Communication Certification Laboratory

July 10, 2003

Mr. Jason Lee
Firstech LLC.
3415 116th Ave. S. #113
Seattle, WA 98168

Dear Jason:

Communication Certification Laboratory (CCL) has completed Certification testing for the Firstech LLC. Model 1WPLL4R. One set of documentation is enclosed for your files; the original copy has been electronically forwarded to the TCB for their review. Once this review is complete the TCB will issue the FCC grant.

Please let us know if we can be of further assistance in meeting your testing needs.

Sincerely yours,

COMMUNICATION CERTIFICATION LABORATORY

Joseph W. Jackson
V.P. Marketing

Enclosures
73-7891:nph

Corporate Office and Laboratory
1940 West Alexander Street Salt Lake City, Utah 84119-2039
Tel (801) 972-6146 Fax (801) 972-8432

www.cclab.com

EMC Open Area Test Site
500 West Wanship Road Wanship, Utah 84017-9760
Tel (435) 336-5868 Fax (435) 336-2785

TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY
1940 W. Alexander Street
Salt Lake City, Utah
84119-2039

Type of Report: Certification

TEST OF: 1WPLL4R

FCC ID: N99J1WPLL4R

To FCC PART 15, Subpart C
Section 15.249

Test Report Serial No: 73-7891

Applicant:

Firstech LLC.
3415 116th Ave. S. #113
Seattle, WA 98168

Date of Test: July 7, 2003

Issue Date: July 9, 2003

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Communication Certification Laboratory to determine compliance of the device described below with the certification requirements of FCC Part 15, Subpart C Section 15.249. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Firstech LLC.
- Manufacturer: Youngshin Electronics Co., LTD
- Trade Name: Compustar
- Model Number: 1WPLL4R
- FCC ID: N99J1WPLL4R

On this 9th day of July 2003, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

Although NVLAP has recognized that the Communication Certification Laboratory EMC testing facilities are in good standing, NVLAP does not endorse the product described in this report.

COMMUNICATION CERTIFICATION LABORATORY

Tested by: Norman P. Hansen
EMC Technician

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SECTION 1.0 CLIENT INFORMATION

1.1 Client Information:

Company Name: Firstech LLC.
3415 116th Ave. S. #113
Seattle, WA 98168

Contact Name: Jason Lee
Title: President

1.2 Manufacturer:

Company Name: Youngshin Electronics Co., Ltd.
4FL Hirun Town Bldg 536-3. Unhaeng-Dong.
Sihung, Kyungki-Do, KOREA 429-060

Contact Name: Young T1 Change
Title: President

SECTION 2.0 EQUIPMENT UNDER TEST (EUT)

2.1 Identification of EUT:

Trade Name:	Compustar
Model Name or Number:	1WPLL4R
Serial Number:	None
Options Fitted:	N/A
Country of Manufacture:	Korea

2.2 Description of EUT:

The 1WPLL4R is a hand-held transmitter for an automobile alarm, remote entry, or an auto start system operating at 907.15 MHz. The 1WPLL4R has 4 buttons. By pressing a button or a combination of buttons, the 1WPLL4R will transmit an RF signal to a receiver installed in a vehicle.

2.3 Modification Incorporated/Special Accessories on EUT:

There were no modifications or special accessories required to comply with the specification.

Signature: _____

Typed Name: Jason Lee

Title: President

SECTION 3.0 TEST SPECIFICATION, METHODS & PROCEDURES

3.1 Test Specification:

Title: FCC PART 15, Subpart C (47 CFR 15).
Section 15.249

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz and 24.0-24.25 GHz.

Purpose of Test: The tests were performed to demonstrate Initial compliance.

3.2 Methods & Procedures:

3.2.1 § 15.249

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902 – 928 MHz	50	500
2400 – 2483.5 MHz	50	500
5725 – 5875 MHz	50	500
24.0 – 24.25 GHz	250	2500

(b) Fixed, point-to-point operation as referred to in this paragraph shall be limited to systems employing a fixed transmitter transmitting to a fixed remote location. Point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information are not allowed. Fixed, point-to-point operation is permitted in the 24.05 – 24.25 GHz band subject to the following conditions:

(1) The field strength of emissions in this band shall not exceed 2500 millivolts/meter.

(2) The frequency tolerance of the carrier signal shall be maintained within ±0.001% of the operating frequency over a temperature variation of –20 degrees to +50 degrees C at normal supply voltage, and for a variation

in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery powered equipment, the equipment tests shall be performed using a new battery.

