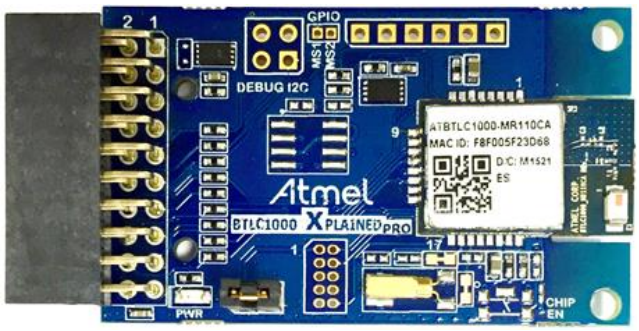
ATBTLC1000 BluSDK

ANCS Profile - Getting Started Guide

USER GUIDE



Introduction

This getting started guide describes the setup of the Atmel® ATBTLC1000 with a supported platform (see Table 2-1) bringing up an example profile supplied as part of BluSDK release. The Bluetooth® Apple® Notification Center Service is an example application that is embedded as part of the software release package. The device acts as Alert Notification Client with custom UUID as per Apple's ANCS specification. This service is unique to Apple and available only on iOS devices.

The ANCS Profile is used to enable a device to obtain notifications from an iOS device that exposes Apple Notification Center Service.

The ANCS Profile defines two roles:

- Notification Provider (NP):

  The Notification Provider is a device that provides the IOS notifications.

- Notification Consumer (NC):

  The Notification Consumer is a device that receives the IOS notifications and notification related data from Notification Provider.

This document explains the details about:

1. Getting started with the setup of supported platform (see Table 2-1) to be used as a Notification Consumer.
2. Getting the ANCS Application working on the above mentioned setup.

The example application provided currently supports only 'Incoming Call Alert Notification'.

Features

- Device Discovery and Disconnection
- Pairing / Bonding
- Apple Notification Center Service
- Alert on incoming call

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1 Demo Setup

Figure 1-1. Demo Setup for ANCS Profile

2 Supported Hardware Platforms and IDEs

Table 2-1. BluSDK – Supported Hardware and IDEs

Platform	MCU	Supported BLE Module	Supported evaluation kits	Supported IDEs
SAM L21 (MCU)	ATSAML21J18B	ATBTLC1000	ATBTLC1000-XSTK (ATSAML21-XPRO-B + ATBTLC1000 XPRO)	Atmel Studio v7.0
SAM L21 (MCU)	ATSAML21J18A	ATBTLC1000	ATSAML21 XPRO + ATBTLC1000 XPRO	Atmel Studio v7.0
SAM D21 (MCU)	ATSAMD21J18A	ATBTLC1000	ATSAMD21-XPRO + ATBTLC1000 XPRO	Atmel Studio v7.0
SAM G55 (MCU)	ATSAMG55J19	ATBTLC1000	ATSAMG55-XPRO + ATBTLC1000 XPRO	Atmel Studio v7.0
SAM 4S (MCU)	ATSAM4SD32C	ATBTLC1000	ATSAM4S-XPRO + ATBTLC1000 XPRO	Atmel Studio v7.0

3 Hardware Setup

3.1 SAM L21 Xplained Pro ANCS Setup

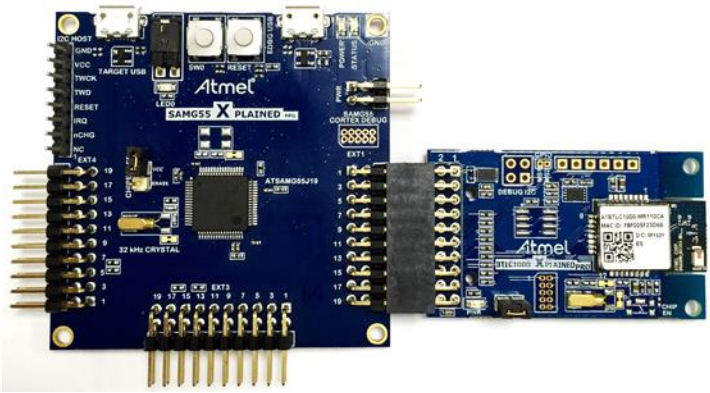
Figure 3-1. ATBTLC1000 Xplained Pro Extension Connected to a SAM L21 Xplained Pro

3.2 SAM D21 Xplained Pro ANCS Setup

Figure 3-2. ATBTLC1000 Xplained Pro Extension Connected to a SAM D21 Xplained Pro

