Nemko-CCL, Inc.
1940 West Alexander Street
Salt Lake City, UT 84119
801-972-6146

Test Report

Certification

Test Of: CP01

FCC ID: 2AAAS-CP01

Test Specifications:

FCC PART 15, Subpart C

Test Report Serial No: 240021-2.2

Applicant:
Vivint, Inc.
4931 N. 300 W.
Provo, UT 84604
U.S.A

Dates of Test: June 13, 19, 25, and 26, 2013

Report Issue Date: August 1, 2013

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. 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.

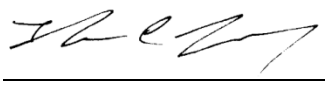
- Applicant: Vivint, Inc.
- Manufacturer: Flextronics
- Manufacturer: Houri Linear Electronics Manufactory
- Brand Name: Vivint
- Model Number: CP01
- FCC ID: 2AAAS-CP01

On this 1st day of August 2013, 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
General Manager

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SECTION 1.0 CLIENT INFORMATION

1.1 Applicant:

Company Name: Vivint, Inc.
4931 N. 300 W.
Provo, UT 84604
U.S.A

Contact Name: Greg Hansen
Title: Regulatory Compliance Manager

1.2 Manufacturer:

Company Name: Flextronics
89 Yong Fu Road
Tong Fu Yu Industrial Park
Fu Yong Town, Bao An District
Shenzhen 518103 P.R. China

Contact Name: Feng Zhou
Title: QA Engineer

1.3 Manufacturer:

Company Name: Hourui Linear Electronics Manufactory
Hourui Second Industrial Zone
Hourui Village
Xixang, Bao An District, Shenzhen
P.R. China

Contact Name: Henry Luk
Title: Senior Electronic Engineering Supervisor

SECTION 2.0 EQUIPMENT UNDER TEST (EUT)

2.1 Identification of EUT:

Brand Name:	Vivint
Model Number:	CP01
Serial Number:	None
Country of Manufacture:	P.R. China
Dimensions:	8.5” x 6” x 1.25”

2.2 Description of EUT:

The CP01 is a control panel for use in Vivint home systems. The CP01 is powered by either a FranMar FRA030E-S12-U external wall mount power supply or an Honor ADS-40FSG-12 external wall mount power supply. A 7.4 V LiPolymer H625094 battery provides power in the event the AC power is removed. A 908.42 MHz Z-Wave transceiver and 345 MHz receiver are used for interfacing other system devices. The CP01 has a touchscreen, display, internal 500 GB hard drive, cell modem, Ethernet/WiFi card, camera, and interface ports for contacts, relays, or sensors.

The Ethernet/WiFi card is a Suga SWP23MA-2 and carries modular approvals under FCC ID VZFSWP23MA2 and IC #10609A-SWP23MA2.

The CP01 may have one of 3 cell modems installed, all carrying FCC and IC modular approvals. One module is the Enfora HS3001 carrying FCC ID MIVCNN0301 and IC #4160A-CNN0301. Another is a Telit HE910-NAR carrying FCC ID RI7HE910NA and IC #5131A-HE910NA. The other cell modem is a Telit CE910-DUAL with FCC ID RI7HCE910-DUAL and IC #5131A-CE910DUAL.

This report covers the Z-Wave transceiver subject to FCC Part 15, Subpart C. The circuitry of the device subject to FCC Subpart B was found to be compliant and is covered in Nemko-CCL, Inc. report 240021-1. The cell modems and WiFi/Ethernet module are FCC certified and are to be used in accordance with the requirements of the grants.

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 Number Serial Number	FCC ID Number or Compliance	Description	Name of Interface Ports / Interface Cables
BN: Vivint MN: CP01 (Note 1) SN: None	2AAAS-CP01	Control Panel	See Section 2.4
BN: Trendnet MN: TE100-S8P SN: 0243C3A16540	DoC	Network Switch	LAN/Cat 5e cables (Note 2)

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 Ports	No. of Ports Fitted to EUT	Cable Descriptions/Length
Ethernet	1	Cat 5e cable with Laird 28A2025-0A2 ferrite/7 meters
System Interface	1	10 unshielded conductors with resistive terminations/1 meter

2.5 Modification Incorporated/Special Accessories on EUT:

The following modifications were made to the EUT by the Client during testing to comply with the specification. This report is not complete without an accompanying signed attestation, that the product will have all of the documented modifications incorporated into the product when manufactured and placed on the market.

1. A Laird 28A2025-0A2 ferrite was placed on the Ethernet cable.
2. The power setting was changed to 2B. This power setting is to be incorporated in the production firmware and the user cannot change the setting.

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 15.249 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 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 band edges.

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.

3.2.3 §15.249 Operation within the bands 902 – 928 MHz, 2400 – 2483.5 MHz, and 5725 – 5850 MHz

(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 operated equipment, the equipment tests shall be performed using a new battery.

(3) Antenna gain must be at least 33 dBi. 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 § 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.

3.2.3 Test Procedure

The testing was performed according to the procedures in ANSI C63.4: 2003. 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 February 15, 2012 (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, 2013.

SECTION 4.0 OPERATION OF EUT DURING TESTING

4.1 Operating Environment:

Power Supply: 120 VAC
AC Mains Frequency: 60 Hz

4.2 Operating Modes:

The transmitter was tested while in a constant transmit mode at full power. The AC mains voltage to the AC adapter was varied as required by §15.31(e) with no change seen in the voltage supplied to the transmitter or in transmitter characteristics.

4.3 EUT Exercise Software:

Vivint test software was used to exercise the transceiver.

SECTION 5.0 SUMMARY OF TEST RESULTS

5.1 FCC Part 15, Subpart C

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
15.249(a)	Field Strength of the Fundamental Frequency	902 – 928	Complied
15.249(a)	Field Strength of the Harmonics	902 – 9280	Complied
15.249(d)	Field Strength of Spurious Emissions	0.05 – 9280	Complied

5.2 Result

In the configuration tested, the EUT 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 monopole wire antenna that is soldered to the PCB.

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 (dBμV)	Limit (dBμV)	Margin (dB)
0.19	Hot Lead	Quasi-Peak (Note 2)	51.2	64.1	-12.9
0.19	Hot Lead	Average (Note 2)	38.5	54.1	-15.6
0.25	Hot Lead	Peak (Note 1)	44.6	51.7	-7.1
0.33	Hot Lead	Peak (Note 1)	39.6	49.5	-9.9
1.44	Hot Lead	Peak (Note 1)	35.6	46.0	-10.4
1.99	Hot Lead	Peak (Note 1)	35.5	46.0	-10.5
4.66	Hot Lead	Peak (Note 1)	36.0	46.0	-10.0
4.90	Hot Lead	Peak (Note 1)	37.5	46.0	-8.5
0.19	Neutral Lead	Quasi-Peak (Note 1)	48.5	54.1	-5.6
0.27	Neutral Lead	Peak (Note 1)	42.1	51.2	-9.1
0.32	Neutral Lead	Peak (Note 1)	39.1	49.7	-10.6
0.44	Neutral Lead	Peak (Note 1)	36.4	47.0	-10.6
0.52	Neutral Lead	Peak (Note 1)	36.0	46.0	-10.0
0.64	Neutral Lead	Peak (Note 1)	36.7	46.0	-9.3

Frequency (MHz)	AC Mains Lead	Detector	Measured Level (dBμV)	Limit (dBμV)	Margin (dB)
0.87	Neutral Lead	Peak (Note 1)	36.2	46.0	-9.8
1.74	Neutral Lead	Peak (Note 1)	35.9	46.0	-10.1
3.98	Neutral Lead	Peak (Note 1)	35.1	46.0	-10.9
4.52	Neutral Lead	Peak (Note 1)	35.9	46.0	-10.1

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 5.6 dB.

6.2.3 §15.249(a) Fundamental Field Strength

The table below shows the fundamental emission, measured at 3 meters using peak detection.

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	3 m Limit (dBμV/m)	Margin (dB)	Polarity
908.42	Quasi-Peak	63.0	30.7	93.7	94.0	-0.3	Vertical
908.42	Quasi-Peak	62.7	30.7	93.4	94.0	-0.6	Horizontal

RESULT

The EUT complied with the specification by 0.3 dB.

6.2.4 §15.249(a) and §15.249(d) Field Strength of Harmonics and Spurious Emissions

The spurious emissions and harmonic emissions were measured from 0.05 MHz to 9084.2 MHz. The table below shows the emissions from the transmitter. Emissions from the digital circuitry and receivers of the EUT are shown in Nemko-CCL report 240021-1.

Frequency (MHz)	Detection Mode	Antenna Polarity	Receiver Reading (dBμV)	Correction Factor (dB)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1816.8	Peak	Vertical	17.7	29.9	47.6	74.0	-26.4
1816.8	Average	Vertical	11.4	29.9	41.3	54.0	-12.7
1816.8	Peak	Horizontal	13.8	29.9	43.7	74.0	-30.3
1816.8	Average	Horizontal	6.8	29.9	36.7	54.0	-17.3
2725.3	Peak	Vertical	12.7	32.9	45.6	74.0	-28.4
2725.3	Average	Vertical	2.2	32.9	35.1	54.0	-18.9
2725.3	Peak	Horizontal	10.6	32.9	43.5	74.0	-30.5
2725.3	Average	Horizontal	2.0	32.9	34.9	54.0	-19.1
3633.7	Peak	Vertical	7.1	35.8	42.9	74.0	-31.1
3633.7	Average	Vertical	-3.2	35.8	32.6	54.0	-21.4
3633.7	Peak	Horizontal	5.1	35.8	40.9	74.0	-33.1
3633.7	Average	Horizontal	-6.4	35.8	29.4	54.0	-24.6
4542.1	Peak	Vertical	8.5	37.1	45.6	74.0	-28.4
4542.1	Average	Vertical	-1.9	37.1	35.2	54.0	-18.8
4542.1	Peak	Horizontal	5.9	37.1	43.0	74.0	-31.0
4542.1	Average	Horizontal	-5.4	37.1	31.7	54.0	-22.3
5450.5	Peak	Vertical	3.3	39.2	42.5	74.0	-31.5
5450.5	Average	Vertical	-6.9	39.2	32.3	54.0	-21.7
5450.5	Peak	Horizontal	3.5	39.2	42.7	74.0	-31.3
5450.5	Average	Horizontal	-8.5	39.2	30.7	54.0	-23.3
6358.9	Peak	Vertical	2.7	39.9	42.6	74.0	-31.4
6358.9	Average	Vertical	-9.9	39.9	30.0	54.0	-24.0
6358.9	Peak	Horizontal	2.8	39.9	42.7	74.0	-31.3
6358.9	Average	Horizontal	-9.0	39.9	30.9	54.0	-23.1
7267.4	Peak	Vertical	3.8	41.9	45.7	74.0	-28.3
7267.4	Average	Vertical	-7.6	41.9	34.3	54.0	-19.7
7267.4	Peak	Horizontal	4.2	41.9	46.1	74.0	-27.9
7267.4	Average	Horizontal	-5.6	41.9	36.3	54.0	-17.7
8175.8	Peak	Vertical	1.7	43.3	45.0	74.0	-29.0
8175.8	Average	Vertical	-9.2	43.3	34.1	54.0	-19.9
8175.8	Peak	Horizontal	2.2	43.3	45.5	74.0	-28.5
8175.8	Average	Horizontal	-8.4	43.3	34.9	74.0	-39.1
9084.2	Peak	Vertical	2.2	44.4	46.6	54.0	-7.4

