DNB ENGINEERING, INC.

A2LA # 0844-1

ELA #116

CERTIFICATION
FOR
INTENTIONAL RADIATOR

Per
Part 15 Subpart C
(CFR 47, 15,203, 15.249)

EUT: ARCON Extended Heart Rate Transmitter
Model No. HRT-01

PREPARED FOR APPLICANT:
VerNova, Inc
1166 James town Road
Williamsburgh, Virginia 23185

REPORT #06056-1
Test Date: 20-Mar-2000

Prepared By:
DNB ENGINEERING, INC.
1100 East Chalk Creek Rd.
Coalville, Utah 84017
Tel: 1(435) 336-4433

Revision Letter	Number of Pages	Page No. of Rev.	Description	Date
1A	35		Document Release	4/7/2000

TRANSMITTAL SUMMARY

Unit tested:	ARCON Extended Heart Rate Tansmitter
Model #:	HRT-01
FCC ID:	OYBHRT01
Specifications:	ANSI C63.4 1992 and CFR 47 FCC part 15 Subpart C
Purpose of Report:	This report was prepared to document the status of the ARCON Extended Heart Rate Transmitter with requirements of the standards listed above.
Requirements not applicable to EUT	Part 15.37 - Not applicable Emergency Broadcast System - Not applicable Spread Spectrum Exhibit - Not applicable Scanning Receiver - Not applicable
Test Summary	The EUT's compliance status according to the tests performed is as follows.

Refer to Section 1.3

CERTIFICATION OF TEST DATA - per 2.911(d)

This report, containing emissions test data and evaluations, has been prepared by an independent electromagnetic compatibility laboratory, DNB ENGINEERING, in accordance with the applicable specifications and instructions required per the Introduction. The American Association has evaluated DNB Engineering to do these tests for Laboratory Accreditation, A2LA.

The data evaluation and equipment configuration presented herein are a true and accurate representation of the measurements of the test emissions characteristics as of the dates and at the times of the test under the conditions herein specified.

Equipment Tested:	ARCON Extended Heart Rate Transmitter
Model #:	HRT-01
FCC ID#:	OYBHRT01
Dates of Test:	20-Mar-2000

Test Performed: _____ _____
Date

Clay Allred
Test Engineer

Test Report Reviewed: _____ _____
Jeff Williams Date
Documentation Supervisor

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Administrative Data Per 2.1033(a) and 2.911(c)

1.1.1 **REQUEST FOR CERTIFICATION Per 2.1033(b)1**:

Applicant: VerNova, Inc
1166 James town Road
Williamsburgh, Virginia 23185

Contact: Dwayne Hall
Phone: 801-576-6473

Dates of Test: 20-Mar-2000

Equipment Under Test (EUT): ARCON Extended Heart Rate Transmitter
FCC ID: OYBHRT01

1.2 Related Submittals/Grants

All Peripherals possess grants.

1.3 Purpose of Tests

The purpose of this series of tests was to demonstrate the Electromagnetic Compatibility (EMC) characteristics of the EUT. The following tests were performed:

REQUIREMENTS	STATUS
FCC part 15 Subpart C	
per 15.203 & 15.249	COMPLIANT

2. TEST DESCRIPTION

2.1 Test Configuration

Config-uration	Unit Name - Processor, Monitor, Printer, Cable, etc. (indent for features of a unit)	Style/Model/ Part No.	Serial Number	Obj. of test	16 VDC	Comments/ FCC ID#
A	ARCON Extended Heart Rate Transmitter			■	■	

■ - Specific device(s) for which this test is being conducted.

2.2 Equipment Description

The ARCON Extended Heart Rate Transmitter is designed to extend the functional range of a Polar or Sensor Dynamics Heart Rate Sensor (chest-worn sensor). To operate correctly, it must be used in conjunction with an appropriate model Polar or Sensor Dynamics Sensor, and with an ARCON Interface Controller (AIC).

2.2.1 Mode of Operation

The EUT was turned on and started transmitting

2.3 Antenna Requirement - per 15.203

The antenna is –internally fixed and part of the PCB **- - -.**

2.4 Circuit Description - per 2.1033(b)4

The HP-TXM is a high performance, eight channel, FM transmitter capable of transmitting analog or digital data.

Digital information is modulated at the transmitter using FSK (frequency shift keying), the binary form of frequency modulation. FSK offers significant advantages over AM-based modulation methods, i.e., increased noise immunity and the ability of the receiver to “capture” in the presence of multiple signals. These advantages will be particularly appreciated in crowded bands like those in which the HP operates. While FSK modulation is not the most bandwidth-efficient manner of modulating digital data, it is an excellent choice for reliable, low cost, low-power RF products such as the HP series.

To transmit analog information the module reverts to FM modulation. In this mode simple to complex waveforms can be introduced at the transmitter’s data pin and recovered with minimal distortion at the receiver’s analog output pin.

The user-supplied antenna is connected at pin 2. The HP series transmitters are designed to operate with a 50-ohm load.

An accurate 12.00MHz VCXO (voltage-controlled crystal oscillator) serves as the frequency reference for the transmitter. The modulation-input pin is connected to the VCXO through a 25 kHz two-pole low-pass filter. The low-pass filter is used to shape the incoming data and limit the transmission bandwidth to 25kHz.

The reference frequency is directly modulated. This method affords two benefits. First, it eliminates the need for a frequency conversion in the transmitter, reducing size, cost, and current consumption. Second, it allows the modulation to occur within the loop bandwidth of the frequency synthesizer allowing a wide modulation bandwidth of 50 Hz to 25 kHz.

The modulated 12.00 MHz reference frequency is applied to the Phase-Locked-Loop (PLL). The PLL, combined with a 902-928 MHz VCO, forms a stable frequency synthesizer that can be programmed to oscillate at a number of preset frequencies.

An on-board micro-controller reads the channel selection lines and programs the PLL to the desired channel frequency. The micro-controller also monitors the status of the PLL and indicates when the transmitter is stable and ready to transmit data by asserting the CTS line high.

A buffer amplifier is used to isolate the VCO from the antenna and to increase the output power of the transmitter. The output of the buffer amplifier is connected to a LPF, which is used to suppress harmonic emissions. Since the harmonic emissions. Since the harmonic LPF is designed for a 50-ohm load, all harmonic specifications are provided as such.

