FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

LF INITIATION TOOL, 125 kHz LF TRANSMITTER

MODEL NUMBER: 200.0162

FCC ID: NATLF0162

REPORT NUMBER: 04U3109-1

ISSUE DATE: DECEMBER 15, 2004

Prepared for
SMARTIRE
13151 VANIER PLACE, STE. 150
RICHMOND, BC V6V 2J1, CANADA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888

LAB CODE:200065-0

Revision History

Rev.	Revisions	Revised By

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SMARTIRE
13151 VANIER PLACE, STE. 150
RICHMOND, BC V6V 2J1, CANADA

EUT DESCRIPTION: LF INITIATION TOOL, 125 kHz LF TRANSMITTER

MODEL: 200.0162

SERIAL NUMBER: 162-0-0-00000051

DATE TESTED: DECEMBER 09, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Equipment Type	**125 kHz LF Transmitter**
Fundamental Frequency	**125 kHz**
Power Source	**9V Battery**
Manufacturer	**Smartire**

5.2. SOFTWARE AND FIRMWARE

To activate continuous transmission, press on the button.

5.3. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined by X, Y, and Z-axis.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

N/A.

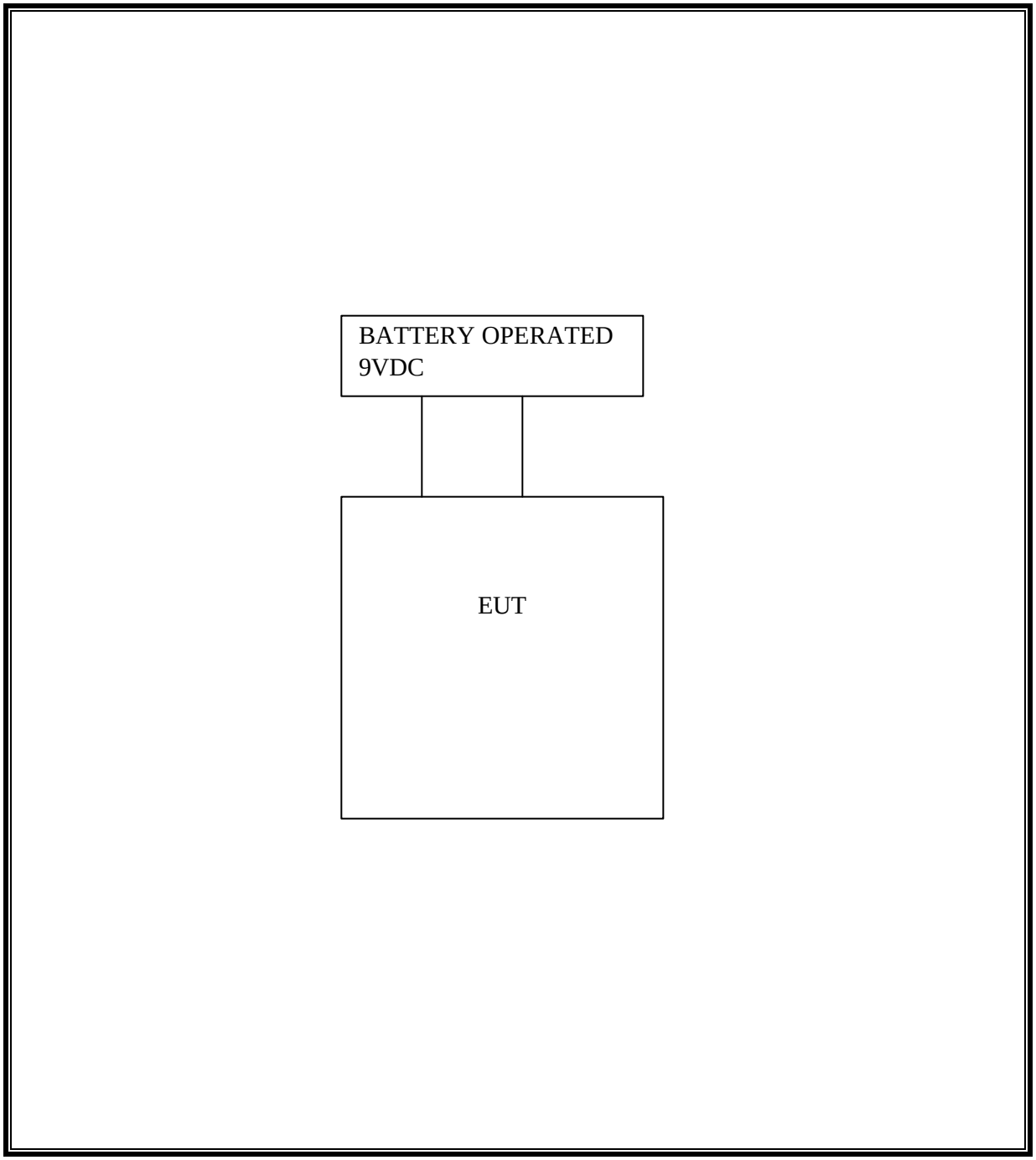
I/O CABLES

N/A.

