



REPORT

For

Guard RFID Solutions Inc.

#8-1600 Derwent Way
Delta, B.C.
V3M 6M5, Canada

Date: October 27, 2008
Report No.: 9244-1E
Revision No.: 1
Project No.: 9244
Equipment: Wireless Keypad Module
Model No.: VZKWK1



ONE STOP GLOBAL CERTIFICATION SOLUTIONS



3133-20800 Westminster Hwy, Richmond, BC
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FCC Part 15.231/IC RSS 210	
Report reference No.	9244-1E
Report Revision History:	<ul style="list-style-type: none"> ➤ Rev.0 – October 15, 2008 ➤ Rev. 1 – October 27, 2008: Updated report as per TCB requirements for clarification.
Tested by (printed name and signature)	Jeremy LEE 
Approved by (printed name and signature)	Kavinder Dhillon, Eng.L. 
Date of issue	October 27, 2008
<p>Note: By signing this report, both the Testing Technician and the Reviewer hereby declare to abide by the applicable LabTest policies:</p> <p>1.) Statement of Independence # 3014 (LabTest Employees), 2.) Independence, Impartiality, and Integrity #1039, clause 11 (Engineering Service Subcontractors), or 3.) Independence, Impartiality, and Integrity #1019, clause 3.5 (Testing Subcontractors).</p>	
FCC Site Registration No.:	444229
IC Site Registration No.:	5970A
Testing Laboratory Name	LabTest Certification Inc.
Address	3133 – 20800 Westminster Hwy, Richmond, B.C. V6V-2W3
OATS Test Location Name	LabTest Certification Inc.
Address	17325-48Ave., Surrey, BC, Canada
Applicant's Name	Guard RFID Solutions Inc.
Address	#8-1600 Derwent Way, Delta, B.C. V3M 6M5
Manufacture's Name	Same as Applicant
Address	Same as Applicant
Test specification	RFID Module
Standards	FCC15.231/RSS-210, Issue 7
Date Test sample received	Oct. 09, 2008
Date of Testing	Oct. 10 to Dec. 15, 2008
Test item description	
Manufacturer	Guard RFID Solutions Inc.
Model and/or type reference	VZKWK1
Serial numbers	N/A
Frequency:	433.92MHz
Power :	10.997mV/meter
Rating(s)	+12Vdc

Device Under Test Description

Application for	Wireless Bypass Keypad
Operating Frequency	433.92MHz
Modulation	MSK
Data Rats	250kbps
Nominal Voltages for:	<input type="checkbox"/> stand-alone equipment <input checked="" type="checkbox"/> combined (or host) equipment <input type="checkbox"/> test jig
Supply Voltage:	_____ AC _____ Amps ___12V_ DC _____0.18___Amps
If DC Power:	<input type="checkbox"/> Internal Power Supply <input checked="" type="checkbox"/> External Power Supply or AC/DC adapter <input type="checkbox"/> Battery <ul style="list-style-type: none"> <input type="checkbox"/> Nickel Cadmium <input type="checkbox"/> Alkaline <input type="checkbox"/> Nickel-Metal Hydride <input type="checkbox"/> Lithium-Ion <input type="checkbox"/> Lead Acid (Vehicle regulated) <input type="checkbox"/> Other
General Product Information:	Wireless Bypass Keypad(WBK) is a device used within Guard RFID system for two purpose: <ul style="list-style-type: none"> - To enter numeric key sequence (Pincode) which is used by the rest of the system to carry out certain actions related to security features of the system. - To provide audio-visual indication of various system events.

List of ancillary and/or support equipment provided by the applicant

Model:	Description:	Ratings:	Approvals/Standards
N/A			

Markings

MODEL: KEYPAD FCC ID: VZKWK1 SN: 100000

This device complies with part 15 of the FCC Rules.Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received,including interference that may cause undesired operation.

Made in Canada

Test Summary

Test Type	Regulation	Measurement Method	Result
Field Strength of Fundamental - Intentional radiator	15.231 and RSS-210	ANSI C63.4:2003	PASS
Field Strength of Spurious Emissions -Intentional radiator	15.231, 15.205, 15.209 and RSS-210	ANSI C63.4:2003	PASS
Radiated Emissions-Unintentional radiators	15.109, Class B and RSS-210	ANSI C63.4:2003	PASS
The Bandwidth of the emission	15.231 and RSS-210	ANSI C63.4:2003	PASS
Conducted Emissions	15.207 and ICES-003	ANSI C63.4:2003	N/A

Summary of the operation of RF Transmission

Regulation	FCC15.231:2007
Intentional Radiating Frequency	433.92MHz
Sample Number	644644
Reviewed By	Jeremy LEE

Test Limits

Section 15.231 Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz.

