

# Avantronics Limited

## Bluetooth Headset


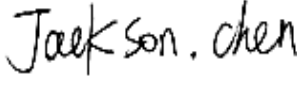
Model: TREX PRO

8 February 2010  
Report No.: 1002073  
(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

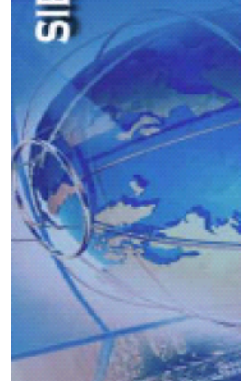
	
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Test result presented in this test report is applicable to the representative sample only.

# RF Test Report

T0: FCC 15.249:2009

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## Laboratory Introduction

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### Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

### Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom

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## 1 Executive Summary & EUT information

The purpose of this test programme was to demonstrate compliance of the Avantronics Limited, Bluetooth Headset, and model: TREX PRO against the current Stipulated Standards. The Bluetooth Headset has demonstrated compliance with the FCC 15.249:2009.

### EUT Information

<b>EUT Description</b>	: Avantalk Trex Pro is an elegant designed noise cancelling Bluetooth Headset. The dual microphones and advanced Digital Signal Processing technology help to eliminate the background noise so you can be heard clearly from even the very noisy environment. You can comfortably wear this headset inside the ear, or discreetly on the neck stripe to avoid attention when not using. Overall, Trex Pro offers good sound quality, trendy design/finish, and comfortableness for long time wearing.
<b>Model No</b>	: TREX PRO
<b>Serial No</b>	: N/A
<b>Input Power</b>	: 3.7Vdc, 21mA
<b>Classification Per Stipulated Test Standard</b>	: FCC 15.249: 2009

## 2 TECHNICAL DETAILS

Purpose	Compliance testing of Bluetooth Headset with stipulated standard
Applicant / Client	<b>Avantronics Limited</b> Unit 1903, Shenhua Commercial Building, No.2018 Jiabin Rd, Luohu District, Shenzhen, China.
Manufacturer	<b>Avantronics Limited</b> Unit 1903, Shenhua Commercial Building, No.2018 Jiabin Rd, Luohu District, Shenzhen, China.
Laboratory performing the tests	<b>SIEMIC Nanjing (China) Laboratories</b> NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com
Test report reference number	1002073
Date EUT received	12 January 2010
Standard applied	FCC 15.249:2009
Dates of test (from – to)	2 February to 5 February 2010
No of Units:	#1
Equipment Category:	DXT
Trade Name:	N/A
Model :	TREX PRO
RF Operating Frequency (ies)	2402-2480MHz
Modulation :	N/A
FCC ID:	WJ5-TREXPRO

### 3 MODIFICATION

NONE

## 4 TEST SUMMARY

The product was tested in accordance with the following specifications.  
All Testing has been performed according to below product classification:

### DXT

#### Test Results Summary

Test Standard	Description	Pass / Fail
CFR 47 Part 15.249: 2009		
15.203	Antenna Requirement	Pass
15.207(a)	Conducted Emissions Voltage	Pass
15.209;15.249	Radiated Spurious Emissions	Pass
ANSI C63.4: 2009		
PS: All measurement uncertainties are not taken into consideration for all presented test result.		



## **5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS**

### **5.1 Antenna Requirement**

**Requirement(s):** 47 CFR §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna requirement must meet at least one of the following:

- a) Antenna must be permanently attached to the device.
- b) Antenna must use a unique type of connector to attach to the device.
- c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device.

EUT antenna is PCB antenna. It is compliance with the requirement of permanently attached to the device.

## 5.2 Conducted Emissions Voltage

Requirement:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

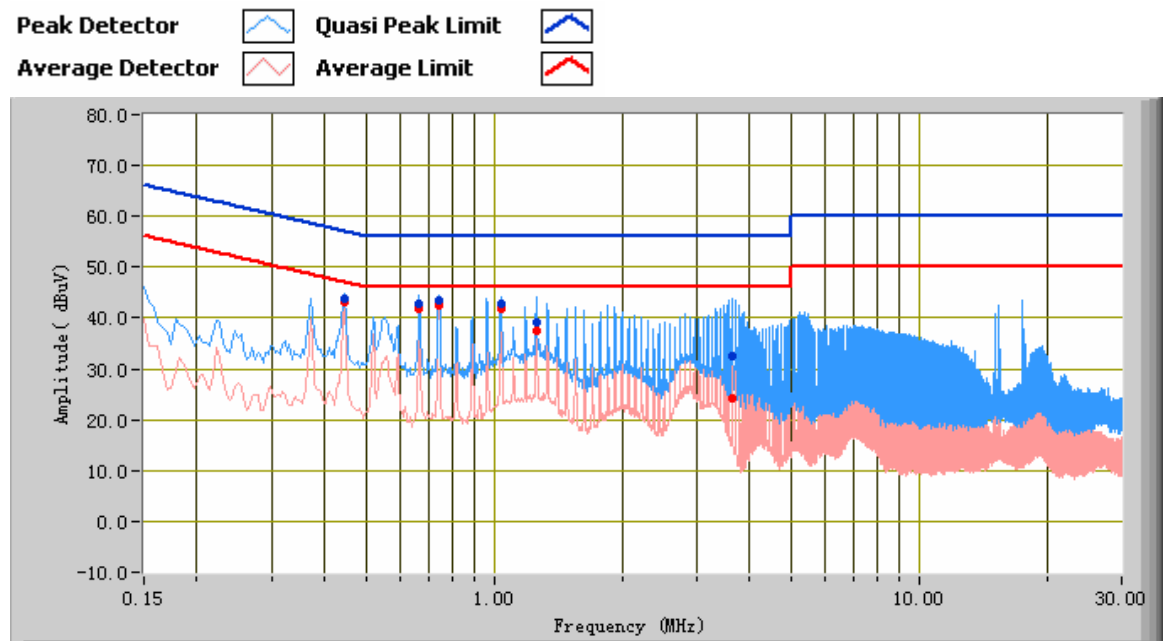
\*Decreases with the logarithm of the frequency.

