

FCC PART 15.247 TEST REPORT

For

Shenzhen Ustellar Technology Ltd.

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CHINA 518000

FCC ID: 2AWONNTF82

Report Type: Original Report	Product Name: Smart LED Flood Light
Report Number: RDG210331004-00A	
Report Date: 2021-05-11	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Smart LED Flood Light
EUT Model:	NTF82
Operation Frequency:	2412-2462 MHz(802.11b/g/n ht20) 2402-2480MHz(BLE)
Maximum Peak Output Power (Conducted):	13.92 dBm(802.11b/g/n) 4.94 dBm(BLE)
Modulation Type:	DSSS, OFDM, GFSK
Antenna Gain▲:	2 dBi
Rated Input Voltage:	AC 120V
Serial Number:	RDG210331004-RF-S1
EUT Received Date:	2021-04-01
EUT Received Status:	Good

Objective

This report is prepared on behalf of **Shenzhen Ustellar Technology 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.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and KDB 558074 D01 DTS Meas Guidance v05r02.

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 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, 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.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible 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*

Note:

Compliance*: This device contains the RF module which is identical with the module build in the certified device, model: NTF80, FCC ID: 2AWONNTF80, so the RF conducted test data please refer to report of NTF80: RDG210126014-00A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

For 2.4GHz band, total 11 channels are provided:

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

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

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

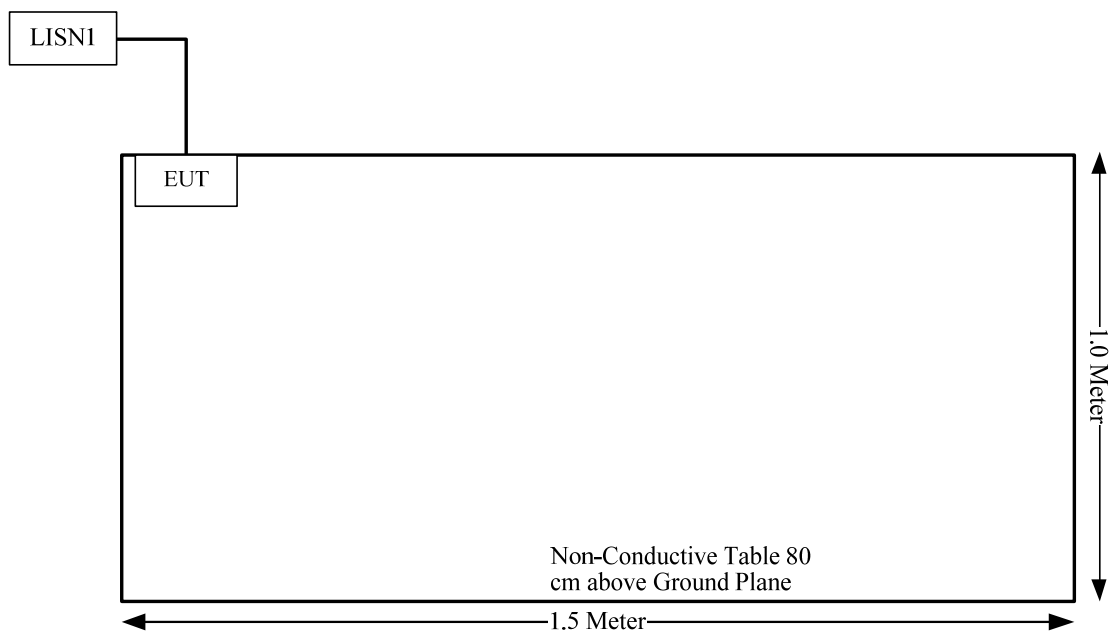
The software “Wifi Test Toolv1.4.1.exe” was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer▲:

Mode	Channel	Frequency (MHz)	Data rate	Power level Setting
802.11 b	Low	2412	1 Mbps	8
	Middle	2437	1 Mbps	8
	High	2462	1 Mbps	8
802.11 g	Low	2412	6 Mbps	9
	Middle	2437	6 Mbps	7
	High	2462	6 Mbps	6
802.11n ht20	Low	2412	MCS0	8
	Middle	2437	MCS0	6
	High	2462	MCS0	5
BLE	Low	2402	1Mbps	20
	Middle	2440	1Mbps	18
	High	2480	1Mbps	15

Equipment Modifications

No modification was made to the EUT.

Block Diagram of Test Setup



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/f ²)	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/cm²);

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:

Operation Modes	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	1.58	14	25.12	20.00	0.008	1.0
BLE	2402-2480	2	1.58	5	3.16	20.00	0.001	1.0

The WLAN and BLE can't transmit simultaneously.

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

Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range
Monopole	50	2 dBi/2.4~2.5GHz

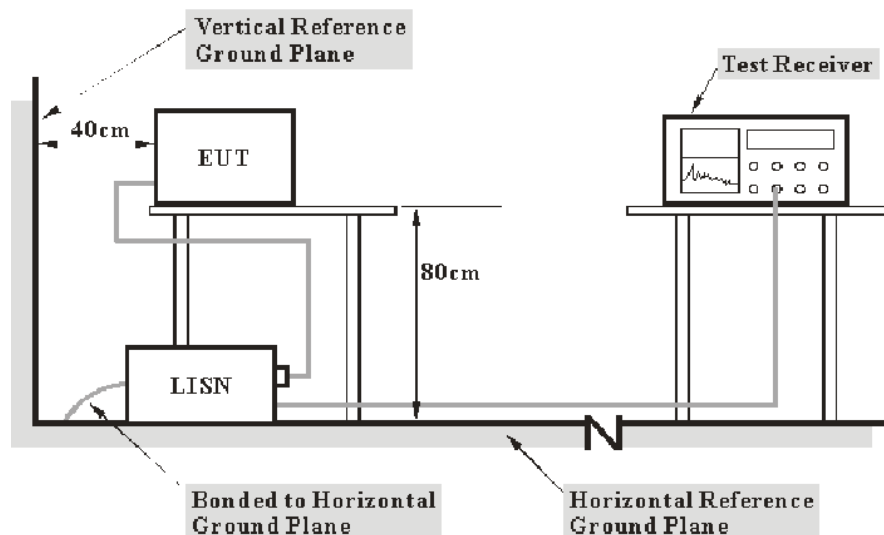
Result: Compliance.

