

## FCC PART 15.247

## TEST REPORT

For

### Amgoo TELECOM CO., LTD

3/F, Block R2-A(North), Gaoxin S. Ave. 4th, Hi-Tech Industrial Park,  
Nanshan District, Shenzhen, China

**FCC ID: UOSAM508**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Smartphone
<b>Test Engineer:</b> Shawn Xiao	Shawn Xiao
<b>Report Number:</b> RSZ160525006-00C	
<b>Report Date:</b> 2016-06-08	
<b>Reviewed By:</b> RF Engineer	Candy Li
<b>Prepared By:</b> Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>	

**Note:** This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE .....	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY .....	3
TEST FACILITY .....	4
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>5</b>
DESCRIPTION OF TEST CONFIGURATION .....	5
EQUIPMENT MODIFICATIONS .....	5
EUT EXERCISE SOFTWARE .....	5
EXTERNAL I/O CABLE.....	5
BLOCK DIAGRAM OF TEST SETUP .....	6
<b>SUMMARY OF TEST RESULTS .....</b>	<b>7</b>
<b>FCC§15.247 (i), §1.1307 (b) (1) &amp; §2.1093 – RF EXPOSURE .....</b>	<b>9</b>
APPLICABLE STANDARD .....	9
<b>FCC §15.203 - ANTENNA REQUIREMENT.....</b>	<b>10</b>
APPLICABLE STANDARD .....	10
ANTENNA CONNECTOR CONSTRUCTION .....	10
<b>FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS .....</b>	<b>11</b>
APPLICABLE STANDARD .....	11
MEASUREMENT UNCERTAINTY.....	11
EUT SETUP .....	11
EMI TEST RECEIVER SETUP.....	12
TEST PROCEDURE .....	12
TEST EQUIPMENT LIST AND DETAILS.....	12
CORRECTED FACTOR & MARGIN CALCULATION .....	12
TEST RESULTS SUMMARY .....	13
TEST DATA .....	13
<b>FCC §15.209, §15.205 &amp; §15.247(d) - SPURIOUS EMISSIONS.....</b>	<b>16</b>
APPLICABLE STANDARD .....	16
MEASUREMENT UNCERTAINTY.....	16
EUT SETUP .....	16
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	17
TEST PROCEDURE .....	17
TEST EQUIPMENT LIST AND DETAILS.....	18
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	18
TEST RESULTS SUMMARY .....	19
TEST DATA .....	19

---

## GENERAL INFORMATION

---

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

The *Amgoo Telecom Co., Ltd*'s product, model number: AM508 (FCC ID: UOSAM508) or the "EUT" in this report was a *Smartphone*, which was measured approximately: 14.4 cm (L) × 7.4 cm (W) × 1.0 cm (H), rated with input voltage: DC 3.7V rechargeable Li-ion battery or DC 5.0V from adapter. The highest operating frequency is 2480MHz.

Adapter Information:

Model: CH5

Input: AC 100-240V, 50/60Hz, 0.2A

Output: DC 5V, 1000mA

*\*All measurement and test data in this report was gathered from production sample serial number: 1602344. (Assigned by Shenzhen BACL). The EUT supplied by the applicant was received on 2016-05-25.*

### Objective

This report is prepared on behalf of *Amgoo Telecom co., LTD* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commission's rules.

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

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

FCC Part 15B JBP, Part 15.247 DSS and Part 22H & 24E PCE submissions with FCC ID: UOSAM508.

### 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 at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with RF radiated emission is 5.81 dB for 30MHz-1GHz and 4.88 dB for above 1GHz, 1.95dB for conducted measurement.

## **Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3<sup>rd</sup> Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10-2013.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

For 802.11b, 802.11g and 802.11n-HT20 mode, 11 channels are provided to testing:

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

For 802.11b, 802.11g, 802.11n-HT20 mode, EUT was tested with Channel 1, 6 and 11.

### Equipment Modifications

No modification was made to the EUT tested.

### EUT Exercise Software

Wifi test in the engineer mode.

