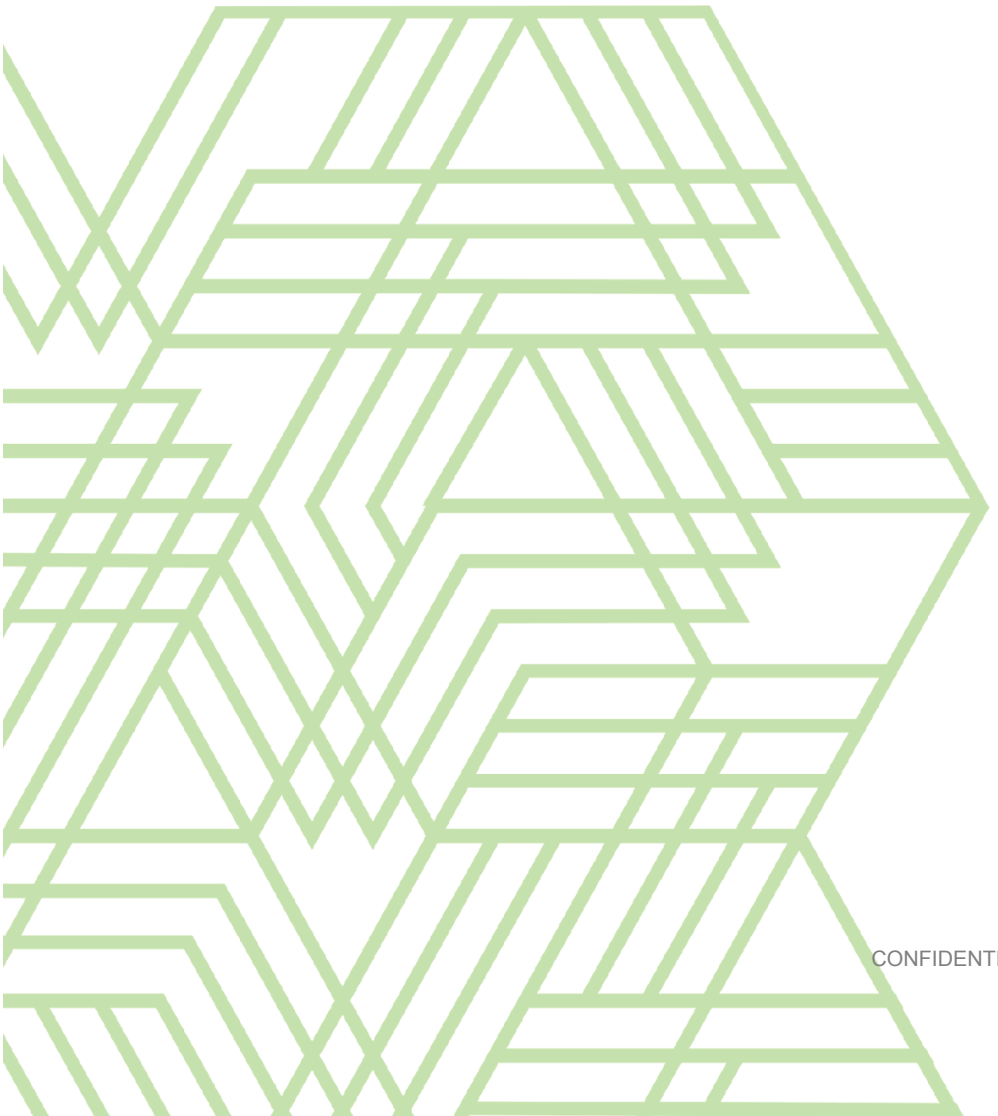
DevTools Mobile App

User Guide

SUMMARY: This document provides instructions on how to operate the Atmosic DevTools Mobile Apps for Android and iOS.



Atmosic™

CONFIDENTIAL | Public DevTools Mobile Apps User Guide
May 21, 2024
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Acronyms and Abbreviations

Acronyms	Definition
EVK	Evaluation Kit
SDK	Software Development Kit

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1. Overview

This document provides instructions on how to operate the Atmosic DevTools Mobile Apps, which are intended to be used with Atmosic-based EVKs, reference designs, and customer products. Not all devices will support all the features in the Apps. For more information about any of the EVKs or reference designs mentioned in this document, please submit a support request to Atmosic. Refer to the latest Atmosic DevTools release notes for a list of supported reference design boards.

2. Hardware and Software Requirements

2.1 Supported EVK

There are multiple versions of the ATM2/ATM3/ATM33/ATM34 EVKs based on the specific device and package configuration. See Table 1.

EVK	SoC Package	SoC Part Number	Kit Part Number
Evaluation Kit for ATM2202	40-pin 5x5 mm QFN	ATM2202SR	ATMEVK-M2202-02
Evaluation Kit for ATM2221	64-pin 6x6 mm DR_QFN	ATM2221SR	ATMEVK-M2221-02
Evaluation Kit for ATM2251	37L WLCP	ATM2251SR	ATMEVK-M2251-01
Evaluation Kit for ATM3201	40-pin 5x5 mm QFN	ATM3201SR	ATMEVK-M3201-02
Evaluation Kit for ATM3202	40-pin 5x5 mm QFN	ATM3202SR	ATMEVK-M3202-02
Evaluation Kit for ATM3221	64-pin 6x6 mm DR_QFN	ATM3221SR	ATMEVK-M3221-02
Evaluation Kit for ATM3325	40-pin 5x5 mm QFN	ATM3325-5DCAQK	ATMEVK-3325-QK
Evaluation Kit for ATM3325 with Extended Storage	40-pin 5x5 mm QFN	ATM3325-5LCAQK	ATMEVK-3325-LQK
Evaluation Kit for ATM3325 WLCSP	49L WLCSP	ATM3325-5DCACM	ATMEVK-3325-CM
Evaluation Kit for ATM3330	56-pin 7x7 mm QFN	ATM3330-5DCAQN	ATMEVK-3330-QN
Evaluation Kit for ATM3330e	56-pin 7x7 mm QFN	ATM3330E-5DCAQN	ATMEVK-3330E-QN

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Evaluation Kit for ATM3405	40-pin 5x5 mm QFN	ATM3405-2PCAQK	ATMEVK-3405-PQK
Evaluation Kit for ATM3425	40-pin 5x5 mm QFN	ATM3425-2PCAQK	ATMEVK-3425-PQK
Evaluation Kit for ATM3430e	56-pin 7x7 mm QFN	ATM3430E-2WCAQN	ATMEVK-3430e-WQN

Table 1 - Supported ATM2/ATM3/ATM33 SoCs and EVKs

2.2 Supported SDK

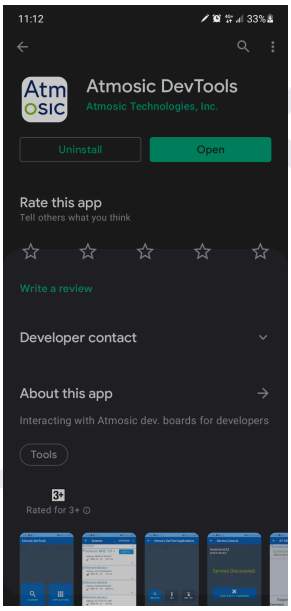
The Atmosic SDK 5.3.0 or later, PV Beacon application can be used with the DevTools App. to demonstrate the use.

