

Nemko-CCL, Inc.
1940 West Alexander Street
Salt Lake City, UT 84119
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Test Report

Certification

Test Of: RangeTRACKER

FCC ID: 2ADS3-TS1RTKR101

Test Specifications:

FCC PART 15, Subpart C (47 CFR 15)
15.203, 15.207, and 15.209

Test Report Serial No: 275504-16.2

Applicant:
TAGSMYTH LLC
940 South 2000 West #140
Springville, UT 84663
U.S.A

Dates of Test: April 8 & 9, 2015

Report Issue Date: April 27, 2015

Accredited Testing Laboratory By:



NVLAP Lab Code 100272-0

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Nemko-CCL, Inc. to document compliance of the device described below with the requirements of Federal Communications Commission (FCC) Part 15, Subpart C, 15.203, 15.207, and 15.209. 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: TAGSMYTH LLC
- Manufacturer: IMSAR LLC
- Brand Name: TAGSMYTH
- Model Name: RangeTRACKER
- Model Number: TS1-RTKR101
- FCC ID: 2ADS3-TS1RTKR101

On this 27th day of April 2015, I, individually and for Nemko-CCL, Inc., 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 Nemko-CCL, Inc. EMC testing facilities are in good standing, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Nemko-CCL, Inc.



Tested by: Norman P. Hansen
Test Technician



Reviewed by: Thomas C. Jackson
Certification Manager

| Revision History | | |
|------------------|--|----------------|
| Revision | Description | Date |
| 1 | Original Report Release | April 23, 2015 |
| 2 | At the request of the client, Photographs 17, 20, 22, 24, 25, and 26 of Appendix 2 were replaced with photos that do not indicate specific manufacturer and component. | April 27, 2015 |

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SECTION 1.0 CLIENT INFORMATION

1.1 Applicant:

Company Name: TAGSMYTH LLC
940 South 2000 West #140
Springville, UT 84663
U.S.A

Contact Name: Ryan Smith
Title: President/CEO

1.2 Manufacturer:

Company Name: IMSAR LLC
940 South 2000 West #140
Springville, UT 84663
U.S.A

Contact Name: Ryan Smith
Title: President/CEO

SECTION 2.0 EQUIPMENT UNDER TEST (EUT)**2.1 Identification of EUT:**

Brand Name: TAGSMYTH
Model Name: RangeTRACKER
Model Number: TS1-RTKR101
Serial Number: None
Dimensions: 18 cm x 18 cm x 16.2 cm

2.2 Description of EUT:

The RangeTRACKER is a handheld device for waking up asset tracking devices and transmitting to and receiving information from the tracking devices. The device is battery powered with a mini USB port provided for charging or data transfer. The RangeTRACKER has a 150 kHz transmitter, a modularly certified Bluetooth transceiver, and a transmitter and receiver operating in the 902 – 928 MHz band.

This report covers the circuitry of the devices subject to FCC Part 15, Subpart C, 15.209. The circuitry of the device subject to FCC Subpart B was found to be compliant and is covered in Nemko-CCL, Inc. report 275504-9. The transmitter, subject to FCC §15.247 is covered in Nemko-CCL report 275504-1.

2.3 EUT and Support Equipment:

The FCC ID numbers for all the EUT and support equipment used during the test are listed below:

| Brand Name Model Name Serial No. | FCC ID Number | Description | Name of Interface Ports / Interface Cables |
|--|----------------------|-----------------------------------|--|
| BN: TAGSMYTH MN: RangeTRACKER (Note 1) SN: None | 2ADS3- TS1RTKR101 | Handheld asset tracking device | See Section 2.4 |
| BN: Samsung MN: N130 SN: LCM93HS900480X | DoC | Netbook computer | USB/USB A to mini USB cable (Note 2) Ethernet/Cat 5e cable |
| BN: Trendnet MN: TE100-S8P SN: 0243C3A16540 | DoC | Network Switch | LAN/Cat 5e cables |

Note: (1) EUT

(2) Interface port connected to EUT (See Section 2.4)

The support equipment listed above was not modified in order to achieve compliance with this standard.

2.4 Interface Ports on EUT:

| Name of Port | No. of Ports Fitted to EUT | Cable Descriptions/Length |
|--------------|----------------------------|------------------------------------|
| Charge/data | 1 | USB A to mini USB cable/2.0 meters |

2.5 Modification Incorporated/Special Accessories on EUT:

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

SECTION 3.0 TEST SPECIFICATION, METHODS & PROCEDURES**3.1 Test Specification:**

Title: FCC PART 15, Subpart C (47 CFR 15)
15.203, 15.207, and 15.209

Limits and methods of measurement of radio interference characteristics of radio frequency devices.

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

3.2 Methods & Procedures:**3.2.1 §15.203 Antenna Requirement**

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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

3.2.2 §15.207 Conducted Limits

(a) Except for Class A digital devices, for equipment 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 μ H/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 band edges.

| Frequency of Emission (MHz) | Conducted Limit (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | 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.

3.2.3 §15.209 Radiated Emission Limits; General Requirements

(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) | |
| 0.490 – 1.705 | 24000/F (kHz) | |
| 1.705 – 30.0 | 30 | |
| 30 – 88 | 100** | |
| 88 – 216 | 150** | |
| 216 – 960 | 200** | |
| Above 960 | 500 | |

** 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., §§ 15.231 and 15.241.

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

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

(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.

(e) The provisions in §§ 15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated

under this part.

(f) In accordance with § 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in § 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in § 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in § 15.109 that are applicable to the incorporated digital device.

(g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

3.3 Test Procedure

The testing was performed according to the procedures in ANSI C63.4: 2003 and 47 CFR Part 15. Testing was performed at the Nemko-CCL, Inc. Wanship open area test site #2, located at 29145 Old Lincoln Highway, Wanship, UT. This site has been registered with the FCC, and was renewed January 22, 2015 (90504). This registration is valid for three years.

Nemko-CCL, Inc. is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Lab Code: 100272-0, which is effective until September 30, 2015.

SECTION 4.0 OPERATION OF EUT DURING TESTING**4.1 Operating Environment:**

Power Supply: 3.7 Vdc from batteries, or 5 VDC at charging port from host or AC to DC adapter

4.2 Operating Modes:

The transmitters were tested with the EUT placed on 3 orthogonal axes operating from battery and when connected to the computer via USB while in a constant transmit mode. The AC mains voltage to the AC adapter of the host computer was varied as required by §15.31(e) with no change seen in the voltage supplied to the transmitter or in transmitter characteristics. Fully charged batteries were used for testing when battery powered.

4.3 EUT Exercise Software:

TAGSMYTH RangeTRACKER v1 test software was used to exercise the transmitters.

SECTION 5.0 SUMMARY OF TEST RESULTS**5.1 FCC Part 15, Subpart C**

The RangeTRACKER transceiver was subjected to each of the tests shown in the summary table below.

5.1.1 Summary of Tests:

| Section | Environmental Phenomena | Frequency Range (MHz) | Result |
|---------|--------------------------------------|------------------------|----------|
| 15.203 | Antenna Requirements | Structural requirement | Complied |
| 15.207 | Conducted Disturbance at Mains Ports | 0.15 to 30 | Complied |
| 15.209 | Fundamental Emission | 0.15 | Complied |
| 15.209 | Spurious Emissions | 0.009 - 1000 | Complied |

Note 1: Compliance with these requirements is shown in documents filed with the FCC at the time of Certification.

5.2 Result

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

SECTION 6.0 MEASUREMENTS AND 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 §15.203 Antenna Requirements

The EUT uses a wire wound on a toroid for the antenna. It is soldered to the PCB and is not user replaceable.

RESULT

The EUT complied with the specification.

6.2.2 §15.207 Conducted Disturbance at the AC Mains Ports

| Frequency (MHz) | AC Mains Lead | Detector | Measured Level (dB μ V) | Limit (dB μ V) | Margin (dB) |
|-----------------|---------------|---------------------|-----------------------------|--------------------|-------------|
| 0.17 | Hot Lead | Quasi-Peak (Note 2) | 53.3 | 65.2 | -11.9 |
| 0.17 | Hot Lead | Average (Note 2) | 42.7 | 55.2 | -12.5 |
| 0.19 | Hot Lead | Quasi-Peak (Note 2) | 49.9 | 63.9 | -14.0 |
| 0.19 | Hot Lead | Average (Note 2) | 31.6 | 53.9 | -22.3 |
| 0.24 | Hot Lead | Peak (Note 1) | 46.0 | 52.0 | -6.0 |
| 0.28 | Hot Lead | Peak (Note 1) | 42.4 | 50.8 | -8.4 |
| 0.48 | Hot Lead | Peak (Note 1) | 35.9 | 46.4 | -10.5 |
| 4.25 | Hot Lead | Peak (Note 1) | 35.8 | 46.0 | -10.2 |
| 0.18 | Neutral Lead | Quasi-Peak (Note 2) | 51.6 | 64.5 | -12.9 |
| 0.18 | Neutral Lead | Average (Note 2) | 41.4 | 54.5 | -13.1 |
| 0.21 | Neutral Lead | Peak (Note 1) | 48.2 | 53.1 | -4.9 |
| 0.25 | Neutral Lead | Peak (Note 1) | 44.0 | 51.7 | -7.7 |
| 0.29 | Neutral Lead | Peak (Note 1) | 40.2 | 50.6 | -10.4 |
| 0.42 | Neutral Lead | Peak (Note 1) | 36.4 | 47.4 | -11.0 |
| 0.52 | Neutral Lead | Peak (Note 1) | 33.9 | 46.0 | -12.1 |

| Frequency (MHz) | AC Mains Lead | Detector | Measured Level (dB μ V) | Limit (dB μ V) | Margin (dB) |
|-----------------|---------------|---------------|-----------------------------|--------------------|-------------|
| 9.78 | Neutral Lead | Peak (Note 1) | 37.9 | 50.0 | -12.1 |

Note 1: The reference detector used for the measurements was Quasi-Peak or Peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.

Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.

