DNB ENGINEERING, INC.

A2LA # 0844-1

ELA #116

CERTIFICATION
FOR
INTENTIONAL RADIATOR

Per
Part 15 Subpart C
(CFR 47, 15,203 & 15.209)

EUT: 122 kHz Cardio Sport Chest Pulse
Model No. 1220

FCC ID: OMC1220

PREPARED FOR APPLICANT:
ICON
1500 S.1000 W.
Logan,, UT 84321

REPORT # 06077-1F
Test Date: June 21, 2000

Prepared By:
DNB ENGINEERING, INC.
1100 East Chalk Creek Rd.
Coalville, Utah 84017
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Revision Letter	Number of Pages	Page No. of Rev.	Description	Date
A	35		Document Release	6/23/2000

TRANSMITTAL SUMMARY

Unit tested:	122 kHz Cardio Sport Chest Pulse
Model #:	1220
FCC ID:	OMC1220
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 122 kHz Cardio Sport Chest Pulse 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. DNB Engineering has been evaluated to do these tests by the American Association 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:	122 kHz Cardio Sport Chest Pulse
Model #:	1220
FCC ID#:	OMC1220
Dates of Test:	June 21, 2000

Test Performed: _____ _____
Yancey Staples — Date
Test Engineer

Test Report Reviewed: _____ _____
Jeff Williams — Date
Documentation Supervisor

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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: ICON
1500 S.1000 W.
Logan,, UT 84321

Contact: Matt McKendrick
Phone: 435-750-5000

Dates of Test: June 21, 2000

Equipment Under Test (EUT): 122 kHz Cardio Sport Chest Pulse
FCC ID: OMC1220

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 & 15.209	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	3DC	Comments/ FCC ID#
A	122 kHz Cardio Sport Chest Pulse	1220		■		OMC1220

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

2.2 Equipment Description

Icon Health and Fitness 122 kHz Cardio Sport a wireless pulse monitor is used with exercise stations such as treadmills. The pulse monitor is strapped to the chest of the exerciser and the pulse rate is monitored and displayed at the console. An EKG is used to detect hart beats and 122 kHz CW is transmitted for each hart beat.

2.2.1 Mode of Operation

122 Khz Cardio Sport was hard wired to be transmitting continuously. Worst case orientation and azimuth of the turntable were determined, then a fresh battery was installed. Worst case was determined to be placed on it's side on the table as shown in setup photo.

2.3 Antenna Requirement - per 15.203

The antenna is soldered to transmitter and enclosure is glued in place.-

2.4 Circuit Description - per 2.1033(b)4

Operation of sports instrument 122 kHz Cardio Sport Chest Pulse Heart Rate Transmitter

The Cardio Sport 122 kHz Chest Pulse transmitter operates in the following manner.

- Two conductive rubber electrodes mounted to the left and right of the plastic transmitter body detect the user's heart rate signal (ECG)
- The electrodes are connected to the differential input terminals (+) and (-) of the amplifier circuit.

- The amplified signal is run through a series of band-pass filters designed to eliminate any signals picked up by the electrodes that are not caused by the users heart rate signal while not eliminating the user's ECG signal.

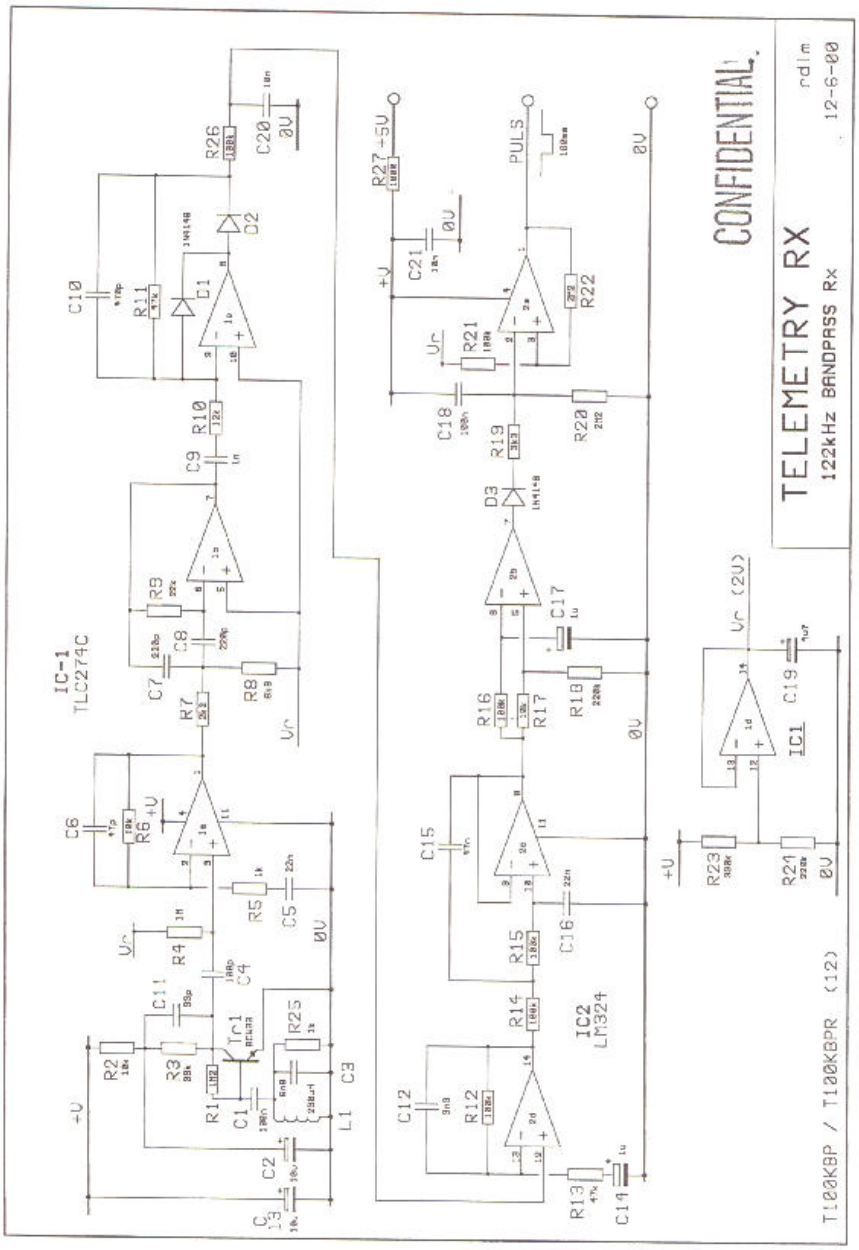
- A Threshold Detector detects any signals of amplitudes greater than the upper threshold of the Band Pass Filters and causes the activation of a One Shot Multi-Vibrator for each signal that activates the Threshold Detector.