(a) The provisions of this Section are restricted to periodic operation within the band 40.66 - 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

Reviewed Results:

The RF transceiver of EUT is based on CC1100 chip(U7) which is configured to receive and transmit data at 433.92MHz.

The features of RF Transmitting are as follows:

Parameter	Setting
Frequency	433.92MHz
Modulation	MSK
Data Rate	250kbps
Filter Bandwidth	540kHz
Preamble Lengths	4 Bytes
Sync Word Lengths	16 bits

Most of the time RF transceiver is in RX mode, expecting to receive commands from the Tag Reader. The EUT exits RX mode to into TX mode only if the key sequence, Pincode is entered followed by the #key or if Beacon message is sent to the Tag Reader. As soon as the entire message is transmitted, CC1100 returns to RX mode as directed by microcontroller.

Valid Pincode has 3 to 8 digits and must be followed by # key for entered key sequence (Pincode) to be transmitted over the RF channel.

When associated Tag Reader receives that message it compares Pincode with the Pincodes in its database and if the Pincode is found, Tag Reader is placed into Bypass mode.

When the Tag Reader enters Bypass Mode, it sends message back to the associated the EUT about this event. The EUT starts audio-video indication of Bypass Mode.

The EUT stays in Bypass Mode until it receives message from Tag Reader to go into idle mode, or until its own internal timer expires in absence of control signals from associated Tag Reader.

The EUT transmits one "Beacon Message" ever 30 seconds at power up and before it is associated with a Tag Reader in the system. And after association is established with a Tag Reader, the EUT replaces the "Beacon Message" with a "Status Message". The frequency of the "Status Message" transmission is also once every 30 seconds.

Field Strength of Fundamental

Regulation	FCC15.231:2007
Intentional Radiating Frequency	433.92MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	13 °C
Relative Humidity	87 %
Barometric Pressure:	102.92 kPa
Test Date	Oct. 10, 2008
Sample Number	644644
Calibrated Test Equipment (ID)	106, 124, 227-1, 228, 233
Reference Equipment (ID) (Calibration not required)	059, 235
Electrical Rating	12VDC
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

(b) In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequency(MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 **	125 to 375 **
174 - 260	3,750	375
260 - 470	3,750 to 12,500 **	375 to 1,250 **
Above 470	12,500	1,250

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, $\mu\text{V}/\text{m}$ at 3 meters = $56.81818(F) - 6136.3636$; for the band 260-470 MHz, $\mu\text{V}/\text{m}$ at 3 meters = $41.6667(F) - 7083.3333$. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in

the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

Test Setup

The test was performed in accordance with **FCC 15.31, 15.33, 15.35 and ANSI C63.4, 2003.**

The test setup for Field Strength of Fundamental at OATS is shown in Figure - 1.

- a) The EUT was placed on a wooden table, and it was put on the turning ground plate.
- b) As the levels of ambient at 3 meters are no lower than 6dB of limit values, the EUT was set up on 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- c) The EUT was steady on its RF Transceiver.
- d) It was measured with a receiver - spectrum analyzer, was software controlled.

