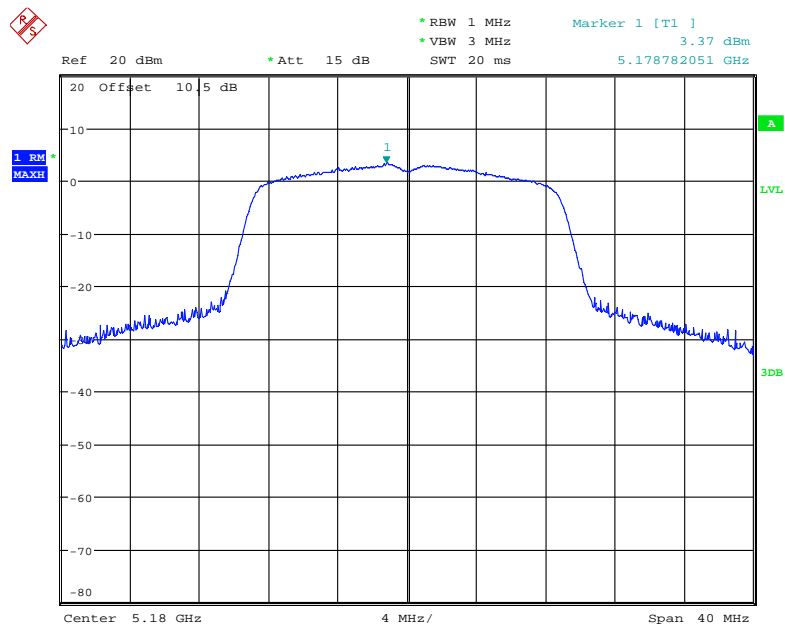
Date: 30.APR.2019 13:57:51

802.11a mode, Power Spectral Density, 5240 MHz



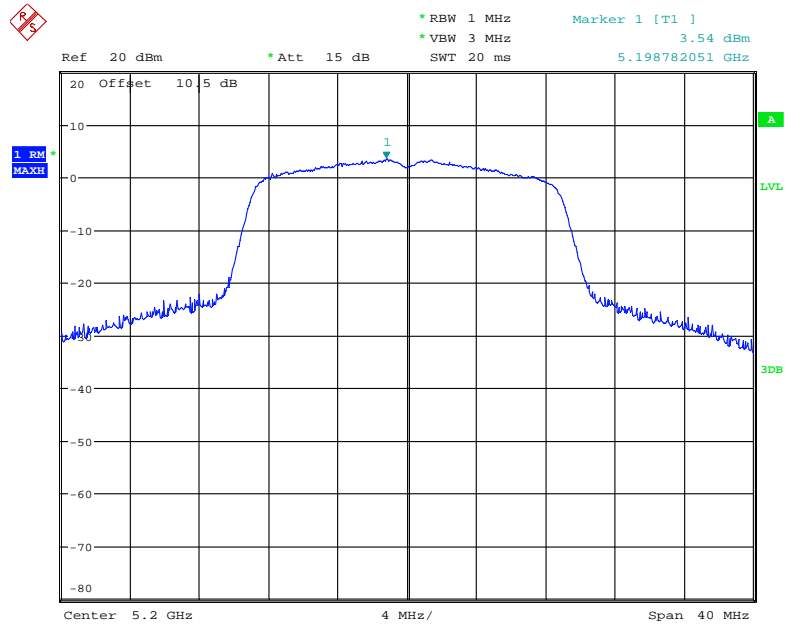
Date: 30.APR.2019 13:57:26

802.11n20 mode, Power Spectral Density, 5180 MHz



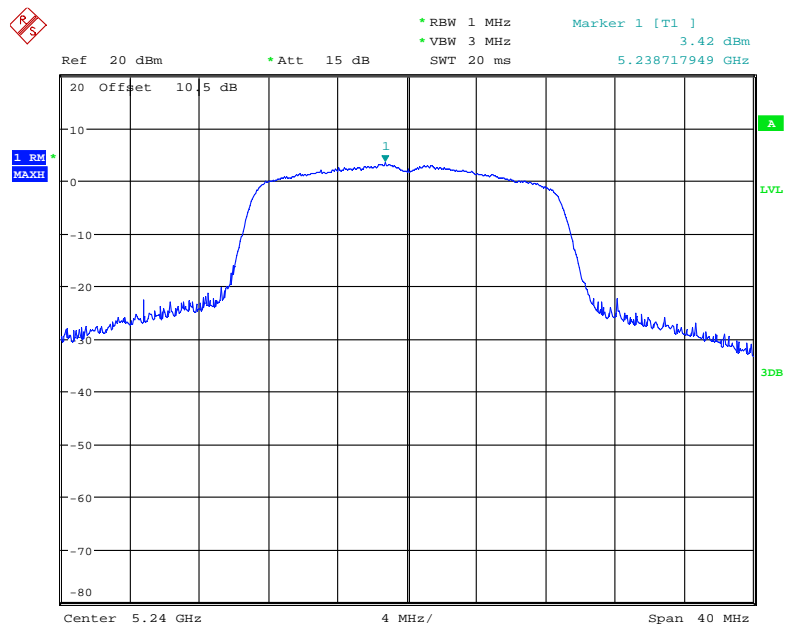
Date: 30.APR.2019 13:56:04

802.11n20 mode, Power Spectral Density, 5200 MHz



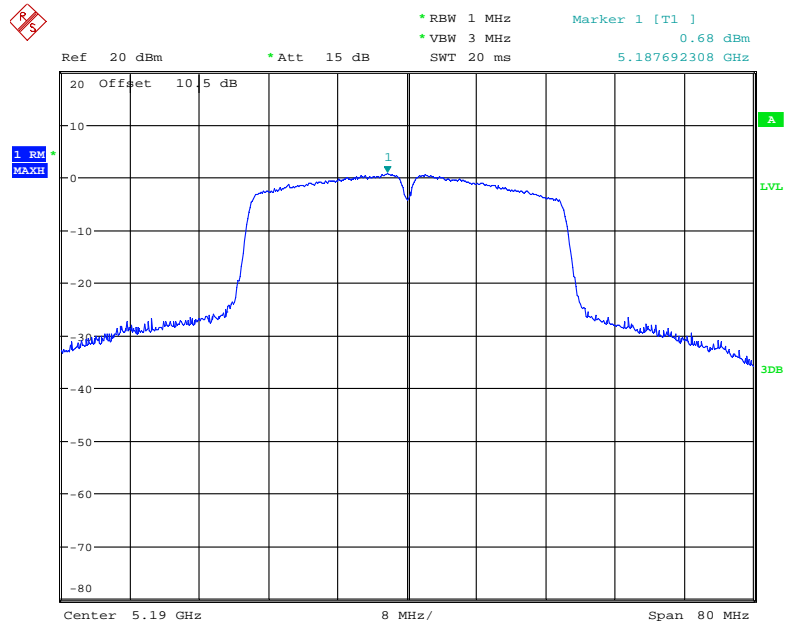
Date: 30.APR.2019 13:56:27

802.11n20 mode, Power Spectral Density, 5240 MHz



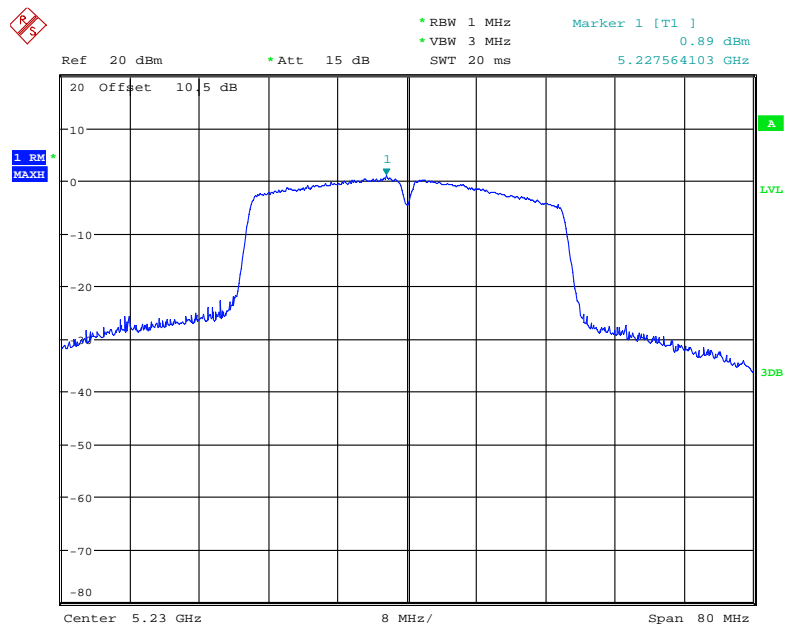
Date: 30.APR.2019 13:56:49

802.11n40 mode, Power Spectral Density, 5190 MHz



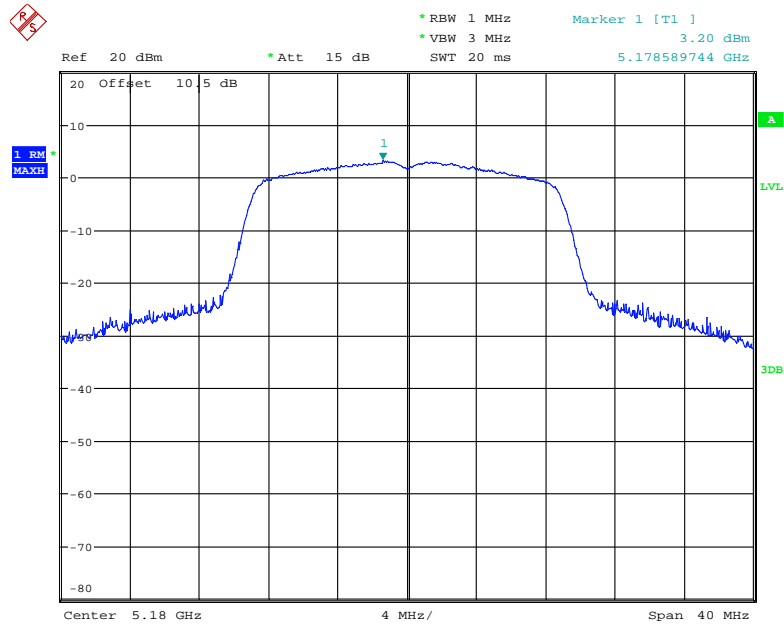
Date: 30.APR.2019 13:59:15

802.11n40 mode, Power Spectral Density, 5230 MHz



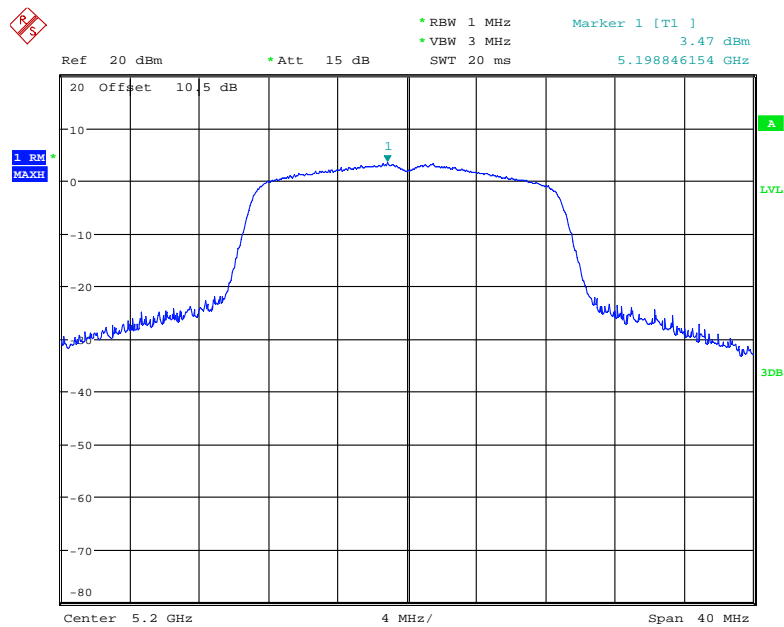
Date: 30.APR.2019 13:59:41

802.11ac20 mode, Power Spectral Density, 5180 MHz



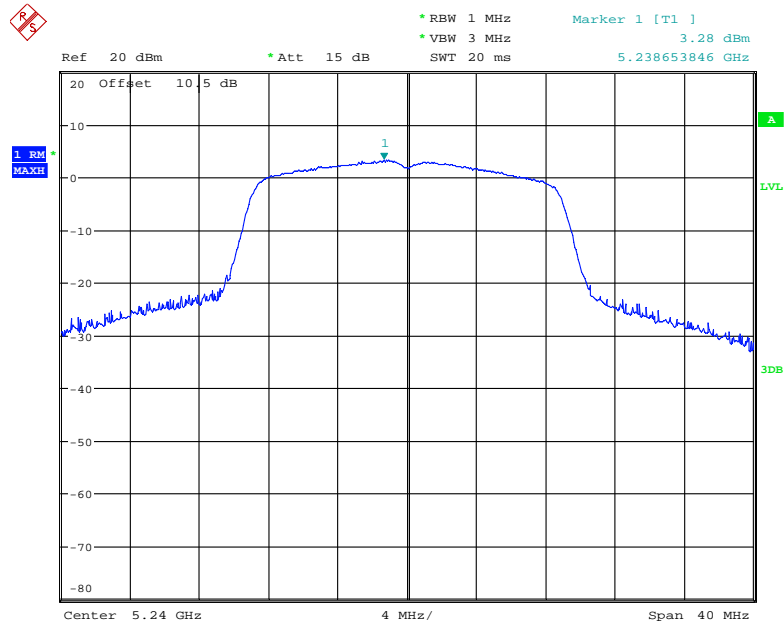
Date: 30.APR.2019 13:54:39

802.11ac20 mode, Power Spectral Density, 5200 MHz



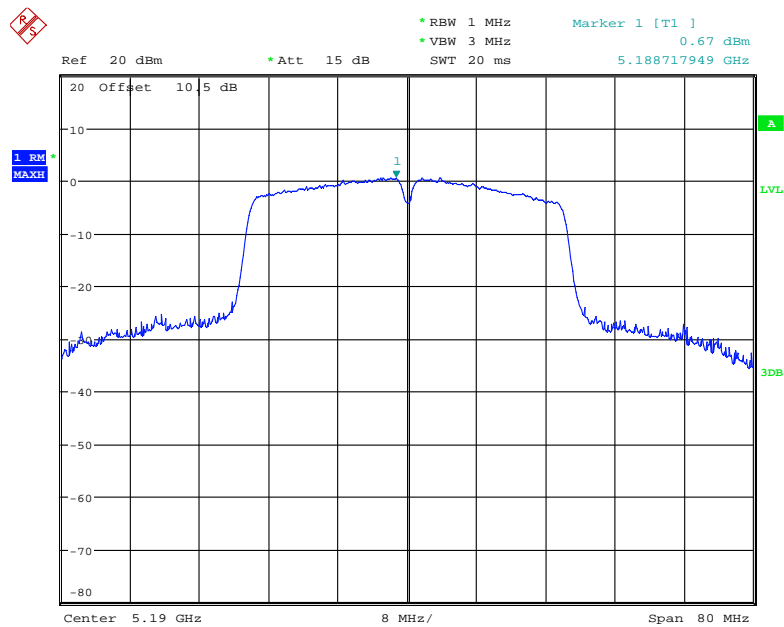
Date: 30.APR.2019 13:54:17

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

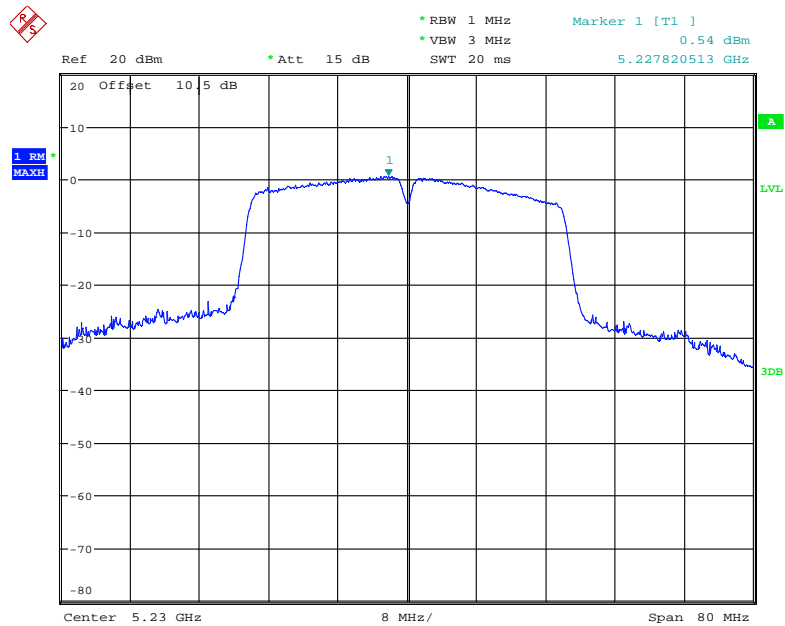


Date: 30.APR.2019 13:53:49

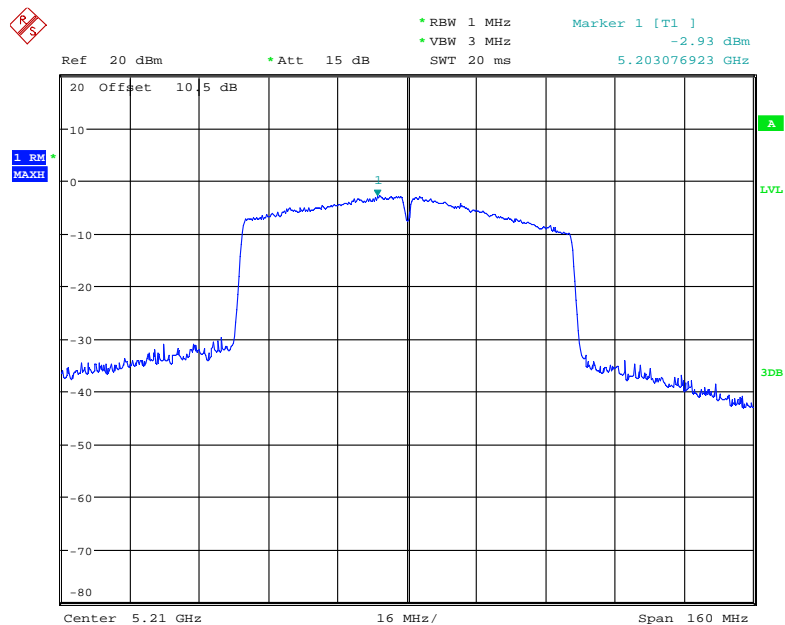
802. 11ac40 mode, Power Spectral Density, 5190 MHz



