FCC PART 15.247

TEST REPORT

For

CLC HONG KONG LIMITED

1011A, 10/F., Harbour Centre Tower 1, No.1 Hok Cheung St., Hung Hom, Kowloon, Hong Kong

FCC ID: 2AG4WZ623

Report Type:	Product Name:
Original Report	Phantom

Report Number:	RDG170717006-00C
Report Date:	2017-08-14
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***CLC HONG KONG LIMITED***'s product, model number: ***Z623(FCC ID: 2AG4WZ623)*** (the "EUT") in this report was a ***Phantom,*** which was measured approximately: 16.6 cm (L) x 8.5 cm (W) x 0.9 cm (H), DC3.7V from Battery or DC 5V from adapter.

Adapter Information:
Model: PMC43
Input: 100-240V~50/60Hz 0.2A
Output: DC5.0V, 1.0A

**All measurement and test data in this report was gathered from final production sample, serial number: 170717006 (assigned by the BACL, Dongguan). The EUT was received on 2017-07-17.*

Objective

This report is prepared on behalf of ***CLC HONG KONG LIMITED*** 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: 2AG4WZ623.
FCC Part 15B JBP submissions with FCC ID: 2AG4WZ623.
FCC Part 22H, 24E PCE submissions with FCC ID: 2AG4WZ623.

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).

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	±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

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

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.

Bay Area Compliance Laboratories Corp. (Dongguan) was 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.

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 802.11 n20 modes were test with channel 1,6,11.
For 802.11 n40 mode was 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.

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.

EUT Exercise Software

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

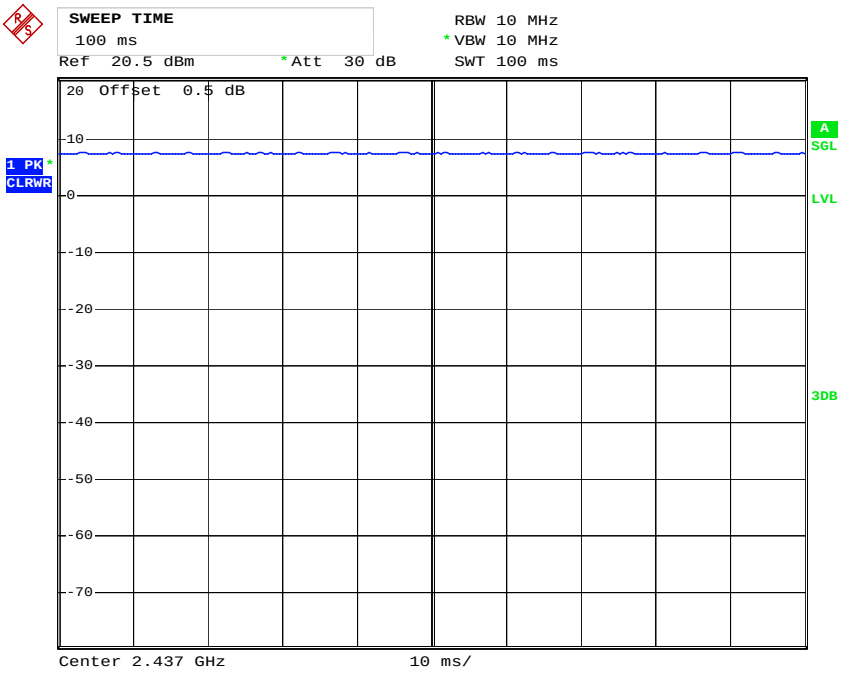
Test Mode	Test Software Version	Engineer Mode		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting	11	11	10
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	13	13	13
802.11n 20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	12.5	13	13
802.11n 40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	13	13	13

Note: BLE mode configured as maximum power by the system default setting.

The maximum duty cycle as following table:

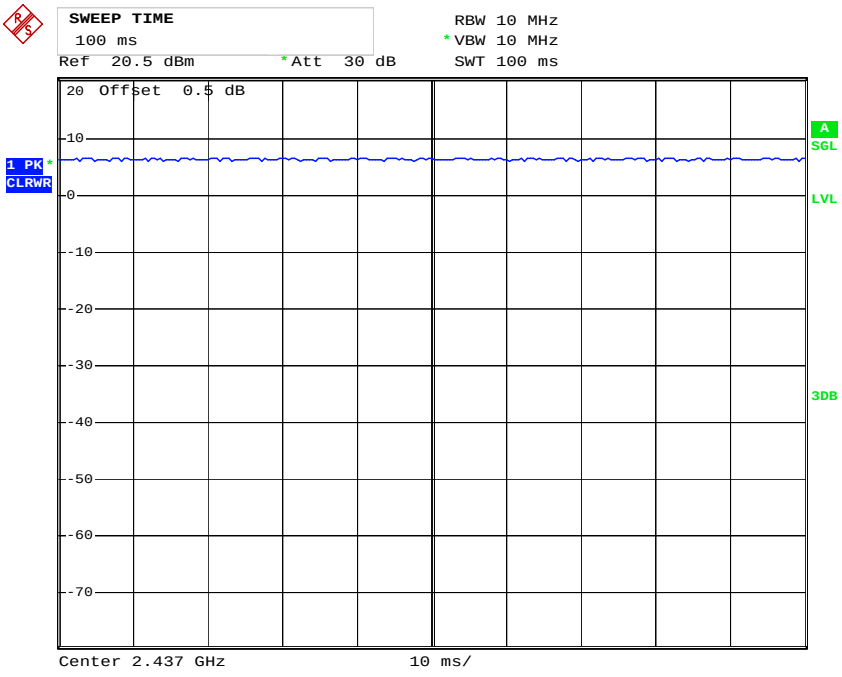
Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100%
802.11g	100	100	100%
802.11 n20	100	100	100%
802.11 n40	100	100	100%
BLE	0.396	0.630	62.86%

802.11b



Date: 30.JUL.2017 21:14:01

802.11g



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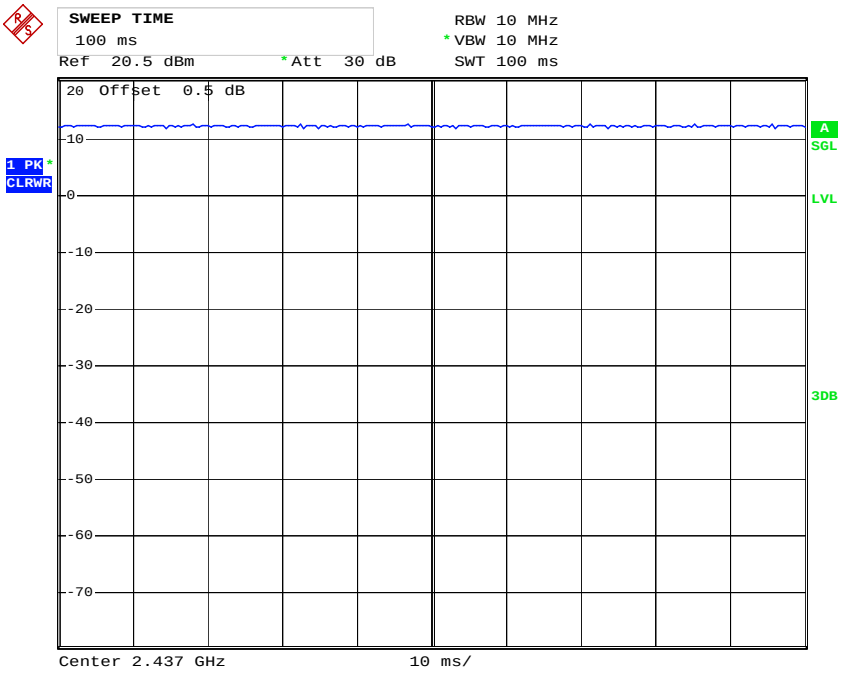
802.11 n20



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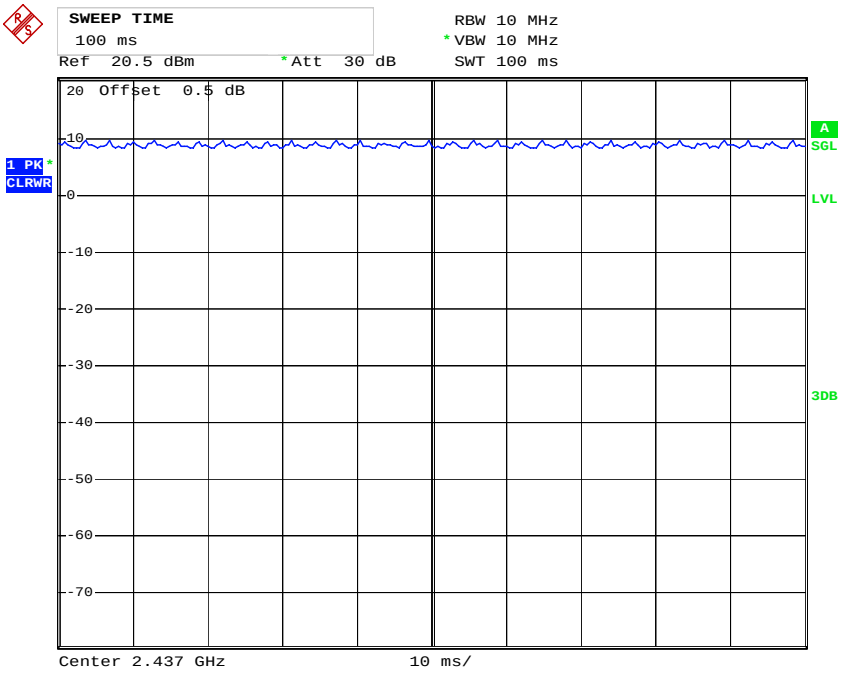
802.11 n40



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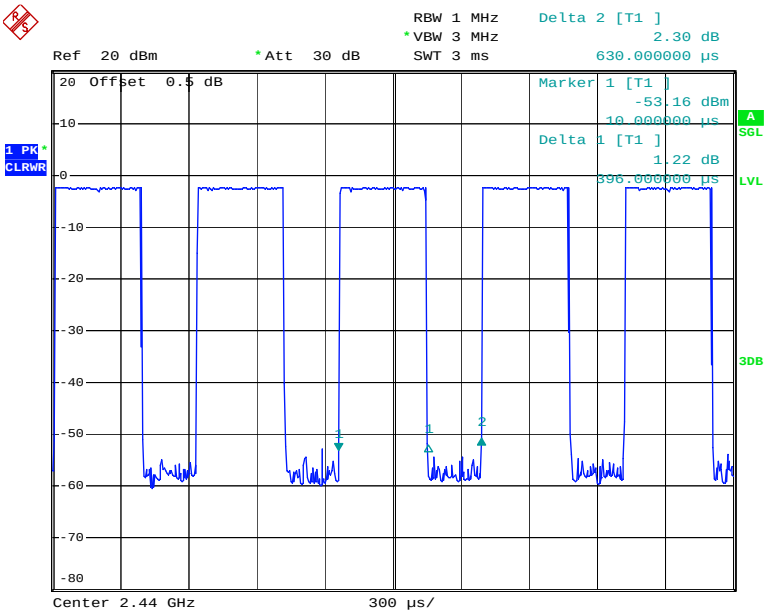
BLE



Date: 23.JUL.2017 17:22:57

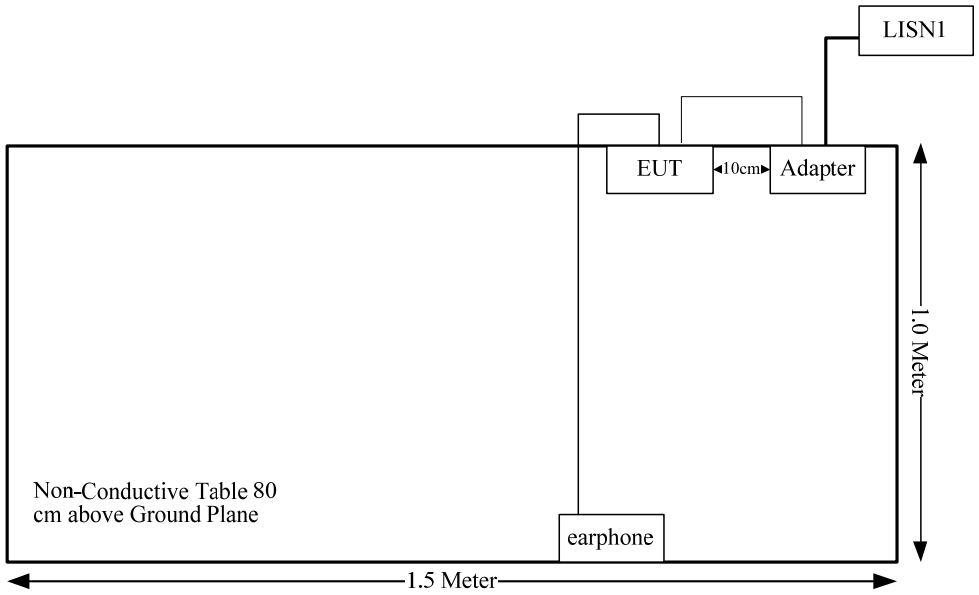
Equipment Modifications

No modification was made to the EUT.

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
USB Cable	Yes	No	1.2	Adapter	EUT
Earphone Cable	No	No	1.2	EUT	Earphone

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.

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 ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(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 ≤ 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

For WiFi mode

The max tune-up conducted power is 9.8 dBm (9.55 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
= 9.55/5*(√2.48) = 3.0 ≤ 3.0

For bluetooth LE mode

The max tune-up conducted power is -1.5 dBm (0.71 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
= 0.71/5*(√2.48) = 0.2 < 3.0

So the stand-alone SAR evaluation for Bluetooth LE mode is not necessary.

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 antenna arrangement for BT and WIFI, and the antenna gain is 1.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

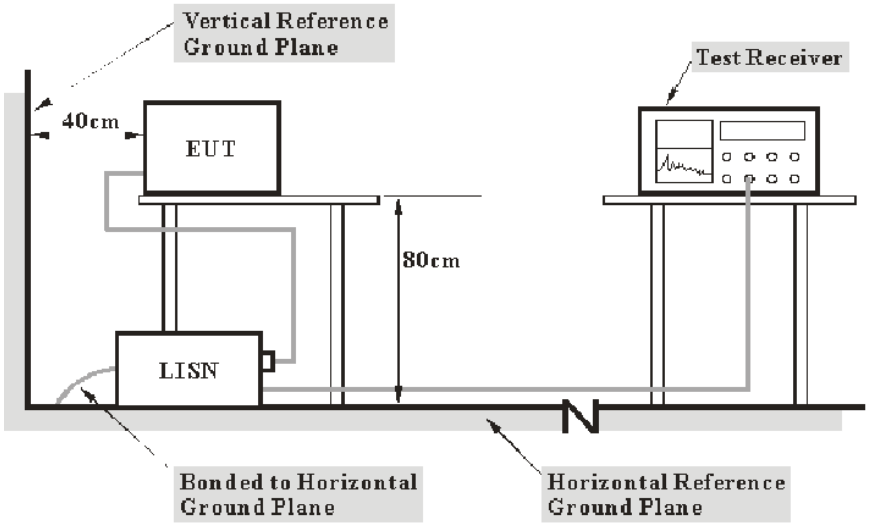
Result: Compliance.

