BlueSoleil Development Kit Instruction

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Version 0.1

VERSION HISTORY

REVISION	AMENDMENT	DATE	AUTHOR
0.1	Draft	2012-11-28	Wan Zhifu Li Li

Contents

1. Introduction

The BlueSoleil development kit is provided with a BlueSoleil evaluation board, a BlueSoleil SOC (System-On-Chip) module, i40e, i50e, or i410e, and demo software, BlueSoleil firmware.

This document introduces BlueSoleil development kit and its components, and how to test BlueSoleil modules and upgrade firmware.

2. Get It Started

This chapter introduces resources that are required for building the test environment.

2.1   BlueSoleil Module Test Environment

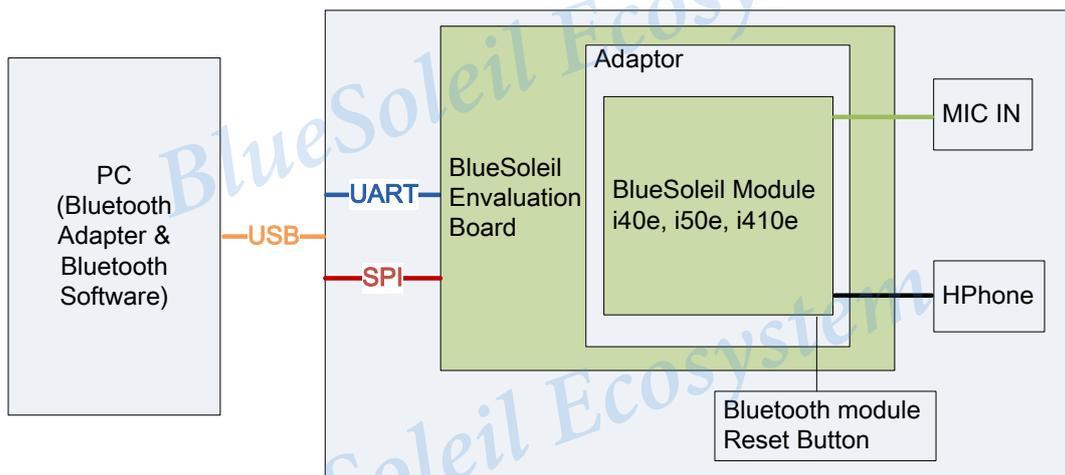Test environment is illustrated in Figure 1 below.

Figure 1 BlueSoleil module test environment

Table 1 below introduces the required resources for building the test environment.

Table 1 Test environment resources

Resources	Functions
BlueSoleil module	i40e, i50e or i410e. It is welded on an adaptor.
adaptor/connector	A welder module PCB plate. It can be directly inserted in BlueSoleil evaluation board to connect BlueSoleil module with BlueSoleil evaluation board.
BlueSoleil evaluation board	It is used to connect with peripherals, including PC, microphone, speaker, and etc.
Power supply	Use a USB cable to connect to PC for power supply
PC (*Bluetooth* adapter and *Bluetooth* software)	Use a USB cable to connect to PC to test *Bluetooth* profiles' functionality.
PC driver	It needs to install the driver to connect the development kit with PC. The install package is CP210x_VCP_Win2K_XP_S2K3.zip.
USB→SPI driver	Install USB→SPI driver, or install CSR uEnergy SDK (current version: 2.0.0.41)
Serial communication tool	Commix.exe/CommixE.exe. It is a tool to interface *Bluetooth* modules via the serial port. For instance, sending AT commands.
Serial port tool	sscom32.exe. It is a tool to send data through the virtual serial port.

It is recommended to use IVT BlueSoleil adapter (BlueSoleil dongles) and BlueSoleil software. They can be purchased from IVT e-Commerce website: www.BlueSoleil.com.

The PC driver and the serial communication tool can be downloaded from IVT support center.

