

# ZEBRA ENTERPRISE SOLUTIONS CORP.

## ACCESS CONTROL PANEL CARD READER

Model: CAN-1120

May 18th 2010

Report No.: SL10042603-ZBR-033\_FCC,IC(CAN-1120) Rev1.0

(This report supersedes SL10042603-ZBR-033\_FCC,IC(CAN-1120))



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

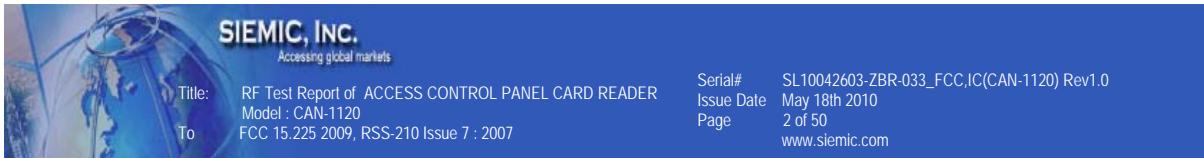
David Zhang Test Engineer	Leslie Bai Engineering Reviewer

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

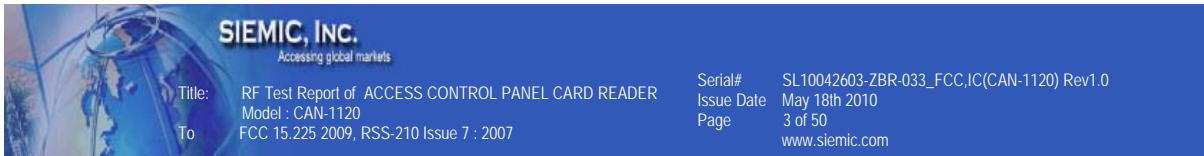
**EMC Test Report**

To: FCC Part 15.207, 15.209, 15.225, RSS-GEN, RSS-210

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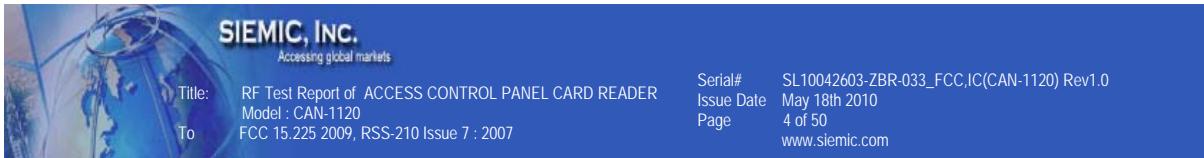


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## **1 Executive Summary & EUT information**

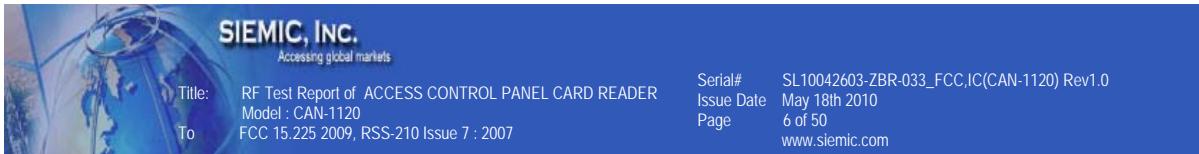
The purpose of this test programmed was to demonstrate compliance of the ACCESS CONTROL PANEL CARD READER., Model:CAN-1120 against the current Stipulated Standards.

The equipment under test radio operating frequency is 13.56 MHz.

The test has demonstrated that this unit complies with stipulated standards.

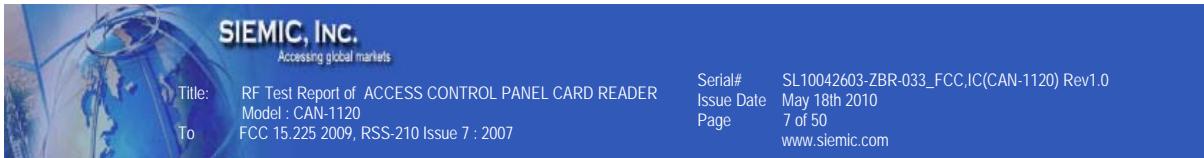
### **EUT Information**

<b>EUT Description</b>	: The CardReader (supporting Mifare and HID technology) is an optional module for access control and user identification that can be installed in the GSE. The CardReader is necessary for the log-on of a user to a vehicle with a special ID card. The usage of the GSE equipped with the UserID system is only possible with a valid ID card.
	The CardReader can be connected to the GSE with an external CAN power supply unit.
<b>Model No</b>	: CAN-1120
<b>Serial No</b>	: N/A
<b>Input Power</b>	: 12VDC
<b>Classification</b>	
<b>Per Stipulated Test Standard</b>	: RFID Reader



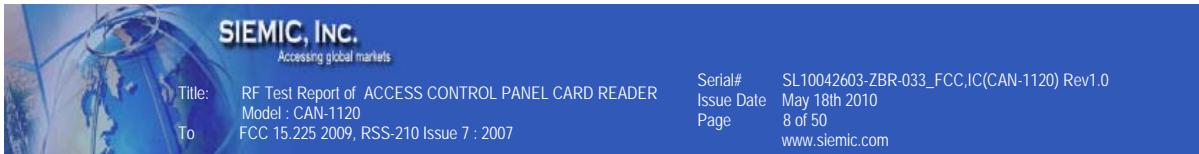
## 2 TECHNICAL DETAILS

<b>Purpose</b>	Compliance testing of ACCESS CONTROL PANEL CARD READER with stipulated standard
<b>Applicant / Client</b>	Zebra Enterprise Solutions Corp.
<b>Manufacturer</b>	Zebra Enterprise Solutions Corp. 2940 N 1st Street San Jose, CA 95134
<b>Laboratory performing the tests</b>	SIEMIC Laboratories
<b>Test report reference number</b>	SL10042603-ZBR-033_FCC,IC(CAN-1120) Rev1.0
<b>Date EUT received</b>	May 13 <sup>th</sup> 2010
<b>Standard applied</b>	47 CFR §15.207, 15.209, 15.225: 2009 & Canadian Standards RSS-GEN Issue 2: 2007, RSS-210 Issue 7: 2007
<b>Dates of test (from – to)</b>	May 13 <sup>th</sup> 2010 to May 20 <sup>th</sup> 2010
<b>No of Units:</b>	1
<b>Equipment Category:</b>	DX & DCD
<b>Model :</b>	CAN-1120
<b>RF Operating Frequency (ies)</b>	13.56 MHz (RFID)
<b>Number of Channels :</b>	13.56 MHz (1)
<b>FCC ID :</b>	XWX-CAN1120
<b>IC ID :</b>	8701A-CAN1120



### **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:

### RFID Reader

#### Test Results Summary

Test Standard		Description	Pass / Fail
47 CFR Part 15.225: 2009	RSS 210 Issue 7: 2007		
15.203		Antenna Requirement	Pass
15.207(a)	RSS Gen(7.2.2)	Conducted Emissions Voltage	Pass
15.225(a)	RSS210(A2.6)	Limit in the band of 13.553 – 13.567 MHz	Pass
15.225(b)	RSS210(A2.6)	Limit in the band of 13.410 – 13.553 MHz and 13.567 – 13.710 MHz	Pass
15.225(c)	RSS210(A2.6)	Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz	Pass
15.225(d), 15.209	RSS210(A2.6)	Limit outside the band of 13.110 – 14.010 MHz	Pass
15.225(e)	RSS210(A2.6)	Frequency Stability	Pass
	RSS-210(5.9.1)	Occupied Bandwidth	Pass
ANSI C63.4: 2003/ RSS-Gen Issue 2: 2007			
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.

- 1) The RFID antenna is integral to the main board permanently to the device which meets the requirement.

## 5.2 Conducted Emissions Voltage

**Requirement(s):** 47 CFR §15.207

Requirement:

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	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:**

1. 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.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. 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  $\pm 3.5$ dB.
4. Environmental Conditions
 