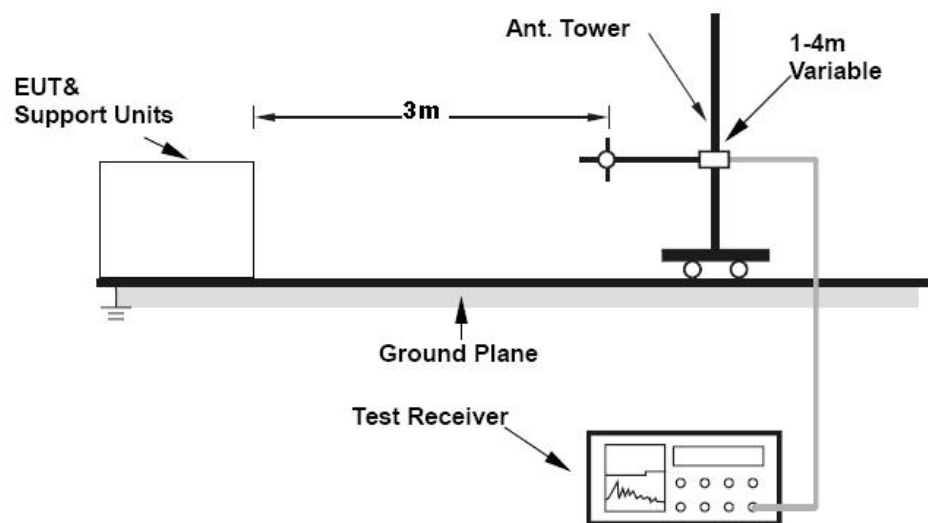


Figure – 1 Test setup for radiated emission at OATS

Test Results:

Measured level (dBuV/m) = Quasi-Peak detected level (dBuV) + Cable Loss(dB)
 + Antenna Factor (dB/m) - Pre-amplifier's Gain (dB)

Fundamental Frequency (MHz)	Limit(dBuV/m)	Measured(dBuV/m)	Results
433.92	80.83	69.76	PASS

- Table of Field Strength of Fundamental; Quasi Peak Detecting, Antenna was used a SAS510-2

LabTest Certification Inc.
 Field Strength of Fundamental and Spurious
 FCC15.231, 3 meters

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	69.56	11.27	75.00	188	H
867.840 MHz	60.83	40.51	20.32	75.00	375	H
1.302 GHz	60.83					
1.736 GHz	60.83					
2.170 GHz	60.83					
2.604 GHz	60.83					
3.037 GHz	60.83					
3.471 GHz	60.83					
3.905 GHz	60.83					
4.339 GHz	60.83					
Project # : 9244, Sample #: 644644						
Temp.: 13 C, Hum.: 87 %, Barometer Pres.:102.92kPa						
Date: Oct. 10, 2008						

Field Strength of Spurious Emission

Regulation	FCC15.231: 2007
Intentional Radiating Frequency	433.92MHz
Detecting Method	Average and Quasi-Peak Detector
IF Bandwidth	1MHz and 120kHz
Temperature	13 °C
Relative Humidity	88 %
Barometric Pressure:	102.92 kPa
Test Date	Oct. 10, 2008
Sample Number	644644
Calibrated Test Equipment (ID)	106, 124, 141, 227-1, 227-2, 228, 233
Reference Equipment (ID) (Calibration not required)	059, 235
Electrical Rating	12VDC
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

FCC 15.231:

(b) In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequency(MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 **	125 to 375 **
174 - 260	3,750	375
260 - 470	3,750 to 12,500 **	375 to 1,250 **
Above 470	12,500	1,250

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, $\mu\text{V}/\text{m}$ at 3 meters = $56.81818(F) - 6136.3636$; for the band 260-470 MHz, $\mu\text{V}/\text{m}$ at 3 meters = $41.6667(F) - 7083.3333$. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based

on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

FCC 15.205:

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e), regardless of the field strength limits specified elsewhere in this Subpart, the provisions of this Section apply to emissions from any intentional radiator.

Test Setup

The test was performed in accordance with **FCC 15.31, 15.33, 15.35, 15.205, 15.209:2007 and ANSI C63.4, 2003.**

The test setup for Field Strength of Fundamental at OATS is shown in Figure - 1.

- a) The EUT was placed on a wooden table, and it was put on the turning ground plate.
- b) As the levels of ambient at 3 meters are no lower than 6dB of limit values, the EUT was set up on 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- c) The EUT was steady on its RF Transceiver.
- d) It was measured with a receiver - spectrum analyzer, was software controlled.

Test Results:

$$\text{Emission level (dBuV/m)} = \text{Average detected level (dBuV)} + \text{Cable Loss(dB)} + \text{Antenna Factor (dB/m)} - \text{Pre-amplifier's Gain (dB)}$$

Harmonic Frequency (MHz)	Limit(dBuV/m)	Measured(dBuV/m)	Results
867.84	46.02	33.39	PASS
1301.76	60.83	58.85	PASS
1735.68	53.97	Under Ambient Levels	N/A
2169.60			
2603.52			
3037.44			
3471.36			
3905.28	60.83		
4339.20			

Prepared by: LabTest Certification Inc.
 Date Issued: October 27, 2008
 Project No.: 9041

Client:Guard RFID Solutions Inc.
 Report No.:9041-2E
 Revision No.:1

- Field Strength of Spurious Emission; 2nd harmonic, Average Detecting, Antenna was used SAS-510-2.