The below data rate was the worst case and selected to be tested:

802.11b: Data rate: 1 Mbps, Power level: 45

802.11g: Data rate: 6 Mbps, Power level: 1078

802.11n-HT20: Data rate: MCS0, Power level: 1085

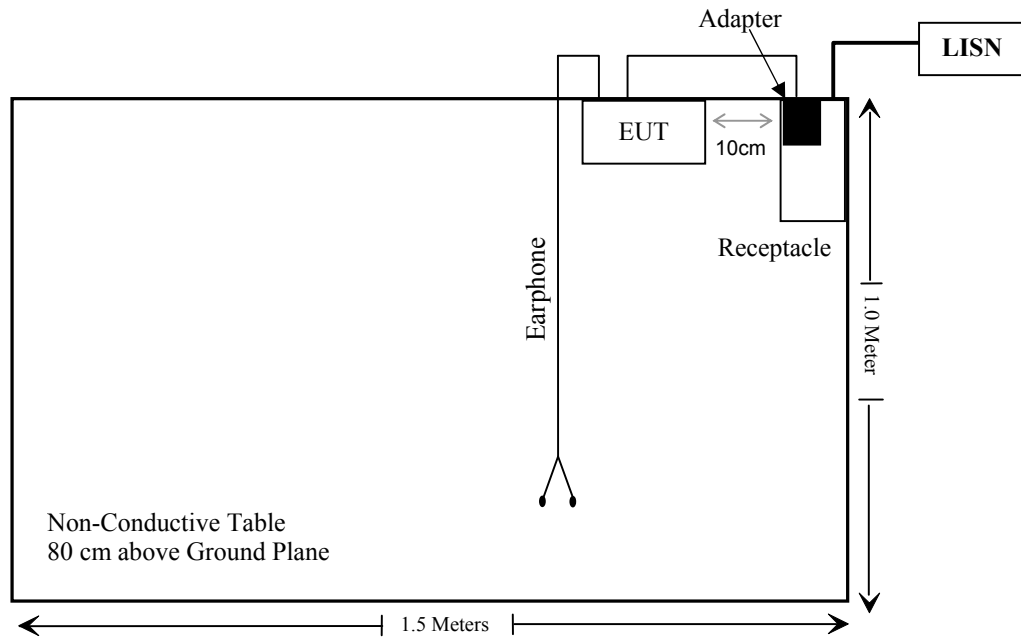
Pre-scan with all the data rates, the above data rate is the worst case for Wifi test.

### External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Detachable USB Cable	1.0	EUT	Adapter
Un-Shielding Detachable Earphone Cable	1.2	EUT	Earphone

## Block Diagram of Test Setup

For conducted emission:



**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1)& §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 Emission Bandwidth	Compliance*
§15.247(b)(3)	Maximum Conducted Output Power	Compliance*
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance*
§15.247(e)	Power Spectral Density	Compliance*

Compliance\*: The EUT (Model: AM508, FCC ID: UOSAM508) is the same main board and chip as the EUT (Model: AM402, FCC ID: UOSAM402), the different test data between them is “AC Line Conducted Emissions” & “Spurious Emissions”, so all the other test data are referred to the report No.: RSZ160525004-00C, which was tested by Bay Area Compliance Laboratories Corp. (Shenzhen).

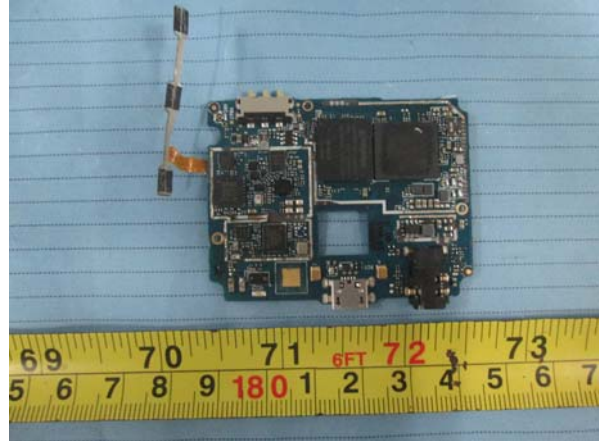
The main board and chip details please refer to the images below.

