Cypress BLE-Beacon Android App User Guide

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Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709
http://www.cypress.com

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1. Introduction

Cypress® BLE-Beacon is a Bluetooth® Low Energy (BLE) app developed by Cypress Semiconductor for Android smartphones and tablets. The Cypress BLE-Beacon Android app can be used with the following devices:

- S6SAE101A00SA1002 Solar-Powered IoT Device Kit
  www.cypress.com/solar-powered-iot-device-kit
- CYALKIT-E02 Solar-Powered BLE Sensor Beacon Reference Design Kit (RDK)
  www.cypress.com/CYALKIT-E02
- CYALKIT-E03 Solar-Powered BLE Sensor Beacon 5 Pack
  www.cypress.com/CYALKIT-E03

The Cypress BLE-Beacon Android app can be used with the BLE example projects provided in PSoC® Creator™ 3.3. PSoC Creator can be downloaded from www.cypress.com/psoccreator. For some helpful tips on finding an example project in PSoC Creator, visit www.cypress.com/blog/psoc-creator-news-and-information/matts-tips-finding-code-examples-psoc-creator.

1.1 App Features

The Cypress BLE-Beacon Android app allows users to receive and visualize beacon signals from CYALKIT-E02 and/or CYALKIT-E03. The app supports the following features:

- Device information – Displays device information
  - Lists sensor device information including BLE Beacon-UUID/Major/RSSI and Eddystone-UID/URL/TLM frame
  - Lists ten sensor devices at the same time
- Thermo-hygrometer – Displays sensor data as line charts
  - Displays sensor data including temperature and humidity
  - Displays ten sensor data at the same time
- Data logger – Displays sensor data as list
  - Lists sensor data including Major ID, timestamp, temperature and humidity in chronological order
- Data Logger
  - Stores the log data in CSV format
  - Log data including Major ID, timestamp, temperature, and humidity in chronological order
  - Maximum log data size is 50 MB

Related information is provided on the kit's web pages described above.

1.2 Software and Hardware Requirements

1.2.1 Software Requirements

Table 1-1. Software Prerequisites

Software/Operating System Prerequisites	Minimum	Recommended
Android OS	4.4 (API Level 19)	4.4 or later

Refer to https://developer.android.com/guide/topics/connectivity/bluetooth-le.html for details on BLE support in Android.

1.2.2 Hardware Requirements

Table 1-2. Hardware Requirements

Hardware Requirements	Minimum	Recommended
Android mobile/tablet with Bluetooth	Bluetooth 4.0	Bluetooth 4.0

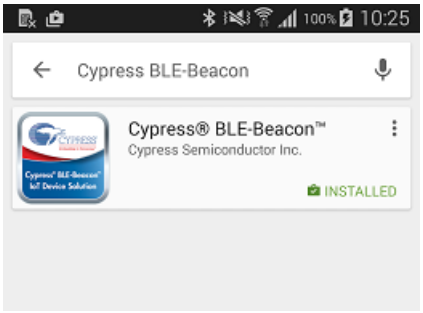
2. Software Installation

2.1 Installing the App

The Cypress BLE-Beacon app is available in Google Play for free. To install the app, do the following.

