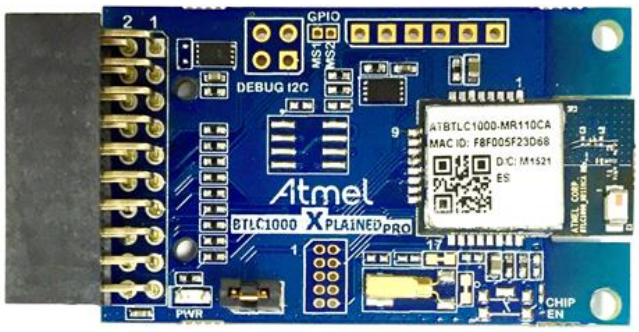
ATBTLC1000 BluSDK

Alert Notification 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 Alert Notification Profile is an example application that is embedded as part of the software release package.

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 ANS Application working on the above mentioned setup.

The example application provided currently supports ‘Missed Call Alert and SMS Notification’.

Features

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

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1 Demo Setup

Figure 1-1. Demo Setup for ANS Profile

2 Supported Hardware Platforms and IDEs

Table 2-1. BluSDK – Supported Hardware and IDEs

Platform	MCU	Supported BLE device	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 ANS Setup

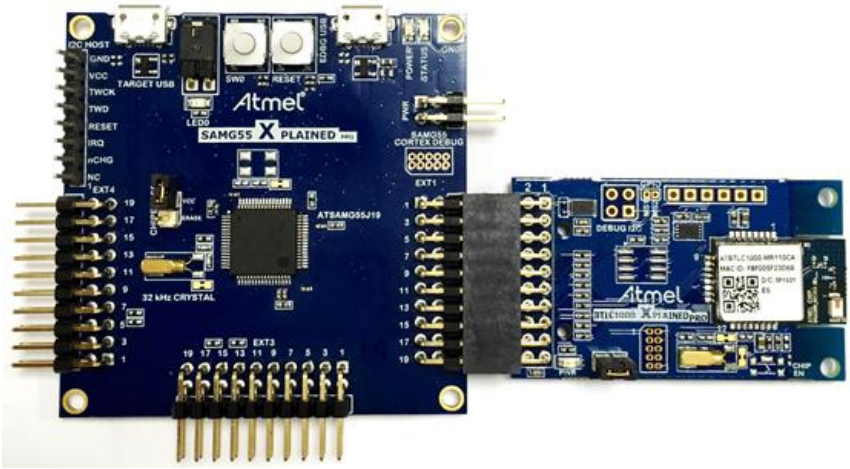
Figure 3-1. ATBTLC1000 Xplained Pro Extension Connected to a SAM L21 Xplained Pro

3.2 SAM D21 Xplained Pro ANS Setup

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

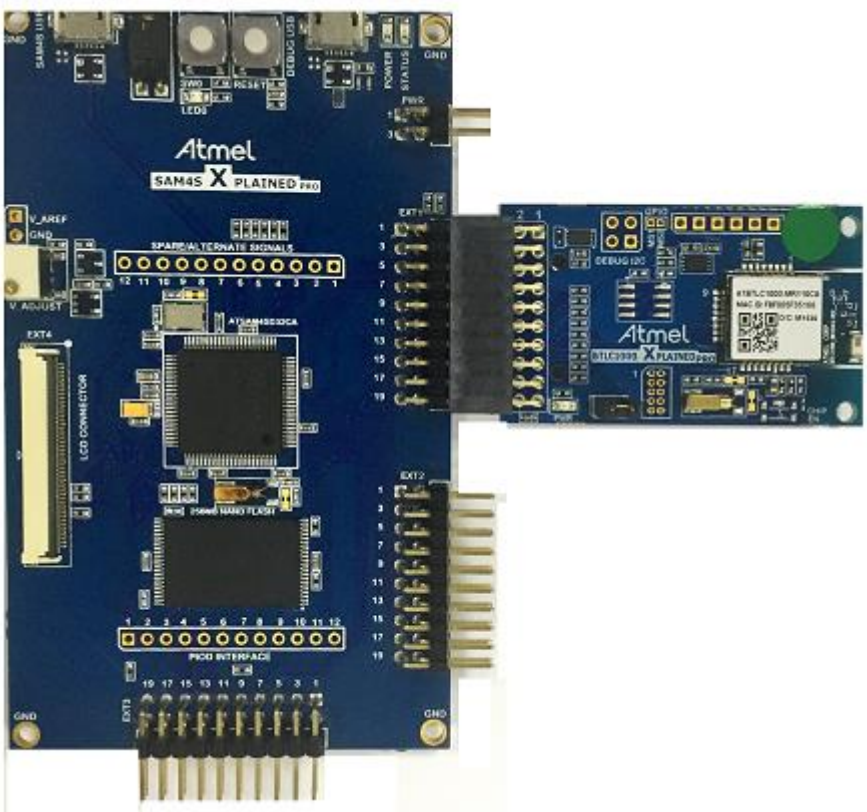
3.3 SAM G55 Xplained Pro ANS Setup

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



3.4 SAM 4S Xplained Pro ANS Setup

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



4 Alert Notification Profile

The Alert Notification profile allows a device like a watch to obtain information from a cellphone about incoming calls, missed calls, and SMS/MMS messages. The information may include the caller ID for an incoming call or the sender's ID for email/SMS/MMS but not the message. This profile also enables the client device to get information about the number of unread messages on the server device.