2.5 Justification

The EUT is a Heart Rate monitor. Typically at rest a human heart beats between 80-100 beats per minute. During periods of intense exercise the rate can increase to 120-140 beats per minute. To calculate a duty cycle correction for this EUT we used a Heart Rate of 200 beats per minute (well above the normal and very close to death). The transmitter operates for a maximum of 150 mS per beat so therefore the following equation was used to calculate the duty cycle correction factor.

$$\frac{\text{200 beats per minute}}{\text{60 seconds}} = 3.33$$

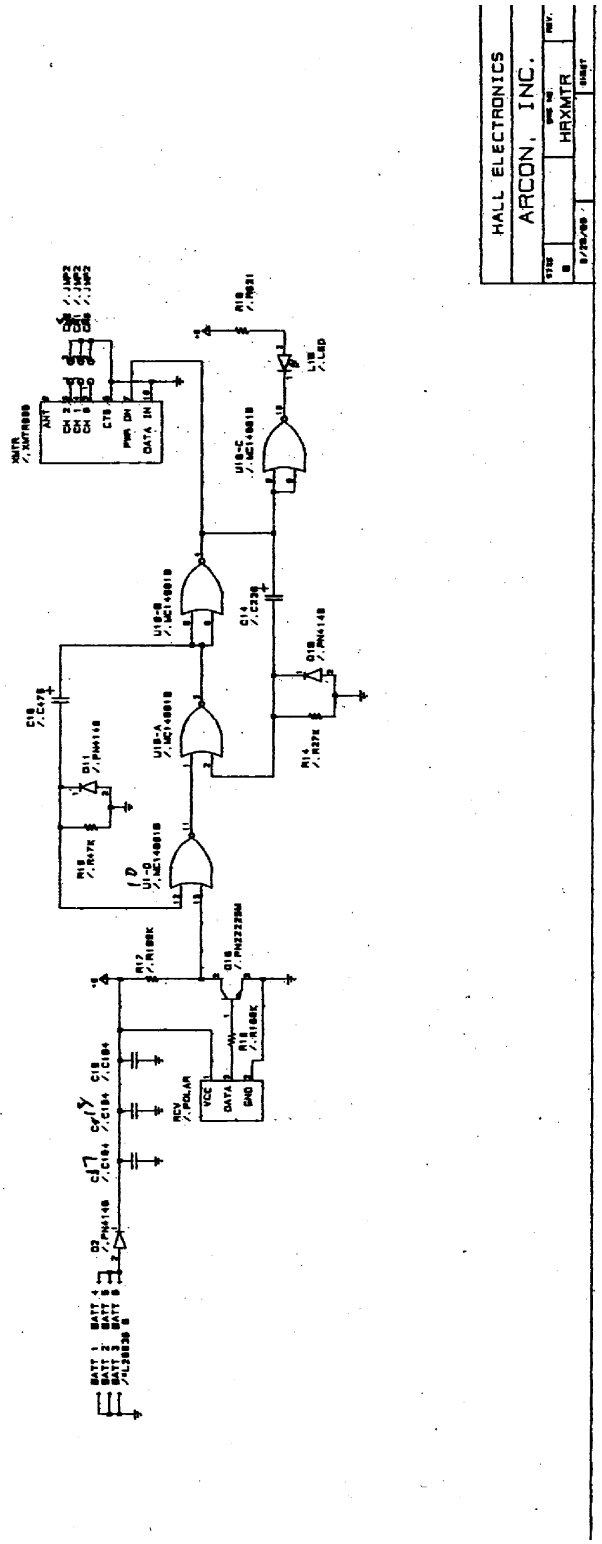
$$200 \div 60 = 3.33$$

$$3.33 \times .150 = .49995$$

$$.4995 = 50\% \text{ Duty Cycle}$$

2.6 Schematics

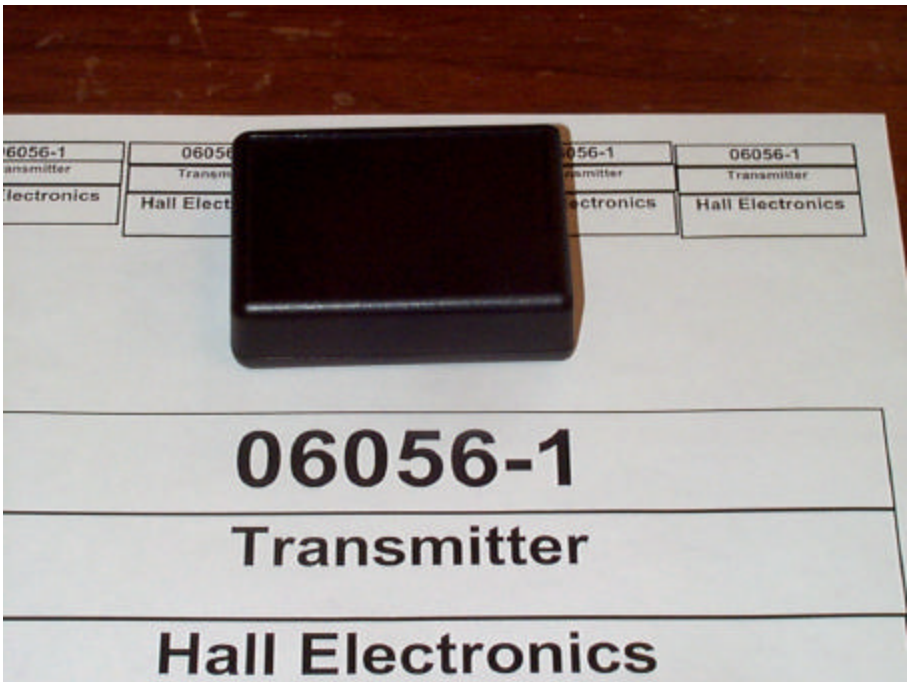
ARCON Extended Heart Rate Transmitter

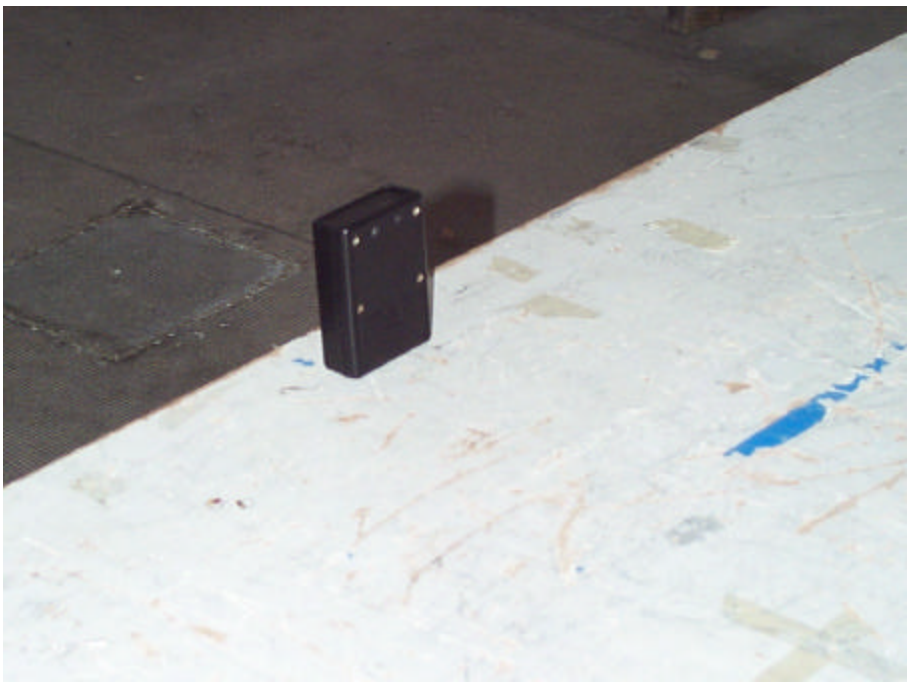


PDF File. See the attachment that was electronically submitted.

