FCC PART 15.407

TEST REPORT

For

Shenzhen Jiawei Photovoltaic Lighting Co., Ltd.

No. 1,2,3,4, Xinfa Industry Zone, Central Community, Pingdi Road, Longgang District, Shenzhen City, Guangdong Province, China

FCC ID: 2AD7D-KNP04

Report Type:	**Product Type:**
Original Report	Smart Motion Security Light

Report Number:	RSZ170511550-00C
Report Date:	2017-11-21
Reviewed By:	Oscar Ye Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Jiawei Photovoltaic Lighting Co., Ltd.'s* product, model number: *SPL12-06A1W4-BKT (FCC ID: 2AD7D-KNP04)* in this report was a *Smart Motion Security Light,* which was measured approximately: 24 cm (L) x20 cm (W) x 32 cm (H), rated with input voltage: AC 120 V/60Hz or 277V/60Hz.

Notes: This series products model: SPL12-06A1W4-WH and SPL12-06A1W4-BKT are identical; they have the same or similar appearance, structure, PCB, Material and function to the testing products, and only are different for color of enclosure. Model SPL12-06A1W4-BKT was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number 1704076. (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2017-05-11.*

Objective

This type approval report is prepared on behalf of *Shenzhen Jiawei Photovoltaic Lighting Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submissions with FCC ID: 2AD7D-KNP04.

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. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		±3.26 dB
RF conducted test with spectrum		±0.9dB
RF Output Power with Power meter		±0.5dB
Radiated emission	30MHz~1GHz	±5.91dB
	Above 1G	±4.92dB
Occupied Bandwidth		±0.5kHz
Temperature		±1.0℃
Humidity		±6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L9963). And accredited to ISO/IEC 17025 by A2LA(Lab code: 4323.01), the FCC Designation No. CN1185 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Kunshan) was registered with ISED Canada under ISED Canada Registration Number 3062E.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

EUT Exercise Software

"SecureCRT" software was used.

The test was tested with the worst case was performed as below:

5150 MHz – 5250 MHz:

802.11a: Rate 6Mbps, Power level: 13.5
802.11n20: Rate MCS0, Power level: 13
802.11n40: Rate MCS0, Power level: 12.5
802.11ac20：Rate MNSS 0, Power level: 13.5
802.11ac40：Rate MNSS 0, Power level: 13.5
802.11ac80：Rate MNSS 0, Power level: 13.5

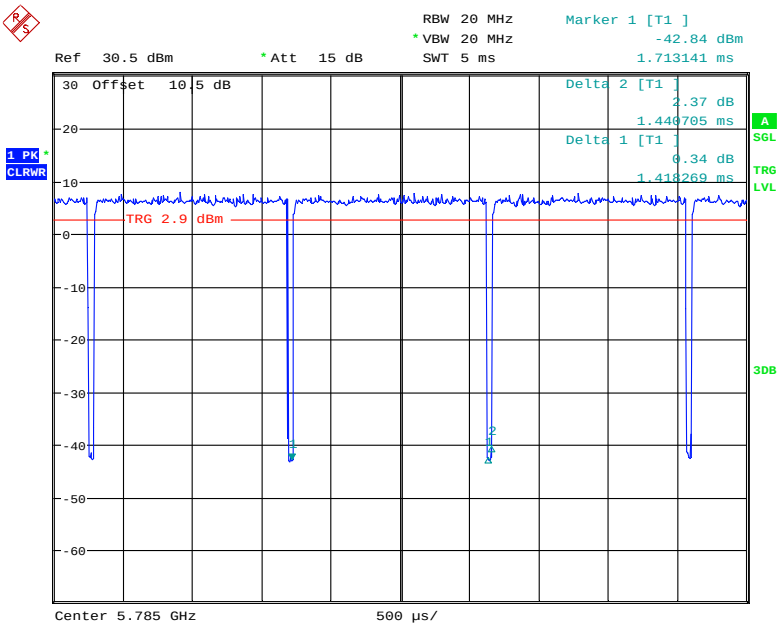
5725 MHz – 5850 MHz:

802.11a: Rate 6Mbps, Power level: 13.5
802.11n20: Rate MCS0, Power level: 13
802.11n40: Rate MCS0, Power level: 12.5
802.11ac20: Rate ISS0, Power level: 13.5
802.11ac40: Rate ISS0, Power level: 13.5
802.11ac80: Rate ISS0, Power level: 13.5

Power level is default.

Duty cycle
5725-5825 MHz

802.11a mode



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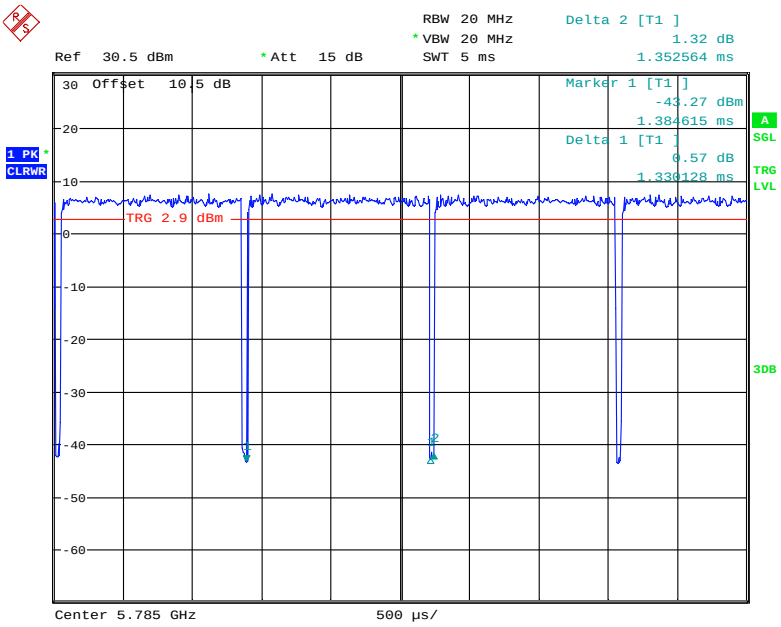
802.11n20 mode



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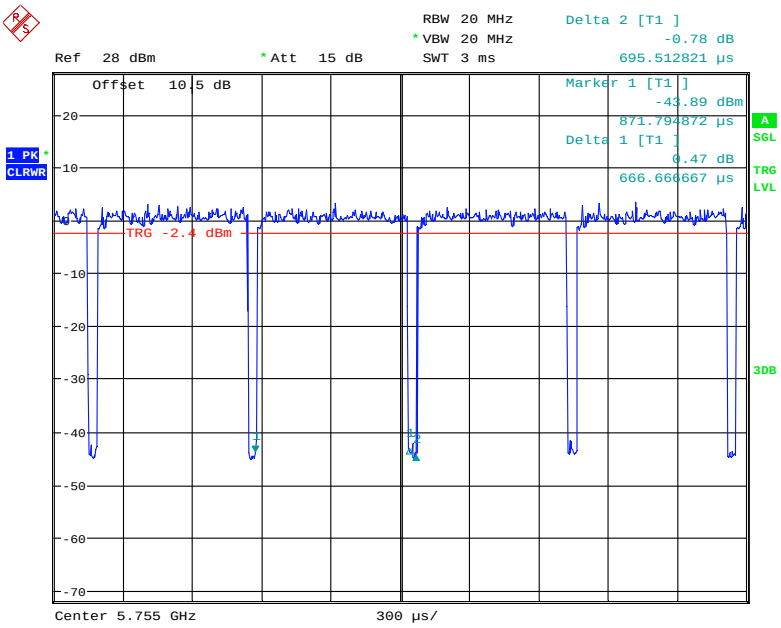
802.11n40 Mode



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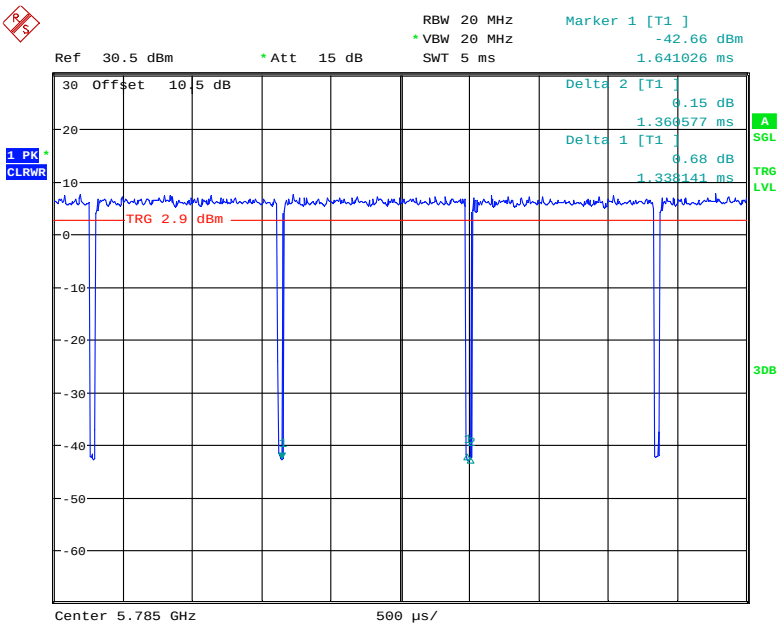
802.11ac20 Mode



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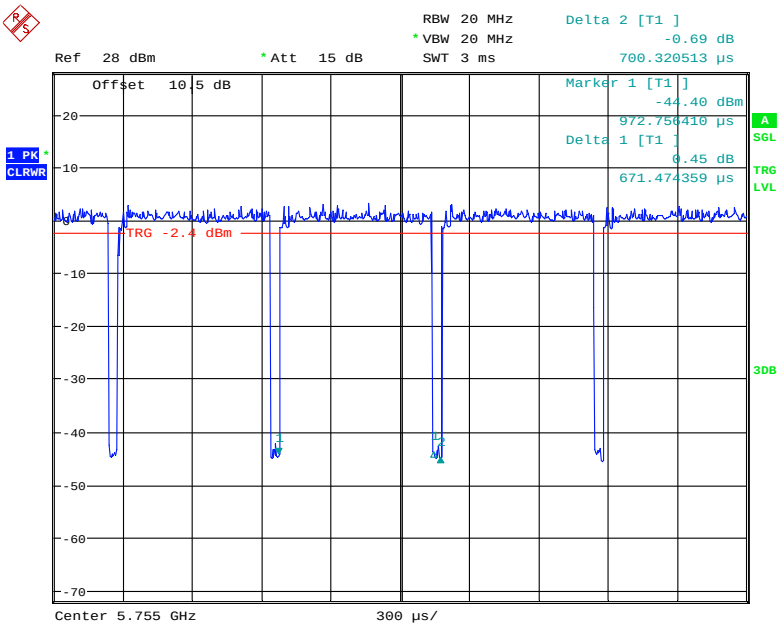
802.11ac40 Mode



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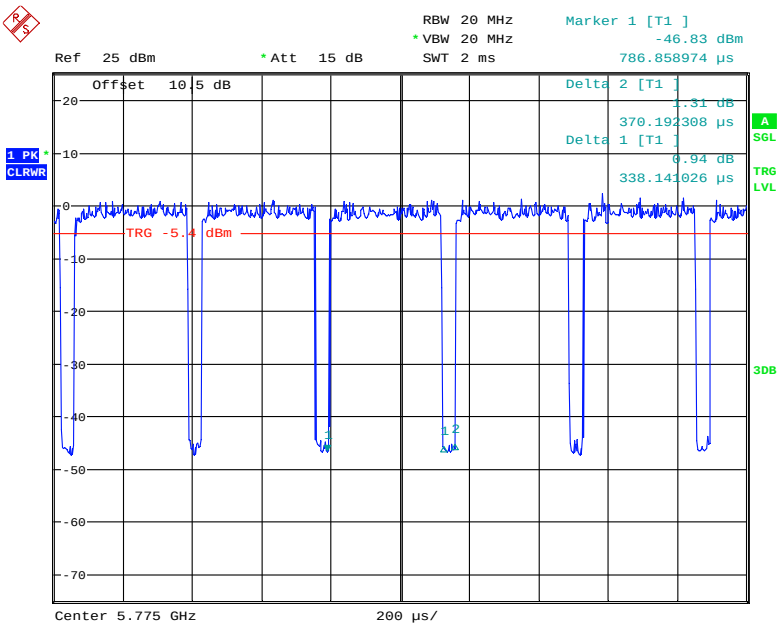

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Band	Duty Cycle (%)	T(ms)	1/T(kHz)	VBW Setting	10log(1/ Duty Cycle)
802.11a	98	-	-	10Hz	-
802.11n20	99	-	-	10Hz	-
802.11n40	96	0.667	1.50	3kHz	0.18
802.11ac20	98	-	-	10Hz	-
802.11ac40	96	0.672	1.49	3kHz	0.18
802.11ac80	91	0.338	2.96	3kHz	0.41

Note： 5150-5250 MHz band was used the same duty cycle to test.

Equipment Modifications

No modification was made to the EUT tested.

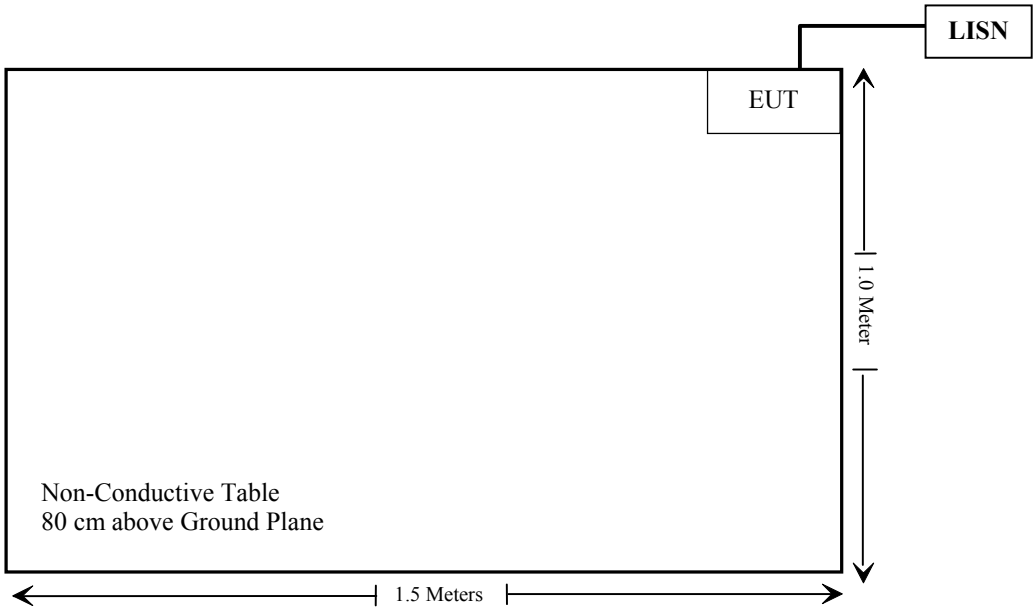
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
/	/	/	/

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	834115/007	2016-11-25	2017-11-25
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2016-10-10	2017-10-10
COM-POWER	LISN	LI-1100	863566/021	2016-10-10	2017-10-10
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2016-06-18	2017-06-17
MICRO-COAX	Coaxial line	UFB-293B-1-0480-50X50	97F0173	2016-09-08	2017-09-08
Rohde & Schwarz	CE Test software	EMC 32	V 09.10.0	NCR	NCR
Radiation test					
Sonoma Instrunent	Pre-Amplifier	330	171377	2016-12-12	2017-12-11
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2016-11-25	2017-11-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Narda	Pre-amplifier	AFS42-00101800	2001270	2016-09-08	2017-09-08
EMCO	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2016-11-25	2017-11-25
Rohde & Schwarz	FSV40 Signal Analyzer	FSV40	101116	2016-07-04	2017-07-03
ETS	Horn Antenna	3115	6229	2016-01-11	2019-01-10
R&S	Auto test Software	EMC32	V 09.10.0	NCR	NCR
haojintech	Coaxial Cable	Cable-1	001	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-2	002	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-3	003	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-4	004	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-5	005	2016-12-12	2017-12-12
RF Conducted test					
BACL	TS 8997 Cable-01	T-KS-EMC086	T-KS-EMC086	2016-12-09	2017-12-08
BACL	RF cable	KS-LAB-012	KS-LAB-012	2016-12-15	2017-12-15
WEINSCHEL	3dB Attenuator	5326	N/A	2016-06-18	2017-06-18
WEINSCHEL	10dB Attenuator	5328	N/A	2016-06-18	2017-06-18
Agilent	Power Meter	N1912A	MY5000492	2016-11-17	2017-11-16
Agilent	Power Sensor	N1921A	MY54210024	2016-11-17	2017-11-16
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2016-09-21	2017-09-21

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

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

Applicable Standard

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

Limits for General Population/Uncontrolled Exposure

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

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

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

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

Mode	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBi)	(numeric)	(dBm)	(mW)			
2.4G WIFI	3	2	19.5	89.13	20	0.04	1
5.2G WIFI	3	2	12.5	17.78	20	0.01	1
5.8G WIFI	3	2	12	15.85	20	0.01	1
BLE	3	2	-1	0.79	20	0.0003	1

Simultaneous transmitting consideration:

(For BLE & 2.4G WIFI Power density come from the DTS report, BLE and WIFI signal can simultaneous transmitting but the 2.4G and 5G WIFI can't simultaneous transmitting, the highest MPE for WIFI is $0.04mW/cm^2$)

The ratio=$MPE/limit_{BLE}$ + $MPE/limit_{DTS}$=0.0003+0.04=0.0403＜1.0.

Note: 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

This product has an integrated antenna with maximum gain is 3 dBi for wifi, fulfill the requirement of this section, and please refer to the EUT photo.

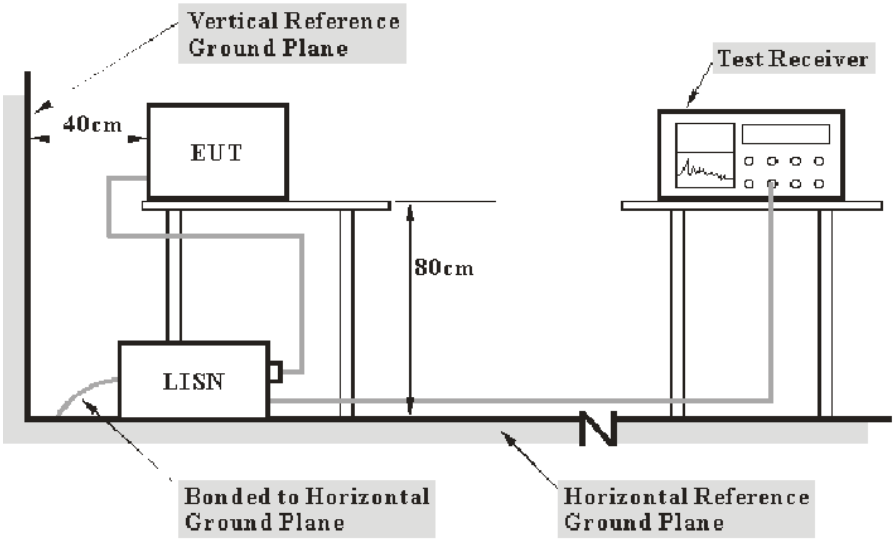
Result: Compliance.

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 EUT 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

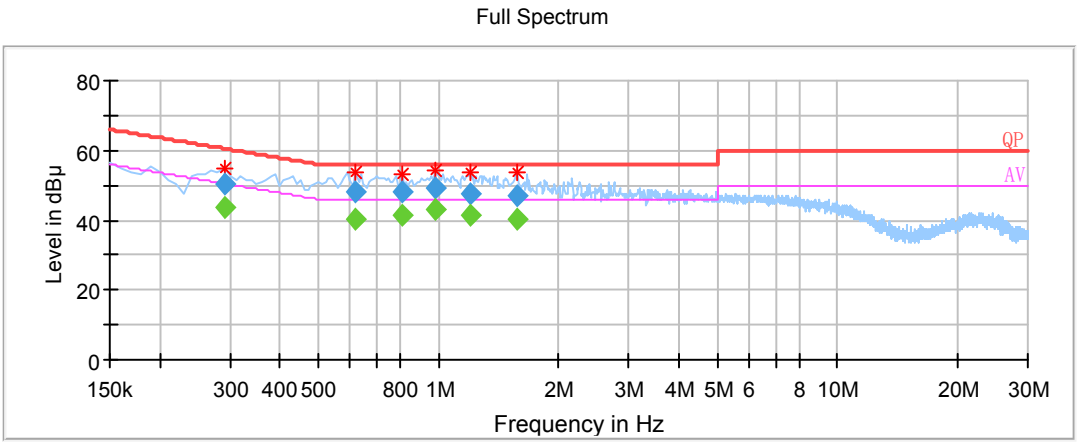
Environmental Conditions

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

The testing was performed by Layne Li on 2017-06-16.

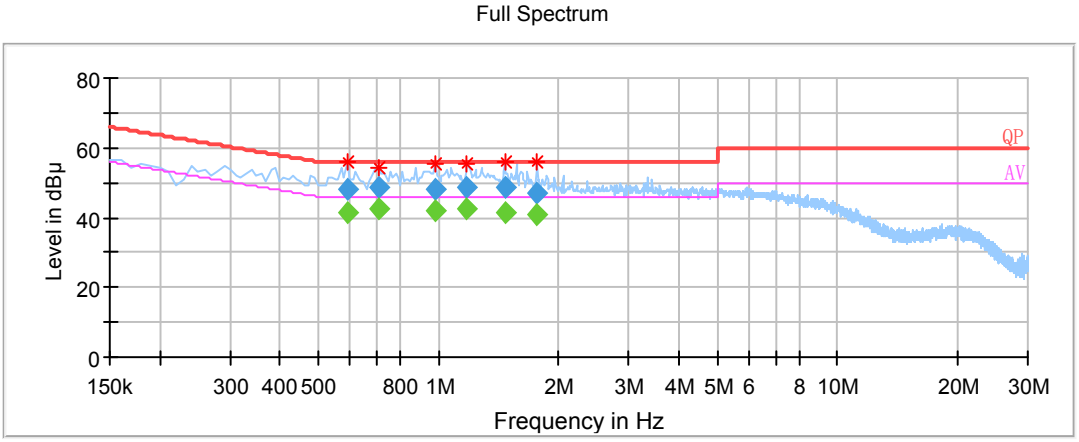
EUT operation mode: Transmitting

AC 120V/60 Hz, Line:



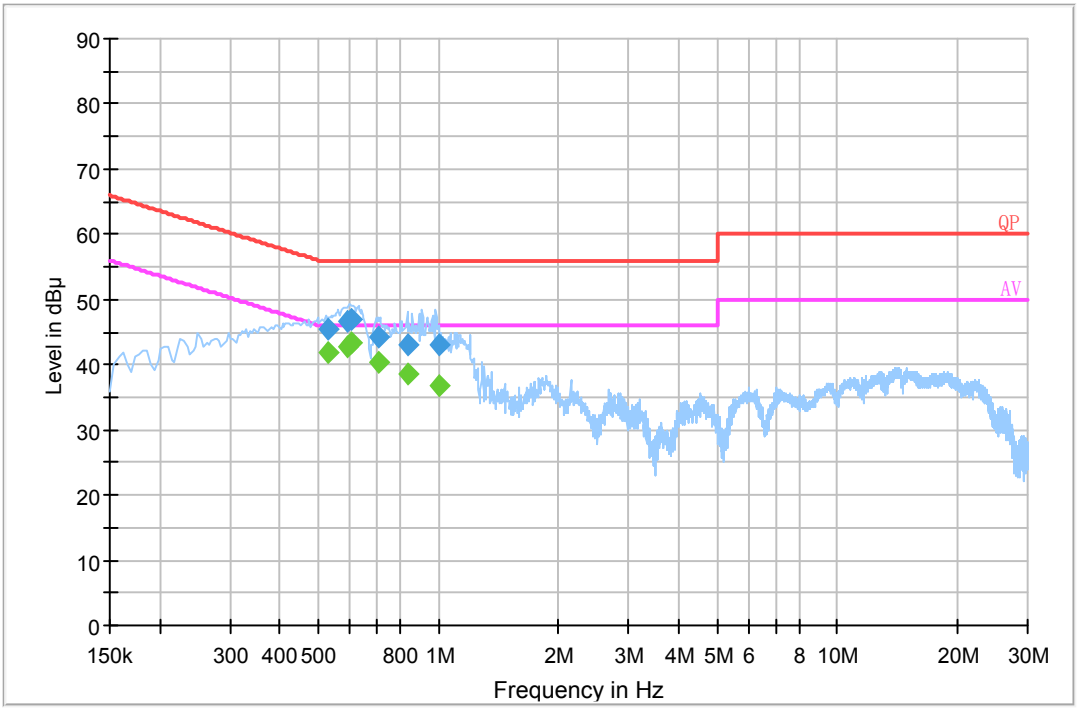
Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.290000	---	43.70	9.000	L1	10.0	6.82	50.52	Compliance
0.290000	50.20	---	9.000	L1	10.0	10.32	60.52	Compliance
0.620000	---	40.48	9.000	L1	10.0	5.52	46.00	Compliance
0.620000	48.23	---	9.000	L1	10.0	7.77	56.00	Compliance
0.810000	---	41.30	9.000	L1	9.9	4.70	46.00	Compliance
0.810000	48.37	---	9.000	L1	9.9	7.63	56.00	Compliance
0.980000	---	42.94	9.000	L1	9.9	3.06	46.00	Compliance
0.980000	49.48	---	9.000	L1	9.9	6.52	56.00	Compliance
1.200000	---	41.44	9.000	L1	9.9	4.56	46.00	Compliance
1.200000	47.50	---	9.000	L1	9.9	8.50	56.00	Compliance
1.580000	---	40.43	9.000	L1	9.9	5.57	46.00	Compliance
1.580000	46.97	---	9.000	L1	9.9	9.03	56.00	Compliance

AC120V, 60 Hz, Neutral:



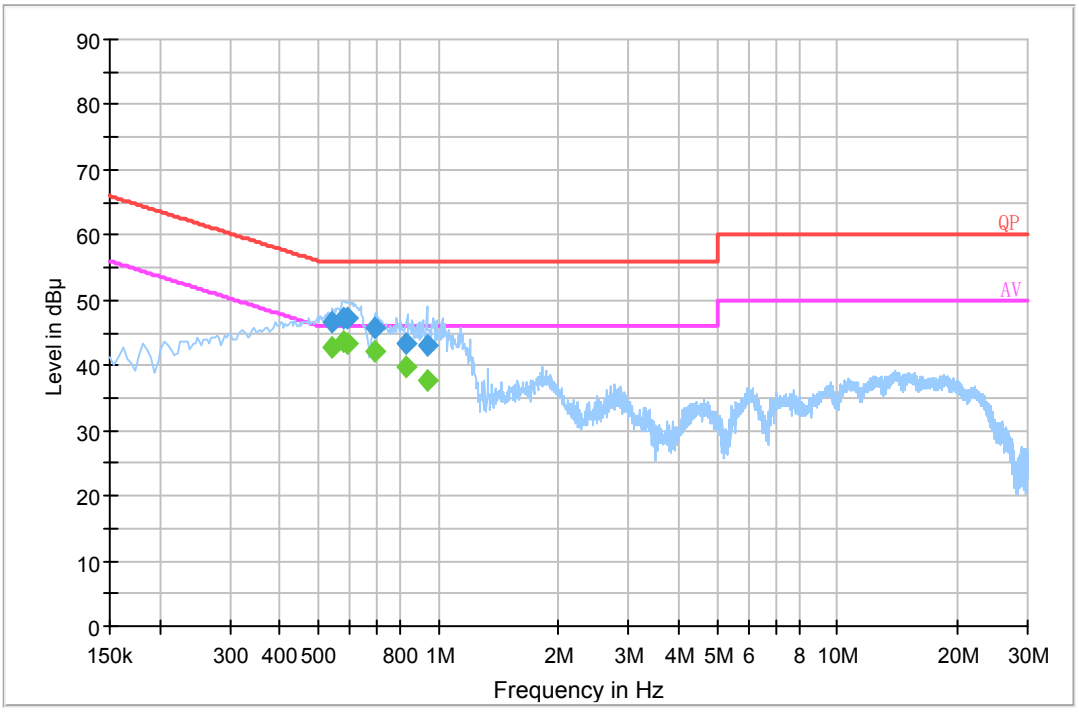
Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.590000	---	41.59	9.000	N	10.1	4.41	46.00	Compliance
0.590000	48.22	---	9.000	N	10.1	7.78	56.00	Compliance
0.710000	---	42.59	9.000	N	10.0	3.41	46.00	Compliance
0.710000	48.63	---	9.000	N	10.0	7.37	56.00	Compliance
0.980000	---	41.74	9.000	N	9.9	4.26	46.00	Compliance
0.980000	48.09	---	9.000	N	9.9	7.91	56.00	Compliance
1.180000	---	42.26	9.000	N	9.9	3.74	46.00	Compliance
1.180000	48.50	---	9.000	N	9.9	7.50	56.00	Compliance
1.470000	---	41.51	9.000	N	9.9	4.49	46.00	Compliance
1.470000	48.55	---	9.000	N	9.9	7.45	56.00	Compliance
1.770000	---	40.94	9.000	N	9.9	5.06	46.00	Compliance
1.770000	46.81	---	9.000	N	9.9	9.19	56.00	Compliance

AC 277V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.529830	---	41.7	9.000	L1	20.2	4.3	46	Compliance
0.529830	45.3	---	9.000	L1	20.2	10.7	56	Compliance
0.593150	---	42.7	9.000	L1	20.1	3.3	46	Compliance
0.593150	46.5	---	9.000	L1	20.1	9.5	56	Compliance
0.606970	---	43.5	9.000	L1	20.1	2.5	46	Compliance
0.606970	47.0	---	9.000	L1	20.1	9.0	56	Compliance
0.711290	---	40.4	9.000	L1	20.0	5.6	46	Compliance
0.711290	44.2	---	9.000	L1	20.0	11.8	56	Compliance
0.841490	---	38.4	9.000	L1	20.0	7.6	46	Compliance
0.841490	43.0	---	9.000	L1	20.0	13.0	56	Compliance
1.000790	---	36.7	9.000	L1	20.1	9.3	46	Compliance
1.000790	43.1	---	9.000	L1	20.1	12.9	56	Compliance

AC277V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.537950	---	42.7	9.000	N	20.2	3.3	46	Compliance
0.537950	46.7	---	9.000	N	20.2	9.3	56	Compliance
0.581330	---	43.7	9.000	N	20.1	2.3	46	Compliance
0.581330	47.3	---	9.000	N	20.1	8.7	56	Compliance
0.593030	---	43.3	9.000	N	20.1	2.7	46	Compliance
0.593030	47.2	---	9.000	N	20.1	8.8	56	Compliance
0.695530	---	42.1	9.000	N	20.0	3.9	46	Compliance
0.695530	45.7	---	9.000	N	20.0	10.3	56	Compliance
0.829490	---	39.7	9.000	N	20.0	6.3	46	Compliance
0.829490	43.3	---	9.000	N	20.0	12.7	56	Compliance
0.939990	---	37.6	9.000	N	20.1	8.4	46	Compliance
0.939990	43.2	---	9.000	N	20.1	12.8	56	Compliance

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

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

Applicable Standard

FCC §15.407 (b) (1), (2), (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.

