



REPORT

For

Guard RFID Solutions Inc.

#140 – 766 Cliveden Place
Delta, British Columbia
V3M 6C7, Canada

Date: June 28, 2011
Report No.: 10385-1E
Revision No.: 0
Project No.: 10385
Equipment: RFID TAG
Model No.: INDUSTRIALTAG
FCC ID: VZKIT



ONE STOP GLOBAL CERTIFICATION SOLUTIONS



3133-20800 Westminster Hwy, Richmond, BC
V6V 2W3, Canada
Phone: 604-247-0444
Fax: 604-247-0442
www.labtestcert.com

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TEST REPORT	
FCC Part 15.231/IC RSS 210	
Report reference No.	10385-1E
Report Revision History:	✓ Rev. 0: June 28, 2011
Tested by (printed name and signature)	Jeremy Lee 
Approved by (printed name and signature)	Kavinder Dhillon, Eng.L 
Date of issue	June 28, 2011
<small>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).</small>	
Testing Laboratory Name	LabTest Certification Inc.
Address	3133 – 20800 Westminster Hwy, Richmond, B.C. V6V-2W3
FCC Site Registration No.	444229
IC Site Registration No.	5970B-1
OATS Test Location Name	LabTest Certification Inc.
Address	17325-48Ave., Surrey, B.C., Canada
Applicant's Name	Guard RFID Solutions Inc.
Address	#140 – 766 Cliveden Place, Delta, B.C. V3M 6C7, Canada
Manufacturer's Name	Same as Applicant
Address	Same as Applicant
Test specification	
Standards	<ul style="list-style-type: none"> ➤ FCC 15:2009 ➤ RSS-210, Issue 7, June 2007
Testing	
Date of receipt of test item	June 07, 2011
Date(s) of performance of test	June 07 to 24, 2011
Test item description	EMC
Trademark	None
Model and/or type reference	INDUSTRIALTAG
Serial numbers	000135
Electrical Rating(s)	3Vdc Lithium Ion battery

Particulars: test item vs. test requirements	
Application for	RFIDTAG
Operating Transmit Frequency	433.92MHz
Operating Receive Frequency	125kHz
Blink Intervaln	5minutes static,20 sec. during motion
Equipment mobility	Yes
Operating condition.....	-30 to +50 °C
Mass of equipment (g)	80
Dimension(LengthX Width X Height)	71 mm X 75mm X 25.4 mm
Nominal Voltages for:	<input checked="" type="checkbox"/> stand-alone equipment <input type="checkbox"/> combined (or host) equipment <input type="checkbox"/> test jig
Supply Voltage:	_____ AC _____ Amps <input checked="" type="checkbox"/> 3V _____ DC _____ Amps
If DC Power:	_____ Internal Power Supply _____ External Power Supply or AC/DC adapter <input checked="" 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 checked="" type="checkbox"/> Lithium-Ion <input type="checkbox"/> Lead Acid (Vehicle regulated) <input type="checkbox"/> Other
Test case verdicts	
Test case does not apply to the test object :	N/A
Test item does meet the requirement	Pass
Test item does not meet the requirement ...:	Fail

General product information:

The EUT, IT-1BLFor IT-2BLF, is highly ruggedized Active Tag that is waterproof and can withstand significant shock and vibration, as they are specially developed for tracking, location and protection of items indoors and outdoors in industrial or commercial applications. It is designed to be mounted by the use of screws in the holes provided in the tag housing, or by means of a built-in magnet for application on magnetic surfaces. The tag may be placed on metal objects, with little degradation of its performance.

The tag contains a UHF transmitter and a Low Frequency (LF) Receiver. It periodically transmits location "Blink" messages, and send an instantaneous message when entering GuardRFID's Tag Exciter field. This combination enables tags to be tracked and located in real time, as well as allowing for instant detection of tags at choke points, such as doors or gates. This functionality also allows use of tags in access control and security applications, as each tag has a unique identity and can be configured to have its own rules pertaining to discovery and access privileges. The IT-2BLF also contains a motion sensor which can be used to control the Blink rate of the tag or for reporting the tag in motion for business processes or security purposes.

Transmission of data from the tags is exceptionally rapid, allowing literally hundreds of Tags to be detected simultaneously at choke points, and also enabling a high density of Tags to coexist within the system coverage area.

Frequencies

Module	Signal	Frequencies (MHz)
CC1150	Transmitter RF	433.92
U2A	DCO	1.0
AS3930	Receiver LF	0.125
U2A	Clock	0.032768

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

Equipment	Model No.	Serial No.	Manufacturer	Data Cable	Power Cord	Approvals/Standards
N/A						

ARRANGEMENT OF INTERFACE CABLES: All the above equipment/interface cables were placed in worst case positions to maximize emission signals during emission test. (please reference photographs).

Grounding: Groundings was in accordance with the manufacturer's requirements and conditions for the intended use.

Software and Firmware

Description	Version
N/A	

Worst-case configuration and mode of operation during testing

The EUT was modified to transmit the RF signal every 1 second for FCC testing. Regularly, the RF will be turned on every 5 minutes.

Modifications Required for Compliance

None.

Test Equipment Verified for function

Model #	Description	Checked Function	Results
E7405A	Spectrum Analyzer	Frequency and Amplitude	Connected 50MHz and -20 dBm Ref_signal and checked OK.
PA-103	Pre-Amplifier, 30 to 1,000MHz	Gain at 30 and 1,000MHz	Gains were normal.

8449B	Pre-Amplifier, 1 to 26.5GHz	Gain at 1 to 4GHz	Gains were normal.
EMCO 3110B	Anatenna, 30 to 300MHz	Checked structure	Normal – no damage.
SAS-510-2	Antenna, 300 to 1000MHz	Checked structure	Normal – no damage.
SAS-571	Antenna, 1 to 18GHz	Checked structure	Normal – no damage.
LCI-001	RF Cable, up to 1GHz	Insertion Losses from 30 to 1000MHz	Losses were normal.
SAS-26G-0.5	RF Cable, 1 to 26.5GHz	Insertion Losses from 1 to 4GHz	Losses were normal.
SP-2000-20R	Humidity/ Temperature Logger	Compared room Temp. and Hum. with another data logger	Working normally

Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

Parameter	Uncertainty(dB)
Radiated Emission, 30 to 300MHz	4.94
Radiated Emission, 300 to 1,000MHz	5.05
Radiated Emission, 1 to 18GHz	5.05

Uncertainty figures are valid to a confidence level of 95%.

Markings



You should refer to the clause of FCC Part 2 Section 2.295 and FCC Part 15 Section 15.19 for information to be contained on the label as well as information about the label. Any other statements or labelling requirements may appear on a separate label at the option of the applicant/grantee.

According to FCC Section 2.925(a),

"(a)Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term *FCC ID* in capital letters on a single line, and shall be a type size large enough to be legible without the aid of magnification.

Example: FCC ID XXX123. XXX-Grantee Code 123-Equipment Product Code"

According to FCC Section 15.19(a)(3), the following statement must be include on the identification label: 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.

Note: Some jurisdictions in Canada require Cautions and Warnings to also be in French. It is the responsibility of the Customer to provide bilingual marking, where applicable, in accordance with the requirements of the local regulatory authorities. It is the responsibility of the Customer to determine this requirement and have bilingual wording added to the "Markings".

