Nemko Test Report:	2014 270323 FCC15.209
Applicant:	Cochran Consulting, Inc. 1758 Firman Drive Richardson, TX 75081
Equipment Under Test: (E.U.T.)	Lifeguard Dive Computer
FCC ID:	LYP44556-05
In Accordance With:	**FCC Part 15, Subpart C, Paragraph 15.209 and Industry Canada RSS-310, Issue 3** General Limits For Low Power Transmitters
Tested By:	Nemko USA Inc. 2210 Faraday Ave, Ste 150 Carlsbad, CA 92008

TESTED BY: _____ **DATE:** **October 7, 2014**
David Light

APPROVED BY: _____ **DATE:** **October 21, 2014**
Tom Tidwell

Total Number of Pages: 15

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Section 1. Summary Of Test Results

Manufacturer: Cochran Consulting, Inc.

Model No.: Lifeguard Dive Computer

Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C and Industry Canada RSS-310, Issue 3 for low power devices. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated Emissions were made on an open area test site.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE

NVLAP Lab Code 200116-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Nemko USA, Inc. is a NVLAP accredited laboratory.

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207 / RSS-Gen 7.2.4	NA
Radiated Emissions	15.209 / RSS-310 3.7	Complies

The EUT is battery powered.

Section 2. General Equipment Specification

Frequency Range:	126 kHz Single Channel
Operating Frequency(ies) of Sample:	126 kHz
Modulation:	ASK
Emission Designator:	16K9F1D
Crystal Frequencies:	32.768 kHz 4.030 MHz

Integral Antenna

Yes	**No**
☒	☐

Description of EUT

The Lifeguard dive computer is a device that provides dynamic telemetry data and decompression data to sport and military SCUBA divers of all skill levels.

Section 3. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: FCC 15.209 RSS-310 3.7
TESTED BY: David Light	DATE: 07 October 2014

Test Results: Complies. The worst case emission was 81.8 dBµV/m at 126 kHz. This is 17.2 dB below the specification limit of 99 dBµV/m.

Measurement Data: See attached table.

Notes:

☒ The EUT was tested on three orthogonal axis'

☒ The device was tested from 30 MHz to the tenth harmonic of the highest fundamental frequency per 15.33

☒ The device was tested on three channels per 15.31(l).

Equipment Used: 1480-1036

Measurement Uncertainty: +/-3.6 dB

Temperature: 22 °C

Relative Humidity: 35 %

Test Data - Radiated Emissions

Meas. Freq. (kHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
126	Loop	0.0	63.8	17.9	0.1	0.0	81.8	99.0	-17.2	Pass	Carrier
252	Loop	0.0	36.0	18.0	0.1	0.0	54.1	89.5	-35.4	Pass	Noise Floor
378	Loop	0.0	36	18.0	0.1	0.0	54.1	86.3	-32.2	Pass	Noise Floor
504	Loop	0.0	32	18.0	0.1	0.0	50.1	87.6	-37.5	Pass	Noise Floor
630	Loop	0.0	35	18.0	0.1	0.0	53.1	78.1	-25.0	Pass	Noise Floor
756	Loop	0.0	34	18.0	0.1	0.0	52.1	71.7	-19.6	Pass	Noise Floor
882	Loop	0.0	32	17.6	0.1	0.0	49.7	67.2	-17.5	Pass	Noise Floor
1008	Loop	0.0	29	18.3	0.1	0.0	47.4	63.8	-16.4	Pass	Noise Floor
1134	Loop	0.0	28	17.9	0.1	0.0	46.0	61.2	-15.2	Pass	Noise Floor
1260	Loop	0.0	29	17.9	0.1	0.0	47.0	59.0	-12.0	Pass	Noise Floor

RBW = 10 kHz

VBW = 30 kHz

Peak detector

Measurement distance = 3 m

Limits were adjusted by 40 dB/decade.

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: N/A
TESTED BY: David Light	DATE: 6 October 2014

Minimum Standard: Not specified.