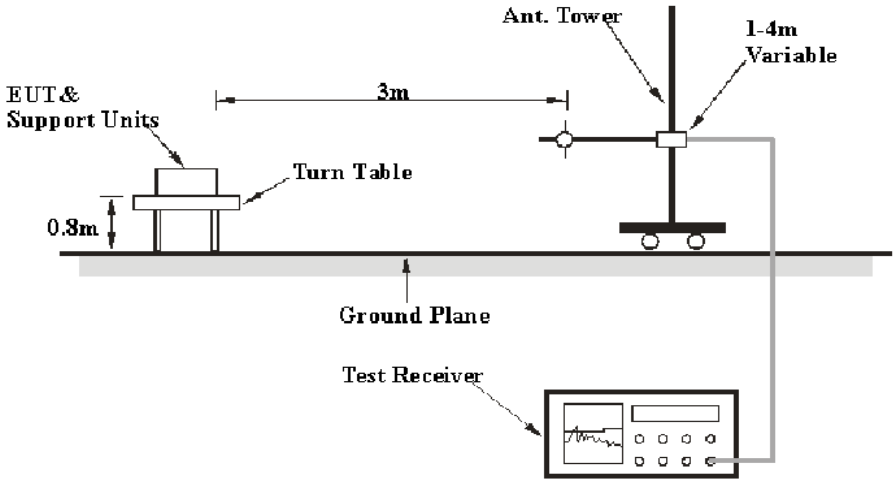
KDB 789033 D02 General UNII Test Procedures New Rulesv01r04, clause II.G 1 d),
(ii) E [dBμV/m] = EIRP [dBm] + 95.2, for d = 3 meters.

KDB 644545 D03 Guidance for IEEE 802 11ac New Rules v01 clause E.3)

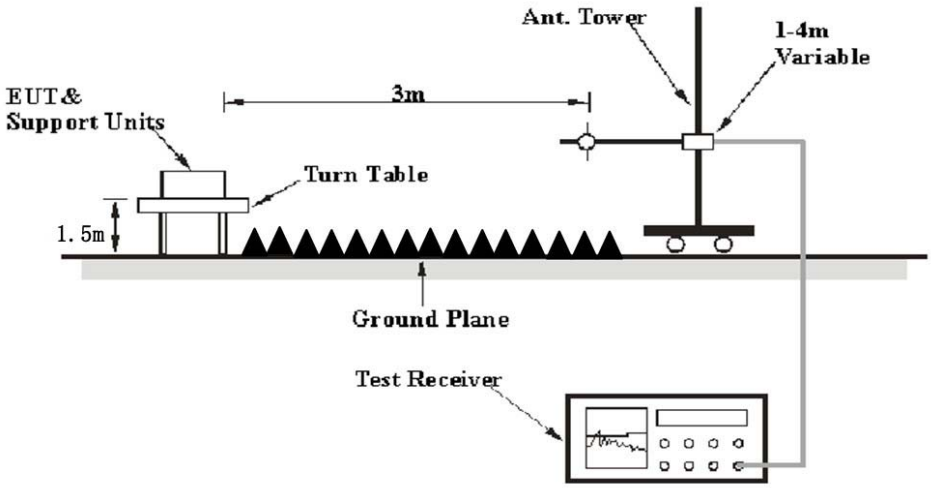
The general limit of -27 dBm EIRP (= 68 dBμV/m) is applied for unwanted emission of U-NII devices.
However, compliance with unwanted emissions in restricted bands may need to be considered, *e.g.,* some harmonics may land in the restricted bands below 5.15 GHz and above 5.35 GHz (refer
The general limit of -27 dBm EIRP (= 68 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 dBμV/m, the lower average limit of 54 dBμV/m in the restricted bands needs to be complied to

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	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz Note 1	/	Ave.
	1MHz	＞1/T Note 2	/	Ave.

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

Test Procedure

Radiated Spurious Emission

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

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

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

Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit – Corrected Amplitude

Test Results Summary

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

The testing was performed by Layne Li on 2017-06-10.

EUT operation mode: Transmitting

30 MHz ~ 40 GHz: (5150-5250 MHz & 5725-5825 MHz)

802.11a mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
73.51	39.64	QP	345	1.6	V	-5.17	34.47	40	5.53
5180	105.15	PK	305	2.4	H	2.28	107.43	/	/
5180	93.27	Ave.	305	2.4	H	2.28	95.55	/	/
5180	99.01	PK	202	1.5	V	2.28	101.29	/	/
5180	86.63	Ave.	202	1.5	V	2.28	88.91	/	/
5130	65.86	PK	208	1.1	H	2.17	68.03	74	5.97
5130	48.74	Ave.	208	1.1	H	2.17	50.91	54	3.09
5358.81	61.91	PK	274	1.5	H	2.28	64.19	74	9.81
5358.81	47.97	Ave.	274	1.5	H	2.28	50.25	54	3.75
10360	45.16	PK	228	2.1	H	12.9	58.06	74	15.94
10360	30.31	Ave.	228	2.1	H	12.9	43.21	54	10.79
5200 MHz									
73.51	39.31	QP	182	2.6	V	-5.17	34.14	40	5.86
5200	104.05	PK	171	2.4	H	2.28	106.33	/	/
5200	93.51	Ave.	171	2.4	H	2.28	95.79	/	/
5200	100.27	PK	252	1.7	V	2.28	102.55	/	/
5200	87.46	Ave.	252	1.7	V	2.28	89.74	/	/
5112.22	61.87	PK	27	1.5	H	2.17	64.04	74	9.96
5112.22	48.5	Ave.	27	1.5	H	2.17	50.67	54	3.33
5351.98	61.05	PK	80	1.6	H	2.28	63.33	74	10.67
5351.98	48.17	Ave.	80	1.6	H	2.28	50.45	54	3.55
10400	44.12	PK	138	2.2	H	12.9	57.02	74	16.98
10400	29.33	Ave.	138	2.2	H	12.9	42.23	54	11.77
5240 MHz									
73.51	38.69	QP	24	2.7	V	-5.17	33.52	40	6.48
5240	103.32	PK	140	1.7	H	2.28	105.6	/	/
5240	92.89	Ave.	140	1.7	H	2.28	95.17	/	/
5240	99.04	PK	117	1.6	V	2.28	101.32	/	/
5240	85.93	Ave.	117	1.6	V	2.28	88.21	/	/
5113.52	62.57	PK	50	2.1	H	2.17	64.74	74	9.26
5113.52	48.61	Ave.	50	2.1	H	2.17	50.78	54	3.22
5356.17	61.44	PK	42	1.3	H	2.28	63.72	74	10.28
5356.17	47.84	Ave.	42	1.3	H	2.28	50.12	54	3.88
10480	43.85	PK	314	1.1	H	14.06	57.91	74	16.09
10480	29.39	Ave.	314	1.1	H	14.06	43.45	54	10.55

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5745 MHz									
73.51	39.08	QP	358	2.9	V	-5.17	33.91	40	6.09
5745	100.8	PK	275	1.5	H	2.61	103.41	/	/
5745	89.48	Ave.	275	1.5	H	2.61	92.09	/	/
5745	101.42	PK	317	1.7	V	2.61	104.03	/	/
5745	88.43	Ave.	317	1.7	V	2.61	91.04	/	/
5723.28	67.77	PK	270	2	H	2.61	70.38	118.28	47.9
5719.11	66.25	PK	188	2	H	2.61	68.86	110.55	41.69
5669.93	58.09	PK	351	1.4	H	2.61	60.7	82.95	22.25
11490	45.05	PK	2	1.1	H	15.15	60.2	74	13.8
11490	29.77	Ave.	2	1.1	H	15.15	44.92	54	9.08
5785 MHz									
73.51	39.59	QP	320	2.8	V	-5.17	34.42	40	5.58
5785	99.24	PK	30	1.1	H	3.49	102.73	/	/
5785	88.37	Ave.	30	1.1	H	3.49	91.86	/	/
5785	97.43	PK	211	1.4	V	3.49	100.92	/	/
5785	86.94	Ave.	211	1.4	V	3.49	90.43	/	/
5720.48	57.53	PK	111	1.6	H	2.61	60.14	111.89	51.75
5703.16	57.53	PK	52	2.1	H	2.61	60.14	106.08	45.94
5670.2	57.93	PK	242	1.7	H	2.61	60.54	83.15	22.61
11570	45.11	PK	228	2.5	H	14.76	59.87	74	14.13
11570	29.94	Ave.	228	2.5	H	14.76	44.7	54	9.3
5825 MHz									
73.51	39.29	QP	166	2.8	V	-5.17	34.12	40	5.88
5825	98.25	PK	320	1.3	H	3.49	101.74	/	/
5825	87.16	Ave.	320	1.3	H	3.49	90.65	/	/
5825	97.24	PK	172	2.1	V	3.49	100.73	/	/
5825	86.48	Ave.	172	2.1	V	3.49	89.97	/	/
5850.28	63.27	PK	335	1.3	H	3.49	66.76	121.56	54.8
5867.74	58.37	PK	100	1.7	H	3.49	61.86	107.23	45.37
5893.93	57.99	PK	57	2.5	H	3.49	61.48	91.19	29.71
11650	43.81	PK	302	1	H	14.76	58.57	74	15.43
11650	29.04	Ave.	302	1	H	14.76	43.8	54	10.2

802.11n20 mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
73.51	39.04	QP	191	1.8	V	-5.17	33.87	40	6.13
5180	102.7	PK	22	1.4	H	2.28	104.98	/	/
5180	92.27	Ave.	22	1.4	H	2.28	94.55	/	/
5180	99	PK	220	1.7	V	2.28	101.28	/	/
5180	87.38	Ave.	220	1.7	V	2.28	89.66	/	/
5131.46	62.34	PK	93	1.6	H	2.17	64.51	74	9.49
5131.46	48.74	Ave.	93	1.6	H	2.17	50.91	54	3.09
5421.42	61.65	PK	173	1.9	H	2.28	63.93	74	10.07
5421.42	48.13	Ave.	173	1.9	H	2.28	50.41	54	3.59
10360	44.32	PK	59	1.5	H	12.9	57.22	74	16.78
10360	29.56	Ave.	59	1.5	H	12.9	42.46	54	11.54
5200 MHz									
73.51	39.41	QP	272	2.4	V	-5.17	34.24	40	5.76
5200	103.82	PK	75	1.3	H	2.28	106.1	/	/
5200	91.75	Ave.	75	1.3	H	2.28	94.03	/	/
5200	100.56	PK	349	1.5	V	2.28	102.84	/	/
5200	87.41	Ave.	349	1.5	V	2.28	89.69	/	/
5120	61.19	PK	84	2.3	H	2.17	63.36	74	10.64
5120	48.67	Ave.	84	2.3	H	2.17	50.84	54	3.16
5353.96	60.52	PK	33	1.9	H	2.28	62.8	74	11.2
5353.96	47.95	Ave.	33	1.9	H	2.28	50.23	54	3.77
10400	44.57	PK	47	1.5	H	12.9	57.47	74	16.53
10400	29.99	Ave.	47	1.5	H	12.9	42.89	54	11.11
5240 MHz									
73.51	39.26	QP	346	1.3	V	-5.17	34.09	40	5.91
5240	103.56	PK	20	2.3	H	2.28	105.84	/	/
5240	92.55	Ave.	20	2.3	H	2.28	94.83	/	/
5240	98.83	PK	153	2	V	2.28	101.11	/	/
5240	86.17	Ave.	153	2	V	2.28	88.45	/	/
5138.27	61.1	PK	56	1.4	H	2.17	63.27	74	10.73
5138.27	48.67	Ave.	56	1.4	H	2.17	50.84	54	3.16
5351.36	61.55	PK	302	1.3	H	2.28	63.83	74	10.17
5351.36	48.29	Ave.	302	1.3	H	2.28	50.57	54	3.43
10480	42.97	PK	140	2.5	H	14.06	57.03	74	16.97
10480	29.72	Ave.	140	2.5	H	14.06	43.78	54	10.22

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5745 MHz									
73.51	38.78	QP	312	1.9	V	-5.17	33.61	40	6.39
5745	101.39	PK	294	1.8	H	2.61	104	/	/
5745	89.76	Ave.	294	1.8	H	2.61	92.37	/	/
5745	100.76	PK	270	1.2	V	2.61	103.37	/	/
5745	89.54	Ave.	270	1.2	V	2.61	92.15	/	/
5723.59	68.67	PK	10	1.5	H	2.61	71.28	119.92	48.64
5717.51	66.69	PK	262	2.4	H	2.61	69.3	110.1	40.8
5662.32	57.75	PK	110	2.1	H	2.61	60.36	77.32	16.96
11490	43.6	PK	21	1.8	H	15.15	58.75	74	15.25
11490	29	Ave.	21	1.8	H	15.15	44.15	54	9.85
5785 MHz									
73.51	39.22	QP	144	2.2	V	-5.17	34.05	40	5.95
5785	100.47	PK	357	1.6	H	3.49	103.96	/	/
5785	89.02	Ave.	357	1.6	H	3.49	92.51	/	/
5785	99.28	PK	331	2.3	V	3.49	102.77	/	/
5785	88.15	Ave.	331	2.3	V	3.49	91.64	/	/
5723.21	57.39	PK	266	1.5	H	2.61	60	119.92	59.92
5708.45	58.12	PK	137	2.4	H	2.61	60.73	107.57	46.84
5673.84	57.89	PK	169	2.2	H	2.61	60.5	85.84	25.34
11570	45.3	PK	97	1.9	H	14.76	60.06	74	13.94
11570	31.44	Ave.	97	1.9	H	14.76	46.2	54	7.8
5825 MHz									
73.51	38.96	QP	353	1.1	V	-5.17	33.79	40	6.21
5825	99	PK	158	2.1	H	3.49	102.49	/	/
5825	87.84	Ave.	158	2.1	H	3.49	91.33	/	/
5825	98.49	PK	155	2.2	V	3.49	101.98	/	/
5825	87.49	Ave.	155	2.2	V	3.49	90.98	/	/
5850.92	64.65	PK	166	2	H	3.49	68.14	120.1	51.96
5855.12	60.67	PK	278	2.3	H	3.49	64.16	110.77	46.61
5904.95	57.7	PK	324	2	H	3.49	61.19	83.04	21.85
11650	44.77	PK	327	2.3	H	14.76	59.53	74	14.47
11650	31.44	Ave.	327	2.3	H	14.76	46.2	54	7.8

802.11n40 mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5190 MHz									
73.51	39.23	QP	302	2.8	V	-5.17	34.06	40	5.94
5190	97.05	PK	359	1.1	H	2.28	99.33	/	/
5190	86.08	Ave.	359	1.1	H	2.28	88.36	/	/
5190	95.16	PK	168	1.8	V	2.28	97.44	/	/
5190	82.78	Ave.	168	1.8	V	2.28	85.06	/	/
5138.27	65.17	PK	66	1.6	H	2.17	67.34	74	6.66
5138.27	48.8	Ave.	66	1.6	H	2.17	50.97	54	3.03
5357.49	60.82	PK	231	1.6	H	2.28	63.1	74	10.9
5357.49	47.81	Ave.	231	1.6	H	2.28	50.09	54	3.91
10380	44.31	PK	328	1.4	H	12.9	57.21	74	16.79
10380	29.76	Ave.	328	1.4	H	12.9	42.66	54	11.34
5230 MHz									
73.51	38.82	QP	359	3	V	-5.17	33.65	40	6.35
5230	98.4	PK	118	1.4	H	2.28	100.68	/	/
5230	88.17	Ave.	118	1.4	H	2.28	90.45	/	/
5230	94.85	PK	178	2	V	2.28	97.13	/	/
5230	82.52	Ave.	178	2	V	2.28	84.8	/	/
5135.67	61.8	PK	41	2.1	H	2.17	63.97	74	10.03
5135.67	47.6	Ave.	41	2.1	H	2.17	49.77	54	4.23
5378.65	62.76	PK	184	1.3	H	2.28	65.04	74	8.96
5378.65	47.85	Ave.	184	1.3	H	2.28	50.13	54	3.87
10460	45.07	PK	150	1.6	H	14.06	59.13	74	14.87
10460	29.96	Ave.	150	1.6	H	14.06	44.02	54	9.98

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5755 MHz									
73.51	39.54	QP	344	1.5	V	-5.17	34.37	40	5.63
5755	98.43	PK	224	2	H	3.49	101.92	/	/
5755	85.75	Ave.	224	2	H	3.49	89.24	/	/
5755	90.45	PK	7	1.3	V	3.49	93.94	/	/
5755	79.76	Ave.	7	1.3	V	3.49	83.25	/	/
5724.71	67.57	PK	267	1.2	H	2.61	70.18	121.54	51.36
5719.35	64.77	PK	280	1.3	H	2.61	67.38	110.62	43.24
5698.97	60.33	PK	301	2.2	H	2.61	62.94	104.44	41.5
11510	45.62	PK	180	1.8	H	15.15	60.77	74	13.23
11510	29.53	Ave.	180	1.8	H	15.15	44.68	54	9.32
5795 MHz									
73.51	39.03	QP	136	2.2	V	-5.17	33.86	40	6.14
5795	97.74	PK	357	2.4	H	3.49	101.23	/	/
5795	85.52	Ave.	357	2.4	H	3.49	89.01	/	/
5795	92.01	PK	325	1	V	3.49	95.5	/	/
5795	79.4	Ave.	325	1	V	3.49	82.89	/	/
5851.18	60.18	PK	352	1.4	H	3.49	63.67	119.51	55.84
5855.2	59.51	PK	158	1.6	H	3.49	63	110.74	47.74
5881.01	57.9	PK	266	1.7	H	3.49	61.39	100.75	39.36
11590	45.7	PK	271	1.7	H	14.76	60.46	74	13.54
11590	30.09	Ave.	271	1.7	H	14.76	44.85	54	9.15

802.11ac20 mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
73.51	39.37	QP	251	1	V	-5.17	34.2	40	5.8
5180	102.73	PK	6	1.6	H	2.28	105.01	/	/
5180	92.12	Ave.	6	1.6	H	2.28	94.4	/	/
5180	98.79	PK	87	1.7	V	2.28	101.07	/	/
5180	87.76	Ave.	87	1.7	V	2.28	90.04	/	/
5149.71	67.13	PK	309	2	H	2.17	69.3	74	4.7
5149.71	48.8	Ave.	309	2	H	2.17	50.97	54	3.03
5346.38	61.93	PK	7	2.4	H	2.28	64.21	74	9.79
5346.38	47.44	Ave.	7	2.4	H	2.28	49.72	54	4.28
10360	45.35	PK	116	2.2	H	12.9	58.25	74	15.75
10360	30.53	Ave.	116	2.2	H	12.9	43.43	54	10.57
5200 MHz									
73.51	38.72	QP	283	1.9	V	-5.17	33.55	40	6.45
5200	103.74	PK	121	2.3	H	2.28	106.02	/	/
5200	92.78	Ave.	121	2.3	H	2.28	95.06	/	/
5200	98.52	PK	208	2	V	2.28	100.8	/	/
5200	87.49	Ave.	208	2	V	2.28	89.77	/	/
5108.31	61.8	PK	314	1.7	H	2.17	63.97	74	10.03
5108.31	48.3	Ave.	314	1.7	H	2.17	50.47	54	3.53
5355.76	60.94	PK	249	1.1	H	2.28	63.22	74	10.78
5355.76	47.91	Ave.	249	1.1	H	2.28	50.19	54	3.81
10400	45.27	PK	323	1.2	H	12.9	58.17	74	15.83
10400	31.72	Ave.	323	1.2	H	12.9	44.62	54	9.38
High channel(5240MHz)									
73.51	39.47	QP	136	3	V	-5.17	34.3	40	5.7
5240	104.09	PK	118	2.2	H	2.28	106.37	/	/
5240	91.37	Ave.	118	2.2	H	2.28	93.65	/	/
5240	97.89	PK	192	2	V	2.28	100.17	/	/
5240	85.96	Ave.	192	2	V	2.28	88.24	/	/
5136.97	62.24	PK	326	1.6	H	2.17	64.41	74	9.59
5136.97	48.46	Ave.	326	1.6	H	2.17	50.63	54	3.37
5362.78	61.41	PK	207	2.2	H	2.28	63.69	74	10.31
5362.78	47.84	Ave.	207	2.2	H	2.28	50.12	54	3.88
10480	43.07	PK	293	1.6	H	14.06	57.13	74	16.87
10480	28.82	Ave.	293	1.6	H	14.06	42.88	54	11.12

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5745 MHz									
73.51	38.84	QP	71	1.2	V	-5.17	33.67	40	6.33
5745	100.62	PK	355	2.4	H	2.61	103.23	/	/
5745	89.57	Ave.	355	2.4	H	2.61	92.18	/	/
5745	99.55	PK	50	1.8	V	2.61	102.16	/	/
5745	87.93	Ave.	50	1.8	V	2.61	90.54	/	/
5724.01	68.29	PK	148	1.6	H	2.61	70.9	119.94	49.04
5719.51	66.81	PK	39	2	H	2.61	69.42	110.66	41.24
5666.13	58.13	PK	203	1.6	H	2.61	60.74	80.14	19.4
11490	45.08	PK	177	1.9	H	15.15	60.23	74	13.77
11490	29.43	Ave.	177	1.9	H	15.15	44.58	54	9.42
5785 MHz									
73.51	39.49	QP	312	2.5	V	-5.17	34.32	40	5.68
5785	98.6	PK	224	1.2	H	3.49	102.09	/	/
5785	87.76	Ave.	224	1.2	H	3.49	91.25	/	/
5785	87.94	PK	178	1.3	V	3.49	91.43	/	/
5785	87.34	Ave.	178	1.3	V	3.49	90.83	/	/
5723.48	57.93	PK	81	1.1	H	2.61	60.54	118.73	58.19
5711.14	57.42	PK	320	1	H	2.61	60.03	108.32	48.29
5665.73	59	PK	144	2.1	H	2.61	61.61	79.84	18.23
11570	45.72	PK	139	1	H	14.76	60.48	74	13.52
11570	30.42	Ave.	139	1	H	14.76	45.18	54	8.82
5825 MHz									
73.51	39.17	QP	291	3	V	-5.17	34	40	6
5825	98.83	PK	159	1.2	H	3.49	102.32	/	/
5825	87.33	Ave.	159	1.2	H	3.49	90.82	/	/
5825	98.95	PK	24	1.5	V	3.49	102.44	/	/
5825	87.56	Ave.	24	1.5	V	3.49	91.05	/	/
5850.14	63.82	PK	205	1.6	H	3.49	67.31	121.88	54.57
5855.6	61.19	PK	12	2.5	H	3.49	64.68	110.63	45.95
5878.1	57.97	PK	267	2.3	H	3.49	61.46	102.91	41.45
11650	44.89	PK	250	1.8	H	14.76	59.65	74	14.35
11650	30.1	Ave.	250	1.8	H	14.76	44.86	54	9.14

802.11ac40 mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5190 MHz									
73.51	39.35	QP	57	3	V	-5.17	34.18	40	5.82
5190	101.23	PK	195	2	H	2.28	103.51	/	/
5190	87.64	Ave.	195	2	H	2.28	89.92	/	/
5190	97.64	PK	149	1.2	V	2.28	99.92	/	/
5190	84.34	Ave.	149	1.2	V	2.28	86.62	/	/
5149.55	67.26	PK	307	2.1	H	2.17	69.43	74	4.57
5149.55	48.74	Ave.	307	2.1	H	2.17	50.91	54	3.09
5357.35	61.55	PK	309	2.4	H	2.28	63.83	74	10.17
5357.35	47.62	Ave.	309	2.4	H	2.28	49.9	54	4.1
10380	46.1	PK	260	1.5	H	12.9	59	74	15
10380	29.9	Ave.	260	1.5	H	12.9	42.8	54	11.2
5230 MHz									
73.51	39.03	QP	266	2.5	V	-5.17	33.86	40	6.14
5230	101.22	PK	234	2.3	H	2.28	103.5	/	/
5230	88.12	Ave.	234	2.3	H	2.28	90.4	/	/
5230	95.38	PK	312	1.2	V	2.28	97.66	/	/
5230	81.86	Ave.	312	1.2	V	2.28	84.14	/	/
5142.18	61.28	PK	21	1.8	H	2.17	63.45	74	10.55
5142.18	47.82	Ave.	21	1.8	H	2.17	49.99	54	4.01
5353.96	61.18	PK	310	1.8	H	2.28	63.46	74	10.54
5353.96	47.61	Ave.	310	1.8	H	2.28	49.89	54	4.11
10460	44.7	PK	127	2.1	H	14.06	58.76	74	15.24
10460	29.26	Ave.	127	2.1	H	14.06	43.32	54	10.68

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5755 MHz									
73.51	39.34	QP	124	1.8	V	-5.17	34.17	40	5.83
5755	98.26	PK	308	1.1	H	3.49	101.75	/	/
5755	84.16	Ave.	308	1.1	H	3.49	87.65	/	/
5755	92.83	PK	298	2.2	V	3.49	96.32	/	/
5755	81.74	Ave.	298	2.2	V	3.49	85.23	/	/
5724.71	65.7	PK	230	1.1	H	2.61	68.31	121.54	53.23
5712.58	63.7	PK	276	1.5	H	2.61	66.31	108.72	42.41
5699.49	59.18	PK	324	1.4	H	2.61	61.79	104.82	43.03
11510	44.97	PK	234	2	H	15.15	60.12	74	13.88
11510	29.26	Ave.	234	2	H	15.15	44.41	54	9.59
5795 MHz									
73.51	39.29	QP	263	1.3	V	-5.17	34.12	40	5.88
5795	97.3	PK	34	1.5	H	3.49	100.79	/	/
5795	83.84	Ave.	34	1.5	H	3.49	87.33	/	/
5795	92.33	PK	40	1.6	V	3.49	95.82	/	/
5795	79.53	Ave.	40	1.6	V	3.49	83.02	/	/
5850.51	58.65	PK	37	1.9	H	3.49	62.14	121.04	58.9
5869.06	58.09	PK	129	1	H	3.49	61.58	106.86	45.28
5918.28	58.59	PK	234	1.8	H	3.49	62.08	73.17	11.09
11590	44.91	PK	61	2.2	H	14.76	59.67	74	14.33
11590	29.76	Ave.	61	2.2	H	14.76	44.52	54	9.48

802.11ac80 mode:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5210 MHz									
73.51	39.38	QP	105	1.2	V	-5.17	34.21	40	5.79
5210	97.53	PK	171	1.4	H	2.28	99.81	/	/
5210	85.37	Ave.	171	1.4	H	2.28	87.65	/	/
5210	93.51	PK	42	1.9	V	2.28	95.79	/	/
5210	79.35	Ave.	42	1.9	V	2.28	81.63	/	/
5144.78	62.3	PK	252	2.3	H	2.17	64.47	74	9.53
5144.78	48.52	Ave.	252	2.3	H	2.17	50.69	54	3.31
5359.69	60.84	PK	155	2.1	H	2.28	63.12	74	10.88
5359.69	47.42	Ave.	155	2.1	H	2.28	49.7	54	4.3
10420	45.98	PK	277	1.5	H	12.9	58.88	74	15.12
10420	29.87	Ave.	277	1.5	H	12.9	42.77	54	11.23
5775 MHz									
73.51	39.36	QP	86	1.5	V	-5.17	34.19	40	5.81
5775	92.27	PK	257	2.4	H	3.49	95.76	/	/
5775	80.73	Ave.	257	2.4	H	3.49	84.22	/	/
5775	89.94	PK	251	1.8	V	3.49	93.43	/	/
5775	77.02	Ave.	251	1.8	V	3.49	80.51	/	/
5724.27	67.22	PK	111	2.2	H	2.61	69.83	120.54	50.71
5705.65	63.08	PK	94	2.4	H	2.61	65.69	106.78	41.09
5693.58	59.98	PK	292	1.7	H	2.61	62.59	100.45	37.86
5852.26	59.98	PK	324	2.4	H	3.49	63.47	117.05	53.58
5868.42	58.82	PK	358	2	H	3.49	62.31	107.04	44.73
5876.80	57.79	PK	32	1.9	H	3.49	61.28	103.87	42.59
11550	45.25	PK	22	2.2	H	14.76	60.01	74	13.99
11550	31.44	Ave.	22	2.2	H	14.76	46.20	54	7.80

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude
Spurious emissions more than 20 dB below the limit were not reported.

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

Applicable Standard

FCC §15.407 (b) (1), (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 5.725–5.825 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

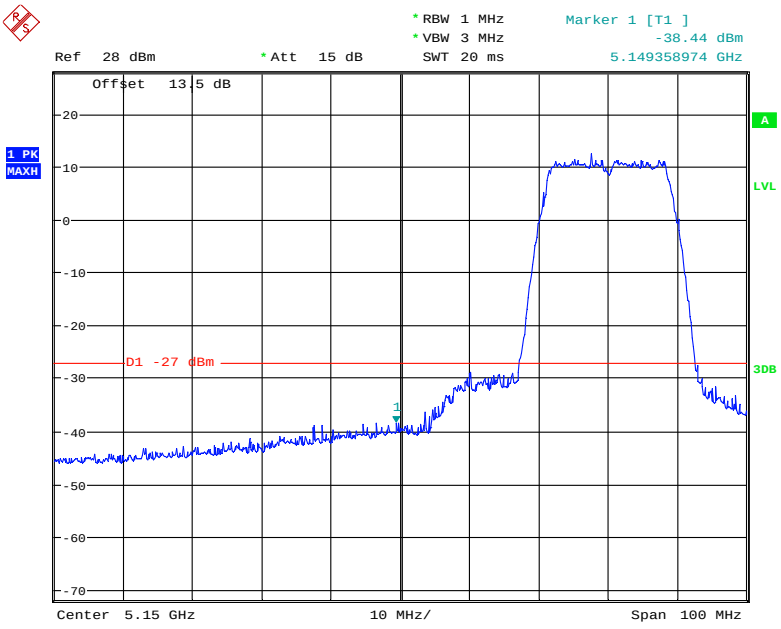
Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ada Yu on 2017-06-02.

