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CERTIFICATE #4820.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 15.247

TEST REPORT

For

LUXPAD TABLET

YangGuangGaoErFU Building,No 7008 SHENNAN Road, FuTian, SHENZHEN,China

FCC ID: 2ANIRTAB9G

Report Type: Original Report	**Product Name:** Tablet

Report Number: RDG190125005-00B

Report Date: 2019-04-03

Reviewed By: Jerry Zhang
EMC Manager

Jerry Zhang

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Tablet
EUT Model:		TAB-9G
Operation Frequency:		2412-2462 MHz(802.11b/g/n20) 2422-2452MHz(802.11n40)
Maximum Peak Output Power (Conducted):		23.09 dBm
Modulation Type:		DSSS, OFDM
Adapter Information	Input:	100-240V/AC 0.3A 50/60Hz
	Output:	5V 2000mA
External Dimension:		190mm(L)*148mm(W)*12mm(H)
Serial Number:		190125005
EUT Received Date:		2019/1/19

Objective

This report is prepared on behalf of ***LUXPAD TABLET*** in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communications Commission's rules.

The tests were performed in order to determine the compliance of the EUT with FCC Rules Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: 2ANIRTAB9G.

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 558074 D01 15.247 Meas Guidance v05r01.

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: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
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 lab has been recognized as the FCC accredited lab 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 lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

For 2.4GHz band, total 11 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

For 802.11b, 802.11g, and 802.11n ht20 modes were test with channel 1,6,11.
For 802.11n ht40 modes were test with channel 3,6,9.

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

EUT Exercise Software

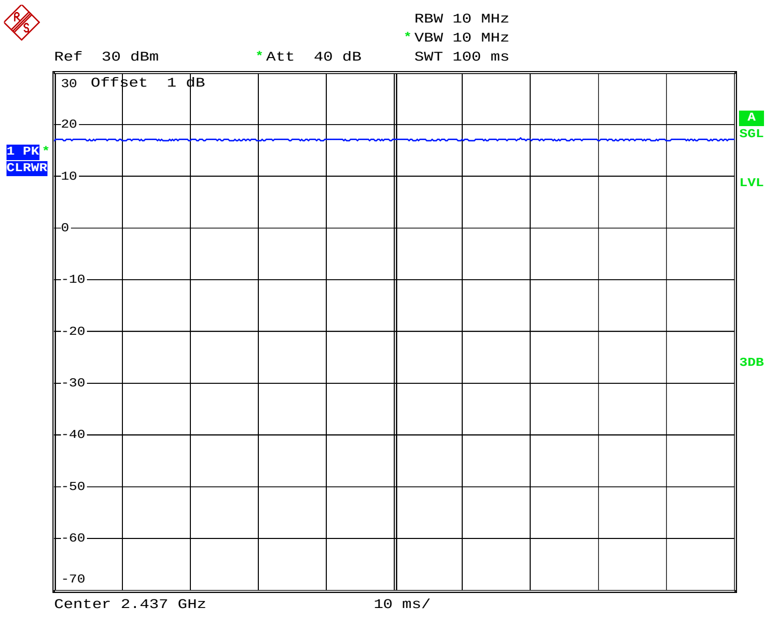
The software "Engineering Mode" was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer:

Mode	Channel	Frequency (MHz)	Data rate	Power level Setting
802.11b	Low	2412	1 Mbps	15
	Middle	2437	1 Mbps	15
	High	2462	1 Mbps	15
802.11g	Low	2412	6 Mbps	14
	Middle	2437	6 Mbps	14
	High	2462	6 Mbps	14
802.11n ht20	Low	2412	MCS0	14
	Middle	2437	MCS0	14
	High	2462	MCS0	14
802.11n ht 40	Low	2422	MCS0	13
	Middle	2437	MCS0	13
	High	2452	MCS0	13

The maximum duty cycle as following table:

Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100
802.11g	2.140	2.260	94.69
802.11n ht20	1.968	2.048	96.09
802.11n ht40	0.984	1.080	91.11

802.11b



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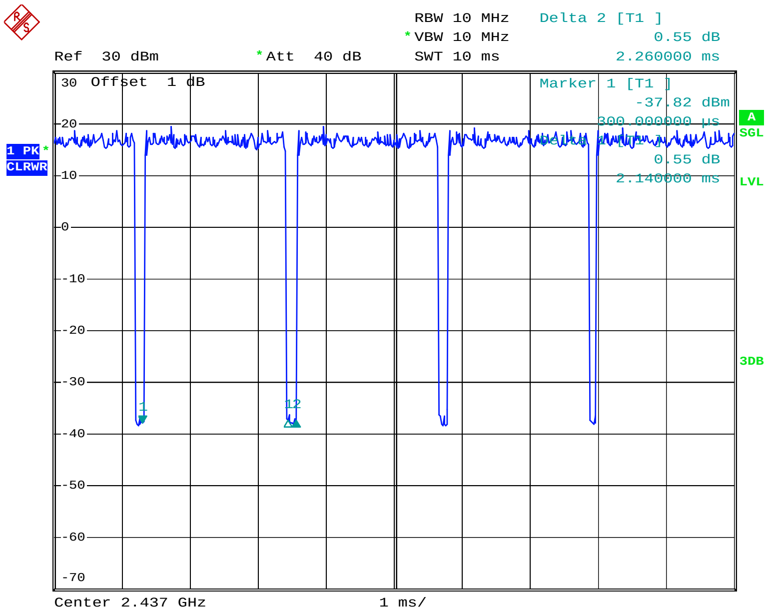
802.11g



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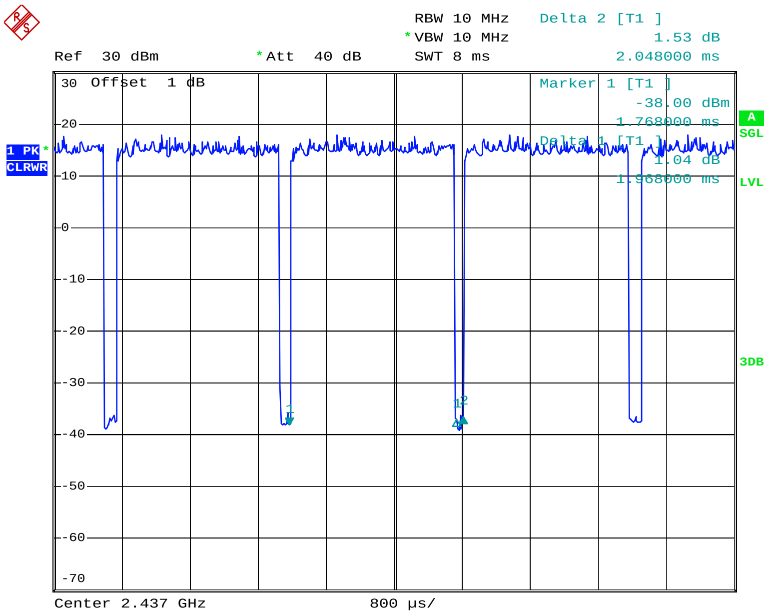

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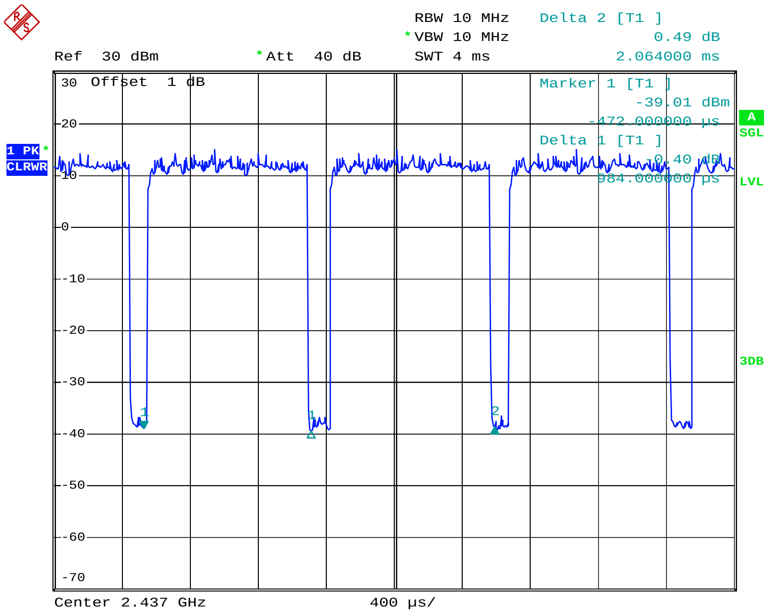
802.11n ht40



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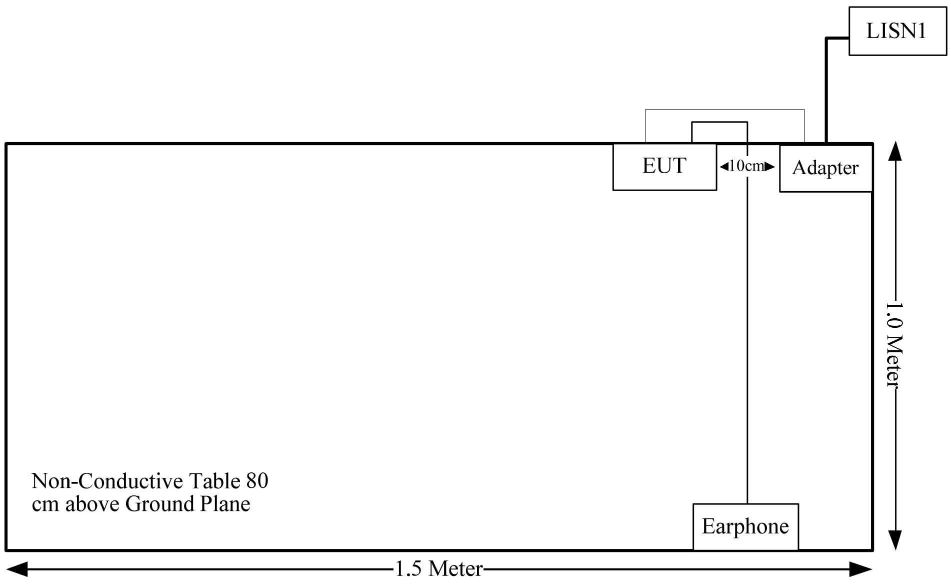
Equipment Modifications

No modification was made to the EUT.

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Power Cable	Yes	No	1.0	Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC§15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Bandwidth	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1310 & §2.1093- RF Exposure

Applicable Standard

According to§15.247(i) and §1.1310, 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.

Measurement Result

Please refer to the SAR report: RDG190125005-20.

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

Antenna Connector Construction

The EUT has one internal FPC antenna arrangement for BT/WLAN, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range
FPC	50	3.0 dBi/2.4~2.5GHzz

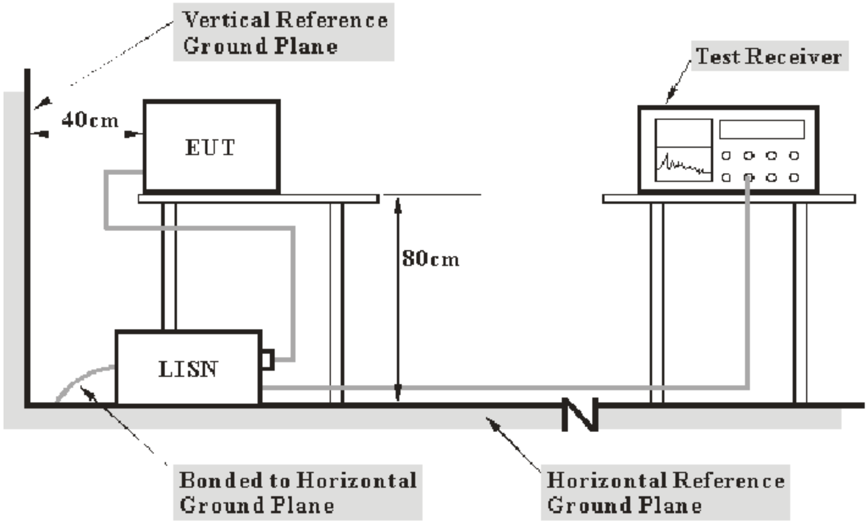
Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a).

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

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.

