


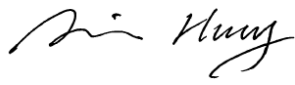
FCC PART 15B, CLASS B
MEASUREMENT AND TEST REPORT

For

SAGEMCOM SAS

250 Route de l'Empereur- RUEIL MALMAISON CEDEX 92848 France

FCC ID: VW3FAST1704N

Report Type: Original Report	Product Type: Wireless ADSL Router
Test Engineer: <u>Tiger Ye</u> 	
Report Number: <u>RSZ120912003-00B</u>	
Report Date: <u>2012-09-28</u>	
Reviewed By: <u>RF Leader</u> 	
Test Laboratory: 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 www.baclcorp.com.cn	

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 may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★"

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL I/O CABLE.....	5
CONFIGURATION OF TEST SETUP	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS.....	7
FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....	8
MEASUREMENT UNCERTAINTY	8
EUT SETUP	8
EMI TEST RECEIVER SETUP.....	9
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST PROCEDURE	9
TEST RESULTS SUMMARY	9
TEST DATA	9
FCC §15.109 - RADIATED EMISSIONS	12
MEASUREMENT UNCERTAINTY	12
EUT SETUP	12
EMI TEST RECEIVER SETUP.....	13
TEST PROCEDURE	13
TEST EQUIPMENT LIST AND DETAILS.....	13
CORRECTED AMPLITUDE & MARGIN CALCULATION	13
TEST RESULTS SUMMARY	14
TEST DATA	14

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The SAGEMCOM SAS's product, model number: *F@ST 1704N* (FCC ID: *VW3FAST1704N*) or the "EUT" as referred to in this report is a *Wireless ADSL Router*, which measures approximately: 14.0 cm (L) x 12.2 cm (W) x 4.3 cm (H), rated input voltage: DC 12V adapter.

The clock frequency in this equipment:

- 1) 200MHz DDR-SDRAM clock
- 2) 333MHz MIPS processor core
- 3) 25MHz CPU clock
- 4) 20MHz wi-fi clock

Adapter Information: Switching power supply
Model: S006DM1200050;
Input: 100-240V~50/60Hz 300mA;
Output: 12.0V 500mA.

** All measurement and test data in this report was gathered from production sample serial number: 1209040 (Assigned by BACL, Shenzhen). The EUT was received on 2012-09-12.*

Objective

This report is prepared on behalf of SAGEMCOM SAS 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 the compliance of EUT with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submissions with FCC ID: VW3FAST1704N.

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 mode which is provided by manufacture.

EUT Exercise Software

Microsoft CMD.exe
Internet explorer 8

Equipment Modifications

No modification was made to the unit tested.

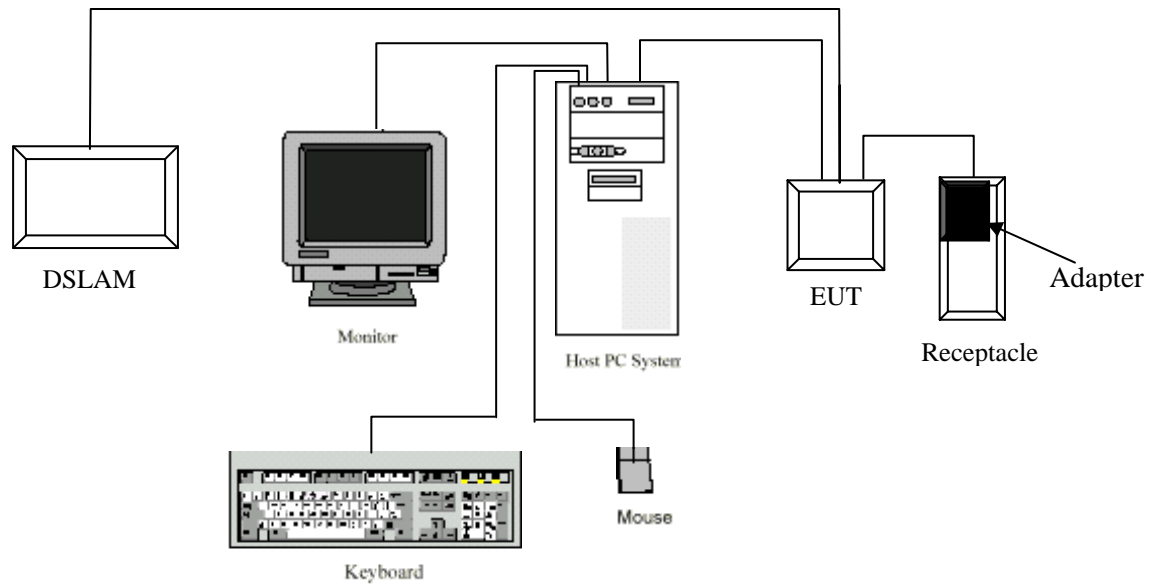
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
Huawei	DSLAM	MA5105	N/A