EUT operation mode: Transmitting

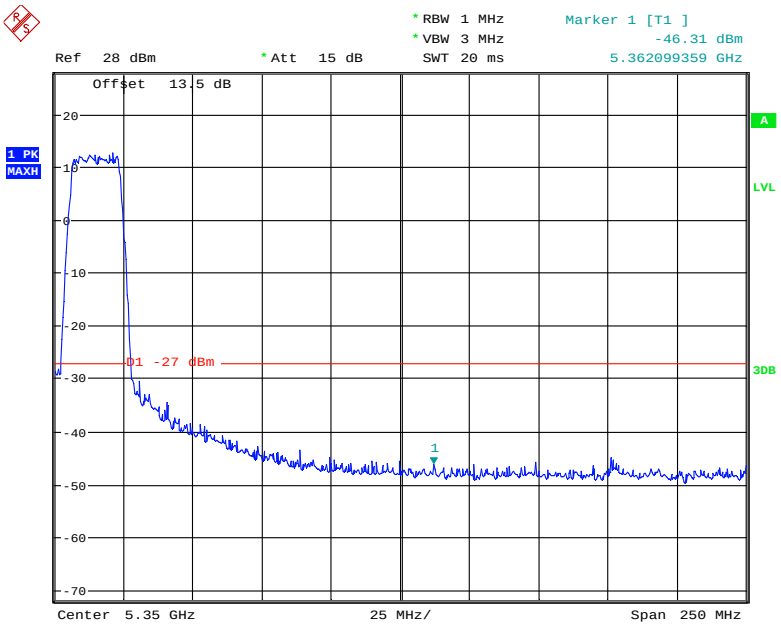
5150 – 5250 MHz:

802.11a mode, Band Edge, Left Side



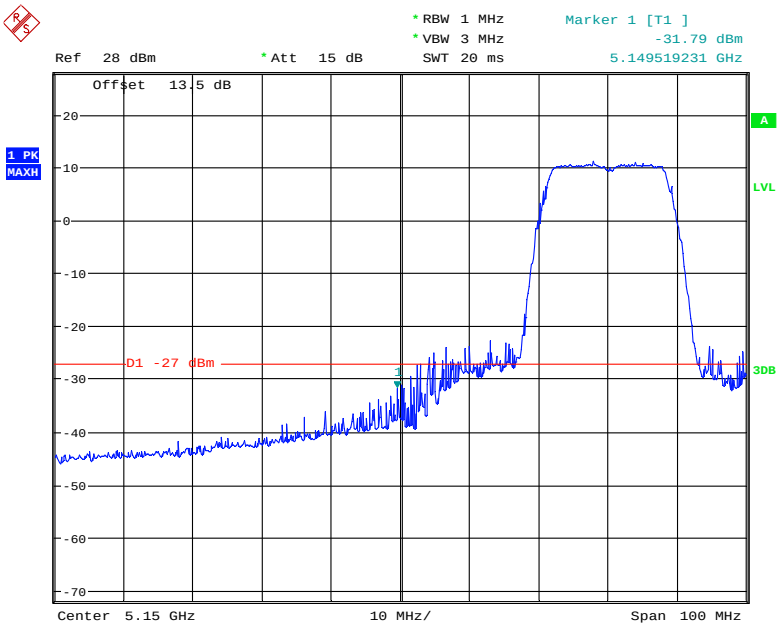
Date: 2.JUN.2017 01:46:49

802.11a mode, Band Edge, Right Side



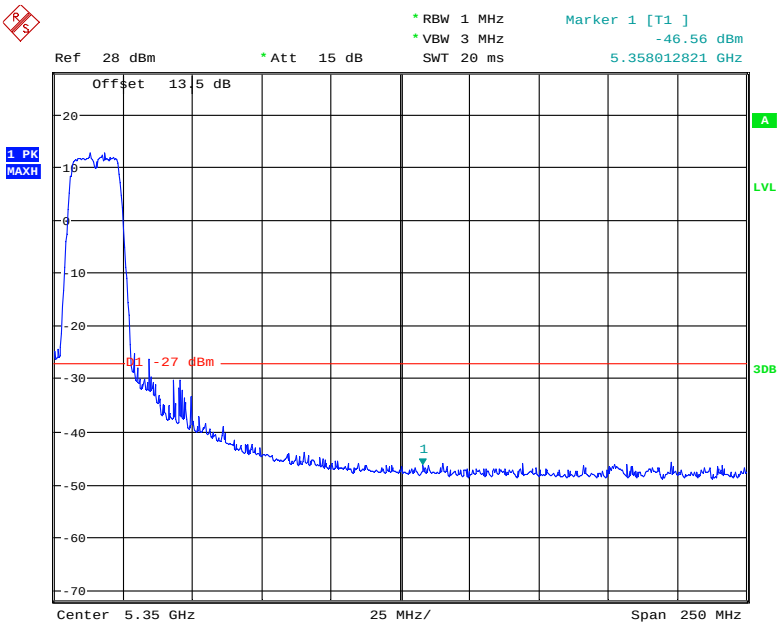
Date: 2.JUN.2017 01:47:46

802.11n20 mode, Band Edge, Left Side



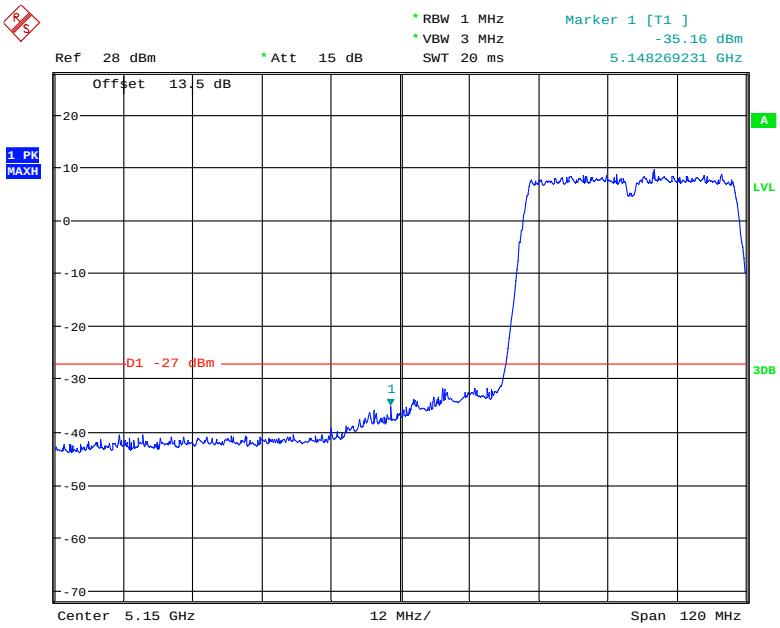
Date: 2.JUN.2017 01:24:57

802.11n20 mode, Band Edge, Right Side



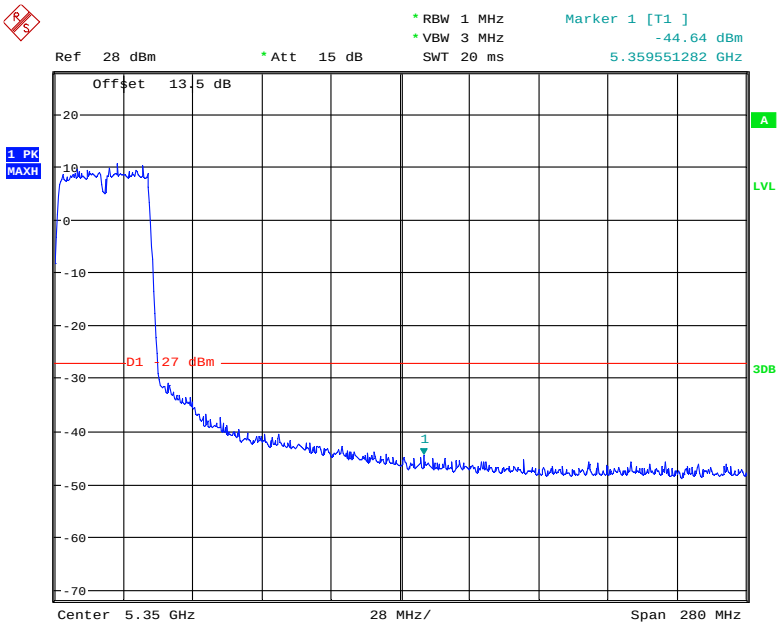
Date: 2.JUN.2017 01:29:16

802.11n40 mode, Band Edge, Left Side



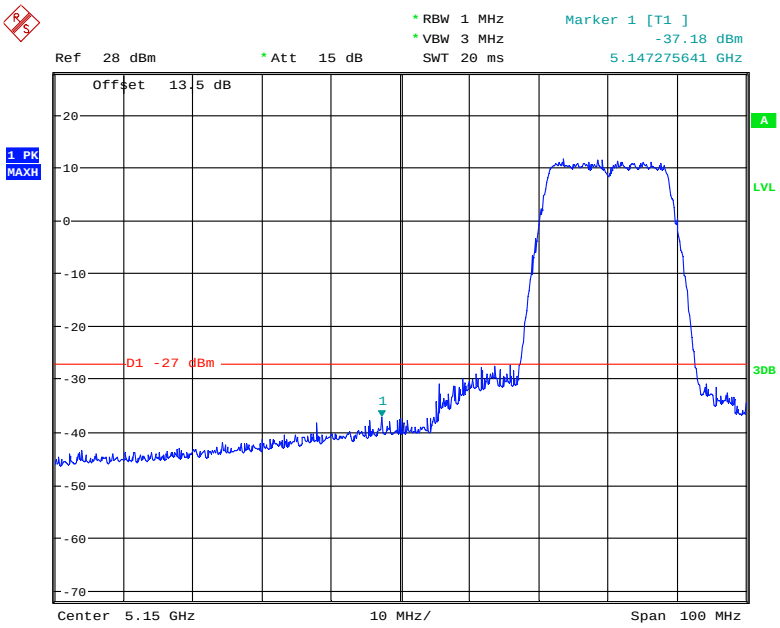
Date: 2.JUN.2017 01:50:51

802.11n40 mode, Band Edge, Right Side



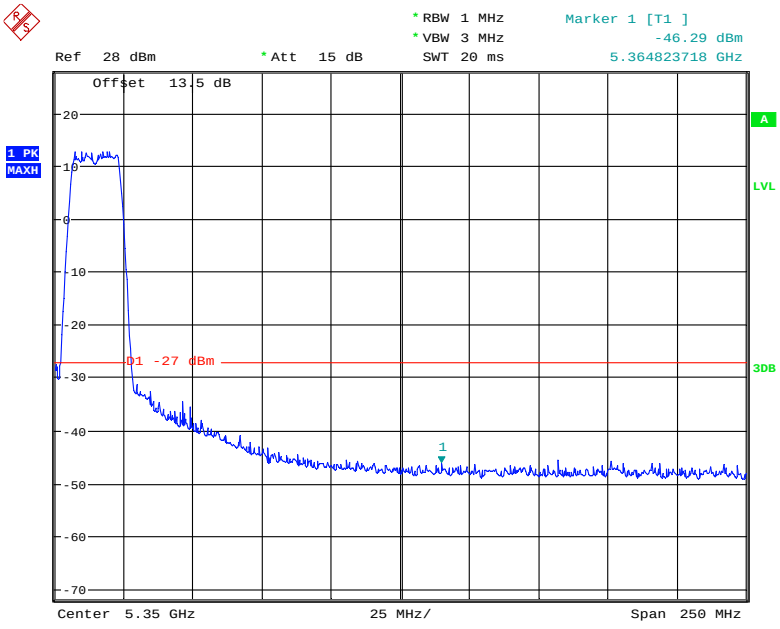
Date: 2.JUN.2017 01:52:45

802.11ac20 mode, Band Edge, Left Side



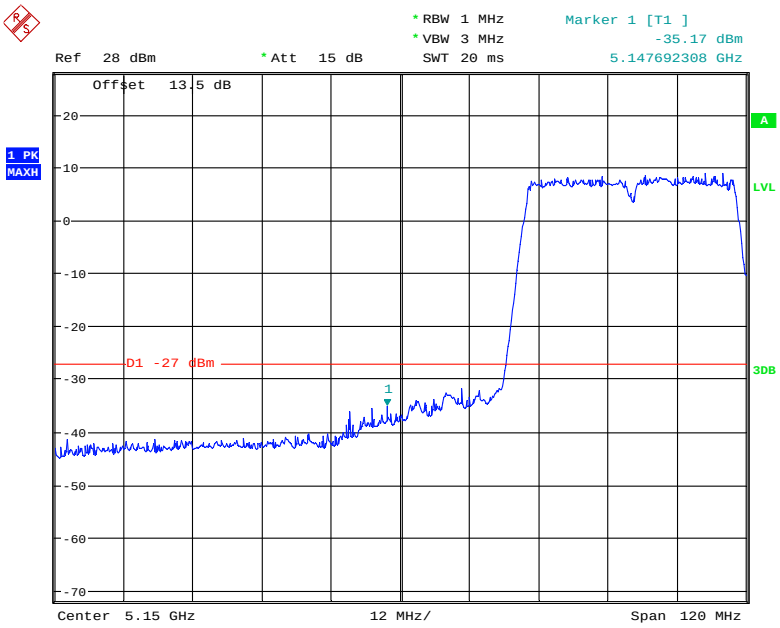
Date: 2.JUN.2017 01:34:36

802.11ac20 mode, Band Edge, Right Side



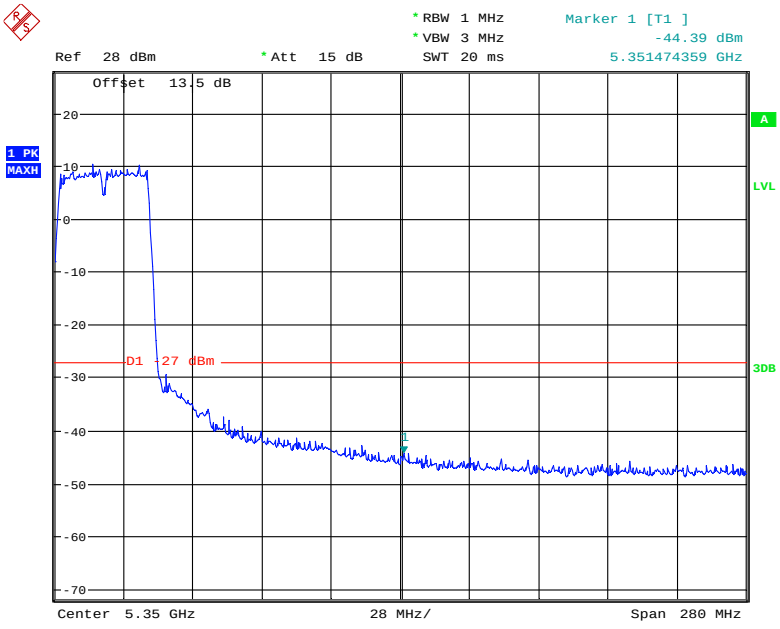
Date: 2.JUN.2017 01:32:59

802.11ac40 mode, Band Edge, Left Side



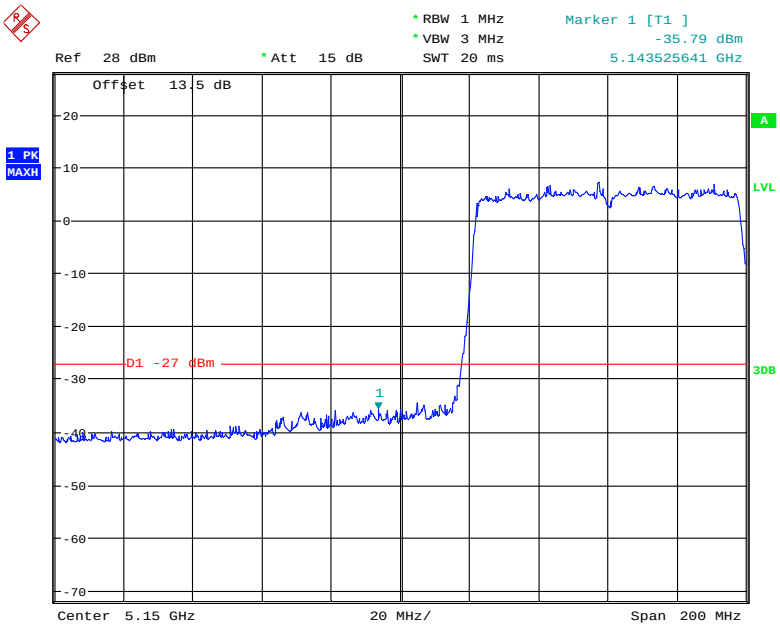
Date: 2.JUN.2017 01:54:29

802.11ac40 mode, Band Edge, Right Side



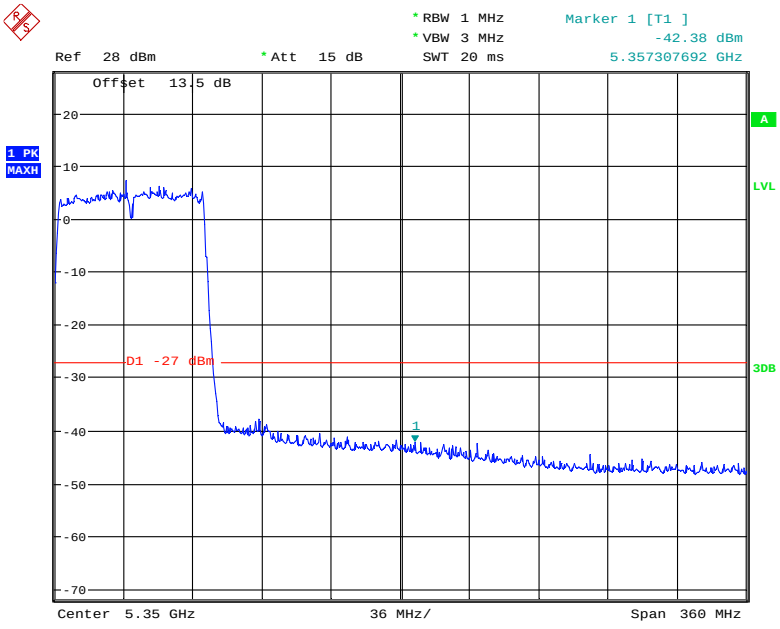
Date: 2.JUN.2017 01:55:45

802.11ac80 mode, Band Edge, Left Side



Date: 2.JUN.2017 02:13:56

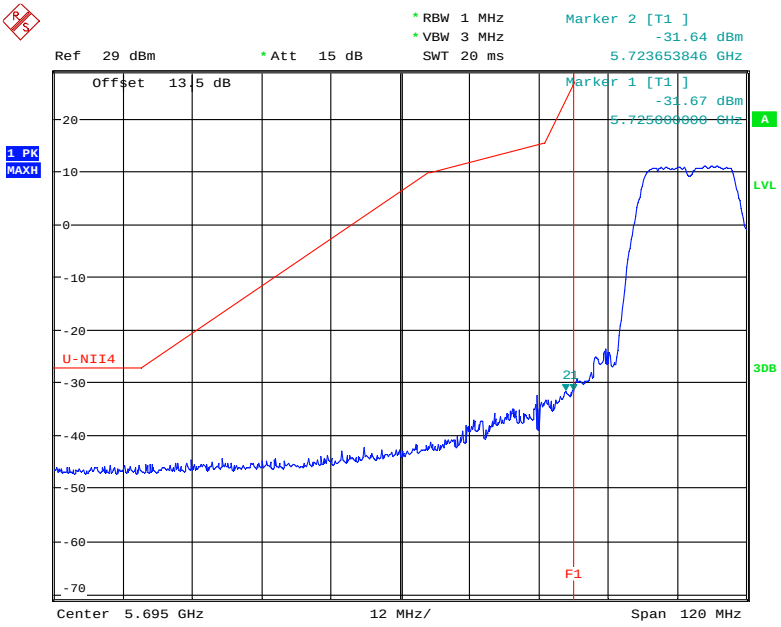
802.11ac80 mode, Band Edge, Right Side



Date: 2.JUN.2017 02:14:39

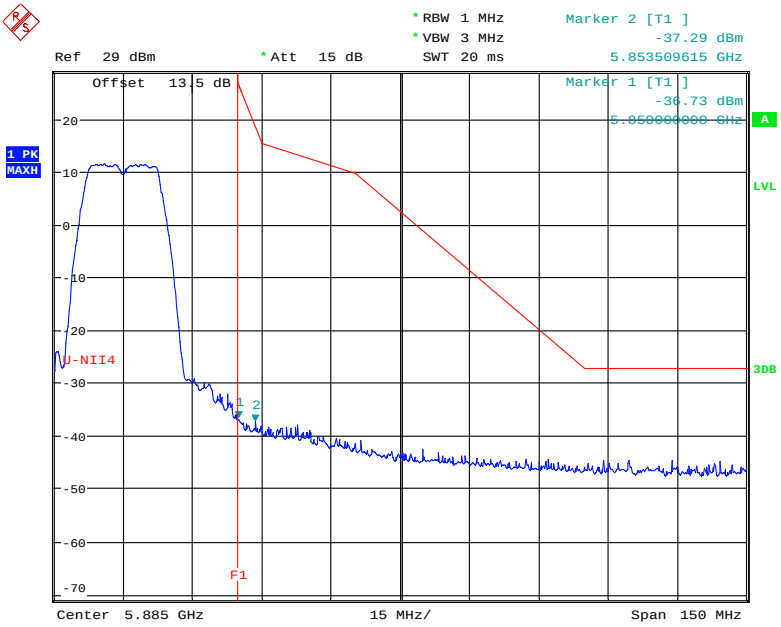
5725 – 5850 MHz:

802.11a mode, Band Edge, Left Side



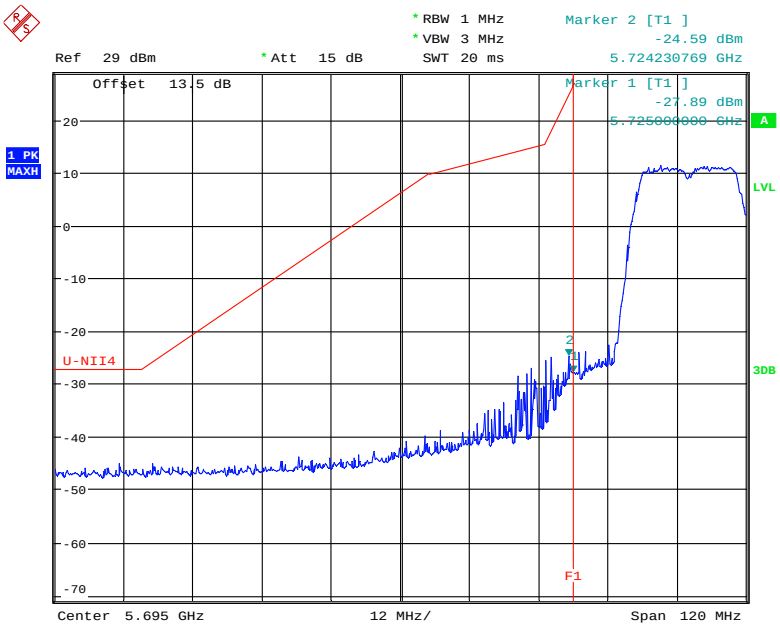
Date: 2.JUN.2017 02:22:26

802.11a mode, Band Edge, Right Side



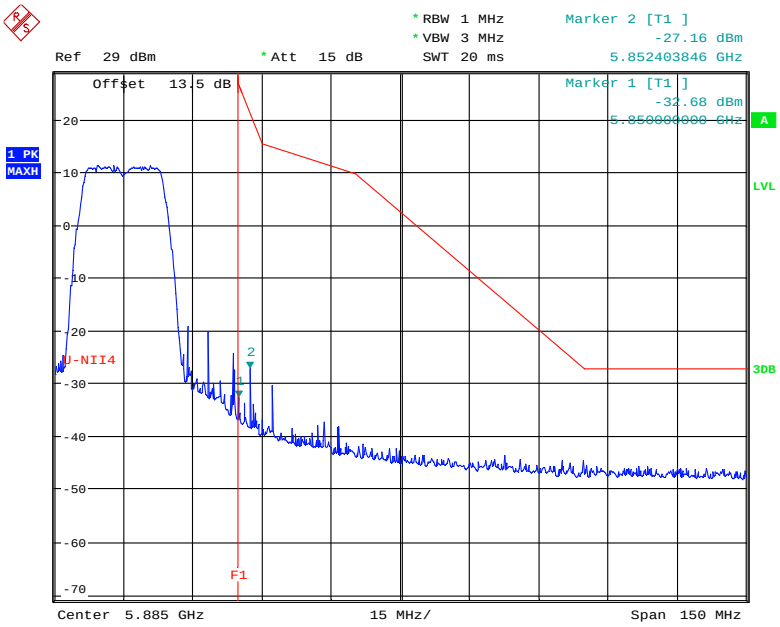
Date: 2.JUN.2017 02:21:19

802.11n20 mode, Band Edge, Left Side



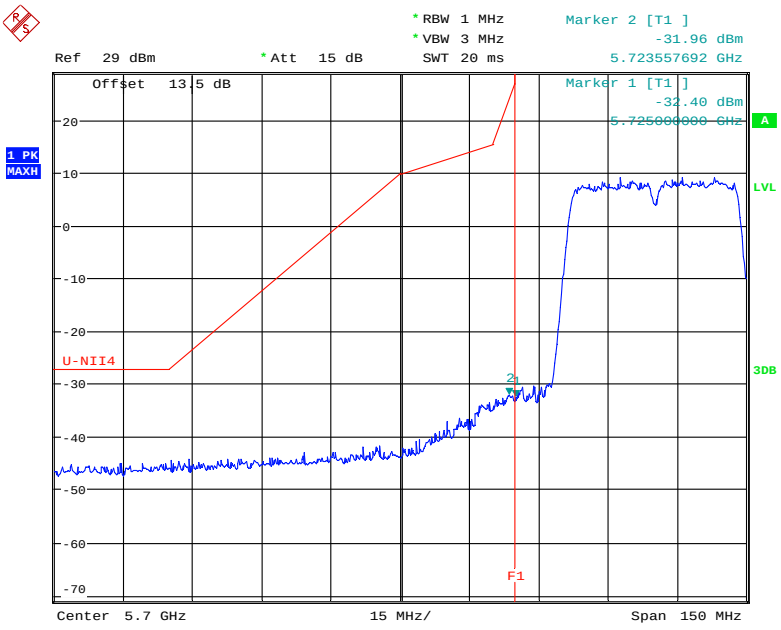
Date: 2.JUN.2017 02:24:28

802.11n20 mode, Band Edge, Right Side



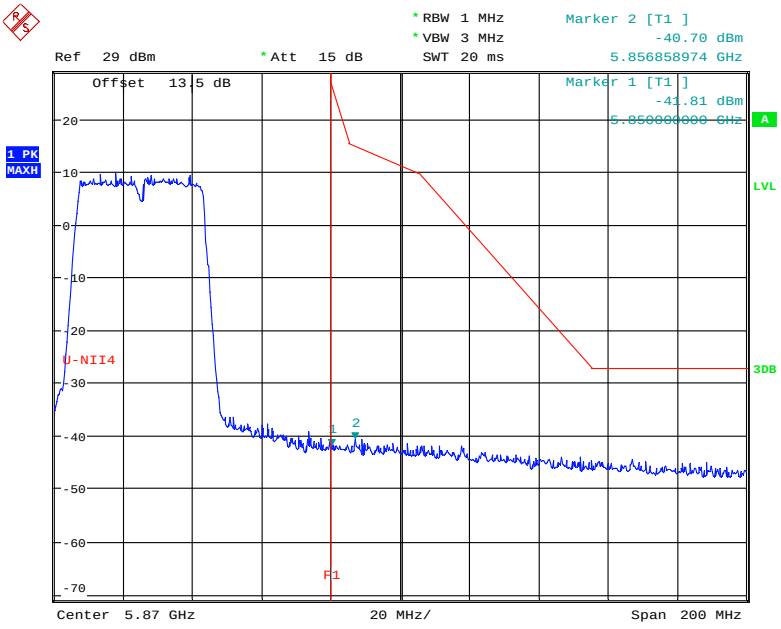
Date: 2.JUN.2017 02:28:57

802.11n40 mode, Band Edge, Left Side



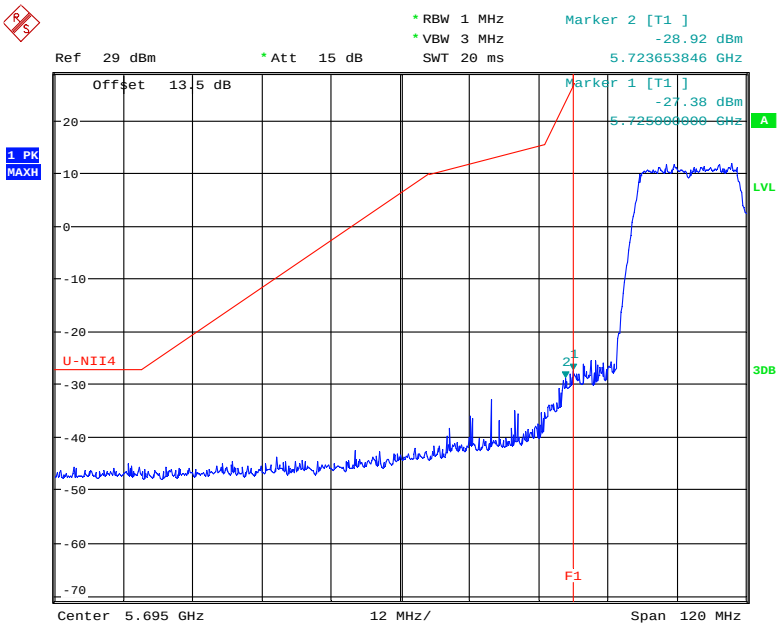
Date: 2.JUN.2017 02:40:28

802.11n40 mode, Band Edge, Right Side



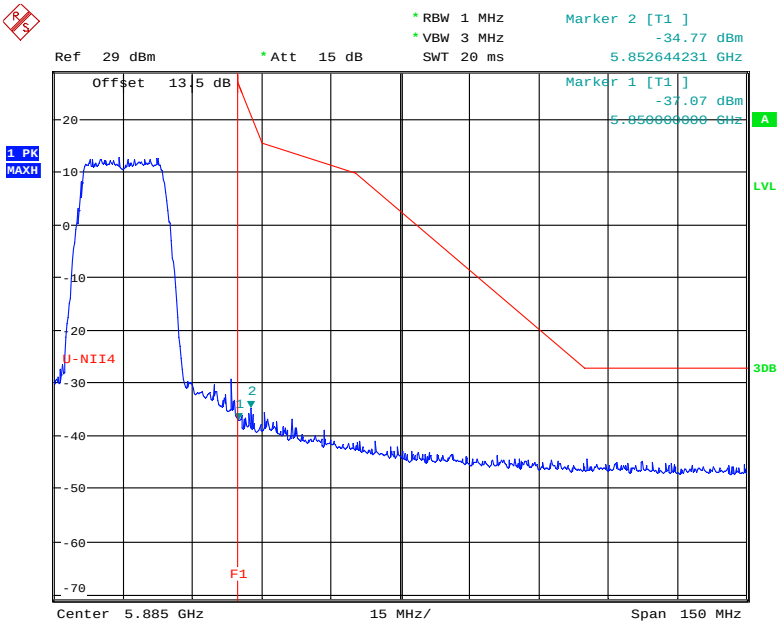
Date: 2.JUN.2017 02:39:19

802.11ac20 mode, Band Edge, Left Side



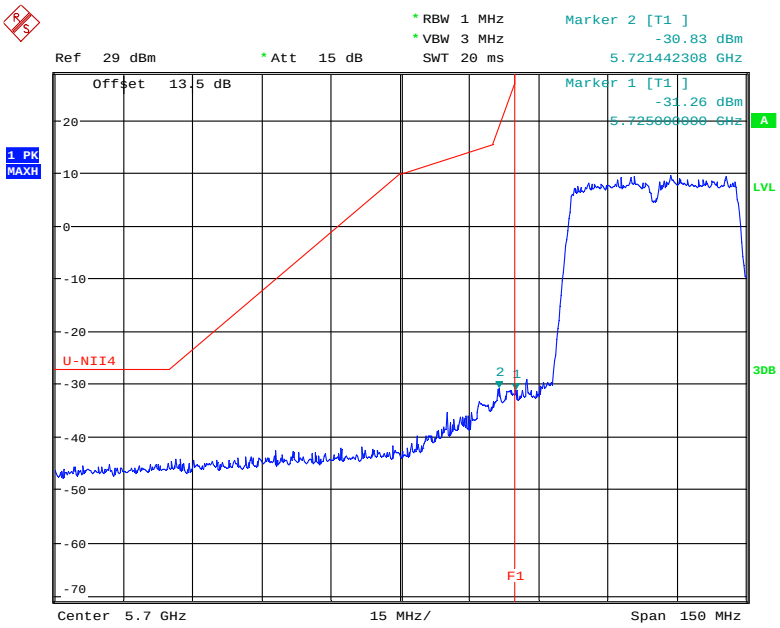
Date: 2.JUN.2017 02:26:02

802.11ac20 mode, Band Edge, Right Side



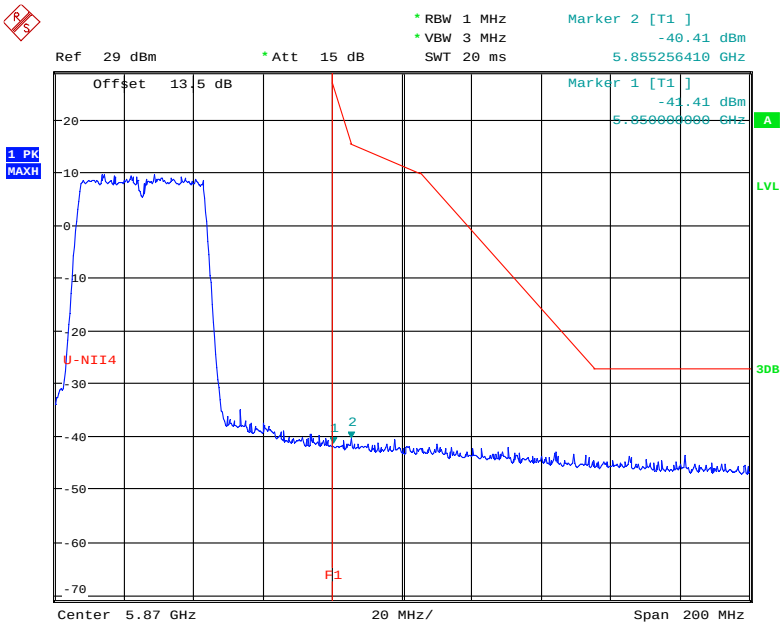
Date: 2.JUN.2017 02:28:19

802.11ac40 mode, Band Edge, Left Side



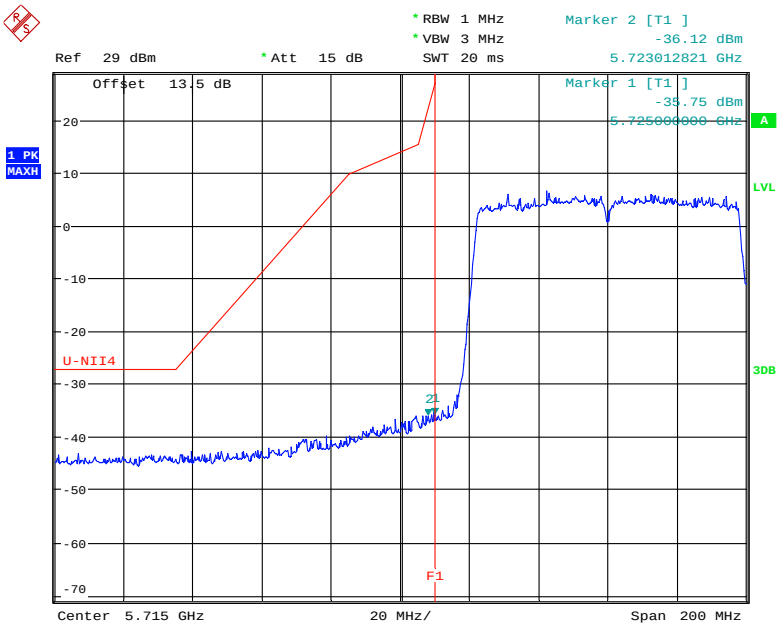
Date: 2.JUN.2017 02:37:02

802.11ac40 mode, Band Edge, Right Side



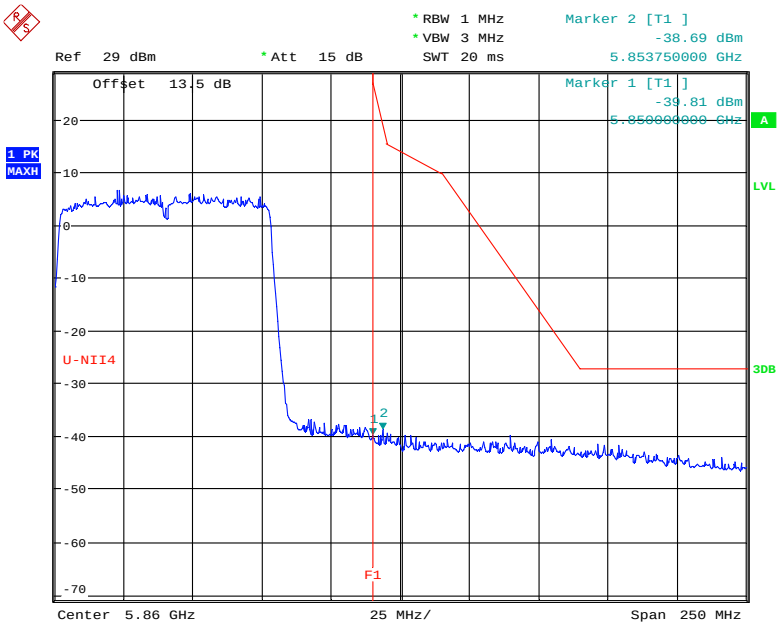
Date: 2.JUN.2017 02:38:40

802.11ac80 mode, Band Edge, Left Side



Date: 2.JUN.2017 02:16:49

802.11ac80 mode, Band Edge, Right Side



Date: 2.JUN.2017 02:17:58

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

Applicable Standard

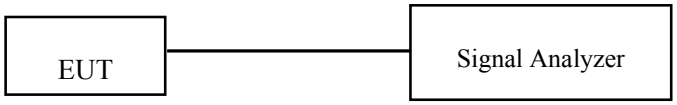
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band 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:	24 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Ada Yu on 2017-05-29.

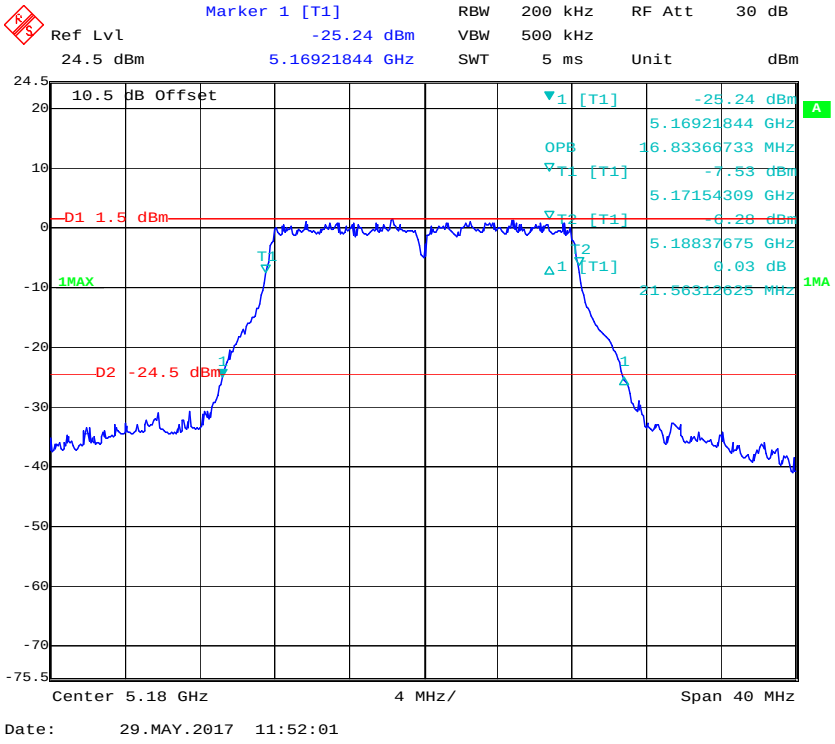
EUT operation mode: Transmitting

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

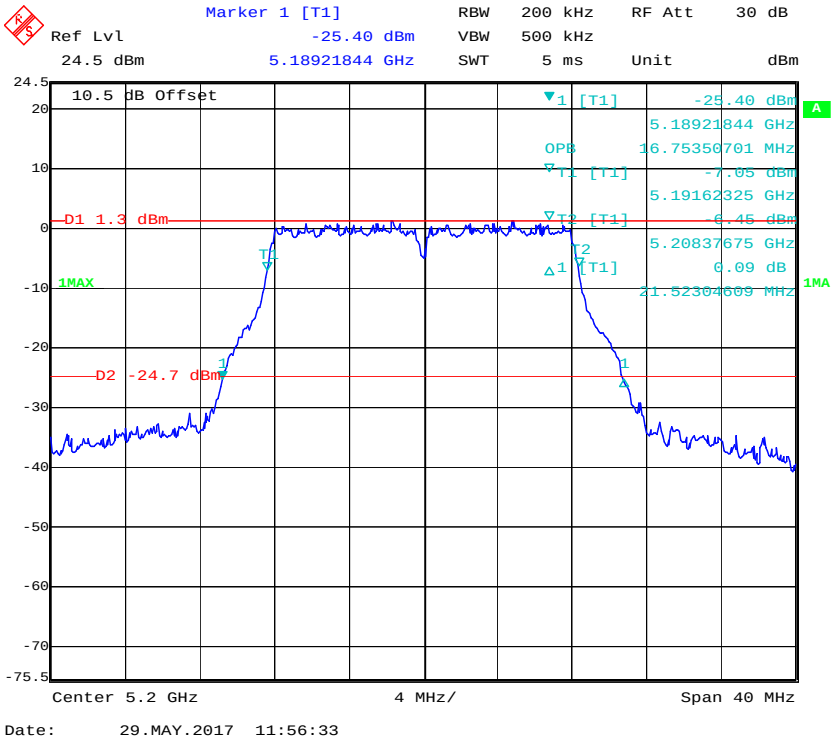
5150 MHz - 5250 MHz:

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	16.834	21.563	
5200	16.754	21.523	
5240	16.834	21.563	
802.11n20			
5180	18.036	21.964	
5200	17.956	21.964	
5240	18.036	22.044	
802.11n40			
5190	36.713	40.922	
5230	36.713	40.882	
802.11ac20			
5180	18.036	22.044	
5200	18.036	21.764	
5240	17.956	21.804	
802.11ac40			
5190	36.713	40.882	
5230	36.713	40.721	
802.11ac80			
5210	76.313	83.407	

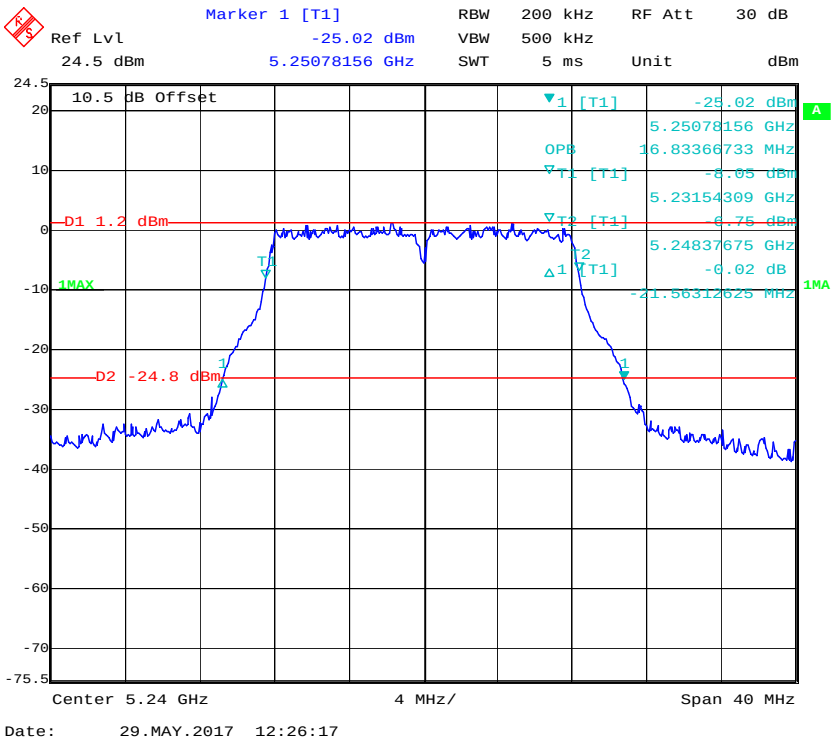
802.11a mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5180 MHz



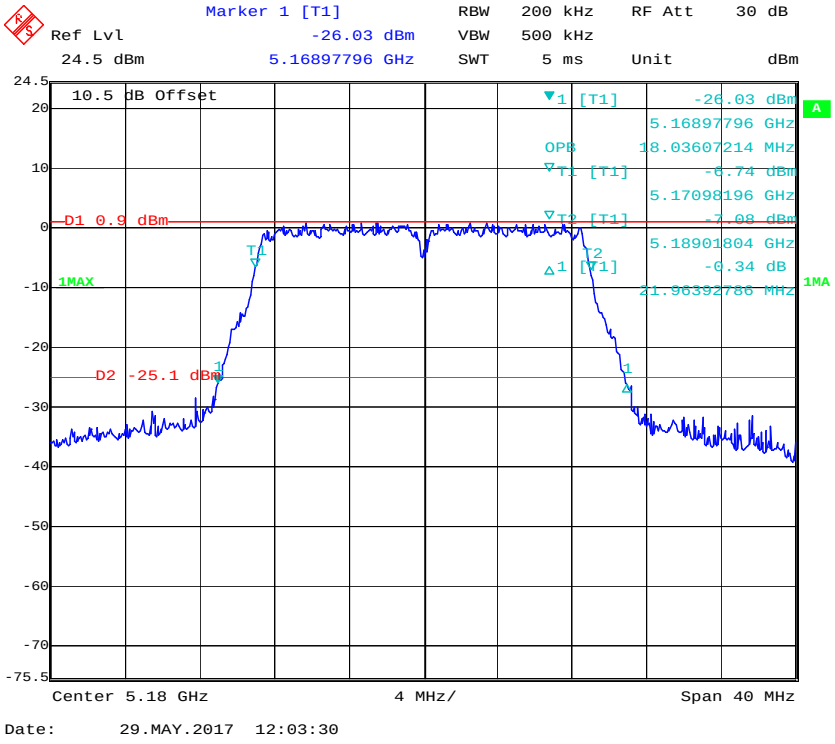
802.11a mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5200 MHz



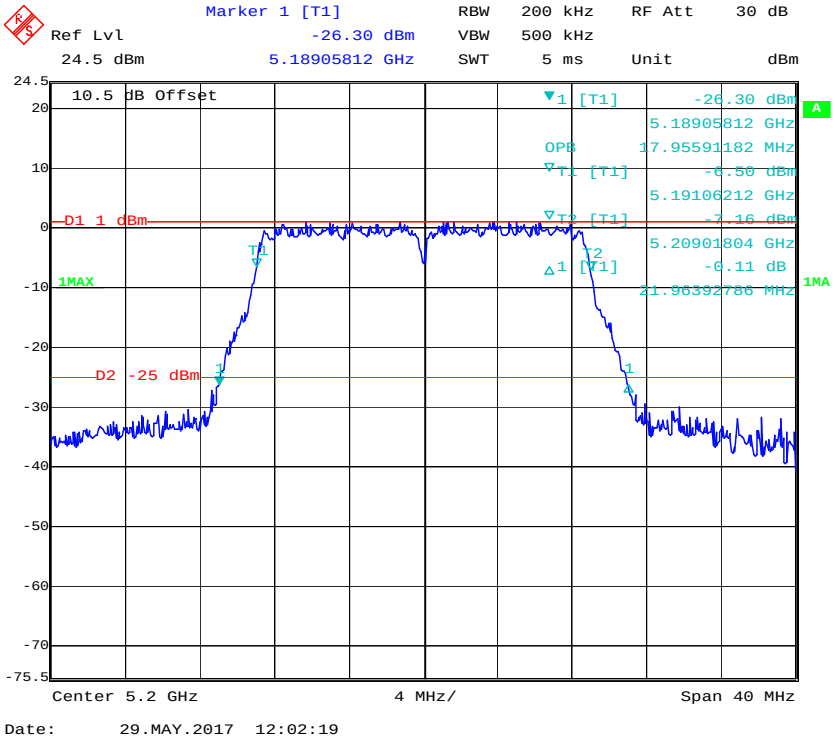
802.11a mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5240 MHz



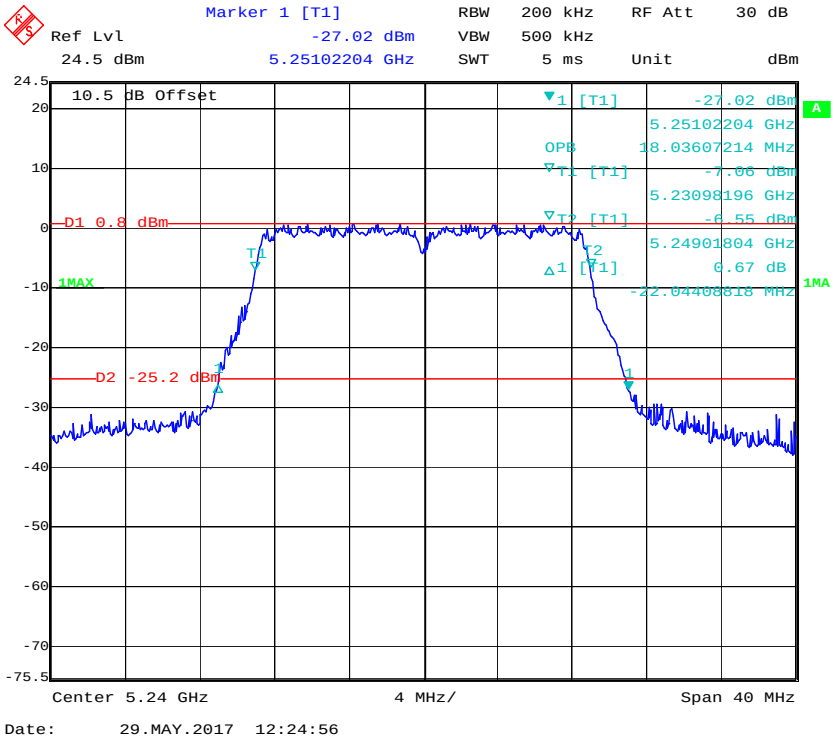
802.11n20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5180 MHz



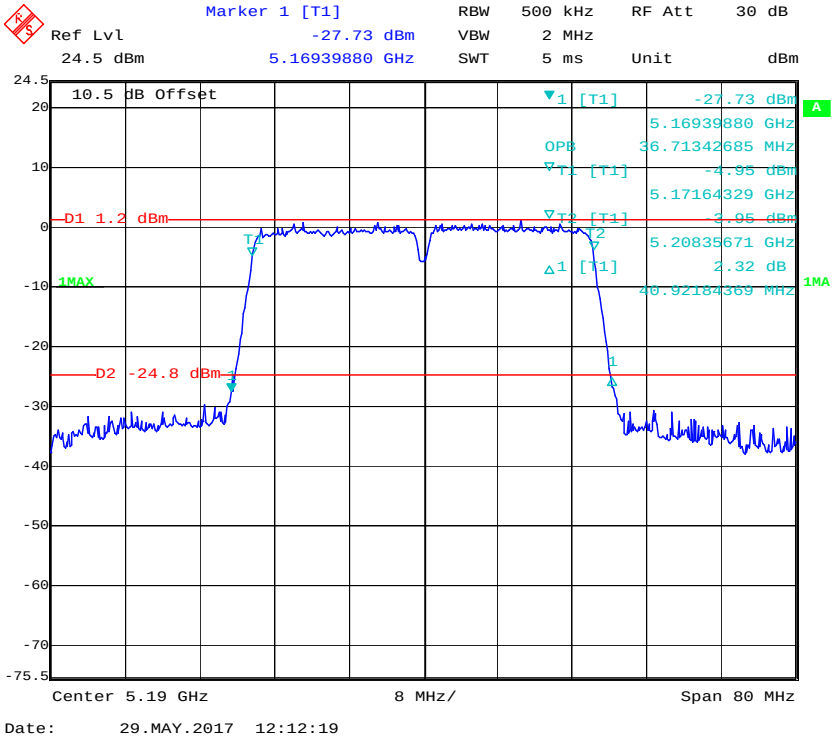
802.11n20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5200 MHz



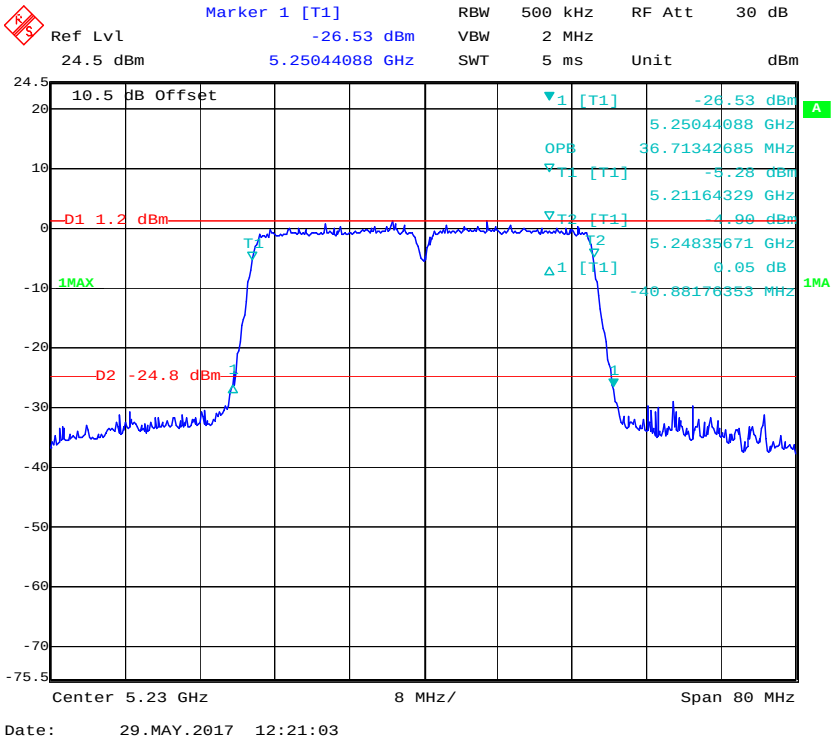
802.11n20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5240 MHz



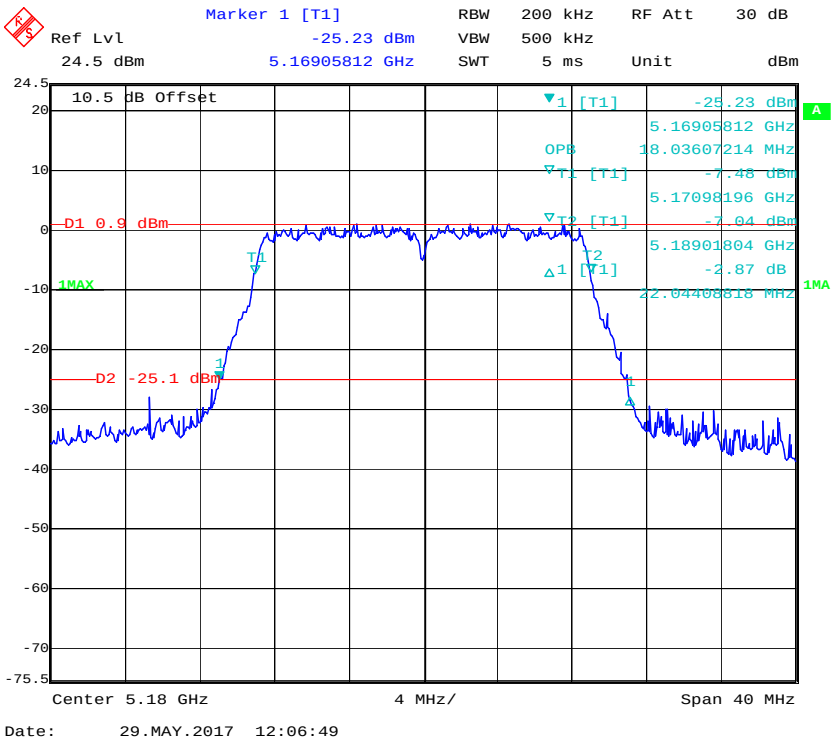
802.11n40 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5190 MHz



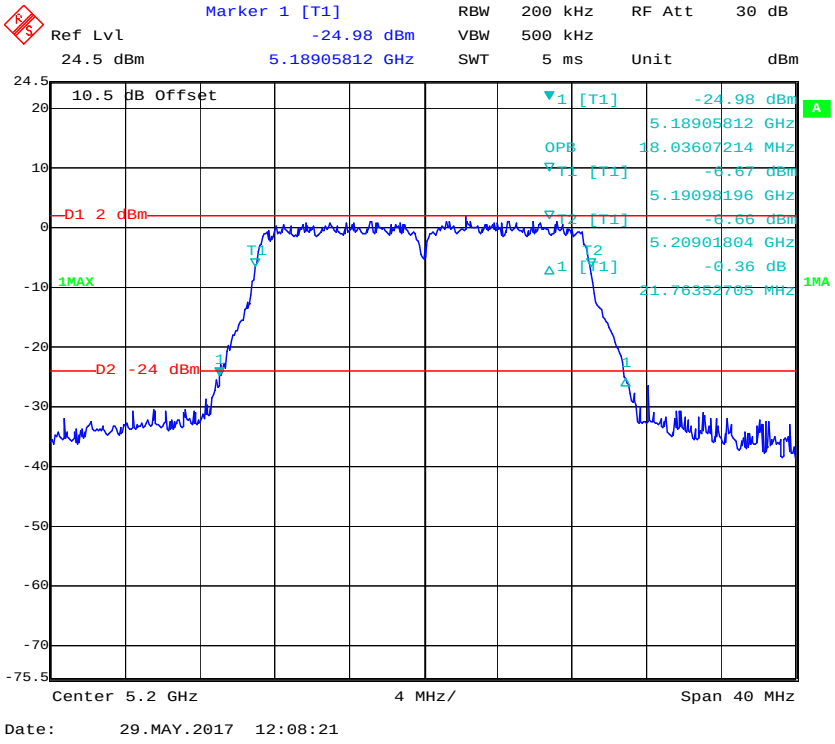
802.11n40 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5230 MHz



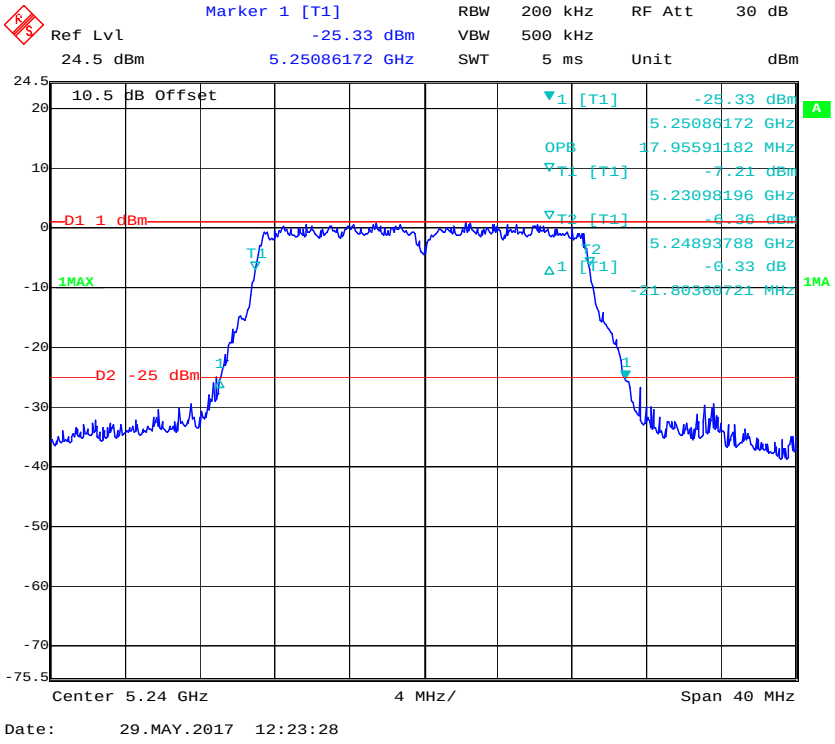
802.11ac20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5180 MHz



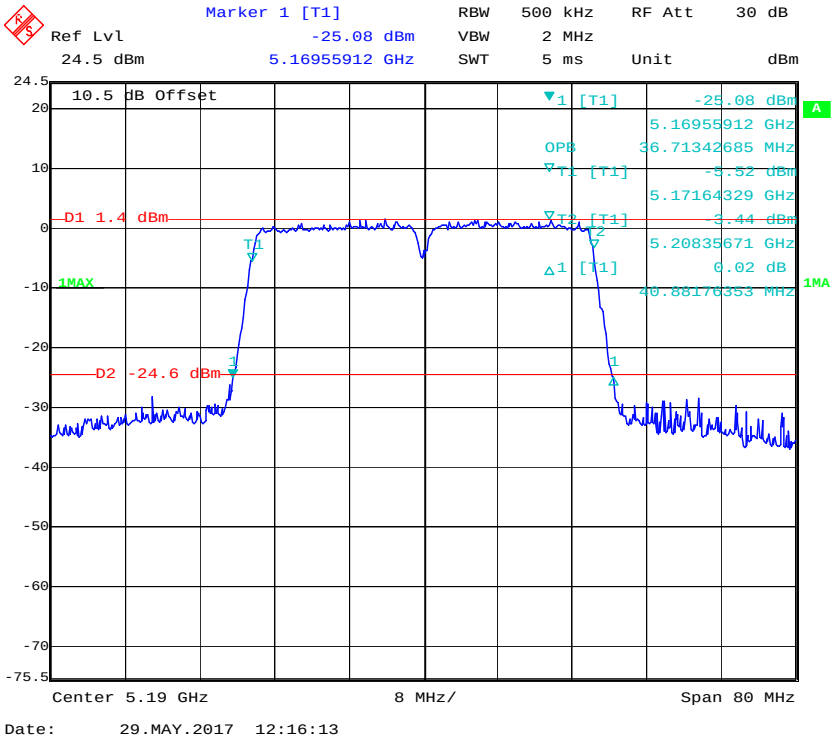
802.11ac20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5200 MHz



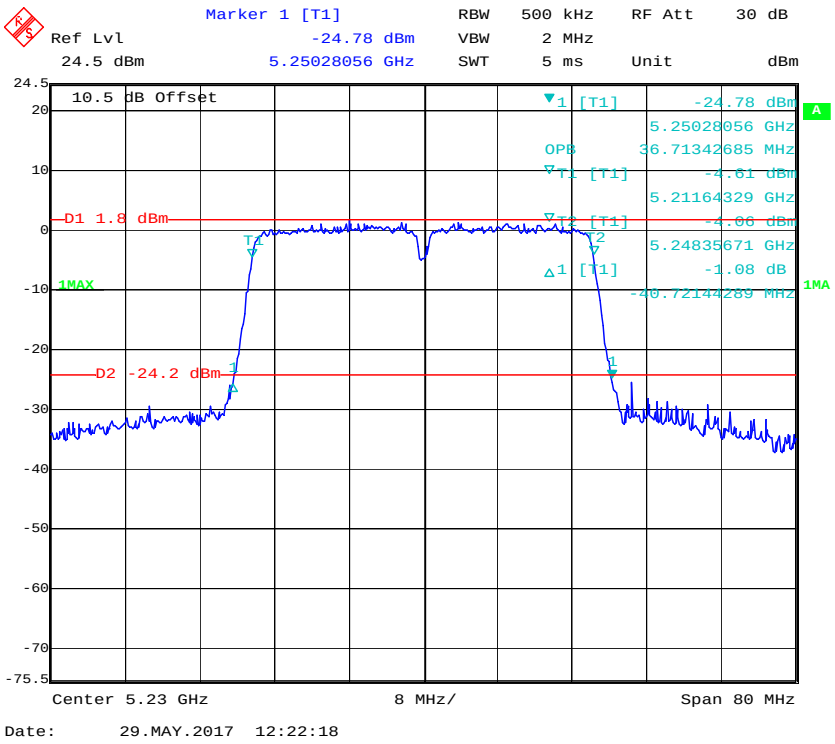
802.11ac20 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5240 MHz