TEST SETUP

The EUT is stand-alone unit.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Antenna, Loop 9 kHz ~ 30 MHz	EMCO	6502	9202-2722	9/7/2006
SA Display Section 2	HP	85662A	2816A16696	5/24/2005
SA RF Section, 1.5 GHz	HP	85680B	2814A04227	2/22/2005
Quasi-Peak Adaptor	HP	85650A	2811A01155	5/24/2005
Spectrum Analyzer, 26.5 GHz	HP	8593EM	3710A00205	1/6/2006
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/2004

7. LIMITS AND RESULTS

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS (< 30 MHz)

LIMITS

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.750	24000/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

§15.209 (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

TEST PROCEDURE

The EUT is tested on the Open Area Test Site. The antenna to EUT distance is 10 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 150 kHz the resolution bandwidth is set to 3 kHz, or 200 Hz CISPR 6 dB for peak detection measurements or VBW=10 Hz for average detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 150 kHz the resolution bandwidth is set to 9 kHz, or 10 kHz CISPR 6 dB for peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The center of the loop antenna is fixed at 1

meter above the field. Measurements are made with the antenna polarized in both the Face-On and the Face-Off positions.

SPURIOUS EMISSIONS BELOW 30 MHz

FCC Part 15, Subpart C **10 Meter Distance Measurement At Open Field**

Company:Smartire
Project #:04U3109-1
Model #:200.0161 LF Initiation Tool
Tester: Chin Pang
Date: 12/9/2004

Frequency (MHz)	PK (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On:											
0.125	68.8		10.48	-59.08	18.20		46.67	25.67	-27.5	-7.5	10m distance
0.25	60.4		10.39	-59.08	11.70		39.65	19.65	-27.9	-7.9	10m distance
0.375	53.9		10.29	-59.08	5.11		36.12	16.12	-31.0	-11.0	10m distance

Frequency (MHz)	PK (dBuV)	QP (dBuV)	AF dB/m	Distance Correction (dB)		QP Corrected Reading (dBuV/m)		QP Limit (dBuV/m)		QP Margin (dB)	Notes
Loop Antenna Face On:											
0.5	38.5	35.1	10.2	-19.08		26.22		33.62		-7.4	10m distance
0.625	38.7	35.5	10.23	-19.08		26.64		31.69		-5.0	10m distance
0.75	37.8	34.2	10.25	-19.08		25.37		30.10		-4.7	10m distance
0.875	38.1	32.8	10.28	-19.08		23.99		28.78		-4.8	10m distance
1	32.5	26.8	10.3	-19.08		18.02		27.60		-9.6	10m distance
1.25	32.3	27.5	10.29	-19.09		18.70		25.67		-7.0	10m distance

Frequency (MHz)	PK (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face Off:											
0.125	40.5		10.48	-59.08	-8.10		46.67	25.67	-53.8	-33.8	10m distance
0.25	30.5		10.39	-59.08	-18.20		39.65	19.65	-57.8	-37.8	10m distance
0.375	35.8		10.29	-59.08	-12.99		36.12	16.12	-49.1	-29.1	10m distance

Frequency (MHz)	PK (dBuV)	QP (dBuV)	AF dB/m	Distance Correction (dB)		QP Corrected Reading (dBuV/m)		QP Limit (dBuV/m)		QP Margin (dB)	Notes
Loop Antenna Face Off:											
0.5	33.8		10.2	-19.08		24.92		33.62		-8.7	10m distance
0.625	34.5		10.23	-19.08		25.64		31.69		-6.0	10m distance
0.75	35.1		10.25	-19.08		26.27		30.10		-3.8	10m distance
0.875	31.4		10.28	-19.08		22.59		28.76		-6.2	10m distance
1	30		10.3	-19.09		21.22		27.60		-6.4	10m distance

Note: The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kH and above 10000Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector.