2.7 Photograph of EUT - per 2.1033(b)(7)

ARCON Extended Heart Rate Transmitter

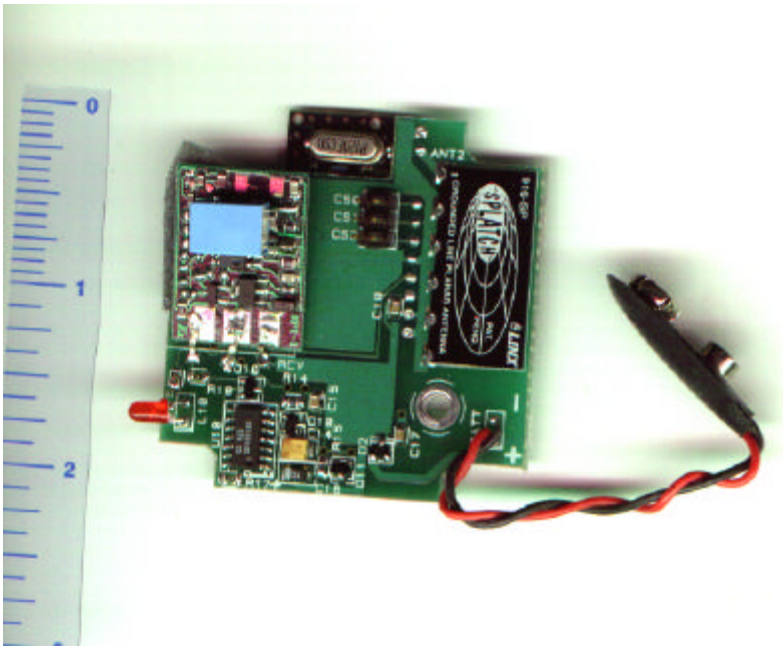


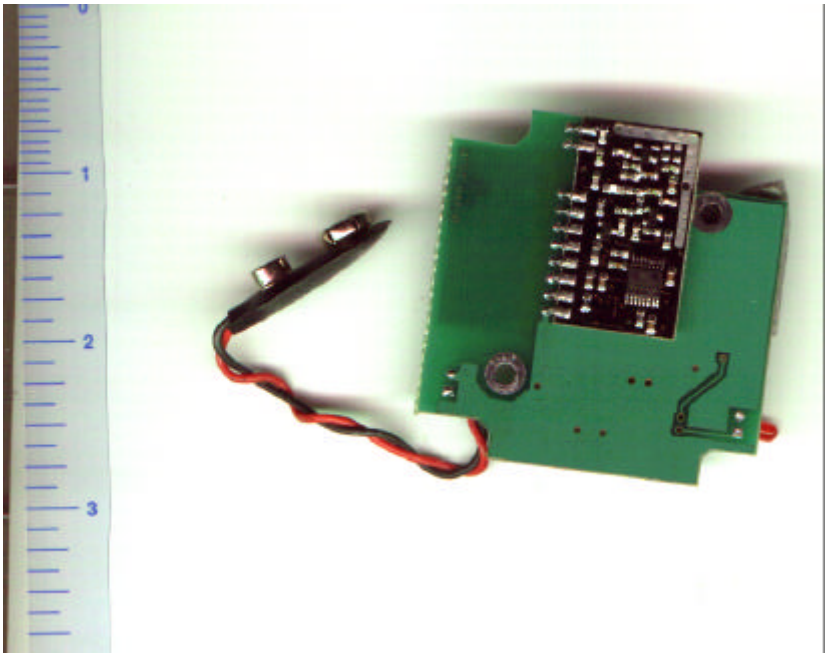


PDF File. See the attachment that was electronically submitted.

2.7.1 Photograph of EUT - per 2.1033(b)(7)

ARCON Extended Heart Rate Transmitter Internal (Front & Back)





