GETTING STARTED GUIDE

Atmel BluSDK v1.3 – iBeacon Demo

BTLC1000 | SAMD21/SAMG55

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3 Purpose

This Beacon guide describes the setup of BTLC1000 to be used in conjunction with either a SAMD21 or SAMG55 Xplained Pro boards. The document also explains bringing-up an example profile supplied as part of BluSDK v1.1 release. The Bluetooth iBeacon Profile is an example profile application that is embedded as part of the software release package.

4 Features

- Device Discovery
- RSSI Sampling
- Beacon Advertising
- iBeacon Demo App for iOS

5 Introduction

The Beacon Application advertises iBeacon specific packets that includes UUID, Major and Minor numbers. Any beacon scanner application should be able to find the beacon device. The supplied iOS demo app can be used to find the beacon devices in the vicinity.

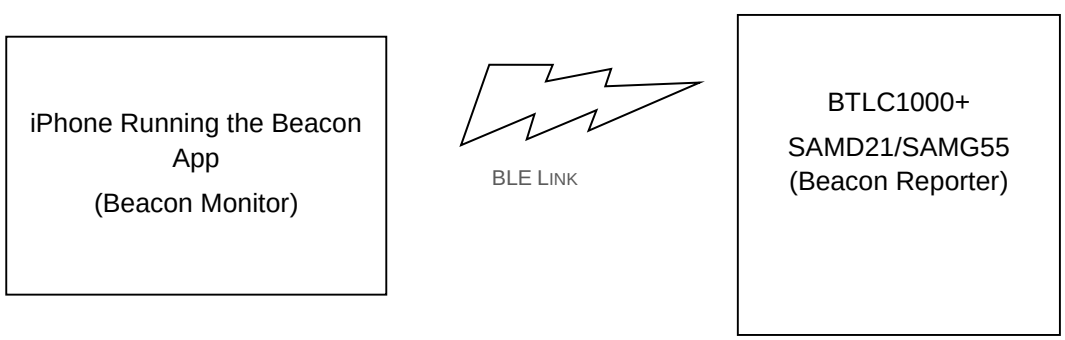
The profile defines two roles:

- Monitor: The iOS device that searches for beacon packets.
- Reporter: This device that continuously advertises the beacon packet as part of advertisement data

This document explains the details about

1. Getting started with the setting up the BTLC1000 Wing board using SAMD21 or SAMG55.
2. Getting the Beacon Profile Application working on the above mentioned setup.

