



# FCC PART 15.247

## TEST REPORT

For

### Lexington Wellness Holdings Inc. d/b/a Selvera

150 West 28th Street, Suite 502, New York, NY USA 10001

**FCC ID: 2AJII-TRACKER3**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Smart Activity & Sleep Band
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<b>Report Number:</b> RDG160908002-00A	
<b>Report Date:</b> 2016-09-23	
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**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 may contain data or test methods that are not covered by the NVLAP accreditation scope and shall be marked with an asterisk "\*" and noted.

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FINAL

## GENERAL INFORMATION

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

The *Lexington Wellness Holdings Inc. d/b/a Selvera's* product, model number: T-3 (FCC ID: 2AJII-TRACKER3) (the "EUT") in this report was a *Smart Activity & Sleep Band*, which was measured approximately: 9.6 cm (L) x 1.9 cm (W) x 1.2 cm (H), rated input voltage: DC3.7V from battery.

*All measurement and test data in this report was gathered from production sample serial number: 160908002 (Assigned by BACL Dongguan). The EUT was received on 2016-09-07.*

### Objective

This report is prepared on behalf of *Lexington Wellness Holdings Inc. d/b/a Selvera* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

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

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

N/A

### Test Methodology

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

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

### 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 Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer. For Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	...	...
...	...	...	...
..	...	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

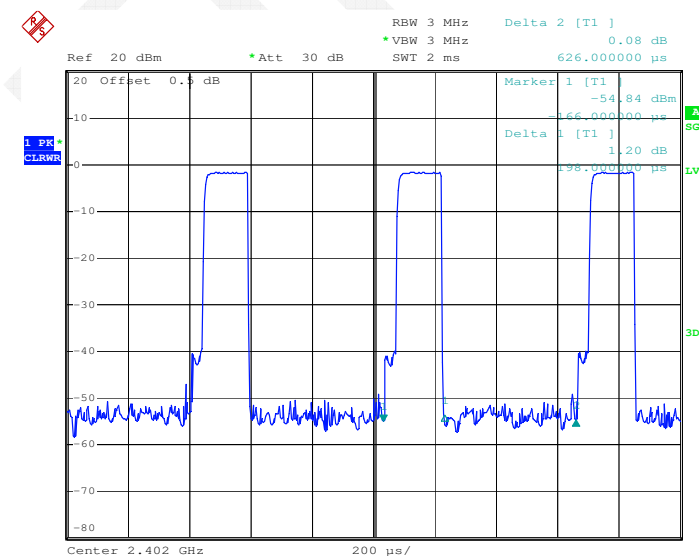
### Equipment Modifications

No modification was made to the EUT tested.

### EUT Exercise Software

The software “nRFgo Studio” was provided by manufacture, it configured maximum power by default value and maximum duty cycle as below:

T <sub>on</sub> (ms)	T <sub>on+off</sub> (ms)	Duty Cycle (%)
0.198	0.626	31.63%



Date: 21.SEP.2016 22:35:59

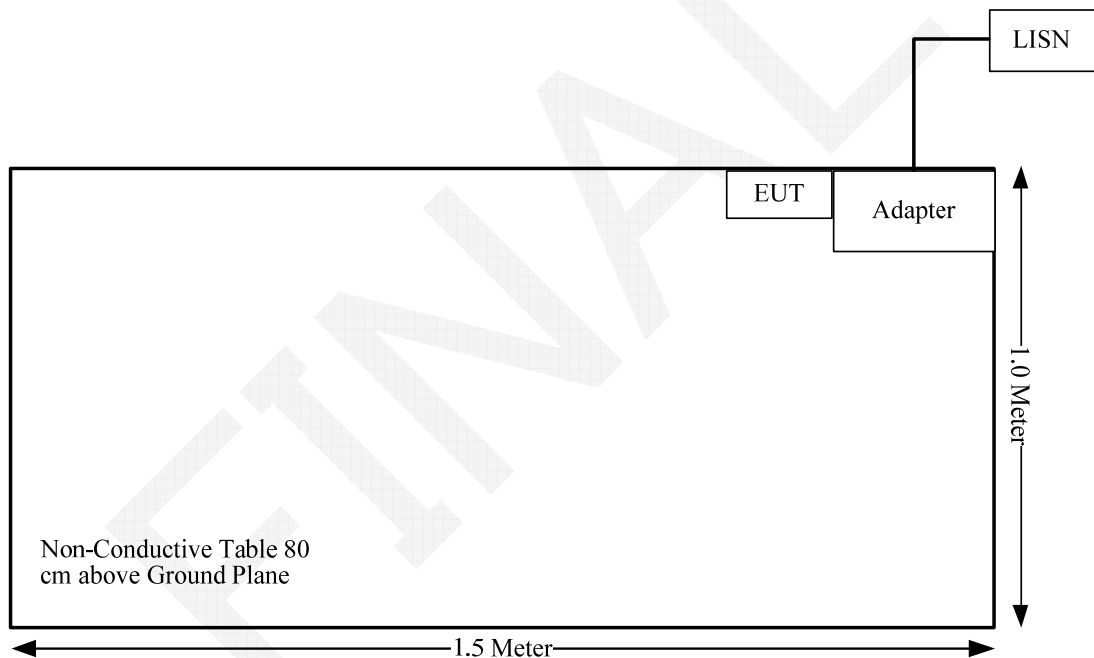
**Support Equipment List and Details**

Manufacturer	Description	Model	Serial Number
Posh	Adapter	PP11L	QDS-BRCM1017

**External Cable**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

**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
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission 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

Note: Test time: 2016-09-07 ~ 2016-09-22.

## **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.

According to KDB447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$   
 $\leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

### **Measurement Result**

The tune-up power is -2.0 dBm (0.63 mW).

