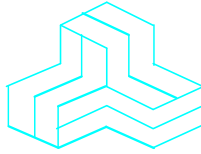


# ENGINEERING TEST REPORT



**BuzzFinder**  
**Model No.: BF-TX-01**  
**FCC ID: ZCIBFTX01**

*Applicant:*

**SOS FINDER Inc.**  
250 Dubois  
St-Eustache, Québec  
Canada J7P 4W9

***Tested in Accordance With***

**FCC Part 15, Subpart C, Section 15.249**  
**Low Power Transmitters Operating in the Frequency Band 2400-2483.5 MHz**

**UltraTech's File No.: QPS-232QR1TXF15C249**

This Test report is Issued under the Authority of  
Tri M. Luu, BAsC  
Vice President of Engineering  
UltraTech Group of Labs

Date: March 14, 2011

Report Prepared by: Dan Huynh

Tested by: Mr. Wei Wu

Issued Date: March 14, 2011

Test Dates: February 28 & March 9, 2011

- The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.
- This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.

## UltraTech

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FCC

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1309



Approved Test Facility

46390-2049



NvLap Lab Code 200093-0



SL2-IN-E-1119R



Korea KCC-RRL  
CA2049

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## EXHIBIT 1. INTRODUCTION

### 1.1. SCOPE

<b>Reference:</b>	FCC Part 15, Subpart C, Section 15.249
<b>Title:</b>	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15
<b>Purpose of Test:</b>	To gain FCC Certification Authorization for Low Power Licensed-Exempt Transmitters operating in the Frequency Band 2400-2483.5 MHz.
<b>Test Procedures:</b>	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
<b>Environmental Classification:</b>	Residential

### 1.2. RELATED SUBMITTAL(S)/GRANT(S)

Publication	Year	Title
FCC 47 CFR 15	2010	Code of Federal Regulations, Title 47 -Telecommunication
ANSI C63.4	2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
CISPR 22 EN 55022	2008-09, Edition 6.0 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1 +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances

## EXHIBIT 2. PERFORMANCE ASSESSMENT

### 2.1. CLIENT INFORMATION

APPLICANT	
<b>Name:</b>	SOS FINDER Inc.
<b>Address:</b>	250 Dubois St-Eustache, Québec Canada J7P 4W9
<b>Contact Person:</b>	Mr. Sebastien Lassonde Phone #: (514) 768-3888 Fax #: +1 (866) 551-5383 Email Address: <a href="mailto:sebastien@sosfinder.com">sebastien@sosfinder.com</a>

MANUFACTURER	
<b>Name:</b>	SOS FINDER Inc.
<b>Address:</b>	250 Dubois St-Eustache, Québec Canada J7P 4W9
<b>Contact Person:</b>	Mr. Sebastien Lassonde Phone #: (514) 768-3888 Fax #: +1 (866) 551-5383 Email Address: <a href="mailto:sebastien@sosfinder.com">sebastien@sosfinder.com</a>

### 2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

<b>Brand Name:</b>	SOS FINDER Inc.
<b>Product Name:</b>	BuzzFinder
<b>Model Name or Number:</b>	BF-TX-01
<b>Serial Number:</b>	Test sample
<b>Type of Equipment:</b>	Low Power Transceiver
<b>Input Power Supply Type:</b>	3V Lithium Battery CR1632
<b>Primary User Functions of EUT:</b>	Small wireless remote control device helping people finding lost objects.

### 2.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable
Intended Operating Environment:	[ ] Commercial, industrial or business environment [ x ] Residential environment
Power Supply Requirement:	3V Lithium Battery CR1632
RF Output Power Rating:	68.48 dBμV/m at 3m distance
Operating Frequency Range:	2440 MHz
RF Output Impedance:	50 Ω
20 dB Bandwidth:	633.27 kHz
Modulation Type:	GFSK
Antenna Connector Type:	Integral
Antenna Description:	Manufacturer: Johanson Technology, Inc. Type: Chip P/N: 2450AT43A100 Frequency Range: 2400 - 2500 MHz In/Out Impedance: 50 Ω Gain: 2.0 dBi typ.

### 2.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
None				

### 2.5. ANCILLARY EQUIPMENT

Ancillary Equipment # 1	
Description:	BuzzFinder Receiver Unit
Brand name:	SOS FINDER Inc.
Model Name or Number:	BF-RX-01
Serial Number:	Test sample
Cable Length & Type:	N/A
Connected to EUT's Port:	N/A

## EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

### 3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	3V Lithium Battery CR1632

### 3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

<b>Operating Modes:</b>	EUT was configured to transmit continuously for emissions measurements.
<b>Special Test Software:</b>	None
<b>Special Hardware Used:</b>	None
<b>Transmitter Test Antenna:</b>	The EUT is tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment.