Model AM508:

Main board top view



Main board Bottom Shielding Off view

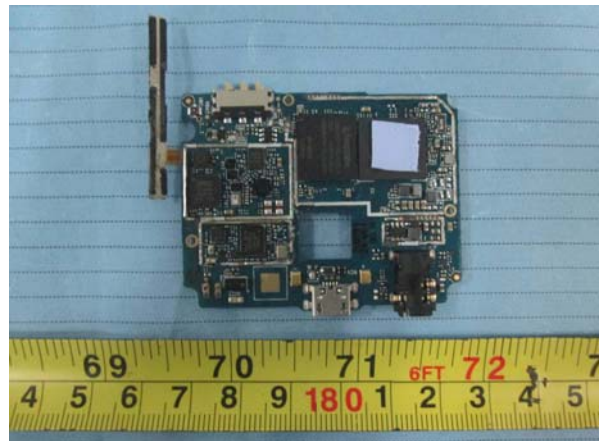


Model AM402:

Main board top view



Main board Bottom Shielding Off view





## **FCC§15.247 (i), §1.1307 (b) (1) & §2.1093 – RF EXPOSURE**

### **Applicable Standard**

According to FCC §2.1093 and §1.1307(b) (1), 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 KDB 447498 D01 General RF Exposure Guidance

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

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

1.  $f(\text{GHz})$  is the RF channel transmit frequency in GHz.

2. Power and distance are rounded to the nearest mW and mm before calculation.

3. The result is rounded to one decimal place for comparison.

4. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test Exclusion.

### **Measurement Result**

**For worst case:**

Mode	Frequency (MHz)	Max Tune-up Conducted Power (dBm)	Max Tune-up Conducted Power (mW)	Calculated Distance (mm)	Calculated value	Threshold (1-g SAR)	SAR Test Exclusion
Wi-Fi	2462	8.0	6.31	5	2.0	3.0	Yes

**Result: No SAR test is required**

---

## **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.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **Antenna Connector Construction**

The EUT has one internal antenna arrangement, which was permanently attached 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

### Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements may be receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report.

Port	Expanded Measurement uncertainty
AC Mains	3.34 dB (k=2, 95% level of confidence)
CAT 3	3.72 dB (k=2, 95% level of confidence)
CAT 5	3.74 dB (k=2, 95% level of confidence)
CAT 6	4.54 dB (k=2, 95% level of confidence)

### 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.

## 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 outlet of the LISN.

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

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

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2016-06-01	2017-05-31
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2015-12-15	2016-12-14
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2016-05-14	2017-05-14
Rohde & Schwarz	CE Test software	EMC 32	V8.53	NCR	NCR
Ducommun technologies	Conducted Emission Cable	RG-214	CB031	2015-06-15	2016-06-15

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

## Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

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

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

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, the worst margin reading as below:

**8.6 dB at 0.542010 MHz in the Line conducted mode**

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

## Test Data

### Environmental Conditions

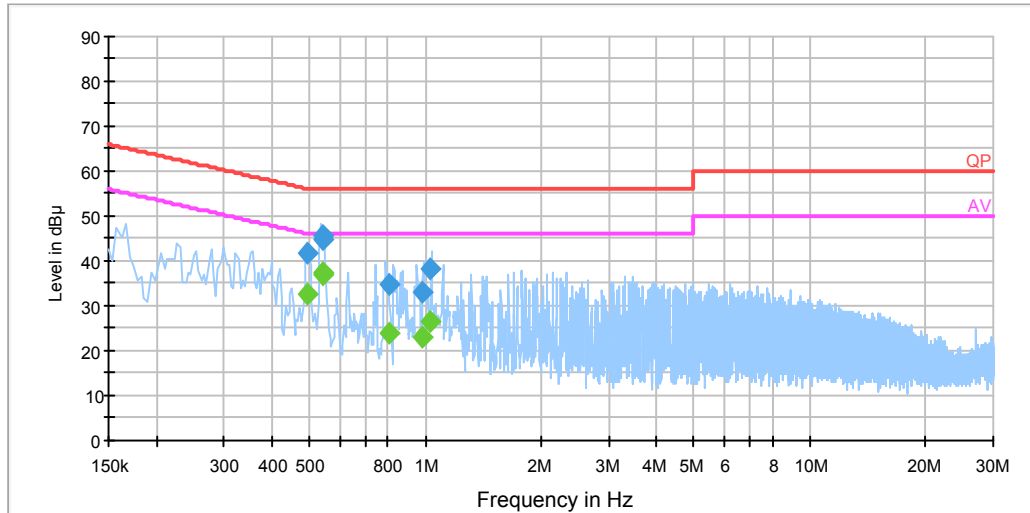
Temperature:	24 °C
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