### Procedures:

- All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
- A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
- Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.5dB.
- Environmental Conditions
 

Temperature	15°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
- Test date : 2 February to 5 February 2010  
Tested By : Peter Cai

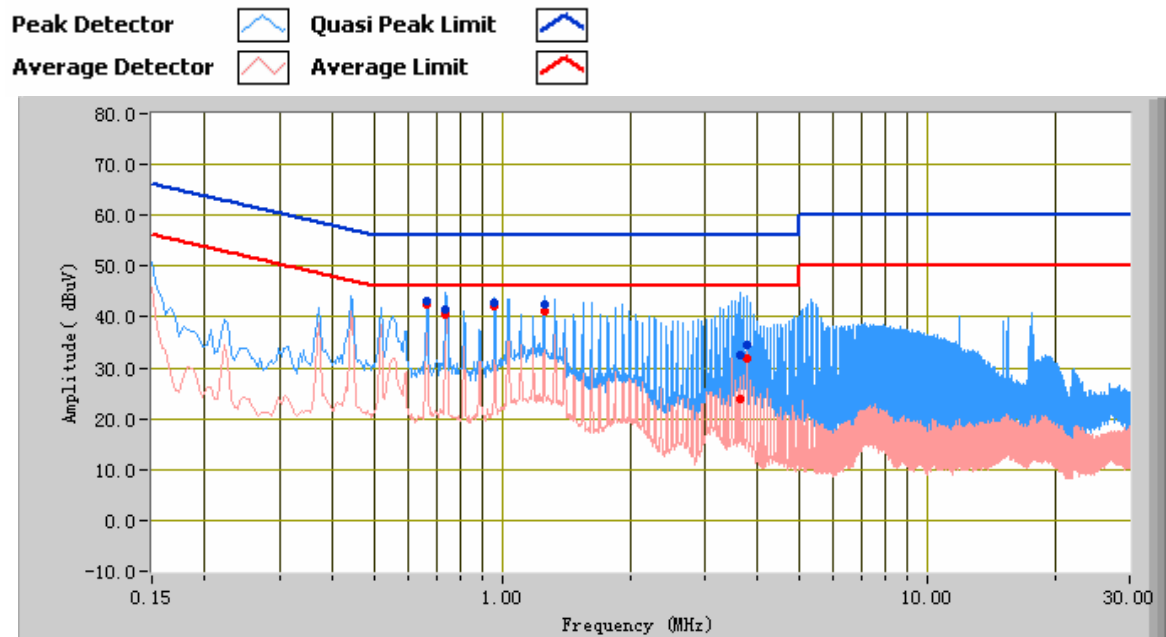
5.2.1 Test Result Complying For 47 CFR §15.207



*Test Data*

*Line*

Frequency (MHz)	Quasi Peak (dBuV)	Limit (dBuV)	Margin (dB)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Factors (dB)
0.74	43.32	56.00	-12.68	42.60	46.00	-3.40	10.14
0.67	42.89	56.00	-13.11	41.77	46.00	-4.23	10.13
1.04	42.69	56.00	-13.31	41.65	46.00	-4.35	10.16
1.26	39.11	56.00	-16.89	37.45	46.00	-8.55	10.17
3.63	32.49	56.00	-23.51	24.17	46.00	-21.83	10.39
0.45	43.72	56.96	-13.24	43.05	46.96	-3.91	10.17



## Test Data

### Neutral

Frequency (MHz)	Quasi Peak (dBuV)	Limit (dBuV)	Margin (dB)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Factors (dB)
3.62	32.49	56.00	-23.51	23.86	46.00	-22.14	10.41
0.74	41.33	56.00	-14.67	40.48	46.00	-5.52	10.14
1.26	42.51	56.00	-13.49	41.29	46.00	-4.71	10.18
3.77	34.55	56.00	-21.45	31.94	46.00	-14.06	10.46
0.67	43.09	56.00	-12.91	42.43	46.00	-3.57	10.14
0.96	42.84	56.00	-13.16	42.04	46.00	-3.96	10.17

### 5.3 Radiated Spurious Emission<1GHz

- All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
- A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
- Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +5.6/-4.5dB.
- |                          |                      |          |
|--------------------------|----------------------|----------|
| Environmental Conditions | Temperature          | 15°C     |
|                          | Relative Humidity    | 50%      |
|                          | Atmospheric Pressure | 1019mbar |
- Test date : 2 February to 5 February 2010  
Tested By : Peter Cai

**Requirement(s):** 47 CFR §15.249

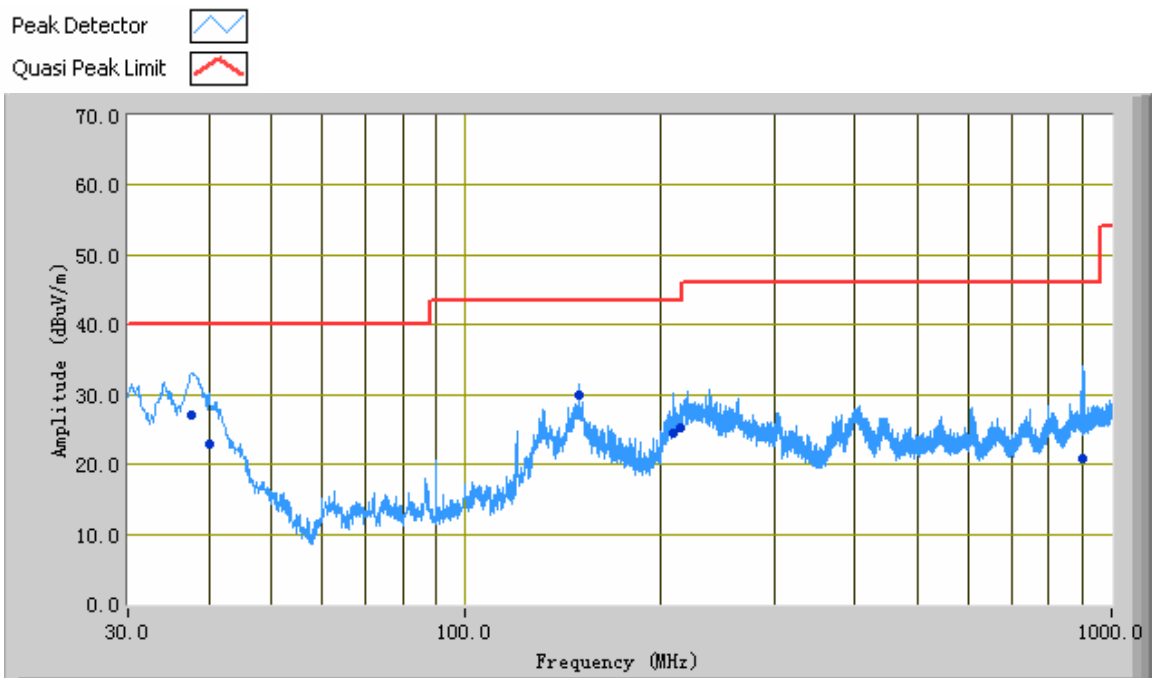
Procedures: Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set to transmit at low mid high channel.

