

# NORTHWEST EMC

## Connected Development

Zoll LifeVest Model 5000

FCC 2.1093:2016

Bluetooth Radio

Report # CDVE0003.5



NVLAP Lab Code: 201049-0

*This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report may only be duplicated in its entirety*

# CERTIFICATE OF EVALUATION

Last Date of Test: February 8, 2016  
Connected Development  
Zoll LifeVest Model 5000

## RF Exposure Evaluation

### Standards

Specification	Method
FCC 2.1093:2016	FCC KDB 447498 D01 General RF Exposure Guidance v06

### Results

Method Clause	Evaluation Description	Applied	Results	Comments
4.3.1	SAR Test Exclusion	Yes	Pass	

### Deviations From Standards

None

### Approved By:



Don Facticeau, IS Manager

*Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.*

# REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

# ACCREDITATIONS AND AUTHORIZATIONS

## United States

**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

## Canada

**IC** - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

## European Union

**European Commission** - Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

## Australia/New Zealand

**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

## Korea

**MSIP / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

## Japan

**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

## Taiwan

**BSMI** - Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

## Singapore

**IDA** - Recognized by IDA as a CAB for the acceptance of test data.

## Israel

**MOC** - Recognized by MOC as a CAB for the acceptance of test data.

## Hong Kong

**OFCA** - Recognized by OFCA as a CAB for the acceptance of test data.

## Vietnam

**MIC** - Recognized by MIC as a CAB for the acceptance of test data.

## SCOPE

For details on the Scopes of our Accreditations, please visit:

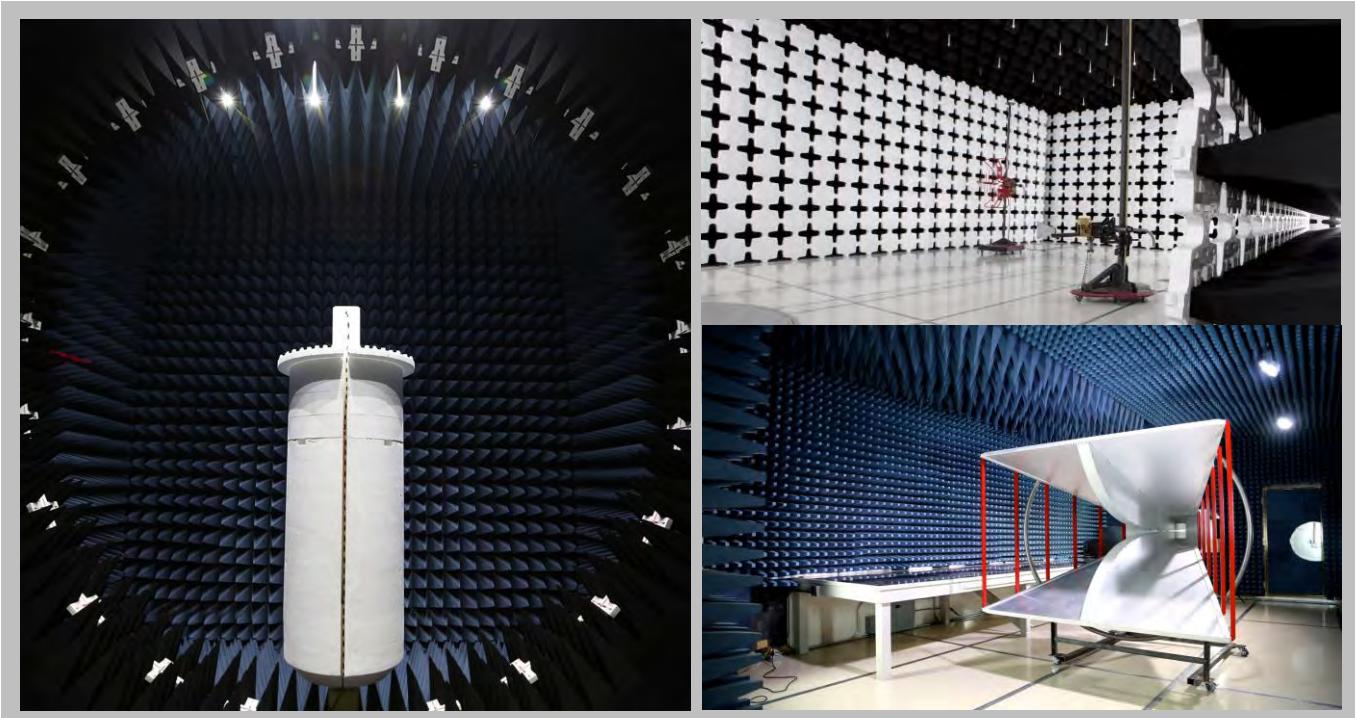
<http://www.nwemc.com/accreditations/>

<http://gsi.nist.gov/global/docs/cabs/designations.html>

# FACILITIES



California	Minnesota	New York	Oregon	Texas	Washington
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<b>NVLAP</b>					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code: 201049-0	NVLAP Lab Code: 200629-0
<b>Industry Canada</b>					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
<b>BSMI</b>					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
<b>VCCI</b>					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
<b>Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA</b>					
US0158	US0175	N/A	US0017	US0191	US0157



# PRODUCT DESCRIPTION

## Client and Equipment Under Evaluation (EUT) Information

<b>Company Name:</b>	Connected Development
<b>Address:</b>	5020 Weston Parkway Suite 215
<b>City, State, Zip:</b>	Cary, NC 27513
<b>Evaluation Requested By:</b>	Mike Thys
<b>Model:</b>	Zoll LifeVest Model 5000
<b>First Date of Evaluation:</b>	February 8, 2016

## Information Provided by the Party Requesting the Evaluation

### Functional Description of the EUT:

The EUT is the Bluetooth radio portion of a Murata Wifi/Bluetooth radio module (Multi-Tech MTPCIEBW) which uses a 2.4GHz Multi Standard Antenna (Taoglas, part number: FXP73.07.0100A). The radio module is a PCIE technology product. The module is installed in the Zoll LifeVest 5000

The LifeVest is the first wearable defibrillator. It is worn outside the body rather than implanted in the chest. This device continuously monitors the patient's heart with dry, non-adhesive sensing electrodes to detect life-threatening abnormal heart rhythms. If a life-threatening rhythm is detected, the device alerts the patient prior to delivering a treatment shock, and thus allows a conscious patient to delay the treatment shock. If the patient becomes unconscious, the device releases a Blue™ gel over the therapy electrodes and delivers an electrical shock to restore normal rhythm.

### Objective:

To demonstrate compliance of the Bluetooth radio with FCC requirements for RF exposure for 2.1093 portable devices.

# SAR TEST EXCLUSION

## OVERVIEW

The device is excluded from SAR evaluation and therefore deemed compliant with FCC RF exposure requirements as described below:

## COMPLIANCE WITH FCC KDB 447498 D01 General RF Exposure Guidance v06

KDB 447498 D01 General RF Exposure Guidance v06, Section 4.3.1(a)

*"For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:*

*$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$*  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,

*where*

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz*
- Power and distance are rounded to the nearest mW and mm before calculation*
- The result is rounded to one decimal place for comparison*
- 3.0 and 7.5 are referred to as the numeric thresholds in the step b below*

*The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 4.1f) is applied to determine SAR test exclusion."*

## METHOD OF EVALUATION

The Bluetooth radio is part of the Murata Wifi/Bluetooth radio module, FCC ID: VPYLBTN. The radios cannot transmit simultaneously. The evaluation is based on the closest spacing of the antenna to the user's torso being 5mm.

The SAR Test Exclusion Threshold is summarized in the following table:

The result of the calculation is below the exclusion threshold of 3.0, therefore the unit is excluded from SAR evaluation and deemed compliant with FCC RF exposure requirements.

Transmit Frequency (GHz)	Test Separation (mm)	Output Power (mW)	Duty Cycle	Exclusion Threshold	Specification
2.48	5	8.39	1	2.6	$\leq 3.0$