FCC §15.207 (a)– AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(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.

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 maximum 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	2016-12-08	2017-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2016-09-01	2017-09-01
R&S	Two-line V-network	ENV 216	3560.6550.12	2016-12-08	2017-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
Unknown	Coaxial Cable	2m	Con-1	2016-09-01	2017-09-01

*** 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

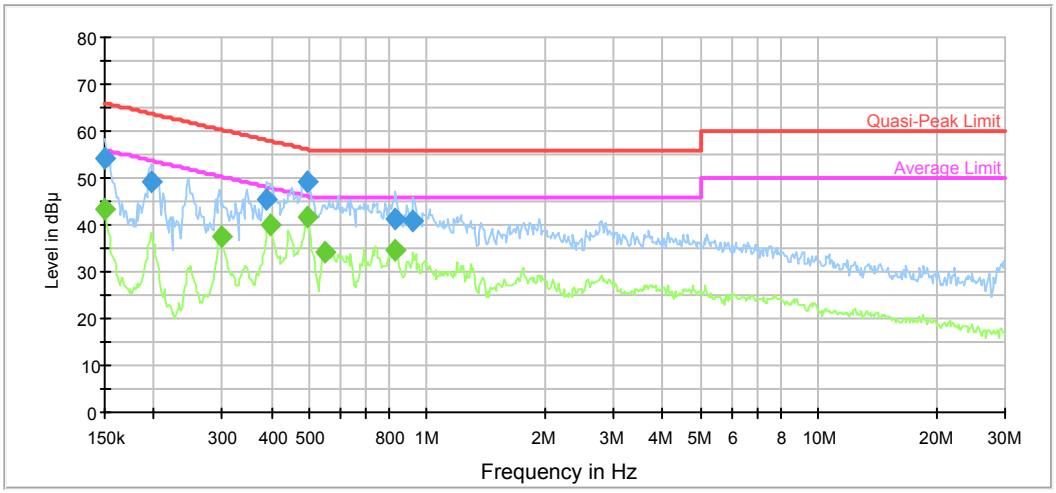
Environmental Conditions

Temperature:	25.4 °C
Relative Humidity:	50 %
ATM Pressure:	100.2 kPa

The testing was performed by Gaochao Gong on 2017-07-23.

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

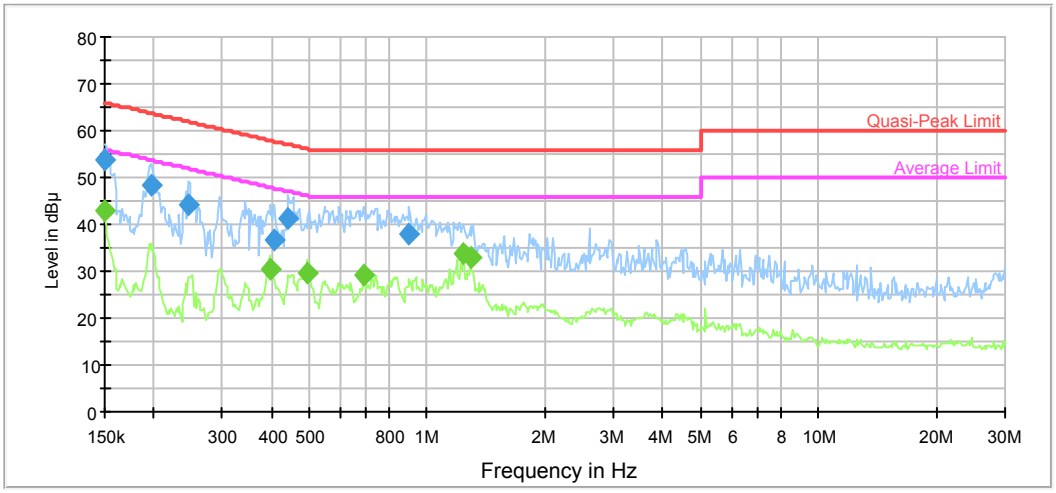
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	54.1	9.000	L1	11.2	11.9	66.0	Compliance
0.198249	49.0	9.000	L1	10.6	14.7	63.7	Compliance
0.390261	45.3	9.000	L1	10.0	12.8	58.1	Compliance
0.491712	49.0	9.000	L1	9.9	7.1	56.1	Compliance
0.831967	41.1	9.000	L1	9.8	14.9	56.0	Compliance
0.922769	40.9	9.000	L1	9.8	15.1	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	43.2	9.000	L1	11.2	12.8	56.0	Compliance
0.297644	37.4	9.000	L1	10.1	12.9	50.3	Compliance
0.396530	40.2	9.000	L1	10.0	7.7	47.9	Compliance
0.495646	41.5	9.000	L1	9.9	4.6	46.1	Compliance
0.545378	34.4	9.000	L1	9.9	11.6	46.0	Compliance
0.825364	34.4	9.000	L1	9.8	11.6	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	53.9	9.000	N	11.2	12.1	66.0	Compliance
0.196675	48.1	9.000	N	10.6	15.6	63.7	Compliance
0.245835	44.0	9.000	N	10.3	17.9	61.9	Compliance
0.406123	36.6	9.000	N	10.0	21.1	57.7	Compliance
0.443327	41.1	9.000	N	9.9	15.9	57.0	Compliance
0.900972	37.8	9.000	N	9.8	18.2	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	42.8	9.000	N	11.2	13.2	56.0	Compliance
0.396530	30.6	9.000	N	10.0	17.3	47.9	Compliance
0.495646	29.4	9.000	N	9.9	16.7	46.1	Compliance
0.692650	29.1	9.000	N	9.8	16.9	46.0	Compliance
1.239175	33.8	9.000	N	9.7	12.2	46.0	Compliance
1.289541	32.7	9.000	N	9.7	13.3	46.0	Compliance

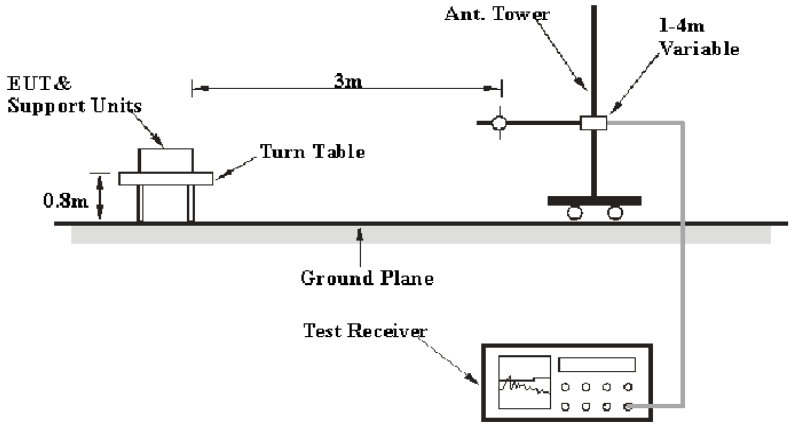
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

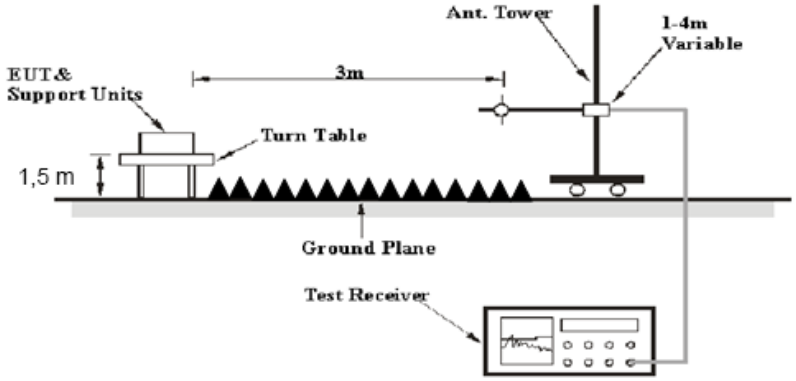
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters distance, 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:

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 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	2016-09-01	2017-08-31
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2016-09-01	2017-09-01
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Mini-Circuit	Amplifier	ZVA-213-S+	SN054201245	2017-02-19	2018-02-19
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2016-09-06	2017-09-06
Unknown	Coaxial Cable	Chamber A-1	4m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-1	0.75m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber A-2	10m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-2	8m	2016-09-01	2017-09-01
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

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

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	61 %
ATM Pressure:	99.8 kPa

The testing was performed by Crazy He on 2017-07-25.

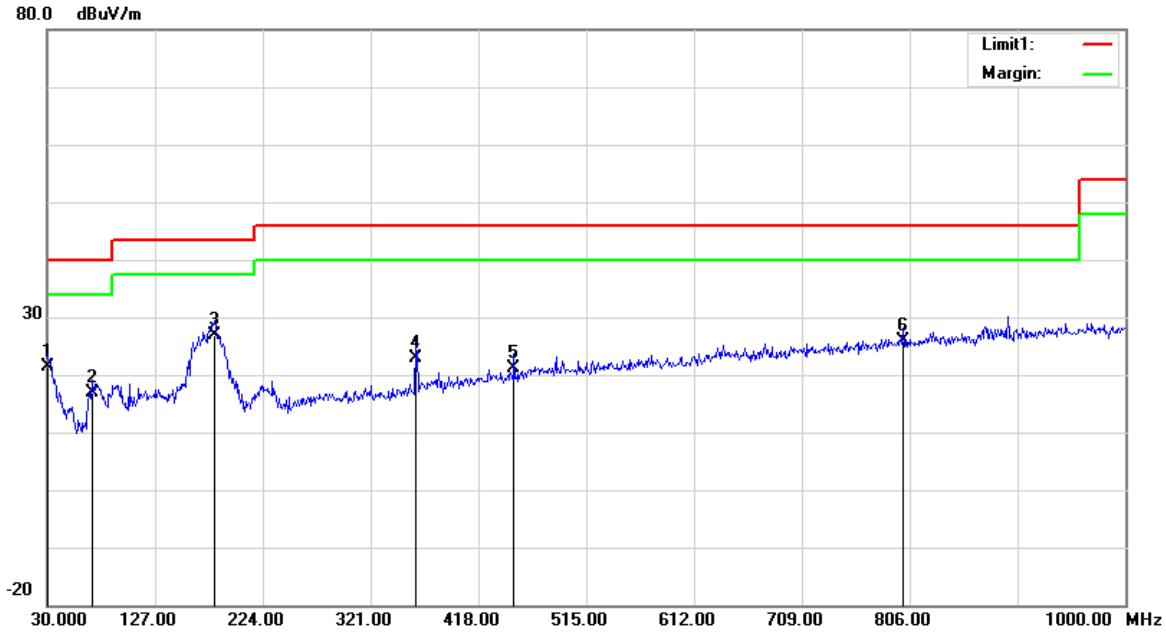
Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting

1) 30MHz-1GHz

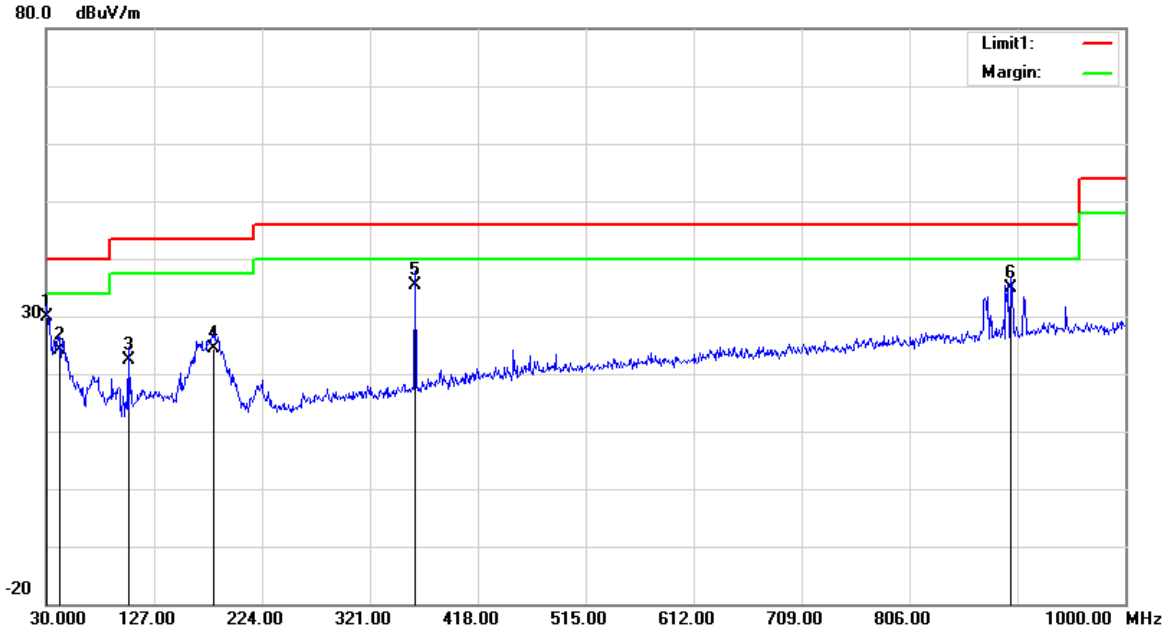
WIFI(802.11b mode middle channel was the worst)**:**

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.0000	19.70	QP	1.60	21.30	40.00	18.70
70.7400	28.23	QP	-11.23	17.00	40.00	23.00
180.3500	34.79	QP	-7.79	27.00	43.50	16.50
361.7400	26.87	QP	-3.87	23.00	46.00	23.00
450.0100	23.02	QP	-1.82	21.20	46.00	24.80
800.1800	22.50	QP	3.30	25.80	46.00	20.20