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 limits.

The spacing between the peripherals was 10 cm.

The EUT 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 EUT was connected to the outlet of the first LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

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:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV 216	101614	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-07-07	2021-07-07
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	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

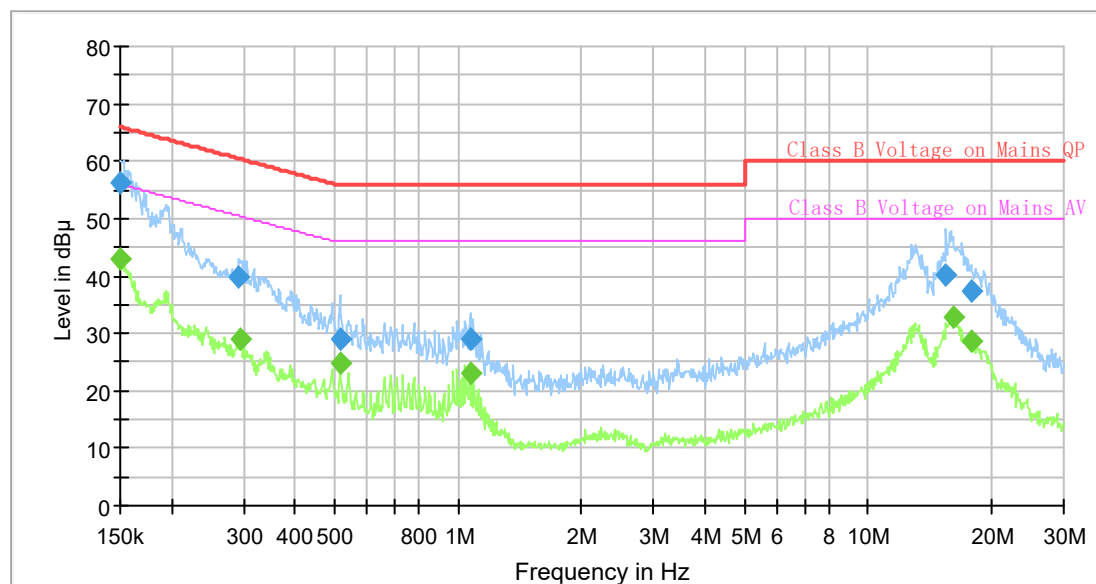
Environmental Conditions

Temperature:	25.5°C
Relative Humidity:	59%
ATM Pressure:	101.4kPa
Tester:	Walker Chen
Test Date:	2021-04-26

Test Result: Compliance

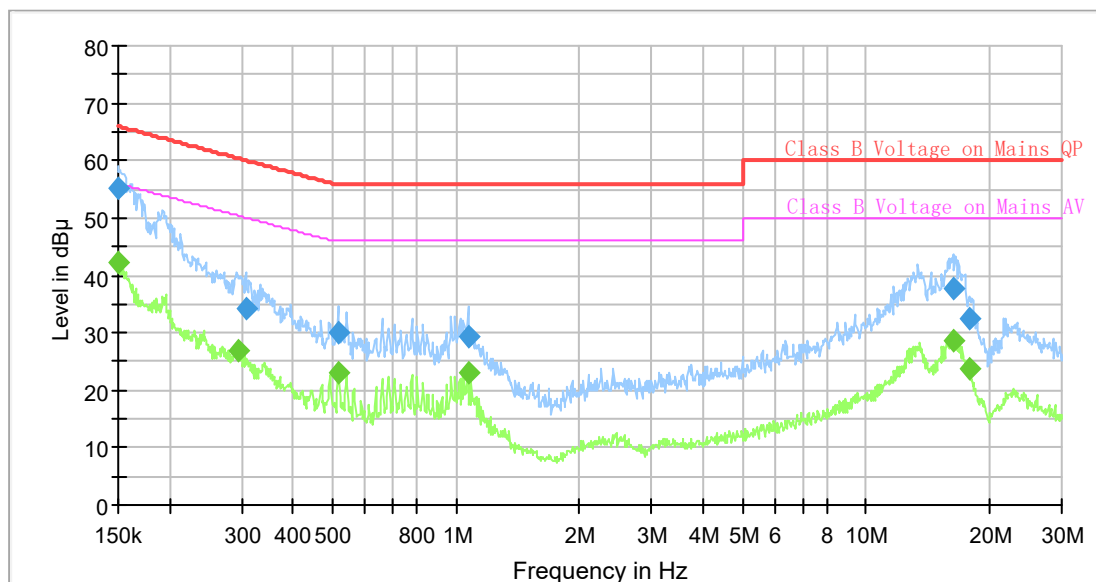
Test Mode: Transmitting(802.11b mode high channel was the worst)