Temperature	26°C
Relative Humidity	54%
Atmospheric Pressure	1019mbar

Test Date : May 13-20 2010

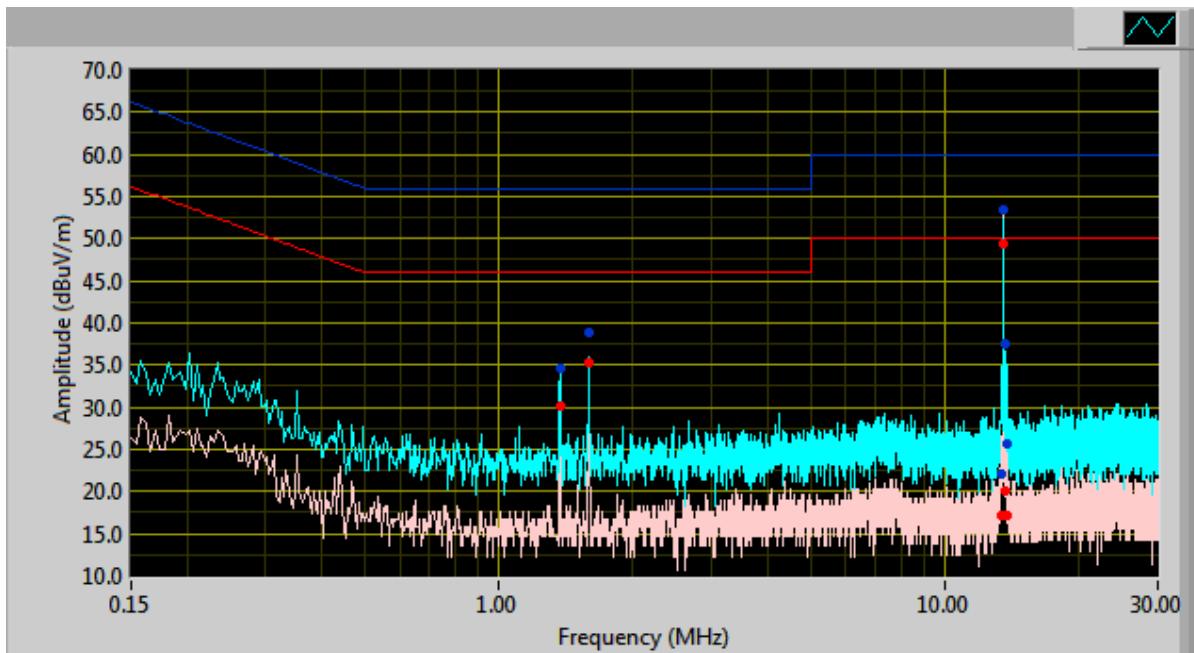
Tested By : David Zhang

**Results:** Pass

**Test Result with DC supply**

Quasi-Peak Limit

Average Limit

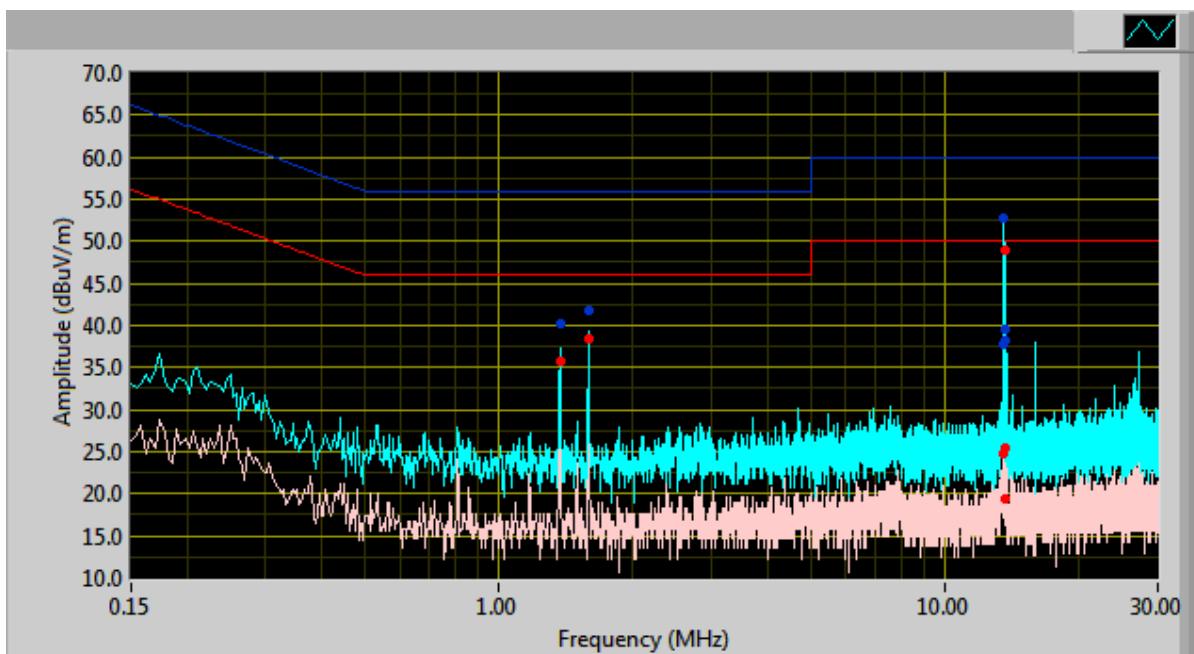


120VAC, Phase Line

Frequency (MHz)	QP Value (dB $\mu$ V)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dB $\mu$ V)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
13.56	52.86	60.00	Pass	-7.14	49.24	50.00	Pass	-0.76	L
1.59	38.87	56.00	Pass	-17.13	35.21	46.00	Pass	-10.79	L
1.37	34.55	56.00	Pass	-21.45	30.15	46.00	Pass	-15.85	L
13.59	37.54	60.00	Pass	-22.46	20.04	50.00	Pass	-29.96	L
13.73	25.76	60.00	Pass	-34.24	17.13	50.00	Pass	-32.87	L
13.34	22.19	60.00	Pass	-37.81	17.09	50.00	Pass	-32.91	L

Quasi-Peak Limit

Average Limit



120VAC, Neutral Line

Frequency (MHz)	QP Value (dB $\mu$ V)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dB $\mu$ V)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
13.56	52.73	60.00	Pass	-7.27	48.85	50.00	Pass	-1.15	N
13.61	38.25	60.00	Pass	-21.75	19.39	50.00	Pass	-30.61	N
1.59	41.88	56.00	Pass	-14.12	38.52	46.00	Pass	-7.48	N
13.49	37.77	60.00	Pass	-22.23	24.71	50.00	Pass	-25.29	N
1.37	40.18	56.00	Pass	-15.82	35.70	46.00	Pass	-10.30	N
13.69	39.60	60.00	Pass	-20.40	25.43	50.00	Pass	-24.57	N

## 5.3 Radiated Emission < 30MHz (9kHz - 30MHz, H-Field)

**Requirement(s):** 47 CFR §15.225 & RSS-210 (A2.6) & RSS-310 (3.7)

**Procedures:** **For < 30MHz,** Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 10 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the centre of the loop. The measuring bandwidth was set to 10 kHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT.)

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

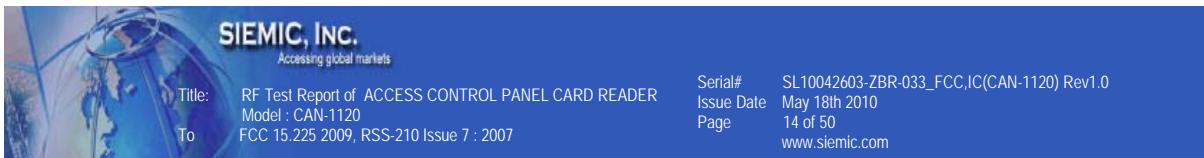
**Sample Calculation:** Corrected Amplitude = Raw Amplitude (dB $\mu$ V/m) + ACF (dB) + Cable Loss(dB) – Distance Correction Factor

1. 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.
2. A "ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. 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, is +/- 6dB.
4. Environmental Conditions      Temperature      253°C  
    Relative Humidity      550%  
    Atmospheric Pressure      1019mbar