3. DevTools Apps Usage

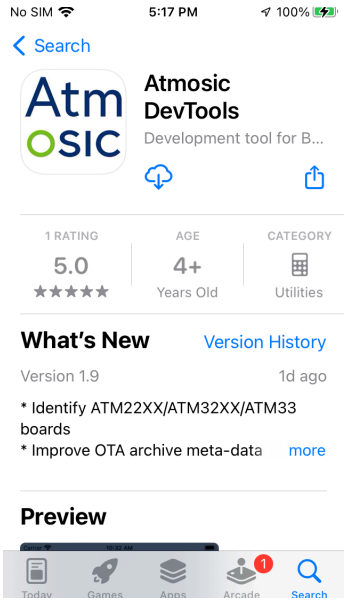
3.1 Installation

Download and install the Atmosic DevTools App for Android or iOS from Google Play or Apple's App Store, respectively.

See Figure 1.



Atmosic DevTools App for Android



Atmosic DevTools App for iOS

Figure 1 - Atmosic DevTools Apps

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3.2 Search Nearby Bluetooth LE Devices

After installing and launching the Apps, there are two entries for finding the Bluetooth LE devices nearby as shown in Figure 2.

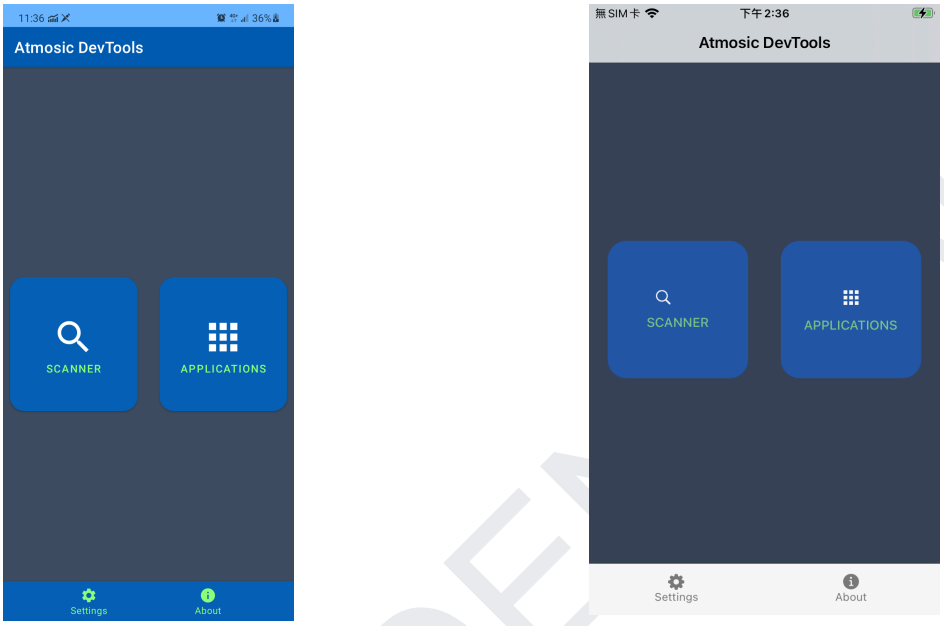

Figure 2 - Search Nearby Bluetooth LE Devices by Classification

Enter the SCANNER page to find all Bluetooth LE devices nearby without filtering the device applications.

Enter the APPLICATIONS page to find and filter only Atmosic devices advertising special packets for classifying the applications from different firmware (FW) configurations as shown in Figure 3. These features are supported by Atmosic EVKs running Software Development Kit (SDK) version 5.3.0 or later.

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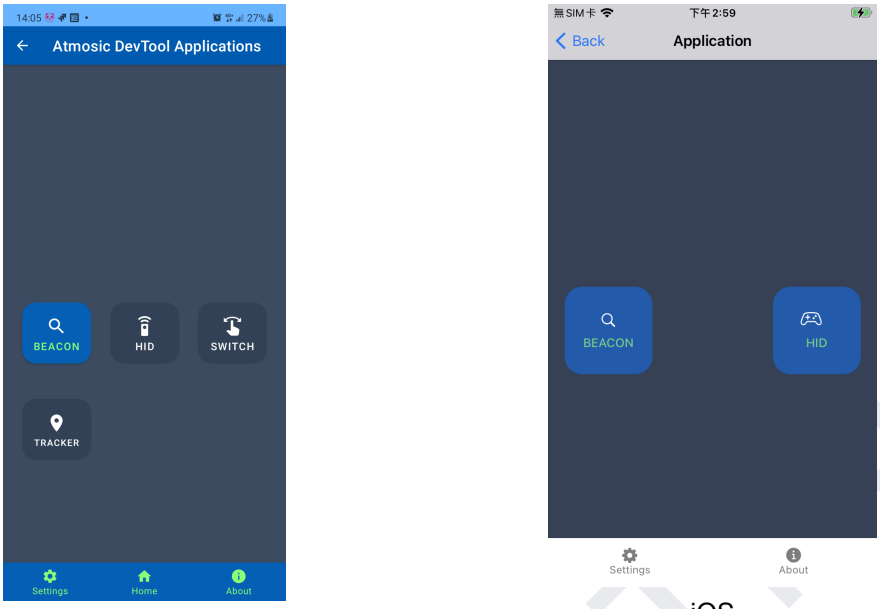
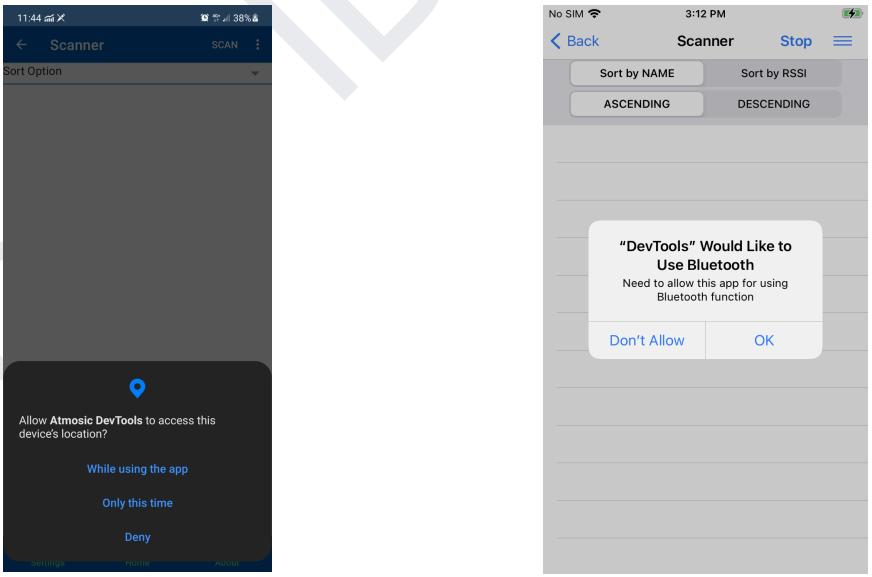