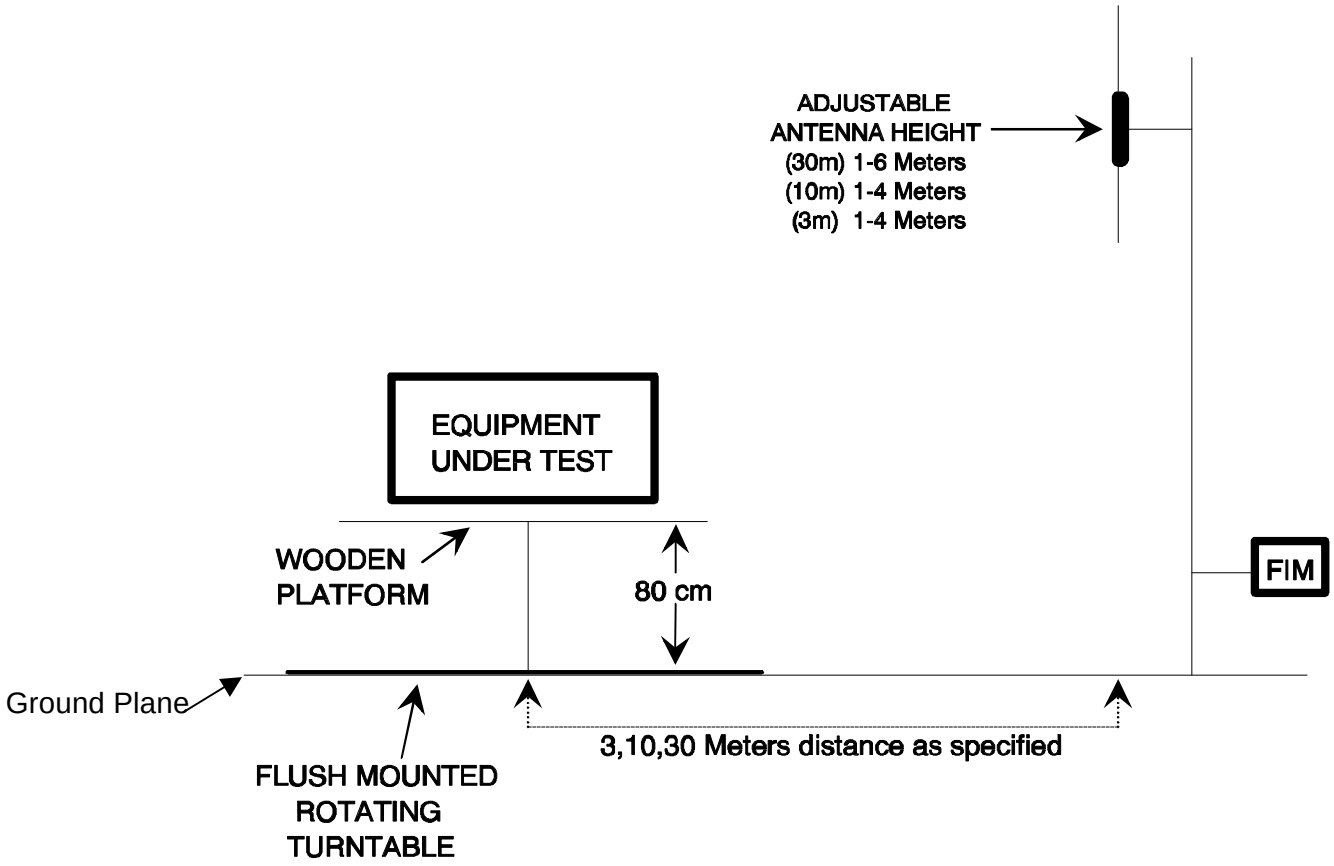
3. EMISSIONS FCC PART 15

Per FCC part 15 Subpart C

3.1 Radiated Emissions Test Setup and Procedure - Per 2.1033(b)(6) Per 2.947(a)

The EUT was placed on a wooden table 1 meter wide and 1.5 meters long which rests on a flush mounted, steel-top turntable on the open area test site as shown in Section 3.1.1.1. The top of the table is 80 cm above the ground plane. The turntable can be rotated 360 degrees. Measuring antenna is set at the prescribed distance. Measurements are made with broad band antennas that have been correlated with tuned dipole antennas. The mast is 4.5 meters high and is self-supporting. The height of the antenna can be varied from 1 to 4 meters. Positioning of the antenna is controlled remotely.

3.1.1 Spurious Radiation Test Site Per 2.1033(b)6



Radiated Test Setup and Procedure - cont'd

The EUT is put into the operational test mode as stated in Section 2.2.1 is then started.

The spectrum analyzer is setup to store the peak emission over the frequency range of the antenna. Peak EUT and ambient emissions are stored while the turntable is rotated 360^0. The Peak spectrum analyzer trace is then plotted with the addition of antenna and cable correction factors. The limit is plotted on the same graph. A receiver with CISPR Quasi Peak detector is then used on the frequencies identified as the highest with respect to the plotted limit. Ambients are noted on the graph along with EUT emissions. The highest emissions are maximized.

To maximize emissions levels, the turntable is rotated and the antenna is raised and lowered to determine the point of maximum emanations. The cables are then manipulated at that point to maximize emissions. Measurements are made with the antennas in each horizontal and vertical polarization. The data obtained from these tests is corrected with the proper cable, preamplifier and antenna factors. The results are then transcribed onto tables that show the maximum emission levels. The highest emissions are listed in a Radiated Emissions Summary table.

If no emissions can be found, the lowest harmonics of the EUT clocks within the bands of the standard are tuned into with the receiver. If no emissions are found, the noise floor will be entered to the table and noted. A minimum of six frequencies will be logged. Summary results will reflect only actual emissions from the EUT.

Radiated Test Setup and Procedure - contd.

The field intensity measurements are made using standard techniques with a spectrum analyzer or EMI receiver as the calibrated Field Intensity Meter (FIM). Preamplifiers and filters are used when required.

When using the Hewlett Packard Model 8568B Spectrum Analyzer as the FIM, the Analyzer is calibrated to read signal level in dBm. Where:

0 dBm (50 ohms) = 107 dBuV (50 ohms)

The signal level (dBuV) = indicated signal level (dBm) + 107 dB. To obtain the signal level in dBuV/m it is necessary to add the antenna factor in dB.

3.1.2 Example Of Typical Calculation Per 2.1033(b)6

Measurement Distance = 3 Meter		
Rohde and Schwarz reading @ 60 MHz		49.0 dBuV
Antenna Factor	+7.5 dBuV	
Cable Loss	+2.0 dBuV	
Preamplifier	-25.5 dBuV	
	-16.0 dBuV	-16.0 dBuV
Field Strength dBuV/m at 3 Meter =		33.0 dBuV

The Following FCC limits for acceptance were used:

Limit 902 to 928 MHz (At the Carrier Frequency):

50,000 µV/M = 20 log (50,000) dBµV/M = 94.0 dBµV/M @ 3 Meters

Limit >960 MHz:

500µV/M = 20 log (500) dBµV/M = 54.0 dBµV/M @ 3 Meters

3.1.3 Field Strength of Intentional Radiator Inside of Band

The EUT was compliant with CFR 47, 15.249 (a) field strength of intentional radiator. Measurements of radiated data were taken at low, mid and high frequencies of tuning range.

Radiated Emissions Inside the Band Summary Test Data

Per FCC part 15, Subpart C (15.249 (a)) at 3 meters

VerNova, Inc EUT: ARCON Extended Heart Rate Transmitter

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (mV/m)	Total (mV/m) (-50%)	3 Meter FCC Limit (mV/m)	Delta (mV/m)
903.28	102.9	51.5	51.2	11.0	24.8	**-15.4**	36.1	**94.0**
909.34	101.1	50.6	51.2	11.1	24.9	**-15.2**	35.4	**94.0**
921.35	95.8	47.9	51.2	11.3	25.0	**-14.9**	33.0	**94.0**
909.34	95.9	48.0	51.2	11.1	24.9	**-15.2**	32.8	**94.0**
903.29	92.9	46.5	51.2	11.0	24.8	**-15.4**	31.1	**94.0**

- Highest frequencies relative to the Limit.
- Reference Appendix A for all data taken.

3.1.4 Emissions Radiated Outside of Band

The EUT was compliant with CFR 47, 15.249 (c) radiated emissions requirements.