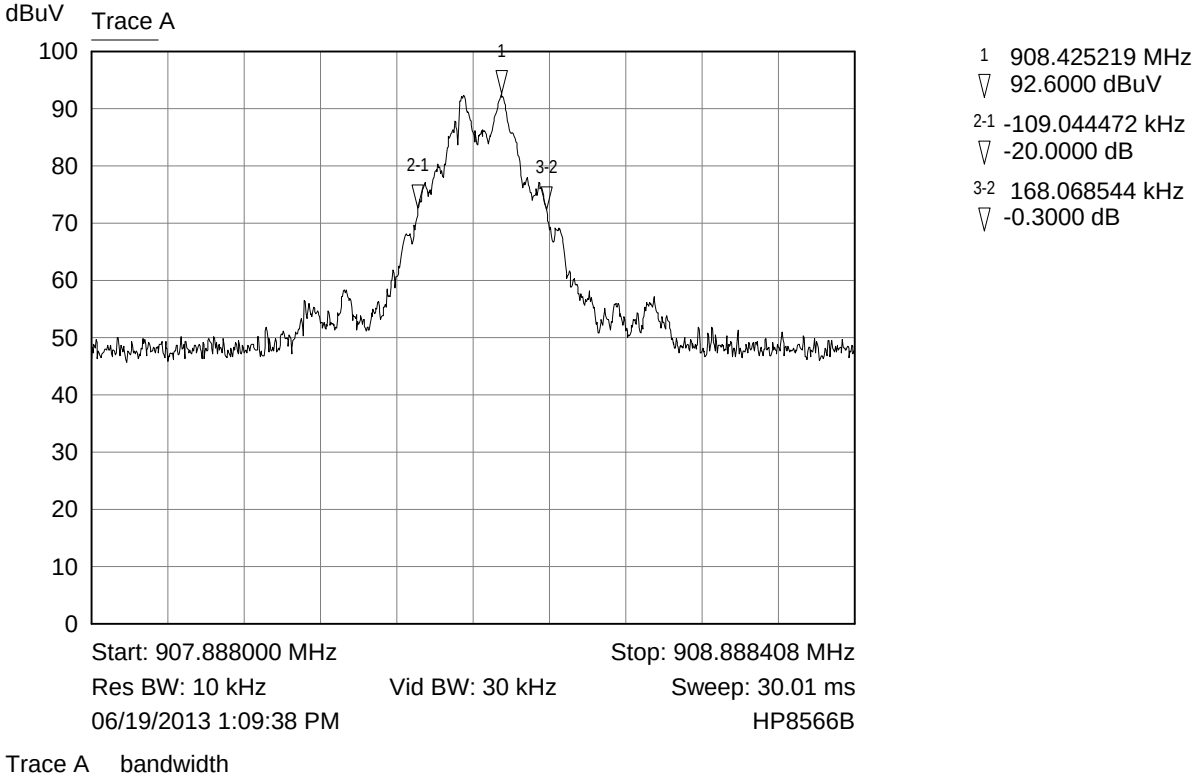
Frequency (MHz)	Detection Mode	Antenna Polarity	Receiver Reading (dBµV)	Correction Factor (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
9084.2	Average	Vertical	-10.1	44.4	34.3	74.0	-39.7
9084.2	Peak	Horizontal	2.1	44.4	46.5	54.0	-7.5
9084.2	Average	Horizontal	-10.2	44.4	34.2	74.0	-39.8

RESULT

The EUT complied with the specification by 7.4 dB.

6.2.4 Channel Bandwidth

The 20 dB bandwidth of the channel is shown in the plot below. This plot shows the fundamental emission has a 20 dB band width of 168 kHz which is contained totally within the 902 – 928 MHz frequency band.



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.

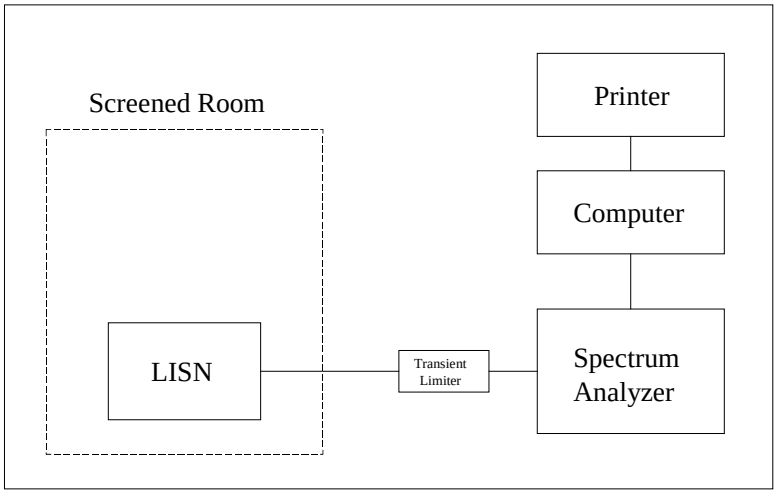
For AC mains port testing, desktop EUT are placed on a non-conducting table at least 0.8 meters from the metallic floor and placed 40 cm from the vertical coupling plane (copper plating in the wall behind EUT table). Floor standing equipment is placed directly on the earth grounded floor.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Due Date of Calibration
Wanship Open Area Test Site #2	Nemko-CCL, Inc.	N/A	N/A	12/07/2012	12/07/2013
Test Software	Nemko-CCL, Inc.	Conducted Emissions	Revision 1.2	N/A	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	02/06/2013	02/06/2014

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Due Date of Calibration
Quasi-Peak Detector	Hewlett Packard	85650A	2043A00137	02/06/2013	02/06/2014
LISN	EMCO	3825/2	9305-2099	03/12/2013	03/12/2014
Conductance Cable Wanship Site #2	Nemko-CCL, Inc.	Cable J	N/A	12/21/2012	12/21/2013
Transient Limiter	Hewlett Packard	11947A	3107A02266	12/21/2012	12/21/2013

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 Spurious Emissions in the Restricted Bands

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.

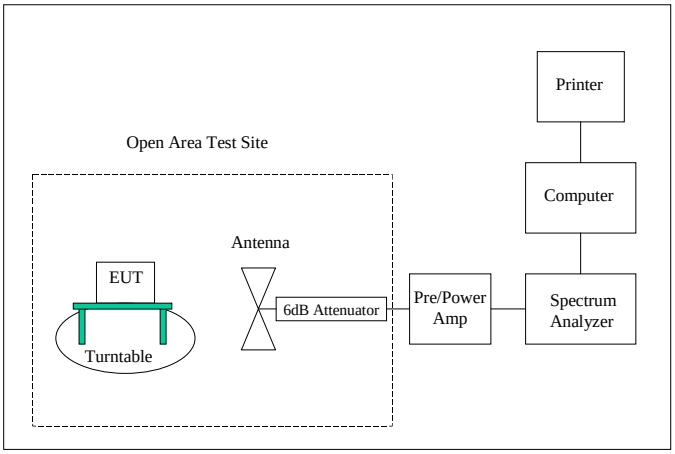
Desktop EUT are measured on a non-conducting table 0.8 meters above the ground plane. The table is placed on a turntable, which is level with the ground plane. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

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	Serial Number	Date of Last Calibration	Due Date of Calibration
Wanship Open Area Test Site #2	Nemko-CCL, Inc.	N/A	N/A	12/07/2012	12/07/2013
Test Software	Nemko-CCL, Inc.	Radiated Emissions	Revision 1.3	N/A	N/A
Spectrum Analyzer/Receiver	Rhode & Schwarz	ESU40	100064	07/28/2012	07/28/2013
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	02/06/2013	02/06/2014
Quasi-Peak Detector	Hewlett Packard	85650A	2043A00137	02/06/2013	02/06/2014
Loop Antenna	EMCO	6502	9111-2675	03/04/2013	03/04/2015
Biconilog Antenna	EMCO	3142	9601-1008	10/10/2012	10/10/2014
Double Ridged Guide Antenna	EMCO	3115	9409-4355	06/06/2012	06/06/2014
High Frequency Amplifier	Miteq	AFS4-01001800-43-10P-4	1096455	05/06/2013	05/06/2014
6’ High Frequency Cable	Microcoax	UFB197C-0-0720-000000	1296	05/02/2013	05/02/2014
20’ High Frequency Cable	Microcoax	UFB197C-1-3120-000000	1297	05/02/2013	05/02/2014
3 Meter Radiated Emissions Cable Wanship Site #2	Microcoax	UFB205A-0-4700-000000	1295	05/02/2013	05/02/2014
10 Meter Radiated Emissions Cable Wanship Site #2	Nemko-CCL, Inc.	Cable L	N/A	12/21/2012	12/21/2013
Pre/Power-Amplifier	Hewlett Packard	8447F	3113A05161	08/27/2012	08/27/2013
6 dB Attenuator	Hewlett Packard	8491A	32835	12/21/2012	12/21/2013

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.

