

## Theory of Operations

### Overview

The JAET2L accelerometer sensor couples an ST accelerometer IC (part number LIS2HH12) with a Nordic Bluetooth Low Energy SOC (part number nRF52810). The Nordic SOC collects data from the accelerometer and the data is made available via the Bluetooth protocol.

### Hardware

The system consists of one PCBA housed in a plastic case. The PCBA is two layers. There are no user inputs. There is one LED used to indicate system status to the user.

### Power

The system is powered by a 3V CR2032 coin cell. Maximum power consumption by the radio is 4.6mA. Maximum power consumption of the board is 7.0mA (LED on and radio on). The Nordic SOC is only enabled when motion is detected. After motion ceases, the Nordic SOC is turned off. The battery life is 1 to 3 months.

### Ground

The PCBA includes a ground plane on the bottom copper layer.

### Antenna

The PCBA includes a trace antenna as part of the top copper layer. There is no ability to attach an additional internal or external antenna.

### Radio

The Nordic SOC includes the radio and Bluetooth Low Energy 5.0 software (Stack). Radio output level is set to 0dBm. Refer to the included Nordic product specification for more information on the Nordic SOC. The Bluetooth Low Energy 5.0 protocol is defined by the Bluetooth SIG. More information on the Bluetooth protocol is available at <http://www.bluetooth.com>

### Tune Up Procedure

The Nordic SOC is self tuning. No tune up procedure is available or required.

### System Level Block Diagram