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$   
 $= 0.63/5 \cdot (\sqrt{2.480}) = 0.20 < 3.0$

**So the stand-alone SAR evaluation is not necessary.**

## **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.

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 PCB antenna arrangement and the antenna gain is -2.6 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

FCC§15.207

### Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If  $U_{lab}$  is less than or equal to  $U_{cispr}$  of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If  $U_{lab}$  is greater than  $U_{cispr}$  of Table 1, then:

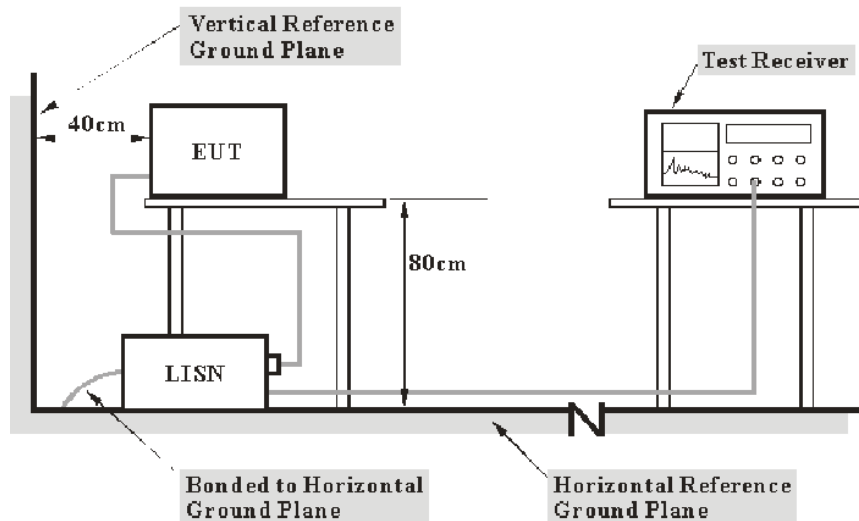
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz).

Table 1 – Values of  $U_{cispr}$

Measurement	$U_{cispr}$
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

### 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 EUT was connected to 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 maximum 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	2015-12-10	2016-12-09
R&S	L.I.S.N	ESH2-Z5	892107/021	2016-09-01	2017-08-31
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
N/A	Coaxial Cable	1.8m	N/A	2016-05-06	2017-05-06
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

### Test Results Summary

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

### Test Data

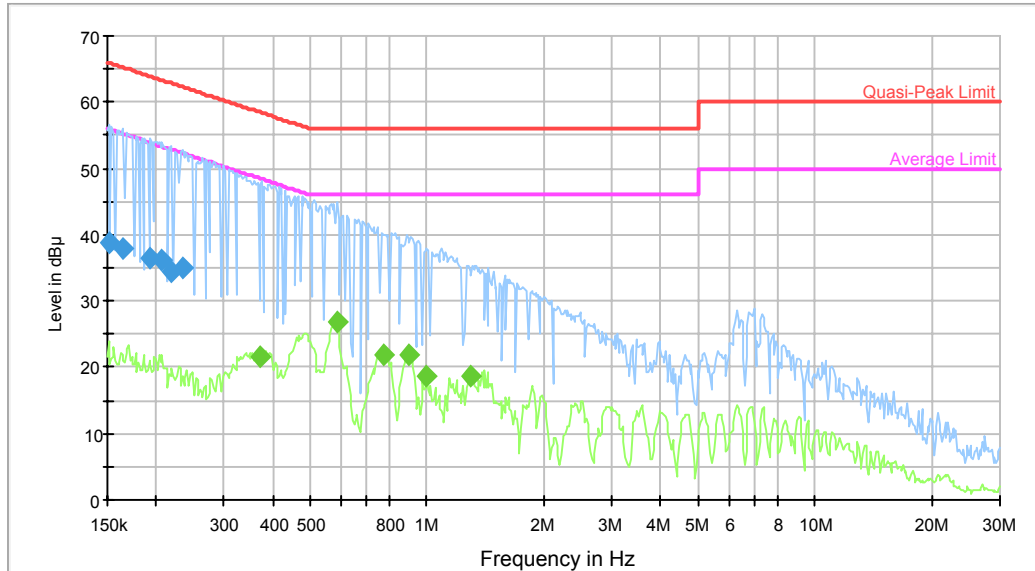
#### Environmental Conditions

<b>Temperature:</b>	28.9 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.2 kPa

*The testing was performed by Robin Zheng on 2016-09-18.*

Test Mode: Transmitting

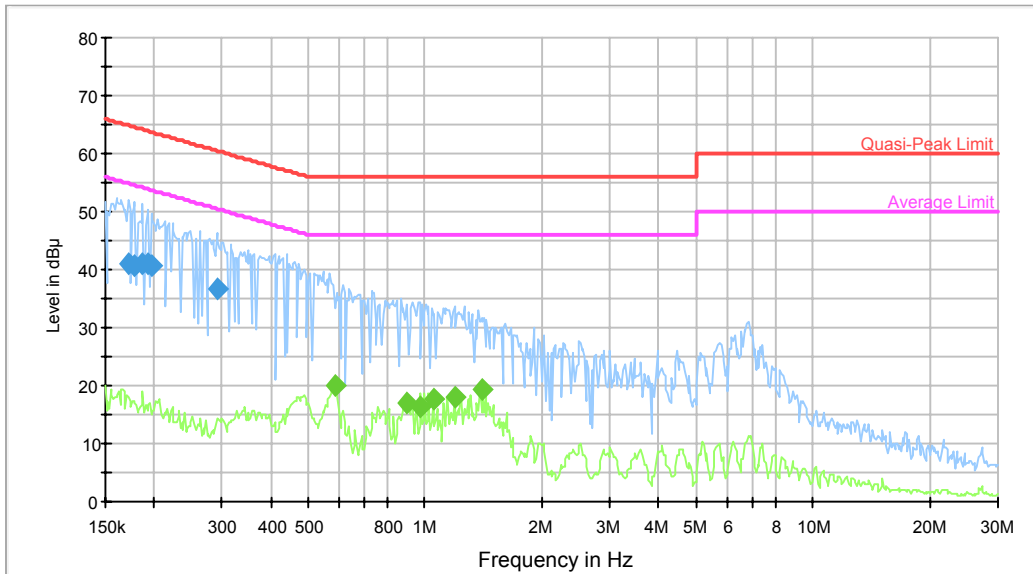
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	38.8	9.000	L1	9.7	27.1	65.9	Compliance
0.163741	37.9	9.000	L1	9.7	27.4	65.3	Compliance
0.193566	36.5	9.000	L1	9.7	27.4	63.9	Compliance
0.207957	36.2	9.000	L1	9.6	27.1	63.3	Compliance
0.218141	34.5	9.000	L1	9.6	28.4	62.9	Compliance
0.234359	35.1	9.000	L1	9.6	27.2	62.3	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.372042	21.7	9.000	L1	9.7	26.8	48.5	Compliance
0.585926	26.7	9.000	L1	9.7	19.3	46.0	Compliance
0.774393	22.0	9.000	L1	9.7	24.0	46.0	Compliance
0.893821	21.9	9.000	L1	9.7	24.1	46.0	Compliance
0.999305	18.6	9.000	L1	9.7	27.4	46.0	Compliance
1.289541	18.6	9.000	L1	9.7	27.4	46.0	Compliance