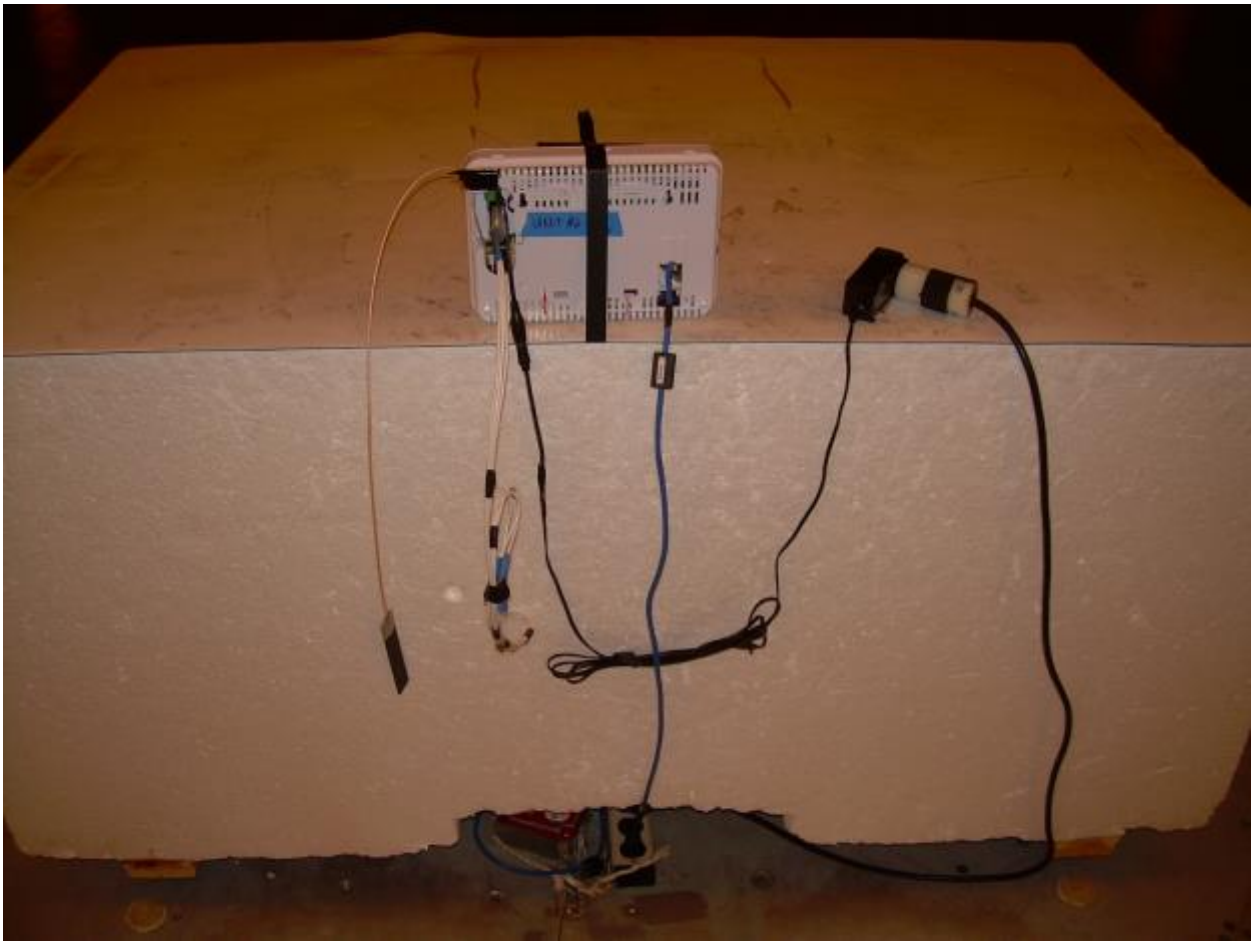
Radiated Emissions Test Setup



APPENDIX 2 PHOTOGRAPHS

Photograph 1 – Front View Radiated Disturbance Worst Case Configuration

Photograph 2 – Back View Radiated Disturbance Worst Case Configuration

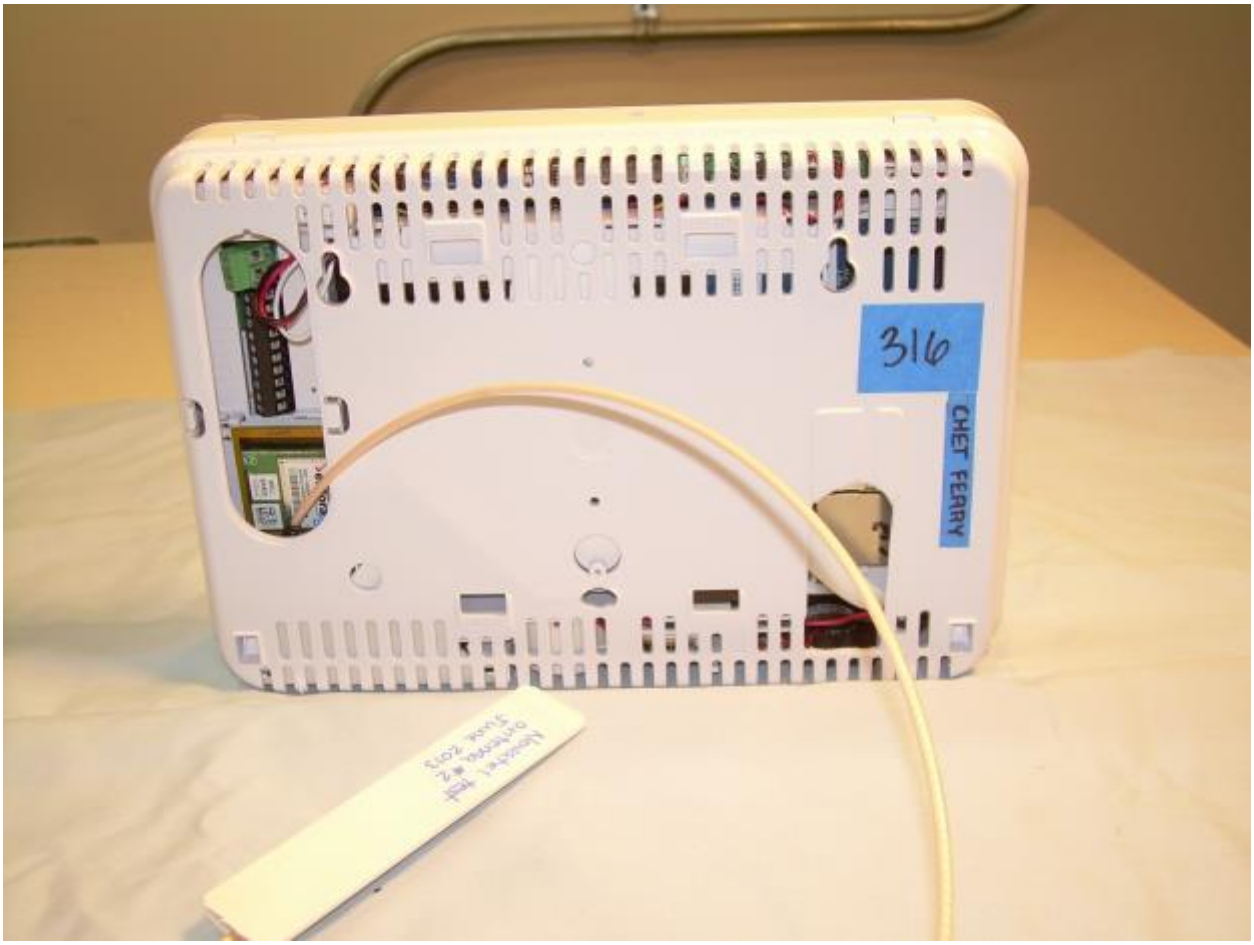


Photograph 3 – Front View Conducted Disturbance Worst Case Configuration

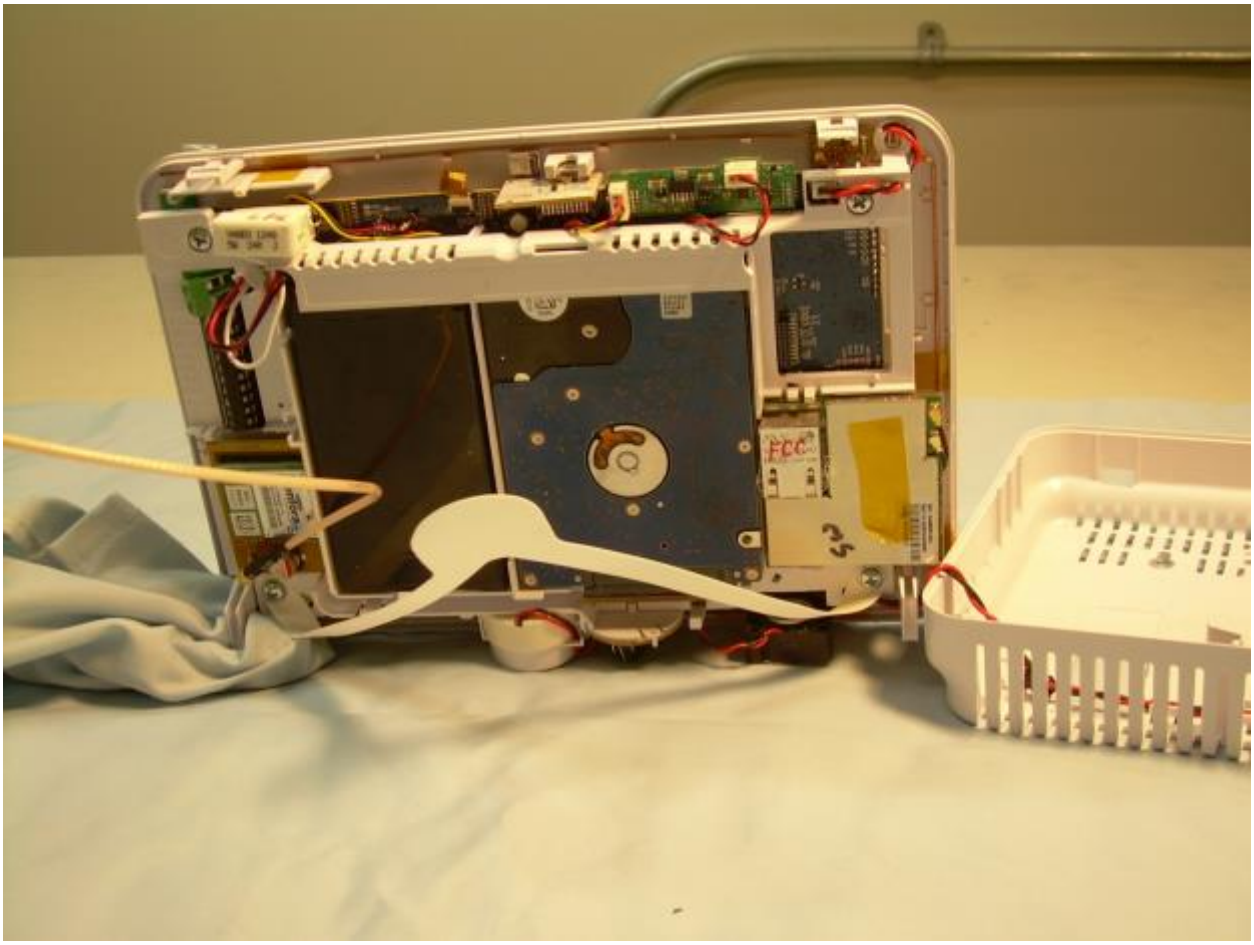
Photograph 4 – Back View Conducted Disturbance Worst Case Configuration

