NVLAP LAB CODE 200707-0

FCC PART 15B

MEASUREMENT AND TEST REPORT

For

Aztech Technologies Pte Ltd.

31 UBI Road 1, Aztech Building, Singapore, 408694

FCC ID: I38HW550

Report Type:	**Product Type:**
Original Report	4-Port Wireless-N Router plus HSPA Support for 3G Mobile Broadband

Test Engineer:	Vicent Kang
Report Number:	RSZ09081704
Report Date:	2009-09-11
Reviewed By:	Merry Zhao EMC Engineer
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Aztech Technologies Pte Ltd. 's* product, model number: *HW550-3G (FCC ID: I38HW550) o*r the "EUT" as referred to in this report is a *4-Port Wireless-N Router plus HSPA Support for 3G Mobile Broadband,* which measures approximately: 20 cm L x 16 cm W x 3.5 cm H, input voltage: DC 12V Adapter.

Adapter: Aztech
Model: SWM1112120;
Input: AC 100-240V; 0.4A; 50-60Hz
Output: DC 12.0V 1.00A.

** All measurement and test data in this report was gathered from production sample serial number: 0908024 (Assigned by BACL, Shenzhen). The EUT was received on 2009-08-17.*

Objective

This Type approval report is prepared on behalf of *Aztech Technologies Pte 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 15 Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submission with FCC ID: I38HW550.

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.

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 in 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 November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

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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 manufacturer testing fashion.

EUT Exercise Software

N/A.

Equipment Modifications

No modification was made to the unit tested.

Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4Q6	DOC
DELL	Keyboard	SK-8110	CN07N244-71616-56A-1B1E	DOC
DELL	Mouse	M071KC	520027907	DOC
DELL	LCD Monitor	1505FP	Y4287-7168-571-GBSH	DOC
Hynix	Memory	PC2-5300U-555-12	HYMP564U64CP8-Y5 AB	N/A
Intel	CPU	Core Processor E5200	N/A	N/A

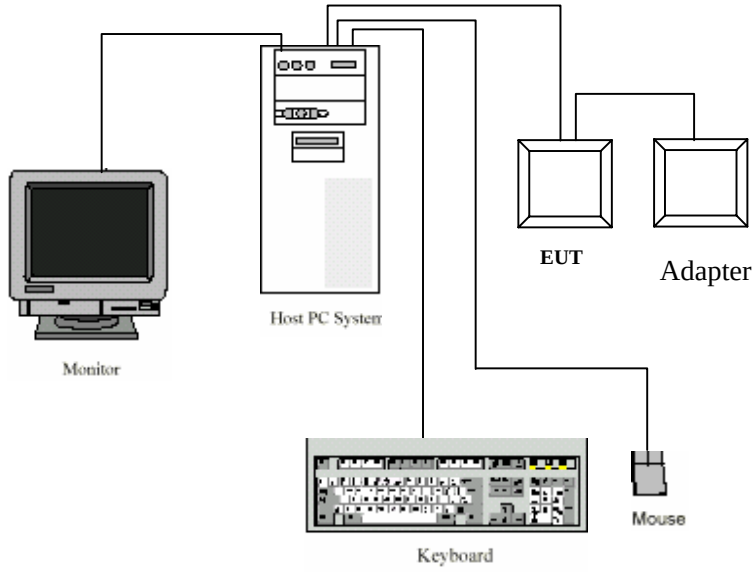
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Foxconn	Motherboard	G33M02	11S19R1949ZJ1WCB46JK8	DOC
Bestec	Power	ATX0300P5WB	070900730657	DOC
Western Digital	Hard Disk	WD800JD	WD-WMAM9YJ07713	DOC
Hitachi-LG	DVD-ROM	LTN-489S	B4F511412	DOC
Intel	Ethernet	PRO 10/100 VE	82562V-2	DOC