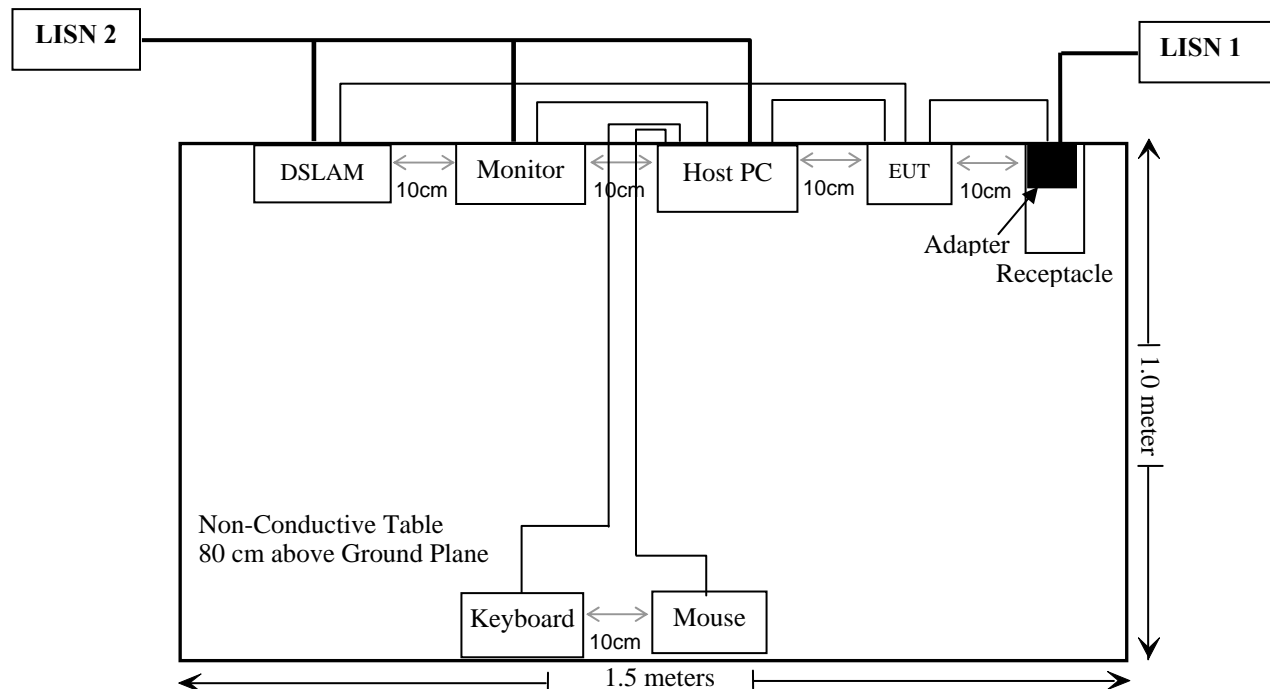
External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable VGA Cable	1.5	Host PC	Monitor
Unshielded Detachable RJ45 Cable	1.5	EUT	Host PC
Unshielded Detachable RJ11 Cable	2.0	EUT	DSLAM
Unshielded Detachable AC Cable	2.0	EUT	Adapter

