

FCC PART 15.407 TEST REPORT

For

Dongguan SmartAction Technology Co.,Ltd

Room 1108, Building D, First Place, Nancheng District, Dongguan, China

FCC ID: 2AOBQ-HIBYR6

Report Type: Original Report	Product Name: High Resolution Music Player
Report Number: RDG180112005-00C	
Report Date: 2018-02-09	
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 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. (Dongguan). This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA* or any agency of the Federal Government. * This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk “*”.

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
EQUIPMENT MODIFICATIONS	8
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	8
SUPPORT CABLE LIST AND DETAILS	8
BLOCK DIAGRAM OF TEST SETUP	9
SUMMARY OF TEST RESULTS	10
FCC §15.407 (f) & §1.1310 & §2.1093 - RF EXPOSURE	11
APPLICABLE STANDARD	11
TEST RESULT	11
FCC §15.203 – ANTENNA REQUIREMENT	12
APPLICABLE STANDARD	12
ANTENNA CONNECTOR CONSTRUCTION	12
FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS	13
APPLICABLE STANDARD	13
EUT SETUP	13
EMI TEST RECEIVER SETUP.....	13
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST PROCEDURE	14
TEST DATA	15
FCC §15.209, §15.205 & §15.407(b) –UNWANTED EMISSION.....	17
APPLICABLE STANDARD	17
EUT SETUP	18
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	19
TEST PROCEDURE	19
CORRECTED AMPLITUDE & MARGIN CALCULATION	19
TEST EQUIPMENT LIST AND DETAILS.....	20
TEST DATA	20
FCC §15.407(b)–OUT- OF-BAND EMISSIONS	29
APPLICABLE STANDARD	29
TEST PROCEDURE	29
TEST EQUIPMENT LIST AND DETAILS.....	30
TEST DATA	30
FCC §15.407(a)(e) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH.....	34
APPLICABLE STANDARD	34
TEST EQUIPMENT LIST AND DETAILS.....	34

TEST PROCEDURE	34
TEST DATA	34
FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER.....	44
APPLICABLE STANDARD	44
TEST EQUIPMENT LIST AND DETAILS.....	45
TEST PROCEDURE	45
TEST DATA	45
FCC §15.407(a) - POWER SPECTRAL DENSITY	47
APPLICABLE STANDARD	47
TEST PROCEDURE	48
TEST EQUIPMENT LIST AND DETAILS.....	48
TEST DATA	48

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	High Resolution Music Player
EUT Model:	HiBy R6
FCC ID:	2AOBQ-HIBYR6
Rated Input Voltage:	DC3.7V from Battery
External Dimension:	Length (11.6 cm)*Width (6.4 cm)*High (1.2 cm)
Serial Number:	180112005
EUT Received Date:	2018.01.12

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: 2AOBQ-HIBYR6.
FCC Part 15C DTS submissions with FCC ID: 2AOBQ-HIBYR6.

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. And KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~40GHz: 5.23 dB
Unwanted Emissions,conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The system only support 802.11a/n ht20/n ht40 in 5725-5850MHz band.

For 5725~5850MHz band, 7 channels are provided to testing:

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

For 802.11a,802.11 n ht20 modes were test with channel 149,157,165. For 802.11n ht40 mode was tested with channel 151, 159.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD acrossed all data rates bandwidths, and modulations. Preliminary tests were perfrmed in difference data rate and all the possible configurations, the worst cases as below table and shown in the report.

EUT Exercise Software

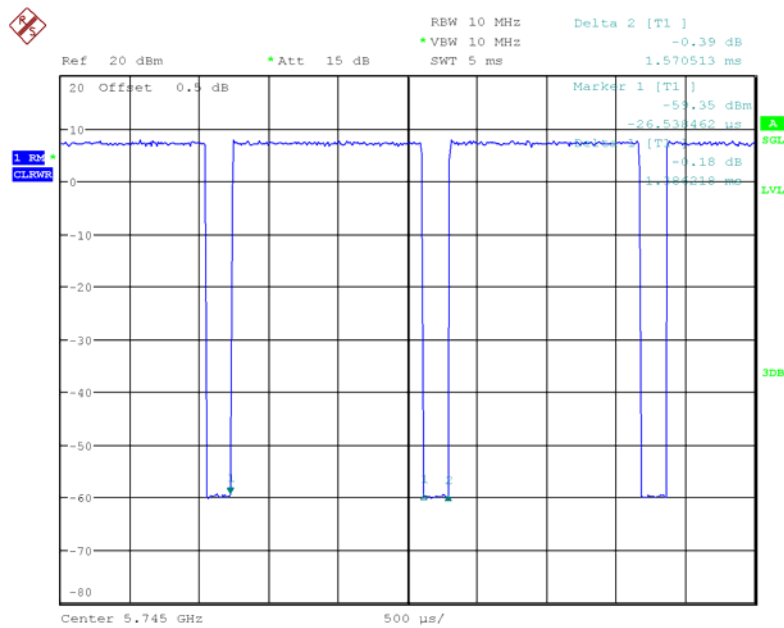
The software “QRCT” was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer:

Test Mode	Test Software Version	QRCT		
802.11a	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	2	2	3
802.11n ht20	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting Chain	0	0	1
802.11n ht40	Test Frequency	5755MHz	/	5795MHz
	Data Rate	MCS0	/	MCS0
	Power Level Setting Chain	0	/	1

The duty cycle as below:

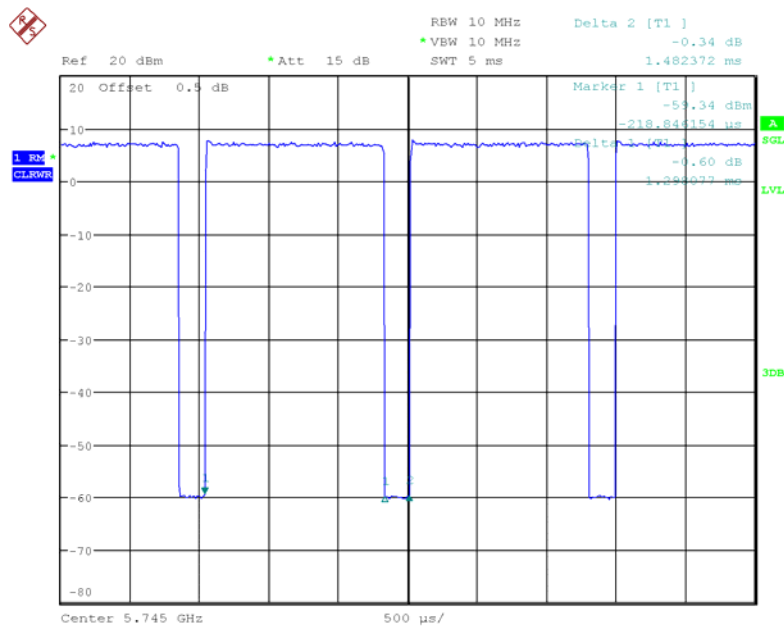
Mode	T _{on} (ms)	T _{on+off} (ms)	Duty Cycle (%)
802.11 a	1.39	1.57	88.54
802.11n ht20	1.30	1.48	87.84
802.11n ht40	0.65	0.84	77.38

802.11a

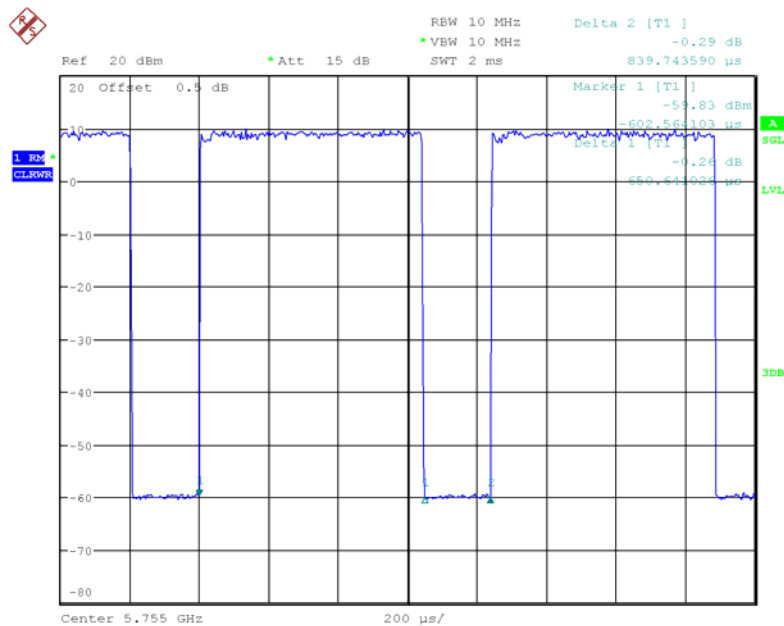


Date: 24.JAN.2018 00:35:30

802.11n ht20



Date: 24.JAN.2018 00:36:26

802.11n ht40

Date: 24.JAN.2018 00:38:58

Equipment Modifications

No modification was made to the EUT.

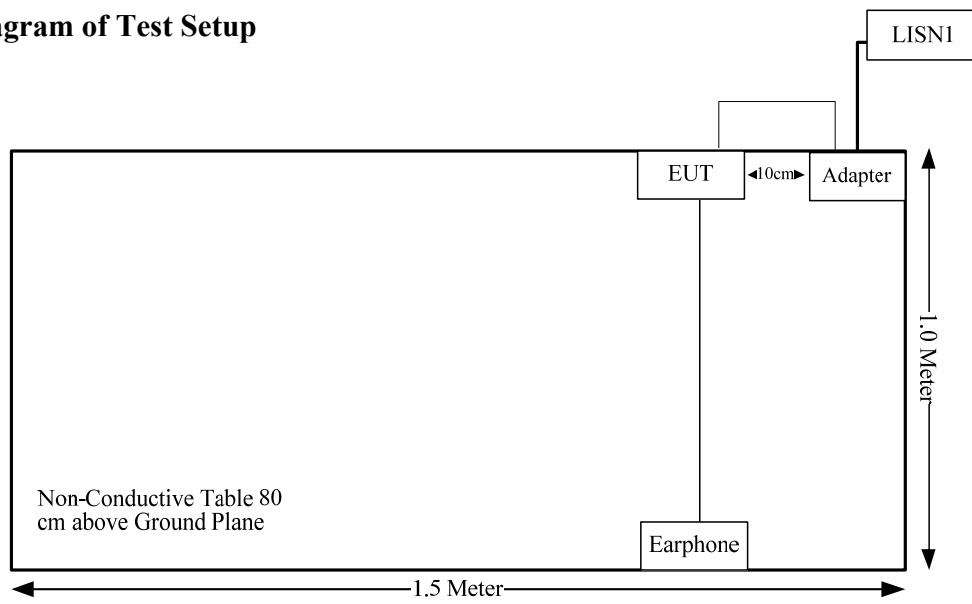
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
FLYPOWER	Adapter	PS06C050K1000 UU	N/A

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
USB Cable	No	No	1	Aapter	EUT
Earphone	No	No	1	EUT	Earphone

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.407 (f) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b)	Out Of Band Emissions	Compliance
§15.407(a) (e)	Emission Bandwidth	Compliance
§15.407(a)	Conducted Transmitter Output Power	Compliance
§15.407 (a)	Power Spectral Density	Compliance

FCC §15.407 (f) & §1.1310 & §2.1093 - RF EXPOSURE

Applicable Standard

According to subpart 15.407(f), §1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG180112005-20.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.407 (a)(1), if transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna arrangement for WLAN, and the antenna gain is 0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

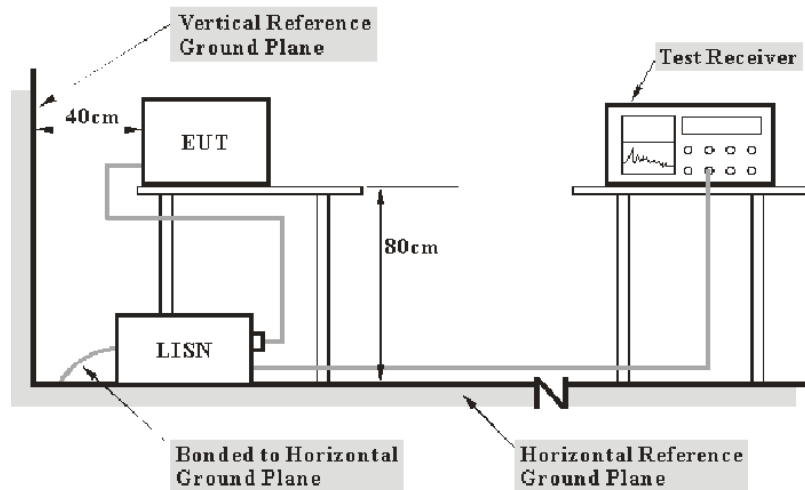
Result: Compliance.

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

Applicable Standard

FCC §15.207(a), §15.407(b) (6).