6 Demo Setup



7 Hardware Setup

SAMD21 Beacon setup

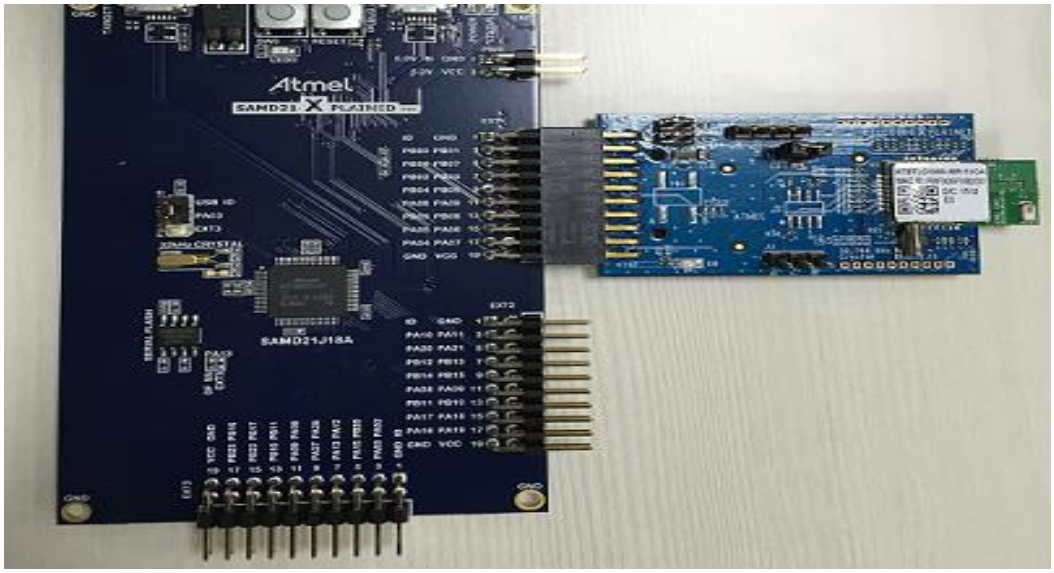


Figure 1: SAMD21 board connected to BTLC1000

SAMG55 Beacon setup

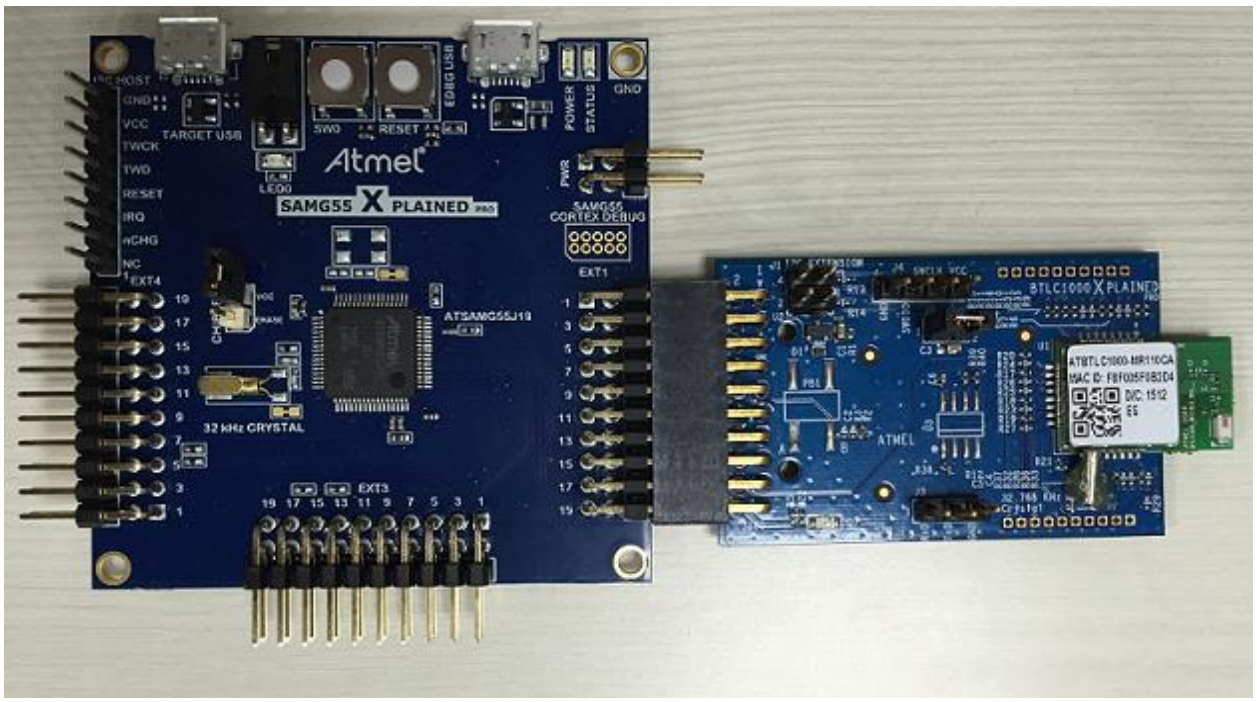


Figure 2 : SAMG55 board connected to BTLC1000

8 Software Setup

8.1 Installation Steps

1. Atmel Studio installation [**Atmel Studio 6.2 sp2 (build 1563) Installer – with .NET]**
   http://www.atmel.com/tools/atmelstudio.aspx

   (Note: SAMD21 part pack is built-in as part of Atmel Studio 6.2 sp2)

2. Install SAMG55 Part pack http://www.atmel.com/images/as-partpack-ATSAMG55-6.2.13.zip
   (Note: This installer is needed only if the bring-up is being done on the SAMG55 platform)

3. Atmel USB Driver Installer 7.0.712 http://www.atmel.com/tools/atmelstudio.aspx

4. Install the package **BLU-SDK-msi package** that is supplied. Defaults can be selected during installation.

This package will install the following examples within the Atmel Studio environment.