The limit is converted from microvolts/meter to decibel microvolts/meter.

Sample Calculation: Corrected Amplitude=Raw Amplitude (dBuV/m) + ACF (dB) +Cable Loss (dB)

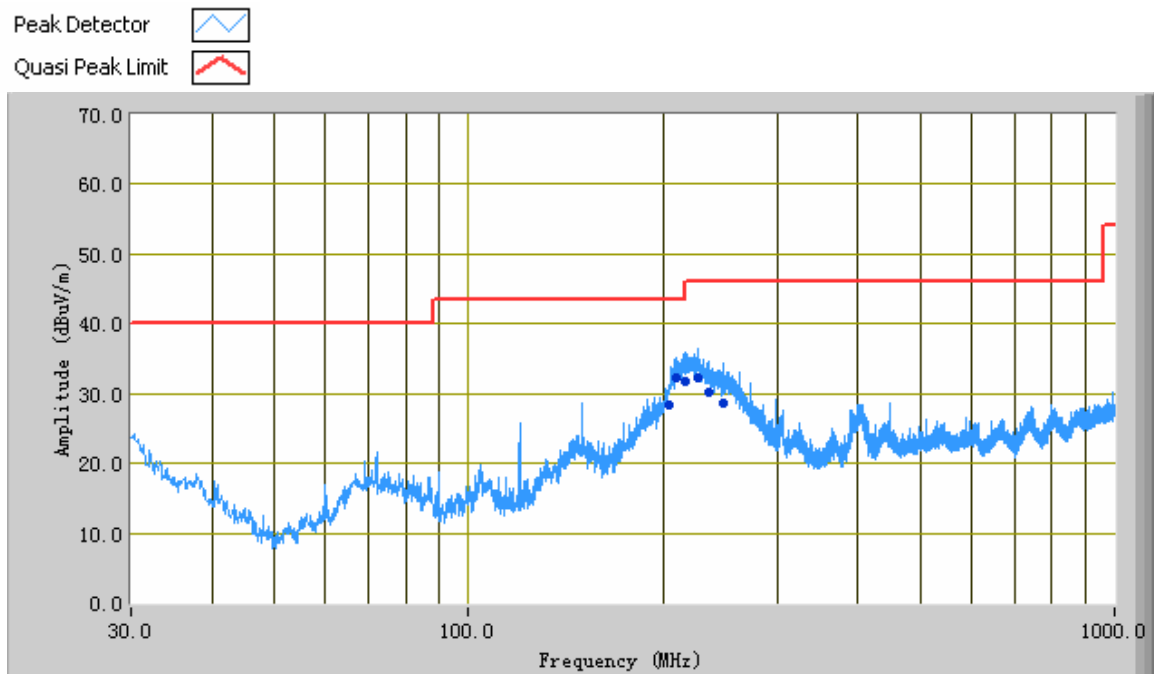
**Test Result:**

## Radiated Emission Plot (Transmitter)



### Test Data

Frequency (MHz)	Quasi Peak (dBuV/m)	Azimuth	Polarity(H/V)	Height (cm)	Factors (dB)	Limit (dBuV/m)	Margin (dB)
37.77	26.96	100.00	V	106.00	-32.69	40.00	-13.04
39.98	22.78	160.00	V	101.00	-34.43	40.00	-17.22
904.78	20.93	90.00	V	132.00	-19.73	46.00	-25.07
150.03	29.91	247.00	V	100.00	-32.01	43.50	-13.59
209.93	24.50	73.00	V	110.00	-31.76	43.50	-19.00
214.50	25.29	86.00	V	112.00	-31.85	43.50	-18.21



### Test Data

Frequency (MHz)	Quasi Peak (dBuV/m)	Azimuth	Polarity(H/V)	Height (cm)	Factors (dB)	Limit (dBuV/m)	Margin (dB)
215.70	31.77	171.00	H	119.00	-32.01	43.50	-11.73
210.13	32.23	160.00	H	130.00	-31.89	43.50	-11.27
226.17	32.34	170.00	H	102.00	-32.23	46.00	-13.66
235.41	30.20	178.00	H	102.00	-32.42	46.00	-15.80
248.12	28.60	22.00	H	106.00	-32.70	46.00	-17.40
203.94	28.30	151.00	H	148.00	-31.75	43.50	-15.20

## 5.4 Radiated Spurious Emissions > 1GHz

- All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
- A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
- Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +5.6/-4.5dB.
- |                          |                      |          |
|--------------------------|----------------------|----------|
| Environmental Conditions | Temperature          | 15°C     |
|                          | Relative Humidity    | 50%      |
|                          | Atmospheric Pressure | 1019mbar |
- Test date : 2 February to 5 February 2010  
Tested By : Peter

### Standard Requirement: 47 CFR §15.249

**.Procedures:** Equipment was setup in a semi-anechoic chamber. For measurements above 1GHz an average measurement was taken with a 10Hz video bandwidth. The EUT was tested at low, mid, high with the highest output power. Investigated up to 10<sup>th</sup> harmonics of the operating frequency.

