FCC PART 15.407

TEST REPORT

For

YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.

309, 3th Floor, No.16, Yun Ding North Road, Huli District, Xiamen City, Fujian, P.R. China

FCC ID: T2C-T49G

Report Type:	**Product Type:**
Original Report	Ultra-elegant Gigabit IP Phone

Test Engineer:	William Li
Report Number:	RSZ151013008-00C
Report Date:	2015-11-05
Reviewed By:	Jimmy Xiao RF Engineer
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.'s* product, model number: *SIP VP-T49G (FCC ID: T2C-T49G)* or the "EUT" in this report was an *Ultra-elegant Gigabit IP Phone,* which was measured approximately: 27.5 cm (L) * 25.0 cm (W) * 22.5 cm (H), rated with input voltage: DC 12.0V from adapter.

US Adapter Information:
Model: YLPS1202000A-US
Input: AC 100-240V, 50/60 Hz, 650mA
Output: DC 12V, 2A

** All measurement and test data in this report was gathered from production sample serial number: 1506790 (Assigned by BACL, Shenzhen).The EUT supplied by the applicant was received on 2015-10-13.*

Objective

This type approval report is prepared on behalf of *YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.* 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, Part 15.247 DSS and part 15B JBP submissions with FCC ID: T2C-T49G.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

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

Measurement uncertainty with RF radiated emission is 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. 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

MTool_2.0.1.1 was used.

802.11a: Rate 6Mbps, Power level: 16
802.11n20: Rate MCS0, Power level: 16
802.11n40: Rate MCS0, Power level: 16

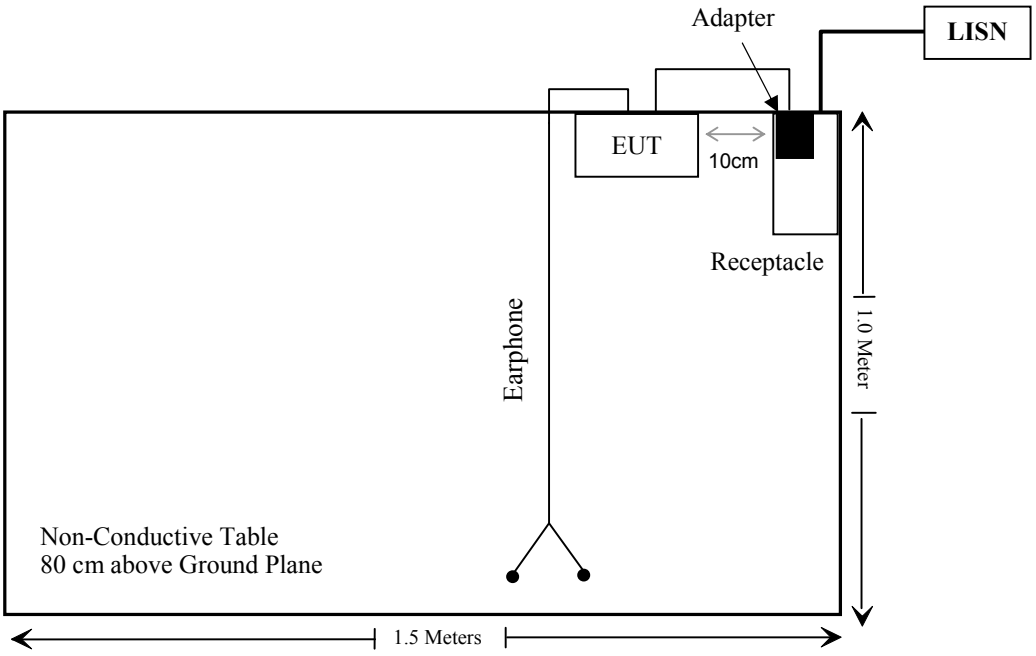
Equipment Modifications

No modification was made to the EUT tested.

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Un-detachable DC Power cable	2.4	EUT	Adapter

Block Diagram of Test Setup



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),(6),(7)	Undesirable Emission	Compliance
§15.407(b) (1),(4)	Band edge	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

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/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

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

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

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11a	5745	0	1	16	39.81	20	0.008	1.0
802.11n-HT20	5805	0	1	16	39.81	20	0.008	1.0
802.11n-HT40	5755	0	1	16	39.81	20	0.008	1.0

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

Result: Compliance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

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

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

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

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

Antenna Connector Construction

The EUT has an internal antenna arrangement, which was permanently attached and the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

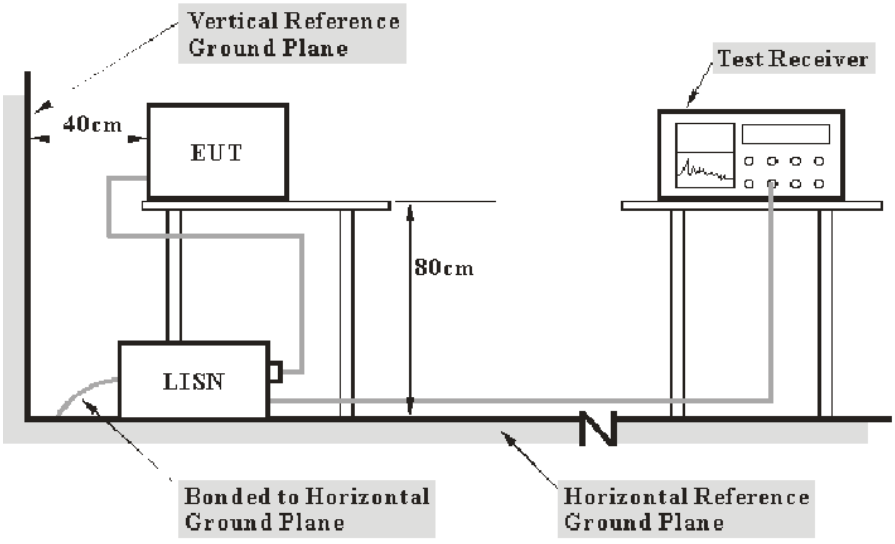
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 dB (k=2, 95% level of confidence)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2015-06-03	2016-06-03
Rohde & Schwarz	LISN	ESH2-Z5	892107/021	2015-06-09	2016-06-09
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2015-06-09	2016-06-09
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2015-05-14	2016-05-14
Rohde & Schwarz	CE Test software	EMC 32	V8.53	NCR	NCR

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, the worst margin reading as below:

8.8 dB at **0.150000 MHz** in the **Neutral** conducted mode

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

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

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

Test Data

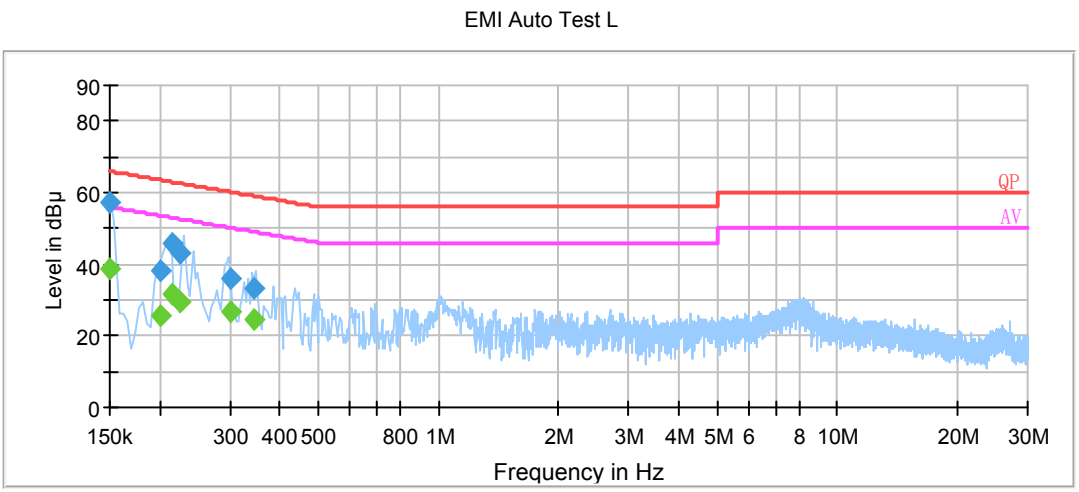
Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-10-18.

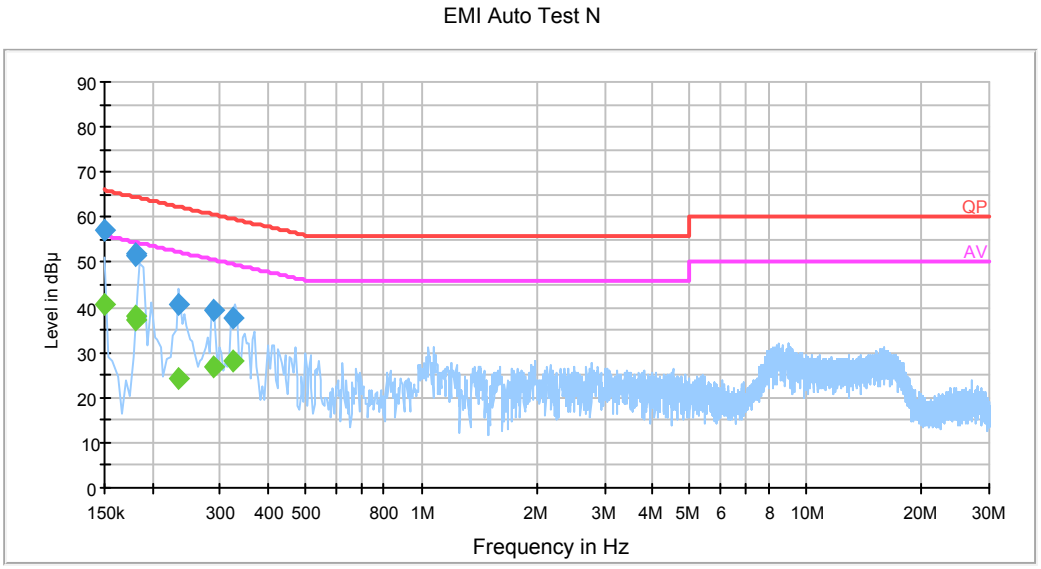
EUT operation mode: Transimitting

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	57.1	20.0	66.0	8.9	QP
0.150000	38.9	20.0	56.0	17.1	Ave.
0.201500	38.0	20.0	63.5	25.6	QP
0.201500	25.6	20.0	53.5	28.0	Ave.
0.214501	45.8	20.0	63.0	17.2	QP
0.214501	31.5	20.0	53.0	21.5	Ave.
0.225500	43.1	20.0	62.6	19.5	QP
0.225500	29.7	20.0	52.6	22.9	Ave.
0.302500	36.2	19.9	60.2	24.0	QP
0.302500	26.7	19.9	50.2	23.5	Ave.
0.344750	33.1	19.9	59.1	26.0	QP
0.344750	24.5	19.9	49.1	24.6	Ave.

AC120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	57.2	20.0	66.0	8.8	QP
0.150000	40.7	20.0	56.0	15.3	Ave.
0.181500	51.7	20.0	64.4	12.7	QP
0.181500	52.0	20.0	64.4	12.5	QP
0.181500	38.1	20.0	54.4	16.4	Ave.
0.181500	37.4	20.0	54.4	17.0	Ave.
0.233500	40.5	20.0	62.3	21.8	QP
0.233500	24.3	20.0	52.3	28.0	Ave.
0.289500	39.2	19.9	60.5	21.3	QP
0.289500	26.9	19.9	50.5	23.7	Ave.
0.325110	37.6	19.9	59.6	22.0	QP
0.325110	28.2	19.9	49.6	21.3	Ave.

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

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

Applicable Standard

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

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

For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz。

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

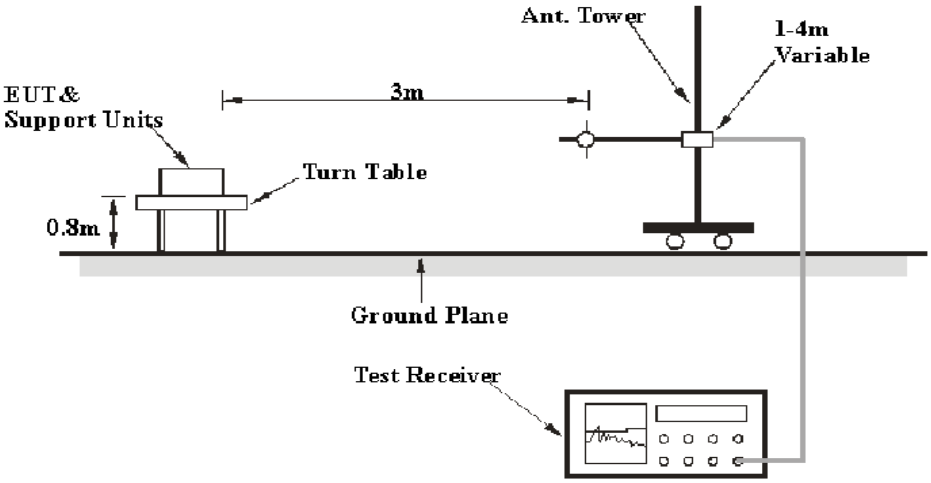
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

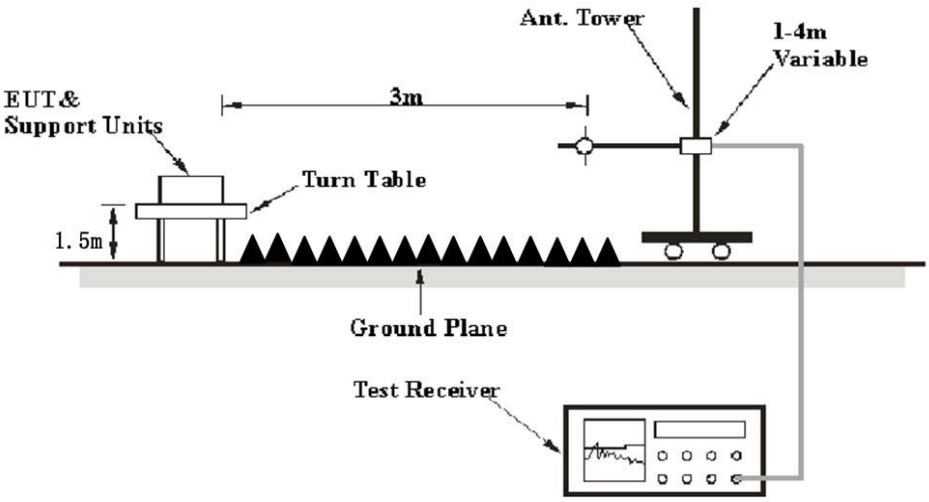
Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.91 dB for 30MHz-1GHz and 4.92 dB for above 1GHz, 1.95dB for conducted measurement at antenna port. And the uncertainty will not be taken into consideration for the test data recorded in the report

EUT Setup

Below 1GHz:



Above 1GHz:



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

The 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
	1 MHz	10 Hz	/	Ave.

Test Procedure

Radiated Spurious Emission

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

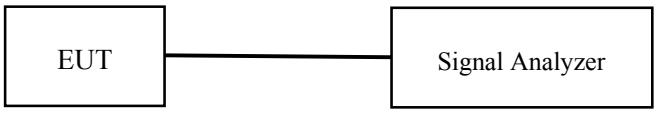
Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

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

The EUT is set 1.5 meter away from the testing antenna, which is varied from 1-4 mete, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

Conducted Spurious Emission at Antenna Port

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



Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2015-11-03	2016-11-03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Mini	Amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
DUCOMMUN	Pre-amplifier	ALN-22093530-01	991373-01	2014-12-02	2015-12-01
Agilent	Spectrum Analyzer	8564E	3943A01781	2013-05-09	2016-05-08
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, Section 15.205, 15.209 and 15.407, the worst margin reading as below:

3.15 dB at **5146.72 MHz** in the **Horizontal** polarization

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 ℃
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-11-04 &2015-11-05.

EUT operation mode: Transmitting

30 MHz ~ 40 GHz: (5150-5250 MHz & 5725-5850 MHz)

802.11a mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
265.7	44.59	QP	115	1.2	H	-13.7	30.89	46	15.11
5180.00	95.43	PK	315	1.3	H	13.89	109.32	/	/
5180.00	79.86	Ave.	315	1.3	H	13.89	93.75	/	/
5180.00	88.71	PK	101	2.2	V	13.89	102.60	/	/
5180.00	74.05	Ave.	101	2.2	V	13.89	87.94	/	/
5146.72	56.88	PK	42	1.3	H	13.97	70.85	74	3.15
5146.72	35.97	Ave.	42	1.3	H	13.97	49.94	54	4.06
5251.34	37.26	PK	83	1.4	H	13.94	51.20	74	22.80
5251.34	22.09	Ave.	83	1.4	H	13.94	36.03	54	17.97
5354.22	36.88	PK	326	1.2	H	14.67	51.55	74	22.45
5354.22	22.41	Ave.	326	1.2	H	14.67	37.08	54	16.92
10360.00	49.02	PK	117	1.1	H	20.25	69.27	74	4.73
10360.00	30.19	Ave.	117	1.1	H	20.25	50.44	54	3.56
15540.00	38.03	PK	31	1.6	H	23.85	61.88	74	12.12
15540.00	22.08	Ave.	31	1.6	H	23.85	45.93	54	8.07
20720.00	37.12	PK	147	1.1	V	23.85	60.97	74	13.03
20720.00	21.09	Ave.	147	1.1	V	23.85	44.94	54	9.06
5200 MHz									
265.7	44.57	QP	115	1.2	H	-13.7	30.87	46	15.13
5200.00	89.34	PK	240	2.2	H	13.89	103.23	/	/
5200.00	75.53	Ave.	240	2.2	H	13.89	89.42	/	/
5200.00	88.23	PK	193	1.0	V	13.89	102.12	/	/
5200.00	74.83	Ave.	193	1.0	V	13.89	88.72	/	/
5149.58	38.56	PK	257	2.4	V	11.93	50.49	74	23.51
5149.58	26.26	Ave.	257	2.4	V	11.93	38.19	54	15.81
5350.20	38.42	PK	271	2.2	V	12.01	50.43	74	23.57
5350.20	24.35	Ave.	271	2.2	V	12.01	36.36	54	17.64
5450.00	37.89	PK	123	1.3	H	12.1	49.99	74	24.01
5450.00	23.01	Ave.	123	1.3	H	12.1	35.11	54	18.89
10400.00	49.02	PK	256	1.8	H	20.38	69.40	74	4.60
10400.00	30.19	Ave.	256	1.8	H	20.38	50.57	54	3.43
15600.00	38.03	PK	189	1.9	V	23.85	61.88	74	12.12
15600.00	22.08	Ave.	189	1.9	V	23.85	45.93	54	8.07
20800.00	37.12	PK	11	1.2	V	23.85	60.97	74	13.03
20800.00	21.09	Ave.	11	1.2	V	23.85	44.94	54	9.06

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5240 MHz									
265.7	44.54	QP	115	1.2	H	-13.7	30.84	46	15.16
5240.00	89.86	PK	323	1.7	H	13.89	103.75	/	/
5240.00	75.61	Ave.	323	1.7	H	13.89	89.50	/	/
5240.00	88.74	PK	20	1.6	V	13.89	102.63	/	/
5240.00	74.95	Ave.	20	1.6	V	13.89	88.84	/	/
5149.59	39.91	PK	75	1.7	H	11.93	51.84	74	22.16
5149.59	27.96	Ave.	75	1.7	H	11.93	39.89	54	14.11
5350.30	52.05	PK	125	2.4	V	12.01	64.06	74	9.94
5350.30	30.03	Ave.	125	2.4	V	12.01	42.04	54	11.96
5450.20	37.93	PK	335	2.5	V	12.10	50.03	74	23.97
5450.20	22.41	Ave.	335	2.5	V	12.10	34.51	54	19.49
10480.00	46.07	PK	299	1.7	H	20.41	66.48	74	7.52
10480.00	29.31	Ave.	299	1.7	H	20.41	49.72	54	4.28
15720.00	36.83	PK	206	1.7	H	23.85	60.68	74	13.32
15720.00	22.36	Ave.	206	1.7	H	23.85	46.21	54	7.79
20960.00	35.62	PK	72	1.3	H	23.85	59.47	74	14.53
20960.00	21.11	Ave.	72	1.3	H	23.85	44.96	54	9.04
5745 MHz									
265.7	44.25	QP	115	1.2	H	-13.7	30.55	46	15.45
5745.00	88.27	PK	208	1.4	H	15.54	103.81	/	/
5745.00	75.16	Ave.	208	1.4	H	15.54	90.70	/	/
5745.00	87.44	PK	52	2.2	V	15.54	102.98	/	/
5745.00	74.65	Ave.	52	2.2	V	15.54	90.19	/	/
5724.64	52.13	PK	151	2.3	V	13.51	65.64	74	8.36
5724.64	31.53	Ave.	151	2.3	V	13.51	45.04	54	8.96
5933.24	37.73	PK	162	1.3	H	14.19	51.92	74	22.08
5933.24	23.89	Ave.	162	1.3	H	14.19	38.08	54	15.92
11490.00	47.17	PK	204	2.0	V	20.47	67.64	74	6.36
11490.00	26.26	Ave.	204	2.0	V	20.47	46.73	54	7.27
17235.00	36.05	PK	340	1.6	H	23.85	59.90	74	14.10
17235.00	22.68	Ave.	340	1.6	H	23.85	46.53	54	7.47
22980.00	36.22	PK	202	1.1	H	23.85	60.07	74	13.93
22980.00	21.72	Ave.	202	1.1	H	23.85	45.57	54	8.43

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5765 MHz									
265.7	44.40	QP	115	1.2	H	-13.7	30.70	46	15.30
5765.00	87.69	PK	116	2.2	H	15.19	102.88	/	/
5765.00	75.33	Ave.	116	2.2	H	15.19	90.52	/	/
5765.00	87.24	PK	62	2.3	V	15.19	102.43	/	/
5765.00	74.58	Ave.	62	2.3	V	15.19	89.77	/	/
5723.23	40.84	PK	92	2.0	H	13.51	54.35	74	19.65
5723.23	26.28	Ave.	92	2.0	H	13.51	39.79	54	14.21
5935.19	36.45	PK	1	1.7	V	14.19	50.64	74	23.36
5935.19	22.95	Ave.	1	1.7	V	14.19	37.14	54	16.86
11530.00	46.12	PK	134	1.7	H	20.09	66.21	74	7.79
11530.00	27.99	Ave.	134	1.7	H	20.09	48.08	54	5.92
17295.00	36.12	PK	76	2.3	V	23.85	59.97	74	14.03
17295.00	23.24	Ave.	76	2.3	V	23.85	47.09	54	6.91
23060.00	36.04	PK	357	1.1	H	23.85	59.89	74	14.11
23060.00	21.16	Ave.	357	1.1	H	23.85	45.01	54	8.99
5805 MHz									
265.7	44.32	QP	115	1.2	H	-13.7	30.62	46	15.38
5805.00	88.05	PK	344	1.1	H	15.19	103.24	/	/
5805.00	75.49	Ave.	344	1.1	H	15.19	90.68	/	/
5805.00	86.94	PK	315	1.3	V	15.19	102.13	/	/
5805.00	74.72	Ave.	315	1.3	V	15.19	89.91	/	/
5724.09	39.96	PK	204	1.2	H	13.51	53.47	74	20.53
5724.09	25.40	Ave.	204	1.2	H	13.51	38.91	54	15.09
5938.22	37.23	PK	25	1.4	V	14.19	51.42	74	22.58
5938.22	23.41	Ave.	25	1.4	V	14.19	37.60	54	16.40
11610.00	46.79	PK	8	1.2	H	20.41	67.20	74	6.80
11610.00	26.88	Ave.	8	1.2	H	20.41	47.29	54	6.71
17415.00	37.77	PK	72	2.0	V	23.85	61.62	74	12.38
17415.00	23.92	Ave.	72	2.0	V	23.85	47.77	54	6.23
23220.00	36.80	PK	312	1.7	H	23.85	60.65	74	13.35
23220.00	21.57	Ave.	312	1.7	H	23.85	45.42	54	8.58