(3) Antenna gain must be at least 33dBi. Alternatively, the main lobe beamwidth must not exceed 3.5 degrees. The beamwidth limit shall apply to both the azimuth and elevation planes. At antenna gains over 33 dBi or beamwidths narrower than 3.5 degrees, power must be reduced to ensure that the field strength does not exceed 2500 millivolts/meter.

(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 Section 15.209, whichever is the lesser attenuation.

(e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above 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 milivolts/meter at 3 meters along the antenna azimuth.

(f) Parties considering the manufacture, importation, marketing or operation of equipment under this section should also note the requirements in section 15.37(d).

3.2.2 § 15.207 Conducted Limits

(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 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power

line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 – 0.5*	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	60	50

*Decreases with the logarithm of the frequency.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation wile connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.3 Test Procedure

The line conducted and radiated emissions testing was performed according to the procedures in ANSI C63.4 (1992). Testing was performed at CCL's Wanship open area test site #2, located at 550 West Wanship Road, Wanship, UT. This site has been fully described in a report submitted to the FCC, and was accepted in a letter dated October 23, 2000 (90504).

CCL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and has been accepted under NVLAP Lab Code:100272-0, which is effective until September 30, 2003.

For radiated emissions testing at 30 MHz or above that is performed at distances closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

SECTION 4.0 OPERATION OF EUT DURING TESTING

4.1 Operating Environment:

Power Supply: 3 volt CR2016 Lithium battery
AC Mains Frequency: N/A
Current Rating: N/A

4.2 Operating Modes:

Each mode of operation was exercised to produce worst-case emissions. The worst-case emissions were with the 1WPLL4R transmitting continuously.

The 1WPLL4R operates on a 3 volt battery; therefore, conducted emissions testing is not applicable.

4.3 EUT Exercise Software:

No exercise software was required to produce the worst-case emissions.

SECTION 5.0 SUMMARY OF TEST RESULTS

5.1 FCC PART 15, Subpart C Sections 15.249

5.1.1 Summary of Tests:

Section	Test Performed	Frequency Range (MHz)	Result
15.249 (a)	Radiated Emissions – Transmitting at 907.15 MHz	30 to 9,100	Complied
15.207	Line Conducted Emissions (Hot Lead to Ground)	0.15 to 30	Not Applicable
15.207	Line Conducted Emissions (Neutral Lead to Ground)	0.15 to 30	Not Applicable

5.2 Result

In the configuration tested, the EUT complied with the requirements of the specification.

SECTION 6.0 MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS

6.1 General Comments:

This section contains the test results only. Details of the test methods used and a list of the test equipment used during the measurements can be found in Appendix 1 of this report.

6.2 Test Results:

6.2.1 Radiated Interference Level Data - (Vertical Polarity) (Transmitting at 907.15 MHz)

Frequency (MHz)	Detector	Receiver Reading ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Limit ($dB\mu V/m$)	Margin (dB)
907.15	Quasi-Peak	61.9	28.0	89.9	94.0	-4.1
1814.12	Peak	61.4	-7.8	53.6	74.0	-20.4
1814.12	Average	59.7	-7.8	51.9	54.0	-2.1
2721.33*	Peak	48.4	-4.4	44.0	74.0	-30.0
2721.33*	Average	47.2	-4.4	42.8	54.0	-11.2
3628.50*	Peak	45.7	-1.0	44.7	74.0	-29.3
3628.50*	Average	42.9	-1.0	41.9	54.0	-12.1
4535.65	Peak	47.6	0.2	47.8	74.0	-26.2
4535.65	Average	43.2	0.2	43.4	54.0	-10.6
5443.06*	Peak	46.6	3.1	49.7	74.0	-24.3
5443.06*	Average	39.6	3.1	42.7	54.0	-11.3
6350.24	Peak	46.8	3.6	50.4	74.0	-23.6
6350.24	Average	38.9	3.6	42.5	54.0	-11.5
7257.38*	Peak	51.4	5.5	56.9	74.0	-17.1
7257.38*	Average	45.3	5.5	50.8	54.0	-3.2
8164.53*	Peak	48.2	5.5	53.7	74.0	-20.3
8164.53*	Average	39.2	5.5	44.7	54.0	-9.3
9071.2*	Peak	46.1**	8.2	54.3	74.0	-19.7
9071.2*	Average	34.2**	8.2	42.4	54.0	-11.6