2.2 BlueSoleil Evaluation Board

Figure 2 below illustrates the layout of BlueSoleil evaluation board.
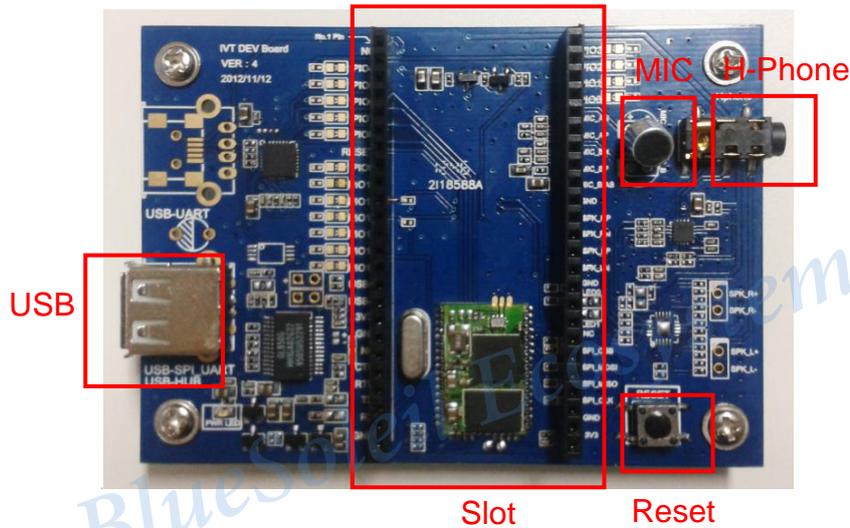
Figure 2 BlueSoleil evaluation board

BlueSoleil evaluation board components are summarized in Table 2 below.

Table 2 BlueSoleil evaluation board components

Components	Functions
USB interface	Use a USB cable to connect to PC
MIC	Microphone. Audio input.
H-phone	H-phone. Audio 3.5 output. Users can directly use the MIC and H-phone to evaluate the *Bluetooth* functionality of HFP and A2DP.
Reset Button	Powers off and then on. It will reset the BlueSoleil module. This reset button only works for i40e and i50e. i410e does not have reset PIN.
Slot	Insert the adaptor to connect the BlueSoleil module with BlueSoleil evaluation board.

3. Build Environment

This chapter introduces how to build the BlueSoleil module test environment and firmware upgrade environment.

3.1 Build test environment

Figure 3 below illustrates test environment's overview. The BlueSoleil module is placed in a welder module PCB plate which can be directly inserted into BlueSoleil evaluation board.
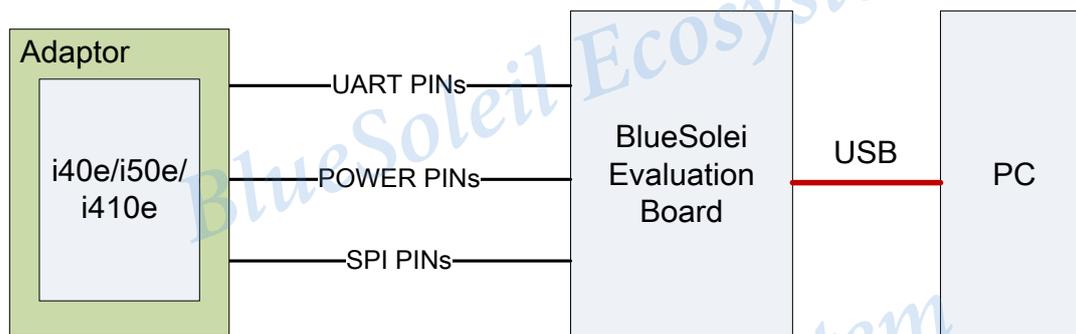