Android iOS

Figure 3 - Atmosic FW Applications

When entering the SCANNER page the first time, the OS will ask for permission to access the device's location to discover the devices nearby, as shown in Figure 4.



Android iOS

Figure 4 - Grant the Permission to Access Location

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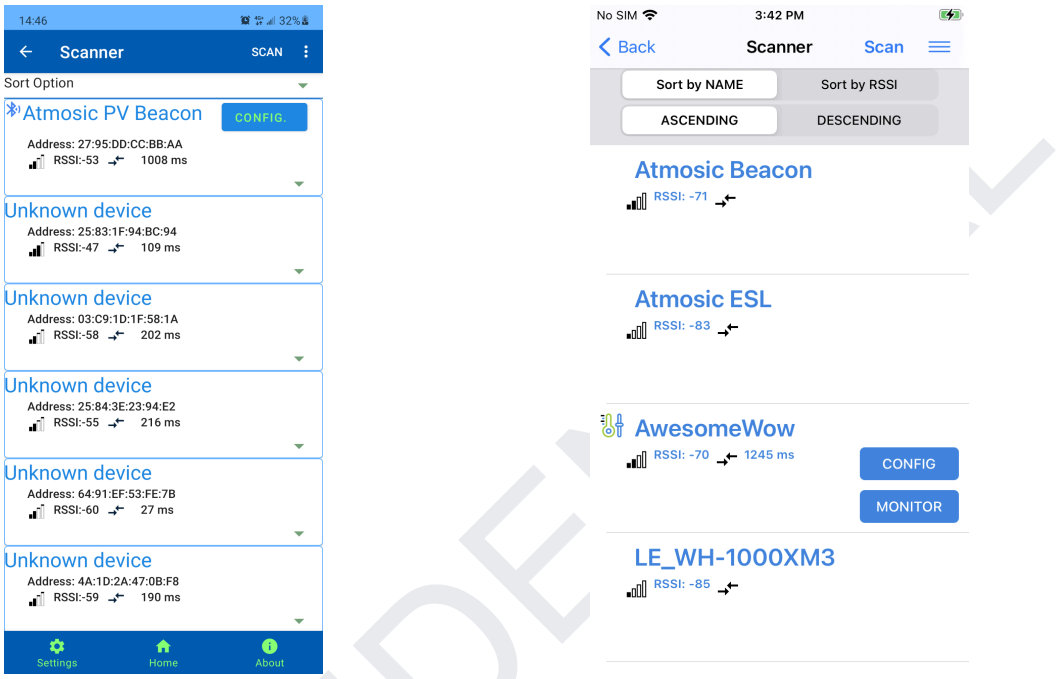
After granting permission, clicking the SCAN button on the upper right corner will trigger device discovery. The devices discovered will be listed in the list view as shown in Figure 5. Click on the device item will lead to another page for connecting to the device and listing available services.



Android iOS

Figure 5 - Show Discovered Devices

If desired devices are not listed, go to the Settings to change the scanning RSSI threshold and scanning period as shown in Figure 6, then repeat the process.

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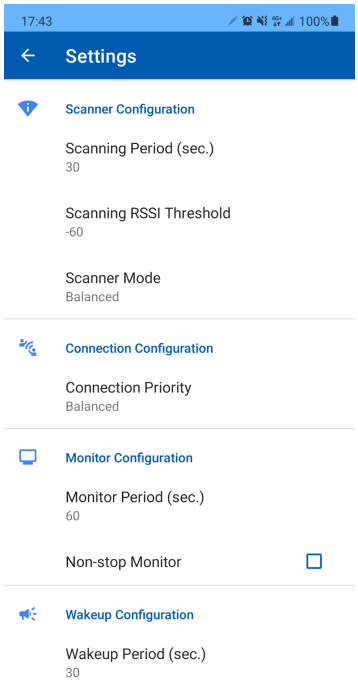
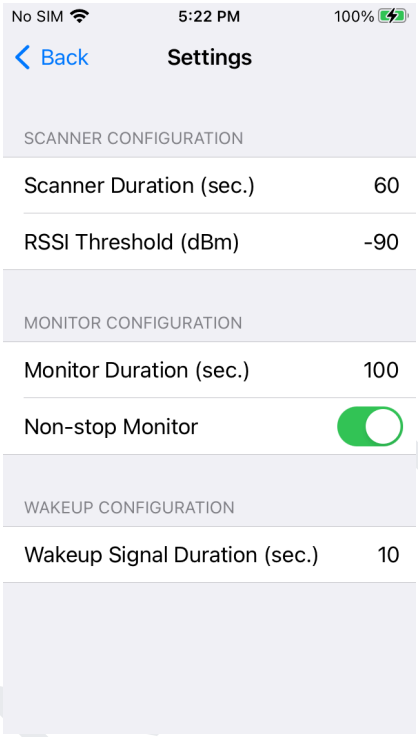


Android



iOS

Figure 6 - Scanner Configuration

3.3 Wake Up Nearby Wakeup Receivers

To experiment with the wake-up feature with the Atmosic EVKs configured with Wakeup Receivers, you may find the Wake Up option in the menu bar on the Scanner page to generate signals to wake up the configured devices nearby as shown in Figure 7.