**AC120 V, 60 Hz, Neutral:**



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.171759	40.9	9.000	N	9.6	24.0	64.9	Compliance
0.178741	40.7	9.000	N	9.6	23.8	64.5	Compliance
0.187494	41.1	9.000	N	9.6	23.0	64.1	Compliance
0.193566	40.9	9.000	N	9.6	23.0	63.9	Compliance
0.196675	40.7	9.000	N	9.6	23.0	63.7	Compliance
0.290613	36.6	9.000	N	9.6	23.9	60.5	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.585926	20.0	9.000	N	9.6	26.0	46.0	Compliance
0.900972	17.0	9.000	N	9.7	29.0	46.0	Compliance
0.975701	16.2	9.000	N	9.7	29.8	46.0	Compliance
1.048242	17.5	9.000	N	9.7	28.5	46.0	Compliance
1.190776	17.9	9.000	N	9.7	28.1	46.0	Compliance
1.407671	19.3	9.000	N	9.7	26.7	46.0	Compliance

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

**Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

**Measurement Uncertainty**

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If  $U_{lab}$  is less than or equal to  $U_{cispr}$  of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If  $U_{lab}$  is greater than  $U_{cispr}$  of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

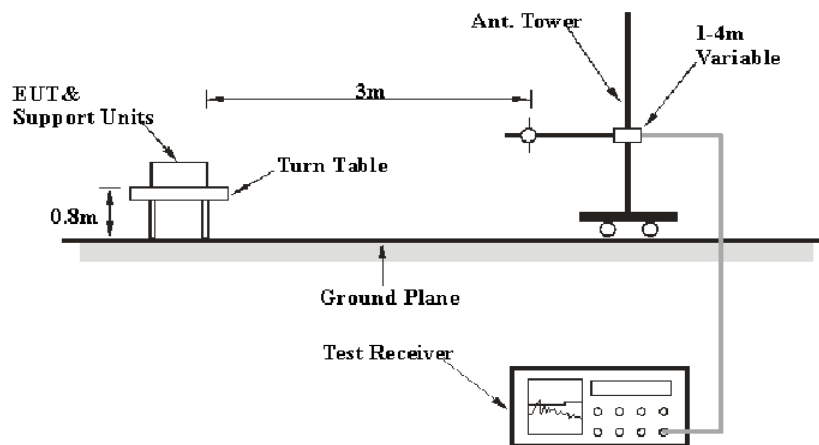
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB.

Table 2 – Values of  $U_{cispr}$

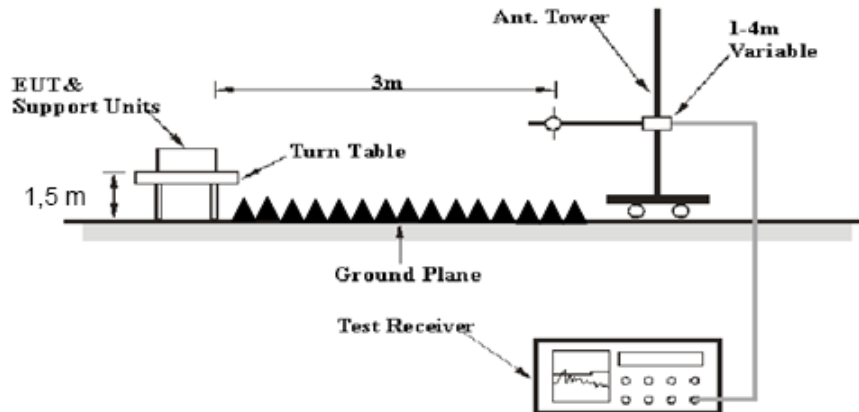
Measurement	$U_{cispr}$
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

**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.

**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:

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

1GHz- 25GHz:

Detector	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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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
R&S	EMI Test Receiver	ESCI	100224	2016-08-03	2017-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2016-09-01	2017-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2016-09-06	2017-09-06
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
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 in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247.

## Test Data

### Environmental Conditions

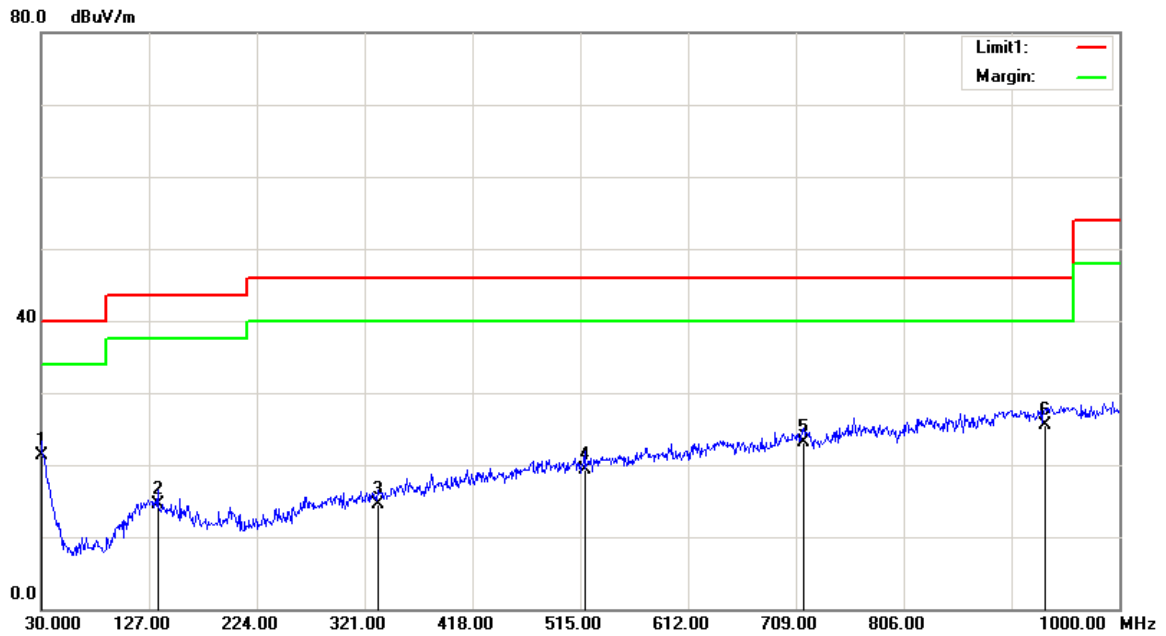
<b>Temperature:</b>	26.9 °C
<b>Relative Humidity:</b>	39 %
<b>ATM Pressure:</b>	100.7 kPa

\* The testing was performed by Robin Zheng on 2016-09-20.