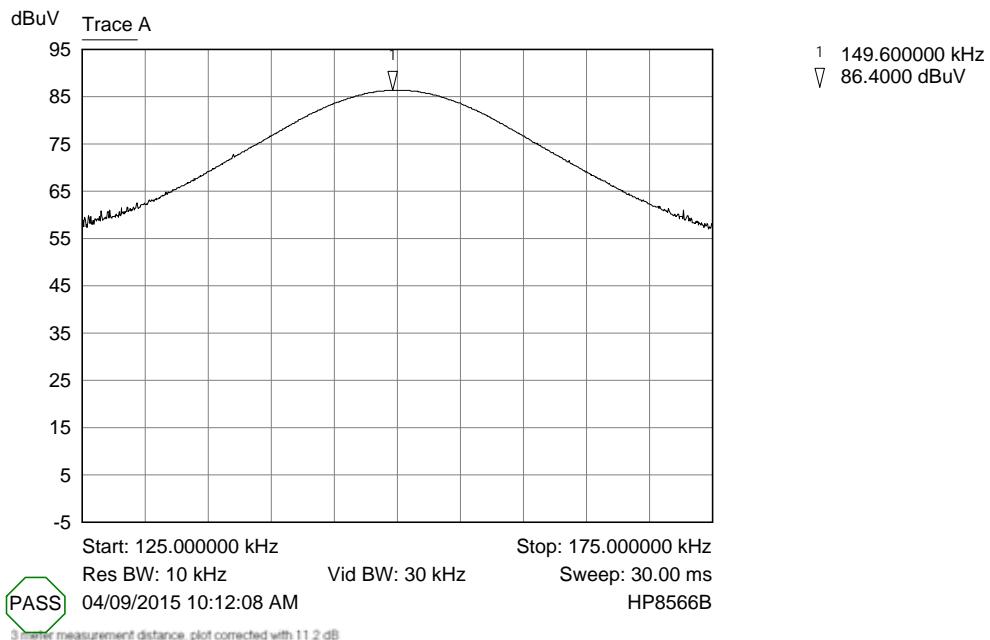
RESULT

In the configuration tested, the EUT complied with the specification by 4.9 dB.

6.2.3 §15.209 Fundamental Emission

| Frequency (MHz) | Detector | Receiver Reading (dB μ V) | Correction Factor (dB/m) | Field Strength (dB μ V/m) | 3 m Limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|-------------------------------|--------------------------|-------------------------------|--------------------------|-------------|
| 0.15 | Peak (Note 1) | 75.2 | 11.2 | 86.4 | 104.1 | -17.7 |

Note 1: The measurement was made using Peak detection and was compared to the Average limit.



RESULT

In the configuration tested, the fundamental emission measured at 3 meters met the 3 meter limit.

6.2.4 §15.209 Spurious Emissions

| Frequency (MHz) | Detector | Receiver Reading (dB μ V) | Correction Factor (dB/m) | Field Strength (dB μ V/m) | 3 m Limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|-------------------------------|--------------------------|-------------------------------|--------------------------|-------------|
| 0.30 | Peak (Note 1) | 49.7 | 11.2 | 60.9 | 98.1 | -37.2 |
| 0.45 | Peak (Note 1) | 52.5 | 11.2 | 63.7 | 94.5 | -30.8 |
| 0.60 | Peak (Note 1) | 44.1 | 11.2 | 55.3 | 72.0 | -16.7 |
| 0.75 | Peak (Note 1) | 43.1 | 11.1 | 54.2 | 70.1 | -15.9 |
| 0.90 | Peak (Note 1) | 37.8 | 11.1 | 48.9 | 68.5 | -19.6 |
| 1.05 | Peak (Note 1) | 35.2 | 11.1 | 46.3 | 67.2 | -20.9 |
| 1.20 | Peak (Note 1) | 34.3 | 10.9 | 45.2 | 66.0 | -20.8 |
| 1.35 | Peak (Note 1) | 29.2 | 10.9 | 40.1 | 65.0 | -24.9 |
| 1.50 | Peak (Note 1) | 29.0 | 10.9 | 39.9 | 64.1 | -24.2 |

Note 1: The measurement was made using Peak detection and was compared to the Average limit.

RESULT

The EUT complies with the specification with a margin of 15.9 dB.

6.2.5 EUT Duty Cycle and Average Factor

No Average Factor was applied to the emissions measurements. An Average Factor was calculated and may be used to average the emissions shown in section 6.2.3 and 6.2.4 of this report in order to show more margin to the limits.

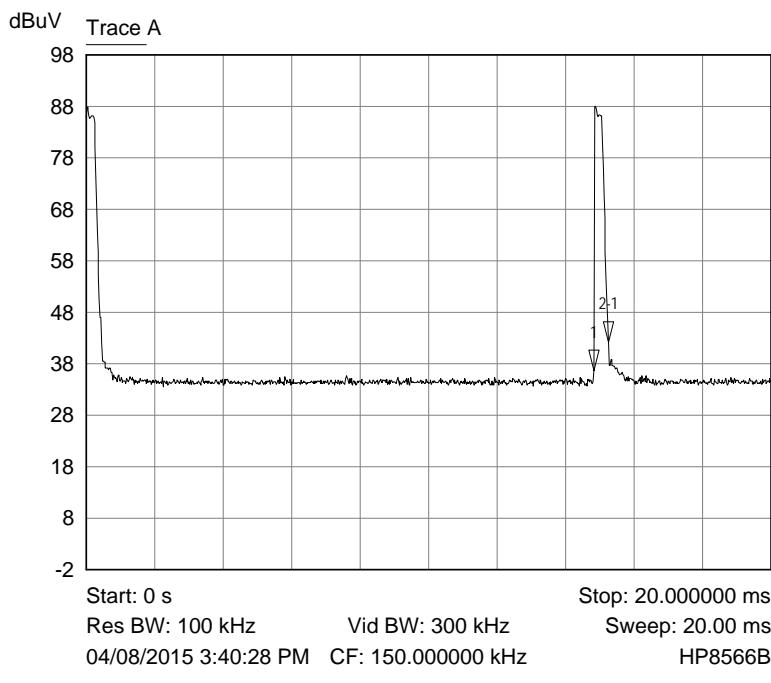
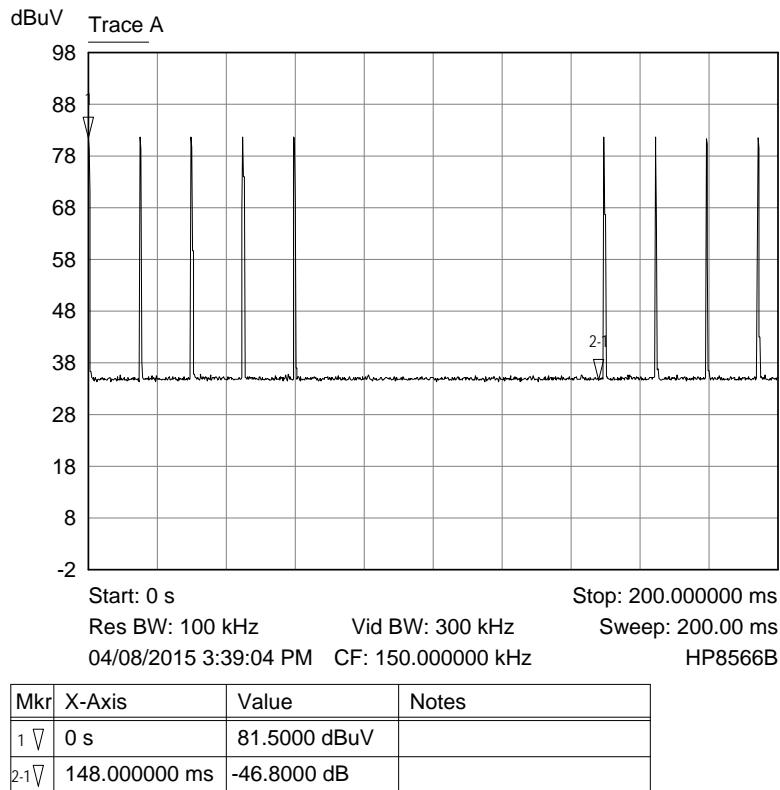
The EUT transmits 5 pulses in 148 ms. The Average Factor will be calculated using 100 ms as specified in FCC §15.35(c). Each burst is 440 μ sec.

$$\text{Avg Factor} = 20 \log (\text{on time}/\text{pulse train})$$

$$\text{On time} = 5 \times 440 \mu\text{sec} = 2.2 \text{ msec}$$

$$\text{Avg Factor} = 20 \log (2.2 \text{ msec}/100 \text{ ms}) = -33.15$$

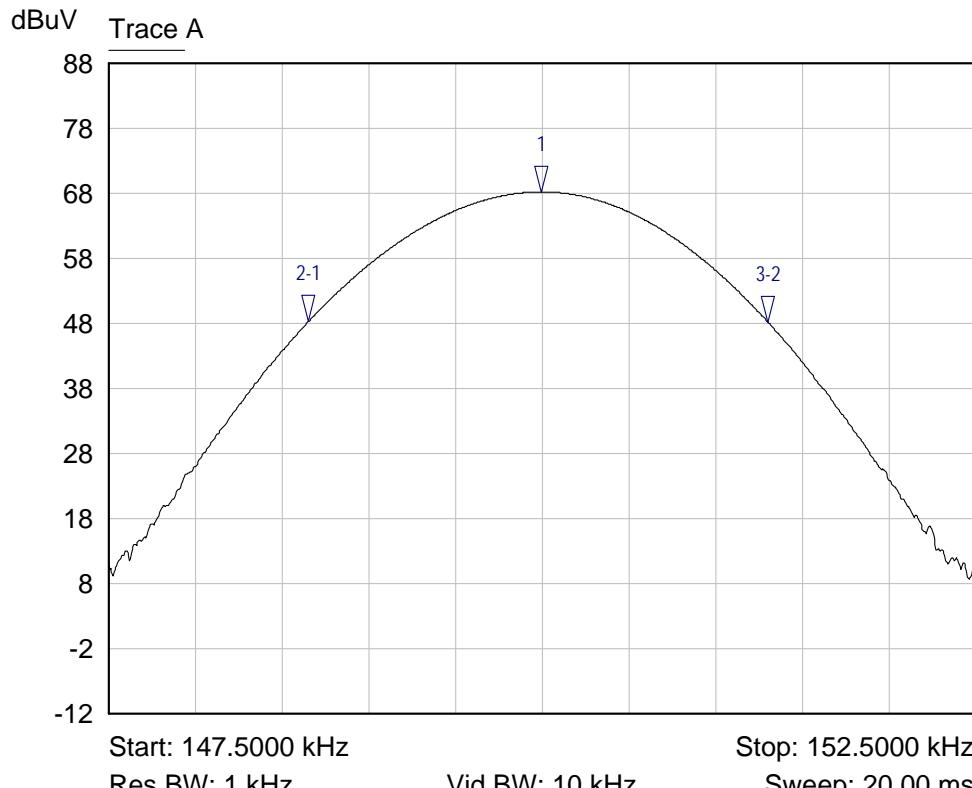
§15.35(b) specifies a 20 dB maximum between the peak and average measurements; therefore, a -20 dB averaging factor could be applied to the measurements of 6.2.3 and 6.2.4.