AC120 V, 60 Hz, Line:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.150750	---	42.80	55.96	13.16	9.000	L1	9.6
0.150750	56.10	---	65.96	9.86	9.000	L1	9.6
0.292647	39.78	---	60.45	20.67	9.000	L1	9.6
0.294110	---	29.05	50.41	21.36	9.000	L1	9.6
0.514172	28.92	---	56.00	27.08	9.000	L1	9.6
0.516743	---	24.65	46.00	21.35	9.000	L1	9.6
1.070335	28.89	---	56.00	27.11	9.000	L1	9.7
1.070335	---	23.09	46.00	22.91	9.000	L1	9.7
15.507032	40.23	---	60.00	19.77	9.000	L1	10.2
16.138278	---	32.79	50.00	17.21	9.000	L1	10.1
17.831112	37.46	---	60.00	22.54	9.000	L1	10.1
17.920267	---	28.76	50.00	21.24	9.000	L1	10.1

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

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	55.14	---	66.00	10.86	9.000	N	9.6
0.150750	---	42.15	55.96	13.81	9.000	N	9.6
0.294110	---	27.01	50.41	23.40	9.000	N	9.6
0.307613	34.25	---	60.03	25.78	9.000	N	9.6
0.516743	---	22.97	46.00	23.03	9.000	N	9.6
0.516743	30.02	---	56.00	25.98	9.000	N	9.6
1.070335	29.30	---	56.00	26.70	9.000	N	9.6
1.070335	---	23.15	46.00	22.85	9.000	N	9.6
16.300064	37.77	---	60.00	22.23	9.000	N	9.9
16.300064	---	28.82	50.00	21.18	9.000	N	9.9
17.831112	---	23.70	50.00	26.30	9.000	N	9.9
17.831112	32.42	---	60.00	27.58	9.000	N	9.9

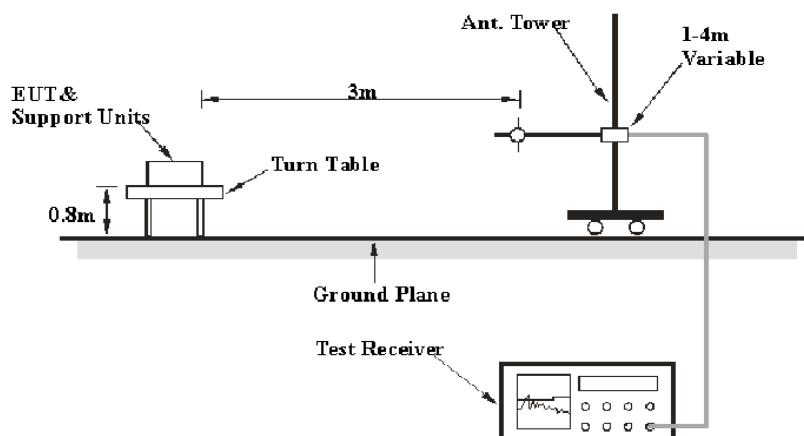
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

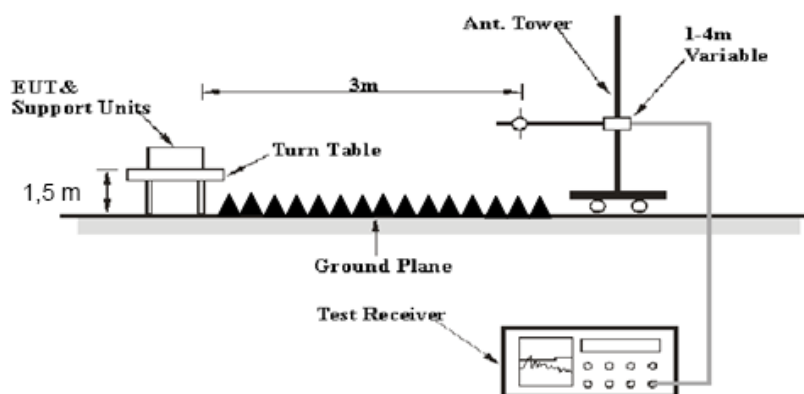
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission below 1GHz tests were performed in the 10 meters chamber test site, 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 external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 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- 26.5GHz:

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:

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiation Below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Radiation Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2020-12-05	2023-12-04
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2020-06-27	2021-06-27
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2020-06-16	2021-06-16
Mini Circuits	High Pass Filter	VHF-6010+	31118	2020-06-16	2021-06-16

*** 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**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	21.4 °C	25.6°C
Relative Humidity:	53 %	51%
ATM Pressure:	101.4 kPa	100.9kPa
Tester:	Burt Hu	Jeremy Liang
Test Date:	2021-04-26	2021-04-29