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:

Margin = Limit – 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	2018-12-10	2019-12-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-10	2019-12-10

*** 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

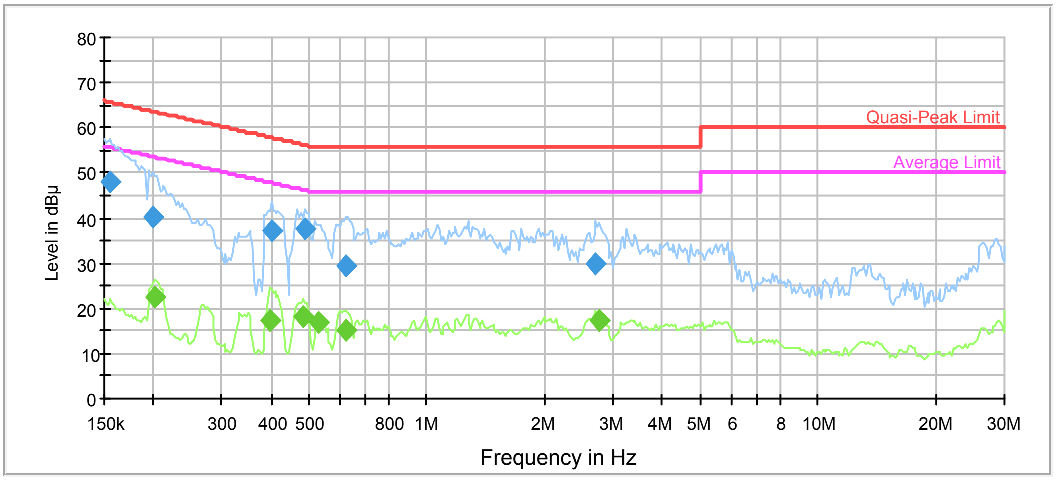
Environmental Conditions

Temperature:	24.6 °C
Relative Humidity:	46 %
ATM Pressure:	101.4 kPa

The testing was performed by Lily Xie on 2019-03-15.

Test Mode: Transmitting (Wi-Fi mode 802.11b middle channel was the worst)

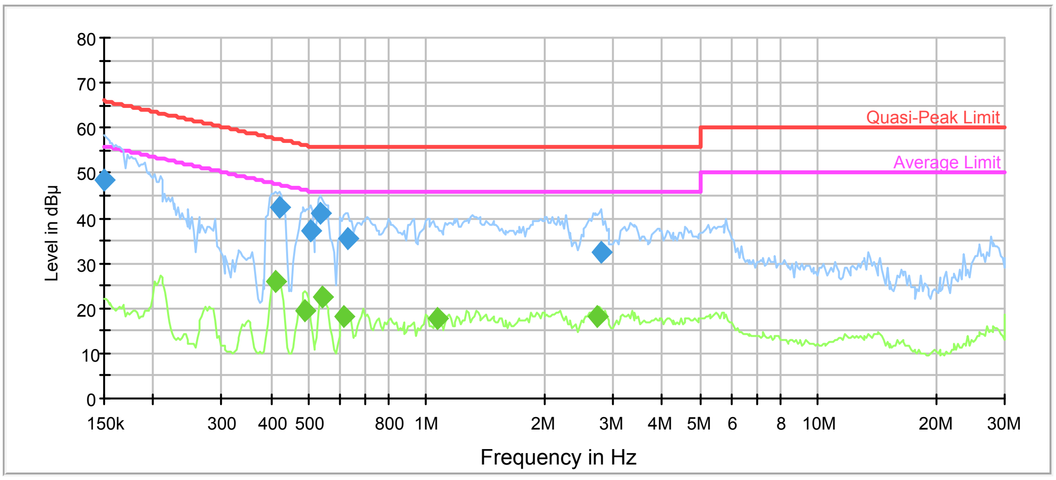
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.156091	47.8	9.000	L1	11.1	17.9	65.7
0.200176	40.3	9.000	L1	10.6	23.3	63.6
0.401705	37.1	9.000	L1	10.0	20.7	57.8
0.490157	37.6	9.000	L1	9.9	18.6	56.2
0.622369	29.5	9.000	L1	9.8	26.5	56.0
2.714009	29.9	9.000	L1	9.8	26.1	56.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.202177	22.5	9.000	L1	10.6	31.0	53.5
0.397728	17.4	9.000	L1	10.0	30.5	47.9
0.485304	18.1	9.000	L1	9.9	28.1	46.2
0.530770	17.0	9.000	L1	9.9	29.0	46.0
0.622369	15.2	9.000	L1	9.8	30.8	46.0
2.768561	17.4	9.000	L1	9.8	28.6	46.0

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	48.6	9.000	N	11.2	17.4	66.0
0.422196	42.4	9.000	N	9.9	15.0	57.4
0.505009	37.2	9.000	N	9.9	18.8	56.0
0.536077	40.9	9.000	N	9.9	15.1	56.0
0.628593	35.3	9.000	N	9.8	20.7	56.0
2.796246	32.2	9.000	N	9.8	23.8	56.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.413877	25.9	9.000	N	9.9	21.7	47.6
0.490157	19.5	9.000	N	9.9	26.7	46.2
0.541438	22.6	9.000	N	9.8	23.4	46.0
0.616207	18.1	9.000	N	9.8	27.9	46.0
1.065129	17.8	9.000	N	9.8	28.2	46.0
2.741149	18.0	9.000	N	9.8	28.0	46.0

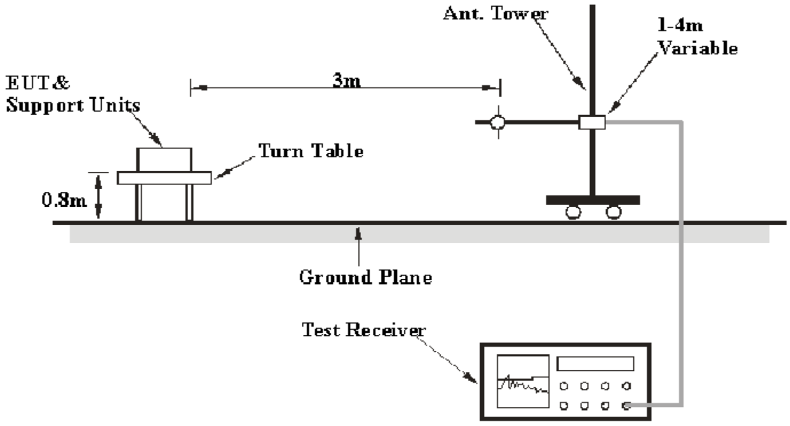
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

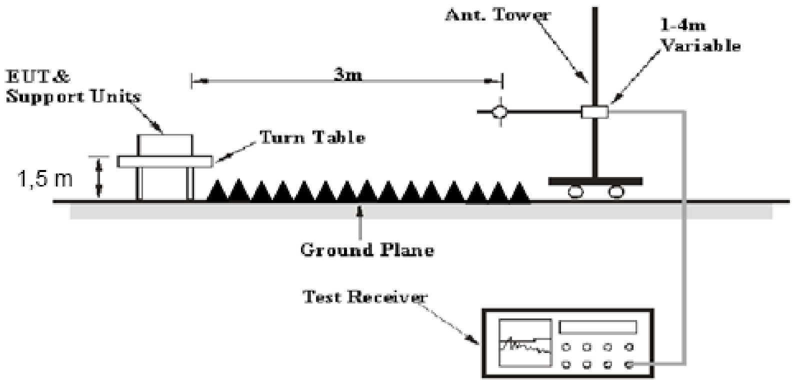
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission Below 1GHz tests were performed in the 3 meters chamber A, above 1GHz tests were performed in the 3 meters chamber B, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

30MHz-1000MHz:

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

1GHz- 25GHz:

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

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

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

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

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
R&S	EMI Test Receiver	ESCI	100224	2018-12-10	2019-12-10
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2018-05-06	2019-05-06
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2018-06-27	2019-06-27
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2018-09-05	2019-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2018-06-16	2019-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2018-06-16	2019-06-16

* **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:	22.9~23.8°C
Relative Humidity:	43~45%
ATM Pressure:	100.8~101.2kPa

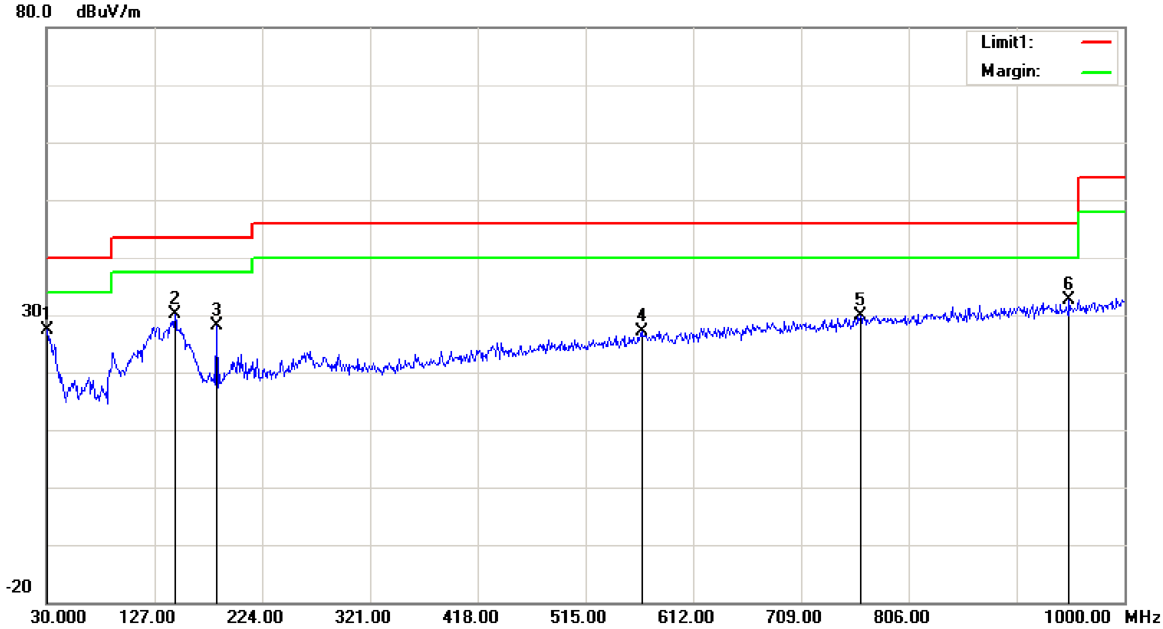
** The testing was performed by Neil Liao on 2019-03-07&2019-03-18.*

Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting

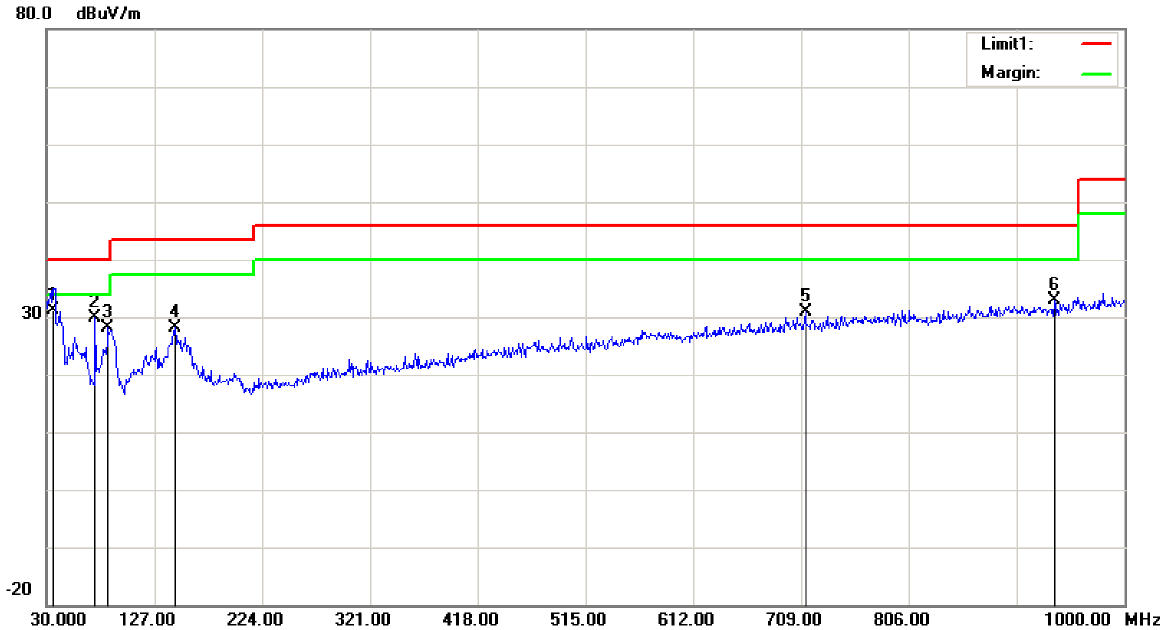
1) 30MHz-1GHz(802.11b mode middle channel was the worst)

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	32.46	peak	-5.01	27.45	40.00	12.55
145.4300	42.07	peak	-11.98	30.09	43.50	13.41
183.2600	41.58	peak	-13.35	28.23	43.50	15.27
565.4400	32.36	peak	-5.19	27.17	46.00	18.83
762.3500	31.88	peak	-2.06	29.82	46.00	16.18
950.5300	35.85	peak	-3.33	32.52	46.00	13.48

Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
35.8200	33.80	QP	-2.59	31.21	40.00	8.79
73.6500	40.87	peak	-11.02	29.85	40.00	10.15
85.2900	39.59	peak	-11.41	28.18	40.00	11.82
145.4300	34.15	peak	-6.01	28.14	43.50	15.36
712.8800	27.62	peak	3.19	30.81	46.00	15.19
936.9500	36.38	peak	-3.41	32.97	46.00	13.03

2) 1-25GHz:
802.11b 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: 2412 MHz									
2412.00	70.99	PK	H	28.12	1.81	0.00	100.92	N/A	N/A
2412.00	64.85	AV	H	28.12	1.81	0.00	94.78	N/A	N/A
2412.00	67.49	PK	V	28.12	1.81	0.00	97.42	N/A	N/A
2412.00	61.74	AV	V	28.12	1.81	0.00	91.67	N/A	N/A
2390.00	25.52	PK	H	28.08	1.80	0.00	55.40	74.00	18.60
2390.00	14.22	AV	H	28.08	1.80	0.00	44.10	54.00	9.90
4824.00	48.89	PK	H	32.95	3.19	37.20	47.83	74.00	26.17
4824.00	42.16	AV	H	32.95	3.19	37.20	41.10	54.00	12.90
7236.00	55.26	PK	H	35.81	4.77	37.27	58.57	74.00	15.43
7236.00	50.09	AV	H	35.81	4.77	37.27	53.40	54.00	0.60
Middle Channel: 2437 MHz									
2437.00	72.77	PK	H	28.17	1.82	0.00	102.76	N/A	N/A
2437.00	66.34	AV	H	28.17	1.82	0.00	96.33	N/A	N/A
2437.00	70.01	PK	V	28.17	1.82	0.00	100.00	N/A	N/A
2437.00	64.12	AV	V	28.17	1.82	0.00	94.11	N/A	N/A
4874.00	49.85	PK	H	33.05	3.26	37.21	48.95	74.00	25.05
4874.00	43.12	AV	H	33.05	3.26	37.21	42.22	54.00	11.78
7311.00	55.71	PK	H	36.01	4.64	37.36	59.00	74.00	15.00
7311.00	50.16	AV	H	36.01	4.64	37.36	53.45	54.00	0.55
High Channel: 2462 MHz									
2462.00	72.39	PK	H	28.22	1.83	0.00	102.44	N/A	N/A
2462.00	67.12	AV	H	28.22	1.83	0.00	97.17	N/A	N/A
2462.00	70.10	PK	V	28.22	1.83	0.00	100.15	N/A	N/A
2462.00	64.87	AV	V	28.22	1.83	0.00	94.92	N/A	N/A
2483.50	25.86	PK	H	28.27	1.84	0.00	55.97	74.00	18.03
2483.50	14.33	AV	H	28.27	1.84	0.00	44.44	54.00	9.56
4924.00	48.31	PK	H	33.15	3.27	37.22	47.51	74.00	26.49
4924.00	40.97	AV	H	33.15	3.27	37.22	40.17	54.00	13.83
7386.00	55.50	PK	H	36.20	4.51	37.46	58.75	74.00	15.25
7386.00	50.18	AV	H	36.20	4.51	37.46	53.43	54.00	0.57

802.11g 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: 2412 MHz									
2412.00	73.00	PK	H	28.12	1.81	0.00	102.93	N/A	N/A
2412.00	63.63	AV	H	28.12	1.81	0.00	93.56	N/A	N/A
2412.00	71.75	PK	V	28.12	1.81	0.00	101.68	N/A	N/A
2412.00	61.28	AV	V	28.12	1.81	0.00	91.21	N/A	N/A
2390.00	36.63	PK	H	28.08	1.80	0.00	66.51	74.00	7.49
2390.00	19.09	AV	H	28.08	1.80	0.00	48.97	54.00	5.03
4824.00	47.02	PK	H	32.95	3.19	37.20	45.96	74.00	28.04
4824.00	33.76	AV	H	32.95	3.19	37.20	32.70	54.00	21.30
7236.00	60.41	PK	H	35.81	4.77	37.27	63.72	74.00	10.28
7236.00	46.90	AV	H	35.81	4.77	37.27	50.21	54.00	3.79
Middle Channel: 2437 MHz									
2437.00	72.52	PK	H	28.17	1.82	0.00	102.51	N/A	N/A
2437.00	62.47	AV	H	28.17	1.82	0.00	92.46	N/A	N/A
2437.00	70.35	PK	V	28.17	1.82	0.00	100.34	N/A	N/A
2437.00	60.69	AV	V	28.17	1.82	0.00	90.68	N/A	N/A
4874.00	46.38	PK	H	33.05	3.26	37.21	45.48	74.00	28.52
4874.00	33.18	AV	H	33.05	3.26	37.21	32.28	54.00	21.72
7311.00	58.64	PK	H	36.01	4.64	37.36	61.93	74.00	12.07
7311.00	44.06	AV	H	36.01	4.64	37.36	47.35	54.00	6.65
High Channel: 2462 MHz									
2462.00	72.37	PK	H	28.22	1.83	0.00	102.42	N/A	N/A
2462.00	62.59	AV	H	28.22	1.83	0.00	92.64	N/A	N/A
2462.00	70.28	PK	V	28.22	1.83	0.00	100.33	N/A	N/A
2462.00	60.45	AV	V	28.22	1.83	0.00	90.50	N/A	N/A
2483.50	36.94	PK	H	28.27	1.84	0.00	67.05	74.00	6.95
2483.50	20.23	AV	H	28.27	1.84	0.00	50.34	54.00	3.66
4924.00	47.01	PK	H	33.15	3.27	37.22	46.21	74.00	27.79
4924.00	33.69	AV	H	33.15	3.27	37.22	32.89	54.00	21.11
7386.00	58.04	PK	H	36.20	4.51	37.46	61.29	74.00	12.71
7386.00	44.18	AV	H	36.20	4.51	37.46	47.43	54.00	6.57

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: 2412 MHz									
2412.00	71.93	PK	H	28.12	1.81	0.00	101.86	N/A	N/A
2412.00	62.90	AV	H	28.12	1.81	0.00	92.83	N/A	N/A
2412.00	71.82	PK	V	28.12	1.81	0.00	101.75	N/A	N/A
2412.00	62.48	AV	V	28.12	1.81	0.00	92.41	N/A	N/A
2390.00	34.77	PK	H	28.08	1.80	0.00	64.65	74.00	9.35
2390.00	17.81	AV	H	28.08	1.80	0.00	47.69	54.00	6.31
4824.00	47.75	PK	H	32.95	3.19	37.20	46.69	74.00	27.31
4824.00	34.24	AV	H	32.95	3.19	37.20	33.18	54.00	20.82
7236.00	60.05	PK	H	35.81	4.77	37.27	63.36	74.00	10.64
7236.00	46.13	AV	H	35.81	4.77	37.27	49.44	54.00	4.56
Middle Channel: 2437 MHz									
2437.00	71.32	PK	H	28.17	1.82	0.00	101.31	N/A	N/A
2437.00	62.59	AV	H	28.17	1.82	0.00	92.58	N/A	N/A
2437.00	71.24	PK	V	28.17	1.82	0.00	101.23	N/A	N/A
2437.00	62.13	AV	V	28.17	1.82	0.00	92.12	N/A	N/A
4874.00	47.20	PK	H	33.05	3.26	37.21	46.30	74.00	27.70
4874.00	34.12	AV	H	33.05	3.26	37.21	33.22	54.00	20.78
7311.00	58.29	PK	H	36.01	4.64	37.36	61.58	74.00	12.42
7311.00	44.40	AV	H	36.01	4.64	37.36	47.69	54.00	6.31
High Channel: 2462 MHz									
2462.00	68.88	PK	H	28.22	1.83	0.00	98.93	N/A	N/A
2462.00	59.47	AV	H	28.22	1.83	0.00	89.52	N/A	N/A
2462.00	68.57	PK	V	28.22	1.83	0.00	98.62	N/A	N/A
2462.00	58.10	AV	V	28.22	1.83	0.00	88.15	N/A	N/A
2483.50	32.47	PK	H	28.27	1.84	0.00	62.58	74.00	11.42
2483.50	17.04	AV	H	28.27	1.84	0.00	47.15	54.00	6.85
4924.00	47.83	PK	H	33.15	3.27	37.22	47.03	74.00	26.97
4924.00	34.35	AV	H	33.15	3.27	37.22	33.55	54.00	20.45
7386.00	54.92	PK	H	36.20	4.51	37.46	58.17	74.00	15.83
7386.00	40.37	AV	H	36.20	4.51	37.46	43.62	54.00	10.38

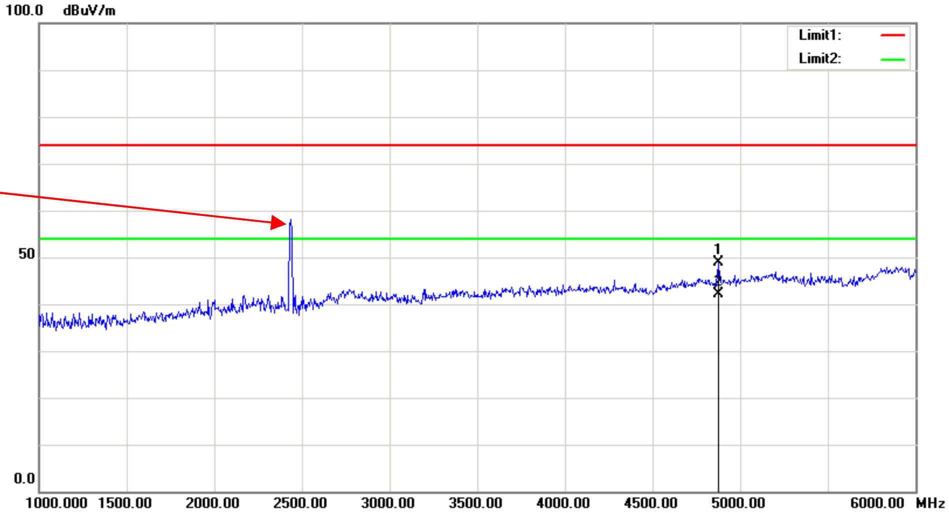
802.11n ht40 Mode:

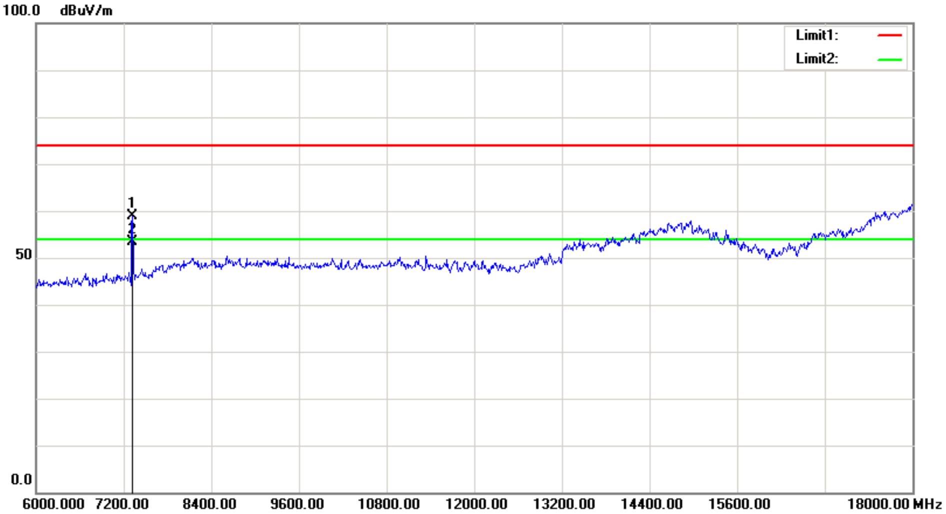
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2422 MHz									
2422.00	70.43	PK	H	28.14	1.81	0.00	100.38	N/A	N/A
2422.00	60.66	AV	H	28.14	1.81	0.00	90.61	N/A	N/A
2422.00	69.59	PK	V	28.14	1.81	0.00	99.54	N/A	N/A
2422.00	60.10	AV	V	28.14	1.81	0.00	90.05	N/A	N/A
2390.00	32.98	PK	H	28.08	1.80	0.00	62.86	74.00	11.14
2390.00	22.05	AV	H	28.08	1.80	0.00	51.93	54.00	2.07
4844.00	46.64	PK	H	32.99	3.22	37.20	45.65	74.00	28.35
4844.00	33.78	AV	H	32.99	3.22	37.20	32.79	54.00	21.21
7266.00	54.81	PK	H	35.89	4.72	37.31	58.11	74.00	15.89
7266.00	41.45	AV	H	35.89	4.72	37.31	44.75	54.00	9.25
Middle Channel: 2437 MHz									
2437.00	70.33	PK	H	28.17	1.82	0.00	100.32	N/A	N/A
2437.00	60.89	AV	H	28.17	1.82	0.00	90.88	N/A	N/A
2437.00	70.08	PK	V	28.17	1.82	0.00	100.07	N/A	N/A
2437.00	60.00	AV	V	28.17	1.82	0.00	89.99	N/A	N/A
4874.00	46.07	PK	H	33.05	3.26	37.21	45.17	74.00	28.83
4874.00	33.24	AV	H	33.05	3.26	37.21	32.34	54.00	21.66
7311.00	55.72	PK	H	36.01	4.64	37.36	59.01	74.00	14.99
7311.00	42.60	AV	H	36.01	4.64	37.36	45.89	54.00	8.11
High Channel: 2452 MHz									
2452.00	68.82	PK	H	28.20	1.83	0.00	98.85	N/A	N/A
2452.00	58.49	AV	H	28.20	1.83	0.00	88.52	N/A	N/A
2452.00	68.27	PK	V	28.20	1.83	0.00	98.30	N/A	N/A
2452.00	58.26	AV	V	28.20	1.83	0.00	88.29	N/A	N/A
2483.50	34.98	PK	H	28.27	1.84	0.00	65.09	74.00	8.91
2483.50	20.21	AV	H	28.27	1.84	0.00	50.32	54.00	3.68
4904.00	46.63	PK	H	33.11	3.30	37.21	45.83	74.00	28.17
4904.00	33.48	AV	H	33.11	3.30	37.21	32.68	54.00	21.32
7356.00	55.49	PK	H	36.13	4.56	37.42	58.76	74.00	15.24
7356.00	41.91	AV	H	36.13	4.56	37.42	45.18	54.00	8.82