| Mkr | X-Axis | Value | Notes |
|-----|---------------|--------------|-------|
| 1 | 14.820000 ms | 36.6000 dBuV | |
| 2-1 | 440.000000 us | 5.6000 dB | |

6.2.6 Emission 20 dB Bandwidth

The 20 dB bandwidth was measured at 2.65 kHz. See the plot below.



| Mkr | Trace | X-Axis | Value | Notes |
|-------|---------|--------------|------------|-------|
| 1 ▽ | Trace A | 149.9950 kHz | 68.22 dBuV | |
| 2-1 ▽ | Trace A | -1.3450 kHz | -19.95 dB | |
| 3-2 ▽ | Trace A | 2.6500 kHz | -0.06 dB | |

APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT**A1.1 Conducted Disturbance at the AC Mains**

The conducted disturbance at mains ports from the EUT 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 equipment with each device having its own power cord, the point of connection for the LISN is determined from the following rules:

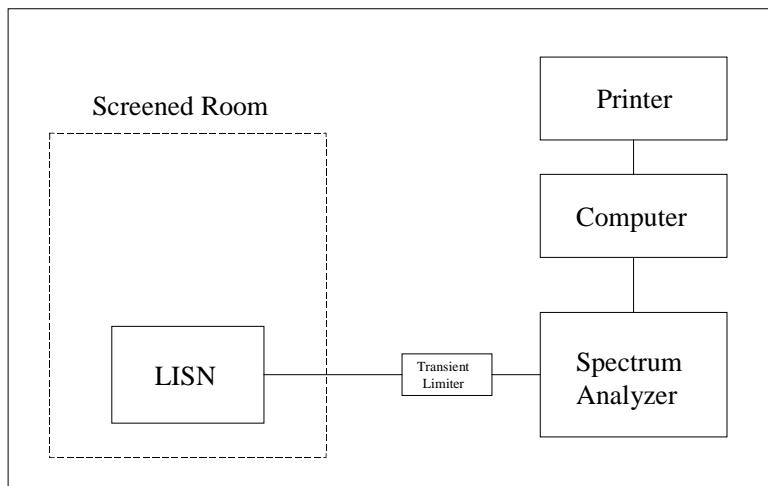
- (a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
- (b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
- (c) Power cords which are specified by the manufacturer to be connected via a host 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.

For AC mains port testing, desktop EUT are placed on a non-conducting table at least 0.8 meters from the metallic floor and placed 40 cm from the vertical coupling plane (copper plating in the wall behind EUT table). Floor standing equipment is placed directly on the earth grounded floor.

| Type of Equipment | Manufacturer | Model Number | Barcode Number | Date of Last Calibration | Due Date of Calibration |
|--------------------------------------|-----------------|--------------|----------------|--------------------------|-------------------------|
| Spectrum Analyzer | Hewlett Packard | 8566B | 1407 | 06/27/2014 | 06/27/2015 |
| Quasi-Peak Detector | Hewlett Packard | 85650A | 1130 | 03/16/2015 | 03/16/2016 |
| LISN | Nemko | LISN-COMM-50 | 1424 | 02/25/2015 | 02/25/2016 |
| Conductance Cable Wanship Site #2 | Nemko | Cable J | 840 | 12/23/2014 | 12/23/2015 |
| Transient Limiter | Hewlett Packard | 11947A | 768 | 12/23/2014 | 12/23/2015 |

An independent calibration laboratory or Nemko-CCL, Inc. personnel calibrates all the equipment listed above at intervals defined in ANSI C63.4:2003 Section 4.4 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



A1.2 Radiated Emissions

The radiated emissions from the intentional radiator were measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings.

A loop antenna was used to measure emissions below 30 MHz. Emission readings more than 20 dB below the limit at any frequency may not be listed in the reported data. For frequencies between 9 kHz and 30 MHz, or the lowest frequency generated or used in the device greater than 9 kHz, and less than 30 MHz, the spectrum analyzer resolution bandwidth was set to 9 kHz and the video bandwidth was set to 30 kHz. For average measurements, the spectrum analyzer average detector was used.

For frequencies above 30 MHz, an amplifier and preamplifier were used to increase the sensitivity of the measuring instrumentation. 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 ranges. 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 measurements above 1000 MHz the spectrum analyzer's resolution bandwidth was set to 1 MHz and the average detector of the analyzer was used.

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 of 1 GHz to 18 GHz, and a Pyramidal Horn antenna was used to measure the frequency range of 18 GHz to 25 GHz, at a distance of 3 meters and/or 1 meter from the EUT. The readings obtained by the antenna are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

The configuration of the EUT was varied to find the maximum radiated emission. The EUT was connected to the peripherals listed in Section 2.3 via the interconnecting cables listed in Section 2.4. A technician manually manipulated these interconnecting cables to obtain worst-case radiated disturbance. The EUT was rotated 360 degrees, and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission. Where there were multiple interface ports all of the same type, cables are either placed on all of the ports or cables added to these ports until the emissions do not increase by more than 2 dB.

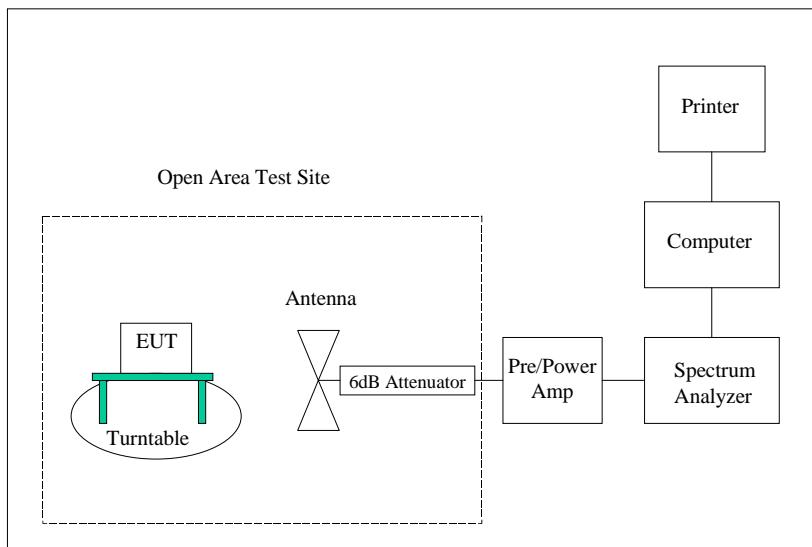
Desktop EUT are measured on a non-conducting table 0.8 meters above the ground plane. The table is placed on a turntable, which is level with the ground plane. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

For radiated emission 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.

| Type of Equipment | Manufacturer | Model Number | Barcode Number | Date of Last Calibration | Due Date of Calibration |
|--|-----------------|------------------------|----------------|--------------------------|-------------------------|
| Spectrum Analyzer/Receiver | Rohde & Schwarz | FSU26 | 1557 | 01/26/2015 | 01/26/2016 |
| Spectrum Analyzer | Hewlett Packard | 8566B | 1407 | 06/27/2014 | 06/27/2015 |
| Quasi-Peak Detector | Hewlett Packard | 85650A | 1130 | 03/16/2015 | 03/16/2016 |
| Loop Antenna | EMCO | 6502 | 176 | 03/17/2015 | 03/17/2017 |
| Biconilog Antenna | EMCO | 3142 | 713 | 10/22/2014 | 10/22/2016 |
| Double Ridged Guide Antenna | EMCO | 3115 | 735 | 03/17/2015 | 03/17/2017 |
| High Frequency Amplifier | Miteq | AFS4-00102650-35-10P-4 | 1299 | 12/23/2014 | 12/23/2015 |
| 20' High Frequency Cable | Microcoax | UFB197C-1-3120-000000 | 1297 | 12/23/2014 | 12/23/2015 |
| 3 Meter Radiated Emissions Cable Wanship Site #2 | Microcoax | UFB205A-0-4700-000000 | 1295 | 12/23/2014 | 12/23/2015 |
| Pre/Power-Amplifier | Hewlett Packard | 8447F | 762 | 09/05/2014 | 09/05/2015 |
| 6 dB Attenuator | Hewlett Packard | 8491A | 1103 | 12/23/2014 | 12/23/2015 |

An independent calibration laboratory or Nemko-CCL, Inc. personnel calibrates all the equipment listed above at intervals defined in ANSI C63.4:2003 Section 4.4 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