Radiated Emissions Outside the Band Summary Test Data

per FCC part 15, Subpart C (15.249 (c)) at 3 meters

Table 3.1.5(1)

VerNova, Inc EUT: ARCON Extended Heart Rate Transmitter

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (mV/m)	Total (mV/m) (-50%)	3 Meter FCC Limit (mV/m)	Delta (mV/m)
902.00	50.5	51.2	11.0	24.8	-15.4	**35.1**	46.0	**-10.9**
923.68	48.0	51.2	11.3	25.0	-14.9	**33.1**	46.0	**-12.9**
902.00	43.1	51.2	11.0	24.8	-15.4	**27.7**	46.0	**-18.3**
923.73	42.4	51.2	11.3	25.0	-14.9	**27.5**	46.0	**-18.5**

- Highest frequencies relative to the Limit.
- Reference Appendix A for all data taken.

3.1.5 Occupied Bandwidth

The occupied bandwidth at the transceiver's fundamental frequency output was measured using a HP8568B spectrum analyzer. The spectrum analyzer was adjusted as follows:

Frequency: 921.3 MHz 903.3 MHz	Resolution Bandwidth: 100 KHz
Input Attenuation: 20 dB	Reference Level: 116.0 dBµV
Scan Width: .5 MHz/div	Detector: Peak
Vertical Scale: 10 dB/div	Max Hold Multiple Sweeps

3.1.6 Harmonics Emissions

Measurements of radiated emission data were taken at low, mid and high end of the 903 to 920 MHz band. The test frequencies were 903.3 MHz, 909.3 MHz, and 921.3 MHz.

per FCC part 15, Subpart C (15.249 (c)) at 3 meters

VerNova, Inc EUT: ARCON Extended Heart Rate Transmitter Tuned to 903.3 MHz

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (mV/m)	Total (mV/m) (-50%)	3 Meter FCC Limit (mV/m)	Delta (mV/m)
1806.55	53.6	26.8	24.9	6.9	27.3	**9.3**	36.1	**54.0**
5420.05	44.8	22.4	27.2	5.8	34.0	**12.6**	35.0	**54.0**
4516.59	47.2	23.6	27.1	6.1	32.3	**11.3**	34.9	**54.0**
5419.71	43.2	21.6	27.2	5.8	34.0	**12.6**	34.2	**54.0**
1806.61	49.3	24.7	24.9	6.9	27.3	**9.3**	33.9	**54.0**

VerNova, Inc EUT: ARCON Extended Heart Rate Transmitter Tuned to 909.3 MHz

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (mV/m)	Total (mV/m) (-50%)	3 Meter FCC Limit (mV/m)	Delta (mV/m)
1818.68	55.0	27.5	24.9	6.9	27.4	**9.4**	36.9	**54.0**
4545.73	48.7	24.4	27.1	6.3	32.4	**11.5**	35.9	**54.0**
4545.76	48.3	24.2	27.1	6.3	32.4	**11.5**	35.7	**54.0**
1818.75	50.8	25.4	24.9	6.9	27.4	**9.4**	34.8	**54.0**
5455.97	44.7	22.4	27.2	5.5	34.0	**12.3**	34.7	**54.0**

VerNova, Inc EUT: ARCON Extended Heart Rate Transmitter Tuned to 921.3 MHz

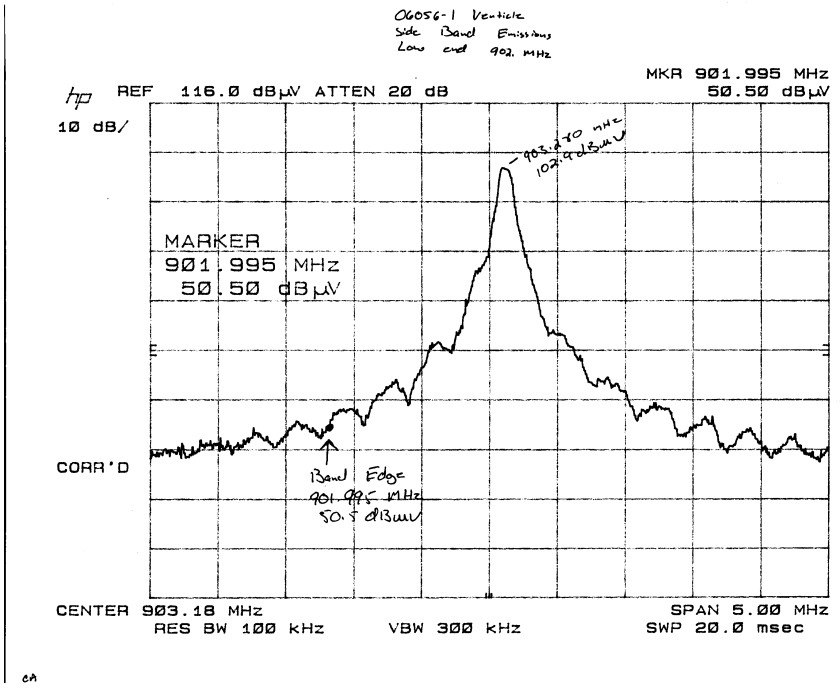
Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (mV/m)	Total (mV/m) (-50%)	3 Meter FCC Limit (mV/m)	Delta (mV/m)
1842.64	57.6	28.8	24.8	6.9	27.5	**9.6**	38.4	**54.0**
1842.61	52.7	26.4	24.8	6.9	27.5	**9.6**	35.9	**54.0**
4606.67	47.6	23.8	27.1	6.6	32.6	**12.1**	35.9	**54.0**
4605.74	46.5	23.3	27.1	6.6	32.6	**12.1**	35.3	**54.0**
5528.68	45.2	22.6	27.2	5.3	34.1	**12.1**	34.7	**54.0**

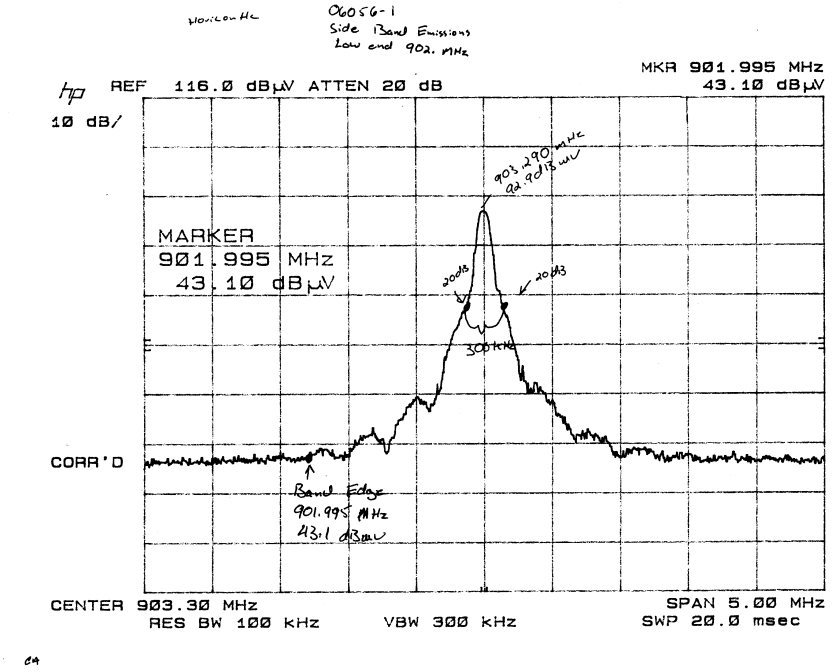
- Six highest frequencies relative to the Limit.
- Reference Appendix A for all data taken.

