

# Product Specification

**Product Name:** AOA Tag

**Model Name:** DSBC-230-AOA

**Customer:**

## Revision History

Specification		Sect.	Update Description	By
Rev	Date			
1.0	2022-10-29		New version release	Alpha
1.1	2023-02-03		Add LED and Button function definition	
1.2	2023-02-09		Add Reset function and low voltage alarm LED status	
1.3	2023-02-10		Further optimized	
1.4	2023-03-08		Further optimized	

## Approvals

Organization	Name	Title	Date

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## 1 Introduction

### 1.1 Purpose& Description

DSBC-230-AOA is a rechargeable AOA Tag, suitable for personnel positioning. The product is developed based on the EFR32BG22C224F512GM32-C chip of SILICON LABS, which has excellent functions of ultra-low power consumption. At the same time, the product is equipped with an accelerometer, a LED and a button.

### 1.2 Product Feature

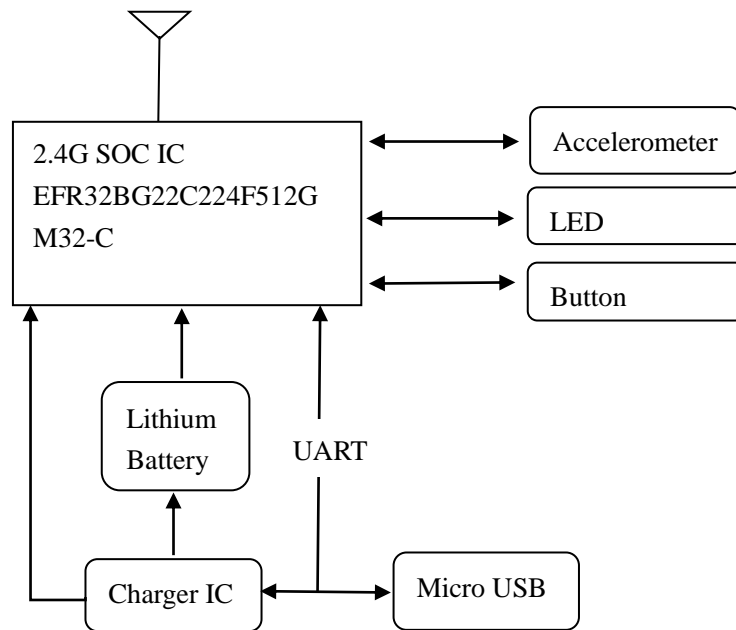
Product size	90mm×55.5mm×7.5mm
Product color	Black
Main IC	EFR32BG22C224F512GM32-C
Wireless protocol	2.4G
Tx power	Max 6dBm,default Tx power is 0dBm
Battery Type	Lithium battery 700mAh
Operating Voltage	3.0~3.7V
Operating Temperature	0 ~ +45°C
IP Protection	IP20
Button function	Turn on/off Device
Working current	360uA (@0dBm , at 100ms broadcast interval )
Battery life	60 Days (@0dBm ,at 100ms broadcast interval)
Low voltage alarm	When less than 3.2V

## 2 Appearance



### 3 Hardware Description

#### 3.1 Product diagram



#### 3.2 LED Status

When Device is charging	LED flashes every 3 seconds per time
When Device is fully charged with charger connected	LED keeps light on, if charger is removed ,then LED is off
When Device is being turned on	LED flashes 3 times at 1 Hz frequency
When Device is being turned off	After user presses and holds button for 2 seconds, LED keeps light on for 3 seconds and then flashes 2 times at 2Hz frequency
Low voltage status	LED flashes every 5 seconds per time until it is turned off or being charged again, if button is pressed during this period, stop flashing and priority to indicate the button action until the button action is done, then continue flashing every 5 seconds per time

### 3.3 Button function

Turn on Device	Click the button when Device is not being charged
Turn off Device	Press and hold the button for 5 seconds when Device is not being charged

## 4 Software definition

AOA Beacon broadcast:

When the AOA Tag is in state of motion, AOA broadcast interval is 100ms.

When the AOA Tag is in stationary state, AOA broadcast interval is 2000ms.

Reset:

Once Device is being charged, it will Reset automatically.

## 5 Usage with gateway(Locator)

Before using the Device, please make sure that you have clicked the button to turn on device.

DSBC-230-AOA Tag is designed to work with gateway(Locator) to achieve positioning function, in order to ensure the positioning accuracy and stability, at least two gateways(Locators) should be in work at the same time.

Before using the DSBC-230-AOA Tag, users should enter the Tag's Mac address into the positioning system platform.

## **FCC Statement**

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **NOTE:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

## **SAR Information Statement**

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radiofrequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health. The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. \* Tests for SAR are conducted with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output. Before a phone model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this model phone when tested for use on the body, as described in this user guide, is 0.063W/Kg(Body-worn measurements differ among phone models, depending upon available accessories and FCC requirements). While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure. The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RFexposure guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of <http://www.fcc.gov/oet/fccid> after searching on

FCC ID: **2AUXBDSBC-230** Additional information on Specific Absorption Rates (SAR) can be found on the Cellular Telecommunications Industry Association (CTIA) web-site at <http://www.wow-com.com>. \* In the United States and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kg (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements.

## **Body-worn Operation**

This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 10mm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.