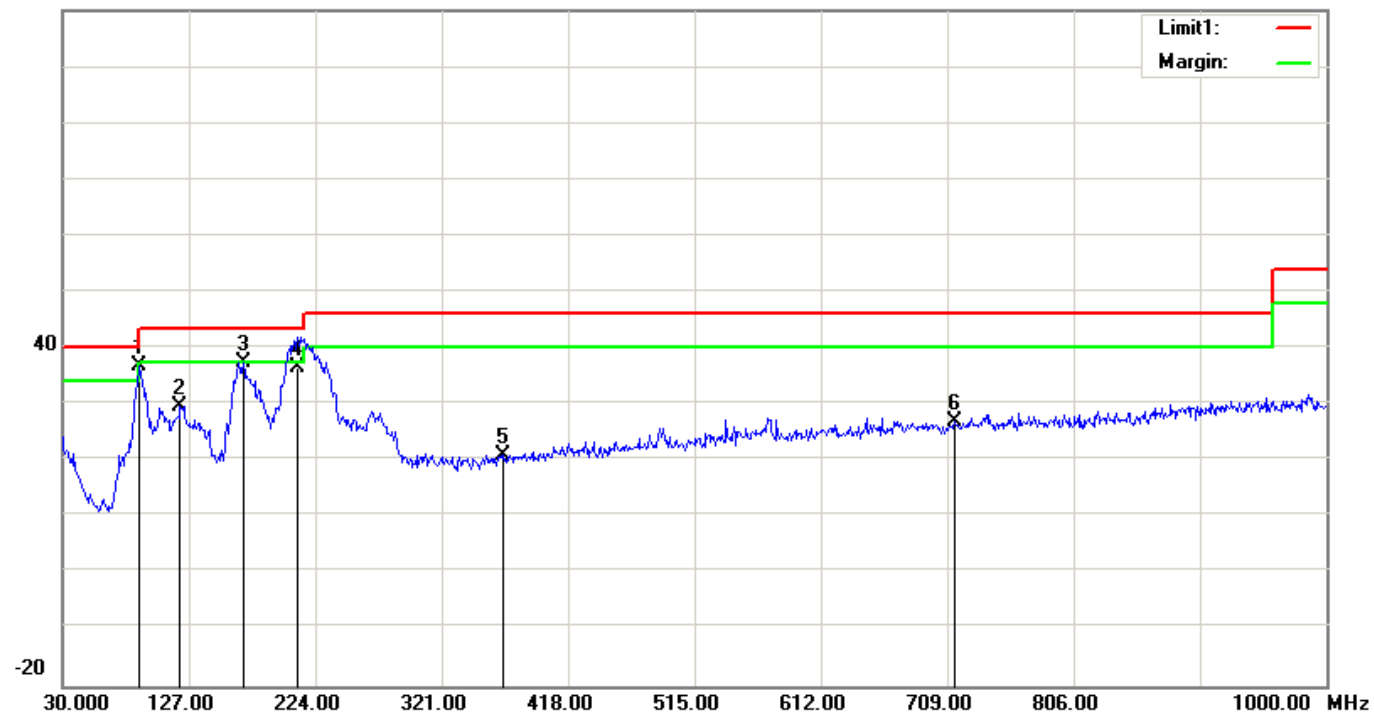
Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting

1) 30MHz-1GHz

Horizontal:

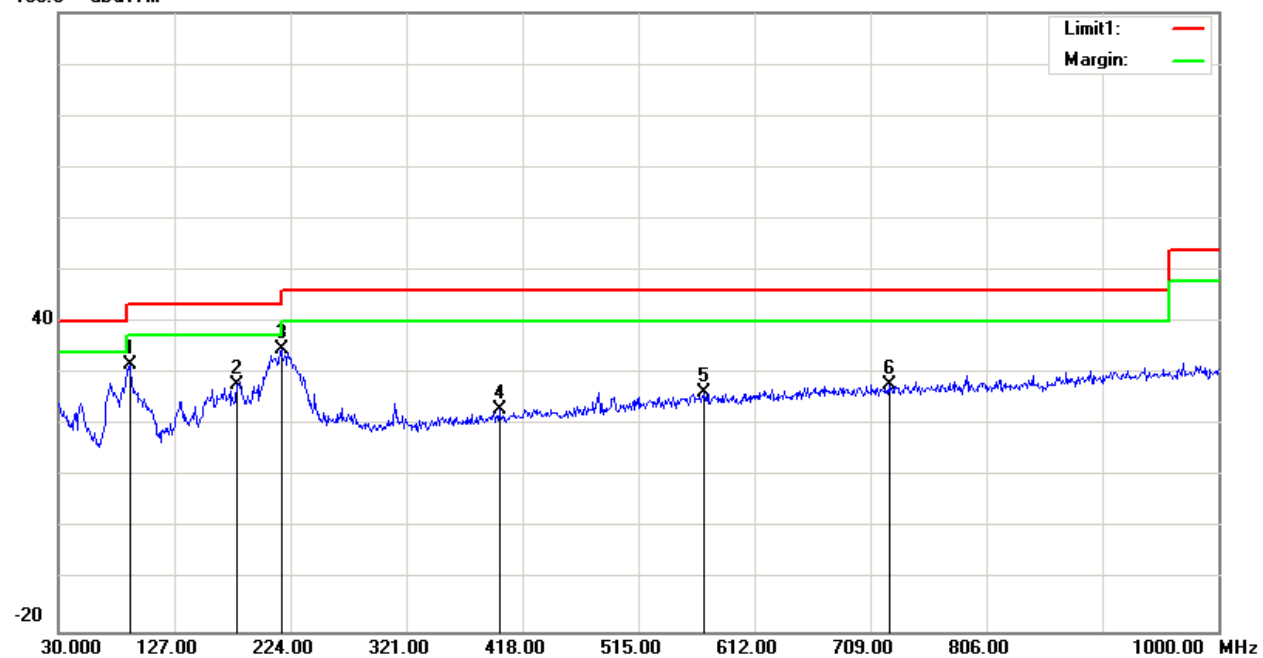
100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
89.1700	51.98	peak	-15.06	36.92	43.50	6.58
120.2100	42.23	peak	-12.63	29.60	43.50	13.90
168.7100	46.92	peak	-9.46	37.46	43.50	6.04
210.4200	47.82	QP	-11.22	36.60	43.50	6.90
368.5300	27.10	peak	-6.00	21.10	46.00	24.90
714.8200	26.65	peak	0.28	26.93	46.00	19.07

Vertical:

100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
90.1400	46.74	peak	-14.99	31.75	43.50	11.75
179.3800	37.80	peak	-9.80	28.00	43.50	15.50
216.2400	46.02	peak	-11.17	34.85	46.00	11.15
398.6000	28.29	peak	-5.29	23.00	46.00	23.00
570.2900	27.73	peak	-1.48	26.25	46.00	19.75
724.5200	27.29	peak	0.66	27.95	46.00	18.05

2) 1-25GHz:

802.11b Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	73.39	PK	H	28.12	1.81	0.00	103.32	N/A	N/A
2412.00	67.22	AV	H	28.12	1.81	0.00	97.15	N/A	N/A
2412.00	70.38	PK	V	28.12	1.81	0.00	100.31	N/A	N/A
2412.00	63.71	AV	V	28.12	1.81	0.00	93.64	N/A	N/A
2390.00	28.94	PK	H	28.08	1.80	0.00	58.82	74.00	15.18
2390.00	16.51	AV	H	28.08	1.80	0.00	46.39	54.00	7.61
4824.00	36.23	PK	H	32.95	3.19	25.62	46.75	74.00	27.25
4824.00	24.36	AV	H	32.95	3.19	25.62	34.88	54.00	19.12
7236.00	35.57	PK	H	35.81	4.77	25.64	50.51	74.00	23.49
7236.00	23.75	AV	H	35.81	4.77	25.64	38.69	54.00	15.31
Middle Channel: 2437 MHz									
2437.00	73.99	PK	H	28.17	1.82	0.00	103.98	N/A	N/A
2437.00	67.03	AV	H	28.17	1.82	0.00	97.02	N/A	N/A
2437.00	69.63	PK	V	28.17	1.82	0.00	99.62	N/A	N/A
2437.00	62.88	AV	V	28.17	1.82	0.00	92.87	N/A	N/A
4874.00	36.45	PK	H	33.05	3.26	25.65	47.11	74.00	26.89
4874.00	24.15	AV	H	33.05	3.26	25.65	34.81	54.00	19.19
7311.00	35.26	PK	H	36.01	4.64	25.71	50.20	74.00	23.80
7311.00	23.17	AV	H	36.01	4.64	25.71	38.11	54.00	15.89
High Channel: 2462 MHz									
2462.00	73.34	PK	H	28.22	1.83	0.00	103.39	N/A	N/A
2462.00	67.03	AV	H	28.22	1.83	0.00	97.08	N/A	N/A
2462.00	69.48	PK	V	28.22	1.83	0.00	99.53	N/A	N/A
2462.00	63.01	AV	V	28.22	1.83	0.00	93.06	N/A	N/A
2483.50	28.65	PK	H	28.27	1.84	0.00	58.76	74.00	15.24
2483.50	16.78	AV	H	28.27	1.84	0.00	46.89	54.00	7.11
4924.00	36.64	PK	H	33.15	3.27	25.65	47.41	74.00	26.59
4924.00	24.57	AV	H	33.15	3.27	25.65	35.34	54.00	18.66
7386.00	35.01	PK	H	36.20	4.51	25.79	49.93	74.00	24.07
7386.00	23.99	AV	H	36.20	4.51	25.79	38.91	54.00	15.09

802.11g Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	72.44	PK	H	28.12	1.81	0.00	102.37	N/A	N/A
2412.00	62.91	AV	H	28.12	1.81	0.00	92.84	N/A	N/A
2412.00	68.79	PK	V	28.12	1.81	0.00	98.72	N/A	N/A
2412.00	62.34	AV	V	28.12	1.81	0.00	92.27	N/A	N/A
2390.00	29.31	PK	H	28.08	1.80	0.00	59.19	74.00	14.81
2390.00	16.54	AV	H	28.08	1.80	0.00	46.42	54.00	7.58
4824.00	37.14	PK	H	32.95	3.19	25.62	47.66	74.00	26.34
4824.00	25.36	AV	H	32.95	3.19	25.62	35.88	54.00	18.12
7236.00	35.45	PK	H	35.81	4.77	25.64	50.39	74.00	23.61
7236.00	23.74	AV	H	35.81	4.77	25.64	38.68	54.00	15.32
Middle Channel: 2437 MHz									
2437.00	70.56	PK	H	28.17	1.82	0.00	100.55	N/A	N/A
2437.00	61.23	AV	H	28.17	1.82	0.00	91.22	N/A	N/A
2437.00	64.78	PK	V	28.17	1.82	0.00	94.77	N/A	N/A
2437.00	55.42	AV	V	28.17	1.82	0.00	85.41	N/A	N/A
4874.00	36.89	PK	H	33.05	3.26	25.65	47.55	74.00	26.45
4874.00	24.87	AV	H	33.05	3.26	25.65	35.53	54.00	18.47
7311.00	35.46	PK	H	36.01	4.64	25.71	50.40	74.00	23.60
7311.00	23.51	AV	H	36.01	4.64	25.71	38.45	54.00	15.55
High Channel: 2462 MHz									
2462.00	68.42	PK	H	28.22	1.83	0.00	98.47	N/A	N/A
2462.00	59.02	AV	H	28.22	1.83	0.00	89.07	N/A	N/A
2462.00	62.06	PK	V	28.22	1.83	0.00	92.11	N/A	N/A
2462.00	53.41	AV	V	28.22	1.83	0.00	83.46	N/A	N/A
2483.50	29.58	PK	H	28.27	1.84	0.00	59.69	74.00	14.31
2483.50	16.78	AV	H	28.27	1.84	0.00	46.89	54.00	7.11
4924.00	36.26	PK	H	33.15	3.27	25.65	47.03	74.00	26.97
4924.00	24.58	AV	H	33.15	3.27	25.65	35.35	54.00	18.65
7386.00	35.78	PK	H	36.20	4.51	25.79	50.70	74.00	23.30
7386.00	23.77	AV	H	36.20	4.51	25.79	38.69	54.00	15.31