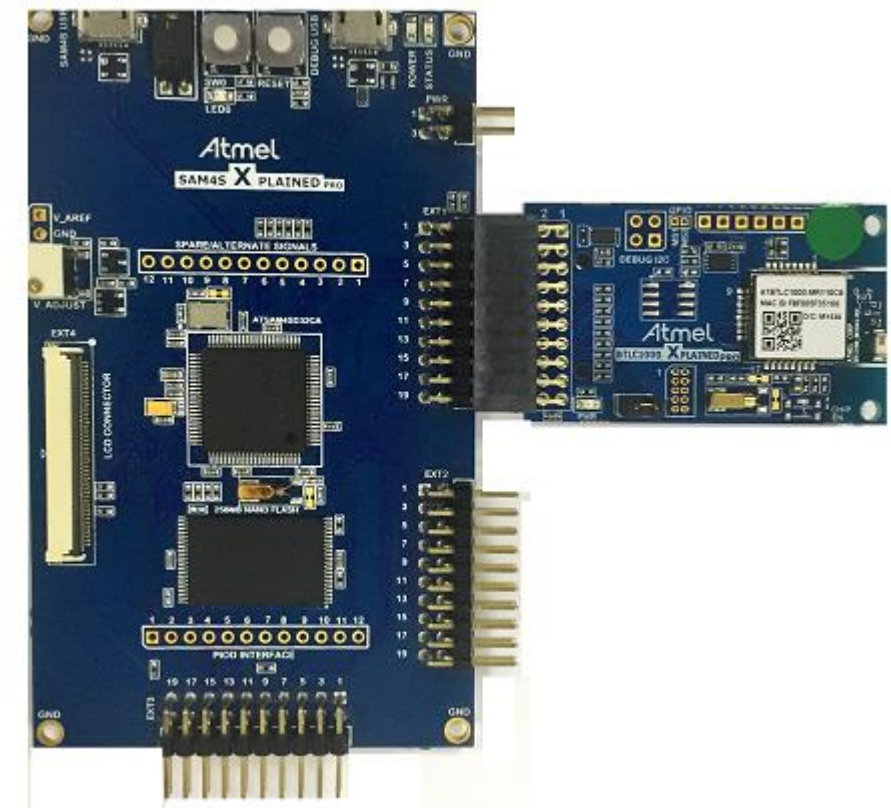
3.3 SAM G55 Xplained Pro ANCS Setup

Figure 3-3. ATBTLC1000 Xplained Pro Extension Connected to a SAM G55 Xplained Pro



3.4 SAM 4S Xplained Pro ANCS Setup

Figure 3-4. ATBTLC1000 Xplained Pro Extension Connected to a SAM 4S Xplained Pro



4 Incoming Call Notification

The SAM L21 or supported platform (see Table 2-1) + ATBTLC1000 device must be paired with an iPhone®[1] after which, upon an incoming call received by the iPhone, a notification is displayed in the console.

Bluetooth® SIG defined Alert Notification Profile provides similar functionality. ANCS is a variant of Alert Notification Profile customized by Apple. For similar functionality on Android devices, please refer to the Alert Notification Profile example application provided by Atmel.

5 Software Setup

5.1 Installation Steps

1. Atmel Studio installation [**Atmel Studio 7.0 (build 594) Installer – with .NET**] http://www.atmel.com/tools/atmelstudio.aspx.

   (Note: SAM L21 Rev B/SAM D21/SAM G55/SAM4S part pack is built-in as part of Atmel Studio 7.0)
2. Atmel USB Driver Installer http://www.atmel.com/tools/atmelstudio.aspx.
3. Atmel USB Driver Installer from http://www.atmel.com/tools/atmelstudio.aspx.
4. Install the standalone ASF package from http://www.atmel.com/tools/AVRSOFTWAREFRAMEWORK.aspx.

Note: Refer to the BluSDK release notes for updates to version numbers of the components mentioned above.

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

1. ANCS Application for SAM L21.
2. ANCS Application for SAM D21.
3. ANCS Application for SAM G55.
4. ANCS Application for SAM 4S.

