

TEST REPORT

For

Hull Base International Ltd.

Room 1101, 11/F, New Lee Wah Ctr., 88 Tokwawan Road,
Tokwawan, Hong Kong

FCC PART 15.247

FCC ID: XGGH100M09
H100 (Monitor Unit: H100M)

Report Type: Class II Permissive Change	Product Type: 2.4 GHz Wireless Monitoring System
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Report Number: RSZ110527005-00A1	
Report Date: 2011-08-09	
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Reviewed By: EMC Engineer	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.

* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EQUIPMENT MODIFICATIONS	5
EXTERNAL I/O CABLE.....	5
CONFIGURATION OF TEST SETUP	5
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	7
APPLICABLE STANDARD	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP.....	7
EMI TEST RECEIVER SETUP.....	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST PROCEDURE	8
TEST RESULTS SUMMARY	8
TEST DATA	8
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS.....	13
APPLICABLE STANDARD	13
MEASUREMENT UNCERTAINTY	13
EUT SETUP.....	13
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST PROCEDURE	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST RESULTS SUMMARY	15
TEST DATA	15

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hull Base International Ltd.*'s product, model number: *H100 (Monitor Unit: H100M)* (FCC ID: *XGGH100M09*) or the "EUT" as referred to in this report is a monitor unit of 2.4 GHz Wireless Monitoring System, which measures approximately: 15.5 cm (L) x 8.0 cm (W) x 3.0 cm (H), rated input voltage: DC 6V adapter or DC 3.7V battery.

Adapter 1 information: Switching adapter
 Manufacturer: K.S.;
 Model: KSD10-060-0800;
 Input: 100-240V AC 50-60Hz 300mA;
 Output: 6V DC 800mA

Adapter 2 Information: Switching adapter
 Manufacturer: Keen Ocean Industrial Ltd.
 Model: S08-006-006000800
 Input: 100-240VAC 50/60 Hz, 0.2A Max.
 Output: 6VDC 800 mA

All measurement and test data in this report was gathered from production sample serial number: 1105158 (Assigned by BACL, Shenzhen). The EUT was received on 2011-05-27.

Objective

This report is prepared on behalf of *Hull Base International Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions 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.

This is the C2PC application of the device. The difference between the original device and the current one is as below:

Change	Original	New
Adding two Adapters	Model: ADS10-W060100	Adapter 1 information: Switching adapter Manufacture: K.S.; Model: KSD10-060-0800; Adapter 2 Information: Switching adapter Manufacturer: Keen Ocean Industrial Ltd. Model: S08-006-006000800
Address	Room 1004, New Lee Wah Centre, 88, Tokwawan Road, Tokwawan, Kowloon, Hong Kong	Room 1101,11/F,New Lee Wah Ctr., 88 Tokwawan Road, Tokwawan., Hong Kong
Adding Battery	3.7V 900mAh Li-ion battery	HK-8788 3.7V 900mAh 3.33Wh Li-ion battery
Product name	Wireless Monitoring Device	2.4 GHz Wireless Monitoring System

Note: For the changes made to the device, the AC Line conducted emission and radiated emission below 1 GHz was performed. All the other test data please refer to the report RSZ09060303, FCC ID: XGGH100M09, which was granted on 2009-08-09.

Related Submittal(s)/Grant(s)

FCC Part 15.247 submission of camera unit with FCC ID: XGGH100C09.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

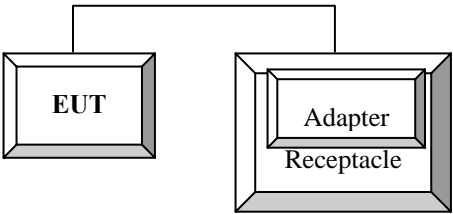
Equipment Modifications

No modification was made to the EUT tested.

