



REPORT

For

Guard RFID Solutions Inc.

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

Date: 01 May 2018
Report No.: 12955-1E
Revision No.: 3
Project No.: 16922
Model No.: Proximity Tag Exciter
FCC ID: VZKPTE2
IC ID.: 9937A-PTE2



ONE STOP GLOBAL CERTIFICATION SOLUTIONS




Unit 205 – 8291 92 ST., Delta, BC
V4G 0A4, Canada
Phone: 604-247-0444
Fax: 604-247-0442
www.labtestcert.com

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TEST REPORT_FCC 15.231 & RSS-210	
Periodic operation in the band 40.66-40.70 MHz and above 70 MHz / License-Exempt Radio Apparatus: Category I Equipment	
Report Reference No.....:	16922-1E
Report Revision History.....:	<ul style="list-style-type: none"> ✓ Rev. 0: 16 December, 2015 ✓ Rev. 1: 26 January, 2016, revised under 30MHz testing and Occupied Bandwidth. ✓ Rev. 2: 30 April 2018, revised report with Conducted Emission via PoE. ✓ Rev. 3: 01 May 2018, revised report with Conducted Emission with Power Supply and increased resolution for graphes.
Compiled by (+ signature).....	Jeremy Lee 
Approved by (+ signature).....	David Johanson 
Date of issue	01 May 2018
Total number of pages	29
FCC Site Registration No.:	CA5970
IC Site Registration No.:	5970A
Testing Laboratory.....:	LabTest Certification Inc.
Address	3128 – 20800 Westminster Hwy, Richmond, B.C. V6V2W3
Applicant's name.....:	Guard RFID Solutions Inc.
Address	#140-766 Cliveden Place, Delta, BC, V3M 6C7, Canada
Manufacture's Name	Same as Applicant
Address	Same as Applicant
Test specification:	
Standards	FCC15.207 & 209:2015 / RSS-210, Issue 8, December 2010
Test procedure	<ul style="list-style-type: none"> ➤ ANSI C63.4:2014 ➤ ANSI C63.10:2013 ➤ RSS-Gen, Issue 4, November 2014
Non-standard test method.....:	N/A
Test Report Form(s) Originator	Jeremy Lee

Master TRF	1036_Rev2 – RF Report Template
Test item description :	
Trade Mark	
Model/Type reference	Proximity Tag Exciter
Serial Number	000120 & 000C30
FCC ID	VZKPTE2
IC ID	9937A-PTE2
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing:	
Date of receipt of test item	Nov. 09, 2015
Date (s) of performance of tests.....	Dec. 02 to 08, 2015

Device Under Test Description

Application for	Radio Frequency Identification (RFID)
Operating Frequency Range	123 to 127kHz
Number of Channel	1 Channel
Equipment mobility	No
Type of Mounting	Wall or Ceiling (Non-metallic surface only)
Type of Antenna	Internal(Loop Coil Antenna)
Modulation	ASK
Operating condition	-10 to +50 °C
Mass of equipment (g).....	500
Dimension	41 mm X 33 mm X 7 mm
Nominal Voltages for:	<input checked="" type="checkbox"/> stand-alone equipment <input type="checkbox"/> combined (or host) equipment

Supply Voltage:	<u> 12V </u> DC <u> 1 </u> Amps Max.
If DC Power:	<u> </u> Internal Power Supply <u> X </u> Host system is supplied 12VDC <u> X </u> PoE via PoE Splitter

Program details

Testing procedure and testing location:	
<input checked="" type="checkbox"/> Testing Laboratory:	LabTest Certification Inc.
Testing location/ address	3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada

Summary of testing:	
Tests performed (name of test and test clause): Radiated Field strength and Emissions	Testing location: In SAC, Richmond
<p>The tests indicated in Test Summary were performed on the product constructed as described below. The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.</p> <p>Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. LabTest does not make any claims of compliance for samples or variants which were not tested.</p>	

Description of Equipment Under Test and Variant Models

<p>Description:</p> <p>The Proximity Tag Exciter creates a 125 KHz radio frequency (RF) zone with a unique ID that allows instant and accurate location of GuardRFID's Active Tags equipped with 125KHz Receivers. When such an active tag enters the PTE zone, it immediate transmits the zone's unique ID to the system. This real-time tag location information can then be used by GuardRFID's Argus network to detect the precise location of the tag. The PTE is primarily used for very close proximity tag detection, such as for room or bed level location, a narrow choke point leading from one manufacturing cell to another or tagged items on a conveyor belt, for example.</p> <p>The field strength of the Exciter's LF field can be adjusted from 2' to 10', creating a defined detection zone. By adjusting the LF field the Exciter can tightly define a specified area. The Tag Exciter also has a UHF transceiver, so that it can communicate with the network. This communications capability is used to monitor the health of the PTE in real-time, and to enable remote adjustment of its LF field size. The PTE can be either recessed within a wall or can be surface mounted on the wall.</p>
--

FEATURES:

- **Creates a precise and definable tag detection zone at a specific location**
- **Adjustable detection zone from 2 – 10'**
- **Simple installation – only requires mounting and power**
- **May be mounted above the ceiling or surface-mounted on a wall**
- **Fully supervised device, using 433MHz transceiver**
- **PoE compatible – simplifies and reduces installation costs**

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

EUT Internal Operating Frequencies

Frequency (MHz)	Description	Frequency (MHz)	Description
0.032768	Y1, Ref. Clock	16	Y2, RF Clock
433.92	Transmitting Radio	-	-

Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	RFID	Guard RFID	PTE	-
AE	Power Supply	ICT	ICT22012-12APB	12VDC output

Abbreviations:

EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment

Software and Firmware

Use*	Description	Version
EUT	Hardware	n/p
EUT	Firmware	n/p

Abbreviations:

EUT - Equipment Under Test, n/p: not provided by client.

Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	DC input	DC	Yes	No	12VDC
*Note: DC = DC Power Port					


Power Interface

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
0	12	-	-	DC	-	

EUT Operation Modes

Mode #	Description
1	Keep transmitting 125kHz Radio Signal every 1 second, modified for Radio Testing.
2	Keep transmitting 125kHz Radio Signal every 12 seconds, normal operation.

EUT Configuration Modes

Mode #	Description
1	<p>Mounted as see below as Wall Hanging.</p> 



Test Equipment Verified for function

Model #	Description	Checked Function	Results
E74005A	EMC Analyzer	Frequency and Amplitude	Checked 50MHz and -20dBm Reference Signal and both Freq. and Level were OK.
8447D	Pre-Amplifier, 30 to 2,000MHz	Gain at 30 and 1,000MHz	Gains were normal.
JB1	Antenna, 30 to 2000MHz	Checked structure	Normal – no damage.
AL-130	Antenna, 9kHz to 30MHz	Checked structure	Normal – no damage.
8611-50-TS-10-N	LISN	Checked Insertion Losses from 150kHz to 30MHz	Losses were normal.
5001i	AC Power Source	Measured the Output power, 120VAC, 60Hz	Working normally

Measurement Uncertainty

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

Parameter	Uncertainty
Conducted Measurements, 0.15 to 30MHz	± 3.46 dB
Radiated Measurements, 9kHz to 1,000MHz	± 4.91 dB

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

Result Summary

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

FCC Part 15.209 and IC RSS-210			
Test Type	Regulation	Measurement Method	Result
Antenna Requirement	15.203 & RSS-Gen	-	PASS
Field Strength of Fundamental - Intentional radiator	15.209 & RSS-210	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5	PASS
Field Strength of Spurious Emissions - Intentional radiator	15.209 & RSS-210	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	PASS
Radiated Emissions- Intentional radiators	15.209 and RSS-210	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5	PASS
The Bandwidth of the emission	15.209 and RSS-210	ANSI C63.10:2013, Clause 6.9	PASS
AC Power Line Conducted Emission	15.207(a) and RSS-Gen	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.2	PASS