1. Beacon Application for SAMD21
2. Beacon Application for SAMG55

8.2 Build Procedure

The following procedure is explained for SAMD21 application example. The same procedure is valid for the case of SAMG55 as well.

1. Select New Example Project

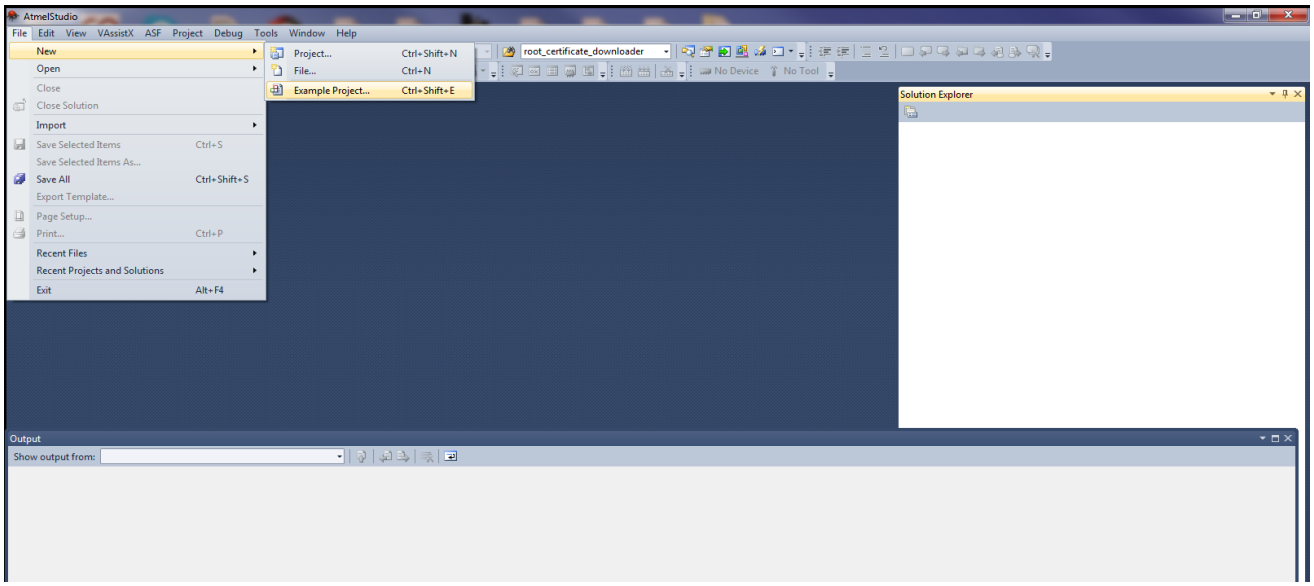


Figure 3 Creating a new project

2. Select “SAMD,32-bit” in device family, enter “BLE” in search window and expand Atmel Corp Projects. The location and the name of the project can be selected in the respective fields. Click OK

