NVLAP LAB CODE 200707-0

FCC PART 15B

MEASUREMENT AND TEST REPORT

For

Tobii Technology AB

Karlsrovägen 2D, 18256 Danderyd, Sweden

FCC ID: W5MTOBIIC12
Model: T-C12-R1.0A-V0

Report Type:	**Product Type:**
Original Report	A Laptop Computer with Bluetooth, Wi-Fi and GSM Modules

Test Engineer:	Bruce Zhang
Report Number:	RSZ09042308
Report Date:	2009-06-23
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	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

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Tobii Technology AB's* product, model *T-C12-R1.0A-V0* , or the "EUT" as referred to in this report is a *A Laptop Computer with Bluetooth, WiFi and GSM Modules, which* measures approximately 31.1 cm L x 25.9 cm W x 4.6 cm H, rated input voltage: DC 14.8V battery or DC 24 V adapter

Adapter information:
Manufacture: Powerbox;
Model: EXM805121;
Input: AC 100-240V, Max.1.7A;
Output: DC 24V 2.9A.

All measurement and test data in this report was gathered from production sample serial number: 0904061 (Assigned by BACL, Shenzhen). The EUT was received on 2009-04-23.

Objective

The following test report is prepared on behalf of *Tobii Technology AB* in accordance with Part 2, Subpart J, and 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.

Related Submittal(s)/Grant(s)

FCC Part 24E and Part 15.247 submission with FCC ID: W5MTOBIIC12.

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 radiated and conducted emissions measurement was performed at 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 radiated and conducted emission measurement 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).

NVLAP 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).

EUT Exercise Software

N/A

Special Accessories

N/A

Equipment Modifications

No modifications were made to the unit tested.

Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	Motherboard	OWC297	CN-OWC297-70821-566-02BR	DoC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E8NBM	DoC
Seagate	Hard Disk	ST340014A	5JXK3NAD	DoC
DELL	3.5' Floppy	N/A	CN-0N8893-69802-54Q-02OZ	DoC
Lite-ON	CD-ROM	LTN-489S	N/A	DoC
Intel	CPU	Celeron D-2533	N/A	N/A
Pro MOS	Memory	V826632K24SATG-C0	0525-K1933700	N/A
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

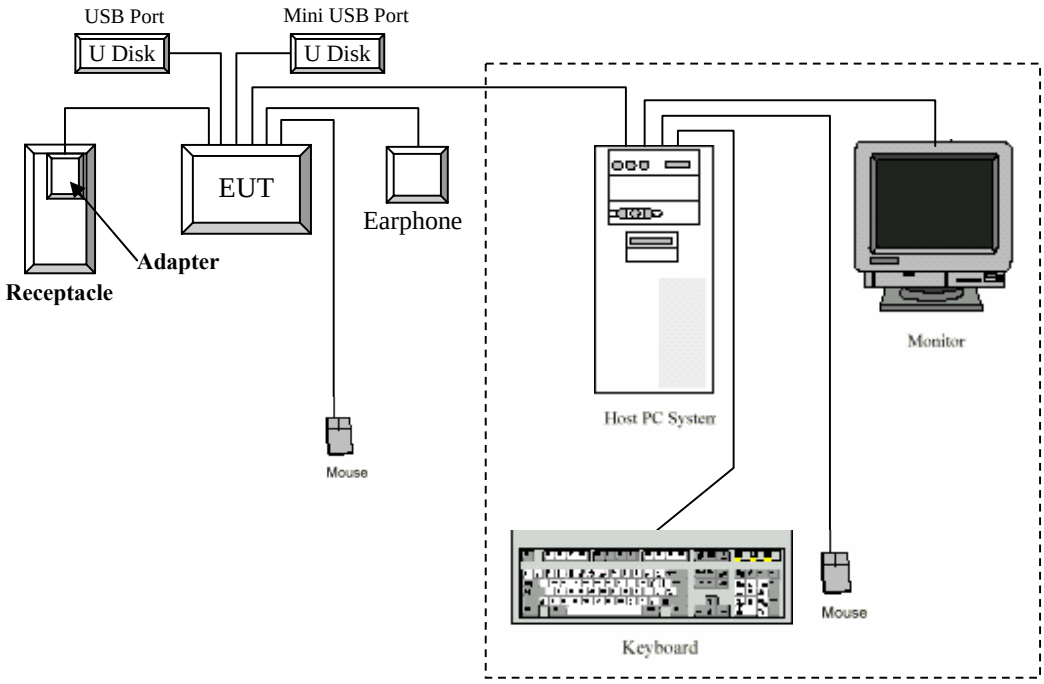
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4WQ	DoC
DELL	Keyboard	SK-8110	CN07N244-71616-56I-1I0O	DoC
DELL	Mouse	M071KC	519046820	DoC
DELL	Mouse	MUC5UO	N/A	DoC
DELL	LCD Monitor	1505FP	Y4287-7168-574-GBSH	DoC
SOMIC	Earphone	ST-818	N/A	DOC
U Disk 1	Apacer	AH321	N/A	DOC
U Disk 2	HuaPu	DPF-802	08-2295	DOC