Photograph 5 – Front View of the EUT

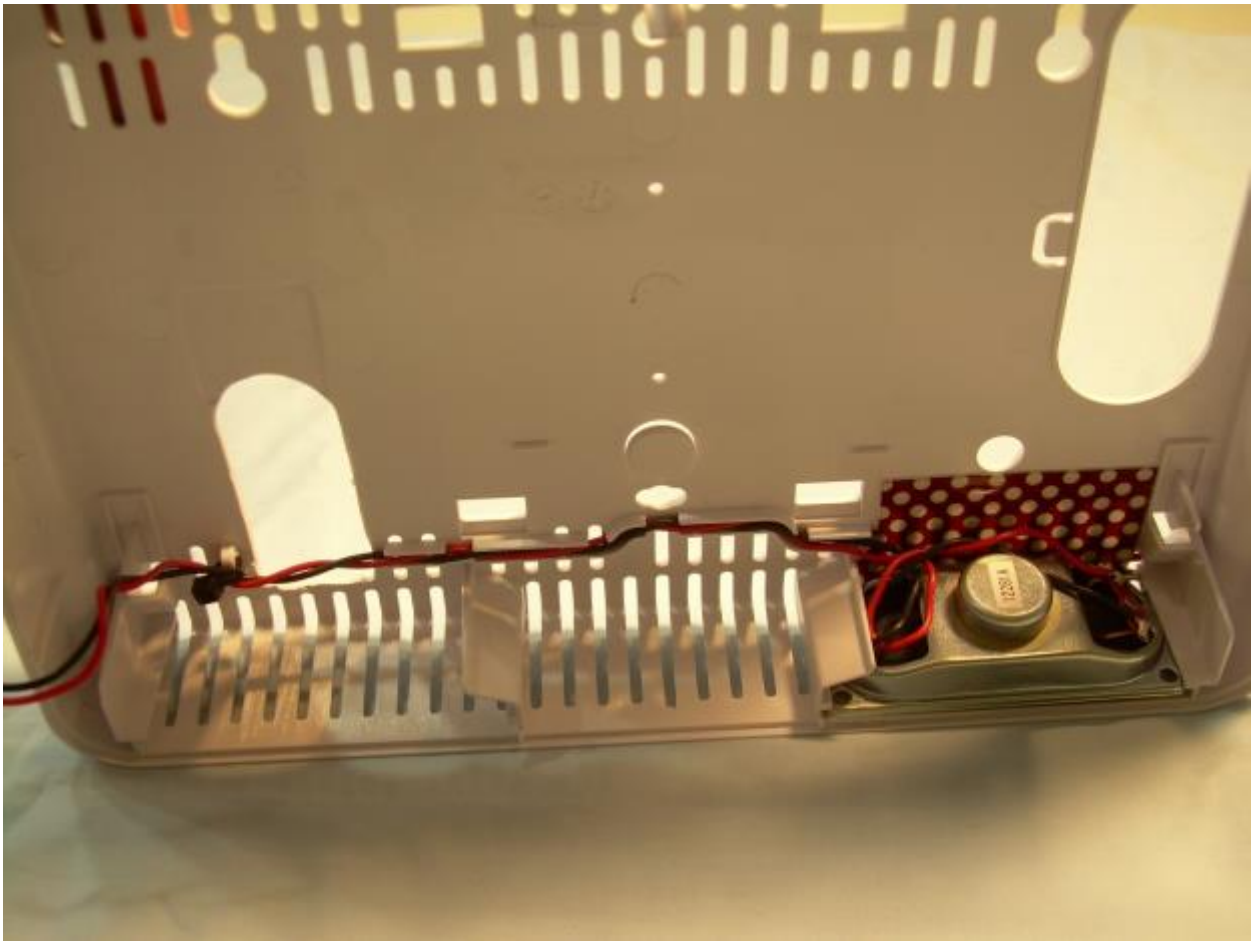
Photograph 6 – Back View of the EUT



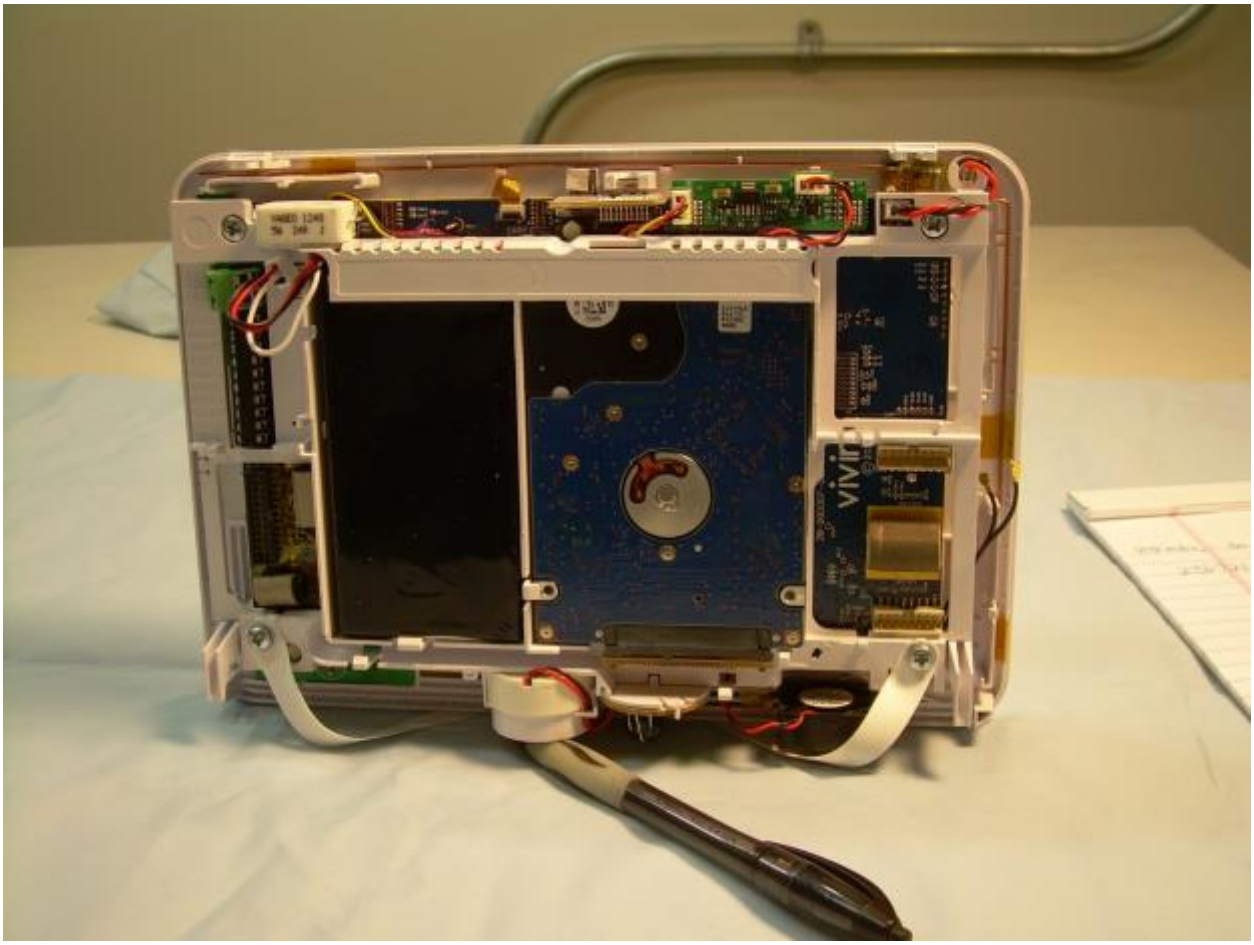
Photograph 7 – View of the EUT with the Back Cover Removed



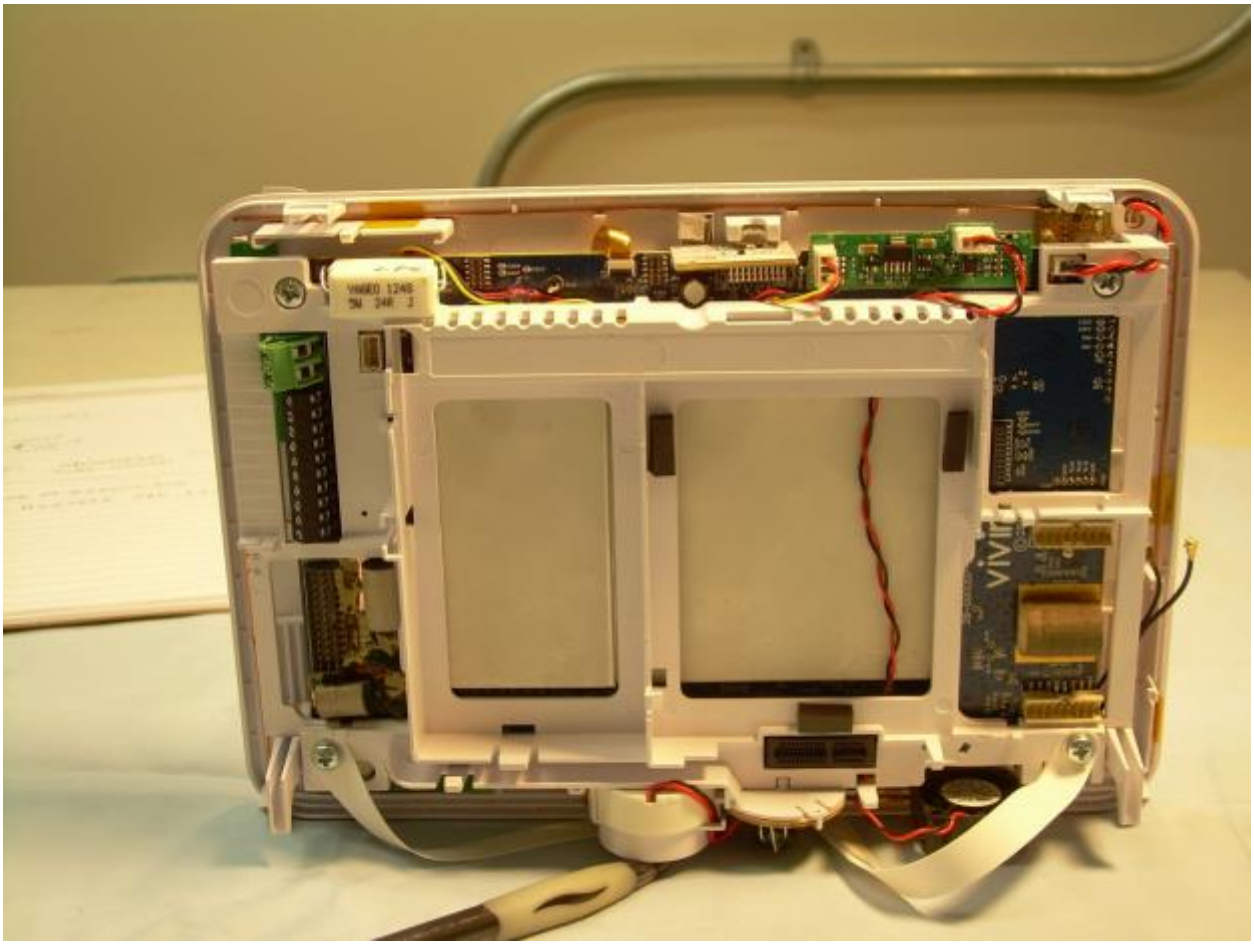
Photograph 8 – View of the Speaker



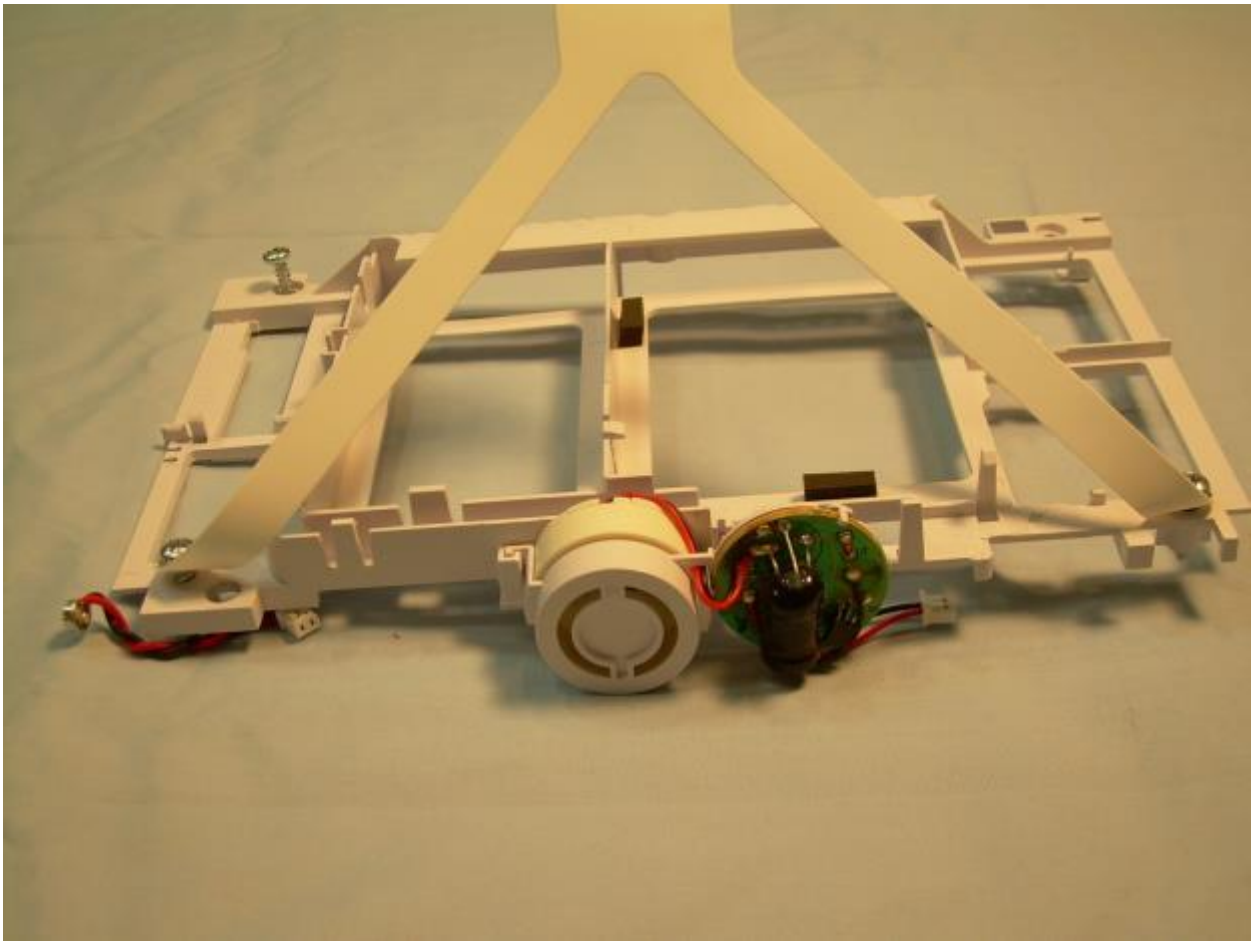
Photograph 9 – View of the EUT with the Cell Modem and Ethernet/WiFi Modules Removed



