TESTING LABORATORY
CERTIFICATE #4820.01

FCC PART 15.247

TEST REPORT

For

AKUVOX (XIAMEN) NETWORKS CO., LTD.

10/F, No.56, Software Park II , Xiamen, China

FCC ID: 2AHCR-C317X

Report Type:	**Product Type:**
Original Report	Indoor Monitor

Report Number:	RXM190510053-00C
Report Date:	2019-07-08
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TABLE OF CONTENTS

GENERAL INFORMATION **4**
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 4
OBJECTIVE 4
RELATED SUBMITTAL(S)/GRANT(S) 4
TEST METHODOLOGY 4
MEASUREMENT UNCERTAINTY 5
TEST FACILITY 5
SYSTEM TEST CONFIGURATION **6**
DESCRIPTION OF TEST CONFIGURATION 6
EUT EXERCISE SOFTWARE 7
EQUIPMENT MODIFICATIONS 10
SUPPORT EQUIPMENT LIST AND DETAILS 10
SUPPORT CABLE LIST AND DETAILS 10
BLOCK DIAGRAM OF TEST SETUP 11
SUMMARY OF TEST RESULTS **13**
FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE) **14**
APPLICABLE STANDARD 14
FCC §15.203 - ANTENNA REQUIREMENT **15**
APPLICABLE STANDARD 15
ANTENNA CONNECTOR CONSTRUCTION 15
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS **16**
APPLICABLE STANDARD 16
EUT SETUP 16
EMI TEST RECEIVER SETUP 16
TEST PROCEDURE 17
CORRECTED AMPLITUDE & MARGIN CALCULATION 17
TEST EQUIPMENT LIST AND DETAILS 17
TEST DATA 18
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS **22**
APPLICABLE STANDARD 22
EUT SETUP 22
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP 23
TEST PROCEDURE 23
CORRECTED AMPLITUDE & MARGIN CALCULATION 23
TEST EQUIPMENT LIST AND DETAILS 24
TEST DATA 24
FCC §15.247(a) (2)–6 dB EMISSION BANDWIDTH **45**
APPLICABLE STANDARD 45
TEST PROCEDURE 45
TEST EQUIPMENT LIST AND DETAILS 45
TEST DATA 45
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER **54**
APPLICABLE STANDARD 54
TEST PROCEDURE 54
TEST EQUIPMENT LIST AND DETAILS 54
TEST DATA 55

FCC §15.247(d)– 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....56
APPLICABLE STANDARD 56
TEST PROCEDURE 56
TEST EQUIPMENT LIST AND DETAILS.....56
TEST DATA 57
FCC §15.247(e) - POWER SPECTRAL DENSITY 62
APPLICABLE STANDARD 62
TEST PROCEDURE 62
TEST EQUIPMENT LIST AND DETAILS.....62
TEST DATA 62

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Indoor Monitor
EUT Model:	C317A
Multiple Models:	C317W
Rated Input Voltage:	DC12V from DC port or DC48V from POE port
External Dimension:	251 mm(L)*182.5mm(W)*22.6mm(H)
Serial Number:	190510053
EUT Received Date:	2019/5/14

Note: The series product model C317W *is electrically identical with model C317A, we selected C317A for fully testing, the differences details was explained in the declaration letter.*

Objective

This report is prepared on behalf of *AKUVOX (XIAMEN) NETWORKS CO., LTD* 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: 2AHCR-C317X

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And 558074 D01 15.247 Meas Guidance v05.

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

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

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Test Mode	M1	Adapter supply & Transmitting
	M2	PoE supply & Transmitting

For 2.4GHz band, total 11 channels are provided:

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

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

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

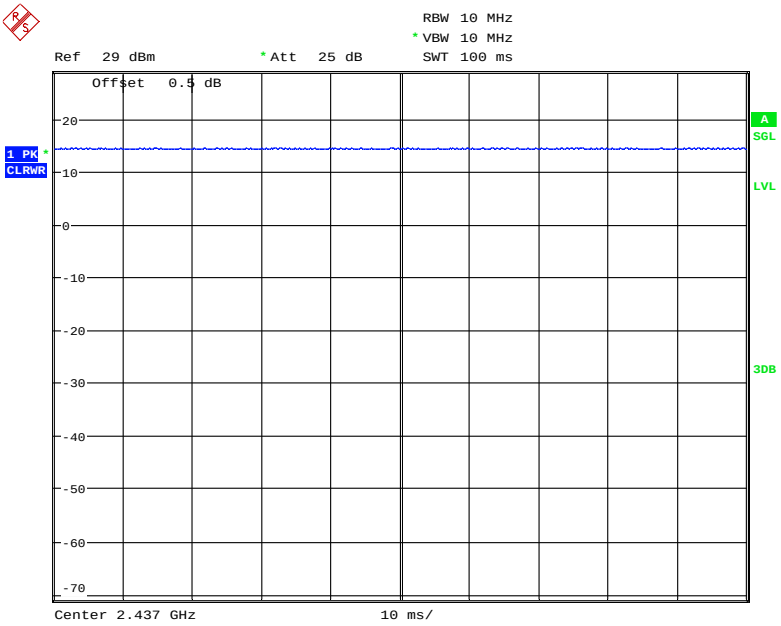
The software "RFTestTool" was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer:

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	Power level
802.11 b	Low	2412	1	default
	Middle	2437	1	default
	High	2462	1	default
802.11 g	Low	2412	6	default
	Middle	2437	6	default
	High	2462	6	default
802.11 n20	Low	2412	MCS0	default
	Middle	2437	MCS0	default
	High	2462	MCS0	default

The maximum duty cycle as following table:

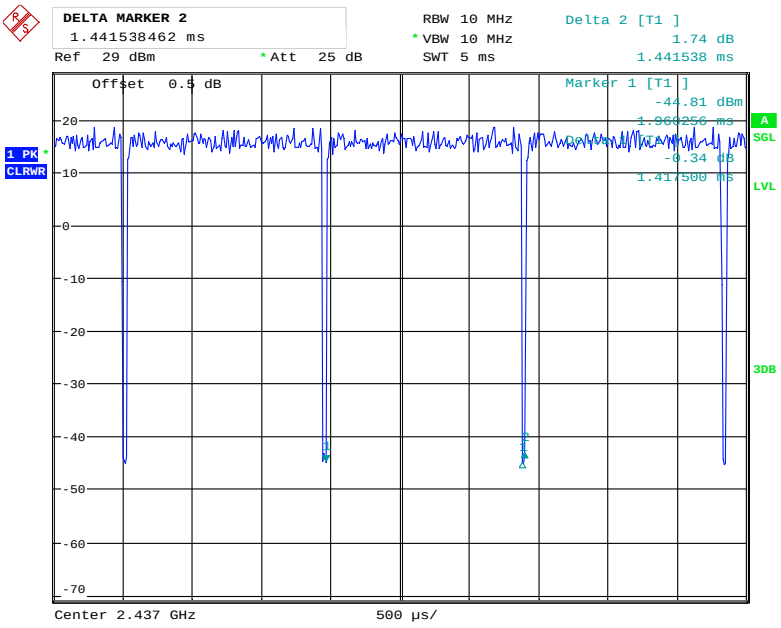
Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100
802.11g	1.418	1.442	98.34
802.11n ht20	1.337	1.361	98.24
BLE	0.413	0.629	65.66

802.11b



Date: 18.MAY.2019 10:07:14

802.11g



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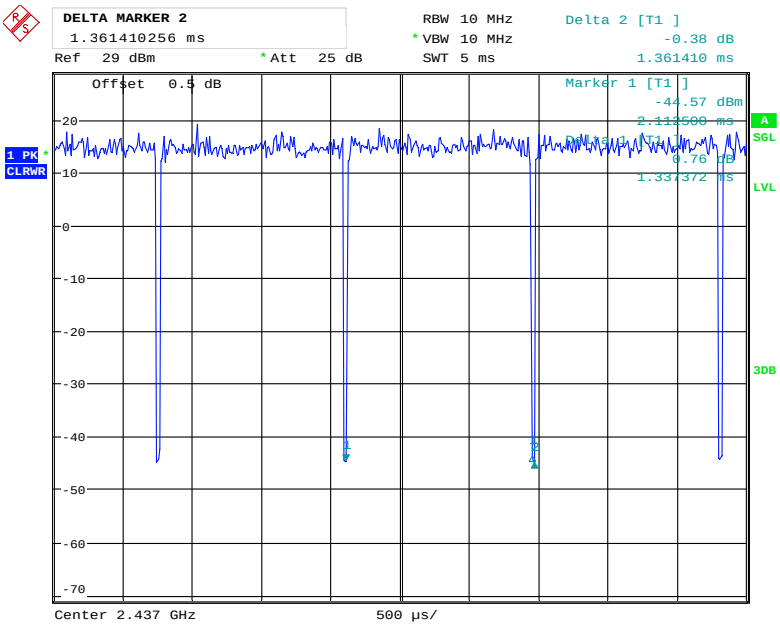
802.11n ht20



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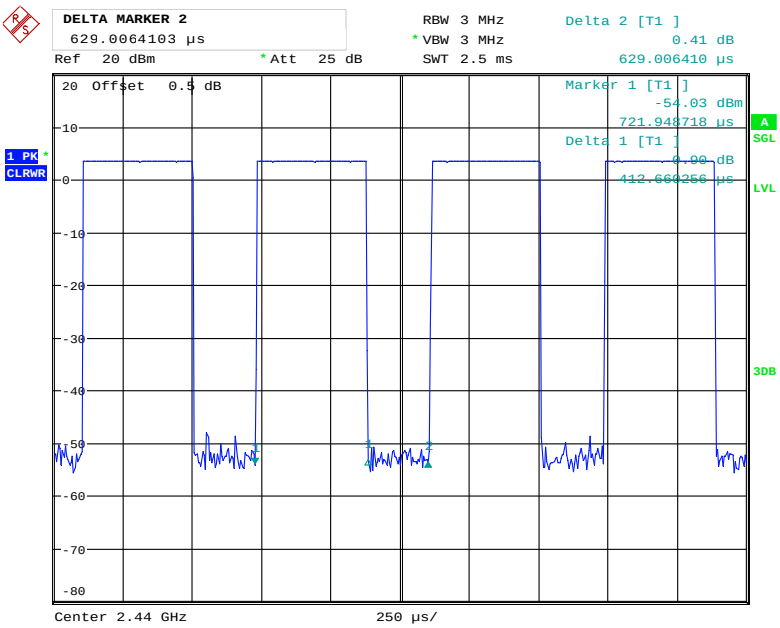
BLE



Date: 18.MAY.2019 16:58:27

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

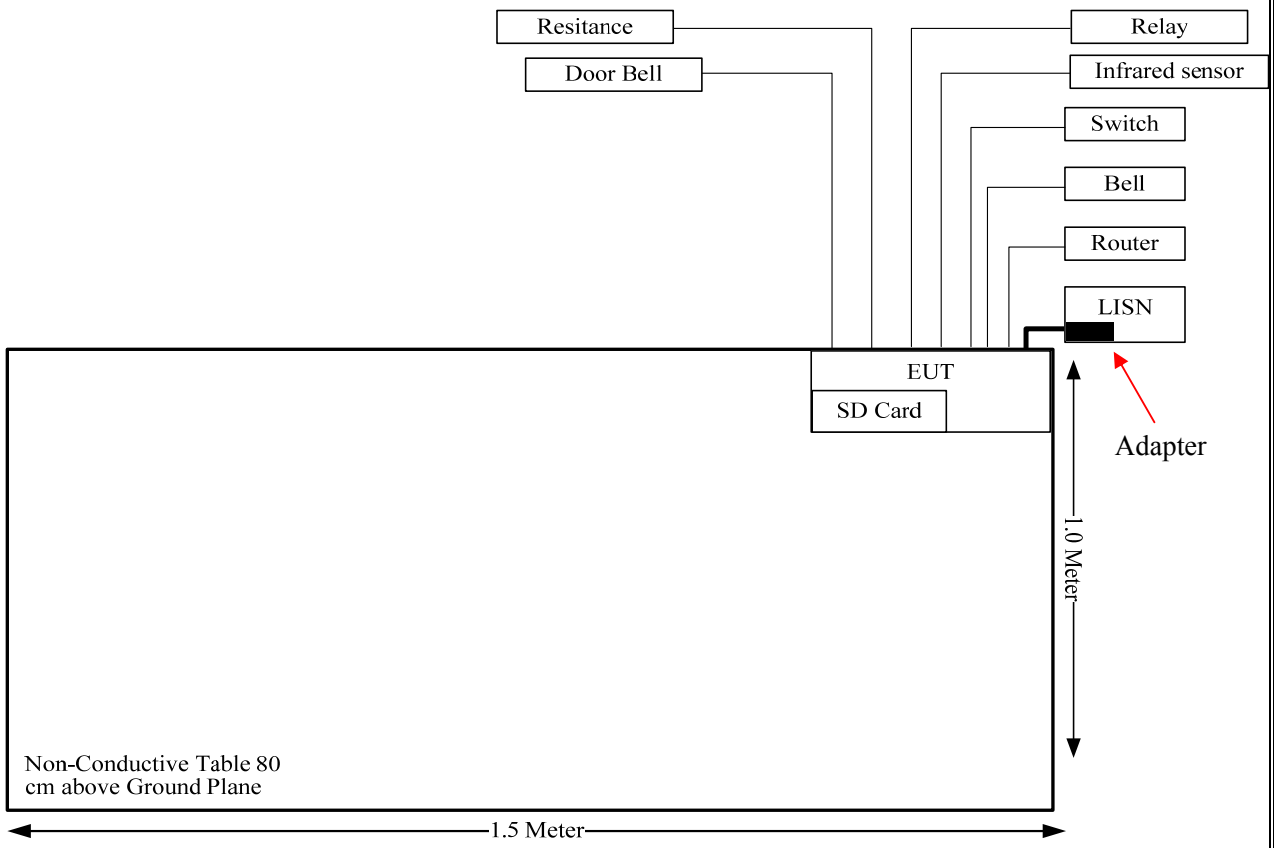
Manufacturer	Description	Model	Serial Number
Channel Well Technology	Adapter	2ABB018F EU	N/A
HUAWEI	SWITCHING POWER ADAPTER	PoE35-54A	N/A
Kingston	SD card	N/A	N/A
SIEMENS	Bell	5TD0102-1CC1	N/A
SALENS	Infrared sensor	RE200B	N/A
Schneider	Relay	RXM2LB2BD	N/A
AKUVOX	Doorbell	E10R	P1M40WMJ00299
TP-LINK	Switch	TL-SF1008P	114A297001782
xinsheng	Resistance	BX8-13	N/A
URSALINK	Router	UR75	621273906928

Support Cable List and Details

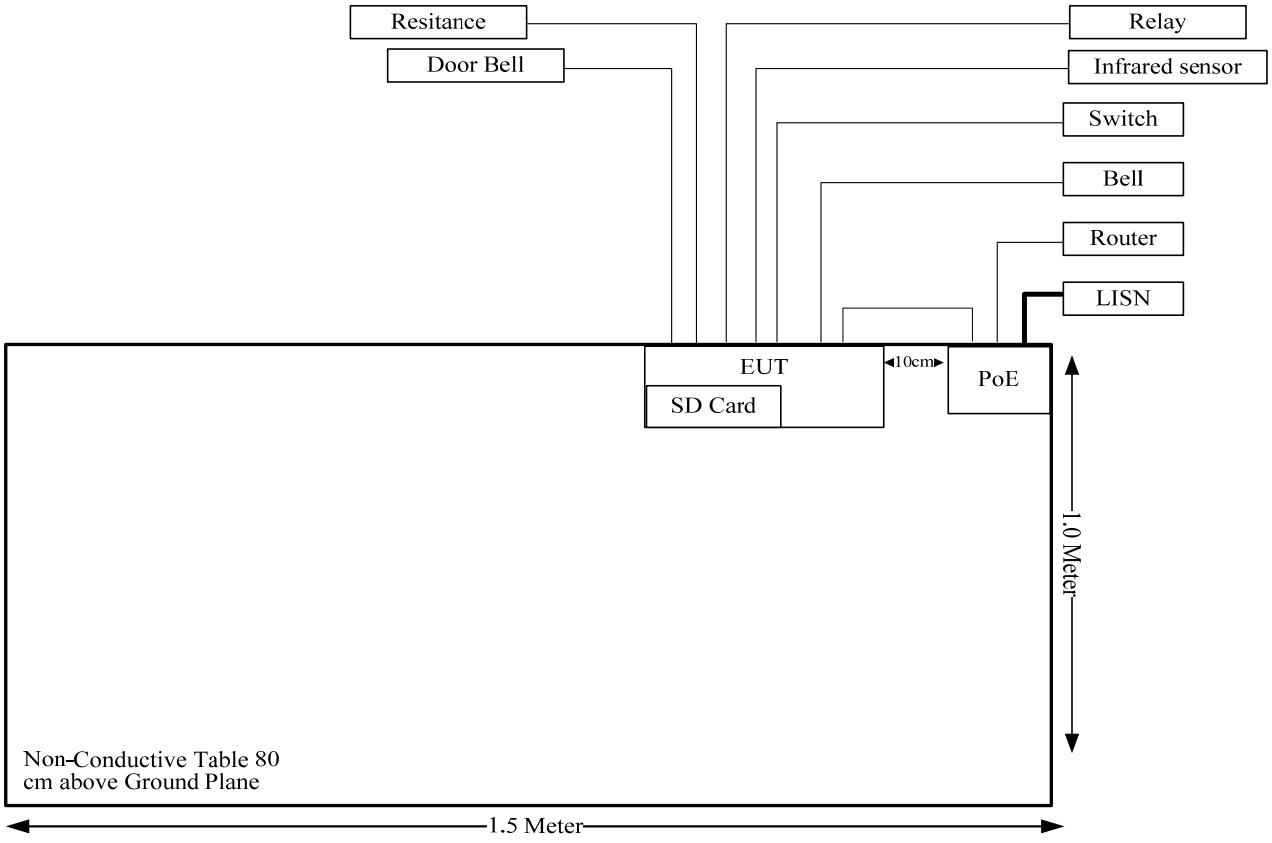
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	No	5	RJ45 Port of EUT	Doorbell
Signal Cable*8	No	No	5	IO Port of EUT	Infrared sensor
Signal Cable	No	No	5	BELL Port of EUT	Bell
Signal Cable	No	No	5	RS485 Port of EUT	Switch
Signal Cable	No	No	5	Relay Port of EUT	Relay
Signal Cable	No	No	5	12V_OUT Port of EUT	Resistance
RJ45 Cable	No	No	5	POE Port of EUT	Router
Adapter Cable	No	No	1.3	Adapter	EUT
RJ45 Cable	No	No	1	POE Port of EUT	SWITCHING POWER ADAPTER

Block Diagram of Test Setup

M1



M2


Resitance
Door Bell
Relay
Infrared sensor
Switch
Bell
Router
LISN
EUT
SD Card
10cm
PoE
1.0 Meter
Non-Conductive Table 80 cm above Ground Plane
1.5 Meter

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissable Exposure (MPE)	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 & §2.1091- 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) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	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^2);
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:

Mode	**Frequency (MHz)**	**Antenna Gain**		**Conducted output power including Tune-up Tolerance**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
		(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
WLAN	2412-2462	2.6	1.82	22.5	177.83	20.00	0.064	1.0
Bluetooth LE	2402-2480	2.6	1.82	5	3.16	20.00	0.001	1.0

Result: The device meet FCC MPE at 20 cm distance

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, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range
FPC	50	2.6 dBi/2.4~2.5GHz

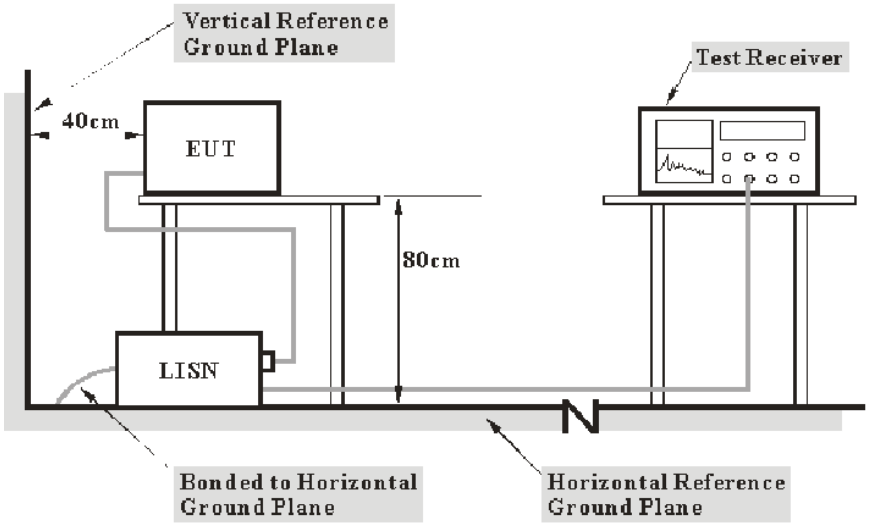
Result: Compliance.