1. Open Google Play and search for “Cypress BLE-Beacon” (Figure 2-1).

Figure 2-1. Identifying Cypress BLE-Beacon App Using App Icon

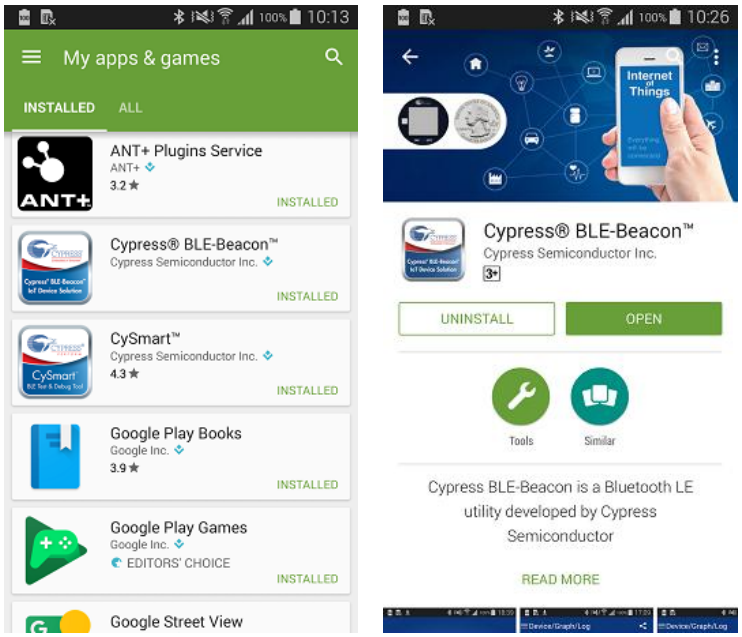


2. Select the Cypress BLE-Beacon app on the subsequent screen, and tap the **Install** button to proceed with installation.
3. When presented with the app permission dialog box, tap **Accept** to continue.
4. When the installation is complete, the Cypress BLE-Beacon app can be launched from the App Drawer.

2.2 Uninstalling the App

1. From the Android device, open Google Play.
2. From the menu, select **My apps**. A list of apps installed on the Android device is displayed (Figure 2-2).

Figure 2-2. Uninstalling the App



3. From the list, select **Cypress BLE-Beacon,** and on the subsequent screen, tap the **Uninstall** button to remove the app from the Android device.

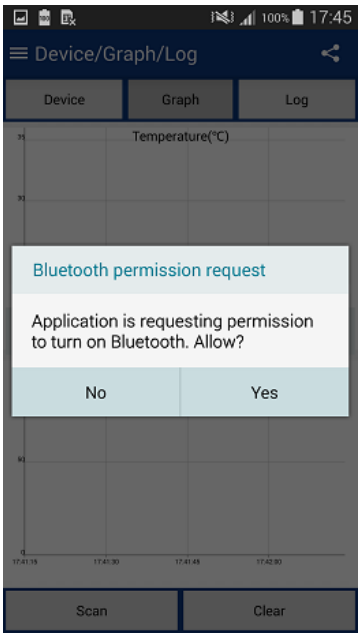
3. Getting Started

This chapter will help you get started with the Cypress BLE-Beacon app. It briefly describes how to receive a packet from BLE devices. For the purposes of description, a CYALKIT-E02 Solar-Powered BLE Sensor Beacon RDK running a PSoC Creator 3.3 example project is used as the broadcaster device.

1. Set up the CYALKIT-E02 Solar-Powered BLE Sensor Beacon RDK, Solar BLE Sensor using the steps provided in the Quick Start Guide of RDK, which is available at www.cypress.com/CYALKIT-E02.
2. Launch the Cypress BLE-Beacon app. When the app is first started or restarted, a splash screen is displayed for a few seconds (Figure 3-1) before the home screen (**Graph**). If Bluetooth is turned OFF on the Android device, the Android OS prompts you to turn ON Bluetooth (Figure 3-2). Tap **Yes** to turn ON Bluetooth. Taping **No** exits the app.

Figure 3-1. Cypress BLE-Beacon Splash Screen

Figure 3-2. Bluetooth Permission Request



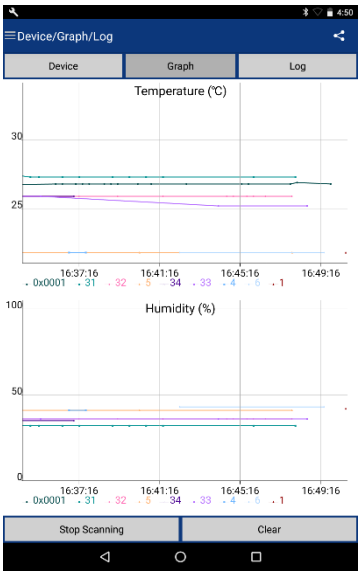
3. The app shows the home screen (**Graph**) where line charts of all discovered BLE devices are plotted (Figure 4-1). If the BLE device of interest does not appear in the graph, check to see the steps provided in the Quick Start Guide of RDK.