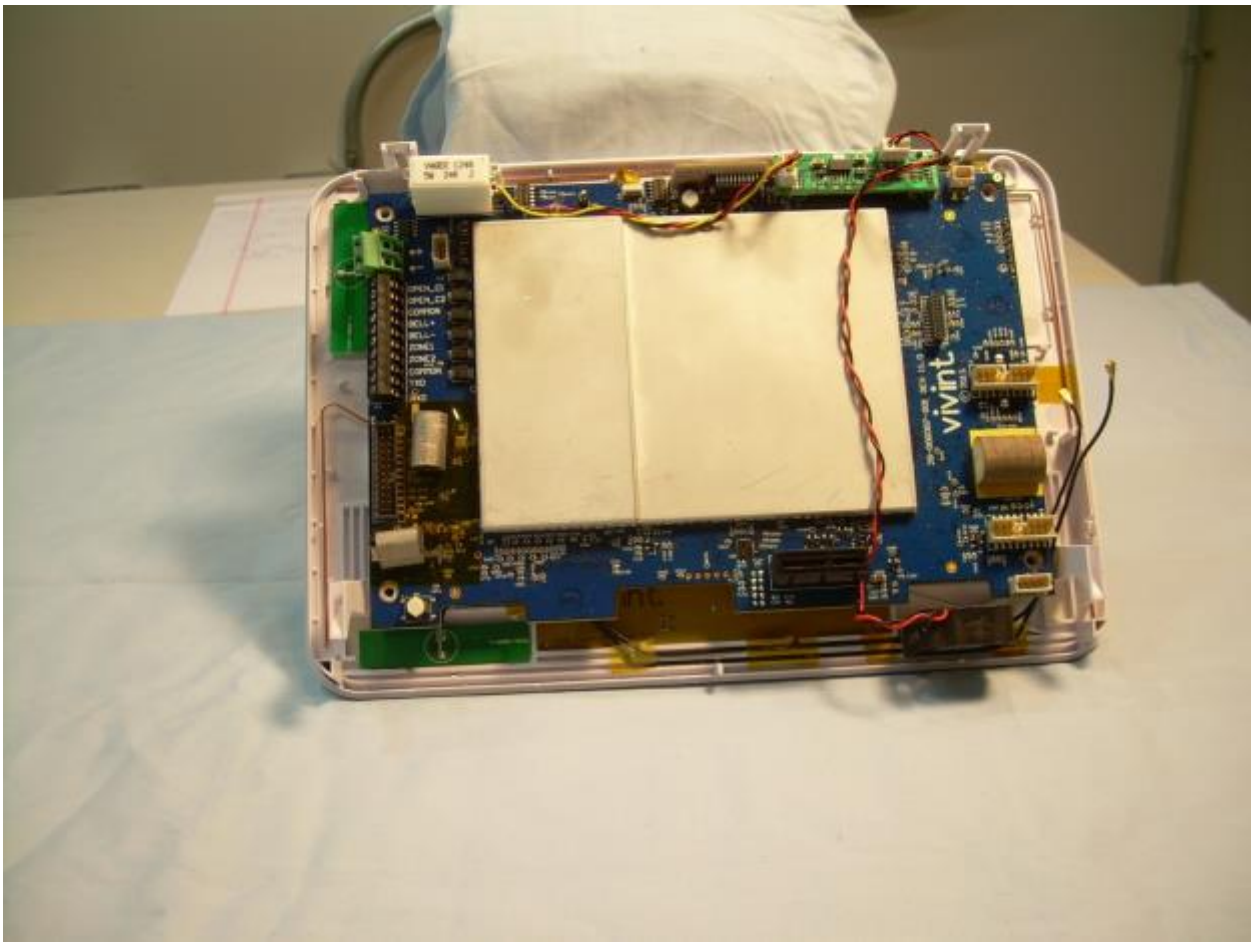
Photograph 10 – View with the Hard Drive Removed



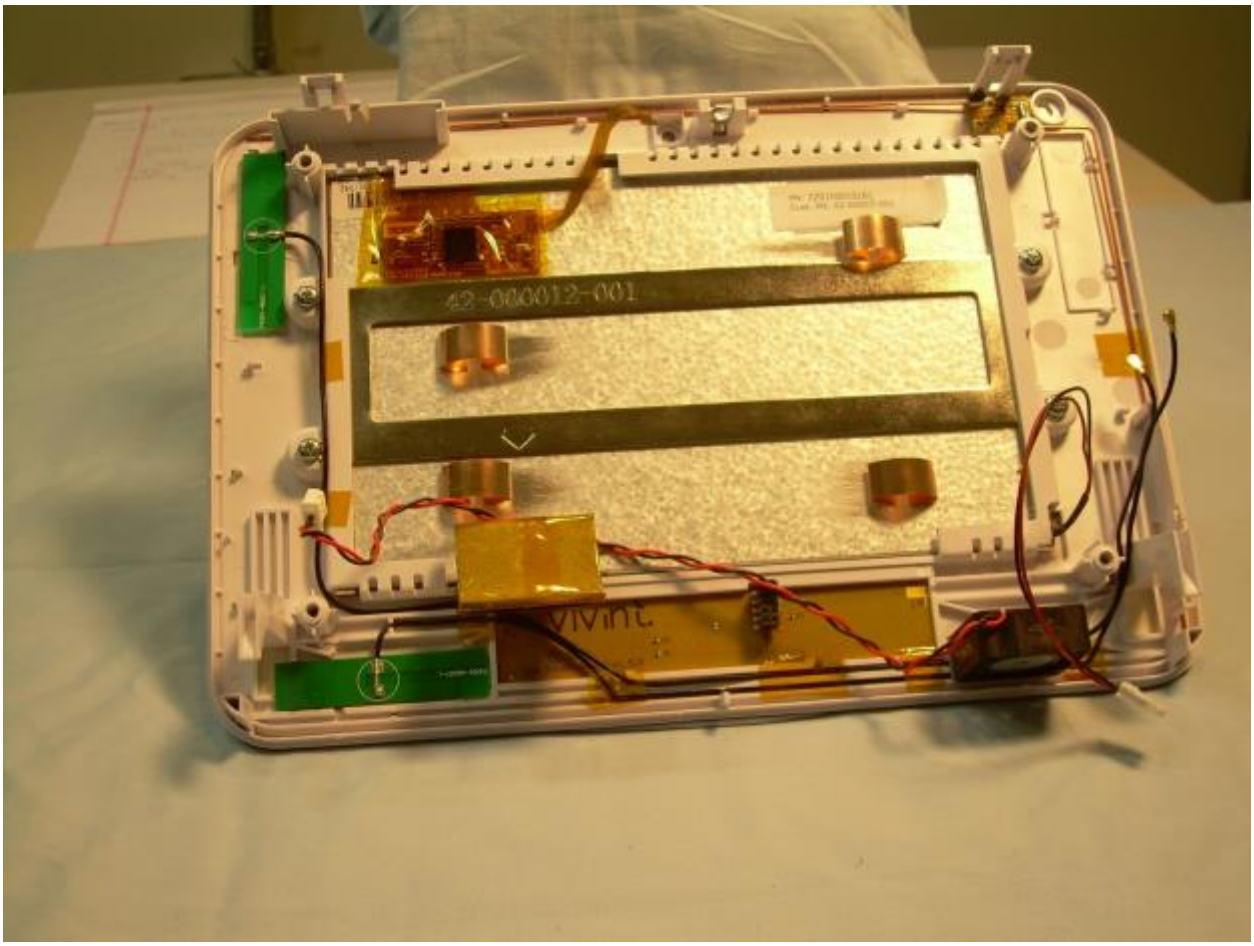
Photograph 11 – View of the Inner Frame



Photograph 12 – View of the EUT with Inner Frame, Hard Drive, and Transceiver Modules Removed

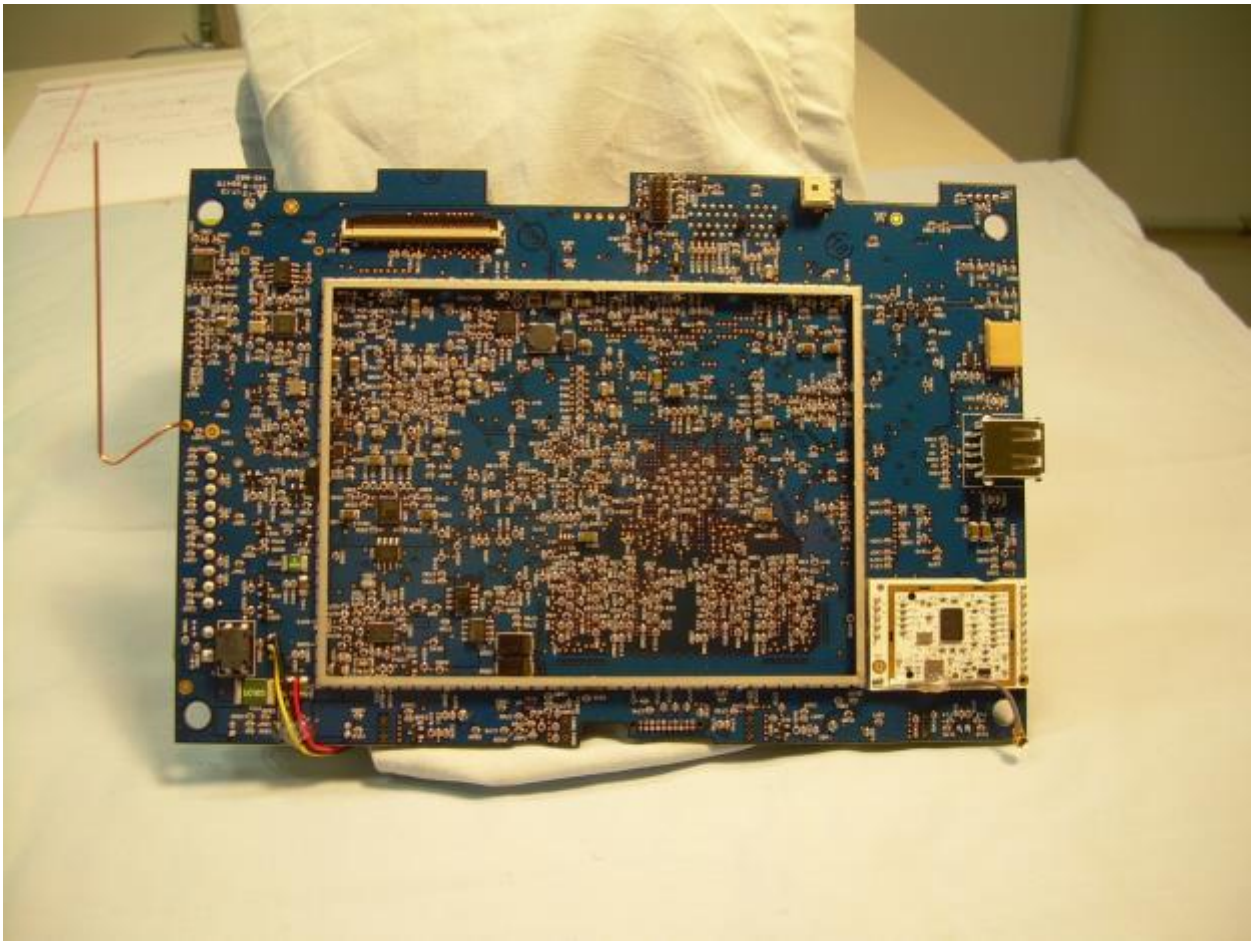


Photograph 13 – View of the EUT with the Main PCB Removed Showing WiFi Antennas, Fan, and Back of the Display Module