3.1.6.1 Occupied Bandwidth Plot

Measurements of the Occupied Bandwidth were taken at low and high end of the 902 to 928 MHz band. The test frequencies were 901.995 MHz and 923.725 MHz.

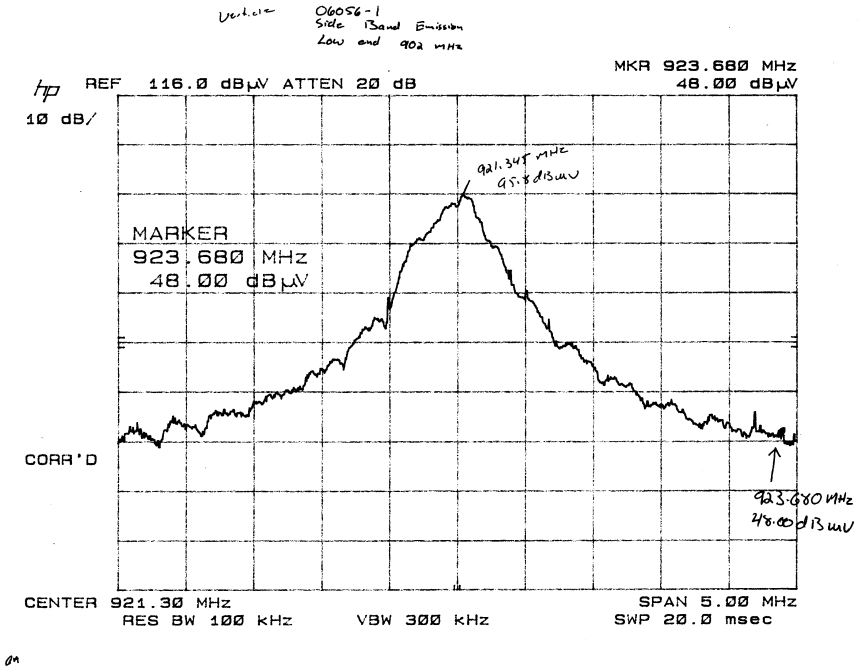
901.995 MHz Vertical and Horizontal (Lowest Transmit Frequency off EUT)

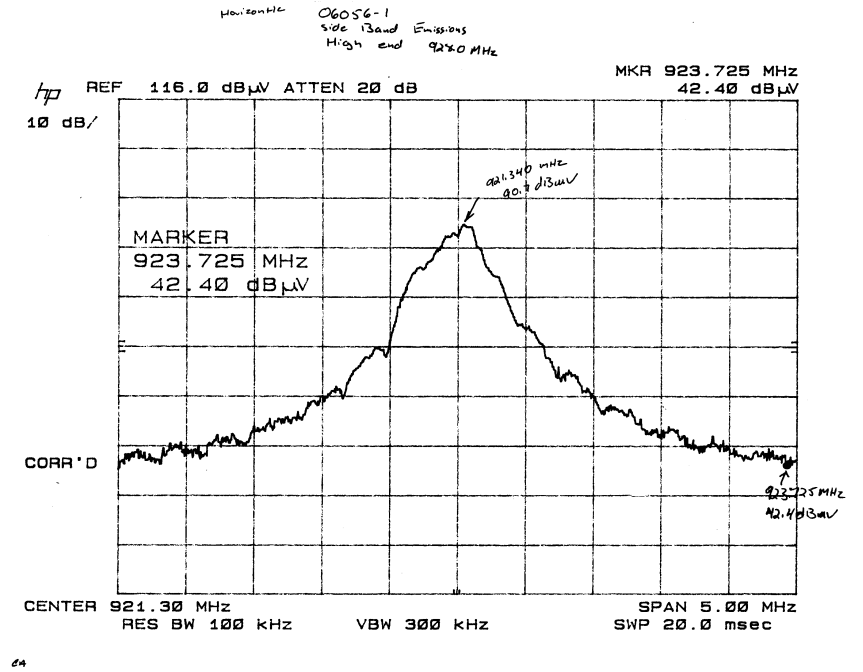




3.1.6.2 Occupied Bandwidth cont.

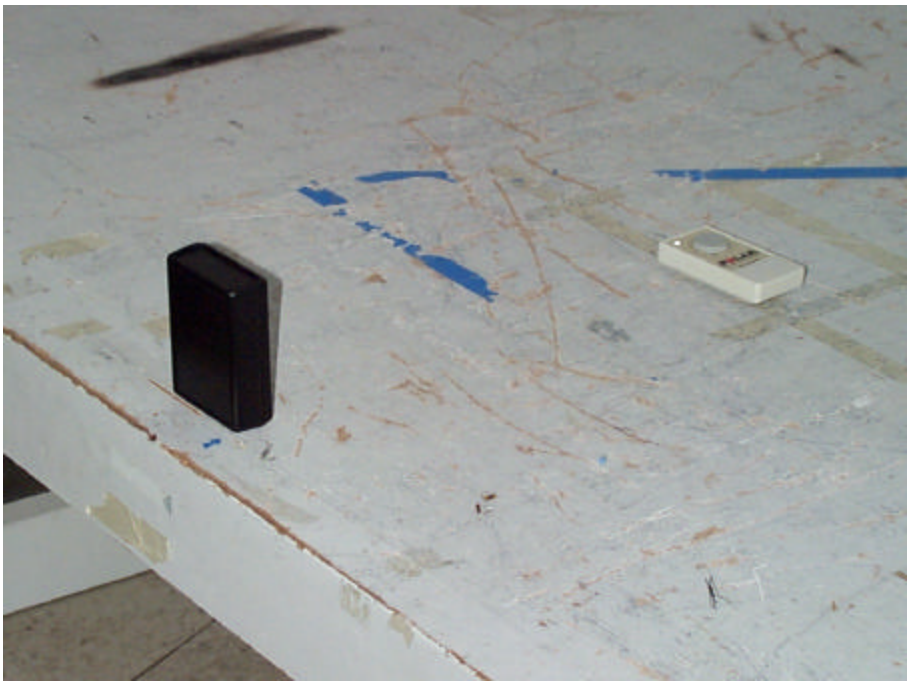
923.725 MHz and 923.680 Vertical and Horizontal (Highest Transmit Frequency off EUT)

