



TESTING LABORATORY  
CERTIFICATE #4820.01



# FCC PART 15.247 TEST REPORT

For

## Skyrocket Toys LLC

12910 Culver Blvd, Suite F, Los Angeles, CA 90066, U.S.A

**FCC ID: O5301849RX24G**

<b>Report Type:</b> Original Report	<b>Product Name:</b> JOURNEY GPS Streaming Video Drone
<b>Report Number:</b>	RDG180419001-00A
<b>Report Date:</b>	2018-05-03
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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>	JOURNEY GPS Streaming Video Drone
<b>EUT Model:</b>	01849
<b>FCC ID:</b>	O5301849RX24G
<b>Rated Input Voltage:</b>	DC 3.7V from battery
<b>External Dimension:</b>	Length (26.8 cm)*Width (26.8 cm)*High (5.1 cm)
<b>Serial Number:</b>	180419001
<b>EUT Received Date:</b>	2018.04.19

### Objective

This report is prepared on behalf of *Skyrocket Toys LLC* 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, 15.209 and 15.247 rules.

### Related Submittal(s)/Grant(s)

FCC Part 15C DXX submissions with FCC ID: O5301849RX24G.  
Submitted with the part of a system with FCC ID: O5301849TX24G.

### 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 558074 D01 DTS Meas Guidance v04.

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~26.5GHz: 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 system was configured for testing in Engineering Mode, which was provided by the manufacturer.

The EUT supports 802.11b/g, total 11 channels are employed:

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 and 802.11g modes were test with channel 1,6,11.

### Equipment Modifications

No modification was made to the EUT tested.

### EUT Exercise Software

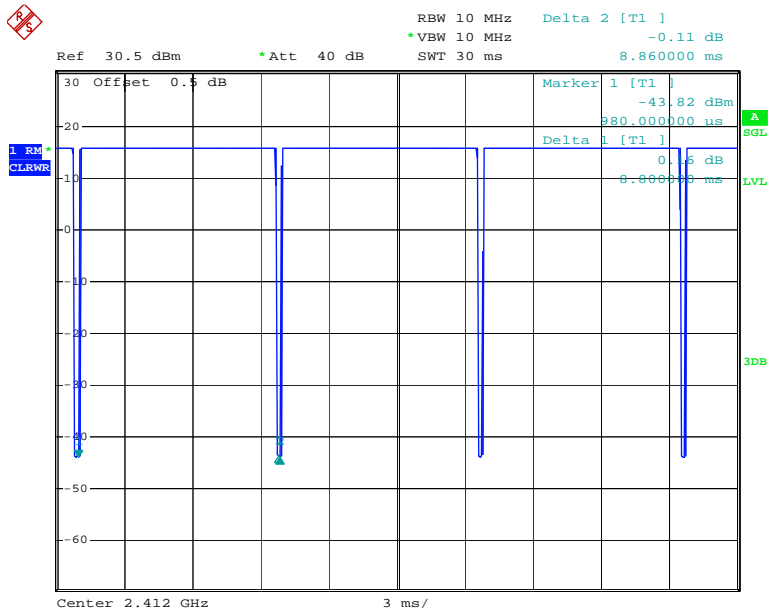
The software "MT7601USB.exe" was used for testing, which was provided by manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations. The maximum power was configured as below table, that provided by the manufacturer:

Test Mode	Test Software Version	MT7601USB.exe		
		Test Frequency	Data Rate	Power Level Setting
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting	0B	0B	0B
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	03	03	03

The duty cycle as below:

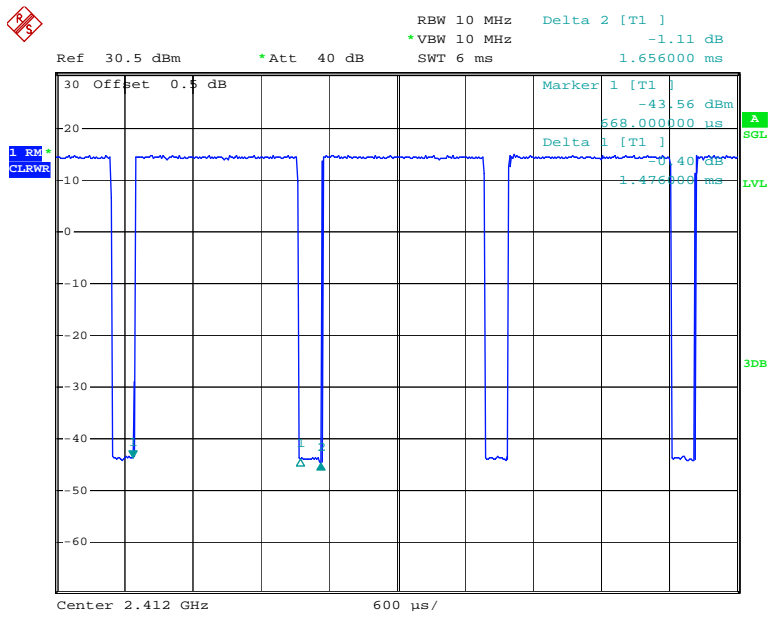
Mode	T <sub>on</sub> (ms)	T <sub>on+off</sub> (ms)	Duty Cycle (%)
802.11b	8.80	8.86	99.32
802.11g	1.476	1.656	89.13

802.11b



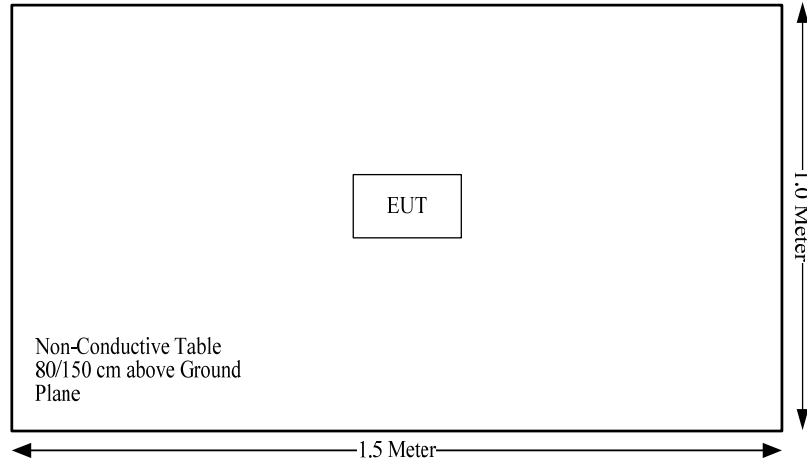
Date: 25.APR.2018 09:35:35

802.11g



Date: 25.APR.2018 09:36:47

### Block Diagram of Test Setup





**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Not applicable
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum conducted output power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

Not applicable: the devices are powered by battery.

**FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

**Applicable Standard**

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

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

<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

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

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

**Calculation formula:**

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

**Calculated Data:**

Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
	(dBi)	(numeric)	(dBm)	(mW)			
2412-2462	2	1.58	23	199.53	20.00	0.063	1.0

**Result:** The device meet FCC MPE at 20 cm distance

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## **FCC §15.203 - ANTENNA REQUIREMENT**

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### **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 antenna arrangement for WIFI, and the antenna gain is 2 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

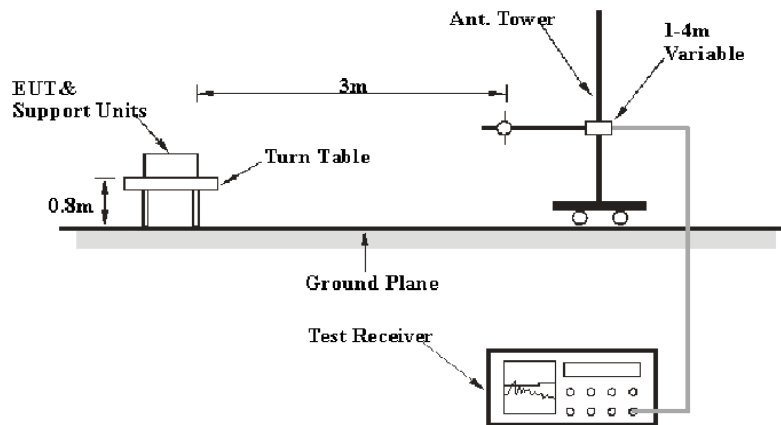
## FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

### Applicable Standard

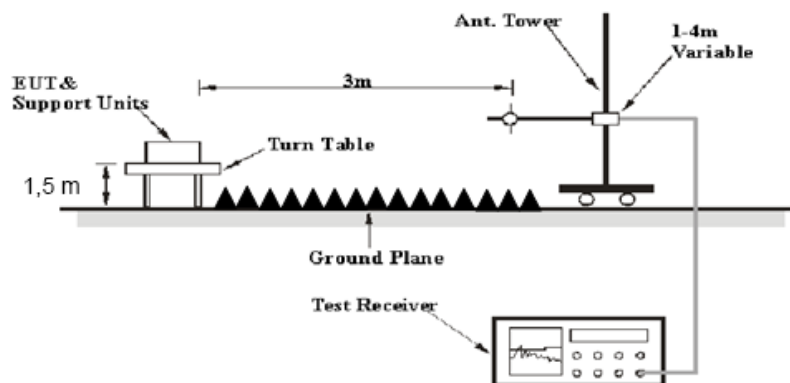
FCC §15.247 (d); §15.209; §15.205;

### EUT Setup

#### Below 1GHz:



#### Above 1GHz:



The radiated emission 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 15.247 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 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
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

## 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:

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

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

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

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2017-06-16	2018-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2017-06-16	2018-06-16
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2017-06-27	2018-06-27
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**

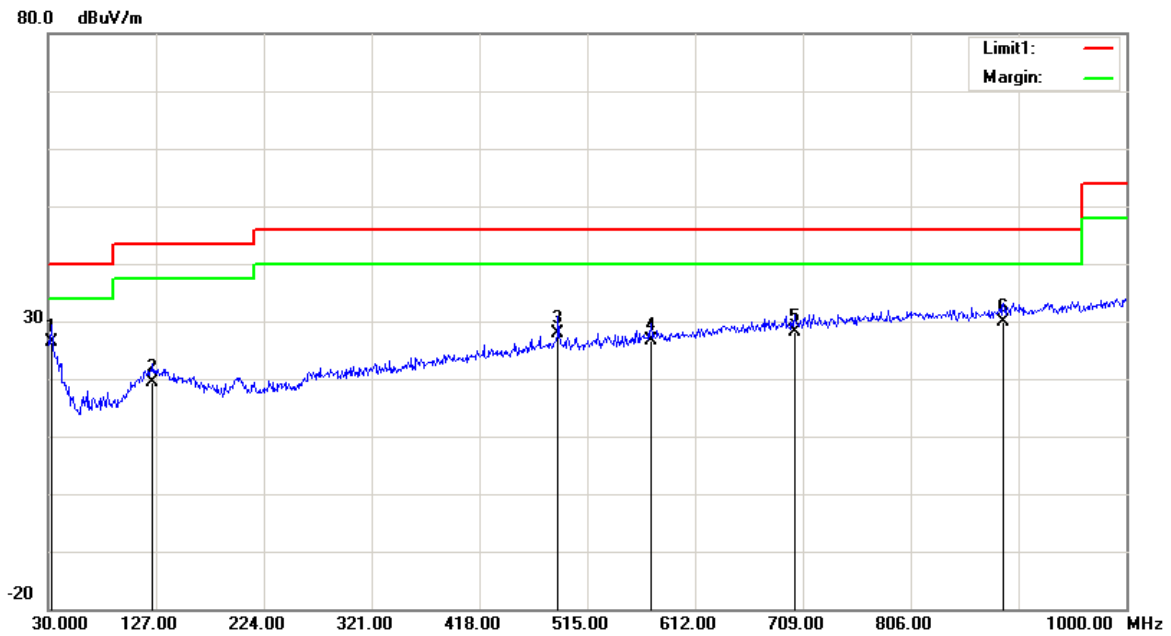
<b>Temperature:</b>	23.6~24.4 °C
<b>Relative Humidity:</b>	39~52 %
<b>ATM Pressure:</b>	100.6~100.9 kPa

\* The testing was performed by Vern Shen&Steven Zuo from 2018-04-26 to 2018-04-28.

*Test Mode: Transmitting*

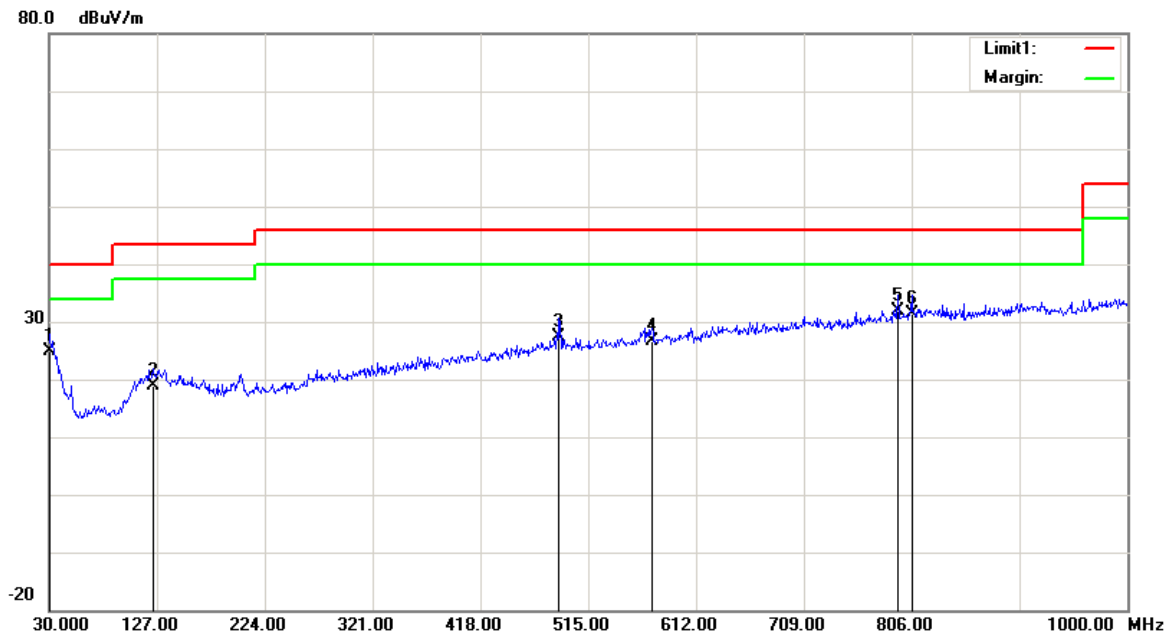
1) Below 1GHz(802.11b mode high channel was the worst)