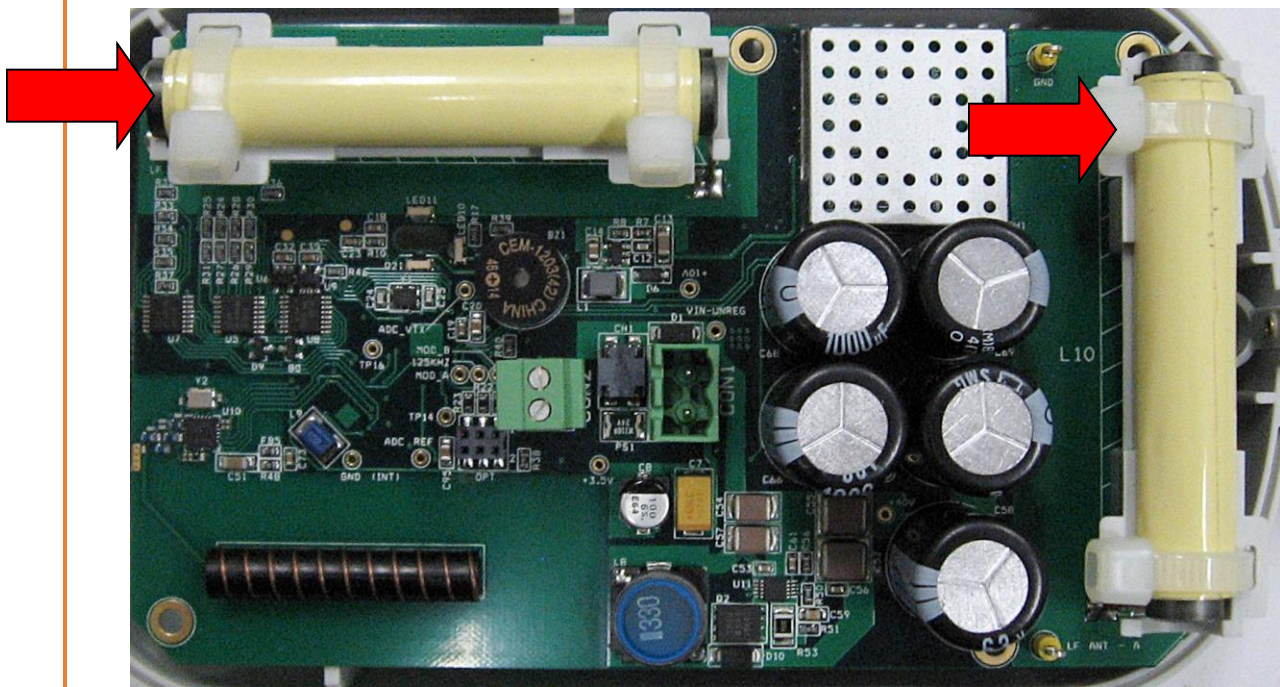
Antenna Requirement

Governing Doc	FCC 15.203 & RSS-GEN	Room Temperature (°C)	24.1
Basic Standard	-	Relative Humidity (%)	34.0
Test Location	Richmond	Barometric Pressure (kPa)	102.5
Test Engineer	Jeremy Lee	Date	13 March 2018
EUT Voltage	<input checked="" type="checkbox"/> DC 12V		
Compliant <input checked="" type="checkbox"/>		Non-Compliant <input type="checkbox"/>	
		Not Applicable <input type="checkbox"/>	

Results

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The EUT has fixed antenna, which accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.



Field Strength of Fundamental

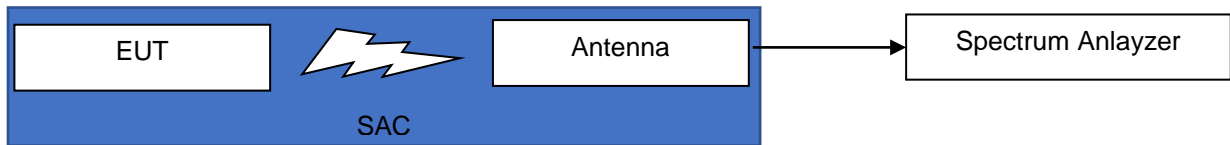
Governing Doc	15.209 & RSS-210	Room Temperature (°C)	22.4			
Basic Standard	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5	Relative Humidity (%)	44.0			
Test Location	Richmond	Barometric Pressure	100.2			
Test Engineer	Jeremy Lee	Date	08 Dec. 2015			
EUT Voltage	<input checked="" type="checkbox"/> DC 12V					
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due	
EMC Analyzer	Agilent	E7405A	272	09-Jun-2015	09-Jun-2016	
Active Loop Antenna	Com-Power	AL-130	241	28-Oct-2015	28-Oct-2017	
AC Power Source	California Instrument	5000i	059	NCR	NCR	
EMC Shielded Enclosure	USC	USC-26	374	NCR ¹	NCR ¹	
Note1) NCR = No Calibration Required, but NSA was done at 2015.						
Detector:	<input checked="" type="checkbox"/> Peak		<input checked="" type="checkbox"/> AVG			
RBW/VBW:	<input checked="" type="checkbox"/> 200/300Hz		<input type="checkbox"/> 9/30kHz			
Type of Facility:	<input checked="" type="checkbox"/> SAC		<input type="checkbox"/> FSOATS		<input type="checkbox"/> <i>in-situ</i>	
Distance:	<input checked="" type="checkbox"/> 3meter		<input type="checkbox"/> 10meter		<input type="checkbox"/> 1meter	
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only		<input type="checkbox"/> Floor-standing only		<input type="checkbox"/> Rack Mounted	
Frequency (kHz)	Detector	POL	Emissions (dBuV/m)	Limit (dB)	Margin (dB)	Comments
123.077	Peak	N/A	106.32	125.8	19.48	PASS
	AVG ¹	N/A	98.71	105.8	7.09	PASS
Note 1) Measured by CISPR Averaging detector. The limit was calculated as followed; ➤ Limit of FCC 15.209 at 123.077kHz; 2400/123.077 uV/m at 300meter distance ➤ Converting to dBuV/m: 25.8dBuV/m at 300meter distance ➤ Converting at 3 meter: 105.8dBuV/m as Averaging limit ➤ Converting Peak Limit: 125.8dBuV						
Test Result Emission level (dBuV/m) = Detected level (dBuV) +Cable Loss (dB) + Antenna Factor (dB/m)						
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>						

Test setup

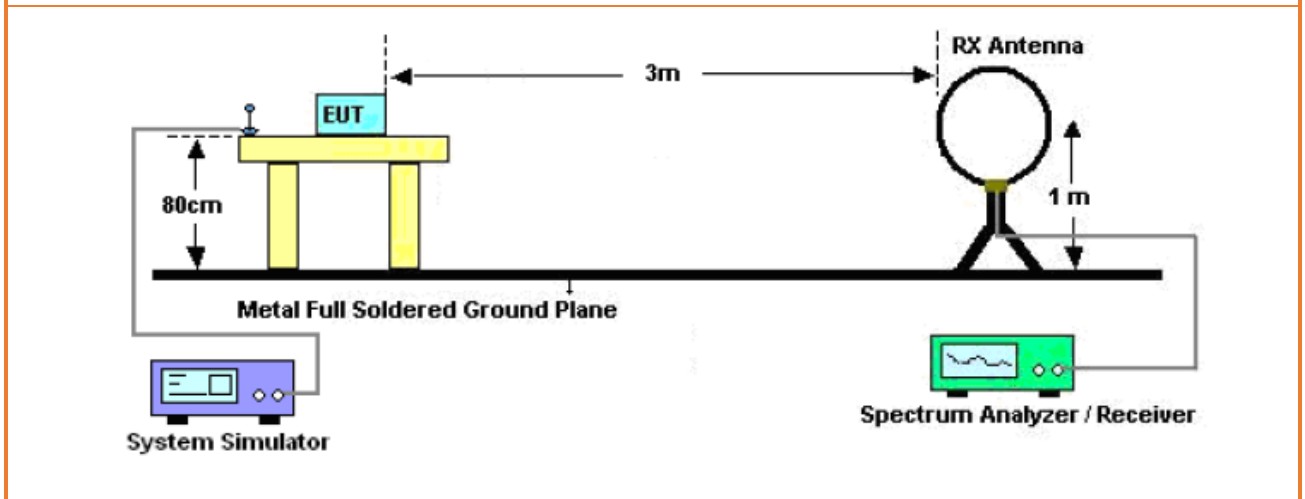
Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #1 with configuration Mode #1**.