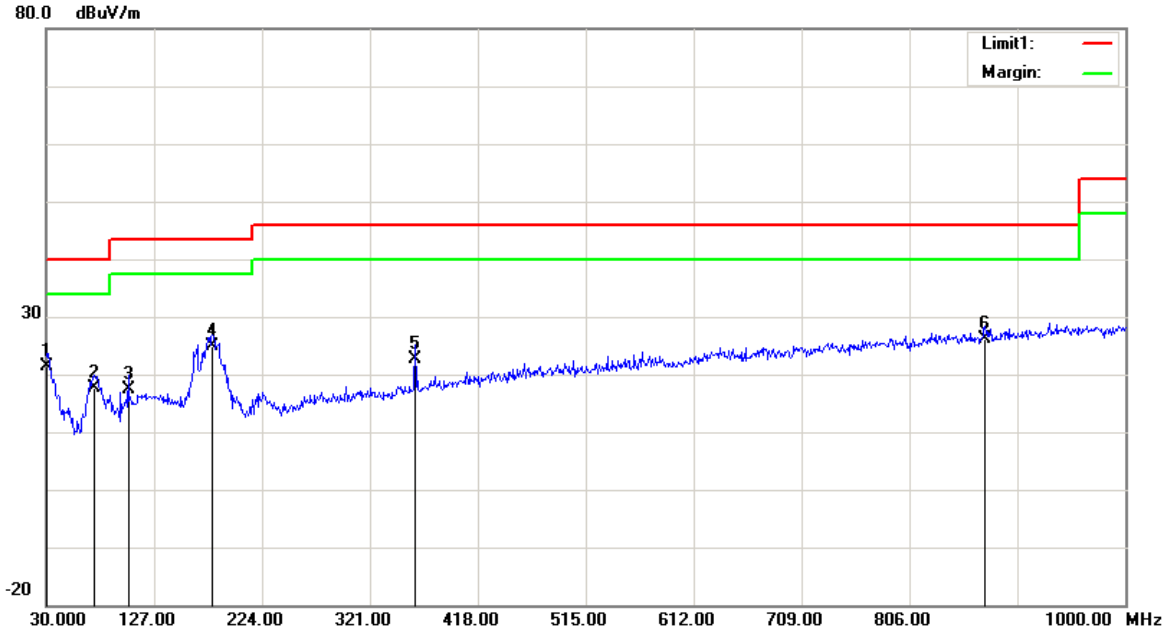
Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	29.06	QP	0.94	30.00	40.00	10.00
41.6400	31.18	QP	-6.98	24.20	40.00	15.80
103.7200	29.94	QP	-7.64	22.30	43.50	21.20
180.3500	32.19	QP	-7.79	24.40	43.50	19.10
361.7400	39.37	QP	-3.87	35.50	46.00	10.50
897.1800	29.75	QP	5.05	34.80	46.00	11.20

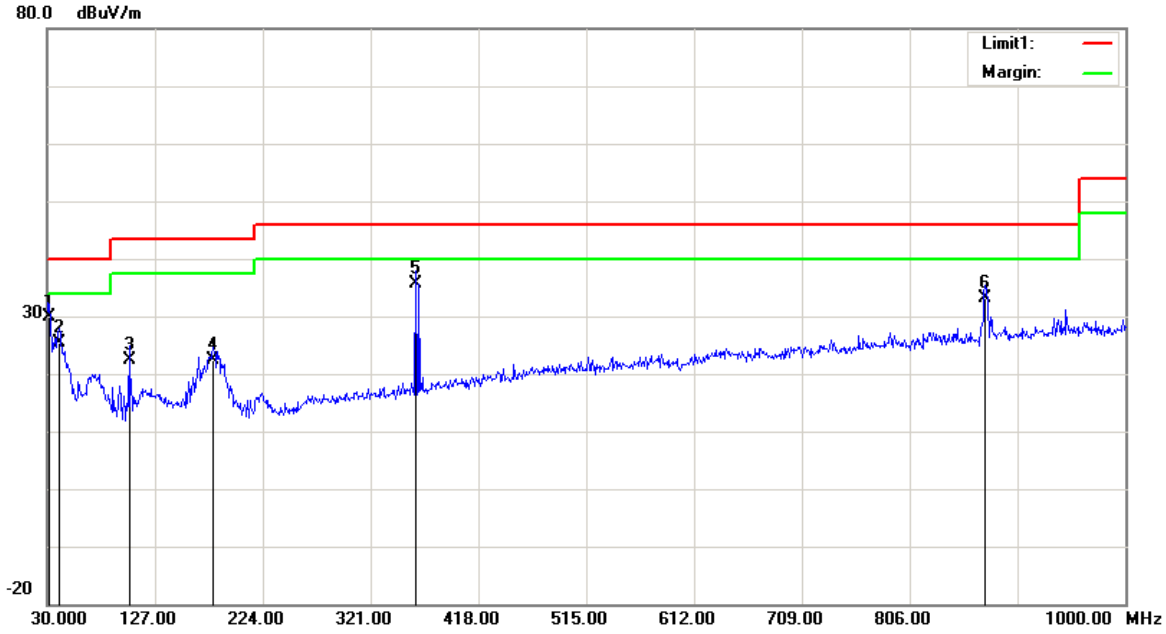
BLE (middle channel was the worst)**:**

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	20.46	QP	0.94	21.40	40.00	18.60
72.6800	28.73	QP	-11.13	17.60	40.00	22.40
103.7200	25.14	QP	-7.64	17.50	43.50	26.00
179.3800	32.58	QP	-7.78	24.80	43.50	18.70
361.7400	26.57	QP	-3.87	22.70	46.00	23.30
873.9000	21.56	QP	4.54	26.10	46.00	19.90

Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.9400	29.70	QP	0.30	30.00	40.00	10.00
40.6700	31.84	QP	-6.34	25.50	40.00	14.50
103.7200	30.14	QP	-7.64	22.50	43.50	21.00
179.3800	30.28	QP	-7.78	22.50	43.50	21.00
361.7400	39.57	QP	-3.87	35.70	46.00	10.30
873.9000	28.66	QP	4.54	33.20	46.00	12.80

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 (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	59.79	PK	H	28.12	3.11	0.00	91.02	N/A	N/A
2412	54.62	AV	H	28.12	3.11	0.00	85.85	N/A	N/A
2412	54.79	PK	V	28.12	3.11	0.00	86.02	N/A	N/A
2412	50.67	AV	V	28.12	3.11	0.00	81.90	N/A	N/A
2390	25.38	PK	H	28.08	3.10	0.00	56.56	74.00	17.44
2390	13.42	AV	H	28.08	3.10	0.00	44.60	54.00	9.40
4824	56.37	PK	H	32.95	4.33	35.49	58.16	74.00	15.84
4824	51.22	AV	H	32.95	4.33	35.49	53.01	54.00	0.99
7236	48.32	PK	H	35.81	5.47	35.97	53.63	74.00	20.37
7236	32.86	AV	H	35.81	5.47	35.97	38.17	54.00	15.83
6435	46.64	PK	H	34.21	5.19	35.75	50.29	74.00	23.71
6435	32.01	AV	H	34.21	5.19	35.75	35.66	54.00	18.34
Middle Channel: 2437 MHz									
2437	59.82	PK	H	28.17	3.11	0.00	91.10	N/A	N/A
2437	55.61	AV	H	28.17	3.11	0.00	86.89	N/A	N/A
2437	55.39	PK	V	28.17	3.11	0.00	86.67	N/A	N/A
2437	51.27	AV	V	28.17	3.11	0.00	82.55	N/A	N/A
4874	54.54	PK	H	33.05	4.39	35.53	56.45	74.00	17.55
4874	51.58	AV	H	33.05	4.39	35.53	53.49	54.00	0.51
7311	47.56	PK	H	36.01	5.52	35.97	53.12	74.00	20.88
7311	32.19	AV	H	36.01	5.52	35.97	37.75	54.00	16.25
5765	47.36	PK	H	34.21	4.70	35.85	50.42	74.00	23.58
5765	32.34	AV	H	34.21	4.70	35.85	35.40	54.00	18.60
6245	46.68	PK	H	34.25	4.96	35.80	50.09	74.00	23.91
6245	31.53	AV	H	34.25	4.96	35.80	34.94	54.00	19.06
High Channel: 2462 MHz									
2462	62.13	PK	H	28.22	3.10	0.00	93.45	N/A	N/A
2462	57.86	AV	H	28.22	3.10	0.00	89.18	N/A	N/A
2462	57.18	PK	V	28.22	3.10	0.00	88.50	N/A	N/A
2462	53.06	AV	V	28.22	3.10	0.00	84.38	N/A	N/A
2483.5	24.43	PK	H	28.27	3.10	0.00	55.80	74.00	18.20
2483.5	13.87	AV	H	28.27	3.10	0.00	45.24	54.00	8.76
4924	55.68	PK	H	33.15	4.42	35.57	57.68	74.00	16.32
4924	51.42	AV	H	33.15	4.42	35.57	53.42	54.00	0.58
7386	48.39	PK	H	36.20	5.57	35.98	54.18	74.00	19.82
7386	32.84	AV	H	36.20	5.57	35.98	38.63	54.00	15.37
6325	46.85	PK	H	34.24	5.06	35.78	50.37	74.00	23.63
6325	31.67	AV	H	34.24	5.06	35.78	35.19	54.00	18.81

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 (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	61.89	PK	H	28.12	3.11	0.00	93.12	N/A	N/A
2412	52.41	AV	H	28.12	3.11	0.00	83.64	N/A	N/A
2412	59.73	PK	V	28.12	3.11	0.00	90.96	N/A	N/A
2412	50.46	AV	V	28.12	3.11	0.00	81.69	N/A	N/A
2390	25.37	PK	H	28.08	3.10	0.00	56.55	74.00	17.45
2390	13.48	AV	H	28.08	3.10	0.00	44.66	54.00	9.34
4824	59.27	PK	H	32.95	4.33	35.49	61.06	74.00	12.94
4824	43.32	AV	H	32.95	4.33	35.49	45.11	54.00	8.89
7236	48.16	PK	H	35.81	5.47	35.97	53.47	74.00	20.53
7236	32.73	AV	H	35.81	5.47	35.97	38.04	54.00	15.96
6455	46.85	PK	H	34.21	5.22	35.75	50.53	74.00	23.47
6455	31.69	AV	H	34.21	5.22	35.75	35.37	54.00	18.63
Middle Channel: 2437 MHz									
2437	61.75	PK	H	28.17	3.11	0.00	93.03	N/A	N/A
2437	42.39	AV	H	28.17	3.11	0.00	73.67	N/A	N/A
2437	59.64	PK	V	28.17	3.11	0.00	90.92	N/A	N/A
2437	50.48	AV	V	28.17	3.11	0.00	81.76	N/A	N/A
4874	59.16	PK	H	33.05	4.39	35.53	61.07	74.00	12.93
4874	43.21	AV	H	33.05	4.39	35.53	45.12	54.00	8.88
7311	47.36	PK	H	36.01	5.52	35.97	52.92	74.00	21.08
7311	32.24	AV	H	36.01	5.52	35.97	37.80	54.00	16.20
5875	46.64	PK	H	34.25	4.64	35.85	49.68	74.00	24.32
5875	31.42	AV	H	34.25	4.64	35.85	34.46	54.00	19.54
6445	46.93	PK	H	34.21	5.20	35.75	50.59	74.00	23.41
6445	31.48	AV	H	34.21	5.20	35.75	35.14	54.00	18.86
High Channel: 2462 MHz									
2462	65.27	PK	H	28.22	3.10	0.00	96.59	N/A	N/A
2462	56.45	AV	H	28.22	3.10	0.00	87.77	N/A	N/A
2462	62.45	PK	V	28.22	3.10	0.00	93.77	N/A	N/A
2462	53.18	AV	V	28.22	3.10	0.00	84.50	N/A	N/A
2483.5	28.37	PK	H	28.27	3.10	0.00	59.74	74.00	14.26
2483.5	14.81	AV	H	28.27	3.10	0.00	46.18	54.00	7.82
4924	59.96	PK	H	33.15	4.42	35.57	61.96	74.00	12.04
4924	43.87	AV	H	33.15	4.42	35.57	45.87	54.00	8.13
7386	47.54	PK	H	36.20	5.57	35.98	53.33	74.00	20.67
7386	32.16	AV	H	36.20	5.57	35.98	37.95	54.00	16.05
6635	46.75	PK	H	34.47	5.28	35.80	50.70	74.00	23.30
6635	31.64	AV	H	34.47	5.28	35.80	35.59	54.00	18.41

802.11n20 Mode:

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)					
Low Channel: 2412 MHz									
2412	59.67	PK	H	28.12	3.11	0.00	90.90	N/A	N/A
2412	51.34	AV	H	28.12	3.11	0.00	82.57	N/A	N/A
2412	55.96	PK	V	28.12	3.11	0.00	87.19	N/A	N/A
2412	48.16	AV	V	28.12	3.11	0.00	79.39	N/A	N/A
2390	25.26	PK	H	28.08	3.10	0.00	56.44	74.00	17.56
2390	13.38	AV	H	28.08	3.10	0.00	44.56	54.00	9.44
4824	59.76	PK	H	32.95	4.33	35.49	61.55	74.00	12.45
4824	43.98	AV	H	32.95	4.33	35.49	45.77	54.00	8.23
7236	47.56	PK	H	35.81	5.47	35.97	52.87	74.00	21.13
7236	32.43	AV	H	35.81	5.47	35.97	37.74	54.00	16.26
5765	46.58	PK	H	34.21	4.70	35.85	49.64	74.00	24.36
5765	32.23	AV	H	34.21	4.70	35.85	35.29	54.00	18.71
Middle Channel: 2437 MHz									
2437	61.49	PK	H	28.17	3.11	0.00	92.77	N/A	N/A
2437	53.75	AV	H	28.17	3.11	0.00	85.03	N/A	N/A
2437	57.33	PK	V	28.17	3.11	0.00	88.61	N/A	N/A
2437	49.28	AV	V	28.17	3.11	0.00	80.56	N/A	N/A
4874	59.42	PK	H	33.05	4.39	35.53	61.33	74.00	12.67
4874	43.18	AV	H	33.05	4.39	35.53	45.09	54.00	8.91
7311	47.67	PK	H	36.01	5.52	35.97	53.23	74.00	20.77
7311	32.59	AV	H	36.01	5.52	35.97	38.15	54.00	15.85
5565	46.38	PK	H	34.13	4.52	35.85	49.18	74.00	24.82
5565	32.25	AV	H	34.13	4.52	35.85	35.05	54.00	18.95
6315	46.46	PK	H	34.24	5.05	35.78	49.97	74.00	24.03
6315	32.31	AV	H	34.24	5.05	35.78	35.82	54.00	18.18
High Channel: 2462 MHz									
2462	65.37	PK	H	28.22	3.10	0.00	96.69	N/A	N/A
2462	57.14	AV	H	28.22	3.10	0.00	88.46	N/A	N/A
2462	61.67	PK	V	28.22	3.10	0.00	92.99	N/A	N/A
2462	53.24	AV	V	28.22	3.10	0.00	84.56	N/A	N/A
2483.5	28.64	PK	H	28.27	3.10	0.00	60.01	74.00	13.99
2483.5	14.91	AV	H	28.27	3.10	0.00	46.28	54.00	7.72
4924	59.49	PK	H	33.15	4.42	35.57	61.49	74.00	12.51
4924	43.77	AV	H	33.15	4.42	35.57	45.77	54.00	8.23
7386	47.54	PK	H	36.20	5.57	35.98	53.33	74.00	20.67
7386	32.18	AV	H	36.20	5.57	35.98	37.97	54.00	16.03
6145	46.35	PK	H	34.27	4.84	35.82	49.64	74.00	24.36
6145	31.52	AV	H	34.27	4.84	35.82	34.81	54.00	19.19

802.11n40 Mode:

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)					
Low Channel: 2422 MHz									
2422	58.93	PK	H	28.14	3.11	0.00	90.18	N/A	N/A
2422	49.66	AV	H	28.14	3.11	0.00	80.91	N/A	N/A
2422	56.24	PK	V	28.14	3.11	0.00	87.49	N/A	N/A
2422	47.39	AV	V	28.14	3.11	0.00	78.64	N/A	N/A
2390	25.27	PK	H	28.08	3.10	0.00	56.45	74.00	17.55
2390	13.53	AV	H	28.08	3.10	0.00	44.71	54.00	9.29
4844	56.37	PK	H	32.99	4.35	35.51	58.20	74.00	15.80
4844	43.51	AV	H	32.99	4.35	35.51	45.34	54.00	8.66
7266	47.63	PK	H	35.89	5.49	35.97	53.04	74.00	20.96
7266	32.52	AV	H	35.89	5.49	35.97	37.93	54.00	16.07
6425	46.75	PK	H	34.22	5.18	35.76	50.39	74.00	23.61
6425	31.62	AV	H	34.22	5.18	35.76	35.26	54.00	18.74
Middle Channel: 2437 MHz									
2437	60.13	PK	H	28.17	3.11	0.00	91.41	N/A	N/A
2437	51.58	AV	H	28.17	3.11	0.00	82.86	N/A	N/A
2437	56.49	PK	V	28.17	3.11	0.00	87.77	N/A	N/A
2437	47.51	AV	V	28.17	3.11	0.00	78.79	N/A	N/A
4874	56.49	PK	H	33.05	4.39	35.53	58.40	74.00	15.60
4874	43.63	AV	H	33.05	4.39	35.53	45.54	54.00	8.46
7311	47.26	PK	H	36.01	5.52	35.97	52.82	74.00	21.18
7311	32.42	AV	H	36.01	5.52	35.97	37.98	54.00	16.02
5835	47.15	PK	H	34.23	4.68	35.85	50.21	74.00	23.79
5835	32.31	AV	H	34.23	4.68	35.85	35.37	54.00	18.63
6215	46.58	PK	H	34.26	4.93	35.80	49.97	74.00	24.03
6215	31.67	AV	H	34.26	4.93	35.80	35.06	54.00	18.94
High Channel: 2452 MHz									
2452	61.73	PK	H	28.20	3.10	0.00	93.03	N/A	N/A
2452	52.69	AV	H	28.20	3.10	0.00	83.99	N/A	N/A
2452	57.79	PK	V	28.20	3.10	0.00	89.09	N/A	N/A
2452	48.67	AV	V	28.20	3.10	0.00	79.97	N/A	N/A
2483.5	30.42	PK	H	28.27	3.10	0.00	61.79	74.00	12.21
2483.5	15.34	AV	H	28.27	3.10	0.00	46.71	54.00	7.29
4904	57.47	PK	H	33.11	4.42	35.56	59.44	74.00	14.56
4904	44.68	AV	H	33.11	4.42	35.56	46.65	54.00	7.35
7356	47.67	PK	H	36.13	5.55	35.98	53.37	74.00	20.63
7356	32.54	AV	H	36.13	5.55	35.98	38.24	54.00	15.76
6455	46.75	PK	H	34.21	5.22	35.75	50.43	74.00	23.57
6455	32.13	AV	H	34.21	5.22	35.75	35.81	54.00	18.19

BLE 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)					
Low Channel: 2402 MHz									
2402	61.31	PK	H	24.82	5.32	0.00	91.45	N/A	N/A
2402	55.9	AV	H	24.82	5.32	0.00	86.04	N/A	N/A
2402	50.92	PK	V	24.82	5.32	0.00	81.06	N/A	N/A
2402	45.41	AV	V	24.82	5.32	0.00	75.55	N/A	N/A
2390	28.38	PK	H	24.80	5.30	0.00	58.48	74.00	15.52
2390	14.96	AV	H	24.80	5.30	0.00	45.06	54.00	8.94
4780	38.46	PK	H	29.66	7.29	28.28	47.13	74.00	26.87
4780	25.34	AV	H	29.66	7.29	28.28	34.01	54.00	19.99
7206	38.4	PK	H	33.93	8.99	34.10	47.22	74.00	26.78
7206	25.31	AV	H	33.93	8.99	34.10	34.13	54.00	19.87
2875	37.42	PK	H	25.53	5.75	27.84	40.86	74.00	33.14
2875	24.35	AV	H	25.53	5.75	27.84	27.79	54.00	26.21
Middle Channel: 2440 MHz									
2440	63.79	PK	H	24.89	5.35	0.00	94.03	N/A	N/A
2440	58.11	AV	H	24.89	5.35	0.00	88.35	N/A	N/A
2440	52.96	PK	V	24.89	5.35	0.00	83.20	N/A	N/A
2440	47.6	AV	V	24.89	5.35	0.00	77.84	N/A	N/A
4880	38.42	PK	H	29.86	7.43	28.52	47.19	74.00	26.81
4880	25.43	AV	H	29.86	7.43	28.52	34.20	54.00	19.80
7320	38.49	PK	H	34.11	9.06	34.38	47.28	74.00	26.72
7320	25.39	AV	H	34.11	9.06	34.38	34.18	54.00	19.82
2935	37.53	PK	H	25.61	5.80	27.77	41.17	74.00	32.83
2935	24.34	AV	H	25.61	5.80	27.77	27.98	54.00	26.02
3245	37.45	PK	H	26.44	6.11	27.25	42.75	74.00	31.25
3245	24.23	AV	H	26.44	6.11	27.25	29.53	54.00	24.47
High Channel: 2480 MHz									
2480	66.55	PK	H	24.96	5.39	0.00	96.90	N/A	N/A
2480	61.19	AV	H	24.96	5.39	0.00	91.54	N/A	N/A
2480	56.15	PK	V	24.96	5.39	0.00	86.50	N/A	N/A
2480	50.55	AV	V	24.96	5.39	0.00	80.90	N/A	N/A
2483.5	28.35	PK	H	24.97	5.39	0.00	58.71	74.00	15.29
2483.5	14.96	AV	H	24.97	5.39	0.00	45.32	54.00	8.68
4960	38.59	PK	H	30.02	7.54	28.71	47.44	74.00	26.56
4960	25.38	AV	H	30.02	7.54	28.71	34.23	54.00	19.77
7440	38.41	PK	H	34.30	9.14	34.67	47.18	74.00	26.82
7440	25.26	AV	H	34.30	9.14	34.67	34.03	54.00	19.97
3953	37.61	PK	H	28.11	6.85	26.99	45.58	74.00	28.42
3953	24.42	AV	H	28.11	6.85	26.99	32.39	54.00	21.61

FCC §15.247(a) (2)& RSS-247 §5.2 a)–6 dB EMISSION BANDWIDTH

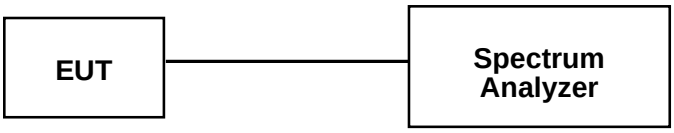
Applicable Standard

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	EMI Test Receiver	ESCI	101121	2017-03-02	2018-03-02
Unknown	RF Cable	Unknown	C-2	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	25.5~27.5 °C
Relative Humidity:	53~61 %
ATM Pressure:	98~99.6 kPa

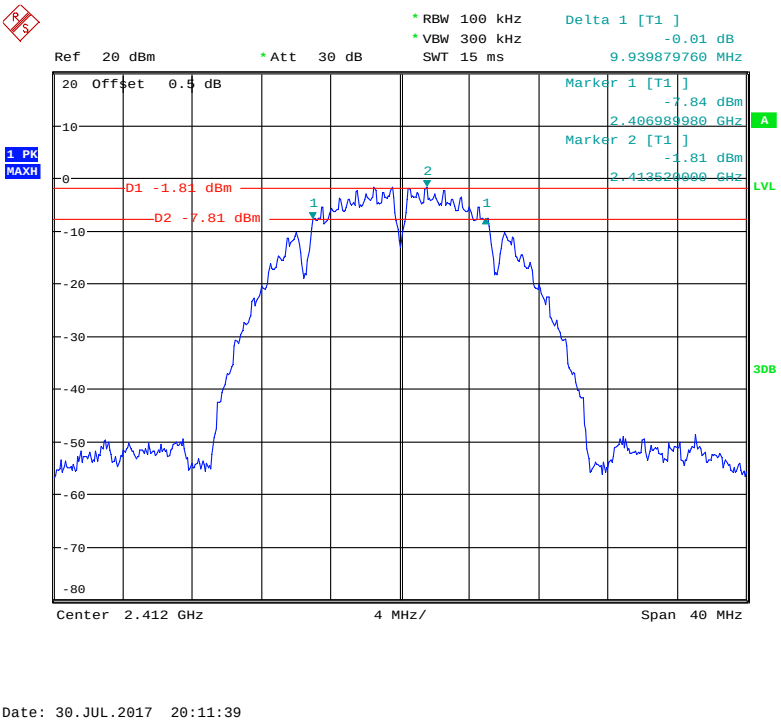
The testing was performed by Crazy He from 2017-07-23 to 2017-07-30.

Test Mode: Transmitting

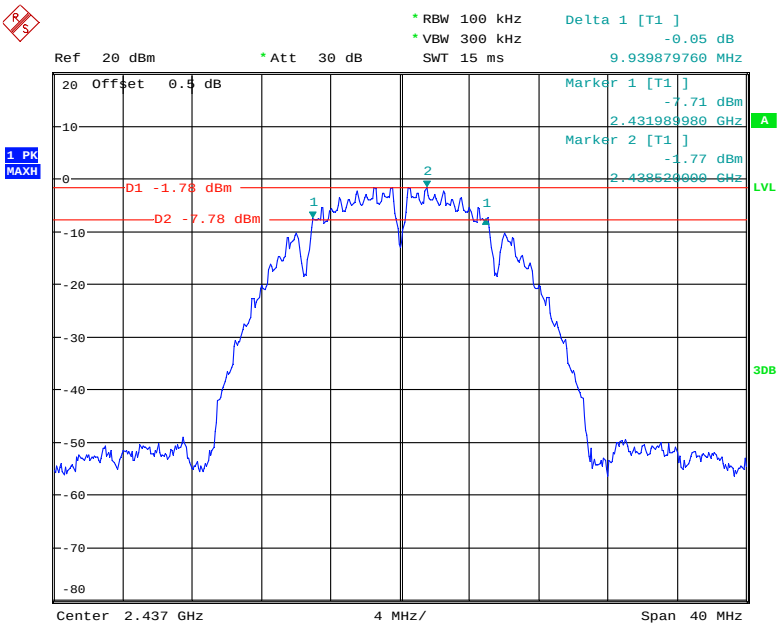
Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	9.94	≥0.5
	Middle	2437	9.94	≥0.5
	High	2462	9.62	≥0.5
802.11g	Low	2412	16.48	≥0.5
	Middle	2437	16.48	≥0.5
	High	2462	16.48	≥0.5
802.11n20	Low	2412	17.92	≥0.5
	Middle	2437	17.6	≥0.5
	High	2462	17.6	≥0.5
802.11n40	Low	2422	36.48	≥0.5
	Middle	2437	36.32	≥0.5
	High	2452	36.32	≥0.5
BLE	Low	2402	0.72	≥0.5
	Middle	2440	0.72	≥0.5
	High	2480	0.72	≥0.5

