



FCC PART 15.407 TEST REPORT

For

Grandstream Networks, Inc.

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

FCC ID: YZZGWN7600

Report Type: Original Report	Product Type: Wireless Access Point
Report Number: RSZ161216002-00B	
Report Date: 2017-02-17	
Oscar Ye 	
Reviewed By: 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	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	5
TEST FACILITY	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	6
ANTENNA SYSTEM	7
DUTY CYCLE	7
EQUIPMENT MODIFICATIONS	11
SUPPORT EQUIPMENT LIST AND DETAILS	11
EXTERNAL I/O CABLE.....	11
BLOCK DIAGRAM OF TEST SETUP	11
SUMMARY OF TEST RESULTS	13
TEST EQUIPMENT LIST	14
FCC §15.407 (f) & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	15
APPLICABLE STANDARD	15
FCC §15.203 – ANTENNA REQUIREMENT	16
APPLICABLE STANDARD	16
ANTENNA CONNECTOR CONSTRUCTION	16
FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS	17
APPLICABLE STANDARD	17
EUT SETUP	17
EMI TEST RECEIVER SETUP.....	17
TEST PROCEDURE	17
TEST RESULTS SUMMARY	18
TEST DATA	18
§15.205 & §15.209 & §15.407(B) (1),(4),(6),(7) – UNDESIRABLE EMISSION	23
APPLICABLE STANDARD	23
EUT SETUP	24
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	25
TEST PROCEDURE	25
CORRECTED AMPLITUDE & MARGIN CALCULATION	25
TEST RESULTS SUMMARY	25
TEST DATA	26
FCC §15.407(a) (1) – 26 dB & 6dB EMISSION BANDWIDTH.....	38
APPLICABLE STANDARD	38
TEST PROCEDURE	38
TEST DATA	39

FCC §15.407(a) (1) (3)– CONDUCTED TRANSMITTER OUTPUT POWER	100
APPLICABLE STANDARD	100
TEST PROCEDURE	100
TEST DATA	101
FCC §15.407(a) (1) (5) - POWER SPECTRAL DENSITY	134
APPLICABLE STANDARD	134
TEST PROCEDURE	134
TEST DATA	135

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Grandstream Networks, Inc.*'s product, model number: *GWN7600* (FCC ID: *YZZGWN7600*) in this report was a *Wireless Access Point*, which was measured approximately: 22.85 cm (L) x 22.0 cm (W) x 7.9 cm (H), rated with input voltage: DC 24 V from adapter or powered by POE supply.

** All measurement and test data in this report was gathered from production sample serial number 1603881 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2016-12-16.*

Objective

This type approval report is prepared on behalf of *Grandstream Networks, Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B 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 and Part 15B JBP submissions with FCC ID: YZZGWN7600.

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		± 0.9 dB
RF Output Power with Power meter		± 0.5 dB
Radiated emission	30MHz~1GHz	± 5.91 dB
	Above 1G	± 4.92 dB
Occupied Bandwidth		± 0.5 kHz
Temperature		± 1.0 °C
Humidity		$\pm 6\%$

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

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) 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 November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10-2013.

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.

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

Soft ware: “QRCT”

The test was tested with 100% duty cycle and the worst case was performed as below:

5150 MHz – 5250 MHz:

802.11a: Rate 6Mbps, Power level: 19
802.11n20: Rate MCS0, Power level: 19
802.11n40: Rate MCS0, Power level: 19
802.11ac20: Rate MCS0, Power level: 19
802.11ac40: Rate MCS0, Power level: 19
802.11ac80: Rate MCS0, Power level: 19

5725 MHz – 5850 MHz:

802.11a: Rate 6Mbps, Power level: 19
802.11n20: Rate MCS0, Power level: 19
802.11n40: Rate MCS0, Power level: 19
802.11ac20: Rate MCS0, Power level: 19
802.11ac40: Rate MCS0, Power level: 19
802.11ac80: Rate MCS0, Power level: 19

Antenna system

This Device Emploies Cyclic Delay Diversity.

Total directional gain (dBi) = gain of individual transmit antennas (dBi) + array gain (dB),

When determining reductions in power spectral density limits, array gain is calculated as follows:

Array gain = $10 \log (N_{\text{ANT}})$, where N_{ANT} is the number of transmit antennas.

When determining reductions in conducted power limits, array gain is calculated as follows:

Array Gain = 0 dB for $N_{\text{ANT}} \leq 4$;

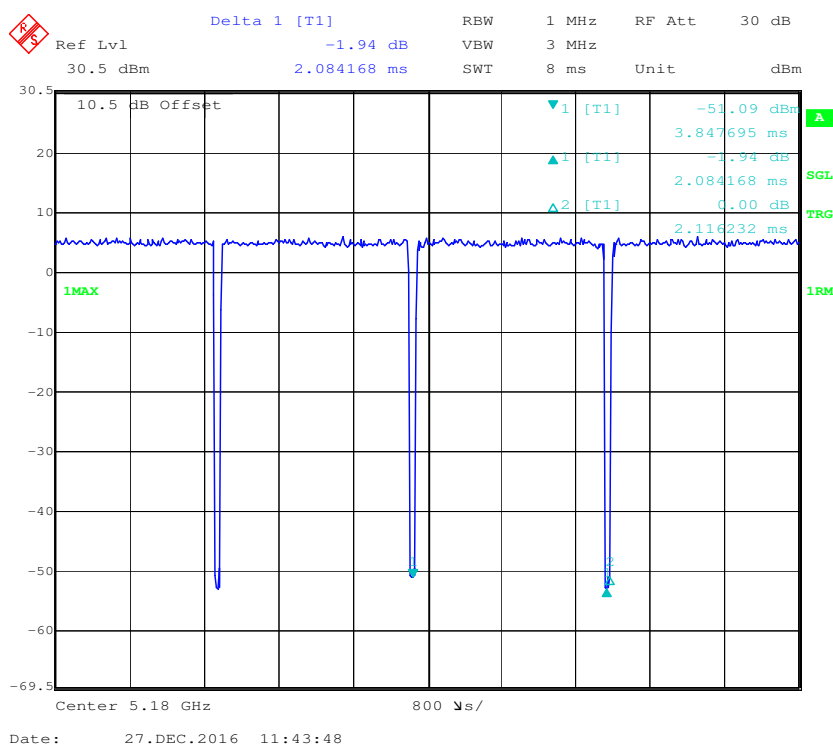
Array Gain = 0 dB for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = 3 dB for 20-MHz channel widths with $N_{\text{ANT}} \geq 5$.

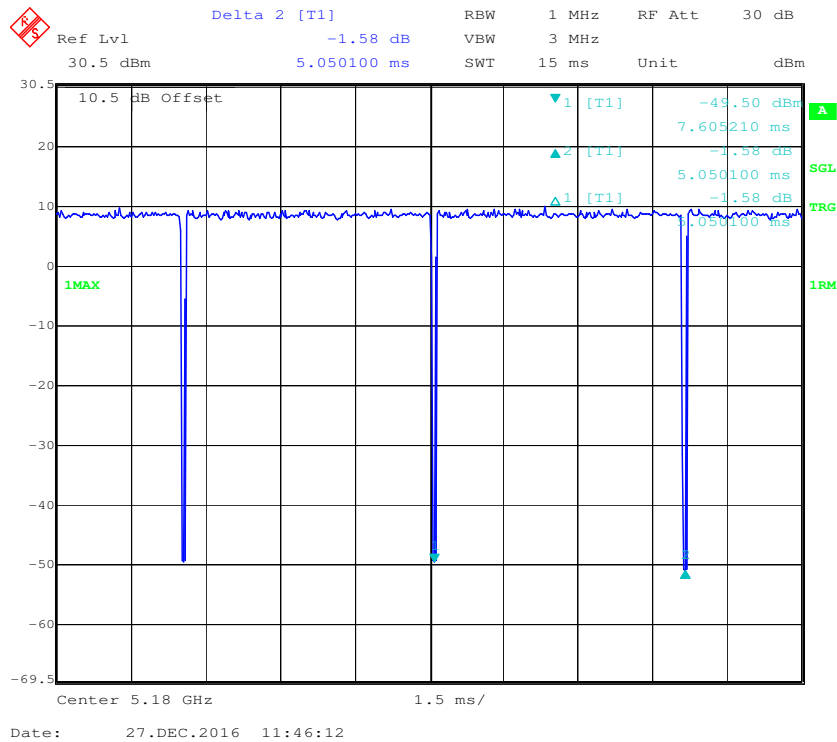
Duty cycle

5150 MHz – 5250 MHz:

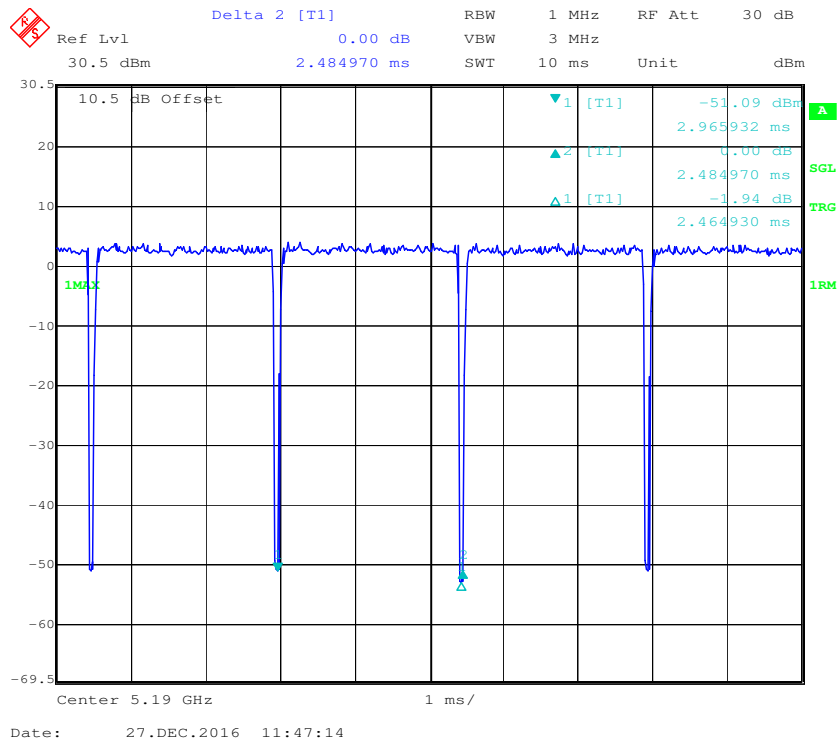
802.11a mode



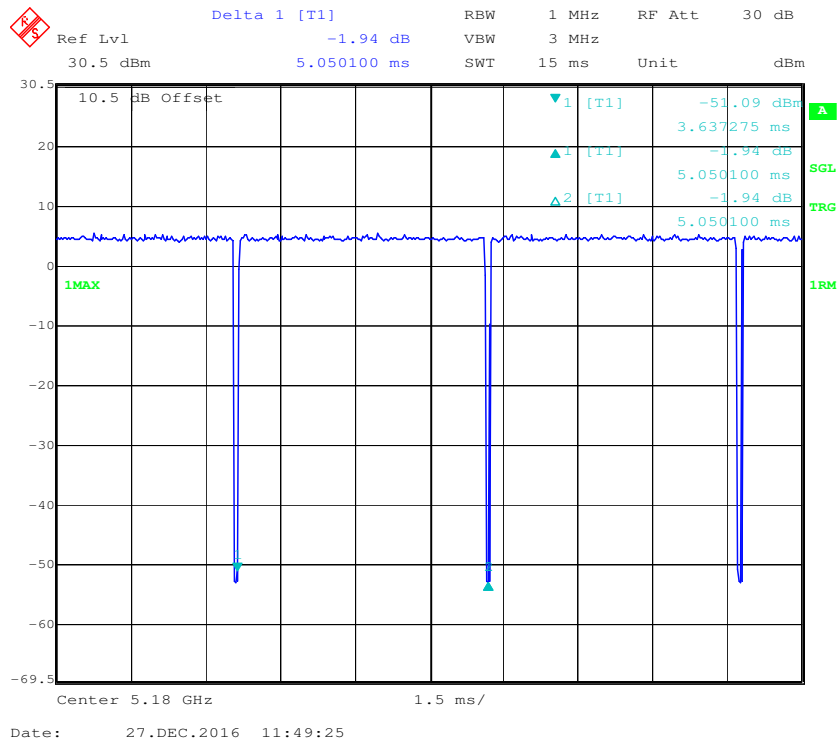
802.11n20 mode



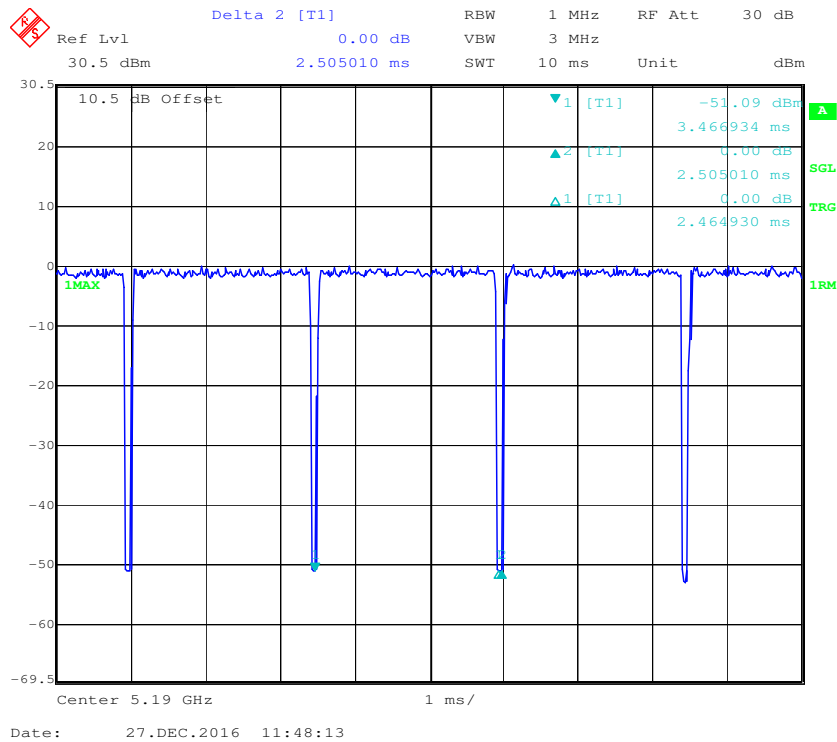
802.11n40 Mode

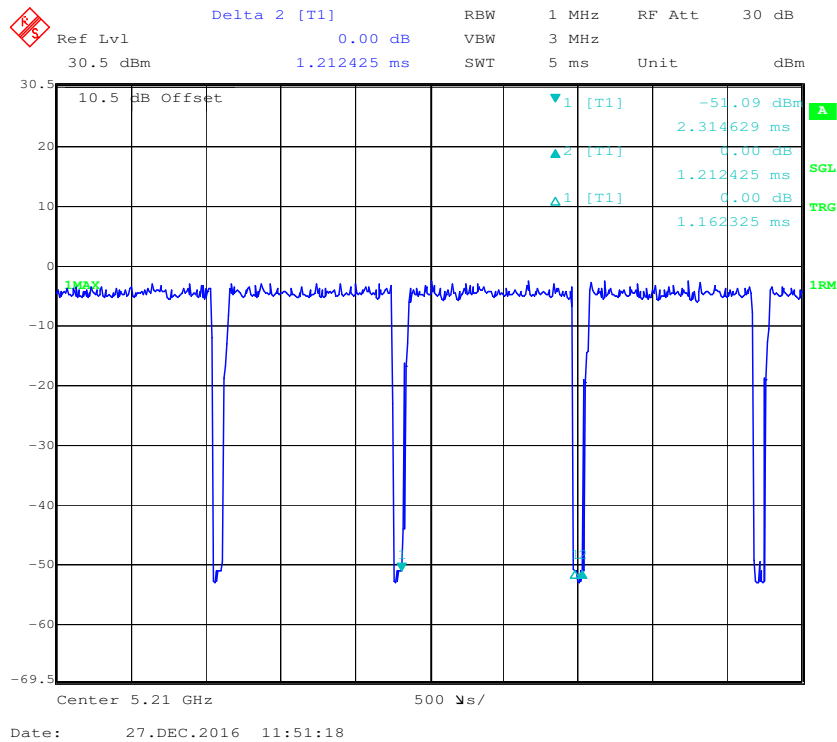


802.11ac20 Mode



802.11ac40 Mode



802.11ac80 Mode

Band	Duty Cycle (%)	T(us)	1/T(kHz)	VBW Setting	10log(1/x)
802.11a	>98	-	-	10Hz	0
802.11n20	>98	-	-	10Hz	0
802.11n40	>98	-	-	10Hz	0
802.11ac20	>98	-	-	10Hz	0
802.11ac40	>98	-	-	10Hz	0
802.11ac80	96	1162	0.86	1kHz	0.18

Note: 5725-5825MHz band was used the same duty cycle to test.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

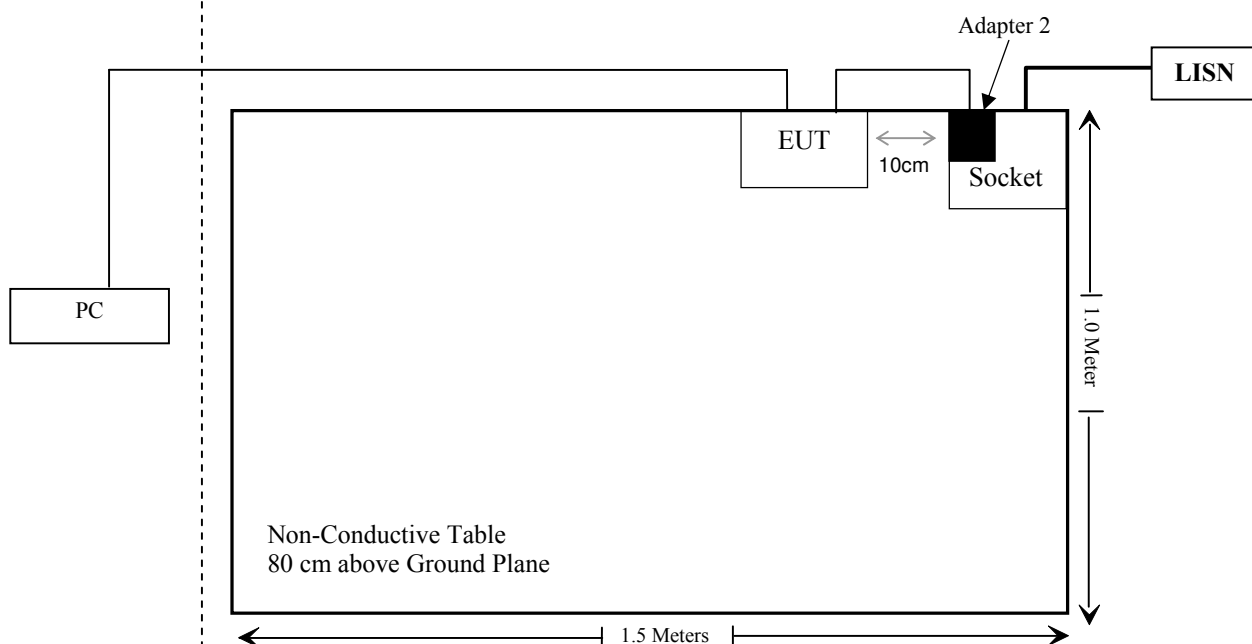
Manufacturer	Description	Model	Serial Number
Lenovo	Nootbook	T400	R8-LXAXE 09/12
HUAWEI	POE	PoE35-54A	2102220369ARG6001801
NETGEAR	Adapter 1	DSA-0421S-50	330-10142-01
MASS POWER	Adapter 2	NBS24J240100VU	1604

External I/O Cable

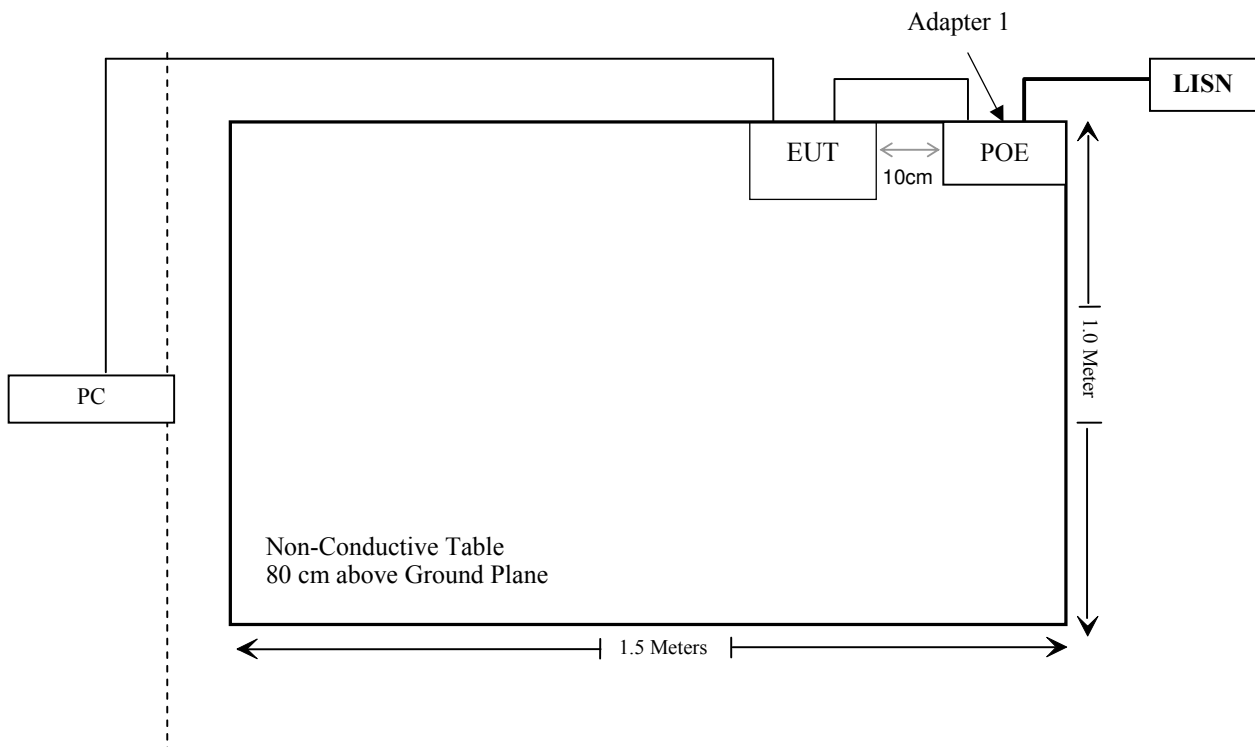
Cable Description	Length (m)	From Port	To
Un-shielding Un-detachable DC cable	0.8	POE	Adapter 1
Un-shielding detachable RJ45 cable	1.0	POE	EUT
Un-shielding detachable RJ45 cable	3.0	EUT	PC
Un-shielding detachable AC cable	0.9	Adapter 1	LISN
Un-shielding detachable AC cable	0.9	Adapter 2	LISN
Un-shielding Un-detachable DC cable	1.5	EUT	Adapter 2

Block Diagram of Test Setup

Powered by Adapter



Powered by POE



SUMMARY OF TEST RESULTS

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	834115/007	2016-11-25	2017-11-25
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	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	Amplifier	330	171377	2016-12-12	2017-12-12
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	2017-12-14
WEINSCHL	3dB Attenuator	5326	N/A	2016-06-18	2017-06-18
Agilent	Power Meter	N1912A	MY5000492	2016-11-18	2017-11-17
Agilent	Power Sensor	N1921A	MY54210024	2016-11-18	2017-11-17
Rohde & Schwarz	FSV40 Signal Analyzer	FSV40	101116	2016-07-04	2017-07-03
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).

FCC §15.407 (f) & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)**Applicable Standard**

According to FCC §2.1091 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

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/cm²)	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;

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

Calculated Formulary:

Predication of MPE limit at a given distance

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

Calculated Data (Worst Case):

Frequency (MHz)	Antenna Gain		Max tune –up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	(numeric)	(dBm)	(mW)			
5180-5240	3.0	2.0	23.00	199.53	20	0.08	1.0
5745-5825	3.0	2.0	22.50	177.83	20	0.07	1.0

Simultaneous transmitting consideration: (referring to the DTS report, the highest MPE for 2.4G band is 0.07mW/cm²)

The ratio= $MPE_{DTS}/limit + MPE_{UNII}/limit = 0.07 + 0.08 = 0.15 < 1.0$, simultaneous exposure is not required.

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 two integrated antenna with maximum gain 3.0 dBi which were permanently attached, fulfill the requirement of this section, and please refer to the EUT photo.

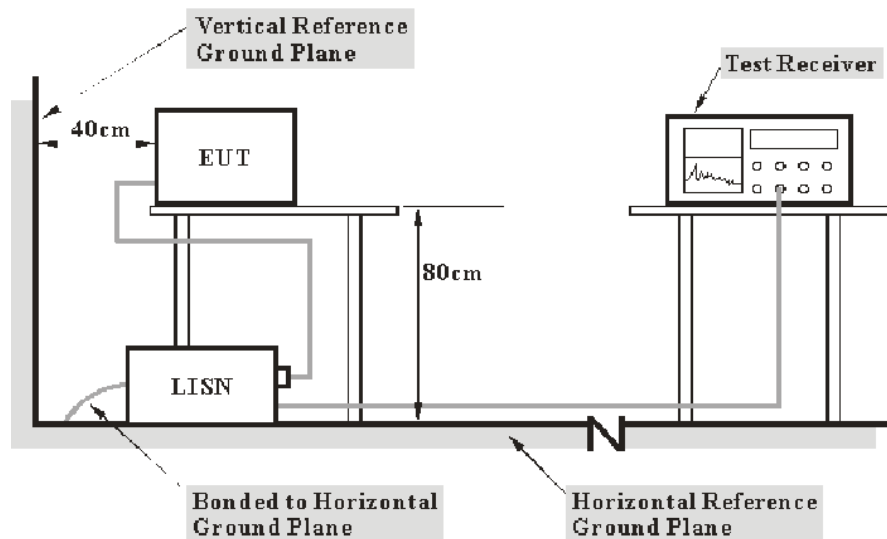
Result: Compliance.

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 C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Test Results Summary

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

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

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

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

Test Data

Environmental Conditions

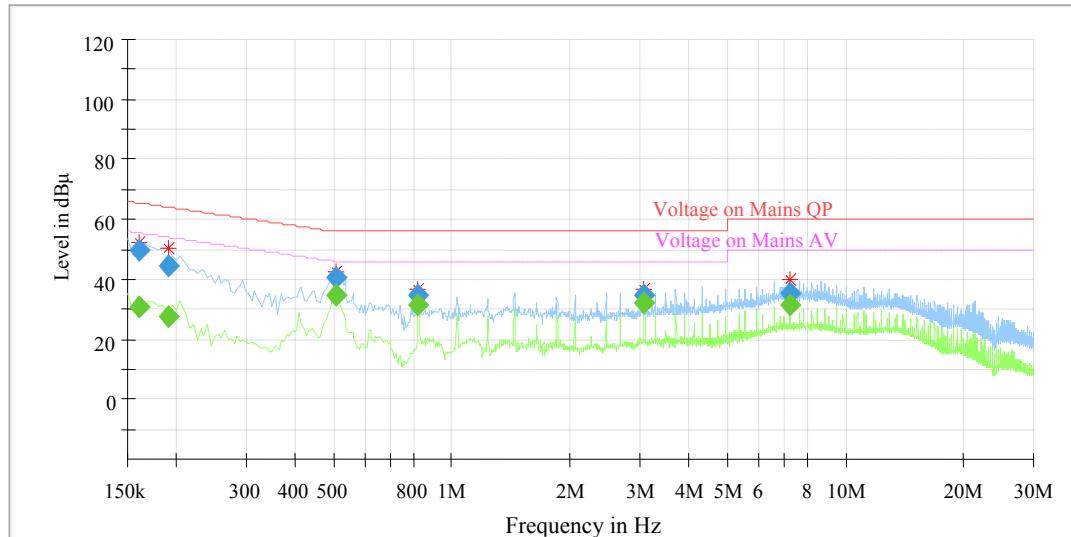
Temperature:	26 °C
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2016-12-25.

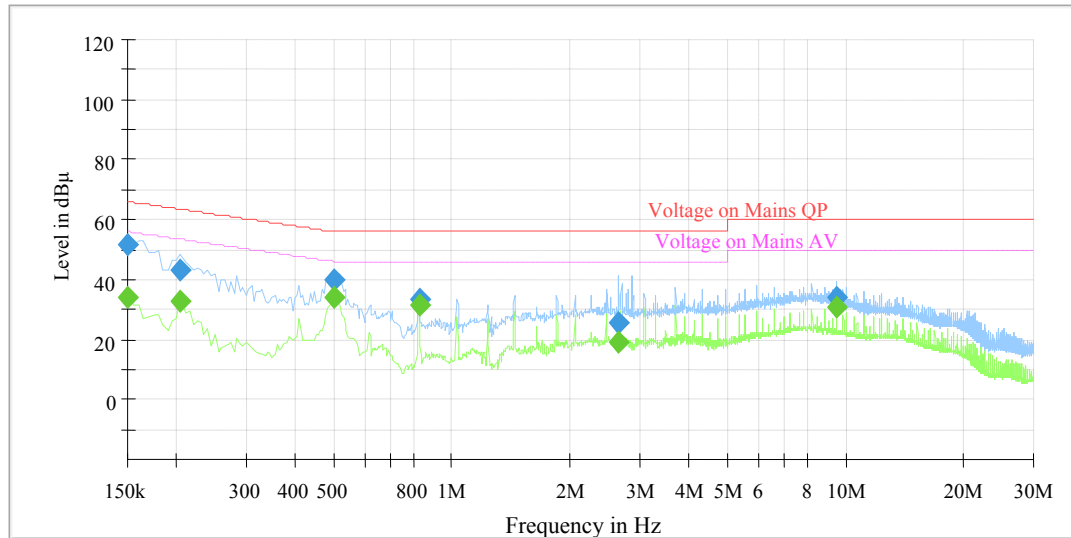
EUT operation mode: Transmitting (worst case: simultaneous transmission for all transmitters)

Powered by adapter

AC 120V/60 Hz, Line:



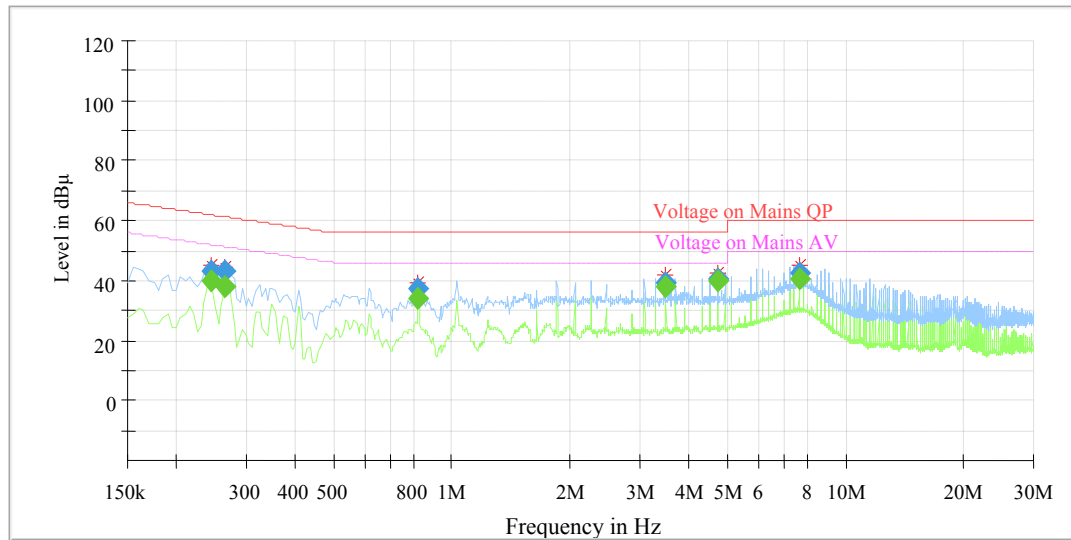
Frequency (MHz)	QuasiPeak (dBμV)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.160000	---	30.95	9.000	L1	10.3	24.51	55.46	Compliance
0.160000	49.50	---	9.000	L1	10.3	15.96	65.46	Compliance
0.190000	---	27.77	9.000	L1	10.3	26.27	54.04	Compliance
0.190000	44.48	---	9.000	L1	10.3	19.56	64.04	Compliance
0.505000	---	34.89	9.000	L1	10.3	11.11	46.00	Compliance
0.505000	40.81	---	9.000	L1	10.3	15.19	56.00	Compliance
0.820000	---	31.58	9.000	L1	10.3	14.42	46.00	Compliance
0.820000	34.91	---	9.000	L1	10.3	21.09	56.00	Compliance
3.085000	---	32.11	9.000	L1	10.5	13.89	46.00	Compliance
3.085000	34.93	---	9.000	L1	10.5	21.07	56.00	Compliance
7.200000	---	31.39	9.000	L1	10.5	18.61	50.00	Compliance
7.200000	35.28	---	9.000	L1	10.5	24.72	60.00	Compliance

AC120V, 60 Hz, Neutral:

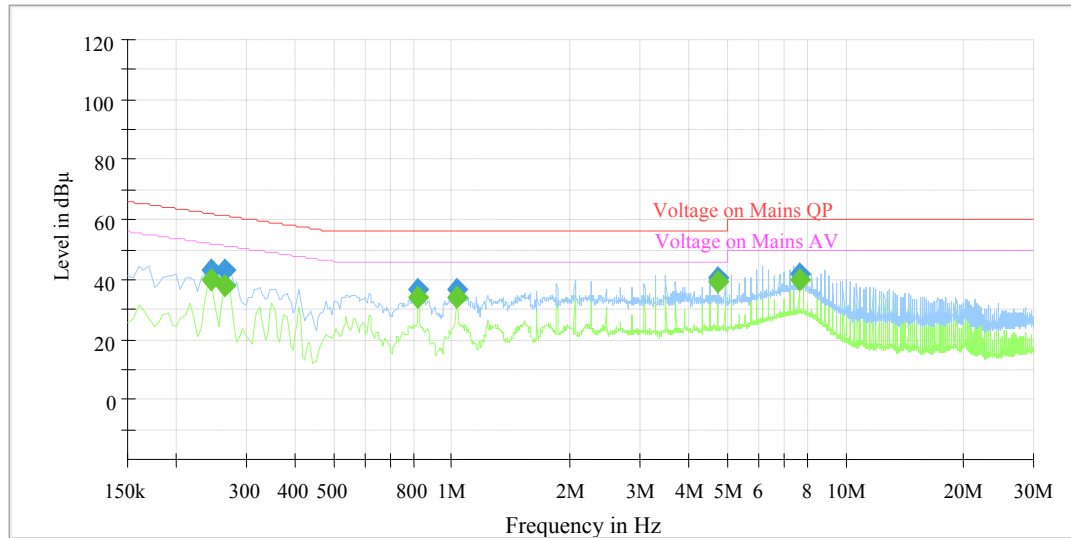
Frequency (MHz)	QuasiPeak (dBμV)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	---	34.01	9.000	N	10.3	21.99	56.00	Compliance
0.150000	51.66	---	9.000	N	10.3	14.34	66.00	Compliance
0.205000	---	32.79	9.000	N	10.3	20.62	53.41	Compliance
0.205000	42.95	---	9.000	N	10.3	20.46	63.41	Compliance
0.500000	---	34.10	9.000	N	10.3	11.90	46.00	Compliance
0.500000	40.21	---	9.000	N	10.3	15.79	56.00	Compliance
0.825000	---	31.72	9.000	N	10.3	14.28	46.00	Compliance
0.825000	33.46	---	9.000	N	10.3	22.54	56.00	Compliance
2.650000	---	18.99	9.000	N	10.5	27.01	46.00	Compliance
2.650000	25.33	---	9.000	N	10.5	30.67	56.00	Compliance
9.465000	---	30.59	9.000	N	10.5	19.41	50.00	Compliance
9.465000	34.21	---	9.000	N	10.5	25.79	60.00	Compliance

Powered by POE

AC 120V/60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.245000	---	40.04	9.000	L1	10.3	11.88	51.92	Compliance
0.245000	43.20	---	9.000	L1	10.3	18.72	61.92	Compliance
0.265000	---	38.15	9.000	L1	10.3	13.12	51.27	Compliance
0.265000	43.36	---	9.000	L1	10.3	17.91	61.27	Compliance
0.820000	---	34.30	9.000	L1	10.3	11.70	46.00	Compliance
0.820000	36.98	---	9.000	L1	10.3	19.02	56.00	Compliance
3.495000	---	37.95	9.000	L1	10.5	8.05	46.00	Compliance
3.495000	39.28	---	9.000	L1	10.5	16.72	56.00	Compliance
4.730000	---	39.60	9.000	L1	10.5	6.40	46.00	Compliance
4.730000	40.57	---	9.000	L1	10.5	15.43	56.00	Compliance
7.610000	---	40.34	9.000	L1	10.5	9.66	50.00	Compliance
7.610000	42.72	---	9.000	L1	10.5	17.28	60.00	Compliance

AC120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.245000	---	39.68	9.000	N	10.3	12.24	51.92	Compliance
0.245000	43.11	---	9.000	N	10.3	18.81	61.92	Compliance
0.265000	---	38.19	9.000	N	10.3	13.08	51.27	Compliance
0.265000	42.92	---	9.000	N	10.3	18.35	61.27	Compliance
0.820000	---	34.22	9.000	N	10.3	11.78	46.00	Compliance
0.820000	36.87	---	9.000	N	10.3	19.13	56.00	Compliance
1.030000	---	33.88	9.000	N	10.3	12.12	46.00	Compliance
1.030000	36.66	---	9.000	N	10.3	19.34	56.00	Compliance
4.730000	---	39.27	9.000	N	10.6	6.73	46.00	Compliance
4.730000	40.28	---	9.000	N	10.6	15.72	56.00	Compliance
7.610000	---	40.05	9.000	N	10.6	9.95	50.00	Compliance
7.610000	42.13	---	9.000	N	10.6	17.87	60.00	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 Rulesv01, clause II.G 1 d),

- (ii) $E \text{ [dB}\mu\text{V/m]} = \text{EIRP [dBm]} + 95.2$, 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 dB μ V/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 dB μ V/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.

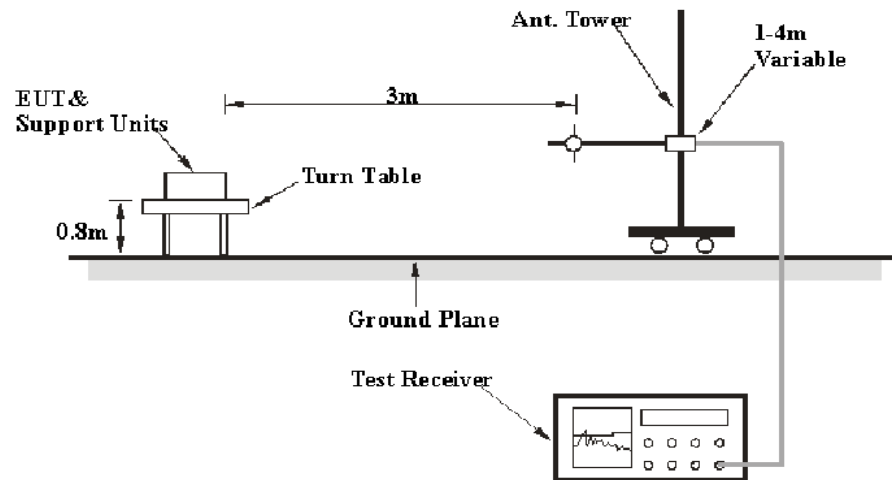
Although the peak limit of 74 dB μ V/m (20 dB above 54 dB μ V/m) in the restricted band appears to be higher than 68 dB μ V/m, the lower average limit of 54 dB μ V/m in the restricted bands needs to be complied to

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

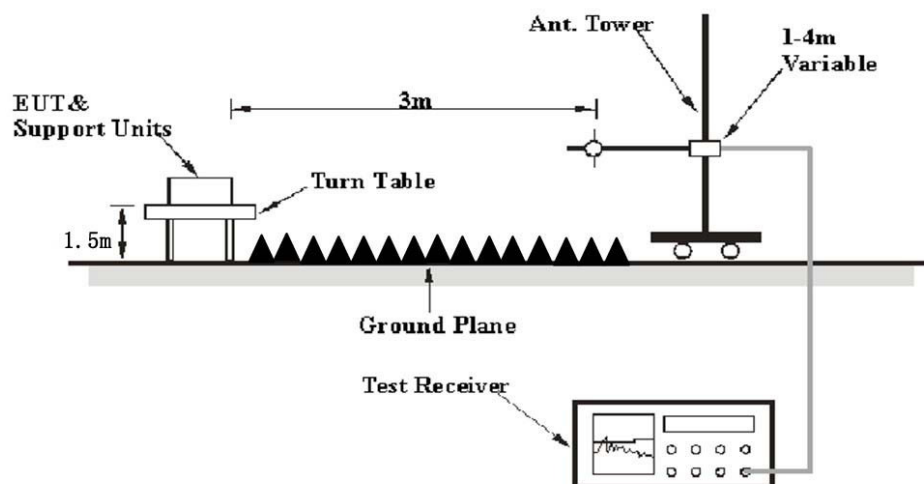
- 1) For 25MHz-75 MHz above or below the band edge, a level of -27 dBm/MHz (68.2dB μ V/m) was applied.
- 2) For 5MHz-25 MHz above or below the band edge, a level of 10 dBm/MHz (105.2dB μ V/m) was applied.
- 2) For 0MHz-5 MHz above or below the band edge, a level of 15.6 dBm/MHz (110.8dB μ V/m) was applied.

EUT Setup

Below 1 GHz:



Above 1 GHz:



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

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

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz ^{Note 1}	/	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:

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

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

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

Test Results Summary

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

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

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:	26 °C
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2016-12-25.

EUT operation mode: Transmitting (worst case is Simultaneous transmission for Antenna 0+ Antenna 1)

30 MHz ~ 40 GHz: (5150-5250 MHz & 5725-5825 MHz)**802.11a mode:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
270.2	44.53	QP	172	1.2	V	-11.97	32.56	46	13.44
5180.00	104.26	PK	321	1.8	H	2.28	106.54	/	/
5180.00	93.17	Ave.	321	1.8	H	2.28	95.45	/	/
5180.00	109.55	PK	293	1.5	V	2.28	111.83	/	/
5180.00	98.72	Ave.	293	1.5	V	2.28	101.00	/	/
5148.9	61.77	PK	224	2.5	V	2.17	63.94	74	10.06
5148.9	48.49	Ave.	224	2.5	V	2.17	50.66	54	3.34
10360.00	50.51	PK	345	2.3	V	12.9	63.41	74	10.59
10360.00	36.57	Ave.	345	2.3	V	12.9	49.47	54	4.53
5200 MHz									
270.2	44.72	QP	253	1.1	V	-11.97	32.75	46	13.25
5200.00	103.1	PK	193	2.4	H	2.28	105.38	/	/
5200.00	89.49	Ave.	193	2.4	H	2.28	91.77	/	/
5200.00	112.19	PK	201	1.0	V	2.28	114.47	/	/
5200.00	98.87	Ave.	201	1.0	V	2.28	101.15	/	/
10400.00	52.95	PK	282	2.2	V	12.9	65.85	74	8.15
10400.00	38.67	Ave.	282	2.2	V	12.9	51.57	54	2.43
5240 MHz									
270.2	44.4	QP	56	1.2	V	-11.97	32.43	46	13.57
5240.00	102.02	PK	195	1.1	H	2.28	104.30	/	/
5240.00	88.19	Ave.	195	1.1	H	2.28	90.47	/	/
5240.00	109.88	PK	82	2.3	V	2.28	112.16	/	/
5240.00	96.14	Ave.	82	2.3	V	2.28	98.42	/	/
5287.5	61.03	PK	239	1.1	V	2.28	63.31	74	10.69
5287.5	47.75	Ave.	239	1.1	V	2.28	50.03	54	3.97
10480.00	51.64	PK	69	1.5	V	14.06	65.70	74	8.30
10480.00	38.41	Ave.	69	1.5	V	14.06	52.47	54	1.53

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5745 MHz									
270.2	44.34	QP	63	1.2	V	-11.97	32.37	46	13.63
5745.00	100.38	PK	126	1.1	H	2.61	102.99	/	/
5745.00	91.13	Ave.	126	1.1	H	2.61	93.74	/	/
5745.00	109.77	PK	55	1.3	V	2.61	112.38	/	/
5745.00	98.73	Ave.	55	1.3	V	2.61	101.34	/	/
5724.2	61.25	PK	293	1.6	V	2.61	63.86	74	10.14
5724.2	48.11	Ave.	293	1.6	V	2.61	50.72	54	3.28
11490.00	45.40	PK	175	2.3	V	15.15	60.55	74	13.45
11490.00	29.65	Ave.	175	2.3	V	15.15	44.80	54	9.20
5785 MHz									
270.2	44.42	QP	130	1.4	V	-11.97	32.45	46	13.55
5785.00	96.30	PK	247	2.4	H	3.49	99.79	/	/
5785.00	85.35	Ave.	247	2.4	H	3.49	88.84	/	/
5785.00	106.49	PK	208	1.5	V	3.49	109.98	/	/
5785.00	91.90	Ave.	208	1.5	V	3.49	95.39	/	/
11570.00	47.83	PK	329	1.5	V	14.76	62.59	74	11.41
11570.00	30.55	Ave.	329	1.5	V	14.76	45.31	54	8.69
5825 MHz									
270.2	44.23	QP	99	1.2	V	-11.97	32.26	46	13.74
5825.00	100.65	PK	263	1.3	H	3.49	104.14	/	/
5825.00	90.26	Ave.	263	1.3	H	3.49	93.75	/	/
5825.00	106.22	PK	92	1.6	V	3.49	109.71	/	/
5825.00	94.7	Ave.	92	1.6	V	3.49	98.19	/	/
5859.4	60.44	PK	228	2.1	V	3.49	63.93	74	10.07
5859.4	47.12	Ave.	228	2.1	V	3.49	50.61	54	3.39
11650.00	48.49	PK	203	2.1	V	14.76	63.25	74	10.75
11650.00	33.05	Ave.	203	2.1	V	14.76	47.81	54	6.19

802.11n20 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
270.2	44.44	QP	96	1.1	V	-11.97	32.47	46	13.53
5180.00	105.16	PK	102	1.2	H	2.28	107.44	/	/
5180.00	91.69	Ave.	102	1.2	H	2.28	93.97	/	/
5180.00	112.32	PK	306	1.8	V	2.28	114.60	/	/
5180.00	96.43	Ave.	306	1.8	V	2.28	98.71	/	/
5143.7	61.83	PK	163	1.9	V	2.17	64.00	74	10.00
5143.7	48.59	Ave.	163	1.9	V	2.17	50.76	54	3.24
10360.00	51.37	PK	65	1.3	V	12.9	64.27	74	9.73
10360.00	37.33	Ave.	65	1.3	V	12.9	50.23	54	3.77
5200 MHz									
270.2	44.51	QP	94	1.4	V	-11.97	32.54	46	13.46
5200.00	106.34	PK	150	1.3	H	2.28	108.62	/	/
5200.00	92.26	Ave.	150	1.3	H	2.28	94.54	/	/
5200.00	112.32	PK	117	2.0	V	2.28	114.60	/	/
5200.00	97.58	Ave.	117	2.0	V	2.28	99.86	/	/
10400.00	51.52	PK	282	1.6	V	12.9	64.42	74	9.58
10400.00	36.57	Ave.	282	1.6	V	12.9	49.47	54	4.53
5240 MHz									
270.2	44.28	QP	87	1.3	V	-11.97	32.31	46	13.69
5240.00	104.14	PK	21	1.2	H	2.28	106.42	/	/
5240.00	90.15	Ave.	21	1.2	H	2.28	92.43	/	/
5240.00	110.89	PK	47	1.3	V	2.28	113.17	/	/
5240.00	96.82	Ave.	47	1.3	V	2.28	99.10	/	/
5264.3	59.93	PK	187	2.4	V	2.28	62.21	74	11.79
5264.3	46.60	Ave.	187	2.4	V	2.28	48.88	54	5.12
10480.00	49.35	PK	41	1.8	V	14.06	63.41	74	10.59
10480.00	37.76	Ave.	41	1.8	V	14.06	51.82	54	2.18

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5745 MHz									
270.2	44.1	QP	220	1.2	V	-11.97	32.13	46	13.87
5745.00	100.46	PK	67	1.5	H	2.61	103.07	/	/
5745.00	90.26	Ave.	67	1.5	H	2.61	92.87	/	/
5745.00	109.63	PK	254	1.5	V	2.61	112.24	/	/
5745.00	99.2	Ave.	254	1.5	V	2.61	101.81	/	/
5722.6	61.07	PK	63	1.2	V	2.61	63.68	74	10.32
5722.6	49.05	Ave.	63	1.2	V	2.61	51.66	54	2.34
11490.00	45.63	PK	267	1.8	V	15.15	60.78	74	13.22
11490.00	29.65	Ave.	267	1.8	V	15.15	44.80	54	9.20
5785 MHz									
270.2	44.22	QP	287	1.2	V	-11.97	32.25	46	13.75
5785.00	98.30	PK	191	2.1	H	3.49	101.79	/	/
5785.00	87.87	Ave.	191	2.1	H	3.49	91.36	/	/
5785.00	108.72	PK	319	1.9	V	3.49	112.21	/	/
5785.00	97.40	Ave.	319	1.9	V	3.49	100.89	/	/
11570.00	46.76	PK	310	1.0	V	14.76	61.52	74	12.48
11570.00	30.55	Ave.	310	1.0	V	14.76	45.31	54	8.69
5825 MHz									
270.2	43.71	QP	197	1.2	V	-11.97	31.74	46	14.26
5825.00	101.29	PK	120	1.7	H	3.49	104.78	/	/
5825.00	86.07	Ave.	120	1.7	H	3.49	89.56	/	/
5825.00	106.5	PK	88	1.2	V	3.49	109.99	/	/
5825.00	92.63	Ave.	88	1.2	V	3.49	96.12	/	/
5861	60.77	PK	64	1.1	V	3.49	64.26	74	9.74
5861	47.99	Ave.	64	1.1	V	3.49	51.48	54	2.52
11650.00	49.88	PK	292	2.2	V	14.76	64.64	74	9.36
11650.00	34.07	Ave.	292	2.2	V	14.76	48.83	54	5.17

802.11ac20 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5180 MHz									
270.2	44.13	QP	270	1.2	V	-11.97	32.16	46	13.84
5180.00	106.03	PK	274	1.6	H	2.28	108.31	/	/
5180.00	94.82	Ave.	274	1.6	H	2.28	97.10	/	/
5180.00	110.44	PK	62	1.5	V	2.28	112.72	/	/
5180.00	98.28	Ave.	62	1.5	V	2.28	100.56	/	/
5142.6	59.64	PK	106	1.0	V	2.17	61.81	74	12.19
5142.6	47.21	Ave.	106	1.0	V	2.17	49.38	54	4.62
10360.00	50.16	PK	205	1.3	V	12.9	63.06	74	10.94
10360.00	35.74	Ave.	205	1.3	V	12.9	48.64	54	5.36
5200 MHz									
270.2	43.91	QP	192	1.2	V	-11.97	31.94	46	14.06
5200.00	100.16	PK	284	2.2	H	2.28	102.44	/	/
5200.00	88.1	Ave.	284	2.2	H	2.28	90.38	/	/
5200.00	113.44	PK	286	2.2	V	2.28	115.72	/	/
5200.00	101.08	Ave.	286	2.2	V	2.28	103.36	/	/
10400.00	52.66	PK	107	1.9	V	12.9	65.56	74	8.44
10400.00	36.57	Ave.	107	1.9	V	12.9	49.47	54	4.53
5240 MHz									
270.2	43.85	QP	85	1.2	V	-11.97	31.88	46	14.12
5240.00	99.03	PK	19	1.2	H	2.28	101.31	/	/
5240.00	86.72	Ave.	19	1.2	H	2.28	89.00	/	/
5240.00	112.61	PK	40	1.6	V	2.28	114.89	/	/
5240.00	100.56	Ave.	40	1.6	V	2.28	102.84	/	/
5271	58.07	PK	347	2.4	V	2.28	60.35	74	13.65
5271	45.92	Ave.	347	2.4	V	2.28	48.20	54	5.80
10480.00	50.84	PK	121	1.3	V	14.06	64.90	74	9.10
10480.00	34.57	Ave.	121	1.3	V	14.06	48.63	54	5.37

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5745 MHz									
270.2	44.26	QP	19	1.2	V	-11.97	32.29	46	13.71
5745.00	97.18	PK	199	1.8	H	2.61	99.79	/	/
5745.00	86.51	Ave.	199	1.8	H	2.61	89.12	/	/
5745.00	110.58	PK	181	1.4	V	2.61	113.19	/	/
5745.00	98.24	Ave.	181	1.4	V	2.61	100.85	/	/
5720.9	60.13	PK	313	2.4	V	2.61	62.74	74	11.26
5720.9	48.07	Ave.	313	2.4	V	2.61	50.68	54	3.32
11490.00	45.49	PK	134	1.6	V	15.15	60.64	74	13.36
11490.00	29.65	Ave.	134	1.6	V	15.15	44.80	54	9.20
5785 MHz									
270.2	44.17	QP	105	1.2	V	-11.97	32.2	46	13.8
5785.00	102.58	PK	288	1.3	H	3.49	106.07	/	/
5785.00	91.52	Ave.	288	1.3	H	3.49	95.01	/	/
5785.00	108.36	PK	195	1.4	V	3.49	111.85	/	/
5785.00	97.87	Ave.	195	1.4	V	3.49	101.36	/	/
11570.00	46.74	PK	258	1.5	V	14.76	61.50	74	12.50
11570.00	33.05	Ave.	258	1.5	V	14.76	47.81	54	6.19
5825 MHz									
270.2	44.08	QP	231	1.2	V	-11.97	32.11	46	13.89
5825.00	102.71	PK	319	1.8	H	3.49	106.20	/	/
5825.00	91.39	Ave.	319	1.8	H	3.49	94.88	/	/
5825.00	107.37	PK	359	1.6	V	3.49	110.86	/	/
5825.00	96.51	Ave.	359	1.6	V	3.49	100.00	/	/
5864.1	59.53	PK	45	1.7	V	3.49	63.02	74	10.98
5864.1	46.54	Ave.	45	1.7	V	3.49	50.03	54	3.97
11650.00	47.92	PK	219	2.4	V	14.76	62.68	74	11.32
11650.00	33.05	Ave.	219	2.4	V	14.76	47.81	54	6.19

802.11n40 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5190 MHz									
270.2	43.55	QP	220	1.2	V	-11.97	31.58	46	14.42
5190.00	97.78	PK	80	2.5	H	2.28	100.06	/	/
5190.00	87.58	Ave.	80	2.5	H	2.28	89.86	/	/
5190.00	109.16	PK	131	1.4	V	2.28	111.44	/	/
5190.00	98.68	Ave.	131	1.4	V	2.28	100.96	/	/
5147.2	59.26	PK	200	1.2	V	2.17	61.43	74	12.57
5147.2	46.81	Ave.	200	1.2	V	2.17	48.98	54	5.02
10380.00	48.55	PK	162	2.1	V	12.9	61.45	74	12.55
10380.00	33.81	Ave.	162	2.1	V	12.9	46.71	54	7.29
5230 MHz									
270.2	43.44	QP	351	1.2	V	-11.97	31.47	46	14.53
5230.00	98.18	PK	150	2.0	H	2.28	100.46	/	/
5230.00	87.05	Ave.	150	2.0	H	2.28	89.33	/	/
5230.00	107.44	PK	167	1.5	V	2.28	109.72	/	/
5230.00	97.12	Ave.	167	1.5	V	2.28	99.40	/	/
5262.5	59.27	PK	36	1.6	V	2.28	61.55	74	12.45
5262.5	46.68	Ave.	36	1.6	V	2.28	48.96	54	5.04
10460.00	49.38	PK	359	1.9	V	14.06	63.44	74	10.56
10460.00	34.57	Ave.	359	1.9	V	14.06	48.63	54	5.37

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5755 MHz									
270.2	43.37	QP	69	1.2	V	-11.97	31.4	46	14.6
5755.00	99.4	PK	113	2.0	H	3.49	102.89	/	/
5755.00	89.53	Ave.	113	2.0	H	3.49	93.02	/	/
5755.00	106.14	PK	243	2.0	V	3.49	109.63	/	/
5755.00	94.43	Ave.	243	2.0	V	3.49	97.92	/	/
5721.4	60.39	PK	103	1.8	V	2.61	63.00	74	11.00
5721.4	48.49	Ave.	103	1.8	V	2.61	51.10	54	2.90
11510.00	45.3	PK	359	1.7	V	15.15	60.45	74	13.55
11510.00	29.65	Ave.	359	1.7	V	15.15	44.80	54	9.20
5795 MHz									
270.2	43.93	QP	52	1.2	V	-11.97	31.96	46	14.04
5795.00	100.09	PK	350	1.3	H	3.49	103.58	/	/
5795.00	89.73	Ave.	350	1.3	H	3.49	93.22	/	/
5795.00	105.89	PK	219	2.4	V	3.49	109.38	/	/
5795.00	94.67	Ave.	219	2.4	V	3.49	98.16	/	/
5861.7	59.48	PK	9	2.3	V	3.49	62.97	74	11.03
5861.7	46.96	Ave.	9	2.3	V	3.49	50.45	54	3.55
11590.00	46.63	PK	73	1.7	V	14.76	61.39	74	12.61
11590.00	30.55	Ave.	73	1.7	V	14.76	45.31	54	8.69

802.11ac40 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5190 MHz									
270.2	43.42	QP	257	1.3	V	-11.97	31.45	46	14.55
5190.00	97.36	PK	20	1.3	H	2.28	99.64	/	/
5190.00	86.38	Ave.	20	1.3	H	2.28	88.66	/	/
5190.00	108.61	PK	329	2.0	V	2.28	110.89	/	/
5190.00	97.98	Ave.	329	2.0	V	2.28	100.26	/	/
5146.9	59.35	PK	301	1.7	V	2.17	61.52	74	12.48
5146.9	46.50	Ave.	301	1.7	V	2.17	48.67	54	5.33
10380.00	48.89	PK	154	2.3	V	12.9	61.79	74	12.21
10380.00	33.81	Ave.	154	2.3	V	12.9	46.71	54	7.29
5230 MHz									
270.2	43.83	QP	281	1.2	V	-11.97	31.86	46	14.14
5230.00	96.53	PK	130	2.1	H	2.28	98.81	/	/
5230.00	86.09	Ave.	130	2.1	H	2.28	88.37	/	/
5230.00	108.64	PK	30	2.0	V	2.28	110.92	/	/
5230.00	96.89	Ave.	30	2.0	V	2.28	99.17	/	/
5269.1	58.99	PK	55	1.2	V	2.28	61.27	74	12.73
5269.1	46.10	Ave.	55	1.2	V	2.28	48.38	54	5.62
10460.00	48.61	PK	21	1.3	V	14.06	62.67	74	11.33
10460.00	34.57	Ave.	21	1.3	V	14.06	48.63	54	5.37

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5755 MHz									
270.2	43.89	QP	310	1.3	V	-11.97	31.92	46	14.08
5755.00	99.92	PK	67	1.7	H	3.49	103.41	/	/
5755.00	88.35	Ave.	67	1.7	H	3.49	91.84	/	/
5755.00	106.07	PK	65	1.8	V	3.49	109.56	/	/
5755.00	94.40	Ave.	65	1.8	V	3.49	97.89	/	/
5724	59.51	PK	203	1.8	V	2.61	62.12	74	11.88
5724	46.56	Ave.	203	1.8	V	2.61	49.17	54	4.83
11510.00	44.80	PK	116	2.0	V	15.15	59.95	74	14.05
11510.00	29.65	Ave.	116	2.0	V	15.15	44.80	54	9.20
5795 MHz									
270.2	43.82	QP	275	1.2	V	-11.97	31.85	46	14.15
5795.00	100.31	PK	226	1.3	H	3.49	103.80	/	/
5795.00	89.76	Ave.	226	1.3	H	3.49	93.25	/	/
5795.00	105.06	PK	67	2.1	V	3.49	108.55	/	/
5795.00	93.59	Ave.	67	2.1	V	3.49	97.08	/	/
5863.5	59.99	PK	277	1.2	V	3.49	63.48	74	10.52
5863.5	47.63	Ave.	277	1.2	V	3.49	51.12	54	2.88
11590.00	46.66	PK	207	1.5	V	14.76	61.42	74	12.58
11590.00	30.55	Ave.	207	1.5	V	14.76	45.31	54	8.69

802.11ac80 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5210 MHz									
270.2	43.84	QP	59	1.1	V	-11.97	31.87	46	14.13
5210.00	97.06	PK	352	1.9	H	2.28	99.34	/	/
5210.00	85.97	Ave.	352	1.9	H	2.28	88.25	/	/
5210.00	105.38	PK	87	1.1	V	2.28	107.66	/	/
5210.00	96.03	Ave.	87	1.1	V	2.28	98.31	/	/
5144	59.95	PK	16	1.2	V	2.17	62.12	74	11.88
5144	46.69	Ave.	16	1.2	V	2.17	48.86	54	5.14
10420.00	46.98	PK	50	2.2	V	12.9	59.88	74	14.12
10420.00	31.31	Ave.	50	2.2	V	12.9	44.21	54	9.79
5775 MHz									
270.2	43.76	QP	34	1.2	V	-11.97	31.79	46	14.21
5775.00	94.78	PK	331	2.0	H	3.49	98.27	/	/
5775.00	84.66	Ave.	331	2.0	H	3.49	88.15	/	/
5775.00	102.43	PK	236	1.1	V	3.49	105.92	/	/
5775.00	91.11	Ave.	236	1.1	V	3.49	94.60	/	/
5870.2	59.52	PK	183	1.1	V	3.49	63.01	74	10.99
5870.2	46.41	Ave.	183	1.1	V	3.49	49.90	54	4.10
11550.00	46.51	PK	77	1.7	V	14.76	61.27	74	12.73
11550.00	30.55	Ave.	77	1.7	V	14.76	45.31	54	8.69

Simultaneous transmitting for 2.4G+5G

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
39.63	43.03	QP	34	1.2	V	-9.14	33.89	40	6.11
45.75	46.75	QP	18	1.3	V	-13.32	33.43	40	6.57
65.64	49.10	QP	127	1.6	V	-16.89	32.21	40	7.79
134.17	47.09	QP	99	1.7	V	-13.34	33.75	43.5	9.75
860.36	33.39	QP	231	1.4	V	-1.23	32.16	46	13.84
938.05	33.39	QP	22	1.2	V	-0.86	32.53	46	13.47
1165.4	49.63	PK	119	2.4	H	-11.25	38.38	74	35.62
1165.4	40.55	Ave.	119	2.4	H	-11.25	29.30	54	24.70
1296.3	52.46	PK	359	2.1	H	-10.66	41.80	74	32.20
1296.3	41.15	Ave.	359	2.1	H	-10.66	30.49	54	23.51

Note:

Corrected Amplitude = Corrected Factor + Reading

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

Margin = Limit- Corr. Amplitude

The bandedge was tested all polarization , and the worst polarization data was recorded.

Spurious emissions more than 20 dB below the limit were not reported.

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

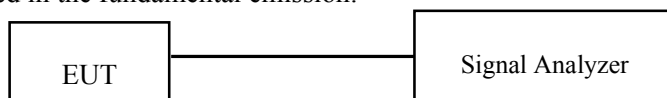
1. Emission Bandwidth (EBW)

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



Test Data**Environmental Conditions**

Temperature:	25~26 °C
Relative Humidity:	53~56 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Alisa Gao from 2016-12-27 to 2017-02-09.