- Tested with AL-130, Loop Antenna



Measurement Procedure

Test procedure is based on the FCC15.31(a)(3) - Other intentional and unintentional radiators are to be measured for compliance using the following procedure excluding sections 4.1.5.2, 5.7, 9 and 14: ANSI C63.4–2014: “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz” (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51.

NOTE to Paragraph (a)(3): Digital devices tested to show compliance with the provisions of §§ 15.107(e) and 15.109(g) must be tested following the ANSI C63.4 procedure described in paragraph (a)(3) of this section.[As stated in the adopting R&O, ANSI C63.4 is not used for measurements below 30 MHz.]

The EUT was placed on 0.8-meter high nonconductive table that was placed directly onto a flush mounted turntable. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter. It is measured with a receiver – the spectrum analyzer, was software controlled. The antennas was used an Active Loop Antenna.

The EUT was positioned the emissions from the unit were maximized by manipulating the cables, and by adjusting the polarization and height of the receive antenna and rotating the EUT on the turntable.

- The EUT was set-up at Channel "F".
- The following measurements were made with
 - Span = wide enough to fully capture the emission being measured.
 - RBW = 200Hz
 - VBW = 300Hz
 - Sweep = Auto
 - Detector Method = Peak and Average
 - Trace = Single trace up to capturing the whole range of signal

Spurious Emissions (Harmonics)

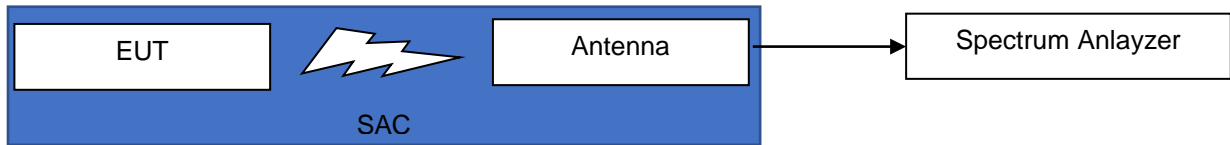
Governing Doc	15.209 & RSS-210	Room Temperature (°C)	22.4		
Basic Standard	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	Relative Humidity (%)	44.0		
Test Location	Richmond	Barometric Pressure (kPa)	100.3		
Test Engineer	Jeremy Lee	Date	28 Dec. 2015		
EUT Voltage	<input checked="" type="checkbox"/> DC 12V				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	Agilent	E7405A	272	09-Jun-2015	09-Jun-2016
Active Loop Antenna	Com-Power	AL-130	241	28-Oct-2015	28-Oct-2017
EMC Broadband Antenna	Sunol	JB1	371	17-Mar-2014	17-Mar-2016
AC Power Source	California Instrument	5000i	059	NCR	NCR
EMC Shielded Enclosure	USC	USC-26	374	NCR ¹	NCR ¹
RF Preamplifier	Agilent	8447D	516	NCR	NCR
Note1) NCR = No Calibration Required, but NSA & sVSWR was done at 2015.					
Detector:	<input checked="" type="checkbox"/> Peak		<input checked="" type="checkbox"/> Quasi-Peak/AVG		
RBW/VBW:	<input checked="" type="checkbox"/> 9/30kHz		<input checked="" type="checkbox"/> 120/300kHz		
Type of Facility:	<input checked="" type="checkbox"/> SAC(30kHz to 1GHz)				
Distance:	<input checked="" type="checkbox"/> 3meter		<input type="checkbox"/> 10meter		<input type="checkbox"/> 1meter
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only		<input type="checkbox"/> Floor-standing only		<input type="checkbox"/> Rack Mounted
Please see below test results.					
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

Test setup

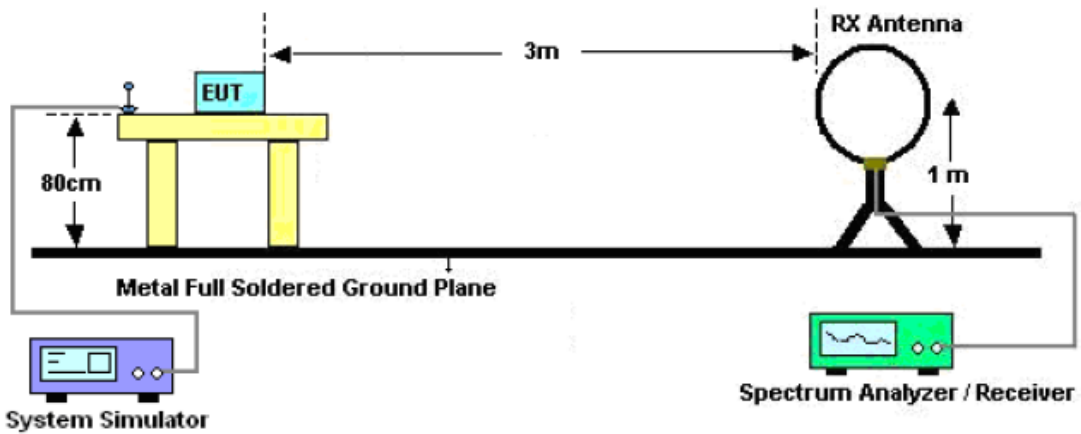
Description of test set-up:

The EUT was placed on a 0.8m in SAC.

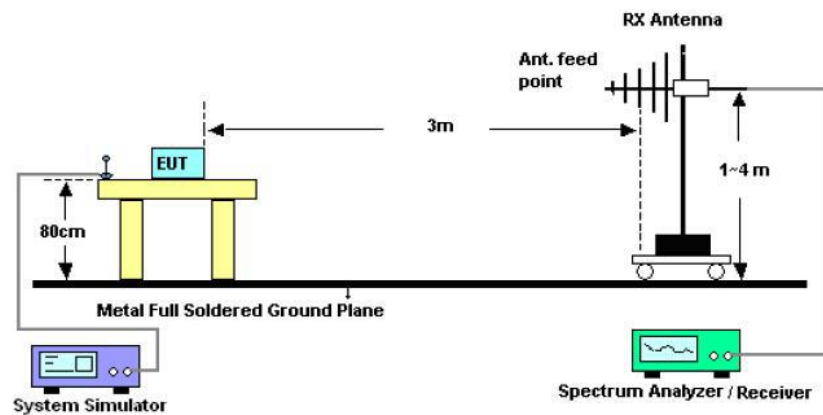
The EUT was set to **Operation Mode #1 with configuration Mode #1.**



- Tested with AL-130



- Tested with JB-1



Measurement Procedure

Test procedure is based on the FCC15.31(a)(3) - Other intentional and unintentional radiators are to be measured for compliance using the following procedure excluding sections 4.1.5.2, 5.7, 9 and 14: ANSI C63.4–2014: “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz” (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51.

NOTE to Paragraph (a)(3): Digital devices tested to show compliance with the provisions of §§ 15.107(e) and 15.109(g) must be tested following the ANSI C63.4 procedure described in paragraph (a)(3) of this section.[As stated in the adopting R&O, ANSI C63.4 is not used for measurements below 30 MHz.]

The EUT was placed on 0.8-meter high nonconductive table that was placed directly onto a flush mounted turntable. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter. It is measured with a receiver – the spectrum analyzer, was software controlled. The antennas was used an Active Loop Antenna.

The EUT was positioned the emissions from the unit were maximized by manipulating the cables, and by adjusting the polarization and height of the receive antenna and rotating the EUT on the turntable.