802.11n20 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5180 MHz									
265.7	44.29	QP	115	1.2	H	-13.7	30.59	46	15.41
5180.00	94.33	PK	227	2.2	H	13.89	108.22	/	/
5180.00	80.15	Ave.	227	2.2	H	13.89	94.04	/	/
5180.00	93.16	PK	125	1.8	V	13.89	107.05	/	/
5180.00	77.69	Ave.	125	1.8	V	13.89	91.58	/	/
5109.05	36.35	PK	33	1.3	H	13.97	50.32	74	23.68
5109.05	17.34	Ave.	33	1.3	H	13.97	31.31	54	22.69
5410.86	38.61	PK	229	1.9	H	14.67	53.28	74	20.72
5410.86	15.96	Ave.	229	1.9	H	14.67	30.63	54	23.37
7006.42	35.33	PK	119	1.8	H	18.33	53.66	74	20.34
7006.42	17.36	Ave.	119	1.8	H	18.33	35.69	54	18.31
7513.56	36.13	PK	242	1.5	H	19.15	55.28	74	18.72
7513.56	16.96	Ave.	242	1.5	H	19.15	36.11	54	17.89
10360.00	35.31	PK	300	2.1	H	23.61	58.92	74	15.08
10360.00	17.29	Ave.	300	2.1	H	23.61	40.90	54	13.10
15540.00	30.11	PK	218	1.3	H	34.14	64.25	74	9.75
15540.00	15.01	Ave.	218	1.3	H	34.14	49.15	54	4.85
5200 MHz									
265.7	44.22	QP	115	1.2	H	-13.7	30.52	46	15.48
5200.00	93.17	PK	90	2.0	H	13.89	107.06	/	/
5200.00	78.96	Ave.	90	2.0	H	13.89	92.85	/	/
5200.00	91.33	PK	9	1.7	V	13.89	105.22	/	/
5200.00	76.55	Ave.	9	1.7	V	13.89	90.44	/	/
5136.36	36.35	PK	124	1.5	H	13.97	50.32	74	23.68
5136.36	17.51	Ave.	124	1.5	H	13.97	31.48	54	22.52
5416.21	37.01	PK	91	1.9	H	14.67	51.68	74	22.32
5416.21	18.54	Ave.	91	1.9	H	14.67	33.21	54	20.79
7531.35	33.65	PK	278	1.6	H	19.15	52.80	74	21.20
7531.35	15.36	Ave.	278	1.6	H	19.15	34.51	54	19.49
7536.91	35.61	PK	353	1.0	H	19.15	54.76	74	19.24
7536.91	15.47	Ave.	353	1.0	H	19.15	34.62	54	19.38
10400.00	30.75	PK	195	2.3	H	23.61	54.36	74	19.64
10400.00	16.54	Ave.	195	2.3	H	23.61	40.15	54	13.85
15600.00	30.65	PK	275	1.7	H	34.14	64.79	74	9.21
15600.00	15.11	Ave.	275	1.7	H	34.14	49.25	54	4.75

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5240 MHz									
265.7	44.19	QP	115	1.2	H	-13.7	30.49	46	15.51
5240.00	90.54	PK	357	2.1	H	13.89	104.43	/	/
5240.00	75.95	Ave.	357	2.1	H	13.89	89.84	/	/
5240.00	88.89	PK	357	1.5	V	13.89	102.78	/	/
5240.00	74.79	Ave.	357	1.5	V	13.89	88.68	/	/
5114.31	35.31	PK	280	2.4	H	13.97	49.28	74	24.72
5114.31	17.51	Ave.	280	2.4	H	13.97	31.48	54	22.52
5413.29	36.33	PK	344	1.5	H	14.67	51.00	74	23.00
5413.29	17.59	Ave.	344	1.5	H	14.67	32.26	54	21.74
7510.37	36.13	PK	332	2.3	H	19.15	55.28	74	18.72
7510.37	17.15	Ave.	332	2.3	H	19.15	36.30	54	17.70
7513.33	35.98	PK	29	2.4	H	19.15	55.13	74	18.87
7513.33	18.16	Ave.	29	2.4	H	19.15	37.31	54	16.69
10480.00	30.59	PK	142	1.9	H	23.61	54.20	74	19.80
10480.00	15.16	Ave.	142	1.9	H	23.61	38.77	54	15.23
15720.00	33.11	PK	325	1.2	H	34.14	67.25	74	6.75
15720.00	15.57	Ave.	325	1.2	H	34.14	49.71	54	4.29
5745 MHz									
265.7	44.05	QP	115	1.2	H	-13.7	30.35	46	15.65
5745.00	88.03	PK	52	2.2	H	15.54	103.57	/	/
5745.00	75.14	Ave.	52	2.2	H	15.54	90.68	/	/
5745.00	86.14	PK	152	1.6	V	15.54	101.68	/	/
5745.00	74.95	Ave.	152	1.6	V	15.54	90.49	/	/
5724.16	52.06	PK	357	1.6	H	13.51	65.57	74	8.43
5724.16	32.65	Ave.	357	1.6	H	13.51	46.16	54	7.84
5939.17	36.30	PK	305	2.2	V	14.19	50.49	74	23.51
5939.17	23.10	Ave.	305	2.2	V	14.19	37.29	54	16.71
11590.00	47.40	PK	351	1.7	H	20.41	67.81	74	6.19
11590.00	27.04	Ave.	351	1.7	H	20.41	47.45	54	6.55
17385.00	37.12	PK	190	1.8	H	23.85	60.97	74	13.03
17385.00	23.95	Ave.	190	1.8	H	23.85	47.80	54	6.20
23180.00	35.41	PK	97	1.5	H	23.85	59.26	74	14.74
23180.00	21.05	Ave.	97	1.5	H	23.85	44.90	54	9.10

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5765 MHz									
265.7	44.16	QP	115	1.2	H	-13.7	30.46	46	15.54
5785.00	90.93	PK	35	1.3	H	15.19	106.12	/	/
5785.00	76.78	Ave.	35	1.3	H	15.19	91.97	/	/
5785.00	86.44	PK	16	2.4	V	15.19	101.63	/	/
5785.00	73.13	Ave.	16	2.4	V	15.19	88.32	/	/
5137.69	39.31	PK	133	1.5	H	13.97	53.28	74	20.72
5137.69	19.51	Ave.	133	1.5	H	13.97	33.48	54	20.52
5457.13	38.65	PK	67	2.0	H	16.70	55.35	74	18.65
5457.13	17.65	Ave.	67	2.0	H	16.70	34.35	54	19.65
7556.31	36.19	PK	271	1.5	H	18.82	55.01	74	18.99
7556.31	16.53	Ave.	271	1.5	H	18.82	35.35	54	18.65
7560.37	30.66	PK	240	2.0	H	18.82	49.48	74	24.52
7560.37	16.37	Ave.	240	2.0	H	18.82	35.19	54	18.81
11570.00	31.13	PK	3	2.5	H	25.46	56.59	74	17.41
11570.00	15.27	Ave.	3	2.5	H	25.46	40.73	54	13.27
5805 MHz									
265.7	44.20	QP	115	1.2	H	-13.7	30.50	46	15.50
5805.00	87.86	PK	197	2.1	H	15.19	103.05	/	/
5805.00	75.24	Ave.	197	2.1	H	15.19	90.43	/	/
5805.00	86.54	PK	290	1.1	V	15.19	101.73	/	/
5805.00	74.58	Ave.	290	1.1	V	15.19	89.77	/	/
5723.27	40.68	PK	125	2.4	H	13.51	54.19	74	19.81
5723.27	25.08	Ave.	125	2.4	H	13.51	38.59	54	15.41
5939.42	37.43	PK	266	2.2	V	14.19	51.62	74	22.38
5939.42	23.62	Ave.	266	2.2	V	14.19	37.81	54	16.19
11610.00	47.91	PK	313	1.3	H	20.41	68.32	74	5.68
11610.00	26.05	Ave.	313	1.3	H	20.41	46.46	54	7.54
17415.00	36.45	PK	337	1.7	V	23.85	60.30	74	13.70
17415.00	22.88	Ave.	337	1.7	V	23.85	46.73	54	7.27
23220.00	36.67	PK	151	1.1	H	23.85	60.52	74	13.48
23220.00	22.02	Ave.	151	1.1	H	23.85	45.87	54	8.13

802.11n40 mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5190 MHz									
265.7	44.50	QP	115	1.2	H	-13.7	30.80	46	15.20
5190.00	88.34	PK	48	1.9	H	13.89	102.23	/	/
5190.00	75.49	Ave.	48	1.9	H	13.89	89.38	/	/
5190.00	86.35	PK	238	1.9	V	13.89	100.24	/	/
5190.00	75.04	Ave.	238	1.9	V	13.89	88.93	/	/
5148.45	52.15	PK	177	1.6	V	11.93	64.08	74	9.92
5148.45	32.48	Ave.	177	1.6	V	11.93	44.41	54	9.59
5253.37	38.66	PK	113	2.3	V	11.92	50.58	74	23.42
5253.37	28.88	Ave.	113	2.3	V	11.92	40.80	54	13.20
5354.19	36.04	PK	271	2.0	H	12.01	48.05	74	25.95
5354.19	23.72	Ave.	271	2.0	H	12.01	35.73	54	18.27
10380.00	46.32	PK	358	1.8	V	20.38	66.70	74	7.30
10380.00	26.26	Ave.	358	1.8	V	20.38	46.64	54	7.36
15570.00	37.23	PK	206	2.1	H	23.85	61.08	74	12.92
15570.00	24.00	Ave.	206	2.1	H	23.85	47.85	54	6.15
20760.00	36.39	PK	312	1.1	H	23.85	60.24	74	13.76
20760.00	21.02	Ave.	312	1.1	H	23.85	44.87	54	9.13
5230 MHz									
265.7	44.24	QP	115	1.2	H	-13.7	30.54	46	15.46
5230.00	88.16	PK	240	1.4	H	13.89	102.05	/	/
5230.00	75.08	Ave.	240	1.4	H	13.89	88.97	/	/
5230.00	86.18	PK	125	2.4	V	13.89	100.07	/	/
5230.00	75.23	Ave.	125	2.4	V	13.89	89.12	/	/
5149.22	38.67	PK	292	1.9	V	11.93	50.60	74	23.40
5149.22	28.52	Ave.	292	1.9	V	11.93	40.45	54	13.55
5251.35	53.56	PK	150	1.5	V	11.92	65.48	74	8.52
5251.35	32.80	Ave.	150	1.5	V	11.92	44.72	54	9.28
5356.29	37.45	PK	351	1.9	H	12.01	49.46	74	24.54
5356.29	22.62	Ave.	351	1.9	H	12.01	34.63	54	19.37
10460.00	47.64	PK	102	2.0	V	20.41	68.05	74	5.95
10460.00	27.08	Ave.	102	2.0	V	20.41	47.49	54	6.51
15690.00	37.86	PK	118	1.3	V	23.85	61.71	74	12.29
15690.00	22.97	Ave.	118	1.3	V	23.85	46.82	54	7.18
20920.00	36.85	PK	164	1.8	V	23.85	60.70	74	13.30
20920.00	22.95	Ave.	164	1.8	V	23.85	46.80	54	7.20

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5755 MHz									
265.7	44.33	QP	115	1.2	H	-13.7	30.63	46	15.37
5755.00	87.68	PK	317	2.1	H	15.19	102.87	/	/
5755.00	74.92	Ave.	317	2.1	H	15.19	90.11	/	/
5755.00	85.79	PK	72	2.0	V	15.19	100.98	/	/
5755.00	74.83	Ave.	72	2.0	V	15.19	90.02	/	/
5723.48	53.10	PK	288	1.6	H	13.51	66.61	74	7.39
5723.48	31.75	Ave.	288	1.6	H	13.51	45.26	54	8.74
5933.25	37.09	PK	112	1.2	V	14.19	51.28	74	22.72
5933.25	23.01	Ave.	112	1.2	V	14.19	37.20	54	16.80
11590.00	46.86	PK	237	1.5	H	20.41	67.27	74	6.73
11590.00	26.85	Ave.	237	1.5	H	20.41	47.26	54	6.74
17385.00	37.51	PK	279	1.2	H	23.85	61.36	74	12.64
17385.00	22.71	Ave.	279	1.2	H	23.85	46.56	54	7.44
23180.00	35.66	PK	86	2.0	V	23.85	59.51	74	14.49
23180.00	21.98	Ave.	86	2.0	V	23.85	45.83	54	8.17

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.407/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
5795 MHz									
265.7	44.15	QP	115	1.2	H	-13.7	30.45	46	15.55
5795.00	87.51	PK	126	1.8	H	15.19	102.70	/	/
5795.00	74.83	Ave.	126	1.8	H	15.19	90.02	/	/
5795.00	86.22	PK	236	1.4	V	15.19	101.41	/	/
5795.00	74.29	Ave.	236	1.4	V	15.19	89.48	/	/
5723.27	39.53	PK	137	2.0	H	13.51	53.04	74	20.96
5723.27	26.52	Ave.	137	2.0	H	13.51	40.03	54	13.97
5940.24	37.12	PK	178	1.6	V	14.19	51.31	74	22.69
5940.24	23.62	Ave.	178	1.6	V	14.19	37.81	54	16.19
11590.00	46.15	PK	313	2.0	H	20.41	66.56	74	7.44
11590.00	26.73	Ave.	313	2.0	H	20.41	47.14	54	6.86
17385.00	37.48	PK	176	1.8	H	23.85	61.33	74	12.67
17385.00	22.39	Ave.	176	1.8	H	23.85	46.24	54	7.76
23180.00	36.20	PK	306	1.7	H	23.85	60.05	74	13.95
23180.00	22.91	Ave.	306	1.7	H	23.85	46.76	54	7.24

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude

§15.407(B) (1),(4) – BAND EDGE

Applicable Standard

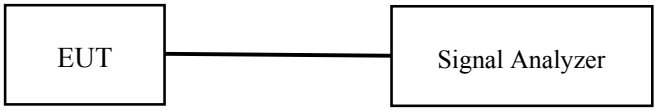
FCC §15.407 (b) (1), (4);

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

For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11

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

Test Data

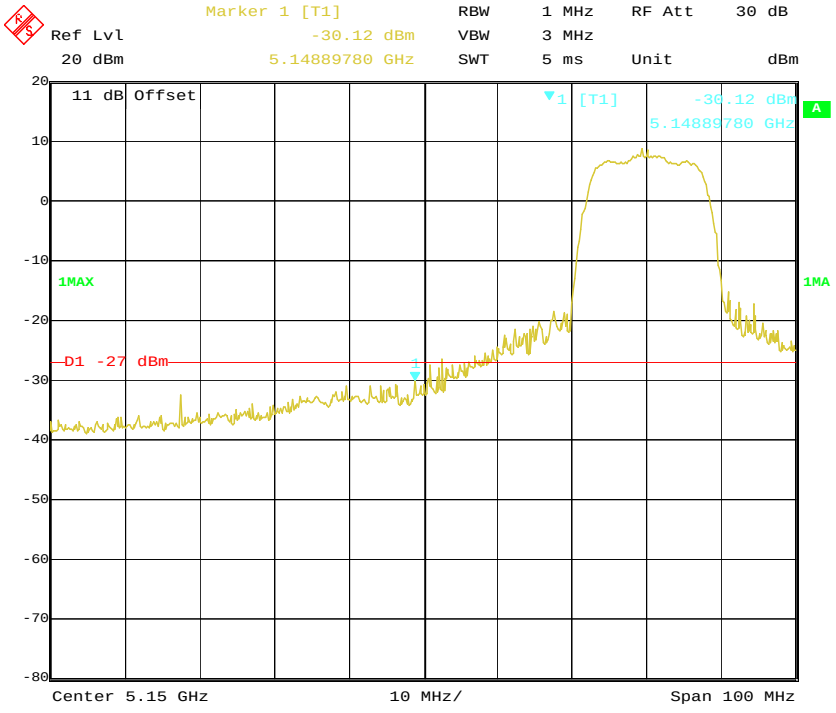
Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

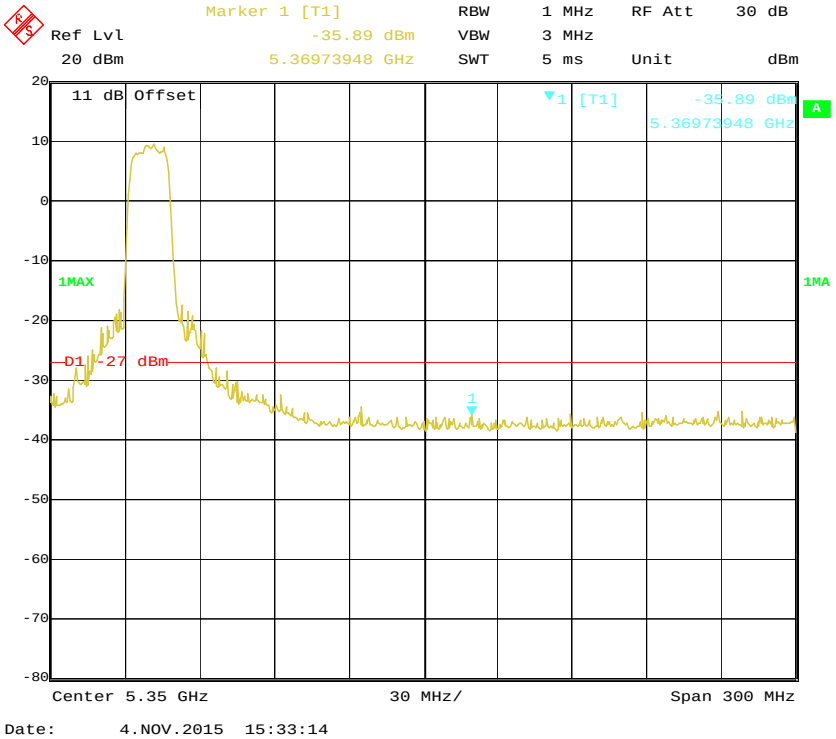
The testing was performed by William Li on 2015-11-04 &2015-11-05.