<b>Transmitter Test Signals:</b>	
<b>Frequency Band(s):</b>	2440 MHz
<b>Test Frequency(ies):</b>	2440 MHz
<b>Transmitter Wanted Output Test Signals:</b>	
• RF Power Output (measured maximum output power):	68.48 dBµV/m at 3m distance
• Normal Test Modulation:	GFSK
• Modulating signal source:	Internal

## EXHIBIT 4. SUMMARY OF TEST RESULTS

### 4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).
- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2011-05-01.

### 4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.107(a) & 15.207	Power Line Conducted Emissions	N/A
15.215(c)	20 dB Bandwidth	Yes
15.249(a), 15.209, 15.205	Transmitter Radiated Emissions, Harmonic Emissions	Yes

### 4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

## **EXHIBIT 5. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS**

### **5.1. TEST PROCEDURES**

Details of test methods and procedures can be found in Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4.

### **5.2. MEASUREMENT UNCERTAINTIES**

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement. Refer to Exhibit 7 for Measurement Uncertainties.

### **5.3. MEASUREMENT EQUIPMENT USED**

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4 and CISPR 16-1-1.

### **5.4. ESSENTIAL/PRIMARY FUNCTIONS AS DECLARED BY THE MANUFACTURER**

Object finder.

---

#### **ULTRATECH GROUP OF LABS**

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4  
Tel.: 905-829-1570, Fax. : 905-829-8050

File #: QPS-232QR1TXF15C249

March 14, 2011

*All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*



## 5.5. 20 dB BANDWIDTH [47 CFR 15.215(c)]

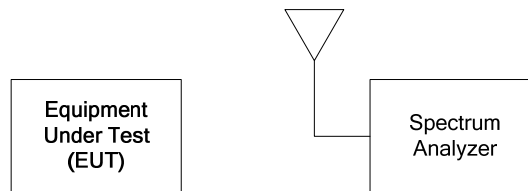
### 5.5.1. Limits

The 20 dB bandwidth must be contained within the frequency band designated in the rule.

### 5.5.2. Method of Measurements

The transmitter output was loosely coupled to the spectrum analyzer through a receiving antenna and the bandwidth of the fundamental frequency was measured with the spectrum analyzer with the resolution bandwidth of the spectrum analyzer set per ANSI 63.4

