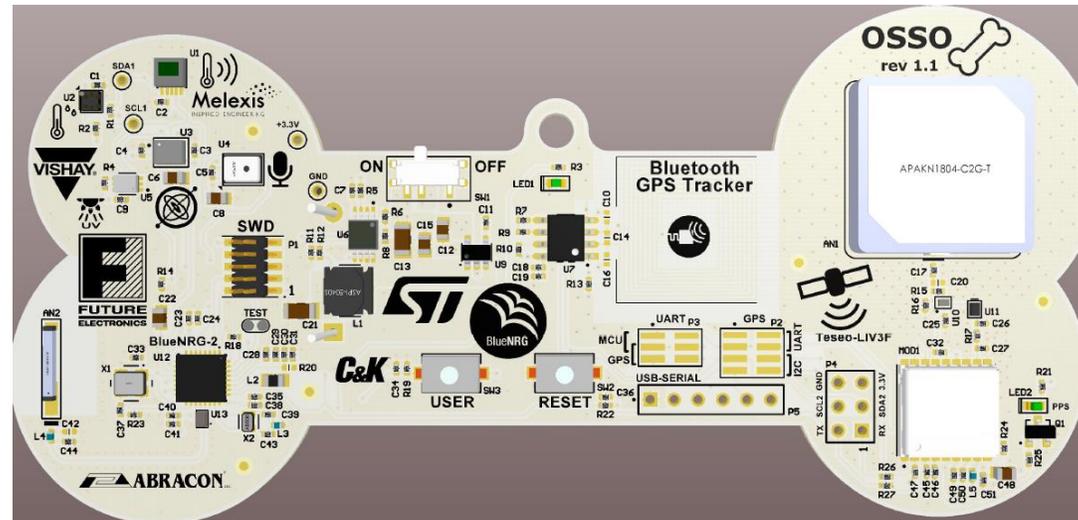


OSSO- Pet tracker

SENSE • CONNECT • CONTROL

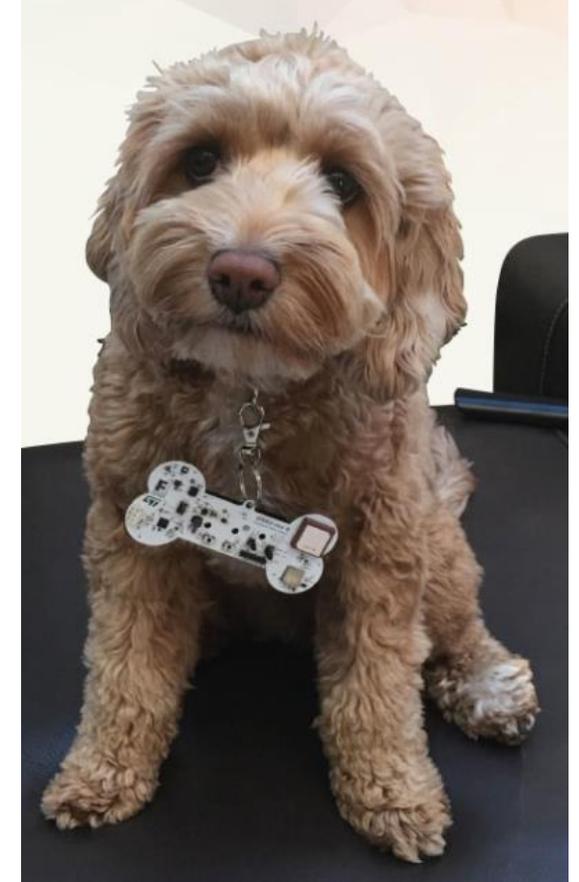


Introduction



What is OSSO?

- OSSO is the Italian word for “bone”
- Reference design evaluation board in the shape of a dog bone to demonstrate pet tracking application
- The OSSO board utilizes ST Microelectronics wireless and sensor solutions
- Created and designed in-house by the System Design Center, Future Connectivity Solutions and ST Microelectronics
- Default wireless connectivity is provided by Bluetooth Module and GPS Module
- Android and iOS app available now
- The OSSO board features the following ST Microelectronics solutions:
 1. Multi-constellation GNSS solution: **Teseo-LIV3F**
 2. Bluetooth Low Energy system on chip: **BlueNRG-2**
 3. NFC Tag IC: **M24SR64**



What is OSSO? (cont'd)

- Wireless connectivity is incomplete without sensors, the OSSO board features the following sensors:
 - From ST Microelectronics:
 1. MEMS Microphone: **MP34DT05-A**
 2. Accelerometer and Gyroscope: **LSM6DSOTR**
 3. Humidity and Temperature: **HTS221TR**
 - From other suppliers:
 1. Vishay's UVA sensor: **VEML6070**
 2. Melexis' PIR sensor: **MLX90632**
- Power management components from ST Microelectronics:
 1. LDO Voltage regulator: **LDS3985**
 2. Step up converter: **L6920DB**
- Other components from ST Microelectronics:
 1. Balun for Bluetooth SoC: **BALF-NRG-02D3**