PK = Peak Readings
QP = Quasi Peak Readings
AV = Average Readings
AF = Antenna factor

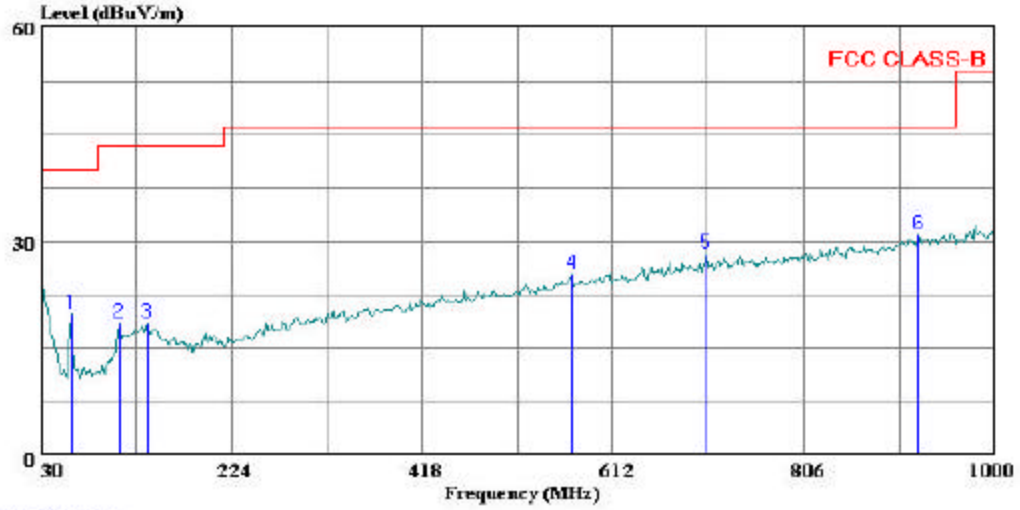
7.1.2. DIGITAL RADIATED EMISSIONS (Standby Mode)

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 4 File#: 3109 smartire.EMI Date: 12-09-2004 Time: 11:15:27



(Audix ATC)
Trace: 3 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 04U3109-1
Company: : Smartire
EUT: : 125KHz LF Transmitter
Model No: : 200.0162
Configuration: : EUT only
Target of Test: : FCC 15.109
Mode of Operation: Standby Mode

HORIZONTAL DATA

Page: 1

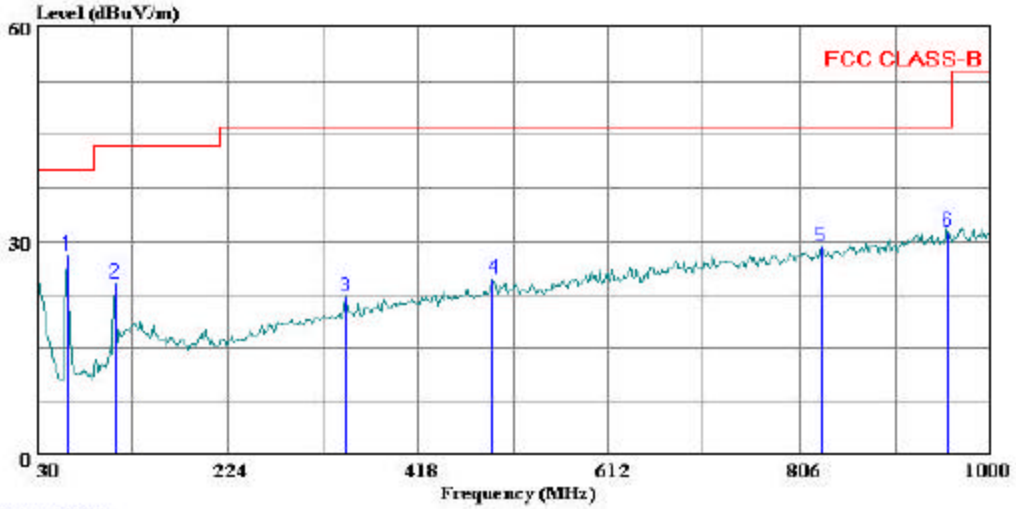
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	61.040	37.88	-18.18	19.70	40.00	-20.30	Peak
2	109.540	32.03	-13.62	18.41	43.50	-25.09	Peak
3	138.640	29.95	-11.46	18.49	43.50	-25.01	Peak
4	570.290	31.29	-5.93	25.36	46.00	-20.64	Peak
5	708.030	32.06	-3.78	28.28	46.00	-17.72	Peak
6	921.430	31.18	-0.22	30.96	46.00	-15.04	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 2 File#: 3109 smartire.EMI Date: 12-09-2004 Time: 11:11:41



(Audix ATC)
Trace: 1 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 04U3109-1
Company: : Smartire
EUT: : 125KHz LF Transmitter
Model No: : 200.0162
Configuration: : EUT only
Target of Test: : FCC 15.109
Mode of Operation: Standby mode