Date: 30.APR.2019 14:00:24

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

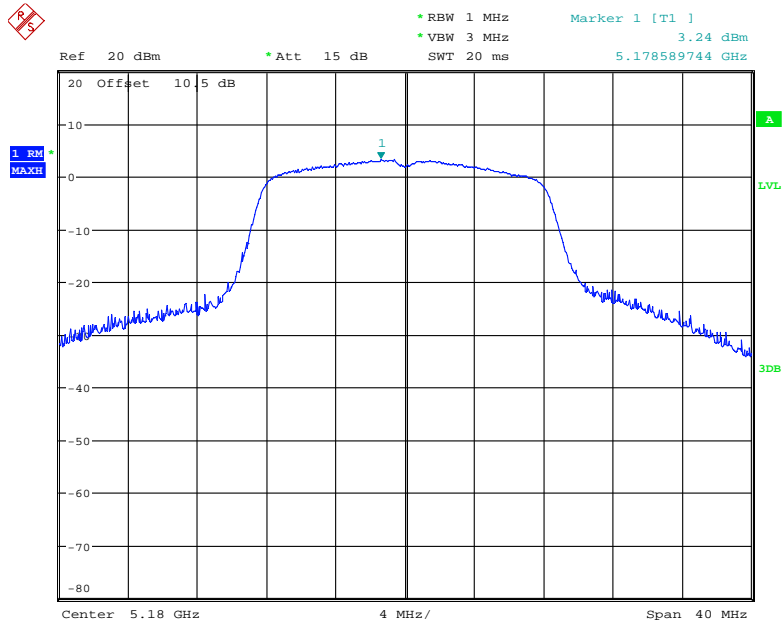
Date: 30.APR.2019 14:00:02

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

Date: 30.APR.2019 14:00:54

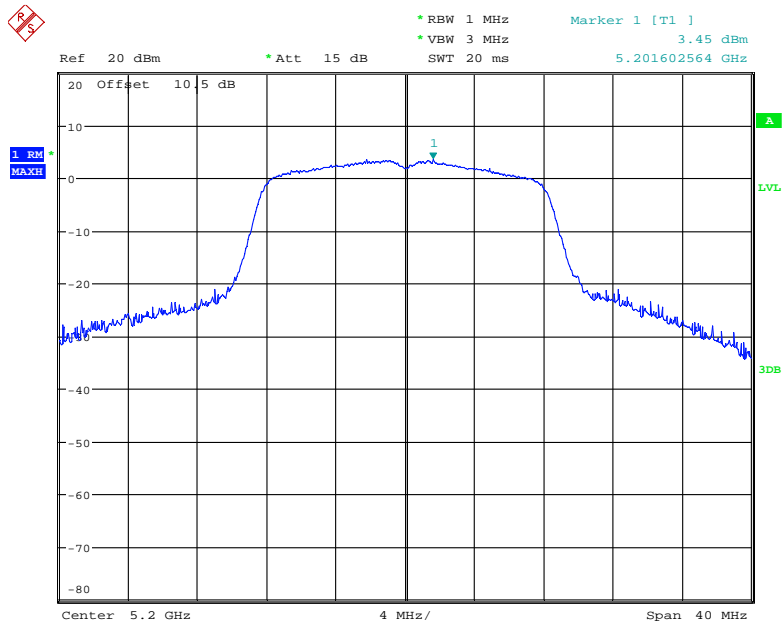
Antenna 1

802.11a mode, Power Spectral Density, 5180 MHz



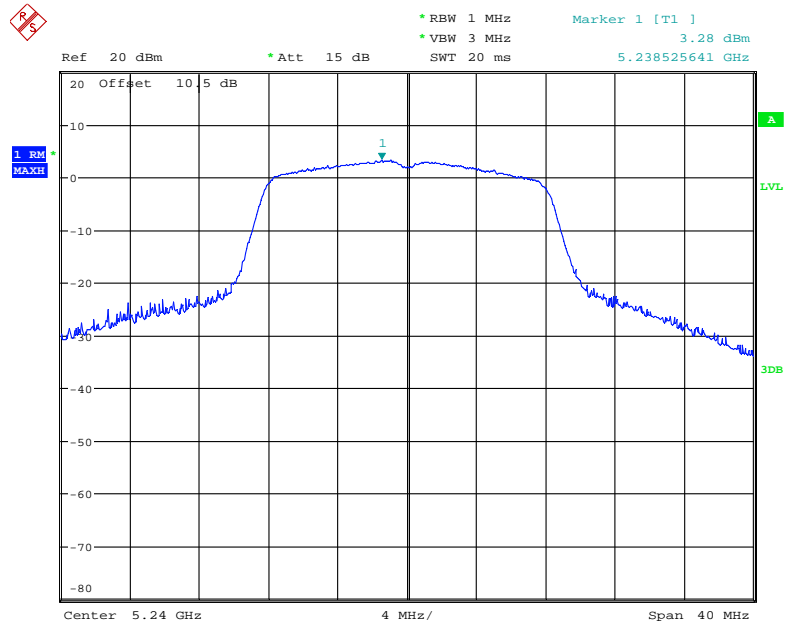
Date: 30.APR.2019 11:37:30

802.11a mode, Power Spectral Density, 5200 MHz



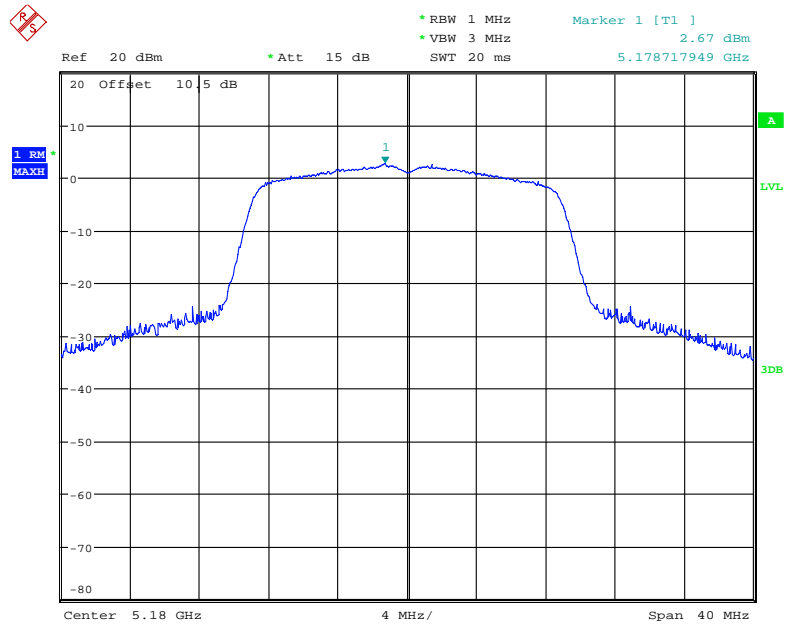
Date: 30.APR.2019 11:37:59

802.11a mode, Power Spectral Density, 5240 MHz



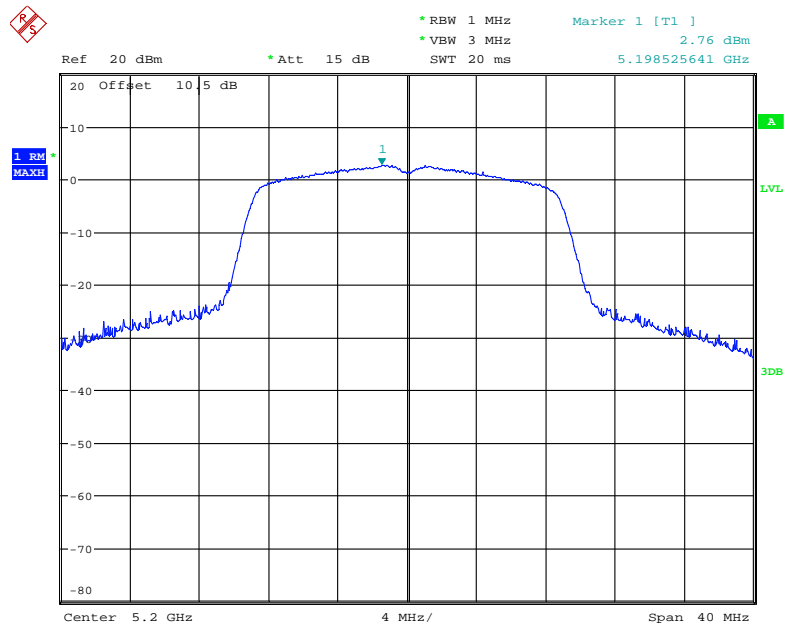
Date: 30.APR.2019 11:38:17

802.11n20 mode, Power Spectral Density, 5180 MHz



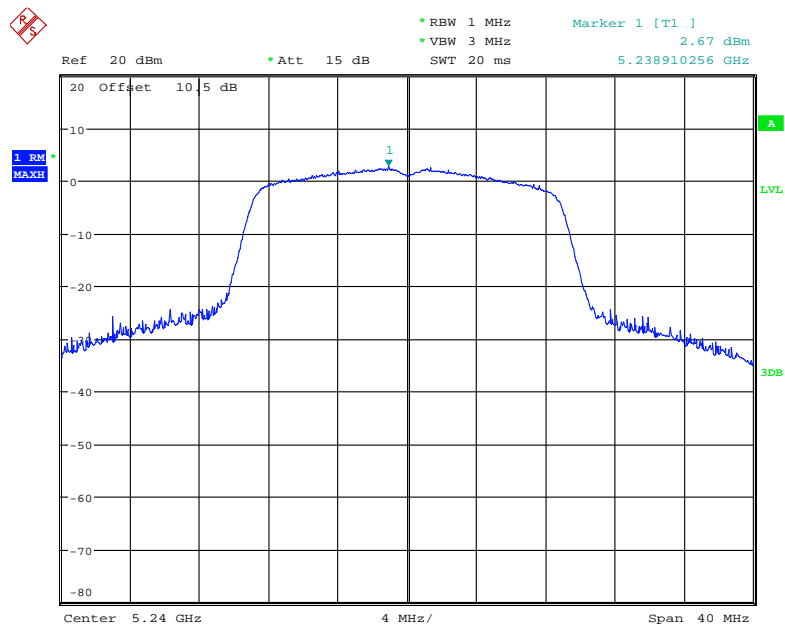
Date: 30.APR.2019 11:39:21

802.11n20 mode, Power Spectral Density, 5200 MHz



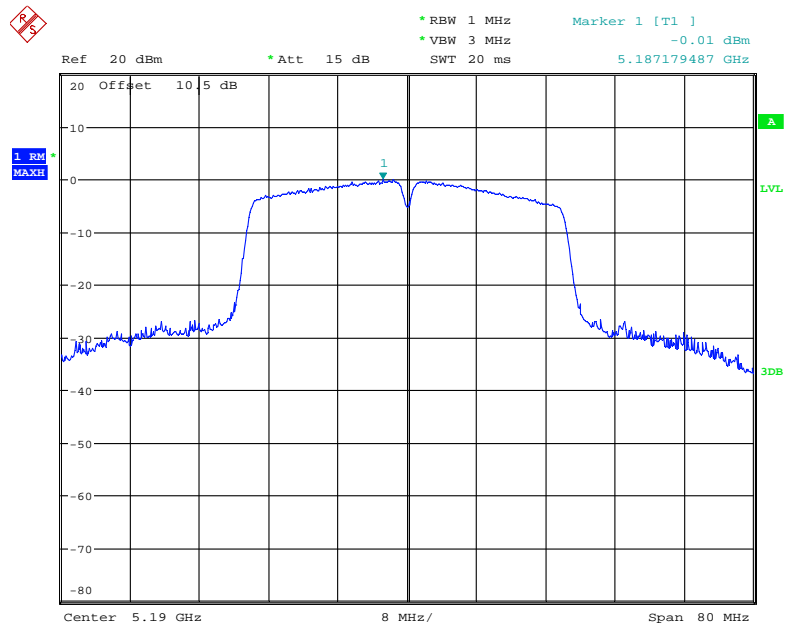
Date: 30.APR.2019 11:39:02

802.11n20 mode, Power Spectral Density, 5240 MHz



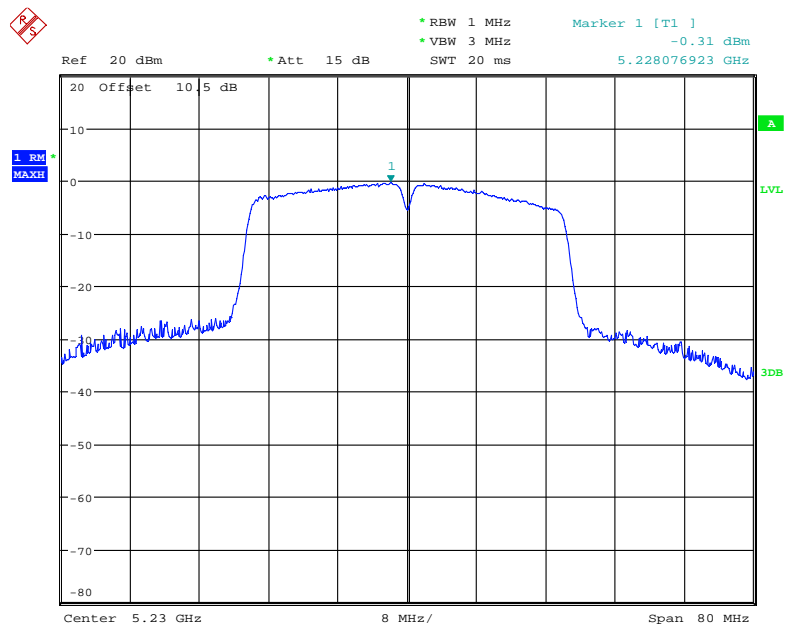
Date: 30.APR.2019 11:38:35

802.11n40 mode, Power Spectral Density, 5190 MHz



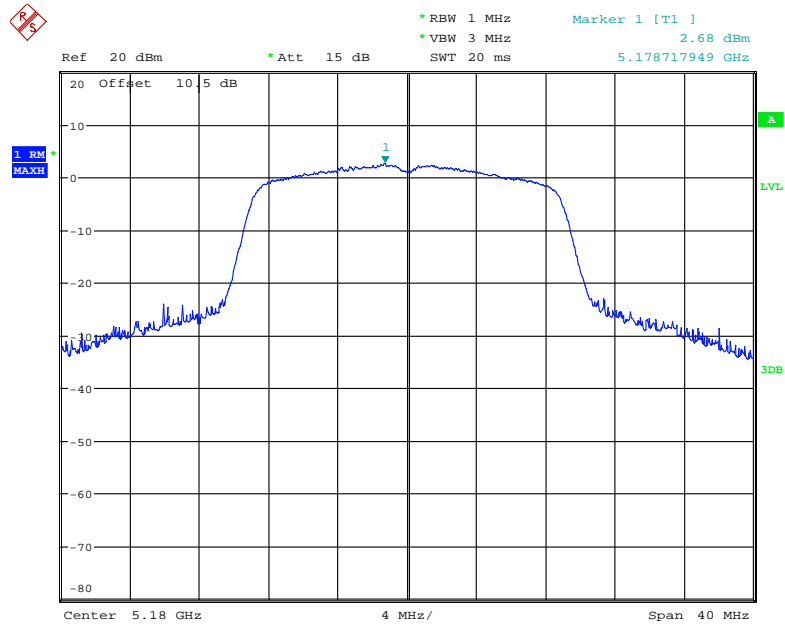
Date: 30.APR.2019 11:42:02

802.11n40 mode, Power Spectral Density, 5230 MHz



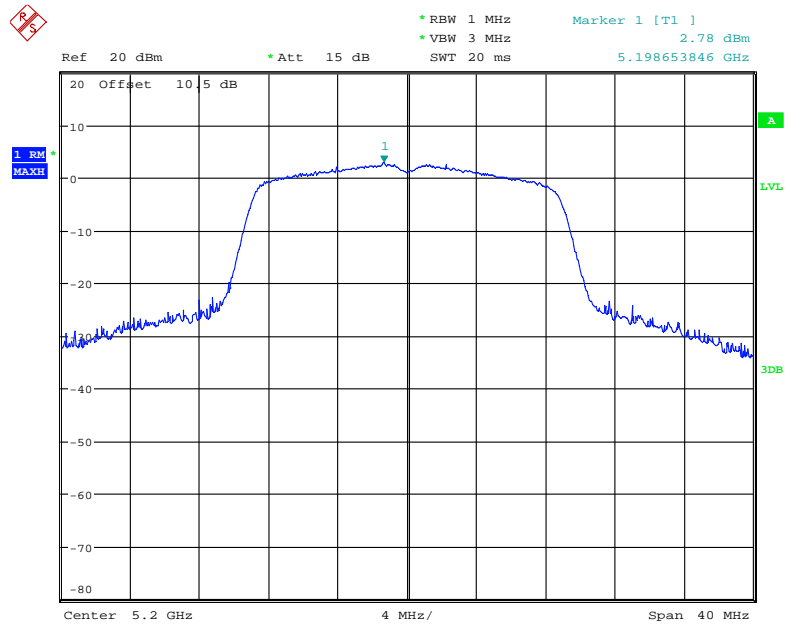
Date: 30.APR.2019 11:42:20

802.11ac20 mode, Power Spectral Density, 5180 MHz



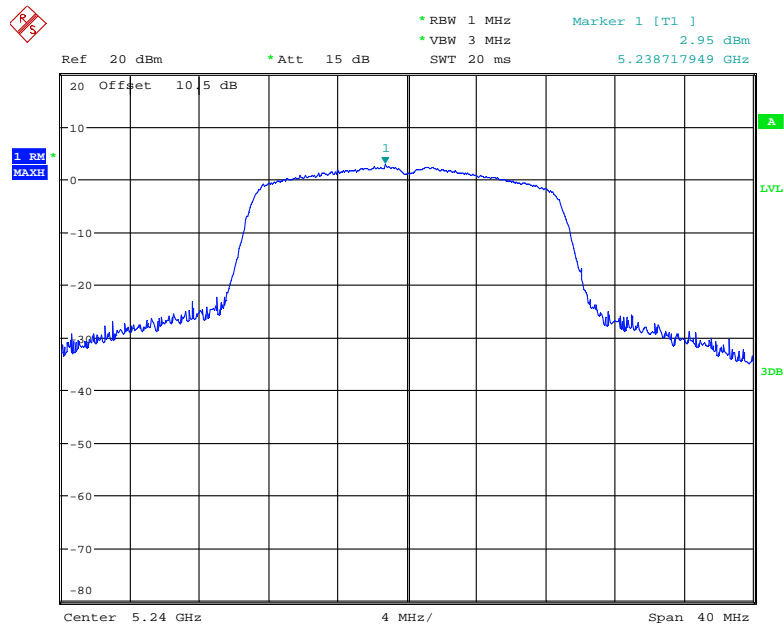
Date: 30.APR.2019 11:39:50

802.11ac20 mode, Power Spectral Density, 5200 MHz



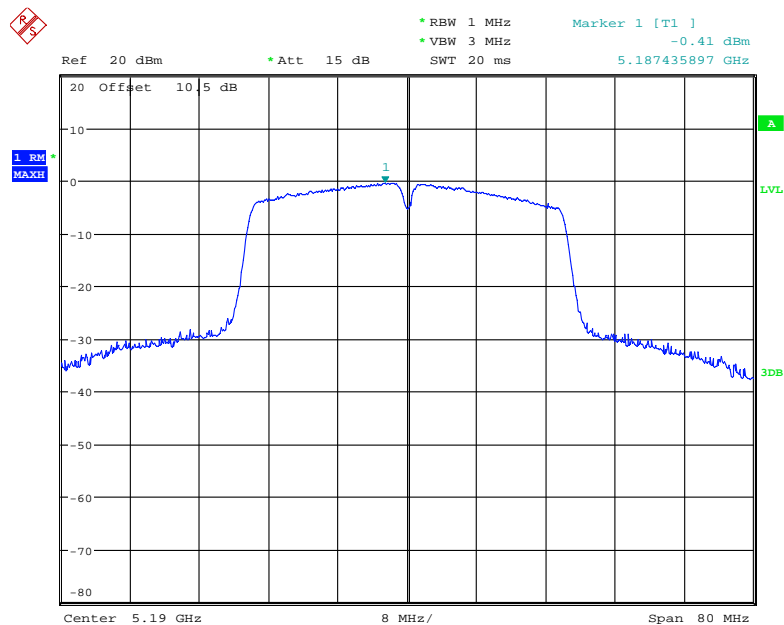
Date: 30.APR.2019 11:40:08

802.11ac20 mode, Power Spectral Density, 5240 MHz



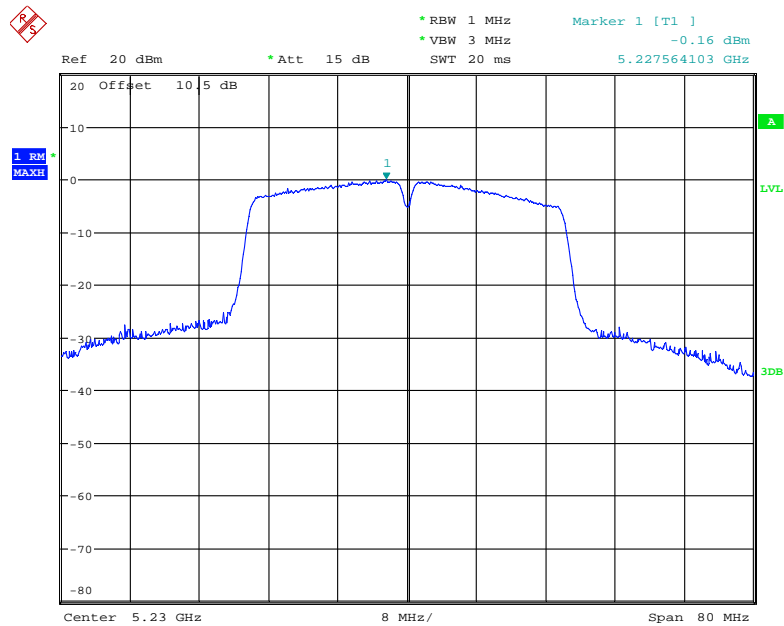
Date: 30.APR.2019 11:40:26

802.11ac40 mode, Power Spectral Density, 5190 MHz



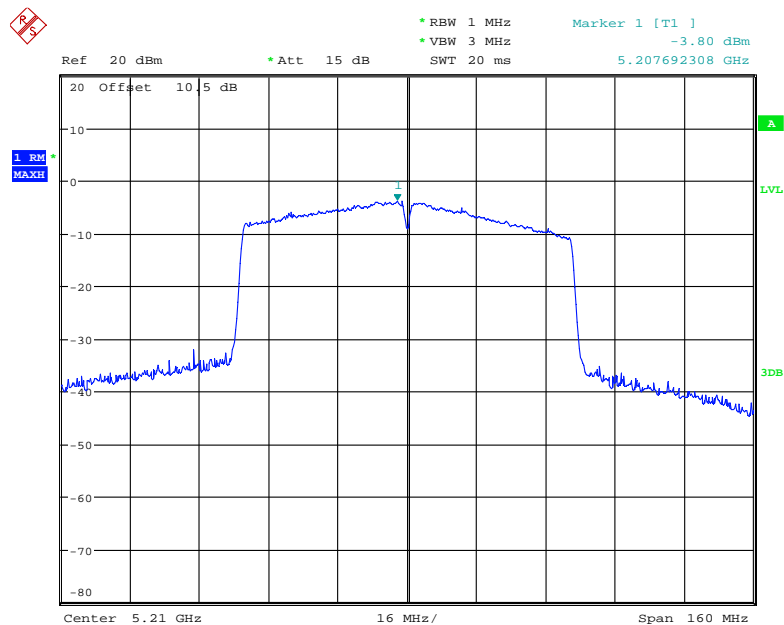
Date: 30.APR.2019 11:41:38

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



Date: 30.APR.2019 11:41:19

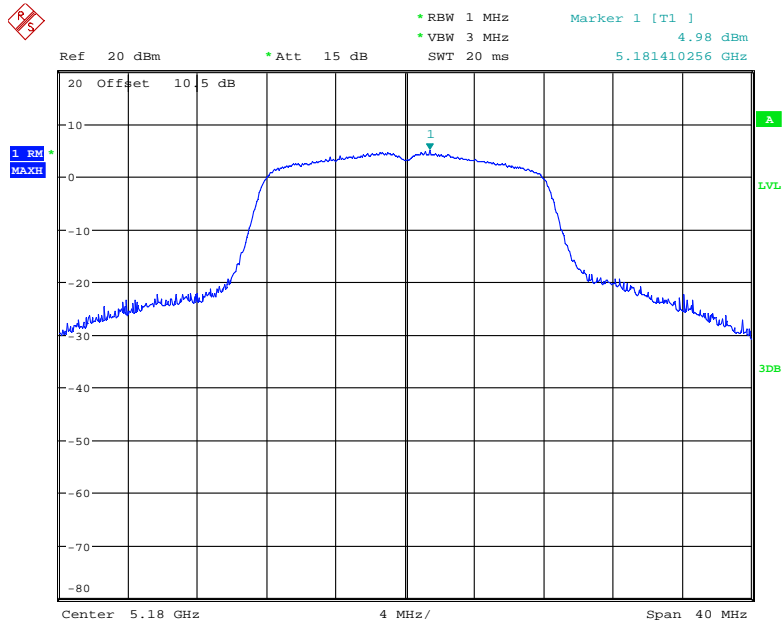
802. 11ac80 mode, Power Spectral Density, 5210 MHz