Test Summary

Test Type	Regulation	Measurement Method	Result
Field Strength of Fundamental - Intentional radiator	15.231 and RSS-210	ANSI C63.10:2009	PASS
Field Strength of Spurious Emissions -Intentional radiator	15.231, 15.205, 15.209 and RSS-210	ANSI C63.10:2009	PASS
Radiated Emissions-Unintentional radiators	15.109, Class B and RSS-210	ANSI C63.10:2009	PASS
The Bandwidth of the emission	15.231 and RSS-210	ANSI C63.10:2009	PASS
Conducted Emissions	15.207 and ICES-003	ANSI C63.10:2009	N/A

Summary of the operation of RF Transmission

Regulation	FCC15.231:2009
Intentional Radiating Frequency	433.92MHz
Sample Number	894504
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:

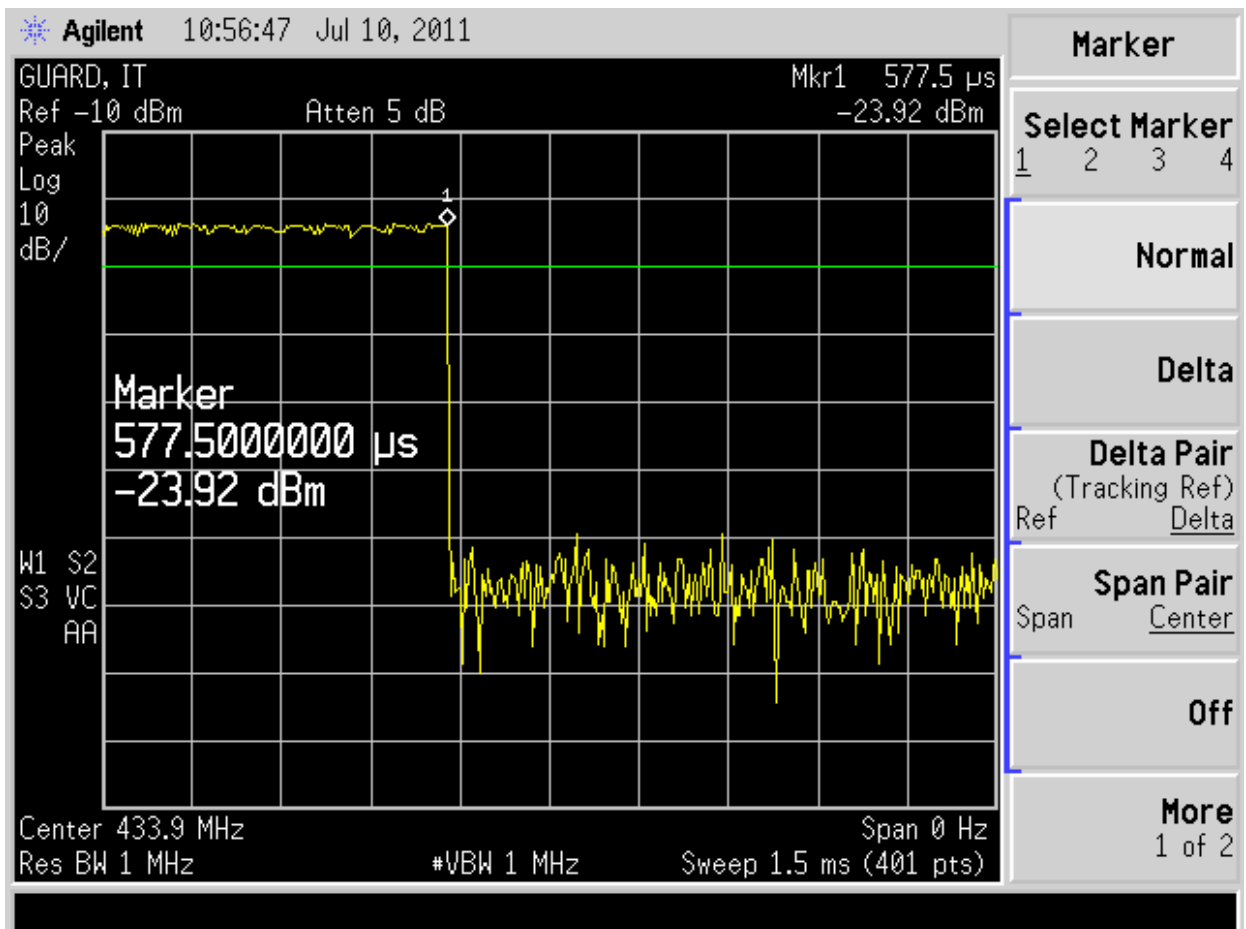
X **Pass** **Fail** **N/A**

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		

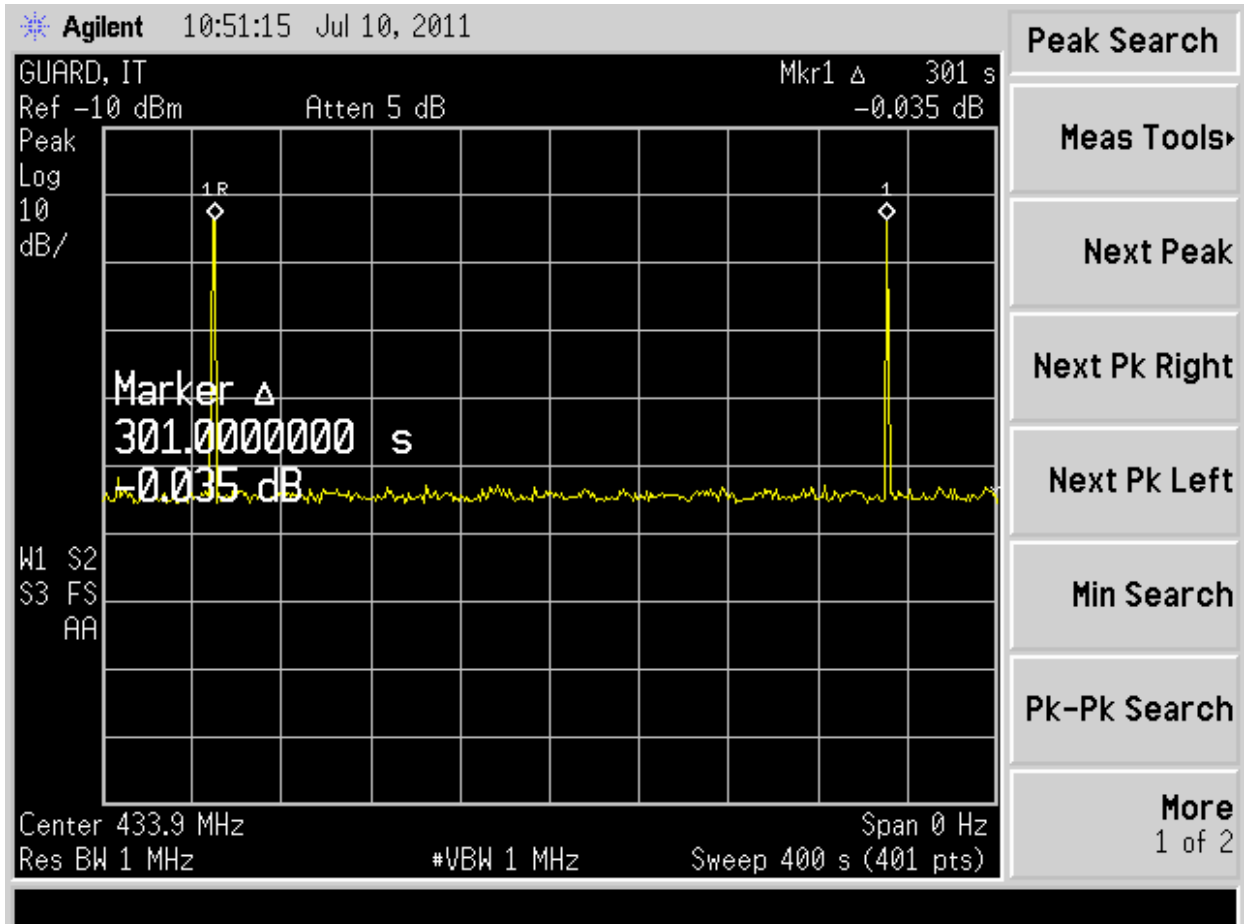
Pt 15.231(a)(4)	Operation involving fire, security, or safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.		No	
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*Tag transmits one 577.5µs pulse every 5 minutes in static or every 20sec. in during motion.