For details about how to configure the Wakeup Receivers, please refer to the **On Demand Wakeup Application Note**.

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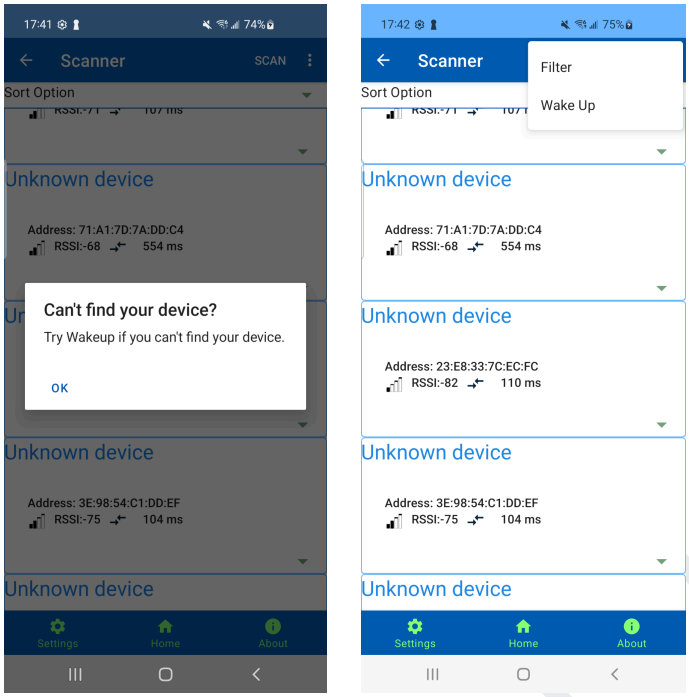

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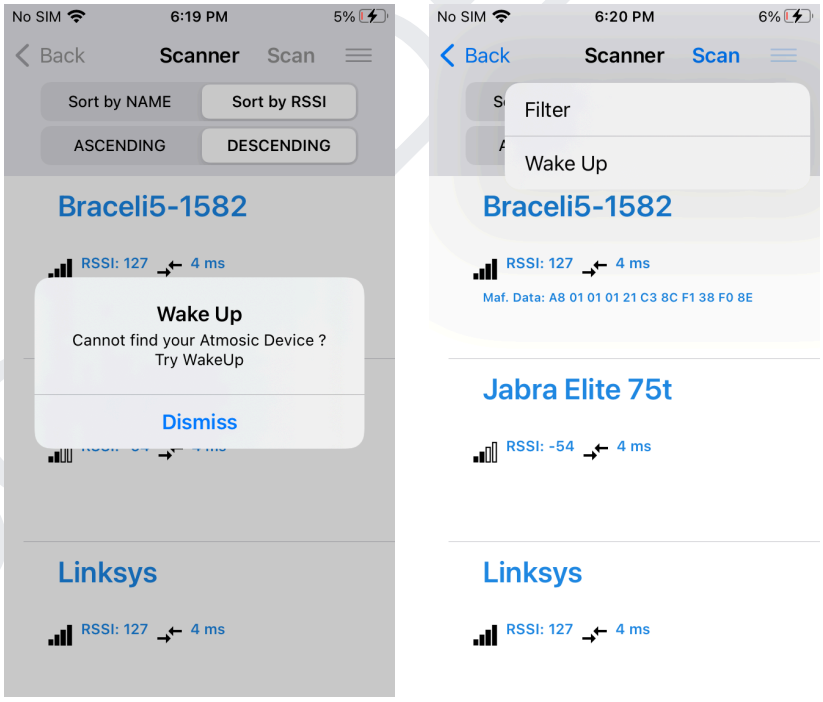

iOS

Figure 7 - Wake Up Nearby Wakeup Receivers

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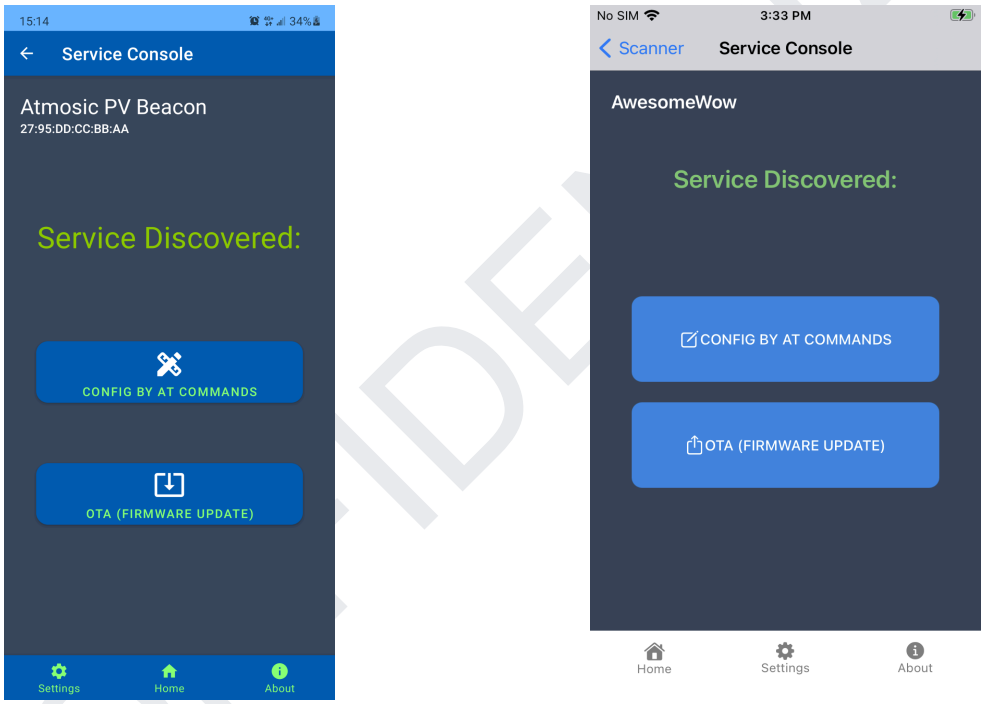
3.4 Check Available Services

After clicking a device item from the list view of the `Scanner` page, the `Service Console` page will connect to the device and list available services. The page will only display the Atmosic supported services, other services from other vendors will not be displayed even if it's connected with the Apps unless enabled by the vendors. Currently, the App supports four services, AT Command Configuration, Over the Air (OTA) Firmware Update, Blinky, and ZRC BLE Combo. A firmware example with two services as shown in Figure 8. For additional information and to learn how to install these services, please refer to the *AT Command User Guide* or *OTA Update User Guide*.