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
32.9100	26.96	QP	-0.66	26.30	40.00	13.70
124.0900	24.26	QP	-4.76	19.50	43.50	24.00
488.8100	28.35	QP	-0.45	27.90	46.00	18.10
572.2300	25.85	QP	0.85	26.70	46.00	19.30
701.2400	25.00	QP	3.20	28.20	46.00	17.80
889.4200	24.19	QP	5.81	30.00	46.00	16.00

**Vertical**



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.0000	23.26	QP	1.54	24.80	40.00	15.20
123.1200	23.58	QP	-4.78	18.80	43.50	24.70
488.8100	27.95	QP	-0.45	27.50	46.00	18.50
572.2300	25.85	QP	0.85	26.70	46.00	19.30
793.3900	27.24	QP	4.56	31.80	46.00	14.20
806.0000	26.67	QP	4.83	31.50	46.00	14.50



## 802.11b

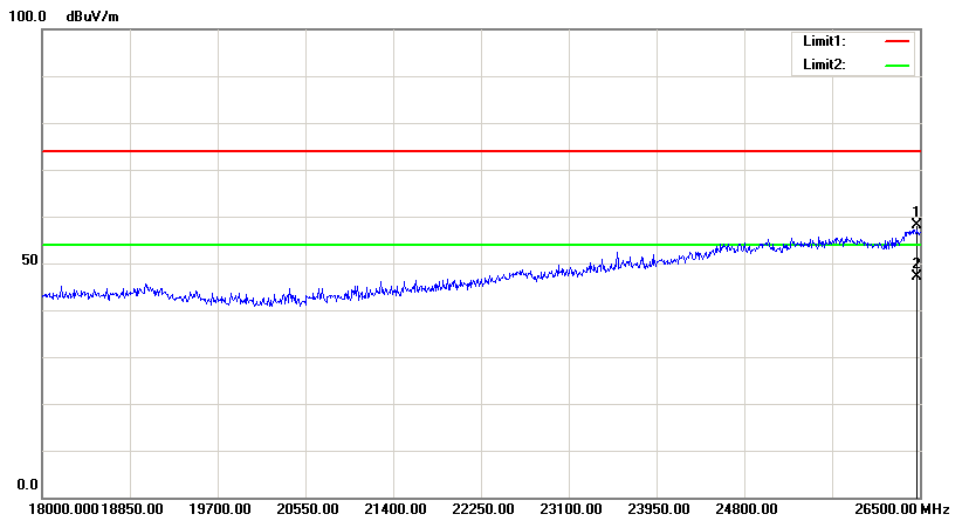
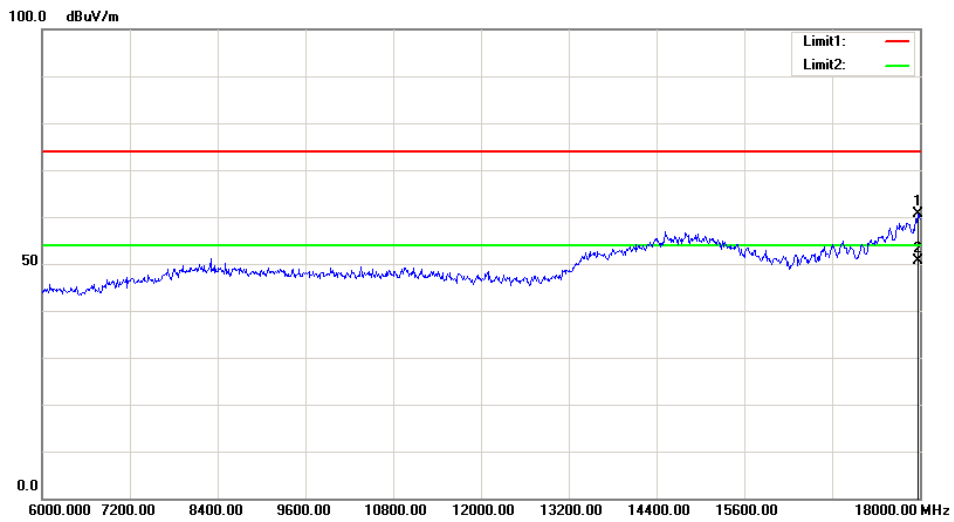
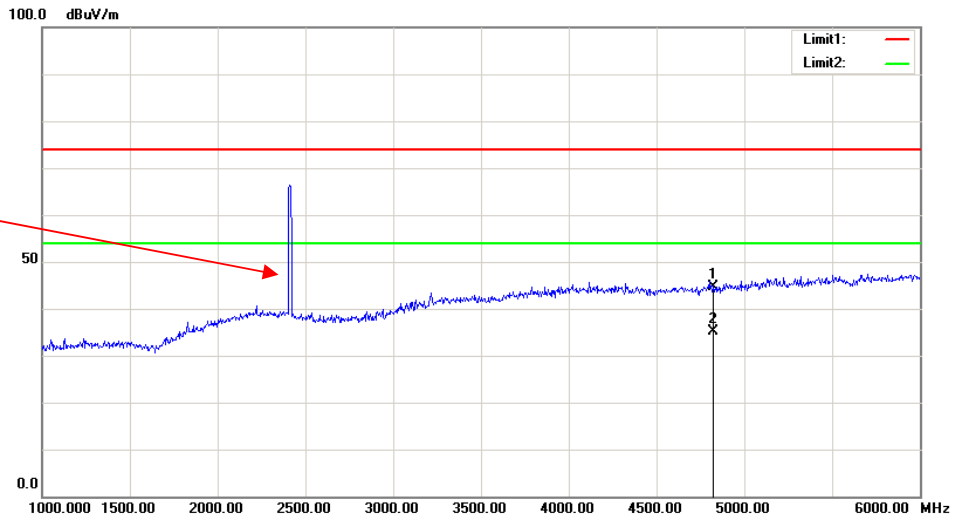
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
	Reading (dB $\mu$ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	73.96	PK	H	28.12	1.81	0.00	103.89	N/A	N/A
2412.00	70.67	AV	H	28.12	1.81	0.00	100.60	N/A	N/A
2412.00	72.57	PK	V	28.12	1.81	0.00	102.50	N/A	N/A
2412.00	69.62	AV	V	28.12	1.81	0.00	99.55	N/A	N/A
2390.00	25.54	PK	H	28.08	1.80	0.00	55.42	74.00	18.58
2390.00	15.45	AV	H	28.08	1.80	0.00	45.33	54.00	8.67
4824.00	45.17	PK	H	32.95	3.19	37.20	44.11	74.00	29.89
4824.00	42.16	AV	H	32.95	3.19	37.20	41.10	54.00	12.90
7236.00	44.76	PK	H	35.81	4.77	37.27	48.07	74.00	25.93
7236.00	41.46	AV	H	35.81	4.77	37.27	44.77	54.00	9.23
Middle Channel: 2437 MHz									
2437.00	72.47	PK	H	28.17	1.82	0.00	102.46	N/A	N/A
2437.00	69.28	AV	H	28.17	1.82	0.00	99.27	N/A	N/A
2437.00	70.14	PK	V	28.17	1.82	0.00	100.13	N/A	N/A
2437.00	67.15	AV	V	28.17	1.82	0.00	97.14	N/A	N/A
4874.00	46.39	PK	H	33.05	3.26	37.21	45.49	74.00	28.51
4874.00	42.90	AV	H	33.05	3.26	37.21	42.00	54.00	12.00
7311.00	45.23	PK	H	36.01	4.64	37.36	48.52	74.00	25.48
7311.00	41.58	AV	H	36.01	4.64	37.36	44.87	54.00	9.13
High Channel: 2462 MHz									
2462.00	72.95	PK	H	28.22	1.83	0.00	103.00	N/A	N/A
2462.00	69.55	AV	H	28.22	1.83	0.00	99.60	N/A	N/A
2462.00	70.85	PK	V	28.22	1.83	0.00	100.90	N/A	N/A
2462.00	67.40	AV	V	28.22	1.83	0.00	97.45	N/A	N/A
2483.50	24.29	PK	H	28.27	1.84	0.00	54.40	74.00	19.60
2483.50	15.65	AV	H	28.27	1.84	0.00	45.76	54.00	8.24
4924.00	46.37	PK	H	33.15	3.27	37.22	45.57	74.00	28.43
4924.00	43.49	AV	H	33.15	3.27	37.22	42.69	54.00	11.31
7386.00	45.65	PK	H	36.20	4.51	37.46	48.90	74.00	25.10
7386.00	42.15	AV	H	36.20	4.51	37.46	45.40	54.00	8.60

