

FCC PART 15B

TEST REPORT

For

Shanghai KOHLER Electronics, Ltd.

Building E, 18Jindian Road, Pudong New Area,

Shanghai, China

FCC ID: A2PSKE-KOHLER3673

Report Type:

Original Report

Product Type:

Entertainment Remote Controller

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Jim Huang

Report Number: RSZ110609001-00A

Report Date: 2011-12-08

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Reviewed By: EMC Engineer

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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shanghai KOHLER Electronics, Ltd.*'s product, model number: 1143673 (FCC ID: A2PSKE-KOHLER3673) (the "EUT") in this report is an *Entertainment Remote Controller*, which was measured approximately: 15.3 cm (L) x 8.7 cm (W) x 1.9 cm (H), rated input voltage: 3.7V battery, DC 5V from adapter for charging. The highest operating frequency is 266MHz.

Adapter information:

Model: SAW10-05.0-2000US

Input: AC 100-240 V, 50-60 Hz, 0.5 A

Output: DC 5 V, 2000 mA

** All measurement and test data in this report was gathered from production sample serial number: 1106009 (Assigned by BACL, Shenzhen). The EUT was received on 2011-06-09.*

Objective

This report is prepared on behalf of *Shanghai KOHLER Electronics, Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 WiFi DTS submission with FCC ID: A2PSKE-KOHLER3673.

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

Justification

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

Test mode 1: downloading mode (data transmit with Laptop).

Test mode 2: Media playing mode.

EUT Exercise Software

Winthraw.exe Software

Equipment Modifications

No modification was made to the EUT.

Local Support Equipment List and Details

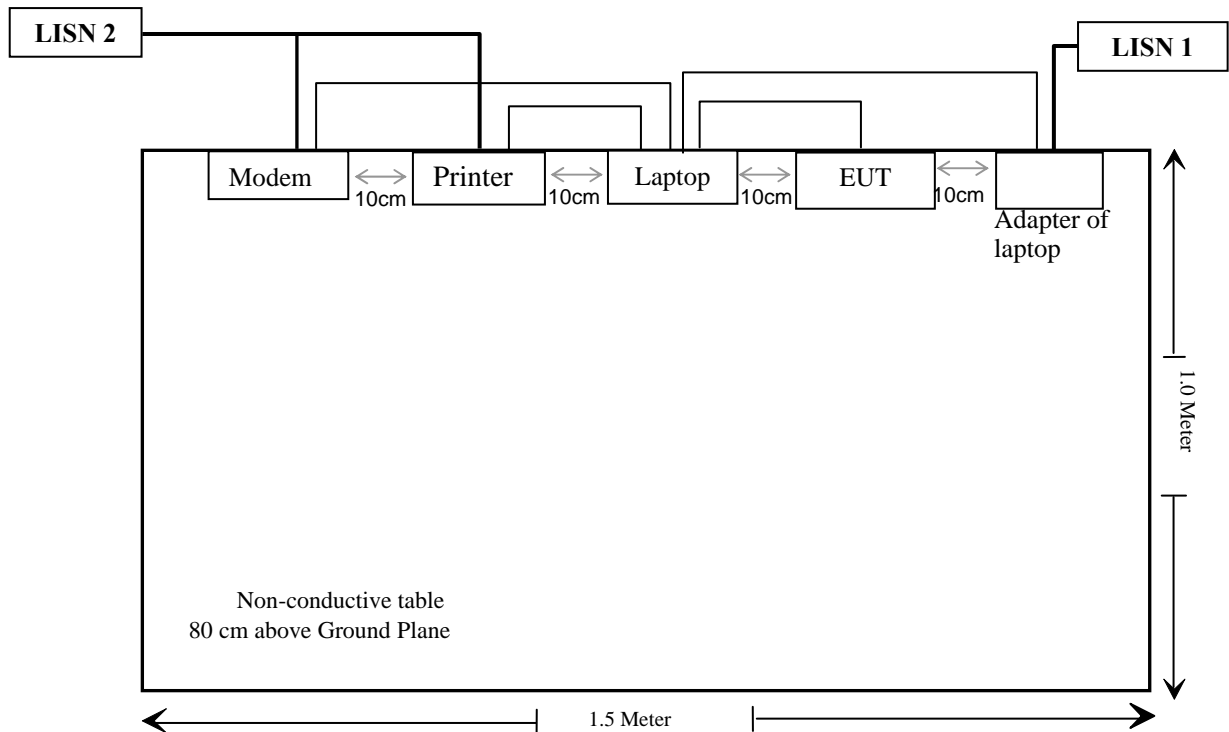
Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP05L	00045-452-921-345
HP	Printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293