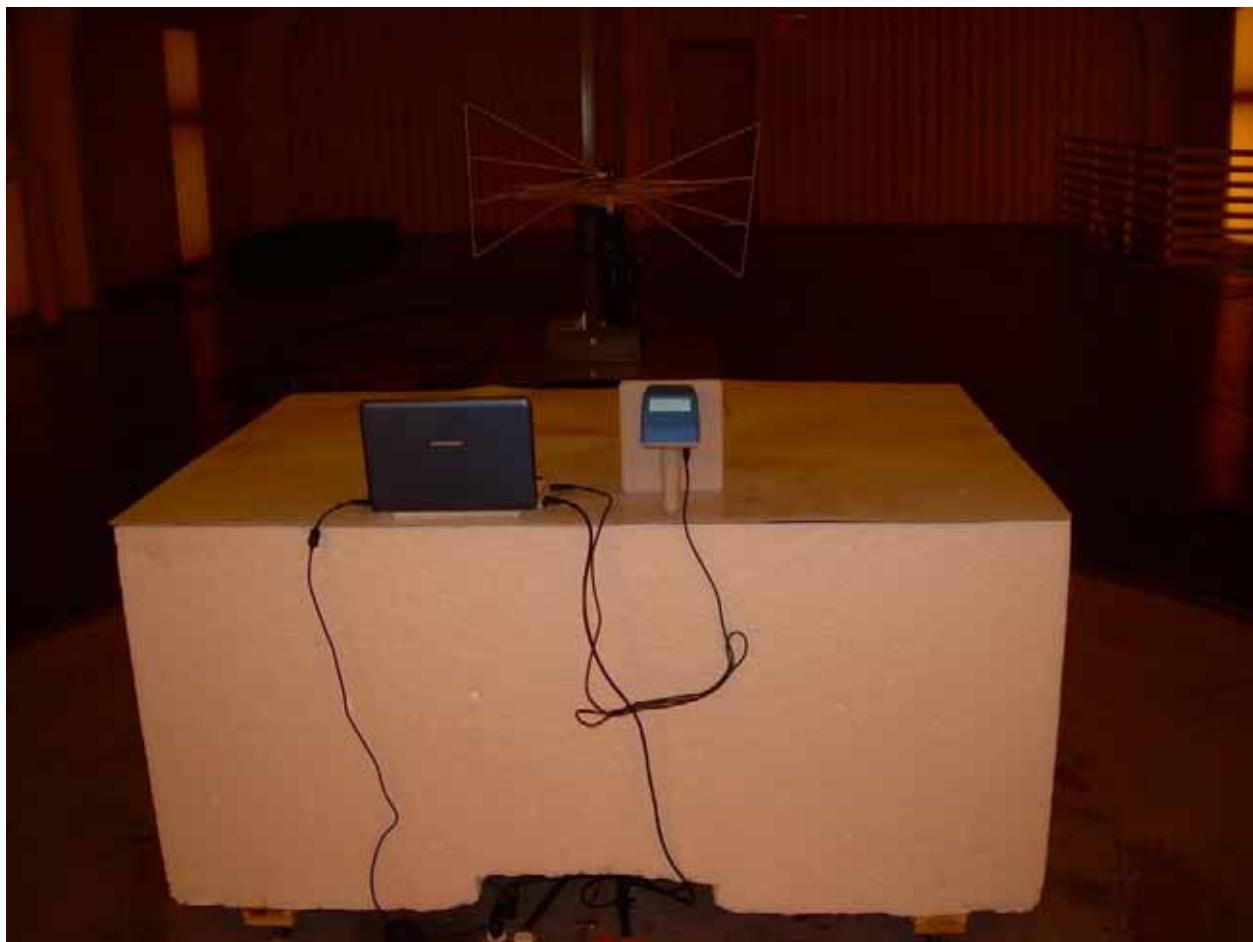


APPENDIX 2 PHOTOGRAPHS

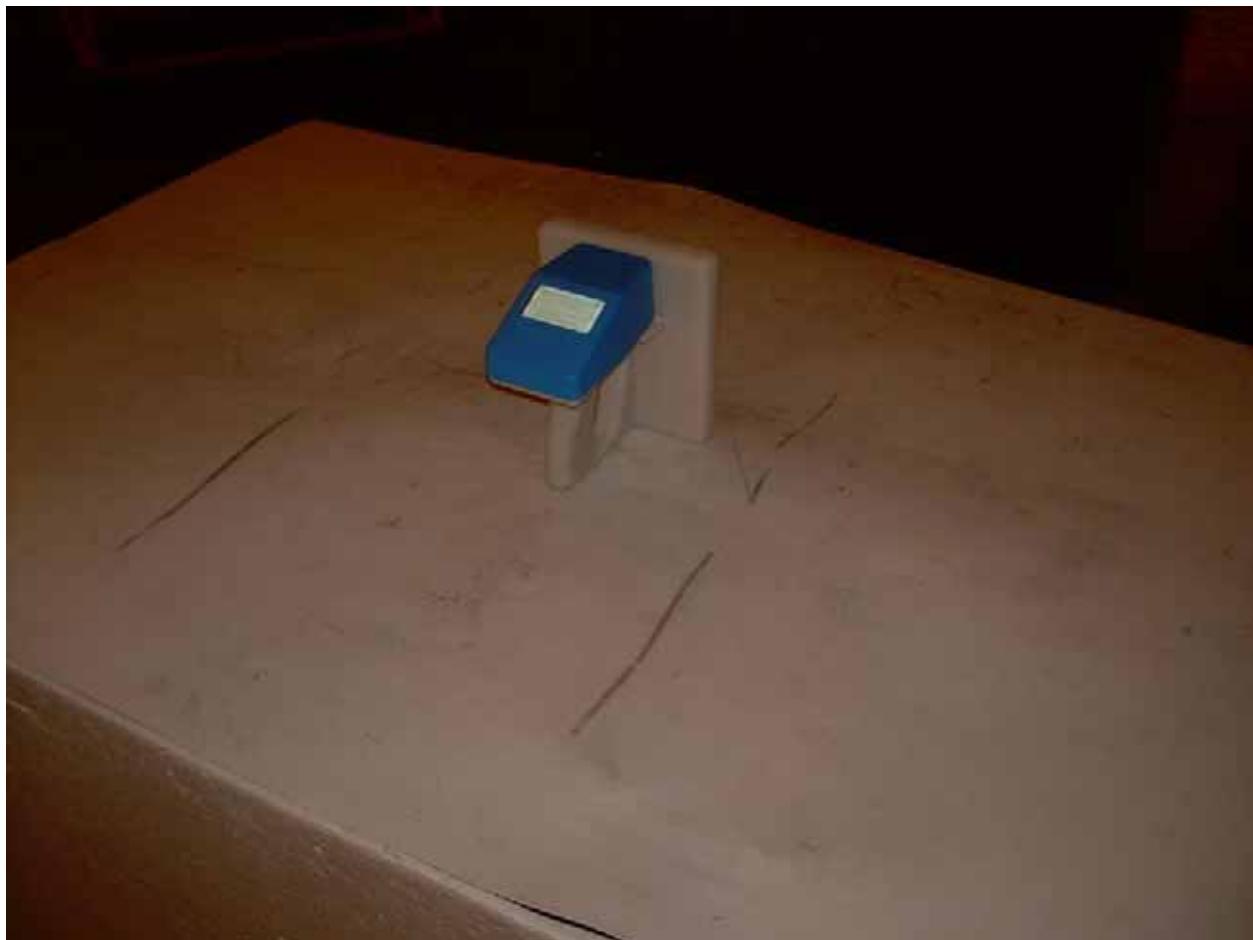
Photograph 1 – Front View Radiated Disturbance Worst Case Configuration – Connected to Computer Placed Vertical



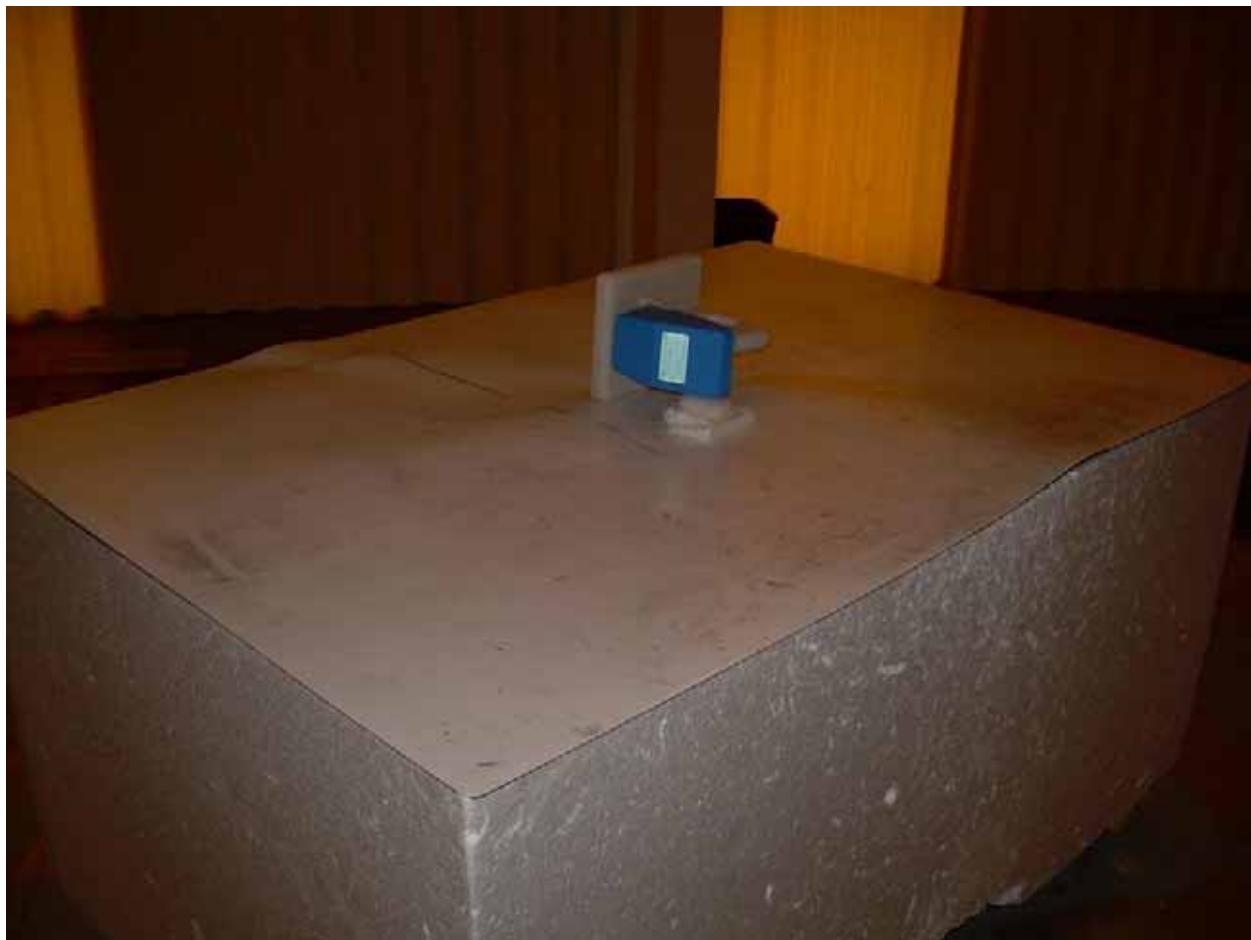
Photograph 2 – Back View Radiated Disturbance Worst Case Configuration – Connected to Computer Placed Vertical