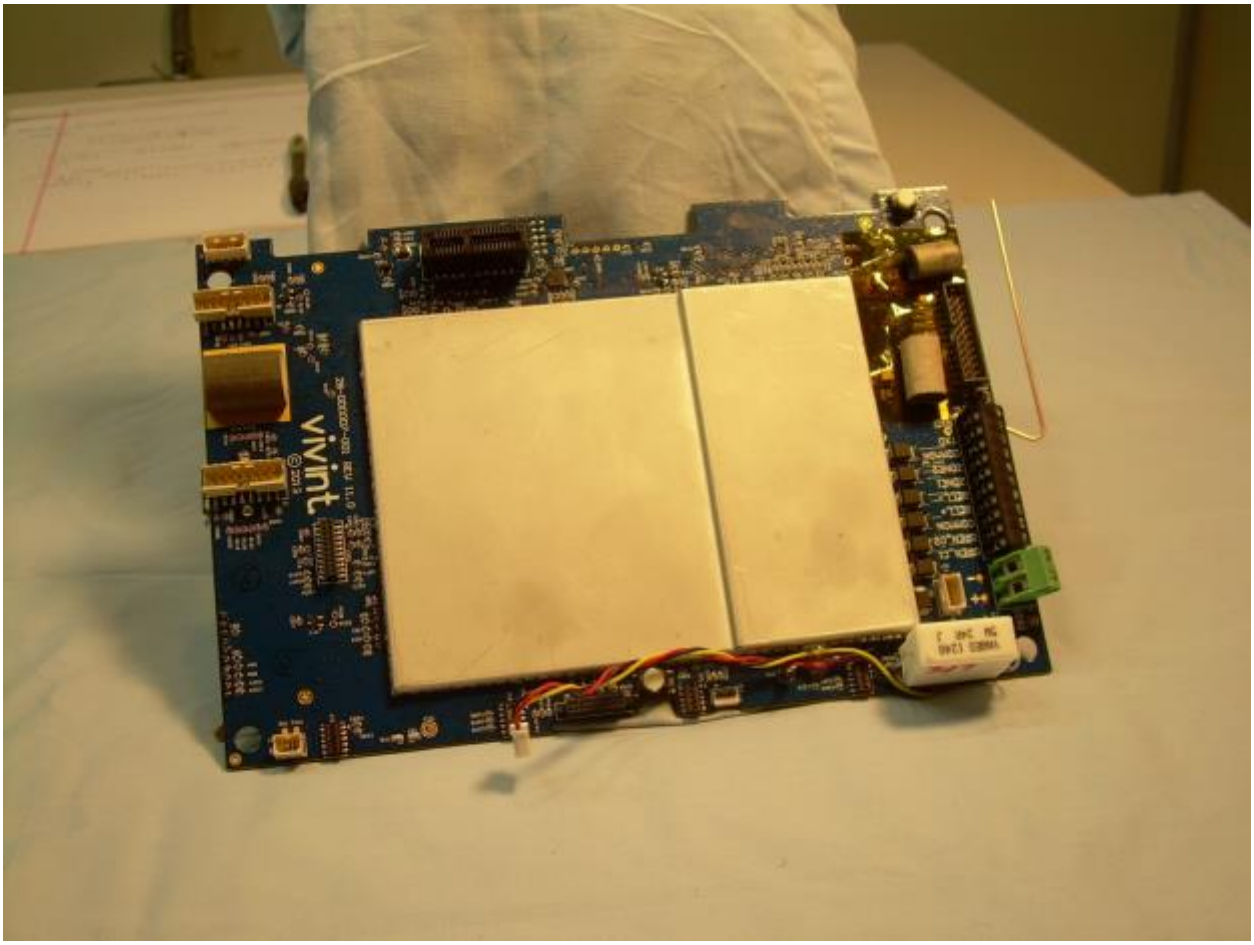


Photograph 14 – View of the Front Side of the Main PCB with RF Shield In Place

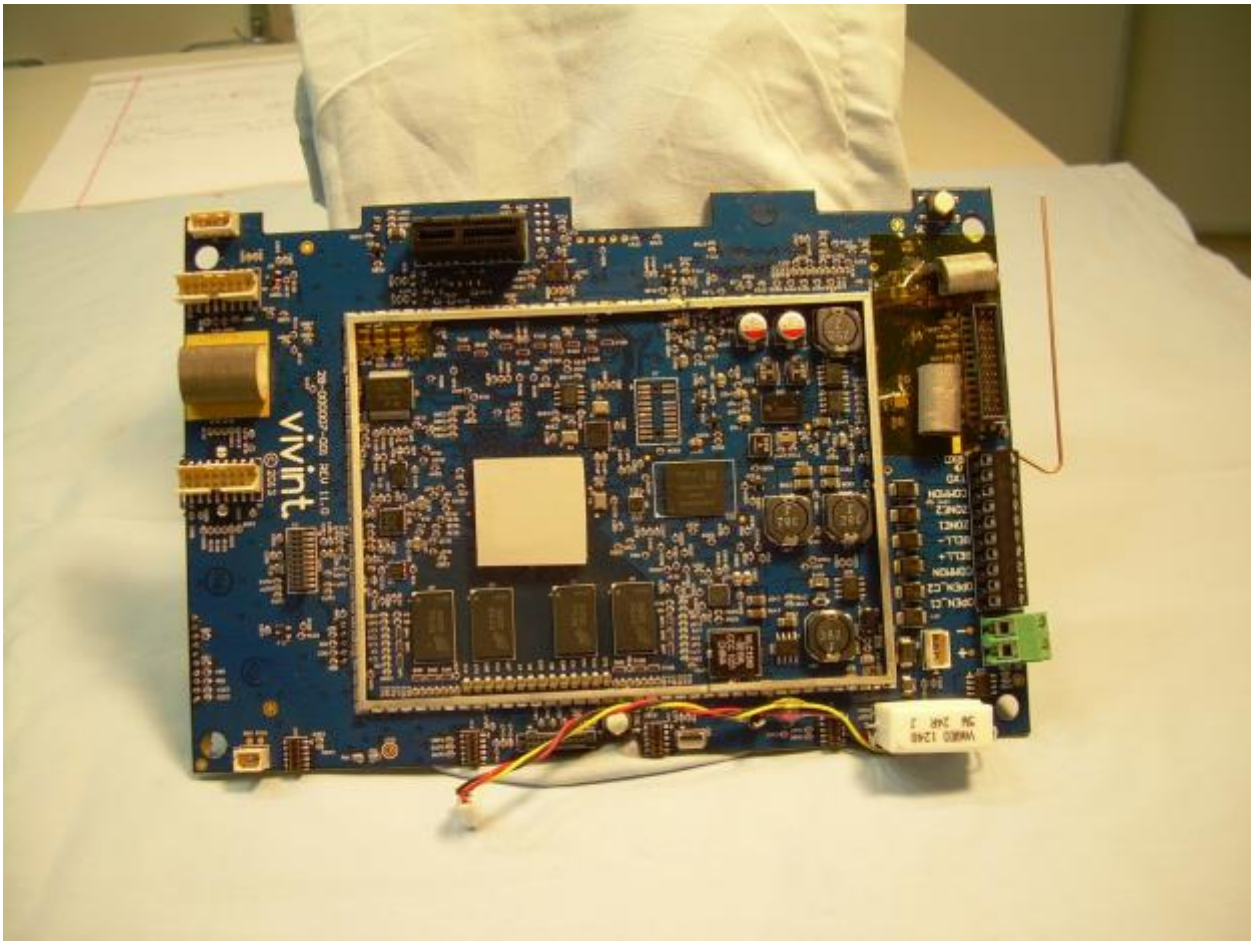
Photograph 15 – View of the Front Side of the Main PCB with RF Shield Removed



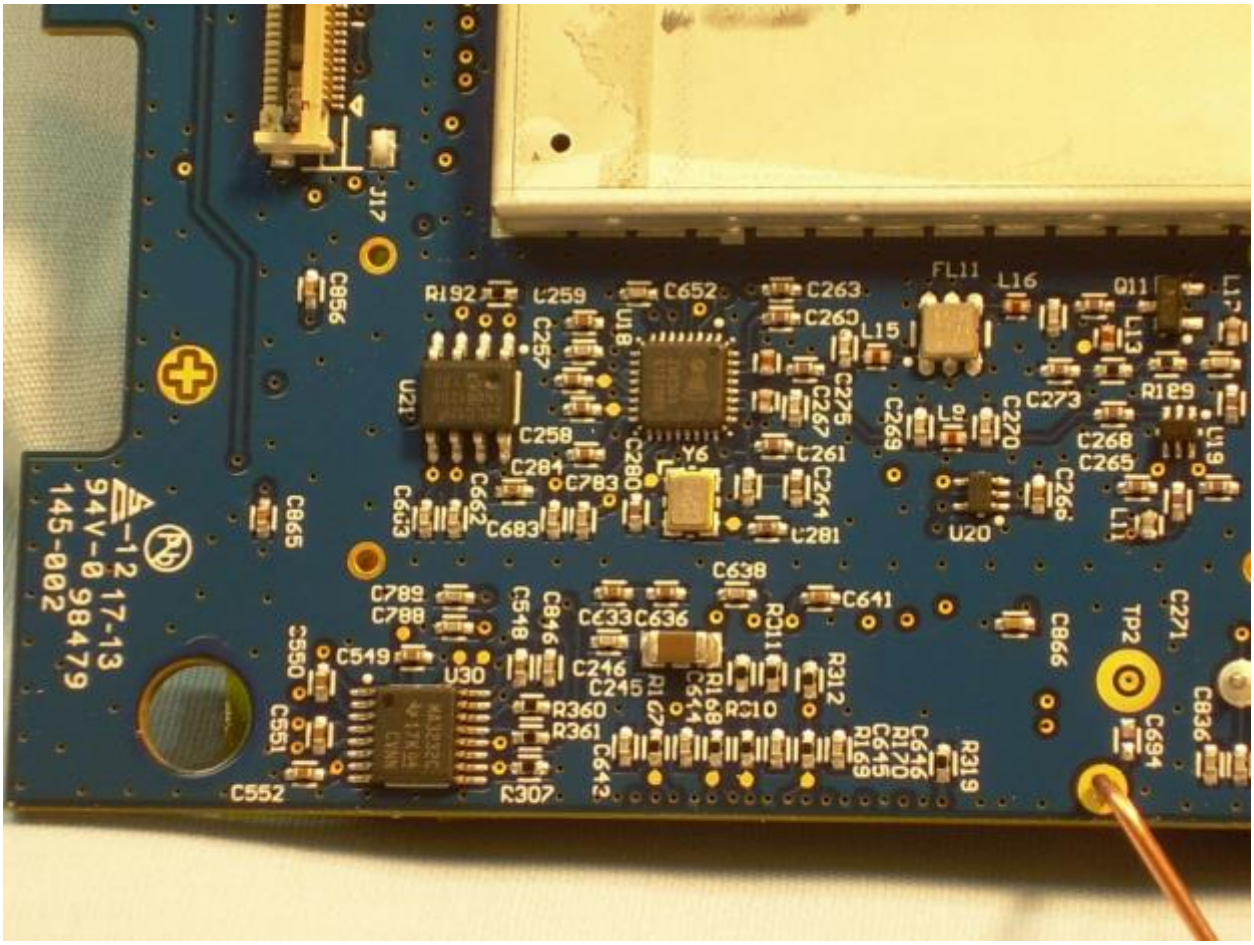
Photograph 16 – View of the Back Side of the Main PCB with RF Shield In Place



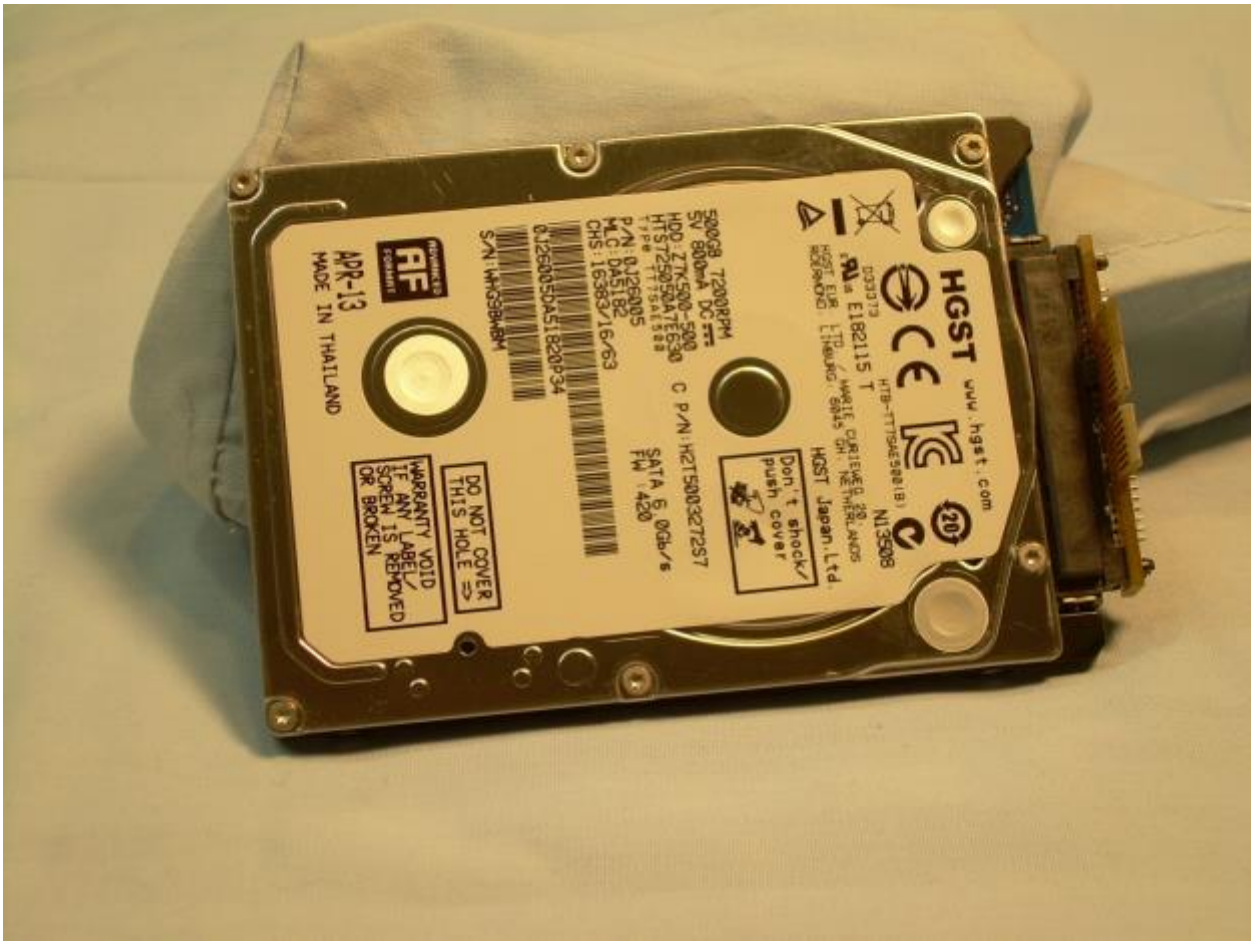
Photograph 17 – View of the Back Side of the Main PCB with RF Shield Removed