- The EUT was set-up at Channel "F".
- The following measurements were made with
 - Span = wide enough to fully capture the emission being measured.
 - RBW = 9kHz
 - VBW = 30kHz
 - Sweep = Auto
 - Detector Method = Quasi-peak or Peak and Average
 - Trace = Single trace up to capturing the whole range of signal

Test Result

Emission level (dBuV/m) = Detected level (dBuV) +Cable Loss (dB) + Antenna Factor (dB/m)

Frequency (kHz)	Detector	Measur ed (dBuV)	AF (dB/m)	Path Loss (dB)	Radiated Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Results
244.475	Average	37.15	10.53	0.24	47.92	111.52	63.60	PASS
244.475	Peak	48.85	10.53	0.24	59.62	131.52	71.90	PASS
369.187	Average	37.08	10.60	0.26	47.94	102.52	54.58	PASS
369.187	Peak	51.82	10.60	0.26	62.68	122.52	59.84	PASS
486.677	QP	36.36	10.55	0.27	47.18	94.04	46.86	PASS
616.385	QP	37.43	10.69	0.26	48.38	72.67	24.29	PASS
740.512	QP	32.81	10.79	0.12	43.71	71.57	27.86	PASS
862.884	QP	33.27	10.96	0.13	44.36	70.48	26.12	PASS
985.278	QP	30.38	10.94	0.12	41.44	69.39	27.94	PASS
1107.54	QP	30.87	10.95	0.13	41.95	68.30	26.34	PASS
1226.154	QP	28.46	10.97	0.13	39.56	67.24	27.67	PASS

Radiated Emissions for Digital Parts and Receiver

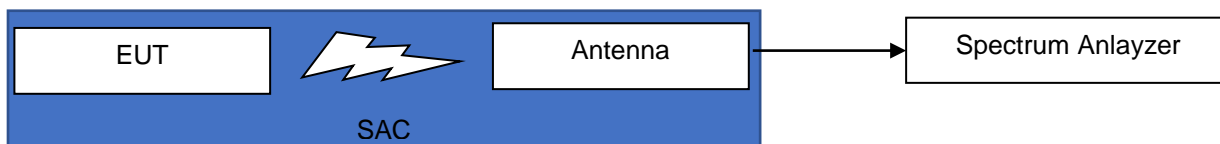
Governing Doc	FCC 15.109(a) & ICES-003	Room Temperature (°C)	22.1 to 23.4		
Basic Standard	ANSI C63.4:2014	Relative Humidity (%)	37.0 to 44.0		
Test Location	Richmond	Barometric Pressure (kPa)	100.3 to 101.7		
Test Engineer	Jeremy Lee	Date	02 & 08 Dec. 2015		
EUT Voltage	<input checked="" type="checkbox"/> DC 12V				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	Agilent	E7405A	272	09-Jun-2015	09-Jun-2016
Active Loop Antenna	Com-Power	AL-130	241	28-Oct-2015	28-Oct-2017
LP Antenna	A.H.Systems	SAS-510-2	227B	07-Feb-2018	07-Feb-2020
AC Power Source	California Instrument	5000i	059	NCR	NCR
EMC Shielded Enclosure	USC	USC-26	374	NCR ¹	NCR ¹
RF Preamplifier	Agilent	8449B	273	NCR	NCR
Note1) NCR = No Calibration Required, but NSA & sVSWR was done at 2015.					
Frequency Range:	<input checked="" type="checkbox"/> 30kHz-30MHz	<input checked="" type="checkbox"/> 30-1000MHz	<input type="checkbox"/> 1-6GHz		
Detector:	<input checked="" type="checkbox"/> Peak (for Prescan)	<input checked="" type="checkbox"/> Quasi-Peak(for Formal)			
RBW/VBW:	<input checked="" type="checkbox"/> 9/30kHz	<input checked="" type="checkbox"/> 120/300kHz	<input type="checkbox"/> 1/3MHz		
Type of Facility:	<input checked="" type="checkbox"/> SAC	<input type="checkbox"/> FSOATS	<input type="checkbox"/> <i>in-situ</i>		
Distance:	<input checked="" type="checkbox"/> 3meter	<input type="checkbox"/> 10meter	<input type="checkbox"/> 1meter		
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only	<input type="checkbox"/> Floor-standing only	<input type="checkbox"/> Rack Mounted		
Classification:	<input checked="" type="checkbox"/> Class B	<input type="checkbox"/> Class A			
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

Test setup

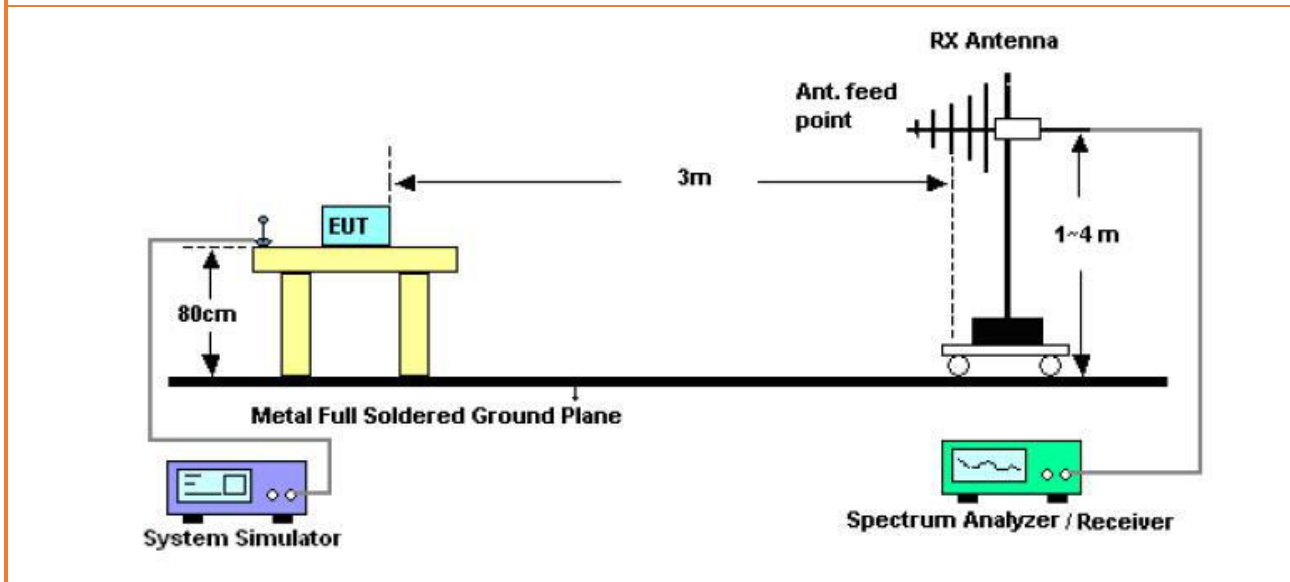
Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #1 with configuration Mode #2.**



- Radiated Emission 30 to 1,000MHz, with JB-1



Measurement Procedure

Test procedure is based on the FCC15.31(a)(3) - Other intentional and unintentional radiators are to be measured for compliance using the following procedure excluding sections 4.1.5.2, 5.7, 9 and 14: ANSI C63.4-2014: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51.

NOTE to Paragraph (a)(3): Digital devices tested to show compliance with the provisions of §§ 15.107(e) and 15.109(g) must be tested following the ANSI C63.4 procedure described in paragraph (a)(3) of this section. [As stated in the adopting R&O, ANSI C63.4 is not used for measurements below 30 MHz.]

The EUT was placed on 0.8-meter high nonconductive table that was placed directly onto a flush mounted turntable. The EUT was set 3 meters away from the interference-receiving antenna. It is measured with a receiver – the EMC analyzer, was software controlled.

The antennas was installed followed ANSI C63.4-2014, Clause 8.2 as followed;

- Under 30MHz
 - Active Loop Antenna, AL-130 was used as followed ANSI C63.4-2014, Clause 8.2.1.
 - The center of the loop was 1 m above the ground Plane of Chamber.
- 30 to 1,000MHz used an Active Loop Antenna.
 - Broadband Hybrid Antenna, JB-1 was used as followed ANSI C63.4-2014, Clause 8.2.3.
 - The antenna height was varied from 1 m to 4 m.

The EUT was positioned the emissions from the unit were maximized by manipulating the cables, and by adjusting the polarization and height of the receive antenna and rotating the EUT on the turntable.

