FCC PART 15.407

TEST REPORT

For

Grandstream Networks, Inc.

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

FCC ID: YZZGVC3210

Report Type:	**Product Type:**
Original Report	Video Conference System

Report Number:	RSZ171115010-00D
Report Date:	2018-01-30
Reviewed By:	Candy Li RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP* or any agency of the Federal Government. * This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "*".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Grandstream Networks, Inc.'s* product, model number: *GVC3210 (FCC ID: YZZGVC3210)* in this report was a *Video Conference System*, which was measured approximately: 270 mm (L) * 45 mm (W) * 80 mm (H), rated with input voltage: DC 12V from adapter.

Adapter 1 Information (MASS POWER):
Model: NBS24J120200HU
Input: 100-240V ~ 50/60Hz, 0.6A
Output: 12.0 V, 2.0A

Adapter 2 Information (SHENZHEN FRECOM ELECTRONICS CO., LTD.):
Model: F24W5-120200SPAU
Input: 100-240V~ 50/60Hz, 0.6A
Output: 12V, 2A

Adapter 3 Information (Shenzhen Sunlight Electronic Technology Co., Ltd):
Model: F24US1200200A
Input: 100-240V ~ 50/60Hz, 1.0A max
Output: 12V, 2A

**All measurement and test data in this report was gathered from production sample serial number: 1702517 (Assigned by BACL, shenzhen).The EUT supplied by the applicant was received on 2017-11-15.*

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 15.247 DTS&DSS and FCC Part 15B JBP submissions with FCC ID: YZZGVC3210 and part of system with Bluetooth Remote Control submission with FCC ID: YZZGVC3210RMT.

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		±0.5dB
RF conducted test with spectrum		±1.5dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		-30~60 ℃
Humidity		±6%
Supply voltages		±0.4%

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. : 382179, the FCC Designation No. : CN5001.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

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

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

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

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

For 5470-5725MHz Band, 21 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
102	5510	126	5630
104	5520	128	5640
106	5530	132	5660
108	5540	134	5670
110	5550	136	5680
112	5560	138	5690
116	5580	140	5700
118	5590	142	5710
120	5600	144	5720
122	5610	/	/

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

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

EUT Exercise Software

"RFtest tool" software was used. Test frequencies and power level were configured as below:

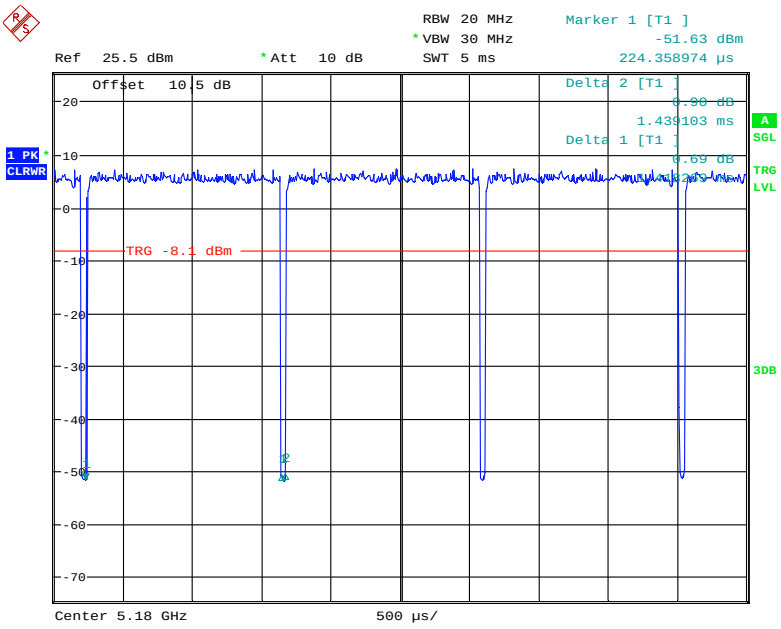
U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5150 – 5250MHz	802.11 a	CH36	5180	6	Default
		CH40	5200	6	Default
		CH48	5240	6	Default
	802.11 n20	CH36	5180	MCS0	Default
		CH40	5200	MCS0	Default
		CH48	5240	MCS0	Default
	802.11 n40	CH38	5190	MCS0	Default
		CH46	5230	MCS0	Default
	802.11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

U-NII	Mode	Channel Number	Frequency (MHz)	Rate (Mbps)	Power Level
5470 – 5725MHz	802.11 a	CH100	5500	6	Default
		CH120	5600	6	Default
		CH140	5700	6	Default
		CH144	5720	6	Default
	802.11 n20	CH100	5500	MCS0	Default
		CH120	5600	MCS0	Default
		CH140	5700	MCS0	Default
		CH144	5720	MCS0	Default
	802.11 n40	CH102	5510	MCS0	Default
		CH118	5590	MCS0	Default
		CH142	5710	MCS0	Default
	802.11 ac20	CH100	5500	MCS0	Default
		CH120	5600	MCS0	Default
		CH140	5700	MCS0	Default
		CH144	5720	MCS0	Default
	802.11 ac40	CH102	5510	MCS0	Default
		CH118	5590	MCS0	Default
		CH142	5710	MCS0	Default
	802.11 ac80	CH106	5530	MCS0	Default
		CH122	5610	MCS0	Default
		CH138	5690	MCS0	Default
5725 – 5850MHz	802.11 a	CH149	5745	6	Default
		CH157	5785	6	Default
		CH165	5825	6	Default
	802.11 n20	CH149	5745	MCS0	Default
		CH157	5785	MCS0	Default
		CH165	5825	MCS0	Default
	802.11 n40	CH151	5755	MCS0	Default
		CH159	5795	MCS0	Default
	802.11 ac20	CH149	5745	MCS0	Default
		CH157	5785	MCS0	Default
		CH165	5825	MCS0	Default
	802.11 ac40	CH151	5755	MCS0	Default
		CH159	5795	MCS0	Default
	802.11 ac80	CH155	5775	MCS0	Default

Duty cycle

5150-5250 MHz

802.11a mode



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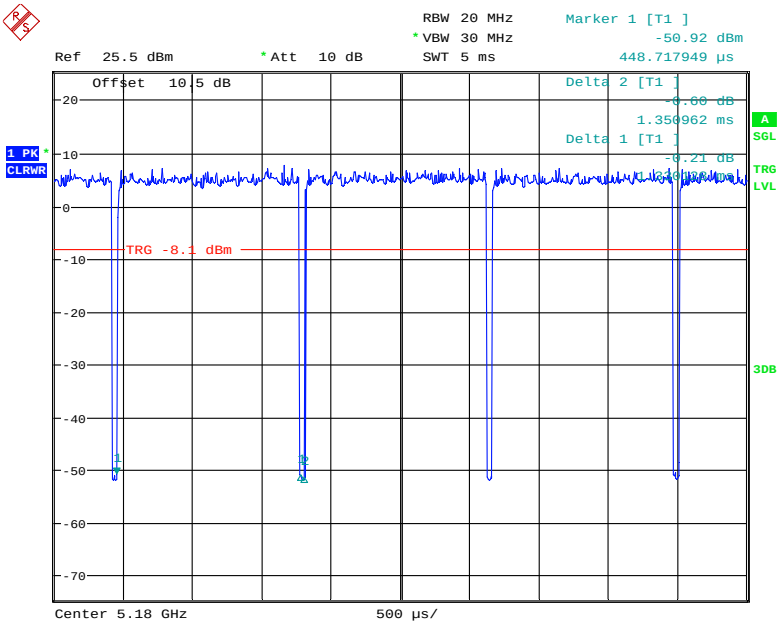
802.11n20 mode



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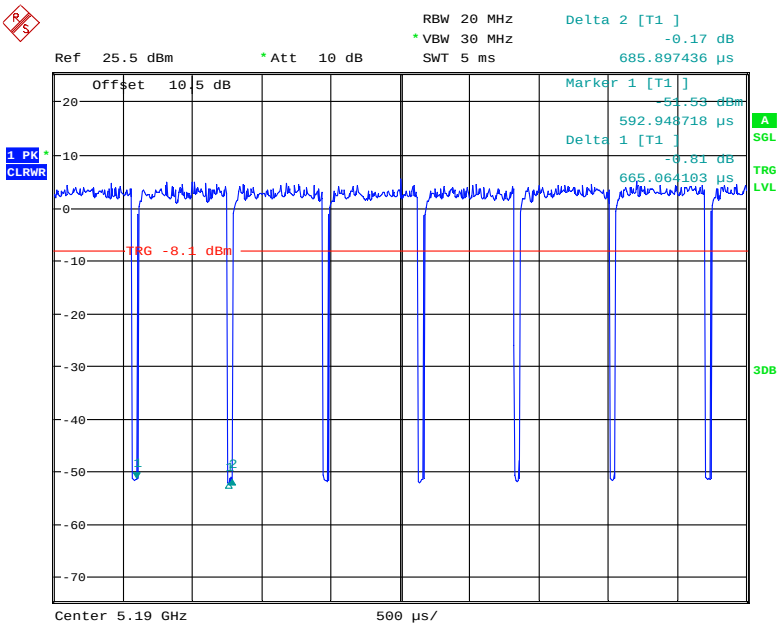
802.11n40 Mode



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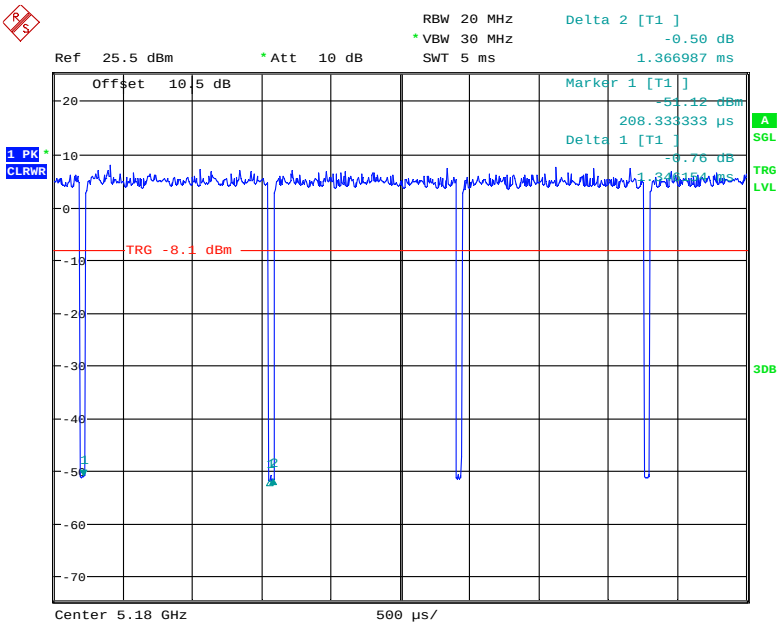
802.11ac20 Mode



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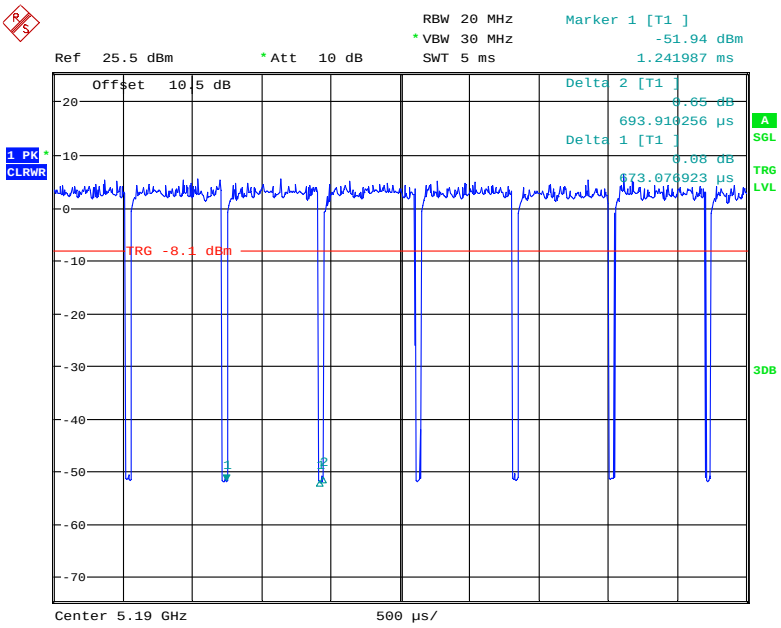
802.11ac40 Mode



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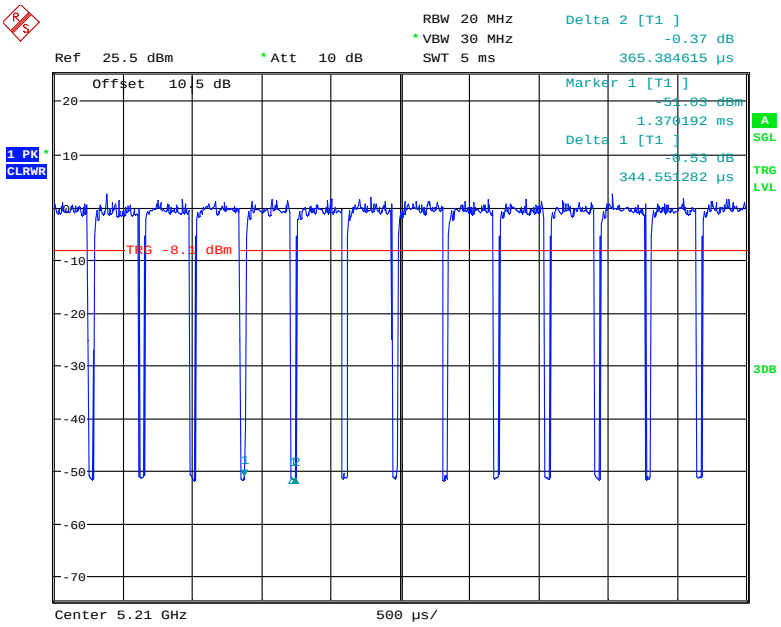
802.11ac80 Mode



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Band	Duty Cycle (%)	T(ms)	1/T(kHz)	VBW Setting	10log(1/x)
802.11a	98.54	1.418	-	10Hz	0.06
802.11n20	98.45	1.330	-	10Hz	0.07
802.11n40	96.94	0.665	1.50	2kHz	0.14
802.11ac20	98.46	1.346	-	10Hz	0.07
802.11ac40	96.97	0.673	1.49	2kHz	0.13
802.11ac80	94.52	0.345	2.90	3kHz	0.24

Note: 5250-5350MHz band, 5470-5725MHz band and 5725-5825MHz band was used the same duty cycle to test for each mode.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

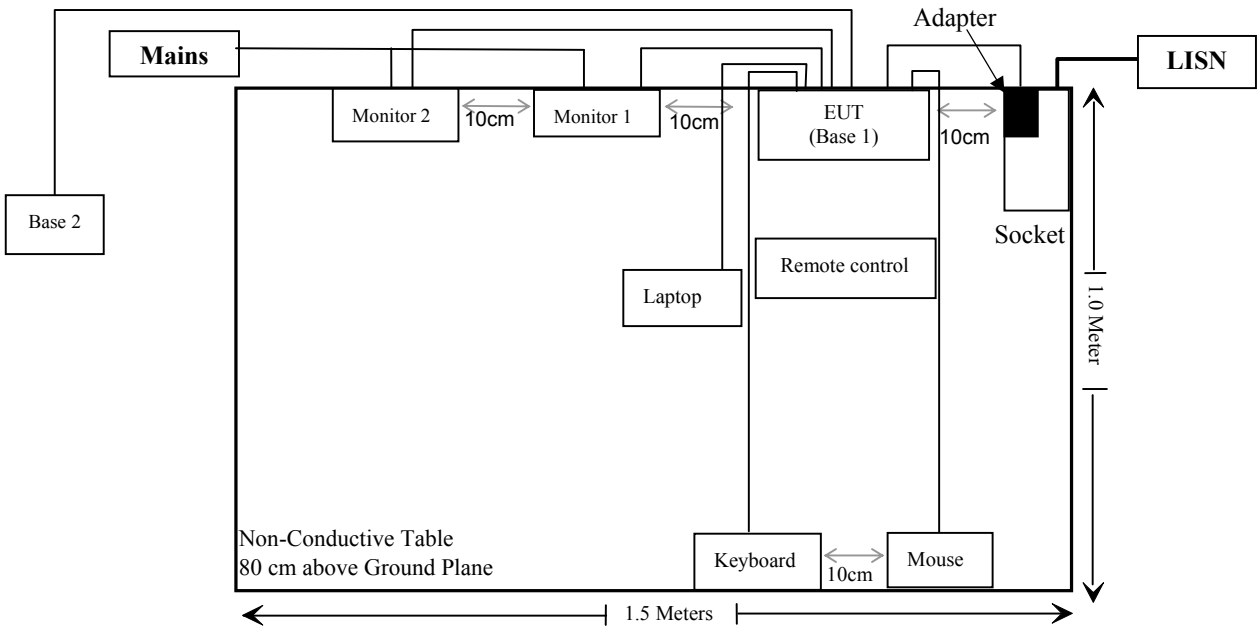
Manufacturer	Description	Model	Serial Number
SAMSUNG	Monitor 1	225MS	N/A
DELL	Monitor 2	ST2420Lb	CN-0X0K27-74261-2AF-090U
Sandisk	T-F card	N/A	3491
BULL	Socket	GN-415K	5503290068073
HP	Laptop	CQ45-m02TU	5CG33407QL
LISTED	Adapter	TYP60-1207000Z	326703
Microsoft	Keyboard	1406	0200706128743
Microsoft	Mouse	1405	0204608630856

External I/O Cable

NO.	Cable Description	Length (m)	From/Port	To
1	Un-shielding detachable AC cable	1.2	Monitor 1	Mains
2	Un-shielding detachable AC cable	1.2	Monitor 2	Mains
3	Un-shielding Detachable AC Cable	1.0	Socket	LISN
4	Un-shielding Un-detachable DC Cable	3.0	EUT	Adapter
5	Un-shielding Un-detachable HDMI Cable With Ferrite Core	4.3	Monitor 1	EUT
6	Un-shielding Un-detachable HDMI Cable With Ferrite Core	4.3	Monitor 2	EUT
7	Un-shielding Un-detachable HDMI Cable With Ferrite Core	4.3	EUT	Laptop
8	Shielding Un-detachable USB Cable	1.2	Mouse	EUT
9	Un-shielding Un-detachable AC cable	1.0	LISN	Socket
10	Shielding Un-detachable USB cable	1.2	Keyboard	EUT
11	Un-shielding Detachable RJ45 Cable	10	EUT (Base 1)	EUT (Base 2)

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), (2), (3), (4),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b) (1), (2), (3), (4)	Out Of Band Emission	Compliance
§15.407(a) (1), (5),(e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliance
§15.407(a)(1),(2), (3)	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1), (2), (3)	Power Spectral Density	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2017-08-04	2018-08-04
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2016-12-07	2017-12-07
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2017-11-19	2018-05-21
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
N/A	Conducted Emission Cable	N/A	UF A210B-1-0720-504504	2017-11-12	2018-05-12
Radiated Emission Test					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2017-04-24	2018-04-24
Agilent	Spectrum Analyzer	8564E	3943A01781	2017-01-04	2018-01-04
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-17	2017-12-16
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2017-05-21	2018-05-21
HP	Amplifier	HP8447E	1937A01046	2017-11-19	2018-05-21
Anritsu	Signal Generator	68369B	004114	2016-12-05	2017-12-05
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2016-12-07	2017-12-07
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	104PEA	218124002	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	1	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	2	2017-05-22	2017-11-22
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2014-12-29	2017-12-28
Ducommun Technologies	Horn Antenna	ARH-4823-02	1007726-04	2014-12-29	2017-12-28
Ducommun Technologies	Pre-amplifier	ALN-22093530-01	991373-01	2017-08-03	2018-08-03

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2016-12-05	2017-12-05
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-05	2018-12-05
Agilent	Power Meter	N1912A	MY5000492	2017-11-18	2018-11-17
Agilent	Power Sensor	N1921A	MY54210024	2017-11-18	2018-11-17
Ducommun technologies	RF Cable	RG-214	3	2017-05-22	2017-11-22
Ducommun technologies	RF Cable	RG-214	3	2017-11-22	2018-05-22
WEINSCHEL	10dB Attenuator	5324	AU 3842	2017-05-23	2017-11-22
WEINSCHEL	10dB Attenuator	5324	AU 3842	2017-11-22	2018-05-23

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

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

Applicable Standard

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

Limits for General Population/Uncontrolled Exposure

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

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

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	2	1.58	16	39.81	20	0.013	1.0
5250-5350	2	1.58	16	39.81	20	0.013	1.0
5470-5725	2	1.58	16	39.81	20	0.013	1.0
5725-5825	2	1.58	16	39.81	20	0.013	1.0

Note:
1) The conducted power is the tune-up power of the Max Conducted Output Power.
2) BT and 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 one internal antenna arrangement, which was permanently attached and the antenna gain is 2 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

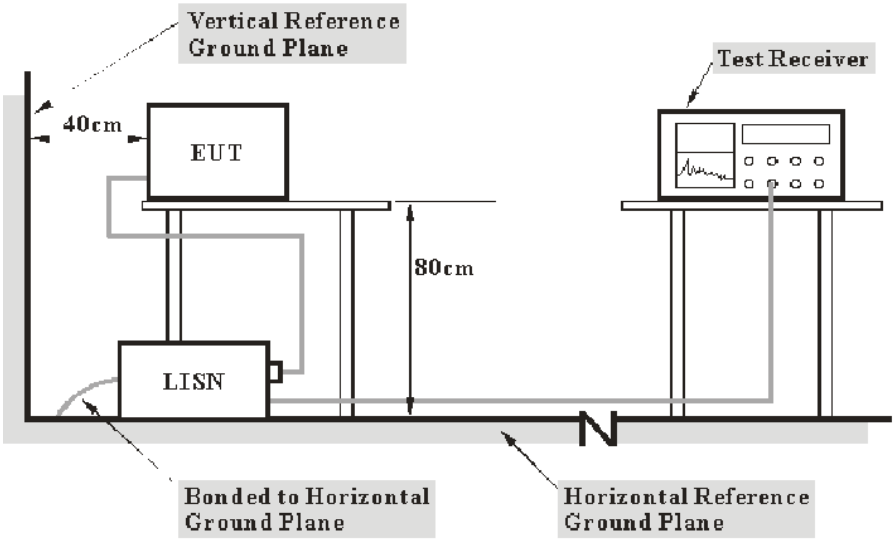
Result: Compliance.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Test Results Summary

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

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

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

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

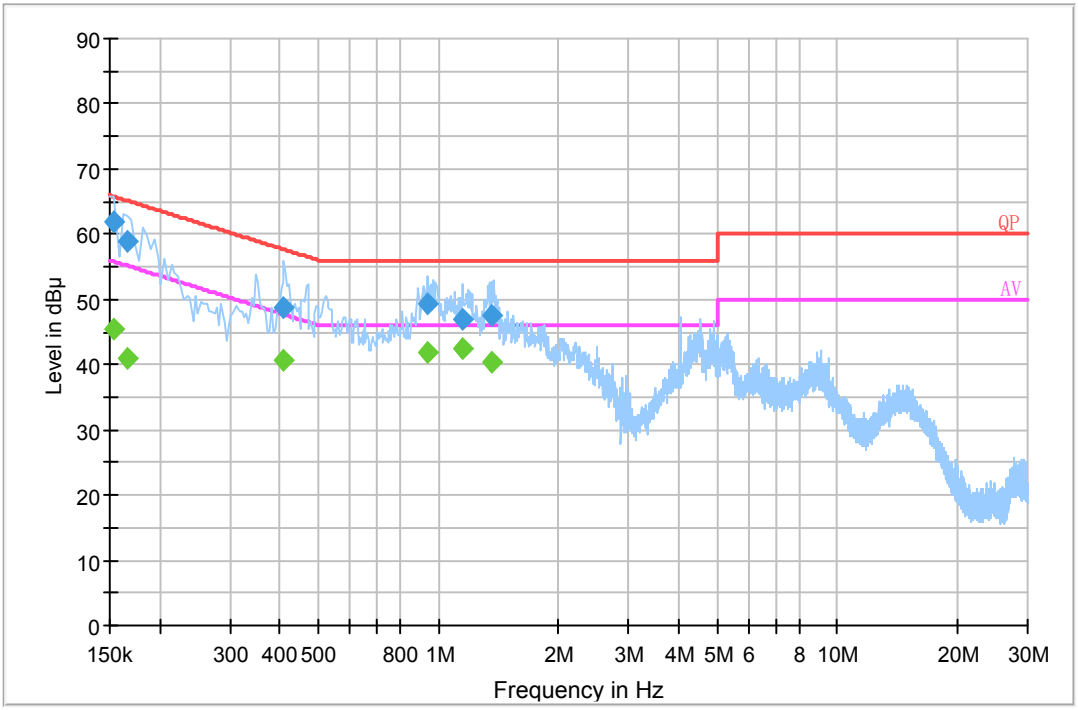
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Vincent Zheng on 2017-11-21.

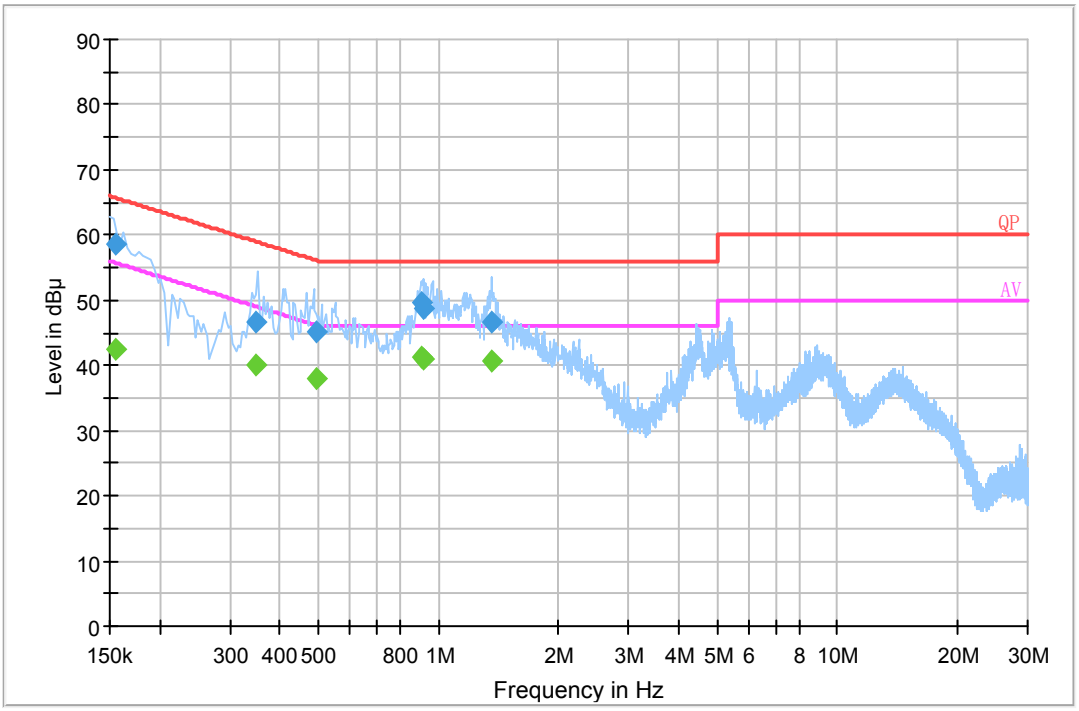
EUT operation mode: Transmitting (worst case)

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	61.8	20.2	65.8	4.0	QP
0.165500	59.0	20.2	65.2	6.2	QP
0.407850	48.9	20.2	57.7	8.8	QP
0.935930	49.4	20.1	56.0	6.6	QP
1.152750	47.1	20.1	56.0	8.9	QP
1.361270	47.6	20.1	56.0	8.4	QP
0.154000	45.4	20.2	55.8	10.4	Ave.
0.165500	40.8	20.2	55.2	14.4	Ave.
0.407850	40.6	20.2	47.7	7.1	Ave.
0.935930	42.0	20.1	46.0	4.0	Ave.
1.152750	42.5	20.1	46.0	3.5	Ave.
1.361270	40.3	20.1	46.0	5.7	Ave.

AC120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154500	58.7	20.2	65.8	7.1	QP
0.348690	46.6	20.2	59.0	12.4	QP
0.493290	45.2	20.2	56.1	10.9	QP
0.908230	49.7	20.1	56.0	6.3	QP
0.916410	48.8	20.1	56.0	7.2	QP
1.357630	46.7	20.1	56.0	9.3	QP
0.154500	42.4	20.2	55.8	13.4	Ave.
0.348690	40.2	20.2	49.0	8.8	Ave.
0.493290	37.9	20.2	46.1	8.2	Ave.
0.908230	41.4	20.1	46.0	4.6	Ave.
0.916410	40.9	20.1	46.0	5.1	Ave.
1.357630	40.7	20.1	46.0	5.3	Ave.

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

§15.205 & §15.209 & §15.407(B) (1), (2), (3), (4),(6),(7) – UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4), (6), (7); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

KDB 789033 D02 General UNII Test Procedures New Rules v02r01, clause G),
E [dBμV/m] = EIRP [dBm] + 95.2, for d = 3 meters.

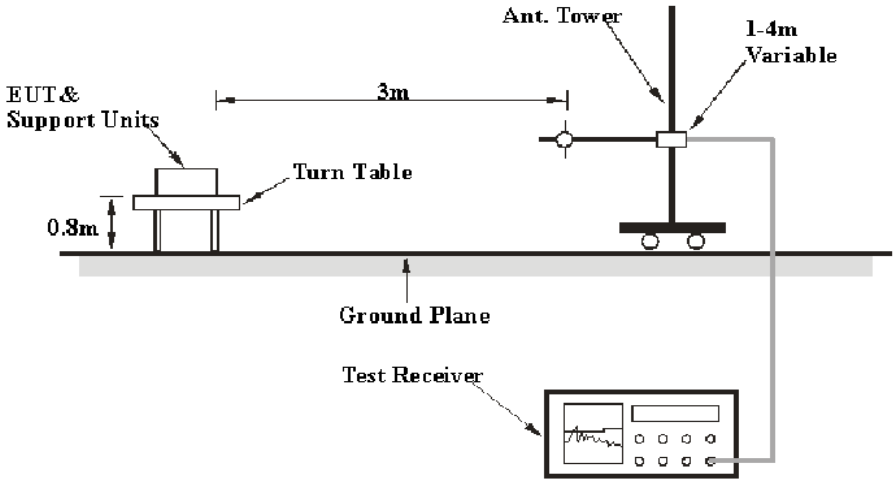
The general limit of -27 dBm EIRP (= 68.2 dBμV/m) is applied for unwanted emission of U-NII devices.
However, compliance with unwanted emissions in restricted bands may need to be considered, *e.g.,* some harmonics may land in the restricted bands below 5.15 GHz and above 5.35 GHz (refer
The general limit of -27 dBm EIRP (= 68.2 dBμV/m) is applied for unwanted emission of U-NII devices.
However, compliance with unwanted emissions in restricted bands may need to be considered, *e.g.,* some harmonics may land in the restricted bands below 5.15 GHz and above 5.35 GHz (refer to § 15.205 for restricted bands) that have average and peak limits specified in §§ 15.209 and 15.35(b), respectively.
Although the peak limit of 74 dBμV/m (20 dB above 54 dBμV/m) in the restricted band appears to be higher than 68.2 dBμV/m, the lower average limit of 54 dBμV/m in the restricted bands needs to be complied to

As to transmitters operating in the 5.725-5.85 GHz band, the strictest limit was applied for undesirable emissions, performed as below:

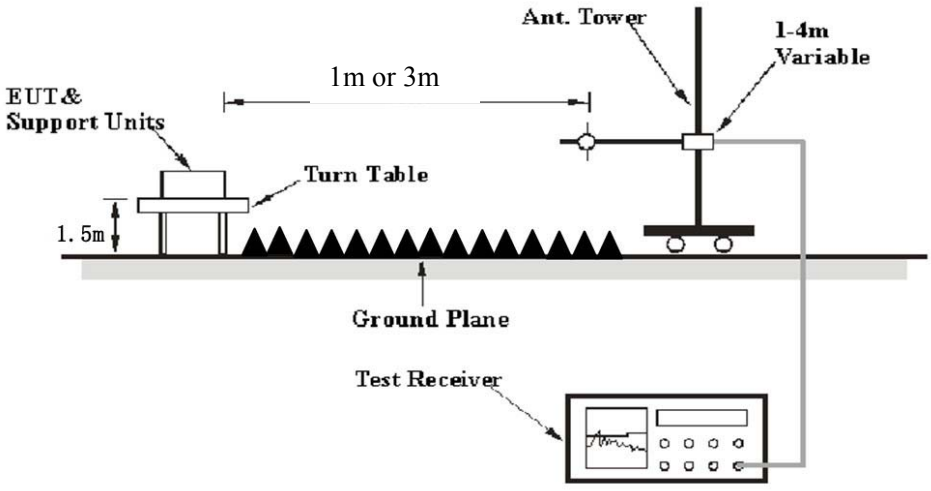
1) For 25MHz-75 MHz above or below the band edge, a level of -27 dBm/MHz (68.2dBμV/m) was applied.
2) For 5MHz-25 MHz above or below the band edge, a level of 10 dBm/MHz (105.2dBμV/m) was applied.
2) For 0MHz-5 MHz above or below the band edge, a level of 15.6 dBm/MHz (110.8dBμV/m) was applied.

EUT Setup

Below 1 GHz:



Above 1 GHz:



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

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

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

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 KDB 789033, the limit is E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

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;

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

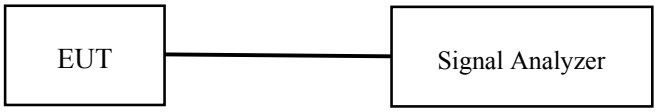
where

$E_{\mathrm{SpecLimit}}$ 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
$d_{\mathrm{SpecLimit}}$ is the distance specified by the limit, in m

So the extrapolation factor of 1m is 20*log(1/3)= -9.54 dB

Conducted Spurious Emission at Antenna Port

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



Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

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

Margin = Limit – Corrected Amplitude

Test Results Summary

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

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

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

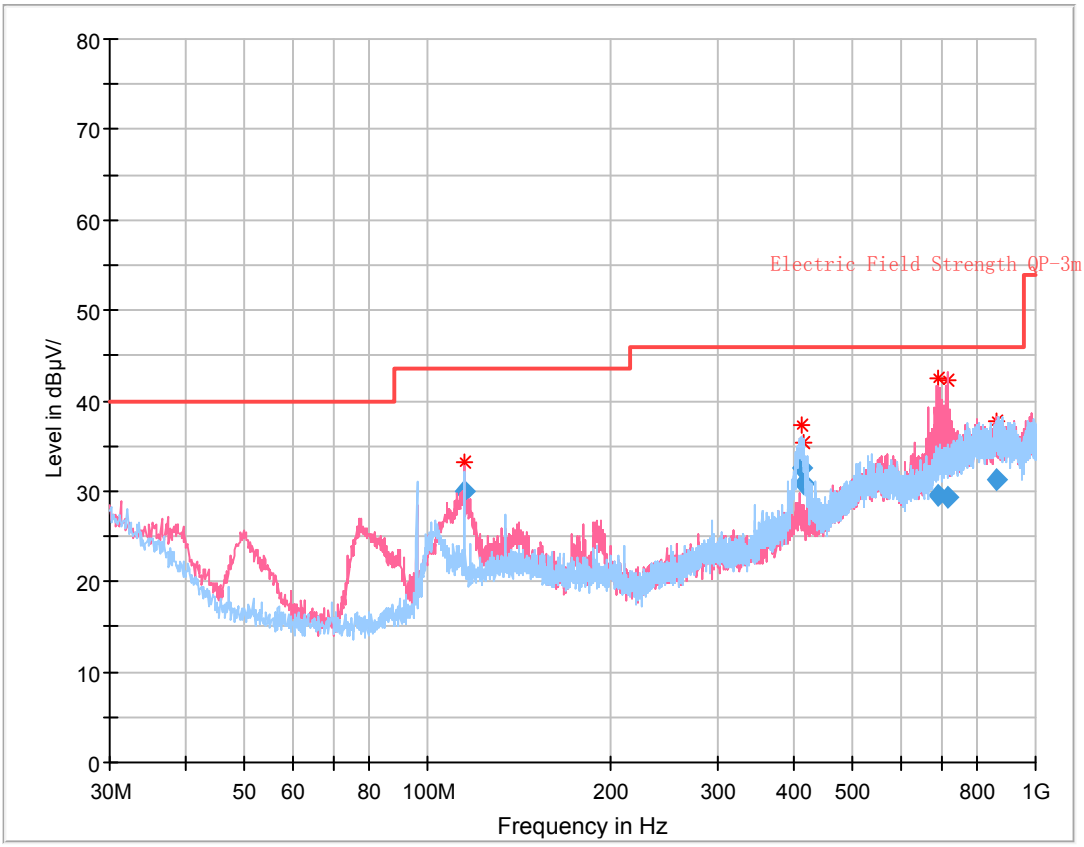
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Vincent Zheng on 2017-11-21.

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)
115.167000	29.96	101.0	V	275.0	-6.8	43.50	13.54
411.646750	32.54	114.0	H	356.0	0.1	46.00	13.46
416.589750	30.78	106.0	H	0.0	0.1	46.00	15.22
688.946625	29.51	100.0	V	10.0	6.2	46.00	16.49
715.359875	29.30	108.0	V	300.0	7.0	46.00	16.70
860.231875	31.35	271.0	V	102.0	9.2	46.00	14.65

30 MHz ~ 40 GHz:

5150-5250 MHz:

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11a										
5180MHz										
5180	81.63	PK	96	2.4	H	41.8	123.43	113.89	/	/
5180	71.10	Ave.	96	2.4	H	41.8	112.90	103.36	/	/
5180	79.76	PK	53	1.3	V	41.8	121.56	112.02	/	/
5180	68.99	Ave.	53	1.3	V	41.8	110.79	101.25	/	/
5117.33	27.62	PK	345	1.9	H	41.8	69.42	59.88	74	14.12
5117.33	13.77	Ave.	345	1.9	H	41.8	55.57	46.03	54	7.97
5368.07	28.69	PK	200	1.2	H	41.83	70.52	60.98	74	13.02
5368.07	13.76	Ave.	200	1.2	H	41.83	55.59	46.05	54	7.95
10360	47.97	PK	171	1.2	H	16.34	64.31	54.77	74	19.23
10360	34.36	Ave.	171	1.2	H	16.34	50.70	41.16	54	12.84
5200MHz										
5200	80.99	PK	129	2.4	H	41.8	122.79	113.25	/	/
5200	70.00	Ave.	129	2.4	H	41.8	111.80	102.26	/	/
5200	80.12	PK	92	1.3	V	41.8	121.92	112.38	/	/
5200	69.13	Ave.	92	1.3	V	41.8	110.93	101.39	/	/
5124.51	28.69	PK	171	2.1	H	41.8	70.49	60.95	74	13.05
5124.51	13.80	Ave.	171	2.1	H	41.8	55.60	46.06	54	7.94
5380.76	28.69	PK	197	1.1	H	41.83	70.52	60.98	74	13.02
5380.76	13.78	Ave.	197	1.1	H	41.83	55.61	46.07	54	7.93
10400	48.78	PK	139	2.1	H	16.34	65.12	55.58	74	18.42
10400	35.01	Ave.	139	2.1	H	16.34	51.35	41.81	54	12.19
5240MHz										
5240	80.97	PK	170	2.0	H	41.8	122.77	113.23	/	/
5240	70.13	Ave.	170	2.0	H	41.8	111.93	102.39	/	/
5240	81.36	PK	8	1.1	V	41.8	123.16	113.62	/	/
5240	70.22	Ave.	8	1.1	V	41.8	112.02	102.48	/	/
5143.47	28.47	PK	87	1.4	H	41.8	70.27	60.73	74	13.27
5143.47	13.81	Ave.	87	1.4	H	41.8	55.61	46.07	54	7.93
5402.68	28.54	PK	348	1.7	H	41.83	70.37	60.83	74	13.17
5402.68	13.78	Ave.	348	1.7	H	41.83	55.61	46.07	54	7.93
10480	48.97	PK	16	2.4	H	17.24	66.21	56.67	74	17.33
10480	35.32	Ave.	16	2.4	H	17.24	52.56	43.02	54	10.98

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11n20										
5180MHz										
5180	80.89	PK	352	1.4	H	41.8	122.69	113.15	/	/
5180	70.69	Ave.	352	1.4	H	41.8	112.49	102.95	/	/
5180	79.76	PK	189	1.5	V	41.8	121.56	112.02	/	/
5180	69.94	Ave.	189	1.5	V	41.8	111.74	102.20	/	/
5147.09	29.19	PK	215	1.7	H	41.8	70.99	61.45	74	12.55
5147.09	13.67	Ave.	215	1.7	H	41.8	55.47	45.93	54	8.07
5419.21	28.36	PK	220	1.2	H	41.83	70.19	60.65	74	13.35
5419.21	13.71	Ave.	220	1.2	H	41.83	55.54	46.00	54	8.00
10360	47.94	PK	2	2.5	H	16.34	64.28	54.74	74	19.26
10360	34.37	Ave.	2	2.5	H	16.34	50.71	41.17	54	12.83
5200MHz										
5200	71.48	PK	269	1.7	H	41.8	122.82	113.28	/	/
5200	61.44	Ave.	269	1.7	H	41.8	112.78	103.24	/	/
5200	71.19	PK	269	2.4	V	41.8	122.53	112.99	/	/
5200	60.95	Ave.	269	2.4	V	41.8	112.29	102.75	/	/
10400	39.40	PK	96	2.2	H	16.34	65.28	55.74	74	18.26
10400	25.62	Ave.	96	2.2	H	16.34	51.50	41.96	54	12.04
5240 MHz										
5240	81.21	PK	18	1.6	H	41.8	123.01	113.47	/	/
5240	71.12	Ave.	18	1.6	H	41.8	112.92	103.38	/	/
5240	80.75	PK	347	1.9	V	41.8	122.55	113.01	/	/
5240	70.61	Ave.	347	1.9	V	41.8	112.41	102.87	/	/
5127.05	27.78	PK	8	1.0	H	41.8	69.58	60.04	74	13.96
5127.05	13.82	Ave.	8	1.0	H	41.8	55.62	46.08	54	7.92
5364.24	27.56	PK	59	2.3	H	41.83	69.39	59.85	74	14.15
5364.24	13.78	Ave.	59	2.3	H	41.83	55.61	46.07	54	7.93
10480	48.40	PK	193	2.5	H	17.24	65.64	56.10	74	17.9
10480	35.18	Ave.	193	2.5	H	17.24	52.42	42.88	54	11.12

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11n40										
5190MHz										
5190	76.5	PK	30	2.0	H	41.8	118.30	108.76	/	/
5190	65.91	Ave.	30	2.0	H	41.8	107.71	98.17	/	/
5190	75.16	PK	186	1.7	V	41.8	116.96	107.42	/	/
5190	64.94	Ave.	186	1.7	V	41.8	106.74	97.2	/	/
5150	36.92	PK	115	1.2	H	41.8	78.72	69.18	74	4.82
5150	19.26	Ave.	115	1.2	H	41.8	61.06	51.52	54	2.48
5364.8	28.17	PK	250	1.6	H	41.83	70.00	60.46	74	13.54
5364.8	13.78	Ave.	250	1.6	H	41.83	55.61	46.07	54	7.93
10380	49.02	PK	346	2.3	H	16.34	65.36	55.82	74	18.18
10380	34.81	Ave.	346	2.3	H	16.34	51.15	41.61	54	12.39
5230MHz										
5230	77.26	PK	46	2.4	H	41.8	119.06	109.52	/	/
5230	66.99	Ave.	46	2.4	H	41.8	108.79	99.25	/	/
5230	76.97	PK	235	1.7	V	41.8	118.77	109.23	/	/
5230	66.68	Ave.	235	1.7	V	41.8	108.48	98.94	/	/
5123.17	28.49	PK	214	1.8	H	41.8	70.29	60.75	74	13.25
5123.17	14.14	Ave.	214	1.8	H	41.8	55.94	46.40	54	7.60
5377.55	28.93	PK	343	2.4	H	41.83	70.76	61.22	74	12.78
5377.55	14.30	Ave.	343	2.4	H	41.83	56.13	46.59	54	7.41
10460	48.52	PK	242	1.3	H	17.6	66.12	56.58	74	17.42
10460	34.96	Ave.	242	1.3	H	17.6	52.56	43.02	54	10.98

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11ac20										
5180MHz										
5180	80.38	PK	103	1.5	H	41.80	122.18	112.64	/	/
5180	70.34	Ave.	103	1.5	H	41.80	112.14	102.60	/	/
5180	80.04	PK	226	2.0	V	41.80	121.84	112.30	/	/
5180	70.05	Ave.	226	2.0	V	41.80	111.85	102.31	/	/
5149.09	29.78	PK	7	1.2	H	41.80	71.58	62.04	74	11.96
5149.09	14.62	Ave.	7	1.2	H	41.80	56.42	46.88	54	7.12
5420.19	28.14	PK	328	2.4	H	41.83	69.97	60.43	74	13.57
5420.19	14.47	Ave.	328	2.4	H	41.83	56.30	46.76	54	7.24
10360	48.33	PK	67	2.3	H	16.34	64.67	55.13	74	18.87
10360	34.16	Ave.	67	2.3	H	16.34	50.50	40.96	54	13.04
5200MHz										
5200	81.10	PK	156	1.9	H	41.8	122.90	113.36	/	/
5200	70.82	Ave.	156	1.9	H	41.8	112.62	103.08	/	/
5200	80.32	PK	6	1.2	V	41.8	122.12	112.58	/	/
5200	70.11	Ave.	6	1.2	V	41.8	111.91	102.37	/	/
5132.85	28.17	PK	318	1.4	H	41.8	69.97	60.43	74	13.57
5132.85	13.80	Ave.	318	1.4	H	41.8	55.60	46.06	54	7.94
5443.46	28.12	PK	32	2.0	H	41.83	69.95	60.41	74	13.59
5443.46	13.79	Ave.	32	2.0	H	41.83	55.62	46.08	54	7.92
10400	48.69	PK	183	1.9	H	16.34	65.03	55.49	74	18.51
10400	34.86	Ave.	183	1.9	H	16.34	51.20	41.66	54	12.34
5240MHz										
5240	80.52	PK	304	1.7	H	41.8	122.32	112.78	/	/
5240	70.38	Ave.	304	1.7	H	41.8	112.18	102.64	/	/
5240	80.03	PK	173	2.1	V	41.8	121.83	112.29	/	/
5240	69.91	Ave.	173	2.1	V	41.8	111.71	102.17	/	/
5137.67	28.78	PK	15	2.2	H	41.8	70.58	61.04	74	12.96
5137.67	13.78	Ave.	15	2.2	H	41.8	55.58	46.04	54	7.96
5362.78	27.71	PK	344	1.1	H	41.83	69.54	60.00	74	14.00
5362.78	13.76	Ave.	344	1.1	H	41.83	55.59	46.05	54	7.95
10480	48.93	PK	298	1.5	H	17.24	66.17	56.63	74	17.37
10480	36.11	Ave.	298	1.5	H	17.24	53.35	43.81	54	10.19

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11ac40										
5190MHz										
5190	76.50	PK	130	2.0	H	41.8	118.30	108.76	/	/
5190	65.91	Ave.	130	2.0	H	41.8	107.71	98.17	/	/
5190	76.49	PK	201	1.5	V	41.8	118.29	108.75	/	/
5190	66.08	Ave.	201	1.5	V	41.8	107.88	98.34	/	/
5149.21	35.81	PK	51	2.0	H	41.8	77.61	68.07	74	5.93
5149.21	19.73	Ave.	51	2.0	H	41.8	61.53	51.99	54	2.01
5385.05	28.31	PK	96	2.2	H	41.83	70.14	60.60	74	13.4
5385.05	14.42	Ave.	96	2.2	H	41.83	56.25	46.71	54	7.29
10380	49.09	PK	43	1.4	H	16.7	65.79	56.25	74	17.75
10380	34.48	Ave.	43	1.4	H	16.7	51.18	41.64	54	12.36
5230MHz										
5230	76.52	PK	166	2.4	H	41.8	118.32	108.78	/	/
5230	65.16	Ave.	166	2.4	H	41.8	106.96	97.42	/	/
5230	76.26	PK	57	1.0	V	41.8	118.06	108.52	/	/
5230	64.72	Ave.	57	1.0	V	41.8	106.52	96.98	/	/
5132.85	28.28	PK	287	1.3	H	41.8	70.08	60.54	74	13.46
5132.85	14.21	Ave.	287	1.3	H	41.8	56.01	46.47	54	7.53
5364.93	28.14	PK	351	2.4	H	41.83	69.97	60.43	74	13.57
5364.93	14.27	Ave.	351	2.4	H	41.83	56.10	46.56	54	7.44
10460	50.09	PK	238	2.0	H	17.6	67.69	58.15	74	15.85
10460	35.26	Ave.	238	2.0	H	17.6	52.86	43.32	54	10.68
802.11ac80										
5210 MHz										
5210	76.38	PK	197	2.1	H	41.8	118.18	108.64	/	/
5210	64.55	Ave.	197	2.1	H	41.8	106.35	96.81	/	/
5210	75.25	PK	228	1.5	V	41.8	117.05	107.51	/	/
5210	64.00	Ave.	228	1.5	V	41.8	105.80	96.26	/	/
5149.82	38.29	PK	237	2.0	H	41.8	80.09	70.55	74	3.45
5149.82	20.60	Ave.	237	2.0	H	41.8	62.40	52.86	54	1.14
5366.41	27.56	PK	9	1.9	H	41.83	69.39	59.85	74	14.15
5366.41	14.27	Ave.	9	1.9	H	41.83	56.10	46.56	54	7.44
10420	49.32	PK	332	1.2	H	16.34	65.66	56.12	74	17.88
10420	35.00	Ave.	332	1.2	H	16.34	51.34	41.80	54	12.20

5250-5350 MHz & 5470-5725 MHz:

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m) @1m	Corrected Amplitude (dBµV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBµV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBµV/m)	Margin (dB)
802.11a										
5250 MHz ~ 5350 MHz										
5260 MHz										
5260.00	80.68	PK	74	1.8	H	42.00	122.68	113.14	/	/
5260.00	71.14	Ave.	74	1.8	H	42.00	113.14	103.60	/	/
5260.00	80.61	PK	199	1.3	V	42.00	122.61	113.07	/	/
5260.00	70.8	Ave.	199	1.3	V	42.00	112.8	103.26	/	/
5126.85	27.62	PK	293	1.3	H	41.80	69.42	59.88	74	14.12
5126.85	13.69	Ave.	293	1.3	H	41.80	55.49	45.95	54	8.05
5397.29	28.25	PK	213	1.2	H	41.83	70.08	60.54	74	13.46
5397.29	14.28	Ave.	213	1.2	H	41.83	56.11	46.57	54	7.43
10520.00	49.44	PK	20	1.3	H	17.24	66.68	57.14	74	16.86
10520.00	35.23	Ave.	20	1.3	H	17.24	52.47	42.93	54	11.07
5280 MHz										
5280.00	81.72	PK	216	1.9	H	42.00	123.72	114.18	/	/
5280.00	71.74	Ave.	216	1.9	H	42.00	113.74	104.20	/	/
5280.00	81.52	PK	58	2.3	V	42.00	123.52	113.98	/	/
5280.00	71.26	Ave.	58	2.3	V	42.00	113.26	103.72	/	/
10560.00	49.28	PK	100	2.2	H	17.67	66.95	57.41	74	16.59
10560.00	35.26	Ave.	100	2.2	H	17.67	52.93	43.39	54	10.61
5320MHz										
5320.00	81.67	PK	349	2.1	H	42.00	123.67	114.13	/	/
5320.00	71.75	Ave.	349	2.1	H	42.00	113.75	104.21	/	/
5320.00	81.06	PK	330	2.1	V	42.00	123.06	113.52	/	/
5320.00	70.99	Ave.	330	2.1	V	42.00	112.99	103.45	/	/
5119.83	27.27	PK	96	1.9	H	41.80	69.07	59.53	74	14.47
5119.83	13.57	Ave.	96	1.9	H	41.80	55.37	45.83	54	8.17
5377.55	28.89	PK	187	2.4	H	41.83	70.72	61.18	74	12.82
5377.55	14.25	Ave.	187	2.4	H	41.83	56.08	46.54	54	7.46
10640.00	48.06	PK	30	1.4	H	17.92	65.98	56.44	74	17.56
10640.00	34.82	Ave.	30	1.4	H	17.92	52.74	43.20	54	10.80

