# COMMUNICATION CERTIFICATION LABORATORY

**1940 West Alexander Street**
**Salt Lake City, UT 84119**
**801-972-6146**


## Test Report

Certification

Test Of:

PowerControl6

FCC ID Number:WCS-PC6

Test Specification:

FCC PART 15, Subpart C

Test Report Serial No: 1561

Applicant:

SRM Service Center, Inc.
720 West Monument Street
Colorado Springs, CO 80904

Date of Test: May 27, 2008

Issue Date: June 5, 2008

Accredited Testing Laboratory By:

NVLAP

NVLAP Lab Code 100272-0

**CERTIFICATION OF ENGINEERING REPORT**

This report has been prepared by Communication Certification Laboratory 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: SRM Service Center, Inc.
- Manufacturer: SRM Service Center, Inc.
- Brand Name: SRM
- Model Number: PowerControl6
- FCC ID Number: WCS-PC6

On this 5th day of June 2008, 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 accredited the Communication Certification Laboratory EMC testing facilities, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

COMMUNICATION CERTIFICATION LABORATORY

Tested by: Norman P. Hansen
EMC Technician

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## SECTION 1.0 CLIENT INFORMATION

### 1.1 Applicant:

Company Name: SRM Service Center, Inc.
720 West Monument Street
Colorado Springs, CO 80904

Contact Name: Ulrich Schoberer
Title: Owner

### 1.2 Manufacturer:

Company Name: SRM Service Center, Inc.
720 West Monument Street
Colorado Springs, CO 80904

Contact Name: Ulrich Schoberer
Title: Owner

## SECTION 2.0 EQUIPMENT UNDER TEST (EUT)

### 2.1 Identification of EUT:

Brand Name: SRM
Model Number: PowerControl6
Serial Number: None
Options Fitted: N/A

### 2.2 Description of EUT:

The SRM PowerControl6 and PowerMeter6 create a system for monitoring and measuring the torque applied to a bicycle crank. The PowerControl6 is the receiving and display unit. The PowerMeter6 is the torque sensor. Both units contain a 2.457 GHz transceiver that uses ANT+Sport Protocol for communication.

The PowerControl6 can interface a computer using the USB port. Power may be provided from the USB port of a computer, external 5 VDC power supply, or a 3.6 VDC NiMH battery.

This report covers the transceiver circuitry of the device subject to FCC Part 15, Subpart C. The circuitry, subject to FCC Part 15, Subpart B and ICES-003 is to be tested and the results shown in separate reports.

### 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<br>Model Number<br>Serial No. | FCC ID Number | Description | Name of Interface Ports / Interface Cables |
|---|---|---|---|
| BN: SRM<br>MN: PowerControl6<br>(Note 1) | WCS-PC6 | Control Assembly | See Section 2.4 |
| BN: Apple<br>MN: iMac | DoC | Laptop computer | USB/USB cable (Note 2)<br>Ethernet/Cat5 cable |
| BN: TRENDnet<br>MN: TE100-S8P | DoC | 8 port LAN hub | Ethernet/Cat 5 cable w/RJ45 connectors |

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 |
|---|---|---|
| USB | 1 | USB cable/1.5 meters |

## 2.5 Modification Incorporated/Special Accessories on EUT:

The following modifications were made to the PowerControl6 by the Client during testing to comply with the specification. These modifications will be implemented during manufacturing.

1. The software was changed to set the transmitter power at the level 1 setting.

Signature: _____

Typed Name: Ulrich Schoberer

Title: Owner

## 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.

(b) The shown limit in paragraph (a) of this Section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 uV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in Section 15.205 and Section 15.209, 15.221, 15.223, 15.225 or 15.227, as appropriate.

(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 while 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.

## 3.2.3 §15.249 Operation within the bands 902 – 928 MHz, 2400 – 2483.5 MHz, 5725 – 5875 MHz, and 24.0 – 24.25 GHz

(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 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 millivolts/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 requirement in Section 15.37(d).

## 3.3 Test Procedure

The line conducted and radiated emissions testing was performed according to the procedures in ANSI C63.4 (2003). 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 June 6, 2006 (90504).

CCL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and has been accredited under NVLAP Lab Code:100272-0, which is effective until September 30, 2008.

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: | 120 VAC/60 Hz to 5 VDC adapter |
| | 5 VDC from USB port |
| | 3.6 VDC NiMH battery |

### 4.2 Operating Modes:

The EUT was tested when connected to the laptop computer via the USB port, when powered by an external power supply, and when battery powered. The EUT was tested on three orthogonal axes.

### 4.3 EUT Exercise Software:

Internal firmware was used to exercise the EUT.

