FCC PART 15B

MEASUREMENT AND TEST REPORT

FOR

GUANGZHOU AOLONG ELECTRONIC TECHNOLOGY CO., LTD

No2, Hualian Industry District, No.3 Economic Zone, Lianbian Villiage, Xinshi Town, Baiyun District, Guangzhou, China

FCC ID: UZMKB2158

Report Concerns: Original Report	**Equipment Type:** Computer Keyboard

Model: 2158

Report No.: STR07018057I

Test/Witness Engineer: Innaz Lee

Test Date: 2007-02-06

Prepared By:

Shenzhen SEM.Test Compliance Service Co., Ltd
Room 609-610, Baotong Building, Baomin 1st Road, Baoan District, Shenzhen, Guangdong, P.R.C. (518133)

Approved & Authorized By:

PSQ Manager / Jandy So

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Guangzhou Aolong Electronic Technology Co., Ltd.
Address of applicant:	No2, Hualian Industry District, No.3 Economic Zone, Lianbian Villiage, Xinshi Town, Baiyun District, Guangzhou, China
Manufacturer:	Guangzhou Aolong Electronic Technology Co., Ltd.
Address of manufacturer:	No2, Hualian Industry District, No.3 Economic Zone, Lianbian Villiage, Xinshi Town, Baiyun District, Guangzhou, China

General Description of E.U.T

Items	Description
EUT Description:	Computer Keyboard
Trade Name:	Aisonic
Model No.:	2158
Rated Voltage:	DC 5V
Rated Current:	＜250mA
Size:	40.3X16.9X1.2 cm
For more information refer to the circuit diagram form and the user's manual.	

The test data gathered are from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report of is prepared on behalf of Guangzhou Aolong Electronic Technology Co., Ltd. in accordance with Part 2, Subpart J, and Part 15, Subparts B section 15.107 and 15.109 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.107 and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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.

The equipment under test (EUT) was configured to measure its highest possible immunity level. Test is carried with playing mode which worst case has been showed. Test setup was adapted accordingly in reference to the Operating Instructions.

1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

China National Accreditation Committee for Laboratories (CNAL) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

United States of American Federal Communications Commission (FCC), and the registration number is 274801(semi anechoic chamber).

Voluntary Control Council for Interference by Information Technology Equipment (VCCI), and the registration number is R-1966 (semi anechoic chamber).

Industry Canada (IC), and the registration number is IC4174.

All measurement required was performed at laboratory of Shenzhen Academy of Metrology and Quality Inspection, Bldg. Of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China.

1.6 Test Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software is started at the Windows XP terminal, running with “H” type.

1.6 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
TP-LINK	Modem	TM-EC5658V	KT99CTQC-508
EPSON	Printer	B161A	C48220005L923317741
IBM	Note Book	R51e	ETP18864

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.40	Shielded	Without Core

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 Conducted Emission	Compliant
§15.109 Radiated Emission	Compliant

3. §15.107 – CONDUCTED EMISSIONS

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 0.5dB.

3.2 Test Equipment List and Details

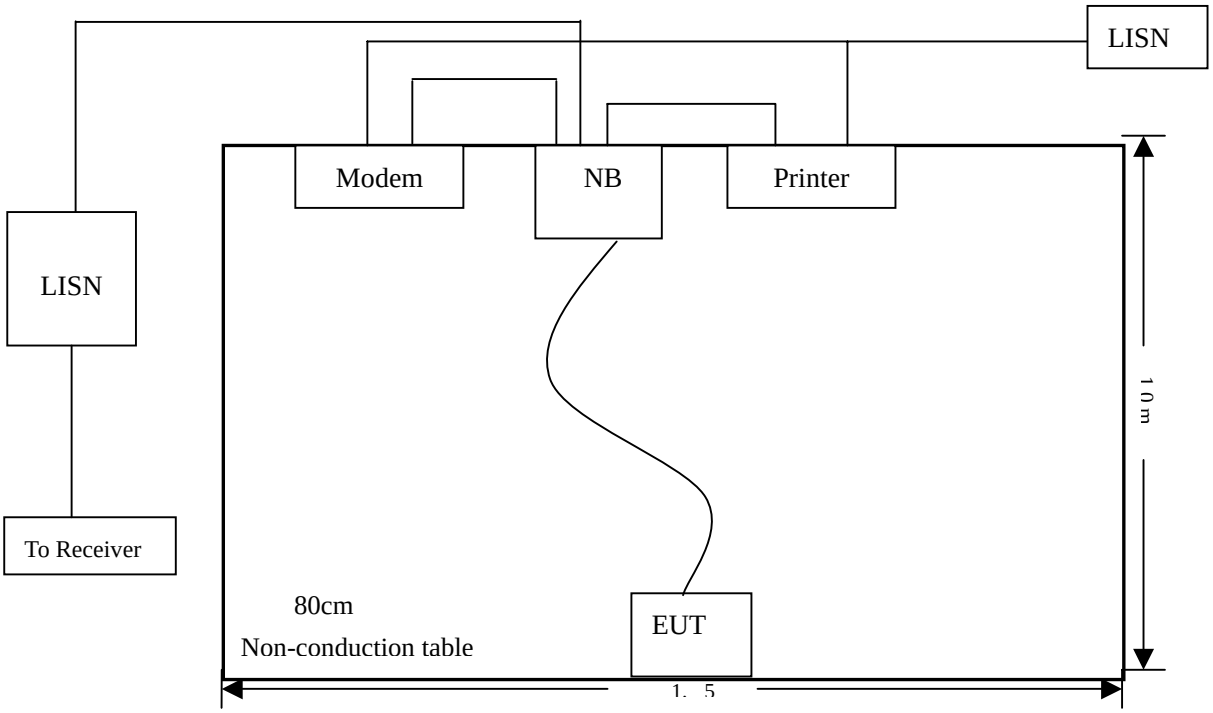
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	830245/009	2006-1-26	2007-1-25
AMN	Rohde & Schwarz	ESH2-Z5	100002	2006-1-26	2007-1-25
Limiter	Rohde & Schwarz	ESH3-Z2	357.8810.52	2006-1-26	2007-1-25
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2006-1-26	2007-1-25