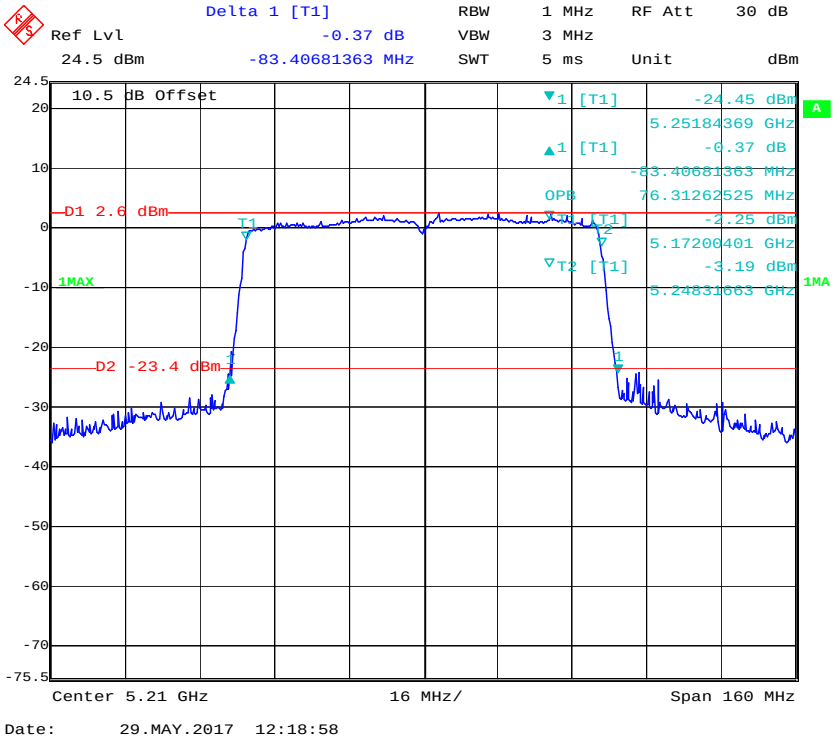
802.11ac40 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5190 MHz



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



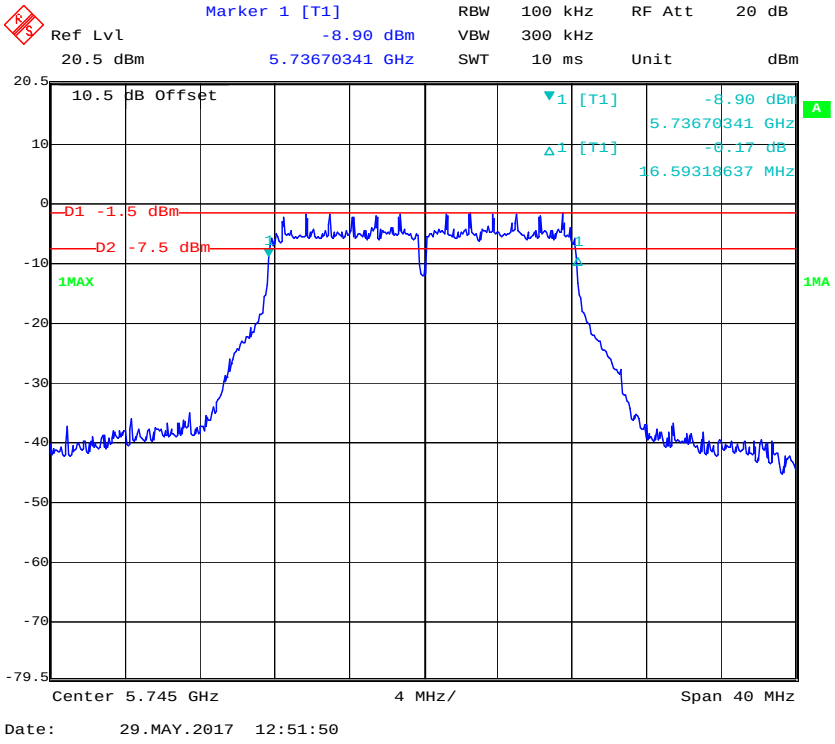
802.11ac80 mode, 26dB Emission Bandwidth&99% Occupied Bandwidth, 5210 MHz



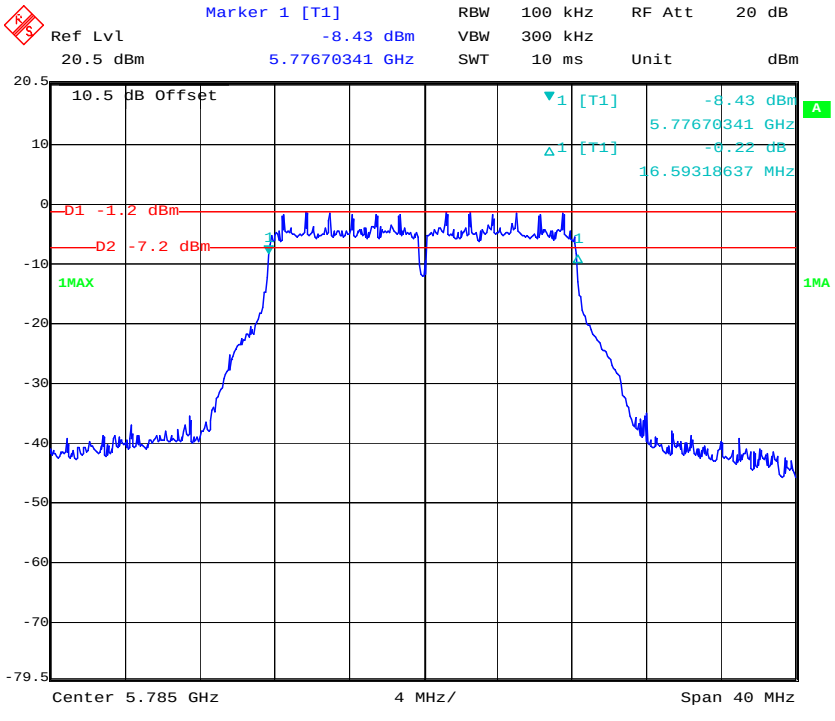
5725 MHz – 5850 MHz:

Frequency (MHz)	99% bandwidth (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
802.11a			
5745	16.914	16.593	0.5
5785	16.834	16.593	0.5
5825	16.914	16.593	0.5
802.11n20			
5745	18.036	17.715	0.5
5785	18.036	17.715	0.5
5825	18.036	17.796	0.5
802.11n40			
5755	36.713	36.713	0.5
5795	36.713	36.633	0.5
802.11ac20			
5745	18.036	17.715	0.5
5785	18.036	17.715	0.5
5825	17.956	17.715	0.5
802.11ac40			
5755	36.553	36.713	0.5
5795	36.713	36.633	0.5
802.11ac80			
5775	76.313	76.633	0.5

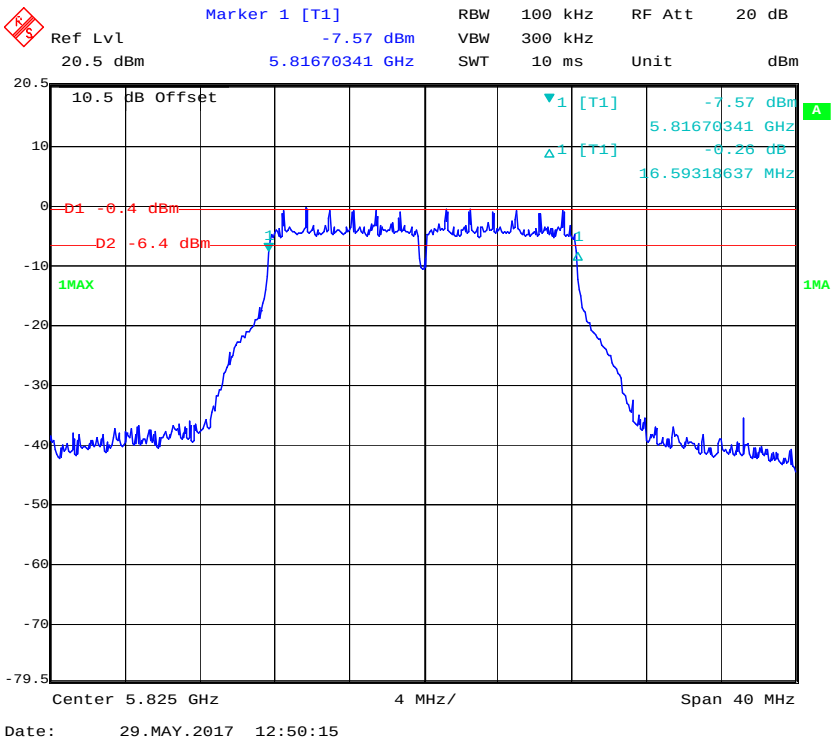
802.11a mode, 6dB Emission Bandwidth, 5745 MHz



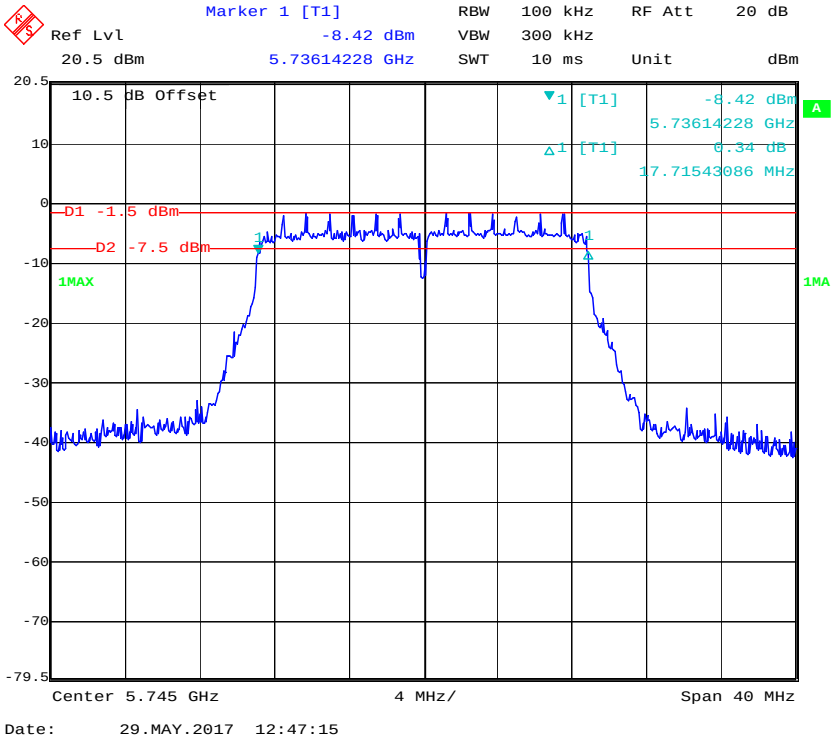
802.11a mode, 6dB Emission Bandwidth, 5785 MHz



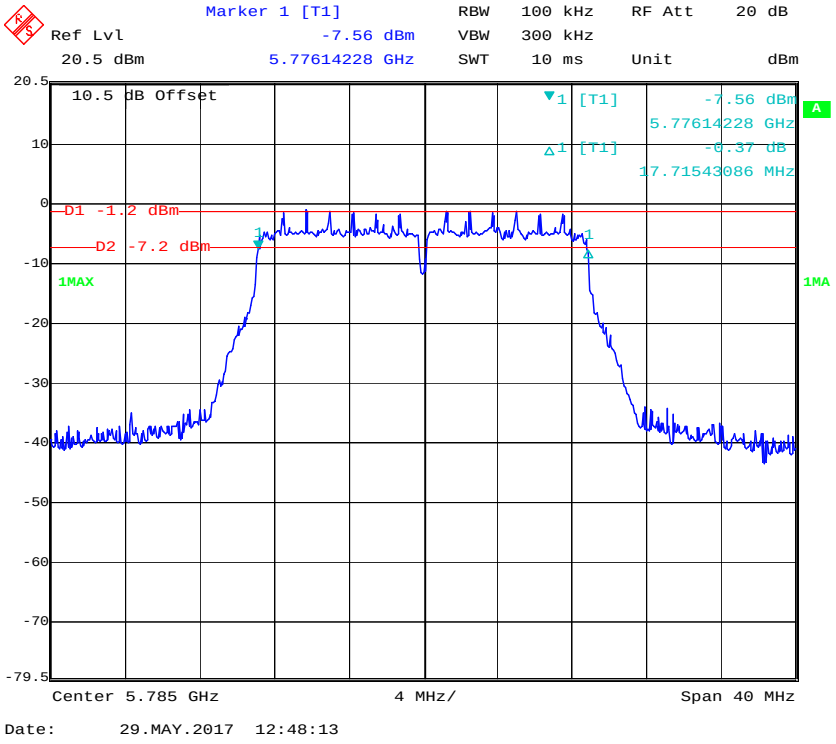
802.11a mode, 6dB Emission Bandwidth, 5825 MHz



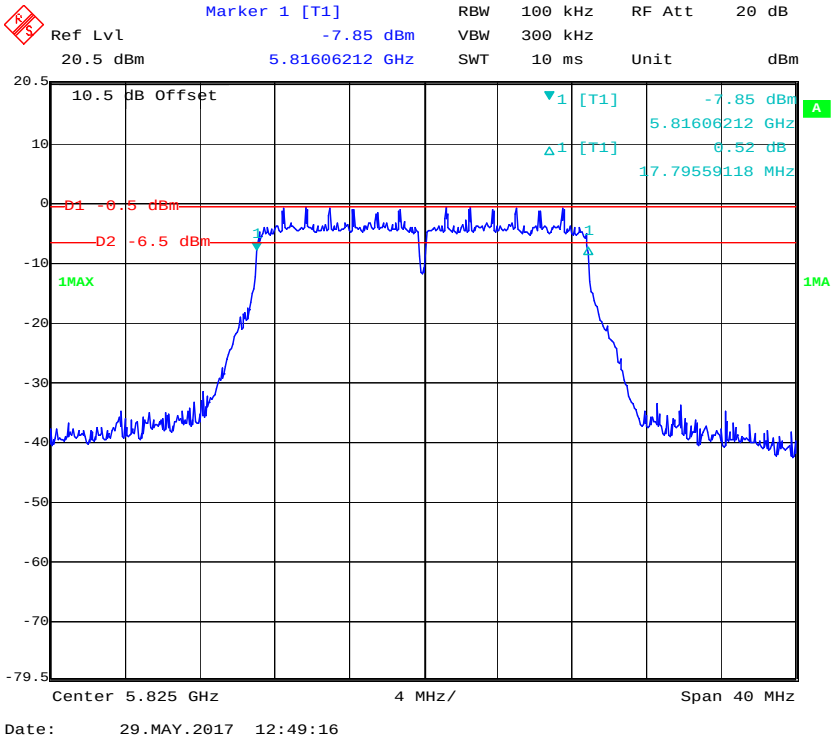
802.11n20 mode, 6dB Emission Bandwidth, 5745 MHz



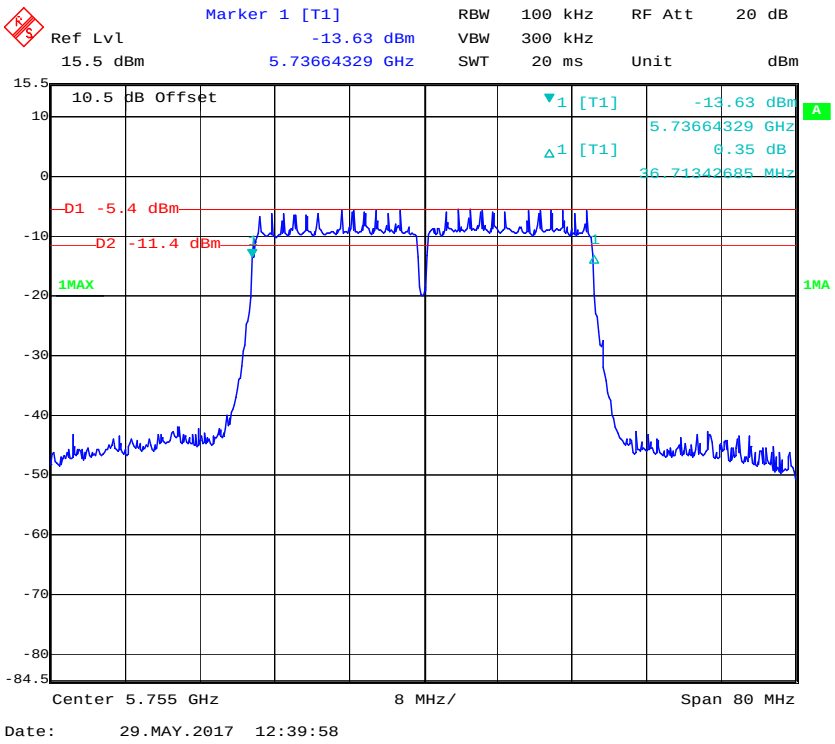
802.11n20 mode, 6dB Emission Bandwidth, 5785 MHz



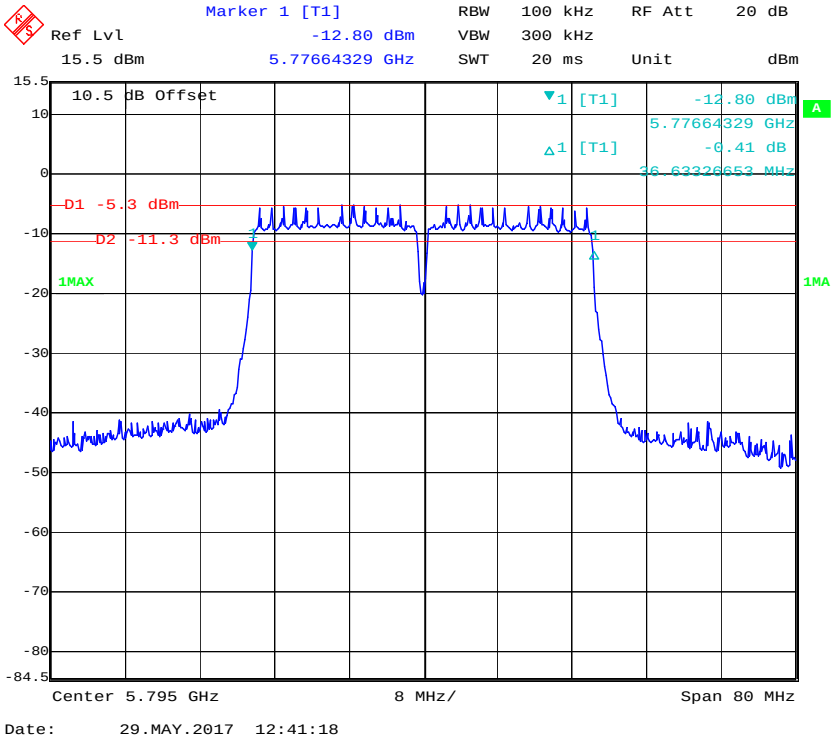
802.11n20 mode, 6dB Emission Bandwidth, 5825 MHz



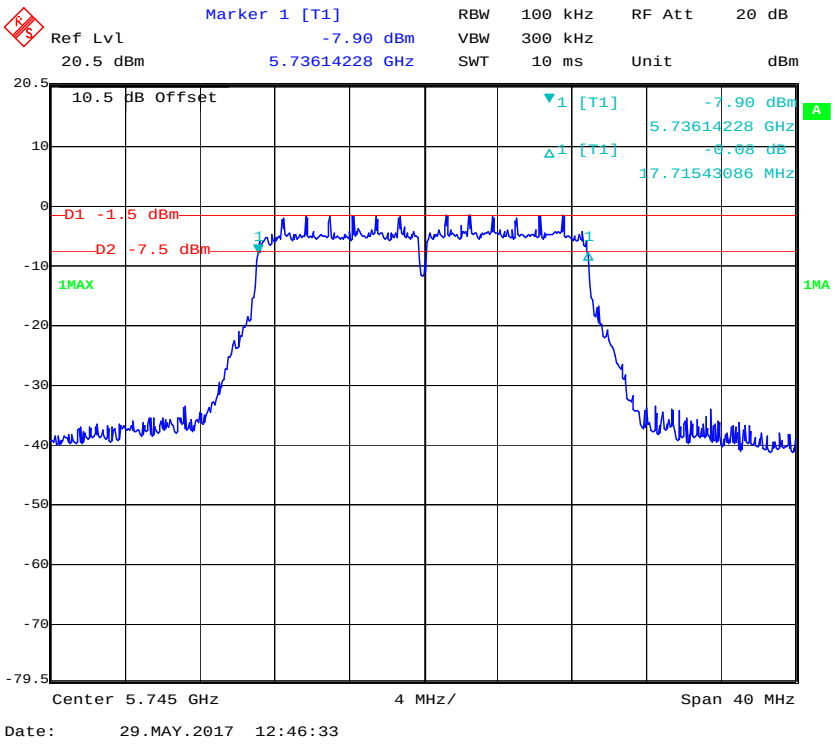
802.11n40 mode, 6dB Emission Bandwidth, 5755 MHz



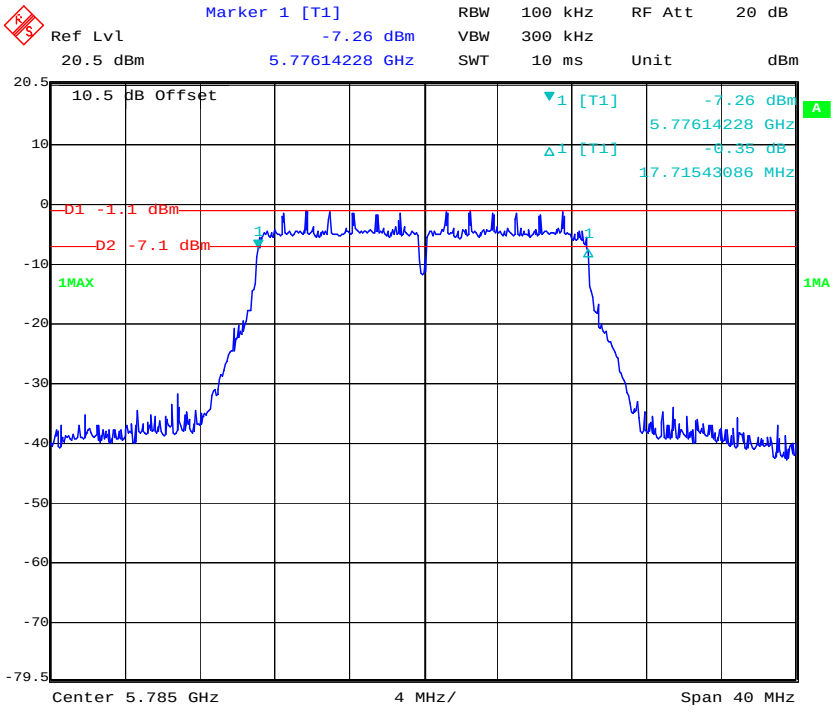
802.11n40 mode, 6dB Emission Bandwidth, 5795 MHz



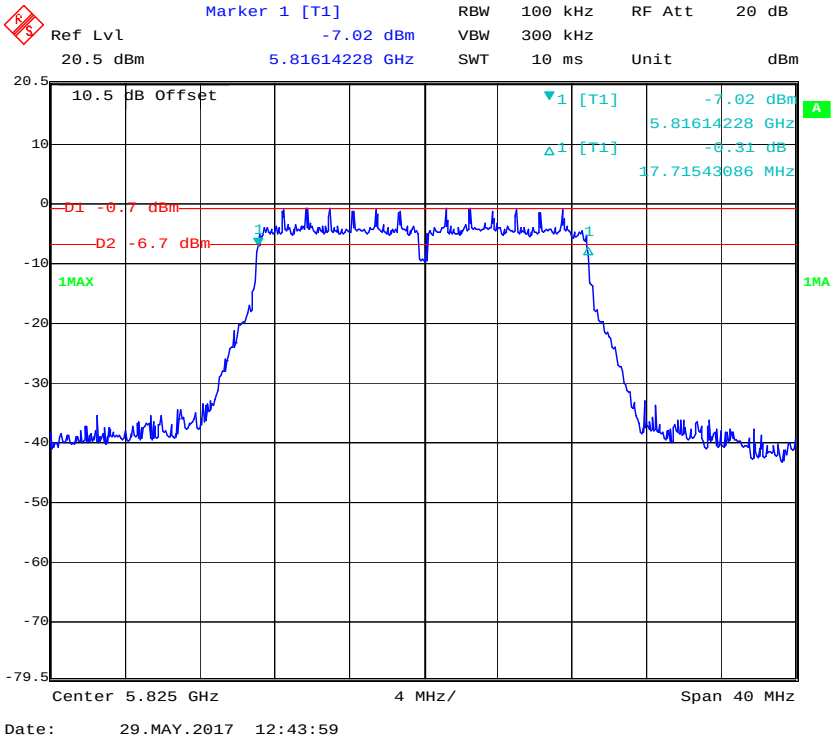
802.11ac20 mode, 6dB Emission Bandwidth, 5745 MHz



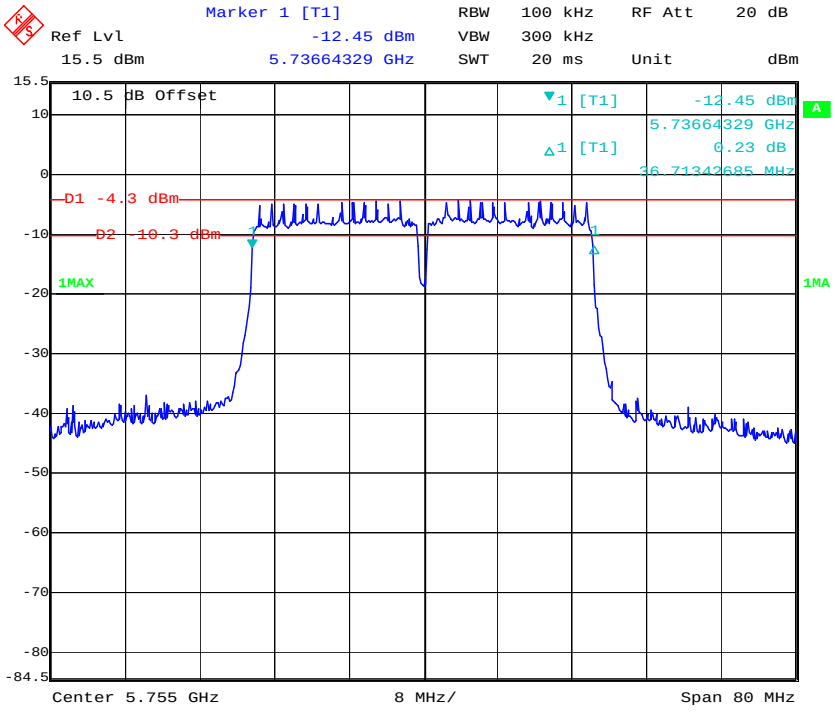
802.11ac20 mode, 6dB Emission Bandwidth, 5785 MHz



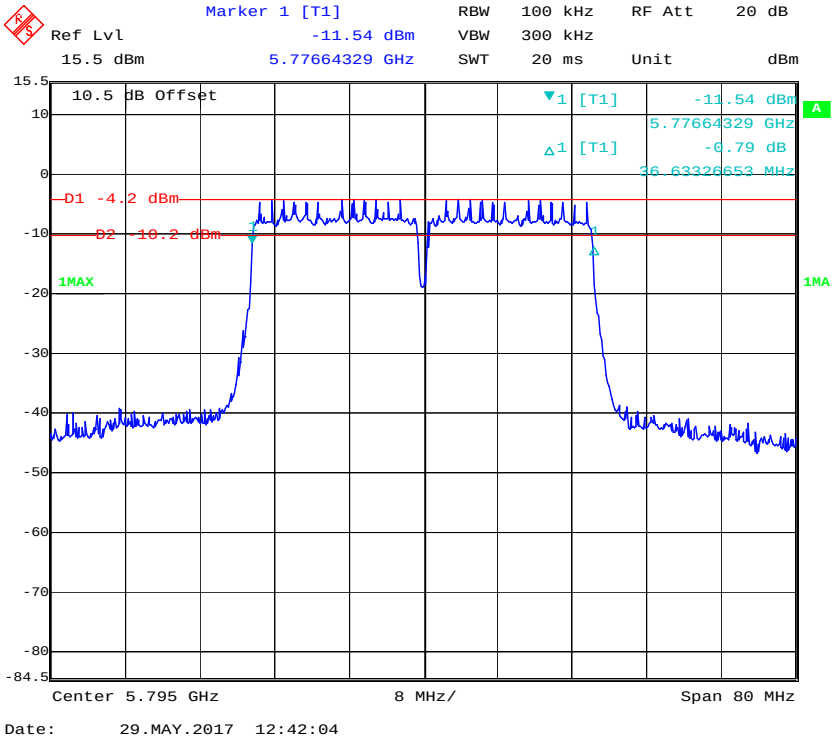
802.11ac20 mode, 6dB Emission Bandwidth, 5825 MHz



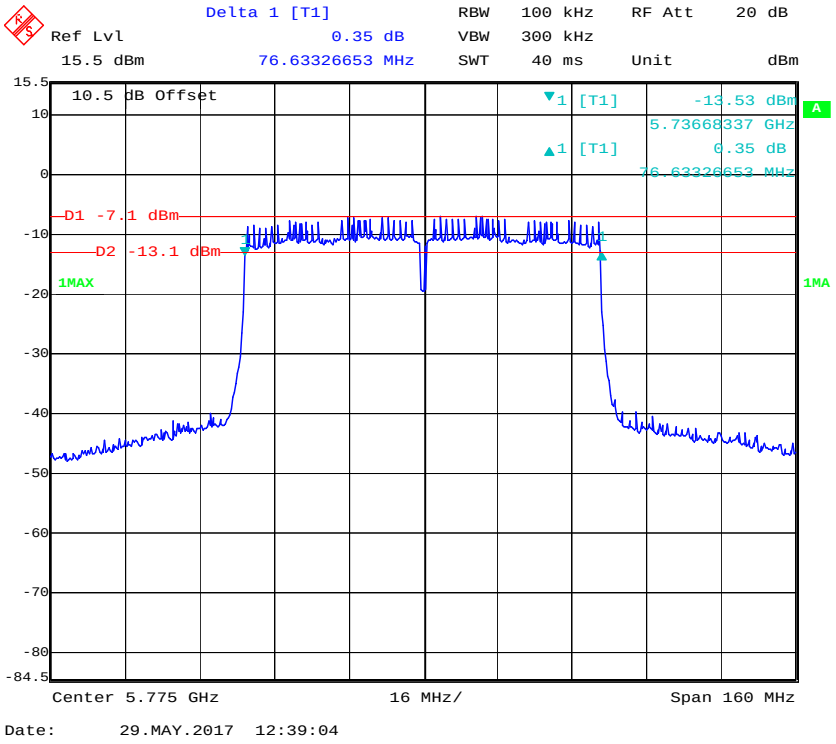
802.11ac40 mode, 6dB Emission Bandwidth, 5755 MHz