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

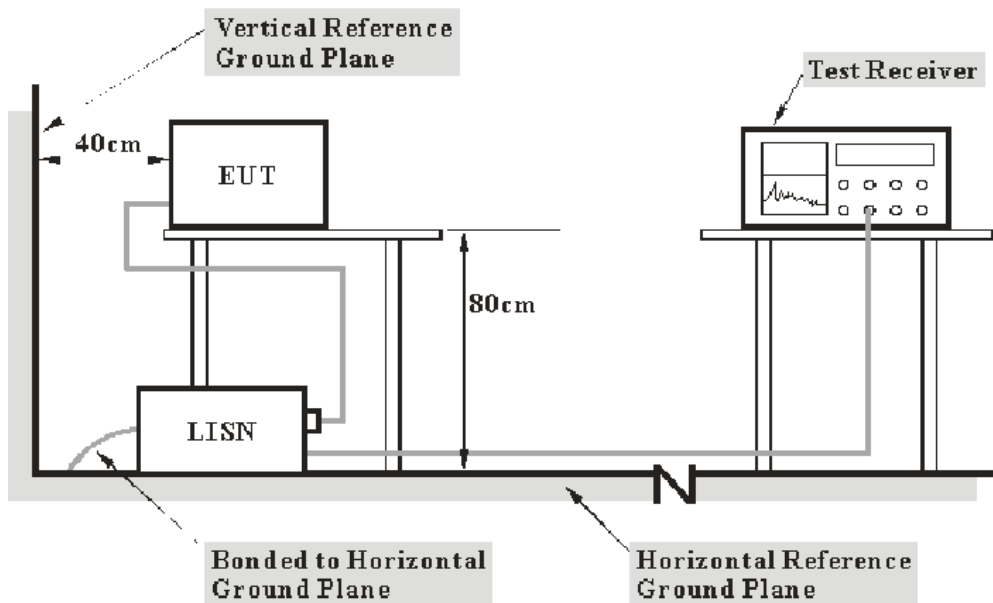
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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 CISPR 16-4-2, 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), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

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 spacing between the peripherals was 10 cm.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	Attenuator	ESH3Z2	DE25985	2012-07-08	2013-07-07
BACL	CE Test software	BACL-CE	V1.0	-	-

* **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 Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN, and the other relevant equipments were connected to the outlet of the second 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 15.107, with the worst margin reading of:

23.62 dB at 2.840 MHz in the Line conducted mode

Test Data

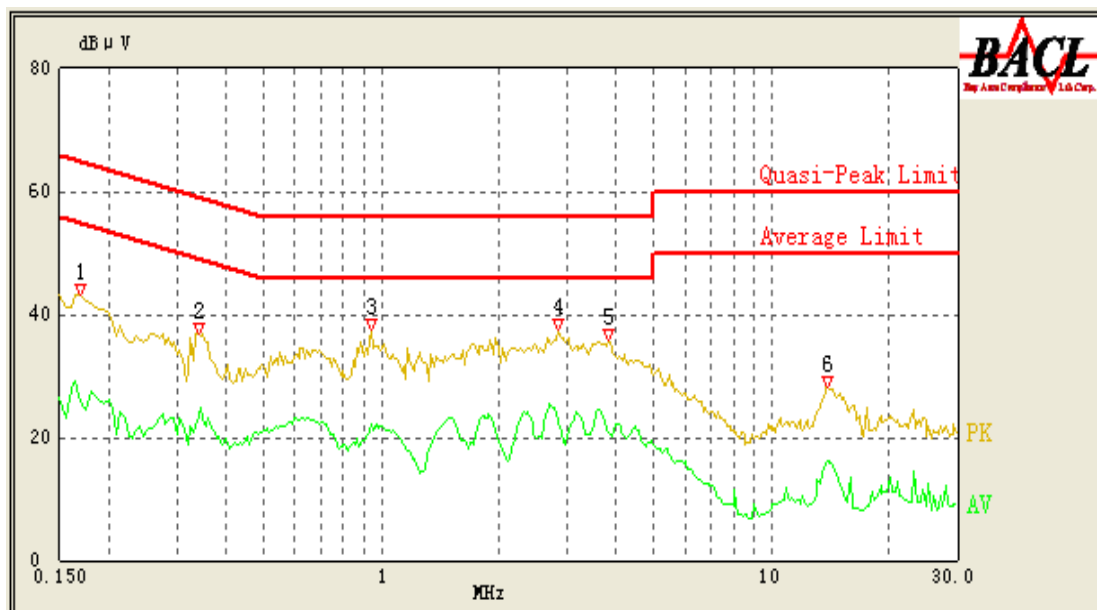
Environmental Conditions

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

The testing was performed by Tiger Ye on 2012-09-17.

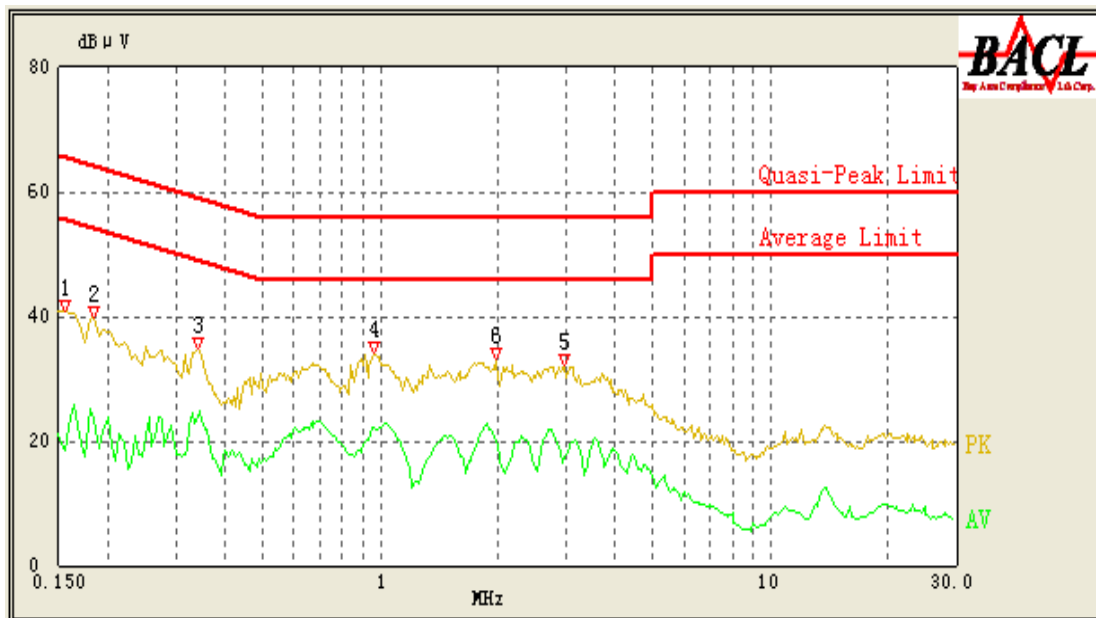
Test Mode: Operating (ADSL Access & LAN Access)

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
2.840	22.38	10.23	46.00	23.62	Ave.
0.945	22.33	10.18	46.00	23.67	Ave.
3.820	20.71	10.25	46.00	25.29	Ave.
0.945	28.95	10.18	56.00	27.05	QP
2.850	28.94	10.23	56.00	27.06	QP
0.340	23.36	10.25	50.57	27.21	Ave.
3.805	27.26	10.25	56.00	28.74	QP
0.340	35.72	10.25	60.57	28.85	QP
0.170	25.91	10.24	55.43	29.52	Ave.
0.170	34.72	10.24	65.43	30.71	QP
14.065	16.12	11.10	50.00	33.88	Ave.
13.950	21.56	11.08	60.00	38.44	QP