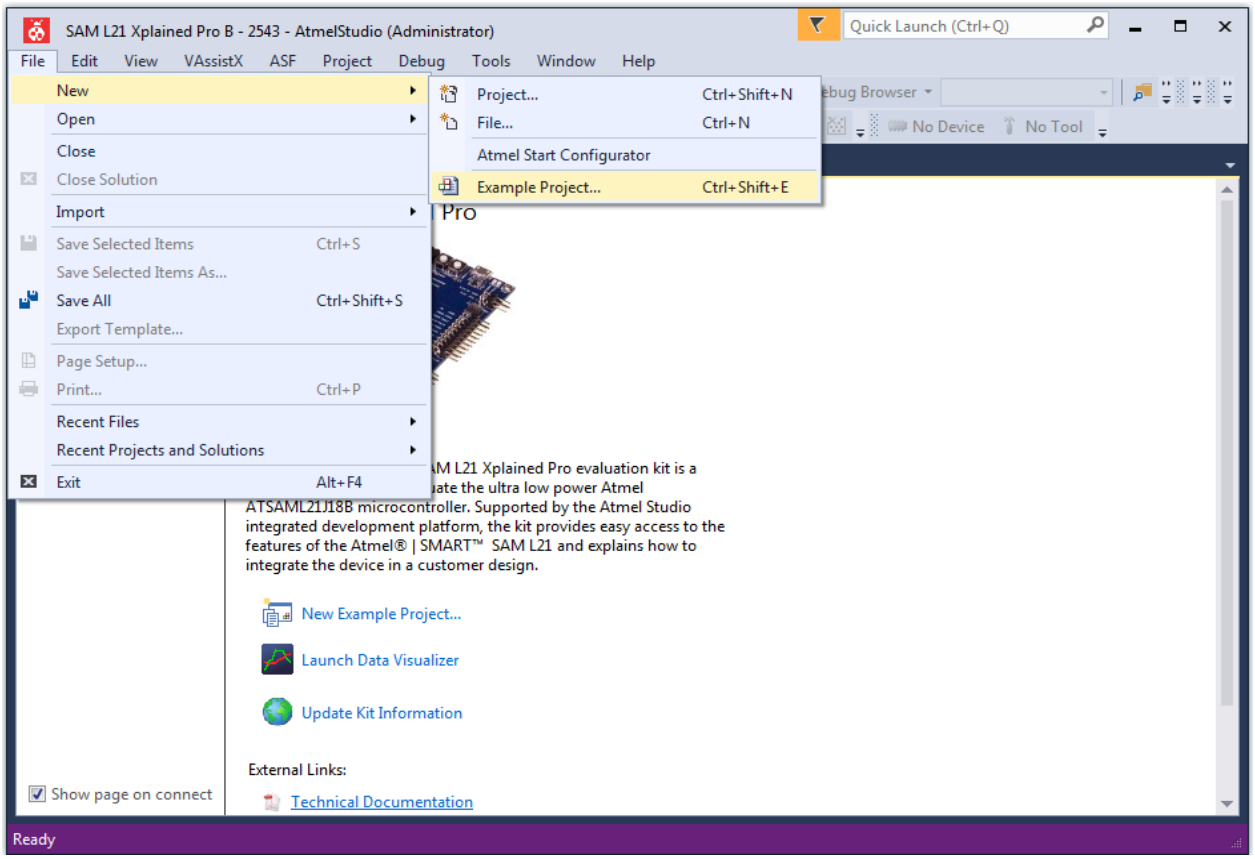
[1] Note: ANCS is only supported in iOS versions 7.0 and above.

5.2 Build Procedure

The following procedure is explained for SAM L21 application example. The same procedure is valid for the case of all the other supported platforms (see Table 2-1) as well.

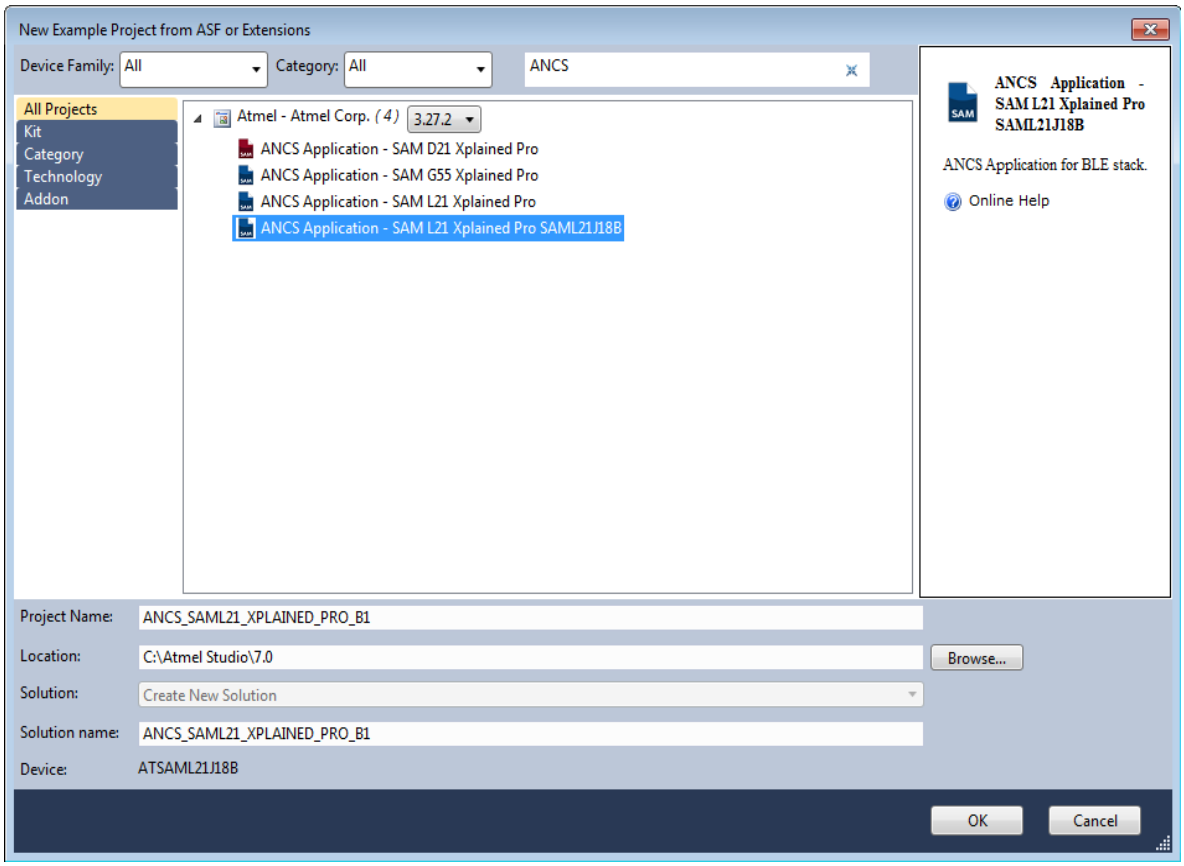
Select New Example Project.