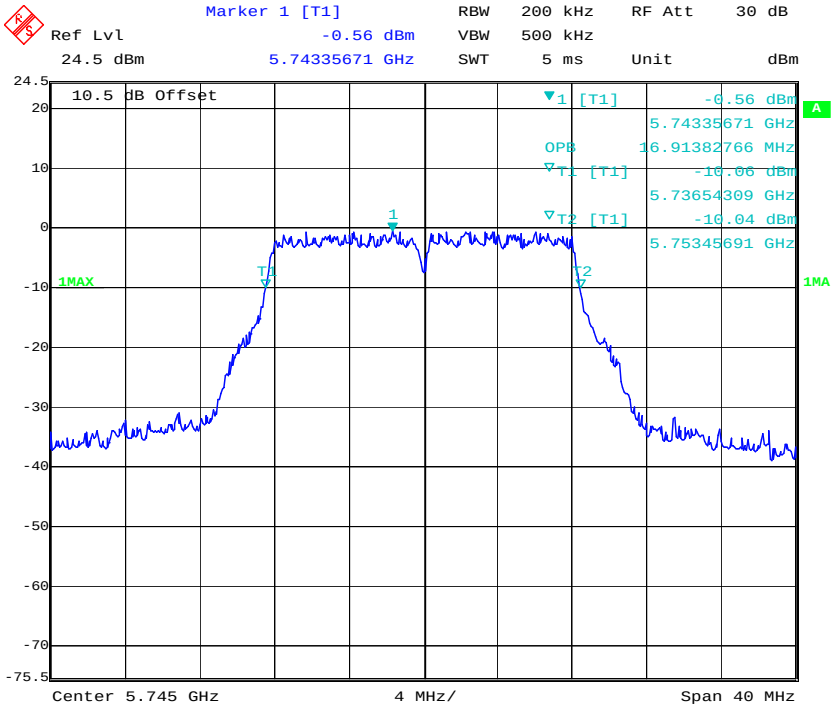
802.11ac40 mode, 6dB Emission Bandwidth, 5795 MHz



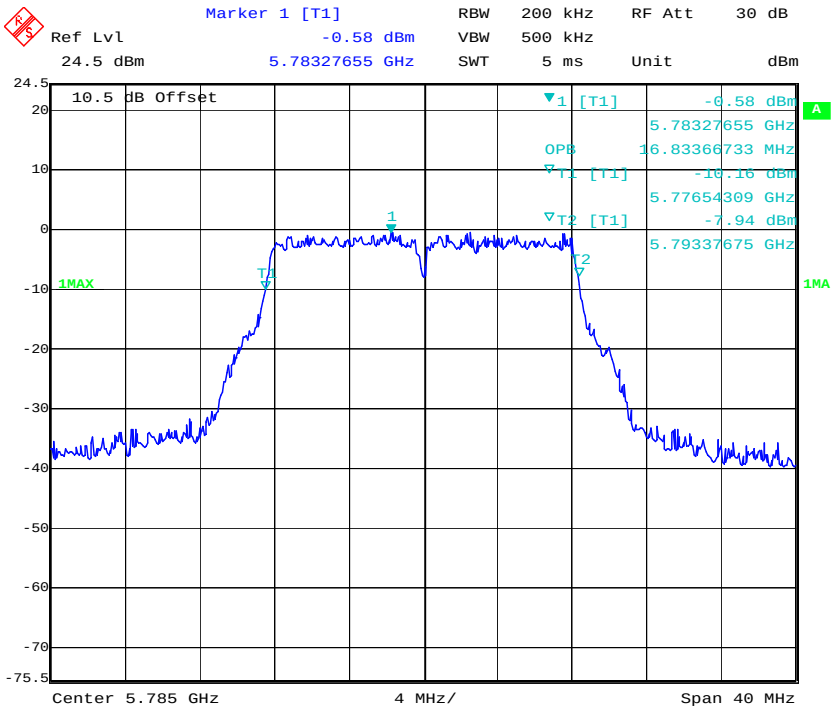
802.11ac80 mode, 6dB Emission Bandwidth, 5775 MHz



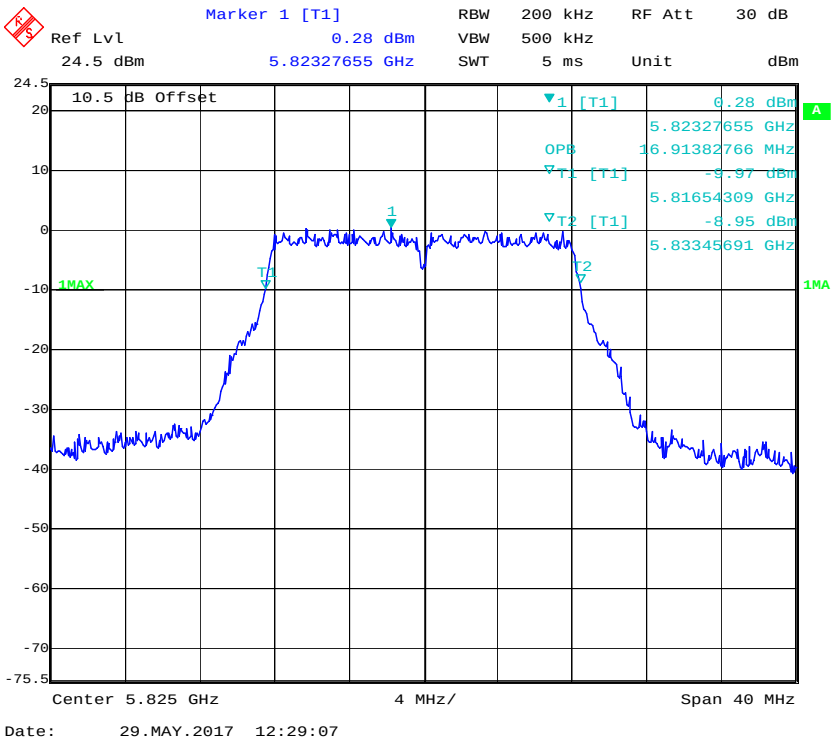
802.11a mode, 99% Occupied Bandwidth, 5745 MHz



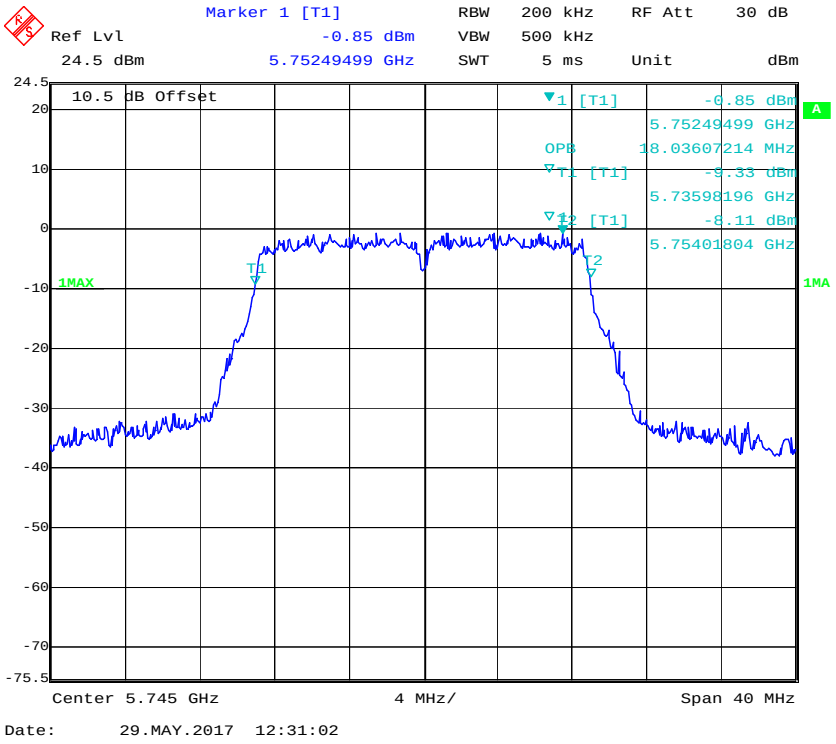
802.11a mode, 99% Occupied Bandwidth, 5785 MHz



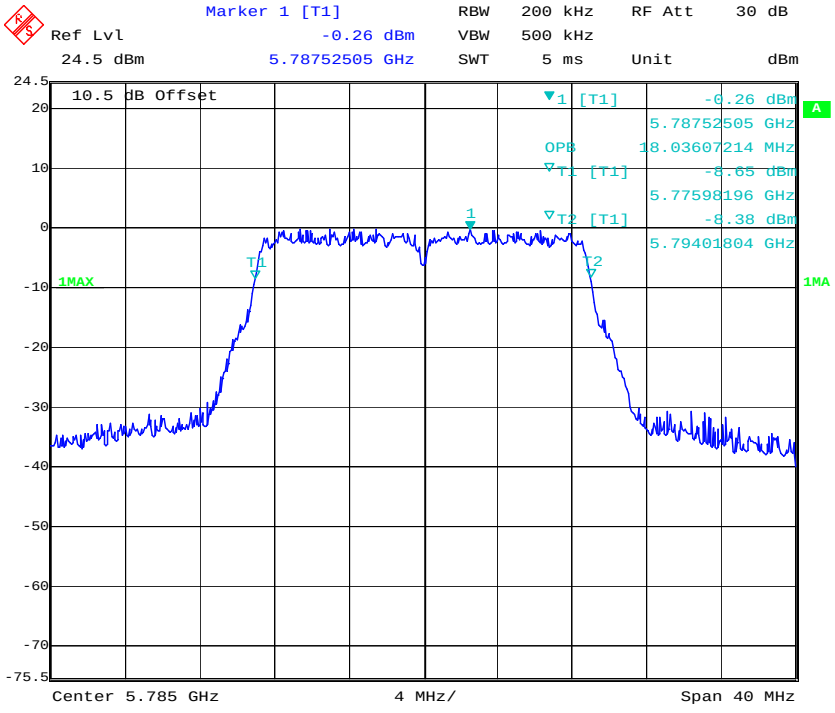
802.11a mode, 99% Occupied Bandwidth, 5825 MHz



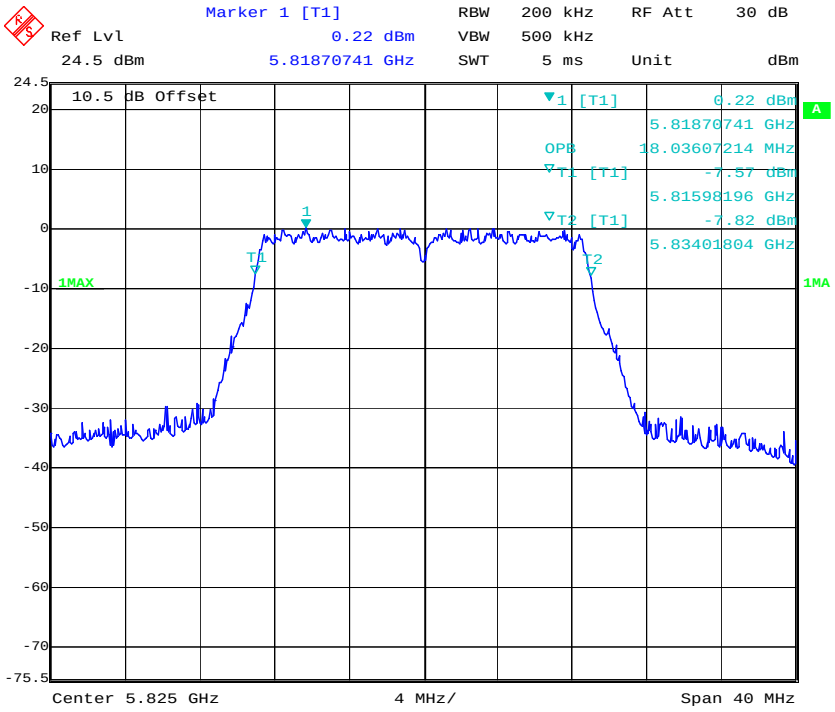
802.11n20 mode, 99% Occupied Bandwidth, 5745 MHz



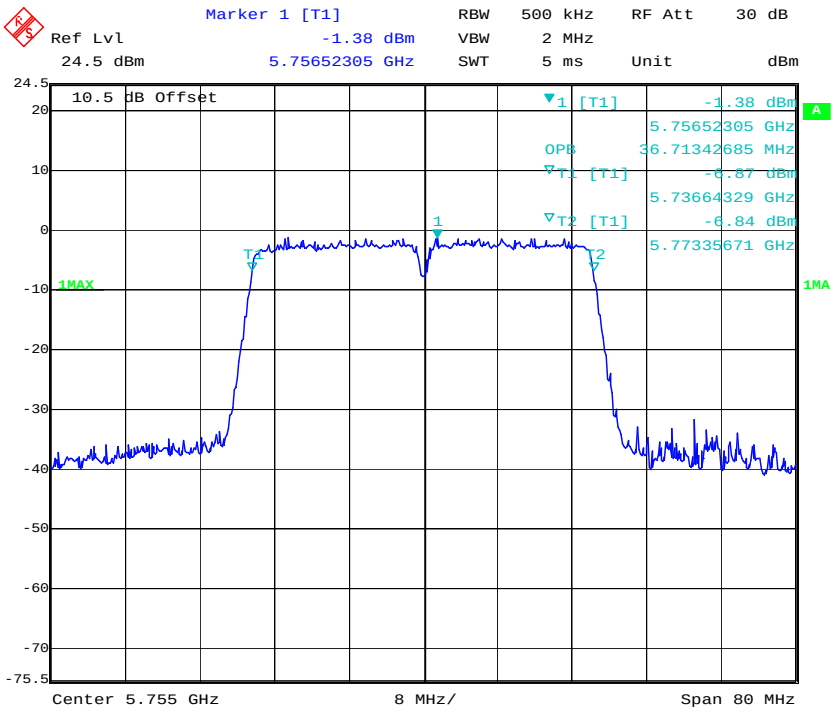
802.11n20 mode, 99% Occupied Bandwidth, 5785 MHz



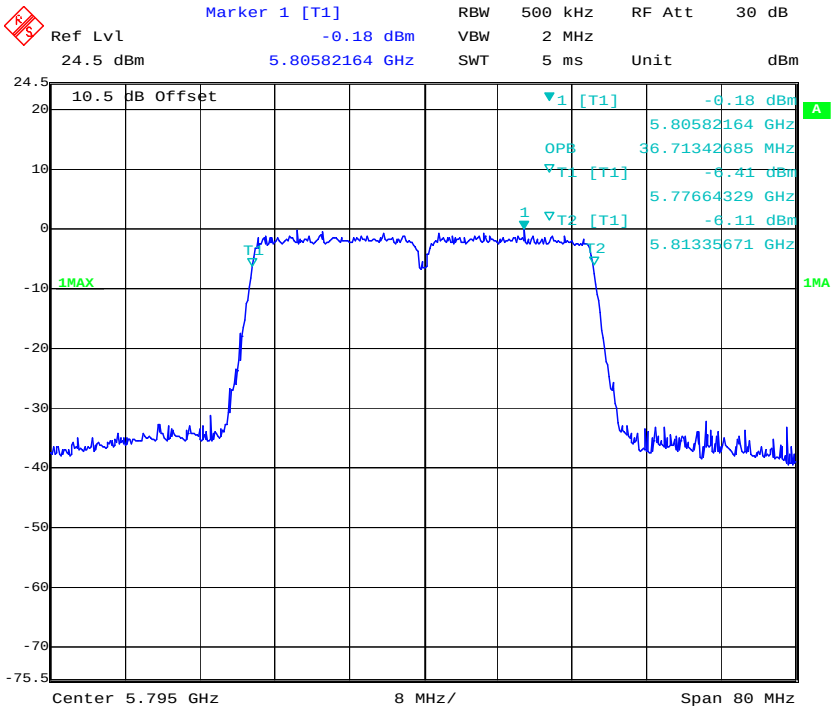
802.11n20 mode, 99% Occupied Bandwidth, 5825 MHz



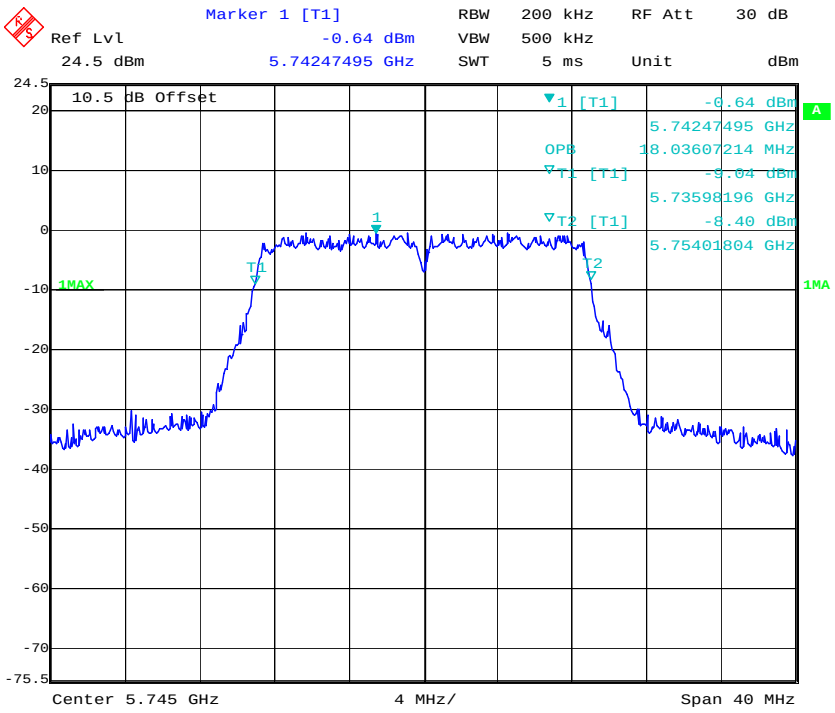
802.11n40 mode, 99% Occupied Bandwidth, 5755 MHz



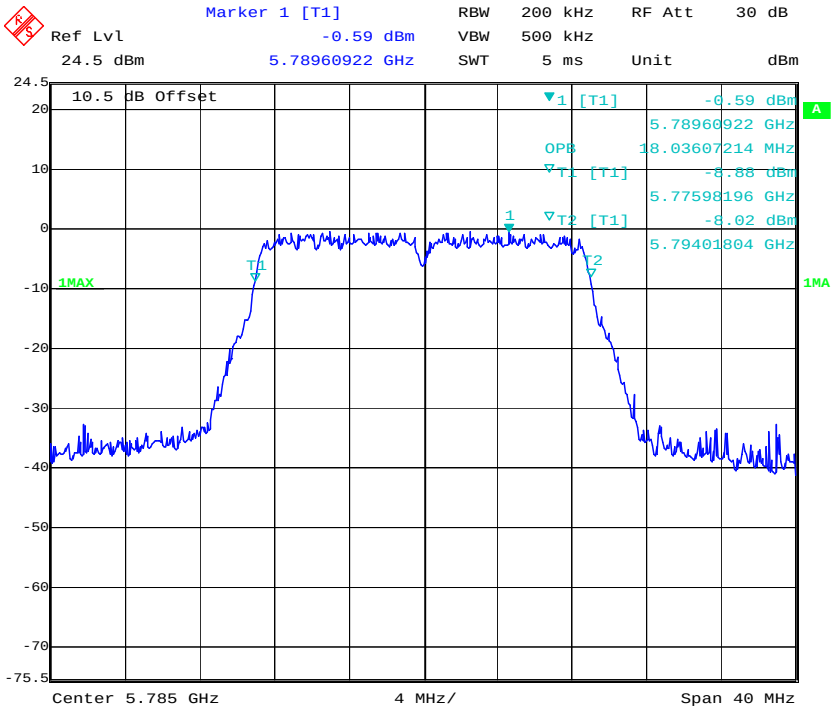
802.11n40 mode, 99% Occupied Bandwidth, 5795 MHz



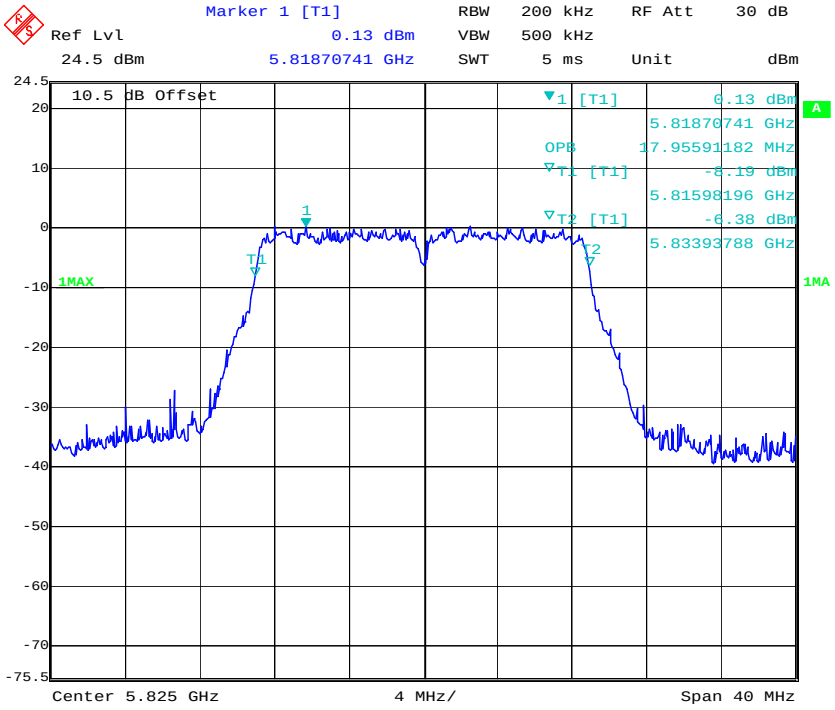
802.11ac20 mode, 99% Occupied Bandwidth, 5745 MHz



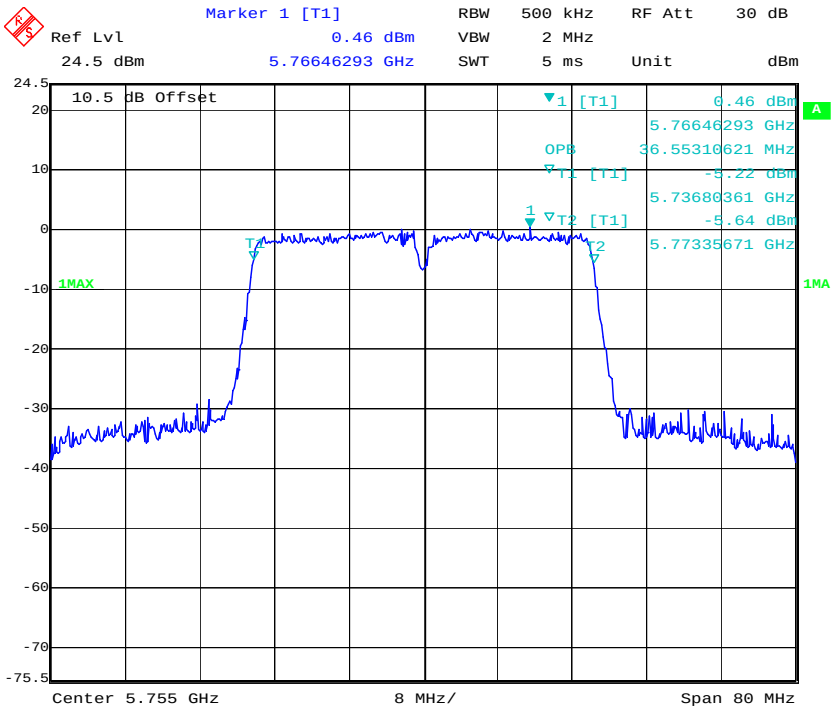
802.11ac20 mode, 99% Occupied Bandwidth, 5785 MHz



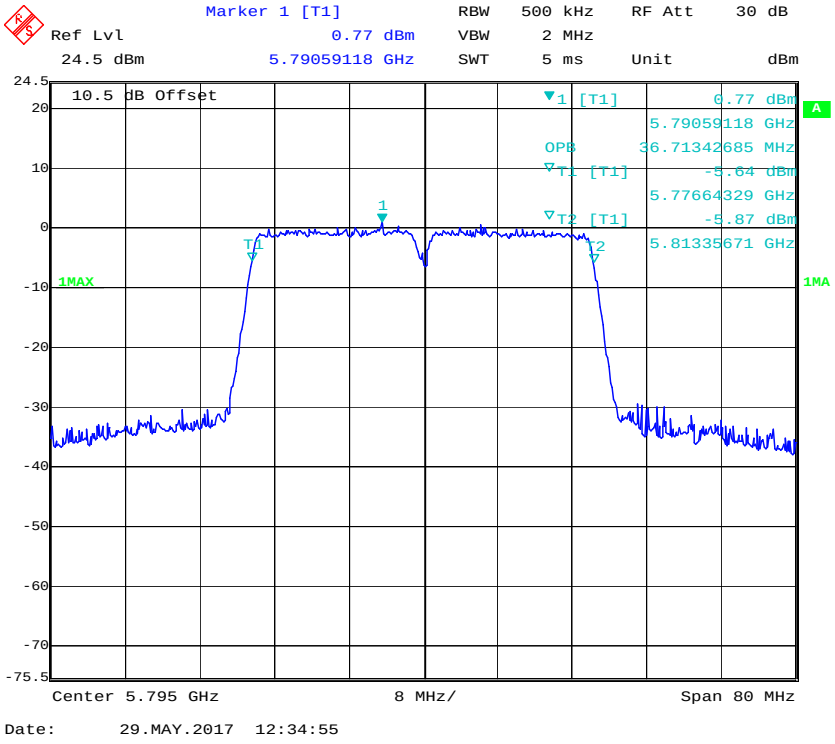
802.11ac20 mode, 99% Occupied Bandwidth, 5825 MHz



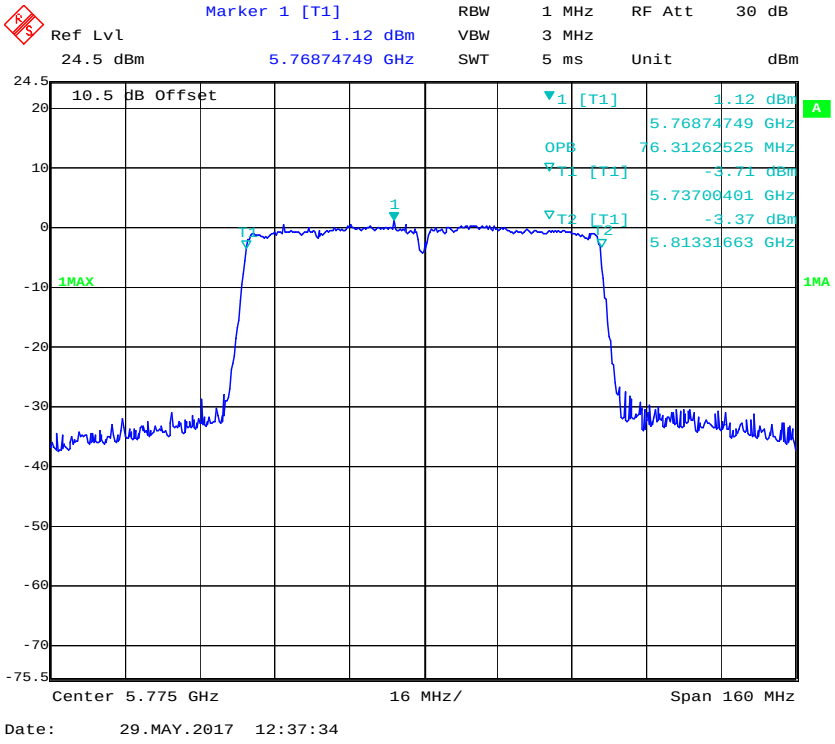
802.11ac40 mode, 99% Occupied Bandwidth, 5755 MHz



802.11ac40 mode, 99% Occupied Bandwidth, 5795 MHz



802.11ac80 mode, 99% Occupied Bandwidth, 5775 MHz



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

Applicable Standard

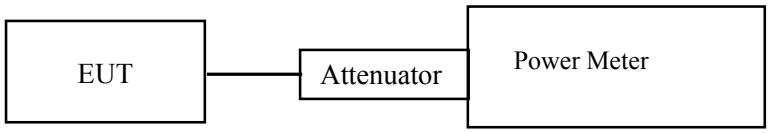
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz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

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

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

Test Procedure

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



Test Data

Environmental Conditions

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

The testing was performed by Ada Yu 2017-05-29.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

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

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5180	11.91	24
5200	12.24	
5240	11.83	
802.11n20		
5180	12.00	24
5200	12.02	
5240	11.75	
802.11n40		
5190	11.10	24
5230	10.07	
802.11ac20		
5180	12.20	24
5200	12.13	
5240	12.16	
802.11ac40		
5190	11.92	24
5230	11.69	
802.11ac80		
5210	12.05	24

5725 MHz – 5825 MHz:

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
802.11a		
5745	10.76	30
5785	10.95	
5825	11.55	
802.11n20		
5745	10.53	30
5785	10.86	
5825	11.40	
802.11n40		
5755	9.71	30
5795	9.85	
802.11ac20		
5745	11.01	30
5785	10.81	
5825	11.45	
802.11ac40		
5755	10.56	30
5795	10.84	
802.11ac80		
5775	10.88	30

FCC §15.407(g) – FREQUENCY STABILITY

Applicable Standard

FCC §15.407(G)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Procedure

According to ANSI C63.10-2013 §6.8

Some unlicensed wireless device requirements specify frequency stability tests with variation of supply voltage and temperature; the requirements can be found in the regulatory specifications for each type of unlicensed wireless device. The procedures listed in 6.8.1 and 6.8.2 shall be used for frequency stability tests.

Test Data

Environmental Conditions

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

The testing was performed by Ada Yu 2017-05-29.