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

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$
$C_f = A_C + VDF$

Herein,
V_C (cord. Reading): corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN
C_f: Correction Factor

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2018-12-10	2019-12-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-10	2019-12-10

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

Test Data

Environmental Conditions

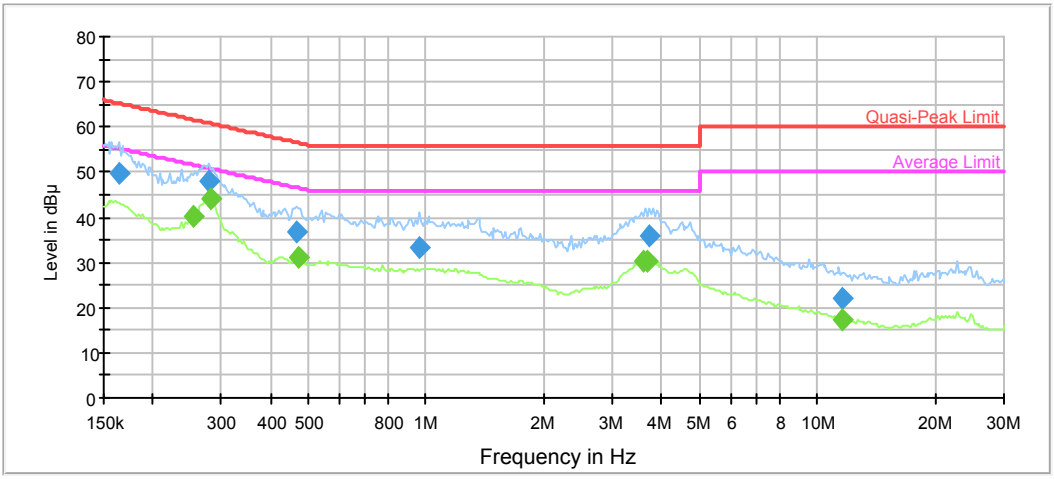
Temperature:	27.2 °C
Relative Humidity:	65 %
ATM Pressure:	101.2 kPa

The testing was performed by Lily Xie on 2019-05-28.

Pre-scan two models, C317A was the worst case.

Test Mode: M1 (802.11b low channel was the worst case)

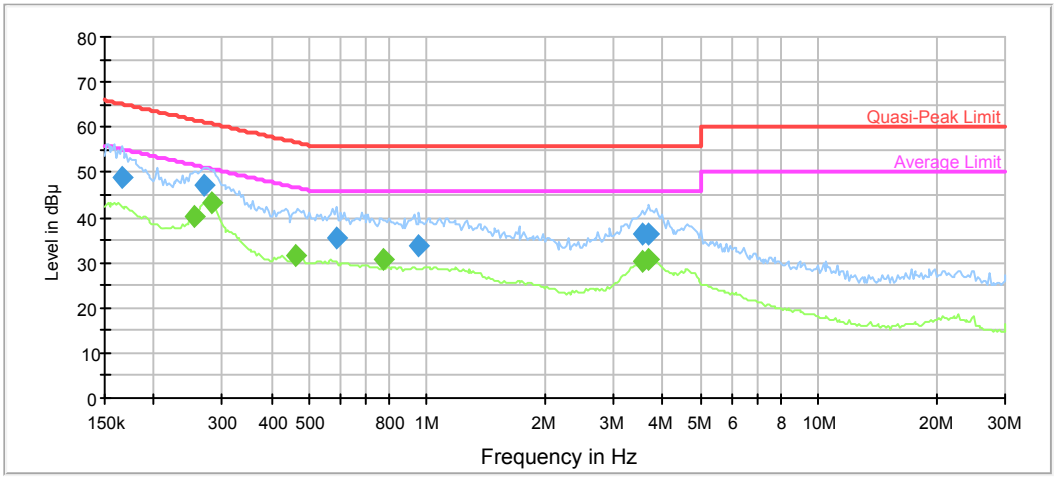
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.164053	49.8	9.000	L1	11.0	15.5	65.3
0.277982	47.9	9.000	L1	10.2	13.0	60.9
0.466367	36.9	9.000	L1	9.9	19.7	56.6
0.964247	33.4	9.000	L1	9.8	22.6	56.0
3.731602	36.0	9.000	L1	9.8	20.0	56.0
11.601974	22.0	9.000	L1	9.8	38.0	60.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.254170	40.2	9.000	L1	10.3	11.4	51.6
0.280762	43.9	9.000	L1	10.2	6.9	50.8
0.471031	31.3	9.000	L1	9.9	15.2	46.5
3.585996	30.1	9.000	L1	9.8	15.9	46.0
3.658074	30.3	9.000	L1	9.8	15.7	46.0
11.601974	17.4	9.000	L1	9.8	32.6	50.0

AC120 V, 60 Hz, Neutral:

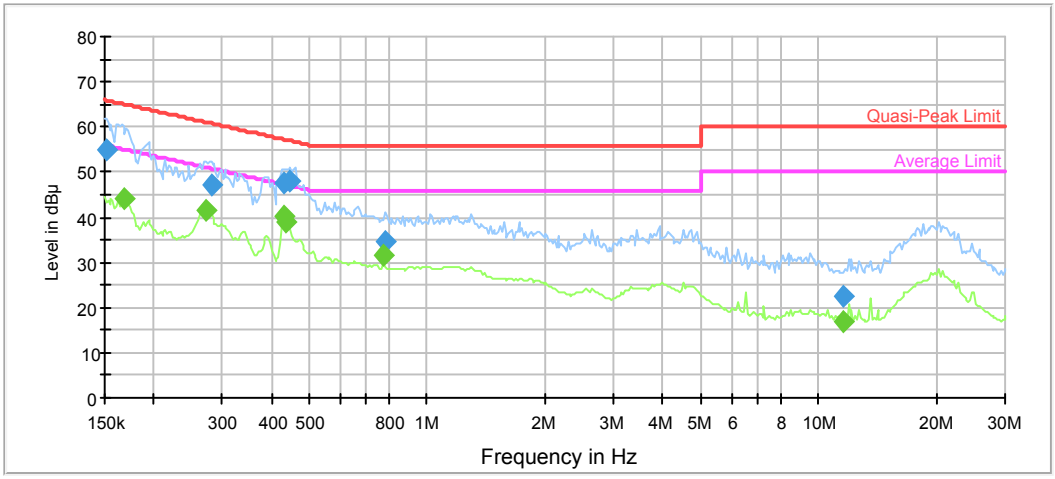


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.165693	49.0	9.000	N	10.9	16.2	65.2
0.269807	47.3	9.000	N	10.2	13.8	61.1
0.586300	35.3	9.000	N	9.8	20.7	56.0
0.954700	33.7	9.000	N	9.8	22.3	56.0
3.550491	36.2	9.000	N	9.8	19.8	56.0
3.694655	36.3	9.000	N	9.8	19.7	56.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.254170	40.2	9.000	N	10.3	11.4	51.6
0.280762	43.4	9.000	N	10.2	7.4	50.8
0.461750	31.7	9.000	N	9.9	15.0	46.7
0.774673	30.8	9.000	N	9.8	15.2	46.0
3.550491	30.4	9.000	N	9.8	15.6	46.0
3.694655	30.5	9.000	N	9.8	15.5	46.0

Test Mode: M2 (802.11b low channel was the worst case)

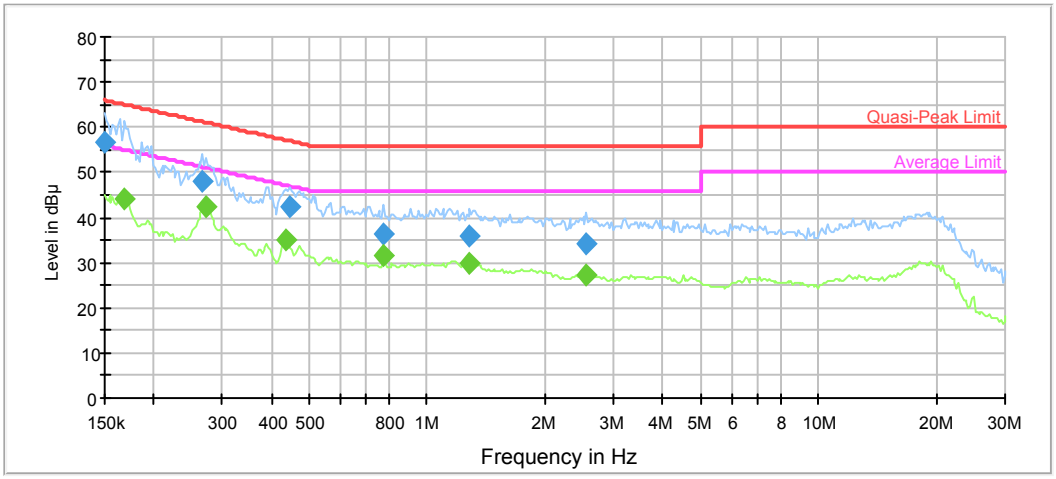
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.151500	54.8	9.000	L1	11.2	11.1	65.9
0.280762	47.0	9.000	L1	10.2	13.8	60.8
0.430682	47.5	9.000	L1	9.9	9.7	57.2
0.448170	48.1	9.000	L1	9.9	8.8	56.9
0.782419	34.4	9.000	L1	9.8	21.6	56.0
11.601974	22.3	9.000	L1	9.8	37.7	60.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.167350	44.0	9.000	L1	10.9	11.1	55.1
0.272505	41.5	9.000	L1	10.2	9.5	51.0
0.430682	40.0	9.000	L1	9.9	7.2	47.2
0.434989	39.1	9.000	L1	9.9	8.0	47.2
0.774673	31.4	9.000	L1	9.8	14.6	46.0
11.601974	17.0	9.000	L1	9.8	33.0	50.0

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	56.6	9.000	N	11.2	9.4	66.0
0.267135	48.1	9.000	N	10.3	13.1	61.2
0.448170	42.3	9.000	N	9.9	14.6	56.9
0.774673	36.4	9.000	N	9.8	19.6	56.0
1.286792	36.0	9.000	N	9.8	20.0	56.0
2.556719	34.1	9.000	N	9.8	21.9	56.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.169024	44.0	9.000	N	10.9	11.0	55.0
0.272505	42.5	9.000	N	10.2	8.5	51.0
0.434989	34.9	9.000	N	9.9	12.3	47.2
0.774673	31.5	9.000	N	9.8	14.5	46.0
1.286792	29.9	9.000	N	9.8	16.1	46.0
2.556719	27.2	9.000	N	9.8	18.8	46.0

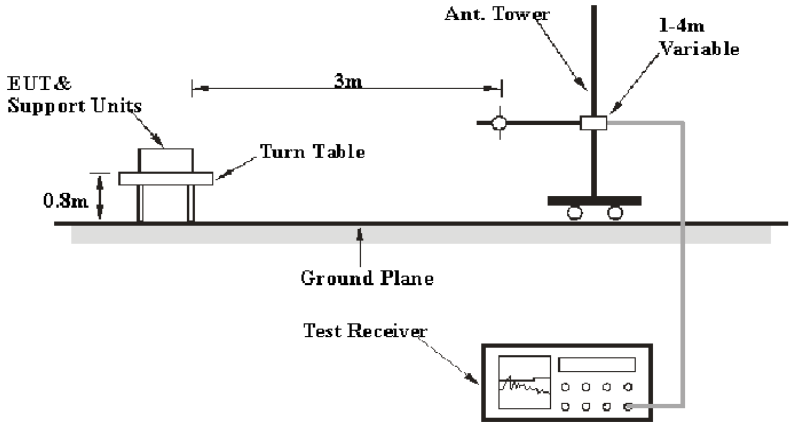
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

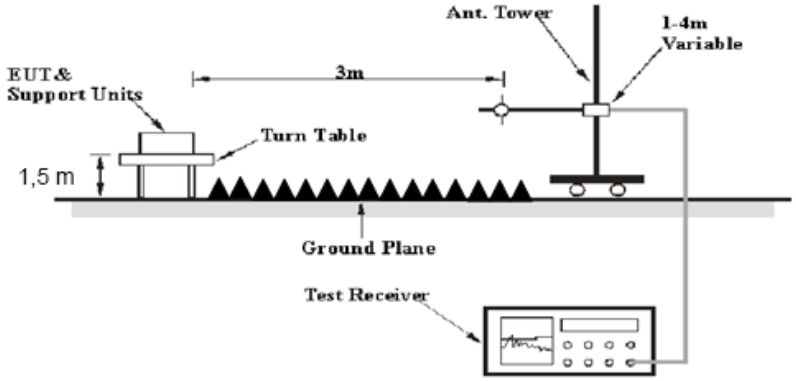
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1GHz:



Above 1GHz:



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

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

30MHz-1000MHz:

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

1GHz- 25GHz:

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

Note: T is minimum transmission duration

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

Test Procedure

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

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

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2018-08-03	2019-08-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-09-24	2019-09-24
Sonoma	Amplifier	310N	185914	2018-10-13	2019-10-13
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
MICRO-COAX	Coaxial Cable	UFA147-1-2362-100100	64639 231029-001	2019/2/24	2020/2/24
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2018-09-05	2019-09-05
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2018-06-27	2019-06-27
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2018-06-16	2019-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2018-06-16	2019-06-16

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

Test Data

Environmental Conditions

Temperature:	24.2 °C
Relative Humidity:	61%
ATM Pressure:	100.7kPa

** The testing was performed by Tiger Pan and Neil Liao on 2019-05-20.*

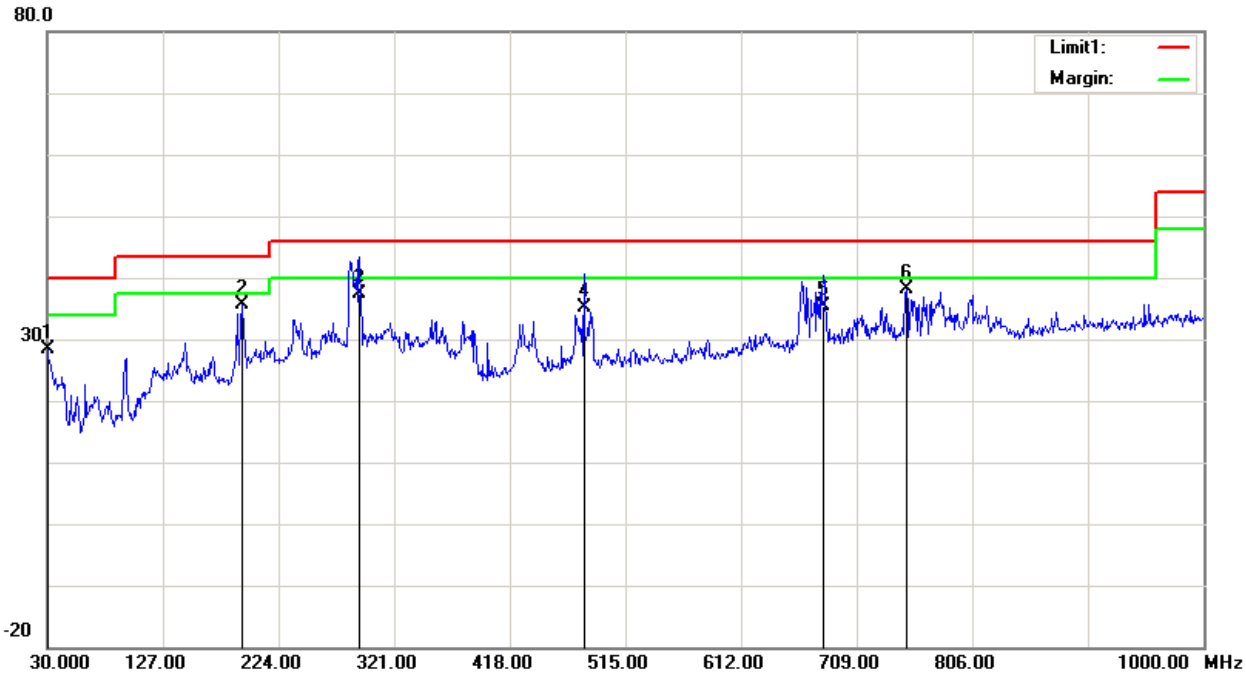
Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting

Pre-scan two models and two test modes, C317A and M1 was the worst case.