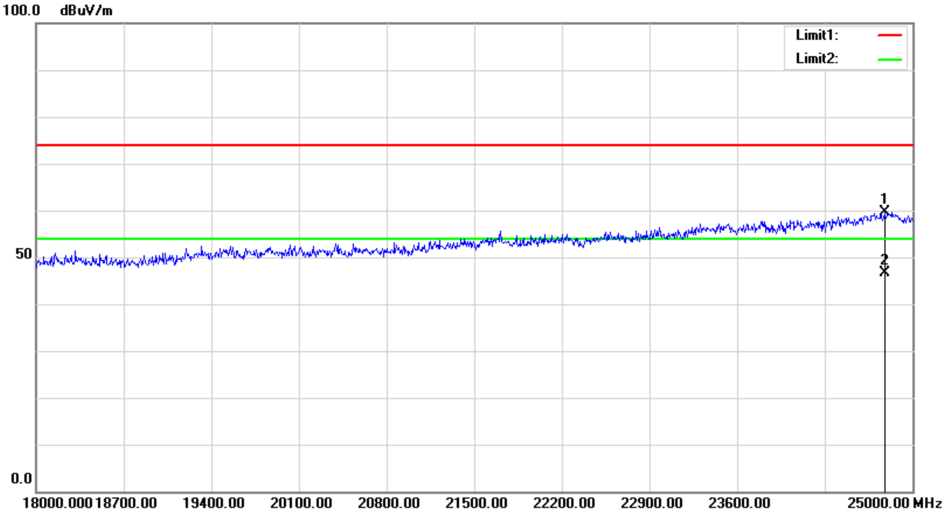
Test plots(802.11b low channel was the worst)

Horizontal:

Fundamental Test with Band Rejection Filter

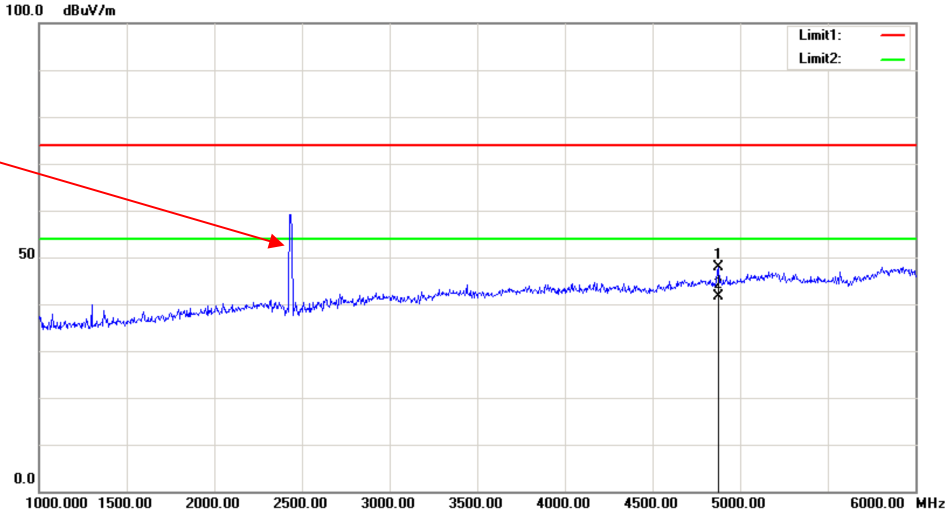


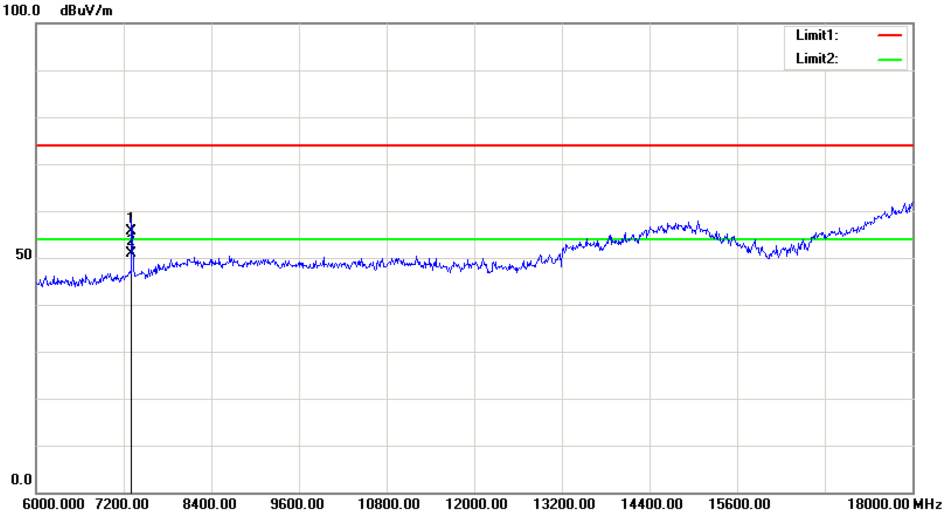


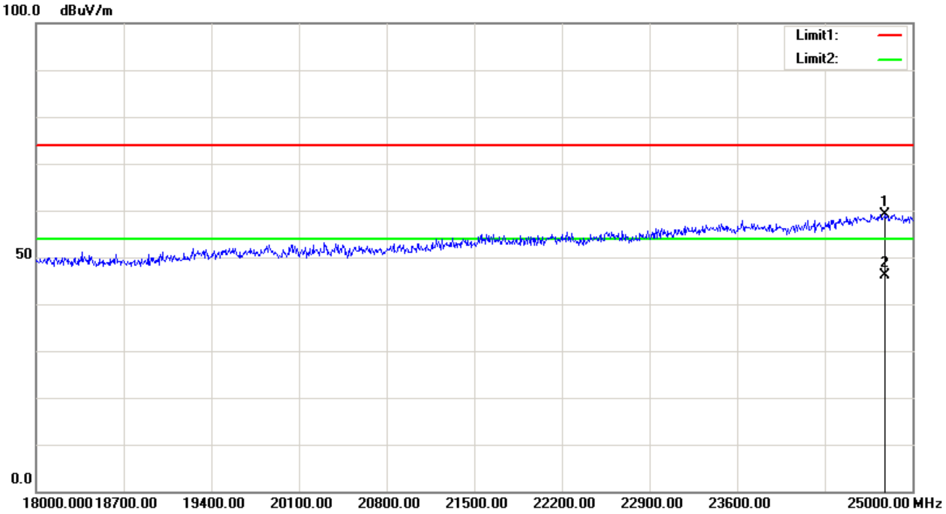


Vertical:

Fundamental Test with Band Rejection Filter







FCC §15.247(a) (2)–6 dB EMISSION BANDWIDTH

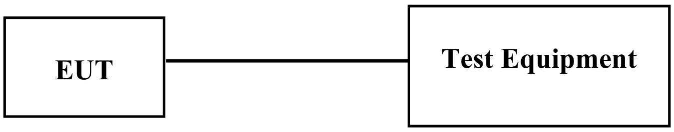
Applicable Standard

According to FCC §15.247(a) (2)

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

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
R&S	Spectrum Analyzer	FSU 26	200256	2019-01-04	2020-01-04
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	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:	25.6 °C
Relative Humidity:	72 %
ATM Pressure:	100.5kPa

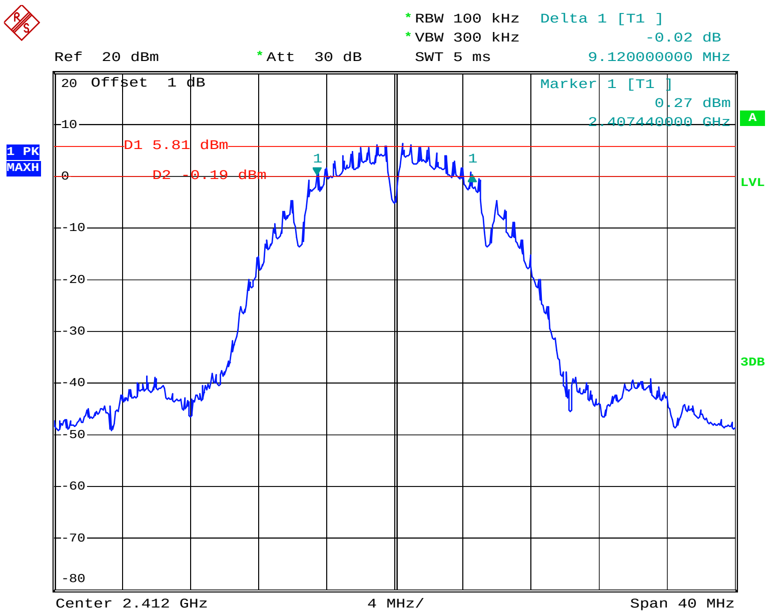
** The testing was performed by Carrie He on 2019-02-28*

Test Mode: Transmitting

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

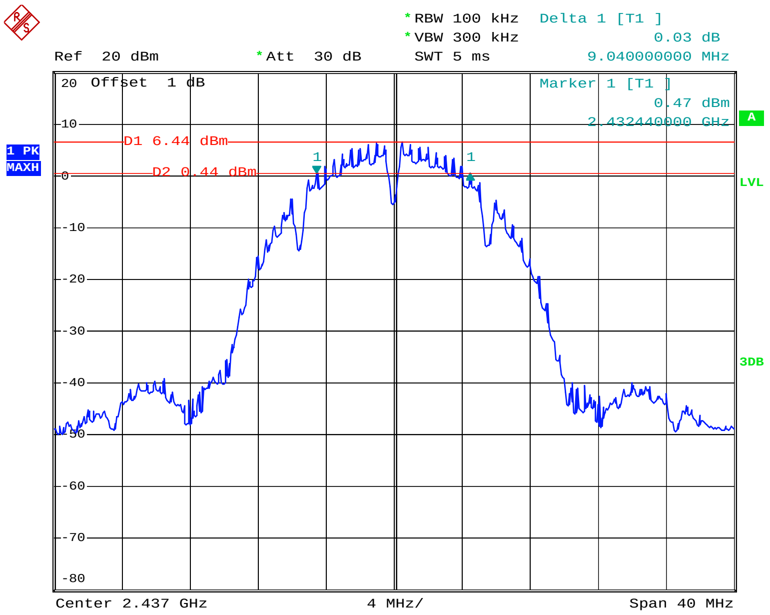
Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	9.120	≥0.5
	Middle	2437	9.040	≥0.5
	High	2462	9.200	≥0.5
802.11g	Low	2412	16.560	≥0.5
	Middle	2437	16.480	≥0.5
	High	2462	16.480	≥0.5
802.11n ht20	Low	2412	17.440	≥0.5
	Middle	2437	17.600	≥0.5
	High	2462	17.440	≥0.5
802.11n ht20	Low	2422	35.680	≥0.5
	Middle	2437	35.680	≥0.5
	High	2452	35.520	≥0.5