External I/O Cable

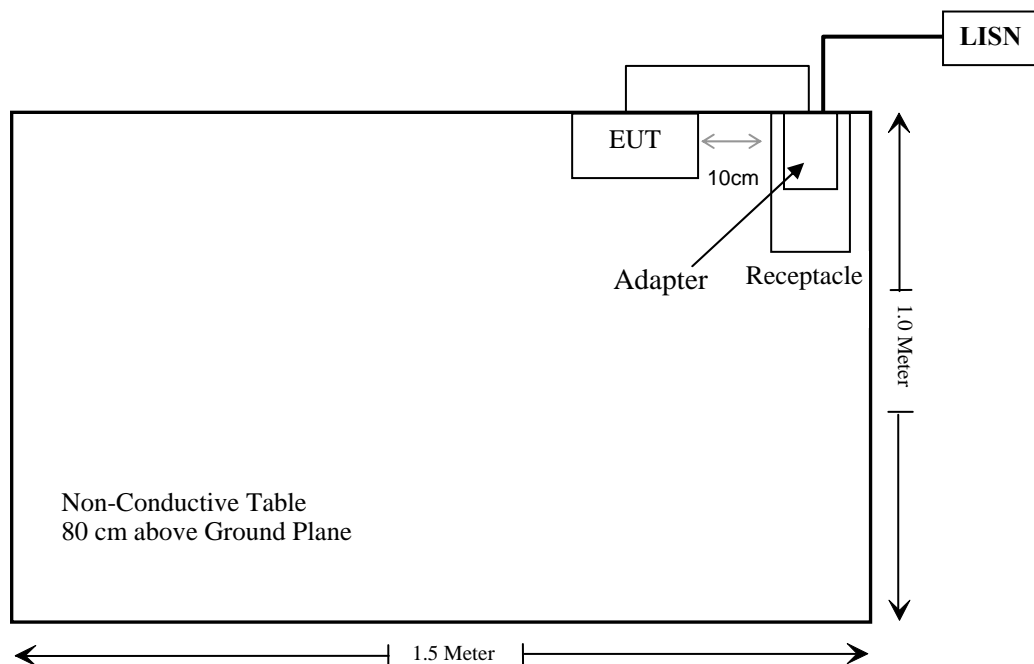
Cable Description	Length (m)	From	To
Shielded Detachable Printer Cable	1.2	Laptop	Printer
Shielded Detachable Serial Cable	1.2	Laptop	Modem
Shielded Detachable USB Cable	0.8	EUT	Laptop
Unshielded Detachable AC Cable	2.0	Adapter of laptop	LISN

Block Diagram of Test Setup

Test mode 1:



Test mode 2:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

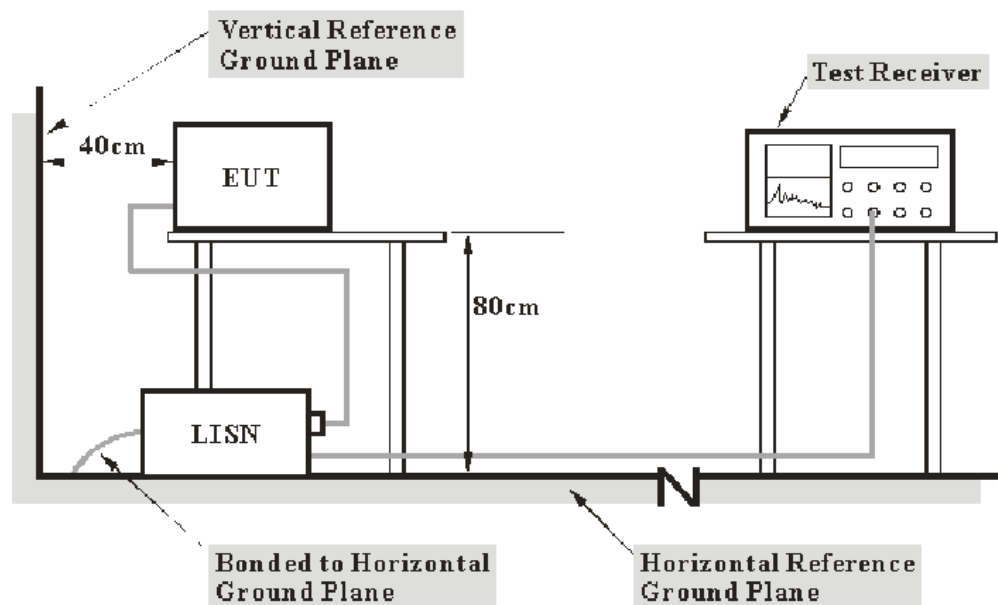
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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 Laboratories 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 15.107 Class B limits.