802.11b Low Channel

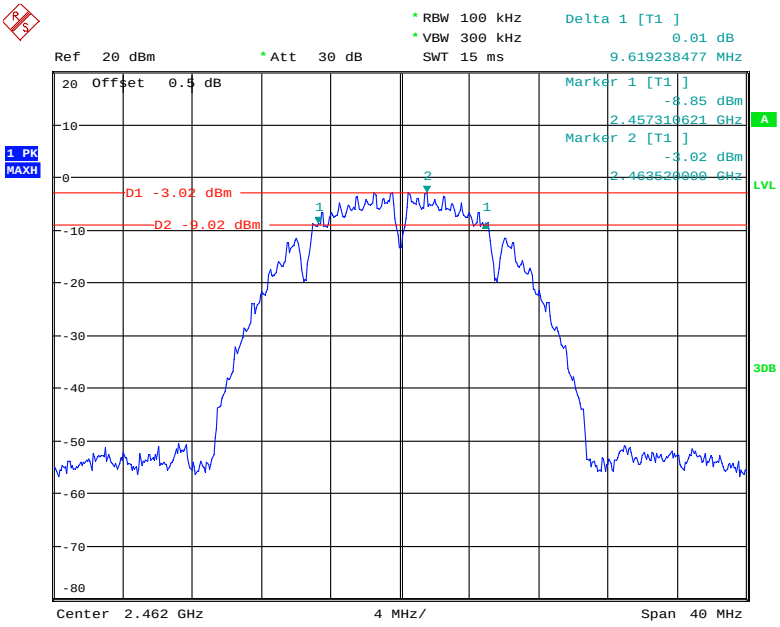


802.11b Middle Channel



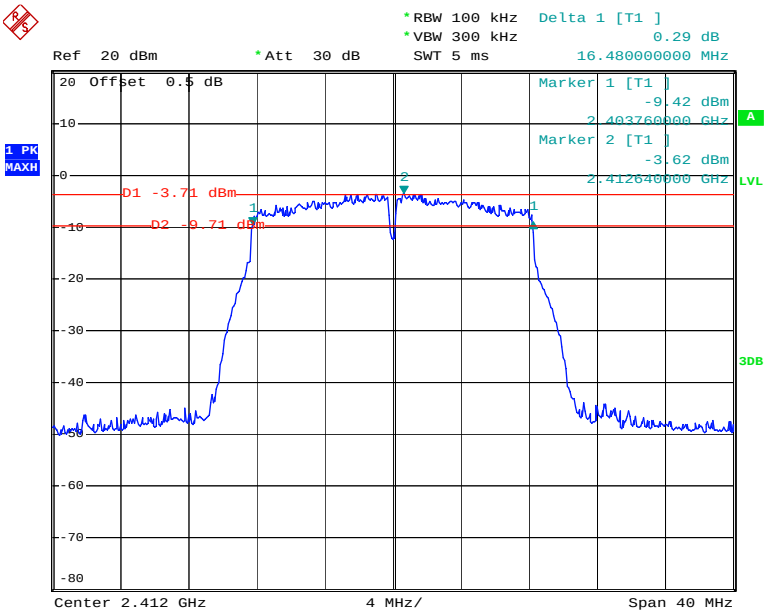
Date: 30.JUL.2017 20:13:54

802.11b High Channel



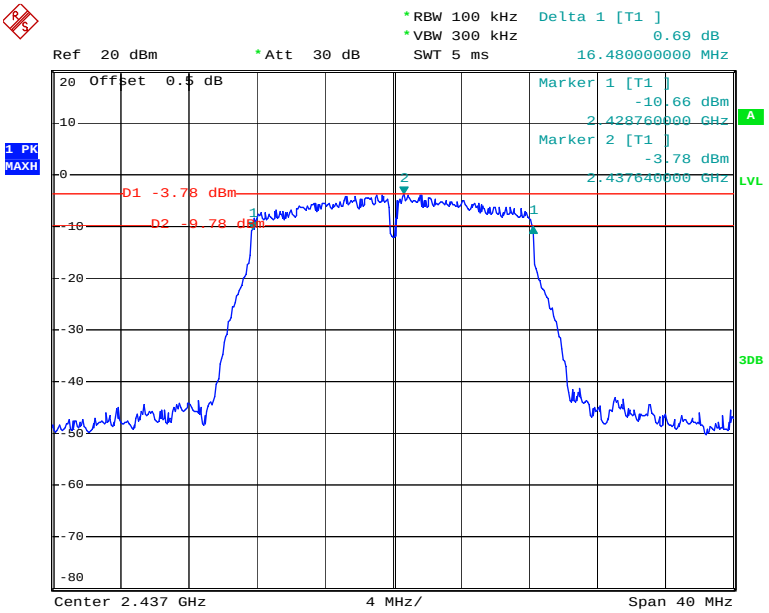
Date: 30.JUL.2017 20:15:29

802.11g Low Channel



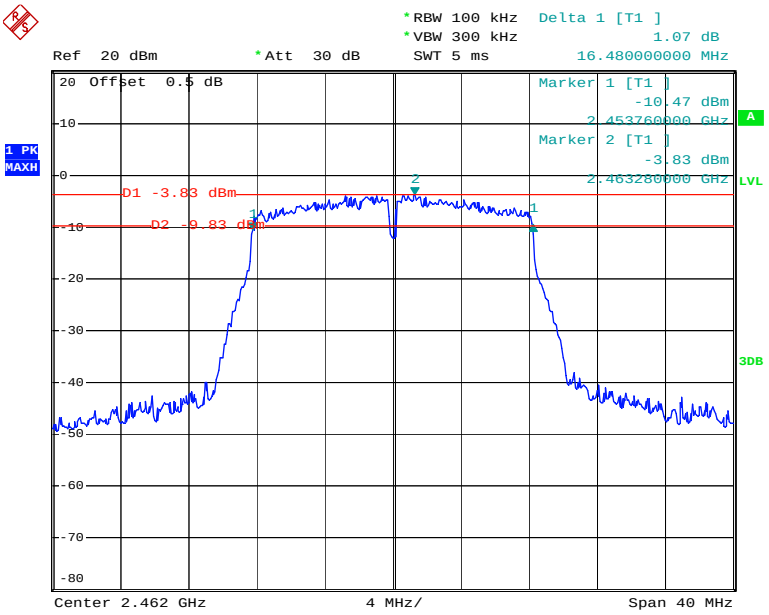
Date: 23.JUL.2017 15:43:38

802.11g Middle Channel



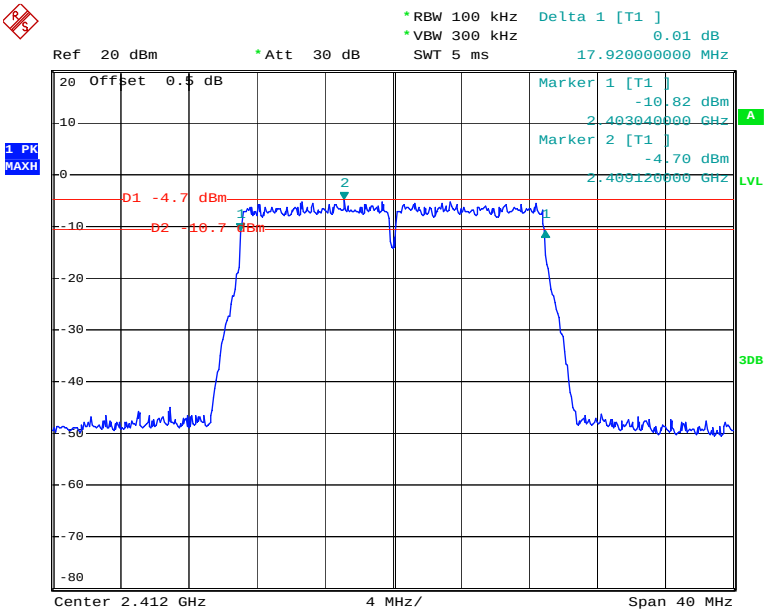
Date: 23.JUL.2017 15:45:42

802.11g High Channel



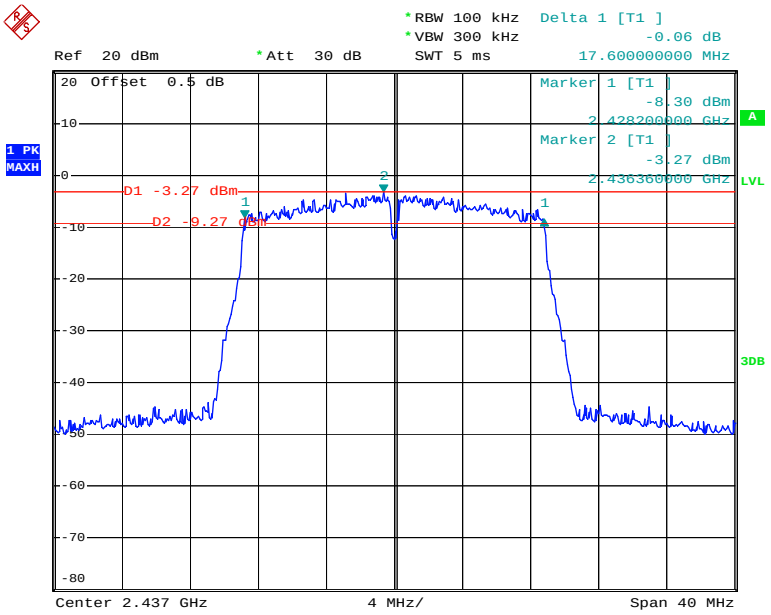
Date: 23.JUL.2017 15:50:03

802.11n ht20 Low Channel



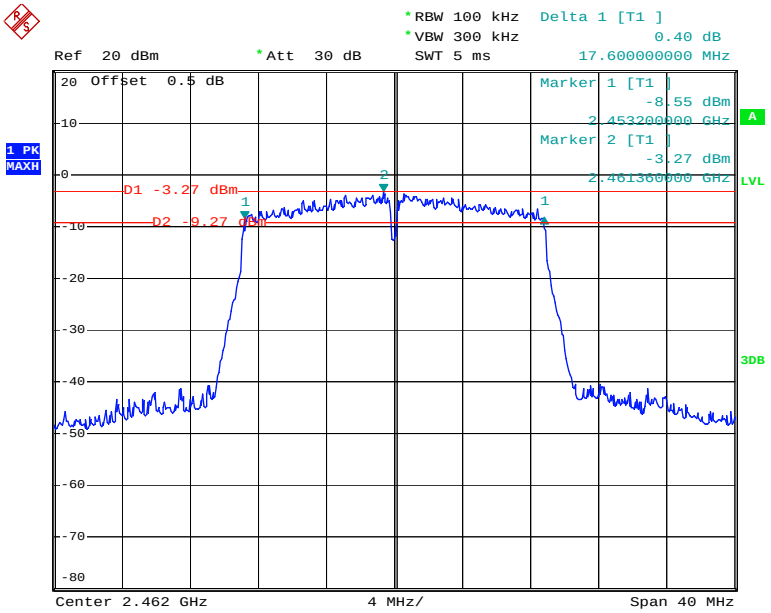
Date: 23.JUL.2017 15:51:56

802.11n ht20 Middle Channel



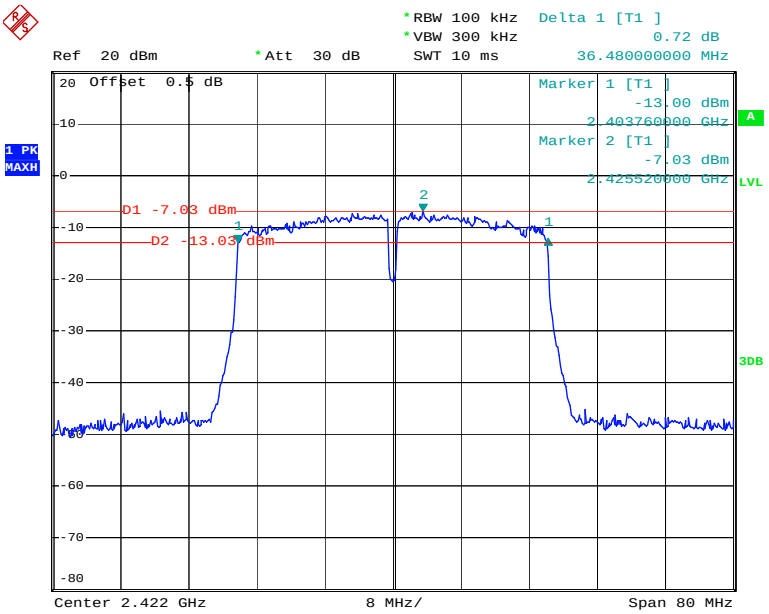
Date: 23.JUL.2017 15:53:51

802.11n ht20 High Channel



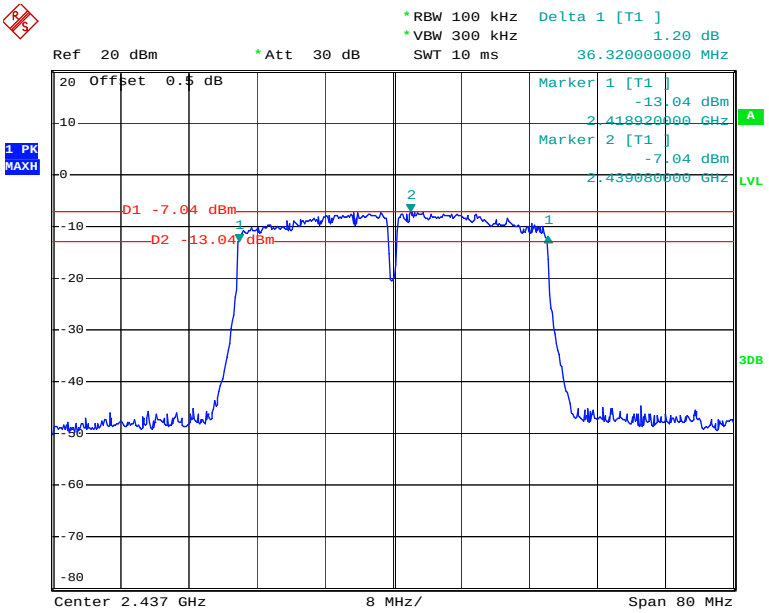
Date: 23.JUL.2017 15:55:20

802.11n ht40 Low Channel



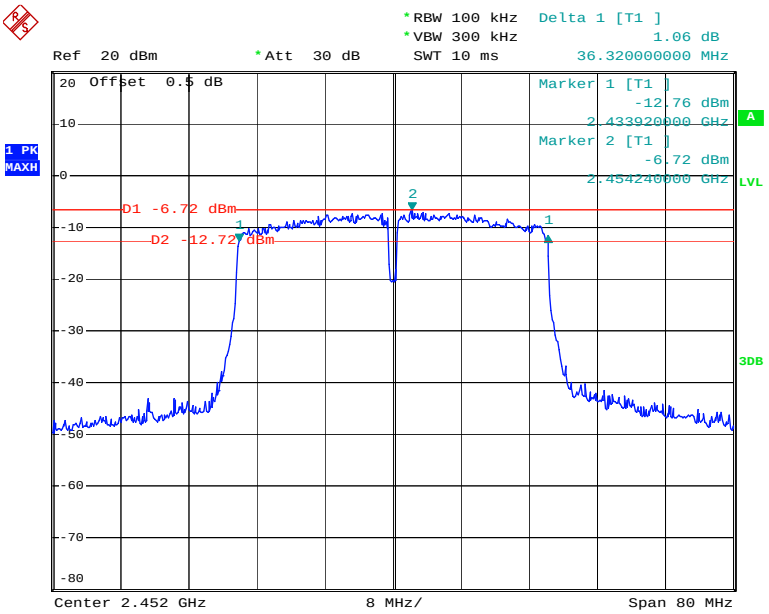
Date: 23.JUL.2017 15:57:13

802.11n ht40 Middle Channel



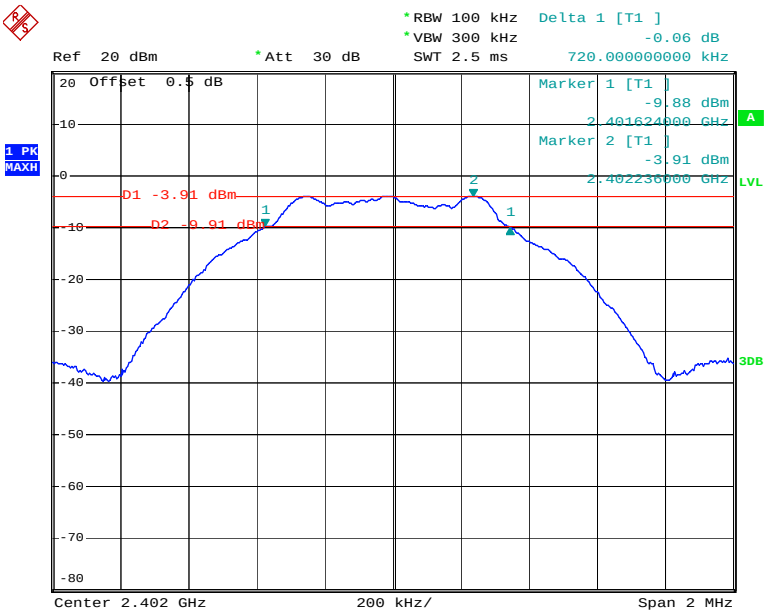
Date: 23.JUL.2017 16:01:11

802.11n ht40 High Channel



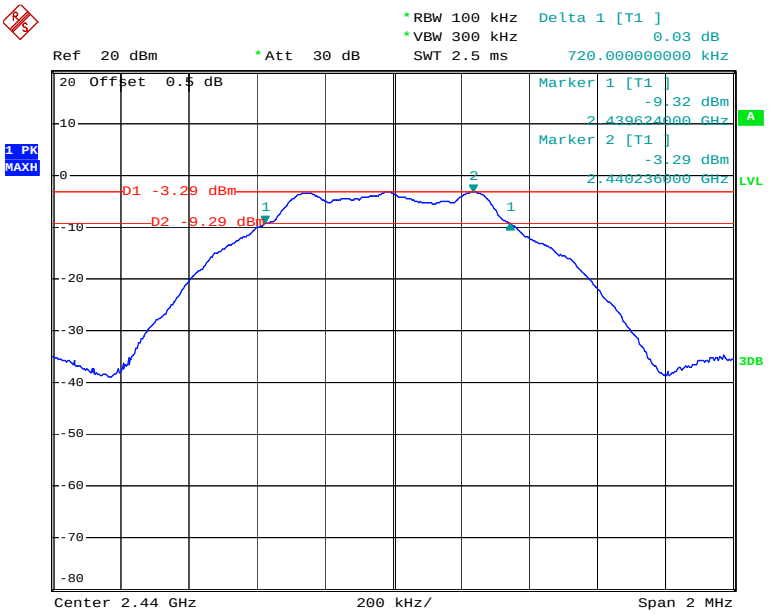
Date: 23.JUL.2017 16:03:35

BLE Low Channel



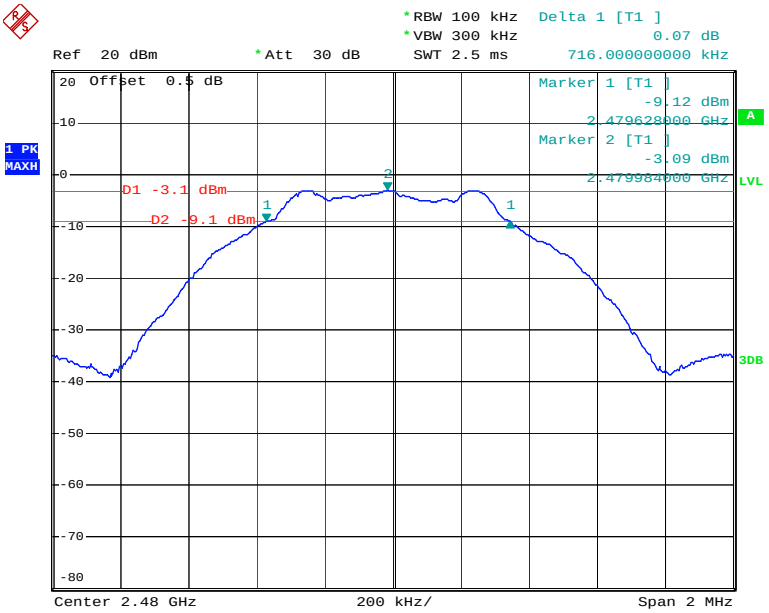
Date: 23.JUL.2017 16:07:11

BLE Middle Channel



Date: 23.JUL.2017 16:08:44

BLE High Channel



Date: 23.JUL.2017 16:09:51

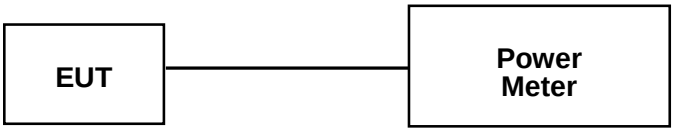
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER

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 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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2016-11-03	2017-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2016-11-03	2017-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2016-11-03	2017-11-03
Unknown	RF Cable	Unknown	C-2	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	25.5~27.5 °C
Relative Humidity:	53~61 %
ATM Pressure:	98~99.6 kPa

The testing was performed by Crazy He from 2017-07-23 to 2017-07-30.