*The testing was performed by Shawn Xiao on 2016-06-06*

*EUT operation mode: Transmitting & Charging*

**Wi-Fi Mode:****AC 120V/60 Hz, Line**

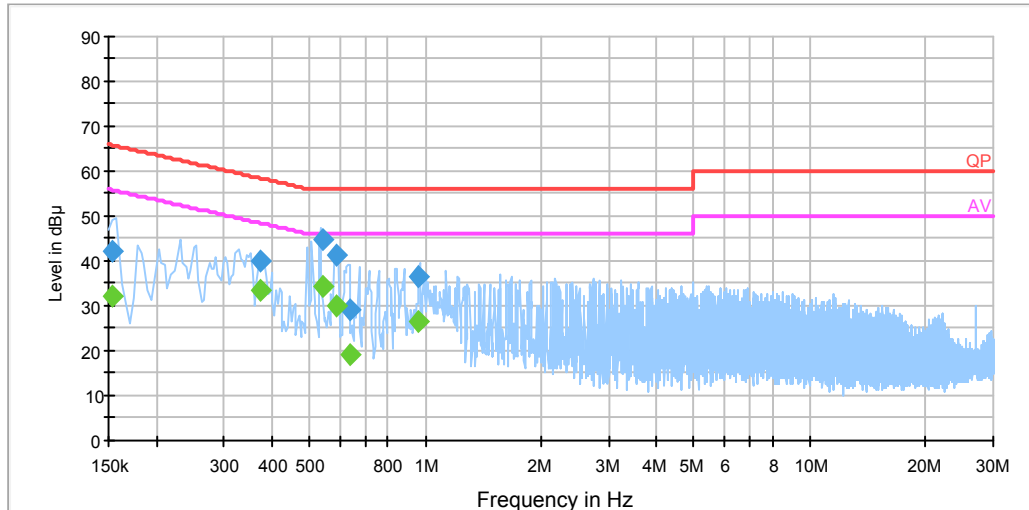
EMI Auto Test L



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.494650	41.8	19.9	56.1	14.3	QP
0.541930	44.8	19.9	56.0	11.2	QP
0.542010	45.5	19.9	56.0	10.5	QP
0.801850	34.6	19.9	56.0	21.4	QP
0.979150	32.9	20.0	56.0	23.1	QP
1.026430	38.2	20.0	56.0	17.8	QP
0.494650	32.4	19.9	46.1	13.7	Ave.
0.541930	36.8	19.9	46.0	9.2	Ave.
0.542010	37.4	19.9	46.0	<b>8.6</b>	Ave.
0.801850	24.0	19.9	46.0	22.0	Ave.
0.979150	23.1	20.0	46.0	22.9	Ave.
1.026430	26.4	20.0	46.0	19.6	Ave.

**AC 120V/60 Hz, Neutral**

## EMI Auto Test N



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.153500	42.2	20.0	65.8	23.6	QP
0.372330	40.1	19.9	58.4	18.3	QP
0.542010	44.7	19.9	56.0	11.3	QP
0.589210	41.4	19.9	56.0	14.6	QP
0.639450	29.1	19.9	56.0	26.9	QP
0.963510	36.4	20.0	56.0	19.6	QP
0.153500	32.3	20.0	55.8	23.5	Ave.
0.372330	33.6	19.9	48.4	14.8	Ave.
0.542010	34.5	19.9	46.0	11.5	Ave.
0.589210	30.2	19.9	46.0	15.8	Ave.
0.639450	19.0	19.9	46.0	27.0	Ave.
0.963510	26.6	20.0	46.0	19.4	Ave.