EUT operation mode: Transmitting

Test Result: Pass

5150-5250：

802.11a				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5171.54689	5248.37852	Wthin 5150 to 5250
-20		5171.54742	5248.37549	
-10		5171.54147	5248.37684	
0		5171.54134	5248.37704	
10		5171.54368	5248.37576	
20		5171.54589	5248.38044	
30		5171.54309	5248.37675	
40		5171.54755	5248.38158	
50		5171.54099	5248.37956	
25	102	5171.54512	5248.38020	
25	138	5171.54151	5248.37851	

802.11n20				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5170.98683	5249.01777	Wthin 5150 to 5250
-20		5170.98286	5249.01504	
-10		5170.98633	5249.02170	
0		5170.98320	5249.02169	
10		5170.98197	5249.01669	
20		5170.98423	5249.02293	
30		5170.98196	5249.01804	
40		5170.97925	5249.01681	
50		5170.98435	5249.01584	
25	102	5170.98355	5249.01659	
25	138	5170.97973	5249.01995	

802.11n40				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5171.64154	5248.36092	Wthin 5150 to 5250
-20		5171.64407	5248.36023	
-10		5171.64061	5248.35546	
0		5171.64323	5248.35488	
10		5171.64628	5248.35927	
20		5171.64380	5248.35663	
30		5171.64329	5248.35671	
40		5171.64486	5248.36029	
50		5171.64174	5248.35668	
25	102	5171.64497	5248.35533	
25	138	5171.64169	5248.35461	

802.11ac20				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5170.98178	5248.93512	Wthin 5150 to 5250
-20		5170.98594	5248.93850	
-10		5170.98329	5248.94246	
0		5170.98096	5248.93585	
10		5170.98438	5248.93666	
20		5170.98478	5248.93996	
30		5170.98196	5248.93788	
40		5170.98110	5248.93891	
50		5170.98477	5248.93901	
25	102	5170.98023	5248.93844	
25	138	5170.98684	5248.94189	

802.11ac40				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5171.64663	5248.35454	Wthin 5150 to 5250
-20		5171.64577	5248.35856	
-10		5171.64063	5248.36075	
0		5171.64222	5248.35950	
10		5171.64264	5248.35374	
20		5171.64097	5248.35822	
30		5171.64329	5248.35671	
40		5171.64287	5248.35775	
50		5171.64509	5248.36119	
25	102	5171.64158	5248.35464	
25	138	5171.64063	5248.36051	

802.11ac80				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5172.00802	5248.31378	Wthin 5150 to 5250
-20		5172.00525	5248.31701	
-10		5172.00548	5248.32096	
0		5172.00171	5248.31928	
10		5172.00591	5248.32055	
20		5172.00361	5248.31810	
30		5172.00401	5248.31663	
40		5172.00665	5248.31461	
50		5172.00135	5248.31720	
25	102	5172.00281	5248.31686	
25	138	5172.00833	5248.31793	

5725-5850：

802.11a				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5736.54218	5833.45665	Wthin 5725 to 5850
-20		5736.54112	5833.46050	
-10		5736.54416	5833.45501	
0		5736.54306	5833.46022	
10		5736.54168	5833.45580	
20		5736.54170	5833.45824	
30		5736.54309	5833.45691	
40		5736.54546	5833.46033	
50		5736.54412	5833.45678	
25	102	5736.54703	5833.46027	
25	138	5736.54131	5833.45501	

802.11n20				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5735.98302	5834.01698	Wthin 5725 to 5850
-20		5735.98242	5834.01924	
-10		5735.97942	5834.01603	
0		5735.98642	5834.01746	
10		5735.98292	5834.02173	
20		5735.98536	5834.02290	
30		5735.98196	5834.01804	
40		5735.98527	5834.01690	
50		5735.98611	5834.01750	
25	102	5735.98594	5834.01720	
25	138	5735.98329	5834.02283	

802.11n40				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5736.64559	5813.35521	Wthin 5725 to 5850
-20		5736.64126	5813.35390	
-10		5736.64532	5813.35757	
0		5736.64598	5813.35479	
10		5736.64548	5813.35649	
20		5736.64438	5813.35754	
30		5736.64329	5813.35671	
40		5736.64098	5813.36114	
50		5736.64110	5813.35467	
25	102	5736.64523	5813.35565	
25	138	5736.64549	5813.35599	

802.11ac20				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5735.98606	5833.93925	Wthin 5725 to 5850
-20		5735.98064	5833.94140	
-10		5735.98014	5833.93857	
0		5735.98360	5833.93785	
10		5735.97952	5833.93929	
20		5735.98060	5833.93820	
30		5735.98196	5833.93788	
40		5735.98354	5833.94064	
50		5735.98522	5833.93571	
25	102	5735.98138	5833.93915	
25	138	5735.98601	5833.94011	

802.11ac40				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5736.80473	5813.36155	Wthin 5725 to 5850
-20		5736.80524	5813.35683	
-10		5736.80300	5813.35772	
0		5736.80634	5813.35455	
10		5736.80410	5813.36158	
20		5736.80419	5813.35638	
30		5736.80361	5813.35671	
40		5736.80748	5813.35987	
50		5736.80402	5813.36055	
25	102	5736.80190	5813.35763	
25	138	5736.80815	5813.35857	

802.11ac80				
Temperature (℃)	**Power Supplied (V_{AC})**	**Lowest Frequency of Low channel (MHz)**	**Highest Frequency of High channel (MHz)**	**Limit (MHz)**
-30	120	5737.00328	5813.31916	Wthin 5725 to 5850
-20		5737.00295	5813.32137	
-10		5737.00156	5813.31543	
0		5737.00723	5813.31970	
10		5737.00159	5813.31766	
20		5737.00402	5813.31632	
30		5737.00401	5813.31663	
40		5737.00128	5813.31460	
50		5737.00142	5813.31715	
25	102	5737.00230	5813.32095	
25	138	5737.00863	5813.31861	

FCC §15.407(a) (1) (5) - 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.

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

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

Test Procedure

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

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

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	103.0 kPa

The testing was performed by Ada Yu from 2017-05-29.

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EUT operation mode: Transmitting

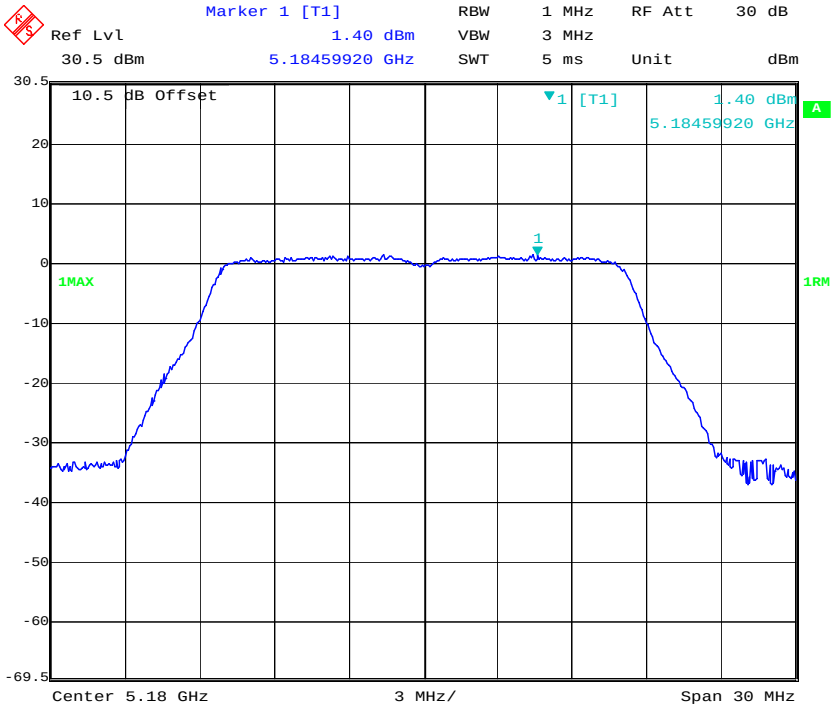
Test Result: Pass

Please refer to the following tables and plots.

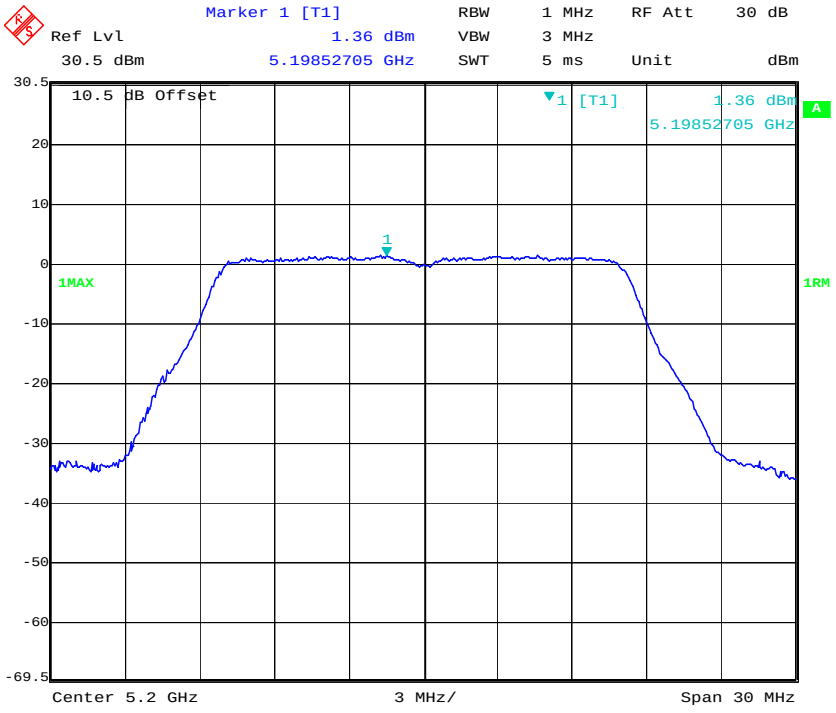
5150 MHz – 5250 MHz:

Frequency (MHz)	Test Value (dBm/MHz)	Dutycycle Factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a				
5180	1.40	0	1.40	11
5200	1.36	0	1.36	
5240	0.90	0	0.90	
802.11n20				
5180	1.51	0	1.51	11
5200	1.48	0	1.48	
5240	0.89	0	0.89	
802.11n40				
5190	-3.10	0.18	-2.92	11
5230	-2.97	0.18	-2.79	
802.11ac20				
5180	1.30	0	1.30	11
5200	1.43	0	1.43	
5240	1.03	0	1.03	
802.11ac40				
5190	-2.04	0.18	-1.86	11
5230	-2.18	0.18	-2.00	
802.11ac80				
5210	-5.01	0.41	-4.60	11

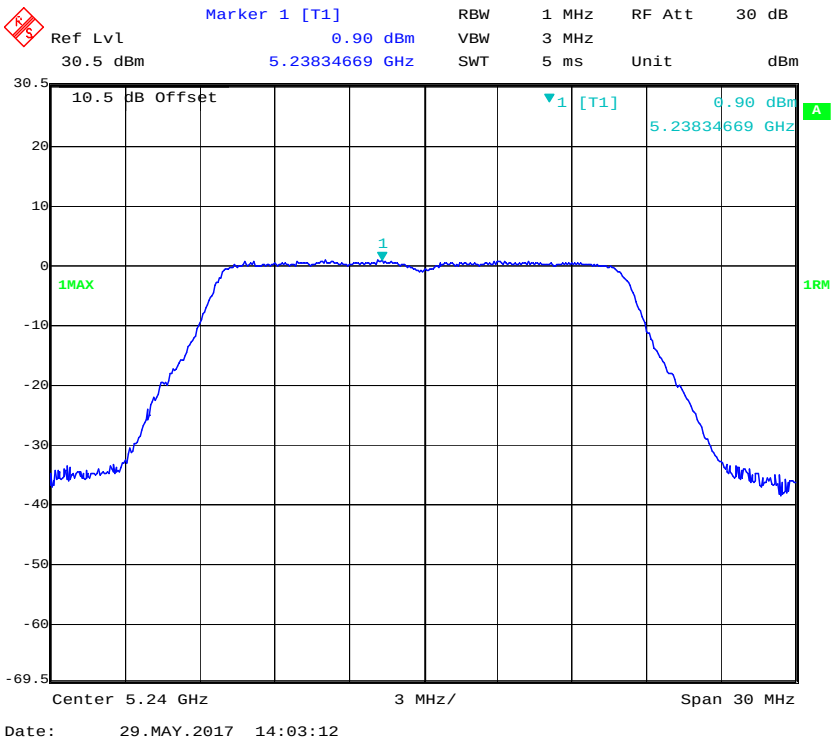
802.11a mode, Power Spectral Density, 5180 MHz



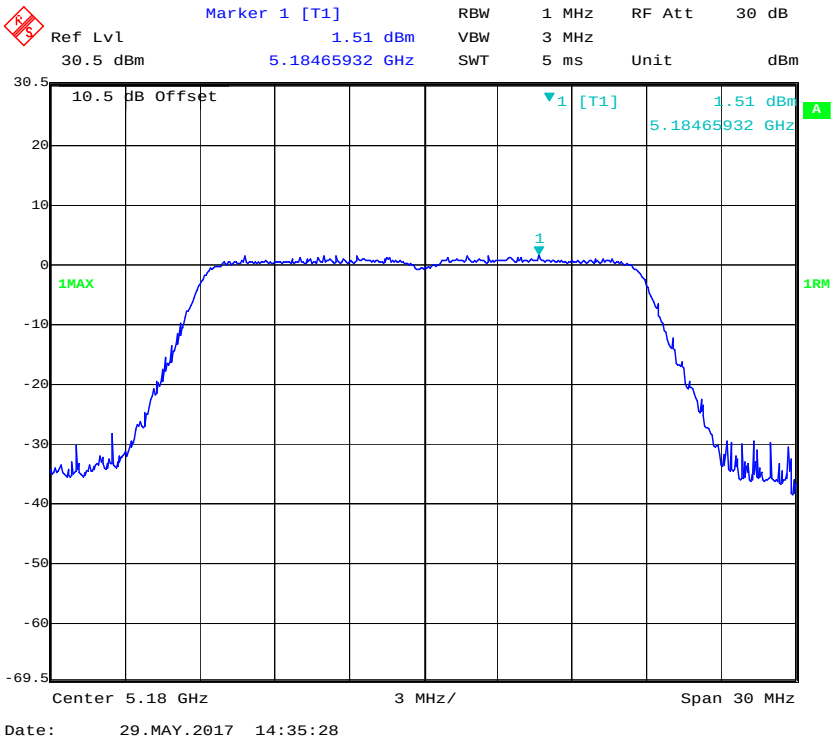
802.11a mode, Power Spectral Density, 5200 MHz



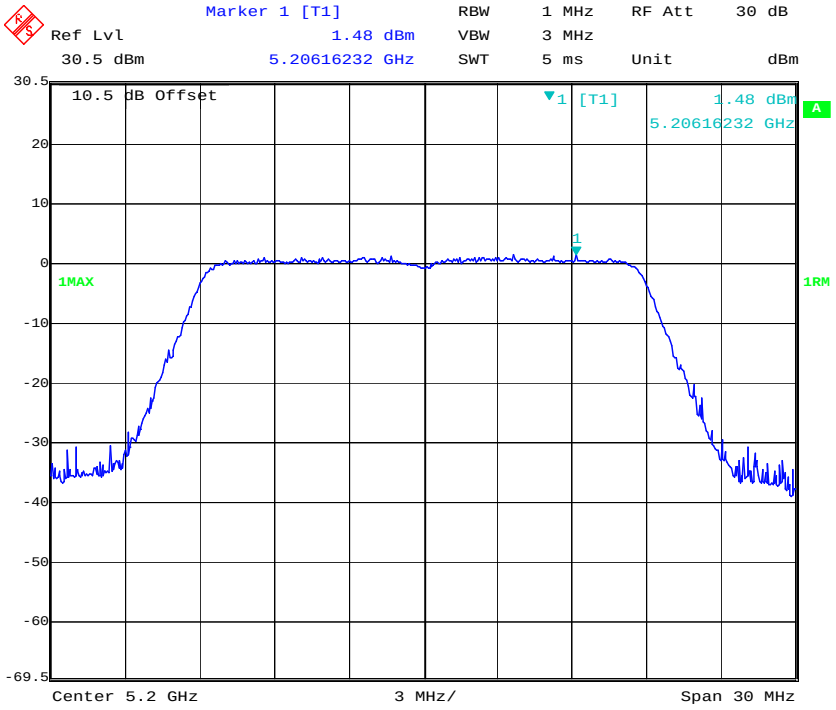
802.11a mode, Power Spectral Density, 5240 MHz



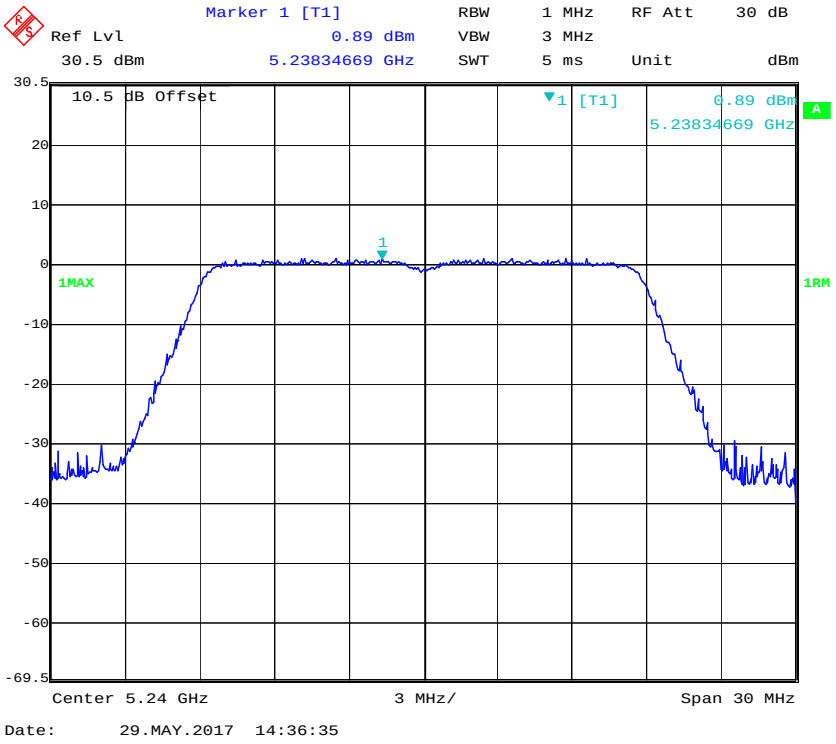
802.11n20 mode, Power Spectral Density, 5180 MHz



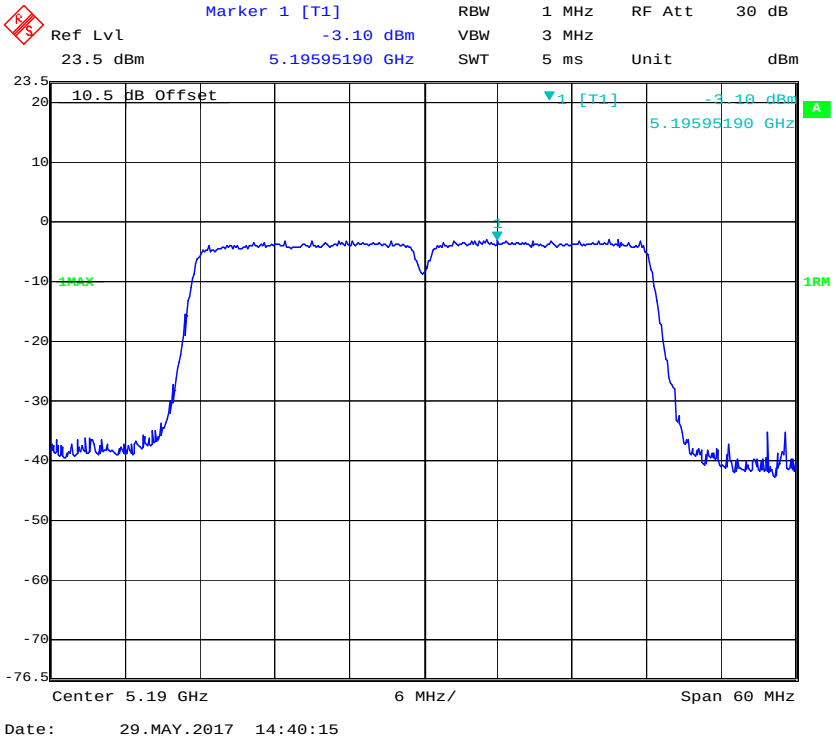
802.11n20 mode, Power Spectral Density, 5200 MHz



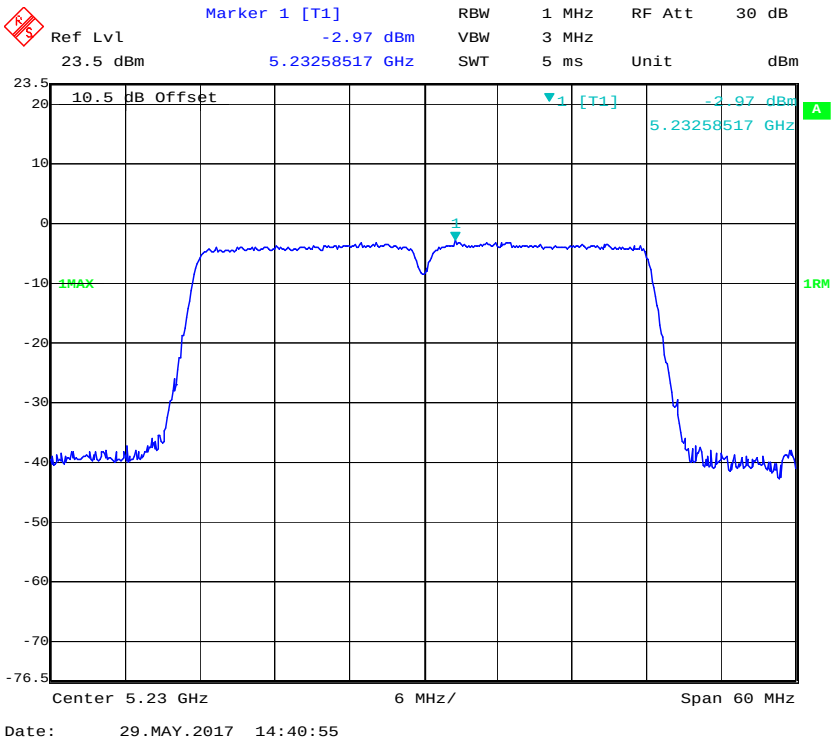
802.11n20 mode, Power Spectral Density, 5240 MHz



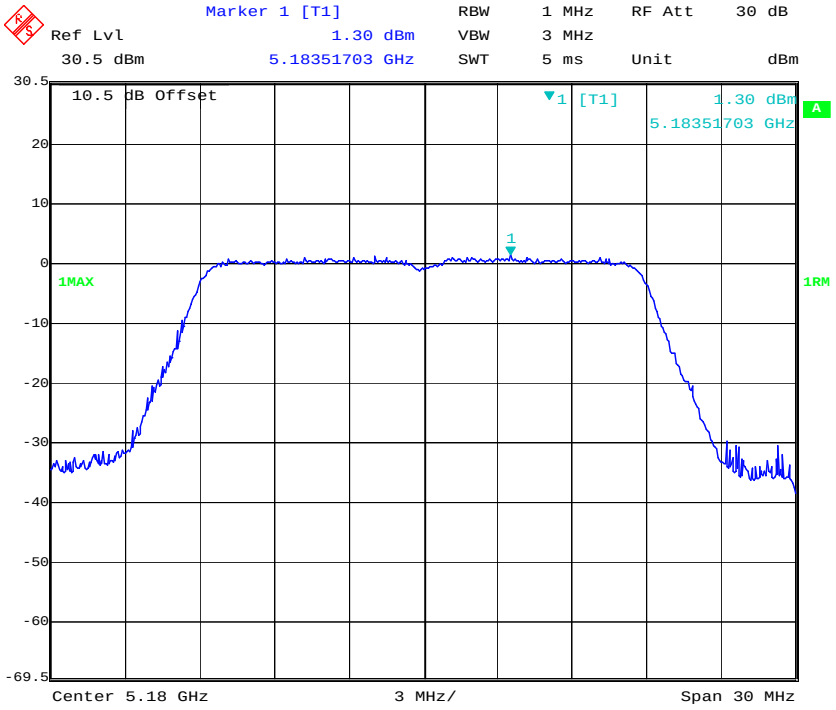
802.11n40 mode, Power Spectral Density, 5190 MHz



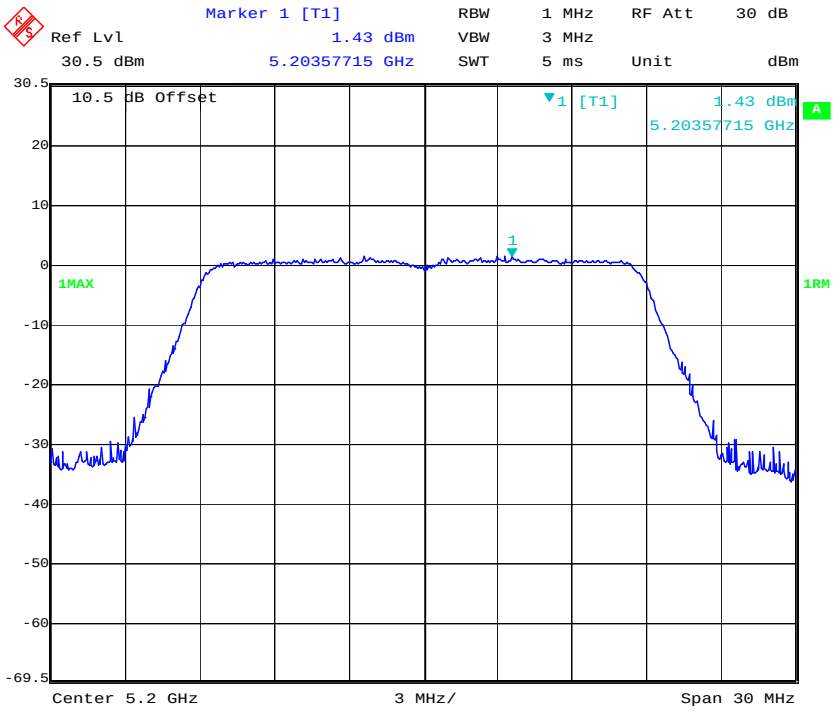
802.11n40 mode, Power Spectral Density, 5230 MHz



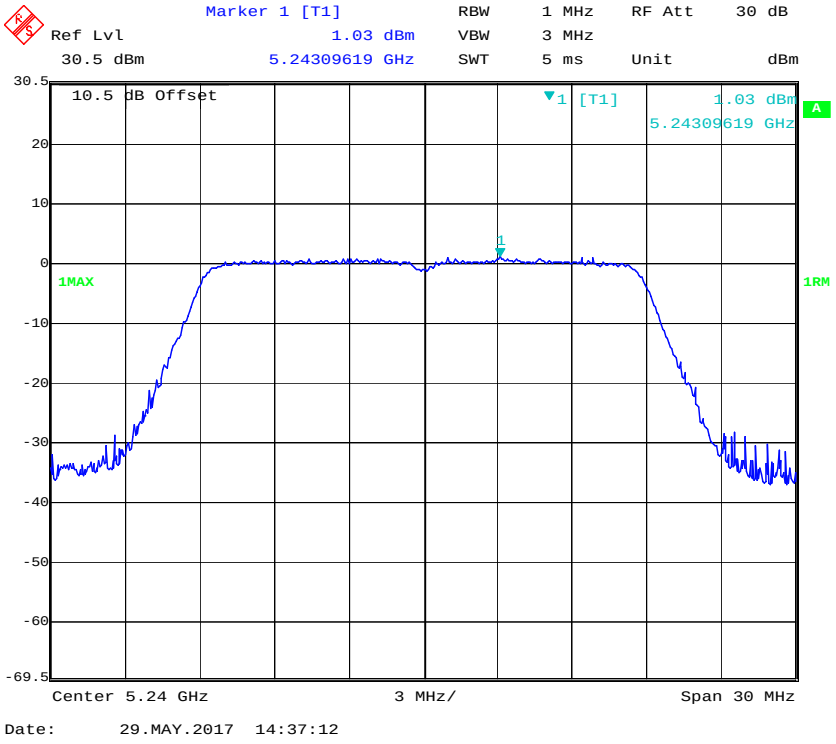
802.11ac20 mode, Power Spectral Density, 5180 MHz



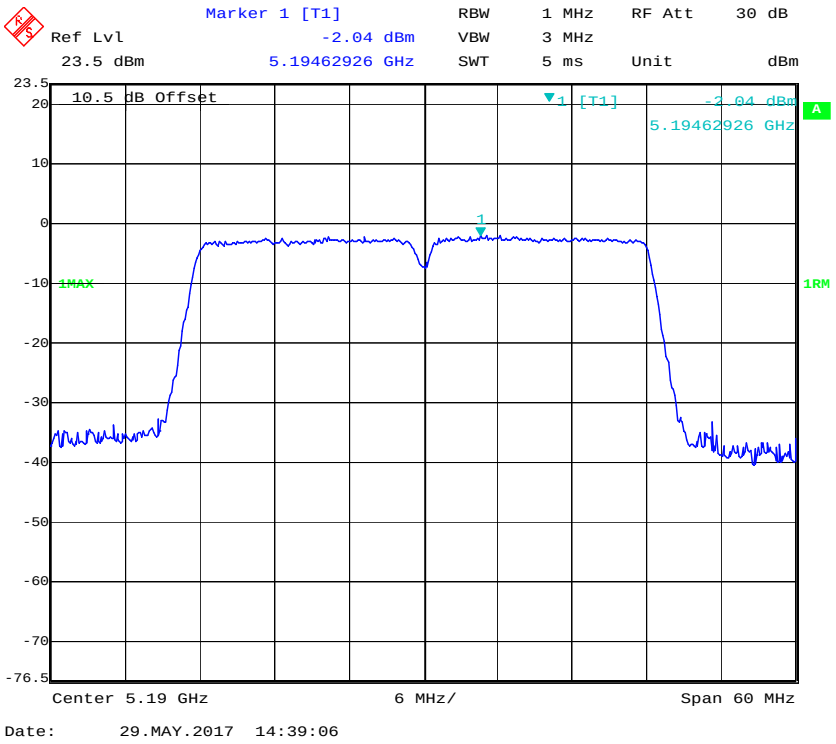
802. 11ac20 mode, Power Spectral Density, 5200 MHz



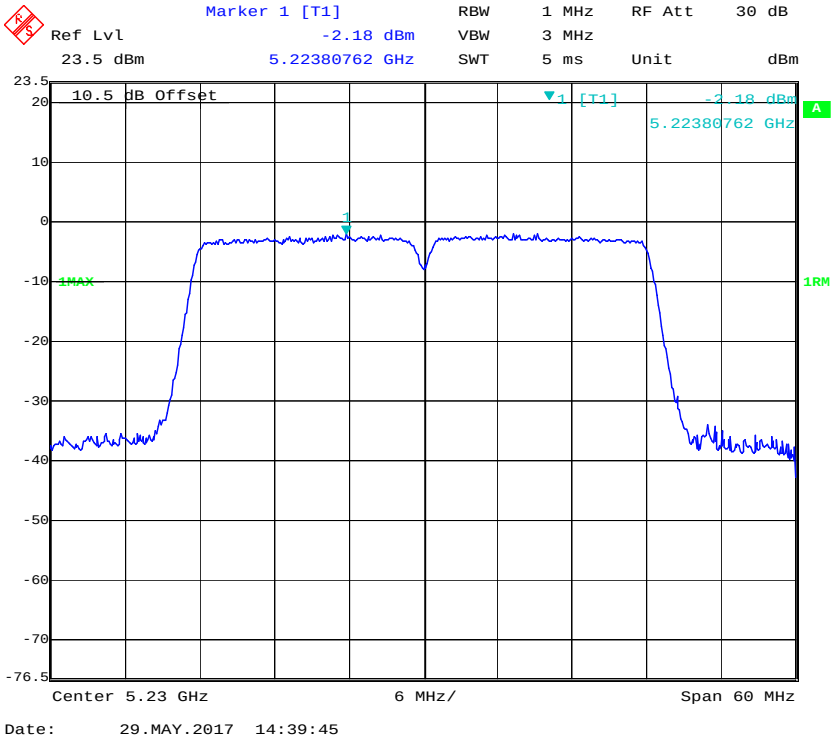
802. 11ac20 mode, Power Spectral Density, 5240 MHz