The adapter was connected to a 120 VAC/60 Hz 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 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 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. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

3.35 dB at 2.315 MHz in the Neutral conducted

Test Data

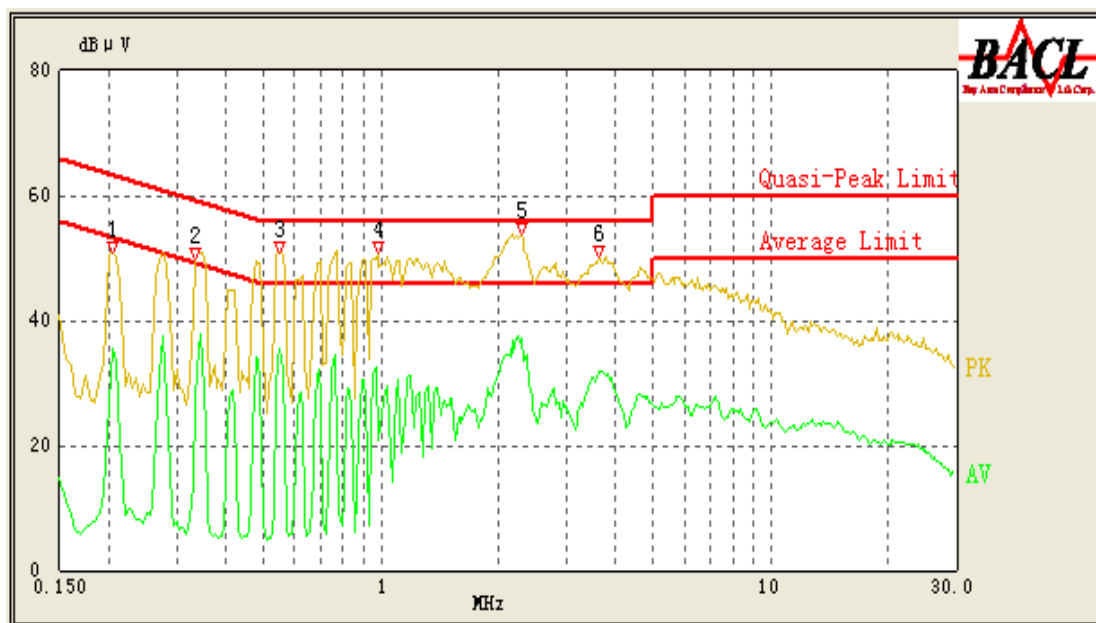
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