EUT operation mode: Transmitting

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

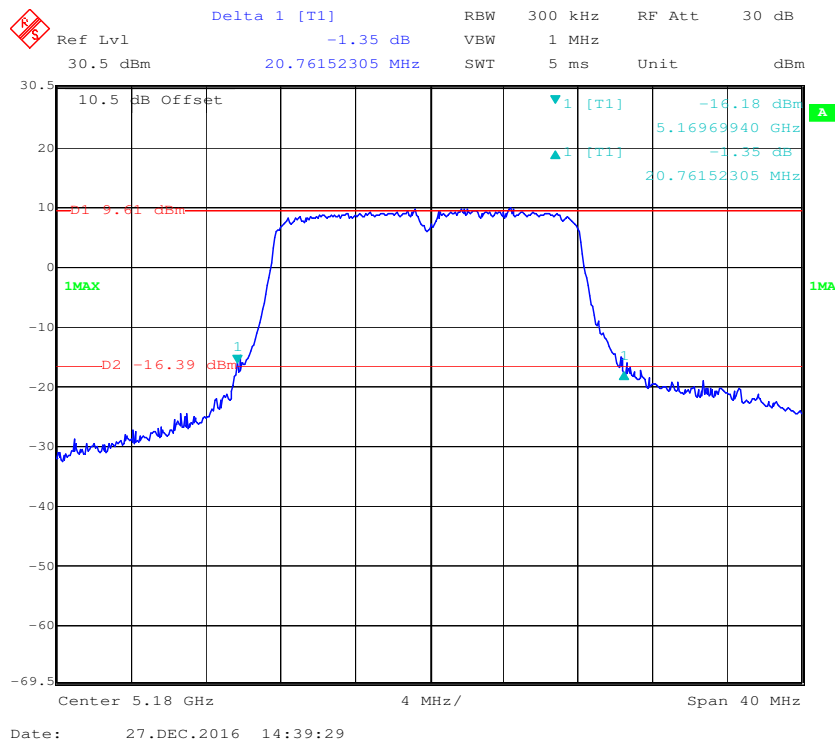
5150 MHz – 5250 MHz:

Frequency (MHz)	AntennaPort	26dB Emission Bandwidth (MHz)
802.11a		
5180	Chain 0	20.76
	Chain 1	19.64
5200	Chain 0	20.36
	Chain 1	19.64
5240	Chain 0	19.64
	Chain 1	19.32
802.11n20		
5180	Chain 0	20.92
	Chain 1	20.44
5200	Chain 0	20.92
	Chain 1	20.52
5240	Chain 0	20.12
	Chain 1	20.12
802.11n40		
5190	Chain 0	39.92
	Chain 1	39.92
5230	Chain 0	39.76
	Chain 1	39.68

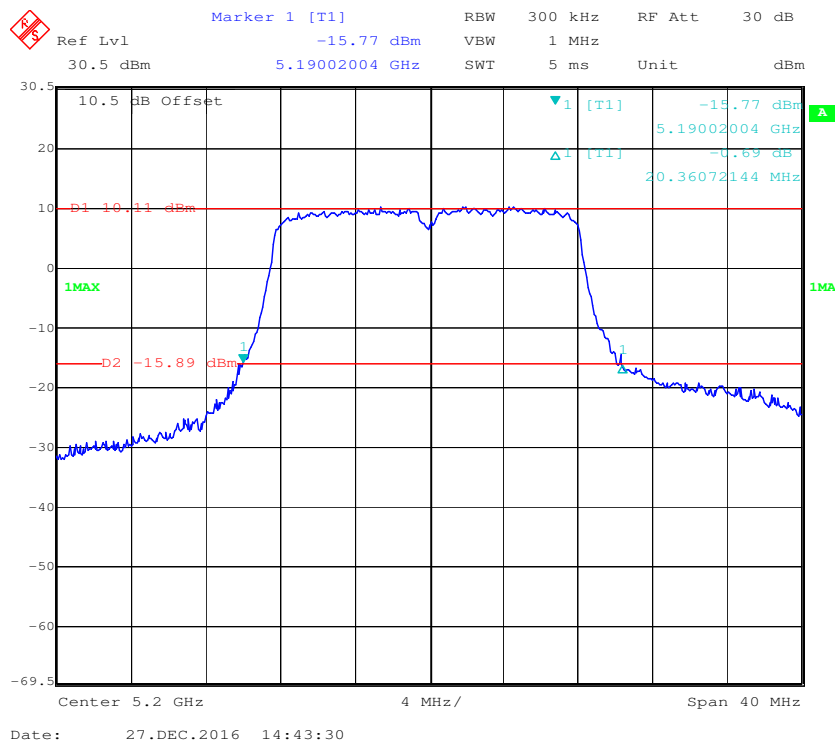
Frequency (MHz)	AntennaPort	26dB Emission Bandwidth (MHz)
802.11ac20		
5180	Chain 0	21.08
	Chain 1	20.52
5200	Chain 0	20.84
	Chain 1	20.36
5240	Chain 0	20.12
	Chain 1	20.12
802.11ac40		
5190	Chain 0	39.76
	Chain 1	40.04
5230	Chain 0	39.76
	Chain 1	39.80
802.11ac80		
5210	Chain 0	103.25
	Chain 1	94.59

Chain 0

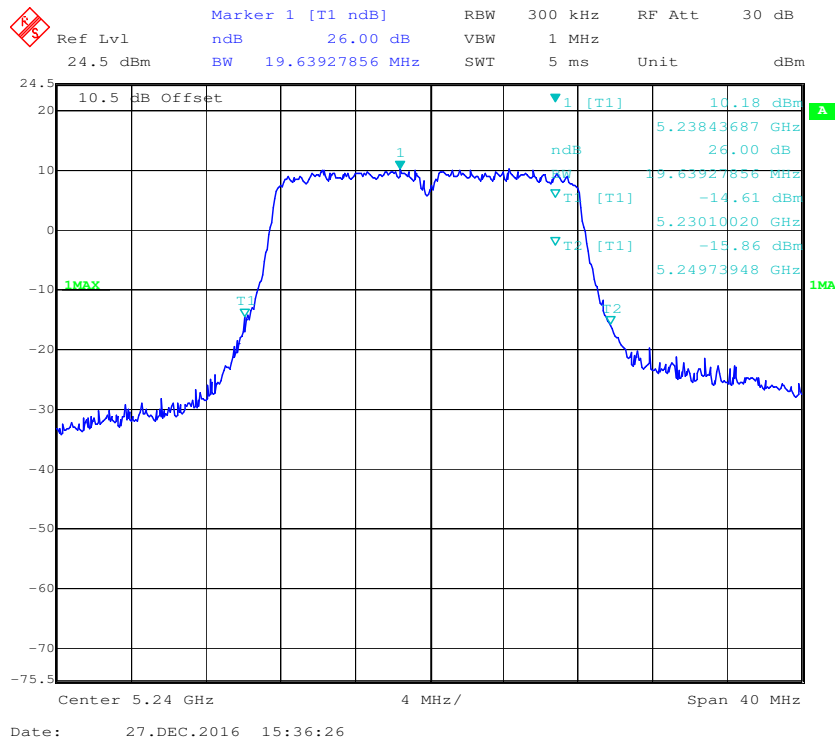
802.11a mode, 26dB Emission Bandwidth, 5180 MHz



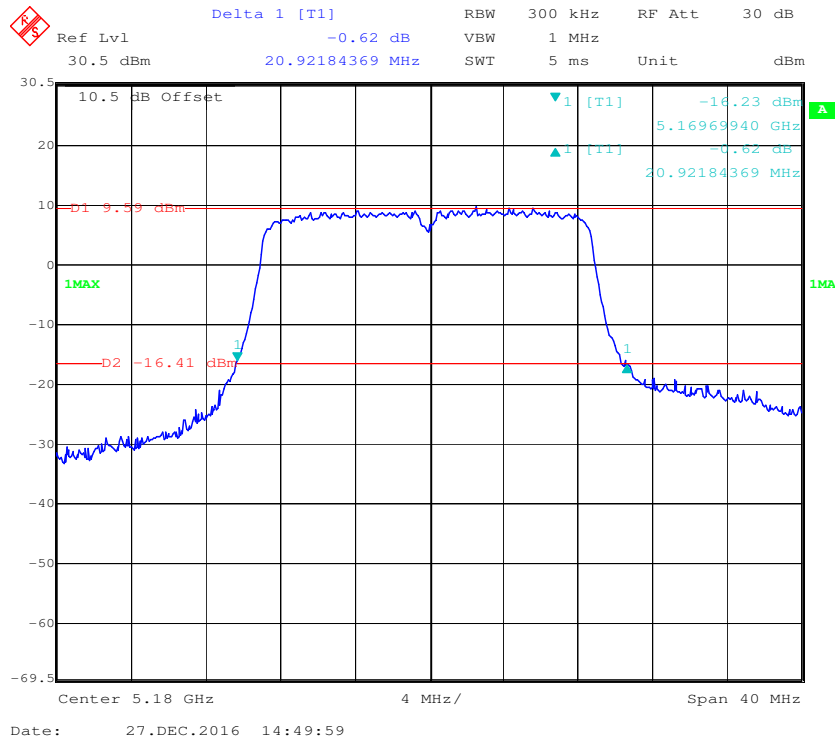
802.11a mode, 26dB Emission Bandwidth, 5200 MHz

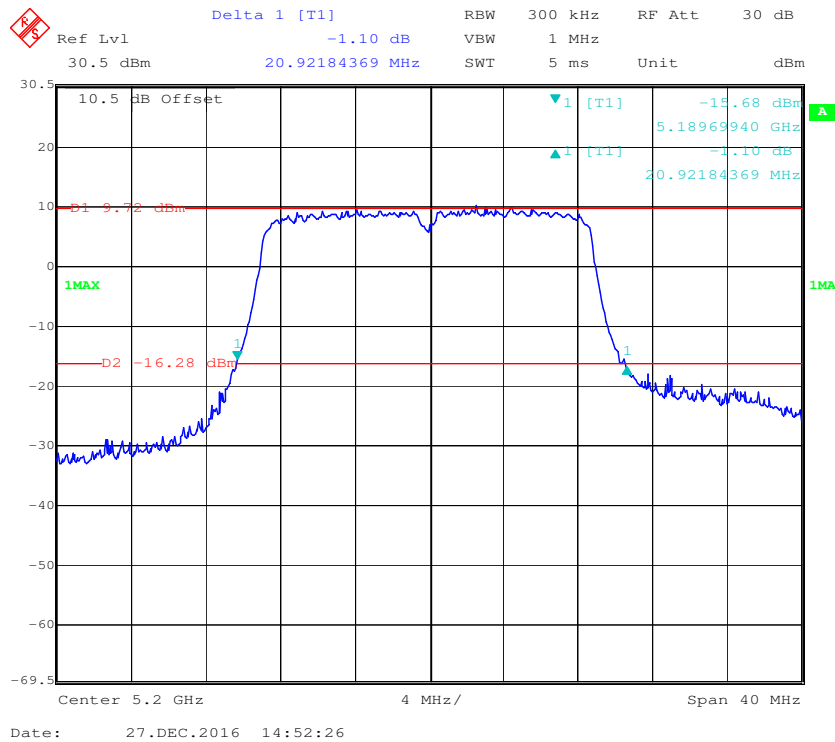
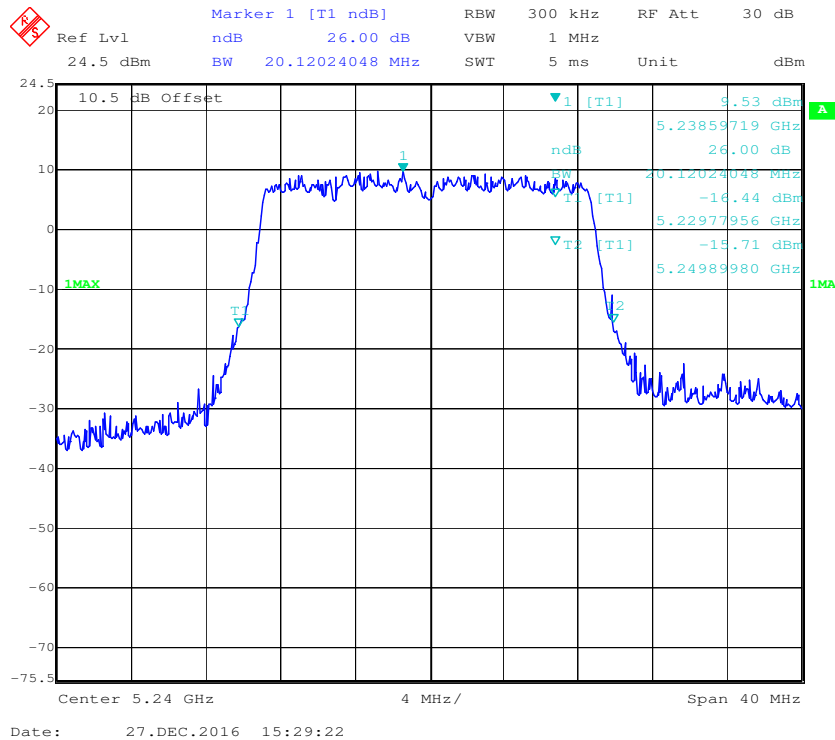


802.11a mode, 26dB Emission Bandwidth, 5240 MHz

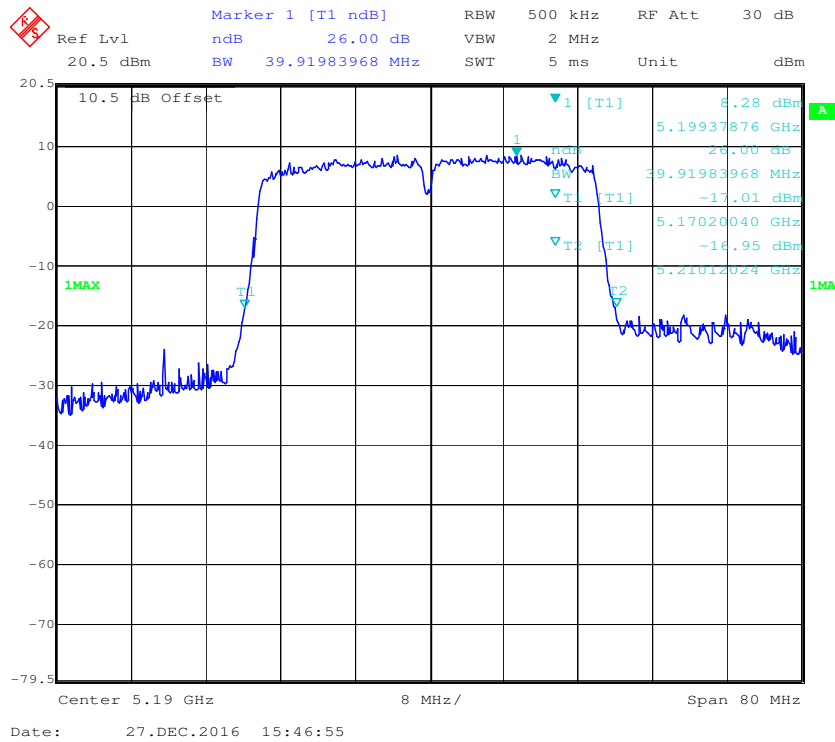


802.11n20 mode, 26dB Emission Bandwidth, 5180 MHz

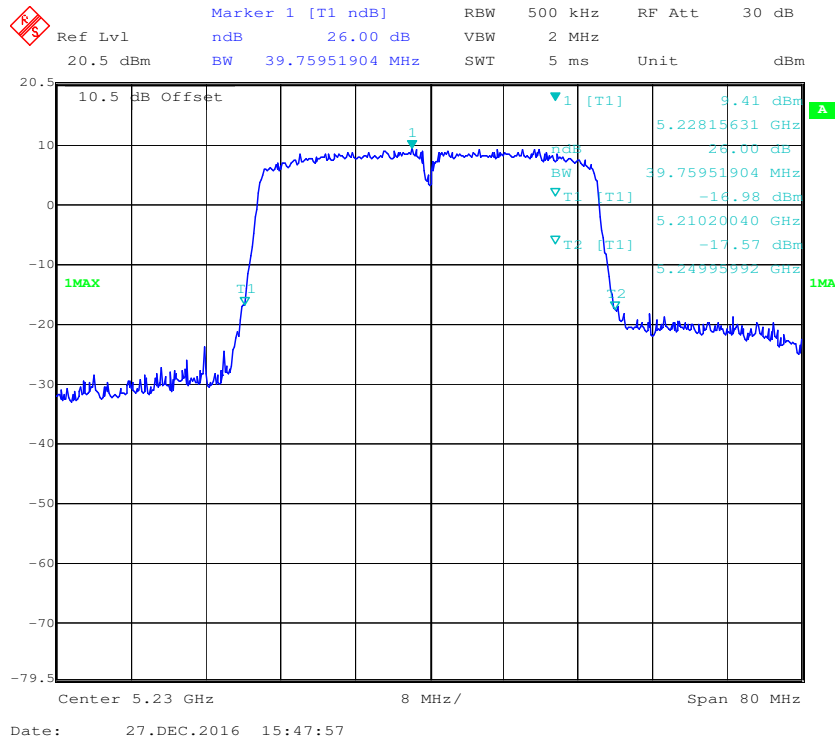


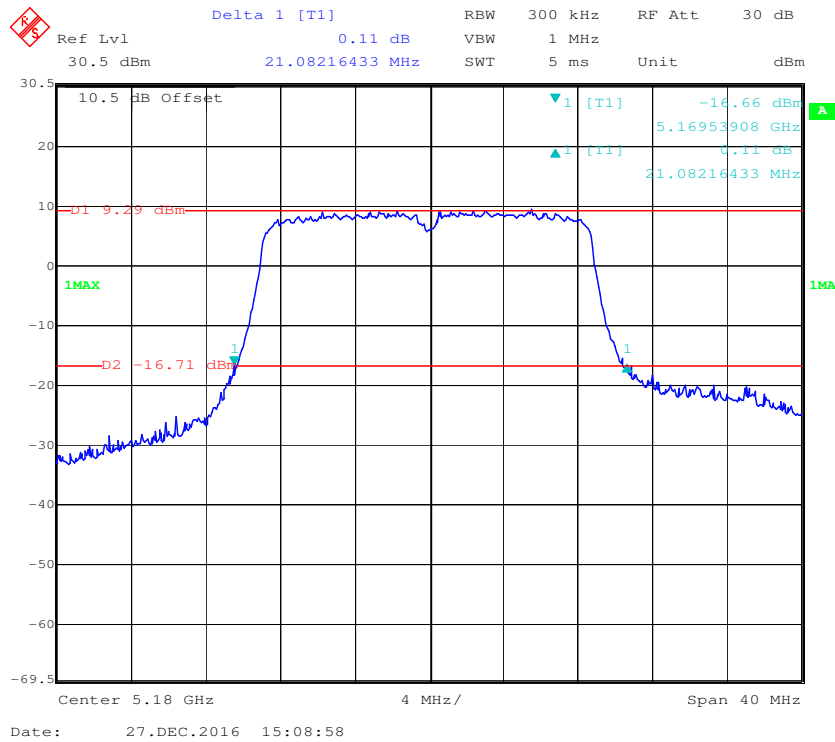
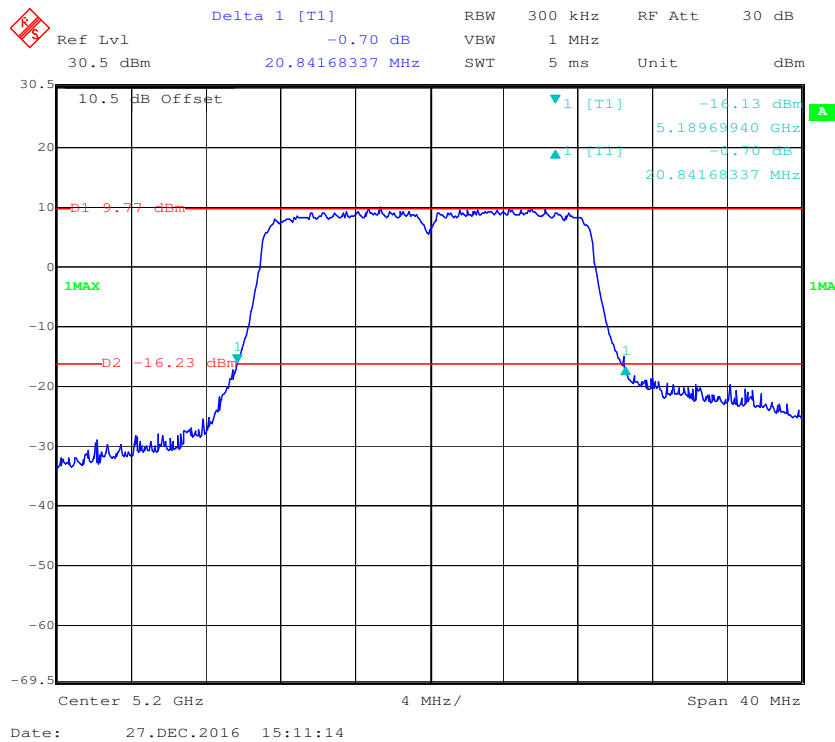
802.11n20 mode, 26dB Emission Bandwidth, 5200 MHz**802.11n20 mode, 26dB Emission Bandwidth, 5240 MHz**

802.11n40 mode, 26dB Emission Bandwidth, 5190 MHz

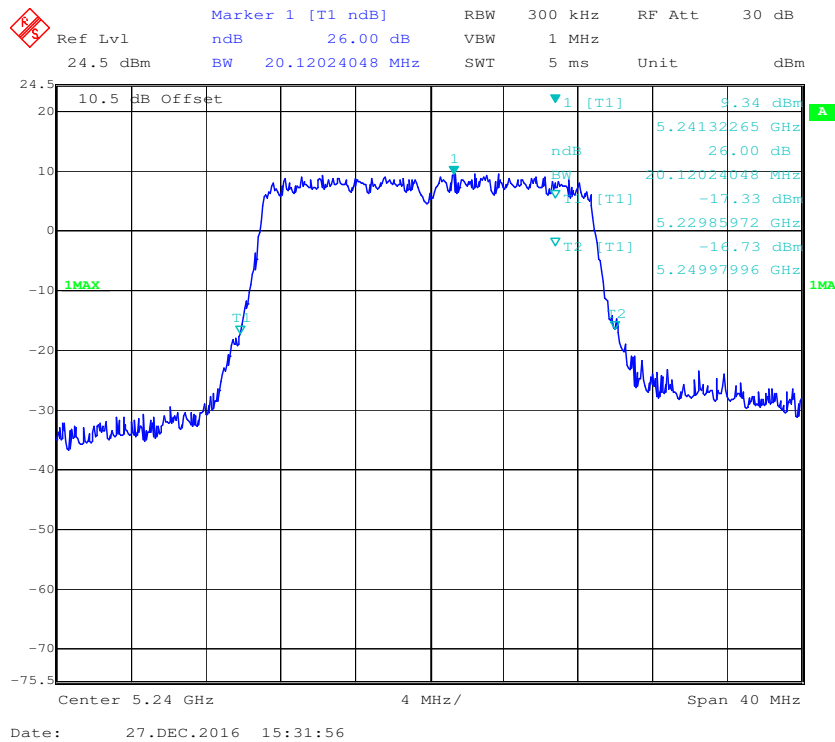


802.11n40 mode, 26dB Emission Bandwidth, 5230 MHz

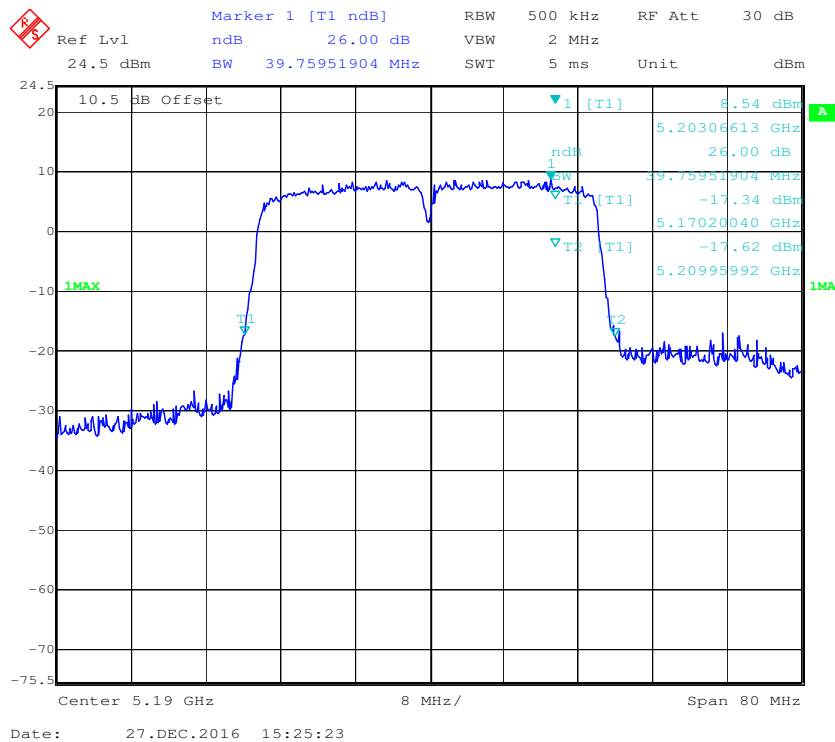


802.11ac20 mode, 26dB Emission Bandwidth, 5180 MHz**802.11ac20 mode, 26dB Emission Bandwidth, 5200 MHz**

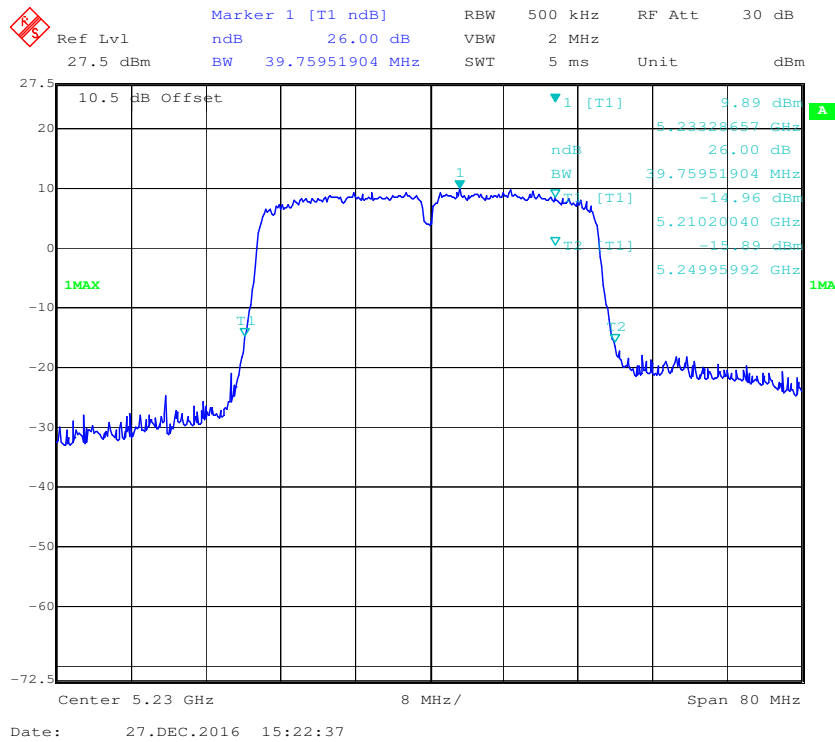
802.11ac20 mode, 26dB Emission Bandwidth, 5240 MHz



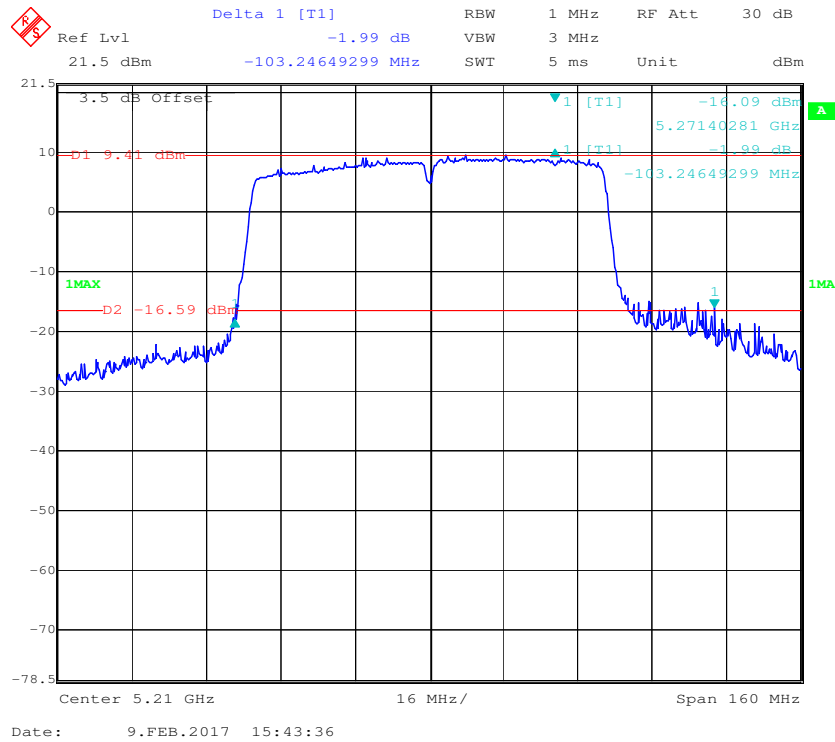
802.11ac40 mode, 26dB Emission Bandwidth, 5190 MHz



802.11ac40 mode, 26dB Emission Bandwidth, 5230 MHz

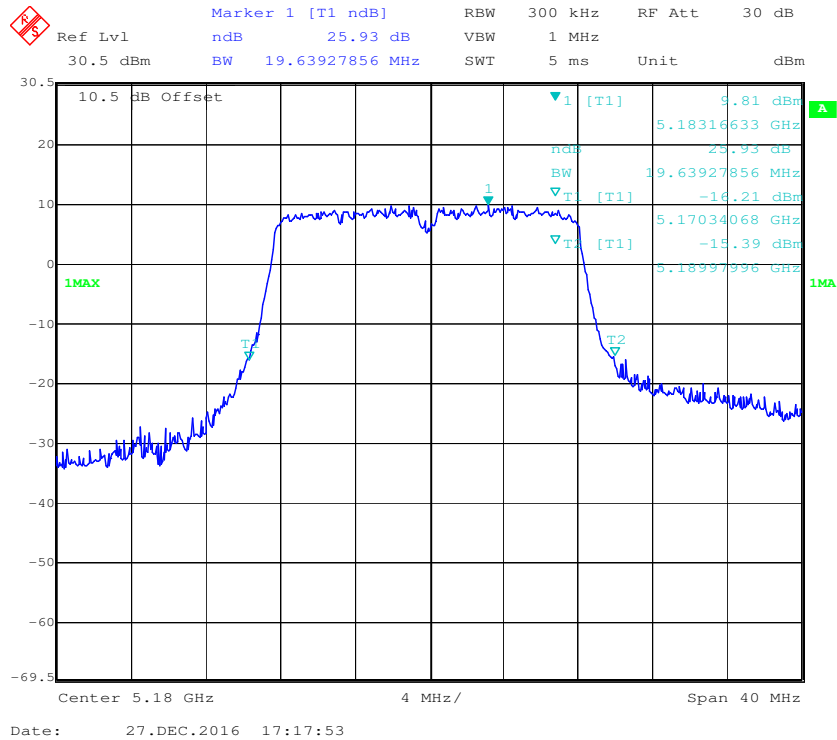


802.11ac80 mode, 26dB Emission Bandwidth, 5210 MHz

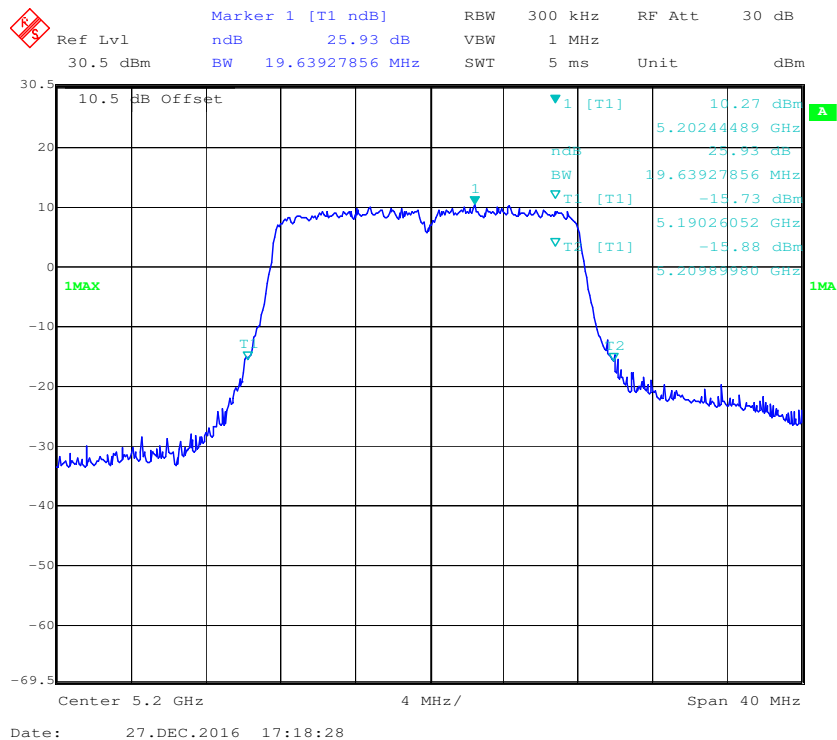


Chain 1

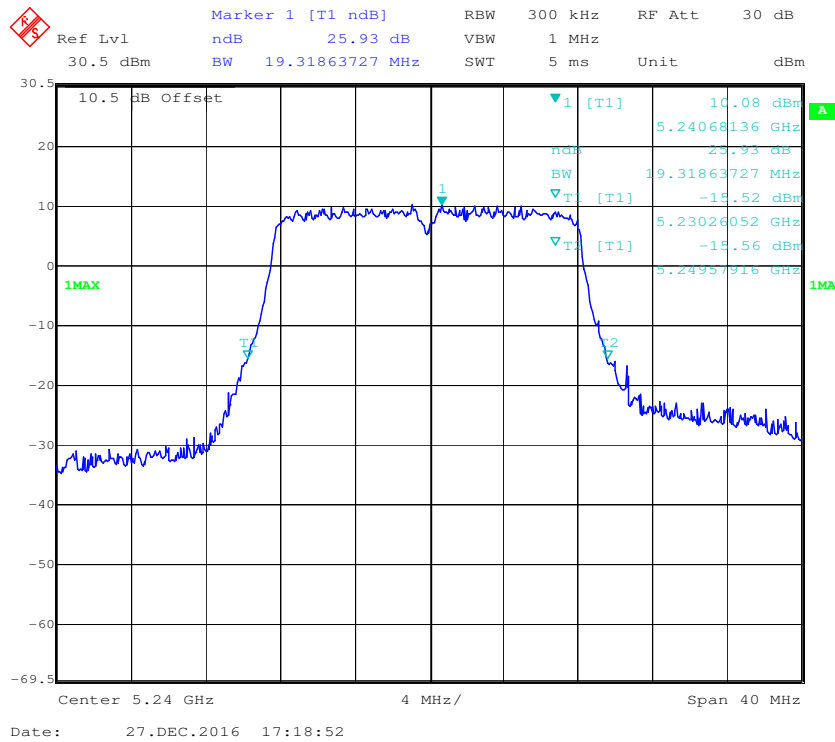
802.11a mode, 26dB Emission Bandwidth, 5180 MHz



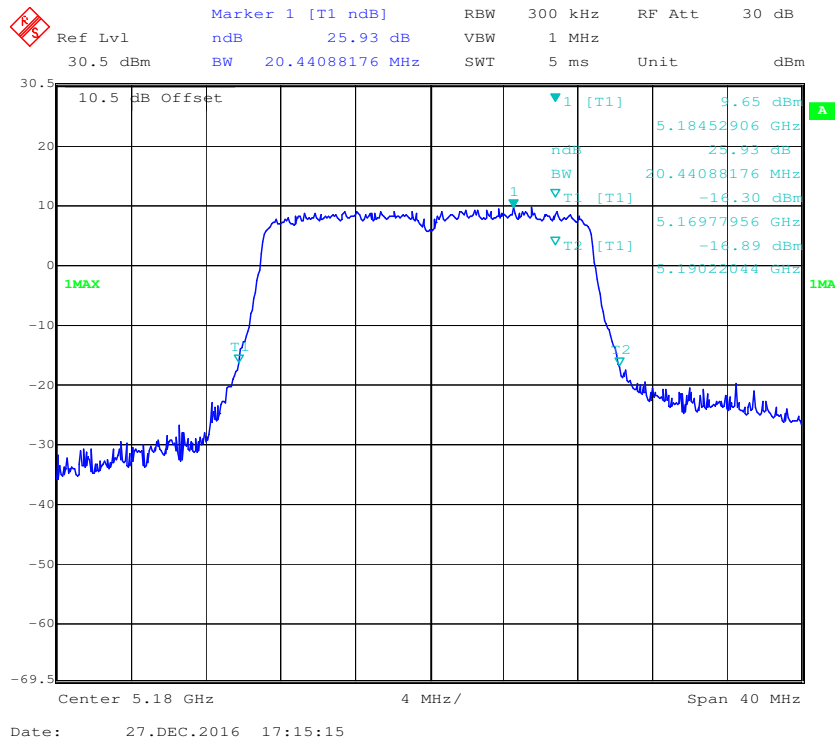
802.11a mode, 26dB Emission Bandwidth, 5200 MHz



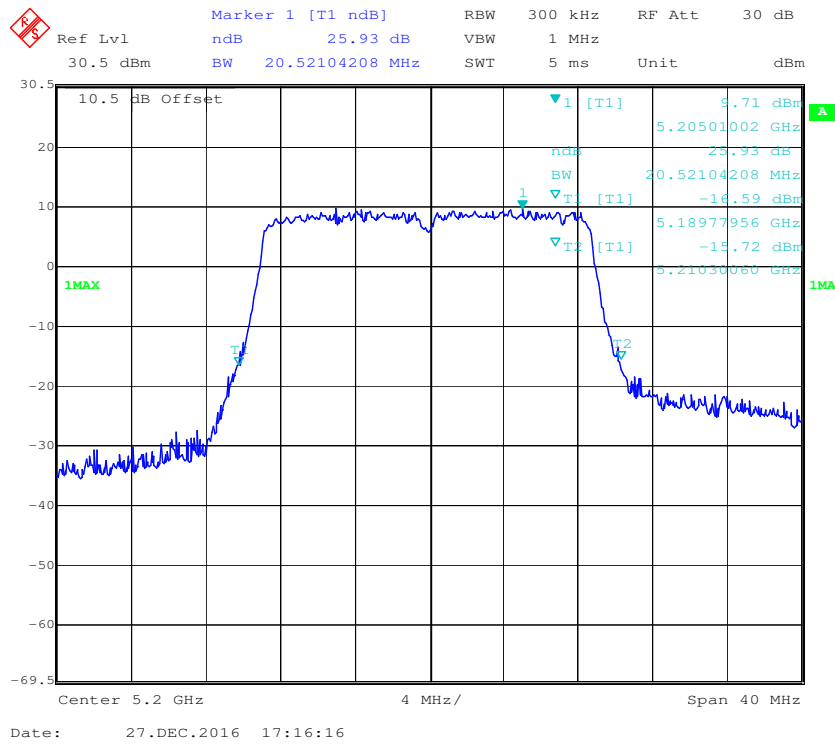
802.11a mode, 26dB Emission Bandwidth, 5240 MHz



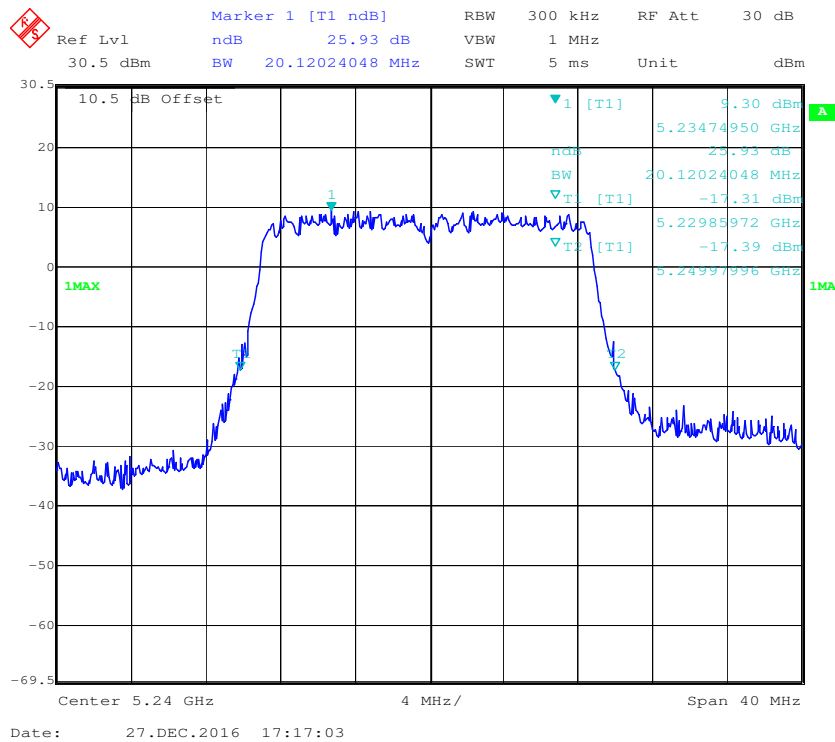
802.11n20 mode, 26dB Emission Bandwidth, 5180 MHz

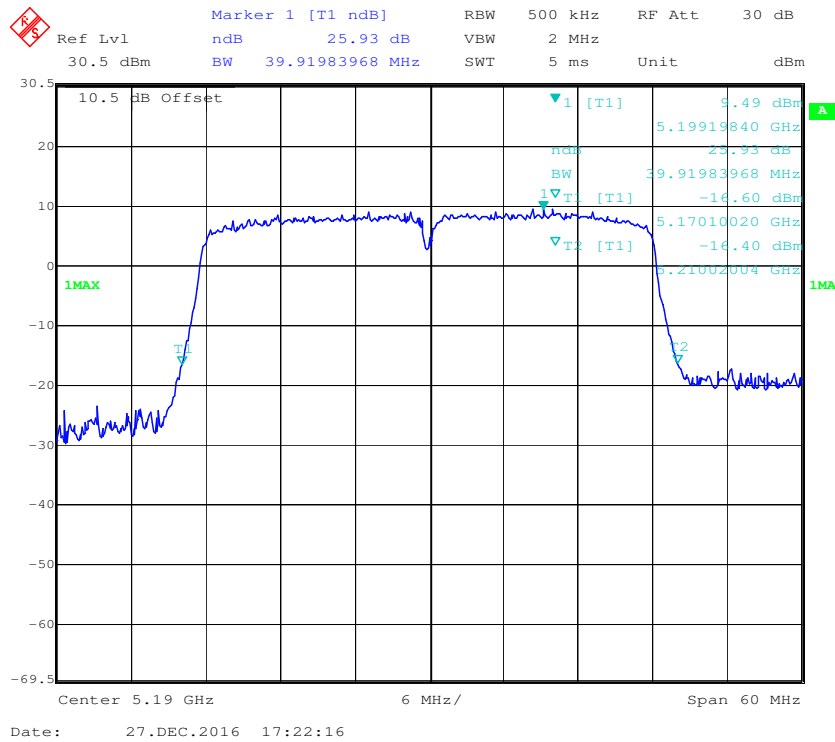
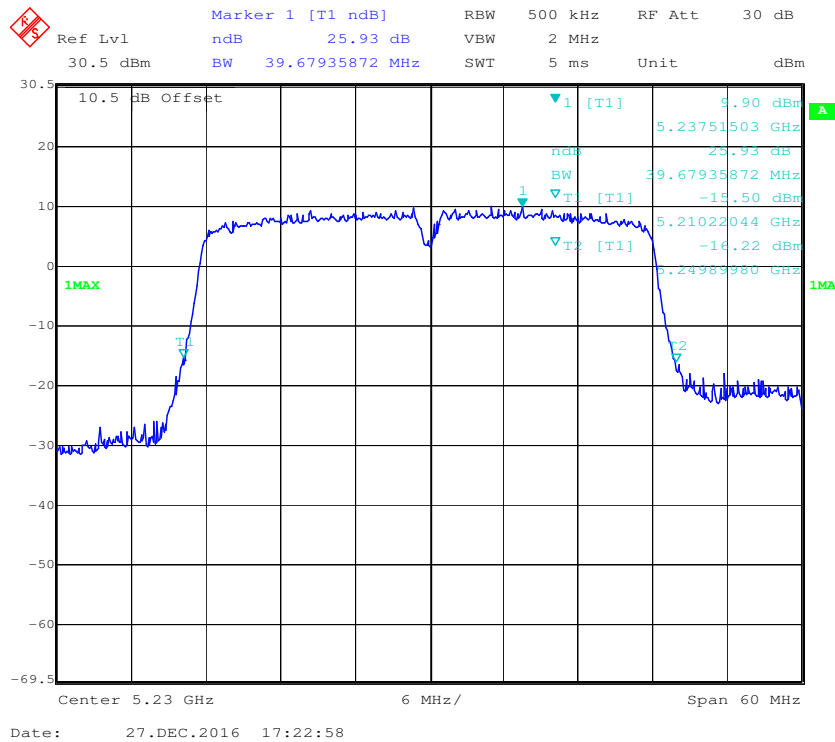


802.11n20 mode, 26dB Emission Bandwidth, 5200 MHz

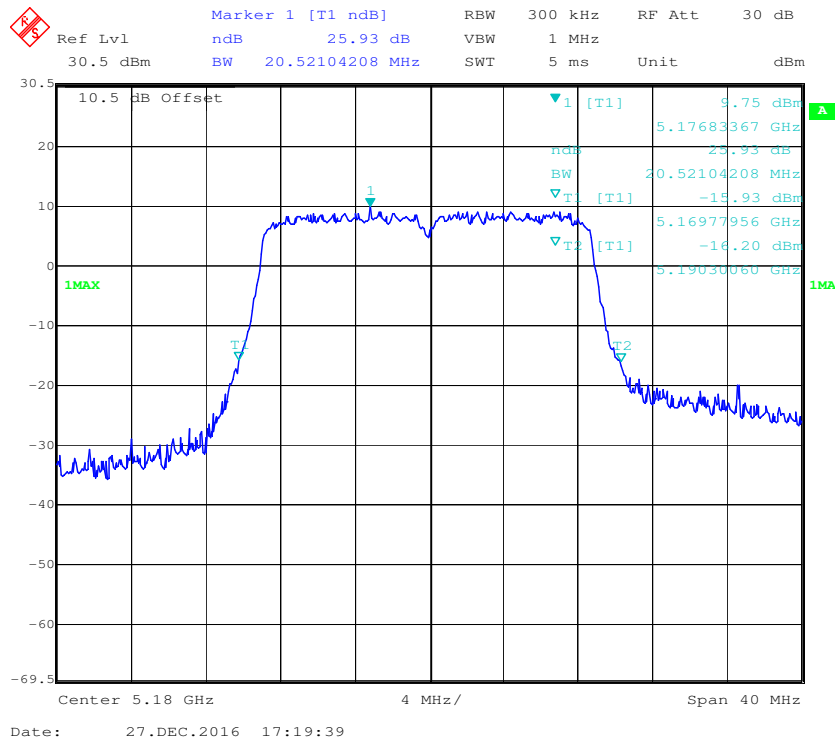


802.11n20 mode, 26dB Emission Bandwidth, 5240 MHz

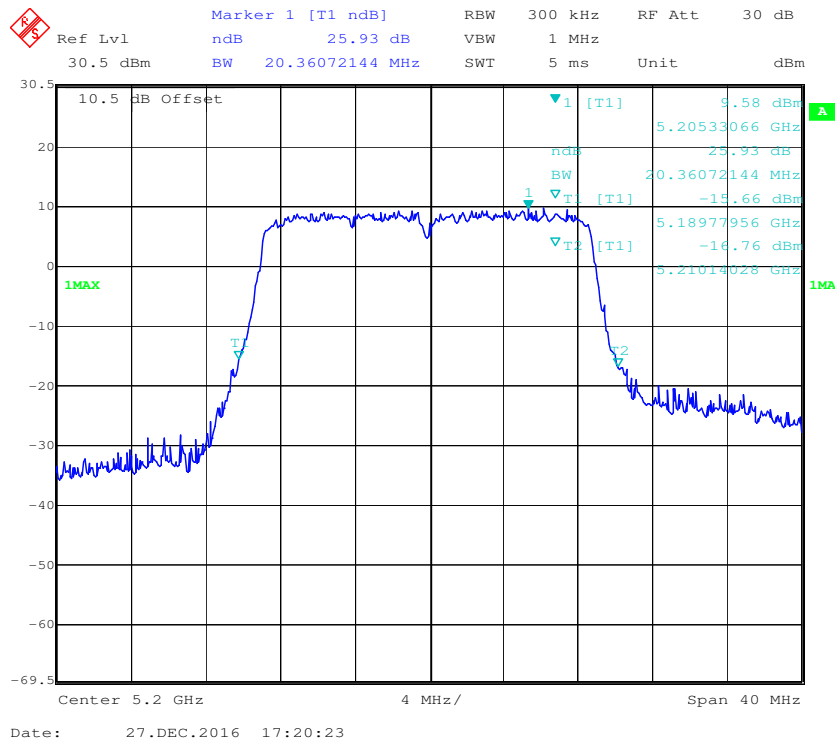


802.11n40 mode, 26dB Emission Bandwidth, 5190 MHz**802.11n40 mode, 26dB Emission Bandwidth, 5230 MHz**

802.11ac20 mode, 26dB Emission Bandwidth, 5180 MHz



802.11ac20 mode, 26dB Emission Bandwidth, 5200 MHz



Ref Lvl: 30.5 dBm
 Marker 1 [T1 ndB]: 25.93 dB
 RBW: 300 kHz
 VBW: 1 MHz
 RF Att: 30 dB
 BW: 30.12024048 MHz
 SWT: 5 ms
 Unit: dBm

10.5 dB Offset
 1MAX
 1
 T1
 T1 [T1]
 T2 [T1]
 5.23843687 GHz
 5.22985972 GHz
 5.24997996 GHz
 5.62 dBm
 25.93 dB
 -16.49 dBm
 -16.05 dBm

Center 5.24 GHz
 4 MHz/
 Span 40 MHz

Date: 27.DEC.2016 17:20:44

Ref Lvl 30.5 dBm Marker 1 [T1 ndB] RBW 500 kHz RF Att 30 dB Unit dBm

30.5 dB Offset

10.5 dB Offset

1MAX

T1 [T1]

T2 [T1]

5.14 dBm

5.2004080 GHz

25.93 dB

40.04008016 MHz

-16.35 dBm

-17.23 dBm

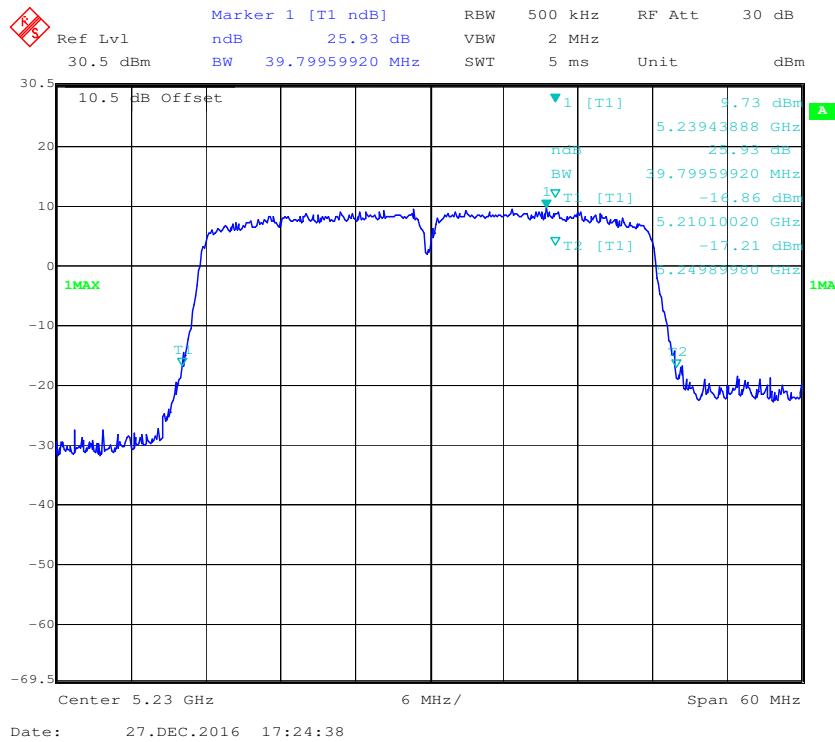
5.16997996 GHz

5.21002004 GHz

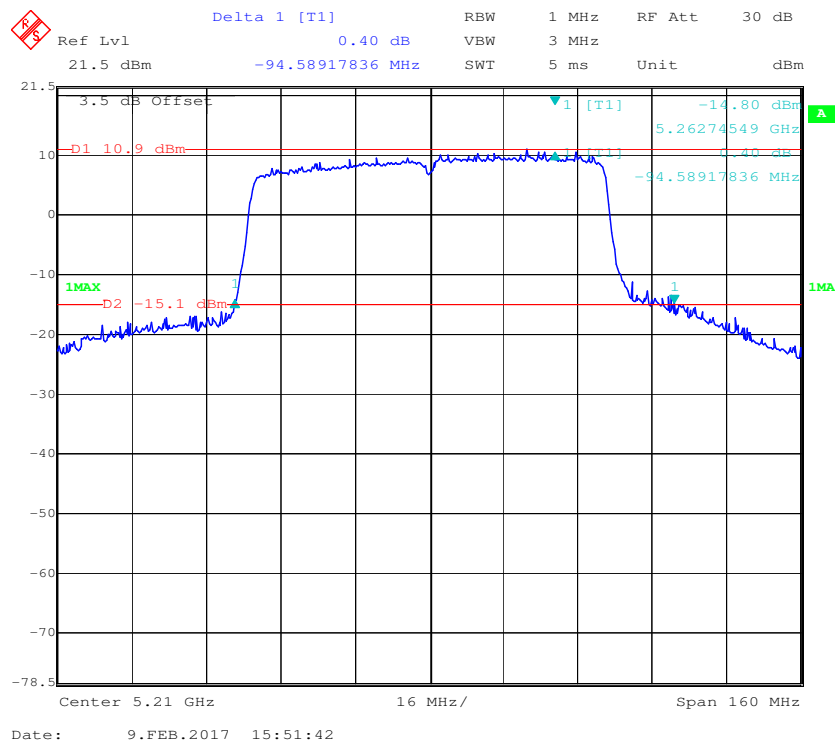
Center 5.19 GHz 6 MHz/ Span 60 MHz

Date: 27.DEC.2016 17:24:05

802.11ac40 mode, 26dB Emission Bandwidth, 5230 MHz



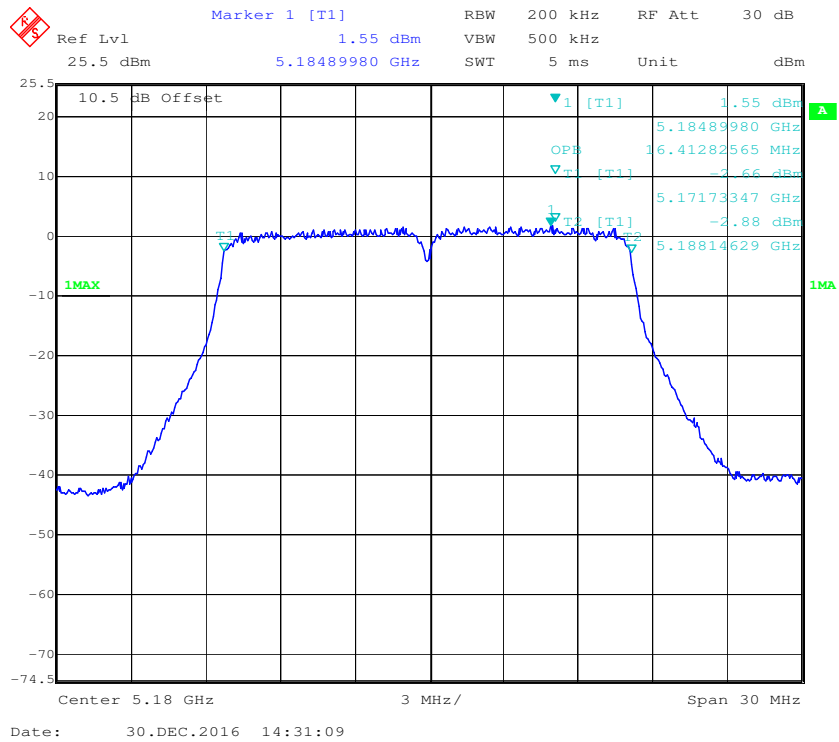
802.11ac80 mode, 26dB Emission Bandwidth, 5210 MHz



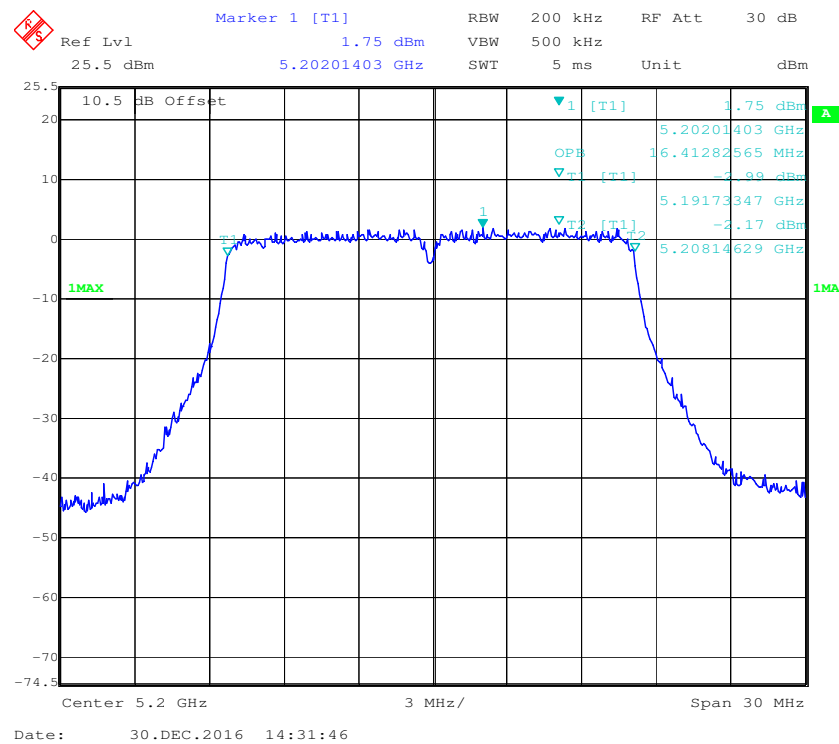
Frequency (MHz)	AntennaPort	99% dB Bandwidth (MHz)
802.11a		
5180	Chain 0	16.413
	Chain 1	16.413
5200	Chain 0	16.413
	Chain 1	16.413
5240	Chain 0	16.413
	Chain 1	16.413
802.11n20		
5180	Chain 0	17.615
	Chain 1	17.615
5200	Chain 0	17.615
	Chain 1	17.615
5240	Chain 0	17.615
	Chain 1	17.615
802.11n40		
5190	Chain 0	36.072
	Chain 1	35.952
5230	Chain 0	36.072
	Chain 1	36.072
802.11ac20		
5180	Chain 0	17.615
	Chain 1	17.615
5200	Chain 0	17.615
	Chain 1	17.615
5240	Chain 0	17.615
	Chain 1	17.615
802.11ac40		
5190	Chain 0	36.072
	Chain 1	35.952
5230	Chain 0	35.952
	Chain 1	35.952
802.11ac80		
5210	Chain 0	75.992
	Chain 1	76.313

Chain 0

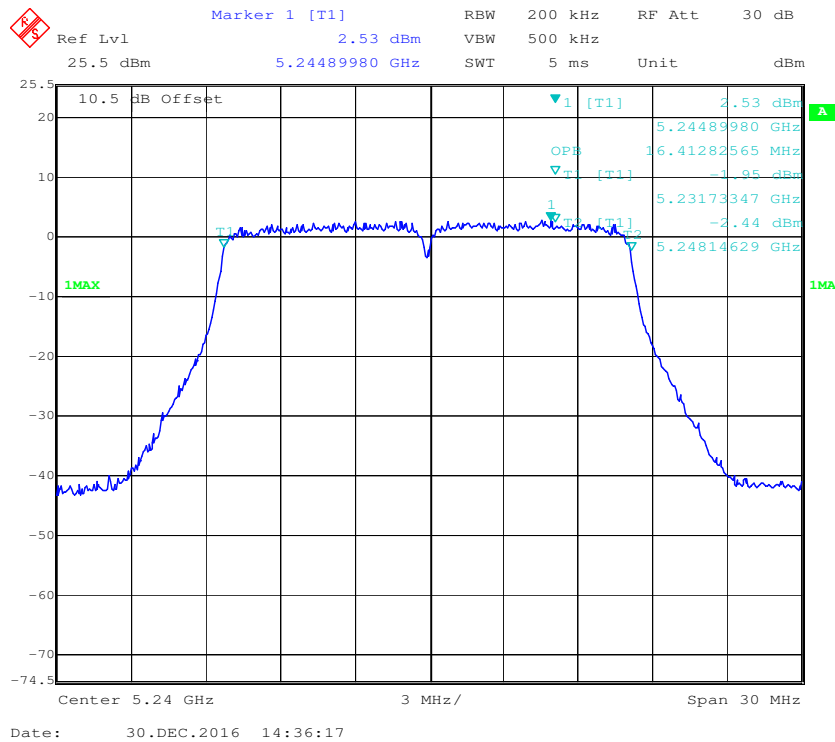
802.11a mode, 99% Occupied Bandwidth, 5180 MHz



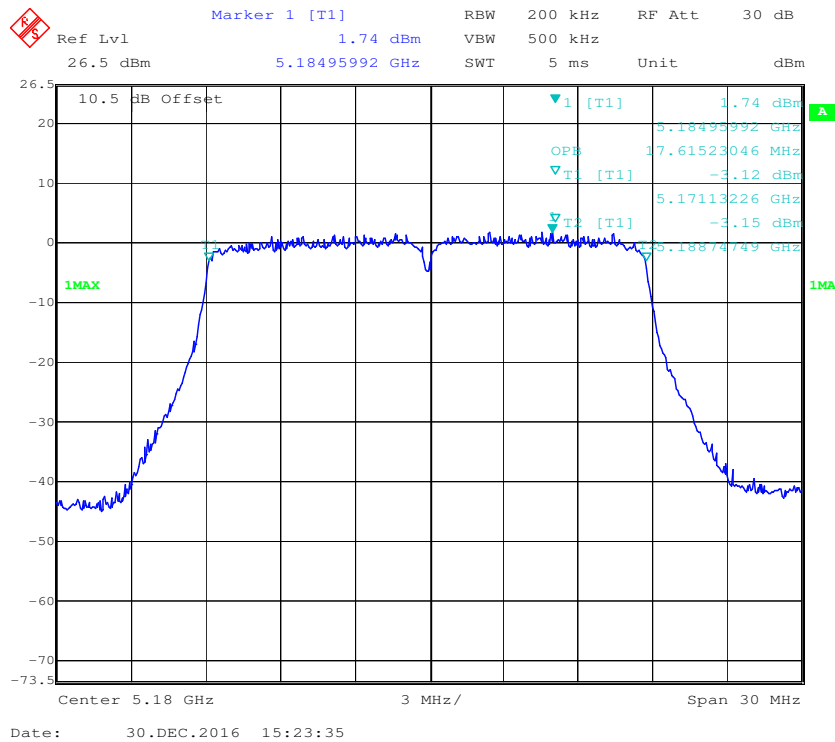
802.11a mode, 99% Occupied Bandwidth, 5200MHz

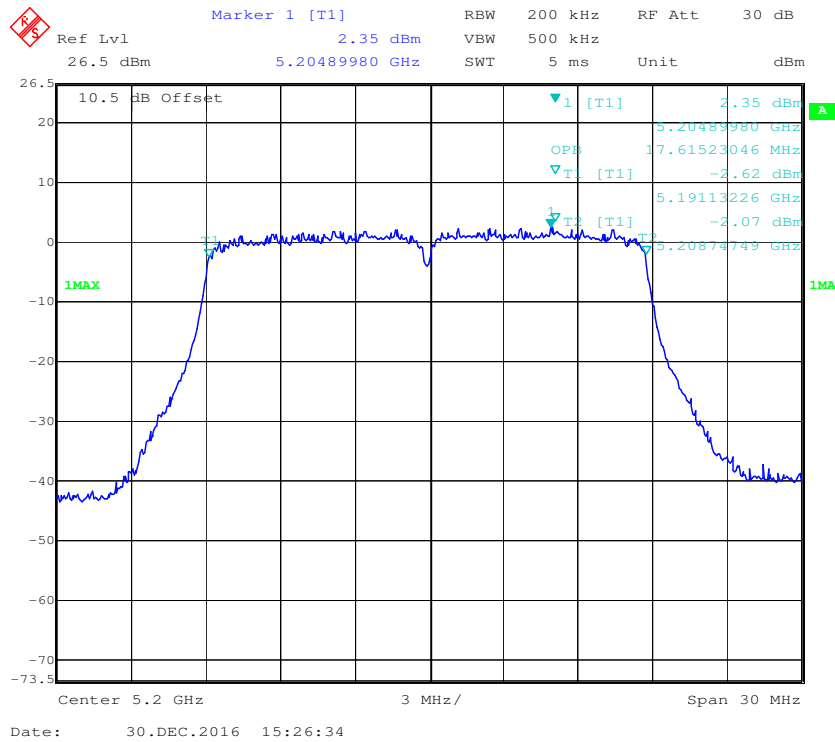
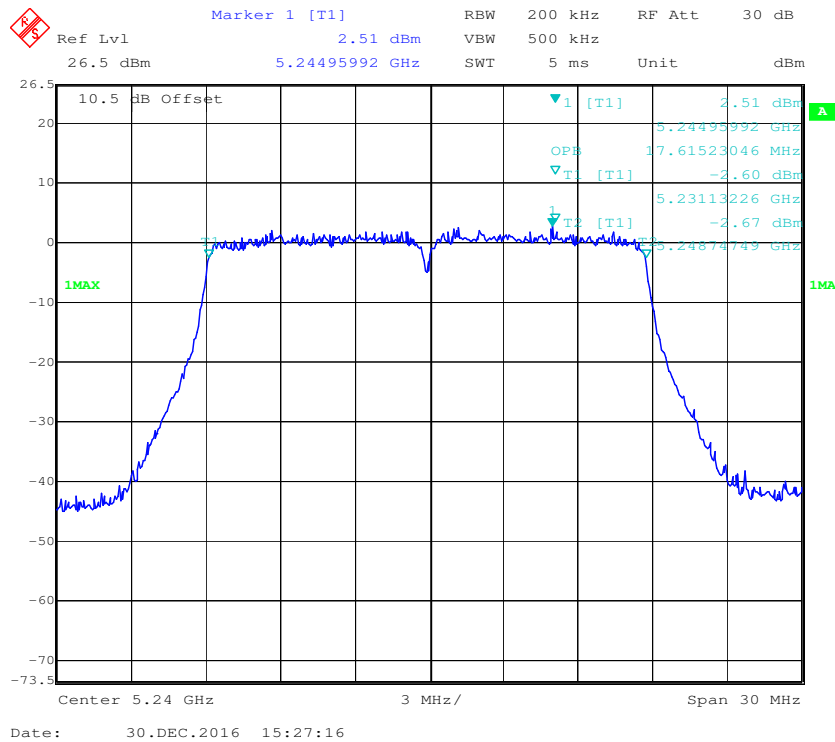