802.11n ht20 Mode:

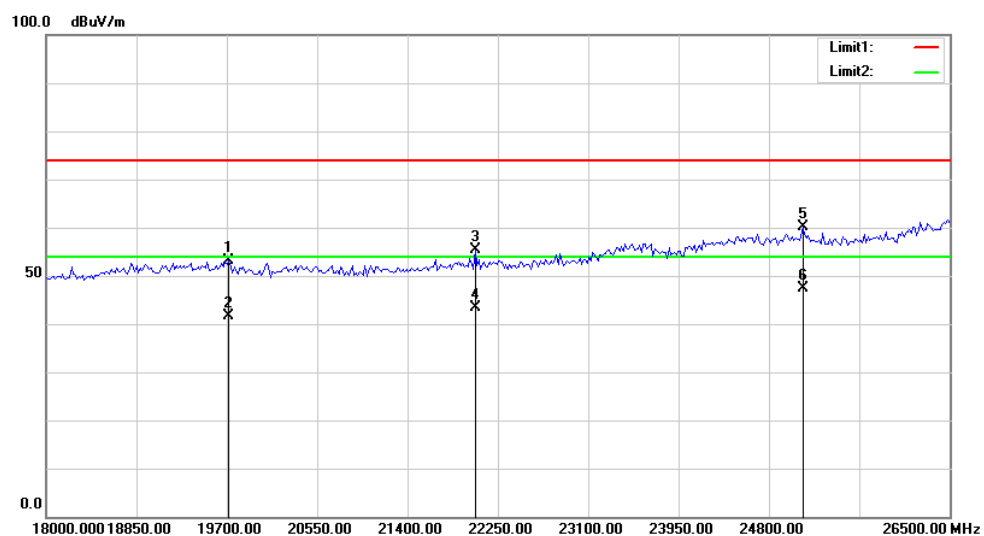
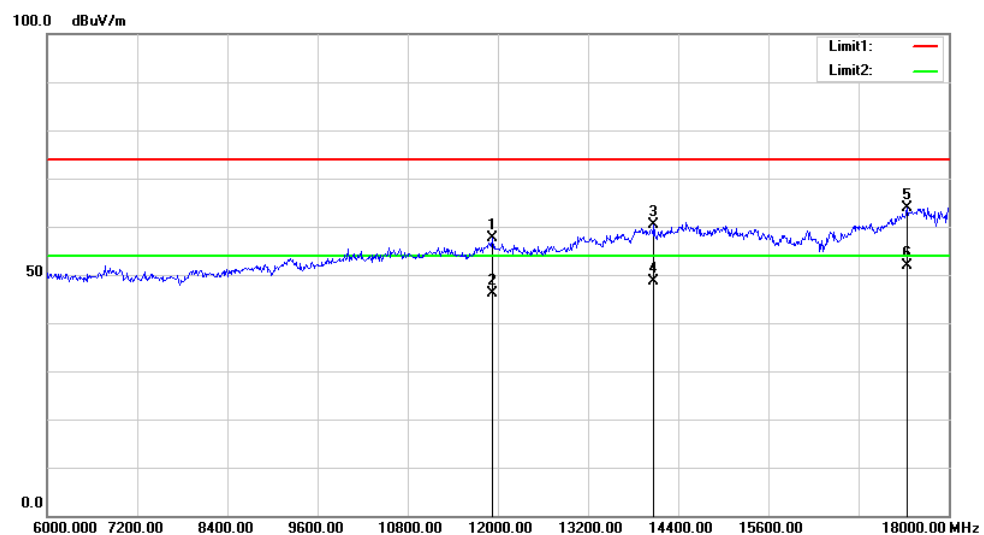
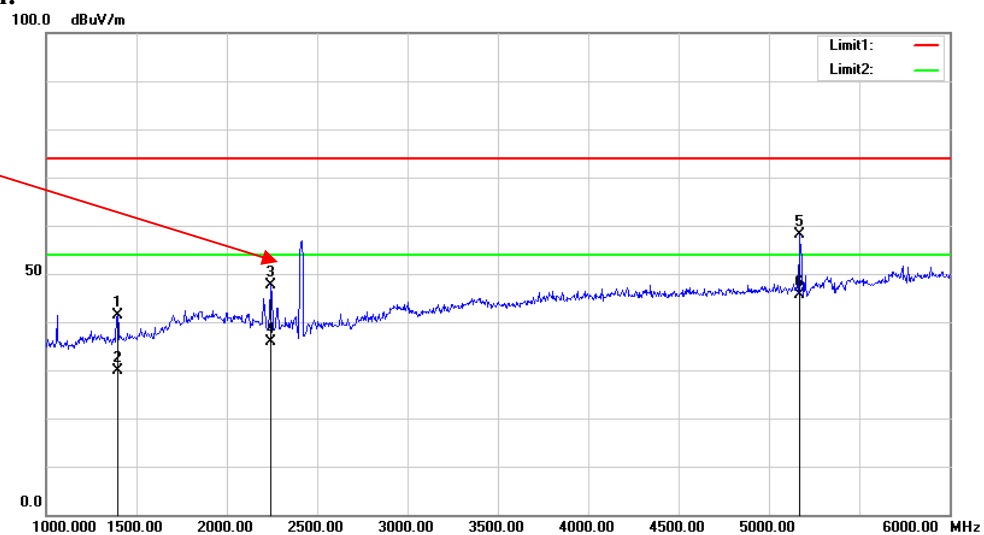
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	71.29	PK	H	28.12	1.81	0.00	101.22	N/A	N/A
2412.00	61.79	AV	H	28.12	1.81	0.00	91.72	N/A	N/A
2412.00	65.23	PK	V	28.12	1.81	0.00	95.16	N/A	N/A
2412.00	56.72	AV	V	28.12	1.81	0.00	86.65	N/A	N/A
2390.00	29.14	PK	H	28.08	1.80	0.00	59.02	74.00	14.98
2390.00	15.98	AV	H	28.08	1.80	0.00	45.86	54.00	8.14
4824.00	35.26	PK	H	32.95	3.19	25.62	45.78	74.00	28.22
4824.00	23.12	AV	H	32.95	3.19	25.62	33.64	54.00	20.36
7236.00	35.21	PK	H	35.81	4.77	25.64	50.15	74.00	23.85
7236.00	23.01	AV	H	35.81	4.77	25.64	37.95	54.00	16.05
Middle Channel: 2437 MHz									
2437.00	69.54	PK	H	28.17	1.82	0.00	99.53	N/A	N/A
2437.00	60.12	AV	H	28.17	1.82	0.00	90.11	N/A	N/A
2437.00	63.62	PK	V	28.17	1.82	0.00	93.61	N/A	N/A
2437.00	54.72	AV	V	28.17	1.82	0.00	84.71	N/A	N/A
4874.00	35.47	PK	H	33.05	3.26	25.65	46.13	74.00	27.87
4874.00	23.16	AV	H	33.05	3.26	25.65	33.82	54.00	20.18
7311.00	35.84	PK	H	36.01	4.64	25.71	50.78	74.00	23.22
7311.00	23.14	AV	H	36.01	4.64	25.71	38.08	54.00	15.92
High Channel: 2462 MHz									
2462.00	67.15	PK	H	28.22	1.83	0.00	97.20	N/A	N/A
2462.00	58.31	AV	H	28.22	1.83	0.00	88.36	N/A	N/A
2462.00	61.19	PK	V	28.22	1.83	0.00	91.24	N/A	N/A
2462.00	52.88	AV	V	28.22	1.83	0.00	82.93	N/A	N/A
2483.50	29.37	PK	H	28.27	1.84	0.00	59.48	74.00	14.52
2483.50	16.78	AV	H	28.27	1.84	0.00	46.89	54.00	7.11
4924.00	35.69	PK	H	33.15	3.27	25.65	46.46	74.00	27.54
4924.00	23.67	AV	H	33.15	3.27	25.65	34.44	54.00	19.56
7386.00	35.88	PK	H	36.20	4.51	25.79	50.80	74.00	23.20
7386.00	23.47	AV	H	36.20	4.51	25.79	38.39	54.00	15.61