- Measured result of the Automatic Turned-on and off time.



- Measured result of the period for Automatic Turned-on time.



Field Strength of Fundamental

Regulation	FCC15.231:2009
Intentional Radiating Frequency	433.92MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	16.7 to 18.9 °C
Relative Humidity	53.9 to 64.2 %
Barometric Pressure:	101.65 to 101.69 kPa
Test Date	June 23, 2011
Sample Number	894504
Calibrated Test Equipment (ID)	227-2, 228, 272
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/cabc0248>

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 C63.10, 2009.**

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 1000ms intervals for this testing.
- d) It was measured with a receiver - Spectrum analyzer, was software controlled.
- e) The test was performed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix C.

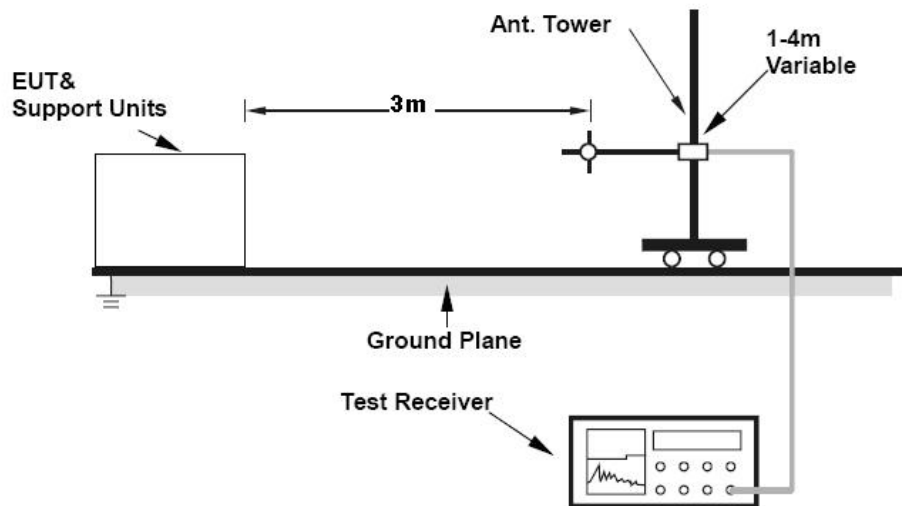


Figure – 1 Test setup for radiated emission at OATS

Test Results:

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

X Pass Fail N/A

Fundamental Frequency (MHz)	Limit (dBuV/m)	Measured (dBuV/m)	Margin (dB)	Orthogonal Plane	Pol.	Results
433.92	80.83	73.59	7.24	X	H	PASS
		65.55	15.28		V	PASS
		59.65	21.18	Y	H	PASS
		68.50	12.33		V	PASS
		75.54	5.29	Z	H	PASS
		67.60	13.23		V	PASS

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

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

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal X_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

10:34:56 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.882500 MHz	82.28	16.64	7.06	-32.39	73.59	80.83	7.24	270.1	100.2	H
Project # : 10385, Sample #: 894504										
Temp.: 16.7 C, Hum.: 64.2 %										
Barometer Pres.: 101.65 kPa										

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal X_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

10:34:56 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.945500 MHz	74.60	16.28	7.06	-32.39	65.55	80.83	15.28	321.6	230.0	V
Project # : 10385, Sample #: 894504										
Temp.: 16.7 C, Hum.: 64.2 %										
Barometer Pres.: 101.65 kPa										

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

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Y_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

11:07:31 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.846500 MHz	68.34	16.64	7.06	-32.39	59.65	80.83	21.18	39.9	150.1	V
Project # : 10385, Sample #: 894504										
Temp.: 18.1 C, Hum.: 53.9 %										
Barometer Pres.: 101.69 kPa										

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Y_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

11:07:31 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.945500 MHz	77.55	16.28	7.06	-32.39	68.50	80.83	12.33	321.6	230.0	V
Project # : 10385, Sample #: 894504										
Temp.: 18.1 C, Hum.: 53.9 %										
Barometer Pres.: 101.69 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

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

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Z_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

11:36:16 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.980500 MHz	84.23	16.64	7.06	-32.39	75.54	80.83	5.29	24.9	101.2	H
Project # : 10385, Sample #: 894504										
Temp.: 18.9 C, Hum.: 59.3 %										
Barometer Pres.: 101.69 kPa										

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Z_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

11:36:16 AM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
433.843800 MHz	76.65	16.28	7.06	-32.39	67.60	80.83	13.23	289.9	100.1	V
Project # : 10385, Sample #: 894504										
Temp.: 18.9 C, Hum.: 59.3 %										
Barometer Pres.: 101.69 kPa										

Field Strength of Spurious Emission

Regulation	FCC15.231: 2009
Intentional Radiating Frequency	433.92MHz
Detecting Method	Average and Quasi-Peak Detector
IF Bandwidth	1MHz and 120kHz
Temperature	20.1 to 25.2 °C
Relative Humidity	33.1 to 58.4 %
Barometric Pressure:	101.70 to 101.76 kPa
Test Date	June 23 & 24, 2011
Sample Number	894504
Calibrated Test Equipment (ID)	227-2, 227-3, 228, 272, 273
Reference Equipment (ID) (Calibration not required)	124, 227-5, 233, 235
Electrical Rating	3VDC, Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

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, 15.209:2009 and ANSI C63.10: 2009.**

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 1000ms intervals for this testing.
 d) It was measured with a receiver - spectrum analyzer, was software controlled.
 e) The test was performed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix C.

Test Results:

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

X **Pass** **Fail** **N/A**

Harmonic Frequency (MHz)	Detector	Limit (dBuV/m)	Measured (dBuV/m)	Margin (dB)	Orthogonal Plane	Pol.	Results
867.84	Quasi-Peak	60.83	46.73	14.10	X	H	PASS
			43.49	17.34	Y	V	PASS
1301.76	Peak	73.98	65.06	8.92	Y	H	PASS
			67.33	6.65	X	V	PASS
	Averaging	53.98	27.73	26.25	X	H	PASS
			27.96	26.02	Z	V	PASS
1735.68	Peak	80.83	47.49	33.34	X	H	PASS
			47.44	33.39	X	V	PASS
	Averaging	60.83	29.39	31.44	X	H	PASS
			31.24	29.59	Z	V	PASS
2169.60	Peak	80.83	60.25	20.58	X	H	PASS
			52.02	28.81	Y	V	PASS
	Averaging	60.83	29.74	31.09	X	H	PASS
			29.64	31.19	Z	V	PASS
2603.52	Peak	80.83	50.04	30.79	X	H	PASS
			46.19	34.64	X	V	PASS
	Averaging	60.83	32.46	28.37	X	H	PASS
			31.83	29.00	Z	V	PASS
3037.44	Peak	80.83	49.77	31.06	X	H	PASS
			55.81	25.02	X	V	PASS
	Averaging	60.83	31.38	29.45	Y	H	PASS
			31.01	29.82	Z	V	PASS
3471.36	Peak	80.83	48.85	31.98	Y	H	PASS
			50.49	30.34	Z	V	PASS
	Averaging	60.83	32.29	28.54	Y	H	PASS
			32.43	28.40	Z	V	PASS
3905.28	Peak	73.98	59.55	14.43	Z	H	PASS
			53.19	20.79	Z	V	PASS
	Averaging	53.98	36.14	17.84	Z	H	PASS
			31.08	22.90	Z	V	PASS
4339.20	Peak	73.98	46.75	27.23	Z	H	PASS
			48.84	25.14	X	V	PASS
	Averaging	53.98	29.95	24.03	Z	H	PASS
			30.19	23.79	Z	V	PASS