802.11a mode, 99% Occupied Bandwidth, 5240 MHz

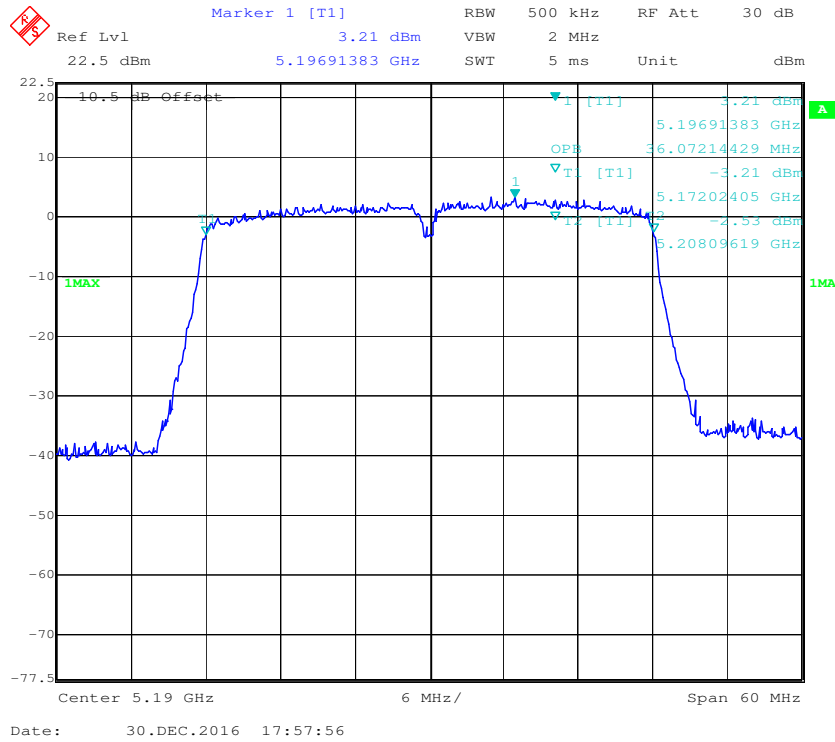


802.11n20 mode, 99% Occupied Bandwidth, 5180 MHz

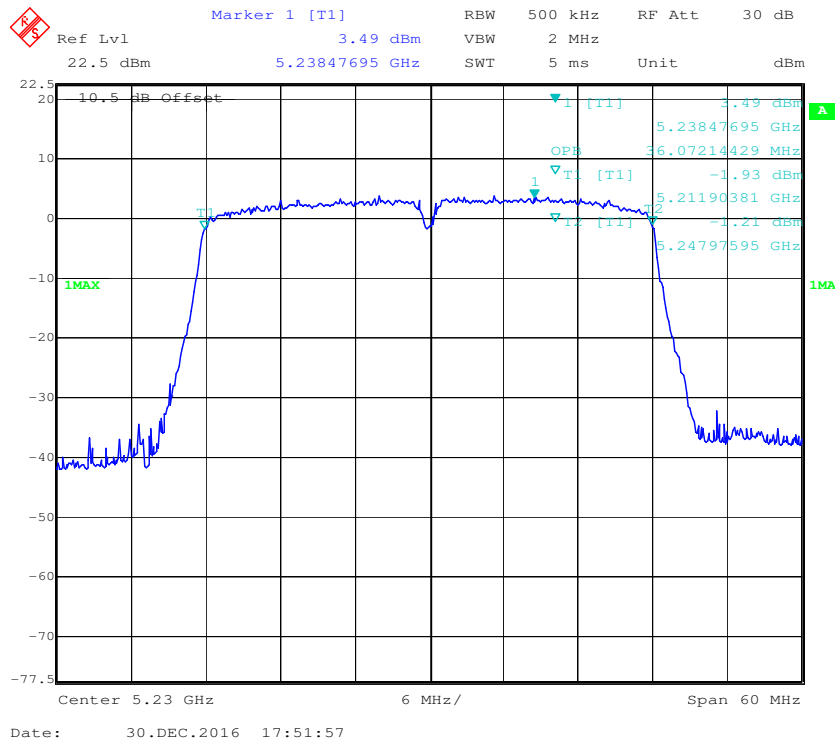


802.11n20 mode, 99% Occupied Bandwidth, 5200 MHz**802.11n20 mode, 99% Occupied Bandwidth, 5240 MHz**

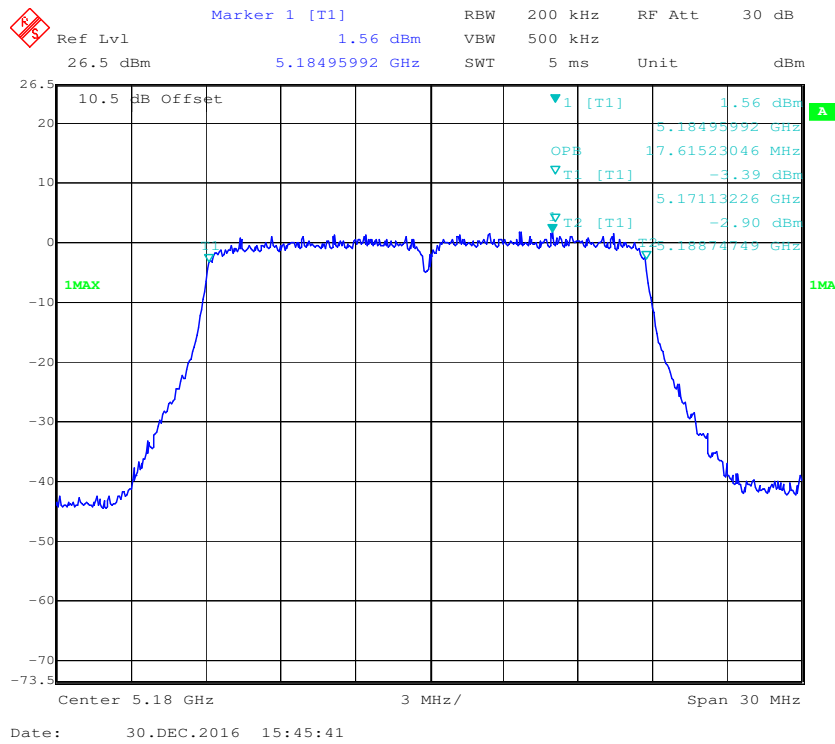
802.11n40 mode, 99% Occupied Bandwidth, 5190 MHz



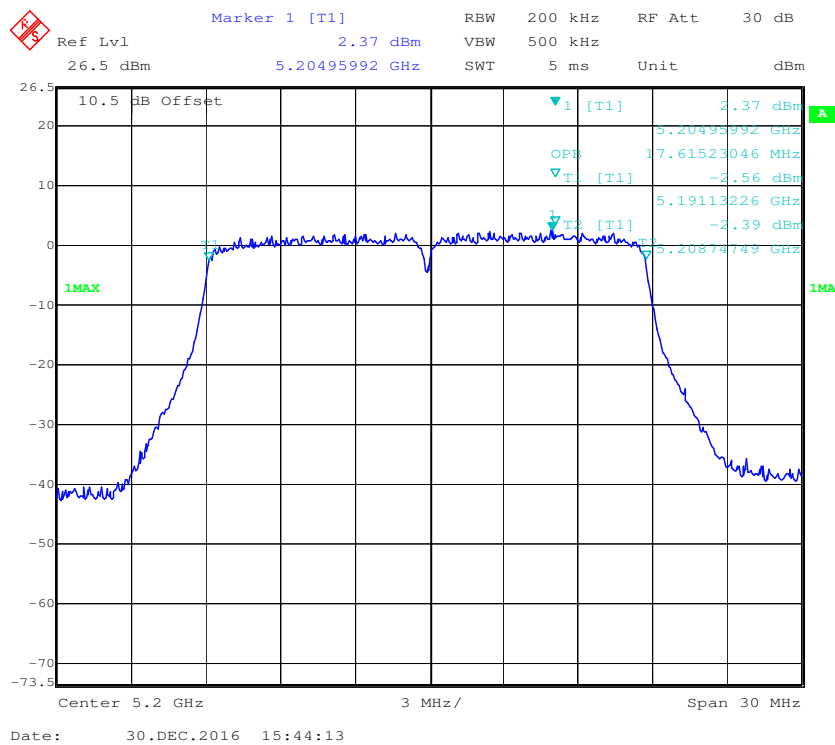
802.11n40 mode, 99% Occupied Bandwidth, 5230 MHz



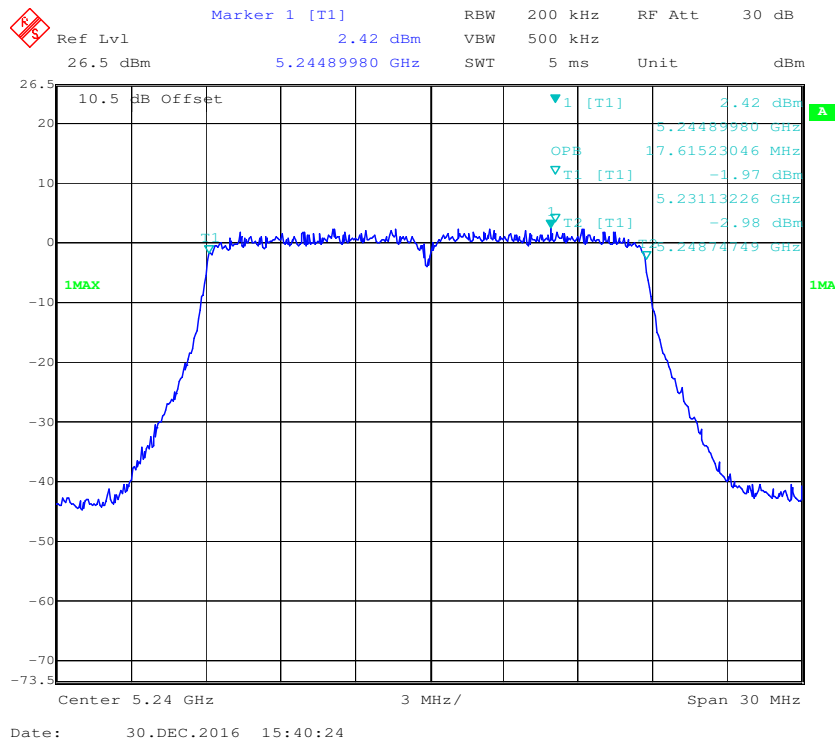
802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz



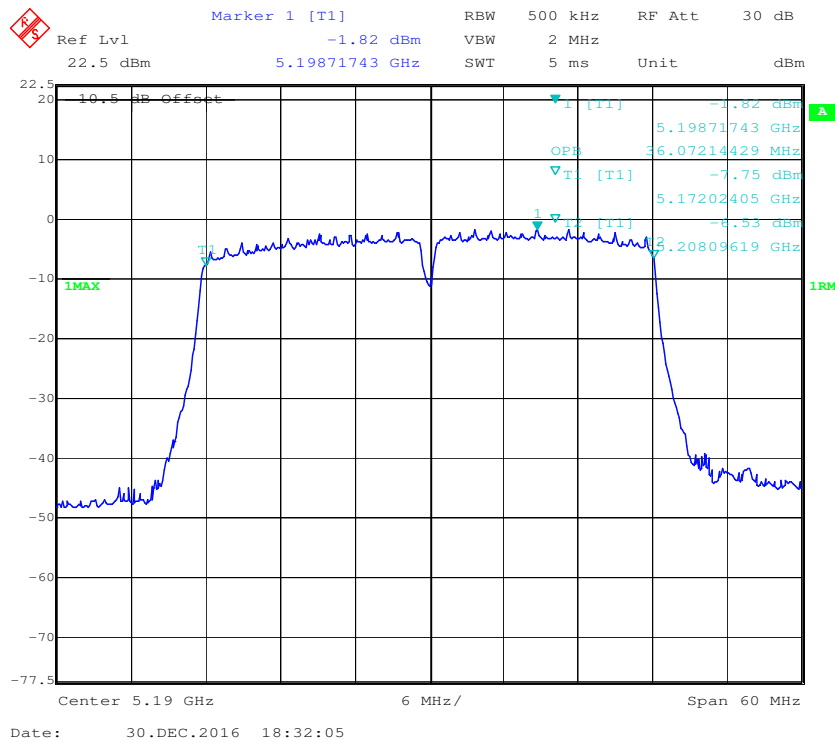
802.11ac20, 99% Occupied Bandwidth, 5200 MHz

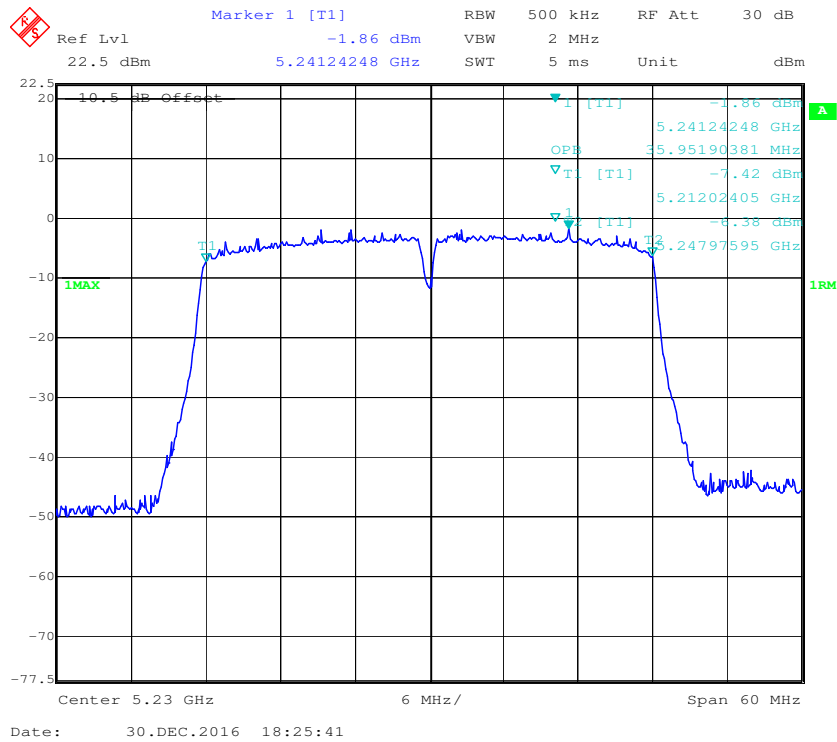
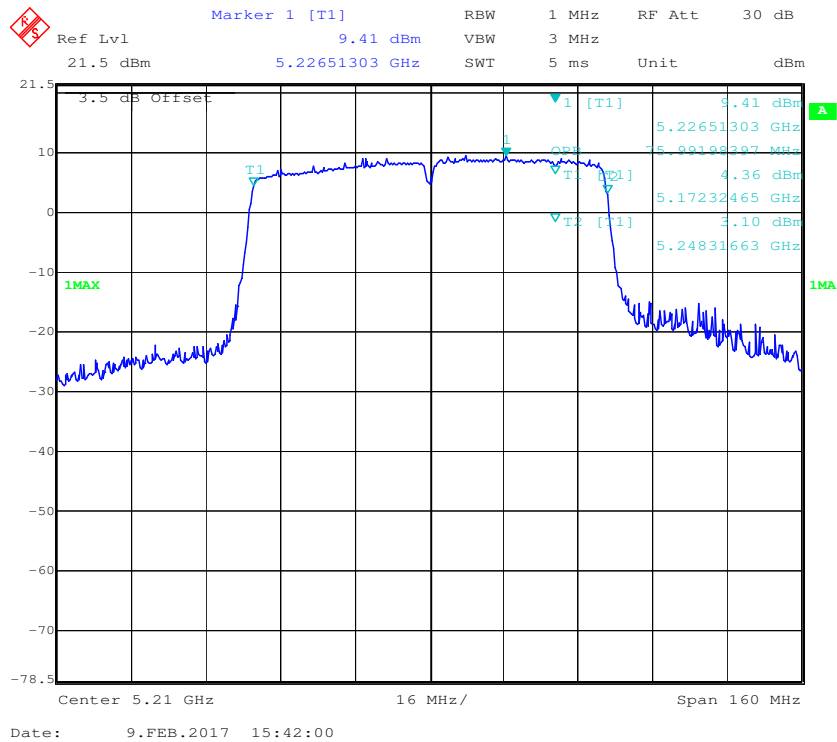


802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz



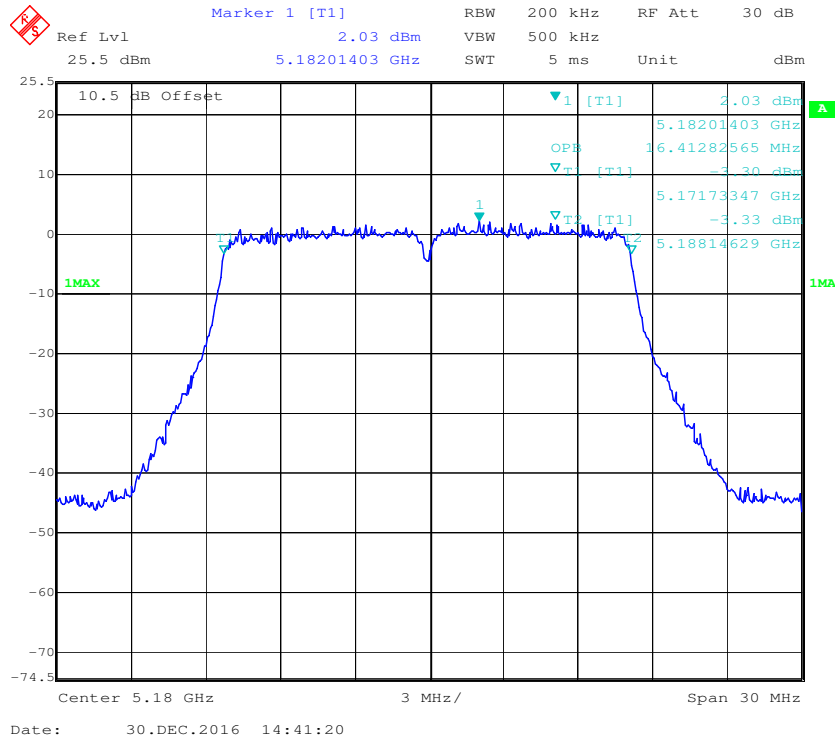
802.11ac40 mode, 99% Occupied Bandwidth, 5190 MHz



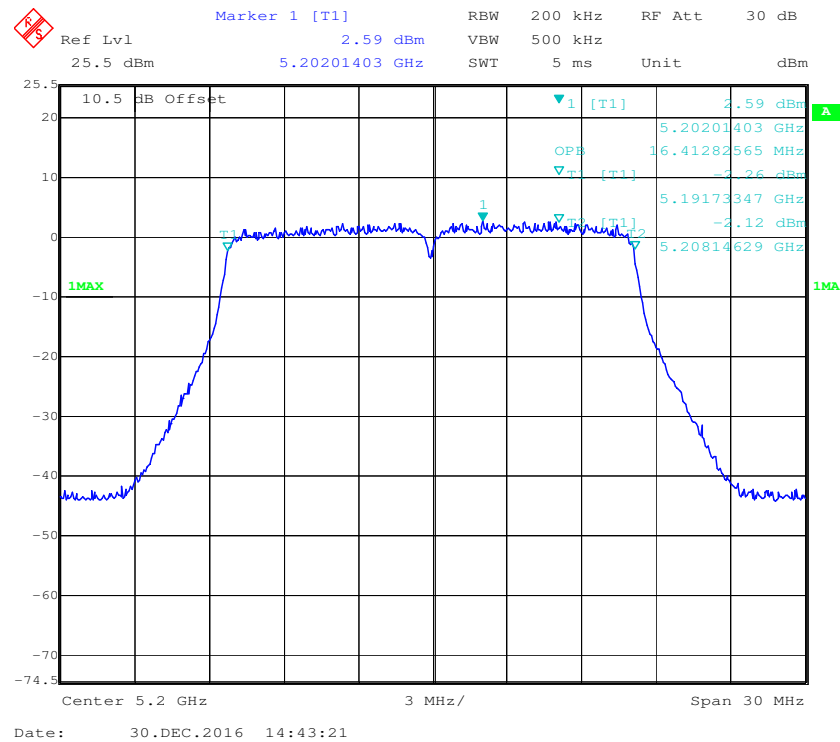
802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz**802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz**

Chain 1

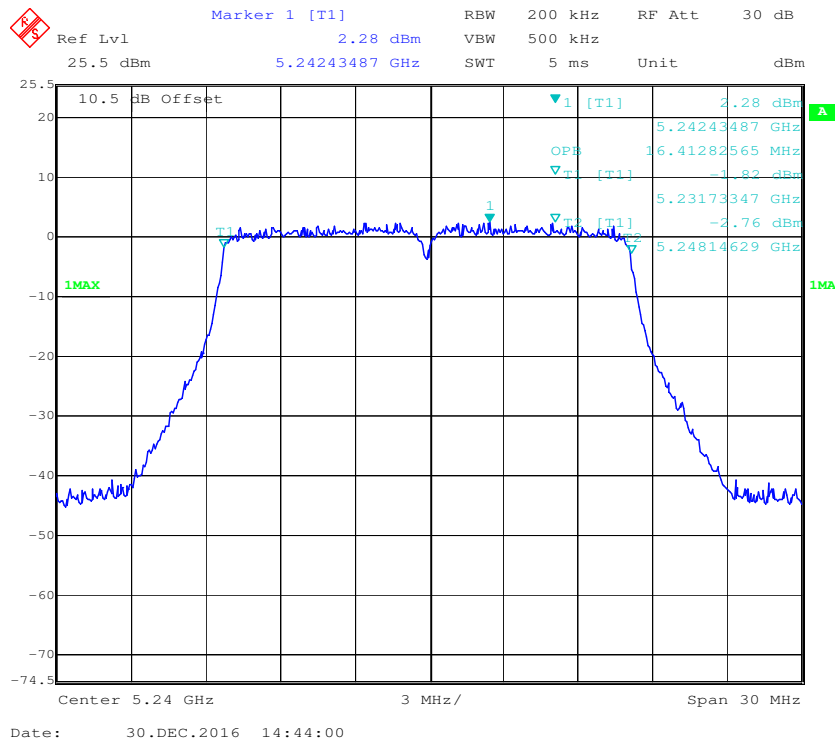
802.11a mode, 99% Occupied Bandwidth, 5180 MHz



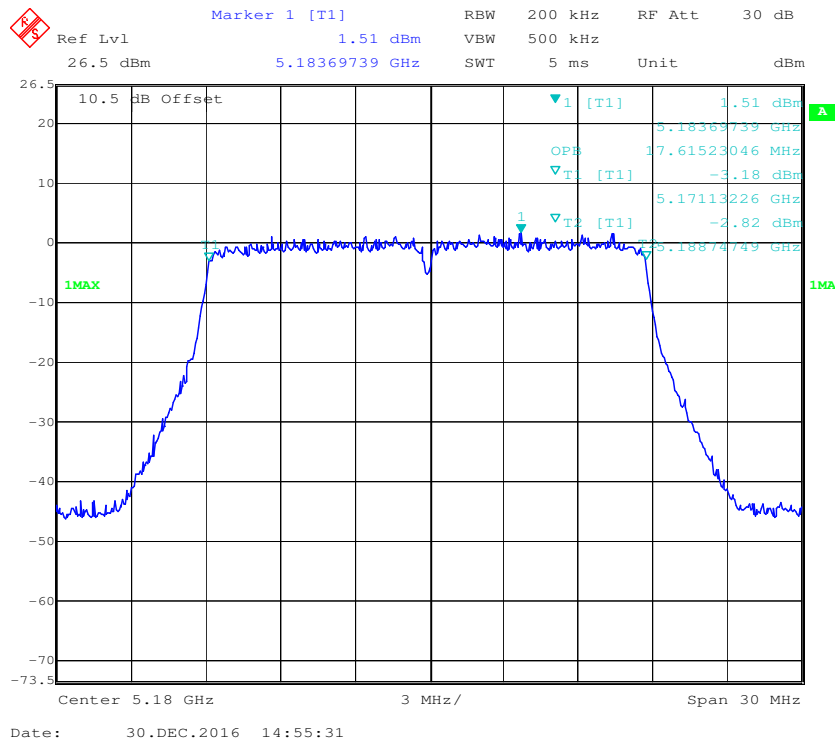
802.11a mode, 99% Occupied Bandwidth, 5200MHz



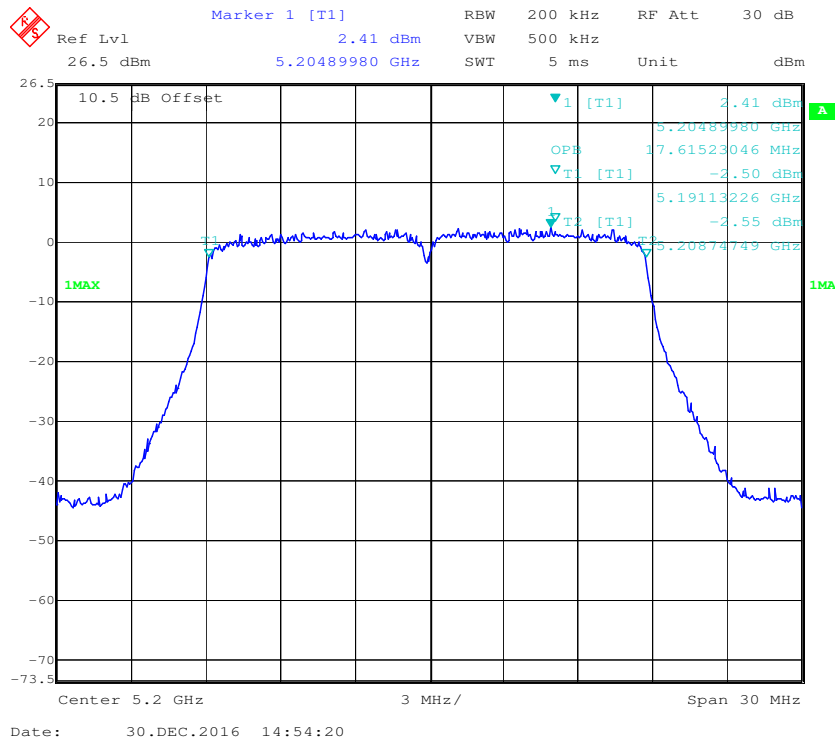
802.11a mode, 99% Occupied Bandwidth, 5240 MHz



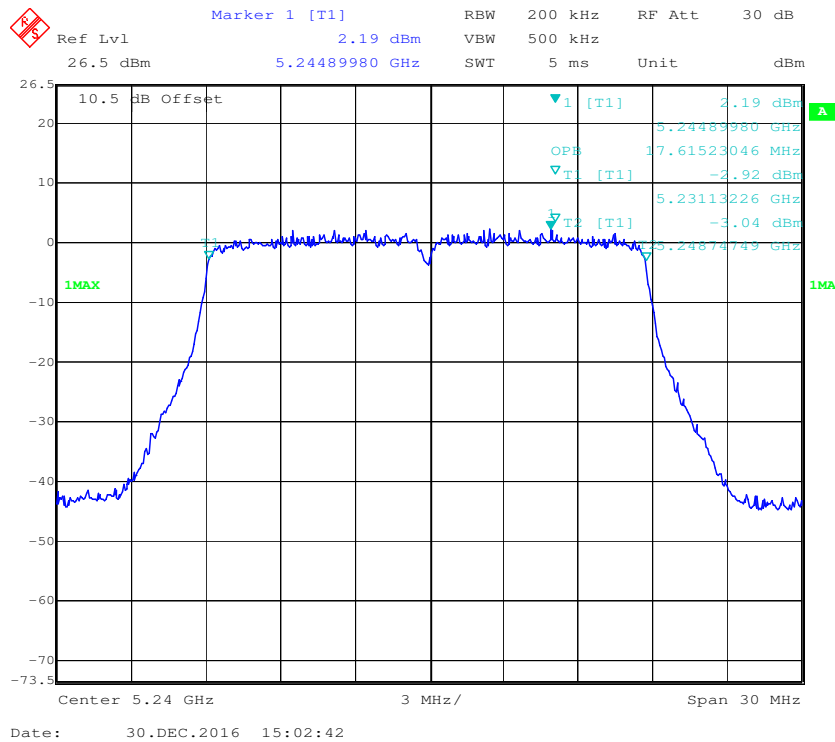
802.11n20 mode, 99% Occupied Bandwidth, 5180 MHz



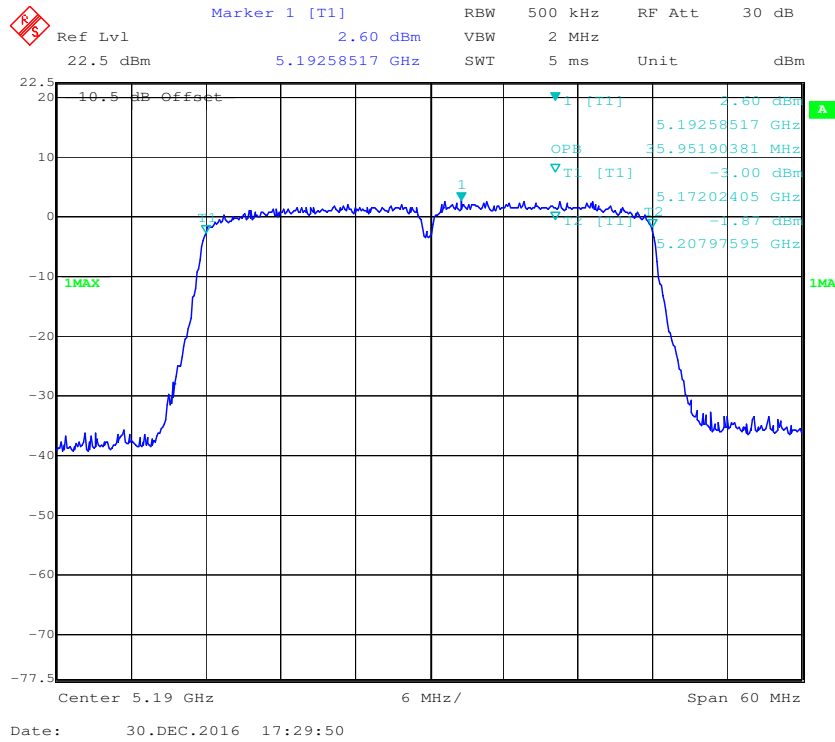
802.11n20 mode, 99% Occupied Bandwidth, 5200 MHz



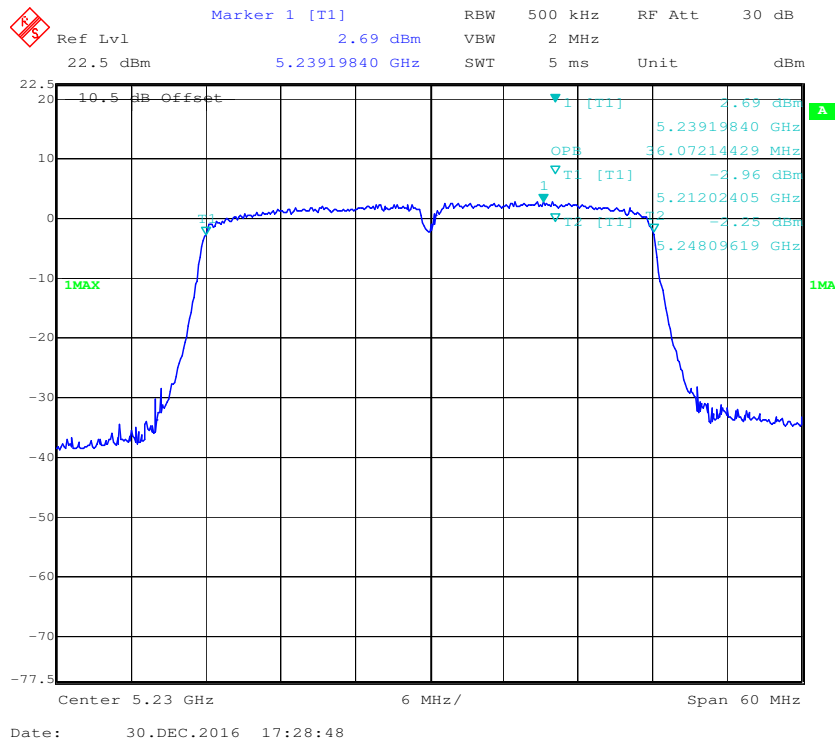
802.11n20 mode, 99% Occupied Bandwidth, 5240 MHz



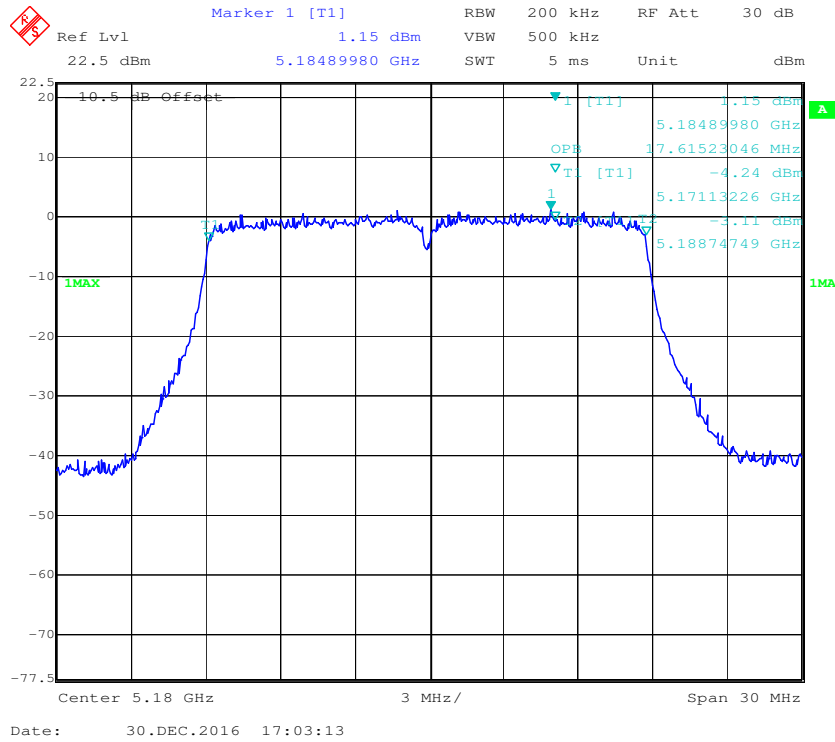
802.11n40 mode, 99% Occupied Bandwidth, 5190 MHz



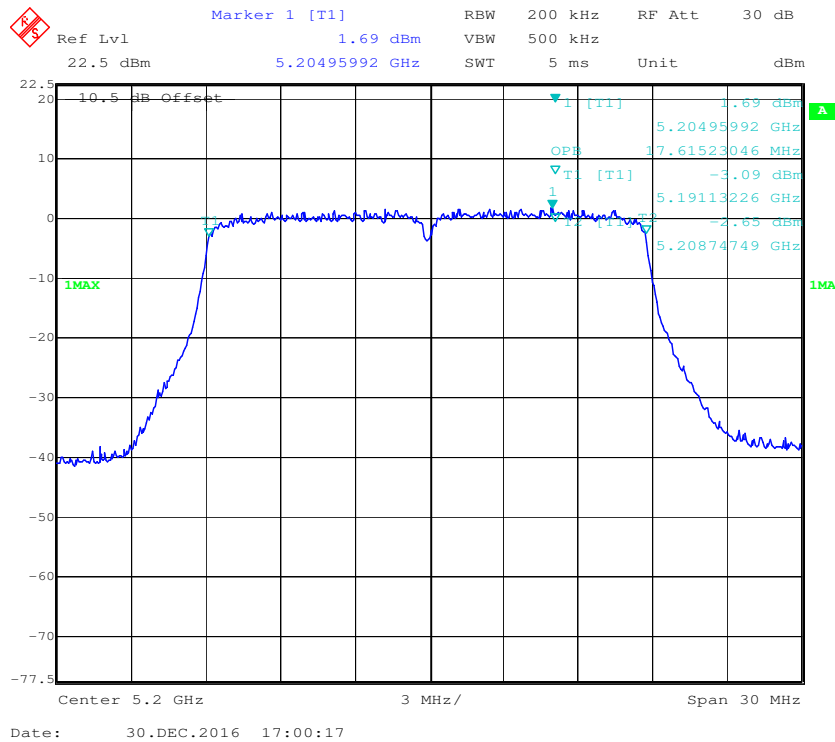
802.11n40 mode, 99% Occupied Bandwidth, 5230 MHz

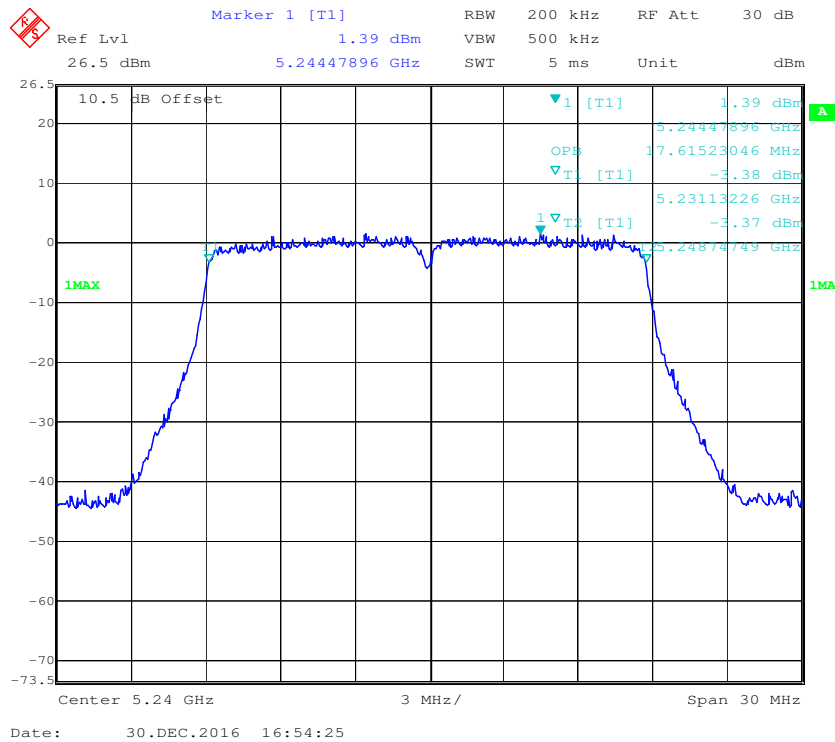
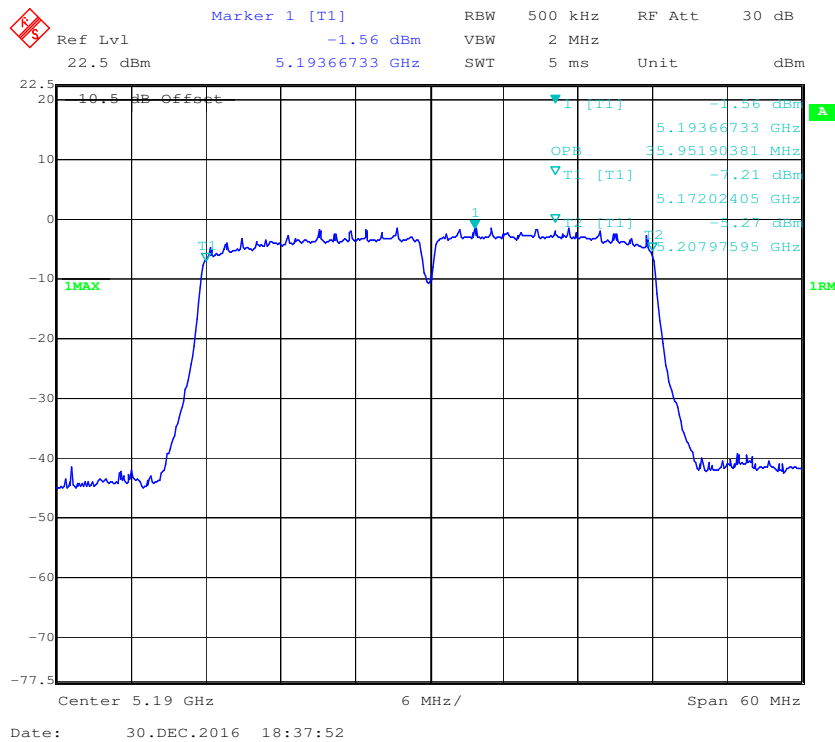


802.11ac20 mode, 99% Occupied Bandwidth, 5180 MHz

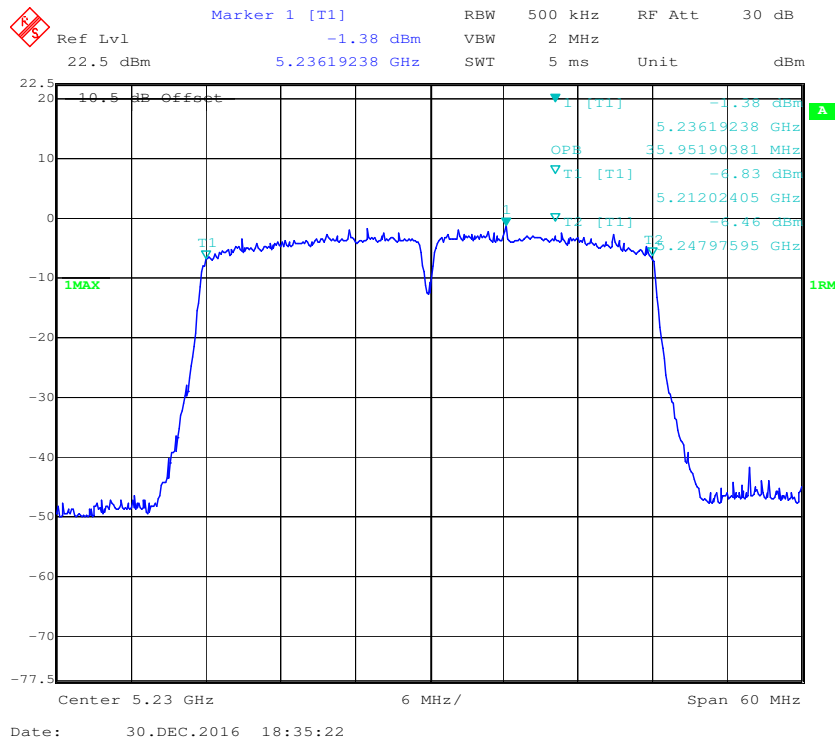


802.11ac20, 99% Occupied Bandwidth, 5200 MHz

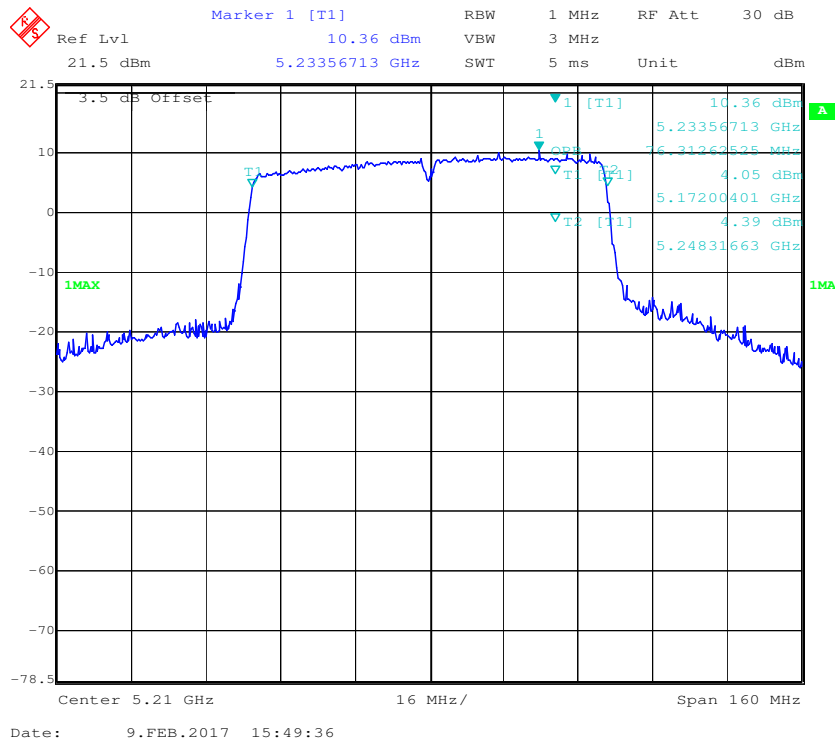


802.11ac20 mode, 99% Occupied Bandwidth, 5240 MHz**802.11ac40 mode, 99% Occupied Bandwidth, 5190 MHz**

802.11ac40 mode, 99% Occupied Bandwidth, 5230 MHz



802.11ac80 mode, 99% Occupied Bandwidth, 5210 MHz

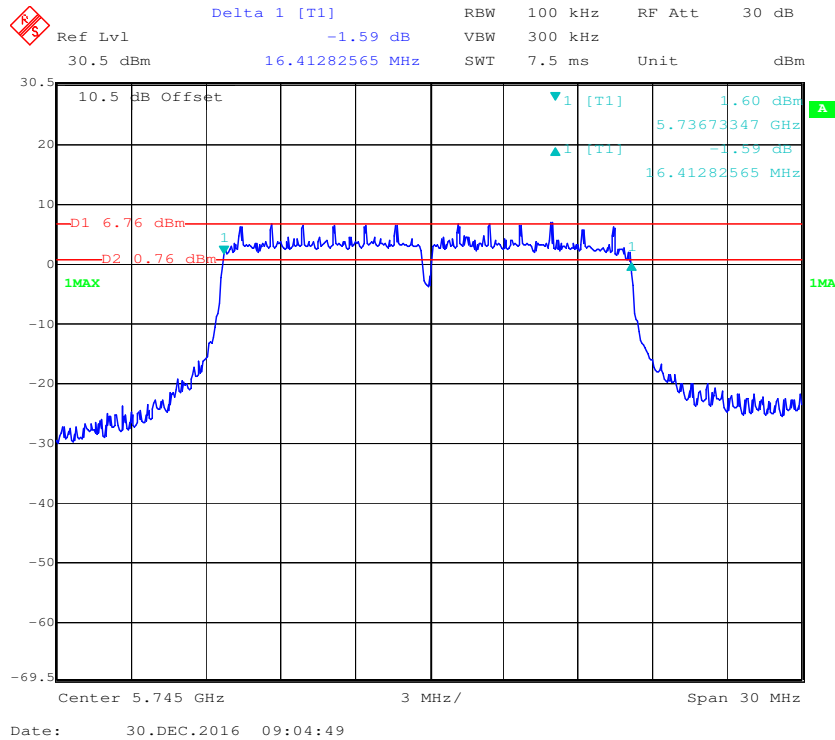


5725 MHz – 5825 MHz:

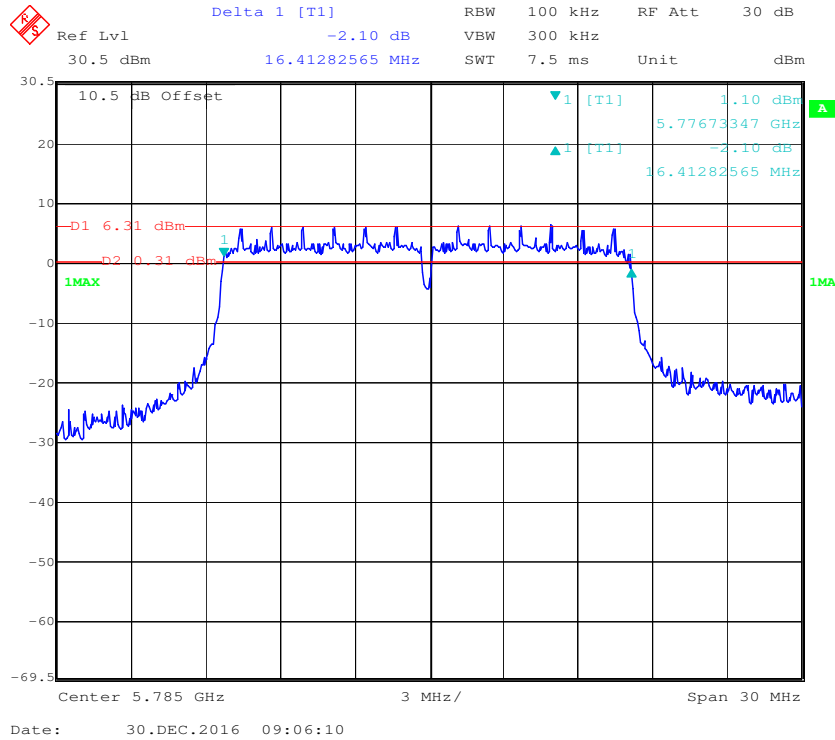
Frequency (MHz)	AntennaPort	6dB Emission Bandwidth (MHz)
802.11a		
5745	Chain 0	16.413
	Chain 1	16.413
5785	Chain 0	16.413
	Chain 1	16.413
5825	Chain 0	16.413
	Chain 1	16.413
802.11n20		
5745	Chain 0	17.675
	Chain 1	17.615
5785	Chain 0	17.675
	Chain 1	17.615
5825	Chain 0	17.675
	Chain 1	17.615
802.11n40		
5755	Chain 0	35.741
	Chain 1	35.832
5795	Chain 0	35.741
	Chain 1	35.591
802.11ac20		
5745	Chain 0	17.675
	Chain 1	17.615
5785	Chain 0	17.675
	Chain 1	17.615
5825	Chain 0	17.675
	Chain 1	17.615
802.11ac40		
5755	Chain 0	35.591
	Chain 1	35.591
5795	Chain 0	35.471
	Chain 1	35.471
802.11ac80		
5755	Chain 0	76.473
	Chain 1	76.232

Chain 0

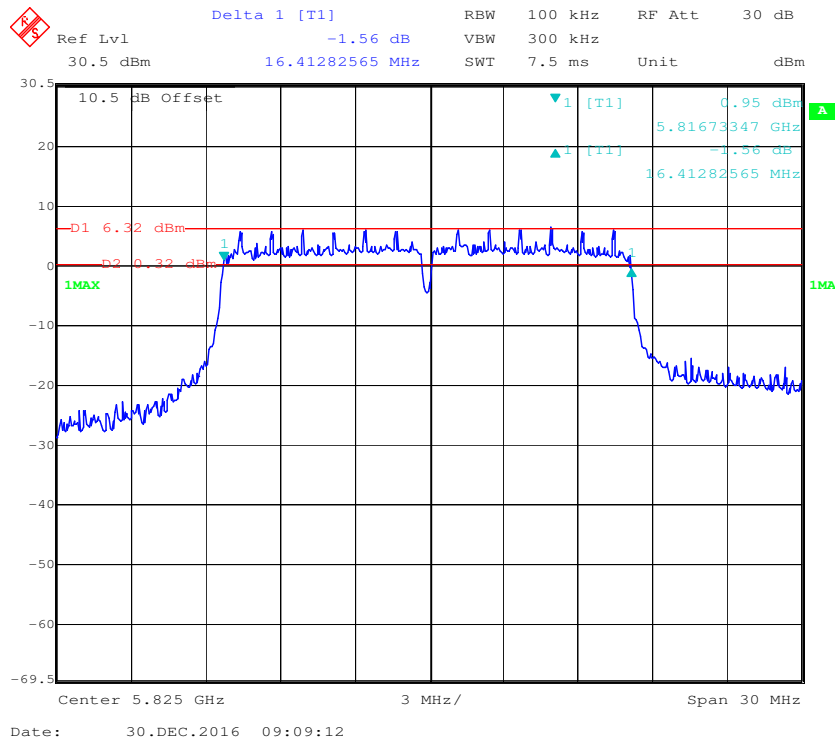
802.11a mode, 6dB Emission Bandwidth, 5745 MHz



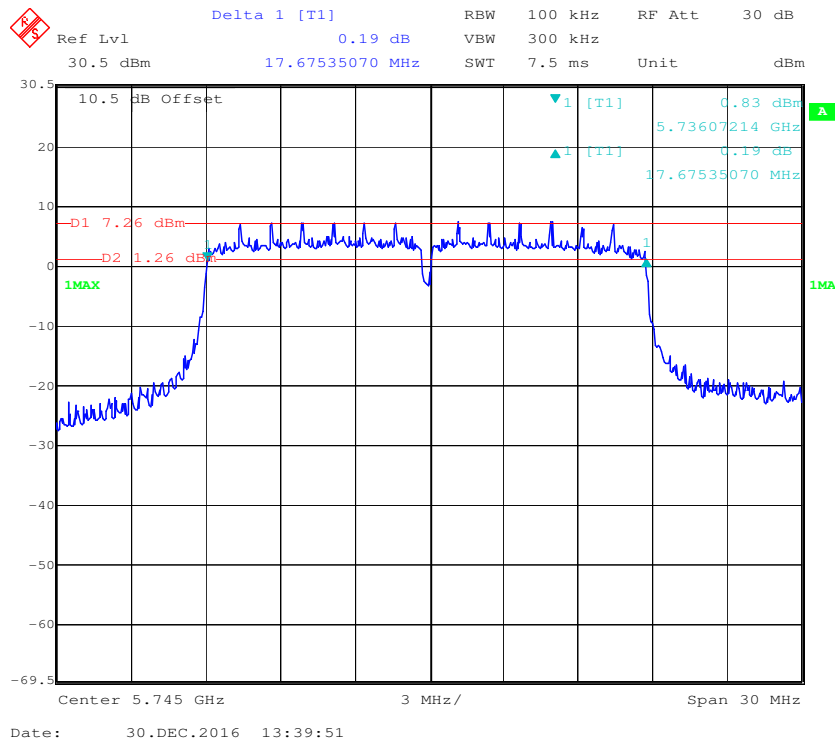
802.11a mode, 6dB Emission Bandwidth, 5785 MHz



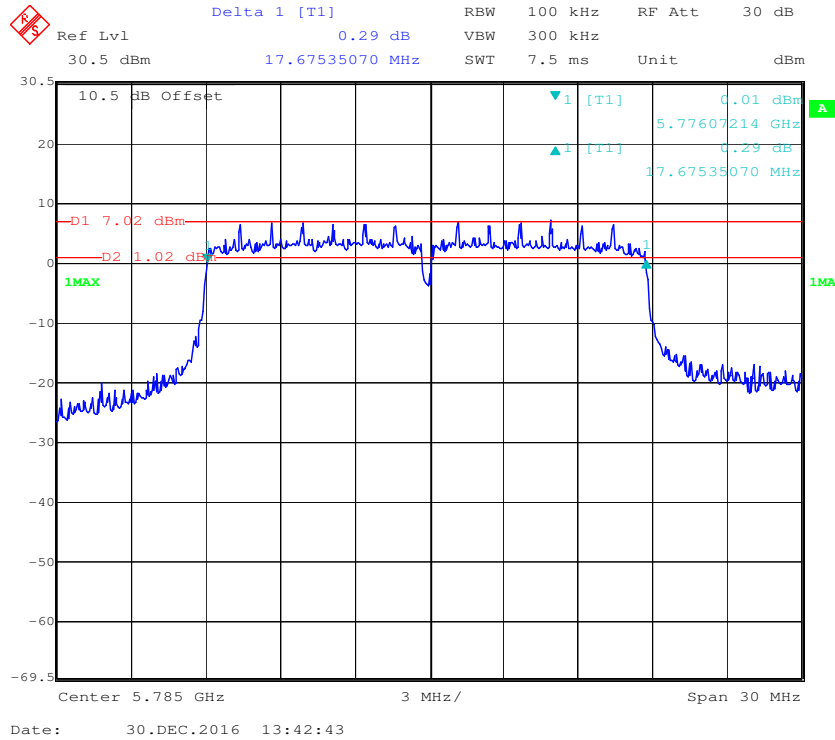
802.11a mode, 6dB Emission Bandwidth, 5825 MHz



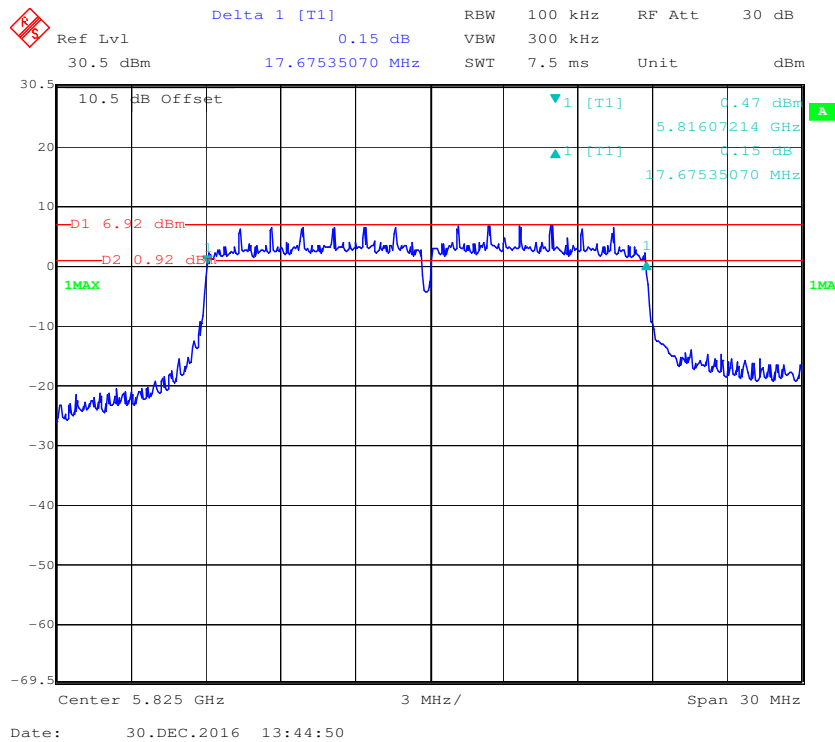
802.11n20 mode, 6dB Emission Bandwidth, 5745 MHz

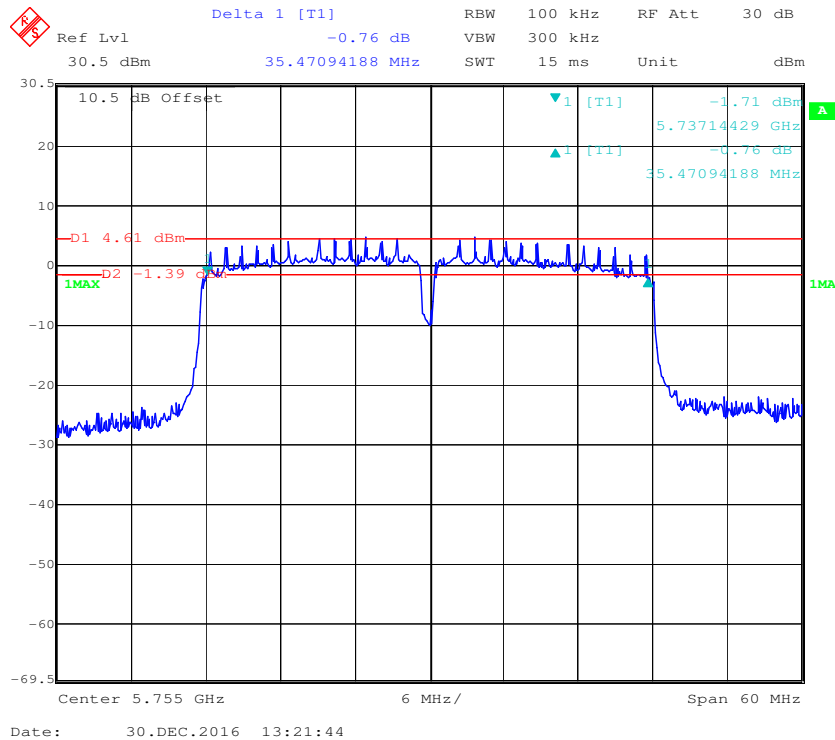
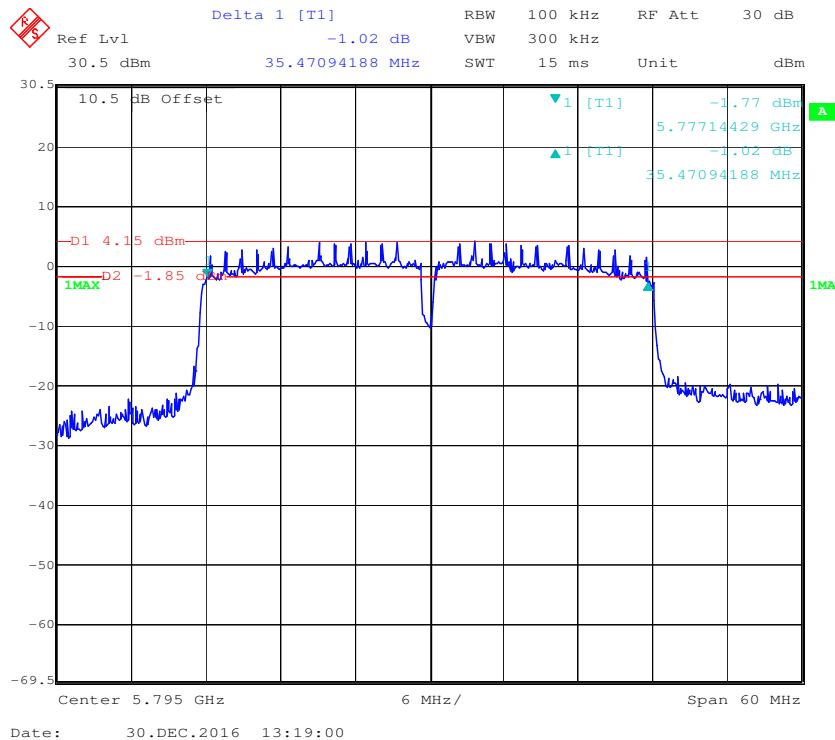


