



REPORT

For

Guard RFID Solutions Inc.

#8-1600 Derwent Way
Delta, British Columbia
V3M 6M5, Canada

Date: January 12, 2008
Report No.: 9274-1E
Revision No.: 1
Project No.: 9274
Equipment: RFID TAG
Model No.: CT-1BLF

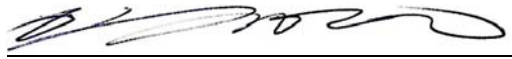

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FCC Part 15.231/IC RSS 210	
Report reference No.	9274-1E
Report Revision History:	<ul style="list-style-type: none"> ➤ Rev.0 – December 12, 2008 ➤ Rev.1 – January 12, 2009: Adding the testing results of 3 orthogonal plane and Turn-on Time
Tested by (printed name and signature)	Jeremy LEE 
Approved by (printed name and signature)	Kavinder Dhillon, Eng.L. 
Date of issue	January 12, 2009
<p>Note: By signing this report, both the Testing Technician and the Reviewer hereby declare to abide by the applicable LabTest policies: 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
Manufacturer's Name	Same as Applicant
Address	Same as Applicant
Test specification	RFID TAG
Standards	FCC15.231/RSS-210, Issue 7
Date Test sample received	Dec. 04, 2008
Date of Testing	Dec. 08 to 11, 2008 and Jan 09, 2009
Test item description	
Manufacturer	Guard RFID Solutions Inc.
Model and/or type reference	CT-1BLF
Serial numbers	N/A
Frequency:	433.92MHz

