FCC PART 15.407

TEST REPORT

For

Chengdu Xgimi Technology Co., Ltd.

5F, Building A7, Tianfu Software Park,
Tianfu Avenue, Hi-tech Zone, Chengdu, China

FCC ID: 2AFENXF09G

Report Type:	**Product Name:**
Original Report	LED Projector

Test Engineer:	Mill Chen
Report Number:	RSC160411001-0B
Report Date:	2016-08-31
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***Chengdu Xgimi Technology Co., Ltd.***'s product, model number: ***XF09G (FCC ID: 2AFENXF09G)*** *or* ("EUT") in this report was the ***LED Projector****,* which was measured approximately: 245mm (L) x 245mm (W) x 216mm (H). Rated input voltage: DC 17V from adapter.

The products, test model: XF09G, multiple model: XF10G, XF11G, XF12G, XF13G, XF14G, XF15G, XF16G, XF17G, XF18G, XF19G, XF20G, XF21G, XF22G, XF23G, XF24G, XF25G, XF26G, XF27G, XF28G, XF29G, XF30G, XF31G, XF32G, XF33G, XF34G, XF35G, XF36G, XF37G, XF38G, XF39G, XF40G, XF41G, XF42G, XF43G, XF44G, XF45G, XF46G, XF47G, XF48G, XF49G, XF50G. Their differences were presented in Product Difference Statement provided by the applicant. And we selected XF09G to fully test.

**All measurement and test data in this report was gathered from final production sample, serial number: 160411001/01 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-04-01, and EUT conformed to test requirement.*

Objective

This type approval report is prepared on behalf of ***Chengdu Xgimi Technology Co., Ltd.*** in accordance with Part 2-Subpart J, Part 15-Subparts A, B ,C and E of the Federal Communications Commission rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AFENXF09G.
FCC Part 15.247 DTS submissions with FCC ID: 2AFENXF09G.

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 and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ±3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G-6GHz:: ±5.13dB;
6G~25GHz: ±5.47dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

For 5150~5250 MHz band, channels are provided to test as follows:

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

For 802.11a, 802.11n ht20: Channel 36, 44 and 48 were tested; for 802.11n ht40: Channel 38, 46 were tested; for ac80: Channel 42 was tested

For 5725~5850 MHz band, channels are provided to test as follows:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	163	5815
155	5775	165	5825
157	5785	/	/

For 802.11a, 802.11n ht20: Channel 149, 157 and 165 were tested; for 802.11n ht40: Channel 151, 159 were tested; for ac80: Channel 155 was tested

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

EUT Exercise Software

The software “Ampak RFtest tool V5.3” was used for testing, which was provided by manufacturer. The maximum power with duty cylce(100%) was set by default configuration.

For 5150~5250 MHz

Test Mode	Test Software Version	Ampak RFtest tool V5.3		
802.11a	Test Frequency	5180MHz	5220MHz	5240MHz
	Data Rate	OFDM 6Mbps	OFDM 6Mbps	OFDM 6Mbps
	Power Level Antenna 1	N/A	N/A	N/A
	Power Level Antenna 2	N/A	N/A	N/A
802.11n HT20	Test Frequency	5180MHz	5220MHz	5240MHz
	Data Rate	MCSO 6.5Mbps	MCSO 6.5Mbps	MCSO 6.5Mbps
	Power Level Antenna 1	N/A	N/A	N/A
	Power Level Antenna 2	N/A	N/A	N/A
802.11n HT40	Test Frequency	5190MHz	5230MHz	
	Data Rate	MCSO 13.5Mbps	MCSO 13.5Mbps	
	Power Level Antenna 1	N/A	N/A	
	Power Level Antenna 2	N/A	N/A	
802.11ac80	Test Frequency	5210MHz		
	Data Rate	1SSO 29.3Mbps		
	Power Level Antenna 1	N/A		
	Power Level Antenna 2	N/A		

Note: No power level parameter configuration, it was set by default configuration.

For 5725~5850 MHz

Test Mode	Test Software Version	Ampak RFtest tool V5.3		
802.11a	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	OFDM 6Mbps	OFDM 6Mbps	OFDM 6Mbps
	Power Level Setting Antenna 1	N/A	N/A	N/A
	Power Level Setting Antenna 2	N/A	N/A	N/A
802.11n HT20	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	MCSO 6.5Mbps	MCSO 6.5Mbps	MCSO 6.5Mbps
	Power Level Setting Antenna 1	N/A	N/A	N/A
	Power Level Setting Antenna 2	N/A	N/A	N/A
802.11n HT40	Test Frequency	5755MHz	5795MHz	
	Data Rate	MCSO 13.5Mbps	MCSO 13.5Mbps	
	Power Level Setting Antenna 1	N/A	N/A	
	Power Level Setting Antenna 2	N/A	N/A	
802.11ac80	Test Frequency	5775MHz		
	Data Rate	1SSO 29.3Mbps		
	Power Level Setting Antenna 1	N/A		
	Power Level Setting Antenna 2	N/A		

Note: No power level parameter configuration, it was set by default configuration.

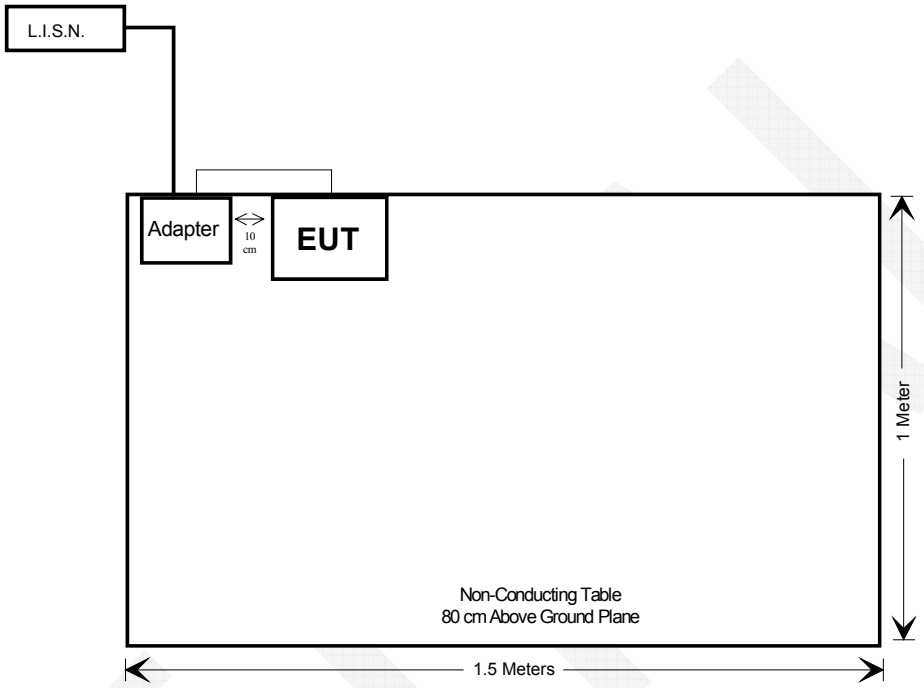
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
-	-	-	-

External I/O Cable

Cable Description	Length (m)	From	To
Unshielded DC Cable	1.8	EUT	Adapter

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.407 (f) & §1.1310 & §2.1091	Maximum Permissible Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1),(4),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b) (1), (4)	Band Edge	Compliance
§15.407(a) (1),(3) & (e)	26dB & 6dB Bandwidth	Compliance
§15.407(a)(1),(3)	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(3),(5)	Power Spectral Density	Compliance

FCC §15.407(f) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.407(f)and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) 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/f²)	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;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

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

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

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

The rated tune-up output power and antenna gain in the below table:

Calculated Data:

MPE evaluation for single transmission:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
WLAN	2412-2462	3.95	2.48	18.0	63.10	20	0.031	1.0
	5150-5250	3.84	2.42	16.0	39.81	20	0.019	1.0
	5725-5850	3.84	2.42	15.5	35.48	20	0.017	1.0
BLE	2402-2480	4.10	2.57	4.0	2.51	20	0.001	1.0

Note: The WiFi(2.4G) and WiFi(5G) can not tansmit simultaneously.

MPE evaluation for simultaneous transmission:

2.4 G(BT) and 5G(WiFi) or 2.4 G(BT) and 2.4G(WiFi) can transmit at the same time, MPE evaluation is as below formula:

PD1/Limit1+PD2/Limit2+……＜1, PD (Power Density)

MPE evaluation:

2.4 G(BT) and 5G(WiFi):

Max MPE of 5G(WiFi) + Max MPE of 2.4G(BT) = 0.019/1+0.001/1=0.020＜1

2.4 G(BT) and 2.4G(WiFi):

Max MPE of 2.4G(WiFi) + Max MPE of 2.4G(BT) = 0.031/1+0.001/1=0.032＜1

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

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 use of a standard antenna jack or electrical connector is prohibited.
And according to FCC 47 CFR section 15.407 (a)(1),if transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak 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 used three internal FPC antennas and with I-PEX connector, two of them is for Wi-Fi (2.4GHz/5GHz) and antenna gain is 3.95 dBi for 2.4GHz, 3.84 dBi for 5GHz, the other is for Bluetooth and antenna gain is 4.1 dBi, which were permanently attached, fullfill the requirement of this section. Please refer to the EUT internal photos.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

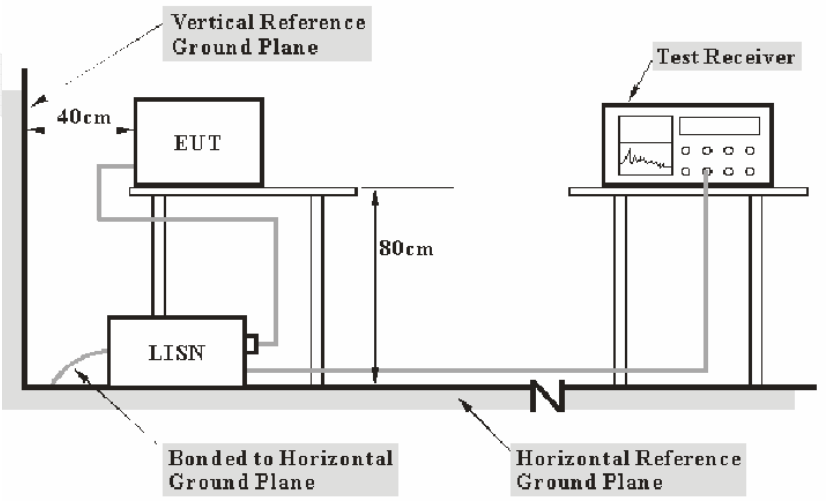
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is 3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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 AC 120V/60Hz power source.

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$
$C_f = A_C + VDF$

Herein,
V_C (cord. Reading): corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN
C_f: Correction Factor

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.12	None	None
	Conducted Cable	NO.5		2015-11-10	2016-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter was connected to the LISN and the other support equipments were connected to the outlet of the second 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.

Test Data

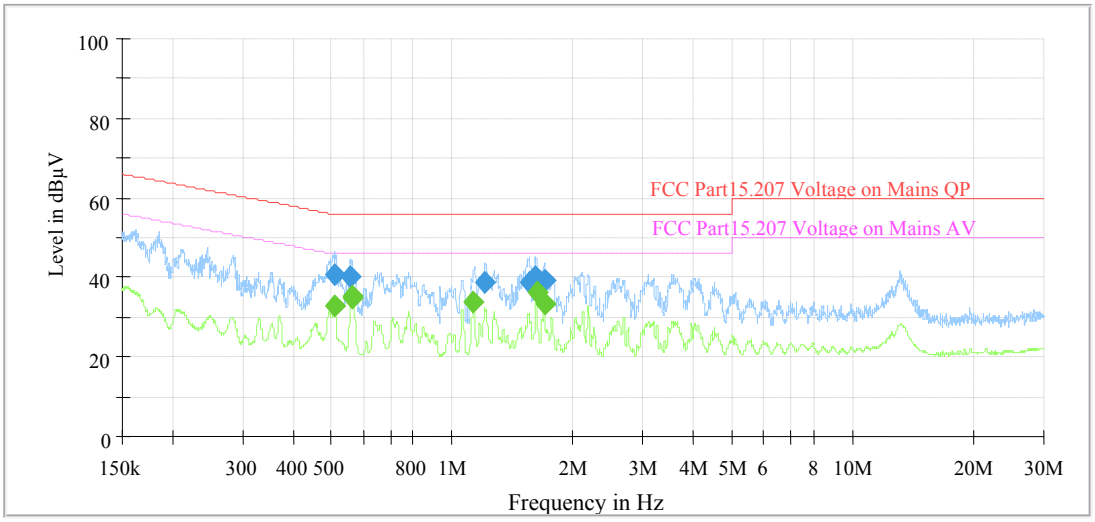
Environmental Conditions

Temperature:	30 °C
Relative Humidity:	60 %
ATM Pressure:	94.8 kPa

The testing was performed by Mill Chen on 2016-08-05.

Test Mode: Transmitting

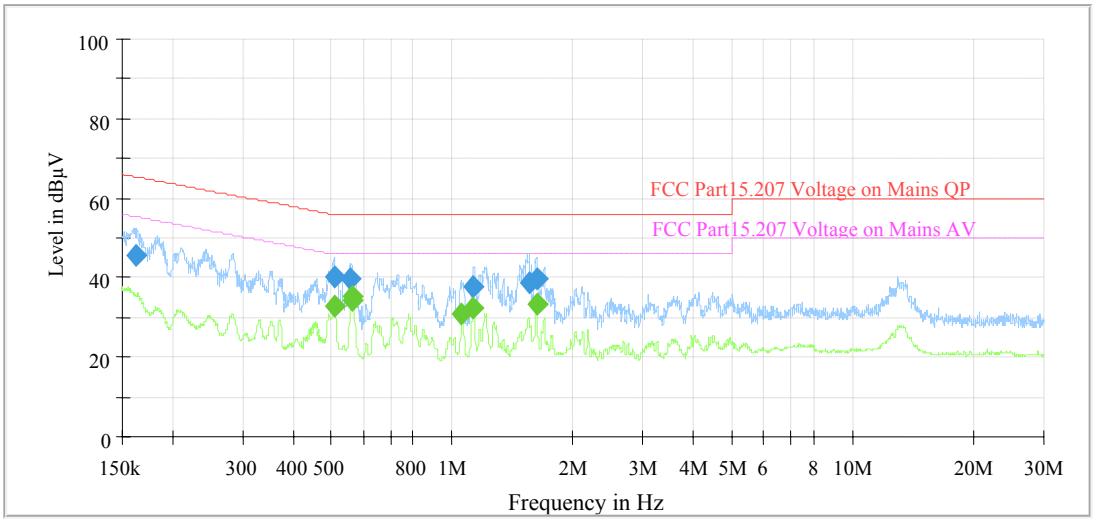
AC120V/60Hz, Line



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.507460	40.7	9.000	L1	20.0	15.3	56.0
0.558537	40.3	9.000	L1	20.0	15.7	56.0
1.210209	38.9	9.000	L1	20.0	17.1	56.0
1.553552	38.7	9.000	L1	20.0	17.3	56.0
1.620123	40.3	9.000	L1	20.0	15.7	56.0
1.696311	39.2	9.000	L1	20.0	16.8	56.0

Frequency (MHz)	Average (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.507460	32.9	9.000	L1	20.0	13.1	46.0
0.563019	35.1	9.000	L1	20.0	10.9	46.0
0.565274	34.9	9.000	L1	20.0	11.1	46.0
1.130728	34.0	9.000	L1	20.0	12.0	46.0
1.623363	36.3	9.000	L1	20.0	**9.7**	46.0
1.696311	33.3	9.000	L1	20.0	12.7	46.0

AC120V/60Hz, Neutral



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.162480	45.7	9.000	N	18.8	19.7	65.3
0.506447	40.4	9.000	N	19.9	15.6	56.0
0.558537	39.9	9.000	N	19.9	16.1	56.0
1.130728	37.7	9.000	N	20.0	18.3	56.0
1.556659	38.7	9.000	N	20.0	17.3	56.0
1.623363	39.5	9.000	N	20.0	16.5	56.0

Frequency (MHz)	Average (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.506447	33.0	9.000	N	19.9	13.0	46.0
0.563019	35.1	9.000	N	19.9	10.9	46.0
0.565274	34.4	9.000	N	19.9	11.6	46.0
1.058579	31.0	9.000	N	19.9	15.0	46.0
1.130728	32.3	9.000	N	20.0	13.7	46.0
1.623363	33.3	9.000	N	20.0	12.7	46.0

FCC §15.209, §15.205 & §15.407(b) (1) (2) (4) (6) (7) – UNDESIRABLE EMISSION, RESTRICTED BANDS & BAND EDGE

Applicable Standard

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

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.

For transmitters operating in the 5.725-5.85 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.

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

According to KDB 789033 D02 General UNII Test Procedures v01, emission shall be computed as:
E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

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.

Measurement Uncertainty

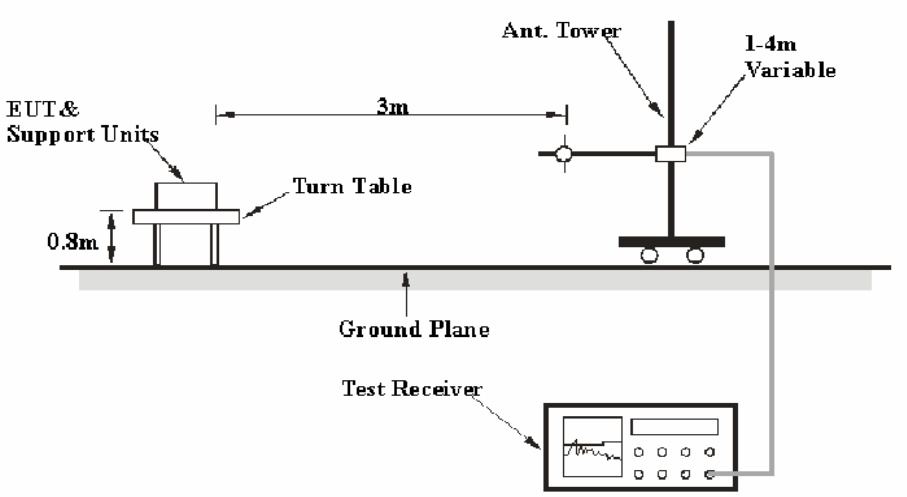
Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

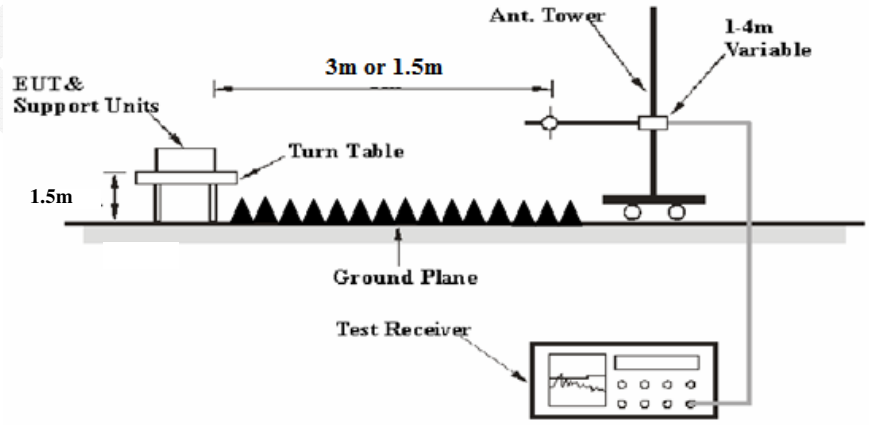
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB ;
200M~1GHz: ±6.0 dB ;
1G-6GHz: ±5.13dB;
6G~40GHz: ±5.47 dB;

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters semi-anechoic chamber, using the setup accordance with the ANSI C63.10-2013. The specification used was 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 spacing between the peripherals was 10 cm.

The adapter was connected to AC 120V/60Hz 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	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all 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 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2015-12-02	2016-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2015-12-02	2016-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
EM TEST	Horn Antenna	3115	003-6076	2015-12-02	2016-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-5-20	2017-5-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2015-11-10	2016-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2015-11-10	2016-11-09

N/A	RF Cable (above 1GHz)	NO.2	N/A	2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09
Rohde & Schwarz	EMC32	N/A	V 8.54.0	N/A	N/A

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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 = Receiver Reading + Cable loss + Antenna Factor – Amplifier Gain

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

Margin = Limit-Corrected Amplitude

Test Results Summary

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

Test Data

Environmental Conditions

Temperature:	29 °C
Relative Humidity:	68 %
ATM Pressure:	94.7 kPa

The testing was performed by Mill Chen on 2016-08-08.

Test mode: Transmitting (Worst Case)

5150-5250 MHz:

For 802.11a mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5180 MHz									
5180	70.9	PK	H	31.80	4.86	0.00	107.56	N/A	N/A
5180	60.38	AV	H	31.80	4.86	0.00	97.04	N/A	N/A
5180	73.61	PK	V	31.80	4.86	0.00	110.27	N/A	N/A
5180	63.2	AV	V	31.80	4.86	0.00	99.86	N/A	N/A
10360	40.82	PK	V	37.40	6.70	24.20	60.72	74.00	13.28
10360	30.41	AV	V	37.40	6.70	24.20	50.31	54.00	***3.69**
15540	35.76	PK	V	39.40	6.95	21.95	60.16	74.00	13.84
15540	25.18	AV	V	39.40	6.95	21.95	49.58	54.00	*4.42
5150	46.85	PK	V	31.40	4.85	26.81	56.29	74.00	17.71
5150	35.96	AV	V	31.40	4.85	26.81	45.40	54.00	8.60
5025	45.4	PK	V	31.10	4.80	26.77	54.53	74.00	19.47
5025	35.87	AV	V	31.10	4.80	26.77	45.00	54.00	9.00
332	51.01	QP	V	13.50	0.26	26.20	38.57	46.00	7.43

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5220 MHz									
5220	69.28	PK	H	31.80	4.86	0.00	105.94	N/A	N/A
5220	57.22	AV	H	31.80	4.86	0.00	93.88	N/A	N/A
5220	73.27	PK	V	31.80	4.86	0.00	109.93	N/A	N/A
5220	60.65	AV	V	31.80	4.86	0.00	97.31	N/A	N/A
10440	35.49	PK	V	37.40	6.70	24.20	55.39	74.00	18.61
10440	24.89	AV	V	37.40	6.70	24.20	44.79	54.00	9.21
15660	34.32	PK	V	39.40	6.95	21.95	58.72	74.00	15.28
15660	23.44	AV	V	39.40	6.95	21.95	47.84	54.00	6.16
5025	46.93	PK	V	31.10	4.80	26.77	56.06	74.00	17.94
5025	35.54	AV	V	31.10	4.80	26.77	44.67	54.00	9.33
5390	42.24	PK	V	31.80	4.90	26.83	52.11	74.00	21.89
5390	33.04	AV	V	31.80	4.90	26.83	42.91	54.00	11.09
332	50.53	QP	V	13.50	0.26	26.20	38.09	46.00	7.91
5240 MHz									
5240	67.57	PK	H	31.80	4.86	0.00	104.23	N/A	N/A
5240	57.31	AV	H	31.80	4.86	0.00	93.97	N/A	N/A
5240	70.97	PK	V	31.80	4.86	0.00	107.63	N/A	N/A
5240	58.89	AV	V	31.80	4.86	0.00	95.55	N/A	N/A
10480	39.28	PK	V	37.40	6.70	24.20	59.18	74.00	14.82
10480	28.7	AV	V	37.40	6.70	24.20	48.60	54.00	*5.40
15720	33.55	PK	V	39.40	6.95	21.95	57.95	74.00	16.05
15720	23.44	AV	V	39.40	6.95	21.95	47.84	54.00	6.16
5350	45.25	PK	V	31.40	4.88	26.79	54.74	74.00	19.26
5350	37.48	AV	V	31.40	4.88	26.79	46.97	54.00	7.03
5025	46.29	PK	V	31.10	4.80	26.77	55.42	74.00	18.58
5025	35	AV	V	31.10	4.80	26.77	44.13	54.00	9.87
332	49.67	QP	V	13.50	0.26	26.20	37.23	46.00	8.77

**Within measurement uncertainty!*

For 802.11n HT20 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5180 MHz									
5180	68.78	PK	H	31.80	4.86	0.00	105.44	N/A	N/A
5180	58.02	AV	H	31.80	4.86	0.00	94.68	N/A	N/A
5180	72.21	PK	V	31.80	4.86	0.00	108.87	N/A	N/A
5180	59.51	AV	V	31.80	4.86	0.00	96.17	N/A	N/A
10360	38.44	PK	V	37.40	6.70	24.20	58.34	74.00	15.66
10360	27.32	AV	V	37.40	6.70	24.20	47.22	54.00	6.78
15540	33.07	PK	V	39.40	6.95	21.95	57.47	74.00	16.53
15540	23.11	AV	V	39.40	6.95	21.95	47.51	54.00	6.49
5150	44.28	PK	V	31.40	4.85	26.81	53.72	74.00	20.28
5150	34.02	AV	V	31.40	4.85	26.81	43.46	54.00	10.54
5025	40.43	PK	V	31.10	4.80	26.77	49.56	74.00	24.44
5025	31.68	AV	V	31.10	4.80	26.77	40.81	54.00	13.19
332	49.26	QP	V	13.50	0.26	26.20	36.82	46.00	9.18
5220 MHz									
5220	69.52	PK	H	31.80	4.86	0.00	106.18	N/A	N/A
5220	56.53	AV	H	31.80	4.86	0.00	93.19	N/A	N/A
5220	73.18	PK	V	31.80	4.86	0.00	109.84	N/A	N/A
5220	58.31	AV	V	31.80	4.86	0.00	94.97	N/A	N/A
10440	38.28	PK	V	37.40	6.70	24.20	58.18	74.00	15.82
10440	27.17	AV	V	37.40	6.70	24.20	47.07	54.00	6.93
15660	33.59	PK	V	39.40	6.95	21.95	57.99	74.00	16.01
15660	21.95	AV	V	39.40	6.95	21.95	46.35	54.00	7.65
5025	44.21	PK	V	31.10	4.80	26.77	53.34	74.00	20.66
5025	34	AV	V	31.10	4.80	26.77	43.13	54.00	10.87
5390	42.85	PK	V	31.80	4.90	26.83	52.72	74.00	21.28
5390	33.38	AV	V	31.80	4.90	26.83	43.25	54.00	10.75
332	49.35	QP	V	13.50	0.26	26.20	36.91	46.00	9.09

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5240 MHz									
5240	68.79	PK	H	31.80	4.86	0.00	105.45	N/A	N/A
5240	55.67	AV	H	31.80	4.86	0.00	92.33	N/A	N/A
5240	70.94	PK	V	31.80	4.86	0.00	107.60	N/A	N/A
5240	56.87	AV	V	31.80	4.86	0.00	93.53	N/A	N/A
10480	37.48	PK	V	37.40	6.70	24.20	57.38	74.00	16.62
10480	27.84	AV	V	37.40	6.70	24.20	47.74	54.00	6.26
15720	33.47	PK	V	39.40	6.95	21.95	57.87	74.00	16.13
15720	21.89	AV	V	39.40	6.95	21.95	46.29	54.00	7.71
5350	43.58	PK	V	31.40	4.88	26.79	53.07	74.00	20.93
5350	35.06	AV	V	31.40	4.88	26.79	44.55	54.00	9.45
5025	39.38	PK	V	31.10	4.80	26.77	48.51	74.00	25.49
5025	33.26	AV	V	31.10	4.80	26.77	42.39	54.00	11.61
332	48.61	QP	V	13.50	0.26	26.20	36.17	46.00	9.83

For 802.11n HT40 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5190 MHz									
5190	67	PK	H	31.80	4.86	0.00	103.66	N/A	N/A
5190	54.82	AV	H	31.80	4.86	0.00	91.48	N/A	N/A
5190	71.41	PK	V	31.80	4.86	0.00	108.07	N/A	N/A
5190	61.21	AV	V	31.80	4.86	0.00	97.87	N/A	N/A
10380	38.46	PK	V	37.40	6.70	24.20	58.36	74.00	15.64
10380	28.27	AV	V	37.40	6.70	24.20	48.17	54.00	5.83
15570	34.23	PK	V	39.40	6.95	21.95	58.63	74.00	15.37
15570	23.61	AV	V	39.40	6.95	21.95	48.01	54.00	5.99
5150	43.25	PK	V	31.40	4.85	26.81	52.69	74.00	21.31
5150	33.41	AV	V	31.40	4.85	26.81	42.85	54.00	11.15
5025	44.77	PK	V	31.10	4.80	26.77	53.90	74.00	20.10
5025	34.35	AV	V	31.10	4.80	26.77	43.48	54.00	10.52
332	49.13	QP	V	13.50	0.26	26.20	36.69	46.00	9.31
5230 MHz									
5230	71.21	PK	H	31.80	4.86	0.00	107.87	N/A	N/A
5230	59.12	AV	H	31.80	4.86	0.00	95.78	N/A	N/A
5230	72.74	PK	V	31.80	4.86	0.00	109.40	N/A	N/A
5230	61.52	AV	V	31.80	4.86	0.00	98.18	N/A	N/A
10460	39.92	PK	V	37.40	6.70	24.20	59.82	74.00	14.18
10460	28.69	AV	V	37.40	6.70	24.20	48.59	54.00	*5.41
15690	34.81	PK	V	39.40	6.95	21.95	59.21	74.00	14.79
15690	24.31	AV	V	39.40	6.95	21.95	48.71	54.00	*5.29
5350	44.43	PK	V	31.40	4.88	26.79	53.92	74.00	20.08
5350	34.87	AV	V	31.40	4.88	26.79	44.36	54.00	9.64
5025	43.45	PK	V	31.10	4.80	26.77	52.58	74.00	21.42
5025	33.78	AV	V	31.10	4.80	26.77	42.91	54.00	11.09
332	48.74	QP	V	13.50	0.26	26.20	36.30	46.00	9.70

**Within measurement uncertainty!*

For 802.11ac 80 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5210 MHz									
5210	70.11	PK	H	31.80	4.86	0.00	106.77	N/A	N/A
5210	59.68	AV	H	31.80	4.86	0.00	96.34	N/A	N/A
5210	75.12	PK	V	31.80	4.86	0.00	111.78	N/A	N/A
5210	61.21	AV	V	31.80	4.86	0.00	97.87	N/A	N/A
10420	38.81	PK	V	37.40	6.70	24.20	58.71	74.00	15.29
10420	27.8	AV	V	37.40	6.70	24.20	47.70	54.00	6.30
15630	34.73	PK	V	39.40	6.95	21.95	59.13	74.00	14.87
15630	23.06	AV	V	39.40	6.95	21.95	47.46	54.00	6.54
5150	45.82	PK	V	31.40	4.85	26.81	55.26	74.00	18.74
5150	35.8	AV	V	31.40	4.85	26.81	45.24	54.00	8.76
5350	44.1	PK	V	31.40	4.88	26.79	53.59	74.00	20.41
5350	33.48	AV	V	31.40	4.88	26.79	42.97	54.00	11.03
332	51.39	QP	V	13.50	0.26	26.20	38.95	46.00	7.05

5725-5850 MHz

For 802.11a mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5745 MHz									
5745	70.07	PK	H	32.50	4.95	0.00	107.52	N/A	N/A
5745	57.47	AV	H	32.50	4.95	0.00	94.92	N/A	N/A
5745	75.29	PK	V	32.50	4.95	0.00	112.74	N/A	N/A
5745	64.72	AV	V	32.50	4.95	0.00	102.17	N/A	N/A
11490	41.11	PK	V	38.00	6.34	23.80	61.65	74.00	12.35
11490	27.45	AV	V	38.00	6.34	23.80	47.99	54.00	6.01
17235	34.51	PK	V	43.30	6.45	22.40	61.86	74.00	12.14
17235	19.48	AV	V	43.30	6.45	22.40	46.83	54.00	7.17
5724	46.31	PK	V	32.50	4.95	26.55	57.21	110.8	53.59
5724	51.74	PK	H	32.50	4.95	26.55	62.64	110.8	48.16
5718	57.25	PK	V	32.50	4.95	26.55	68.15	105.20	37.05
5718	47.84	PK	H	32.50	4.95	26.55	58.74	105.20	46.46
5643	43.15	PK	V	32.30	4.85	26.33	53.97	68.20	14.23
5643	46.13	PK	H	32.30	4.85	26.33	56.95	68.20	11.25
332	48.51	QP	V	13.50	0.26	26.20	36.07	46.00	9.93
5785 MHz									
5785	72.6	PK	H	32.50	4.95	0.00	110.05	N/A	N/A
5785	59.95	AV	H	32.50	4.95	0.00	97.40	N/A	N/A
5785	74.38	PK	V	32.50	4.95	0.00	111.83	N/A	N/A
5785	62.8	AV	V	32.50	4.95	0.00	100.25	N/A	N/A
11570	40.37	PK	V	38.00	6.34	23.80	60.91	74.00	13.09
11570	26.66	AV	V	38.00	6.34	23.80	47.20	54.00	6.80
17355	34.13	PK	V	43.30	6.45	22.40	61.48	74.00	12.52
17355	20.18	AV	V	43.30	6.45	22.40	47.53	54.00	6.47
5936	47.88	PK	V	32.50	5.10	26.93	58.55	74.00	15.45
5936	35.8	AV	V	32.50	5.10	26.93	46.47	54.00	7.53
6251	47.33	PK	V	32.80	5.13	27.13	58.13	74.00	15.87
6251	35.13	AV	V	32.80	5.13	27.13	45.93	54.00	8.07
332	48.58	QP	V	13.50	0.26	26.20	36.14	46.00	9.86