Figure 3 Test environment overview

The PIN number starts from the top left side. Refer to Figure 5 below.
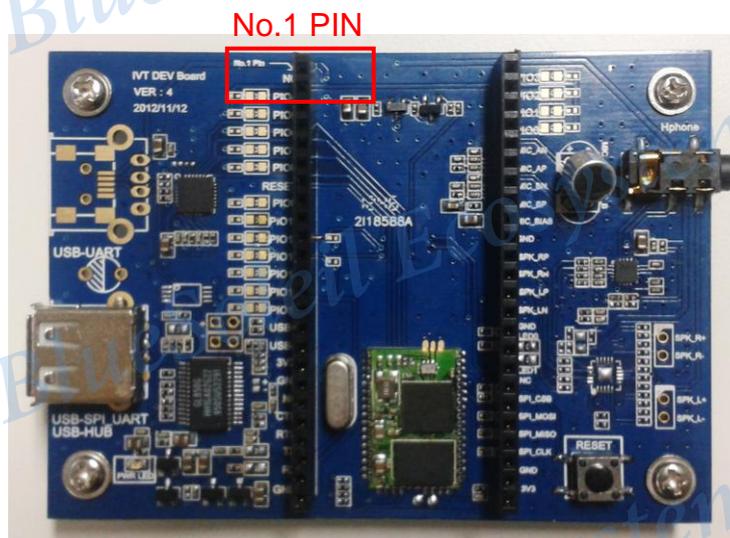

Figure 4 BlueSoleil module PIN start point

Figure 5 below illustrates BlueSoleil i40e with an adapter. The adapter can be directly inserted into the BlueSoleil evaluation board's slot. Please note the PIN foot orientation.
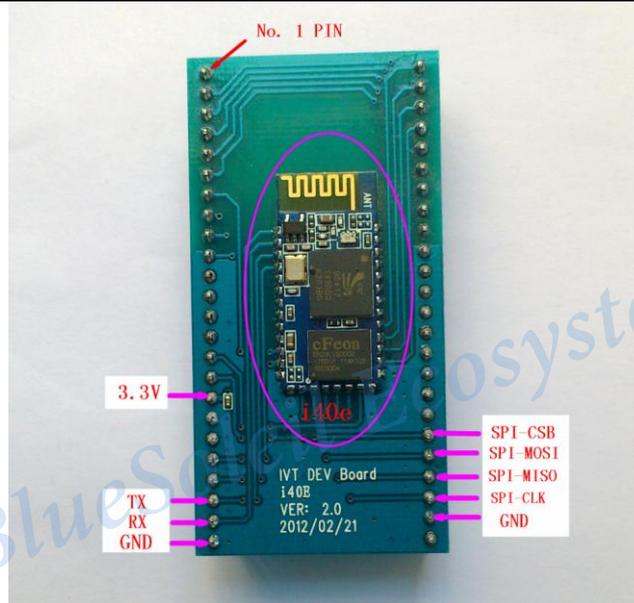
Figure 5 BlueSoleil i40e with adaptor

After installed the PC serial port driver, a serial port will be created for the connection between the BlueSoleil development kit and PC. See Figure 6 below.
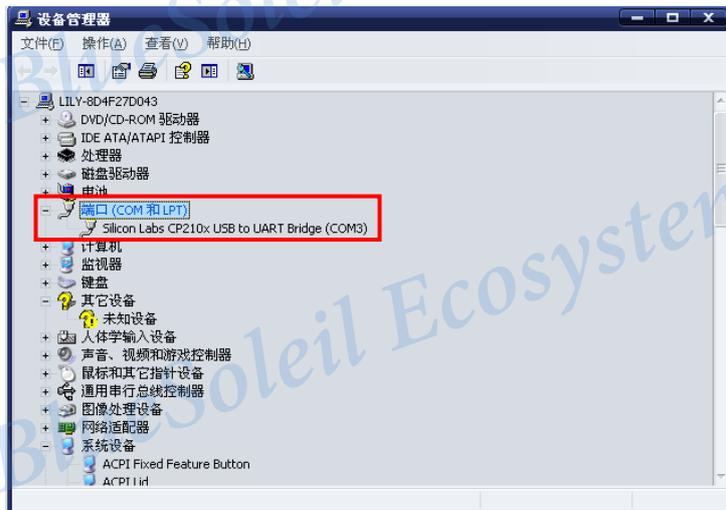

Figure 6 Created serial port

It needs to install USB→SPI driver in order to upgrade firmware. A USB→SPI convertor will be created after installed the driver. See Figure 7 below.