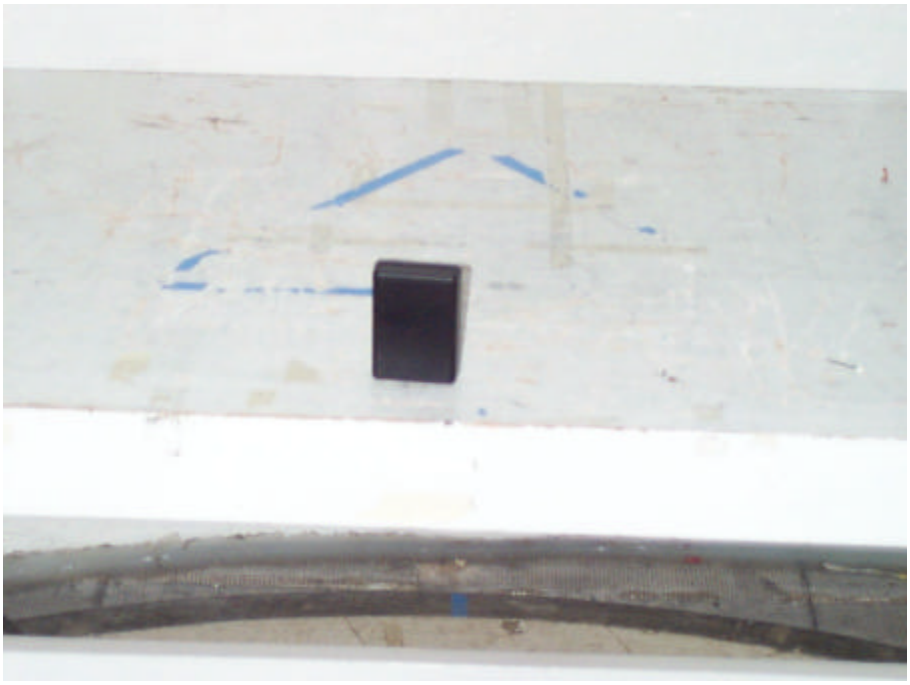




3.1.7 Photograph of Radiated Test Setup - per 2.1033(b)(7)

ARCON Extended Heart Rate Transmitter





PDF File. See the attachment that was electronically submitted.

4. LABELING REQUIREMENTS - PER 2.1033(B)(7)

Label will be constructed of 0.02 inch plastic attached as shown on the equipment with permanent adhesive.

All information on the label will be etched or screened. All methods will exceed the expected lifetime of the equipment.

The label will be large enough to allow all information to be readily legible.

4.1 Additional Label Required

This device complies with Part 15 of the FCC Rules. Operation is subject to the following tow conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Shown above is a copy of the label with the Part 15.19 Compliance Statement, Location of required information is checked “below”.

☐ The label will be placed in a conspicuous location on the device.

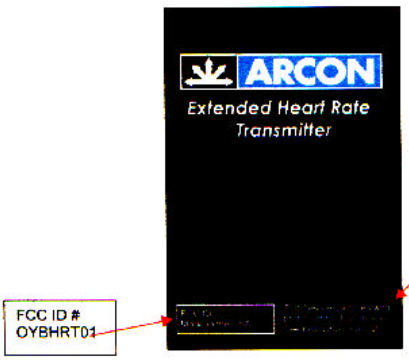
☐ The device is too small for a compliance label. Therefore the label will be placed in a prominent location in the Instruction Manual or other information supplied to the user.

☐ The device is too small for a compliance label. The label will be placed on the container in which the device will be marketed.

4.2 Photograph of Label Placement and Contents

DNB ENGINEERING, INC.
"One World, One EMC Solution"

VerNova is a new company who is filing for Application.
This is what their label will look like.
The label will be placed on the back of the Transmitter.



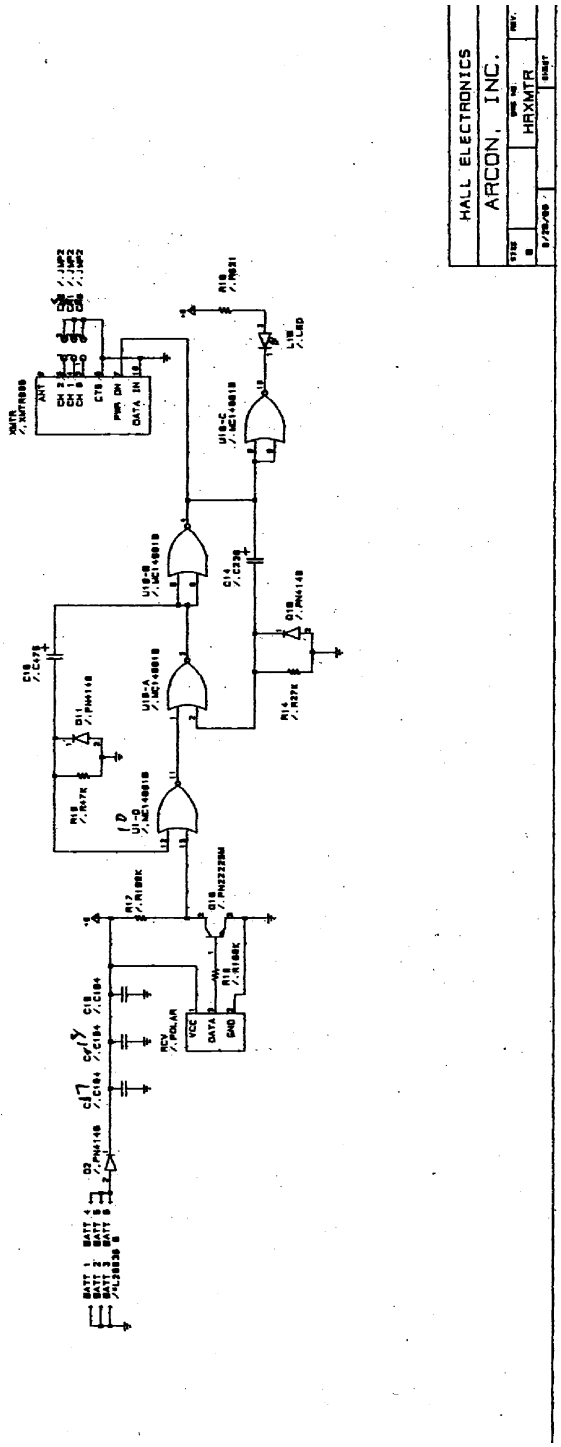
FCC ID # OYBHRT01

Label Wording as follows:
"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

Family owned and operated since 1979
1180 E. Chalk Creek Road • Coalville, UT 84017 • Tel. 435/336-4433 • Fax 435/336-4436

PDF File. See the attachment that was electronically submitted.