The iPhone® implements a custom variant of ANS called ANCS. A separate example application implementing this custom variant is available in the BluSDK package.

The example application explained in this document will only work with BLE compatible Android phones running Atmel Smart Connect mobile application. Unlike iPhone, Android does not natively support Alert Notification Service. The Atmel Smart Connect mobile application implements this service and can be used to demonstrate this example application. The example application supports missed call alert and SMS alert notification.

The device implements the GATT Client, which reads (or gets notified) about the characteristic values from the GATT server (the mobile device). The supported platforms (see Table 2-1) + ATBTLC1000 device must be paired with an Android phone. After connection and discovery, missed call or SMS alert notifications can be enabled/disabled. The Atmel Smart Connect application will notify missed call or SMS alert which are then displayed on the terminal console on the device side (ATBTLC1000 + Host MCU). The following chapters provide a detailed description of running this demo.

The 'SW0' user button on the supported platform is programmed in such a way that each successive button press will either enable or disable the notifications.

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/SAM 4S 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. 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.

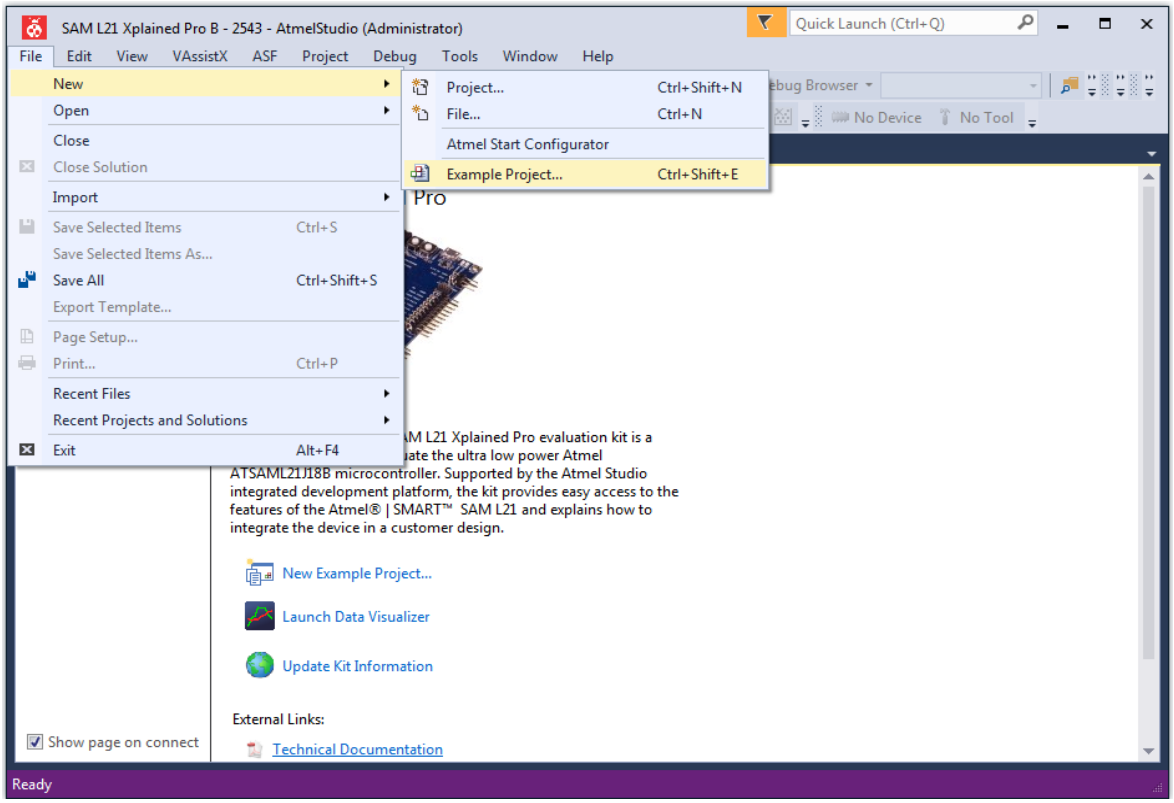
1. Alert Notification Application for SAM L21.
2. Alert Notification Application for SAM D21.
3. Alert Notification Application for SAM G55.
4. Alert Notification Application for SAM 4S.

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.