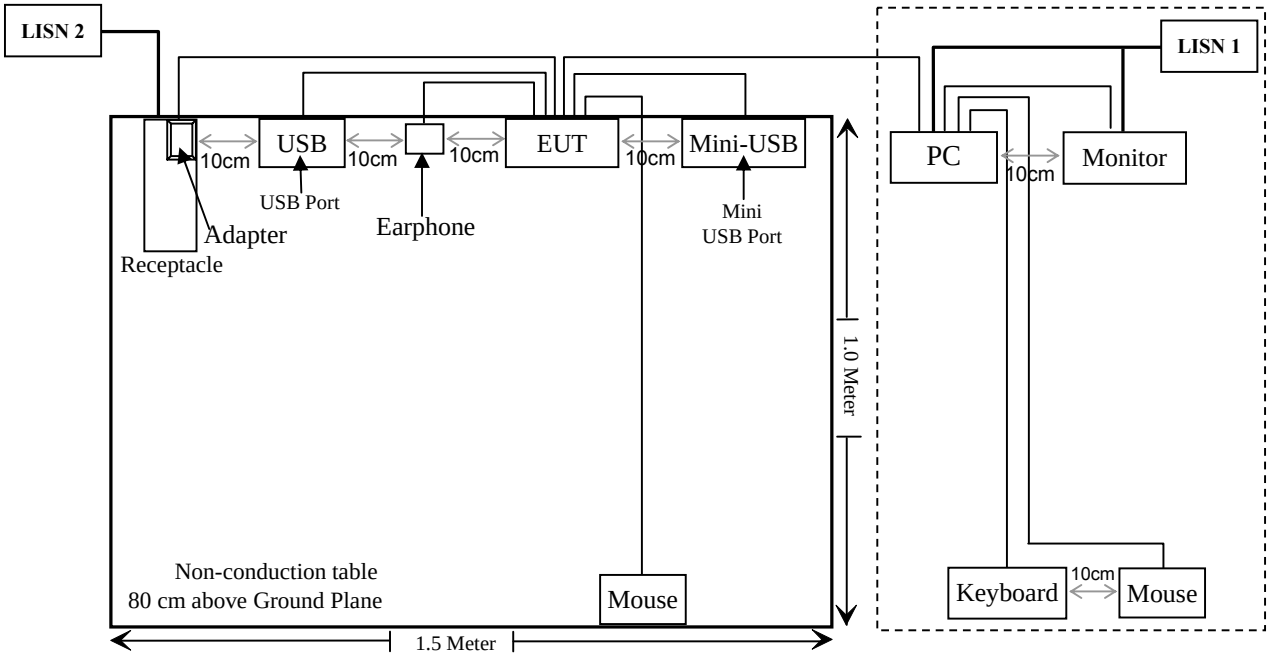
External I/O Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable K/B Cable	1.5	K/B Port / Host	K/B
Shielded Detachable Mouse Cable	1.5	Mouse Port / Host	Mouse
Shielded Detachable VGA Cable	1.5	VGA Port / Host	Monitor
Detachable Shielded Power Cable	1.96	EUT	Adapter
Shielded Detachable USB Cable	1.4	EUT-USB Port	U Disk
Shielded Detachable USB Cable	0.21	EUT-mini USB Port	U Disk

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST REPORT

FCC Rules	Description	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant
§15.33	Frequency of Investigation	N/A
§15.27	Special Accessories	Compliant