Figure 5-1. Create a New Project



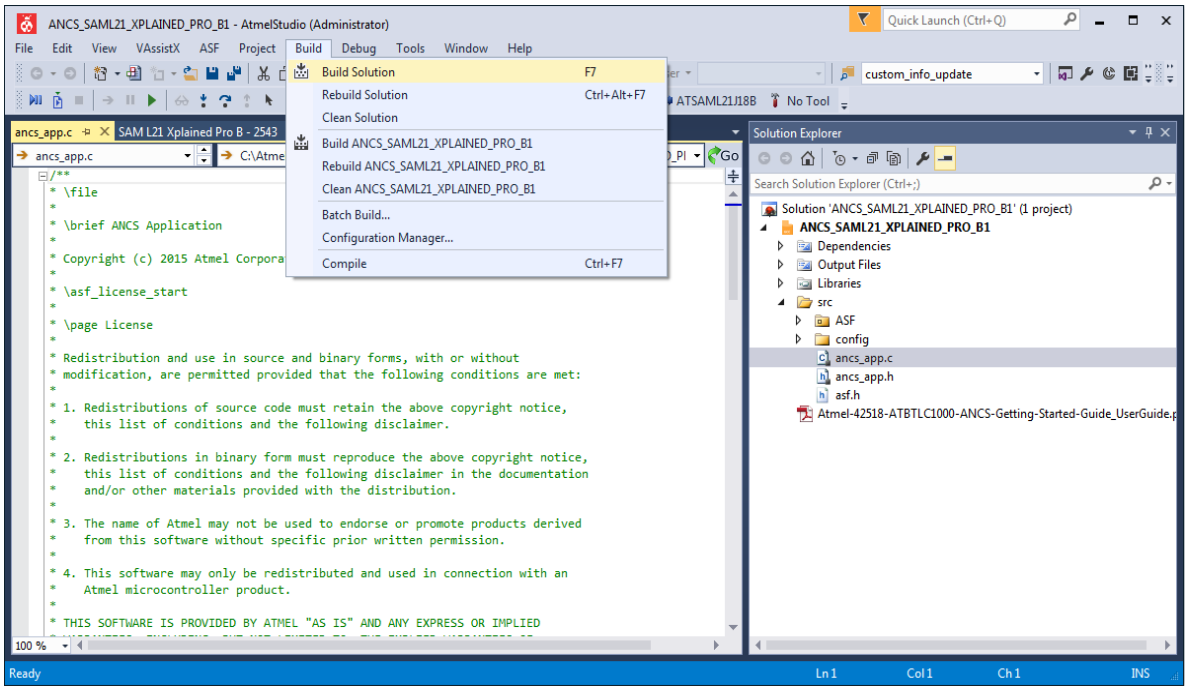
1. Select “SAML,32-bit” in device family, enter “ancs” in the search window and expand Atmel Corp Projects. The location and the name of the project can be selected in the respective fields. Click OK.