EUT operation mode: Transmitting

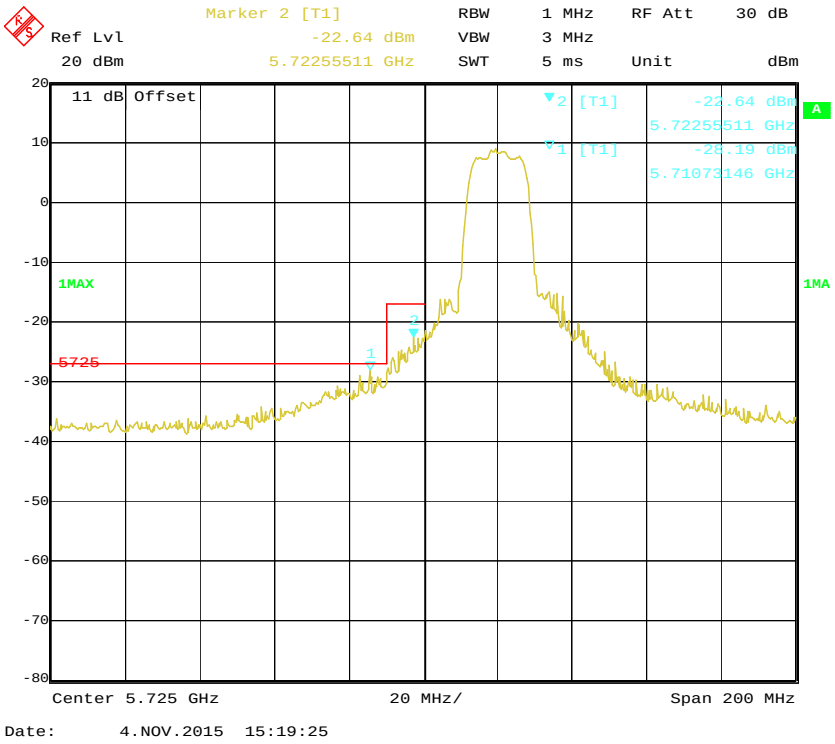
802.11a mode, 5150 MHz, Band Edge



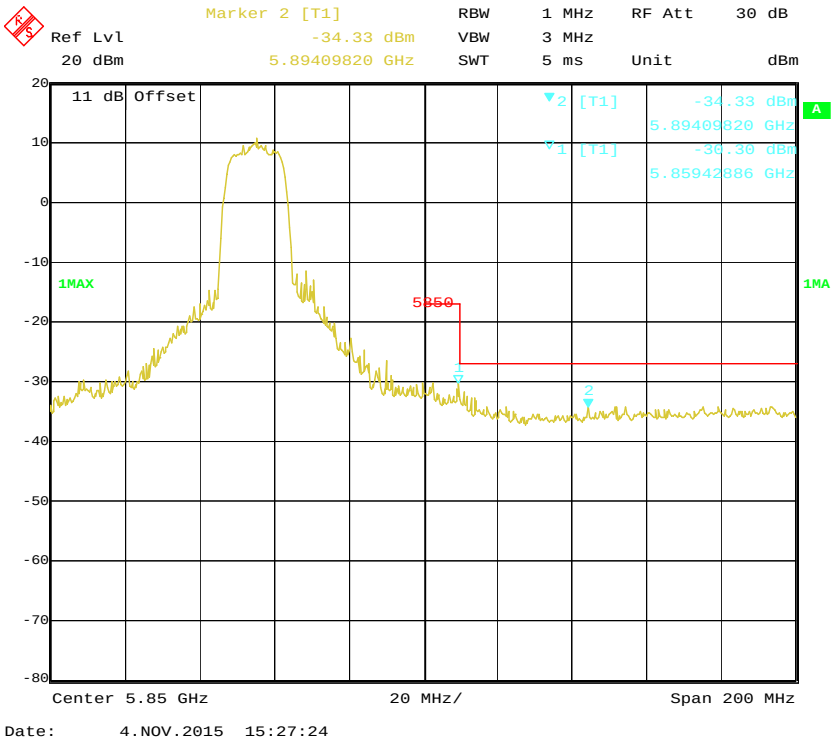
802.11a mode, 5350 MHz, Band Edge



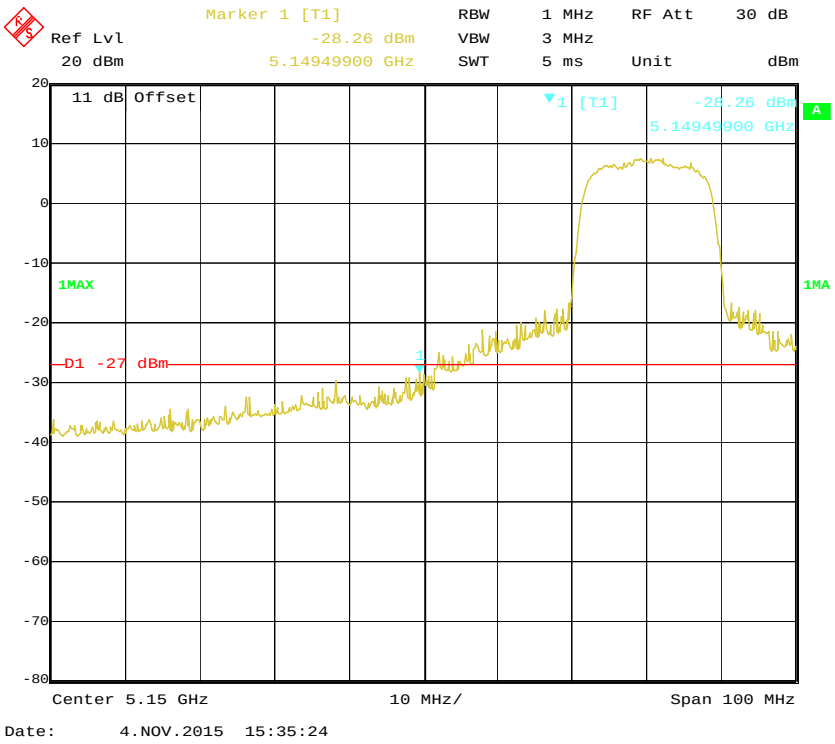
802.11a mode, 5725 MHz, Band Edge



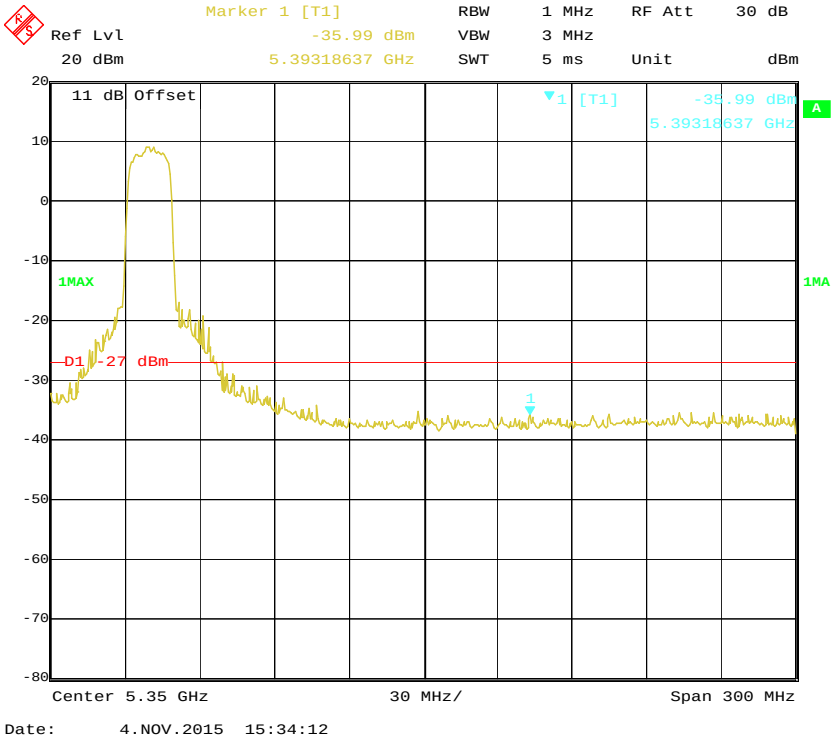
802.11a mode, 5850 MHz, Band Edge



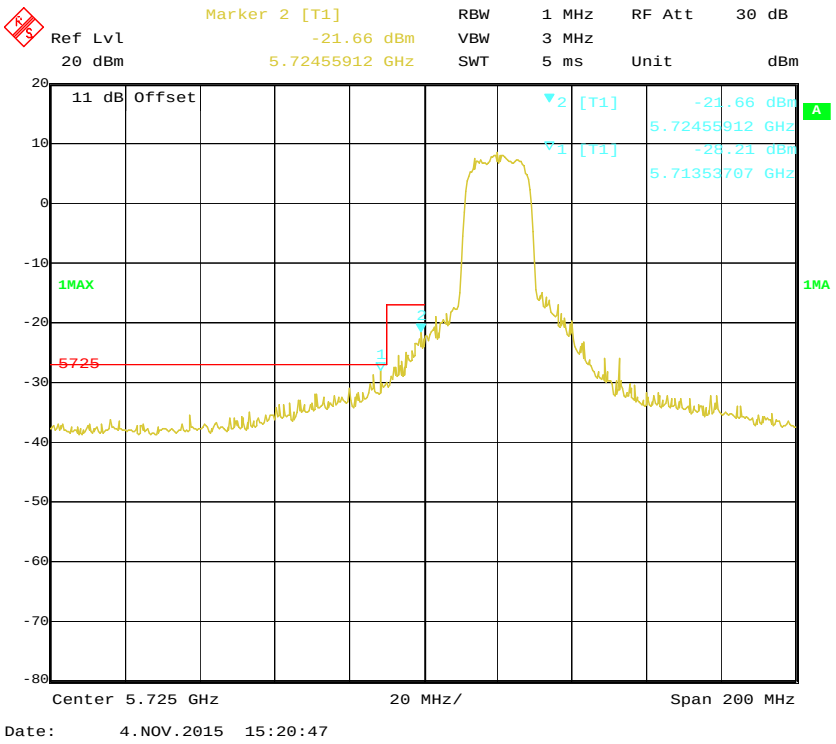
802.11n20 mode, 5150 MHz Band Edge



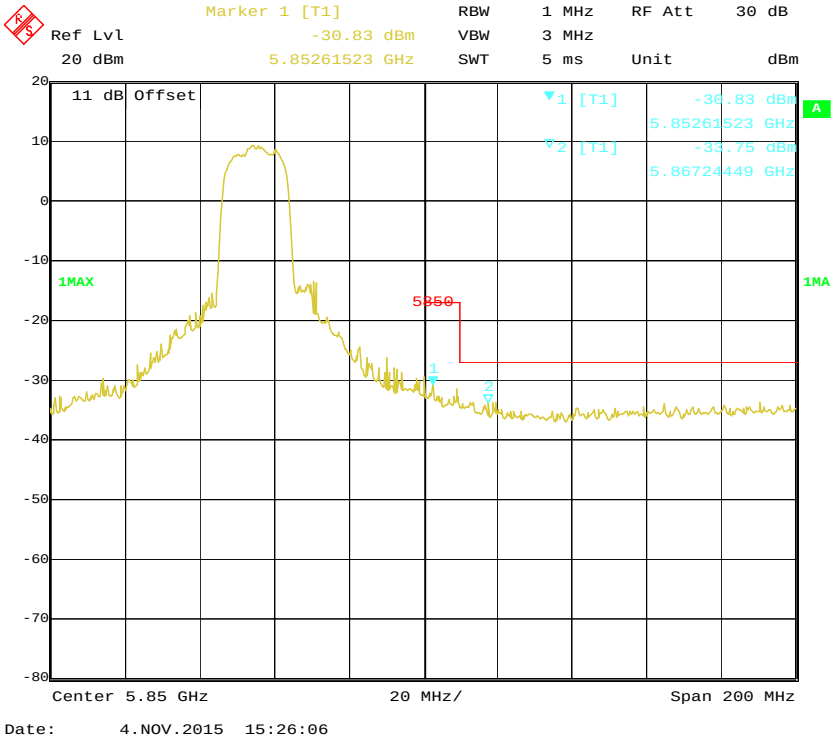
802.11n20 mode, 5350 MHz Band Edge



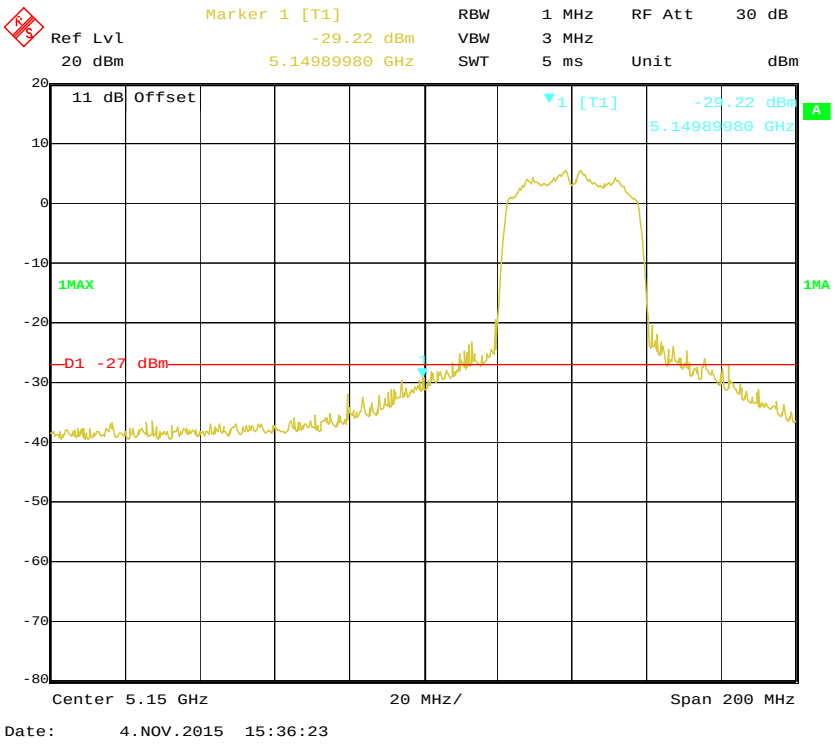
802.11n20 mode, 5725 MHz Band Edge



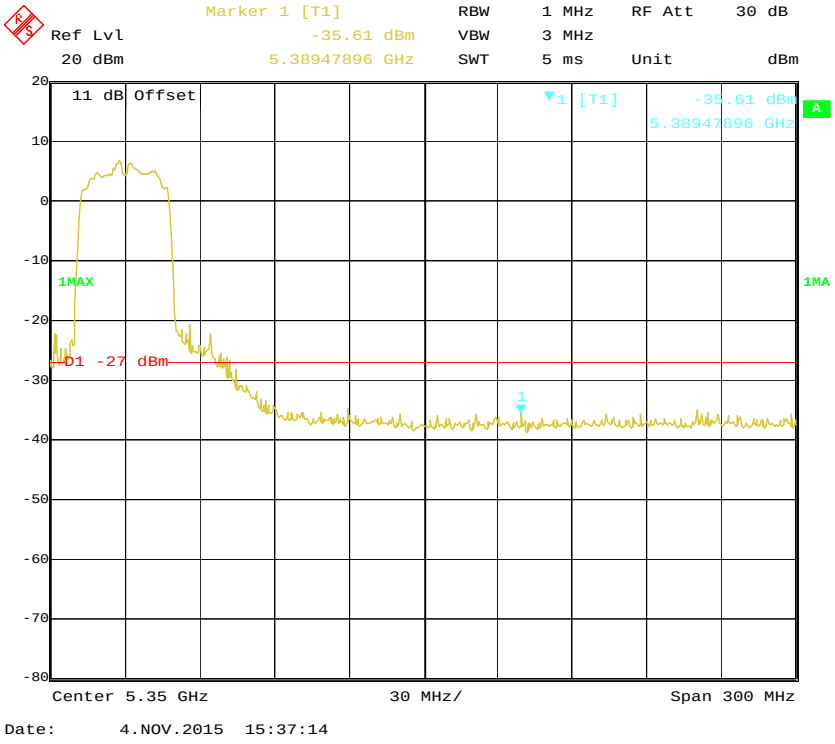
802.11n20 mode, 5850 MHz Band Edge



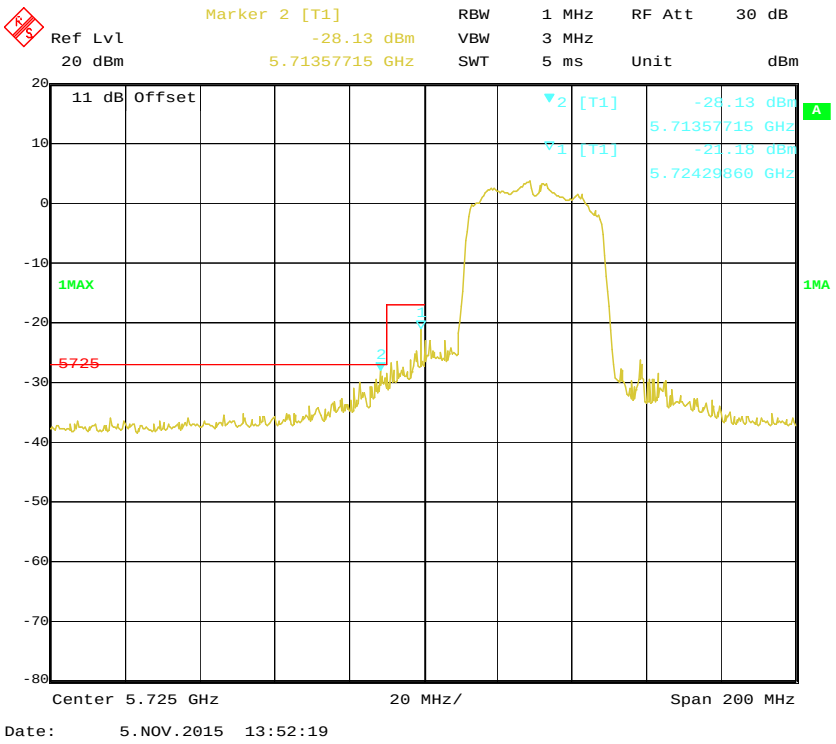
802.11n40 mode, 5150 MHz Band Edge



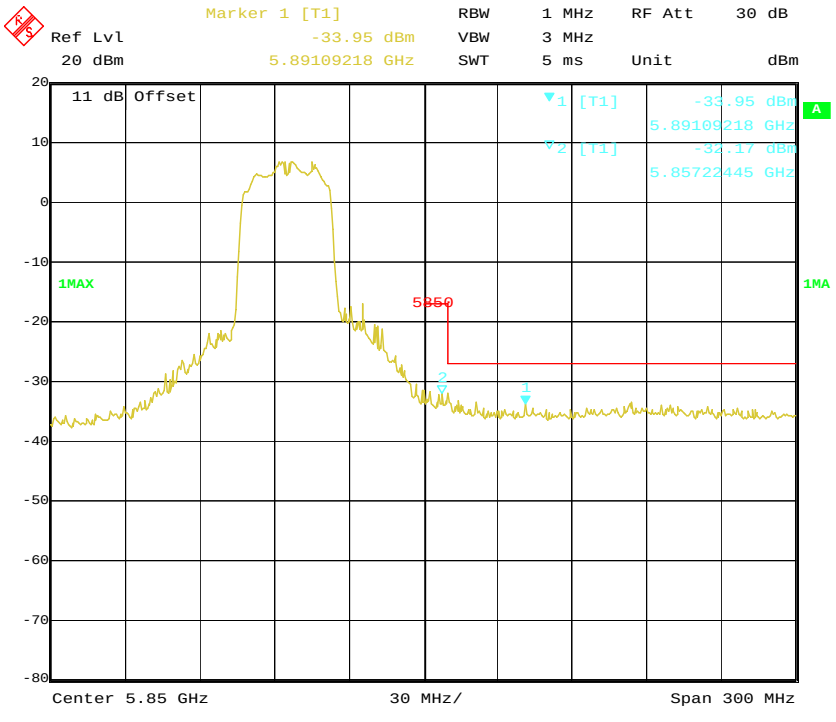
802.11n40 mode, 5350 MHz Band Edge



802.11n40 mode, 5725 MHz Band Edge



802.11n40 mode, 5850 MHz Band Edge



Note: offset = attenuator + cable loss +Antenna gain
= 10dB+1dB+0dBi

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

Applicable Standard

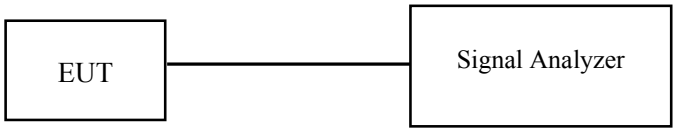
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band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

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

Test Procedure

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

2. **Minimum Emission Bandwidth for the band 5.725-5.85 GHz**
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-10-29.

EUT operation mode: Transmitting

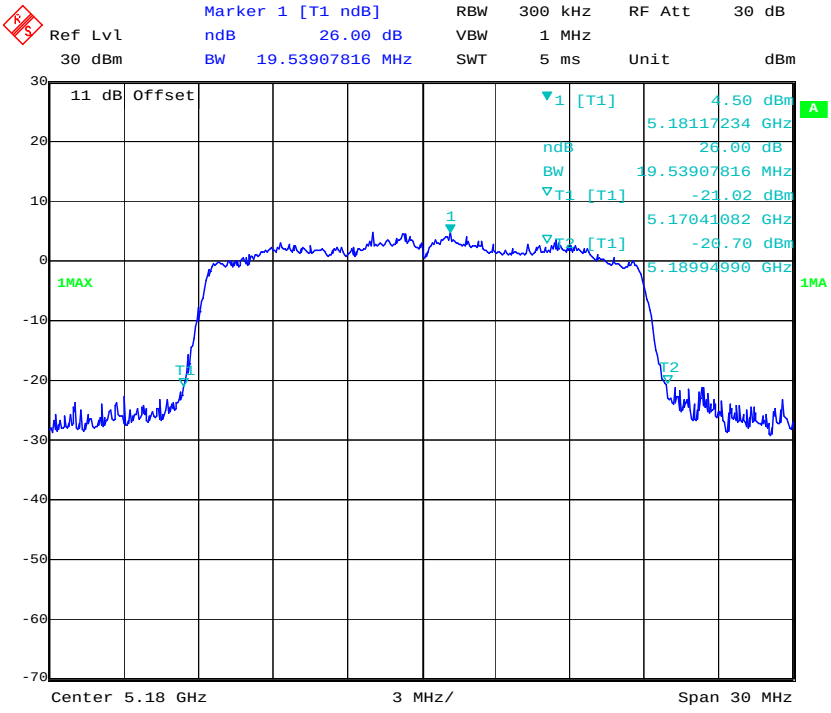
Test Result: Pass

Please refer to the following tables and plots.

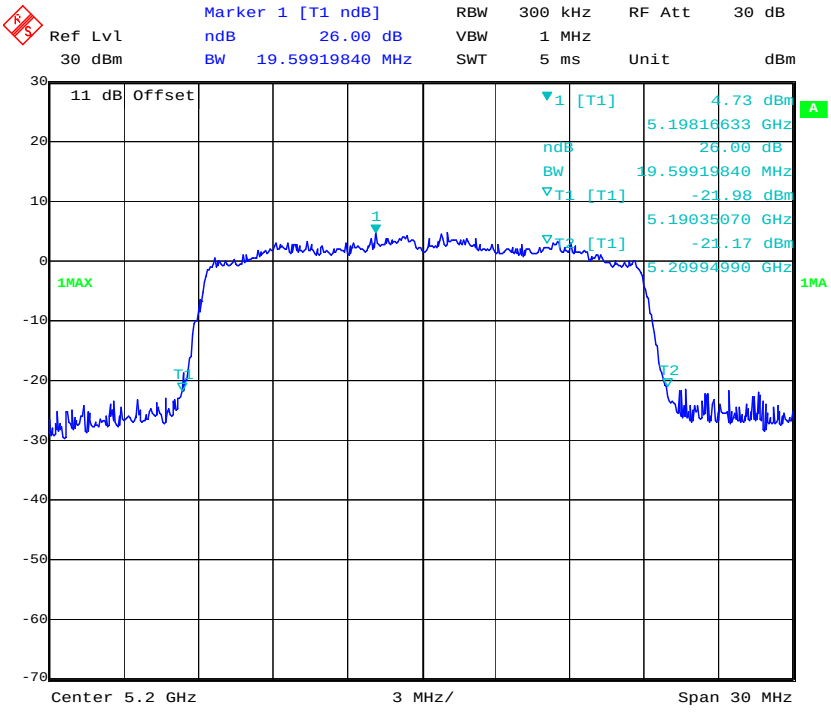
5150 MHz – 5250 MHz:

Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
11a	5180	16.28	19.54
	5200	16.97	19.60
	5240	16.97	19.48
11n20	5180	17.82	19.48
	5200	17.89	19.78
	5240	17.82	19.54
11n40	5190	36.63	39.68
	5230	36.48	39.32

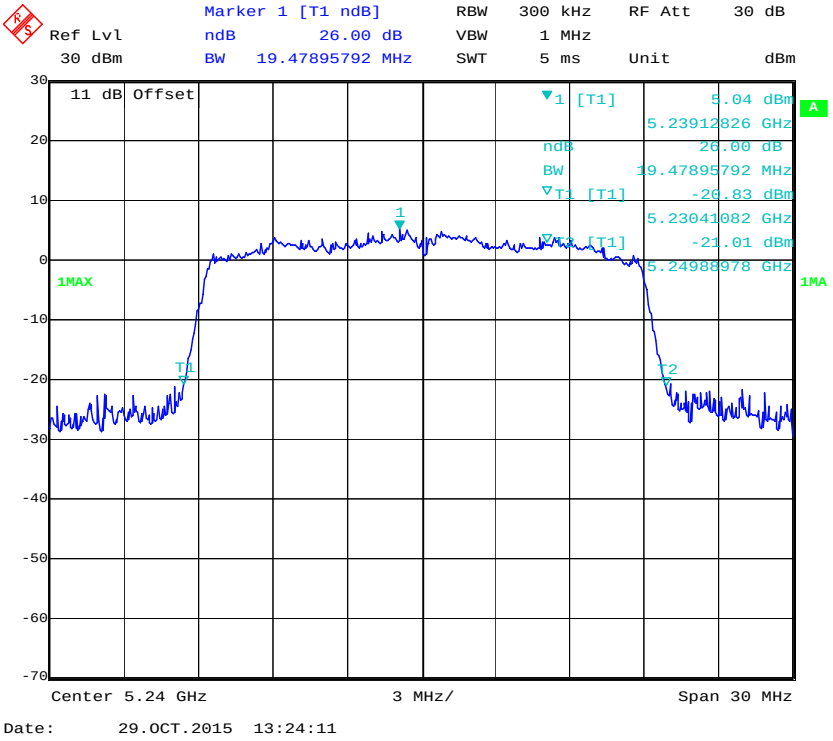
802.11a mode, 26dB Emission Bandwidth, 5180 MHz



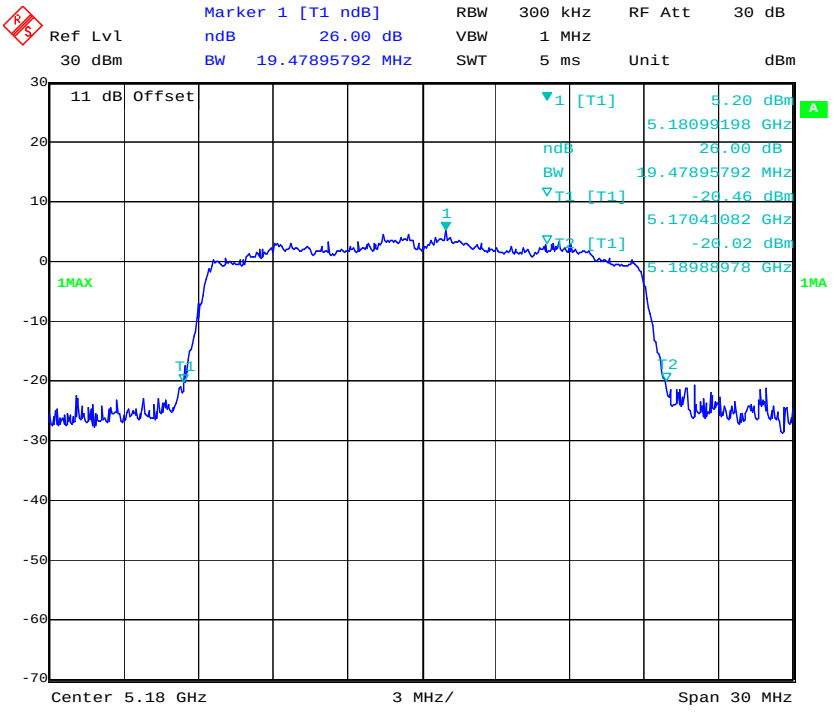
802.11a mode, 26dB Emission Bandwidth, 5200 MHz



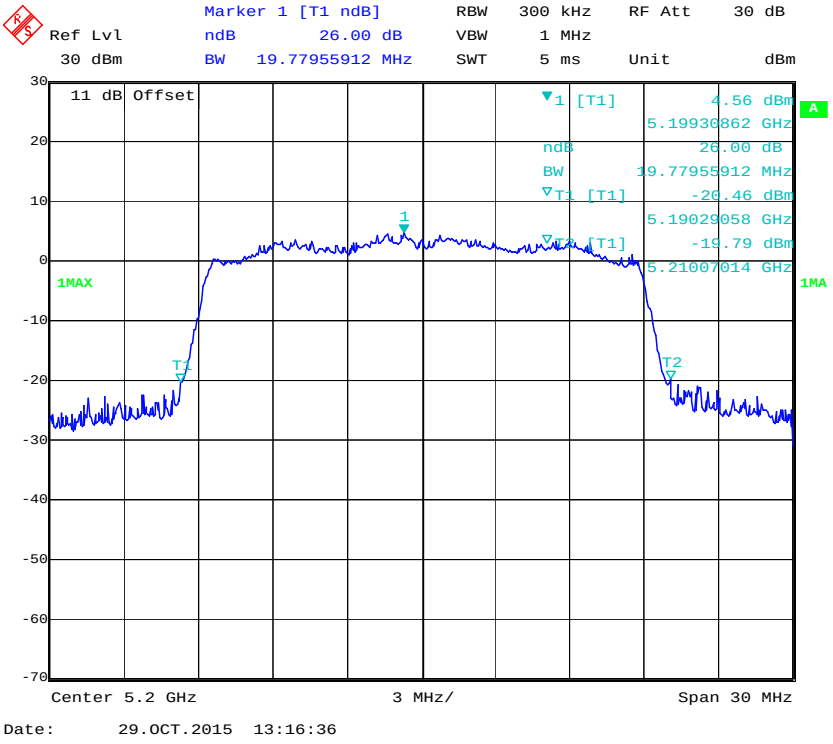
802.11a mode, 26dB Emission Bandwidth, 5240 MHz