Sample Calculation:

EUT Field Strength= Raw Amplitude(dBuV/m) – Amplifier Gain(dB) + Antenna Factor(dB) + Cable Loss(dB)  
+ Filter Attenuation(dB, if used)

**Test Result:**



## Fundamental

### Low channel

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
2.402	15	1.06	v	5.15	55.00	102.34	114.00	-11.66	PK
2.402	11	1.87	h	5.15	55.00	104.30	114.00	-9.7	PK
2.402	13	1.06	v	5.15	55.00	79.51	94.00	-14.49	AV
2.402	15	1.87	h	5.15	55.00	81.20	94.00	-12.80	AV

### Middle channel

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
2.441	2	1.15	v	5.15	55.00	104.22	114.00	-9.78	PK
2.441	16	2.01	h	5.15	55.00	100.51	114.00	-13.49	PK
2.441	2	1.15	v	5.15	55.00	82.39	94.00	-11.61	AV
2.441	23	2.01	h	5.15	55.00	83.18	94.00	-10.82	AV

### High channel

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
2.480	354	1.36	v	5.15	55.00	99.42	114.00	-14.58	PK
2.480	16	1.94	h	5.15	55.00	100.59	114.00	-13.41	PK
2.480	354	1.36	v	5.15	55.00	80.58	94.00	-13.42	AV
2.480	29	1.94	h	5.15	55.00	81.67	94.00	-12.33	AV

**x, y, z axis has been checked, only worst orientation test result is presented in this test result.**

**@ 2402MHz @ 3 Meter**

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.804	16	1.21	v	5.15	55.00	60.47	74.00	-13.53	Peak
4.804	7	1.87	h	5.15	55.00	62.33	74.00	-11.67	Peak
4.804	16	1.21	v	5.15	55.00	49.51	54.00	-4.49	Ave
4.804	7	1.87	h	5.15	55.00	48.64	54.00	-5.36	Ave
7.206	28	1.31	v	7.23	55.00	58.24	74.00	-15.76	Peak
7.206	36	1.97	h	7.23	55.00	59.61	74.00	-14.39	Peak
7.206	28	1.34	v	7.23	55.00	47.68	54.00	-6.32	Ave
7.206	37	2.09	h	7.23	55.00	48.60	54.00	-5.40	Ave

Emission was scanned up to 25GHz.

**@ 2441MHz @ 3Meter**

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.882	34	1.08	v	5.16	55.00	61.53	74.00	-12.47	Peak
4.882	40	1.64	h	5.16	55.00	60.08	74.00	-13.92	Peak
4.882	34	1.07	v	5.16	55.00	48.79	54.00	-5.21	Ave
4.882	40	1.72	h	5.16	55.00	48.93	54.00	-5.07	Ave
7.323	2	1.34	v	7.31	55.00	57.32	74.00	-16.68	Peak
7.323	34	1.98	h	7.31	55.00	58.64	74.00	-15.36	Peak
7.323	52	1.25	v	7.31	55.00	47.92	54.00	-6.08	Ave
7.323	43	2.06	h	7.31	55.00	48.27	54.00	-5.73	Ave

Emission was scanned up to 25GHz.

**@ 2480MHz @ 3Meter**

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.249/15.209	15.249/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.960	62	1.32	v	5.17	55.00	60.18	74.00	-13.82	Peak
4.960	18	1.79	h	5.17	55.00	59.41	74.00	-14.59	Peak
4.960	65	1.24	v	5.17	55.00	48.77	54.00	-5.23	Ave
4.960	5	1.87	h	5.17	55.00	47.92	54.00	-6.08	Ave
7.440	32	1.12	v	7.36	55.00	61.25	74.00	-12.75	Peak
7.440	41	2.05	h	7.36	55.00	60.81	74.00	-13.19	Peak
7.440	57	1.22	v	7.36	55.00	47.61	54.00	-6.39	Ave
7.440	42	2.19	h	7.36	55.00	47.00	54.00	-7.00	Ave

Emission was scanned up to 25GHz.

### Band edge

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading			
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
2.400	15	1.20	v	3.81	55.00	46.2	74.00	-27.8	Peak
2.400	32	1.69	h	3.81	55.00	46.8	74.00	-27.2	Peak
2.400	15	1.20	v	3.81	55.00	34.6	54.00	-19.4	Ave
2.400	32	1.69	h	3.81	55.00	33.2	54.00	-20.8	Ave
2.4835	11	1.42	v	3.90	55.00	45.8	74.00	-28.2	Peak
2.4835	38	1.99	h	3.90	55.00	44.6	74.00	-29.4	Peak
2.4835	11	1.42	v	3.90	55.00	33.4	54.00	-20.6	Ave
2.4835	38	1.99	h	3.90	55.00	34.6	54.00	-19.4	Ave

## Annex A. TEST INSTRUMENT & METHOD

### Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Model	Serial #	Calibration Due
<b>Conducted Emissions</b>			
R&S Receiver	ESPI 3	101216	02/19/2010
Com-Power LISN	LI 115	241090	05/02/2010
Com-Power LISN	LI 115	241091	05/02/2010
Com-Power LIMITER	LIT-153	531021	N/A
<b>Radiated Emissions</b>			
R&S Receiver	ESPI 3	101216	02/19/2010
Sunol Sciences, Inc. Antenna (30MHz~2GHz)	JB1	A112107	10/04/2010
Horn Antenna (1~18GHz)	A-INFOMW	JXTXLB-10180	11/18/2010
Horn Antenna (1~18GHz)	N/A	N/A	10/04/2010
Pre-Amplifier(0.1 ~ 18GHz)	MITEQ	AMF-7D-00101800- 30-10P	03/05/2010
HP Pre-Amplifier	8447F	1937A01160	04/24/2010

## **Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION**

### **Test Set-up**

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.
2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.