802.11b Low Channel



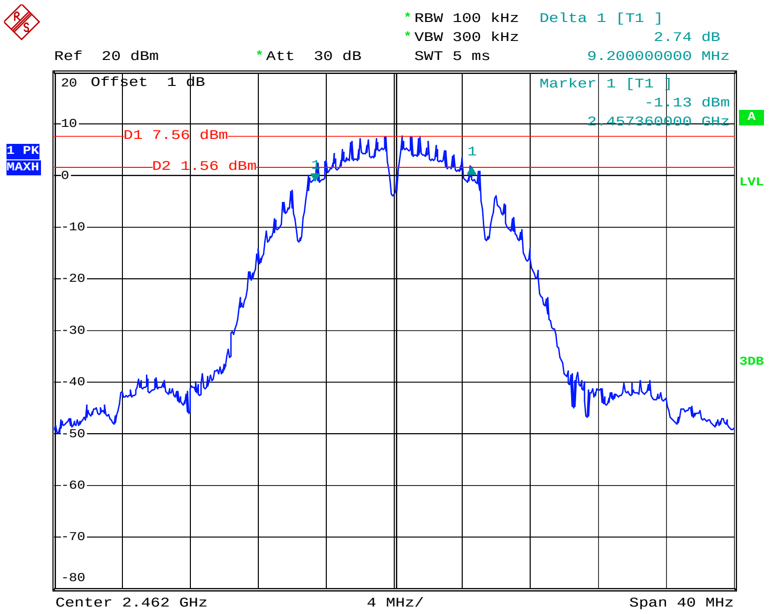
Date: 28.FEB.2019 10:42:36

802.11b Middle Channel



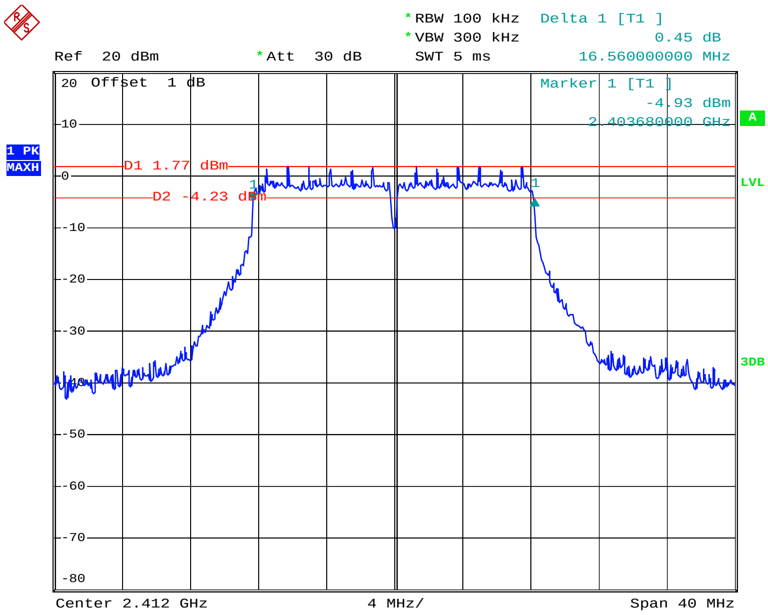
Date: 28.FEB.2019 10:43:40

802.11b High Channel



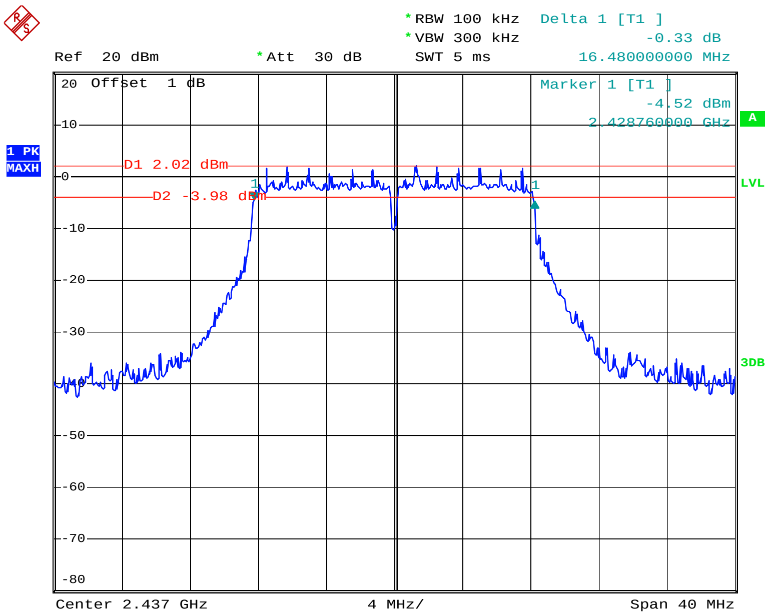
Date: 28.FEB.2019 11:24:12

802.11g Low Channel



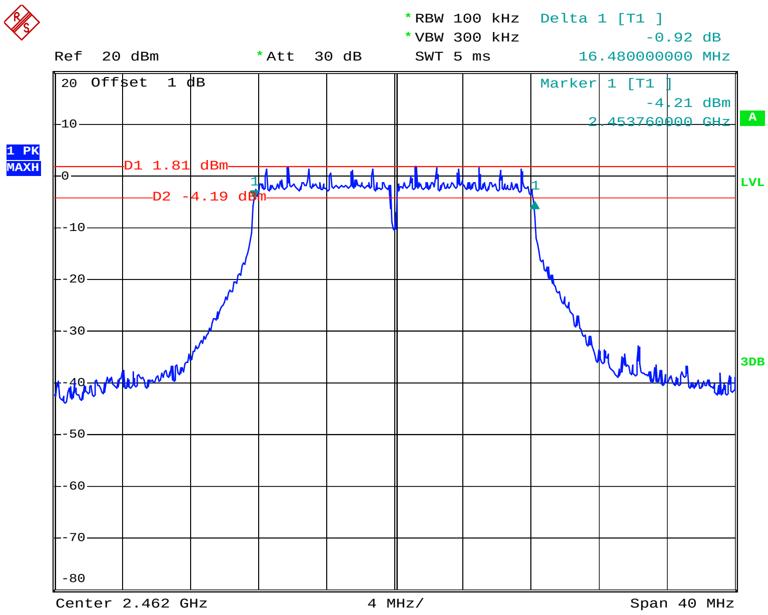
Date: 28.FEB.2019 11:25:08

802.11g Middle Channel



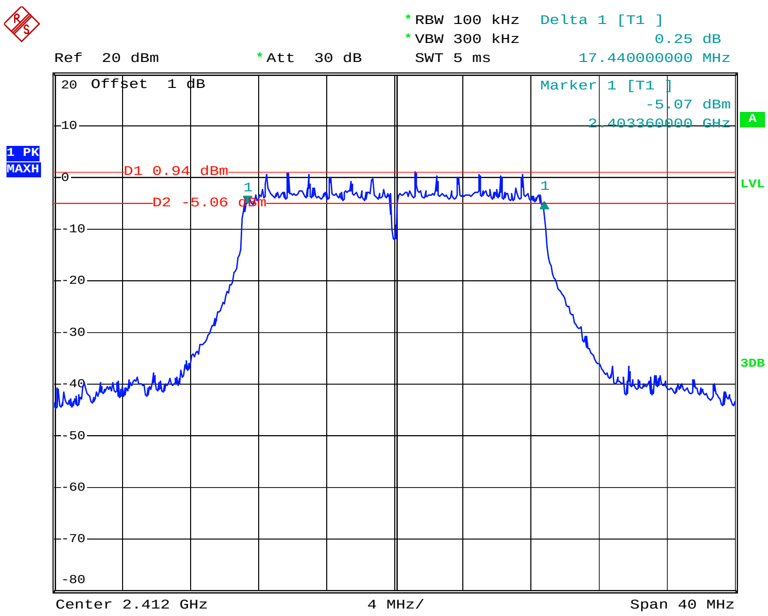
Date: 28.FEB.2019 11:27:51

802.11g High Channel



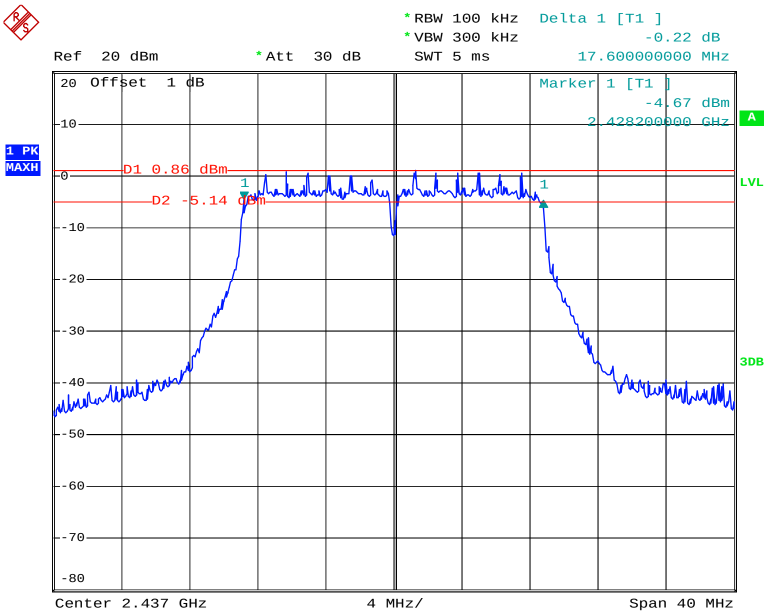
Date: 28.FEB.2019 11:39:23

802.11n ht20 Low Channel



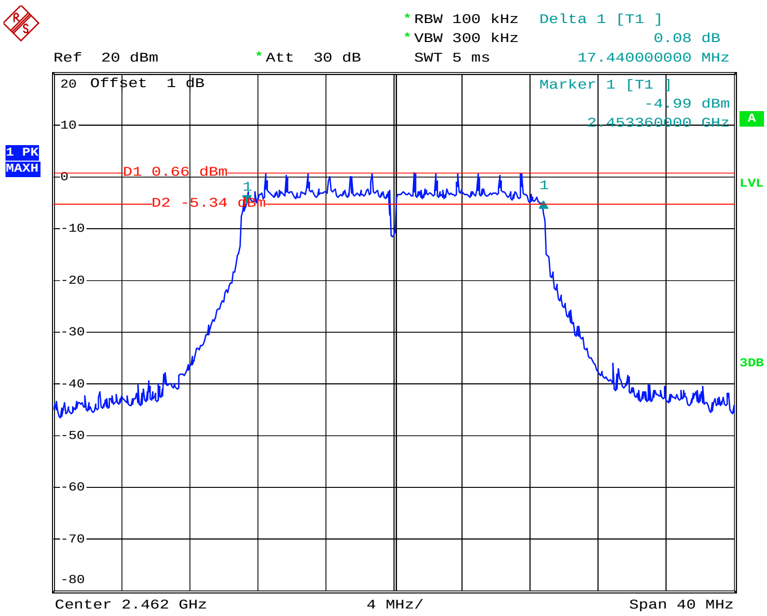
Date: 28.FEB.2019 11:40:17

802.11n ht20 Middle Channel



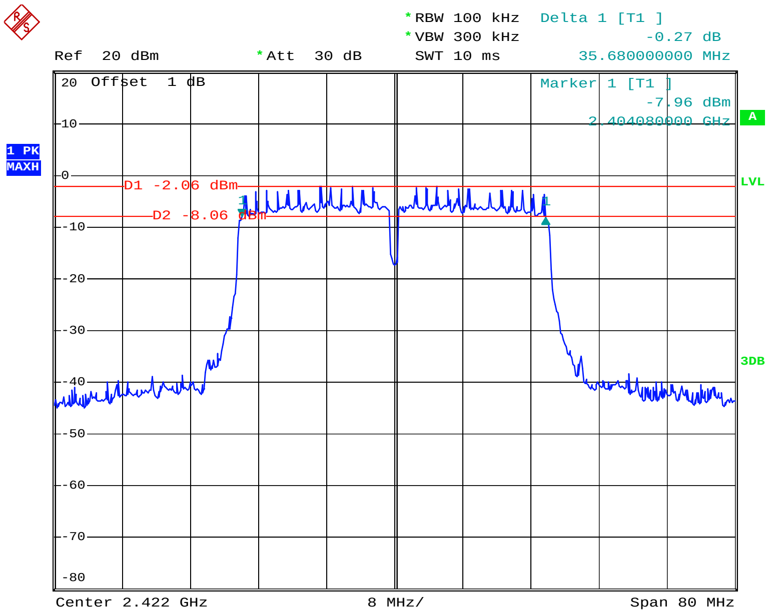
Date: 28.FEB.2019 11:44:33

802.11n ht20 High Channel



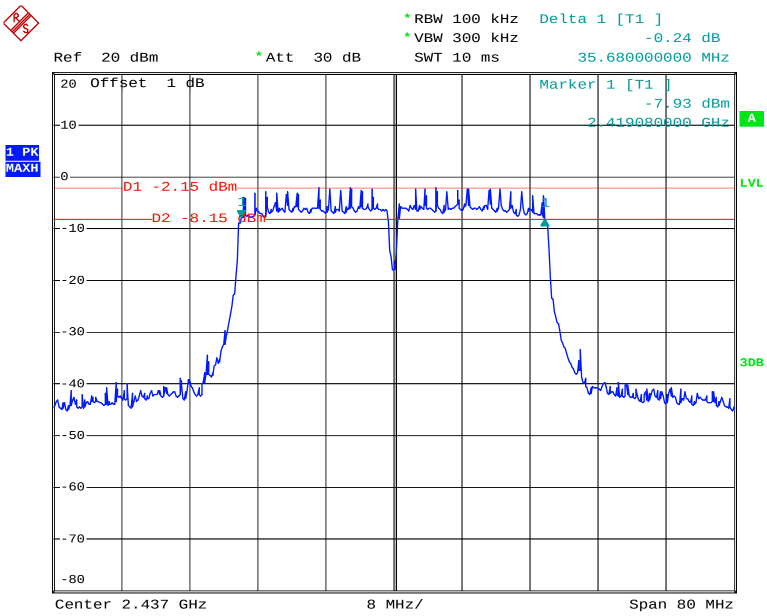
Date: 28.FEB.2019 11:49:03

802.11n ht40 Low Channel



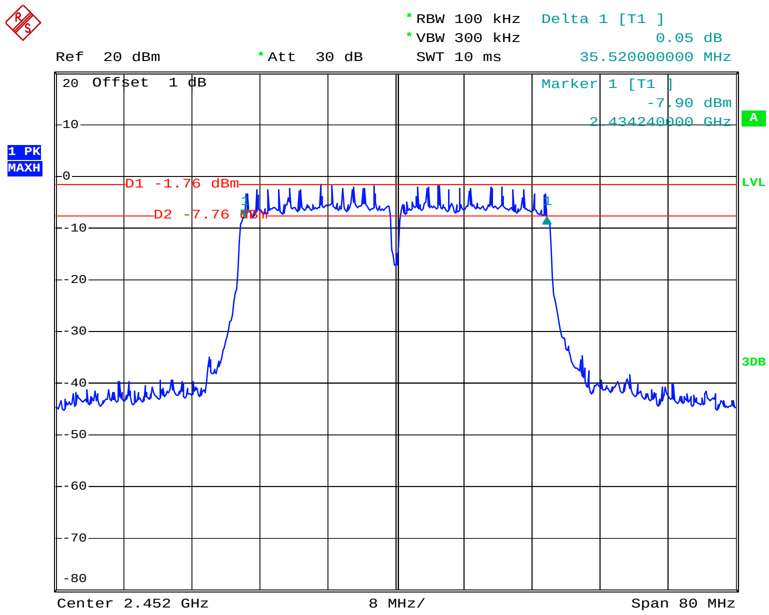
Date: 28.FEB.2019 11:51:49

802.11n ht40 Middle Channel



Date: 28.FEB.2019 11:54:57

802.11n ht40 High Channel



Date: 28.FEB.2019 13:26:30

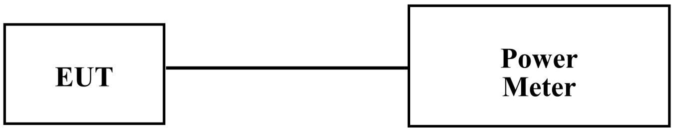
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to test equipment.
3. Add a correction factor to the display.
4. Set the power meter to test average output power, record the result as average power.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	USB Wideband Power Sensor	U2022XA	MY5417006	2018-12-10	2019-12-10