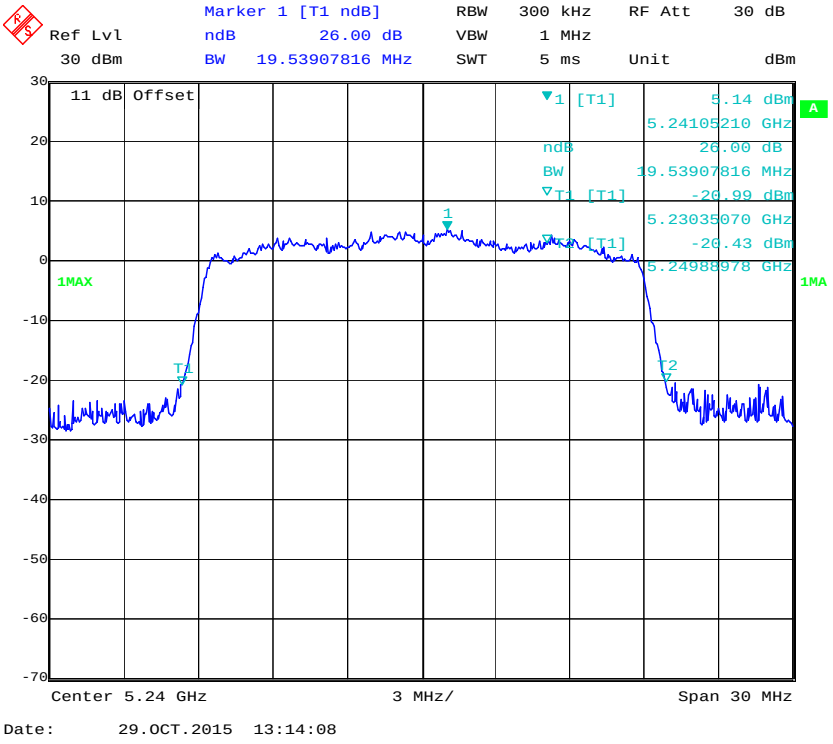
802.11n20 mode, 26dB Emission Bandwidth, 5180 MHz



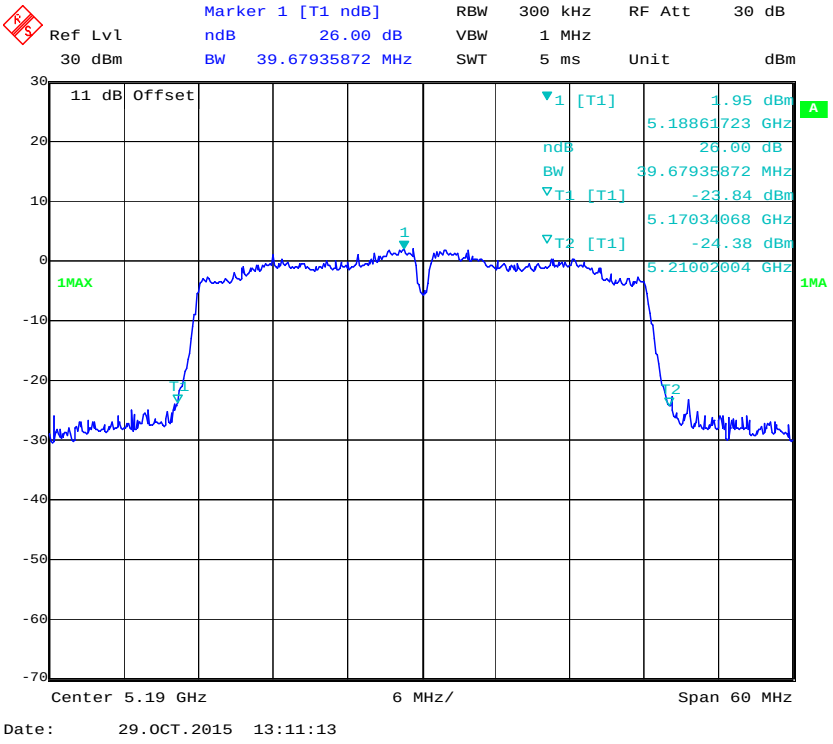
802.11n20 mode, 26dB Emission Bandwidth, 5200 MHz



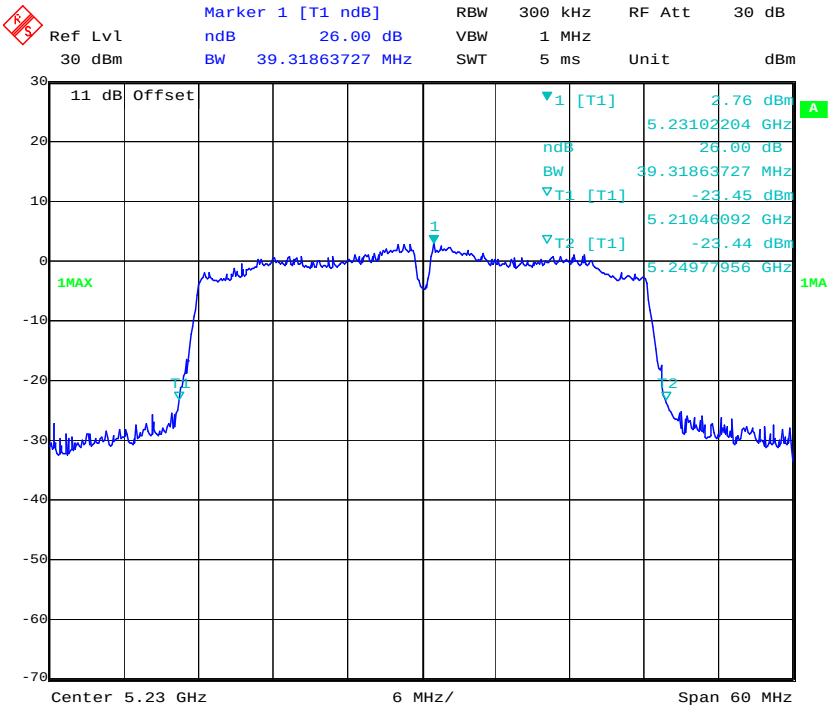
802.11n20 mode, 26dB Emission Bandwidth, 5240 MHz



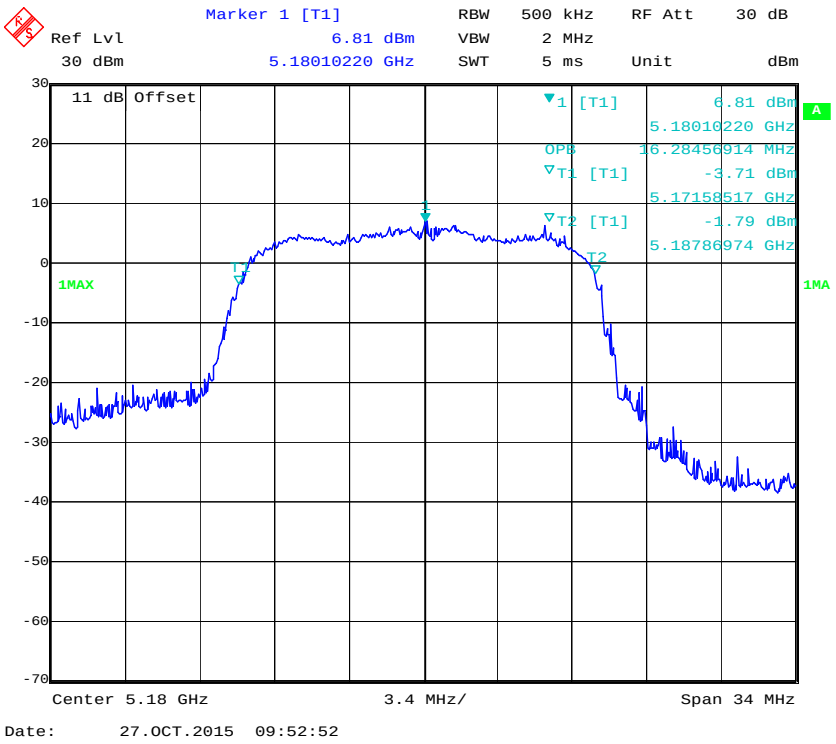
802.11n40 mode, 26dB Emission Bandwidth, 5190 MHz



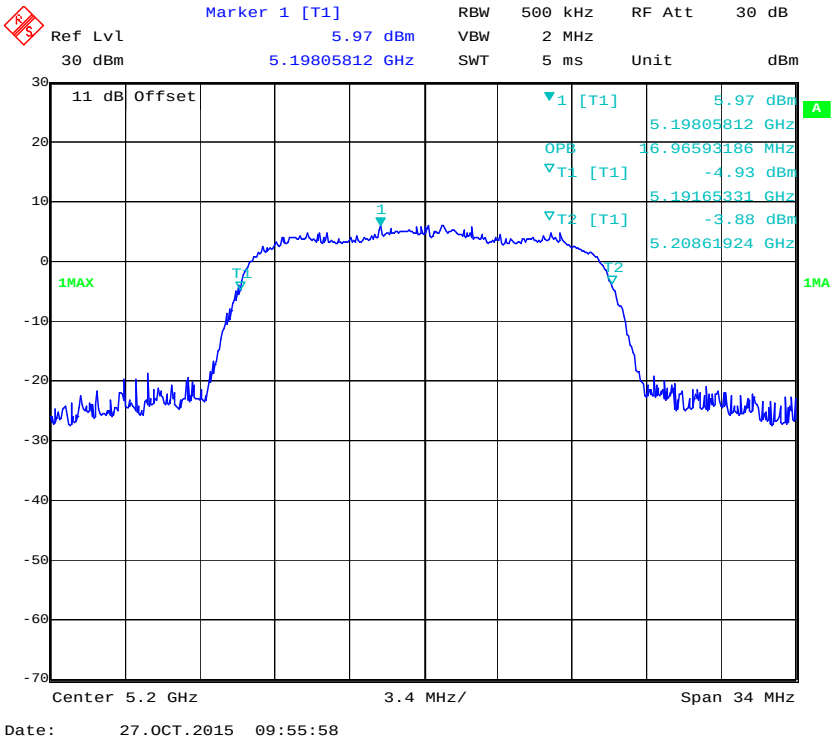
802.11n40 mode, 26dB Emission Bandwidth, 5230 MHz



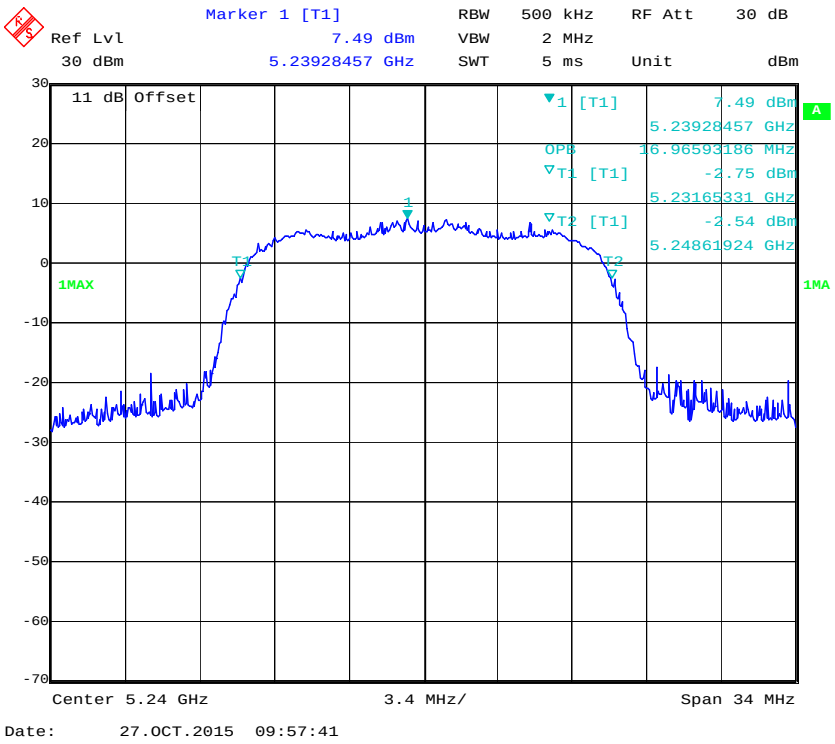
802.11a mode, 99 % Occupied Bandwidth, 5180 MHz



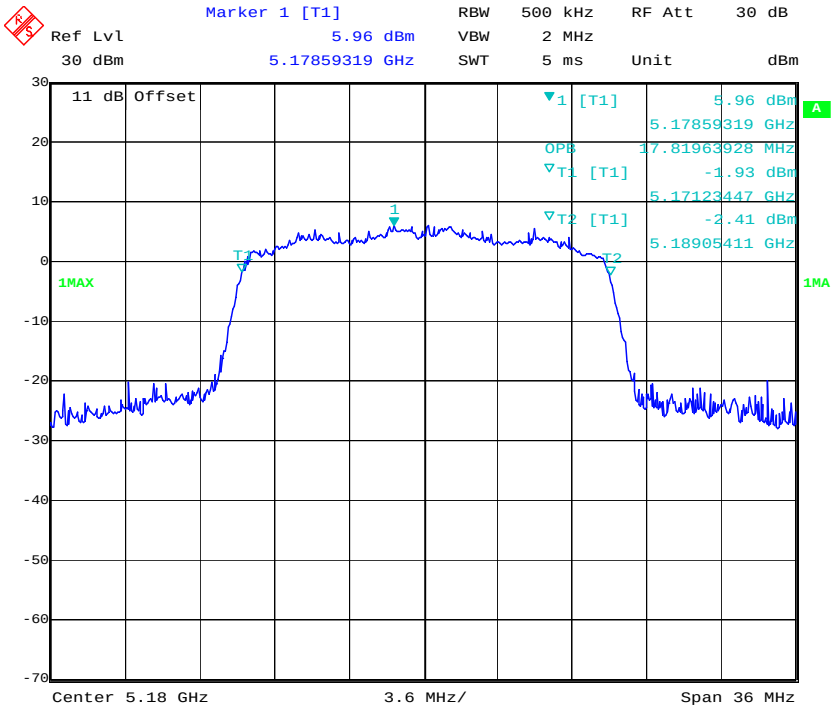
802.11a mode, 99 % Occupied Bandwidth, 5200 MHz



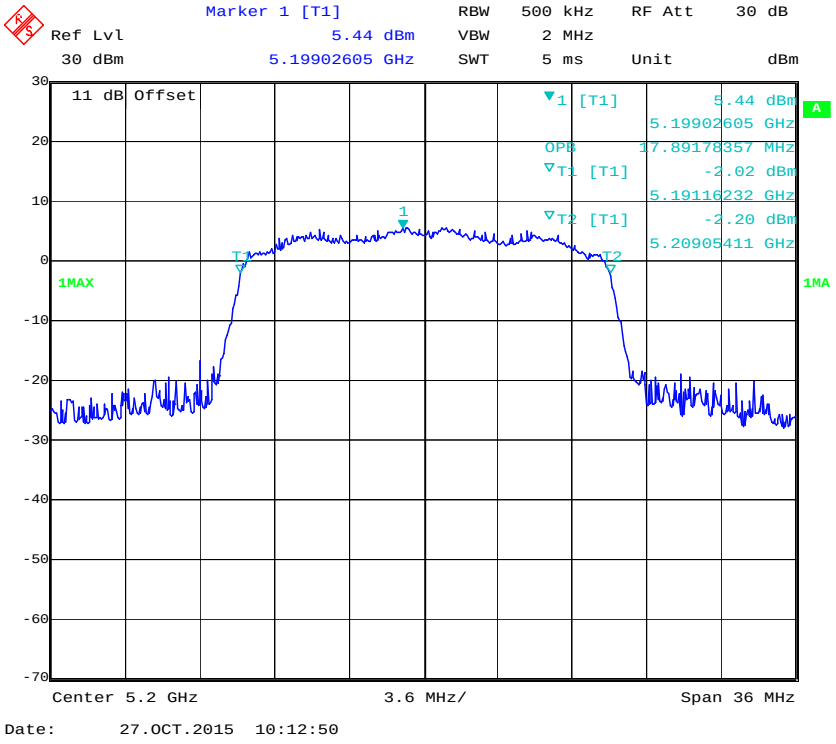
802.11a mode, 99 % Occupied Bandwidth, 5240 MHz



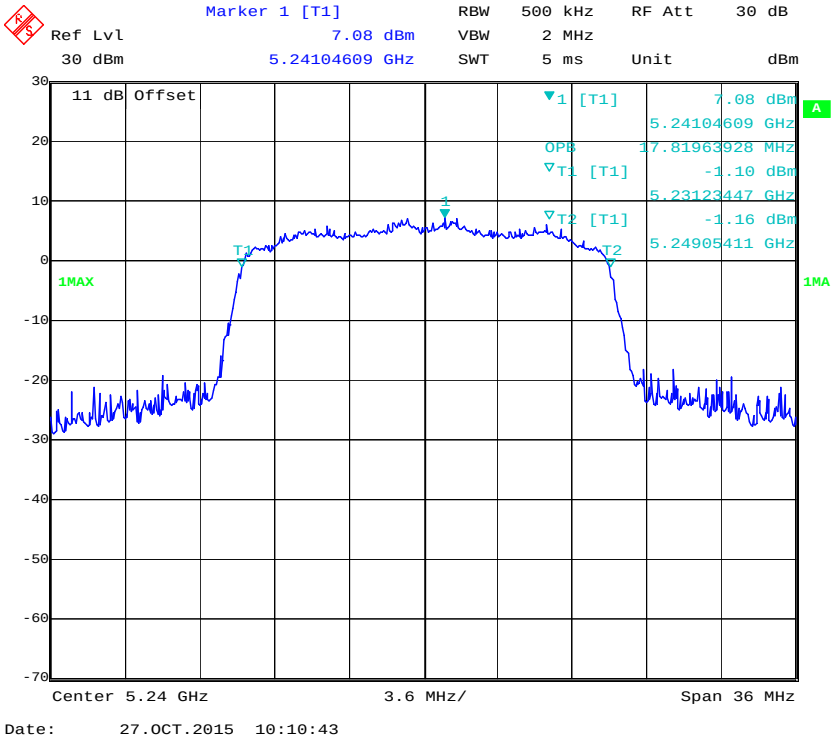
802.11n20 mode, 99 % Occupied Bandwidth, 5180 MHz



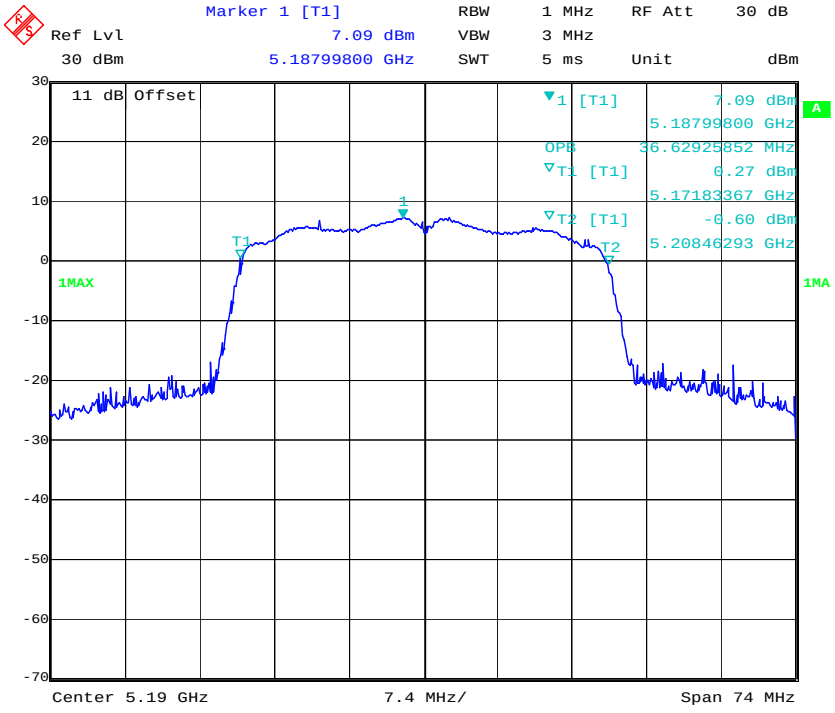
802.11n20 mode, 99 % Occupied Bandwidth, 5200 MHz



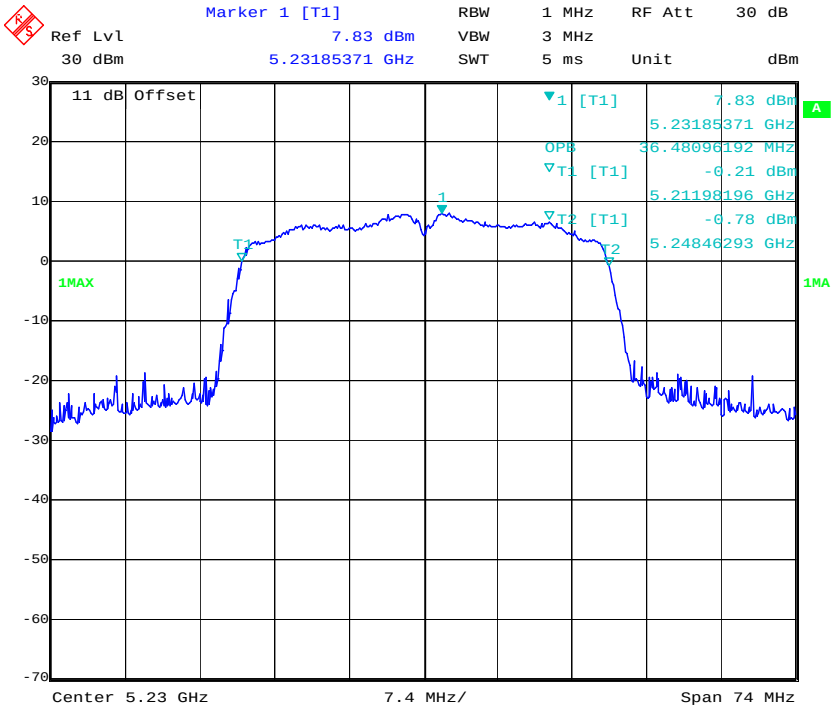
802.11n20 mode, 99 % Occupied Bandwidth, 5240 MHz



802.11n40 mode, 99 % Occupied Bandwidth, 5190 MHz



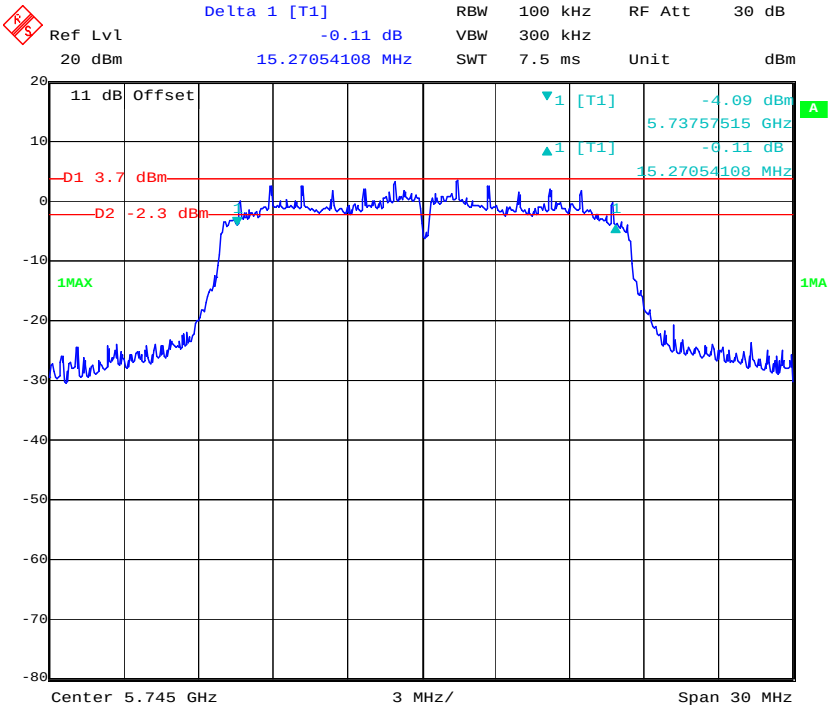
802.11n40 mode, 99 % Occupied Bandwidth, 5230 MHz



