1601 North A.W. Grimes Blvd., Suite B
Round Rock, TX 78665
e-mail: info@ptitest.com
(512) 244-3371 Fax: (512) 244-1846

February 18, 2015

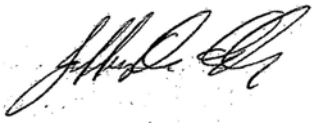
John Weber
Long Range Systems, LLC
4550 Excel Parkway Suite 200
Addison TX 75001

Dear John:

Thank you for allowing Professional Testing (EMI), Inc. an opportunity to perform testing for Long Range Systems, LLC. Enclosed is the Wireless Certification Report for the TT-SIL-Z pager. This report can be used to demonstrate compliance with wireless regulatory requirements for wireless devices in North America.

If you have any questions, please contact me.

Sincerely,



Jeffrey A. Lenk
President

Attachment

Project 16693-15

TT-SIL-Z
Wireless Pager
13.56 MHz RFID Section

Wireless Certification Report

Prepared for:

Long Range Systems, LLC
4550 Excel Parkway Suite 200
Addison TX 75001

By

Professional Testing (EMI), Inc.
1601 North A.W. Grimes Blvd., Suite B
Round Rock, Texas 78665

February 18, 2015

Reviewed by

Larry Finn
Chief Technical Officer

Written by

Eric Lifsey
EMC Engineer

Revision History

Revision Number	Description	Date
00	Initial Release	February 17, 2015
01	Revised/final per reviewer comments.	February 18, 2015

Table of Contents

Certificate of Compliance

Applicant	Device & Test Identification
Long Range Systems LLC (John Weber) 4550 Excel Parkway Suite 200 Addison TX 75001 Certificate Date: February 18, 2015	FCC ID: 2AB6OTRACKER Industry Canada ID: 5501A-TRACKER Model(s): TT-SIL-Z Laboratory Project ID: 16693-15

The device model(s) listed above were tested utilizing the following documents and found to be in compliance with the required criteria.

47 CFR (USA), IC (Industry Canada)	
Section Reference FCC | IC	**Parameter**
15.225(a) | RSS-210 Issue 8	Fundamental Field Strength Limit 15,848 µV/m at 30 m
15.209 | RSS-210 Issue 8	Harmonic & Spurious Emissions
15.203 | RSS-Gen Issue 4	Antenna Requirements
15.225(e) | RSS-210 Issue 8	Frequency Tolerance
RSS-210 Issue 8	Bandwidth

I, Eric Lifsey, for Professional Testing (EMI), Inc., being familiar with the above rules and test procedures have reviewed the test setup, measured data, and this report. I believe them to be true and accurate.

Eric Lifsey
EMC Engineer

This report has been reviewed and accepted by the Applicant. The undersigned is responsible for ensuring that this device will continue to comply with the rules listed above.

_____
Representative of Applicant

1.0 Introduction

1.1 Scope

This report describes the extent to which the equipment under test (EUT) conformed to the intentional radiator requirements of North America.

Professional Testing (EMI), Inc., (PTI) follows the guidelines of National Institute of Standards and Technology (NIST) for all uncertainty calculations, estimates, and expressions thereof for electromagnetic compatibility testing. The procedures of ANSI C63.4: 2009 were used for making all radiated enclosure and mains emission measurements.

1.2 EUT Description

This device is a wireless pager for restaurant use in paging patrons for service. The RFID device in this report is one part of a two-part composite wireless device. The pager includes a 2.4 GHz Zigbee type radio which was tested and certified previously.

Table 1.2.1: Equipment Under Test

Manufacturer	Model	Serial #	Description
Long Range Systems LLC	TT-SIL-Z	7	Wireless pager, RFID section

The device is composed of an approximately square circuit board in a rigid plastic case approximately 10 x 12 cm in size and ~1.5 cm in height. It is designed such that it presents as a drink coaster.

In operation the pager is alerted by a signal from a base unit. It then flashes a set of LED indicators and vibrates to get the patrons attention. The RFID functionality communicates with a passive RFID tag on the patrons table to help the servers locate the table.

EUT Photograph

1.3 EUT Operation

The EUT was exercised in a manner consistent with normal operations.

1.4 Modifications to Equipment

No modifications were made to the EUT during the performance of the test program.

Custom firmware was loaded into the EUT to raise the transmit duty cycle to facilitate testing. When a particular passive RFID tag was placed next to the EUT it invoked this test mode.

1.5 Test Site

Measurements were made at the PTI semi-anechoic facility designated Site 45 (FCC 459644, IC 3036B-1) in Austin, Texas. The site is registered with the FCC under Section 2.948 and Industry Canada per RSS-GEN, and is subsequently confirmed by laboratory accreditation (NVLAP). The test site is located at 11400 Burnet Road, Austin, Texas 78758, while the main office is located at 1601 North A.W. Grimes Boulevard, Suite B, Round Rock, Texas, 78665.