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
5470 MHz ~ 5725 MHz										
5500 MHz										
5500.00	77.94	PK	300	1.3	H	42.01	119.95	110.41	/	/
5500.00	67.67	Ave.	300	1.3	H	42.01	109.68	100.14	/	/
5500.00	78.44	PK	357	1.8	V	42.01	120.45	110.91	/	/
5500.00	68.06	Ave.	357	1.8	V	42.01	110.07	100.53	/	/
5365.12	28.98	PK	92	1.1	V	41.83	70.81	61.27	74	12.73
5365.12	14.29	Ave.	92	1.1	V	41.83	56.12	46.58	54	7.42
5456.31	28.18	PK	328	1.9	V	42.01	70.19	60.65	74	13.35
5456.31	14.27	Ave.	328	1.9	V	42.01	56.28	46.74	54	7.26
11000.00	48.04	PK	153	1.5	V	17.84	65.88	56.34	74	17.66
11000.00	35.03	Ave.	153	1.5	V	17.84	52.87	43.33	54	10.67
5600MHz										
5600.00	77.20	PK	312	1.2	H	42.07	119.27	109.73	/	/
5600.00	67.15	AV	312	1.2	H	42.07	109.22	99.68	/	/
5600.00	77.93	PK	288	1.5	V	42.07	120	110.46	/	/
5600.00	67.98	AV	288	1.5	V	42.07	110.05	100.51	/	/
11200.00	48.03	PK	213	1.6	V	18.60	66.63	57.09	74	16.91
11200.00	35.00	AV	213	1.6	V	18.60	53.6	44.06	54	9.94
5700MHz										
5700.00	78.23	PK	232	1.6	H	42.15	120.38	110.84	/	/
5700.00	68.01	Ave.	232	1.6	H	42.15	110.16	100.62	/	/
5700.00	78.63	PK	193	1.6	V	42.15	120.78	111.24	/	/
5700.00	68.72	Ave.	193	1.6	V	42.15	110.87	101.33	/	/
5386.18	28.29	PK	150	2.3	V	41.83	70.12	60.58	74	13.42
5386.18	14.27	Ave.	150	2.3	V	41.83	56.1	46.56	54	7.44
5725.0	37.68	PK	50	1.3	H	42.15	79.83	70.29	74	3.71
5725.0	15.95	Ave.	50	1.3	H	42.15	58.1	48.56	54	5.44
11400.00	48.66	PK	352	1.7	V	17.66	66.32	56.78	74	17.22
11400.00	35.16	Ave.	352	1.7	V	17.66	52.82	43.28	54	10.72
5720 MHz										
5720	77.35	PK	256	1.3	H	42.15	119.50	109.96	/	/
5720	63.25	Ave.	256	1.3	H	42.15	105.40	95.86	/	/
5720	75.68	PK	314	1.2	V	42.15	117.83	108.29	/	/
5720	64.25	Ave.	314	1.2	V	42.15	106.4	96.86	/	/
11440	48.66	PK	186	1.3	H	17.66	66.32	56.78	74	17.22
11440	35.68	Ave.	186	1.3	H	17.66	53.34	43.8	54	10.2

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11n20										
5250 MHz ~ 5350 MHz										
5260MHz										
5260.00	80.14	PK	342	1.6	H	42.00	122.14	112.60	/	/
5260.00	69.96	Ave.	342	1.6	H	42.00	111.96	102.42	/	/
5260.00	79.57	PK	26	1.7	V	42.00	121.57	112.03	/	/
5260.00	69.38	Ave.	26	1.7	V	42.00	111.38	101.84	/	/
5120.14	28.35	PK	298	2.0	H	41.80	70.15	60.61	74	13.39
5120.14	13.59	Ave.	298	2.0	H	41.80	55.39	45.85	54	8.15
5380.98	28.45	PK	19	1.8	H	41.83	70.28	60.74	74	13.26
5380.98	14.24	Ave.	19	1.8	H	41.83	56.07	46.53	54	7.47
10520.00	48.50	PK	201	2.0	H	17.24	65.74	56.20	74	17.80
10520.00	34.91	Ave.	201	2.0	H	17.24	52.15	42.61	54	11.39
5280MHz										
5280.00	80.22	PK	294	1.2	H	42.00	122.22	112.68	/	/
5280.00	70.28	Ave.	294	1.2	H	42.00	112.28	102.74	/	/
5280.00	79.82	PK	296	1.4	V	42.00	121.82	112.28	/	/
5280.00	69.71	Ave.	296	1.4	V	42.00	111.71	102.17	/	/
10560.00	48.46	PK	67	2.5	H	17.67	66.13	56.59	74	17.41
10560.00	35.17	Ave.	67	2.5	H	17.67	52.84	43.30	54	10.70
5320MHz										
5320.00	79.88	PK	112	2.2	H	42.00	121.88	112.34	/	/
5320.00	69.95	Ave.	112	2.2	H	42.00	111.95	102.41	/	/
5320.00	79.33	PK	196	1.0	V	42.00	121.33	111.79	/	/
5320.00	68.85	Ave.	196	1.0	V	42.00	110.85	101.31	/	/
5142.08	27.16	PK	28	2.3	H	41.80	68.96	59.42	74	14.58
5142.08	13.58	Ave.	28	2.3	H	41.80	55.38	45.84	54	8.16
5376.17	28.90	PK	324	1.0	H	41.83	70.73	61.19	74	12.81
5376.17	14.41	Ave.	324	1.0	H	41.83	56.24	46.7	54	7.30
10640.00	48.28	PK	225	1.0	H	17.67	65.95	56.41	74	17.59
10640.00	35.00	Ave.	225	1.0	H	17.67	52.67	43.13	54	10.87

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
5470 MHz ~ 5725MHz										
5500 MHz										
5500.00	77.07	PK	84	1.7	H	42.01	119.08	109.54	/	/
5500.00	66.73	Ave.	84	1.7	H	42.01	108.74	99.20	/	/
5500.00	78.02	PK	50	2.2	V	42.01	120.03	110.49	/	/
5500.00	67.75	Ave.	50	2.2	V	42.01	109.76	100.22	/	/
5443.48	28.65	PK	32	2.0	V	41.83	70.48	60.94	74	13.06
5443.48	14.24	Ave.	32	2.0	V	41.83	56.07	46.53	54	7.47
5487.62	28.90	PK	297	2.3	V	42.01	70.91	61.37	74	12.63
5487.62	14.41	Ave.	297	2.3	V	42.01	56.42	46.88	54	7.12
11000.00	47.99	PK	112	2.1	V	17.84	65.83	56.29	74	17.71
11000.00	35.01	Ave.	112	2.1	V	17.84	52.85	43.31	54	10.69
5600MHz										
5600.00	78.28	PK	209	1.4	H	42.07	120.35	110.81	/	/
5600.00	68.14	Ave.	209	1.4	H	42.07	110.21	100.67	/	/
5600.00	78.66	PK	352	1.6	V	42.07	120.73	111.19	/	/
5600.00	68.56	Ave.	352	1.6	V	42.07	110.63	101.09	/	/
11200.00	47.89	PK	212	1.9	V	18.60	66.49	56.95	74	17.05
11200.00	35.28	Ave.	212	1.9	V	18.60	53.88	44.34	54	9.66
5700MHz										
5700.00	77.91	PK	242	2.0	H	42.15	120.06	110.52	/	/
5700.00	68.29	Ave.	242	2.0	H	42.15	110.44	100.90	/	/
5700.00	78.58	PK	27	2.0	V	42.15	120.73	111.19	/	/
5700.00	68.75	Ave.	27	2.0	V	42.15	110.9	101.36	/	/
5353.52	27.56	PK	290	1.6	H	41.83	69.39	59.85	74	14.15
5353.52	14.19	Ave.	290	1.6	H	41.83	56.02	46.48	54	7.52
5725.00	38.05	PK	300	2.3	H	42.15	80.2	70.66	74	3.34
5725.00	16.24	Ave.	300	2.3	H	42.15	58.39	48.85	54	5.15
11400.00	48.30	PK	100	1.2	V	17.66	65.96	56.42	74	17.58
11400.00	35.11	Ave.	100	1.2	V	17.66	52.77	43.23	54	10.77
5720 MHz										
5720	76.35	PK	200	1.5	H	42.15	118.50	108.96	/	/
5720	64.57	Ave.	200	1.5	H	42.15	106.72	97.18	/	/
5720	76.92	PK	275	1.0	V	42.15	119.07	109.53	/	/
5720	65.62	Ave.	275	1.0	V	42.15	107.77	98.23	/	/
11440	49.35	PK	36	1.2	V	17.66	67.01	57.47	74	16.53
11440	36.12	Ave.	36	1.2	V	17.66	53.78	44.24	54	9.76

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11ac20										
5250 MHz ~ 5350 MHz										
5260MHz										
5260.00	80.23	PK	328	1.6	H	42.00	122.23	112.69	/	/
5260.00	69.96	Ave.	328	1.6	H	42.00	111.96	102.42	/	/
5260.00	79.67	PK	216	2.2	V	42.00	121.67	112.13	/	/
5260.00	69.59	Ave.	216	2.2	V	42.00	111.59	102.05	/	/
5128.75	27.15	PK	200	1.0	V	41.80	68.95	59.41	74	14.59
5128.75	14.24	Ave.	200	1.0	V	41.80	56.04	46.5	54	7.50
5380.12	28.51	PK	54	1.7	V	41.83	70.34	60.8	74	13.20
5380.12	14.25	Ave.	54	1.7	V	41.83	56.08	46.54	54	7.46
10520.00	48.06	PK	202	1.6	V	17.24	65.3	55.76	74	18.24
10520.00	34.96	Ave.	202	1.6	V	17.24	52.2	42.66	54	11.34
5280MHz										
5280.00	80.40	PK	100	1.2	H	42.00	122.4	112.86	/	/
5280.00	70.32	Ave.	100	1.2	H	42.00	112.32	102.78	/	/
5280.00	79.67	PK	74	1.0	V	42.00	121.67	112.13	/	/
5280.00	69.59	Ave.	74	1.0	V	42.00	111.59	102.05	/	/
10560.00	48.15	PK	357	2.1	H	17.67	65.82	56.28	74	17.72
10560.00	35.01	Ave.	357	2.1	H	17.67	52.68	43.14	54	10.86
5320MHz										
5320.00	80.16	PK	355	2.1	H	42.00	122.16	112.62	/	/
5320.00	70.06	Ave.	355	2.1	H	42.00	112.06	102.52	/	/
5320.00	79.77	PK	35	1.2	V	42.00	121.77	112.23	/	/
5320.00	69.66	Ave.	35	1.2	V	42.00	111.66	102.12	/	/
5135.27	27.90	PK	83	2.3	H	41.80	69.7	60.16	74	13.84
5135.27	14.28	Ave.	83	2.3	H	41.80	56.08	46.54	54	7.46
5389.81	28.39	PK	263	1.2	H	41.83	70.22	60.68	74	13.32
5389.81	14.27	Ave.	263	1.2	H	41.83	56.1	46.56	54	7.44
10640.00	47.64	PK	55	1.8	H	17.67	65.31	55.77	74	18.23
10640.00	34.96	Ave.	55	1.8	H	17.67	52.63	43.09	54	10.91

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
5470 MHz ~5725 MHz										
5500 MHz										
5500.00	77.39	PK	179	1.3	H	42.01	119.4	109.86	/	/
5500.00	67.21	Ave.	179	1.3	H	42.01	109.22	99.68	/	/
5500.00	78.06	PK	256	1.2	V	42.01	120.07	110.53	/	/
5500.00	67.95	Ave.	256	1.2	V	42.01	109.96	100.42	/	/
5378.85	28.75	PK	250	1.1	H	41.83	70.58	61.04	74	12.96
5378.85	14.25	Ave.	250	1.1	H	41.83	56.08	46.54	54	7.46
5399.27	28.66	PK	293	1.5	H	41.83	70.49	60.95	74	13.05
5399.27	14.3	Ave.	293	1.5	H	41.83	56.13	46.59	54	7.41
11000.00	48.04	PK	84	1.9	V	17.84	65.88	56.34	74	17.66
11000.00	34.95	Ave.	84	1.9	V	17.84	52.79	43.25	54	10.75
5600MHz										
5600.00	78.06	PK	353	2.4	H	42.07	120.13	110.59	/	/
5600.00	67.67	Ave.	353	2.4	H	42.07	109.74	100.20	/	/
5600.00	78.99	PK	171	1.9	V	42.07	121.06	111.52	/	/
5600.00	69.16	Ave.	171	1.9	V	42.07	111.23	101.69	/	/
11200.00	48.23	PK	116	1.3	V	18.60	66.83	57.29	74	16.71
11200.00	34.86	Ave.	116	1.3	V	18.60	53.46	43.92	54	10.08
5700 MHz										
5700	76.98	PK	0	1.3	H	42.15	119.13	109.59	/	/
5700	66.58	Ave.	0	1.3	H	42.15	108.73	99.19	/	/
5700	76.25	PK	176	1.2	V	42.15	118.4	108.86	/	/
5700	65.34	Ave.	176	1.2	V	42.15	107.49	97.95	/	/
5725	38.36	PK	360	1.3	H	42.15	80.51	70.97	74	3.03
5725	15.76	Ave.	360	1.3	H	42.15	57.91	48.37	54	5.63
11400	48.52	PK	278	1.3	V	17.66	66.18	56.64	74	17.36
11400	36.21	Ave.	278	1.3	V	17.66	53.87	44.33	54	9.67
5720MHz										
5720.00	78.10	PK	26	1.6	H	42.15	120.25	110.71	/	/
5720.00	68.01	Ave.	26	1.6	H	42.15	110.16	100.62	/	/
5720.00	78.78	PK	76	2.1	V	42.15	120.93	111.39	/	/
5720.00	68.66	Ave.	76	2.1	V	42.15	110.81	101.27	/	/
11440.00	48.28	PK	42	2.2	V	17.66	65.94	56.40	74	17.60
11440.00	34.97	Ave.	42	2.2	V	17.66	52.63	43.09	54	10.91

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11n40										
5250 MHz ~ 5350 MHz										
5270MHz										
5270.00	78.05	PK	268	2.1	H	42.00	120.05	110.51	/	/
5270.00	68.00	Ave.	268	2.1	H	42.00	110	100.46	/	/
5270.00	77.65	PK	222	2.2	V	42.00	119.65	110.11	/	/
5270.00	67.39	Ave.	222	2.2	V	42.00	109.39	99.85	/	/
5112.52	27.85	PK	297	1.2	H	41.80	69.65	60.11	74	13.89
5112.52	13.72	Ave.	297	1.2	H	41.80	55.52	45.98	54	8.02
5440.60	27.88	PK	195	1.7	H	41.83	69.71	60.17	74	13.83
5440.60	14.27	Ave.	195	1.7	H	41.83	56.1	46.56	54	7.44
10540.00	48.23	PK	130	1.1	H	17.24	65.47	55.93	74	18.07
10540.00	35.3	Ave.	130	1.1	H	17.24	52.54	43.00	54	11.00
5310MHz										
5310.00	77.99	PK	309	1.2	H	42.00	119.99	110.45	/	/
5310.00	67.77	Ave.	309	1.2	H	42.00	109.77	100.23	/	/
5310.00	77.74	PK	265	2.2	V	42.00	119.74	110.20	/	/
5310.00	67.28	Ave.	265	2.2	V	42.00	109.28	99.74	/	/
5123.26	27.6	PK	186	1.4	H	41.80	69.4	59.86	74	14.14
5123.26	13.72	Ave.	186	1.4	H	41.80	55.52	45.98	54	8.02
5378.65	28.36	PK	310	1.8	H	41.83	70.19	60.65	74	13.35
5378.65	14.32	Ave.	310	1.8	H	41.83	56.15	46.61	54	7.39
10620.00	48.79	PK	217	2.3	H	17.67	66.46	56.92	74	17.08
10620.00	35.64	Ave.	217	2.3	H	17.67	53.31	43.77	54	10.23
5470 MHz ~ 5725 MHz										
5510MHz										
5510.00	77.79	PK	95	1.7	H	42.07	119.86	110.32	/	/
5510.00	67.46	Ave.	95	1.7	H	42.07	109.53	99.99	/	/
5510.00	77.68	PK	49	1.6	V	42.07	119.75	110.21	/	/
5510.00	67.03	Ave.	49	1.6	V	42.07	109.1	99.56	/	/
5426.49	28.46	PK	291	1.0	H	41.83	70.29	60.75	74	13.25
5426.49	14.28	Ave.	291	1.0	H	41.83	56.11	46.57	54	7.43
5453.82	27.42	PK	129	2.0	H	42.01	69.43	59.89	74	14.11
5453.82	14.27	Ave.	129	2.0	H	42.01	56.28	46.74	54	7.26
11020.00	48.51	PK	44	1.4	H	17.84	66.35	56.81	74	17.19
11020.00	35.68	Ave.	44	1.4	H	17.84	53.52	43.98	54	10.02
5590MHz										
5590.00	78.49	PK	159	1.2	H	42.15	120.64	111.10	/	/
5590.00	67.8	Ave.	159	1.2	H	42.15	109.95	100.41	/	/
5590.00	77.95	PK	54	1.0	V	42.15	120.1	110.56	/	/
5590.00	67.38	Ave.	54	1.0	V	42.15	109.53	99.99	/	/
5452.28	28.05	PK	48	1.6	H	42.01	70.06	60.52	74	13.48
5452.28	14.29	Ave.	48	1.6	H	42.01	56.3	46.76	54	7.24
5425.17	28.58	PK	322	1.8	H	41.83	70.41	60.87	74	13.13
5425.17	14.27	Ave.	322	1.8	H	41.83	56.1	46.56	54	7.44
11180.00	48.03	PK	160	1.1	H	18.60	66.63	57.09	74	16.91
11180.00	35.21	Ave.	160	1.1	H	18.60	53.81	44.27	54	9.73

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
5710MHz										
5710.00	77.10	PK	125	1.2	H	42.15	119.25	109.71	/	/
5710.00	65.36	Ave.	125	1.2	H	42.15	107.51	97.97	/	/
5710.00	77.02	PK	136	1.3	V	42.15	119.17	109.63	/	/
5710.00	66.62	Ave.	136	1.3	V	42.15	108.77	99.23	/	/
5453.25	30.21	PK	78	1.5	H	42.01	72.22	62.68	74	11.32
5453.25	15.12	Ave.	78	1.5	H	42.01	57.13	47.59	54	6.41
11420.00	49.62	PK	360	1.4	H	18.60	68.22	58.68	74	15.32
11420.00	35.56	Ave.	360	1.4	H	18.60	54.16	44.62	54	9.38
802.11ac40										
5250 MHz ~ 5350 MHz										
5270MHz										
5270.00	78.28	PK	318	1.2	H	42.00	120.28	110.74	/	/
5270.00	67.77	Ave.	318	1.2	H	42.00	109.77	100.23	/	/
5270.00	76.80	PK	224	1.7	V	42.00	118.8	109.26	/	/
5270.00	66.64	Ave.	224	1.7	V	42.00	108.64	99.10	/	/
5142.35	28.13	PK	225	1.4	H	41.80	69.93	60.39	74	13.61
5142.35	13.72	Ave.	225	1.4	H	41.80	55.52	45.98	54	8.02
5355.73	28.37	PK	339	1.4	H	41.83	70.2	60.66	74	13.34
5355.73	14.28	Ave.	339	1.4	H	41.83	56.11	46.57	54	7.43
10540.00	48.48	PK	171	1.9	H	17.24	65.72	56.18	74	17.82
10540.00	35.38	Ave.	171	1.9	H	17.24	52.62	43.08	54	10.92
5310MHz										
5310.00	78.48	PK	343	1.9	H	42.00	120.48	110.94	/	/
5310.00	68.24	Ave.	343	1.9	H	42.00	110.24	100.70	/	/
5310.00	77.96	PK	148	2.0	V	42.00	119.96	110.42	/	/
5310.00	67.74	Ave.	148	2.0	V	42.00	109.74	100.20	/	/
5128.69	28.13	PK	6	2.0	H	41.80	69.93	60.39	74	13.61
5128.69	13.72	Ave.	6	2.0	H	41.80	55.52	45.98	54	8.02
5350.44	29.60	PK	301	1.7	H	41.83	71.43	61.89	74	12.11
5350.44	15.25	Ave.	301	1.7	H	41.83	57.08	47.54	54	6.46
10620.00	48.18	PK	155	1.8	H	17.67	65.85	56.31	74	17.69
10620.00	35.41	Ave.	155	1.8	H	17.67	53.08	43.54	54	10.46

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
5470 MHz ~ 5725 MHz										
5510MHz										
5510.00	77.88	PK	230	1.8	H	42.07	119.95	110.41	/	/
5510.00	67.70	Ave.	230	1.8	H	42.07	109.77	100.23	/	/
5510.00	77.48	PK	145	2.3	V	42.07	119.55	110.01	/	/
5510.00	67.02	Ave.	145	2.3	V	42.07	109.09	99.55	/	/
5412.60	27.63	PK	39	2.3	H	41.83	69.46	59.92	74	14.08
5412.60	14.32	Ave.	39	2.3	H	41.83	56.15	46.61	54	7.39
5452.50	28.90	PK	247	1.4	H	42.01	70.91	61.37	74	12.63
5452.50	14.27	Ave.	247	1.4	H	42.01	56.28	46.74	54	7.26
11020.00	48.23	PK	143	1.8	H	17.84	66.07	56.53	74	17.47
11020.00	35.06	Ave.	143	1.8	H	17.84	52.9	43.36	54	10.64
5590MHz										
5590.00	77.52	PK	107	1.2	H	42.15	119.67	110.13	/	/
5590.00	66.74	Ave.	107	1.2	H	42.15	108.89	99.35	/	/
5590.00	76.77	PK	321	1.7	V	42.15	118.92	109.38	/	/
5590.00	66.64	Ave.	321	1.7	V	42.15	108.79	99.25	/	/
5450.15	28.28	PK	28	1.6	H	42.01	70.29	60.75	74	13.25
5450.15	14.27	Ave.	28	1.6	H	42.01	56.28	46.74	54	7.26
5448.68	28.46	PK	294	2.1	H	41.83	70.29	60.75	74	13.25
5448.68	14.31	Ave.	294	2.1	H	41.83	56.14	46.6	54	7.40
11180.00	48.48	PK	236	2.5	H	18.60	67.08	57.54	74	16.46
11180.00	34.95	Ave.	236	2.5	H	18.60	53.55	44.01	54	9.99
5670MHz										
5670	75.89	PK	100	1.3	H	42.15	118.04	108.5	/	/
5670	64.35	Ave.	100	1.3	H	42.15	106.5	96.96	/	/
5670	76.25	PK	150	1.3	V	42.15	118.4	108.86	/	/
5670	63.35	Ave.	150	1.3	V	42.15	105.5	95.96	/	/
5725	38.12	PK	136	1.4	H	42.15	80.27	70.73	74	3.27
5725	15.24	Ave.	136	1.4	H	42.15	57.39	47.85	54	6.15
11340	47.69	PK	144	1.5	V	18.6	66.29	56.75	74	17.25
11340	37.15	Ave.	144	1.5	V	18.6	55.75	46.21	54	7.79
5710 MHz										
5710.00	77.10	PK	75	1.0	H	42.15	120.36	110.82	/	/
5710.00	65.36	Ave.	75	1.0	H	42.15	108.47	98.93	/	/
5710.00	77.02	PK	48	1.2	V	42.15	120.39	110.85	/	/
5710.00	66.62	Ave.	48	1.2	V	42.15	109.49	99.95	/	/
5456.00	30.21	PK	168	1.1	H	42.01	73.26	63.72	74	10.28
5456.00	15.12	Ave.	168	1.1	H	42.01	56.69	47.15	54	6.85
11420.00	49.62	PK	195	1.3	H	18.60	66.93	57.39	74	16.61
11420.00	35.56	Ave.	195	1.3	H	18.60	53.28	43.74	54	10.26

Frequency (MHz)	Receiver		Turntable	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @1m	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @1m	PK/QP/Ave.	Degree	Height (m)	Polar (H / V)				Limit (dBμV/m)	Margin (dB)
802.11ac80										
5250 MHz ~ 5350 MHz										
5290MHz										
5290.00	76.75	PK	56	1.5	H	42.00	118.75	109.21	/	/
5290.00	65.16	Ave.	56	1.5	H	42.00	107.16	97.62	/	/
5290.00	76.33	PK	248	1.6	V	42.00	118.33	108.79	/	/
5290.00	64.64	Ave.	248	1.6	V	42.00	106.64	97.10	/	/
5123.44	27.55	PK	227	1.3	H	41.80	69.35	59.81	74	14.19
5123.44	13.78	Ave.	227	1.3	H	41.80	55.58	46.04	54	7.96
5354.84	37.03	PK	164	1.6	H	41.83	78.86	69.32	74	4.68
5354.84	20.53	Ave.	164	1.6	H	41.83	62.36	52.82	54	1.18
10580.00	48.71	PK	312	2.1	H	17.67	66.38	56.84	74	17.16
10580.00	35.77	Ave.	312	2.1	H	17.67	53.44	43.90	54	10.10
5470 MHz ~ 5725 MHz										
5530MHz										
5530.00	77.00	PK	91	1.0	H	42.01	119.01	109.47	/	/
5530.00	65.38	Ave.	91	1.0	H	42.01	107.39	97.85	/	/
5530.00	76.64	PK	220	1.1	V	42.01	118.65	109.11	/	/
5530.00	64.97	Ave.	220	1.1	V	42.01	106.98	97.44	/	/
5435.31	28.16	PK	146	1.4	H	41.83	69.99	60.45	74	13.55
5435.31	14.29	Ave.	146	1.4	H	41.83	56.12	46.58	54	7.42
5456.25	28.51	PK	79	1.7	H	42.01	70.52	60.98	74	13.02
5456.25	14.38	Ave.	79	1.7	H	42.01	56.39	46.85	54	7.15
11060.00	48.25	PK	124	2.2	H	17.84	66.09	56.55	74	17.45
11060.00	35.32	Ave.	124	2.2	H	17.84	53.16	43.62	54	10.38
5610MHz										
5610	78.67	PK	360	1.0	H	42.07	120.74	111.2	/	/
5610	64.53	Ave.	360	1.0	H	42.07	106.6	97.06	/	/
5610	77.68	PK	124	1.2	V	42.07	119.75	110.21	/	/
5610	62.35	Ave.	124	1.2	V	42.07	104.42	94.88	/	/
5455.34	32.16	PK	175	1.1	H	42.01	74.17	64.63	74	9.37
5455.34	15.24	Ave.	175	1.1	H	42.01	57.25	47.71	54	6.29
11220	49.35	PK	48	1.1	H	18.60	67.95	58.41	74	15.59
11220	34.25	Ave.	48	1.1	H	18.60	52.85	43.31	54	10.69
5690MHz										
5690	76.34	PK	25	1.2	H	42.15	118.49	108.95	/	/
5690	63.12	Ave.	25	1.2	H	42.15	105.27	95.73	/	/
5690	76.89	PK	163	1.5	V	42.15	119.04	109.5	/	/
5690	60.15	Ave.	163	1.5	V	42.15	102.3	92.76	/	/
5456.2	33.26	PK	245	1.3	H	42.01	75.27	65.73	74	8.27
5456.2	16.11	Ave.	245	1.3	H	42.01	58.12	48.58	54	5.42
11380	48.75	PK	186	1.1	H	17.66	66.41	56.87	74	17.13
11380	33.64	Ave.	186	1.1	H	17.66	51.3	41.76	54	12.24

5725-5850 MHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5745.00	69.24	PK	7	1.8	H	42.15	111.39	/	/
5745.00	58.73	Ave.	7	1.8	H	42.15	100.88	/	/
5745.00	68.86	PK	195	1.2	V	42.15	111.01	/	/
5745.00	57.98	Ave.	195	1.2	V	42.15	100.13	/	/
5723.61	32.12	PK	254	2.4	H	42.15	74.27	119.03	44.76
5717.46	32.42	PK	254	2.4	H	42.15	74.57	110.09	35.52
5692.36	28.62	PK	85	1.7	H	42.15	70.77	99.55	28.78
5851.13	27.02	PK	85	1.7	H	42.55	69.57	119.62	50.05
11490.00	38.97	PK	240	1.1	H	17.56	56.53	74	17.47
11490.00	25.76	Ave.	240	1.1	H	17.56	43.32	54	10.68
5785 MHz									
5785.00	68.79	PK	136	1.8	H	42.08	110.87	/	/
5785.00	57.92	Ave.	136	1.8	H	42.08	100.00	/	/
5785.00	68.10	PK	225	1.8	V	42.08	110.18	/	/
5785.00	57.21	Ave.	225	1.8	V	42.08	99.29	/	/
11570.00	38.86	PK	168	2.2	H	18.32	57.18	74	16.82
11570.00	25.76	Ave.	168	2.2	H	18.32	44.08	54	9.92
5825 MHz									
5825.00	67.69	PK	153	1.7	H	42.08	109.77	/	/
5825.00	56.84	Ave.	153	1.7	H	42.08	98.92	/	/
5825.00	67.10	PK	68	2.3	V	42.08	109.18	/	/
5825.00	56.21	Ave.	68	2.3	V	42.08	98.29	/	/
5852.69	30.17	PK	8	2.1	H	42.55	72.72	116.07	43.35
5867.12	29.24	PK	8	2.1	H	42.55	71.79	107.41	35.62
5880.13	27.61	PK	157	2.3	H	42.55	70.16	101.40	31.24
5722.15	28.06	PK	157	2.3	H	42.15	70.21	115.70	45.49
11650.00	38.41	PK	76	1.7	H	18.32	56.73	74	17.27
11650.00	25.97	Ave.	76	1.7	H	18.32	44.29	54	9.71

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745 MHz									
5745.00	69.24	PK	257	1.3	H	42.15	111.39	/	/
5745.00	58.16	Ave.	257	1.3	H	42.15	100.31	/	/
5745.00	68.74	PK	151	1.6	V	42.15	110.89	/	/
5745.00	57.23	Ave.	151	1.6	V	42.15	99.38	/	/
5722.31	34.02	PK	219	1.4	H	42.15	76.17	116.07	39.90
5718.25	31.11	PK	219	1.4	H	42.15	73.26	110.31	37.05
5689.69	29.23	PK	3	2.3	H	42.15	71.38	97.57	26.19
5853.51	29.41	PK	3	2.3	H	42.55	71.96	114.2	42.24
11490.00	39.21	PK	58	2.4	H	17.56	56.77	74	17.23
11490.00	25.84	Ave.	58	2.4	H	17.56	43.40	54	10.60
5785 MHz									
5785.00	68.94	PK	172	2.3	H	42.08	111.02	/	/
5785.00	58.13	Ave.	172	2.3	H	42.08	100.21	/	/
5785.00	68.25	PK	268	2.3	V	42.08	110.33	/	/
5785.00	57.21	Ave.	268	2.3	V	42.08	99.29	/	/
11570.00	38.94	PK	212	2.0	H	18.32	57.26	74	16.74
11570.00	25.94	Ave.	212	2.0	H	18.32	44.26	54	9.74
5825 MHz									
5825.00	68.63	PK	297	1.0	H	42.08	110.71	/	/
5825.00	67.34	Ave.	297	1.0	H	42.08	109.42	/	/
5825.00	67.69	PK	136	1.5	V	42.08	109.77	/	/
5825.00	57.12	Ave.	136	1.5	V	42.08	99.20	/	/
5851.38	29.31	PK	122	1.6	H	42.55	71.86	119.05	47.19
5859.13	28.64	PK	122	1.6	H	42.55	71.19	109.64	38.45
5879.42	27.23	PK	14	1.2	H	42.55	69.78	101.93	32.15
5724.61	28.44	PK	14	1.2	H	42.15	70.59	121.31	50.72
11650.00	38.64	PK	263	1.8	H	18.32	56.96	74	17.04
11650.00	25.84	Ave.	263	1.8	H	18.32	44.16	54	9.84

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5755 MHz									
5755.00	67.94	PK	93	1.8	H	42.08	110.02	/	/
5755.00	56.85	Ave.	93	1.8	H	42.08	98.93	/	/
5755.00	66.86	PK	128	1.3	V	42.08	108.94	/	/
5755.00	56.10	Ave.	128	1.3	V	42.08	98.18	/	/
5724.28	30.15	PK	97	1.3	H	42.15	72.30	120.56	48.26
5713.56	29.42	PK	97	1.3	H	42.15	71.57	109.00	37.43
5687.32	28.10	PK	176	2.2	H	42.15	70.25	95.82	25.57
5854.23	27.13	PK	176	2.2	H	42.55	69.68	112.56	42.88
11510.00	39.64	PK	318	1.4	H	17.56	57.20	74	16.80
11510.00	26.02	Ave.	318	1.4	H	17.56	43.58	54	10.42
5795 MHz									
5795.00	67.84	PK	292	2.1	H	42.08	109.92	/	/
5795.00	57.20	Ave.	292	2.1	H	42.08	99.28	/	/
5795.00	67.42	PK	70	2.2	V	42.08	109.50	/	/
5795.00	56.16	Ave.	70	2.2	V	42.08	98.24	/	/
5852.24	30.12	PK	136	2.0	H	42.55	72.67	117.09	44.42
5863.12	28.62	PK	136	2.0	H	42.55	71.17	108.53	37.36
5883.20	27.41	PK	14	2.1	H	42.55	69.96	99.13	29.17
5721.77	27.56	PK	14	2.1	H	42.15	69.71	114.84	45.13
11590.00	38.74	PK	300	1.0	H	18.32	57.06	74	16.94
11590.00	25.68	Ave.	300	1.0	H	18.32	44.00	54	10.00

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745 MHz									
5745.00	69.12	PK	348	2.2	H	42.15	111.27	/	/
5745.00	58.49	Ave.	348	2.2	H	42.15	100.64	/	/
5745.00	68.46	PK	345	2.0	V	42.15	110.61	/	/
5745.00	57.84	Ave.	345	2.0	V	42.15	99.99	/	/
5723.69	36.12	PK	140	2.4	H	42.15	78.27	119.21	40.94
5716.17	30.15	PK	140	2.4	H	42.15	72.30	109.73	37.43
5690.33	28.21	PK	271	1.9	H	42.15	70.36	98.04	27.68
5853.26	28.10	PK	271	1.9	H	42.55	70.65	114.77	44.12
11490.00	39.10	PK	30	1.6	H	17.56	56.66	74	17.34
11490.00	25.76	Ave.	30	1.6	H	17.56	43.32	54	10.68
5785 MHz									
5785.00	67.94	PK	127	1.5	H	42.08	110.02	/	/
5785.00	56.89	Ave.	127	1.5	H	42.08	98.97	/	/
5785.00	67.10	PK	259	1.2	V	42.08	109.18	/	/
5785.00	57.09	Ave.	259	1.2	V	42.08	99.17	/	/
11570.00	39.16	PK	125	2.2	H	18.32	57.48	74	16.52
11570.00	25.63	Ave.	125	2.2	H	18.32	43.95	54	10.05
5825 MHz									
5825.00	68.10	PK	110	2.0	H	42.08	110.18	/	/
5825.00	57.64	Ave.	110	2.0	H	42.08	99.72	/	/
5825.00	67.84	PK	59	2.2	V	42.08	109.92	/	/
5825.00	57.42	Ave.	59	2.2	V	42.08	99.50	/	/
5853.34	34.62	PK	123	1.5	H	42.55	77.17	114.58	37.41
5860.74	29.42	PK	123	1.5	H	42.55	71.97	109.19	37.22
5878.49	27.21	PK	171	1.5	H	42.55	69.76	102.62	32.86
5724.27	28.03	PK	171	1.5	H	42.15	70.18	120.54	50.36
11650.00	38.97	PK	137	1.7	H	18.32	57.29	74	16.71
11650.00	25.68	Ave.	137	1.7	H	18.32	44.00	54	10.00

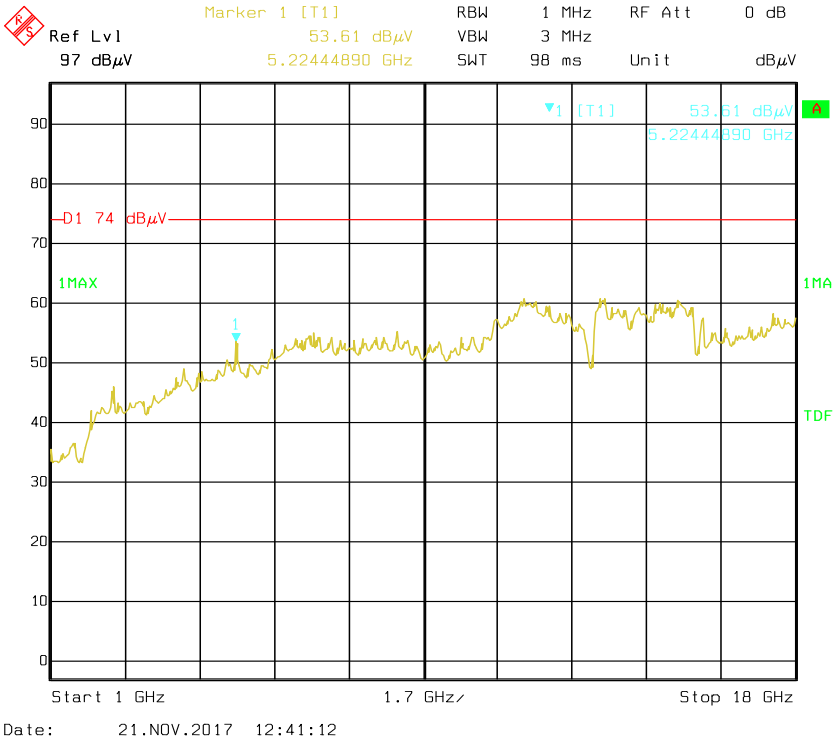
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5755 MHz									
5755.00	68.26	PK	67	2.3	H	42.08	110.34	/	/
5755.00	57.04	Ave.	67	2.3	H	42.08	99.12	/	/
5755.00	67.20	PK	58	1.9	V	42.08	109.28	/	/
5755.00	56.46	Ave.	58	1.9	V	42.08	98.54	/	/
5723.18	34.10	PK	247	2.0	H	42.15	76.25	118.05	41.80
5719.34	30.14	PK	247	2.0	H	42.15	72.29	110.62	38.33
5693.66	28.13	PK	61	2.0	H	42.15	70.28	100.51	30.23
5852.91	27.65	PK	61	2.0	H	42.55	70.20	115.57	45.37
11510.00	38.68	PK	25	1.1	H	17.56	56.24	74	17.76
11510.00	25.76	Ave.	25	1.1	H	17.56	43.32	54	10.68
5795 MHz									
5795.00	68.12	PK	137	1.1	H	42.08	110.20	/	/
5795.00	57.34	Ave.	137	1.1	H	42.08	99.42	/	/
5795.00	67.74	PK	244	1.8	V	42.08	109.82	/	/
5795.00	56.23	Ave.	244	1.8	V	42.08	98.31	/	/
5853.29	30.12	PK	237	2.3	H	42.55	72.67	114.70	42.03
5860.17	28.62	PK	237	2.3	H	42.55	71.17	109.35	38.18
5879.43	27.41	PK	349	1.2	H	42.55	69.96	101.92	31.96
5723.18	27.56	PK	349	1.2	H	42.15	69.71	118.05	48.34
11590.00	38.42	PK	222	1.5	H	18.32	56.74	74	17.26
11590.00	25.74	Ave.	222	1.5	H	18.32	44.06	54	9.94

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m) @3m	FCC Part 15.407/205/209	
	Reading (dBμV) @3m	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5775 MHz									
5775.00	67.64	PK	7	2.3	H	42.08	109.72	/	/
5775.00	56.28	Ave.	7	2.3	H	42.08	98.36	/	/
5775.00	66.21	PK	221	1.5	V	42.08	108.29	/	/
5775.00	55.84	Ave.	221	1.5	V	42.08	97.92	/	/
5724.21	32.02	PK	249	1.2	H	42.15	74.17	120.40	46.23
5711.32	29.35	PK	249	1.2	H	42.15	71.50	108.37	36.87
5693.69	28.11	PK	265	1.1	H	42.15	70.26	100.53	30.27
5852.39	27.13	PK	265	1.1	H	42.55	69.68	116.75	47.07
11550.00	38.62	PK	202	1.5	H	18.32	56.94	74	17.06
11550.00	25.41	Ave.	202	1.5	H	18.32	43.73	54	10.27

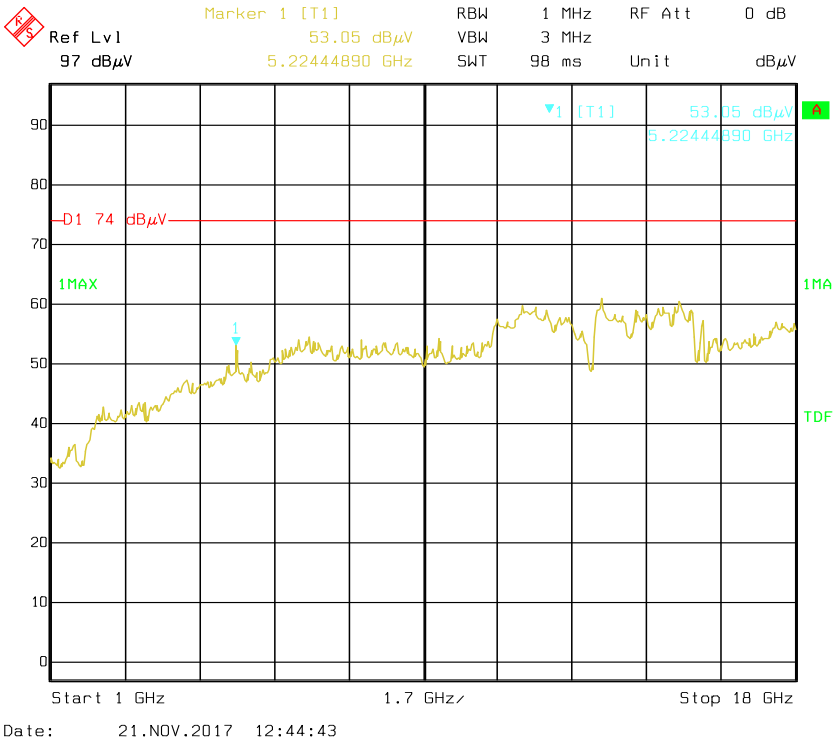
Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude
All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

Pre-scan with 802.11a 5240MHz

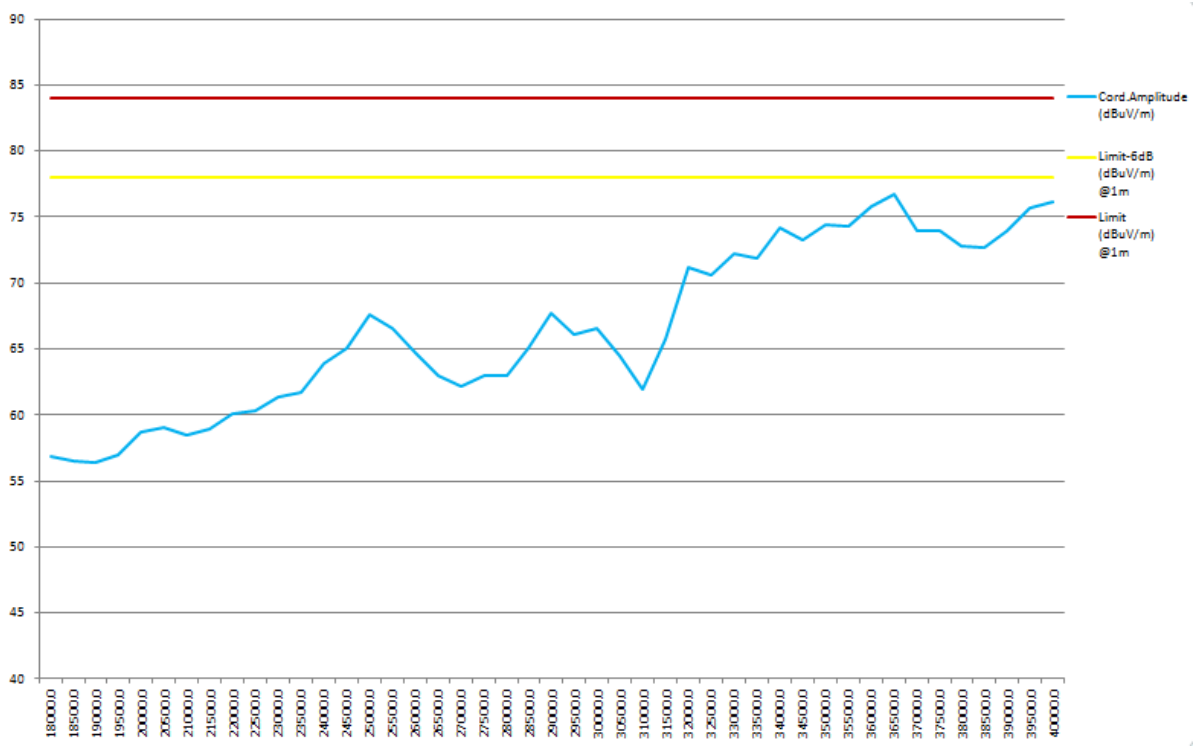
Horizontal



Vertical



System noise floor level for above 18GHz @1m



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

Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4);

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27dBm/MHz.

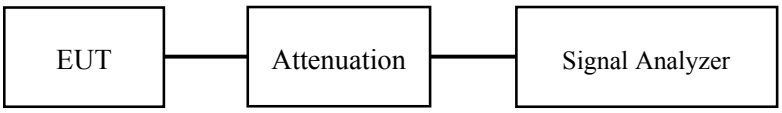
For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

For transmitters operating in the 5.725–5.825 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Test Procedure

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



Test Data

Environmental Conditions

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

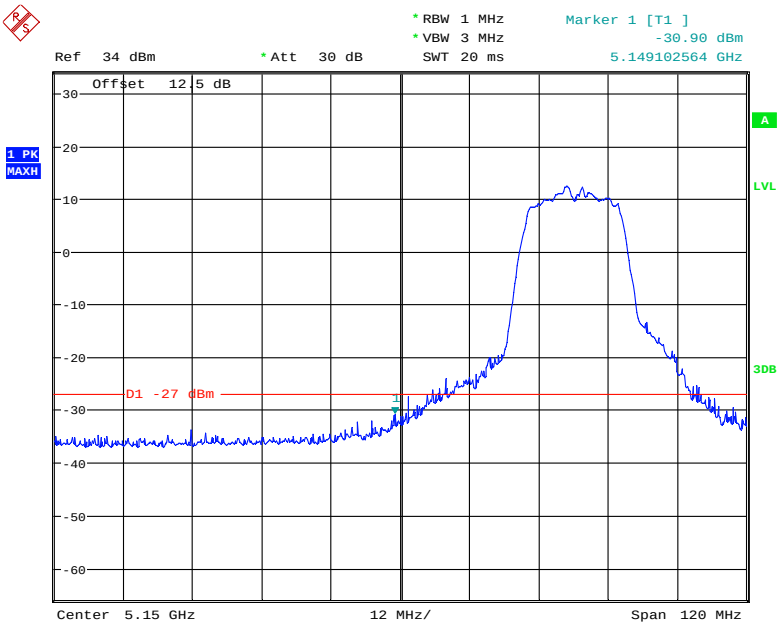
The testing was performed by Vincent Zheng from 2017-11-21 to 2018-01-19.

EUT operation mode: Transmitting

Note: Antenna gain was added into the test result.