Photograph 3 – Back View Radiated Disturbance – Vertical Battery Power Configuration



Photograph 4 – View Radiated Disturbance – On Edge Battery Power Configuration



Photograph 5 – View Radiated Disturbance – Pointed Up Battery Power Configuration



Photograph 6 – View Radiated Disturbance – Pointed Down Connected to Computer Configuration



Photograph 7 – View Radiated Disturbance – On Edge Connected to Computer Configuration



Photograph 8 – Front View Conducted Disturbance Worst Case Configuration



Photograph 9 – Back View Conducted Disturbance Worst Case Configuration



Photograph 10 – Front View of the EUT



Photograph 11 – Top View of the EUT



Photograph 12 – Back View of the EUT



Photograph 13 – Bottom View of the EUT



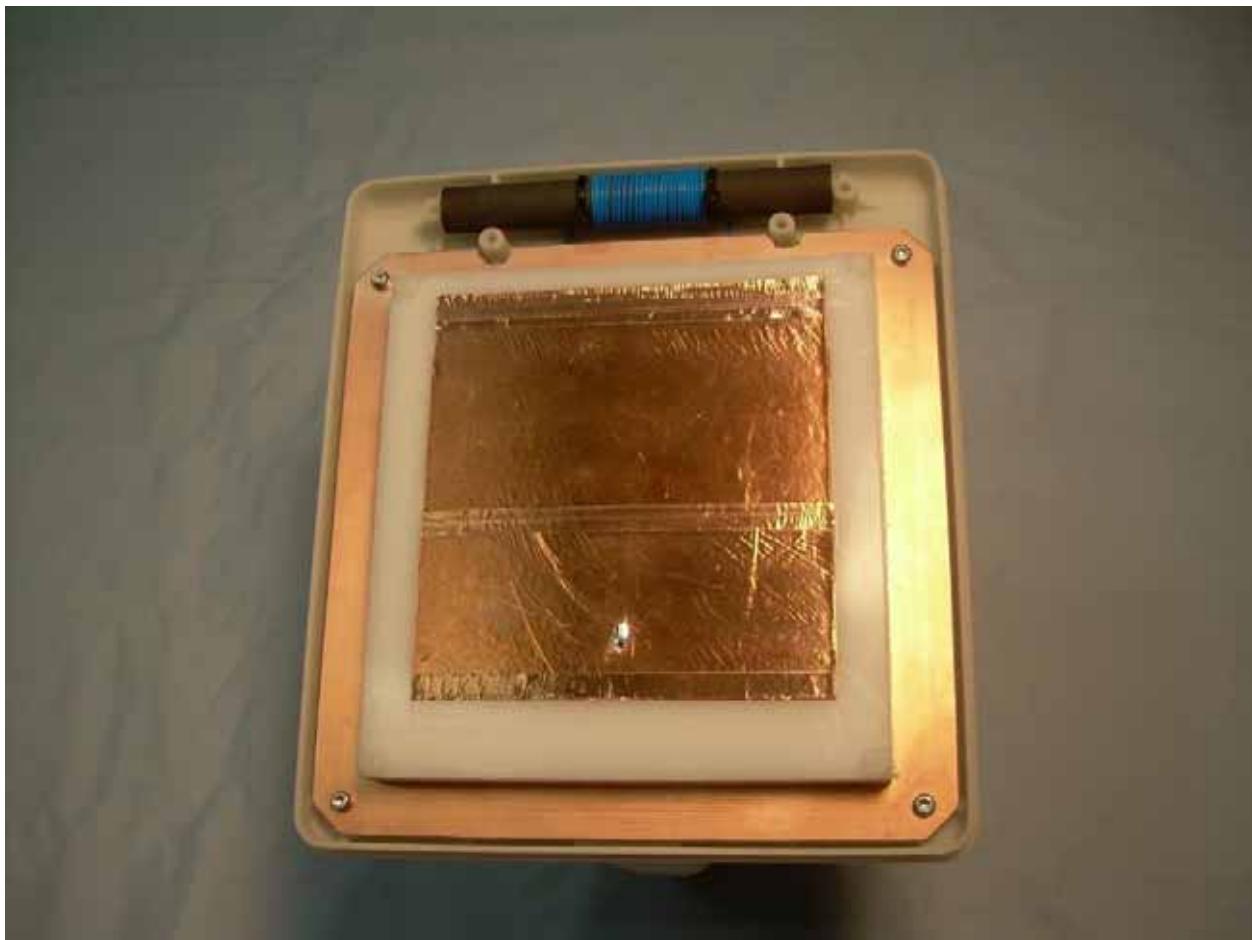
Photograph 14 – Side View of the EUT



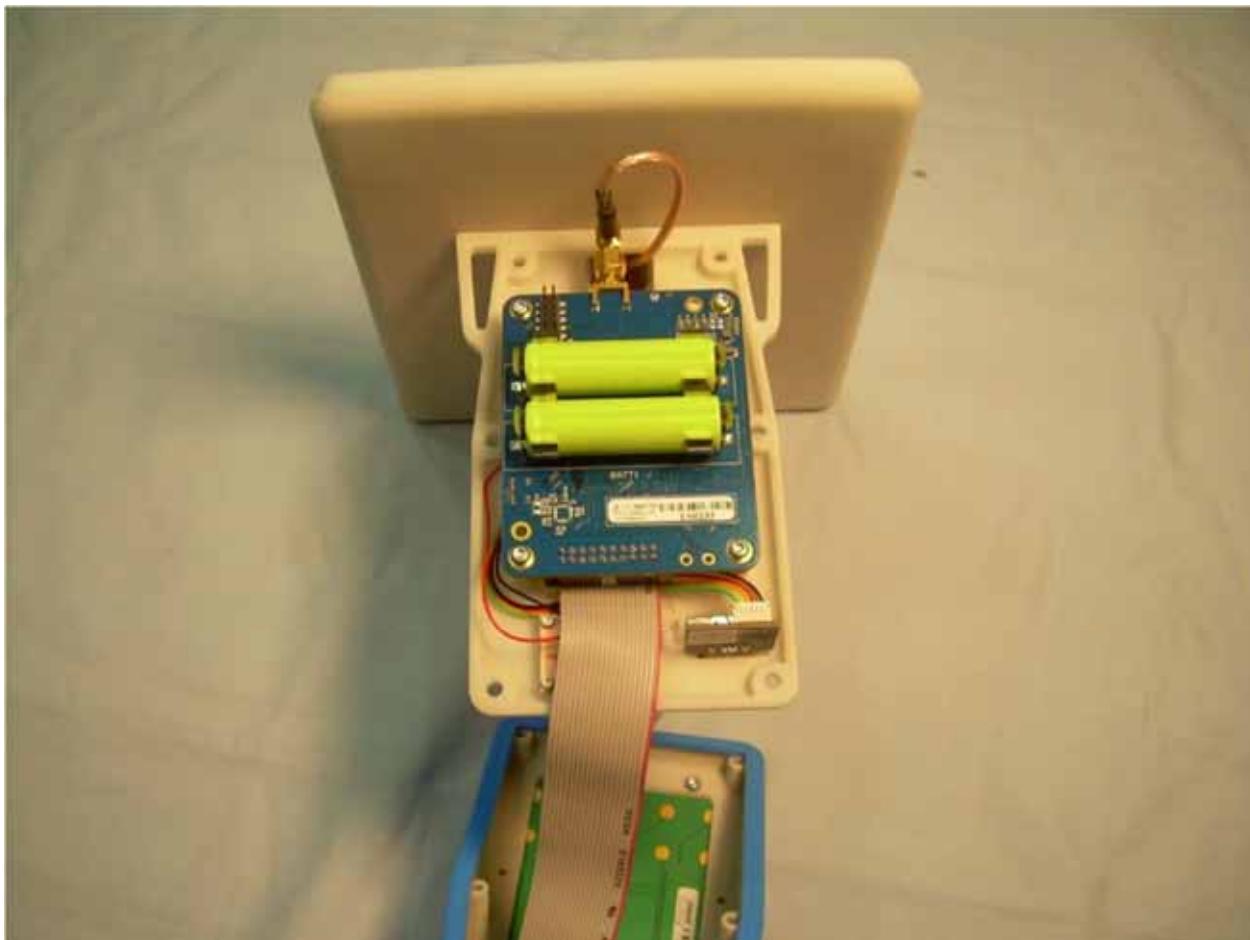
Photograph 15 – Side View of the EUT



Photograph 16 – View of the Antennas



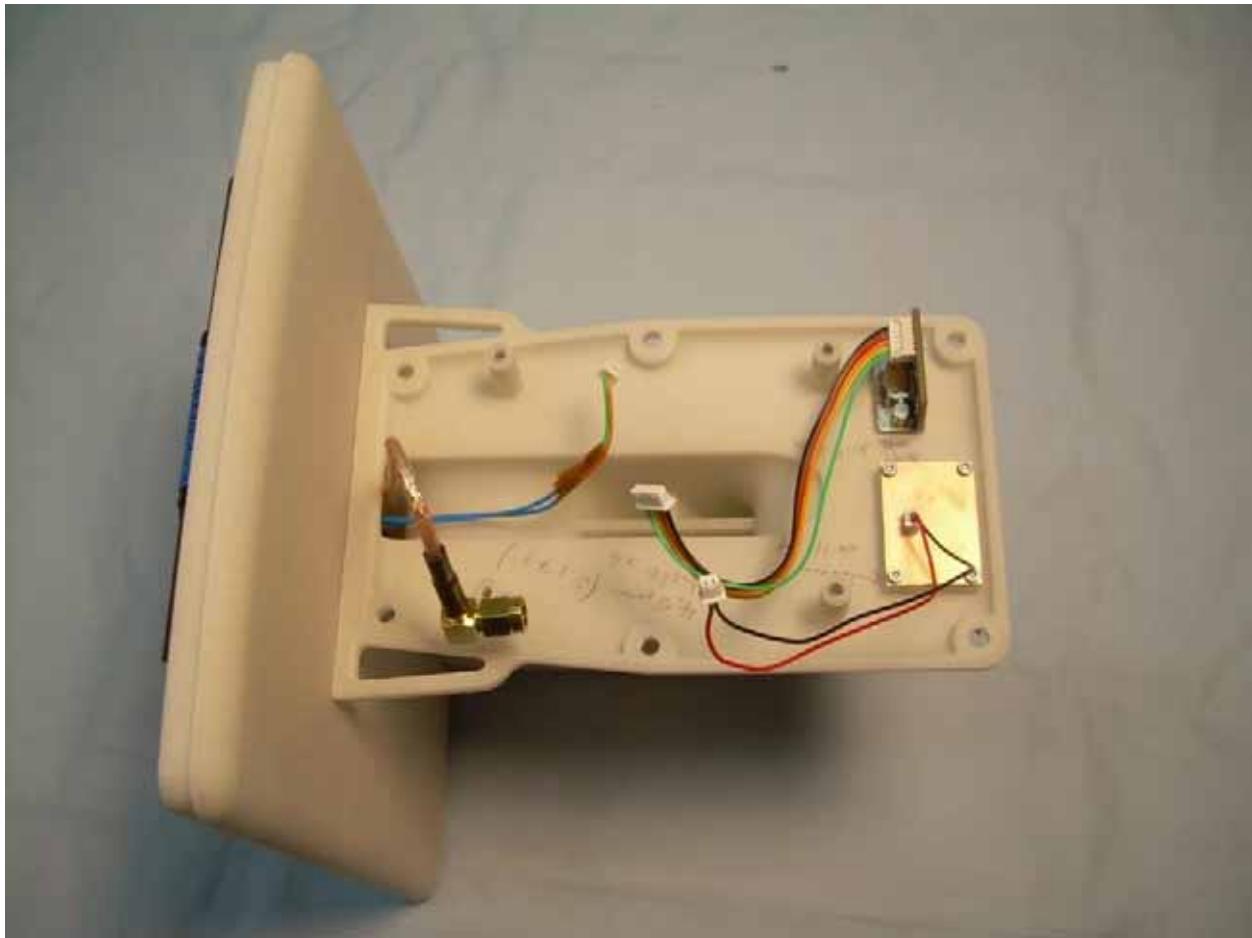
Photograph 17 – View with Top Cover Removed



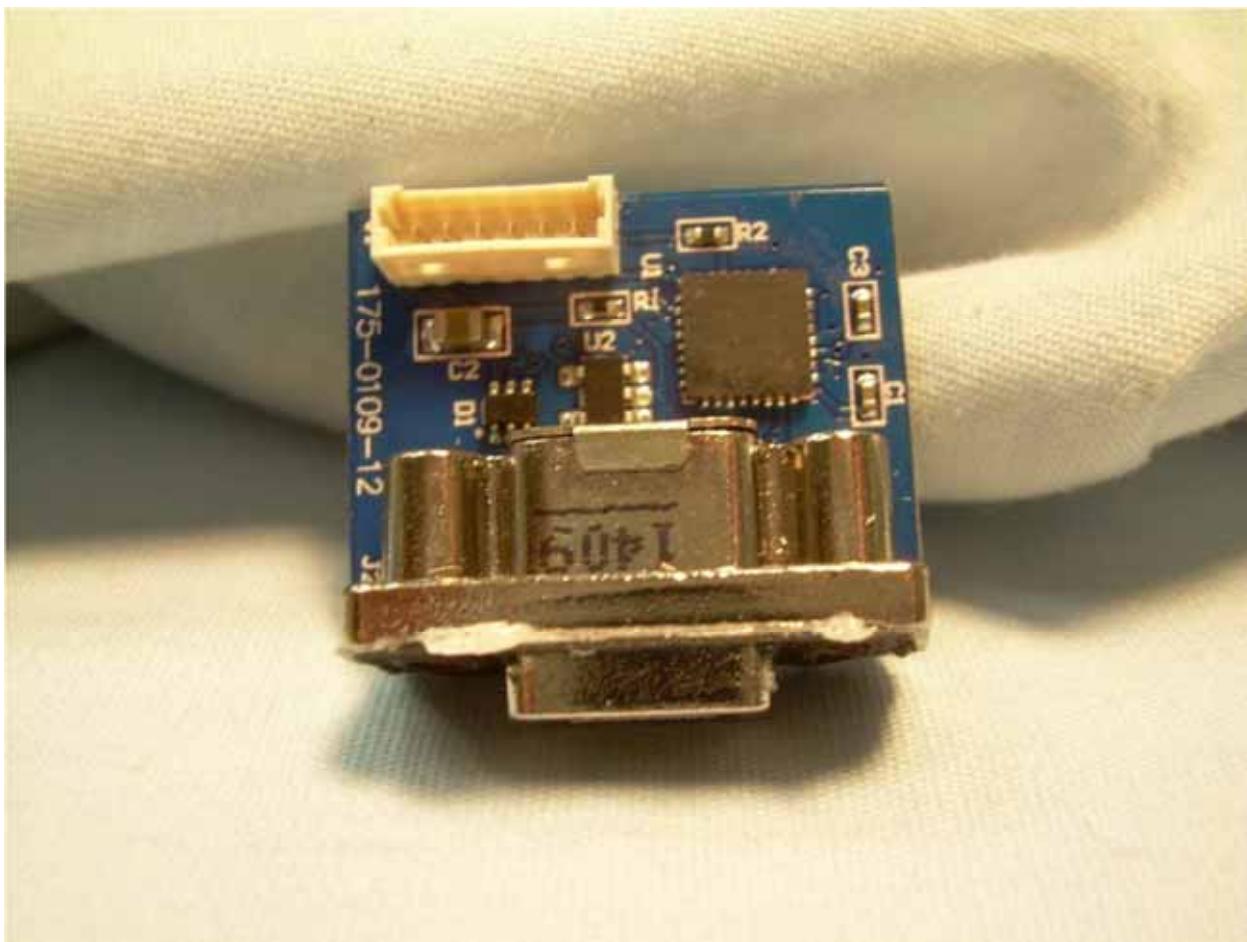
Photograph 18 – View of the Keypad PCB



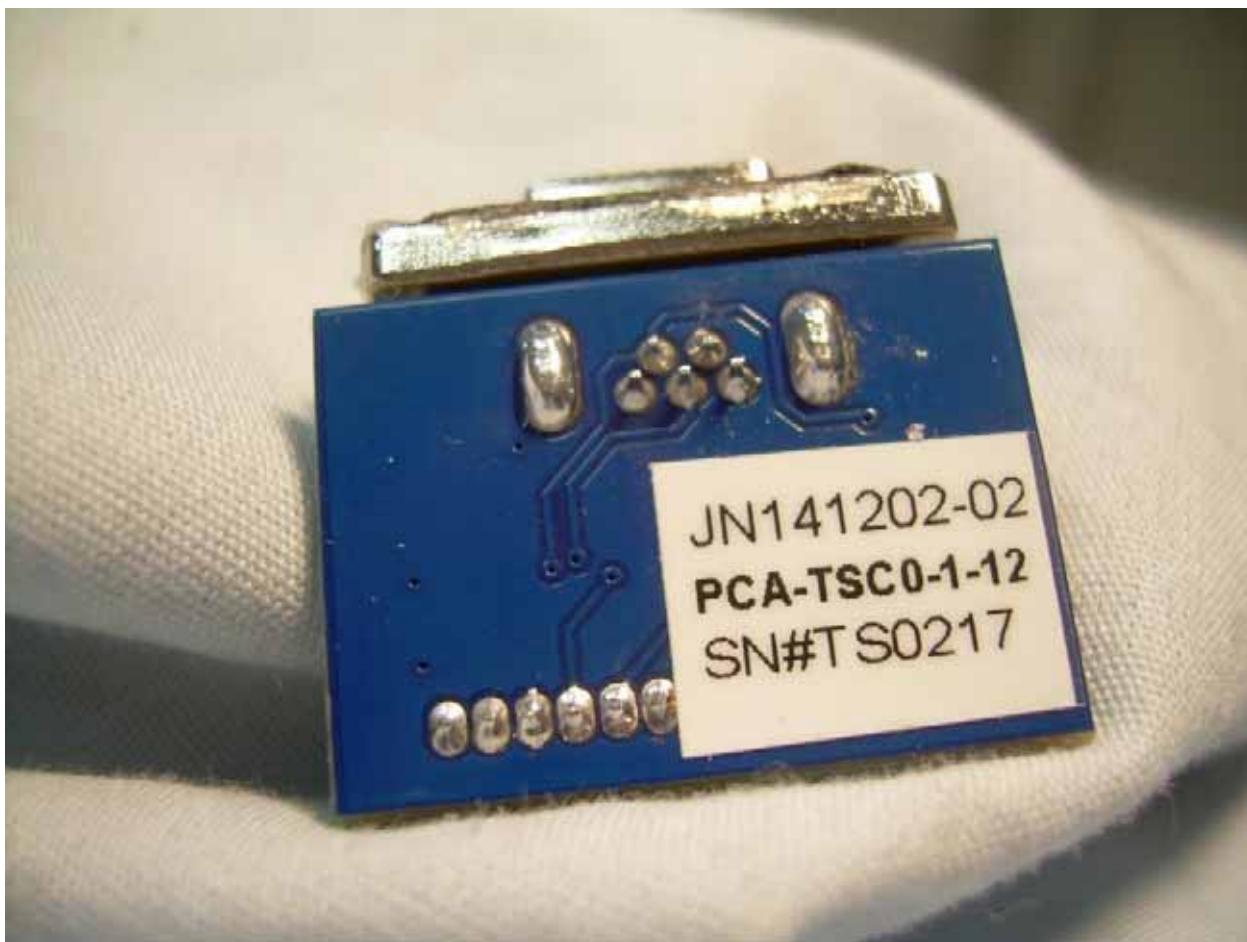
Photograph 19 – View with the Main PCB Removed