Test Mode: Transmitting

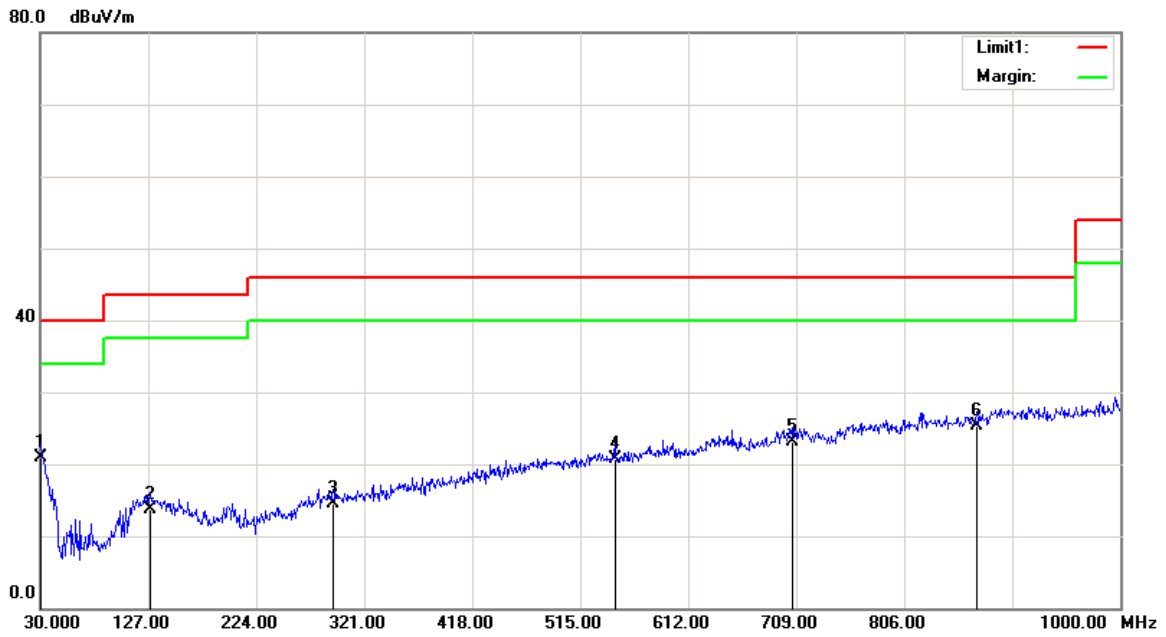
1) Below 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	20.27	QP	1.03	21.30	40.00	18.70
134.7600	20.66	QP	-6.16	14.50	43.50	29.00
332.6400	19.94	QP	-5.44	14.50	46.00	31.50
518.8800	20.87	QP	-1.47	19.40	46.00	26.60
715.7900	21.33	QP	1.77	23.10	46.00	22.90
933.0700	20.94	QP	4.66	25.60	46.00	20.40

**Vertical**



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.9700	20.63	QP	0.27	20.90	40.00	19.10
128.9400	19.65	QP	-5.85	13.80	43.50	29.70
292.8700	20.54	QP	-6.04	14.50	46.00	31.50
546.0400	21.67	QP	-0.97	20.70	46.00	25.30
706.0900	21.20	QP	1.90	23.10	46.00	22.90
870.9900	21.76	QP	3.54	25.30	46.00	20.70

2) 1-25GHz:

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)					
Low Channel: 2402MHz									
2402	57.24	PK	H	25.65	3.66	0.00	86.55	N/A	N/A
2402	44.31	AV	H	25.65	3.66	0.00	73.62	N/A	N/A
2402	53.34	PK	V	25.65	3.66	0.00	82.65	N/A	N/A
2402	40.64	AV	V	25.65	3.66	0.00	69.95	N/A	N/A
2400	24.95	PK	H	25.64	3.65	0.00	54.24	74.00	19.76
2400	13.43	AV	H	25.64	3.65	0.00	42.72	54.00	11.28
4804	41.75	PK	H	30.59	5.06	27.41	49.99	74.00	24.01
4804	29.67	AV	H	30.59	5.06	27.41	37.91	54.00	16.09
7206	36.42	PK	H	34.09	6.61	25.91	51.21	74.00	22.79
7206	24.11	AV	H	34.09	6.61	25.91	38.90	54.00	15.10
3154	34.11	PK	H	27.69	6.91	27.41	41.30	74.00	32.70
3154	22.41	AV	H	27.69	6.91	27.41	29.60	54.00	24.40
Middle Channel: 2440 MHz									
2440	58.52	PK	H	25.74	3.76	0.00	88.02	N/A	N/A
2440	45.6	AV	H	25.74	3.76	0.00	75.10	N/A	N/A
2440	54.35	PK	V	25.74	3.76	0.00	83.85	N/A	N/A
2440	41.51	AV	V	25.74	3.76	0.00	71.01	N/A	N/A
4880	40.54	PK	H	30.79	5.18	27.42	49.09	74.00	24.91
4880	28.54	AV	H	30.79	5.18	27.42	37.09	54.00	16.91
7320	35.02	PK	H	34.37	6.75	25.88	50.26	74.00	23.74
7320	22.41	AV	H	34.37	6.75	25.88	37.65	54.00	16.35
3210	32.85	PK	H	27.87	6.13	27.36	39.49	74.00	34.51
3210	20.17	AV	H	27.87	6.13	27.36	26.81	54.00	27.19
3583	32.69	PK	H	28.98	4.59	27.26	39.00	74.00	35.00
3583	20.12	AV	H	28.98	4.59	27.26	26.43	54.00	27.57
High Channel: 2480MHz									
2480	58.61	PK	H	25.85	3.68	0.00	88.14	N/A	N/A
2480	45.75	AV	H	25.85	3.68	0.00	75.28	N/A	N/A
2480	54.68	PK	V	25.85	3.68	0.00	84.21	N/A	N/A
2480	40.43	AV	V	25.85	3.68	0.00	69.96	N/A	N/A
2483.5	25.29	PK	H	25.86	3.67	0.00	54.82	74.00	19.18
2483.5	13.98	AV	H	25.86	3.67	0.00	43.51	54.00	10.49
4960	40.65	PK	H	31.00	5.34	27.43	49.56	74.00	24.44
4960	29.41	AV	H	31.00	5.34	27.43	38.32	54.00	15.68
7440	34.36	PK	H	34.66	6.89	25.97	49.94	74.00	24.06
7440	22.11	AV	H	34.66	6.89	25.97	37.69	54.00	16.31
3140	32.42	PK	H	27.65	6.95	27.42	39.60	74.00	34.40
3140	20.08	AV	H	27.65	6.95	27.42	27.26	54.00	26.74