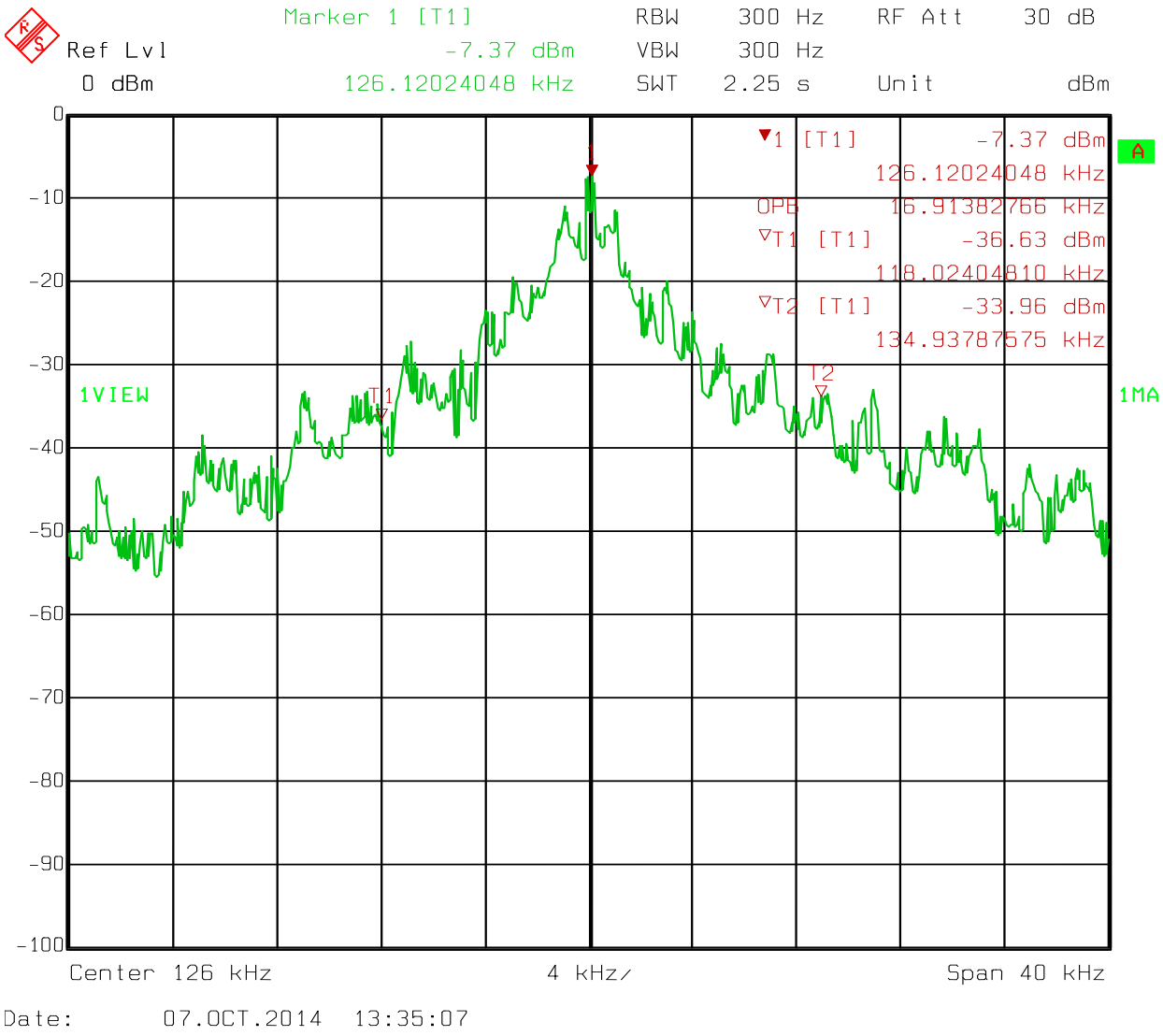
Test Results: The 99% power occupied bandwidth is xxx MHz

Measurement Data: See attached graph(s).

Method of Measurement:

A spectrum analyzer was used to measure the 99% power occupied bandwidth of the fundamental emission. This value is used as the bandwidth for the emission designator.

Test Data – 99% Occupied Bandwidth



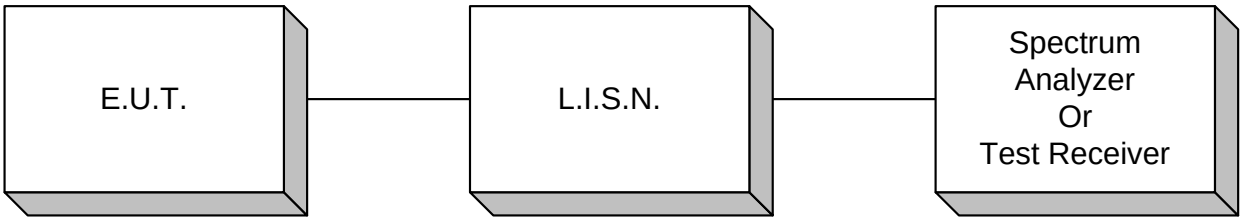
Section 5. Test Equipment List

Asset Tag	Description	Manufacturer	Model	Serial #	Last Cal	Next Cal
552	Antenna, Loop	EMCO	ALR-30M	820	21-Feb-2014	21-Feb-2015
901	Preamplifier	Sonoma	310 N	130607	21-Nov-2013	21-Nov-2014
1036	Spectrum Analyzer	Rohde & Schwartz	FSEK30	830844/006	15-Jul-2013	15-Jul-2015