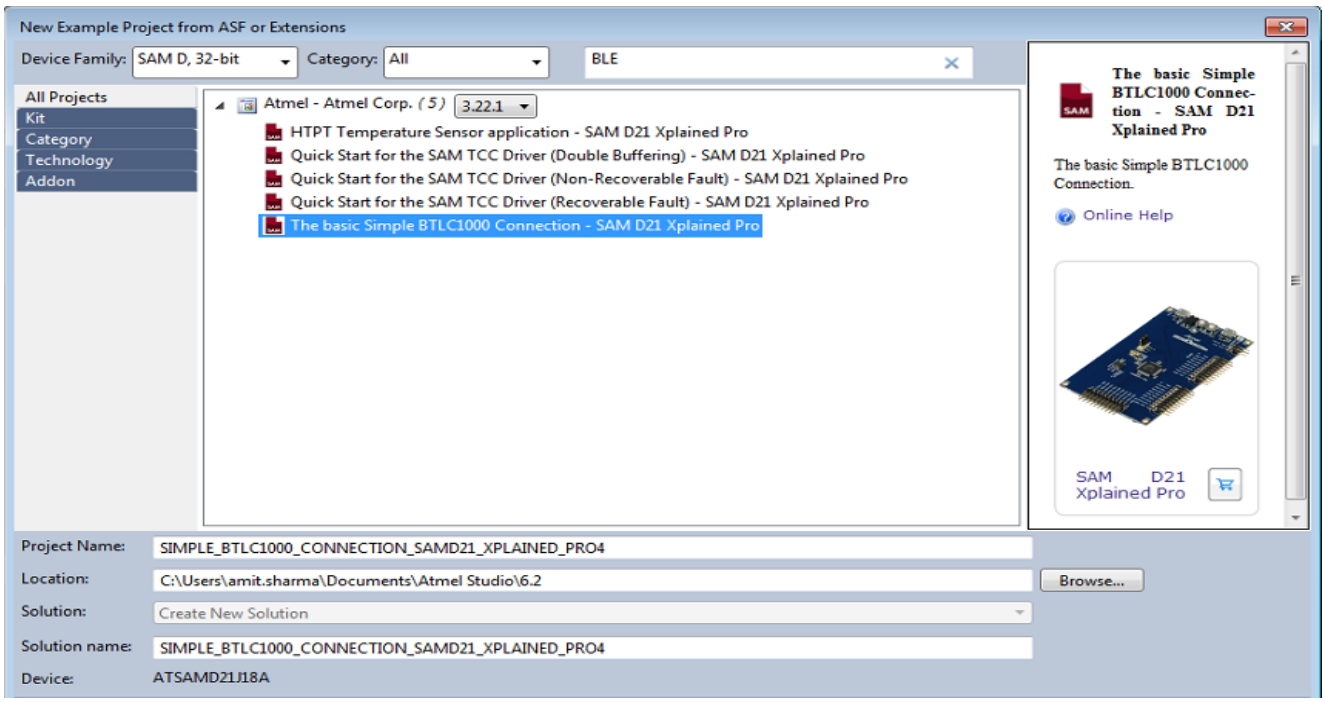


Figure 4 Selecting Beacon Application from example projects

3. Accept the license Agreement. The studio will generate the Beacon Profile project for SAMD21.

4. Build the solution.

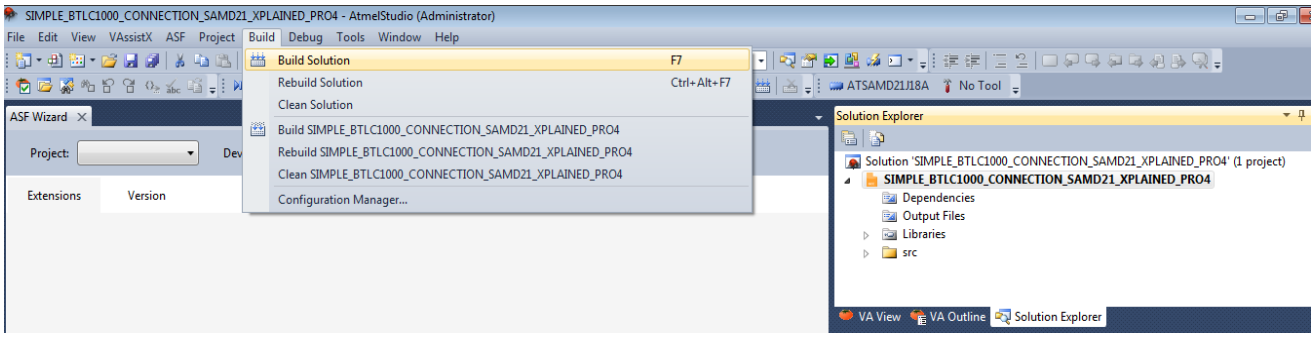


Figure 5 Building the Beacon Application

5. Download the application via the USB to the SAMD21 board
6. Once the application is flashed, it is ready to be advertise beacon packets.

9 Running the demo

1. Connect the BTLC1000 Wing Board to SAMD21 as indicated in Fig1
2. Power on the SAMD21 by connecting the USB Cable.
3. Press the Reset button on the SAMD21 board.
4. Wait for around 10 seconds for the patches to be downloaded from SAMD21 to BTLC1000 board.
5. Start the Beacon application on the iPhone:

Figure 6 iOS Beacon Profile App Launch Screen

6. As soon as beacon application is launched it will show the positioning of beacon device with respect to iOS device. It also represent three modes as mentioned below.