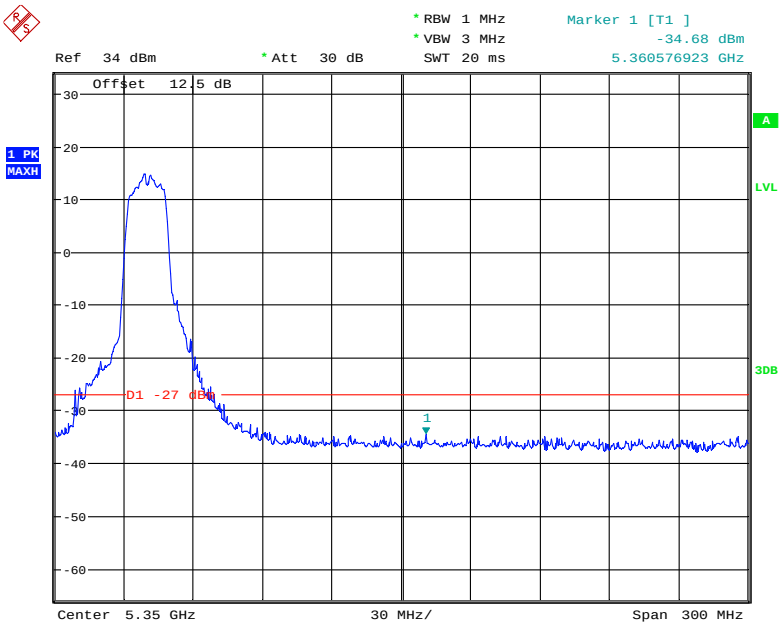
5150 – 5250 MHz:

802.11a mode, Band Edge, Left Side



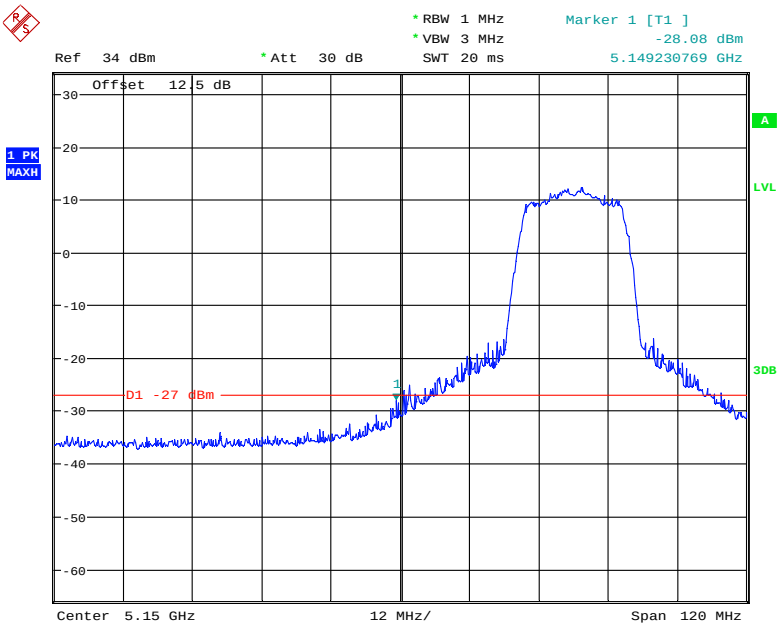
Date: 21.NOV.2017 19:57:16

802.11a mode, Band Edge, Right Side



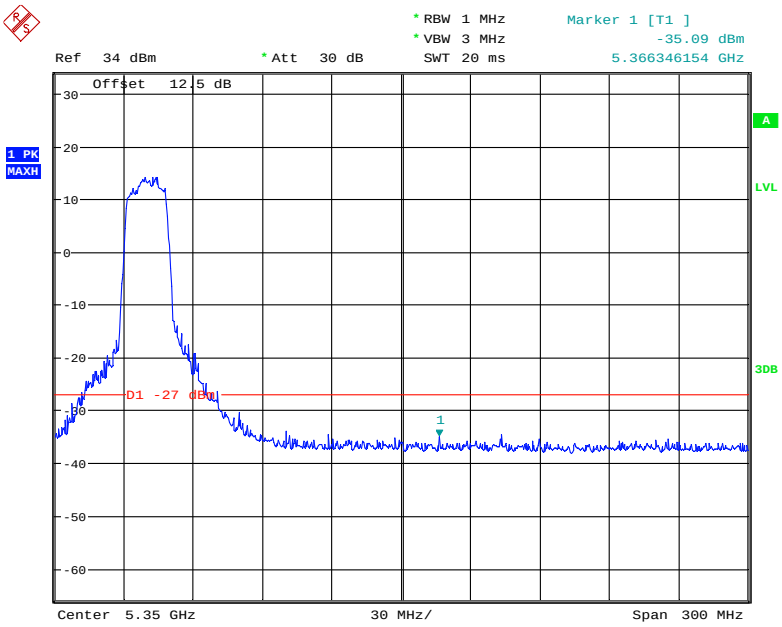
Date: 21.NOV.2017 19:59:19

802.11n20 mode, Band Edge, Left Side



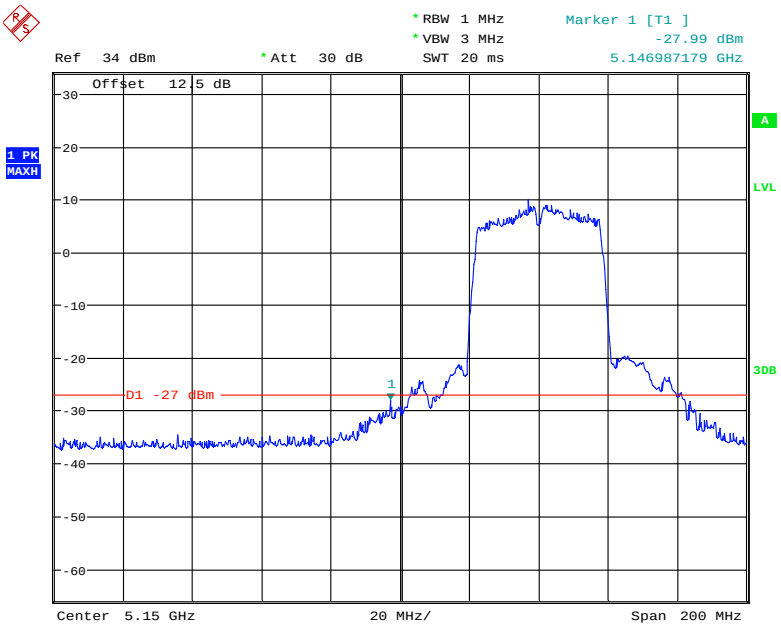
Date: 21.NOV.2017 19:49:26

802.11n20 mode, Band Edge, Right Side



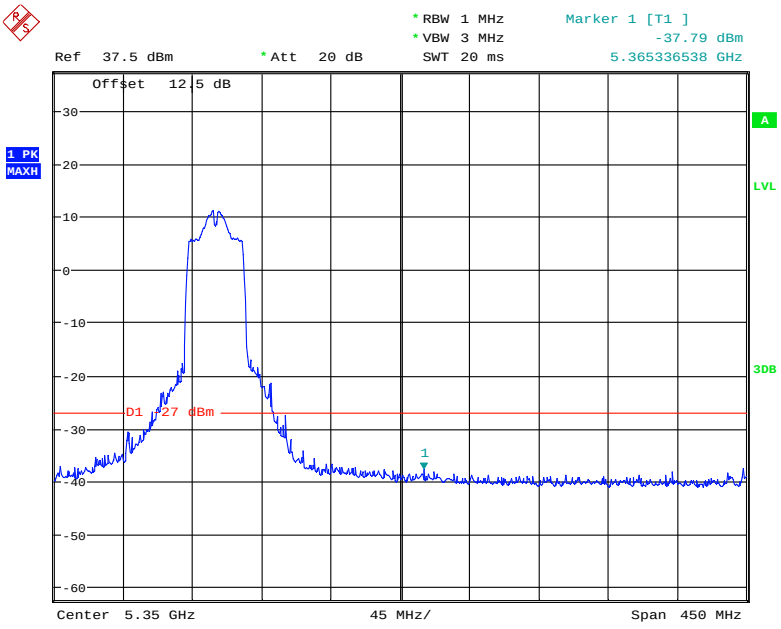
Date: 21.NOV.2017 19:59:43

802.11n40 mode, Band Edge, Left Side



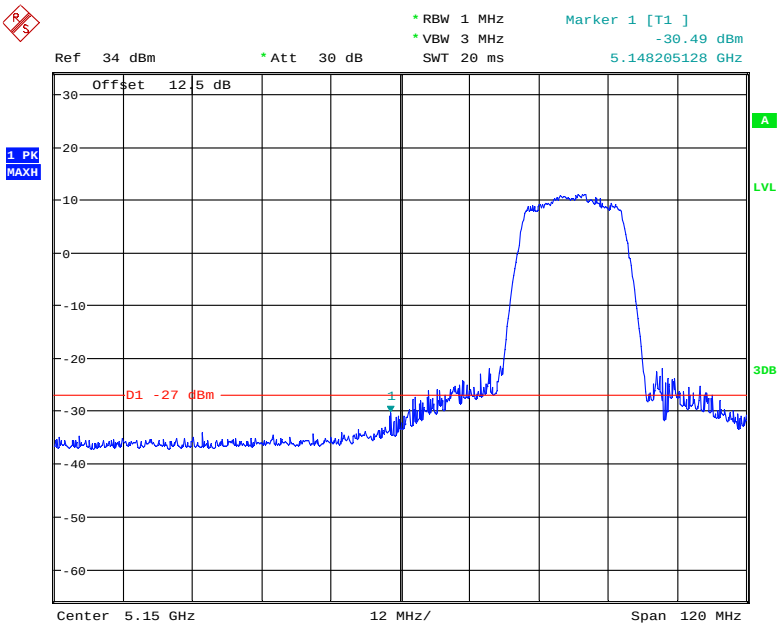
Date: 21.NOV.2017 19:56:28

802.11n40 mode, Band Edge, Right Side



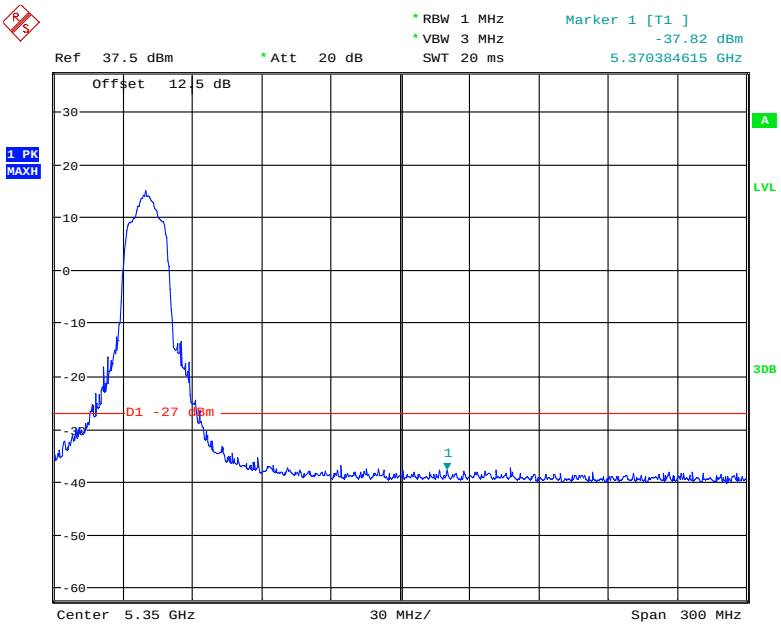
Date: 18.JAN.2018 20:20:18

802.11ac20 mode, Band Edge, Left Side



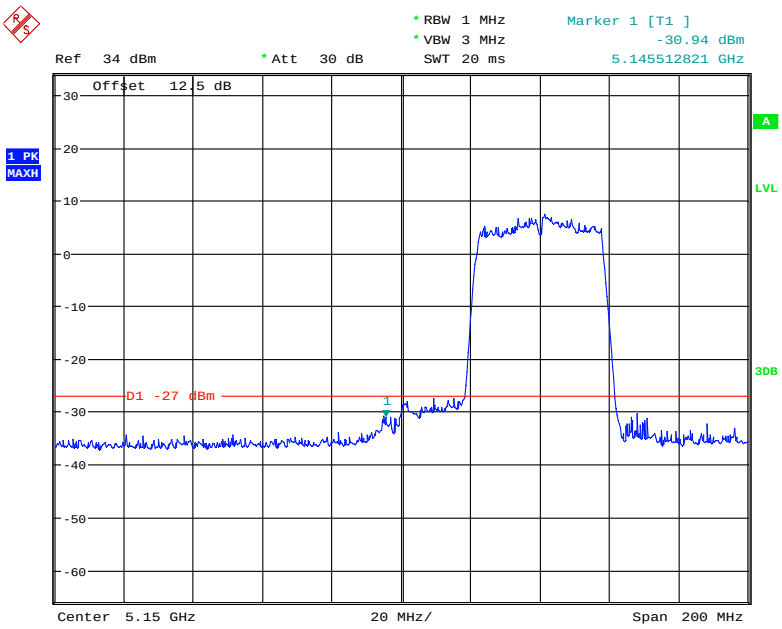
Date: 21.NOV.2017 19:44:05

802.11ac20 mode, Band Edge, Right Side



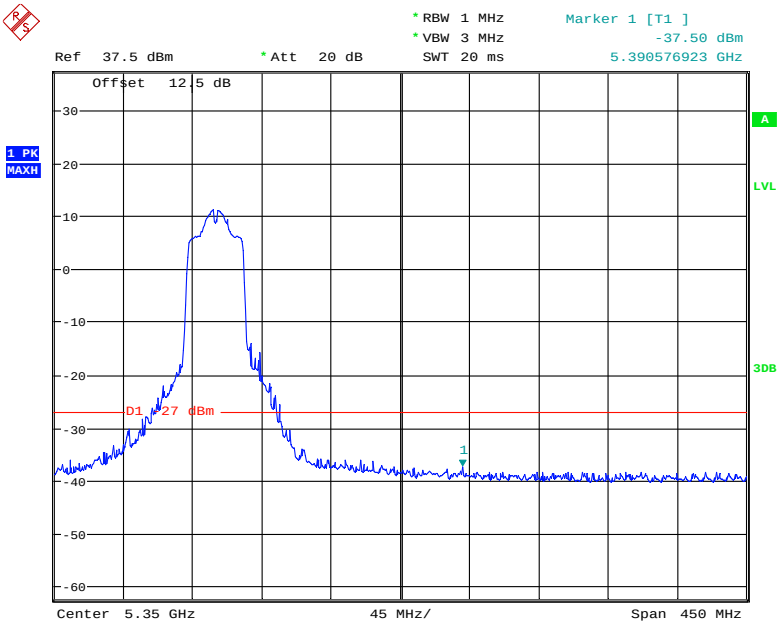
Date: 18.JAN.2018 20:18:43

802.11ac40 mode, Band Edge, Left Side



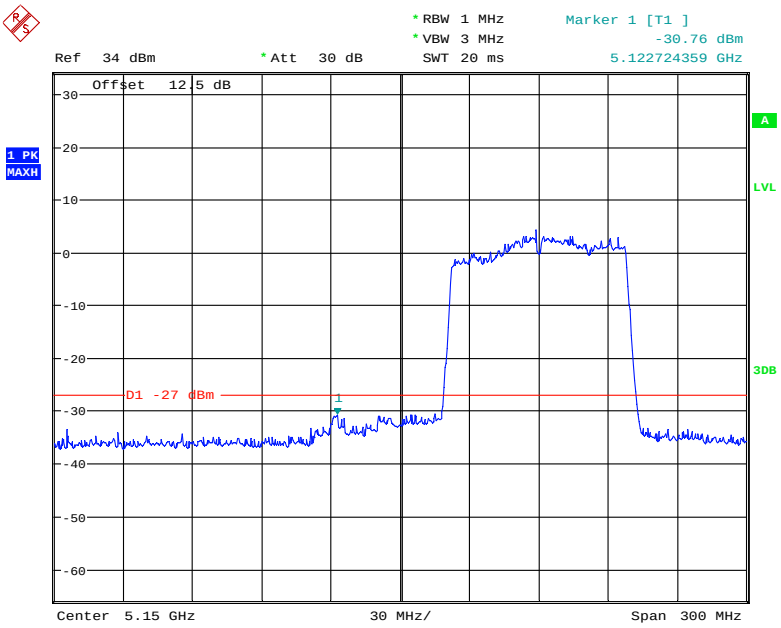
Date: 21.NOV.2017 19:43:27

802.11ac40 mode, Band Edge, Right Side



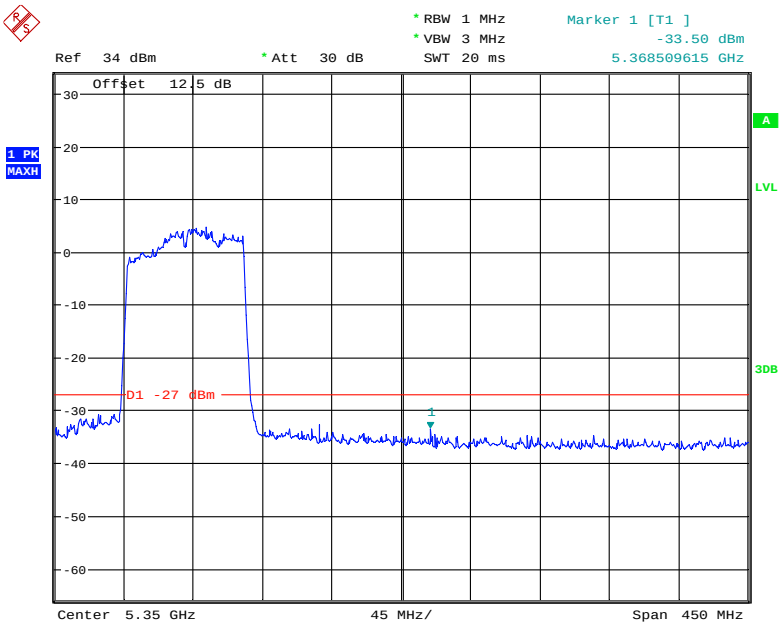
Date: 18.JAN.2018 20:20:01

802.11ac80 mode, Band Edge, Left Side



Date: 21.NOV.2017 19:45:10

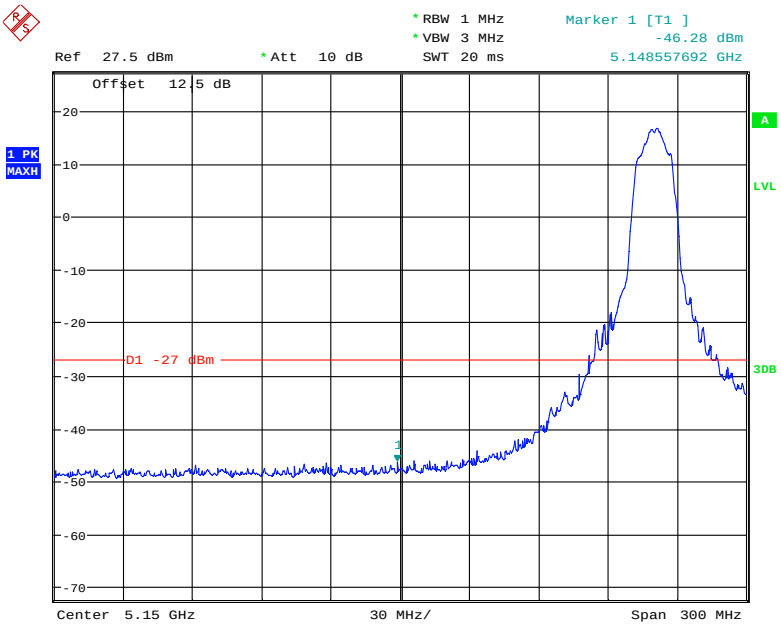
802.11ac80 mode, Band Edge, Right Side



Date: 21.NOV.2017 20:04:07

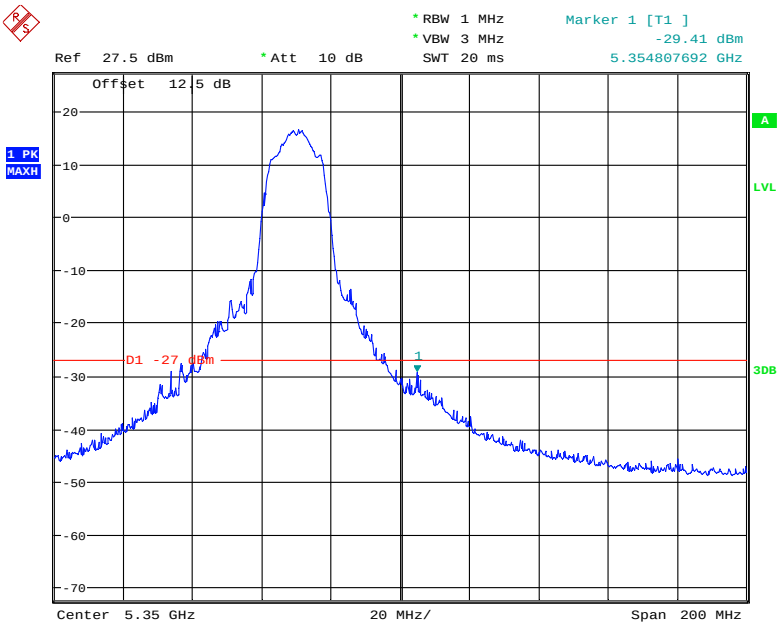
5250 – 5350 MHz:

802.11a mode, Band Edge, Left Side



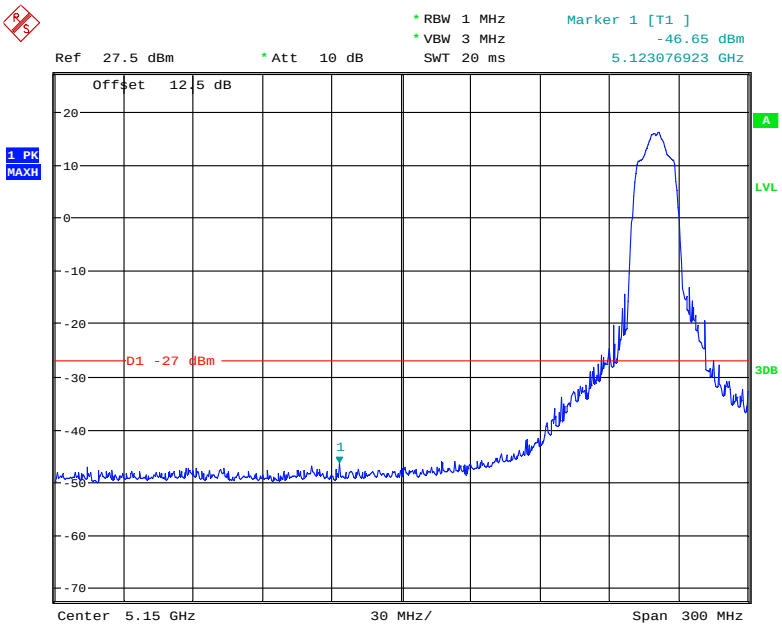
Date: 28.NOV.2017 18:51:03

802.11a mode, Band Edge, Right Side



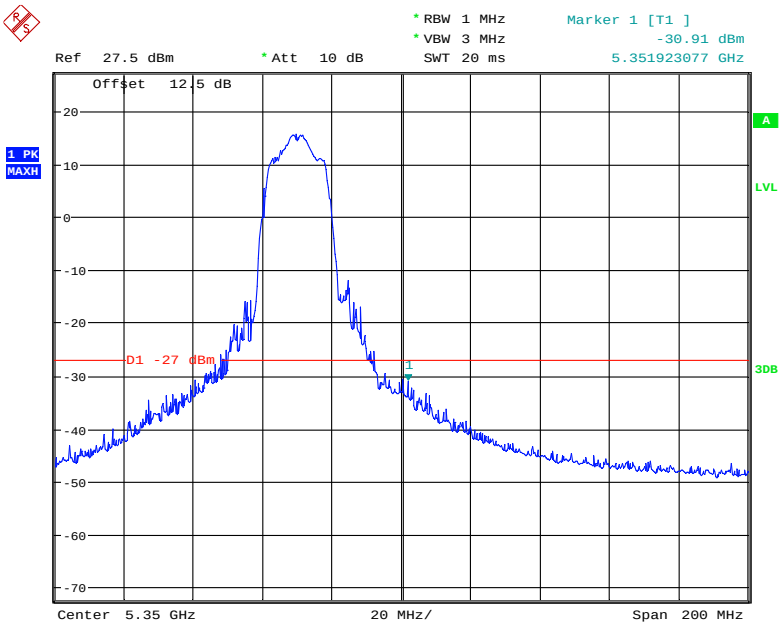
Date: 28.NOV.2017 19:00:35

802.11n20 mode, Band Edge, Left Side



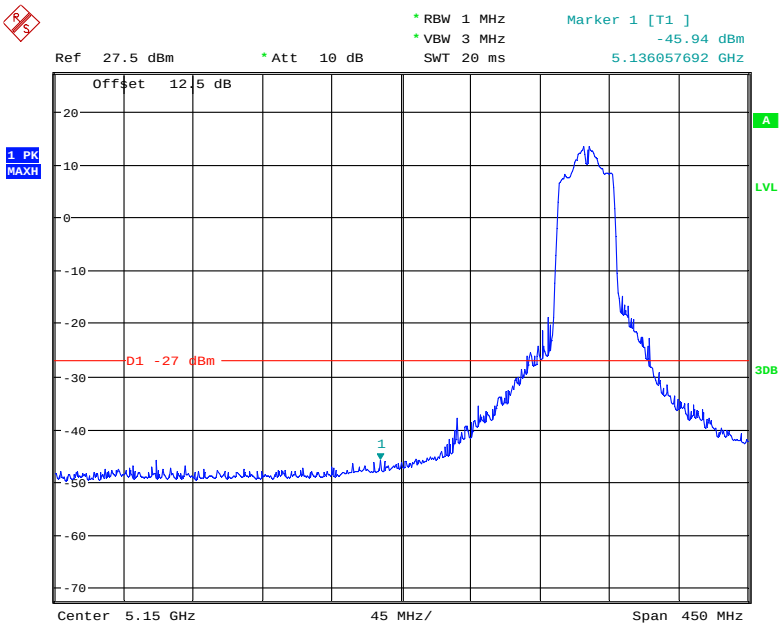
Date: 28.NOV.2017 18:52:10

802.11n20 mode, Band Edge, Right Side



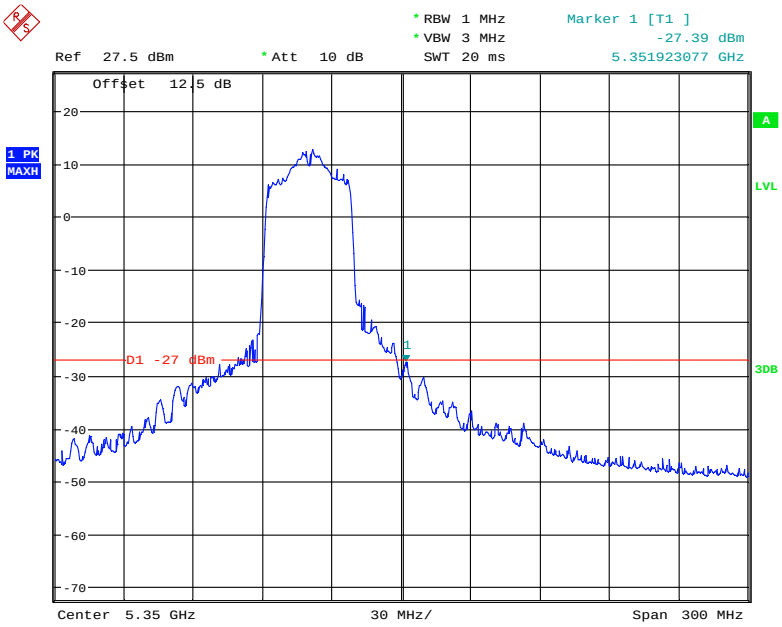
Date: 28.NOV.2017 18:58:53

802.11n40 mode, Band Edge, Left Side



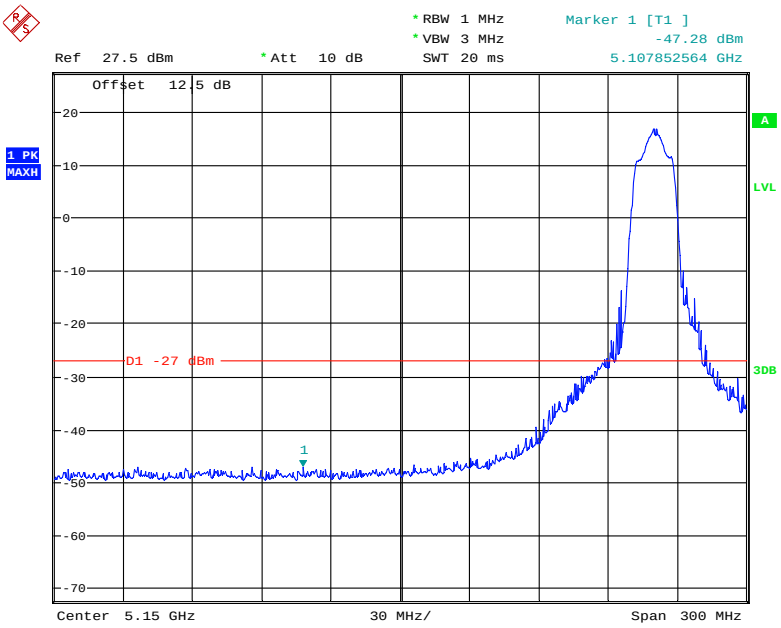
Date: 28.NOV.2017 18:52:39

802.11n40 mode, Band Edge, Right Side



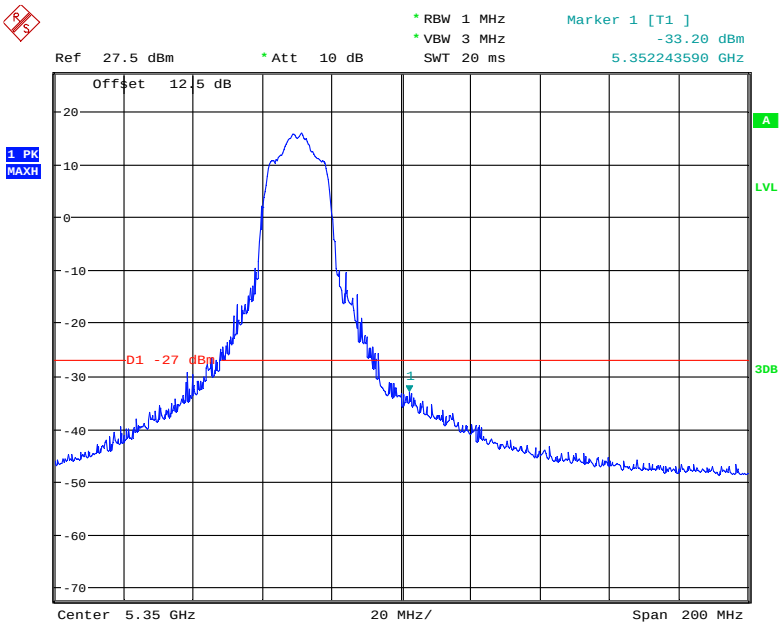
Date: 28.NOV.2017 19:00:00

802.11ac20 mode, Band Edge, Left Side



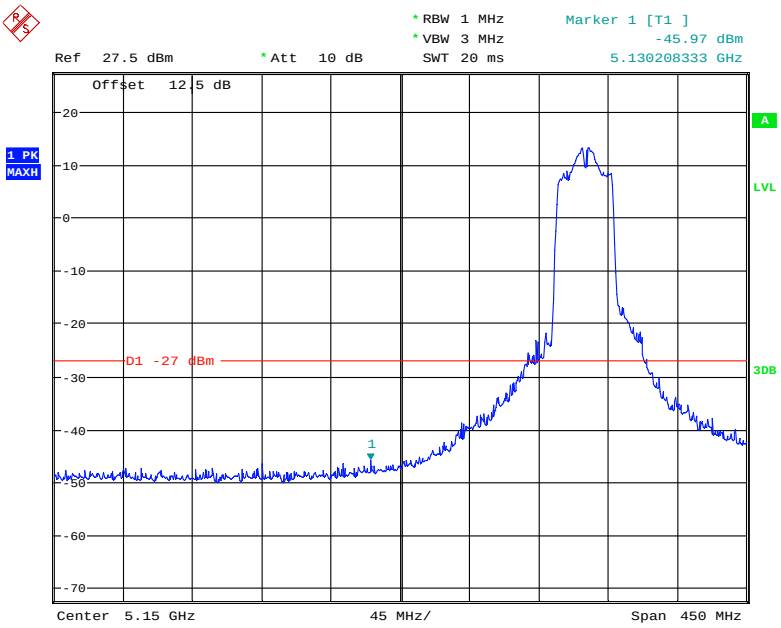
Date: 28.NOV.2017 18:53:48

802.11ac20 mode, Band Edge, Right Side



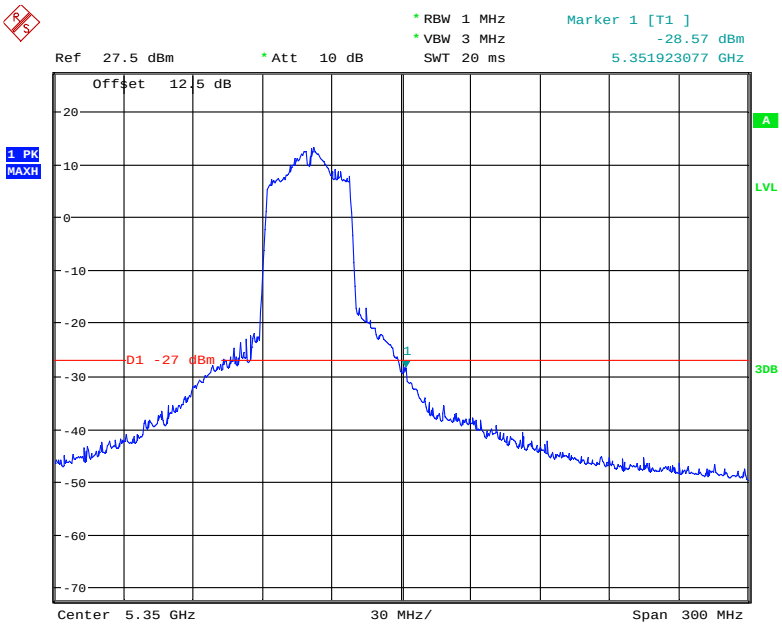
Date: 28.NOV.2017 18:58:18

802.11ac40 mode, Band Edge, Left Side



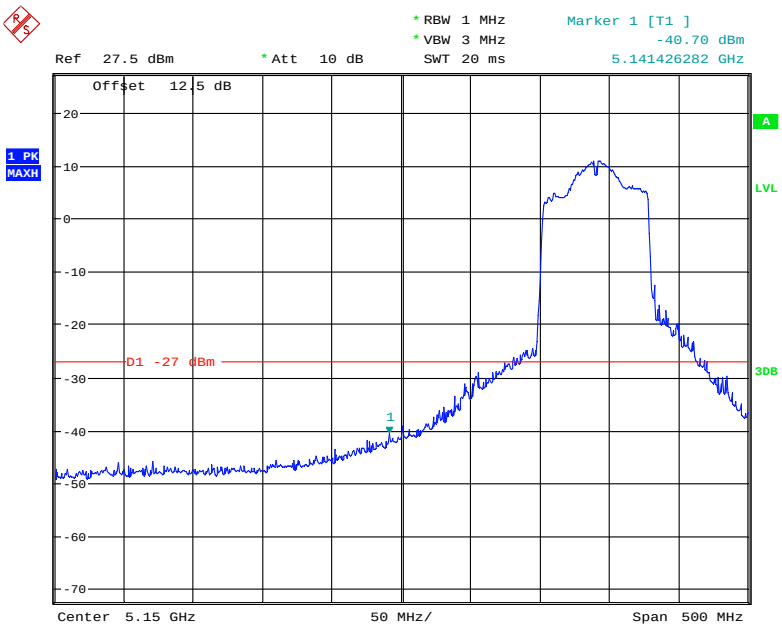
Date: 28.NOV.2017 18:54:11

802.11ac40 mode, Band Edge, Right Side



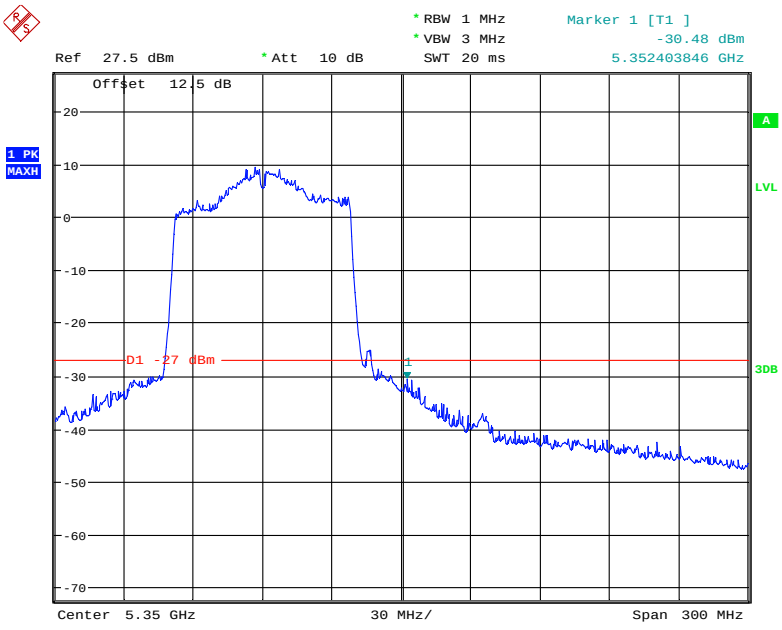
Date: 28.NOV.2017 18:57:42

802.11ac80 mode, Band Edge, Left Side



Date: 28.NOV.2017 18:54:49

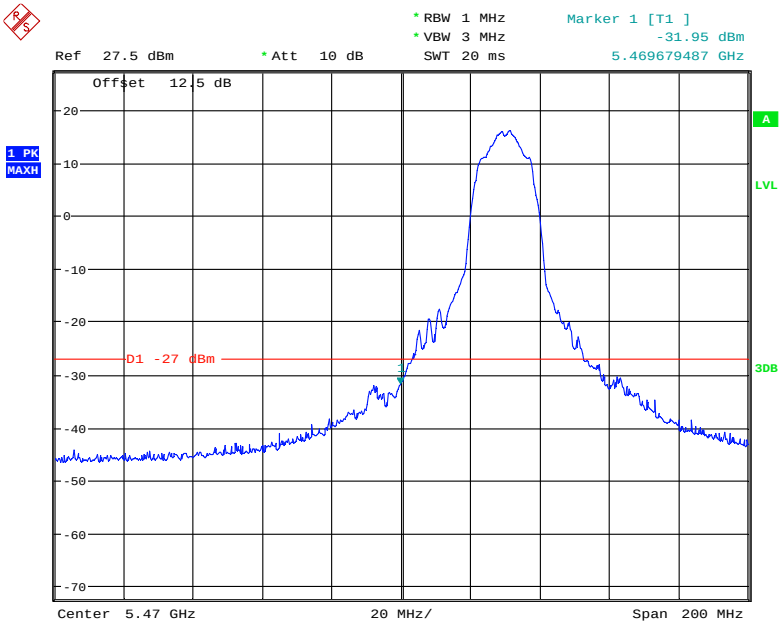
802.11ac80 mode, Band Edge, Right Side



Date: 28.NOV.2017 18:56:56

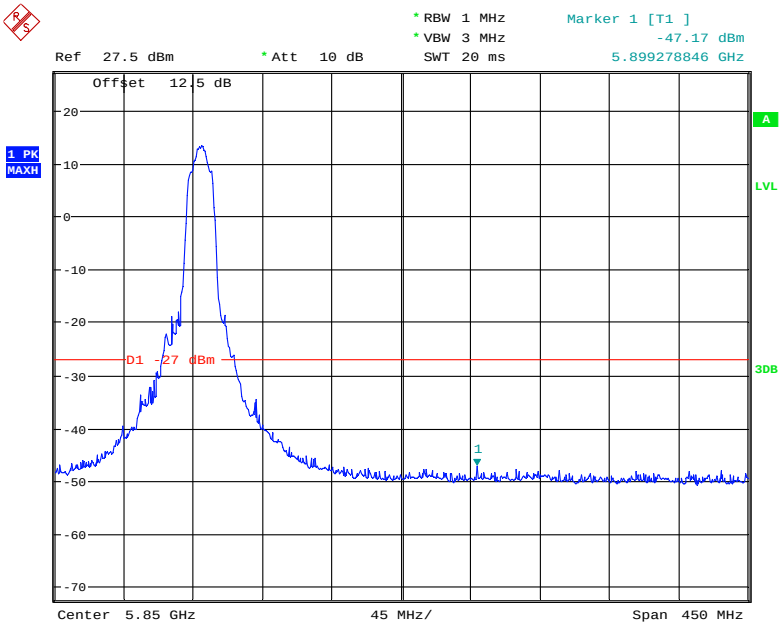
5470 – 5725 MHz:

802.11a mode, Band Edge, Left Side



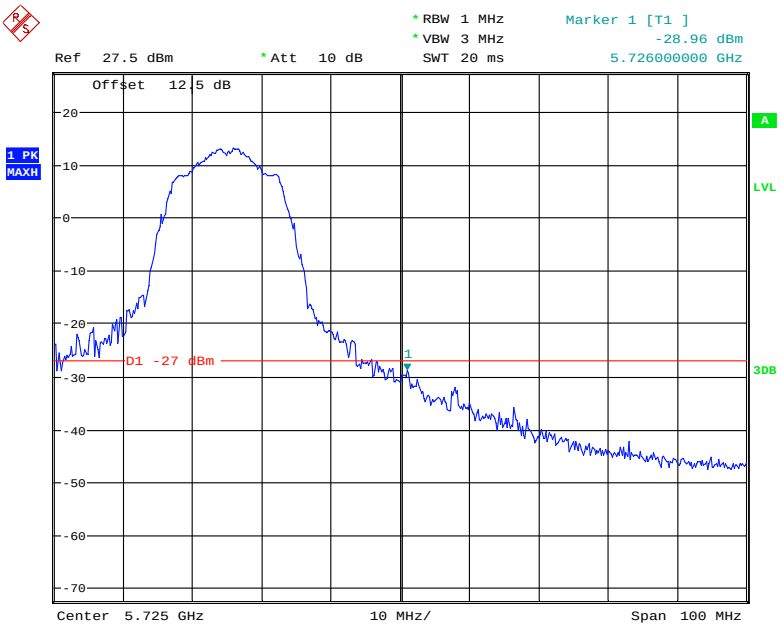
Date: 28.NOV.2017 19:01:31

802.11a mode, Band Edge, Right Side (5720)



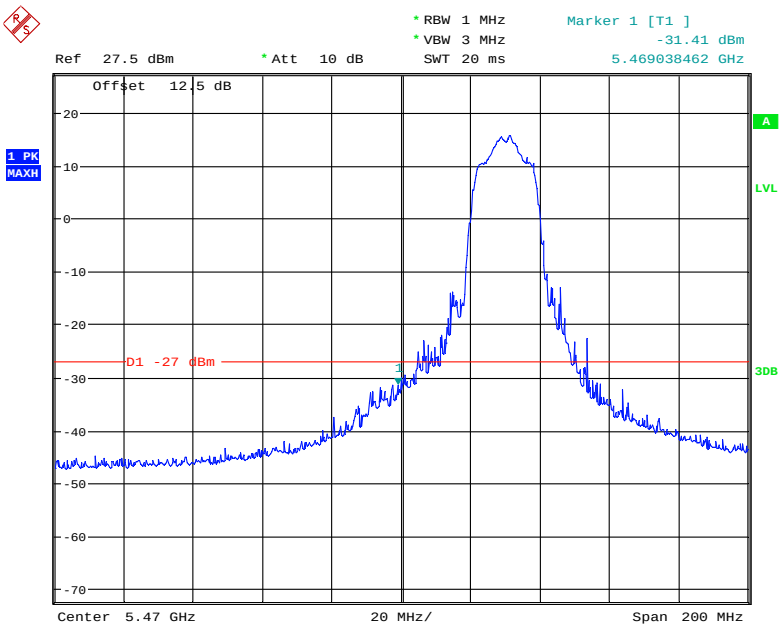
Date: 28.NOV.2017 19:10:13

802.11a mode, Band Edge, Right Side (5700)



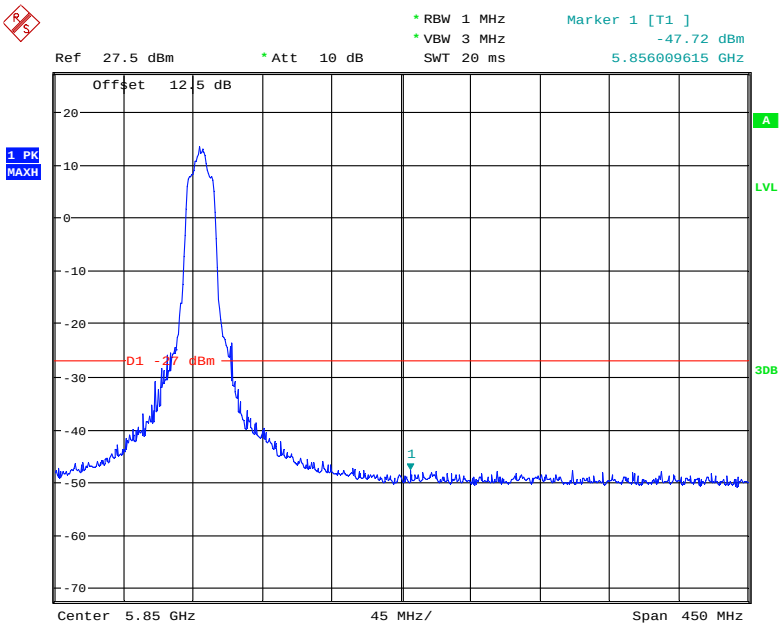
Date: 19.JAN.2018 11:24:14

802.11n20 mode, Band Edge, Left Side



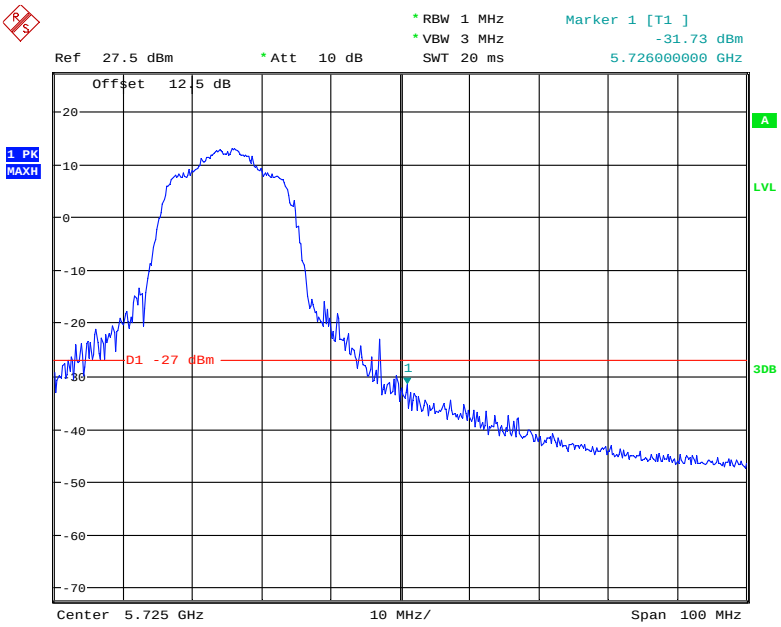
Date: 28.NOV.2017 19:02:20

802.11n20 mode, Band Edge, Right Side (5720)



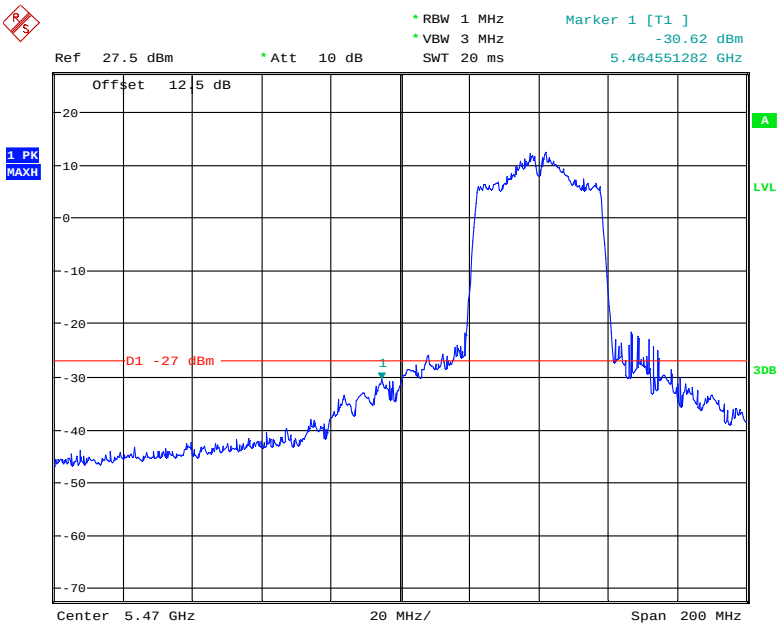
Date: 28.NOV.2017 19:09:14

802.11n20 mode, Band Edge, Right Side (5700)



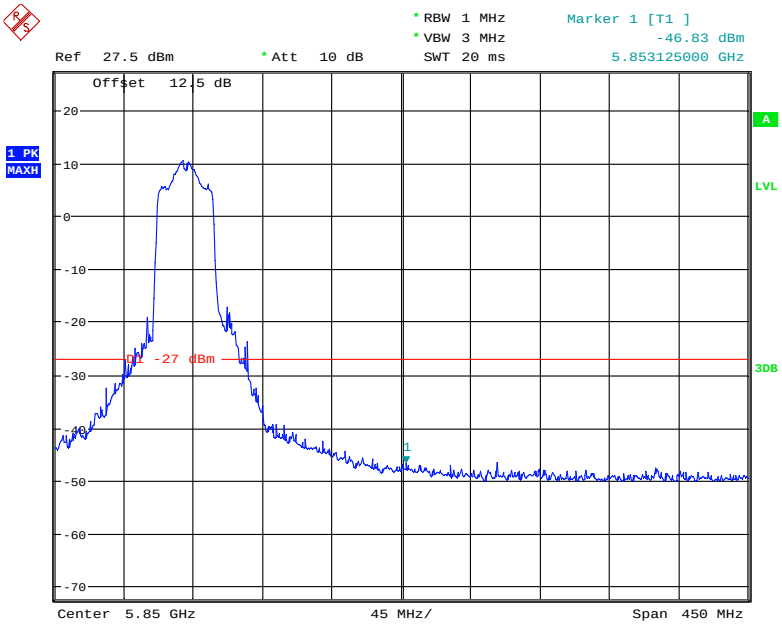
Date: 19.JAN.2018 11:22:58

802.11n40 mode, Band Edge, Left Side



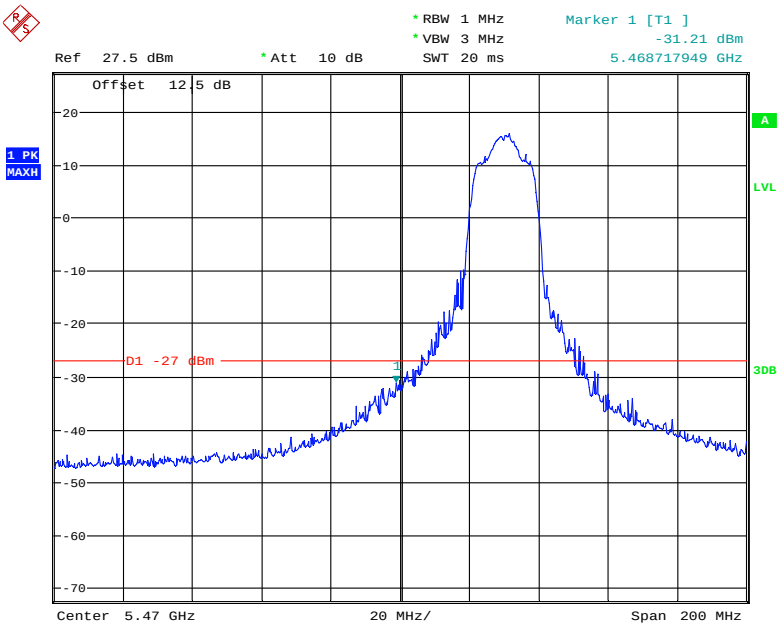
Date: 28.NOV.2017 19:02:53

802.11n40 mode, Band Edge, Right Side



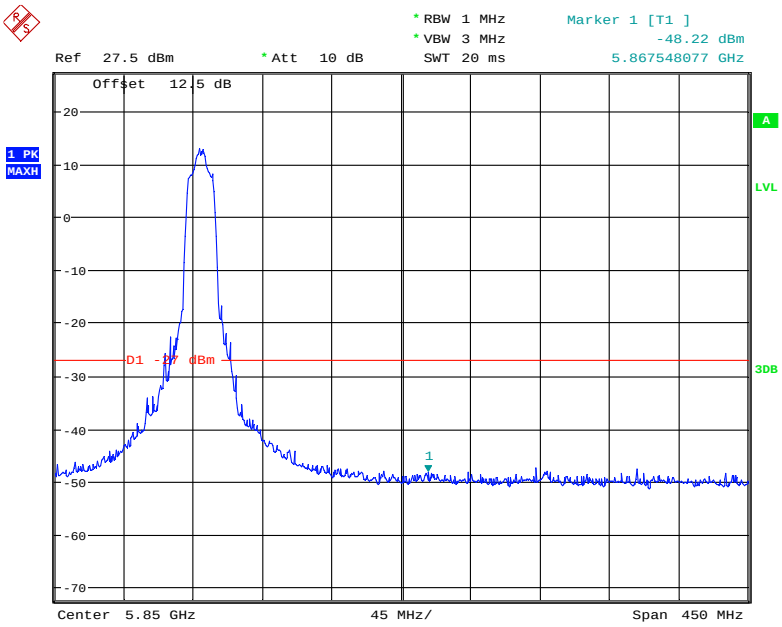
Date: 28.NOV.2017 19:09:50

802.11ac20 mode, Band Edge, Left Side



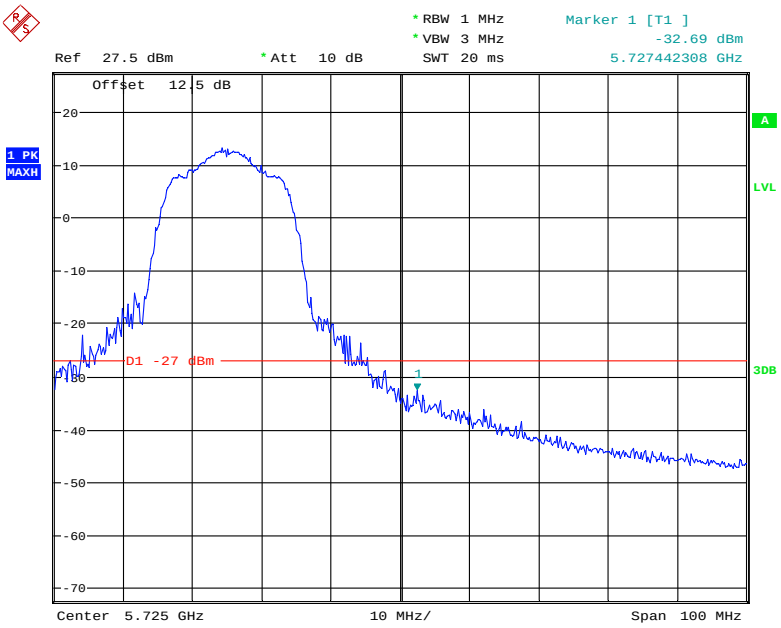
Date: 28.NOV.2017 19:03:23

802.11ac20 mode, Band Edge, Right Side (5720)