1.6 Radiated Measurements

Radiated levels are determined as follows:

Raw Measured Level + Antenna Factor + Cable Losses – Amplifier Gain = Corrected Level

Additionally, measurement distance extrapolation factors are applied and documented where used.

2.0 Applicable Documents and Clauses

Table 2.0.1: Applicable Documents	
Document	**Title/Description**
47 CFR (USA)	Part 15 – Section 15.225
ANSI C63.4 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment
RSS-Gen Issue 4	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 Issue 8	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

Table 2.0.2: Applicable Clauses	
47 CFR (USA), IC (Industry Canada)	
Section Reference FCC | IC	**Parameter**
15.225(a) | RSS-210 Issue 8	Fundamental Field Strength Limit 15,848 µV/m at 30 m
15.209 | RSS-210 Issue 8	Harmonic & Spurious Emissions
15.203 | RSS-Gen Issue 4	Antenna Requirements
15.225(e) | RSS-210 Issue 8	Frequency Tolerance
RSS-210 Issue 8	Bandwidth

3.0 Fundamental Field Strength

Radiated peak output power measurements were made on the EUT.

3.1 Test Procedure

EUT is placed on a non-conductive surface 80 cm above a reference plane and measurements of emissions are made to find maximum emission level.

3.2 Test Criteria

Section Reference	Parameter	Date(s)
15.225(a), RSS210 A2.6a	Radiated Output Power 15,848 µV/m at 30 m Restated as 84.0 dBµV/m at 30 m Restated as 143.1 dBµV/m @ 1 m	2015-02-04

3.3 Test Results

The EUT was found to be in compliance with the applicable criteria. The maximum emission is presented below and compared to the limit. The test distance is 1 meter. Measurement distance extrapolation factor is given by 15.31(f)(2) for below 30 MHz as 40 dB/decade. The EUT is elevated above the table to align with the center axis of the measurement loop antenna for best signal.

Maximum signal orientation of the EUT was found to be upright and oriented either in-plane or parallel to the measurement antenna. The measurement resolution bandwidth was 300 kHz with video bandwidth of 1 MHz.

Table 3.3.1: Field Strength at 1 Meter, 13.56 MHz

Antenna Polarity	Antenna Height meters	Measured Level dBµA	Amplifier Gain dB	Antenna Factor dB/S	20 Log_{10} (377) Current Conversion dB Ω	Cable Loss dB	Corrected Level (Measured Peak Level) dBµV/m	Detector Mode
Face	1	46.7	0	-40.6	51.53	0.11	57.74	Peak
Edge	1	43.1	0	-40.6	51.53	0.11	54.14	Peak

Limit at 1 meter dBµV/m	Corrected Level (Measured Peak Level) dBµV/m	Margin dB
143.1	57.74	-85.36

The EUT was found to be in compliance with the applicable criteria.

4.0 RFID Emission Mask

The in-band emission plot of the EUT radiated signal is superimposed with the mask as defined in the referenced rules.

4.1 Test Procedure

The EUT is configured for best signal/power, the span is adjusted to encompass the mask frequencies, then the emission is measured. Measurement distance factor is given by 15.31(f)(2) as 40 dB/decade. The limits are then corrected to correspond to the measurement and graphically superimposed on the original plotted data.

4.2 Test Criteria

Section Reference	Parameter	Date(s)
15.225(a), (b), (c), (d), and RSS210-Gen 4.6.1	**Emission Mask:** Fundamental: Limit 15,884 µV/m at 30 m	2015-02-17
	Inner Mask Range: 13.410 to 13.553 MHz and 13.567 to 13.710 MHz; Limit 334 µV/m (50.48 dB µV/m) at 30 m Restated as 110.48 dB µV/m at 1 m	
	Outer Mask Range: 13.110 to 13.410 and 13.710 to 14.010 MHz; Limit 106 µV/m (40.51 µV/m) at 30 m Restated as 100.51 dB µV/m at 1 m	

4.3 Test Results

The maximum peak power of the EUT measured so low such that it was far below all of the applicable mask limits making the mask measurement irrelevant.

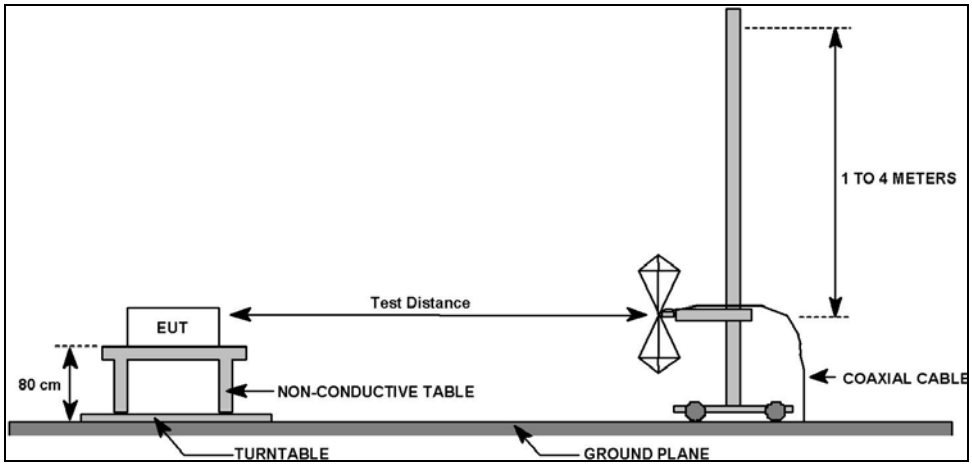
EUT was found to satisfy the mask requirement.

