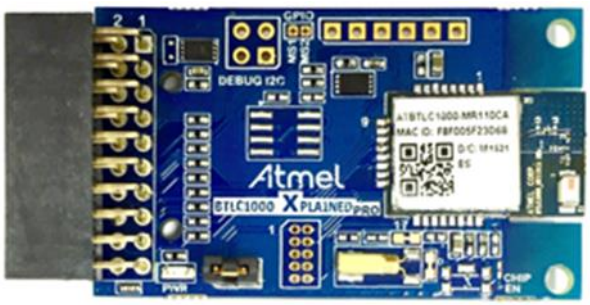
ATBTLC1000 BluSDK

Custom Serial Chat Profile - Getting Started Guide

USER GUIDE



Introduction

This getting started guide describes the setup of the Atmel® ATBTLC1000 with a supported platform bringing up an example profile supplied as part of the BluSDK release. The Custom Serial Chat Profile is an example application that is embedded as part of the software release package.

The custom serial chat allow you to send and receive data between the Atmel ATBTLC1000 with a supported host platform and the Atmel Smart Connect mobile application. This is a custom profile and application example implemented over GATT. The user can type a message on the Atmel ATBTLC1000 side using the terminal console and send it to the mobile application. Messages typed from the mobile app side are received and displayed on the console terminal at the device side.

This document explains the details about:

1. Getting started with the setup of a supported platform to be used as a Custom Serial Chat.
2. Getting the Custom Serial Chat Application working on the above mentioned setup.

Features

- Device discovery and disconnection
- Pairing/bonding
- Send and receive messages
- Console display

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1 Demo Setup

Figure 1-1. Demo Setup of a Custom Serial Chat Application on the ATBTLC1000

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 Custom Serial Chat Setup

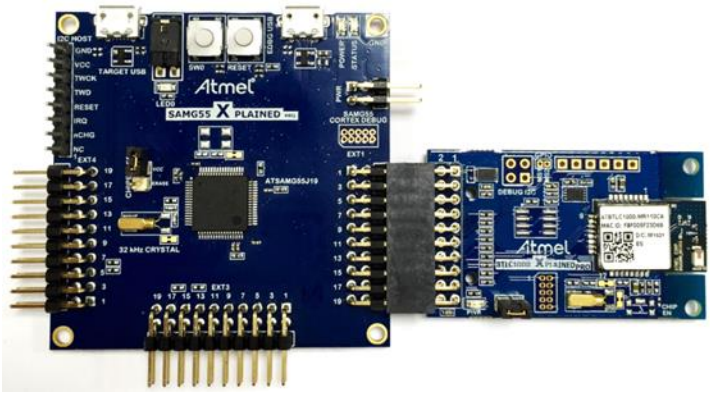
Figure 3-1. ATBTLC1000 Xplained Pro Extension Connected to a SAM L21 Xplained Pro

3.2 SAM D21 Xplained Pro Custom Serial Chat Setup

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

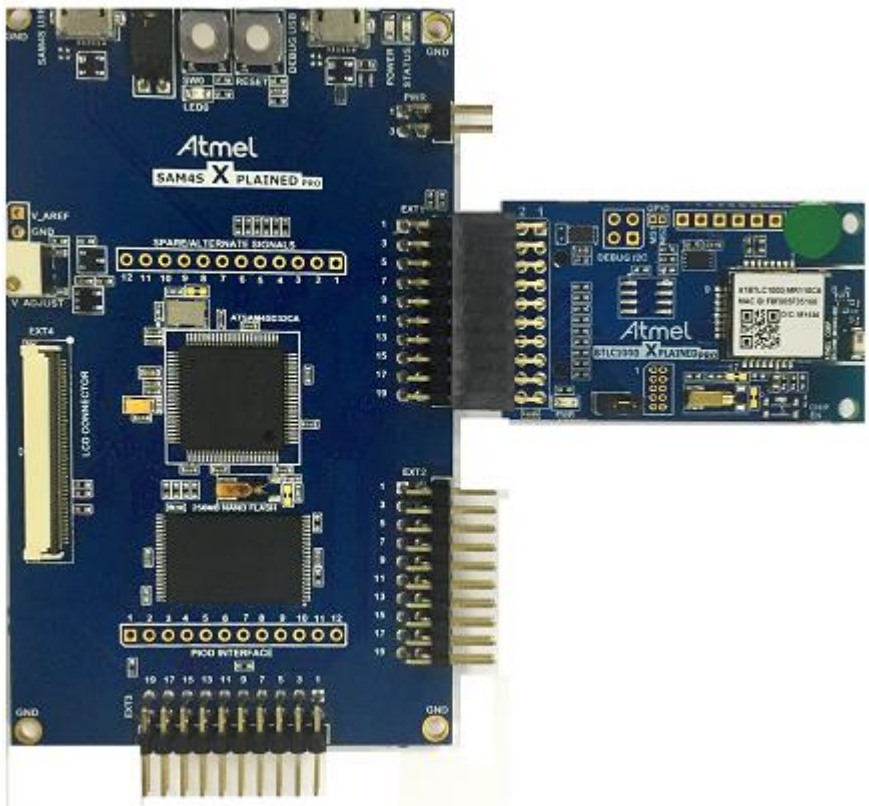
3.3 SAM G55 Xplained Pro Custom Serial Chat Setup

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



3.4 SAM 4S Xplained Pro Custom Serial Chat Setup

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



4 Software Setup

4.1 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 from 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.