- The EUT was set-up at Channel "F".
- The following measurements were made with
 - Span = wide enough to fully capture the emission being measured.
 - RBW = 9kHz(under 30MHz) and 120kHz(30 to 1,000MHz)
 - VBW = 30kHz(under 30MHz) and 300kHz(30 to 1,000MHz)
 - Sweep = Auto
 - Detector Method = Quasi-peak
 - Trace = Single trace up to capturing the whole range of signal

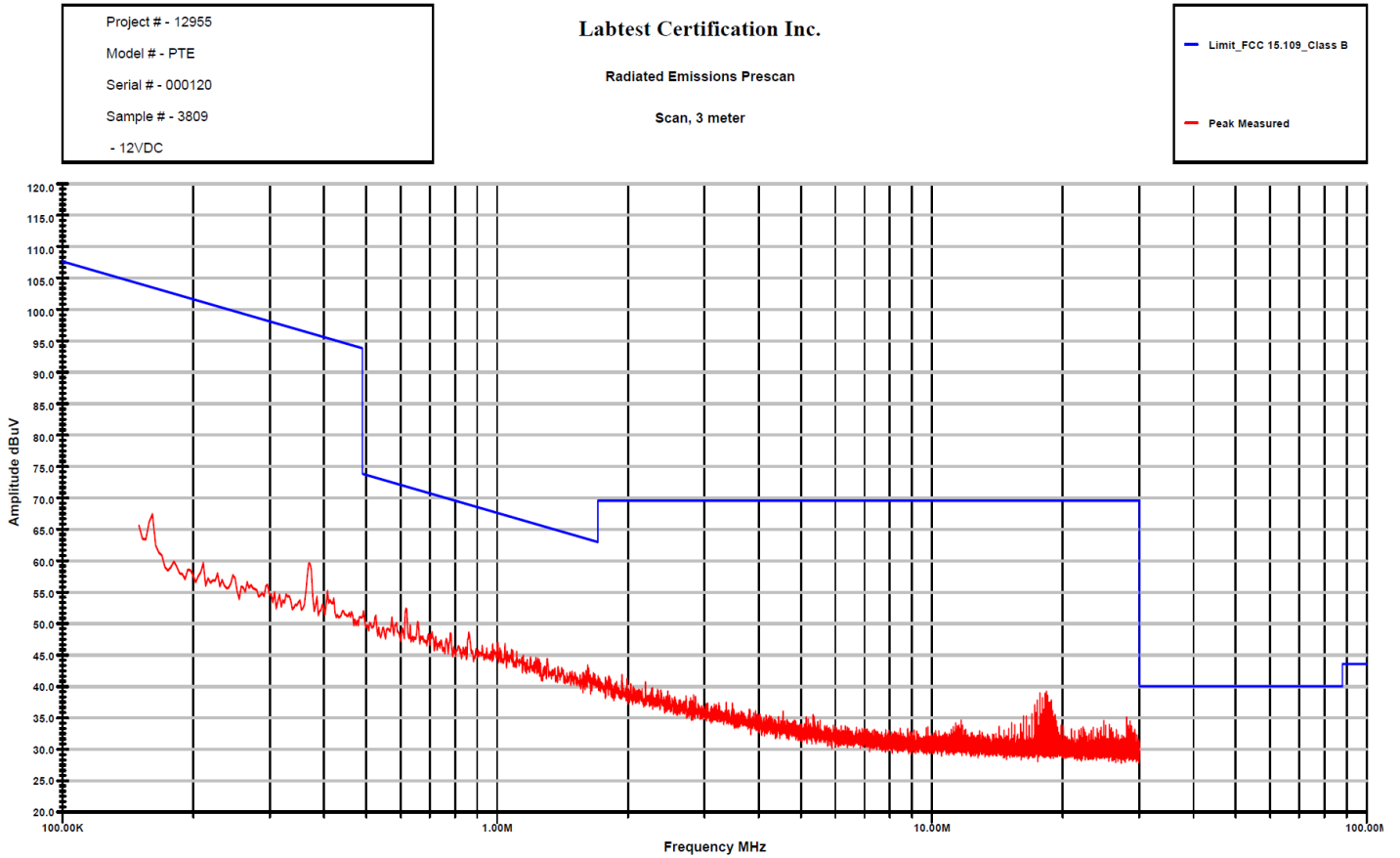
Test Result

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

Frequency (MHz)	Detector	Measured (dBuV)	AF (db/m)	Path Loss (dB)	Radiated Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	POL	Results
32.6048	QP	37.06	19.06	-27.26	28.85	40.00	11.15	V	PASS
50.4601	QP	55.72	8.05	-27.07	36.70	40.00	3.30	V	PASS
94.4536	QP	52.11	9.49	-26.55	35.05	43.52	8.47	V	PASS
108.8150	QP	50.78	12.86	-26.40	37.24	43.52	6.28	V	PASS
125.8362	QP	53.08	14.98	-26.20	41.87	43.52	1.65	V	PASS
127.7380	QP	40.51	14.30	-26.17	28.64	43.52	14.88	H	PASS
136.3842	QP	50.63	13.76	-26.06	38.33	43.52	5.19	V	PASS
136.7655	QP	39.50	13.72	-26.06	27.16	43.52	16.36	H	PASS

Note) There was no checked signal with Quasi-Peak detector under 30MHz as see their plot with peak detector.

- Graph of Radiated Emissions: 150kHz to 30MHz, Peak detecting, and Antenna was used AL-130.



Operator: Jeremy Lee

T: 22.3 C, H: 44.0 %, BP: 100.3 kPa

RE_Scan_150kHz to 30MHz.TIL

Contact: Dalibor Pokrajac

05:39:12 PM, Tuesday, December 08, 2015

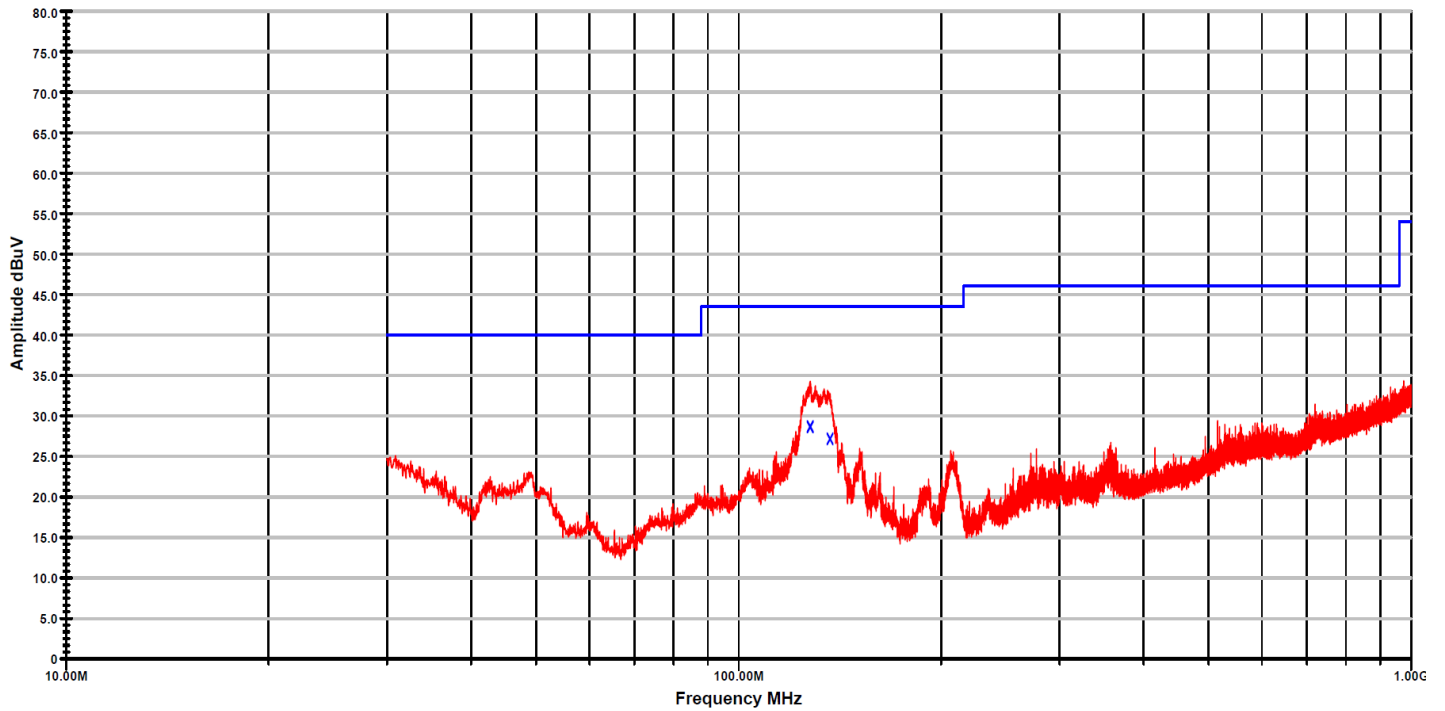
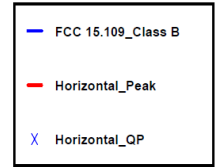
Company: Guard RFID Solutions Inc.