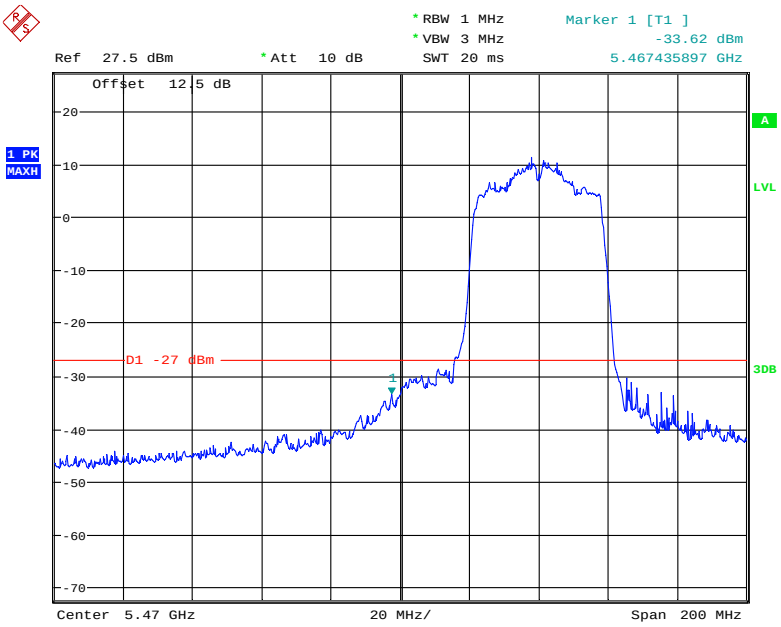
Date: 28.NOV.2017 19:08:03

802.11ac20 mode, Band Edge, Right Side (5700)



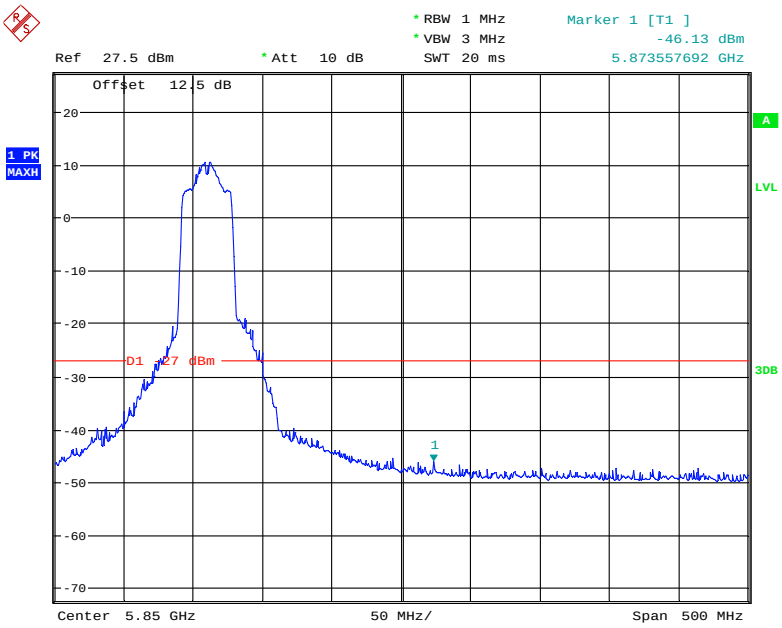
Date: 19.JAN.2018 11:23:42

802.11ac40 mode, Band Edge, Left Side



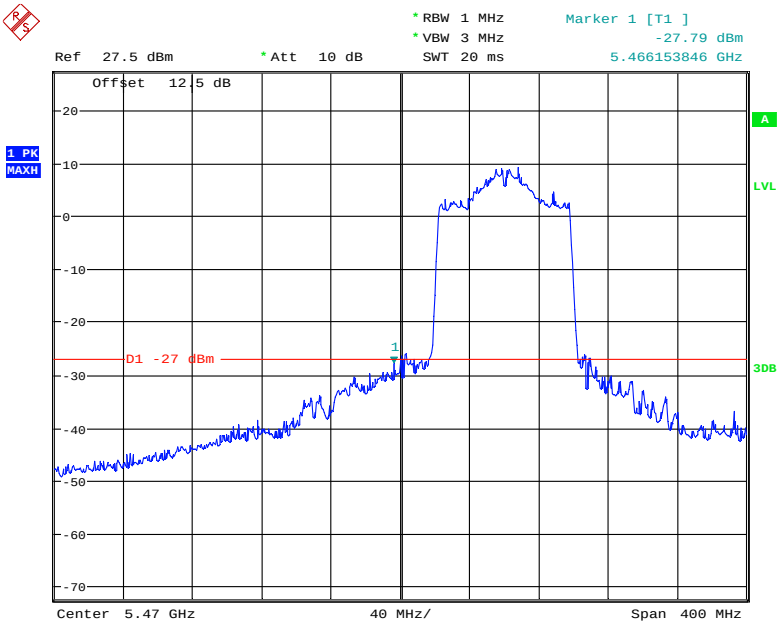
Date: 28.NOV.2017 19:03:57

802.11ac40 mode, Band Edge, Right Side



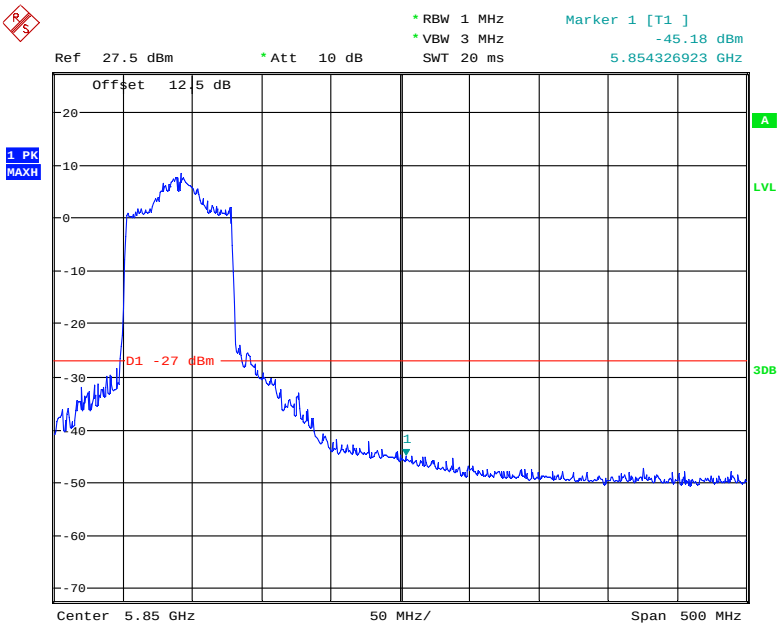
Date: 28.NOV.2017 19:07:18

802.11ac80 mode, Band Edge, Left Side



Date: 28.NOV.2017 19:05:53

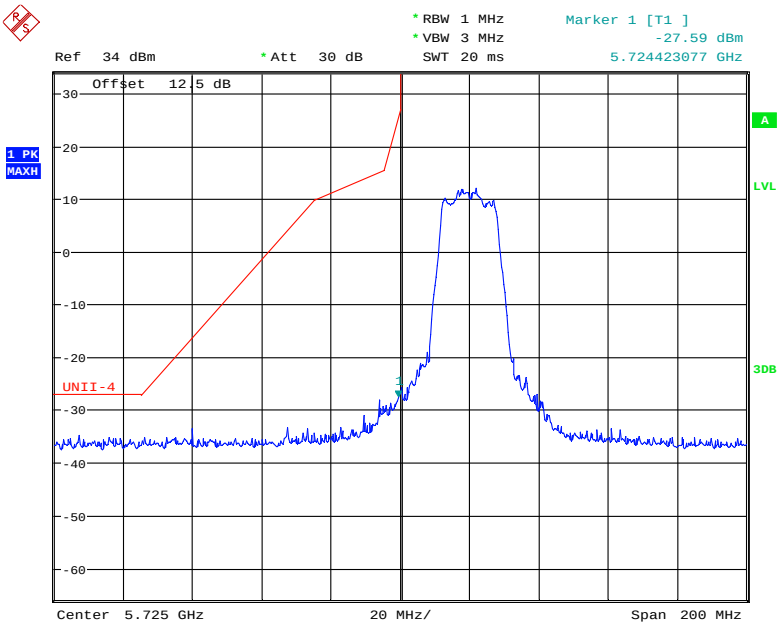
802.11ac80 mode, Band Edge, Right Side



Date: 28.NOV.2017 19:06:28

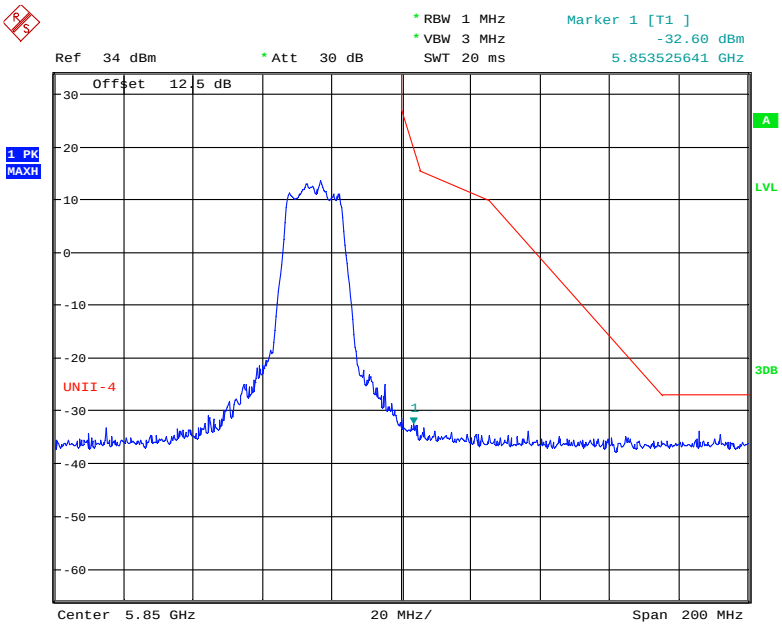
5725 – 5850 MHz:

802.11a mode, Band Edge, Left Side



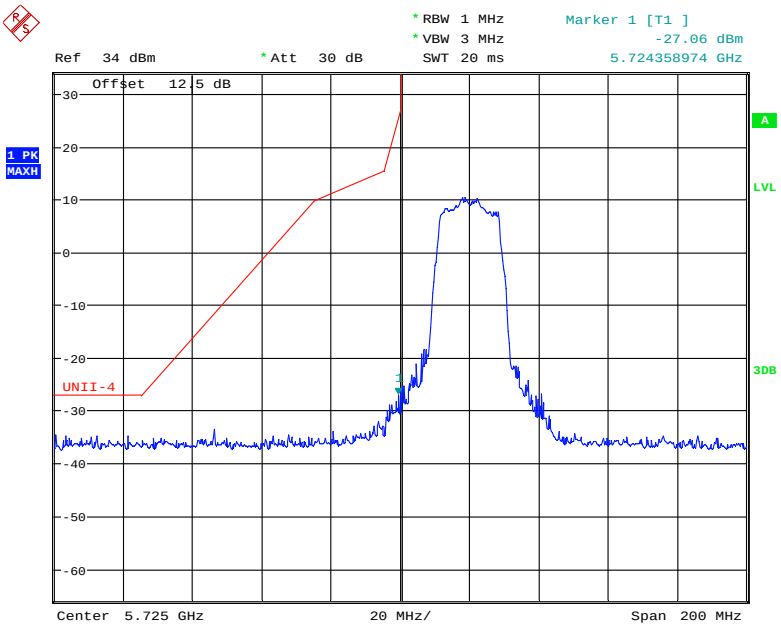
Date: 21.NOV.2017 21:38:15

802.11a mode, Band Edge, Right Side



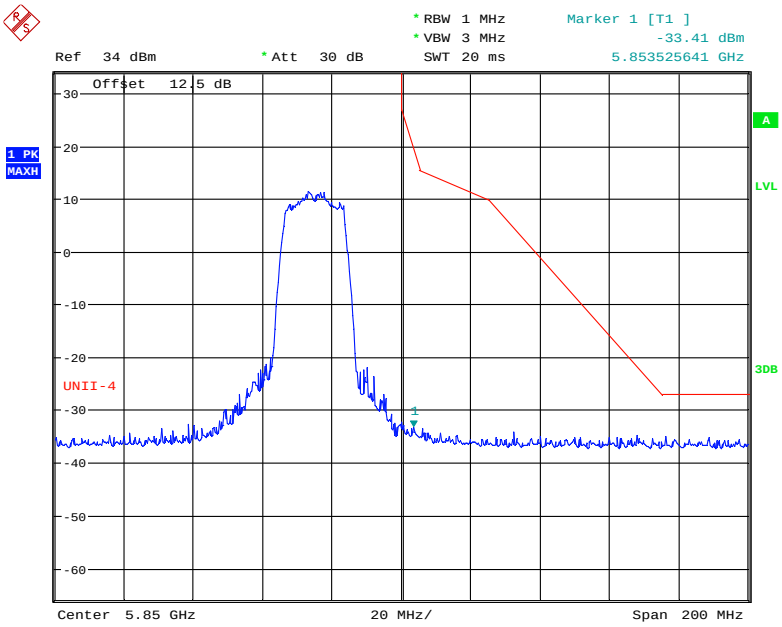
Date: 21.NOV.2017 21:39:11

802.11n20 mode, Band Edge, Left Side



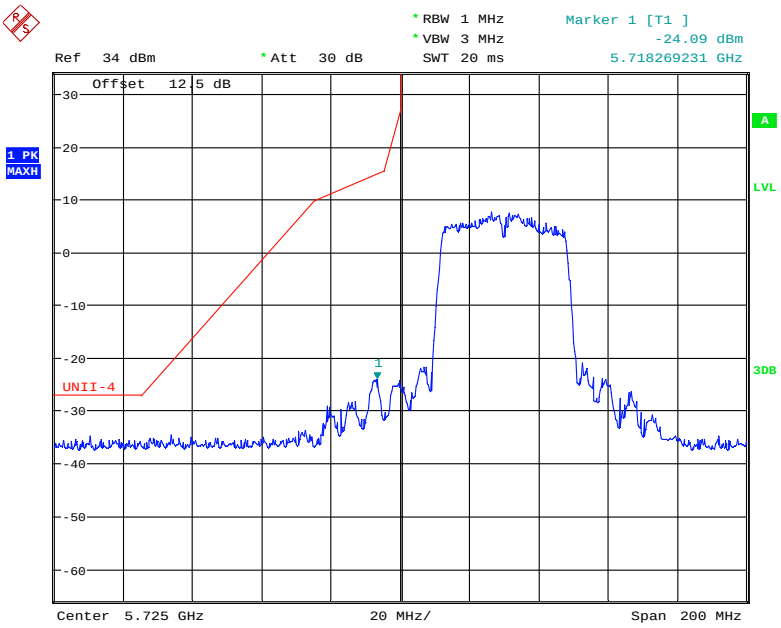
Date: 21.NOV.2017 21:35:27

802.11n20 mode, Band Edge, Right Side



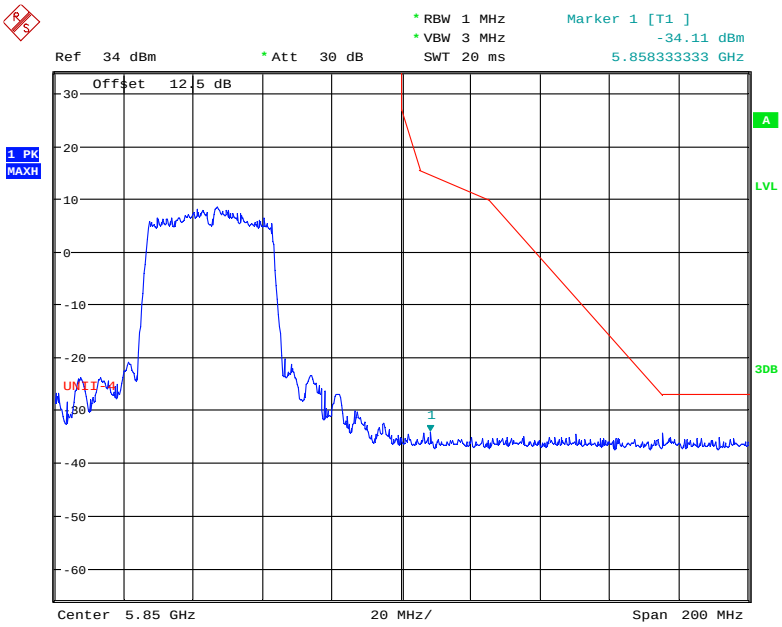
Date: 21.NOV.2017 21:34:57

802.11n40 mode, Band Edge, Left Side



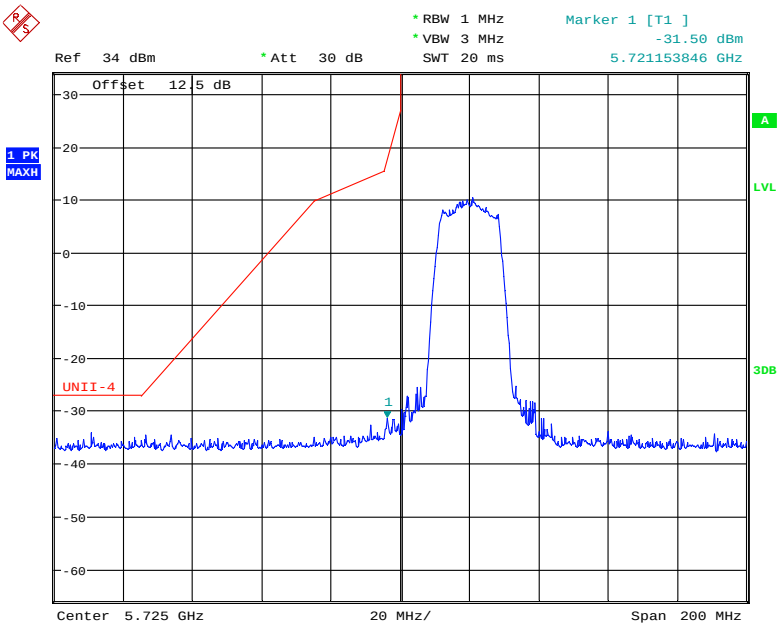
Date: 21.NOV.2017 21:36:14

802.11n40 mode, Band Edge, Right Side



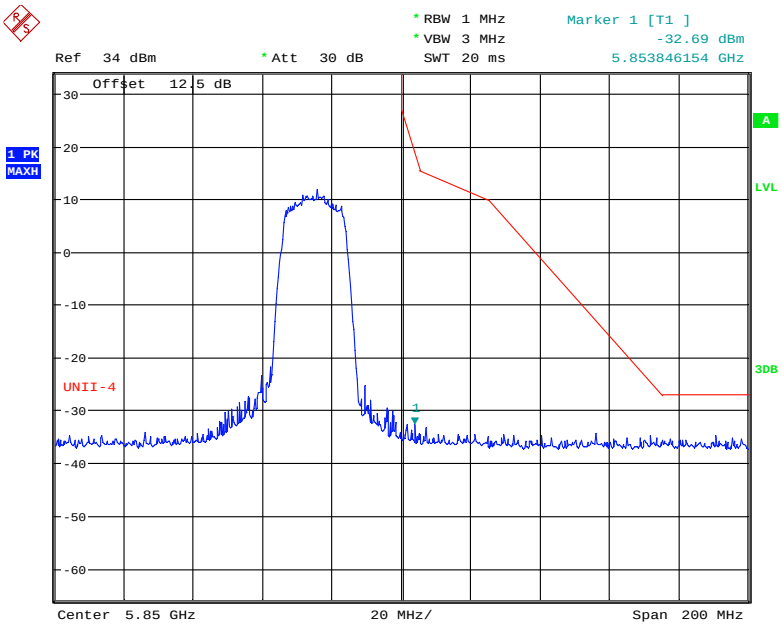
Date: 21.NOV.2017 21:36:37

802.11ac20 mode, Band Edge, Left Side



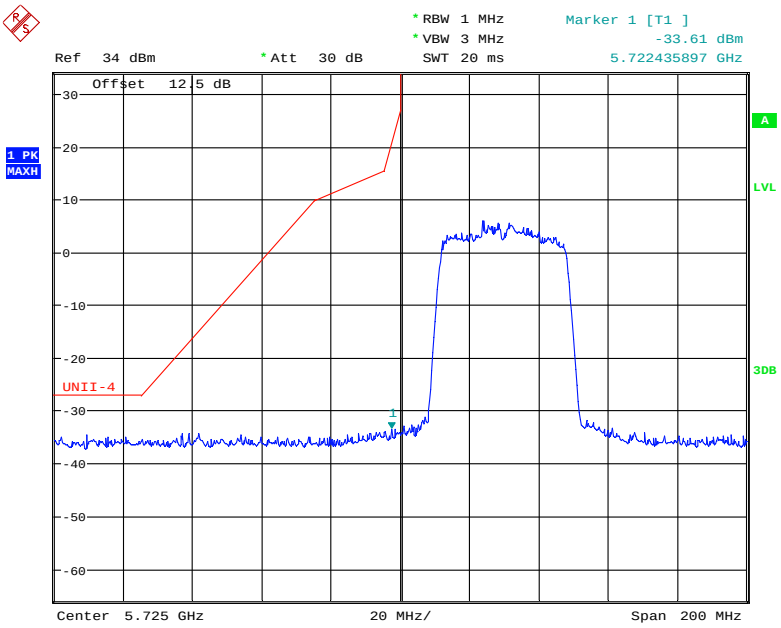
Date: 21.NOV.2017 21:33:00

802.11ac20 mode, Band Edge, Right Side



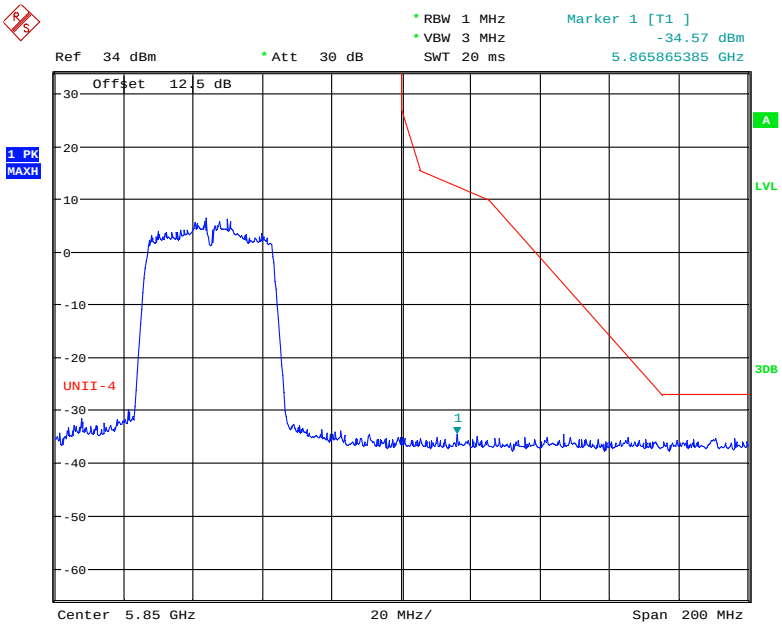
Date: 21.NOV.2017 21:33:39

802.11ac40 mode, Band Edge, Left Side



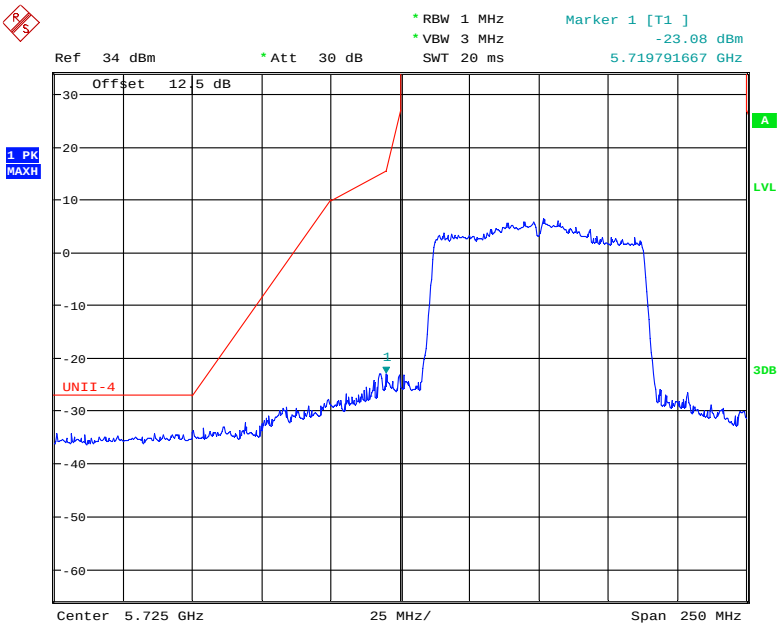
Date: 21.NOV.2017 21:31:13

802.11ac40 mode, Band Edge, Right Side



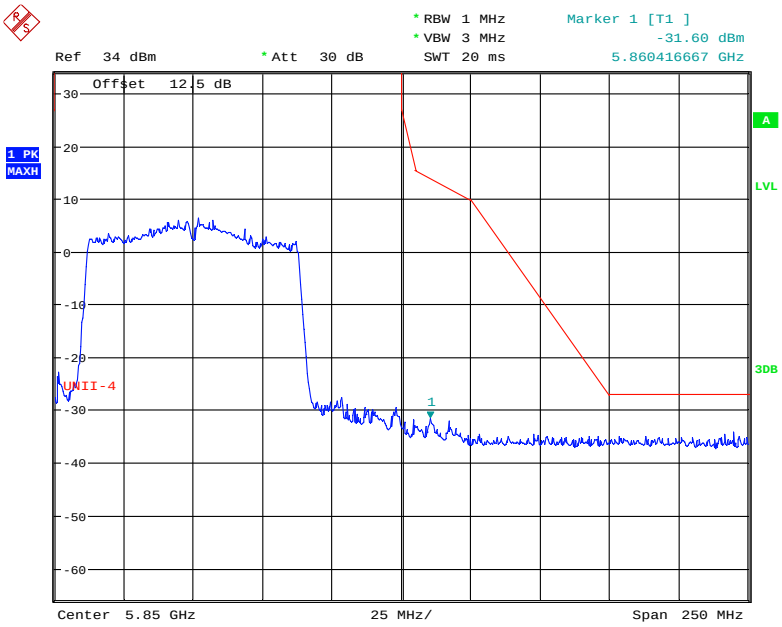
Date: 21.NOV.2017 21:30:36

802.11ac80 mode, Band Edge, Left Side



Date: 21.NOV.2017 21:28:40

802.11ac80 mode, Band Edge, Right Side



Date: 21.NOV.2017 21:30:04

FCC §15.407(a) (1) – 26 dB & 6dB EMISSION BANDWIDTH

Applicable Standard

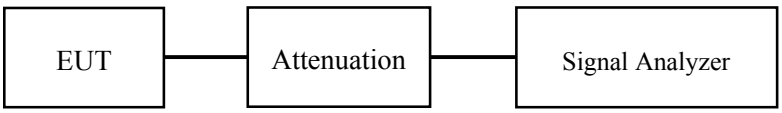
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band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

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

Test Procedure

1. Emission Bandwidth (EBW)
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) ≥ 3 × 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:	22~24 ℃
Relative Humidity:	45~50 %
ATM Pressure:	109.0~101.0 kPa

The testing was performed by Vincent Zheng from 2017-11-21 to 2017-11-23.

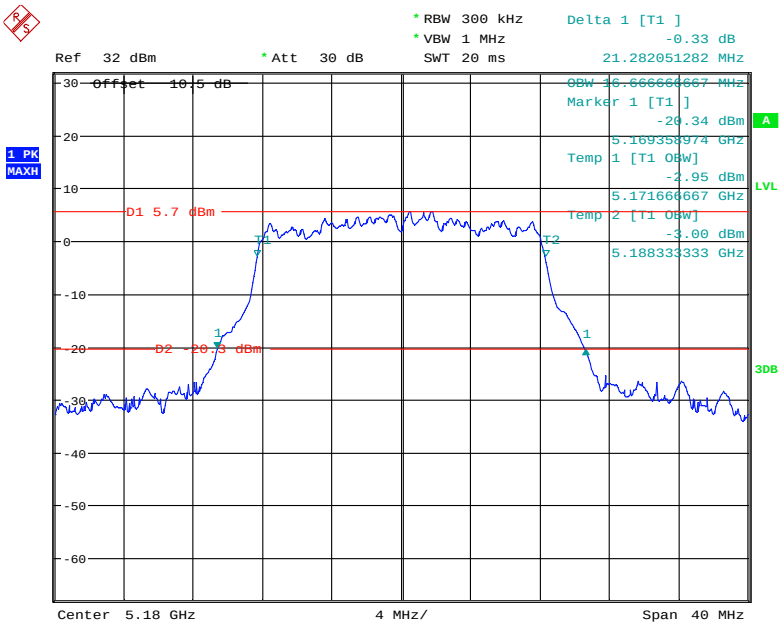
EUT operation mode: Transmitting

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

5120 MHz - 5250 MHz:

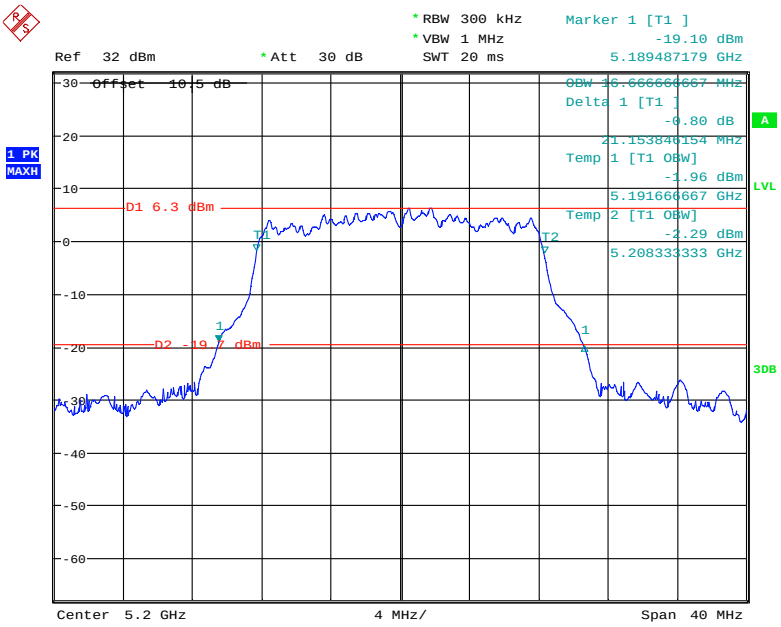
Frequency (MHz)	99% bandwidth (MHz)	26dB Bandwidth (MHz)	Remark
802.11a			No transmitted signal in the 99% bandwidth extends into the U-NII-2A band
5180	16.67	21.28	
5200	16.67	21.15	
5240	16.67	21.15	
802.11n20			
5180	18.01	21.60	
5200	18.01	21.67	
5240	18.01	21.60	
802.11n40			
5190	36.41	39.74	
5230	36.41	39.87	
802.11ac20			
5180	18.01	21.47	
5200	18.01	21.47	
5240	18.01	21.41	
802.11ac40			
5190	36.41	40.13	
5230	36.54	40.13	
	802.11ac80		
5210	75.64	81.79	

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5180 MHz



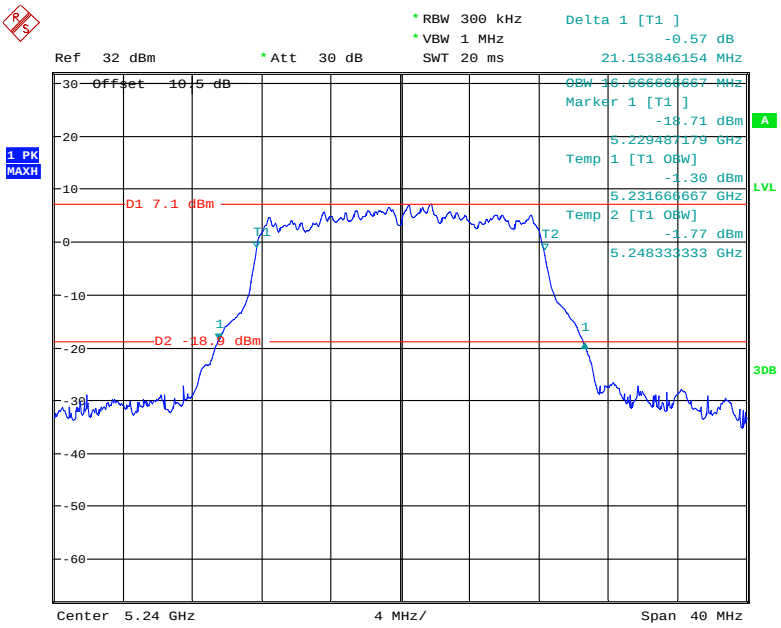
Date: 21.NOV.2017 20:27:04

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5200 MHz



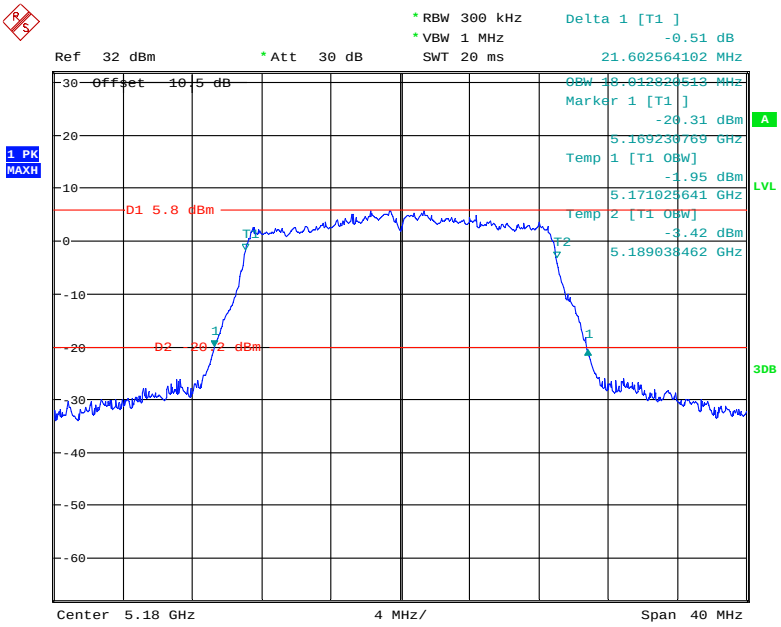
Date: 21.NOV.2017 20:28:01

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5240 MHz



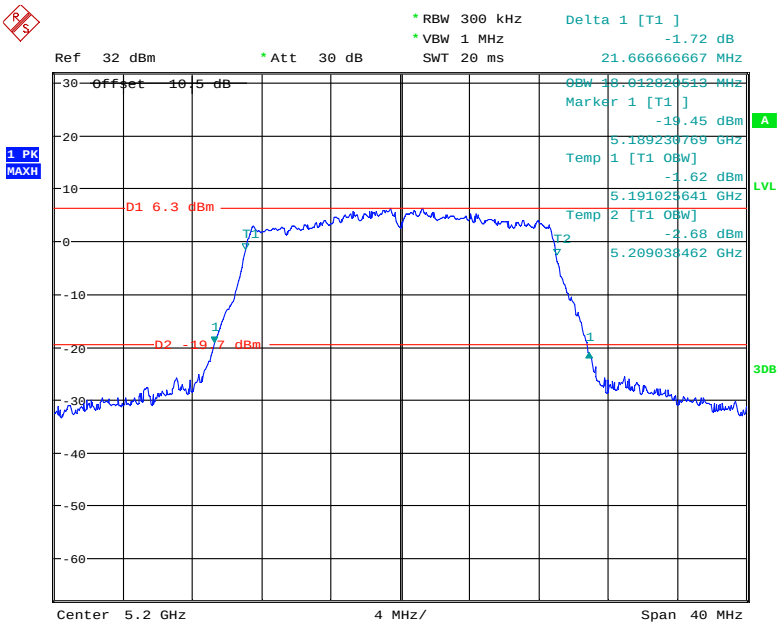
Date: 21.NOV.2017 20:28:46

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5180 MHz



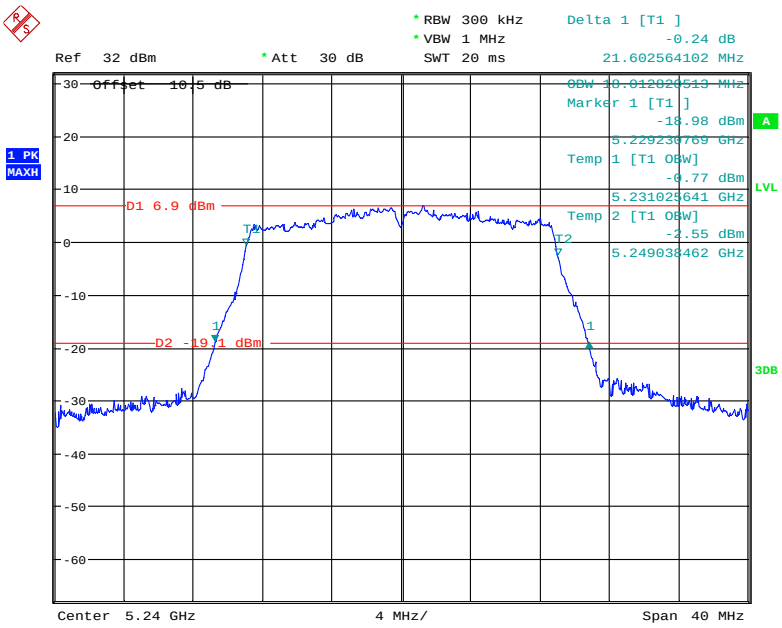
Date: 21.NOV.2017 20:20:31

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5200 MHz



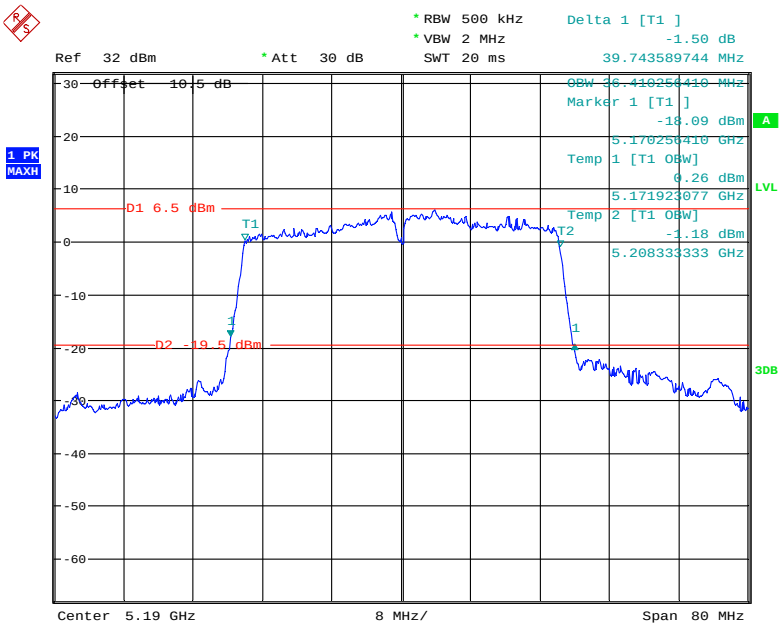
Date: 21.NOV.2017 20:22:12

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5240 MHz



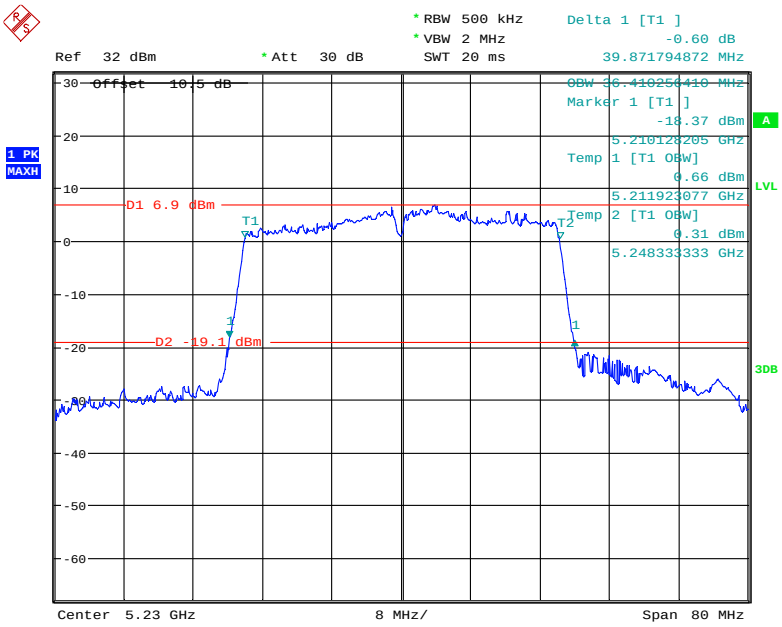
Date: 21.NOV.2017 20:23:14

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5190 MHz



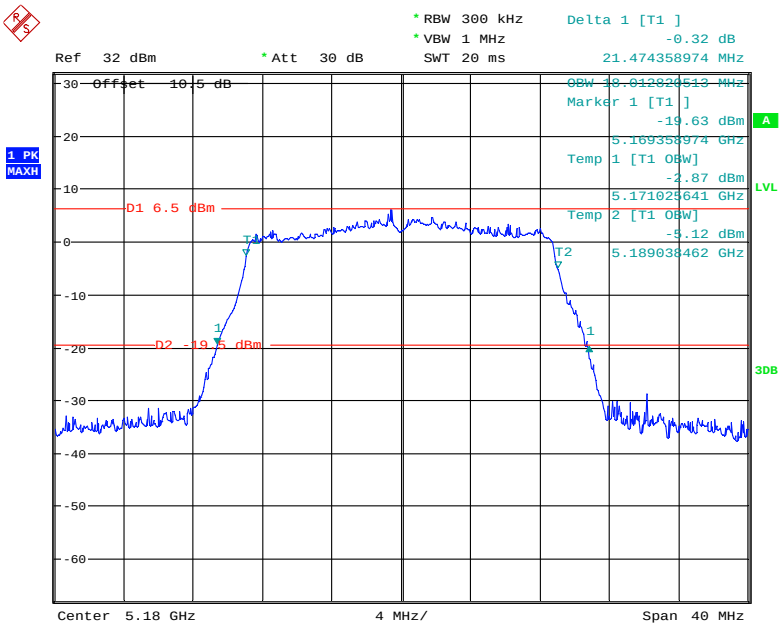
Date: 21.NOV.2017 20:24:25

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5230 MHz



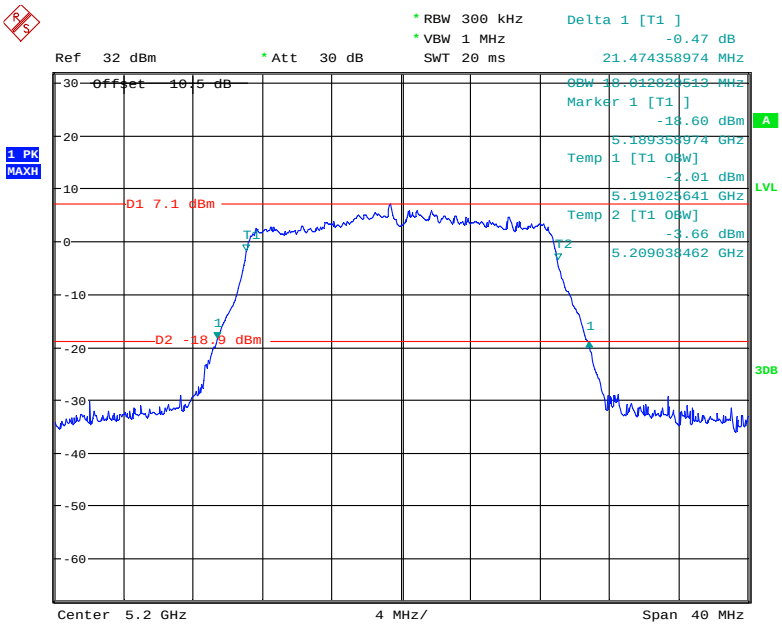
Date: 21.NOV.2017 20:25:32

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5180 MHz



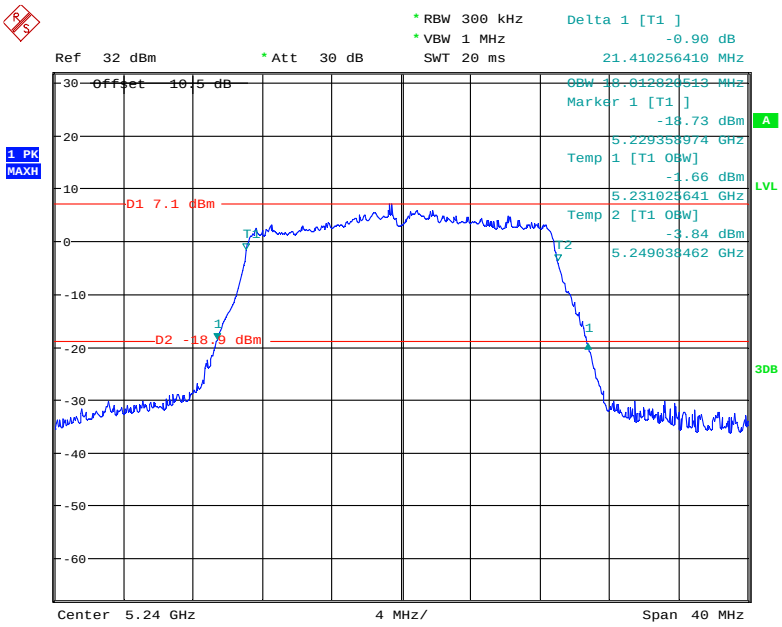
Date: 21.NOV.2017 20:15:48

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5200 MHz



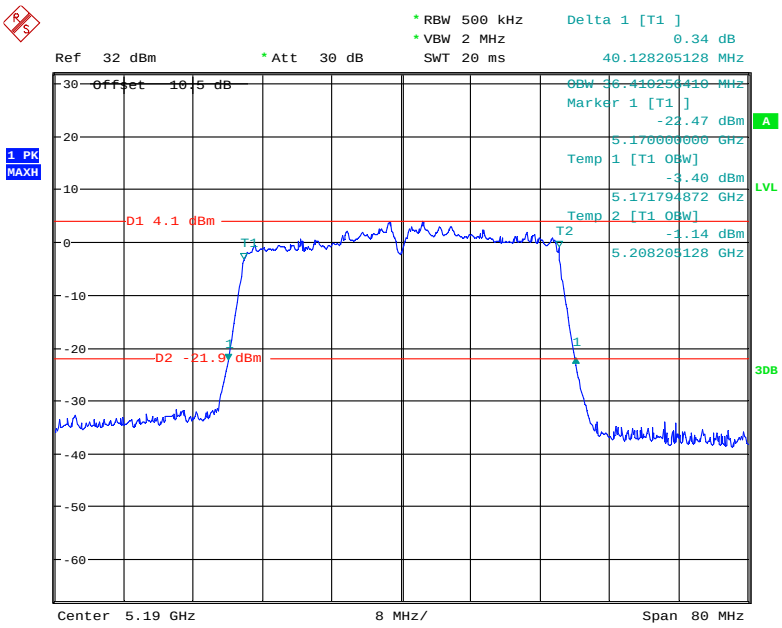
Date: 21.NOV.2017 20:18:14

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5240 MHz



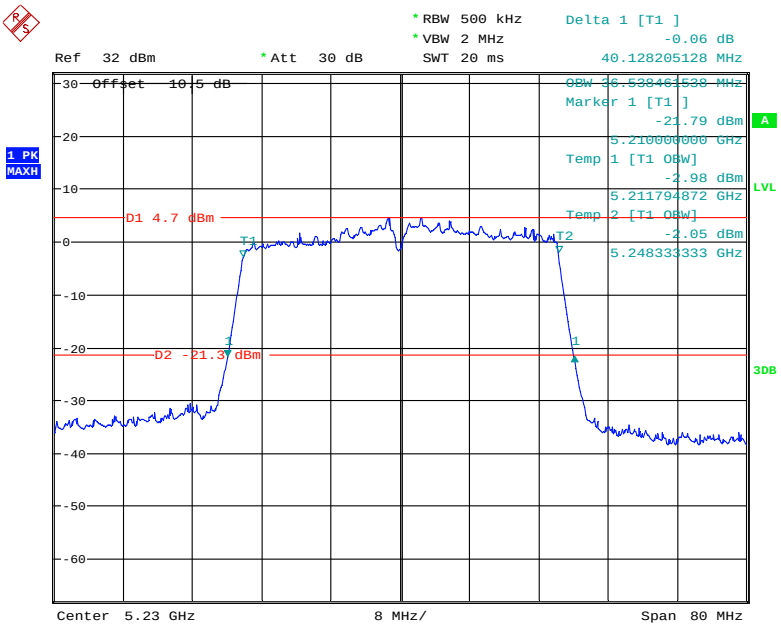
Date: 21.NOV.2017 20:19:16

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5190 MHz



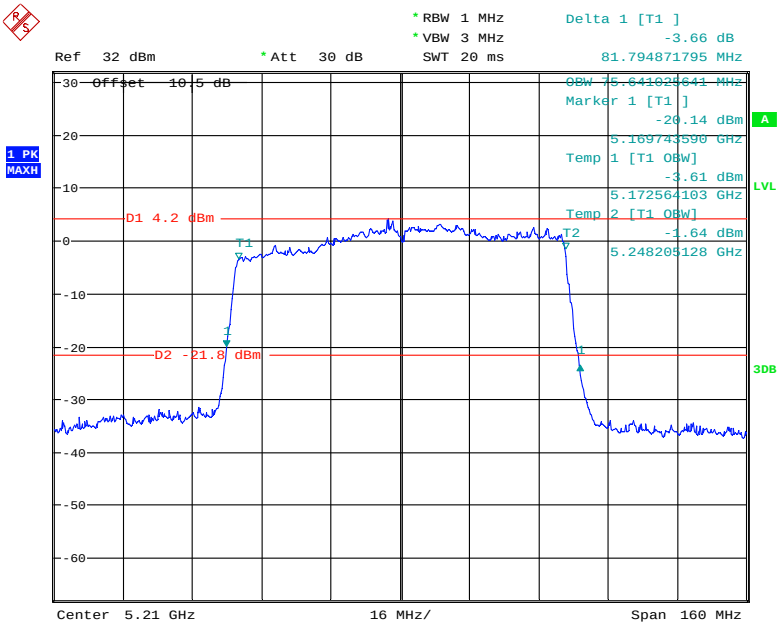
Date: 21.NOV.2017 20:11:16

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5230 MHz



Date: 21.NOV.2017 20:12:41

802.11ac80 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5210 MHz

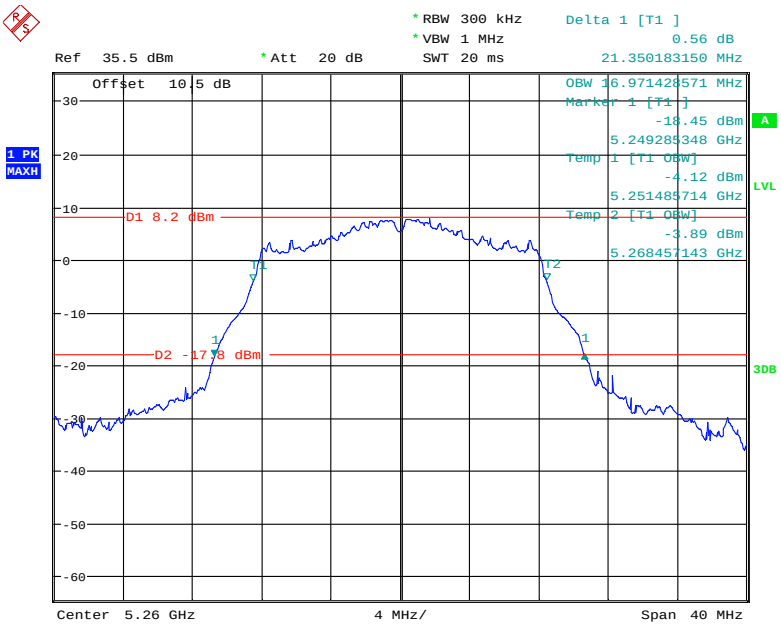


Date: 21.NOV.2017 20:06:15

5250 MHz - 5350 MHz:

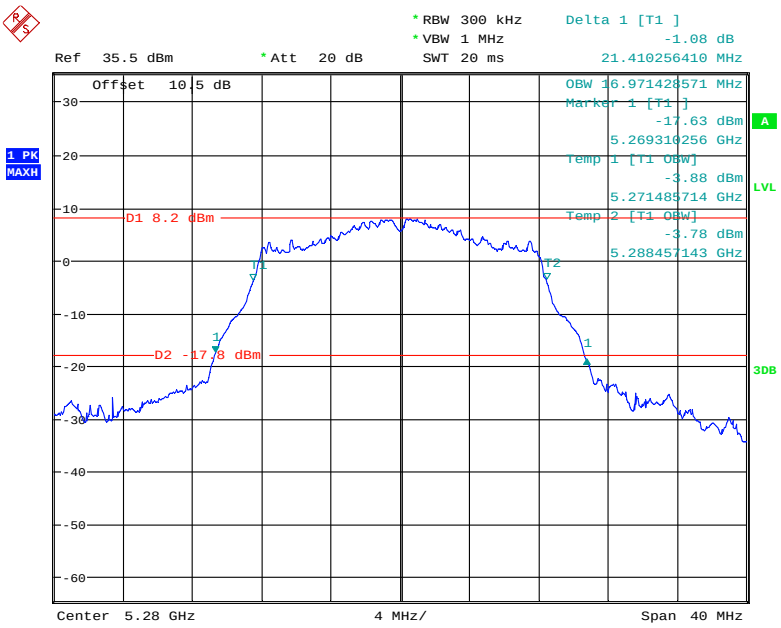
Frequency (MHz)	99% bandwidth (MHz)	26dB Bandwidth (MHz)
802.11a		
5260	16.97	21.35
5280	16.97	21.41
5320	16.97	21.36
802.11n20		
5260	18.06	21.73
5280	18.06	21.79
5320	18.06	21.73
802.11n40		
5270	36.23	40.02
5310	36.11	39.82
802.11ac20		
5260	18.06	21.60
5280	18.06	22.13
5320	18.06	21.73
802.11ac40		
5270	36.11	41.57
5310	36.11	41.61
802.11ac80		
5290	75.20	82.82