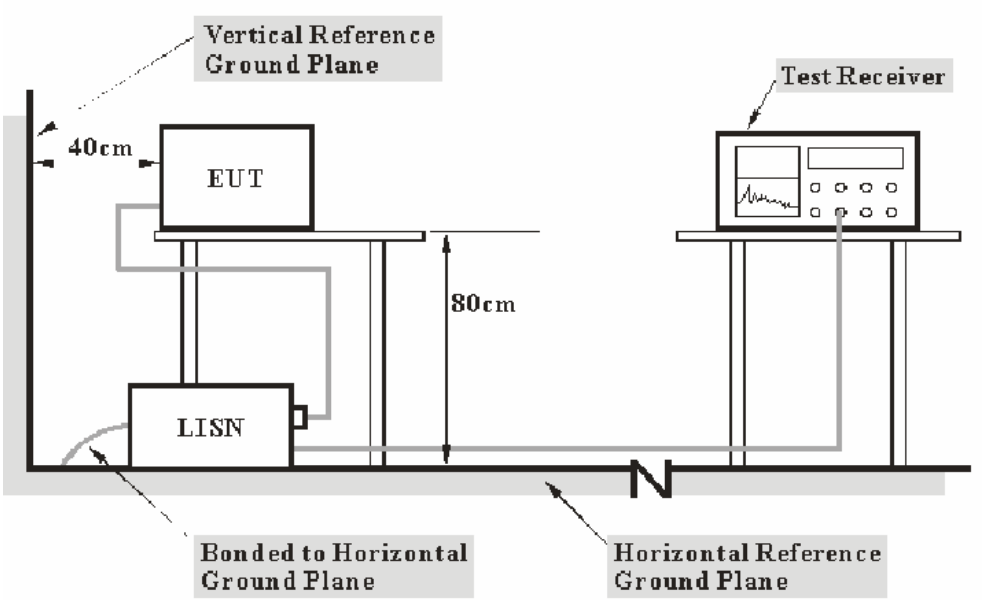
CFR47 §15.107 - CONDUCTED EMISSIONS

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 external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

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
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	DE25330	2009-03-25	2010-03-25
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2009-03-25	2010-03-25

***** Com-Power's LISN were used as the supporting equipment.
*** 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

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 Class B, with the worst margin reading of:

7.10 dB at **7.375 MHz** in the **Line** conductor mode

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	60 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-05-16.

Test Mode: Operating

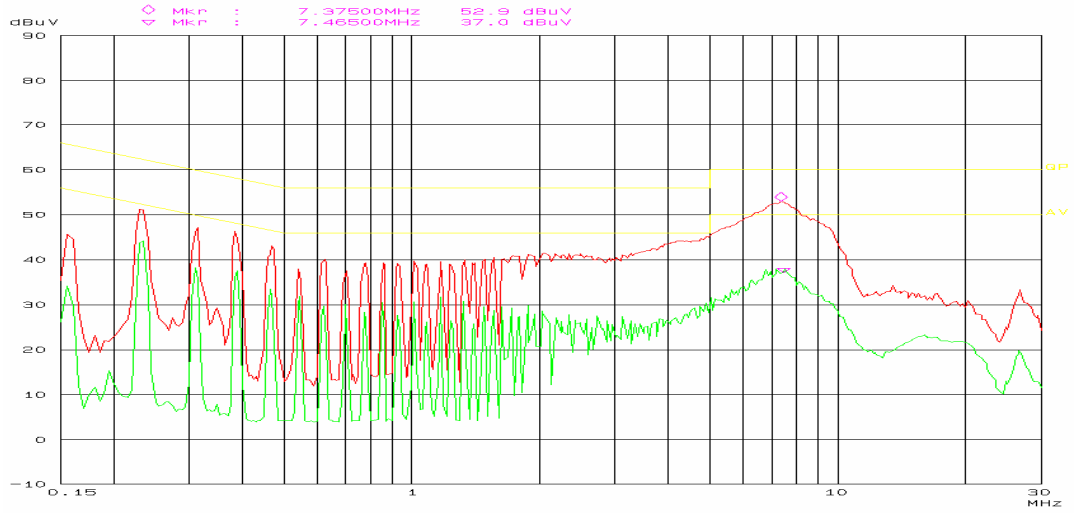
Line Conducted Emissions				FCC Part 15.107	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Conductor (Line/ Neutral)**	**Limit (dBµV)**	**Margin (dB)**
7.375	52.90	QP	Line	60.00	7.10
7.265	52.40	QP	Neutral	60.00	7.60
0.230	44.20	AV	Line	52.40	8.20
0.230	44.00	AV	Neutral	52.40	8.40
0.535	36.50	AV	Neutral	46.00	9.50
0.460	36.20	AV	Neutral	46.70	10.50
0.380	37.70	AV	Neutral	48.30	10.60
0.385	37.60	AV	Line	48.20	10.60
0.230	51.20	QP	Line	62.40	11.20
0.230	51.00	QP	Neutral	62.40	11.40
0.315	38.20	AV	Line	49.80	11.60
0.385	46.40	QP	Line	58.20	11.80
0.315	47.10	QP	Line	59.80	12.70
7.270	37.20	AV	Neutral	50.00	12.80
7.465	37.00	AV	Line	50.00	13.00
0.470	33.40	AV	Line	46.50	13.10
0.470	43.00	QP	Line	56.50	13.50
0.460	42.60	QP	Neutral	56.70	14.10
0.380	44.10	QP	Neutral	58.30	14.20
0.310	45.60	QP	Neutral	60.00	14.40
0.535	41.60	QP	Neutral	56.00	14.40
0.310	34.80	AV	Neutral	50.00	15.20
0.625	40.20	QP	Line	56.00	15.80
0.625	29.80	AV	Line	60.00	30.20