Power :	1612.5uV/meter
Rating(s)	3Vdc Lithium ion battery

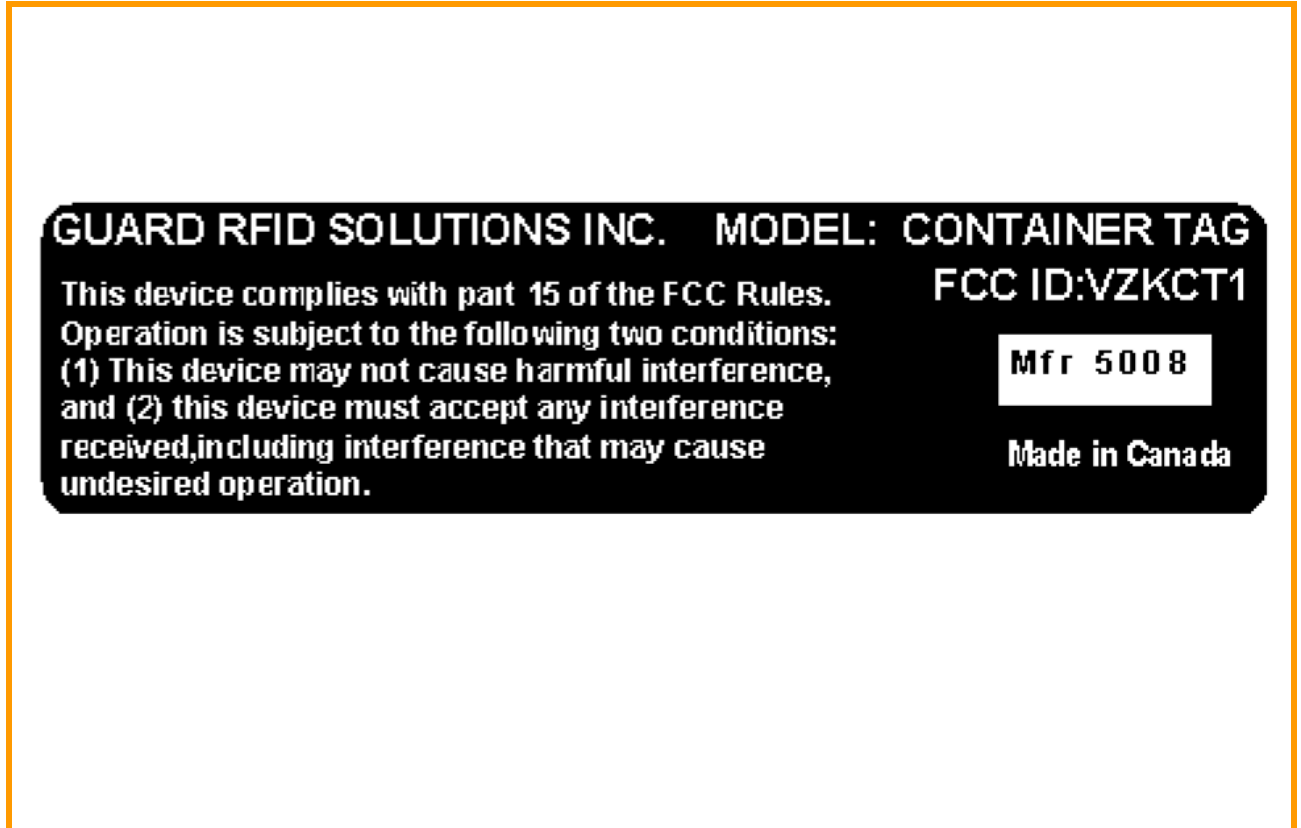
Device Under Test Description

Application for	RFID TAG
Operating Frequency	433.92MHz
Modulation	MSK
Data Rates	250kbps
Nominal Voltages for:	___X___ stand-alone equipment ___ combined (or host) equipment ___ test jig
Supply Voltage:	_____ AC _____ Amps ___3V___ DC _____ Amps
If DC Power:	___ Internal Power Supply ___ External Power Supply or AC/DC adapter ___X___ Battery <ul style="list-style-type: none"> <input type="checkbox"/> Nickel Cadmium <input type="checkbox"/> Alkaline <input type="checkbox"/> Nickel-Metal Hydride <input checked="" type="checkbox"/> Lithium-Ion <input type="checkbox"/> Lead Acid (Vehicle regulated) <input type="checkbox"/> Other
General Product Information:	The EUT is a ruggedized Active Tag specially developed for placing on Totes and other such Containers, for tracking and location in the manufacturing and warehousing environment. It is a battery powered wireless device used to track assets within a Guard RFID Solutions System. The tag is powered by a small lithium battery and consists of a low frequency receiver, a small microcontroller, and a UHF transmitter.

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

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

Markings



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	673811
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.

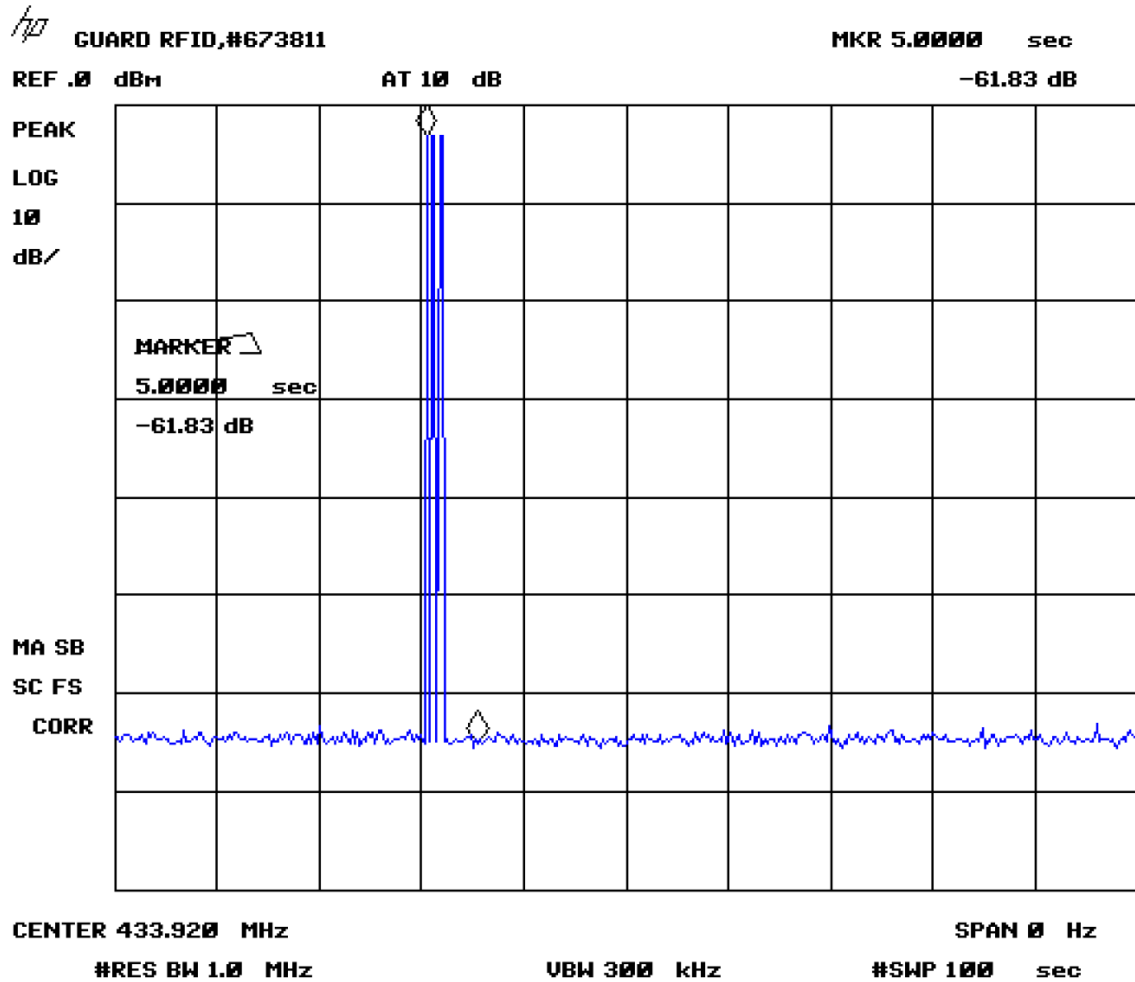
Reviewed Results:

Rule Part No.	Description of Rule	Yes	No	N/A
Pt 15.231(a)	Continuous transmission		No	
Pt 15.231(a)	Control Signals		No	
Pt 15.231(a)	Data transmission with control signal	Yes		
Pt 15.231(a)(1)	Manually operated		No	
	Automatically deactivate within 5 seconds of being released			n/a
15.231(a)(2)	Automatically operated	Yes		
	Deactivate within 5 seconds after activation	Yes		
Pt 15.231(a)(3)	Periodic transmission at regular predetermined intervals	Yes*		

	Polling or supervision transmission, including data, to determine system integrity or transmitters used in security or safety applications requires no total duration of transmission not exceeding 2s/hr.	Yes		
Pt 15.231(a)(4)	Operation involving fire, security, or safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.		No	

*Tag transmits five 1 ms pulses every 5 minutes.

- Measured result of the Turn-on time for Transmitter.



Field Strength of Fundamental

Regulation	FCC15.231:2007
Intentional Radiating Frequency	433.92MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	4.4 °C & 3.6 °C
Relative Humidity	84 % & 85 %
Barometric Pressure:	102.97 kPa & 103.55 kPa
Test Date	Dec. 11, 2008 & Jan. 09, 2009
Sample Number	673811
Calibrated Test Equipment (ID)	106, 227-1, 228
Reference Equipment (ID) (Calibration not required)	124, 233, 235
Electrical Rating	3VDC, Internal battery
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 continually on its RF Transmitter. It was modified to transmit in 100ms intervals for this testing.
- d) It was measured with a receiver - spectrum analyzer, was software controlled.
- e) The test was preformed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix B.

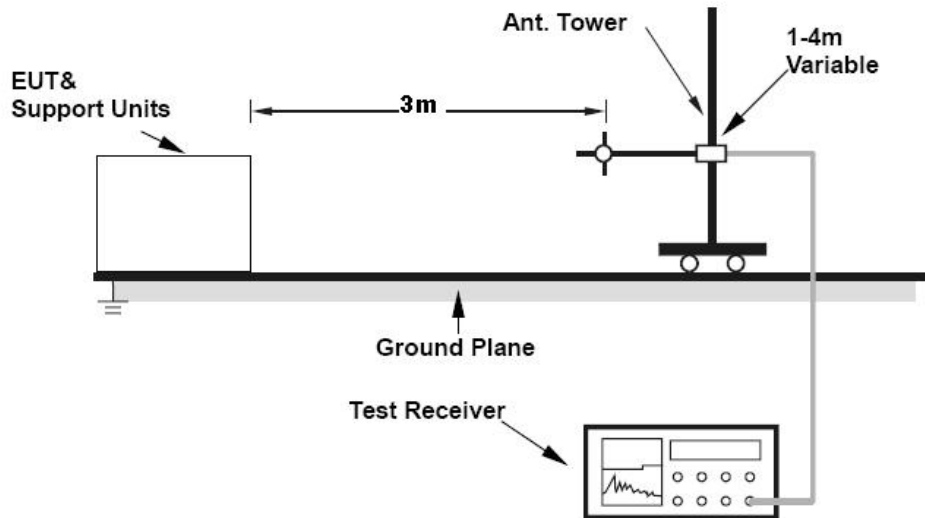


Figure – 1 Test setup for radiated emission at OATS

Test Results:

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

Fundamental Frequency (MHz)	Limit(dBuV/m)	Measured (dBuV/m)	Orthogonal Plane	Pol.	Results
433.92	80.83	64.15	X	H	PASS
		48.06		V	PASS
		80.10	Y	H	PASS

		73.50		V	PASS
		65.97	Z	H	PASS
		80.25		V	PASS

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

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	64.15	16.68	170.0	101.5	H
Project # : 9274, Sample #: 671311						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97 kPa						
Date: Dec. 11, 2008						

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	48.06	32.77	168.3	189.9	V
Project # : 9274, Sample #: 671311						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97 kPa						
Date: Dec. 11, 2008						

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

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	80.10	0.73	150.0	104.9	H
Project # : 9274, Sample #: 671311						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55 kPa						
Date: Jan. 09, 2009						

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	73.50	7.33	156.6	116.9	V
Project # : 9274, Sample #: 671311						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55 kPa						
Date: Jan. 09, 2009						

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

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	65.97	14.86	286.5	100.3	H
Project # : 9274, Sample #: 671311						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55 kPa						
Date: Jan. 09, 2009						

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

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP Measured	Margin	T/T	Tower	Pol
433.920 MHz	80.83	80.25	0.58	267.9	132.3	V
Project # : 9274, Sample #: 671311						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55 kPa						
Date: Jan. 09, 2009						

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	4.4 °C & 3.6 °C
Relative Humidity	84 % & 85 %
Barometric Pressure:	102.97 kPa & 103.55 kPa
Test Date	Dec. 11, 2008 & Jan. 09, 2009
Sample Number	673811
Calibrated Test Equipment (ID)	106, 141, 227-1, 227-2, 228
Reference Equipment (ID) (Calibration not required)	124, 233, 235
Electrical Rating	3VDC, Internal battery
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, $\mu\text{V/m}$ at 3 meters = $56.81818(F) - 6136.3636$; for the band 260-470 MHz, $\mu\text{V/m}$ 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 continually on its RF Transmitter. It was modified to transmit in 100ms intervals for this testing.
- d) It was measured with a receiver - spectrum analyzer, was software controlled.
- e) [The test was preformed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix B.](#)

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)	Orthogonal Plane	Pol.	Results
867.84	46.02	32.18	X	H	PASS
		32.88		V	PASS
		32.96	Y	H	PASS
		33.92		V	PASS
		31.41	Z	H	PASS
		42.35		V	PASS
1301.76	60.83	33.93	X	H	PASS
		33.81		V	PASS
		33.72	Y	H	PASS
		33.83		V	PASS
		33.79	Z	H	PASS
		33.44		V	PASS
1735.68	53.97	38.21	X	H	PASS
		38.22		V	PASS
		36.81	Y	H	PASS
		36.97		V	PASS
		36.80	Z	H	PASS
		37.03		V	PASS
2169.60	53.97	44.33	X	H	PASS
		44.34		V	PASS
		44.01	Y	H	PASS
		44.09		V	PASS
		43.61	Z	H	PASS
		44.09		V	PASS
2603.52		48.40	X	H	PASS

		48.02		V	PASS
		48.41	Y	H	PASS
		48.08		V	PASS
		47.39	Z	H	PASS
		48.44		V	PASS
3037.44	60.83	Under Ambient level	N/A	N/A	N/A
3471.36					
3905.28					
4339.20					

- Field Strength of Spurious Emission; 2nd harmonic, Quasi-peak Detecting, Antenna was used SAS-510-2 , Orthogonal X

LabTest Certification Inc.
 Field Strength of Fundamental and Spurious
 FCC15.231 & 15.205, 3 meters
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	32.18	13.84	0.0	231.8	H
Project # : 9274, Sample #: 673811						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97kPa						
Date: Dec. 11, 2008						

LabTest Certification Inc.
 Field Strength of Fundamental and Spurious
 FCC15.231 & 15.205, 3 meters
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	32.88	13.14	168.3	152.2	V
Project # : 9274, Sample #: 673811						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97kPa						
Date: Dec. 11, 2008						

- Field Strength of Spurious Emission; 2nd harmonic, Quasi-peak Detecting, Antenna was used SAS-510-2 , Orthogonal Y

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	32.96	13.06	197.1	100.0	H
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	33.92	12.10	87.0	140.5	V
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

- Field Strength of Spurious Emission; 2nd harmonic, Quasi-peak Detecting, Antenna was used SAS-510-2 , Orthogonal Z