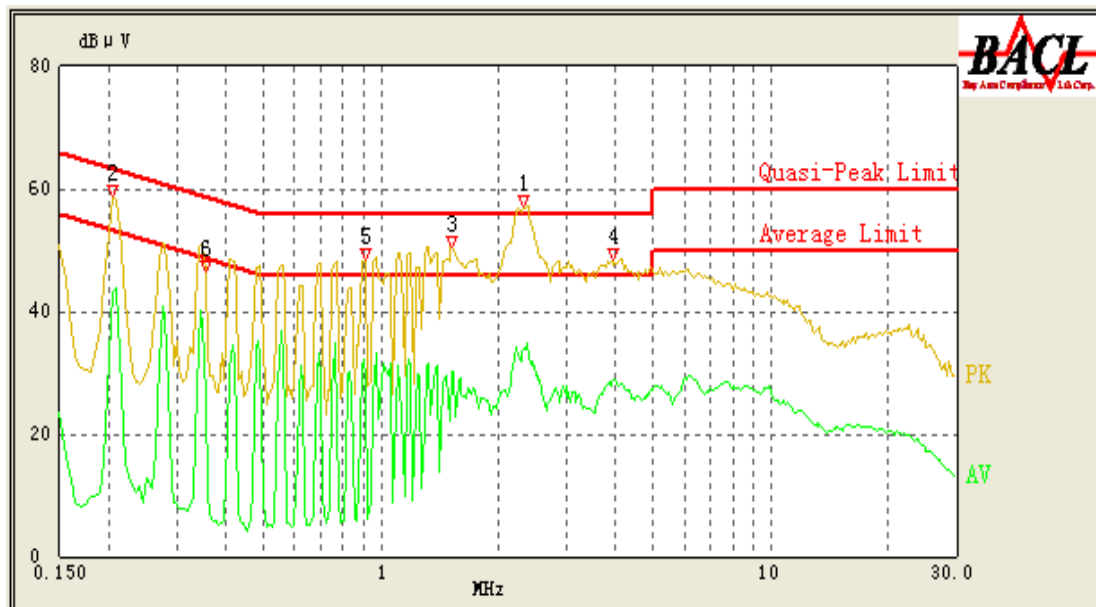
The testing was performed by Jim Huang on 2011-10-29.

Scanned with Test mode 1 & Test mode 2, and Test mode 2 is worst case, as below:

120 V, 60 Hz, Line:



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
2.295	36.13	10.36	46.00	9.87	Ave.
0.550	35.60	10.23	46.00	10.40	Ave.
2.290	45.48	10.36	56.00	10.52	QP
0.980	44.73	10.24	56.00	11.27	QP
0.550	43.94	10.23	56.00	12.06	QP
3.630	43.38	10.48	56.00	12.62	QP
0.975	31.75	10.24	46.00	14.25	Ave.
3.630	31.72	10.48	46.00	14.28	Ave.
0.205	48.86	10.23	64.43	15.57	QP
0.335	43.70	10.23	60.71	17.01	QP
0.205	35.62	10.23	54.43	18.81	Ave.
0.335	27.64	10.23	50.71	23.07	Ave.

120 V, 60 Hz, Neutral:

Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
2.315	52.65	10.36	56.00	3.35	QP
0.910	48.59	10.24	56.00	7.41	QP
1.525	48.10	10.29	56.00	7.90	QP
0.205	43.28	10.23	54.43	11.15	Ave.
3.930	44.09	10.50	56.00	11.91	QP
2.305	33.57	10.36	46.00	12.43	Ave.
0.205	50.05	10.23	64.43	14.38	QP
1.530	30.31	10.29	46.00	15.69	Ave.
0.910	29.44	10.24	46.00	16.56	Ave.
3.910	28.50	10.50	46.00	17.50	Ave.
0.355	41.79	10.23	60.14	18.35	QP
0.355	26.24	10.23	50.14	23.90	Ave.