## SECTION 5.0 SUMMARY OF TEST RESULTS

### 5.1 FCC Part 15, Subpart C

### 5.1.1 Summary of Tests:

| Paragraph | Requirements | Frequency Range (MHz) | Result |
|---|---|---|---|
| 15.203 | Antenna Requirements | N/A | Complied |
| 15.207 | Conducted Disturbance at Mains Ports | 0.15 to 30 | Complied |
| 15.249 | Radiated Field Strengths | 30 to 1000 | Complied |

### 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 §15.203 Antenna Requirements

The EUT uses a Murata 2.4 GHz chip antenna that is soldered to the PCB and is not user replaceable.

### 6.2.2 Conducted Disturbance at Mains Ports Data (Hot Lead)

| Frequency (MHz) | AC Mains Lead | Detector | Measured Level (dBμV) | Limit (dBμV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.38 | Hot Lead | Quasi-Peak (Note 2) | 44.3 | 58.2 | -13.9 |
| 0.38 | Hot Lead | Average (Note 2) | 27.4 | 48.2 | -20.8 |
| 0.63 | Hot Lead | Peak (Note 1) | 41.1 | 46.0 | -4.9 |
| 1.55 | Hot Lead | Peak (Note 1) | 40.6 | 46.0 | -5.4 |
| 1.82 | Hot Lead | Peak (Note 1) | 38.2 | 46.0 | -7.8 |
| 2.50 | Hot Lead | Peak (Note 1) | 36.6 | 46.0 | -9.4 |
| 2.56 | Hot Lead | Peak (Note 1) | 38.4 | 46.0 | -7.6 |
| 0.16 | Neutral Lead | Peak (Note 1) | 47.8 | 55.7 | -7.9 |
| 0.38 | Neutral Lead | Peak (Note 1) | 43.5 | 48.3 | -4.8 |
| 0.61 | Neutral Lead | Quasi-Peak (Note 1) | 29.2 | 46.0 | -16.8 |
| 0.75 | Neutral Lead | Peak (Note 1) | 39.4 | 46.0 | -6.6 |
| 1.56 | Neutral Lead | Peak (Note 1) | 38.8 | 46.0 | -7.2 |
| 1.64 | Neutral Lead | Peak (Note 1) | 38.5 | 46.0 | -7.5 |

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

The EUT complied with the specification limit by a margin of 4.8 dB.

## 6.2.3 Radiated Field Strength (Vertical Polarity)

| Frequency (MHz) | Detector | Receiver Reading (dBμV) | Correction Factor (dB/m) | Field Strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|
| 2457.1 | Peak | 38.8 | 30.8 | 69.6 | 94.0 | -24.4 |
| 4914.2 | Peak | 14.9 | 36.2 | 51.1 | 54.0 | -2.9 |
| 7371.3 | Peak | 17.9 | 40.7 | 58.6 | 74.0 | -15.4 |
| 7371.3 | Average | 5.7 | 40.7 | 46.4 | 54.0 | -7.6 |
| 9828.4 | Peak | 11.2 | 42.8 | 54.0 | 74.0 | -20.0 |
| 9828.4 | Average | -1.8 | 42.8 | 41.0 | 54.0 | -13.0 |
| 12285.5 | Peak | 9.1 | 44.5 | 53.6 | 74.0 | -20.4 |
| 12285.5 | Average | -4.2 | 44.5 | 40.3 | 54.0 | -13.7 |
| 14742.6 | Peak | 13.6 | 47.6 | 61.2 | 74.0 | -12.8 |
| 14742.6 | Average | -3.6 | 47.6 | 44.0 | 54.0 | -10.0 |
| 17199.7 | Peak | 14.2 | 49.0 | 63.2 | 74.0 | -10.8 |
| 17199.7 | Average | -3.0 | 49.0 | 46.0 | 54.0 | -8.0 |
| 19656.8 | Peak | 15.8 | 49.8 | 65.6 | 74.0 | -8.4 |
| 19656.8 | Average | -2.6 | 49.8 | 47.2 | 54.0 | -6.8 |
| 22113.9 | Peak | 16.3 | 50.6 | 66.9 | 74.0 | -7.1 |
| 22113.9 | Average | -2.2 | 50.6 | 48.4 | 54.0 | -5.6 |
| 24571.0 | Peak | 17.0 | 51.0 | 68.0 | 74.0 | -6.0 |
| 24571.0 | Average | -1.9 | 51.0 | 49.1 | 54.0 | -4.9 |

RESULT

The EUT complied with the specification limit by a margin of 2.9 dB.