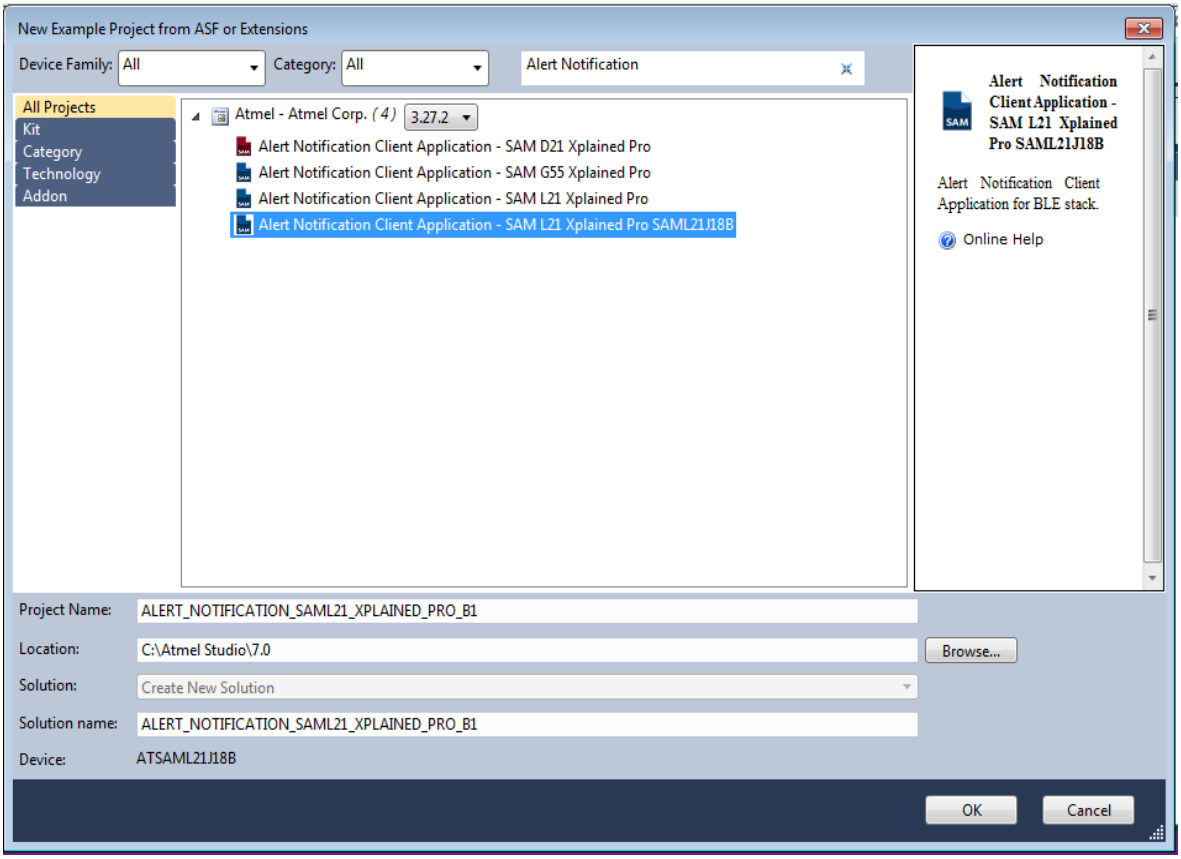
1. Select New Example Project.

Figure 5-1. Create a New Project



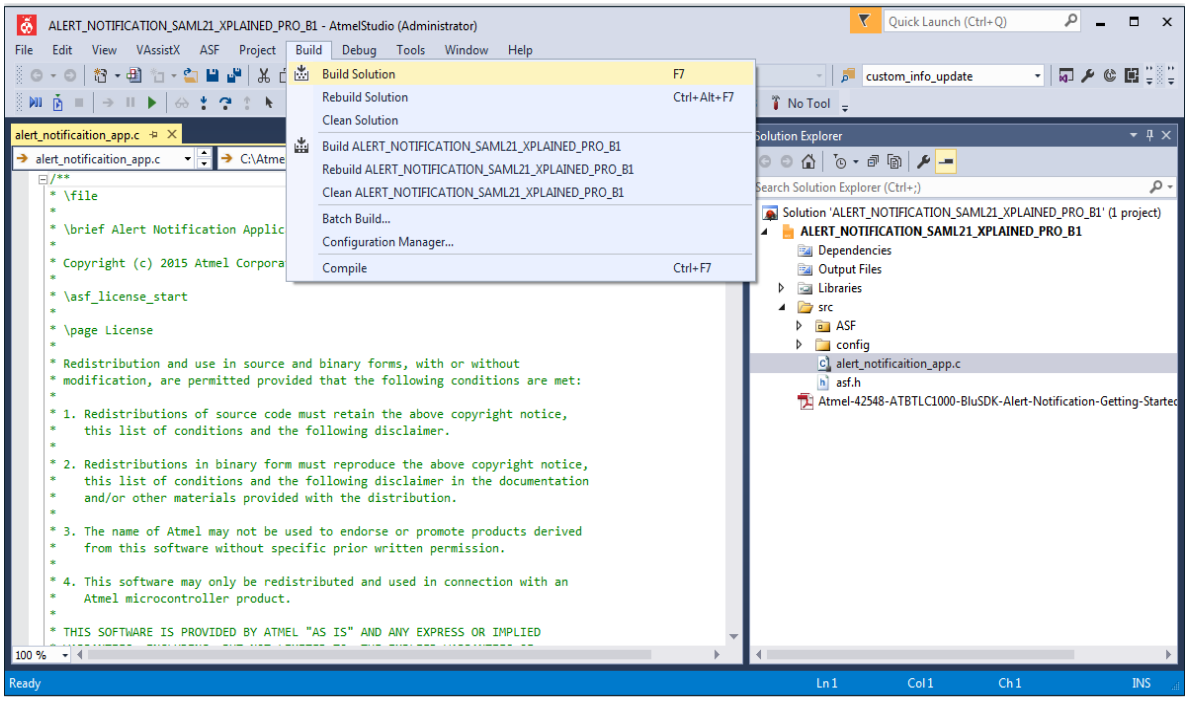
2. Select “SAMD,32-bit” in the device family, enter “alert notification” in the search window and expand Atmel Corp. Projects. The location and the name of the project can be selected in the respective fields. Click OK.