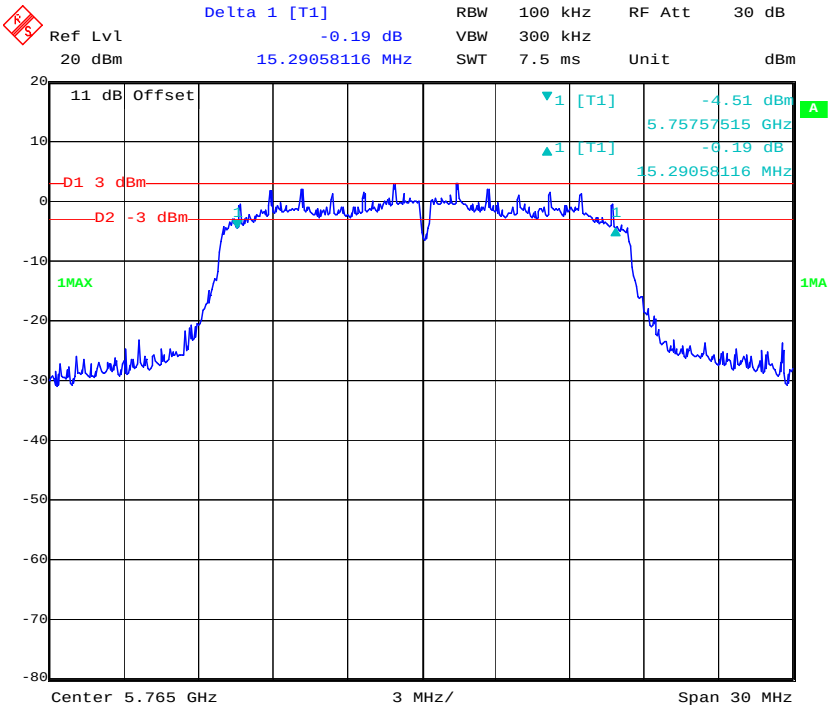
5725 MHz – 5850 MHz:

Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	6dB Bandwidth (MHz)	Limit (kHz)
11a	5745	17.11	15.27	＞500
	5765	17.11	15.29	＞500
	5805	17.11	15.27	＞500
11n20	5745	17.96	15.21	＞500
	5765	17.96	15.27	＞500
	5805	17.89	15.27	＞500
11n40	5755	36.78	35.47	＞500
	5795	36.63	35.39	＞500

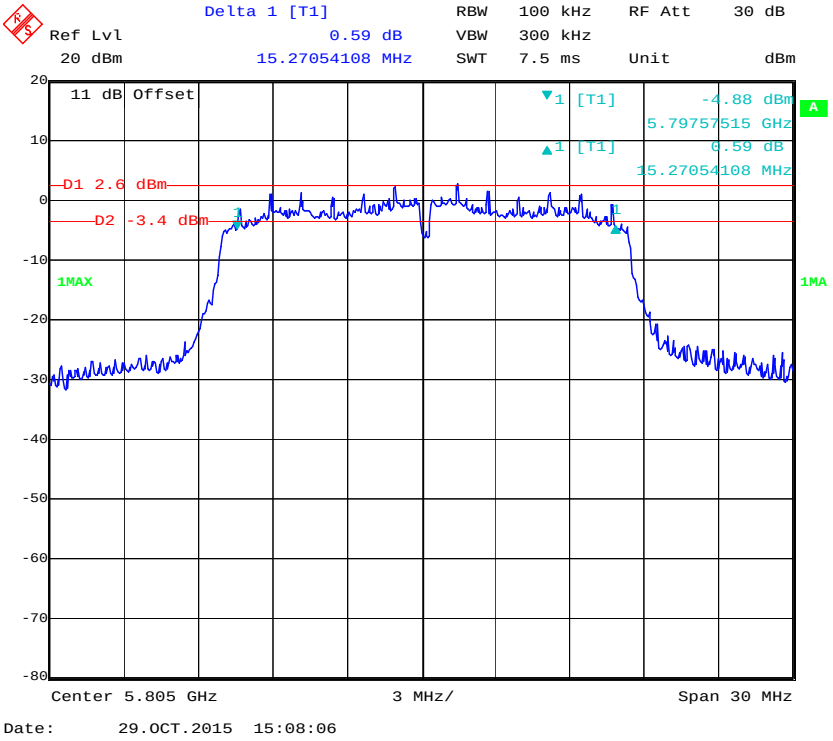
802.11a mode, 6dB Emission Bandwidth, 5745 MHz



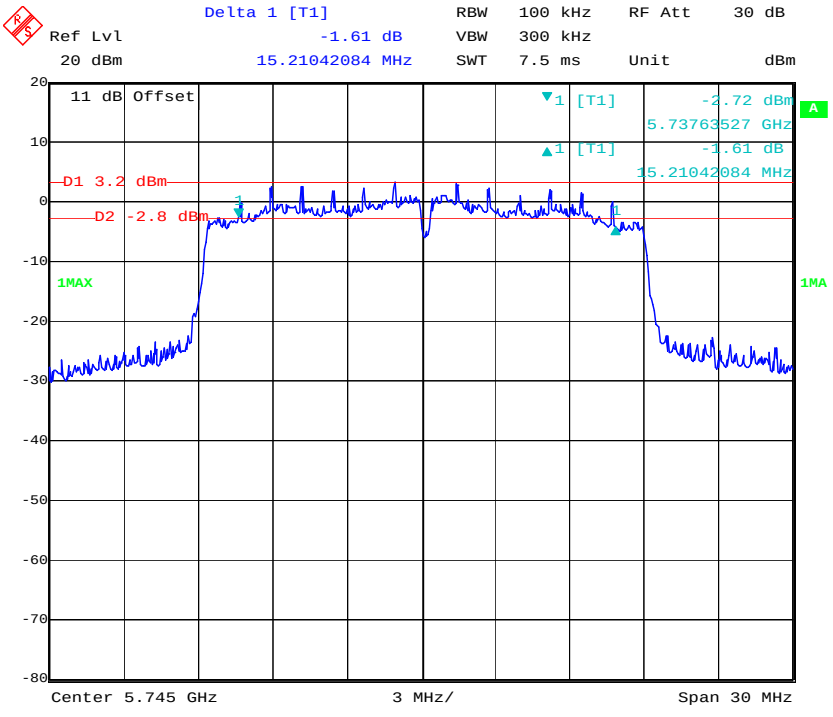
802.11a mode, 6dB Emission Bandwidth, 5765 MHz



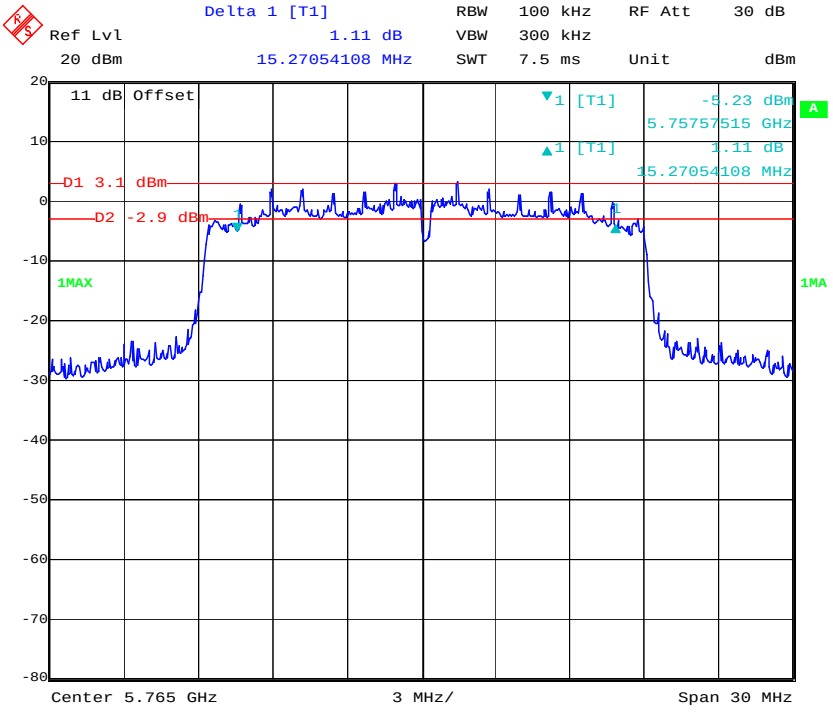
802.11a mode, 6dB Emission Bandwidth, 5805 MHz



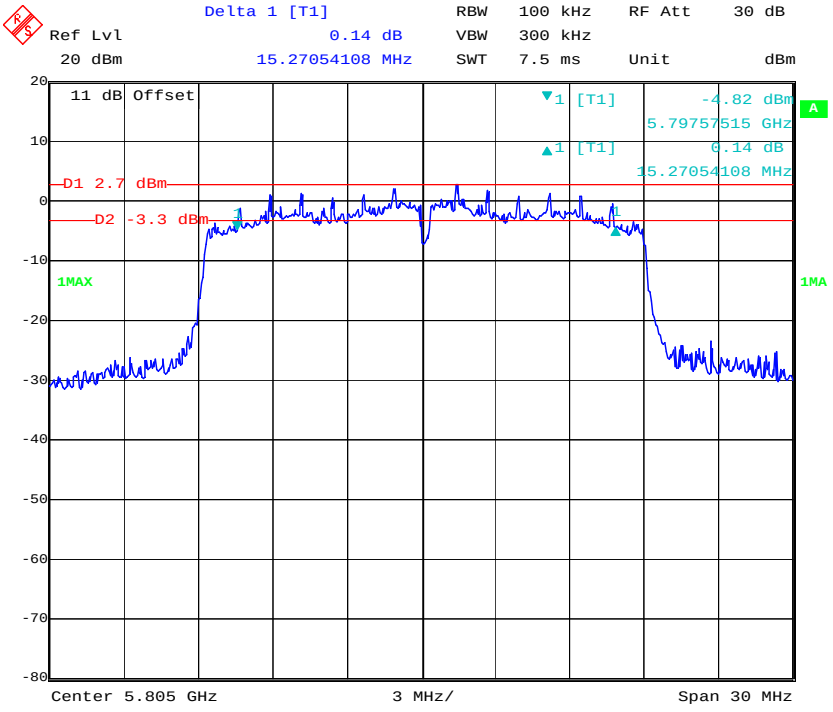
802.11n20 mode, 6dB Emission Bandwidth, 5745 MHz



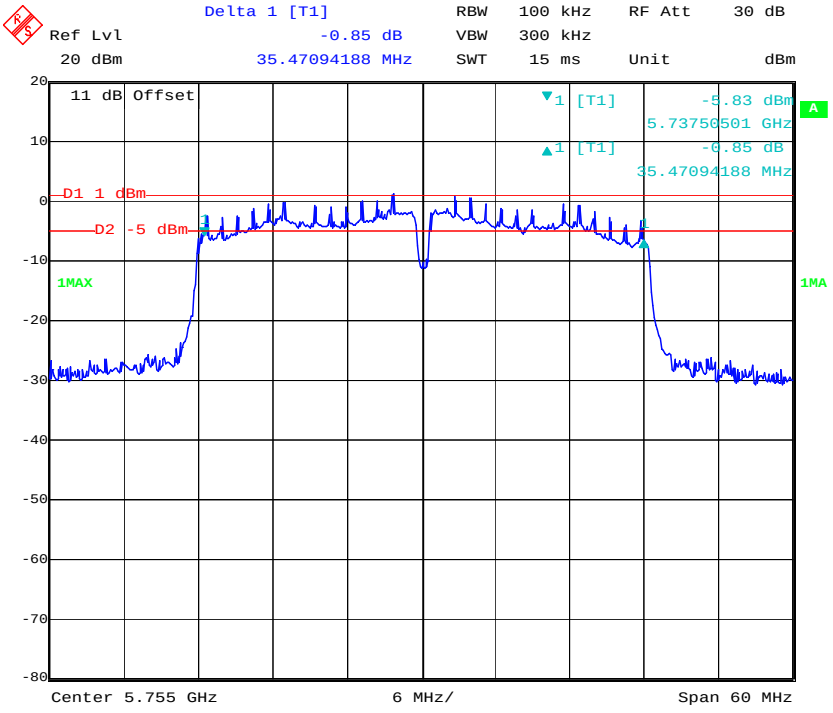
802.11n20 mode, 6dB Emission Bandwidth, 5765 MHz



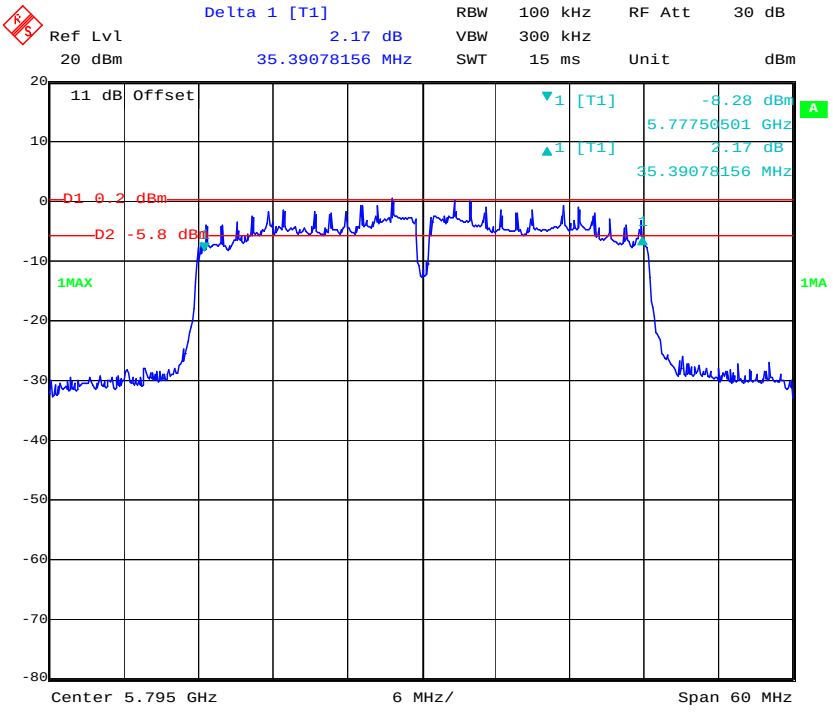
802.11n20 mode, 6dB Emission Bandwidth, 5805 MHz



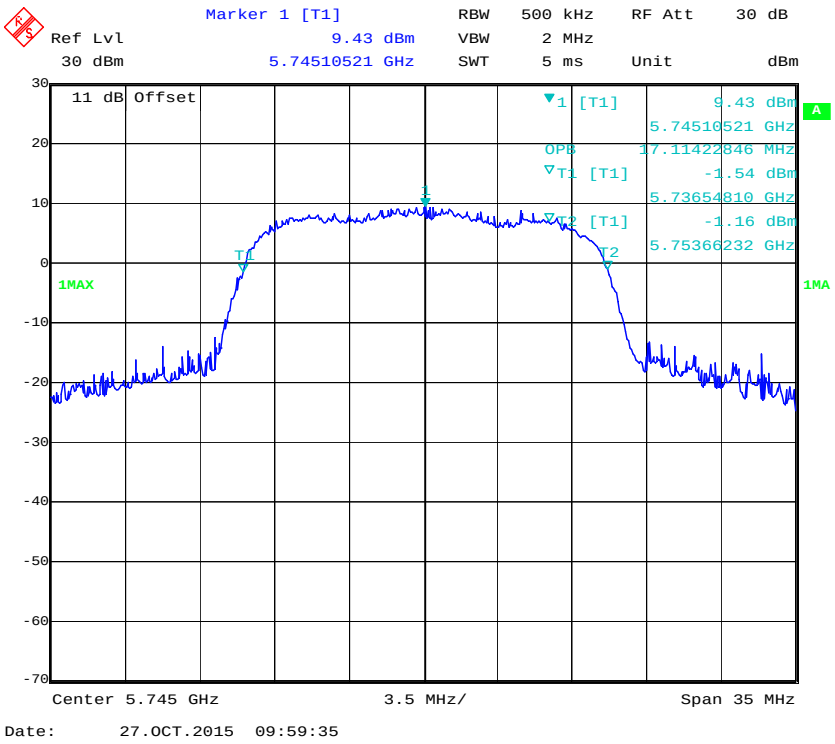
802.11n40 mode, 6dB Emission Bandwidth, 5755 MHz



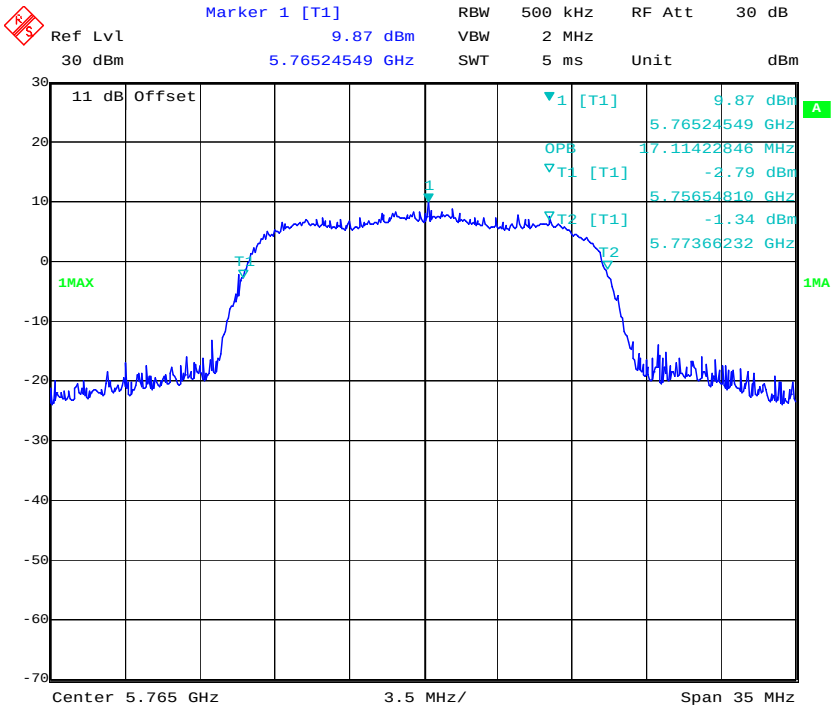
802.11n40 mode, 6dB Emission Bandwidth, 5795 MHz



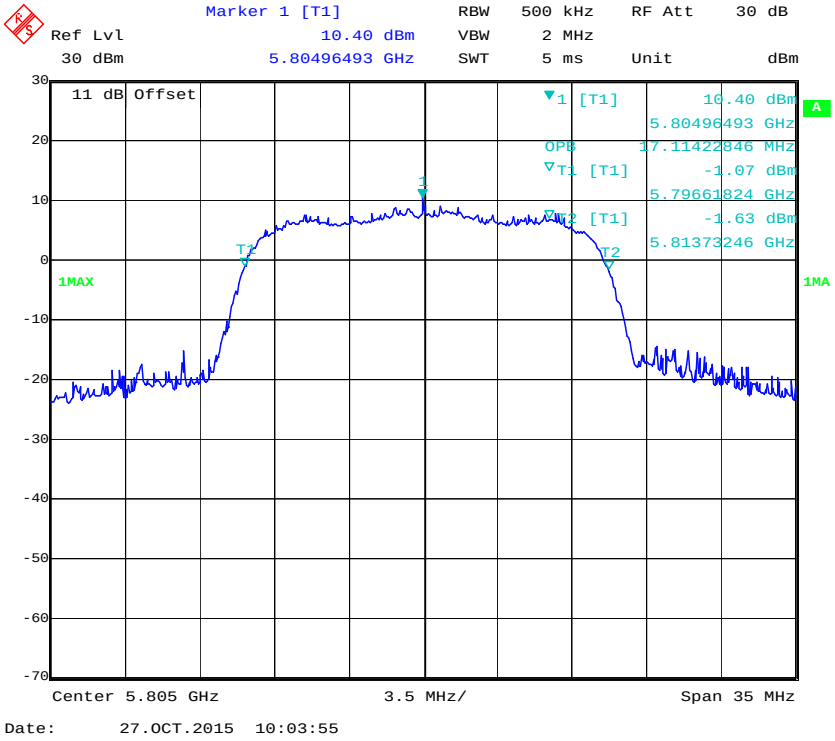
802.11a mode, 99 % Occupied Bandwidth, 5745 MHz



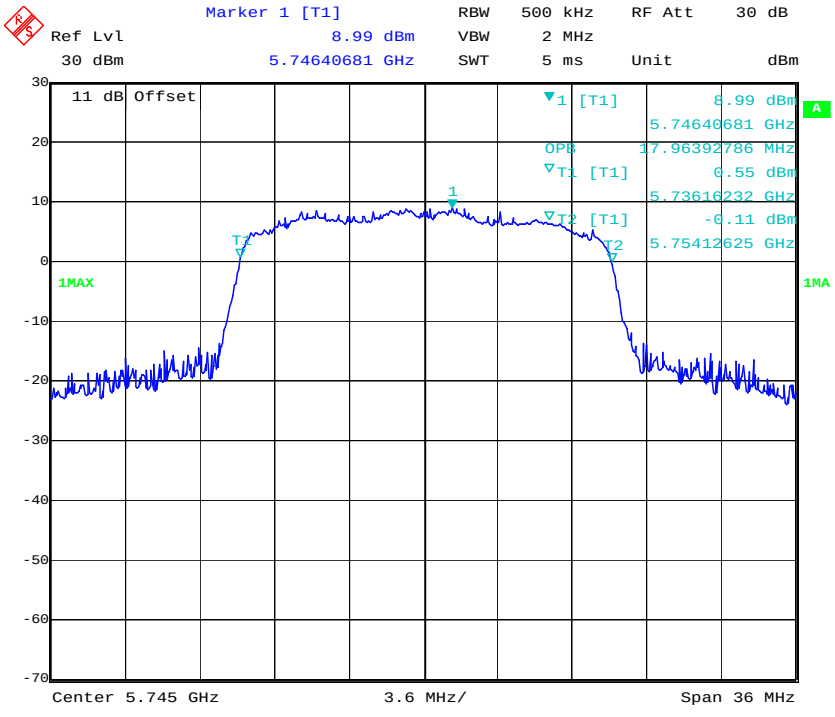
802.11a mode, 99 % Occupied Bandwidth, 5765 MHz



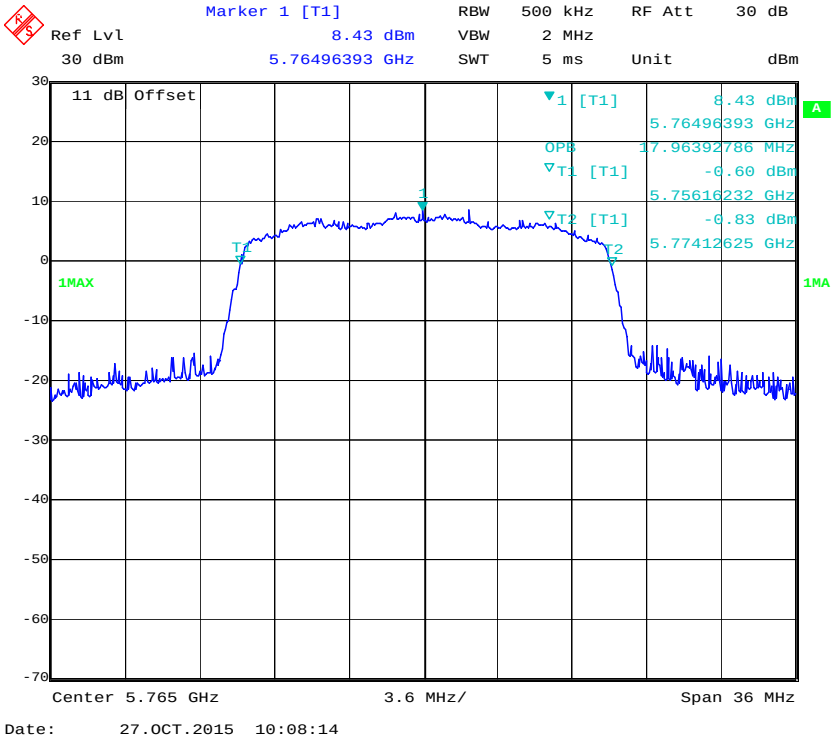
802.11a mode, 99 % Occupied Bandwidth, 5805 MHz