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5260 MHz



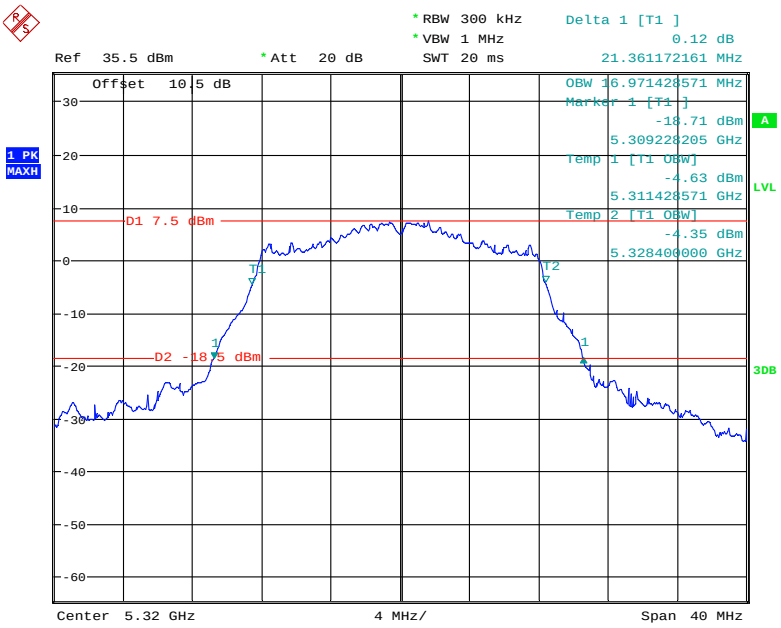
Date: 23.NOV.2017 19:41:49

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5280 MHz



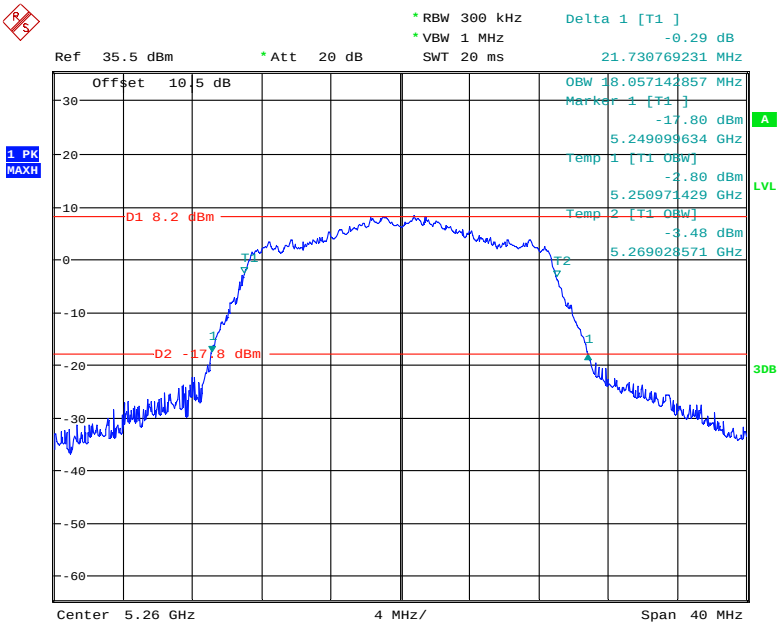
Date: 23.NOV.2017 19:42:39

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5320 MHz



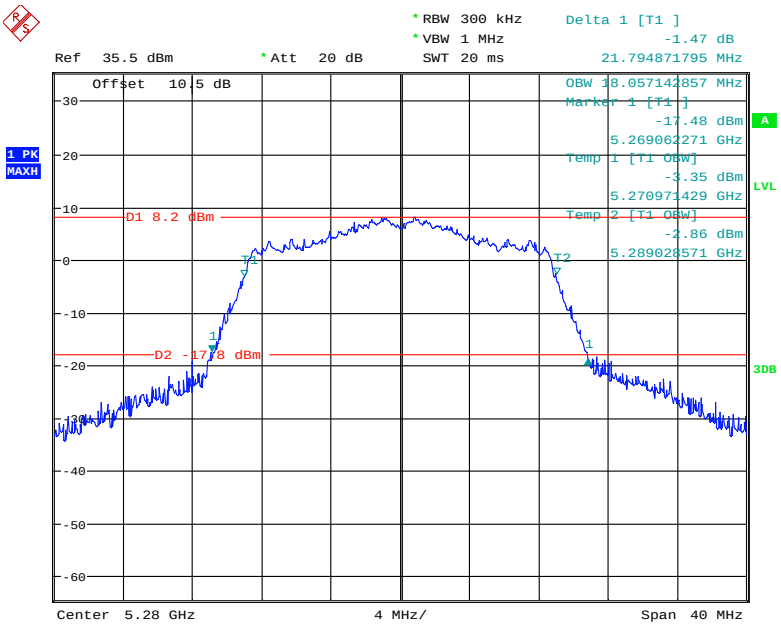
Date: 23.NOV.2017 19:43:56

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5260 MHz



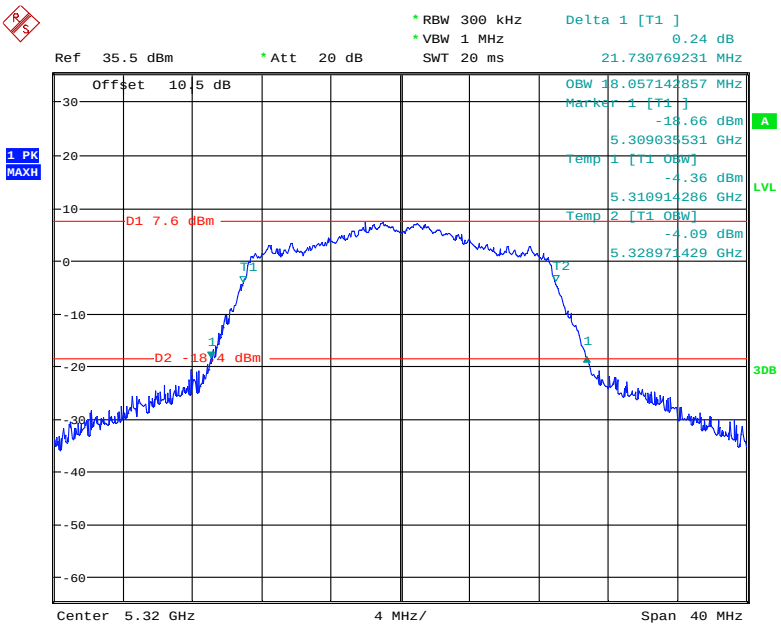
Date: 23.NOV.2017 19:38:13

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5280 MHz



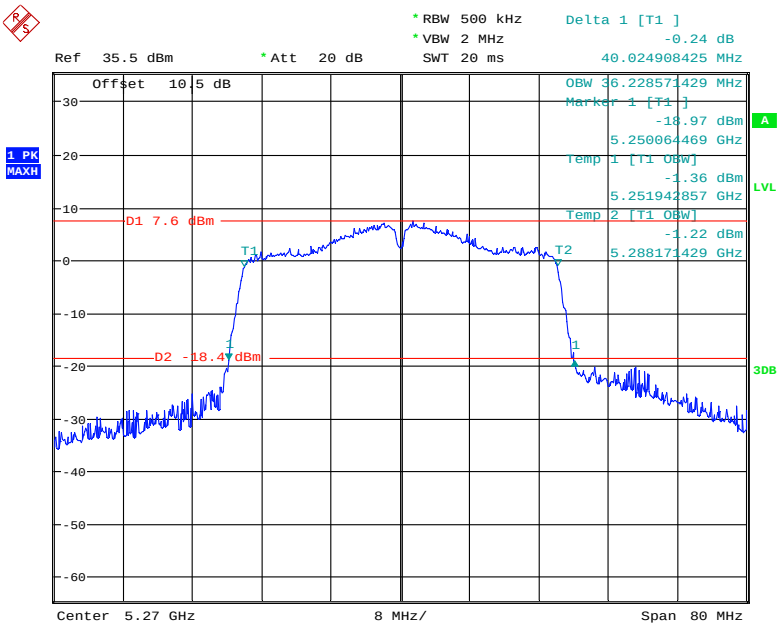
Date: 23.NOV.2017 19:39:12

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5320 MHz



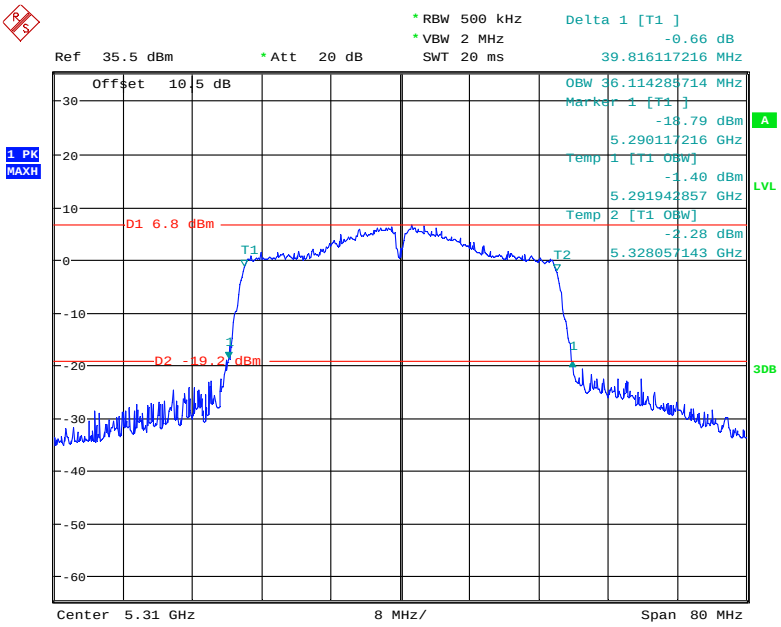
Date: 23.NOV.2017 19:40:40

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5270 MHz



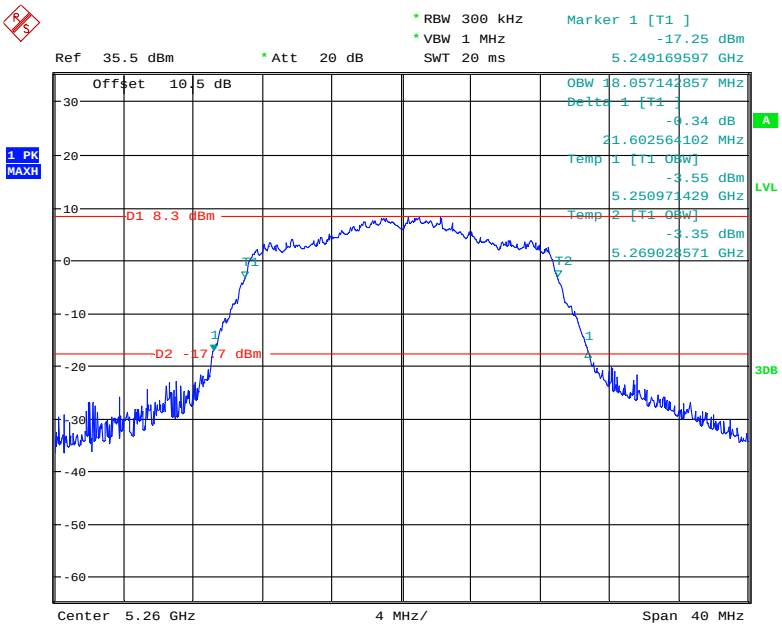
Date: 23.NOV.2017 19:33:19

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5310 MHz



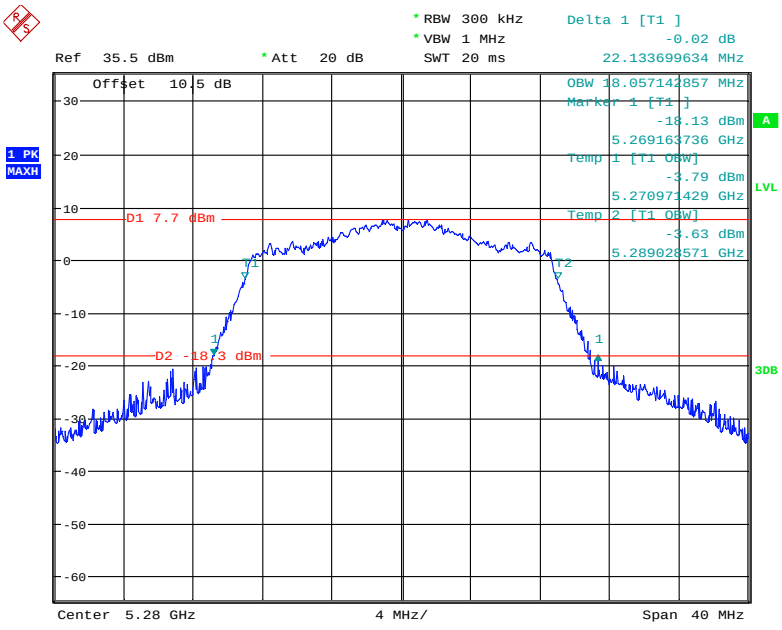
Date: 23.NOV.2017 19:32:16

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5260 MHz



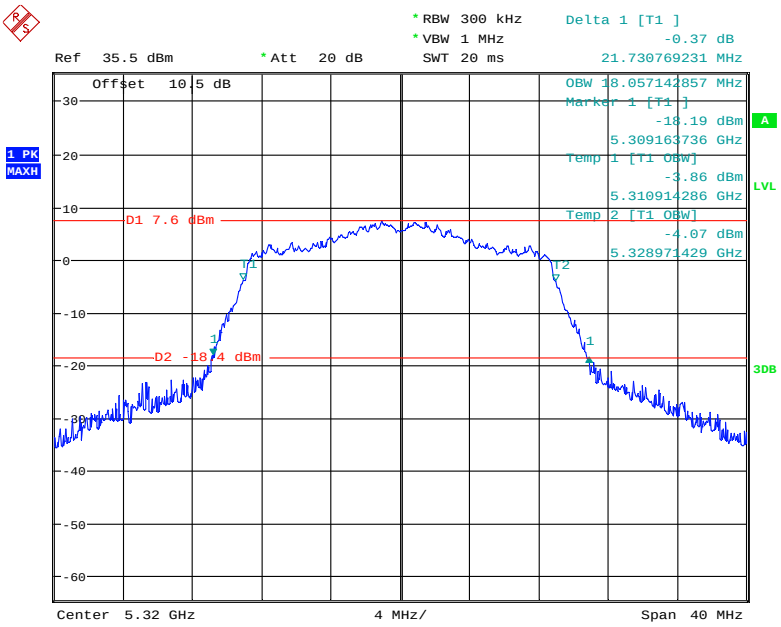
Date: 23.NOV.2017 19:34:49

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5280 MHz



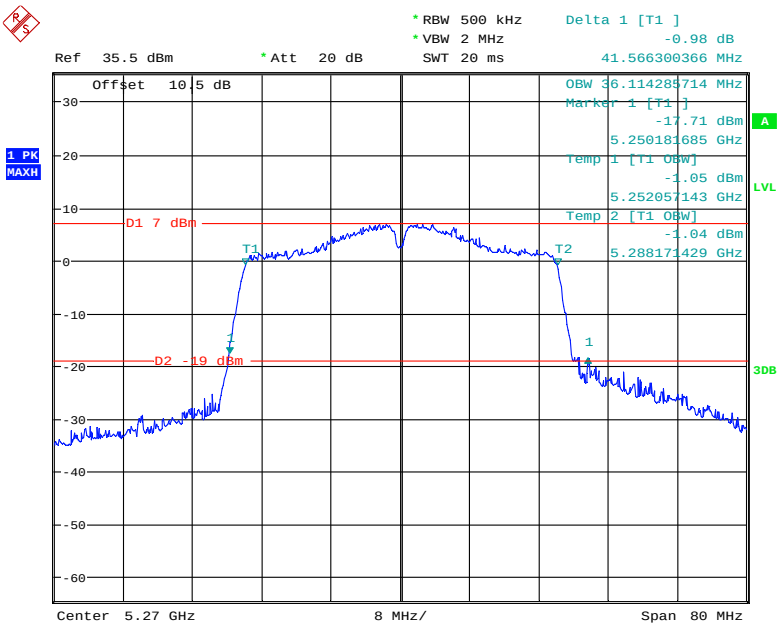
Date: 23.NOV.2017 19:35:47

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5320 MHz



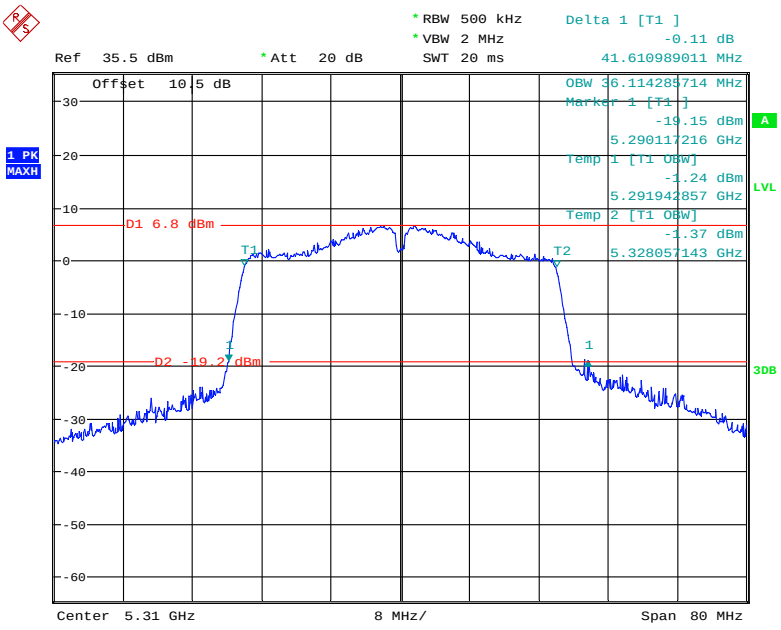
Date: 23.NOV.2017 19:36:53

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5270 MHz



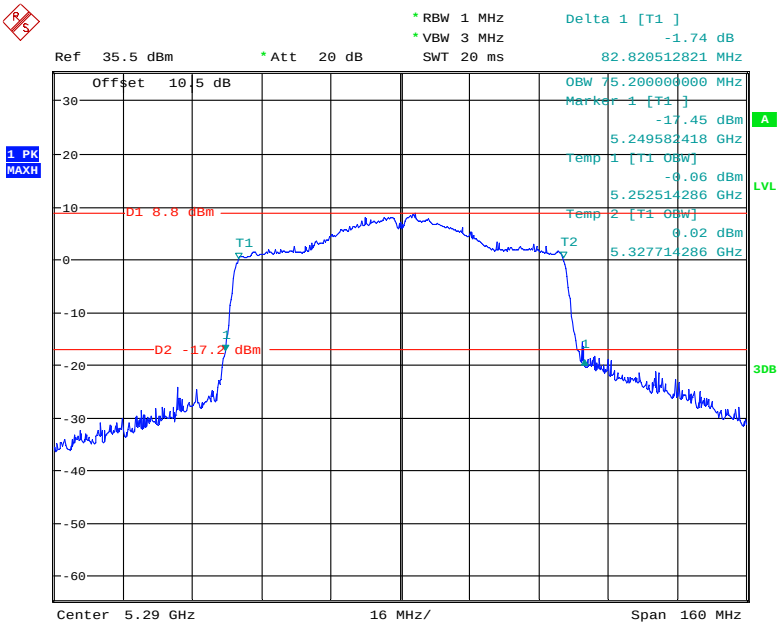
Date: 23.NOV.2017 19:30:08

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5310 MHz



Date: 23.NOV.2017 19:31:28

802.11ac80 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5290 MHz

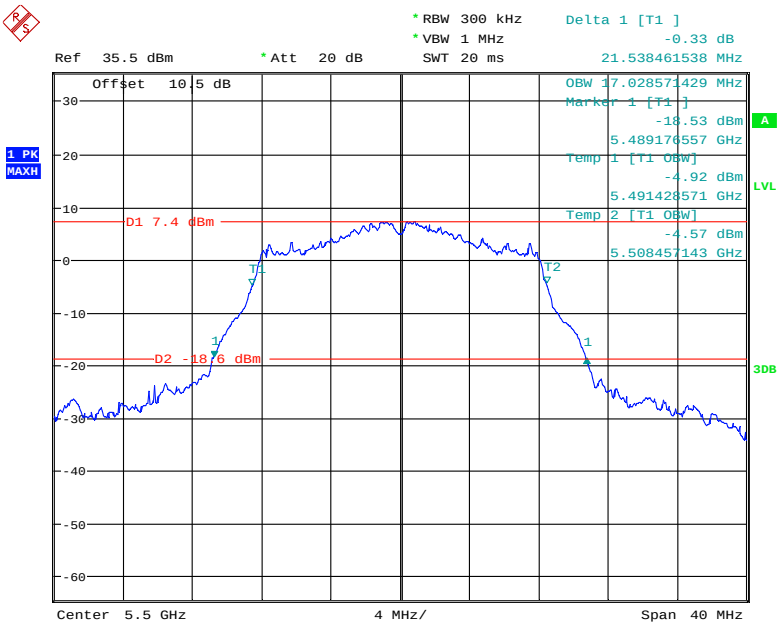


Date: 23.NOV.2017 19:28:13

5470 MHz – 5725 MHz:

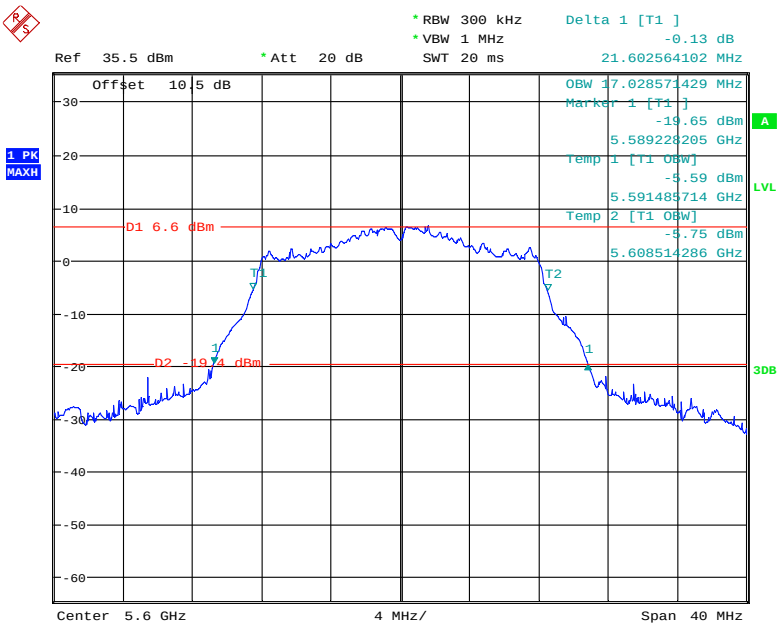
Frequency (MHz)	99% bandwidth (MHz)	26dB Bandwidth (MHz)
802.11a		
5500	17.03	21.54
5600	17.03	21.60
5720	17.03	21.41
802.11n20		
5500	18.17	21.79
5600	18.11	21.60
5720	18.11	21.79
802.11n40		
5510	36.34	40.00
5590	36.23	40.51
5710	36.28	40.13
802.11ac20		
5500	18.06	21.73
5600	18.06	21.73
5720	18.06	21.83
802.11ac40		
5510	36.34	39.91
5590	36.23	41.51
5710	36.23	40.13
802.11ac80		
5530	75.43	83.08
5610	75.38	81.54
5690	75.43	82.79

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5500 MHz



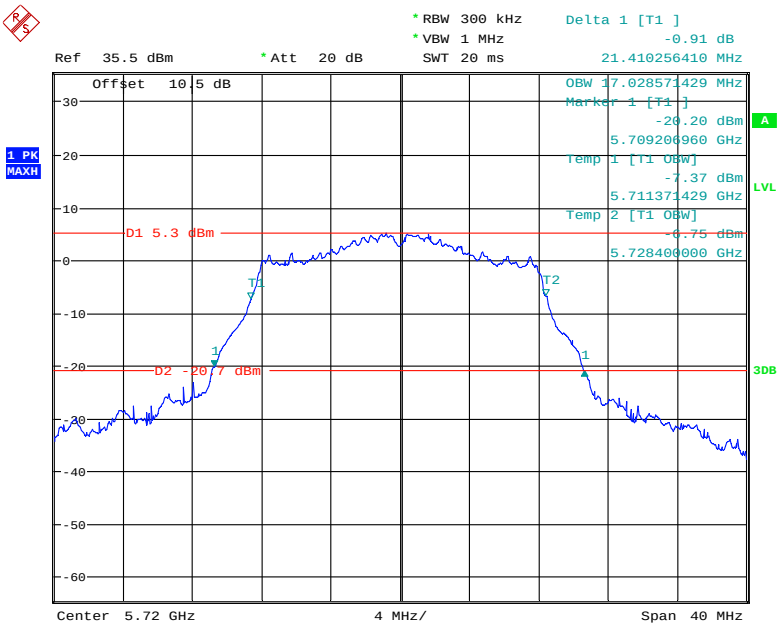
Date: 23.NOV.2017 21:18:59

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5600 MHz



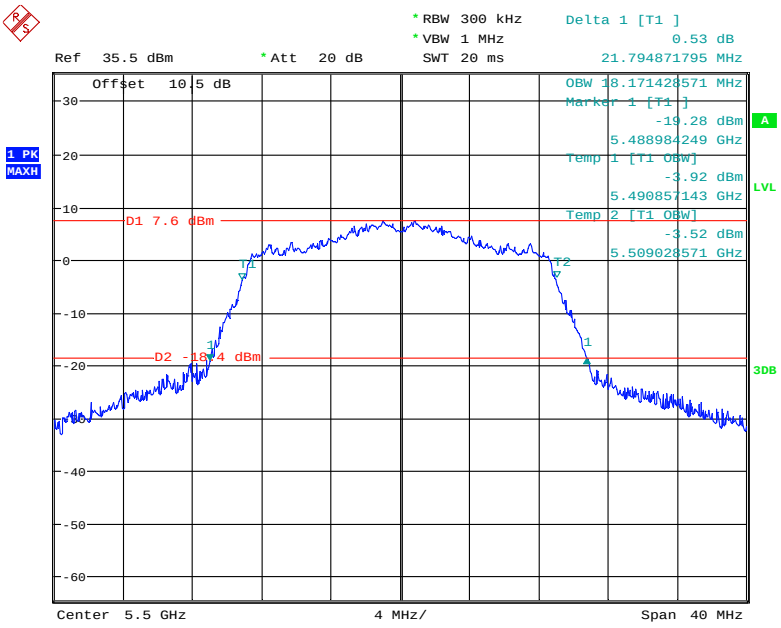
Date: 23.NOV.2017 21:17:55

802.11a mode, 26 dB Emissions & 99% Occupied Bandwidth, 5720 MHz



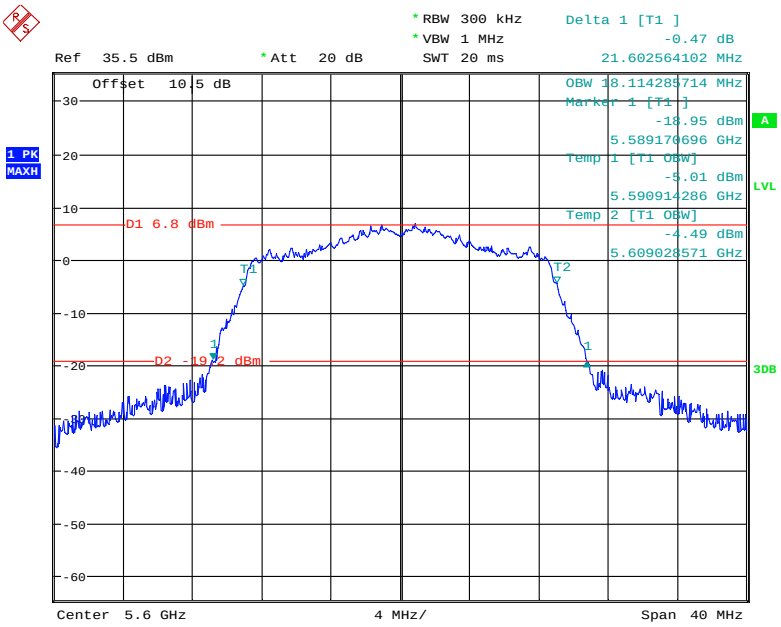
Date: 23.NOV.2017 21:12:37

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5500 MHz



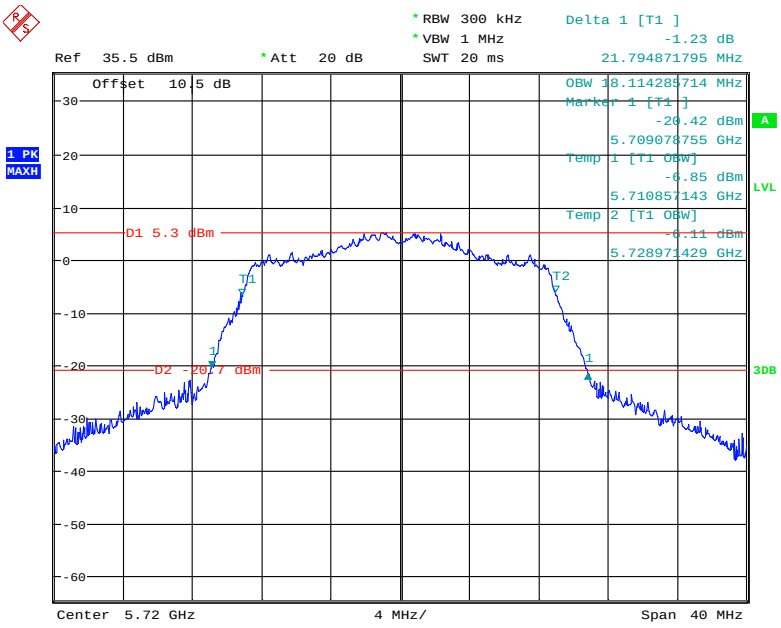
Date: 23.NOV.2017 21:20:44

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5600 MHz



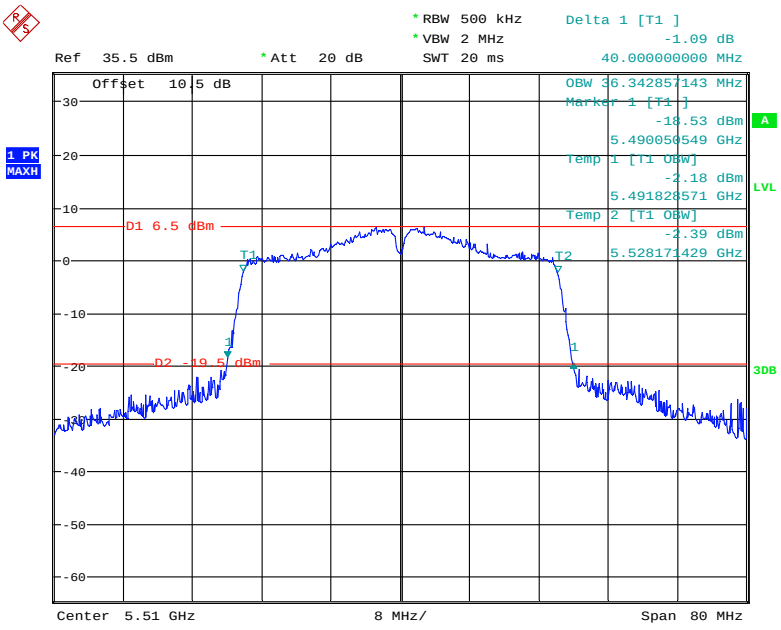
Date: 23.NOV.2017 21:30:11

802.11n20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5720 MHz



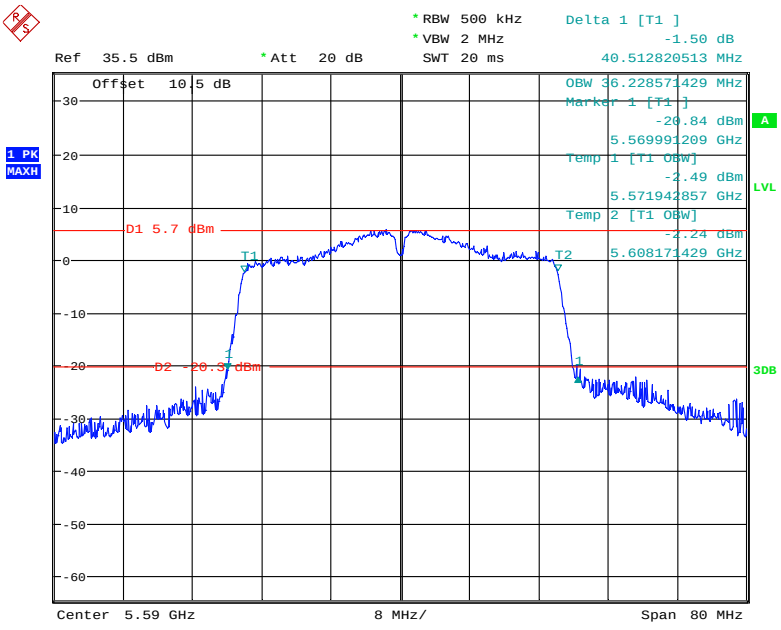
Date: 23.NOV.2017 21:31:58

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5510 MHz



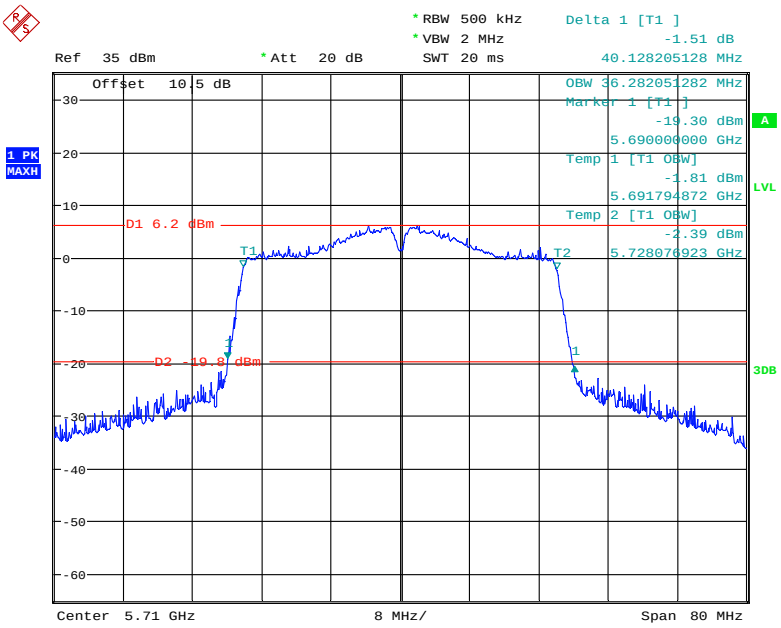
Date: 23.NOV.2017 21:37:13

802.11n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5590 MHz



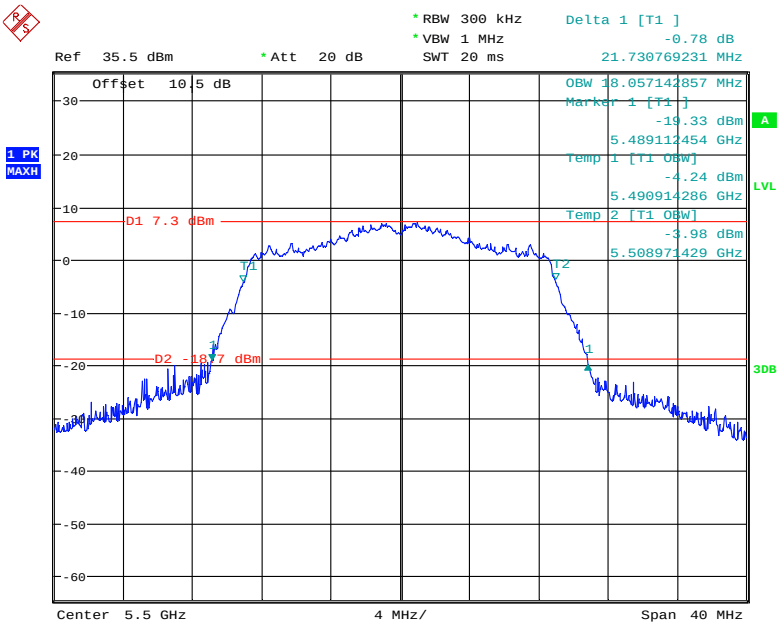
Date: 23.NOV.2017 21:38:21

802.11 n40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5710 MHz



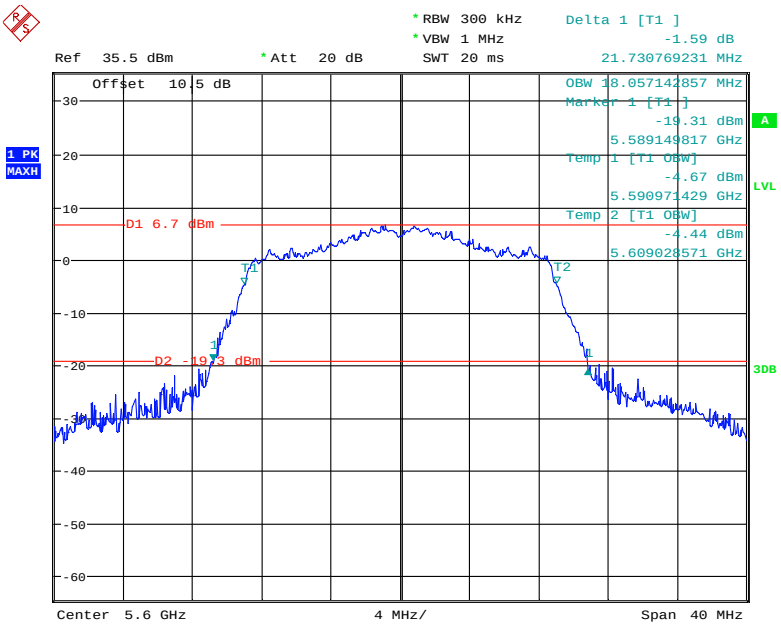
Date: 18.JAN.2018 15:00:10

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5500 MHz



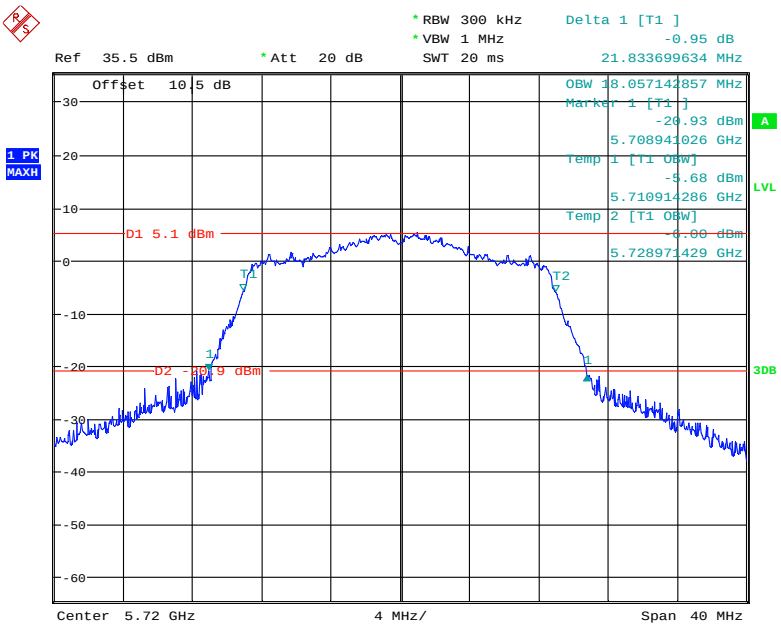
Date: 23.NOV.2017 21:33:00

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5600 MHz



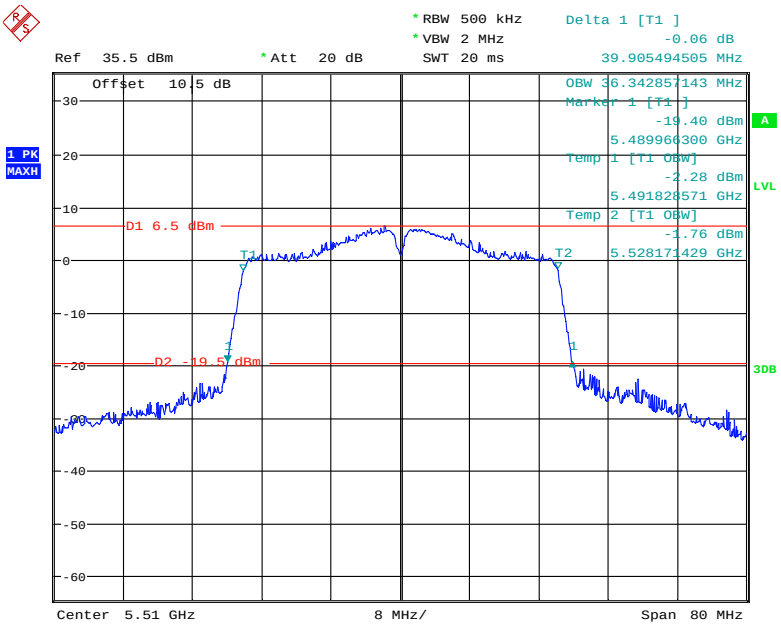
Date: 23.NOV.2017 21:34:12

802.11ac20 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5720 MHz



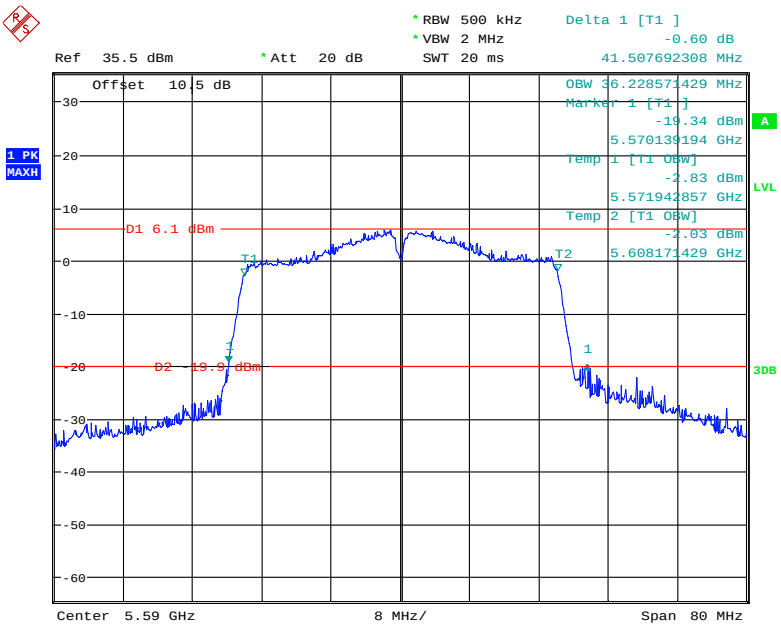
Date: 23.NOV.2017 21:35:35

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5510 MHz



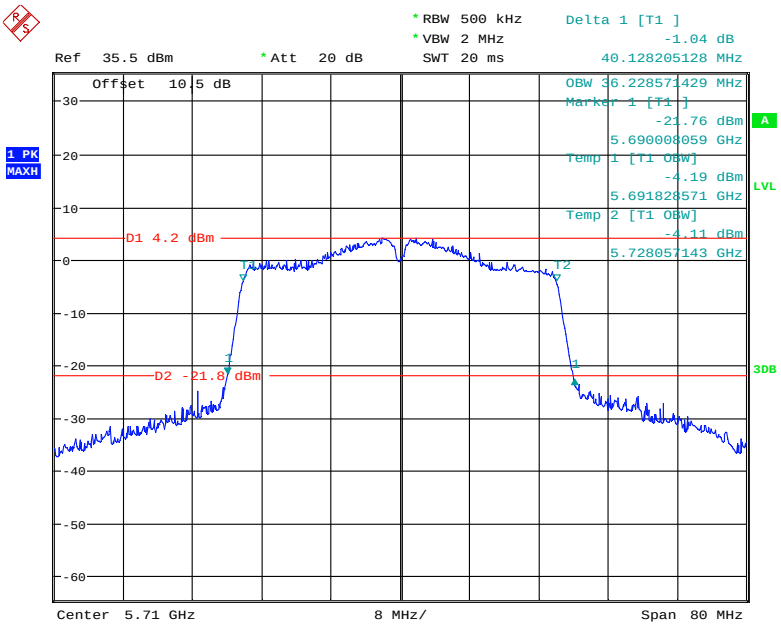
Date: 23.NOV.2017 21:44:13

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5590 MHz



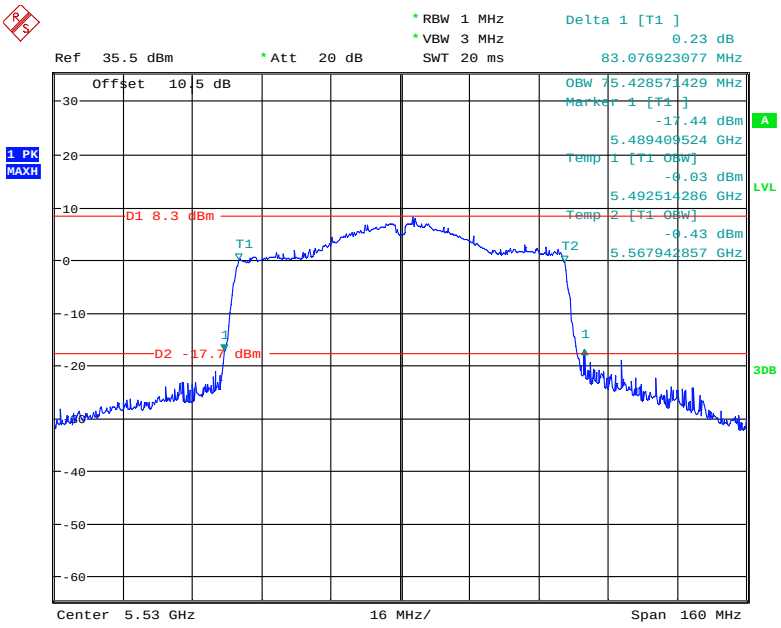
Date: 23.NOV.2017 21:44:57

802.11ac40 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5710 MHz



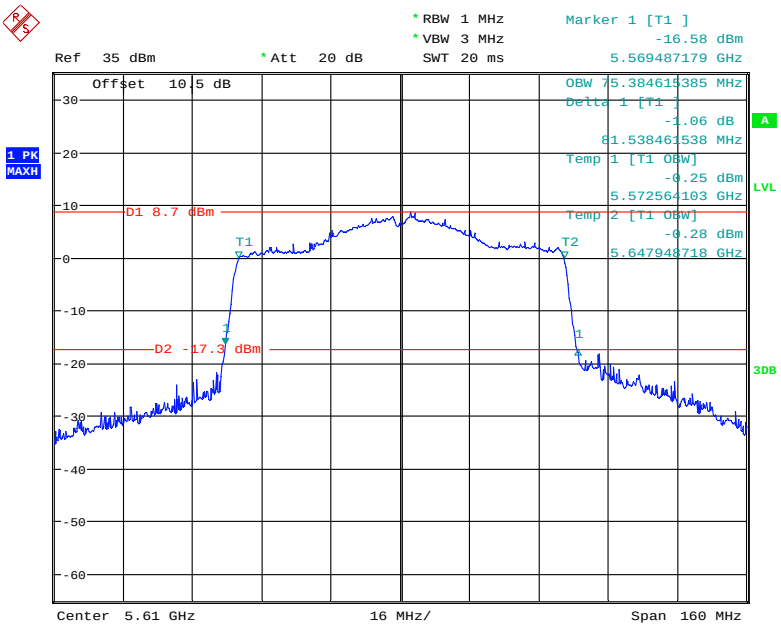
Date: 23.NOV.2017 21:45:43

802.11ac80 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5530 MHz



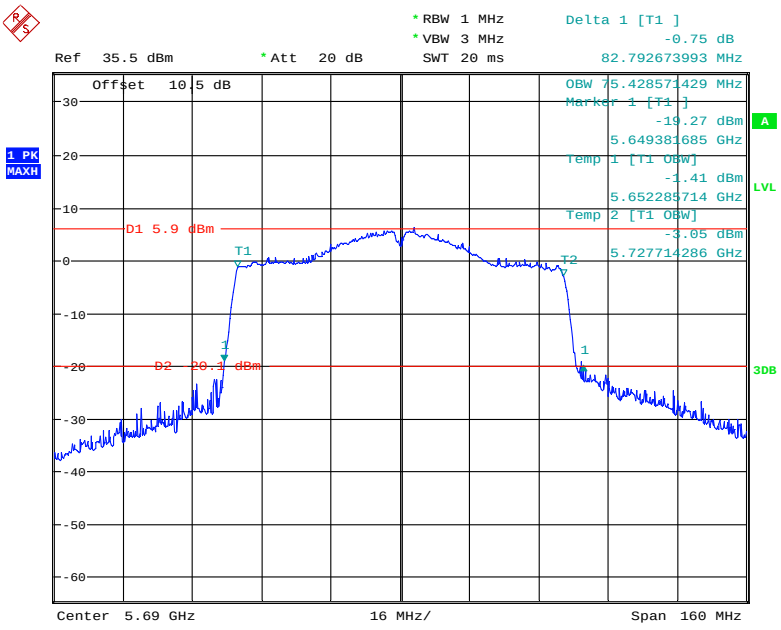
Date: 23.NOV.2017 21:46:46

802.11ac80 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5610 MHz



Date: 18.JAN.2018 15:03:27

802.11ac80 mode, 26 dB Emissions & 99% Occupied Bandwidth, 5690 MHz

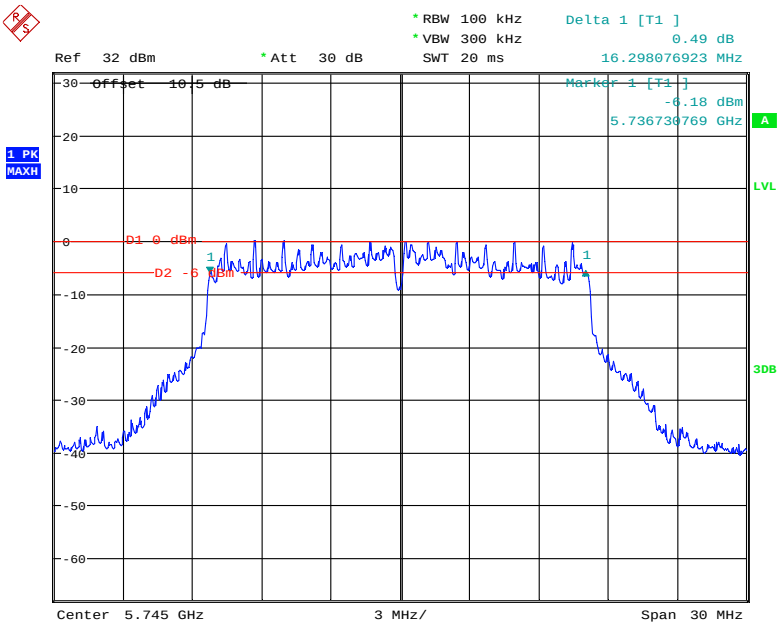


Date: 23.NOV.2017 21:56:27

5725 MHz – 5850 MHz:

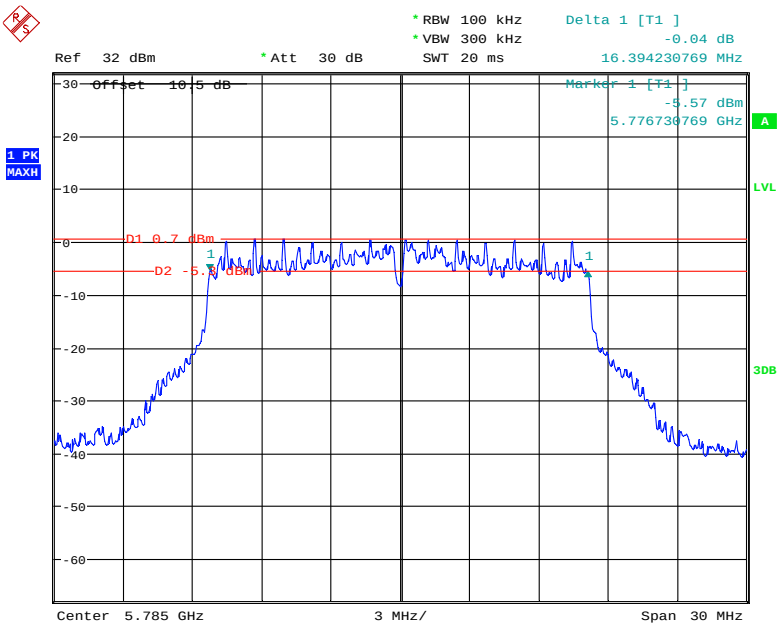
Frequency (MHz)	99% bandwidth (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
802.11a			
5745	16.73	16.30	0.5
5785	16.67	16.39	0.5
5825	16.73	15.87	0.5
802.11n20			
5745	18.01	17.74	0.5
5785	18.01	17.74	0.5
5825	18.01	17.74	0.5
802.11n40			
5755	36.31	36.54	0.5
5795	36.31	36.63	0.5
802.11ac20			
5745	18.01	17.79	0.5
5785	18.08	17.69	0.5
5825	18.08	17.74	0.5
802.11ac40			
5755	36.54	36.63	0.5
5795	36.54	36.54	0.5
802.11ac80			
5775	76.15	76.15	0.5