5.0 Radiated Spurious Emissions

5.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a rotating turntable at a distance of 10 meters from the measurement antenna.

Spurious emissions below 1 GHz were measured with quasi-peak detection with a resolution bandwidth of 120 kHz. A diagram showing the test setup is given in the figure below.



Field Strength of Spurious Emissions Test Setup

5.2 Test Criteria

Section Number FCC | IC	Clause Subject	Date
15.231(a), 15.209 | RSS-210 A1.1 Table A	Field Strength of Radiated Spurious/Harmonic Emissions	2015-01-26

5.3 Test Results

There is no distinct receive mode for this type of RFID device.

Peak detection was employed. Quasi-Peak detection was used if peaks exceeded the limits.

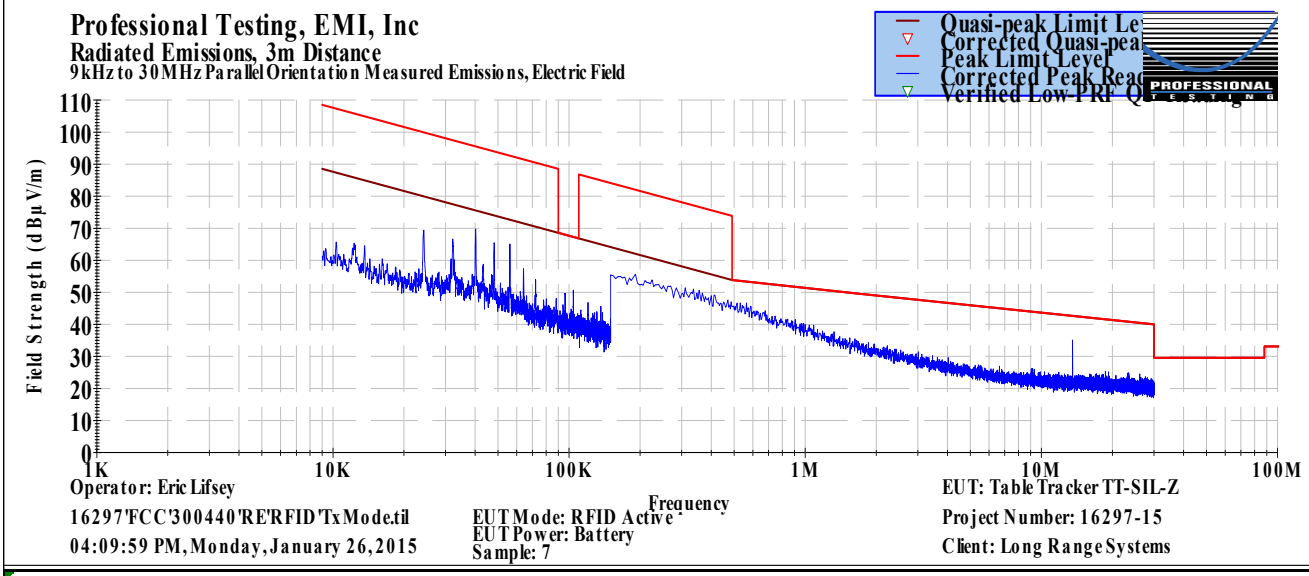
Note that signals from 9 kHz to 150 kHz were ambient-sourced and were confirmed as present when the EUT was removed from the chamber. The only signal below 30 MHz confirmed as from the EUT was the fundamental at 13.56 MHz; this signal was measured separately.

The EUT satisfied the criteria. Recorded data is presented below.