### **Test Method**

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

### **Sample Calculation Example**

At 20 MHz	limit = 250 μV = 47.96 dBμV
Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB	
Q-P reading obtained directly from EMI Receiver = 40.00 dBμV (Calibrated for system losses)	
Therefore, Q-P margin = 47.96 – 40.00 = 7.96	i.e. <b>7.96 dB below limit</b>

## Annex A. iii. RADIATED EMISSIONS TEST DESCRIPTION

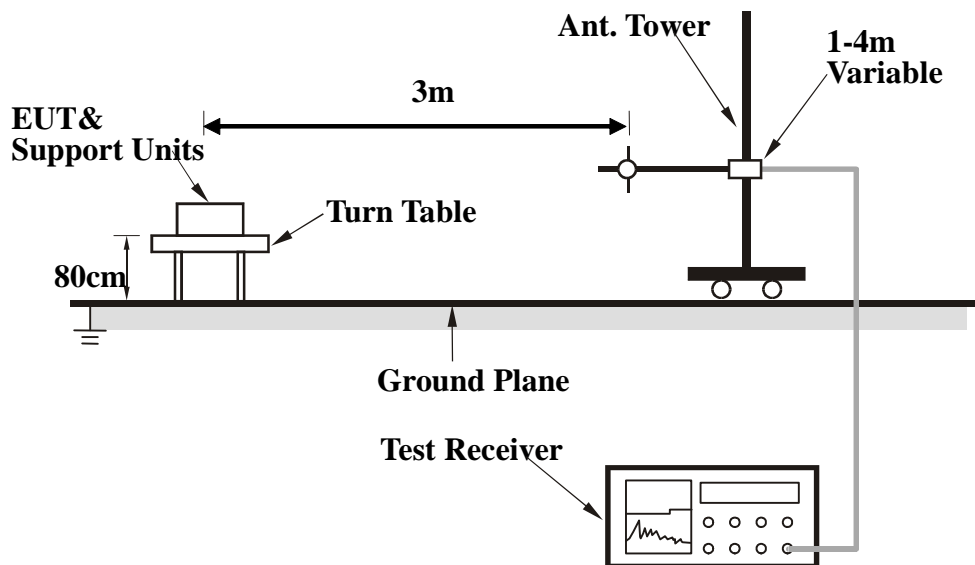
### EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10<sup>th</sup> Harmonic, was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



## **Test Method**

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

### **Final Radiated Emission Measurement**

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

## **Sample Calculation Example**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

where

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor or}$$

$$\text{Set RBW} = 1\text{MHz, VBW} = 10\text{Hz.}$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