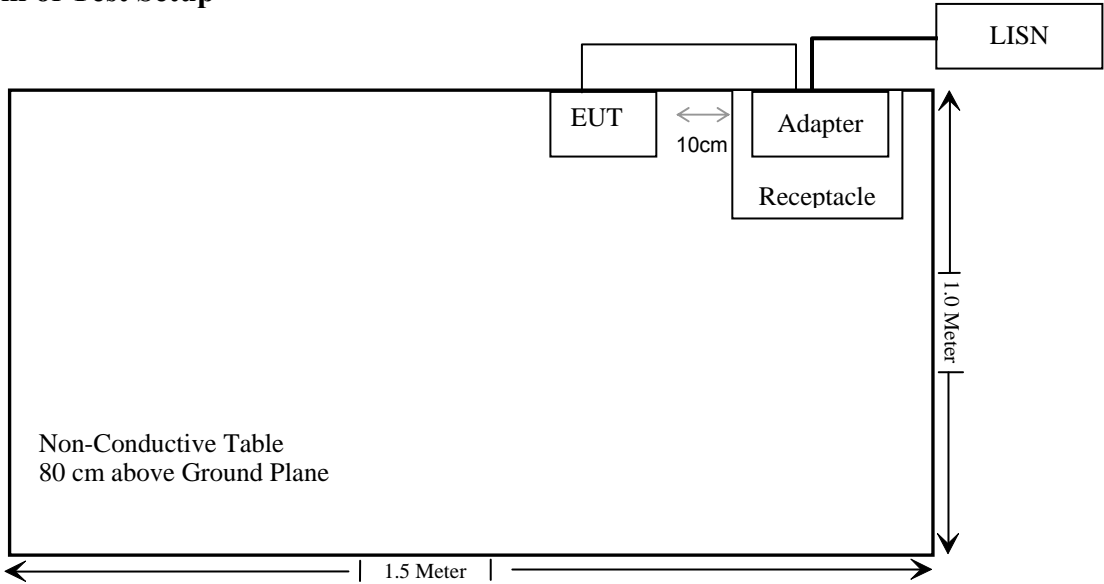
External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Undetachable DC Power Cable	1.6	Adapter	EUT
Unshielded Undetachable Audio Cable	1.0	Audio Signal Generator	Speaker

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b)(1), §2.1091	Maximum Permissible Exposure (MPE)	N/A*
§15.203	Antenna Requirement	N/A*
§15.207 (a), §15.107	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.109, §15.247(d)	Radiated Emissions	Compliance
§15.247 (a)(1)	20 dB Bandwidth	N/A*
§15.247(a)(1)	Channel Separation Test	N/A*
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	N/A*
§15.247(a)(1)(iii)	Quantity of hopping channel Test	N/A*
§15.247(b)(1)	Peak Output Power Measurement	N/A*
§15.247(d)	Band Edges	N/A*

Note: N/A*: Please refer to the original report.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

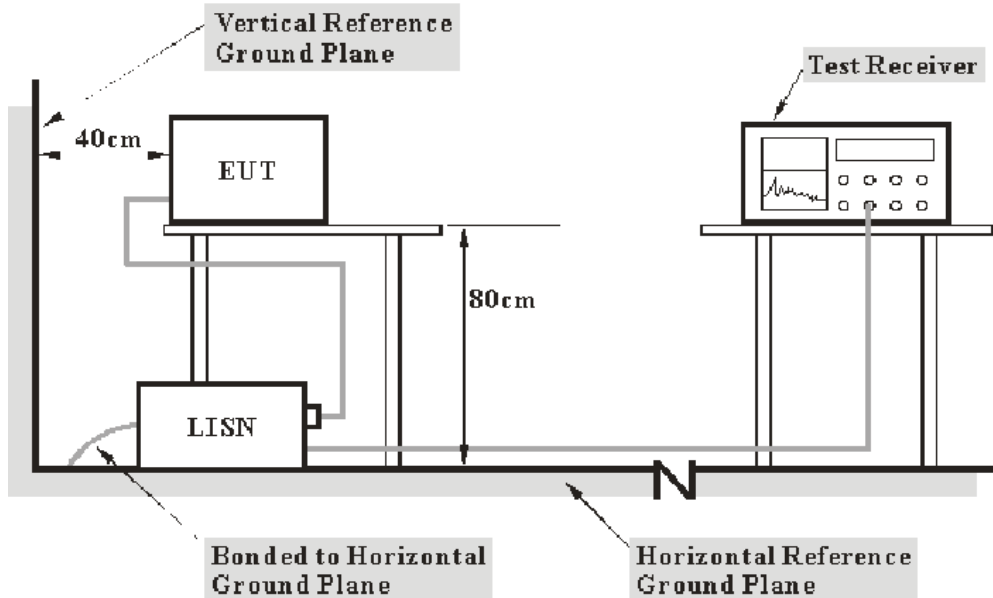
FCC §15.207(a).