- The One-Shot Multi-Vibrator activates a Relaxation Oscillator, which generates an 80ms pulse at 122 kHz.

- This pulse is picked up by the Heart Rate Receiver circuit for processing

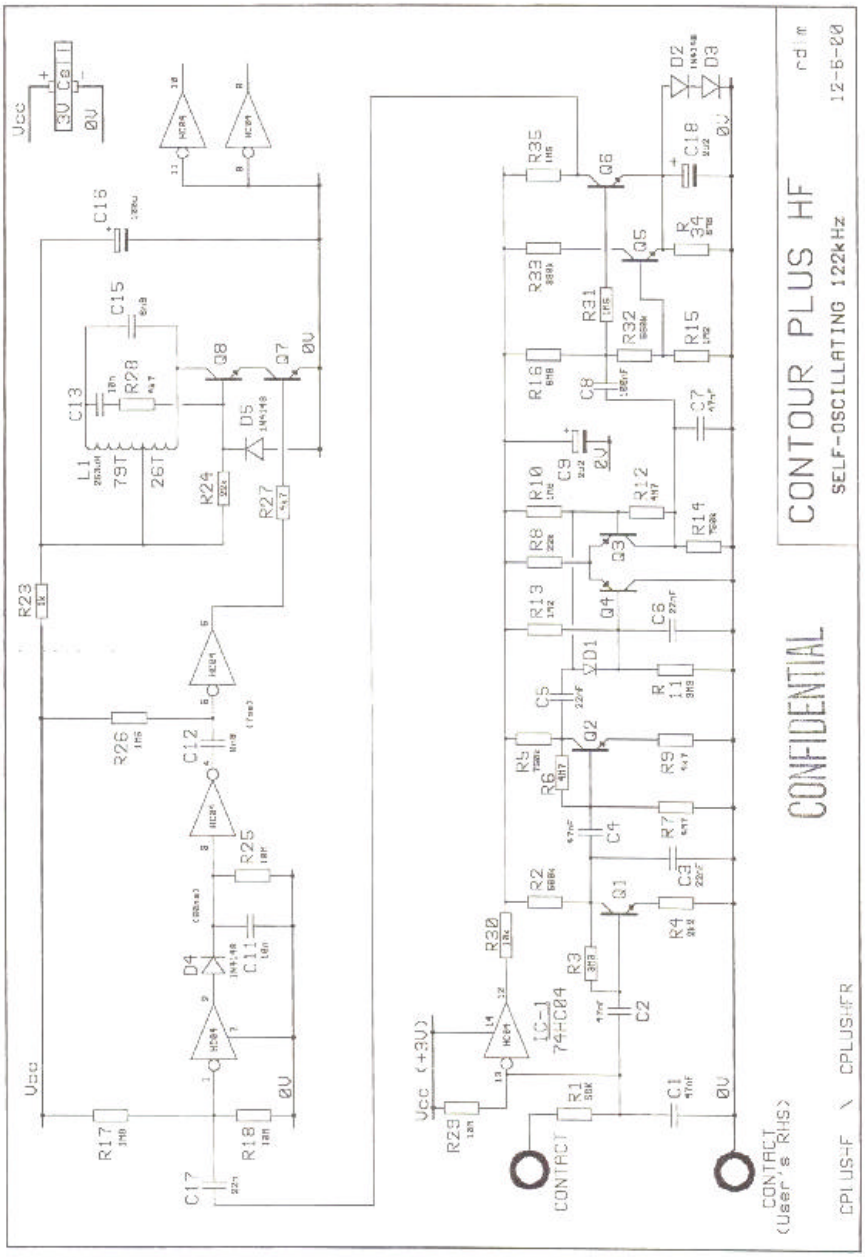
2.5 Schematics

122 kHz Cardio Sport Chest Pulse

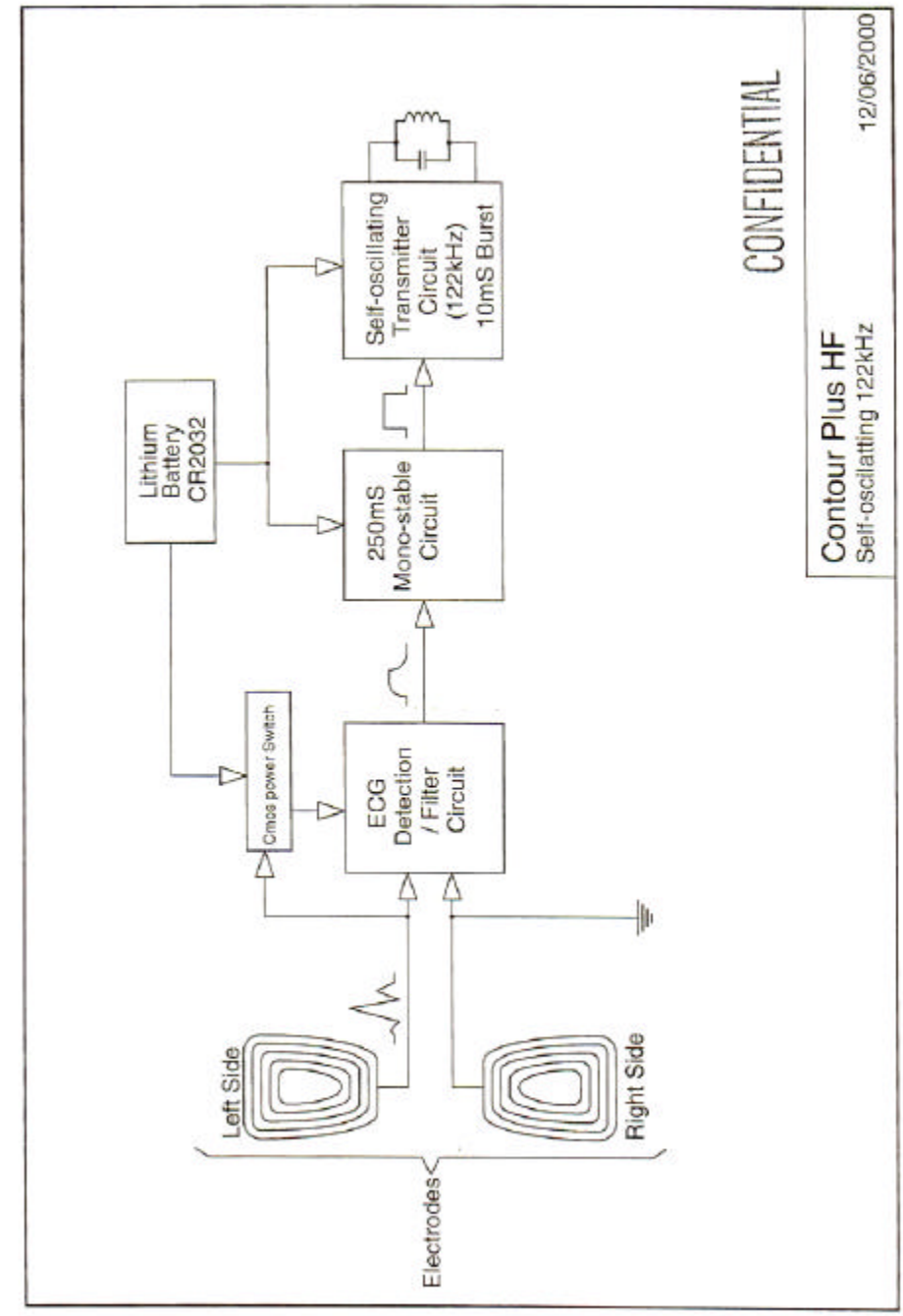


2.6 Schematics

122 kHz Cardio Sport Chest Pulse



2.7 Test Block Diagram

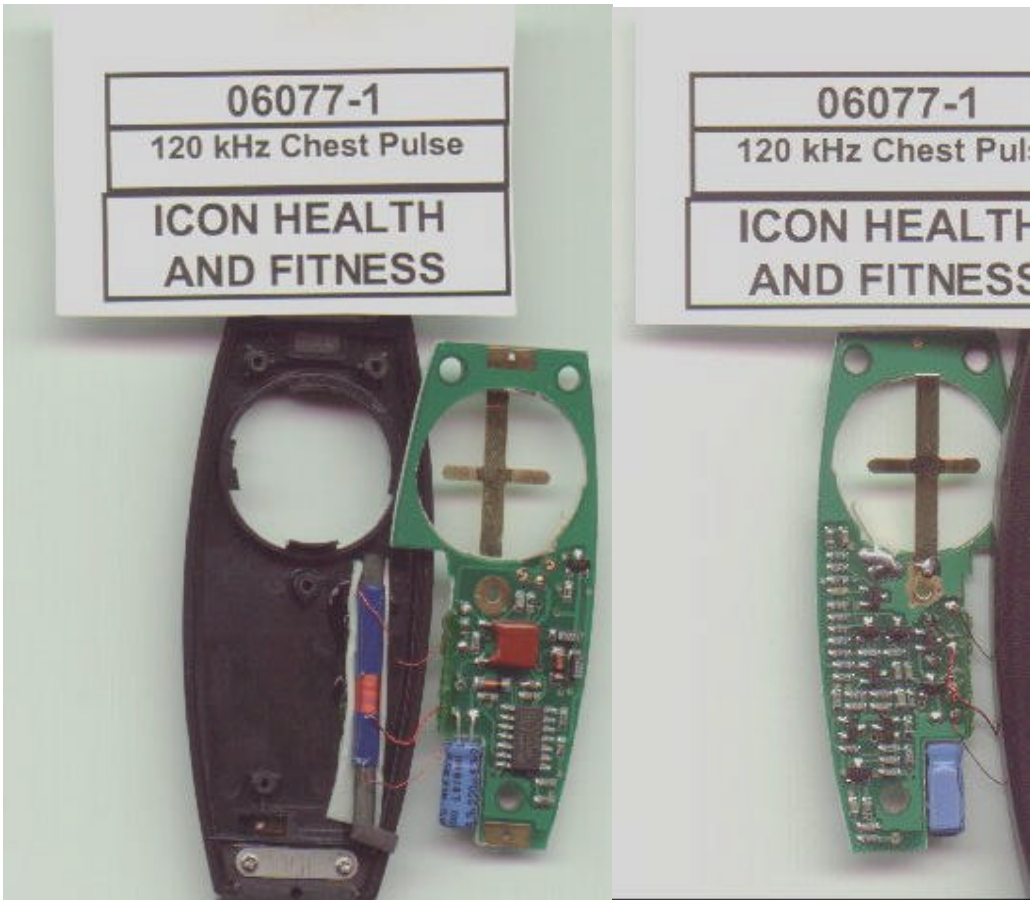


2.8 Photograph of EUT - per 2.1033(b)(7)

122 kHz Cardio Sport Chest Pulse

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