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	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:	25.6 °C
Relative Humidity:	72 %
ATM Pressure:	100.5 kPa

** The testing was performed by Carrie He on 2019-02-28.*

Test Mode: Transmitting

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

Test mode	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Max Average Conducted Output Power (dBm)	Limit (dBm)
802.11b	2412	15.71	13.64	30
	2437	17.83	15.65	30
	2462	17.68	15.49	30
802.11g	2412	23.09	13.83	30
	2437	22.94	13.72	30
	2462	22.72	13.56	30
802.11n ht20	2412	22.57	12.83	30
	2437	22.51	12.69	30
	2462	22.31	12.63	30
802.11n ht40	2422	22.68	12.58	30
	2437	22.64	12.51	30
	2452	22.61	12.49	30

FCC §15.247(d)– 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

According to FCC§15.247(d):In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2019-01-04	2020-01-04
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	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

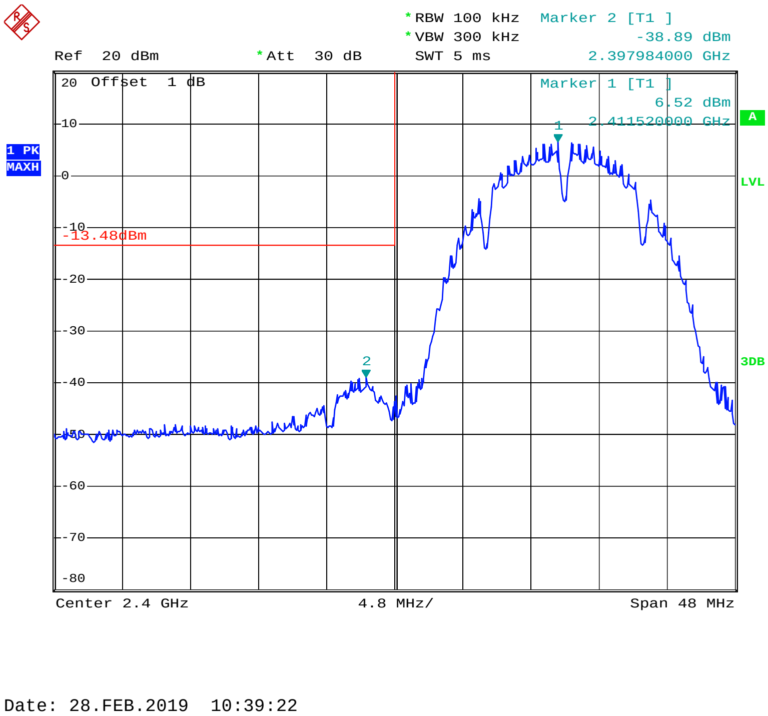
Temperature:	25.6 °C
Relative Humidity:	72 %
ATM Pressure:	100.5 kPa

** The testing was performed by Carrie He on 2019-02-28.*

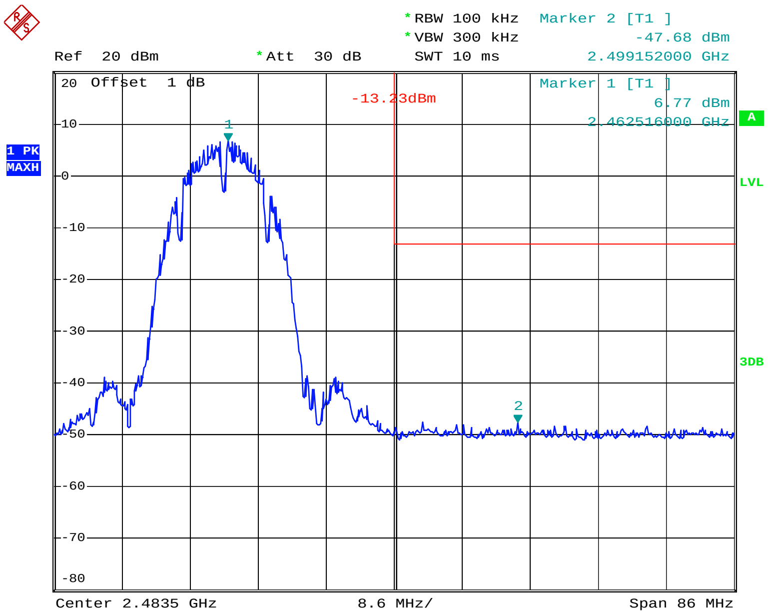
Test mode: Transmitting

Test Result: Compliance. Please refer to following plots.