Figure 7 USB→SPI convertor

3.2 Build firmware upgrade environment

Figure 8 below illustrates how to build firmware upgrade environment. Since BlueSoleil evaluation board integrates a chip that is able to covert USB interface to SPI and UART, it does not need the SPI interface to upgrade firmware.
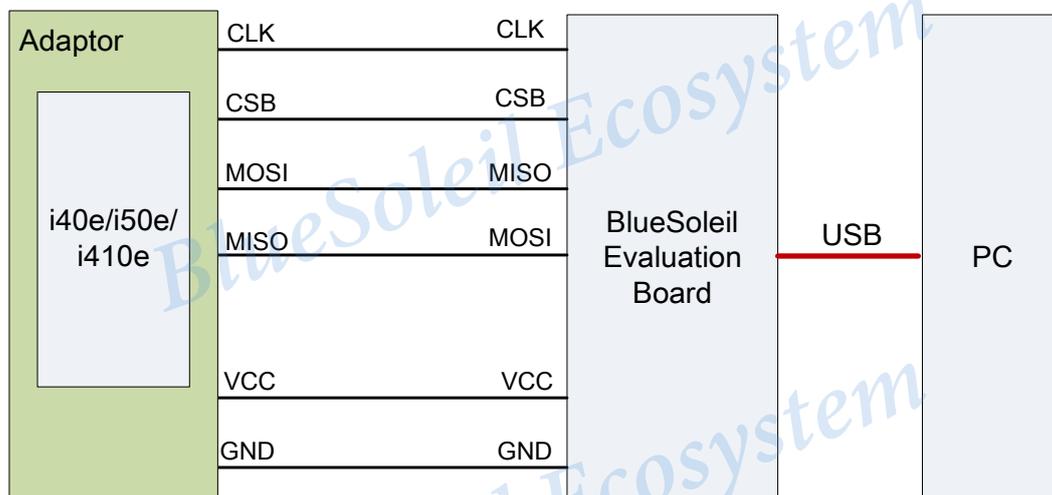

Figure 8 Firmware upgrade environment

The procedure to build firmware upgrade environment includes:

1. Place the BlueSoleil module with the connector to the BlueSoleil evaluation board.

2. Connect BlueSoleil evaluation board with PC through a USB cable;

3. Use the **Blue Flash** tool to upgrade firmware. Refer to the chapter 4.2.

4. Test Module and Upgrade Firmware

This chapter introduces how to test BlueSoleil modules, and upgrade firmware.

4.1   Test BlueSoleil Module

Before executing the test procedure, please make sure the test environment is successfully set up according to the chapter 3.1. The test procedure are as follows:

1. Open the device manager in Windows to check the number of the serial port which is created for the connection between BlueSoleil evaluation board and PC. See Figure 6 above. Open the serial port terminal tool, Commix, select and open this serial port. The serial port default setting is: 115200(baud rate), 8(data bits), N(parity), 1(stop bits).

2. Send AT commands according to the BlueSoleil modules' programming manual. Figure 9 below illustrates how to get firmware version.

Figure 9 Check version number

3. If any response (except ERROR\r\n) returns, it represents the serial port communication is successfully established between the BlueSoleil module and PC. See Figure 9 above. If no response returns, please check if the hardware is correctly connected. Refer to the chapter 2.1 and 3.1. If ERROR returns after sending an AT command, it represents BlueSoleil module cannot identify the AT command. Please refer to BlueSoleil modules' programming manuals to send AT commands.

4. Install BlueSoleil software or other *Bluetooth* software in PC, and plug in a *Bluetooth* adapter, BlueSoleil dongle, in PC.