   Proximity: This mode is used to display beacon specific information when the mobile device comes in close proximity to a given beacon. The mode then shows the corresponding product related information that is configured for this particular beacon device.

   Distance: To indicate the distance between beacon device and the Mobile.

Notification: This mode is used to demonstrate the ranging capabilities of a given beacon. The notification messages change appropriately based on the proximity to a given beacon.

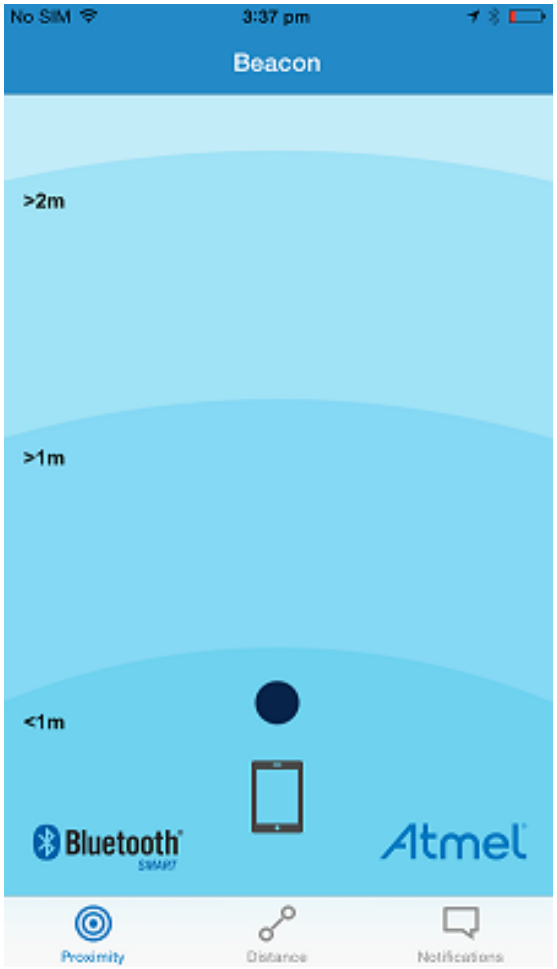


Figure 7 iOS App Beacon Initial Screen

7. Click on dark blue circle to check the Major, Minor and RSSI Value. The RSSI values get automatically updated based on the movement of the scanner device.