## **Annex B. EUT AND TEST SETUP PHOTOGRAPHS**

**Please see attachment**



## **Annex C. TEST SETUP AND SUPPORTING EQUIPMENT**

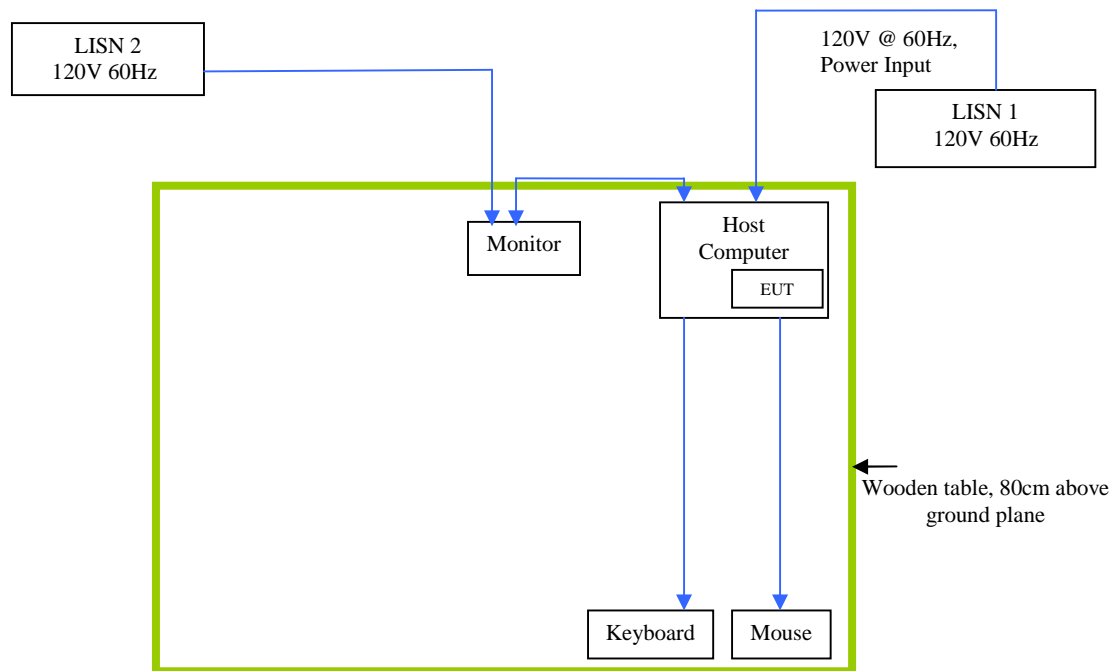
### **EUT TEST CONDITIONS**

#### **Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION**

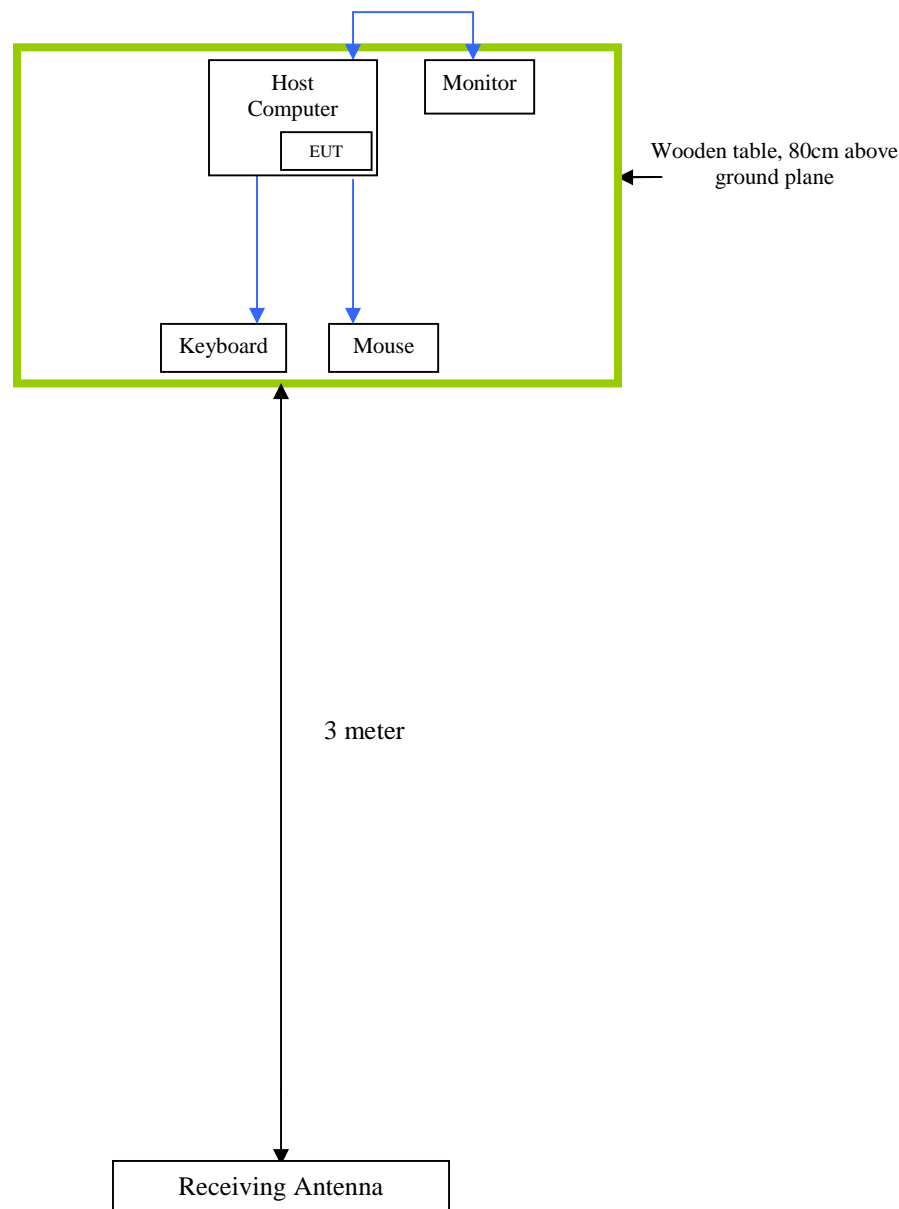
The following is a description of supporting equipment and details of cables used with the EUT.

<b>Equipment Description (Including Brand Name)</b>	<b>Model &amp; Serial Number</b>	<b>Cable Description (List Length, Type &amp; Purpose)</b>
Host Computer	SL020660 & SAW5114366	N/A
Dell Monitor	SE198WFPf & N/A	2m VGA Cable
Dell Keyboard	SK-8115 & N/A	2m USB Cable
Dell Mouse	MOC5UO & H0S00A91	USB Cable unshield 1.5m

## Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



## **Annex C.ii. EUT OPERATING CONDITIONS**

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions Testing	The EUT was running test program to stimulate the worst case.

## **Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST**

**Please see attachment**

## Annex E. SIEMIC ACCREDITATION CERTIFICATES

**SIEMIC ACREDITATION DETAILS: A2LA Certificate Number: 2742.01**




THE AMERICAN ASSOCIATION FOR  
LABORATORY ACCREDITATION

**ACCREDITED LABORATORY**

A2LA has accredited

**SIEMIC LABORATORIES**

**San Jose, CA**

for technical competence in the field of

**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).



Presented this 11th day of July 2008.



President  
For the Accreditation Council  
Certificate Number 2742.01  
Valid to September 30, 2010

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.



THE AMERICAN ASSOCIATION FOR  
LABORATORY ACCREDITATION

**ACCREDITED PRODUCT CERTIFICATION BODY**

A2LA has accredited

**SIEMIC INC.**

**San Jose, CA**

for technical competence as a

**Product Certification Body**

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), IDA (Singapore) and IC (Canada) requirements.



Presented this 9<sup>th</sup> day of January 2009.



President  
For the Accreditation Council  
Certificate Number: 2742.02  
Valid to: September 30, 2010

For the product certification schemes to which this accreditation applies, please refer to the certification body's Scope of Accreditation.

**SIEMIC ACCREDITATION DETAILS: FCC Registration NO:986914**





**SIEMIC ACCREDITATION DETAILS: FCC Listing, Registration NO:986914**

**FEDERAL COMMUNICATIONS COMMISSION**

Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046

April 25, 2008

Registration Number: 986914

SIEMIC Nanjing (China) Laboratories  
2-1 Longcang Avenue,  
Yuhua Economic and Technology Development Park,  
Nanjing, 210039  
China

Attention: Leslie Bai

Re: Measurement facility located at 2-1 Longcang Avenue, Nanjing, China  
Anechoic chamber (3 meters) and 3&10 meter OATS  
Date of Listing: April 25, 2008

Dear Sir or Madam:

Your request for registration of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC rules. The information has, therefore, been placed on file and the name of your organization added to the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Katie Hawkins  
Electronics Engineer



## SIEMIC ACCREDITATION DETAILS: Industry of Canada Registration No. 4842



February 19, 2009

OUR FILE: 46405-4842  
Submission No: 131645

### SIEMIC NANJING (CHINA) LABORATORIES

2-1 Longcang Avenue  
Yuhua Economic & Technology Dev. Park  
Nanjing  
China

Attention: Leslie Bai

Dear Sir/Madame:

The Bureau has received your application for the registration of a 3m/10m alternative test site. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought ( 4842B-1 ). Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please keep for your records the following information;

- Your primary code is: 4842

- The company number associated to the site(s) located at the above address is: 4842B

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 meter OATS or 3 meter chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed two years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL;

[http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/en/h\\_tt00052e.html](http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/en/h_tt00052e.html)

If you have any questions, you may contact the Bureau by e-mail at [certification\\_bureau@ic.gc.ca](mailto:certification_bureau@ic.gc.ca) Please reference our file and submission number above for all correspondence.