LabTest Certification Inc.
 Field Strength of Fundamental and Spurious
 FCC15.231, 3 meters

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	AVG_Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	17.59	63.24	75	188	H
867.840 MHz	60.83	33.39	27.44	75	375	H
1.302 GHz	60.83					
1.736 GHz	60.83					
2.170 GHz	60.83					
2.604 GHz	60.83					
3.037 GHz	60.83					
3.471 GHz	60.83					
3.905 GHz	60.83					
4.339 GHz	60.83					
Project # : 9244, Sample #: 644644						
Temp.: 13 C, Hum.: 87 %, Barometer Pres.:102.92kPa						
Date: Oct. 10, 2008						

Prepared by: LabTest Certification Inc.
 Date Issued: October 27, 2008
 Project No.: 9041

Client:Guard RFID Solutions Inc.
 Report No.:9041-2E
 Revision No.:1

- Field Strengt of Spurious Emissions; 3rd to 10th harmonics, Average Detecting, Horizontal, Antenna was used SAS-571.

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231, 3 meters, Horizontal

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	58.85	75.00	273.00	H
1.736 GHz	38.44	75.00	243.00	H
2.170 GHz	40.81	75.00	198.00	H
2.604 GHz	42.61	75.00	100.00	H
3.037 GHz	54.02	75.00	277.00	H
3.471 GHz	53.73	75.00	337.00	H
3.905 GHz	56.21	75.00	247.00	H
4.339 GHz	58.44	75.00	223.00	H
Project # : 9244, Sample #: 644644				
Temp.: 13 C, Hum.: 87 %, Barometer Pres.:102.92kPa				
Date: Oct. 10, 2008				

LabTest Certification Inc.
 Radiated Emissions

FCC15.231, 3 meters, Ambients, Horizontal

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

04:28:34 PM, Friday, October 10, 2008

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	28.34	0.00	237.00	H
1.736 GHz	38.04	0.00	146.00	H
2.170 GHz	40.83	0.00	184.00	H
2.604 GHz	42.98	0.00	189.00	H
3.037 GHz	54.01	0.00	277.00	H
3.471 GHz	53.68	0.00	171.00	H
3.905 GHz	56.22	0.00	206.00	H
4.339 GHz	58.85	0.00	357.00	H
Project # : 9244, Sample #: 644644				
Temp.: 13 C, Hum.: 87 %				
Barometer Pres.:102.92kPa				

Prepared by: LabTest Certification Inc.
 Date Issued: October 27, 2008
 Project No.: 9041

Client:Guard RFID Solutions Inc.
 Report No.:9041-2E
 Revision No.:1

- Field Strengt of Spurious Emissions; 3rd to 10th harmonics, Average Detecting, Vertical, Antenna was used SAS-571.

LabTest Certification Inc.
 Spurious Measurement, Fc=433.92MHz
 FCC15.231, 3 meters, Vertical

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	58.82	75.00	339.00	V
1.736 GHz	38.08	75.00	306.00	V
2.170 GHz	40.80	75.00	288.00	V
2.604 GHz	42.96	75.00	316.00	V
3.037 GHz	54.01	75.00	228.00	V
3.471 GHz	53.68	75.00	118.00	V
3.905 GHz	56.21	75.00	213.00	V
4.339 GHz	58.88	75.00	347.00	V
Project # : 9244, Sample #: 644644				
Temp.: 13 C, Hum.: 87 %, Barometer Pres.:102.92kPa				
Date: Oct. 10, 2008				

LabTest Certification Inc.
 Radiated Emissions
 FCC15.209, 3 meters, Ambients, Vertical

Operator: Jeremy Lee

Model #: VZKWK1
 Contact: Francis Chow
 Company: Guard RFIDSolutions Inc.