**802.11g**

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	74.51	PK	H	28.12	1.81	0.00	104.44	N/A	N/A
2412.00	65.88	AV	H	28.12	1.81	0.00	95.81	N/A	N/A
2412.00	72.50	PK	V	28.12	1.81	0.00	102.43	N/A	N/A
2412.00	63.51	AV	V	28.12	1.81	0.00	93.44	N/A	N/A
2390.00	32.41	PK	H	28.08	1.80	0.00	62.29	74.00	11.71
2390.00	19.02	AV	H	28.08	1.80	0.00	48.90	54.00	5.10
4824.00	45.81	PK	H	32.95	3.19	37.20	44.75	74.00	29.25
4824.00	36.22	AV	H	32.95	3.19	37.20	35.16	54.00	18.84
7236.00	43.66	PK	H	35.81	4.77	37.27	46.97	74.00	27.03
7236.00	33.74	AV	H	35.81	4.77	37.27	37.05	54.00	16.95
Middle Channel: 2437 MHz									
2437.00	73.49	PK	H	28.17	1.82	0.00	103.48	N/A	N/A
2437.00	63.51	AV	H	28.17	1.82	0.00	93.50	N/A	N/A
2437.00	71.23	PK	V	28.17	1.82	0.00	101.22	N/A	N/A
2437.00	61.45	AV	V	28.17	1.82	0.00	91.44	N/A	N/A
4874.00	46.76	PK	H	33.05	3.26	37.21	45.86	74.00	28.14
4874.00	37.85	AV	H	33.05	3.26	37.21	36.95	54.00	17.05
7311.00	44.23	PK	H	36.01	4.64	37.36	47.52	74.00	26.48
7311.00	34.94	AV	H	36.01	4.64	37.36	38.23	54.00	15.77
High Channel: 2462 MHz									
2462.00	73.01	PK	H	28.22	1.83	0.00	103.06	N/A	N/A
2462.00	63.98	AV	H	28.22	1.83	0.00	94.03	N/A	N/A
2462.00	71.30	PK	V	28.22	1.83	0.00	101.35	N/A	N/A
2462.00	61.60	AV	V	28.22	1.83	0.00	91.65	N/A	N/A
2483.50	27.98	PK	H	28.27	1.84	0.00	58.09	74.00	15.91
2483.50	16.44	AV	H	28.27	1.84	0.00	46.55	54.00	7.45
4924.00	47.29	PK	H	33.15	3.27	37.22	46.49	74.00	27.51
4924.00	37.11	AV	H	33.15	3.27	37.22	36.31	54.00	17.69
7386.00	45.06	PK	H	36.20	4.51	37.46	48.31	74.00	25.69
7386.00	35.40	AV	H	36.20	4.51	37.46	38.65	54.00	15.35

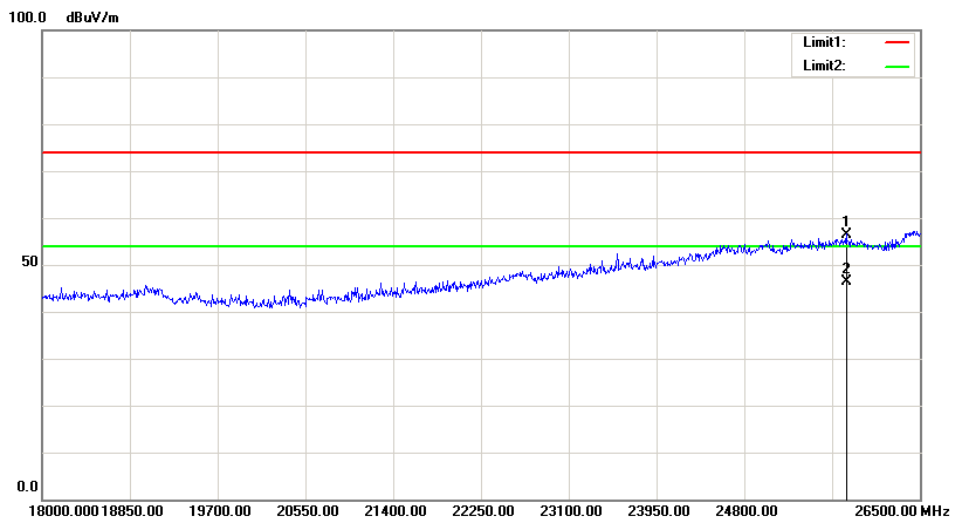
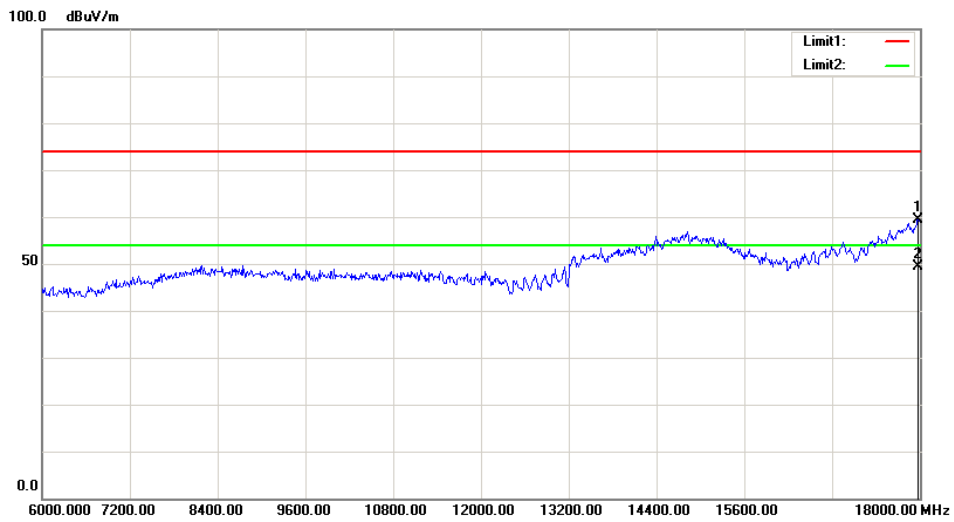
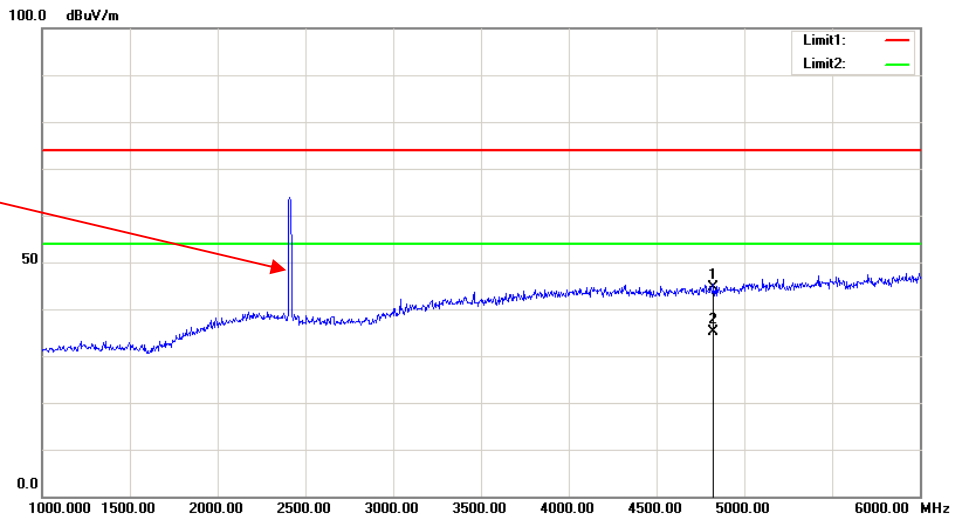
### Worst plots(802.11g Low channel) Horizontal