122 kHz Cardio Sport Chest Pulse
View: Internals Front & Back



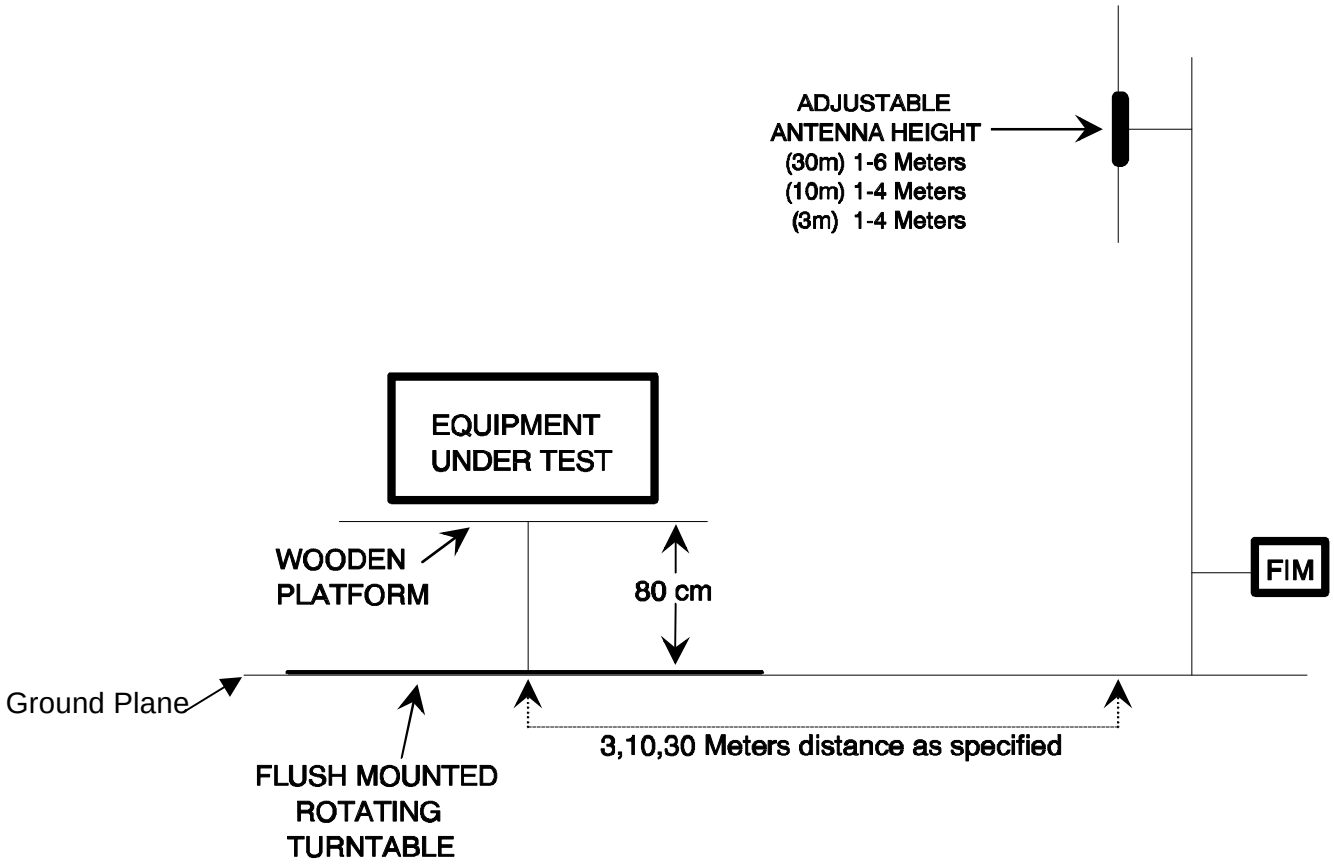
3. EMISSIONS FCC PART 15

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 turn-table 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:

0.009 MHz to 0.490 MHZ 2400/F(kHz) and 0.490 MHz to 1.705 MHz 2400/F(kHz)

Applied limit 123 kHz is 26.1 dB uV/m and 355 kHz is 16.6 dB uV/m.

Per 15.31 (f)(2) Extrapolation factor of 40 dB/decade for measurement distances different then specified in with limits for frequencies below 30 MHz.