4. Cypress BLE-Beacon App GUI Overview

4.1 Home Screen (Graph)

The home screen (**Graph**) displays the device information and the latest sensor data advertised by the Solar BLE Sensor.

Figure 4-1. Home Screen (Graph)



The Home Screen (**Graph**) consists of the following features:

Navigation Drawer

Share

Graph Temperature Graph and Humidity Graph

Data from the Solar BLE Sensor whose ID is on the **ID Settings** screen can be displayed in the graph as a line chart by tapping the **Scan** button. After you tap the button, the button label switches to **Stop Scanning**.

The graph displays all discovered devices with the following information from each discovered device:

- BLE Beacon
  - Major ID
  - Temperature and Humidity
- Eddystone
  - BID
  - Temperature

The app stops scanning when you tap the **Stop Scanning** button. After you do so, the button label will switch to **Scan.**

The line charts in the graph are cleared when you tap the **Clear** button.

You can scroll or resize the x-axis and y-axis as needed. The x-axis in **Temperature Graph** and **Humidity Graph** are always scrolled or resized in synchronization.

4.2 Home Screen (Device)

The home screen (**Device**) appears when you tap the **Device** button, as shown in Figure 4-2. The **Device** screen is used to display the list of detected Solar BLE Sensors.

Figure 4-2. Home Screen (Device)

The home screen (**Device**) of the Cypress BLE-Beacon app consists of the following features:

Navigation Drawer

Share

Device list BLE Device List

The Solar BLE Sensor whose ID is on the **ID Settings** screen are listed on the **Device** screen when you tap the **Scan** button. After you do so, the button label switches to **Stop Scanning**.

The list of all discovered devices is displayed with the following information:

- BLE Beacon
  - UUID
  - Major ID, Sensor Data, and RSSI
- Eddystone
  - NID
  - BID and RSSI

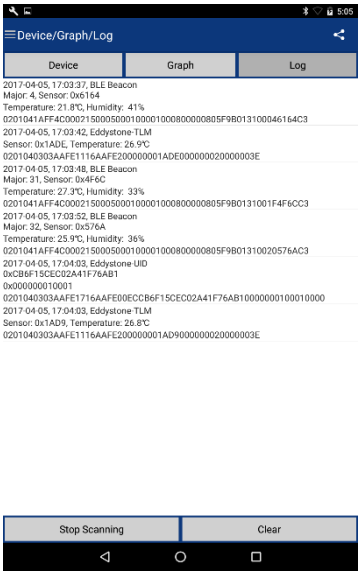
The app stops scanning when you tap the **Stop Scanning** button. When you do so, the button label switches to **Scan**.

All the Solar BLE Sensors listed on the **Device** screen are cleared when you tap the **Clear** button.

4.3 Home Screen (Log)

The home screen (**Log**) appears when you tap the **Log** button, as shown in Figure 4-3. The **Log** screen is used to display the list of packets from Solar BLE Sensors.

Figure 4-3. Home Screen (Log)



The home screen (**Log**) of the Cypress BLE-Beacon app consists of the following features:

Navigation Drawer

Share

Log data BLE log data

The packets from the Solar BLE Sensor whose ID is on the **ID Settings** screen are listed on the **Log** screen when you tap the **Scan** button. When you do so, the button label switches to **Stop Scanning**.

The list of all discovered packets is displayed with the following information:

- BLE Beacon
  - Time stamp
  - Major ID and Sensor Data
  - Temperature and Humidity
  - Raw Data
- Eddystone
  - Time stamp
  - NID
  - BID
  - Raw Data

The app stops scanning when you tap the **Stop Scanning** button. When you do so, the button label switches to **Scan**.

All the packets from Solar BLE Sensors listed on the **Log** screen are cleared when you tap the **Clear** button.