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5825 MHz									
5825	72.73	PK	H	32.50	4.95	0.00	110.18	N/A	N/A
5825	61.57	AV	H	32.50	4.95	0.00	99.02	N/A	N/A
5825	76.13	PK	V	32.50	4.95	0.00	113.58	N/A	N/A
5825	63.83	AV	V	32.50	4.95	0.00	101.28	N/A	N/A
11650	37.42	PK	V	38.00	6.34	23.80	57.96	74.00	16.04
11650	22.18	AV	V	38.00	6.34	23.80	42.72	54.00	11.28
17475	34.24	PK	V	43.30	6.45	22.40	61.59	74.00	12.41
17475	18.42	AV	V	43.30	6.45	22.40	45.77	54.00	8.23
5854	47.52	PK	V	32.80	4.50	26.93	57.89	110.8	52.91
5854	42.36	PK	H	32.80	4.50	26.93	52.73	110.8	58.07
5858	49.86	PK	V	32.80	4.50	26.93	60.23	105.20	44.97
5858	45.63	PK	H	32.80	4.50	26.93	56.00	105.20	49.20
5933	43.69	PK	V	33.10	4.70	27.10	54.39	68.20	13.81
5933	44.74	PK	H	33.10	4.70	27.10	55.44	68.20	12.76
332	49.53	QP	V	13.50	0.26	26.20	37.09	46.00	8.91

For 802.11n HT20 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5745 MHz									
5745	70.73	PK	H	32.50	4.95	0.00	108.18	N/A	N/A
5745	61.01	AV	H	32.50	4.95	0.00	98.46	N/A	N/A
5745	74.4	PK	V	32.50	4.95	0.00	111.85	N/A	N/A
5745	63.62	AV	V	32.50	4.95	0.00	101.07	N/A	N/A
11490	39.87	PK	V	38.00	6.34	23.80	60.41	74.00	13.59
11490	26.27	AV	V	38.00	6.34	23.80	46.81	54.00	7.19
17235	34.52	PK	V	43.30	6.45	22.40	61.87	74.00	12.13
17235	19.05	AV	V	43.30	6.45	22.40	46.40	54.00	7.60
5724	51.15	PK	V	32.50	4.95	26.55	62.05	110.8	48.75
5724	53.75	PK	H	32.50	4.95	26.55	64.65	110.8	46.15
5718	55.12	PK	V	32.50	4.95	26.55	66.02	105.20	39.18
5718	49.21	PK	H	32.50	4.95	26.55	60.11	105.20	45.09
5643	45.31	PK	V	32.30	4.85	26.33	56.13	68.20	12.07
5643	48.55	PK	H	32.30	4.85	26.33	59.37	68.20	8.83
332	49.2	QP	V	13.50	0.26	26.20	36.76	46.00	9.24
5785 MHz									
5785	67.45	PK	H	32.50	4.95	0.00	104.90	N/A	N/A
5785	57.59	AV	H	32.50	4.95	0.00	95.04	N/A	N/A
5785	70.6	PK	V	32.50	4.95	0.00	108.05	N/A	N/A
5785	58.6	AV	V	32.50	4.95	0.00	96.05	N/A	N/A
11570	39.47	PK	V	38.00	6.34	23.80	60.01	74.00	13.99
11570	25.54	AV	V	38.00	6.34	23.80	46.08	54.00	7.92
17355	32.57	PK	V	43.30	6.45	22.40	59.92	74.00	14.08
17355	20.09	AV	V	43.30	6.45	22.40	47.44	54.00	6.56
5936	43.89	PK	V	32.50	5.10	26.93	54.56	74.00	19.44
5936	32.39	AV	V	32.50	5.10	26.93	43.06	54.00	10.94
6251	46.39	PK	V	32.80	5.13	27.13	57.19	74.00	16.81
6251	30.8	AV	V	32.80	5.13	27.13	41.60	54.00	12.40
332	48.24	QP	V	13.50	0.26	26.20	35.80	46.00	10.20

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5825 MHz									
5825	69.5	PK	H	32.50	4.95	0.00	106.95	N/A	N/A
5825	60.95	AV	H	32.50	4.95	0.00	98.40	N/A	N/A
5825	72.58	PK	V	32.50	4.95	0.00	110.03	N/A	N/A
5825	64.12	AV	V	32.50	4.95	0.00	101.57	N/A	N/A
11650	43.37	PK	V	38.00	6.34	23.80	63.91	74.00	10.09
11650	28.14	AV	V	38.00	6.34	23.80	48.68	54.00	*5.32
17475	35.32	PK	V	43.30	6.45	22.40	62.67	74.00	11.33
17475	20.74	AV	V	43.30	6.45	22.40	48.09	54.00	5.91
5854	51.32	PK	V	32.80	4.50	26.93	61.69	110.8	49.11
5854	47.63	PK	H	32.80	4.50	26.93	58.00	110.8	52.8
5858	48.66	PK	V	32.80	4.50	26.93	59.03	105.20	46.17
5858	43.74	PK	H	32.80	4.50	26.93	54.11	105.20	51.09
5933	46.41	PK	V	33.10	4.70	27.10	57.11	68.20	11.09
5933	45.31	PK	H	33.10	4.70	27.10	56.01	68.20	12.19
332	48.51	QP	V	13.50	0.26	26.20	36.07	46.00	9.93

**Within measurement uncertainty!*

For 802.11n HT40 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5755 MHz									
5755	70.54	PK	H	32.50	4.95	0.00	107.99	N/A	N/A
5755	63.7	AV	H	32.50	4.95	0.00	101.15	N/A	N/A
5755	75.17	PK	V	32.50	4.95	0.00	112.62	N/A	N/A
5755	63.56	AV	V	32.50	4.95	0.00	101.01	N/A	N/A
11510	38.47	PK	V	38.00	6.34	23.80	59.01	74.00	14.99
11510	24.85	AV	V	38.00	6.34	23.80	45.39	54.00	8.61
17265	30.83	PK	V	43.30	6.45	22.40	58.18	74.00	15.82
17265	18.96	AV	V	43.30	6.45	22.40	46.31	54.00	7.69
5724	49.18	PK	V	32.50	4.95	26.55	60.08	110.8	50.72
5724	48.66	PK	H	32.50	4.95	26.55	59.56	110.8	51.24
5718	54.31	PK	V	32.50	4.95	26.55	65.21	105.20	39.99
5718	51.75	PK	H	32.50	4.95	26.55	62.65	105.20	42.55
5643	44.63	PK	V	32.30	4.85	26.33	55.45	68.20	12.75
5643	45.36	PK	H	32.30	4.85	26.33	56.18	68.20	12.02
332	49.88	QP	V	13.50	0.26	26.20	37.44	46.00	8.56
5795 MHz									
5795	70.17	PK	H	32.50	4.95	0.00	107.62	N/A	N/A
5795	59.37	AV	H	32.50	4.95	0.00	96.82	N/A	N/A
5795	73.44	PK	V	32.50	4.95	0.00	110.89	N/A	N/A
5795	57.48	AV	V	32.50	4.95	0.00	94.93	N/A	N/A
11590	40.05	PK	V	38.00	6.34	23.80	60.59	74.00	13.41
11590	26.17	AV	V	38.00	6.34	23.80	46.71	54.00	7.29
17385	34.11	PK	V	43.30	6.45	22.40	61.46	74.00	12.54
17385	19.78	AV	V	43.30	6.45	22.40	47.13	54.00	6.87
5854	52.15	PK	V	32.80	4.50	26.93	62.52	111.50	48.98
5854	49.12	PK	H	32.80	4.50	26.93	59.49	111.50	52.01
5858	50.36	PK	V	32.80	4.50	26.93	60.73	105.20	44.47
5858	52.13	PK	H	32.80	4.50	26.93	62.50	105.20	42.70
5933	45.85	PK	V	33.10	4.70	27.10	56.55	68.20	11.65
5933	47.63	PK	H	33.10	4.70	27.10	58.33	68.20	9.87
332	50.12	QP	V	13.50	0.26	26.20	37.68	46.00	8.32

For 802.11ac 80 mode

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
5775 MHz									
5755	69.14	PK	H	32.50	4.95	0.00	106.59	N/A	N/A
5755	60.99	AV	H	32.50	4.95	0.00	98.44	N/A	N/A
5755	71.24	PK	V	32.50	4.95	0.00	108.69	N/A	N/A
5755	62.16	AV	V	32.50	4.95	0.00	99.61	N/A	N/A
11510	38.95	PK	V	38.00	6.34	23.80	59.49	74.00	14.51
11510	24.48	AV	V	38.00	6.34	23.80	45.02	54.00	8.98
17265	32.27	PK	V	43.30	6.45	22.40	59.62	74.00	14.38
17265	19.92	AV	V	43.30	6.45	22.40	47.27	54.00	6.73
5724	47.85	PK	V	32.50	4.95	26.55	58.75	110.8	52.05
5724	50.51	PK	H	32.50	4.95	26.55	61.41	110.8	49.39
5718	59.33	PK	V	32.50	4.95	26.55	70.23	105.20	34.97
5718	52.31	PK	H	32.50	4.95	26.55	63.21	105.20	41.99
5643	41.74	PK	V	32.30	4.85	26.33	52.56	68.20	15.64
5643	45.81	PK	H	32.30	4.85	26.33	56.63	68.20	11.57
5854	51.46	PK	V	32.80	4.50	26.93	61.83	111.50	49.67
5854	49.16	PK	H	32.80	4.50	26.93	59.53	111.50	51.97
5858	55.38	PK	V	32.80	4.50	26.93	65.75	105.20	39.45
5858	53.61	PK	H	32.80	4.50	26.93	63.98	105.20	41.22
5933	47.61	PK	V	33.10	4.70	27.10	58.31	68.20	9.89
5933	44.85	PK	H	33.10	4.70	27.10	55.55	68.20	12.65
332	48.25	QP	V	13.50	0.26	26.20	35.81	46.00	10.19

Note:
Corrected Amplitude = Receiver Reading + Cable loss + Antenna Factor – Amplifier Gain
Margin = Limit-Corrected Amplitude

For co-location evaluation data

Frequency	Result	Polarity	Detector	Corrected factor	Limit	Margin
MHz	(dBµV/m)	V/H	PK/Ave.	(dB)	(dBµV/m)	(dB)
1621.38	57.43	V	PK	0.44	74	16.57
1621.38	39.75	V	AV	0.44	54	14.25
2583.61	52.64	V	PK	-0.7	74	21.36
2583.61	43.72	V	AV	-0.7	54	10.28
1040.73	58.86	H	PK	-2.03	74	15.14
1040.73	41.71	H	AV	-2.03	54	12.29
1714.47	53.64	H	PK	0.48	74	20.36
1714.47	38.23	H	AV	0.48	54	15.77
120.24	40.6	V	QP	-11.9	43.5	2.9
590.66	43.2	V	QP	-7.7	46.0	2.8

FCC §15.407(a) (1) (3) & (e) – 26dB & 6dB 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
	RF Cable	NO.3		2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3.

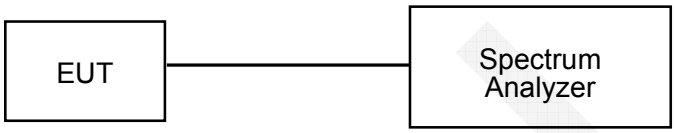
(A) 26dB Bandwidth

Set RBW = approximately 1% of the emission bandwidth.

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

(B) 6dB Bandwidth
Set RBW = 100 kHz. Set the video bandwidth (VBW) ≥ 3 × RBW.
Detector = Peak.Tracemode = max hold. Sweep = auto couple. Allow the trace to stabilize. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

Temperature:	27°C ~ 29°C
Relative Humidity:	65% ~ 50 %
ATM Pressure:	94.9 kPa ~ 94.6 kPa

The testing was performed by Mill Chen from 2016-07-06 to 2016-07-14.

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

Test mode: Transmitting

5150-5250 MHz:

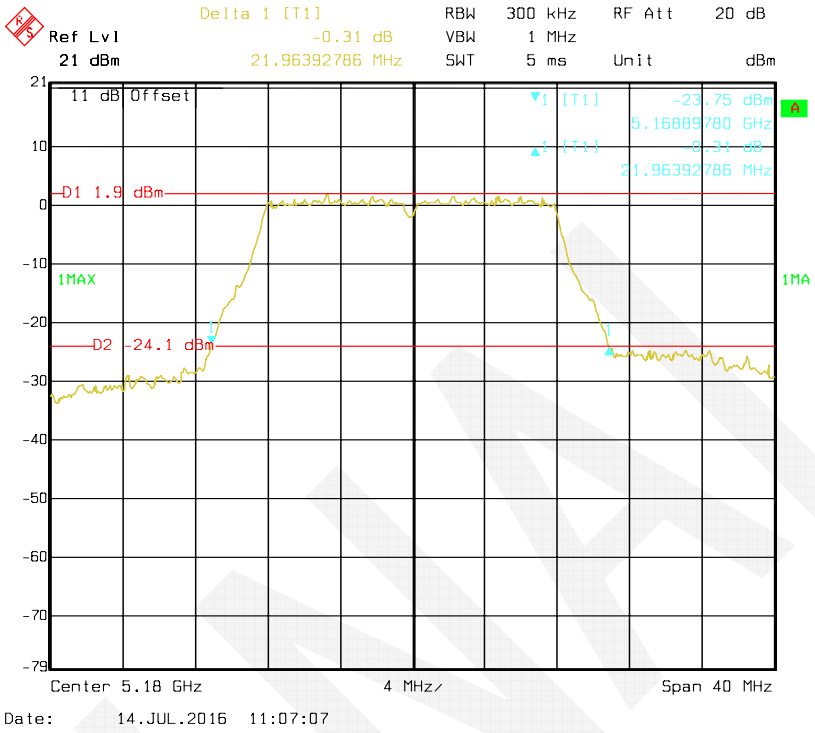
Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			Antenna 1	Antenna 2
802.11a	Low	5180	21.96	22.20
	Middle	5220	22.20	21.88
	High	5240	22.04	21.92
802.11n HT20	Low	5180	22.36	22.36
	Middle	5220	22.52	22.28
	High	5240	22.20	22.24
802.11n HT40	Low	5190	40.04	40.04
	High	5230	40.04	40.16
802.11ac 80	Low	5210	79.84	79.84

5725-5850 MHz:

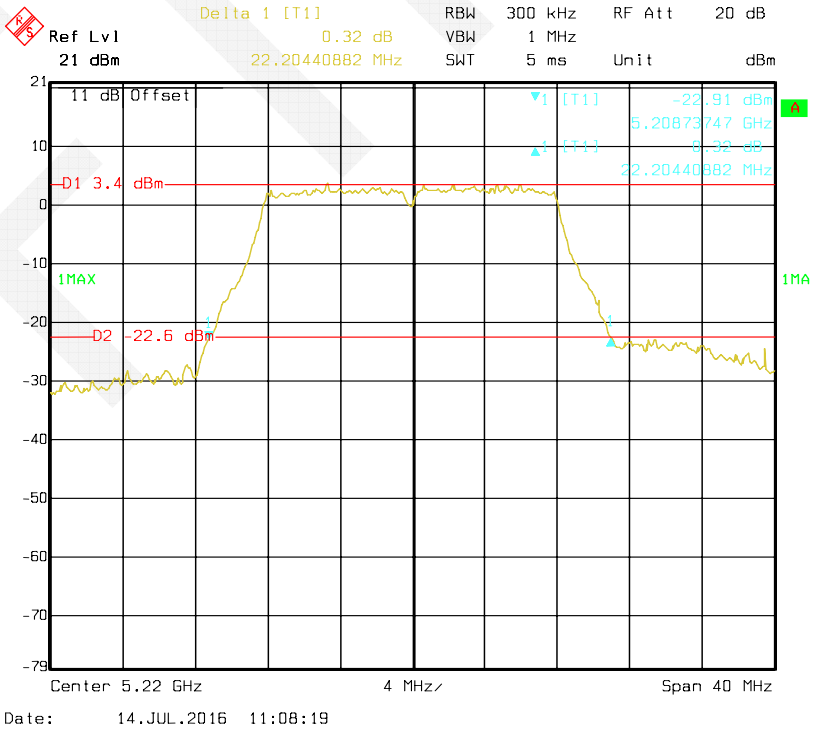
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			Antenna 1	Antenna 2	
802.11a	Low	5745	16.99	16.51	≥0.50
	Middle	5785	16.43	16.51	≥0.50
	High	5825	16.51	16.51	≥0.50
802.11n HT20	Low	5745	17.64	17.64	≥0.50
	Middle	5785	17.72	17.64	≥0.50
	High	5825	17.64	17.64	≥0.50
802.11n HT40	Low	5755	36.43	36.43	≥0.50
	High	5795	36.43	36.43	≥0.50
802.11ac 80	/	5775	76.15	75.95	≥0.50

5150-5250 MHz:

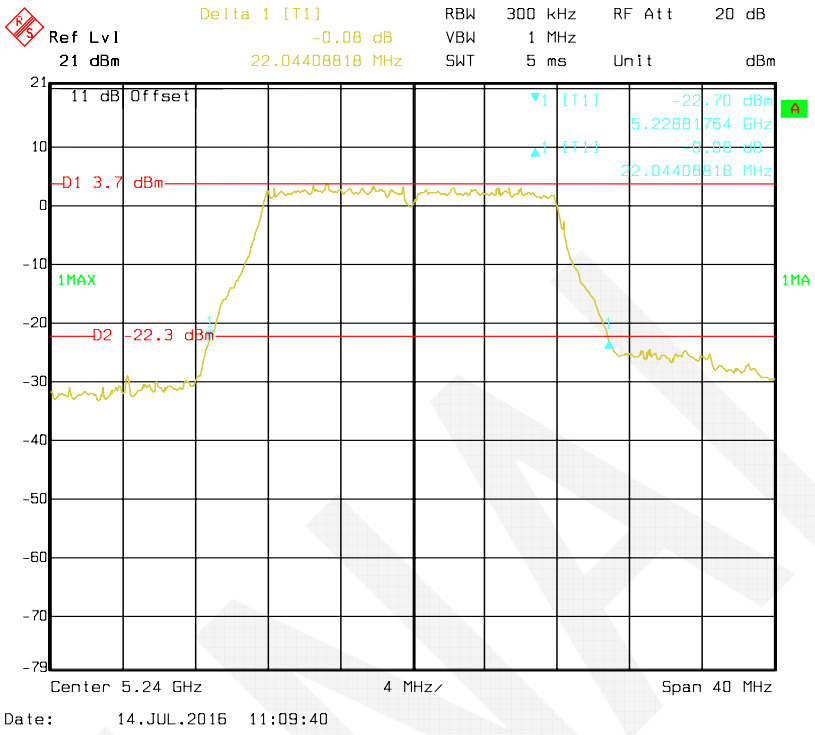
802.11a mode, Antenna 1: 26 dB Bandwidth-5180 MHz



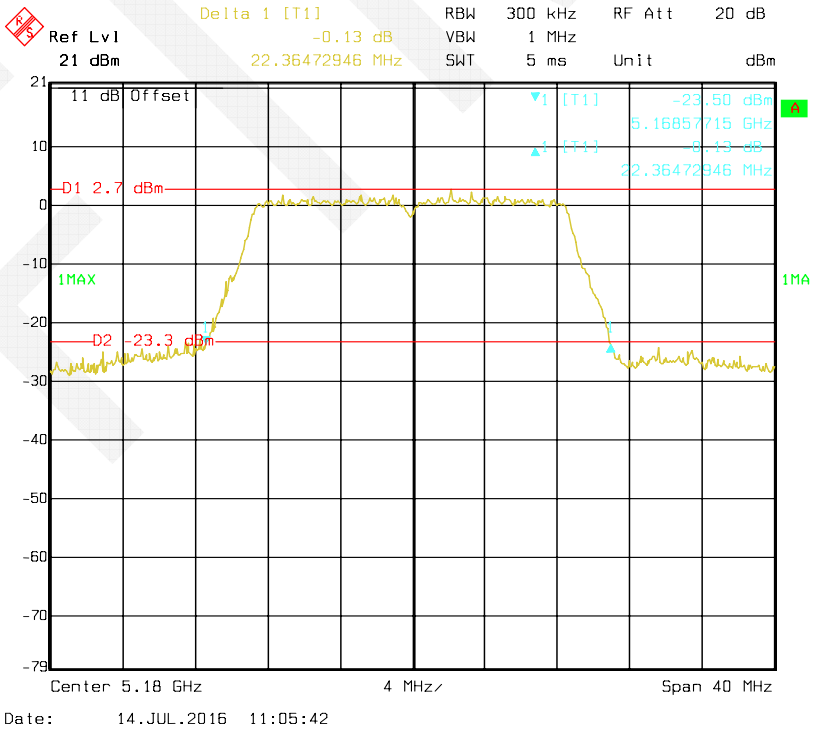
802.11a mode, Antenna 1: 26 dB Bandwidth-5220 MHz



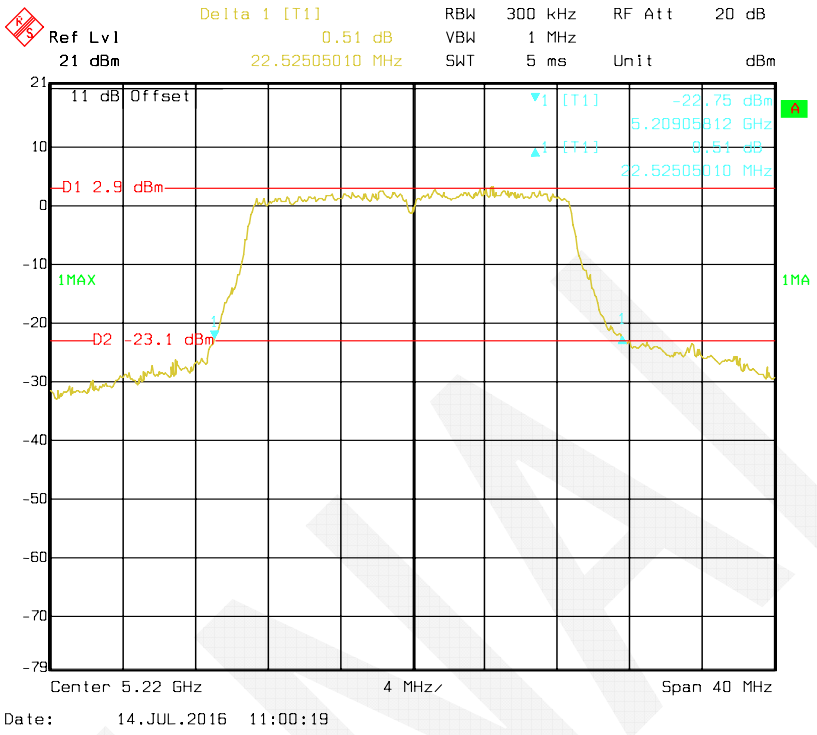
802.11a mode, Antenna 1: 26 dB Bandwidth-5240 MHz



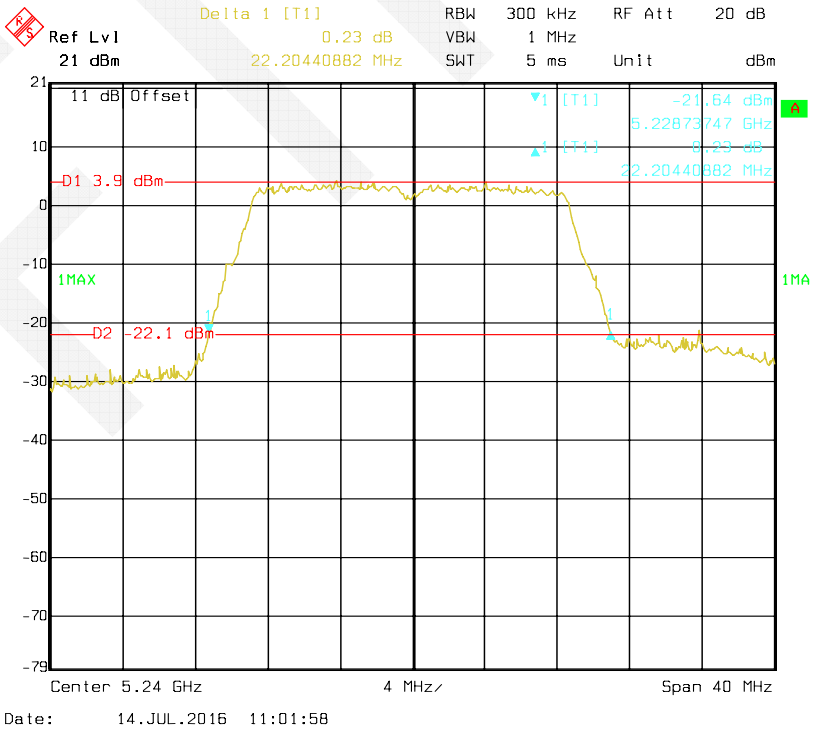
802.11n HT20 mode, Antenna 1: 26 dB Bandwidth-5180 MHz



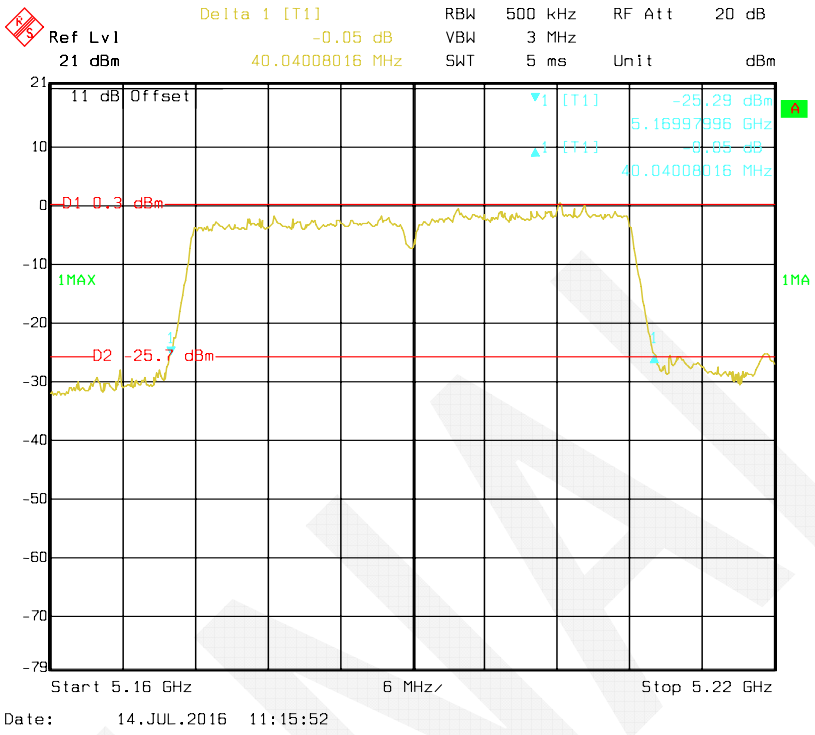
802.11n HT20 mode, Antenna 1: 26 dB Bandwidth-5220 MHz



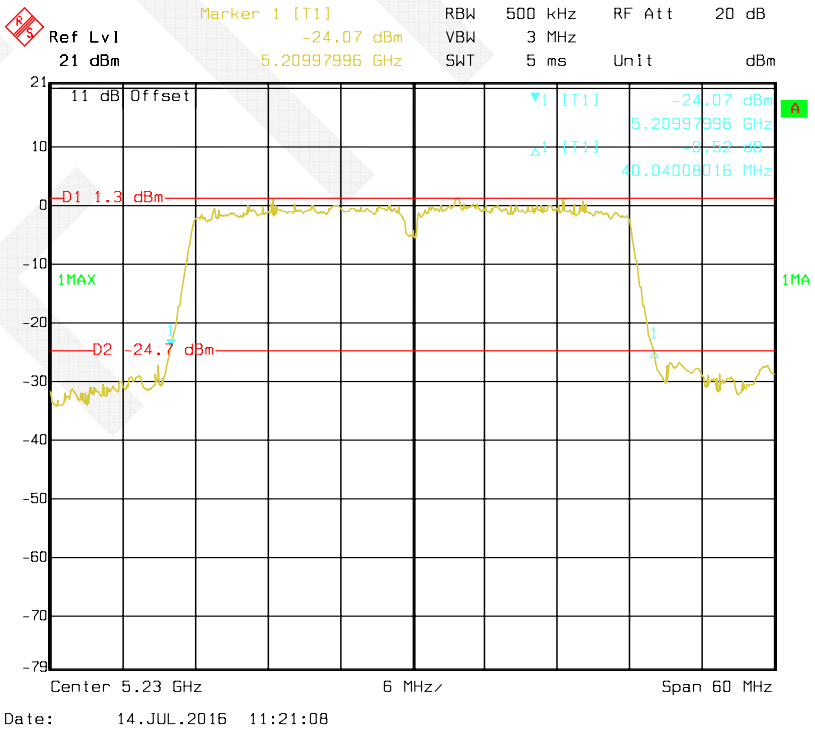
802.11n HT20 mode, Antenna 1: 26 dB Bandwidth-5240 MHz



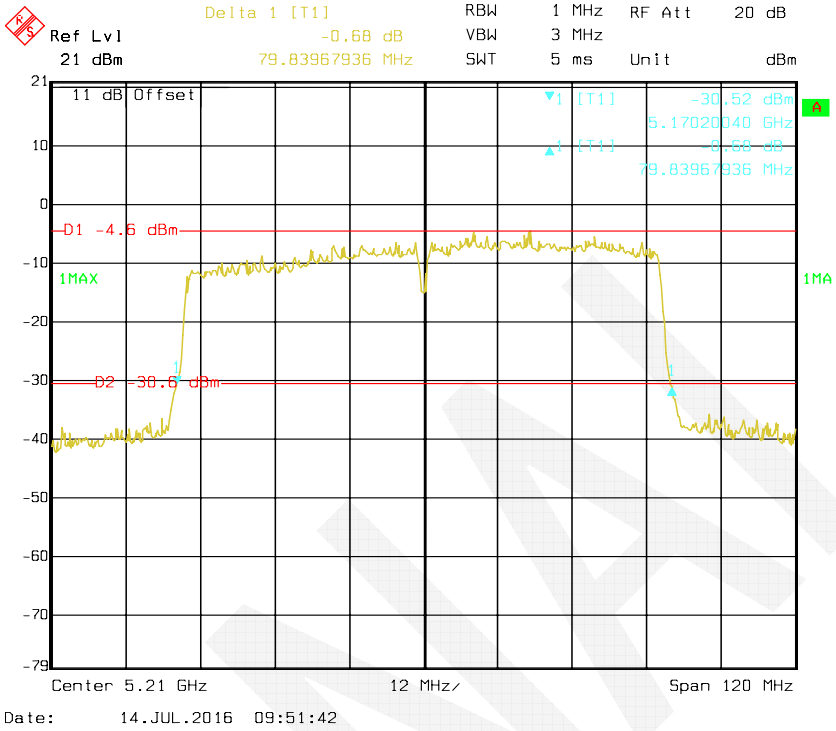
802.11n HT40 mode, Antenna 1: 26 dB Bandwidth-5190 MHz



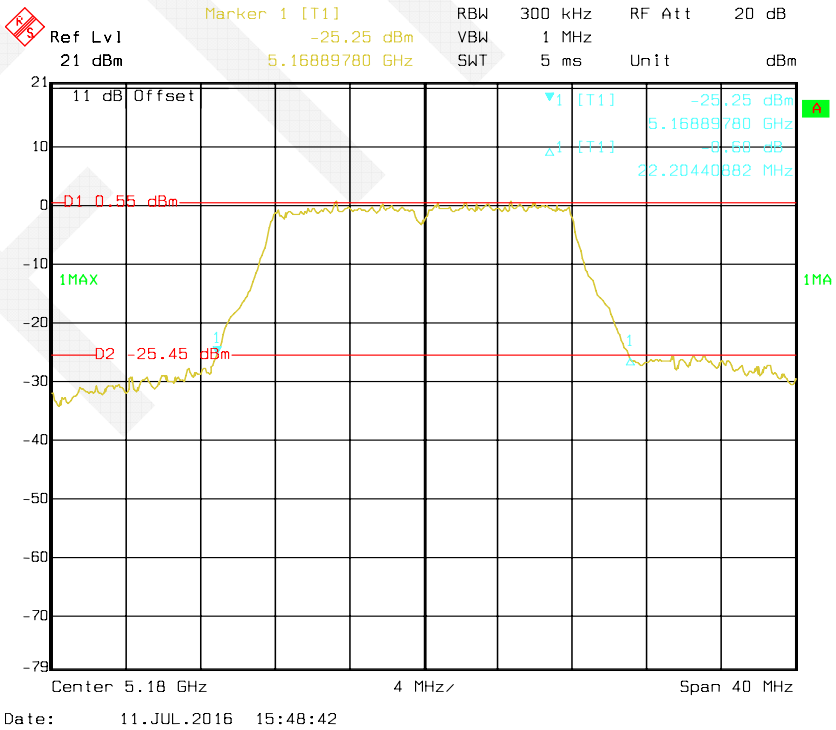
802.11n HT40 mode, Antenna 1: 26 dB Bandwidth-5230 MHz



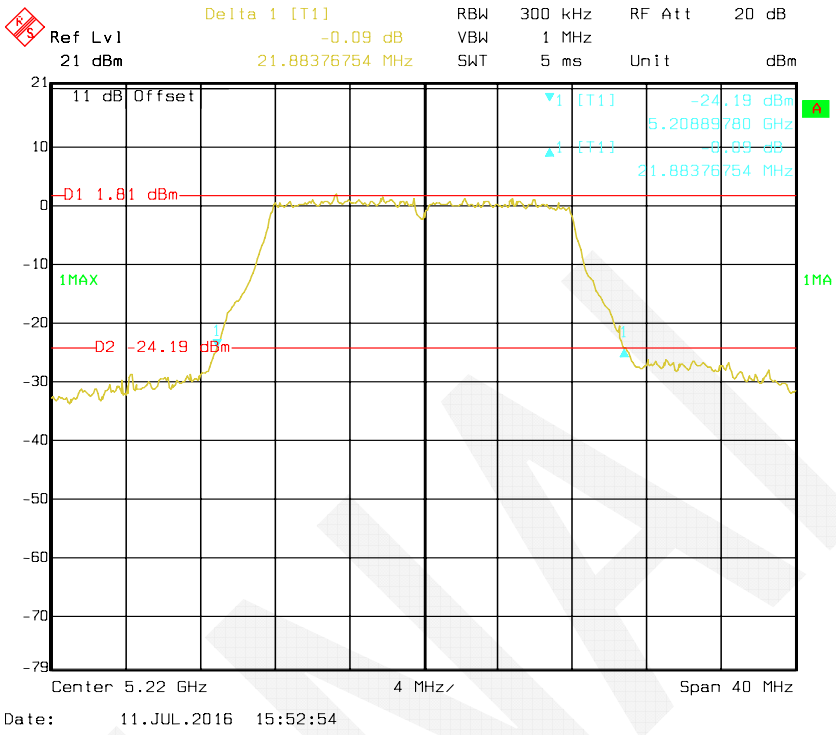
802.11ac 80 mode, Antenna 1: 26 dB Bandwidth-5210 MHz