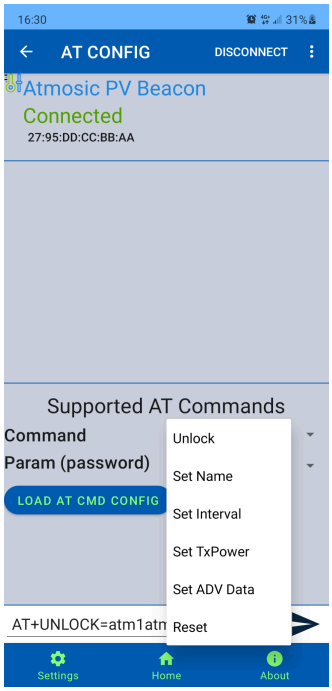
Android iOS

Figure 8 - Show Discovered Services

3.5 AT Command Configuration

Some of the parameters can be tuned and changed from the Apps without modifying the FW code and re-flashing the device. Supported configurations can be selected via the Command box shown in Figure 9.

In order to configure and apply the changes, send the `Unlock` command first so that FW will unlock for accepting incoming configuration. After making any changes, send the `Reset` command to boot the FW with the new configuration as shown in Figure 10.



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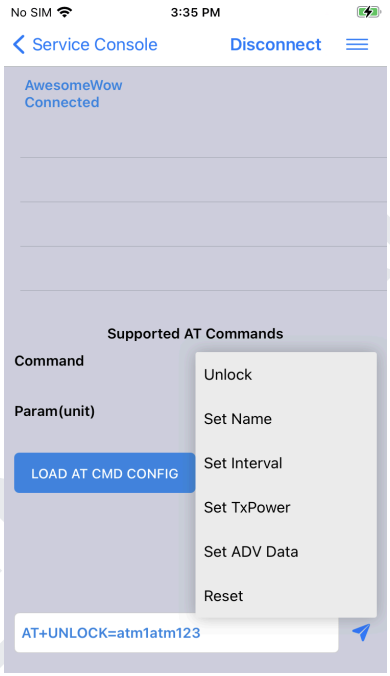

iOS

Figure 9 - Available Configurations

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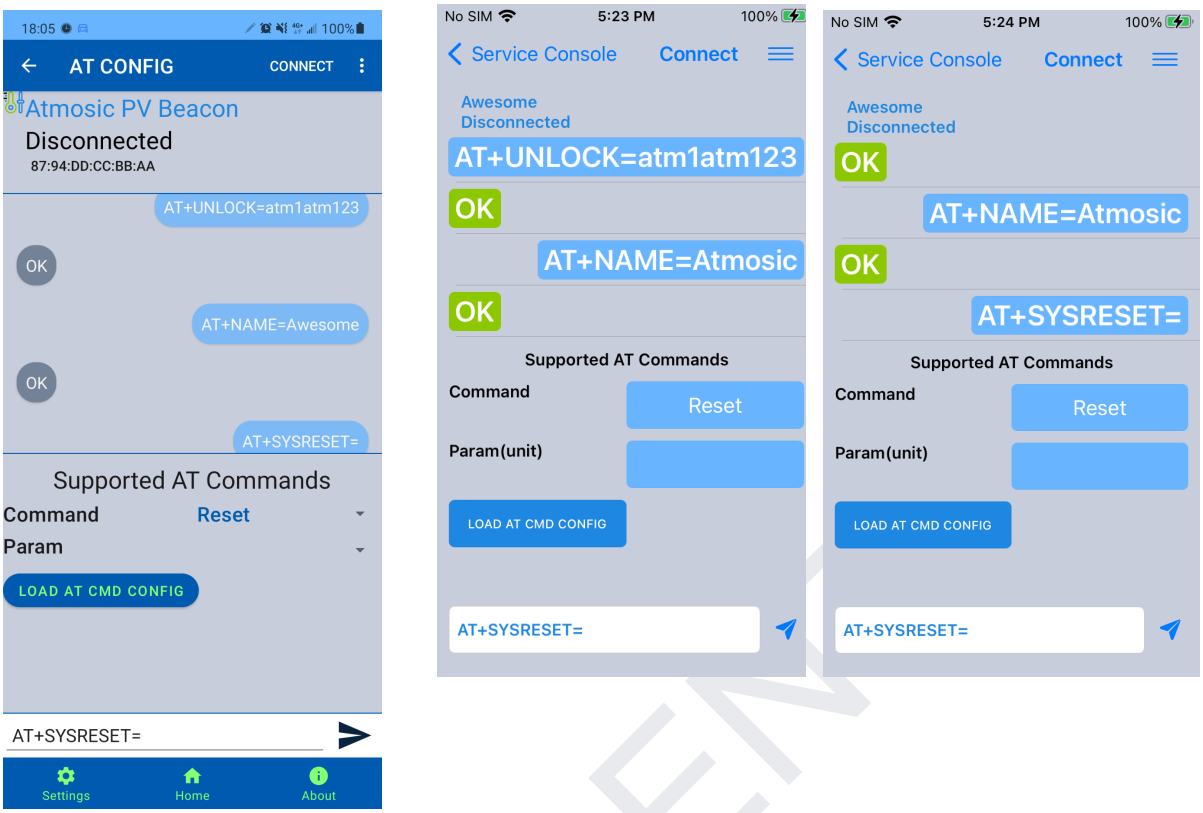

Android iOS

Figure 10 - Unlock, Tune, and Reset

Setting the name and ADV data with arbitrary input of 31 characters at maximum. Tx Power tuning is limited to a few selections as shown in Figure 11. For changes to take effect, the `Reset` command must be sent as the last step.