Table 5.3.1: Radiated Spurious Emissions, Below 30 MHz, Loop Antenna Parallel

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4–2003: "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).		
In accordance with:	FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits		
Section:	15.209		
Test Date(s):	1/26/2015	EUT Serial #:	7
Customer:	Long Range Systems	EUT Part #:	TT-SIL-Z
Project Number:	16297-15, 16693-15	Test Technician:	Eric Lifsey
Purchase Order #:	NA	Supervisor:	Lisa Arndt
Equip. Under Test:	Table Tracker TT-SIL-Z	Witness' Name:	NA

Radiated Emissions Test Results Data Sheet			Page:	1	of	1
EUT Line Voltage:	12	VDC	EUT Power Frequency:	0	N/A	
Antenna Orientation:	Parallel		Frequency Range:	Below 30MHz		
EUT Mode of Operation:			RFID Reading (Transmit)			

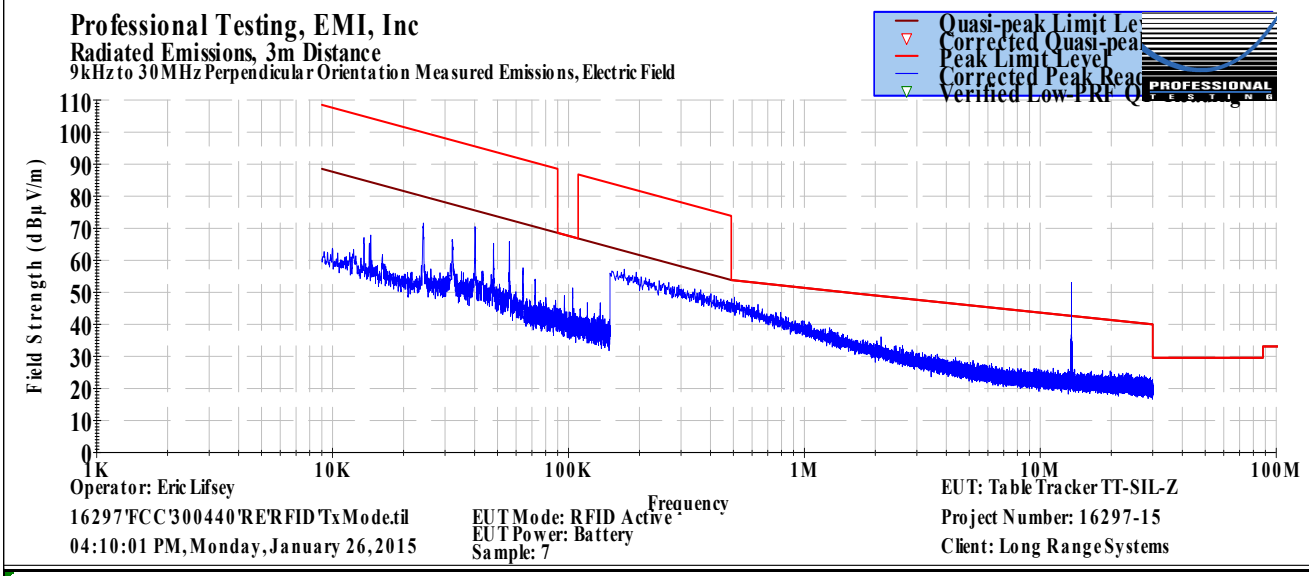


≤ 30MHz Parallel Antenna Orientation Measured Emissions

Table 5.3.2: Radiated Spurious Emissions, Below 30 MHz, Loop Antenna Perpendicular

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4–2003: "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).		
In accordance with:	FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits		
Section:	15.209		
Test Date(s):	1/26/2015	**EUT Serial #:**	7
Customer:	Long Range Systems	**EUT Part #:**	TT-SIL-Z
Project Number:	16297-15, 16693-15	**Test Technician:**	Eric Lifsey
Purchase Order #:	NA	**Supervisor:**	Lisa Arndt
Equip. Under Test:	Table Tracker TT-SIL-Z	**Witness' Name:**	NA

Radiated Emissions Test Results Data Sheet			Page: 1 of 1
EUT Line Voltage:	12 VDC	**EUT Power Frequency:**	0 N/A
Antenna Orientation:	Perpendicular	**Frequency Range:**	Below 30MHz
EUT Mode of Operation:		RFID Reading (Transmit)	