Note 1: * Emissions within restricted bands of § 15.205

Note 2: ** No emission detected, noise floor reading from spectrum analyzer

6.2.2 Radiated Interference Level Data - (Horizontal Polarity) (Transmitting at 907.15 MHz)

Frequency (MHz)	Detector	Receiver Reading ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Limit ($dB\mu V/m$)	Margin (dB)
907.15	Quasi-Peak	59.7	28.0	87.7	94.0	-6.3
1814.12	Peak	59.9	-7.8	52.1	74.0	-21.9
1814.12	Average	58.4	-7.8	50.6	54.0	-3.4
2721.33*	Peak	49.7	-4.4	45.3	74.0	-28.7
2721.33*	Average	42.5	-4.4	38.1	54.0	-15.9
3628.50*	Peak	46.2	-1.0	45.2	74.0	-28.8
3628.50*	Average	40.1	-1.0	39.1	54.0	-14.9
4535.65	Peak	46.0	0.2	46.2	74.0	-27.8
4535.65	Average	38.6	0.2	38.8	54.0	-15.2
5443.06*	Peak	44.5	3.1	47.6	74.0	-26.4
5443.06*	Average	35.8	3.1	38.9	54.0	-15.1
6350.24	Peak	46.8	3.6	50.4	74.0	-23.6
6350.24	Average	35.6	3.6	39.2	54.0	-14.8
7257.38*	Peak	46.5	5.5	52.0	74.0	-22.0
7257.38*	Average	36.3	5.5	41.8	54.0	-12.2
8164.53*	Peak	45.6**	5.5	51.1	74.0	-22.9
8164.53*	Average	35.8**	5.5	41.3	54.0	-12.7
9071.2*	Peak	46.1**	8.2	54.3	74.0	-19.7
9071.2*	Average	34.2**	8.2	42.4	54.0	-11.6

Note 1: * Emissions within restricted bands of § 15.205

Note 2: ** No emission detected, noise floor reading from spectrum analyzer

6.3 Sample Field Strength Calculation:

The field strength is calculated by adding the Correction Factor (Antenna Factor + Cable Factor), to the measured level from the receiver. The receiver amplitude reading is compensated for any amplifier gain. The basic equation with a sample calculation is shown below:

FS = RA + CF Where

FS = Field Strength
RA = Receiver Amplitude Reading (Receiver Reading - Amplifier Gain)
CF = Correction Factor (Antenna Factor + Cable Factor)

Assume a receiver reading of 42.5 $dB\mu V$ is obtained from the receiver, an amplifier gain of 26.5 dB and a correction factor of 8.5 dB. The field strength is calculated by subtracting the amplifier gain and adding the correction factor, giving a field strength of 24.5 $dB\mu V/m$, FS = (42.5 - 26.5) + 8.5 = 24.5 $dB\mu V/m$

APPENDIX A TEST PROCEDURES AND TEST EQUIPMENT

Conducted Disturbance at Mains Ports:

The conducted disturbance at mains ports from the ITE was measured using a spectrum analyzer with a quasi-peak adapter for peak, quasi-peak and average readings. The quasi-peak adapter uses a bandwidth of 9 kHz, with the spectrum analyzer's resolution bandwidth set at 100 kHz, for readings in the 150 kHz to 30 MHz frequency ranges.

The conducted disturbance at mains ports measurements are performed in a screen room using a (50 Ω/50 μH) Line Impedance Stabilization Network (LISN).

Where mains flexible power cords are longer than 1 m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

Where the EUT is a collection of ITE with each ITE having its own power cord, the point of connection for the LISN is determined from the following rules:

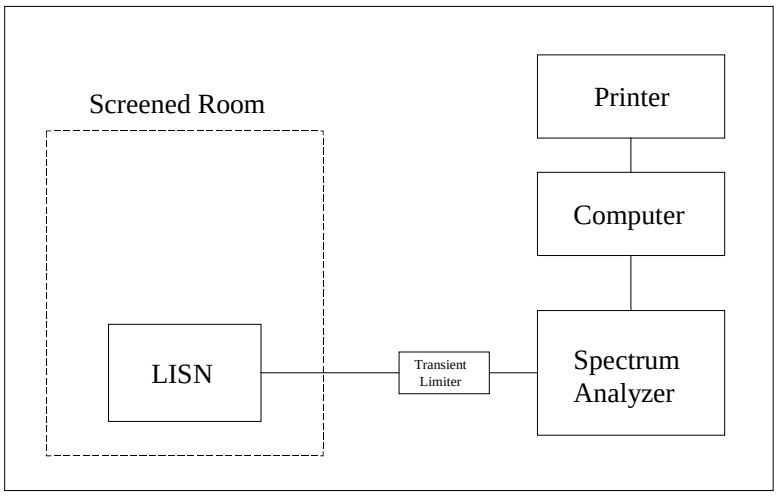
a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
c) Power cords which are specified by the manufacturer to be connected via a host unit or other power supplying equipment shall be connected to that host unit and the power cords of that host unit connected to the LISN and tested.
d) Where a special connection is specified, the necessary hardware to effect the connection is supplied by the manufacturer for the testing purpose.
e) When testing equipment with multiple mains cords, those cords not under test are connected to an artificial mains network (AMN) different than the AMN used for the mains cord under test.