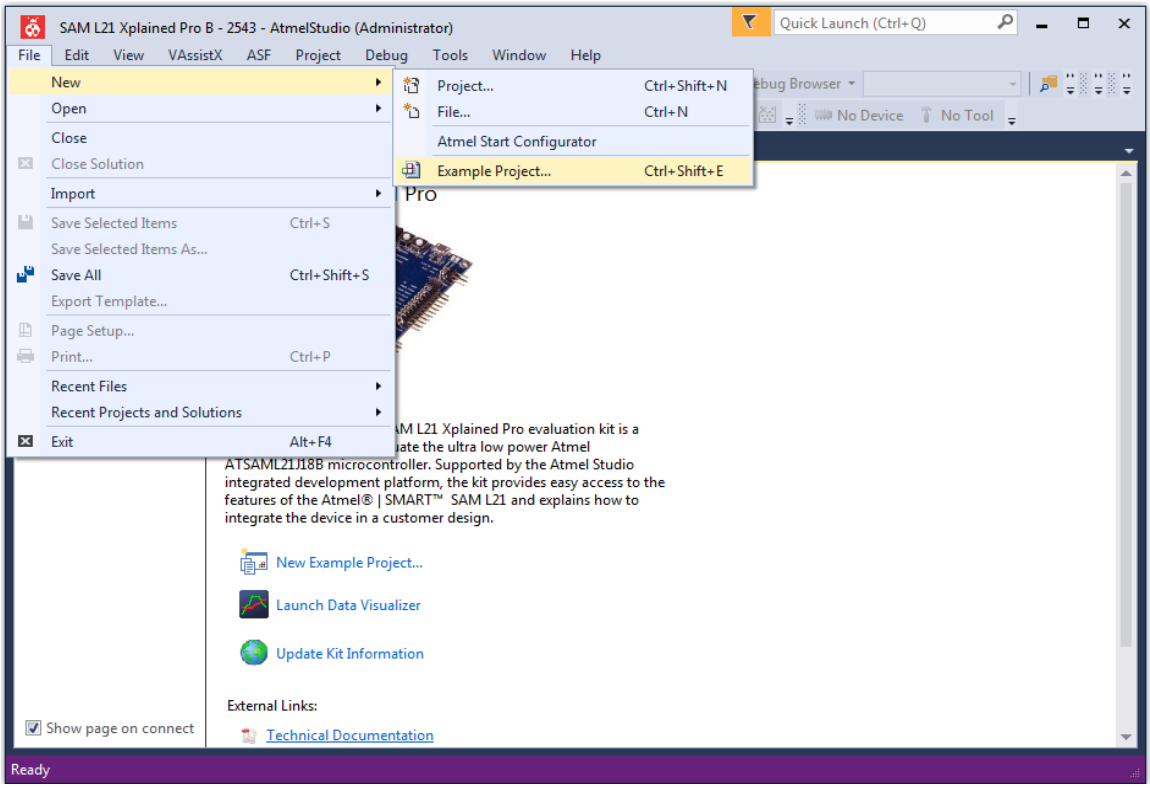
1. Custom Serial Chat Application for SAM L21.
2. Custom Serial Chat Application for SAM D21.
3. Custom Serial Chat Application for SAM G55.
4. Custom Serial Chat Application for SAM 4S.

4.2 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 Chapter 2) as well.

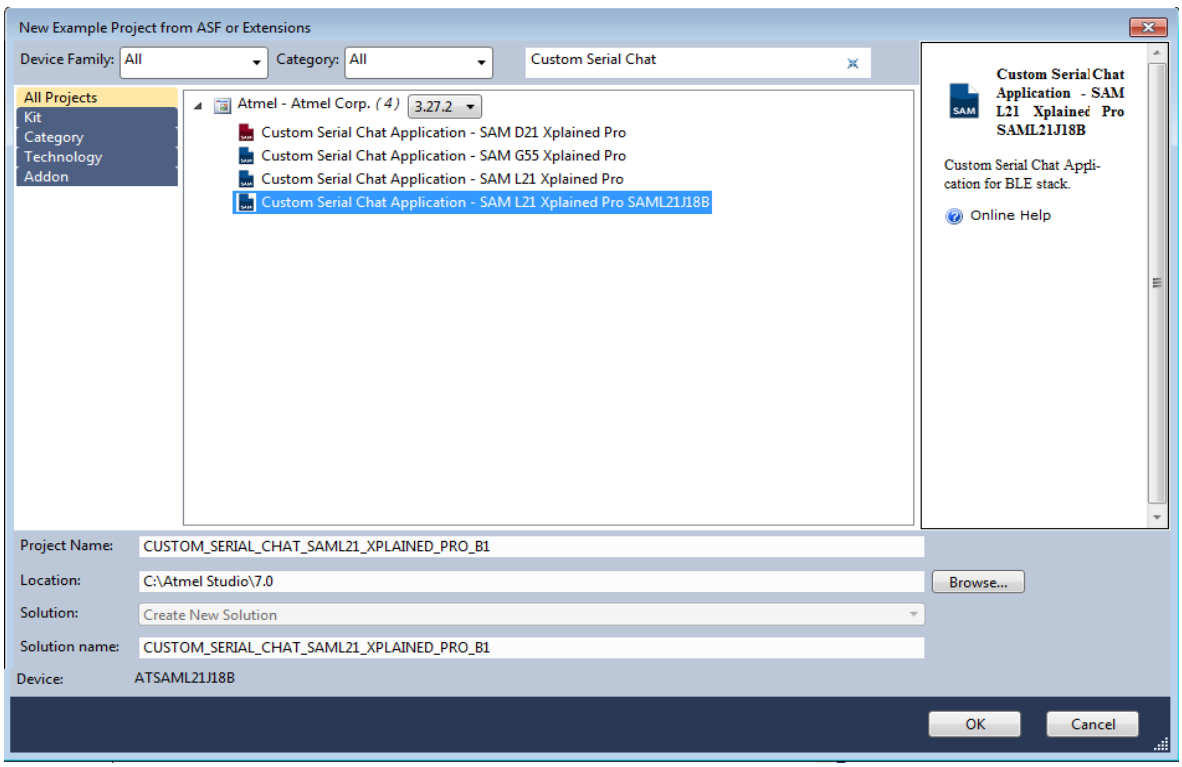
1. Select New Example Project.