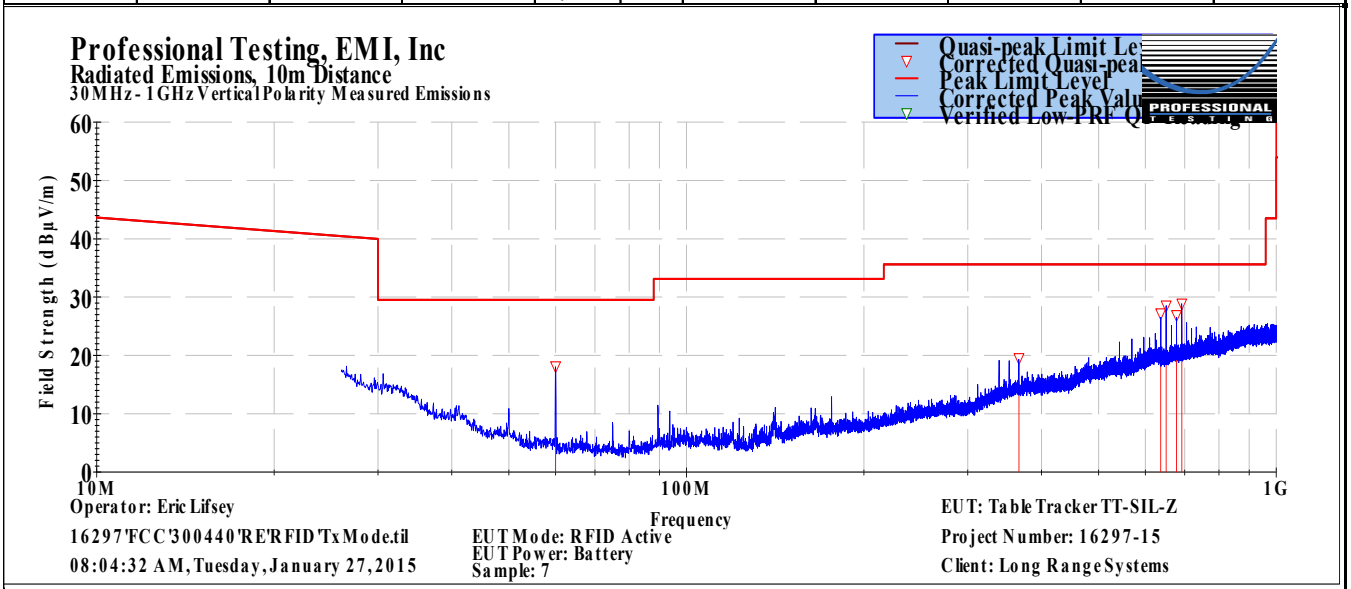
≤ 30MHz Perpendicular Antenna Orientation Measured Emissions

Table 5.3.3: Radiated Spurious Emissions, 30 MHz to 1 GHz, Vertical Polarity

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4–2003: "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).		
In accordance with:	FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits		
Section:	15.209		
Test Date(s):	1/26/2015	EUT Serial #:	7
Customer:	Long Range Systems	EUT Part #:	TT-SIL-Z
Project Number:	16297-15, 16693-15	Test Technician:	Eric Lifsey
Purchase Order #:	NA	Supervisor:	Lisa Arndt
Equip. Under Test:	Table Tracker TT-SIL-Z	Witness' Name:	NA

Radiated Emissions Test Results Data Sheet			Page: 1 of 1		
EUT Line Voltage:	12	VDC	EUT Power Frequency:	0	N/A
Antenna Orientation:	Vertical		Frequency Range:	30MHz to 1GHz	
EUT Mode of Operation:			RFID Reading (Transmit)		

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
60.0071	10	223	3.71	Quasi-peak	38.9	18.119	29.5	-11.4	Pass
366.35	10	276	2.74	Quasi-peak	28.2	19.506	35.6	-16.1	Pass
637.317	10	37	3.01	Quasi-peak	29.9	27.195	35.6	-8.4	Pass
650.822	10	223	3.12	Quasi-peak	31.5	28.531	35.6	-7.1	Pass
677.988	10	231	2.94	Quasi-peak	29	26.886	35.6	-8.7	Pass
691.661	10	213	3.51	Quasi-peak	30.7	28.854	35.6	-6.7	Pass



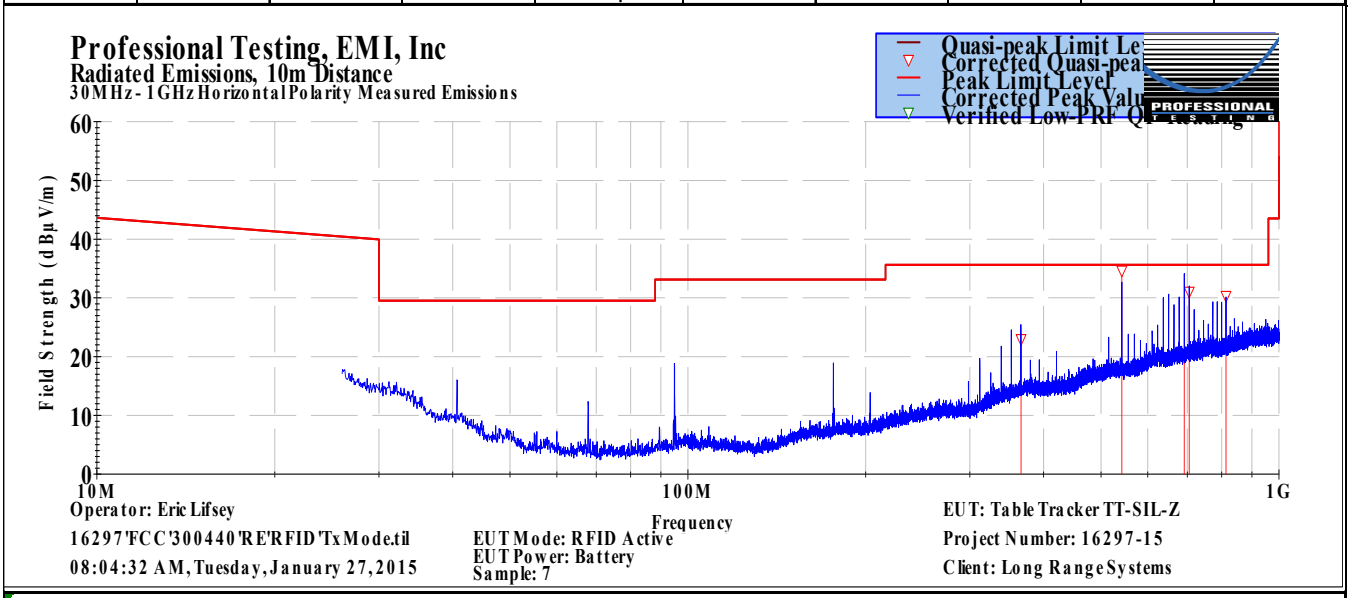
≤ 1GHz Vertical Antenna Polarity Measured Emissions