## 6.2.4 Radiated Disturbance Data (Horizontal Polarity)

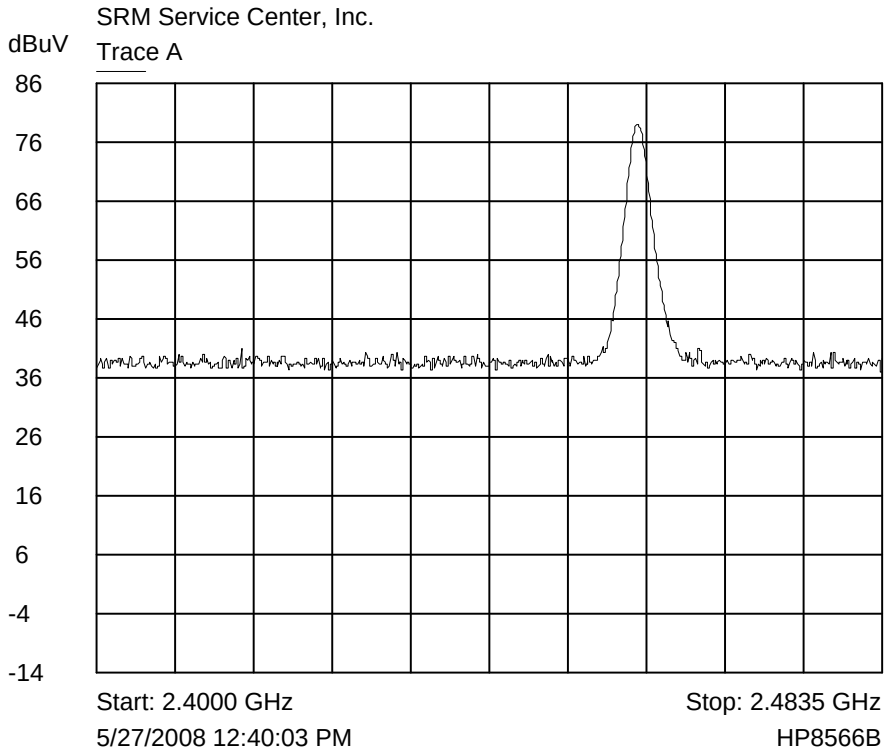
| Frequency (MHz) | Detector | Receiver Reading (dBμV) | Correction Factor (dB/m) | Field Strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|
| 2457.1 | Peak | 51.0 | 30.8 | 81.8 | 94.0 | -12.2 |
| 4914.2 | Peak | 16.5 | 36.2 | 52.7 | 74.0 | -21.3 |
| 4914.2 | Average | 13.2 | 36.2 | 49.4 | 54.0 | -4.6 |
| 7371.3 | Peak | 18.8 | 40.7 | 59.5 | 74.0 | -14.5 |
| 7371.3 | Average | 5.6 | 40.7 | 46.3 | 54.0 | -7.7 |
| 9828.4 | Peak | 9.7 | 42.8 | 52.5 | 74.0 | -21.5 |
| 9828.4 | Average | -1.8 | 42.8 | 41.0 | 54.0 | -13.0 |
| 12285.5 | Peak | 8.9 | 44.5 | 53.4 | 74.0 | -20.6 |
| 12285.5 | Average | -4.3 | 44.5 | 40.2 | 54.0 | -13.8 |
| 14742.6 | Peak | 12.4 | 47.6 | 60.0 | 74.0 | -14.0 |
| 14742.6 | Average | 0.1 | 47.6 | 47.7 | 54.0 | -6.3 |
| 17199.7 | Peak | 14.2 | 49.0 | 63.2 | 74.0 | -10.8 |
| 17199.7 | Average | -3.0 | 49.0 | 46.0 | 54.0 | -8.0 |
| 19656.8 | Peak | 15.8 | 49.8 | 65.6 | 74.0 | -8.4 |
| 19656.8 | Average | -2.6 | 49.8 | 47.2 | 54.0 | -6.8 |
| 22113.9 | Peak | 16.3 | 50.6 | 66.9 | 74.0 | -7.1 |
| 22113.9 | Average | -2.2 | 50.6 | 48.4 | 54.0 | -5.6 |
| 24571.0 | Peak | 17.0 | 51.0 | 68.0 | 74.0 | -6.0 |
| 24571.0 | Average | -1.9 | 51.0 | 49.1 | 54.0 | -4.9 |

RESULT

The EUT complied with the specification limit by a margin of 4.6 dB.

## 6.2.5 Operating Band

A plot is shown below showing the fundamental frequency is totally within the operating band of 2400 – 2483.5 MHz.