Figure 4-1. Creating a New Project



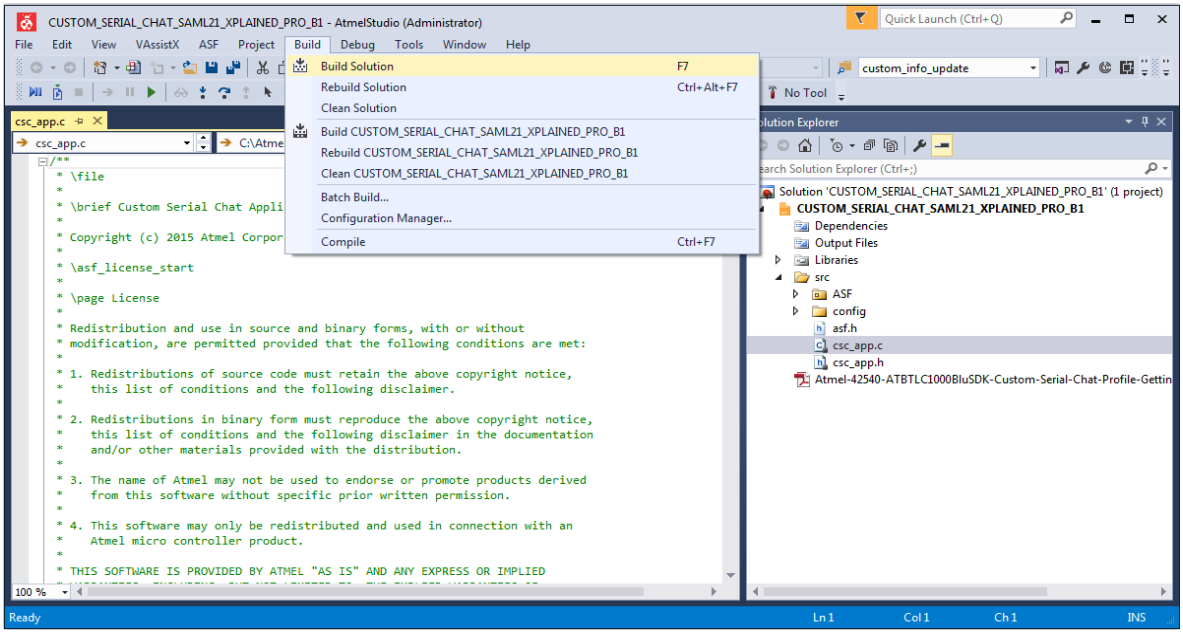
2. Enter “Custom Serial Chat” in the search window and expand Atmel Corp Projects. The location and the name of the project can be selected in the respective fields. Click OK.