Plot(s) of Test Data

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

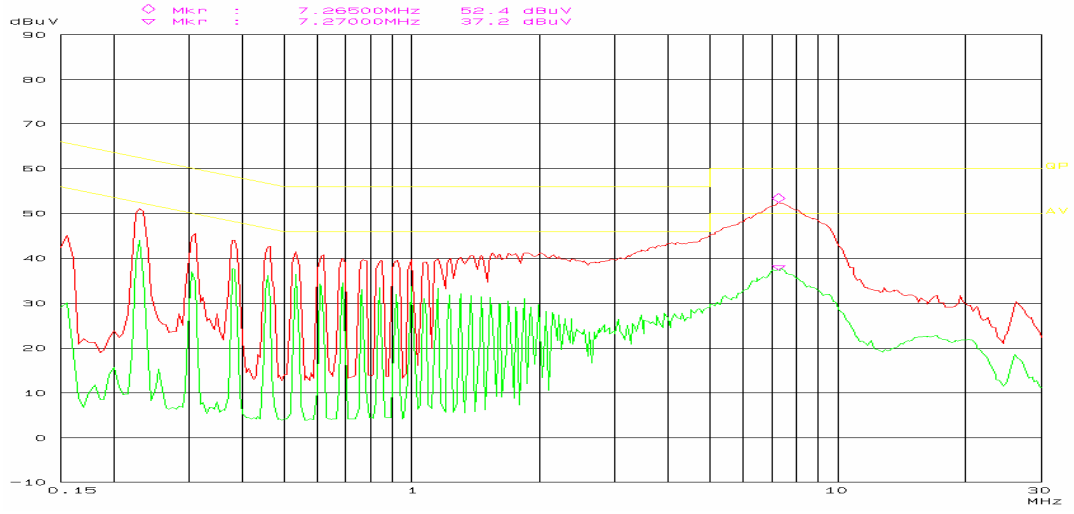
Conducted Emission
FCC Part 15

EUT:	Tobii C12 M/N: T-C12-R1.0A-V0
Manuf:	Tobii
Op Cond:	Operating
Operator:	Bruce
Test Spec:	AC 120V/60Hz L
Comment:	Temp: 25 Hum: 56%
	BACL



Conducted Emission
FCC Part 15

EUT:	Tobii C12 M/N: T-C12-R1.0A-V0
Manuf:	Tobii
Op Cond:	Operating
Operator:	Bruce
Test Spec:	AC 120V/60Hz N
Comment:	Temp: 25 Hum: 56%
	BACL