802.11b: Band Edge, Left Side

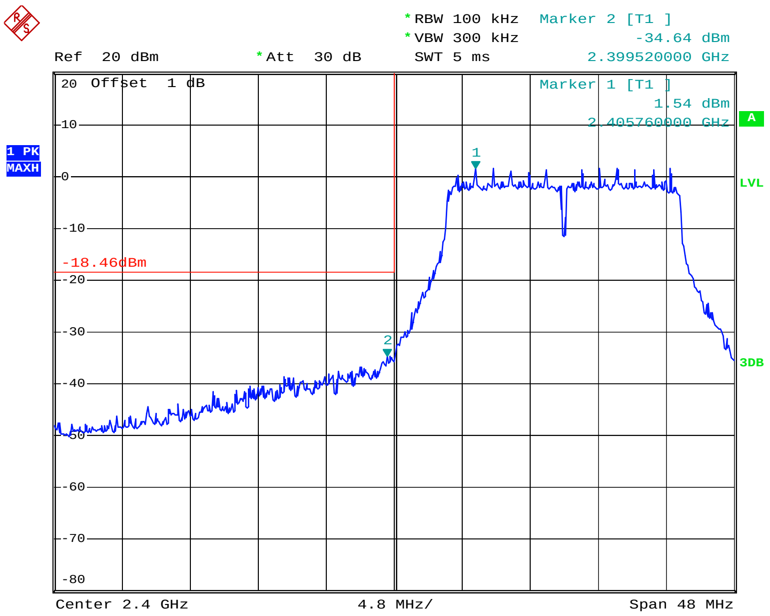


802.11b: Band Edge, Right Side



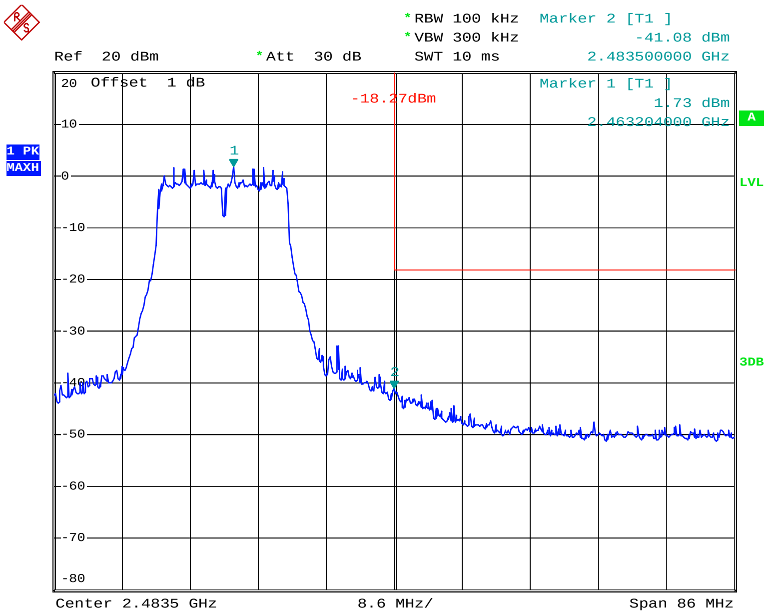
Date: 28.FEB.2019 10:51:43

802.11g: Band Edge, Left Side



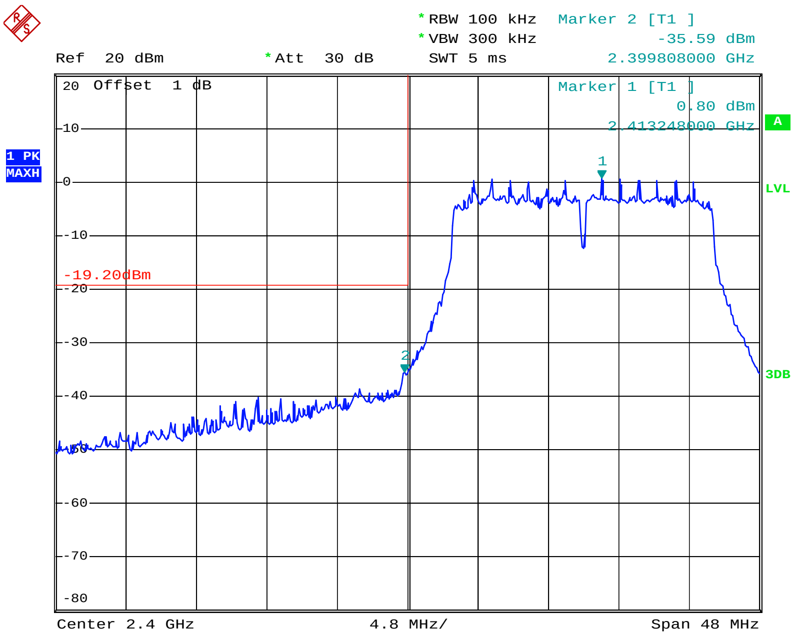
Date: 28.FEB.2019 11:27:03

802.11g: Band Edge, Right Side



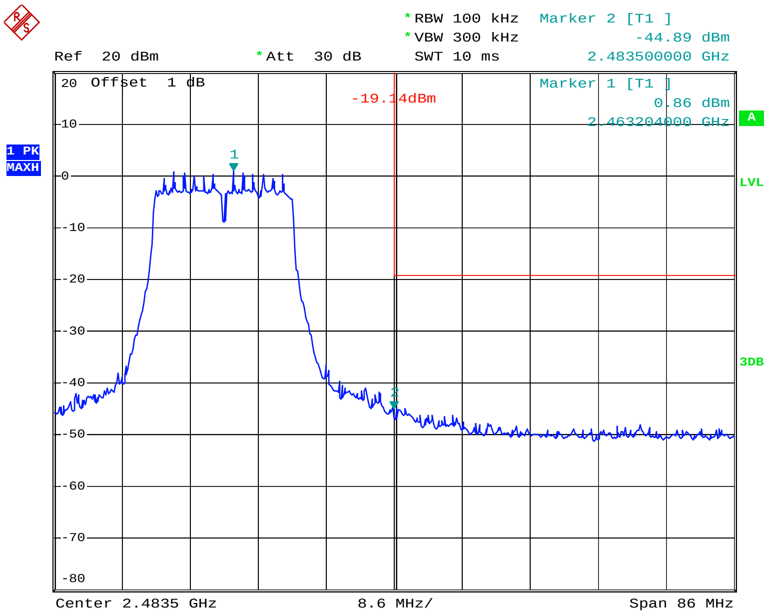
Date: 28.FEB.2019 11:38:44

802.11n ht20 Band Edge, Left Side



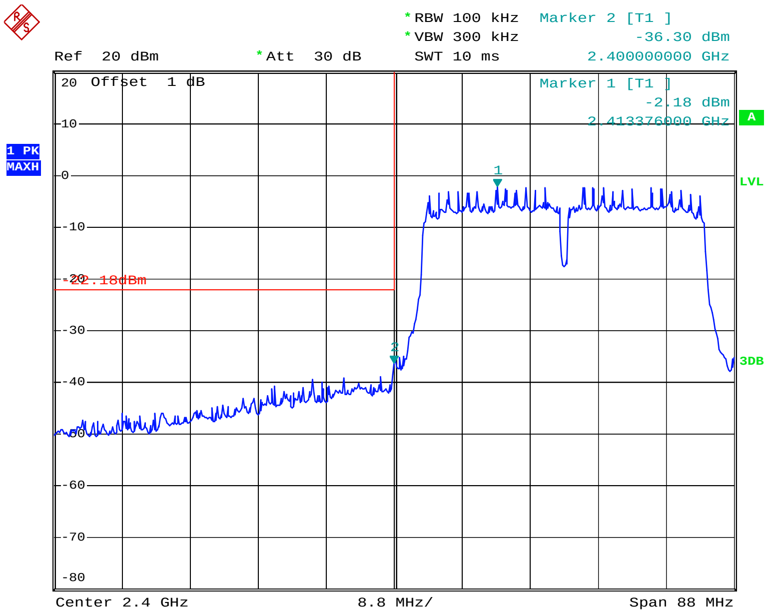
Date: 28.FEB.2019 11:43:04

802.11n ht20 Band Edge, Right Side



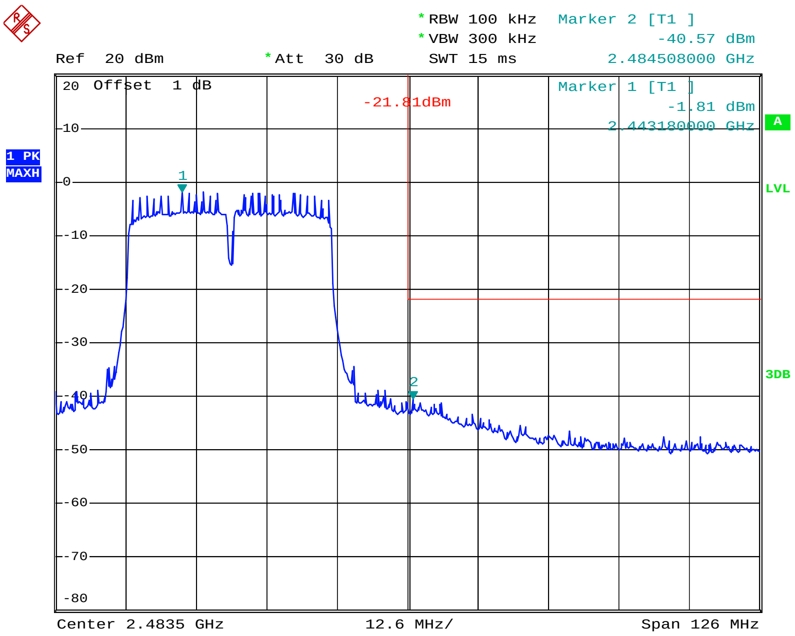
Date: 28.FEB.2019 11:51:05

802.11n ht40 Band Edge, Left Side



Date: 28.FEB.2019 11:54:05

802.11n ht40 Band Edge, Right Side



Date: 28.FEB.2019 13:28:54

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	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:	25.6 °C
Relative Humidity:	72 %
ATM Pressure:	100.5 kPa

** The testing was performed by Carrie He on 2019-02-28.*

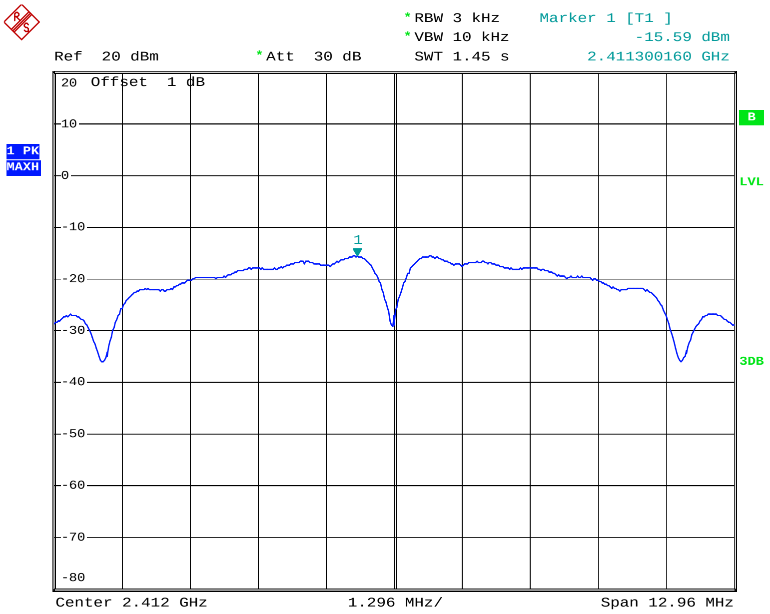
Test Result: Compliance

Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots

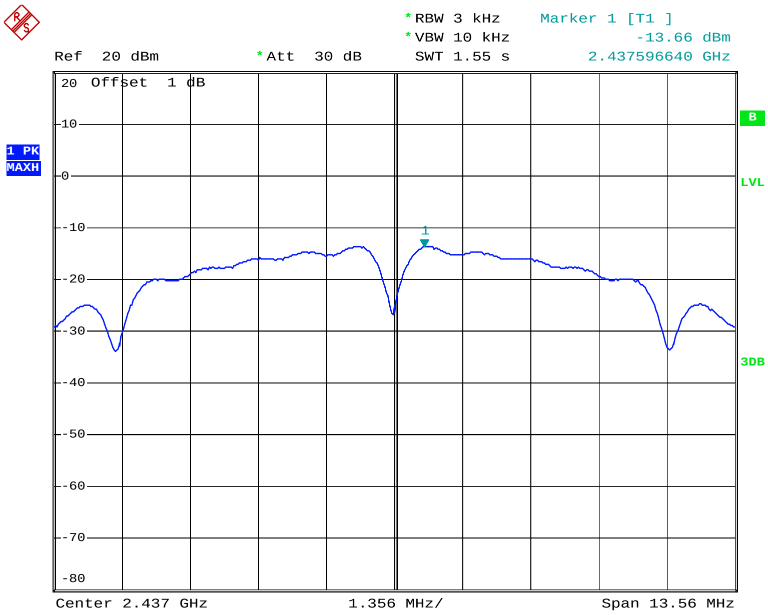
Test mode	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	2412	-15.59	≤8
	2437	-13.66	≤8
	2462	-14.01	≤8
802.11g	2412	-12.53	≤8
	2437	-11.44	≤8
	2462	-12.10	≤8
802.11n ht20	2412	-13.46	≤8
	2437	-13.49	≤8
	2462	-12.96	≤8
802.11n ht40	2422	-15.91	≤8
	2437	-15.93	≤8
	2452	-16.40	≤8