Date: 30.APR.2019 11:43:28

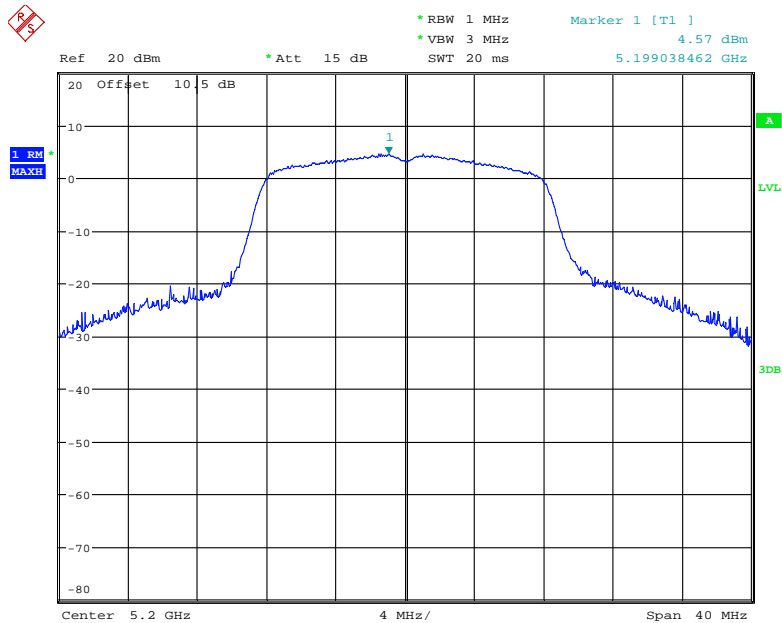
Antenna 2

802.11a mode, Power Spectral Density, 5180 MHz



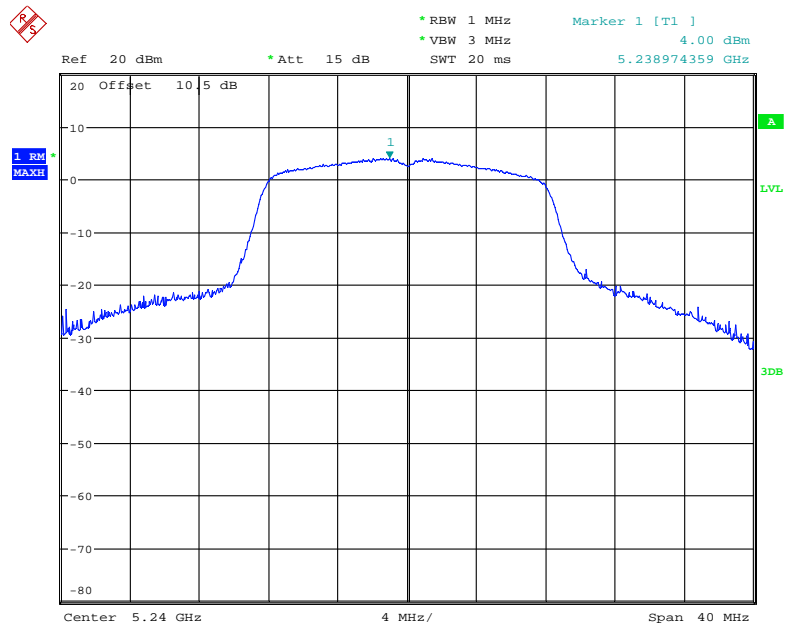
Date: 30.APR.2019 10:54:59

802.11a mode, Power Spectral Density, 5200 MHz



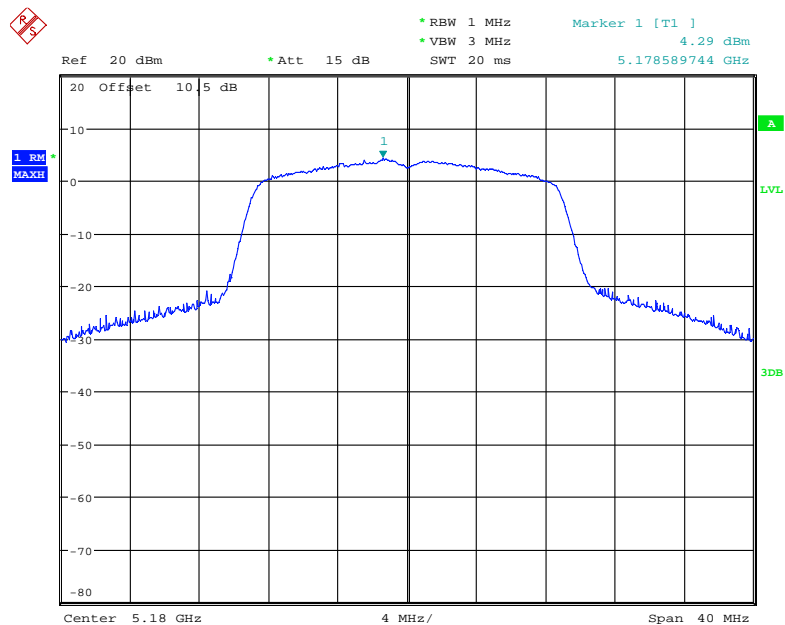
Date: 30.APR.2019 10:55:18

802.11a mode, Power Spectral Density, 5240 MHz



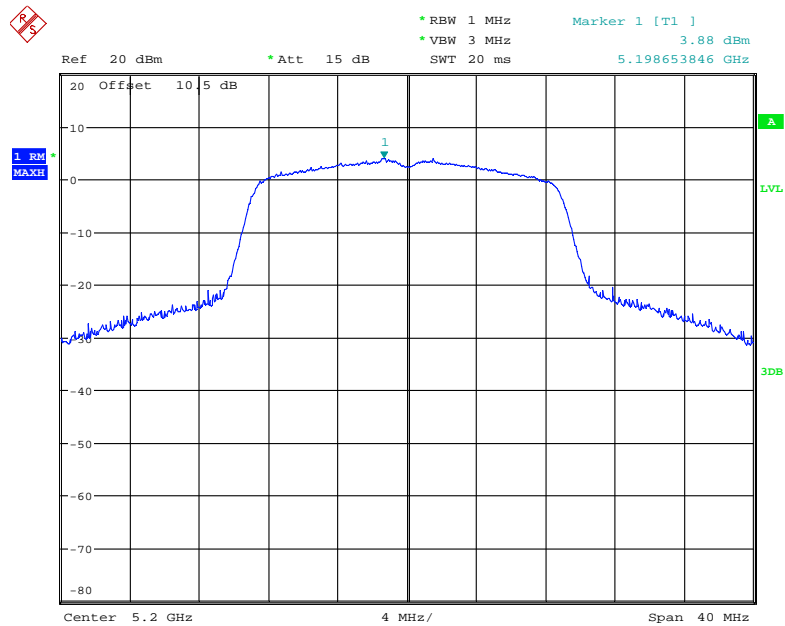
Date: 30.APR.2019 10:55:36

802.11n20 mode, Power Spectral Density, 5180 MHz



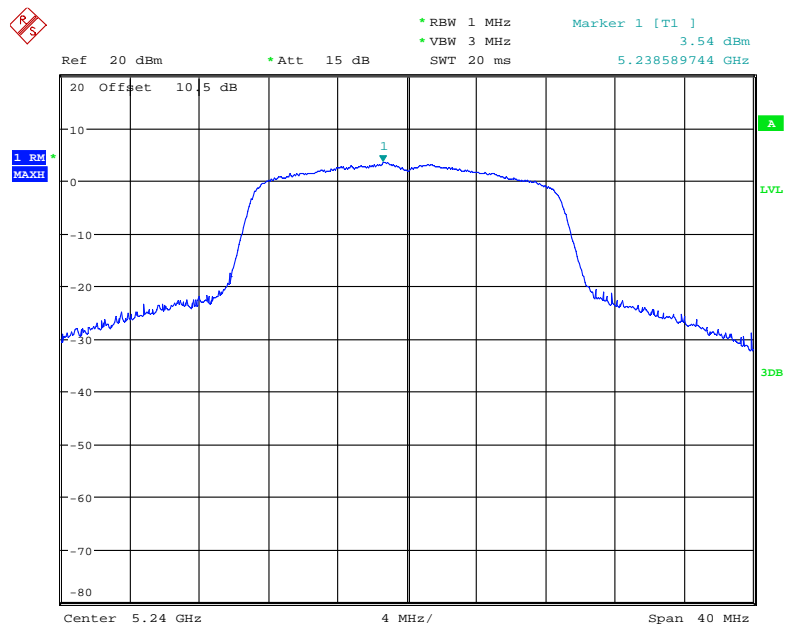
Date: 30.APR.2019 10:52:31

802.11n20 mode, Power Spectral Density, 5200 MHz



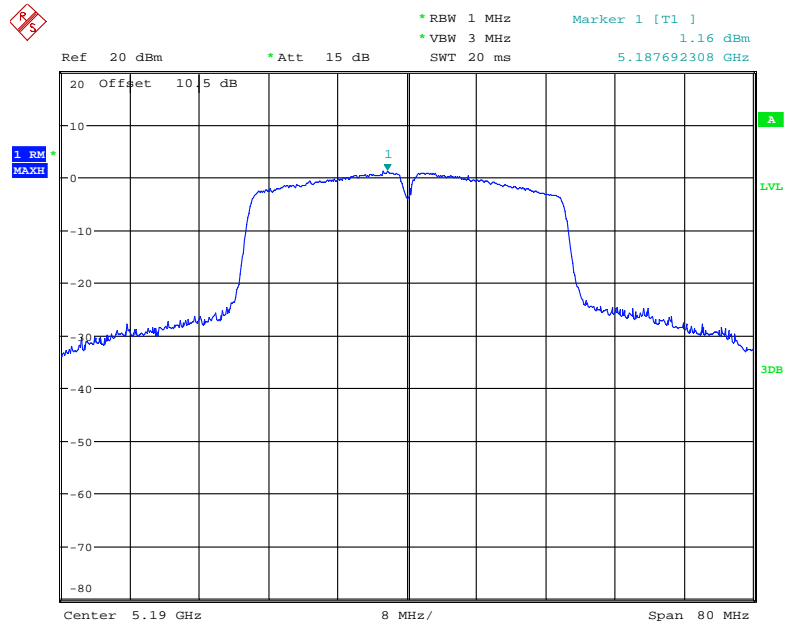
Date: 30.APR.2019 10:52:56

802.11n20 mode, Power Spectral Density, 5240 MHz



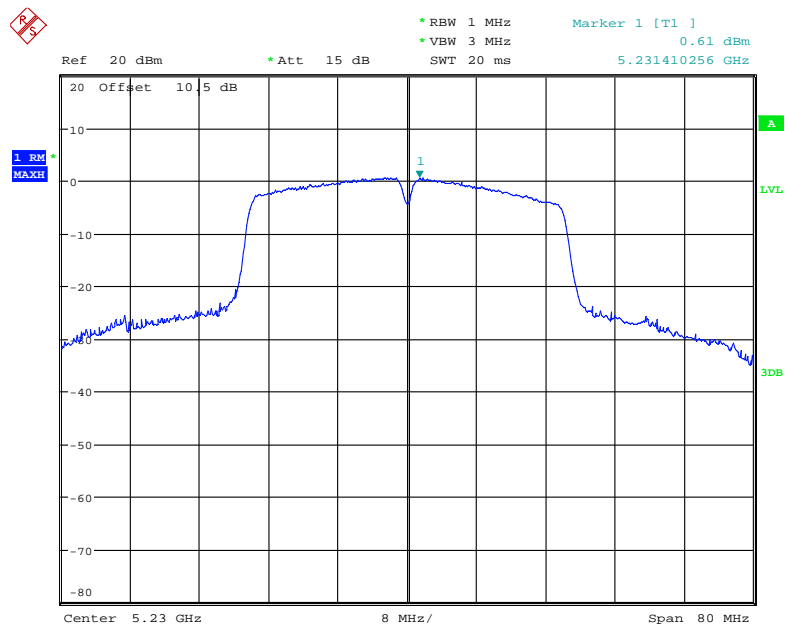
Date: 30.APR.2019 10:53:21

802.11n40 mode, Power Spectral Density, 5190 MHz



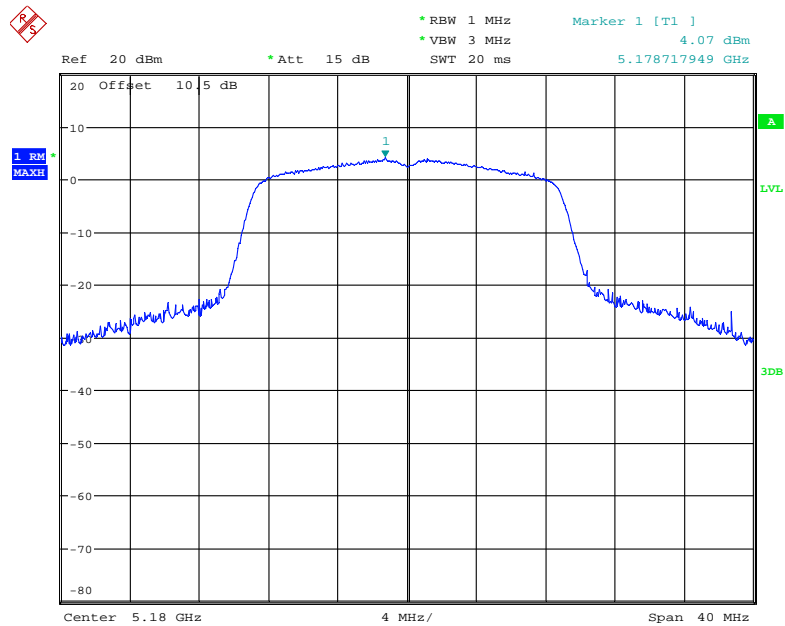
Date: 30.APR.2019 10:51:44

802.11n40 mode, Power Spectral Density, 5230 MHz



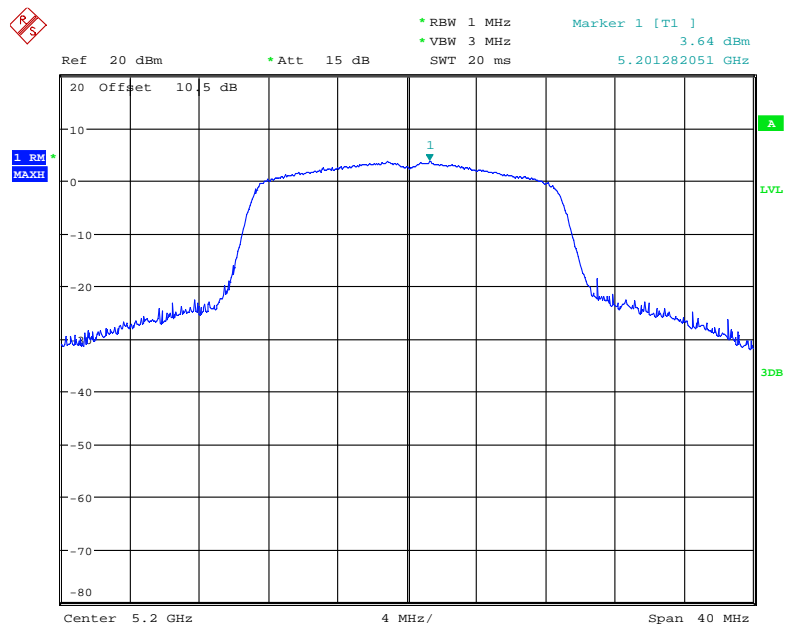
Date: 30.APR.2019 10:51:17

802.11ac20 mode, Power Spectral Density, 5180 MHz



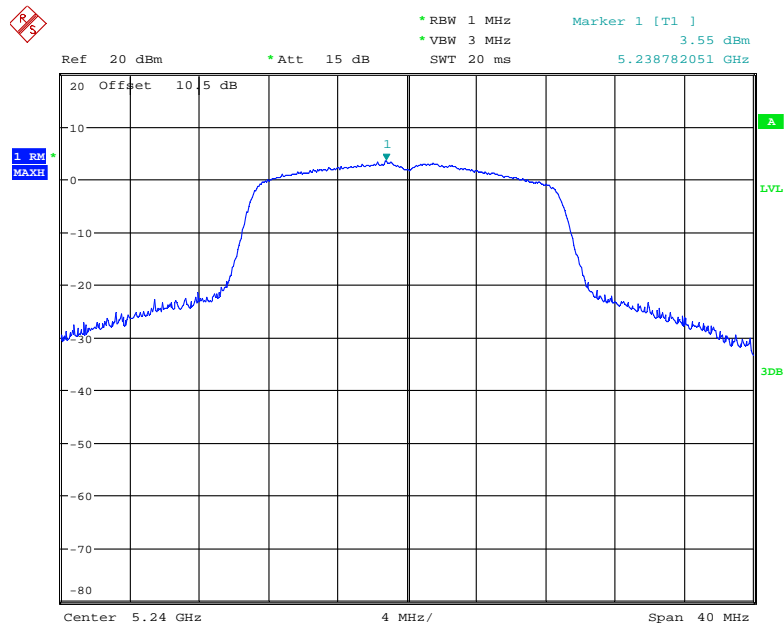
Date: 30.APR.2019 10:54:20

802.11ac20 mode, Power Spectral Density, 5200 MHz



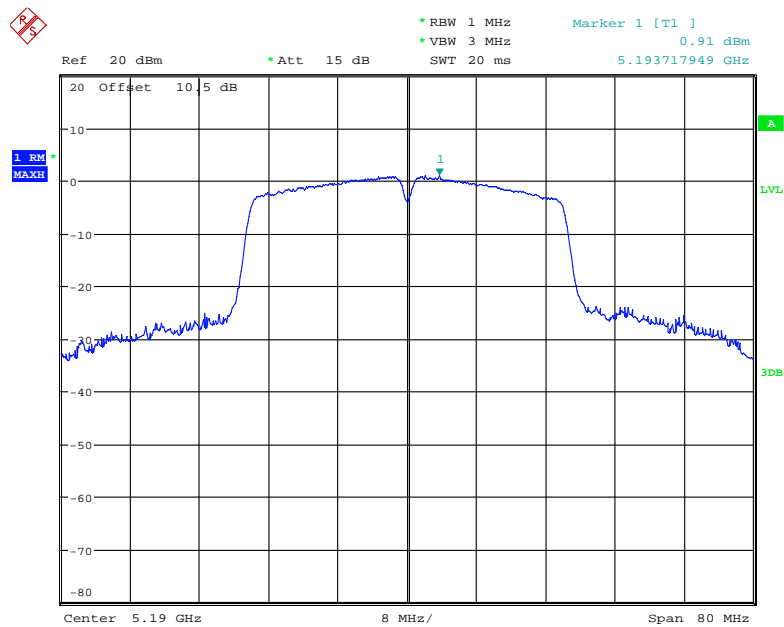
Date: 30.APR.2019 10:54:00

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



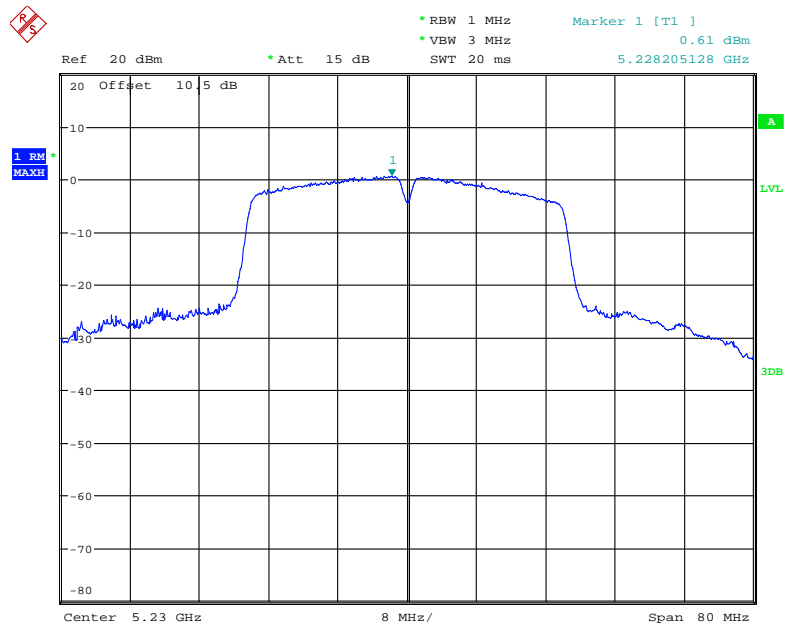
Date: 30.APR.2019 10:53:41

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



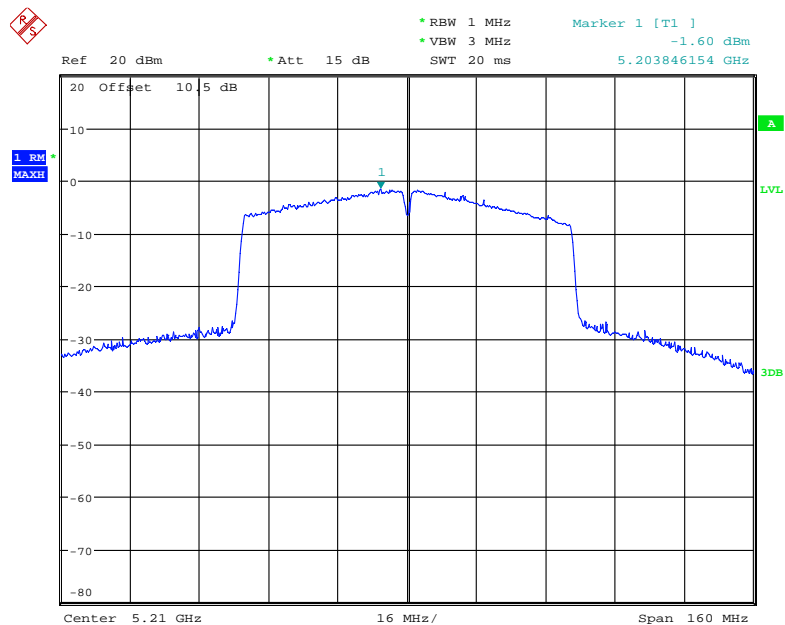
Date: 30.APR.2019 10:50:11

802.11ac40 mode, Power Spectral Density, 5230 MHz



Date: 30.APR.2019 10:50:47

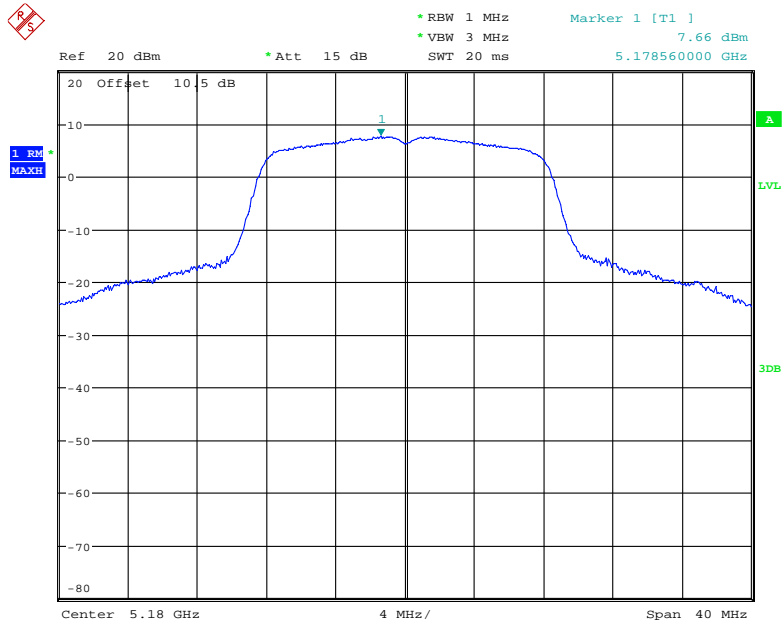
802.11ac80 mode, Power Spectral Density, 5210 MHz