- Graph of Radiated Emissions: 30 to 1,000MHz, Peak detecting, the polarization of Antenna, JB-1 was Horizontal.

Project # - 12955
Model # - Proximity Tag Exciter
Serial # - 000120
Sample # - 3809
keep exciting as Level "F" - w PSU, add a Ferrite w 3 turns

Labtest Certification Inc.

Radiated Emissions
Horizontal_Scan, 3 meter



Operator: Jeremy Lee

T: 22.1 C, H: 37.0 %, BP.:101.7 kPa

RE_Scan_over 30MHz.TIL

Contact: Dalibor Pokrajac

05:05:29 PM, Wednesday, December 02, 2015

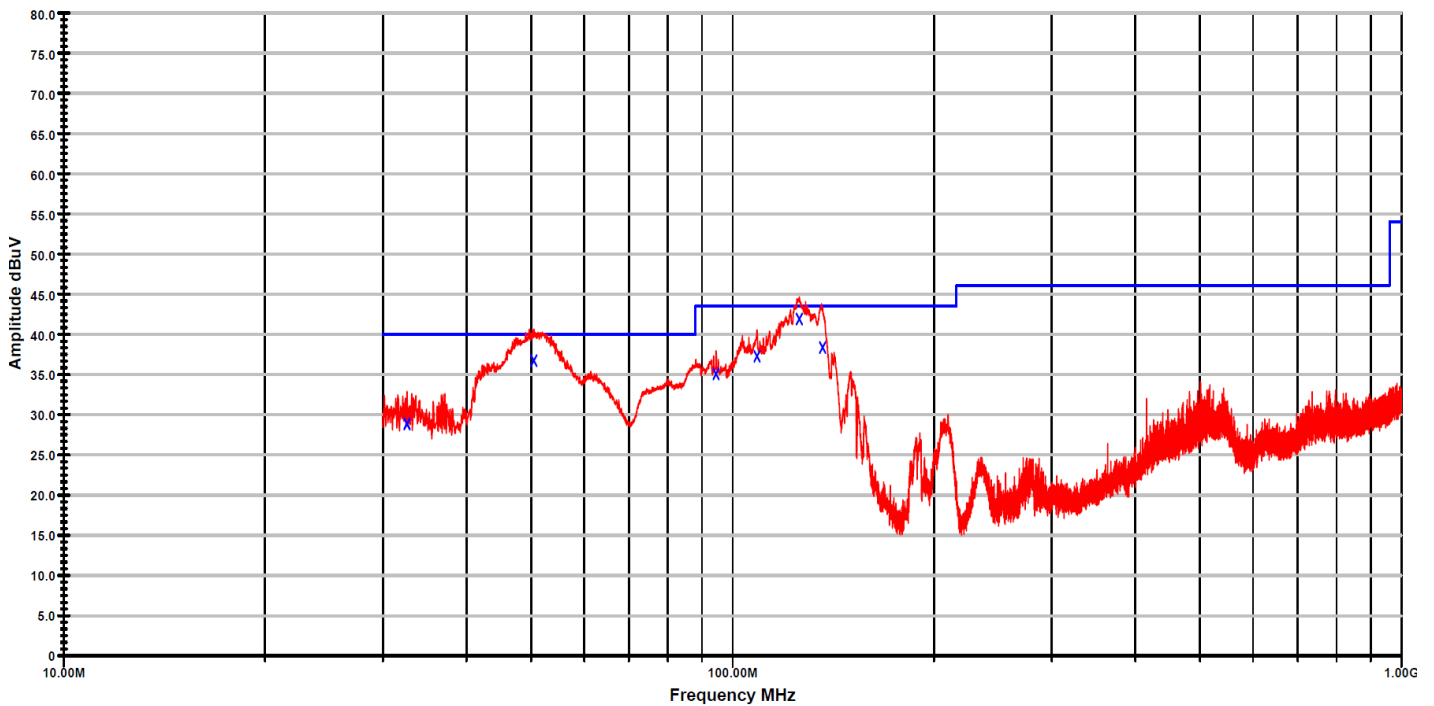
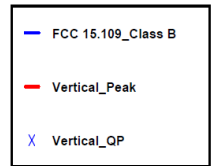
Company: Guard RFID Solutions Inc.

- Graph of Radiated Emissions: 30 to 1,000MHz, Peak detecting, the polarization of Antenna, JB-1 was Vertical.

Project # - 12955
Model # - Proximity Tag Exciter
Serial # - 000120
Sample # - 3809
keep exciting as Level "F" - w PSU, add a Ferritew 3 turns

Labtest Certification Inc.

Radiated Emissions
Vertical_Scan, 3 meter



Operator: Jeremy Lee

T: 22.1 C, H: 37.0 %, BP.:101.7 kPa

RE_Scan_over 30MHz.TIL

Contact: Dalibor Pokrajac

03:57:44 PM, Wednesday, December 02, 2015

Company: Guard RFID Solutions Inc.

The Bandwidth of the emission

Governing Doc	RSS-Gen	Room Temperature (°C)	23.4		
Basic Standard	ANSI C63.10:2013, Clause 6.9	Relative Humidity (%)	44.0		
Test Location	Richmond	Barometric Pressure	100.3		
Test Engineer	Jeremy Lee	Date	08 Dec. 2015		
EUT Voltage	<input checked="" type="checkbox"/> DC 12V				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	Agilent	E4404B	516	20-Nov-2015	20-Nov-2016
Active Loop Antenna	Com-Power	AL-130	241	28-Oct-2015	28-Oct-2017
AC Power Source	California Instrument	5000i	059	NCR	NCR
EMC Shielded Enclosure	USC	USC-26	374	NCR	NCR
Note) NCR = No Calibration Required					
Frequency(kHz)	Test Method	Bandwidth(kHz)	Limit(kHz)	Margin(kHz)	Comments
123.077	99% ¹	9.567	N/A	N/A	PASS
Note 1) referenced by RSS-210, Annex A.3, " The 99% bandwidth of momentarily operated devices shall be less or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz."					
Compliant <input checked="" type="checkbox"/>		Non-Compliant <input type="checkbox"/>		Not Applicable <input type="checkbox"/>	

Test setup

Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #1 with configuration Mode #1**.