802.11a mode, 6dB Emission Bandwidth, 5745 MHz



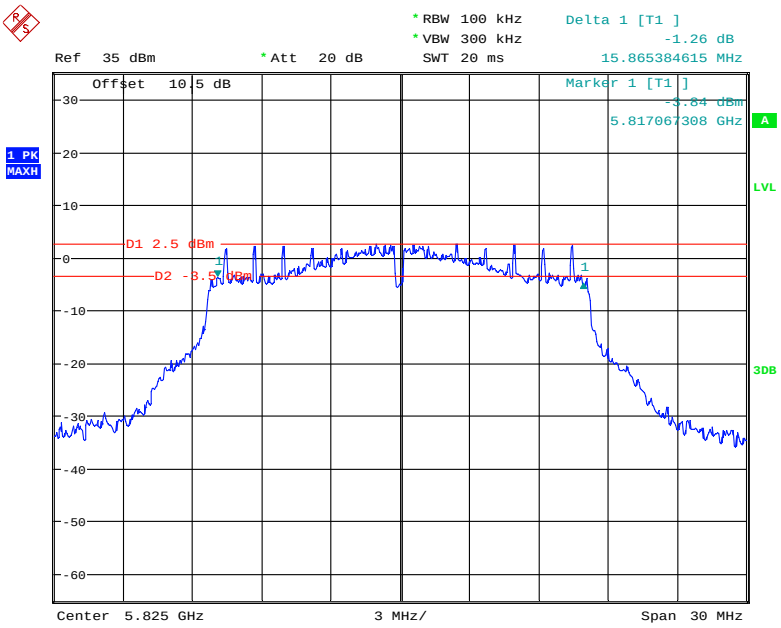
Date: 21.NOV.2017 21:09:09

802.11a mode, 6dB Emission Bandwidth, 5785 MHz



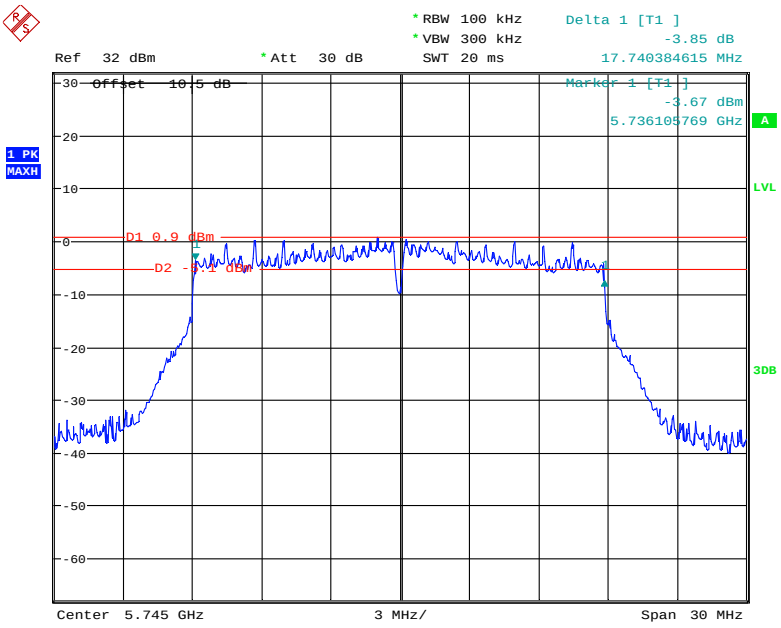
Date: 21.NOV.2017 21:07:53

802.11a mode, 6dB Emission Bandwidth, 5825 MHz



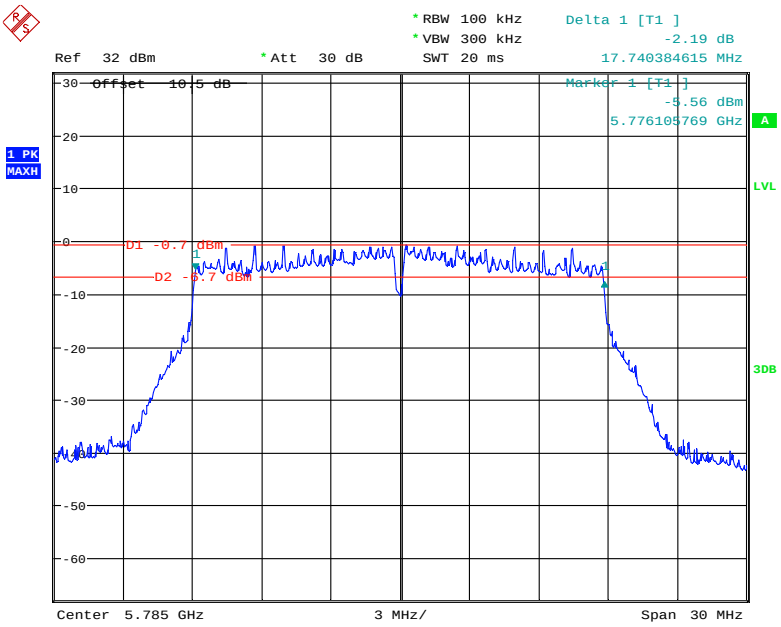
Date: 18.JAN.2018 14:55:15

802.11n20 mode, 6dB Emission Bandwidth, 5745 MHz



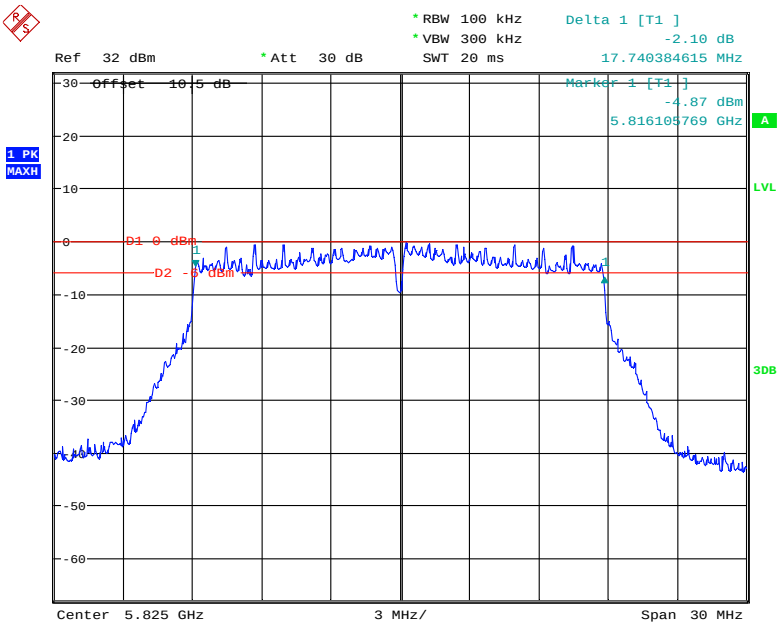
Date: 21.NOV.2017 21:12:00

802.11n20 mode, 6dB Emission Bandwidth, 5785 MHz



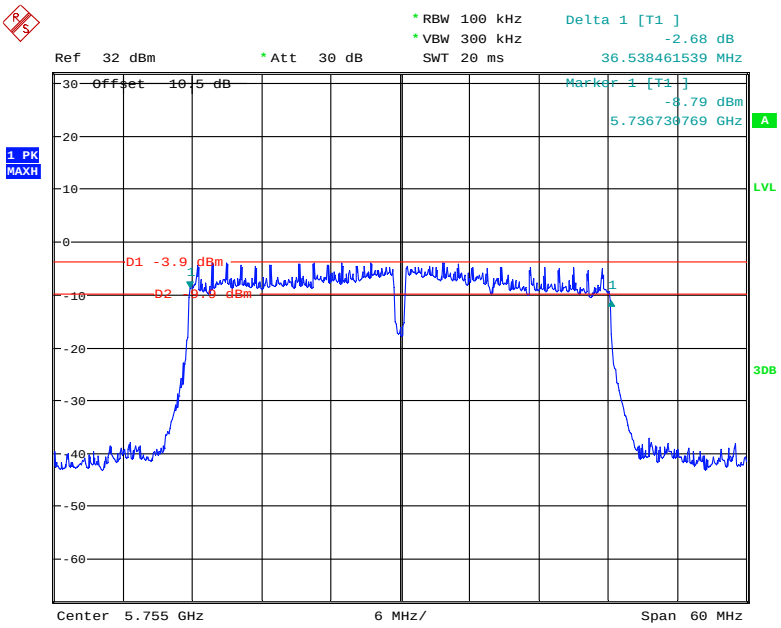
Date: 21.NOV.2017 21:13:14

802.11n20 mode, 6dB Emission Bandwidth, 5825 MHz



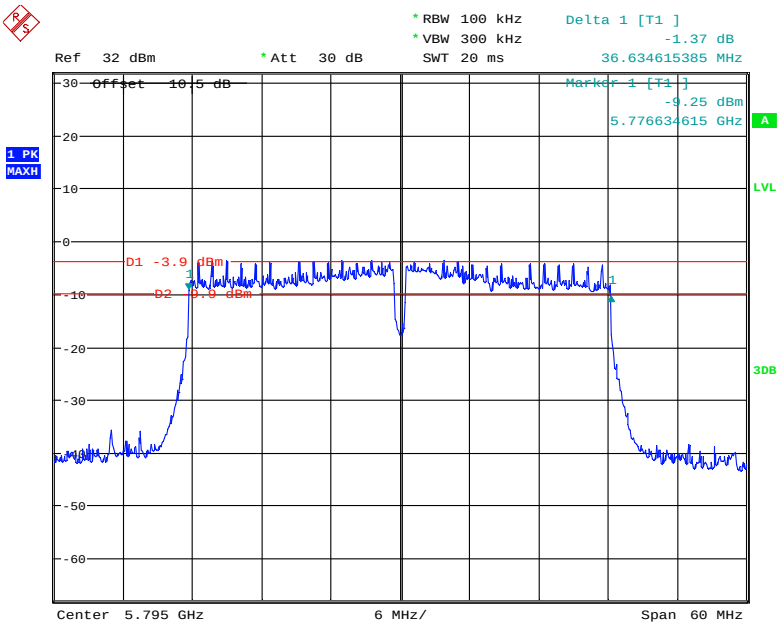
Date: 21.NOV.2017 21:14:23

802.11n40 mode, 6dB Emission Bandwidth, 5755 MHz



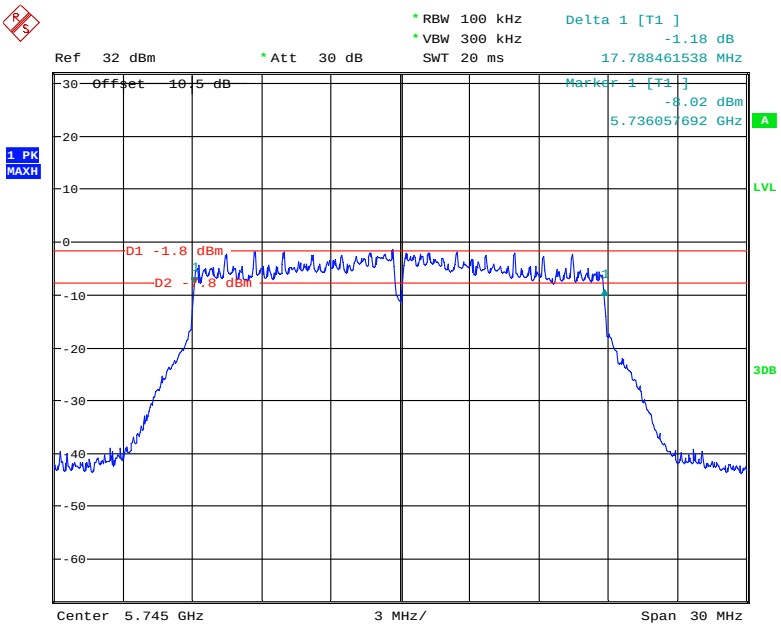
Date: 21.NOV.2017 21:15:51

802.11n40 mode, 6dB Emission Bandwidth, 5795 MHz



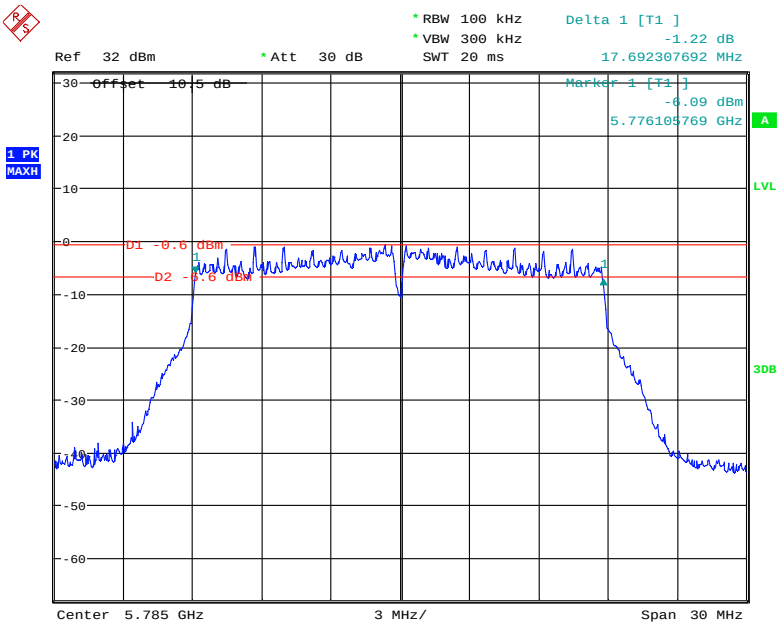
Date: 21.NOV.2017 21:16:38

802.11ac20 mode, 6dB Emission Bandwidth, 5745 MHz



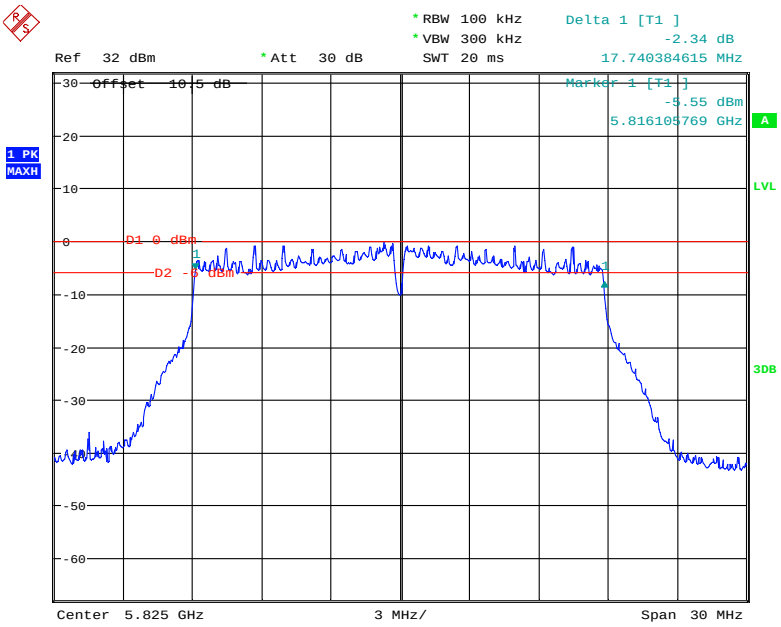
Date: 21.NOV.2017 21:17:52

802.11ac20 mode, 6dB Emission Bandwidth, 5785 MHz



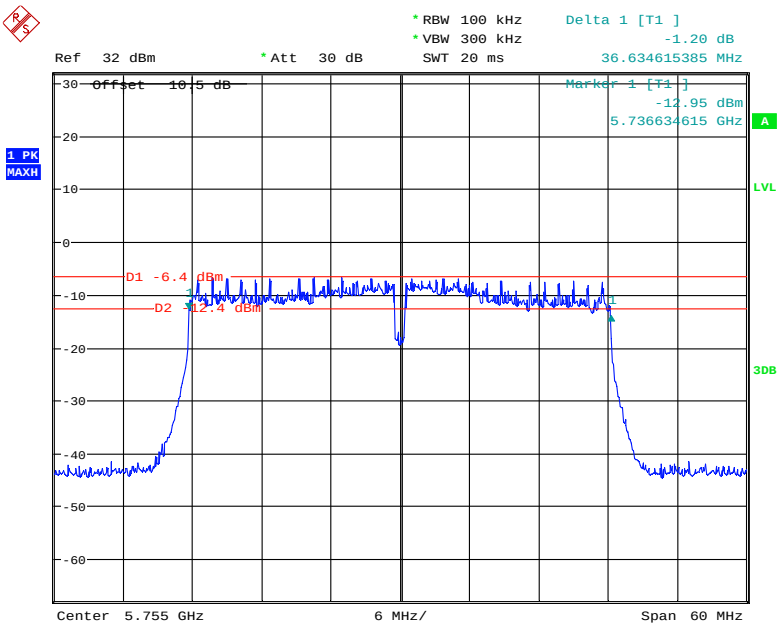
Date: 21.NOV.2017 21:19:25

802.11ac20 mode, 6dB Emission Bandwidth, 5825 MHz



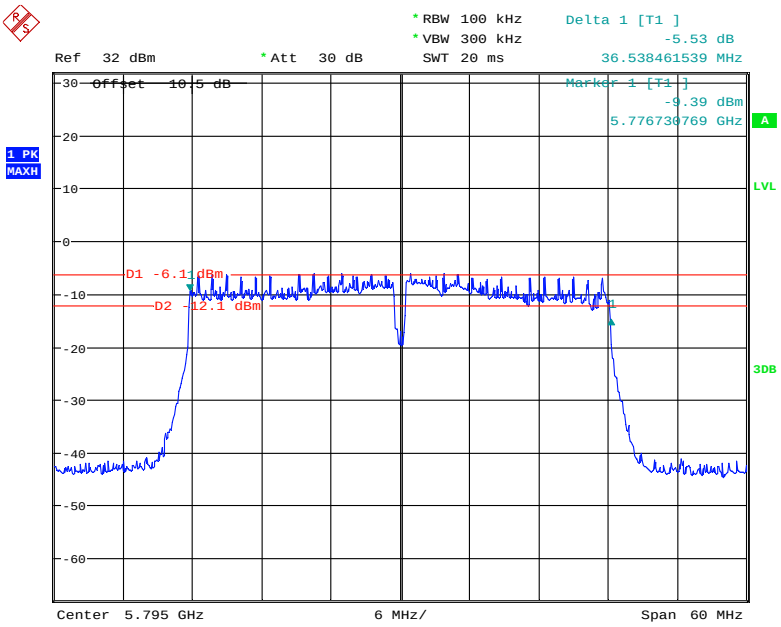
Date: 21.NOV.2017 21:20:54

802.11ac40 mode, 6dB Emission Bandwidth, 5755 MHz



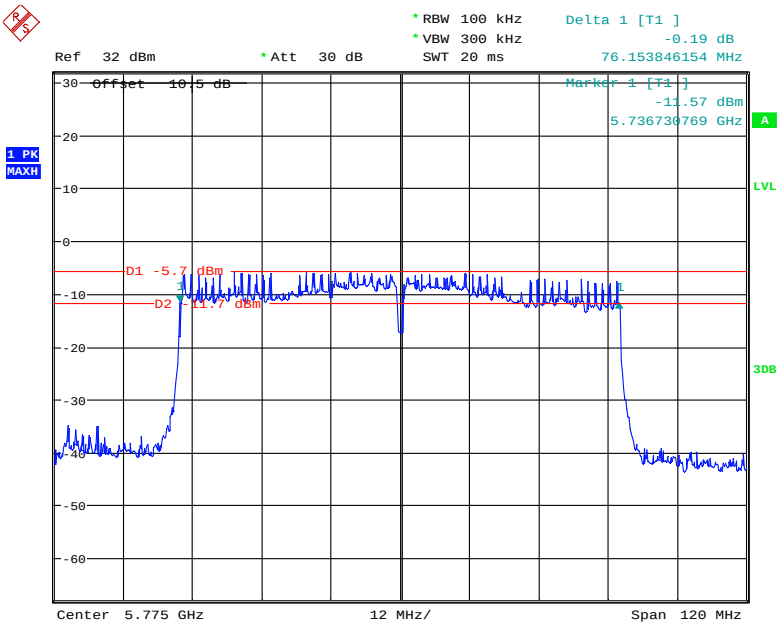
Date: 21.NOV.2017 21:22:41

802.11ac40 mode, 6dB Emission Bandwidth, 5795 MHz



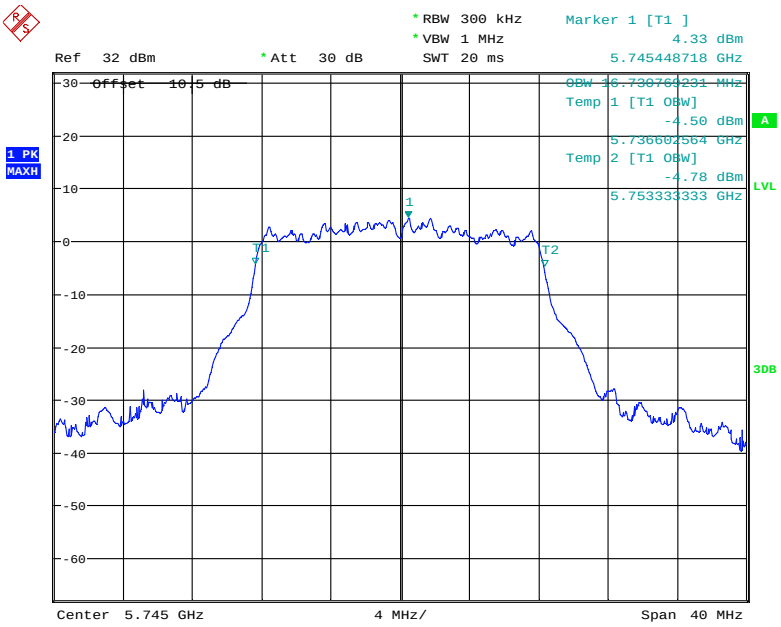
Date: 21.NOV.2017 21:24:59

802.11ac80 mode, 6dB Emission Bandwidth, 5775 MHz

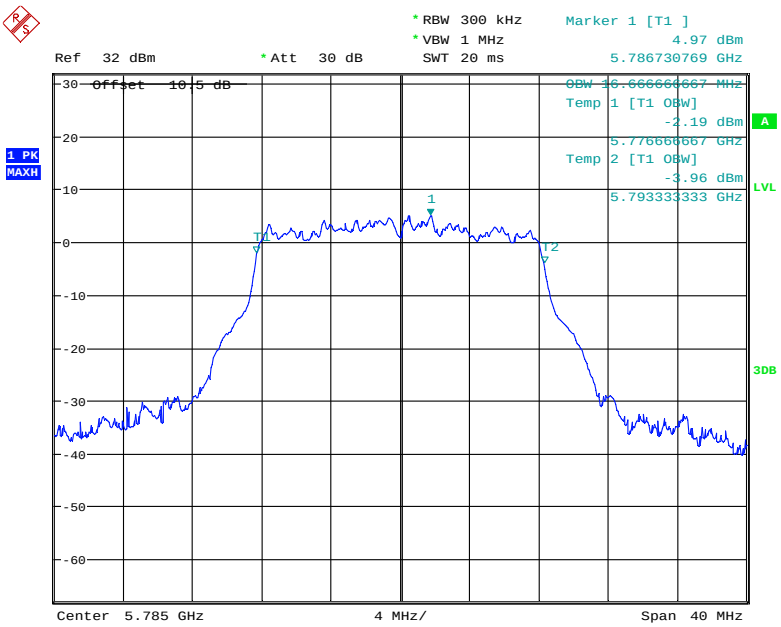


Date: 21.NOV.2017 21:26:43

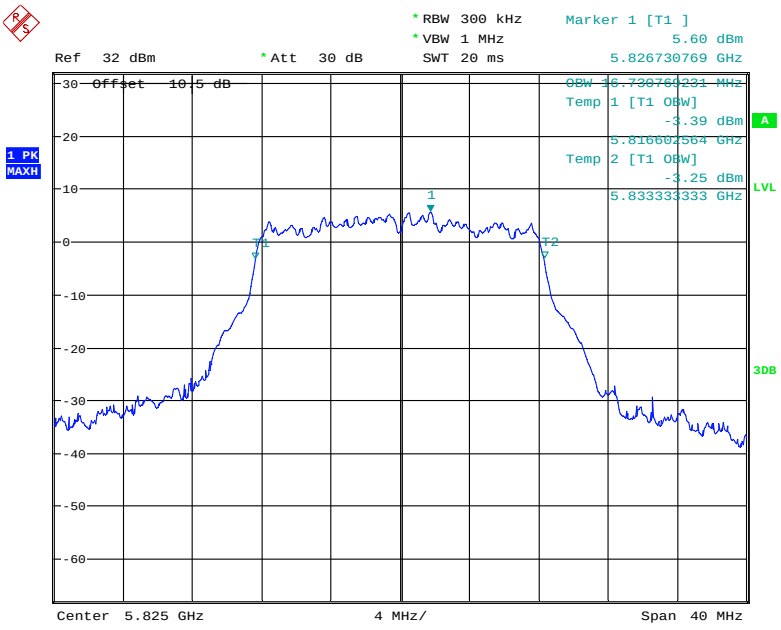
802.11a mode, 99% Occupied Bandwidth, 5745 MHz



802.11a mode, 99% Occupied Bandwidth, 5785 MHz

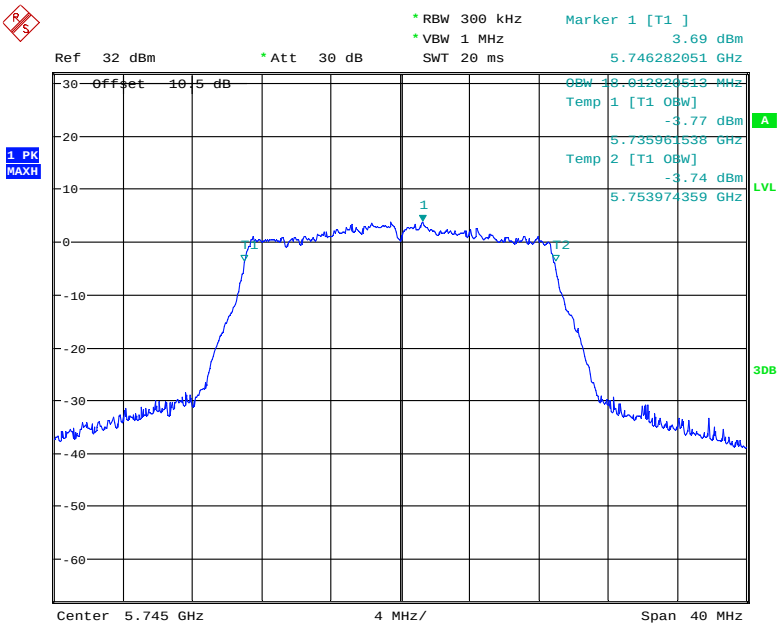


802.11a mode, 99% Occupied Bandwidth, 5825 MHz



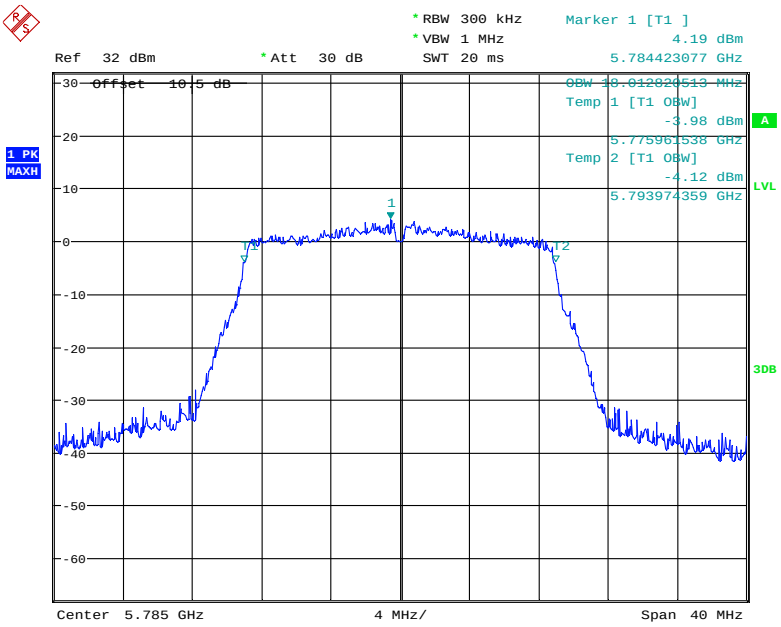
Date: 21.NOV.2017 20:53:12

802.11n20 mode, 99% Occupied Bandwidth, 5745 MHz



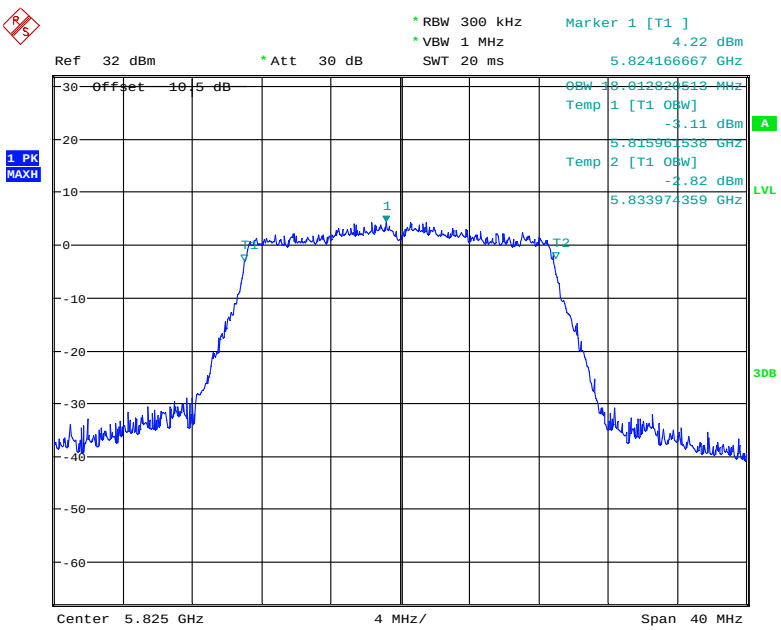
Date: 21.NOV.2017 20:49:16

802.11n20 mode, 99% Occupied Bandwidth, 5785 MHz



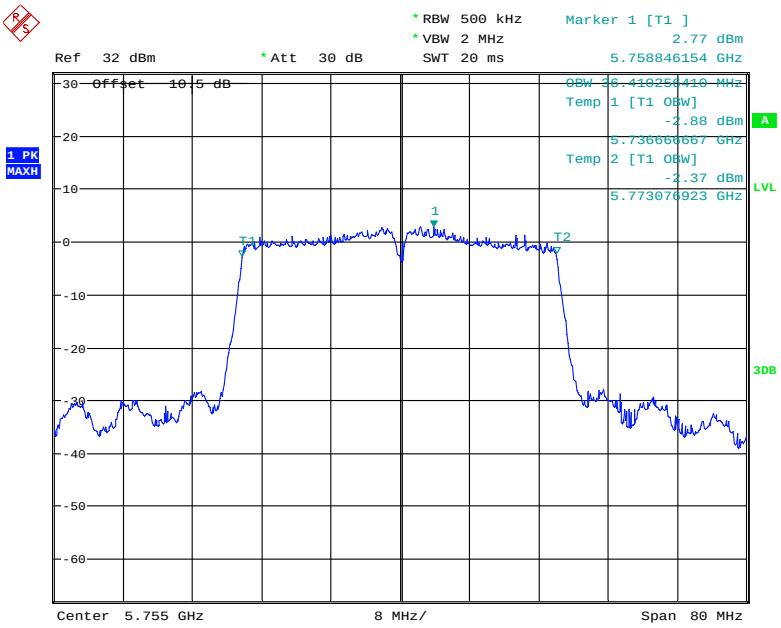
Date: 21.NOV.2017 20:49:41

802.11n20 mode, 99% Occupied Bandwidth, 5825 MHz

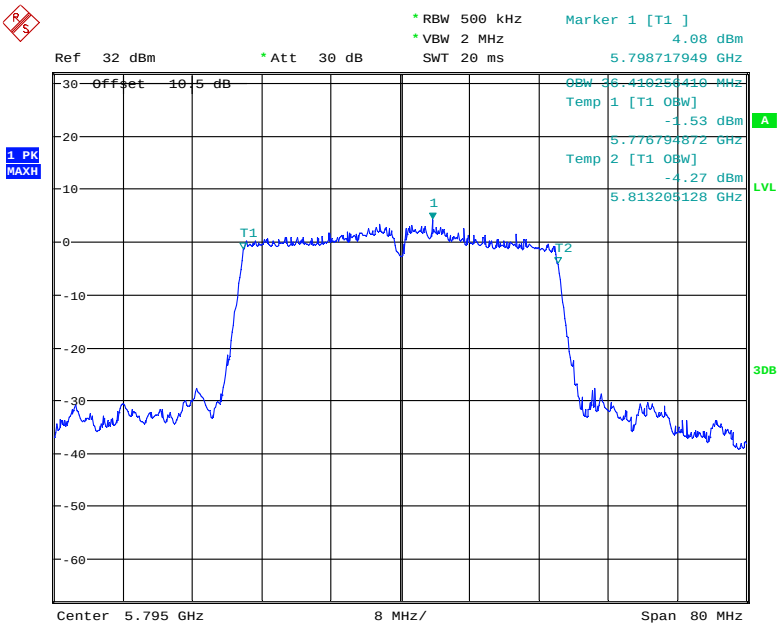


Date: 21.NOV.2017 20:49:55

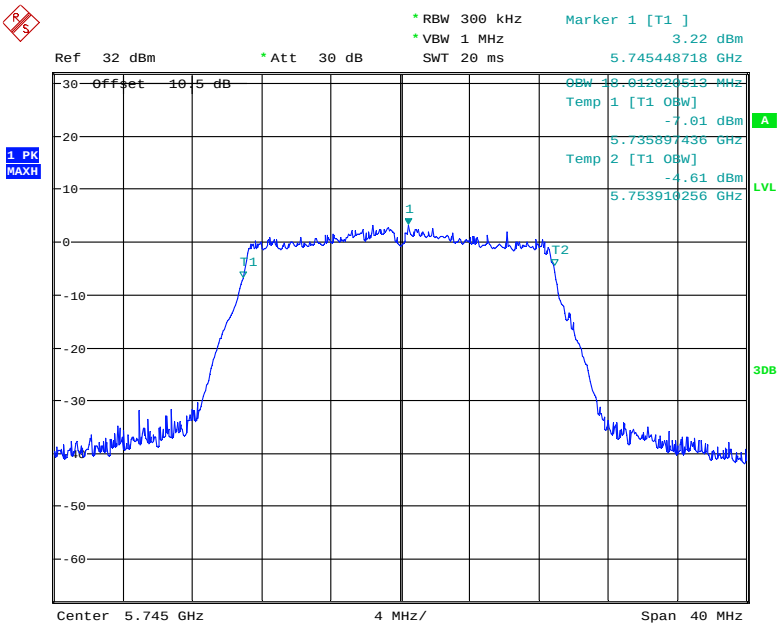
802.11n40 mode, 99% Occupied Bandwidth, 5755 MHz



802.11n40 mode, 99% Occupied Bandwidth, 5795 MHz

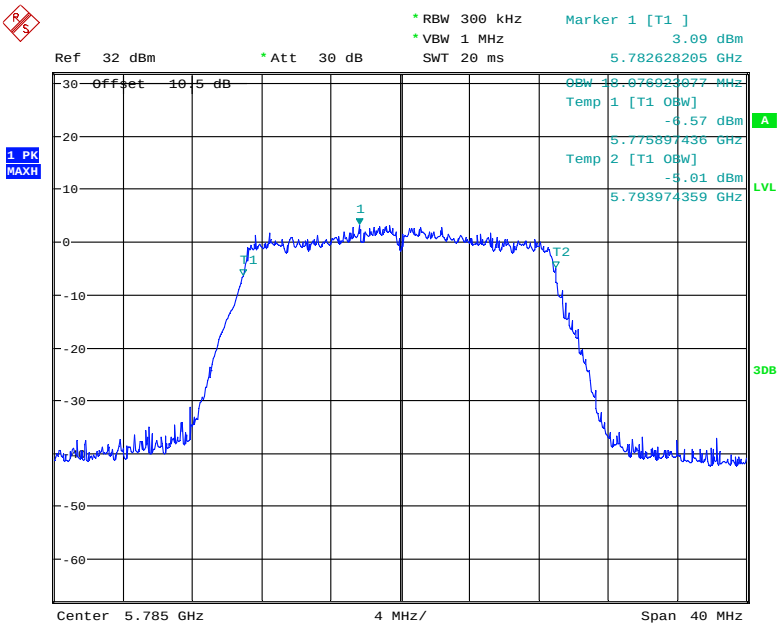


802.11ac20 mode, 99% Occupied Bandwidth, 5745 MHz



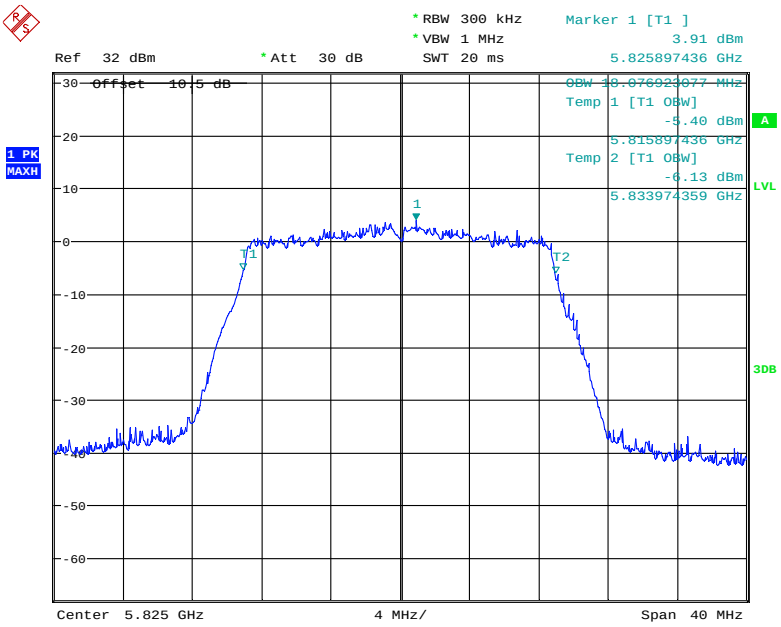
Date: 21.NOV.2017 20:47:49

802.11ac20 mode, 99% Occupied Bandwidth, 5785 MHz



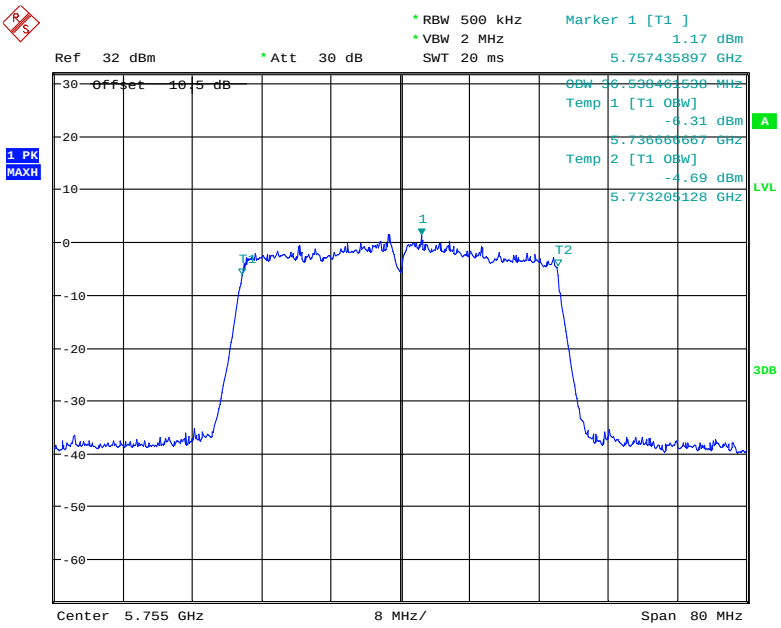
Date: 21.NOV.2017 20:48:05

802.11ac20 mode, 99% Occupied Bandwidth, 5825 MHz



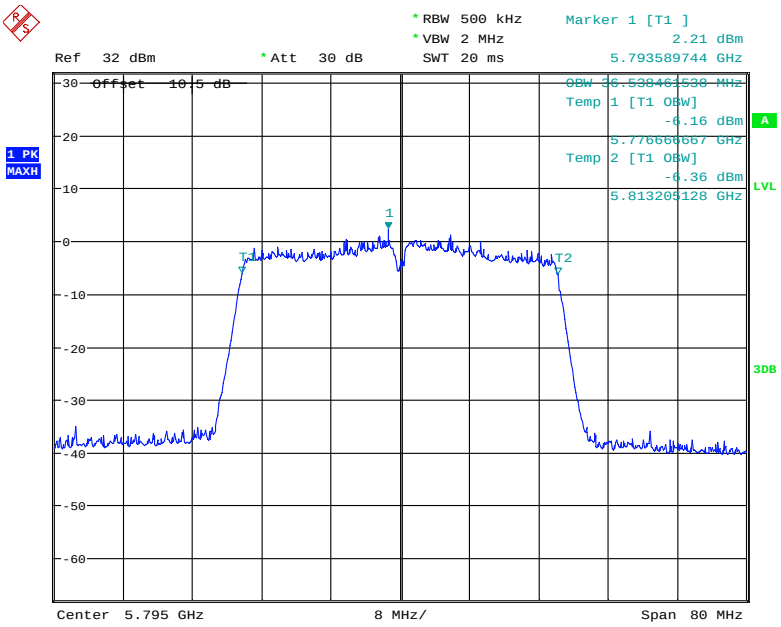
Date: 21.NOV.2017 20:48:18

802.11ac40 mode, 99% Occupied Bandwidth, 5755 MHz



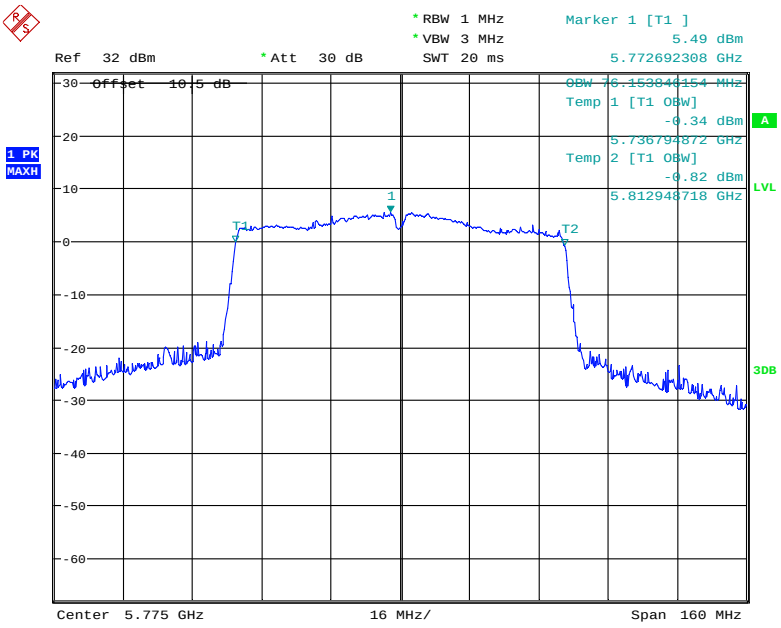
Date: 21.NOV.2017 20:46:46

802.11ac40 mode, 99% Occupied Bandwidth, 5795 MHz



Date: 21.NOV.2017 20:47:13

802.11ac80 mode, 99% Occupied Bandwidth, 5775 MHz



Date: 21.NOV.2017 20:45:18

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

Applicable Standard

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

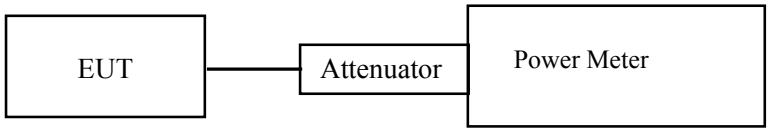
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting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

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Vincent Zheng on 2017-11-24.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

5150 MHz – 5250 MHz:

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5180	15.46	24
5200	15.40	
5240	15.58	
802.11n20		
5180	15.03	24
5200	15.33	
5240	15.29	
802.11n40		
5190	14.48	24
5230	14.69	
802.11ac20		
5180	15.03	24
5200	15.06	
5240	15.27	
802.11ac40		
5190	14.51	24
5230	14.76	
802.11ac80		
5210	14.38	24

5250 MHz – 5350 MHz:

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5260	14.74	24
5280	14.43	
5320	14.04	
802.11n20		
5260	15.43	24
5280	15.33	
5320	14.87	
802.11n40		
5270	14.37	24
5310	14.04	
802.11ac20		
5260	15.45	24
5280	15.29	
5320	14.92	
802.11ac40		
5270	14.34	24
5310	14.03	
802.11ac80		
5290	14.45	24

5470 MHz – 5725 MHz:

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5500	14.99	24
5600	15.52	
5720	14.47	
802.11n20		
5500	14.58	24
5600	14.11	
5720	14.02	
802.11n40		
5510	15.02	24
5590	14.42	
5710	13.88	
802.11ac20		
5500	15.75	24
5600	15.21	
5720	14.04	
802.11ac40		
5510	14.61	24
5590	15.52	
5710	14.02	
802.11ac80		
5530	15.13	24
5610	14.53	
5690	14.61	

5725 MHz – 5825 MHz:

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5745	14.28	30
5785	14.72	
5825	15.18	
802.11n20		
5745	15.53	30
5785	15.24	
5825	15.34	
802.11n40		
5755	14.92	30
5795	15.07	
802.11ac20		
5745	14.93	30
5785	14.49	
5825	14.84	
802.11ac40		
5755	14.57	30
5795	14.12	
802.11ac80		
5775	14.53	30

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

Applicable Standard

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

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

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

Test Procedure

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

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

Test Data

Environmental Conditions

Temperature:	23-24 ℃
Relative Humidity:	49-50 %
ATM Pressure:	100-103.0 kPa

The testing was performed by Vincent Zheng on 2017-11-21 and 2017-11-23.