5. Use BlueSoleil or other *Bluetooth* software installed in PC to search the BlueSoleil module, and then establish a *Bluetooth* connection between BlueSoleil module and BlueSoleil dongle.

For instance, users can establish a SPP connection between i40e and BlueSoleil dongle. When the SPP connection is successfully established, i40e will enter data communication operation. Users can use the tool, such as sscom32, to send data. Please refer to BlueSoleil modules' programming manuals to learn how to establish a connection between the BlueSoleil module and the remote device, and evaluate the *Bluetooth* functionality.

4.2 Upgrade Firmware

There are two methods to upgrade firmware version. The method mentioned in this chapter will restore PSkey settings. Therefore, users need to manually adjust PSkey parameters, such as frequency trim, after firmware is upgraded.

Before upgrading firmware, users need to build the firmware upgrade environment according to the chapter 3.2. The firmware upgrade procedure is as follows:

1. Install CSR BlueSuite tool.

2. Click the **Start** (or Windows) button, select **Process → CSR BlueSuite → Blue Flash** to launch the firmware burning tool. Select **USB SPI** in the drop box. See Figure 10 below. If there is no USB SPI option in the drop box, it represents that PC does not have the USB→SPI driver. Please install the USB→SPI driver before upgrading firmware. Refer to the chapter 3.1 to check if the necessary drivers are successfully installed in PC.
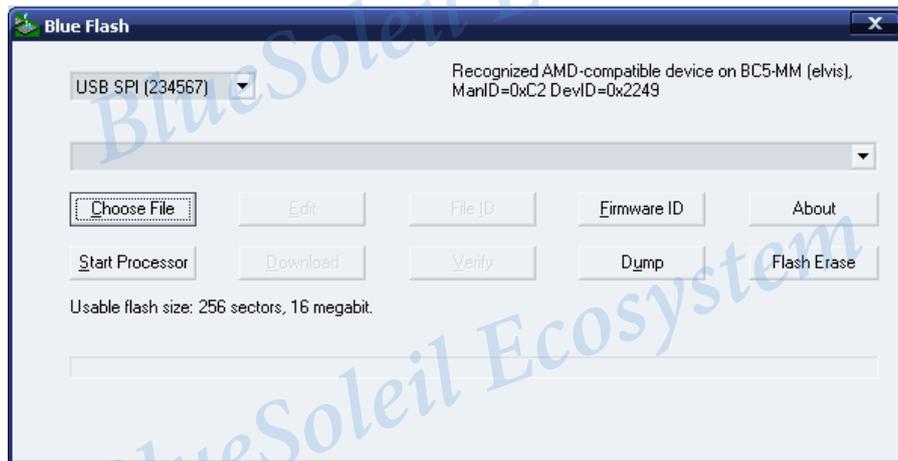

Figure 10 Blue Flash tool

3. Click **Stop Processor** to stop the current running processor. If Blue Flash does not find usable flash size, please check if the hardware is connected correctly. Refer to the chapter 2.1 and 3.2.