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure.
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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011mbar

3.6 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

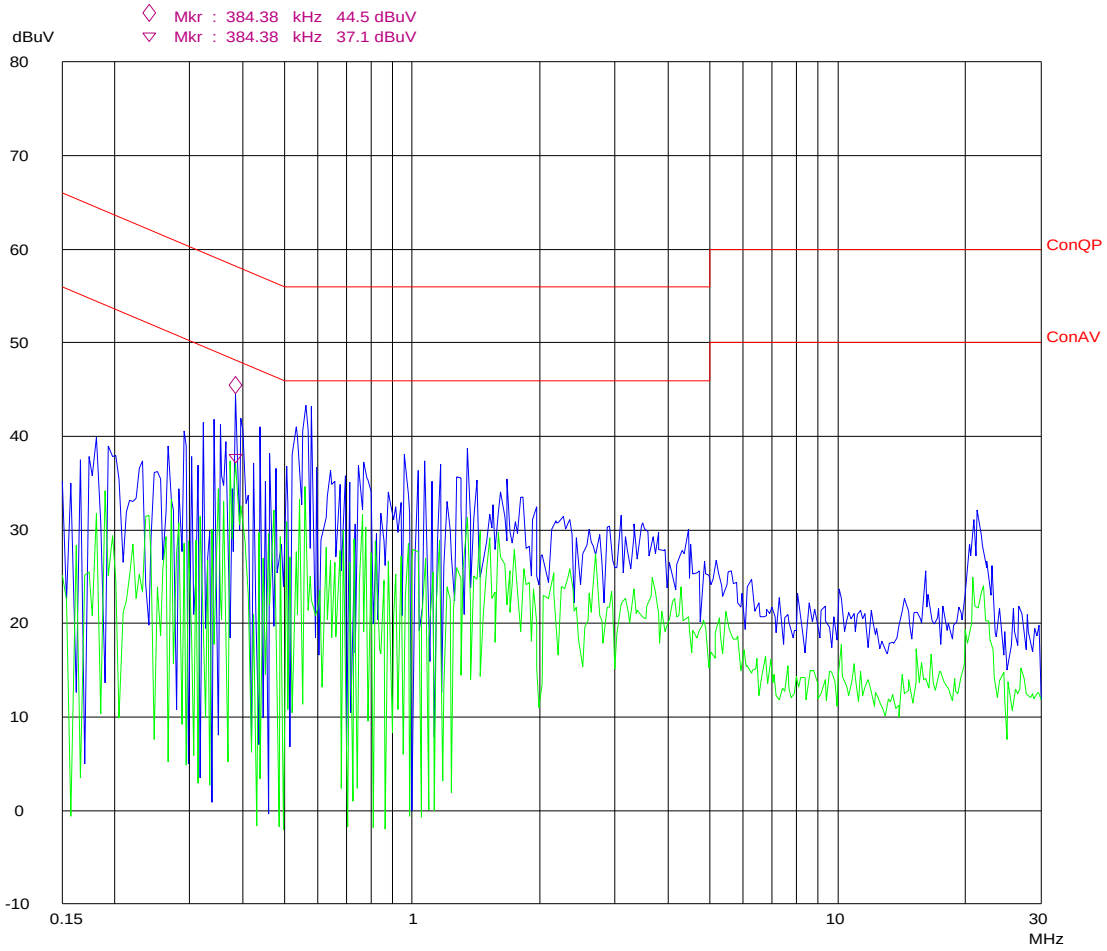
-9.30 dBμV at **0.57 MHz** in the **Line** mode, 0.15-30MHz