Yours sincerely,



Joshua Lavoie  
For: Wireless Laboratory Manager  
Certification and Engineering Bureau  
3701 Carling Ave., Building 94  
P.O. Box 11490, Station "H"  
Ottawa, Ontario K2H 8S2  
Email: [joshua.lavoie@ic.gc.ca](mailto:joshua.lavoie@ic.gc.ca)  
Tel. No. (613) 990-2681  
Fax. No. (613) 990-4752

**SIEMIC ACCREDITATION DETAILS: Japan VCCI Accreditation No. 3081**

	 <i>VCCI Council</i>
<h1 style="text-align: center;">CERTIFICATE</h1>	
<p><b>Company:</b> SIEMIC Inc. <i>&lt;Member No. 3081 &gt;</i></p>	
<p><b>Facility:</b> SIEMIC Inc. (Main Ports Conducted Interference Measurement)</p>	
<p><b>Location of Facility:</b> 2206 Ringwood Avenue, San Jose, CA 95131 USA</p>	
<p><i>This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures</i></p>	
<p><b>Registration No.:</b> C-3421 <b>Date of Registration:</b> June 12 , 2009 <b>This Certificate is valid until</b> September 30 , 2010</p>	
<p style="text-align: right;"><i>VCCI Council</i> </p>	
	

**SIEMIC ACCREDITATION DETAILS: Japan VCCI Accreditation No. 3081**



*VCCI Council*

# CERTIFICATE

Company: SIEMIC Inc.  
*<Member No. 3081 >*

Facility: SIEMIC Inc.  
(Radiation        3        meter site)

Location of Facility:  
2206 Ringwood Avenue, San Jose, CA 95131 USA

*This is to certify that the following measuring facility  
has been registered in accordance with the Rules  
for Voluntary Control Measures*

Registration No.: R-3083  
Date of Registration: June 12 , 2009  
This Certificate is valid until    September 30 , 2010

*VCCI Council*








**SIEMIC ACCREDITATION DETAILS: Japan VCCI Accreditation No. 3081**

	 <i>VCCI Council</i>
<h1 style="text-align: center;">CERTIFICATE</h1>	
<p><b>Company:</b> SIEMIC Inc.</p> <p style="text-align: right;"><i>&lt;Member No. 3081 &gt;</i></p>	
<p><b>Facility:</b> SIEMIC Inc.</p> <p style="text-align: center;">(Telecommunication Ports Conducted Interference Measurement)</p>	
<p><b>Location of Facility:</b></p> <p style="text-align: center;">2206 Ringwood Avenue, San Jose, CA 95131 USA</p>	
<p><i>This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures</i></p>	
<p><b>Registration No.:</b> T-1597</p> <p><b>Date of Registration:</b> June 12 , 2009</p> <p><b>This Certificate is valid until</b>     <b>September 30 , 2010</b></p>	
	<p style="text-align: right;"><i>VCCI Council</i></p> <div style="text-align: right;"></div> 



**SIEMIC ACCREDITATION DETAILS: Korea CAB from NIST: US0160**

	<b>UNITED STATES DEPARTMENT OF COMMERCE</b> <b>National Institute of Standards and Technology</b> Gaithersburg, Maryland 20899
October 1, 2008	
Mr. Leslie Bai SIEMIC, Inc. 2206 Ringwood Avenue San Jose, CA 95131	
Dear Mr. Bai:	
NIST is pleased to inform you that your laboratory has been recognized by the Radio Research Agency (RRA) Korea Communications Commission (KCC) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, <b>Phase I</b> Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:	
CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Recognized Scope:	<b>EMI:</b> KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI <b>EMS:</b> KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN-61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS <b>Wireless:</b> RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68 <b>Wired:</b> President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6 President Notice 20664, RRL Notice 2008-7 with attachment 4
You may submit test data to RRA/KCC to verify that the equipment to be imported into Korea satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.	
Recognized CABs are listed on the NIST website at <a href="http://ts.nist.gov/mra">http://ts.nist.gov/mra</a> . If you have any questions please contact Ramona Saar at (301) 975-5521 or <a href="mailto:ramona.saar@nist.gov">ramona.saar@nist.gov</a> .	
Sincerely,  David F. Alderman Group Leader, Standards Coordination and Conformity Group Standards Services Division	
Enclosure	
cc: Ramona Saar	

**SIEMIC ACCREDITATION DETAILS: Taiwan BSMI CAB Accreditation No. SL2-IN-E-1130R**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899-

May 3, 2006

Mr. Leslie Bai  
SIEMIC Laboratories  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

I am pleased to inform you that your laboratory has been recognized by the Chinese Taipei's Bureau of Standards, Metrology, and Inspection (BSMI) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. You may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. The pertinent designation information is as follows:

- BSMI number: **SL2-IN-E-1130R** (Must be applied to the test reports)
- U.S Identification No: **US0160**
- Scope of Designation: **CNS 13438**
- Authorized signatory: **Mr. Leslie Bai**

The names of all recognized CABs will be posted on the NIST website at <http://ts.nist.gov/mra>. If you have any questions, please contact Mr. Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group

cc: Jogindar Dhillon

**NIST**

**SIEMIC ACCREDITATION DETAILS: Taiwan NCC CAB ID: US0160**



UNITED STATES DEPARTMENT OF COMMERCE  
National Institute of Standards and Technology  
Gaithersburg, Maryland 20899

March 16, 2009

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the National Communications Commission (NCC) for the requested scope expansion under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Current Scope:	LP0002, PSTN01, ADSL01, ID0002, IS6100 and CNS 14336
Additional Scope:	PLMN07

You may submit test data to NCC to verify that the equipment to be imported into China satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Ramona Saar

**NIST**

## SIEMIC ACCREDITATION DETAILS: Mexico NOM Recognition



CAMARA NACIONAL  
DE LA INDUSTRIA  
ELECTRONICA DE  
TELECOMUNICACIONES  
E INFORMACION

### Laboratorio Valentín V. Rivero

México D.F. a 16 de octubre de 2006.

**LESLIE BAI**  
DIRECTOR OF CERTIFICATION  
SIEMIC LABORATORIES, INC.  
ACCESSING GLOBAL MARKETS  
P R E S E N T E

En contestación a su escrito de fecha 5 de septiembre del año en curso, le comento que estamos muy interesados en su intención de firmar un Acuerdo de Reconocimiento Mutuo, para lo cual adjunto a este escrito encontrara el Acuerdo en idioma inglés y español prellenado de los cuales le pido sea revisado y en su caso corregido, para que al este de acuerdo poder firmarlo para mandarlo con las autoridades Mexicanas para su visto bueno y así poder ejercer dicho acuerdo.