Figure 5-2. Selecting ANCS Application from Example Projects



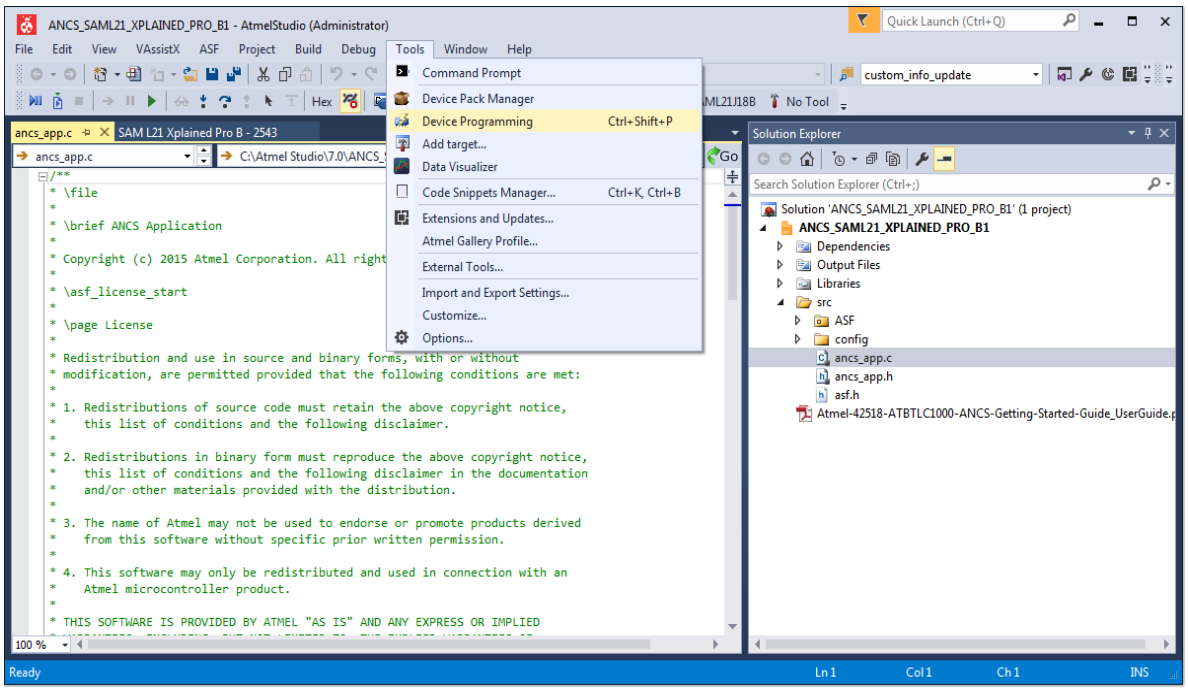
2. Accept the license Agreement. The studio will generate the ANCS Profile project for SAM L21.
3. Build the solution.

Figure 5-3. Building the ANCS Application



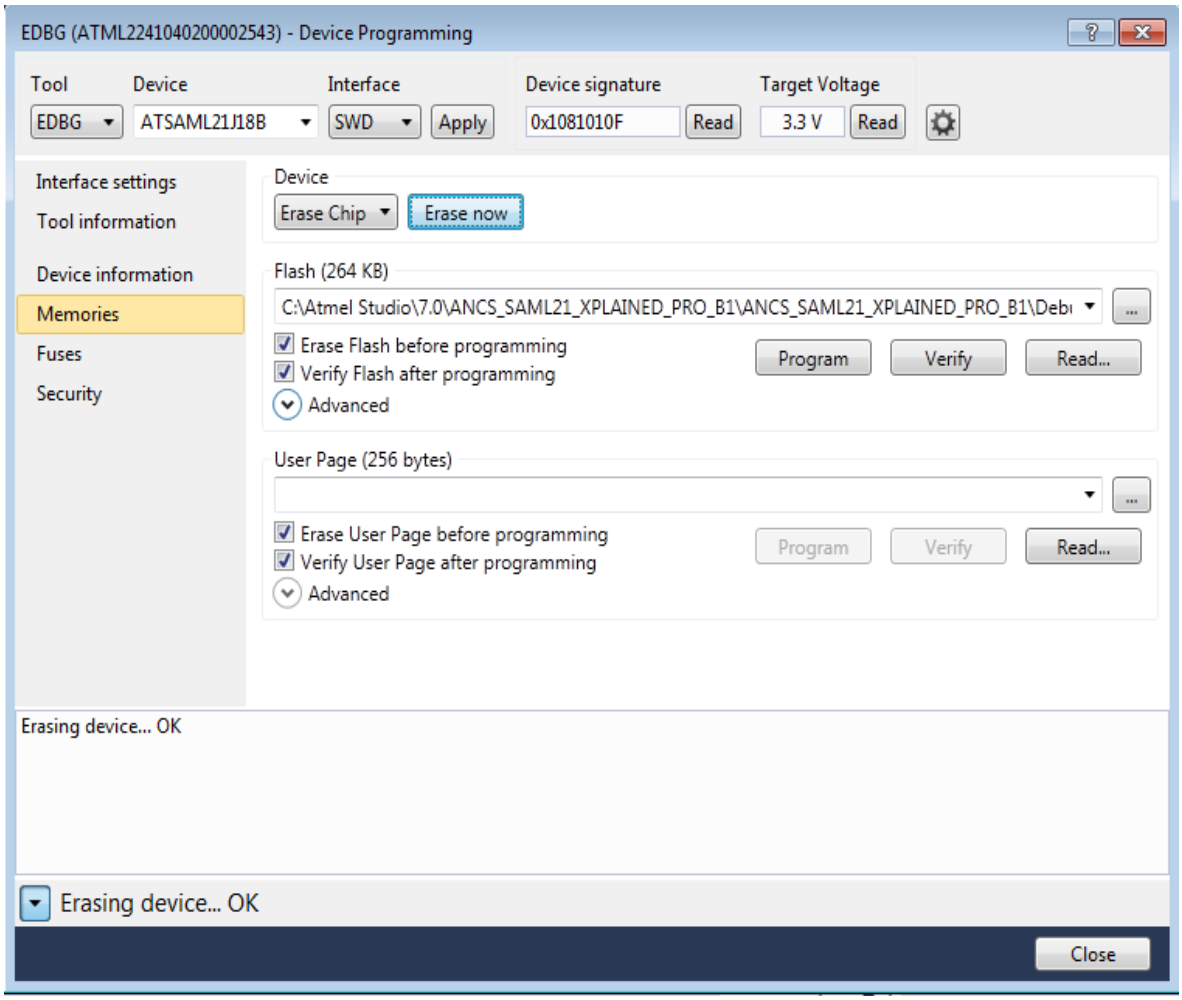
4. Download the application via the USB to the SAM L21 board using the Device Programming option available in Tools, as mentioned below.