Trace A PowerControl6 operating band

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

## APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT

### A1.1 Conducted Disturbance at Mains Ports:

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 devices with each device having its own power cord, the point of connection for the LISN is determined from the following rules:

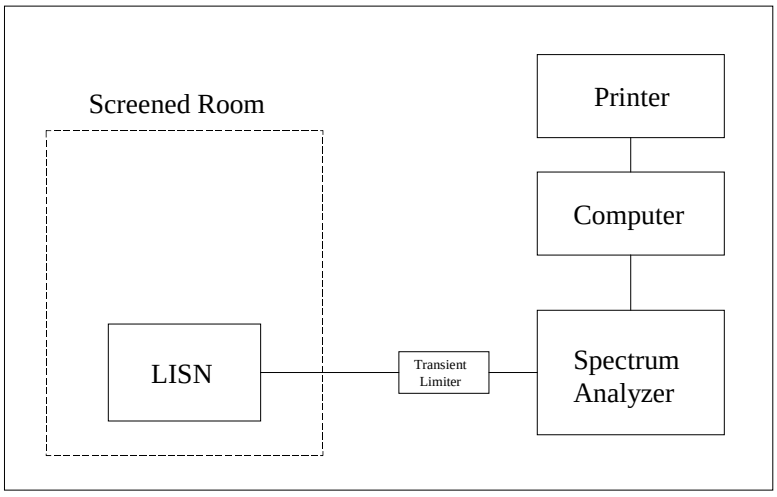
a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
c) Power cords which are specified by the manufacturer to be connected via a host unit or 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 |
|---|---|---|---|---|
| Wanship Open Area Test Site #2 | CCL | N/A | N/A | 10/24/2007 |
| Test Software | CCL | Conducted Emissions | Revision 1.2 | N/A |
| Spectrum Analyzer | Hewlett Packard | 8566B | 2332A02726 | 04/29/2008 |
| Quasi-Peak Detector | Hewlett Packard | 85650A | 2043A00287 | 04/02/2008 |
| LISN | EMCO | 3825/2 | 9508-2435 | 03/13/2008 |
| Conductance Cable Wanship Site #2 | CCL | Cable J | N/A | 12/31/2007 |
| Transient Limiter | Hewlett Packard | 11947A | 3107A02266 | 12/31/2007 |

An independent calibration laboratory or CCL 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 Disturbance:

The radiated disturbance from the EUT 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 and a power amplifier with a fixed gain of 22 dB 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.

A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz, at a distance of 3 or 10 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.

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 was 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.

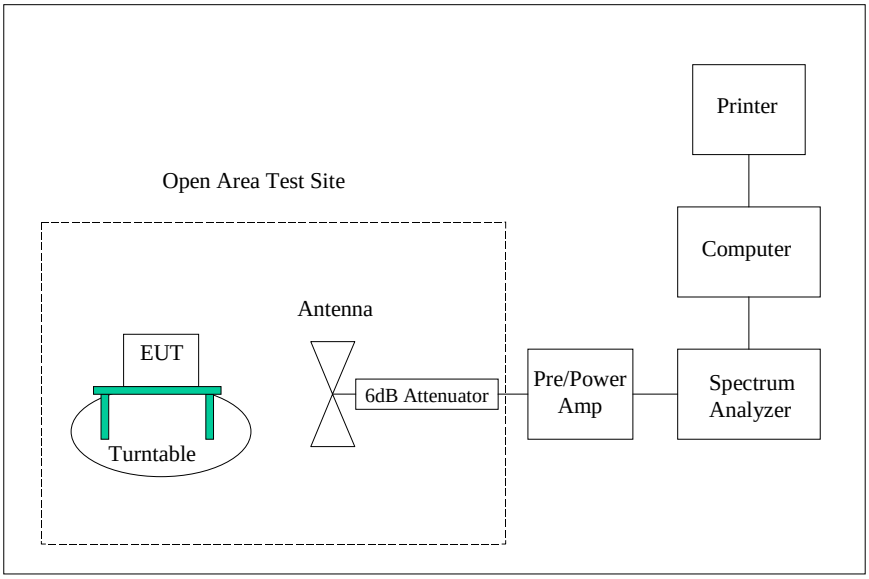
Desktop EUT are measured on a non-conducting table 0.8 meters above the ground plane. The table is placed on a turntable, which is level with the ground plane. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