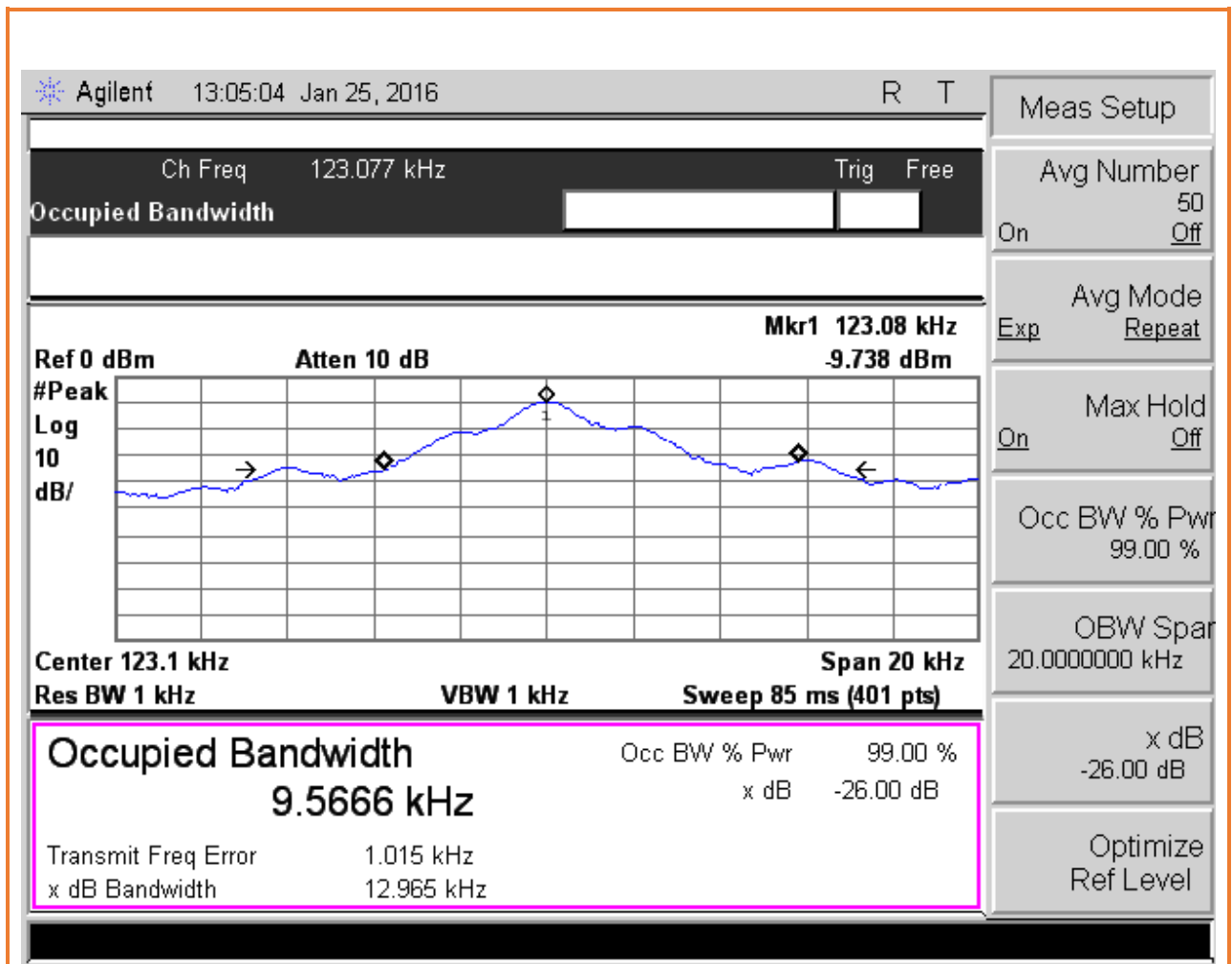
The diagram illustrates the test setup within a blue-shaded area labeled 'SAC'. On the left is a box labeled 'EUT'. A lightning bolt symbol is positioned between the 'EUT' and 'Antenna' boxes. On the right is a box labeled 'Antenna'. An arrow points from the 'Antenna' box to a box labeled 'Spectrum Analyzer' located outside the SAC area.

Measurement Procedure

The test was performed in accordance with **ANSI C63.10:2013**.

- Center frequency: 123.077kHz
- Frequency span: 20kHz.
- RBW: 1kHz
- VBW: 1kHz
- Set the 99% power bandwidth function of the Spectrum Analyzer, Agilent E4404B.
- Used Max Hold function for proper sampling.

Test Results



Conducted Emissions- AC mains port

Governing Doc	FCC 15.207 & RSS-Gen	Room Temperature (°C)	23.3		
Basic Standard	ANSI C63.4	Relative Humidity (%)	37.0		
Test Location	Richmond	Barometric Pressure (kPa)	101.3		
Test Engineer	Jeremy Lee	Date	02 Dec. 2015		
EUT Voltage	<input checked="" type="checkbox"/> DC 12V via ICT22012-12APB				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	Agilent	E7405A	272	09-Jun-2015	09-Jun-2016
LISN	Solar Electronics	8611-50-TS-10-N	377	06-Jan-2015	06-Jan-2016
LISN	Solar Electronics	8611-50-TS-10-N	378	06-Jan-2015	06-Jan-2016
Transient Limiter	Com-Power	LIT-930	215	NCR	NCR
AC Power Source	California Instrument	5000i	059	NCR	NCR
EMC Shielded	USC	USC-26	374	NCR	NCR
AC Power Source	California Instrument	5001i	059	NCR	NCR
Frequency Range:	<input checked="" type="checkbox"/> 150kHz-30MHz <input type="checkbox"/> 9-150kHz				
Detector:	<input checked="" type="checkbox"/> Peak <input checked="" type="checkbox"/> Quasi-Peak <input checked="" type="checkbox"/> Averaging				
RBW/VBW:	<input checked="" type="checkbox"/> 9/30kHz <input type="checkbox"/> 200/300Hz				
Coupling device:	<input checked="" type="checkbox"/> AMN <input type="checkbox"/> AAN <input type="checkbox"/> Current Probe <input type="checkbox"/> CVP				
Arrangement of EUT:	<input type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted				
Classification:	<input type="checkbox"/> Class A <input type="checkbox"/> Class B				
Compliant <input checked="" type="checkbox"/>	Non-Compliant <input type="checkbox"/>				

Measurement Procedure

This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially a scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7, from 150 kHz to 30 MHz on each phase with the receiver in the peak mode. The measuring bandwidth was set up 9 kHz. Measurements were then made using CISPR16-1 quasi peak and averaging detectors when the peak readings were within 10dB of the Quasi-peak limit line.

Test Result

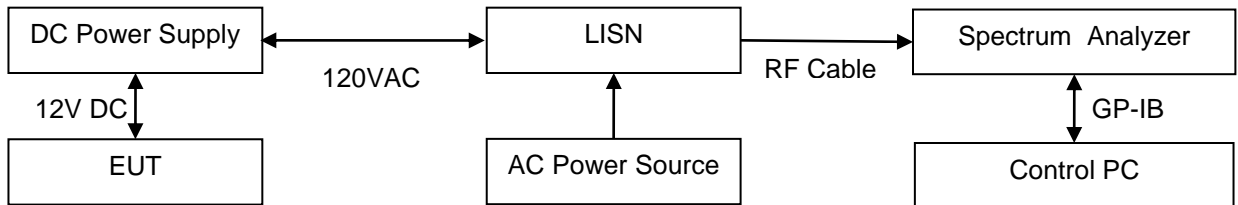
Conducted Emission (dBuV) = Measured Emission (dBuV) + Cable Loss(dB)+LISN(dB)

Test setup

Description of test set-up:

The EUT was placed on a 0.8m non-conducting table above a ground reference plane (GRP).

The EUT was set to **Operation Mode #1 with configuration Mode #2.**



- Table of Conducted Emissions: Hot Line

LabTest Certification Inc.
 Conducted Emission
 FCC 15.207, AVG_Neutral_120Vac/60Hz

Operator: Jeremy LEE

05:52:53 PM, Wednesday, December 02, 2015

Frequency MHz	Measured_AVG dBuV	PathLoss dB	Emission_AVG dBuV	Limit_AVG dBuV	Margin_AVG dB
8.268 MHz	38.36	10.22	48.58	50.00	1.42
12.574 MHz	39.45	10.37	49.82	50.00	0.18
T: 23.3 C, H: 37.0 %, BP.:101.3 kPa					
Project # - 12955					
Model # - Proximity Tag Exciter					
Serial # - 000120					
Sample # - 3809					
keep exciting - w PSU					