Desktop ITE are placed on a non-conducting table at 0.8 meters from the metallic floor. The vertical coupling plane (wall of the screened room) is located 40 cm to the rear of the EUT. Floor standing equipment is placed directly on the earth grounded floor.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/31/2002
Test Software	CCL	Conducted Emissions	Revision 1.2	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/01/2002
Quasi-Peak Detector	Hewlett Packard	85650A	3107A01582	10/02/2002
LISN	EMCO	3825/2	9305-2099	01/27/2003
Conductance Cable Wanship Site #2	CCL	Cable J	N/A	12/31/2002
Transient Limiter	Hewlett Packard	11947A	3107A02266	12/31/2002

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Conducted Emissions Test Setup



Radiated Interference Emissions:

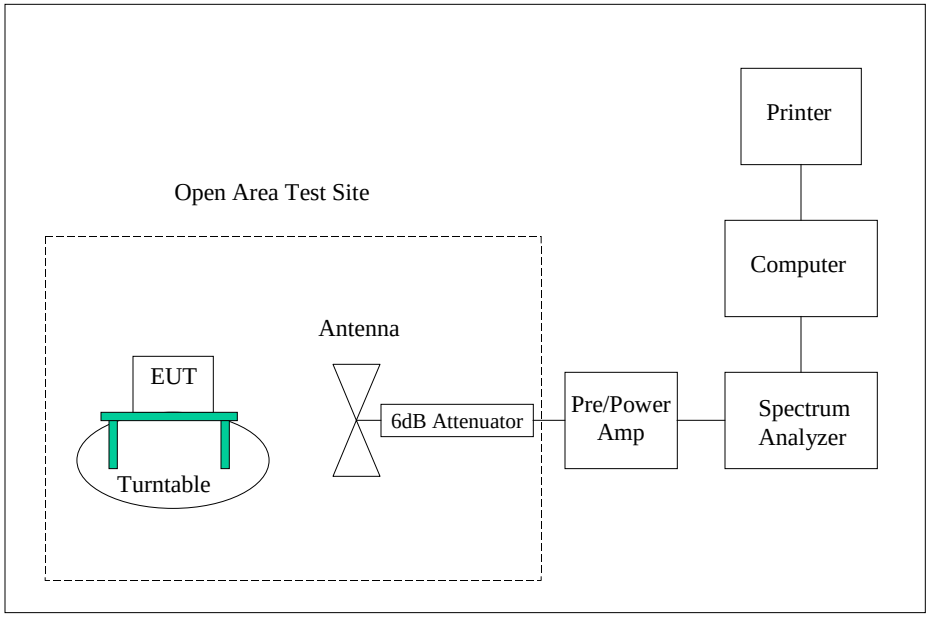
The radiated emission from the intentional radiator was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 26 dB was used to increase the sensitivity of the measuring instrumentation in the frequency range of 30 to 1000 MHz. An amplifier with 36 dB gain was used in the frequency range of 1000 to 9100 MHz. The quasi-peak adapter uses a bandwidth of 120 kHz, with the spectrum analyzer's resolution bandwidth set at 1 MHz, for readings in the 30 to 1000 MHz frequency range. For peak emissions above 1000 MHz the spectrum analyzer's resolution bandwidth was set to 1 MHz and the video bandwidth was set to 3 MHz. For average emissions above 1000 MHz the spectrum analyzer's resolution bandwidth was set to 1 MHz and the video bandwidth was set to 10 Hz.