802.11n20 mode, 6dB Emission Bandwidth, 5785 MHz

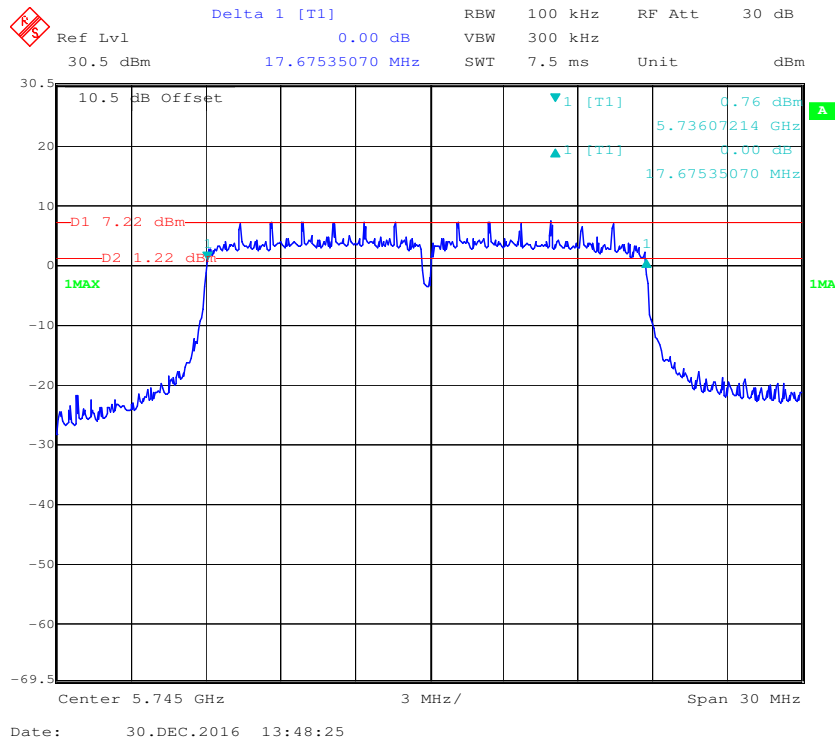


802.11n20 mode, 6dB Emission Bandwidth, 5825 MHz

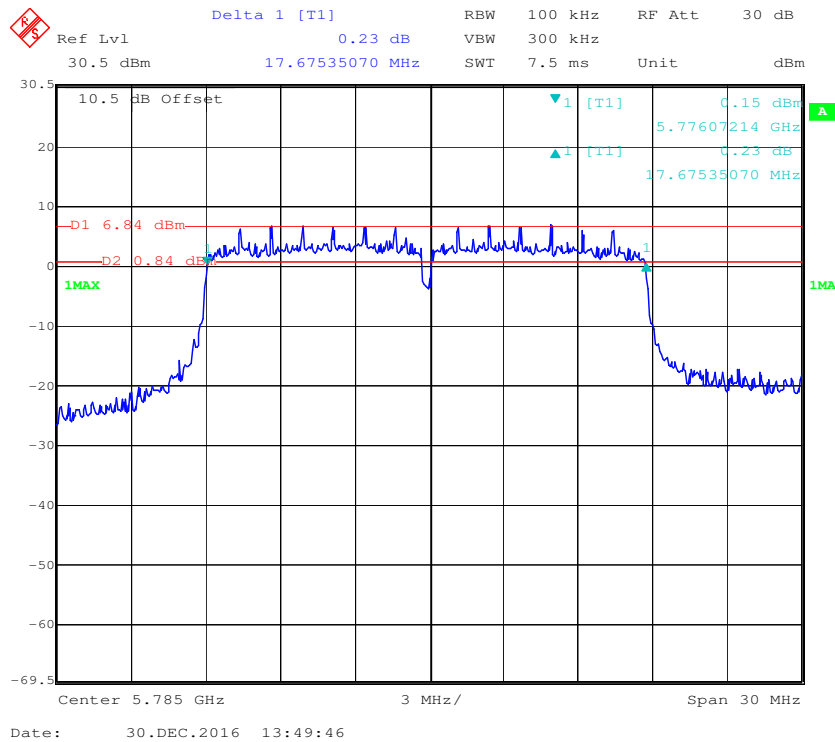


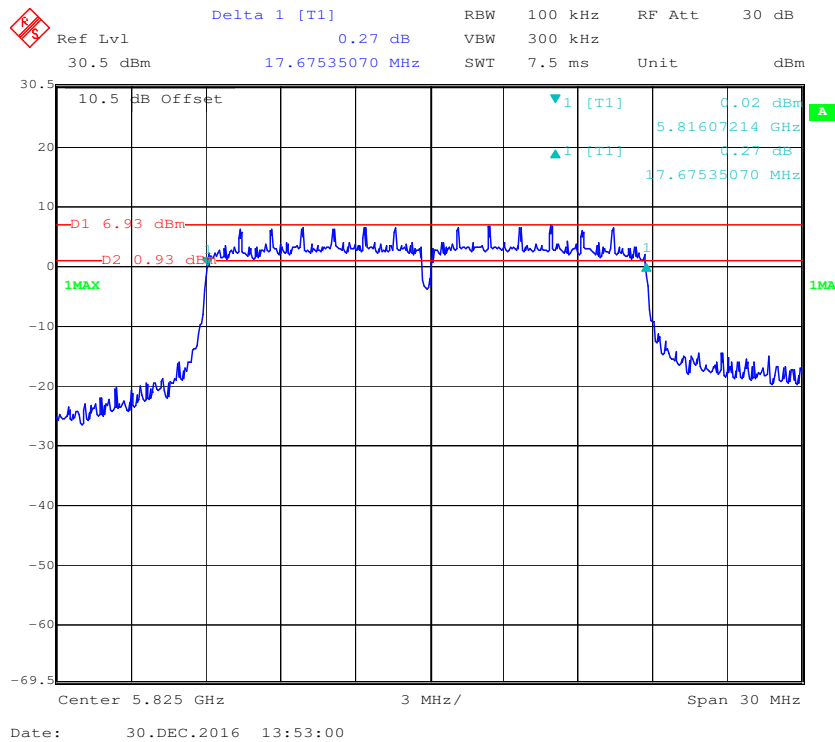
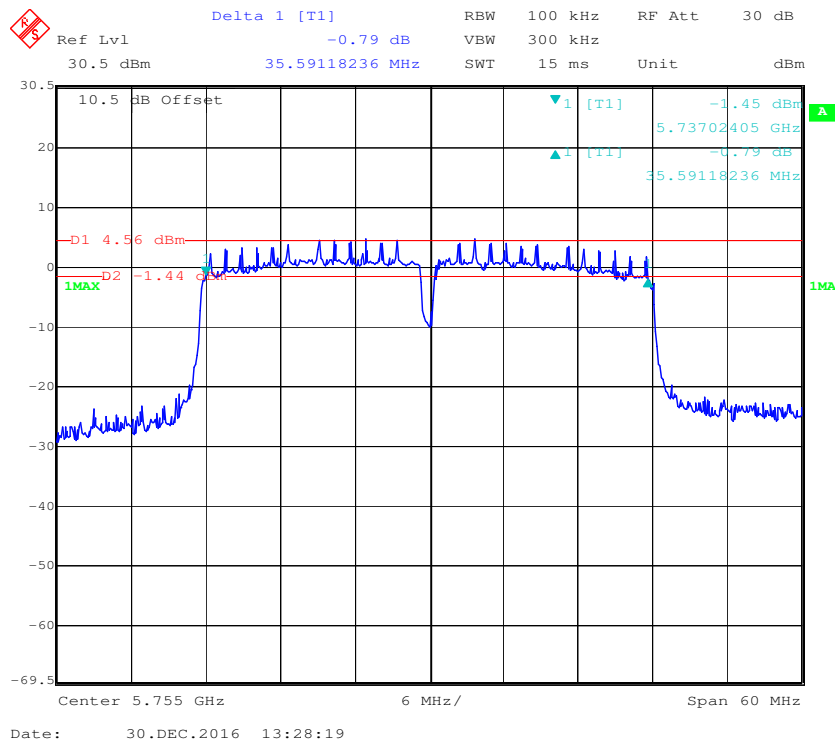
802.11n40 mode, 6dB Emission Bandwidth, 5755 MHz**802.11n40 mode, 6dB Emission Bandwidth, 5795 MHz**

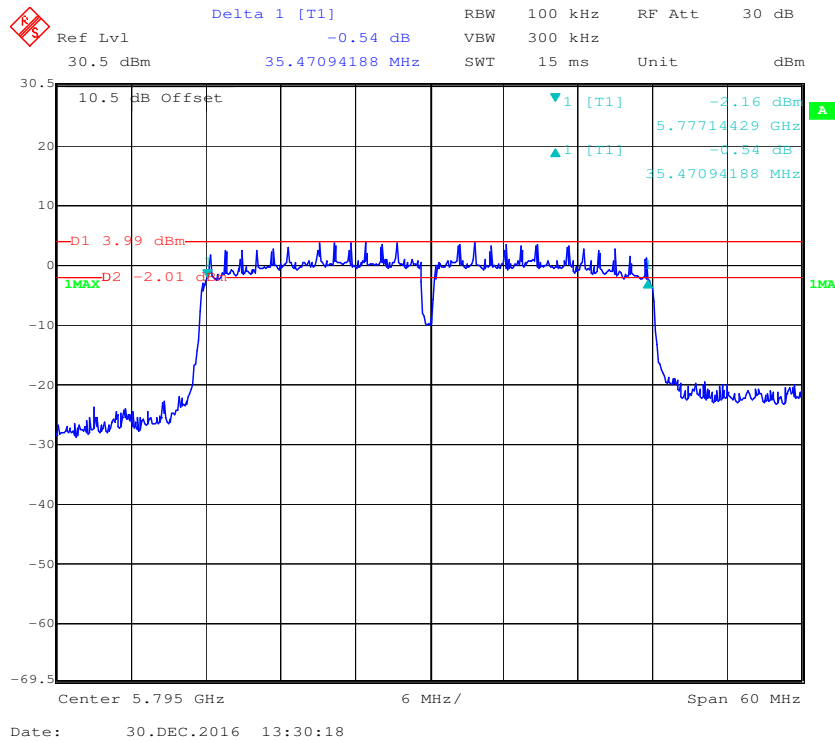
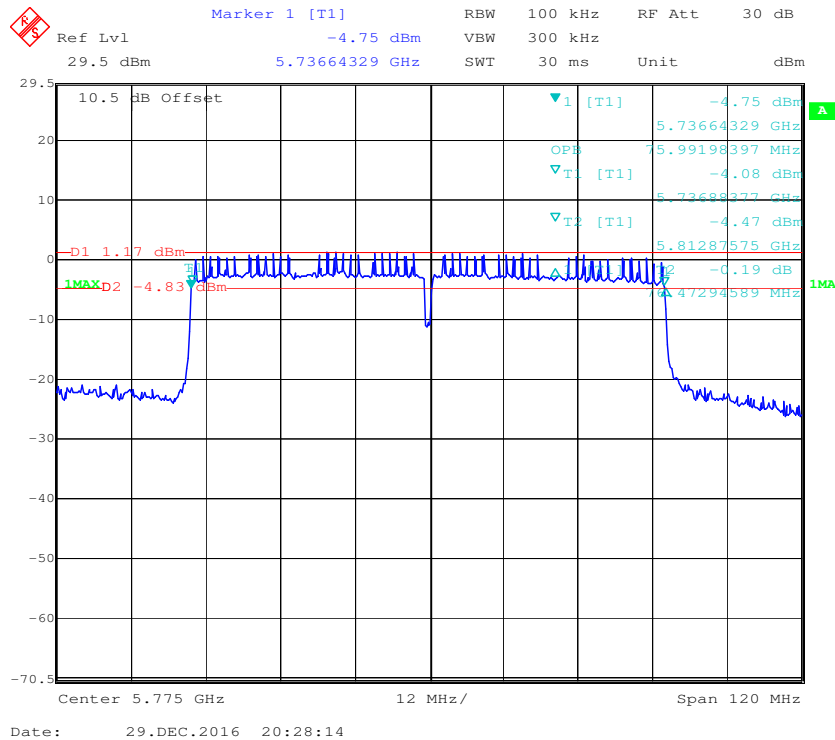
802.11ac20 mode, 6dB Emission Bandwidth, 5745 MHz



802.11ac20 mode, 6dB Emission Bandwidth, 5785 MHz



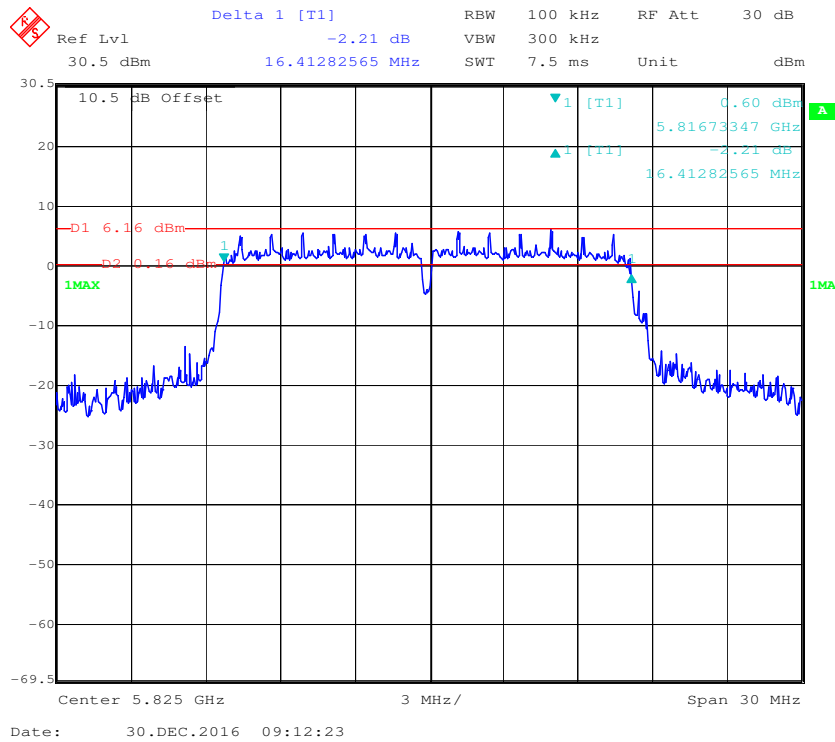
802.11ac20 mode, 6dB Emission Bandwidth, 5825 MHz**802.11ac40 mode, 6dB Emission Bandwidth, 5755 MHz**

802.11ac40 mode, 6dB Emission Bandwidth, 5795 MHz**802.11ac80 mode, 6dB Emission Bandwidth, 5775 MHz**

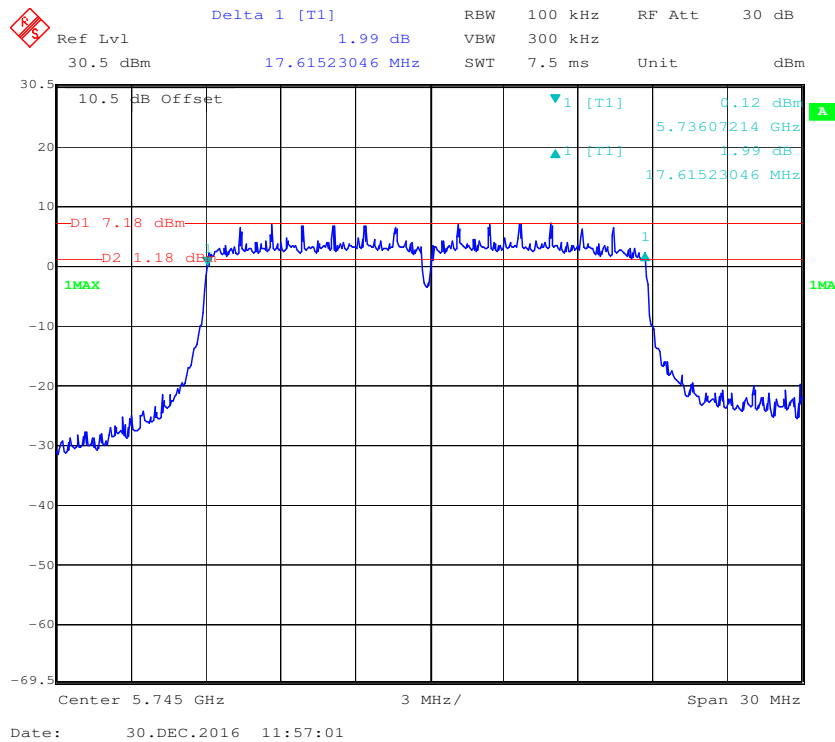
802.11a mode, 6dB Emission Bandwidth, 5745 MHz



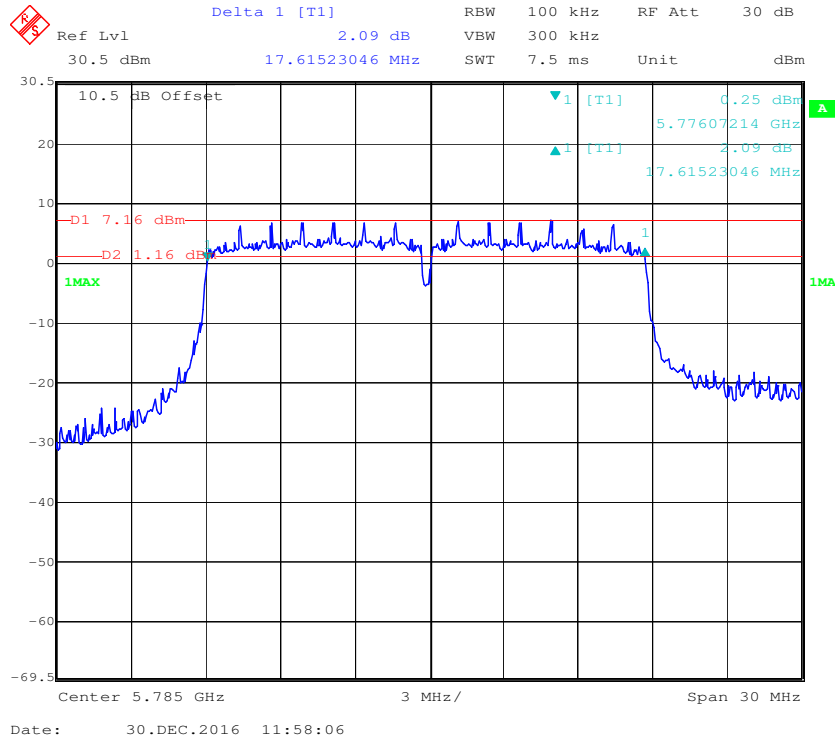
802.11a mode, 6dB Emission Bandwidth, 5825 MHz



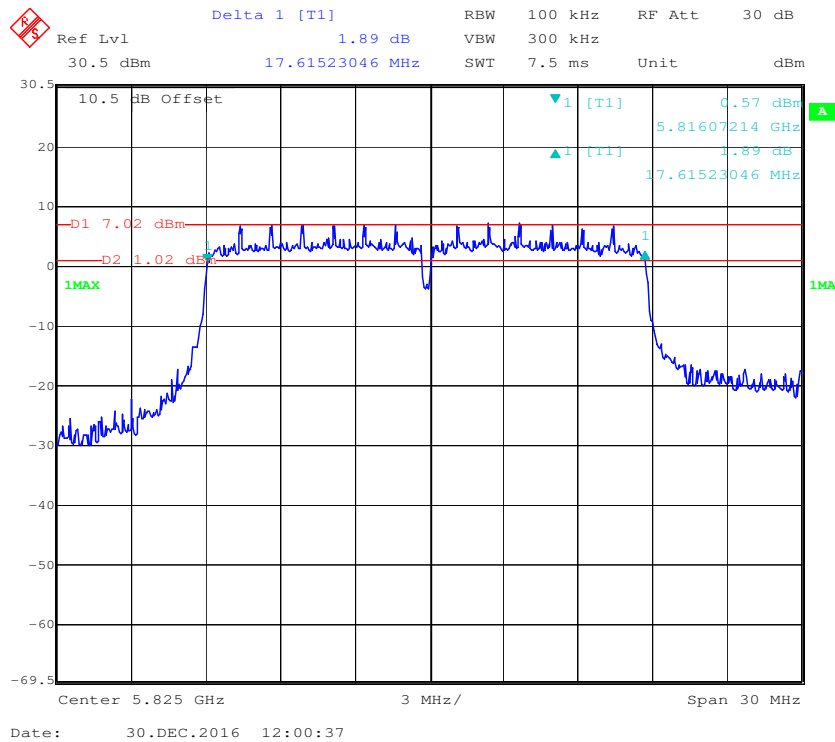
802.11n20 mode, 6dB Emission Bandwidth, 5745 MHz



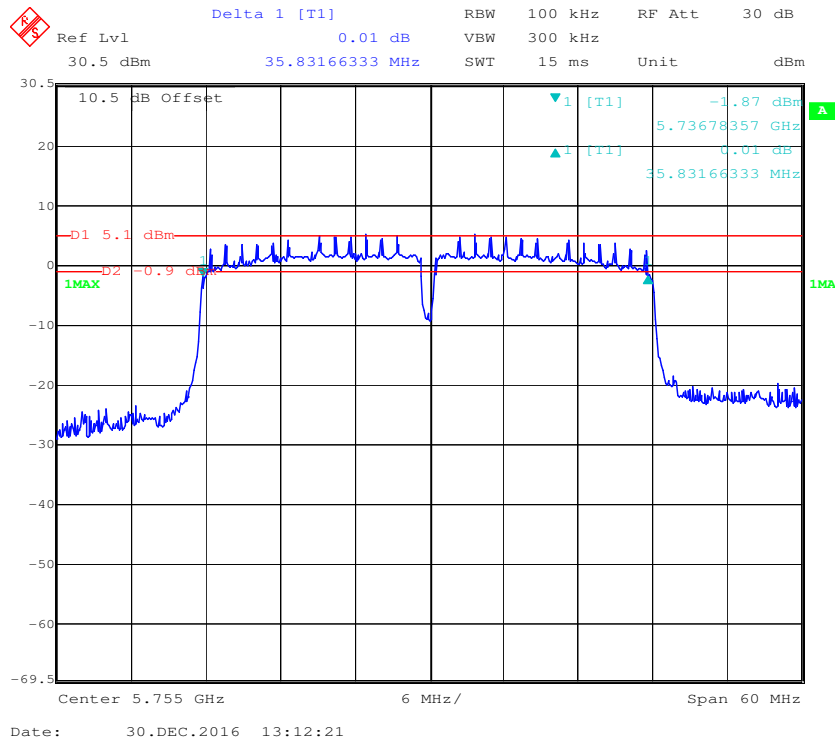
802.11n20 mode, 6dB Emission Bandwidth, 5785 MHz



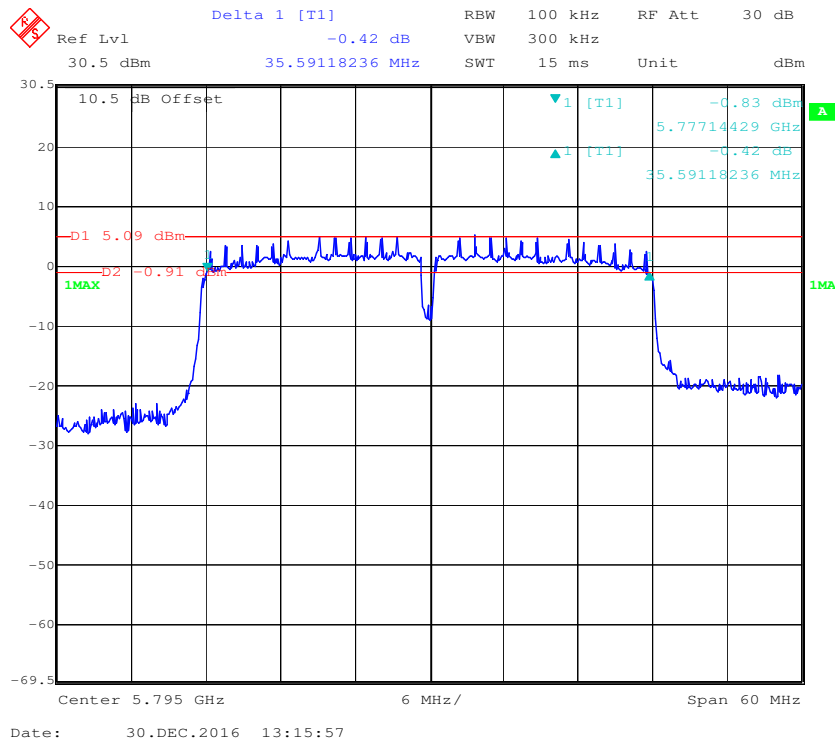
802.11n20 mode, 6dB Emission Bandwidth, 5825 MHz



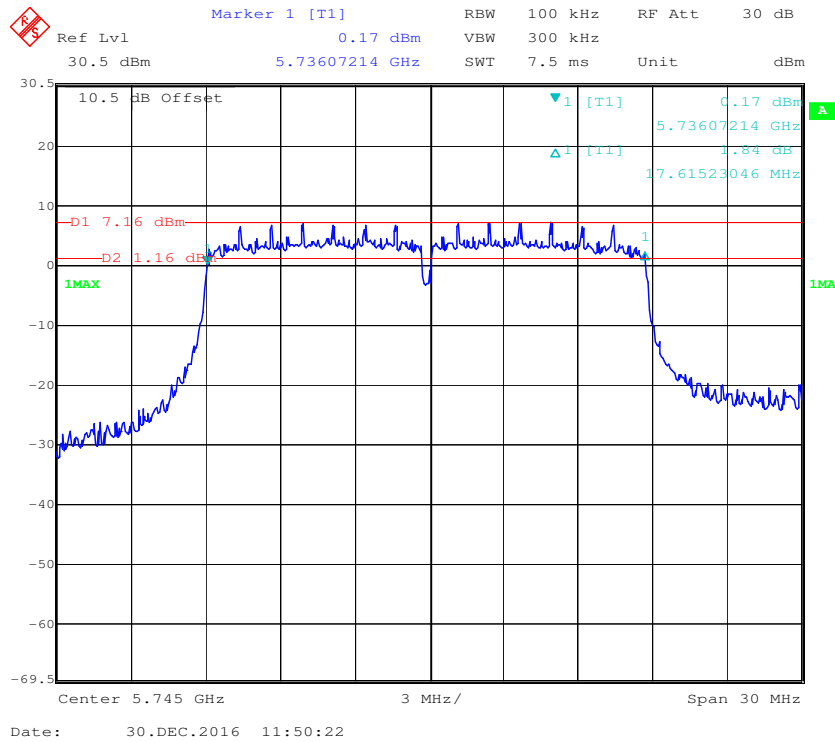
802.11n40 mode, 6dB Emission Bandwidth, 5755 MHz



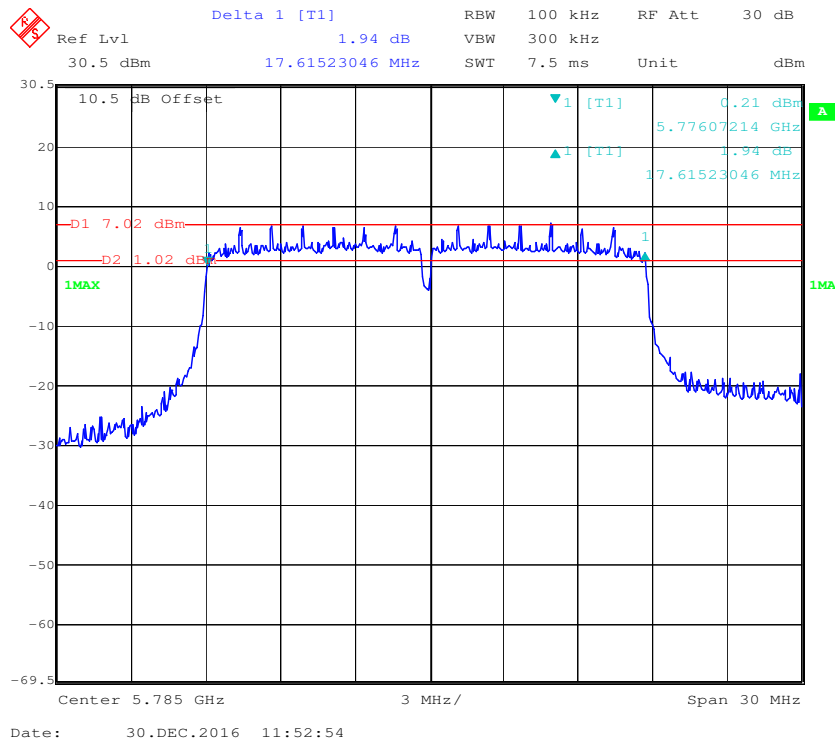
802.11n40 mode, 6dB Emission Bandwidth, 5795 MHz

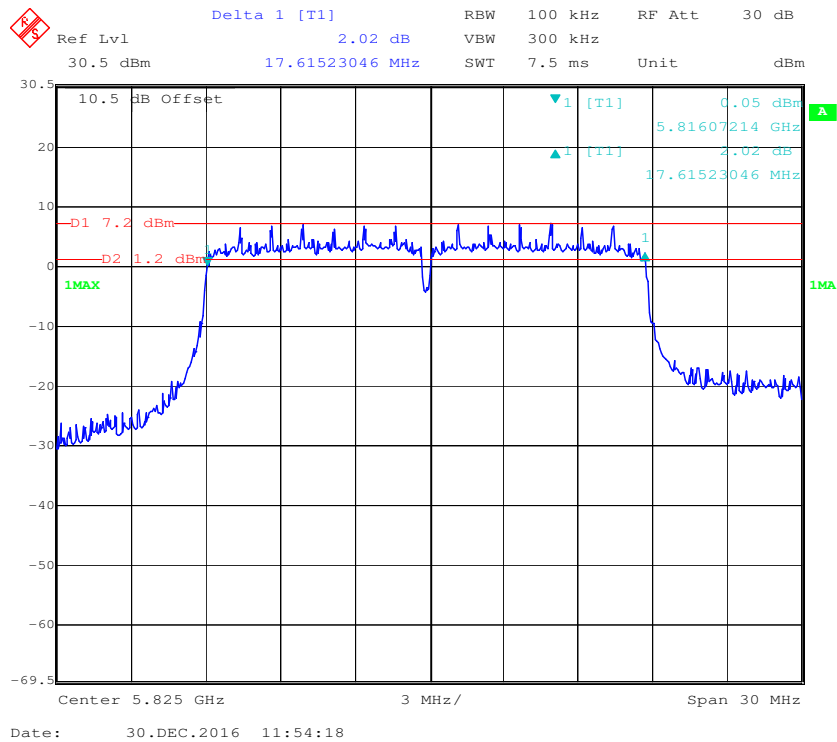
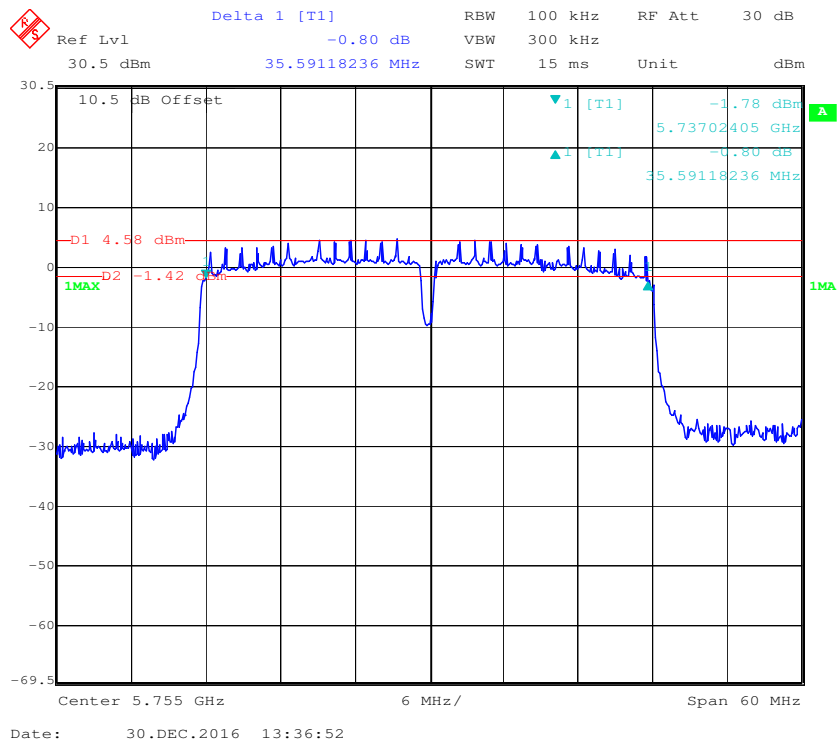


802.11ac20 mode, 6dB Emission Bandwidth, 5745 MHz

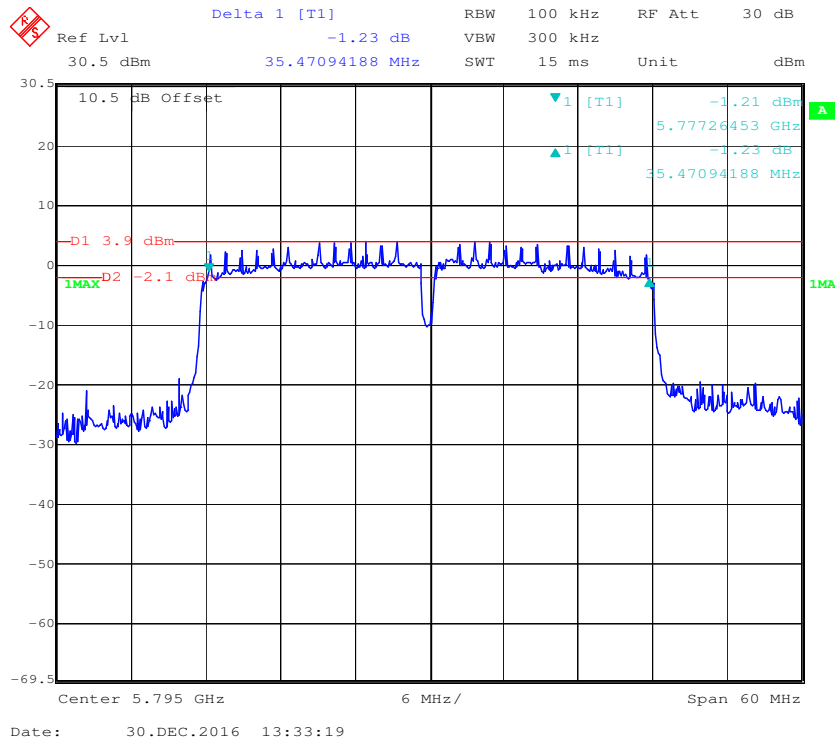


802.11ac20 mode, 6dB Emission Bandwidth, 5785 MHz

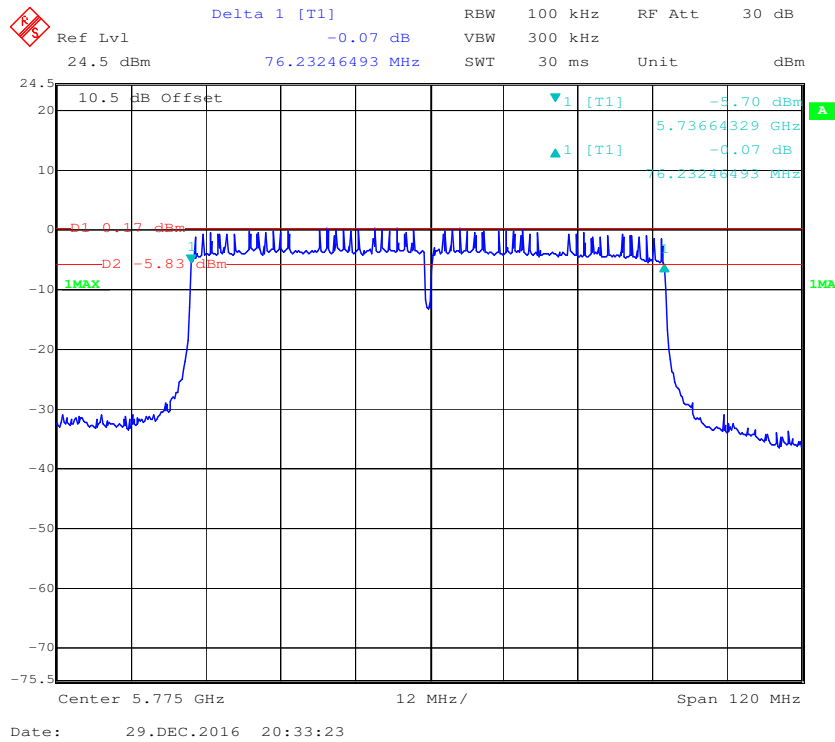


802.11ac20 mode, 6dB Emission Bandwidth, 5825 MHz**802.11ac40 mode, 6dB Emission Bandwidth, 5755 MHz**

802.11ac40 mode, 6dB Emission Bandwidth, 5795 MHz



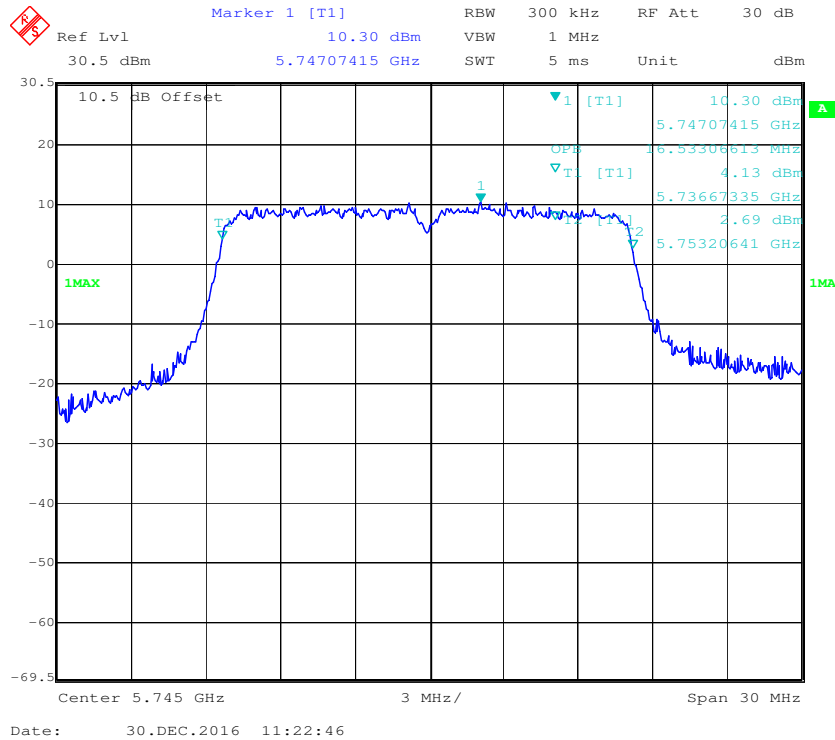
802.11ac80 mode, 6dB Emission Bandwidth, 5775 MHz



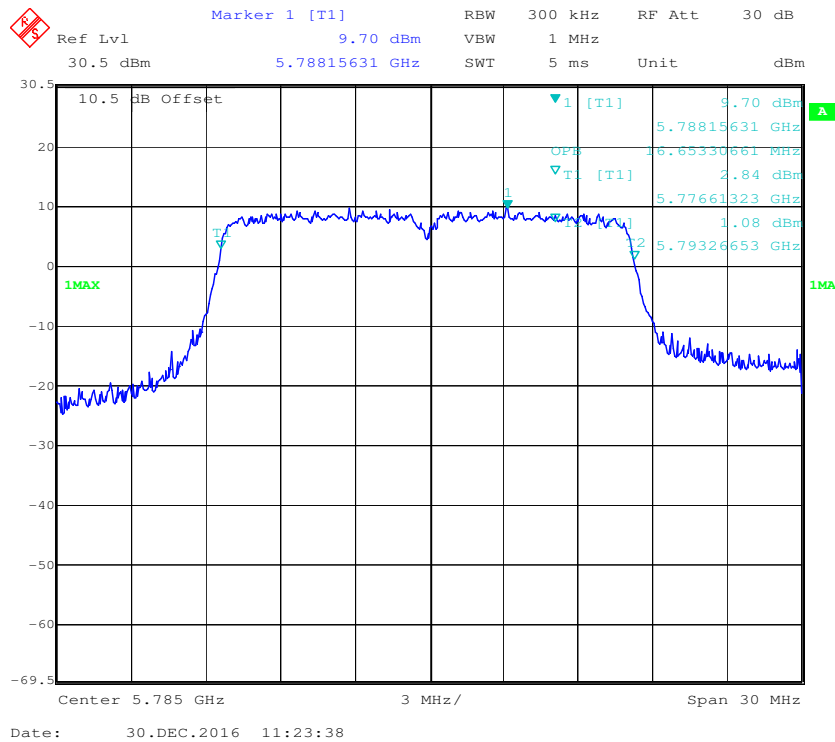
Frequency (MHz)	Antenna Port	99% dB Bandwidth (MHz)
802.11a		
5745	Chain 0	16.533
	Chain 1	16.473
5785	Chain 0	16.653
	Chain 1	16.533
5825	Chain 0	16.653
	Chain 1	16.593
802.11n20		
5745	Chain 0	17.675
	Chain 1	17.735
5785	Chain 0	17.675
	Chain 1	17.735
5825	Chain 0	17.735
	Chain 1	17.796
802.11n40		
5755	Chain 0	36.192
	Chain 1	36.072
5795	Chain 0	36.313
	Chain 1	36.072
802.11ac20		
5745	Chain 0	17.675
	Chain 1	17.735
5785	Chain 0	17.675
	Chain 1	17.735
5825	Chain 0	17.735
	Chain 1	17.796
802.11ac40		
5755	Chain 0	36.313
	Chain 1	36.072
5795	Chain 0	36.433
	Chain 1	36.192
802.11ac80		
5775	Chain 0	76.232
	Chain 1	76.232

Chain 0

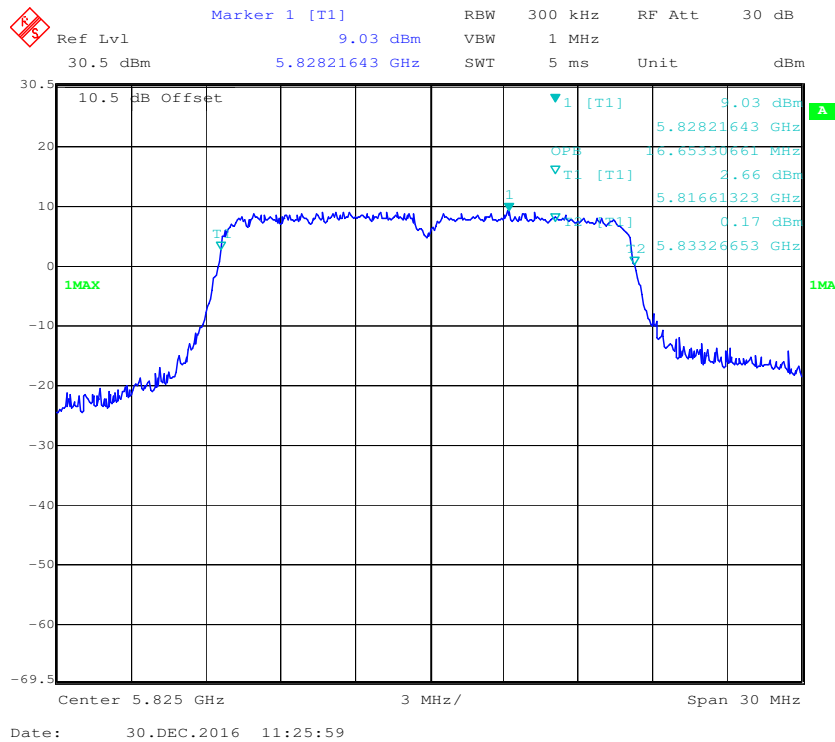
802.11a mode, 99% Occupied Bandwidth, 5745 MHz



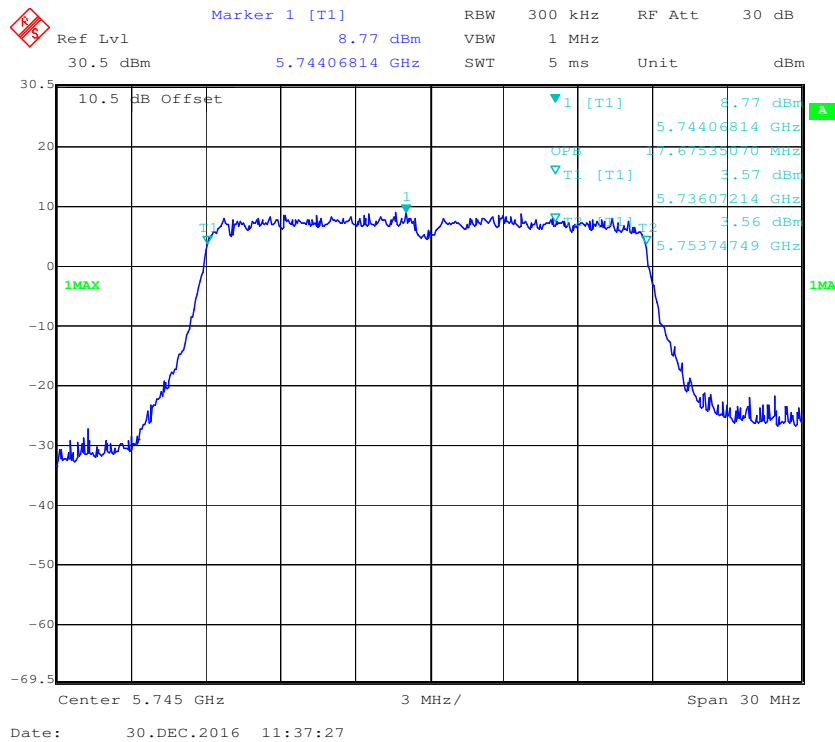
802.11a mode, 99% Occupied Bandwidth, 5785 MHz



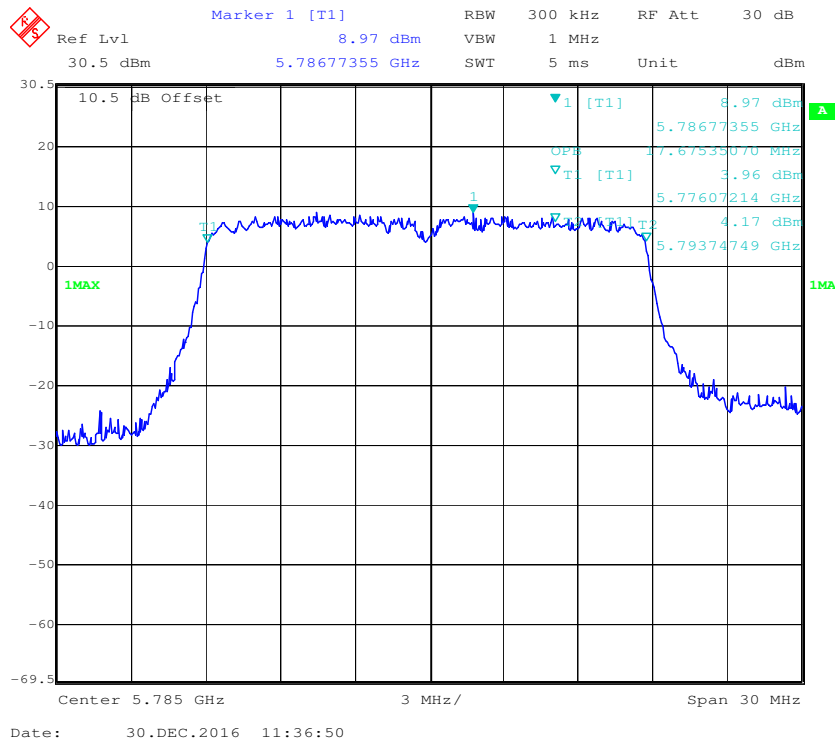
802.11a mode, 99% Occupied Bandwidth, 5825 MHz



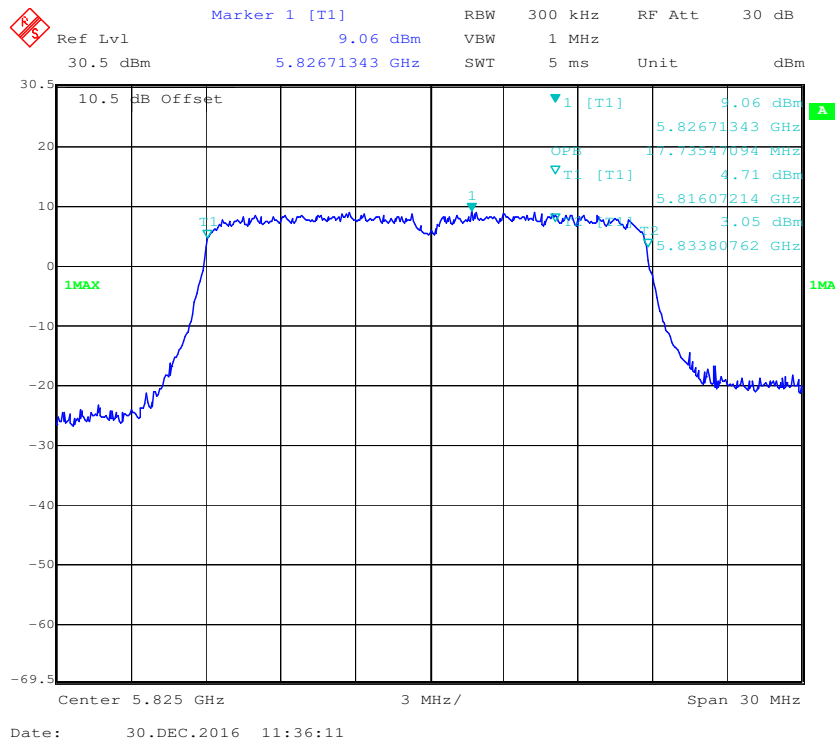
802.11n20 mode, 99% Occupied Bandwidth, 5745 MHz



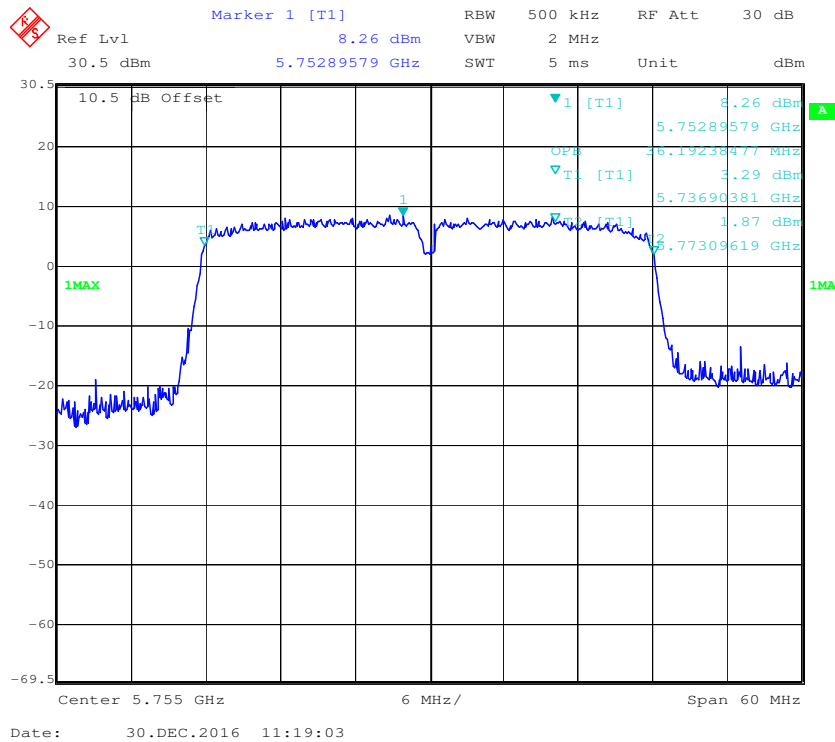
802.11n20 mode, 99% Occupied Bandwidth, 5785 MHz



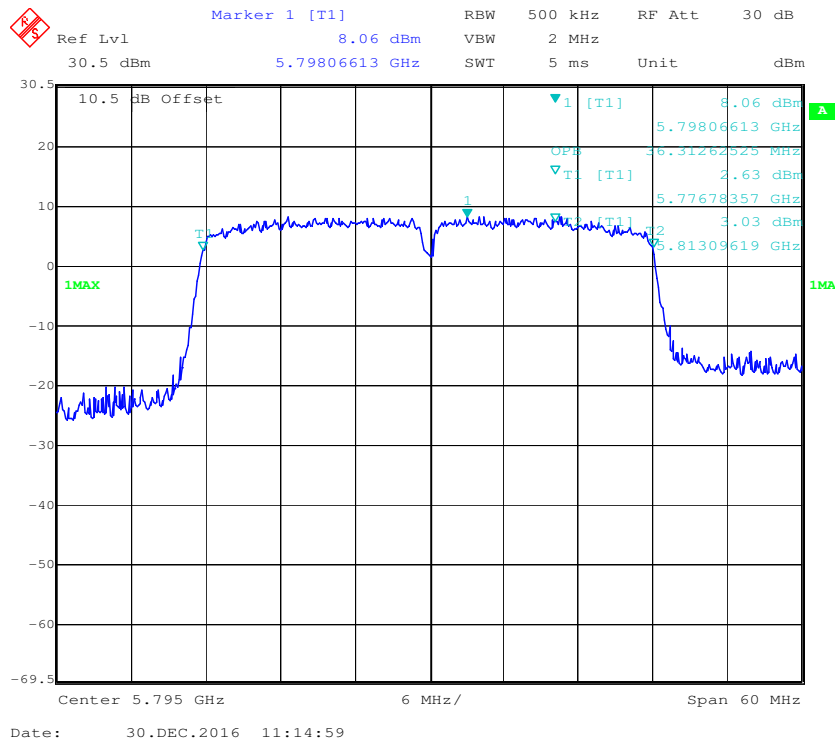
802.11n20 mode, 99% Occupied Bandwidth, 5825 MHz



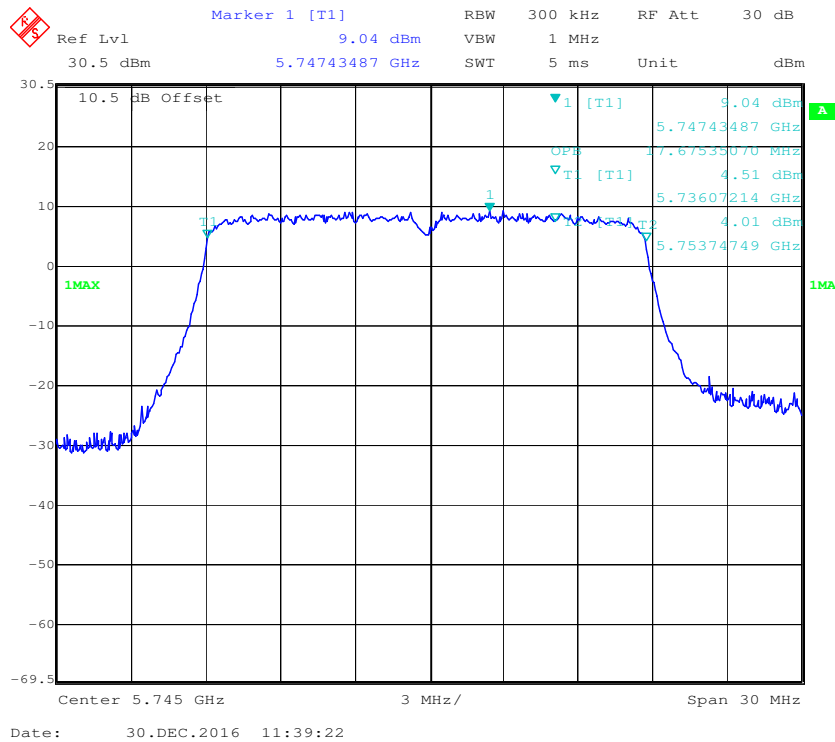
802.11n40 mode, 99% Occupied Bandwidth, 5755 MHz



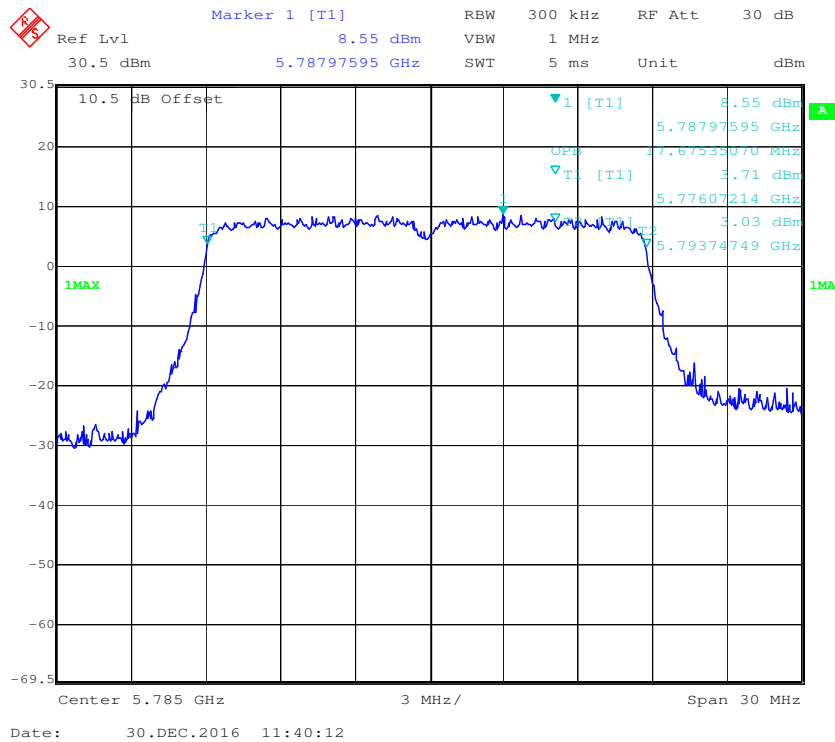
802.11n40 mode, 99% Occupied Bandwidth, 5795 MHz



802.11ac20 mode, 99% Occupied Bandwidth, 5745 MHz



802.11ac20 mode, 99% Occupied Bandwidth, 5785 MHz



Marker 1 [T1] RBW 300 kHz RF Att 30 dB
 Ref Lvl 8.65 dBm VBW 1 MHz
 30.5 dBm 5.82256513 GHz SWT 5 ms Unit dBm

10.5 dB Offset
 1 [T1] 8.65 dBm
 5.82256513 GHz
 17.73547094 MHz
 3.68 dBm
 5.81607214 GHz
 3.21 dBm
 5.83380762 GHz
 1MAX

Center 5.825 GHz 3 MHz/ Span 30 MHz

Date: 30.DEC.2016 11:41:15

Ref Lvl 30.5 dBm Marker 1 [T1] 8.66 dBm RBW 500 kHz VBW 2 MHz RF Att 30 dB Unit dBm

10.5 dB Offset

1 [T1] 8.66 dBm 5.75674349 GHz

2 [T1] 5.73678357 GHz

3 [T1] 5.77309619 GHz

4 [T1] 5.73678357 GHz

5 [T1] 5.75674349 GHz

6 [T1] 5.73678357 GHz

7 [T1] 5.77309619 GHz

8 [T1] 5.75674349 GHz

9 [T1] 5.73678357 GHz

10 [T1] 5.77309619 GHz

11 [T1] 5.75674349 GHz

12 [T1] 5.73678357 GHz

13 [T1] 5.77309619 GHz

14 [T1] 5.75674349 GHz

15 [T1] 5.73678357 GHz

16 [T1] 5.77309619 GHz

17 [T1] 5.75674349 GHz

18 [T1] 5.73678357 GHz

19 [T1] 5.77309619 GHz

20 [T1] 5.75674349 GHz

21 [T1] 5.73678357 GHz

22 [T1] 5.77309619 GHz

23 [T1] 5.75674349 GHz

24 [T1] 5.73678357 GHz

25 [T1] 5.77309619 GHz

26 [T1] 5.75674349 GHz

27 [T1] 5.73678357 GHz

28 [T1] 5.77309619 GHz

29 [T1] 5.75674349 GHz

30 [T1] 5.73678357 GHz

31 [T1] 5.77309619 GHz

32 [T1] 5.75674349 GHz

33 [T1] 5.73678357 GHz

34 [T1] 5.77309619 GHz

35 [T1] 5.75674349 GHz

36 [T1] 5.73678357 GHz

37 [T1] 5.77309619 GHz

38 [T1] 5.75674349 GHz

39 [T1] 5.73678357 GHz

40 [T1] 5.77309619 GHz

41 [T1] 5.75674349 GHz

42 [T1] 5.73678357 GHz

43 [T1] 5.77309619 GHz

44 [T1] 5.75674349 GHz

45 [T1] 5.73678357 GHz

46 [T1] 5.77309619 GHz

47 [T1] 5.75674349 GHz

48 [T1] 5.73678357 GHz

49 [T1] 5.77309619 GHz

50 [T1] 5.75674349 GHz

51 [T1] 5.73678357 GHz

52 [T1] 5.77309619 GHz

53 [T1] 5.75674349 GHz

54 [T1] 5.73678357 GHz

55 [T1] 5.77309619 GHz

56 [T1] 5.75674349 GHz

57 [T1] 5.73678357 GHz

58 [T1] 5.77309619 GHz

59 [T1] 5.75674349 GHz

60 [T1] 5.73678357 GHz

61 [T1] 5.77309619 GHz

62 [T1] 5.75674349 GHz

63 [T1] 5.73678357 GHz

64 [T1] 5.77309619 GHz

65 [T1] 5.75674349 GHz

66 [T1] 5.73678357 GHz

67 [T1] 5.77309619 GHz

68 [T1] 5.75674349 GHz

69 [T1] 5.73678357 GHz

70 [T1] 5.77309619 GHz

71 [T1] 5.75674349 GHz

72 [T1] 5.73678357 GHz

73 [T1] 5.77309619 GHz

74 [T1] 5.75674349 GHz

75 [T1] 5.73678357 GHz

76 [T1] 5.77309619 GHz

77 [T1] 5.75674349 GHz

78 [T1] 5.73678357 GHz

79 [T1] 5.77309619 GHz

80 [T1] 5.75674349 GHz

81 [T1] 5.73678357 GHz

82 [T1] 5.77309619 GHz

83 [T1] 5.75674349 GHz

84 [T1] 5.73678357 GHz

85 [T1] 5.77309619 GHz

86 [T1] 5.75674349 GHz

87 [T1] 5.73678357 GHz

88 [T1] 5.77309619 GHz

89 [T1] 5.75674349 GHz

90 [T1] 5.73678357 GHz

91 [T1] 5.77309619 GHz

92 [T1] 5.75674349 GHz

93 [T1] 5.73678357 GHz

94 [T1] 5.77309619 GHz

95 [T1] 5.75674349 GHz

96 [T1] 5.73678357 GHz

97 [T1] 5.77309619 GHz

98 [T1] 5.75674349 GHz

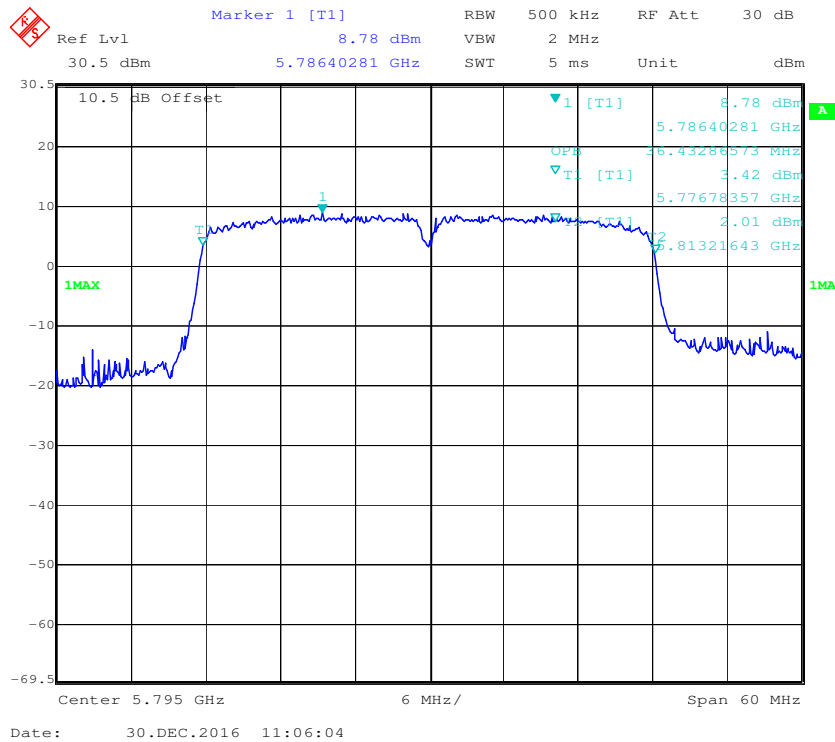
99 [T1] 5.73678357 GHz

100 [T1] 5.77309619 GHz

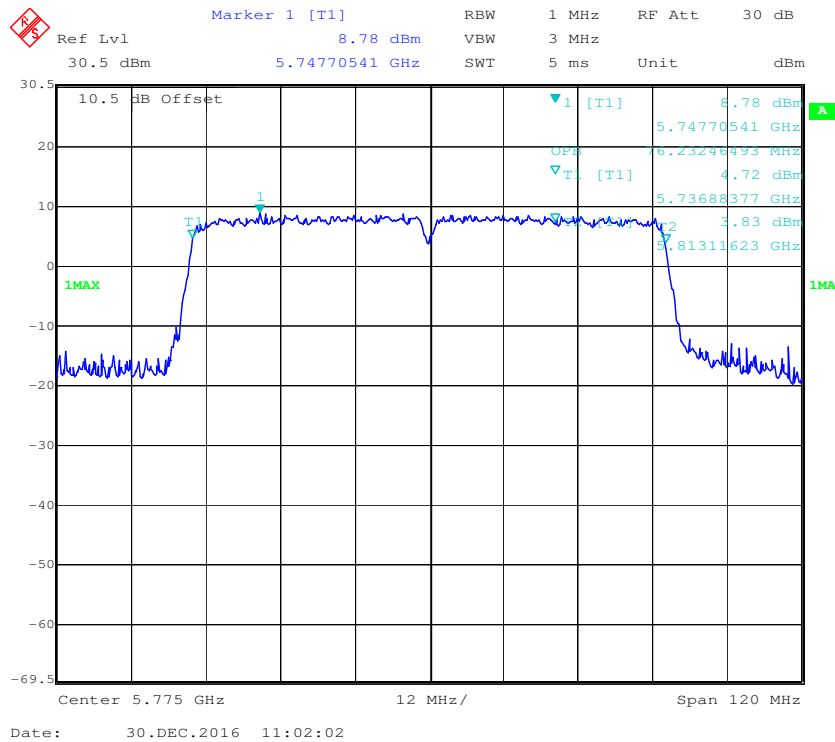
Center 5.755 GHz 6 MHz/ Span 60 MHz

Date: 30.DEC.2016 11:04:48

802.11ac40 mode, 99% Occupied Bandwidth, 5795 MHz

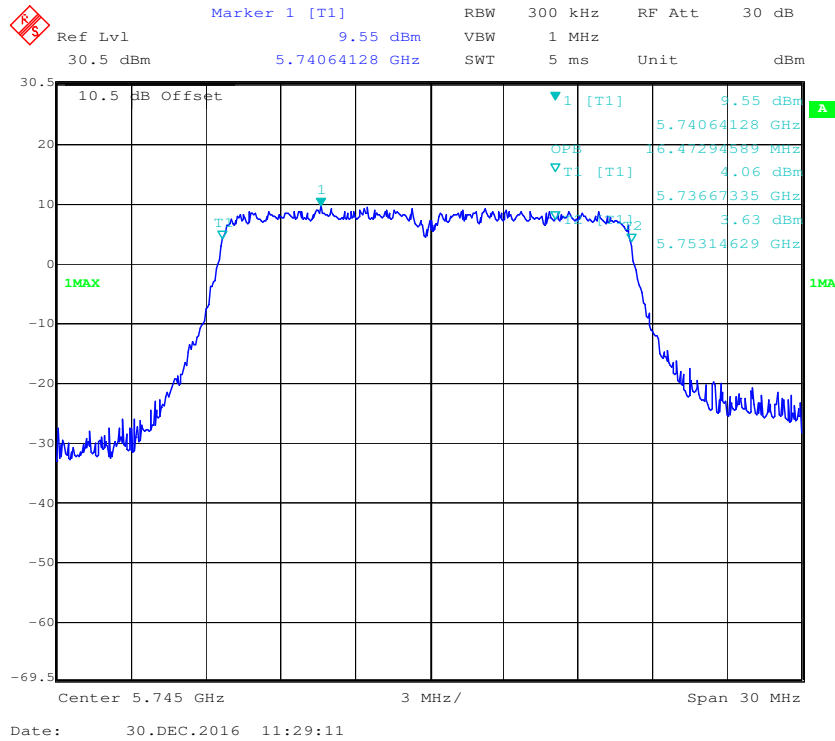


802.11ac80 mode, 99% Occupied Bandwidth, 5775 MHz

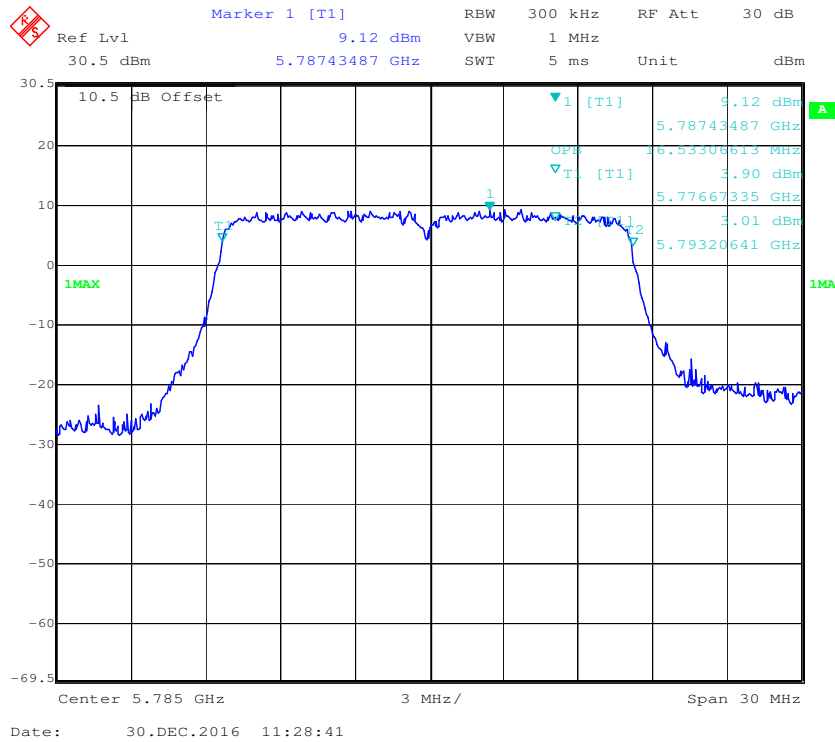


Chain 1

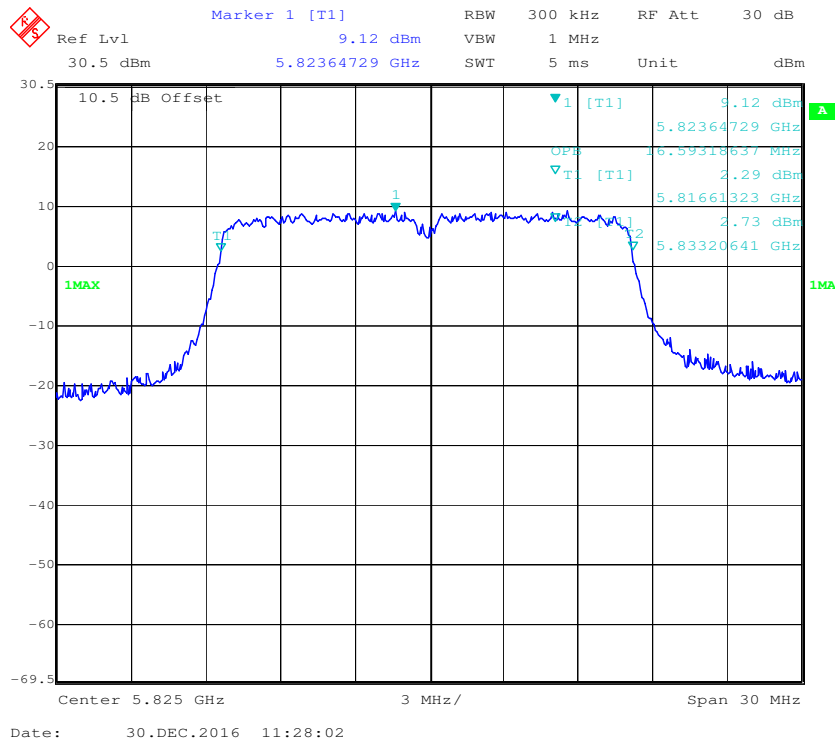
802.11a mode, 99% Occupied Bandwidth, 5745 MHz