Test Date : May 13-20 2010

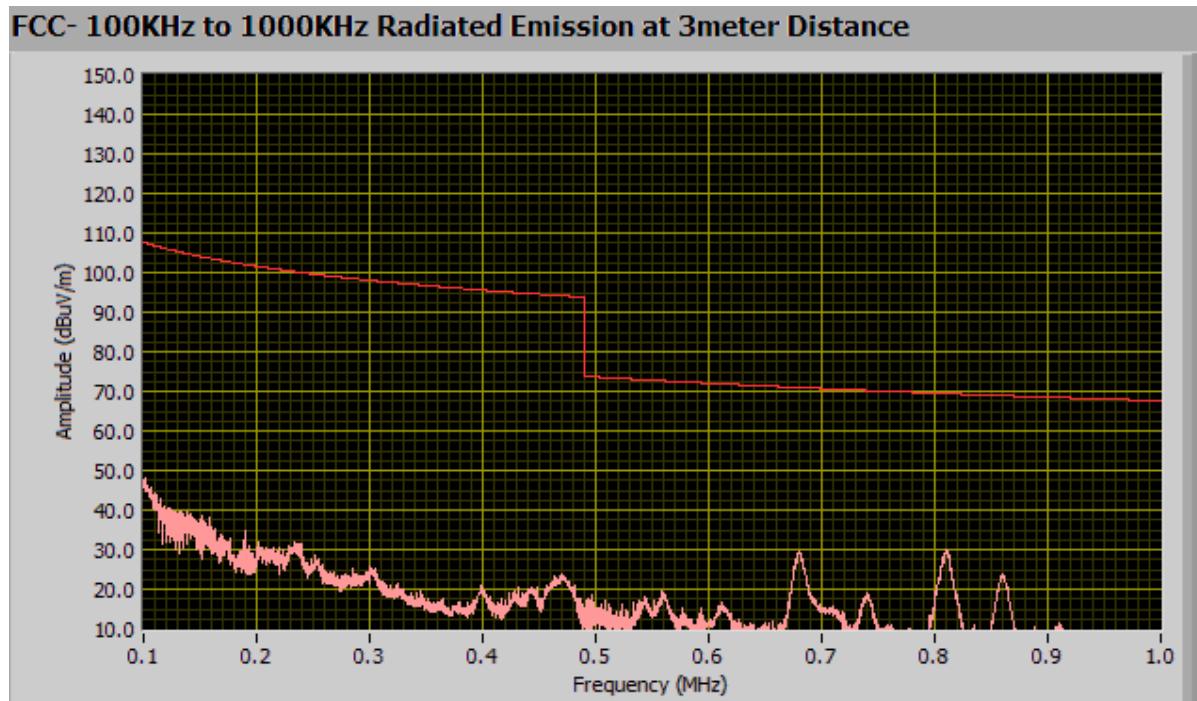
Tested By : David Zhang

**Results:** Pass

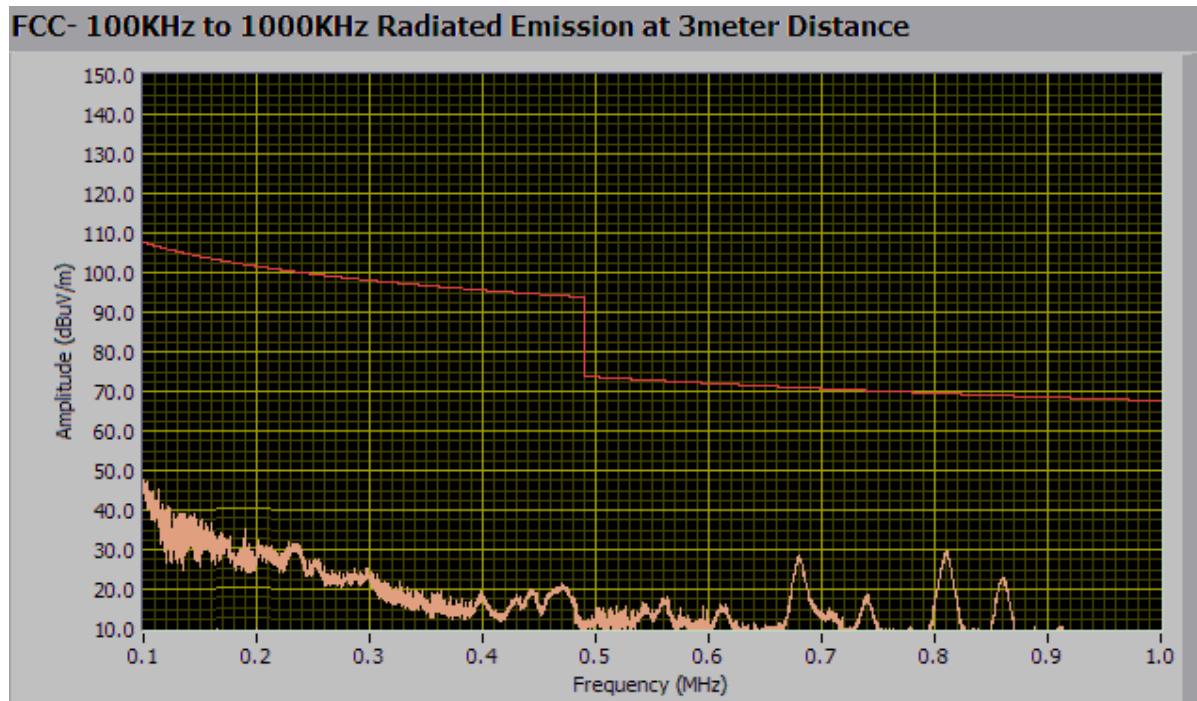


## 100KHz ~ 1MHz

Dipole Antenna at 0 degree      General Emission Limit @ 3 Meter



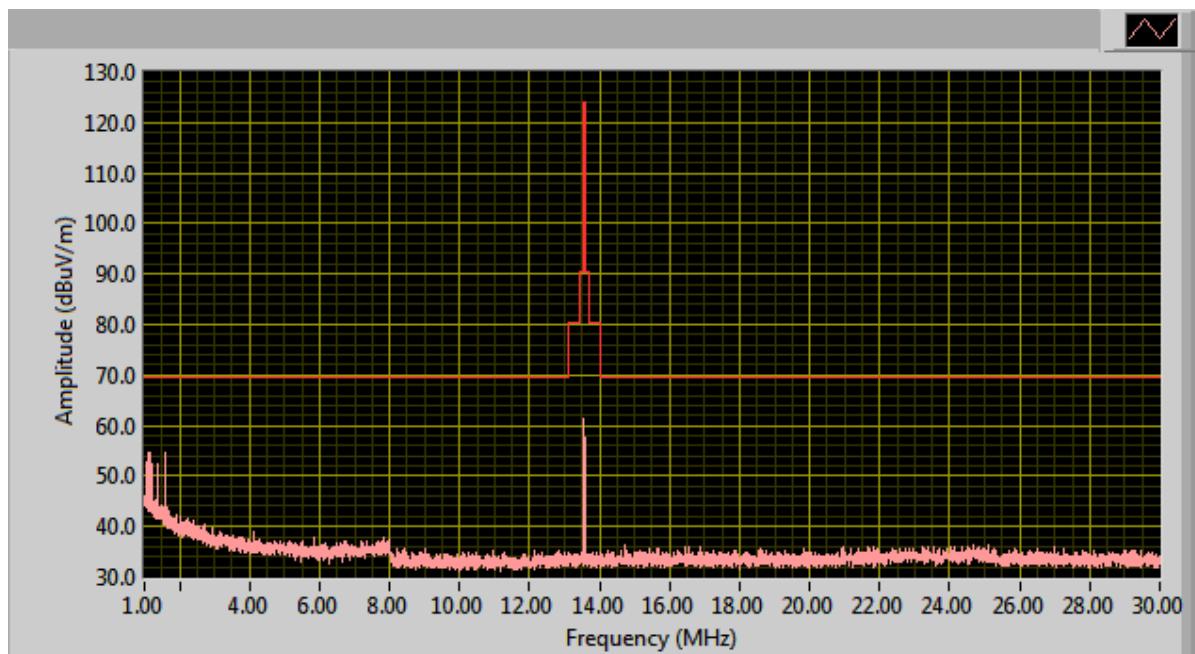
Dipole Antenna at 90 degree



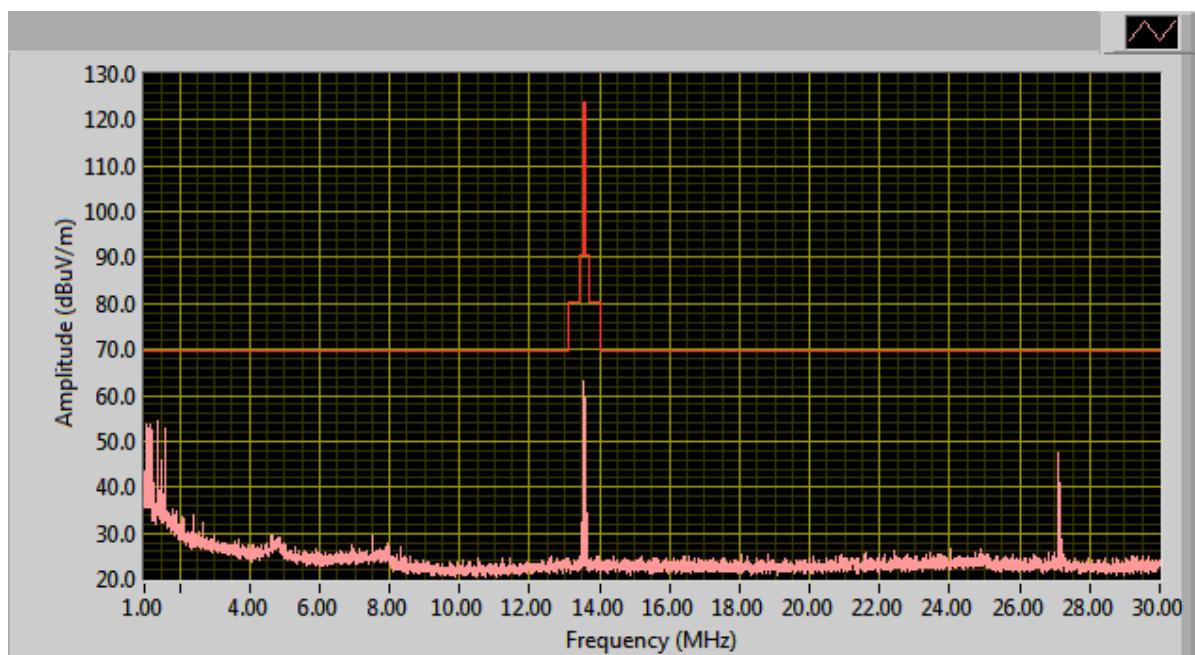
**1MHz ~ 30MHz**

Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



Dipole Antenna at 90 degree



## **5.4 Radiated Emissions > 30 MHz (30MHz - 1 GHz, E-Field)**

**Requirement(s):** 47 CFR §15.209; 47 CFR §15.225(d) & RSS-210 (A2.6)

**Procedures:** **For > 30MHz,** Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 10 meter away from the measuring antenna. The Log periodic antenna was positioned 1 meter above the ground from the centre of the antenna. The measuring bandwidth was set to 120 kHz. (Note: During testing the receive antenna was raise from 1~4 meters to maximize the emission from the EUT.)