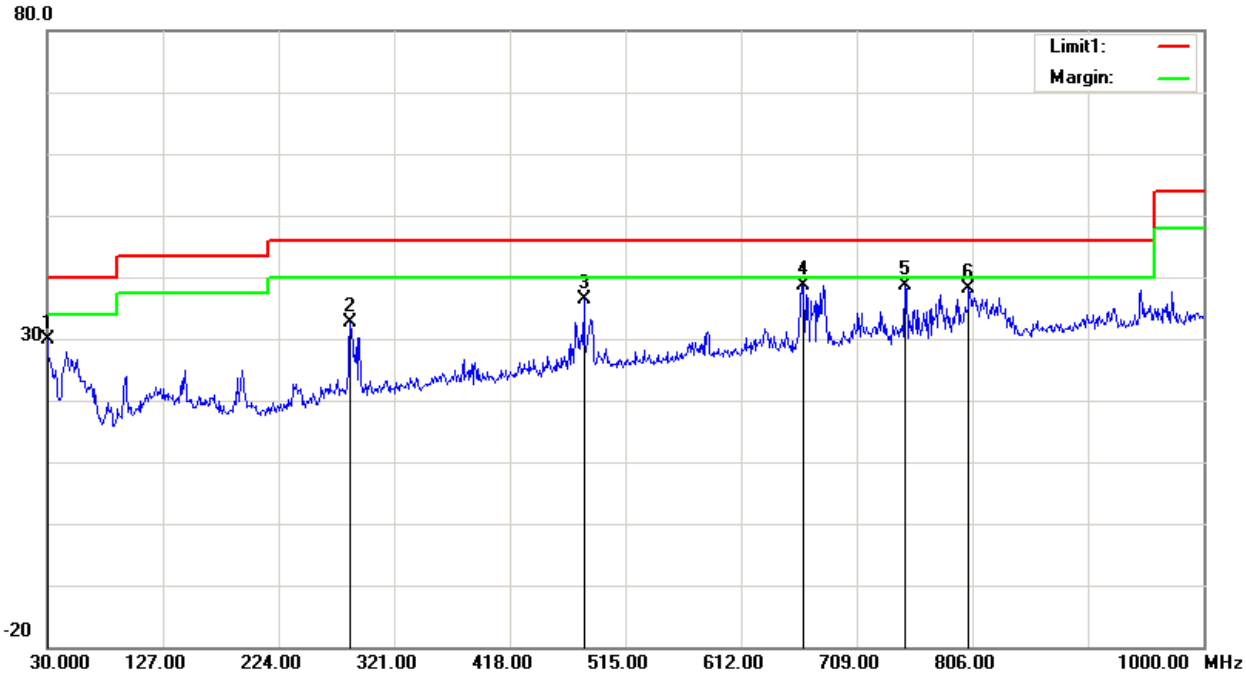
Please refer to following table and plots:

Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	M1 (802.11b was the worst)		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	26.54	peak	1.72	28.26	40.00	11.74
2	193.9300	42.34	peak	-6.80	35.54	43.50	7.96
3	291.9000	41.28	QP	-4.01	37.27	46.00	8.73
4	480.0800	35.43	QP	-0.27	35.16	46.00	10.84
5	680.8700	32.66	QP	2.67	35.33	46.00	10.67
6	750.7100	34.56	peak	3.66	38.22	46.00	7.78

Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	M1 (802.11b was the worst)		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	28.10	peak	1.72	29.82	40.00	10.18
2	284.1400	36.57	peak	-4.05	32.52	46.00	13.48
3	480.0800	36.54	peak	-0.27	36.27	46.00	9.73
4	664.3800	36.46	peak	2.23	38.69	46.00	7.31
5	749.7400	34.91	peak	3.62	38.53	46.00	7.47
6	803.0900	33.53	peak	4.51	38.04	46.00	7.96

Please refer to following table:

802.11b_low channel Frequency 2412 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2412.00	69.35	PK	H	28.12	1.81	0.00	99.28	N/A	N/A
2412.00	66.54	AV	H	28.12	1.81	0.00	96.47	N/A	N/A
2412.00	72.94	PK	V	28.12	1.81	0.00	102.87	N/A	N/A
2412.00	70.01	AV	V	28.12	1.81	0.00	99.94	N/A	N/A
2390.00	27.75	PK	V	28.08	1.80	0.00	57.63	74.00	16.37
2390.00	16.54	AV	V	28.08	1.80	0.00	46.42	54.00	7.58
4824.00	49.38	PK	V	32.95	3.19	37.20	48.32	74.00	25.68
4824.00	41.71	AV	V	32.95	3.19	37.20	40.65	54.00	13.35
7236.00	48.21	PK	V	35.81	4.77	37.27	51.52	74.00	22.48
7236.00	39.35	AV	V	35.81	4.77	37.27	42.66	54.00	11.34

802.11b_middle channel Frequency 2437 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2437.00	69.14	PK	H	28.17	1.82	0.00	99.13	N/A	N/A
2437.00	66.03	AV	H	28.17	1.82	0.00	96.02	N/A	N/A
2437.00	72.58	PK	V	28.17	1.82	0.00	102.57	N/A	N/A
2437.00	69.74	AV	V	28.17	1.82	0.00	99.73	N/A	N/A
4874.00	49.40	PK	V	33.05	3.26	37.21	48.50	74.00	25.50
4874.00	42.91	AV	V	33.05	3.26	37.21	42.01	54.00	11.99
7311.00	48.69	PK	V	36.01	4.64	37.36	51.98	74.00	22.02
7311.00	40.75	AV	V	36.01	4.64	37.36	44.04	54.00	9.96

802.11b_high channel Frequency 2462 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2462.00	68.35	PK	H	28.22	1.83	0.00	98.40	N/A	N/A
2462.00	65.36	AV	H	28.22	1.83	0.00	95.41	N/A	N/A
2462.00	71.88	PK	V	28.22	1.83	0.00	101.93	N/A	N/A
2462.00	68.86	AV	V	28.22	1.83	0.00	98.91	N/A	N/A
2483.50	28.69	PK	V	28.27	1.84	0.00	58.80	74.00	15.20
2483.50	17.86	AV	V	28.27	1.84	0.00	47.97	54.00	6.03
4924.00	50.89	PK	V	33.15	3.27	37.22	50.09	74.00	23.91
4924.00	44.16	AV	V	33.15	3.27	37.22	43.36	54.00	10.64
7386.00	50.25	PK	V	36.20	4.51	37.46	53.50	74.00	20.50
7386.00	42.91	AV	V	36.20	4.51	37.46	46.16	54.00	7.84

802.11g_low channel Frequency 2412 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2412.00	70.12	PK	H	28.12	1.81	0.00	100.05	N/A	N/A
2412.00	60.45	AV	H	28.12	1.81	0.00	90.38	N/A	N/A
2412.00	74.76	PK	V	28.12	1.81	0.00	104.69	N/A	N/A
2412.00	65.11	AV	V	28.12	1.81	0.00	95.04	N/A	N/A
2390.00	40.04	PK	V	28.08	1.80	0.00	69.92	74.00	4.08
2390.00	21.94	AV	V	28.08	1.80	0.00	51.82	54.00	2.18
4824.00	47.95	PK	V	32.95	3.19	37.20	46.89	74.00	27.11
4824.00	34.59	AV	V	32.95	3.19	37.20	33.53	54.00	20.47
7236.00	48.19	PK	V	35.81	4.77	37.27	51.50	74.00	22.50
7236.00	34.47	AV	V	35.81	4.77	37.27	37.78	54.00	16.22

802.11g_middle channel Frequency 2437 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2437.00	70.36	PK	H	28.17	1.82	0.00	100.35	N/A	N/A
2437.00	59.98	AV	H	28.17	1.82	0.00	89.97	N/A	N/A
2437.00	75.12	PK	V	28.17	1.82	0.00	105.11	N/A	N/A
2437.00	64.73	AV	V	28.17	1.82	0.00	94.72	N/A	N/A
4874.00	47.15	PK	V	33.05	3.26	37.21	46.25	74.00	27.75
4874.00	34.16	AV	V	33.05	3.26	37.21	33.26	54.00	20.74
7311.00	50.29	PK	V	36.01	4.64	37.36	53.58	74.00	20.42
7311.00	35.44	AV	V	36.01	4.64	37.36	38.73	54.00	15.27

802.11g_high channel Frequency 2462 MHz

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2462.00	70.45	PK	H	28.22	1.83	0.00	100.50	N/A	N/A
2462.00	61.23	AV	H	28.22	1.83	0.00	91.28	N/A	N/A
2462.00	75.32	PK	V	28.22	1.83	0.00	105.37	N/A	N/A
2462.00	66.52	AV	V	28.22	1.83	0.00	96.57	N/A	N/A
2483.50	36.10	PK	V	28.27	1.84	0.00	66.21	74.00	7.79
2483.50	20.02	AV	V	28.27	1.84	0.00	50.13	54.00	3.87
4924.00	49.69	PK	V	33.15	3.27	37.22	48.89	74.00	25.11
4924.00	35.14	AV	V	33.15	3.27	37.22	34.34	54.00	19.66
7386.00	47.96	PK	V	36.20	4.51	37.46	51.21	74.00	22.79
7386.00	34.22	AV	V	36.20	4.51	37.46	37.47	54.00	16.53

802.11n20_low channel **Frequency 2412 MHz**

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2412.00	69.74	PK	H	28.12	1.81	0.00	99.67	N/A	N/A
2412.00	59.36	AV	H	28.12	1.81	0.00	89.29	N/A	N/A
2412.00	74.34	PK	V	28.12	1.81	0.00	104.27	N/A	N/A
2412.00	64.22	AV	V	28.12	1.81	0.00	94.15	N/A	N/A
2390.00	40.94	PK	V	28.08	1.80	0.00	70.82	74.00	3.18
2390.00	22.01	AV	V	28.08	1.80	0.00	51.89	54.00	2.11
4824.00	47.95	PK	V	32.95	3.19	37.20	46.89	74.00	27.11
4824.00	34.40	AV	V	32.95	3.19	37.20	33.34	54.00	20.66
7236.00	47.53	PK	V	35.81	4.77	37.27	50.84	74.00	23.16
7236.00	33.85	AV	V	35.81	4.77	37.27	37.16	54.00	16.84

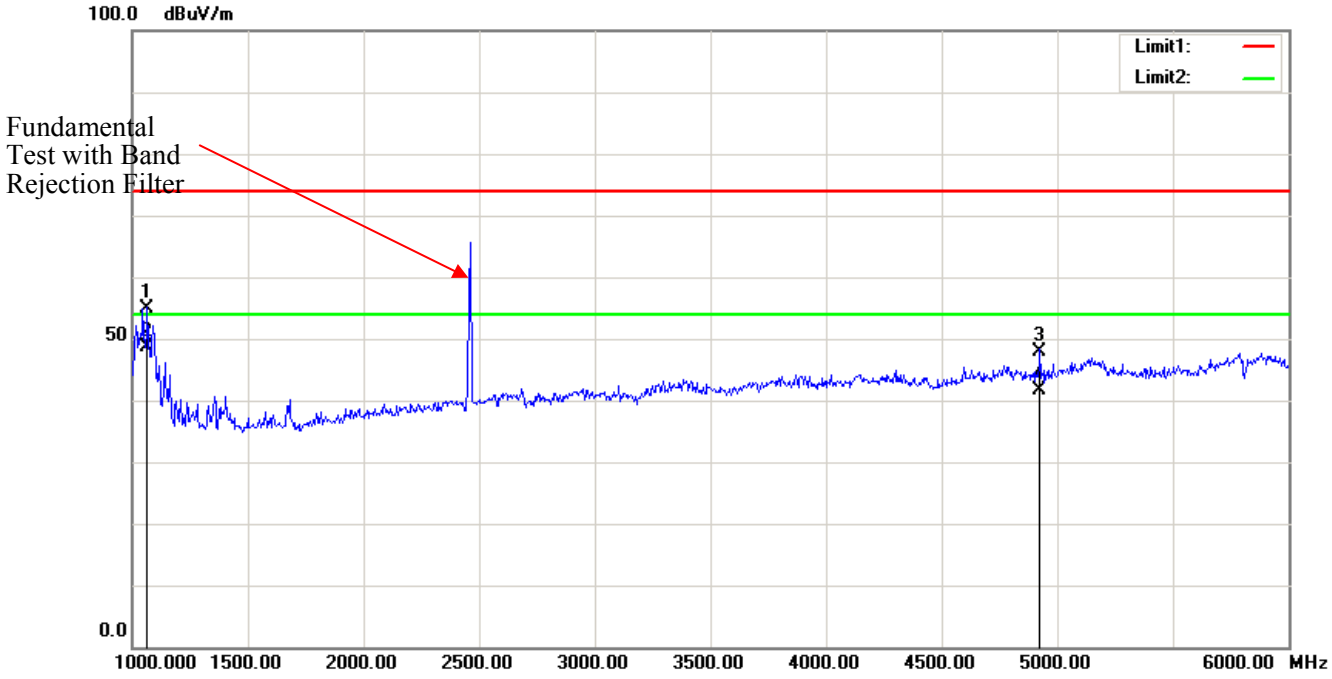
802.11n20_middle channel **Frequency 2437 MHz**

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2437.00	69.78	PK	H	28.17	1.82	0.00	99.77	N/A	N/A
2437.00	59.40	AV	H	28.17	1.82	0.00	89.39	N/A	N/A
2437.00	74.29	PK	V	28.17	1.82	0.00	104.28	N/A	N/A
2437.00	64.03	AV	V	28.17	1.82	0.00	94.02	N/A	N/A
4874.00	47.50	PK	V	33.05	3.26	37.21	46.60	74.00	27.40
4874.00	34.31	AV	V	33.05	3.26	37.21	33.41	54.00	20.59
7311.00	48.68	PK	V	36.01	4.64	37.36	51.97	74.00	22.03
7311.00	35.22	AV	V	36.01	4.64	37.36	38.51	54.00	15.49

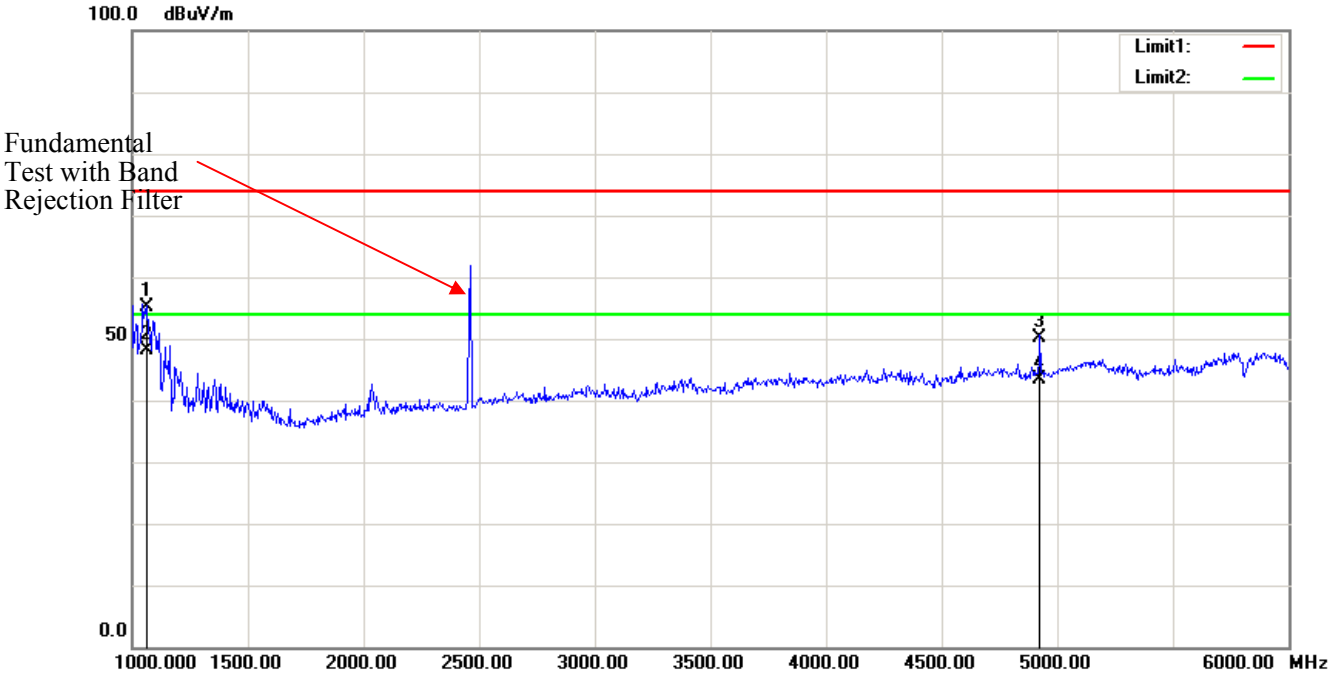
802.11n20_high channel **Frequency 2462 MHz**

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2462.00	68.36	PK	H	28.22	1.83	0.00	98.41	N/A	N/A
2462.00	58.14	AV	H	28.22	1.83	0.00	88.19	N/A	N/A
2462.00	73.53	PK	V	28.22	1.83	0.00	103.58	N/A	N/A
2462.00	62.94	AV	V	28.22	1.83	0.00	92.99	N/A	N/A
2483.50	42.41	PK	V	28.27	1.84	0.00	72.52	74.00	1.48
2483.50	20.49	AV	V	28.27	1.84	0.00	50.60	54.00	3.40
4924.00	48.22	PK	V	33.15	3.27	37.22	47.42	74.00	26.58
4924.00	35.06	AV	V	33.15	3.27	37.22	34.26	54.00	19.74
7386.00	52.13	PK	V	36.20	4.51	37.46	55.38	74.00	18.62
7386.00	37.04	AV	V	36.20	4.51	37.46	40.29	54.00	13.71

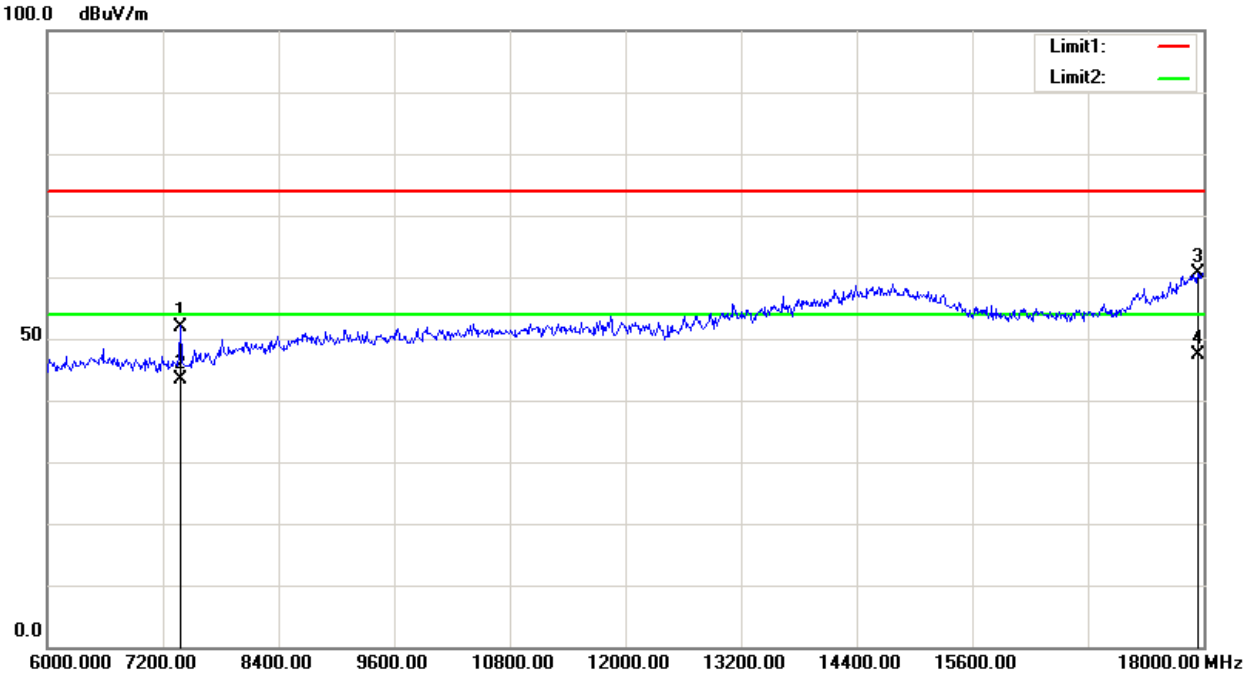
Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



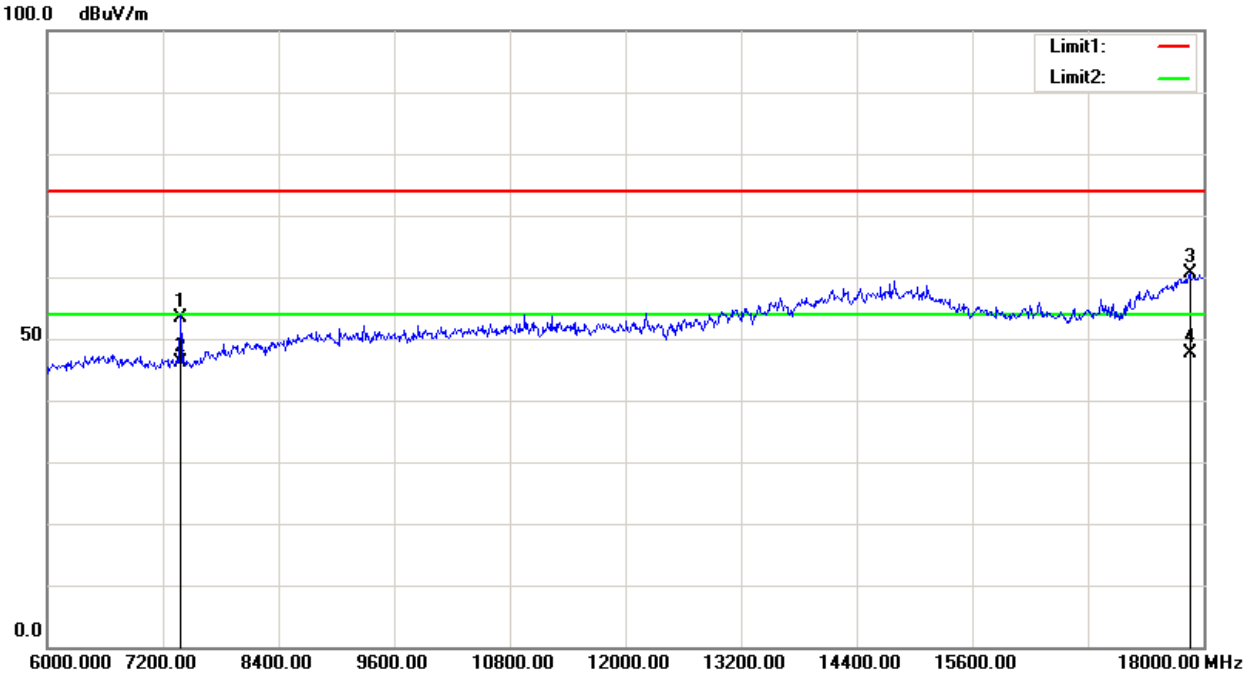
Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