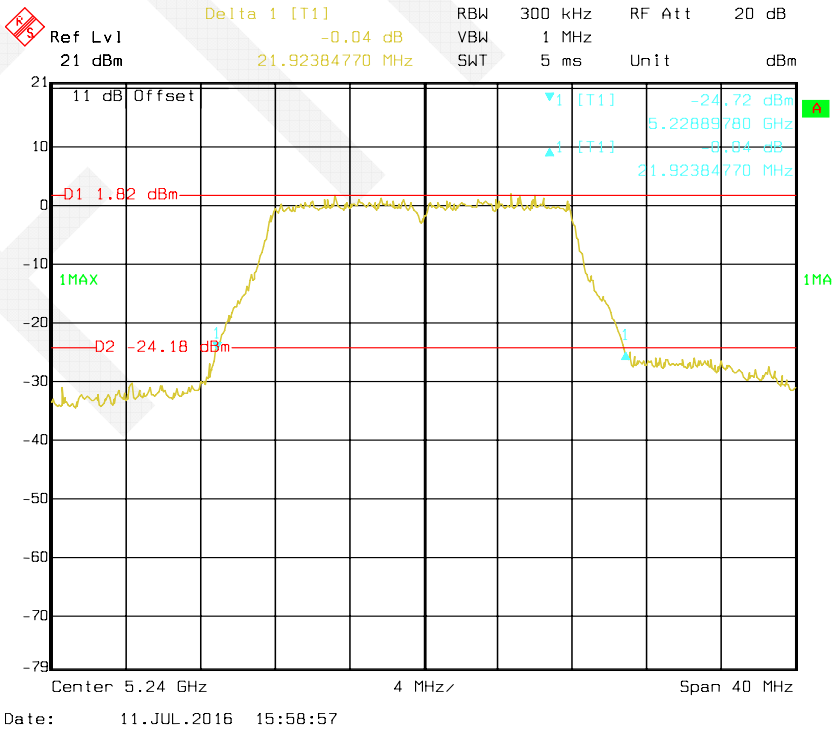
802.11a mode, Antenna 2: 26 dB Bandwidth-5180 MHz



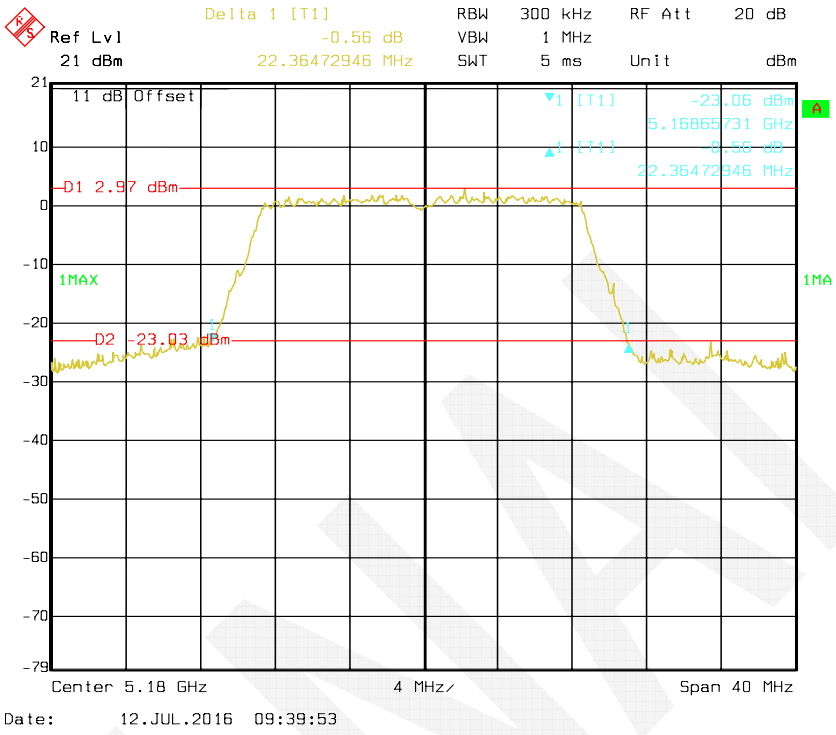
802.11a mode, Antenna 2: 26 dB Bandwidth-5220 MHz



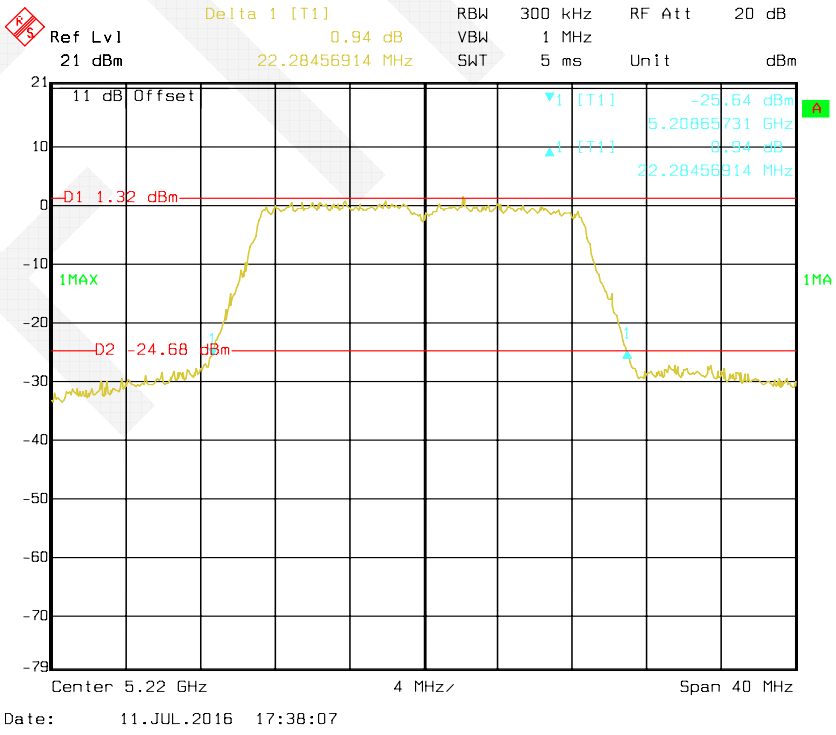
802.11a mode, Antenna 2: 26 dB Bandwidth-5240 MHz



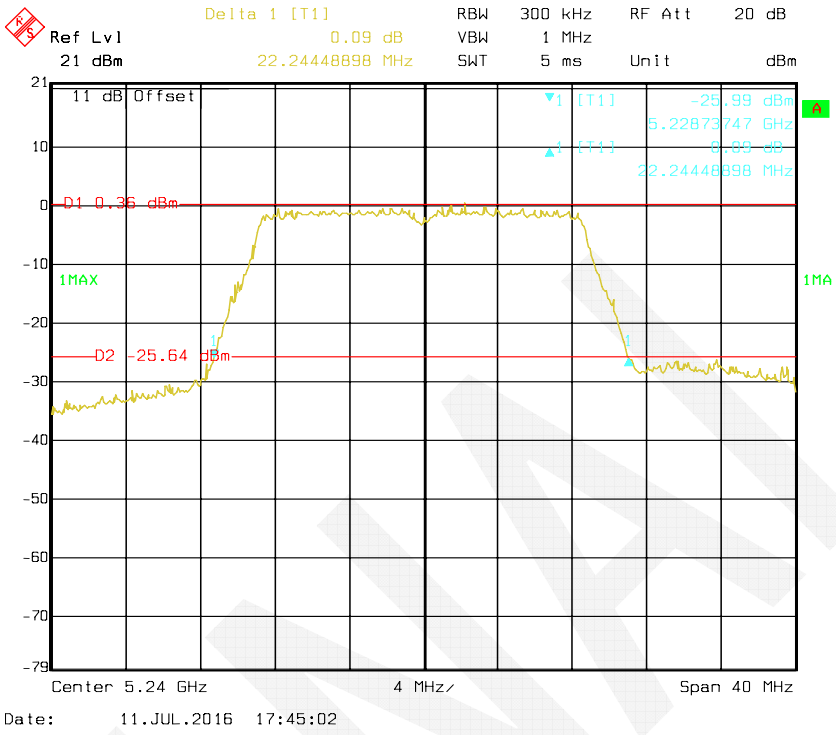
802.11n HT20 mode, Antenna 2: 26 dB Bandwidth-5180 MHz



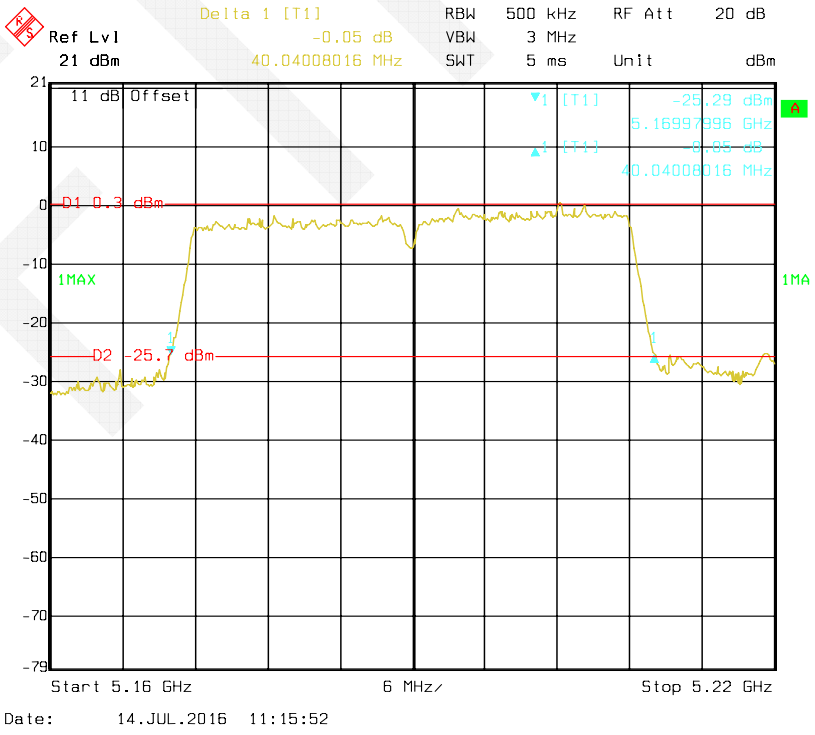
802.11n HT20 mode, Antenna 2: 26 dB Bandwidth-5220 MHz



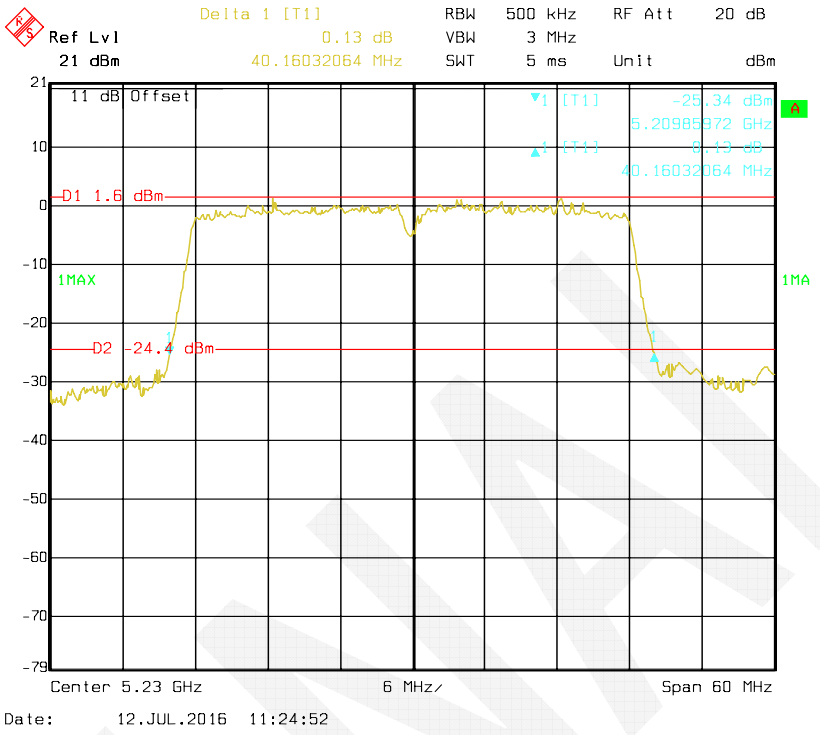
802.11n HT20 mode, Antenna 2: 26 dB Bandwidth-5240 MHz



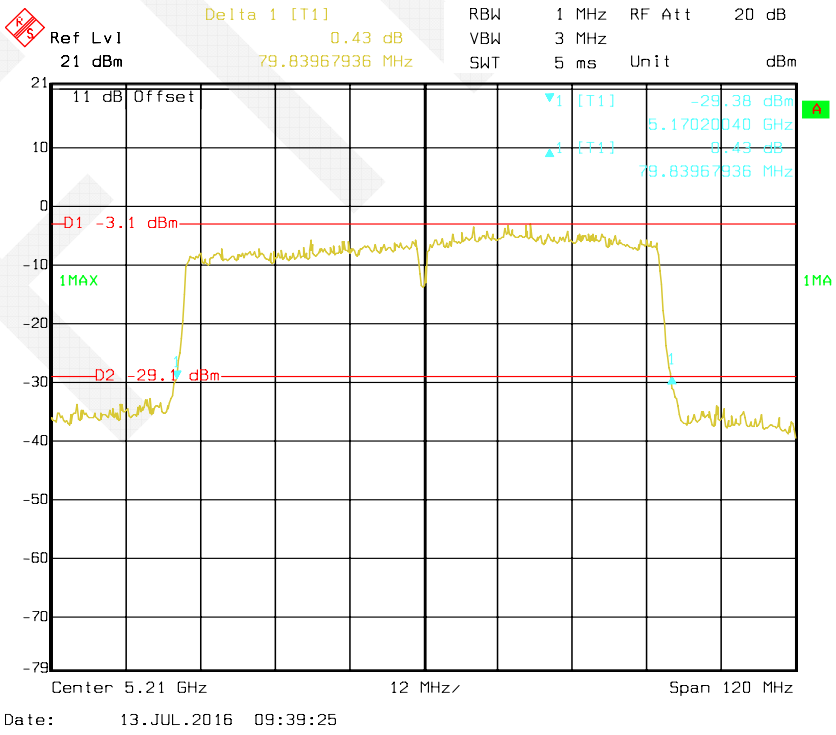
802.11n HT40 mode, Antenna 2: 26 dB Bandwidth-5190 MHz



802.11n HT40 mode, Antenna 2: 26 dB Bandwidth-5230 MHz

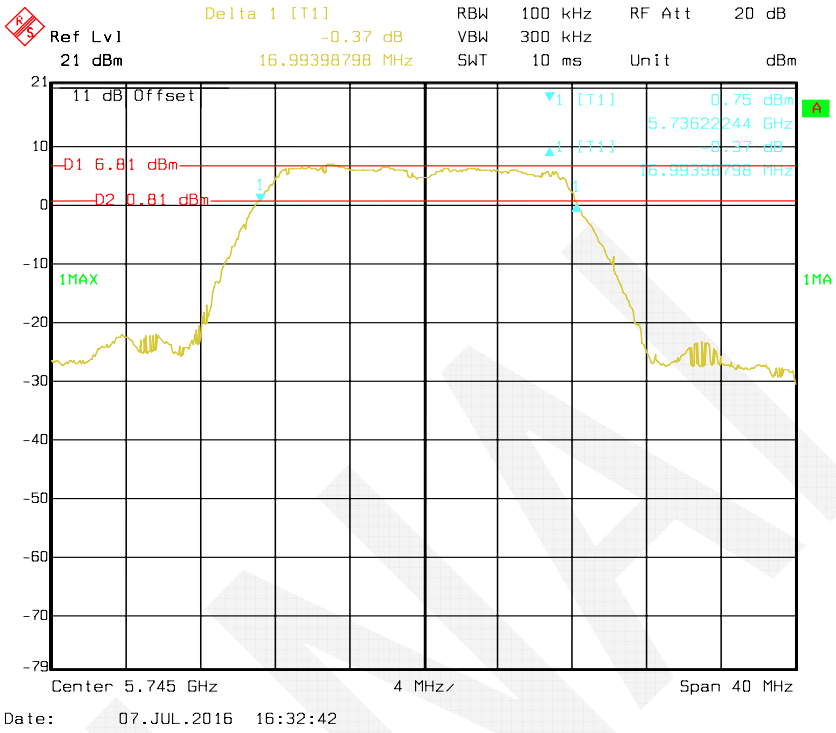


802.11ac 80 mode, Antenna 2: 26 dB Bandwidth-5210 MHz

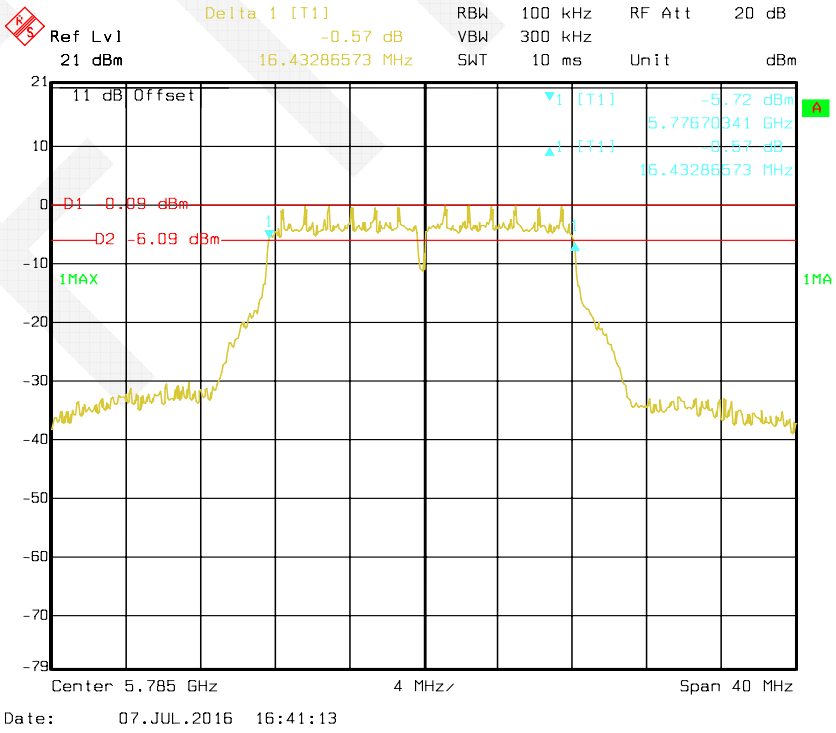


5725-5850 MHz:

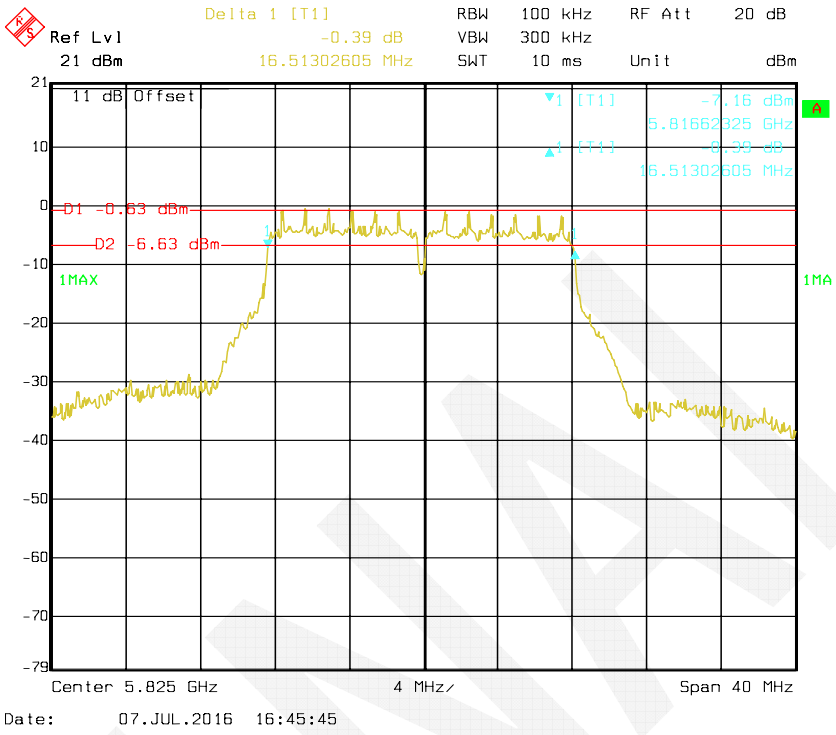
802.11a mode, Antenna 1: 6 dB Bandwidth-5745 MHz



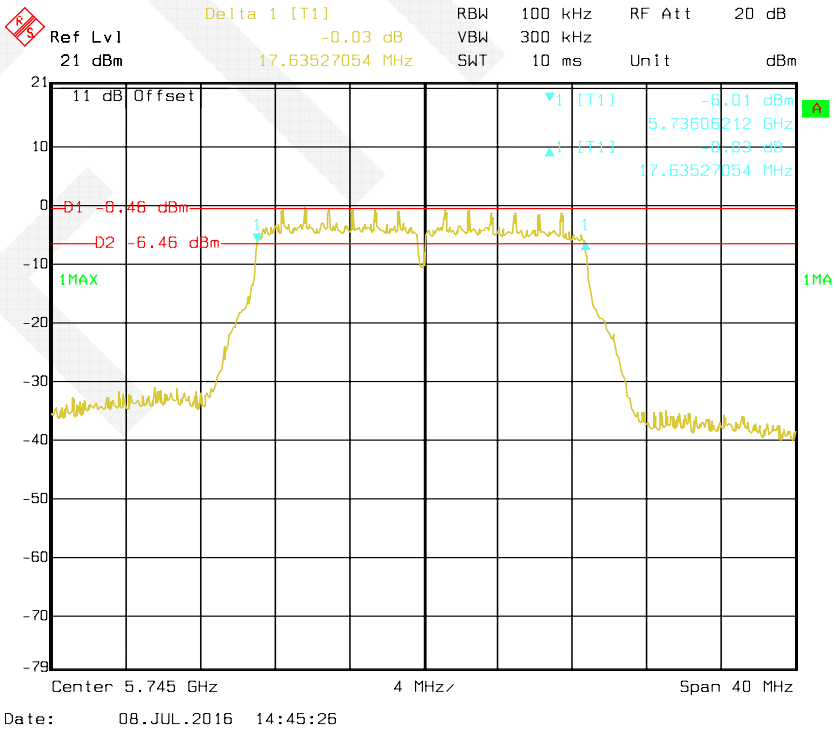
802.11a mode, Antenna 1: 6 dB Bandwidth-5785 MHz



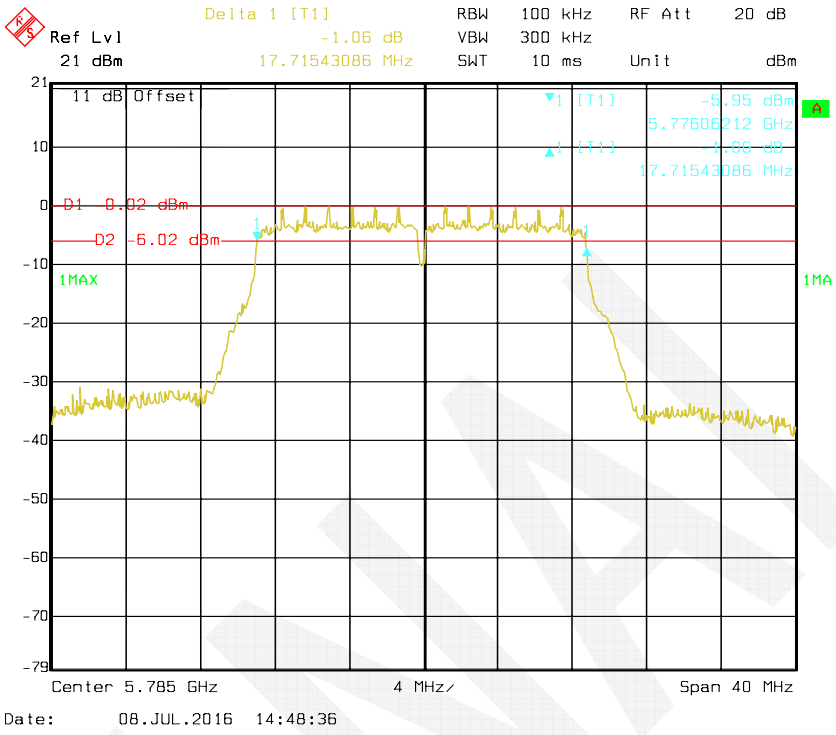
802.11a mode, Antenna 1: 6 dB Bandwidth-5825 MHz



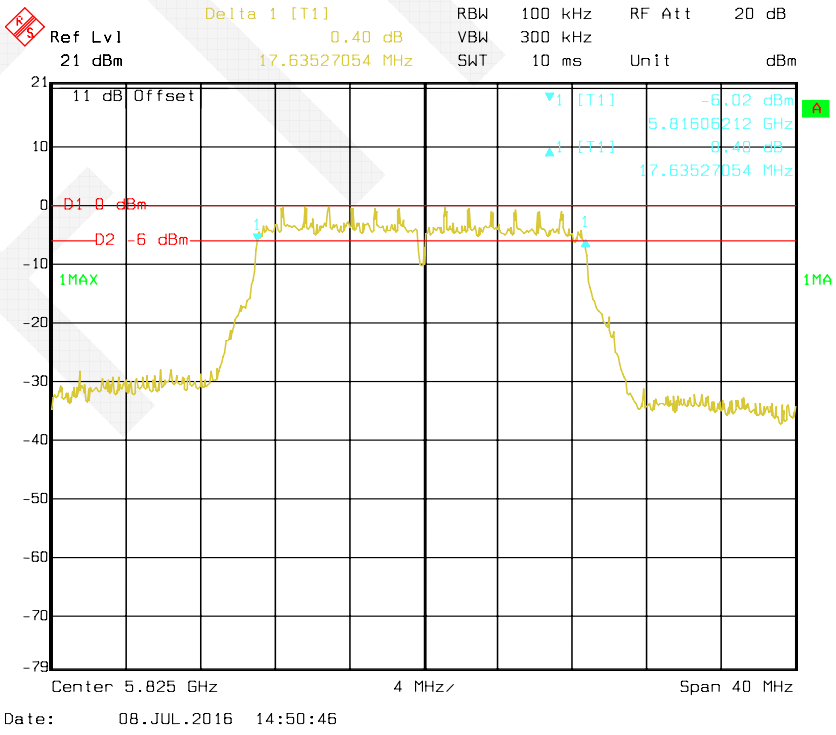
802.11n HT20 mode, Antenna 1: 6 dB Bandwidth-5745 MHz



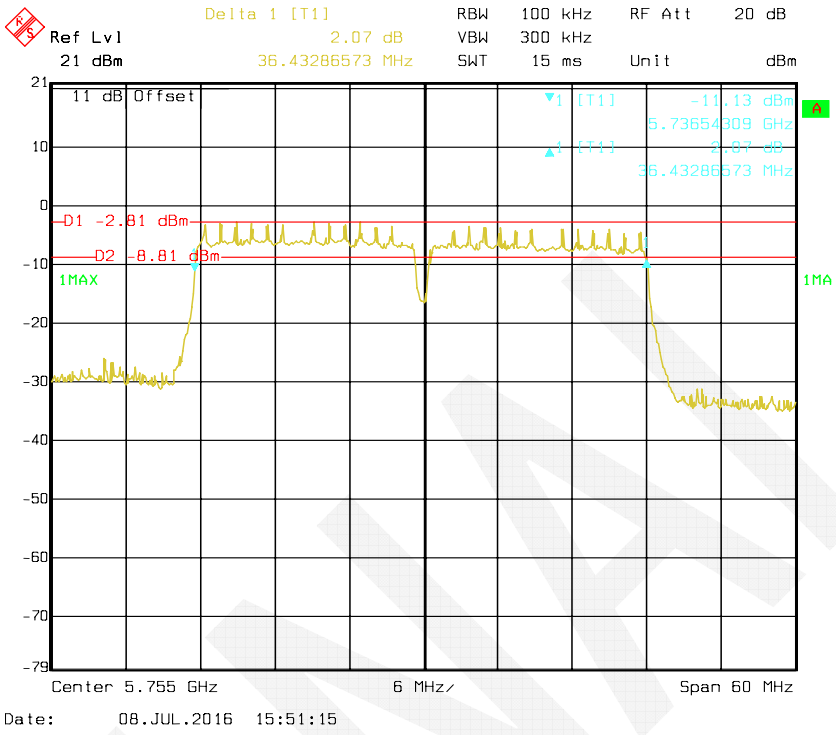
802.11n HT20 mode, Antenna 1: 6 dB Bandwidth-5785 MHz



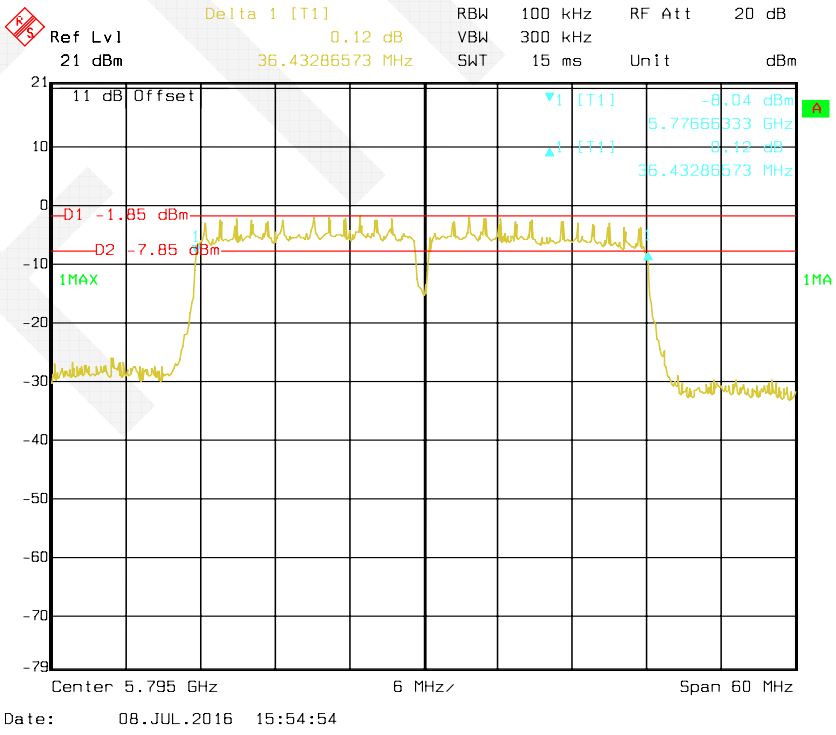
802.11n HT20 mode, Antenna 1: 6 dB Bandwidth-5825 MHz



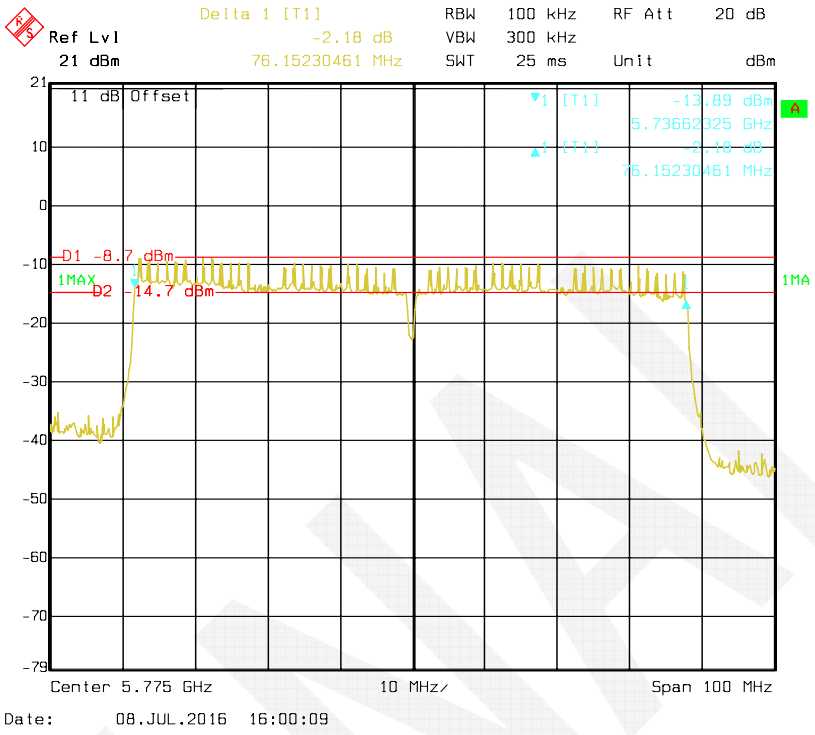
802.11n HT40 mode, Antenna 1: 6 dB Bandwidth-5755 MHz