| Type of Equipment | Manufacturer | Model Number | Serial Number | Date of Last Calibration |
|---|---|---|---|---|
| Wanship Open Area Test Site #2 | CCL | N/A | N/A | 10/24/2007 |
| Test Software | CCL | Radiated Emissions | Revision 1.3 | N/A |
| Spectrum Analyzer | Hewlett Packard | 8566B | 2332A02726 | 04/29/2008 |
| Quasi-Peak Detector | Hewlett Packard | 85650A | 2043A00287 | 04/02/2008 |
| Biconilog Antenna | EMCO | 3142 | 9601-1008 | 9/27/2007 |
| Double Ridged Guide Antenna | EMCO | 3115 | 9604-4779 | 03/17/2008 |
| Amplifier | Hewlett Packard | 11975A | 2738A2030 | 05/18/2006 |

| Type of Equipment | Manufacturer | Model Number | Serial Number | Date of Last Calibration |
|---|---|---|---|---|
| Harmonic Mixer | Hewlett Packard | 11970K | 3003A05756 | 04/19/2006 |
| 2.4 GHz Filter | Microtronics | HPM50111-03 | 001 | 09/06/2006 |
| High Frequency Amplifier | Miteq | AFS4-01001800-43-10P-4 | 1096455 | 05/29/2007 |
| 20' High Frequency Cable | Utiflex | UFA210A-1-2400-30050U | 1175 | 04/12/2007 |
| 3 Meter Radiated Emissions Cable Wanship Site #2 | CCL | Cable K | N/A | 12/31/2007 |
| Pre/Power-Amplifier | Hewlett Packard | 8447F | 3113A05161 | 09/04/2007 |
| 6 dB Attenuator | Hewlett Packard | 8491A | 32835 | 12/31/2007 |

An independent calibration laboratory or CCL 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.