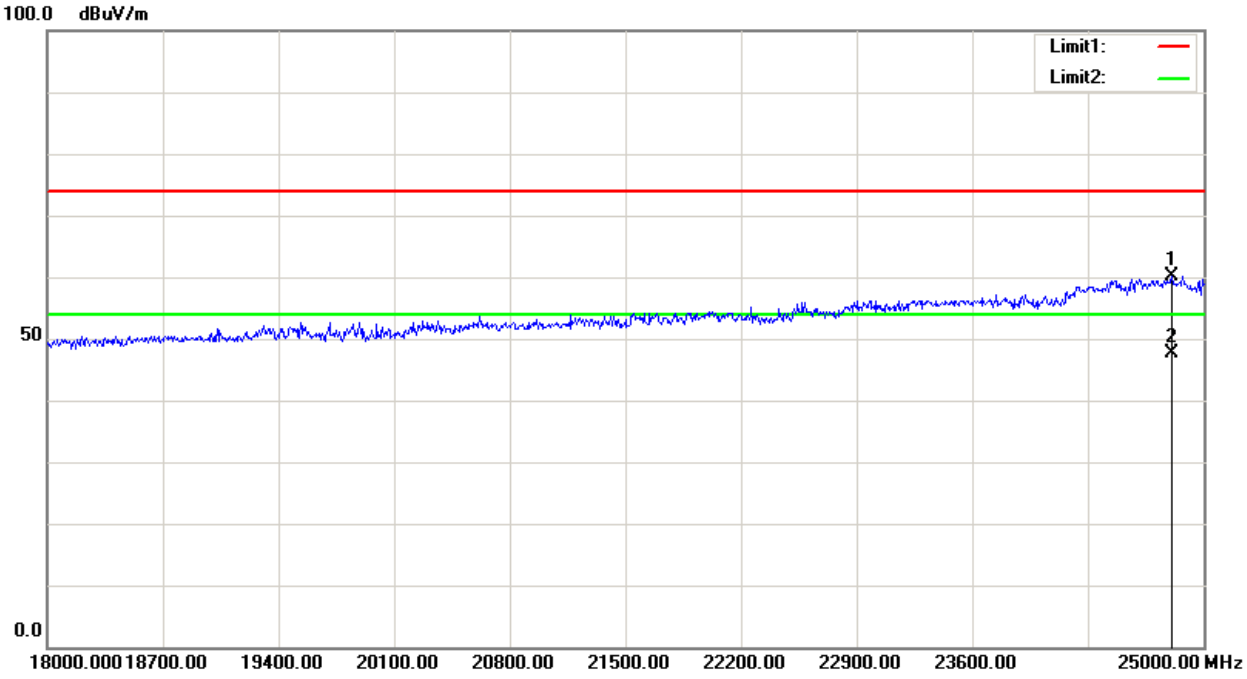
Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



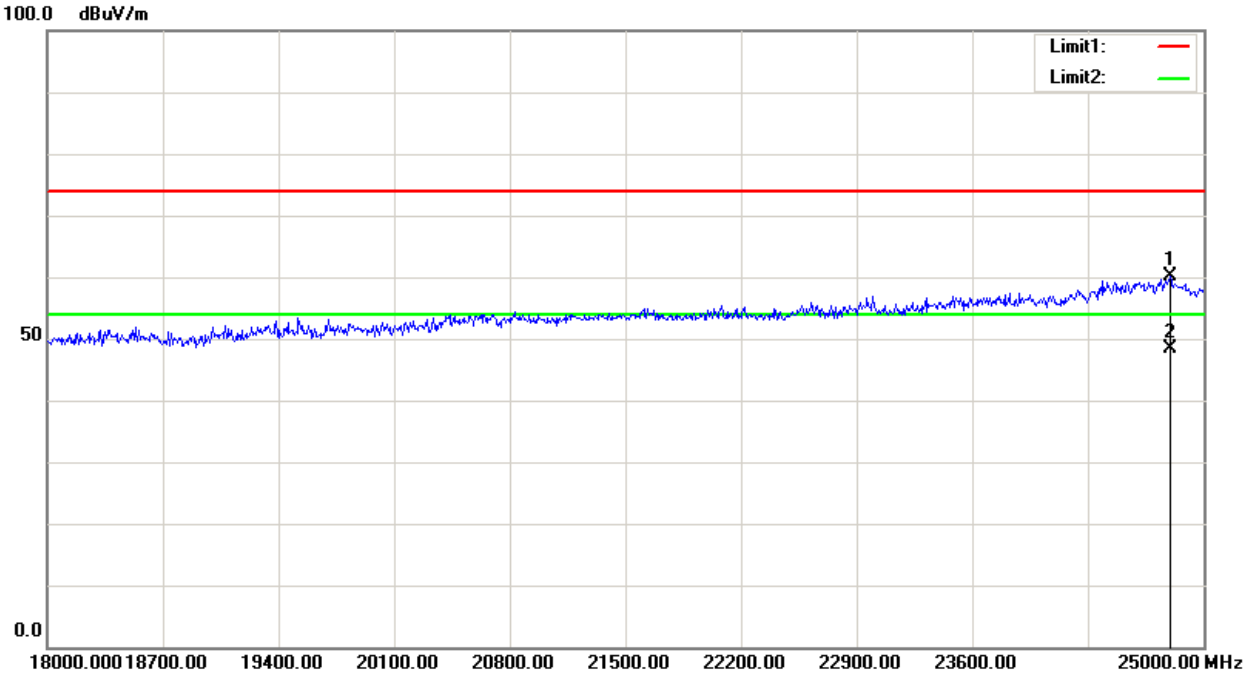
Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



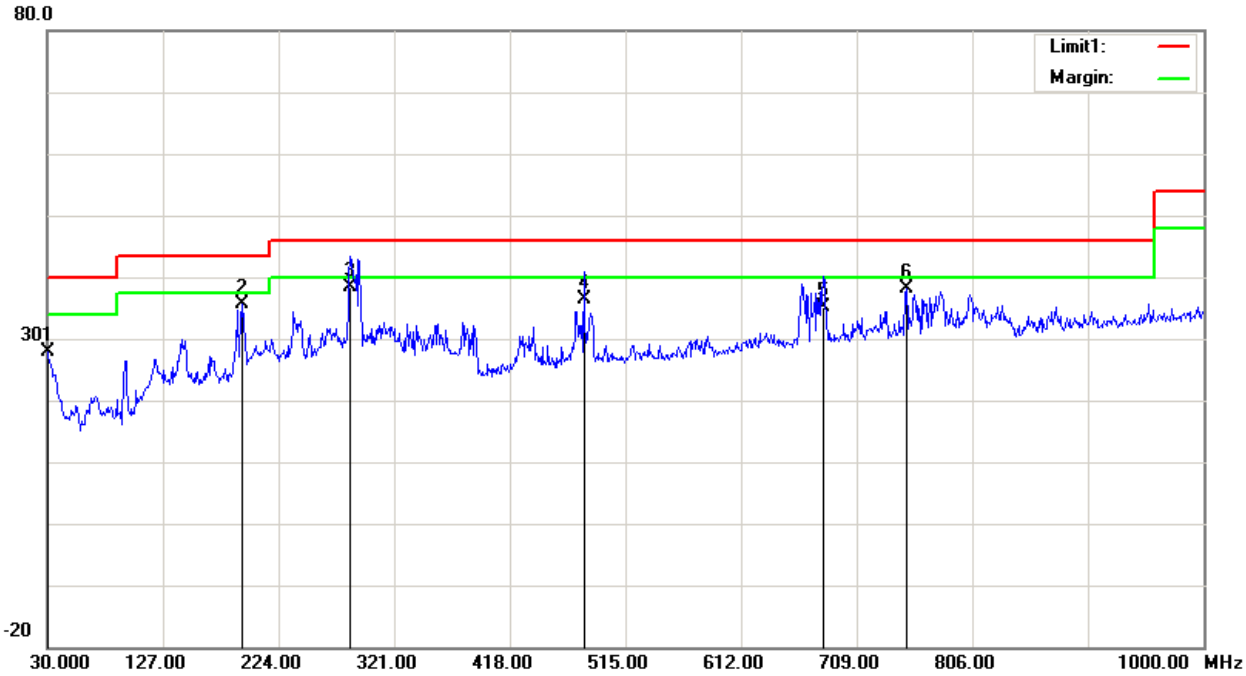
Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	802.11b_high channel-worst		
Note:			



BLE Mode:

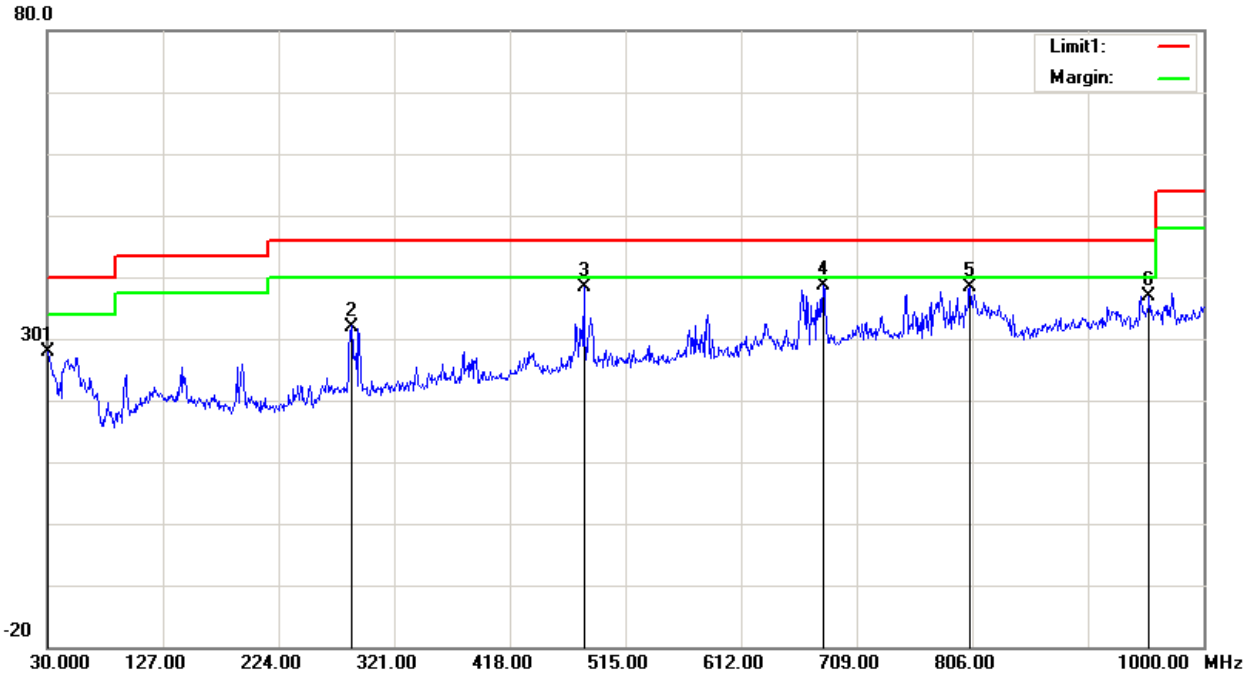
Please refer to following table and plots:

Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	M1(GFSK low channel-worst case)		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	26.12	peak	1.72	27.84	40.00	12.16
2	193.9300	42.50	peak	-6.80	35.70	43.50	7.80
3	284.1400	42.34	QP	-4.05	38.29	46.00	7.71
4	480.0800	36.55	QP	-0.27	36.28	46.00	9.72
5	680.8700	32.50	QP	2.67	35.17	46.00	10.83
6	750.7100	34.37	peak	3.66	38.03	46.00	7.97

Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	M1(GFSK low channel-worst case)		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.9700	27.00	peak	0.91	27.91	40.00	12.09
2	285.1100	36.03	peak	-4.03	32.00	46.00	14.00
3	480.0800	38.59	peak	-0.27	38.32	46.00	7.68
4	680.8700	35.96	peak	2.67	38.63	46.00	7.37
5	804.0600	33.84	peak	4.53	38.37	46.00	7.63
6	954.4100	40.17	peak	-3.31	36.86	46.00	9.14

Please refer to following table:

BLE_low channel **Frequency 2402 MHz**

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2402.00	68.27	PK	H	28.10	1.80	0.00	98.17	N/A	N/A
2402.00	67.78	AV	H	28.10	1.80	0.00	97.68	N/A	N/A
2402.00	70.42	PK	V	28.10	1.80	0.00	100.32	N/A	N/A
2402.00	70.11	AV	V	28.10	1.80	0.00	100.01	N/A	N/A
2390.00	26.35	PK	V	28.08	1.80	0.00	56.23	74.00	17.77
2390.00	14.78	AV	V	28.08	1.80	0.00	44.66	54.00	9.34
4804.00	49.56	PK	V	32.91	3.17	37.20	48.44	74.00	25.56
4804.00	42.18	AV	V	32.91	3.17	37.20	41.06	54.00	12.94
7206.00	46.52	PK	V	35.74	4.82	37.23	49.85	74.00	24.15
7206.00	33.71	AV	V	35.74	4.82	37.23	37.04	54.00	16.96
1066.00	66.59	PK	V	23.72	1.54	35.71	56.14	74.00	17.86
1066.00	59.23	AV	V	23.72	1.54	35.71	48.78	54.00	5.22

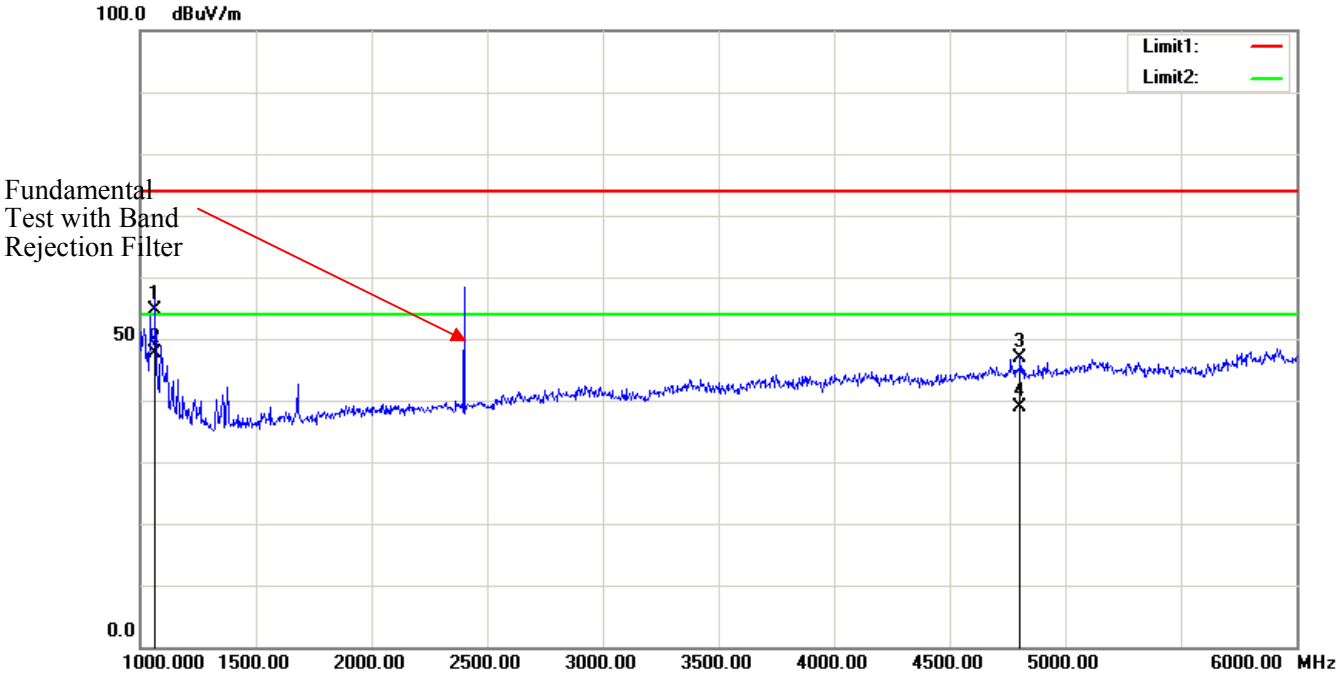
BLE_middle channel **Frequency 2440 MHz**

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2440.00	67.89	PK	H	28.18	1.82	0.00	97.89	N/A	N/A
2440.00	67.56	AV	H	28.18	1.82	0.00	97.56	N/A	N/A
2440.00	69.74	PK	V	28.18	1.82	0.00	99.74	N/A	N/A
2440.00	69.42	AV	V	28.18	1.82	0.00	99.42	N/A	N/A
4880.00	48.95	PK	V	33.06	3.27	37.21	48.07	74.00	25.93
4880.00	41.56	AV	V	33.06	3.27	37.21	40.68	54.00	13.32
7320.00	46.24	PK	V	36.03	4.62	37.37	49.52	74.00	24.48
7320.00	34.07	AV	V	36.03	4.62	37.37	37.35	54.00	16.65
1066.00	66.45	PK	V	23.72	1.54	35.71	56.00	74.00	18.00
1066.00	59.17	AV	V	23.72	1.54	35.71	48.72	54.00	5.28

BLE_high channel **Frequency 2480 MHz**

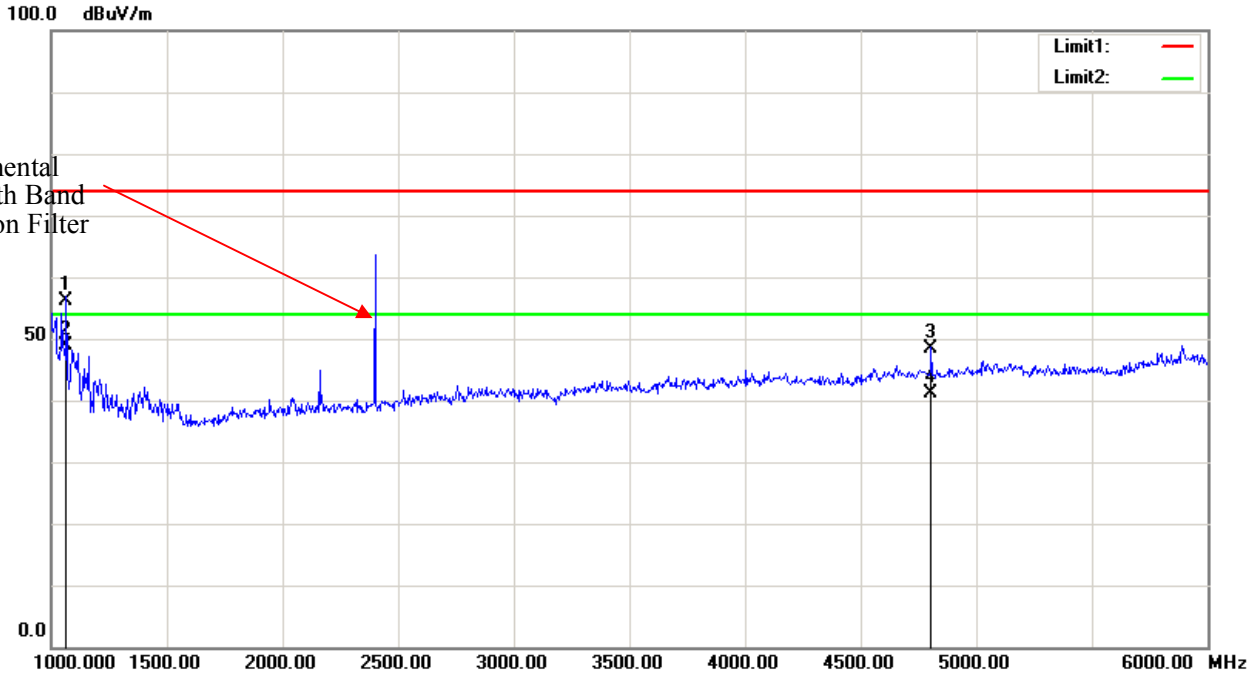
Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
2480.00	67.14	PK	H	28.26	1.84	0.00	97.24	N/A	N/A
2480.00	66.73	AV	H	28.26	1.84	0.00	96.83	N/A	N/A
2480.00	69.42	PK	V	28.26	1.84	0.00	99.52	N/A	N/A
2480.00	69.07	AV	V	28.26	1.84	0.00	99.17	N/A	N/A
2483.50	26.74	PK	V	28.27	1.84	0.00	56.85	74.00	17.15
2483.50	15.26	AV	V	28.27	1.84	0.00	45.37	54.00	8.63
4960.00	49.13	PK	V	33.22	3.23	37.25	48.33	74.00	25.67
4960.00	41.43	AV	V	33.22	3.23	37.25	40.63	54.00	13.37
7440.00	46.31	PK	V	36.34	4.41	37.52	49.54	74.00	24.46
7440.00	33.98	AV	V	36.34	4.41	37.52	37.21	54.00	16.79
1066.00	66.36	PK	V	23.72	1.54	35.71	55.91	74.00	18.09
1066.00	59.03	AV	V	23.72	1.54	35.71	48.58	54.00	5.42

Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			

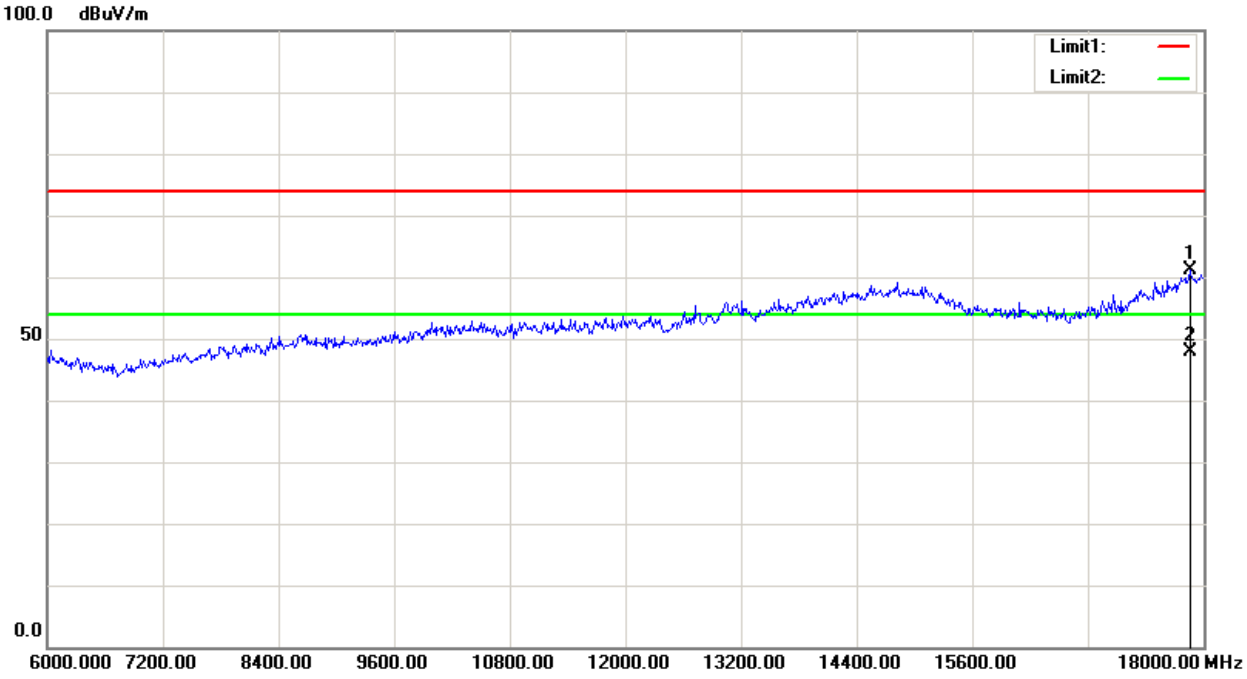


Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			

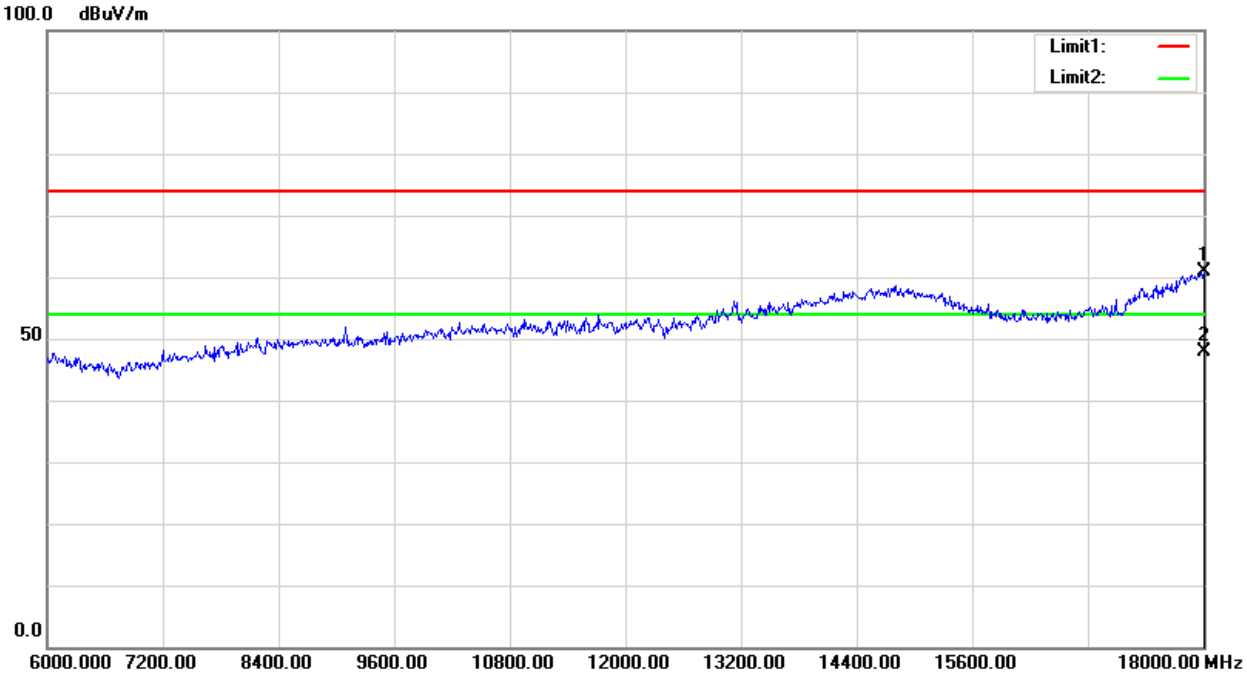
Fundamental Test with Band Rejection Filter



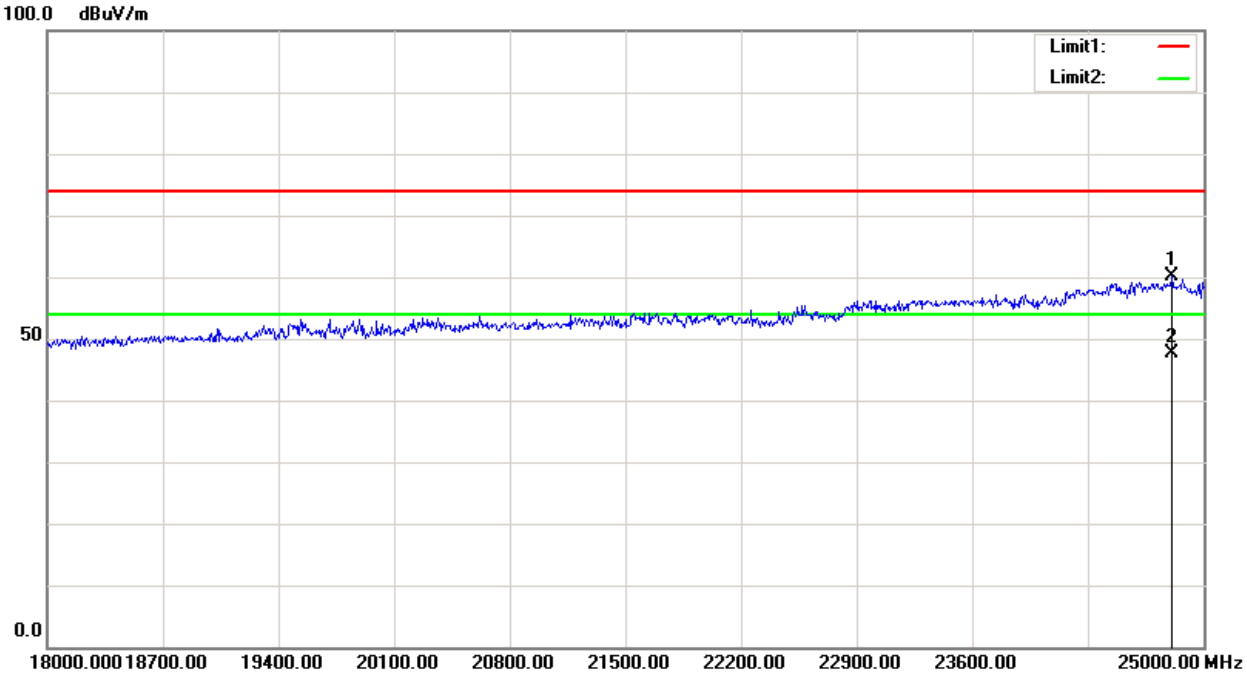
Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			



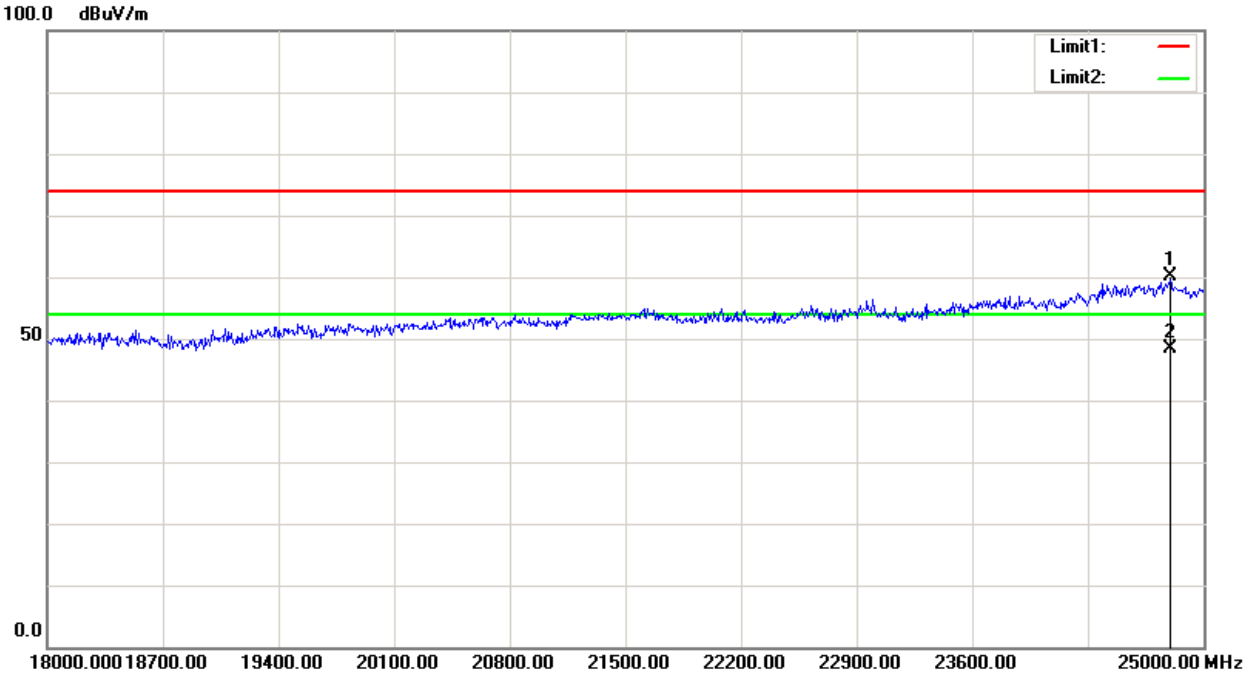
Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			



Condition:	FCC Part 15.247	**Polarization:**	Horizontal
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			



Condition:	FCC Part 15.247	**Polarization:**	Vertical
EUT:	Indoor Monitor	**Power:**	AC 120V/60Hz
Model:	C317A	**Distance:**	3m
Test Mode:	BLE_low channel-worst		
Note:			



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

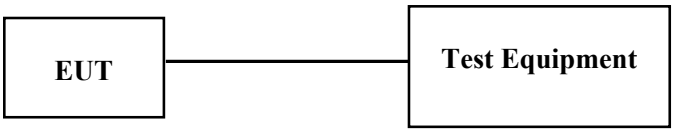
Applicable Standard

According to FCC §15.247(a) (2)

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

Test Procedure

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2019-05-09	2020-05-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

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

Test Data

Environmental Conditions

Temperature:	26.4 °C
Relative Humidity:	54 %
ATM Pressure:	101.1 kPa

The testing was performed by Elena Lei on 2019-05-18.

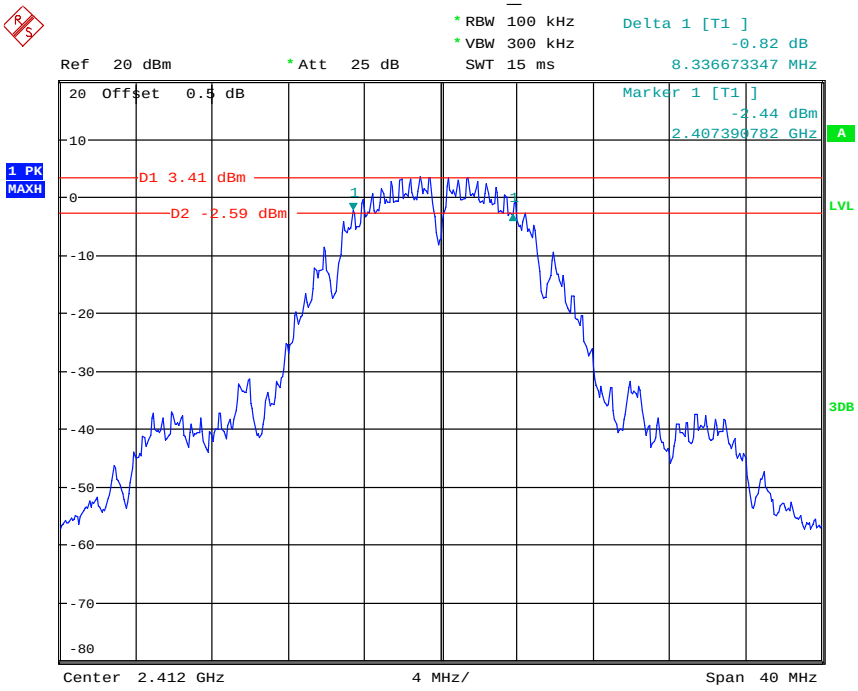
Test Mode: Transmitting

Please refer to following table:

Mode	Channel	Frequency (MHz)	Result (MHz)	Limit (MHz)
b	Low	2412	8.337	0.5
	Middle	2437	8.337	
	High	2462	7.936	
g	Low	2412	16.273	
	Middle	2437	16.273	
	High	2462	16.273	
n20	Low	2412	16.914	
	Middle	2437	17.315	
	High	2462	17.315	

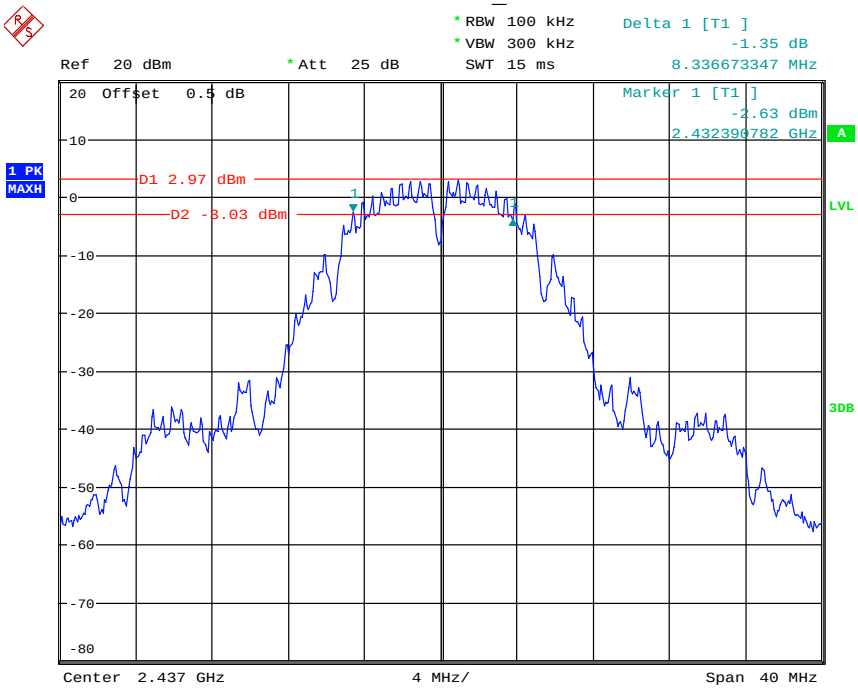
Please refer to following plots:

802.11 b_Low



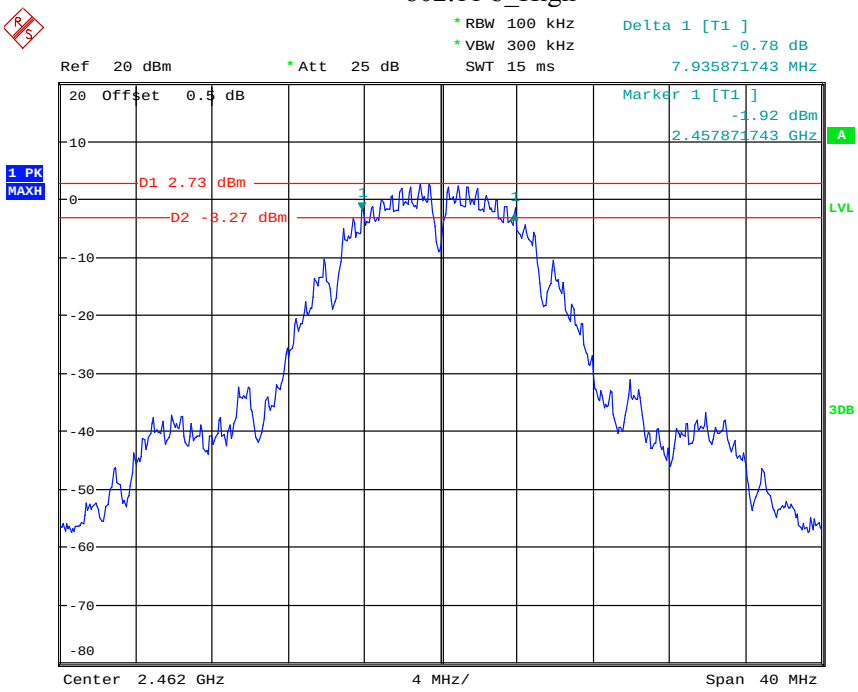
Date: 18.MAY.2019 09:19:23

802.11 b_Middle



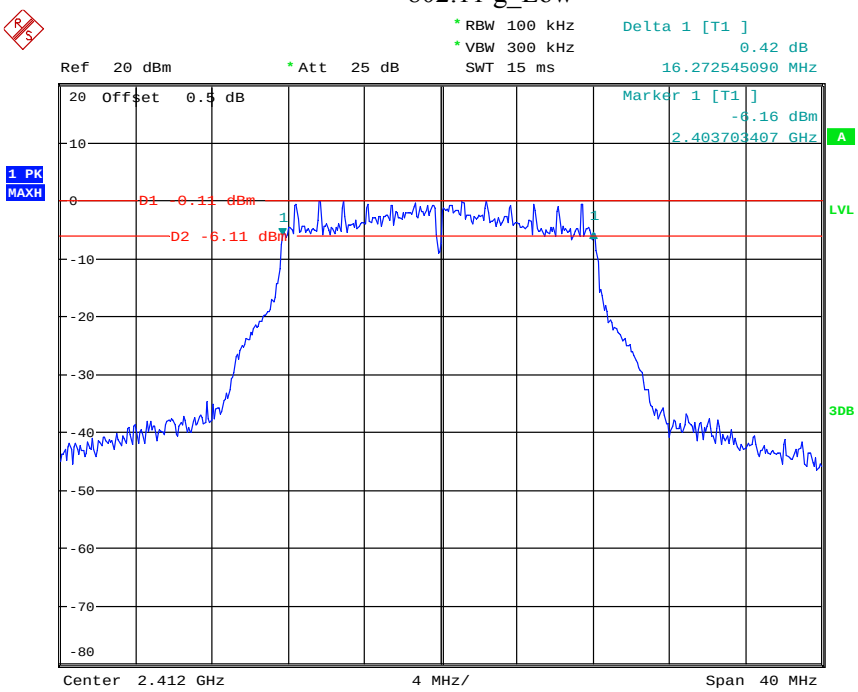
Date: 18.MAY.2019 09:22:22

802.11 b_High



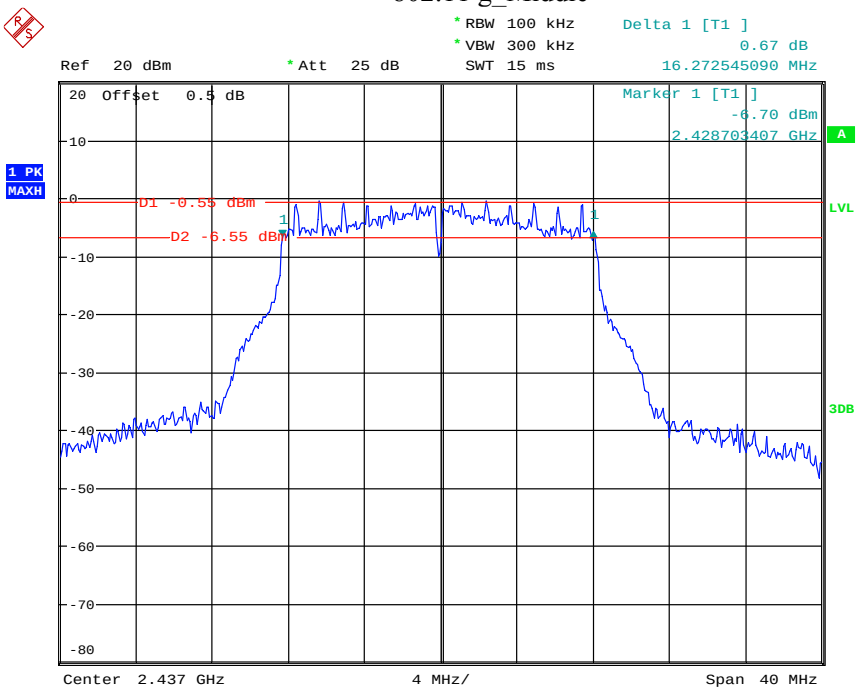
Date: 18.MAY.2019 09:24:07

802.11 g_Low



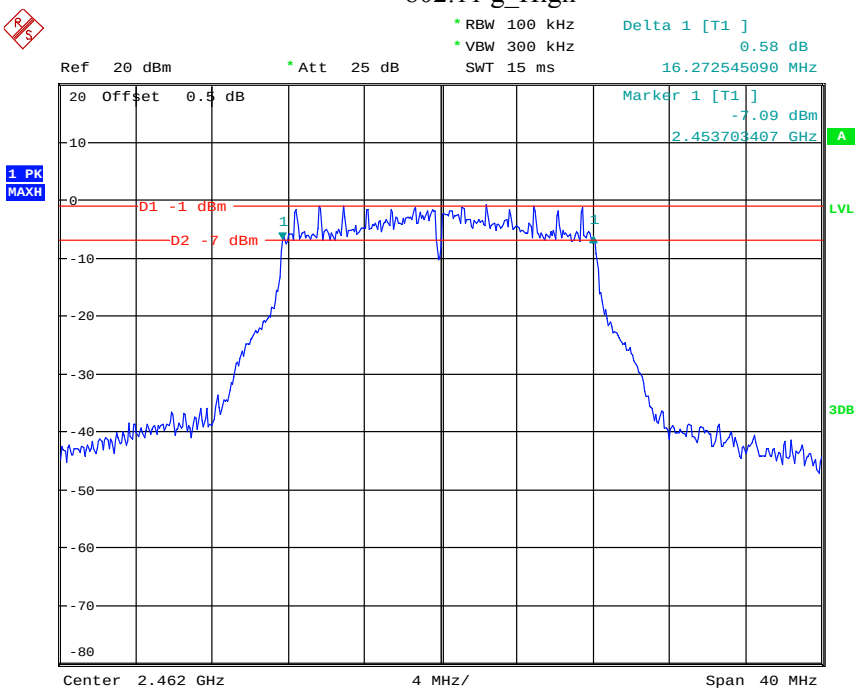
Date: 18.MAY.2019 09:27:50

802.11 g_Middle



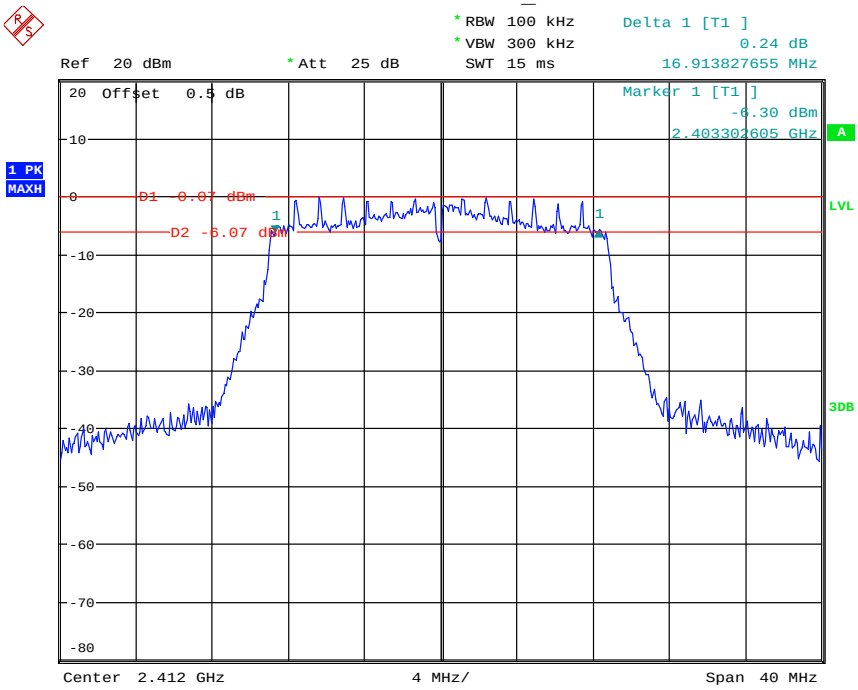
Date: 18.MAY.2019 09:33:27

802.11 g_High



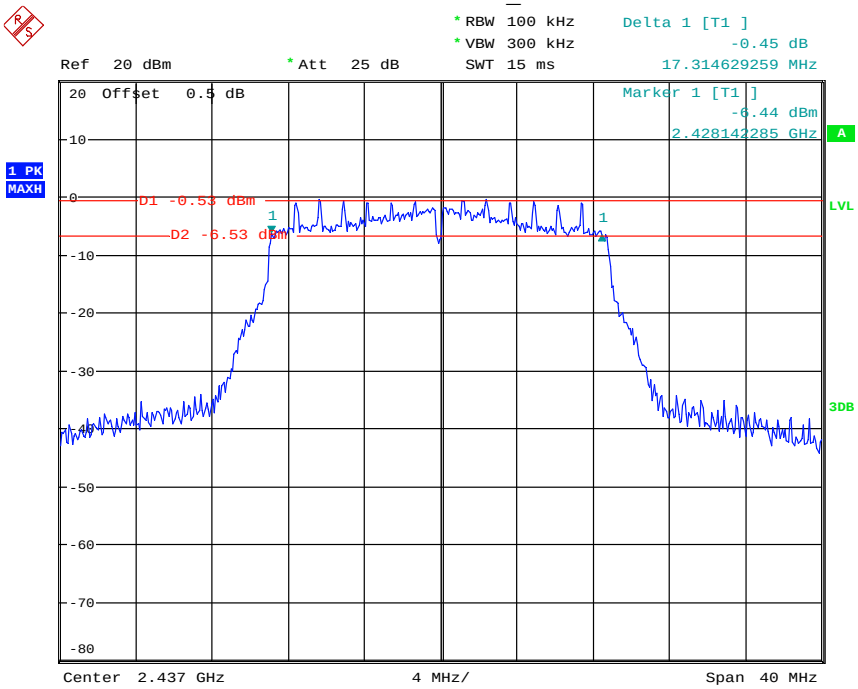
Date: 18.MAY.2019 09:35:56

802.11 n20_Low



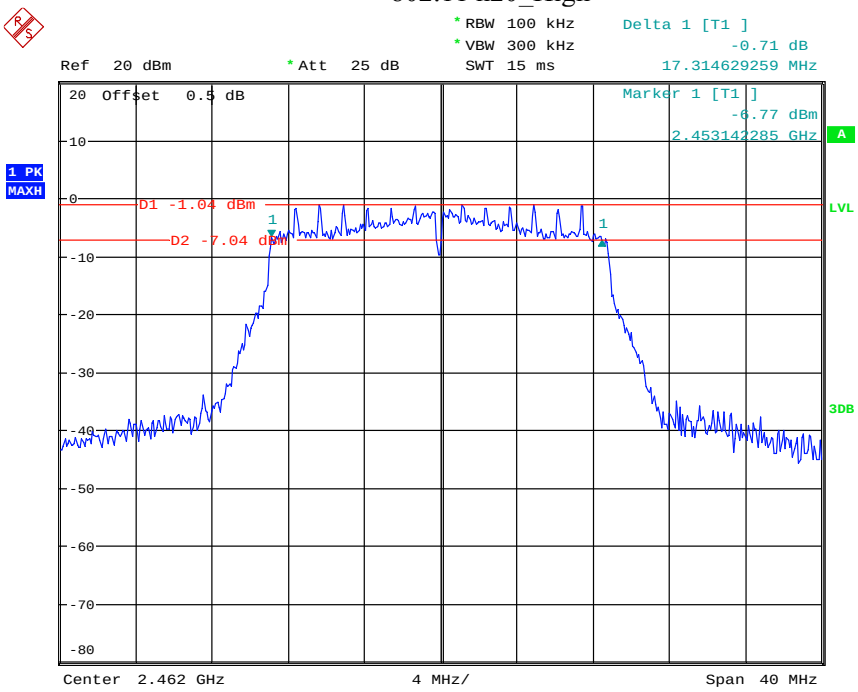
Date: 18.MAY.2019 09:38:40

802.11 n20_Middle



Date: 18.MAY.2019 09:42:41

802.11 n20_High



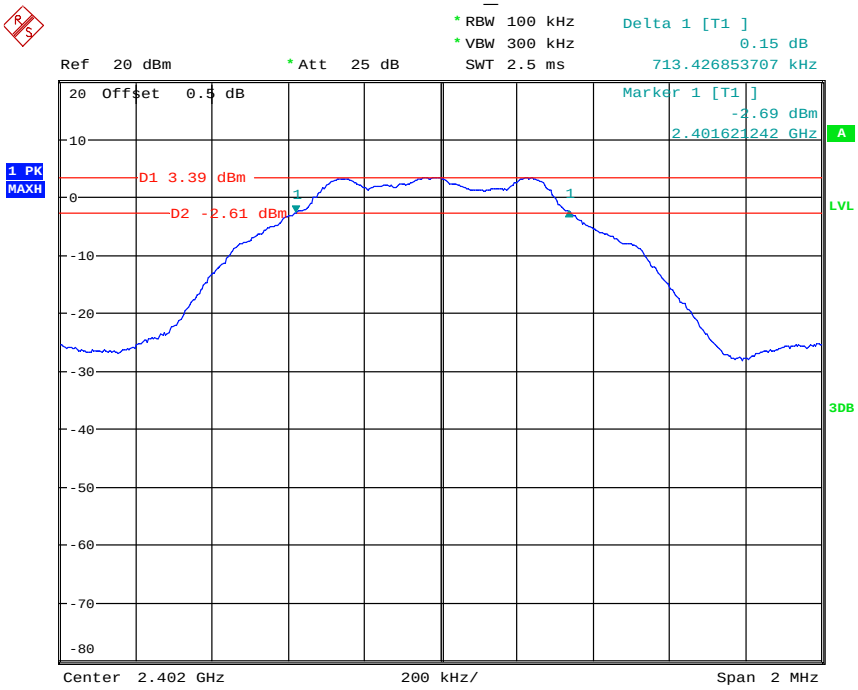
Date: 18.MAY.2019 09:45:58

Please refer to following table:

Mode	Channel	Frequency (MHz)	Result (MHz)	Limit (MHz)
BLE	Low	2402	0.713	0.5
	Middle	2440	0.713	
	High	2480	0.709	

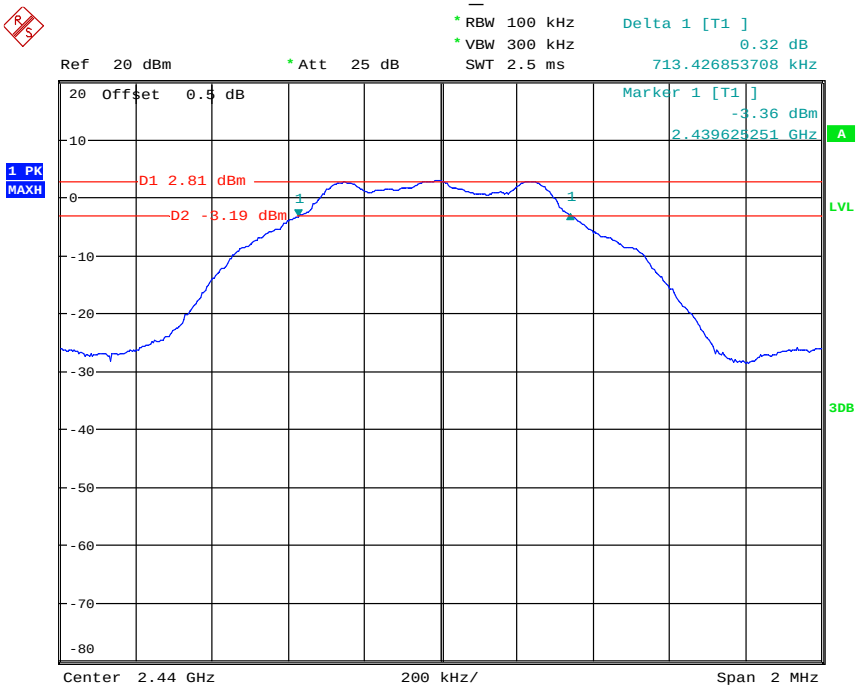
Please refer to following plots:

BLE_Low



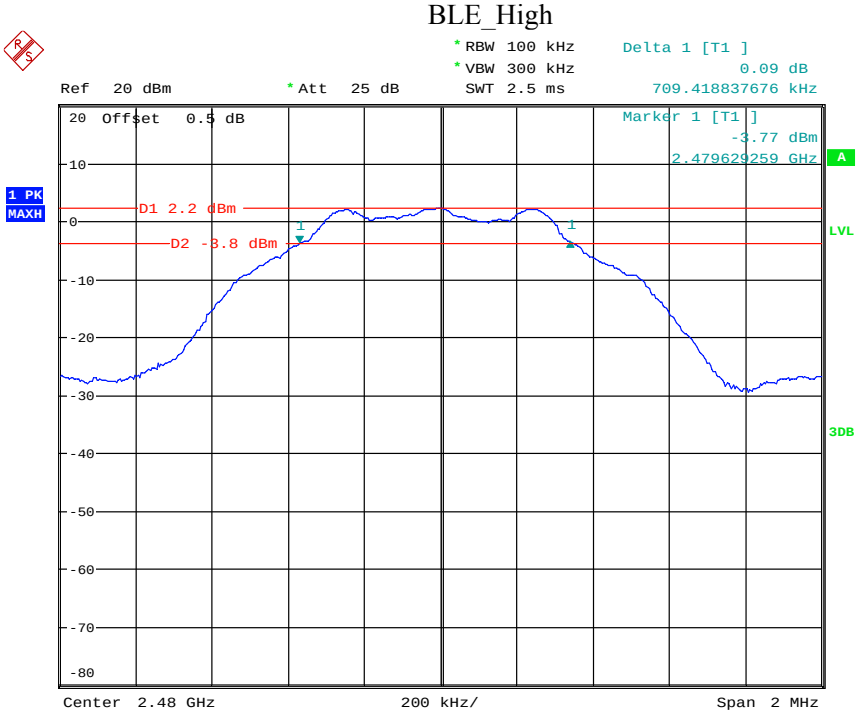
Date: 18.MAY.2019 16:54:01

BLE_Middle



Date: 18.MAY.2019 16:52:04

BLE_High



Date: 18.MAY.2019 16:55:44

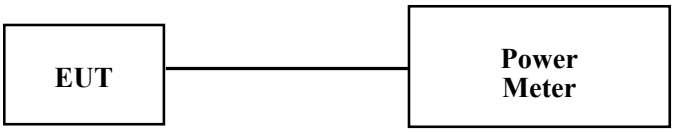
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER

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	USB Wideband Power Sensor	U2022XA	MY5417006	2018-12-10	2019-12-10
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

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

Test Data

Environmental Conditions

Temperature:	26.4 °C
Relative Humidity:	54 %
ATM Pressure:	101.1 kPa

The testing was performed by Elena Lei on 2019-06-17.

Test Mode: Transmitting

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

Maximum Peak Output Power

Mode	Channel	Frequency (MHz)	Result (dBm)	Limit (dBm)
b	Low	2412	17.75	30
	Middle	2437	17.26	
	High	2462	16.96	
g	Low	2412	22.11	
	Middle	2437	21.54	
	High	2462	21.09	
n20	Low	2412	22.05	
	Middle	2437	21.87	
	High	2462	21.31	

Mode	Channel	Frequency (MHz)	Result (dBm)	Limit (dBm)
BLE	Low	2402	4.50	30
	Middle	2440	3.95	
	High	2480	3.52	

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

Applicable Standard

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

Test Procedure

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2019-05-09	2020-05-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

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

Test Data

Environmental Conditions

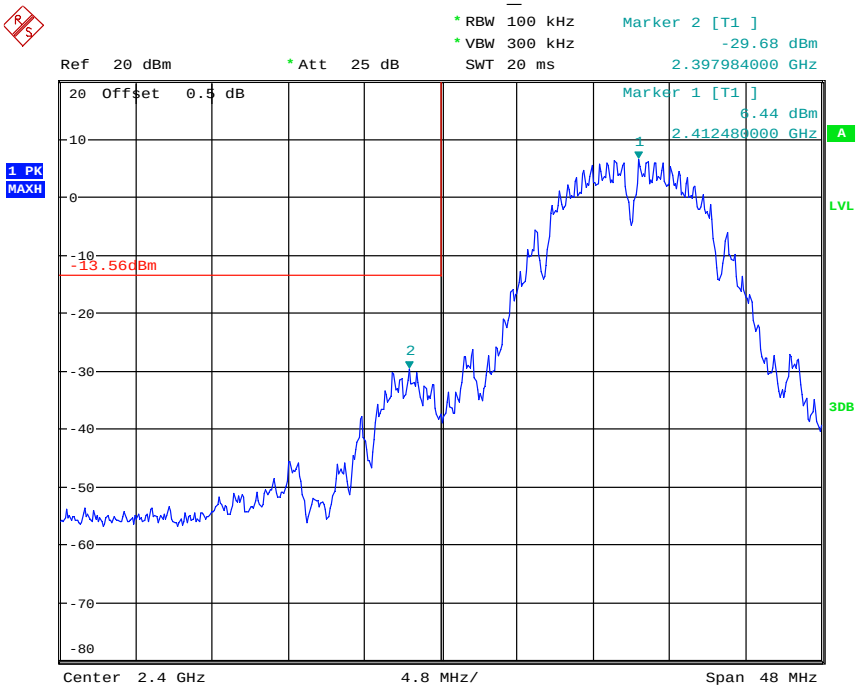
Temperature:	25.2~26.4 °C
Relative Humidity:	50~54 %
ATM Pressure:	100.9~101.1 kPa

The testing was performed by Elena Lei from 2019-05-18 to 2019-06-07.