Figure 4-2. Selecting Custom Serial Chat Application from Example Projects



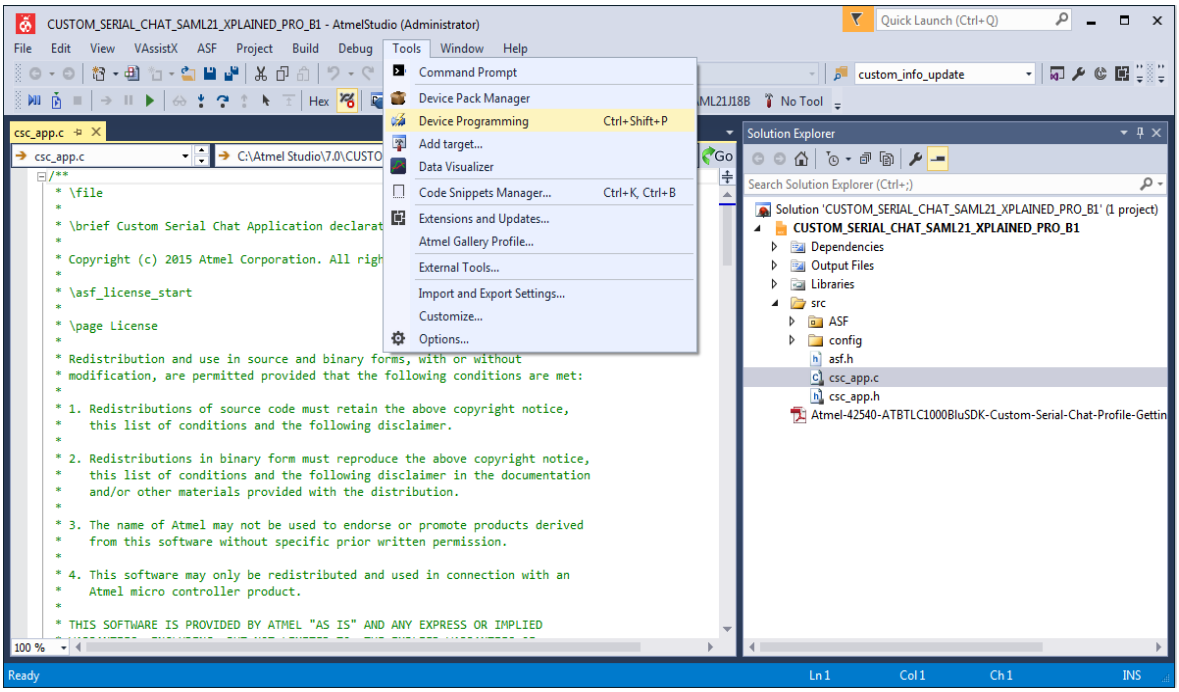
3. Accept the license agreement. The studio will generate the Custom Serial Chat project for SAM L21.
4. Building the solution.

Figure 4-3. Building the Custom Serial Chat Application



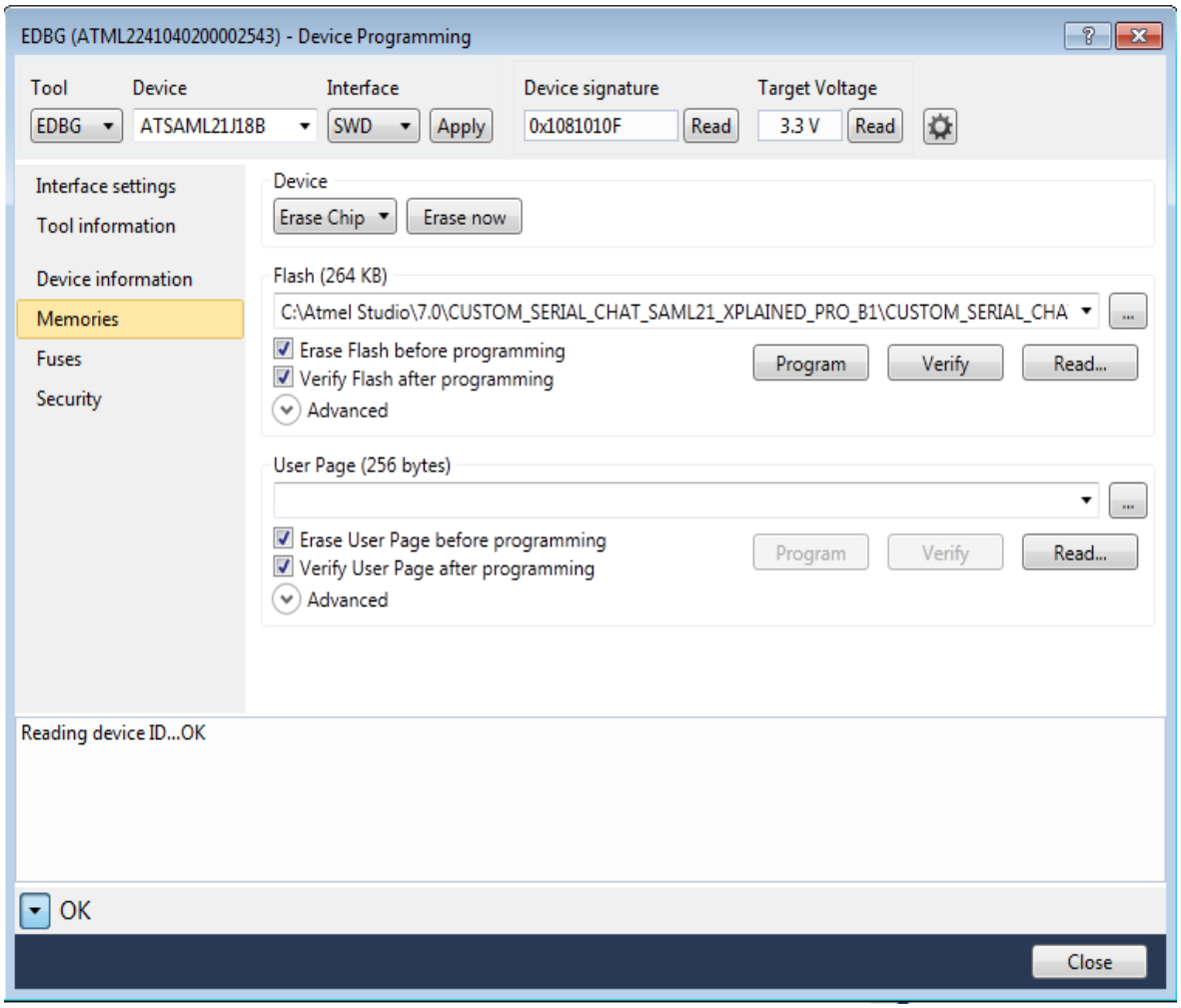
5. Download the application via the DEBUG USB to the SAM L21 board using the Device Programming option available in Tools as shown below.