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

- 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
 FCC 15.231, 3 meters, Orthogonal X_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

12:49:43 PM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.791000	45.95	22.11	9.85	-31.19	46.73	60.83	14.10	270.1	100.3	H
Project # : 10385, Sample #: 894504										
Temp.: 20.8 C, Hum.: 50.1 %										
Barometer Pres.:101.70 kPa										

LabTest Certification Inc.
 Field Strength of Spurious
 FCC 15.231, 3 meters, Orthogonal X_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

12:49:43 PM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.832200	27.92	22.67	9.85	-31.19	29.26	60.83	31.57	321.1	101.1	V
Project # : 10385, Sample #: 894504										
Temp.: 20.8 C, Hum.: 50.1 %										
Barometer Pres.:101.70 kPa										

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

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Y_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

12:35:49 PM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.776400	27.44	22.11	9.85	-31.19	28.22	60.83	32.61	39.7	100.1	H
Project # : 10385, Sample #: 894504										
Temp.: 20.5 C, Hum.: 53.7 %										
Barometer Pres.:101.70 kPa										

LabTest Certification Inc.
 Field Strength of Spurious
 FCC 15.231, 3 meters, Orthogonal Y_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

12:35:49 PM, Thursday, June 23, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.809400	42.15	22.67	9.85	-31.19	43.49	60.83	17.34	321.2	130.1	V
Project # : 10385, Sample #: 894504										
Temp.: 20.5 C, Hum.: 53.7 %										
Barometer Pres.:101.70 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

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

LabTest Certification Inc.
 Field Strength of Fundamental
 FCC 15.231, 3 meters, Orthogonal Z_Horizontal

Operator: Jeremy Lee

12:23:18 PM, Thursday, June 23, 2011

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.797700	41.39	22.11	9.85	-31.19	42.17	60.83	18.66	25.0	101.2	H
Project #: 10385, Sample #: 894504										
Temp.: 20.1 C, Hum.: 58.4 %										
Barometer Pres.: 101.70 kPa										

LabTest Certification Inc.
 Field Strength of Spurious
 FCC 15.231, 3 meters, Orthogonal Z_Vertical

Operator: Jeremy Lee

12:23:18 PM, Thursday, June 23, 2011

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
867.864300	29.22	22.67	9.85	-31.19	30.56	60.83	30.27	290.0	101.1	V
Project #: 10385, Sample #: 894504										
Temp.: 20.1 C, Hum.: 58.4 %										
Barometer Pres.: 101.70 kPa										

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

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal X, Horizontal

Operator: Jeremy Lee

01:00:25 PM, Friday, June 24, 2011

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

Frequency GHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760	68.90	23.84	1.12	-30.00	63.87	73.98	10.11	270.2	100.0	H
1.735680	51.09	25.15	1.25	-30.00	47.49	80.83	33.34	270.2	100.0	H
2.169600	61.52	27.40	1.33	-30.00	60.25	80.83	20.58	270.2	100.0	H
2.603520	49.94	28.68	1.42	-30.00	50.04	80.83	30.79	270.2	100.0	H
3.037440	48.27	29.99	1.51	-30.00	49.77	80.83	31.06	270.2	100.0	H
3.471360	45.85	29.95	1.59	-30.00	47.39	80.83	33.44	270.2	100.0	H
3.905280	51.33	31.05	1.68	-30.00	54.06	73.98	19.92	270.2	100.0	H
4.339200	43.64	30.85	1.77	-30.00	46.26	73.98	27.72	270.2	100.0	H
Project #: 10385, Sample #: 894504										
Temp.: 23.3 C, Hum.: 37.1 %										
Barometer Pres.: 101.76 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal X, Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:00:25 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760 GHz	72.59	23.62	1.12	-30.00	67.33	73.98	6.65	320.2	100.0	V
1.735680 GHz	50.96	25.23	1.25	-30.00	47.44	80.83	33.39	320.2	100.0	V
2.169600 GHz	51.34	27.40	1.33	-30.00	50.08	80.83	30.75	320.2	100.0	V
2.603520 GHz	46.09	28.68	1.42	-30.00	46.19	80.83	34.64	320.2	100.0	V
3.037440 GHz	54.65	29.65	1.51	-30.00	55.81	80.83	25.02	320.2	100.0	V
3.471360 GHz	45.83	29.68	1.59	-30.00	47.11	80.83	33.72	320.2	100.0	V
3.905280 GHz	45.18	30.96	1.68	-30.00	47.82	73.98	26.16	320.2	100.0	V
4.339200 GHz	46.16	30.91	1.77	-30.00	48.84	73.98	25.14	320.2	100.0	V
Project #: 10385, Sample #: 894504										
Temp.: 23.3 C, Hum.: 37.1 %										
Barometer Pres.:101.76 kPa										

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

LabTest Certification Inc.
 Field Strength of Spurious, AVG Detector
 FCC 15.231, 3 meters, Orthogonal X, Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:00:25 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T degree	Tower cm	Pol
1.301760 GHz	32.96	23.84	1.12	-30.00	27.93	53.98	26.05	270.2	100.0	H
1.735680 GHz	32.99	25.15	1.25	-30.00	29.39	60.83	31.44	270.2	100.0	H
2.169600 GHz	31.01	27.40	1.33	-30.00	29.74	60.83	31.09	270.2	100.0	H
2.603520 GHz	32.36	28.68	1.42	-30.00	32.46	60.83	28.37	270.2	100.0	H
3.037440 GHz	29.64	29.99	1.51	-30.00	31.14	60.83	29.69	270.2	100.0	H
3.471360 GHz	30.69	29.95	1.59	-30.00	32.23	60.83	28.60	270.2	100.0	H
3.905280 GHz	32.41	31.05	1.68	-30.00	35.14	53.98	18.84	270.2	100.0	H
4.339200 GHz	26.77	30.85	1.77	-30.00	29.39	53.98	24.59	270.2	100.0	H
Project #: 10385, Sample #: 894504										
Temp.: 23.3 C, Hum.: 37.1 %										
Barometer Pres.:101.76 kPa										

LabTest Certification Inc.
 Field Strength of Spurious, AVG Detector
 FCC 15.231, 3 meters, Orthogonal X, Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:00:25 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T degree	Tower cm	Pol
1.301760 GHz	32.99	23.62	1.12	-30.00	27.73	53.98	26.25	320.2	100.0	V
1.735680 GHz	33.68	25.23	1.247	-30.00	30.16	60.83	30.67	320.2	100.0	V
2.169600 GHz	30.66	27.40	1.334	-30.00	29.40	60.83	31.43	320.2	100.0	V
2.603520 GHz	31.25	28.68	1.421	-30.00	31.35	60.83	29.48	320.2	100.0	V
3.037440 GHz	29.79	29.65	1.507	-30.00	30.95	60.83	29.88	320.2	100.0	V
3.471360 GHz	30.94	29.68	1.594	-30.00	32.22	60.83	28.61	320.2	100.0	V
3.905280 GHz	27.95	30.96	1.681	-30.00	30.59	53.98	23.39	320.2	100.0	V
4.339200 GHz	26.66	30.91	1.768	-30.00	29.34	53.98	24.64	320.2	100.0	V
Project #: 10385, Sample #: 894504										
Temp.: 23.3 C, Hum.: 37.1 %										
Barometer Pres.:101.76 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