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.970	21.88	10.17	46.00	24.12	Ave.
1.960	20.76	10.20	46.00	25.24	Ave.
0.340	23.98	10.25	50.57	26.59	Ave.
0.960	29.05	10.18	56.00	26.95	QP
0.340	32.60	10.25	60.57	27.97	QP
2.985	17.77	10.23	46.00	28.23	Ave.
1.970	26.82	10.20	56.00	29.18	QP
0.185	35.36	10.24	65.00	29.64	QP
0.155	35.08	10.24	65.86	30.78	QP
2.970	24.96	10.23	56.00	31.04	QP
0.185	23.58	10.24	55.00	31.42	Ave.
0.155	18.48	10.24	55.86	37.38	Ave.

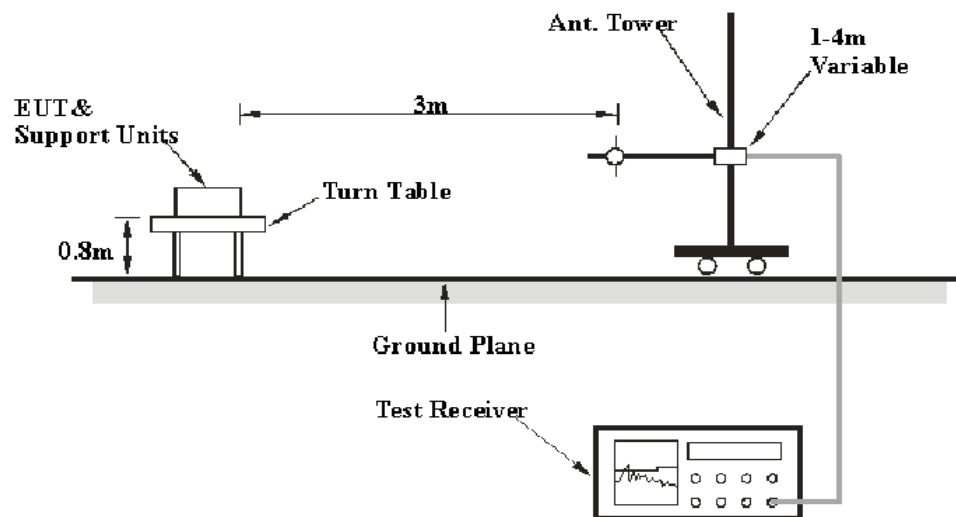
FCC §15.109 - RADIATED EMISSIONS

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 CISPR 16-4-2, 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), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters 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 spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2000 MHz.

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
Above 1 GHz	1MHz	3 MHz	Peak
Above 1 GHz	1MHz	10 Hz	Ave.

Test Procedure

For the radiated emissions test, the adapter and other relevant equipments were connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in Quasi-peak detection mode for frequency from 30 MHz to 1 GHz, peak and average detection mode for frequency from 1 GHz to 2 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
HP	Amplifier	8447E	1937A01046	2011-11-24	2012-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2012-03-08	2013-03-08
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
R&S	Auto test Software	EMC32	V6.30	-	-

* **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.

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:

$$\text{Correction Factor} = \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 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 data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