4.4 Navigation Drawer

The Navigation Drawer provides options to view the device list, Cypress BLE products, contact details, and version information of the app (Figure 4-4). It can be opened by swiping the screen or taping the menu icon at the upper left corner of the screen. The options that the Navigation Drawer provides are described in Table 4-1.

Figure 4-4. Navigation Drawer

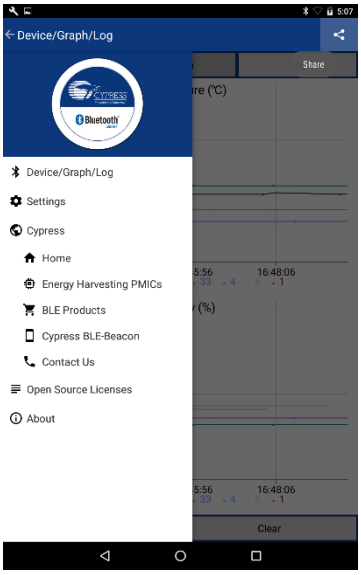


Table 4-1. Navigation Drawer Details

Navigation Drawer Item	Description
Device/Graph/Log	Displays the home screen (**Device/Graph/Log**)
Settings	Displays the **Settings** screen
Cypress	Provides a set of Cypress-related information as sub items. These sub items are links to Cypress's web pages that open in a web browser, provided the Android device is connected to the Internet.
Home	Opens the home page of the Cypress website: http://www.cypress.com
Energy Harvesting PMICs	Opens the Cypress Energy Harvesting PMICs web page: www.cypress.com/energy-harvesting
BLE Products	Opens the Cypress BLE products web page: www.cypress.com/ble
Cypress BLE-Beacon	Opens the Cypress BLE-Beacon Mobile App web page: www.cypress.com/CypressBLE-Beacon-app. The *Cypress BLE-Beacon Android App User Guide* is available on this page.
Contact Us	Opens the Cypress Contact Us web page. When the Android device is not connected to the Internet, it displays contact information and the email address of Cypress customer care.
Open Source Licenses	Displays the license information of open source software used by the Cypress BLE-Beacon app
About	Displays the version of the Cypress BLE-Beacon app and copyright details

4.4.1 Settings Screen

The **Settings** screen shown in Figure 4-5 appears when you tap the **Settings** option in the Navigation Drawer. A menu with the following options is displayed:

- Enable logging
- ID Settings
- Reset

Data logging can be turned ON and OFF by switching the **Enable logging** option.

The **ID Settings** screen shown in Figure 4-6 appears when you tap the **ID Settings** option.

Figure 4-5. Settings Screen

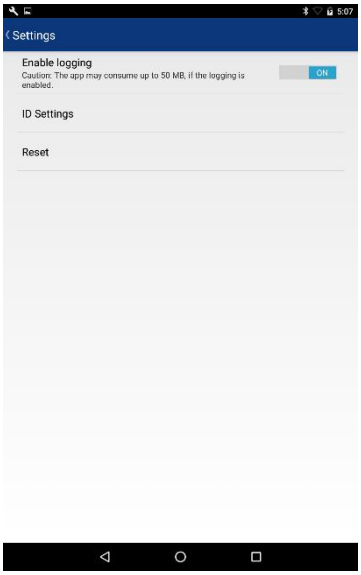
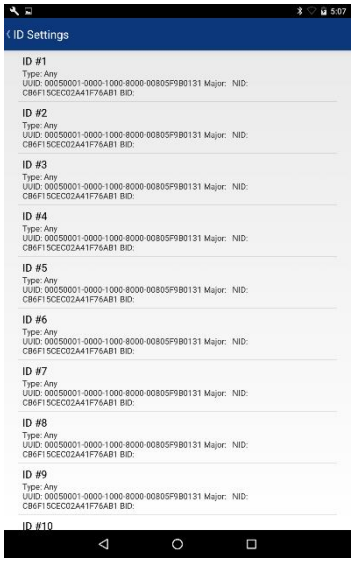


Figure 4-6. UUID Settings Screen



The default IDs are:

- BLE Beacon UUID
  - 00050001-0000-1000-8000-00805F9B0131

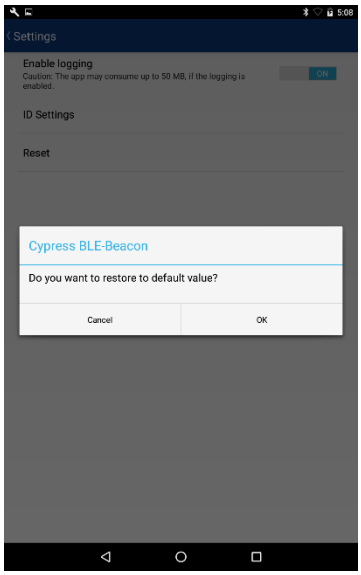
- Eddystone NID
  - CB6F15CEC02A41F76AB1

The packet that has an ID specified here is displayed on the **Device/Graph/Log** screen. Otherwise, the app ignores the packet.

The Reset dialog box shown in Figure 4-7 appears when you tap the **Reset** option.

The default settings are restored when you tap **OK.** The default settings are not restored if you tap **Cancel.**

Figure 4-7. Reset Settings



4.5 Sharing Log

The **Share** option allows you to share the log data with various apps listed in the Android system. It is accessible from the home screen (**Device/Graph/Log**), **Open Source Licenses** screen, or **About** screen in the app.

The following is the rule of logging:

- The maximum number of log files is 5.
- The maximum number of packets in each log file is 100,000.
- If the user enables logging on the **Settings** screen, the app generates and updates the log file.
- If the number of packet reaches 100,000, the app generates a new log file.
- If the user stops logging, the app closes the current log file even if the number of packets does not reach 100,000. Then if the user restarts logging, the app generates a new log file.
- The app deletes the oldest log file before generating a new one if the number of existing log files is 5.

To share a log, follow this procedure.

1. Tap the Share button in the upper-right corner of the screen, as shown in Figure 4-8.

   The app shows a list of available log files. The list has up to five log files, as shown in Figure 4-9.
2. Tap on one of the files. The app shows a dialog box to share the log file, as shown in Figure 4-10.

   The selected app launches, as shown in Figure 4-11.

Figure 4-8. Sharing Log – Share Button

Figure 4-9. Sharing Log – Log Files

Figure 4-10. Sharing Log – Dialog Box

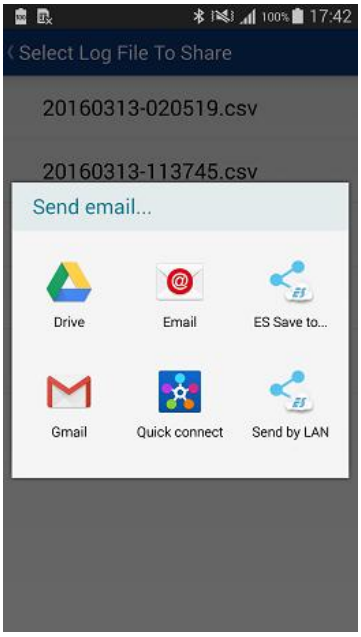
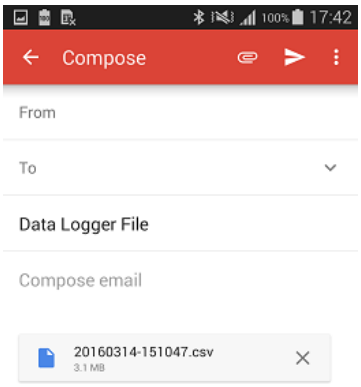


Figure 4-11. Sharing Log – App Launch



4.6 Update Notification

The app can be updated over the Internet through the respective app stores. If the mobile platform is connected to the Internet and an update is available in the store, then you have the option to update the application.

Revision History

Document Revision History

Document Title: Cypress BLE-Beacon Android App User Guide Document Number: 002-12100			
Revision	**Issue Date**	**Origin of Change**	**Description of Change**
**	05/01/2016	TETS	New user guide
*A	04/07/2017	EIFU	Updated Cypress Logos Added Eddystone functions