Date: 30.APR.2019 10:25:13

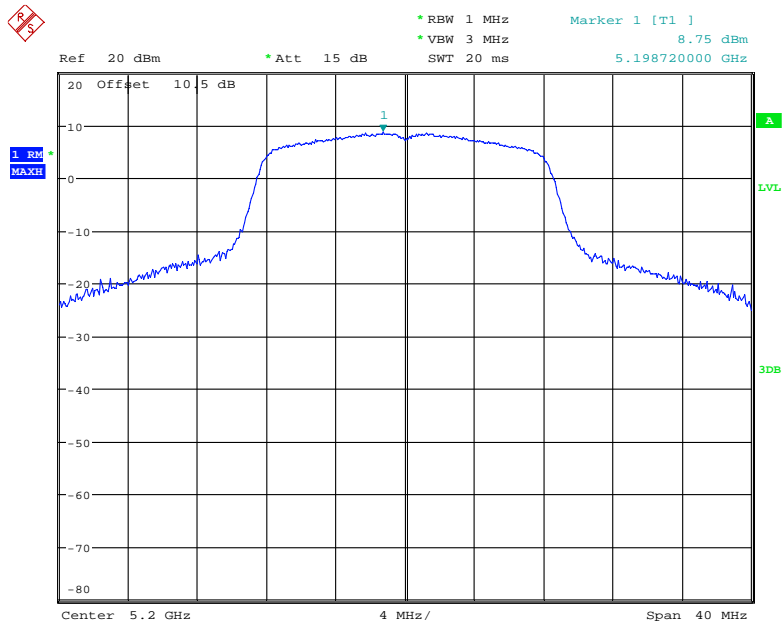
Antenna 3

802.11a mode, Power Spectral Density, 5180 MHz



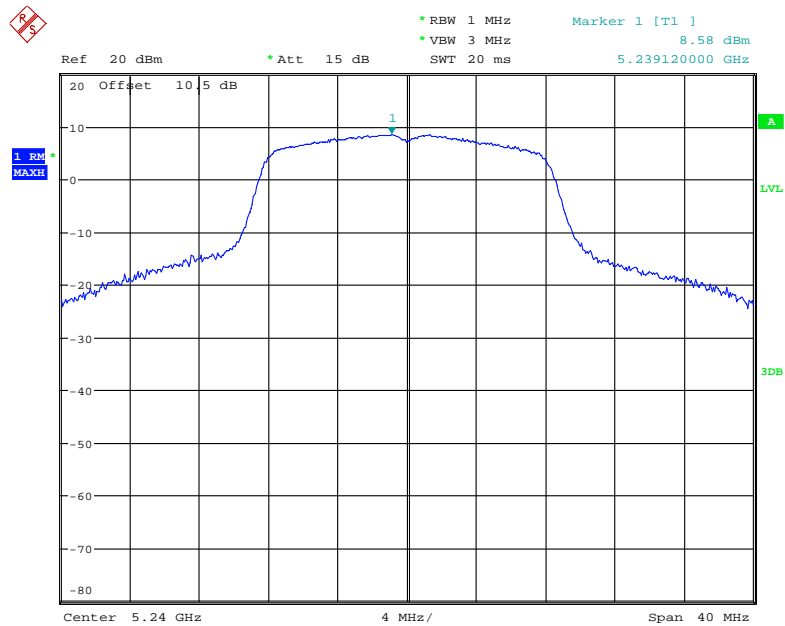
Date: 25.APR.2019 13:56:33

802.11a mode, Power Spectral Density, 5200 MHz



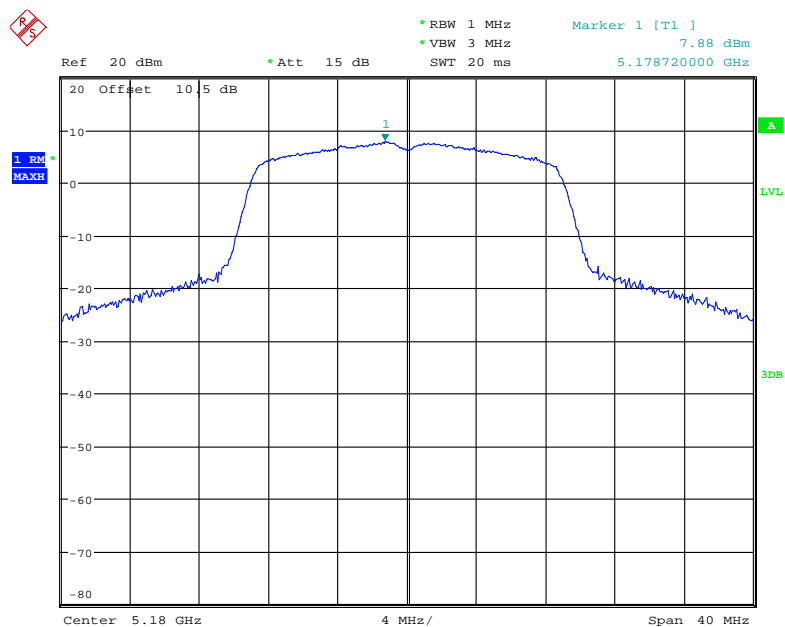
Date: 25.APR.2019 15:50:49

802.11a mode, Power Spectral Density, 5240 MHz



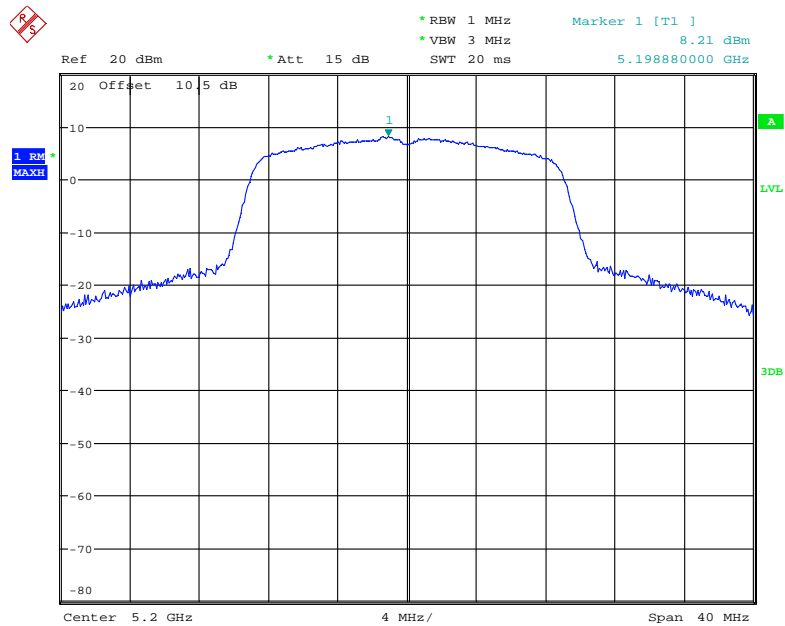
Date: 25.APR.2019 15:55:08

802.11n20 mode, Power Spectral Density, 5180 MHz



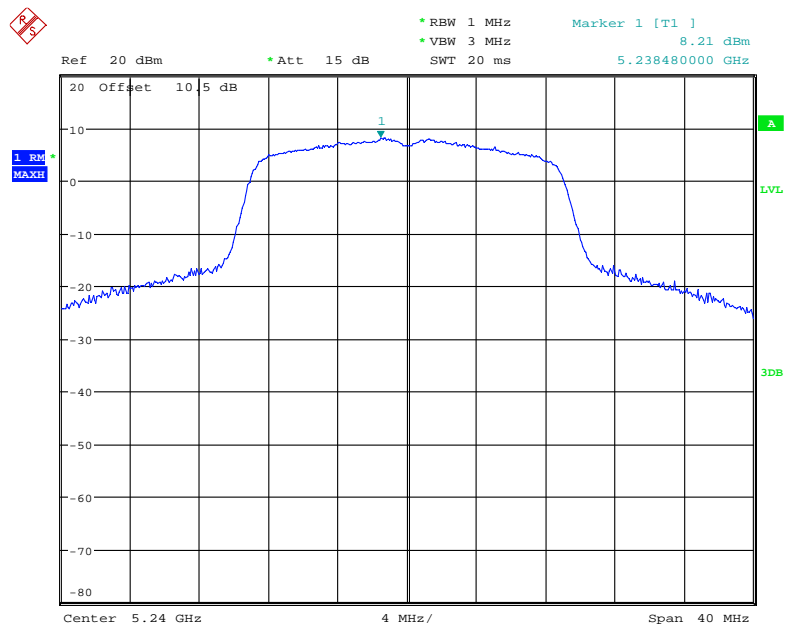
Date: 25.APR.2019 16:20:49

802.11n20 mode, Power Spectral Density, 5200 MHz



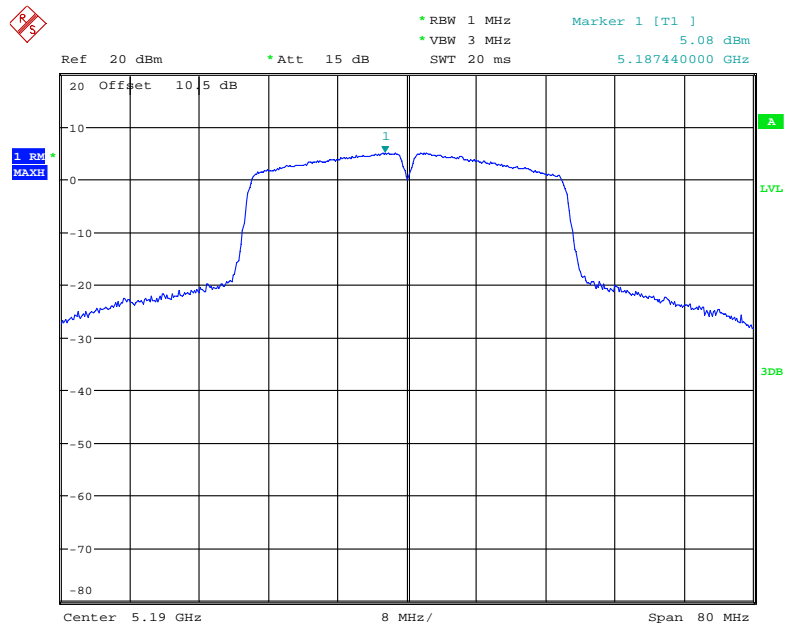
Date: 25.APR.2019 16:16:41

802.11n20 mode, Power Spectral Density, 5240 MHz



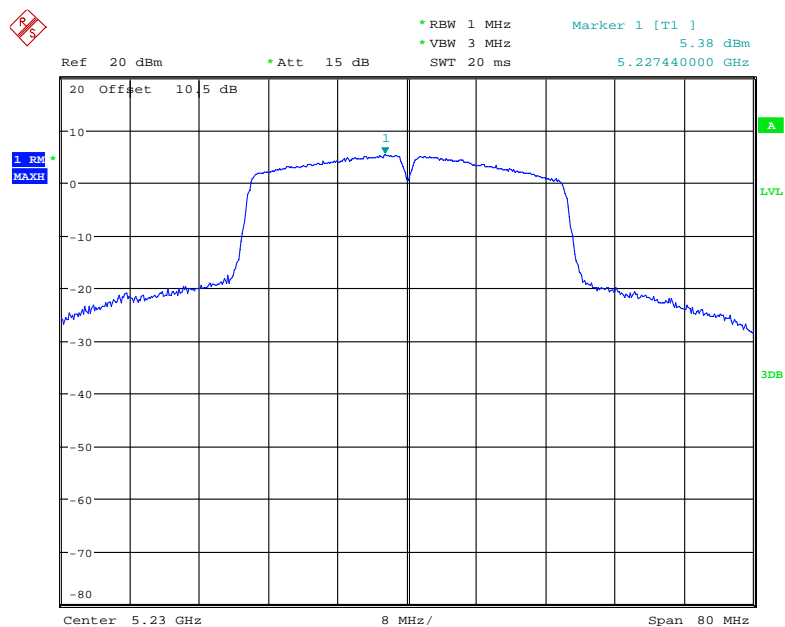
Date: 25.APR.2019 16:02:36

802.11n40 mode, Power Spectral Density, 5190 MHz



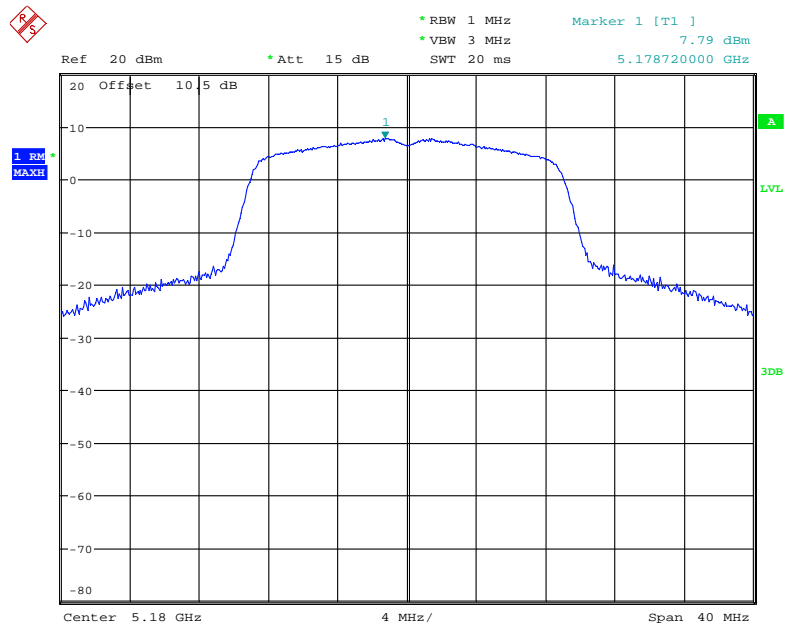
Date: 25.APR.2019 16:26:49

802.11n40 mode, Power Spectral Density, 5230 MHz



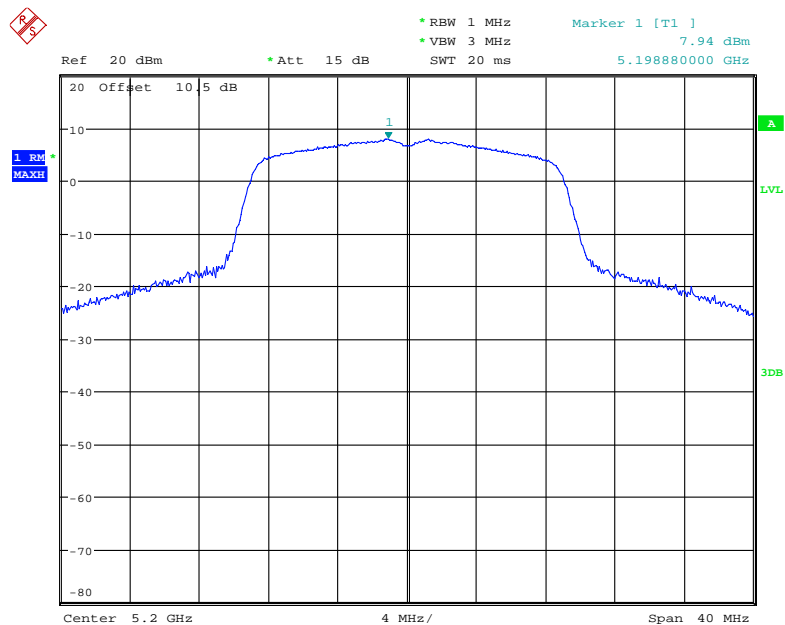
Date: 25.APR.2019 16:30:08

802.11ac20 mode, Power Spectral Density, 5180 MHz



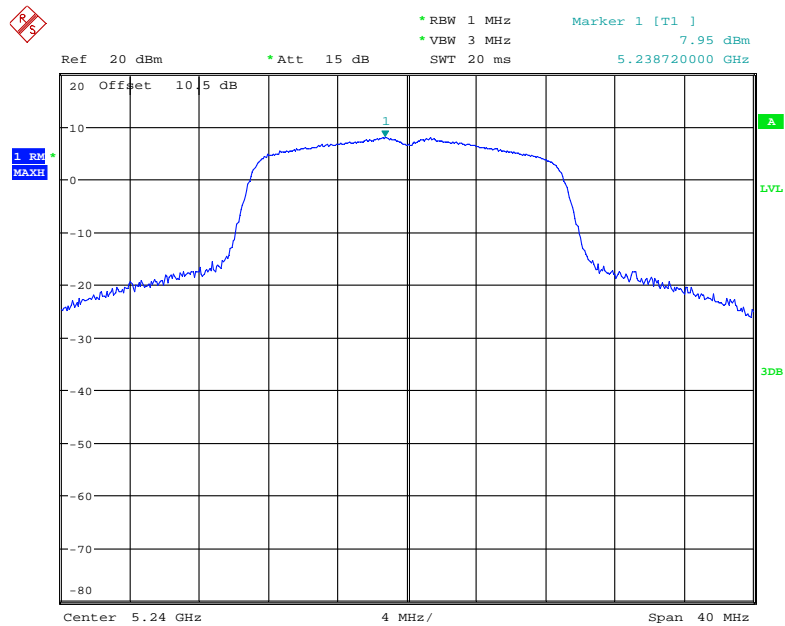
Date: 25.APR.2019 16:47:33

802.11ac20 mode, Power Spectral Density, 5200 MHz



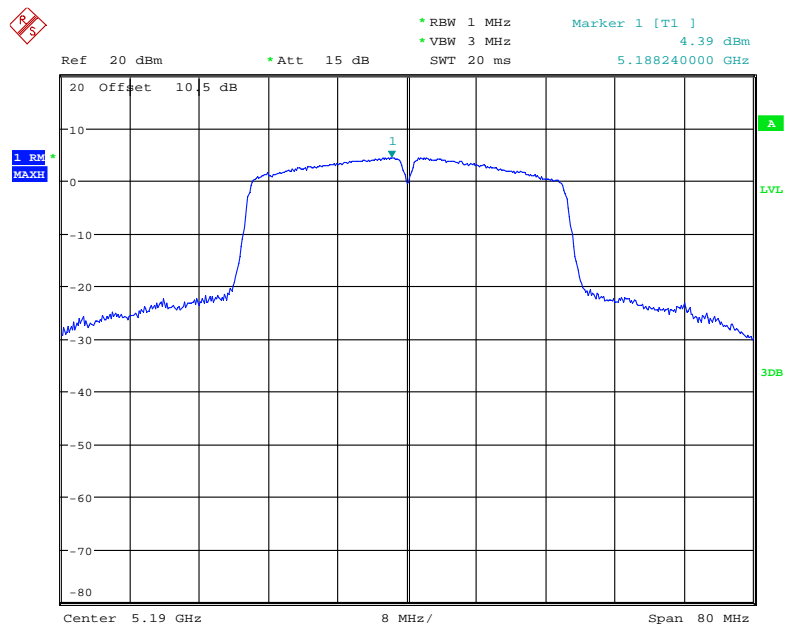
Date: 25.APR.2019 16:52:30

802.11ac20 mode, Power Spectral Density, 5240 MHz



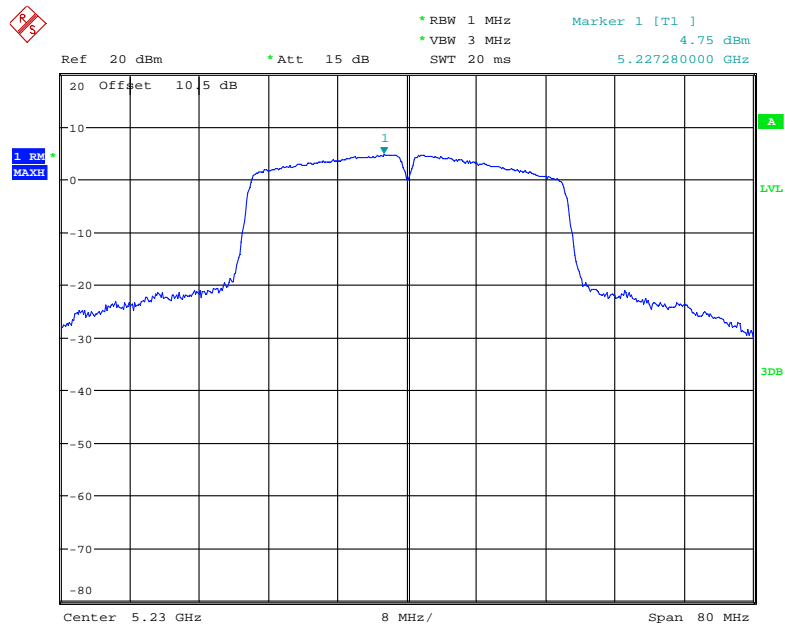
Date: 25.APR.2019 16:57:04

802.11ac40 mode, Power Spectral Density, 5190 MHz



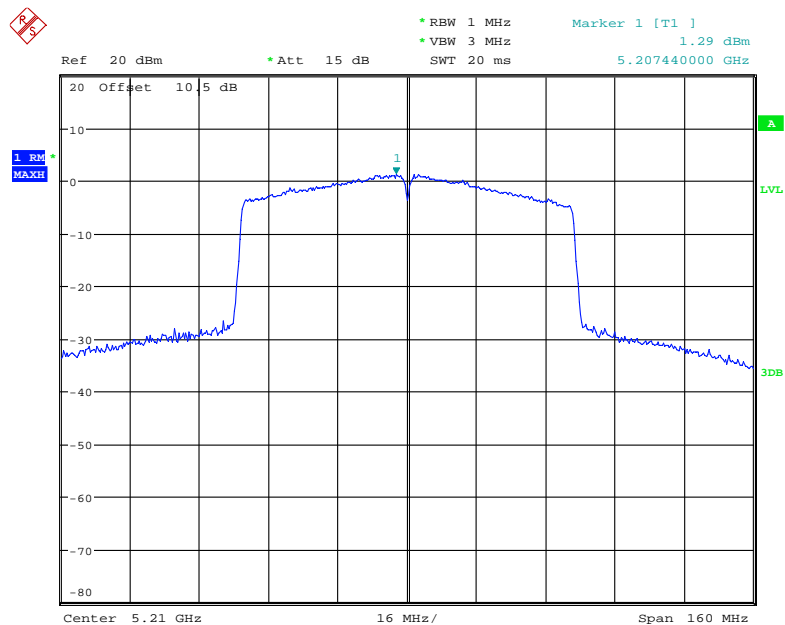
Date: 25.APR.2019 16:59:32

802.11ac40 mode, Power Spectral Density, 5230 MHz



Date: 25.APR.2019 17:03:25

802.11ac80 mode, Power Spectral Density, 5210 MHz



Date: 25.APR.2019 16:37:22

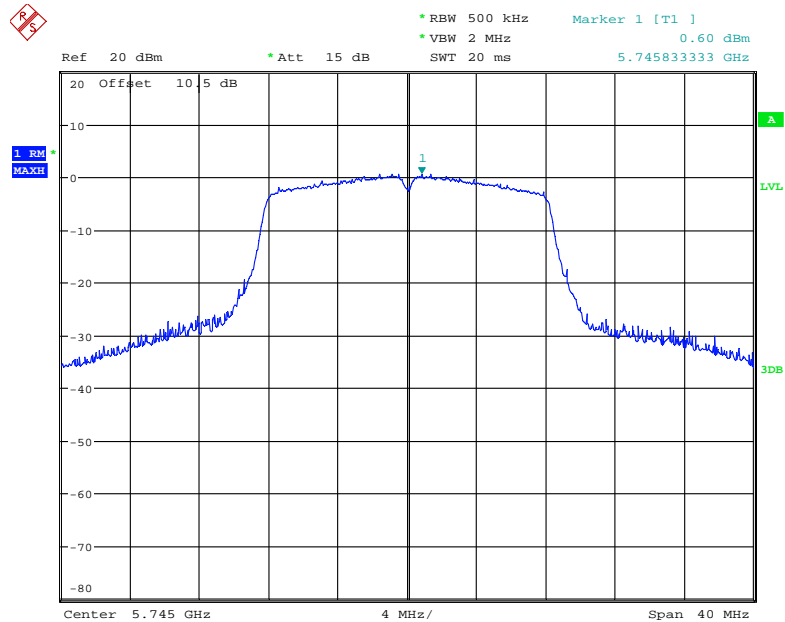
5725 MHz – 5850 MHz:

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/500kHz)	Total Power Spectral (dBm/500kHz)	Limit (dBm/500kHz)
802.11a				
5745	0	0.60	9.2	25
	1	2.31		
	2	3.06		
	3	5.36		
5785	0	0.78	9.35	
	1	2.29		
	2	2.53		
	3	5.94		
5825	0	1.16	9.31	
	1	2.04		
	2	3.08		
	3	5.56		
802.11n20				
5745	0	-0.08	8.63	25
	1	1.85		
	2	2.13		
	3	4.99		
5785	0	0.21	8.92	
	1	2.22		
	2	2.34		
	3	5.28		
5825	0	0.30	9.12	
	1	2.02		
	2	3.64		
	3	5.03		
802.11n40				
5755	0	-2.06	6.45	25
	1	-0.77		
	2	0.87		
	3	2.40		
5795	0	-2.52	6.25	
	1	-1.20		
	2	0.94		
	3	2.19		

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/500kHz)	Total Power Spectral (dBm/500kHz)	Limit (dBm/500kHz)
802.11ac20				
5745	0	0.55	8.84	25
	1	1.80		
	2	2.17		
	3	5.27		
5785	0	0.33	8.89	
	1	1.38		
	2	3.52		
	3	4.84		
5825	0	1.08	8.87	
	1	1.87		
	2	3.21		
	3	4.45		
802.11ac40				
5755	0	-2.52	6.25	25
	1	-0.6		
	2	0.21		
	3	2.40		
5795	0	-2.79	6.07	
	1	-1.00		
	2	0.38		
	3	2.13		
802.11ac80				
5775	0	-4.53	3.64	25
	1	-3.17		
	2	-1.83		
	3	-0.86		