04:48:28 PM, Friday, October 10, 2008

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	28.65	0.00	226.00	V
1.736 GHz	38.40	0.00	358.00	V
2.170 GHz	40.78	0.00	201.00	V
2.604 GHz	42.94	0.00	110.00	V
3.037 GHz	54.00	0.00	354.00	V
3.471 GHz	53.30	0.00	326.00	V
3.905 GHz	56.22	0.00	244.00	V
4.339 GHz	58.82	0.00	240.00	V
Project # : 9244, Sample #: 644644				
Temp.: 13 C, Hum.: 87 %				
Barometer Pres.:102.92kPa				

Radiated Emission; Unintentional Radiators

Regulation	FCC15.109:2007, Class B
Highest Unintentional Radiating Frequency	58.9824MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	13°C
Relative Humidity	87 %
Barometric Pressure:	102.92 kPa
Test Date	Oct. 10, 2008
Sample Number	644644
Calibrated Test Equipment (ID)	106, 112, 124, 141, 227-1, 228, 233
Reference Equipment (ID) (Calibration not required)	059, 235
Electrical Rating	12VDC
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

FCC 15.109:

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Test Setup for Pre-scan

The test was performed in accordance with **FCC 15.31, 15.33, 15.35, 15.109:2007 and ANSI C63.4, 2003.**

The setup for pre-scan the radiated emissions in a GTEM cell is shown in Figure - 2. The EUT is placed inside the GTEM and its radiation is measured with a receiver - spectrum analyzer. The receiver was software controlled. Pre-scan tests were occurred at idle mode.

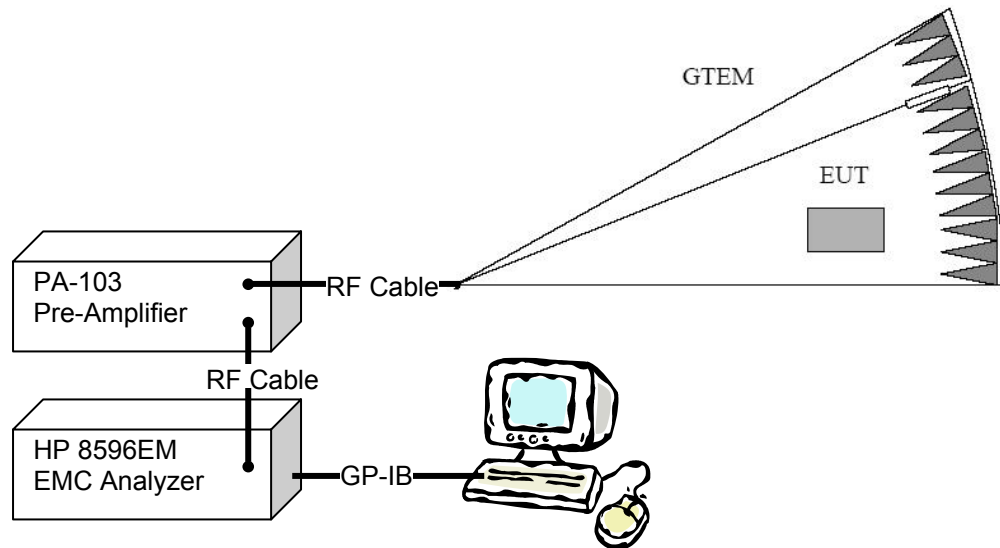


Figure – 2 The setup for Radiated emission test in GTEM

Test Setup for Open Area Test Site(OATS)

The setup for Radiated emission measurements at OATS is shown in Figure - 1.