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	31.41	14.61	171.3	100.5	H
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters

Operator: Jeremy Lee

Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.231	QP_Measured	Margin	T/T	Tower	Pol
867.840 MHz	46.02	42.35	3.67	278.0	132.3	V
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

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

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters, Horizontal
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.93	150.40	101.60	H
1.736 GHz	38.21	138.80	195.90	H
2.170 GHz	44.33	138.80	155.10	H
2.604 GHz	48.40	138.80	100.00	H
3.037 GHz	51.09	138.70	175.80	H
3.471 GHz	57.98	138.70	132.10	H
Project # : 9274, Sample #: 673811				
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97kPa				
Date: Dec. 11, 2008				

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 151.205, 3 meters, Vertical
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.81	156.40	200.10	V
1.736 GHz	38.22	144.80	103.30	V
2.170 GHz	44.34	144.80	104.40	V
2.604 GHz	48.02	144.80	151.10	V
3.037 GHz	58.91	144.80	104.50	V
3.471 GHz	57.58	144.80	104.50	V
Project # : 9274, Sample #: 673811				
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97kPa				
Date: Dec. 11, 2008				

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

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters, Horizontal

Operator: Jeremy Lee Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.72	102.10	108.60	H
1.736 GHz	36.81	91.10	108.60	H
2.170 GHz	44.01	91.10	108.60	H
2.604 GHz	48.41	91.10	108.60	H
3.037 GHz	58.85	91.10	108.60	H
3.471 GHz	57.55	91.10	108.60	H
Project # : 9274, Sample #: 673811				
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa				
Date: Jan. 09, 2009				

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 151.205, 3 meters, Vertical

Operator: Jeremy Lee Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.83	160.90	142.10	V
1.736 GHz	36.97	149.70	142.10	V
2.170 GHz	44.09	149.70	142.10	V
2.604 GHz	48.08	149.70	142.10	V
3.037 GHz	58.82	149.70	142.10	V
3.471 GHz	57.53	149.70	142.10	V
Project # : 9274, Sample #: 673811				
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa				
Date: Jan. 09, 2009				

- Field Strength of Spurious Emissions; 3rd to 10th harmonics, Average Detecting, Antenna was used SAS-571, Orthogonal Z

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters, Horizontal
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.79	153.80	105.60	H
1.736 GHz	36.80	142.10	105.60	H
2.170 GHz	43.61	142.10	105.60	H
2.604 GHz	47.39	142.10	105.60	H
3.037 GHz	58.89	142.10	105.60	H
3.471 GHz	57.56	142.10	105.60	H
Project # : 9274, Sample #: 673811				
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa				
Date: Jan. 09, 2009				

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 151.205, 3 meters, Vertical
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	AVG_Measured	Turn Table	Tower	Pol
1.302 GHz	33.44	159.20	136.50	V
1.736 GHz	37.03	170.30	136.50	V
2.170 GHz	44.09	170.30	136.50	V
2.604 GHz	48.44	170.30	136.50	V
3.037 GHz	59.30	170.30	136.50	V
3.471 GHz	57.56	170.30	136.50	V
Project # : 9274, Sample #: 673811				
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa				
Date: Jan. 09, 2009				

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

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.231 & 15.205, 3 meters, Ambients, Horizontal
 Operator: Jeremy Lee Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 05:12:58 PM, Thursday, December 11, 2008 Company: Guard RFID Solutions Inc.

Frequency MHz	AVG Measured	Turn Table	Tower	Pol
1.302 GHz	33.88	0.00	150.90	H
1.736 GHz	37.89	0.00	150.90	H
2.170 GHz	44.40	0.00	150.90	H
2.604 GHz	48.11	0.00	150.90	H
3.037 GHz	59.30	0.00	150.90	H
3.471 GHz	57.97	0.00	150.90	H
3.905 GHz	61.36	0.00	150.90	H
4.339 GHz	64.79	0.00	150.90	H
Project # : 9274, Sample #: 673811				
Temp.: 4.4 C, Hum.: 84 % Barometer Pres.:102.97 kPa				
Date: Dec. 11, 2008				

LabTest Certification Inc.
 Field Strength of Spurious, Fc=433.92MHz
 FCC15.209 & 15.205, 3 meters, Ambients, Vertical
 Operator: Jeremy Lee Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 05:23:50 PM, Thursday, December 11, 2008 Company: Guard RFID Solutions Inc.