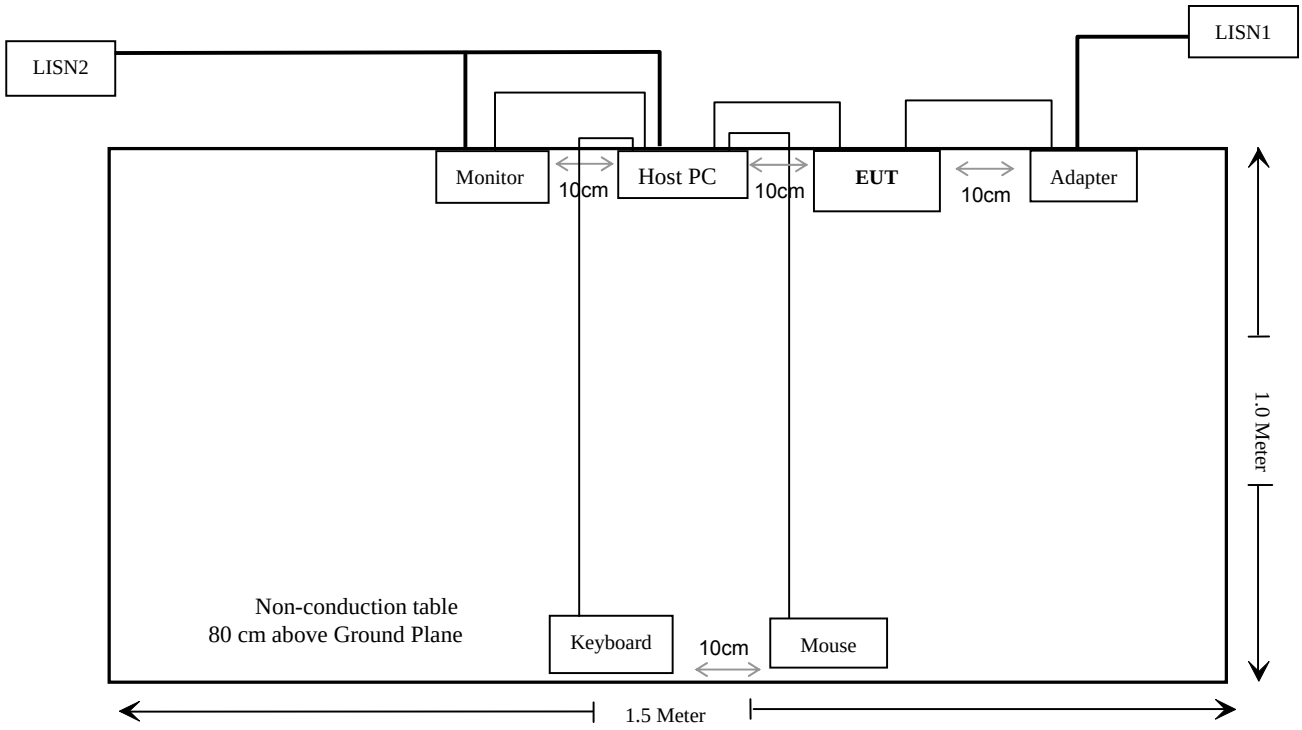
External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.50	K/B Port / Host	K/B
Shielded Detachable Mouse Cable	1.50	Mouse Port / Host	Mouse
Shielded Detachable VGA Cable	1.50	VGA Port / Host	Monitor
Unshielded Detachable Power Cable	1.80	Adapter	EUT
Unshielded Detachable RJ45 Cable	2.00	Computer	EUT

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant*

*Within measurement uncertainty.

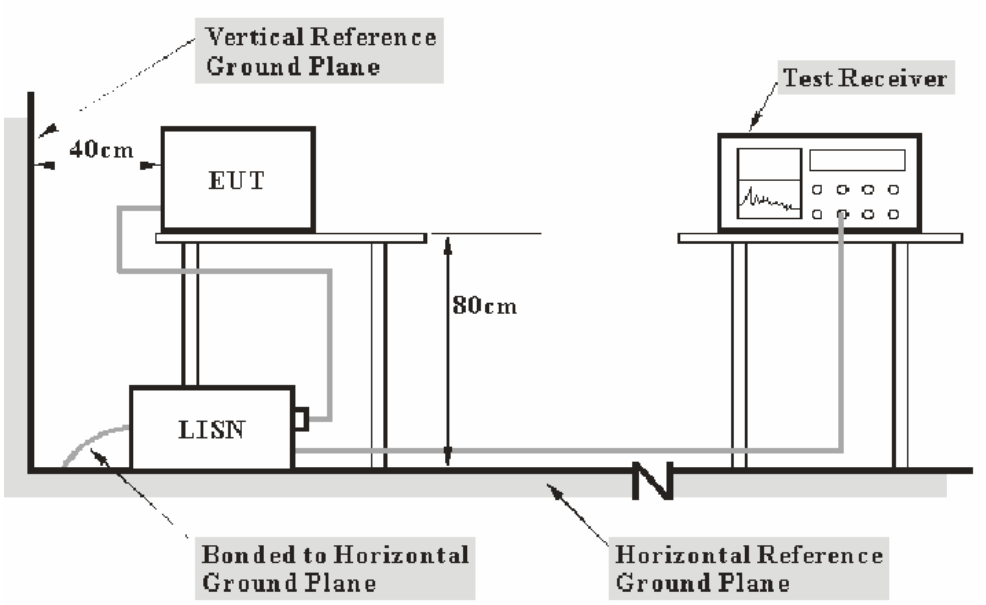
FCC §15.107 - CONDUCTED EMISSIONS

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.