3.2 dB at 500.025950 MHz in the Horizontal polarization

Test Data

Environmental Conditions

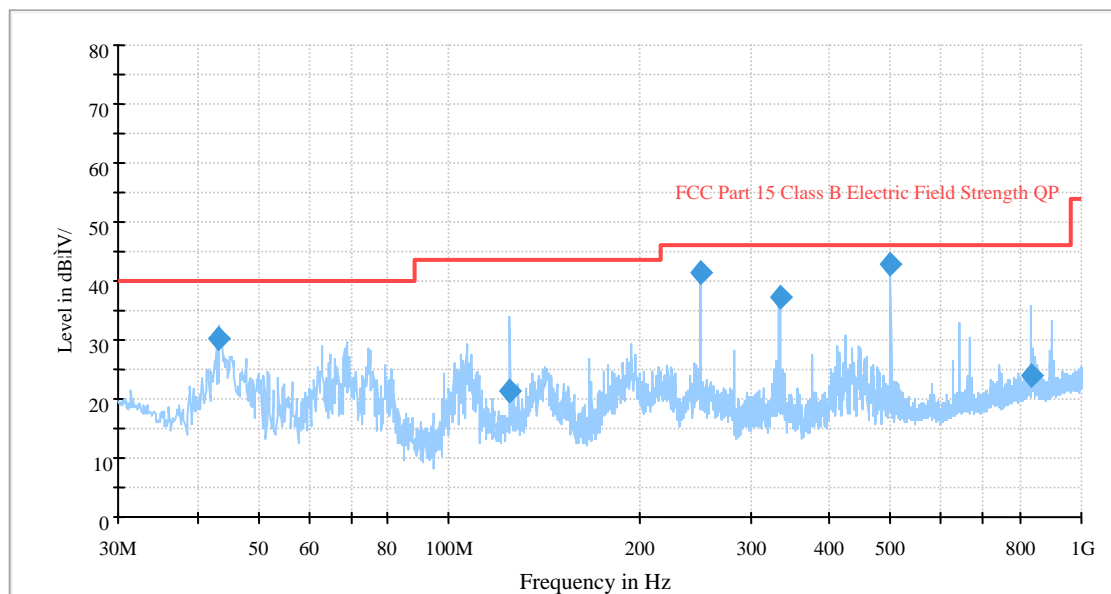
Temperature:	26 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Tiger Ye on 2012-09-28.

Test Mode: Operating (ADSL Access & LAN Access)

30 MHz-1 GHz:

Auto Test(FCC part 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
500.025950	42.8	195.0	H	136.0	-10.1	46.0	3.2*
250.010100	41.6	128.0	H	137.0	-15.8	46.0	4.4
333.367536	37.1	104.0	V	145.0	-13.5	46.0	8.9
43.4587565	30.2	103.0	V	60.0	-16.7	40.0	9.8
124.938827	21.8	105.0	V	306.0	-13.4	43.5	21.7
833.523845	23.2	185.0	H	199.0	-4.9	46.0	22.8

*Within measurement uncertainty.

Above 1 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna			Cable loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dB μ V/m)	FCC Part 15B	
	Reading (dB μ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)
1791.5	42.63	Ave.	58	1.2	H	26.30	2.52	26.50	44.95	54.00	9.05
1795.7	42.18	Ave.	11	1.3	V	26.30	2.52	26.50	44.50	54.00	9.50
1930.6	39.81	Ave.	223	1.3	H	26.60	2.97	26.50	42.88	54.00	11.12
1932.2	36.91	Ave.	62	1.2	V	26.60	2.97	26.50	39.98	54.00	14.02
1469.3	37.62	Ave.	69	1.2	H	25.40	2.25	26.50	38.77	54.00	15.23
1461.5	36.94	Ave.	173	1.2	V	25.60	2.25	26.50	38.29	54.00	15.71
1795.7	52.25	PK	11	1.3	V	26.30	2.52	26.50	54.57	74.00	19.43
1791.5	52.21	PK	58	1.2	H	26.30	2.52	26.50	54.53	74.00	19.47
1930.6	48.95	PK	223	1.3	H	26.60	2.97	26.50	52.02	74.00	21.98
1932.2	47.61	PK	62	1.2	V	26.60	2.97	26.50	50.68	74.00	23.32
1469.3	48.93	PK	69	1.2	H	25.40	2.25	26.50	50.08	74.00	23.92
1461.5	47.96	PK	173	1.2	V	25.60	2.25	26.50	49.31	74.00	24.69

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