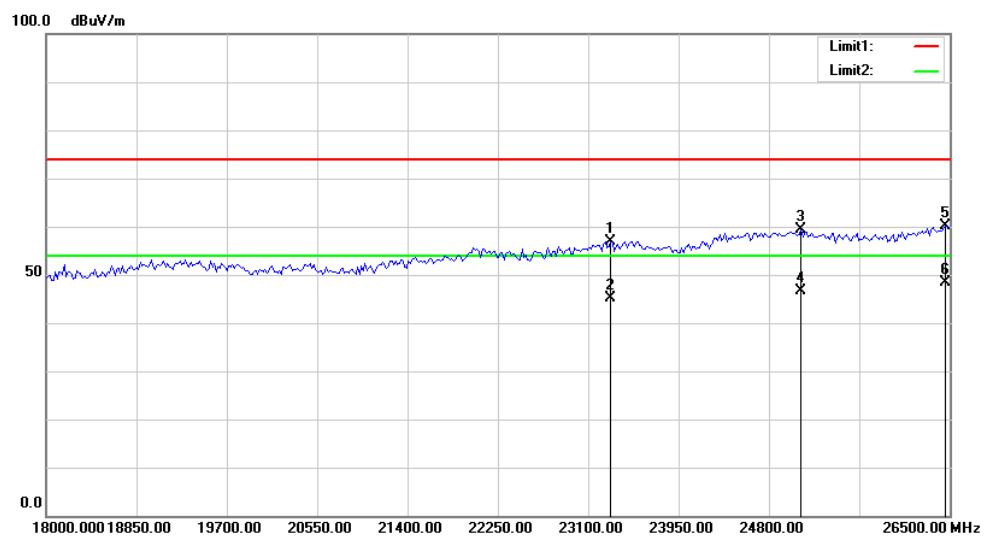
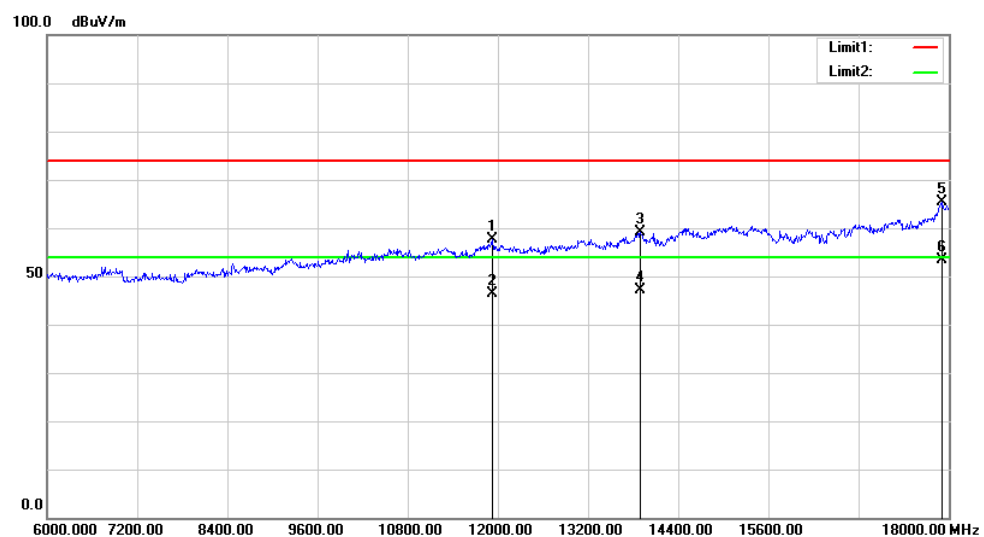
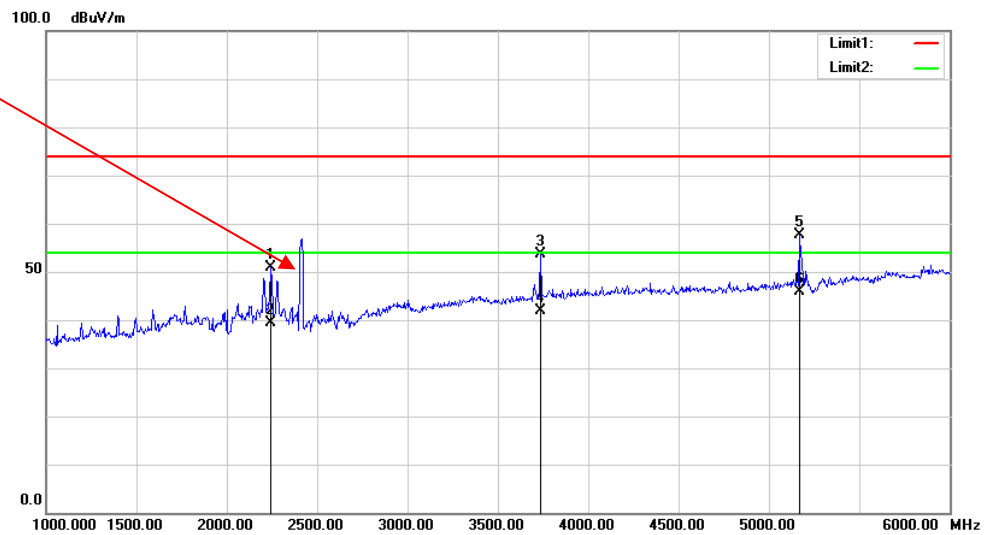
BLE:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2402 MHz									
2402.00	72.02	PK	H	28.10	1.80	0.00	101.92	N/A	N/A
2402.00	70.97	AV	H	28.10	1.80	0.00	100.87	N/A	N/A
2402.00	65.55	PK	V	28.10	1.80	0.00	95.45	N/A	N/A
2402.00	63.41	AV	V	28.10	1.80	0.00	93.31	N/A	N/A
2390.00	29.76	PK	H	28.08	1.80	0.00	59.64	74.00	14.36
2390.00	16.51	AV	H	28.08	1.80	0.00	46.39	54.00	7.61
4804.00	36.49	PK	H	32.91	3.17	25.60	46.97	74.00	27.03
4804.00	25.69	AV	H	32.91	3.17	25.60	36.17	54.00	17.83
7206.00	35.65	PK	H	35.74	4.82	25.60	50.61	74.00	23.39
7206.00	23.46	AV	H	35.74	4.82	25.60	38.42	54.00	15.58
Middle Channel: 2440 MHz									
2440.00	69.25	PK	H	28.18	1.82	0.00	99.25	N/A	N/A
2440.00	68.71	AV	H	28.18	1.82	0.00	98.71	N/A	N/A
2440.00	63.89	PK	V	28.18	1.82	0.00	93.89	N/A	N/A
2440.00	61.23	AV	V	28.18	1.82	0.00	91.23	N/A	N/A