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

Sample Calculation: Corrected Amplitude = Raw Amplitude (dB $\mu$ V/m) + ACF (dB) + Cable Loss(dB) – Distance Correction Factor

1. 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.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. 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, is +/- 6dB.
4. Environmental Conditions
 

	Temperature	253°C
	Relative Humidity	540%
	Atmospheric Pressure	1019mbar

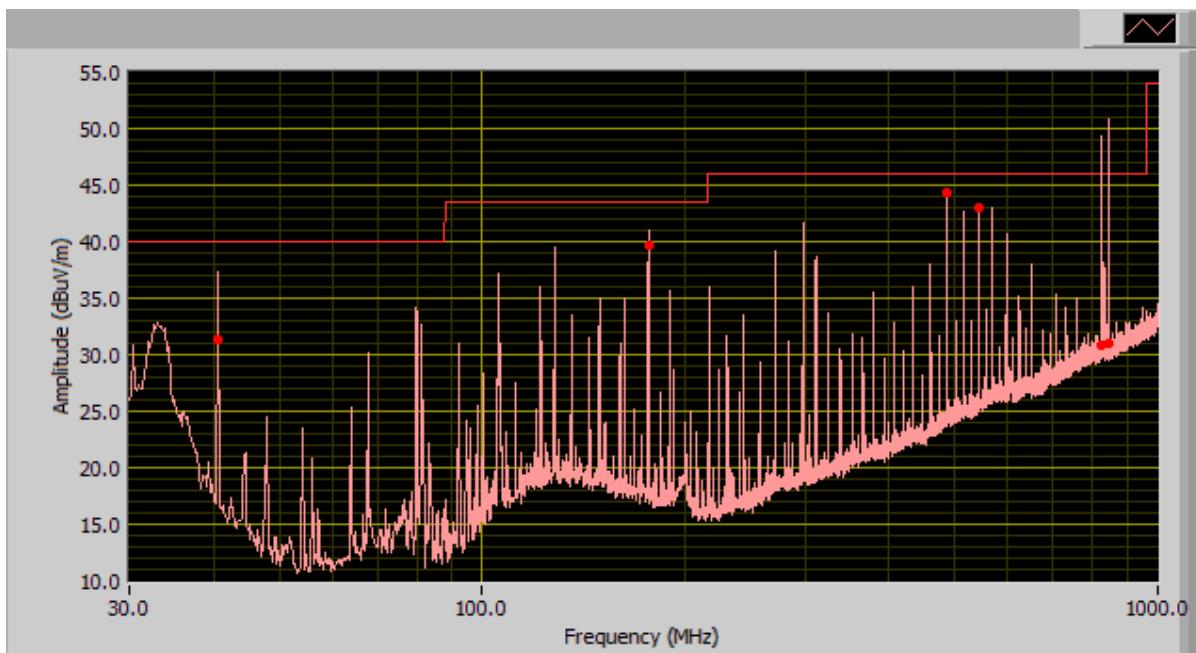
Test Date : May 13-20 2010

Tested By : David Zhang

**Results:** Pass

**30MHz ~ 1000MHz**

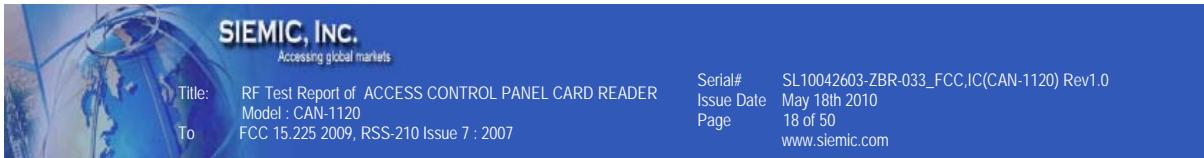
General Emission Limit @ 3 meter



Note : Noise emission at around 830MHz is cell phone signal.

Radiated Emission Test Table 30MHz ~ 1000MHz

Frequency (MHz)	Amplitude @ 3m	Azimuth (degree)	Antenna Polarity	Antenna Height (cm)	Limit @ 3 meter	margin (dB)
845.91	31.05	119.00	H	246.00	46.00	-14.95
824.73	30.78	193.00	V	209.00	46.00	-15.22
488.16	44.28	160.00	H	193.00	46.00	-1.72
176.28	39.70	105.00	V	116.00	43.50	-3.80
542.42	42.95	95.00	H	102.00	46.00	-3.05
40.67	31.38	194.00	H	100.00	40.00	-8.62



## 5.5 Frequency Stability

**Requirement(s):** 47 CFR §15.225(e) & RSS-210 (A2.6)

**Procedures:** Frequency Stability was measured according to 47 CFR §2.1055. Measurement was taken with spectrum analyzer. The spectrum analyzer bandwidth and span was set to read in hertz. A voltmeter was used to monitor when varying the voltage.

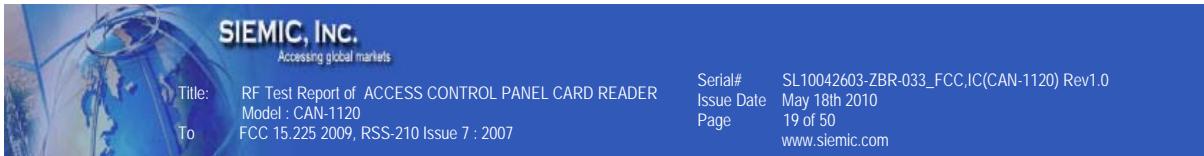
Limit:  $\pm 0.01\%$  of 13.56 MHz = 1356 Hz,  $\pm 0.01\%$  of 125 kHz = 125 Hz

Environmental Conditions	Temperature	253°C
	Relative Humidity	520%
	Atmospheric Pressure	1019mbar

Test Date : May 13-20 2010

Tested By : David Zhang

**Results:** Pass



**Frequency Stability versus Temperature:** The Frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at normal supply voltage.

Reference Frequency: 13.56043 MHz at  $-20^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$

Temperature ( $^{\circ}\text{C}$ )	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
50	13.56040	30	<0.01	Pass
40	13.56041	20	<0.01	Pass
30	13.56039	40	<0.01	Pass
20		Reference ( 13.56043MHz)		
10	13.56043	0	<0.01	Pass
0	13.56040	30	<0.01	Pass
-10	13.56038	50	<0.01	Pass
-20	13.56044	10	<0.01	Pass

**Frequency Stability versus Input Voltage:** The Frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$ , the frequency of the transmitter was measured at 85% and at 115% of the rated power supply voltage at  $20^{\circ}\text{C}$  environmental temperature.

Carrier Frequency: 13.560043 MHz at  $20^{\circ}\text{C}$  at 12VDC

Measured Voltage $\pm 15\%$ of nominal (DC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
10.2	13.56043	0	<0.01	Pass
13.8	13.56041	20	<0.01	Pass

## **5.6 Fundamental Field Strength Test Result**

1. 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.
2. A "ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. 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, is +/- 6dB.
4. Environmental Conditions      Temperature 23°C  
    Relative Humidity 50%  
    Atmospheric Pressure 1019mbar

Test Date : May 13-20 2010

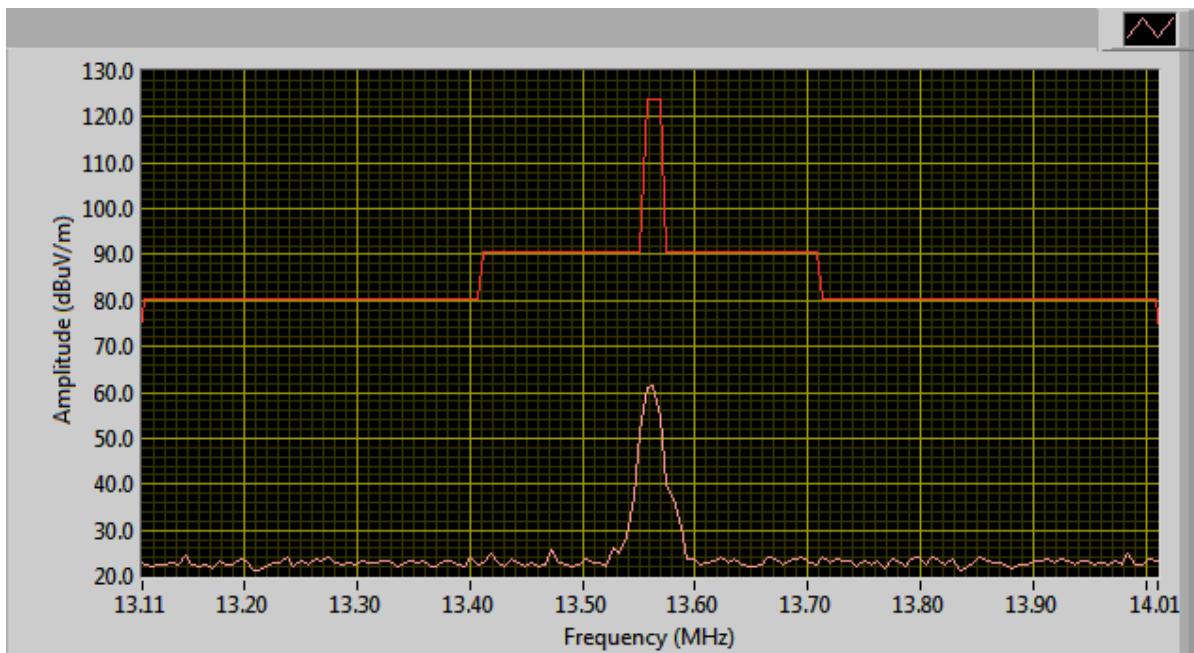
Tested By : David Zhang

### **Test Requirement :**

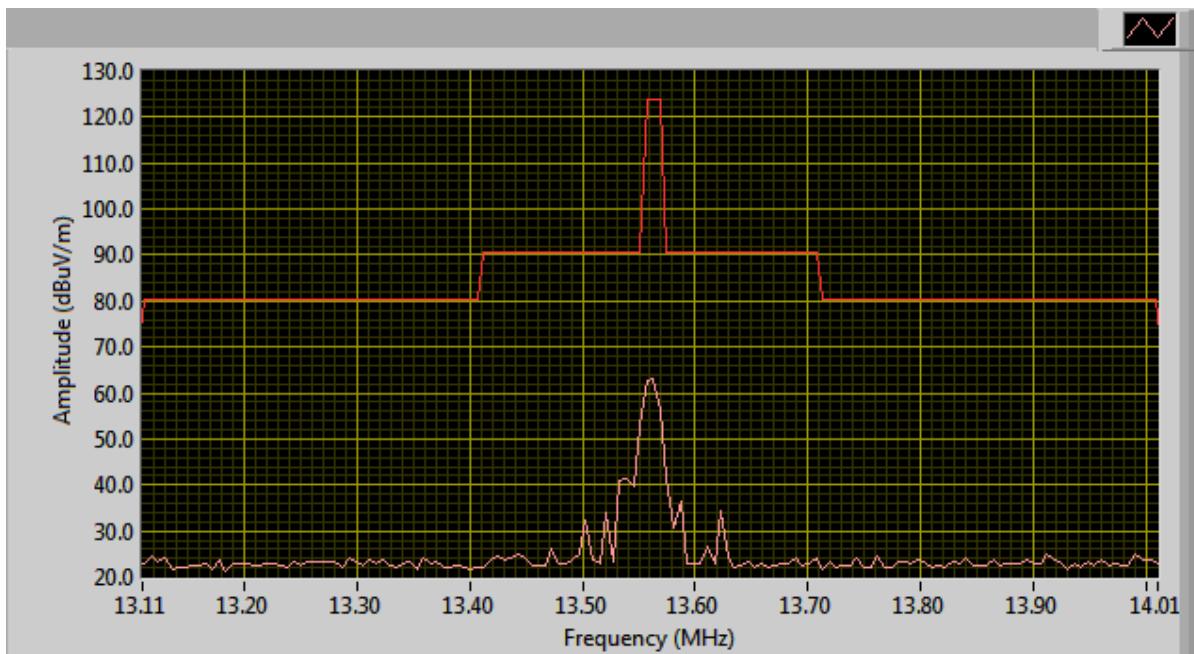
13.56 MHz ---The field strength of any emissions within allowed operating band shall not exceed 10mV/m at 30 meters.