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 2.4 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 C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 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.

The adapter was connected to a 120V 60Hz 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:

<u>Frequency Range</u>	<u>IF B/W</u>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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

Test Results Summary

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

6.60 dB at 0.3850 MHz in the **Neutral** conducted mode for Charging & transmitting by adapter 1
16.78 dB at 1.715 MHz in the **Neutral** conducted mode for Charging & transmitting by adapter 2

Test Data

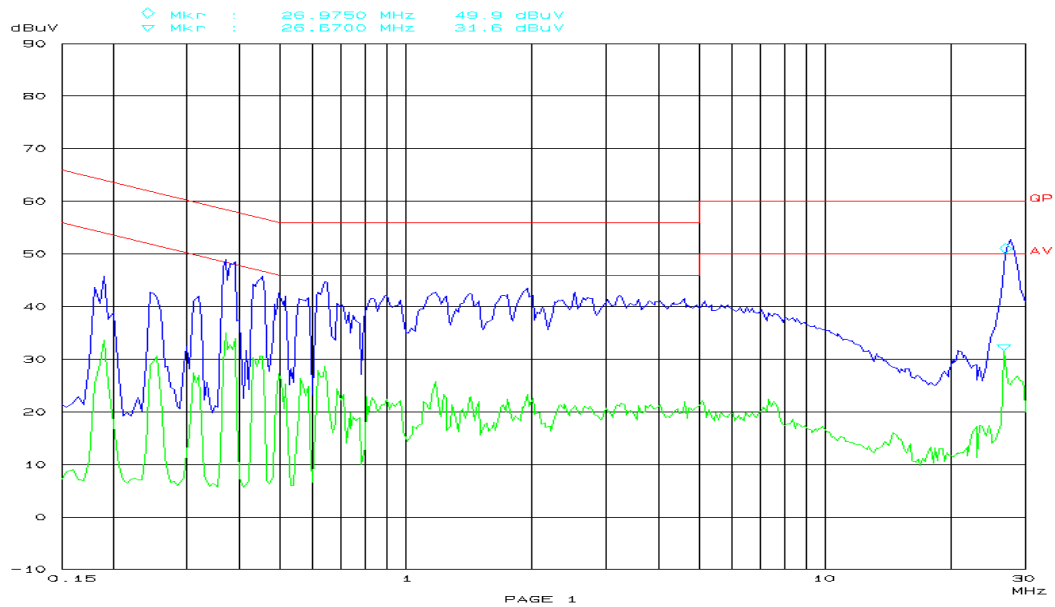
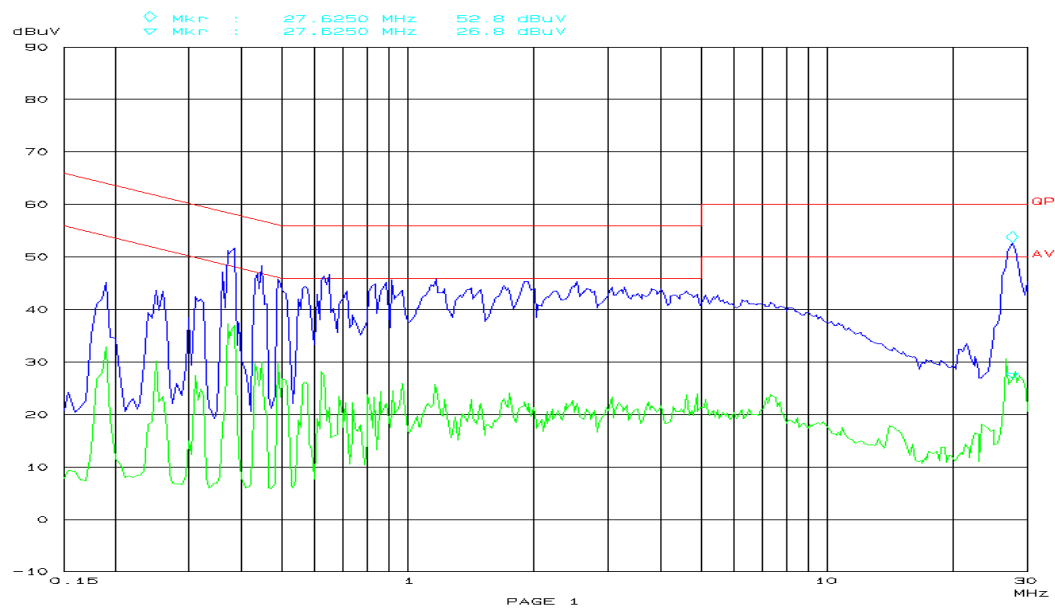
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	46 %
ATM Pressure:	100.0 kPa