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

The adapter was connected to the main lisn with a 120 V/60 Hz AC 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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-08	2018-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2017-09-25	2018-09-25
R&S	Two-line V-network	ENV 216	101614	2017-12-08	2018-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
N/A	Coaxial Cable	C-NJNJ-50	C-0200-01	2017-09-05	2018-09-05

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

Test Procedure

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

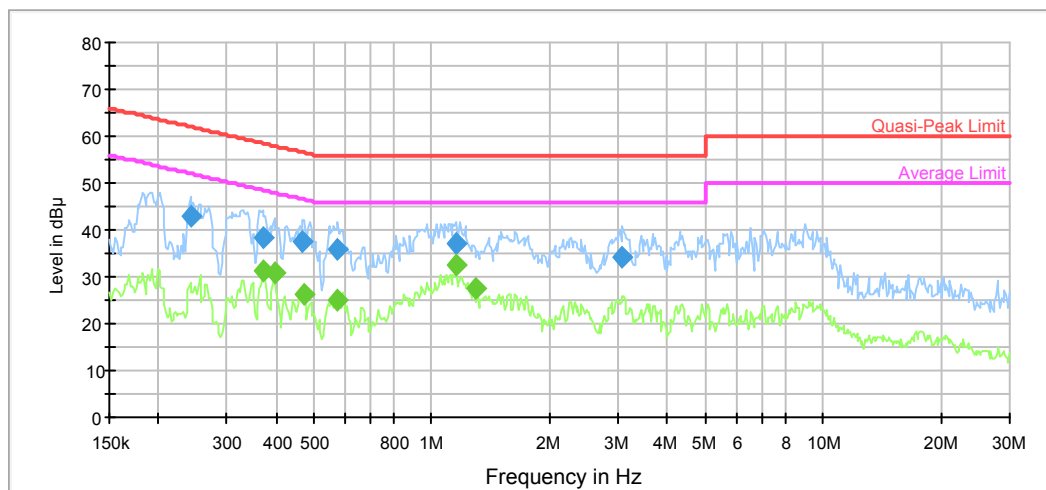
Test Data**Environmental Conditions**

Temperature:	23.4 °C
Relative Humidity:	41 %
ATM Pressure:	101.1 kPa

The testing was performed by Jim Zhang on 2018-01-25.

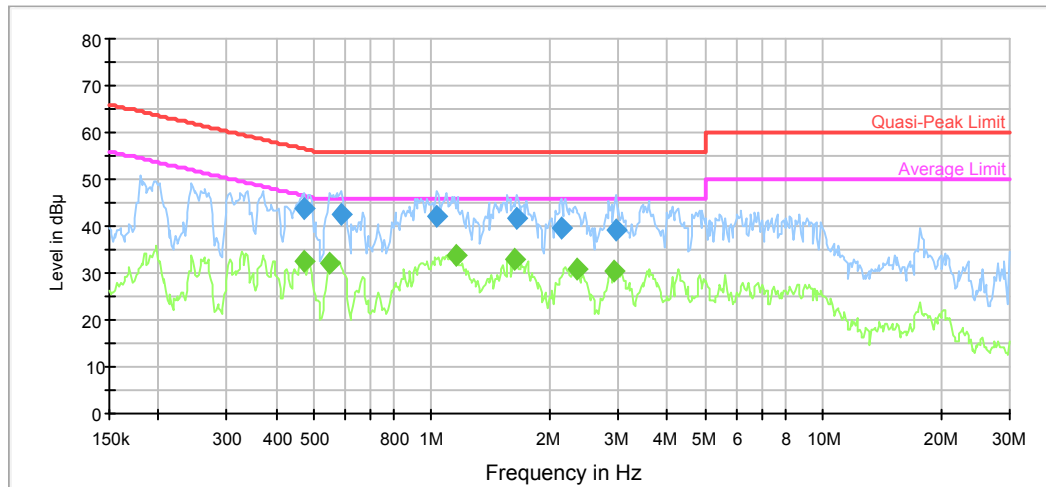
Test Mode: Transmitting

AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.241949	42.9	9.000	L1	10.4	19.1	62.0	Compliance
0.369089	38.3	9.000	L1	10.0	20.2	58.5	Compliance
0.468757	37.7	9.000	L1	9.9	18.8	56.5	Compliance
0.576662	36.0	9.000	L1	9.8	20.0	56.0	Compliance
1.153421	37.2	9.000	L1	9.8	18.8	56.0	Compliance
3.073500	34.0	9.000	L1	9.8	22.0	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.372042	31.2	9.000	L1	10.0	17.3	48.5	Compliance
0.396530	30.7	9.000	L1	10.0	17.2	47.9	Compliance
0.472507	26.2	9.000	L1	9.9	20.3	46.5	Compliance
0.576662	24.9	9.000	L1	9.8	21.1	46.0	Compliance
1.153421	32.4	9.000	L1	9.8	13.6	46.0	Compliance
1.289541	27.3	9.000	L1	9.8	18.7	46.0	Compliance

AC120 V, 60 Hz, Neutral:

frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.472507	43.7	9.000	N	9.9	12.8	56.5	Compliance
0.585926	42.6	9.000	N	9.8	13.4	56.0	Compliance
1.031669	41.9	9.000	N	9.8	14.1	56.0	Compliance
1.650866	41.5	9.000	N	9.7	14.5	56.0	Compliance
2.147382	39.7	9.000	N	9.8	16.3	56.0	Compliance
2.953456	39.2	9.000	N	9.8	16.8	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.472507	32.5	9.000	N	9.9	14.0	46.5	Compliance
0.549741	32.0	9.000	N	9.9	14.0	46.0	Compliance
1.153421	33.8	9.000	N	9.8	12.2	46.0	Compliance
1.624765	33.1	9.000	N	9.7	12.9	46.0	Compliance
2.362847	31.0	9.000	N	9.8	15.0	46.0	Compliance
2.930016	30.2	9.000	N	9.8	15.8	46.0	Compliance

FCC §15.209, §15.205 & §15.407(b) –UNWANTED EMISSION

Applicable Standard

FCC §15.407; §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.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

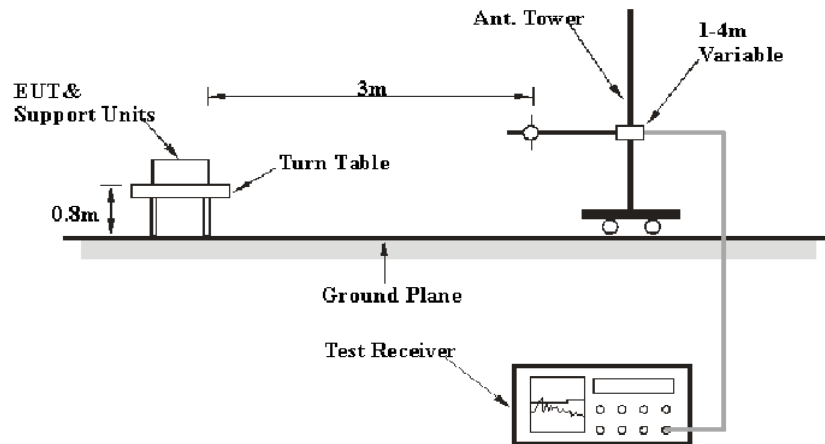
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

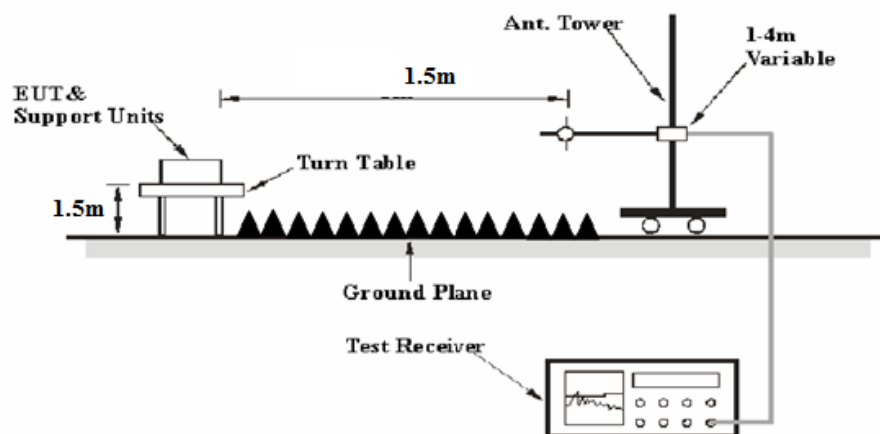
(7) The provisions of §15.205 apply to intentional radiators operating under this section.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission Below 1GHz tests were performed in the 10 meters chamber test site, above 1GHz tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.407 limits.

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

The spacing between the peripherals was 10 cm.

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:

30-1000MHz:

Measurement	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 40GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

Test Procedure

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

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

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

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m

Distance extrapolation factor = $20 \log (\text{specific distance } [3m] / \text{test distance } [1.5m])$ dB = 6.02 dB

All emissions under the average limit and under the noise floor have not recorded in the report.

Corrected Amplitude & Margin Calculation

For the range 30MHz-1GHz, 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:

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

For the range 1GHz-40GHz, Test performed at 1.5m, the Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading and the Distance extrapolation factor. The basic equation is as follows:

$$\begin{aligned} \text{Corrected Amplitude} \\ = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain} - \text{Distance extrapolation factor} \end{aligned}$$

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:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2017-08-04	2018-08-04
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
HP	Amplifier	8447F	2443A01912	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
R&S	Spectrum Analyzer	FSP 38	100478	2017-12-08	2018-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
MITEQ	Amplifier	AFS42-00101800- 25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
N/A	Coaxial Cable	C-NJNJ-50	C-0400-02	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-02	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-2200-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
Chengdu OuLi	Bandrejector Filter	5725-5850	005	2017-09-05	2018-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

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

Test Data

Environmental Conditions

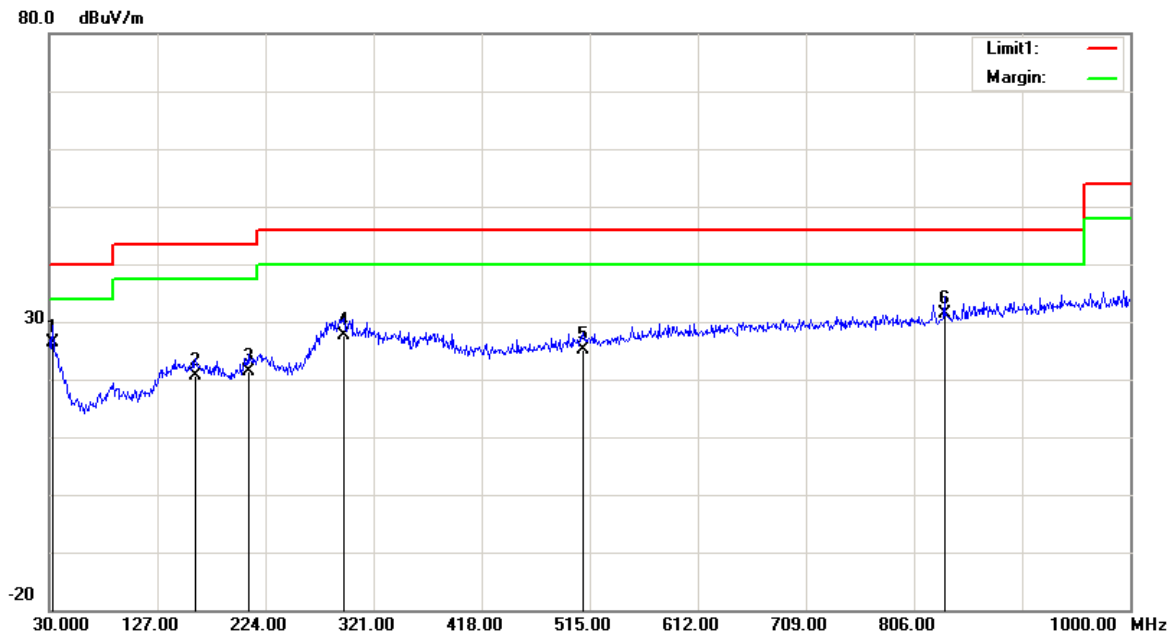
Temperature:	22.6~23 °C
Relative Humidity:	39~47%
ATM Pressure:	101~102.1 kPa

* The testing was performed by Vern Shen and Steven Zuo on 2018-01-24&2018-02-01.