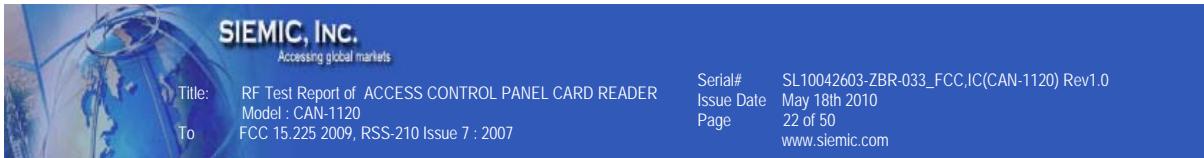
Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



Dipole Antenna at 90 degree





## 5.7 Occupied Bandwidth

**Requirement(s):** RSS-210 (5.9.1)

**Procedures:** Occupied Bandwidth was measured according to RSS-210 (5.9.1). Measurement was taken with spectrum analyzer. The spectrum analyzer bandwidth and span was set to read in hertz.

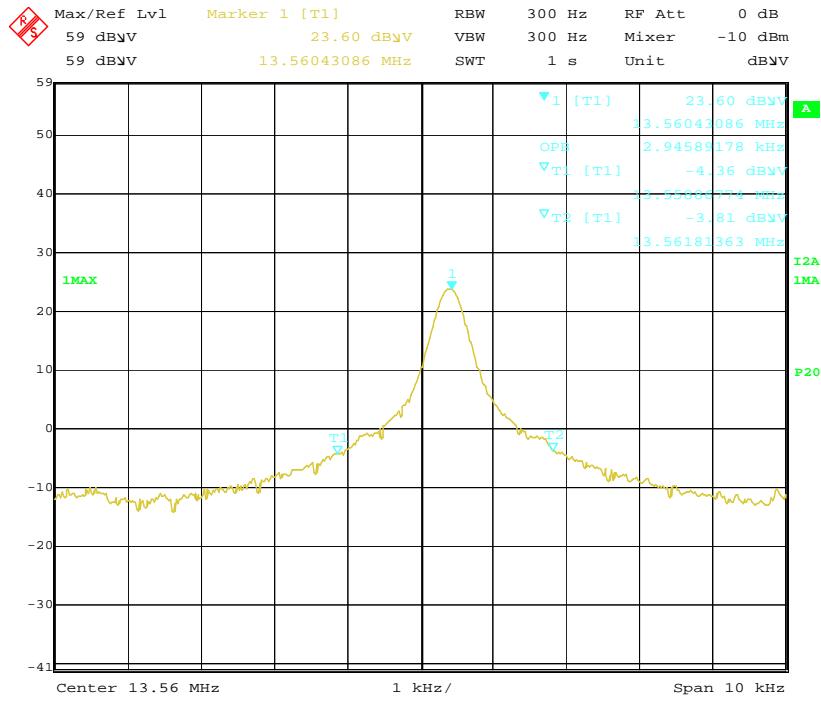
Environmental Conditions	Temperature	23°C
	Relative Humidity	50%
	Atmospheric Pressure	1019mbar

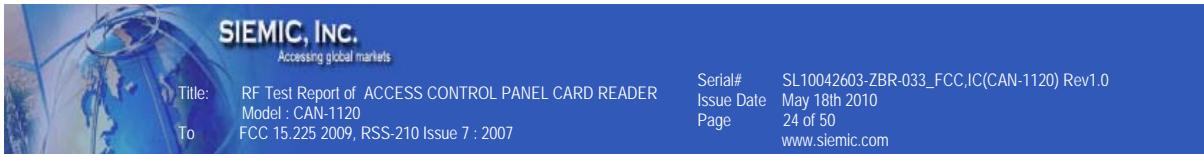
Test Date : May 13-20 2010

Tested By : David Zhang

**Results:** Pass

**Plots: 13.56 MHz**





## Annex A. TEST INSTRUMENT & METHOD

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

Instrument	Model	Calibration Due
<b>Conducted Emissions</b>		
R&S EMI Test Receiver	ESIB40	05/19/2011
R&S LISN	ESH2-Z5	05/18/2011
CHASE LISN	MN2050B	05/18/2011
<b>Radiated Emissions</b>		
Spectrum Analyzer	8564E	04/26/2011
EMI Receiver	ESIB 40	05/19/2011
R&S LISN	ESH2-Z5	05/18/2011
CHASE LISN	MN2050B	05/18/2011
Antenna(1 ~18GHz)	3115	10/04/2010
Antenna (30MHz~2GHz)	JB1	10/04/2010
Chamber	3m	04/18/2011
Pre-Amplifier(1 ~ 26GHz)	8449	05/17/2011
Horn Antenna (18~40GHz)	AH-840	03/19/2011
Microwave Pre-Amp (18~40GHz)	PA-840	05/17/2011

## 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  $50\Omega/50\mu\text{H}$  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 =  $250 \mu\text{V} = 47.96 \text{ dB}\mu\text{V}$

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver =  $40.00 \text{ dB}\mu\text{V}$   
 (Calibrated for system losses)

Therefore, Q-P margin =  $47.96 - 40.00 = 7.96$

i.e. **7.96 dB below limit**

### Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION

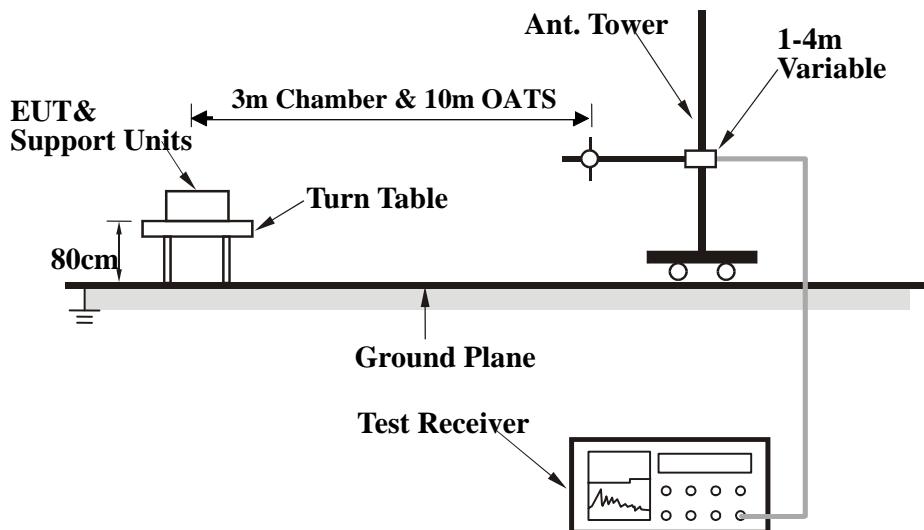
#### EUT Characterisation

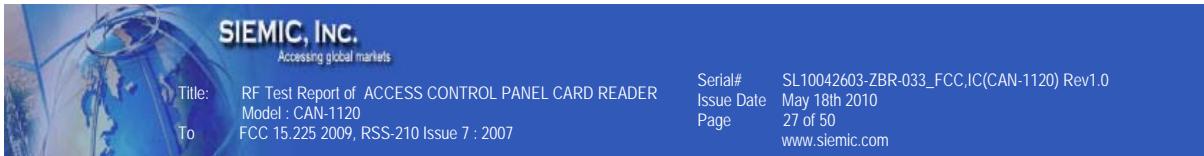
EUT characterisation, over the frequency range from 100kHz – 1GHz to 10<sup>th</sup> Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

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) at 10m distance.