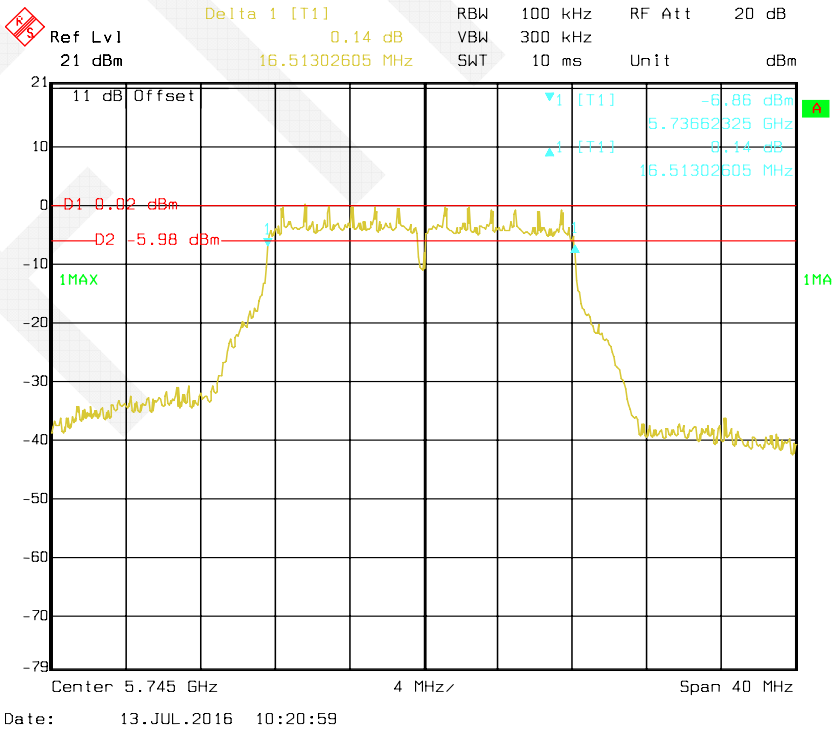
802.11n HT40 mode, Antenna 1: 6 dB Bandwidth-5795 MHz



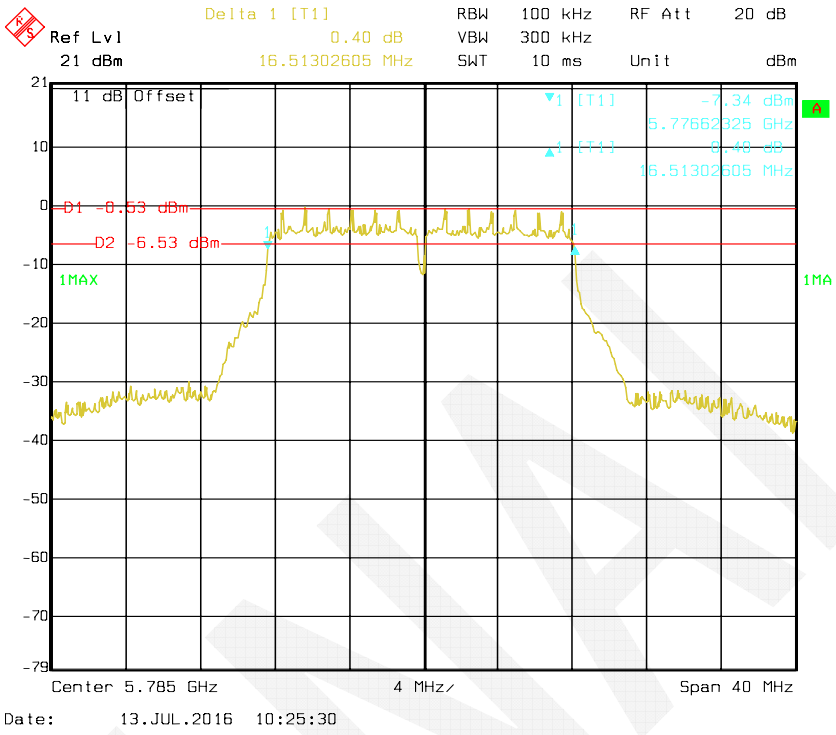
802.11ac 80 mode, Antenna 1: 6 dB Bandwidth-5775 MHz



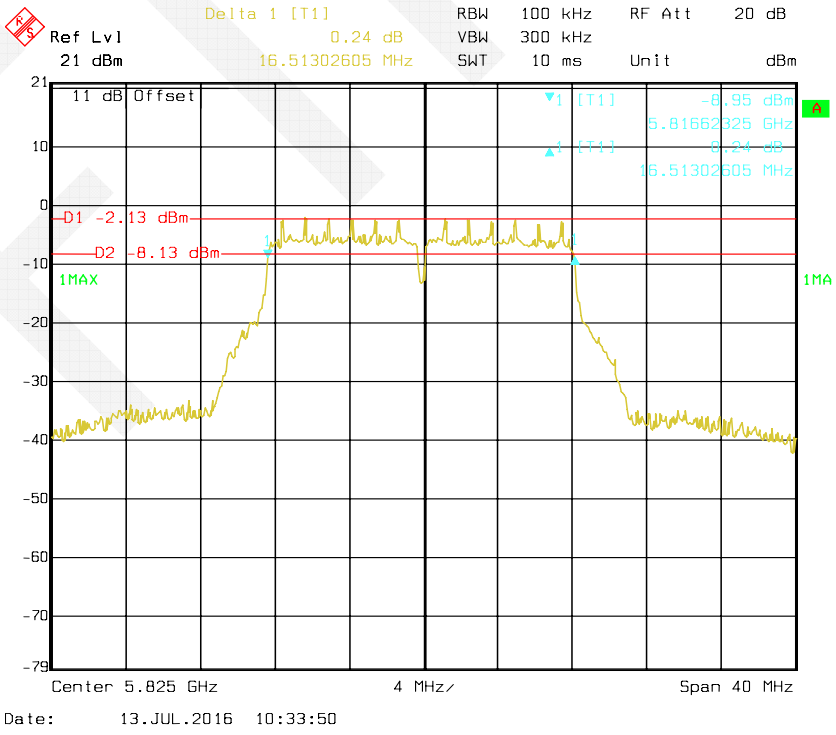
802.11a mode, Antenna 2: 6 dB Bandwidth-5745 MHz



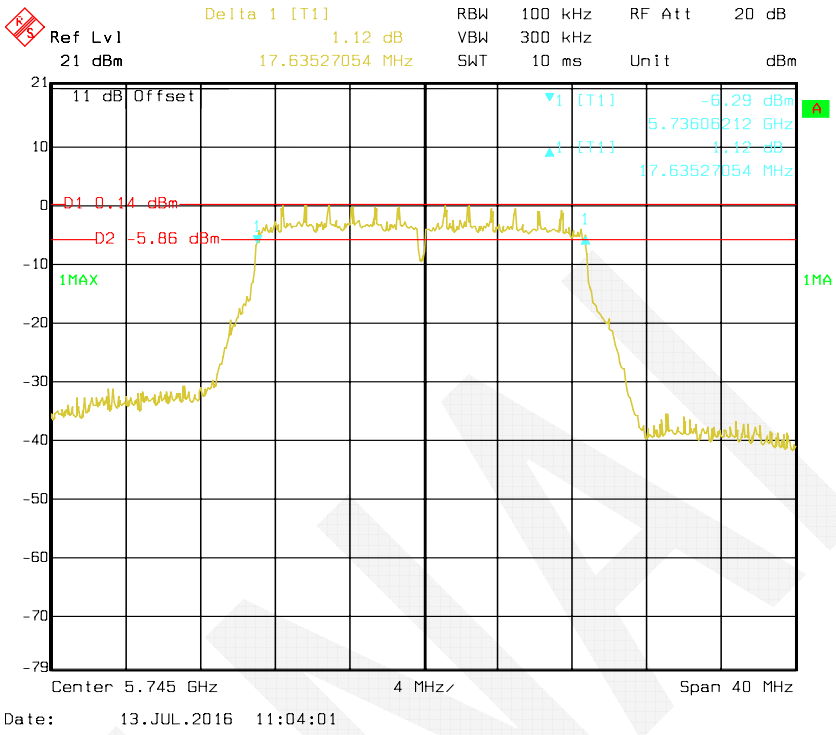
802.11a mode, Antenna 2: 6 dB Bandwidth-5785 MHz



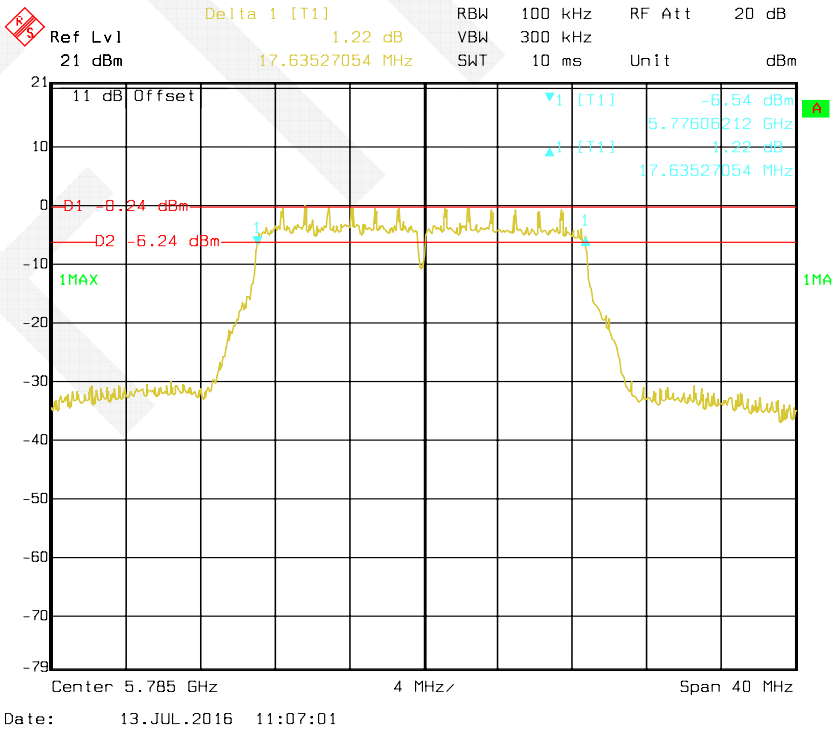
802.11a mode, Antenna 2: 6 dB Bandwidth-5825 MHz



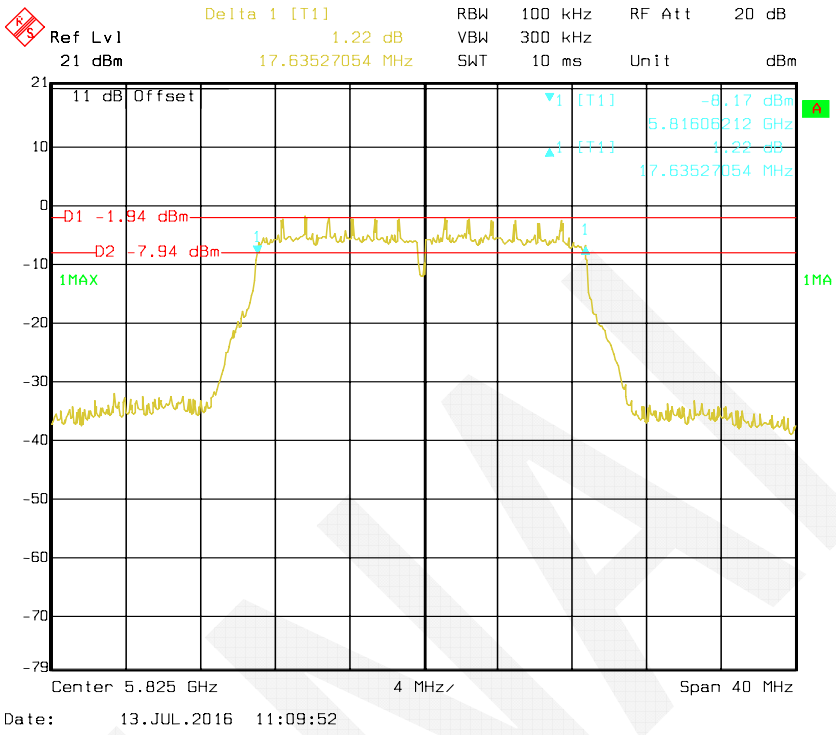
802.11n HT20 mode, Antenna 2: 6 dB Bandwidth-5745 MHz



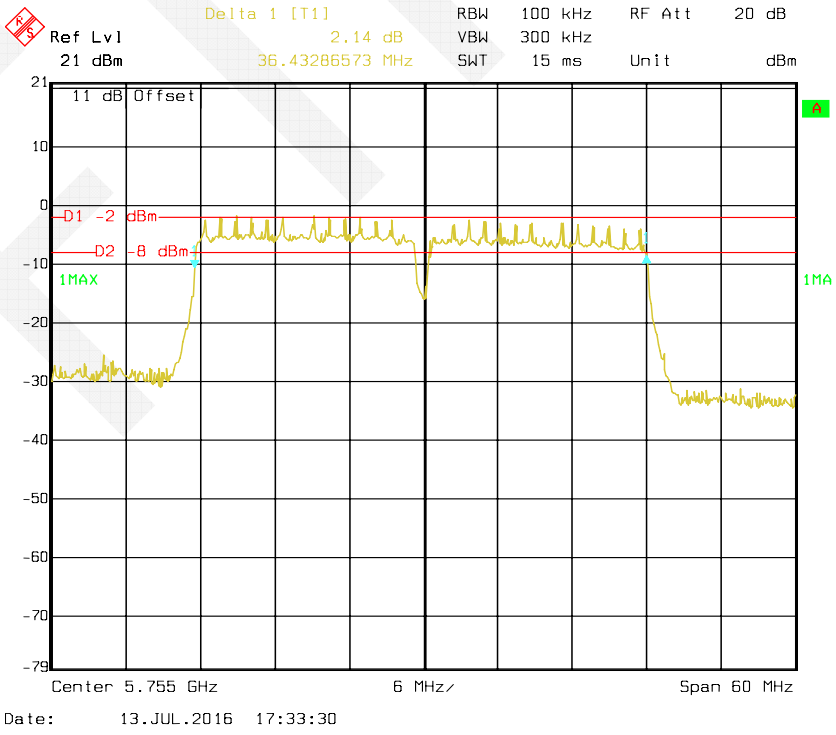
802.11n HT20 mode, Antenna 2: 6 dB Bandwidth-5785 MHz



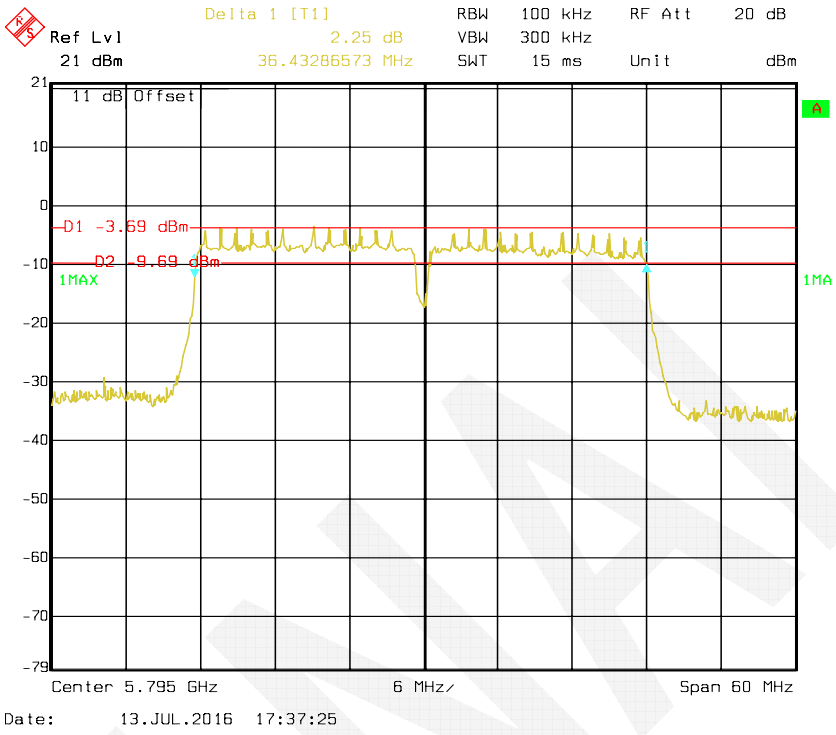
802.11n HT20 mode, Antenna 2: 6 dB Bandwidth-5825 MHz



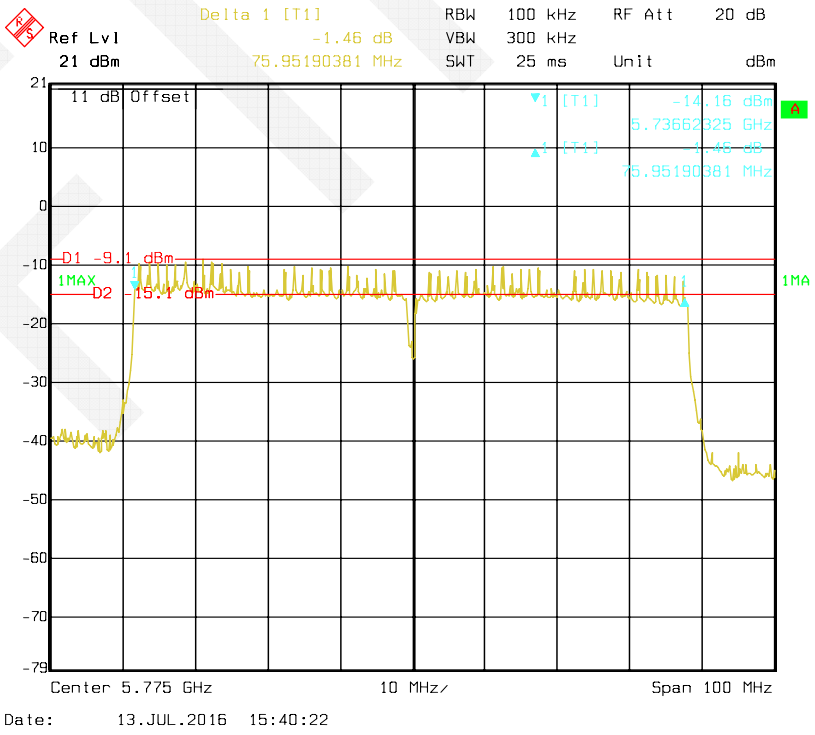
802.11n HT40 mode, Antenna 2: 6 dB Bandwidth-5755 MHz



802.11n HT40 mode, Antenna 2: 6 dB Bandwidth-5795 MHz



802.11ac 80 mode, Antenna 2: 6 dB Bandwidth-5775 MHz



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

Applicable Standard

(a) *Power limits:*

(1)(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.

(3) 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.

NOTE TO PARAGRAPH (*A*)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
	RF Cable	NO.3		2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

Set span to encompass the entire EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Manually set sweep time ≥ 10 * (number of points in sweep) * (symbol period of the transmitted signal), but not less than the automatic default sweep time.

(vi) Set detector = RMS.

(vii) The EUT shall be operated at 100 percent duty cycle.

(viii) Perform a single sweep.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

Test Data

Environmental Conditions

Temperature:	25°C ~ 28 °C
Relative Humidity:	54% ~ 56%
ATM Pressure:	97.1 kPa ~ 94.4 kPa

The testing was performed by Mill Chen from 2016-07-07 to 2016-07-15.

Test Mode: Transmitting

Note: The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

So:

Directional gain = GANT + Array Gain = 3.84 dBi < 6dBi

5150-5250 MHz:

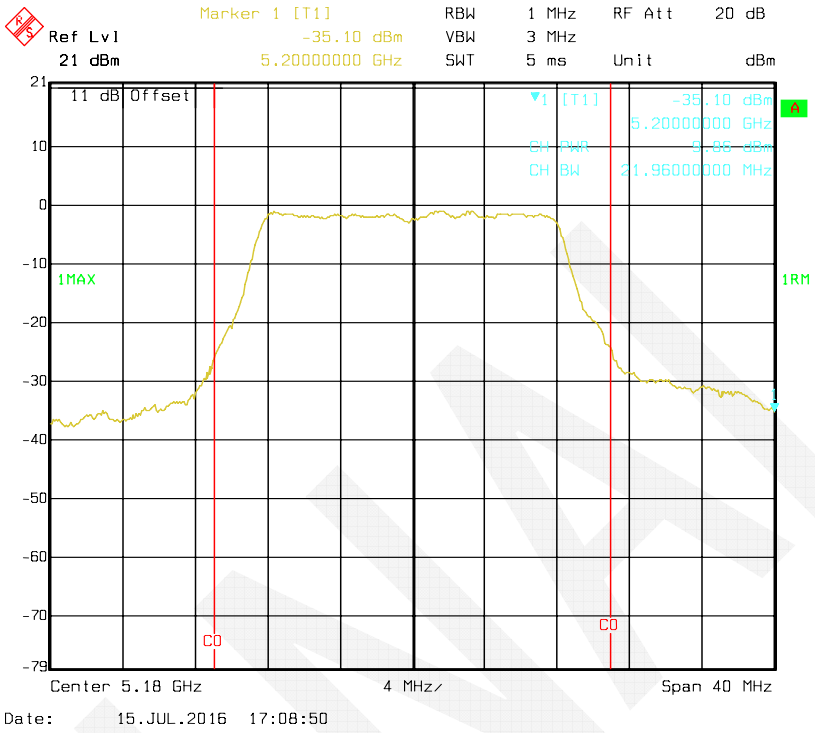
Mode	Channel	Frequency (MHz)	Output Power (dBm)			Limit (dBm)
			Antenna 1	Antenna 2	Antenna 1 + Antenna 2	
802.11a	Low	5180	9.86	10.36	/	24
	Middle	5220	11.83	10.76	/	24
	High	5240	11.92	10.38	/	24
802.11n HT20	Low	5180	9.84	10.07	12.97	24
	Middle	5220	11.82	11.00	14.44	24
	High	5240	11.40	10.18	13.84	24
802.11n HT40	Low	5190	11.19	12.45	14.88	24
	High	5230	12.84	12.38	15.63	24
802.11ac 80	/	5210	11.65	11.26	14.47	24

5725-5850 MHz:

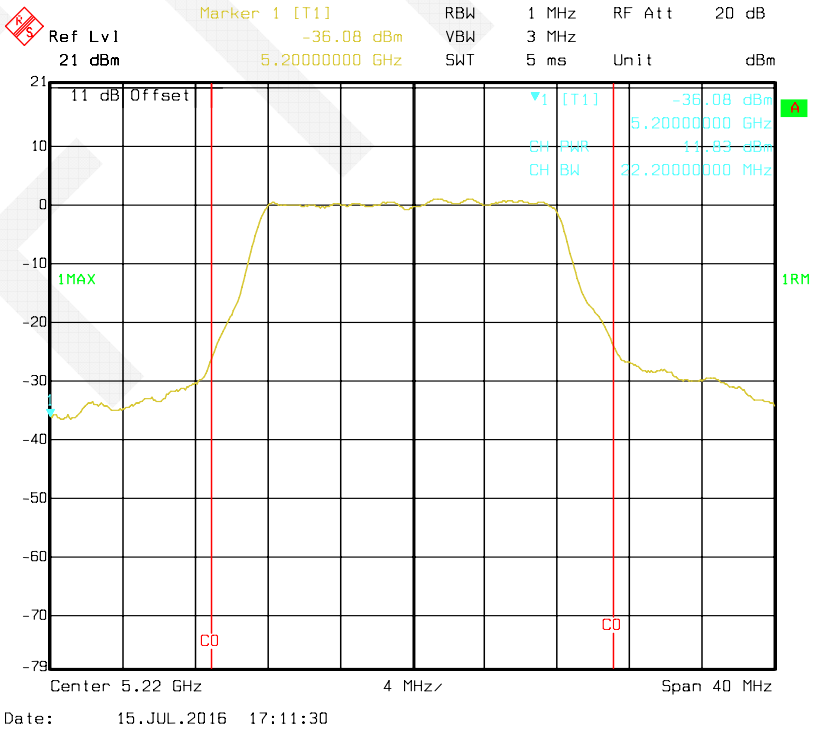
Mode	Channel	Frequency	Maximum Conducted Output Power (dBm)			Limit (dBm)
		MHz	Antenna 1	Antenna 2	Antenna 1 + Antenna 2	
802.11a	Low	5745	10.75	11.04	/	30
	Middle	5785	12.06	11.26	/	30
	High	5825	11.49	9.46	/	30
802.11n20	Low	5745	11.24	11.69	14.48	30
	Middle	5785	11.94	11.28	14.63	30
	High	5825	11.53	10	13.84	30
802.11n40	Low	5755	11.42	12.83	15.19	30
	High	5795	13.11	11.01	15.20	30
802.11ac80	/	5775	11.31	11.12	14.23	30

5150-5250 MHz:

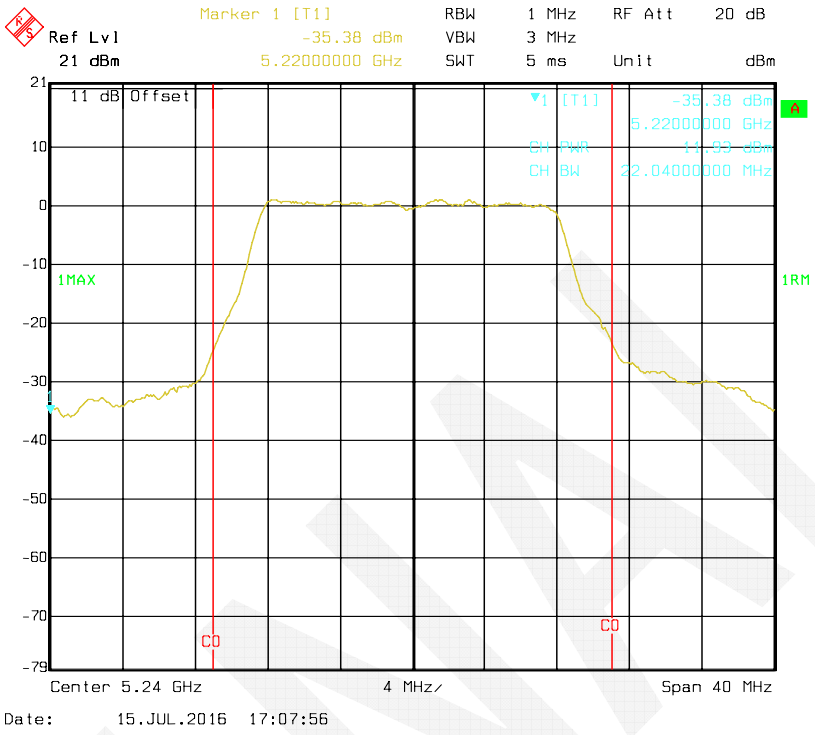
802.11a, Antenna 1: RF Output Power-5180 MHz



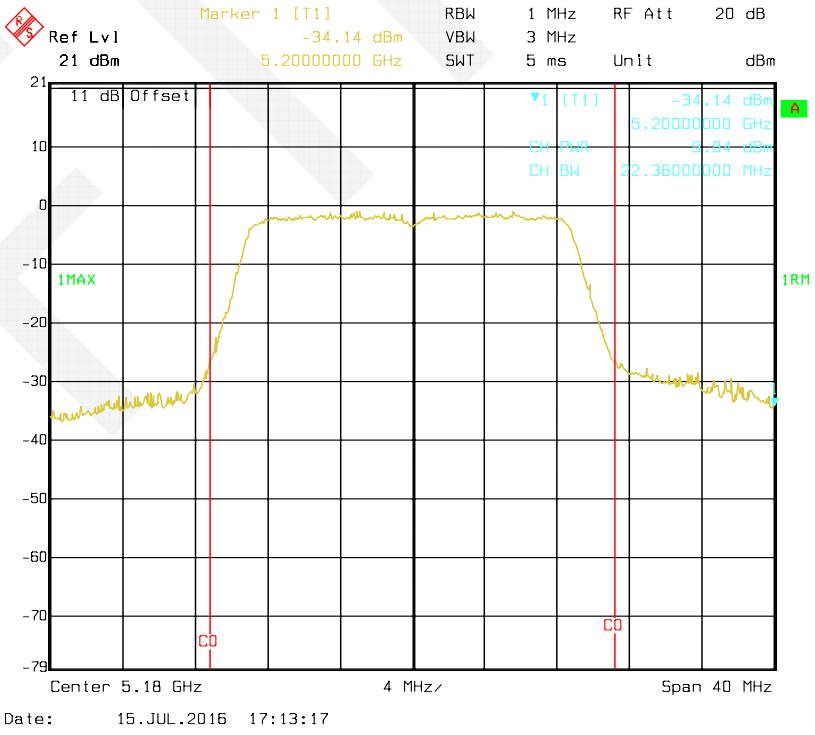
802.11a, Antenna 1: RF Output Power-5220 MHz



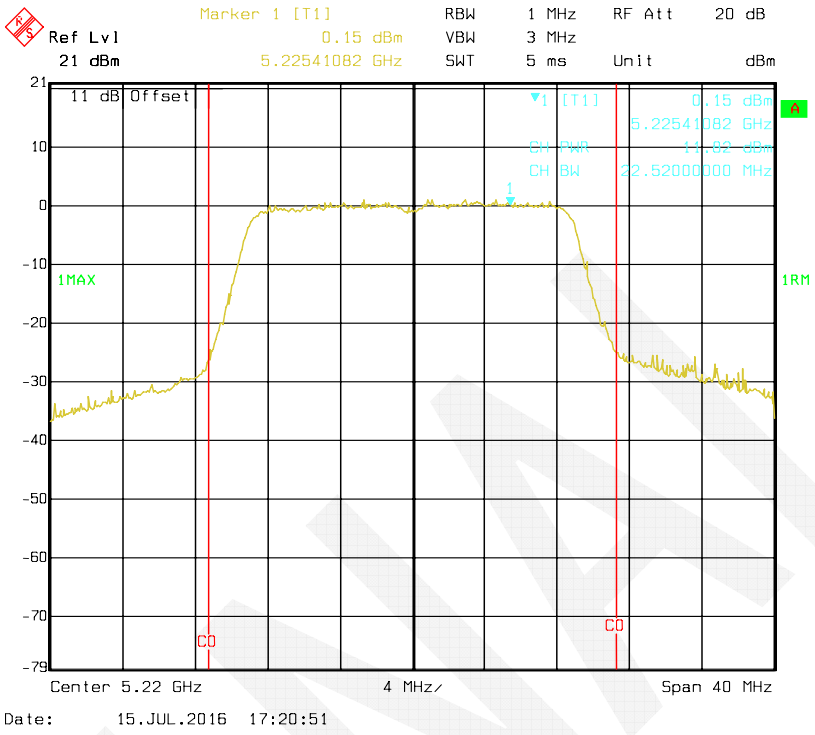
802.11a, Antenna 1: RF Output Power-5240 MHz



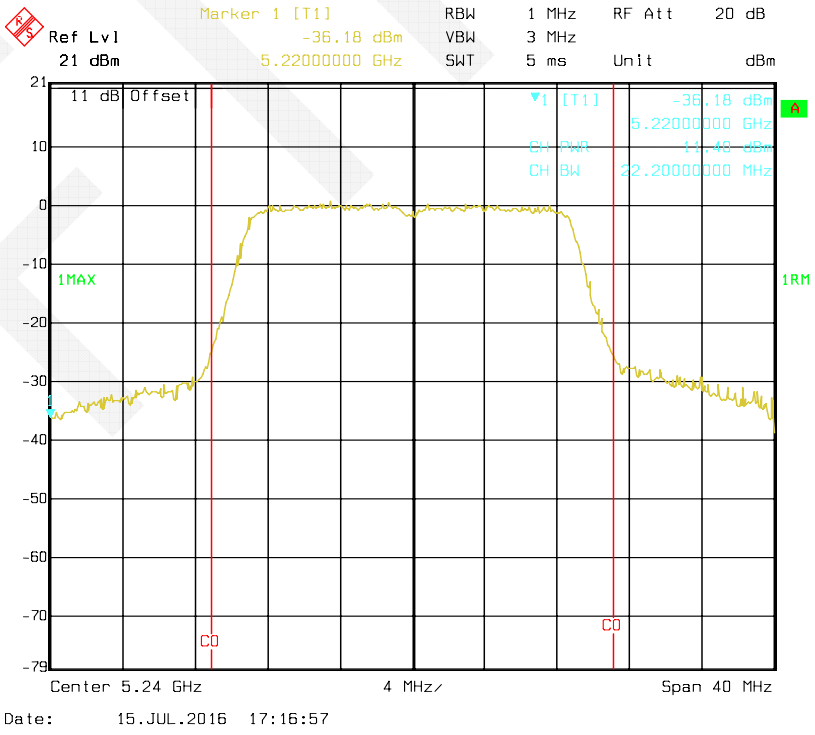
802.11n HT20 mode, Antenna 1: RF Output Power-5180 MHz



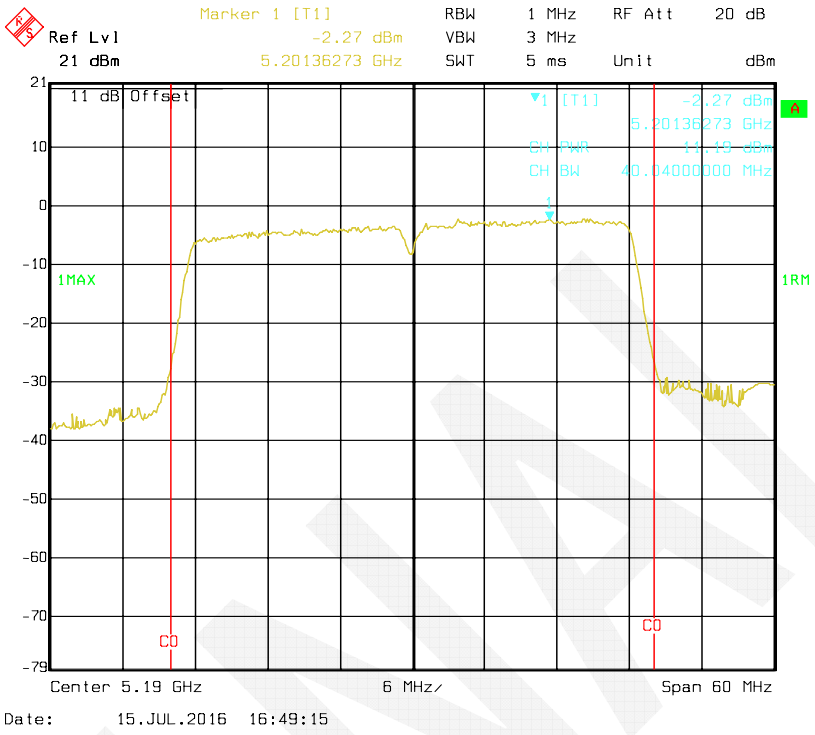
802.11n HT20 mode, Antenna 1: RF Output Power-5220 MHz