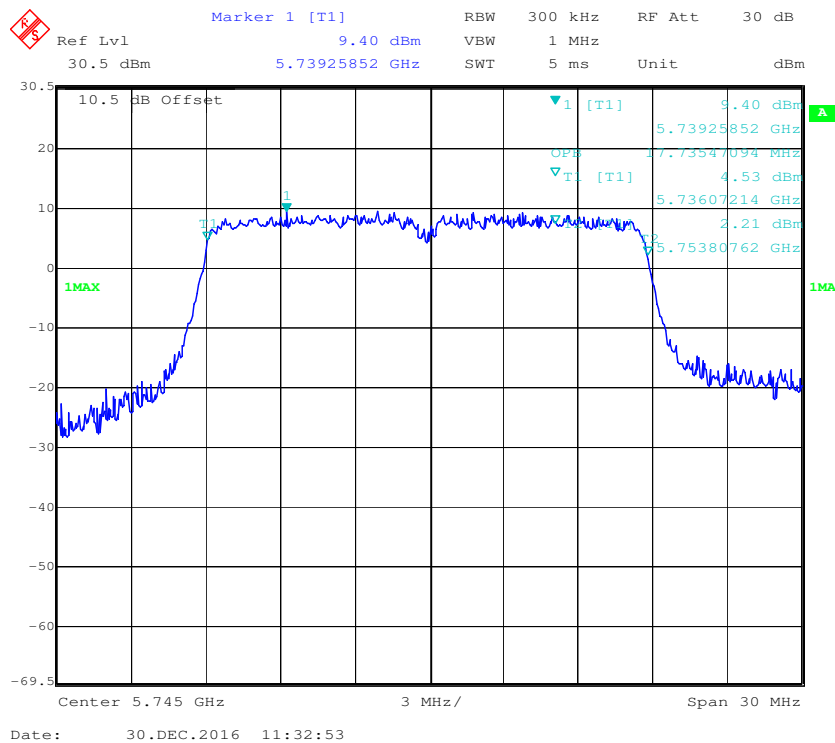
802.11a mode, 99% Occupied Bandwidth, 5785 MHz



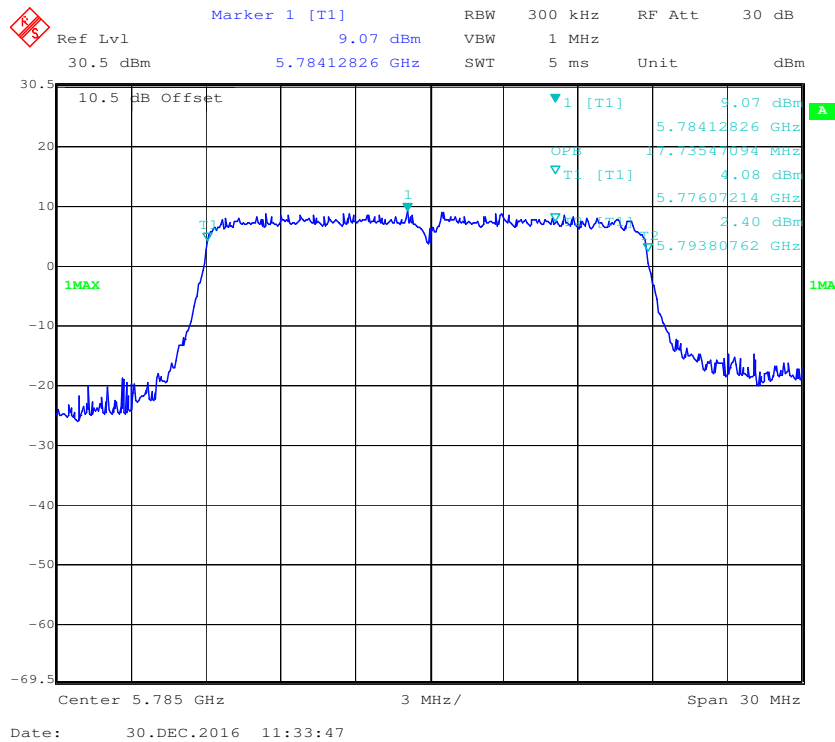
802.11a mode, 99% Occupied Bandwidth, 5825 MHz



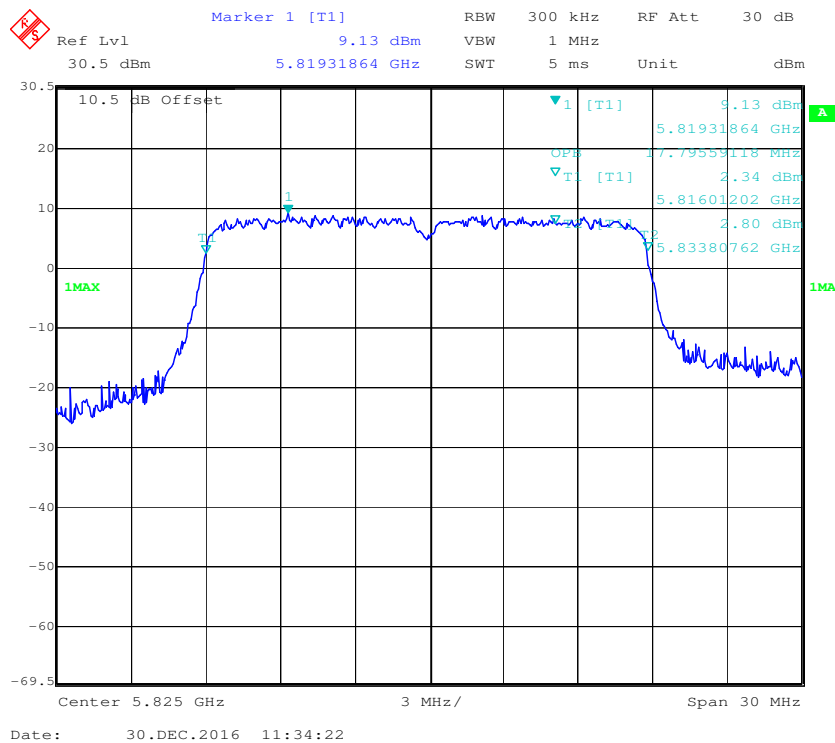
802.11n20 mode, 99% Occupied Bandwidth, 5745 MHz



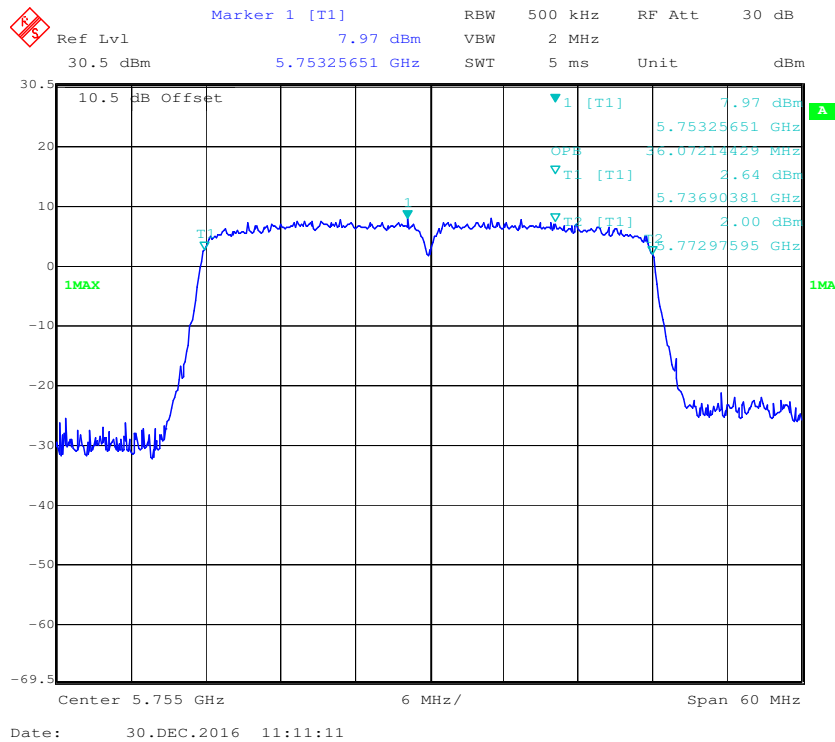
802.11n20 mode, 99% Occupied Bandwidth, 5785 MHz



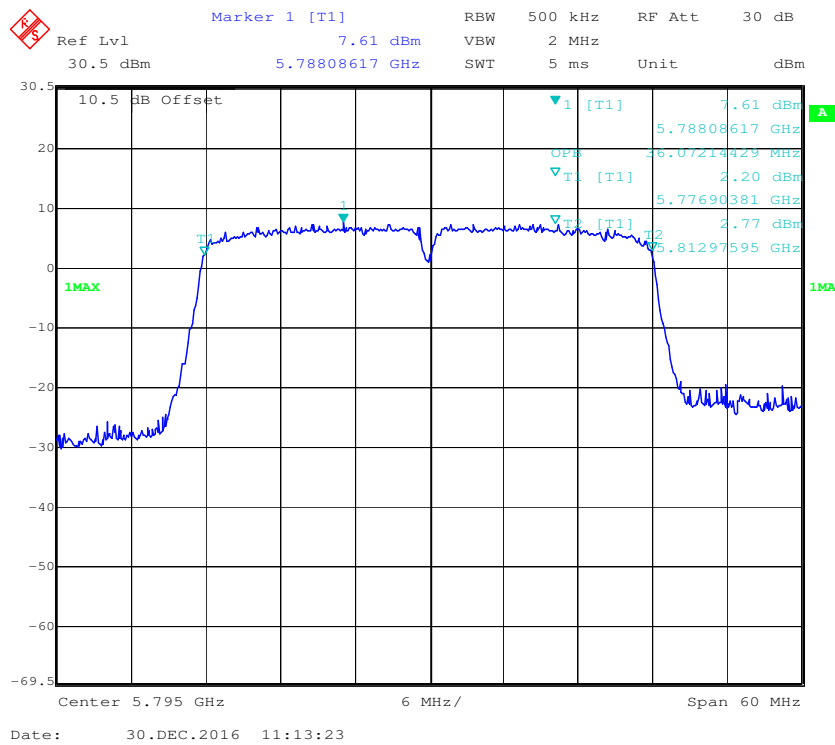
802.11n20 mode, 99% Occupied Bandwidth, 5825 MHz



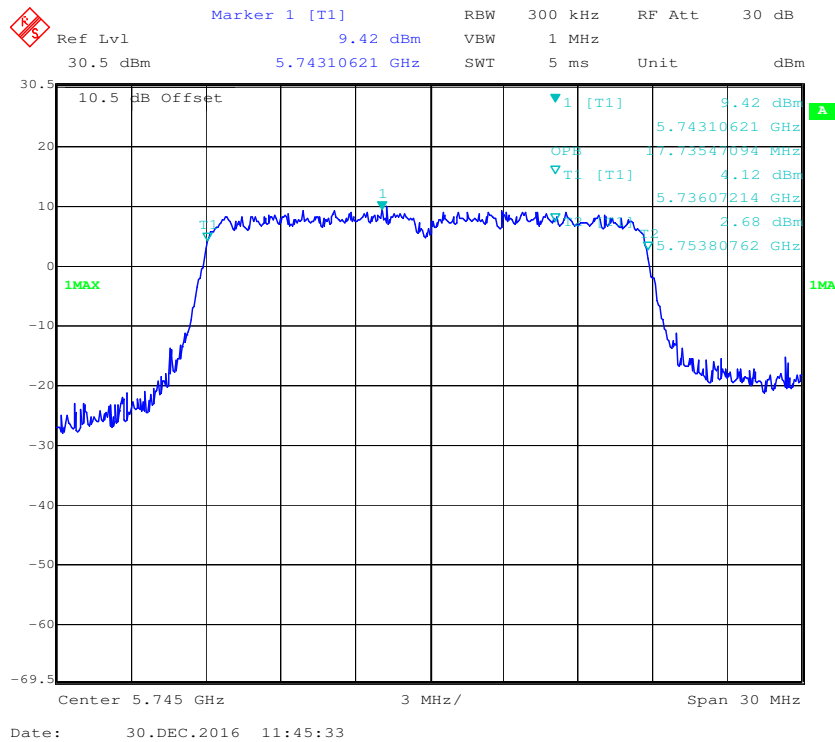
802.11n40 mode, 99% Occupied Bandwidth, 5755 MHz



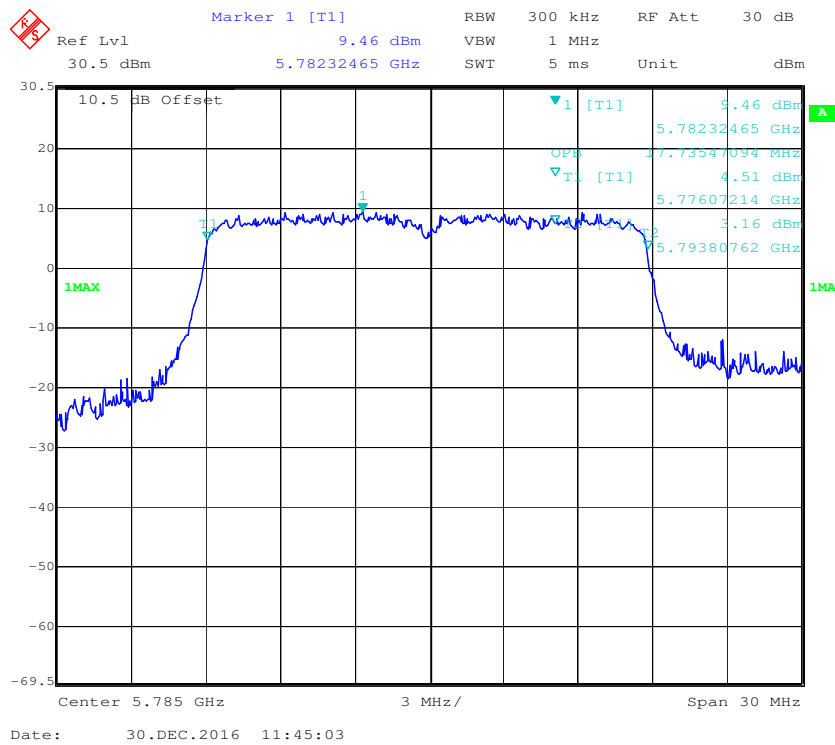
802.11n40 mode, 99% Occupied Bandwidth, 5795 MHz



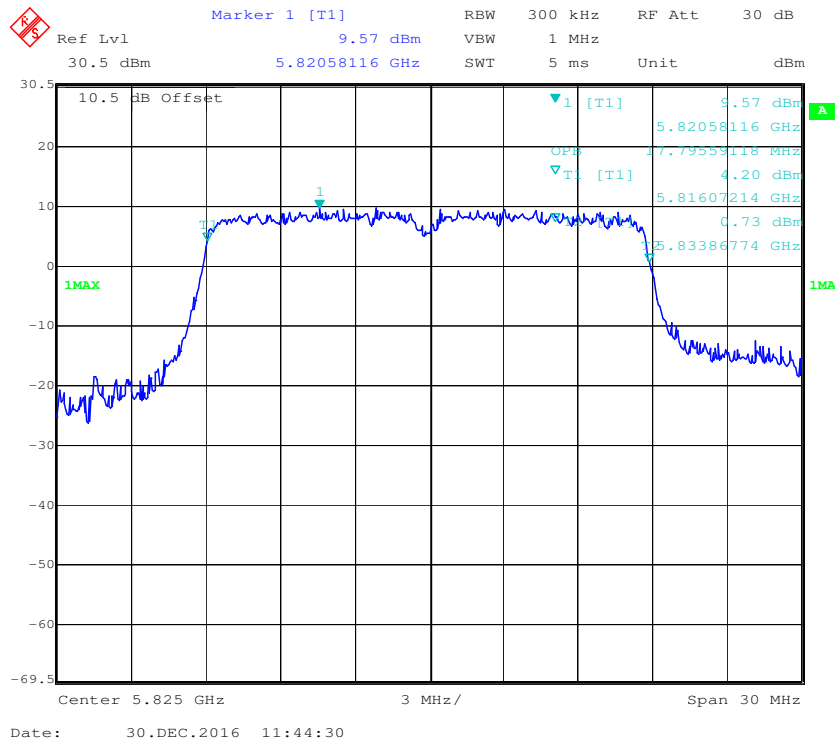
802.11ac20 mode, 99% Occupied Bandwidth, 5745 MHz



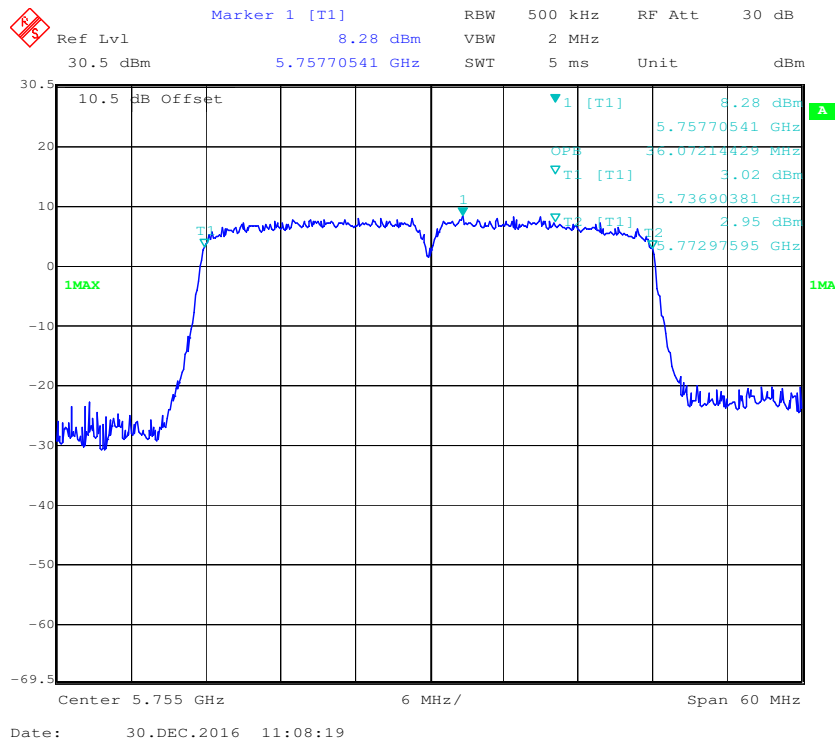
802.11ac20 mode, 99% Occupied Bandwidth, 5785 MHz

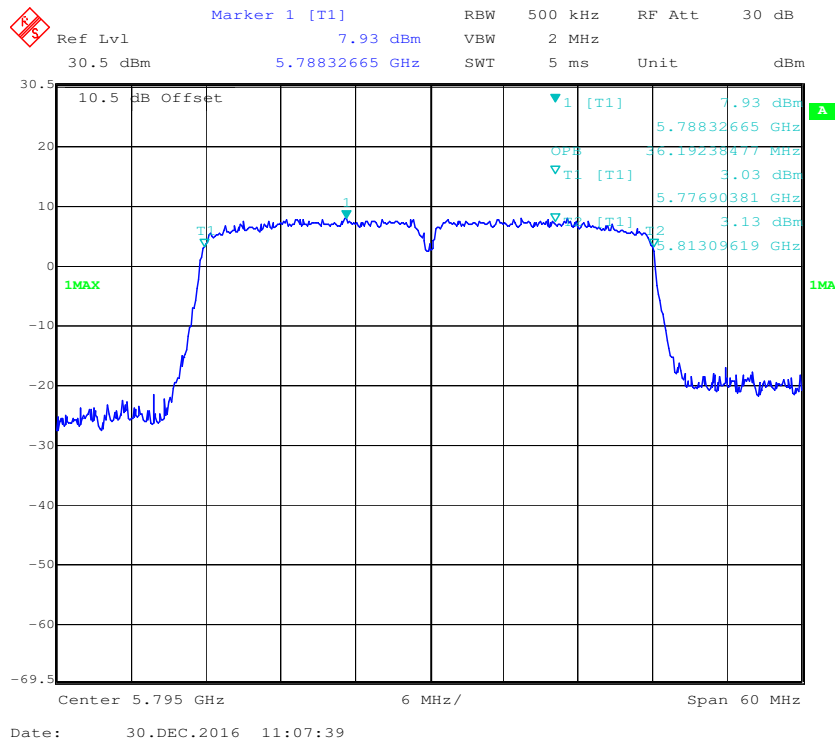
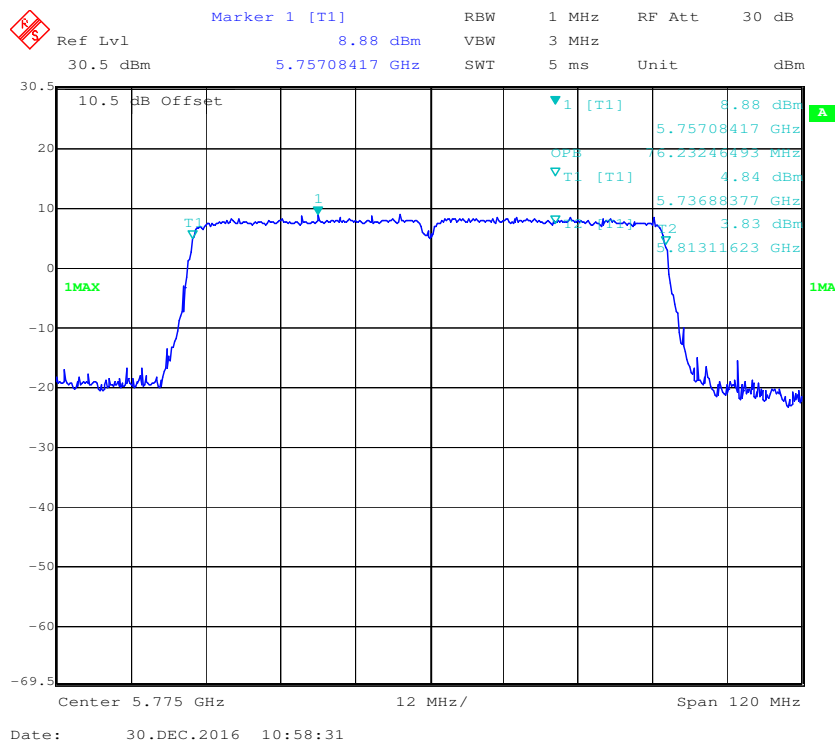


802.11ac20 mode, 99% Occupied Bandwidth, 5825 MHz



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 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

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 $\geq$ 3 MHz.

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

(v) Manually set sweep time $\geq$ 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:	25~26 °C
Relative Humidity:	53~56 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Alisa Gao from 2016-12-27 to 2016-12-29.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Note: This Device Emploies Cyclic Delay Diversity.

When determining reductions in conducted power limits, array gain is calculated as follows:

As to this device, $N_{ANT} \leq 4$, Array Gain = 0 dB.

Total directional gain (dBi) = gain of individual transmit antennas (dBi) + 0 (dB) = 3dBi.

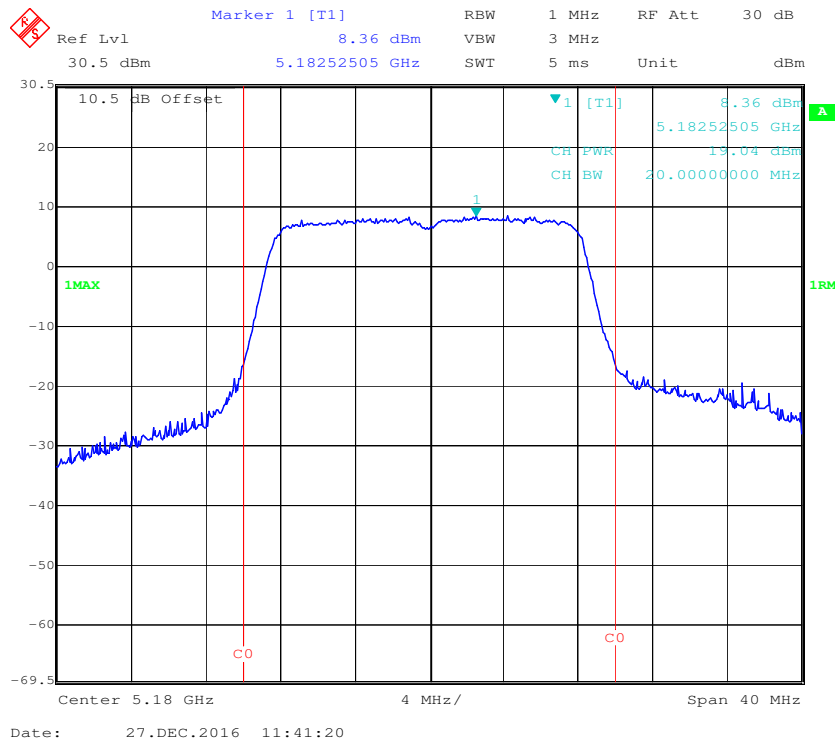
5150 MHz – 5250 MHz:

Frequency (MHz)	Antenna Port	Output Power (dBm)	Sum Output Power (dBm) Chain0+Chain1	Limit (dBm)
802.11a				
5180	0	19.04	22.19	30
	1	19.31		
5200	0	19.23	22.28	
	1	19.30		
5240	0	19.58	22.53	
	1	19.46		
802.11n20				
5180	0	19.00	22.08	30
	1	19.14		
5200	0	19.22	22.36	
	1	19.47		
5240	0	19.11	22.28	
	1	19.42		
802.11n40				
5190	0	19.01	22.14	30
	1	19.25		
5230	0	19.34	22.38	
	1	19.39		

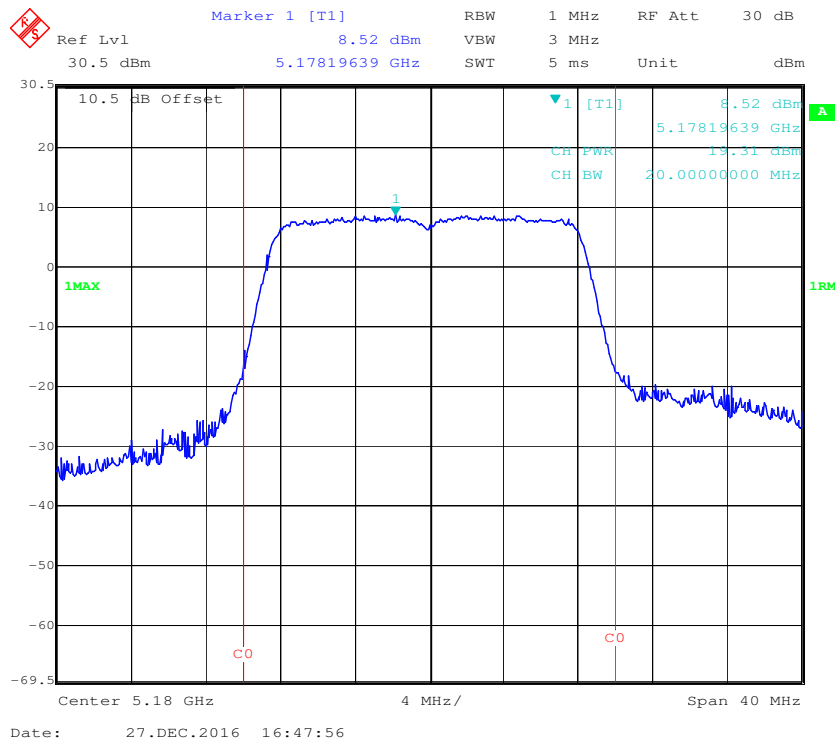
Frequency (MHz)	Antenna Port	Output Power (dBm)	Sum Output Power (dBm) Chain0+Chain1	Limit (dBm)
802.11ac20				
5180	0	18.94	21.99	30
	1	19.02		
5200	0	19.34	22.30	
	1	19.23		
5240	0	19.40	22.34	
	1	19.26		
802.11ac40				
5190	0	19.04	22.10	30
	1	19.13		
5230	0	19.05	22.30	
	1	19.51		
802.11ac80				
5210	0	19.09+0.18 ^{NOTE}	22.31	30
	1	19.14+0.18 ^{NOTE}		

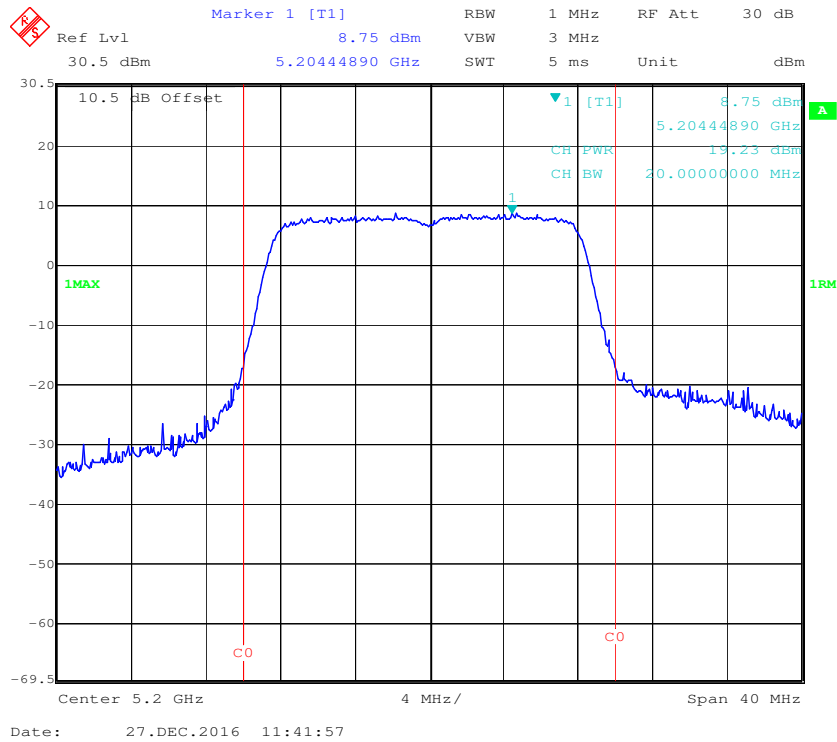
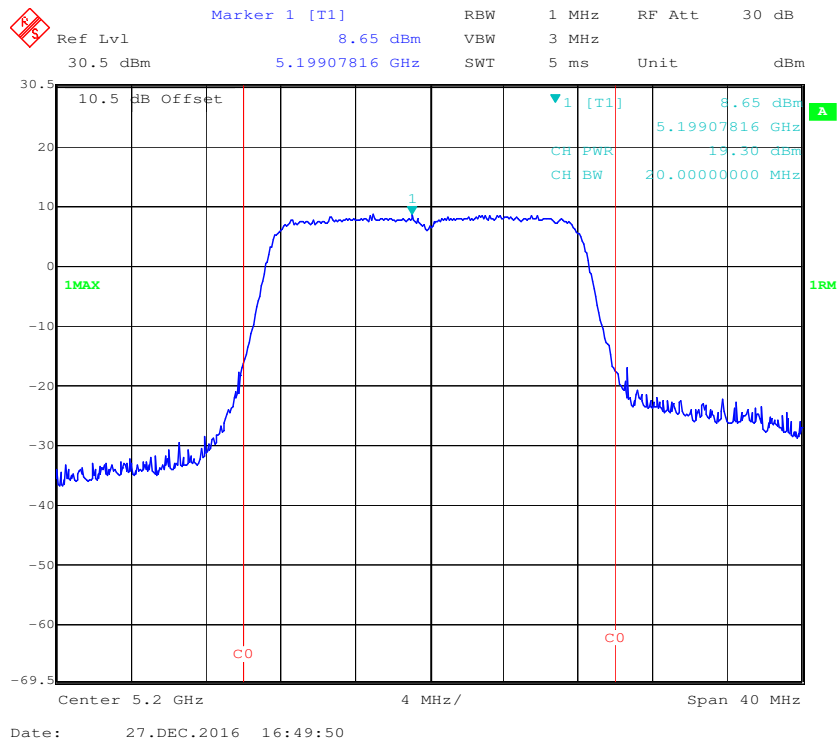
NOTE: The duty cycle of 802.11ac80 is 96%, the factor= $10\log(1/x)=0.18$

802.11a mode, RF Conducted Output Power, Antenn 0, 5180 MHz

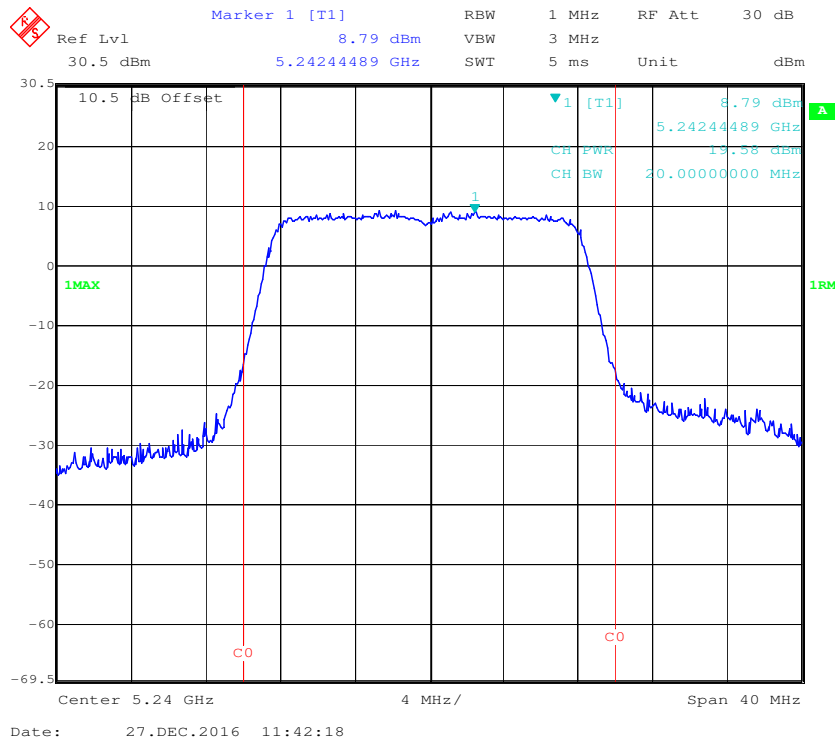


802.11a mode, RF Conducted Output Power, Antenn 1, 5180 MHz

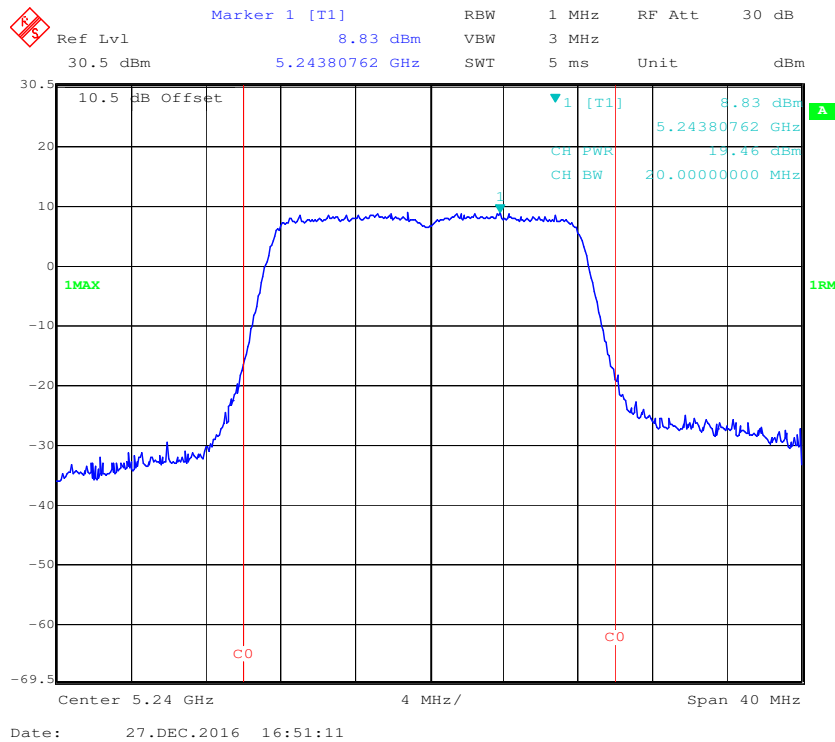


802.11a mode, RF Conducted Output Power, Antenn 0, 5200 MHz**802.11a mode, RF Conducted Output Power, Antenn 1, 5200 MHz**

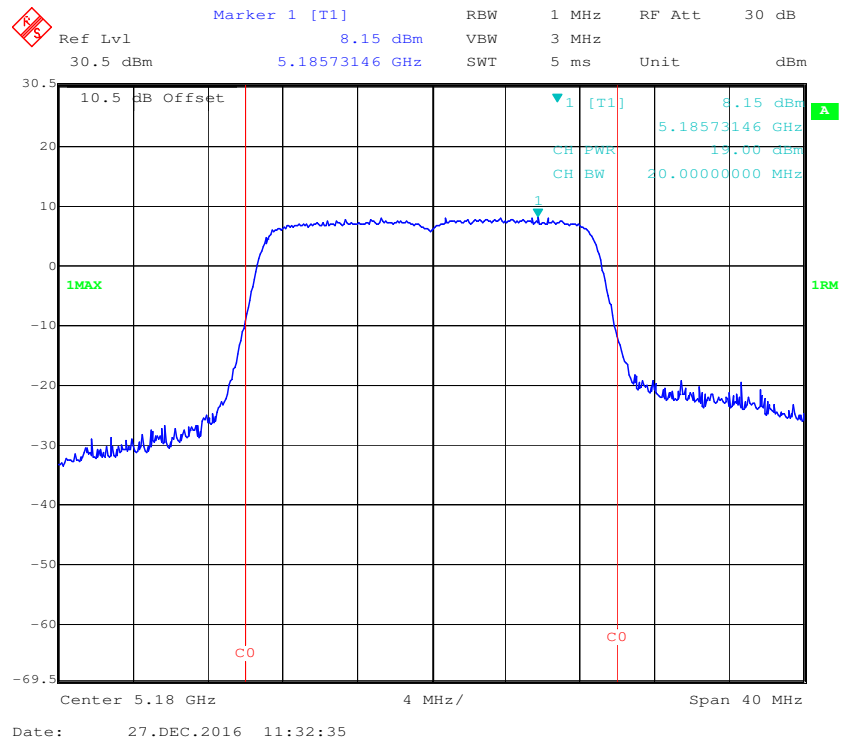
802.11a mode, RF Conducted Output Power, Antenn 0, 5240 MHz



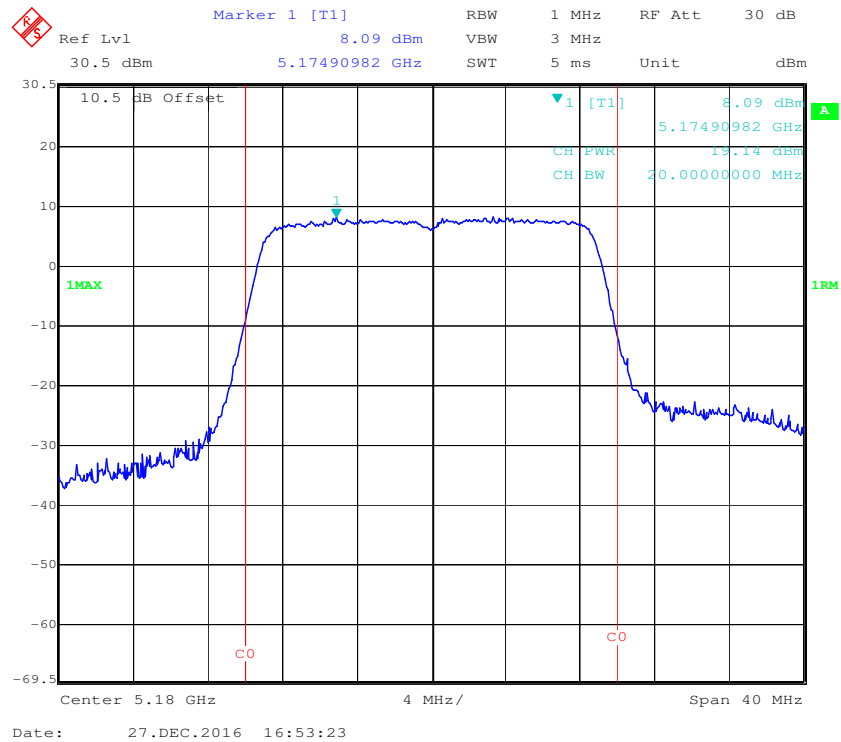
802.11a mode, RF Conducted Output Power, Antenn 1, 5240 MHz



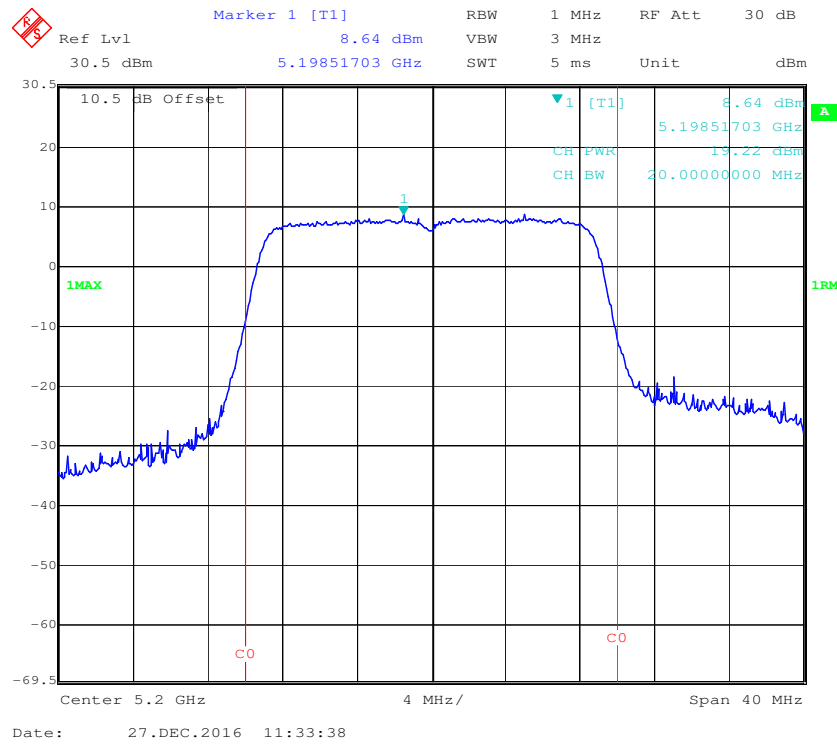
802.11n20 mode, RF Conducted Output Power, Antenn 0, 5180 MHz



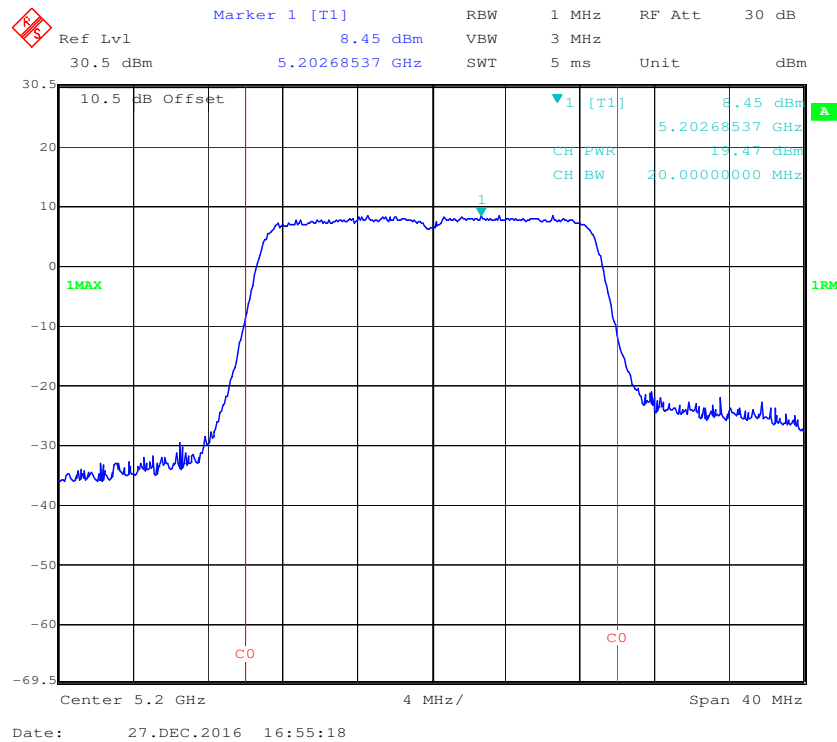
802.11n20 mode, RF Conducted Output Power, Antenn 1, 5180 MHz



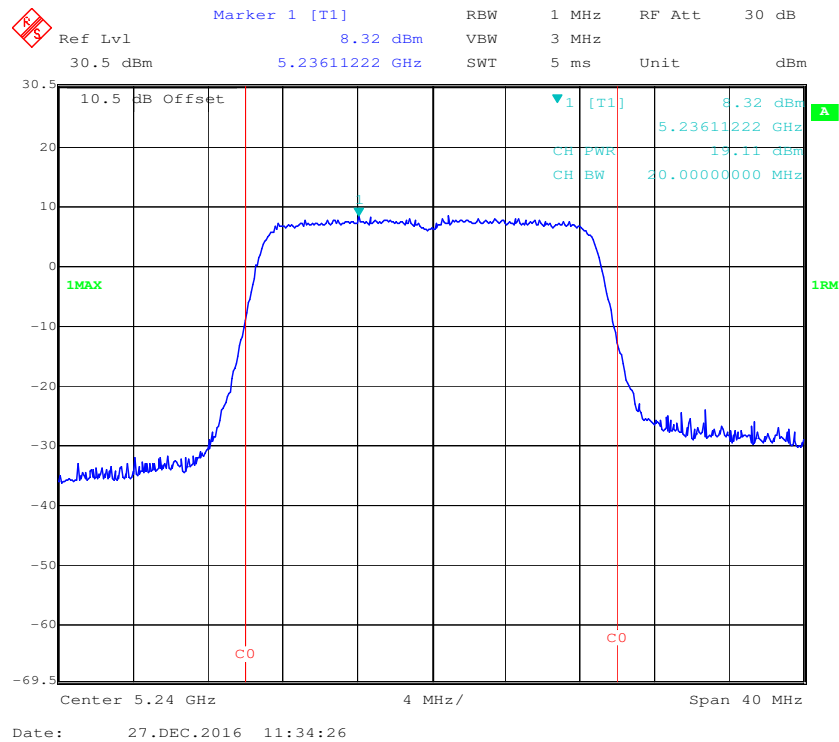
802.11n20 mode, RF Conducted Output Power, Antenn 0, 5200 MHz



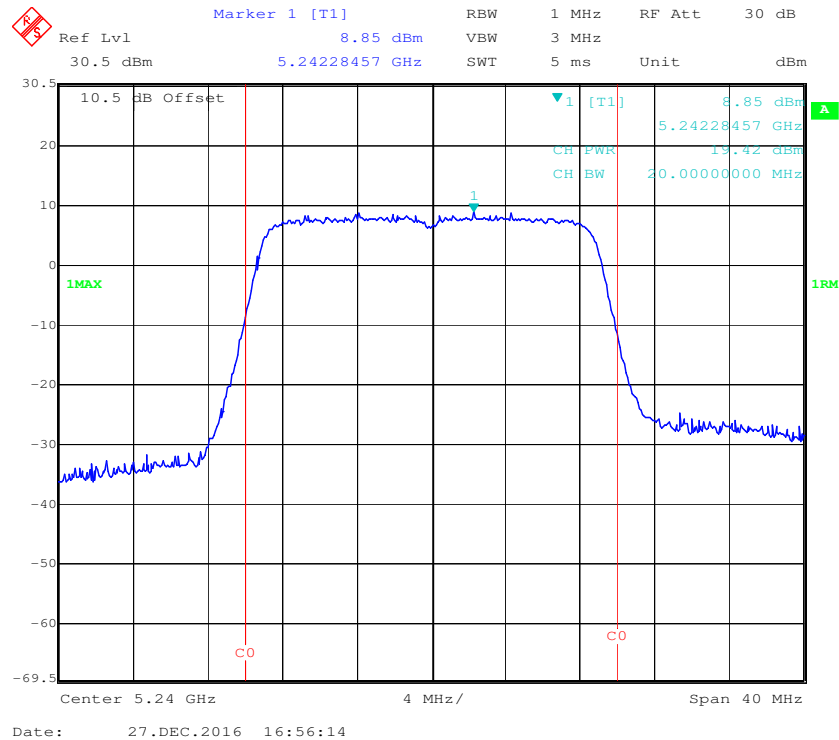
802.11n20 mode, RF Conducted Output Power, Antenn 1, 5200 MHz



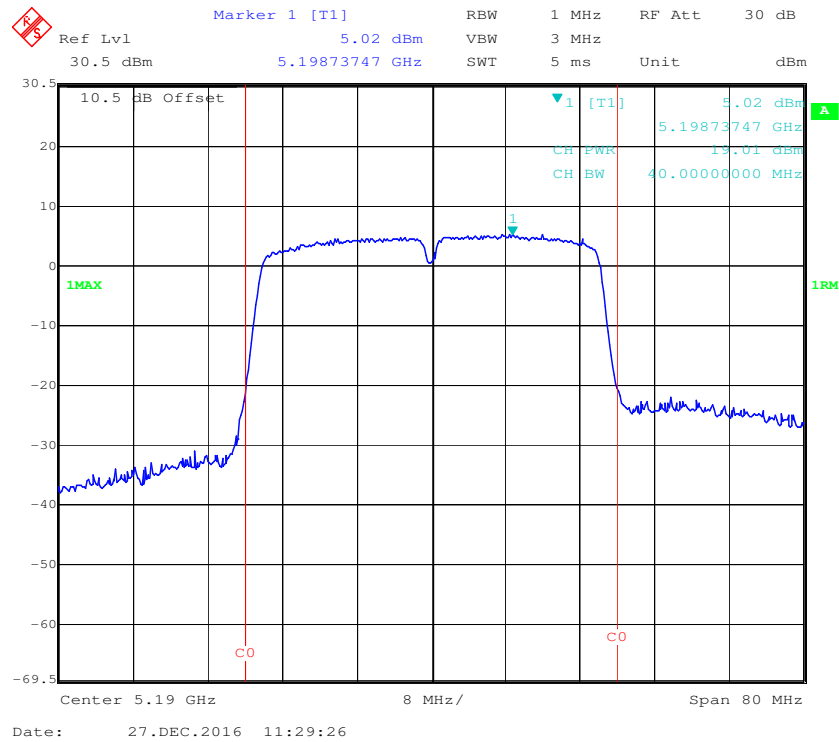
802.11n20 mode, RF Conducted Output Power, Antenn 0, 5240 MHz



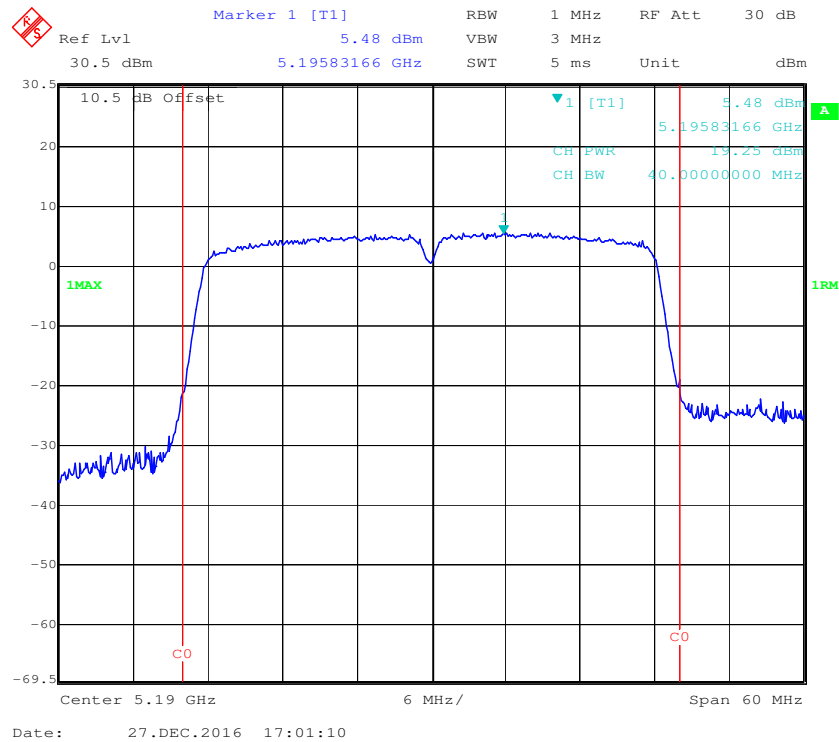
802.11n20 mode, RF Conducted Output Power, Antenn 1, 5240 MHz



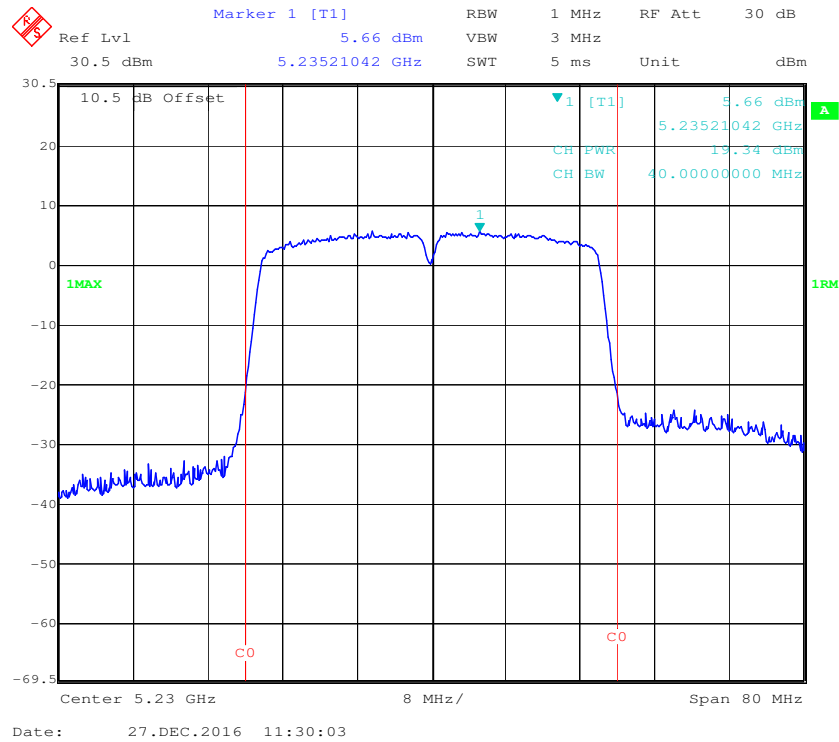
802.11n40 mode, RF Conducted Output Power, Antenn 0, 5190 MHz



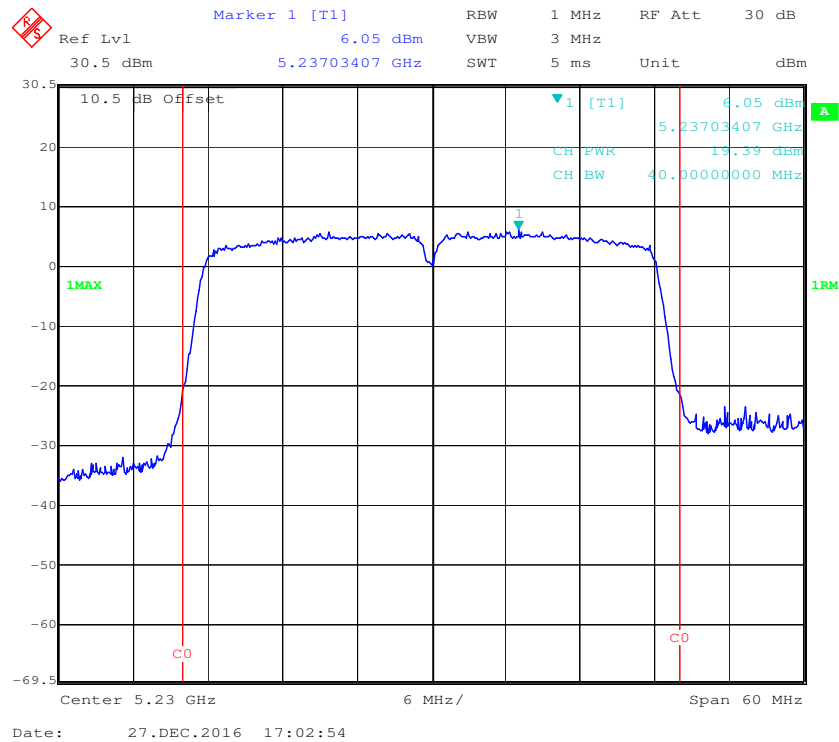
802.11n40 mode, RF Conducted Output Power, Antenn 1, 5190 MHz



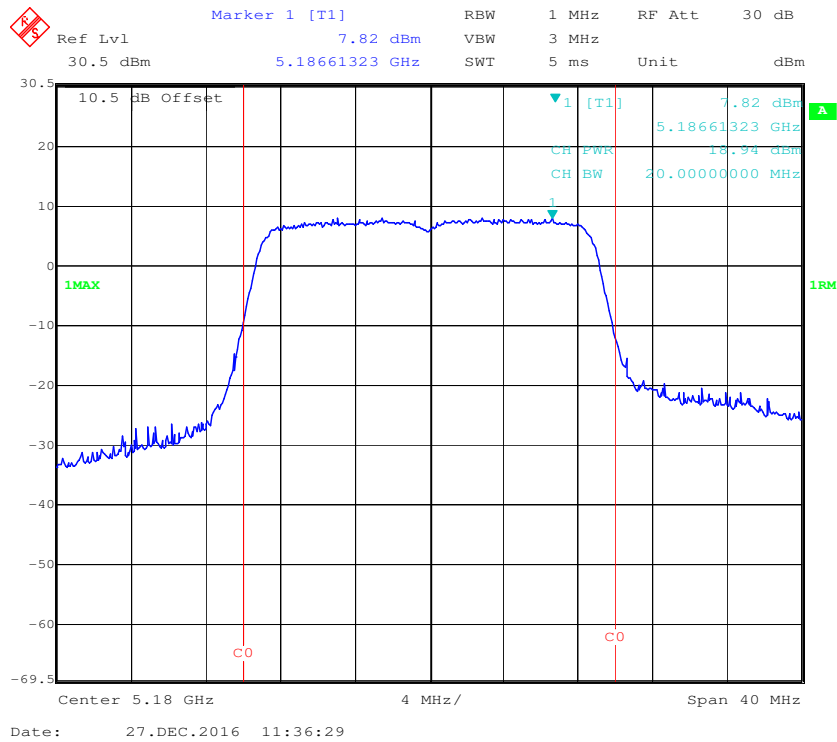
802.11n40 mode, RF Conducted Output Power, Antenn 0, 5230 MHz



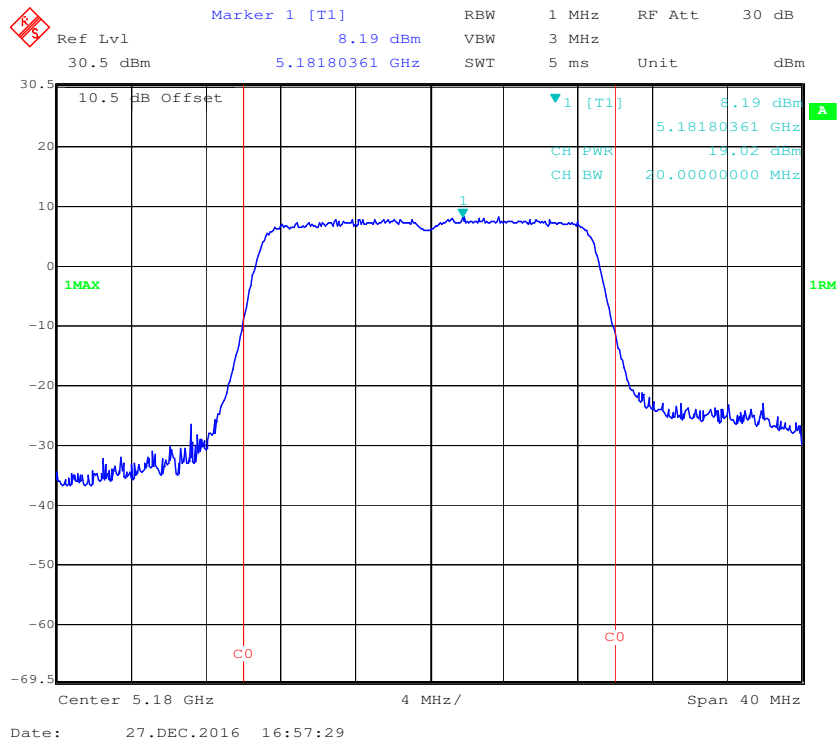
802.11n40 mode, RF Conducted Output Power, Antenn 1, 5230 MHz