* The testing was performed by Jim Huang on 2011-07-01.

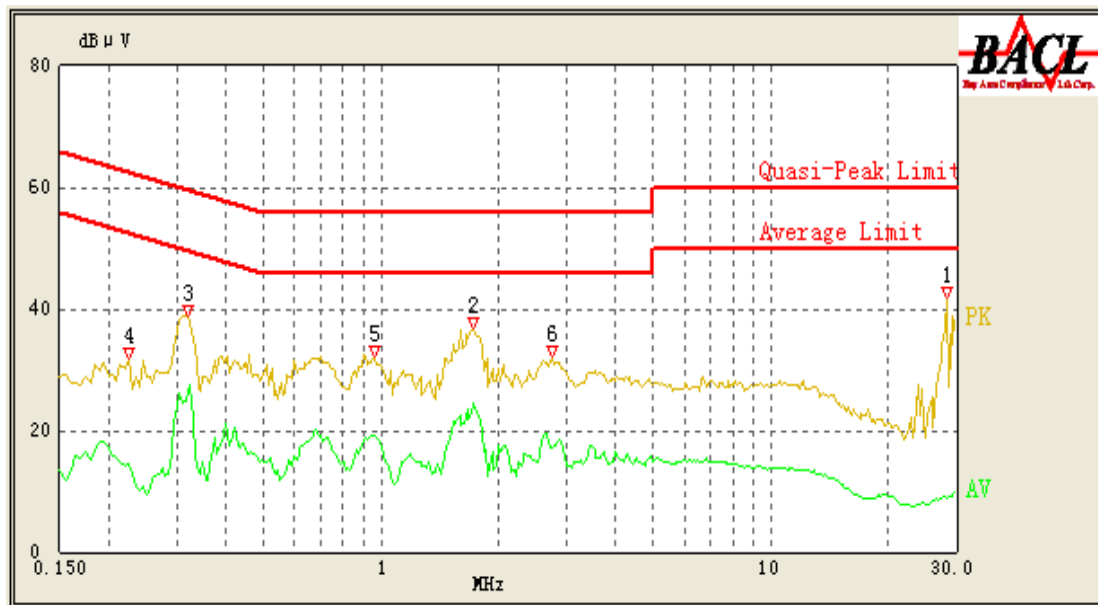
Test Mode: Charging & transmitting by adapter 1

Frequency (MHz)	Cord. Amp. (dBμV)	Detector (QP/Ave.)	Conductor (Line/ Neutral)	Part 15.207 Limit (dBμV)	Margin (dB)
0.3850	51.60	QP	Neutral	58.20	6.60
27.6250	52.80	QP	Neutral	60.00	7.20
0.3700	49.10	QP	Line	58.50	9.40
0.6300	46.30	QP	Neutral	56.00	9.70
26.9750	49.90	QP	Line	60.00	10.10
1.1650	45.70	QP	Neutral	56.00	10.30
0.6400	44.70	QP	Line	56.00	11.30
0.3850	36.90	Ave.	Neutral	48.20	11.30
0.4500	45.30	QP	Line	56.90	11.60
0.3700	35.00	Ave.	Line	48.50	13.50
0.4450	30.60	Ave.	Line	46.90	16.30
0.6400	28.60	Ave.	Line	46.00	17.40
0.3100	42.40	QP	Neutral	60.00	17.60
0.3200	42.00	QP	Line	59.70	17.70
0.1900	45.70	QP	Line	64.00	18.30
26.6700	31.60	Ave.	Line	50.00	18.40
0.6300	27.40	Ave.	Neutral	46.00	18.60
0.1900	45.20	QP	Neutral	64.00	18.80
0.1900	33.70	Ave.	Line	54.00	20.30
1.1600	25.60	Ave.	Neutral	46.00	20.40
0.1900	33.00	Ave.	Neutral	54.00	21.00
0.3100	27.30	Ave.	Neutral	50.00	22.70
0.3200	26.90	Ave.	Line	49.70	22.80
27.6250	26.80	Ave.	Neutral	50.00	23.20