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 C63.4-2003 measurement procedure. The specification used was with the FCC Part 15 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:

Frequency Range	***IF B/W***
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	2009-04-28	2010-04-27
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2009-04-28	2010-04-27

*** 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 LISN 1, the host PC and the monitor was connected to the LISN 2.

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 Class B, with the worst margin reading of:

8.60 dB at **13.1650 MHz** in the **Neutral** conductor mode

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Vicent Kang on 2009-09-01.

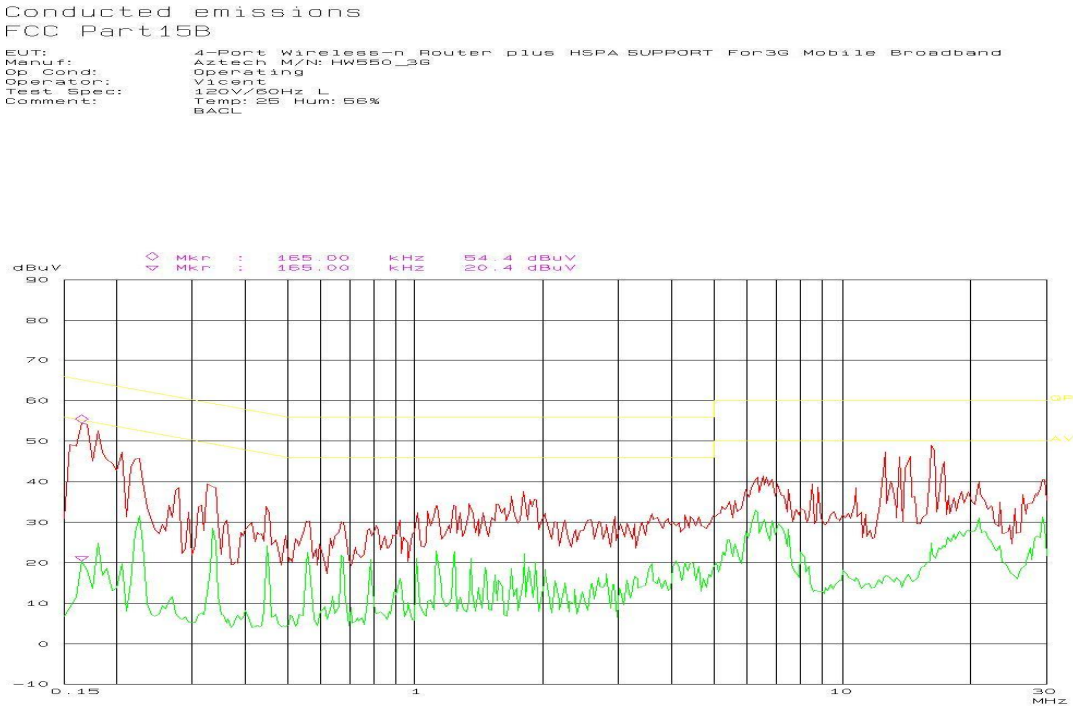
Test Mode: Operating (WAN+LAN)