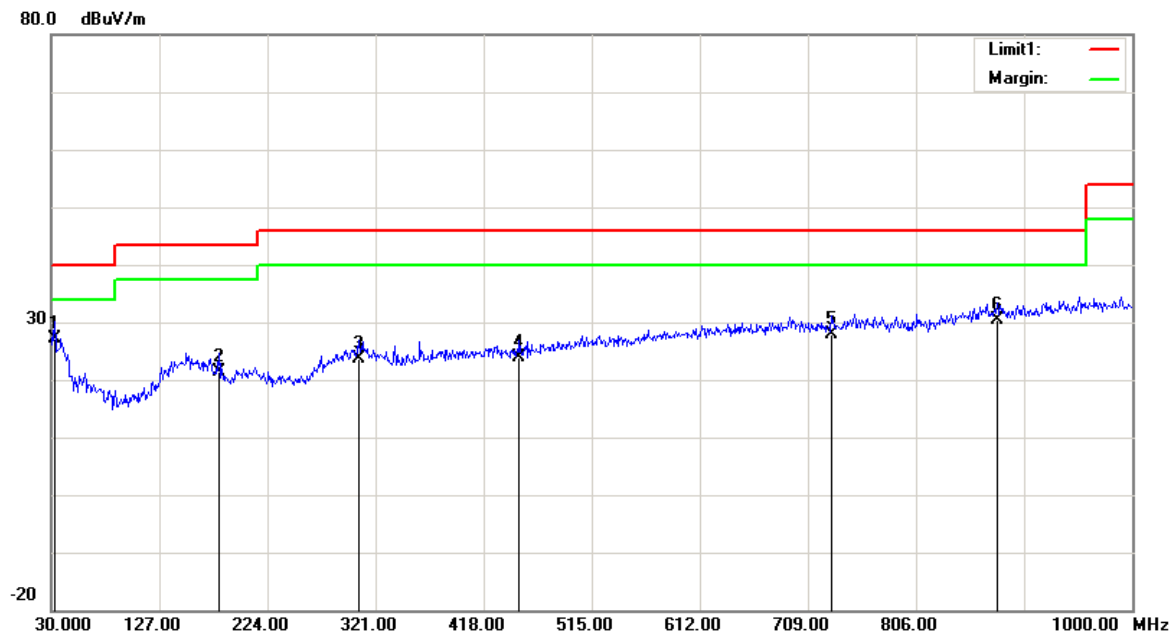
Test Mode: Transmitting

1) Below 1GHz(802.11a 5785MHz was the worst):

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
32.9100	29.55	QP	-3.25	26.30	40.00	13.70
160.9500	27.30	QP	-6.70	20.60	43.50	22.90
208.4800	29.81	QP	-8.41	21.40	43.50	22.10
294.8100	32.60	QP	-4.90	27.70	46.00	18.30
509.1800	24.44	QP	0.66	25.10	46.00	20.90
833.1600	24.82	QP	6.48	31.30	46.00	14.70

Vertical

Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
32.9100	30.35	QP	-3.25	27.10	40.00	12.90
180.3500	28.86	QP	-7.36	21.50	43.50	22.00
305.4800	28.17	QP	-4.47	23.70	46.00	22.30
450.0100	24.98	QP	-1.08	23.90	46.00	22.10
730.3400	22.91	QP	5.09	28.00	46.00	18.00
878.7500	22.66	QP	7.64	30.30	46.00	15.70

2) 1GHz-40GHz:**5725-5850MHz:**

802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 5745 MHz									
5745.00	53.42	PK	H	34.20	3.69	0.00	85.29	N/A	N/A
5745.00	43.39	AV	H	34.20	3.69	0.00	75.26	N/A	N/A
5745.00	56.26	PK	V	34.20	3.69	0.00	88.13	N/A	N/A
5745.00	45.62	AV	V	34.20	3.69	0.00	77.49	N/A	N/A
5725.00	31.38	PK	V	34.19	3.69	0.00	63.24	122.20	58.96
5720.00	29.16	PK	V	34.19	3.69	0.00	61.02	110.80	49.78
5700.00	27.68	PK	V	34.18	3.68	0.00	59.52	105.20	45.68
5650.00	26.54	PK	V	34.16	3.63	0.00	58.31	68.20	9.89
11490.00	46.49	PK	V	38.99	6.59	37.35	48.70	74.00	25.30
11490.00	35.64	PK	V	38.99	6.59	37.35	37.85	74.00	36.15
17235.00	45.86	PK	V	41.56	8.78	38.61	51.57	74.00	22.43
17235.00	34.95	AV	V	41.56	8.78	38.61	40.66	54.00	13.34
Middle Channel: 5785 MHz									
5785.00	53.48	PK	H	34.21	3.71	0.00	85.38	N/A	N/A
5785.00	43.55	AV	H	34.21	3.71	0.00	75.45	N/A	N/A
5785.00	55.97	PK	V	34.21	3.71	0.00	87.87	N/A	N/A
5785.00	45.26	AV	V	34.21	3.71	0.00	77.16	N/A	N/A
11570.00	46.41	PK	V	39.00	6.61	37.44	48.56	74.00	25.44
11570.00	35.57	AV	V	39.00	6.61	37.44	37.72	54.00	16.28
17355.00	45.82	PK	V	42.26	8.81	38.52	52.35	74.00	21.65
17355.00	34.76	AV	V	42.26	8.81	38.52	41.29	54.00	12.71
High Channel: 5825 MHz									
5825.00	51.64	PK	H	34.23	3.73	0.00	83.58	N/A	N/A
5825.00	41.19	AV	H	34.23	3.73	0.00	73.13	N/A	N/A
5825.00	55.12	PK	V	34.23	3.73	0.00	87.06	N/A	N/A
5825.00	45.26	AV	V	34.23	3.73	0.00	77.20	N/A	N/A
5850.00	26.78	PK	V	34.24	3.75	0.00	58.75	122.20	63.45
5855.00	26.53	PK	V	34.24	3.75	0.00	58.50	110.80	52.30
5875.00	26.34	PK	V	34.25	3.77	0.00	58.34	105.20	46.86
5925.00	25.49	PK	V	34.27	3.80	0.00	57.54	68.20	10.66
11650.00	46.30	PK	V	39.00	6.64	37.53	48.39	74.00	25.61
11650.00	35.53	AV	V	39.00	6.64	37.53	37.62	54.00	16.38
17475.00	46.01	PK	V	42.96	8.84	38.44	53.35	74.00	20.65
17475.00	34.82	AV	V	42.96	8.84	38.44	42.16	54.00	11.84

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 5745 MHz									
5745.00	53.67	PK	H	34.20	3.69	0.00	85.54	N/A	N/A
5745.00	43.82	AV	H	34.20	3.69	0.00	75.69	N/A	N/A
5745.00	56.58	PK	V	34.20	3.69	0.00	88.45	N/A	N/A
5745.00	46.63	AV	V	34.20	3.69	0.00	78.50	N/A	N/A
5725.00	30.25	PK	V	34.19	3.69	0.00	62.11	122.20	60.09
5720.00	28.46	PK	V	34.19	3.69	0.00	60.32	110.80	50.48
5700.00	27.15	PK	V	34.18	3.68	0.00	58.99	105.20	46.21
5650.00	26.28	PK	V	34.16	3.63	0.00	58.05	68.20	10.15
11490.00	46.33	PK	V	38.99	6.59	37.35	48.54	74.00	25.46
11490.00	35.63	AV	V	38.99	6.59	37.35	37.84	54.00	16.16
17235.00	45.85	PK	V	41.56	8.78	38.61	51.56	74.00	22.44
17235.00	34.98	AV	V	41.56	8.78	38.61	40.69	54.00	13.31
Middle Channel: 5785 MHz									
5785.00	53.29	PK	H	34.21	3.71	0.00	85.19	N/A	N/A
5785.00	43.42	AV	H	34.21	3.71	0.00	75.32	N/A	N/A
5785.00	55.94	PK	V	34.21	3.71	0.00	87.84	N/A	N/A
5785.00	45.67	AV	V	34.21	3.71	0.00	77.57	N/A	N/A
11570.00	46.56	PK	V	39.00	6.61	37.44	48.71	74.00	25.29
11570.00	35.46	AV	V	39.00	6.61	37.44	37.61	54.00	16.39
17355.00	46.06	PK	V	42.26	8.81	38.52	52.59	74.00	21.41
17355.00	34.94	AV	V	42.26	8.81	38.52	41.47	54.00	12.53
High Channel: 5825 MHz									
5825.00	53.17	PK	H	34.23	3.73	0.00	85.11	N/A	N/A
5825.00	43.23	AV	H	34.23	3.73	0.00	75.17	N/A	N/A
5825.00	55.58	PK	V	34.23	3.73	0.00	87.52	N/A	N/A
5825.00	45.39	AV	V	34.23	3.73	0.00	77.33	N/A	N/A
5850.00	26.98	PK	V	34.24	3.75	0.00	58.95	122.20	63.25
5855.00	26.57	PK	V	34.24	3.75	0.00	58.54	110.80	52.26
5875.00	26.13	PK	V	34.25	3.77	0.00	58.13	105.20	47.07
5925.00	25.42	PK	V	34.27	3.80	0.00	57.47	68.20	10.73
11650.00	46.50	PK	V	39.00	6.64	37.53	48.59	74.00	25.41
11650.00	35.77	AV	V	39.00	6.64	37.53	37.86	54.00	16.14
17475.00	45.71	PK	V	42.96	8.84	38.44	53.05	74.00	20.95
17475.00	35.08	AV	V	42.96	8.84	38.44	42.42	54.00	11.58

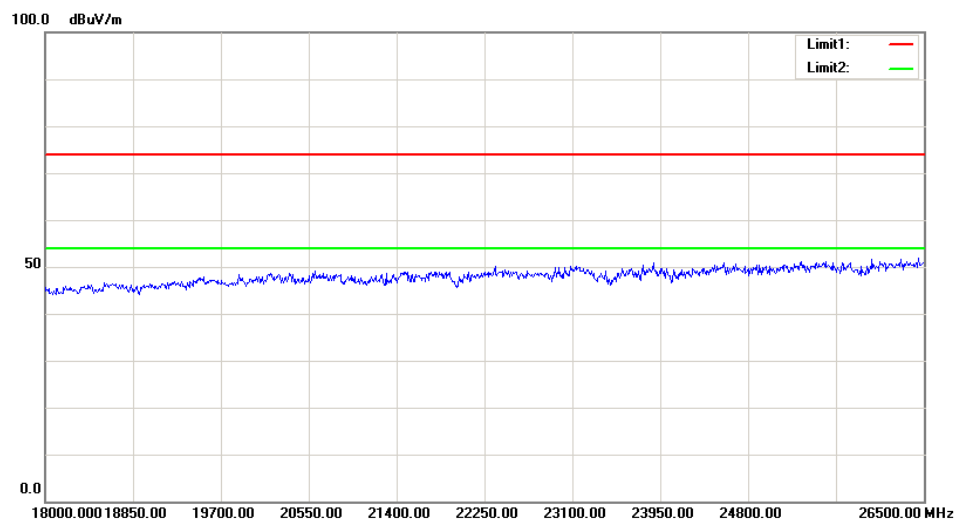
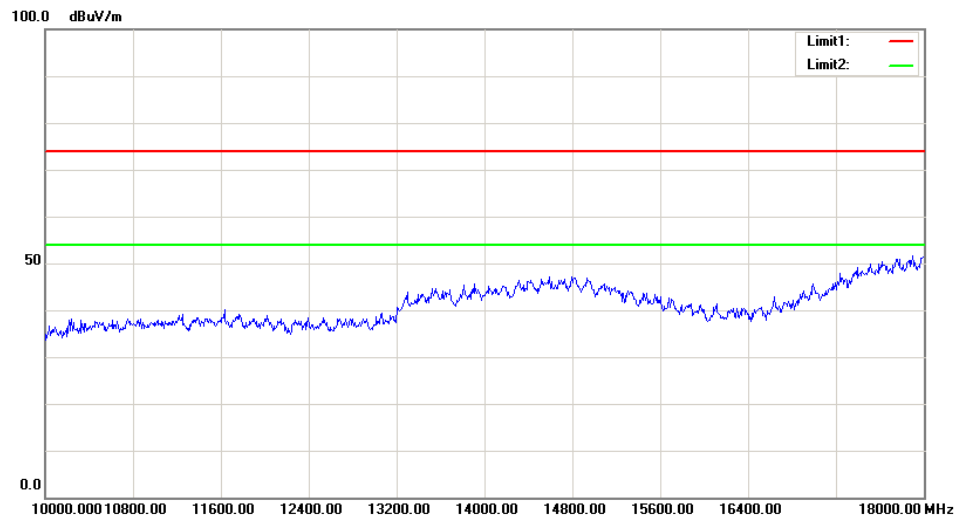
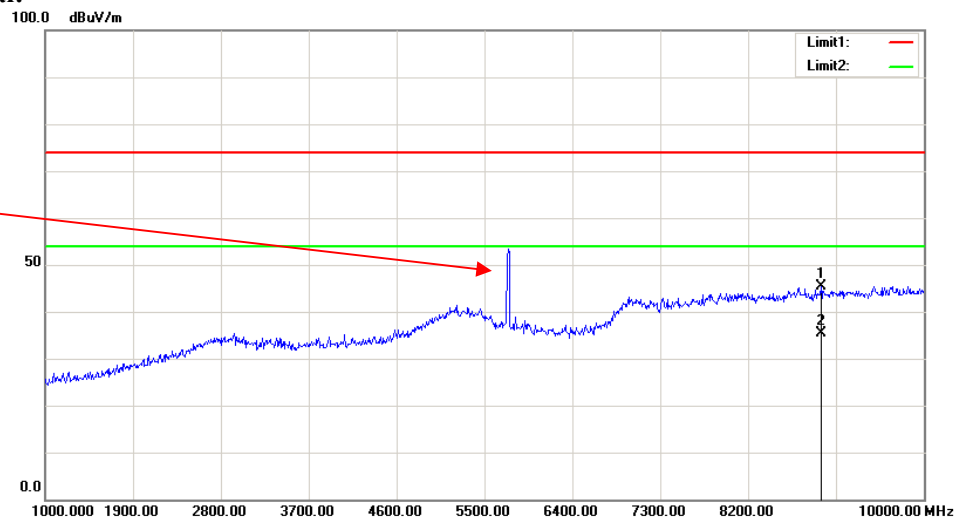
802.11n ht40 mode:

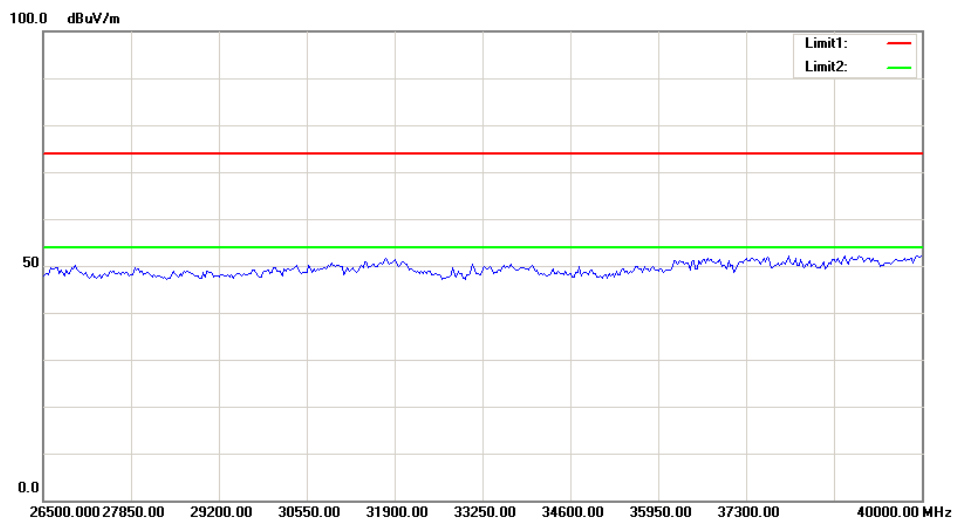
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 5755 MHz									
5755.00	50.64	PK	H	34.20	3.70	0.00	82.52	N/A	N/A
5755.00	40.45	AV	H	34.20	3.70	0.00	72.33	N/A	N/A
5755.00	53.98	PK	V	34.20	3.70	0.00	85.86	N/A	N/A
5755.00	43.87	AV	V	34.20	3.70	0.00	75.75	N/A	N/A
5725.00	28.46	PK	V	34.19	3.69	0.00	60.32	122.20	61.88
5720.00	27.24	PK	V	34.19	3.69	0.00	59.10	110.80	51.70
5700.00	26.58	PK	V	34.18	3.68	0.00	58.42	105.20	46.78
5650.00	25.73	PK	V	34.16	3.63	0.00	57.50	68.20	10.70
11510.00	46.58	PK	V	39.00	6.59	37.37	48.78	74.00	25.22
11510.00	35.54	AV	V	39.00	6.59	37.37	37.74	54.00	16.26
17265.00	45.73	PK	V	41.74	8.79	38.58	51.66	74.00	22.34
17265.00	34.82	AV	V	41.74	8.79	38.58	40.75	54.00	13.25
High Channel: 5795 MHz									
5795.00	50.44	PK	H	34.22	3.71	0.00	82.35	N/A	N/A
5795.00	40.62	AV	H	34.22	3.71	0.00	72.53	N/A	N/A
5795.00	53.99	PK	V	34.22	3.71	0.00	85.90	N/A	N/A
5795.00	43.92	AV	V	34.22	3.71	0.00	75.83	N/A	N/A
5850.00	27.83	PK	V	34.24	3.75	0.00	59.80	122.20	62.40
5855.00	27.15	PK	V	34.24	3.75	0.00	59.12	110.80	51.68
5875.00	26.53	PK	V	34.25	3.77	0.00	58.53	105.20	46.67
5925.00	25.46	PK	V	34.27	3.80	0.00	57.51	68.20	10.69
11590.00	46.65	PK	V	39.00	6.62	37.46	48.79	74.00	25.21
11590.00	35.57	AV	V	39.00	6.62	37.46	37.71	54.00	16.29
17385.00	45.97	PK	V	42.43	8.82	38.50	52.70	74.00	21.30
17385.00	35.06	AV	V	42.43	8.82	38.50	41.79	54.00	12.21

Test Plots(For worst mode 802.11a 5785MHz)

Horizontal:

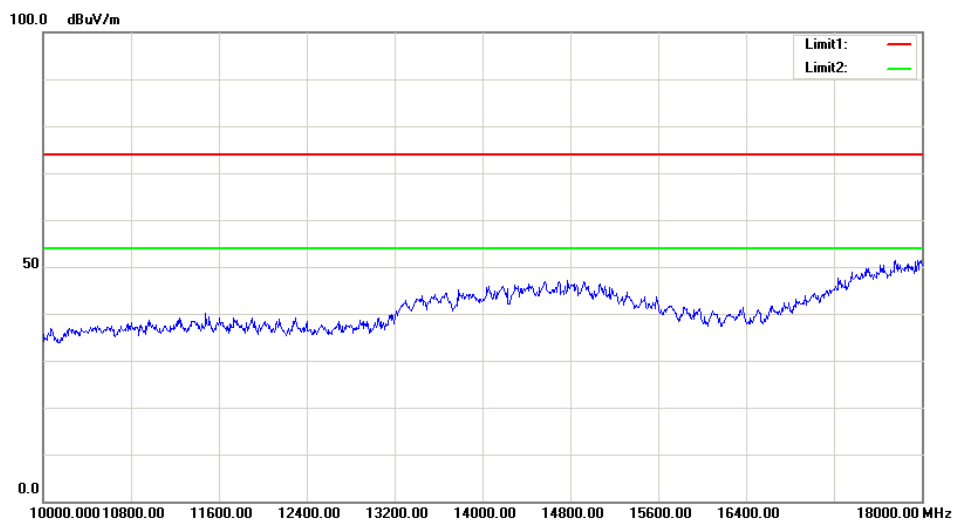
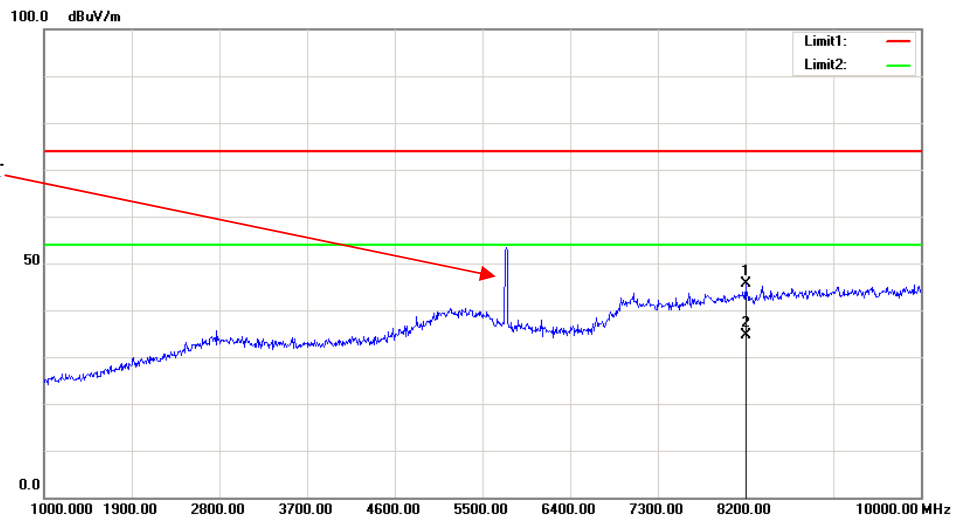
Fundamental
Test with Band
Rejection Filter

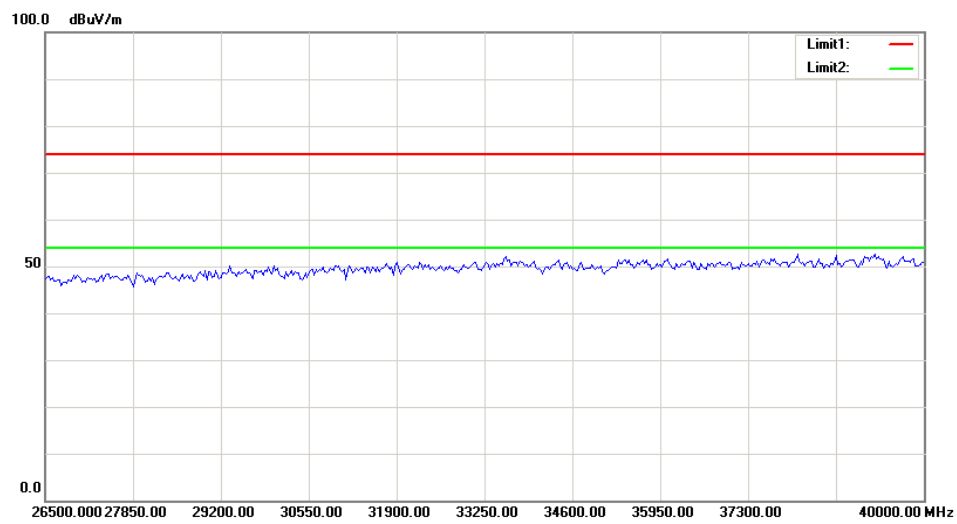
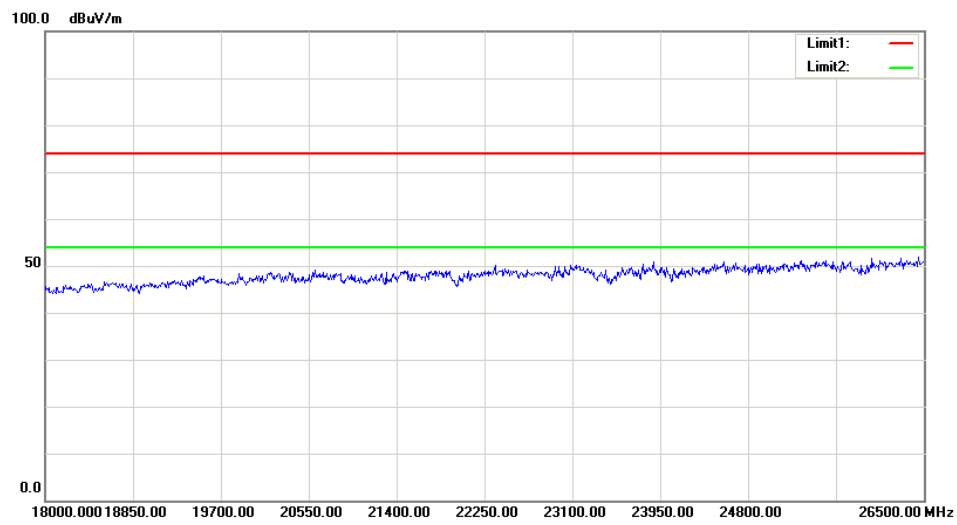




Vertical:

Fundamental
Test with Band
Rejection Filter





FCC §15.407(b)–OUT- OF-BAND EMISSIONS

Applicable Standard

FCC §15.407

(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.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	/

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

Test Data**Environmental Conditions**

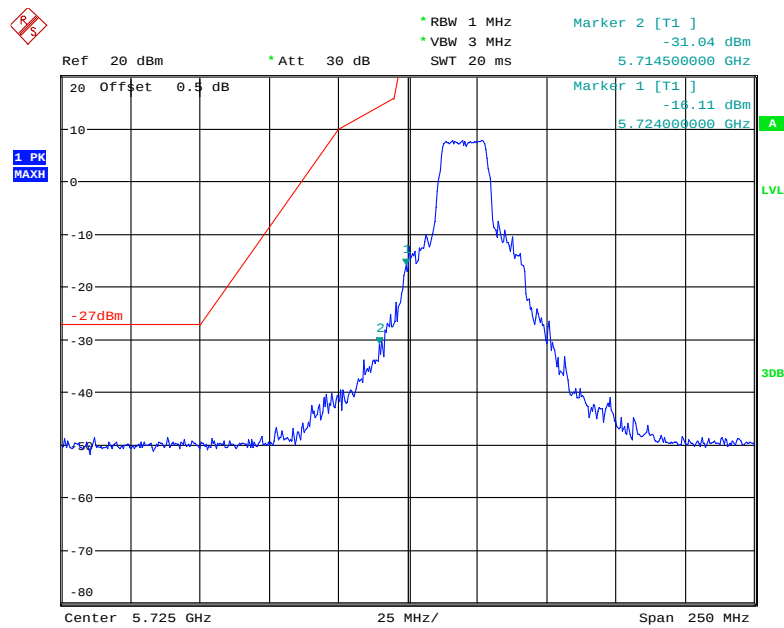
Temperature:	24.6°C
Relative Humidity:	46 %
ATM Pressure:	101 kPa

The testing was performed by Harry Yang on 2018-01-24.