### 5.5.3. Test Arrangement

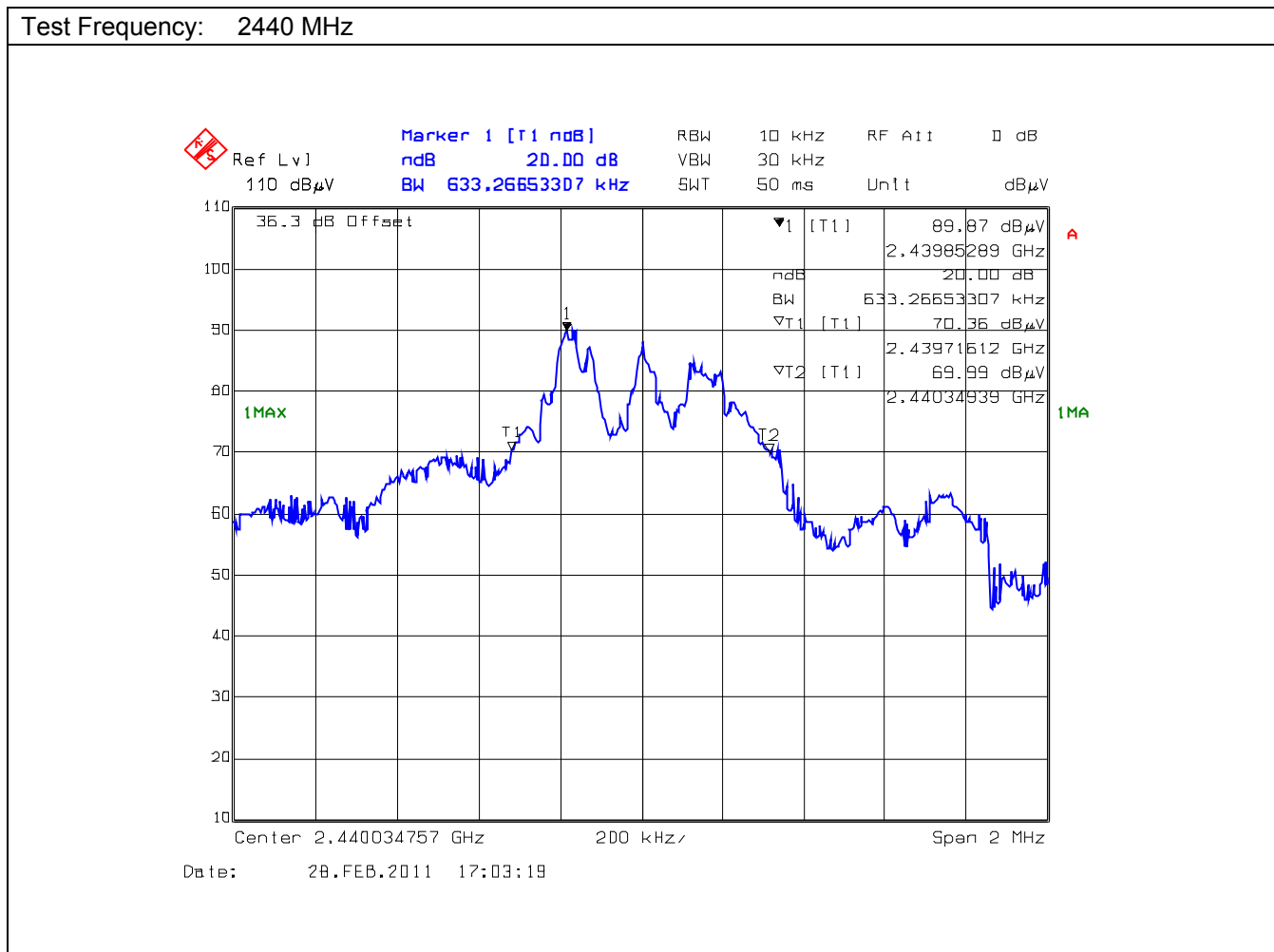


### 5.5.4. Test Data

Frequency (MHz)	20 dB Bandwidth (kHz)
2440	633.27

See the following plot for details.

Plot 5.5.4.1. 20 dB Bandwidth



## 5.6. FUNDAMENTAL FIELD STRENGTH AND HARMONIC EMISSIONS ( RADIATED @ 3m) [47 CFR 15.249(a), 15.209 & 15.205]

### 5.6.1. Limits

(a) The Field Strength of emissions from intentional radiators operated within 2400–2483.5 MHz band shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (µV/m)
2400–2483.5 MHz	50	500

(c) Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

(e) As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

- The fundamental frequency shall not fall within any restricted frequency band specified in 15.205. All of other emissions that fall in the restricted bands shall not exceed the general radiated emission limits specified in @ 15.209(a).

### FCC 47 CFR 15.205(a) -- Restricted Frequency Bands --

MHz	MHz	MHz	GHz
0.090 - 0.110	162.0125 - 167.17	2310 - 2390	9.3 - 9.5
0.49 - 0.51	167.72 - 173.2	2483.5 - 2500	10.6 - 12.7
2.1735 - 2.1905	240 - 285	2655 - 2900	13.25 - 13.4
8.362 - 8.366	322 - 335.4	3260 - 3267	14.47 - 14.5
13.36 - 13.41	399.9 - 410	3332 - 3339	14.35 - 16.2
25.5 - 25.67	608 - 614	3345.8 - 3358	17.7 - 21.4
37.5 - 38.25	960 - 1240	3600 - 4400	22.01 - 23.12
73 - 75.4	1300 - 1427	4500 - 5250	23.6 - 24.0
108 - 121.94	1435 - 1626.5	5350 - 5460	31.2 - 31.8
123 - 138	1660 - 1710	7250 - 7750	36.43 - 36.5
149.9 - 150.05	1718.8 - 1722.2	8025 - 8500	Above 38.6
156.7 - 156.9	2200 - 2300	9000 - 9200	