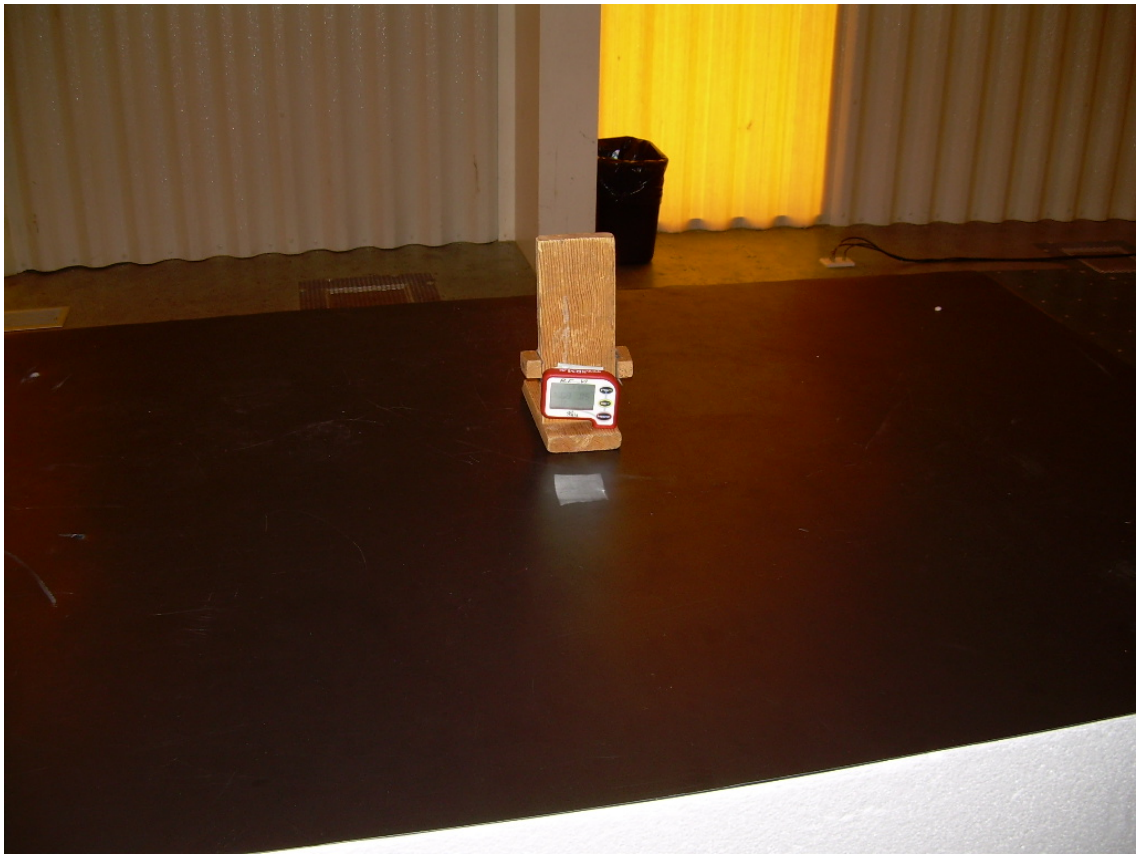
Radiated Emissions Test Setup



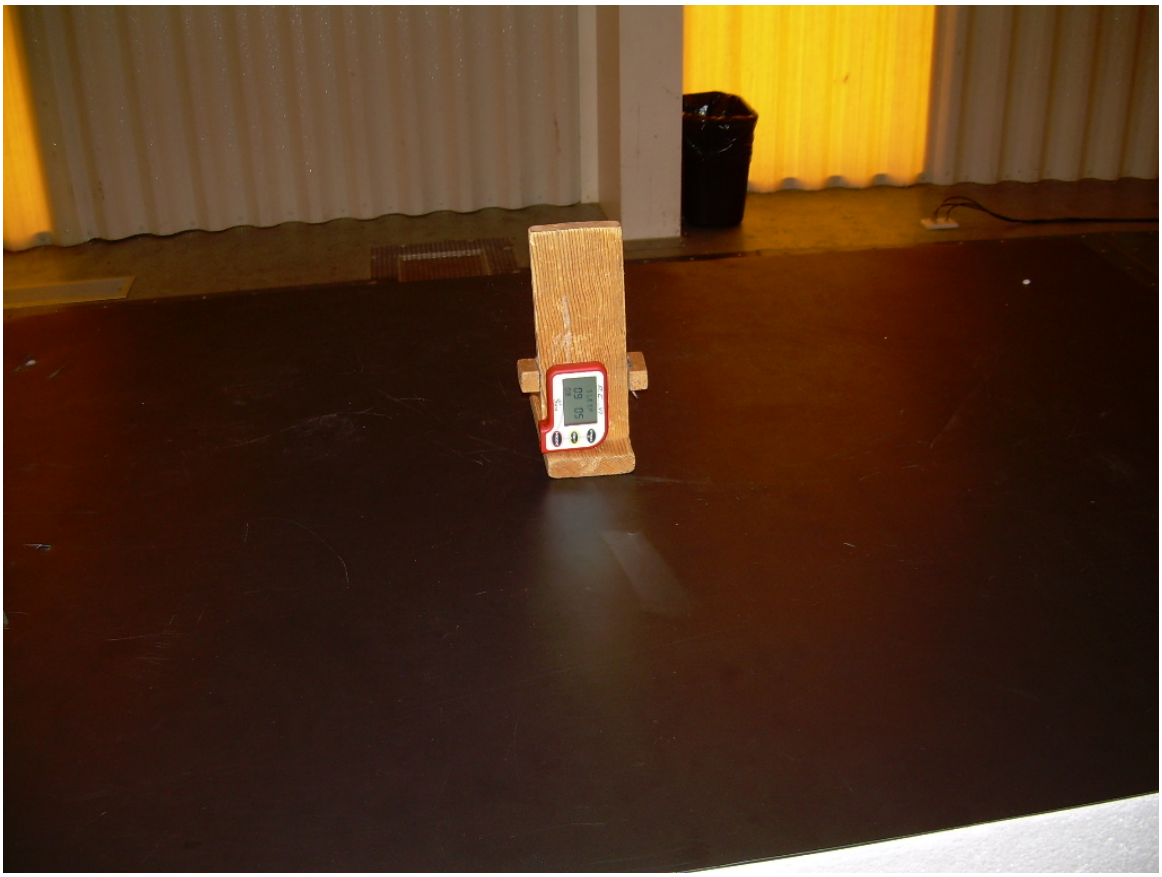
## APPENDIX 2 PHOTOGRAPHS

Photograph 1 – View Radiated Disturbance – Flat Placement - Worst Case Configuration