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EUT operation mode: Transmitting

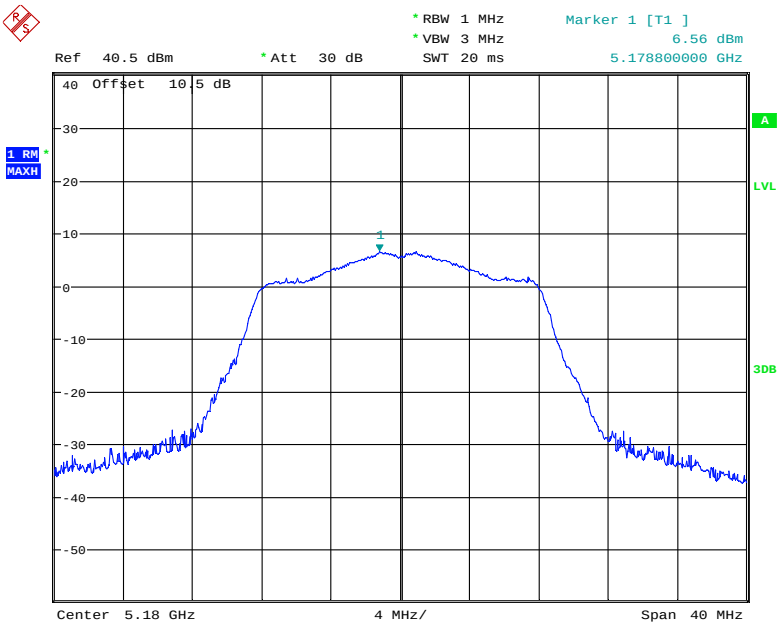
Test Result: Pass

Please refer to the following tables and plots.

5150 MHz – 5250 MHz:

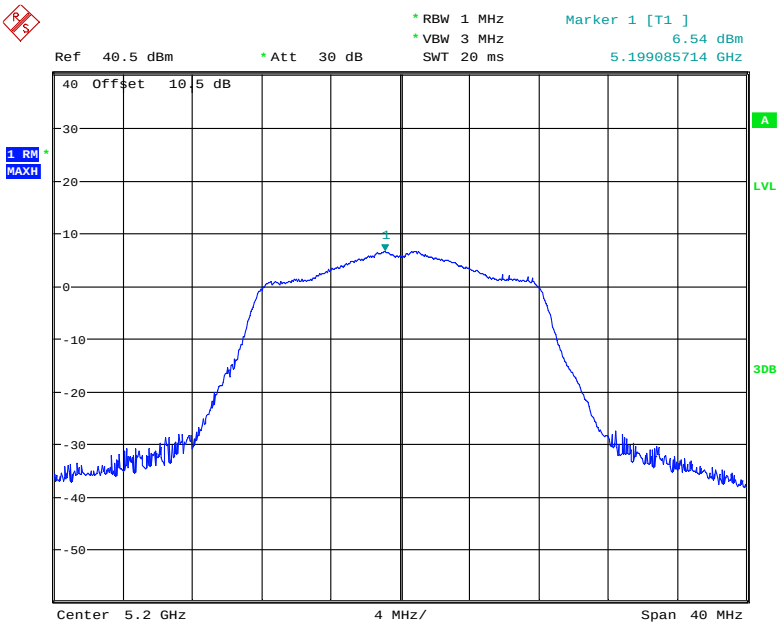
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5180	6.56	11
5200	6.54	
5240	6.55	
802.11n20		
5180	5.68	11
5200	6.01	
5240	5.98	
802.11n40		
5190	3.18	11
5230	3.22	
802. 11ac20		
5180	5.81	11
5200	6.22	
5240	6.14	
802. 11ac40		
5190	3.29	11
5230	3.28	
802. 11ac80		
5210	0.71	11

802.11a mode, Power Spectral Density, 5180 MHz



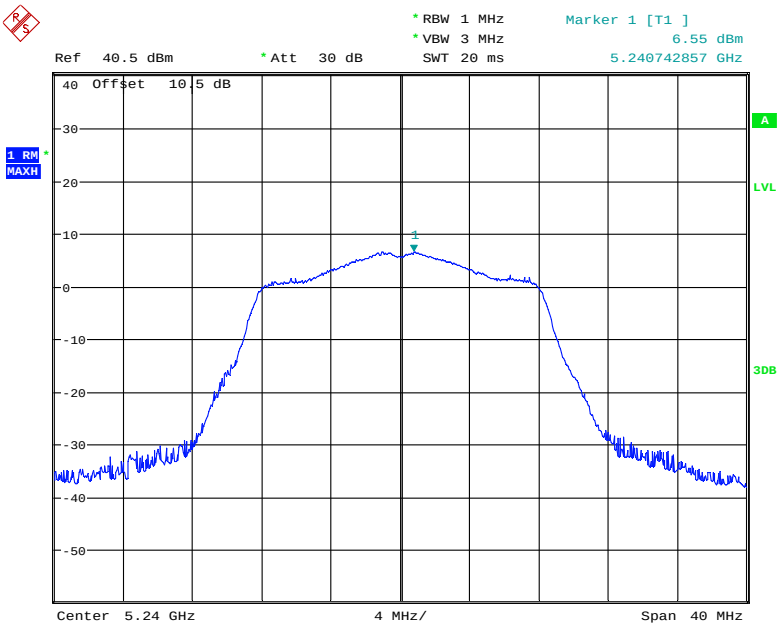
Date: 23.NOV.2017 19:02:41

802.11a mode, Power Spectral Density, 5200 MHz



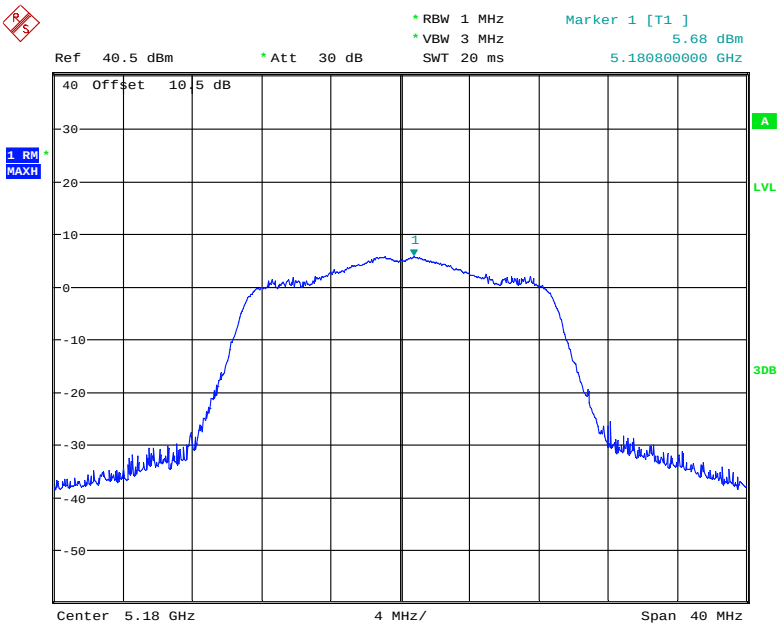
Date: 23.NOV.2017 19:03:35

802.11a mode, Power Spectral Density, 5240 MHz



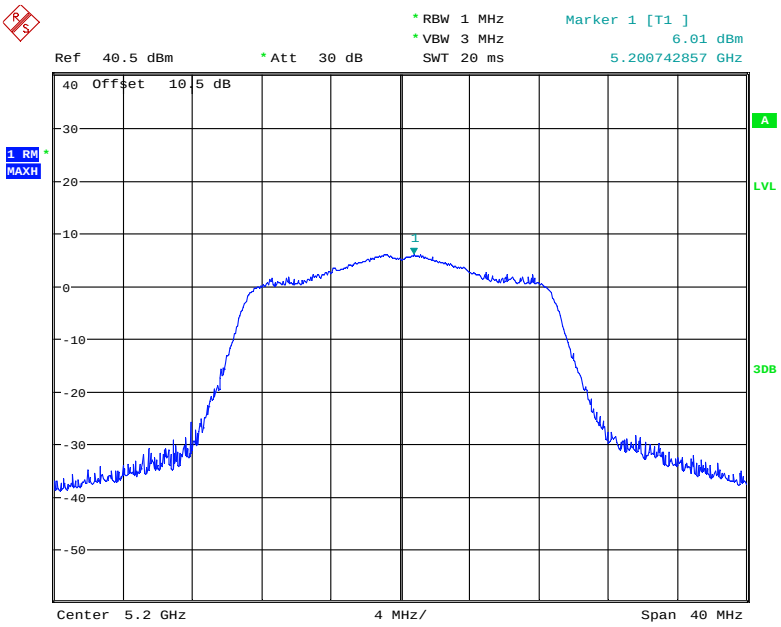
Date: 23.NOV.2017 19:03:50

802.11n20 mode, Power Spectral Density, 5180 MHz



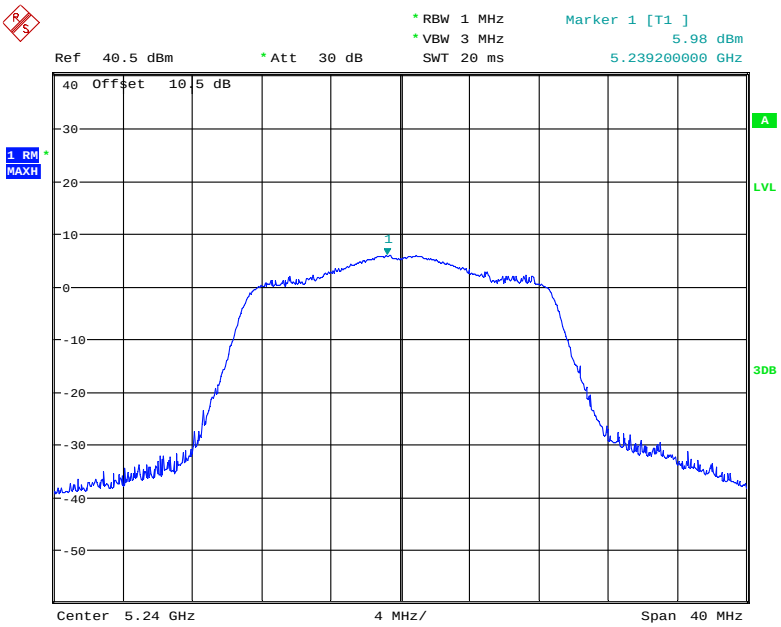
Date: 23.NOV.2017 19:04:25

802.11n20 mode, Power Spectral Density, 5200 MHz



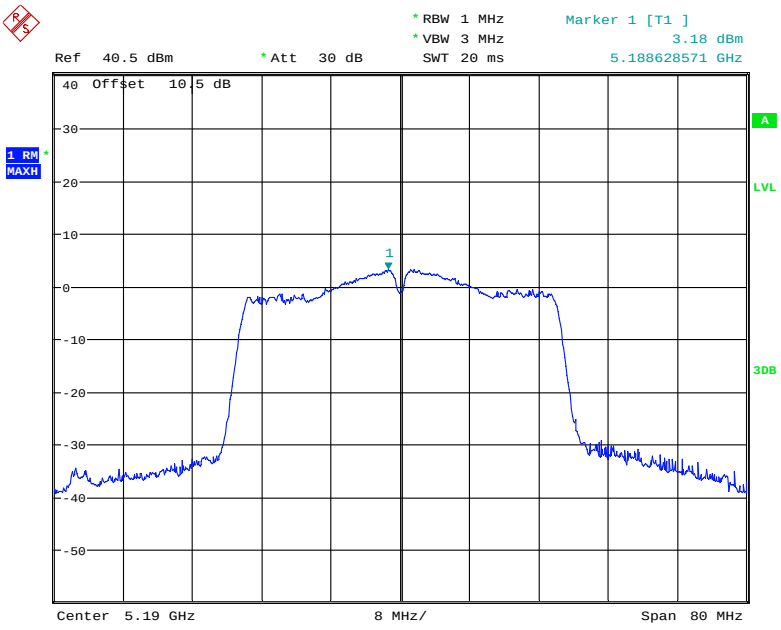
Date: 23.NOV.2017 19:04:46

802.11n20 mode, Power Spectral Density, 5240 MHz



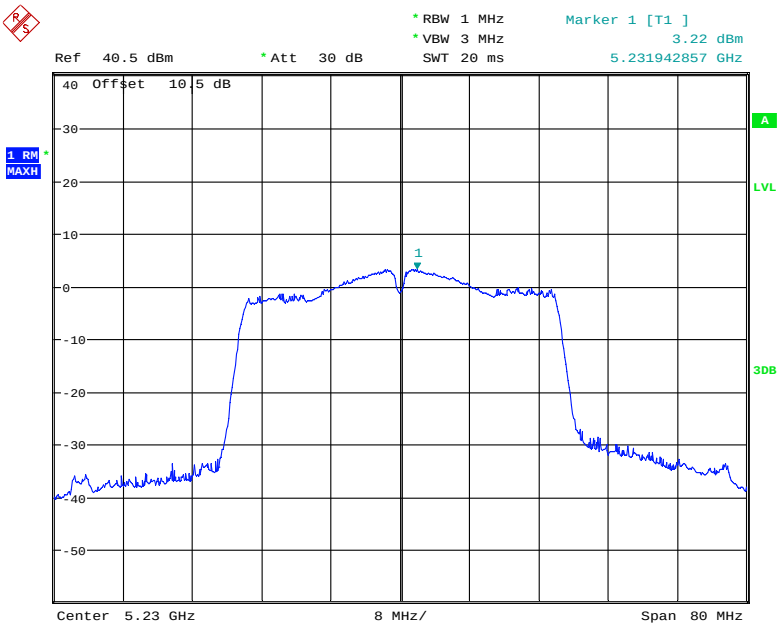
Date: 23.NOV.2017 19:05:03

802.11n40 mode, Power Spectral Density, 5190 MHz



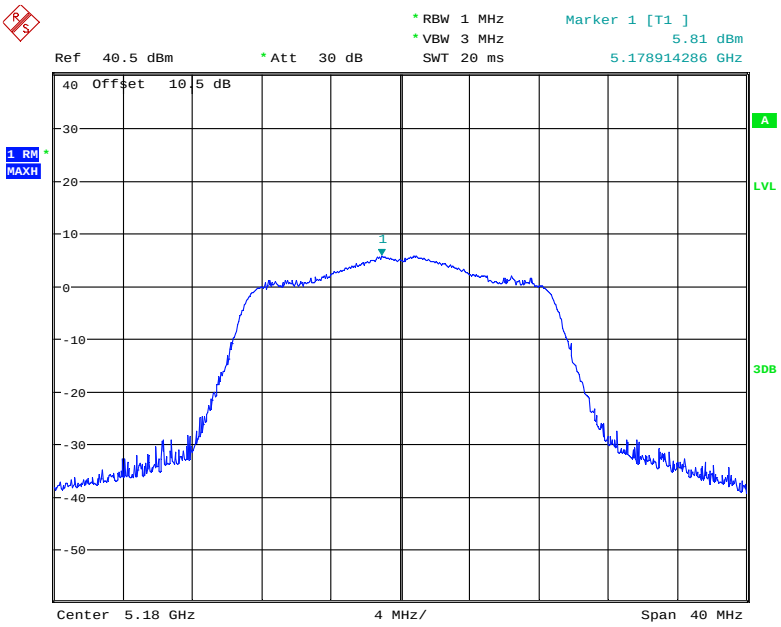
Date: 23.NOV.2017 19:05:25

802.11n40 mode, Power Spectral Density, 5230 MHz



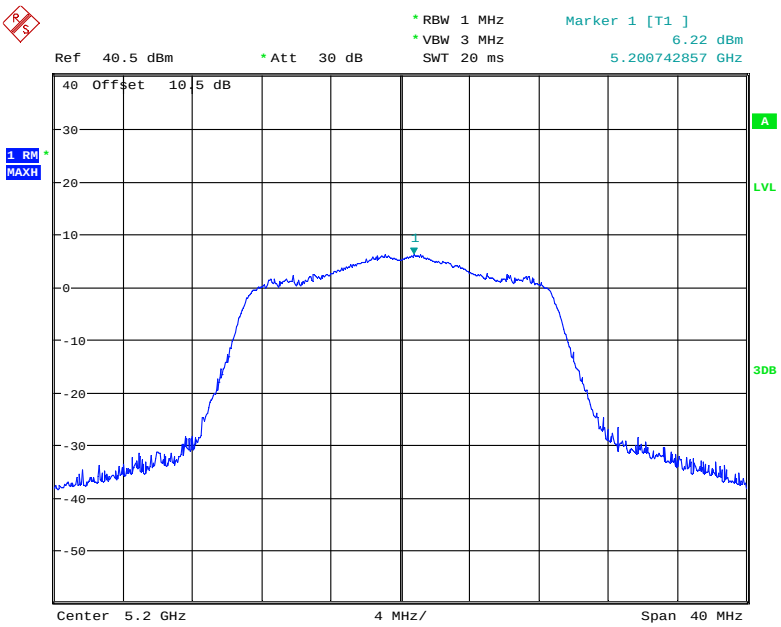
Date: 23.NOV.2017 19:05:46

802.11ac20 mode, Power Spectral Density, 5180 MHz



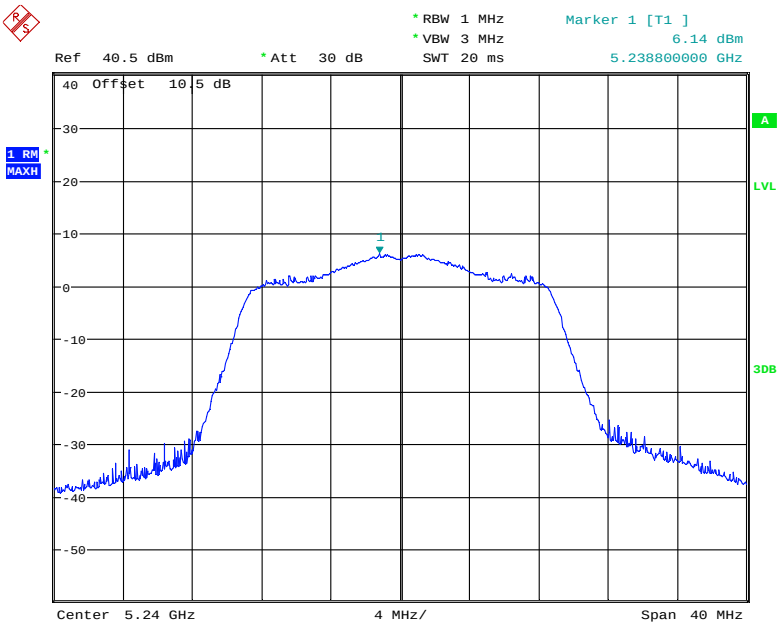
Date: 23.NOV.2017 19:06:04

802. 11ac20 mode, Power Spectral Density, 5200 MHz



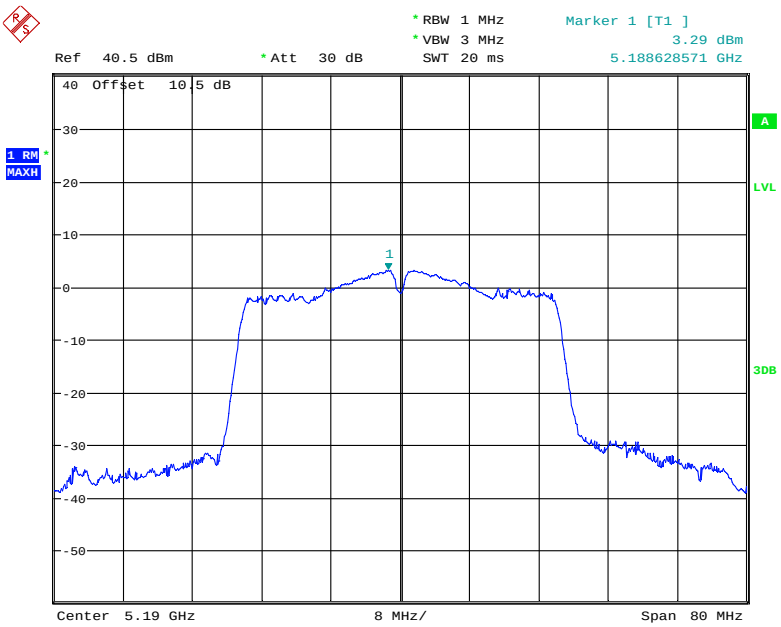
Date: 23.NOV.2017 19:06:23

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



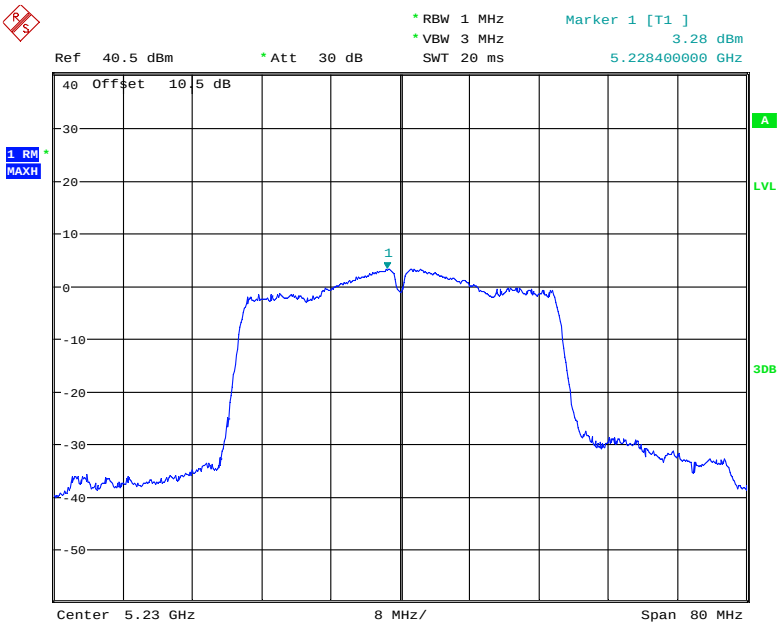
Date: 23.NOV.2017 19:06:38

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



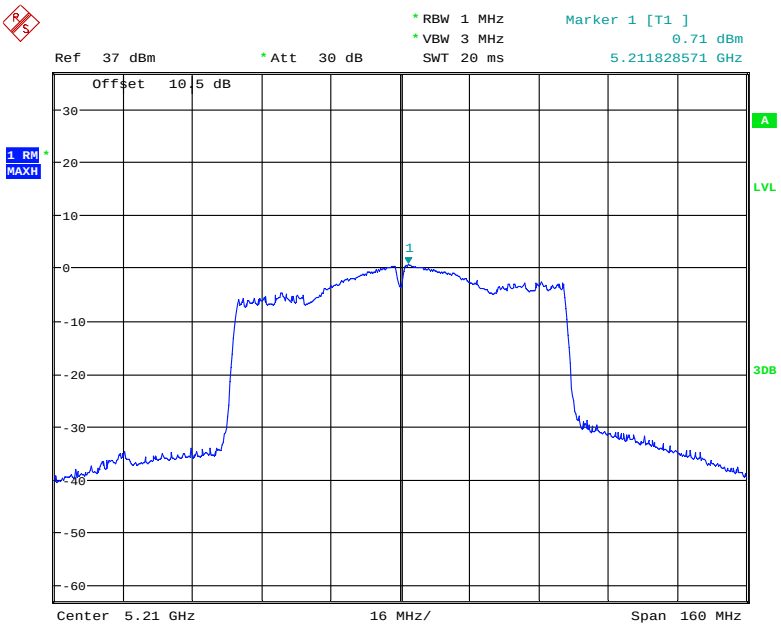
Date: 23.NOV.2017 19:07:06

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



Date: 23.NOV.2017 19:07:27

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

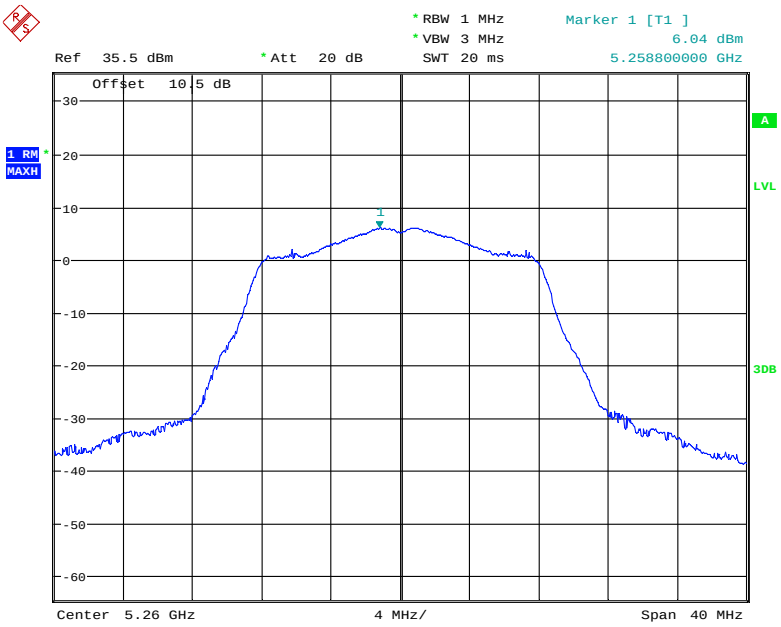


Date: 23.NOV.2017 19:08:10

5250 MHz – 5350 MHz:

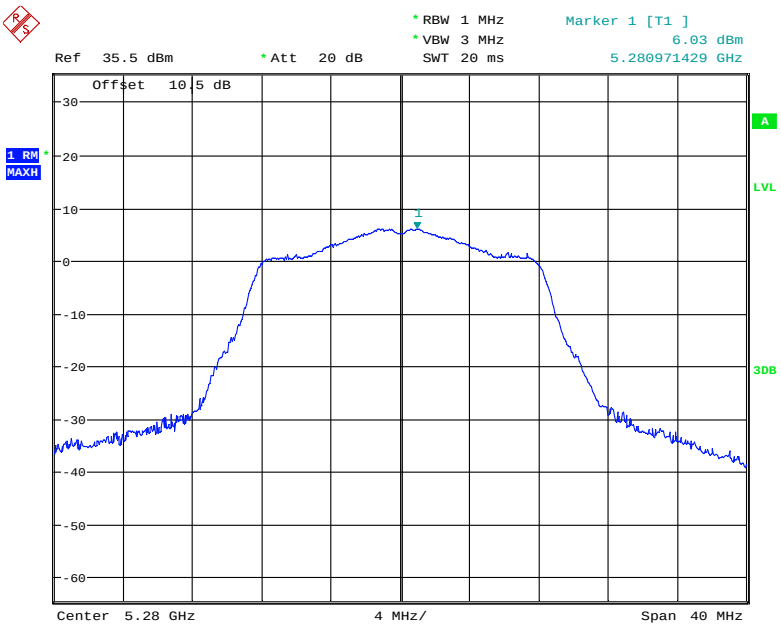
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5260	6.04	11
5280	6.03	
5320	5.65	
802.11n20		
5260	5.37	11
5280	5.79	
5320	4.76	
802.11n40		
5270	2.31	11
5310	2.26	
802. 11ac20		
5260	5.59	11
5280	5.45	
5320	4.68	
802. 11ac40		
5270	2.32	11
5310	2.10	
802. 11ac80		
5290	-0.20	11

802.11a mode, Power Spectral Density, 5260 MHz



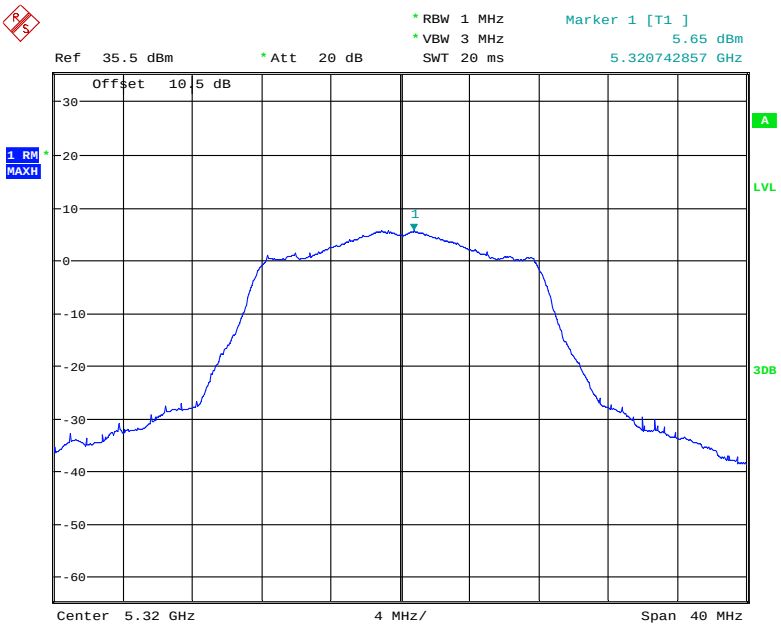
Date: 23.NOV.2017 20:10:33

802.11a mode, Power Spectral Density, 5280 MHz



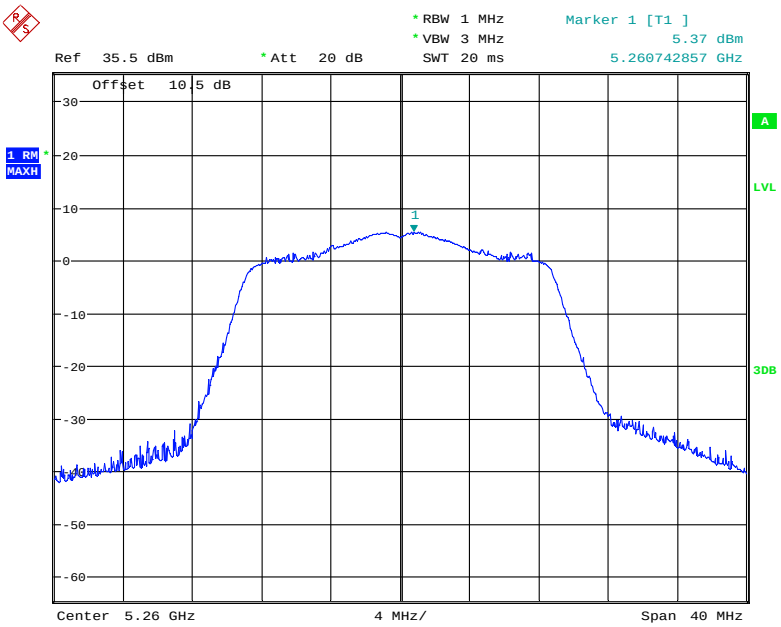
Date: 23.NOV.2017 20:11:17

802.11a mode, Power Spectral Density, 5320 MHz



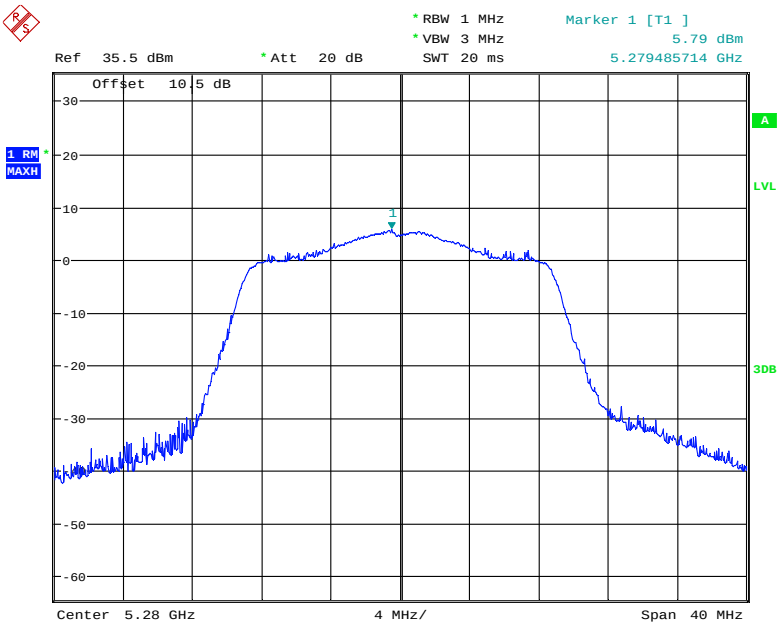
Date: 23.NOV.2017 20:12:53

802.11n20 mode, Power Spectral Density, 5260 MHz



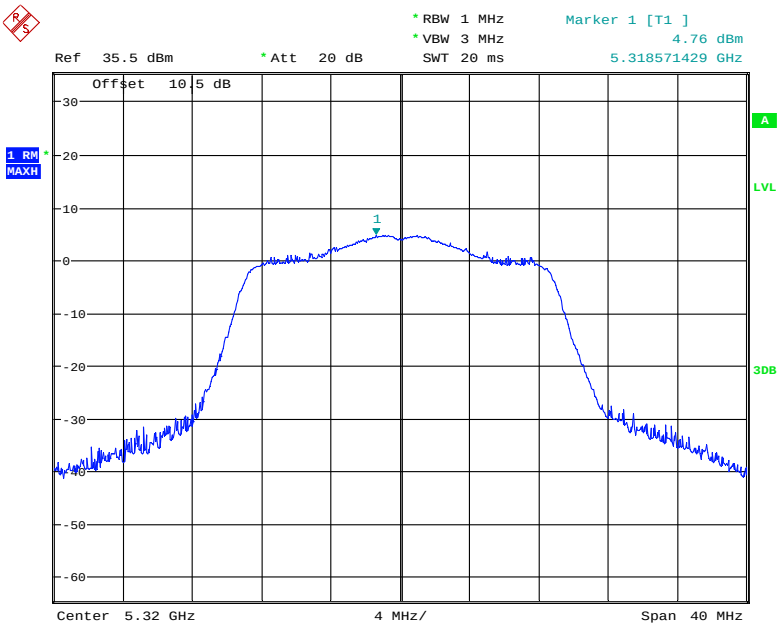
Date: 23.NOV.2017 20:13:13

802.11n20 mode, Power Spectral Density, 5280 MHz



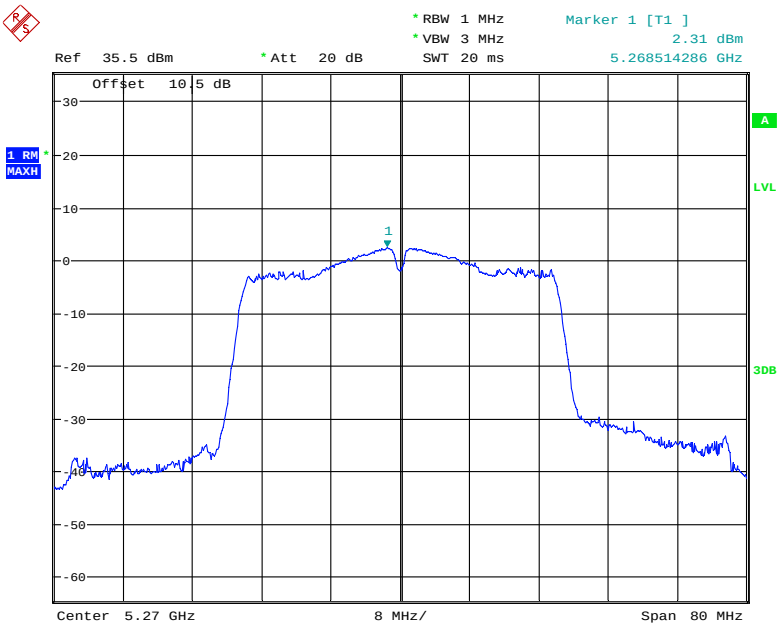
Date: 23.NOV.2017 20:13:37

802.11n20 mode, Power Spectral Density, 5320 MHz



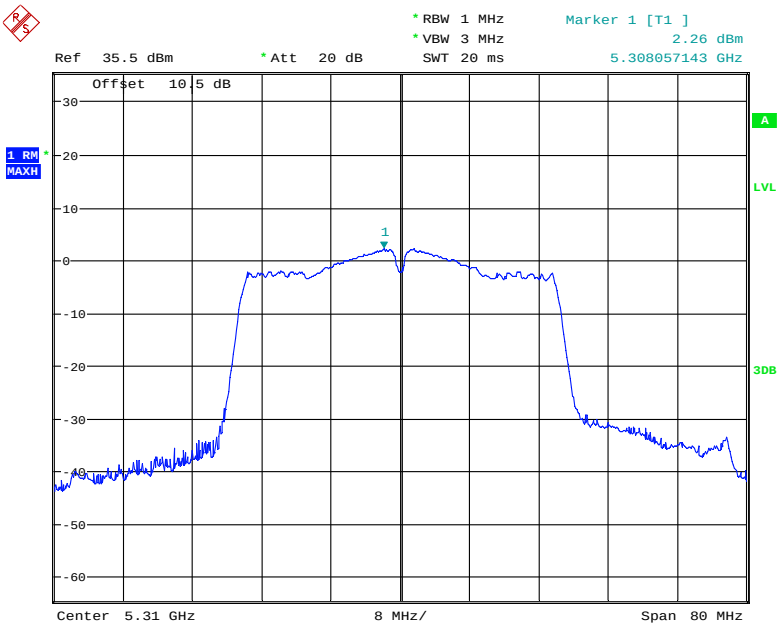
Date: 23.NOV.2017 20:13:53

802.11n40 mode, Power Spectral Density, 5270 MHz



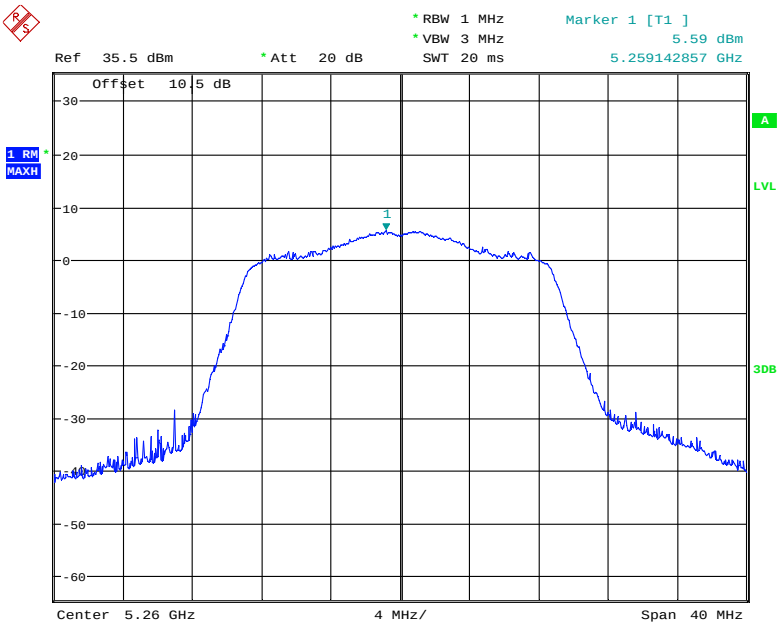
Date: 23.NOV.2017 20:14:10

802.11n40 mode, Power Spectral Density, 5310 MHz



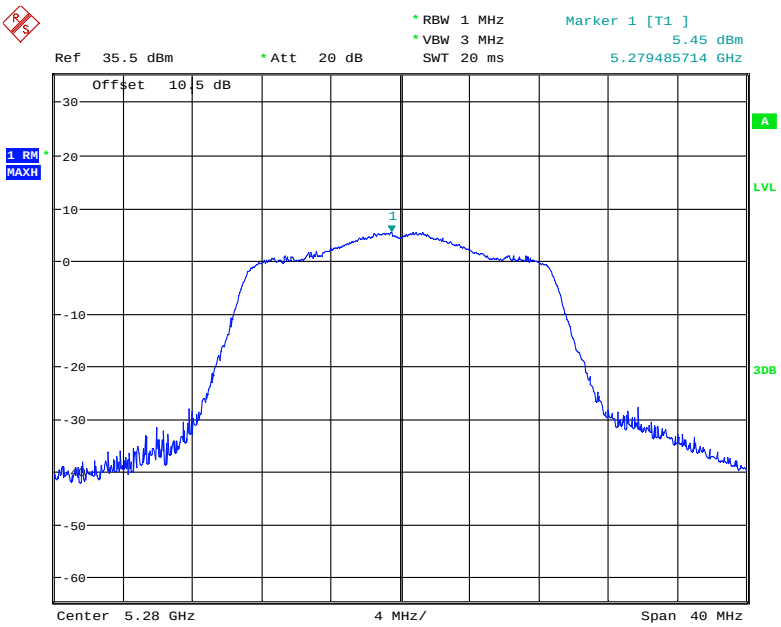
Date: 23.NOV.2017 20:14:40

802.11ac20 mode, Power Spectral Density, 5260 MHz



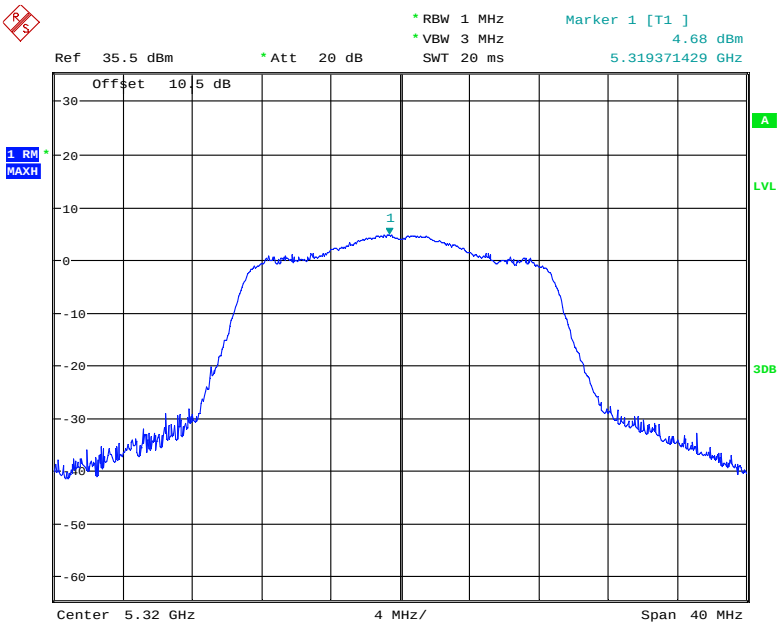
Date: 23.NOV.2017 20:15:04

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



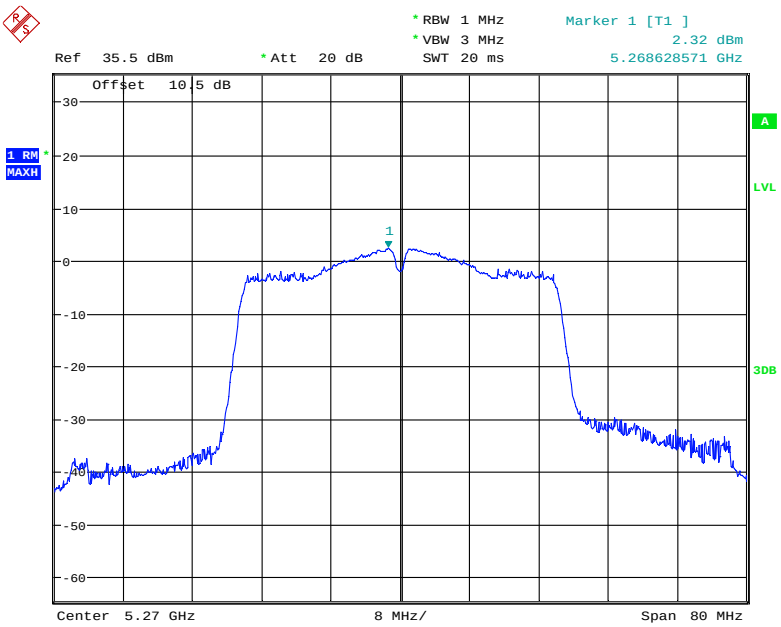
Date: 23.NOV.2017 20:15:21

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



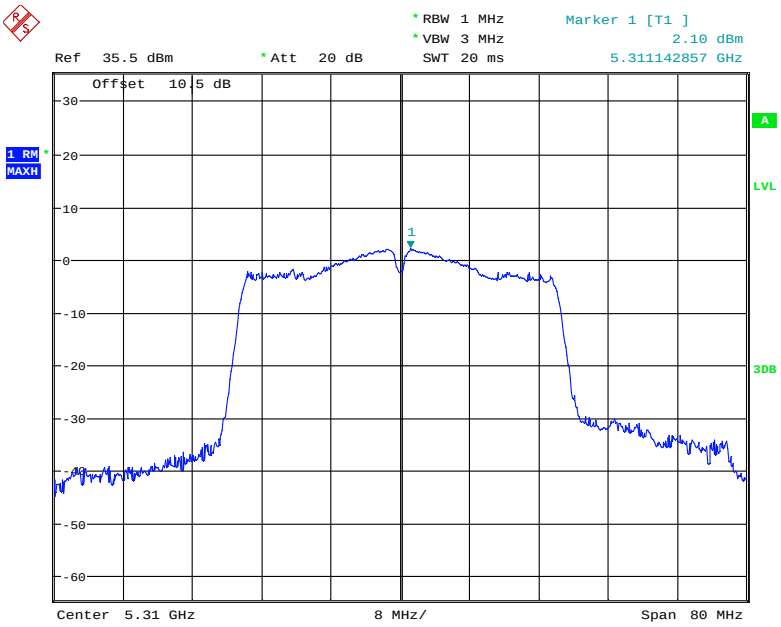
Date: 23.NOV.2017 20:15:35

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



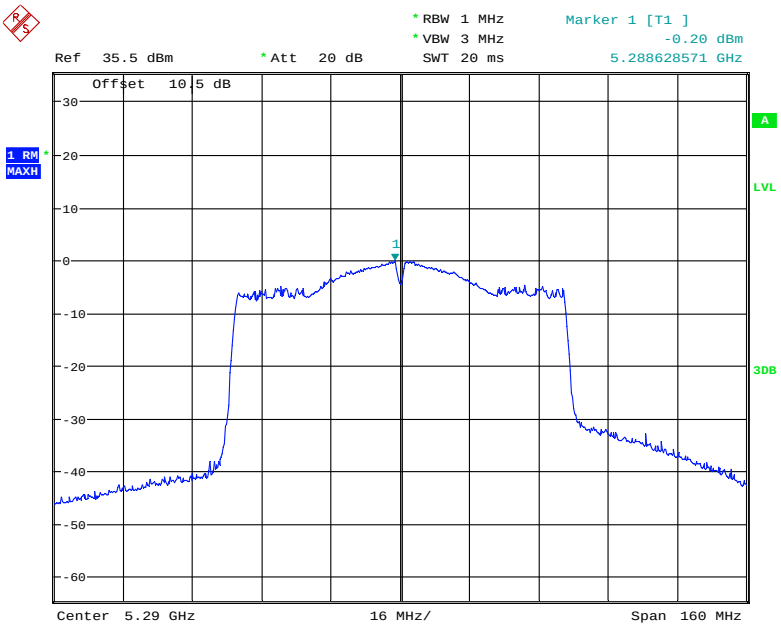
Date: 23.NOV.2017 20:15:53

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



Date: 23.NOV.2017 20:16:09

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

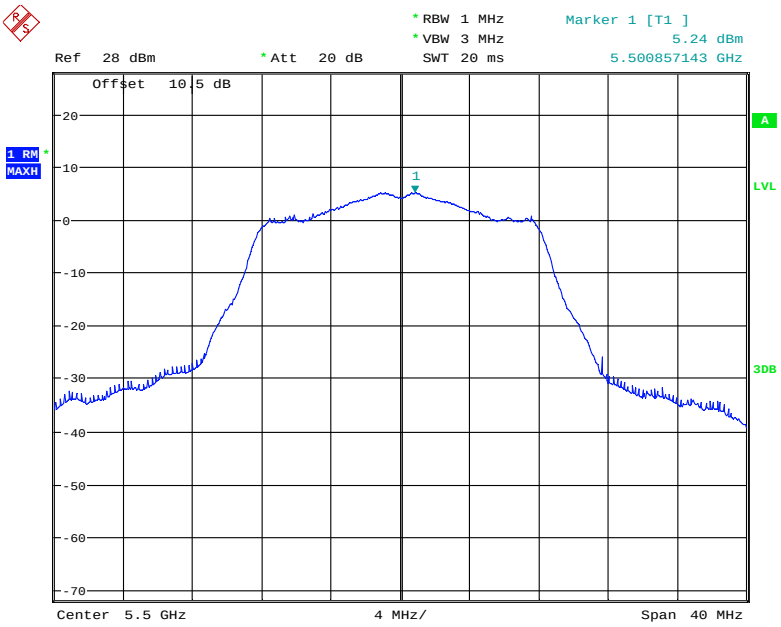


Date: 23.NOV.2017 20:16:32

5470 MHz – 5725 MHz:

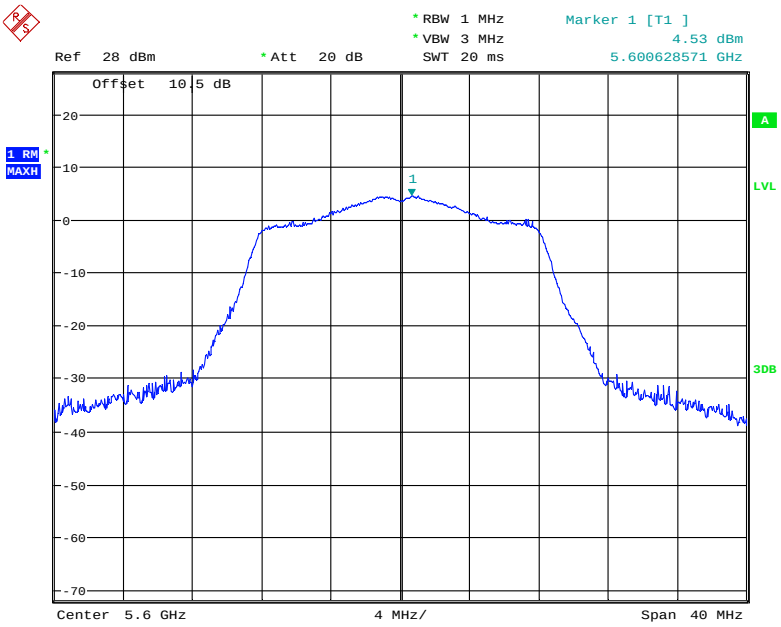
Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a		
5500	5.24	11
5600	4.53	
5720	3.30	
802.11n20		
5500	4.82	11
5600	4.11	
5720	2.74	
802.11n40		
5510	2.02	11
5590	1.39	
5710	-0.10	
802. 11ac20		
5500	4.61	11
5600	4.23	
5720	3.00	
802. 11ac40		
5510	1.78	11
5590	1.44	
5710	-0.10	
802. 11ac80		
5530	-0.92	11
5610	-1.17	
5690	-1.81	