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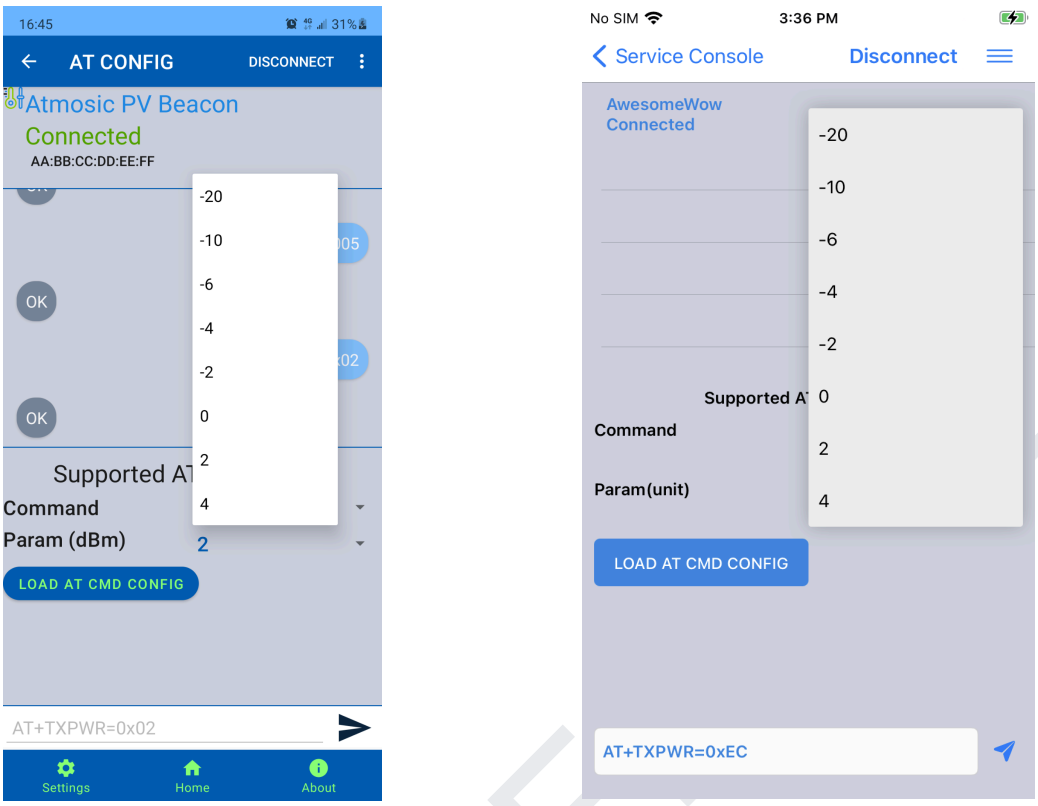

Figure 11 - Limitation for Tx Power Tuning

The command the user sends is on the right upper-half of the list view, the connected Bluetooth device's response will be shown on the left side. The bottom text box is for tuning the predefined parameters. The bottom right arrow button is for triggering the message to be sent.

The AT command set can be extended as developers have implemented new commands to the connected Bluetooth device. To be able to experiment with the commands, developers need to create and edit the *.xml file following the format as described below, then load it from the `LOAD AT CMD CONFIG` button.

Add a <entry> tag for describing the new command content, the <command> tag is the AT command header, the <desc> tag is the purpose of the command, the <unit> tag is for describing the <param>, and can be with an empty value, the <param> tag is the pre-defined parameter for fine-tuning and can be multiple elements under the same <entry> or just empty.