Aprovecho este escrito para mencionarle que nuestro intermediario gestor será la empresa Isotel de México, S. A. de C. V., empresa que ha colaborado durante mucho tiempo con nosotros en lo relacionado a la evaluación de la conformidad y que cuenta con amplia experiencia en la gestión de la certificación de cumplimiento con Normas Oficiales Mexicanas de producto en México.

Me despido de usted enviándole un cordial saludo y esperando sus comentarios al Acuerdo que nos ocupa.

Atentamente:



Ing. Faustino Gómez González  
Gerente Técnico del Laboratorio de  
CANIETI.

Culiacán 71  
Paseo de la Libertad  
Culiacán, Sinaloa, D.F.  
Tel: 5284-0000 con 12 líneas  
Fax: 5284-0000  
[www.canietl.org](http://www.canietl.org)



**SIEMIC ACCREDITATION DETAILS: Hong Kong OFTA Recognition No. D23/16V**



Your Ref 來函檔號 :  
Our Ref 本局檔號 : D23/16 V

Telephone 電話 : (852) 2961 6320  
Fax No 圖文傳真 : (852) 2838 5004  
E-mail 電郵地址 : 20 July 2005

Mr. Leslie Bai  
Director of Certification,  
SIEMIC Laboratories  
2206 Ringwood Avenue  
San Jose, California 95131  
USA

Dear Mr. Bai,

**Application of Recognised Testing Agency (RTA)**

Referring your submission of 28 June 2005 in relation to the application of RTA, I am pleased to inform you that OFTA has appointed SIEMIC Laboratories (SIEMIC) as a Recognised Testing Agency (RTA) :

Please note that, under the Hong Kong Telecommunications Equipment Evaluation and Certification (HKTEC) Scheme, SIEMIC is authorized to conduct evaluation tests on telecommunications equipment against the following HKTA specifications :

Scope of recognition (HKTA Specifications) :  
1001, 1002, 1004, 1006, 1007, 1008  
1010, 1015, 1016  
1022, 1026, 1027, 1029  
1030, 1031, 1032, 1033, 1034, 1035, 1039  
1041, 1042, 1043, 1045, 1047, 1048  
2001

You are requested to refer to and comply with the code of practice and guidelines for RTA as given in the Information Note OFTA I 411 "Recognised Testing Agency (RTA) for Conducting Evaluation Test of Telecommunications Equipment", which can be downloaded from OFTA's homepage at <http://www.ofta.gov.hk/tec/information-notes.html>.

If you have any queries, please do not hesitate to contact me.

Yours sincerely,



(K K Sin)  
for Director-General  
of Telecommunications

Office of the Telecommunications Authority  
29/F Wu Chung House 213 Queen's Road East Wan Chai Hong Kong  
電訊管理局  
香港灣仔皇后大道東 213 號胡忠大廈 29 字樓

<http://www.ofta.gov.hk>

**SIEMIC ACCREDITATION DETAILS: OFTA CAB from NIST: US0160**

**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

December 8, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Office of the Telecommunications Authority (OFTA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: SIEMIC, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, California 95131 USA  
Identification No.: US0160  
Recognized Scope: **Radio:** HKTA 1002, 1007, 1008, 1010, 1015, 1016, 1020, 1022, 1026, 1027, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1039, 1041, 1042, 1043, 1044, 1046, 1047, 1048, 1049, 1051  
**Telecom:** HKTA 2011, 2012, 2013, 2014, 2017, 2018, 2022, 2024, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033

You may submit test data to OFTA to verify that the equipment to be imported into Hong Kong satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,



David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Ramona Saar





Title: RF Test Report for Bluetooth Headset  
Model: TREN PRO  
To: FCC 15.249:2009

Serial#: 1002073  
Issue Date: 8 February 2010  
Page: 43 of 43  
[www.siemic.com.cn](http://www.siemic.com.cn)

## SIEMIC ACCREDITATION DETAILS: Australia NATA Recognition



Leslie Bai  
SIEMIC, Inc.  
2208 Ringwood Avenue  
San Jose, CA 95131

November 4, 2008

Under Australian government legislation, the Australian Communications and Media Authority (ACMA) has determined the National Association of Testing Authorities, Australia (NATA) as an accreditation body as per Section 409(1) of the Telecommunications Act 1997 (Cth). Pursuant to Section 409(2) of the Telecommunications Act 1997 (Cth), I am pleased to advise that your laboratory has been determined as a Recognised Testing Authority (RTA).

This determination has been made on the basis of your accreditation by A2LA accreditation no. 2742.01 and the Mutual Recognition Agreement between NATA and A2LA. It is effective from 11 July 2008. RTA status applies only to the following standards and is contingent upon their continued inclusion in your laboratory's scope of accreditation.

**AS/ACIF S002, AS/ACIF S003, AS/ACIF S004,  
AS/ACIF S006, AS/ACIF S016, AS/ACIF S031,  
AS/ACIF S038, AS/ACIF S041 and  
AS/ACIF S043.2**

As an RTA, your laboratory has the following obligations:

1. the laboratory shall continue to meet all of the accreditation criteria of A2LA;
2. the authorised representative of the laboratory shall notify NATA of changes to the staff or operations of the laboratory which would affect the performance of the tests for which the laboratory has been determined;
3. compliance of equipment shall be reported on test reports bearing the A2LA logo/endorsement.

Current information on the Australian Communications and Media Authority and regulatory requirements for telecommunications products within Australia can be obtained from the ACMA's web-site at "<http://www.acma.gov.au>". Further information about NATA may be gained by visiting "<http://www.nata.asn.au>".

Please note that AS/ACIF S040 and New Zealand standards do not form part of the RTA scheme.

Your RTA listing will appear on the NATA website shortly.

Kind Regards

Chris Norton,  
Senior Scientific Officer  
Measurement Science and Technology  
National Association of Testing Authorities (NATA)  
71-73 Flemington Road  
North Melbourne Vic 3051  
Australia  
Ph: +61 3 9329 1633 Fx: +61 3 9326 5148  
E-Mail: [Christopher.Norton@nata.asn.au](mailto:Christopher.Norton@nata.asn.au)  
Internet: [www.nata.asn.au](http://www.nata.asn.au)