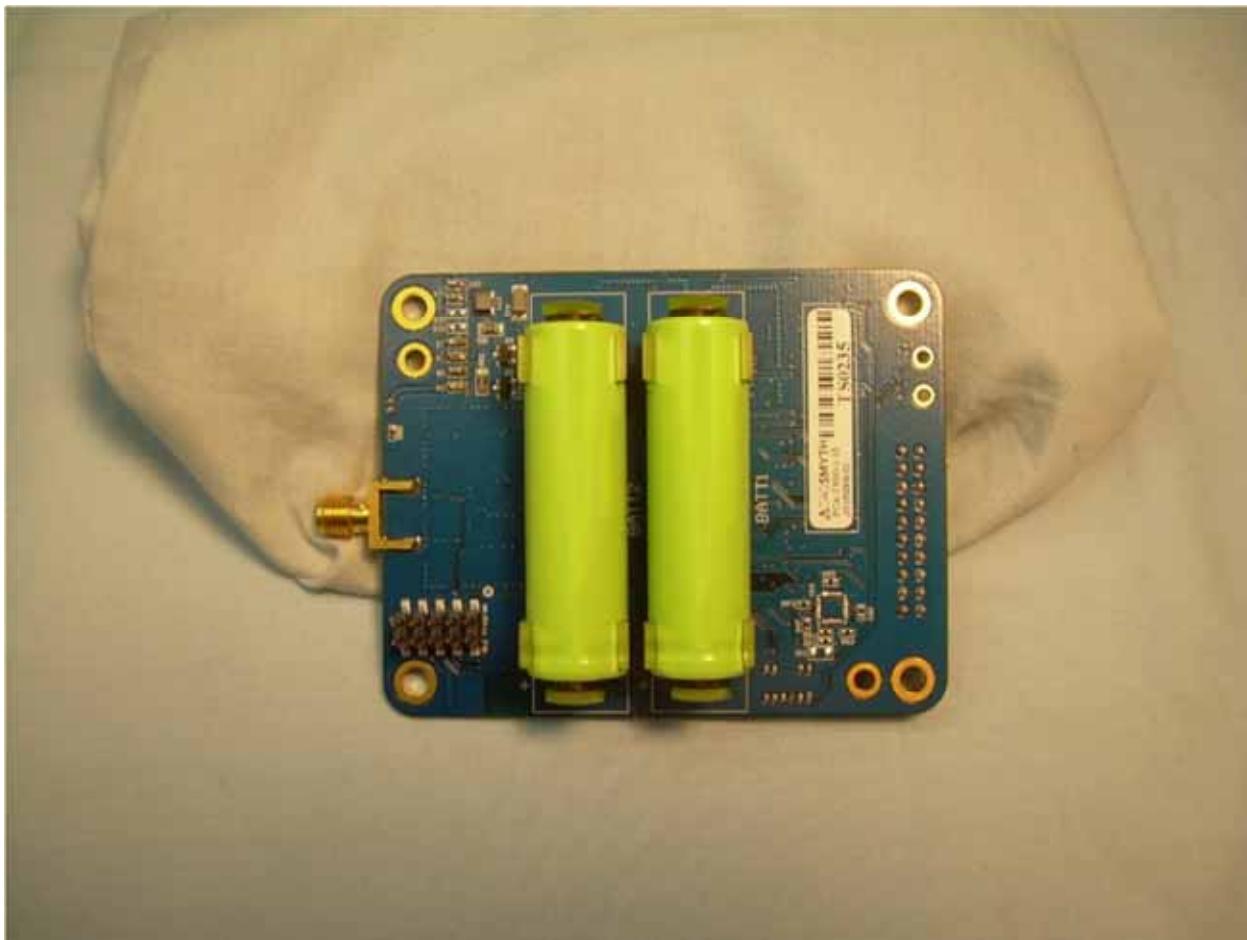
Photograph 20 – View of the Component Side of the USB Interface PCB



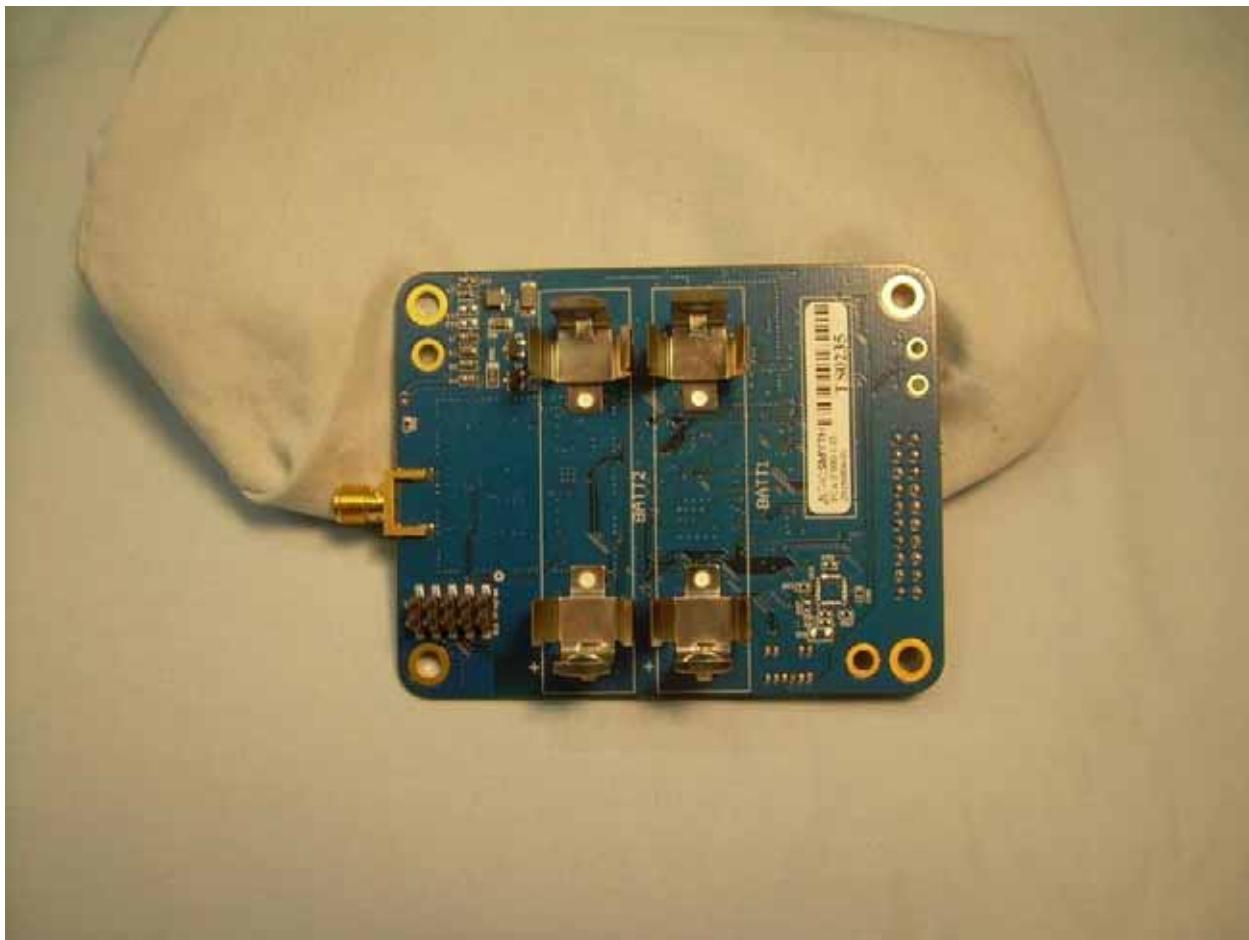
Photograph 21 – View of the Trace Side of the USB Interface PCB