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```xml
<?xml version="1.0" encoding="utf-8"?>
<ATCommands>
    <entry>
        <command>AT+UNLOCK=</command>
        <desc>Unlock</desc>
        <unit>(password)</unit>
        <param>atm1atm123</param>
    </entry>
    <entry>
        <command>AT+NAME=</command>
        <desc>Set Name</desc>
        <unit>(Name)</unit>
        <param>Awesome</param>
        <param>Atmosic</param>
    </entry>
    <entry>
        <command>AT+ADVINT=</command>
        <desc>Set Interval</desc>
        <unit>(ms)</unit>
        <param>2000</param>
        <param>4000</param>
    </entry>
    <entry>
        <command>AT+TXPWR=</command>
        <desc>Set TxPower</desc>
        <unit>(dBm)</unit>
        <param>-20</param>
        <param>-10</param>
        <param>-6</param>
        <param>-4</param>
        <param>-2</param>
        <param>0</param>
        <param>2</param>
        <param>4</param>
    </entry>
    <entry>
        <command>AT+ADVDATA=</command>
        <desc>Set ADV Data</desc>
        <unit>(hex)</unit>
        <param></param>
    </entry>
    <entry>
        <command>AT+SYSRESET=</command>
        <desc>Reset</desc>
        <unit></unit>
        <param></param>
    </entry>
</ATCommands>
```

3.6 Firmware Upgrade OTA

The device can be upgraded with a new firmware archive file (*.atm). Please refer to the **SDK User Guide**, section 4.2 **build_archive** for generating the *.atm file. Place the firmware *.atm file to the mobile phone's user storage first, then on the OTA page, the user can click on `OPEN FILE` to open the system's file browser to select the file from the storage path as shown in Figure 12.

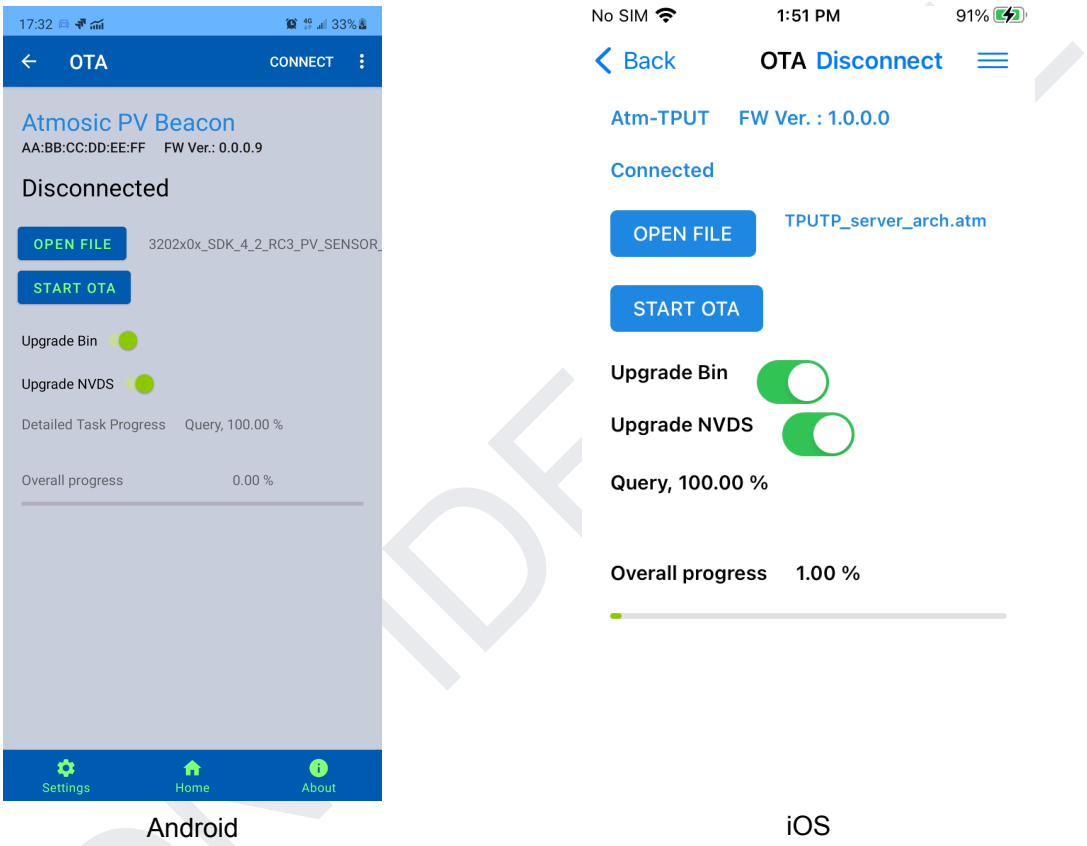

Figure 12 - Select File on the OTA Page

After selecting the file, clicking `START OTA` will trigger the upgrade process automatically. The progress will be shown at the bottom. The detailed task progress is for the developer to observe the state of the OTA procedure.

Once the upgrade process is completed, a `Firmware Updated Successfully` message will pop up. The FW version on the screen will reflect the new version if a different image is loaded. The Apps will request the FW to reboot in normal mode and get disconnected as shown in Figure 13.

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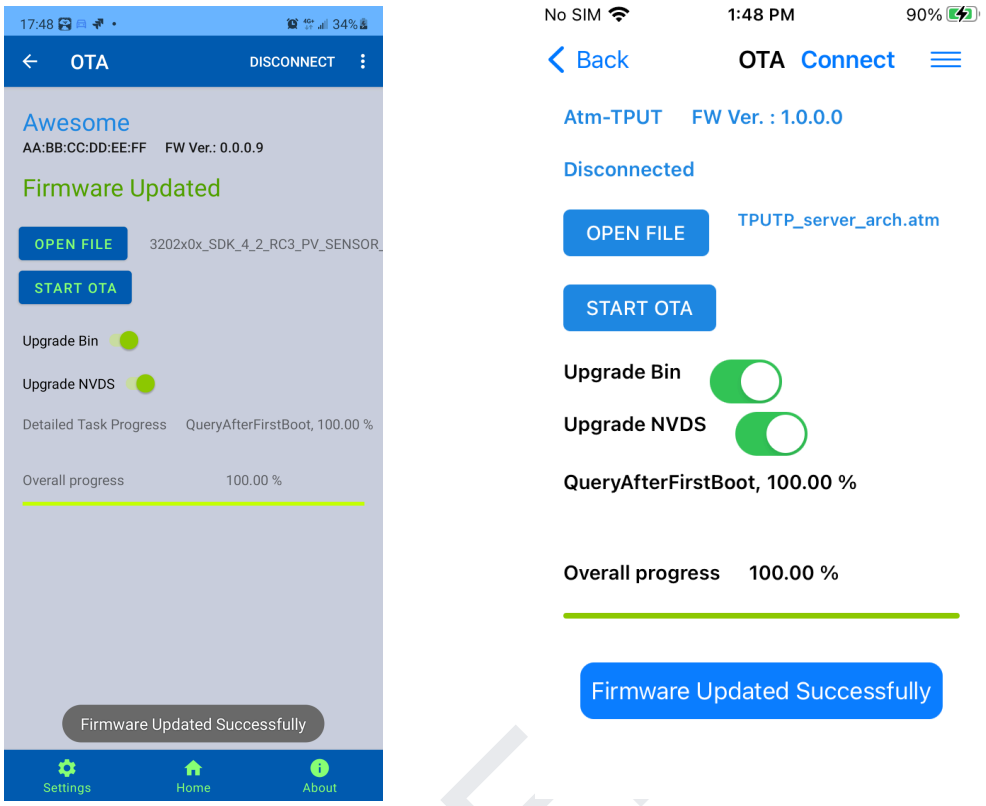

Android iOS

Figure 13 - Firmware Updated Successfully

3.7 Monitor Sensor Data Change

The App supports monitoring sensor data present on the device. This feature is illustrated using the PV Beacon reference design board with sensors based on ATM2/ATM3 and BLE Beacon and BLE_attserver examples. Please refer to the PV Beacon User Guide for more information about the board setting.