Figure 5-4. Programming the Application to SAM L21



5. Inside device programming the user has to select the correct configuration for device and finally program the device using the program button.

Figure 5-5. Flash the ANCS Application to SAM L21



6. Once the application is flashed the ANCS Application is ready for usage.

6 Console Logging

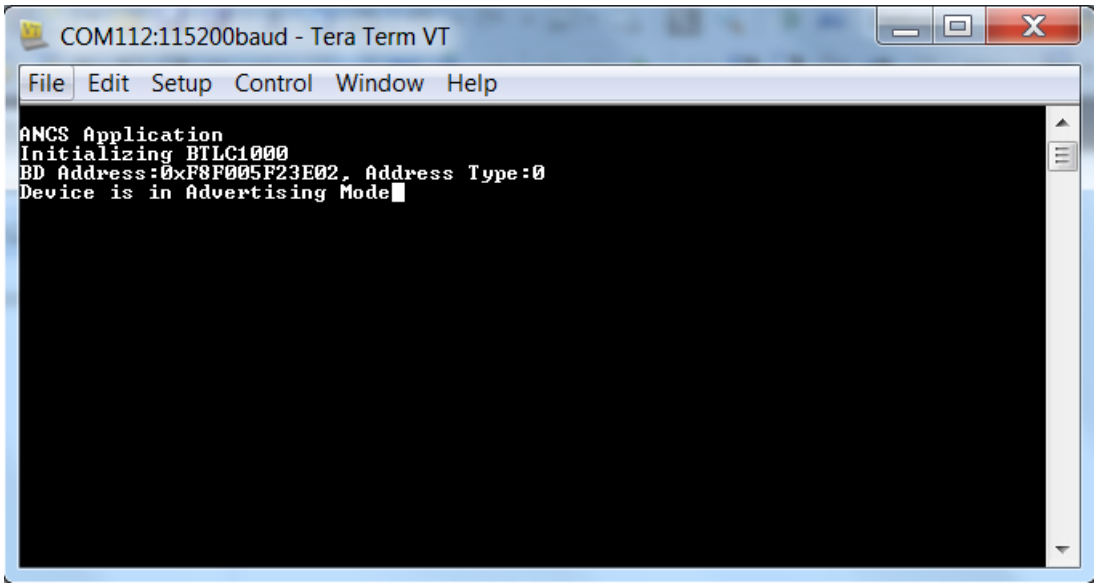
For the purpose of debugging, a logging interface has been implemented in the ANCS Application.

The logging interface utilizes the same EDBG port that connects to supported platform (see Table 2-1). A serial port monitor application (for example TeraTerm) shall be opened and attached to the corresponding COM port enumerated on the PC by the device. Baud rate should be set to 115200.