Extrapolation for 300 meters limit distance to measurement distance is 59 dB.

3.1.3 Field Strength of Intentional Radiator Inside of Band

The EUT was compliant with CFR 47, FCC part 15, Subpart C (a) field strength of intentional radiator.

Radiated Emissions Inside the Band Summary Test Data

Per FCC part 15, Subpart C at 1.4 meters

ICON EUT: 122 kHz Cardio Sport Chest Pulse

Transmitter Field Strength

Frequency MHz	Corrected Measurement (dBuV/m)	Limit (dBuV/m)	Delta (dB)
123.00	56.7	62.2	**-25.73**

- 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, FCC part 15, Subpart C radiated emissions requirements.

Radiated Emissions Outside the Band Summary Test Data

per FCC part 15, Subpart C at 1.4 meters

Table 3.1.5(1)

ICON EUT: 122 kHz Cardio Sport Chest Pulse

Freq. (kHz)	Meas'd (dBuv)	convert to (dBuA/m)	Factors (dB)	Signal Level	limit at 1.4 m	Delta dB
246.00	24.6	-26.9	31.3	4.4	52.2	**-47.8**
369.00	14.0	-37.5	31.3	-6.2	50.2	**-56.4**
492.00	9.3	-42.2	31.3	-10.9	49.7	**-60.6**

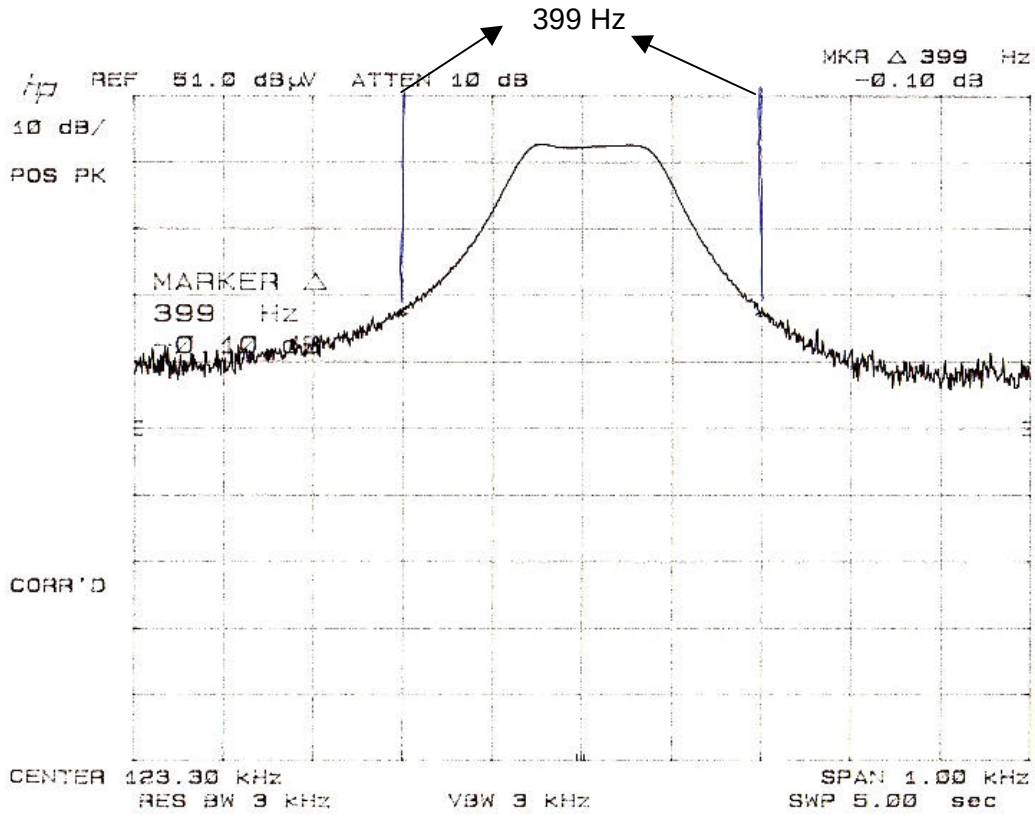
- Highest frequencies relative to the Limit.
- Reference Appendix A for all data taken.