Test mode: Transmitting

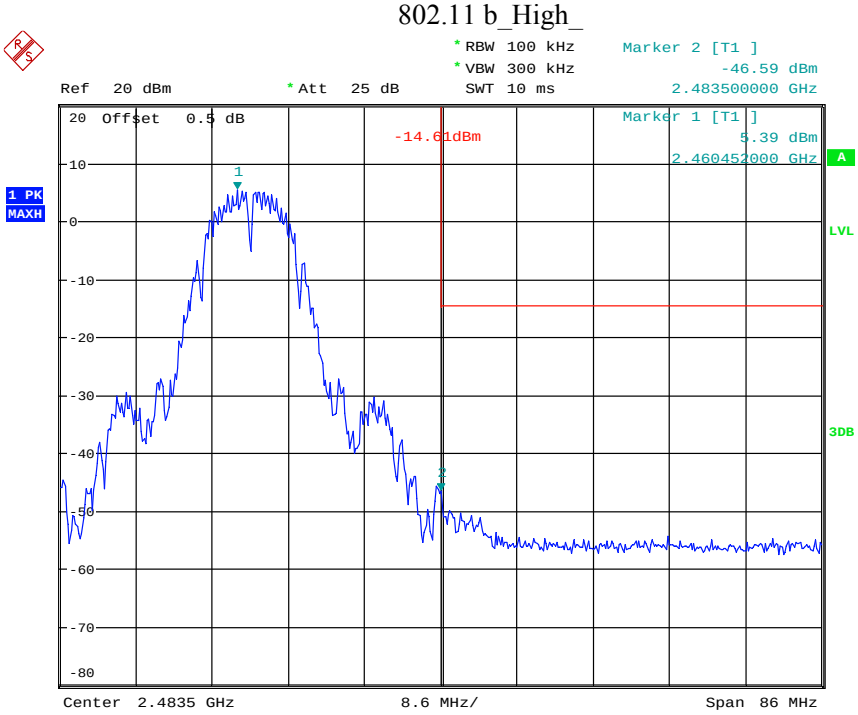
Test Result: Compliant. Please refer to following plots.

802.11 b_Low



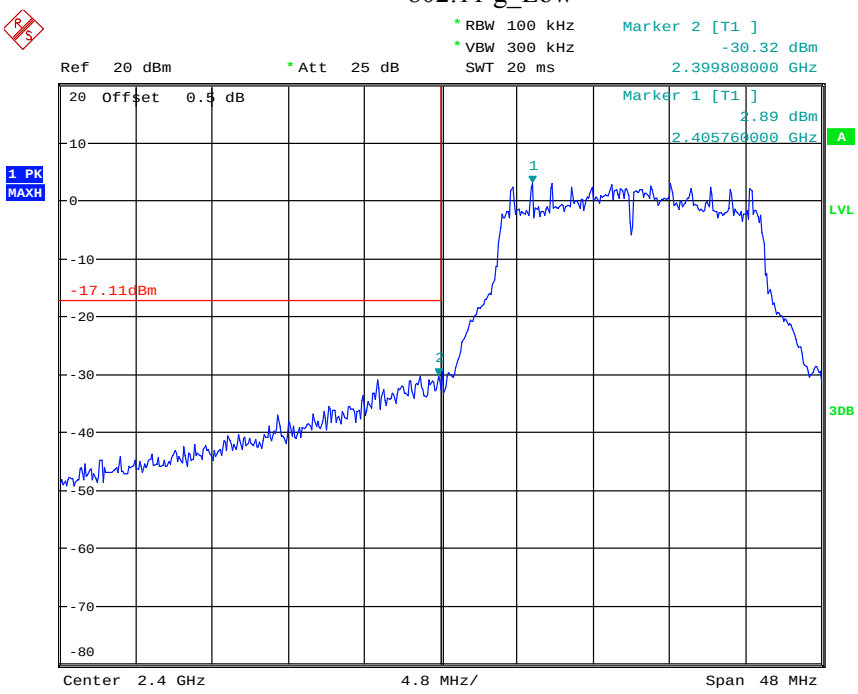
Date: 7.JUN.2019 16:38:10

802.11 b_High_



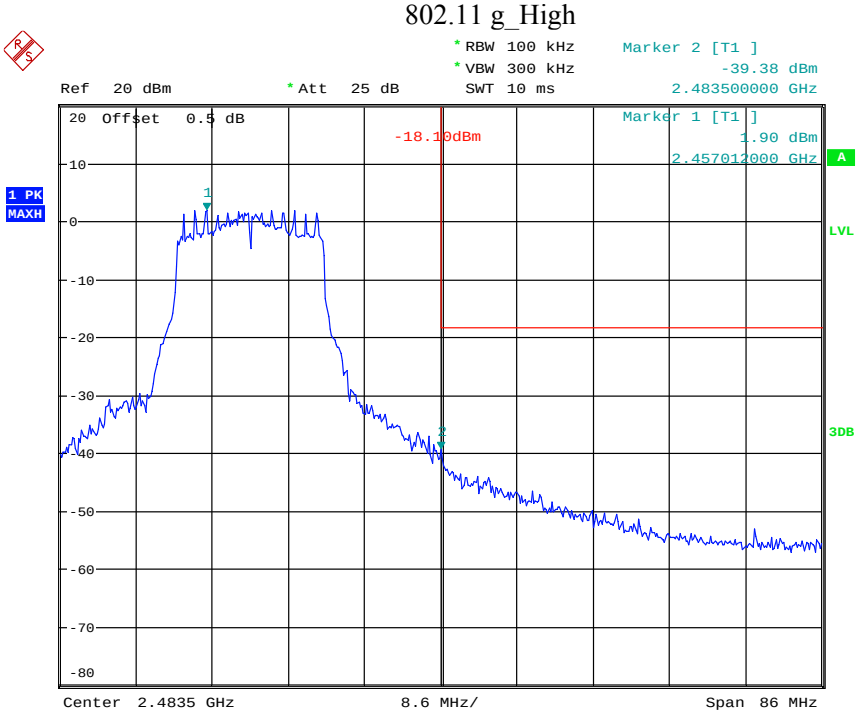
Date: 7.JUN.2019 16:40:48

802.11 g_Low



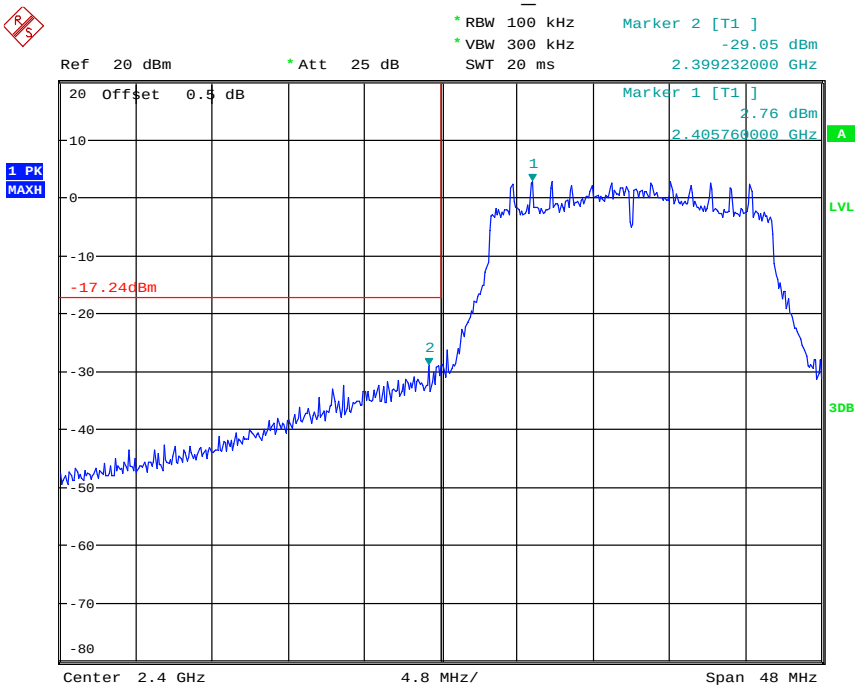
Date: 7.JUN.2019 16:42:19

802.11 g_High



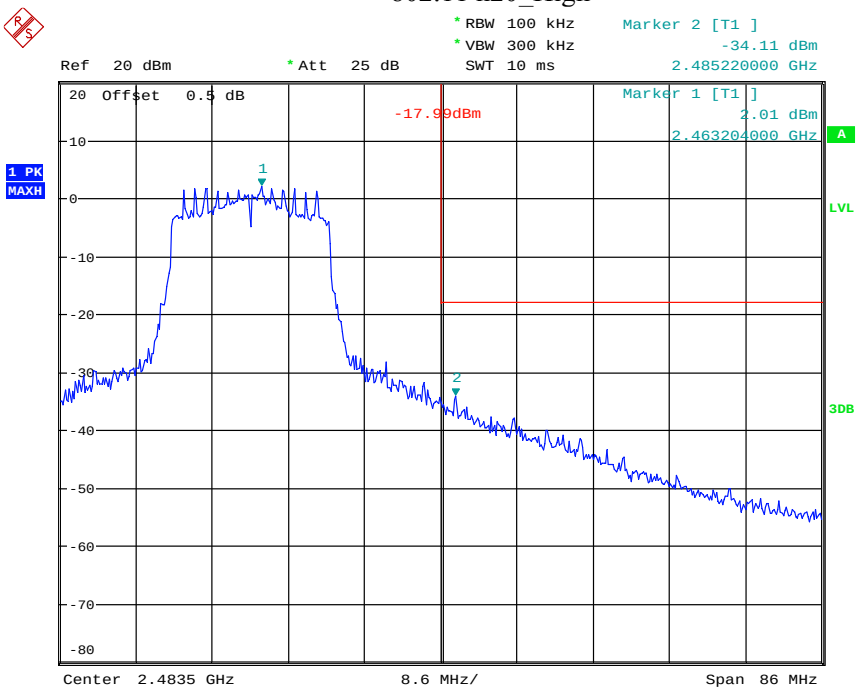
Date: 7.JUN.2019 16:45:41

802.11 n20_Low



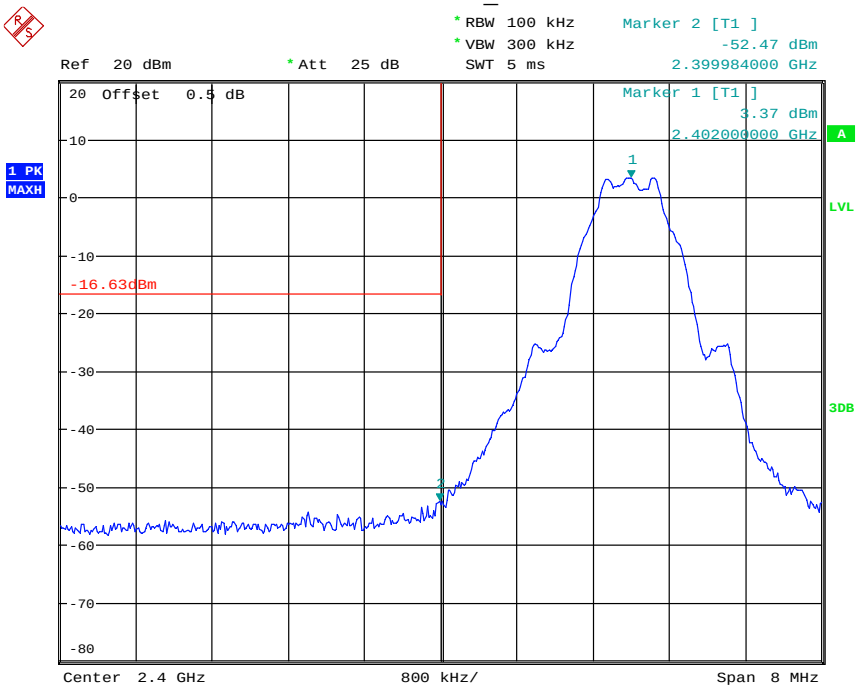
Date: 7.JUN.2019 16:48:33

802.11 n20_High



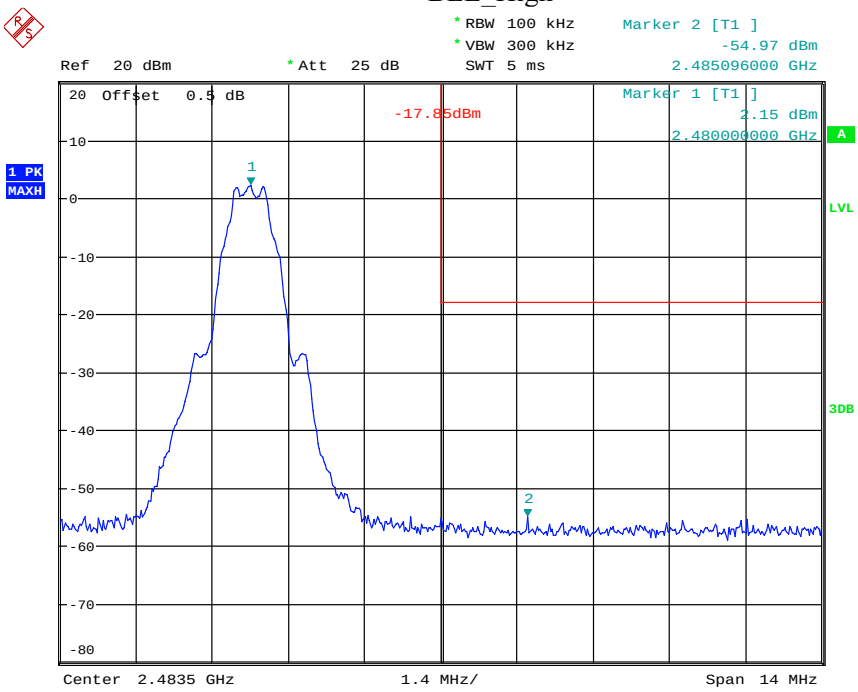
Date: 7.JUN.2019 16:54:30

BLE_Low



Date: 18.MAY.2019 16:55:10

BLE_High



Date: 18.MAY.2019 16:56:56

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

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

Test Procedure

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2019-05-09	2020-05-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

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

Test Data

Environmental Conditions

Temperature:	25.2~26.4 °C
Relative Humidity:	50~54 %
ATM Pressure:	100.9~101.1 kPa

The testing was performed by Elena Lei from 2019-05-18 to 2019-06-07.

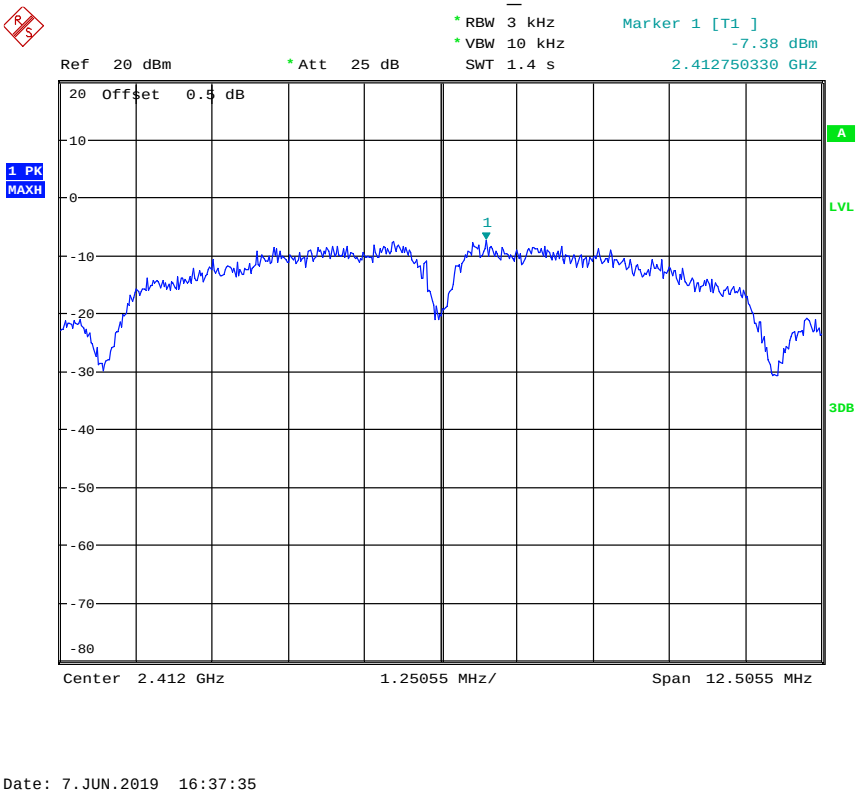
Test Result: Compliance

Test Mode: Transmitting

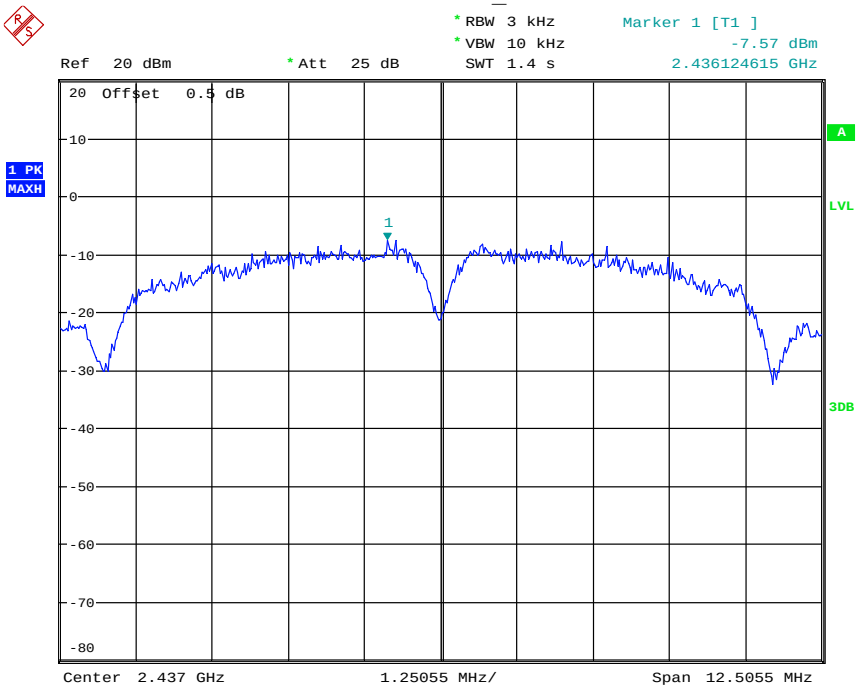
Test Result: Compliant. Please refer to the following table and plots

Mode	Channel	Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)
b	Low	2412	-7.38	8
	Middle	2437	-7.57	
	High	2462	-7.74	
g	Low	2412	-8.70	
	Middle	2437	-9.26	
	High	2462	-9.80	
n20	Low	2412	-9.42	
	Middle	2437	-9.52	
	High	2462	-9.56	