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

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal Y, Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:23:10 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760 GHz	70.09	23.84	1.12	-30.00	65.06	73.98	8.92	39.8	100.0	H
1.735680 GHz	47.40	25.15	1.25	-30.00	43.80	80.83	37.03	39.8	100.0	H
2.169600 GHz	59.87	27.40	1.33	-30.00	58.60	80.83	22.23	39.8	100.0	H
2.603520 GHz	45.94	28.68	1.42	-30.00	46.04	80.83	34.79	39.8	100.0	H
3.037440 GHz	47.15	29.99	1.51	-30.00	48.65	80.83	32.18	39.8	100.0	H
3.471360 GHz	47.31	29.95	1.59	-30.00	48.85	80.83	31.98	39.8	100.0	H
3.905280 GHz	55.82	31.05	1.68	-30.00	58.55	73.98	15.43	39.8	100.0	H
4.339200 GHz	43.03	30.85	1.77	-30.00	45.65	73.98	28.33	39.8	100.0	H
Project #: 10385, Sample #: 894504										
Temp.: 25.2 C, Hum.: 33.1 %										
Barometer Pres.: 101.76 kPa										

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal Y, Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:23:10 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760 GHz	72.39	23.62	1.12	-30.00	67.13	73.98	6.85	320.2	100.0	V
1.735680 GHz	50.40	25.23	1.25	-30.00	46.88	80.83	33.95	320.2	100.0	V
2.169600 GHz	53.28	27.40	1.33	-30.00	52.02	80.83	28.81	320.2	100.0	V
2.603520 GHz	45.45	28.68	1.42	-30.00	45.55	80.83	35.28	320.2	100.0	V
3.037440 GHz	50.94	29.65	1.51	-30.00	52.10	80.83	28.73	320.2	100.0	V
3.471360 GHz	45.17	29.68	1.59	-30.00	46.45	80.83	34.38	320.2	100.0	V
3.905280 GHz	44.19	30.96	1.68	-30.00	46.83	73.98	27.15	320.2	100.0	V
4.339200 GHz	42.65	30.91	1.77	-30.00	45.33	73.98	28.65	320.2	100.0	V
Project #: 10385, Sample #: 894504										
Temp.: 25.2 C, Hum.: 33.1 %										
Barometer Pres.: 101.76 kPa										

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

LabTest Certification Inc.
 Field Strength of Spurious, AVG Detector
 FCC 15.231, 3 meters, Orthogonal Y, Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:23:10 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T degree	Tower cm	Pol
1.301760 GHz	32.64	23.84	1.12	-30.00	27.61	53.98	26.37	39.8	100.0	H
1.735680 GHz	31.81	25.15	1.25	-30.00	28.21	60.83	32.62	39.8	100.0	H
2.169600 GHz	30.84	27.40	1.33	-30.00	29.57	60.83	31.26	39.8	100.0	H
2.603520 GHz	31.79	28.68	1.42	-30.00	31.89	60.83	28.94	39.8	100.0	H
3.037440 GHz	29.88	29.99	1.51	-30.00	31.38	60.83	29.45	39.8	100.0	H
3.471360 GHz	30.75	29.95	1.59	-30.00	32.29	60.83	28.54	39.8	100.0	H
3.905280 GHz	31.63	31.05	1.68	-30.00	34.36	53.98	19.62	39.8	100.0	H
4.339200 GHz	26.63	30.85	1.77	-30.00	29.25	53.98	24.73	39.8	100.0	H
Project #: 10385, Sample #: 894504										
Temp.: 25.2 C, Hum.: 33.1 %										
Barometer Pres.: 101.76 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

LabTest Certification Inc.
 Field Strength of Spurious, AVG Detector
 FCC 15.231, 3 meters, Orthogonal Y, Vertical

Operator : Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:23:10 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T degree	Tower cm	Pol
1.301760 GHz	32.55	23.62	1.121	-30.00	27.29	53.98	26.69	320.2	100.0	V
1.735680 GHz	33.09	25.23	1.247	-30.00	29.57	60.83	31.26	320.2	100.0	V
2.169600 GHz	30.63	27.40	1.334	-30.00	29.37	60.83	31.46	320.2	100.0	V
2.603520 GHz	31.30	28.68	1.421	-30.00	31.40	60.83	29.43	320.2	100.0	V
3.037440 GHz	29.57	29.65	1.507	-30.00	30.73	60.83	30.10	320.2	100.0	V
3.471360 GHz	30.80	29.68	1.594	-30.00	32.08	60.83	28.75	320.2	100.0	V
3.905280 GHz	27.97	30.96	1.681	-30.00	30.61	53.98	23.37	320.2	100.0	V
4.339200 GHz	26.78	30.91	1.768	-30.00	29.46	53.98	24.52	320.2	100.0	V
Project # : 10385, Sample #: 894504										
Temp.: 25.2 C, Hum.: 33.1 %										
Barometer Pres.:101.76 kPa										

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

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal Z, Horizontal

Operator : Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:46:11 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760 GHz	69.11	23.84	1.12	-30.00	64.08	73.98	9.90	24.8	100.0	H
1.735680 GHz	50.74	25.15	1.25	-30.00	47.14	80.83	33.69	24.8	100.0	H
2.169600 GHz	54.75	27.40	1.33	-30.00	53.48	80.83	27.35	24.8	100.0	H
2.603520 GHz	46.47	28.68	1.42	-30.00	46.57	80.83	34.26	24.8	100.0	H
3.037440 GHz	45.59	29.99	1.51	-30.00	47.09	80.83	33.74	24.8	100.0	H
3.471360 GHz	46.87	29.95	1.59	-30.00	48.41	80.83	32.42	24.8	100.0	H
3.905280 GHz	56.82	31.05	1.68	-30.00	59.55	73.98	14.43	24.8	100.0	H
4.339200 GHz	44.13	30.85	1.77	-30.00	46.75	73.98	27.23	24.8	100.0	H
Project # : 10385, Sample #: 894504										
Temp.: 21.1 C, Hum.: 51.2 %										
Barometer Pres.:101.76 kPa										

LabTest Certification Inc.
 Field Strength of Spurious, Peak Detector
 FCC 15.231, 3 meters, Orthogonal Z, Vertical

Operator : Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:46:11 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_Peak dBuV/m	Margin_PK dB	T/T degree	Tower cm	Pol
1.301760 GHz	72.48	23.62	1.12	-30.00	67.22	73.98	6.76	289.2	100.0	V
1.735680 GHz	50.30	25.23	1.25	-30.00	46.78	80.83	34.05	289.2	100.0	V
2.169600 GHz	52.74	27.40	1.33	-30.00	51.48	80.83	29.35	289.2	100.0	V
2.603520 GHz	45.96	28.68	1.42	-30.00	46.06	80.83	34.77	289.2	100.0	V
3.037440 GHz	46.12	29.65	1.51	-30.00	47.28	80.83	33.55	289.2	100.0	V
3.471360 GHz	49.21	29.68	1.59	-30.00	50.49	80.83	30.34	289.2	100.0	V
3.905280 GHz	50.55	30.96	1.68	-30.00	53.19	73.98	20.79	289.2	100.0	V
4.339200 GHz	43.53	30.91	1.77	-30.00	46.21	73.98	27.77	289.2	100.0	V
Project # : 10385, Sample #: 894504										
Temp.: 21.1 C, Hum.: 51.2 %										
Barometer Pres.:101.76 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