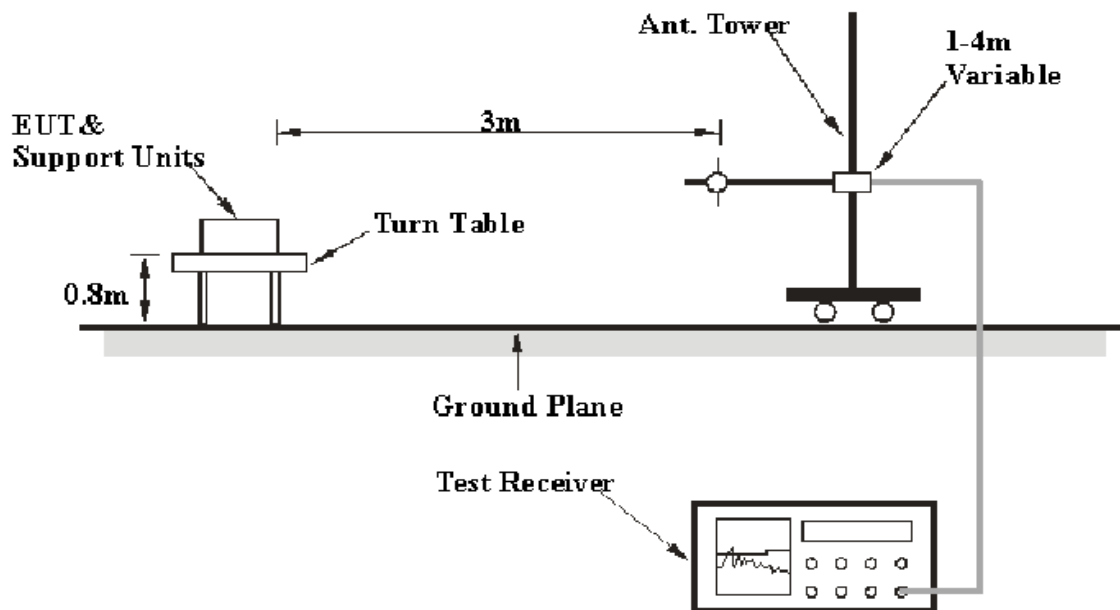
FCC §15.109 - RADIATED EMISSIONS

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 test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109, Class B 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 adapter connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 2 GHz	1 MHz	3 MHz	PK
1000 MHz – 2 GHz	1 MHz	10 Hz	Ave.

Test Procedure

For the radiated emissions test, the adapter was connected to 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-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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-03-11	2012-03-10
Mini-circuits	Pre-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	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07

* **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 Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

5.1 dB at 189.988000 MHz in the Horizontal polarization

Test Data

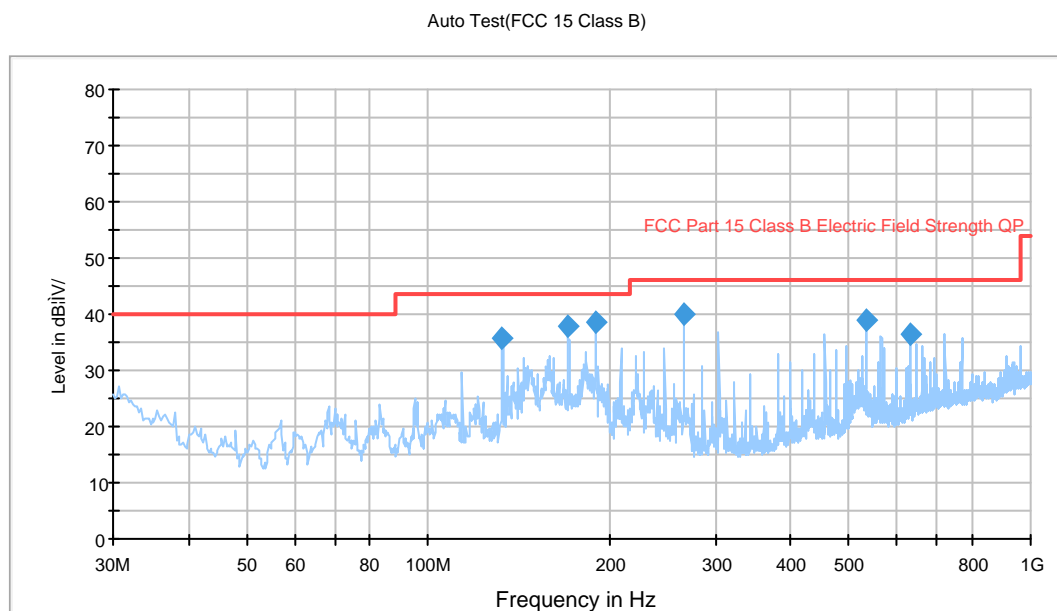
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Jim Huang on 2011-11-21.

Scanned with Test mode 1 & Test mode 2, and Test mode 1 is worst case, as below:

1) Below 1 GHz:



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Test Antenna		Turntable Position (degree)	Limit (dBμV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)			
189.988000	38.4	156.0	H	104.0	43.5	5.1
170.996000	38.0	158.0	H	272.0	43.5	5.5
265.989250	39.8	124.0	H	48.0	46.0	6.2
532.002500	38.9	124.0	V	59.0	46.0	7.1
132.993000	35.8	275.0	H	39.0	43.5	7.7
631.757000	36.6	103.0	V	59.0	46.0	9.4

*Within measurement uncertainty!

2) 1~2 GHz:

Indicated		Detector (PK/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.109			
Frequency (MHz)	S.A. Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
/	/	/	/	/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/	/	/	/	/

Note: For above 1GHz, all emissions are below 20 dB of the limit and have not been recorded.

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