Figure 5-2. Selecting Alert Notification Application from Example Projects



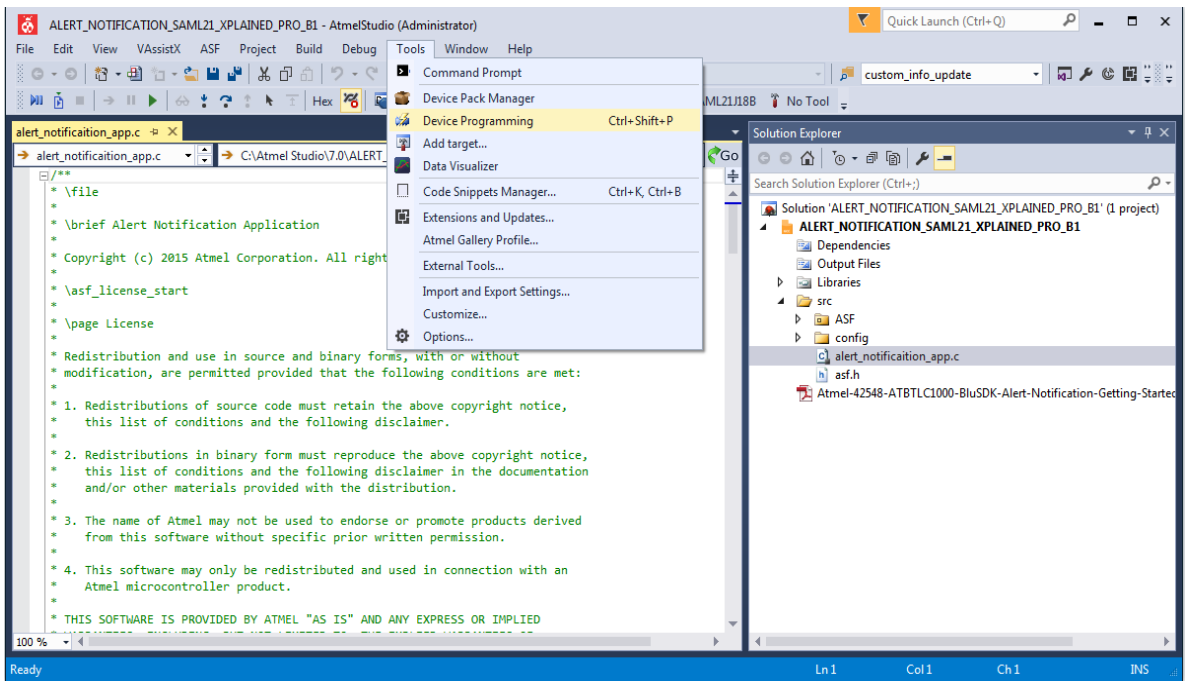
3. Accept the license Agreement. The studio will generate the Alert Notification Profile project for SAM L21.
4. Build the solution.

Figure 5-3. Building ANP Application



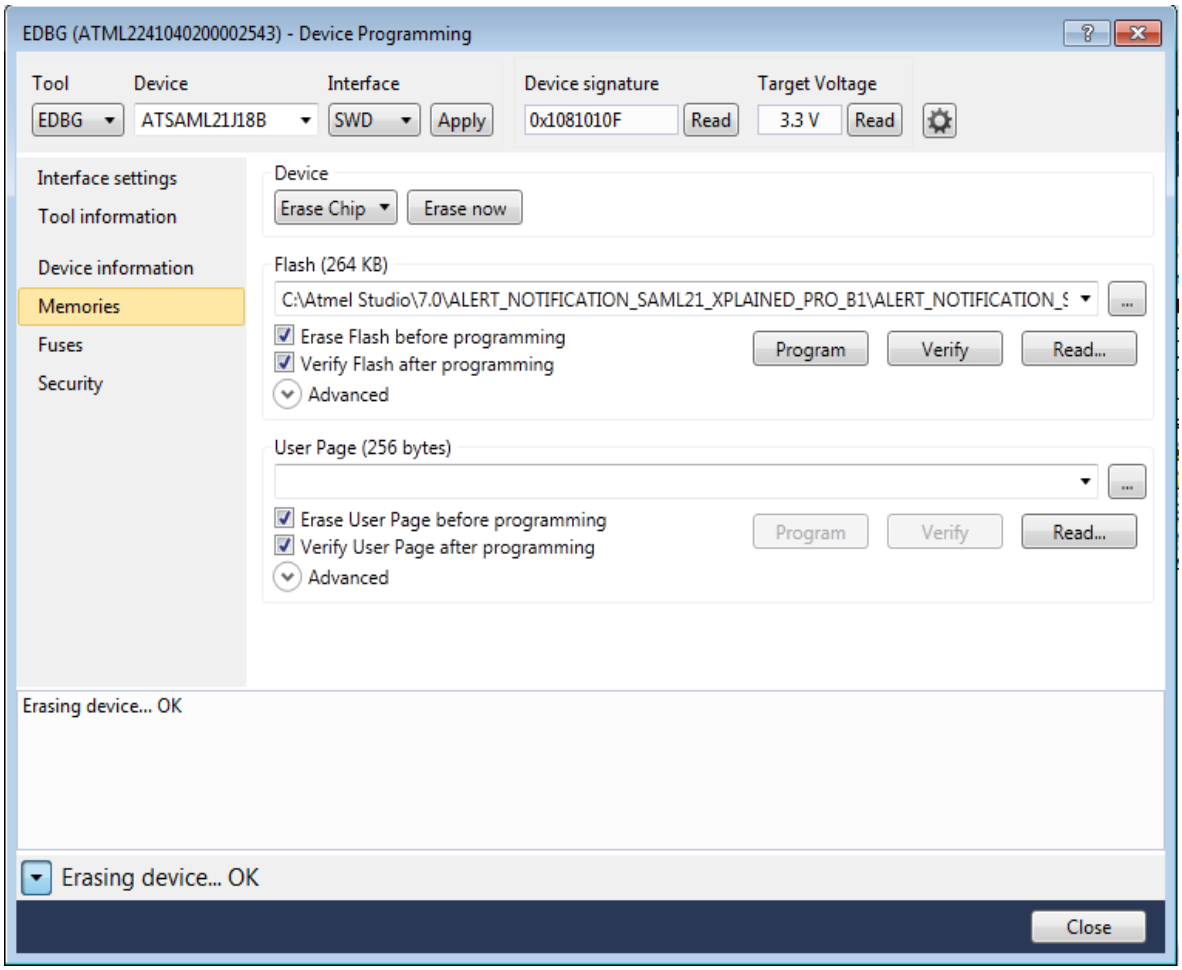
5. Download the application via the USB to the SAM L21 board using the Device Programming option available in Tools as mentioned below.