Power Spectral Density, 802.11b Low Channel



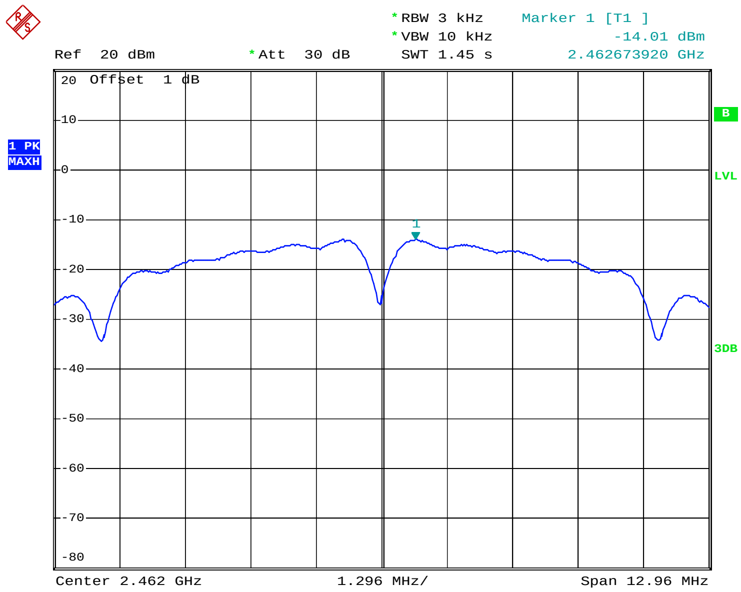
Date: 29.MAR.2019 14:07:38

Power Spectral Density, 802.11b Middle Channel



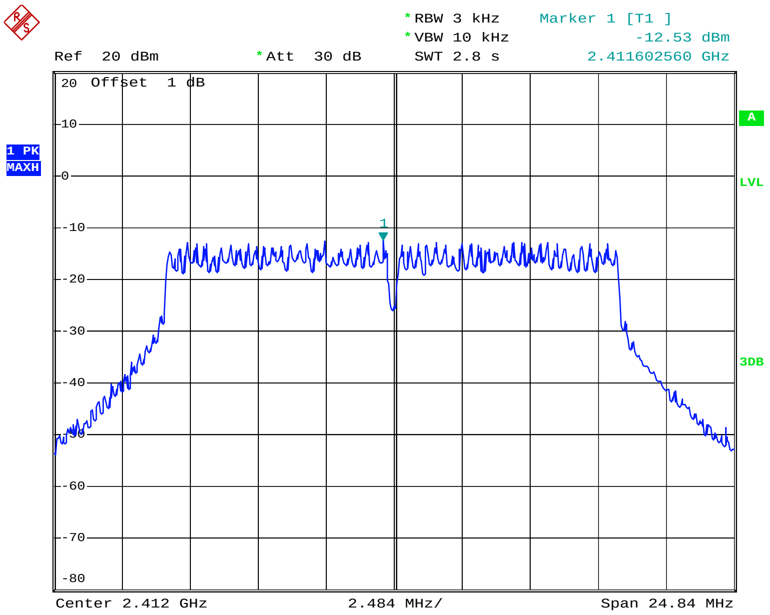
Date: 29.MAR.2019 14:06:49

Power Spectral Density, 802.11b High Channel



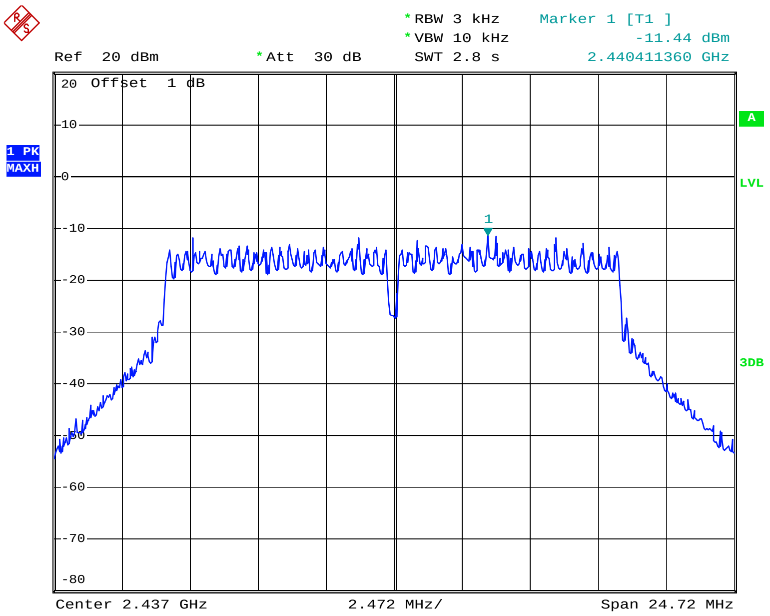
Date: 29.MAR.2019 14:05:55

Power Spectral Density, 802.11g Low Channel



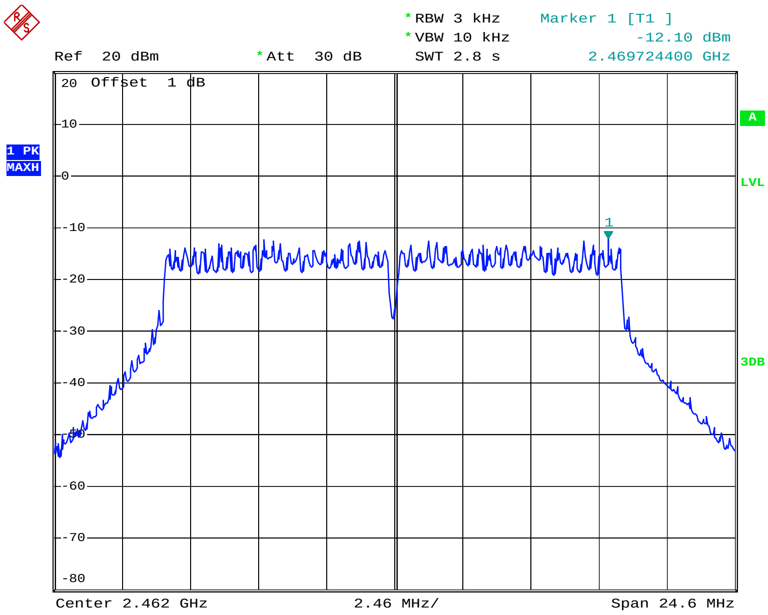
Date: 28.FEB.2019 11:26:37

Power Spectral Density, 802.11g Middle Channel



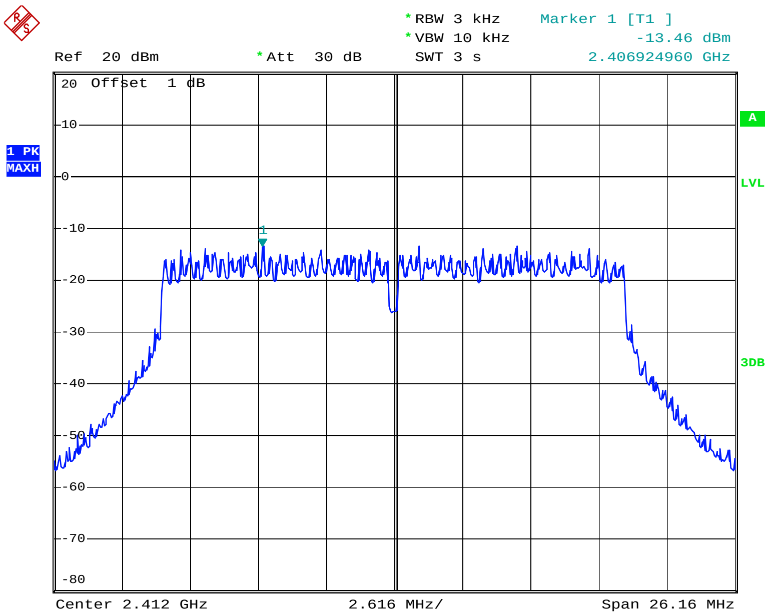
Date: 28.FEB.2019 11:28:56

Power Spectral Density, 802.11g High Channel



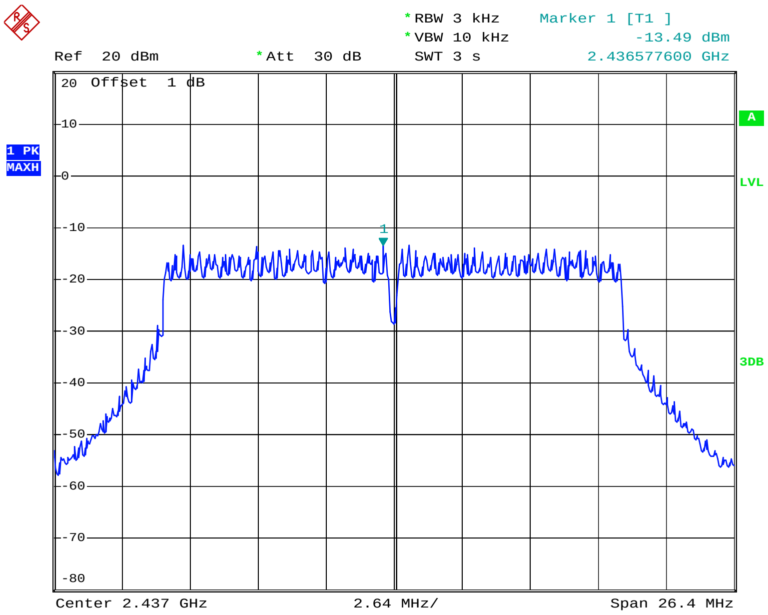
Date: 28.FEB.2019 11:38:24

Power Spectral Density, 802.11n ht20 Low Channel



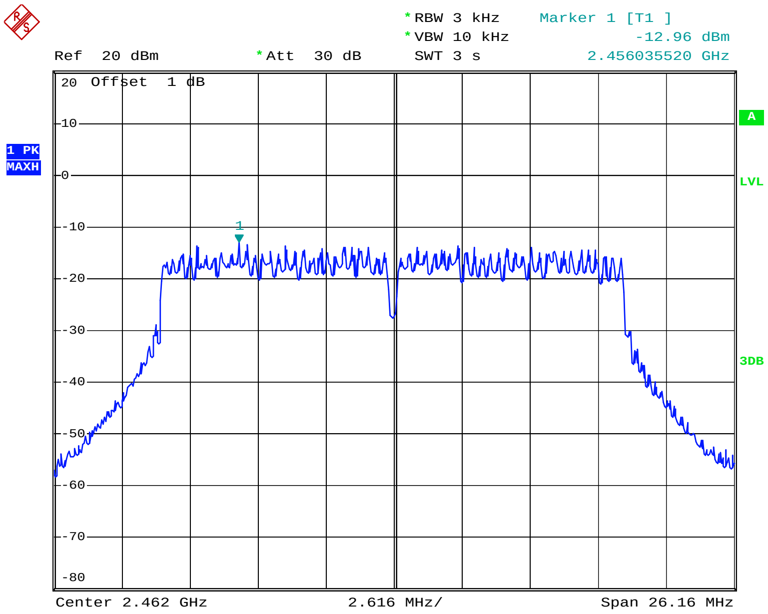
Date: 28.FEB.2019 11:42:38

Power Spectral Density, 802.11n ht20 Middle Channel



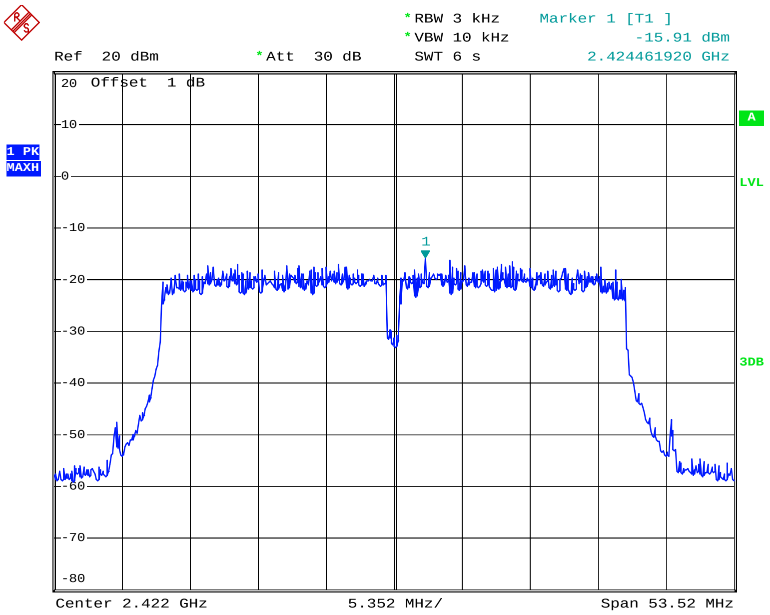
Date: 28.FEB.2019 11:46:03

Power Spectral Density, 802.11n ht20 High Channel



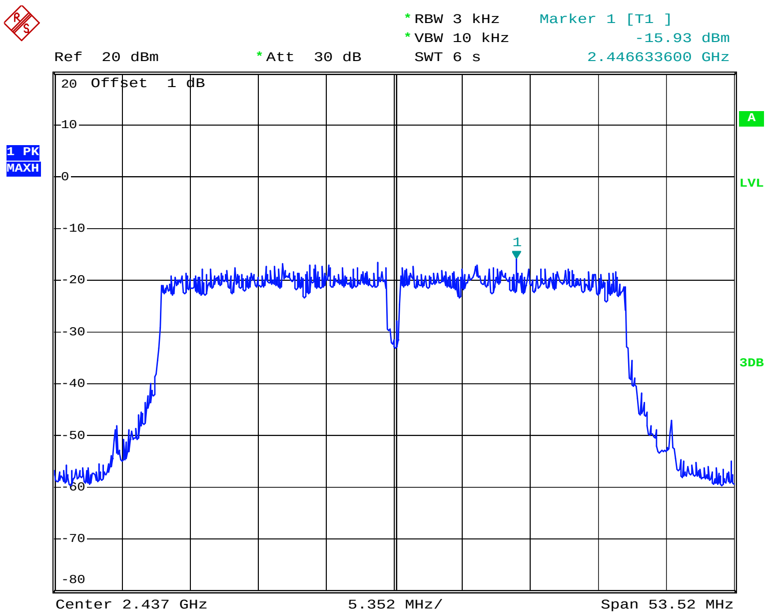
Date: 28.FEB.2019 11:50:39

Power Spectral Density, 802.11n ht40 Low Channel



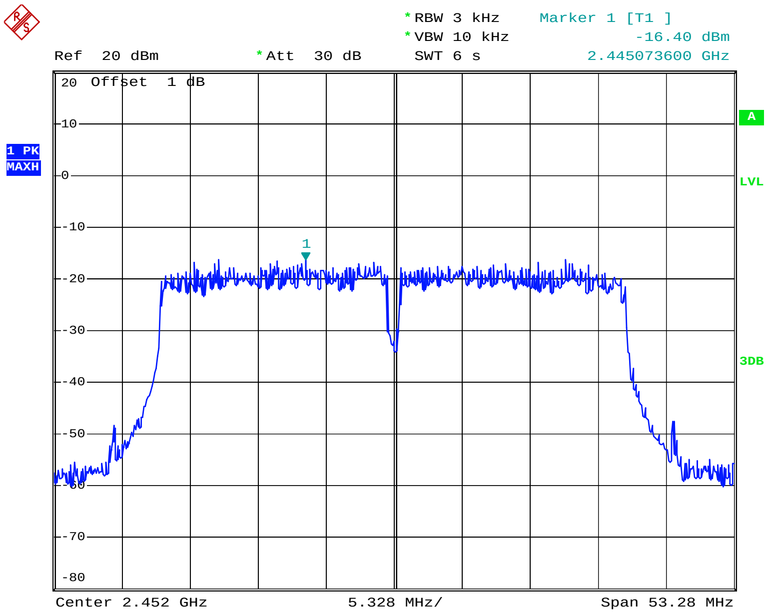
Date: 28.FEB.2019 11:53:48

Power Spectral Density, 802.11n ht40 Middle Channel



Date: 28.FEB.2019 11:56:54

Power Spectral Density, 802.11n ht40 High Channel



Date: 28.FEB.2019 13:28:31

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