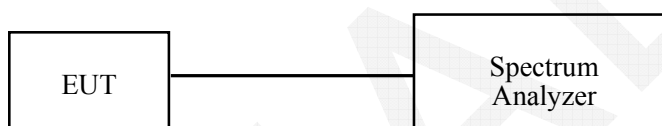
## FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

### Applicable Standard

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	FSEM	831259/019	2016-07-28	2017-07-27
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

### Test Data

#### Environmental Conditions

Temperature:	27.5 °C
Relative Humidity:	34 %
ATM Pressure:	100.7 kPa

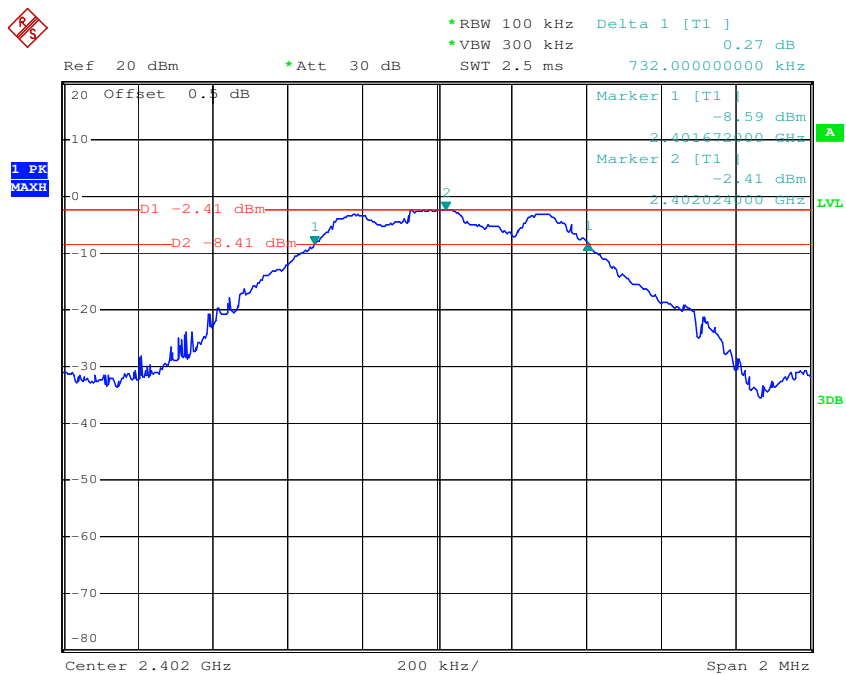
\* The testing was performed by Robin Zheng on 2016-09-19.

Test Mode: Transmitting

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

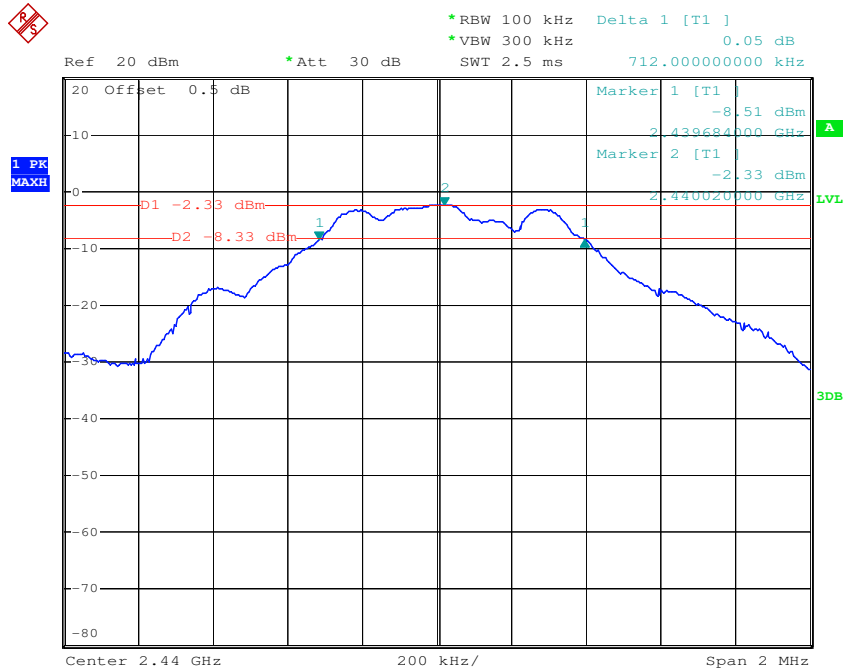
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
Low	2402	0.732	≥0.5
Middle	2440	0.712	≥0.5
High	2480	0.716	≥0.5