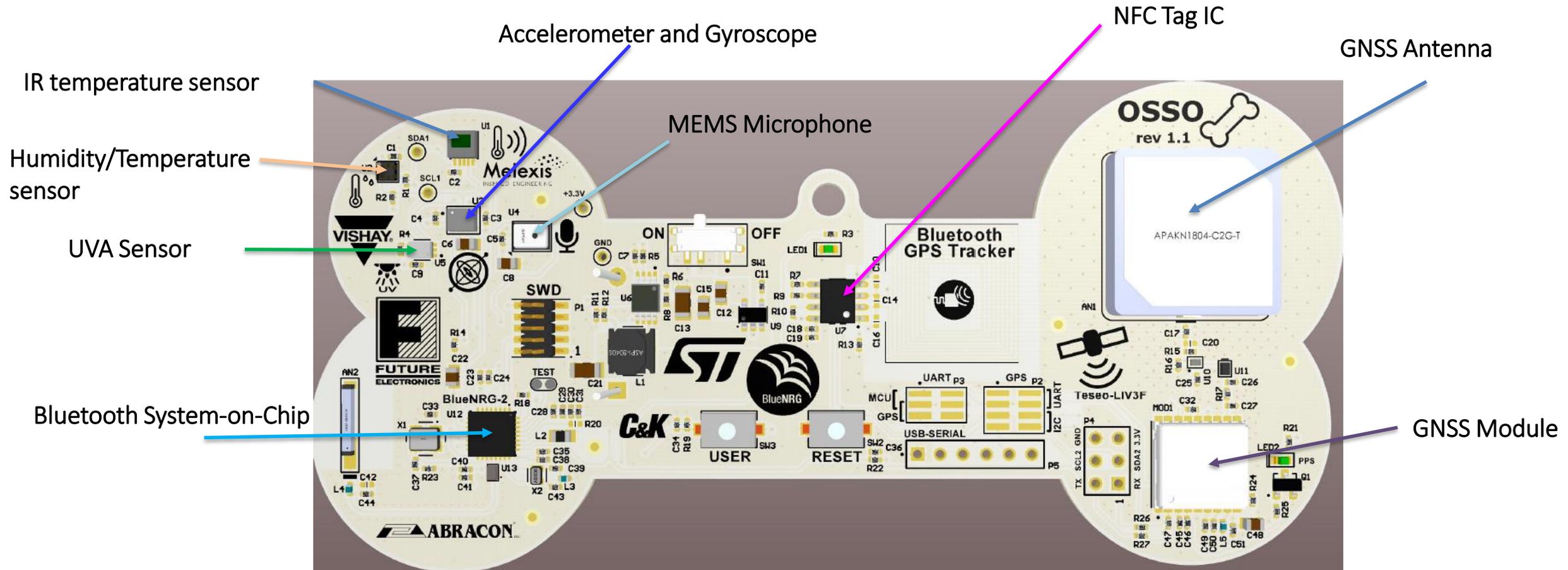
To get more information on the above parts, please click on the OSSO landing page:
<https://www.futureelectronics.com/resources/promotions/future-osso-board>

What is OSSO? (cont'd)

- Abracon Components in OSSO:
 - Antenna components
 1. GNSS Antenna: **APAKN1804-C2G-T**
 2. Bluetooth Low Energy Antenna: **ACAG0801-2450-T**
 - Passive components
 - Inductors:
 1. **ASPI-5040S-100M-T**
 2. **AIML-0805HC-100**
 3. **AIMC-0402-2N2S-T**
 4. **AISC-0402-16NG-T**
 5. **AISC-0402-27NG-T**
 - Timing Crystals & synchronization
 1. **ABM8W-32.0000MHZ-6-D1X-T3**
 2. **ABS06-32.768KHZ-1-T**

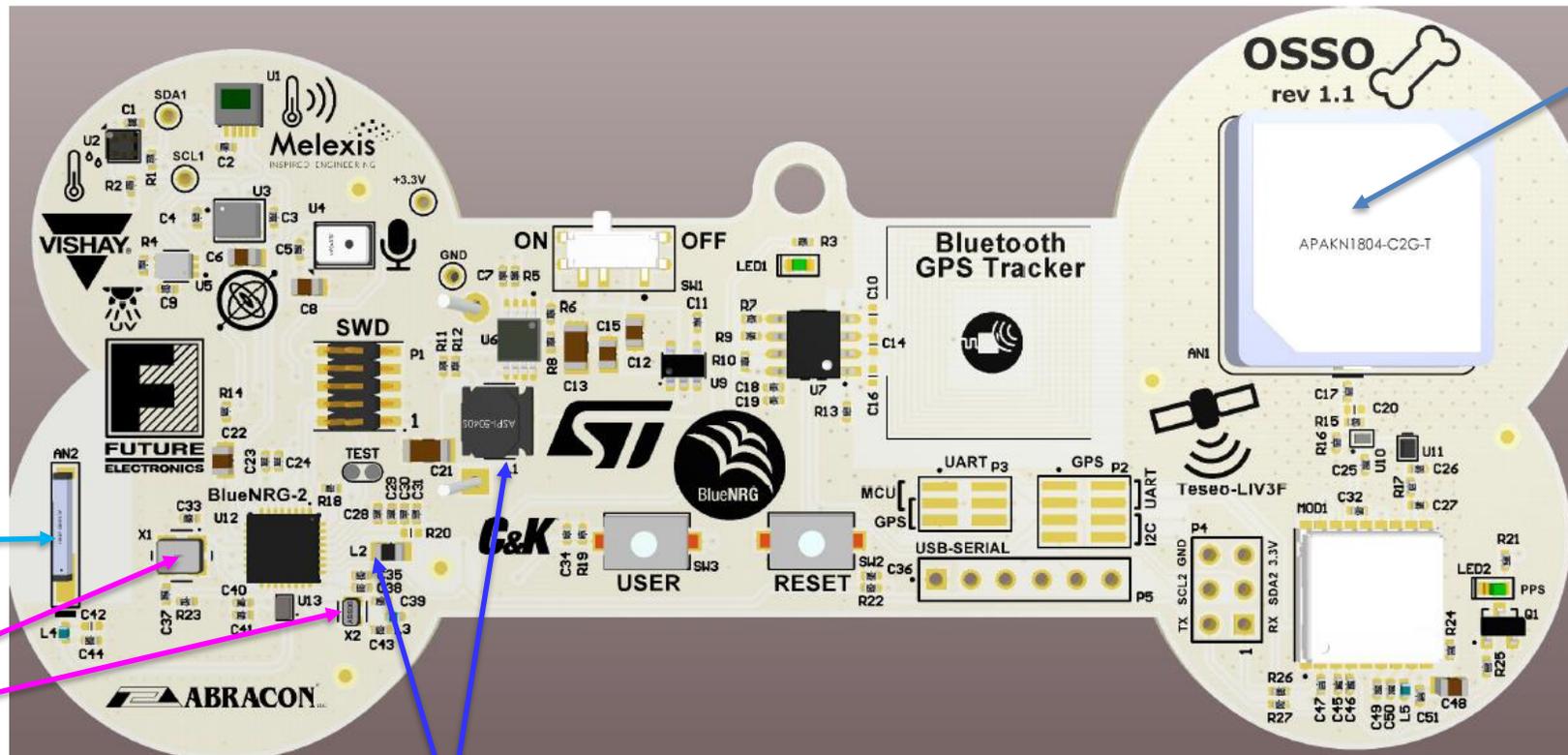
To get more information on the above parts, please click on the OSSO landing page:
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A closer look at OSSO



A closer look at OSSO

GNSS Antenna



Bluetooth System-on-Chip Antenna

Timing Crystal

Inductor

A closer look at OSSO cont'd

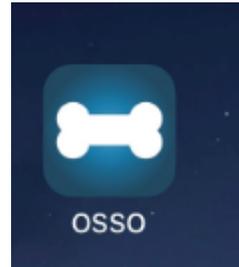
Included in the box:

- OSSO Board
- 2 x AAA batteries
- Scan QR code on label for quick start guide

iOS/Android App Functionalities:

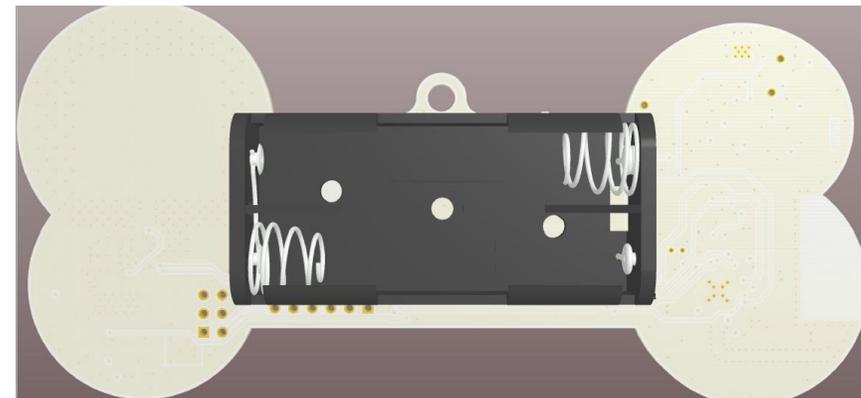
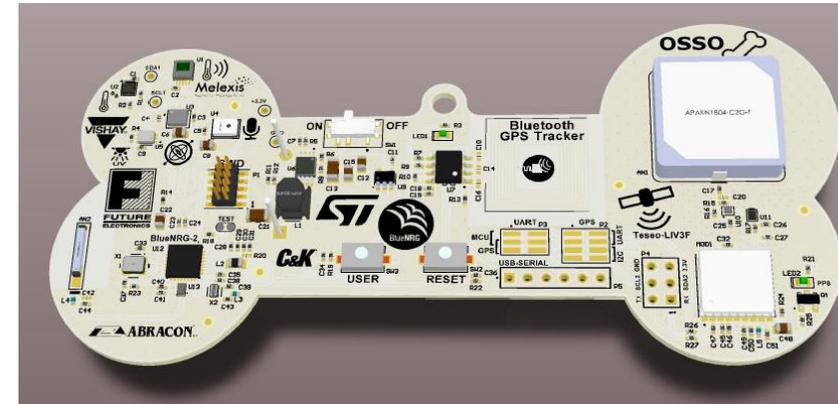
Sensor Demo

1. Environmental demo
2. IR temperature demo
3. Accelerometer demo
4. Microphone demo
5. RSSI and battery demo



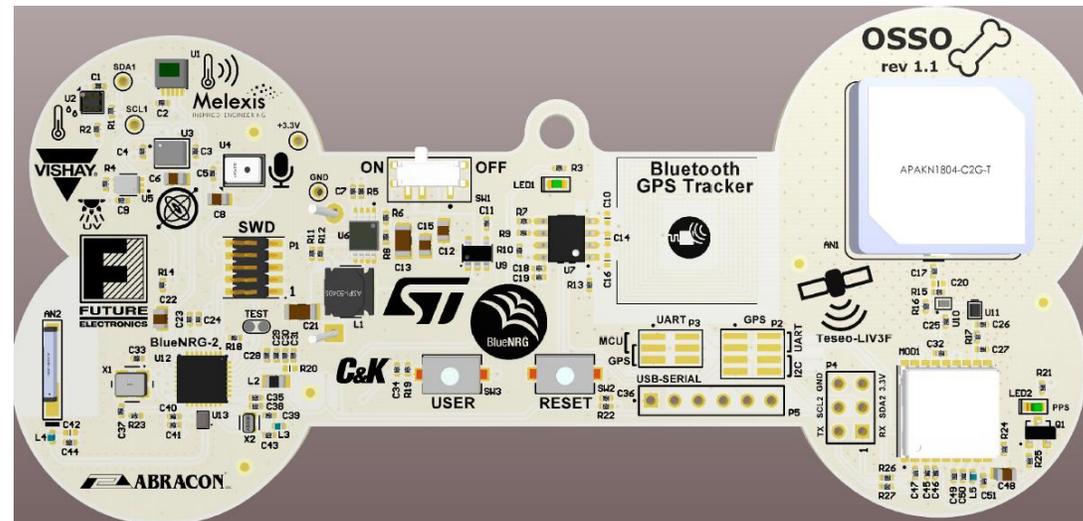
GPS Demo

1. Locate pet demo



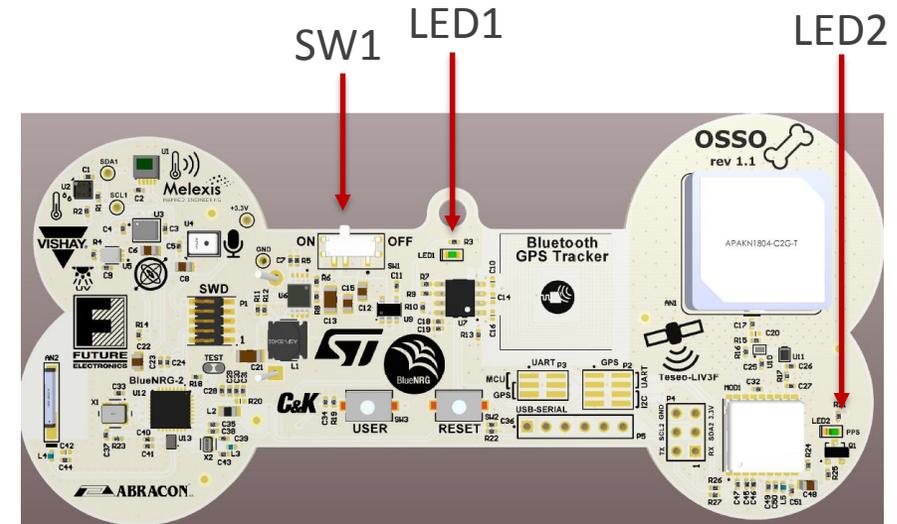
2xAAA

Quick Start Guide



Turning on the OSSO

1. Flip the switch SW1 to the ON position
2. LED1 will turn on solid.
3. Start the App.
4. LED1 and LED2 will start blinking slowly once you have successfully paired with your smart device
5. Blinking LED2 means GPS module is on. It does not mean it has a fix.
6. GPS module is off by default, unless it is connected to a device.
7. LED1 will blink rapidly when a fix is acquired. Please read about GPS Optimization Section.
8. You can run the rest of the demo (temperature, bark count, etc..) without GPS fix
9. Once you finished doing the demo, please **REMOVE** the batteries from the unit.