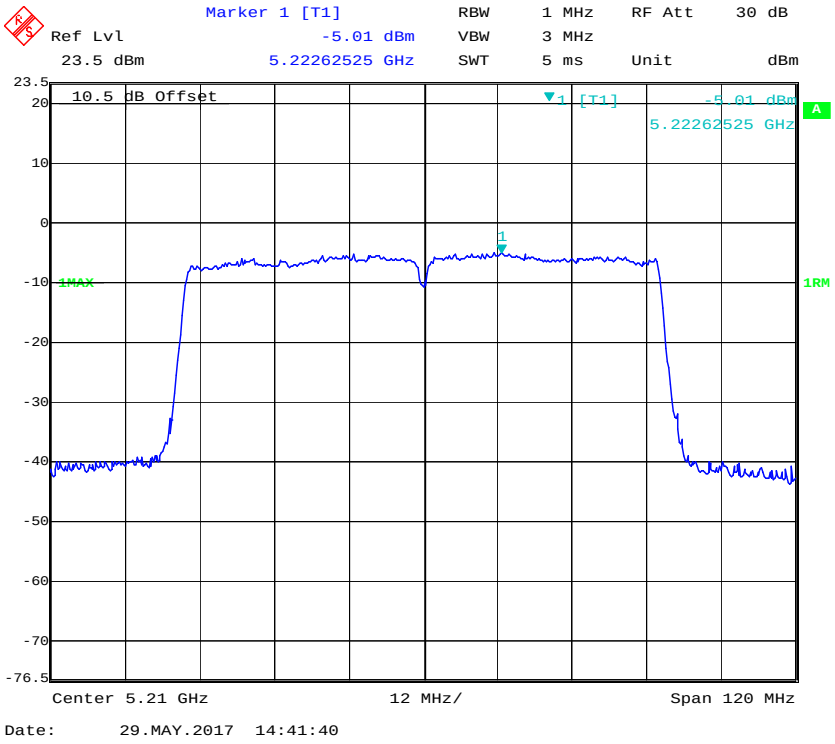
802. 11ac40 mode, Power Spectral Density, 5190 MHz



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



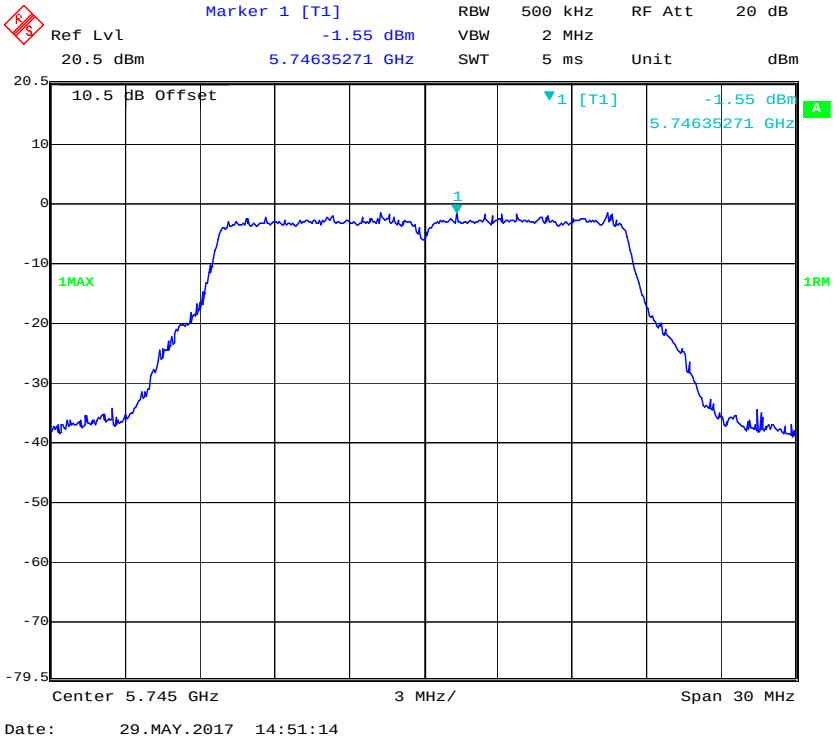
802. 11ac80 mode, Power Spectral Density, 5210 MHz



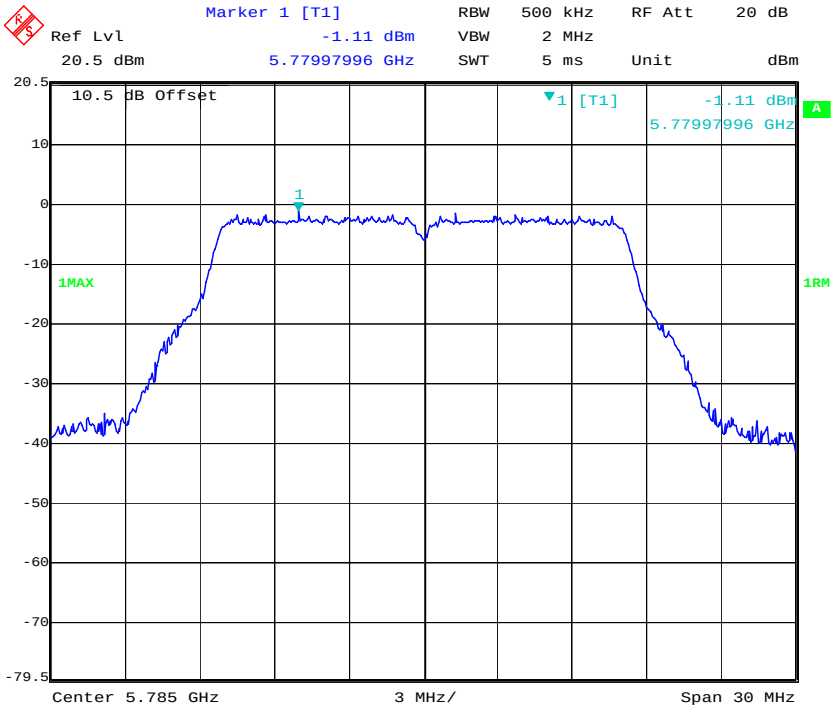
5725 MHz – 5825 MHz:

Frequency (MHz)	Test Value (dBm/500kHz)	Dutycycle Factor (dB)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
802.11a				
5745	-1.55	0	-1.55	30
5785	-1.11	0	-1.11	
5825	-0.84	0	-0.84	
802.11n20				
5745	-0.93	0	-0.93	30
5785	-1.16	0	-1.16	
5825	-0.51	0	-0.51	
802.11n40				
5755	-5.60	0.18	-5.42	30
5795	-5.24	0.18	-5.06	
802.11ac20				
5745	-1.34	0	-1.34	30
5785	-1.45	0	-1.45	
5825	-0.55	0	-0.55	
802.11ac40				
5755	-4.63	0.18	-4.45	30
5795	-4.46	0.18	-4.28	
802.11ac80				
5775	-6.74	0.41	-6.33	30

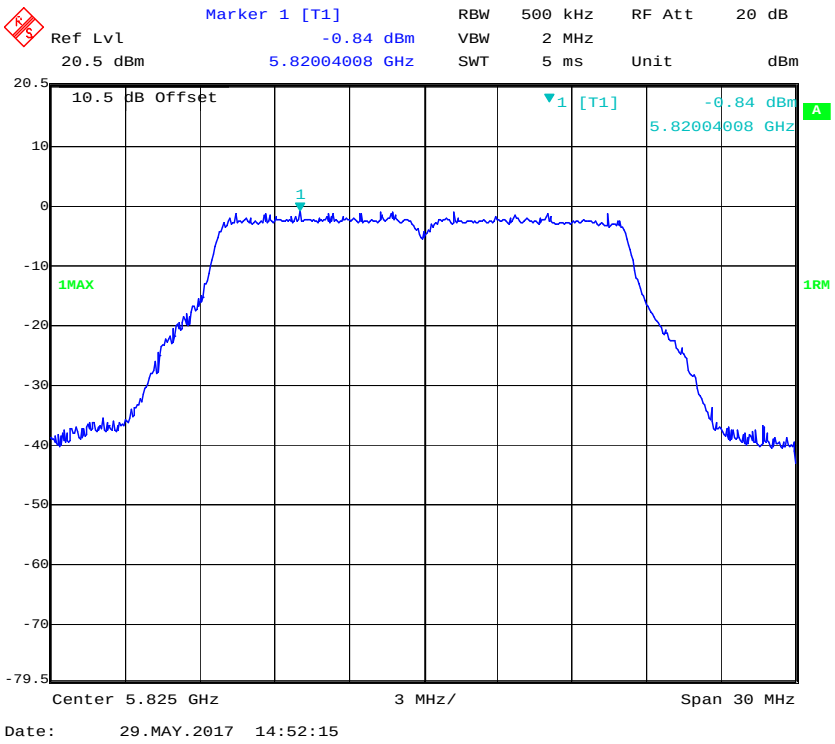
802.11a mode, Power Spectral Density, 5745 MHz



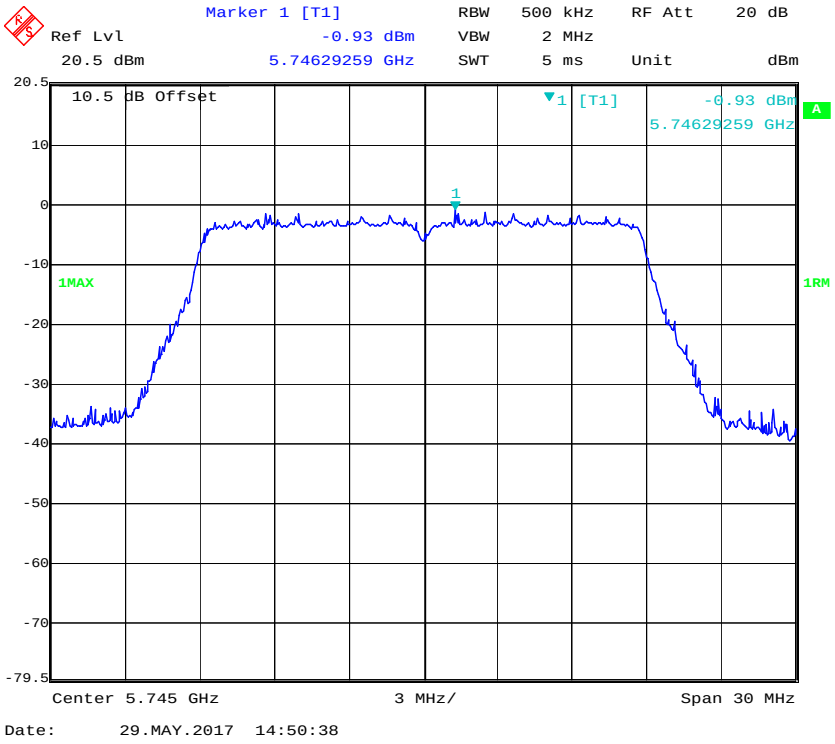
802.11a mode, Power Spectral Density, 5785 MHz



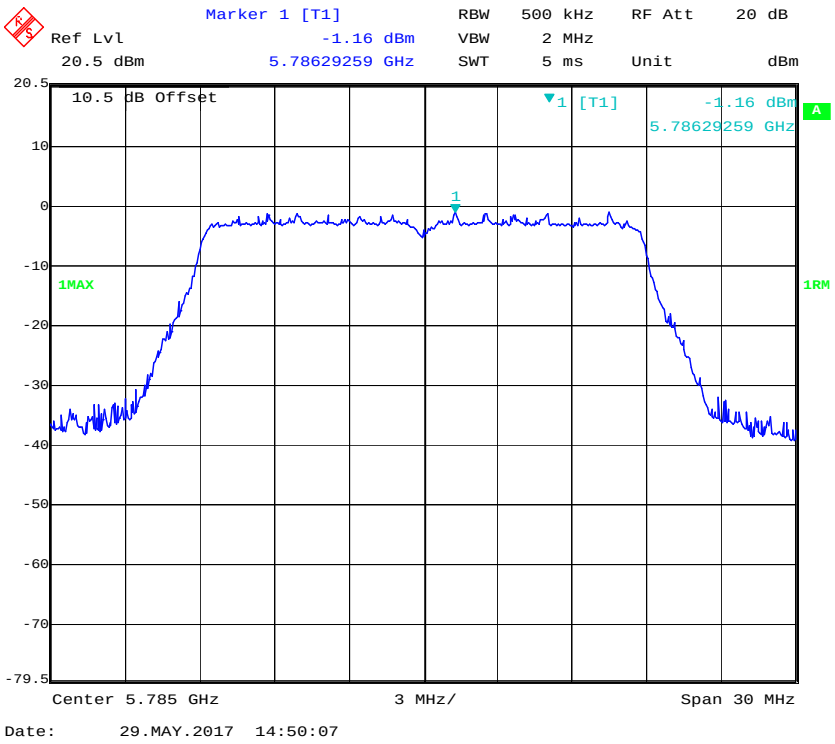
802.11a mode, Power Spectral Density, 5825 MHz



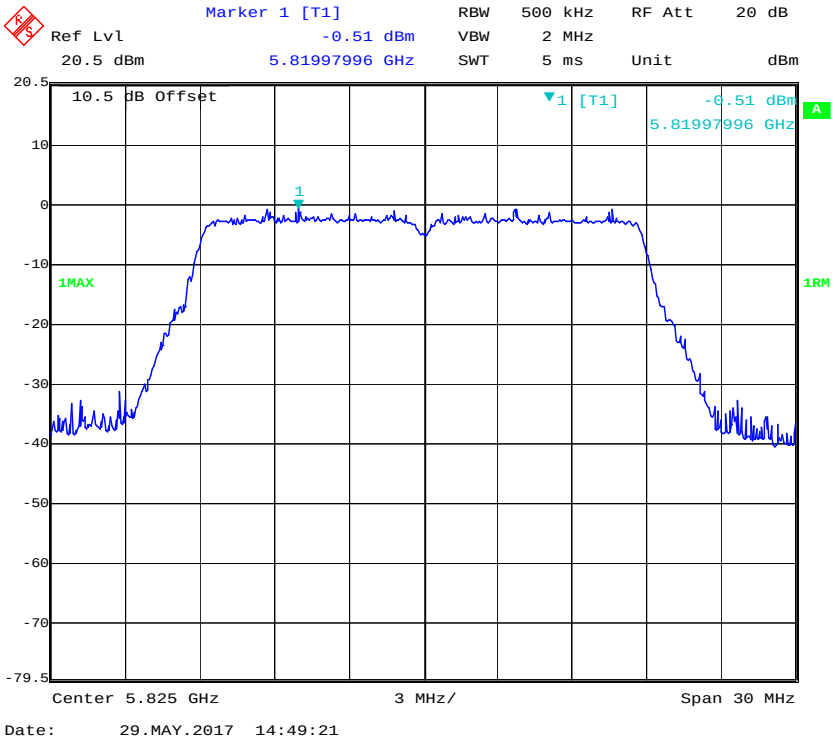
802.11n20 mode, Power Spectral Density, 5745 MHz



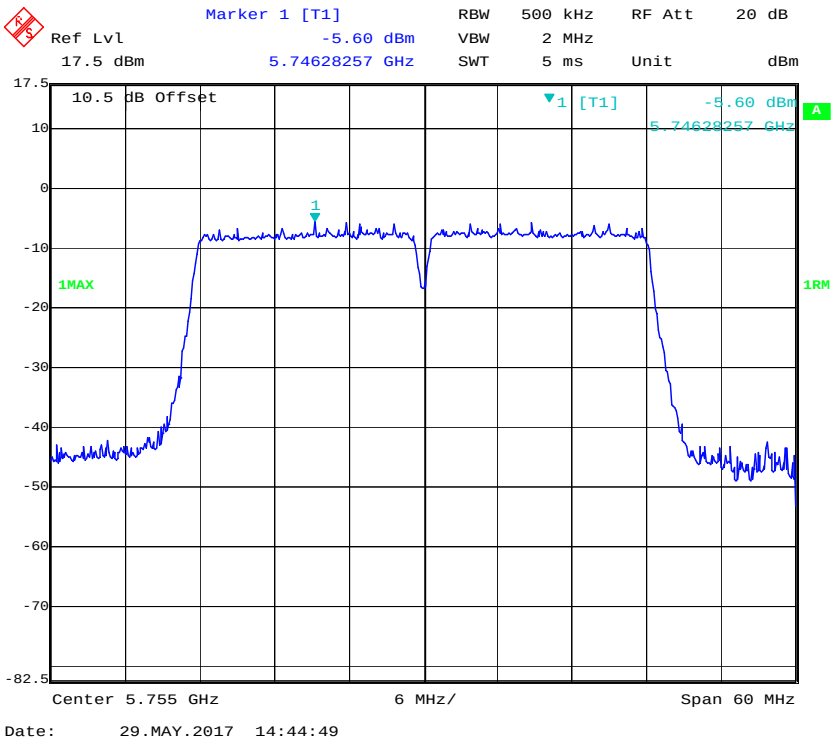
802.11n20 mode, Power Spectral Density, 5785 MHz



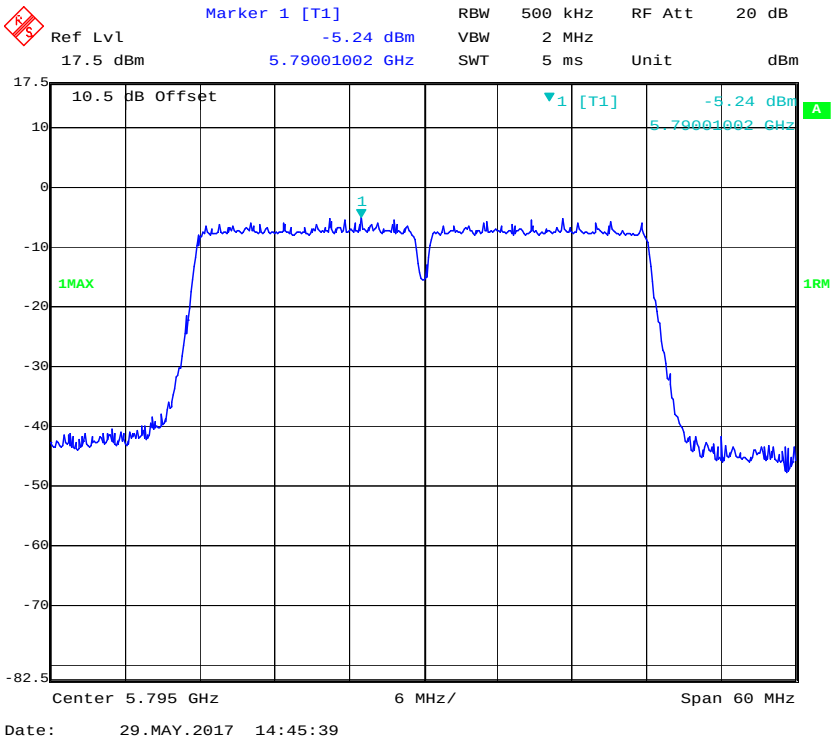
802.11n20 mode, Power Spectral Density, 5825 MHz



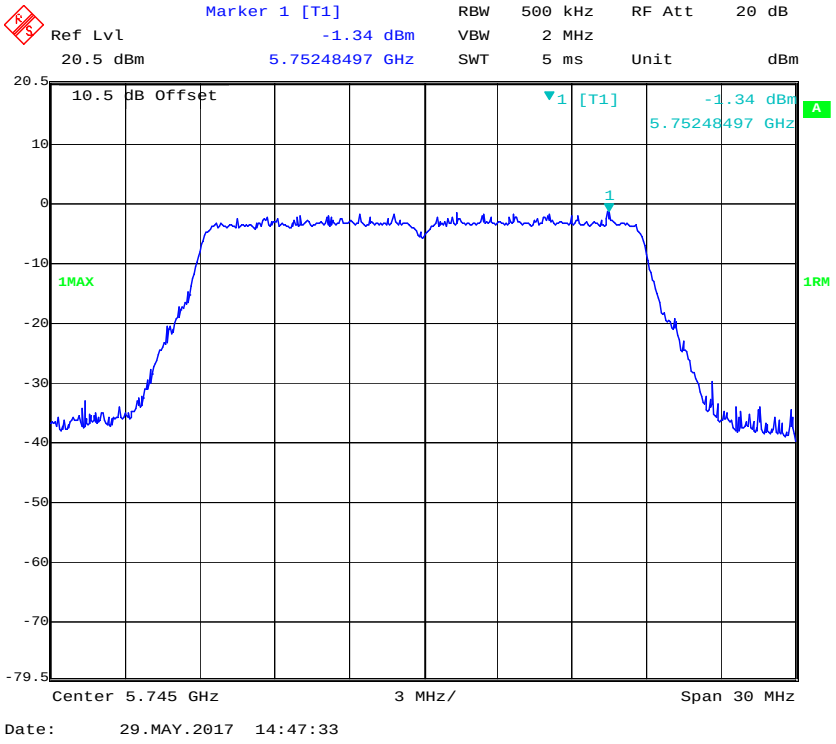
802.11n40 mode, Power Spectral Density, 5755 MHz



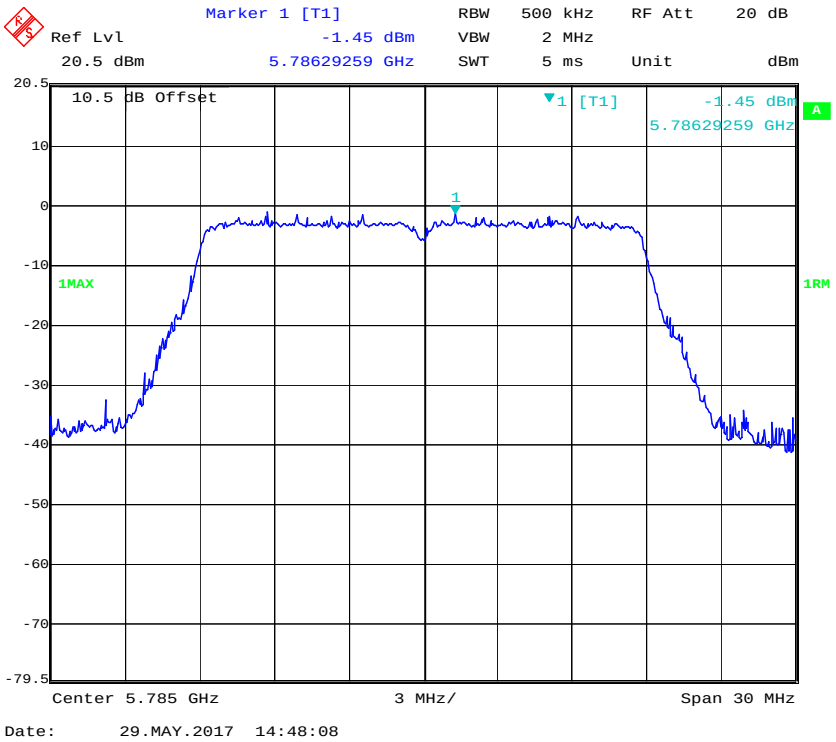
802.11n40 mode, Power Spectral Density, 5795 MHz



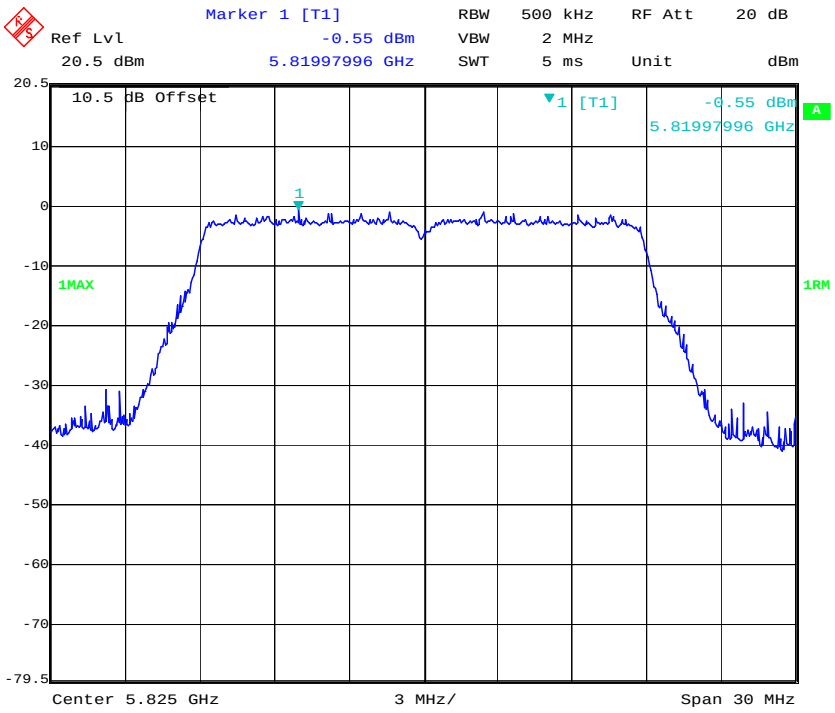
802.11ac20 mode, Power Spectral Density, 5745 MHz



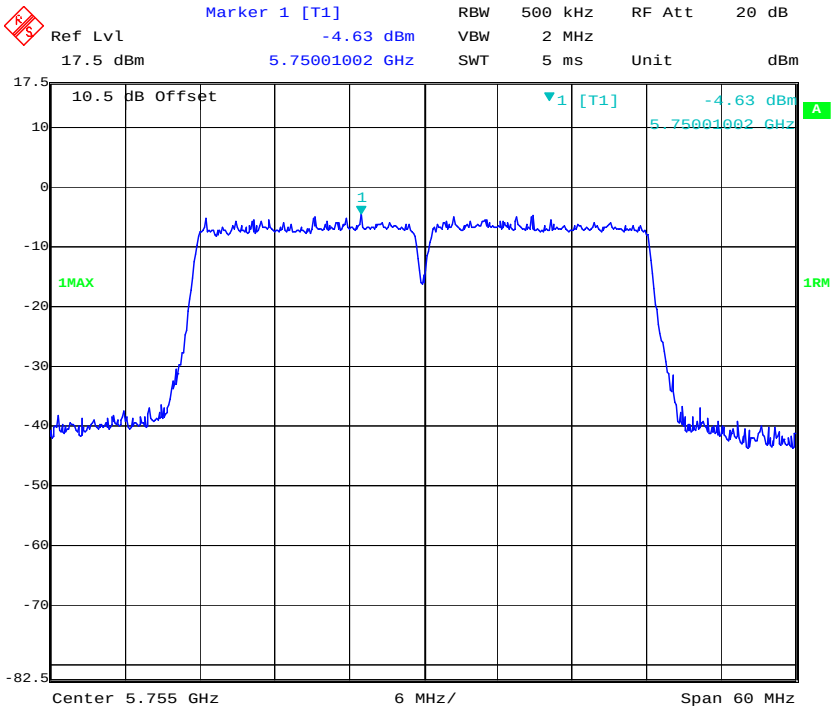
802. 11ac20 mode, Power Spectral Density, 5785 MHz



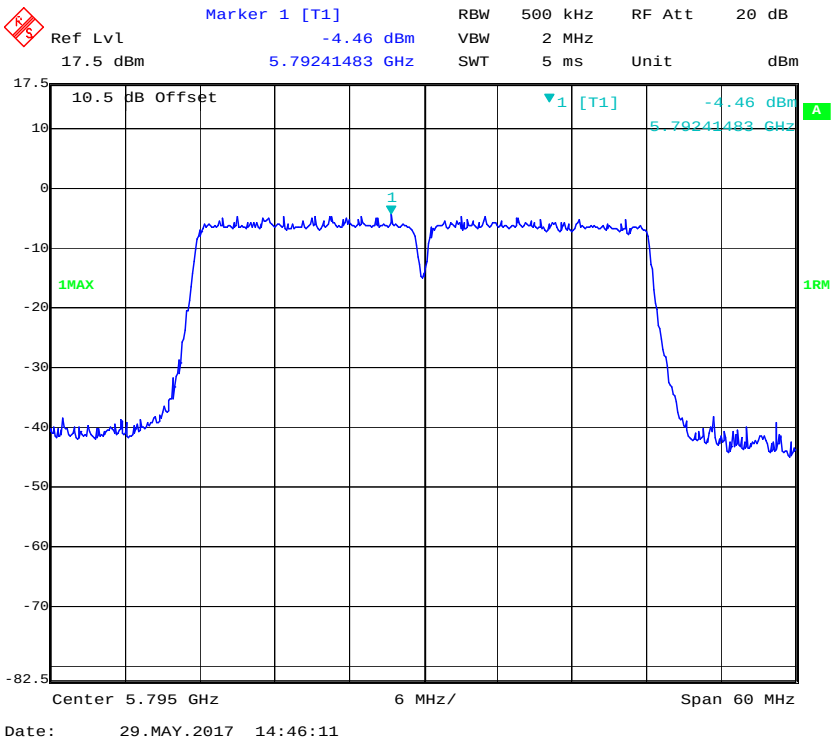
802. 11ac20 mode, Power Spectral Density, 5825 MHz



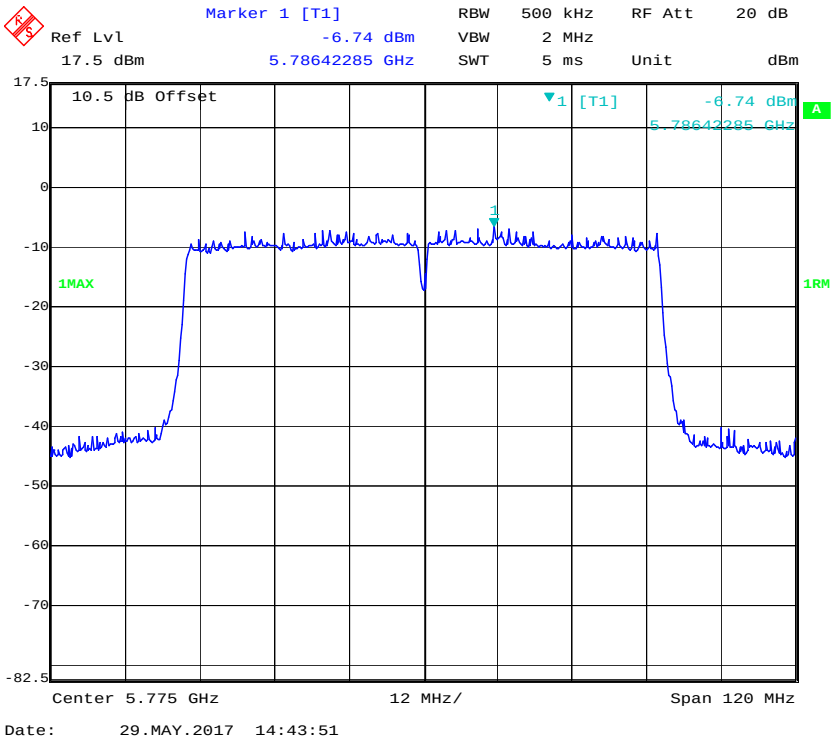
802. 11ac40 mode, Power Spectral Density, 5755 MHz



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



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



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