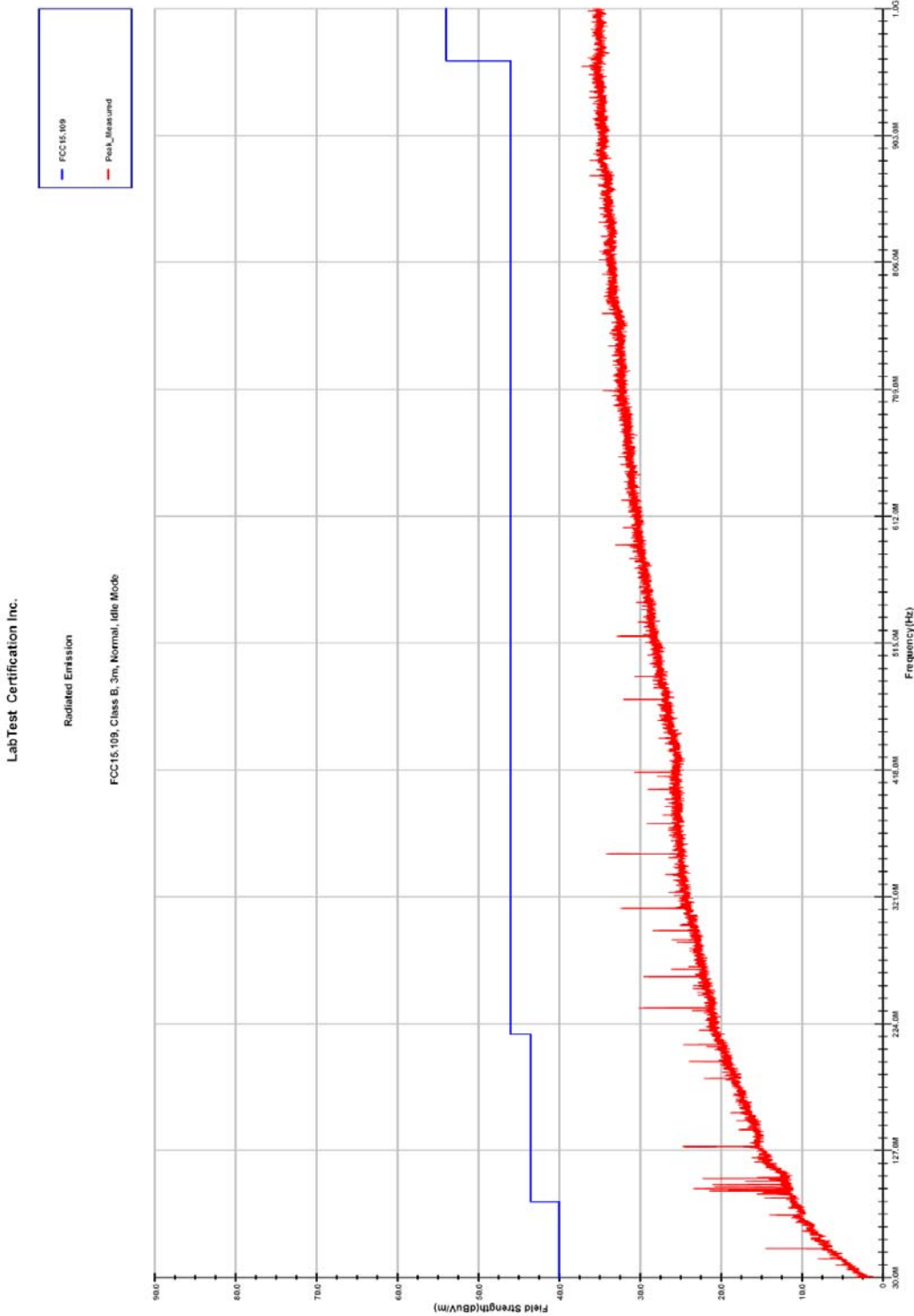
- The EUT was placed on a wooden table, and it was put on the turning ground plate.
- The EUT was set up on 3 meter(s) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- It is measured with a receiver - spectrum analyzer, was software controlled.
- Test frequencies were detected by the results of pre-scan.

Test Results:

$$\text{Emission level (dBuV/m)} = \text{Quasi-Peak detected level (dBuV)} + \text{Cable Loss (dB)} \\ + \text{Antenna Factor (dB/m)} - \text{Pre-amplifier's Gain (dB)}$$

There was no signal over limit.

- Pre-scan test results of Radiated Emission; Idle Mode



Model Number: VZRWK1

Contact: Francis Chow

Company: Guard RFIDSolutions Inc.

Project #: 9244, Sample #: 644644

Temp.: 18 C, Hum.: 38 %

B.P.: 102.77 kPa

Operator: Jeremy LEE

10:11:34 AM, Friday, October 10, 2008

- Table of Radiated Emission-Horizontal: 300-1,000MHz, Antenna was used a SAS-510-2.

LabTest Certification Inc.
 Radiated Emissions
 FCC15.109, Class B, 3 meters, Horizontal

Operator: Jeremy Lee Model #: VZKWK1
Contact: Francis Chow
 03:34:36 PM, Friday, October 10, 2008 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109	QP_Measured	Margin	T/T	Tower	Pol
30.000 MHz	40.00					
88.000 MHz	40.00					
88.000 MHz	40.00					
216.000 MHz	43.52					
216.000 MHz	43.52					
312.092 MHz	46.02	16.35	29.67	0	150	H
353.976 MHz	46.02	25.59	20.43	15	377	H
471.950 MHz	46.02	22.13	23.89	330	150	H
955.828 MHz	46.02	30.09	15.93	10	150	H
960.000 MHz	46.02					
960.000 MHz	46.02					
26.500 GHz	53.98					
Project # : 9244, Sample #: 644644						
Temp.: 13 C, Hum.: 87 %						
Barometer Pres.:102.92kPa						

- Table of Radiated Emission-Vertical: 300-1,000MHz , Antenna was used a SAS-510-2.