Figure 5-4. Programming ANP Application to SAM L21



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

Figure 5-5. Flashing the ANP Application to SAM L21



7. Once the application is flashed the ANP Application is ready for usage.

6 Console Logging

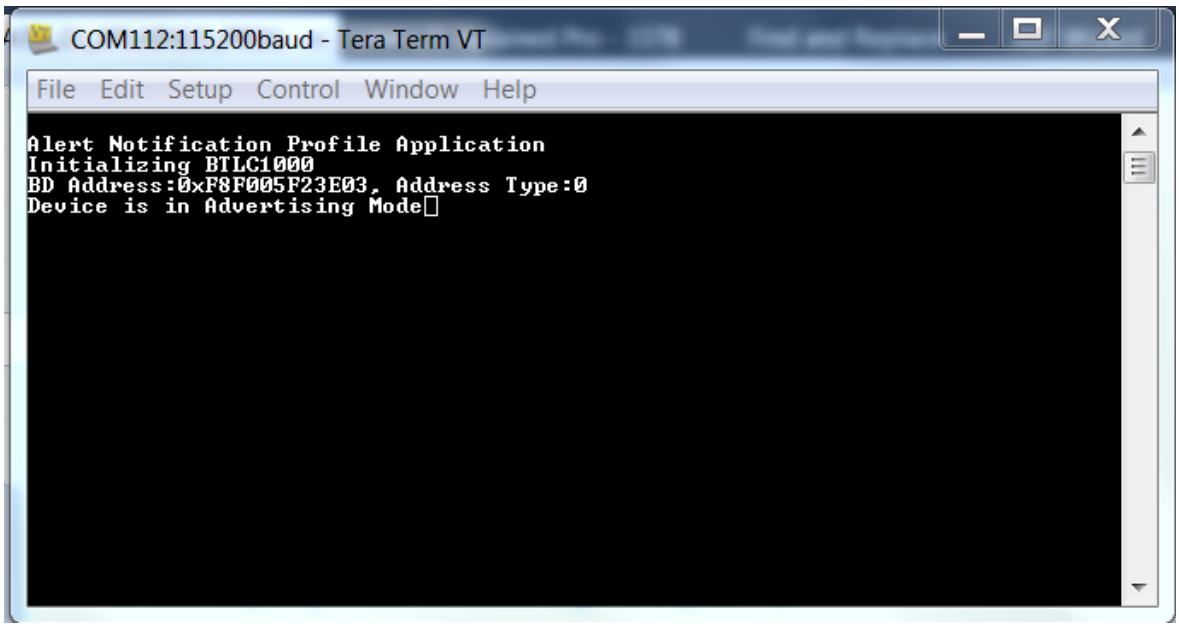
For the purpose of debugging, a logging interface has been implemented in the ANS Application.

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

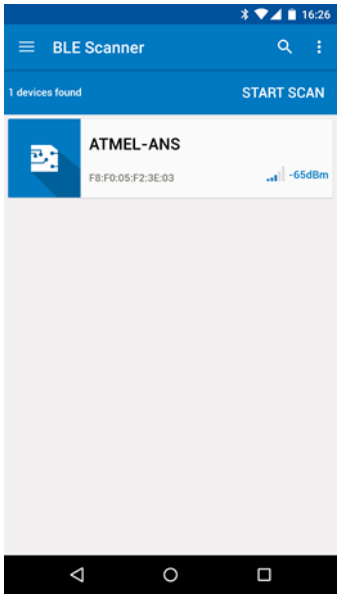
1. Connect the ATBTLC1000 Xplained Pro Board to SAM L21 Xplained Pro EXT1 as indicated in Figure 3-1. (The steps mentioned below use SAM L21 as reference. If SAM D21 or SAM G55 is used for the demo, the same steps are applicable.)
2. Open a console window by using TeraTerm or any equivalent serial port monitor application and connect to the corresponding COM port enumerated on the PC. Configure the COM Port with the following settings: Baudrate 115200, Parity None, one Stop bit, one Start bit, no Hardware Handshake.
3. Press the Reset button on the SAM L21 or supported platform (see Table 2-1) reference boards.
4. The device is now in advertising mode.