A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz and a Double Ridge Guide Horn antenna was used to measure the frequency range 1 GHz to 9.1 GHz, at a distance of 3 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/31/2002
Test Software	CCL	Radiated Emissions	Revision 1.3	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/01/2002
Quasi-Peak Detector	Hewlett Packard	85650A	3107A01582	10/02/2002
Biconilog Antenna	EMCO	3142	9601-1009	12/30/2002
Double Ridged Guide Antenna	EMCO	3115	2129	06/10/2003
High Frequency Amplifier	Hewlett Packard	8449B	3008A00990	04/25/2003
3 Meter Radiated Emissions Cable Wanship Site #2	CCL	Cable K	N/A	12/31/2002
Pre/Power-Amplifier	Hewlett Packard	8447F	3113A05161	09/19/2002

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Radiated Emissions Test Setup



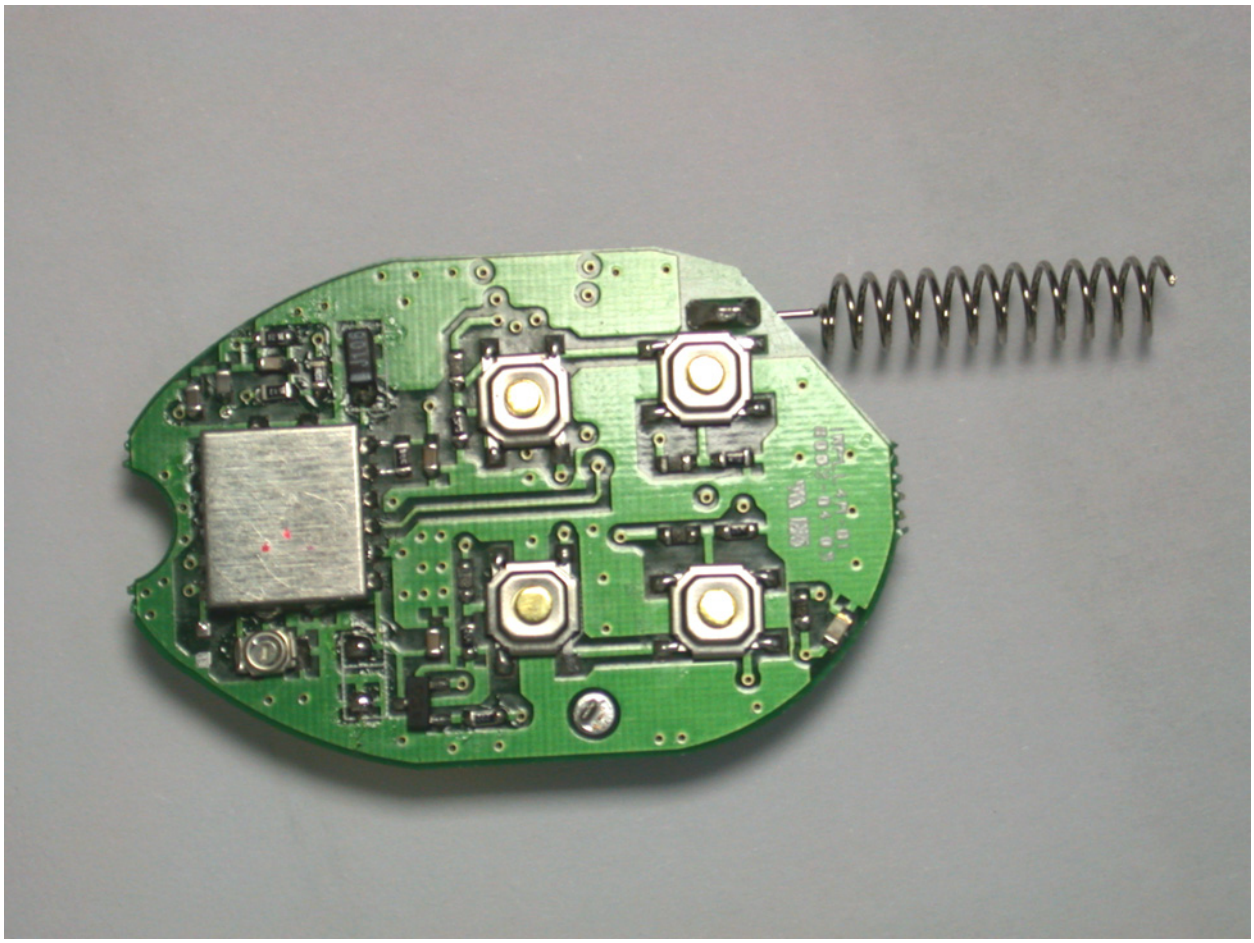
APPENDIX B PHOTOGRAPHS:

Photograph 1 - View of the Test Setup

Photograph 2 – Front View of the 1WPLL4R

Photograph 3 - Bottom View of the 1WPll4R

Photograph 4 – Top Side of the PCB



Photograph 5 – Bottom Side of the PCB