Test Mode: Transmitting

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

Test mode	Channel	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Max Conducted Average Output Power (dBm)	Limit (dBm)
802.11b	Low	2412	9.29	8.87	30
	Middle	2437	9.32	8.9	30
	High	2462	7.93	7.74	30
802.11g	Low	2412	18.17	9.56	30
	Middle	2437	17.7	9.3	30
	High	2462	17.92	9.37	30
802.11n20	Low	2412	17.53	9.02	30
	Middle	2437	18.22	9.28	30
	High	2462	18.26	9.36	30
802.11n40	Low	2422	18.19	9.48	30
	Middle	2437	18.16	9.33	30
	High	2452	18.1	9.28	30
BLE	Low	2402	-2.55	/	30
	Middle	2440	-1.94	/	30
	High	2480	-1.73	/	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	EMI Test Receiver	ESCI	101121	2017-03-02	2018-03-02
Unknown	RF Cable	Unknown	C-2	Each Time	/

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

Test Data

Environmental Conditions

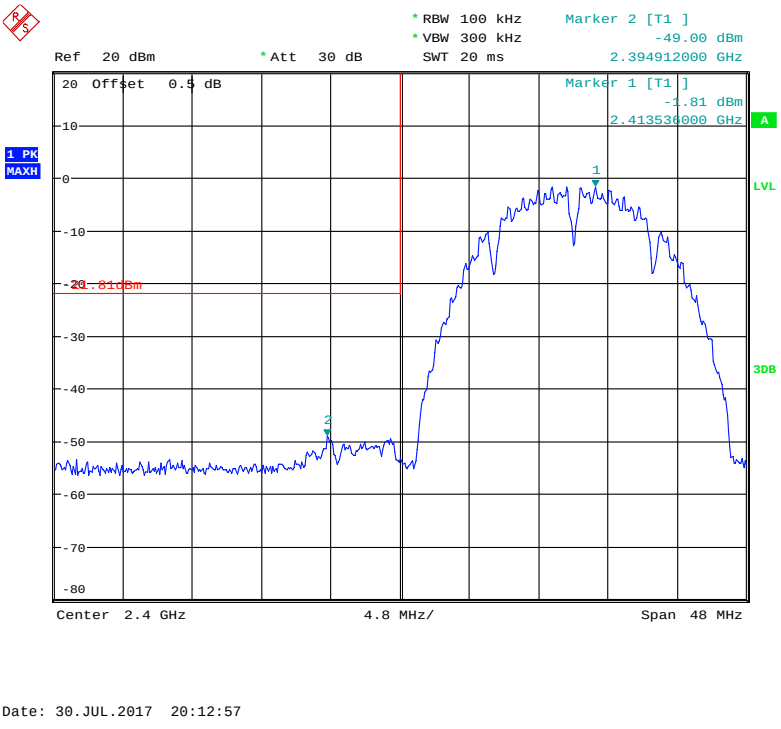
Temperature:	25.5~27.5 °C
Relative Humidity:	53~61 %
ATM Pressure:	98~99.6 kPa

The testing was performed by Crazy He from 2017-07-23 to 2017-07-30.

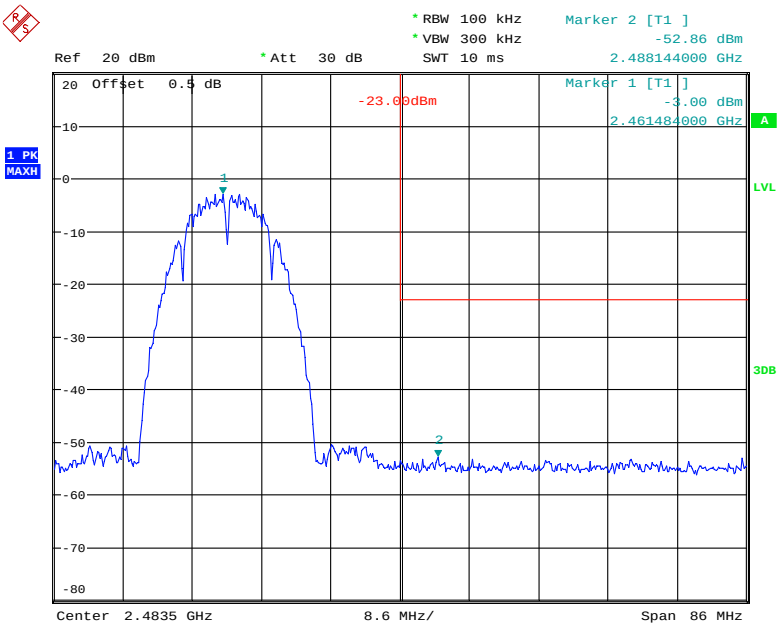
Test mode: Transmitting

Test Result: Compliant. Please refer to following plots.