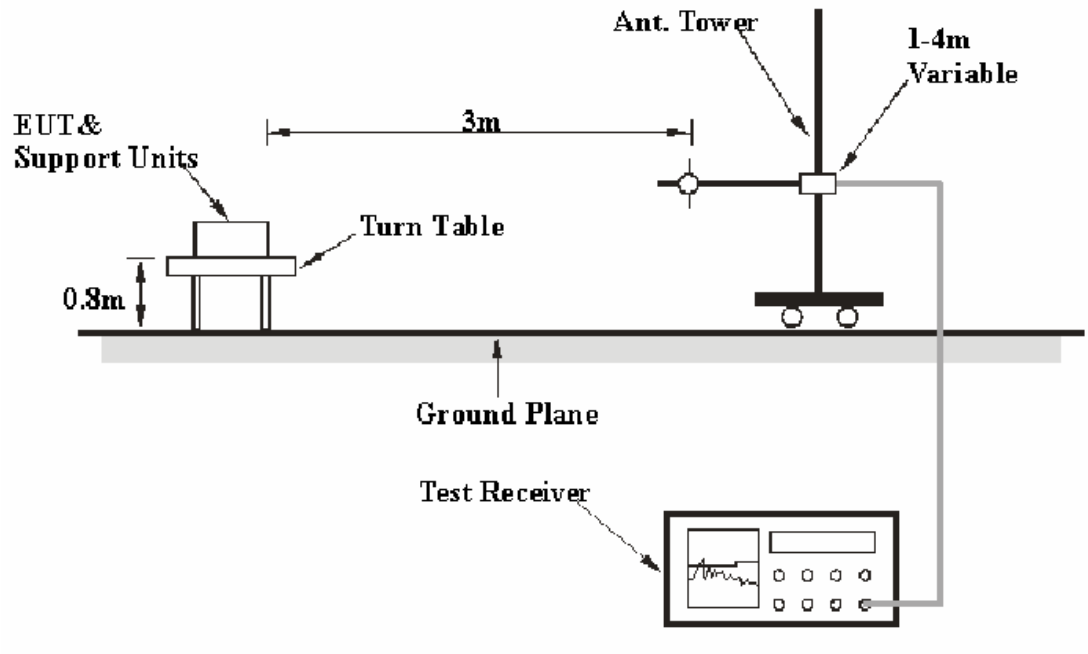
CFR47 §15.109 - RADIATED EMISSIONS

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2008-11-15	2009-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2008-11-07	2009-11-06
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2009-04-12	2010-04-12

*** 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 Mains.

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 for CLASS B. 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:

6.8 dB at **460.398025 MHz** in the **Vertical** polarization

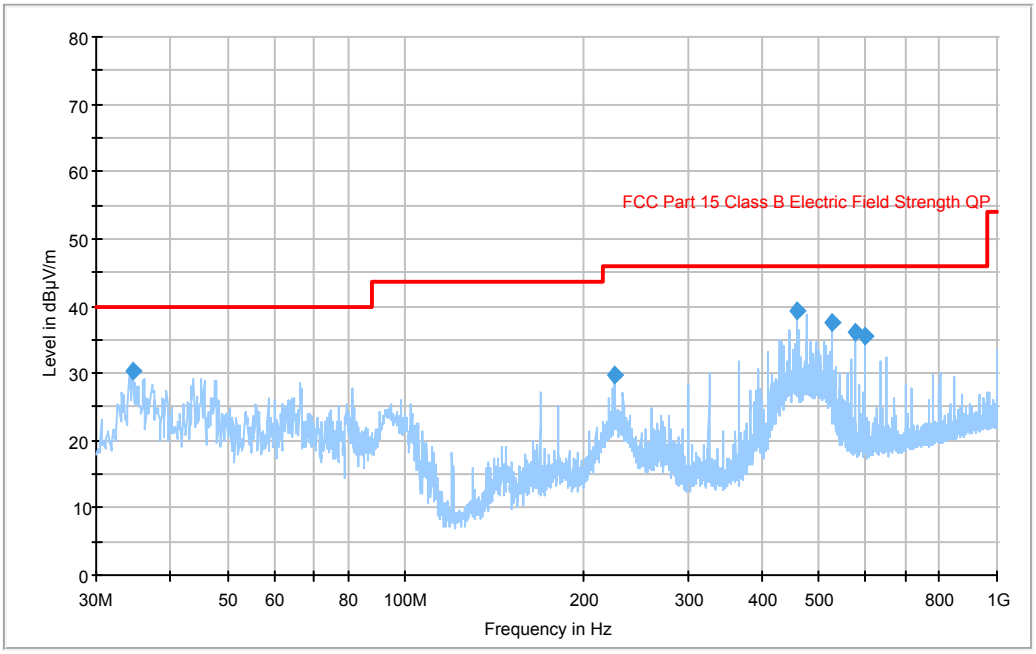
Test Data

Environmental Conditions

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

The testing was performed by Bruce Zhang on 2009-05-24.

Test mode: Operating



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	FCC Limit (dBµV/m)	Margin (dB)
460.398025	39.2	110.0	V	171.0	-11.2	46.0	6.8
526.160950	37.5	110.0	V	55.0	-10.2	46.0	8.5
34.638625	30.2	110.0	V	130.0	-11.7	40.0	9.8
576.014825	36.1	110.0	V	327.0	-9.1	46.0	9.9
600.087050	35.4	110.0	V	14.0	-8.7	46.0	10.6
225.818750	29.8	110.0	V	5.0	-3.6	46.0	16.2

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