Application Note: Programming BC127 Development Board using CSR BlueFlash

Introduction

While BC127 Development Boards ship with Melody firmware programmed on them to speed up customer development, it is possible to re-program the boards and attach a debugger to them for development purposes.

It is best if before you create a backup of the board contents and make a note of the module frequency trim before you start any development. The module Bluetooth address is printed on the module label. There are instructions on how to do this below. BlueCreation cannot help you recover the lost trim value, and you will need to re-trim the module if you lose it.

Required equipment

To Program a BC127 Development Board you will need the following equipment, depending on your board hardware revision number, indicated as vX after the board name e.g. "BC127 Development Board v1"

For revisions v4 and newer:

1) CSR BlueFlash (Latest release available, at time of writing this document 2.5.8.667)

2) BC127 Development board

3) 1 UBS<->miniUSB cable, as supplied with BC127 Development Board

4) The *.xdv and *.xpv files you would like to program your board with

For revisions: v1, v2, v3:

1) CSR DEV-SYS-1808-1A (for example available at http://www.broadband.se/shop/bluetooth/classic-bluetooth/programmer/usb-spi-converter/)

2) CSR BlueFlash (Latest release available, at time of writing this document 2.5.8.667)

3) BC127 Development board

4) 1 UBS<->miniUSB cable, as supplied with BC127 Development Board

5) The *.xdv and *.xpv files you would like to program your board with

Procedure

1. **Set-up**

1.1. If you have not already, download and install CSR BlueSuite from CSR Support.

1.2. Connect your Dev Board to your PC

1.2.1. v4 and newer:

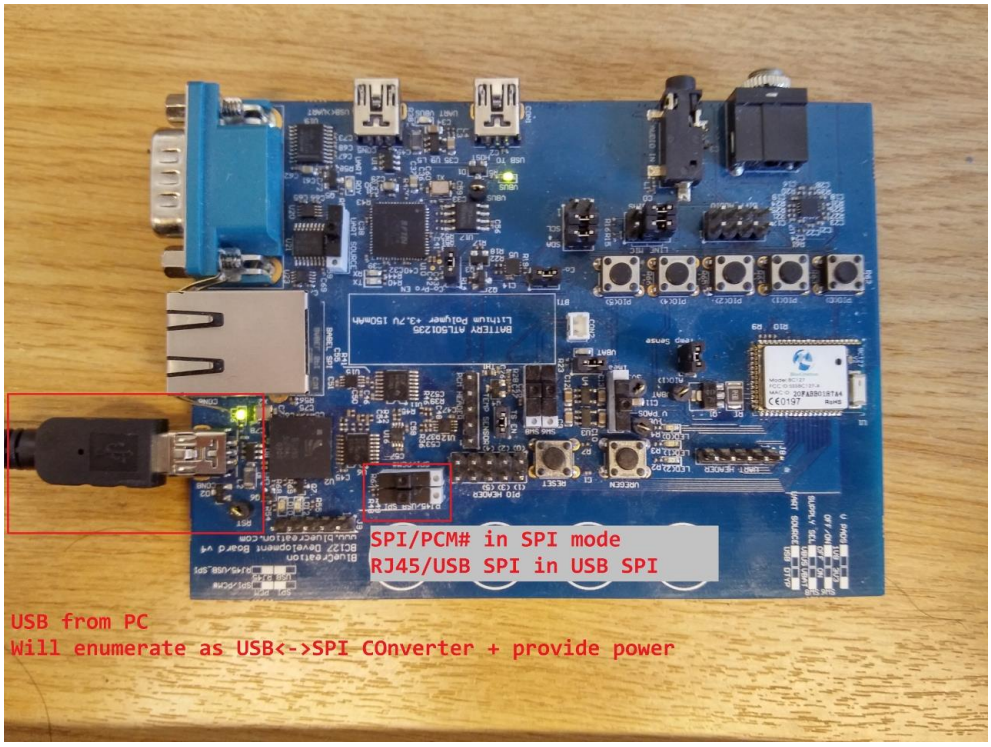

Figure 1: Connecting a v4 and later BC127 Dev Board to a PC for programming

1.2.1.1. Plug in one side of your USB cable to the PC

1.2.1.2. Ensure SPI/PCM# switch is in SPI mode (Figure 1)

1.2.1.3. Ensure RJ45/USB SPI switch is in USB SPI mode (Figure 1)

1.2.1.4. Ensure SUPPLY SEL switch is in VBUS mode (Figure 1)

1.2.1.5. Plug in mini-USB side of USB cable to your Dev Board's USB SPI connector (CON8) (Figure 1)

1.2.1.6. Wait for the USB<->SPI device on the board to enumerate and proceed to 2

1.2.2. v1, v2, v3 or v4 and newer if using CSR USB<->SPI converter is preferred.