3.1.5 Occupied Bandwidth

The occupied bandwidth at the transceiver's fundamental frequency output was measured using a HP 8568B spectrum analyzer. The spectrum analyzer was adjusted as follows:

Frequency: 123.3 kHz	Resolution Bandwidth: 3 kHz
Input Attenuation: 10 dB	Reference Level: 51.0 dBuV
Scan Width: .1.00 kHz/div	Detector: Peak
Vertical Scale: 10 dB/div	Max Hold Multiple Sweeps

Plot of Occupied Bandwidth



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

122 kHz Cardio Sport Chest Pulse
Different configurations to get maximized position

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”.

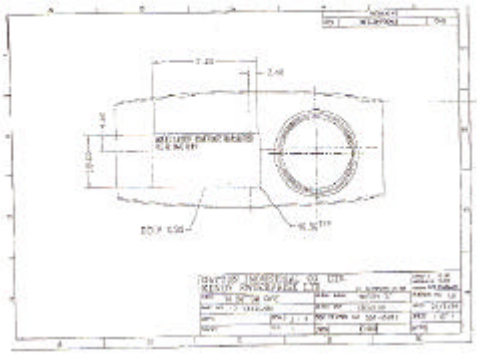
☐ The label will be placed in a conspicuous location on the device.

☐ 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 Label Placement and Contents

4.2 Photograph of Label Placement and Contents

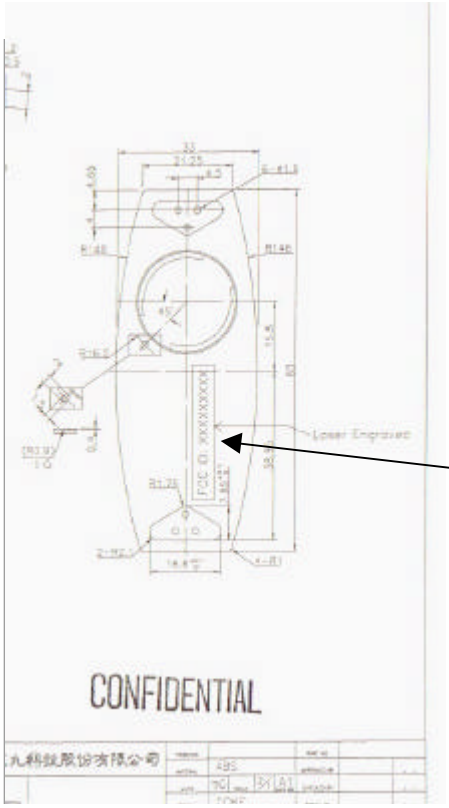


MODEL: 122 kHz Cardio Sport Chest Pulse Transmitter
FCC ID: OMC 1220

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING 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.



Laser Engraved ID

5. OWNERS MANUAL

5. OWNERS MANUAL

Chest Pulse Sensor User's Guide

To install and assemble the replacement chest pulse sensor, please read and follow all instructions in this user's guide. To use the chest pulse sensor with your treadmill, refer to the user's manual provided with your treadmill and the user's manual included with your original chest pulse sensor.

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.

Changes or modifications not expressly approved by ICON Health & Fitness, Inc. could void the user's authority to operate this device.

WARNING: If you have an implanted medical device such as a pacemaker, check with your physician before using the chest pulse sensor.

WARNING: If you have heart problems, or if you are over 50 years of age and have been inactive, do not use the pulse programs. Note: Your treadmill model may not have pulse programs.

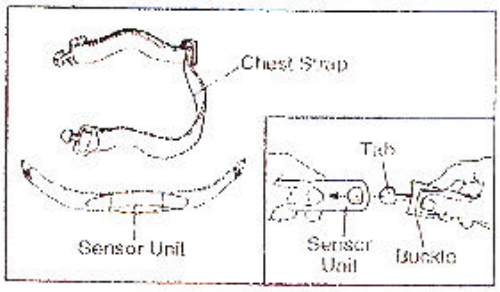
WARNING: If you are taking medication regularly, consult your physician to find whether the medication will affect your exercise heart rate.