120 V/60 Hz, Line:**120 V/60 Hz, Neutral:**

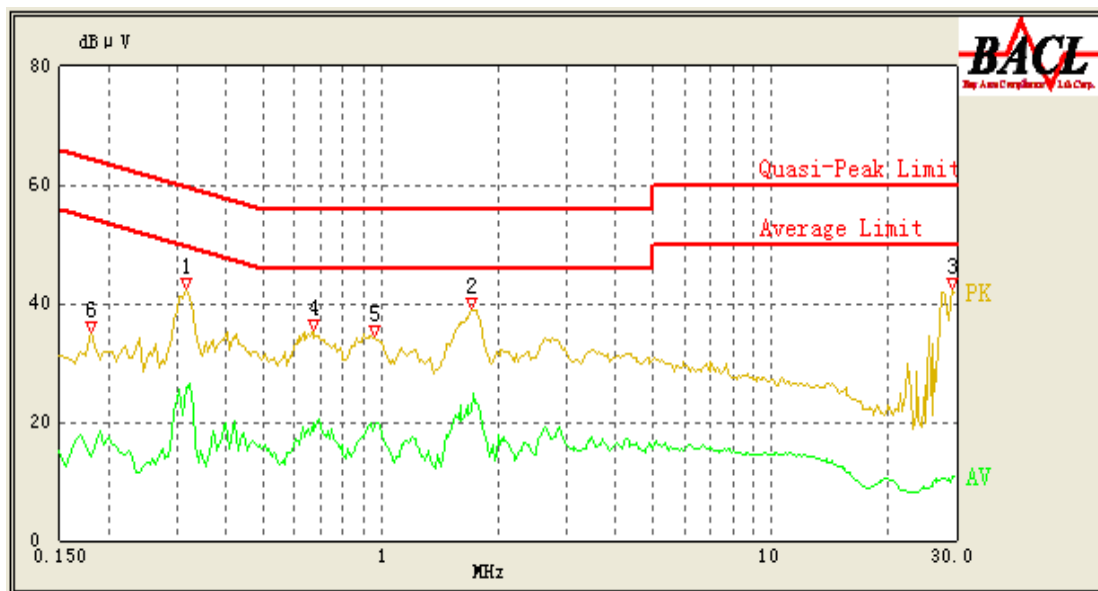
Test Mode: Charging & transmitting by adapter 2

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Part 15.207 Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
28.260	41.90	10.20	60.00	18.10	QP
1.730	36.85	10.13	56.00	19.15	QP
1.730	24.39	10.13	46.00	21.61	Ave.
0.320	38.82	10.10	61.14	22.32	QP
0.965	32.21	10.11	56.00	23.79	QP
2.755	32.03	10.15	56.00	23.97	QP
0.320	26.51	10.10	51.14	24.63	Ave.
0.970	18.88	10.11	46.00	27.12	Ave.
2.730	17.26	10.15	46.00	28.74	Ave.
0.225	31.72	10.10	63.86	32.14	QP
0.225	14.37	10.10	53.86	39.49	Ave.
28.345	8.98	10.20	50.00	41.02	Ave.

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Part 15.207 Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
1.715	39.22	10.13	56.00	16.78	QP
29.200	42.63	10.20	60.00	17.37	QP
0.315	42.62	10.10	61.29	18.67	QP
0.670	35.56	10.10	56.00	20.44	QP
0.965	34.42	10.11	56.00	21.58	QP
1.710	21.70	10.13	46.00	24.30	Ave.
0.315	26.00	10.10	51.29	25.29	Ave.
0.670	19.75	10.10	46.00	26.25	Ave.
0.965	19.31	10.11	46.00	26.69	Ave.
0.180	35.21	10.10	65.14	29.93	QP
28.865	9.98	10.20	50.00	40.02	Ave.
0.180	14.29	10.10	55.14	40.85	Ave.

FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

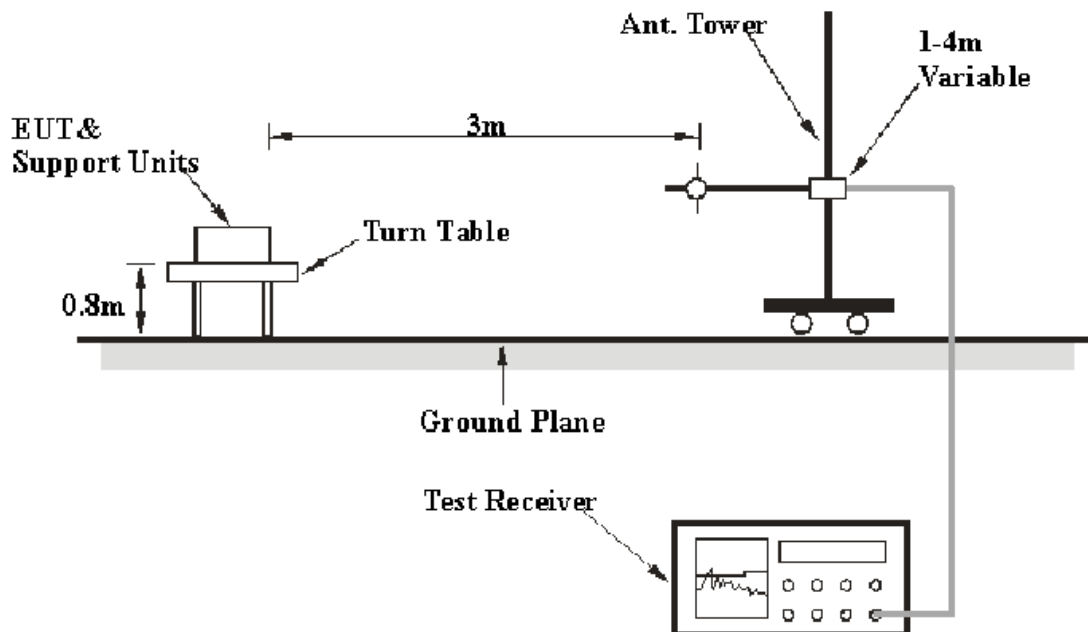
FCC §15.205; §15.209; §15.247 (d)

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 NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ± 4.0 dB(k=2, 95% level of confidence).

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2009. 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:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2010-08-02	2011-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

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-1GHz and peak and Average detection mode for frequencies above 1GHz.

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 maximum 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, with the worst margin reading of:

5.2 dB at 145.130000 MHz in the Vertical polarization for Charging & transmitting by adapter 1

2.9 dB at 32.004500 MHz in the Vertical polarization for Charging & transmitting by adapter 2

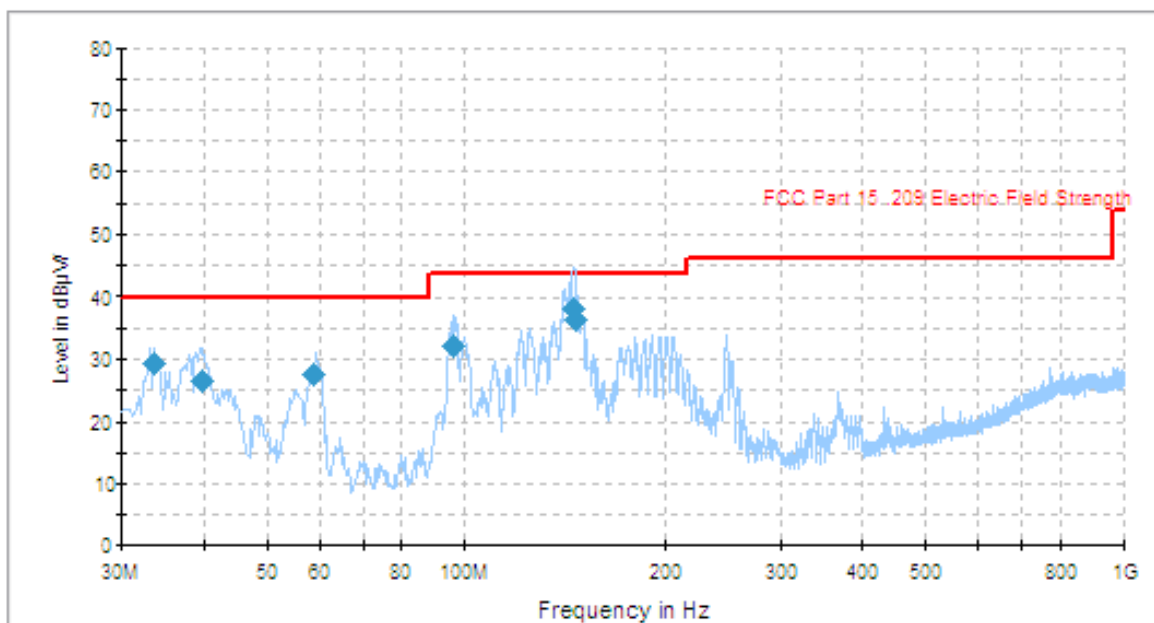
Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* The testing was performed by Jim Huang on 2011-07-01.