#### 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 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

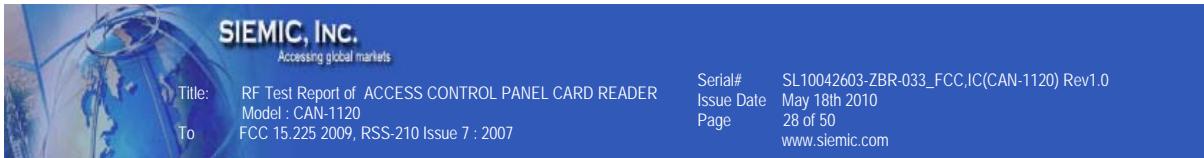
$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain (if any)}$$

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor} \text{ or}$$
$$\text{Set RBW} = 1\text{MHz}, \text{VBW} = 10\text{Hz}.$$

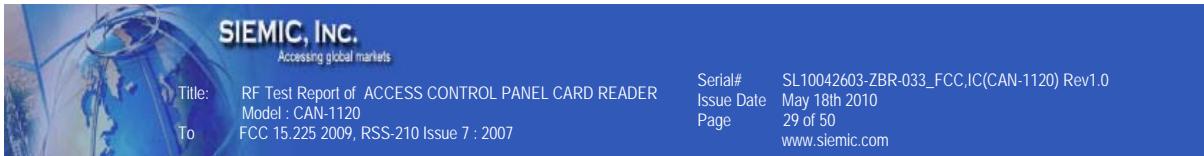
Note :

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.



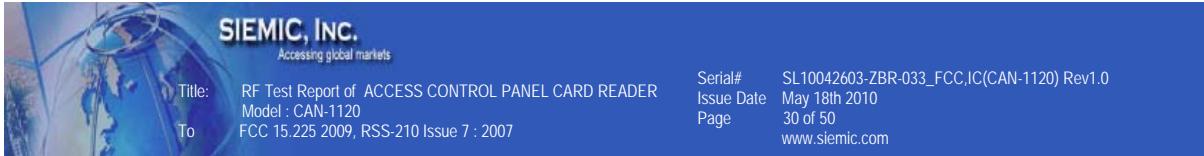
## **Annex B. TEST SETUP PHOTOGRAPHS**

Please See Attachment



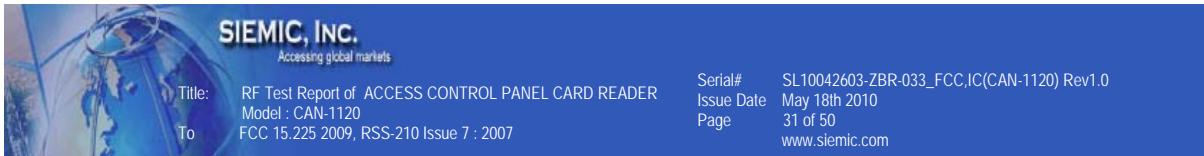
## **Annex B.i. EUT INTERNAL PHOTOGRAPHS**

**Please see attachment**



## **Annex B. ii. EUT EXTERNAL PHOTOGRAPHS**

**Please see attachment**



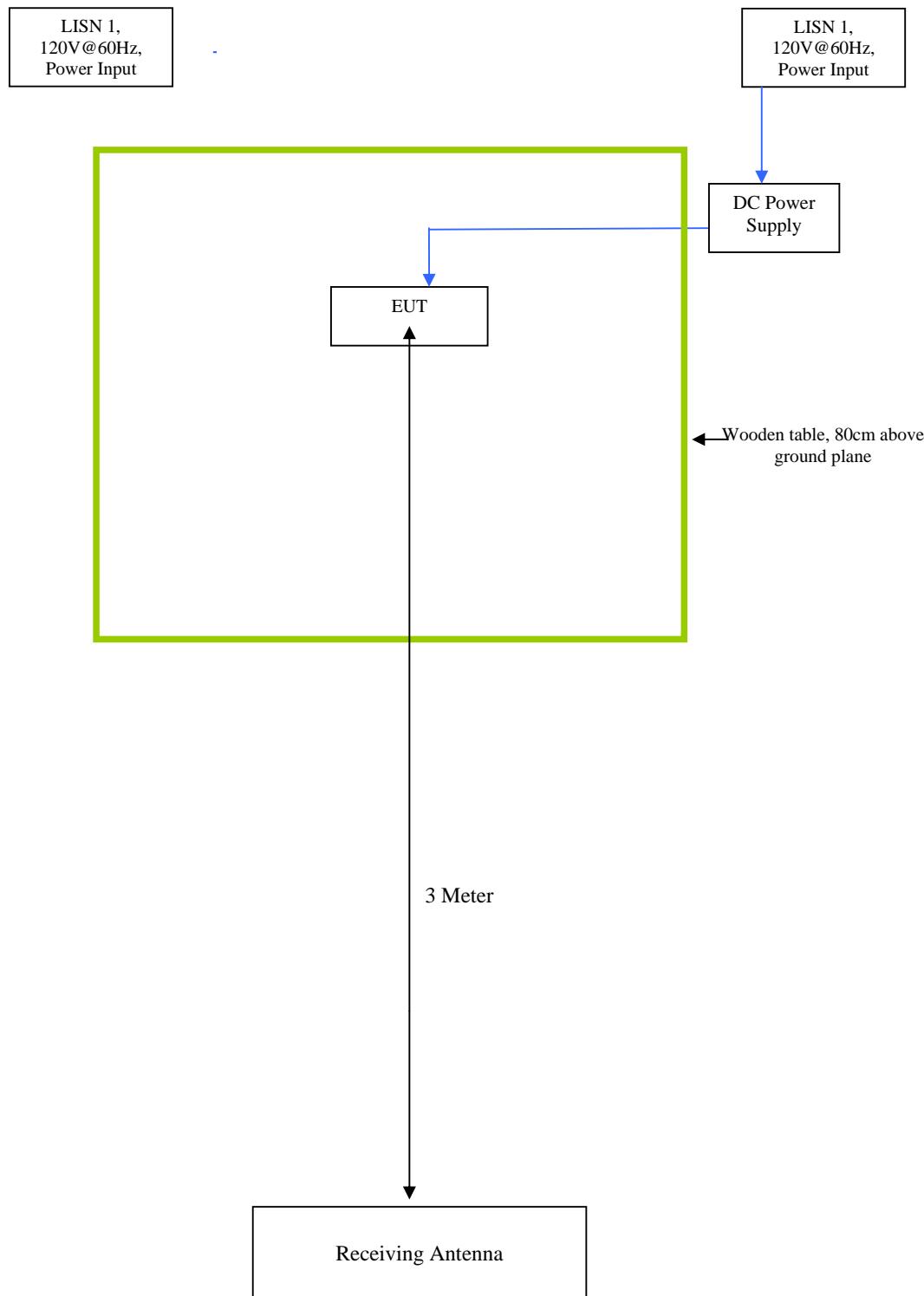
## Annex C. SUPPORTING EQUIPMENT DESCRIPTION

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

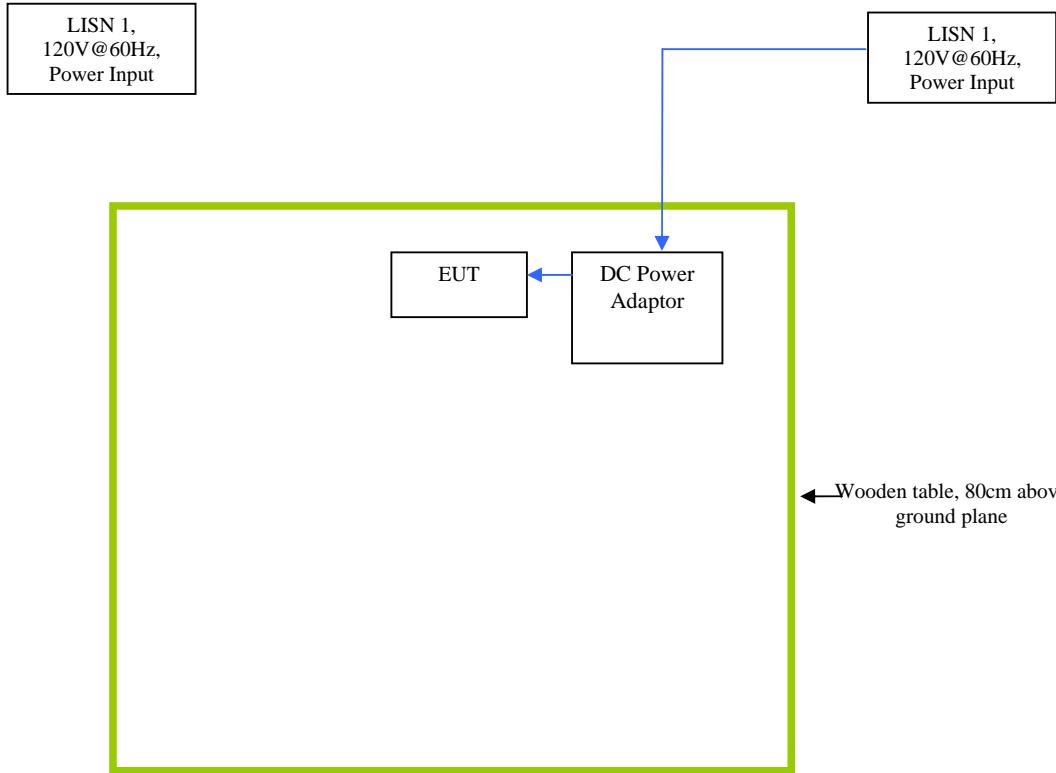
Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
Laptop / Dell	Latitude 102L	USB Cable / 1m

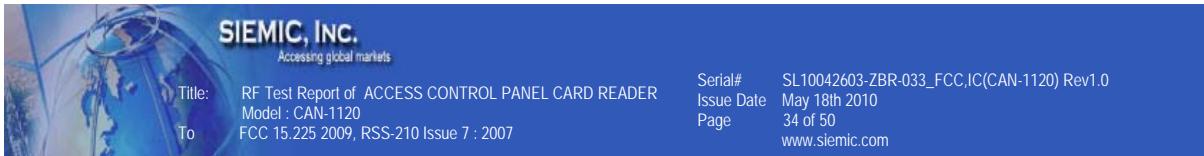
**NOTE:** No special supporting equipment are used or needed during testing to achieve compliance.