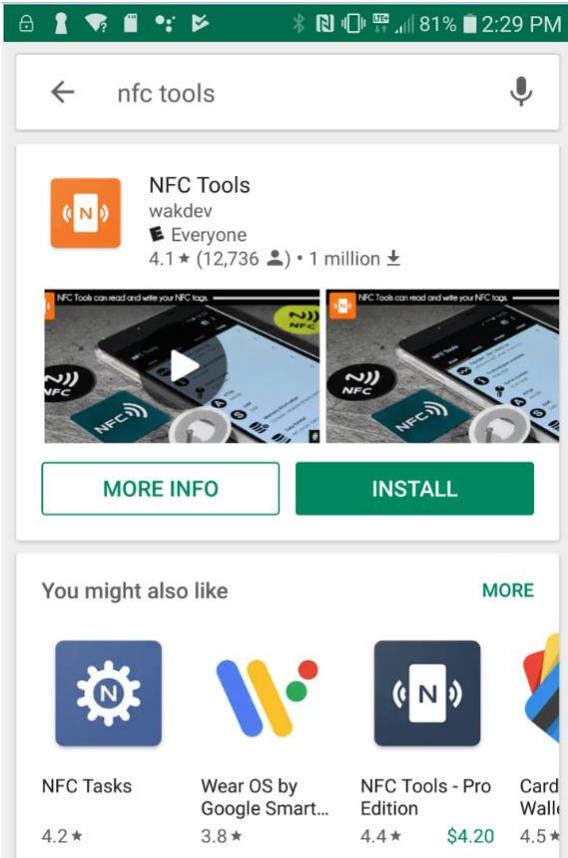
ANDROID

*iOS users can skip the Android section

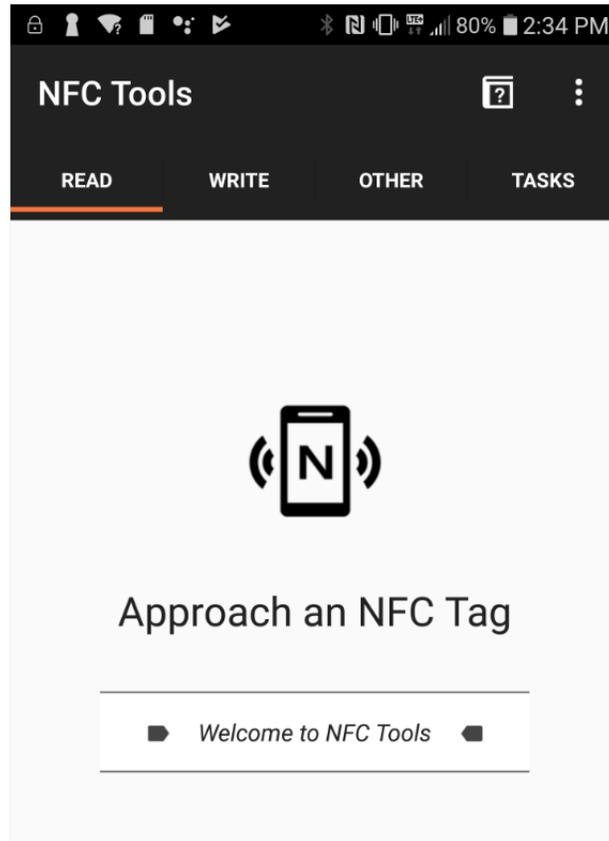


OSSO- Android – NFC Demo*

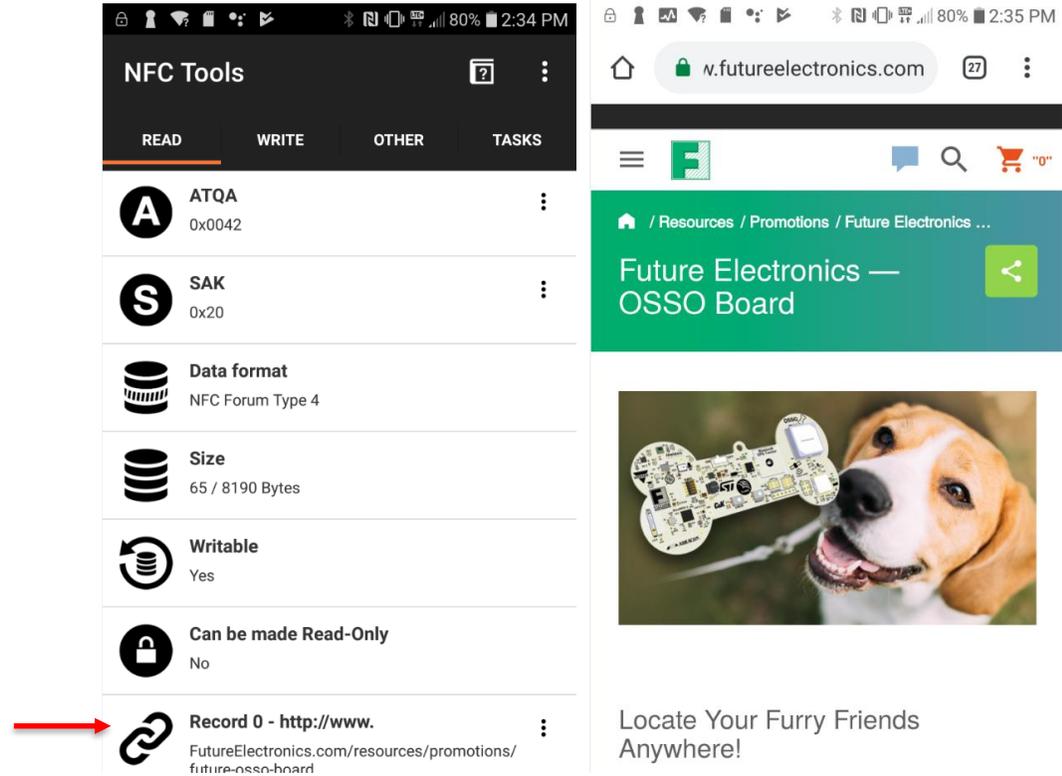
1 Download an “NFC Tool” from the Play Store