The Atmosic PV Beacon reference design is equipped with sensors (Temperature, Humidity, and Accelerometer) that monitor the sensor data periodically. It requires the PV Beacon application to enable the sensors (ens210 and lis3dh) on the reference design board. Once the Apps scan and discover the PV Beacon device, they display the `MONITOR` button along with the `CONFIG` button on the `Scanner` page as shown in Figure 14.

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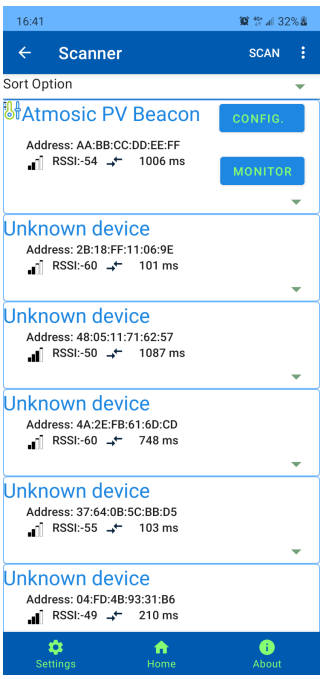
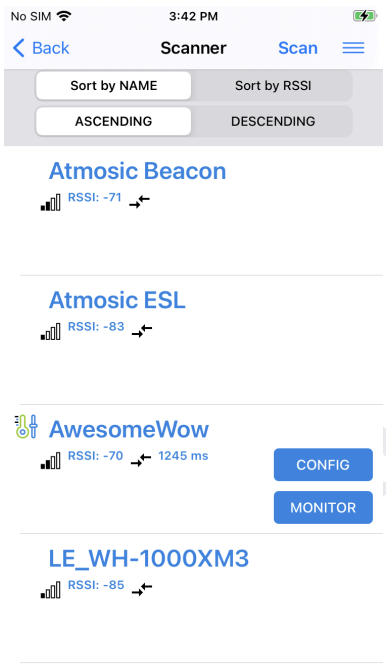


Android



iOS

Figure 14 - MONITOR Button Present

Clicking on the `MONITOR` button will load the `Sensor Monitor` page. It displays temperature, humidity, and acceleration data, and plots the changes as shown in Figure 15. Moving the device to a warmer or colder location or changing the orientation, the sensor data will reflect the changes. In addition, it also displays the RSSI value.

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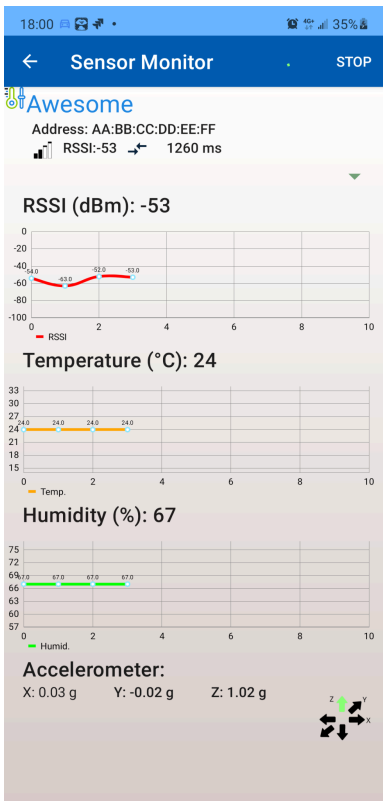
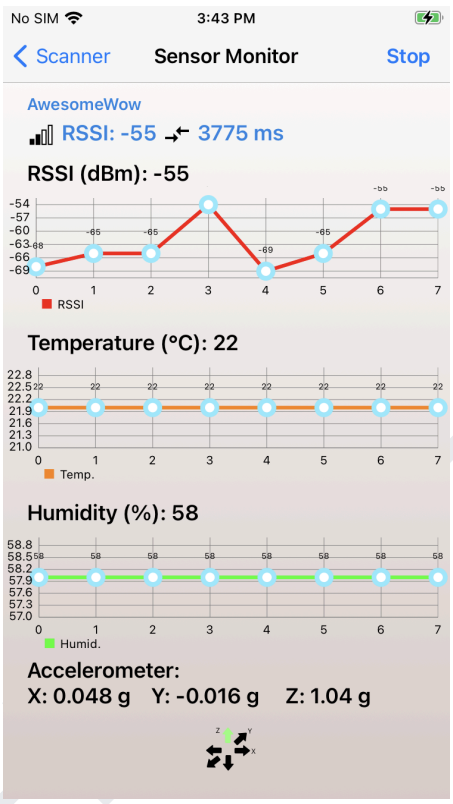


Android



iOS

Figure 15 - Plot Sensor Data

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3.8 Blinky Demo

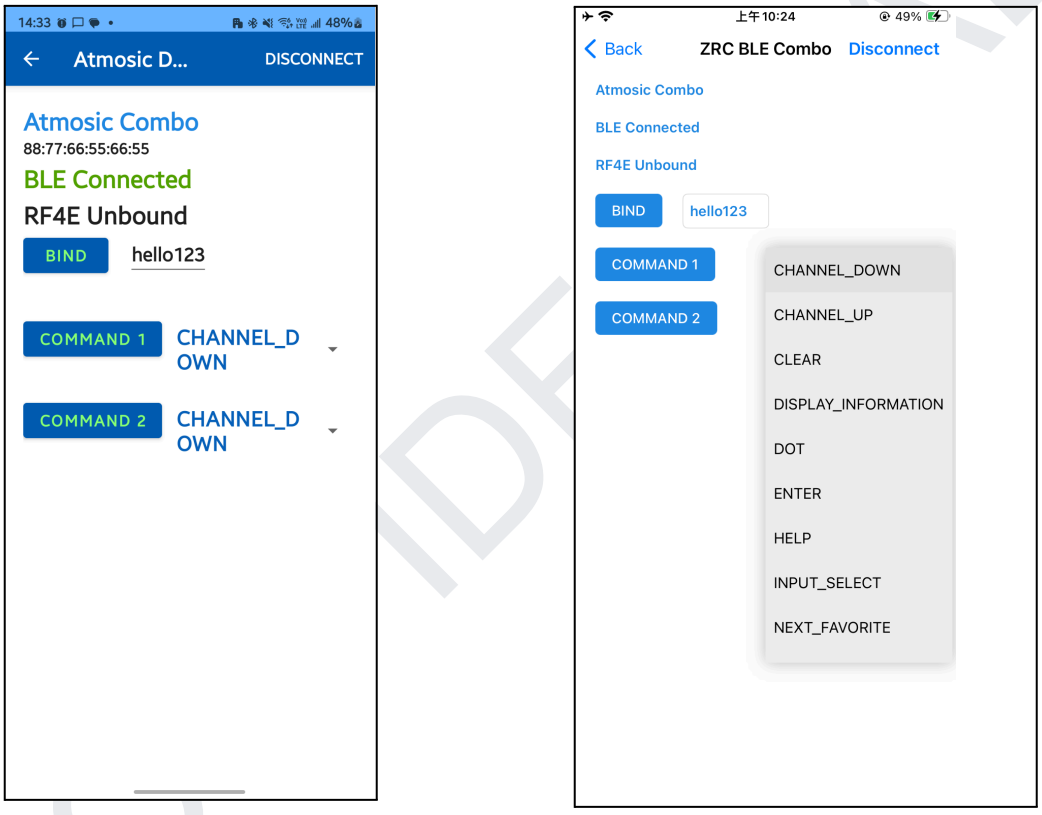
The App supports interacting with the LEDs and buttons on the EVK to demo the basic GPIO control as shown in Figure 16. Toggling the LED 0/1 buttons will turn on/off the respective LEDs on the EVK. Clicking on the clicky buttons on the EVKs will reflect events by popping up messages. Please refer to the user guides of corresponding EVKs for more information about the board configuration to get the LEDs and buttons to work.

Android iOS

Figure 16 - Blinky Demo

3.9 ZRC BLE Combo Demo

The ZRC_remote of Atmosic SDK demos the RF4CE remote control functionalities over the RF4CE network. We can configure more settings via the application using the BLE network before establishing the RF4CE network as shown in Figure 17. Click on the BIND button to bind with the ZRC module. After the successful binding, use the COMMAND 1/2 to send the selected key codes. The corresponding key events will be able to be observed from the emulator tool.



Android iOS

Figure 17 - ZRC BLE Combo Demo

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Revision History

Date	Version	Description
May 21, 2024	0.70	Added sections 3.8 Blinky Demo and 3.9 ZRC BLE Combo Demo.
August 31, 2023	0.60	Added support for iOS; Table 1 - Supported ATM2/ATM3/ATM33 SoCs and EVKs. Added changed title to DevTools Mobile Apps User Guide
March 7, 2022	0.50	Initial version created.

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