## Block Configuration Diagram for Radiated Emission



## Block Configuration Diagram for DC Conducted Emission

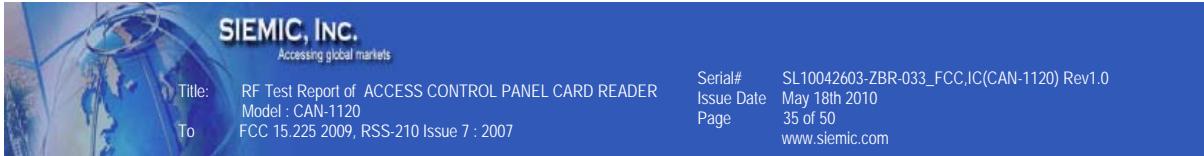




### **Annex C. EUT OPERATING CONDITIONS**

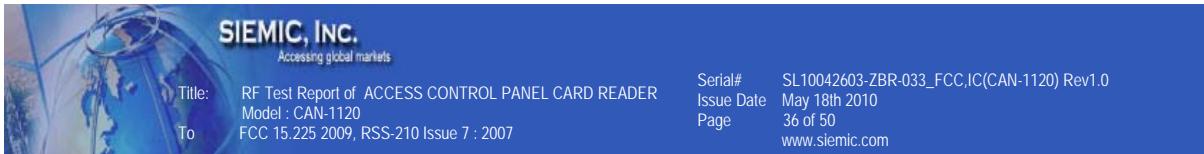
The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
<b>Emissions Testing</b>	The EUT was controlled by itself.
<b>Others Testing</b>	The EUT was controlled by itself.



## Annex D USER MANUAL, BLOCK & CIRCUIT DIAGRAM

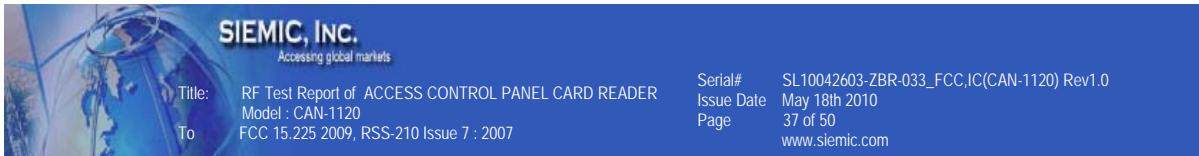
**Please see attachment**



## Annex E SIEMIC ACCREDITATION

### SIEMIC ACCREDITATION DETAILS: A2LA 17025 & ISO Guide 65 : 2742.01 , 2742.2





### SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 65:1996

SIEMIC INC.  
2206 Ringwood Ave.  
San Jose, CA 95131  
Mr. Snell Leong (Authorized Representative) Phone: 408 526 1188  
[www.siemic.com](http://www.siemic.com)

### PRODUCT CERTIFICATION CONFORMITY ASSESSMENT BODY (CAB)

Valid to: September 30, 2010

Certificate Number: 2742.02

In recognition of the successful completion of the A2LA Certification Body Accreditation Program evaluation, including the US Federal Communications Commission (FCC), Industry Canada (IC) and Singapore (IDA) requirements for the indicated types of product certifications, accreditation is granted to this organization to perform the following product certification schemes:

#### Economy

#### Scope

#### **Federal Communication Commission - (FCC)**

Unlicensed Radio Frequency Devices	A1, A2, A3, A4
Licensed Radio Frequency Devices	B1, B2, B3, B4
Telephone Terminal Equipment	C

*\*Please refer to FCC TCB Program Roles and Responsibilities, v04, released February 14, 2008 detailing scopes, roles and responsibilities. <http://www.fcc.gov/oet/ea/FCC-Overview-TCB-Program.pdf>*

#### **Industry Canada - (IC)**

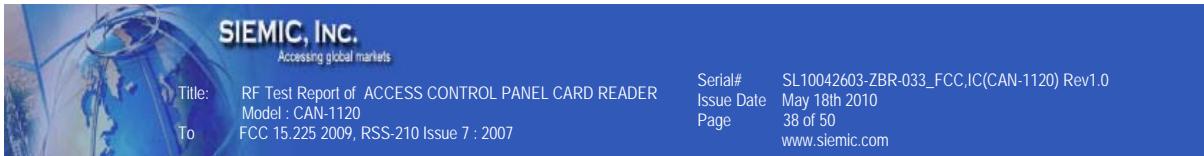
Radio	All Radio Standards Specifications (RSS) in Category I Equipment Standards List Radio
-------	--

*\*Please refer to Industry Canada (IC) website at: [http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/h\\_sf01342e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/h_sf01342e.html)*

#### **IDA – Singapore**

Line Terminal Equipment	All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2008, Annex 2
Radio-Communication Equipment	All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2008, Annex 2

*\*Please refer to Info-Communication Development Authority (IDA) Singapore website at: [http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies\\_and\\_Regulation\\_Level2/20060609145118/MRA\\_RecScheme.pdf](http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level2/20060609145118/MRA_RecScheme.pdf)*



## SIEMIC ACCREDITATION DETAILS: FCC Test Site Registration No. 783147

**FEDERAL COMMUNICATIONS COMMISSION**  
**Laboratory Division**  
**7435 Oakland Mills Road**  
**Columbia, MD 21046**

December 20, 2007

Registration Number: 783147

SIEMIC Laboratories  
2206 Ringwood Avenue,  
San Jose, CA 95131

Attention: Leslie Bai

Re: Measurement facility located at San Jose  
3 & 10 meter site  
Date of Renewal: December 20, 2007

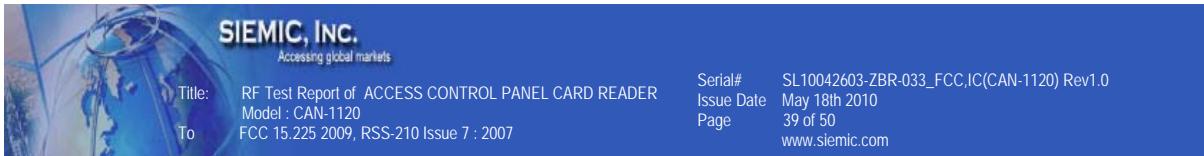
Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on 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,

Phyllis Parrish  
Industry Analyst



## SIEMIC ACCREDITATION DETAILS: Industry of Canada CAB ID : US0160



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

March 4, 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 Industry Canada (IC), 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, CA 95131 USA  
Identification No.: US0160  
Recognized Scope: CS-03 Part I, II, V, VI, VII and VIII

You may submit test data to IC to verify that the equipment to be imported into Canada 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.

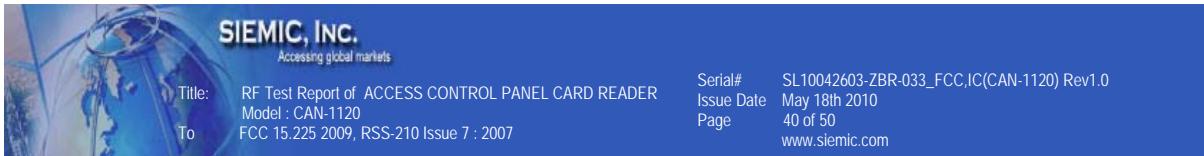
Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have any questions.

Sincerely,

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

Enclosure

cc: CAB Program Manager



## SIEMIC ACCREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842-1



May 27, 2010

OUR FILE: 46405-4842  
Submission No: 140856

**Siemic Inc.**  
2206 Ringwood Ave  
San Jose, CA, 95131  
USA

*Attention:* Snell Leong

Dear Sir/Madame:

The Bureau has received your application for the renewal of a 3m 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 (4842A-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: 4842A

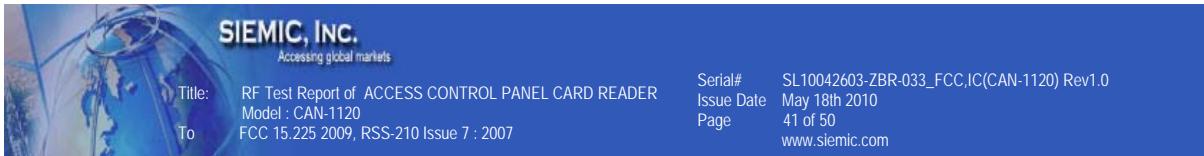
Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 or later shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 metre OATS or 3 metre 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,

Dalwinder Gill  
For: Wireless Laboratory Manager  
Certification and Engineering Bureau  
3701 Carling Ave., Building 94  
P.O. Box 11490, Station "H"  
Ottawa, Ontario K2H 8S2  
Email: [dalwinder.gill@ic.gc.ca](mailto:dalwinder.gill@ic.gc.ca)  
Tel. No. (613) 995-8363  
Fax. No. (613) 990-4752



## SIEMIC ACCREDITATION DETAILS: FCC DOC CAB Recognition : US1109

### FEDERAL COMMUNICATIONS COMMISSION

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

August 28, 2008

Siemic Laboratories  
2206 Ringwood Ave.,  
San Jose, CA 95131

Attention: Leslie Bai

Re: Accreditation of Siemic Laboratories  
Designation Number: US1109  
Test Firm Registration #: 540430

Dear Sir or Madam:

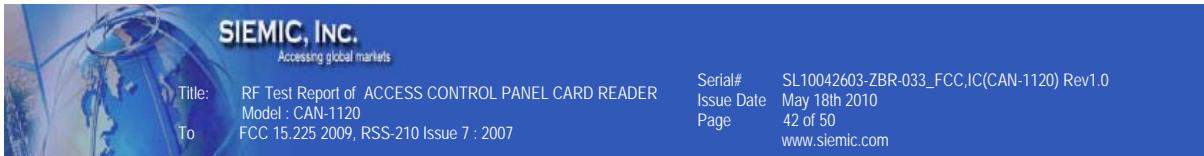
We have been notified by American Association for Laboratory Accreditation that Siemic Laboratories has been accredited as a Conformity Assessment Body (CAB).