- Table of Conducted Emissions: Neutral Line

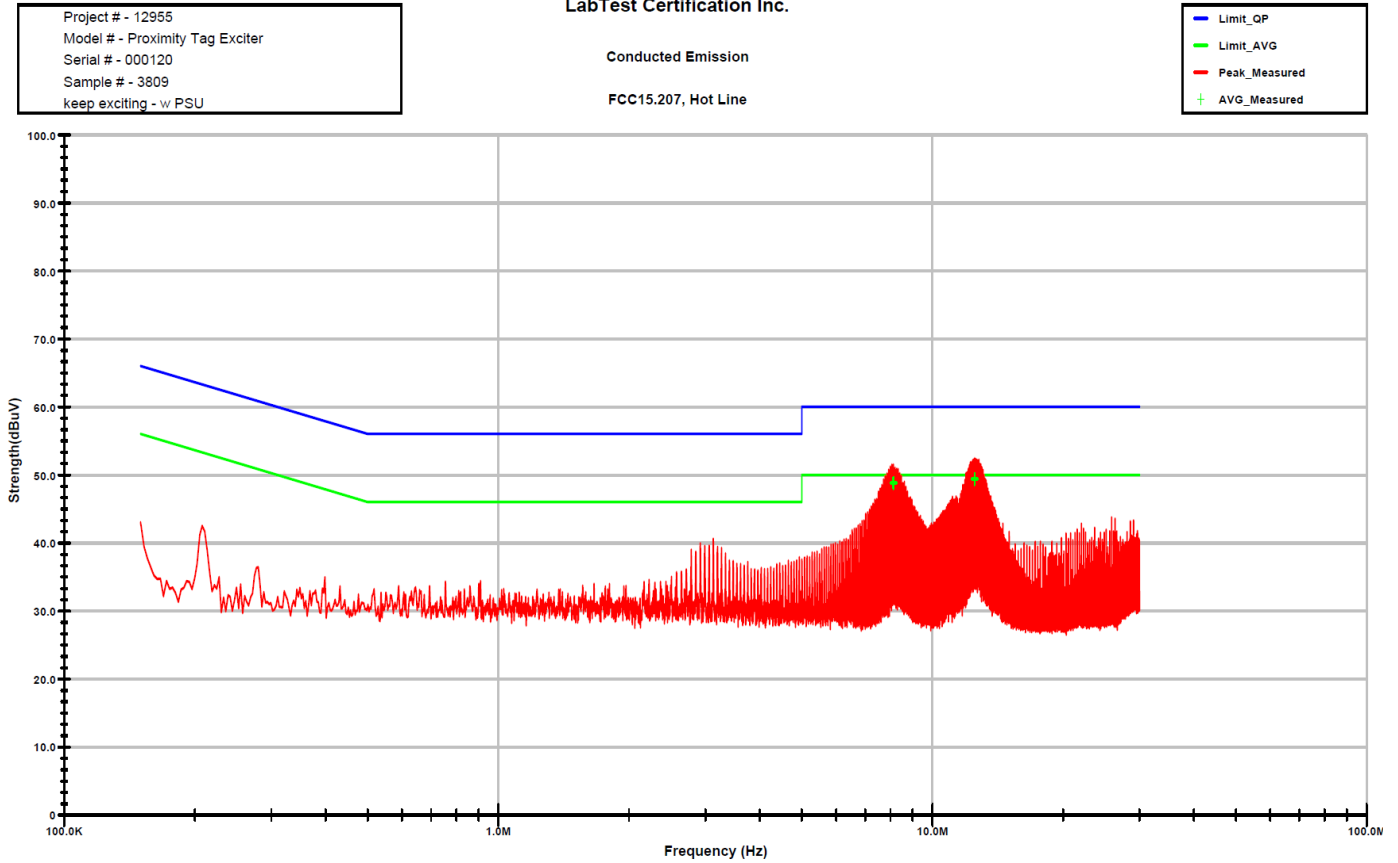
LabTest Certification Inc.
 Conducted Emission
 FCC 15.207, AVG_Hot_120Vac/60Hz

Operator: Jeremy LEE

05:52:53 PM, Wednesday, December 02, 2015

Frequency MHz	Measured_AVG dBuV	PathLoss dB	Emission_AVG dBuV	Limit_AVG dBuV	Margin_AVG dB
8.129 MHz	38.59	10.23	48.82	50.00	1.18
12.510 MHz	39.04	10.35	49.39	50.00	0.61
T: 23.3 C, H: 37.0 %, BP.:101.3 kPa					
Project # - 12955					
Model # - Proximity Tag Exciter					
Serial # - 000120					
Sample # - 3809					
keep exciting - w PSU					

- Graph of Conducted Emissions: Hot Line



T: 23.3 C, H: 37.0 %, BP.:101.3 kPa

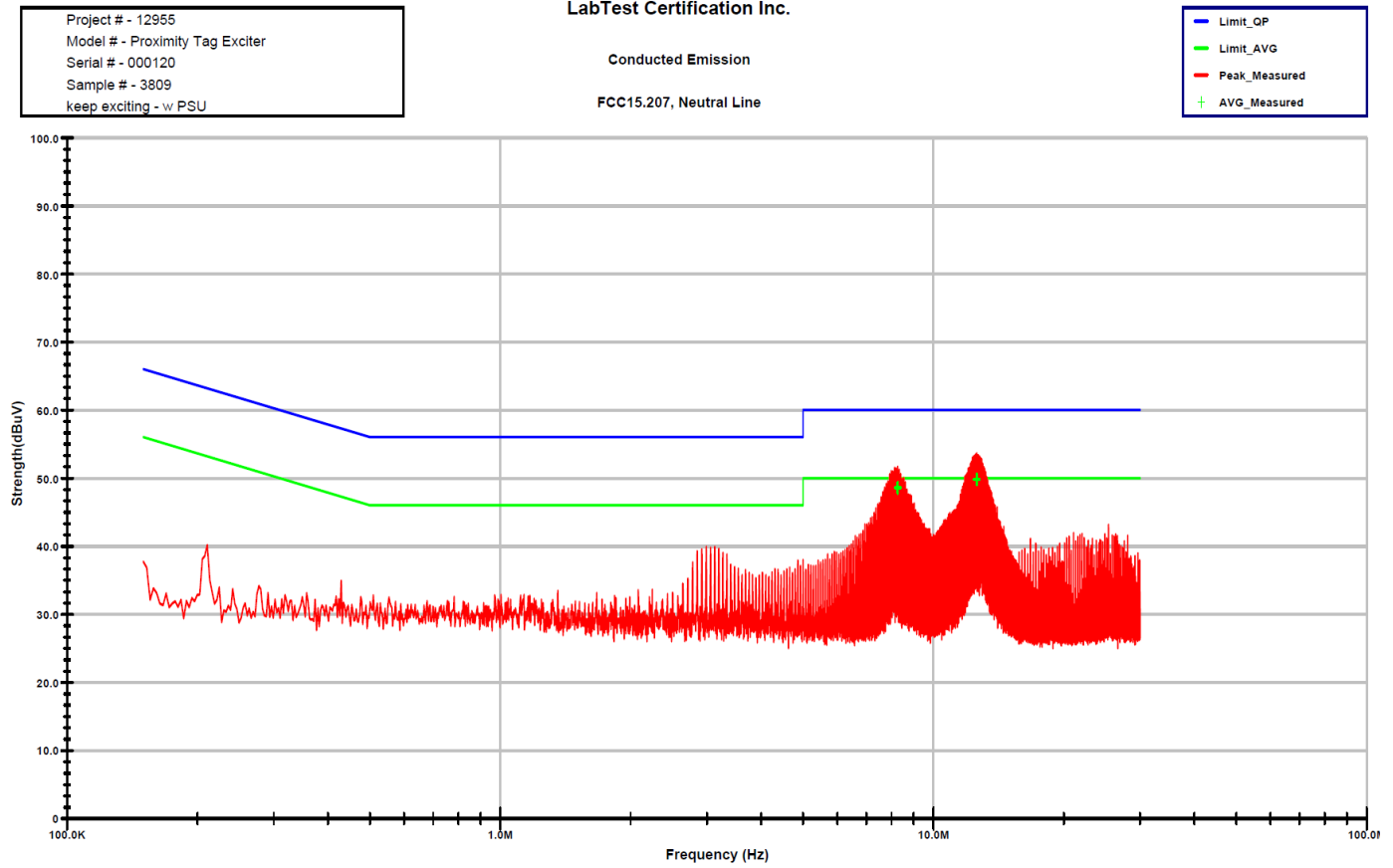
Operator: Jeremy LEE

Contact: Dalibor Pokrajac

05:32:06 PM, Wednesday, December 02, 2015

Company: Guard RFID Solutions Inc.

- Graph of Conducted Emissions: Neutral Line



Operator: Jeremy LEE

Contact: Dalibor Pokrajac

05:52:34 PM, Wednesday, December 02, 2015

Company: Guard RFID Solutions Inc.

END OF REPORT