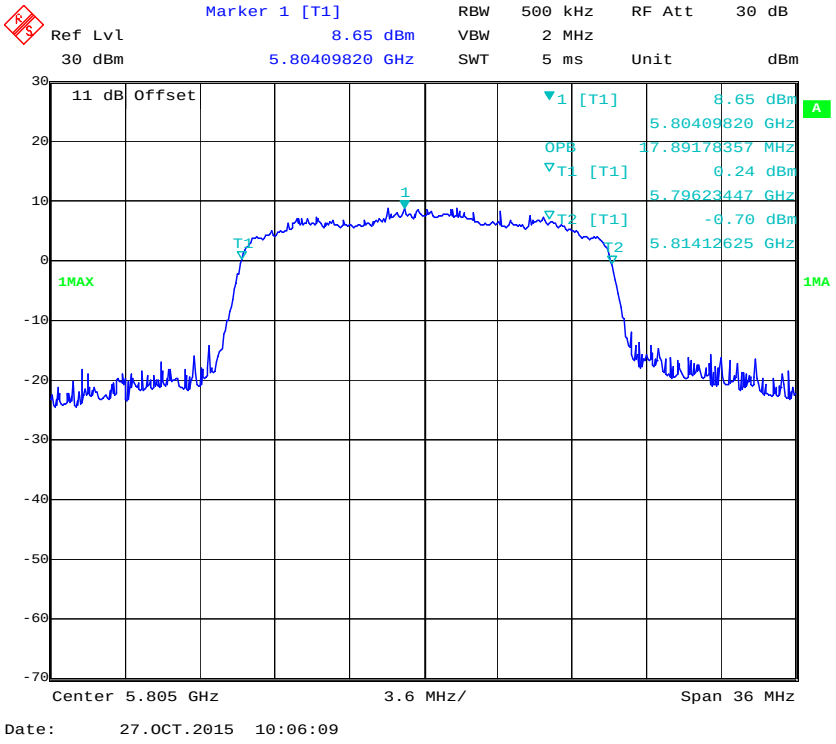
802.11n20 mode, 99 % Occupied Bandwidth, 5745 MHz



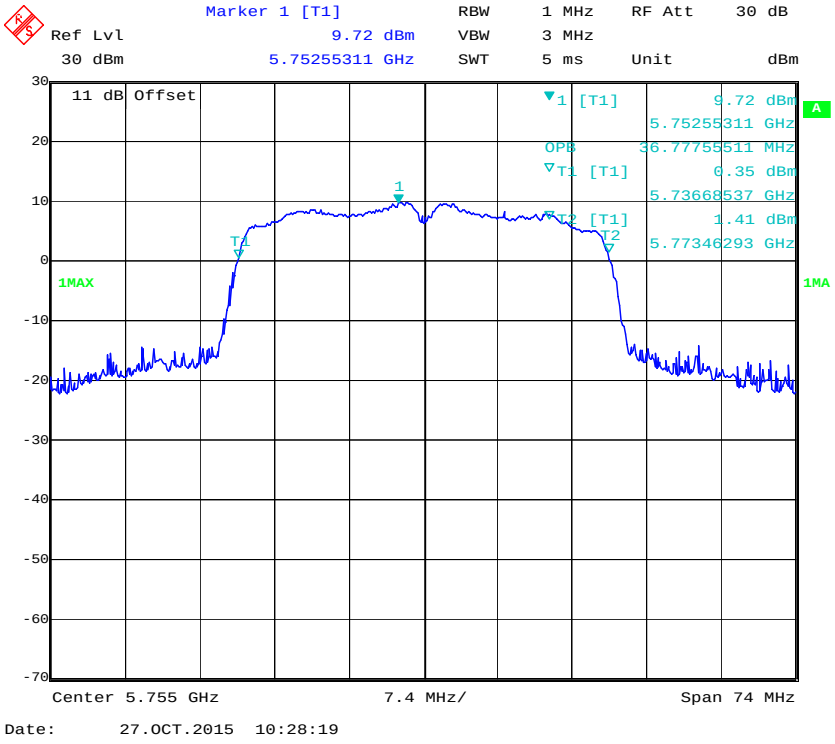
802.11n20 mode, 99 % Occupied Bandwidth, 5765 MHz



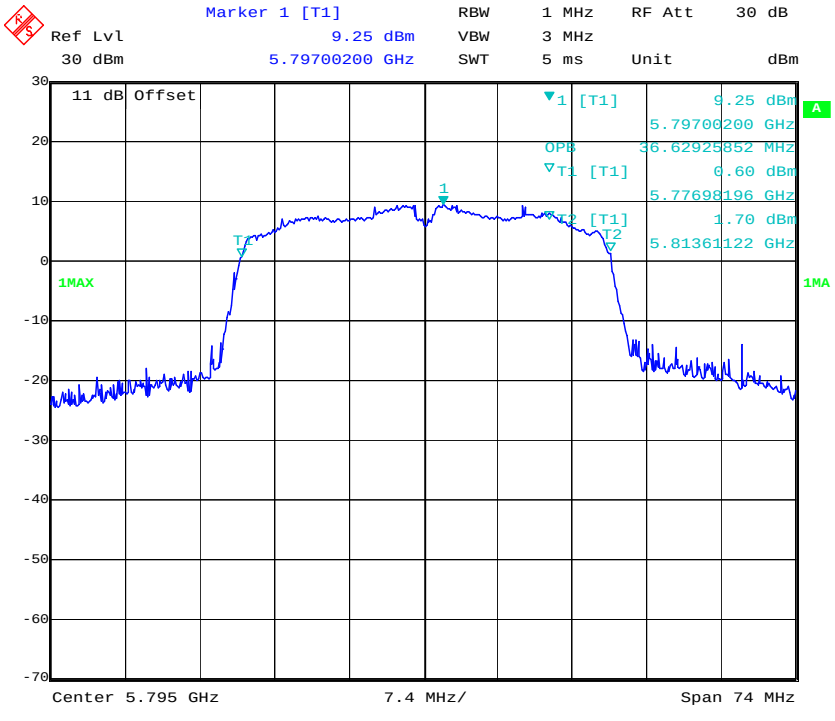
802.11n20 mode, 99 % Occupied Bandwidth, 5805 MHz



802.11n40 mode, 99 % Occupied Bandwidth, 5755 MHz



802.11n40 mode, 99 % Occupied Bandwidth, 5795 MHz



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

Applicable Standard

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

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

Test Procedure

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

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

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

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

(vi) Set detector = RMS.

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

(viii) Perform a single sweep.

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11

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

Test Data

Environmental Conditions

Temperature:	23 - 25 ℃
Relative Humidity:	50 - 51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-10-27.

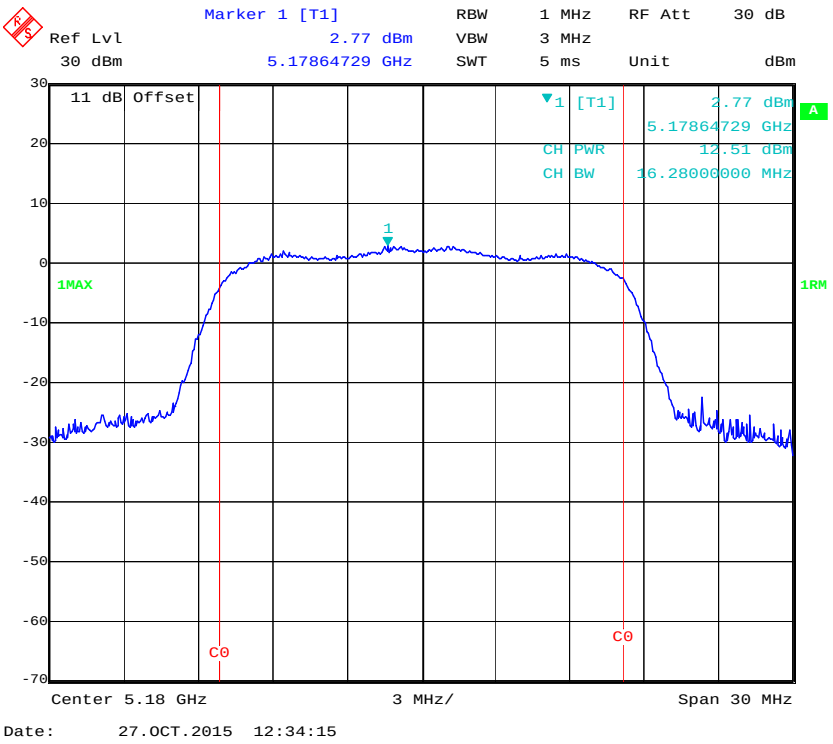
EUT operation mode: Transmitting

Test Result: Pass

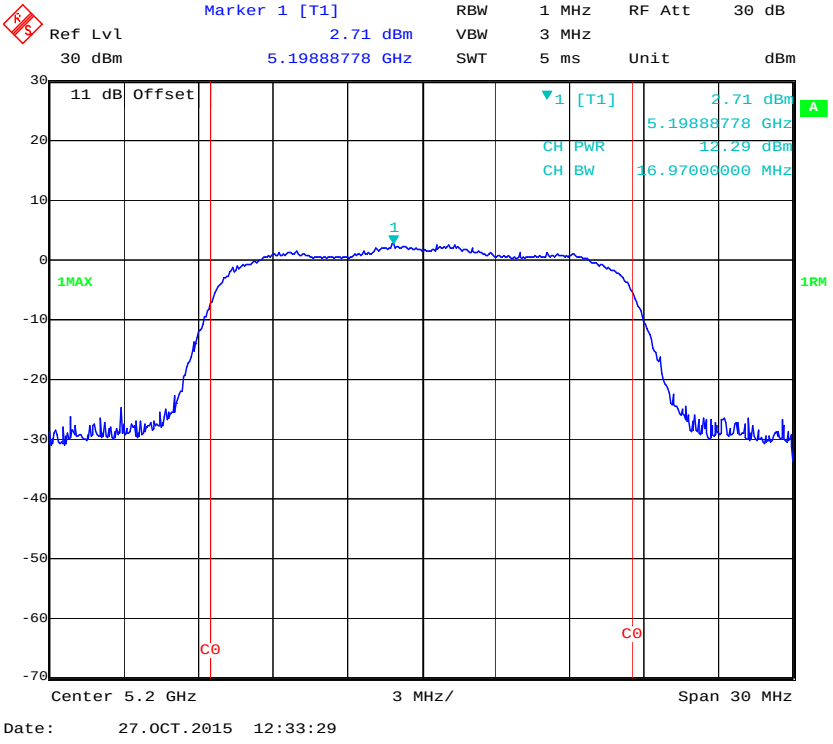
Mode	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
11a	5180	12.51	24
	5200	12.29	
	5240	13.21	
	5745	15.30	30
	5765	14.27	
	5805	14.49	
11n20	5180	12.66	24
	5200	12.03	
	5240	13.17	
	5745	14.95	30
	5765	14.14	
	5805	14.41	
11n40	5190	12.61	24
	5230	13.36	
	5755	15.41	30
	5795	14.96	

Note: The EUT is a mobile device.

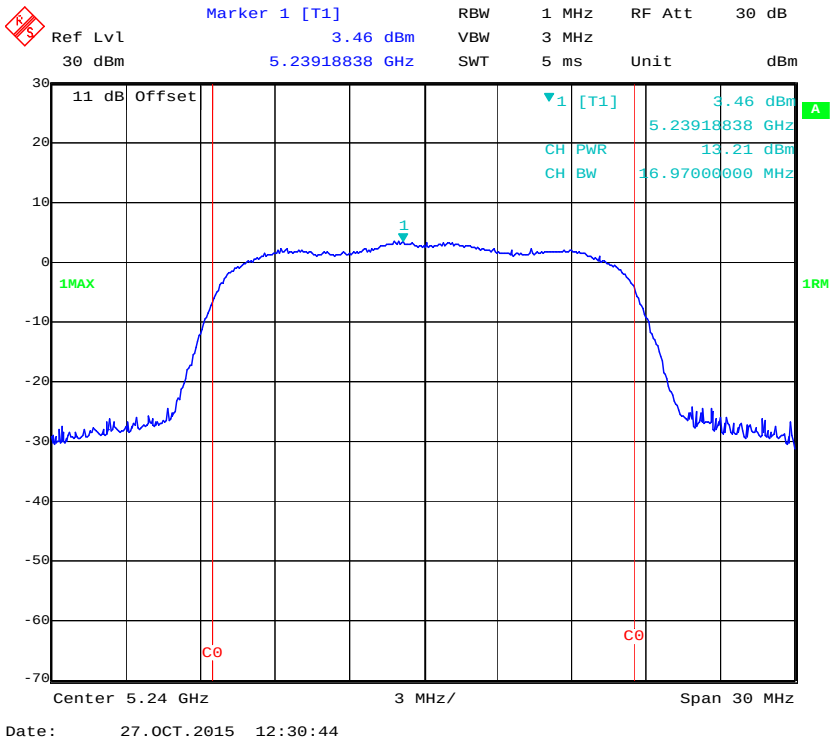
802.11a mode, Average Conducted Output Power, 5180 MHz



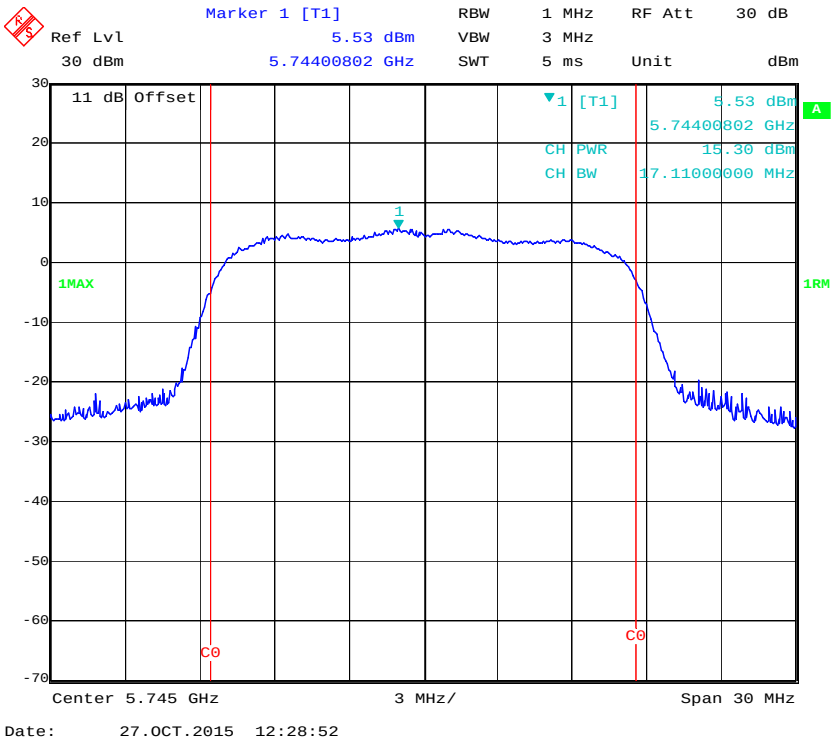
802.11a mode, Average Conducted Output Power, 5200 MHz



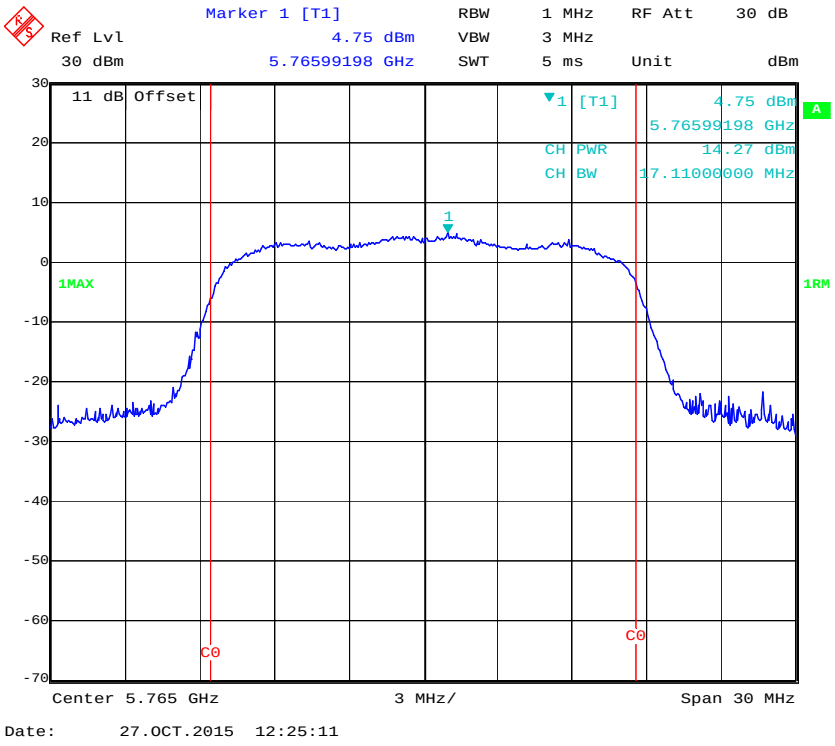
802.11a mode, Average Conducted Output Power, 5240 MHz



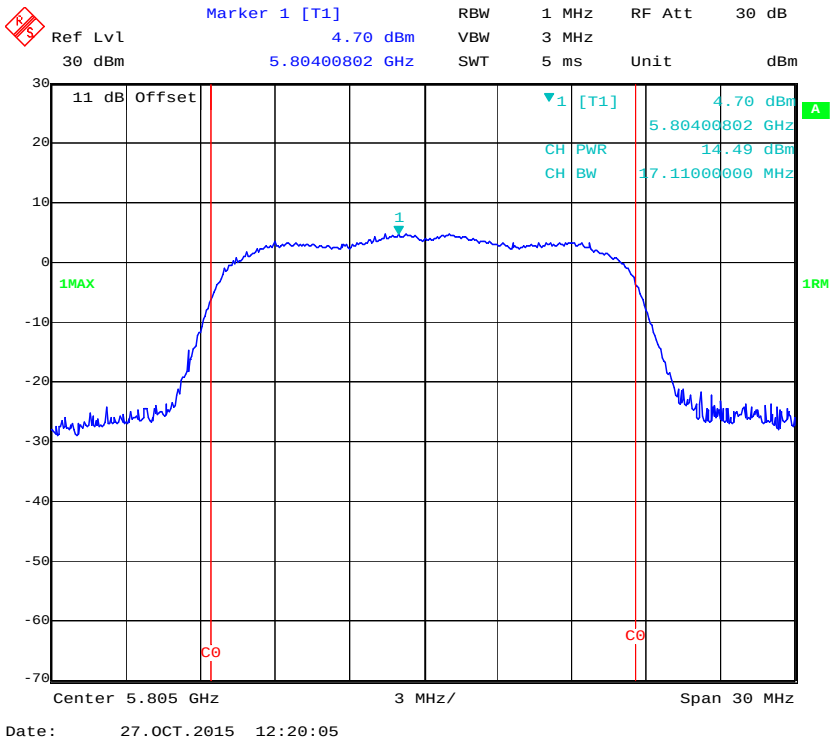
802.11a mode, Average Conducted Output Power, 5745 MHz



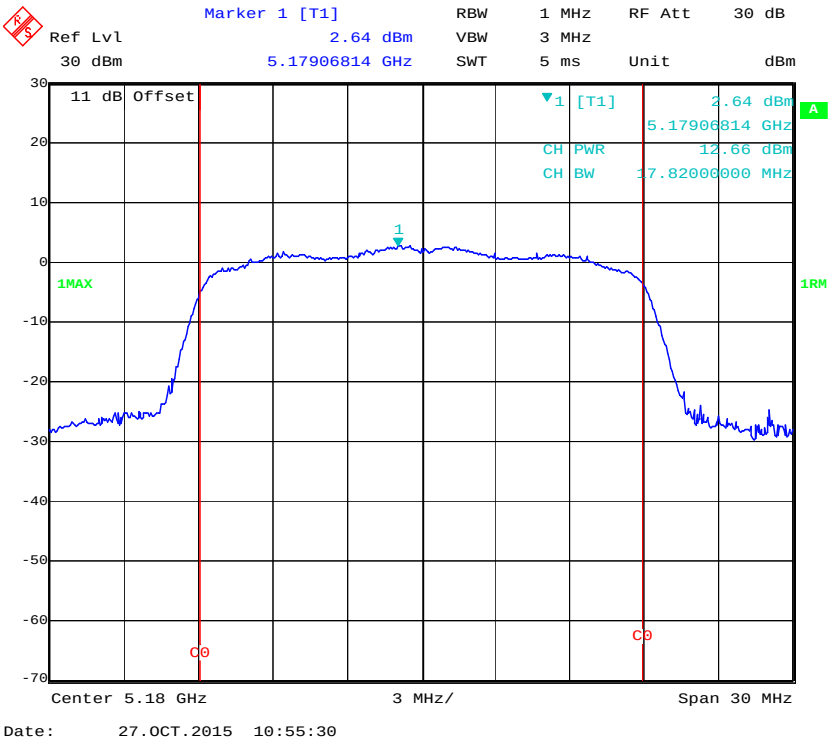
802.11a mode, Average Conducted Output Power, 5765 MHz



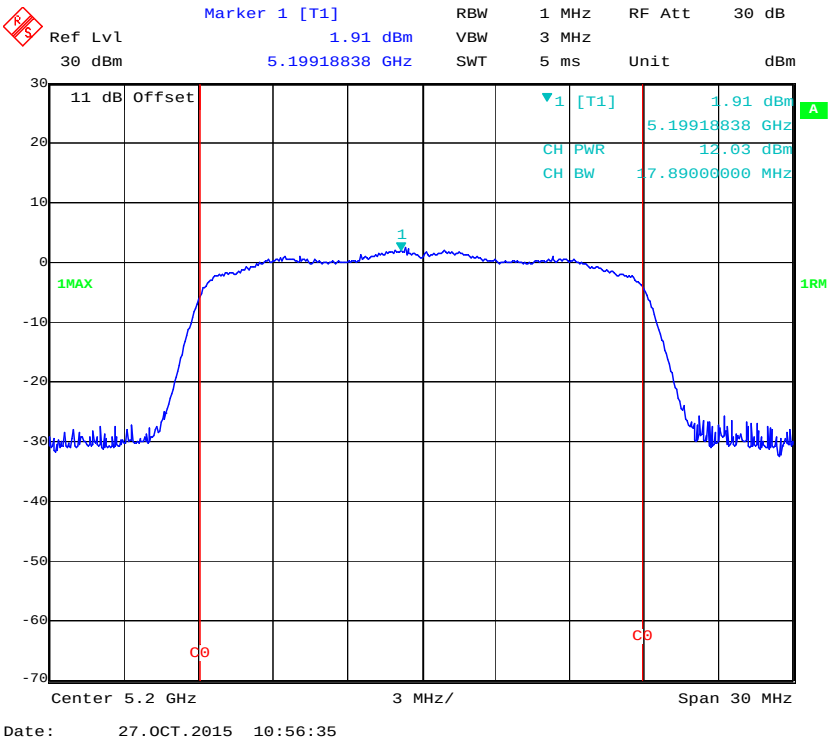
802.11a mode, Average Conducted Output Power, 5805 MHz



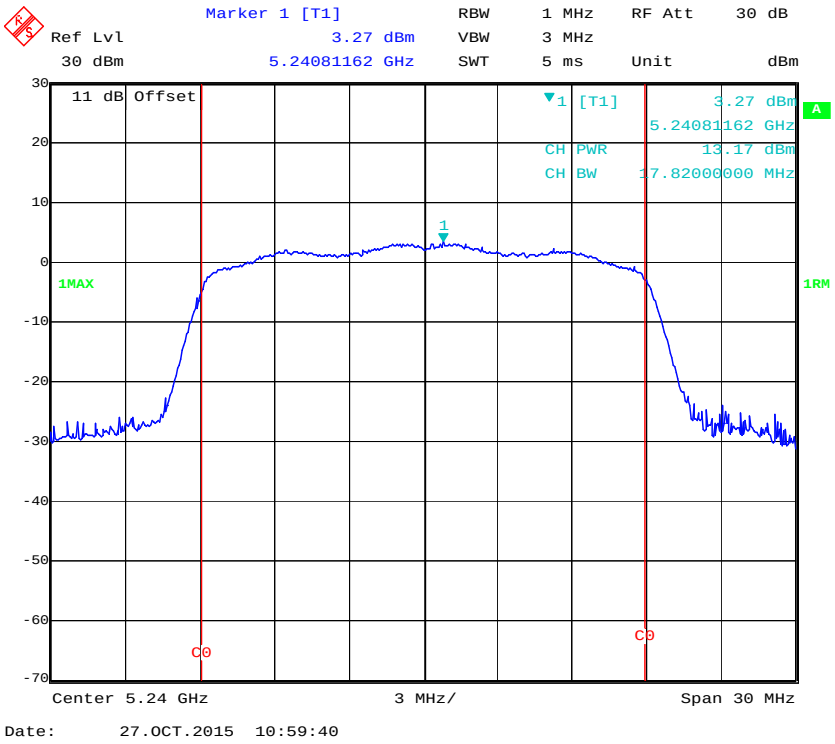
802.11n20 mode, Average Conducted Output Power, 5180 MHz