**Note:**

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

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

### Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

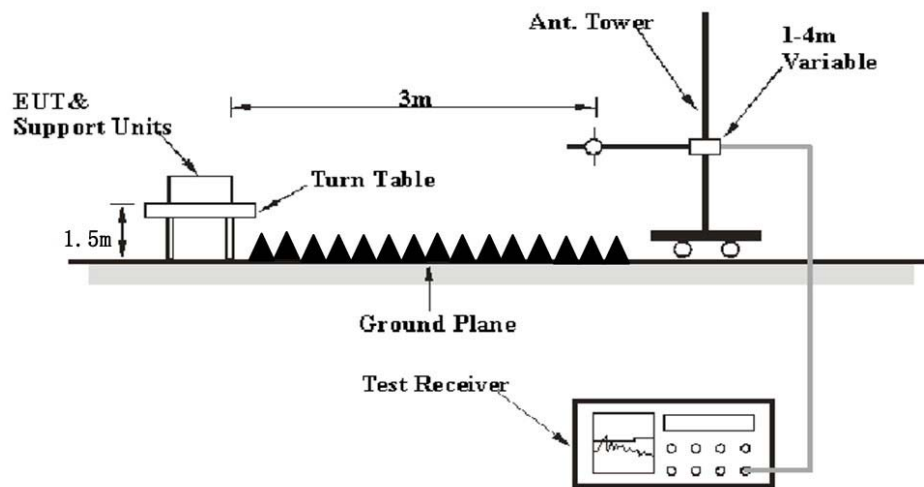
Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.81 dB for 30MHz-1GHz and 4.88 dB for above 1GHz, 1.95dB for conducted measurement at antenna port. And the uncertainty will not be taken into consideration for the test data recorded in the report

### EUT Setup

**Below 1 GHz:**





**Above 1GHz:**

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

**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:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

**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.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2016-05-06	2017-05-06
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Mini	Amplifier	ZVA-183-S+	5969001149	2016-04-23	2017-04-23
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
TDK	Chamber	Chamber A	2#	2013-10-15	2016-10-15
TDK	Chamber	Chamber B	1#	2015-07-23	2016-07-22
DUCOMMUN	Pre-amplifier	ALN-22093530-01	991373-01	2015-08-03	2016-08-03
R&S	Auto test Software	EMC32	V9.10	NCR	NCR
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369223410-001	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	104PEA	218124002	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	1	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	2	2015-06-15	2016-06-15

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

**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 Results Summary

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

**1.03 dB at 4924.00 MHz** in the **Horizontal** polarization in **High channel** for **Wi-Fi 802.11b** Mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