Figure 4-4. Selecting Device Programming Option



6. Program the device to download the Custom serial chat application as shown below.

Figure 4-5. Flashing the Application on Atmel MCU



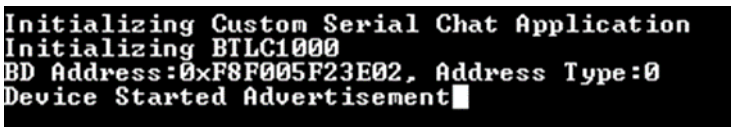
5 Console Logging

For the purpose of debugging, logging is made available through a serial console. The logging interface utilizes the same COM port that connects to supported platform (see Chapter 2). A serial port monitor application (for example TeraTerm) shall be opened and attached to the appropriate COM port enumerated by the device on the PC.

6 Running the Demo

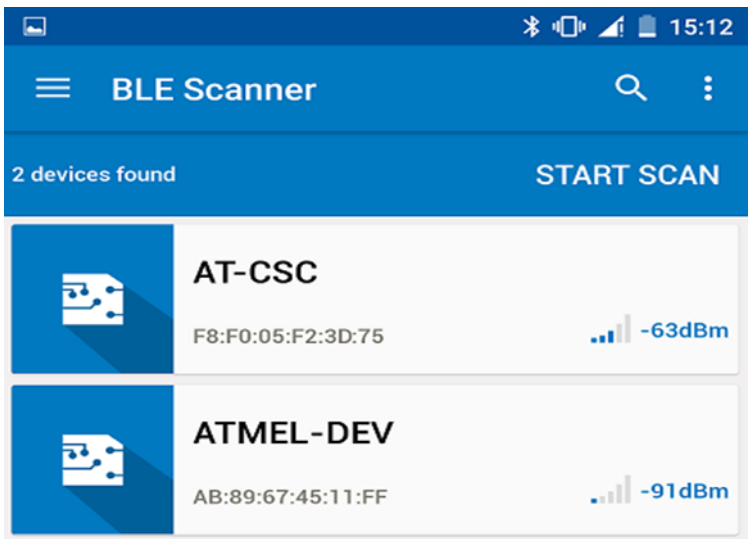
1. Connect the ATBTLC1000 Xplained Pro Board to SAM L21 Xplained Pro EXT1 as indicated in Figure 3-1. (The steps mentioned below use SAM L21 as reference. If SAM G55 is used for the demo, the same steps are applicable.)
2. Power on the SAM L21 by connecting the USB cable.
3. On the PC, open any Terminal Application (e.g. TeraTerm) and select the appropriate COM Port. (Settings: Baudrate 115200, None Parity, one Stop bit, one Start bit, no Hardware Handshake.)
4. Press the Reset button on the SAM L21 or supported platform (see Chapter 2) board.
5. The device is now in advertising mode as shown below.

Figure 6-1. Custom Serial Chat in Advertising Mode



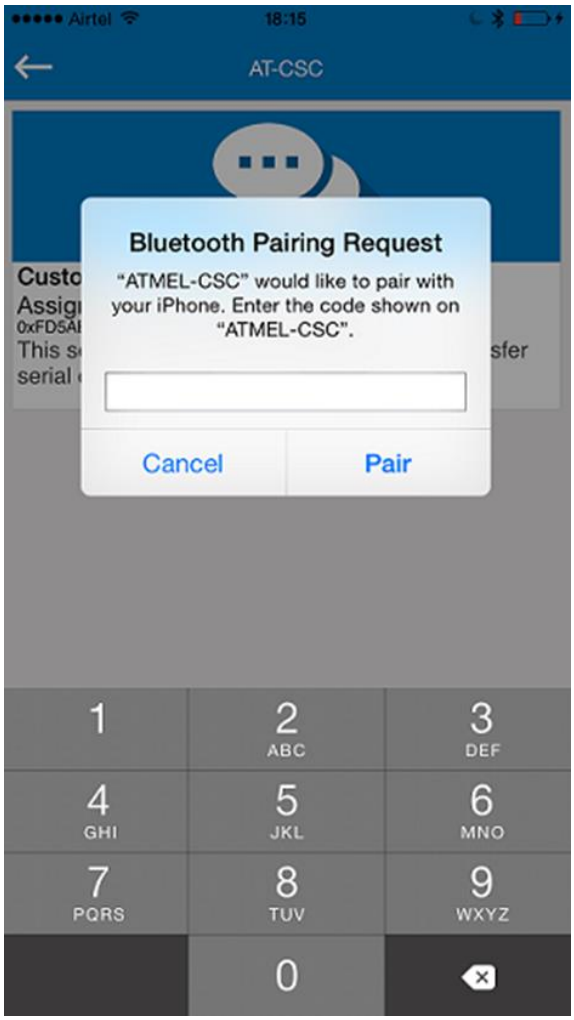
6. On a BLE compatible Android phone or a iPhone®, enable Bluetooth® in the settings page. Open Atmel Smart Connect application and click on 'START SCAN' option for scanning the nearby BLE devices. AT-CSC will appear amongst the devices scanned. Click on AT-CSC to connect to the SAM L21 or supported platform + ATBTLC1000 device.