1.2.2.1. Plug in and install CSR USB<->SPI converter following CSR instructions

1.2.2.2. Plug in mini USB cable into power source wall charger or PC USB and connect it to one of the mini USB ports on your development board. If the USB cable is connected to a PC the development board will start enumerating. This is not important. (Figure 2)

1.2.2.3. Ensure SPI/PCM# switch is in SPI mode (Figure 2)

1.2.2.4. v4 and newer only: Ensure RJ45/USB SPI switch is in RJ45 mode (Figure 2)

1.2.2.5. Ensure SUPPLY SEL switch is in VBUS mode (Figure 2)

1.2.2.6. Plug in the RJ45 cable from the CSR USB<->SPI converter to your Dev Board's RJ45 connector (CON6/ BABEL SPI) (Figure 2)

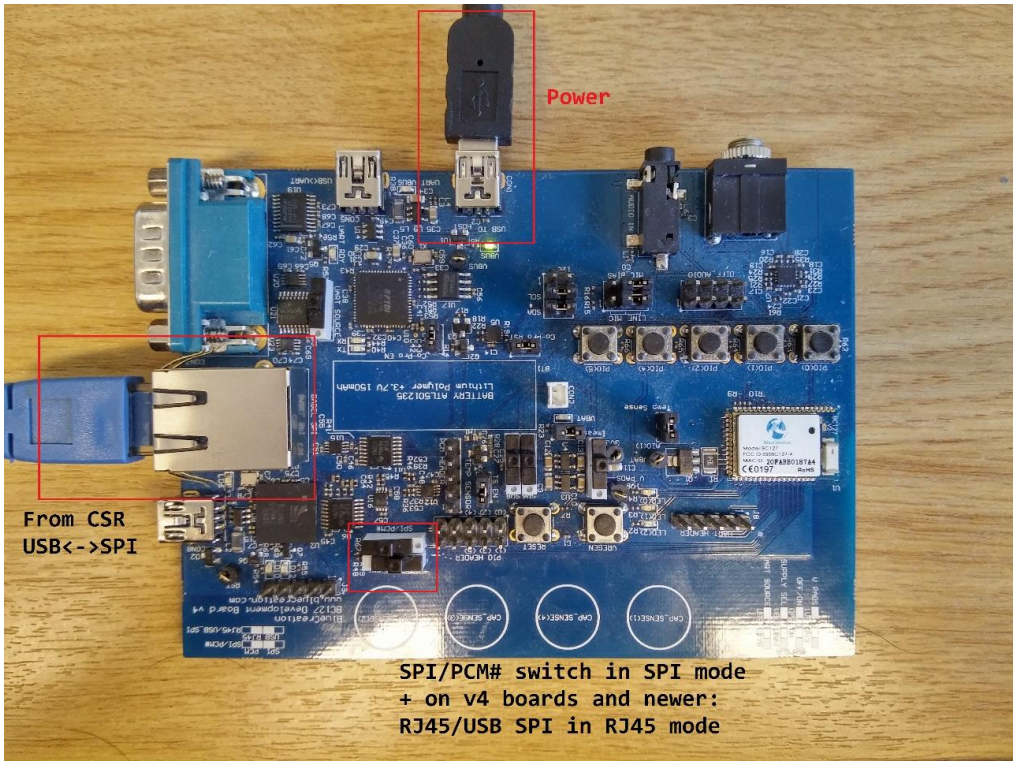

Figure 2: Connecting a BC127 Dev Board to a PC for programming

2. Backup BC127 Development Board crystal trim value using CSR PSTool

2.1. Open PS tool and select USB<->Serial Port to use and press “OK”

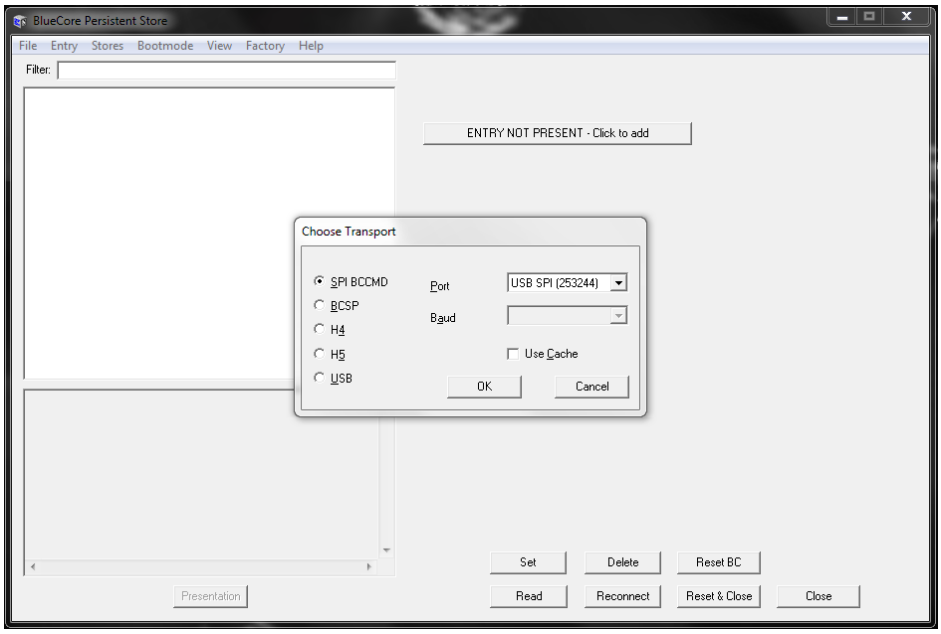

Figure 3: PSTool Start Screen

2.2. You are not connected and the device Bluetooth address is displayed on the right hand pane. Take a note of that.