## Test Data

### Environmental Conditions

Temperature:	24 °C
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

*The testing was performed by Shawn Xiao on 2016-06-06*

*EUT operation mode: Transmitting & Charging*

**30 MHz-25 GHz:****802.11b Mode:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
460.9	35.01	QP	69	1.3	V	-3.2	31.81	46	14.19
2412.00	87.12	PK	35	2.4	H	-6.46	80.66	/	/
2412.00	82.96	Ave.	35	2.4	H	-6.46	76.50	/	/
2412.00	90.93	PK	195	2.1	V	-6.46	84.47	/	/
2412.00	86.15	Ave.	195	2.1	V	-6.46	79.69	/	/
2380.54	41.51	PK	199	1.6	V	-6.46	35.05	74	38.95
2380.54	31.26	Ave.	199	1.6	V	-6.46	24.80	54	29.20
2385.99	42.44	PK	167	1.2	V	-6.46	35.98	74	38.02
2385.99	31.54	Ave.	167	1.2	V	-6.46	25.08	54	28.92
2497.32	40.95	PK	246	1.9	V	-4.74	36.21	74	37.79
2497.32	28.28	Ave.	246	1.9	V	-4.74	23.54	54	30.46
4824.00	42.54	PK	272	1.4	H	3.79	46.33	74	27.67
4824.00	35.69	Ave.	272	1.4	H	3.79	39.48	54	14.52
7236.00	41.26	PK	319	2.4	H	9.79	51.05	74	22.95
7236.00	33.28	Ave.	319	2.4	H	9.79	43.07	54	10.93
9648.00	39.70	PK	263	2.5	V	11.85	51.55	74	22.45
9648.00	33.87	Ave.	263	2.5	V	11.85	45.72	54	8.28
Middle Channel (2437 MHz)									
460.9	34.32	QP	322	1.8	V	-3.2	31.12	46	14.88
2437.00	88.64	PK	285	1.8	H	-6.46	82.18	/	/
2437.00	83.57	Ave.	285	1.8	H	-6.46	77.11	/	/
2437.00	91.57	PK	41	1.1	V	-6.46	85.11	/	/
2437.00	87.29	Ave.	41	1.1	V	-6.46	80.83	/	/
2335.97	41.65	PK	140	2.4	V	-6.65	35.00	74	39.00
2335.97	28.67	Ave.	140	2.4	V	-6.65	22.02	54	31.98
2353.12	41.81	PK	323	1.0	V	-6.46	35.35	74	38.65
2353.12	28.67	Ave.	323	1.0	V	-6.46	22.21	54	31.79
2493.33	41.59	PK	88	1.1	V	-4.74	36.85	74	37.15
2493.33	28.28	Ave.	88	1.1	V	-4.74	23.54	54	30.46
4874.00	48.35	PK	109	2.0	H	3.56	51.91	74	22.09
4874.00	44.42	Ave.	109	2.0	H	3.56	47.98	54	6.02
7311.00	42.79	PK	343	1.2	H	10.11	52.90	74	21.10
7311.00	39.04	Ave.	343	1.2	H	10.11	49.15	54	4.85
9748.00	40.97	PK	170	2.4	V	11.85	52.82	74	21.18
9748.00	36.70	Ave.	170	2.4	V	11.85	48.55	54	5.45

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462MHz)									
460.9	34.67	QP	17	2.2	V	-3.2	31.47	46	14.53
2462.00	87.74	PK	326	2.1	H	-4.74	83.00	/	/
2462.00	82.57	Ave.	326	2.1	H	-4.74	77.83	/	/
2462.00	90.47	PK	168	1.6	V	-4.74	85.73	/	/
2462.00	85.71	Ave.	168	1.6	V	-4.74	80.97	/	/
2319.61	41.59	PK	88	1.6	V	-6.65	34.94	74	39.06
2319.61	28.28	Ave.	88	1.6	V	-6.65	21.63	54	32.37
2484.95	40.49	PK	74	1.5	V	-4.74	35.75	74	38.25
2484.95	29.04	Ave.	74	1.5	V	-4.74	24.30	54	29.70
2487.17	40.36	PK	280	2.3	H	-4.74	35.62	74	38.38
2487.17	28.28	Ave.	280	2.3	H	-4.74	23.54	54	30.46
4924.00	52.56	PK	214	1.9	H	3.56	56.12	74	17.88
4924.00	49.41	Ave.	214	1.9	H	3.56	52.97	54	1.03
7386.00	44.32	PK	175	2.4	H	8.17	52.49	74	21.51
7386.00	41.48	Ave.	175	2.4	H	8.17	49.65	54	4.35
9848.00	42.80	PK	55	2.0	V	13.21	56.01	74	17.99
9848.00	38.32	Ave.	55	2.0	V	13.21	51.53	54	2.47