3.7 Conducted Emissions Test Data

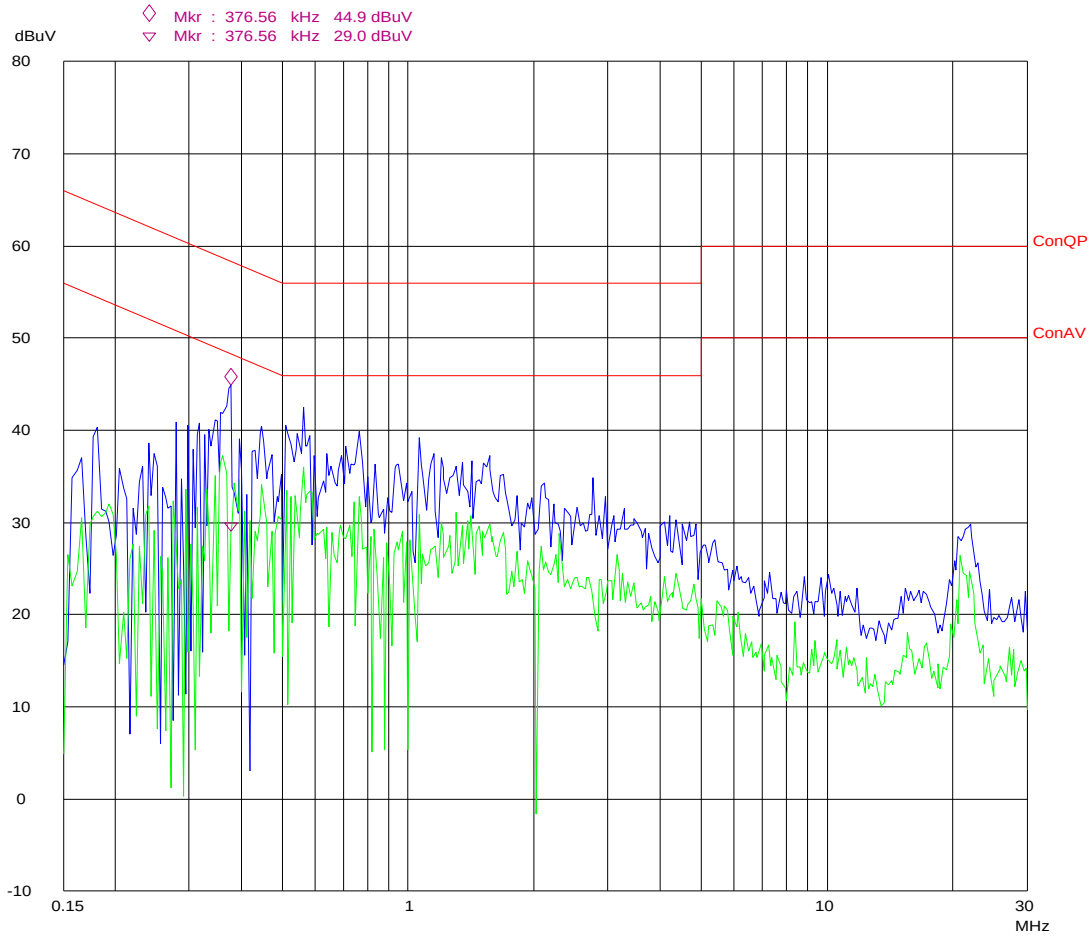
LINE CONDUCTED EMISSIONS				FCC 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
0.57	36.7	AV	Line	46	-9.3
0.57	35.4	AV	Neutral	46	-10.6
0.38	37.1	AV	Neutral	48.279	-11.2
0.57	43.9	QP	Neutral	56	-12.1
1.18	33.1	AV	Line	46	-12.9
0.57	43.0	QP	Line	56	-13.0
0.38	44.9	QP	Line	58.279	-13.4
0.38	44.5	QP	Neutral	58.279	-13.8
1.46	32.2	AV	Neutral	46	-13.8
1.46	38.4	QP	Neutral	56	-17.6
0.38	29.0	AV	Line	48.279	-19.3
1.18	29.2	QP	Line	56	-26.8

Conducted Disturbance

EUT: Computer Keyboard
M/N: 2158
Operating Condition: Running
Test Specification: N
Comment: AC 120V/60Hz



EUT: Computer Keyboard
M/N: 2158
Operating Condition: Running
Test Specification: L
Comment: AC 120V/60Hz



4. §15.109- RADIATED EMISSIONS

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 3.0 dB.