LabTest Certification Inc.
 Radiated Emissions
 FCC15.109, Class B, 3 meters, Vertical

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 03:34:36 PM, Friday, October 10, 2008 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109	QP_Measured	Margin	T/T	Tower	Pol
30.000 MHz	40.00					
88.000 MHz	40.00					
88.000 MHz	40.00					
216.000 MHz	43.52					
216.000 MHz	43.52					
312.024 MHz	46.02	17.73	28.29	0	150	V
353.888 MHz	46.02	23.23	22.79	210	373	V
471.890 MHz	46.02	23.05	22.97	330	150	V
955.616 MHz	46.02	31.10	14.92	10	150	V
960.000 MHz	46.02					
960.000 MHz	46.02					
26.500 GHz	53.98					
Project # : 9244, Sample #: 644644						
Temp.: 13 C, Hum.: 87 %						
Barometer Pres.:102.92kPa						

The Bandwidth of the emission

Regulation	FCC15.231: 2007
Temperature	16 °C
Relative Humidity	38 %
Barometric Pressure:	102.39 kPa
Test Date	Oct. 15, 2008
Sample Number	644644
Calibrated Test Equipment (ID)	106, 228
Reference Equipment (ID) (Calibration not required)	059
Electrical Rating	12VDC
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

FCC 15.231:

(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20dB down from the modulated carrier.

Test Setup

The test was performed in accordance with **ANSI C63.4, 2003**.

The setup for Bandwidth of the emission measurements is shown in Figure - 3.

- The EUT was placed on a wooden table.
- The EUT was set up the RF transmitter steady on.
- It was measured with a receiver - spectrum analyzer.

Test Results:

Center Frequency (MHz)	Limit(<0.25%, kHz)	Measured(kHz)	Results
433.92	1084.8	840	PASS

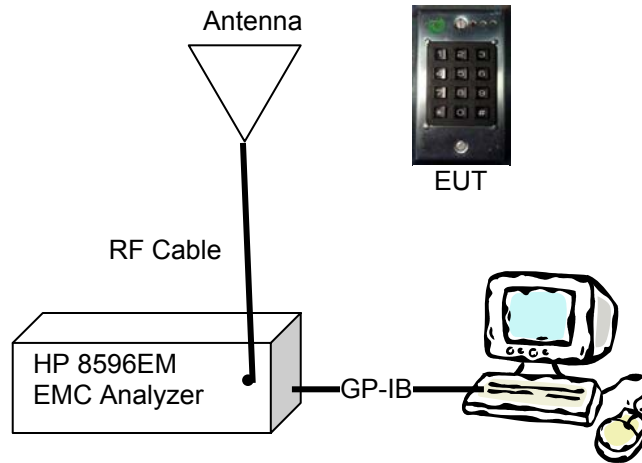


Figure – 3 The setup for Bandwidth of the emission test

- Measured result of the Bandwidth of the emission(20dBc method).