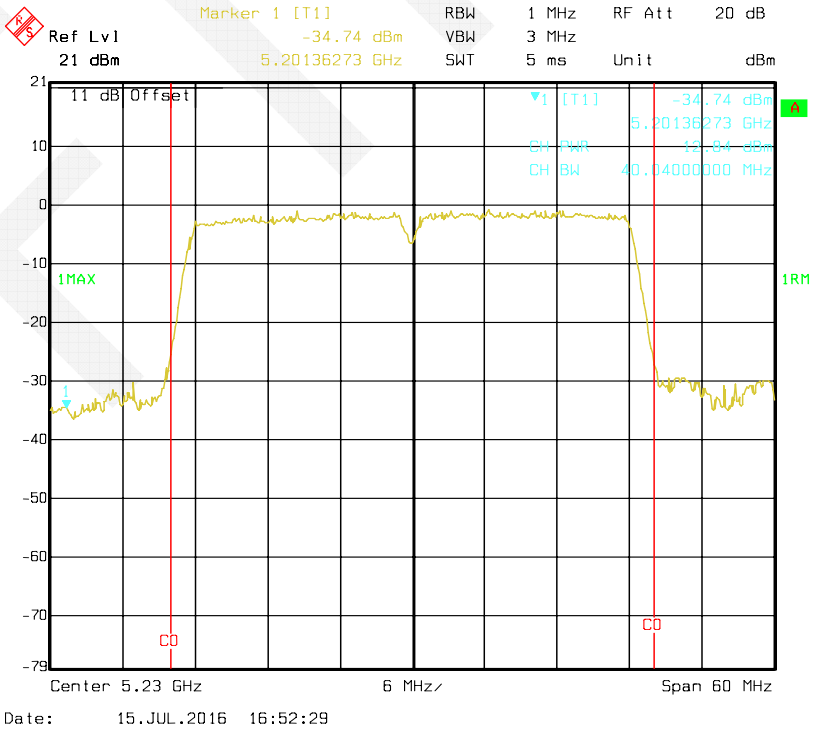
802.11n HT20 mode, Antenna 1: RF Output Power-5240 MHz



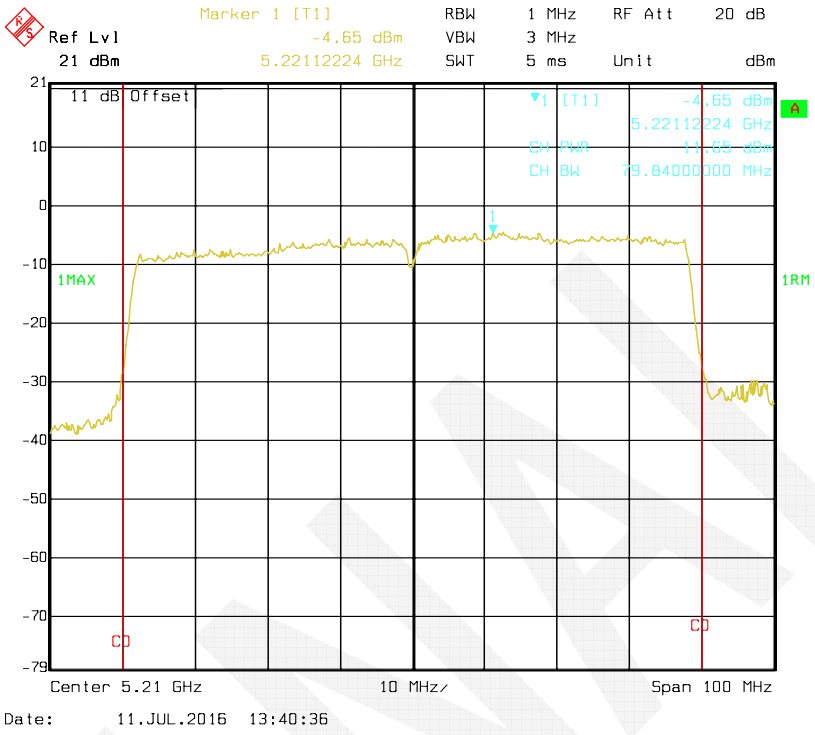
802.11n HT40 mode, Antenna 1: RF Output Power-5190 MHz



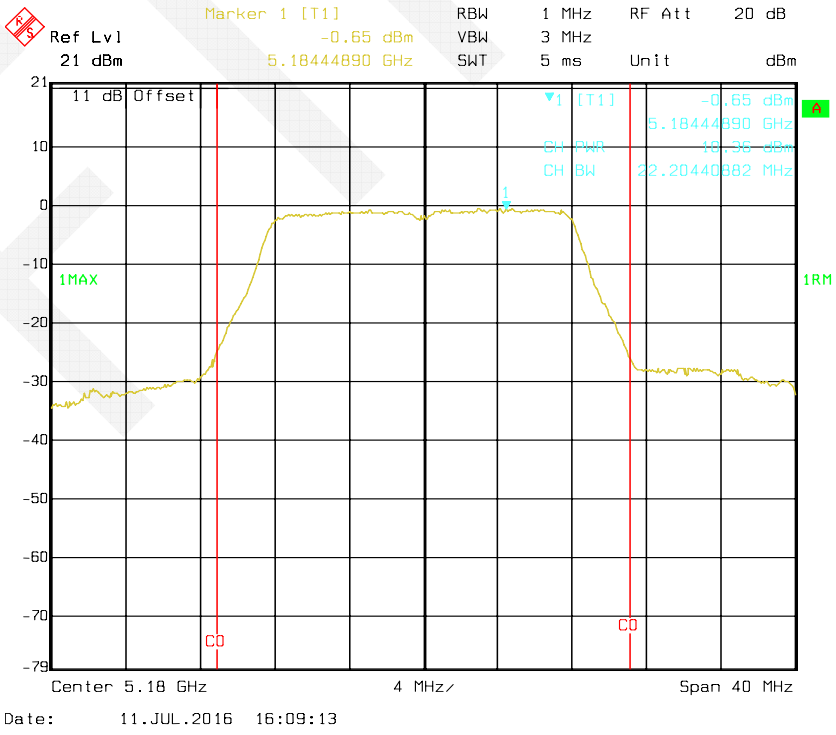
802.11n HT40 mode, Antenna 1: RF Output Power-5230 MHz



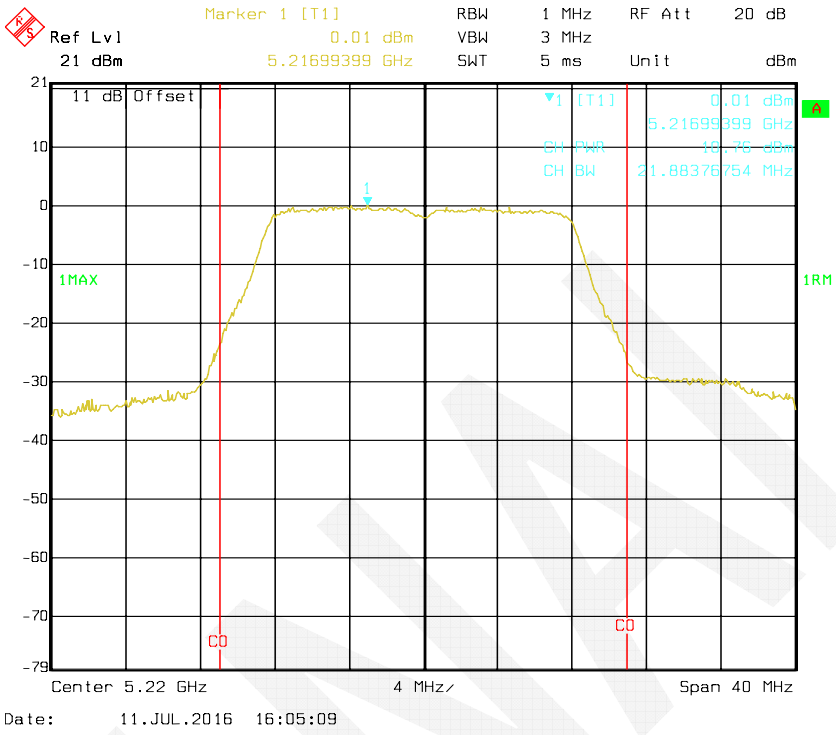
802.11VHT80, Antenna 1: RF Output Power-5210 MHz



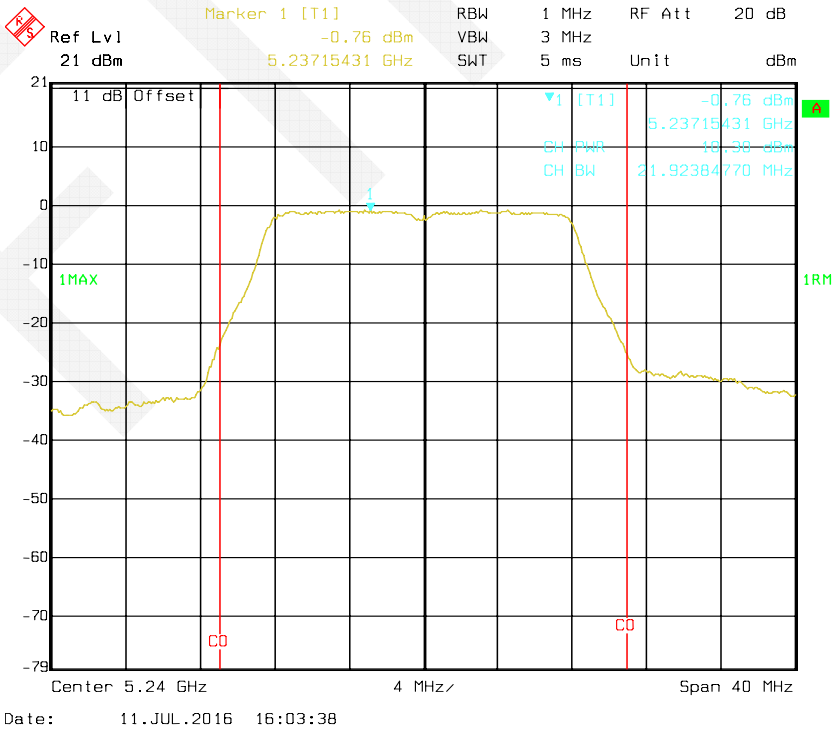
802.11a, Antenna 2: RF Output Power-5180 MHz



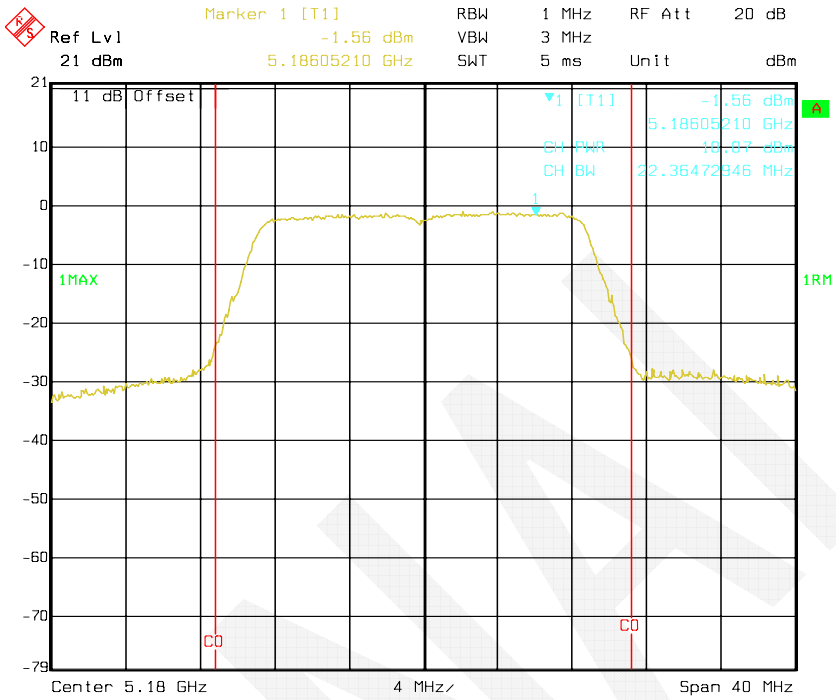
802.11a, Antenna 2: RF Output Power-5220 MHz



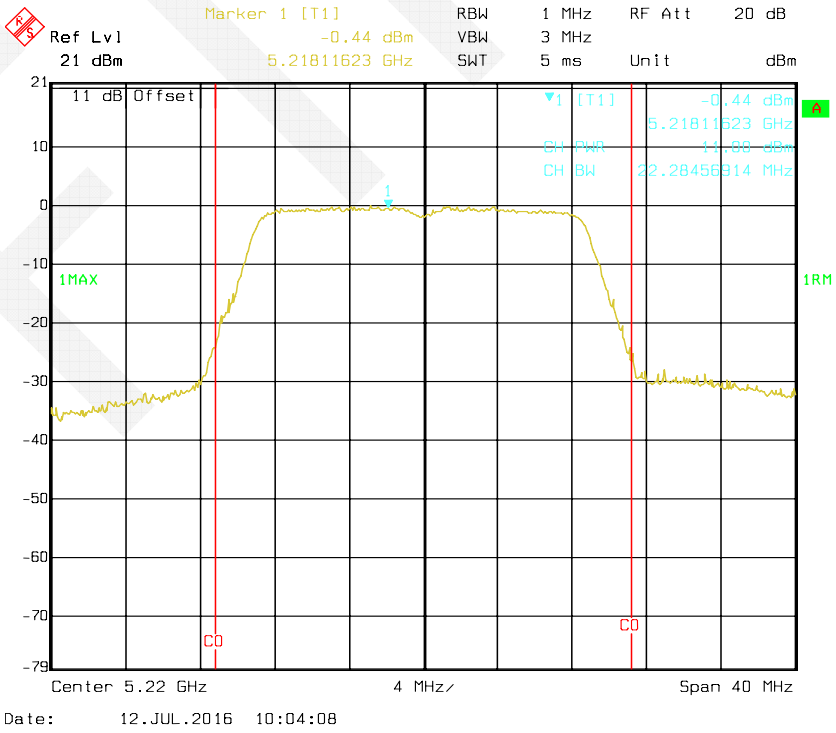
802.11a, Antenna 2: RF Output Power-5240 MHz



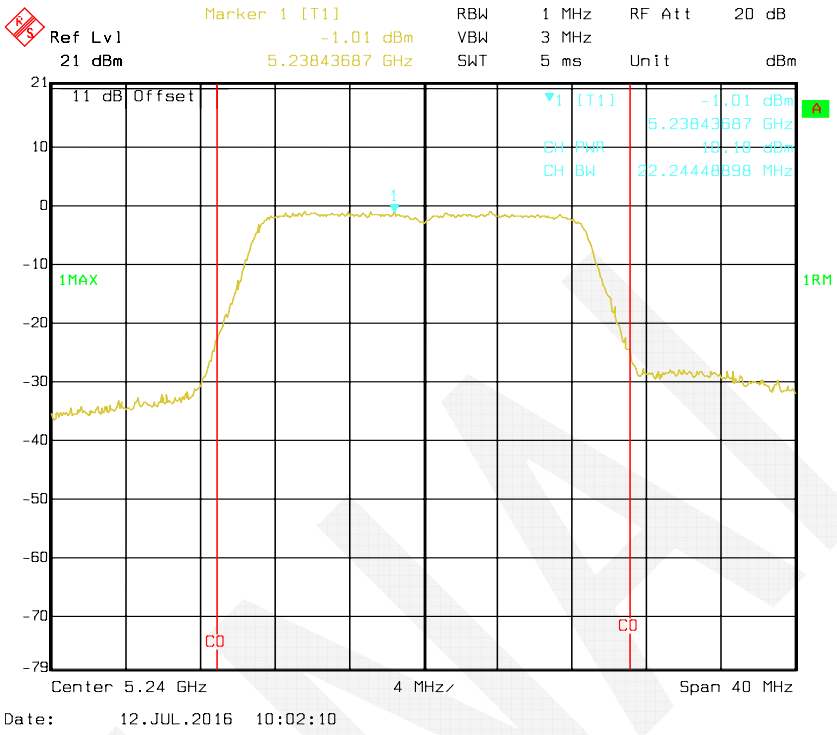
802.11n HT20 mode, Antenna 2: RF Output Power-5180 MHz



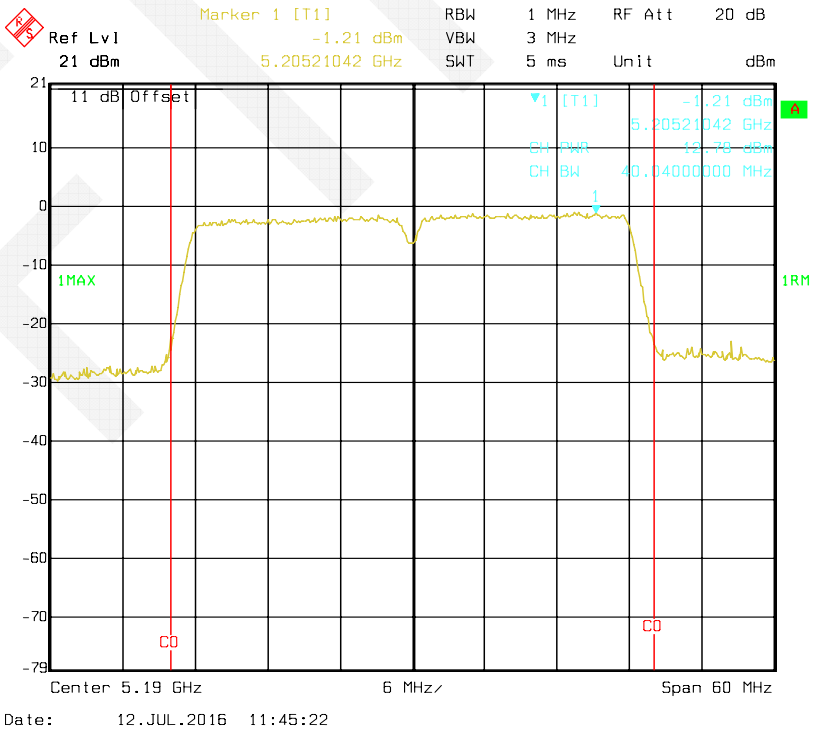
802.11n HT20 mode, Antenna 2: RF Output Power-5220 MHz



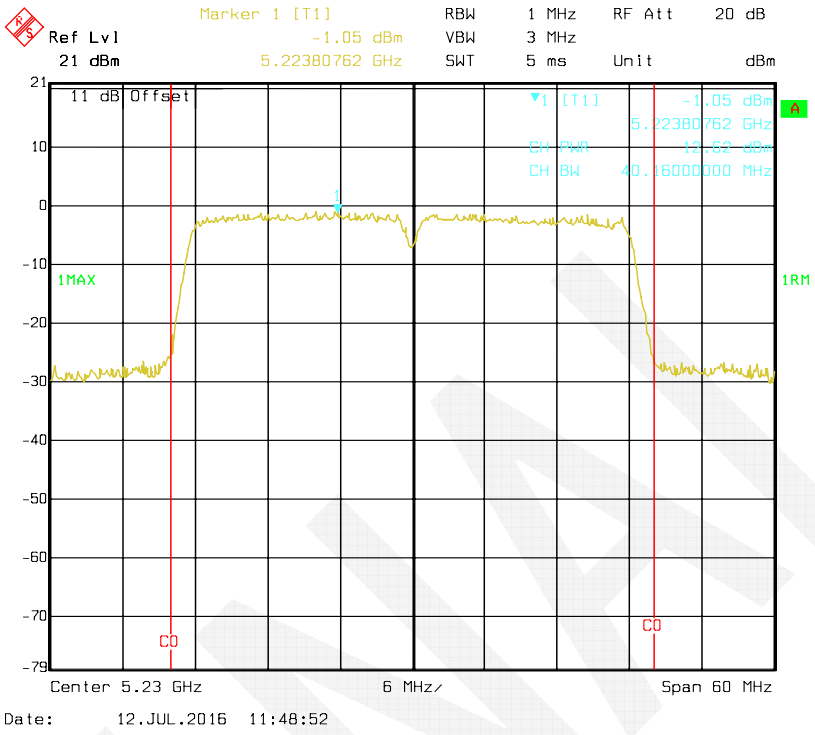
802.11n HT20 mode, Antenna 2: RF Output Power-5240 MHz



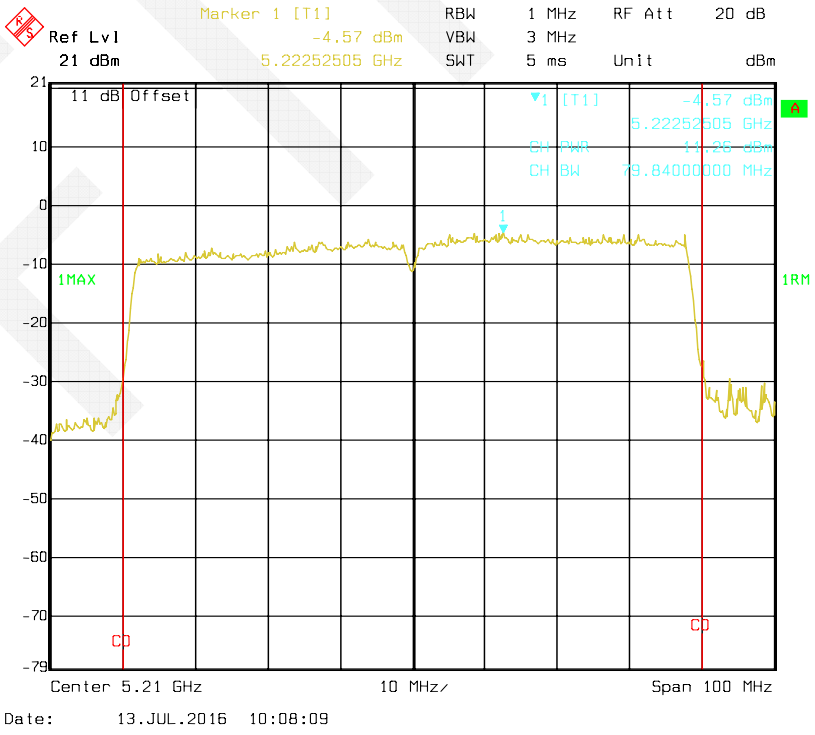
802.11n HT40 mode, Antenna 2: RF Output Power-5190 MHz



802.11n HT40 mode, Antenna 2: RF Output Power-5230 MHz

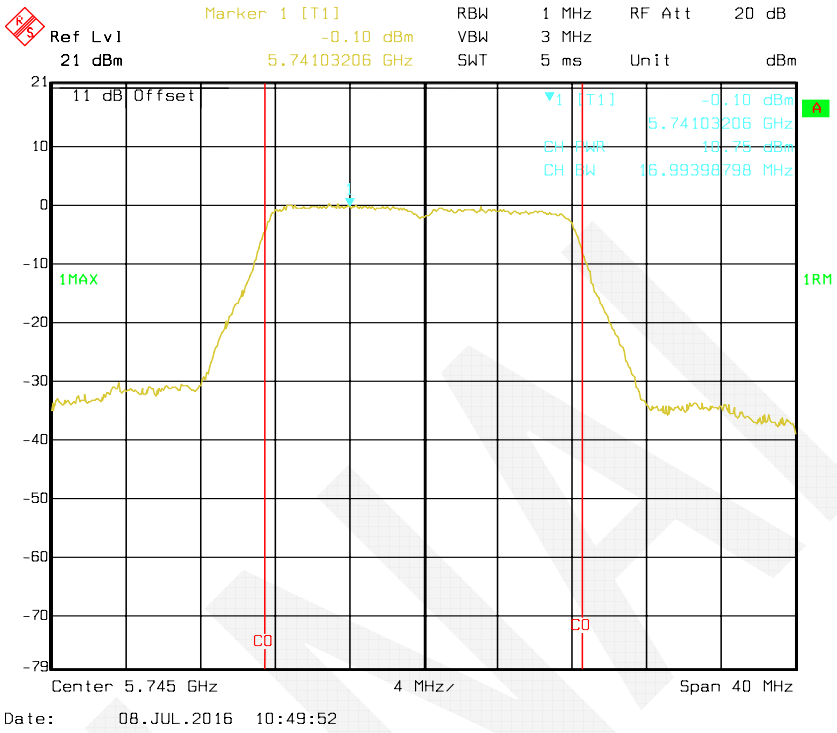


802.11ac 80, Antenna 2: RF Output Power-5210 MHz

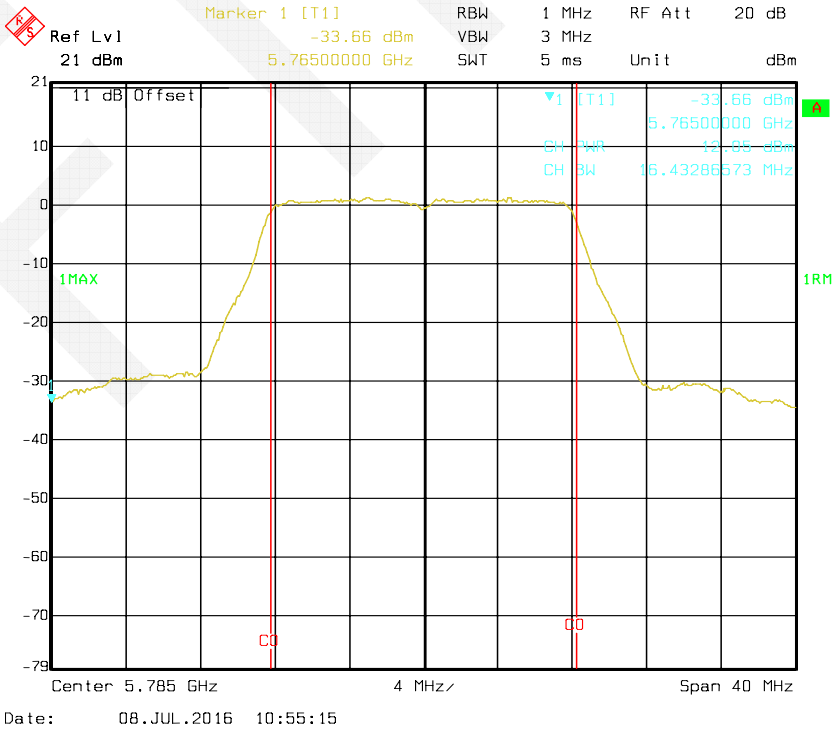


5725-5850 MHz:

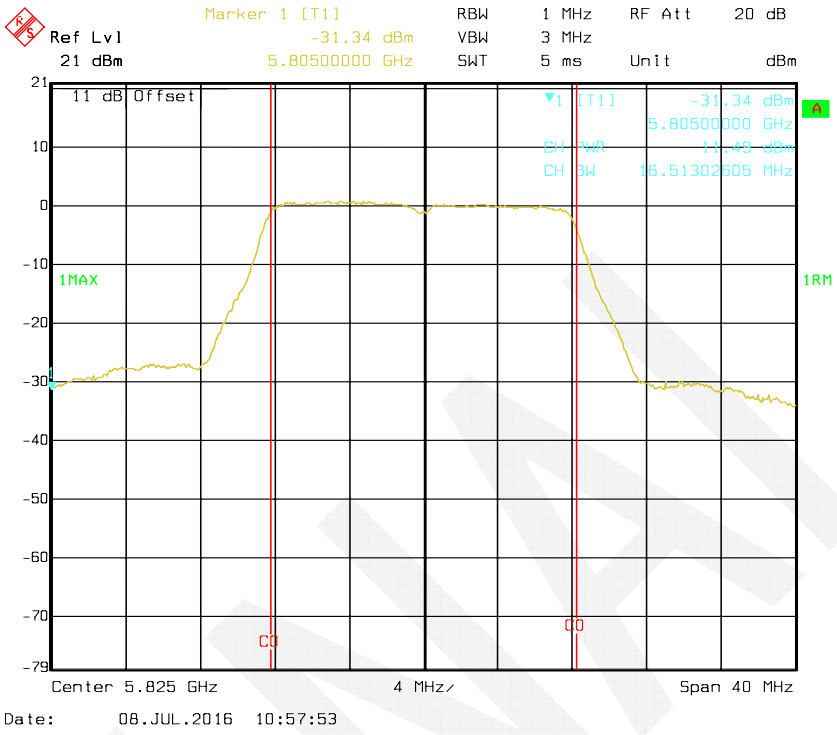
802.11a, Antenna 1: RF Output Power-5745 MHz



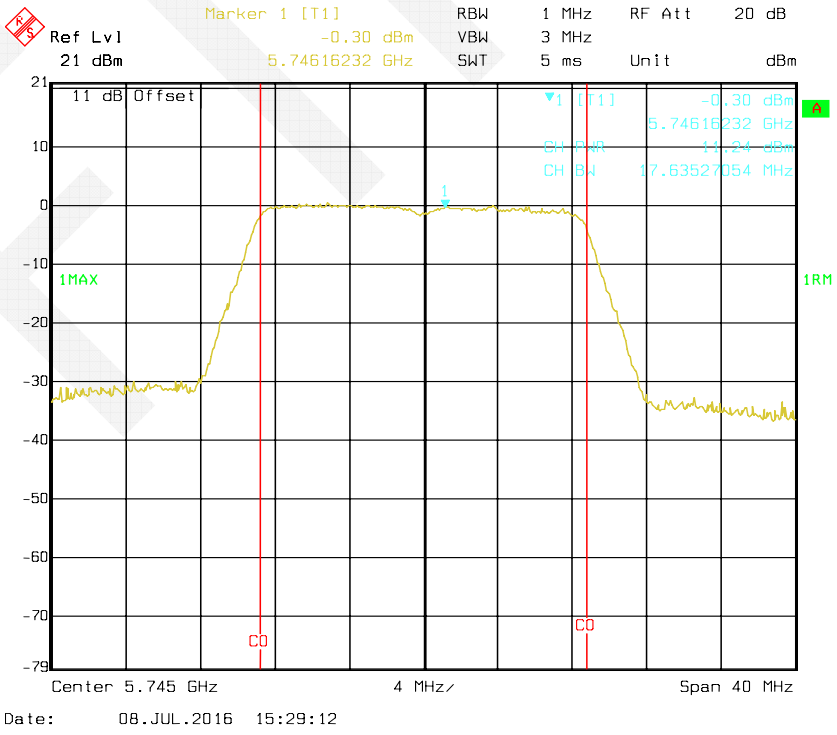
802.11a, Antenna 1: RF Output Power-5785 MHz



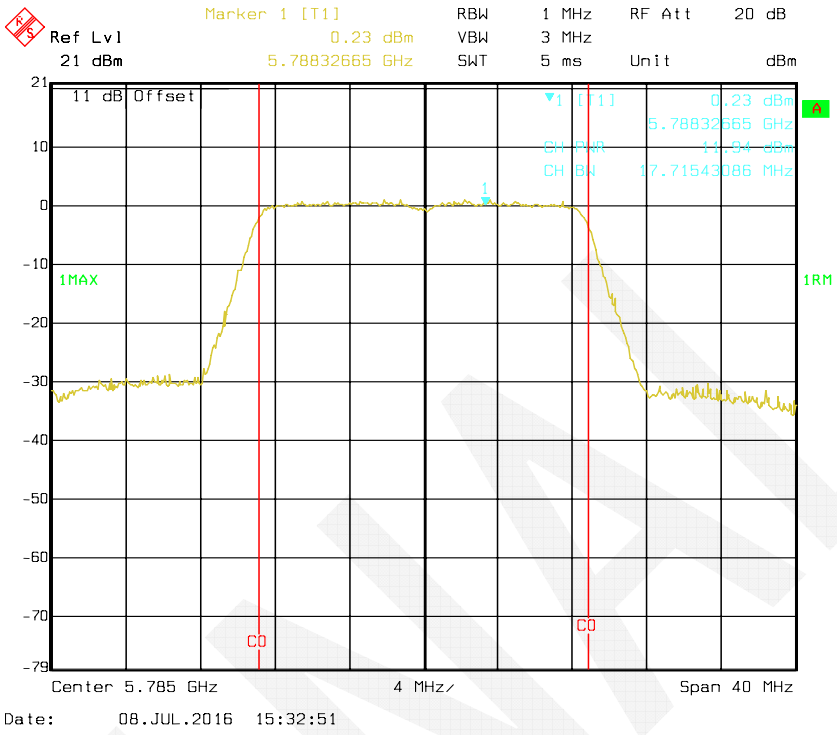
802.11a, Antenna 1: RF Output Power-5825 MHz