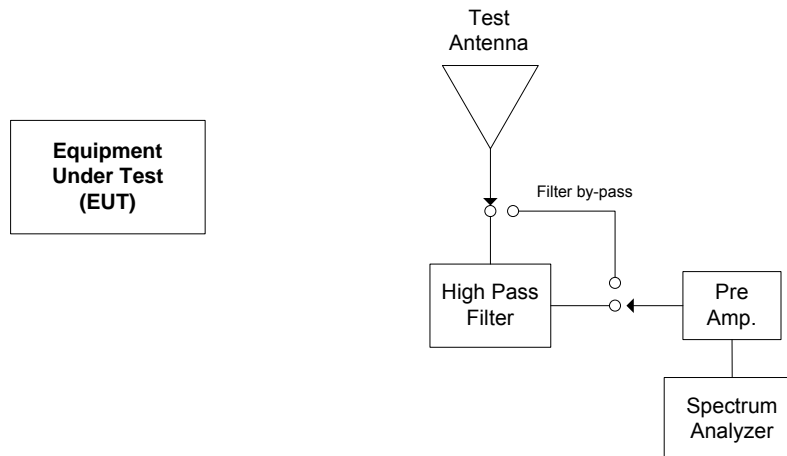
**FCC 47 CFR 15.209(a)**  
**-- Field Strength Limits within Restricted Frequency Bands --**

Frequency (MHz)	Field Strength Limits ( $\mu\text{V/m}$ )	Distance (Meters)
0.009 - 0.490	2,400 / F (KHz)	300
0.490 - 1.705	24,000 / F (KHz)	30
1.705 - 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

**5.6.2. Method of Measurements**

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

**5.6.3. Test Arrangement**



**5.6.4. Test Data**

The emissions were scanned from 30 MHz to 10<sup>th</sup> harmonic of the highest fundamental frequency and all significant emissions were recorded.

Frequency (MHz)	Peak E-Field @3m (dB $\mu\text{V/m}$ )	*QP/Average E-Field @3m (dB $\mu\text{V/m}$ )	Antenna Plane (H/V)	Field Strength Limit of Fundamental/Harmonic (dB $\mu\text{V/m}$ )	Field Strength Limit of § 15.209 (dB $\mu\text{V/m}$ )	Margin (dB)
2440.00	97.77	67.26	V	94.0	--	-26.7
2440.00	100.06	68.48	H	94.0	--	-25.5
4880.00	53.62	35.40	V	54.0	54.0	-18.6

\*QP for frequencies below or equal to 1000 MHz; Average for frequencies above 1000 MHz.

## EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
EMC Analyzer	Agilent Technologies	E7401A	US40240432	9kHz - 1.5GHz	12 Jan 2012
Attenuator	Pasternack	PE7010-20	---	DC to 2 GHz 20dB attenuation	18 Jan 2012
L.I.S.N. Used	EMCO	3810/2	2209	9 kHz – 30 MHz	25 Aug 2011
Coupling Decoupling Network	Fischer Custom Communications Inc.	FCC-801-S9	24	150 kHz - 230 MHz	28 Jan 2012
Semi-Anechoic Chamber	TDK	FCC: 91038 IC: 2049A-3	--	--	1 May 2011
Spectrum Analyzer	Rohde & Schwarz	FSEK	834157/005	9 kHz – 40 GHz	26 Jul 2011
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	09 Mar 2011
RF Amplifier	AH System	PAM-0118	225	20 MHz – 18 GHz	18 Apr 2011
Biconi-Log Antenna	Emco	3142C	00026873	26 – 3000 MHz	18 Apr 2011
Horn Antenna	Emco	3155	9701-5061	1 – 18 GHz	28 Nov 2011
Horn Antenna	ETS-Lindgren	3160-09	00118385	18 – 26.5 GHz	17 Jul 2011
RF Amplifier	Spacek-labs	SLKK-30-6	8D20	18 – 40 GHz	15 Feb 2012
High Pass Filter	K&L	11SH10-4000T12000.0/0	4	Cut off 4 GHz	cal on use
Environmental Chamber	Envirotronics	SSH32C	11994847-S-11059	-60 to 177 degree C	06 Aug 2011

## EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

### 7.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

	Line Conducted Emission Measurement Uncertainty (150 kHz – 30 MHz):	Measured	Limit
$u_c$	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	$\pm 1.57$	$\pm 1.8$
$U$	Expanded uncertainty U: $U = 2u_c(y)$	$\pm 3.14$	$\pm 3.6$

### 7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	Measured	Limit
$u_c$	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	$\pm 2.15$	$\pm 2.6$
$U$	Expanded uncertainty U: $U = 2u_c(y)$	$\pm 4.30$	$\pm 5.2$

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	Measured	Limit
$u_c$	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	$\pm 2.39$	$\pm 2.6$
$U$	Expanded uncertainty U: $U = 2u_c(y)$	$\pm 4.78$	$\pm 5.2$

	Radiated Emission Measurement Uncertainty @ 3 m, Horizontal & Vertical (1 – 18 GHz):	Measured	Limit
$u_c$	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	$\pm 1.87$	Under consideration
$U$	Expanded uncertainty U: $U = 2u_c(y)$	$\pm 3.75$	Under consideration