802.11b: Band Edge, Left Side

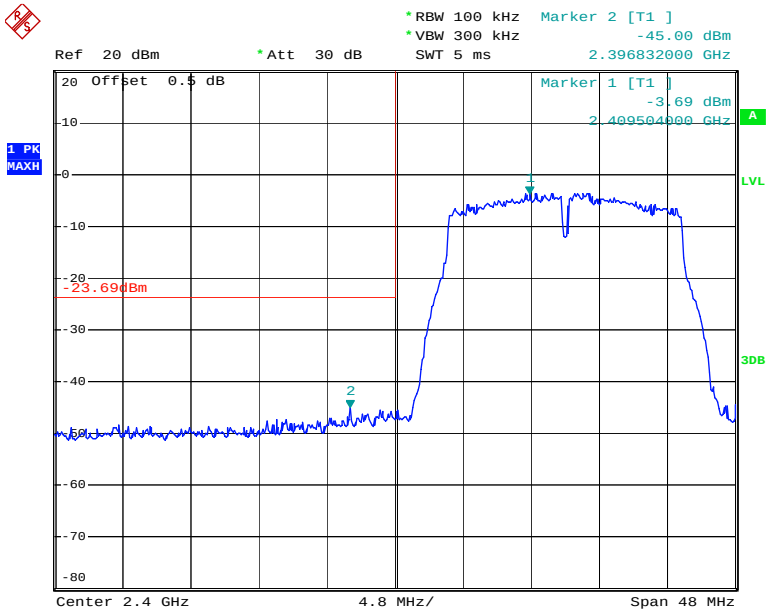


802.11b: Band Edge, Right Side



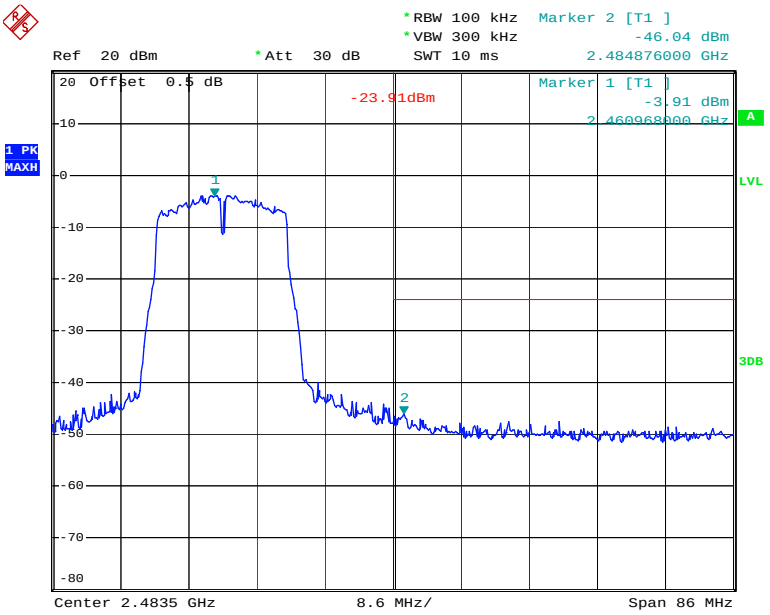
Date: 30.JUL.2017 20:16:53

802.11g: Band Edge, Left Side



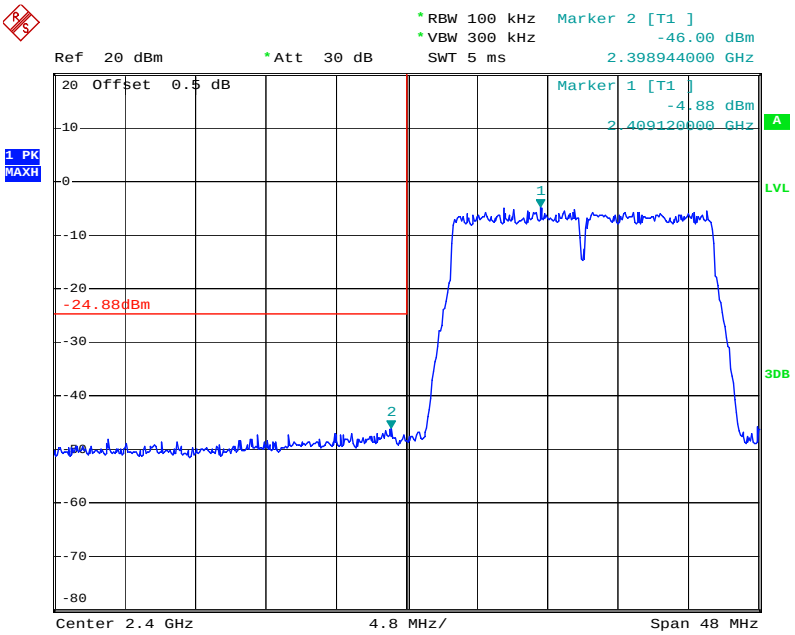
Date: 23.JUL.2017 15:44:50

802.11g: Band Edge, Right Side



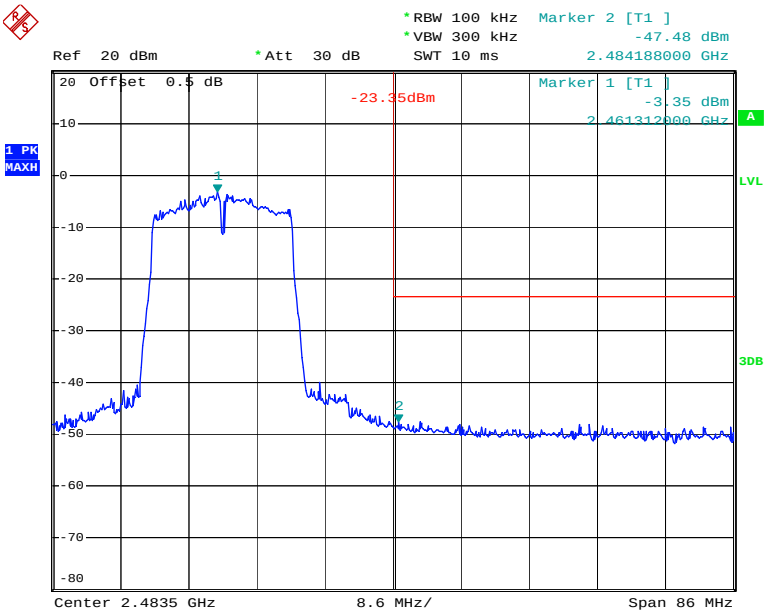
Date: 23.JUL.2017 15:51:05

802.11n ht20 Band Edge, Left Side



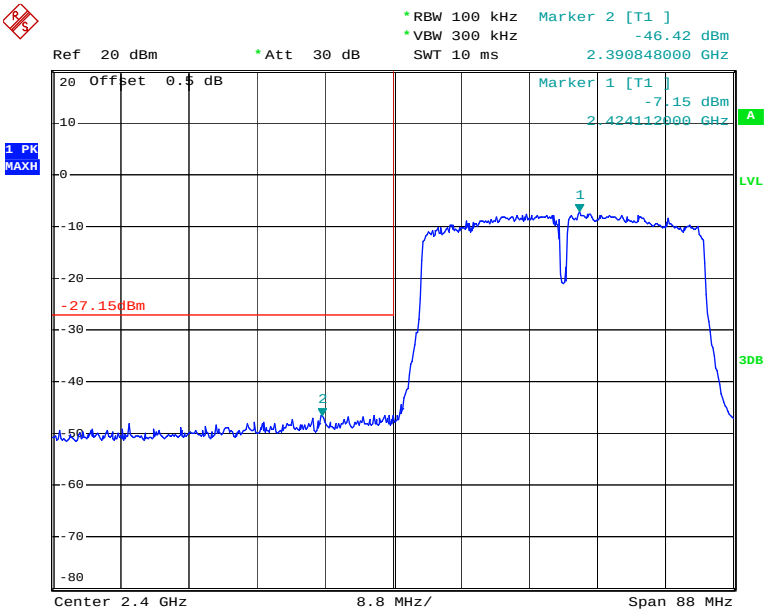
Date: 23.JUL.2017 15:53:00

802.11n ht20 Band Edge, Right Side



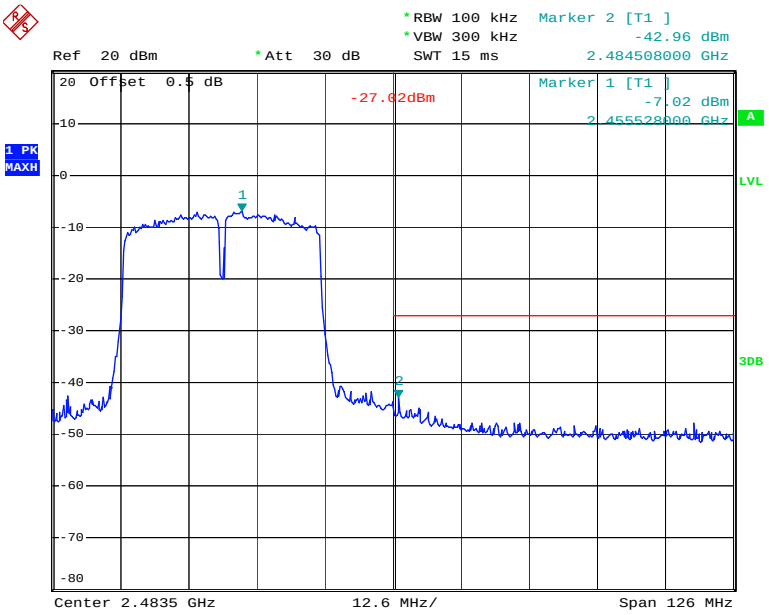
Date: 23.JUL.2017 15:56:22

802.11n ht40 Band Edge, Left Side



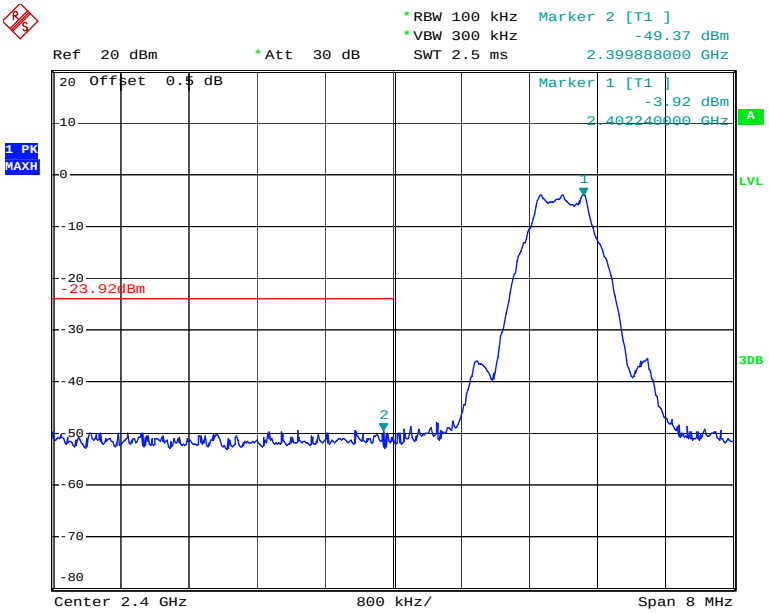
Date: 23.JUL.2017 15:58:41

802.11n ht40 Band Edge, Right Side



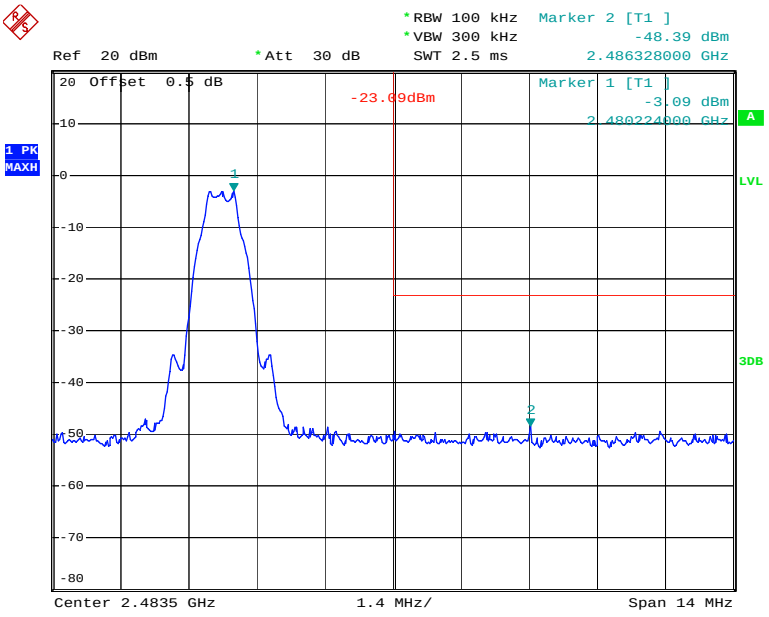
Date: 23.JUL.2017 16:05:00

BLE Band Edge， Left Side



Date: 23.JUL.2017 16:08:04

BLE Band Edge, Right Side



Date: 23.JUL.2017 16:10:51

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

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	EMI Test Receiver	ESCI	101121	2017-03-02	2018-03-02
Unknown	RF Cable	Unknown	C-2	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	25.5~27.5 °C
Relative Humidity:	53~61 %
ATM Pressure:	98~99.6 kPa

The testing was performed by Crazy He from 2017-07-23 to 2017-07-30.

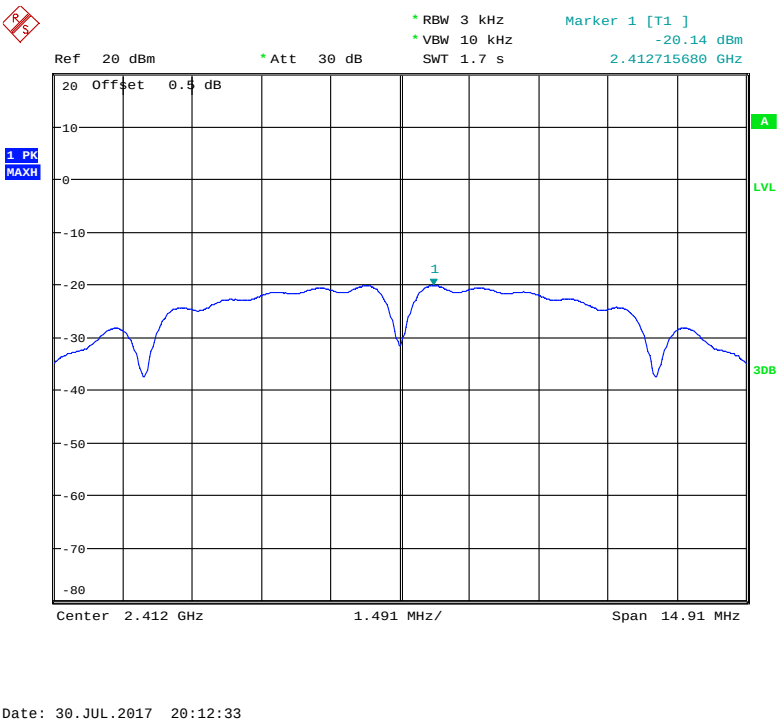
Test Result: Compliance

Test Mode: Transmitting

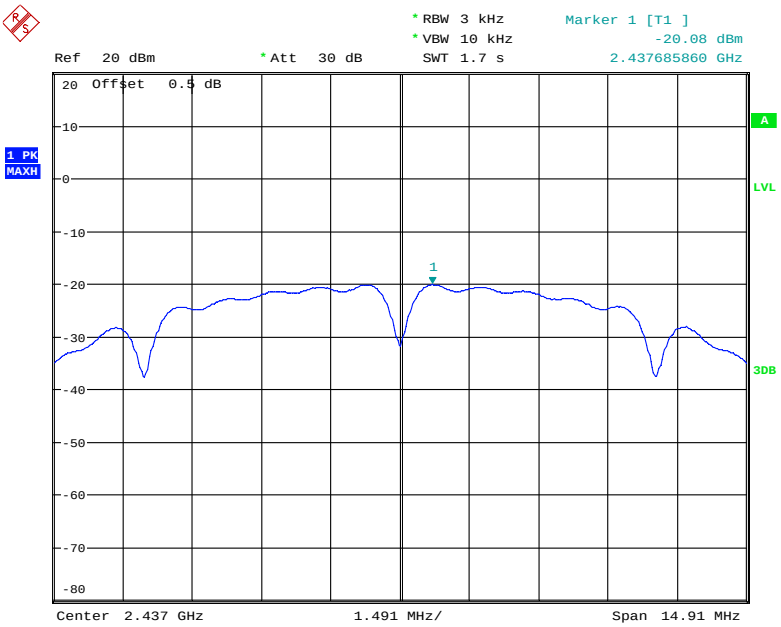
Test Result: Compliant. Please refer to the following table and plots

Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	Low	2412	-20.14	≤8
	Middle	2437	-20.08	≤8
	High	2462	-21.37	≤8
802.11g	Low	2412	-17.28	≤8
	Middle	2437	-17.43	≤8
	High	2462	-18.05	≤8
802.11n20	Low	2412	-18.44	≤8
	Middle	2437	-17.75	≤8
	High	2462	-17.5	≤8
802.11n40	Low	2422	-18.86	≤8
	Middle	2437	-19.38	≤8
	High	2452	-18.61	≤8
BLE	Low	2402	-18.47	≤8
	Middle	2440	-17.93	≤8
	High	2480	-17.66	≤8