802.11a mode, Power Spectral Density, 5500 MHz



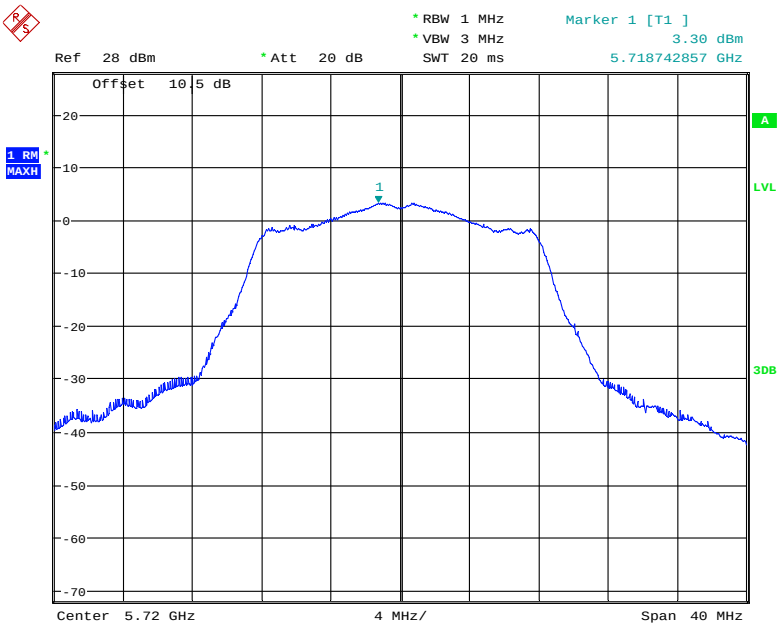
Date: 23.NOV.2017 21:08:16

802.11a mode, Power Spectral Density, 5600 MHz



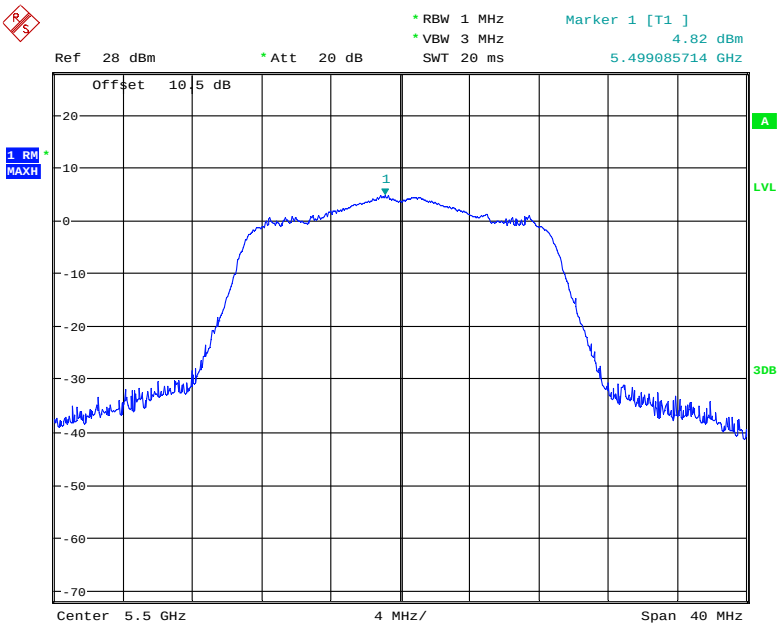
Date: 23.NOV.2017 21:08:37

802.11a mode, Power Spectral Density, 5720 MHz



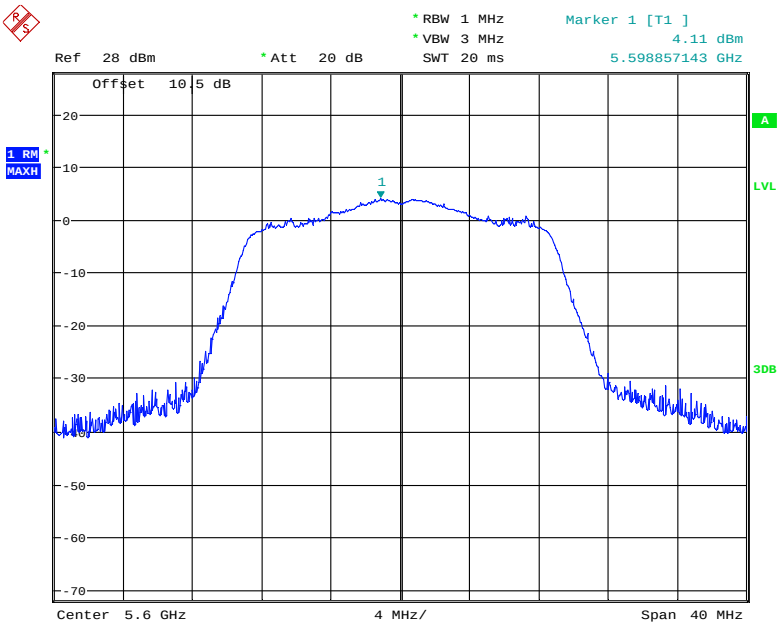
Date: 23.NOV.2017 21:09:42

802.11n20 mode, Power Spectral Density, 5500 MHz



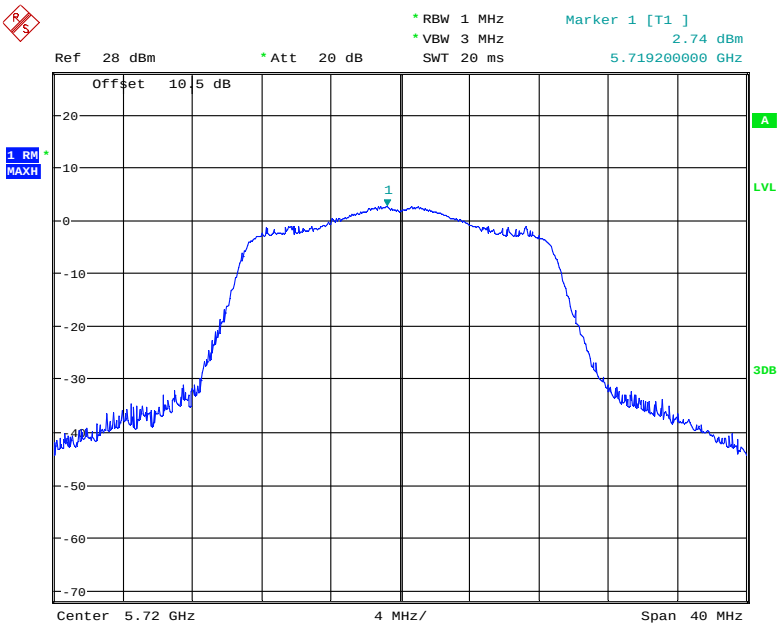
Date: 23.NOV.2017 21:04:34

802.11n20 mode, Power Spectral Density, 5600 MHz



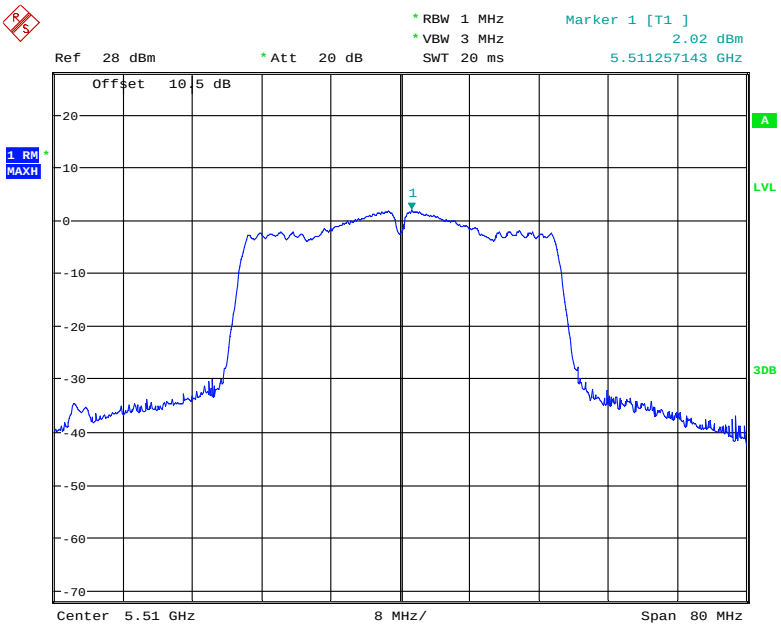
Date: 23.NOV.2017 21:04:58

802.11n20 mode, Power Spectral Density, 5720 MHz



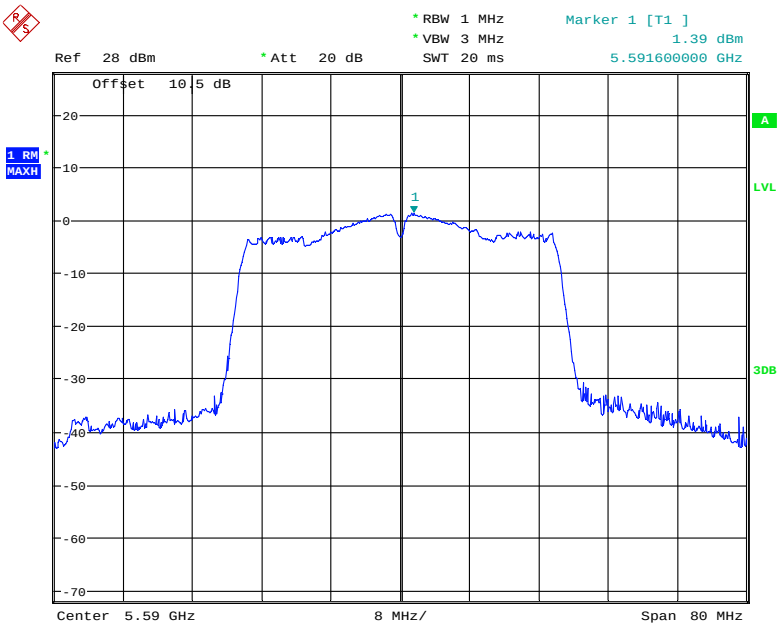
Date: 23.NOV.2017 21:05:15

802.11n40 mode, Power Spectral Density, 5510 MHz



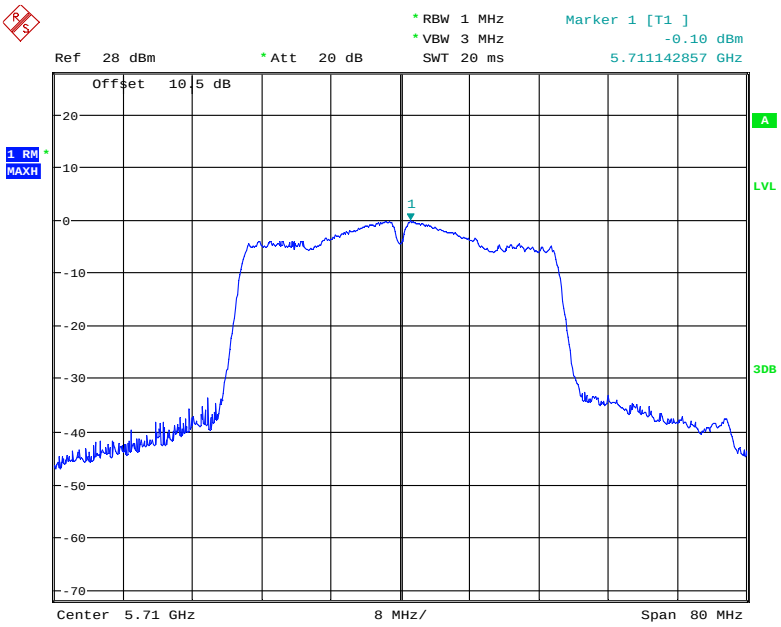
Date: 23.NOV.2017 21:06:16

802.11n40 mode, Power Spectral Density, 5590 MHz



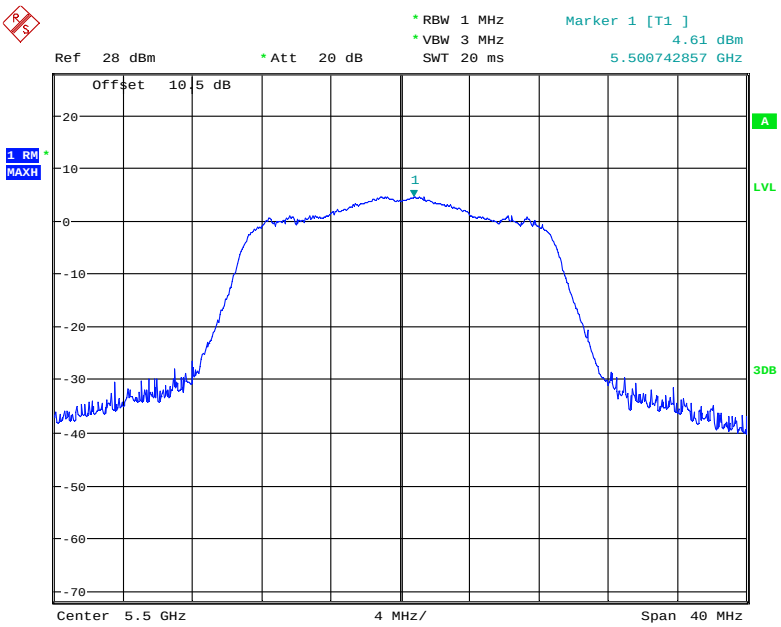
Date: 23.NOV.2017 21:06:47

802.11n40 mode, Power Spectral Density, 5710 MHz



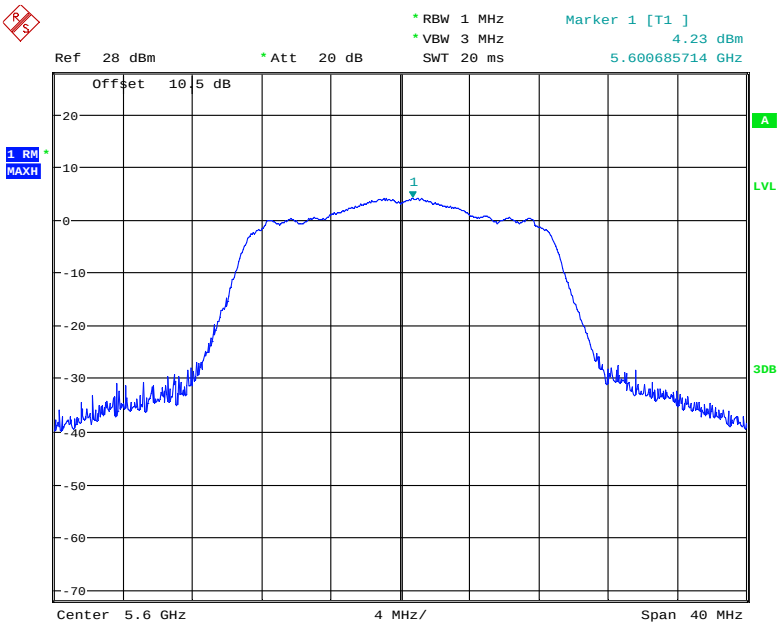
Date: 23.NOV.2017 21:07:14

802.11ac20 mode, Power Spectral Density, 5500 MHz



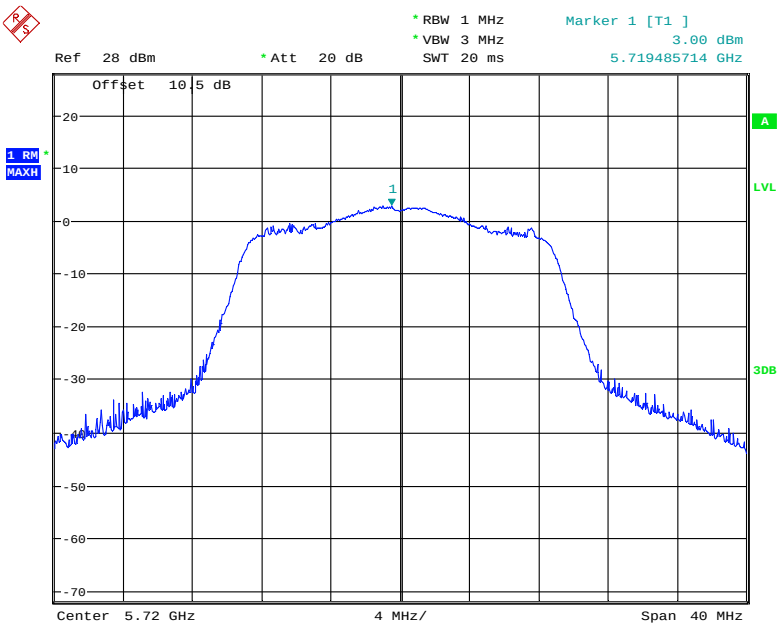
Date: 23.NOV.2017 21:02:27

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



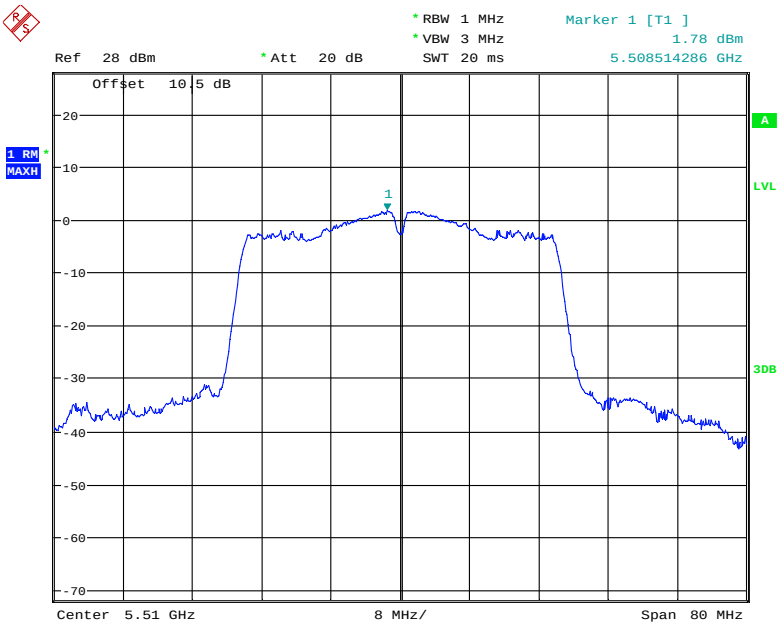
Date: 23.NOV.2017 21:03:47

802. 11ac20 mode, Power Spectral Density, 5710 MHz



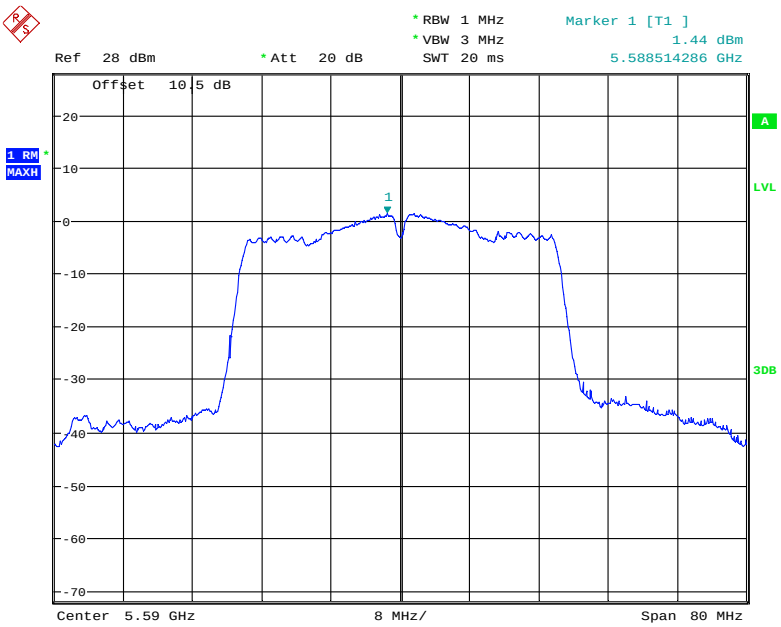
Date: 23.NOV.2017 21:04:09

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



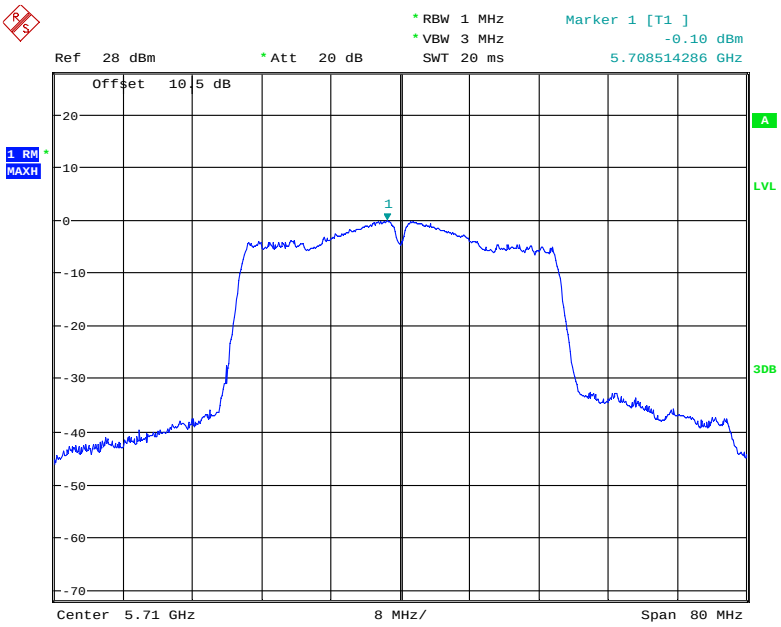
Date: 23.NOV.2017 21:00:26

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



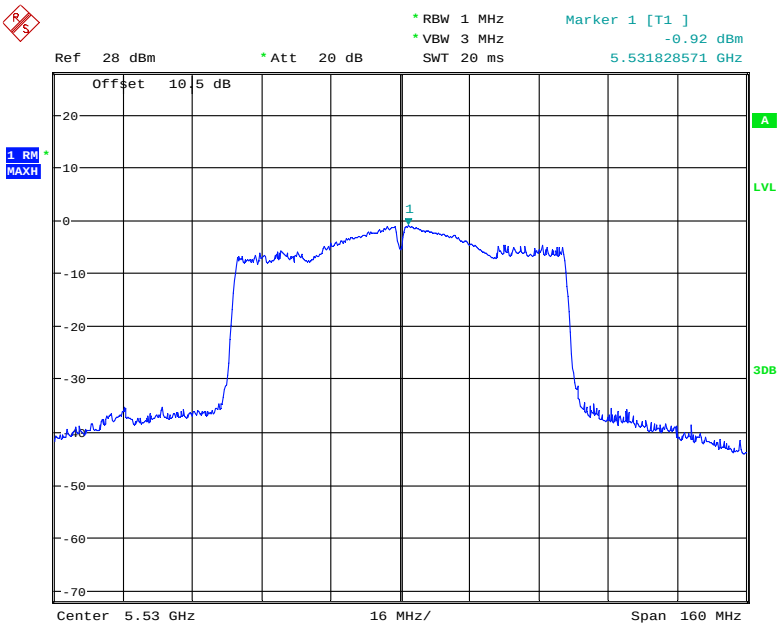
Date: 23.NOV.2017 21:01:26

802. 11ac40 mode, Power Spectral Density, 5710 MHz



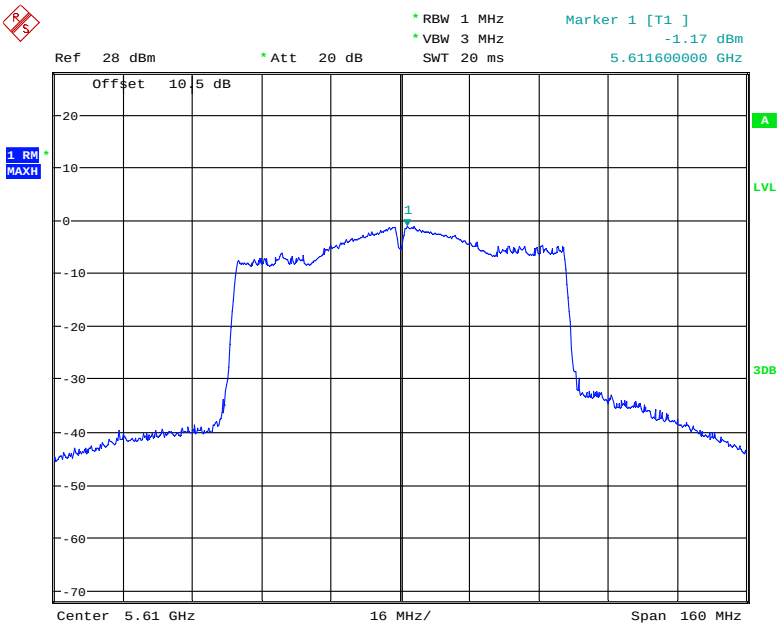
Date: 23.NOV.2017 21:01:46

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



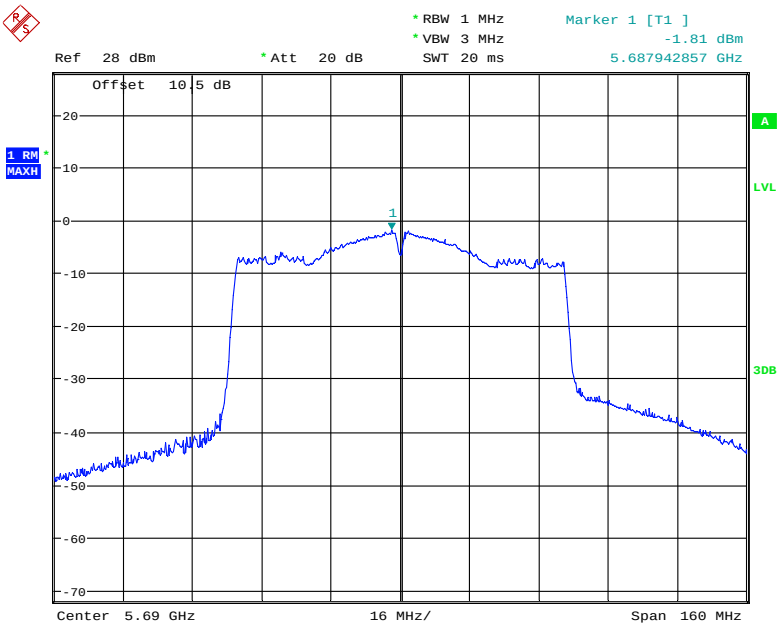
Date: 23.NOV.2017 21:00:01

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



Date: 23.NOV.2017 20:59:42

802. 11ac80 mode, Power Spectral Density, 5690 MHz

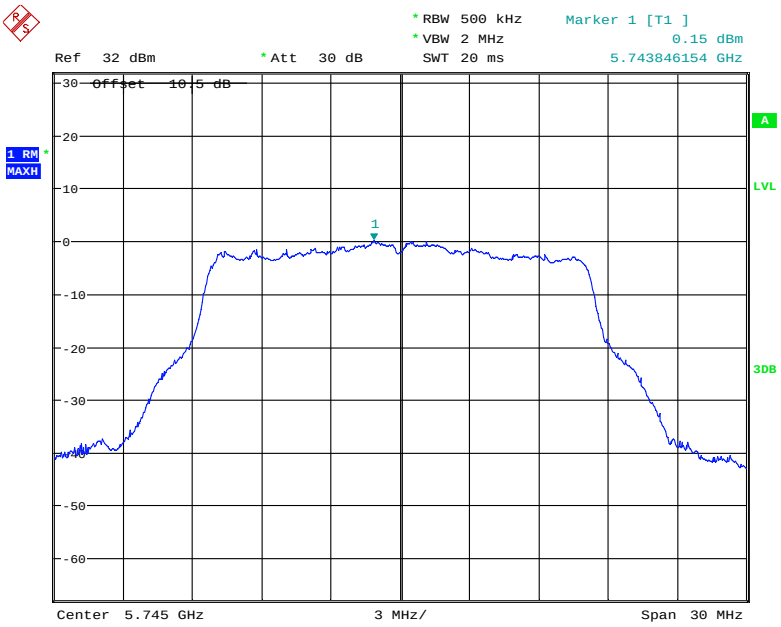


Date: 23.NOV.2017 20:58:51

5725 MHz – 5825 MHz:

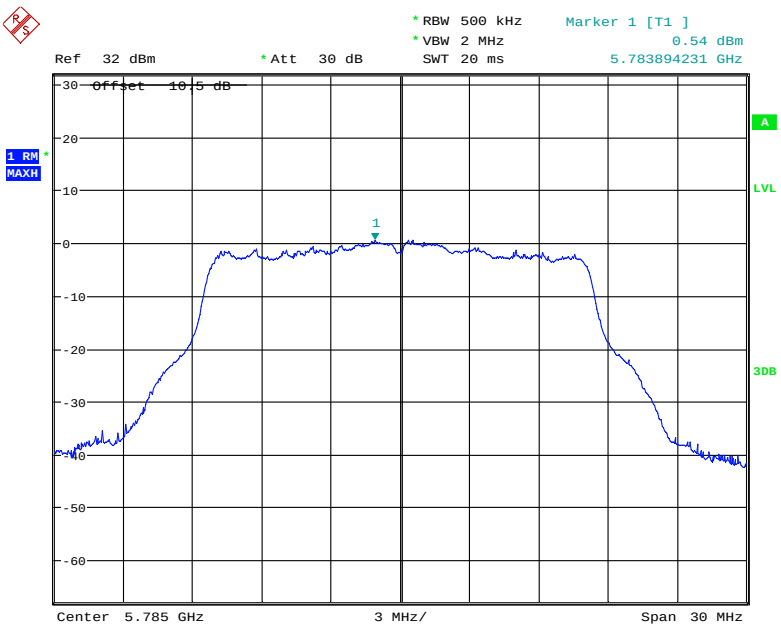
Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
802.11a		
5745	0.15	30
5785	0.54	
5825	1.20	
802.11n20		
5745	0.17	30
5785	-1.06	
5825	-0.42	
802.11n40		
5755	-3.28	30
5795	-3.15	
802. 11ac20		
5745	-2.23	30
5785	-1.56	
5825	-1.37	
802. 11ac40		
5755	-3.85	30
5795	-3.21	
802. 11ac80		
5775	-6.76	30

802.11a mode, Power Spectral Density, 5745 MHz



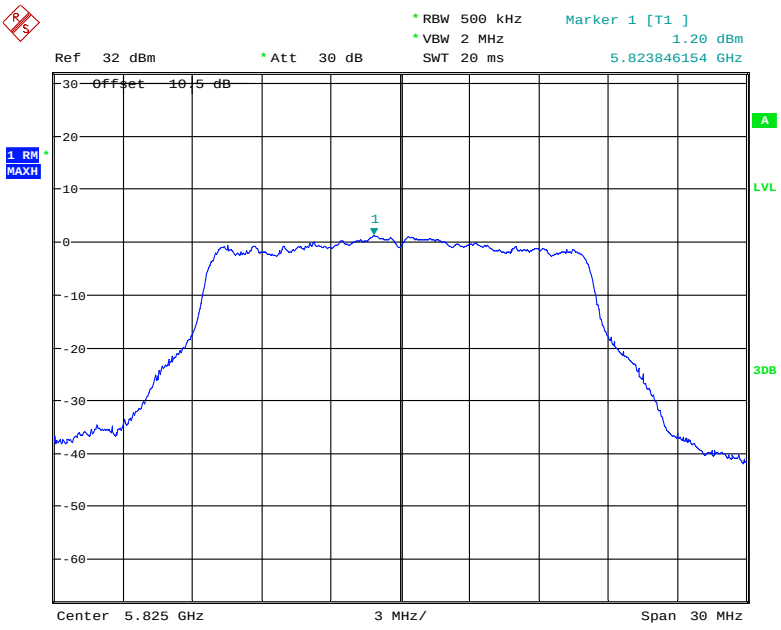
Date: 21.NOV.2017 21:42:11

802.11a mode, Power Spectral Density, 5785 MHz



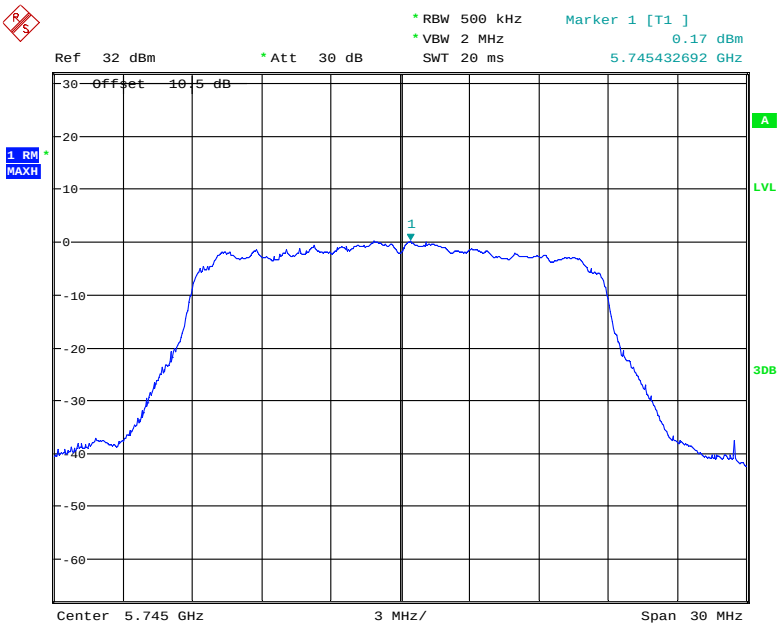
Date: 21.NOV.2017 21:41:54

802.11a mode, Power Spectral Density, 5825 MHz



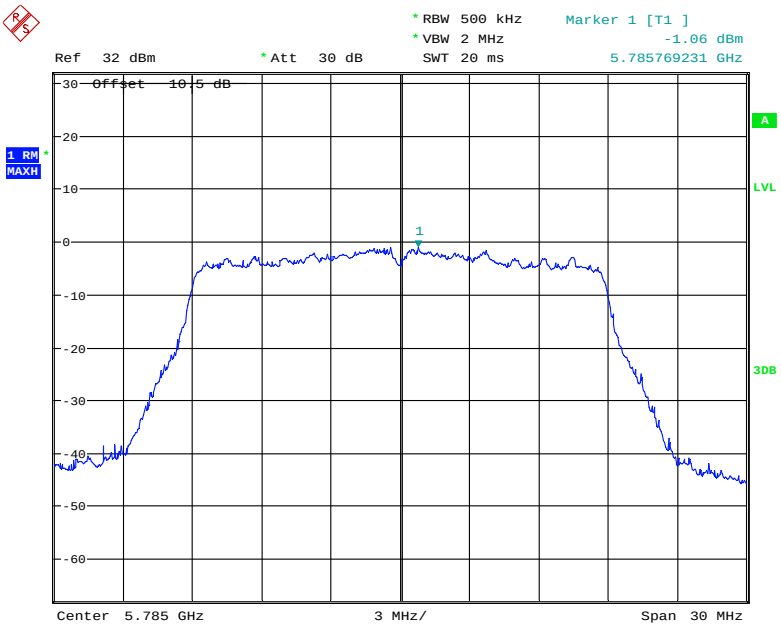
Date: 21.NOV.2017 21:41:34

802.11n20 mode, Power Spectral Density, 5745 MHz



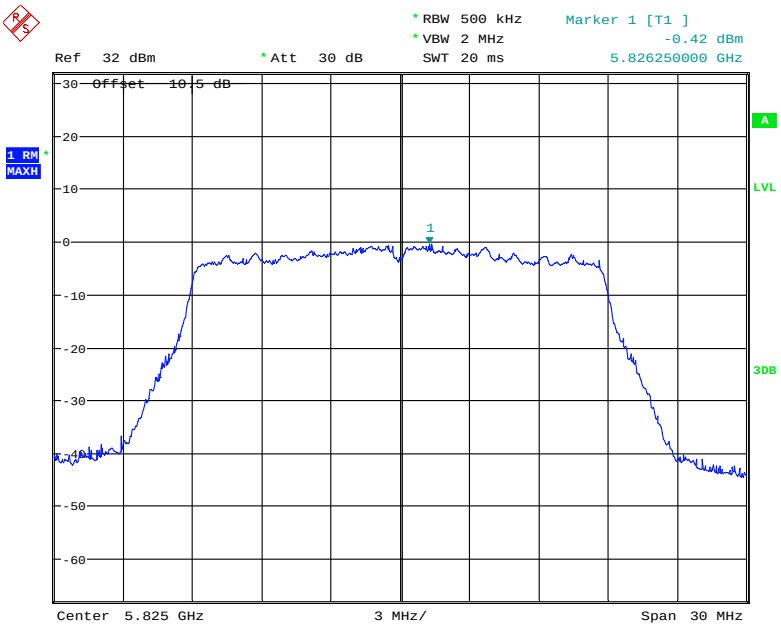
Date: 21.NOV.2017 21:42:37

802.11n20 mode, Power Spectral Density, 5785 MHz



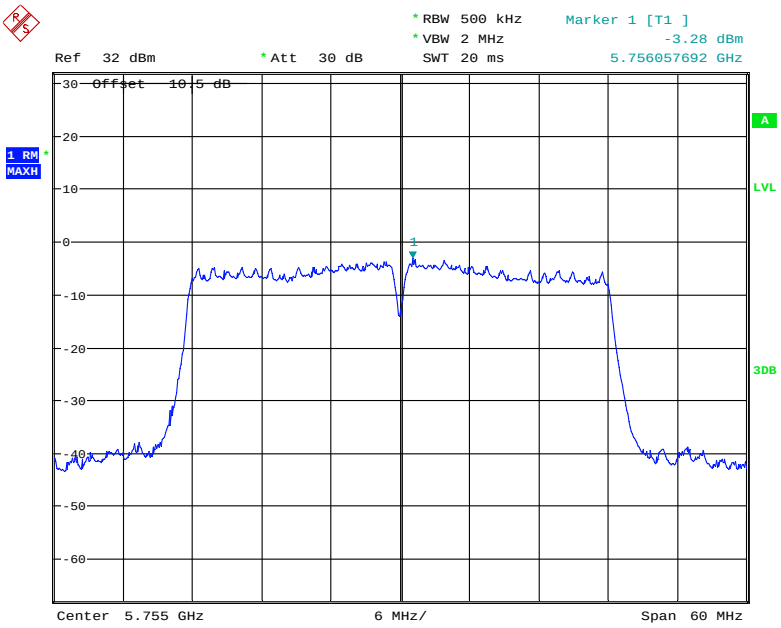
Date: 21.NOV.2017 21:42:52

802.11n20 mode, Power Spectral Density, 5825 MHz



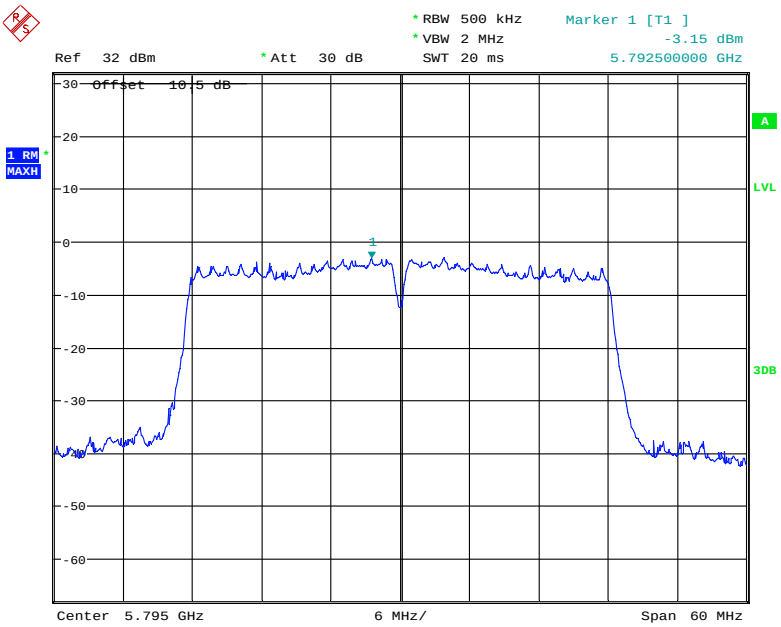
Date: 21.NOV.2017 21:43:09

802.11n40 mode, Power Spectral Density, 5755 MHz



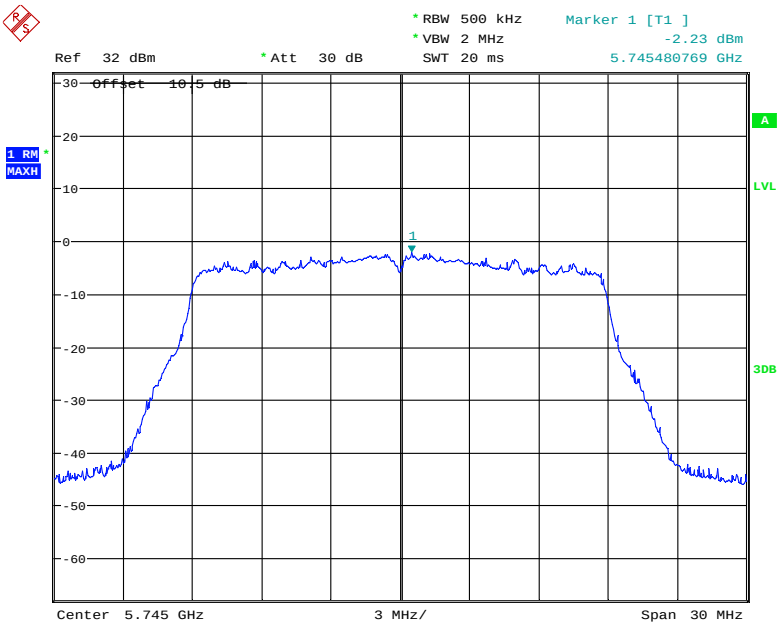
Date: 21.NOV.2017 21:44:23

802.11n40 mode, Power Spectral Density, 5795 MHz



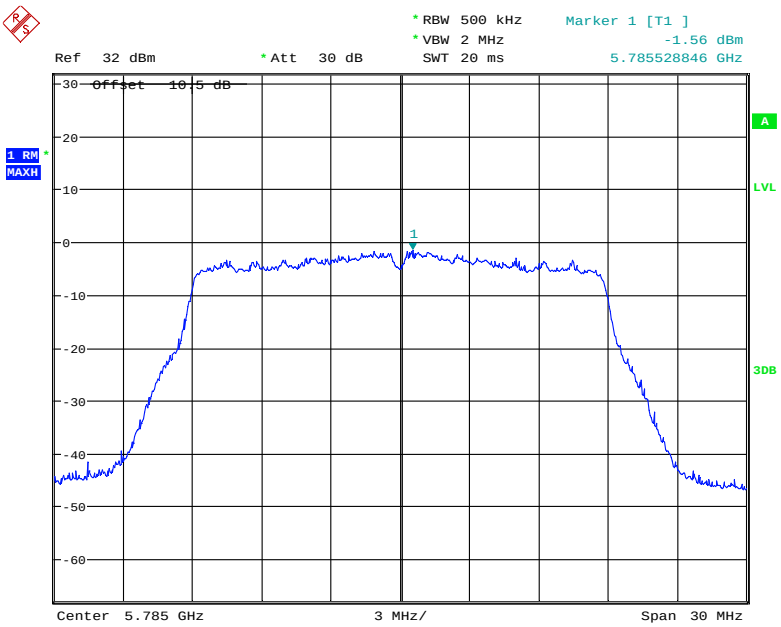
Date: 21.NOV.2017 21:44:39

802.11ac20 mode, Power Spectral Density, 5745 MHz



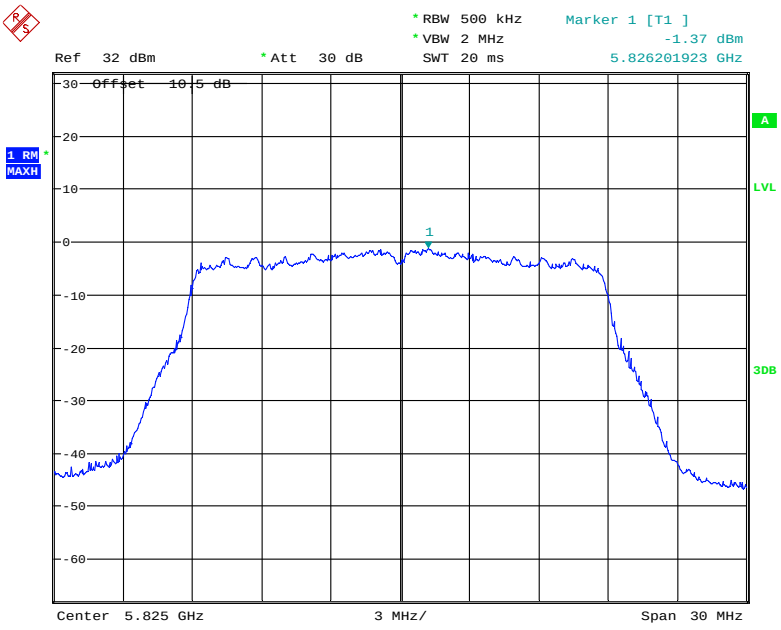
Date: 21.NOV.2017 21:43:56

802. 11ac20 mode, Power Spectral Density, 5785 MHz



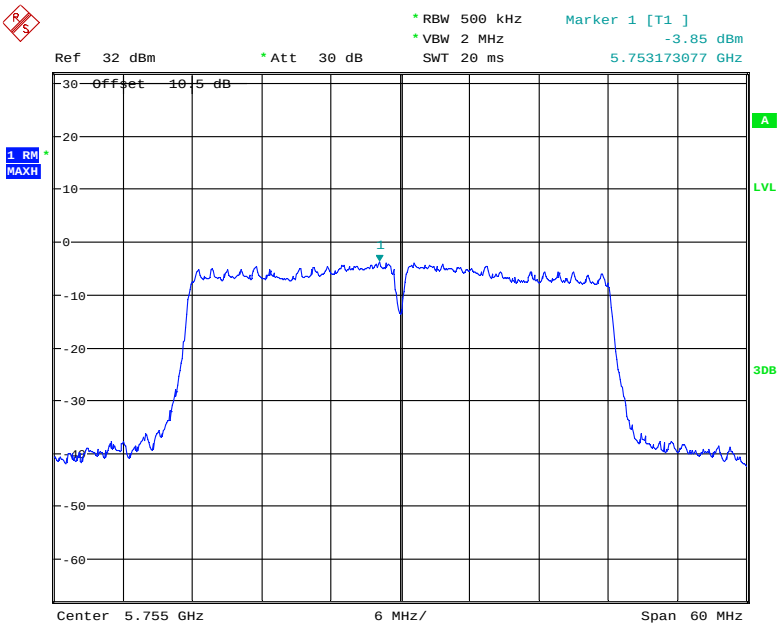
Date: 21.NOV.2017 21:43:45

802. 11ac20 mode, Power Spectral Density, 5825 MHz



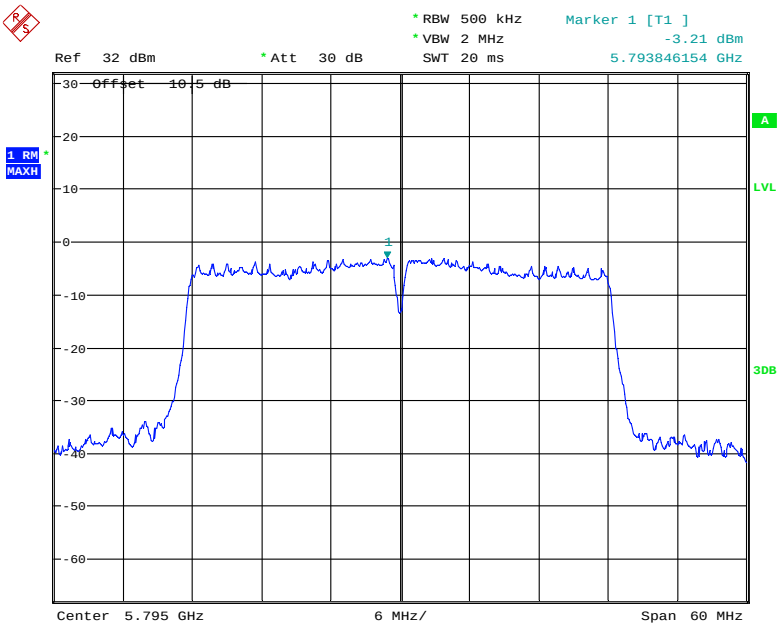
Date: 21.NOV.2017 21:43:32

802. 11ac40 mode, Power Spectral Density, 5755 MHz



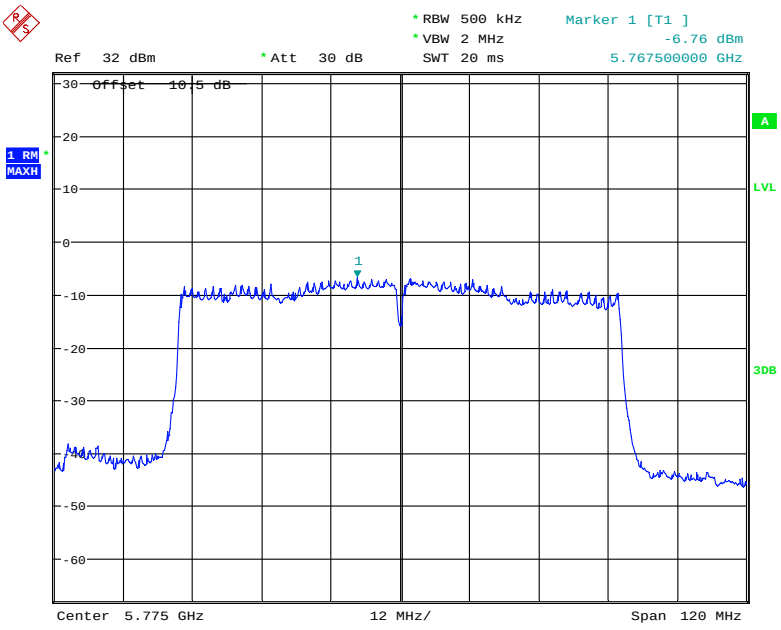
Date: 21.NOV.2017 21:45:02

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



Date: 21.NOV.2017 21:45:22

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



Date: 21.NOV.2017 21:45:49

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