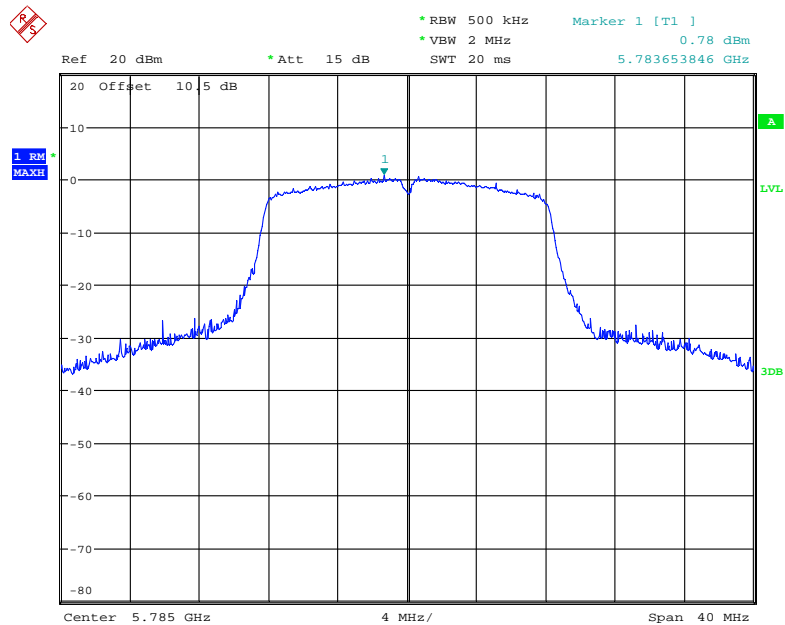
Antenna 0

802.11a mode, Power Spectral Density, 5745 MHz



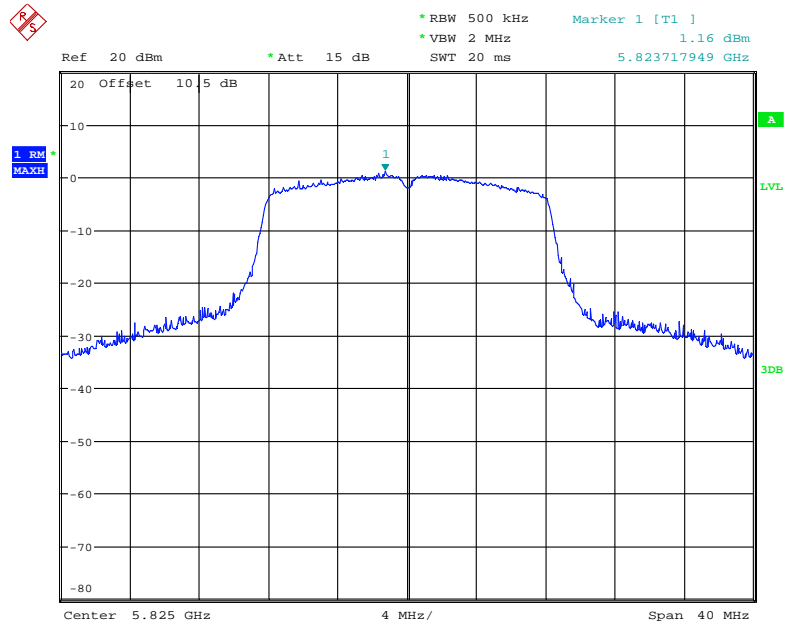
Date: 30.APR.2019 14:24:06

802.11a mode, Power Spectral Density, 5785 MHz



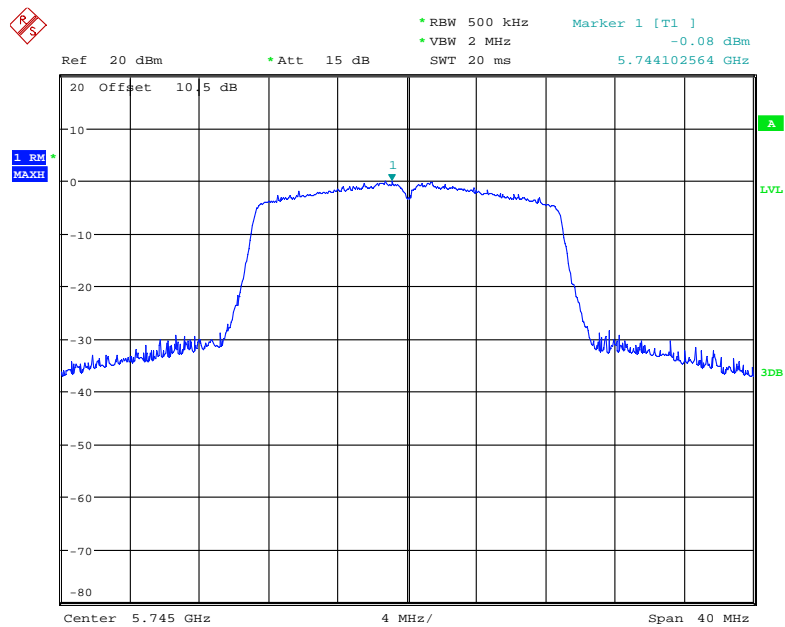
Date: 30.APR.2019 14:24:24

802.11a mode, Power Spectral Density, 5825 MHz



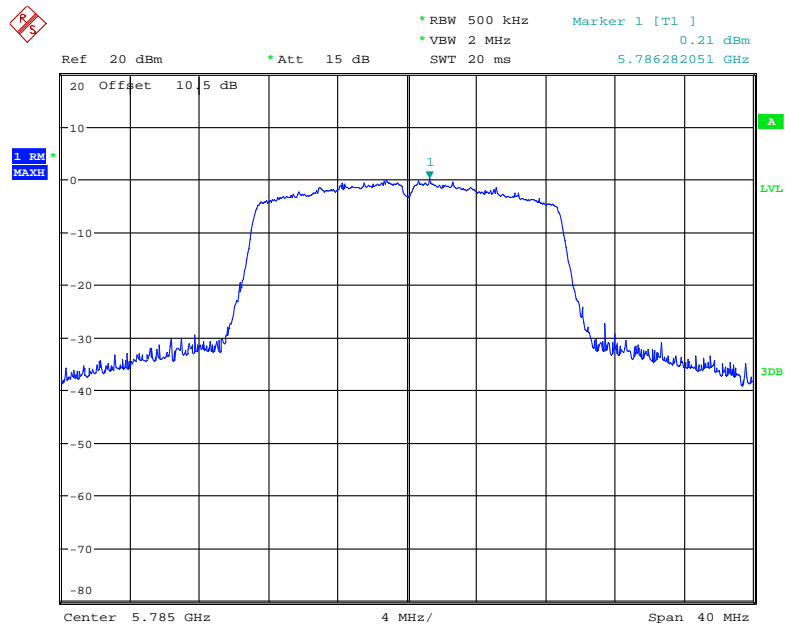
Date: 30.APR.2019 14:24:40

802.11n20 mode, Power Spectral Density, 5745 MHz



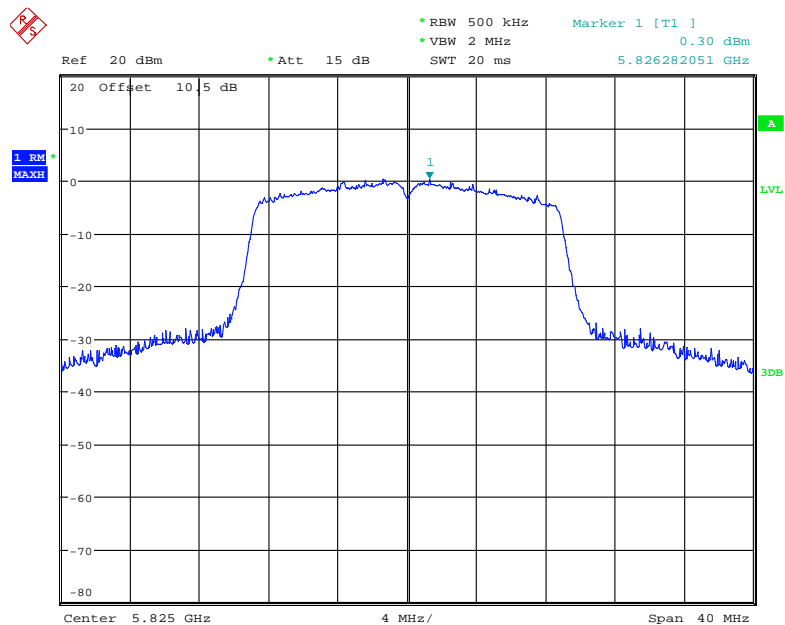
Date: 30.APR.2019 14:22:06

802.11n20 mode, Power Spectral Density, 5785 MHz



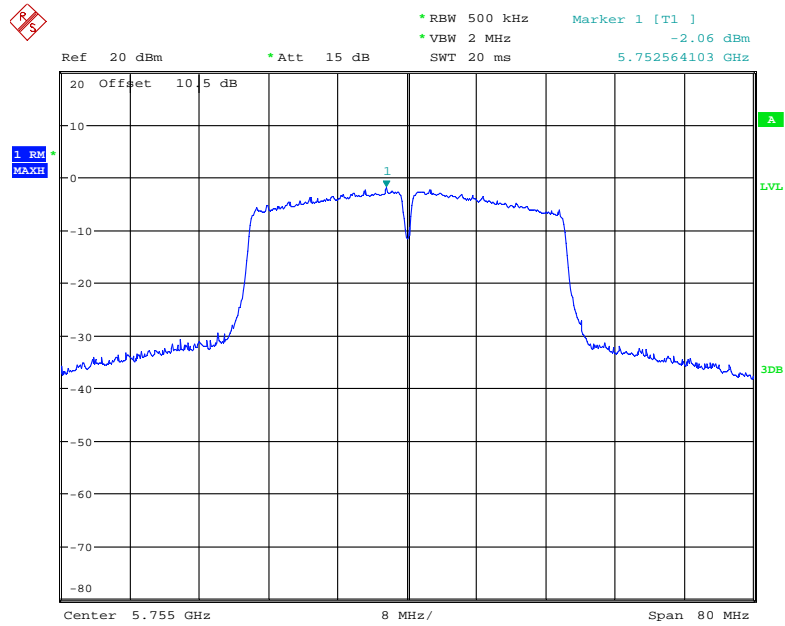
Date: 30.APR.2019 14:22:28

802.11n20 mode, Power Spectral Density, 5825 MHz



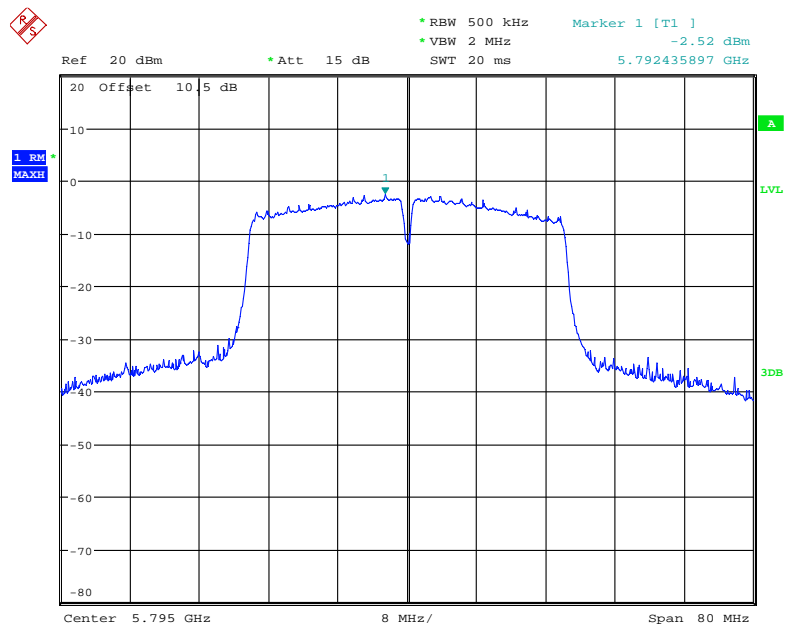
Date: 30.APR.2019 14:22:45

802.11n40 mode, Power Spectral Density, 5755 MHz



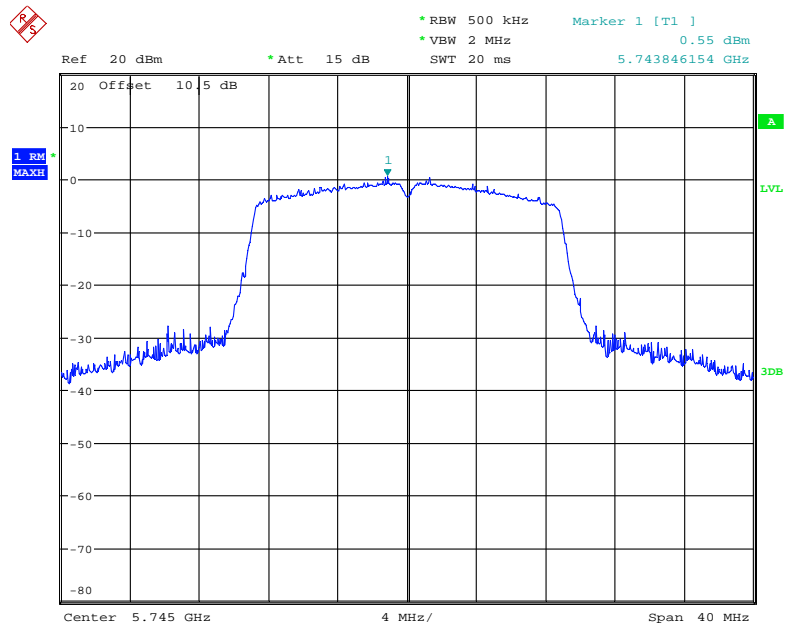
Date: 30.APR.2019 14:21:32

802.11n40 mode, Power Spectral Density, 5795 MHz



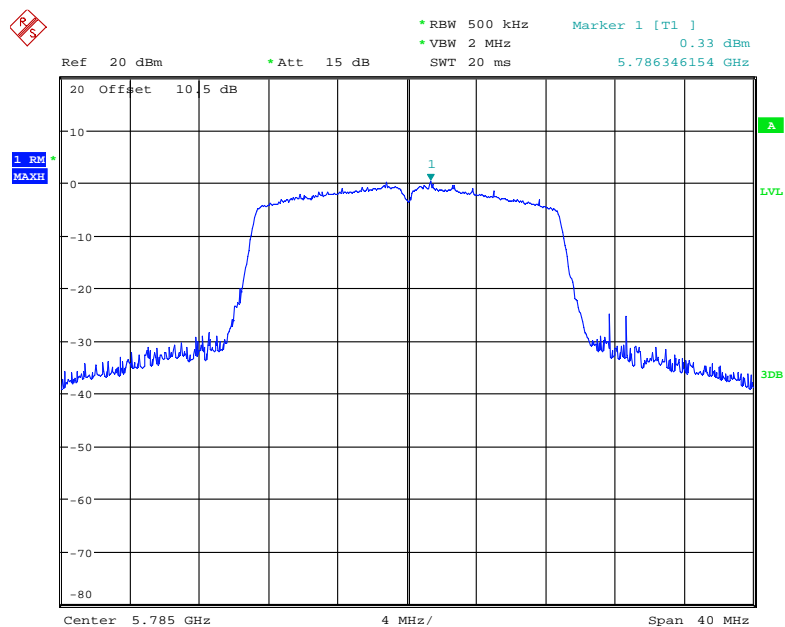
Date: 30.APR.2019 14:18:00

802.11ac20 mode, Power Spectral Density, 5745 MHz



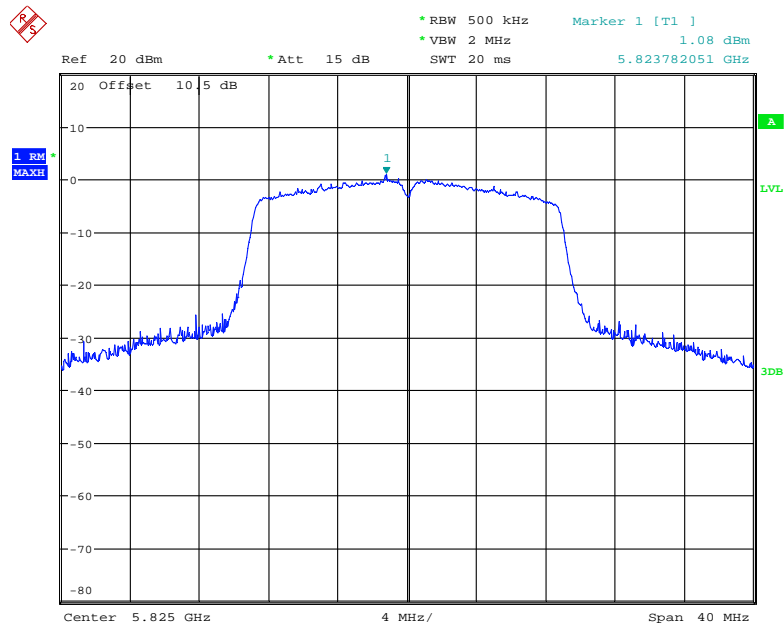
Date: 30.APR.2019 14:23:45

802.11ac20 mode, Power Spectral Density, 5785 MHz



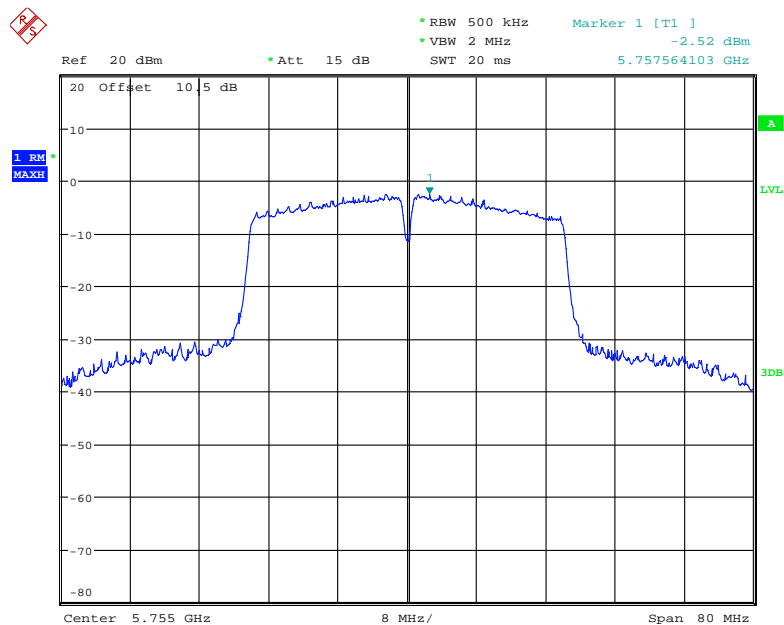
Date: 30.APR.2019 14:23:25

802.11ac20 mode, Power Spectral Density, 5825 MHz

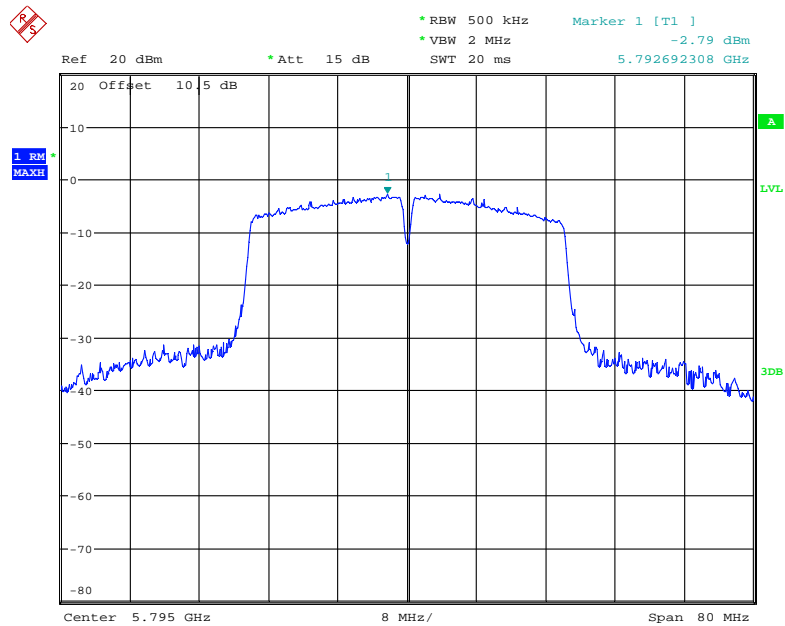


Date: 30.APR.2019 14:23:04

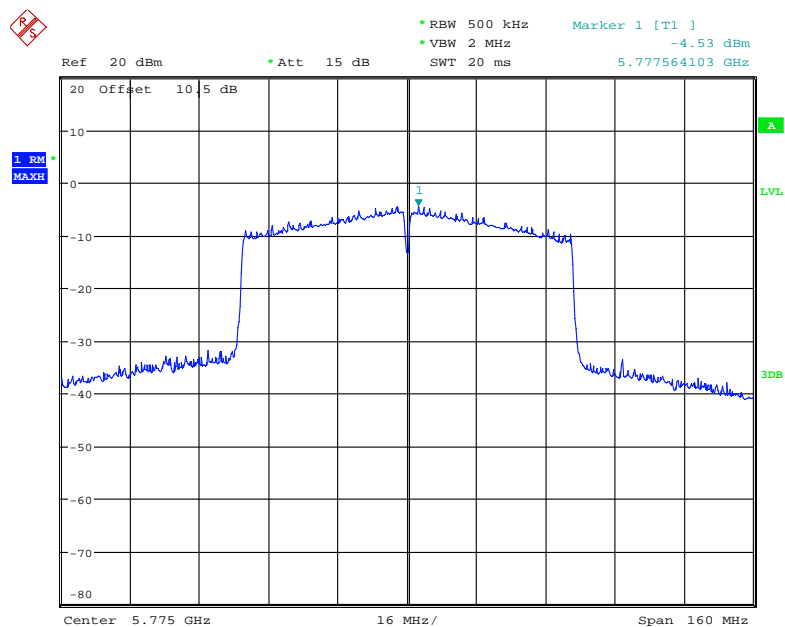
802.11ac40 mode, Power Spectral Density, 5755 MHz