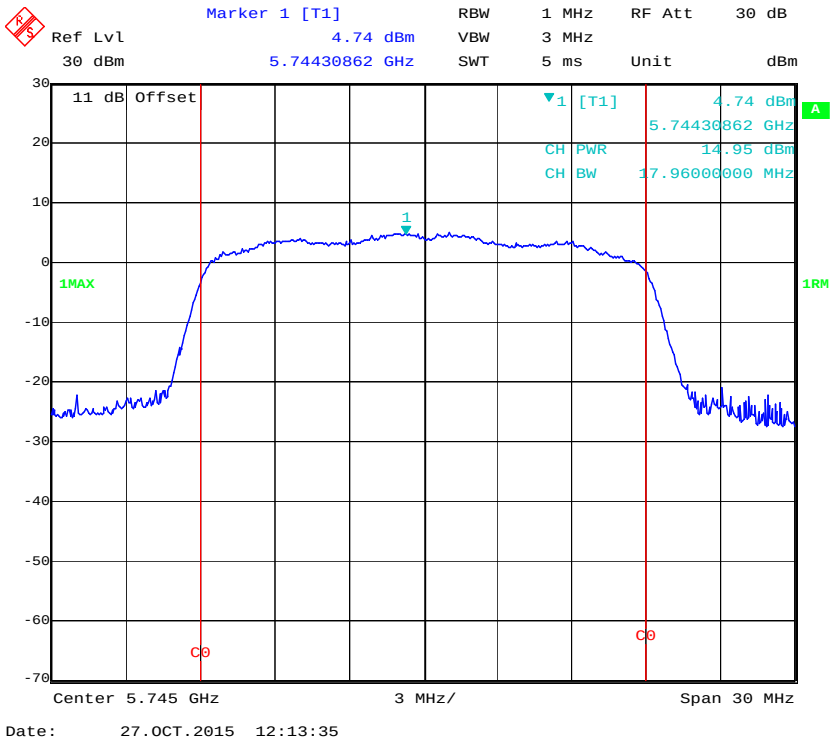
802.11n20 mode, Average Conducted Output Power, 5200 MHz



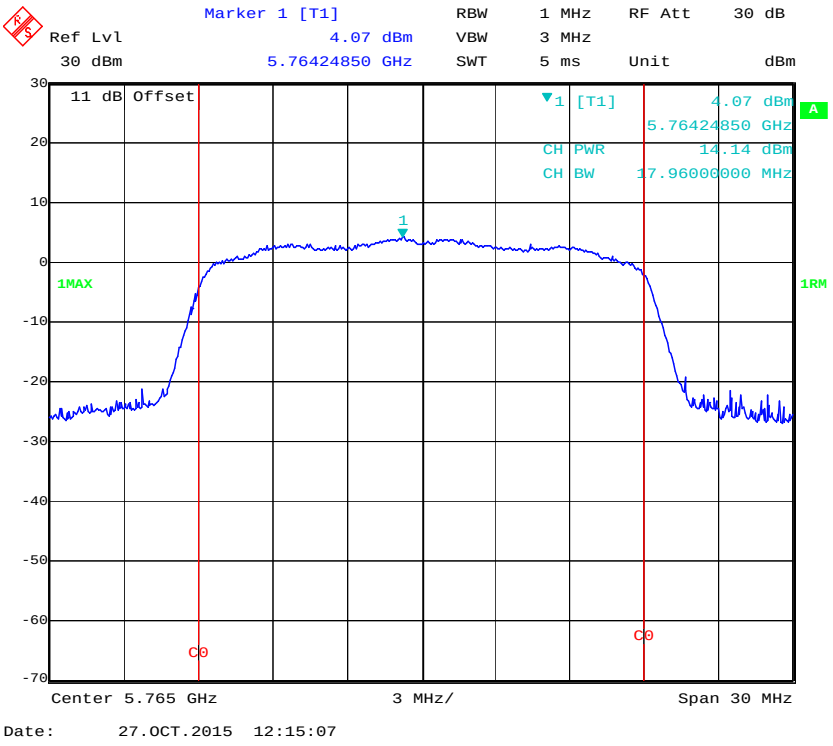
802.11n20 mode, Average Conducted Output Power, 5240 MHz



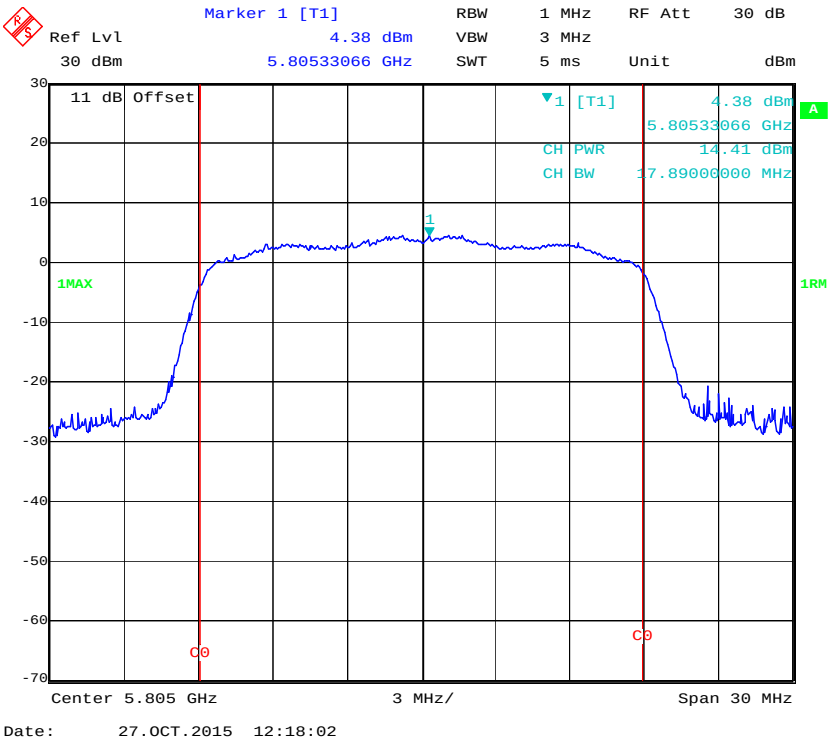
802.11n20 mode, Average Conducted Output Power, 5745 MHz



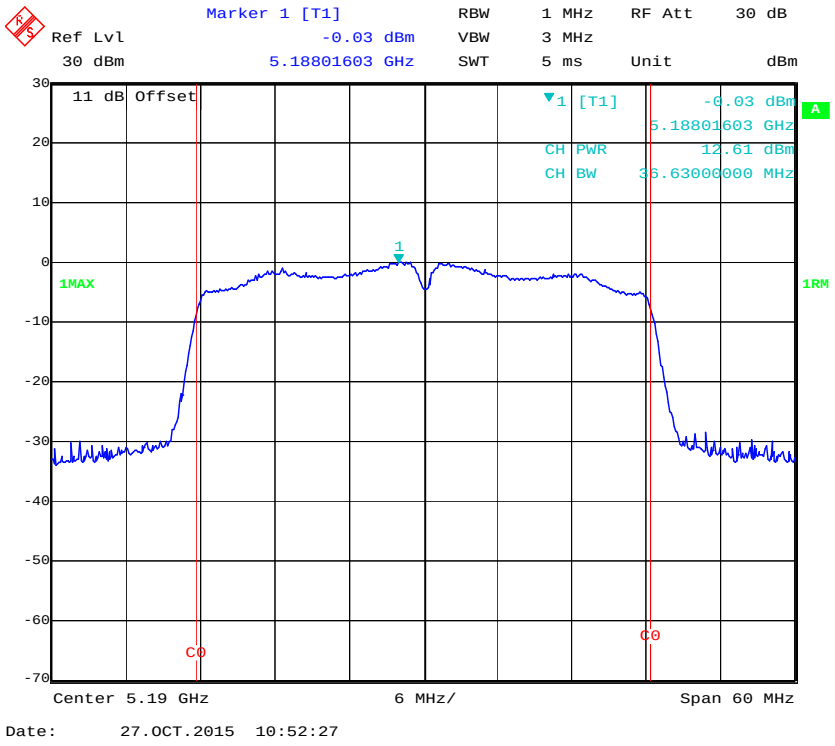
802.11n20 mode, Average Conducted Output Power, 5765 MHz



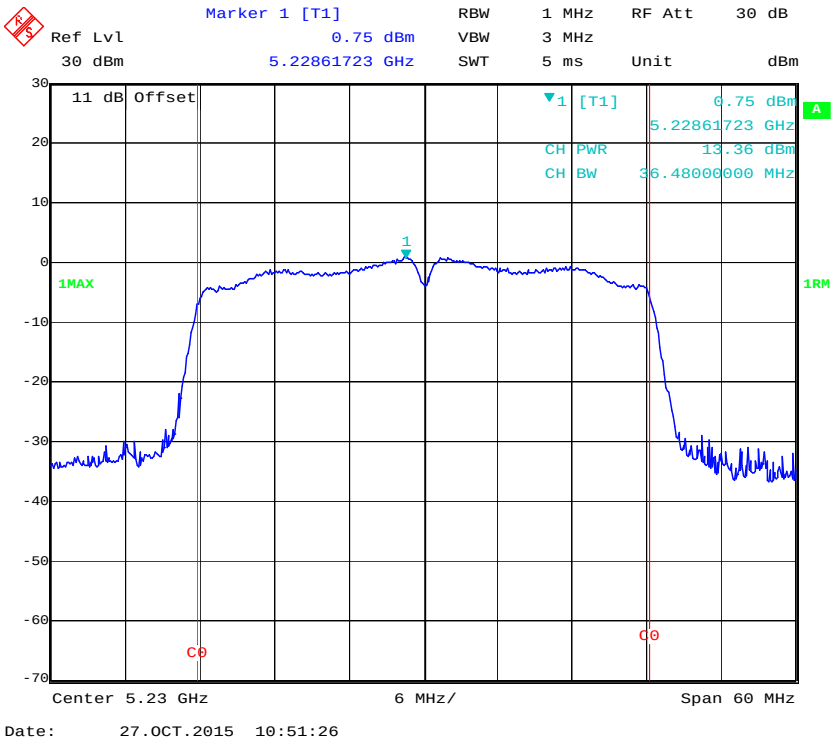
802.11n20 mode, Average Conducted Output Power, 5805 MHz



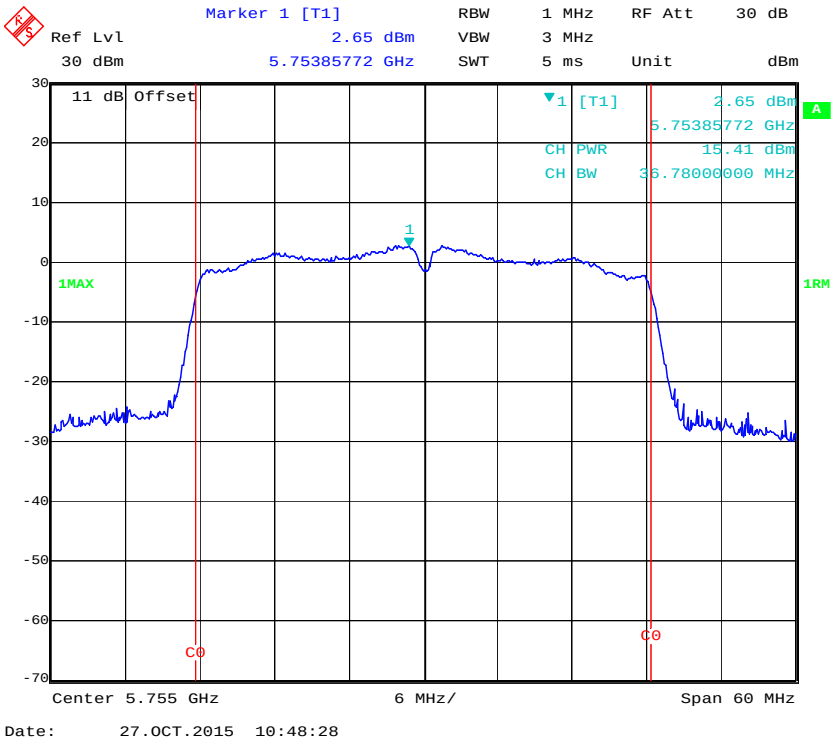
802.11n40 mode, Average Conducted Output Power, 5190 MHz



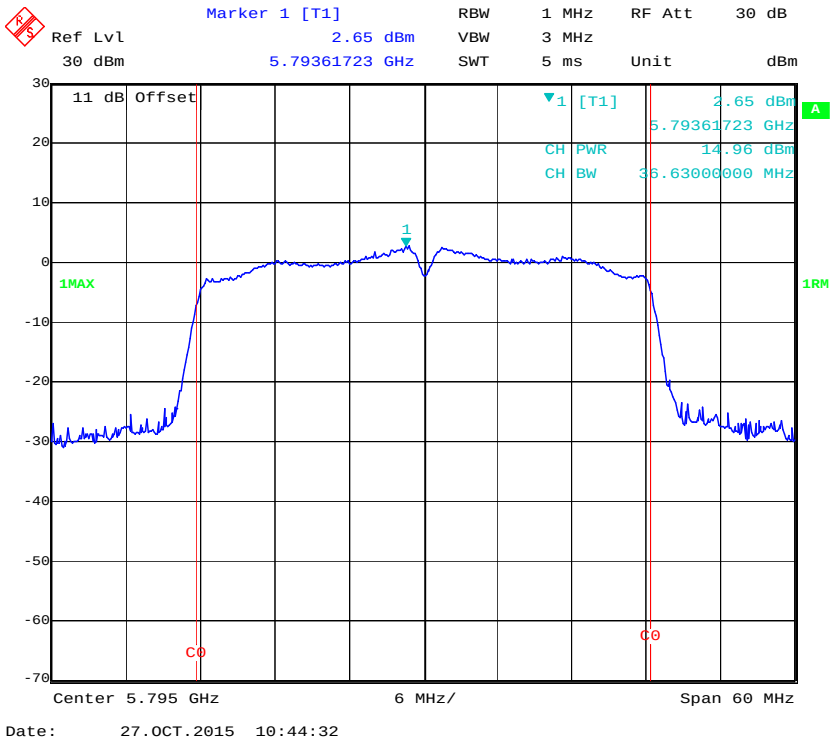
802.11n40 mode, Average Conducted Output Power, 5230 MHz



802.11n40 mode, Average Conducted Output Power, 5755 MHz



802.11n40 mode, Average Conducted Output Power, 5795 MHz



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

Applicable Standard

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

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

Test Procedure

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

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

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

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

(vi) Set detector = RMS.

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

(viii) Perform a single sweep.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li from 2015-10-29 to 2015-11-04.

EUT operation mode: Transmitting

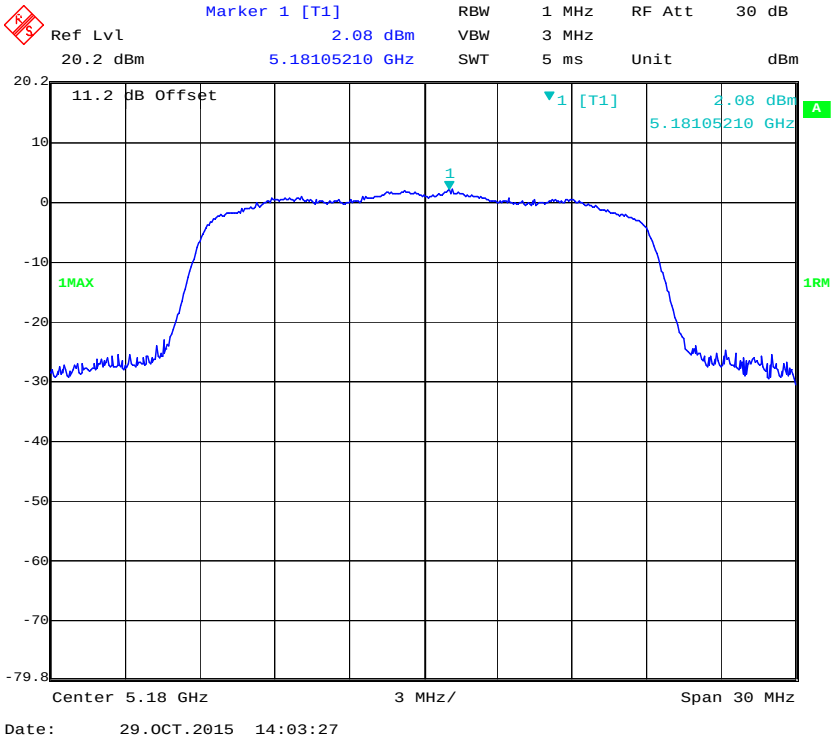
Test Result: Pass

Please refer to the following tables and plots.

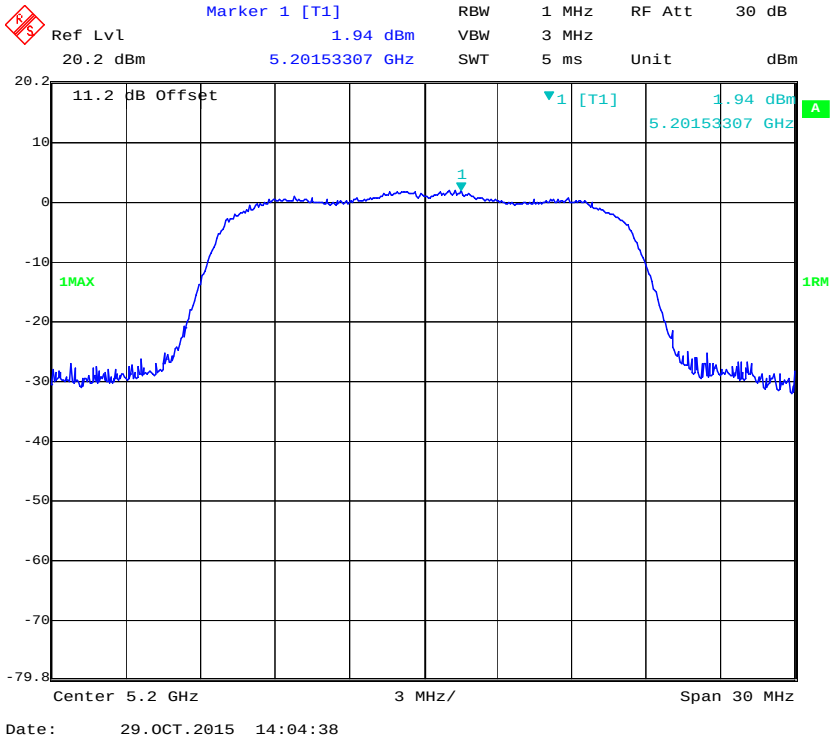
5150 MHz – 5250 MHz:

Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
802.11a	5180	2.08	11
	5200	1.94	
	5240	3.27	
802.11n20	5180	2.23	
	5200	2.01	
	5240	2.89	
802.11n40	5190	-0.36	
	5230	0.46	

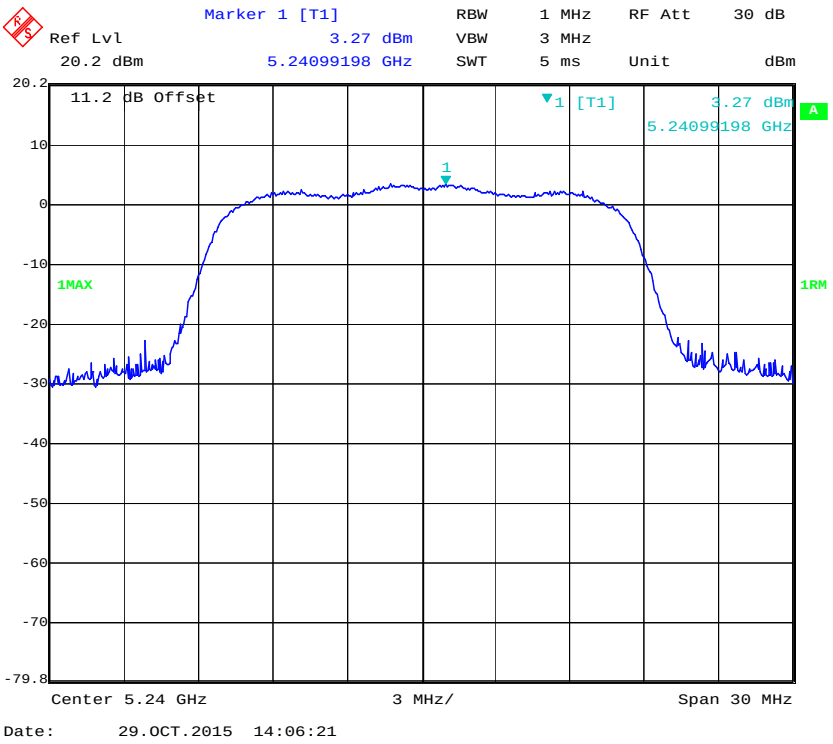
802.11a mode, Power Spectral Density, 5180 MHz



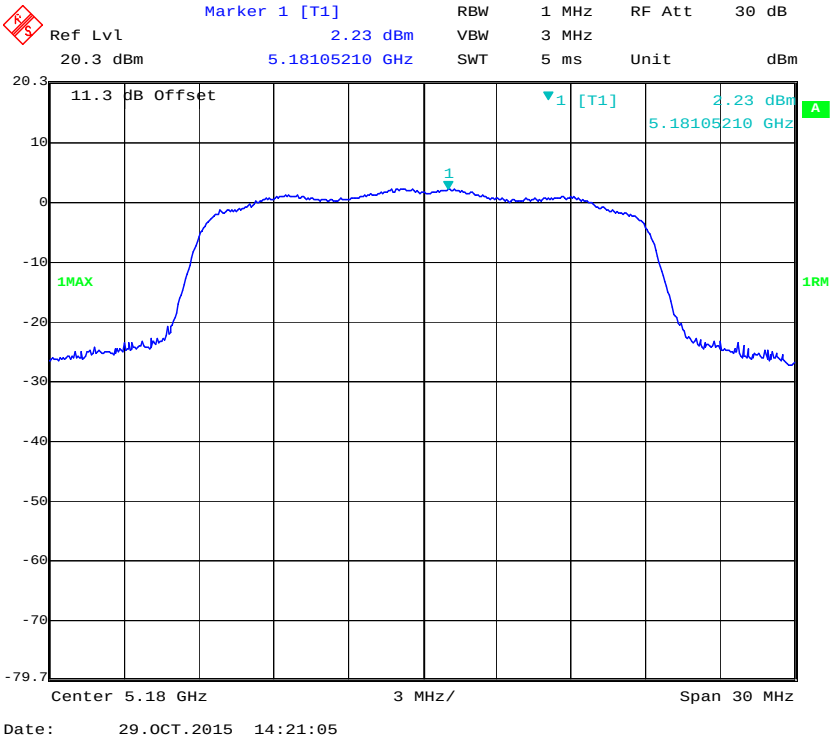
802.11a mode, Power Spectral Density, 5200 MHz