Photograph 18 – Circuitry Beneath Gasketing in Photograph 17

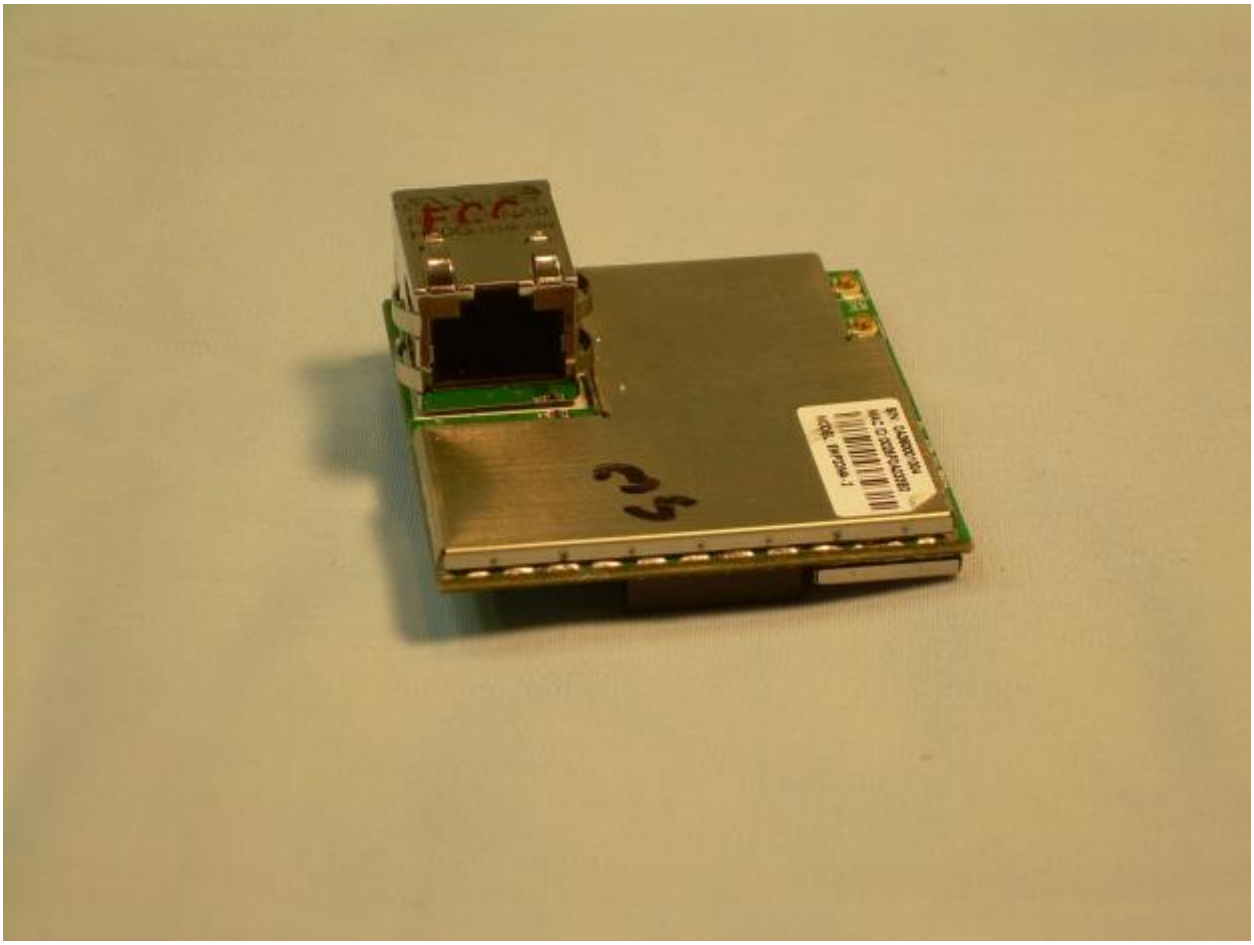


Photograph 19 – View of the Hard Drive

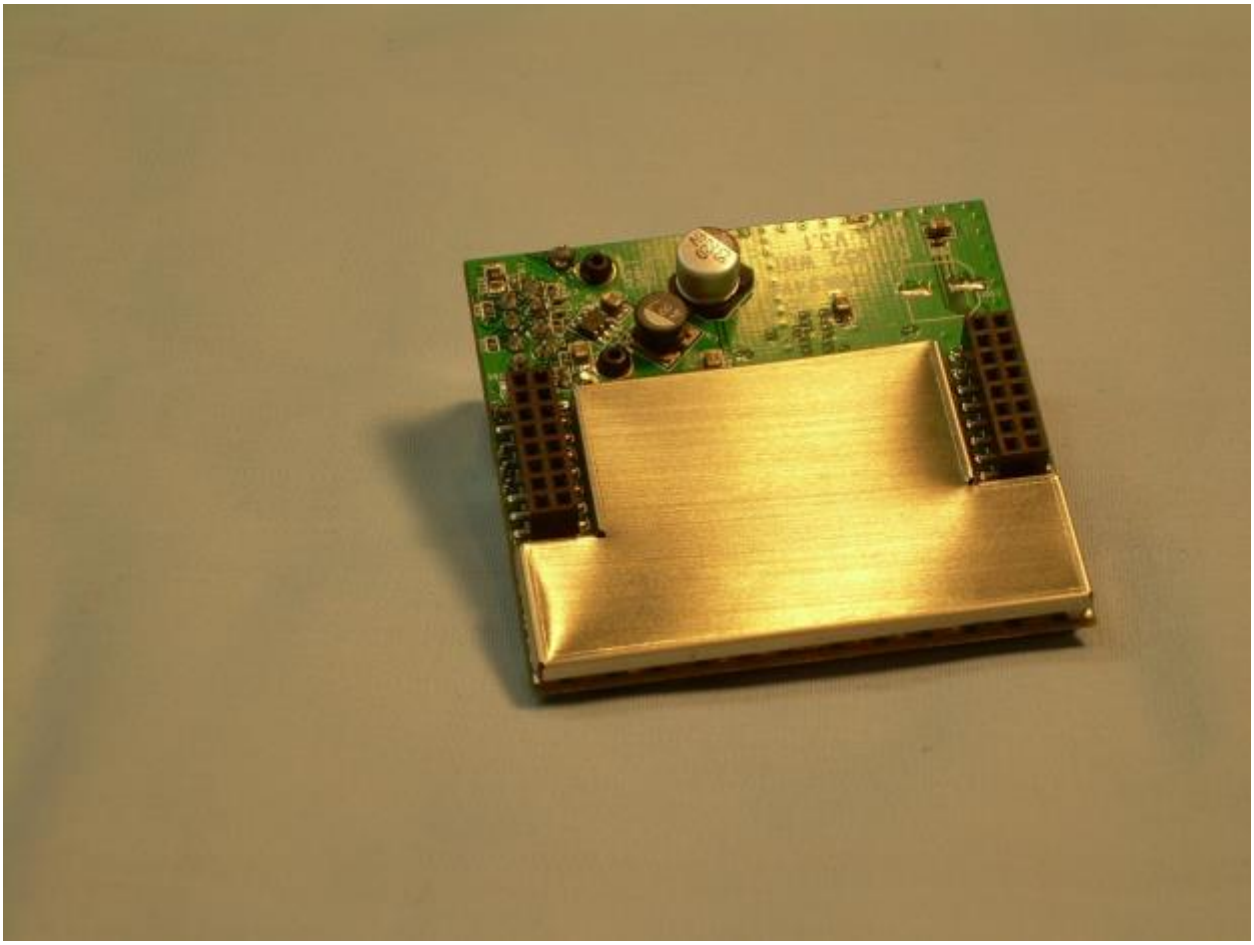


Photograph 20 – View of the Battery

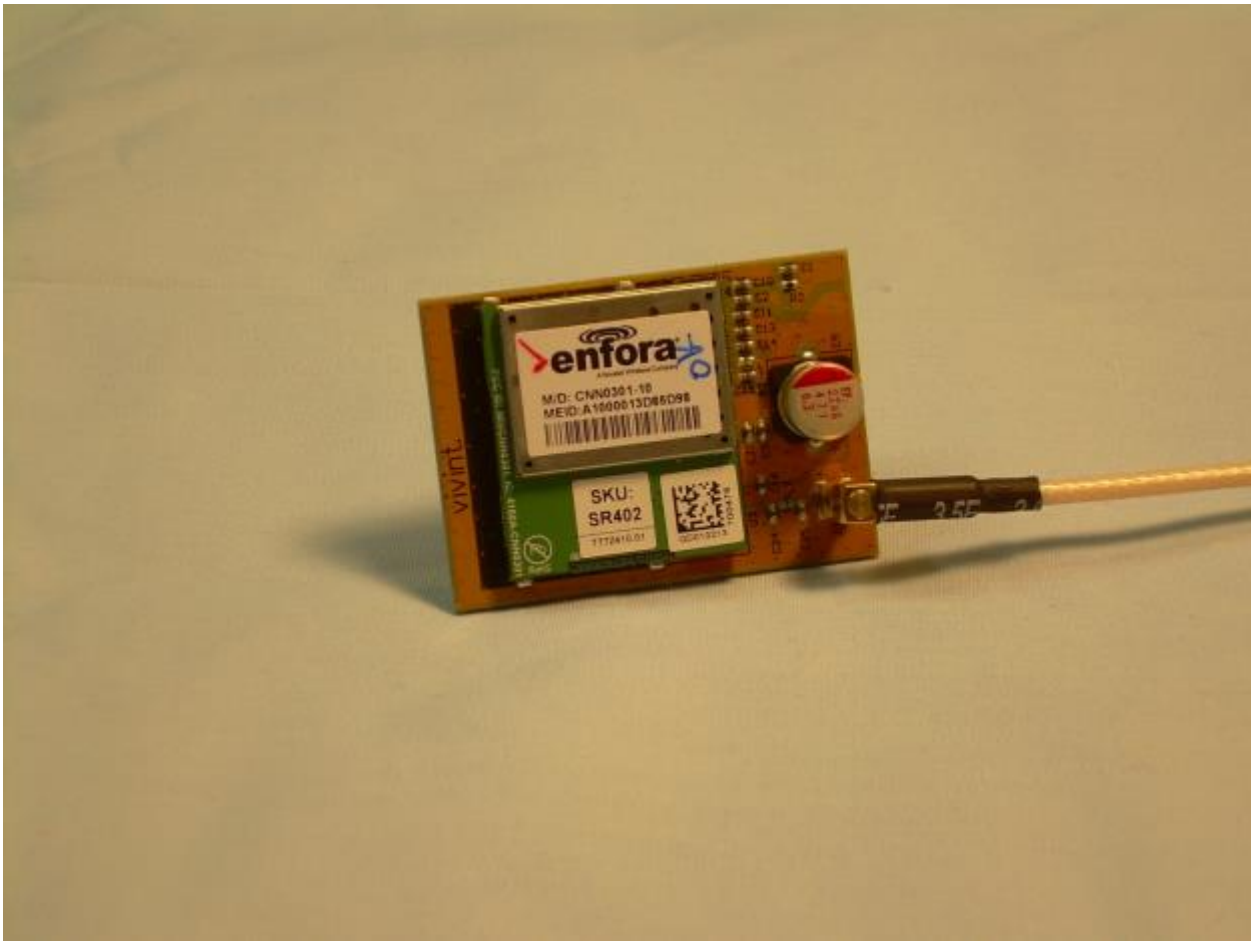
Photograph 21 – View of the Back Side of the Ethernet/WiFi Module