- 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, AVG Detector
 FCC 15.231, 3 meters, Orthogonal Z, Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:46:11 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG/T dB	degree	Tower cm	Pol
1.301760 GHz	32.99	23.84	1.12	-30.00	27.96	53.98	26.02	24.8	100.0	H
1.735680 GHz	31.44	25.15	1.25	-30.00	27.84	60.83	32.99	24.8	100.0	H
2.169600 GHz	30.78	27.40	1.33	-30.00	29.51	60.83	31.32	24.8	100.0	H
2.603520 GHz	31.78	28.68	1.42	-30.00	31.88	60.83	28.95	24.8	100.0	H
3.037440 GHz	29.82	29.99	1.51	-30.00	31.32	60.83	29.51	24.8	100.0	H
3.471360 GHz	30.71	29.95	1.59	-30.00	32.25	60.83	28.58	24.8	100.0	H
3.905280 GHz	33.41	31.05	1.68	-30.00	36.14	53.98	17.84	24.8	100.0	H
4.339200 GHz	27.33	30.85	1.77	-30.00	29.95	53.98	24.03	24.8	100.0	H

Project #: 10385, Sample #: 894504
 Temp.: 21.1 C, Hum.: 51.2 %
 Barometer Pres.: 101.76 kPa

LabTest Certification Inc.
 Field Strength of Spurious, AVG Detector
 FCC 15.231, 3 meters, Orthogonal Z, Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFID Solutions Inc.

01:46:11 PM, Friday, June 24, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit_AVG dBuV/m	Margin_AVG/T dB	degree	Tower cm	Pol
1.301760 GHz	32.54	23.62	1.121	-30.00	27.28	53.98	26.70	289.2	100.0	V
1.735680 GHz	34.76	25.23	1.247	-30.00	31.24	60.83	29.59	289.2	100.0	V
2.169600 GHz	30.90	27.40	1.334	-30.00	29.64	60.83	31.19	289.2	100.0	V
2.603520 GHz	31.73	28.68	1.421	-30.00	31.83	60.83	29.00	289.2	100.0	V
3.037440 GHz	29.85	29.65	1.507	-30.00	31.01	60.83	29.82	289.2	100.0	V
3.471360 GHz	31.15	29.68	1.594	-30.00	32.43	60.83	28.40	289.2	100.0	V
3.905280 GHz	28.44	30.96	1.681	-30.00	31.08	53.98	22.90	289.2	100.0	V
4.339200 GHz	27.51	30.91	1.768	-30.00	30.19	53.98	23.79	289.2	100.0	V

Project #: 10385, Sample #: 894504
 Temp.: 21.1 C, Hum.: 51.2 %
 Barometer Pres.: 101.76 kPa

Radiated Emission; Unintentional Radiators

Regulation	FCC15.109:2009, Class B
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	24.2 to 25.3 °C
Relative Humidity	47.9 to 48.5 %
Barometric Pressure:	101.14 to 101.17 kPa
Test Date	June 22, 2011
Sample Number	894504
Calibrated Test Equipment (ID)	225, 227-2, 228, 272
Reference Equipment (ID) (Calibration not required)	112, 124, 233, 235
Electrical Rating	3VDC, Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

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, 15.109:2009 and ANSI C63.10: 2009.**

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 worst case; the EUT was continually on its RF Transmitter. It was modified to transmit in 1000ms intervals for this testing.

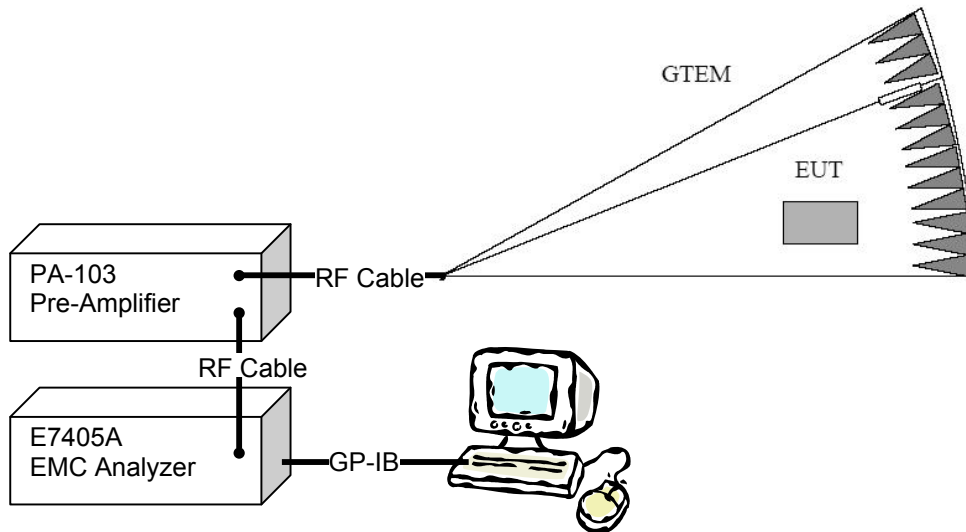


Figure – 2 The setup for Radiated emission test in GTEM

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.
- The EUT was continually on its RF Transmitter. It was modified to transmit in 1000ms intervals for this testing.
- 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 performed three different orthogonal planes, X, Y and Z, the photos were attached in Appendix C.
- The EUT was set-up its worst case operation, which was described in Worst-case configuration and mode of operation during testing.

Test Results:

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

X **Pass** **Fail** **N/A**

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

Fundamental Frequency (MHz)	Limit(dBuV/m)	Measured (dBuV/m)	Margin (dB)	Orthogonal Plane	Pol.	Results
424.0992	47.46	20.01	27.45	Y	H	PASS
444.8271		23.33	24.13	X	V	PASS

- Test results of Radiated Emission at OATS; On RF Transmitter , Orthogonal X

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal X_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

04:59:24 PM, Wednesday, June 22, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.099200 MHz	27.33	16.49	6.98	-32.41	18.39	47.46	29.07	109.1	101.1	H
444.827100 MHz	26.82	16.82	7.14	-32.35	18.42	47.46	29.04	58.8	101.1	H
Project #: 10385, Sample #: 894504										
Temp.: 25.3 C, Hum.: 48.2 %										
Barometer Pres.: 101.17 kPa										

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal X_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

04:59:24 PM, Wednesday, June 22, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.037400 MHz	27.30	16.08	6.98	-32.41	17.95	47.46	29.51	151.1	101.1	V
444.809400 MHz	32.05	16.50	7.14	-32.35	23.33	47.46	24.13	106.5	391.2	V
Project #: 10385, Sample #: 894504										
Temp.: 25.3 C, Hum.: 48.2 %										
Barometer Pres.: 101.17 kPa										

- Test results of Radiated Emission at OATS; On RF Transmitter, Orthogonal Y

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal Y_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

05:38:13 PM, Wednesday, June 22, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.024500 MHz	28.95	16.49	6.98	-32.41	20.01	47.46	27.45	213.6	347.2	H
444.863700 MHz	27.15	16.82	7.14	-32.35	18.75	47.46	28.71	67.2	346.9	H
Project #: 10385, Sample #: 894504										
Temp.: 24.9 C, Hum.: 47.9 %										
Barometer Pres.: 101.15 kPa										