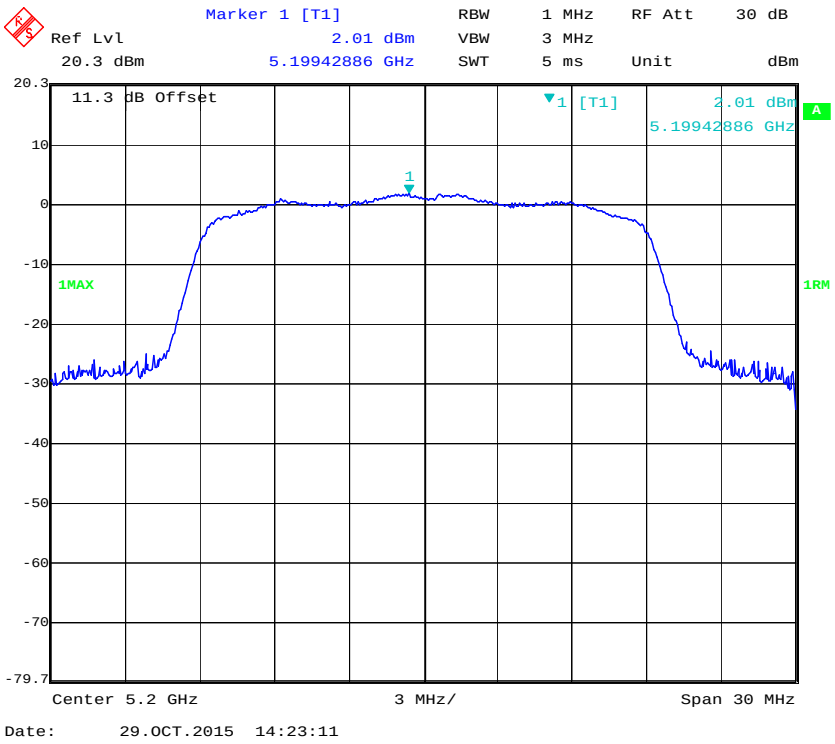
802.11a mode, Power Spectral Density, 5240 MHz



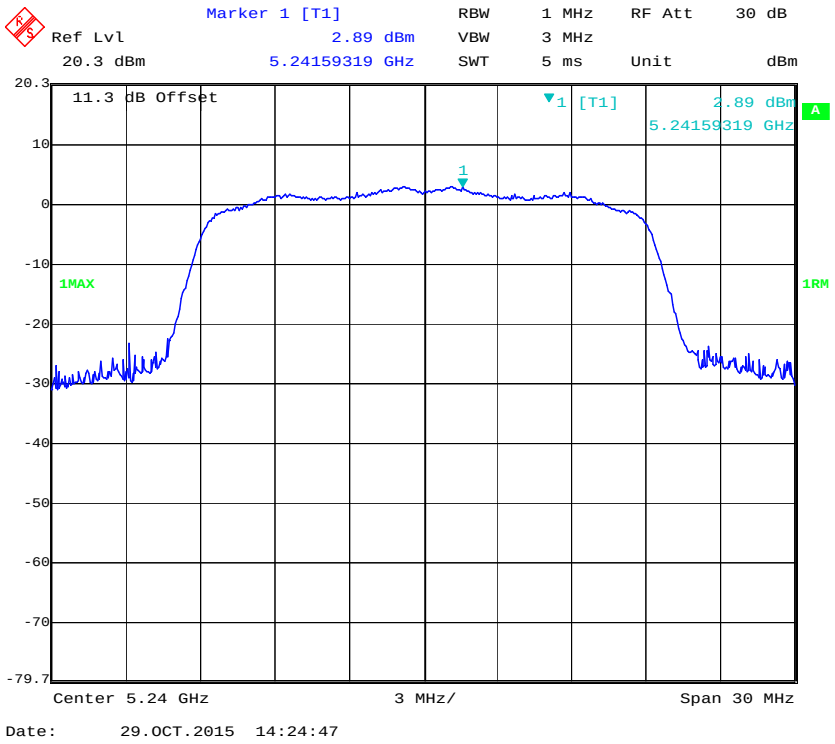
802.11n20 mode, Power Spectral Density, 5180 MHz



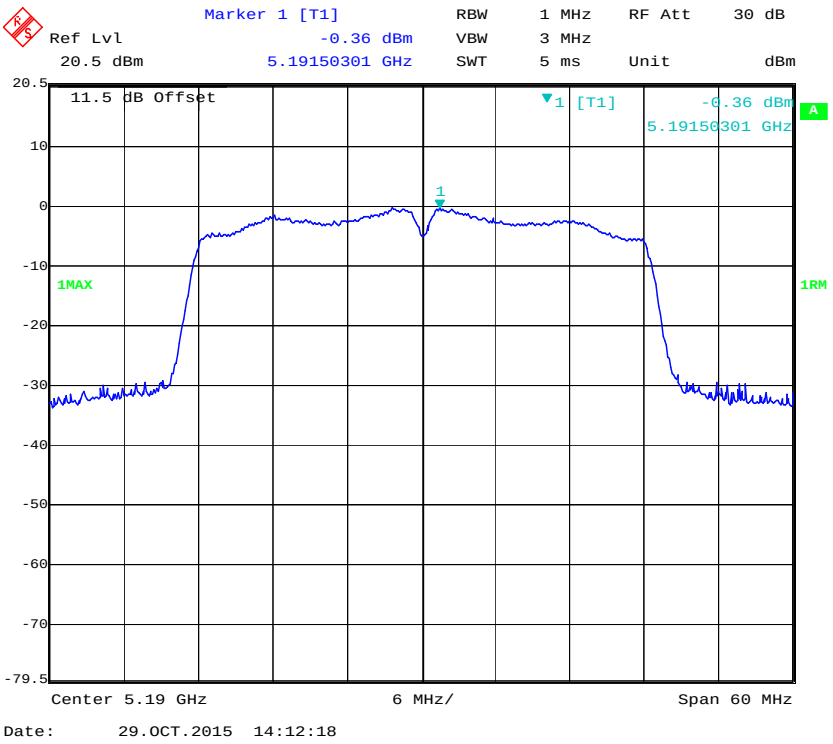
802.11n20 mode, Power Spectral Density, 5200 MHz



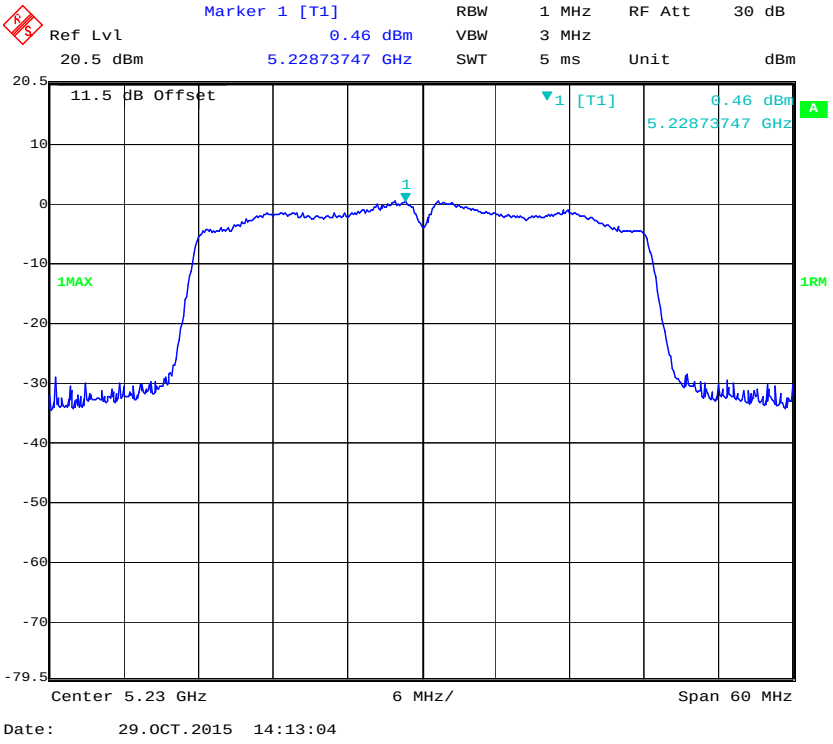
802.11n20 mode, Power Spectral Density, 5240 MHz



802.11n40 mode, Power Spectral Density, 5190 MHz



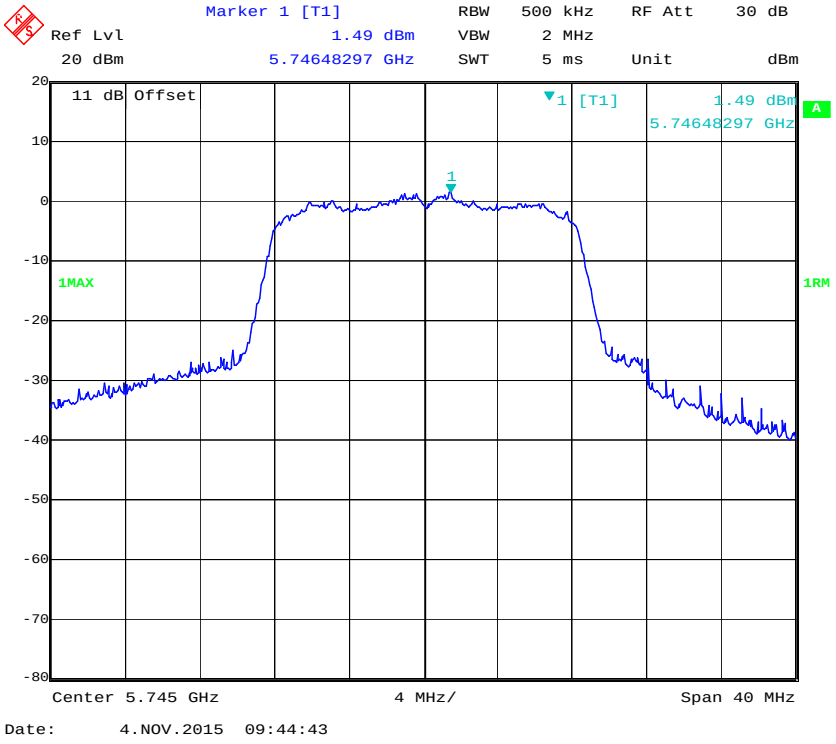
802.11n40 mode, Power Spectral Density, 5230 MHz



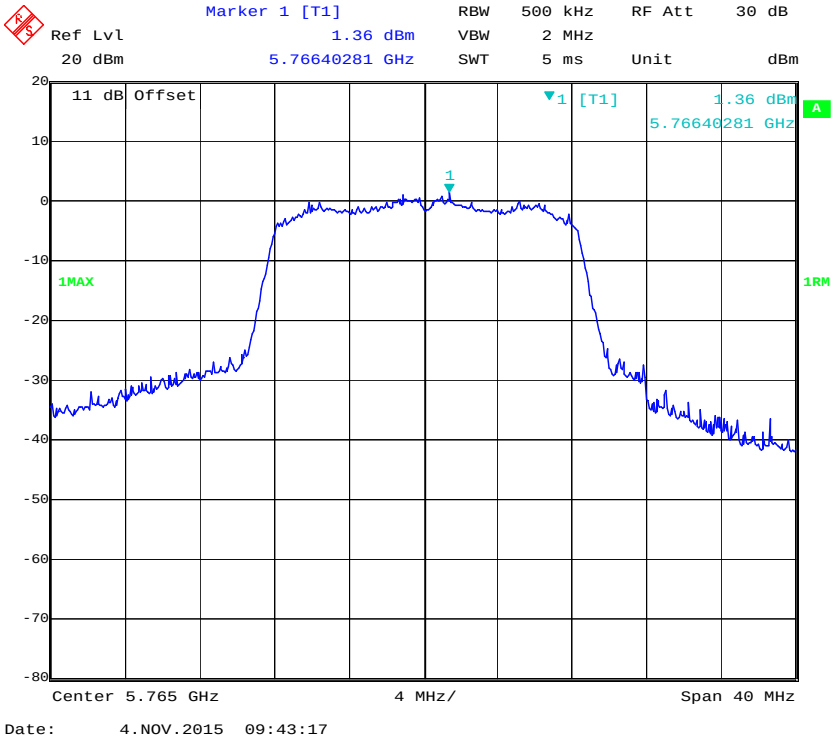
5725 MHz – 5850 MHz:

Mode	Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
11a	5745	1.49	30
	5765	1.36	
	5805	1.99	
11n20	5745	1.33	
	5765	1.05	
	5805	1.56	
11n40	5755	-1.03	
	5795	-1.39	

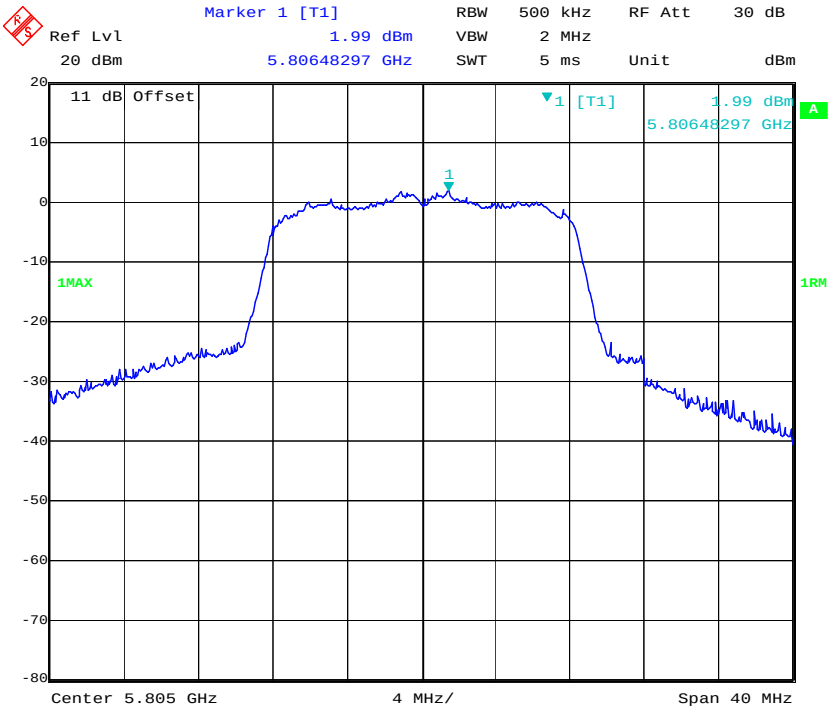
802.11a mode, Power Spectral Density, 5745 MHz



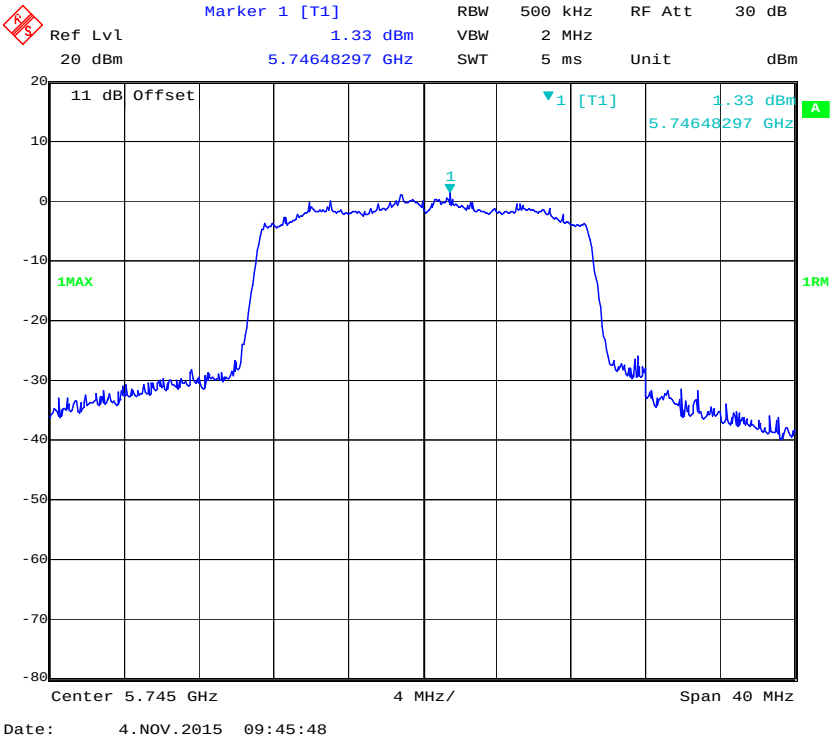
802.11a mode, Power Spectral Density, 5765 MHz



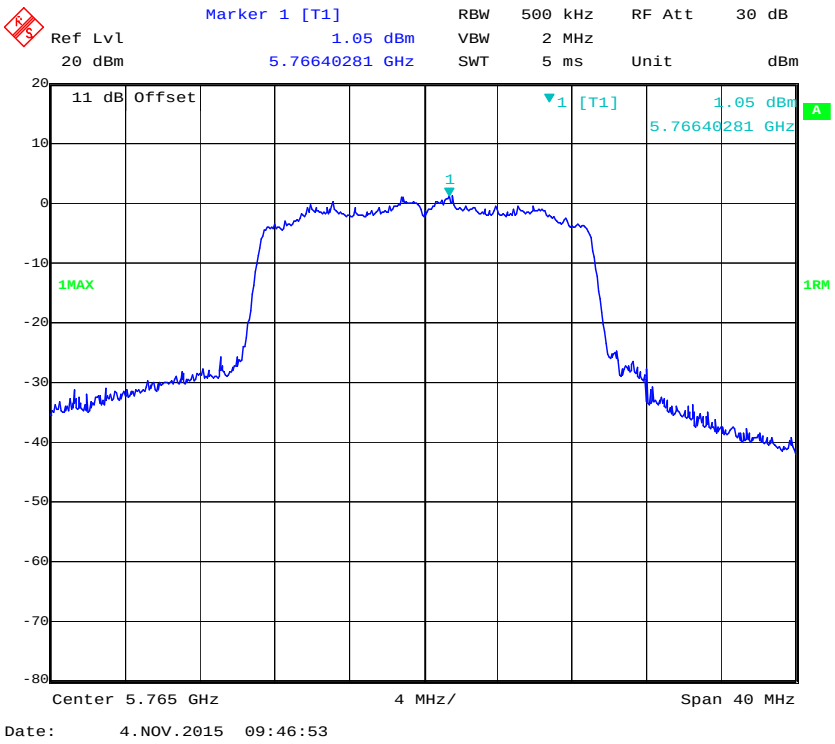
802.11a mode, Power Spectral Density, 5805 MHz



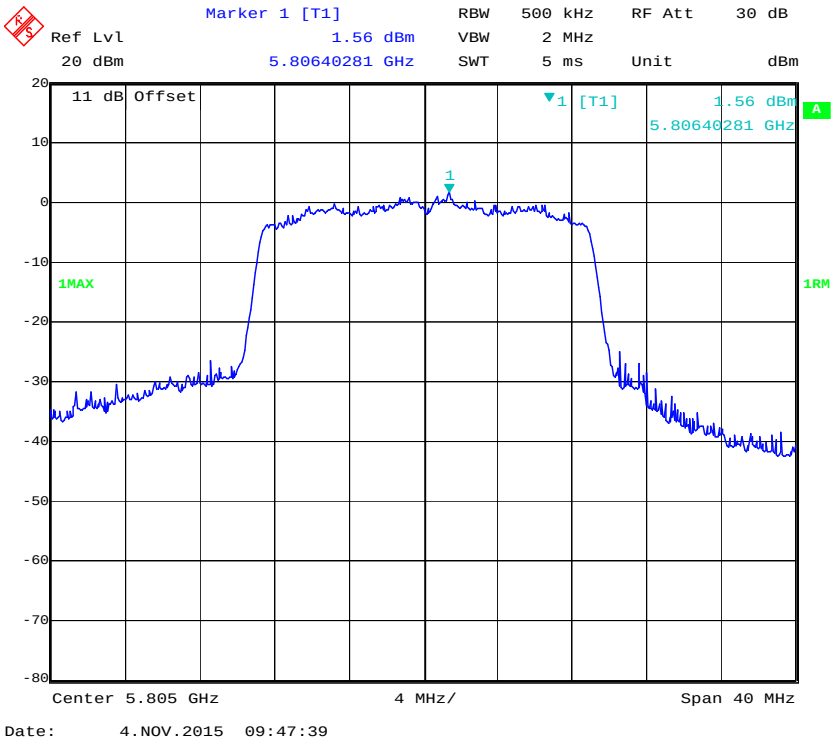
802.11n20 mode, Power Spectral Density, 5745 MHz



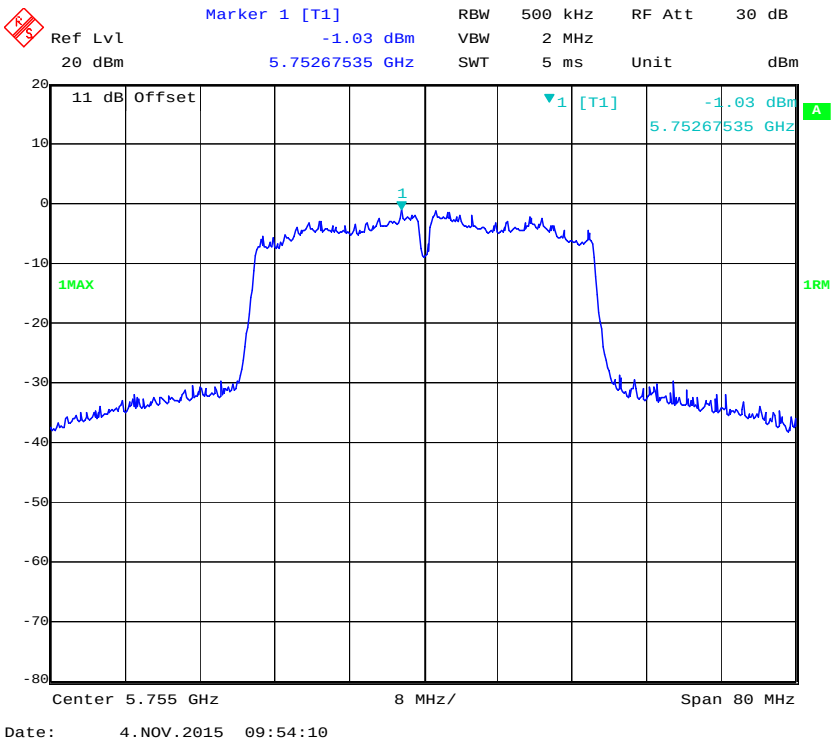
802.11n20 mode, Power Spectral Density, 5765 MHz



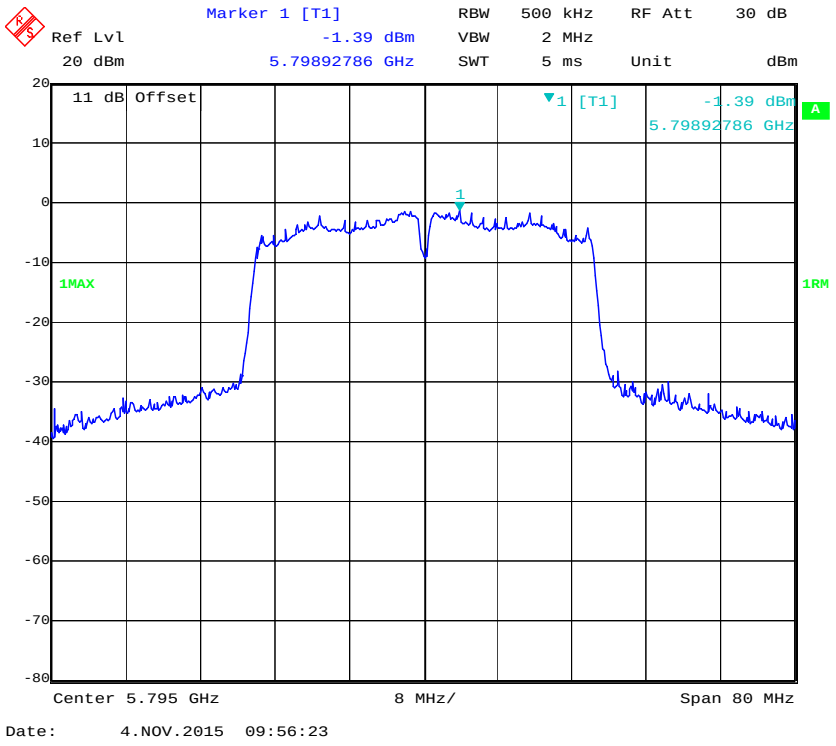
802.11n20 mode, Power Spectral Density, 5805 MHz



802.11n40 mode, Power Spectral Density, 5755 MHz



802.11n40 mode, Power Spectral Density, 5795 MHz



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