Test Result: Pass.

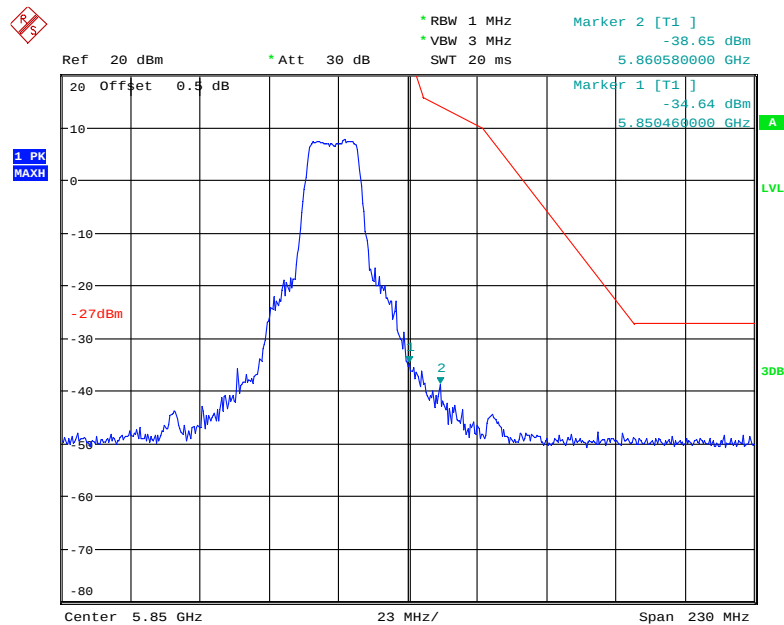
Please refer to the following plots.

802.11a Low Channel



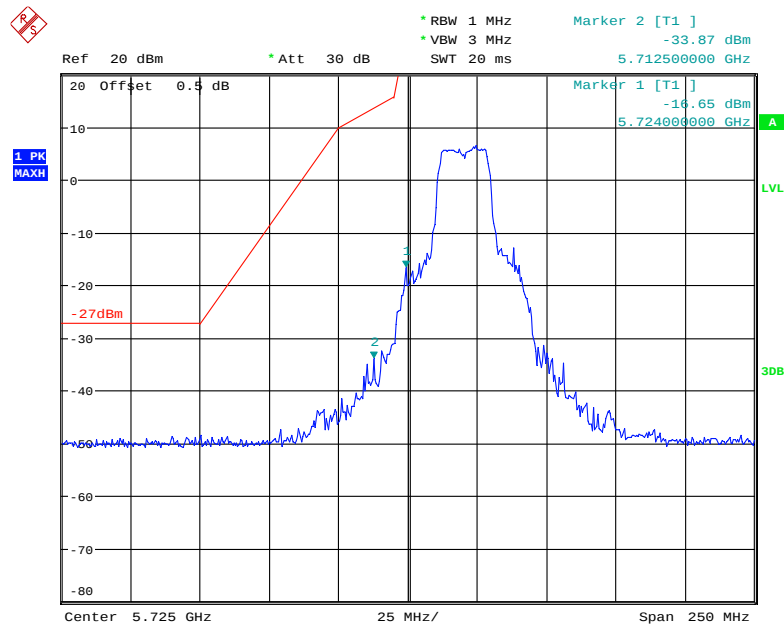
Date: 24.JAN.2018 22:43:34

802.11a High Channel



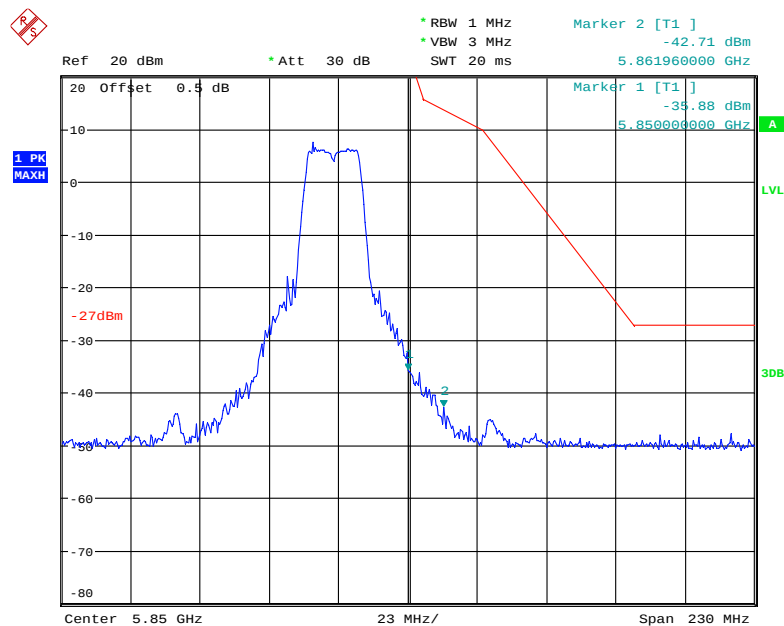
Date: 24.JAN.2018 00:57:39

802.11n ht20 Low Channel



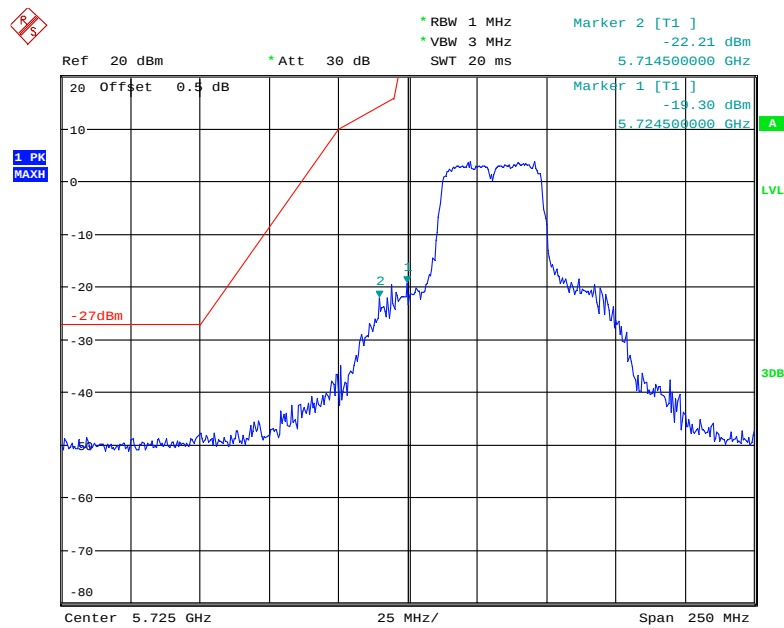
Date: 24.JAN.2018 22:55:01

802.11n ht20 High Channel



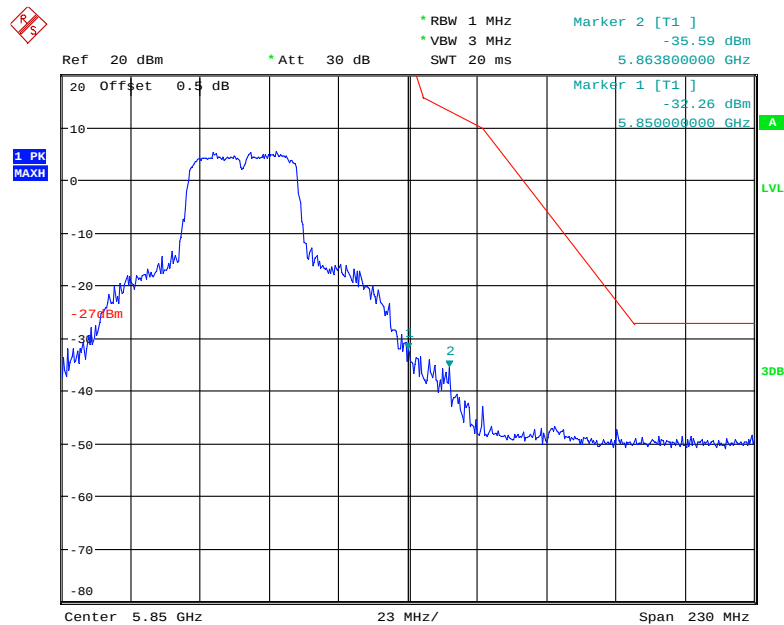
Date: 24.JAN.2018 00:54:34

802.11n ht40 Low Channel



Date: 24.JAN.2018 23:03:07

802.11n ht40 High Channel



Date: 24.JAN.2018 23:05:34

FCC §15.407(a)(e) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH**Applicable Standard**

15.407(a) (e)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	/

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

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data**Environmental Conditions**

Temperature:	24.6°C
Relative Humidity:	46 %
ATM Pressure:	101 kPa

The testing was performed by Harry Yang on 2018-01-24.

Test Result: Pass.

Please refer to the following tables and plots.

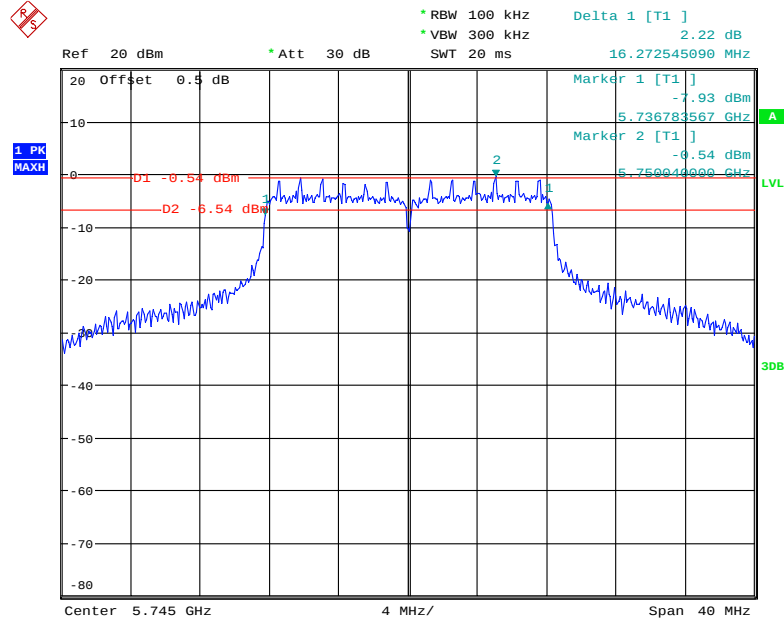
Test mode: Transmitting

Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11 a	Low	5745	16.27	20.48
	Middle	5785	16.27	17.44
	High	5825	16.27	17.44
802.11n ht20	Low	5745	17.47	18.88
	Middle	5785	17.47	19.2
	High	5825	17.39	18.32
802.11n ht40	Low	5755	35.11	38.08
	High	5795	34.95	39.68

Note: For 5725-5850MHz band, the 99% Occupied Bandwidth have not fall into the band 5470-5725MHz.