Photograph 2 – View Radiated Disturbance – Vertical Placement

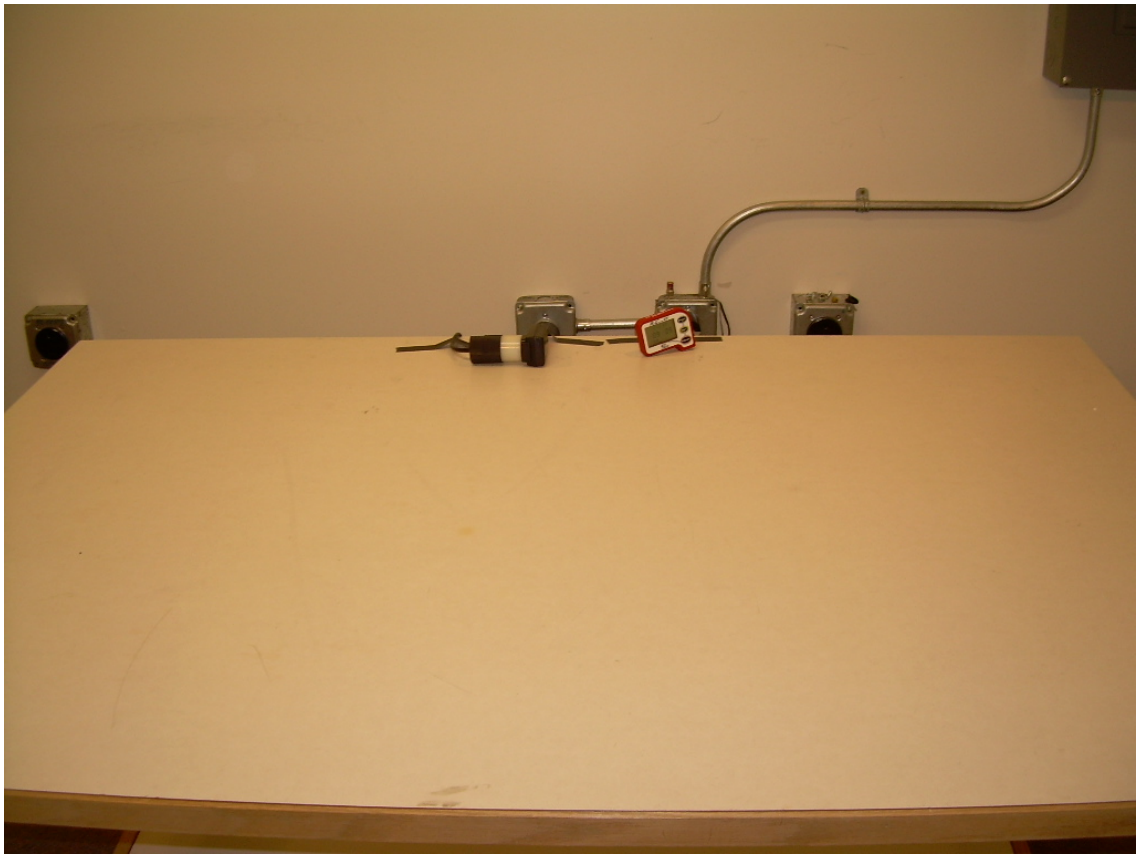


Photograph 3 – Radiated Disturbance - On Edge Placement

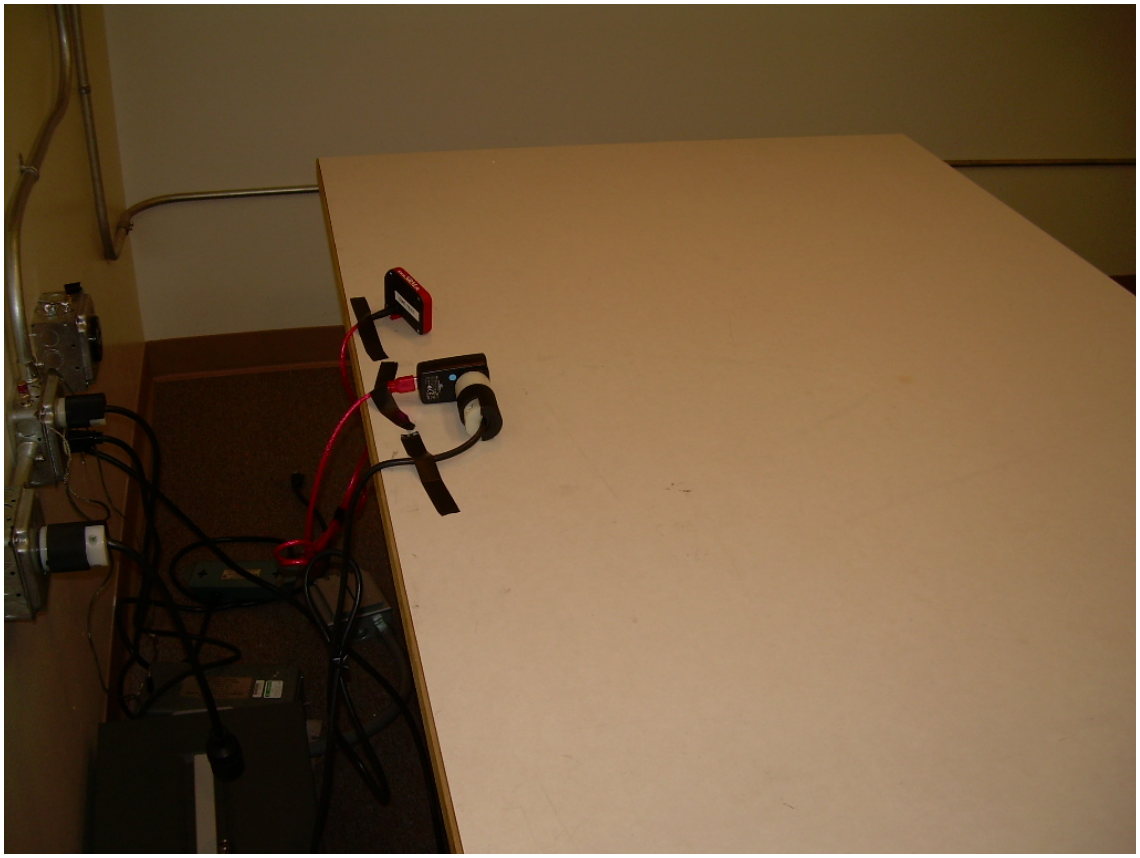


Photograph 4 – Radiated Disturbance – Computer Interface Configuration

Photograph 5 – Front View Conducted Disturbance Worst Case Configuration