Fundamental  
Test with Band  
Rejection Filter



Vertical

Fundamental Test with Band Rejection Filter



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

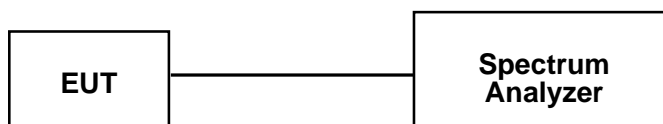
### Applicable Standard

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



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2017-12-08	2018-12-08
unknown	Coaxial Cable	C-SJ00-0010	C0010/05	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

<b>Temperature:</b>	26.9 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	100.7 kPa

\* The testing was performed by Hang Yang on 2018-04-25.

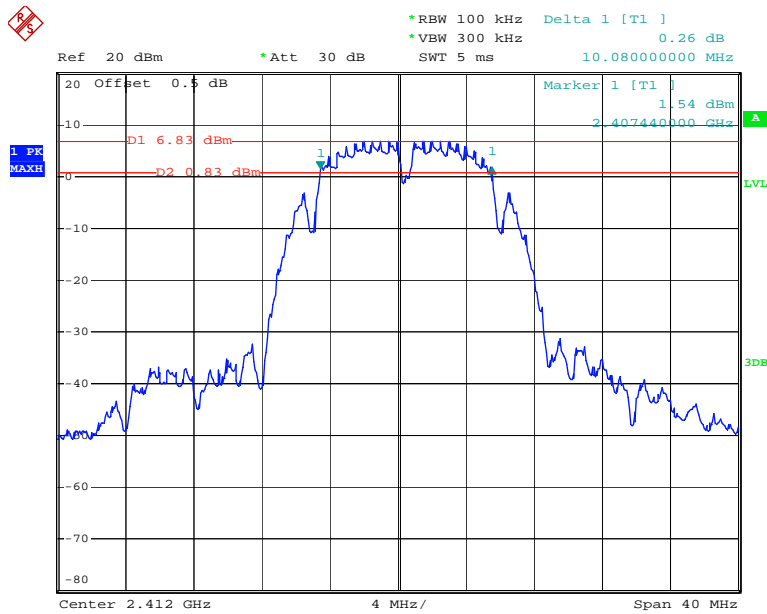
Test Mode: Transmitting

Test Result: Compliant

please refer to the following table and plots.

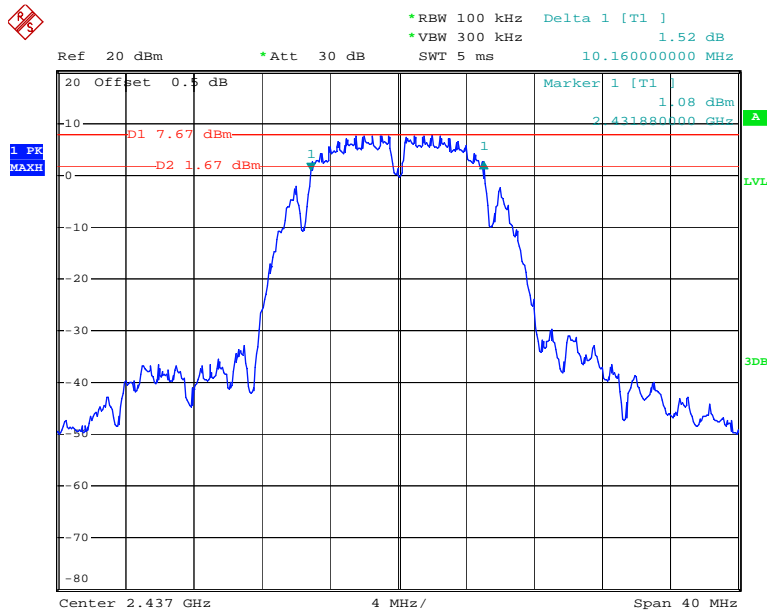
Test mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	10.08	≥0.5
	Middle	2437	10.16	≥0.5
	High	2462	10.08	≥0.5
802.11g	Low	2412	16.48	≥0.5
	Middle	2437	16.48	≥0.5
	High	2462	16.48	≥0.5