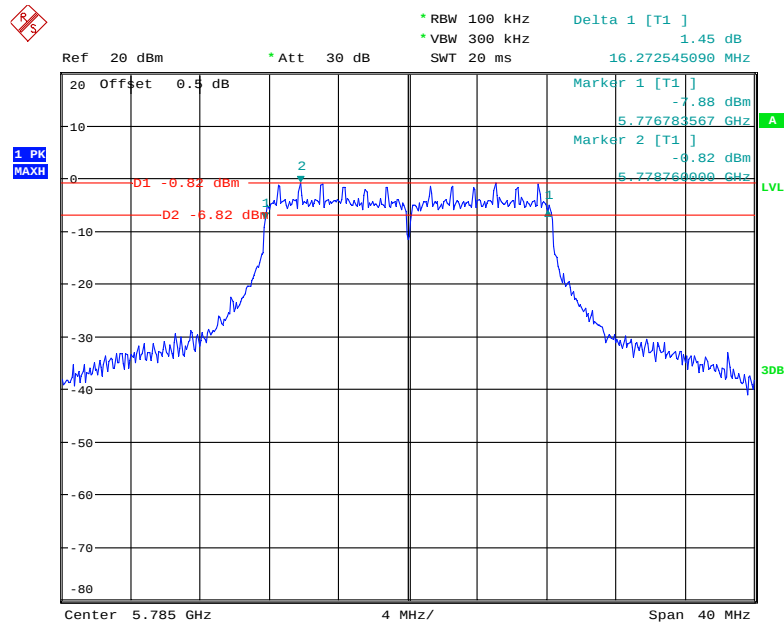
5725-5850MHz:
6dB Bandwidth:

802.11a Low Channel



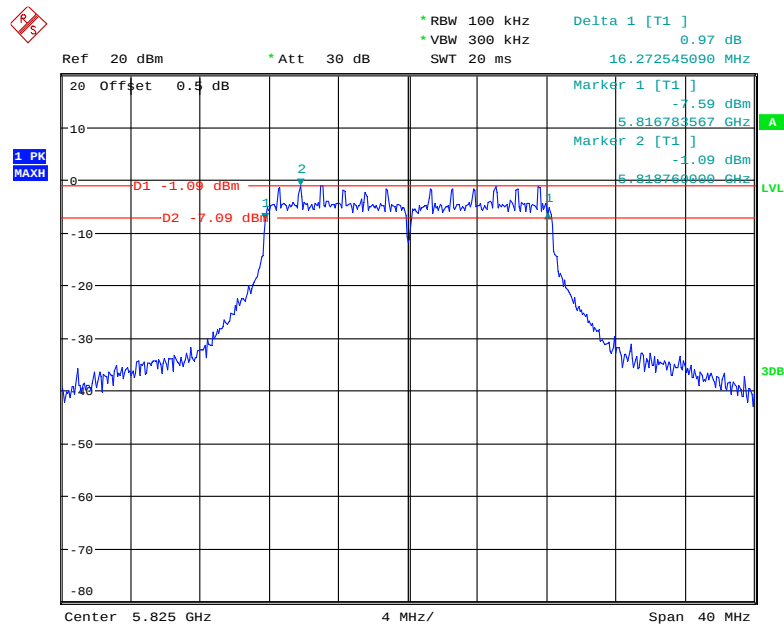
Date: 24.JAN.2018 22:42:20

802.11a Middle Channel



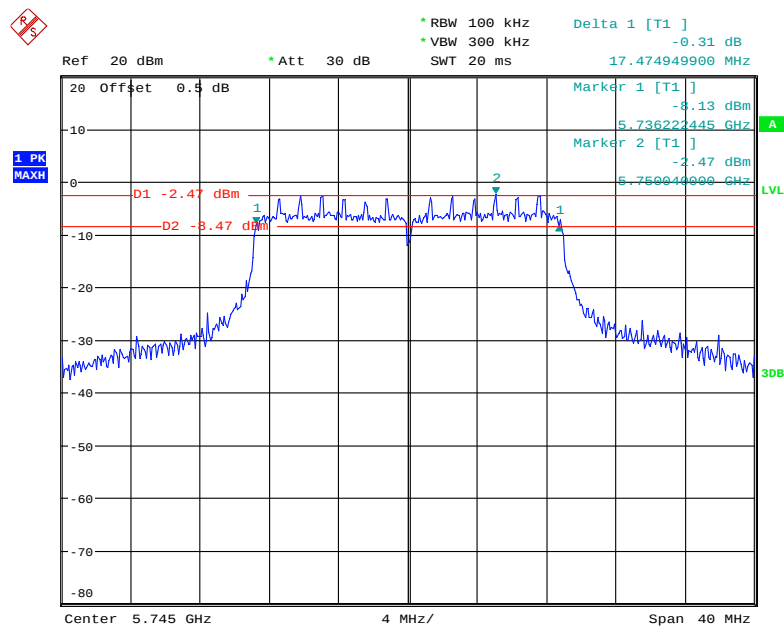
Date: 24.JAN.2018 01:01:06

802.11a High Channel



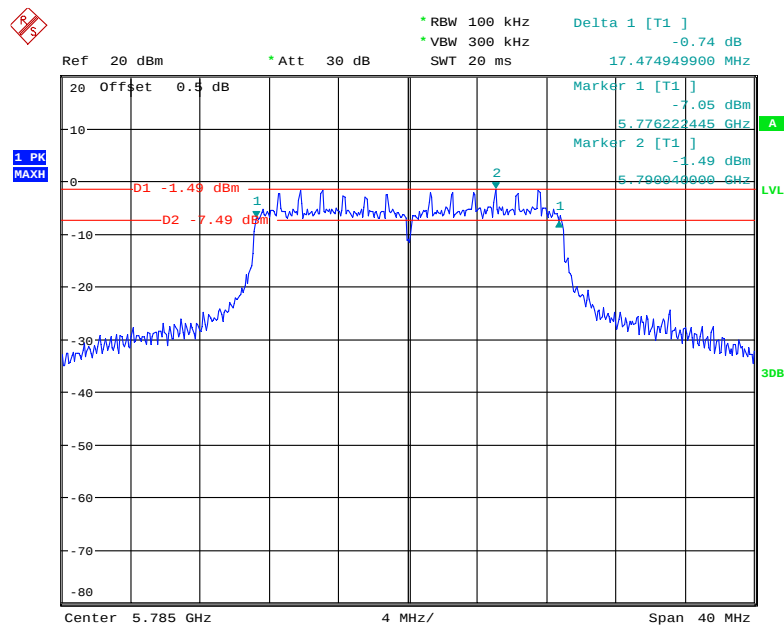
Date: 24.JAN.2018 00:56:19

802.11n ht20 Low Channel



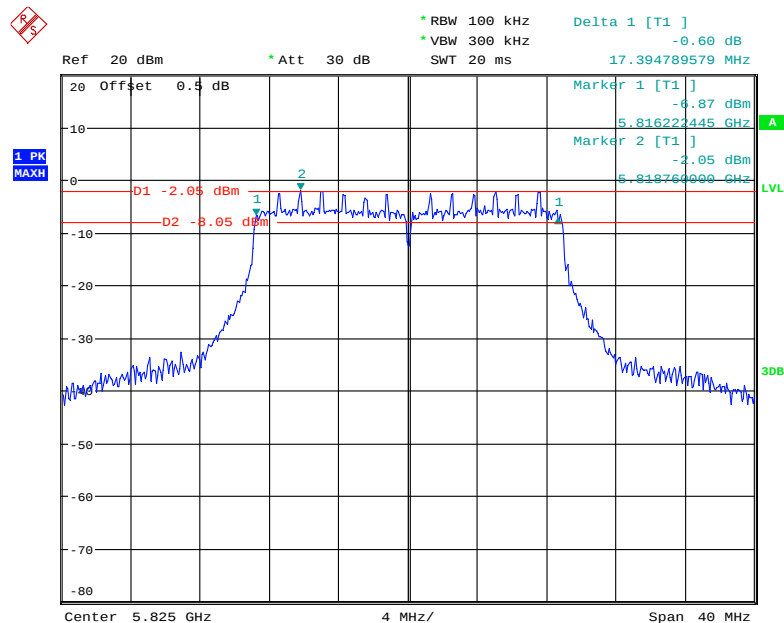
Date: 24.JAN.2018 22:53:43

802.11n ht20 Middle Channel



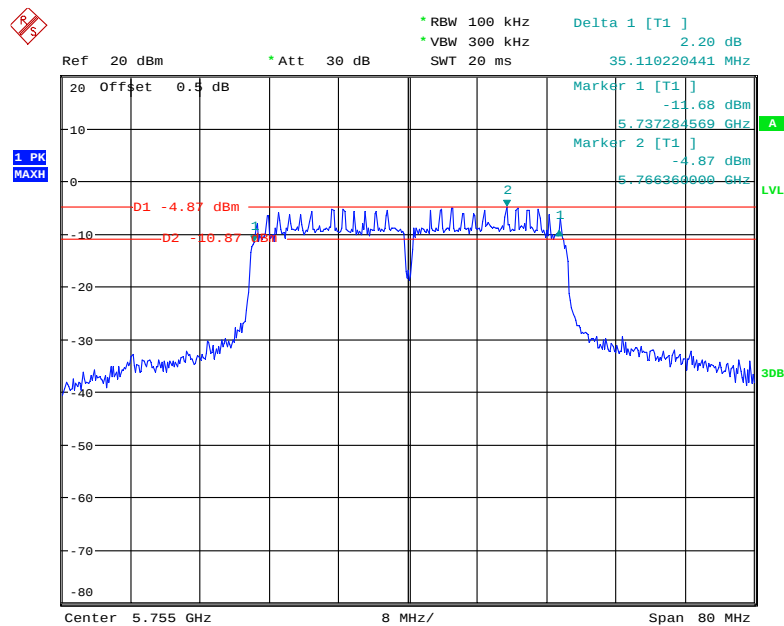
Date: 24.JAN.2018 22:58:23

802.11n ht20 High Channel



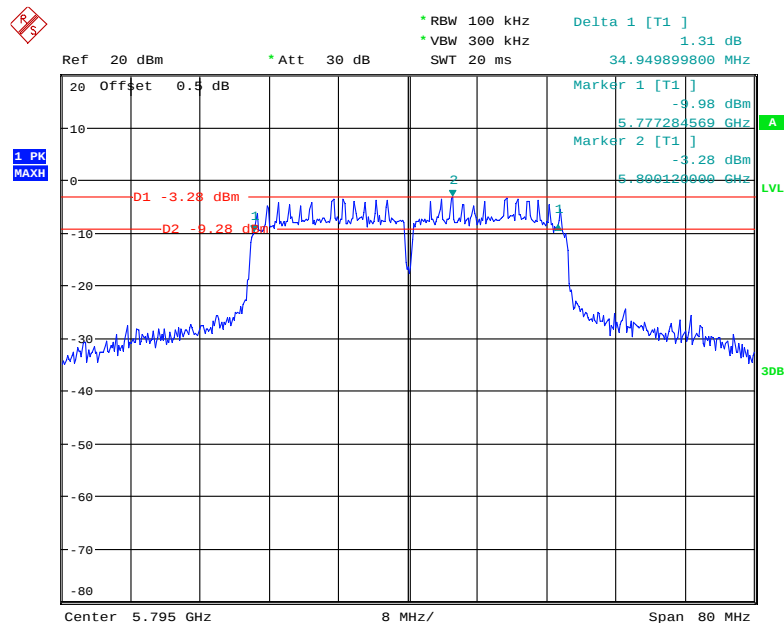
Date: 24.JAN.2018 00:53:23

802.11n ht40 Low Channel

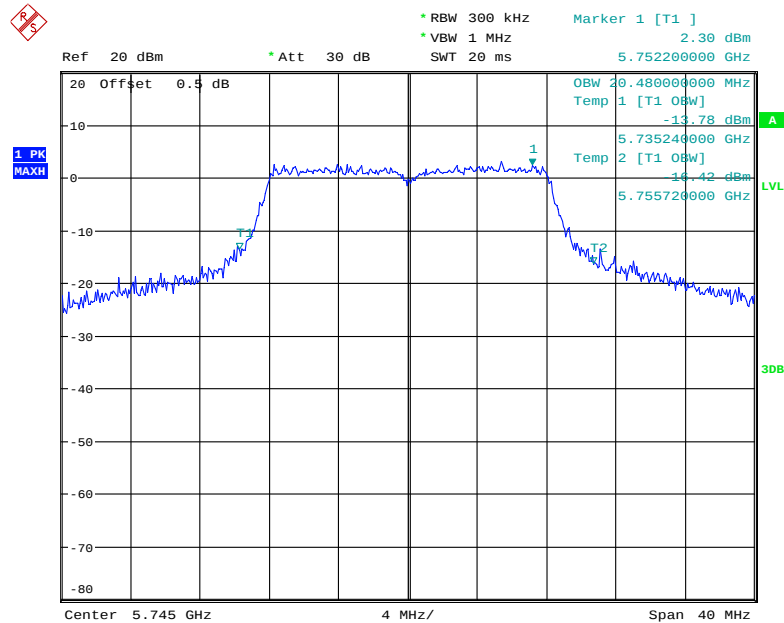


Date: 24.JAN.2018 23:01:55

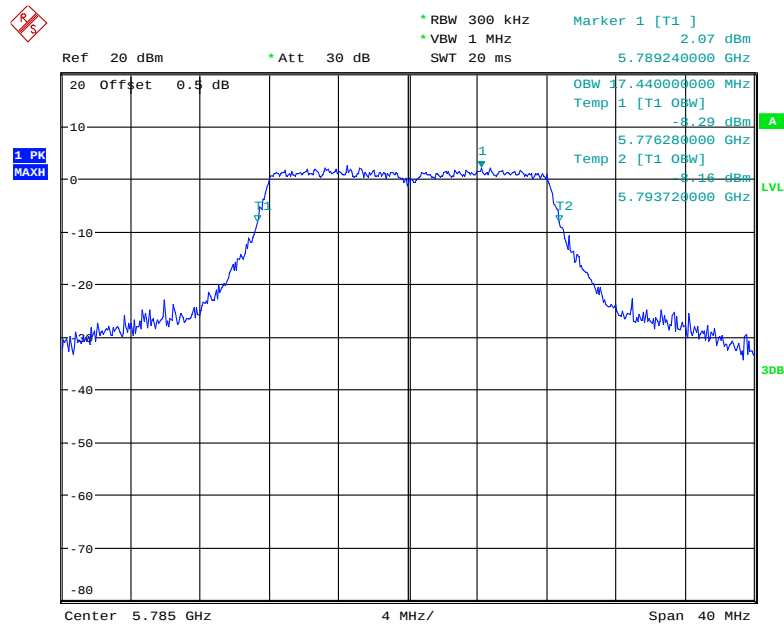
802.11n ht40 High Channel



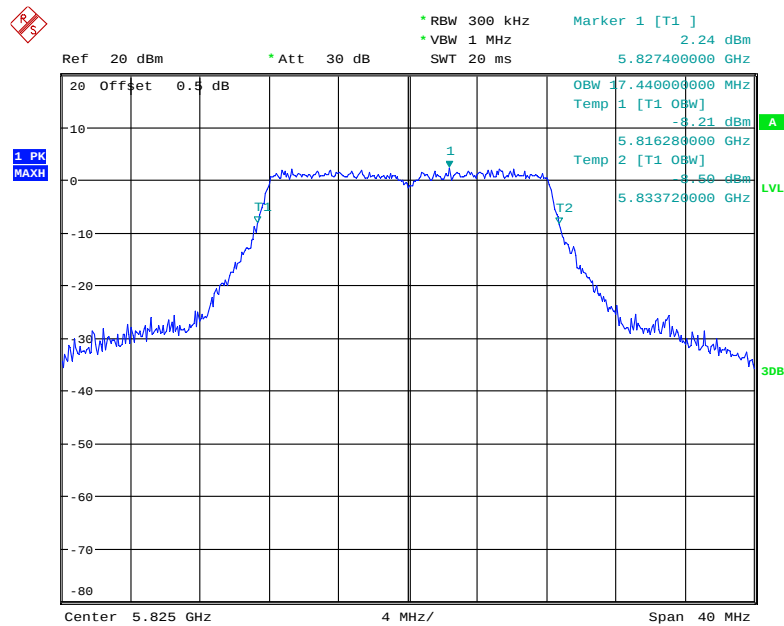
Date: 24.JAN.2018 23:04:20

99% Occupied Bandwidth:**802.11a Low Channel**

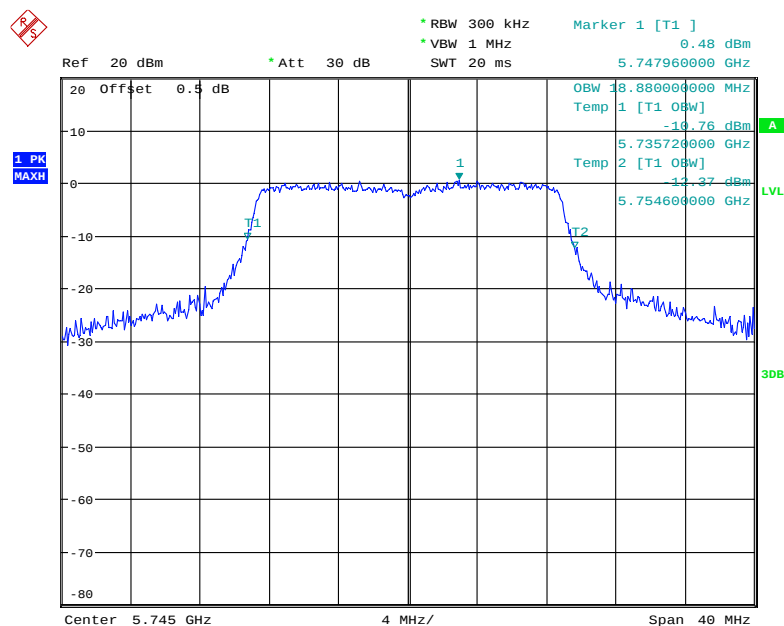
Date: 24.JAN.2018 22:42:34

802.11a Middle Channel

Date: 24.JAN.2018 01:01:18

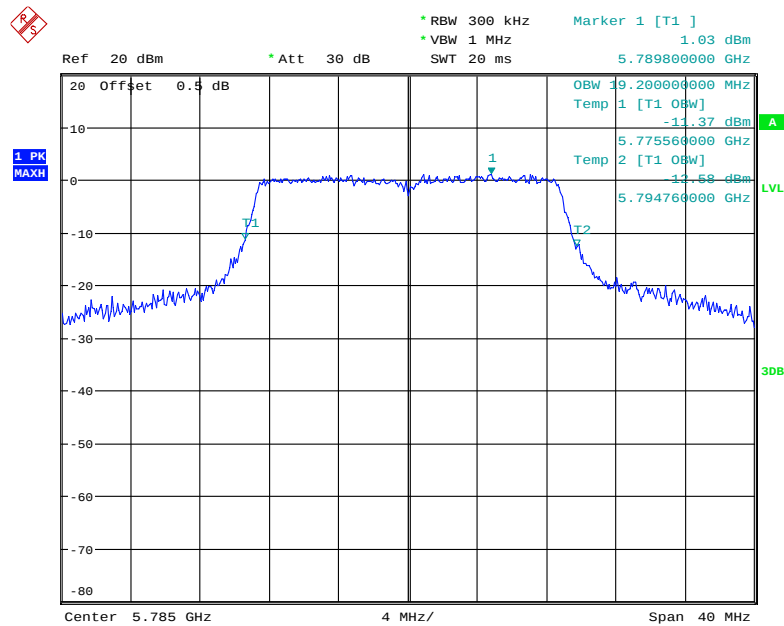
802.11a High Channel

Date: 24.JAN.2018 00:56:32

802.11n ht20 Low Channel

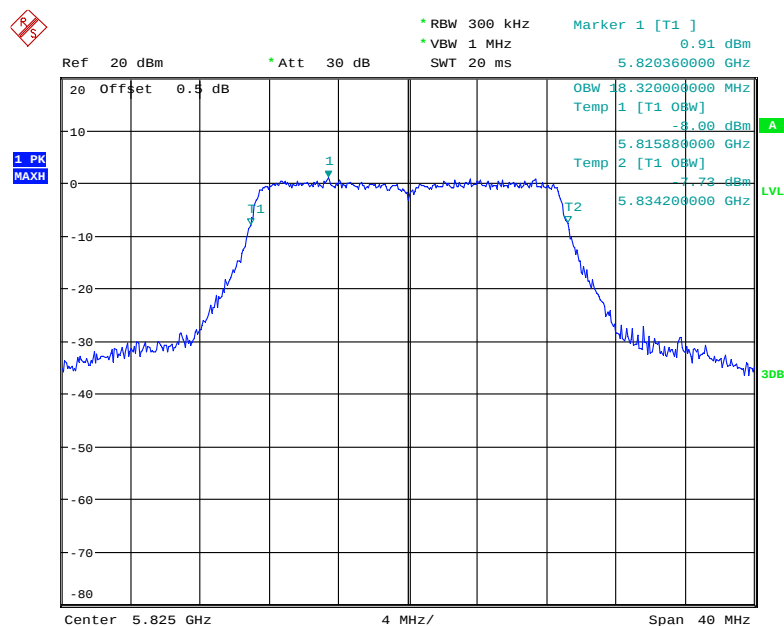
Date: 24.JAN.2018 22:53:55

802.11n ht20 Middle Channel



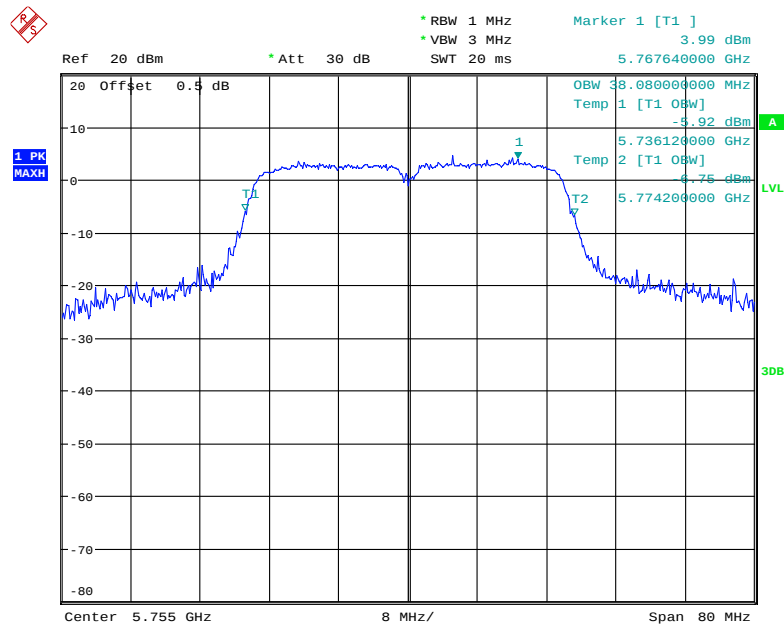
Date: 24.JAN.2018 22:58:36

802.11n ht20 High Channel



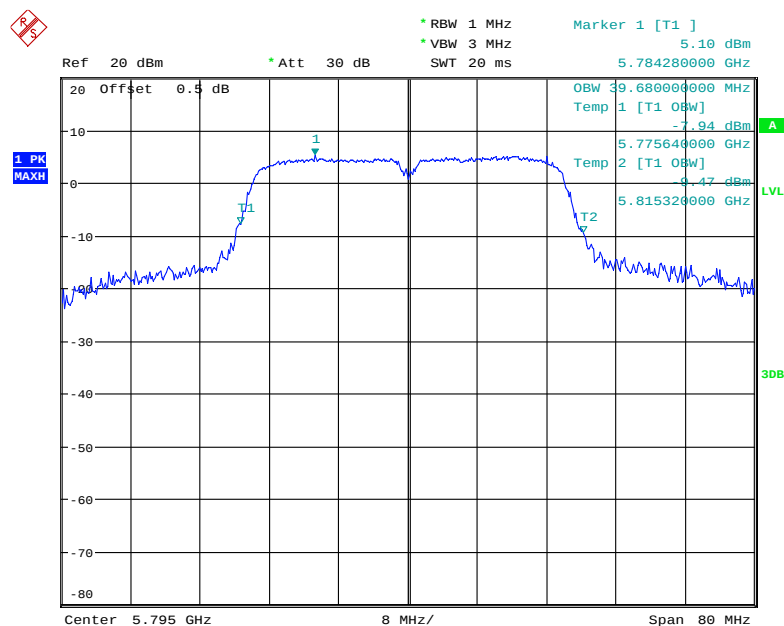
Date: 24.JAN.2018 00:53:35

802.11n ht40 Low Channel



Date: 24.JAN.2018 23:02:07

802.11n ht40 High Channel



Date: 24.JAN.2018 23:04:33

FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(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.

(iii) For fixed point-to-point access points 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. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(iv) 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.

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2017-11-03	2018-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2017-11-03	2018-11-03
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	/

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

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data

Environmental Conditions

Temperature:	24.6°C
Relative Humidity:	46 %
ATM Pressure:	101 kPa

The testing was performed by Harry Yang on 2018-01-24.

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Conducted Average Output Power	Limit (dBm)	Result
802.11 a	Low	5745	10.57	30	PASS
	Middle	5785	10.19	30	PASS
	High	5825	10.04	30	PASS
802.11n ht20	Low	5745	9	30	PASS
	Middle	5785	8.6	30	PASS
	High	5825	9.23	30	PASS
802.11n ht40	Low	5755	8.82	30	PASS
	High	5795	9.47	30	PASS

Note: the duty cycle factor have been added in the result.

FCC §15.407(a) - POWER SPECTRAL DENSITY

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(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.

(iii) For fixed point-to-point access points 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. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(iv) 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.

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

power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	/

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

Test Data

Environmental Conditions

Temperature:	24.6°C
Relative Humidity:	46 %
ATM Pressure:	101 kPa

The testing was performed by Harry Yang on 2018-01-24.

Test Mode: Transmitting

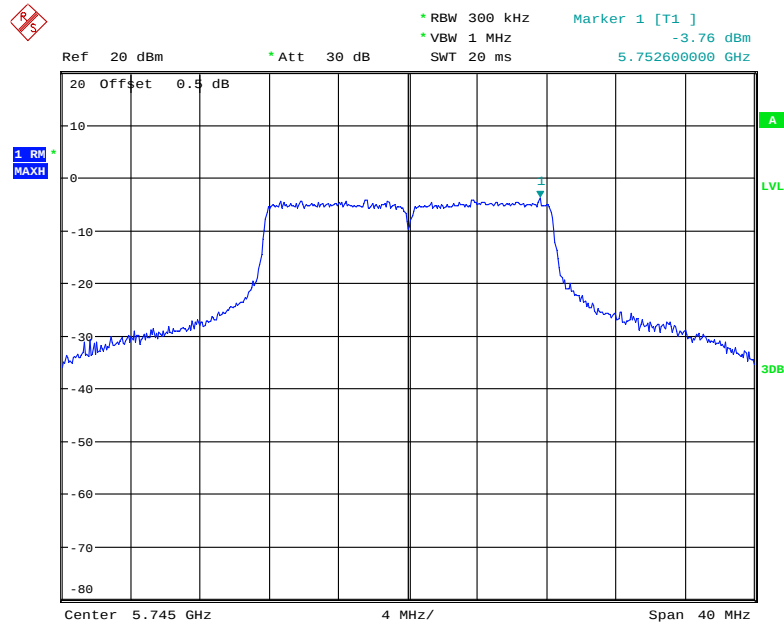
Test Result: Compliance. Please refer to the following table and plot.