Power Spectral Density, 802.11b Low Channel

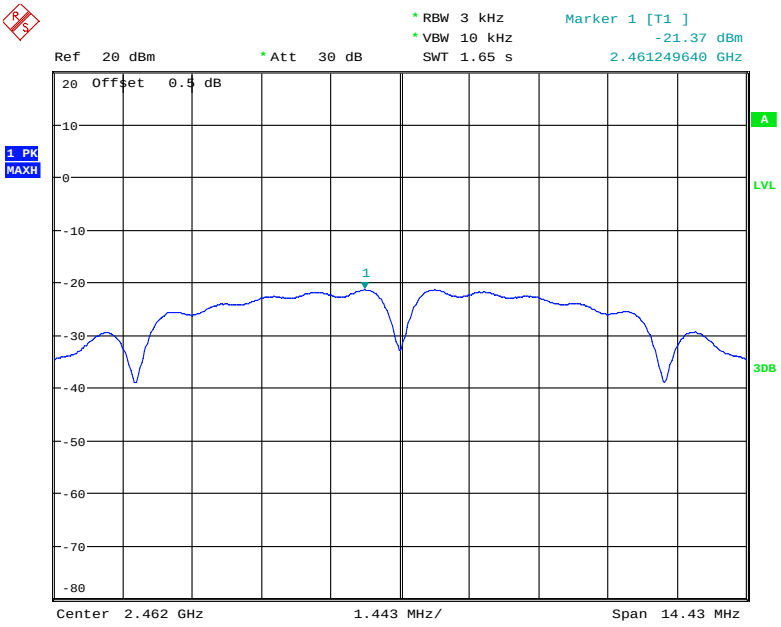


Power Spectral Density, 802.11b Middle Channel



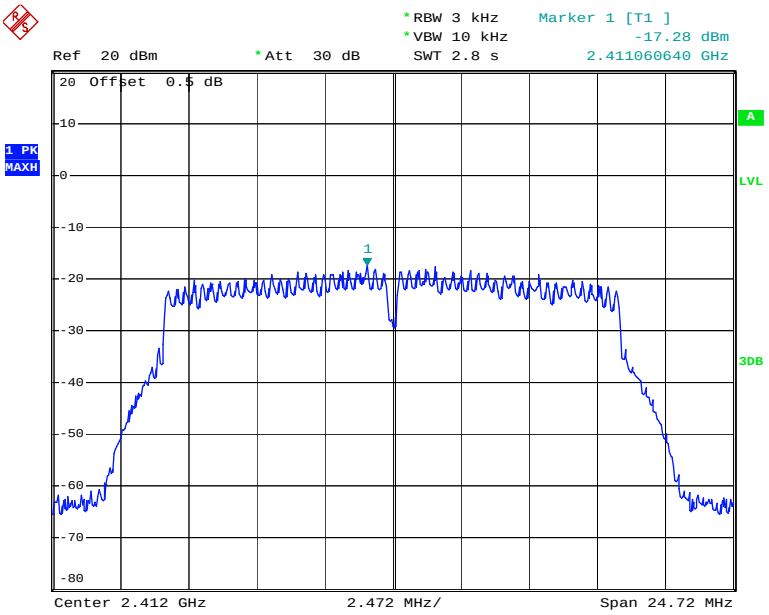
Date: 30.JUL.2017 20:14:45

Power Spectral Density, 802.11b High Channel



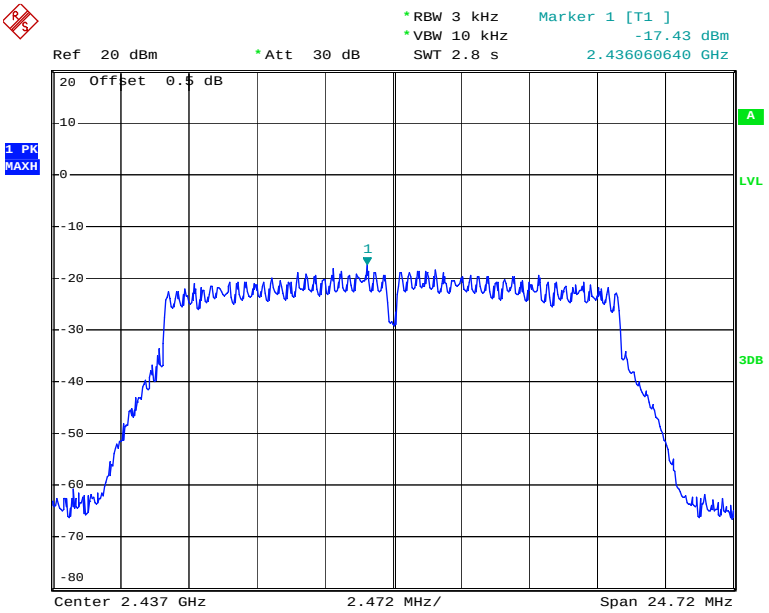
Date: 30.JUL.2017 20:16:22

Power Spectral Density, 802.11g Low Channel



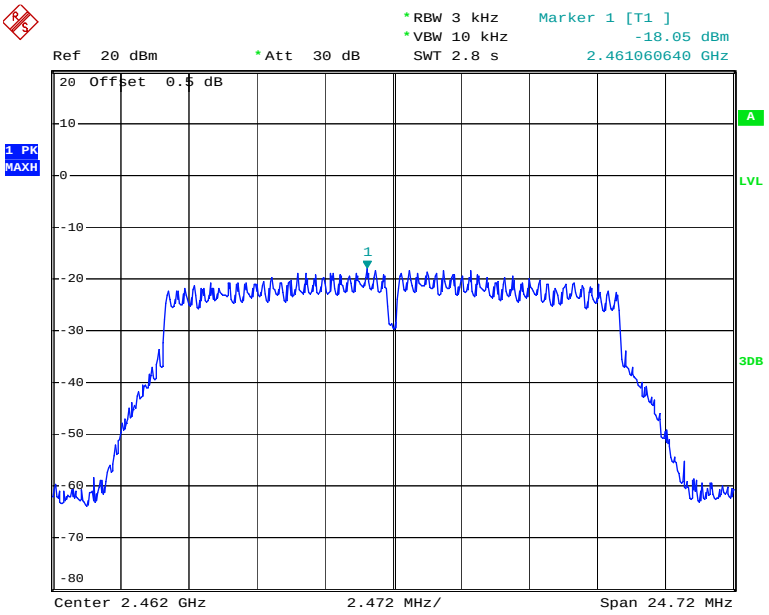
Date: 23.JUL.2017 15:44:26

Power Spectral Density, 802.11g Middle Channel



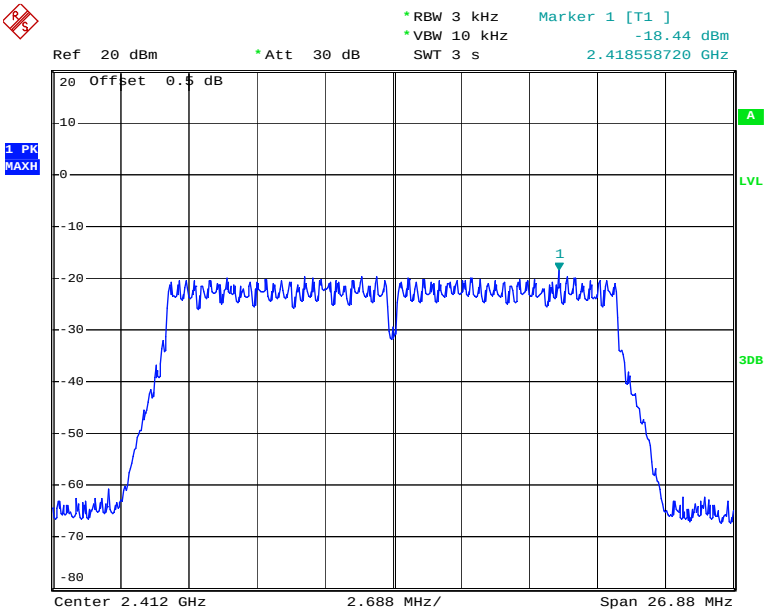
Date: 23.JUL.2017 15:46:31

Power Spectral Density, 802.11g High Channel



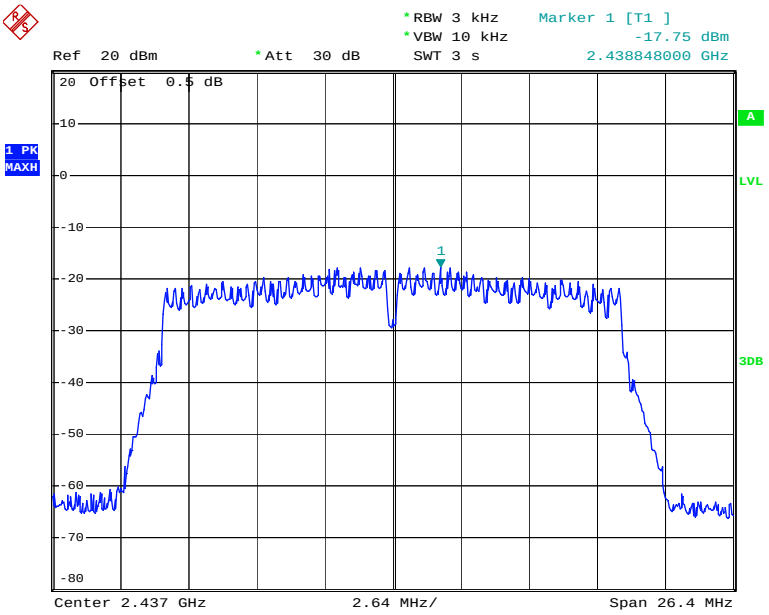
Date: 23.JUL.2017 15:50:48

Power Spectral Density, 802.11n ht20 Low Channel



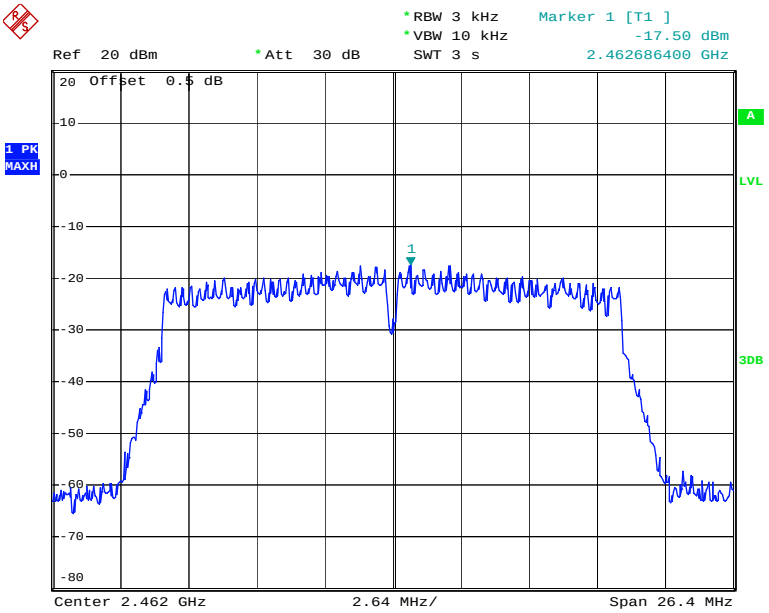
Date: 23.JUL.2017 15:52:41

Power Spectral Density, 802.11n ht20 Middle Channel



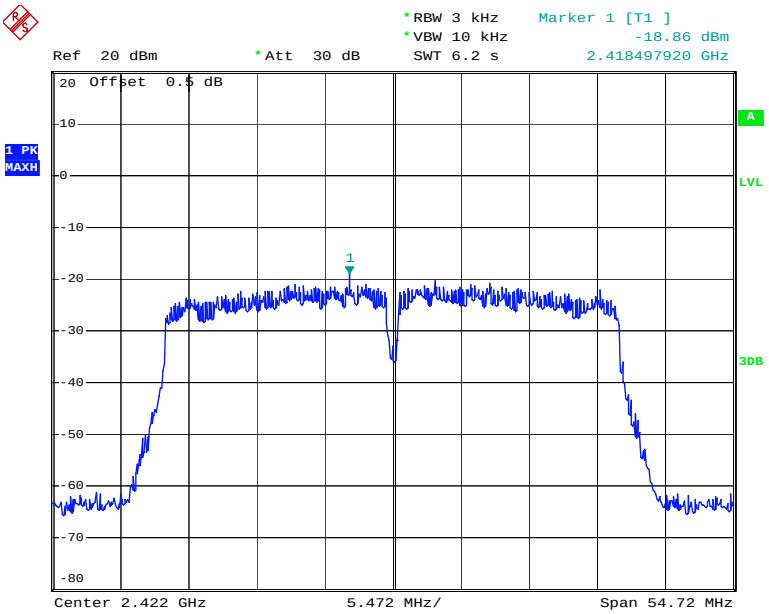
Date: 23.JUL.2017 15:54:36

Power Spectral Density, 802.11n ht20 High Channel



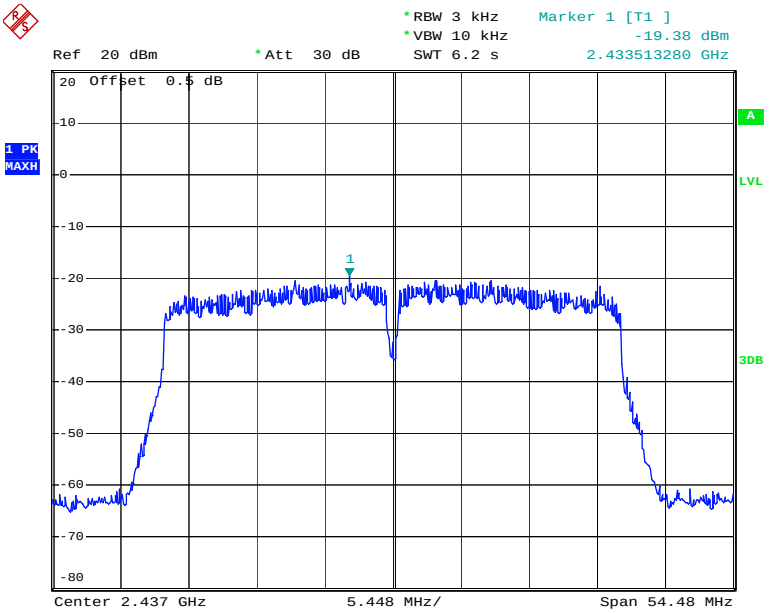
Date: 23.JUL.2017 15:56:04

Power Spectral Density, 802.11n ht40 Low Channel



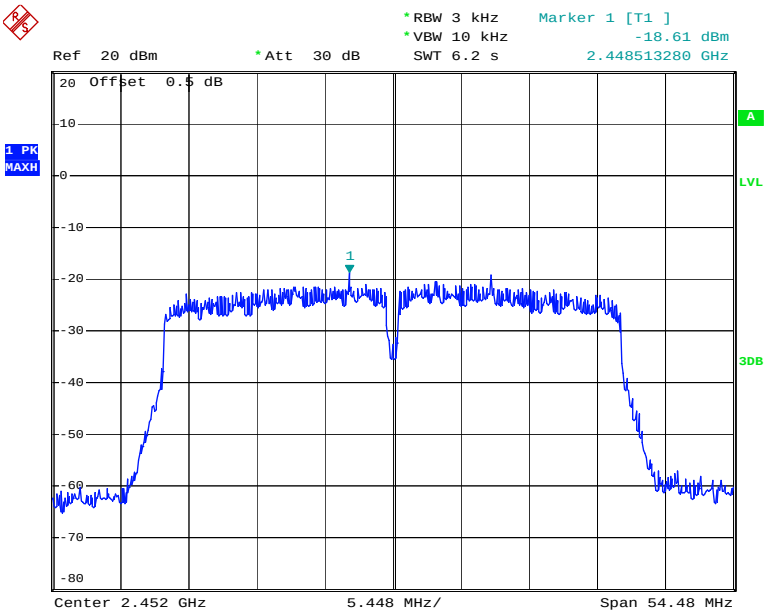
Date: 23.JUL.2017 15:58:23

Power Spectral Density, 802.11n ht40 Middle Channel



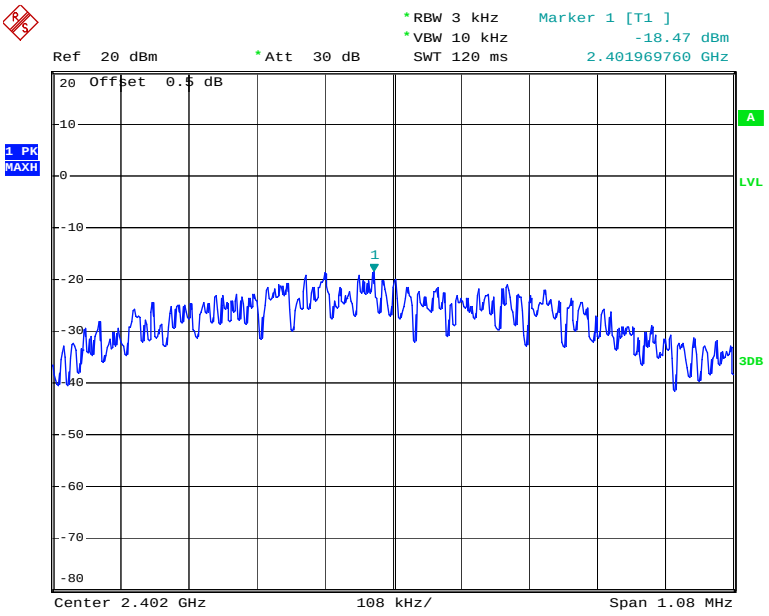
Date: 23.JUL.2017 16:02:32

Power Spectral Density, 802.11n ht40 High Channel



Date: 23.JUL.2017 16:04:35

Power Spectral Density, BLE Low Channel



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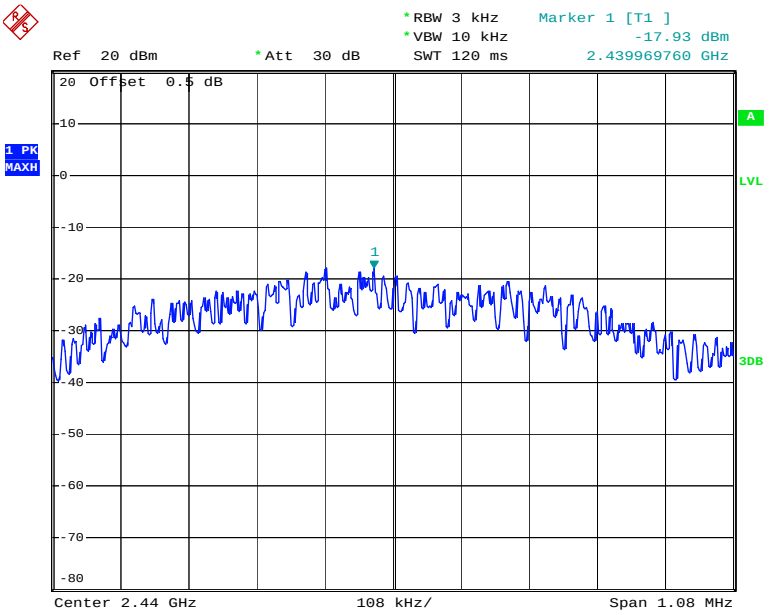
Power Spectral Density, BLE Middle Channel



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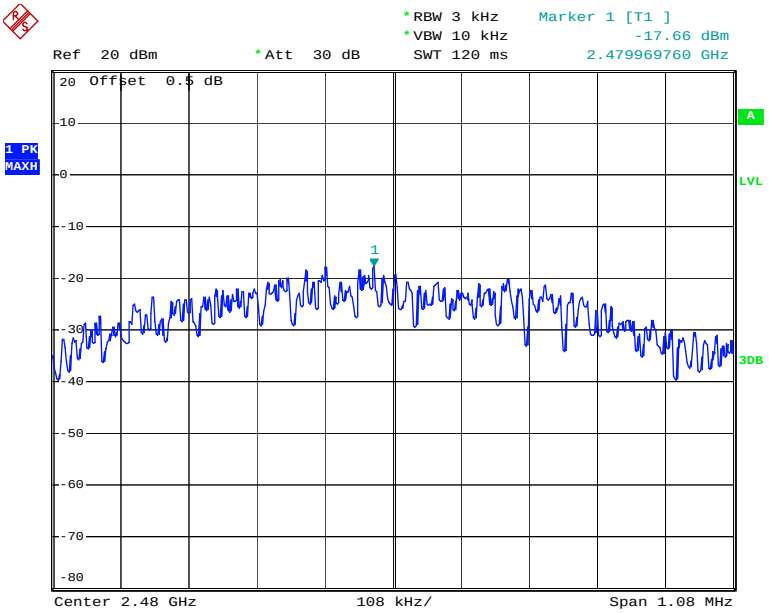
Power Spectral Density, BLE High Channel



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