4880.00	36.15	PK	H	33.06	3.27	25.66	46.82	74.00	27.18
4880.00	24.16	AV	H	33.06	3.27	25.66	34.83	54.00	19.17
7320.00	35.74	PK	H	36.03	4.62	25.72	50.67	74.00	23.33
7320.00	22.47	AV	H	36.03	4.62	25.72	37.40	54.00	16.60
High Channel: 2480 MHz									
2480.00	68.06	PK	H	28.26	1.84	0.00	98.16	N/A	N/A
2480.00	67.13	AV	H	28.26	1.84	0.00	97.23	N/A	N/A
2480.00	62.38	PK	V	28.26	1.84	0.00	92.48	N/A	N/A
2480.00	60.12	AV	V	28.26	1.84	0.00	90.22	N/A	N/A
2483.50	30.21	PK	H	28.27	1.84	0.00	60.32	74.00	13.68
2483.50	17.80	AV	H	28.27	1.84	0.00	47.91	54.00	6.09
4960.00	35.65	PK	H	33.22	3.23	25.63	46.47	74.00	27.53
4960.00	23.47	AV	H	33.22	3.23	25.63	34.29	54.00	19.71
7440.00	35.17	PK	H	36.34	4.41	25.85	50.07	74.00	23.93
7440.00	23.06	AV	H	36.34	4.41	25.85	37.96	54.00	16.04

Test plots (802.11b Low channel was the worst)**Horizontal:**

Fundamental
Test with Band
Rejection Filter



Vertical:Fundamental
Test with Band
Rejection Filter

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