4. Click **Flash Erase**, and press the **OK** button to erase the old firmware.

5. Click **Choose File** and select a '.xpv' file, the firmware file, and click **Download** to start the firmware burning process. See Figure 11 and Figure 12 below.
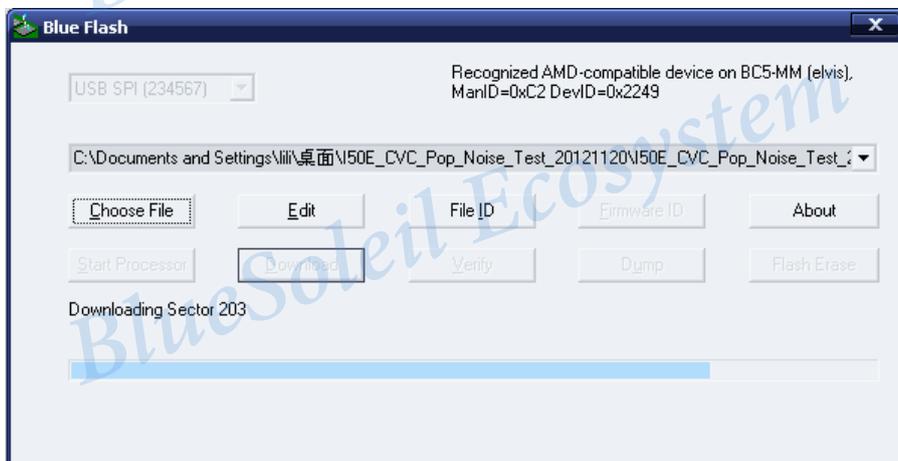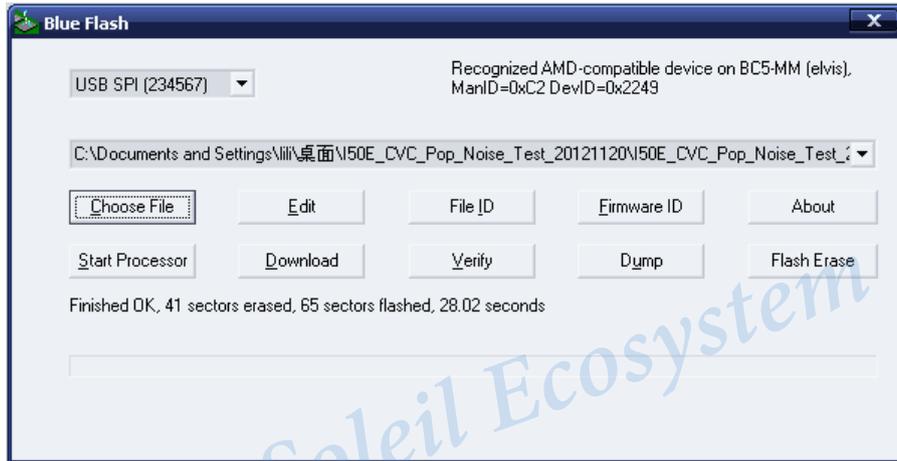

Figure 11 Downloading firmware

Figure 12 Download finished

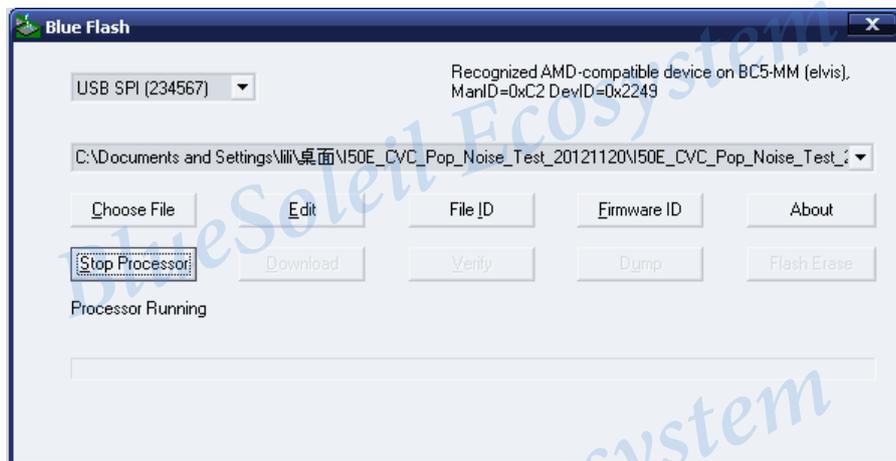6. Click **Start Processor**. See Figure 13 below.

Figure 13 Start processor

7. Open the serial port tool, Commix, and send the AT command to get firmware version to check if the firmware is successfully upgraded. See Figure 9 above in the chapter 4.1.

5. *Bluetooth* Technology Best Developed

Corporation

IVT Corporation is one of *Bluetooth* technology BEST developed together which is authenticated by The Bluetooth SIG. See Figure 14 below.

Figure 14 IVT is one of *Bluetooth* technology BEST developed together

6. Contacts

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