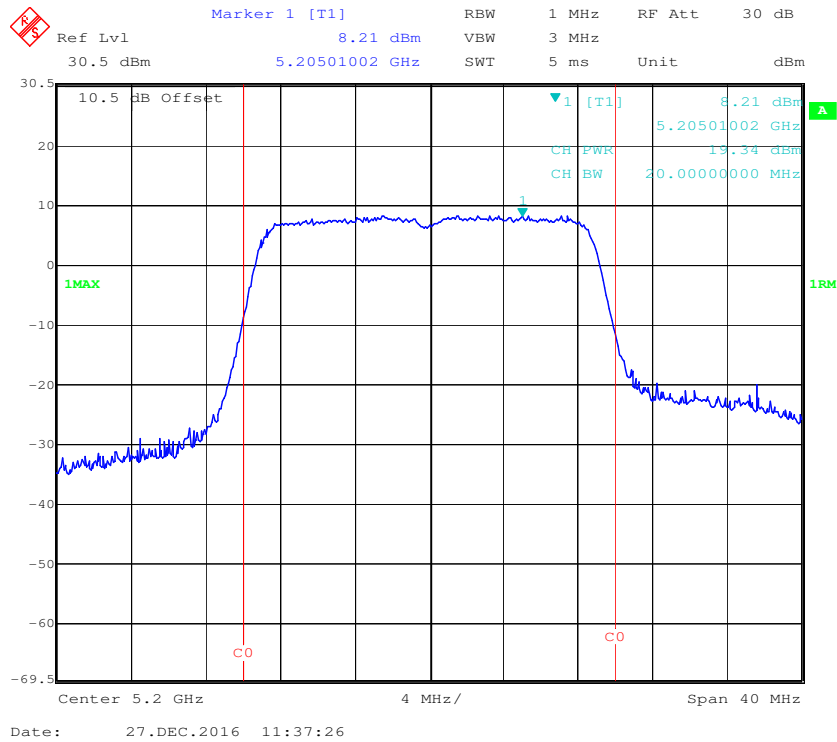
802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5180 MHz



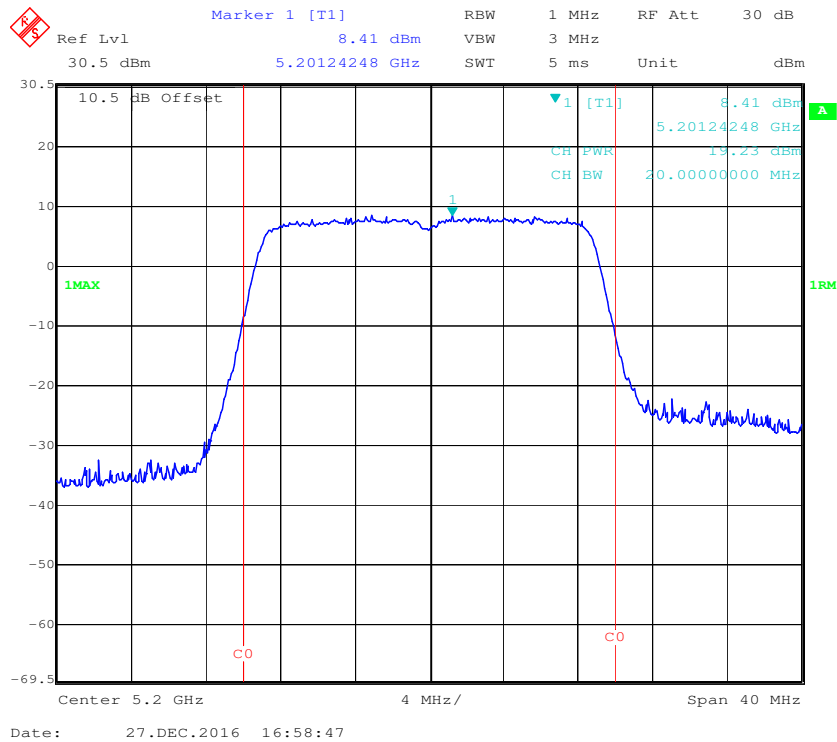
802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5180 MHz



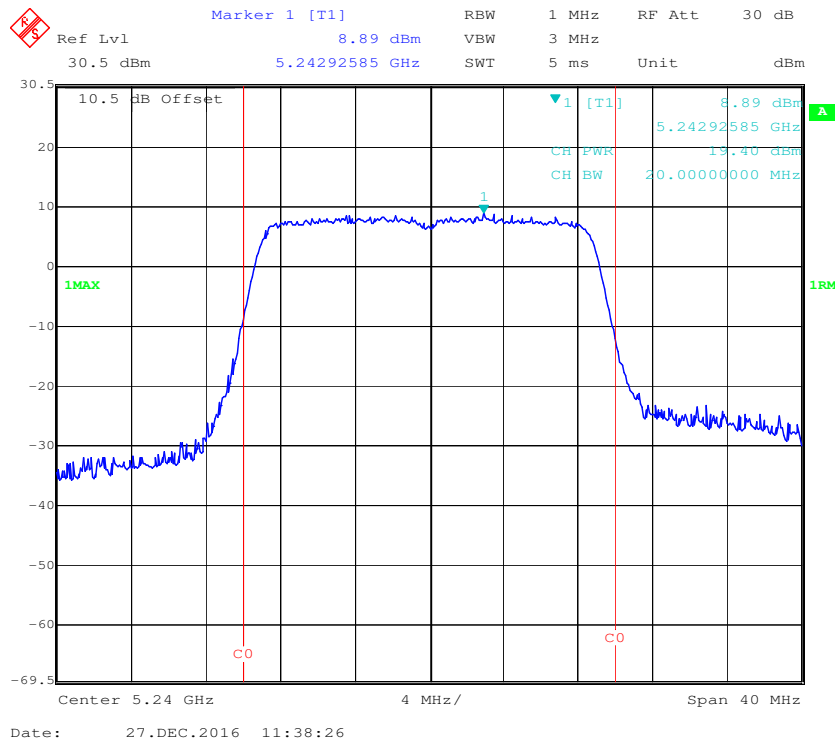
802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5200 MHz



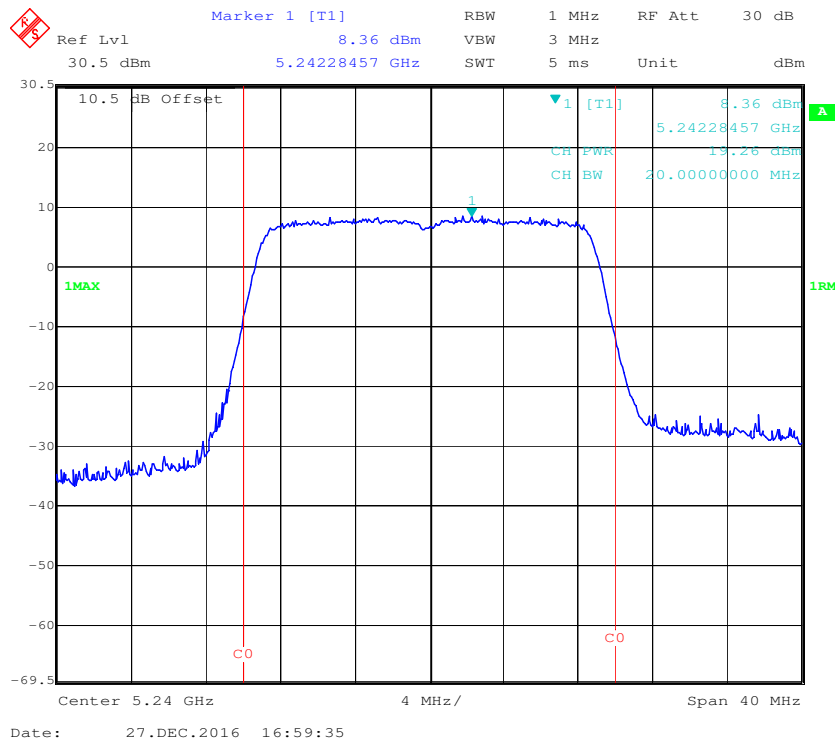
802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5200 MHz



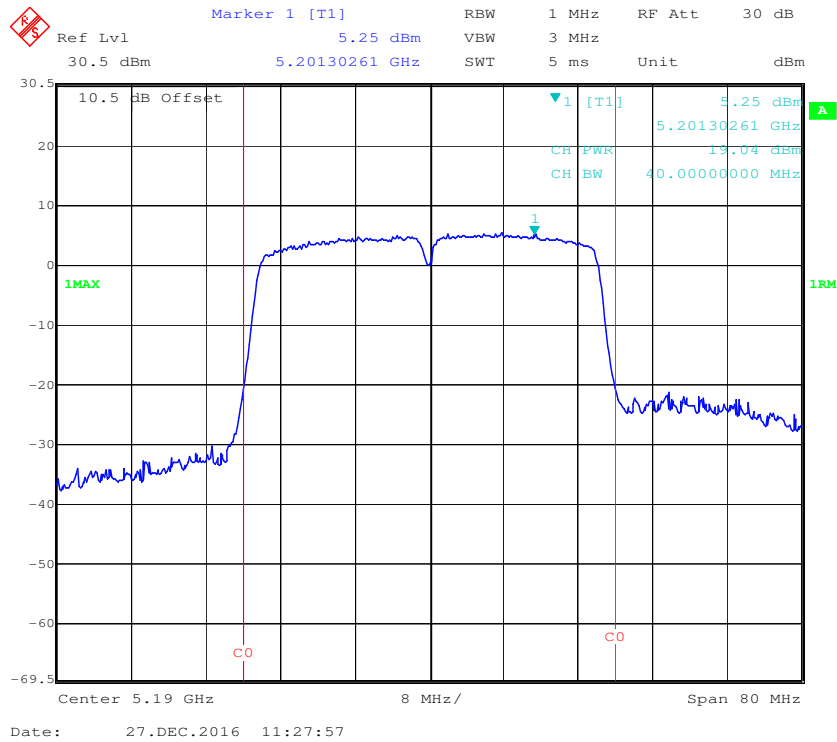
802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5240 MHz



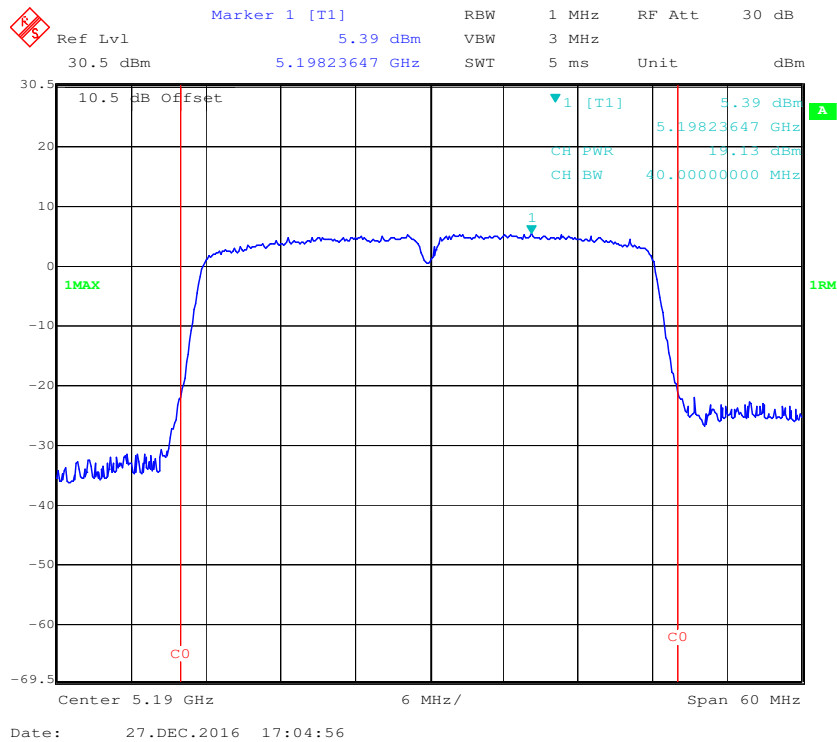
802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5240 MHz

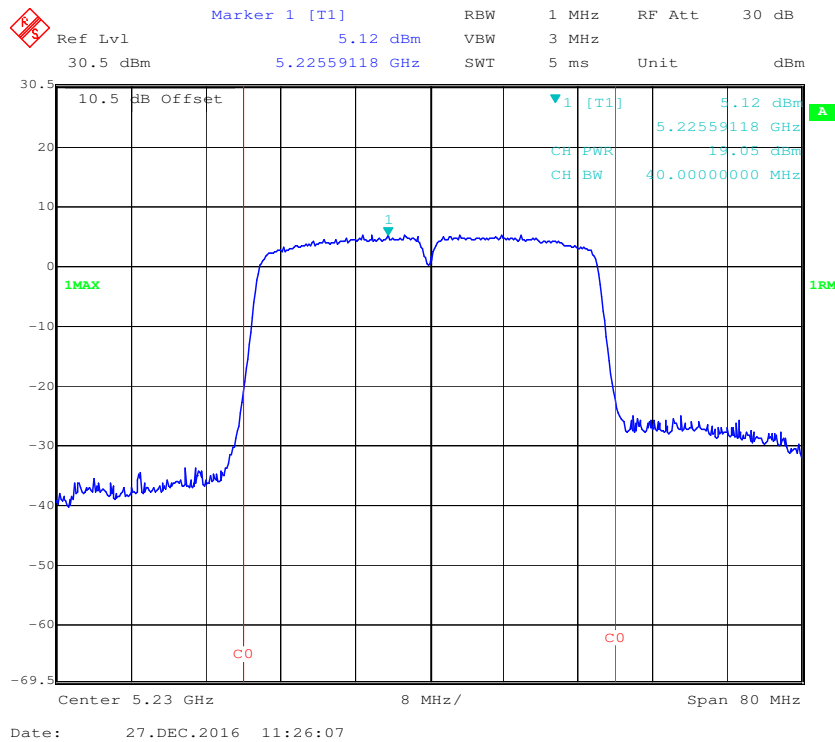
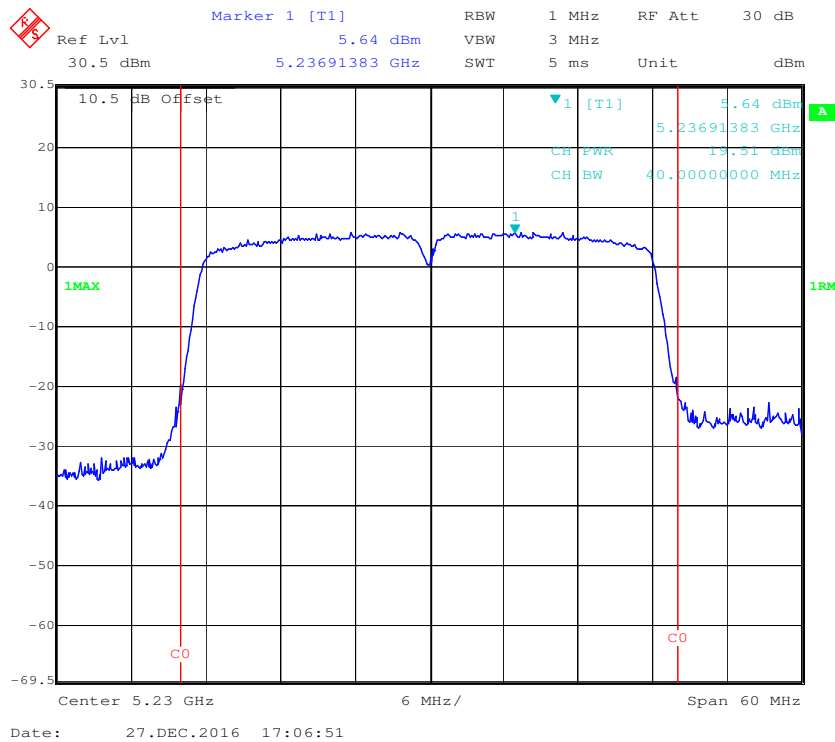


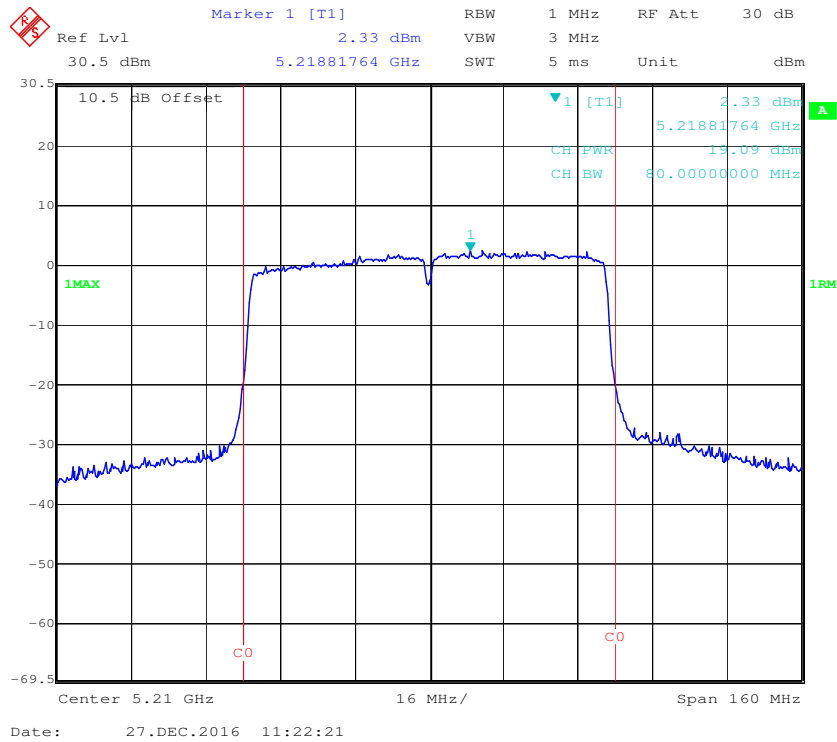
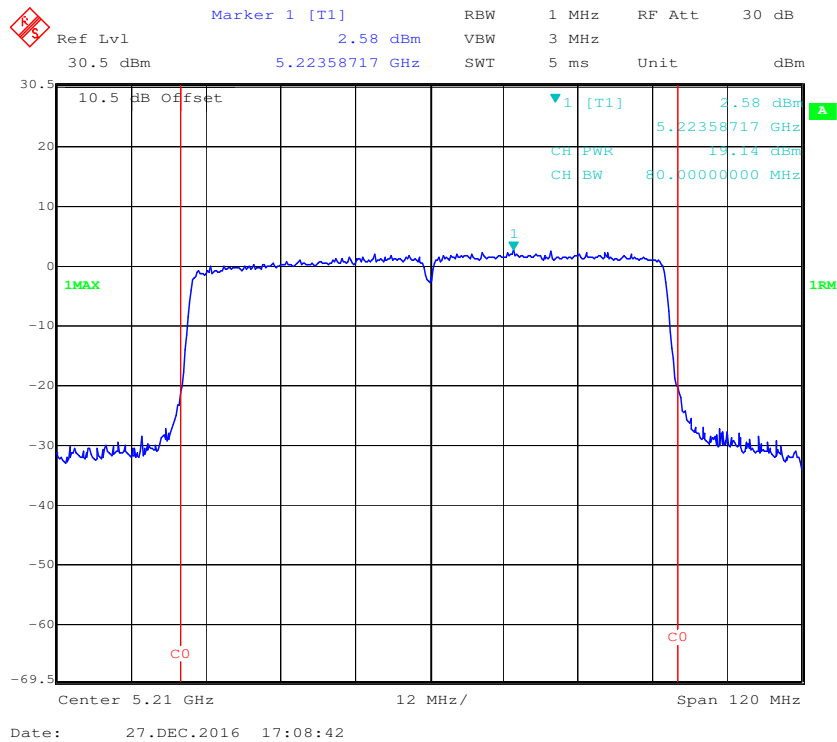
802.11ac40 mode, RF Conducted Output Power, Antenn 0, 5190 MHz



802.11ac40 mode, RF Conducted Output Power, Antenn 1, 5190 MHz



802.11ac40 mode, RF Conducted Output Power, Antenn 0, 5230 MHz**802.11ac40 mode, RF Conducted Output Power, Antenn 1, 5230 MHz**

802.11ac80 mode, RF Conducted Output Power, Antenn 0, 5210 MHz**802.11ac80 mode, RF Conducted Output Power, Antenn 1, 5210 MHz**

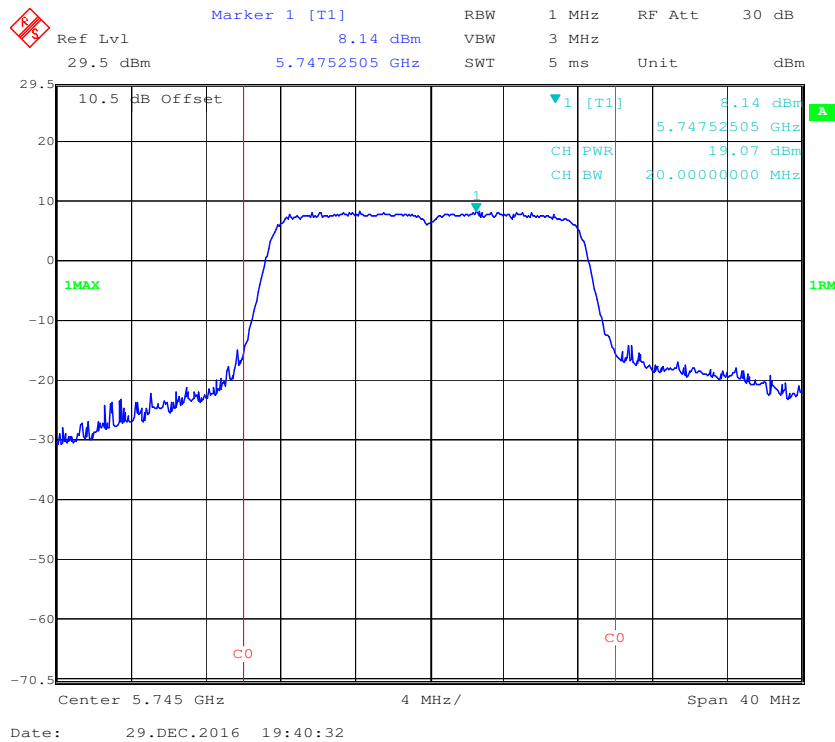
5725 MHz – 5825 MHz:

Frequency (MHz)	Antenna Port	Output Power (dBm)	Sum Output Power (dBm) Chain0+Chain1	Limit (dBm)
802.11a				
5745	0	19.07	22.11	30
	1	19.12		
5785	0	19.22	22.10	
	1	18.96		
5825	0	19.38	22.19	
	1	18.97		
802.11n20				
5745	0	18.65	21.95	30
	1	19.21		
5785	0	18.61	21.79	
	1	18.94		
5825	0	18.88	21.85	
	1	18.80		
802.11n40				
5755	0	19.71	22.28	30
	1	18.78		
5795	0	18.81	21.60	
	1	18.35		

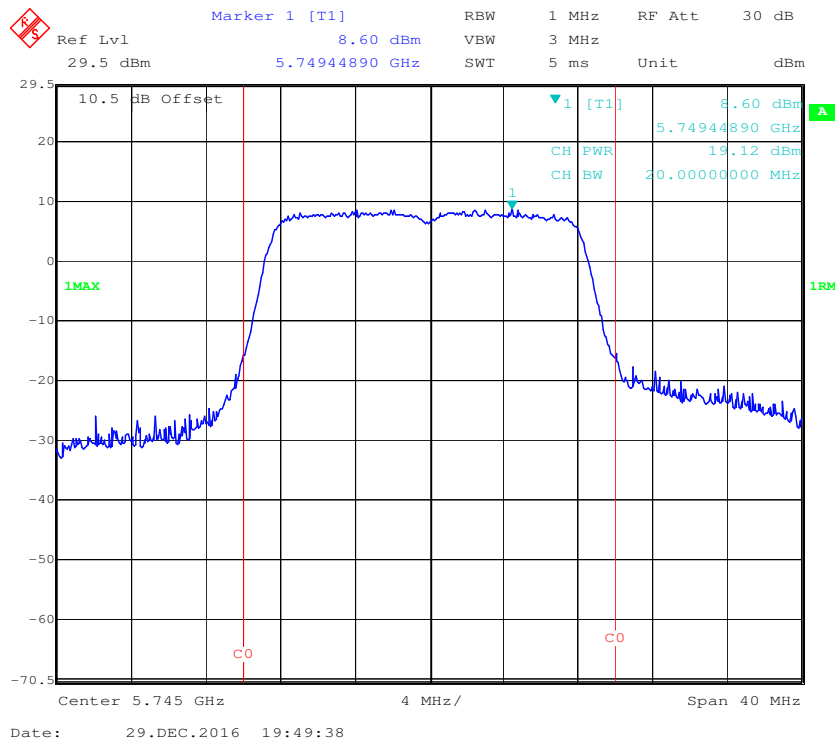
Frequency (MHz)	Antenna Port	Output Power (dBm)	Sum Output Power (dBm) Chain0+Chain1	Limit (dBm)
802.11ac20				
5745	0	19.01	22.16	30
	1	19.28		
5785	0	18.93	21.82	
	1	18.68		
5825	0	18.89	21.75	
	1	18.58		
802.11ac40				
5755	0	19.07	21.97	30
	1	18.84		
5795	0	18.79	21.72	
	1	18.63		
802.11ac80				
5775	0	18.68+0.18 ^{NOTE}	21.80	30
	1	18.54+0.18 ^{NOTE}		

NOTE: The duty cycle of 802.11ac80 is 96%, the factor= $10\log(1/x)=0.18$

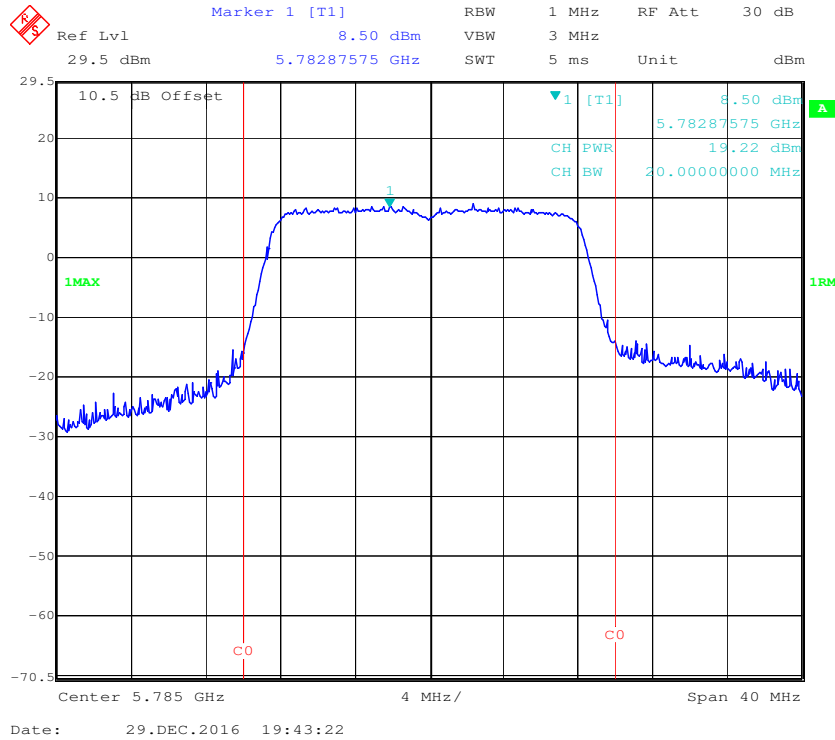
802.11a mode, RF Conducted Output Power, Antenn 0, 5745 MHz



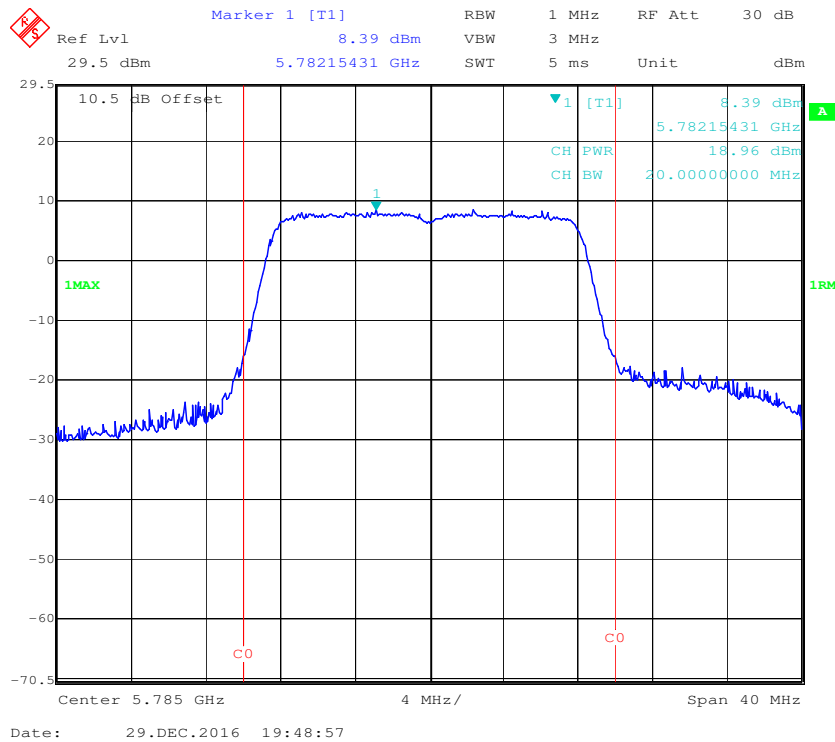
802.11a mode, RF Conducted Output Power, Antenn 1, 5745 MHz



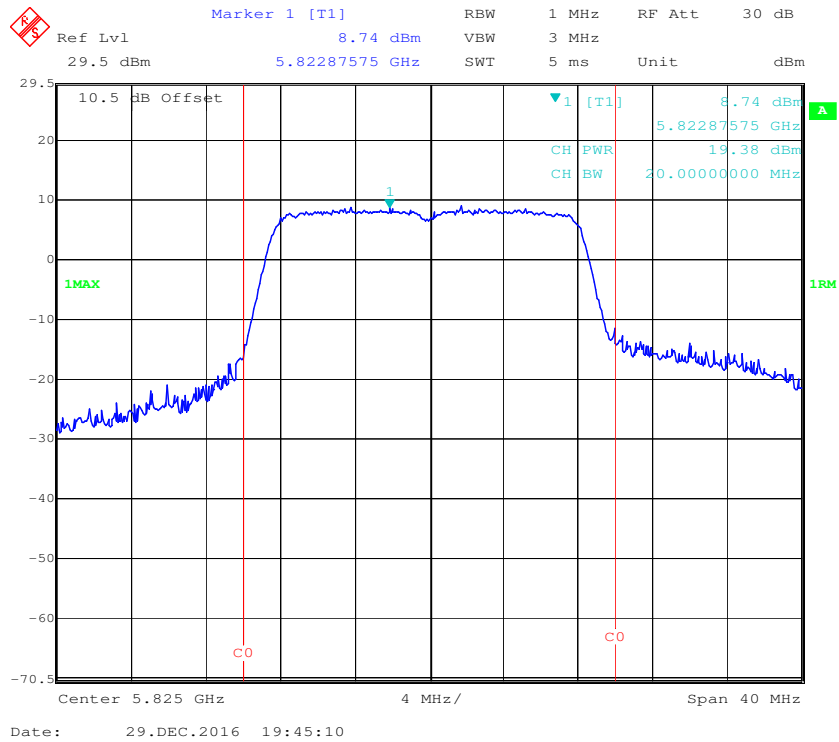
802.11a mode, RF Conducted Output Power, Antenn 0, 5785 MHz



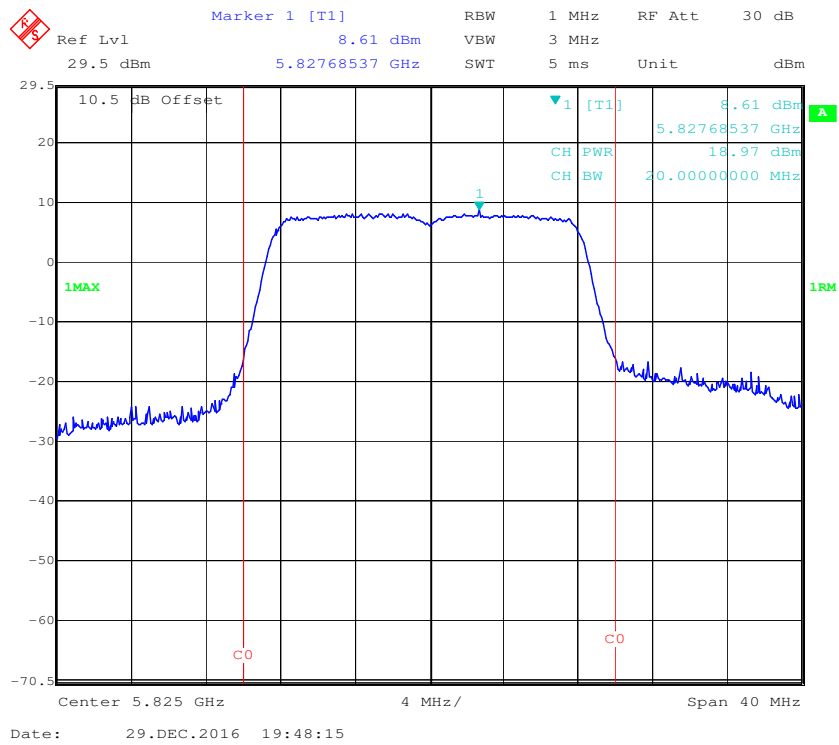
802.11a mode, RF Conducted Output Power, Antenn 1, 5785 MHz



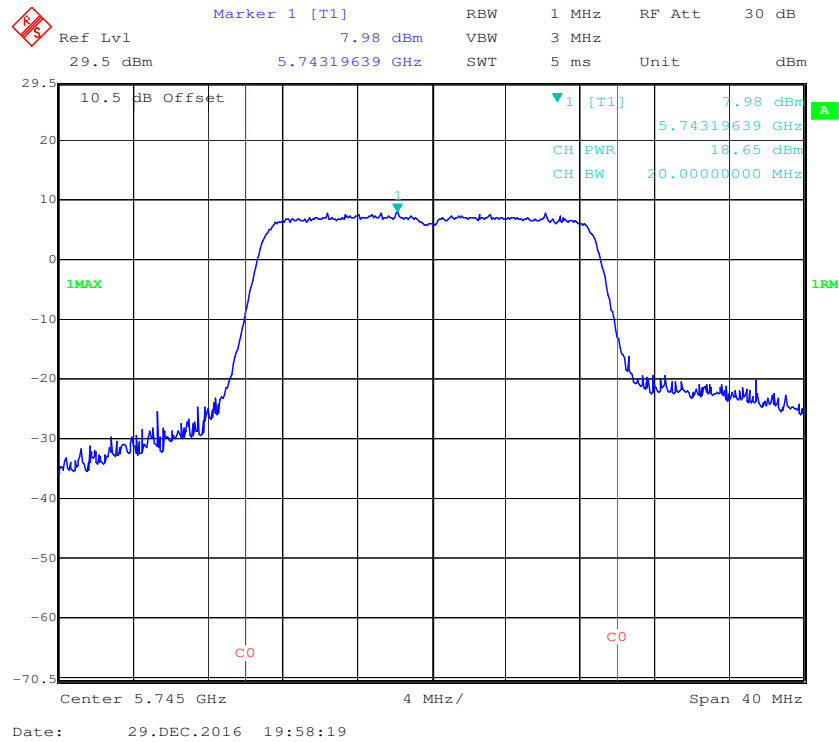
802.11a mode, RF Conducted Output Power, Antenn 0, 5825 MHz



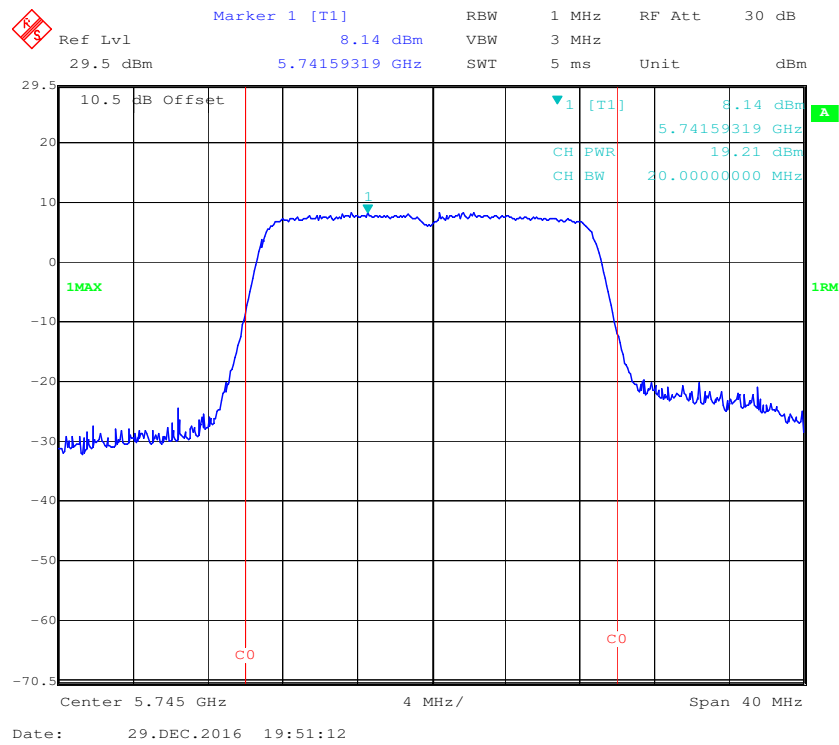
802.11a mode, RF Conducted Output Power, Antenn 1, 5825 MHz



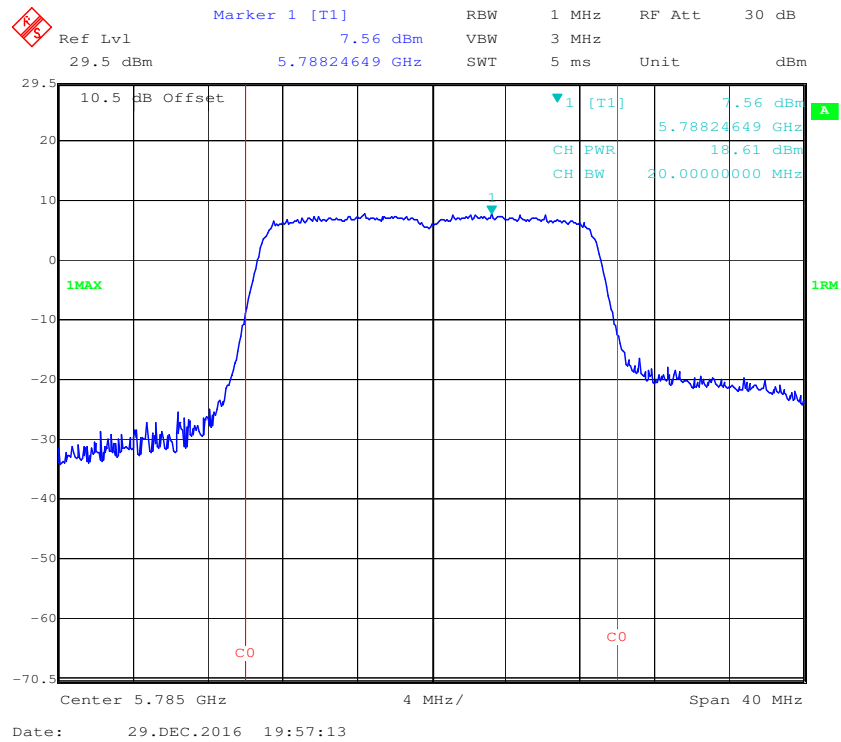
802.11n20 mode, RF Conducted Output Power, Antenn 0, 5745 MHz



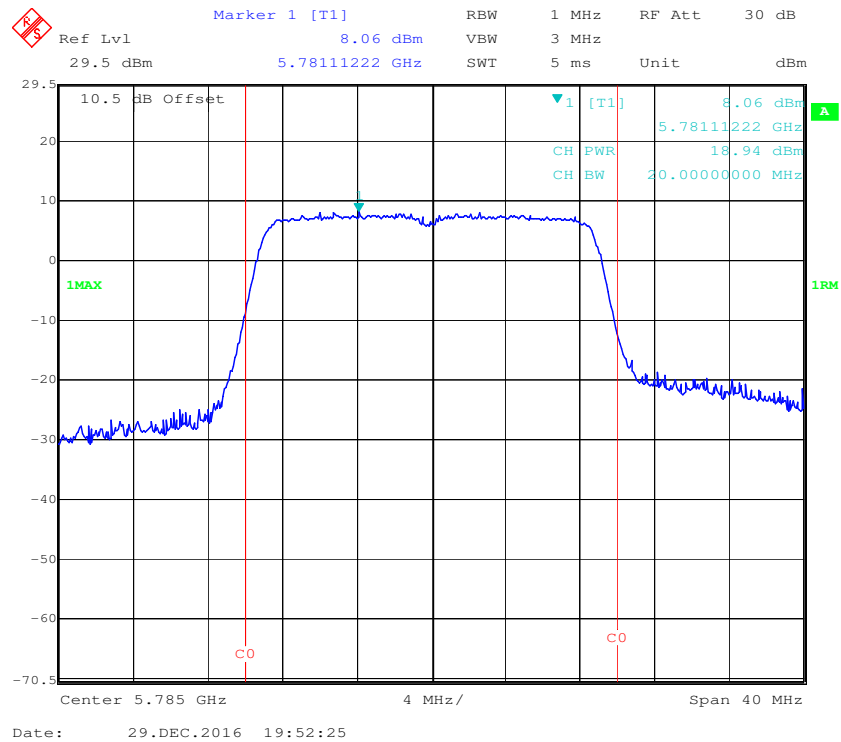
802.11n20 mode, RF Conducted Output Power, Antenn 1, 5745 MHz



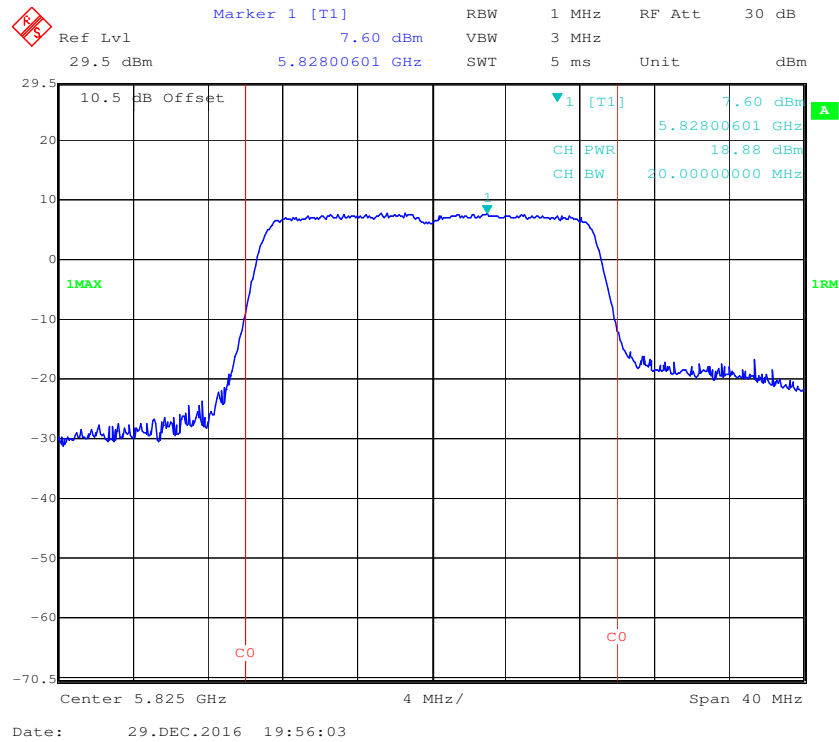
802.11n20 mode, RF Conducted Output Power, Antenn 0, 5785 MHz



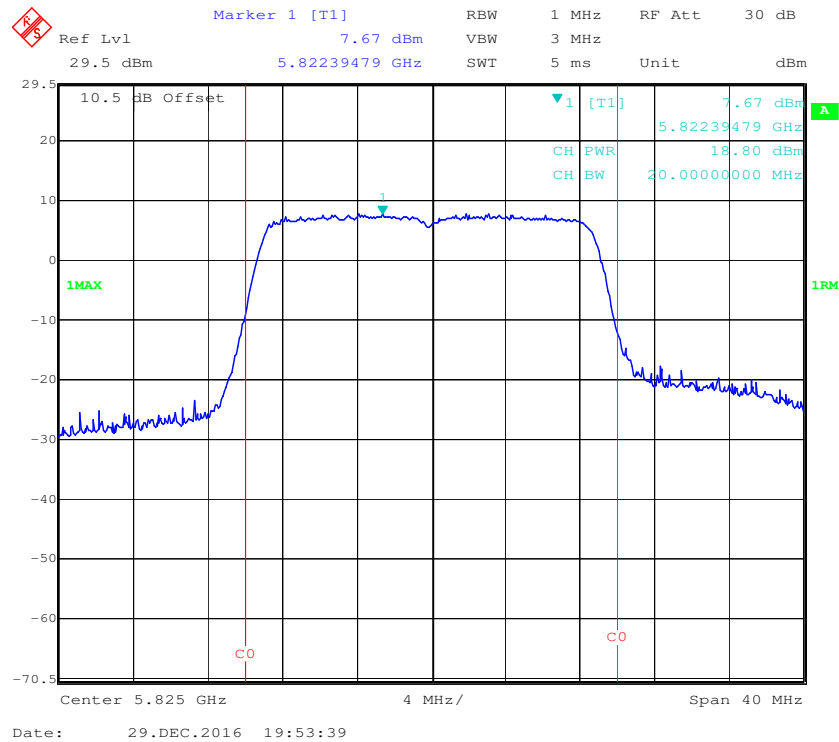
802.11n20 mode, RF Conducted Output Power, Antenn 1, 5785 MHz

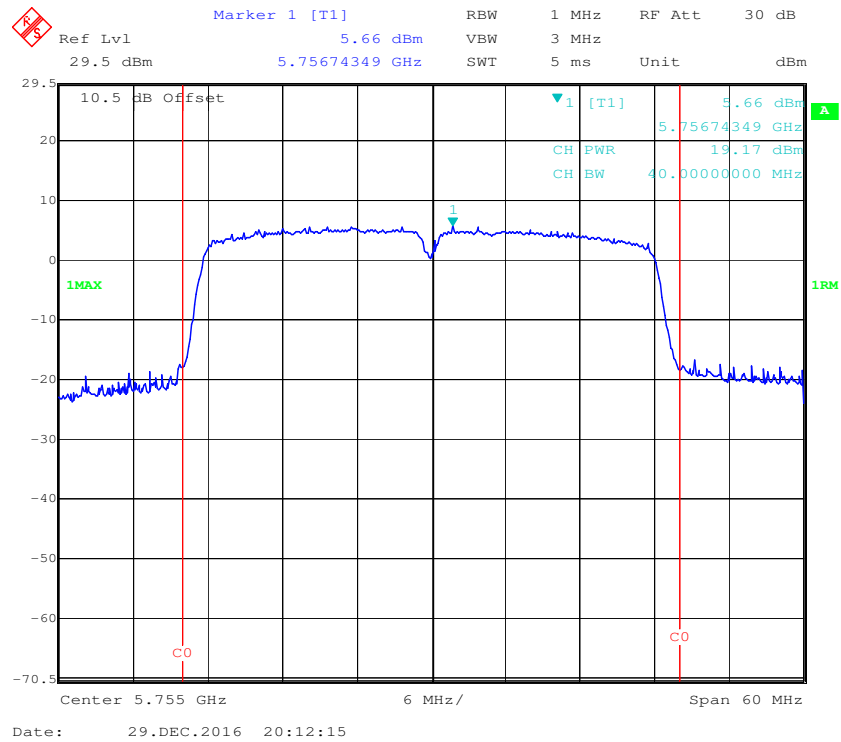
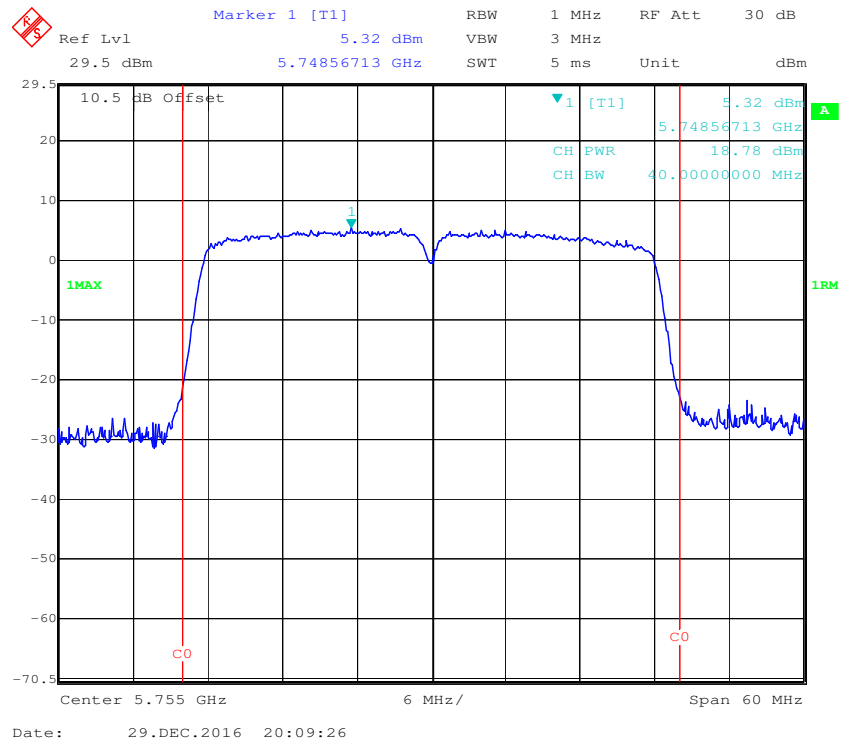


802.11n20 mode, RF Conducted Output Power, Antenn 0, 5825 MHz

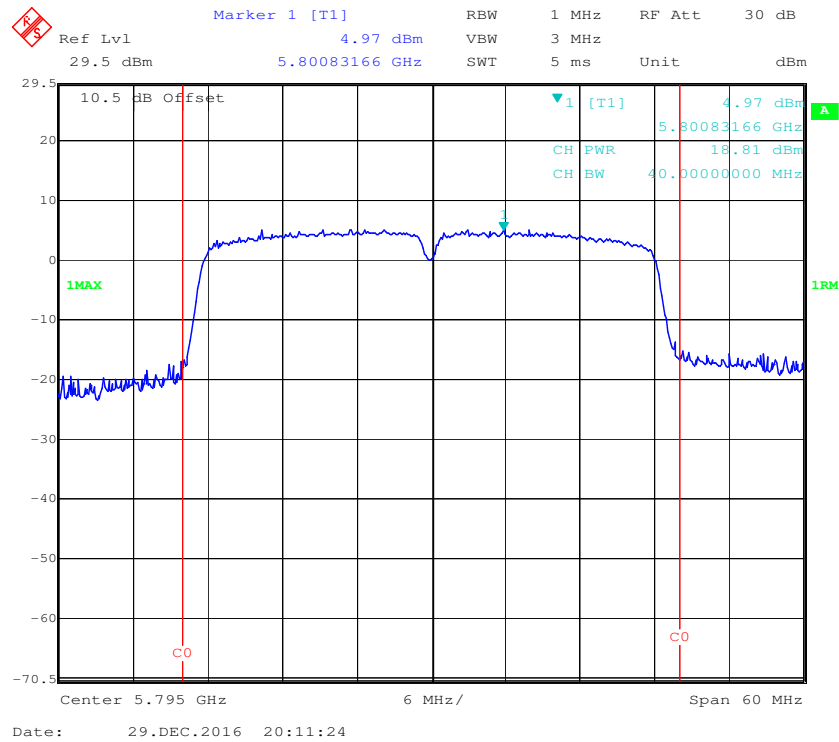


802.11n20 mode, RF Conducted Output Power, Antenn 1, 5825 MHz

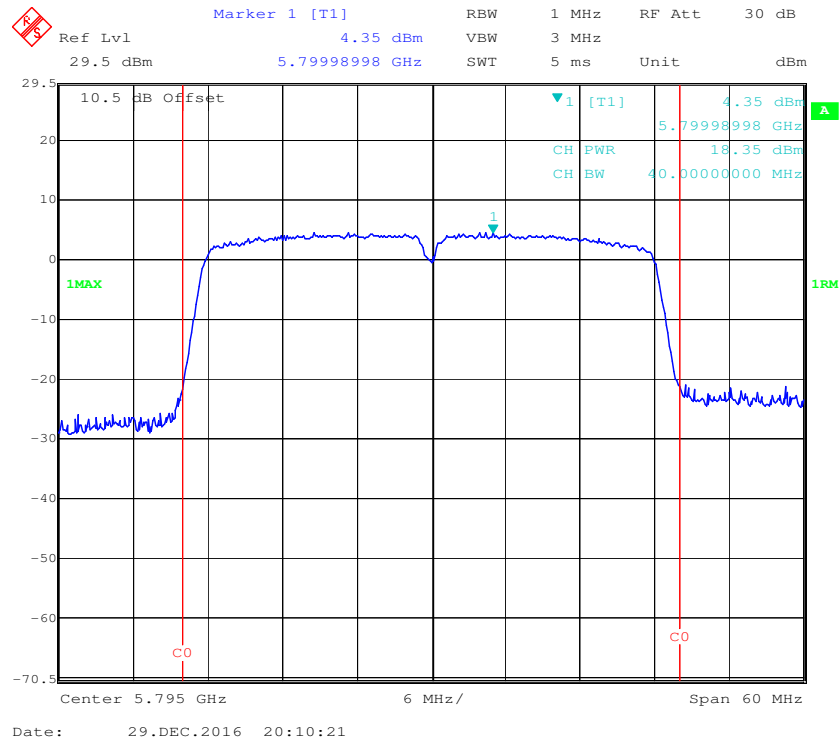


802.11n40 mode, RF Conducted Output Power, Antenn 0, 5755 MHz**802.11n40 mode, RF Conducted Output Power, Antenn 1, 5755 MHz**

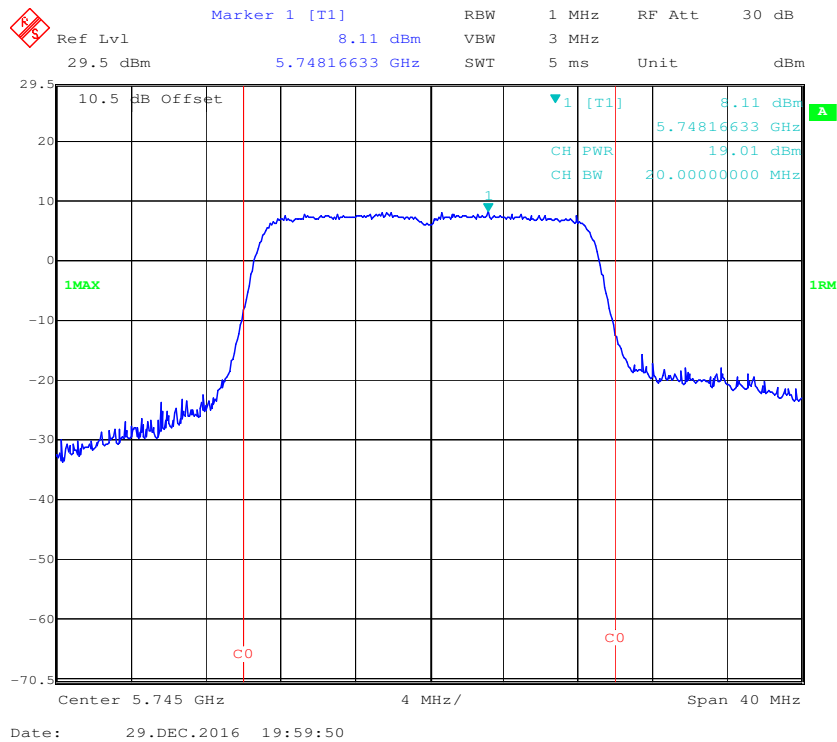
802.11n40 mode, RF Conducted Output Power, Antenn 0, 5795 MHz



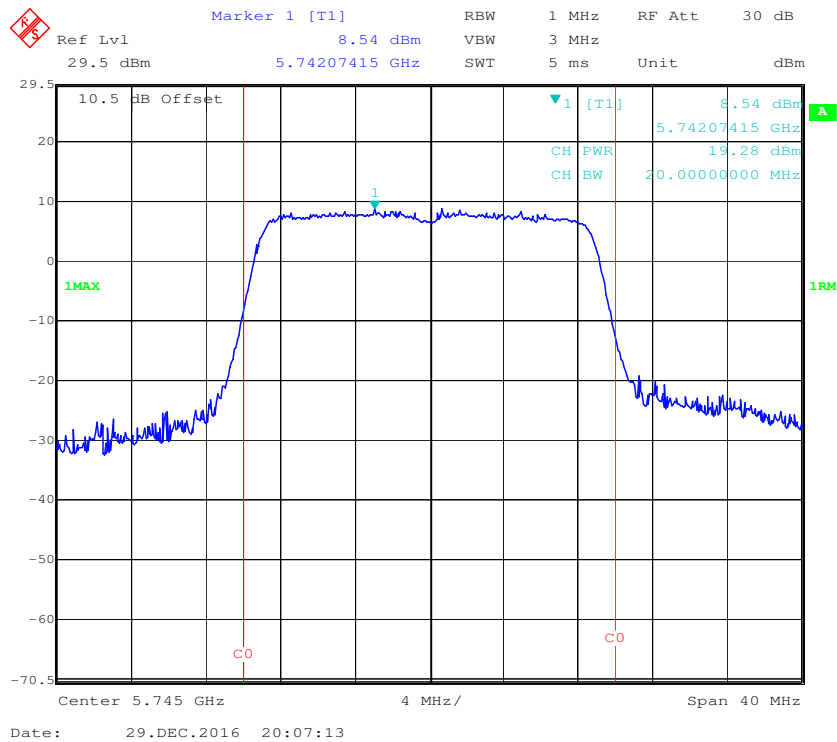
802.11n40 mode, RF Conducted Output Power, Antenn 1, 5795 MHz



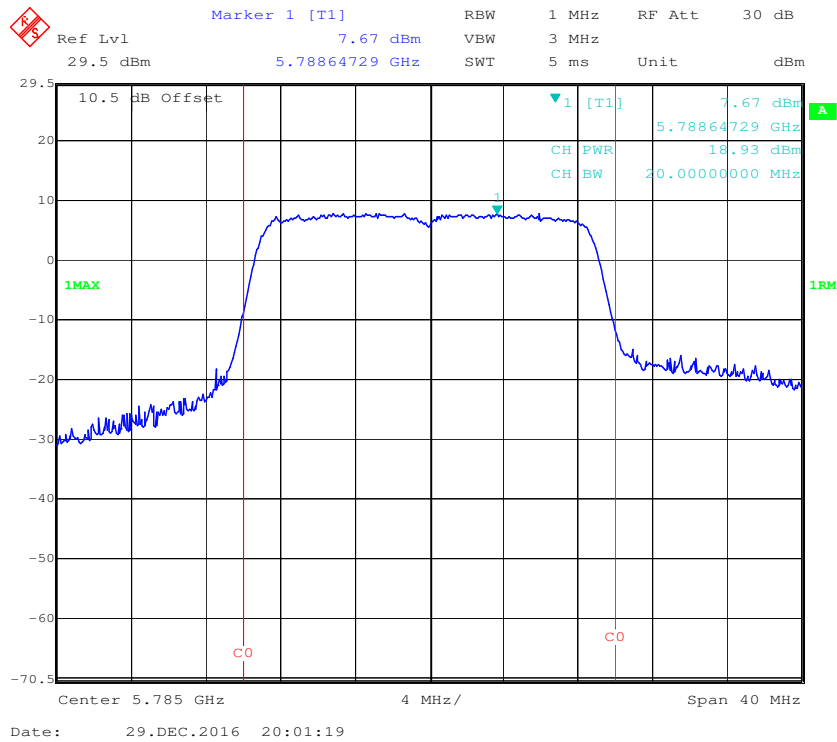
802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5745 MHz



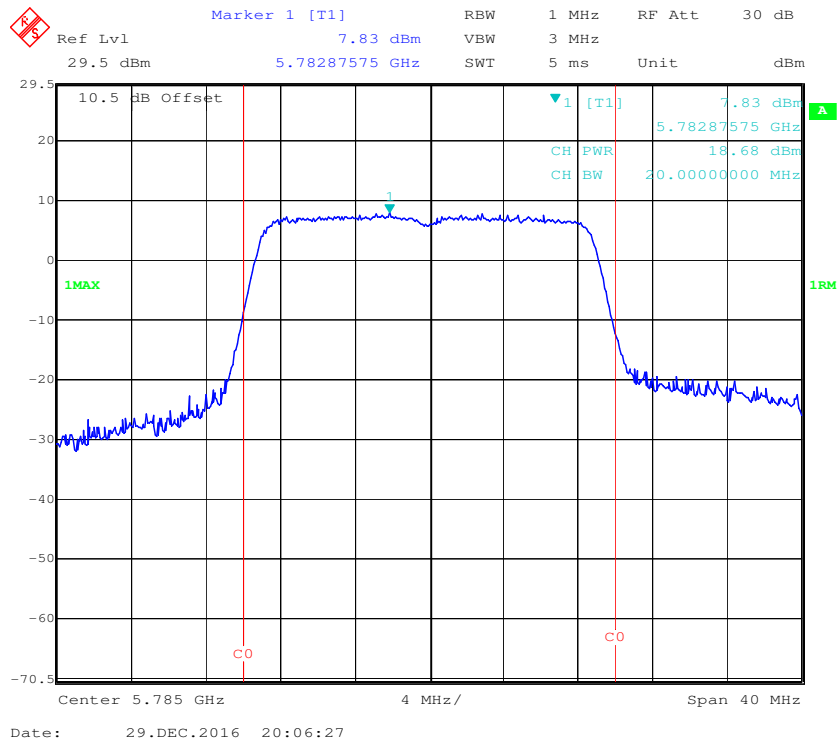
802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5745 MHz



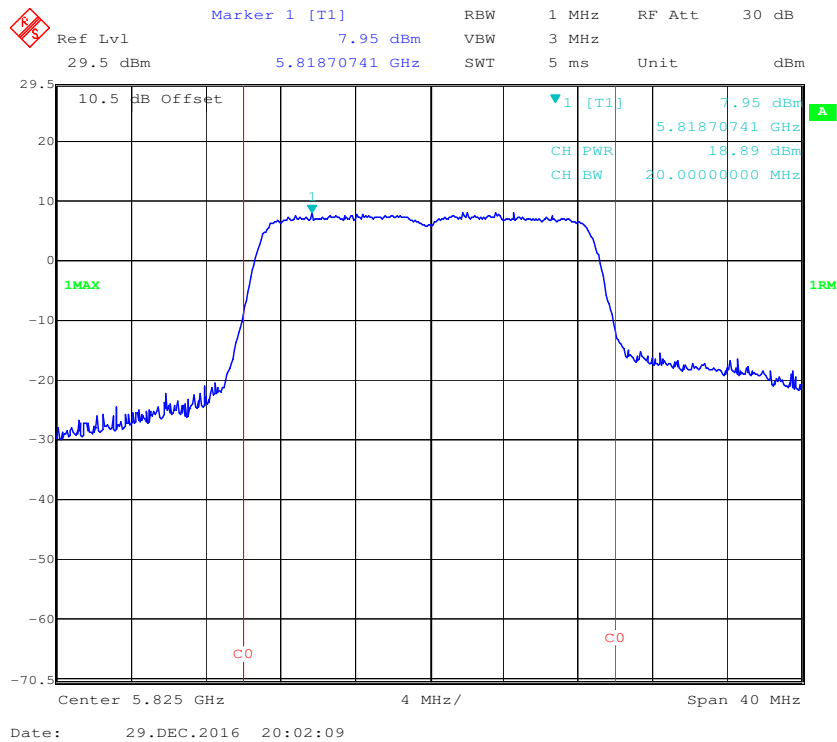
802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5785 MHz