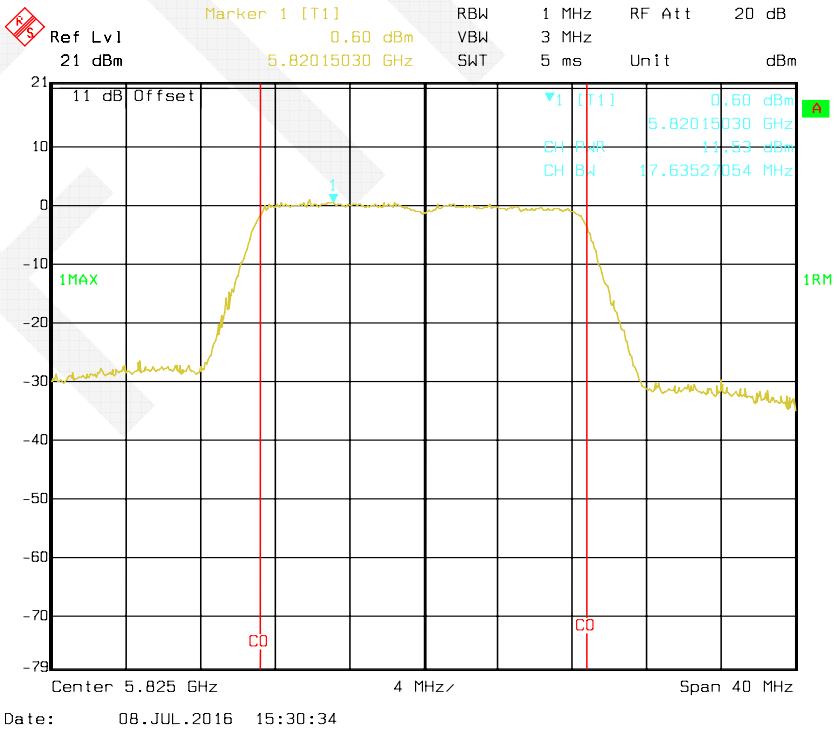
802.11n HT20 mode, Antenna 1: RF Output Power-5745 MHz



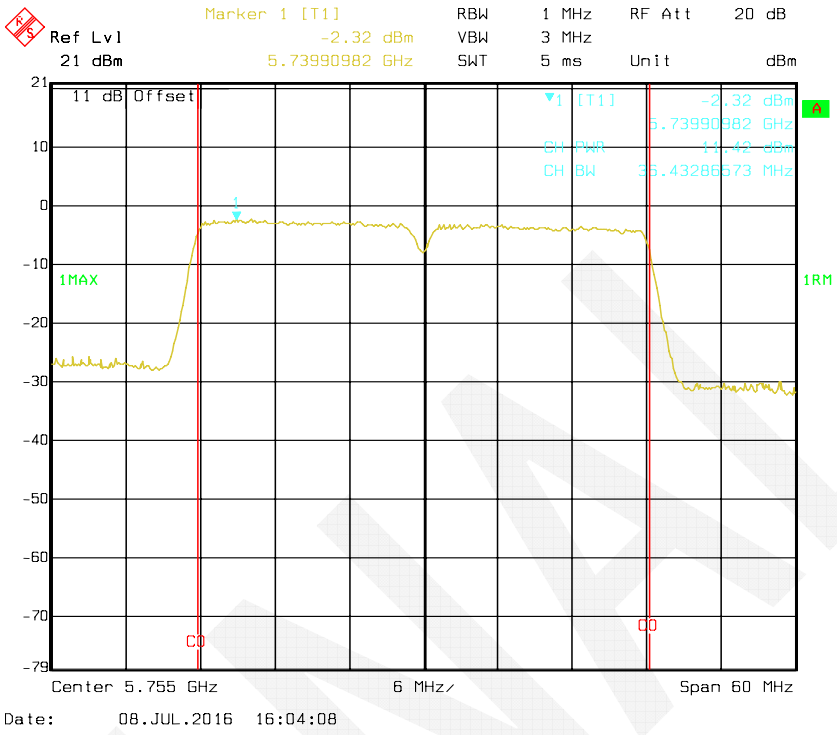
802.11n HT20 mode, Antenna 1: RF Output Power-5785 MHz



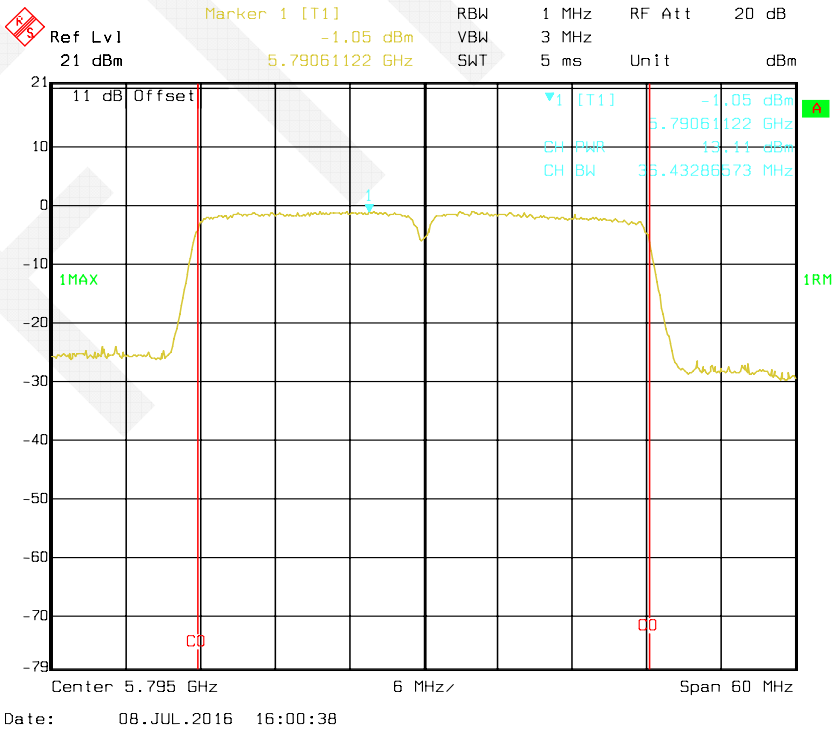
802.11n HT20 mode, Antenna 1: RF Output Power-5825 MHz



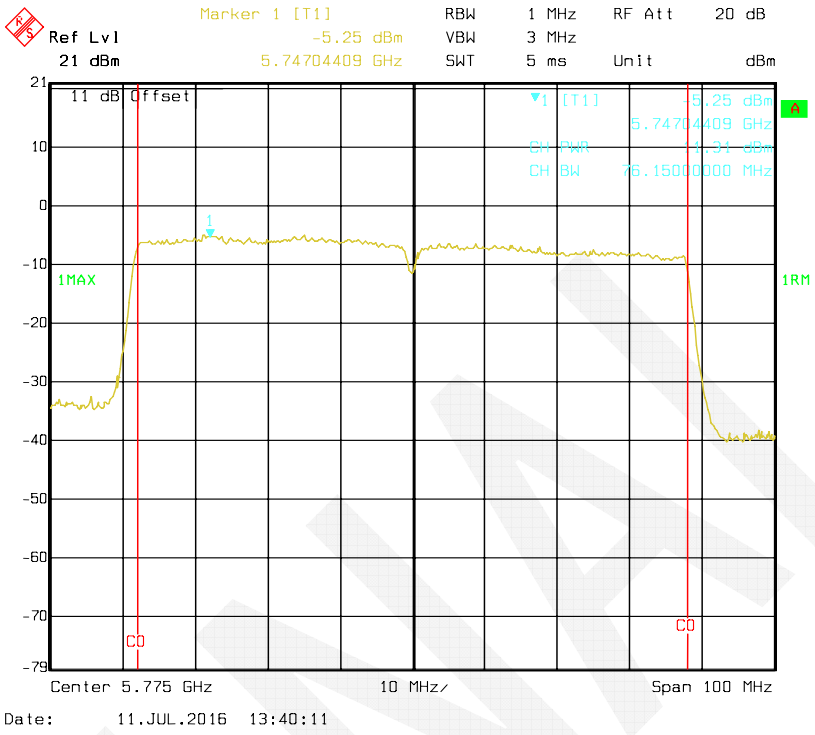
802.11n HT40 mode, Antenna 1: RF Output Power-5755 MHz



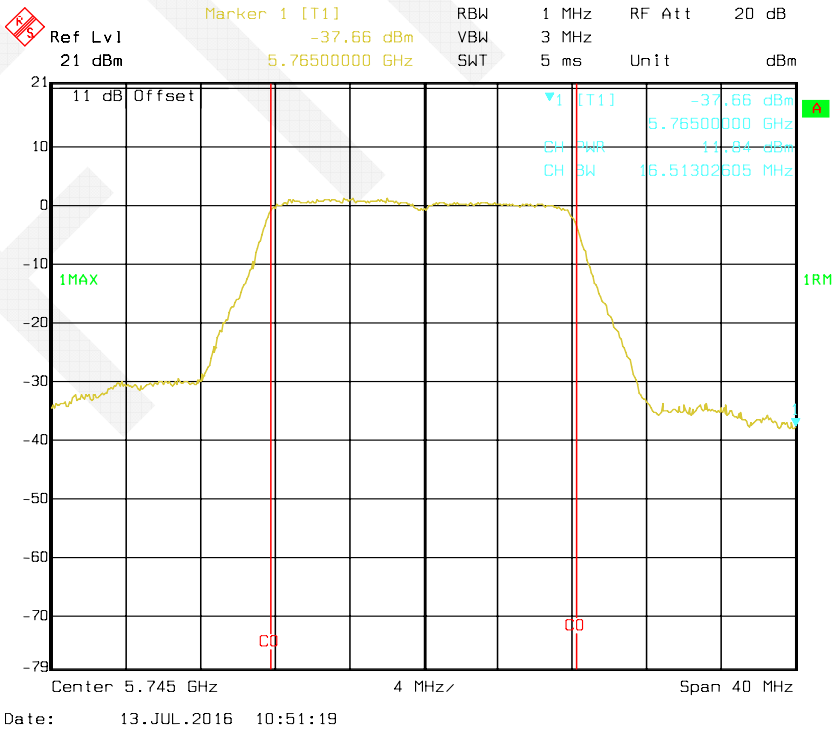
802.11n HT40 mode, Antenna 1: RF Output Power-5795 MHz



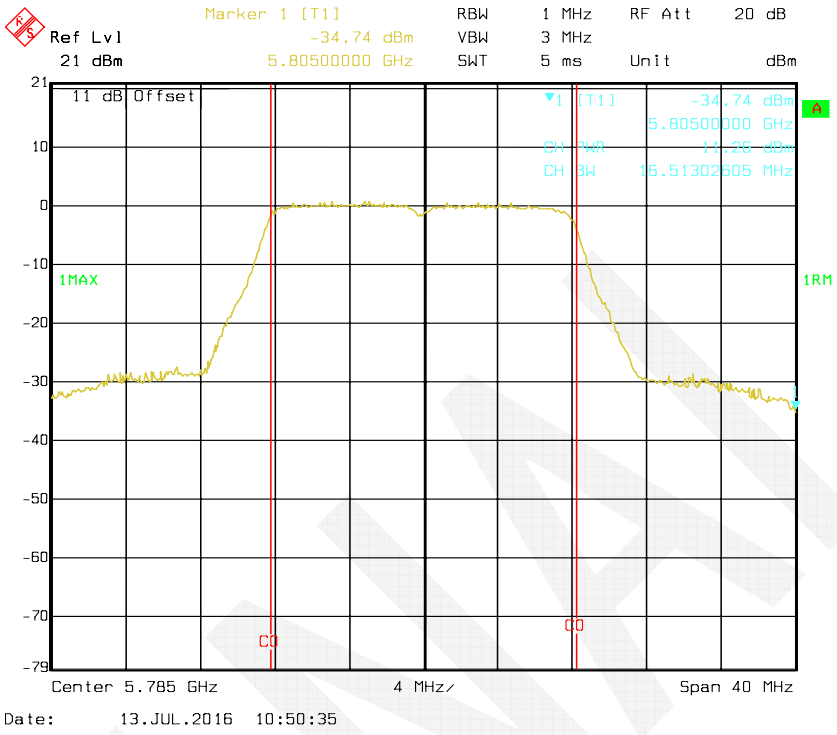
802.11ac 80, Antenna 1: RF Output Power-5775 MHz



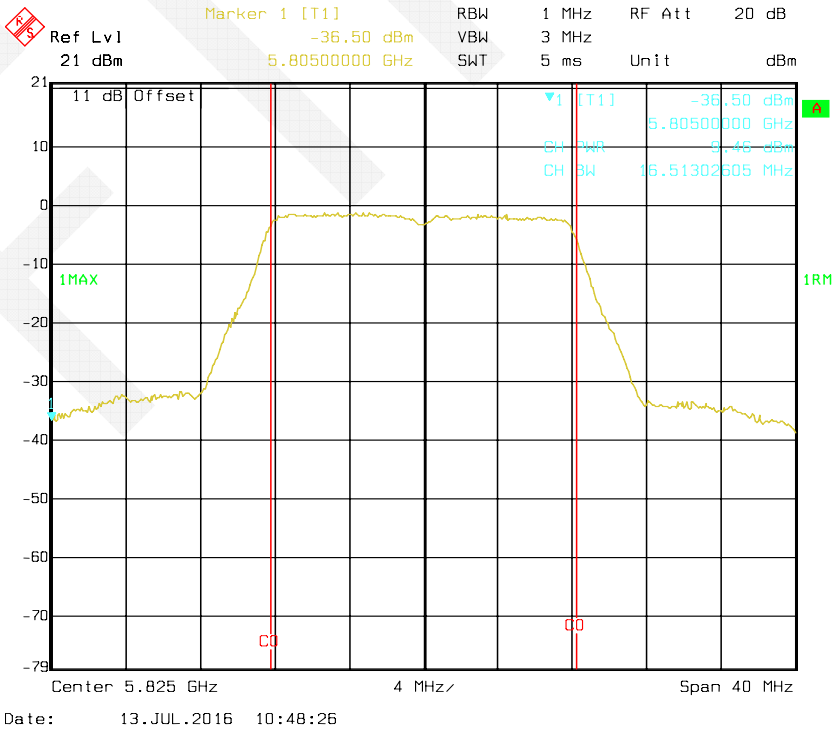
802.11a, Antenna 2: RF Output Power-5745 MHz



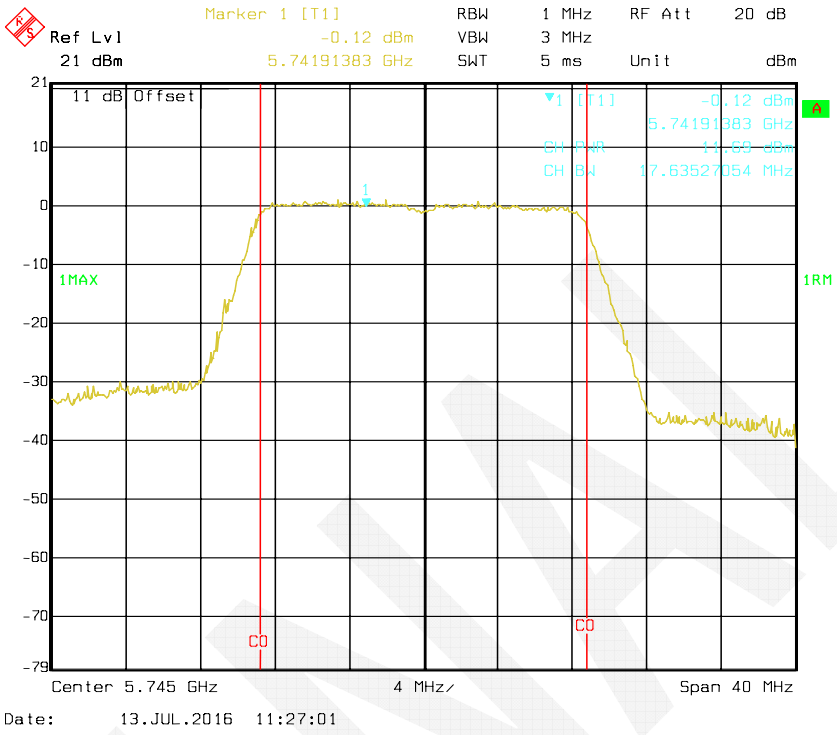
802.11a, Antenna 2: RF Output Power-5785 MHz



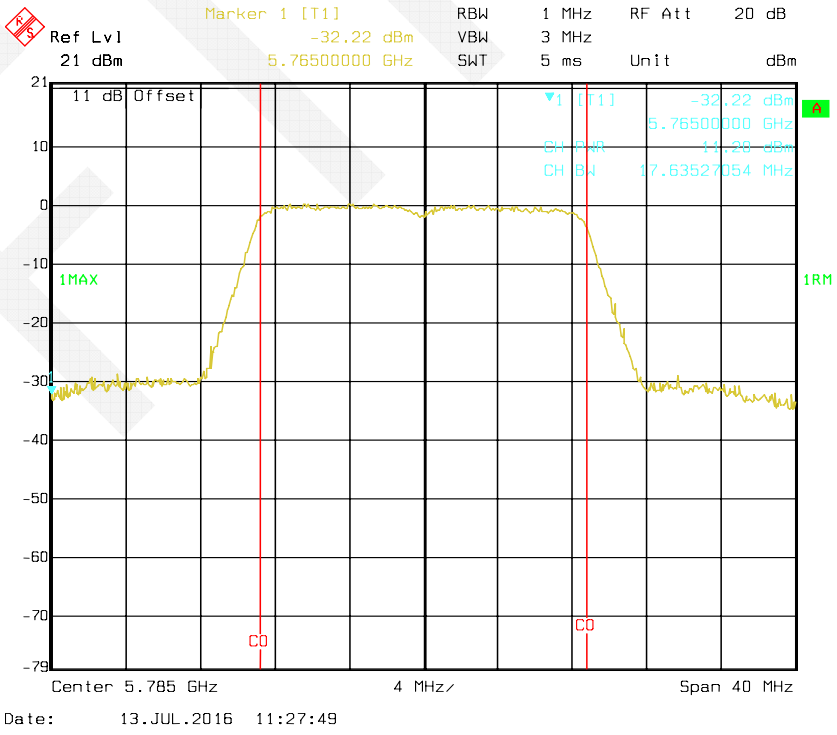
802.11a, Antenna 2: RF Output Power-5825 MHz



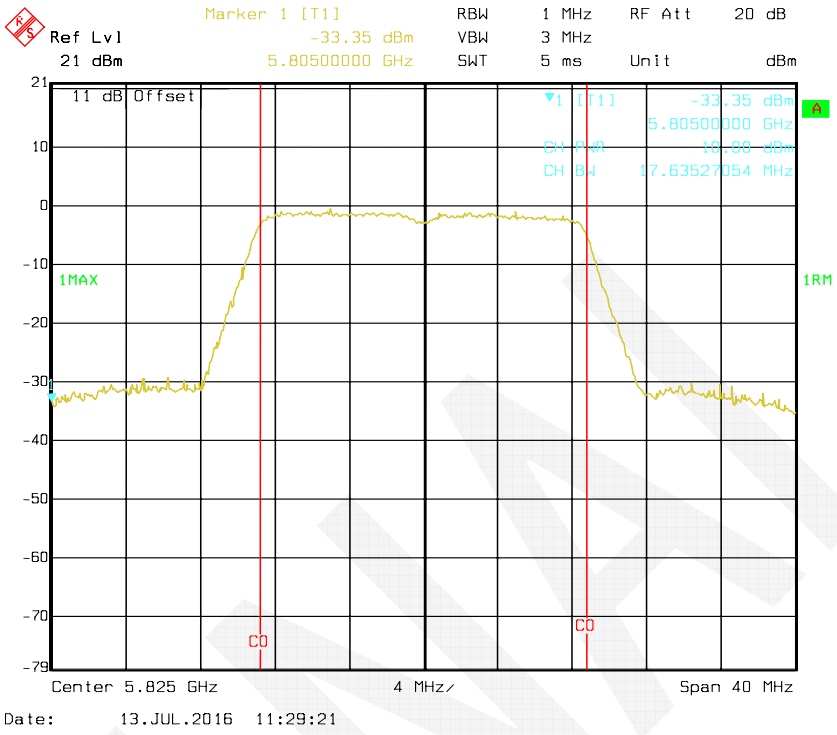
802.11n HT20 mode, Antenna 2: RF Output Power-5745 MHz



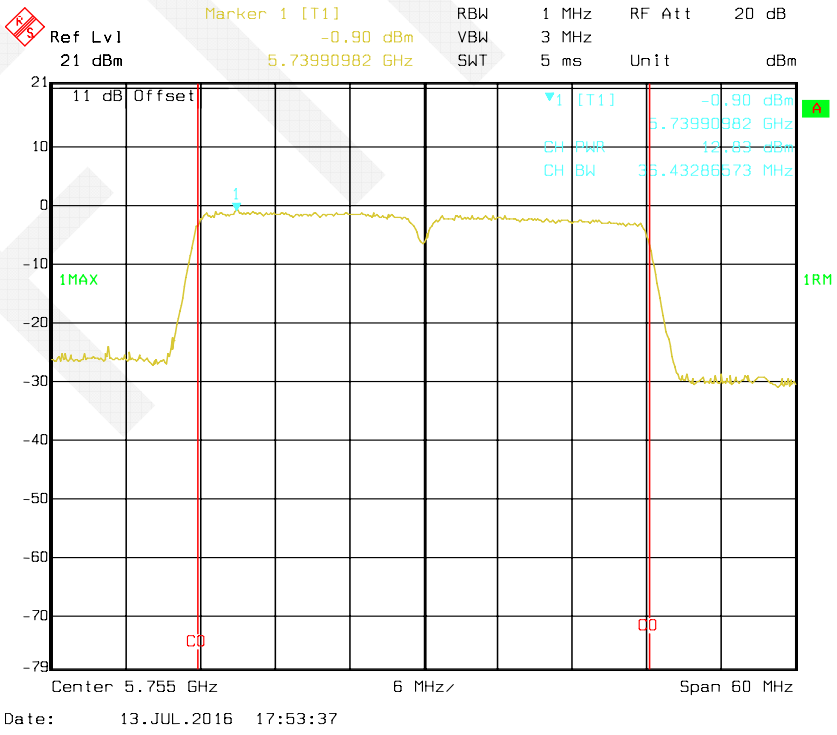
802.11n HT20 mode, Antenna 2: RF Output Power-5785 MHz



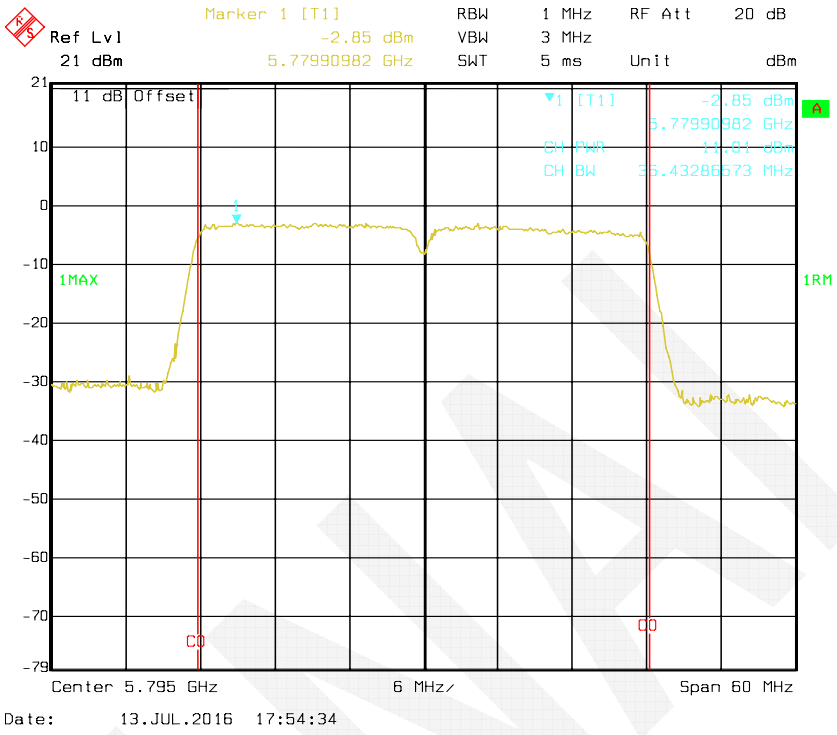
802.11n HT20 mode, Antenna 2: RF Output Power-5825 MHz



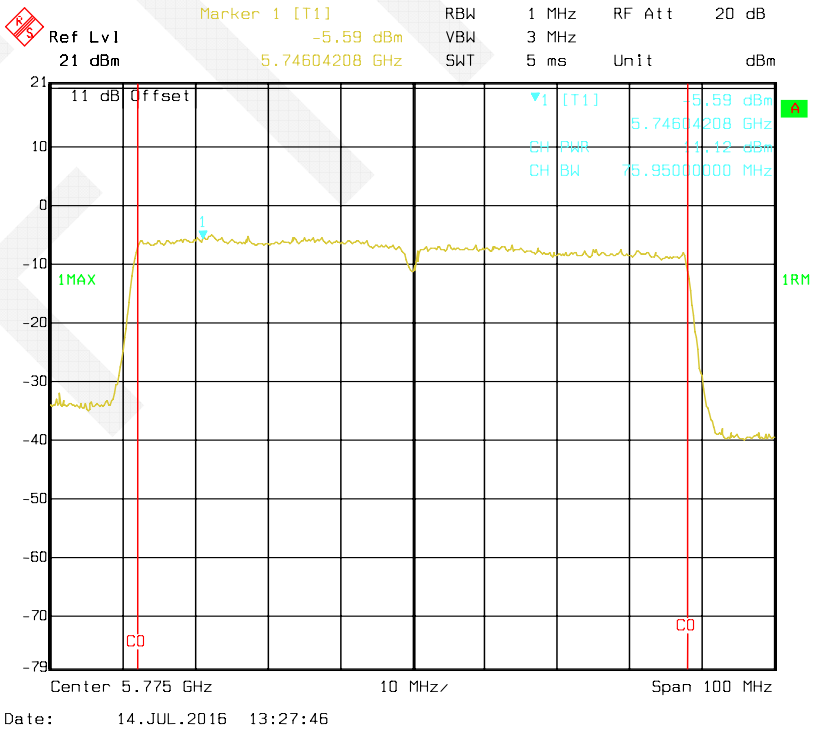
802.11n HT40 mode, Antenna 2: RF Output Power-5755 MHz



802.11n HT40 mode, Antenna 2: RF Output Power-5795 MHz



802.11ac 80, Antenna 2: RF Output Power-5775 MHz



FCC §15.407(a) (1) (3) (5) - POWER SPECTRAL DENSITY

Applicable Standard

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.

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

Test Procedure

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.I.a).
b) Set VBW $\geqslant$ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500kHz/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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
	RF Cable	NO.3		2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	27°C ~30°C
Relative Humidity:	65% ~ 63%
ATM Pressure:	94.9kPa ~ 94.7kPa

The testing was performed by Mill Chen from 2016-07-06 to 2016-07-14.

Test Mode: Transmitting

Test Result: Pass

Note: The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

So:

Directional gain = GANT + Array Gain = 3.84+10*log(2) = 6.84dBi
The Power density Limits was reduced 0.84dB in MIMO mode

5150-5250 MHz:

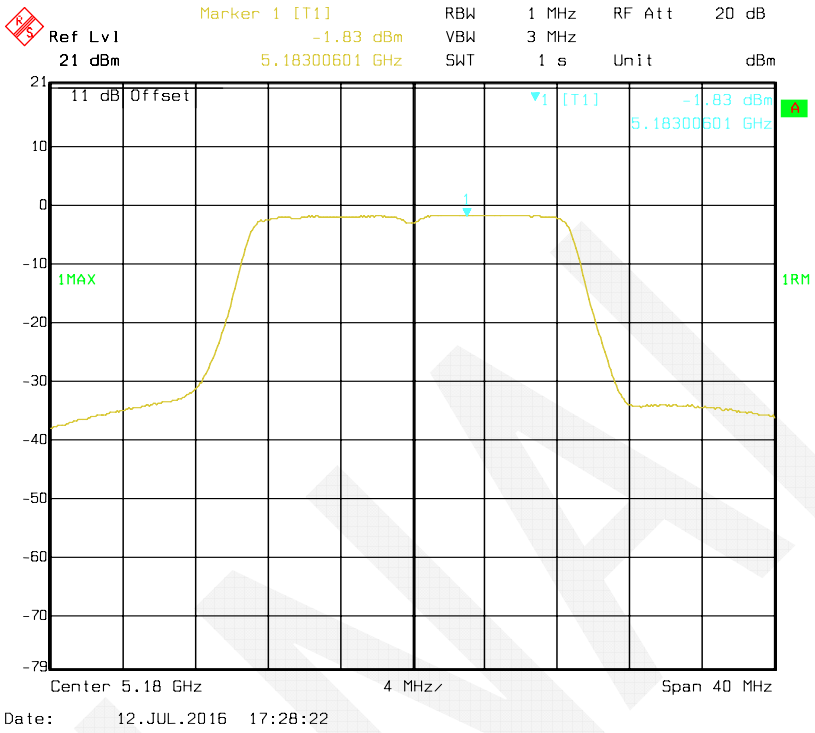
Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
			ANT1	ANT2	ANT1+ANT2	
802.11a	Low	5180	-1.83	-0.79	/	10.16
	Middle	5220	-1.25	0.28	/	10.16
	High	5240	-1.48	-1.11	/	10.16
802.11n HT20	Low	5180	-1.51	-1.54	1.49	10.16
	Middle	5220	0.46	-0.17	3.17	10.16
	High	5240	0.34	-1.31	2.60	10.16
802.11n HT40	Low	5190	-1.82	-1.23	1.50	10.16
	High	5230	-0.29	-1.46	2.17	10.16
802.11a	/	5210	-4.68	-5.91	-2.24	10.16

5725-5850 MHz:

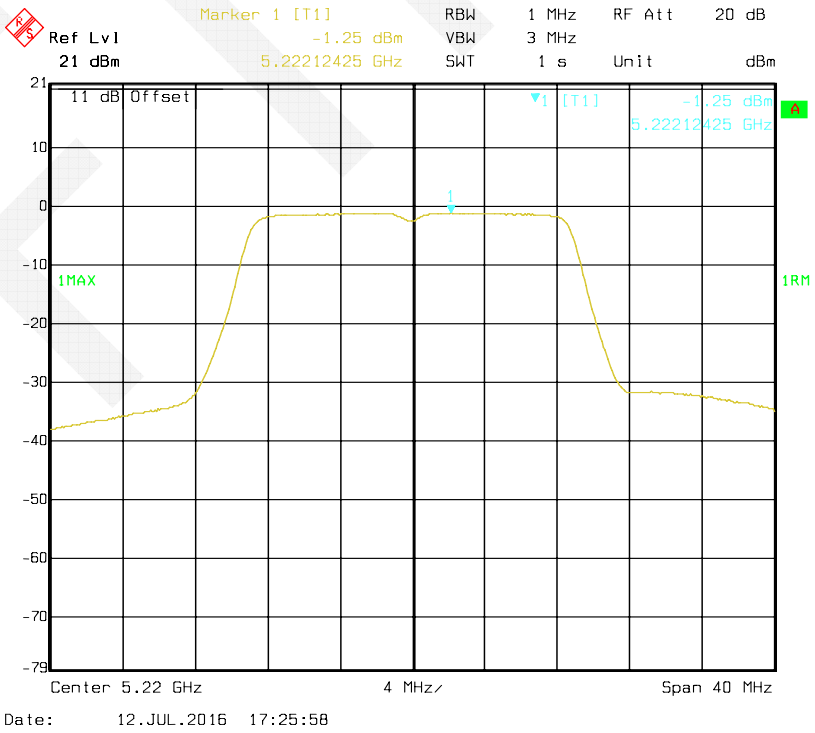
Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Total (dBm/500kHz)	Limit dBm/500kHz
			ANT1	ANT2	ANT1+ANT2	
802.11a	Low	5745	0.21	1.16	/	29.16
	Middle	5785	0.69	-0.36	/	29.16
	High	5825	0.47	-2.39	/	29.16
802.11n HT20	Low	5745	-1.04	-0.60	2.20	29.16
	Middle	5785	0.12	-0.42	2.87	29.16
	High	5825	-0.33	-2.27	1.82	29.16
802.11n HT40	Low	5755	-3.09	-2.26	0.36	29.16
	High	5795	-2.34	-3.62	0.08	29.16
802.11a	/	5775	-9.08	-9.22	-6.14	29.16

5150-5250 MHz:

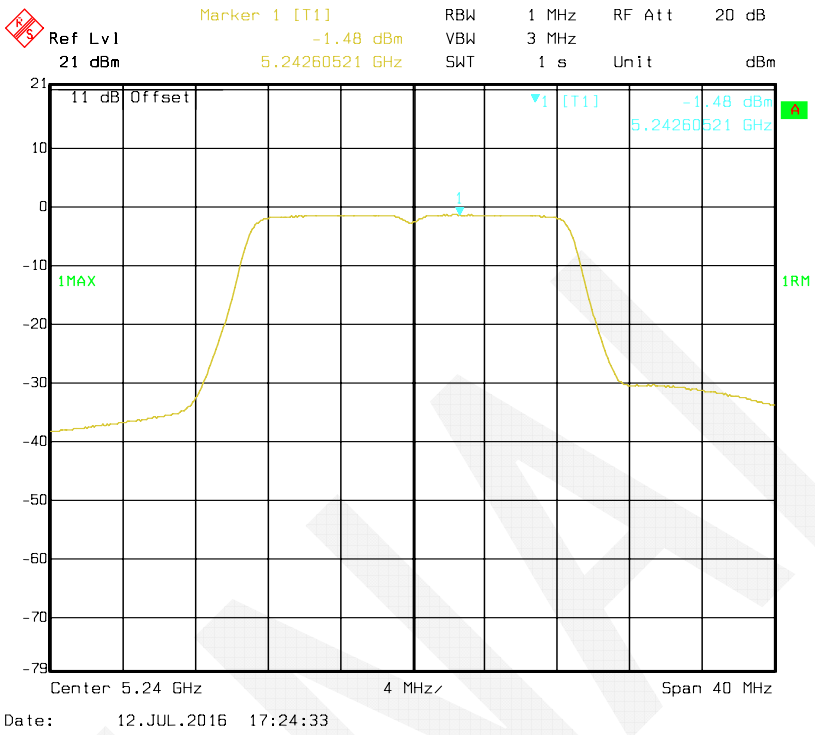
802.11a mode, Antenna 1: Power Spectral Density-5180 MHz