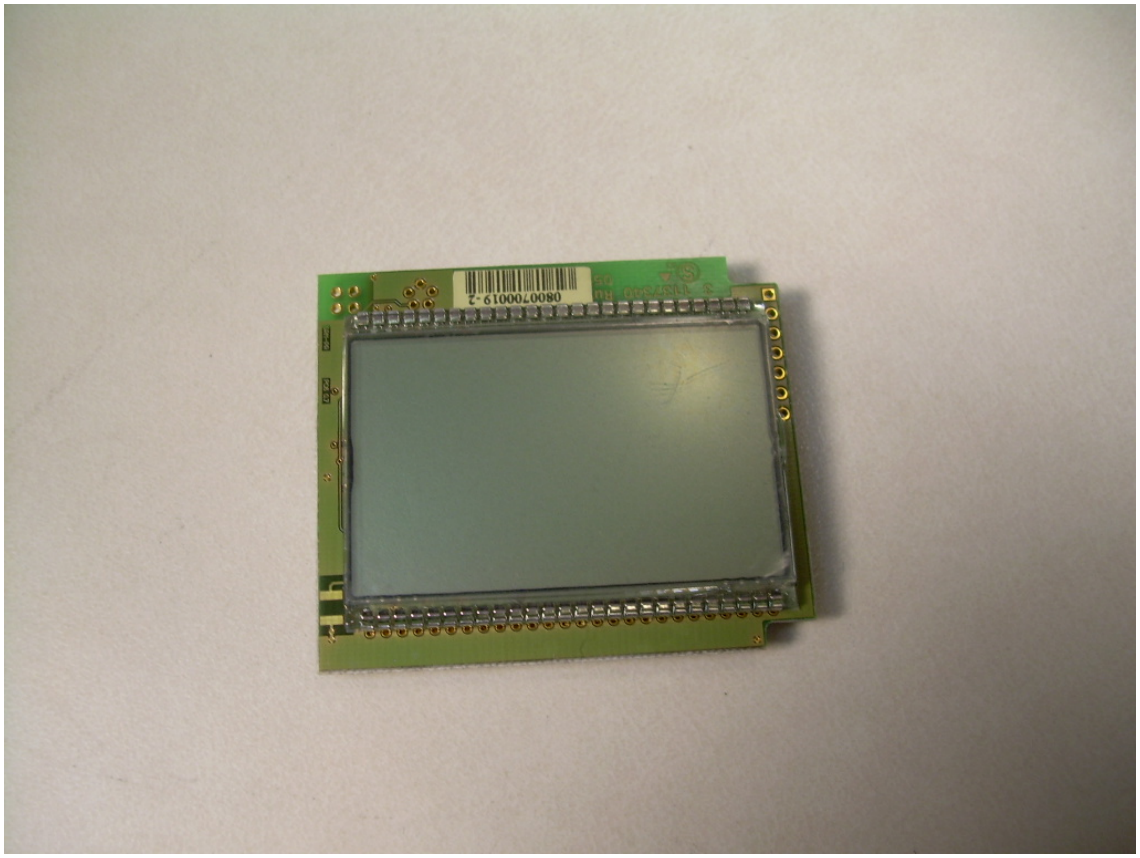
Photograph 6 – Back View Conducted Disturbance Worst Case Configuration



Photograph 7 – Front View of the PowerControl6

Photograph 8 – Back View of the PowerControl6

Photograph 9 – View of the Display Side of the PowerControl6 PCB



Photograph 10 – View of the Component Side of the PowerControl6 PCB