802.11 b_Low

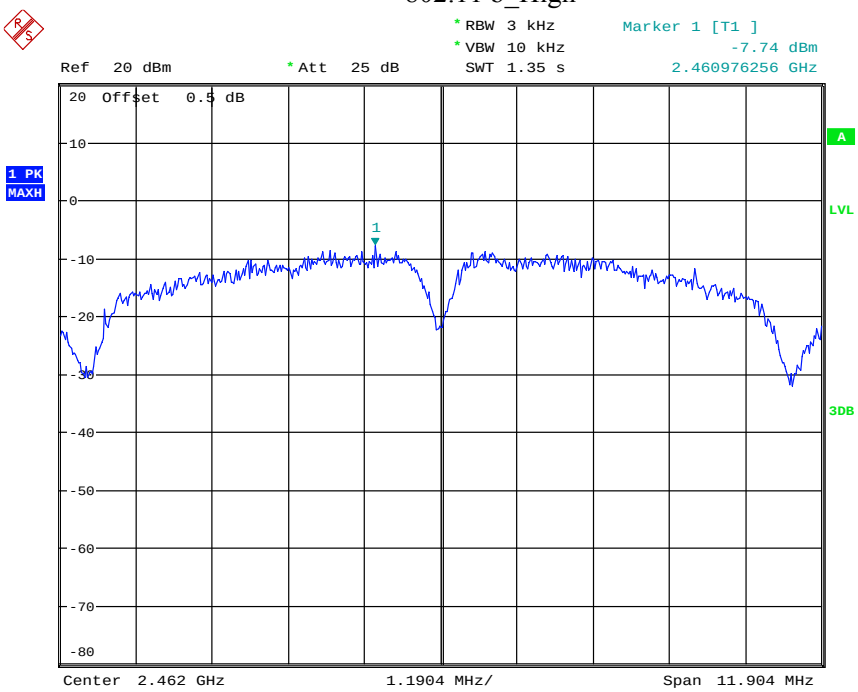


802.11 b_Middle



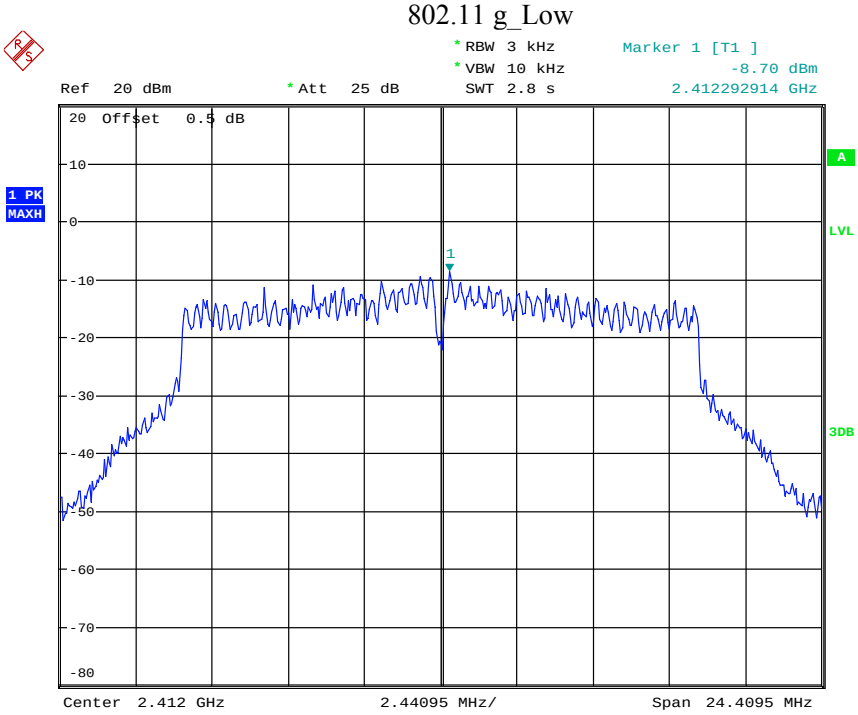
Date: 7.JUN.2019 16:39:06

802.11 b_High



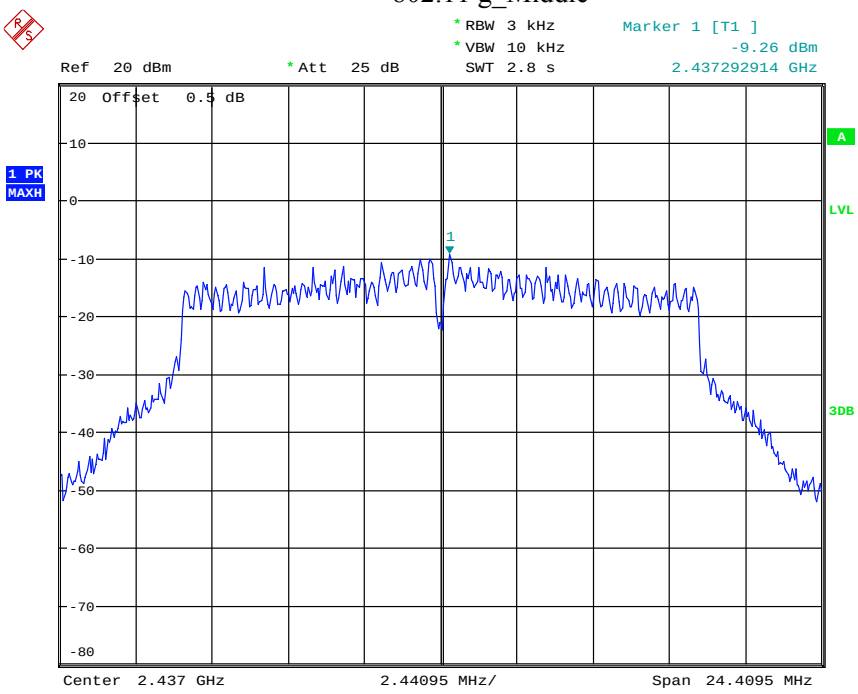
Date: 7.JUN.2019 16:40:14

802.11 g_Low



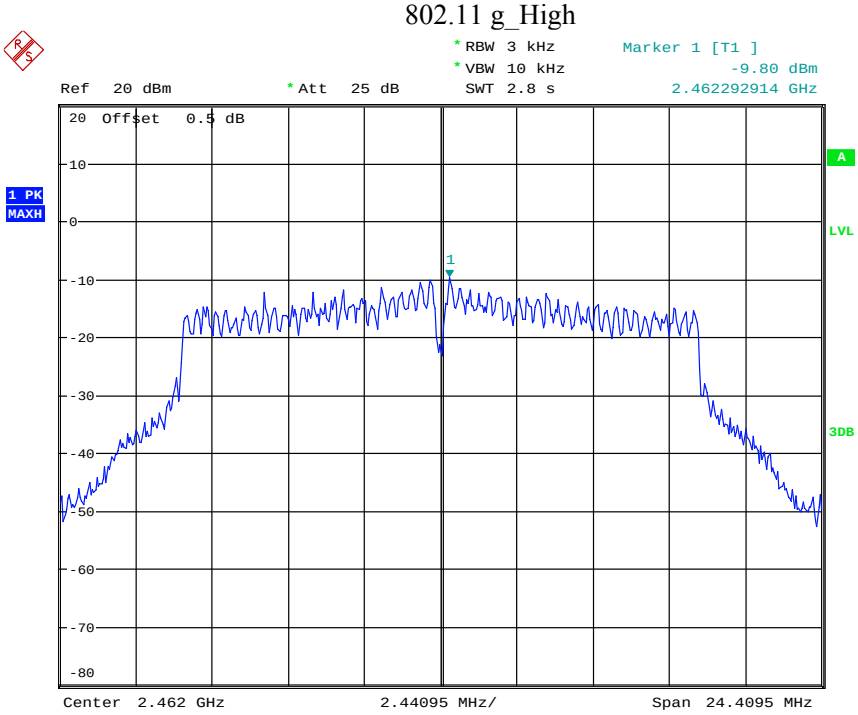
Date: 7.JUN.2019 16:41:52

802.11 g_Middle



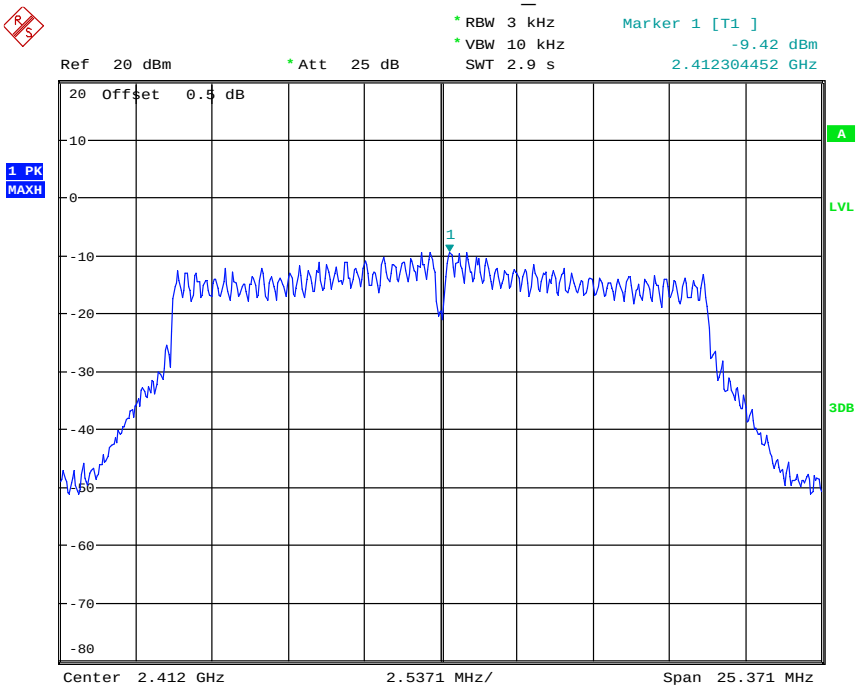
Date: 7.JUN.2019 16:43:35

802.11 g_High



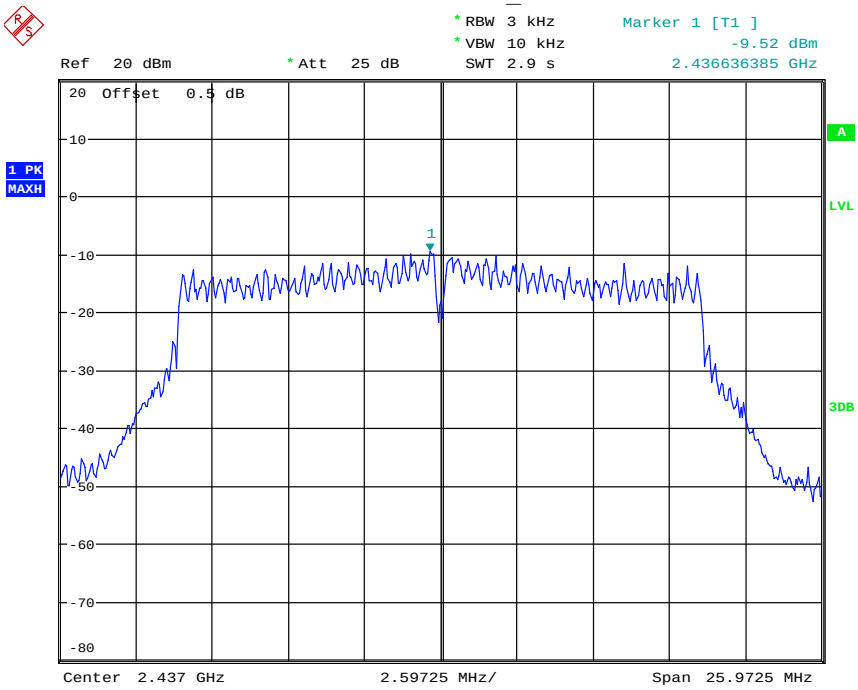
Date: 7.JUN.2019 16:45:10

802.11 n20_Low



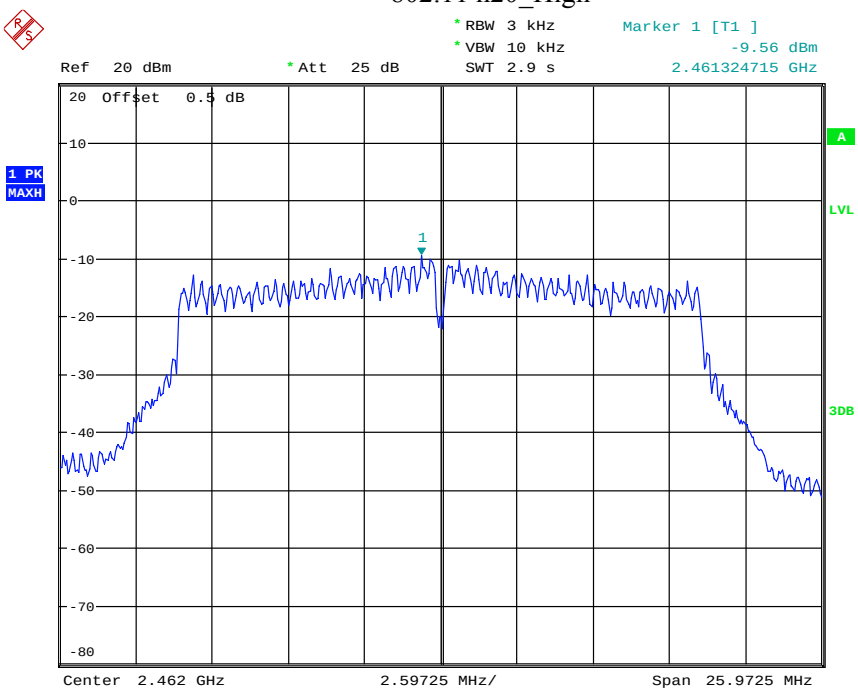
Date: 7.JUN.2019 16:47:54

802.11 n20_Middle



Date: 7.JUN.2019 16:51:10

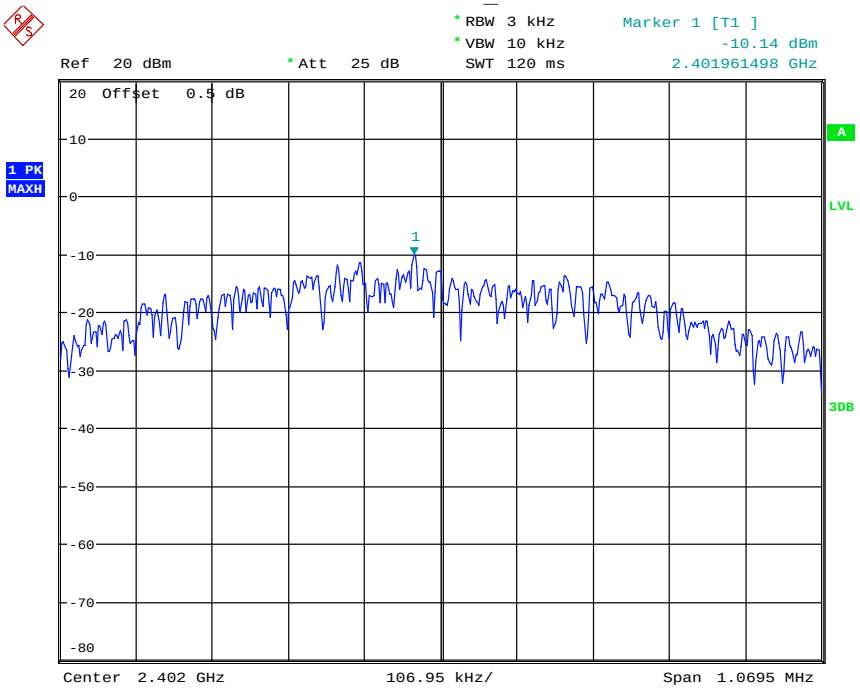
802.11 n20_High



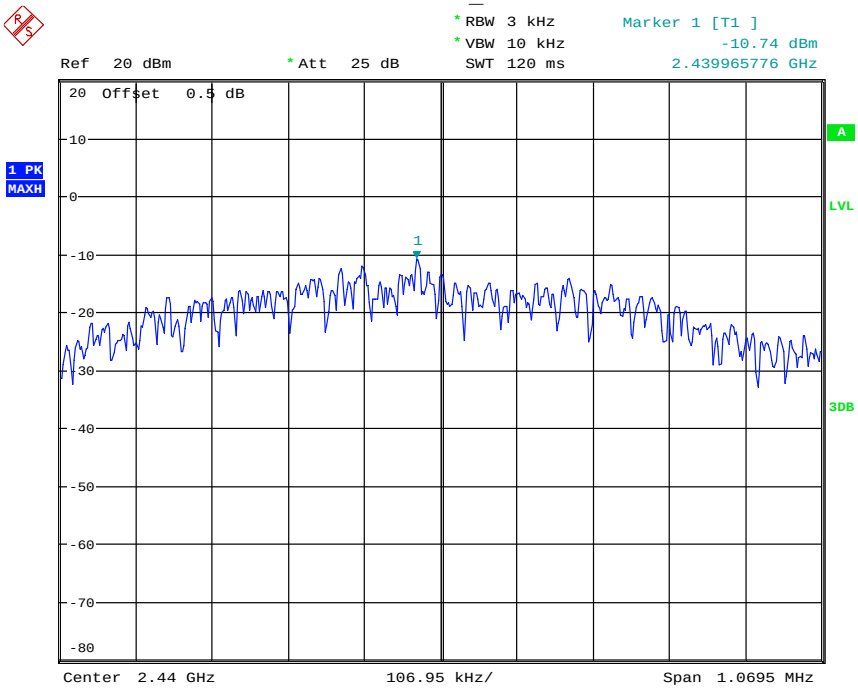
Date: 7.JUN.2019 16:53:56

Mode	Channel	Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)
BLE	Low	2402	-10.14	8
	Middle	2440	-10.74	
	High	2480	-11.35	

BLE_Low

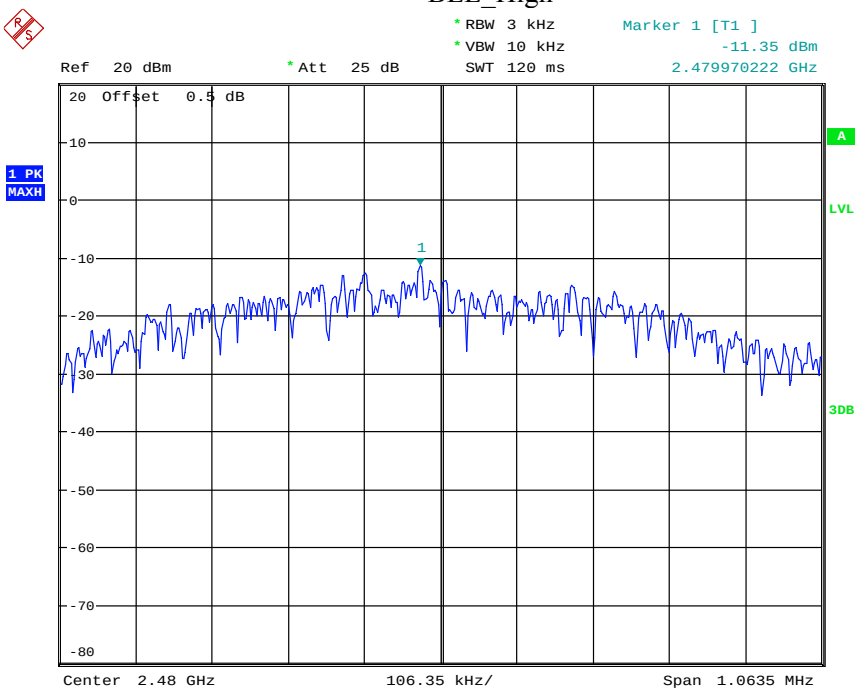


BLE_Middle



Date: 18.MAY.2019 16:52:47

BLE_High



Date: 18.MAY.2019 16:56:26

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