Line Conducted Emissions				FCC Part 15.107	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Conductor (Line/Neutral)**	**Limit (dBµV)**	**Margin (dB)**
13.1650	51.40	QP	Neutral	60.00	8.60
0.1650	54.40	QP	Line	65.21	10.81
16.2350	49.00	QP	Line	60.00	11.00
0.2250	45.80	QP	Line	62.63	16.83
0.2250	45.70	QP	Neutral	62.63	16.93
6.2700	32.90	AV	Neutral	50.00	17.10
6.3350	32.40	AV	Line	50.00	17.60
29.4300	31.20	AV	Line	50.00	18.80
6.3350	41.10	QP	Line	60.00	18.90
0.2250	33.50	AV	Neutral	52.63	19.13
29.4300	40.50	QP	Line	60.00	19.50
6.2700	39.30	QP	Neutral	60.00	20.70
0.3400	38.50	QP	Neutral	59.20	20.70
0.3400	38.50	QP	Line	59.20	20.70
0.2250	31.50	AV	Line	52.63	21.13
29.4300	28.60	AV	Neutral	50.00	21.40
29.4300	38.10	QP	Neutral	60.00	21.90
0.4500	24.80	AV	Neutral	46.88	22.08
0.3000	27.90	AV	Neutral	50.24	22.34
0.4500	33.10	QP	Neutral	56.88	23.78
0.3400	25.00	AV	Line	49.20	24.20
16.2300	24.90	AV	Line	50.00	25.10
0.1800	25.00	AV	Line	54.49	29.49
13.1650	15.20	AV	Neutral	50.00	34.80

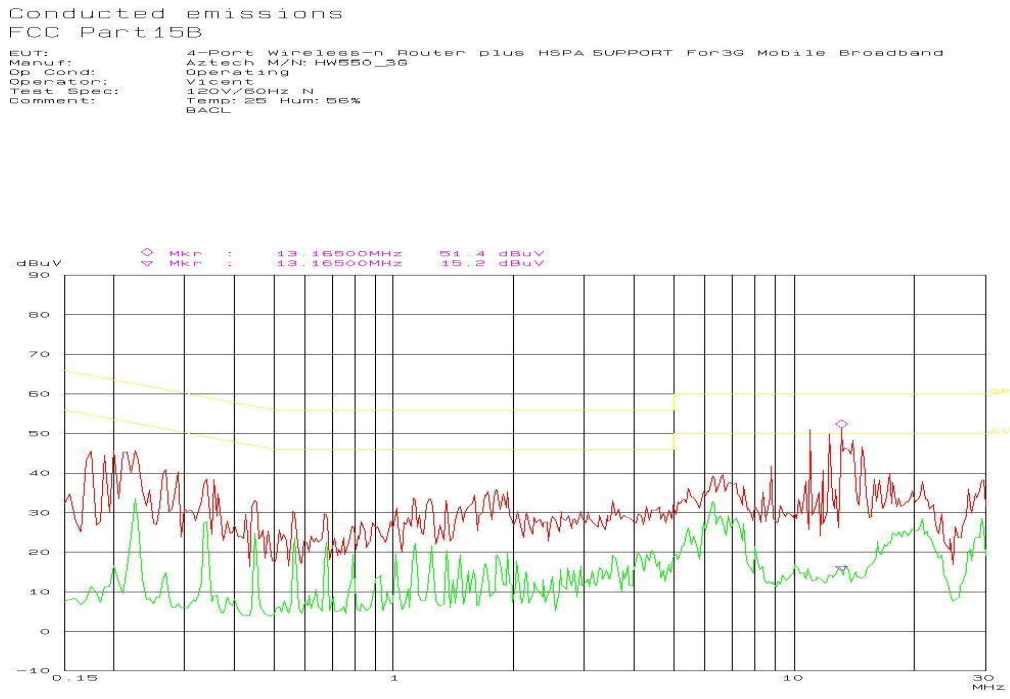
Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Line:



Neutral:



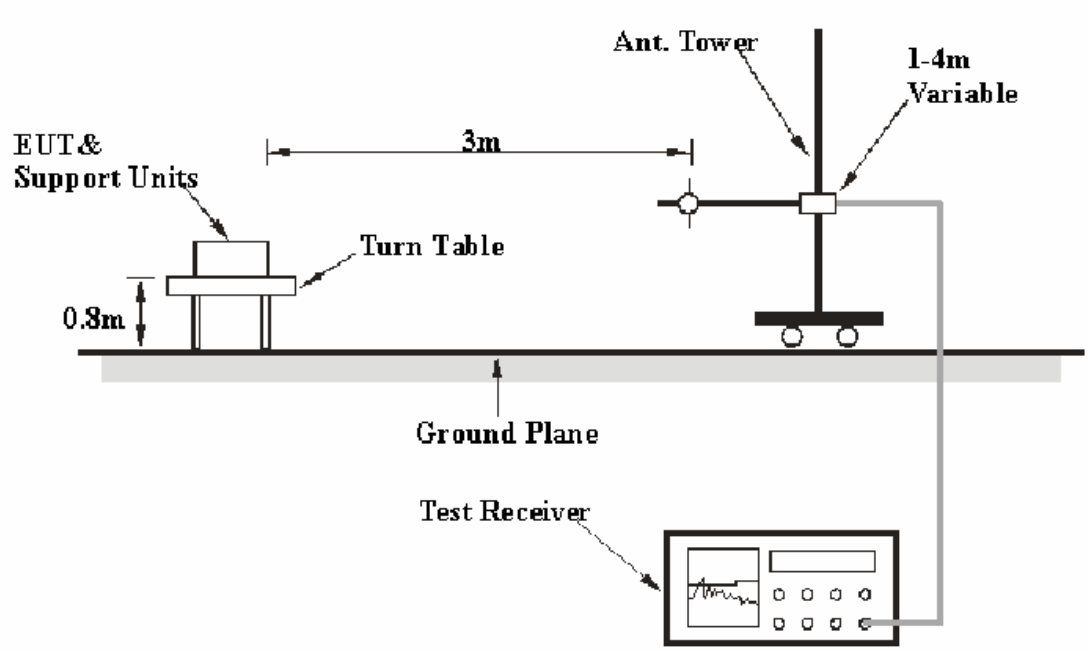
FCC §15.109 - RADIATED EMISSIONS

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.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 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 1000 MHz.

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

Frequency	***RB/W***	***VB/W***	***IF B/W***
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz
above 1GHz			

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2008-11-15	2009-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
HP	Amplifier	8449B	3008A00277	2008-09-12	2009-09-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-07-08	2010-07-08

*** 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, the host PC and monitor were connected to the AC floor outlet.

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

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

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:

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

2.5 dB at **250.003250 MHz** in the **Horizontal** polarization

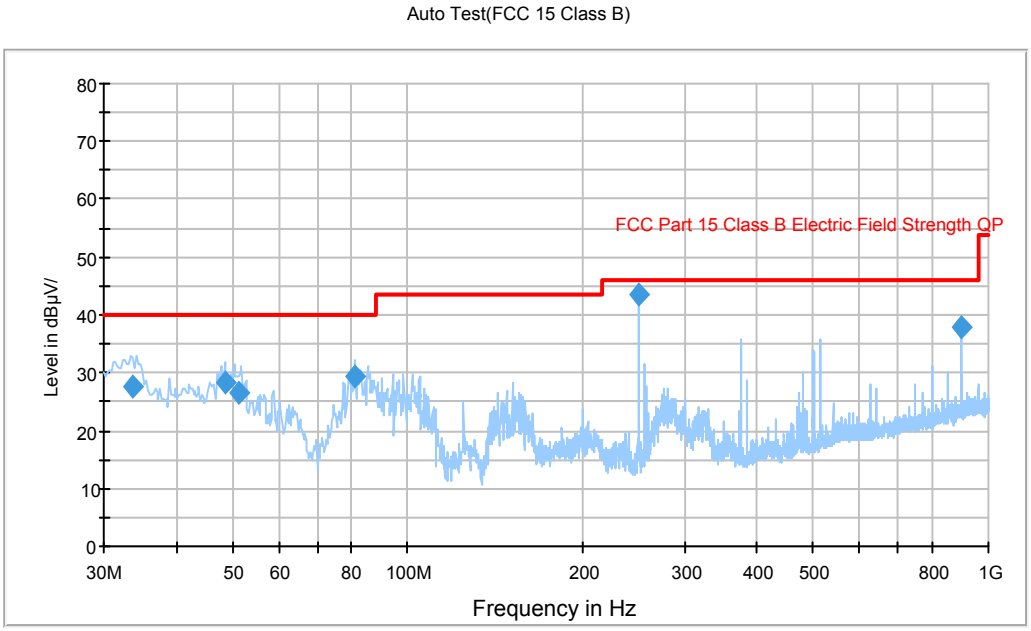
Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-08-24.

Test Mode: Operating (WAN+LAN)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
250.003250	43.5	126.0	H	104.0	-15.9	46.0	2.5*
895.988750	37.9	98.0	V	0.0	-3.9	46.0	8.1
81.194750	29.4	99.0	V	247.0	-22.2	40.0	10.6
48.477500	28.5	180.0	V	212.0	-19.6	40.0	11.5
33.565750	27.7	101.0	V	162.0	-11.0	40.0	12.3
51.357000	26.6	100.0	V	323.0	-20.5	40.0	13.4

** Within measurement uncertainty.*

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