08:13:44 OCT 15, 2008

GUARD RFID,644644

MKR 840 kHz

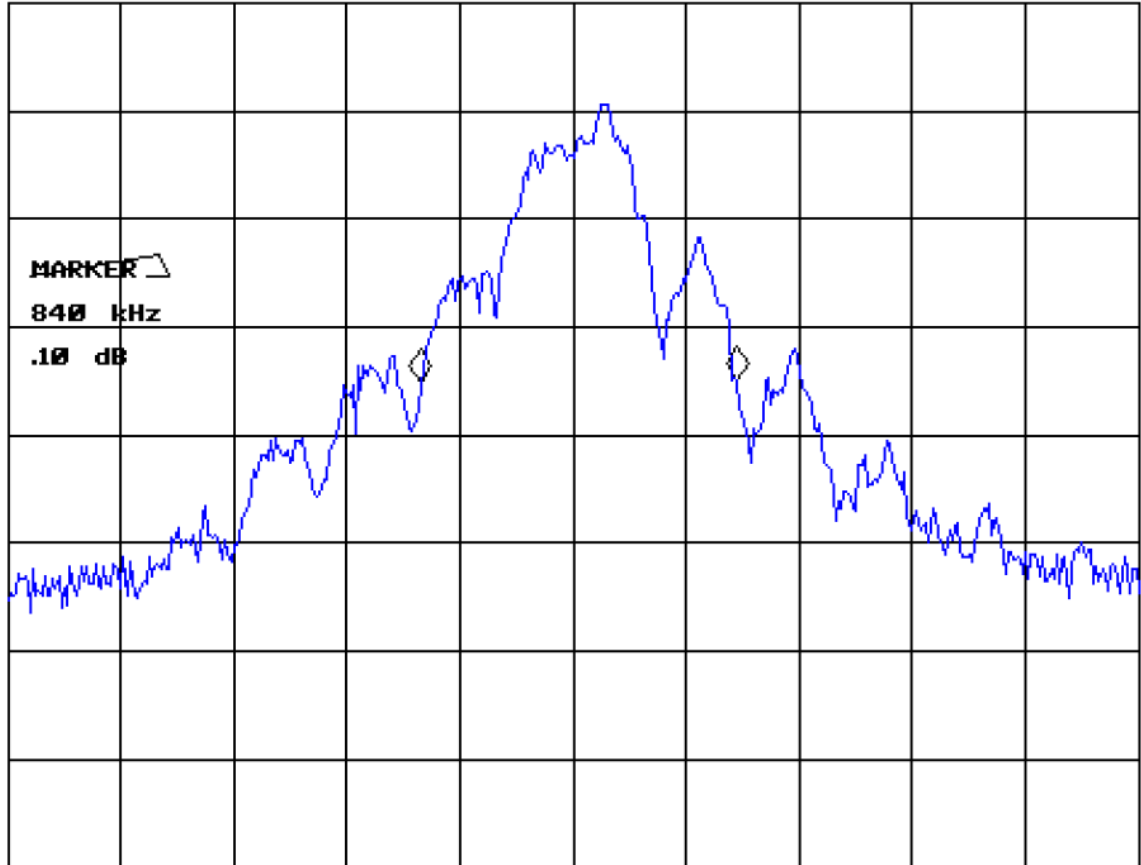
REF -30.0 dBm

AT 10 dB

.10 dB

PEAK
LOG
10
dB/

MA SB
SC FC
CORR



CENTER 433.920 MHz

SPAN 3.000 MHz

RES BW 30 kHz

VBW 30 kHz

SMP 20.0 msec

Conducted Emission

Regulation	FCC15.207:2007
Sample Number	644644
Electrical Rating	12VDC
Tested By	Jeremy LEE

Test Limits

FCC 15.207:

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Test Results

The test was exempted by there is no public utility (AC) power line connection.

Appendix A: Test Equipment Used

ID No.	Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date	Calibration Certificate No:	Calibration Laboratory
059	DC Power Source	California Instrument	5000i	HK51870	N/A	N/A	N/A	N/A
106	Spectrum Analyzer	HP	8596EM	3536A00113	30-Sep-2008	30-Sep-2009	280731	Wescan
112	GTEM EMC Chamber	Emco	5317	N/A	04-Oct-2005	04-Oct-2010	1000082343	Wescan
124	Pre-Amplifier	Com-Power	PA-103	161118	29-Nov-2007	29-Nov-2008	269525	Wescan
141	Pre-Amplifier	RF Bay	LPA-10-10	N/A	28-Feb-2008	28-Feb-2009	272296	Wescan
227-1	Log Periodic Antenna	A.H. Systems	SAS-510-2	1262	30-Apr-2008	30-Apr-2009	66817	ETS-Lindgren
227-2	Horn Antenna	A.H. Systems	SAS-571	936	30-Apr-2008	30-Apr-2009	66892	ETS-Lindgren
228	Humidity/ Temperature Logger	Veriteq	SP-2000-20R	07072157	16-Sep-2008	16-Sep-2008	0133270	Veriteq
233	Coaxial RF Cable	N/A	LCI-001	N/A	15 Oct 2007	15 Oct 2009	268190	Wescan
235	Turn table /Tower System	Sunol Sciences Co.	SC104V	031407-1	N/A	N/A	N/A	N/A

Appendix B: Photographs

- EUT : Front View



- Test configuration for Emission at OATS



END OF REPORT