Date: 30.APR.2019 14:17:10

802.11ac40 mode, Power Spectral Density, 5795 MHz

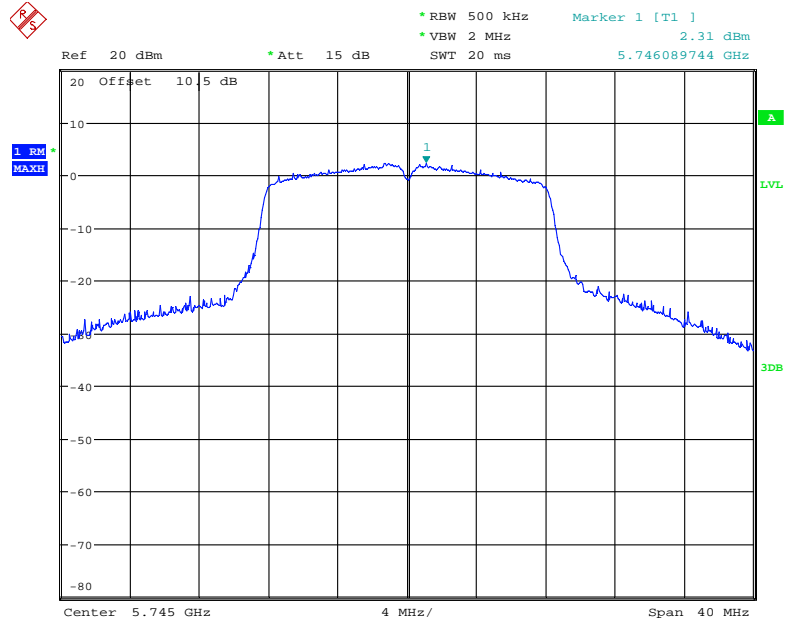
Date: 30.APR.2019 14:17:38

802.11ac80 mode, Power Spectral Density, 5775 MHz

Date: 30.APR.2019 14:16:24

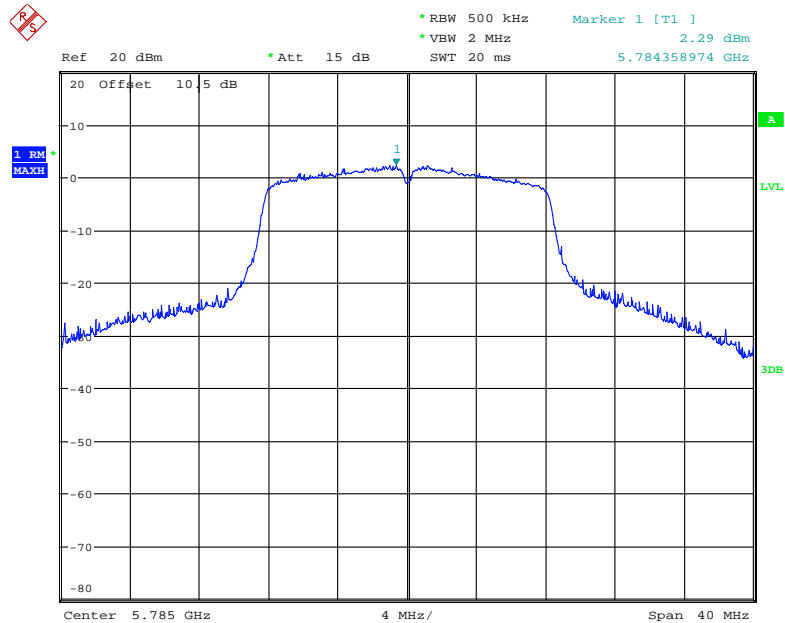
Antenna 1

802.11a mode, Power Spectral Density, 5745 MHz



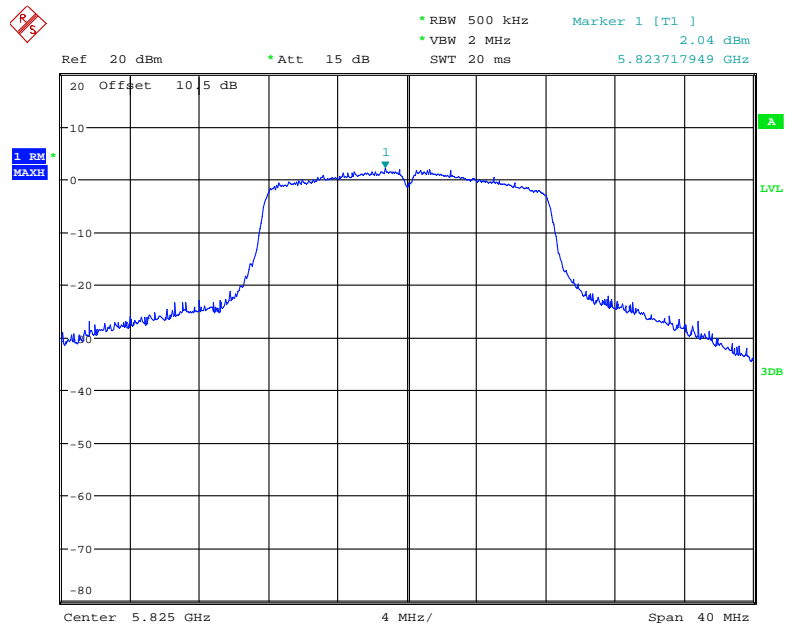
Date: 30.APR.2019 11:33:44

802.11a mode, Power Spectral Density, 5785 MHz



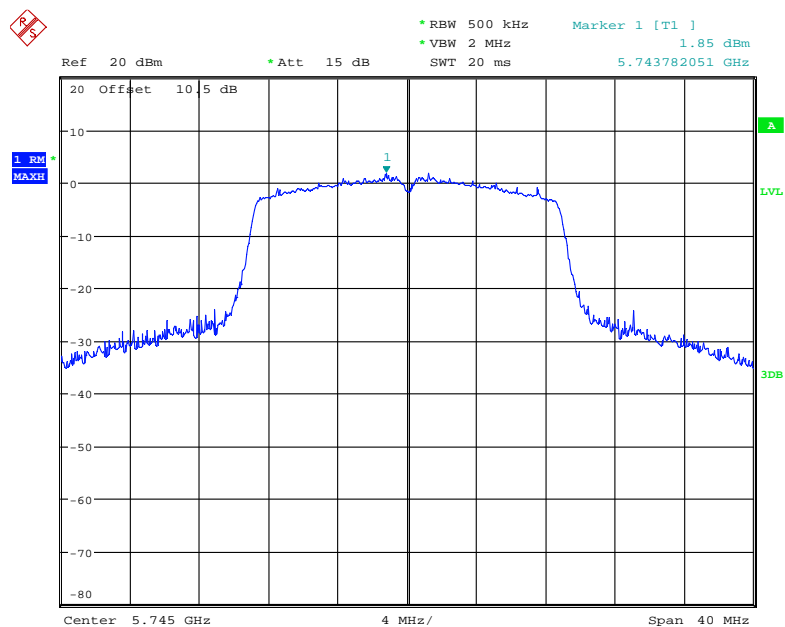
Date: 30.APR.2019 11:33:18

802.11a mode, Power Spectral Density, 5825 MHz



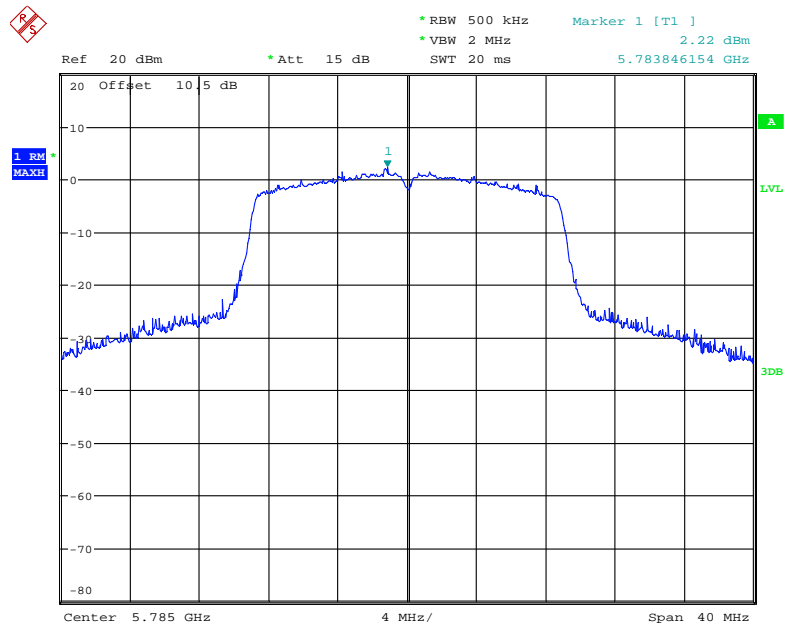
Date: 30.APR.2019 11:32:58

802.11n20 mode, Power Spectral Density, 5745 MHz



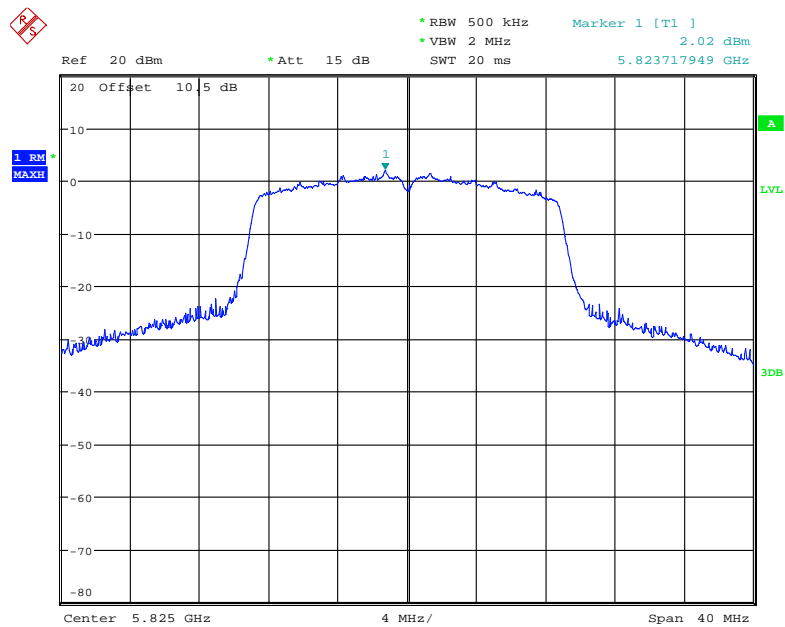
Date: 30.APR.2019 11:31:32

802.11n20 mode, Power Spectral Density, 5785 MHz



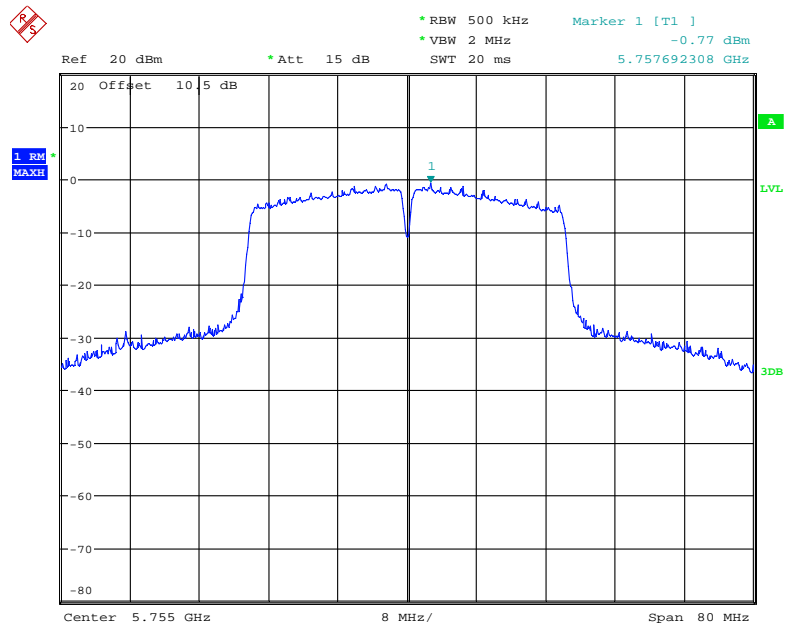
Date: 30.APR.2019 11:31:13

802.11n20 mode, Power Spectral Density, 5825 MHz



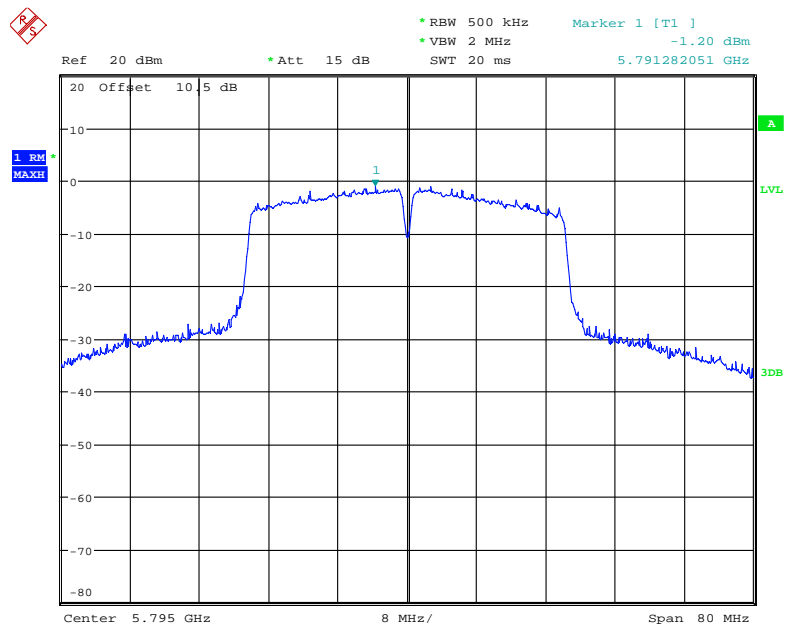
Date: 30.APR.2019 11:30:51

802.11n40 mode, Power Spectral Density, 5755 MHz



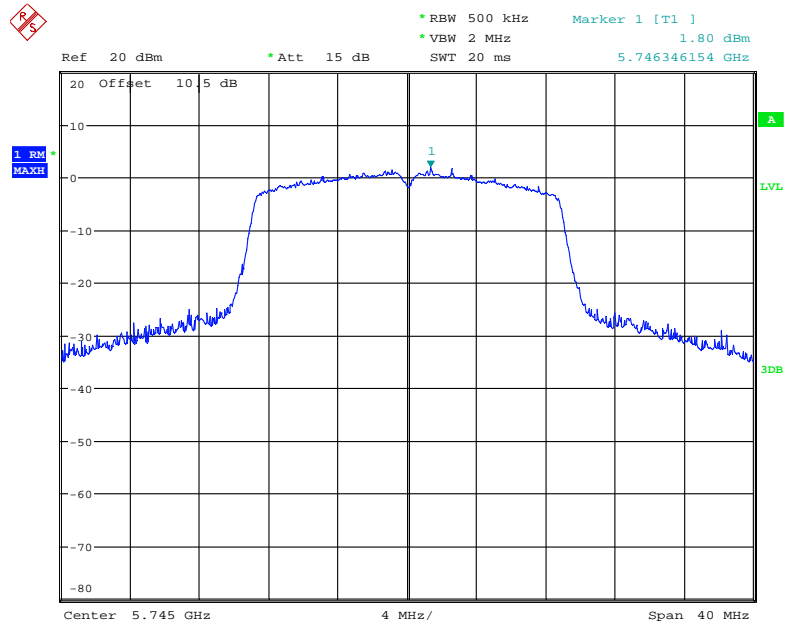
Date: 30.APR.2019 11:29:47

802.11n40 mode, Power Spectral Density, 5795 MHz



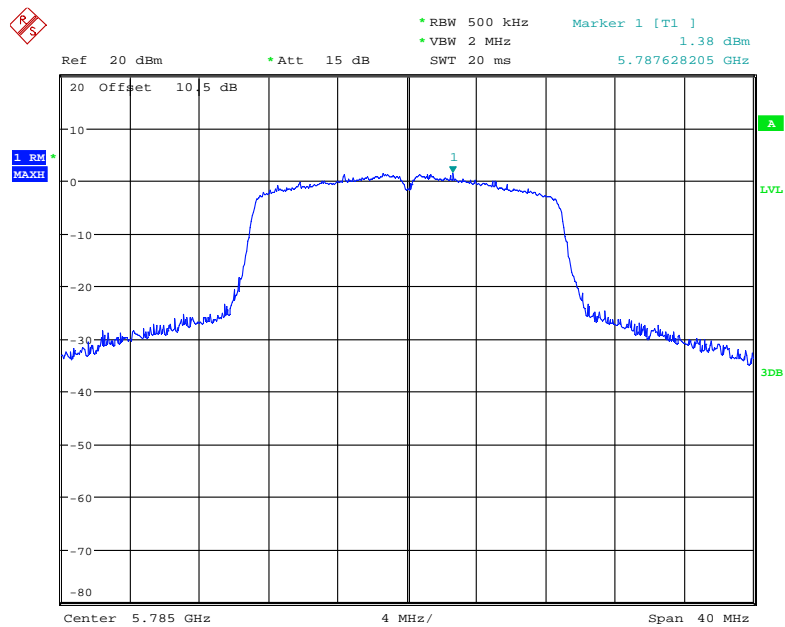
Date: 30.APR.2019 11:30:08

802.11ac20 mode, Power Spectral Density, 5745 MHz



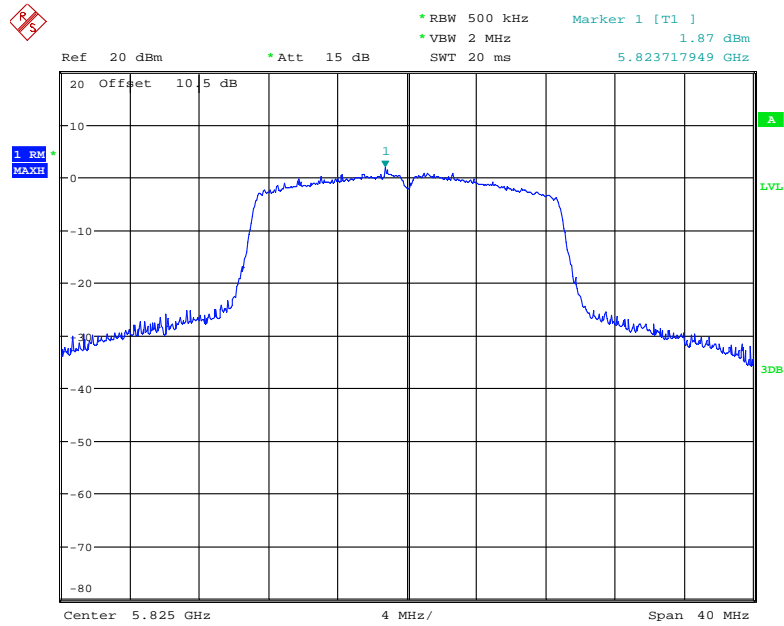
Date: 30.APR.2019 11:31:54

802.11ac20 mode, Power Spectral Density, 5785 MHz



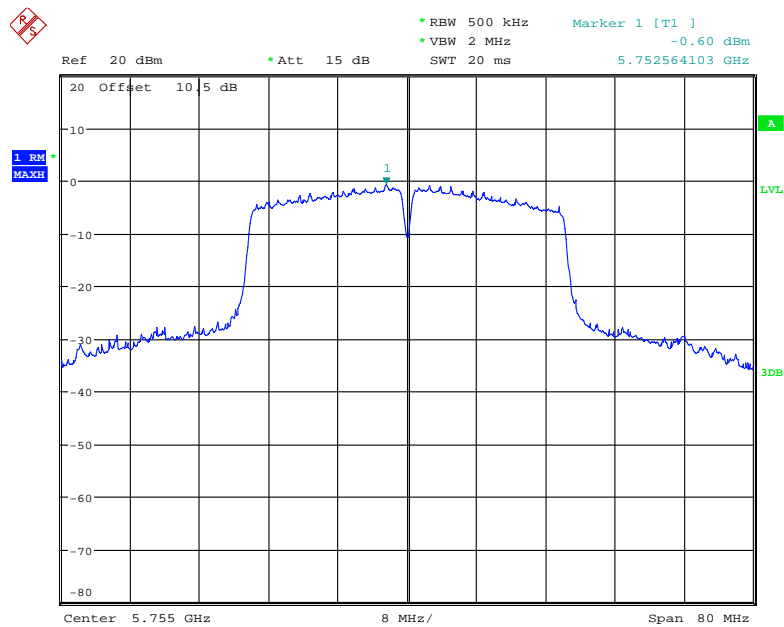
Date: 30.APR.2019 11:32:12

802.11ac20 mode, Power Spectral Density, 5825 MHz



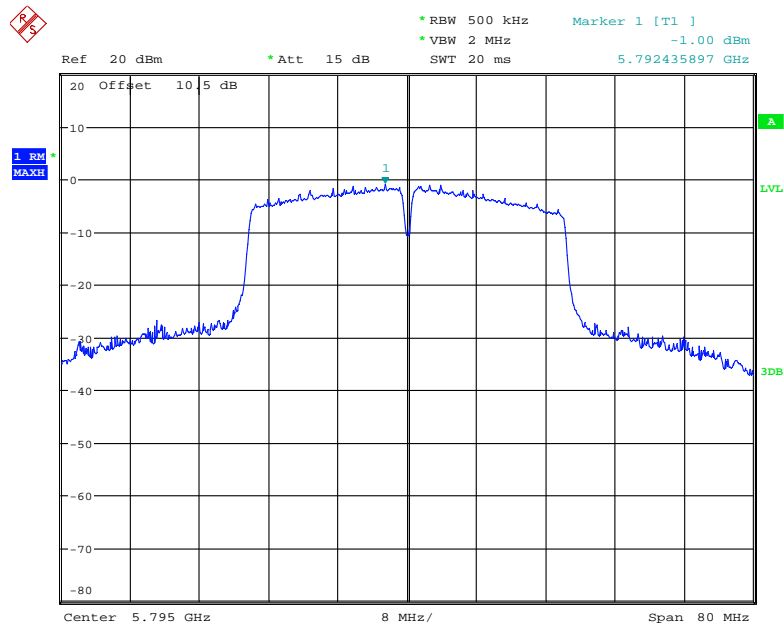
Date: 30.APR.2019 11:32:30

802.11ac40 mode, Power Spectral Density, 5755 MHz



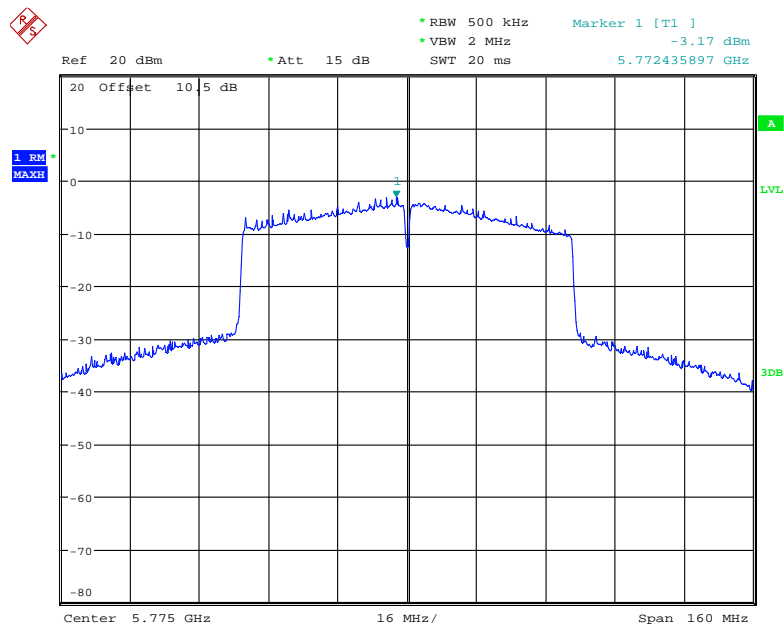
Date: 30.APR.2019 11:29:28

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



Date: 30.APR.2019 11:28:57

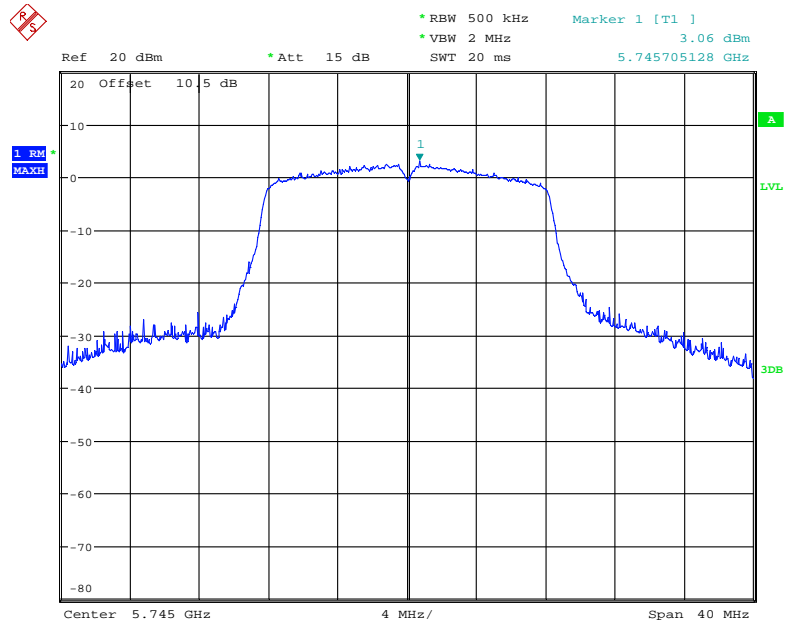
802. 11ac80 mode, Power Spectral Density, 5775 MHz