7 Running the Demo

1. Connect the ATBTLC1000 Xplained Pro Board to SAM L21 Xplained Pro EXT1 as shown in Figure 3-2. (The steps mentioned below use SAM L21 as reference. If SAM D21 or SAM G55 is used for the demo, the same steps are applicable.)
2. Open a console window using TeraTerm or any equivalent serial port monitor application and connect to the corresponding COM port enumerated on the PC.
3. Press the Reset button on the SAM L21 or supported platform (see Table 2-1) board.
4. The device is now in advertising mode.

Figure 7-1. Console Display for Device in Advertising Mode

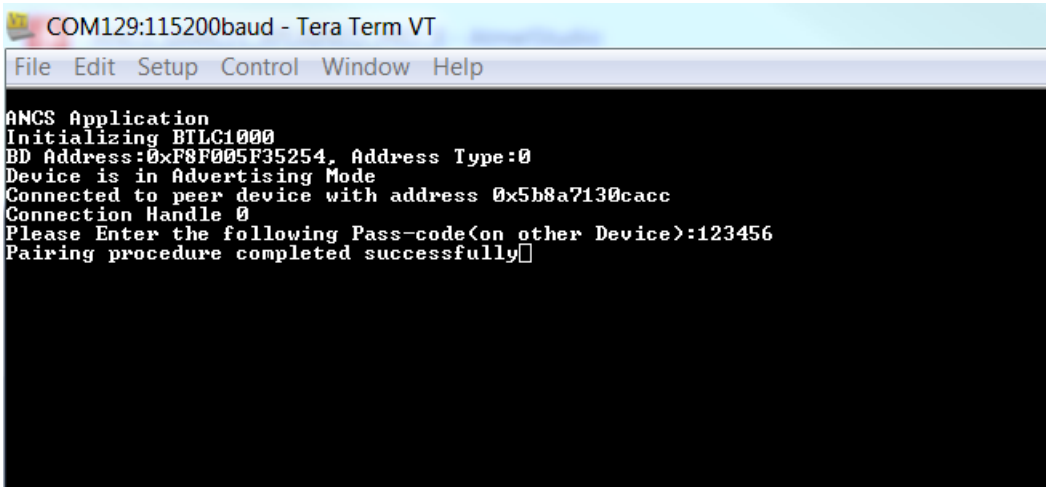


5. On the iPhone, enable Bluetooth in the Settings page. The phone will start to scan for devices. ATMEL-ANCS will be appear amongst the devices scanned. Click on ATMEL-ANCS to connect to the SAM L21 or supported platform (see Table 2-1) + ATBTLC1000 device.

Figure 7-2. ATMEL-ANCS Device Discovery in iPhone

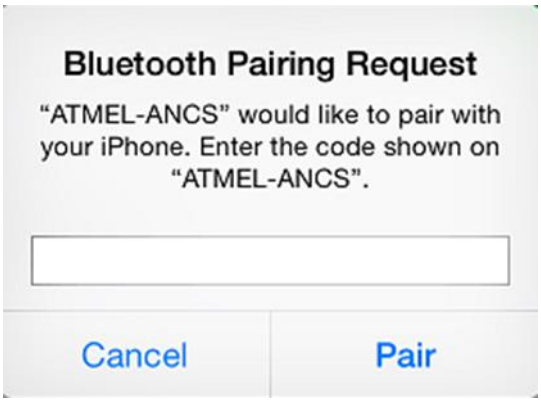
6. Once connected, on the client side will request for pairing procedure with iPhone. The console log provides a guidance for the user to enter the pass-key on iPhone.

Figure 7-3. Console Display for Pairing in ANCS



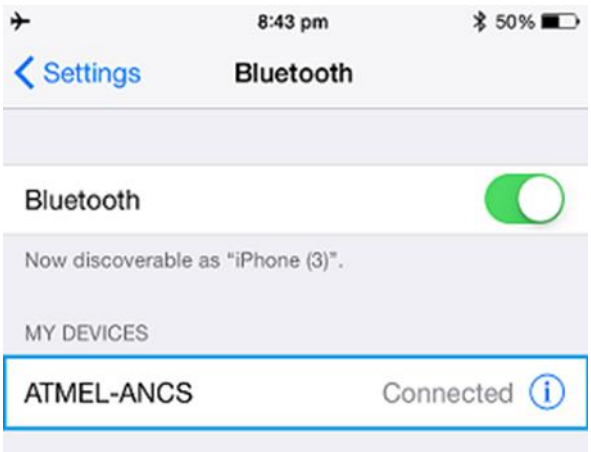
7. On iPhone side, a pop-up screen prompting the user to enter the pass-key will appear. Enter '123456' in the text box and click on 'Pair'.