2 Ensure your device’s **NFC is turned on**. Open App and tap**.



3 Click on the bottom of the screen to visit the OSSO landing page



*OSSO App not required

**try multiple times in direction directions



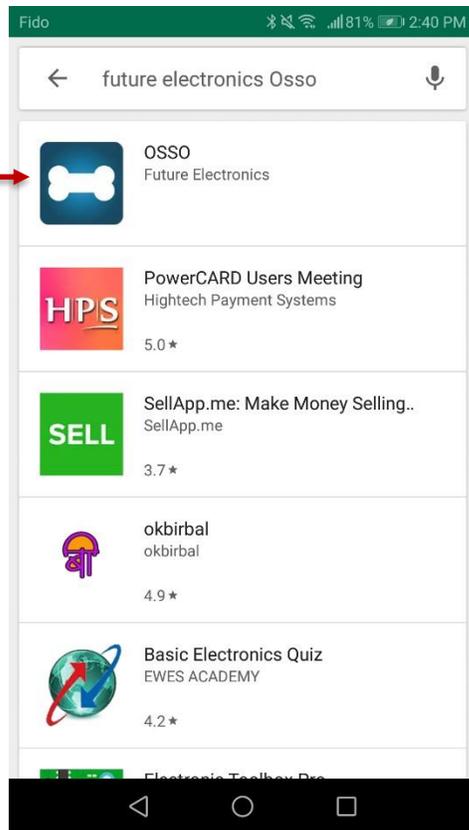
Locate Your Furry Friends Anywhere!



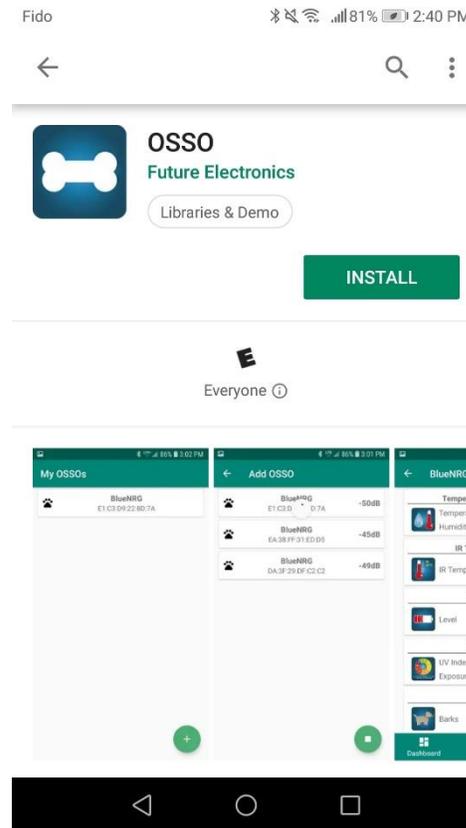


OSSO Android App Quick Start

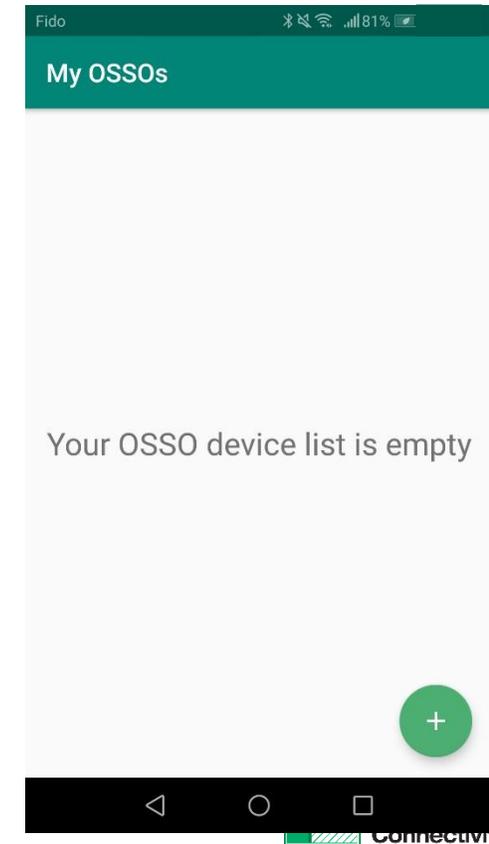
1 Search for “future electronics osso” in Play Store



2 Download the app



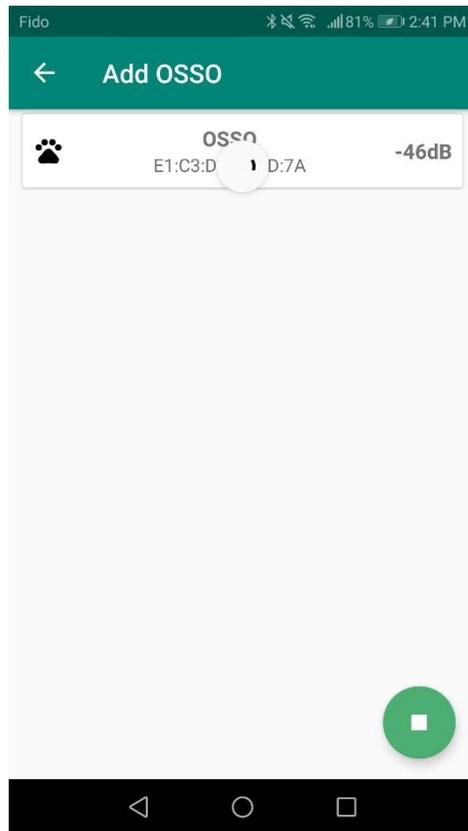
3 Ensure your device's **Bluetooth and GPS are turned on**. Select the “+”



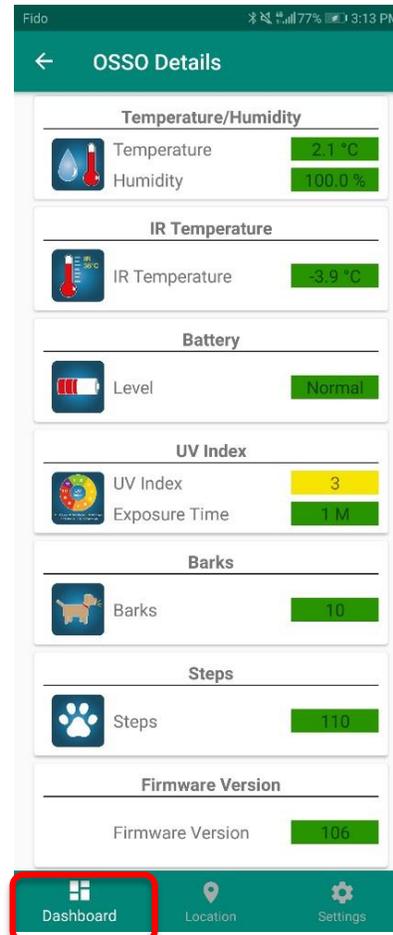


OSSO Android-cont'd

4 Select your OSSO device*



5 Select Dashboard icon to view sensor information



Temperature/Humidity: gives reading for Temperature outside

IR Temperature: gives reading for Temperature of a surface. E.g. put your hand over the sensor

UV index: gives reading for UV
Exposure Time: time spent out in the sun

Barks: displays number of barks

Steps: displays number of steps, need to take a minimum amount of 10 before it is displayed.