Figure 6-2. AT-CSC Device Discover on Bluetooth Device



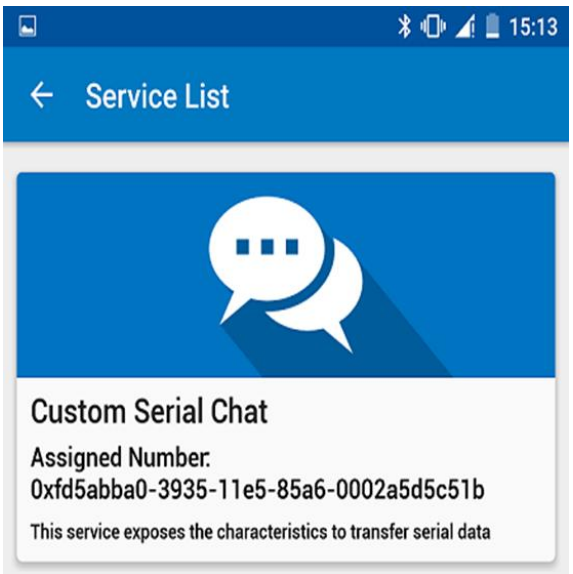
7. After connection, a pairing pop up will occur. The user must enter "123456" as instructed on the console log connected to the ATBTLC1000 setup.

Figure 6-3. Pairing Page for Custom Serial Chat Application



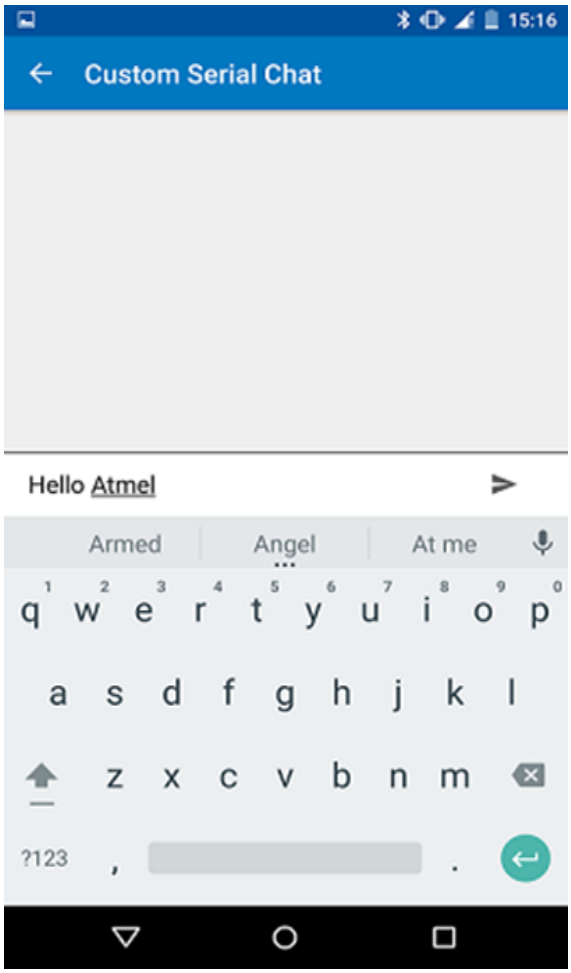
8. Once pairing is complete the Custom Serial Chat icon appear on service list page.

Figure 6-4. Custom Serial Chat Service Page



9. After clicking on the Custom Serial Chat icon, the chat screen will appear where the user can type the text that is to be sent to the remote device and also see the text coming from the remote device.