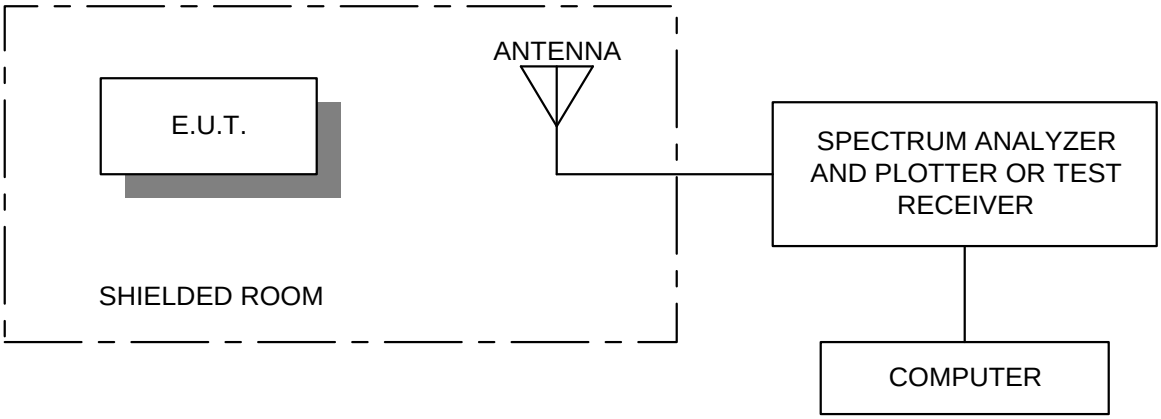
ANNEX A

TEST DIAGRAMS

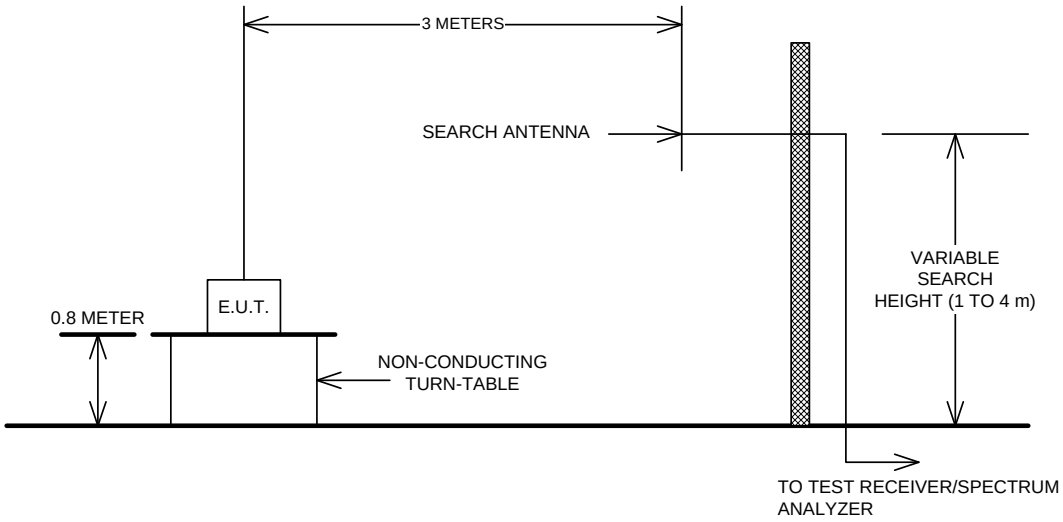
Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions



ANNEX B

TEST DETAILS

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209

Minimum Standard: §15.207 Radiated limits. (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400F (kHz)	300
0.490-1.705	24000F (kHz)	30
1.705-30.0	30	30
30-88	100[1]	3
88-216	150[2]	3
216-960	200[3]	3
Above 960	500	3

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

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

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

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

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

§15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device.

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