Frequency MHz	AVG Measured	Turn Table	Tower	Pol
1.302 GHz	33.90	0.00	150.90	V
1.736 GHz	37.94	0.00	150.90	V
2.170 GHz	44.76	0.00	150.90	V
2.604 GHz	48.13	0.00	150.90	V
3.037 GHz	59.32	0.00	150.90	V
3.471 GHz	57.60	0.00	150.90	V
3.905 GHz	61.40	0.00	150.90	V
4.339 GHz	64.40	0.00	150.90	V
Project # : 9274, Sample #: 673811				
Temp.: 4.4 C, Hum.: 84 % Barometer Pres.:102.97 kPa				
Date: Dec. 11, 2008				

Radiated Emission; Unintentional Radiators

Regulation	FCC15.109:2007, Class B
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	4.4 °C & 3.6 °C
Relative Humidity	84 % & 85 %
Barometric Pressure:	102.97 kPa & 103.55 kPa
Test Date	Dec. 11, 2008 & Jan. 09, 2009
Sample Number	673811
Calibrated Test Equipment (ID)	106, 112, 227-1, 228
Reference Equipment (ID) (Calibration not required)	124, 233, 235
Electrical Rating	3VDC, Internal battery
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 ocured at sleep state.

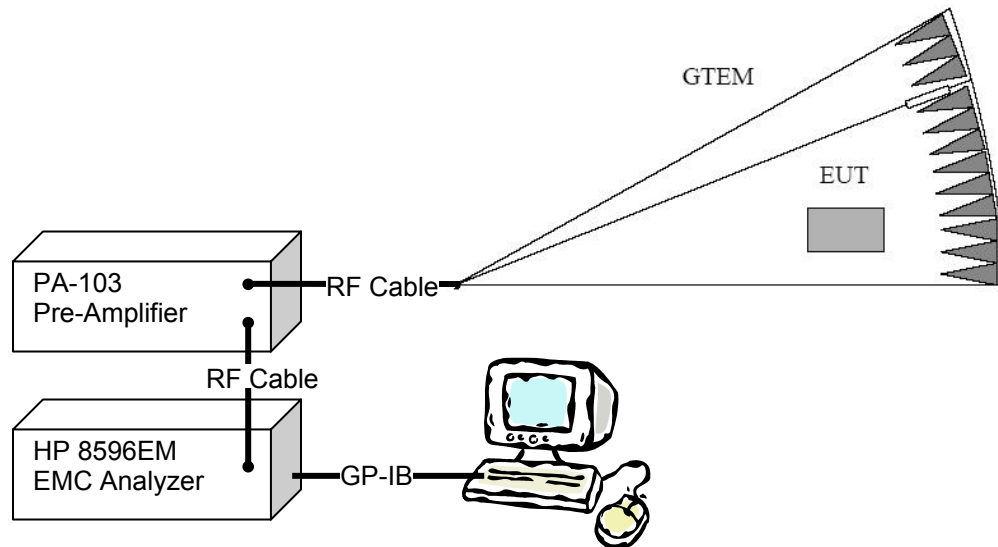


Figure – 2 The setup for Radiated emission test in GTEM

Test Setup for Open Area Test Site(OATS)