5. SCHEMATIC DIAGRAMS



PDF File. See the attachment that was electronically submitted.

6. OWNERS MANUAL

PDF File. See the attachment that was electronically submitted.

7. APPENDIX SECTION

7.1 APPENDIX A: TEST DATA

7.2 APPENDIX B: UNCERTAINTY TOLERANCE

UNCERTAINTY TOLERANCE

DNB Engineering's Utah Facility is within acceptable uncertainty tolerances per ANSI C63.4 (1992) sections 5.4.6.1 and 5.4.6.2 as well as CISPR 16-1(1993) Annex M, section M.2.

ANSI C63.4 (1992)

> 5.4.6.1 Site Attenuation. A measurement site shall be considered acceptable for radiated electromagnetic field measurements if the horizontal and vertical NSA derived from measurements, i.e., the "measured NSA," are within ±4 dB of the theoretical NSA (5.4.6.3) for an ideal site.
>
> 5.4.6.1 NSA Tolerance. The ±4 dB tolerance in 5.4.6.1 includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies. These errors are analyzed in ANSI C63.6-1988 [3], wherein it is shown that the performance of a well-built site contributes only 1 dB of the total allowable tolerance.

CISPR 16-1 (1993)

> M.2 Error analysis
>
> . . . The total estimated errors are the basis for the ±4 dB site acceptability criterion consisting of approximately 3 dB measurement uncertainty and an additional allowable 1 dB for site imperfections.

7.3 APPENDIX C: TEST SITE CERTIFICATION, CHALK CREEK EMI SITE - per 2.948(a)

The DNB Engineering test facility is located in Chalk Creek Canyon near Coalville, Utah. Site characteristics were measured according to the procedures outlined in ANSI C63.4 (1992) “Characteristics of Open Field Test Site”. The results of these characterizations indicate that the Chalk Creek site is an outstanding facility to perform accurate and repeatable EMI tests.

This facility has been FCC approved to perform class B certification testing since January, 1986. According to the FCC requirement to re-apply every three years, the facility was rectified. Certification was granted for the 3, 10, and 30 meter positions for both ranges. The FCC granted facility approval Feb 2, 20003 under file number Registration number 90532.

In August of 1999, **The American Association for Laboratory Accreditation**, **A2LA**, granted accreditation to this facility. Standards for which accreditation was granted: RF Emissions: ANSI C63.4 - 1992, FCC Part 15 subpart B and C, FCC Part 18 CISPR 11, CISPR 13, CISPR 14, CISPR 22, EN 55011, EN 55013, EN 55014, EN 55022, EN 60601-1-2, EN 50081-1, EN 50081-2, IEC 601-1-2; RF Immunity: EN 50082-1, EN 50082-2, Radiated Susceptibility: EN 61000-4-3, ENV 50140, ENV 50204, IEC 1000-4-3, IEC 801-3, ESD: EN 61000-4-2, IEC 1000-4-2, IEC 801-2, EFT: EN 61000-4-4, IEC 1000-4-4, IEC 801-4, Surge: EN 61000-4-5, ENV 50142, IEC 1000-4-5, IEC 801-5, Injected RF Immunity: EN 61000-4-6, ENV 50141, IEC 1000-4-6, IEC 801-6 Magnetic EN 61000-4-8, Power Quality EN 61000-4-11, Harmonic EN 61000-3-2, Flicker EN 61000-3-3, Electric Strength Testing EN 60065(A1,A2,A3,),EN 61010-1, EN 60601-1-1, EN 60065, IEC 950, (Hi Pot) IEC 1010, IEC 601-1, IEC 65, IEC 335XX, Leakage EN 60950, EN 60601-1-1, Temperature Rise, Electric Strength Testing EN 60065(A1,A2,A3,),EN 61010-1, EN 60601-1-1, EN 60065, IEC 950, IEC 1010, IEC 601-1, IEC 65, IEC 335XX, Ground Bonding EN 61010-1, EN 60950, (A1,A2,A3,),EN 60601-1-1, EN 60065, IEC 1010, IEC 950, IEC 601-1, IEC 65, IEC 335XX, Humidity Conditioning EN 61010-1, EN 60950, (A1,A2,A3,),EN 60601-1-1, EN 60065, IEC 1010, IEC 950, IEC 601-1, IEC 65, IEC 335XX, Surges to Antenna or Mains EN 60065, IEC 65

In September,1994 the National Certified Testing/Competent/ Notified Body for Norway and Scandinavian Countries (NEMKO) approved this test facility. DNB now offers the testing required for the CE Mark. **NEMKO EMC Laboratory Authorization No.: ELA 131**
Standards for which accreditation was granted: RF Emission: EN 55011, EN 55022, EN 50081-1, EN 50081-2; RF Immunity: EN 50082-1, EN 50082-2

In September, 1994, the New Zealand Ministry of Commerce certified that DNB ENGINEERING, INC. EMC facilities meet their laboratory approval criteria for EMC testing and placed DNB ENGINEERING on their list of Ministry-Approved laboratories.

In June of 1999, VCCI certified that the Chalk Creek facility was acceptable to perform EMI test according to VCCI requirements. The certificate number is 715.

Ambient Emissions

Ambient emission measurements were made to determine the level of the ambient emanations at the DNB test facility. The results indicate that all ambient signals are below the FCC, and VCCI radiated emission limits or that each can easily be identified as an ambient signal.

7.4 APPENDIX D: EMC INSTRUMENTATION AND MEASUREMENT EQUIPMENT

All test equipment are calibrated by a certified metrology facility using standards traceable to NIST.

Each instrument is calibrated annually or more frequently if required.

Test Equipment for Emissions

7.5 APPENDIX E: INFORMATION SUPPLIED TO APPLICANT

INFORMATION PERTAINING TO EQUIPMENT MANUFACTURED AFTER COMPLIANCE TESTING

It is prudent that manufacturers have an established Quality Assurance program to spot check their products on a periodic basis, either based upon time or quantities produced. Obviously, a change in the engineering design should be sufficient justification for a re-test.

The Quality assurance test need not be formal Verification or Certification such as required during the initial production of the product. However, it should be sufficient in scope to assure that the EMI characteristics of the product have not changed to the degree that the product exceeds the FCC limits. If a new model of a product is produced, it must undergo full Verification or Certification testing and, in case of Certification, be filed with the FCC.

It is expected that the FCC will place greater emphasis and resources in spot checking commercially available products. If a product is found not to be compliant with the Limits specified in Part 15, Subpart B. the manufacturer will be subject to the appropriate penalties imposed by the Commission. The initial Certification or Verification is sufficient to justify initial production. The additional quality assurance testing performed is the manufacturer's responsibility to assure continued compliance.