Figure 6-5. Custom Serial Chat Window



10. Chat text “Hello Atmel” send to remote device.

Figure 6-6. Send Data to ATBTLC1000

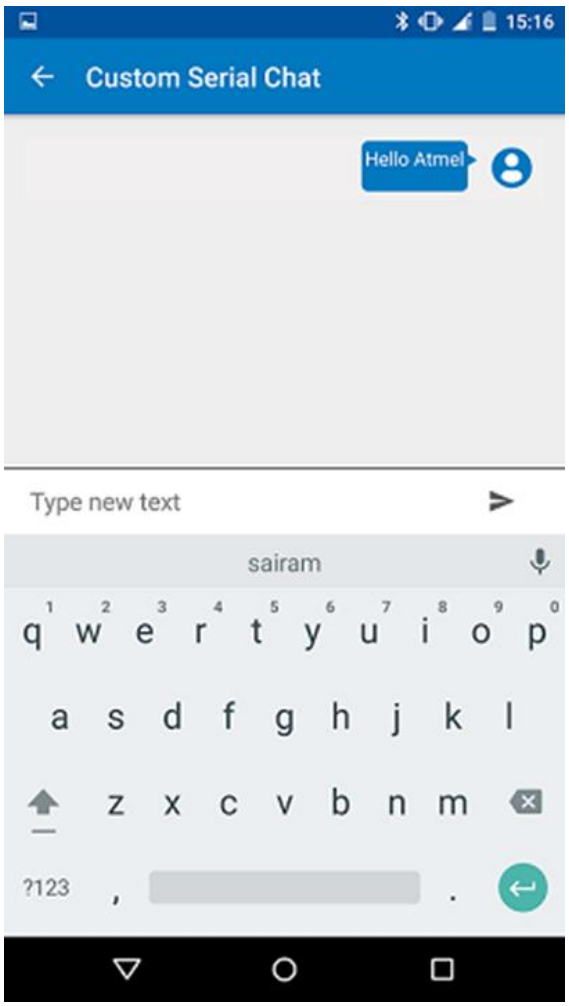
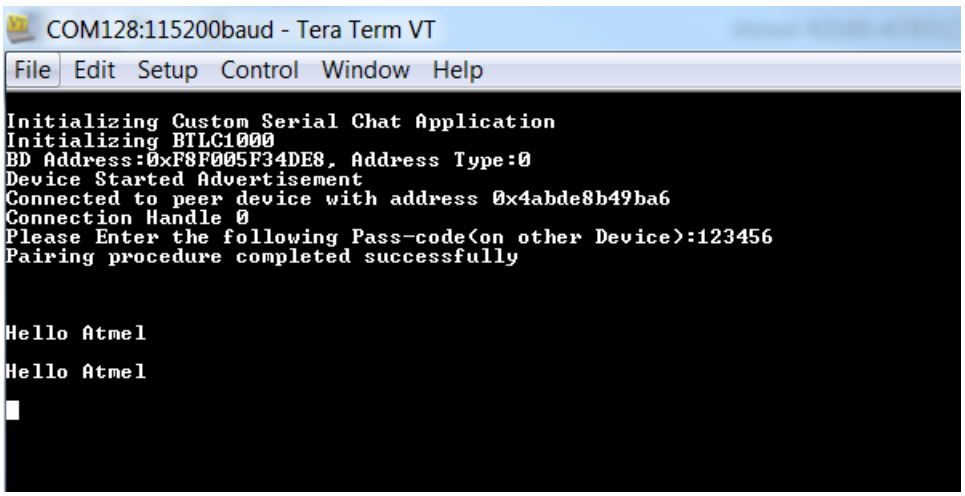


Figure 6-7. Console Log Displaying Data Received from Mobile Application



11. The user can also write the text on the console for SAM L21 (or supported platform - see Chapter 2) + ATBTLC1000 device and press the ENTER key for transmitting the chat text to the mobile application.

Figure 6-8. Console Log for Sending Data to Remote Device

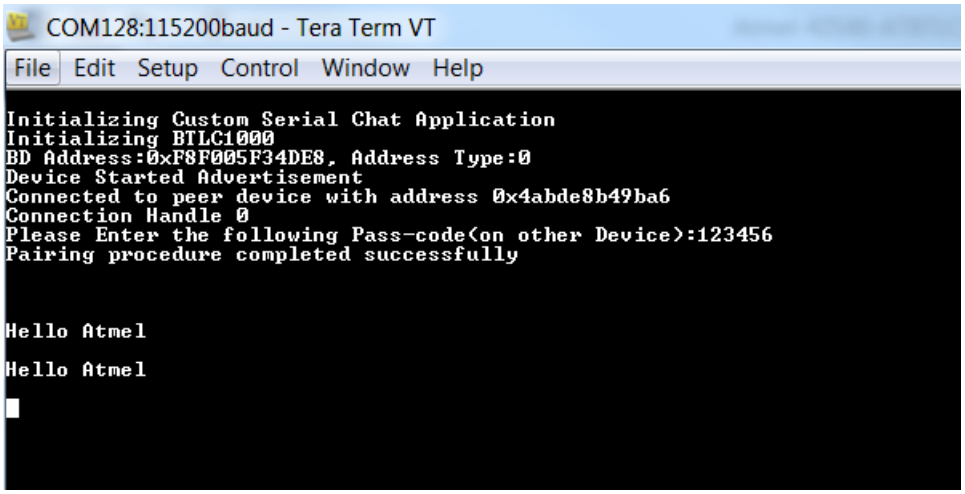
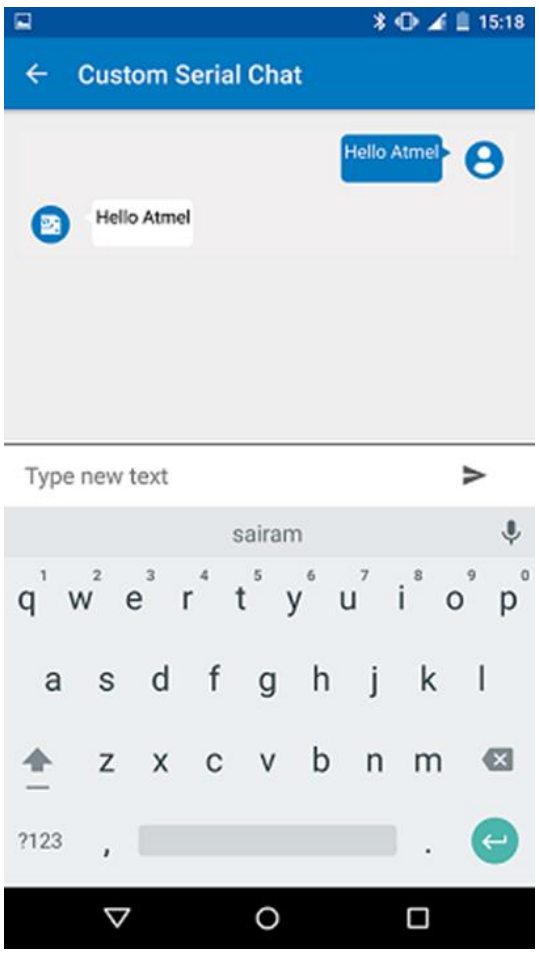