**802.11g Mode:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
460.9	35.17	QP	347	1.2	V	-3.2	31.97	46	14.03
2412.00	91.31	PK	129	2.3	H	-6.46	84.85	/	/
2412.00	80.15	Ave.	129	2.3	H	-6.46	73.69	/	/
2412.00	94.34	PK	244	1.6	V	-6.46	87.88	/	/
2412.00	84.53	Ave.	244	1.6	V	-6.46	78.07	/	/
2353.76	43.23	PK	276	1.5	V	-6.46	36.77	74	37.23
2353.76	37.01	Ave.	276	1.5	V	-6.46	30.55	54	23.45
2361.62	42.51	PK	240	1.7	V	-6.46	36.05	74	37.95
2361.62	28.34	Ave.	240	1.7	V	-6.46	21.88	54	32.12
2484.32	48.66	PK	343	1.8	V	-4.74	43.92	74	30.08
2484.32	28.34	Ave.	343	1.8	V	-4.74	23.60	54	30.40
4824.00	56.47	PK	13	1.0	V	3.79	60.26	74	13.74
4824.00	42.78	Ave.	13	1.0	V	3.79	46.57	54	7.43
7236.00	46.98	PK	327	1.2	H	9.79	56.77	74	17.23
7236.00	32.34	Ave.	327	1.2	H	9.79	42.13	54	11.87
9648.00	44.53	PK	180	1.4	V	11.85	56.38	74	17.62
9648.00	32.26	Ave.	180	1.4	V	11.85	44.11	54	9.89
Middle Channel (2437 MHz)									
460.9	35.04	QP	316	2.2	V	-3.2	31.84	46	14.16
2437.00	90.45	PK	299	1.9	H	-6.46	83.99	/	/
2437.00	80.12	Ave.	299	1.9	H	-6.46	73.66	/	/
2437.00	94.15	PK	265	2.3	V	-6.46	87.69	/	/
2437.00	84.03	Ave.	265	2.3	V	-6.46	77.57	/	/
2353.76	43.23	PK	339	1.5	V	-6.46	36.77	74	37.23
2353.76	28.34	Ave.	339	1.5	V	-6.46	21.88	54	32.12
2361.62	42.51	PK	331	1.6	V	-6.46	36.05	74	37.95
2361.62	28.34	Ave.	331	1.6	V	-6.46	21.88	54	32.12
2484.32	48.66	PK	30	2.5	V	-4.74	43.92	74	30.08
2484.32	28.34	Ave.	30	2.5	V	-4.74	23.60	54	30.40
4874.00	60.12	PK	160	2.2	V	3.56	63.68	74	10.32
4874.00	45.73	Ave.	160	2.2	V	3.56	49.29	54	4.71
7311.00	46.50	PK	320	1.7	H	10.11	56.61	74	17.39
7311.00	32.73	Ave.	320	1.7	H	10.11	42.84	54	11.16
9748.00	44.40	PK	199	2.4	V	11.85	56.25	74	17.75
9748.00	31.95	Ave.	199	2.4	V	11.85	43.80	54	10.20

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
460.9	34.84	QP	311	1.5	V	-3.2	31.64	46	14.36
2462.00	91.72	PK	135	1.1	H	-4.74	86.98	/	/
2462.00	81.56	Ave.	135	1.1	H	-4.74	76.82	/	/
2462.00	94.42	PK	190	2.1	V	-4.74	89.68	/	/
2462.00	84.08	Ave.	190	2.1	V	-4.74	79.34	/	/
2354.56	40.33	PK	206	1.8	V	-6.46	33.87	74	40.13
2354.56	27.88	Ave.	206	1.8	V	-6.46	21.42	54	32.58
2483.66	60.32	PK	319	1.9	V	-4.74	55.58	74	18.42
2483.66	38.94	Ave.	319	1.9	V	-4.74	34.20	54	19.80
2484.26	57.78	PK	219	1.5	V	-4.74	53.04	74	20.96
2484.26	38.21	Ave.	219	1.5	V	-4.74	33.47	54	20.53
4924.00	63.47	PK	261	2.5	V	3.56	67.03	74	6.97
4924.00	49.19	Ave.	261	2.5	V	3.56	52.75	54	1.25
7386.00	45.54	PK	132	1.8	H	8.17	53.71	74	20.29
7386.00	33.56	Ave.	132	1.8	H	8.17	41.73	54	12.27
9848.00	44.29	PK	26	1.2	V	13.21	57.50	74	16.50
9848.00	31.96	Ave.	26	1.2	V	13.21	45.17	54	8.83