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



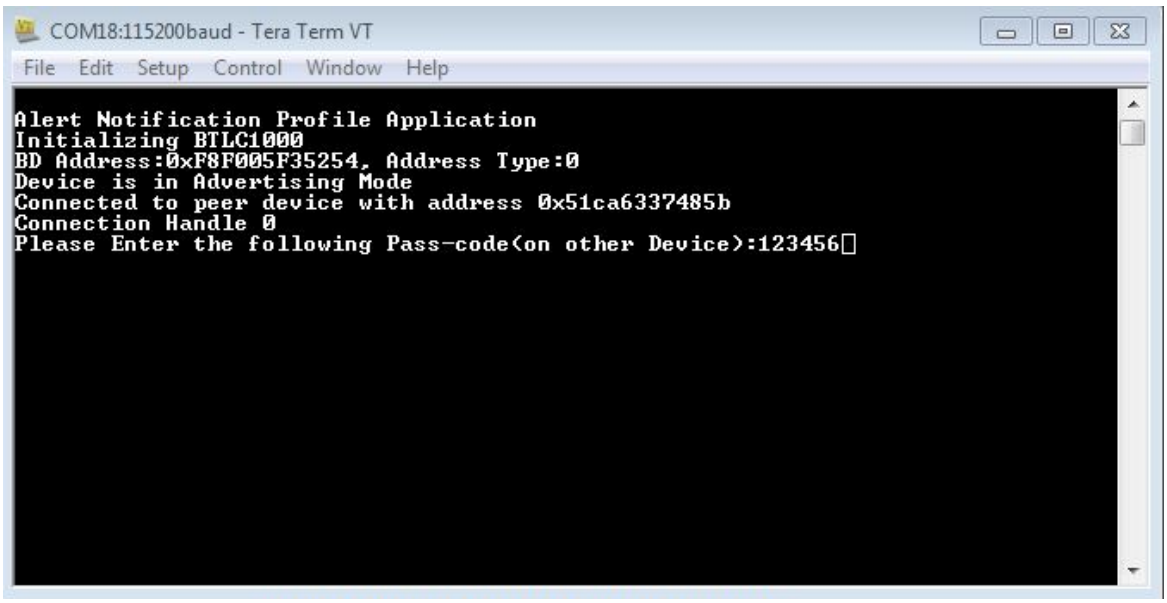
5. On the Android pone, enable Bluetooth in the Settings page. Start the Atmel Smart Connect mobile application and allow it to scan for devices. ATMEL-ANS will appear amongst the devices scanned. Click on ATMEL-ANS to connect to the SAM L21 or supported platform (see Table 2-1) + ATBTLC1000 device.

Figure 7-2. ATMEL-ANS Device Discovery on Atmel Smart Connect Application



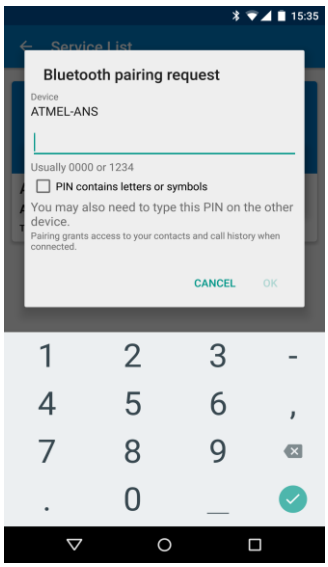
6. Once connected, the client side will start pairing process and show the pass-code to enter in other device.

Figure 7-3. Console Display for Pairing in ANP



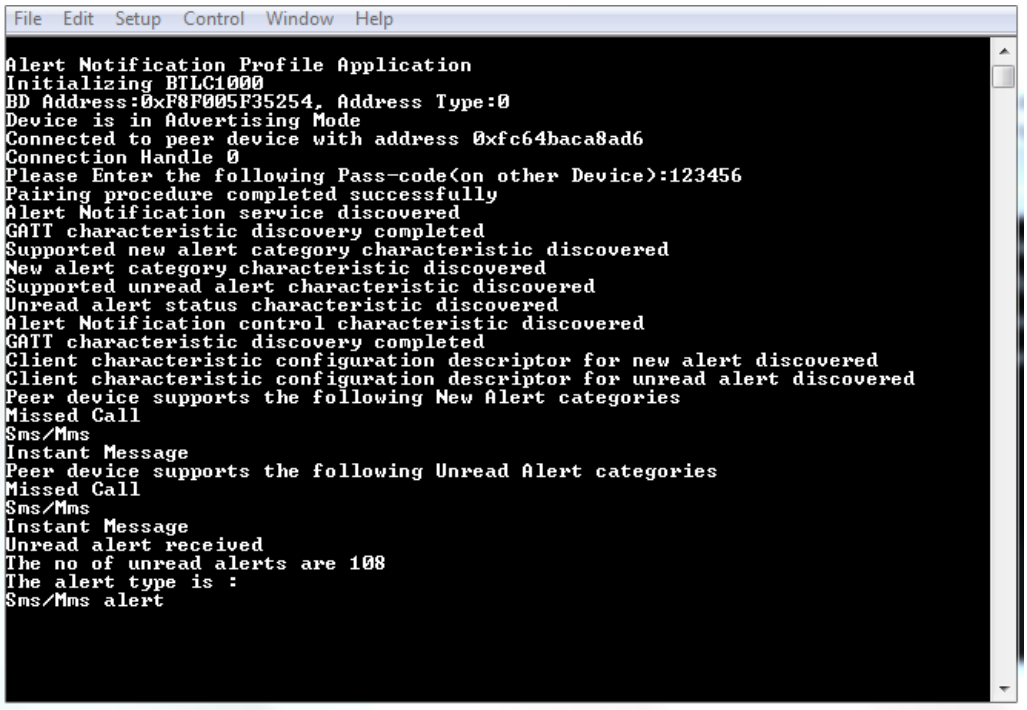
7. On device side, a pop-up screen prompting the user to enter the pass-key will appear. Enter ‘123456’ in the text box and click on ‘OK’