PDF File. See the attachment that was electronically submitted.

5.1.1 Owners Manual

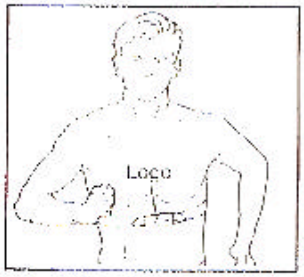
How to Assemble the Chest Pulse Sensor

The chest pulse sensor consists of two components: the chest strap and the sensor unit. Follow the steps below to put on the chest pulse sensor.



1 Refer to the inset drawing above. Insert the tab on one end of the chest strap through one end of the sensor unit as shown. Make sure to press the end of the sensor unit under the buckle on the chest strap.

2 Wrap the sensor unit and the chest strap around your chest. Attach the free end of the chest strap to the sensor unit as described above. Adjust the length of the chest strap, if necessary. The chest pulse sensor should be under your clothing, against your skin, and as high under the pectoral muscles or breasts as is comfortable. Make sure that the logo is facing forward and is right-side-up.



3 Pull the sensor unit away from your body a few inches and locate the two electrode areas on the inner side. Using a saline solution such as saliva or contact lens solution, wet both electrode areas. Return the sensor unit to a position against your chest.

CHEST PULSE SENSOR TROUBLE-SHOOTING

If the chest pulse sensor does not function properly, or if the displayed pulse is excessively high or low, try the trouble-shooting steps below.

- Make sure that the chest pulse sensor is under your clothing, against your skin, and as high under the pectoral muscles or breasts as is comfortable. Note: If the chest pulse sensor does not function when positioned as described, try moving it slightly lower or higher on your chest.
- Make sure that the logo on the sensor unit is facing forward and is right side up.
- Each time you use the chest pulse sensor, use saline solution such as saliva or contact lens solution to wet the two electrode areas on the sensor unit (see the drawing at the top of this page). If pulse readings do not appear until you begin perspiring, re-wet the electrode areas.
- As you walk or run on the treadmill, make sure that you are near the center of the walking belt and within arm's length of the console. **For the console to display pulse readings, the user must be within arm's length of the console.**
- The chest pulse sensor is designed to work with people who have normal heart rhythms. Pulse reading problems may be caused by medical conditions such as premature ventricular contractions (pvcs), tachycardia bursts, and arrhythmia.
- The operation of the chest pulse sensor can be affected by magnetic interference caused by high power lines or other sources. If it is suspected that magnetic interference may be causing a problem, try relocating the treadmill.
- If the chest pulse sensor still does not function properly, test the chest pulse sensor in the following way:

  Hold the chest pulse sensor and place your thumbs over the electrode areas as shown at the left.

  Next, hold the chest pulse sensor near the console. While holding one thumb stationary, begin tapping the other thumb against the electrode area at a rate of about one tap per second. Check the pulse reading on the console.

5.1.2 Owners Manual cont..

Chest Pulse Sensor User's Guide

Model No. OMC1219

To install and assemble the replacement chest pulse sensor, please read and follow all instructions in this user's guide. To use the chest pulse sensor with your treadmill, refer to the user's manual provided with your treadmill and the user's manual included with your original chest pulse sensor.

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.

Changes or modifications not expressly approved by ICON Health & Fitness, Inc. could void the user's authority to operate this device.

WARNING: If you have an implanted medical device such as a pacemaker, check with your physician before using the chest pulse sensor.

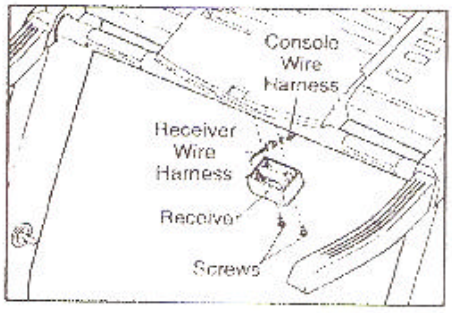
WARNING: If you have heart problems, or if you are over 60 years of age and have been inactive, do not use the pulse programs. Note: Your treadmill model may not have pulse programs.

WARNING: If you are taking medication regularly, consult your physician to find whether the meditation will affect your exercise heart rate.

How to Install the Receiver

Before the replacement chest pulse sensor can be used, the included receiver must be installed. **If the console on your treadmill is like the console shown in drawing 1 below, follow step 1 to install the receiver. If your console is like the console shown in drawing 2, follow step 2.**

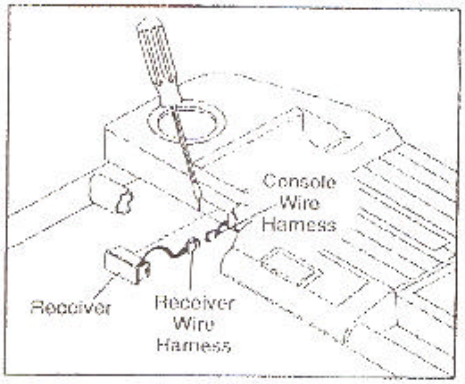
1 Locate the old receiver beneath the console. Using a standard screwdriver (not included), remove the two screws from the receiver.