Mode	Channel	Frequency (MHz)	Reading (dBm/300kHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
a	Low	5745	-3.76	0.53	-1.01	30
	Middle	5785	-3.47	0.53	-0.72	30
	High	5825	-4.48	0.53	-1.73	30
802.11n ht20	Low	5745	-5.77	0.56	-2.99	30
	Middle	5785	-3.97	0.56	-1.19	30
	High	5825	-4.93	0.56	-2.15	30
802.11n ht40	Low	5755	-7.6	1.11	-4.27	30
	High	5795	-5.77	1.11	-2.44	30

Note 2: For 5.8GHz band, If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

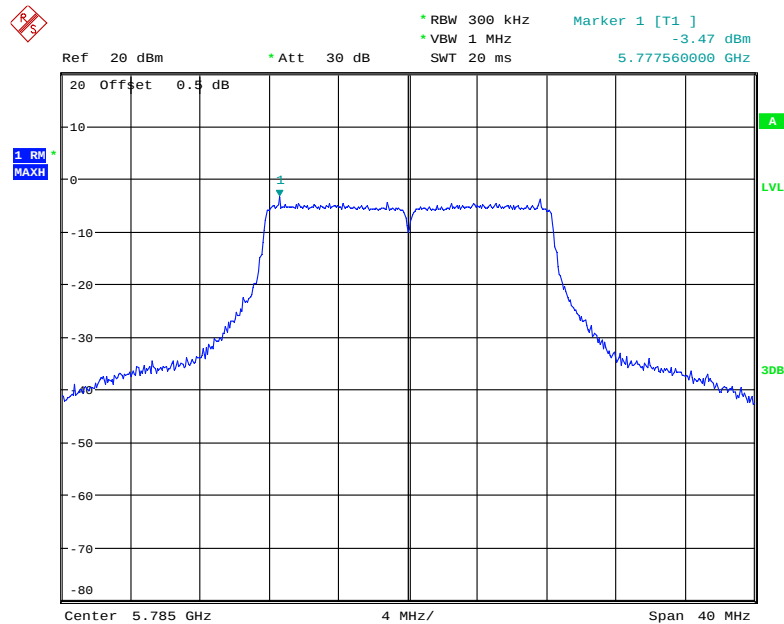
5725-5850MHz

802.11a Low Channel



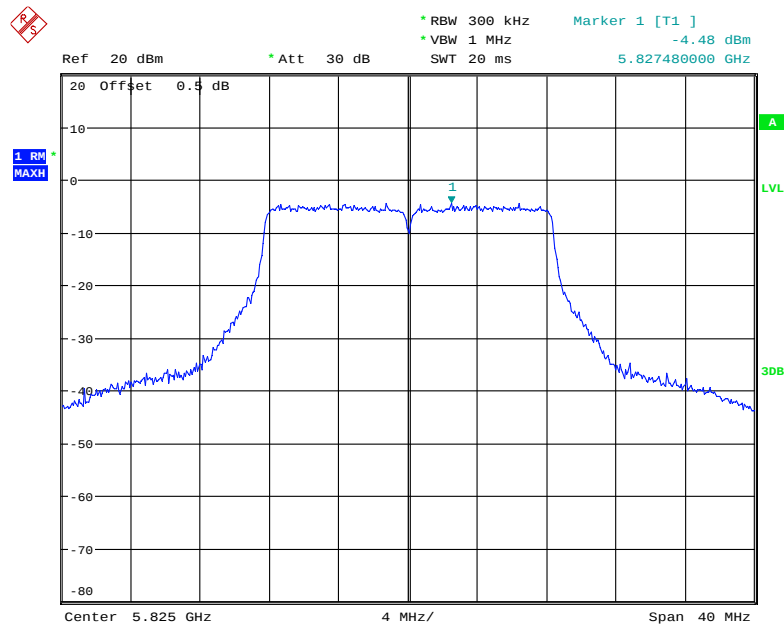
Date: 24.JAN.2018 22:42:54

802.11a Middle Channel



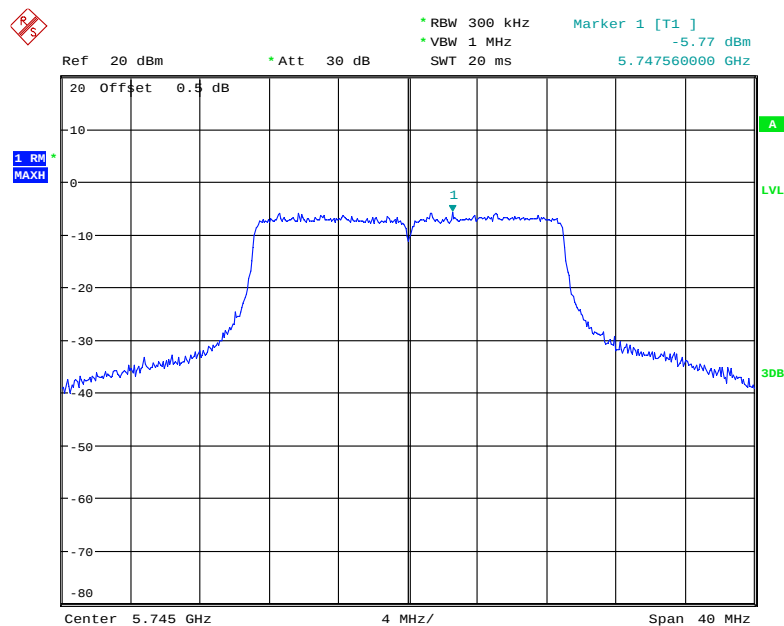
Date: 24.JAN.2018 01:01:38

802.11a High Channel



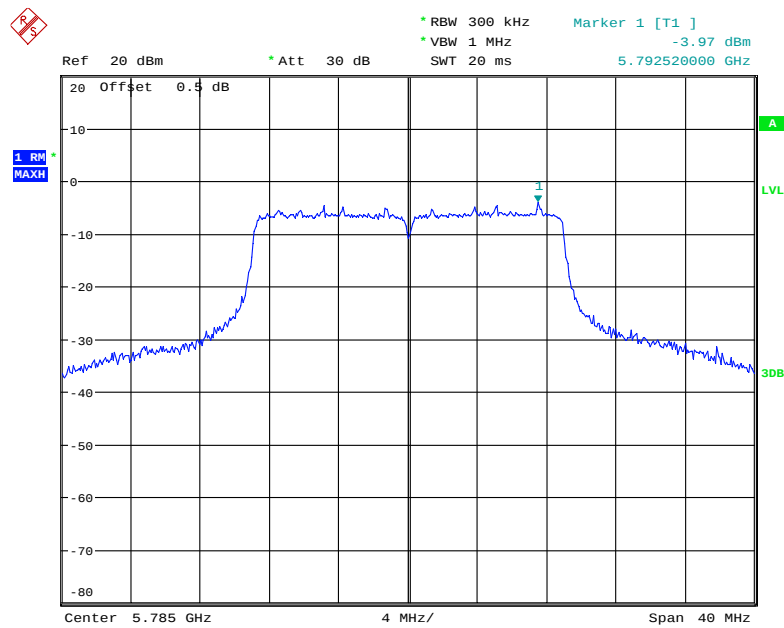
Date: 24.JAN.2018 00:56:52

802.11n ht20 Low Channel



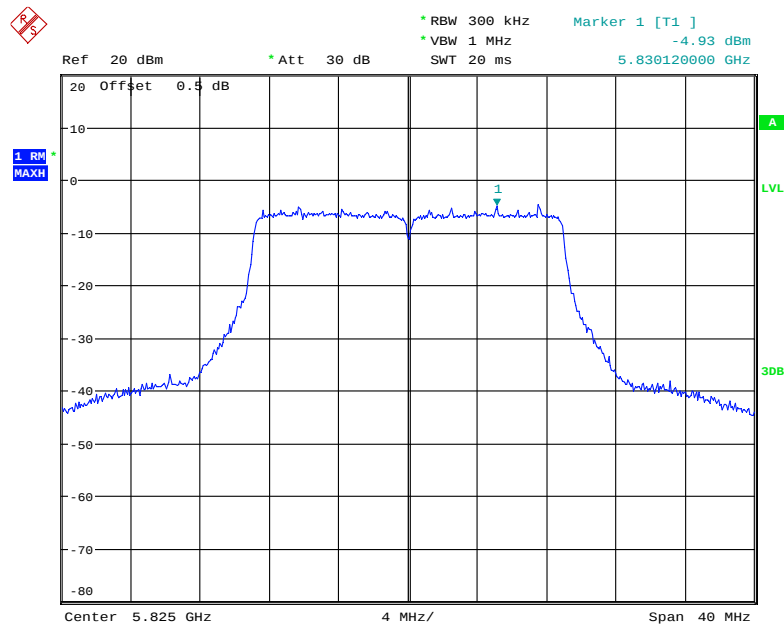
Date: 24.JAN.2018 22:54:15

802.11n ht20 Middle Channel

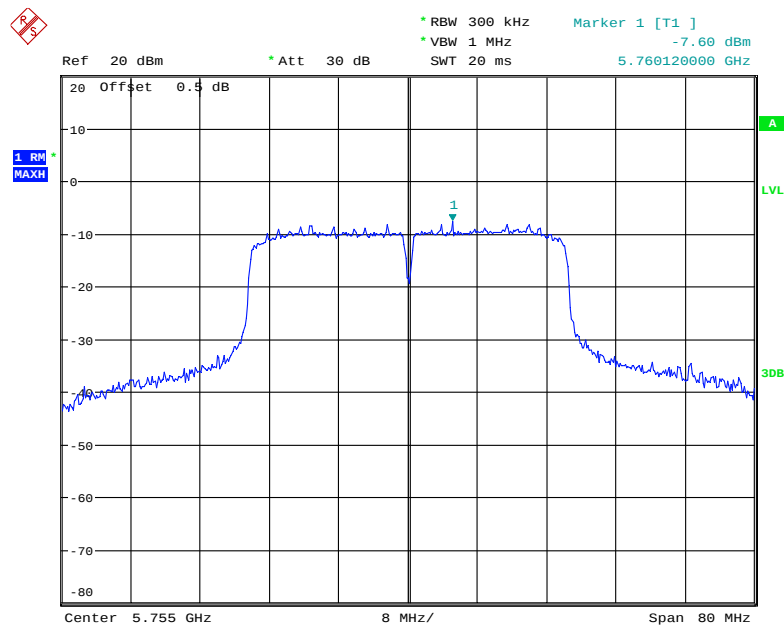


Date: 24.JAN.2018 22:58:56

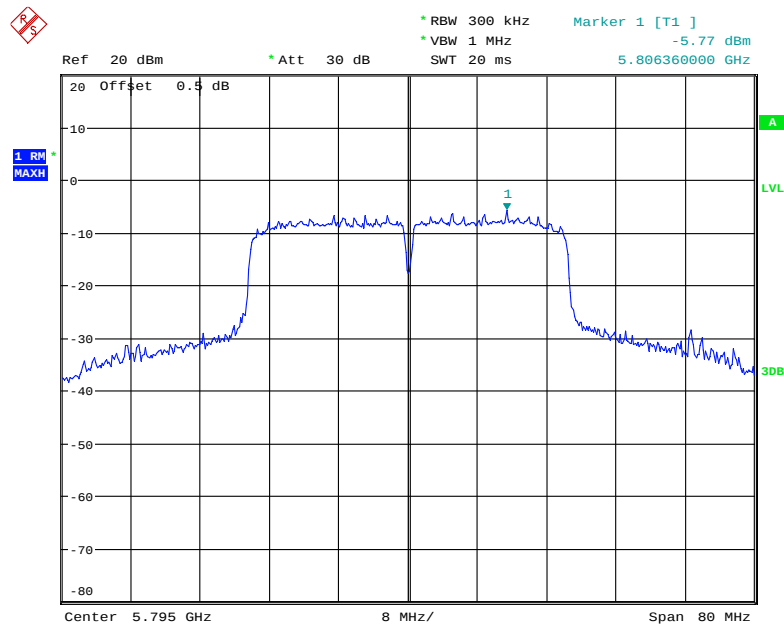
802.11n ht20 High Channel



Date: 24.JAN.2018 00:53:55

802.11n ht40 Low Channel

Date: 24.JAN.2018 23:02:28

802.11n ht40 High Channel

Date: 24.JAN.2018 23:04:54

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