Date: 30.APR.2019 11:28:18

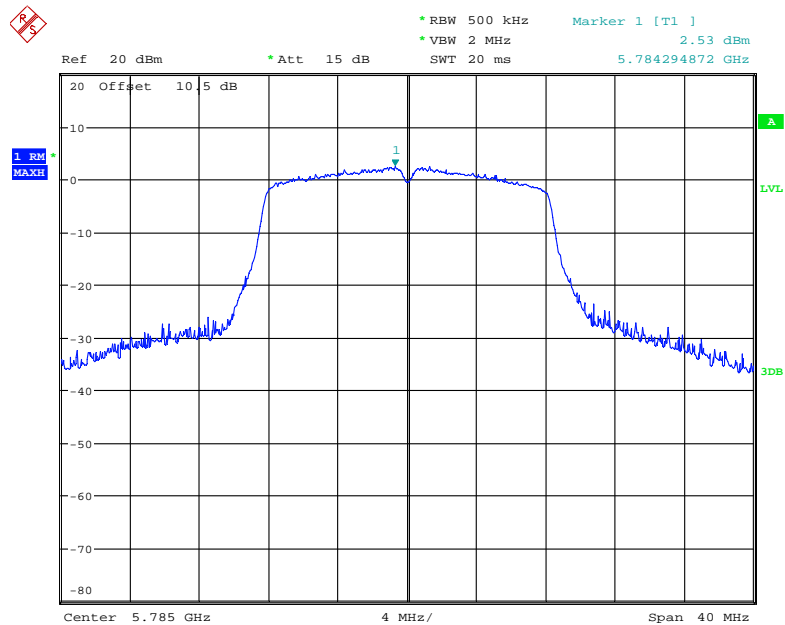
Antenna 2

802.11a mode, Power Spectral Density, 5745 MHz



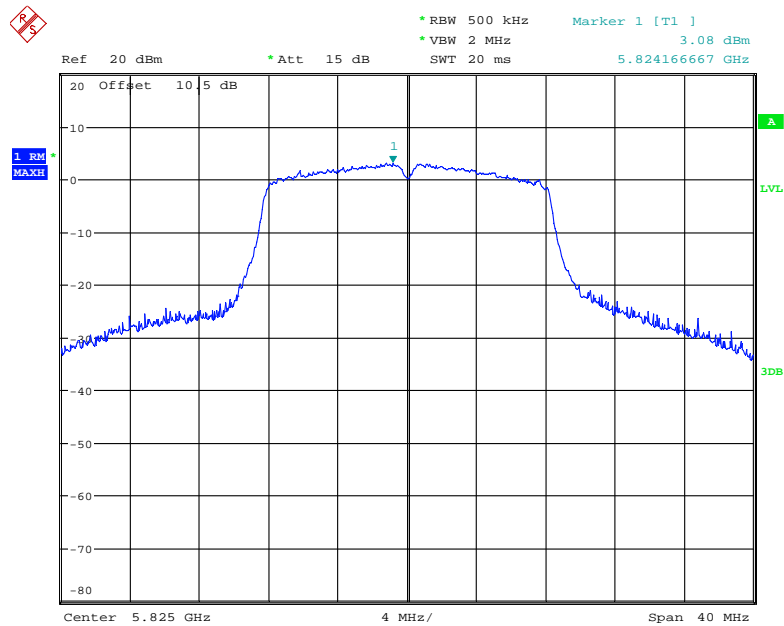
Date: 30.APR.2019 10:56:55

802.11a mode, Power Spectral Density, 5785 MHz



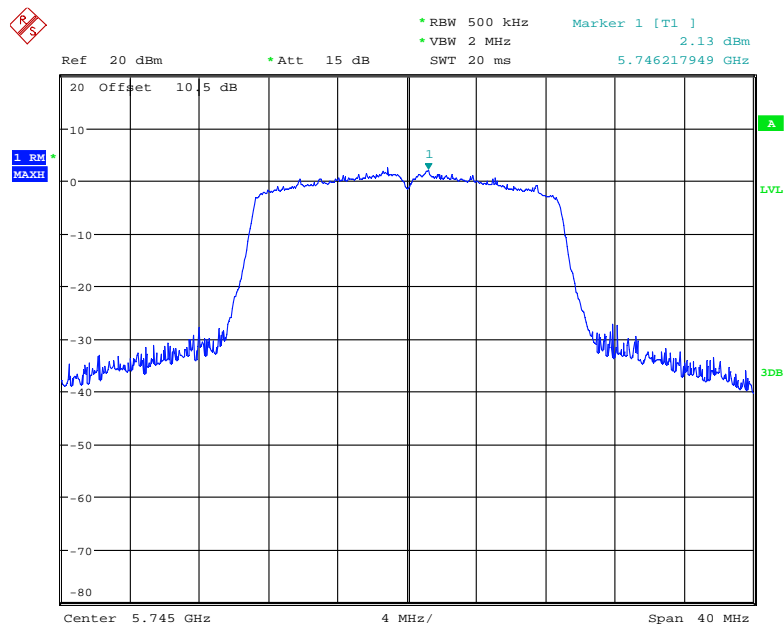
Date: 30.APR.2019 10:57:31

802.11a mode, Power Spectral Density, 5825 MHz



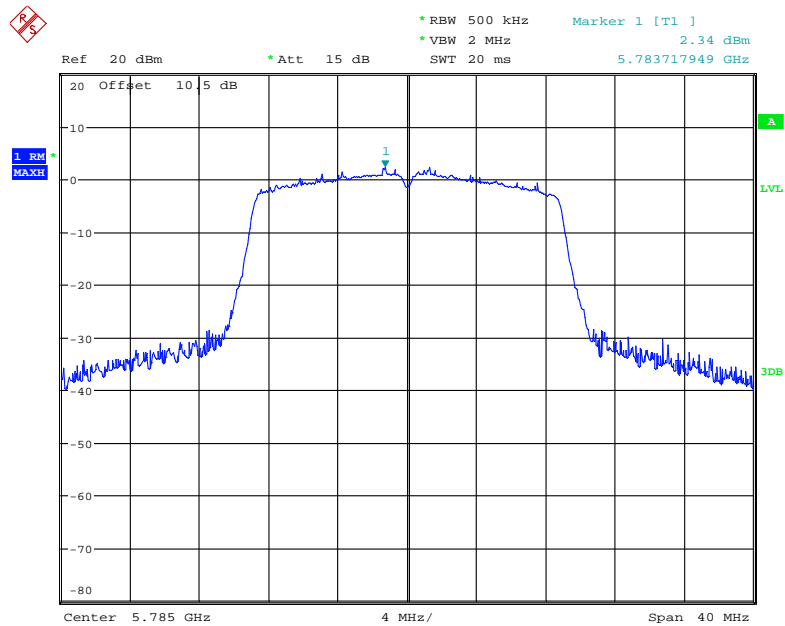
Date: 30.APR.2019 10:58:05

802.11n20 mode, Power Spectral Density, 5745 MHz



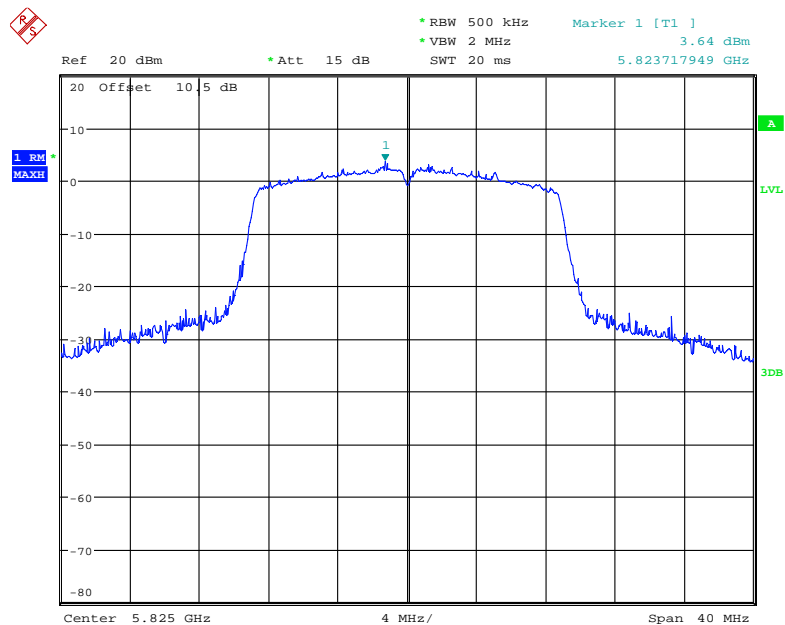
Date: 30.APR.2019 10:59:23

802.11n20 mode, Power Spectral Density, 5785 MHz



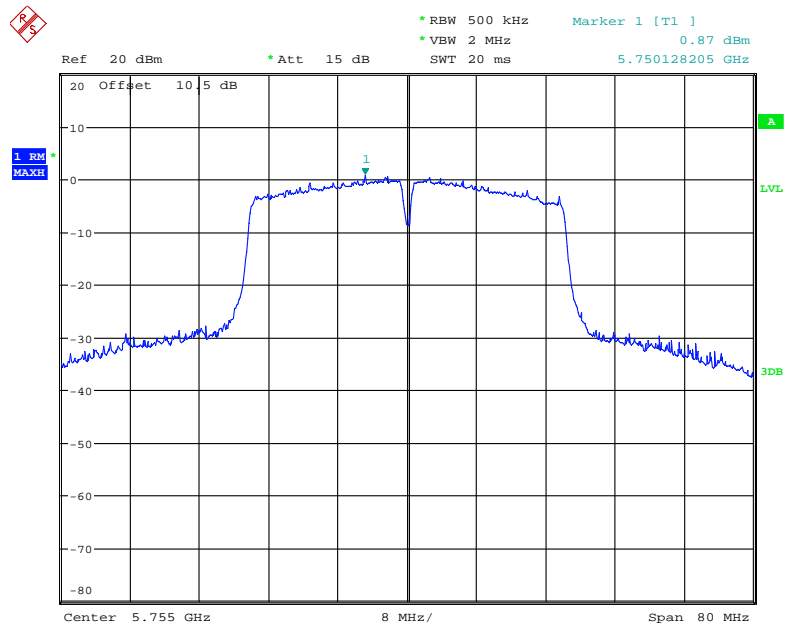
Date: 30.APR.2019 10:59:02

802.11n20 mode, Power Spectral Density, 5825 MHz



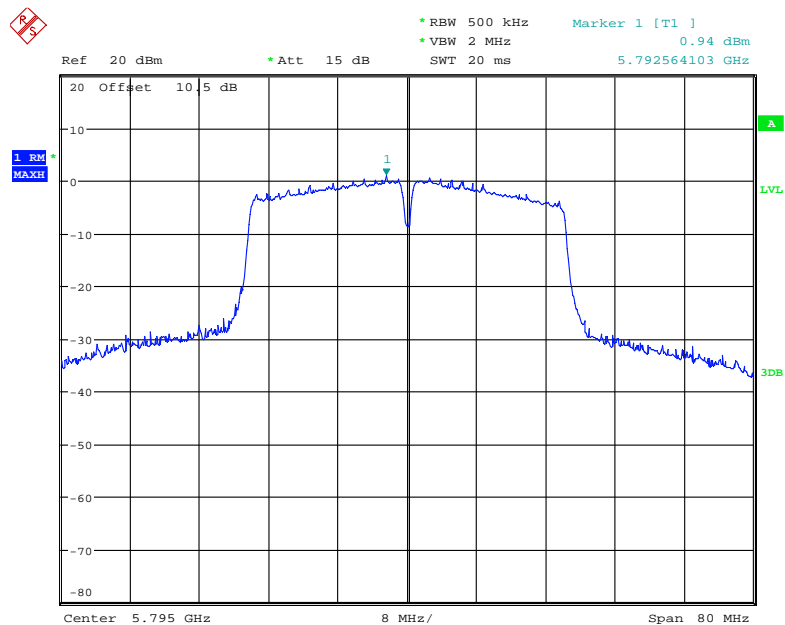
Date: 30.APR.2019 10:58:32

802.11n40 mode, Power Spectral Density, 5755 MHz



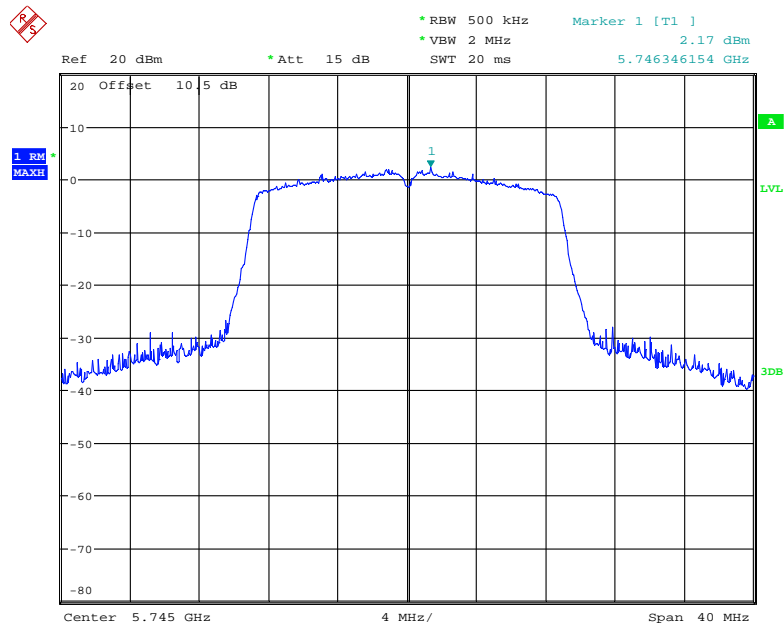
Date: 30.APR.2019 11:02:29

802.11n40 mode, Power Spectral Density, 5795 MHz



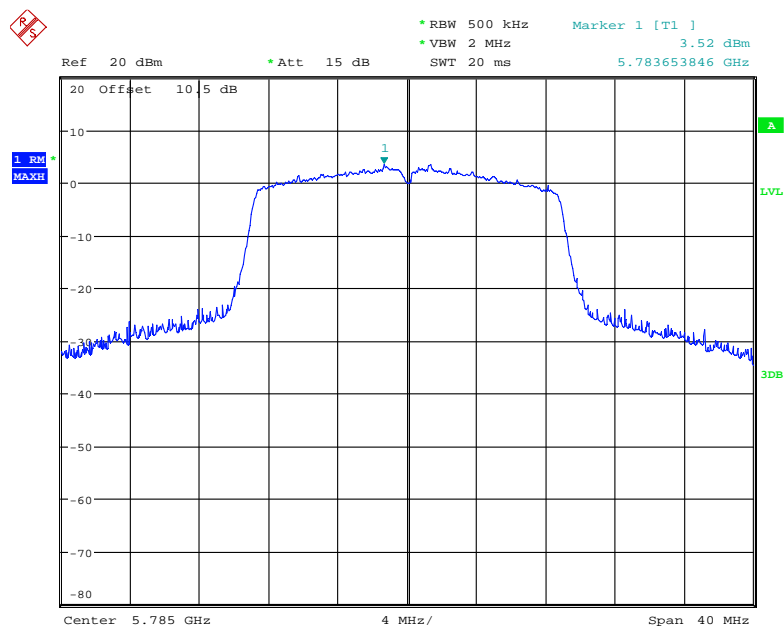
Date: 30.APR.2019 11:02:52

802.11ac20 mode, Power Spectral Density, 5745 MHz



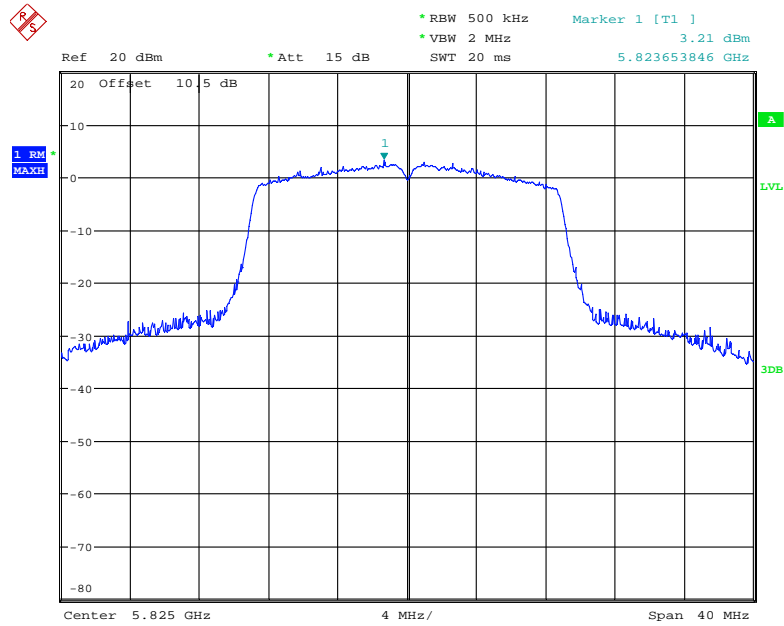
Date: 30.APR.2019 10:59:48

802.11ac20 mode, Power Spectral Density, 5785 MHz



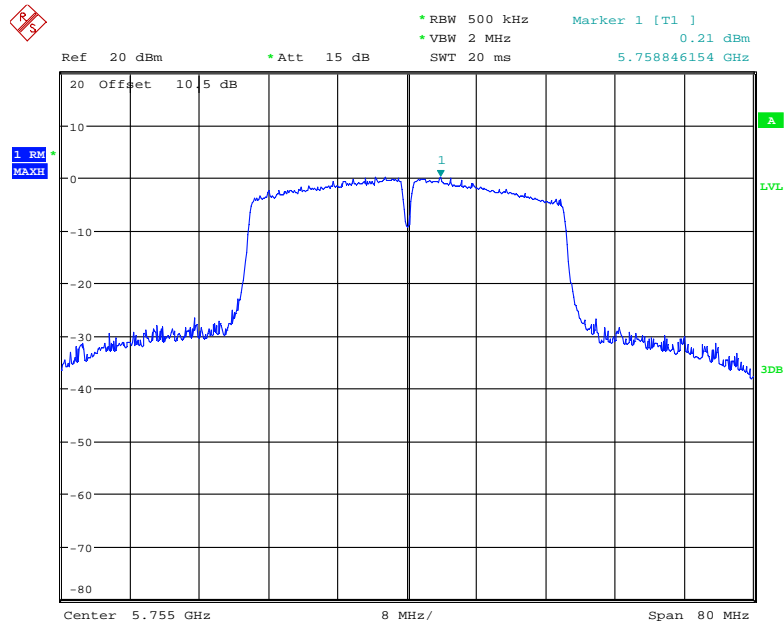
Date: 30.APR.2019 11:00:15

802.11ac20 mode, Power Spectral Density, 5825 MHz



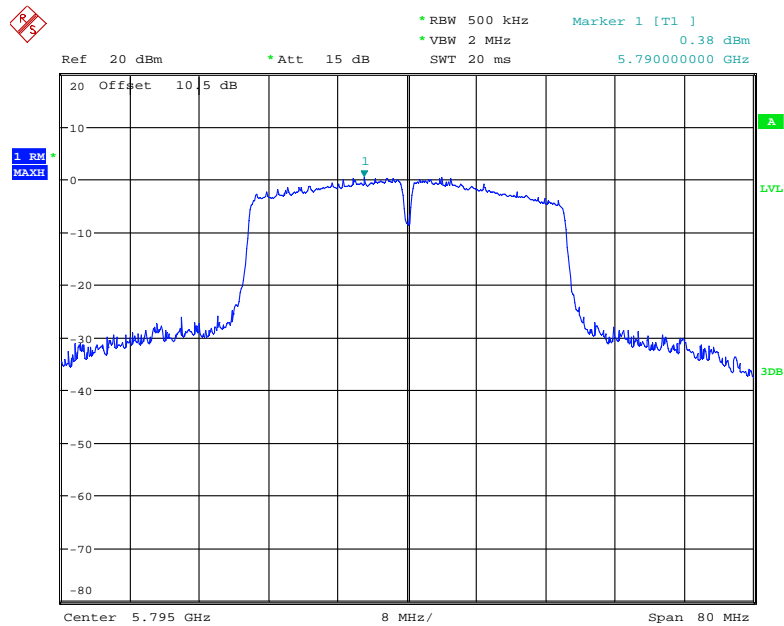
Date: 30.APR.2019 11:00:36

802.11ac40 mode, Power Spectral Density, 5755 MHz



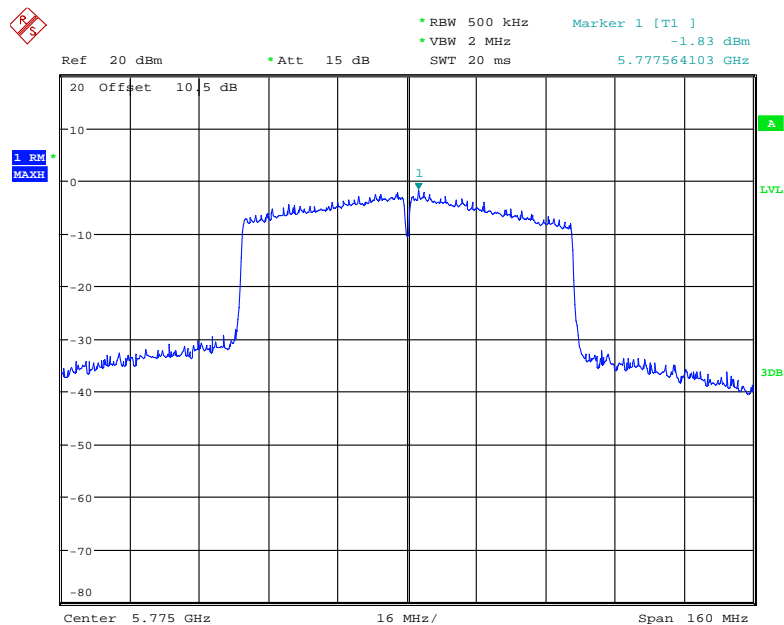
Date: 30.APR.2019 11:02:04

802.11ac40 mode, Power Spectral Density, 5795 MHz



Date: 30.APR.2019 11:01:42

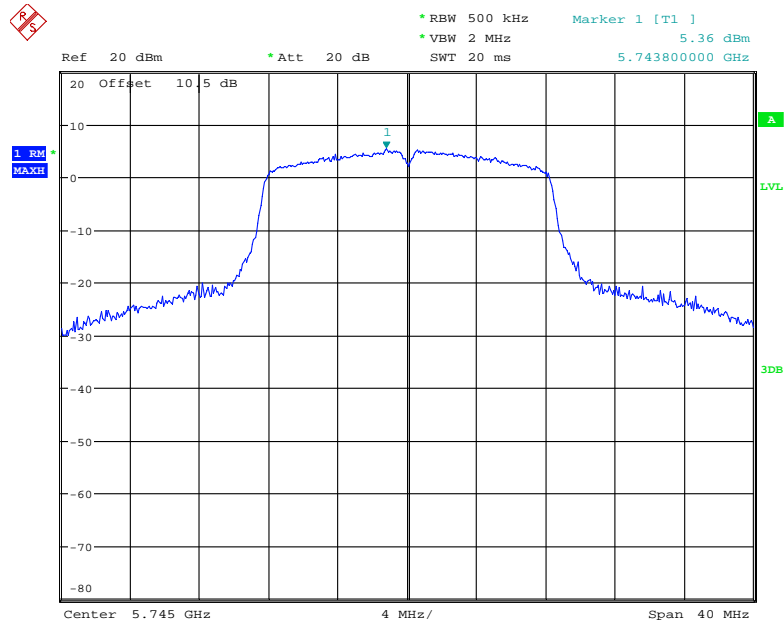
802.11ac80 mode, Power Spectral Density, 5775 MHz