802.11b –Low Channel



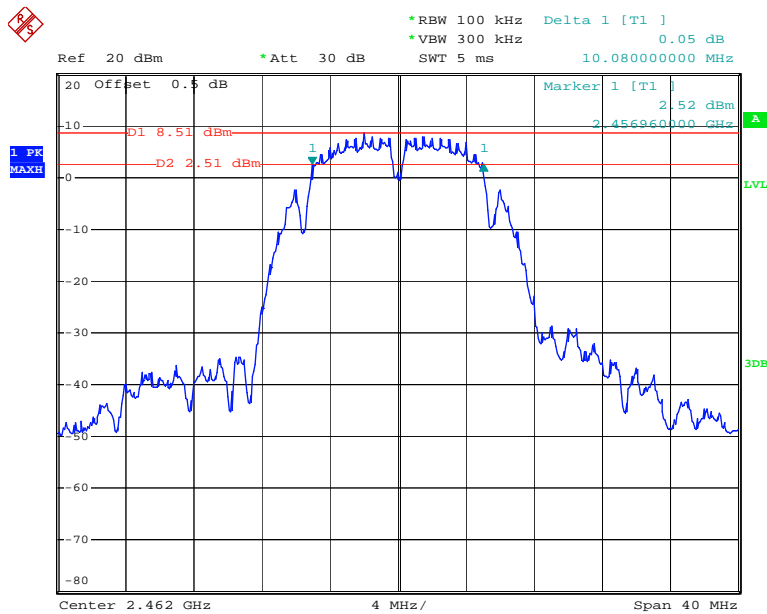
Date: 25.APR.2018 09:43:52

### 802.11b- Middle Channel



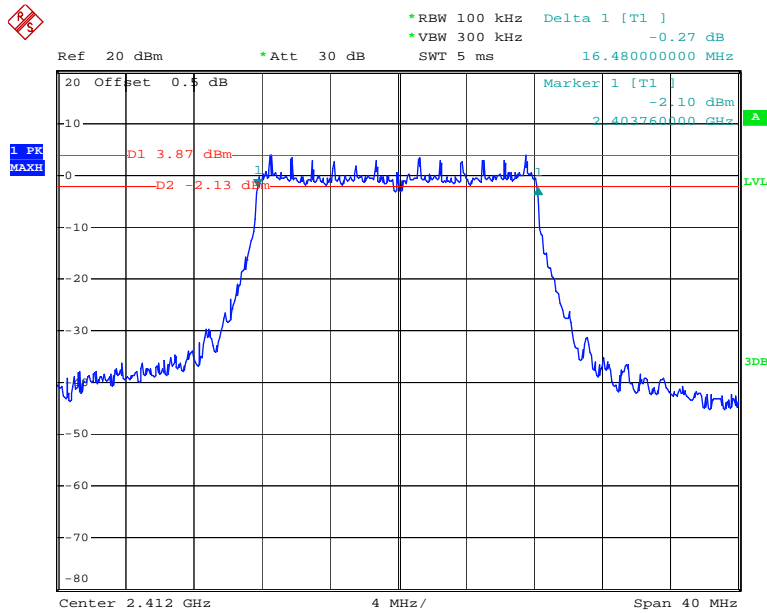
Date: 25.APR.2018 09:50:35

### 802.11b -High Channel



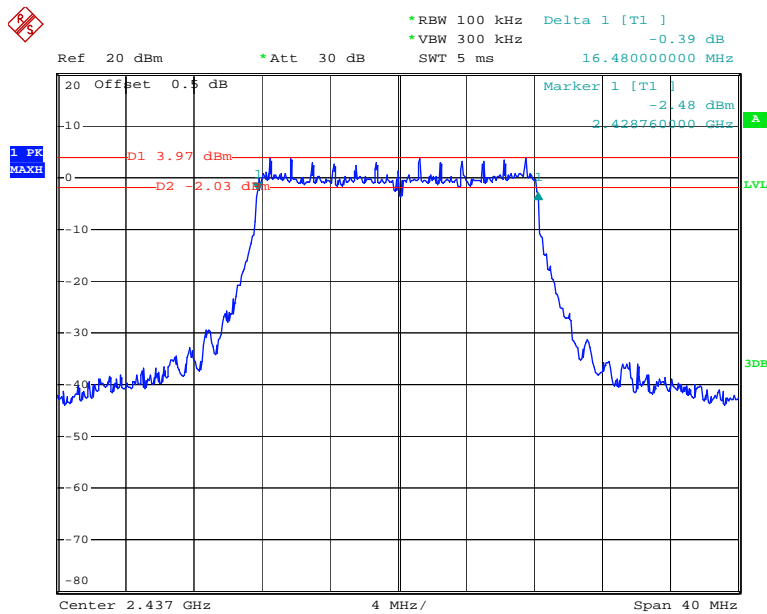
Date: 25.APR.2018 09:54:23

### 802.11g- Low Channel



Date: 25.APR.2018 10:08:31

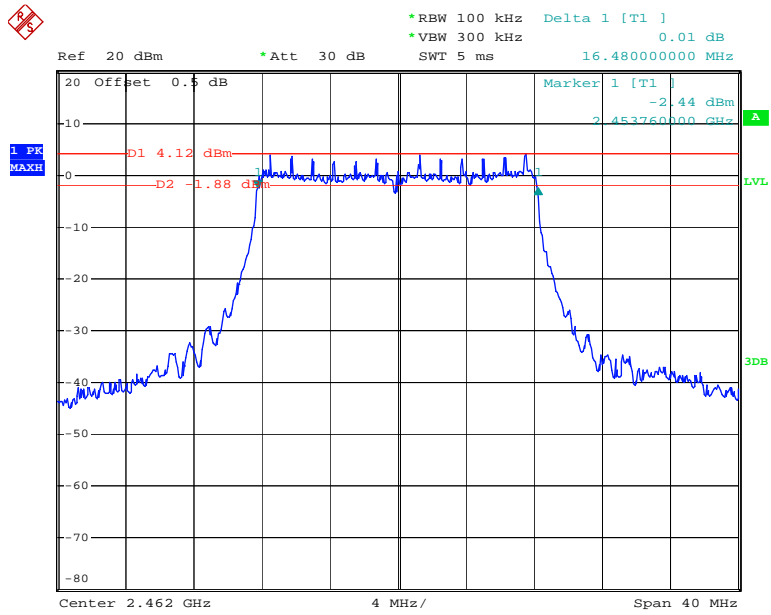
### 802.11g - Middle Channel



Date: 25.APR.2018 10:03:57



### 802.11g- High Channel



Date: 25.APR.2018 09:59:28

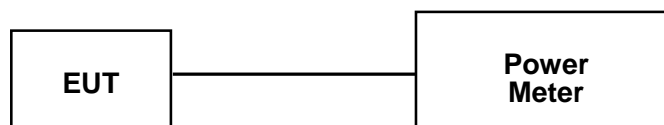
## **FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER**

### **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 Peak output power, record the result as peak power.
5. Set the power meter to test average output power, record the result as average power.



### **Test Equipment List and Details**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
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
Agilent	USB Wideband Power Sensor	U2022XA	MY5417006	2017-12-11	2018-12-11
unknown	Coaxial Cable	C-SJ00-0010	C0010/05	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**

<b>Temperature:</b>	26.9 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	100.7 kPa

\* The testing was performed by Hang Yang on 2018-04-25.

Test Mode: Transmitting

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

Test mode	Channel	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Limit (dBm)
802.11b	Low	2412	20.22	30
	Middle	2437	20.96	30
	High	2462	21.05	30
802.11g	Low	2412	22.64	30
	Middle	2437	22.78	30
	High	2462	22.92	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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
R&S	Spectrum Analyzer	FSP 38	100478	2017-12-08	2018-12-08
unknown	Coaxial Cable	C-SJ00-0010	C0010/05	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**

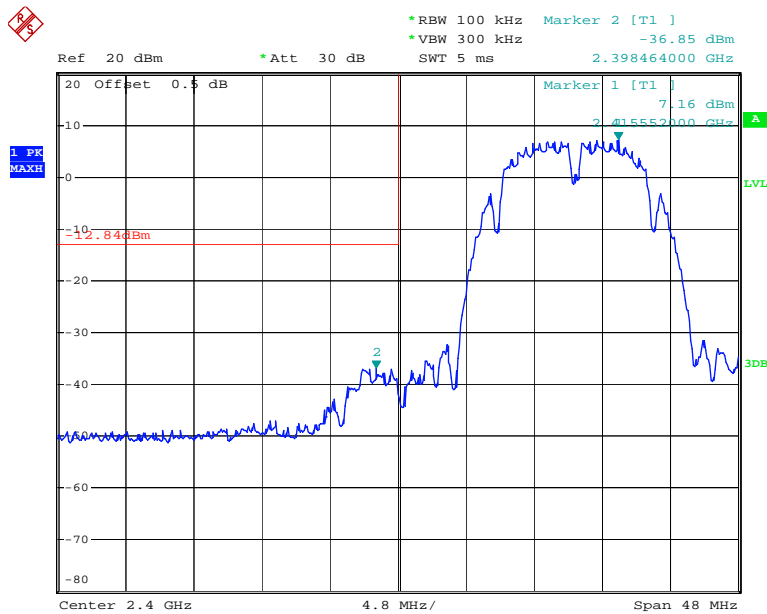
<b>Temperature:</b>	26.9 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	100.7 kPa

\* The testing was performed by Hang Yang on 2018-04-25.