Table 5.3.4: Radiated Spurious Emissions, 30 MHz to 1 GHz, Horizontal Polarity

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4–2003: "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).		
In accordance with:	FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits		
Section:	15.209		
Test Date(s):	1/26/2015	EUT Serial #:	7
Customer:	Long Range Systems	EUT Part #:	TT-SIL-Z
Project Number:	16297-15, 16693-15	Test Technician:	Eric Lifsey
Purchase Order #:	NA	Supervisor:	Lisa Arndt
Equip. Under Test:	Table Tracker TT-SIL-Z	Witness' Name:	NA

Radiated Emissions Test Results Data Sheet			Page: 1 of 1
EUT Line Voltage:	12 VDC	EUT Power Frequency:	0 N/A
Antenna Orientation:	Horizontal	Frequency Range:	30MHz to 1GHz
EUT Mode of Operation:		RFID Reading (Transmit)	

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
366.145	10	346	2.06	Quasi-peak	31.6	22.951	35.6	-12.6	Pass
542.393	10	19	1.84	Quasi-peak	39.6	34.621	35.6	-1.0	Pass
691.579	10	179	3.71	Quasi-peak	21.7	19.899	35.6	-15.7	Pass
705.124	10	43	1.04	Quasi-peak	32.6	31.028	35.6	-4.6	Pass
813.769	10	57	1.48	Quasi-peak	30.3	30.313	35.6	-5.3	Pass



≤ 1GHz Horizontal Antenna Polarity Measured Emissions

6.0 Antenna Construction Requirements

The design was investigated for meeting the antenna construction requirements of the applicable rules.

6.1 Test Procedure

A direct examination of the antenna construction is performed and compared to rule criteria that prevents wireless device antennas from being modified by end users in ways that would void their authorization to use the device.

6.2 Test Criteria

Section Number FCC | IC	Clause Subject	Date
15.203 | RSS-Gen	Antenna Construction	2015-02-17

6.3 Test Results

Antenna Manufacturer, Details
Manufactured by Long Range Systems, LLC. Antenna is a printed circuit loop antenna that follows the outside contour of the circuit board. No external connector.

The antenna design satisfies the requirements of the rules.