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal Y_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

05:38:13 PM, Wednesday, June 22, 2011

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.078200 MHz	27.55	16.09	6.98	-32.41	18.21	47.46	29.25	179.3	100.1	V
444.829200 MHz	26.67	16.50	7.14	-32.35	17.95	47.46	29.51	6.0	100.1	V
Project #: 10385, Sample #: 894504										
Temp.: 24.9 C, Hum.: 47.9 %										
Barometer Pres.: 101.15 kPa										

Prepared by: LabTest Certification Inc.
 Date Issued: June 28, 2011
 Project No.: 10385

Client:Guard RFID Solutions Inc.
 Report No.: 10385-1E
 Revision No.: 0

- Test results of Radiated Emission at OATS; On RF Transmitter, Orthogonal Z

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal Z_Horizontal

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.094100 MHz	27.20	16.49	6.98	-32.41	18.26	47.46	29.20	259.9	100.1	H
444.875100 MHz	26.69	16.82	7.14	-32.35	18.29	47.46	29.17	156.8	100.2	H
Project # : 10385, Sample #: 894504										
Temp.: 24.2 C, Hum.: 48.5 %										
Barometer Pres.: 101.14 kPa										

LabTest Certification Inc.
 Unintentional Radiated Emissions
 FCC 15.109, Class B, 3 meters, Orthogonal Z_Vertical

Operator: Jeremy Lee

Model #: Industrial Tag
 Contact: Dalibor Pokrajac
 Company: Guard RFIDSolutions Inc.

Frequency MHz	Measured dBuV	AntFactor dB/m	CableLoss dB	Preamp dB	Emission dBuV/m	Limit dBuV/m	Margin dB	T/T degree	Tower cm	Pol
424.081500 MHz	27.59	16.09	6.98	-32.41	18.25	47.46	29.21	133.9	100.0	V
444.935100 MHz	28.20	16.50	7.14	-32.35	19.48	47.46	27.98	105.8	252.9	V
Project # : 10385, Sample #: 894504										
Temp.: 24.2 C, Hum.: 48.5 %										
Barometer Pres.: 101.14 kPa										

The Bandwidth of the emission

Regulation	FCC15.231: 2009
Temperature	20.8 °C
Relative Humidity	52.4 %
Barometric Pressure:	102.09 kPa
Test Date	June 07, 2011
Sample Number	894504
Calibrated Test Equipment (ID)	228, 272
Reference Equipment (ID) (Calibration not required)	112, 124
Electrical Rating	3VDC, Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

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 C63.10: 2009**.

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

- a) The EUT was placed on a wooden table.
- b) It was measured with a receiver - spectrum analyzer.

Test Results:

X	Pass	Fail	N/A
Center Frequency (MHz)	Limit(<0.25%, kHz)	Measured(kHz)	Results
433.92	1084.8	650.0	PASS

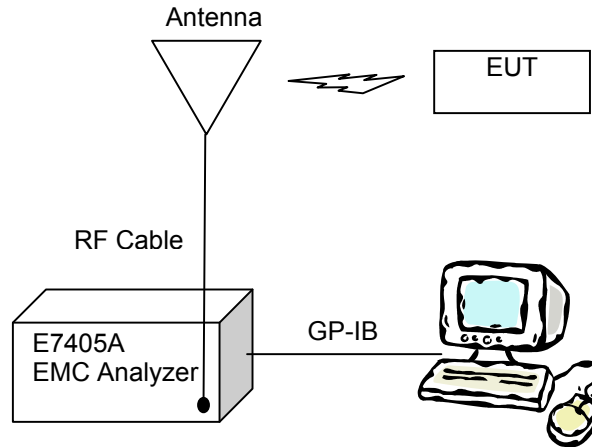


Figure – 3 The setup for Bandwidth of the emission test

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



Prepared by: LabTest Certification Inc.
Date Issued: June 28, 2011
Project No.: 10385

Client:Guard RFID Solutions Inc.
Report No.: 10385-1E
Revision No.: 0

Conducted Emission

Regulation	FCC15.207:2009
Sample Number	894504
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 equipments used for tests

ID No.	Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date	Calibration Certificate No:	Calibration Laboratory
112	GTEM EMC Chamber	Emco	5317	N/A	N/A	N/A	N/A	N/A
124	Pre-Amplifier	Com-Power	PA-103	161118	N/A	N/A	N/A	N/A
225	Biconical Antenna	EMCO	3110B	9211-1595	09-Jun-2011	09-Jun-2012	85387	ETS-Lindgren
227-2	LP Antenna	A.H. Systems	SAS-510-2	1262	08-Jun-2011	08-Jun-2012	85376	ETS-Lindgren
227-3	Horn Antenna	A.H. Systems	SAS-571	936	15-Jun-2011	15-Jun-2012	85526	ETS-Lindgren
227-5	Coaxial RF Cable	N/A	SAS-26G-0.5	N/A	N/A	N/A	N/A	N/A
228	Humidity/ Temperature Logger	Veriteq	SP-2000-20R	07072157	21-Oct-2010	21-Oct-2011	0157252	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
272	EMC Analyzer	Agilent	E7402A	MY45111758	27-Apr-2011	26-Apr-2012	1-3312925125-1	Agilent
273	RF Preamplifier	Agilent	8449B	3008A02264	06-Jan-2010	06-Jan-2012	138311901068042101 6	TRS-RenTelco