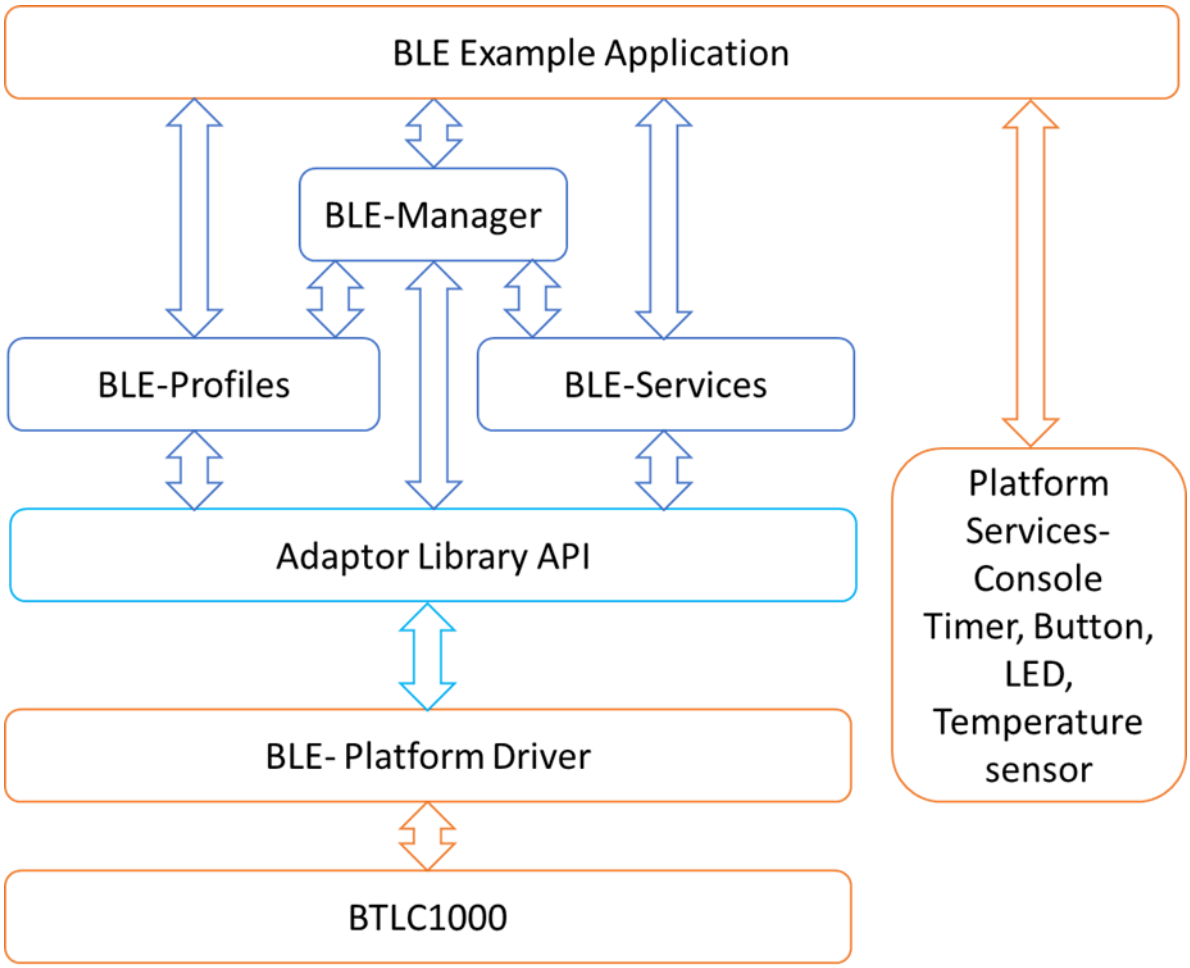
Figure 6-9. Chat Text Received from ATBTLC1000



7 BluSDK Software Architecture

Figure 7-1 illustrates the various layers in the BLE subsystem for the ATBTLC1000 configuration. The External host can be supported platform (see Chapter 2).

Figure 7-1. BluSDK Software Architecture



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9 Revision History

Doc Rev.	Date	Comments
42540C	02/2016	Table 2.1 is updated with SAM4S hardware support. Figure 3.4 is updated with SAM4S Xplained Pro image. Section 4.1 installation steps are updated.
42540B	11/2015	Figure 3-1 is updated. The screenshots in Chapter 4 are updated.
42540A	09/2015	Initial document release.

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