*It is known that some Android devices have not been compatible. App unable to find OSSO. Please try another device.

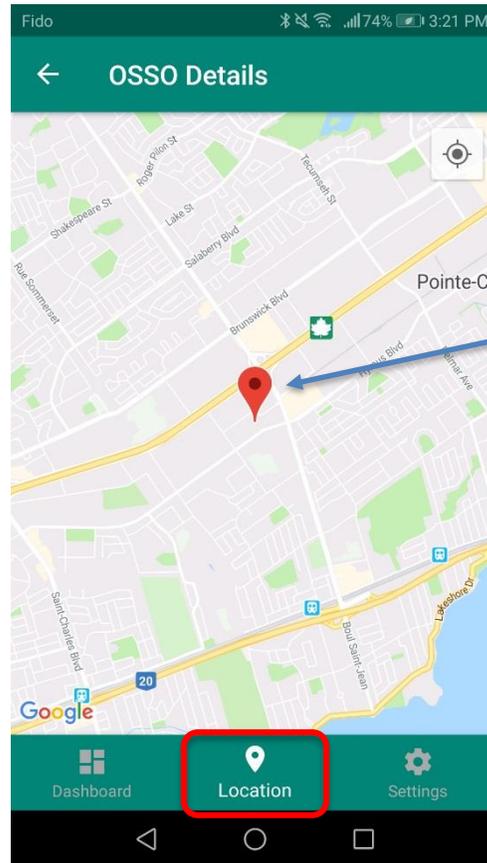


OSSO Android-cont'd

6

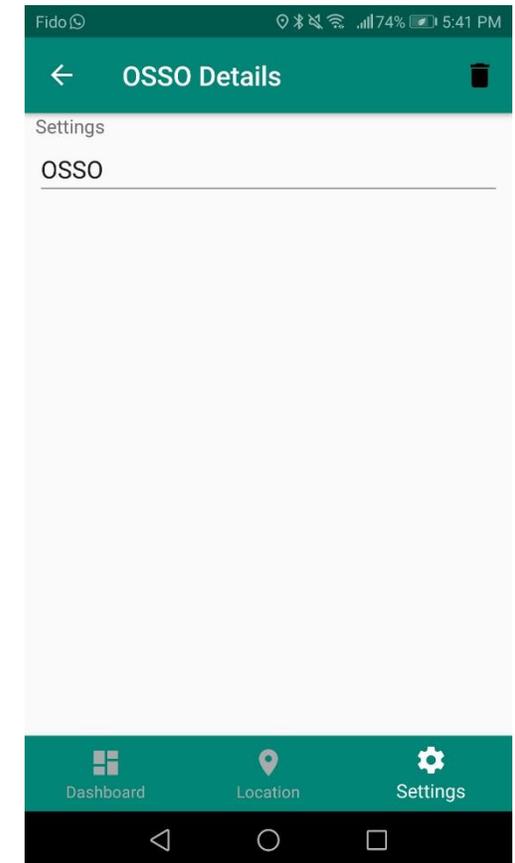
Select Location icon to view GPS information. **Note:** Please note that the GPS will **NOT** receive a fix indoors. The first time to receive a fix may take up to 5 mins

Go outside to get a GPS fix. LED1 will blink rapidly once it acquired a fix. Then you will see marker on map. See GPS Optimization Slide for more details on fixing



Note: you can delete an OSSO board through the settings page, and by selecting the trash icon