Figure 7-4. Pairing Pop in iPhone



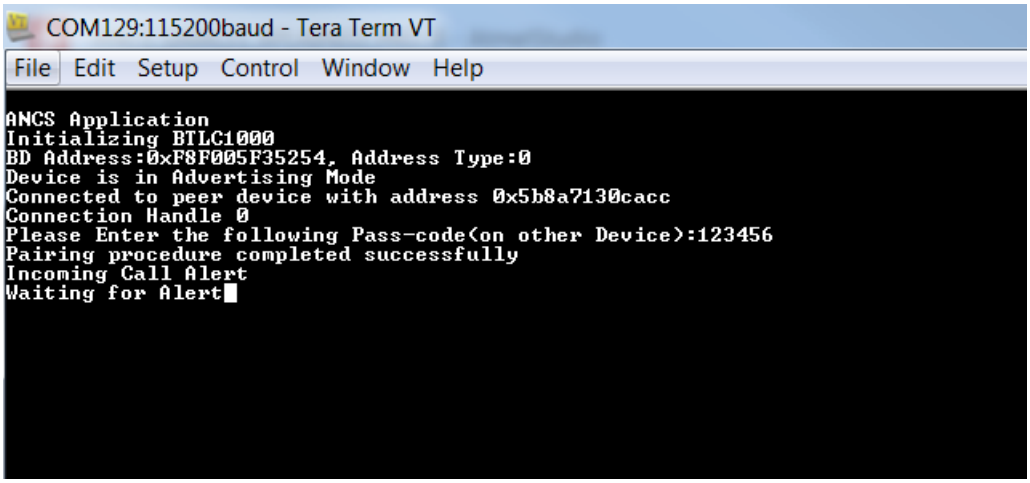
8. Once the device is connected, ATMEL-ANCS will appear in the MY DEVICES section on the iPhone.

Figure 7-5. iPhone Connected to ATMEL-ANCS



9. The user can now user initiate a mobile terminated call to the iPhone. When the iPhone indicates an incoming call, the corresponding incoming call alert is indicated in the console log on ATBTLC1000 + SAM L21 or supported platform (see Table 2-1). Once the call has terminated the device will wait for a new alert to occur as shown below.

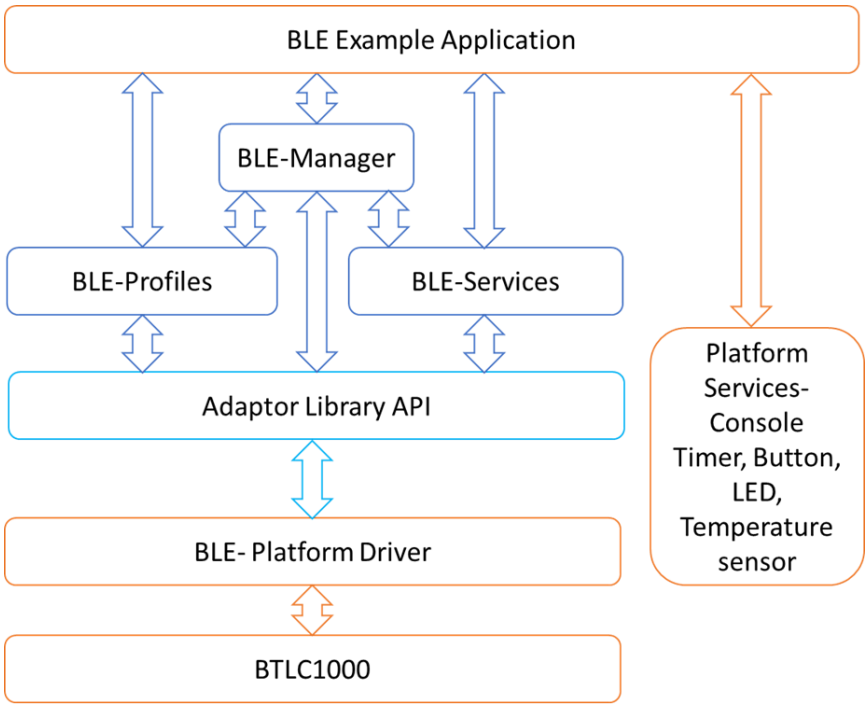
Figure 7-6. Console Display for Notification Received as Incoming Call Alert



8 BluSDK Software Architecture

Figure 8-1 illustrates the various layers in the BLE subsystem for the ATBTLC1000 configuration. The External host can be supported platform (see Table 2-1). The application in this example is ANCS Profile.

Figure 8-1. BluSDK Software Architecture



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10 Revision History

Doc Rev.	Date	Comments
42518C	02/2016	Table 2.1 is updated with SAM4S support. Figure 3.4 is updated with SAM4S Xplained Pro Image. Section 5.1 Installation Steps are updated.
42518B	11/2015	Figure 3-1 is updated. The screenshots in Chapter 5 are updated.
42518A	09/2015	Initial document release.

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