Figure 7-4. Pairing Request Pop-up on Android Phone



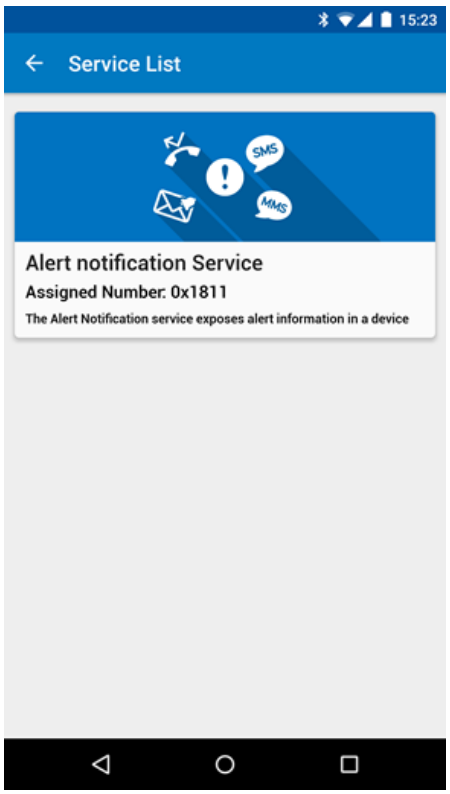
8. After successful completion of pairing procedure, client will start service discovery and will display the supported services and corresponding characterisitcs. It further displays the new and unread alert categories.

Figure 7-5. ATMEL-ANS Device Discovery on Atmel Smart Connect Application



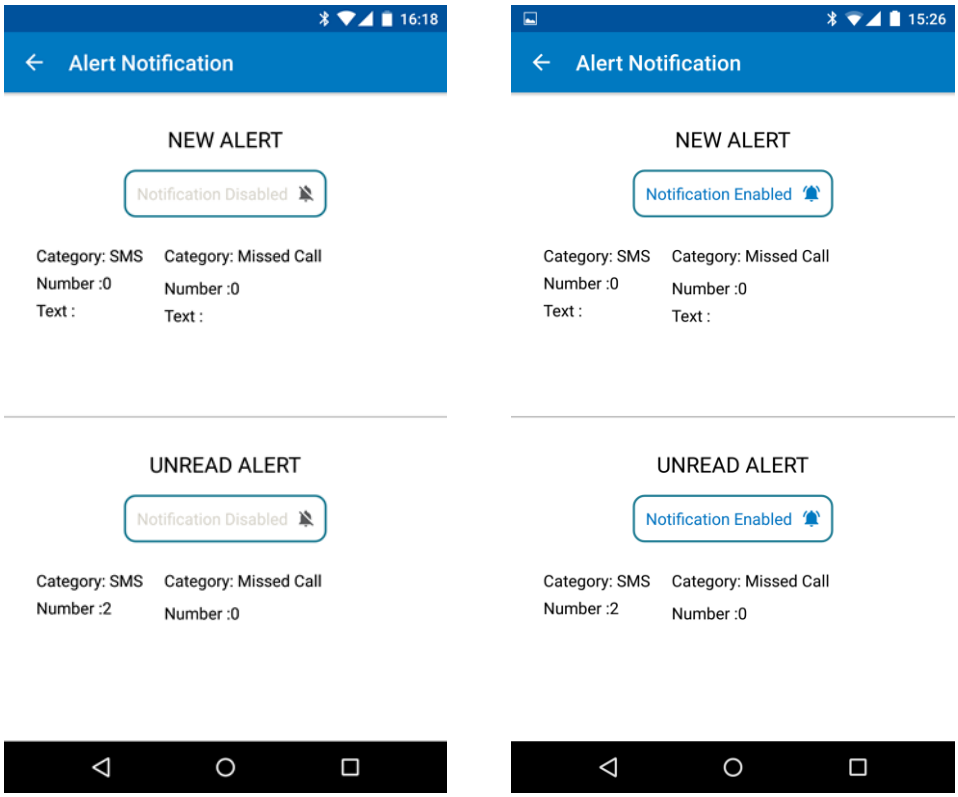
9. After pairing the Alert Notification service page is displayed as shown.