Test mode: Transmitting

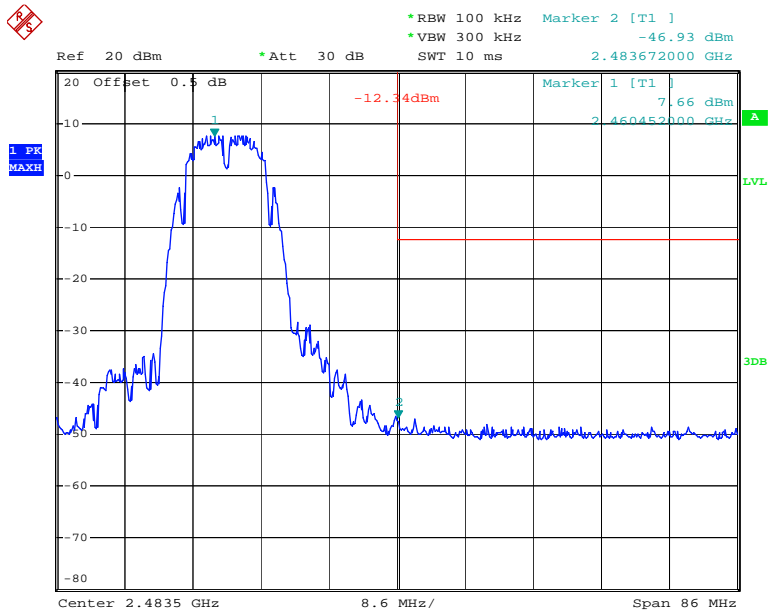
Test Result: Compliant. Please refer to following plots.

**802.11b: Band Edge, Left Side**



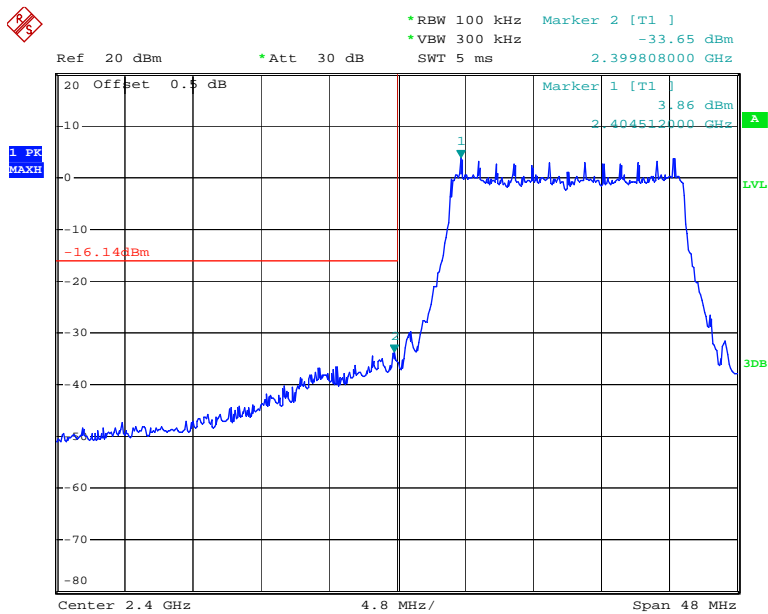
Date: 25.APR.2018 09:45:58

### 802.11b: Band Edge, Right Side



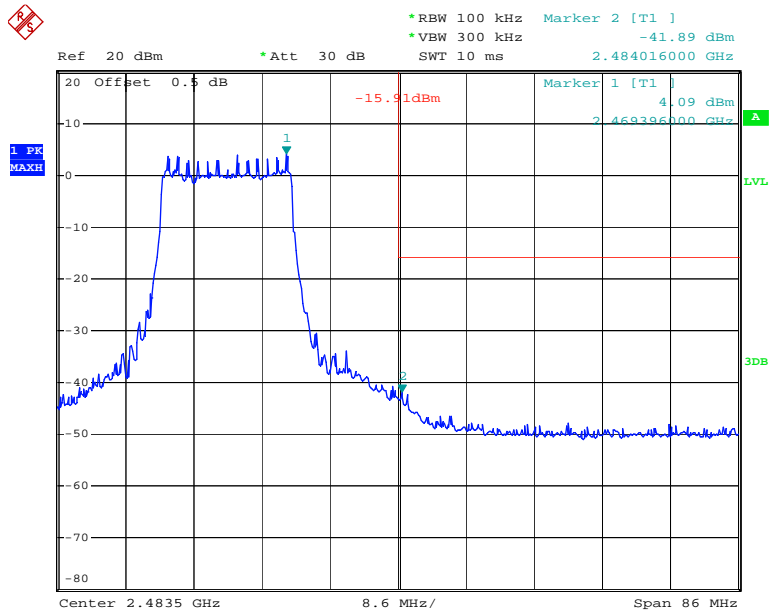
Date: 25.APR.2018 09:56:49

### 802.11g: Band Edge, Left Side



Date: 25.APR.2018 10:10:32

### 802.11g: Band Edge, Right Side



Date: 25.APR.2018 10:02:07

## **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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
R&S	Spectrum Analyzer	FSP 38	100478	2017-12-08	2018-12-08
unknown	Coaxial Cable	C-SJ00-0010	C0010/05	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**

<b>Temperature:</b>	26.9 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	100.7 kPa

\* The testing was performed by Hang Yang on 2018-04-25.

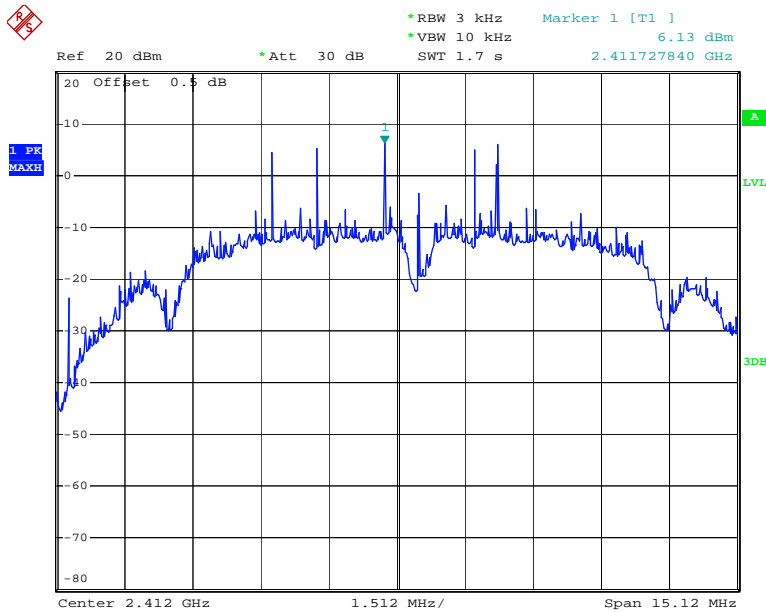


Test Mode: Transmitting

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

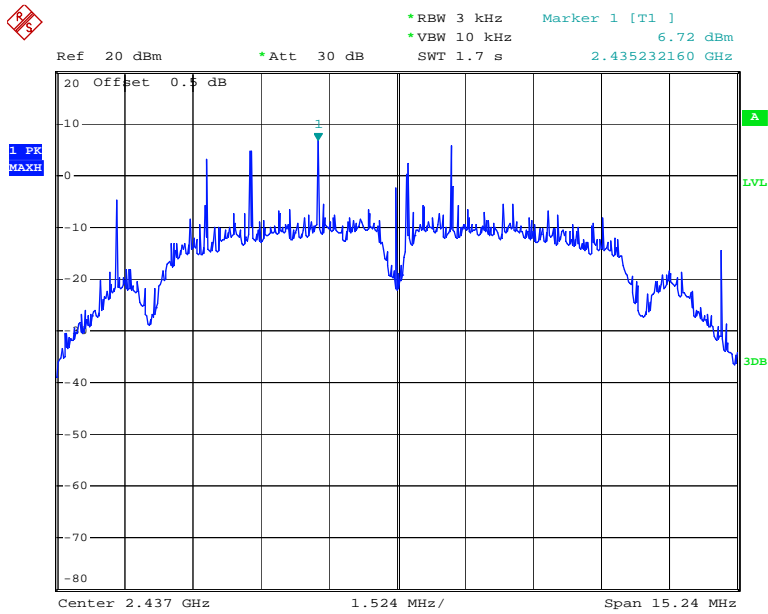
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	Low	2412	6.13	≤8
	Middle	2437	6.72	≤8
	High	2462	6.80	≤8
802.11g	Low	2412	-1.91	≤8
	Middle	2437	-1.69	≤8
	High	2462	-1.64	≤8