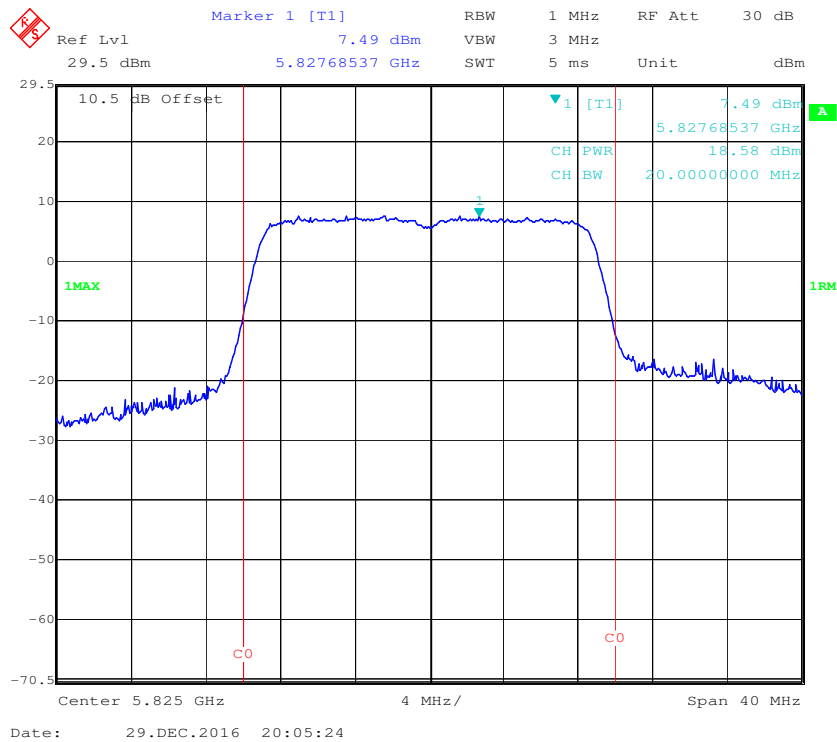
802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5785 MHz

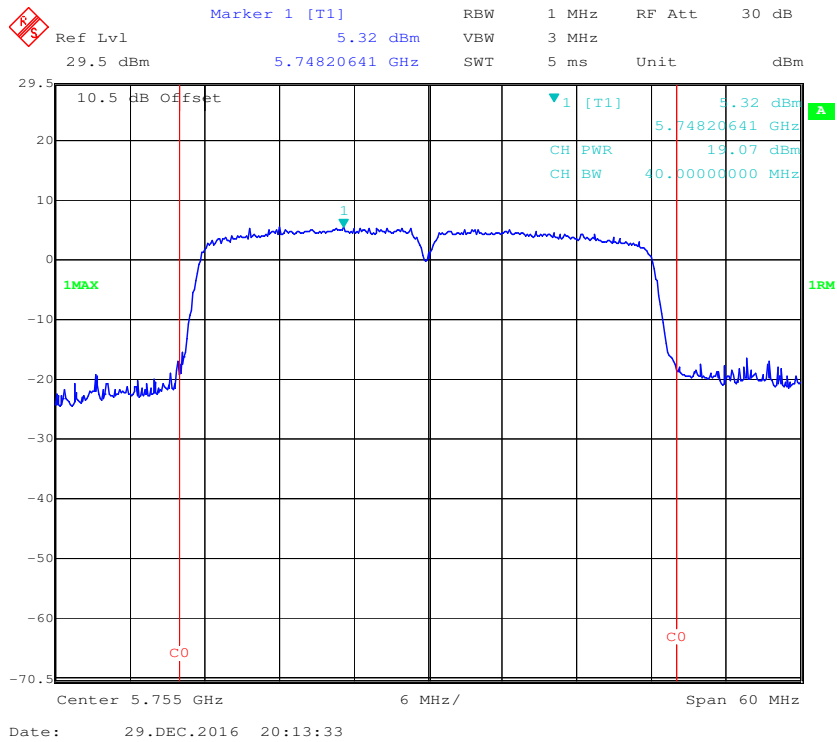
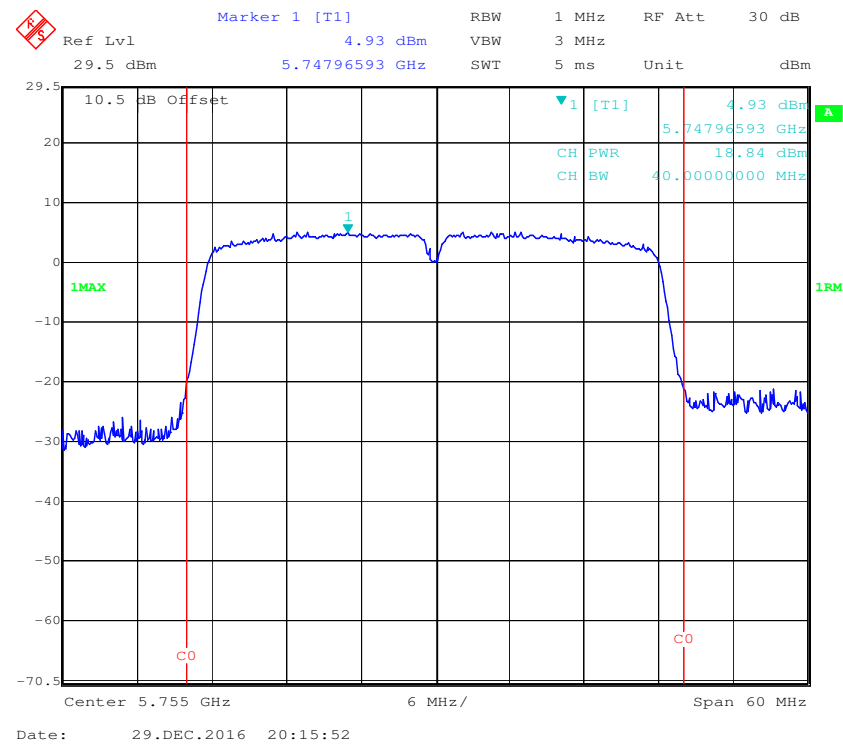


802.11ac20 mode, RF Conducted Output Power, Antenn 0, 5825 MHz

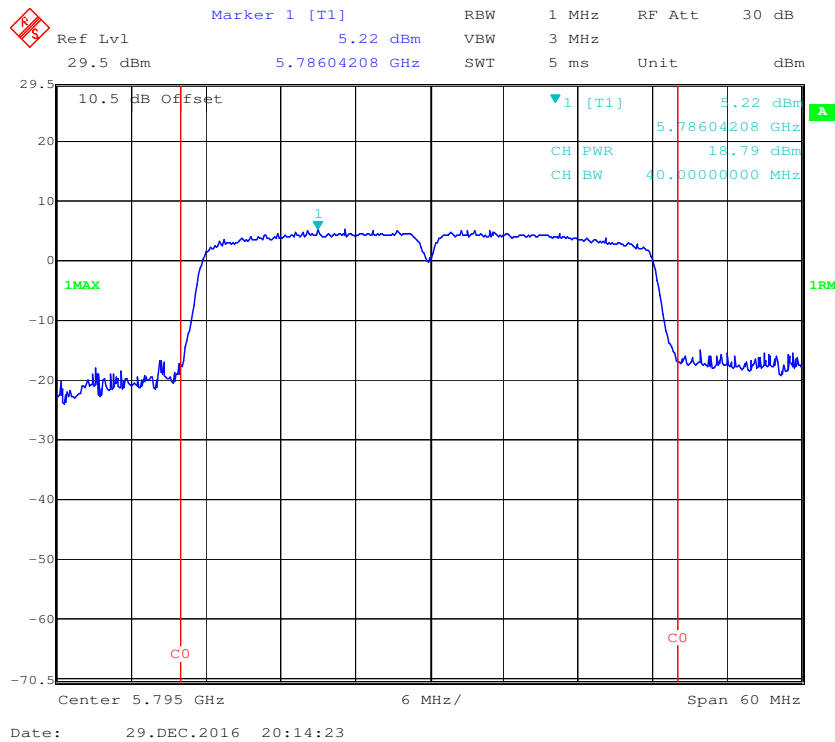


802.11ac20 mode, RF Conducted Output Power, Antenn 1, 5825 MHz

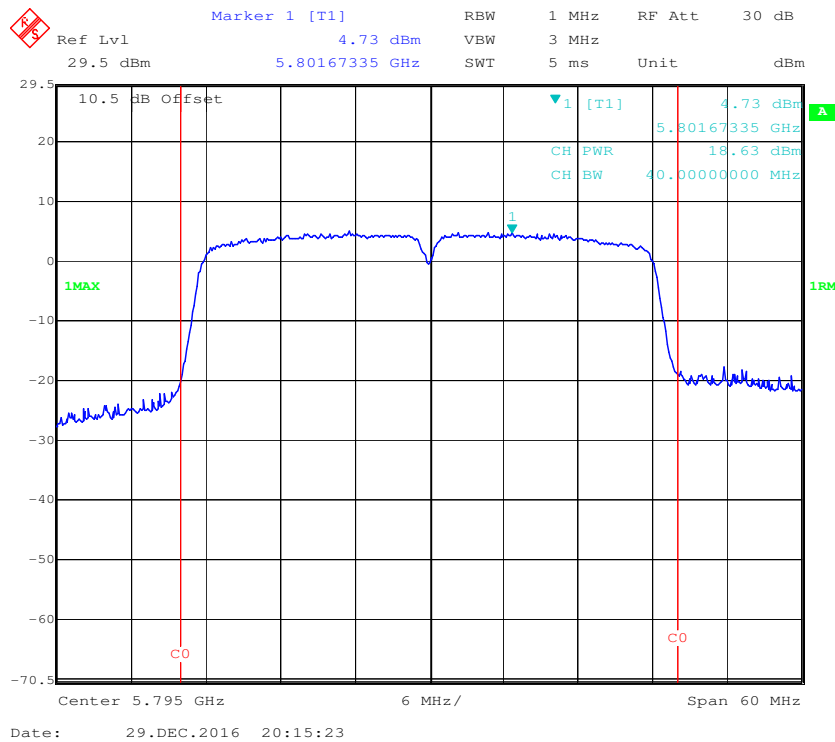


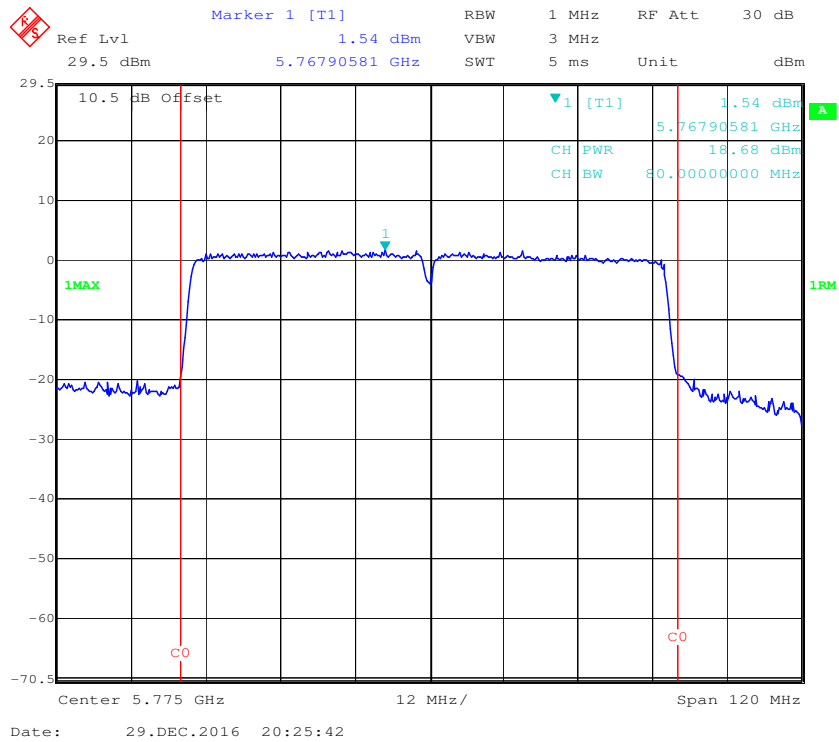
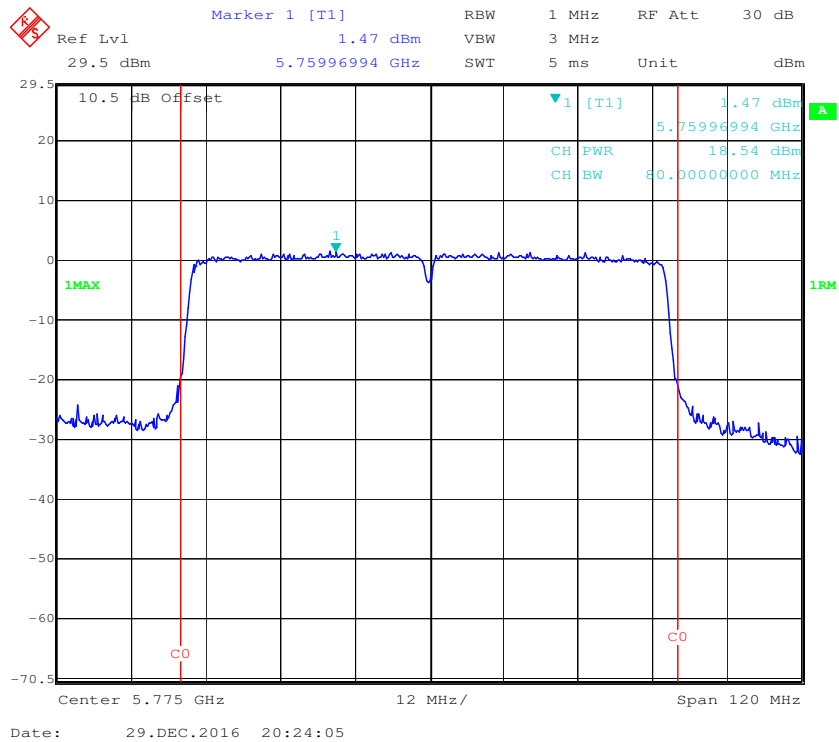
802.11ac40 mode, RF Conducted Output Power, Antenn 0, 5755 MHz**802.11ac40 mode, RF Conducted Output Power, Antenn 1, 5755 MHz**

802.11ac40 mode, RF Conducted Output Power, Antenn 0, 5795 MHz



802.11ac40 mode, RF Conducted Output Power, Antenn 1, 5795 MHz



802.11ac80 mode, RF Conducted Output Power, Antenn 0, 5775 MHz**802.11ac80 mode, RF Conducted Output Power, Antenn 1, 5775 MHz**

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.

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

Test Data**Environmental Conditions**

Temperature:	25~26 °C
Relative Humidity:	53~56 %
ATM Pressure:	100.0-101.0 kPa

The testing was performed by Alisa Gao from 2016-12-27 to 2016-12-30.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Note: This Device Emploies Cyclic Delay Diversity.

When determining reductions in power spectral density limits, array gain is calculated as follows:

Array gain = $10 \log(N_{\text{ANT}})$, where N_{ANT} is the number of transmit antennas.

Total directional gain (dBi) = gain of individual transmit antennas (dBi) +3.0 (dB) =6dBi.

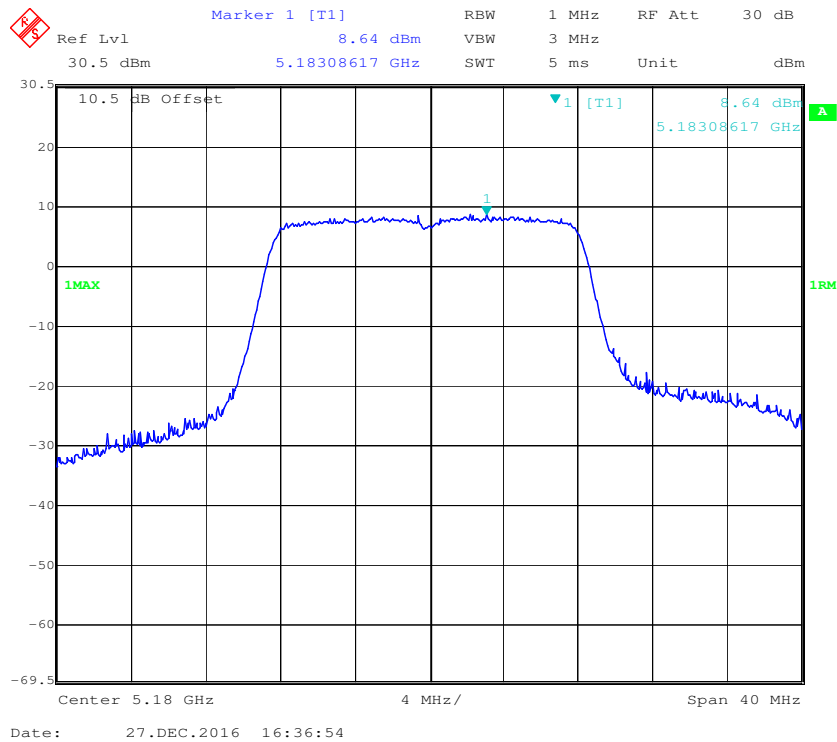
5150 MHz – 5250 MHz:

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Sum Power spectral density (dBm/MHz) Chain0+Chain1	Limit (dBm)
802.11a				
5180	0	8.64	11.61	17
	1	8.56		
5200	0	8.89	11.68	
	1	8.43		
5240	0	8.54	11.69	
	1	8.81		
802.11n20				
5180	0	7.55	10.86	17
	1	8.13		
5200	0	7.79	11.12	
	1	8.40		
5240	0	8.63	11.58	
	1	8.50		
802.11n40				
5190	0	5.24	8.39	17
	1	5.52		
5230	0	5.68	8.86	
	1	6.01		

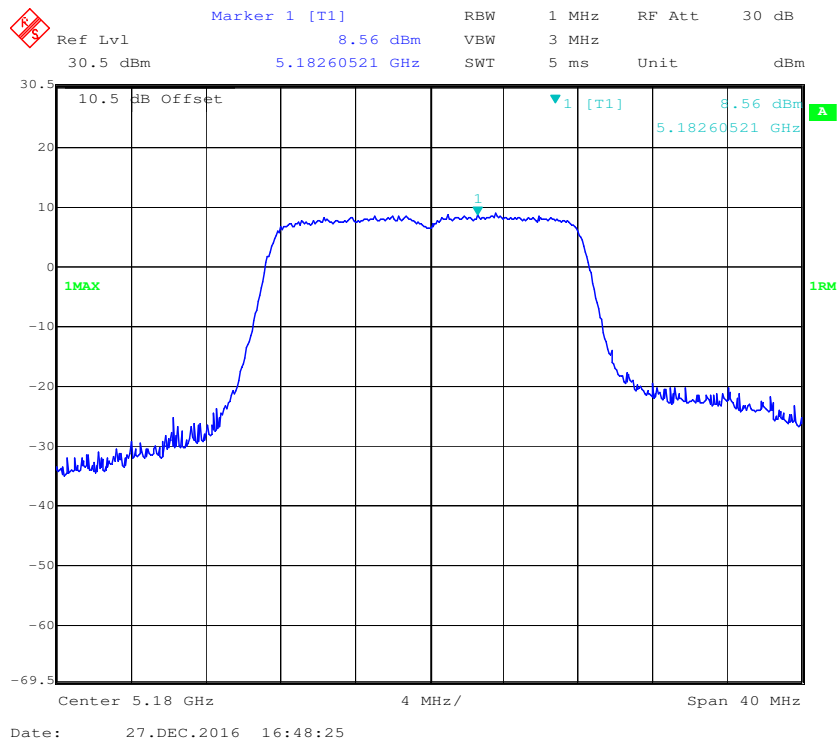
Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Sum Power spectral density (dBm/MHz) Chain0+Chain1	Limit (dBm)
802.11ac20				
5180	0	7.50	10.67	17
	1	7.82		
5200	0	7.68	11.04	
	1	8.36		
5240	0	8.31	11.39	
	1	8.45		
802.11ac40				
5190	0	5.45	8.37	17
	1	5.26		
5230	0	5.38	8.47	
	1	5.54		
802.11ac80				
5210	0	2.53+0.18 ^{note}	5.78	17
	1	2.64+0.18 ^{note}		

NOTE: The duty cycle of 802.11ac80 is 96%, the factor= $10\log(1/x)=0.18$

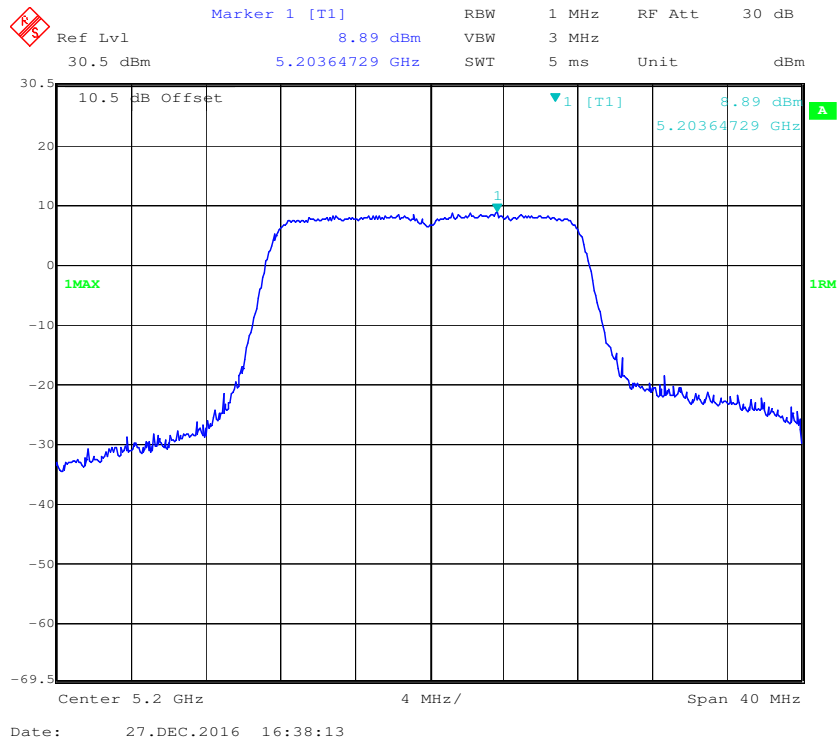
802.11a mode, Power Spectral Density, Antenn 0, 5180 MHz



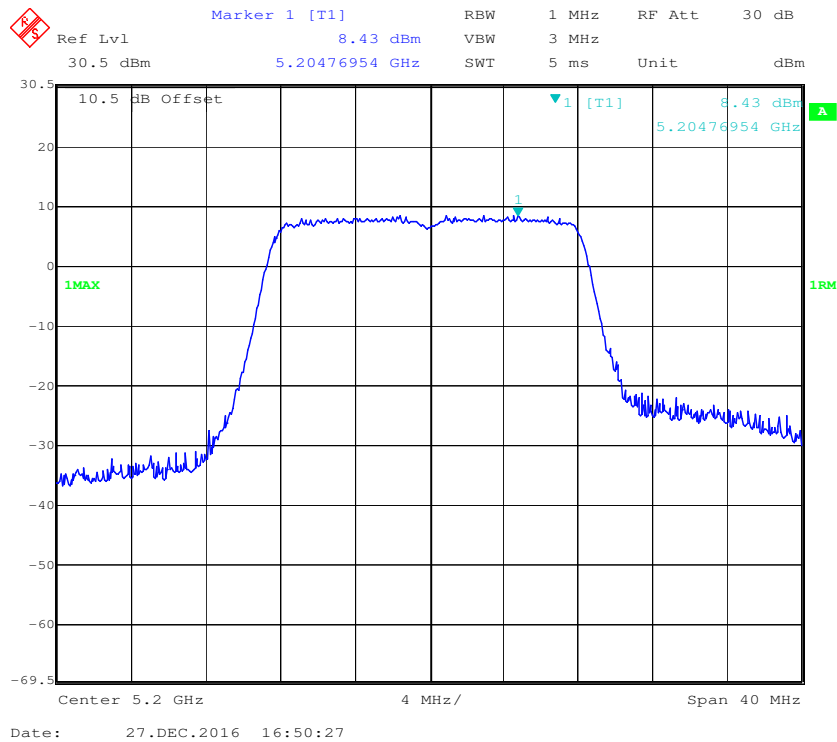
802.11a mode, Power Spectral Density, Antenn 1, 5180 MHz



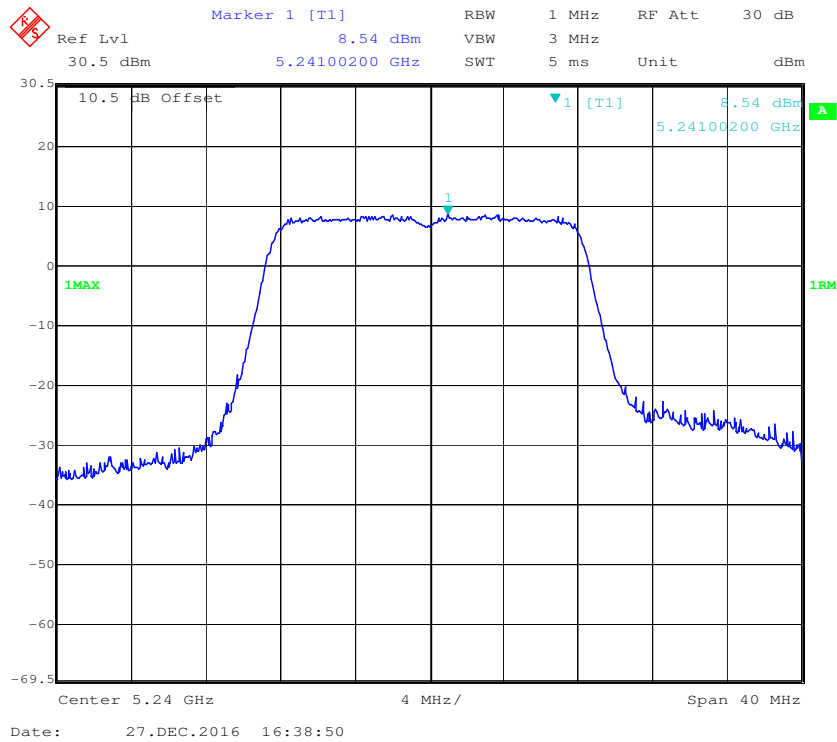
802.11a mode, Power Spectral Density, Antenn 0, 5200 MHz



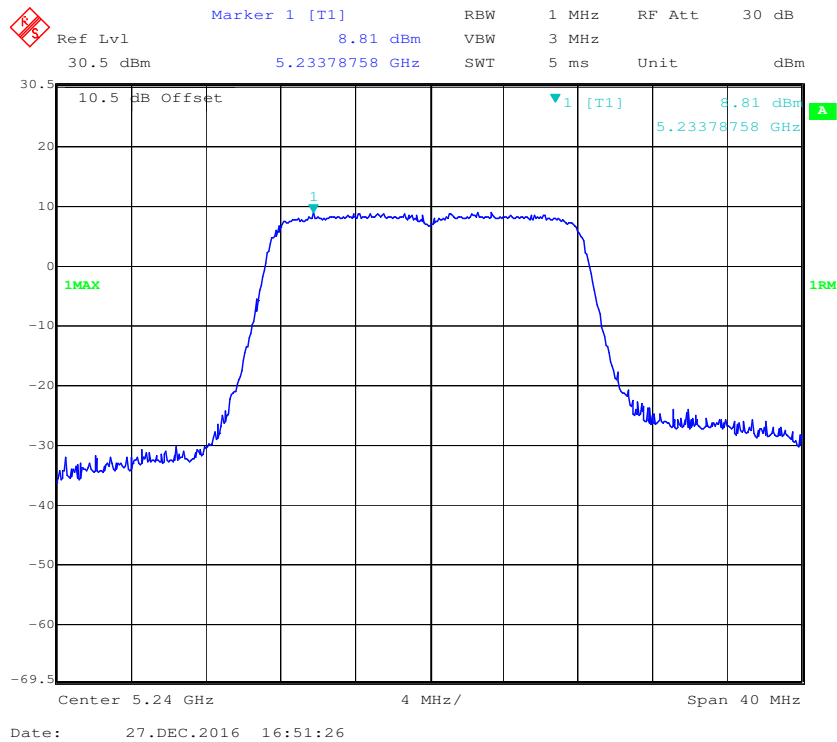
802.11a mode, Power Spectral Density, Antenn 1, 5200 MHz



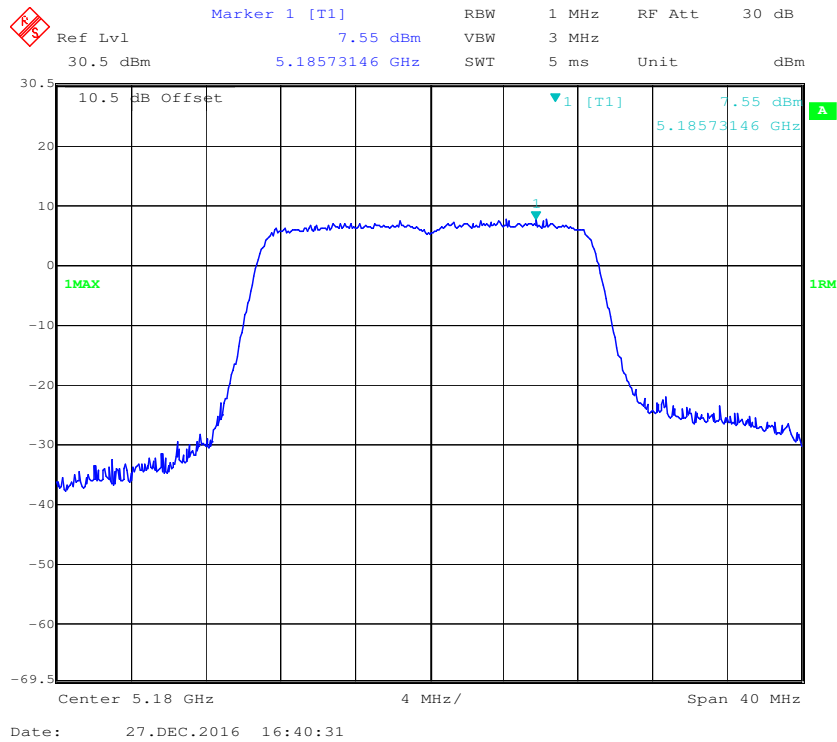
802.11a mode, Power Spectral Density, Antenn 0, 5240 MHz



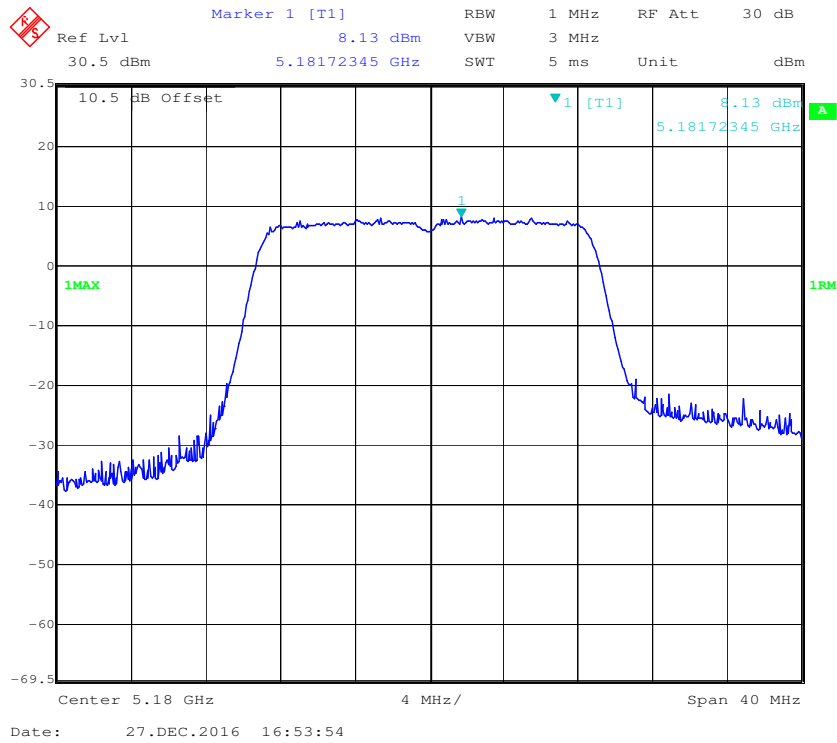
802.11a mode, Power Spectral Density, Antenn 1, 5240 MHz



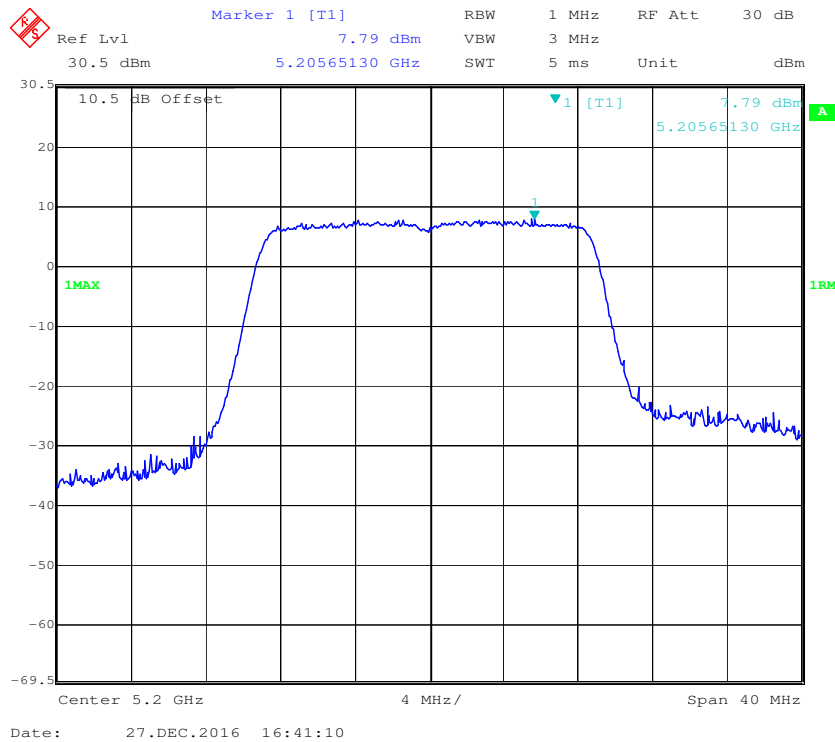
802.11n20 mode, Power Spectral Density, Antenn 0, 5180 MHz



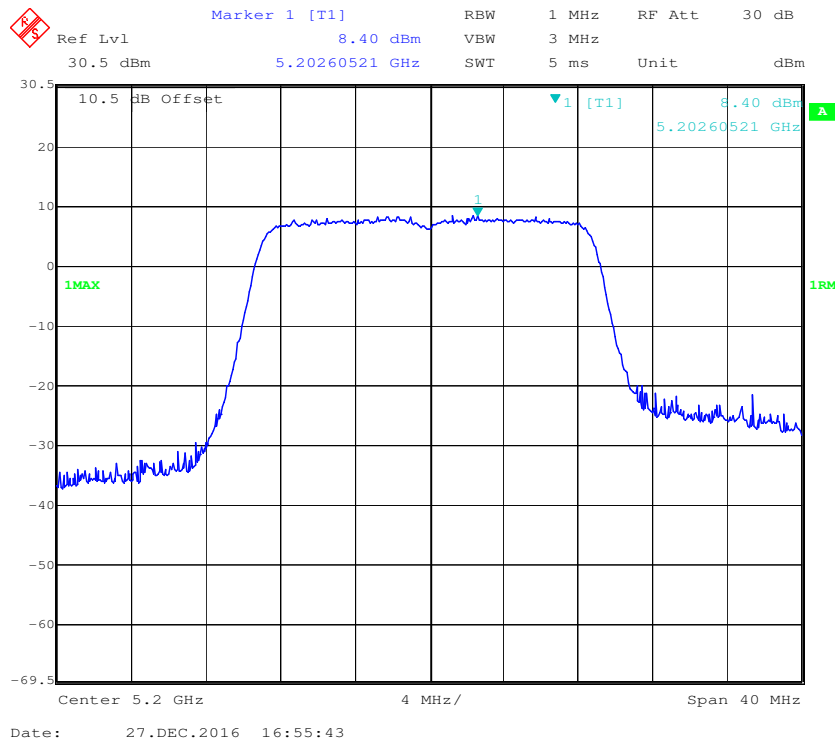
802.11n20 mode, Power Spectral Density, Antenn 1, 5180 MHz



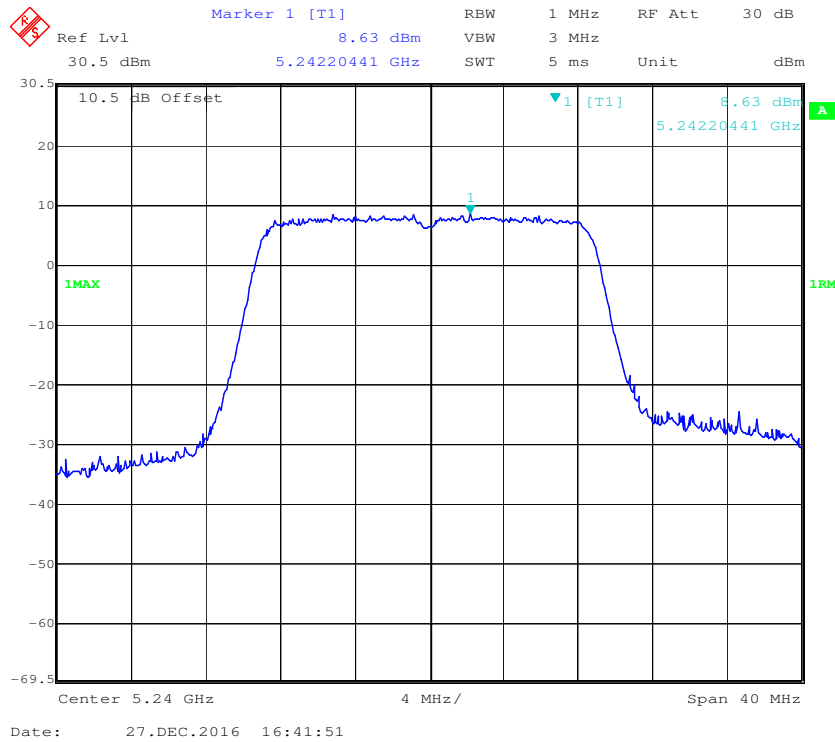
802.11n20 mode, Power Spectral Density, Antenn 0, 5200 MHz



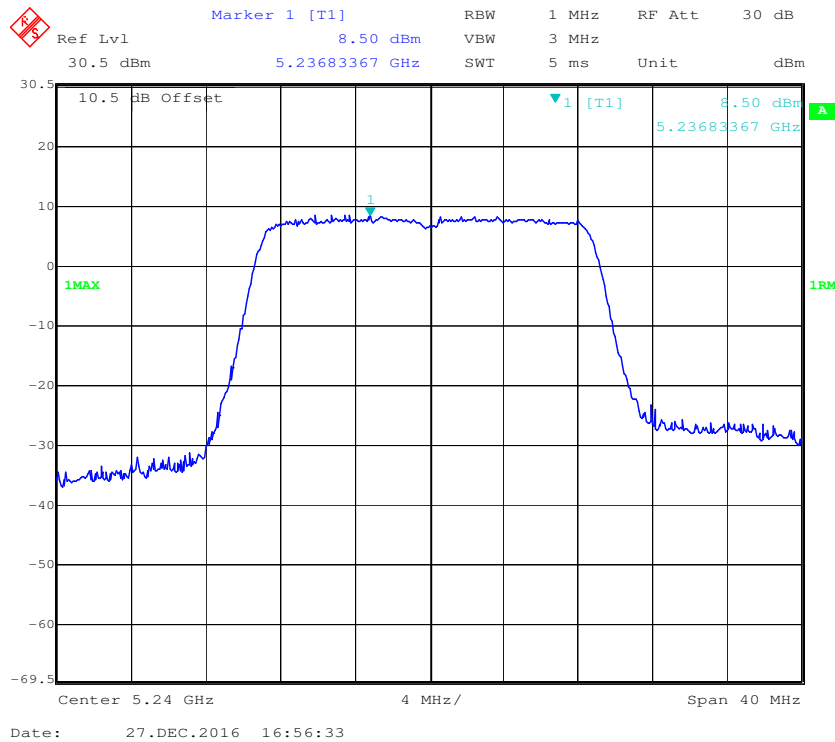
802.11n20 mode, Power Spectral Density, Antenn 1, 5200 MHz



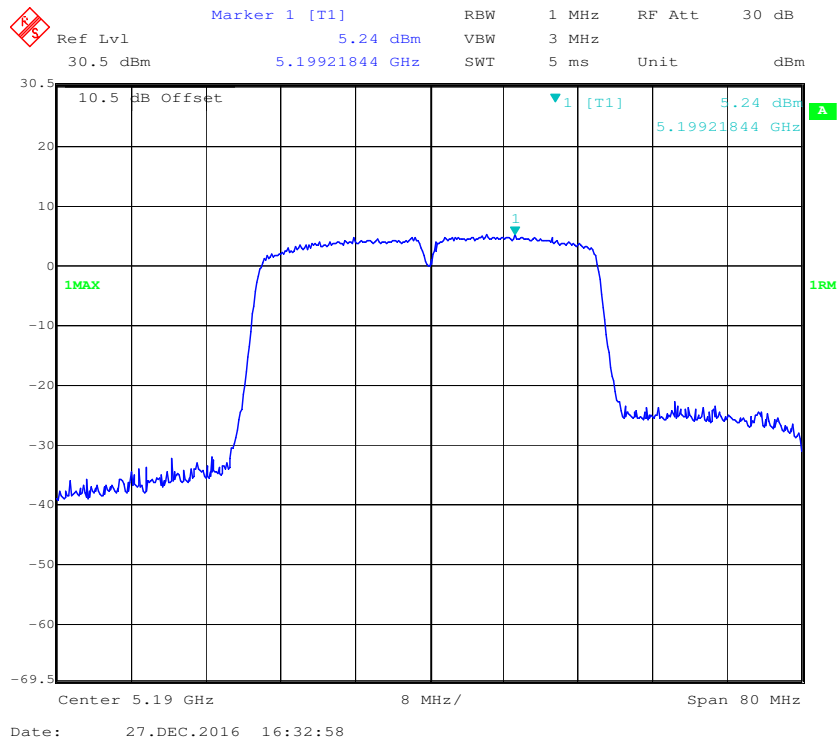
802.11n20 mode, Power Spectral Density, Antenn 0, 5240 MHz



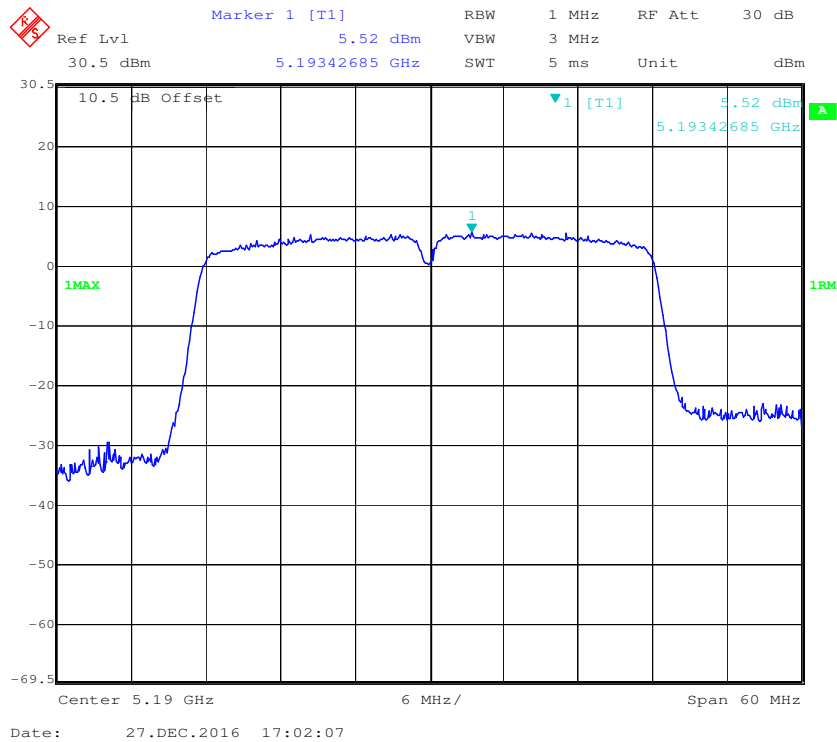
802.11n20 mode, Power Spectral Density, Antenn 1, 5240 MHz



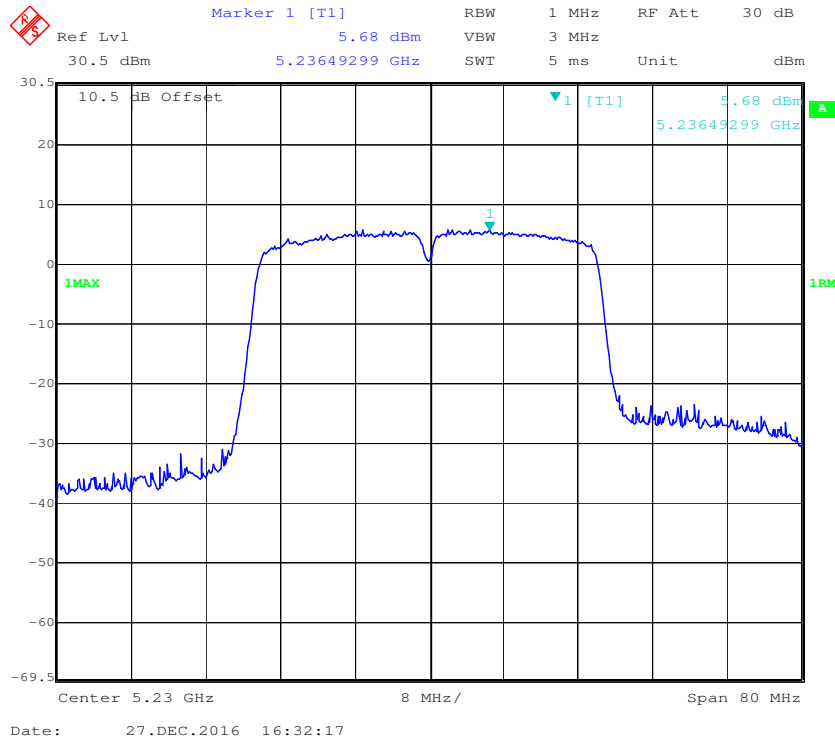
802.11n40 mode, Power Spectral Density, Antenn 0, 5190 MHz



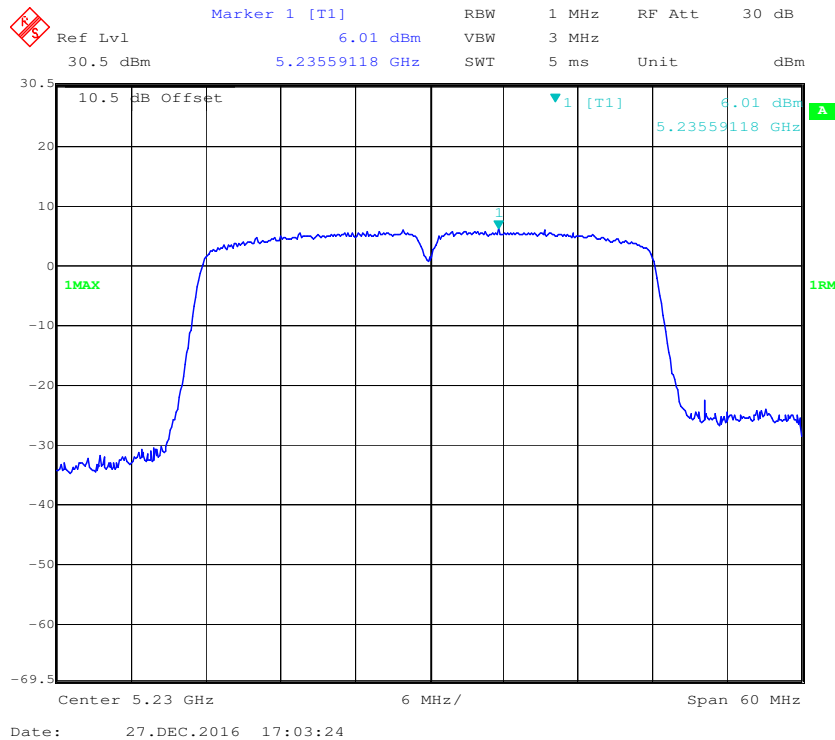
802.11n40 mode, Power Spectral Density, Antenn 1, 5190 MHz



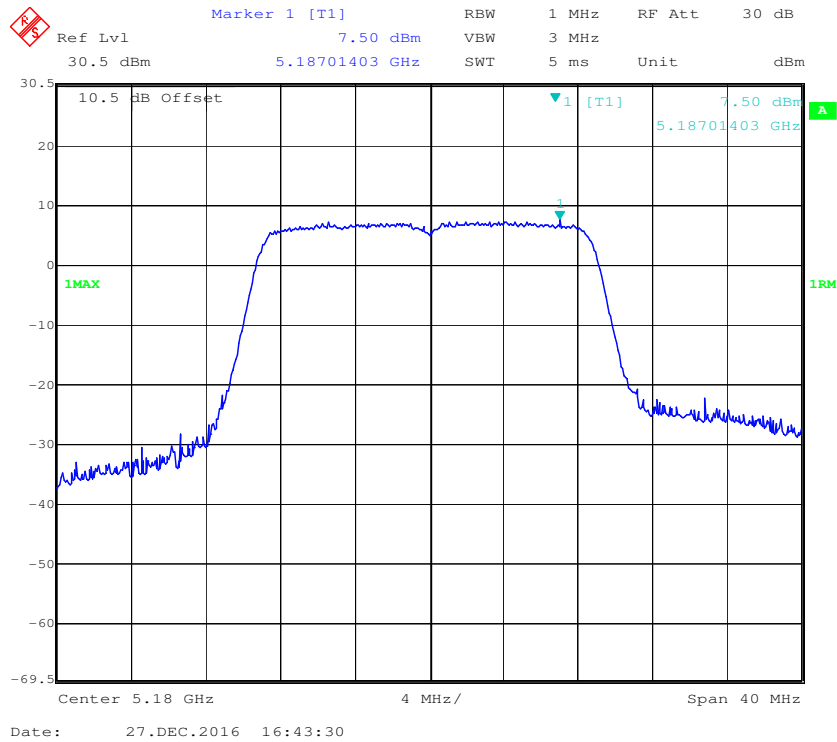
802.11n40 mode, Power Spectral Density, Antenn 0, 5230 MHz



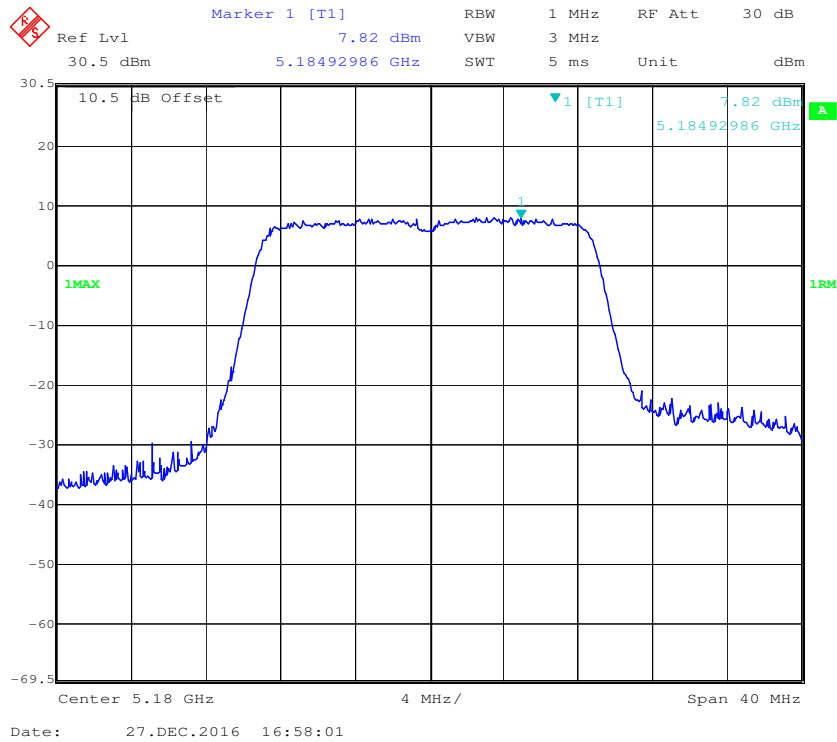
802.11n40 mode, Power Spectral Density, Antenn 1, 5230 MHz



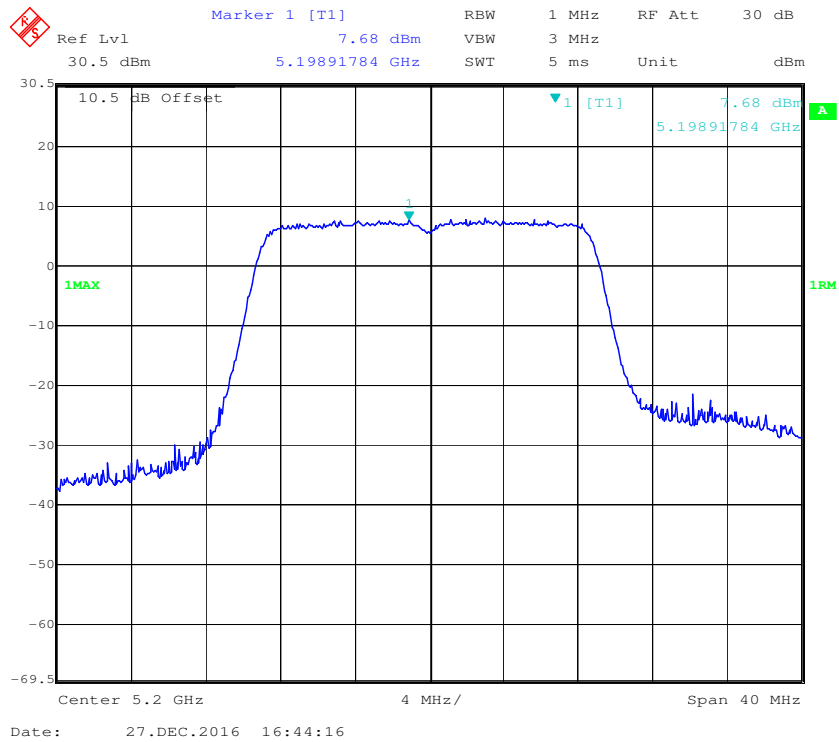
802.11ac20 mode, Power Spectral Density, Antenn 0, 5180 MHz



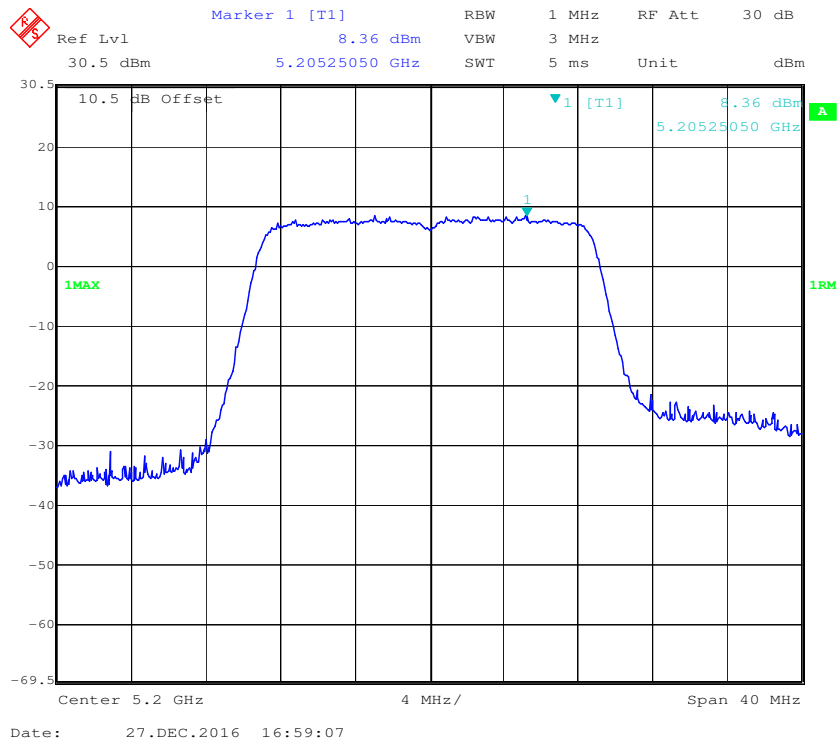
802.11ac20 mode, Power Spectral Density, Antenn 1, 5180 MHz



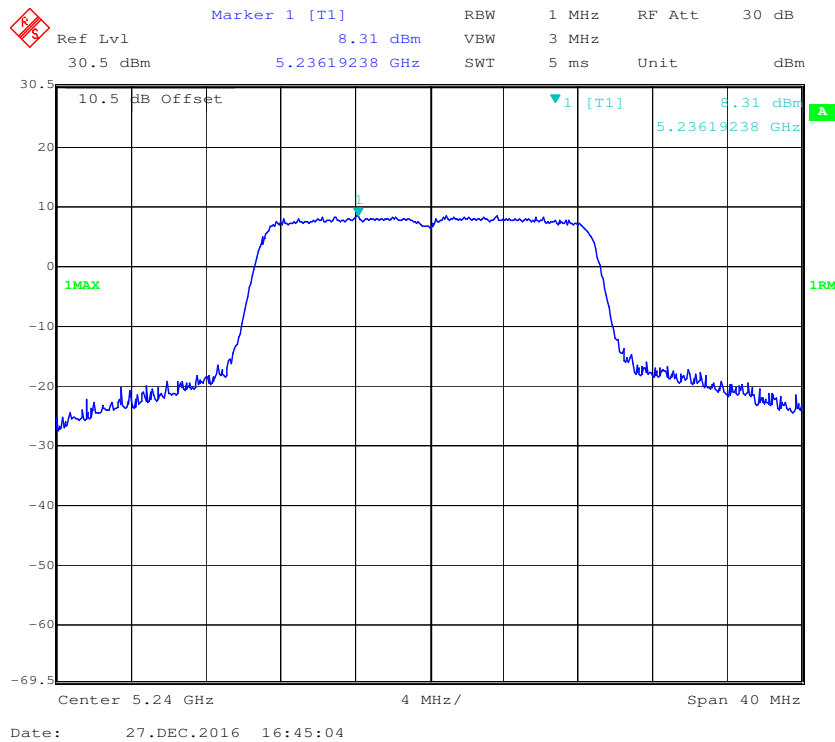
802. 11ac20 mode, Power Spectral Density, Antenn 0, 5200 MHz



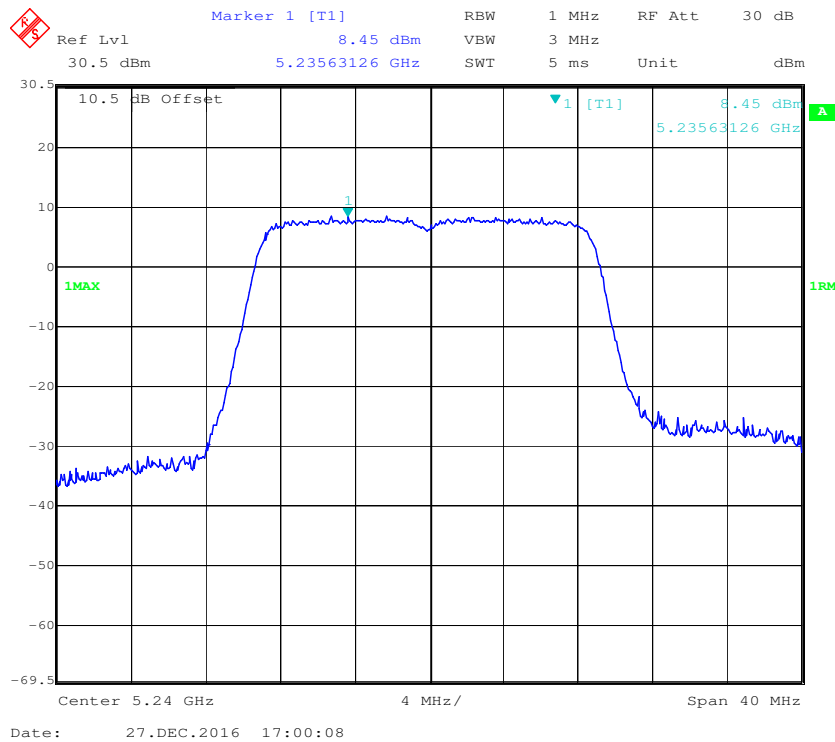
802. 11ac20 mode, Power Spectral Density, Antenn 1, 5200 MHz



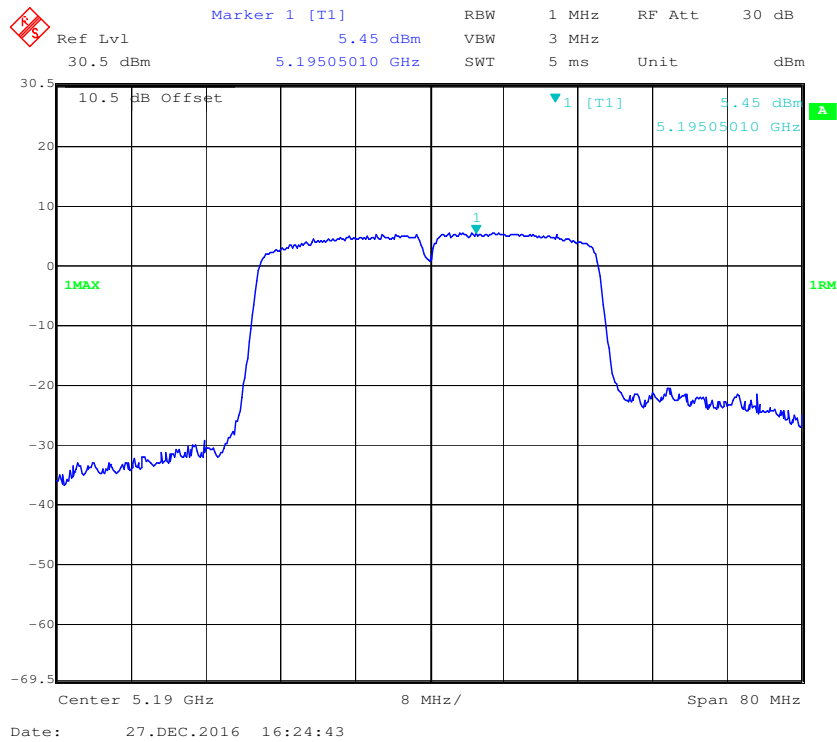
802.11ac20 mode, Power Spectral Density, Antenn 0, 5240 MHz



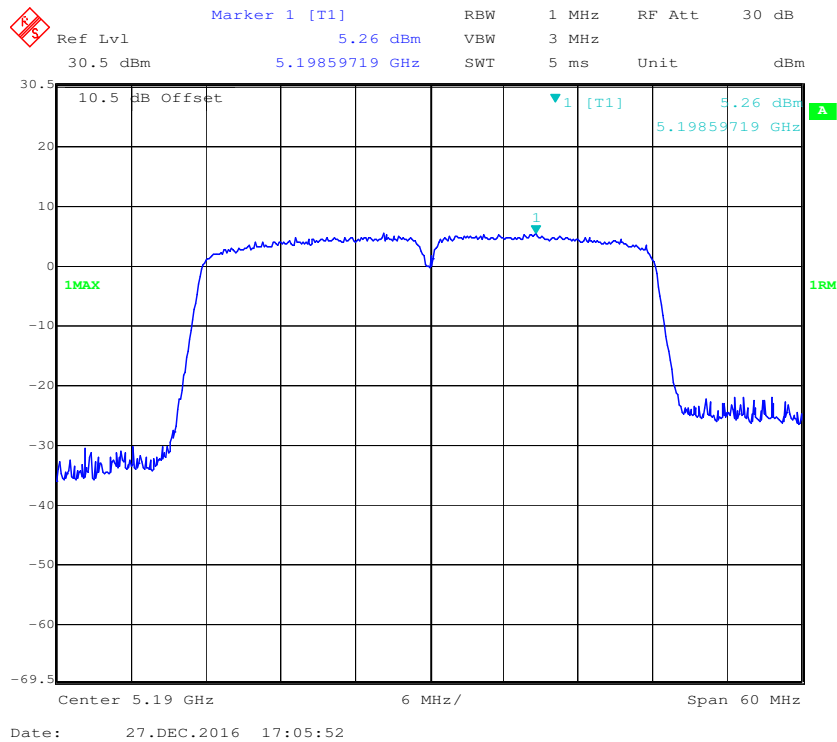
802.11ac20 mode, Power Spectral Density, Antenn 1, 5240 MHz