**BLE Low Channel**



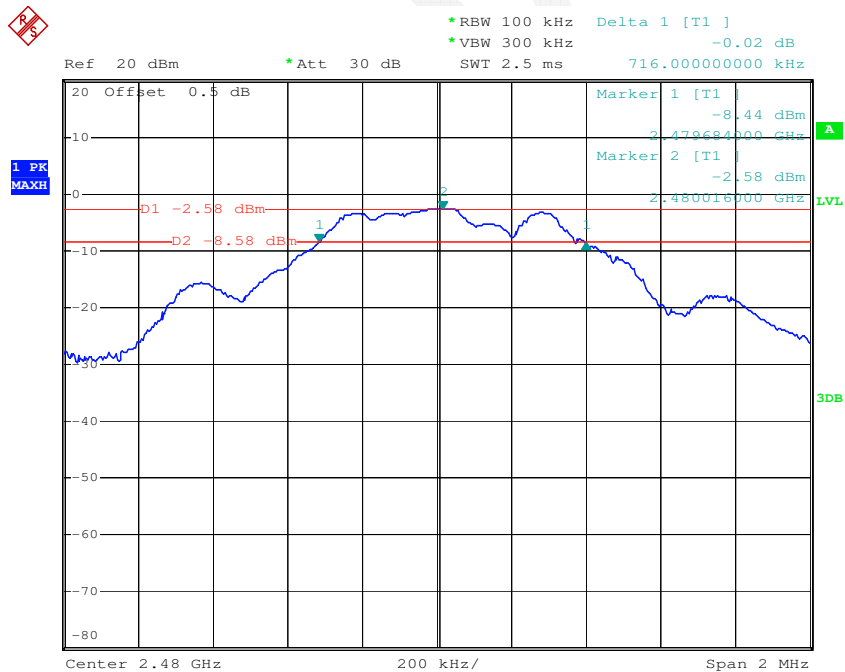
Date: 19.SEP.2016 22:30:58

### BLE Middle Channel



Date: 19.SEP.2016 22:32:47

### BLE High Channel



Date: 19.SEP.2016 22:33:57

## 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.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	831259/019	2016-07-28	2017-07-27
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

### Test Data

#### Environmental Conditions

Temperature:	27.5 °C
Relative Humidity:	34 %
ATM Pressure:	100.7 kPa

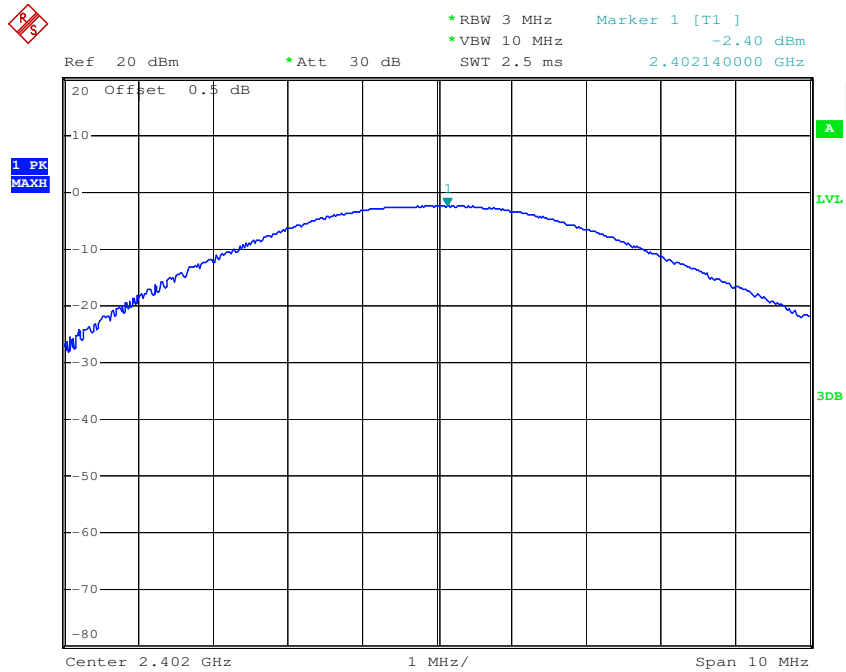
\* The testing was performed by Robin Zheng on 2016-09-19.

Test Mode: Transmitting

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

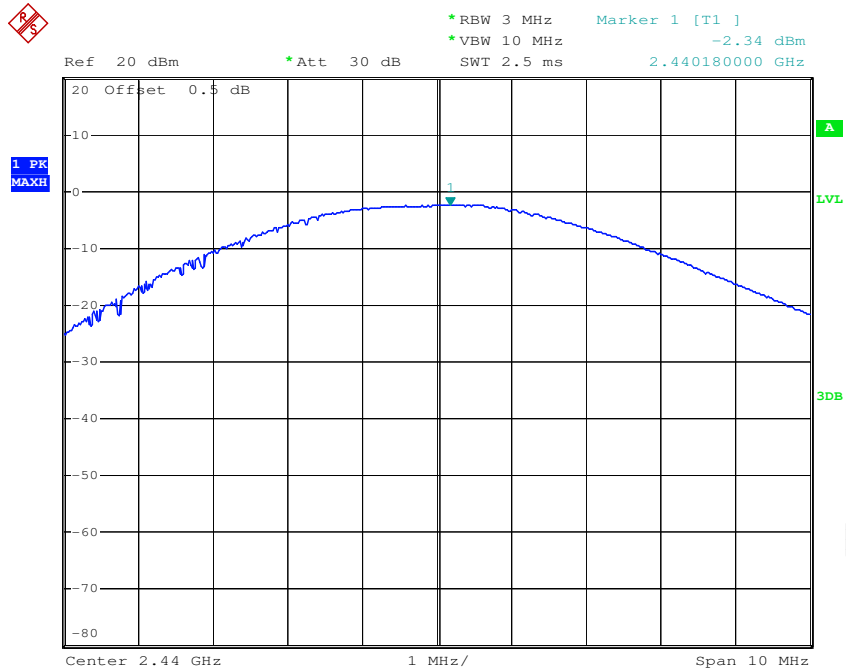
Channel	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Limit (dBm)
Low	2402	-2.4	30
Middle	2440	-2.34	30
High	2480	-2.55	30