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

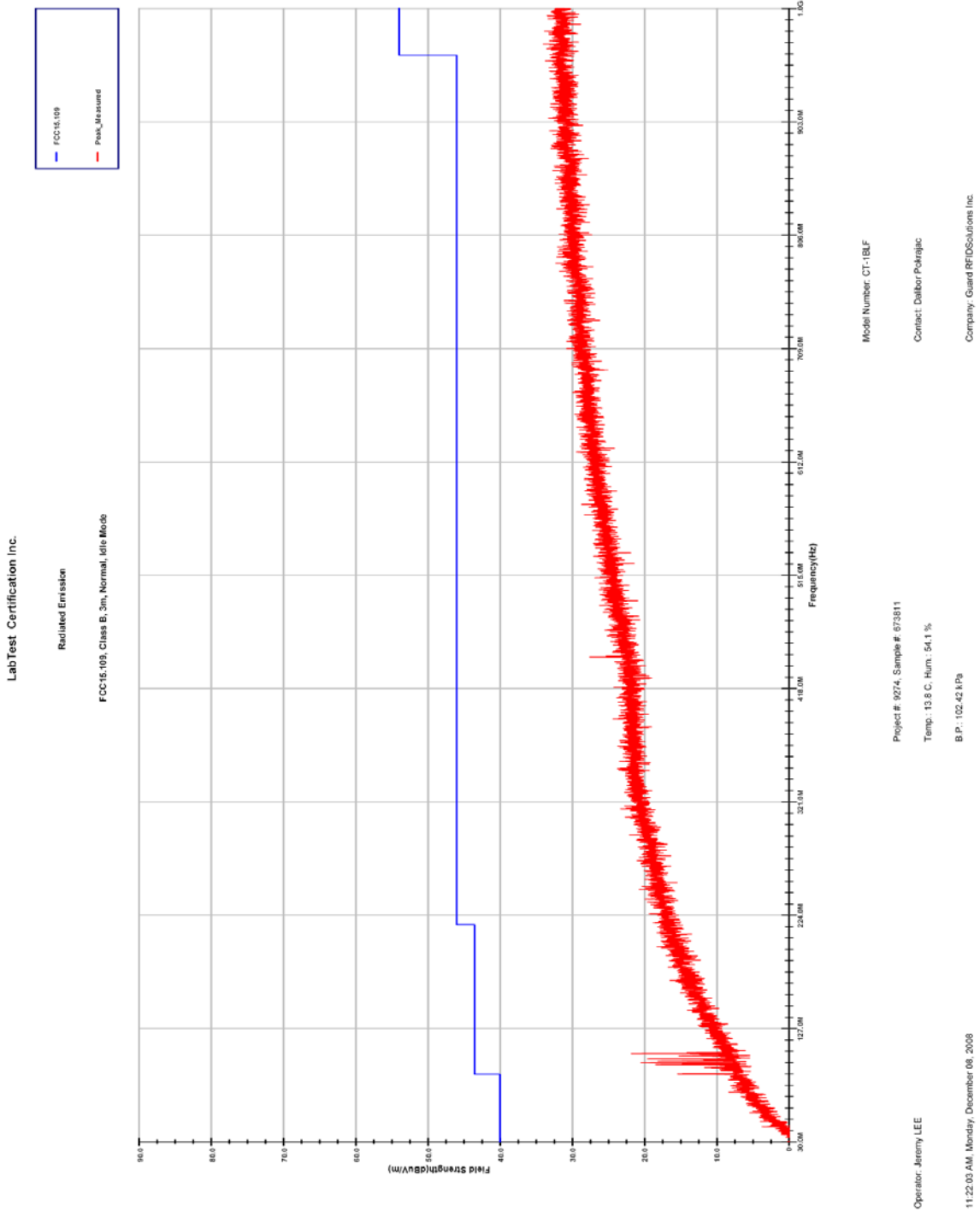
- The EUT was placed on a wooden table, and it was put on the turning ground plate.
- The EUT was set up on 3 meter(s) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- It is measured with a receiver - spectrum analyzer, was software controlled.
- Test frequencies were detected by the results of pre-scan, when the peak readings were within 10dB of the limit line.
- The test was preformed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix B.

Test Results:

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

There was no signal over limit.

- Pre-scan test results of Radiated Emission; Sleep state



- Test results of Radiated Emission at OATS; Sleep state, Orthogonal X

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class B, 3 meters, Horizontal
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
444.906 MHz	46.02	22.73	23.29	168.3	100.1	H
Project # : 9274, Sample #: 673811						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97 kPa						
Date: Dec. 11, 2008						

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class B, 3 meters, Vertical
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
444.906 MHz	46.02	22.58	23.44	150.7	163.4	V
Project # : 9274, Sample #: 673811						
Temp.: 4.4 C, Hum.: 84 %, Barometer Pres.:102.97 kPa						
Date: Dec. 11, 2008						

- Test results of Radiated Emission at OATS; Sleep state, Orthogonal Y

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class B, 3 meters, Horizontal
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
444.906 MHz	46.02	22.45	23.57	145.1	100.2	H
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class B, 3 meters, Vertical
 Operator: Jeremy Lee
 Model #: CT-1BLF
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
444.906 MHz	46.02	22.26	23.76	143.2	140.5	V
Project # : 9274, Sample #: 673811						
Temp.: 3.6 C, Hum.: 85 %, Barometer Pres.:103.55kPa						
Date: Jan. 09, 2009						

The Bandwidth of the emission

Regulation	FCC15.231: 2007
Temperature	14.5 °C
Relative Humidity	49.3 %
Barometric Pressure:	103.25 kPa
Test Date	Dec. 08, 2008
Sample Number	673811
Calibrated Test Equipment (ID)	106, 228
Reference Equipment (ID) (Calibration not required)	N/A
Electrical Rating	3VDC, Internal battery
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.
- It was measured with a receiver - spectrum analyzer.