APPENDIX B: Photos

- EUT: Top View



- EUT: Inside View



APPENDIX C: Test setup photos

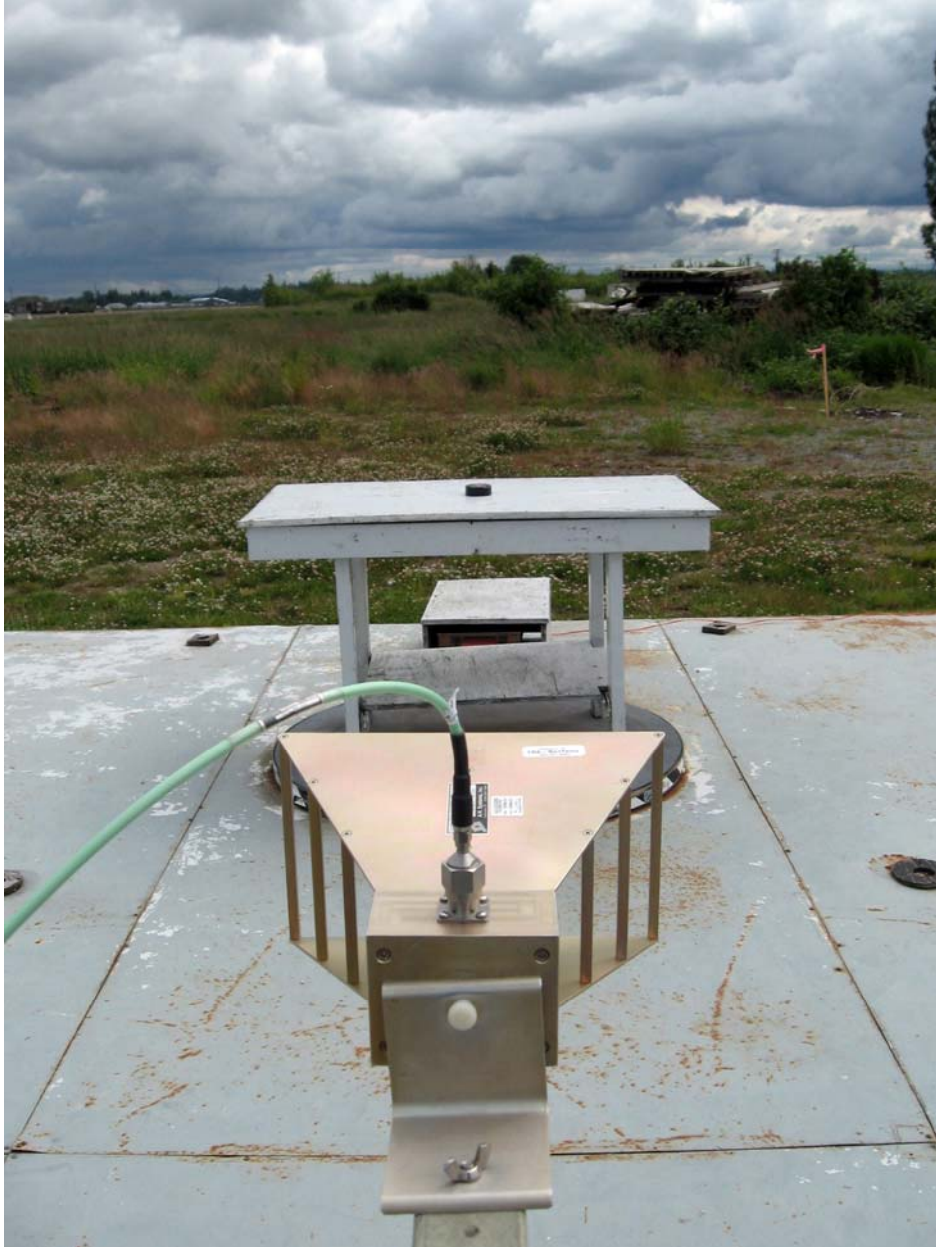
- Test configuration for Field Strength measurement at OATS #1



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- Test configuration for Field Strength measurement at OATS #2



- Set-up for Orthogonal X



- Set-up for Orthogonal Y



- Set-up for Orthogonal Z



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Date Issued: June 28, 2011
Project No.: 10385

Client:Guard RFID Solutions Inc.
Report No.: 10385-1E
Revision No.: 0

APPENDIX D: ISO 17025:2005 Accreditation Certificate



International Accreditation Service

SCOPE OF ACCREDITATION

LabTest Certification, Inc. TL-367
 (Revised February 11, 2010)

LabTest Certification, Inc.
 3133-20800 Westminster Hwy
 Richmond, British Columbia V6V 2W3
 Canada

Kavinder Dhillon
 President & CEO
 (604) 247-0444

FIELDS OF TESTING	ACCREDITED TEST METHODS
Gas and plumbing	ANSI Z21.1; ANSI Z21.19/1.6; ANSI Z21.60; ANSI Z21.67; ANSI Z21.89/CGA 1.18; B45 series; B125; B140.0; B140.1; B140.3; B140.4; B140.6; B140.9.3; CGA 1.18; AS 4551/Ag101; AS 4563/AG 103; AS 4563; AS 2658; EN 30-1-1; EN 30-1-2; EN 30-1-3; EN 30-1-4; EN 30-2-1; EN 30-2-2
Electrical, EMC, and electro-mechanical	AS 4298.1, 4298.2; AS/NZS 1044, 1063, 2064, 3548, 3652, 4051, 4251.1, 4251.2, 62040.2; CISPR 11 / EN55011; CISPR 14 / EN55014; CISPR 15 / EN55015; CISPR 22 / EN55022; CISPR 24 / EN55024; EN 12895, 301 489, 300 386, 50083-2, 50090-2-2, 50091-2, 50121-1, 50121-2, 50121-3-1, 50121-3-2, 50121-4, 50121-5, 50130-4, 50263, 50270, 50293, 50295, 50370-1, 50370-2, 50428, 50470-1, 55012, 55013, 55103-1, 55103-1, 55103-2, 55103-2, 60204-31, 60439-1, 60669-2-1, 60669-2-1, 60669-2-2, 60669-2-3, 60730-1, 60730-2-11, 60730-2-13, 60730-2-14, 60730-2-18, 60730-2-5, 60730-2-6, 60730-2-7, 60730-2-8, 60730-2-9, 60870-2-1, 60945, 61204-3, 61326, 61543, 61547, 61547, 617:2001, 618, 619, 620, 62040-2; FCC Part 15, 18; GB 13837 (CISPR 13); GB 4943, 9254, 7000.1, 7000.10, 7000.11, 7000.12, 2313, 8998, 15143, 14045, 17743, 13936, 13937; GB/T 9383; GB/T 17618; GB 17625.1, 2; GB/T 17626.2, 17626.4.

August 14, 2009
 Commencement Date


 C. P. Ramani, P.E.
 President

Print Date: 02/19/2010 Page 2 of 4

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International Accreditation Service

SCOPE OF ACCREDITATION

LabTest Certification, Inc. TL-367
 (Revised February 11, 2010)

FIELDS OF TESTING	ACCREDITED TEST METHODS
Electrical, EMC, and electro-mechanical (cont)	17826.5; GB/T 17826.6, 17826.8, 17826.11; GB 4343.1 (CISPR 14.1), 4343.2 (CISPR 14.2); GB 4824; HKTA 1001, 1006, 1007, 1022; ICES-001, 003; JIS T 0601-1-2; IEC/EN/AS/KN: 60601-1-2; IEC/EN/AS/KN/JIS C: 61000-3-2, 61000-3-3, 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-9, 61000-4-11, 61000-4-12, 61000-4-13, 61000-6-1, 61000-6-2, 61000-6-3, 61000-6-4; IEC/EN/AS/KN: 61326; RSS-130, 136, 138, 182, 187, 210, 213, 215, 243, 310; MIL-STD-461E; MIL-STD-462D; KN80601-1-2; KN301 489; KN22, 24; YD 1032; YD/T 965, 966, 993, 1103; C22.2 No. 0, .1, .17, .4, 6, 8, 9, 10, 12, 14, 15, 16, 24, 36, 37, 40, 43, 53, 61, 63, 64, 66, 71-1, 71.2, 72, 73, 81, 85, 89, 94, 99, 100, 101, 104, 107.1, 107.2, 108, 109, 110, 112, 113, 114, 117, 122, 125, 139, 141, 147, 149, 156, 157, 158, 164, 166, 167, 168, 169, 173, 177, 184, 187, 191, 195, 205, 207, 213, 217, 218.1, 218.2, 223, 224, 226, 231, 234, 236, 243, 247, 250, 60065; CSA-E60079-0, -6, -11, -15; CSA-E60335-1, -2; CSA-E60730-1, -2; CSA-E60746-1, -2; CSA-E61010-1, -2; CSA E742; IEC/EN 60335-1, -2; IEC/EN 60730-1, -2; IEC/EN 60745-1, -2; IEC/EN 61010-1, -2; IEC/EN 60601-1, -2; IEC/EN 60085; IEC/EN 60079-0, -6, -11, -15; IEC/EN 60950-1, -2; IEC/EN 60529; IEC/EN 60945; IEC/EN 60598-1, -2; IEC/EN 61347-1; UL 48, 50, 73, 197, 499, 507, 508, 508A, 746-1, 751, 763, 778, 858, 867, 875, 924, 935, 982, 987, 998, 1004, 1012, 1026, 1281, 1310, 1431, 1472, 1563.

August 14, 2009
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