Marker





*Android user can skip the iOS section

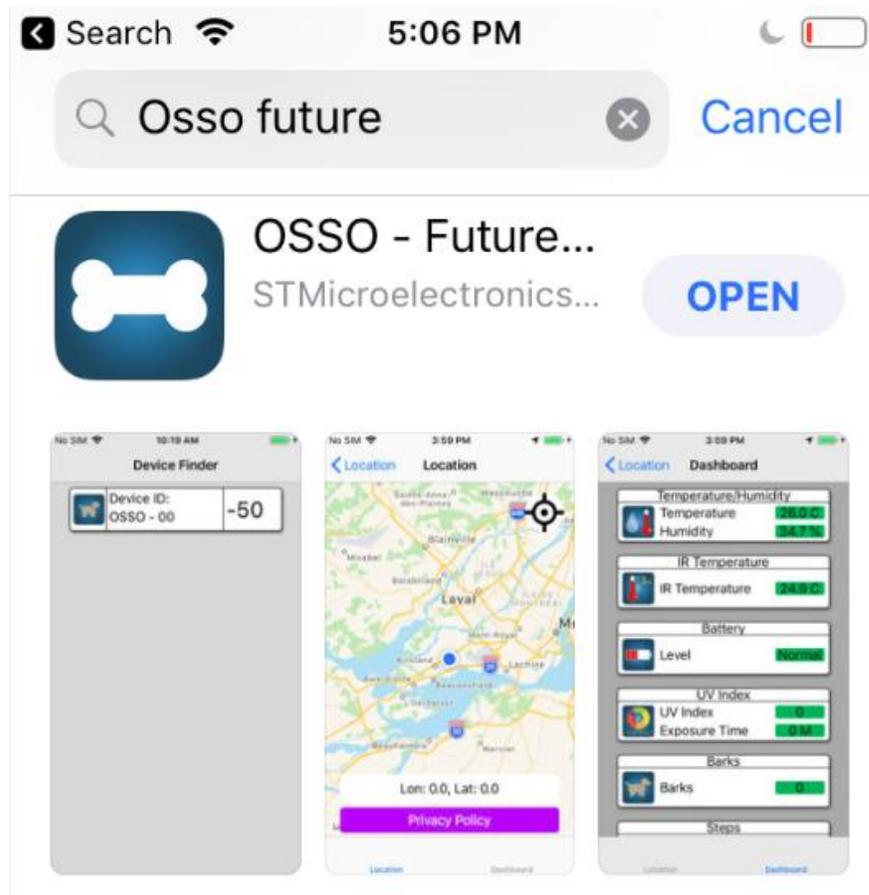


OSSO iOS App Quick Start

1 Search for “osso future” in App Store

2 Download the app

3 Ensure your device’s **Bluetooth is ON** and **GPS are turned OFF**.



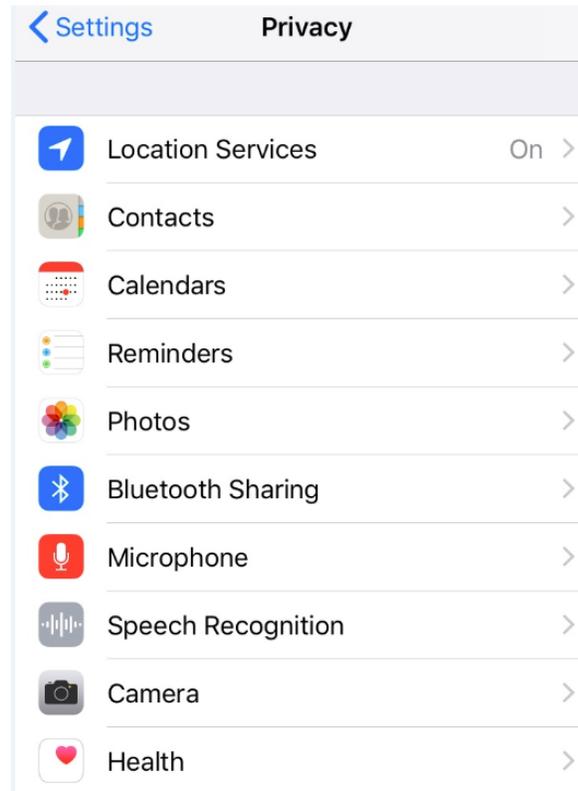


OSSO-iOS

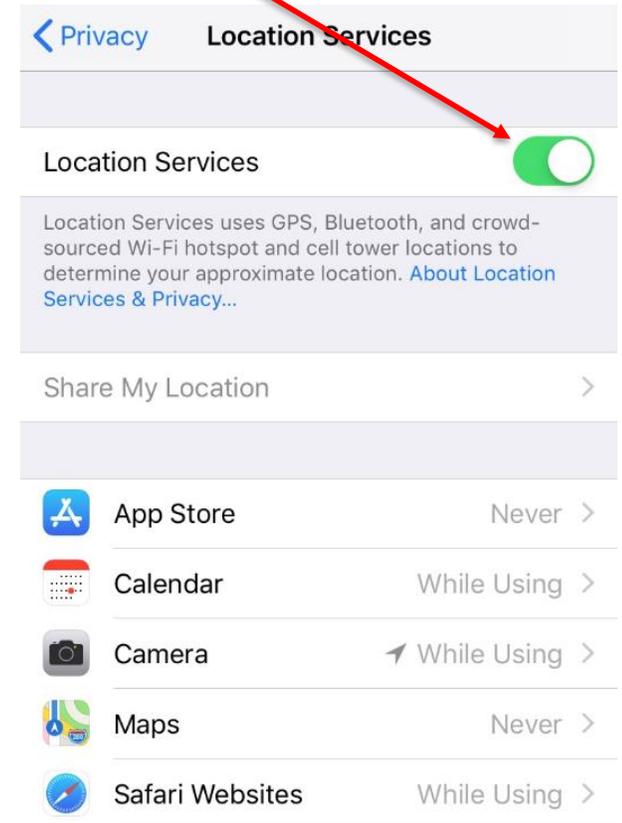
3 Disable GPS on your iPhone.
From Setting, go to Privacy



4 Click on Location Services



5 Turn **off** Location Services





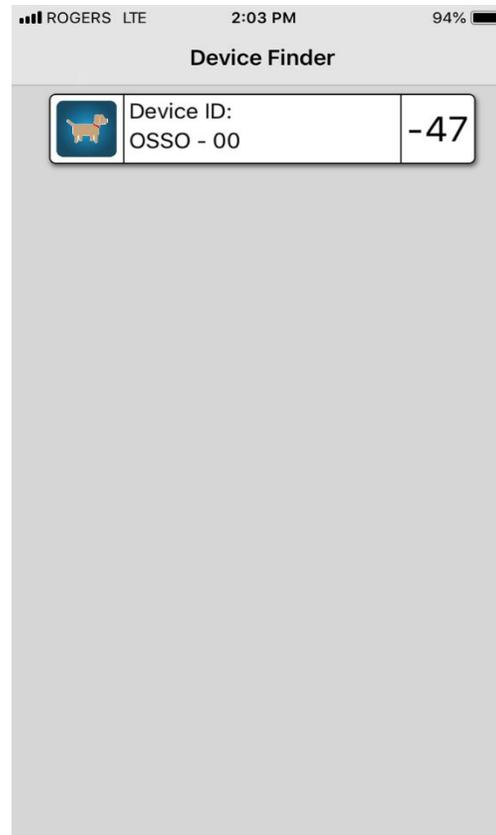
OSSO-iOS

6

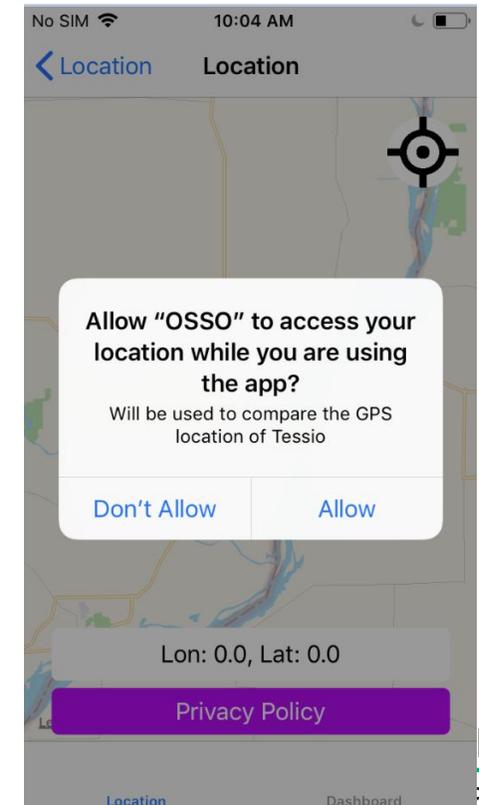
Start the OSSO App

**7**

Ensure your OSSO board and your Bluetooth on your iPhone is turned on. Click in the little dog icon