7.0 Occupied Bandwidth

7.1 Test Procedure

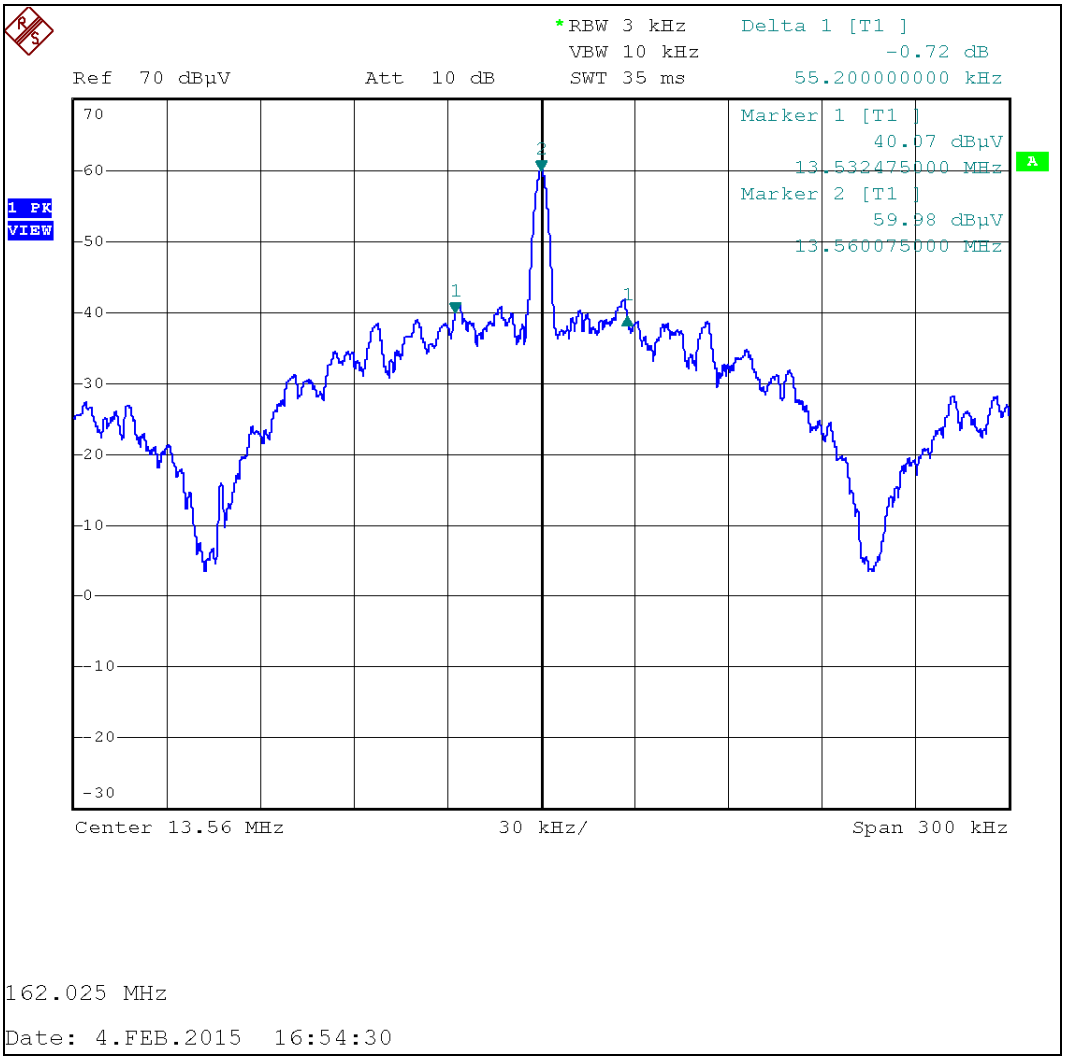
The EUT is configured for best signal/power and the bandwidth is then measured.

7.2 Test Criteria

Section Reference FCC|IC	Parameter	Date(s)
15.231(c), 2.1049 | RSS210 A1.1.3	Bandwidth, 20 dB	2015-02-04

7.3 Test Results

Measured Bandwidth
55.2 kHz



8.0 Frequency Tolerance/Stability

8.1 Test Procedure

The EUT is placed into a temperature controlled chamber and placed into normal operation. A magnetic loop probe is located next to the EUT to pick up the transmitted signal which is monitored on a spectrum analyzer. The EUT is then measured for operating frequency as it is subjected a list of specified test temperatures.

8.2 Test Criteria

Clause Subject	Section Number	Date
Frequency Tolerance Limit ± 0.01% Range -20 C to 50 C Intervals of 10 C	15.225(e), RSS-210 A2.6	2015-02-13

8.3 Test Results

Recorded results appear below.

Professional Testing, EMI, Inc.			
Test Method:	47 CFR Part 15		
In accordance with:	15.225		
Section:	15.225(e)		
Test Date(s):	2/13/2015	EUT Serial #:	None
Customer:	Long Range Systems	EUT Part #:	None
Project Number:	16693-15	Test Technician:	Eric Lifsey
Equipment Under Test:	TT-SIL-Z	Witness' Name:	N/A

Frequency

Temperature (C)	Reference Frequency (MHz at 20C)	Measured Frequency (MHz)	Calculated Deviation (MHz)	Deviation in Percent
50	13.560000	13.559944	-0.000056	-0.00041
40	13.560000	13.559960	-0.000040	-0.00029
30	13.560000	13.559993	-0.000007	-0.00005
20	13.560000	13.560019	0.000019	0.00014
10	13.560000	13.560048	0.000048	0.00035
0	13.560000	13.560069	0.000069	0.00051
-10	13.560000	13.560069	0.000069	0.00051
-20	13.560000	13.560035	0.000035	0.00026

Measured Deviation	Minimum %	Maximum %
Frequency Percent	-0.00041	0.00051

The EUT remained on frequency with a high degree of stability.

The EUT satisfied the criteria.

9.0 Equipment Lists

9.1 Radiated Spurious Emissions 9 kHz to 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4–2003: "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,**		
In accordance with:	**FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits**		
Section:	**15.209**		
Test Date(s):	**1/26/2015**	**EUT Serial #:**	**0**
Customer:	**Long Range Systems**	**EUT Part #:**	**TT-SIL-Z**
Project Number:	**16297-15**	**Test Technician:**	**Eric Lifsey**
Purchase Order #:	**NA**	**Supervisor:**	**Lisa Arndt**
Equip. Under Test:	**Table Tracker TT-SIL-Z**	**Witness' Name:**	**NA**

Radiated Emissions Test Equipment List	
Tile! Software Version:	**4.2.A, May 23, 2010, 08:38:52 AM**
Test Profile:	**Radiated Emissions_Profile Version October 12, 2011**