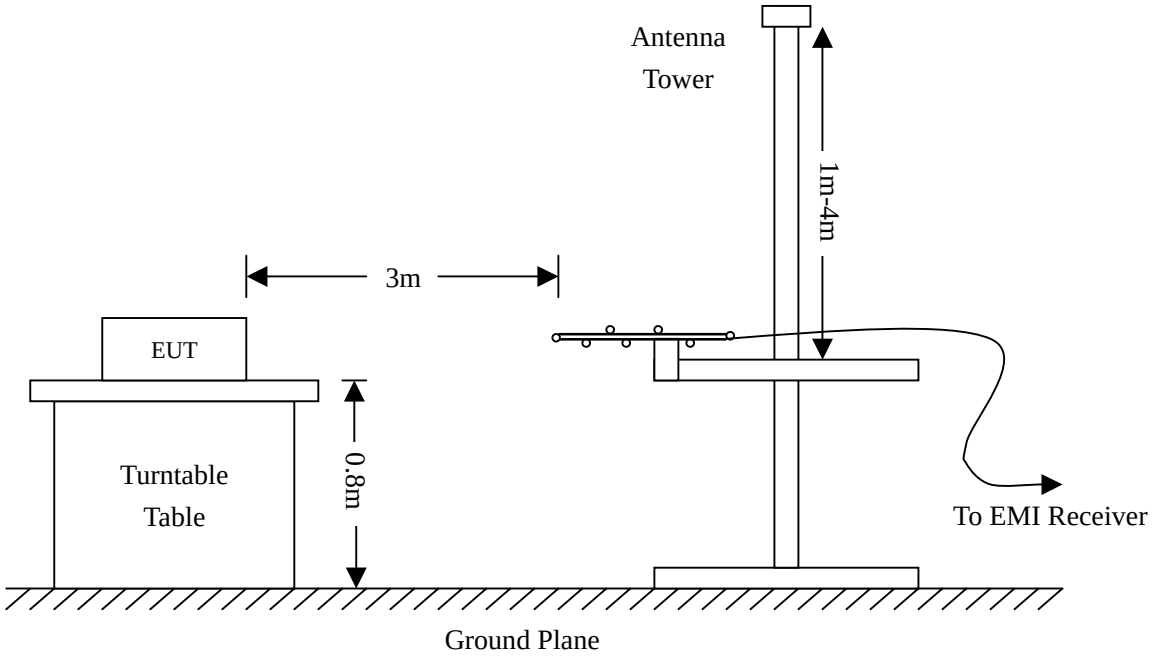
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	830245/009	2007-1-26	2008-1-25
Multi_Device Controller	ETS	2090	57230	2007-1-26	2008-1-25
Receiver Antenna	ETS	2175	57337	2007-1-26	2008-1-25
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2007-1-26	2008-1-25

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
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.



4.4 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15B Limit

4.5 Environmental Conditions

Temperature:	19° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.6 Summary of Test Results/Plots

According to the data in section 4.6, the EUT complied with the FCC 15B standards, and had the worst margin is:

-3.60 dBμV at **48.10 MHz** in the **Vertical** polarization, **30 MHz to 1 GHz, 3Meters**

INDICATED		TABLE	ANTENNA		CORRECTED FACTOR	CORRECTED AMPLITUDE	FCC 15 CLASS B		DETECTOR
Freq. MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	dB	dBμV/m	Limit dBμV/m	Margin dB	PK/QP
48.1	51.2	56	1.4	V	14.84	36.4	40	-3.6	PK
384.31	48.6	185	1.2	V	7.81	40.8	46	-5.2	PK
90	53.1	60	2	V	17.28	35.8	43.5	-7.7	PK
720.4	39.5	60	1.3	H	1.70	37.8	46	-8.2	PK
900	34.9	43	1	V	-1.85	36.7	46	-9.3	PK
900	33.6	98	1.2	H	-1.85	35.4	46	-10.6	PK
372.4	42.5	266	1	V	7.89	34.6	46	-11.4	PK
804.12	33.9	45	1.2	H	-0.24	34.1	46	-11.9	PK
264	44.9	135	1.2	H	10.94	34	46	-12.0	PK
336.1	42.4	45	1	H	8.87	33.5	46	-12.5	PK
48.1	41.5	66	1	H	14.84	26.7	40	-13.3	PK
468.15	37.2	90	1.5	V	6.03	31.2	46	-14.8	PK

Plot of Radiation Emissions Test Data

Radiated Disturbance
EUT: Computer Keyboard
M/N: 2158
Operating Condition: Running
Test Specification: Horizontal & Vertical
Comment: AC 120V/60Hz