Power Spectral Density, 802.11b, Low Channel



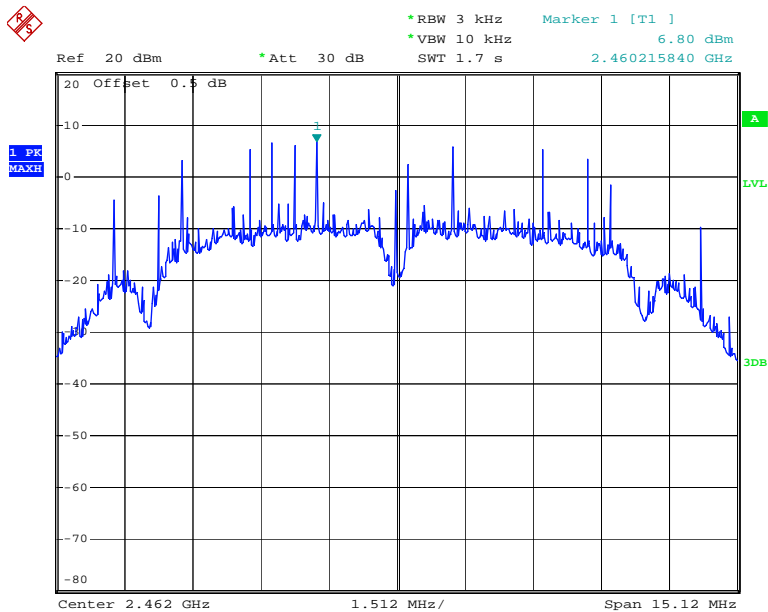
Date: 25.APR.2018 09:45:28

### Power Spectral Density, 802.11b, Middle Channel



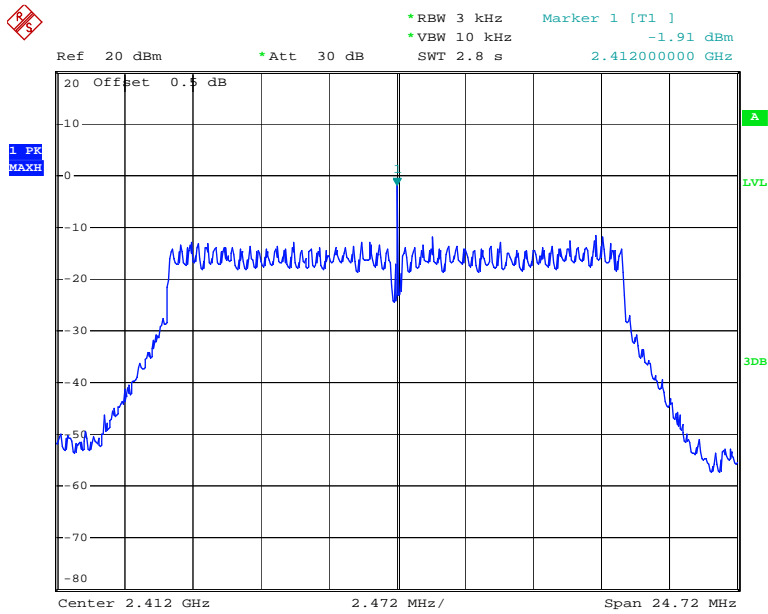
Date: 25.APR.2018 09:52:22

### Power Spectral Density, 802.11b, High Channel



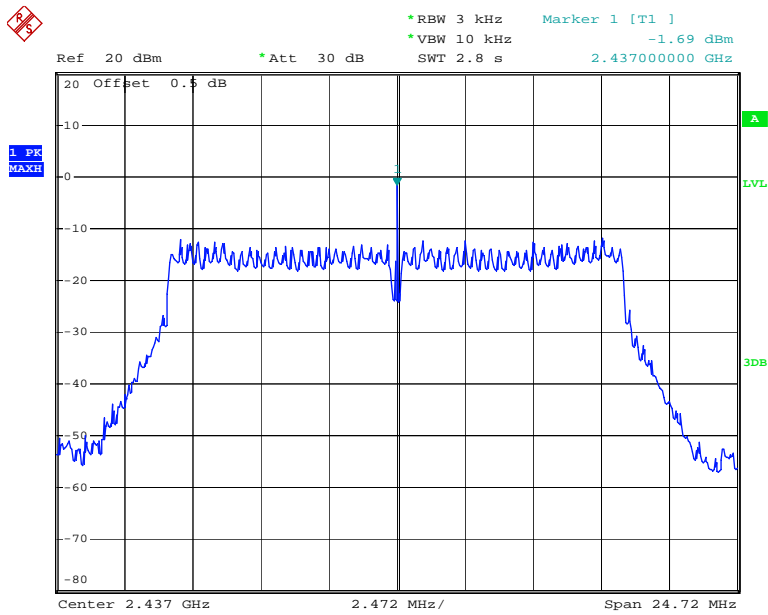
Date: 25.APR.2018 09:56:22

### Power Spectral Density, 802.11g, Low Channel



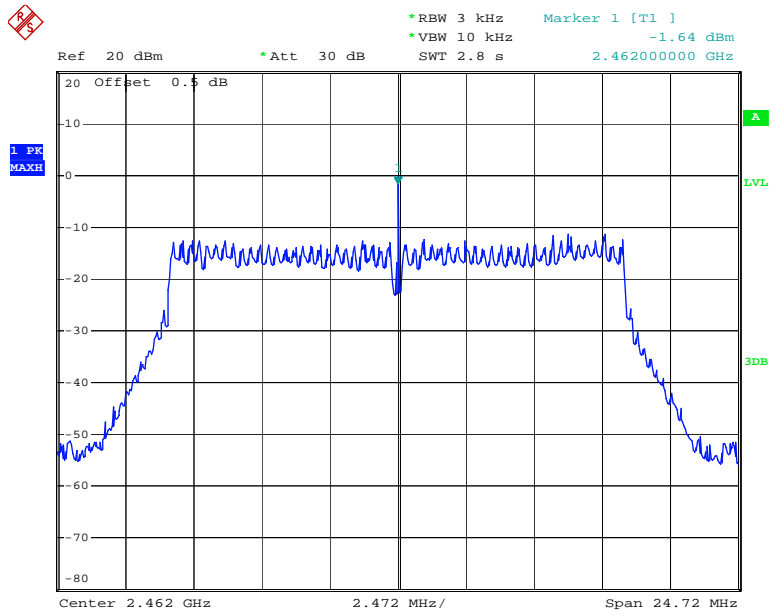
Date: 25.APR.2018 10:10:09

### Power Spectral Density, 802.11g, Middle Channel



Date: 25.APR.2018 10:05:51

### Power Spectral Density, 802.11g, High Channel



Date: 25.APR.2018 10:01:37

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