Asset #	Manufacturer	Model	Equipment Nomenclature	Serial Number	Calibration Due Date
1509A	Braden	N/A	TDK 10M Chamber, NSA < 1 GHz	DAC-012915-005	2/5/2016
1890	HP	8447F	Preamp/Amp, 9kHz-1300MHz, 28/25dB	3313A05298	2/6/2016
1937	Agilent	E4440A	Spectrum Analyzer, 3 Hz - 26.5 GHz	MY44303298	3/29/2015
2172	ETS-Lindgren	3142C	Antenna, Biconilog, 26 MHz-3GHz	49383	2/5/2015
C027	N/A	RG214	Cable Coax, N-N, 25m	none	10/22/2015
1327	EMCO	1050	Controller, Antenna Mast	none	N/A
0942	EMCO	11968D	Turntable, 4ft.	9510-1835	N/A
1969	HP	11713A	Attenuator/Switch Driver	3748A04113	N/A
1293	EMCO	6502	Antenna, Loop, Active, .01-30MHz	2040	7/29/2015
C235	RF Labs	Lab-Flex 200	Cable, SMA-SMA, 36', Purple	none	2/17/2016

9.2 Radiated Measurements ≤30 MHz; Fundamental Power and Bandwidth

Asset #	Manufacturer	Model #	Description	Serial Number	Calibration Due
ALN-077	Rohde & Schwarz	FSP-30	Spectrum Analyzer	1164.4391.30	2016-01-29
C235	Pasternack	Unknown	Cable, RG type, low loss	None	2015-02-17
1293	EMCO	6502	Loop Antenna	2040	2015-07-29

9.3 Frequency Tolerance Measurement

Asset #	Manufacturer	Model	Description	Serial Number	Calibration Due
ALN-077	Rohde & Schwarz	FSP-30	Spectrum Analyzer	1164.4391.30	1/29/2016
2134	Tenny	TC2	Environmental Chamber	710000007	10/31/2016
none	fabricated on site	N/A	H Field Probe	none	not required
none	Unknown	RG223 type	Coaxial Cable	none	not required

Appendix: Policy, Rationale, and Evaluation of EMC Measurement Uncertainty

All uncertainty calculations, estimates and expressions thereof shall be in accordance with NIST policy. Since PTI operates in accordance with NIST (NVLAP) Handbook 150-11: 2007, all instrumentation having an effect on the accuracy or validity of tests shall be periodically calibrated or verified traceable to national standards by a competent calibration laboratory. The certificates of calibration or verification on this instrumentation shall include estimates of uncertainty as required by NIST Handbook 150-11.

Rationale and Summary of Expanded Uncertainty.

Each piece of instrumentation at PTI that is used in making measurements for determining conformance to a standard (or limit), shall be assessed to evaluate its contribution to the overall uncertainty of the measurement in which it is used. The assessment of each item will be based on either a type A evaluation or a type B evaluation. Most of the evaluations will be type B, since they will be based on the manufacturer's statements or specifications of the calibration tolerances, or uncertainty will be stated along with a brief rationale for the type of evaluation and the resulting stated uncertainties.

The individual uncertainties included in the combined standard uncertainty for a specific test result will depend on the configuration in which the item of instrumentation is used. The combination will always be based on the law of propagation of uncertainty. Any systematic effects will be accommodated by including their uncertainties, in the calculation of the combined standard uncertainty; except that if the direction and amount of the systematic effect cannot be determined and separated from its uncertainty, the whole effect will be treated as uncertainty and combined along with the other elements of the test setup.

Type A evaluations of standard uncertainty will usually be based on calculating the standard deviation of the mean of a series of independent observations, but may be based on a least-squares curve fit or the analysis of variance for unusual situations. Type B evaluations of standard uncertainty will usually be based on manufacturer's specifications, data provided in calibration reports, and experience. The type of probability distribution used (normal, rectangular, a priori, or u-shaped) will be stated for each Type B evaluation.

In the evaluation of the uncertainty of each type of measurement, the uncertainty caused by the operator will be estimated. One notable operator contribution to measurement uncertainty is the manipulation of cables to maximize the measured values of radiated emissions. The operator contribution to measurement uncertainty is evaluated by having several operators independently repeat the same test. This results in a Type A evaluation of operator-contributed measurement uncertainty.

A summary of the expanded uncertainties of PTI measurements is shown as Table 1. These are the worst-case uncertainties considering all operative influence factors.

Summary of Measurement Uncertainties for Site 45

Type of Measurement	Frequency Range	Meas. Dist.	Expanded Uncertainty U, dB (k=2)
Mains Conducted Emissions	150 kHz to 30 MHz	N/A	2.9
Telecom Conducted Emissions	150 kHz to 30 MHz	N/A	2.8
Radiated Emissions	30 to 1,000 MHz	10 m	4.8
	1 to 18 GHz	3 m	5.7

End of Report

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