Next, lower the receiver and disconnect the receiver wire harness from the console wire harness. Discard the old receiver.

Plug the new receiver wire harness fully into the console wire harness. Attach the new receiver to the console with the two included screws. **Be careful to avoid pinching the wire harnesses.**

2 Using a standard screwdriver (not included), pry the old receiver out of the console.



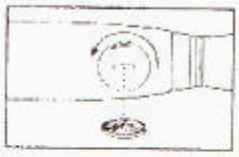
Next, disconnect the receiver wire harness from the console wire harness. Discard the old receiver.

Plug the new receiver wire harness fully into the console wire harness. Press the receiver module into the console base until it snaps into place. **Be careful to avoid pinching the wire harnesses.**

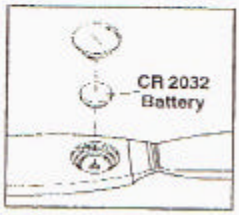
5.1.3 Owners Manual contd..

- If the chest pulse sensor does not function properly after you have followed all of the above instructions, the battery should be replaced in the following way:

Locate the battery cover on the back of the sensor unit. Insert a coin into the slot in the cover, turn the cover counterclockwise, and remove the cover.



Remove the old battery and insert a new CR 2032 battery. **Make sure that the battery is turned so the writing is on top.** Replace the battery cover and turn it clockwise to close it.



CHEST PULSE SENSOR CARE

- Dry the chest pulse sensor after each use. The chest pulse sensor is activated when the electrode areas are wetted and it is put on; the chest pulse sensor shuts off when it is removed and the electrode areas are dried. If the chest pulse sensor is not dried after each use, it may remain activated longer than necessary, draining the battery prematurely.
- Store the chest pulse sensor in a warm, dry place. Do not store the chest pulse sensor in a plastic bag or other container that may trap moisture.
- Do not expose the chest pulse sensor to direct sunlight for extended periods of time. Do not expose the chest pulse sensor to temperatures above 122°F (50°C) or below 14°F (-10°C).
- Do not excessively bend or stretch the sensor unit when using or storing the chest pulse sensor.
- Clean the sensor unit using a damp cloth—never use alcohol, abrasives, or chemicals.

Limited Warranty

WHAT IS COVERED—The Chest Pulse Sensor ("product") is warranted to be free of all defects in material and workmanship.

WHO IS COVERED—The original purchaser or any person receiving the product as a gift from the original purchaser.

HOW LONG IS IT COVERED—ICON Health & Fitness, Inc. ("ICON"), warrants the product for one year after the date of purchase.

WHAT WE DO TO CORRECT COVERED DEFECTS—We will ship to you, without charge, any replacement part or component, or, at our option, we will replace the product.

WHAT IS NOT COVERED—Any failures or damage caused by unauthorized service, misuse, accident, negligence, improper assembly or installation, alterations, modifications without our written authorization or by failure on your part to use, operate, and maintain as set out in this manual ("manual"). This warranty does not extend to products used for commercial or rental purposes or to products used as store display models.

WHAT YOU MUST DO—Always retain proof of purchase, such as your bill of sale; store, operate, and maintain the product as specified in the manual; notify our Customer Service Department of any defect within 10 days after discovery of the defect; as instructed, return any defected part for replacement or, if necessary, the entire product, for repair.

MANUAL—It is VERY IMPORTANT THAT YOU READ THIS MANUAL before using the product. Remember to follow the instructions specified in this manual to assure proper operation and your continued satisfaction.

HOW TO GET PARTS AND SERVICE—Simply call our Customer Service Department at 1-800-999-3756 and tell them your name and address and the model number of your product. They will tell you how to get a part replaced, or advise you how to ship the product for service. Before shipping, always obtain a Return Authorization Number (RA No.) from our Customer Service Department; securely pack your product (save the original shipping carton if possible); put the RA No. on the outside of the carton and insure the product. Include a letter explaining the problem and a copy of your proof of purchase if you believe the service is covered by warranty.

ICON is not responsible or liable for indirect, special or consequential damages arising out of or in connection with the use or performance of the product or damages with respect to any economic loss, loss of property, loss of revenues or profits, loss of enjoyment or use, costs of removal, installation or other consequential damages of whatsoever nature. Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above limitation may not apply to you.

The warranty extended hereunder is in lieu of any and all other warranties and any implied warranties of merchantability or fitness for a particular purpose is limited in its scope and duration to the terms set forth herein. Some states do not allow limitations on how long an implied warranty lasts. Accordingly, the above limitation may not apply to you. No one is authorized to change, modify or extend the terms of this limited warranty. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

ICON HEALTH & FITNESS, INC., 1500 S. 1000 W., LOGAN, UT 84321

6. APPENDIX SECTION

6.1 APPENDIX A: TEST DATA

6.2 APPENDIX B: 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.

6.3 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. Facility approval was granted by the FCC Feb 2, 2003 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.

6.4 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

6.5 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.