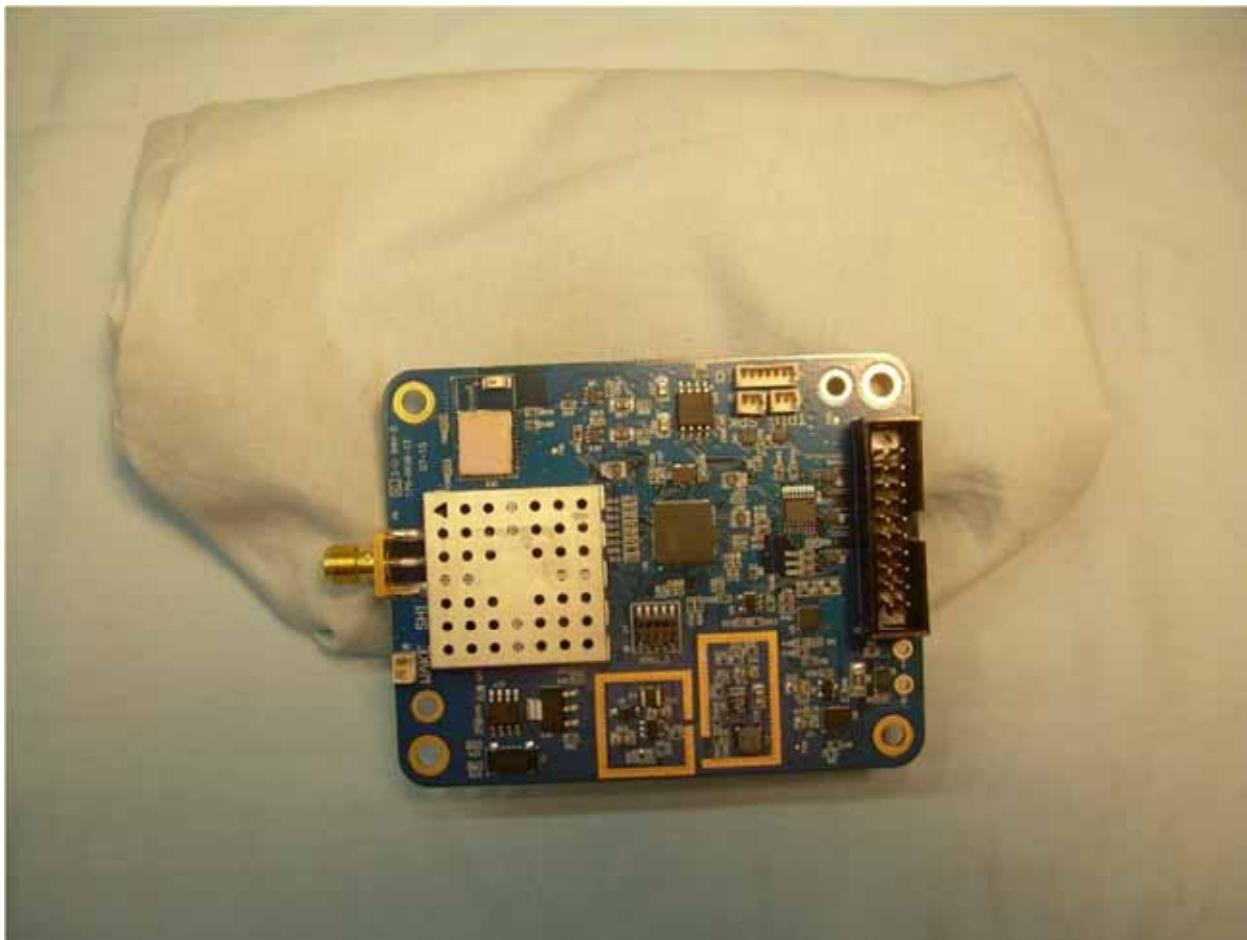
Photograph 22 – View of the Top Side of the Main PCB



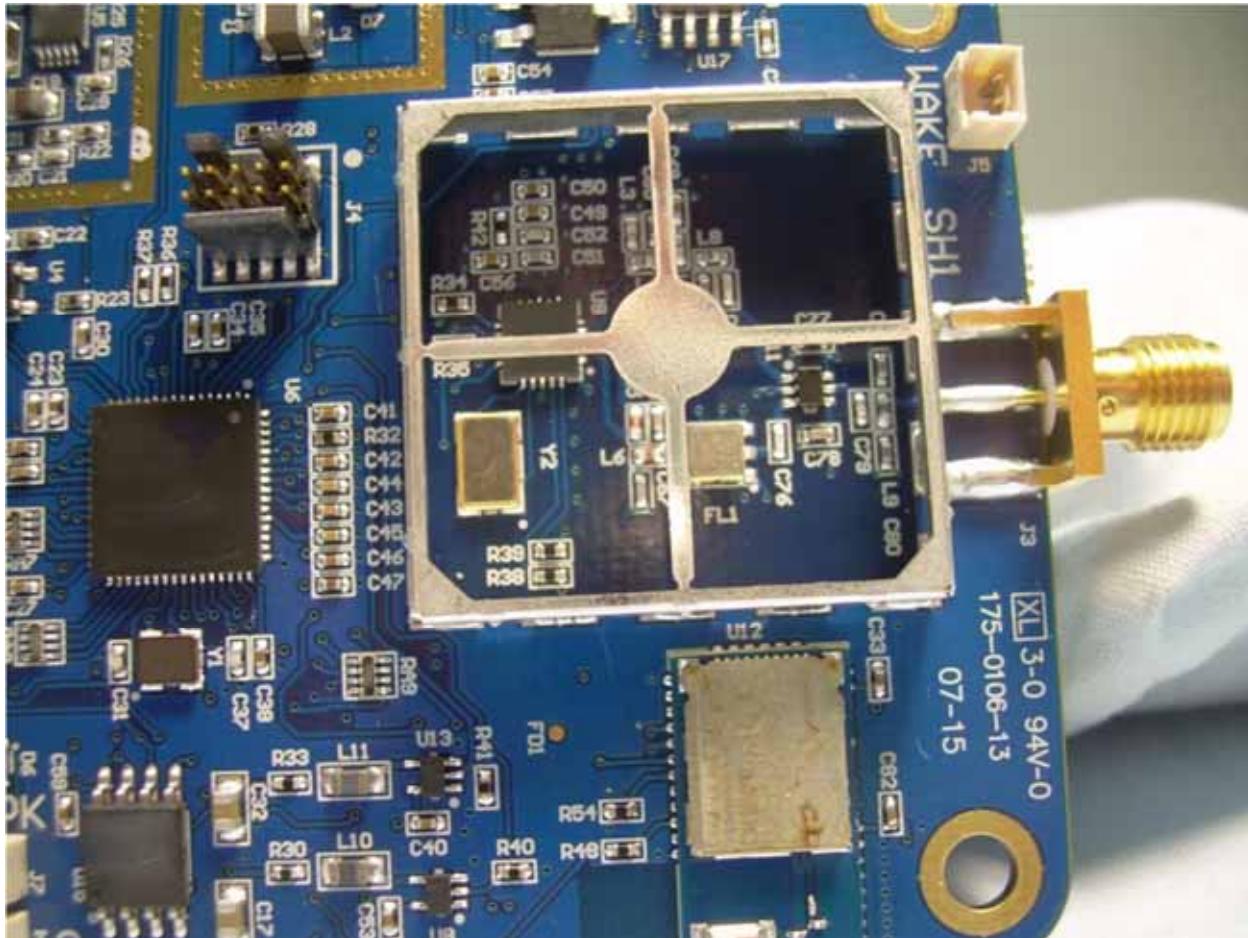
Photograph 23 – View of the Top Side of the Main PCB – Batteries Removed



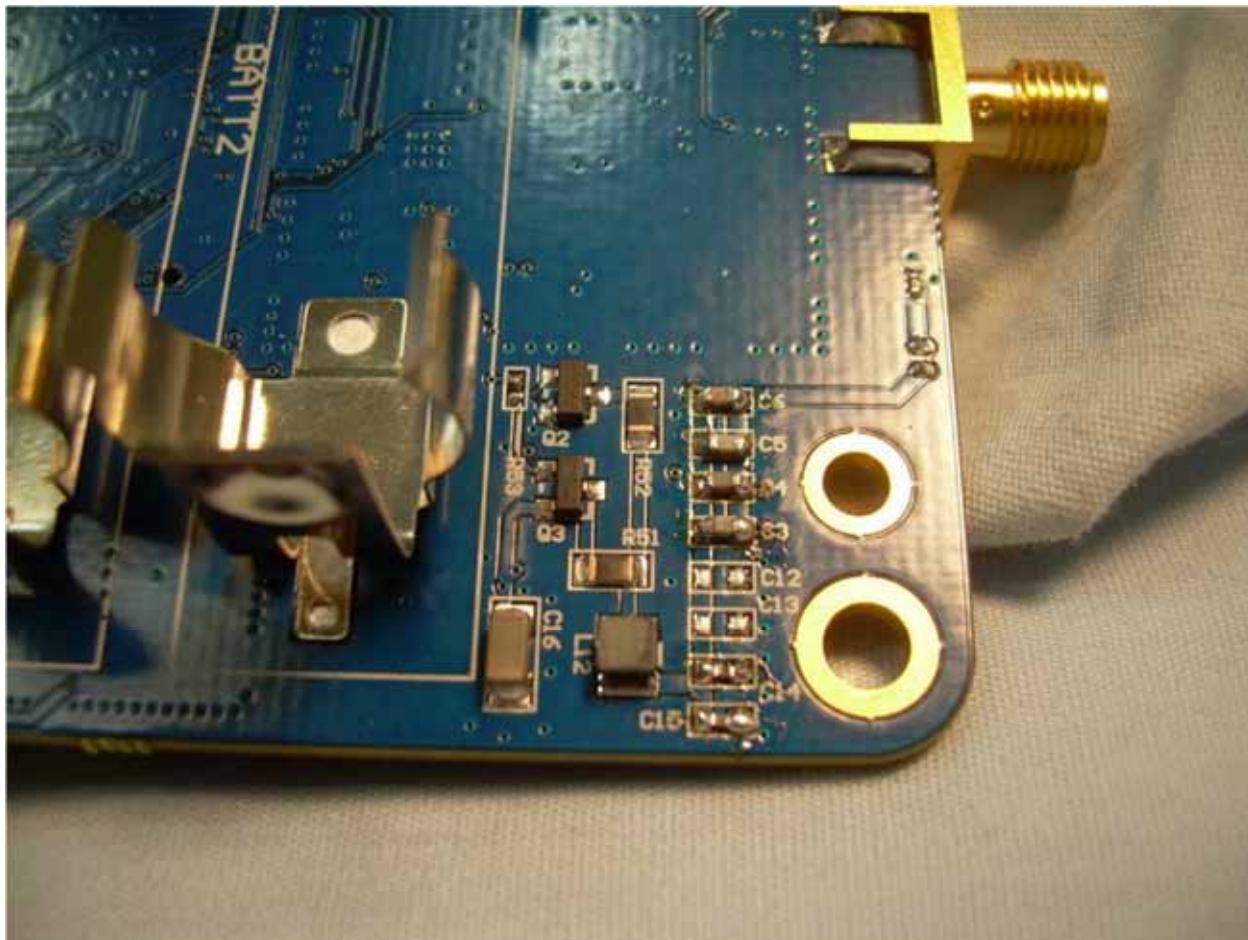
Photograph 24 – View of the Bottom Side of the Main PCB



Photograph 25 – View of the RF Circuitry of the 902 – 928 MHz Transmitter and Receiver



Photograph 26 – View of the 150 kHz Transmitter Circuitry



Photograph 27 – View of the USB Cable