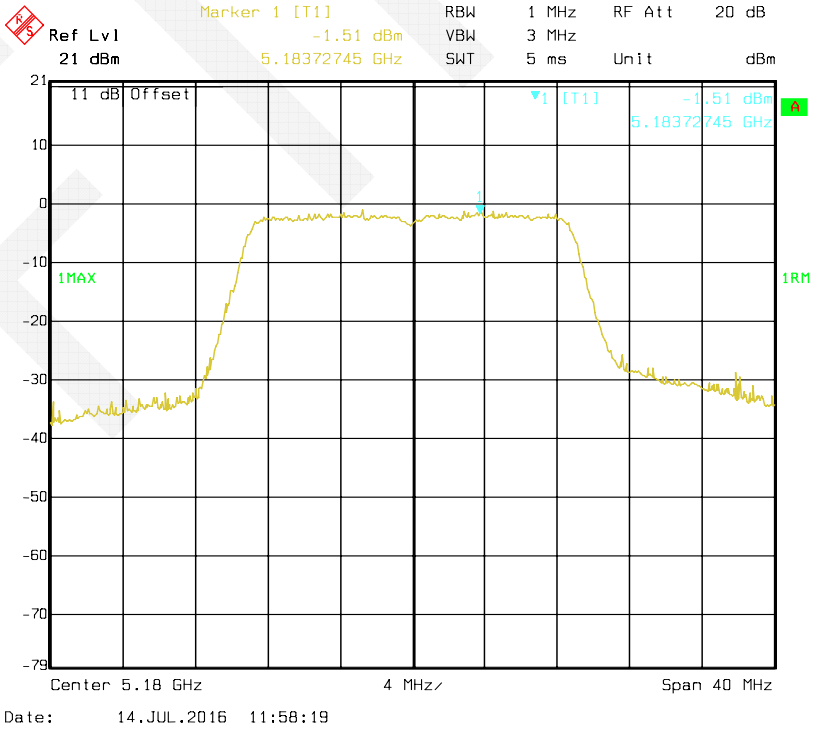
802.11a mode, Antenna 1: Power Spectral Density-5220 MHz



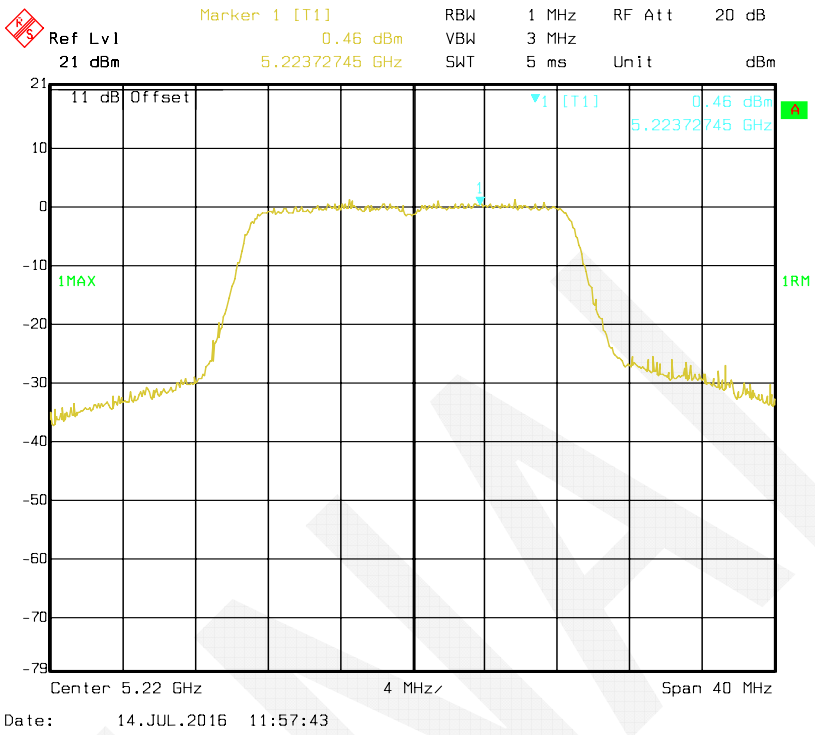
802.11a mode, Antenna 1: Power Spectral Density-5240 MHz



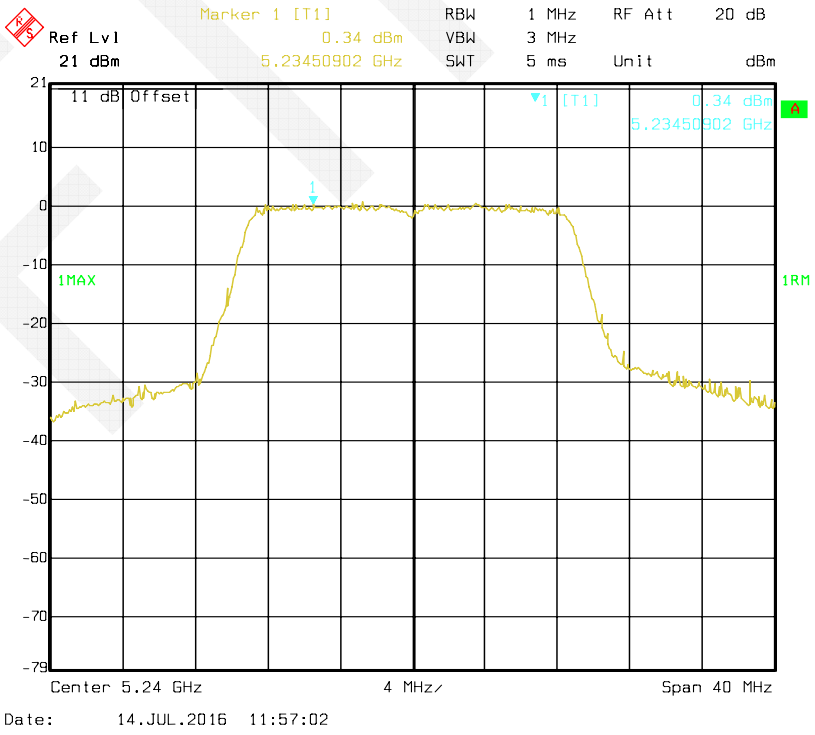
802.11n HT20 mode, Antenna 1: Power Spectral Density-5180 MHz



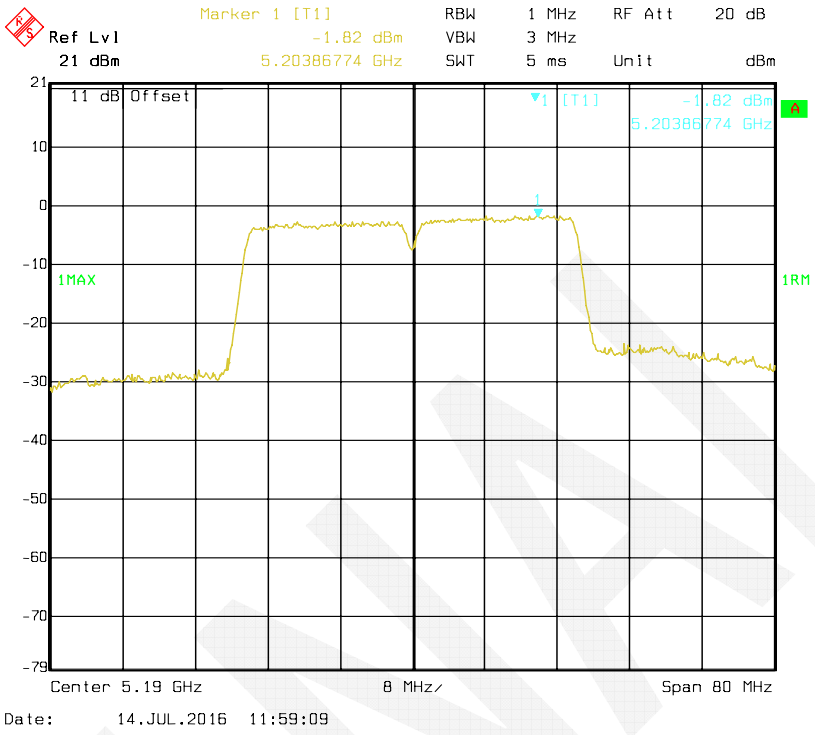
802.11n HT20 mode, Antenna 1: Power Spectral Density-5220 MHz



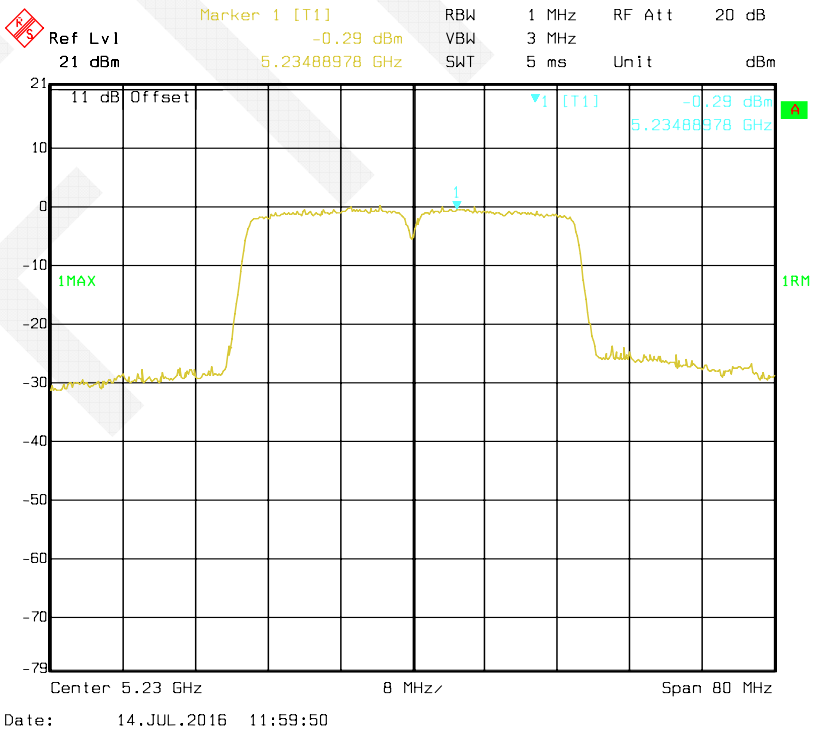
802.11n HT20 mode, Antenna 1: Power Spectral Density-5240 MHz



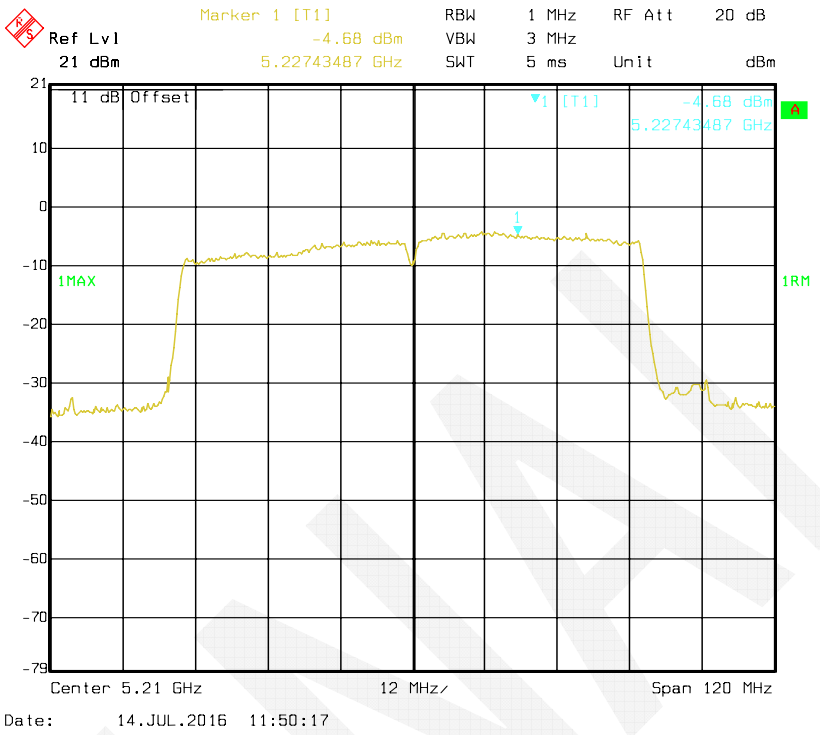
802.11n HT40 mode, Antenna 1: Power Spectral Density-5190 MHz



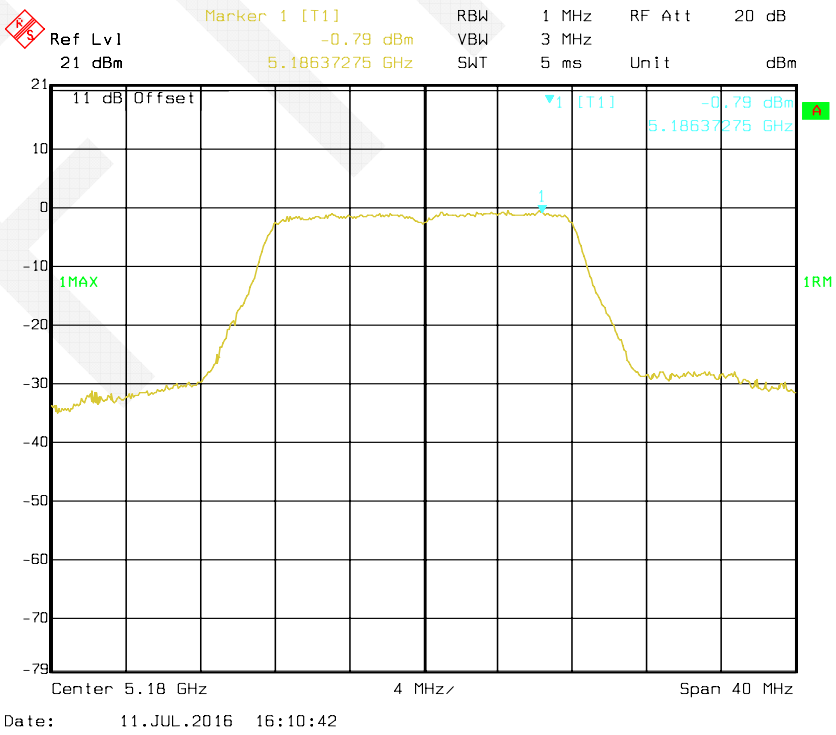
802.11n HT40 mode, Antenna 1: Power Spectral Density-5230 MHz



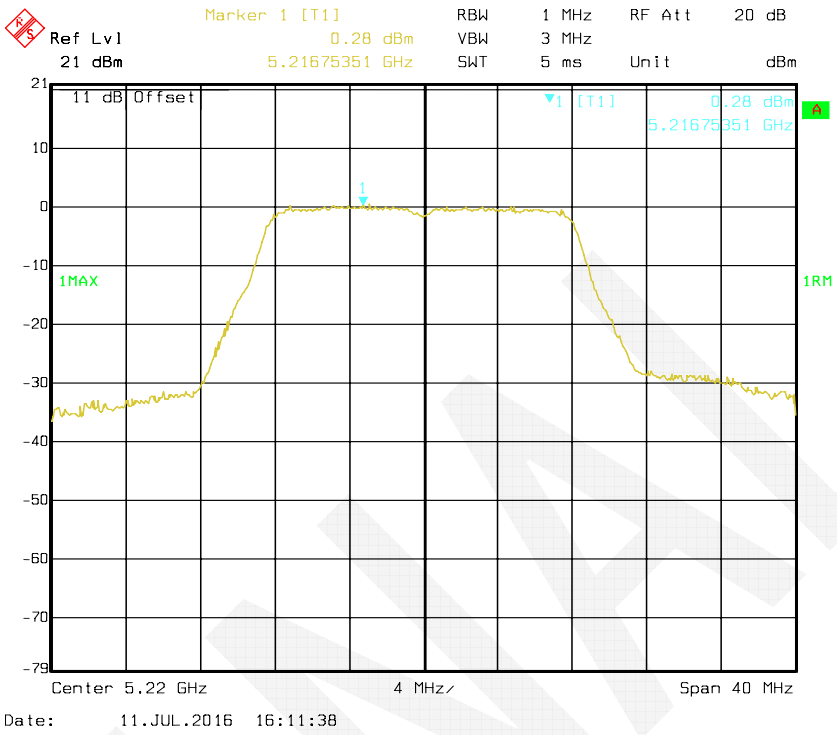
802.11ac 80 mode, Antenna 1: Power Spectral Density-5210 MHz



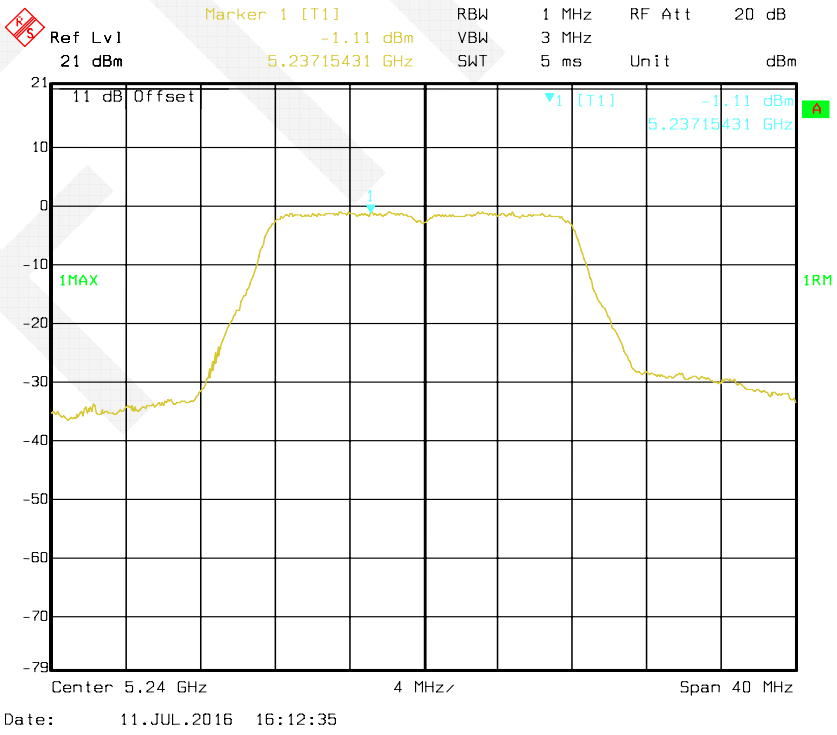
802.11a mode, Antenna 2: Power Spectral Density-5180 MHz



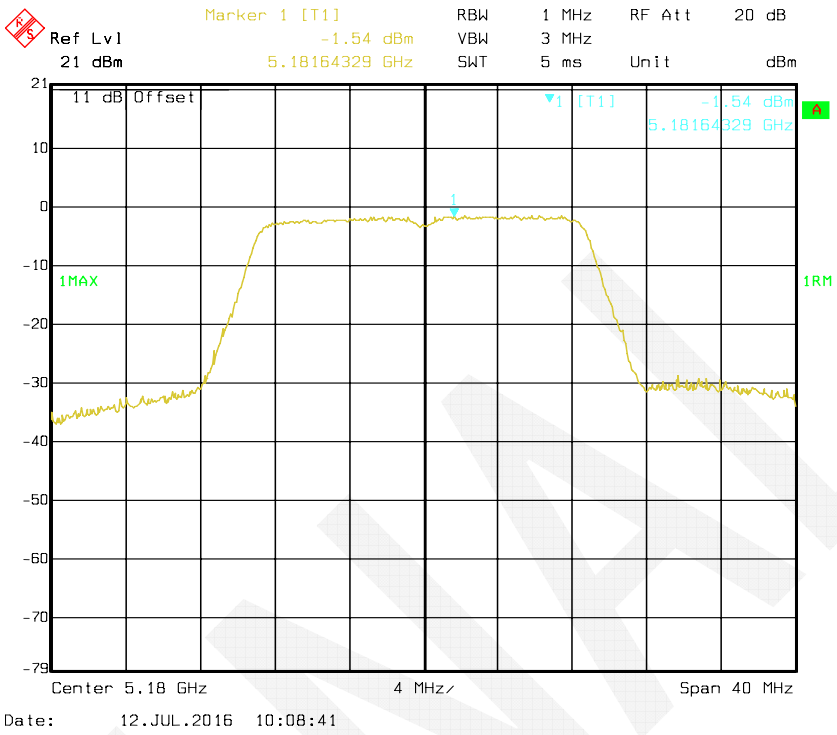
802.11a mode, Antenna 2: Power Spectral Density-5220 MHz



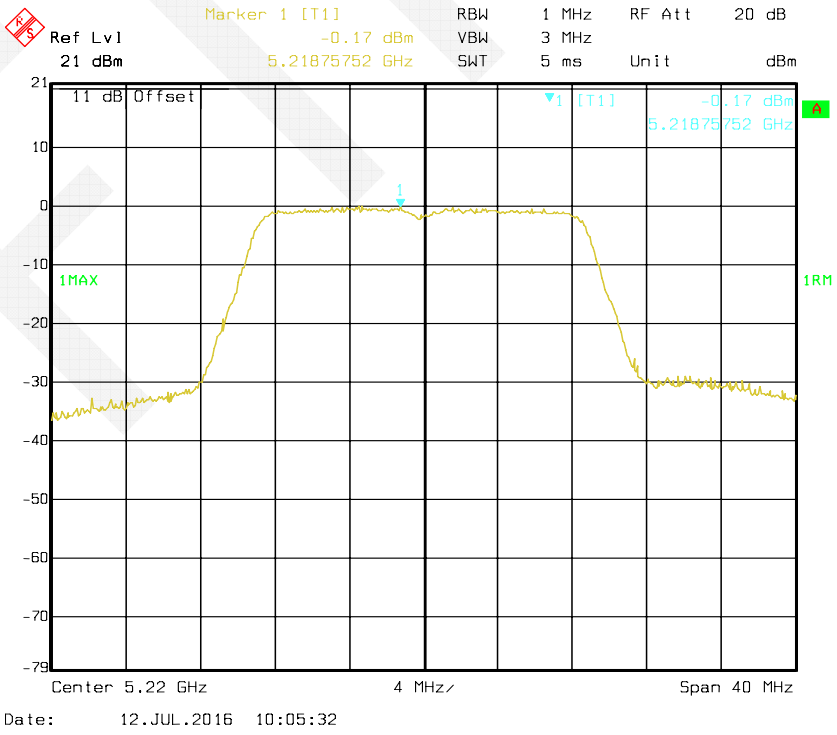
802.11a mode, Antenna 2: Power Spectral Density-5240 MHz



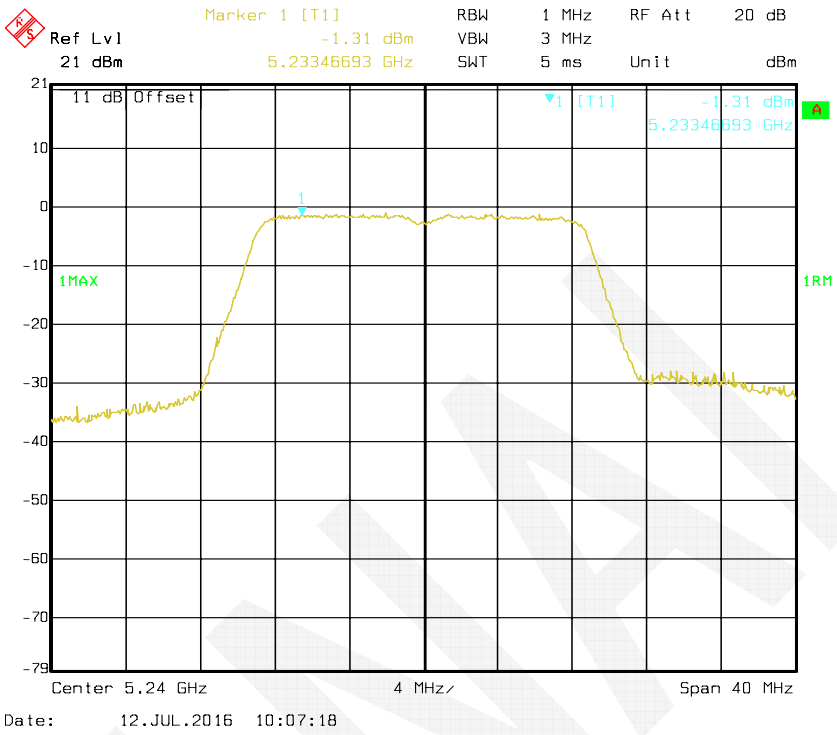
802.11n HT20 mode, Antenna 2: Power Spectral Density-5180 MHz



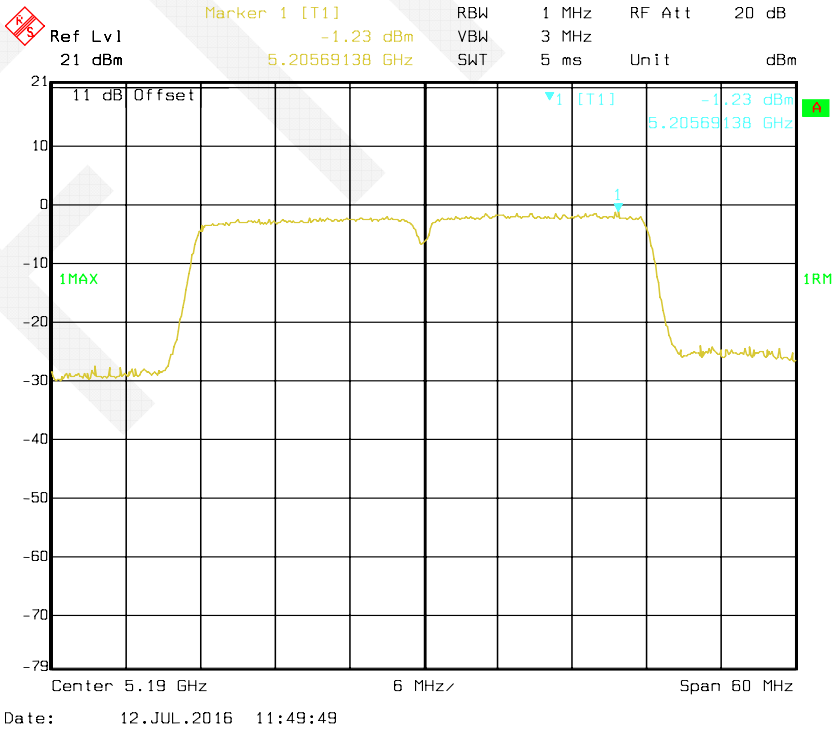
802.11n HT20 mode, Antenna 2: Power Spectral Density-5220 MHz



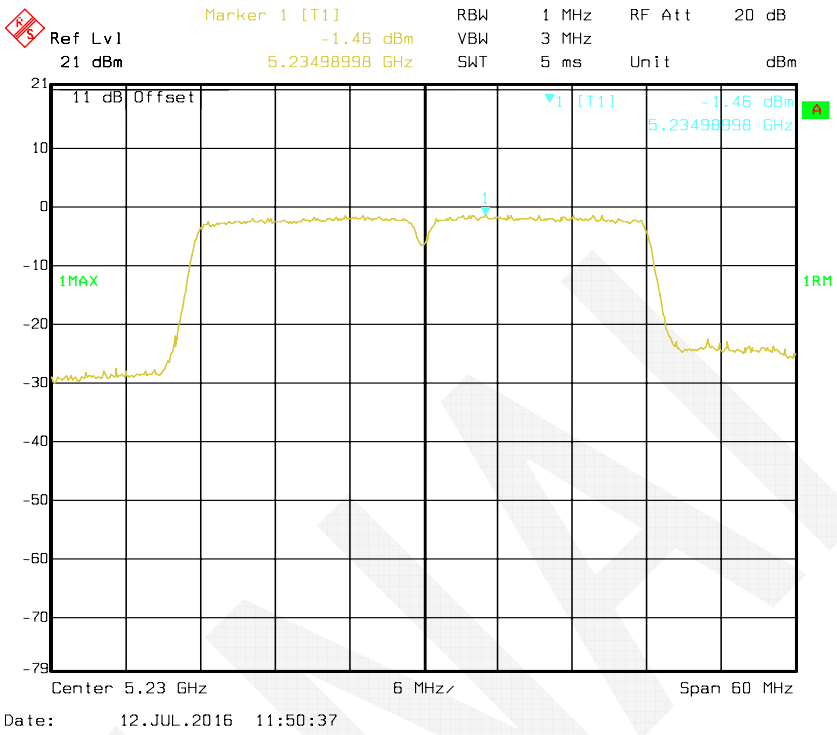
802.11n HT20 mode, Antenna 2: Power Spectral Density-5240 MHz



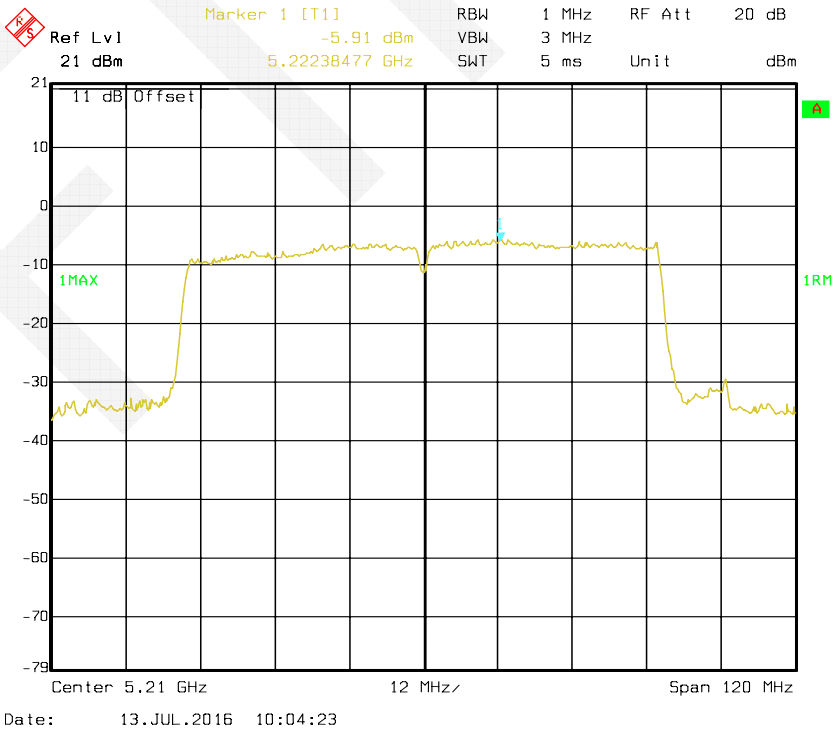
802.11n HT40 mode, Antenna 2: Power Spectral Density-5190 MHz



802.11n HT40 mode, Antenna 2: Power Spectral Density-5230 MHz

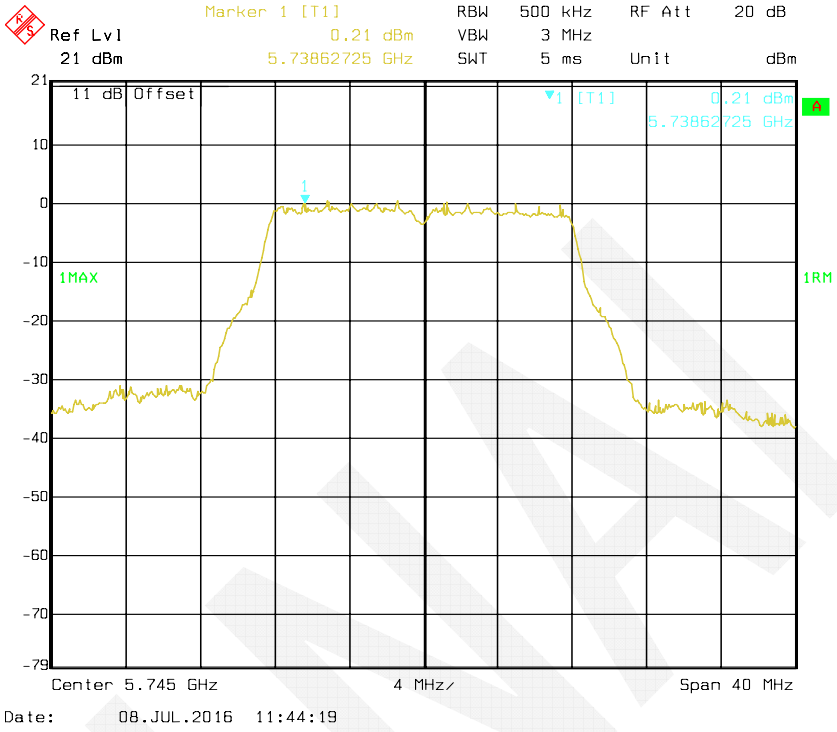


802.11ac 80 mode, Antenna 2: Power Spectral Density-5210 MHz

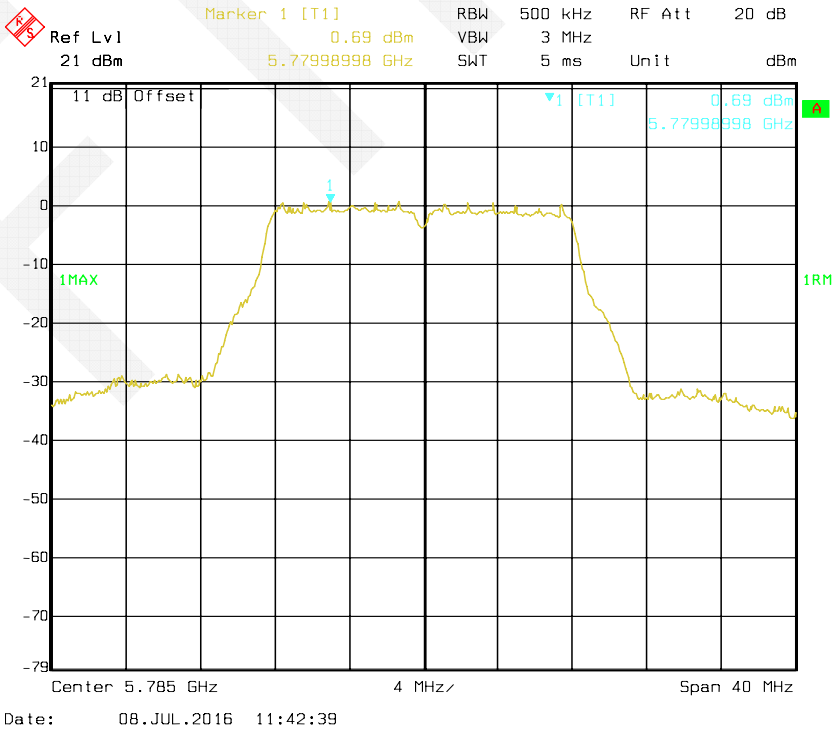


5725-5850 MHz:

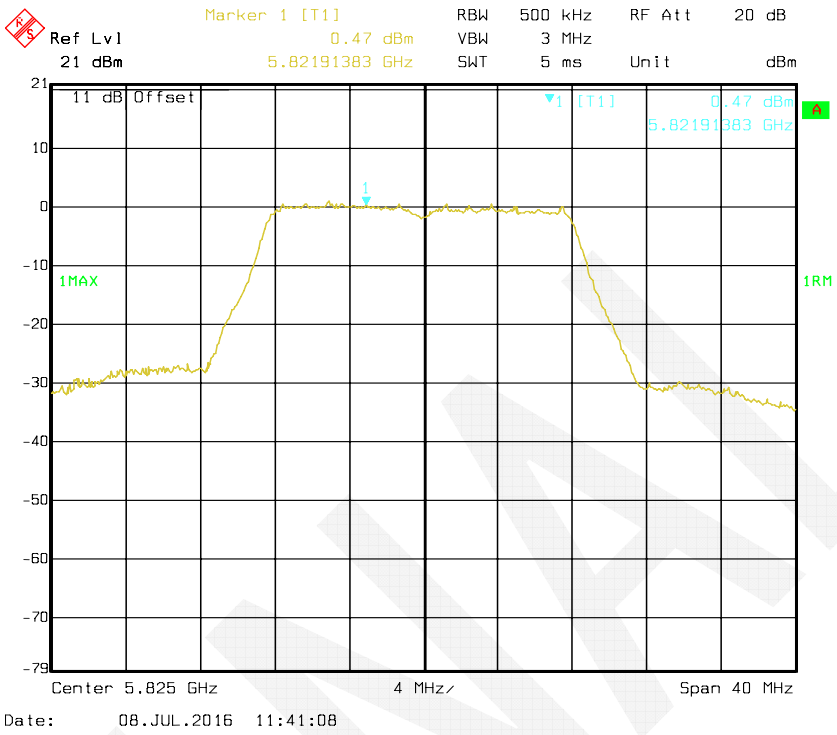
802.11a mode, Antenna 1: Power Spectral Density-5745 MHz



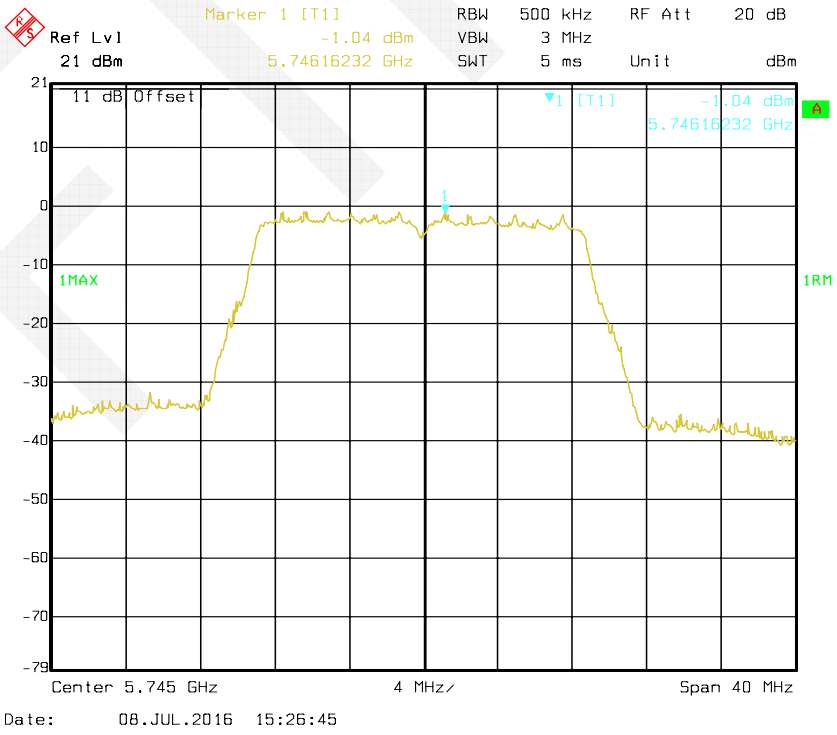
802.11a mode, Antenna 1: Power Spectral Density-5785 MHz



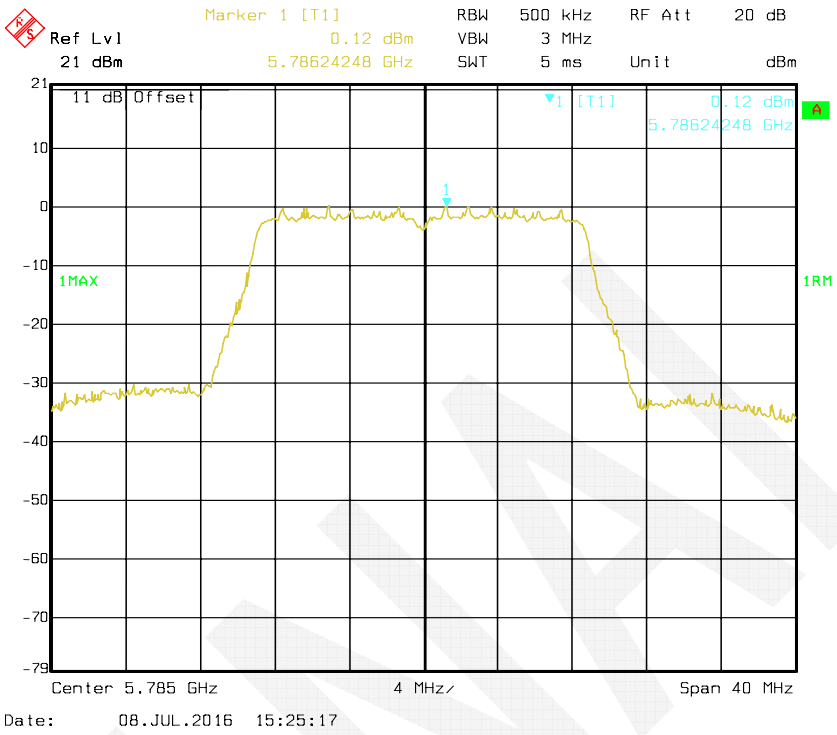
802.11a mode, Antenna 1: Power Spectral Density-5825 MHz



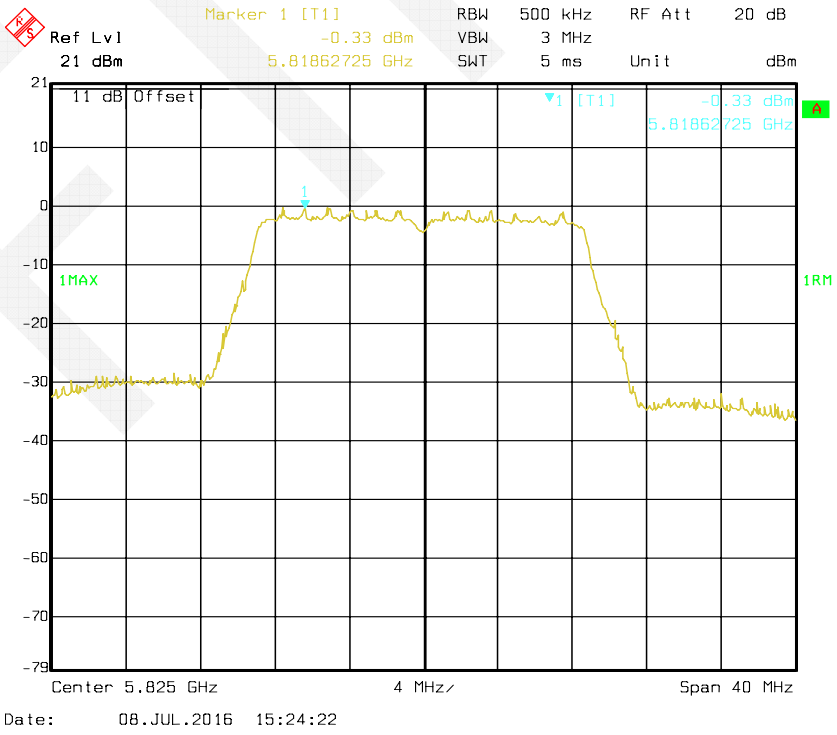
802.11n HT20 mode, Antenna 1: Power Spectral Density-5745 MHz



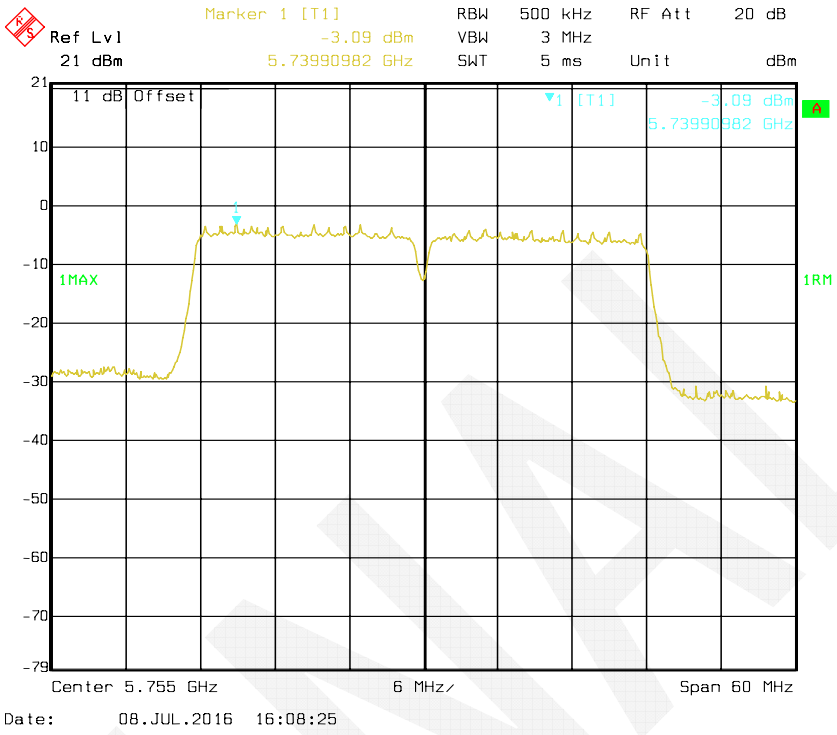
802.11n HT20 mode, Antenna 1: Power Spectral Density-5785 MHz



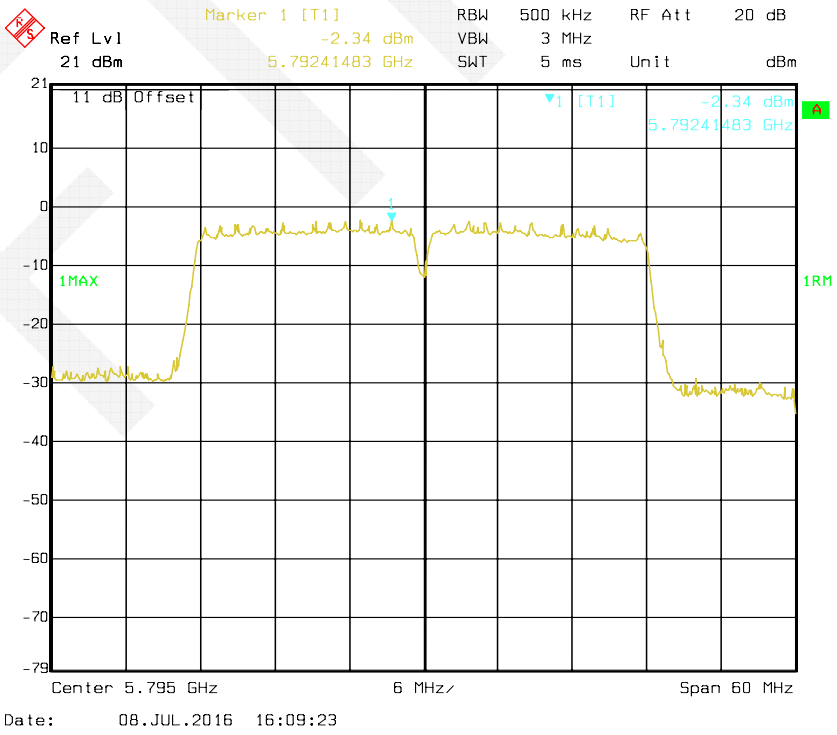
802.11n HT20 mode, Antenna 1: Power Spectral Density-5825 MHz



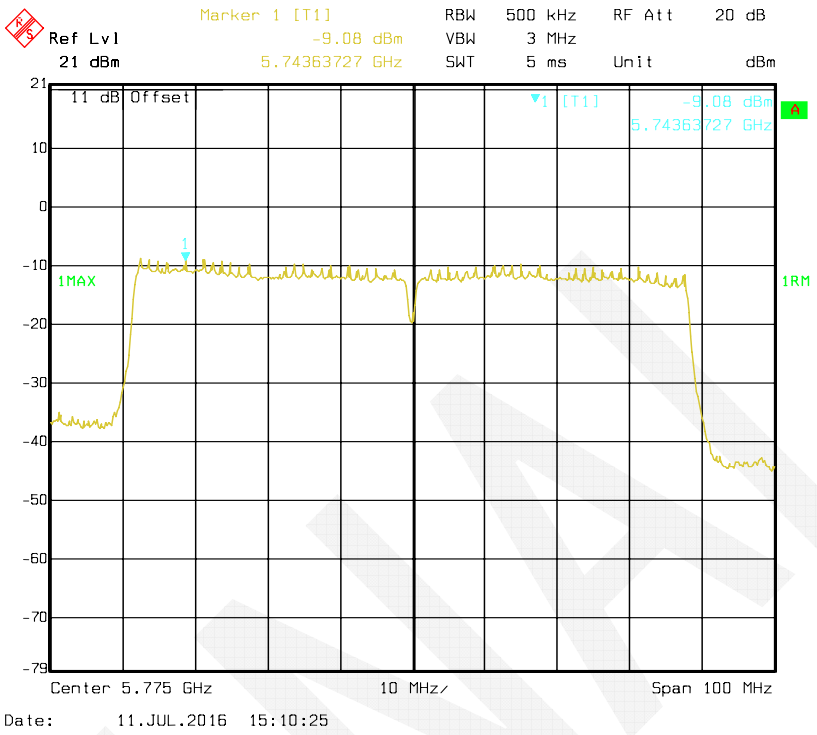
802.11n HT40 mode, Antenna 1: Power Spectral Density-5755 MHz



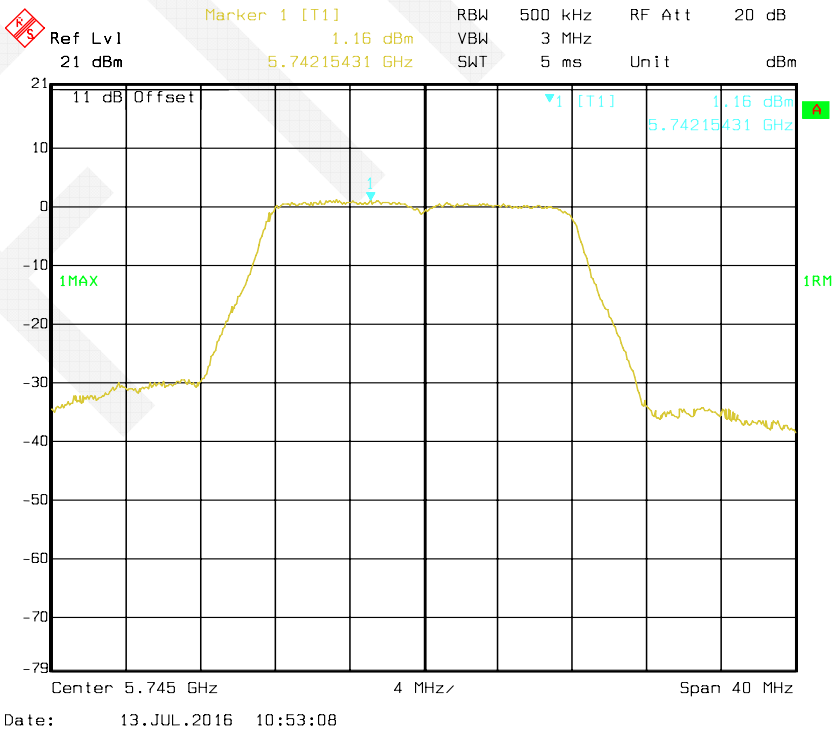
802.11n HT40 mode, Antenna 1: Power Spectral Density-5795 MHz



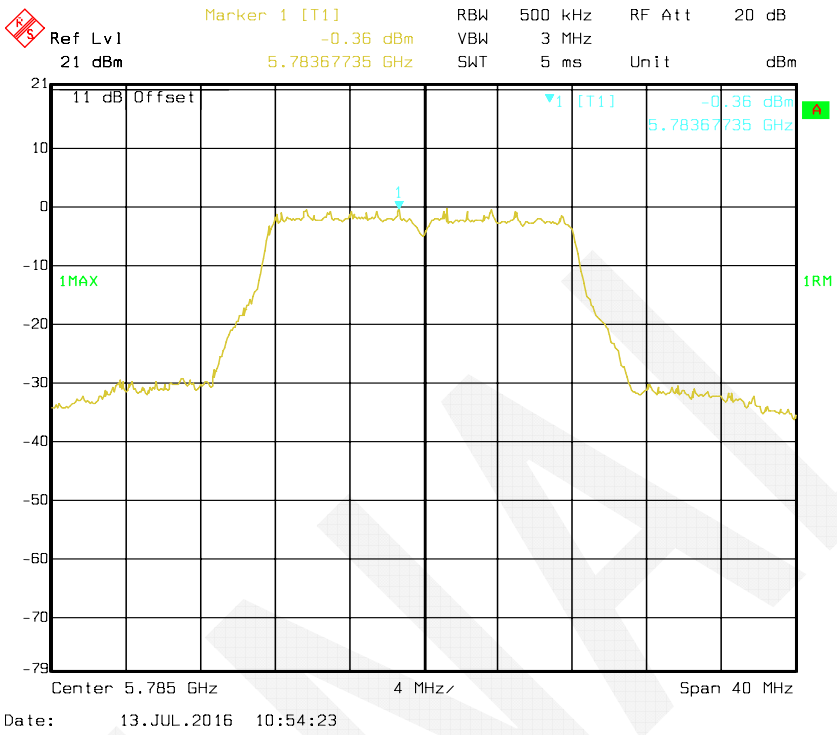
802.11ac 80 mode, Antenna 1: Power Spectral Density-5775 MHz



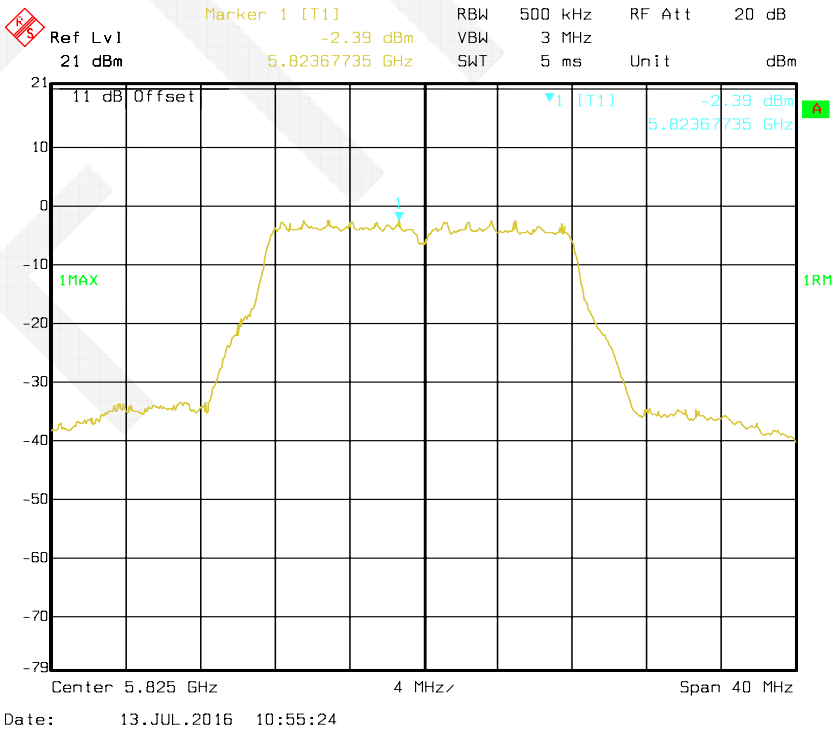
802.11a mode, Antenna 2: Power Spectral Density-5745 MHz



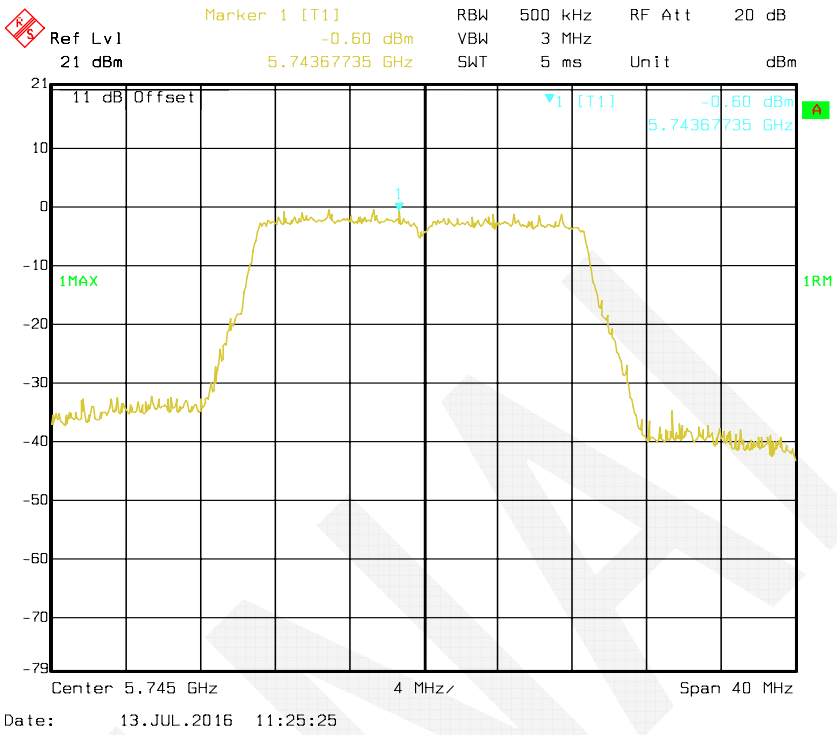
802.11a mode, Antenna 2: Power Spectral Density-5785 MHz



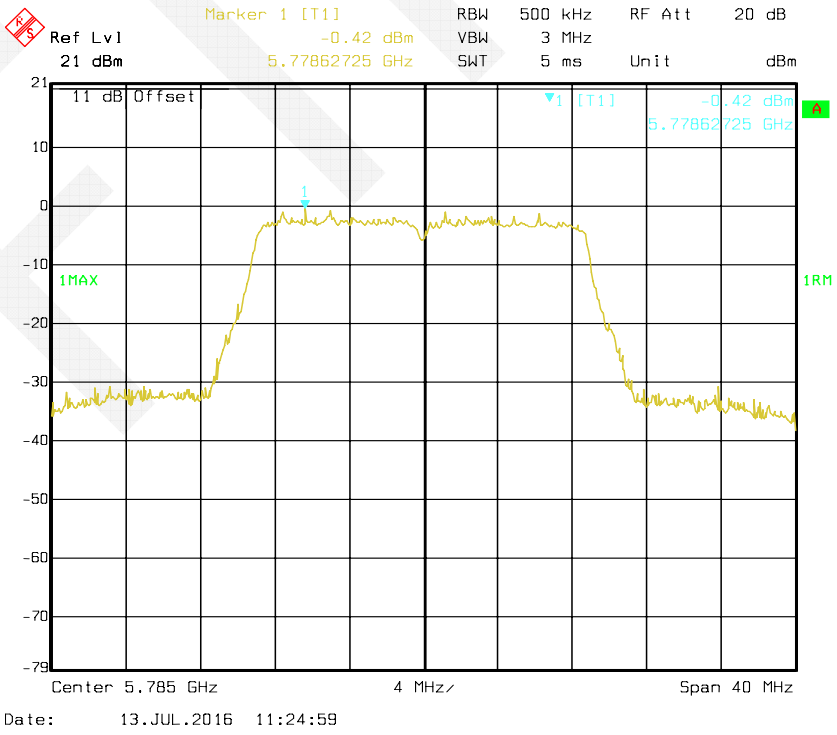
802.11a mode, Antenna 2: Power Spectral Density-5825 MHz



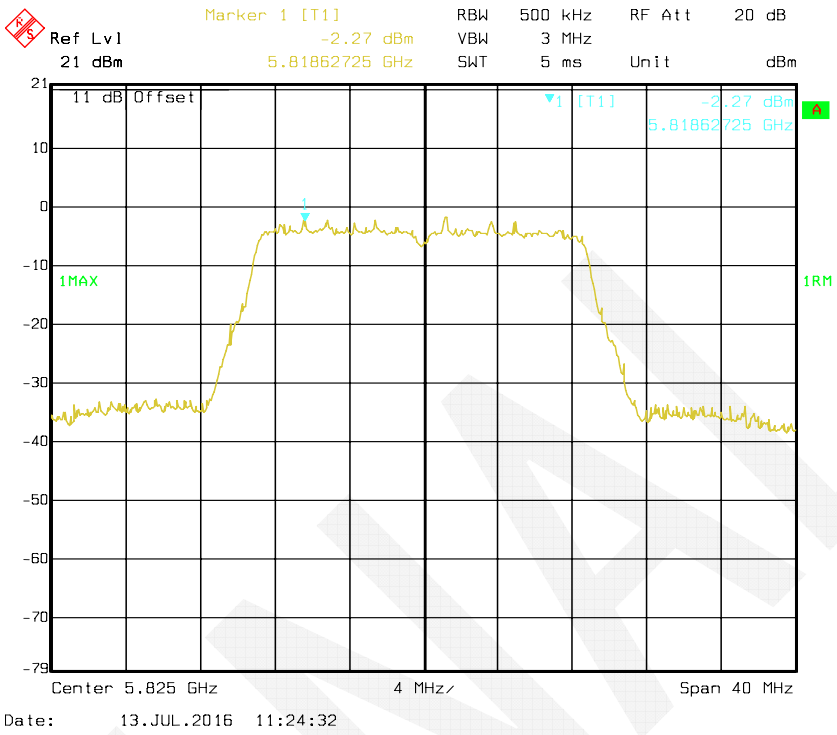
802.11n HT20 mode, Antenna 2: Power Spectral Density-5745 MHz



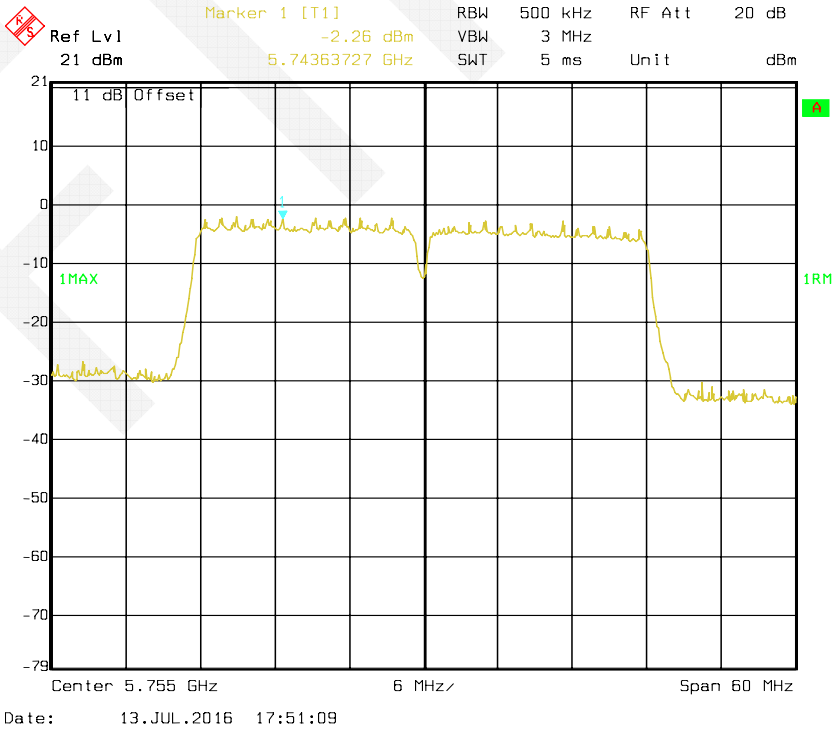
802.11n HT20 mode, Antenna 2: Power Spectral Density-5785 MHz



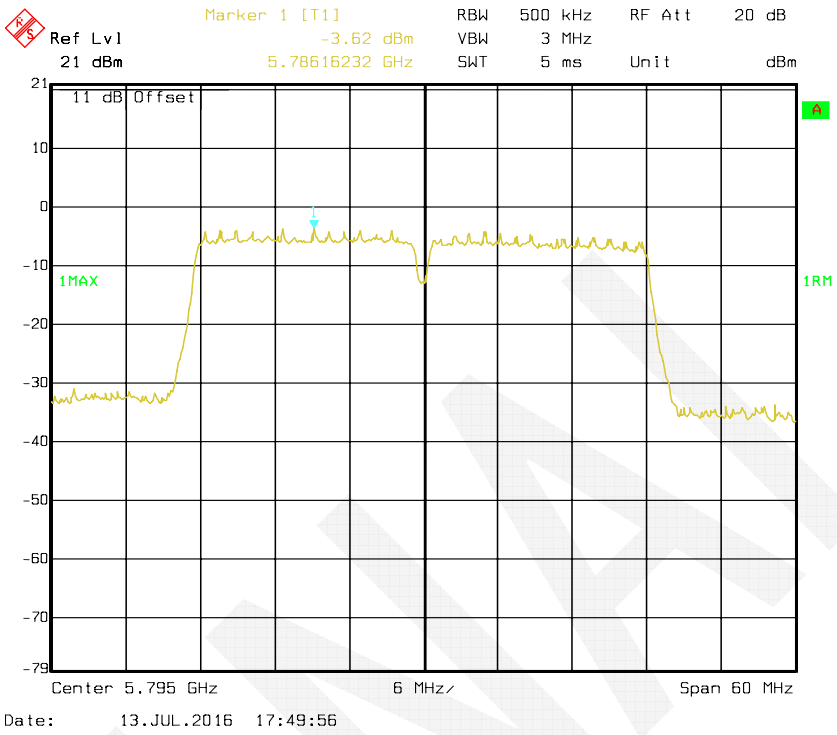
802.11n HT20 mode, Antenna 2: Power Spectral Density-5825 MHz



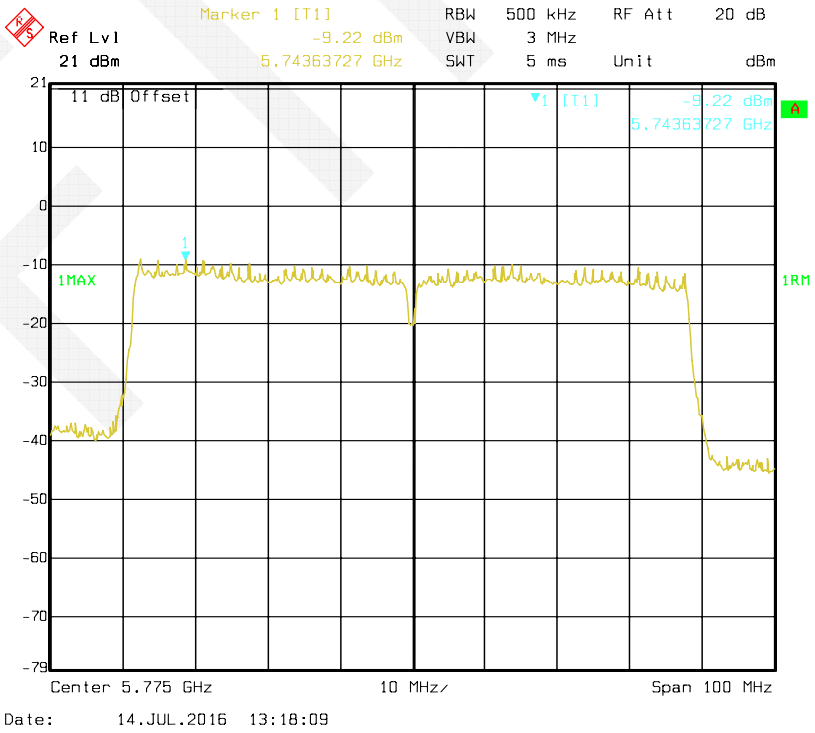
802.11n HT40 mode, Antenna 2: Power Spectral Density-5755 MHz



802.11n HT40 mode, Antenna 2: Power Spectral Density-5795 MHz



802.11ac 80 mode, Antenna 2: Power Spectral Density-5775 MHz



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