At this time Siemic Laboratories is hereby designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Parts 15 and 18 of the Commission's Rules.

This designation will expire upon expiration of the accreditation or notification of withdrawal of designation.

Sincerely,

George Tannahill  
Electronics Engineer



## SIEMIC ACCREDITATION DETAILS: Australia CAB ID : US0160



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

November 20, 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 Australian Communications and Media Authority (ACMA) 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, CA 95131
Identification No.:	US0160
Recognized Scope:	<u>EMC</u> : AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4 <u>Radiocommunications</u> : AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771 <u>Telecommunications</u> : AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia 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>. Please contact Ms. Ramona Saar, at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have questions.

Sincerely,

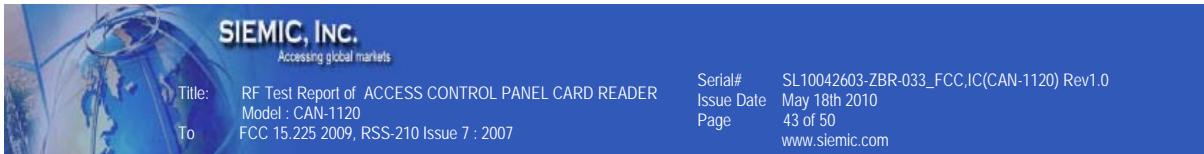
A handwritten signature in black ink that reads "David F. Alderman".

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

Enclosure

cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST

The NIST logo, consisting of the letters "NIST" in a bold, sans-serif font.



## SIEMIC ACCREDITATION DETAILS: Korea CAB ID: US0160



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
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, **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  
Recognized Scope: **EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI  
KN22: Test Method for EMI  
**EMS:** 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  
**Wireless:** 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  
**Wired:** 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.

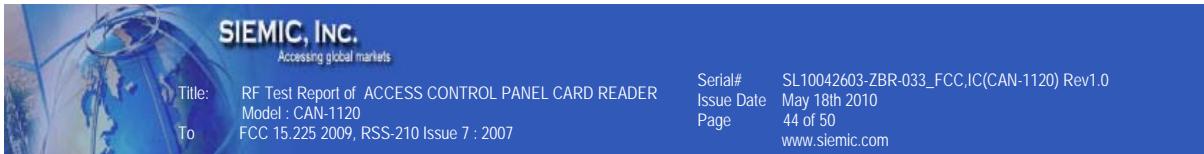
Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

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

Enclosure

cc: Ramona Saar



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



UNITED STATES DEPARTMENT OF COMMERCE  
National Institute of Standards and Technology  
Gaithersburg, Maryland 20889

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**

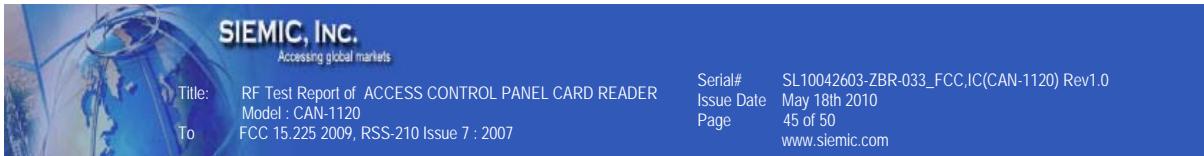
The names of all recognized CABs will be posted on the NIST website at <http://ts.nist.gov/mra>. If you have any questions, please contact Mr. Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

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

cc: Joginder Dhillon

**NIST**



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



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

November 25, 2008

Mr. LeslieBai  
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  
Additional Scope: PSTN01, ADSL01, ID0002, IS6100 and CNS 14336

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.

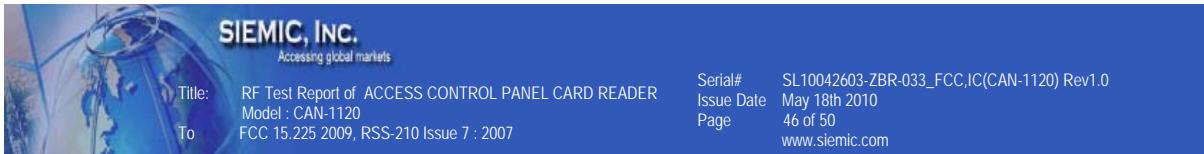
Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

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

Enclosure

cc: Ramona Saar



## SIEMIC ACCREDITATION DETAILS: Mexico NOM Recognition



CAMARA NACIONAL  
DE LA INDUSTRIA  
ELECTRONICA, DE  
TELECOMUNICACIONES  
E INFORMATICA

### Laboratorio Valentín V. Rivero

México D.F. a 18 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 comentó 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 llenado de los cuales le pido sea revisado y en su caso corregido, para que si está de acuerdo poder firmarlo para mandarlo con las autoridades Mexicanas para su visto bueno y así poder ejercer dicho acuerdo.

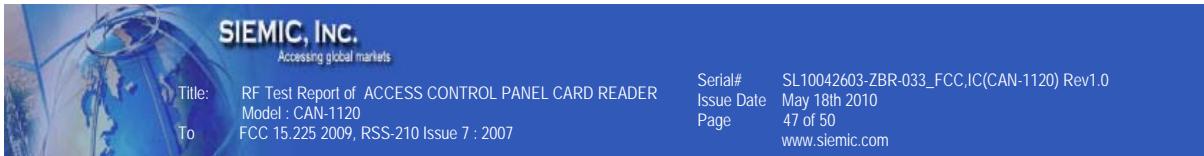
Aprovecho este escrito para mencionarle que nuestro intermediario gestor será la empresa Isabel de México, S. A. de C. V., empresa que ha colaborado durante mucho tiempo con nosotros en lo relacionado a la evaluación de la conformidad y que cuenta con amplia experiencia en la gestoría de la certificación 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 Bóquez González  
Gerente Técnico del Laboratorio de  
CANIETI.

Callejón 71  
Hacienda Condessa  
08110 México, D.F.  
Tel. 5264-0308 con 12 líneas  
Fax 5264-0488  
www.canieti.org



## SIEMIC ACCREDITATION DETAILS: Hong Kong OFTA CAB ID : 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:	<b>Radio:</b> 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 <b>Telecom:</b> 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,

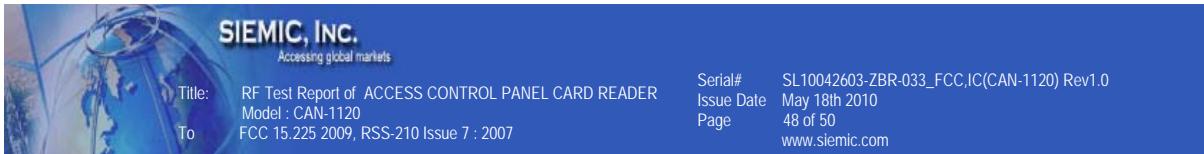
A handwritten signature in black ink that reads "David F. Alderman".

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

Enclosure

cc: Ramona Saar





## SIEMIC ACCREDITATION DETAILS: VCCI Radiated Test Site Registration No. R-3083



# 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*

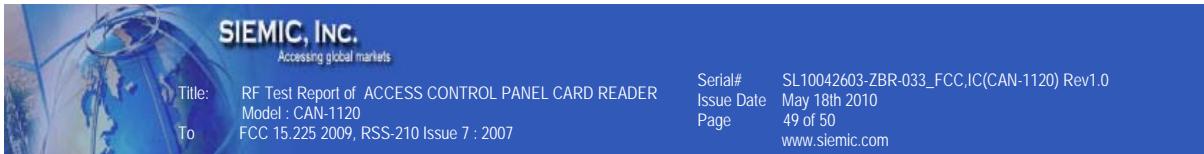
Registration No.: R-3083

Date of Registration: June 12, 2009

This Certificate is valid until September 30, 2010

*VCCI Council*





**SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Main Port) Test Site Registration No. C-3421**



# CERTIFICATE

**Company:** SIEMIC Inc.

*<Member No. 3081 >*

**Facility:** SIEMIC Inc.

(Main Ports Conducted Interference Measurement)

**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*

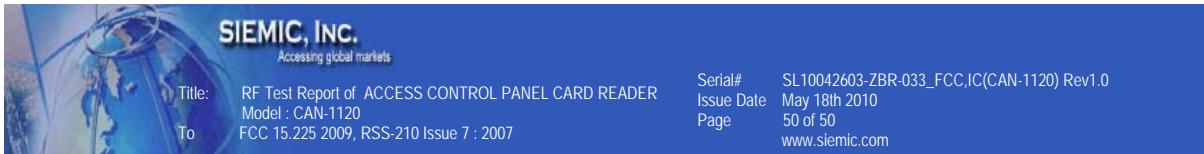
**Registration No.:** C-3421

**Date of Registration:** June 12, 2009

**This Certificate is valid until** September 30, 2010

*VCCI Council*  



**SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Telecom Port) Test Site Registration No. T-1597**



# CERTIFICATE

**Company:** SIEMIC Inc.

*<Member No. 3081 >*

**Facility:** SIEMIC Inc.

(Telecominication Ports Conducted Interference Measurement)

**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.:** T-1597

**Date of Registration:** June 12, 2009

**This Certificate is valid until** September 30, 2010

*VCCI Council*