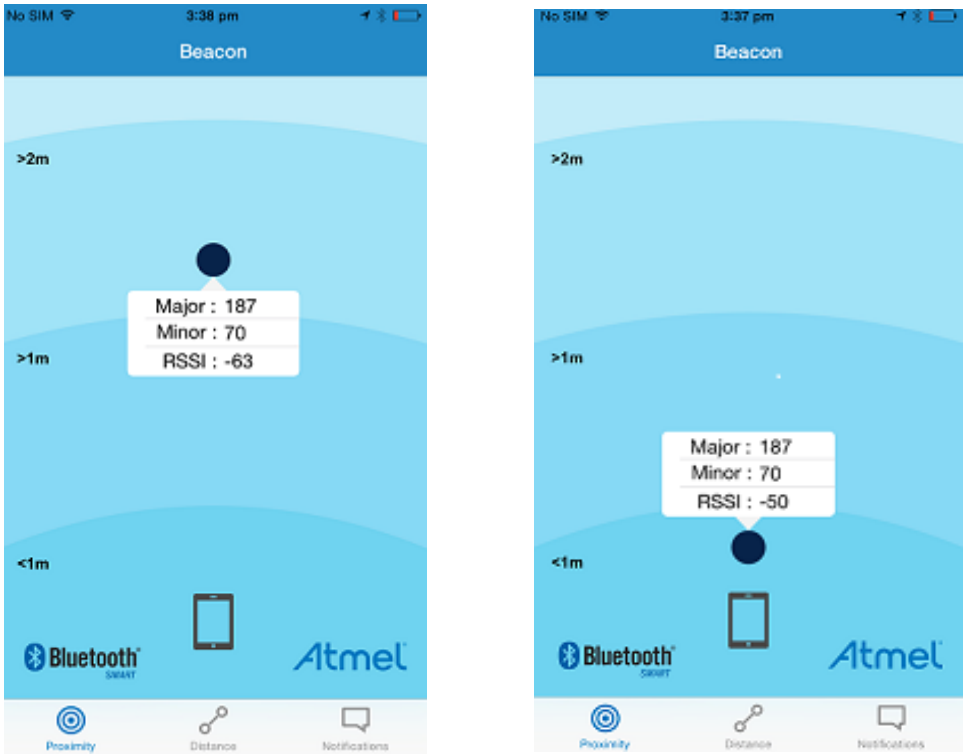


Figure 8 iOS App Beacon Distance Mode

8. Inside the proximity mode if the scanner device is very near to beacon, User will see the product information when he is in close proximity to a given beacon device. When the user moves away from beacon device information this content will not be shown any more. It is just an indication that user moved away from beacon device. User can close the message by clicking on close.

Figure 9 iOS App Beacon Proximity Mode

9. User can select the notification mode and follow the instructions on the screen to check the range of a given beacon device.

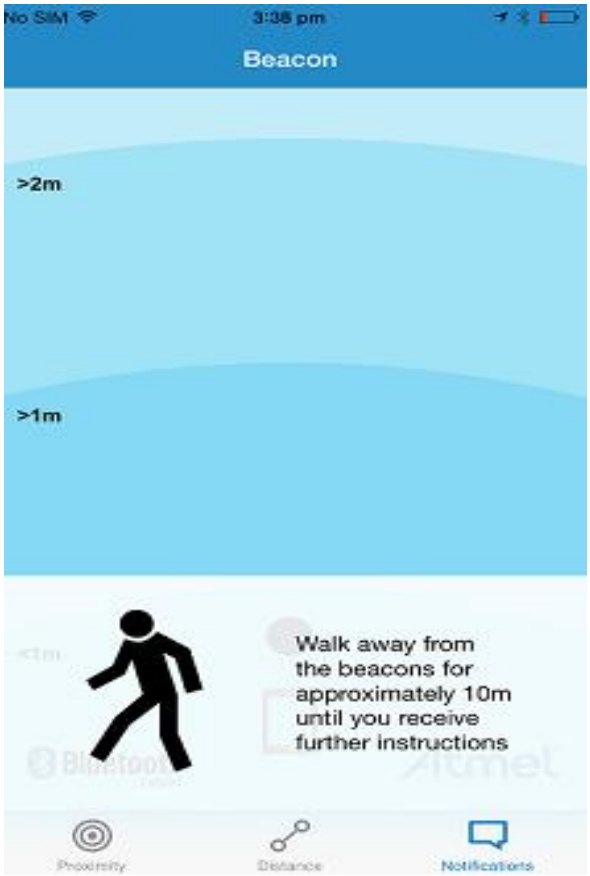
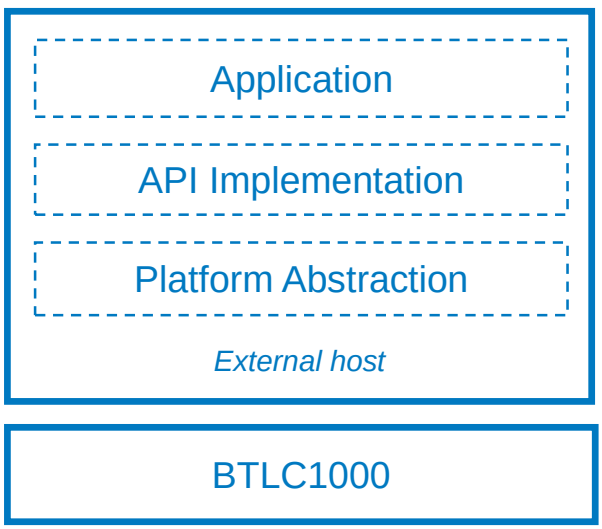


Figure 10 iOS App Beacon Notification Mode

10 Software Architecture

The following diagram illustrates the various layers in the BLE subsystem for the BTLC1000 configuration. The External host can be SAMD21 or SAMG55. The application in this example is Health Thermometer Sensor.