Low Channel



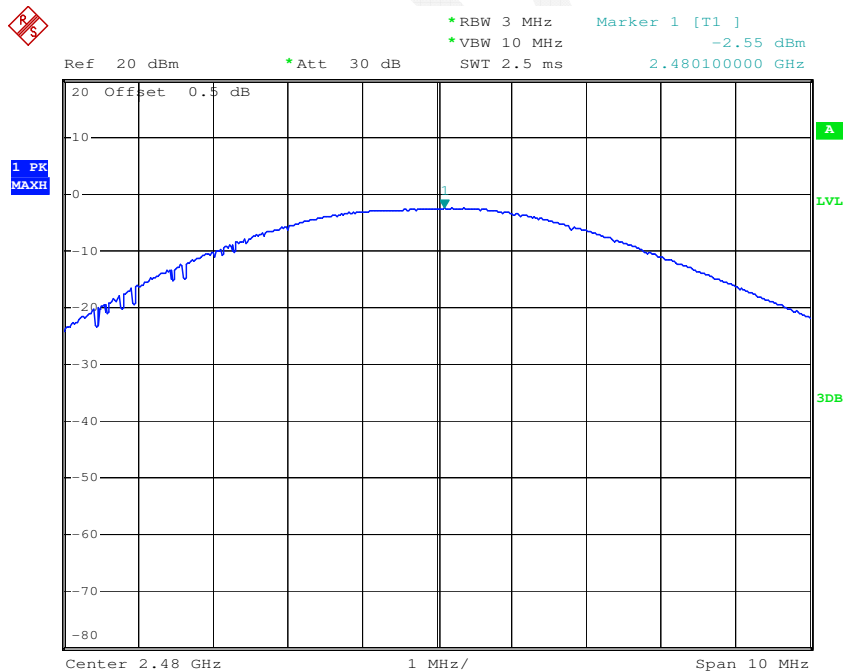
Date: 19.SEP.2016 22:31:24

### Middle Channel



Date: 19.SEP.2016 22:33:11

### High Channel



Date: 19.SEP.2016 22:34:24

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

### **Applicable Standard**

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	FSEM	831259/019	2016-07-28	2017-07-27
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

### **Test Data**

#### **Environmental Conditions**

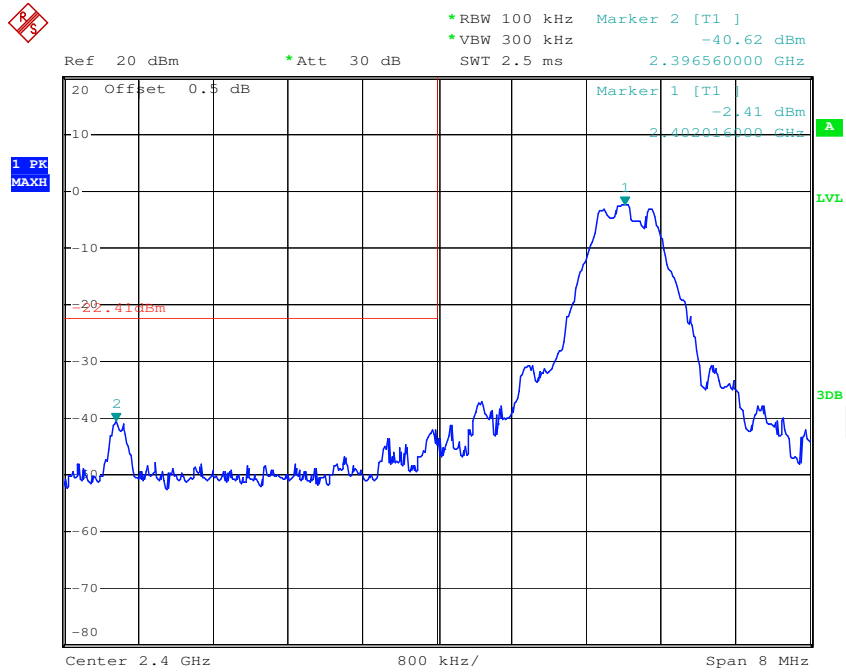
<b>Temperature:</b>	27.5 °C
<b>Relative Humidity:</b>	34 %
<b>ATM Pressure:</b>	100.7 kPa

*\* The testing was performed by Robin Zheng on 2016-09-19.*

Test mode: Transmitting

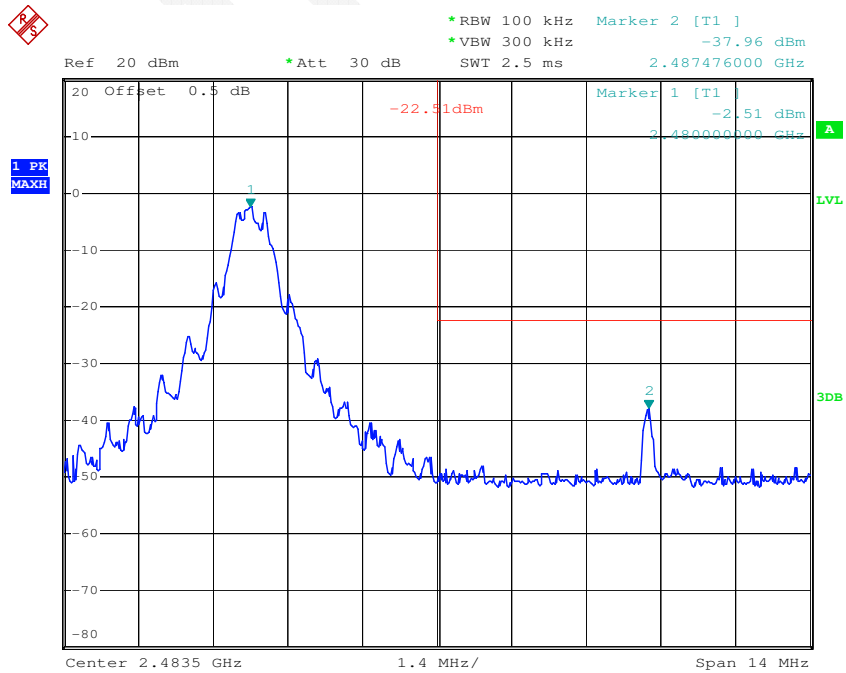
Test Result: Compliant. Please refer to following plots.