Figure 7-6. ANS Services Page



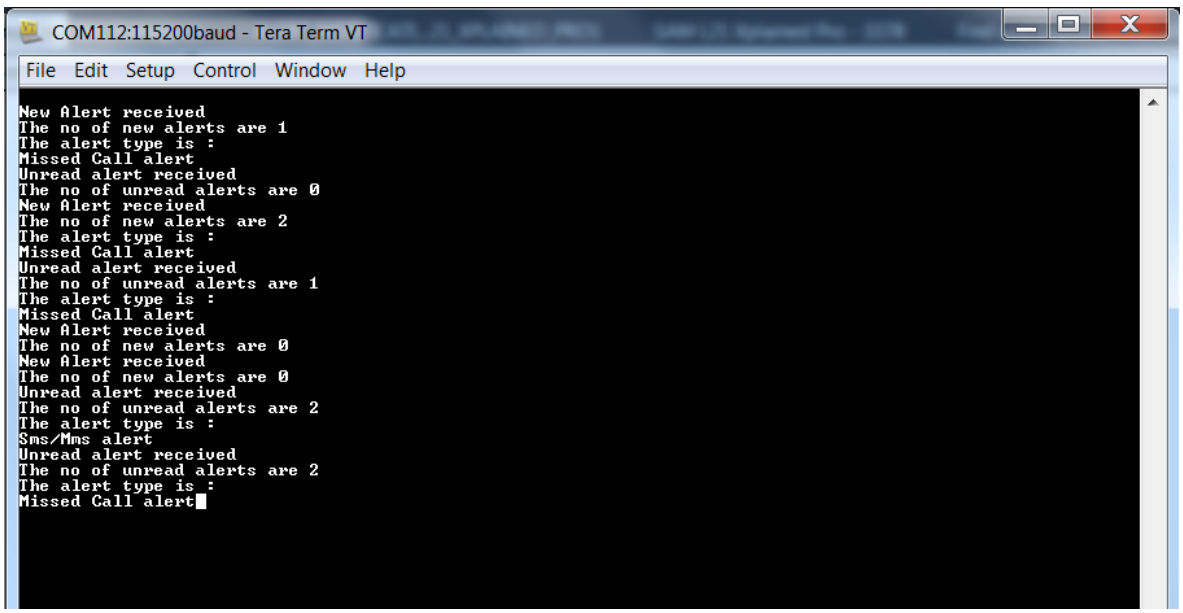
10. Enable the notifications by using the SW0 button as described in Chapter 4. The mobile app should reflect the status as shown.

Figure 7-7. Alert Notification Screen on Atmel Smart Connect Application



11. The user can trigger a missed call to the Android phone or send an SMS. The corresponding notification then gets displayed on the ATBTLC1000 side as shown below in the console logs.

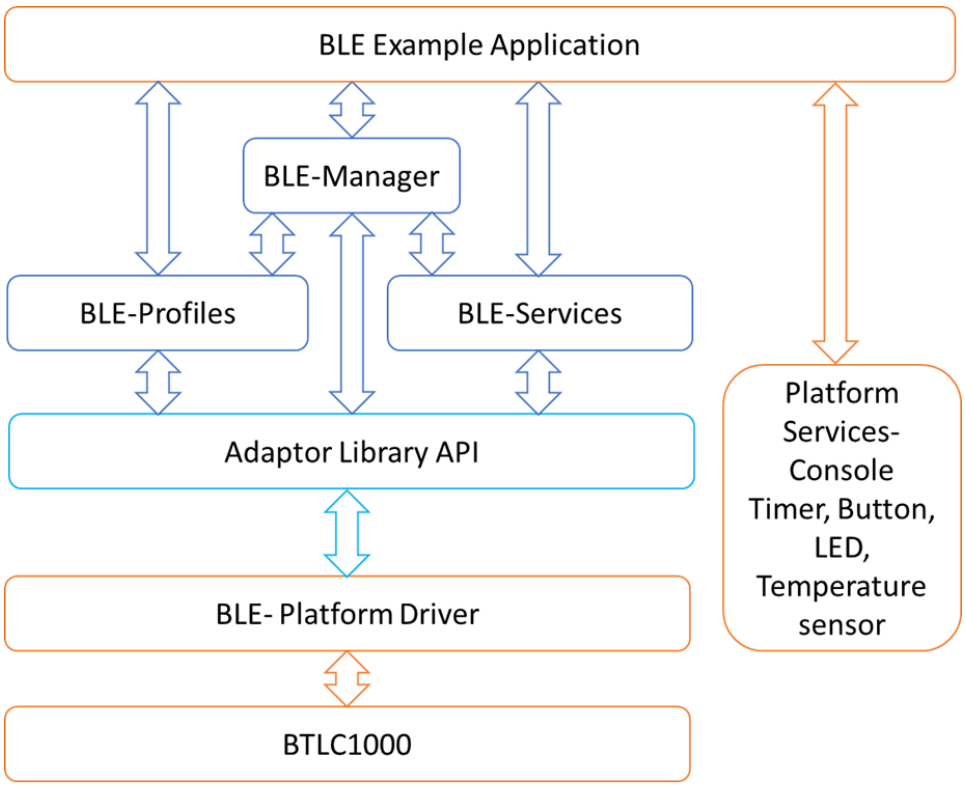
Figure 7-8. Console Display for Missed Call Alert and SMS Alert Notifications



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 Alert Notification Profile.

Figure 8-1. BluSDK Software Architecture



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ATMEL CORPORATION
1600 Technology Drive
San Jose, CA 95110
USA

10 Revision History

Doc Rev.	Date	Comments
42548C	02/2016	Table 2.1 is updated with SAM4S Hardware Support. Figure 3.4 is updated with SAM4S Xplained Pro Image. Section 5.1 Installation Steps are updated.
42548B	11/2015	Figure 3-1 is updated. Screenshots in Chapter 5 are updated.
42548A	09/2015	Initial document release.

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