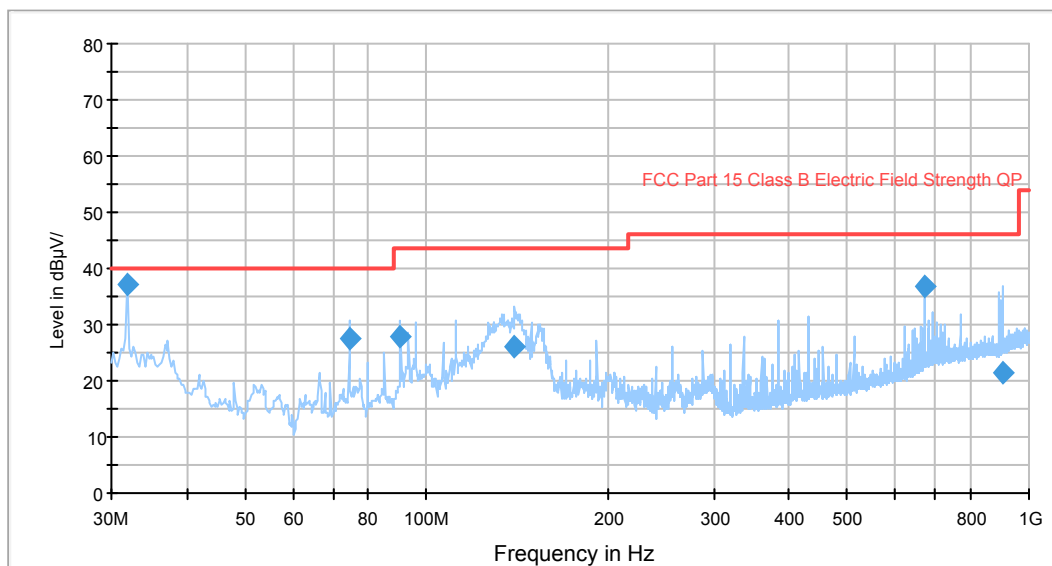
Test Mode: Charging & transmitting (by adapter 1)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (degree)	Limit (dBμV/m)	Margin (dB)
145.130000	38.3	102.0	V	108.0	43.5	5.2
145.988250	36.5	174.0	V	100.0	43.5	7.0
33.550500	29.3	102.0	V	0.0	40.0	10.7
95.990000	32.3	121.0	V	123.0	43.5	11.2
58.893250	27.7	102.0	V	179.0	40.0	12.3
39.787500	26.4	102.0	V	20.0	40.0	13.6

Test Mode: Charging & transmitting (by adapter 2)

Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Limit (dBμV/m)	Margin (dB)
32.004500	37.1	118.0	V	191.0	40.0	2.9*
671.997250	36.8	100.0	H	133.0	46.0	9.2
74.640750	27.6	100.0	H	198.0	40.0	12.4
90.691000	27.8	100.0	H	117.0	43.5	15.7
139.844750	26.1	333.0	H	0.0	43.5	17.4
905.757250	21.3	133.0	V	319.0	46.0	24.7

**Within measurement uncertainty!*

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