Date: 30.APR.2019 11:03:31

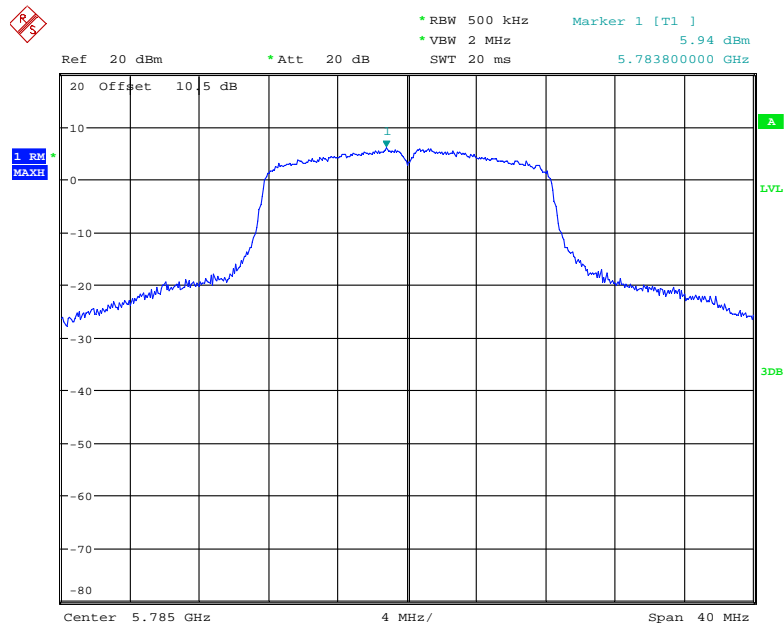
Antenna 3

802.11a mode, Power Spectral Density, 5745 MHz



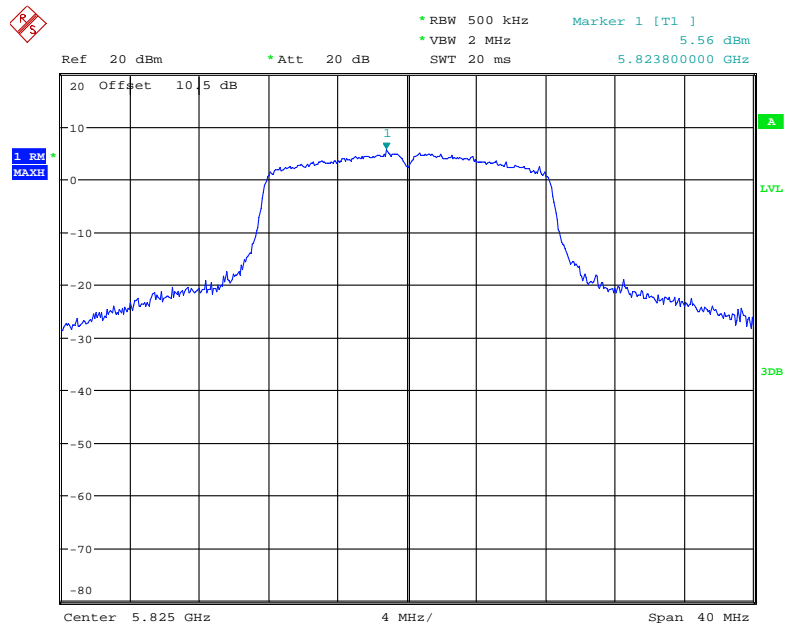
Date: 26.APR.2019 14:31:16

802.11a mode, Power Spectral Density, 5785 MHz



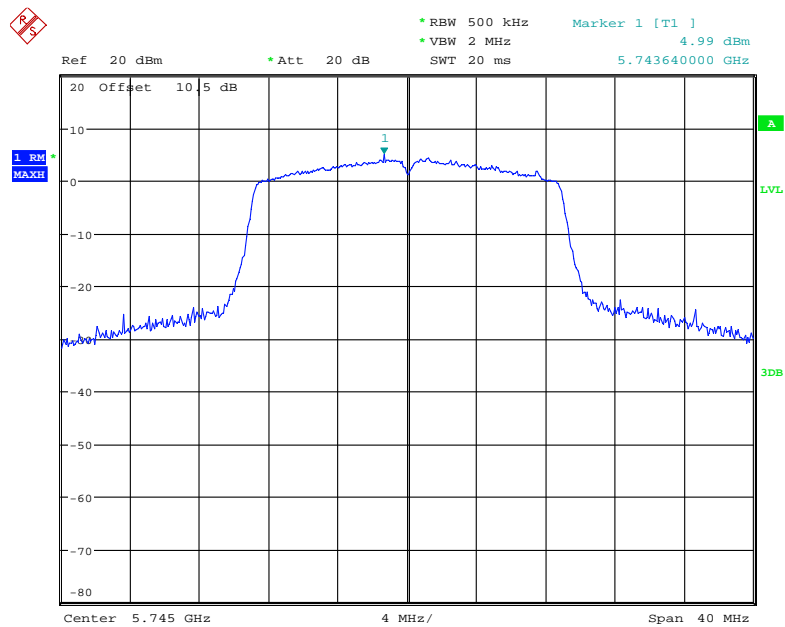
Date: 26.APR.2019 14:37:17

802.11a mode, Power Spectral Density, 5825 MHz



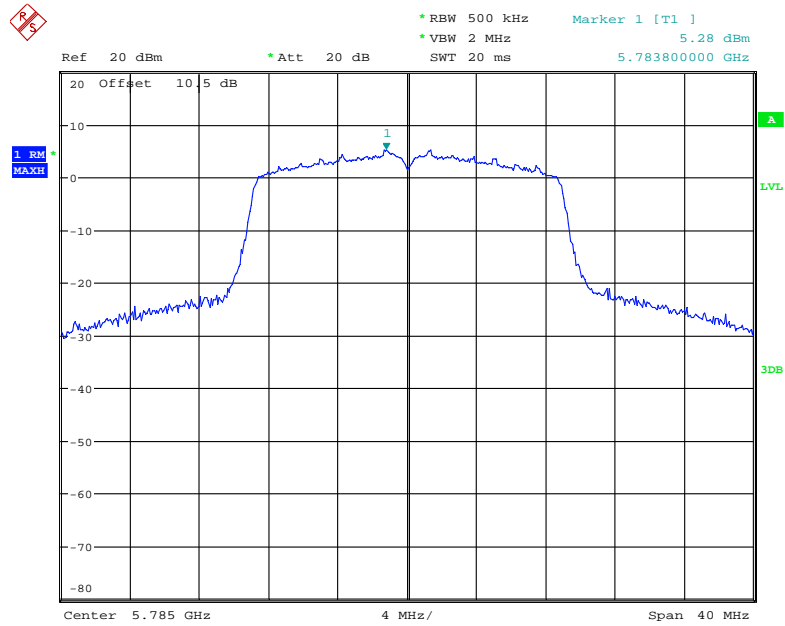
Date: 26.APR.2019 14:38:29

802.11n20 mode, Power Spectral Density, 5745 MHz



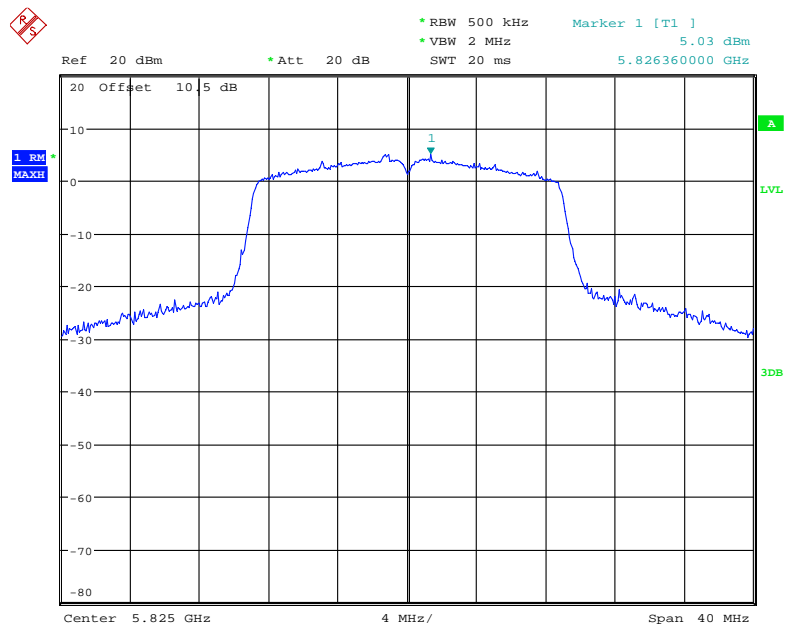
Date: 26.APR.2019 14:41:56

802.11n20 mode, Power Spectral Density, 5785 MHz



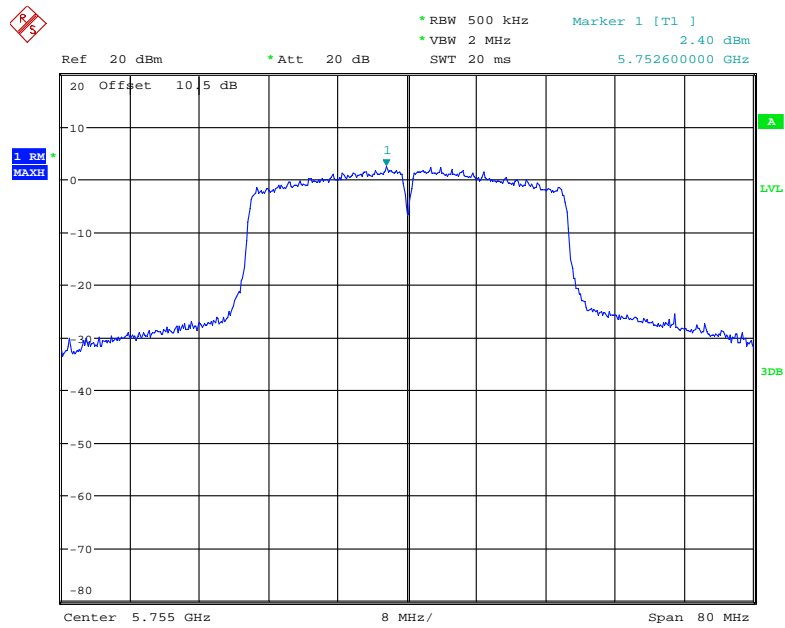
Date: 26.APR.2019 14:41:28

802.11n20 mode, Power Spectral Density, 5825 MHz



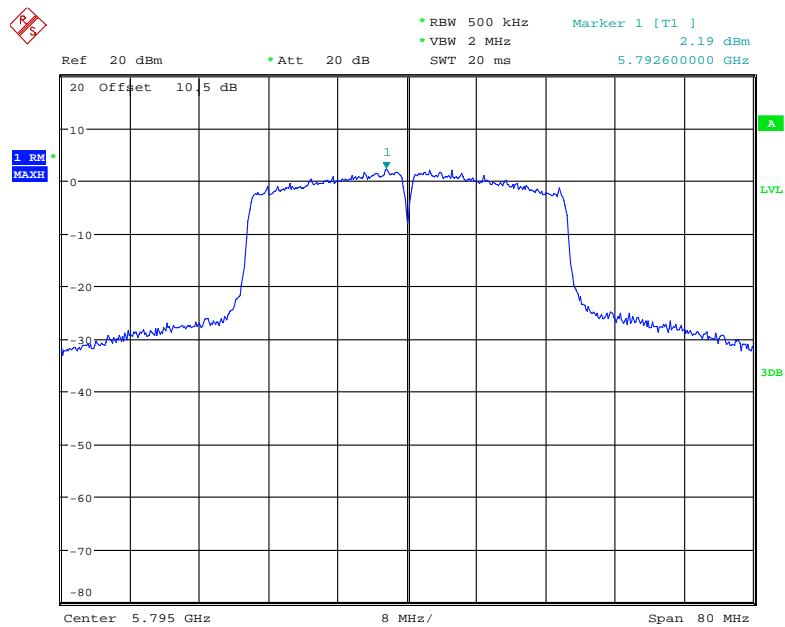
Date: 26.APR.2019 14:40:48

802.11n40 mode, Power Spectral Density, 5755 MHz



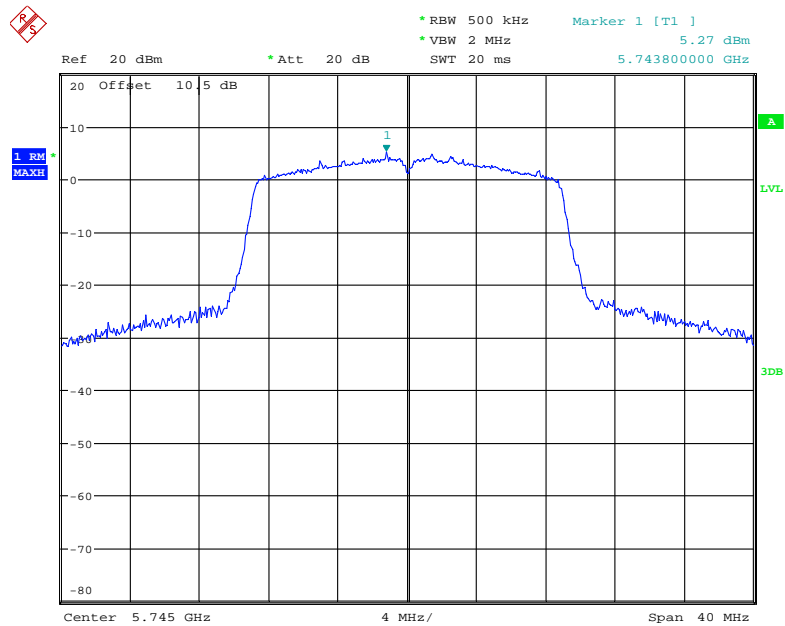
Date: 26.APR.2019 14:55:55

802.11n40 mode, Power Spectral Density, 5795 MHz



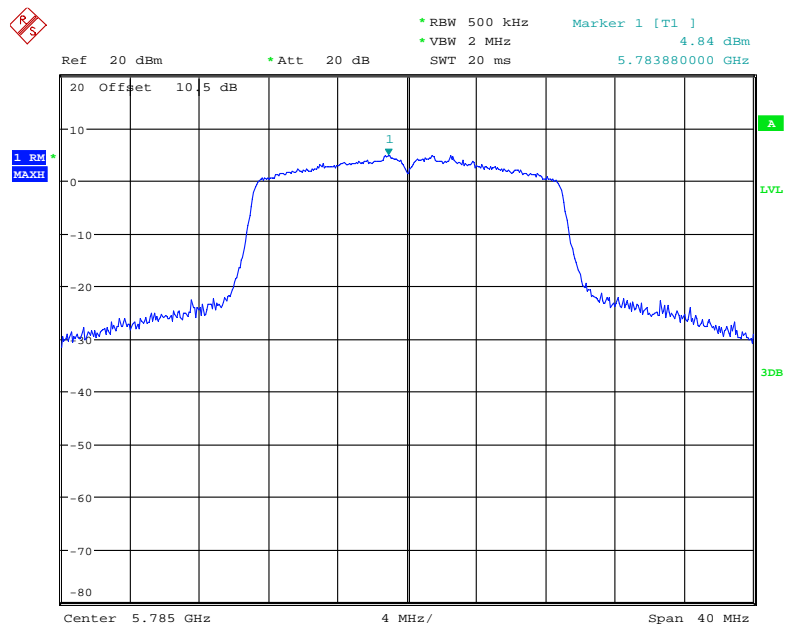
Date: 26.APR.2019 14:56:18

802.11ac20 mode, Power Spectral Density, 5745 MHz



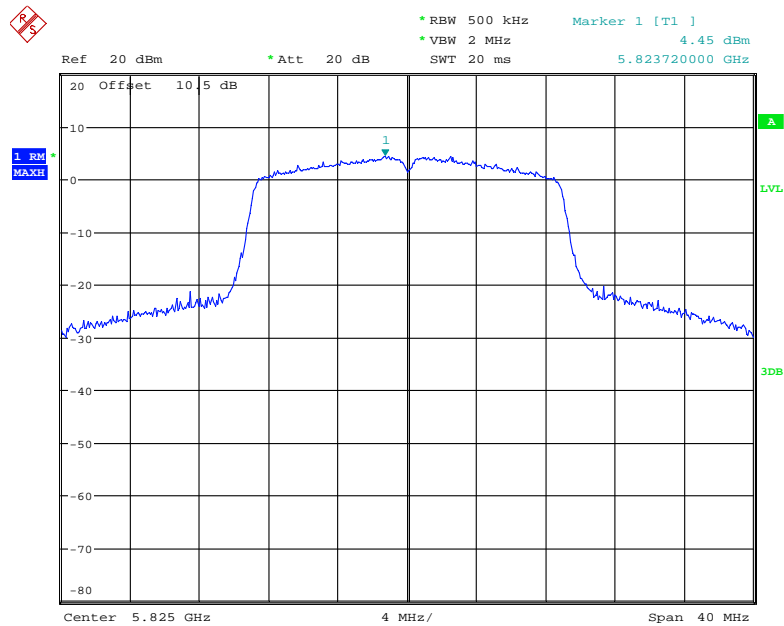
Date: 26.APR.2019 14:42:25

802.11ac20 mode, Power Spectral Density, 5785 MHz



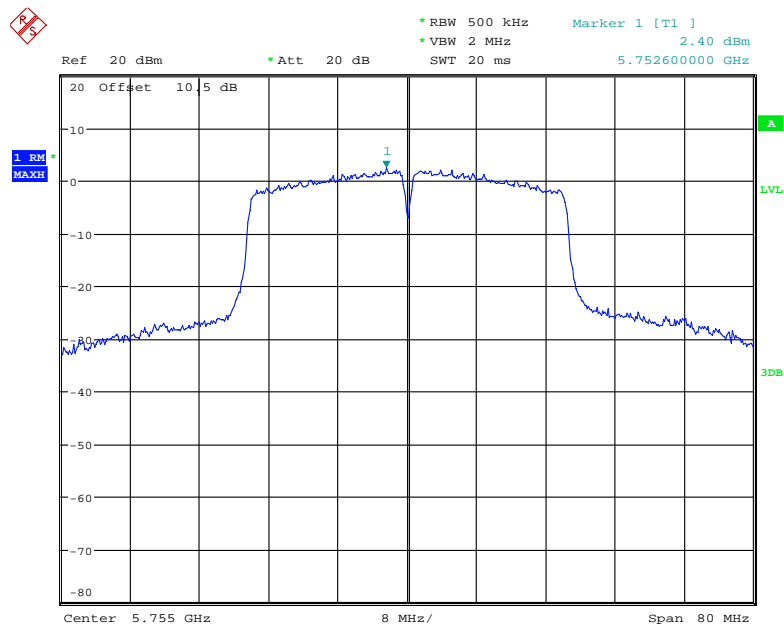
Date: 26.APR.2019 14:50:26

802.11ac20 mode, Power Spectral Density, 5825 MHz



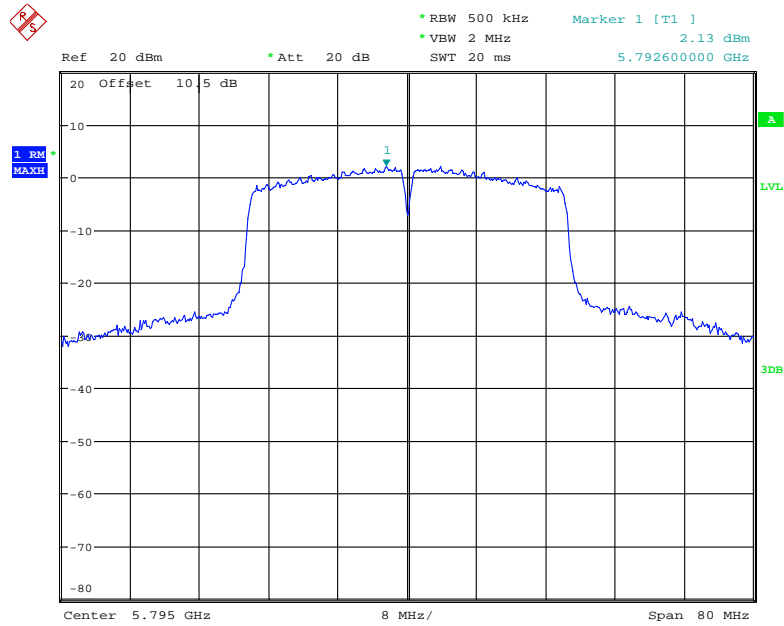
Date: 26.APR.2019 14:52:12

802.11ac40 mode, Power Spectral Density, 5755 MHz



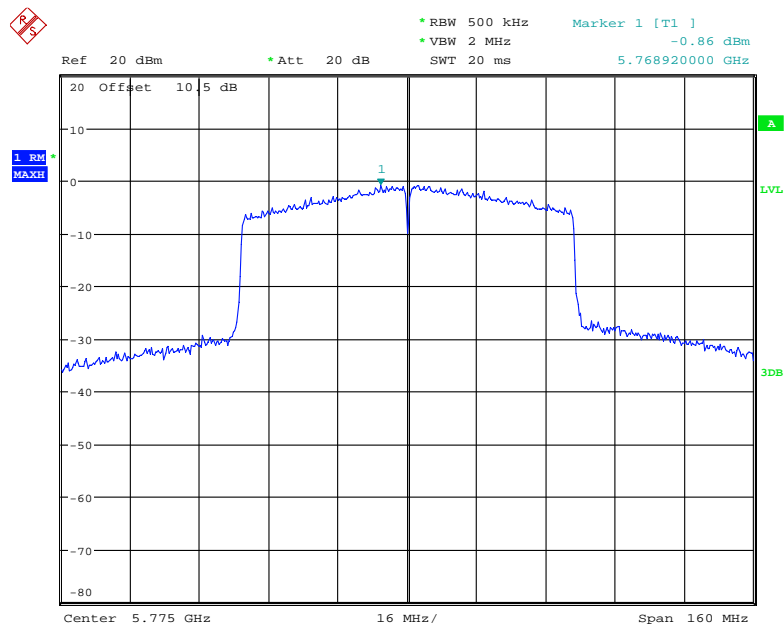
Date: 26.APR.2019 14:54:46

802.11ac40 mode, Power Spectral Density, 5795 MHz



Date: 26.APR.2019 14:53:01

802.11ac80 mode, Power Spectral Density, 5775 MHz



Date: 26.APR.2019 14:57:05

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