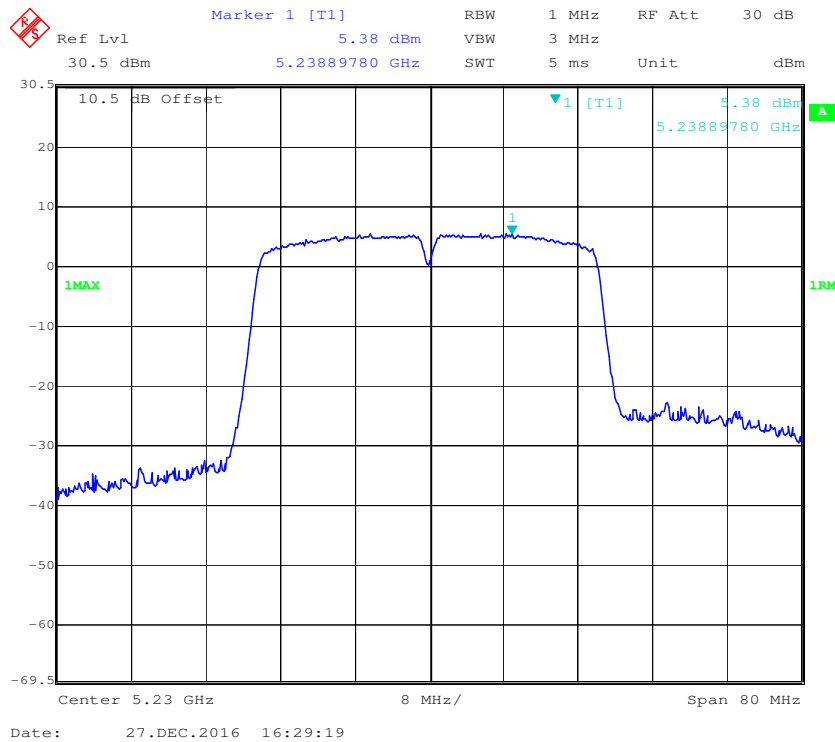
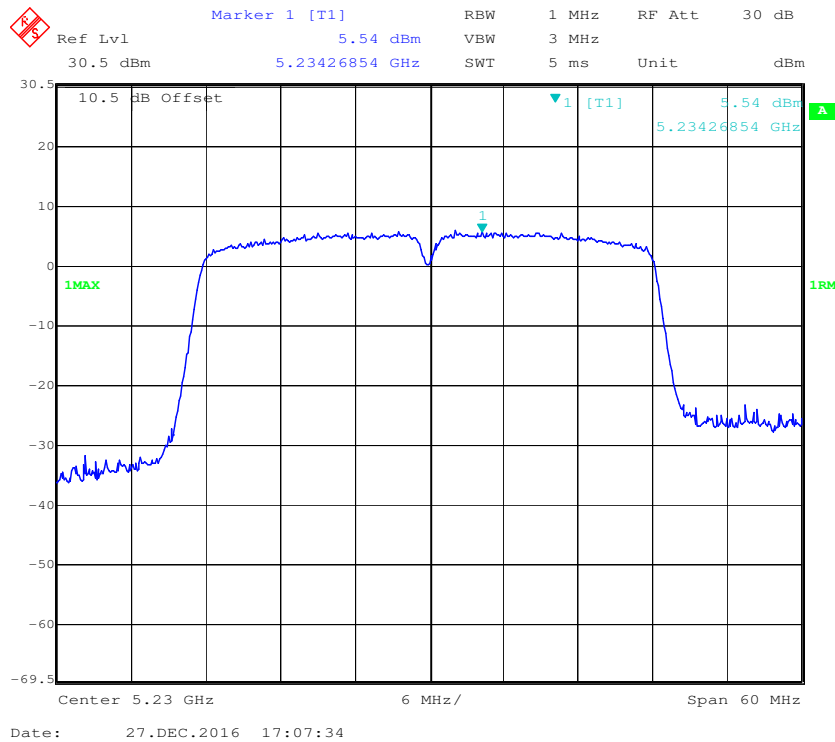


802. 11ac40 mode, Power Spectral Density, Antenn 0, 5190 MHz

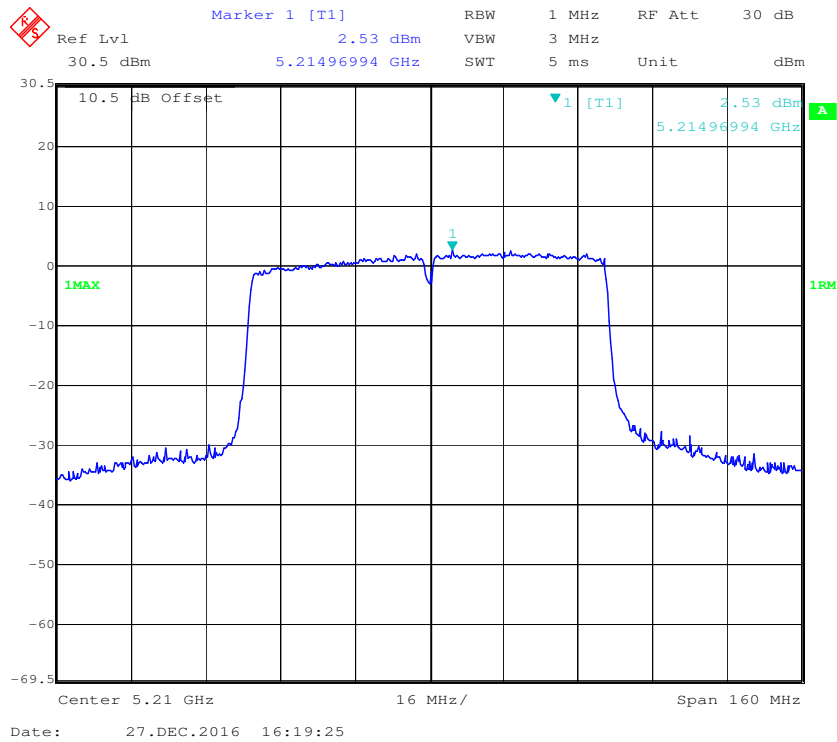


802. 11ac40 mode, Power Spectral Density, Antenn 1, 5190 MHz

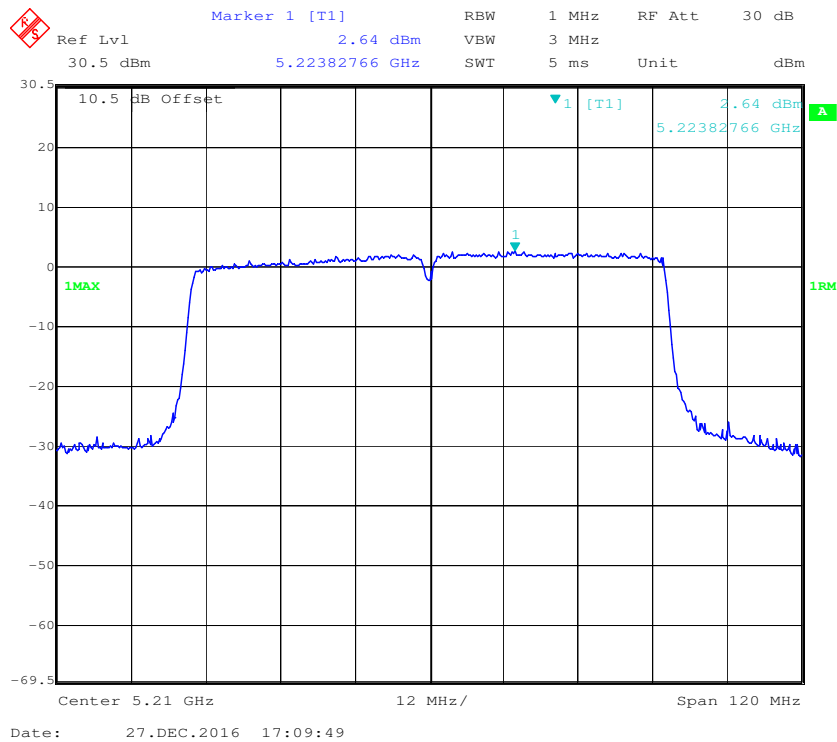


802. 11ac40 mode, Power Spectral Density, Antenn 0, 5230 MHz**802. 11ac40 mode, Power Spectral Density, Antenn 1, 5230 MHz**

802.11ac80 mode, Power Spectral Density, Antenn 0, 5210 MHz



802.11ac80 mode, Power Spectral Density, Antenn 1, 5210 MHz



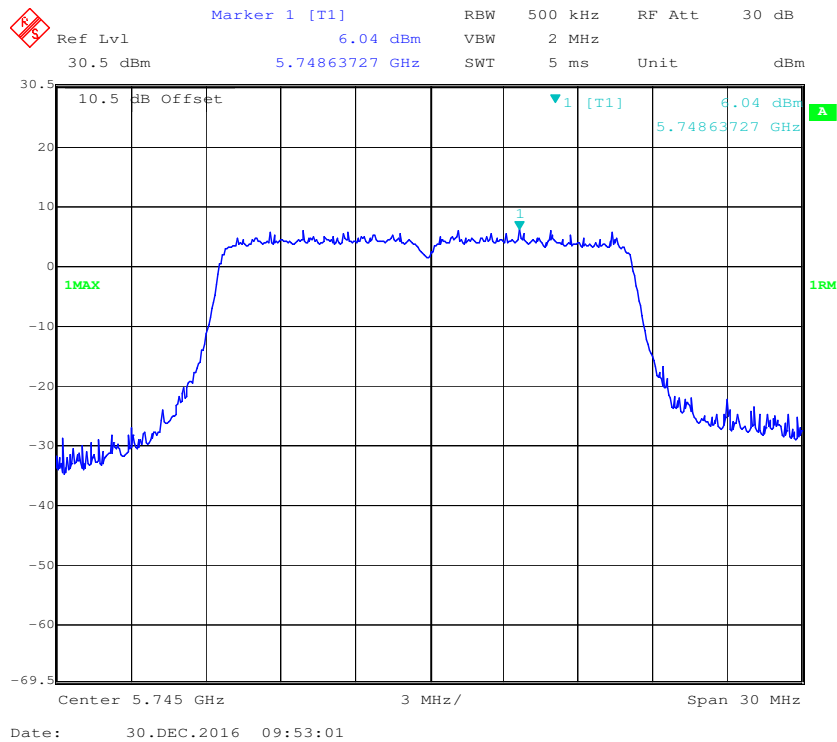
5725 MHz – 5825 MHz:

Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Sum Power spectral density (dBm/500kHz) Chain0+Chain1	Limit (dBm)
802.11a				
5745	0	6.04	8.86	30
	1	5.65		
5785	0	5.90	8.78	
	1	5.64		
5825	0	5.69	8.63	
	1	5.55		
802.11n20				
5745	0	5.95	8.75	30
	1	5.52		
5785	0	5.46	8.57	
	1	5.65		
5825	0	5.32	8.37	
	1	5.40		
802.11n40				
5755	0	4.69	7.49	30
	1	4.26		
5795	0	4.73	7.69	
	1	4.62		

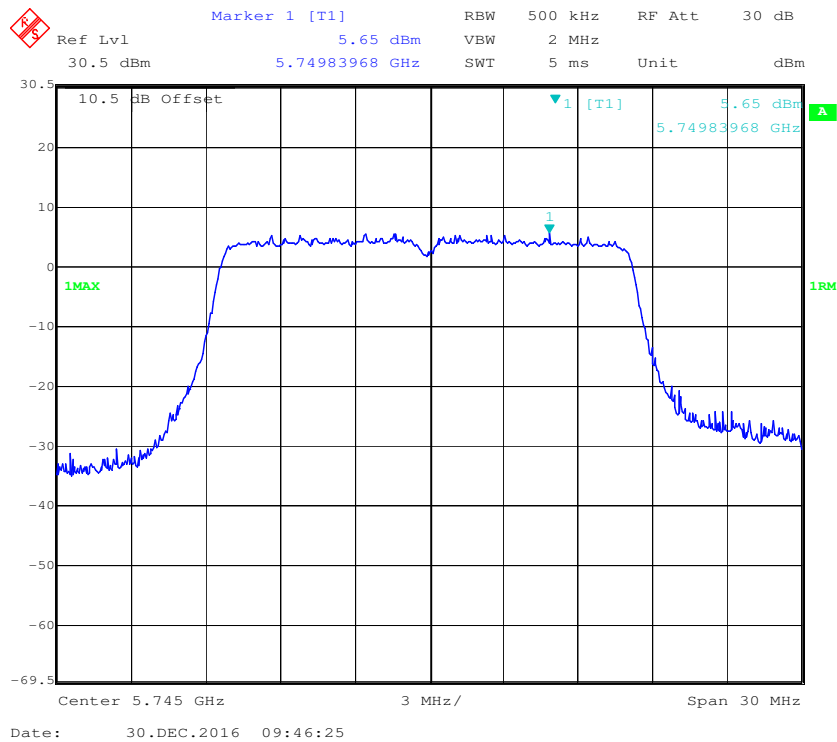
Frequency (MHz)	Antenna Port	Power Spectral Density (dBm/MHz)	Sum Power spectral density (dBm/500kHz) Chain0+Chain1	Limit (dBm)
802.11ac20				
5745	0	5.47	8.66	30
	1	5.82		
5785	0	5.86	8.92	
	1	5.95		
5825	0	5.78	8.87	
	1	5.93		
802.11ac40				
5755	0	4.52	7.58	30
	1	4.61		
5795	0	4.72	7.57	
	1	4.40		
802.11ac80				
5775	0	1.62+0.18 ^{note}	4.64	30
	1	1.28+0.18 ^{note}		

NOTE: The duty cycle of 802.11ac80 is 96%, the factor= $10\log(1/x)=0.18$

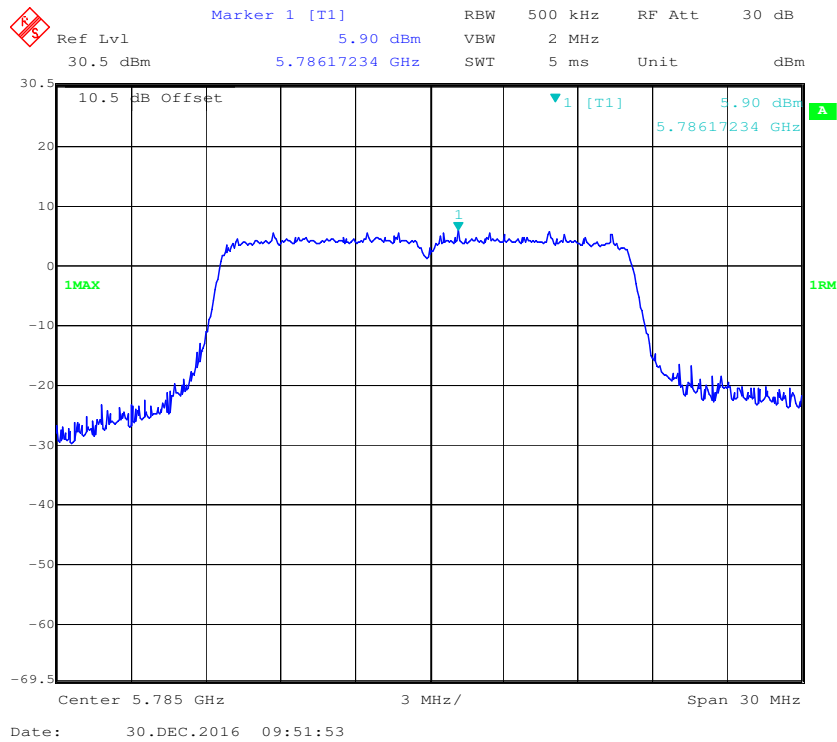
802.11a mode, Power Spectral Density, Antenn 0, 5745 MHz



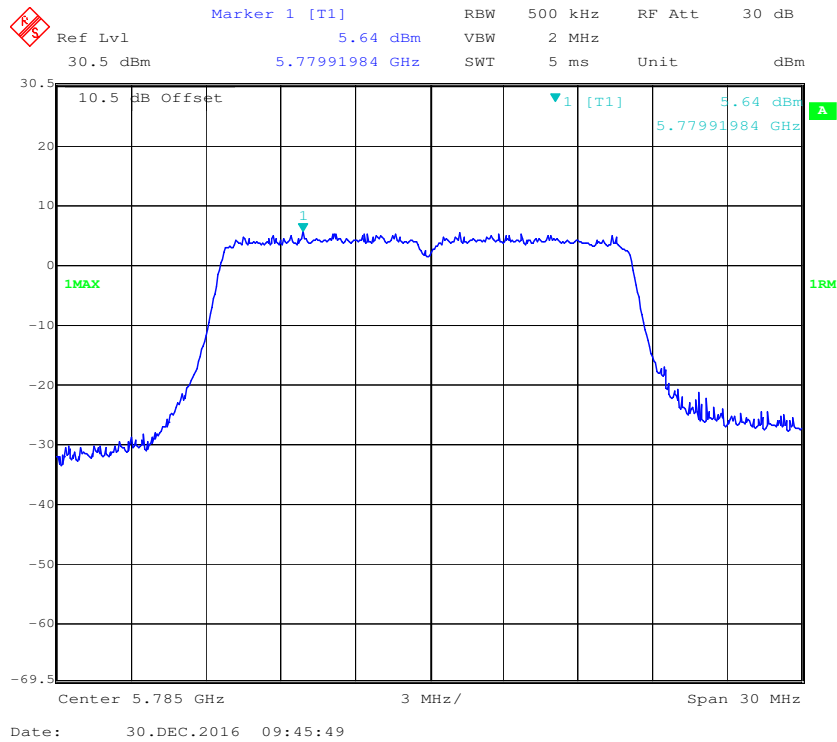
802.11a mode, Power Spectral Density, Antenn 1, 5745 MHz

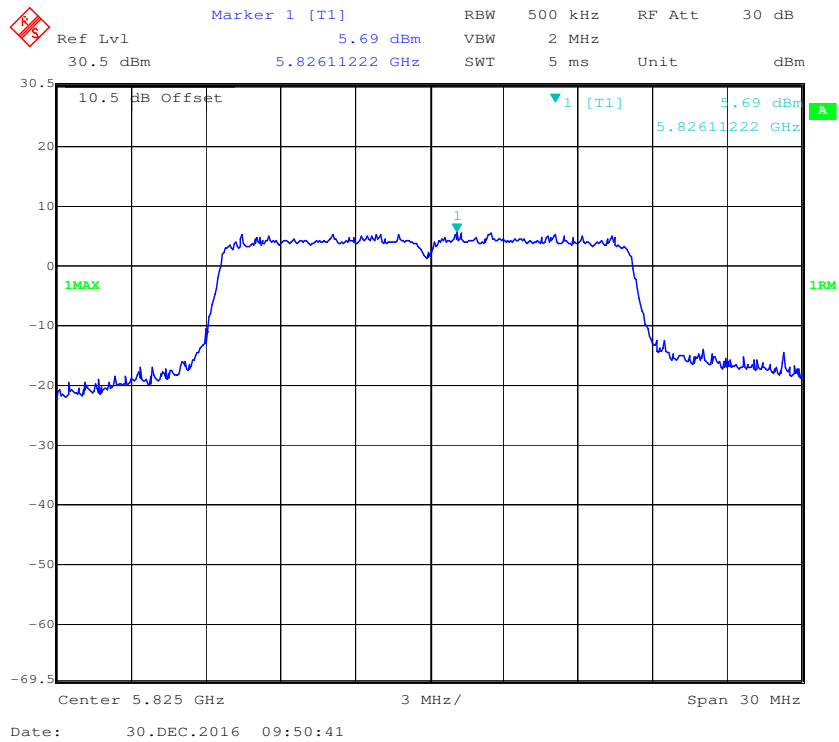
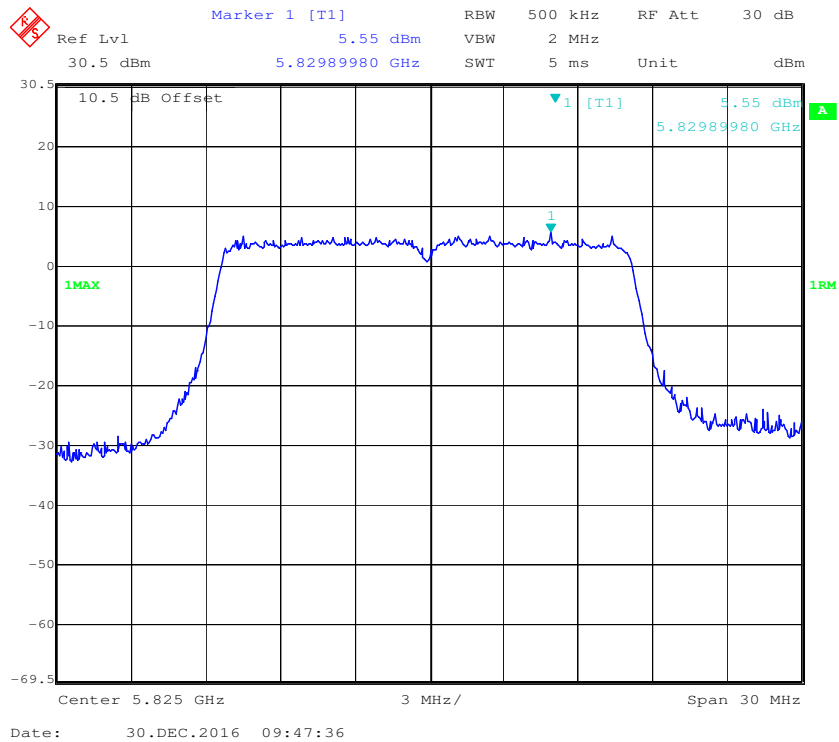


802.11a mode, Power Spectral Density, Antenn 0, 5785 MHz

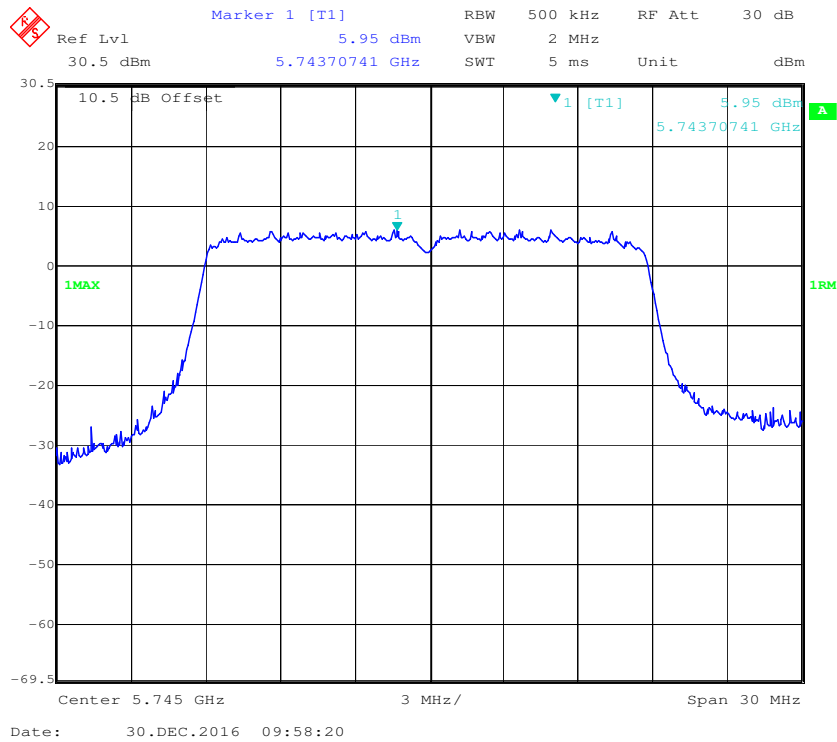


802.11a mode, Power Spectral Density, Antenn 1, 5785 MHz

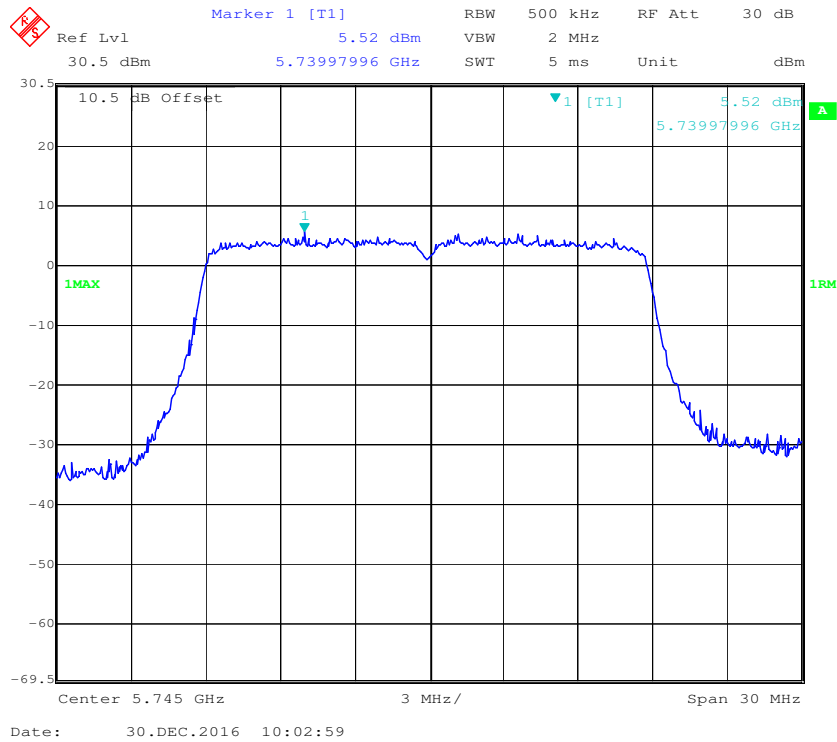


802.11a mode, Power Spectral Density, Antenn 0, 5825 MHz**802.11a mode, Power Spectral Density, Antenn 1, 5825 MHz**

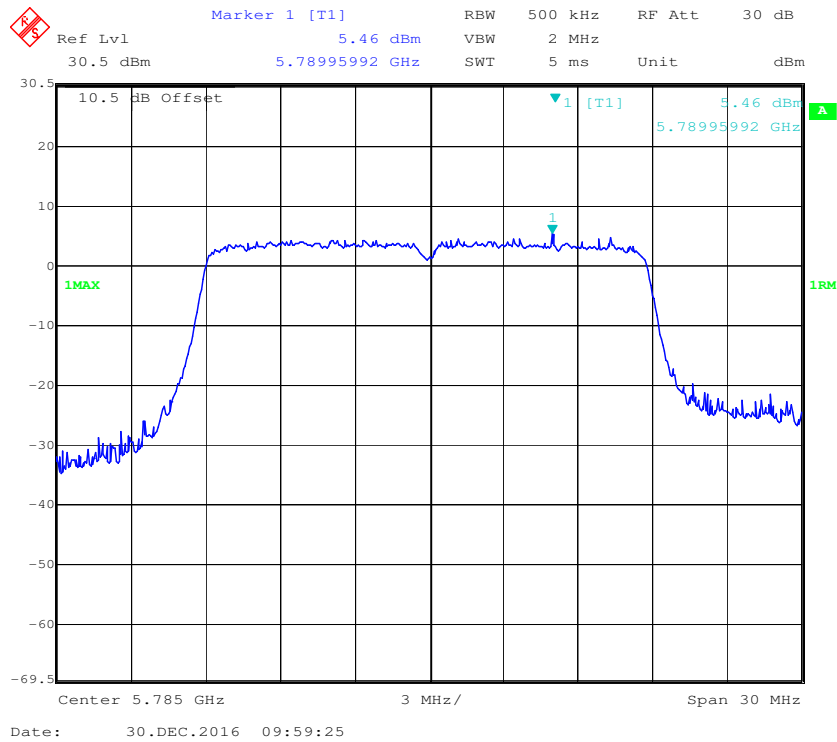
802.11n20 mode, Power Spectral Density, Antenn 0, 5745 MHz



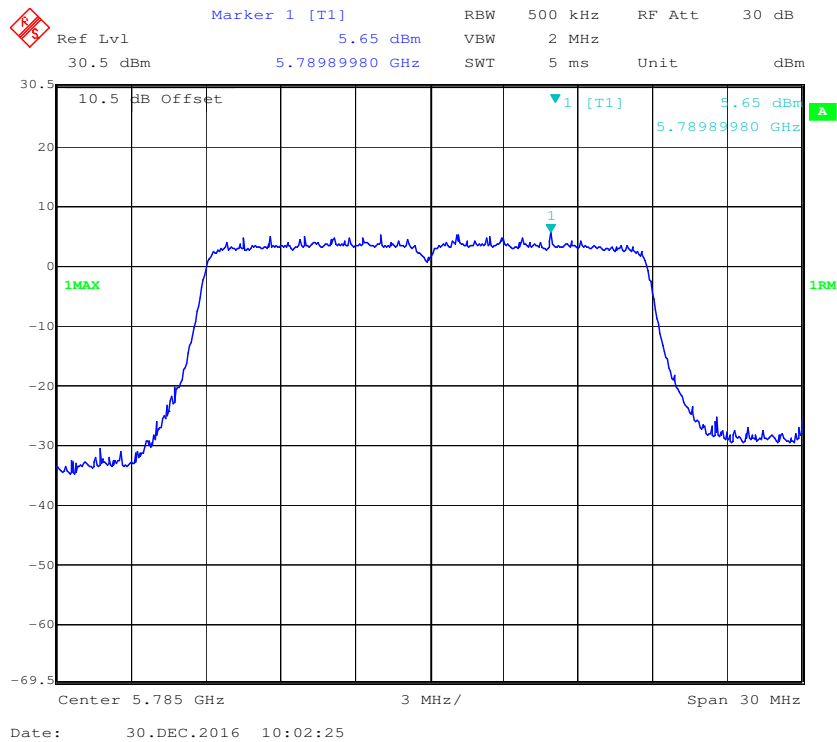
802.11n20 mode, Power Spectral Density, Antenn 1, 5745 MHz



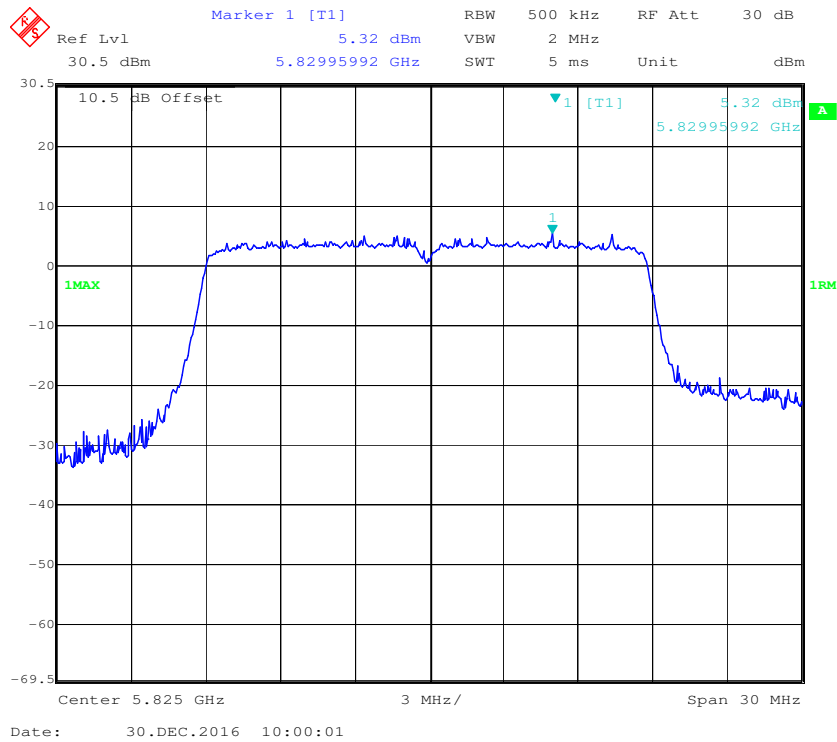
802.11n20 mode, Power Spectral Density, Antenn 0, 5785 MHz



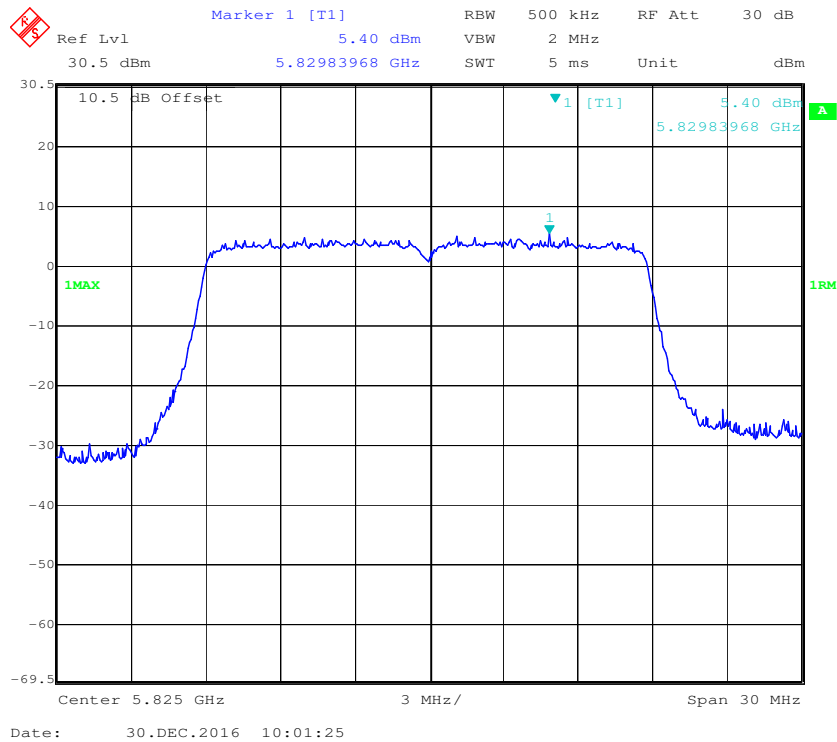
802.11n20 mode, Power Spectral Density, Antenn 1, 5785 MHz



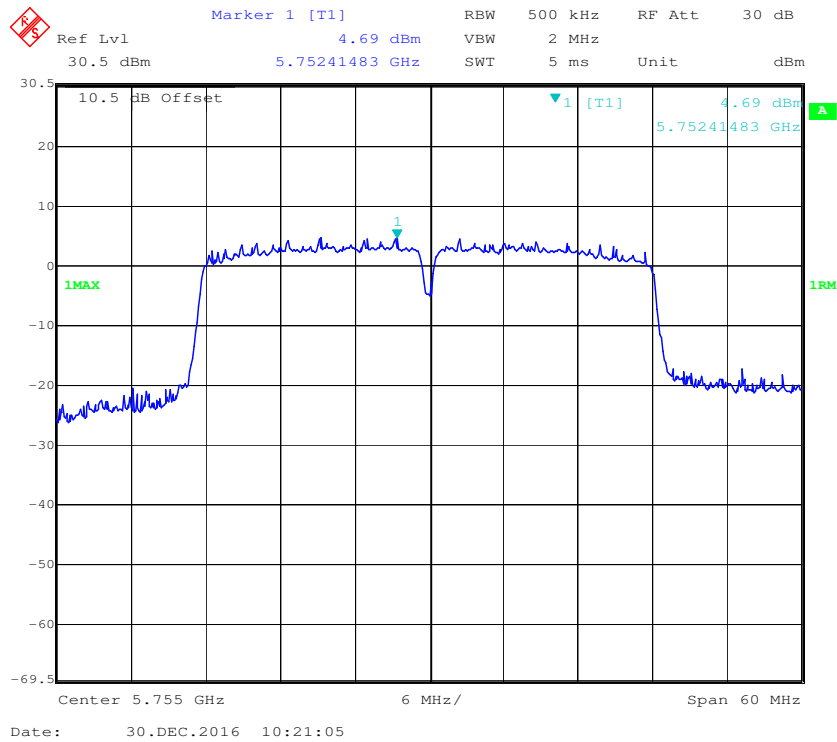
802.11n20 mode, Power Spectral Density, Antenn 0, 5825 MHz



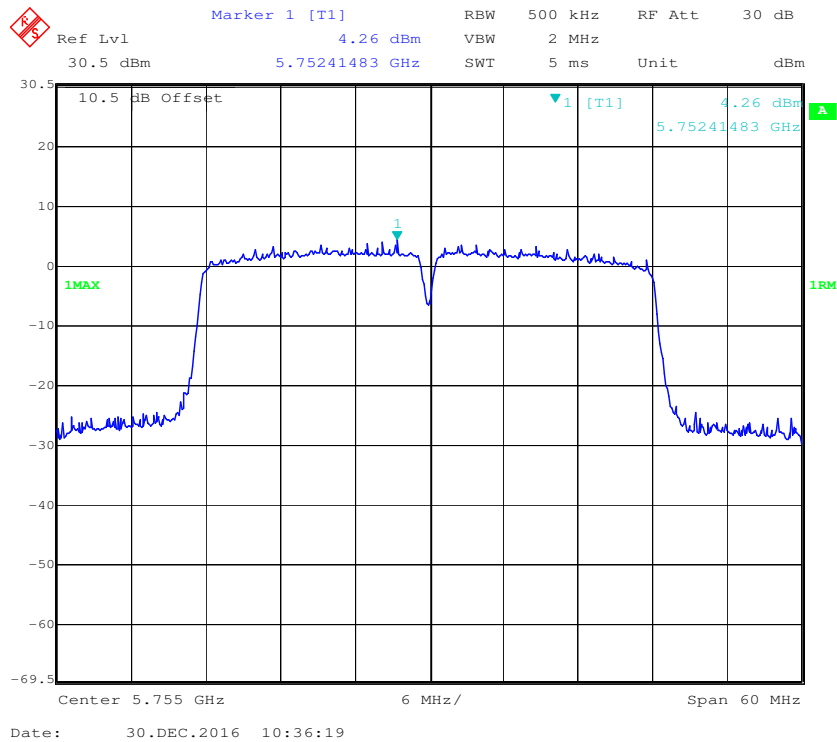
802.11n20 mode, Power Spectral Density, Antenn 1, 5825 MHz



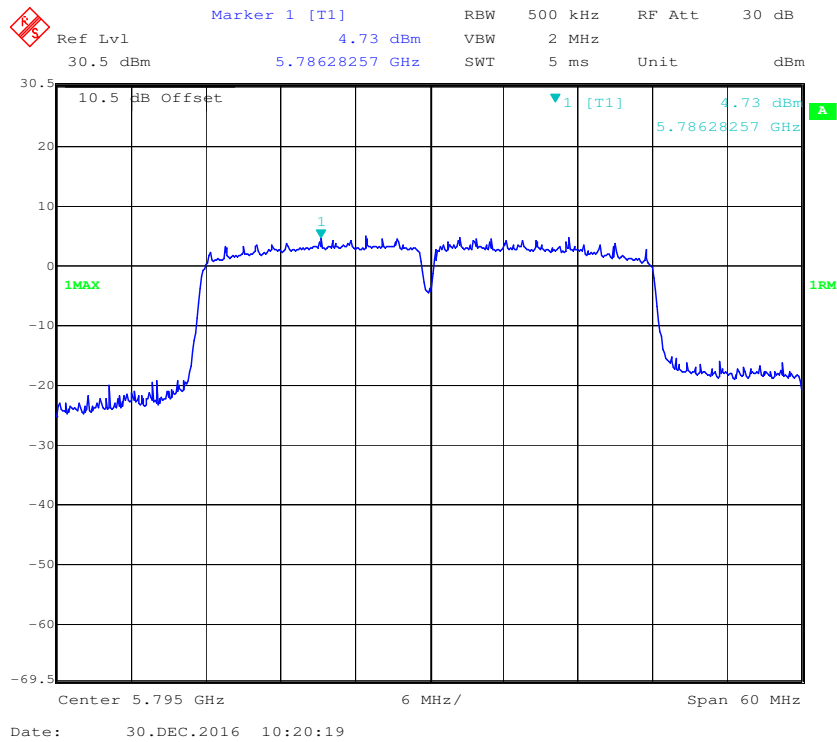
802.11n40 mode, Power Spectral Density, Antenn 0, 5755 MHz



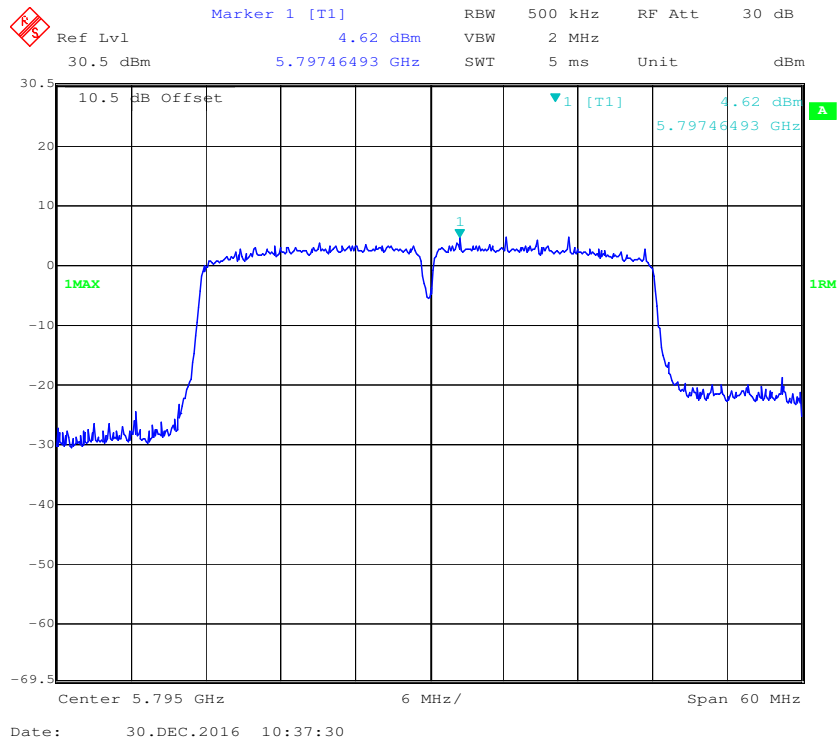
802.11n40 mode, Power Spectral Density, Antenn 1, 5755 MHz



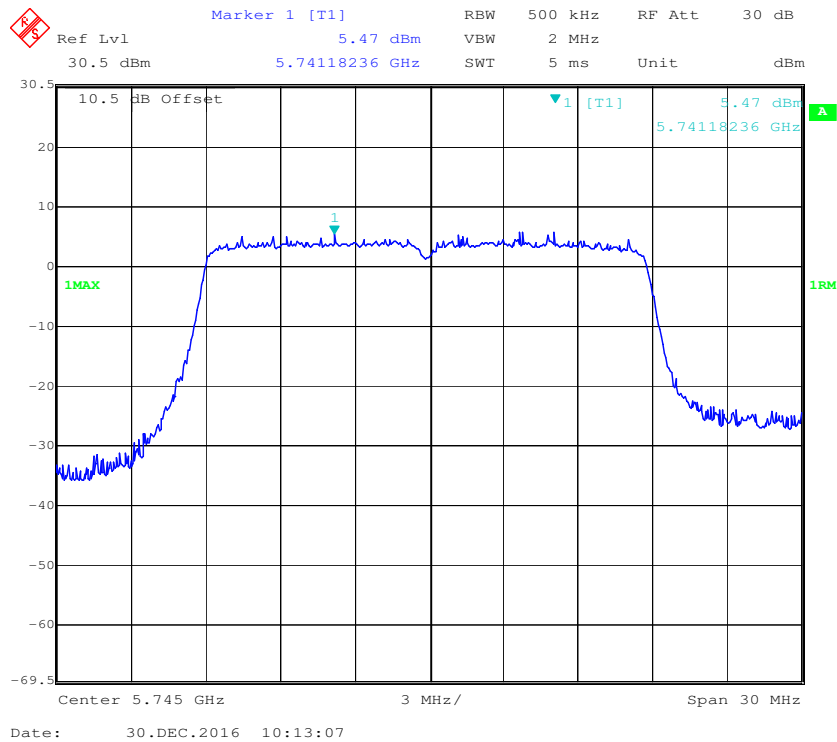
802.11n40 mode, Power Spectral Density, Antenn 0, 5795 MHz



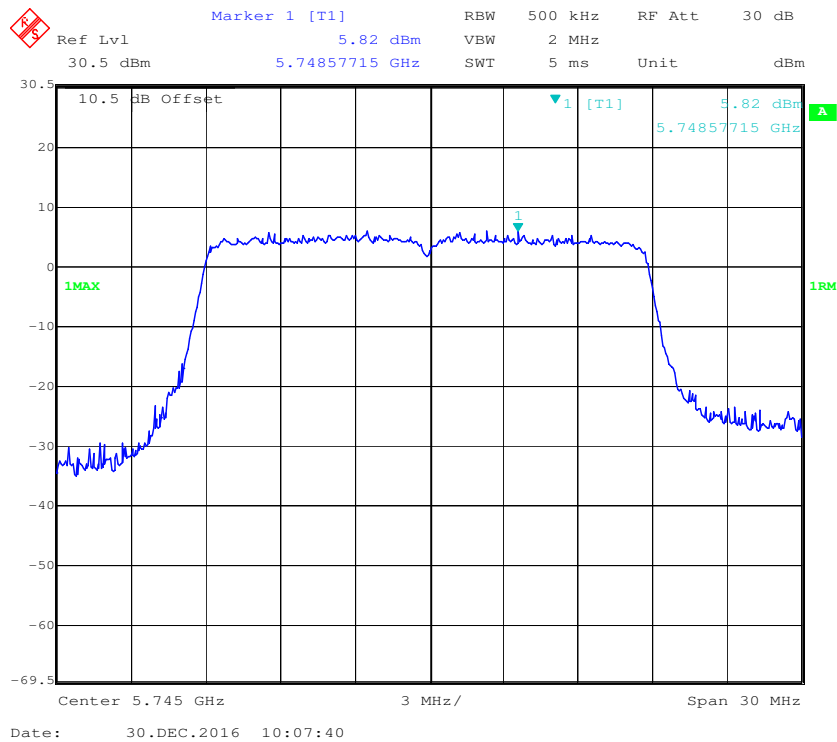
802.11n40 mode, Power Spectral Density, Antenn 1, 5795 MHz



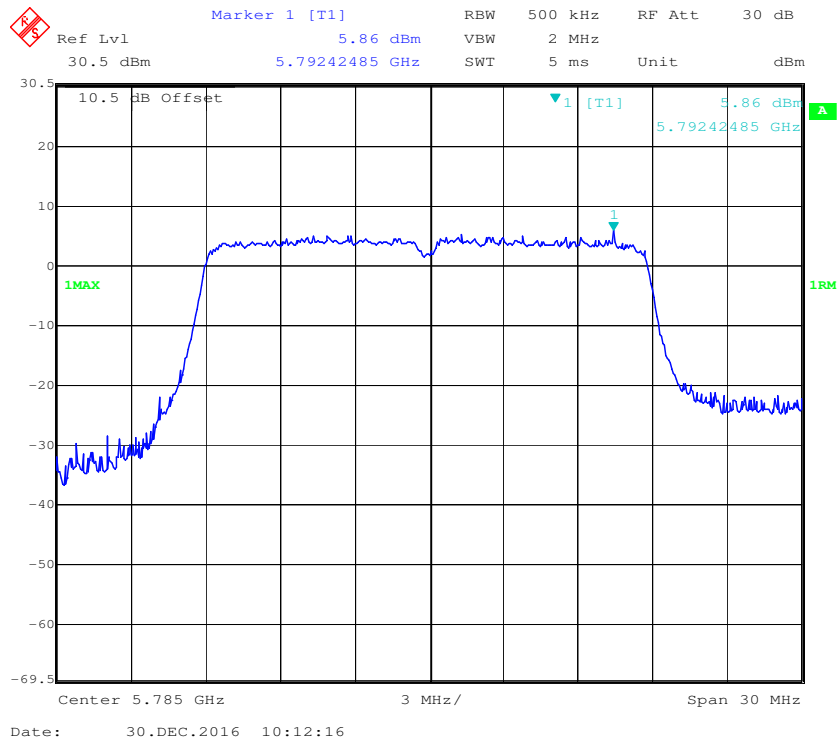
802.11ac20 mode, Power Spectral Density, Antenn 0, 5745 MHz



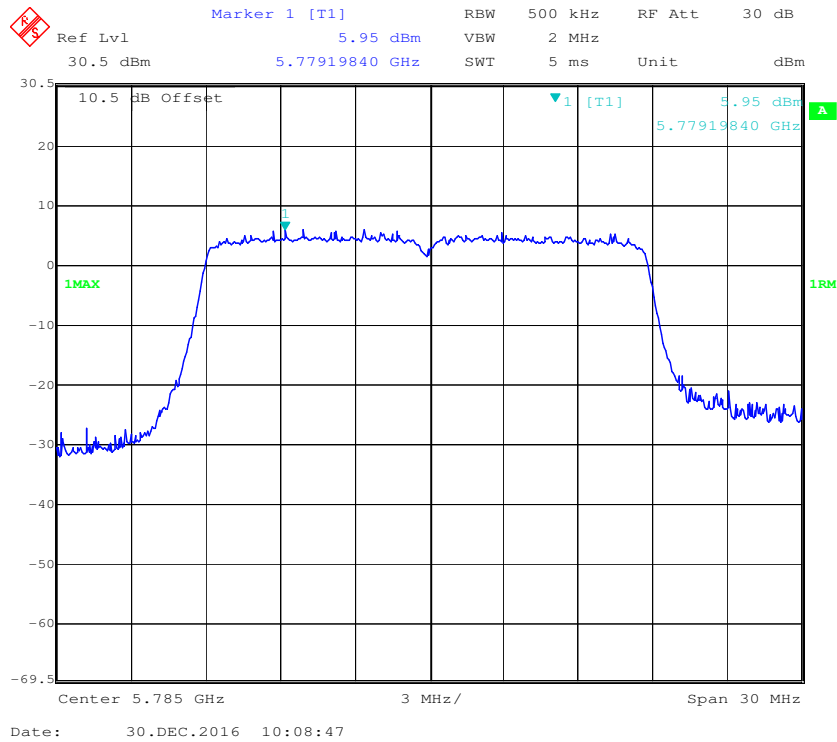
802.11ac20 mode, Power Spectral Density, Antenn 1, 5745 MHz

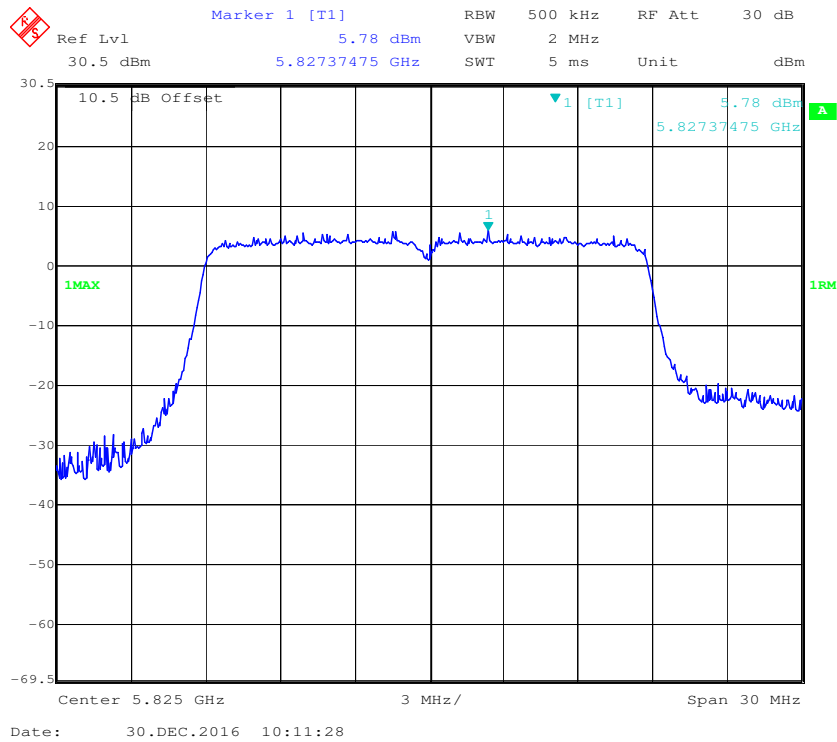
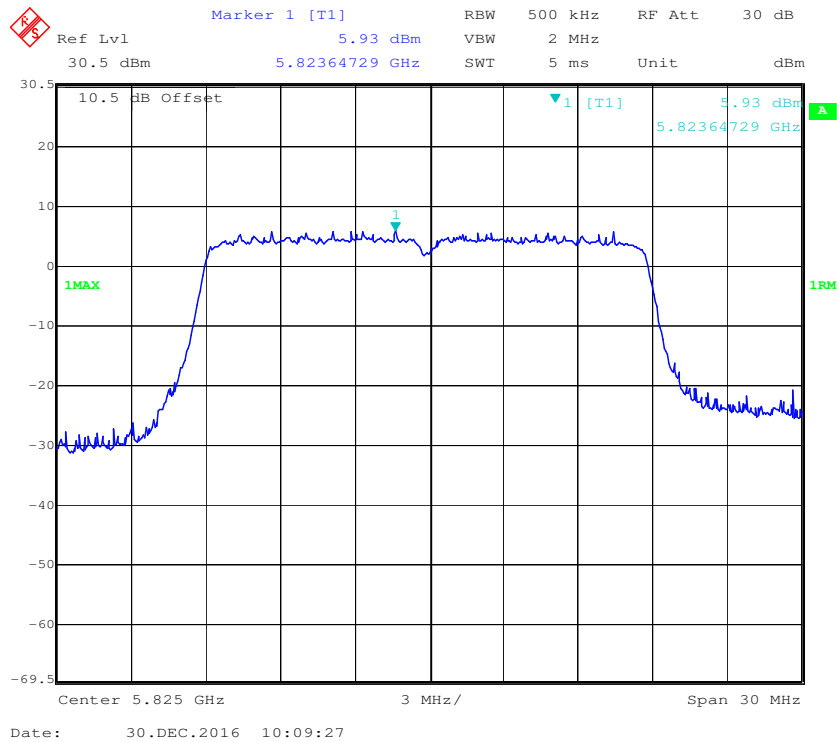


802. 11ac20 mode, Power Spectral Density, Antenn 0, 5785 MHz

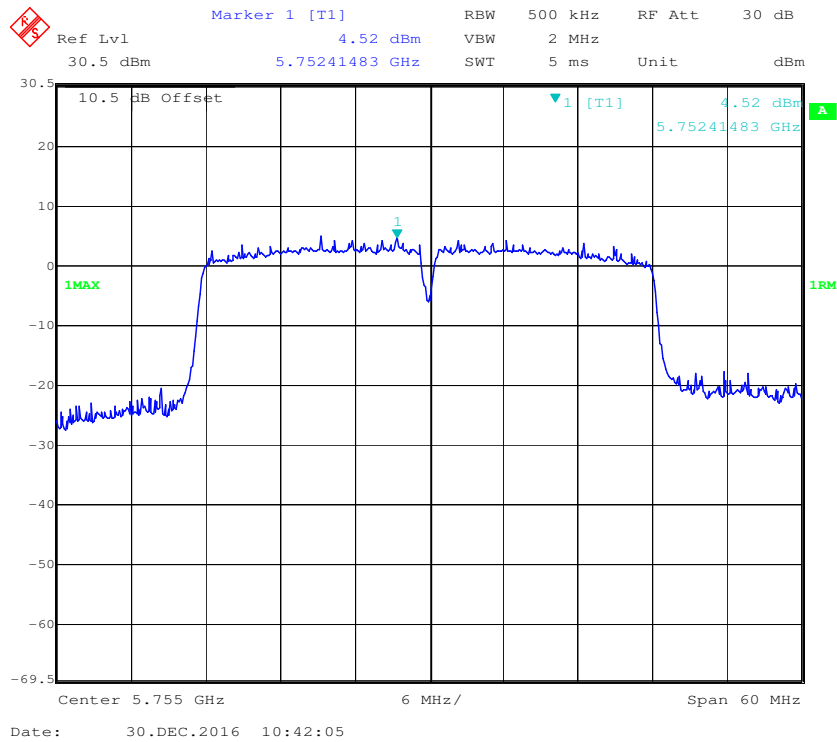


802. 11ac20 mode, Power Spectral Density, Antenn 1, 5785 MHz

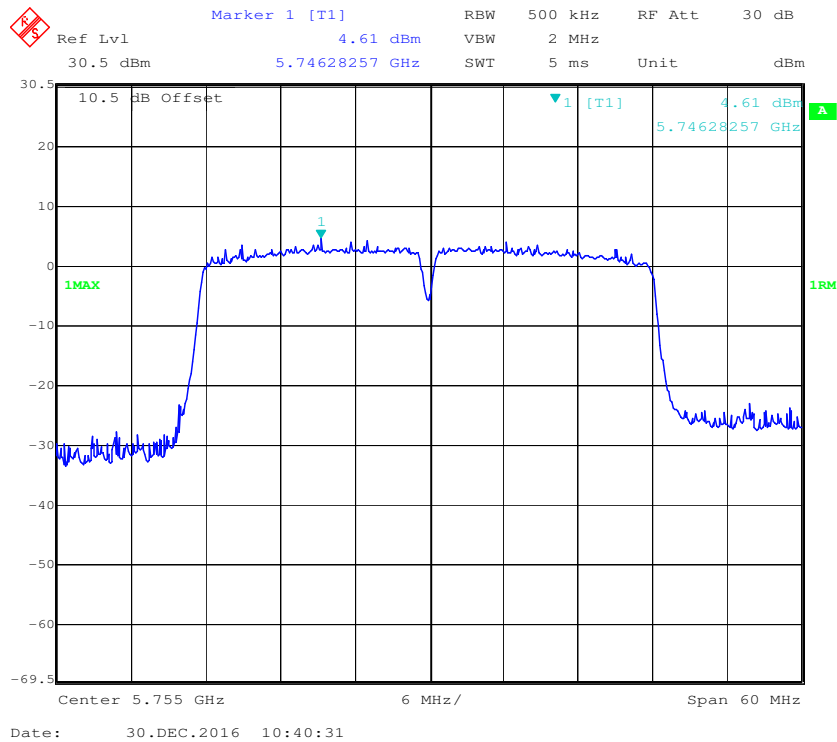


802. 11ac20 mode, Power Spectral Density, Antenn 0, 5825 MHz**802. 11ac20 mode, Power Spectral Density, Antenn 1, 5825 MHz**

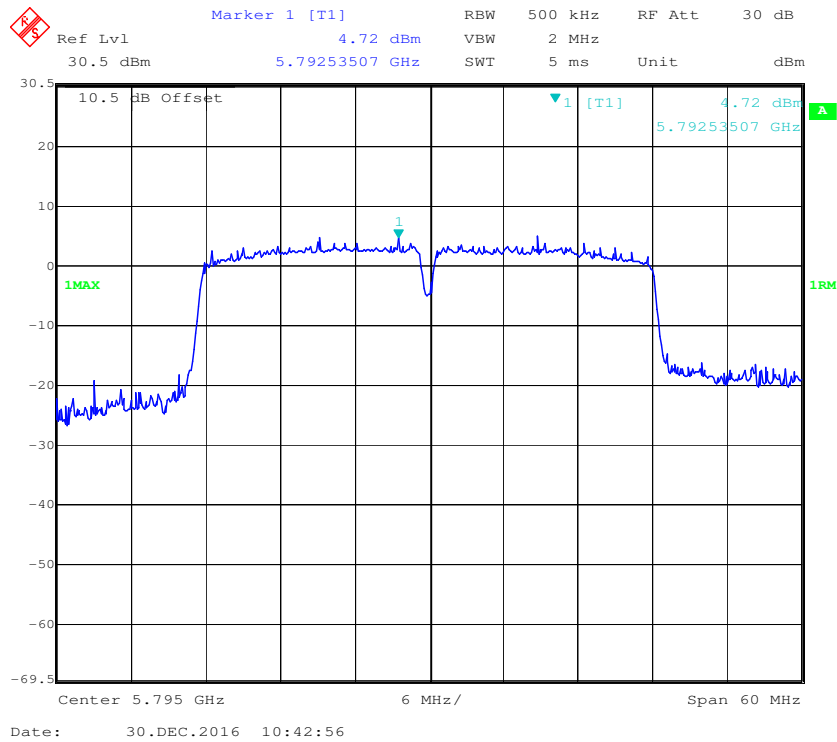
802. 11ac40 mode, Power Spectral Density, Antenn 0, 5755 MHz



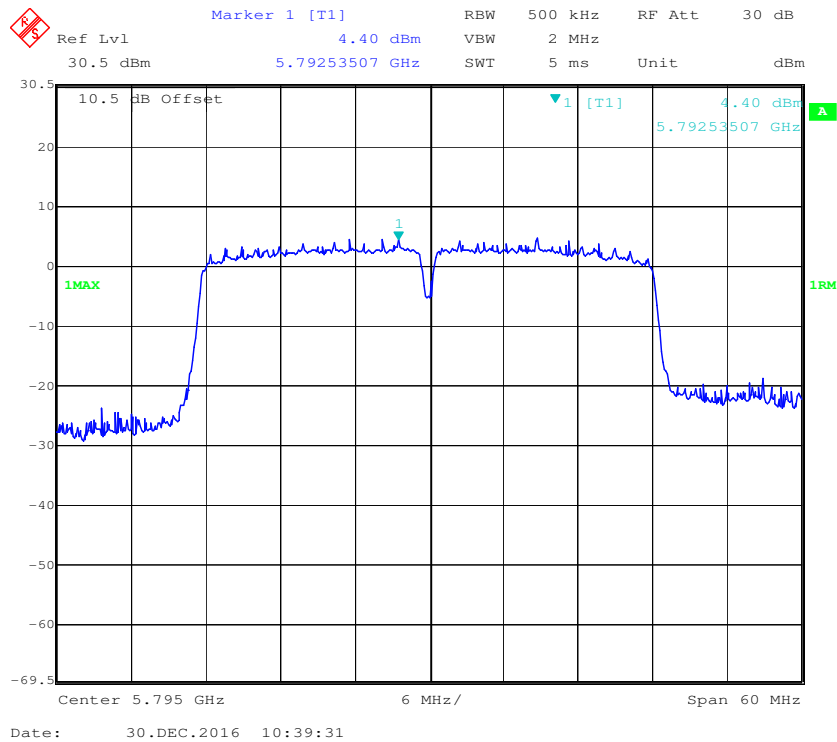
802. 11ac40 mode, Power Spectral Density, Antenn 1, 5755 MHz



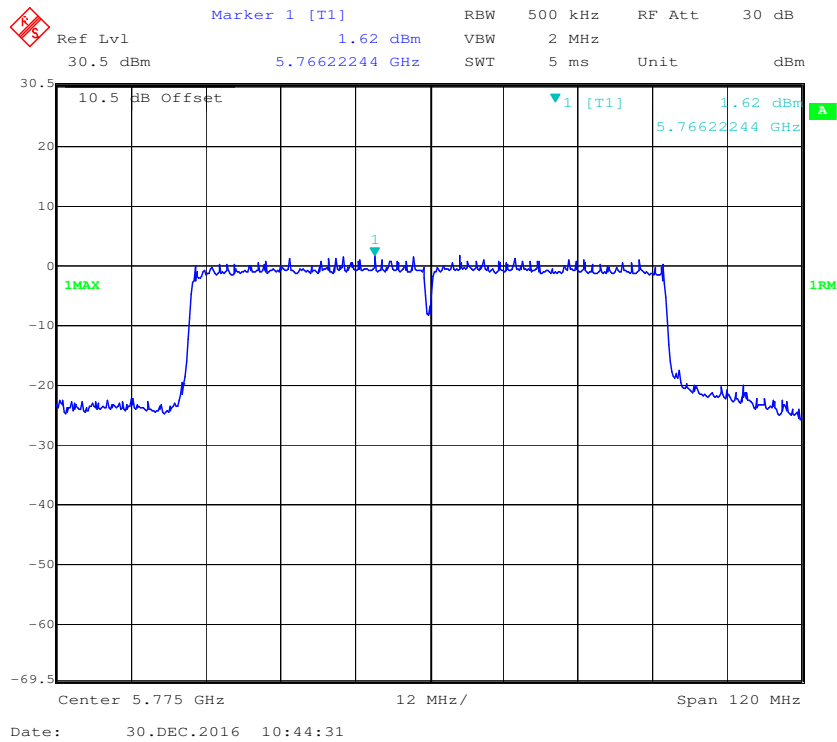
802. 11ac40 mode, Power Spectral Density, Antenn 0, 5795 MHz



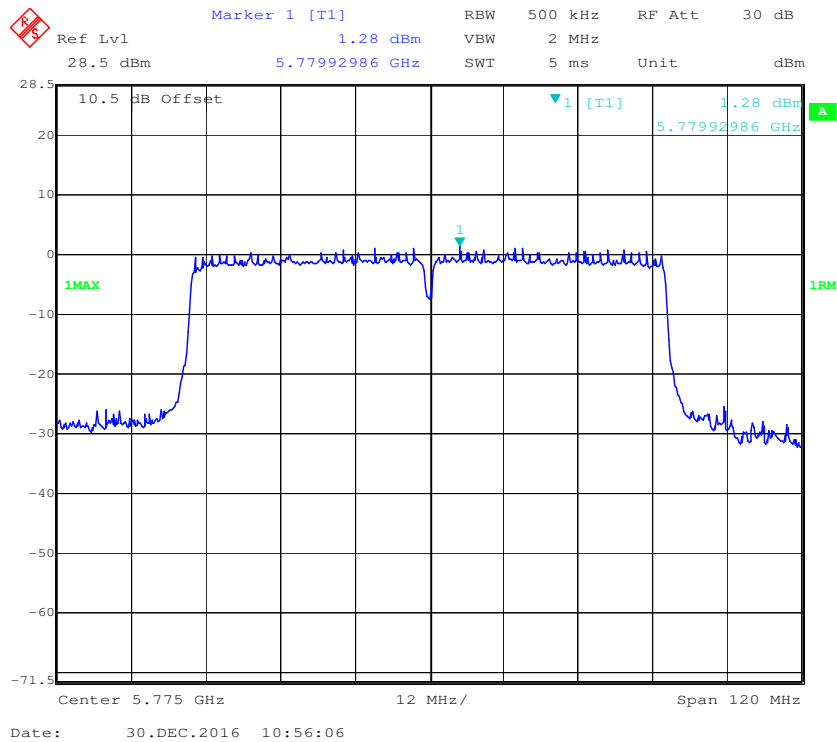
802. 11ac40 mode, Power Spectral Density, Antenn 1, 5795 MHz



802.11ac80 mode, Power Spectral Density, Antenn 0, 5775 MHz



802.11ac80 mode, Power Spectral Density, Antenn 1, 5775 MHz



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