### BLE Band Edge, Left Side



Date: 19.SEP.2016 22:31:56

### BLE Band Edge, Right Side



Date: 19.SEP.2016 22:34:51

## 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

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	831259/019	2016-07-28	2017-07-27
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

### Test Data

#### Environmental Conditions

Temperature:	27.5 °C
Relative Humidity:	34%
ATM Pressure:	100.7 kPa

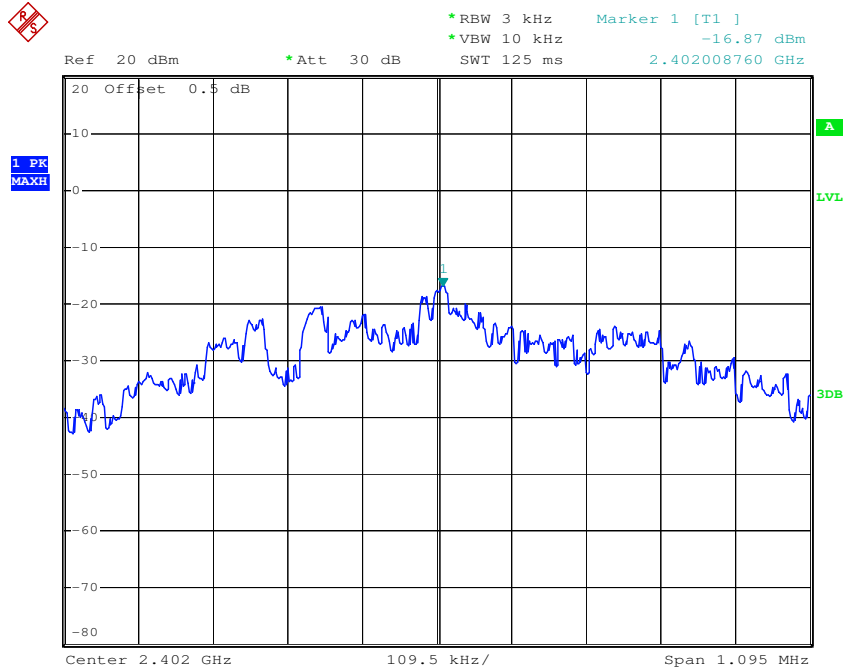
\* The testing was performed by Robin Zheng on 2016-09-19.

Test Mode: Transmitting

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

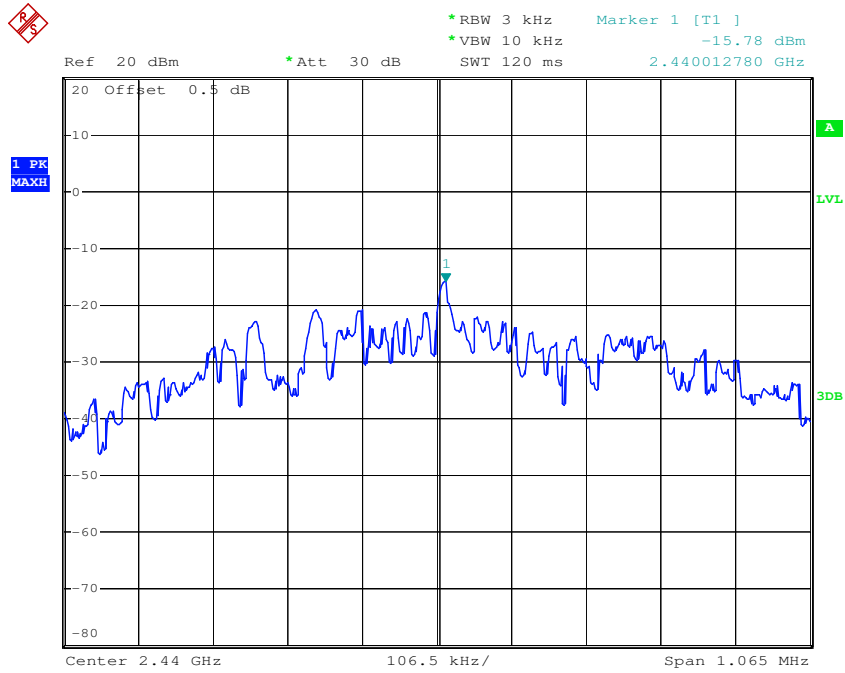
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2402	-16.87	≤8
Middle	2440	-15.78	≤8
High	2480	-17.23	≤8

Low Channel



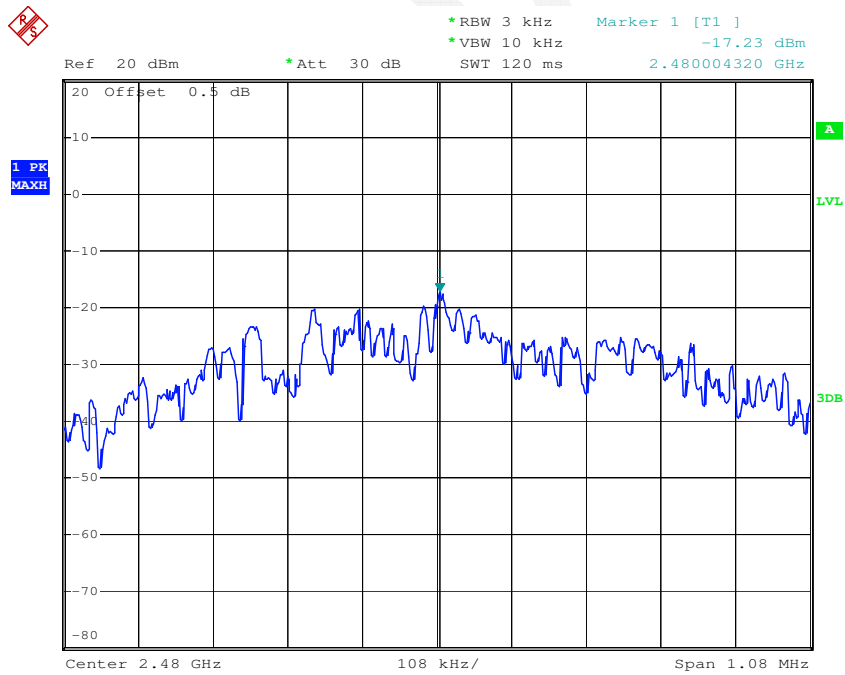
Date: 19.SEP.2016 22:31:33

### Middle Channel



Date: 19.SEP.2016 22:33:20

### High Channel



Date: 19.SEP.2016 22:34:33

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