Test Results:

Center Frequency (MHz)	Limit(<0.25%, kHz)	Measured(kHz)	Results
433.92	1084.8	650.0	PASS

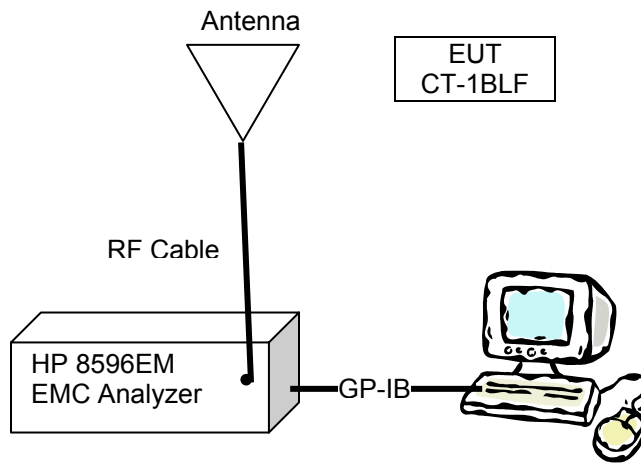


Figure – 3 The setup for Bandwidth of the emission test

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

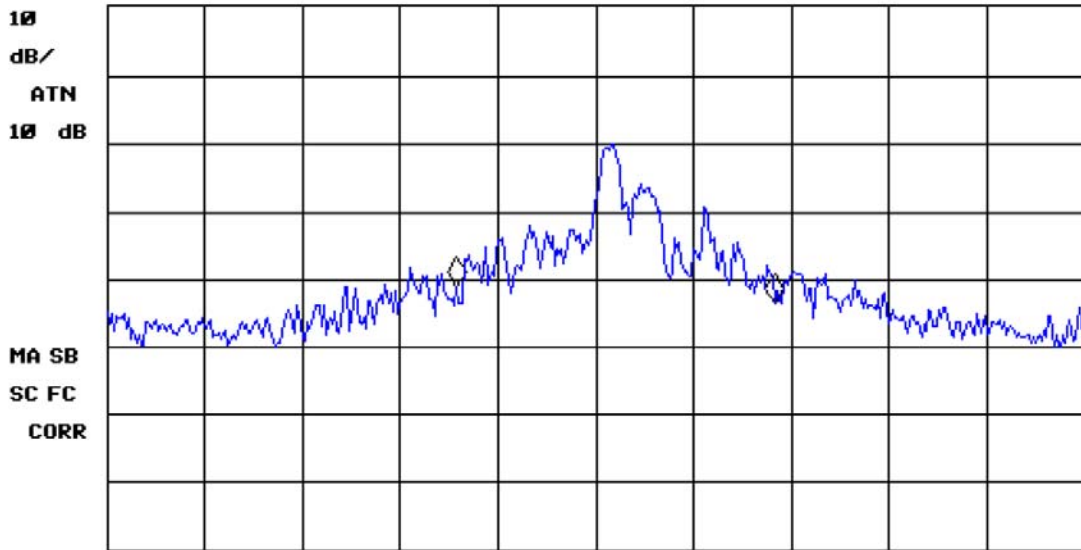
09:31:52 DEC 08, 2008
 GUARD RFID,673811

MARKER
 650 kHz
 -2.53 dB

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 650 kHz
 -2.53 dB

MARKER
 NORMAL

LOG REF -40.0 dBm



MARKER

MARKER
 AMPTD

SELECT
 1 2 3 4

MARKER 1
 ON OFF

More
 1 of 3

CENTER 433.920 MHz

#IF BW 10 kHz

AUG BW 10 kHz

SPAN 2.000 MHz

SWP 60.0 msec

Conducted Emission

Regulation	FCC15.207:2007
Sample Number	673811
Electrical Rating	3VDC
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, 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
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	N/A	N/A	N/A	N/A
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	N/A	N/A	N/A	N/A
235	Turn table /Tower System	Sunol Sciences Co.	SC104V	031407-1	N/A	N/A	N/A	N/A

Appendix B: Photographs

- EUT : Top View



- EUT : Bottom View



- Test configuration at OATS



- Orthogonal plane: X



- Orthogonal plane: Y



- Orthogonal plane: Z



END OF REPORT