**802.11n-HT20 Mode:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
460.9	34.88	QP	15	2.0	V	-3.2	31.68	43.5	11.82
2412.00	91.12	PK	104	1.4	H	-6.46	84.66	/	/
2412.00	80.78	Ave.	104	1.4	H	-6.46	74.32	/	/
2412.00	92.28	PK	81	1.8	V	-6.46	85.82	/	/
2412.00	82.01	Ave.	81	1.8	V	-6.46	75.55	/	/
2380.22	57.74	PK	153	1.6	V	-6.46	51.28	74	22.72
2380.22	32.26	Ave.	153	1.6	V	-6.46	25.80	54	28.20
2384.38	59.08	PK	127	1.8	V	-6.46	52.62	74	21.38
2384.38	33.02	Ave.	127	1.8	V	-6.46	26.56	54	27.44
2485.51	58.71	PK	78	2.1	V	-4.74	53.97	74	20.03
2485.51	28.34	Ave.	78	2.1	V	-4.74	23.60	54	30.40
4824.00	51.89	PK	118	1.2	V	3.79	55.68	74	18.32
4824.00	38.71	Ave.	118	1.2	V	3.79	42.50	54	11.50
7236.00	46.41	PK	57	1.9	H	9.79	56.20	74	17.80
7236.00	32.06	Ave.	57	1.9	H	9.79	41.85	54	12.15
9648.00	44.36	PK	352	2.4	V	11.85	56.21	74	17.79
9648.00	32.26	Ave.	352	2.4	V	11.85	44.11	54	9.89
Middle Channel (2437 MHz)									
460.9	33.98	QP	105	1.0	V	-3.2	30.78	46	15.22
2437.00	91.47	PK	310	1.8	H	-6.46	85.01	/	/
2437.00	81.31	Ave.	310	1.8	H	-6.46	74.85	/	/
2437.00	92.15	PK	170	2.1	V	-6.46	85.69	/	/
2437.00	82.45	Ave.	170	2.1	V	-6.46	75.99	/	/
2358.41	51.57	PK	27	1.7	V	-6.46	45.11	74	28.89
2358.41	28.34	Ave.	27	1.7	V	-6.46	21.88	54	32.12
2381.98	50.69	PK	133	1.7	V	-6.46	44.23	74	29.77
2381.98	28.34	Ave.	133	1.7	V	-6.46	21.88	54	32.12
2485.12	61.27	PK	80	1.8	V	-4.74	56.53	74	17.47
2485.12	28.34	Ave.	80	1.8	V	-4.74	23.60	54	30.40
4874.00	55.97	PK	169	2.4	V	3.56	59.53	74	14.47
4874.00	41.67	Ave.	169	2.4	V	3.56	45.23	54	8.77
7311.00	46.50	PK	287	2.2	H	10.11	56.61	74	17.39
7311.00	33.07	Ave.	287	2.2	H	10.11	43.18	54	10.82
9748.00	44.89	PK	65	1.1	H	11.85	56.74	74	17.26
9748.00	31.97	Ave.	65	1.1	H	11.85	43.82	54	10.18



Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
460.9	35.67	QP	165	1.9	V	-3.2	32.47	46	13.53
2462.00	91.34	PK	205	1.6	H	-4.74	86.60	/	/
2462.00	80.02	Ave.	205	1.6	H	-4.74	75.28	/	/
2462.00	92.61	PK	268	1.4	V	-4.74	87.87	/	/
2462.00	81.71	Ave.	268	1.4	V	-4.74	76.97	/	/
2310.11	46.53	PK	326	1.3	V	-6.65	39.88	74	34.12
2310.11	27.88	Ave.	326	1.3	V	-6.65	21.23	54	32.77
2488.42	61.57	PK	191	1.2	V	-4.74	56.83	74	17.17
2488.42	38.58	Ave.	191	1.2	V	-4.74	33.84	54	20.16
2489.28	59.51	PK	306	2.3	V	-4.74	54.77	74	19.23
2489.28	37.83	Ave.	306	2.3	V	-4.74	33.09	54	20.91
4924.00	60.79	PK	48	1.5	V	3.56	64.35	74	9.65
4924.00	45.38	Ave.	48	1.5	V	3.56	48.94	54	5.06
7386.00	45.20	PK	289	1.1	H	8.17	53.37	74	20.63
7386.00	32.22	Ave.	289	1.1	H	8.17	40.39	54	13.61
9848.00	45.61	PK	290	1.2	H	13.21	58.82	74	15.18
9848.00	31.79	Ave.	290	1.2	H	13.21	45.00	54	9.00

**Note:**

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

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