Photograph 22 – View of the Front Side of the Ethernet/WiFi Module



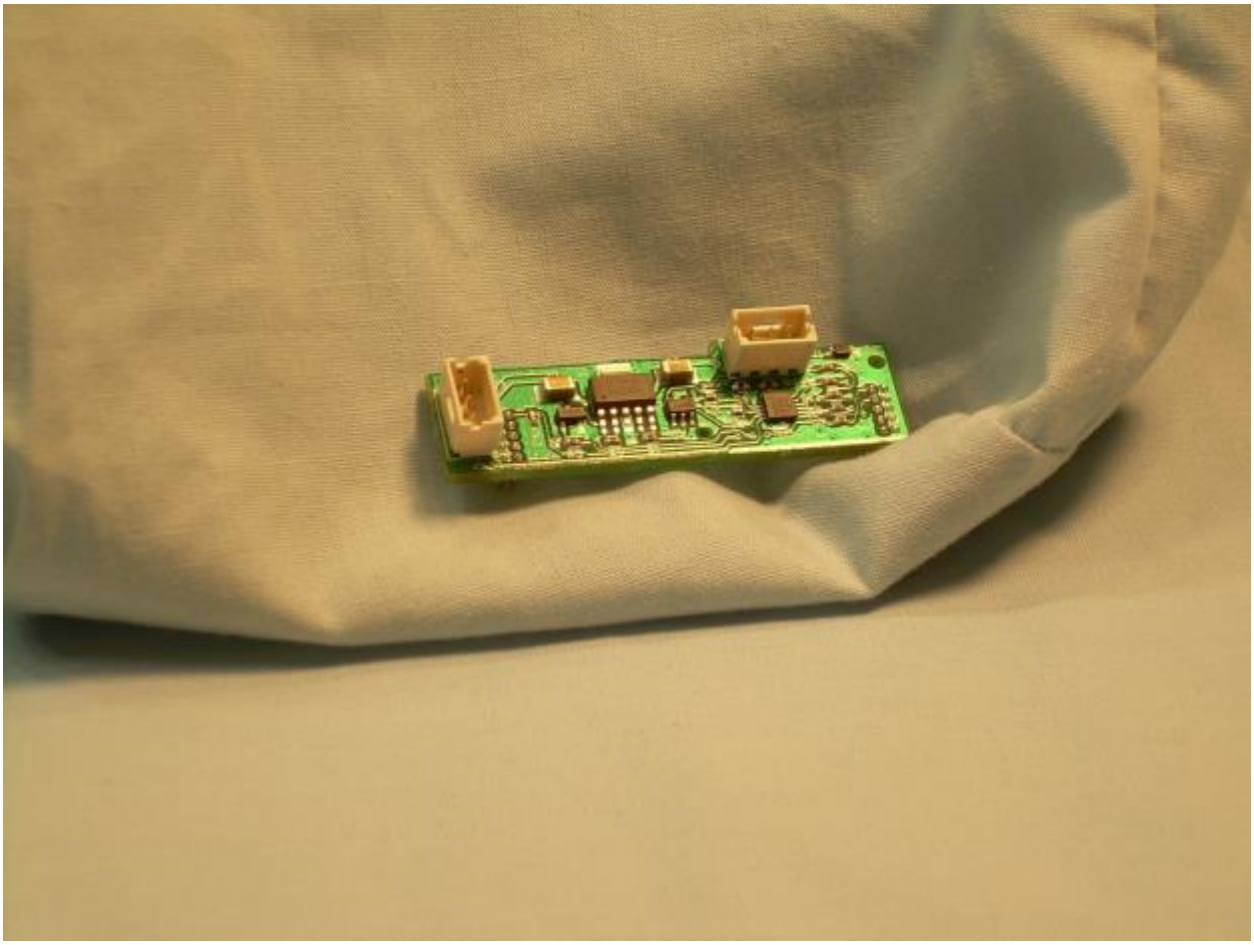
Photograph 23 – View of the Enfora HS3001 Cell Module



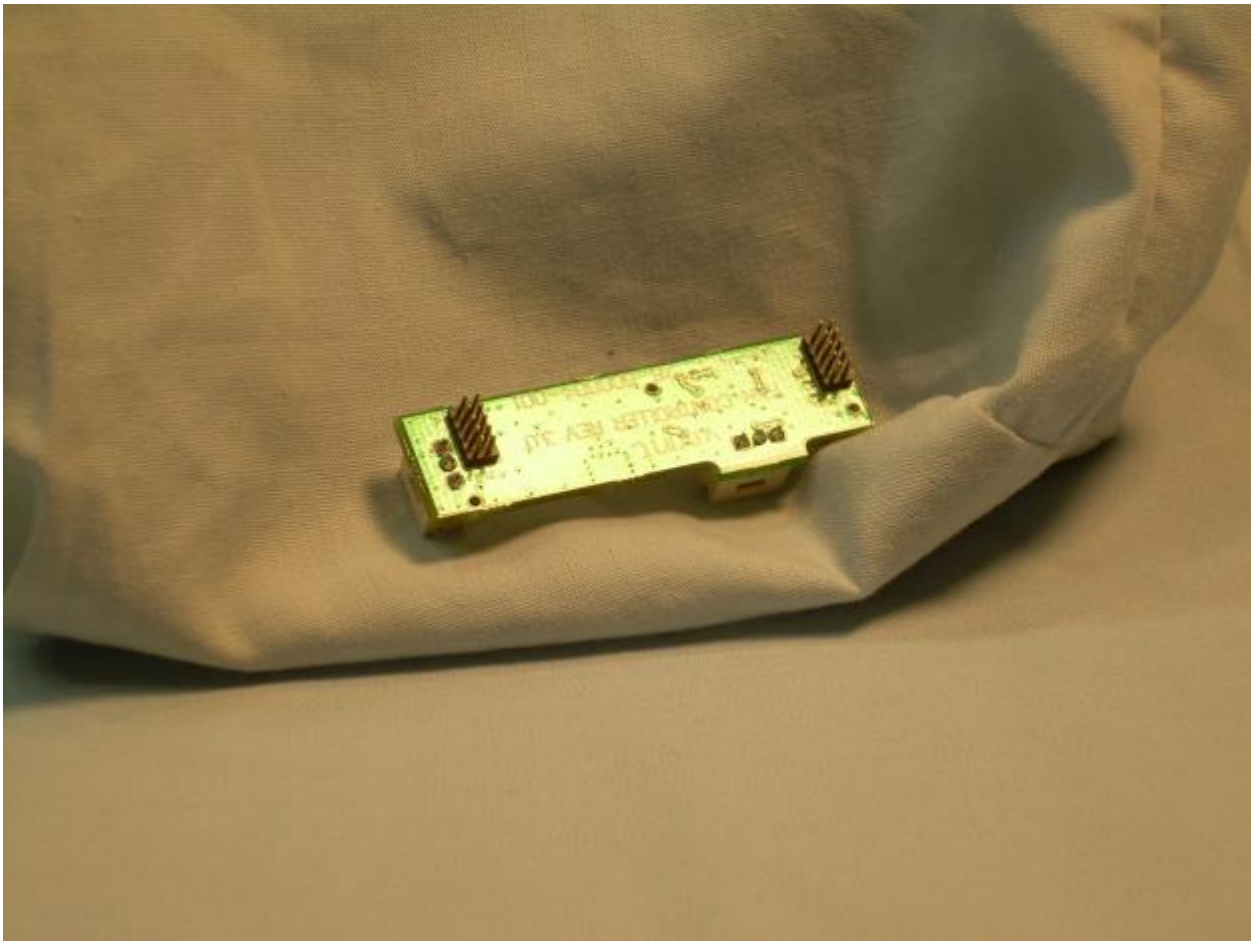
Photograph 24 – View of the Telit HE910-NAR Cell Module

Photograph 25 – View of the Telit CE910-DUAL Cell Module

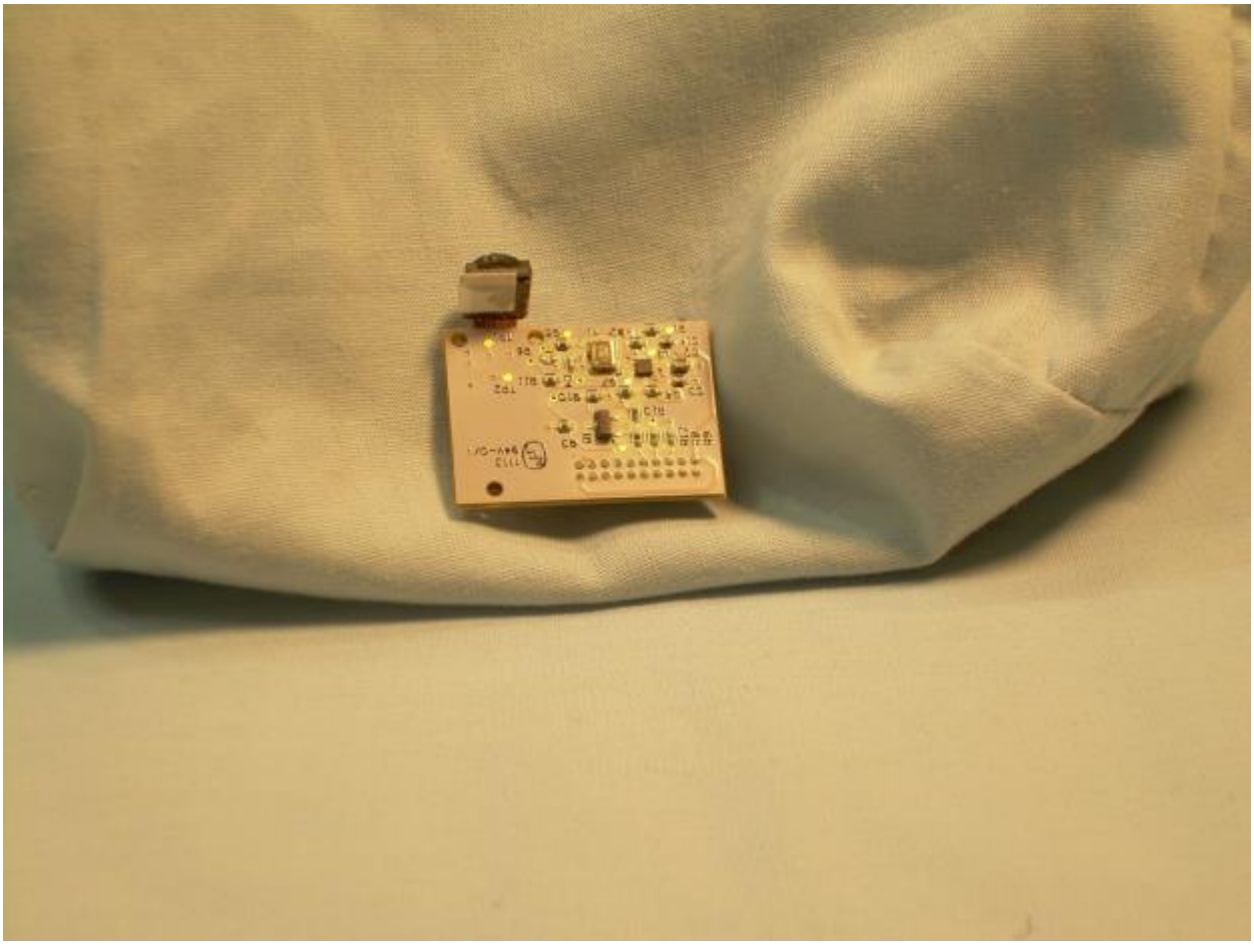
Photograph 26 – View of the Component Side of the Fan Controller PCB



Photograph 27 – View of the Component Side of the Fan Controller PCB



Photograph 28 – View of the Component Side of the Camera Interface PCB



Photograph 29 – View of the Trace Side of the Camera Interface PCB