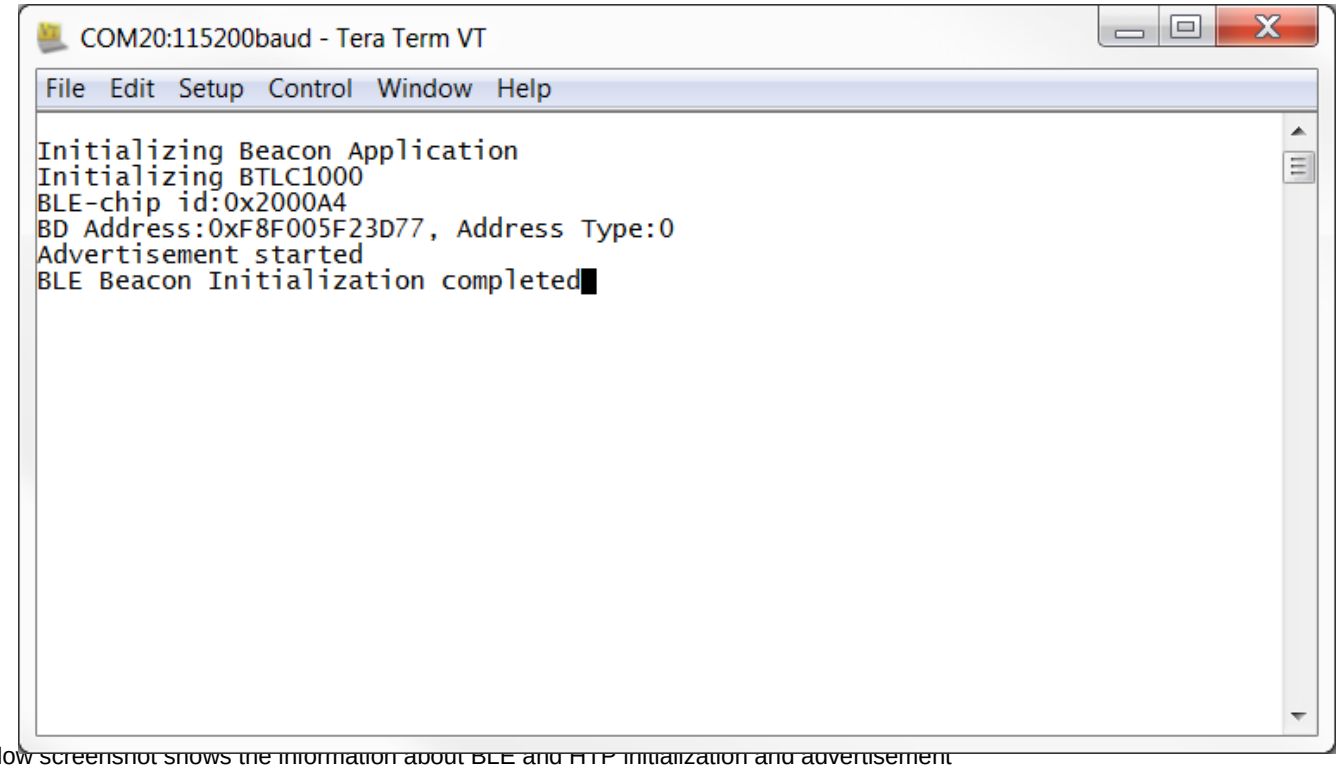


11 Console Logging

For the purpose of debugging, a logging interface had been implemented in the iBeacon Application.

The logging interface utilizes the same EDBG port that connects to SAMD21 or SAMG55. A serial port monitor application (for example teraterm) shall be opened and attached to the EDBG COM port.

The below screenshot shows the information about BLE initialization and iBeacon advertisement.



The below screenshot shows the information about BLE and HTP initialization and advertisement

12 ATMEL EVALUATION BOARD/KIT IMPORTANT NOTICE AND DISCLAIMER

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ATMEL CORPORATION
1600 Technology Drive
San Jose, CA 95110
USA

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Doc Rev.	Date	Comments
1.0	04/25/2015	Initial document release.

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Atmel Corporation 1600 Technology Drive, San Jose, CA 95110 USA **T:** (+1)(408) 441.0311 **F:** (+1)(408) 436.4200 | **www.atmel.com**