VERTICAL DATA

Page: 1

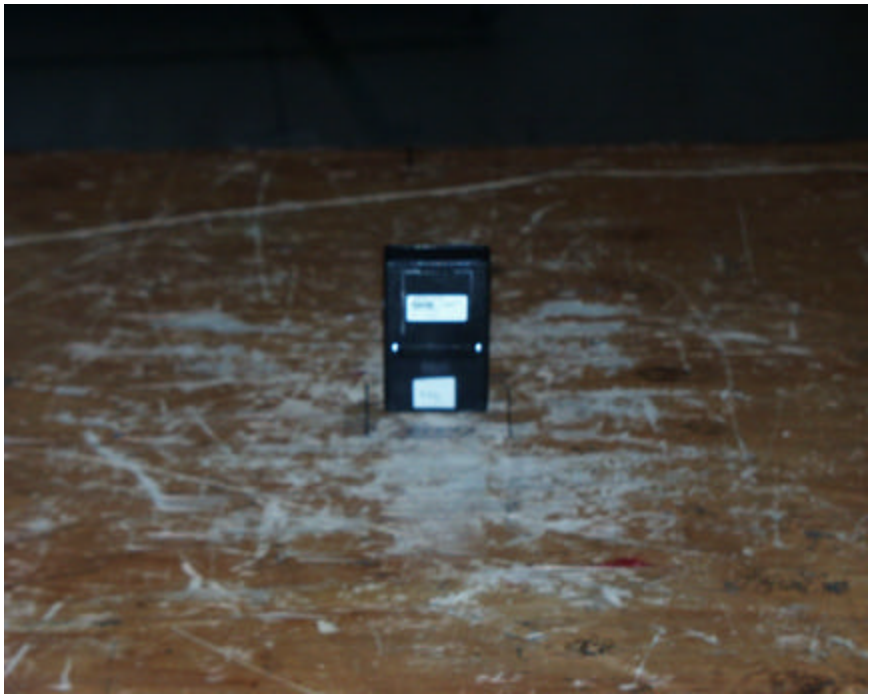
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	61.040	46.18	-18.18	28.00	40.00	-12.00	Peak
2	109.540	37.74	-13.62	24.12	43.50	-19.38	Peak
3	344.280	31.75	-9.63	22.12	46.00	-23.88	Peak
4	494.630	31.64	-6.97	24.67	46.00	-21.33	Peak
5	827.340	31.14	-1.92	29.22	46.00	-16.78	Peak
6	956.350	31.17	0.17	31.34	46.00	-14.66	Peak

8. SETUP PHOTOS

DIGITAL DEVICE RADIATED EMISSIONS SETUP

DIGITAL DEVICE FRONT PHOTO

DIGITAL DEVICE BACK PHOTO

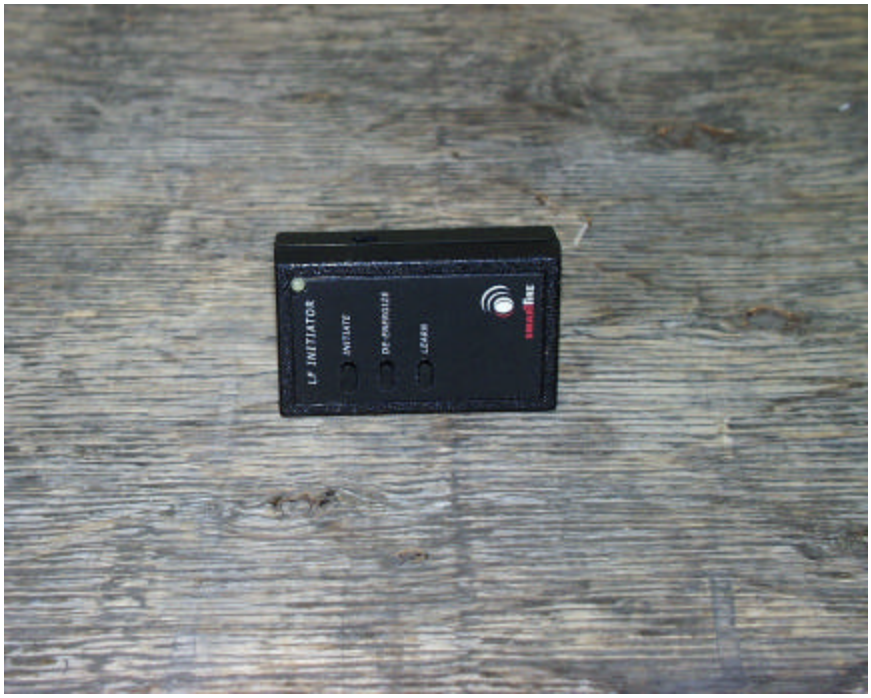


RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

X-AXIS FRONT PHOTO

Y-AXIS FRONT PHOTO

Z-AXIS FRONT PHOTO



END OF REPORT