**8**

In the event that this screen below pops up – hit “Don’t Allow”

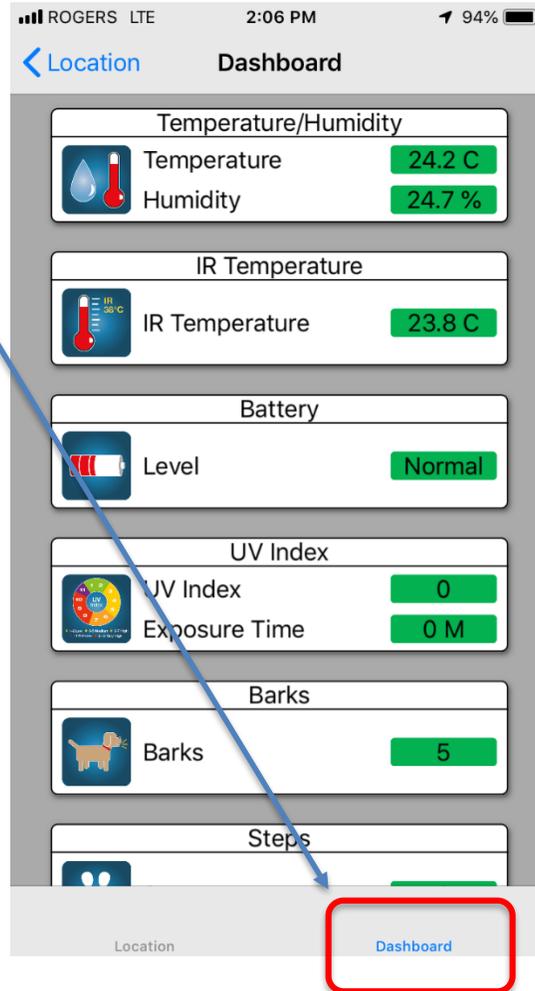




OSSO-iOS-cont'd

8

Select **dashboard tab** to view sensor information



Temperature/Humidity: gives reading for Temperature outside

IR Temperature: gives reading for Temperature of a surface. E.g. put your hand over the sensor

UV index: gives reading for UV
Exposure Time: time spent out in the sun

Barks: displays number of barks

Steps: displays number of steps, need to take a minimum amount of 10 before it is displayed.

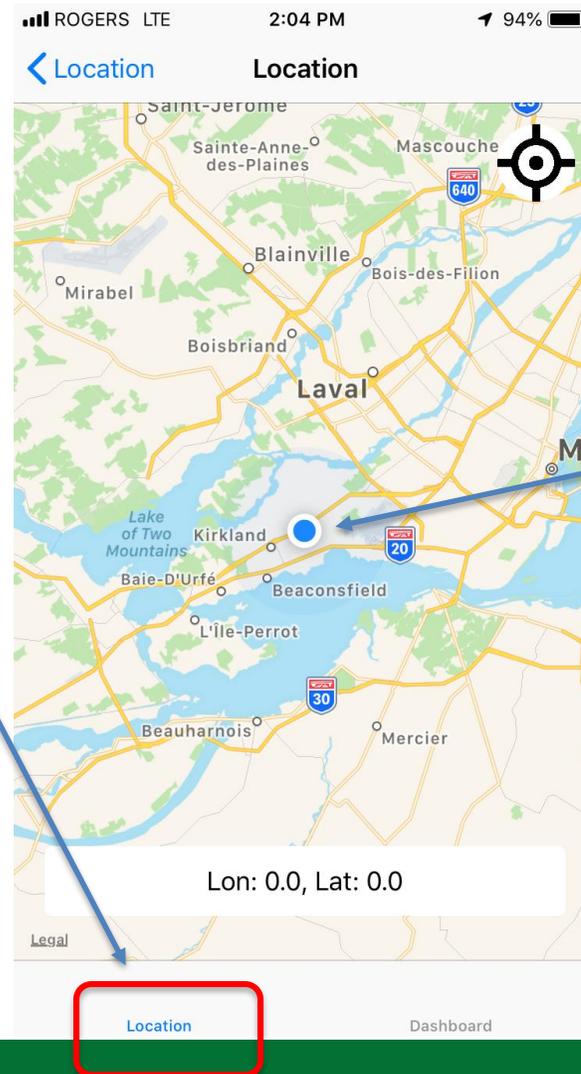


OSSO-iOS-cont'd

5

Select **location tab** to view GPS information. **Note:** Please note that the GPS will **NOT** receive a fix indoors. The first time to receive a fix may take up to 5 mins

Go **outside** to get a GPS fix. LED1 will blink rapidly once it acquires a fix. Then you will see marker on map. See GPS Optimization Slide for more details on fixing.



Marker

If you did not turn off your iPhone GPS, you will get positioning irrespective of the OSSO GPS status since the app will use the GPS Location of your iPhone.



Once you finished doing the demo, please **REMOVE** the batteries from the unit.

This will prevent any shorting potentially caused by the key chain.



GPS Optimization

How to maximize GPS performances?

- **Use outside where an unobstructed view of the sky is achieved**
 - o The antenna has about 120Degree spread on its radiation pattern, it is best if all 120degrees are unobstructed (60degrees on each side)
- When a fix is obtained, the GPS module is likely still renewing its [ephemeris data](#), the longer it runs with satellites in view/used, the more ephemeris data is downloaded and can be used to shorten subsequent fix times
- Waiting a few minutes after a fix before turn off unit helps for most recent ephemeris info to be downloaded
- If the module has recent history of use it will tend to react and get a fix more quickly

Can I use the GPS inside close to a window?

- **Using the GPS indoors is not recommended at all and known to not perform very well at all**

Special GPS Test Mode

This mode allows User to turn on the GPS module without the App. The GPS will attempt to acquire a fix.

1. Flip switch SW1 to ON
2. LED1 will turn on solid
3. Hold User button of 4 seconds
4. LED1 and LED2 will start blinking slowly
5. Go outside under a clear blue sky
6. LED1 will blink rapidly once a fix is acquired.
7. Leave it on for the next 10-15 mins to gather more ephemeris data. This will help shorten subsequent fix times

Reset button resets GPS and MCU
but any ephemeris info still
remains in non-volatile memory.

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