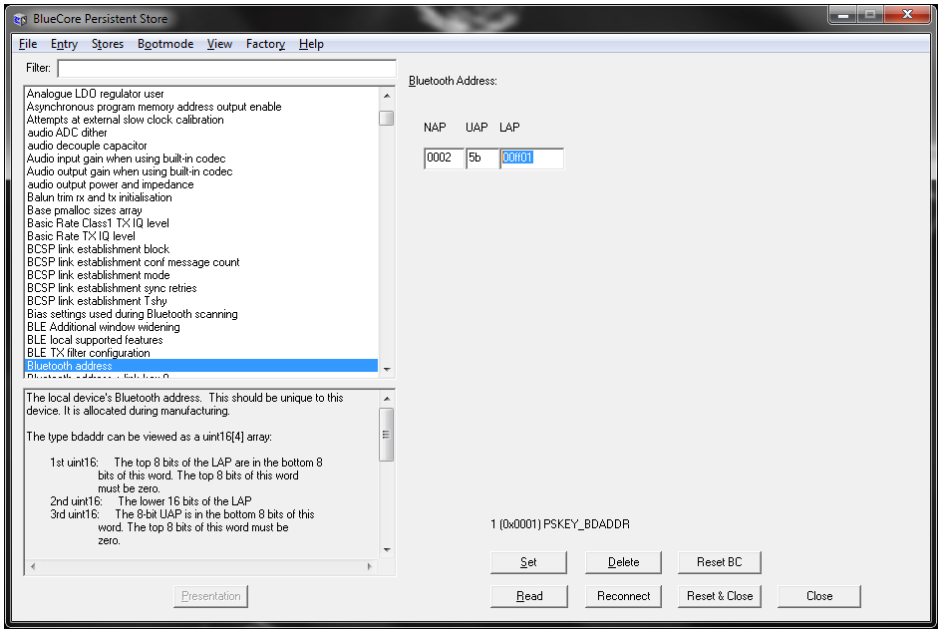

Figure 4: PSTool connected and displaying Bluetooth address

2.3. Type "trim offset to crystal" in the Filter field. This will display only keys which match the string filter

you have written.

2.4. Select the single result from the pane below the filter field

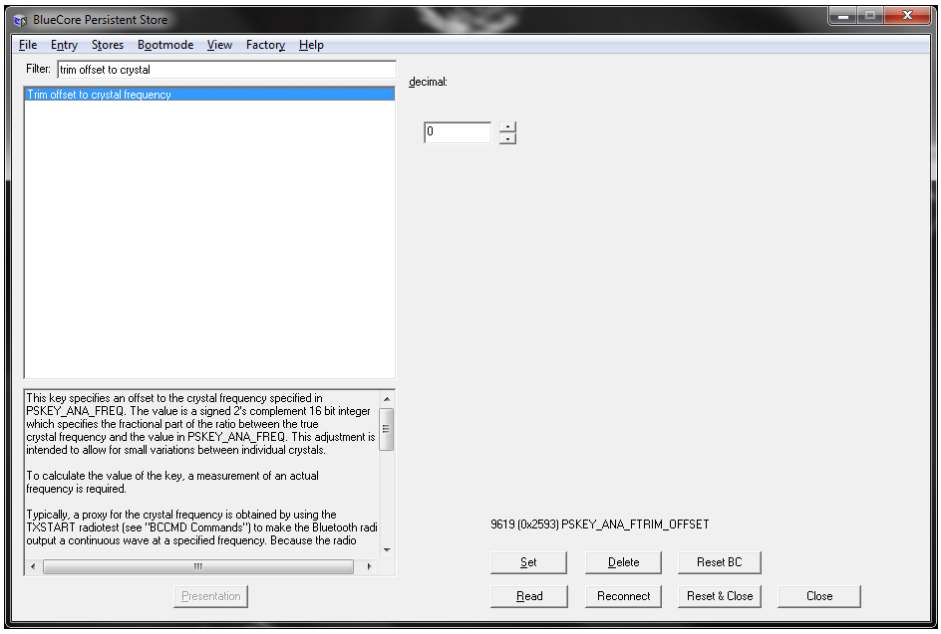

Figure 5: PSTool select crystal trim key

2.5. From the right hand pane, get value, write it down, and store it as you will need to set is after you program your device to ensure radio performance is not affected.

2.6. Close PSTool using the “Close” button.

3. Program Using BlueFlash

3.1. Open BlueFlash

Figure 6: BlueFlash start up

3.1.1. Normally, BlueFlash will recognise your USB<->SPI converter and connect to it and the board on start up.

3.1.2. If it does not, use the drop down menu to select the USB<->SPI port you want to use

3.1.3. Once connection is successful, you will see "Processor Running"

3.2. Stop the processor by clicking on the "Stop Processor" button

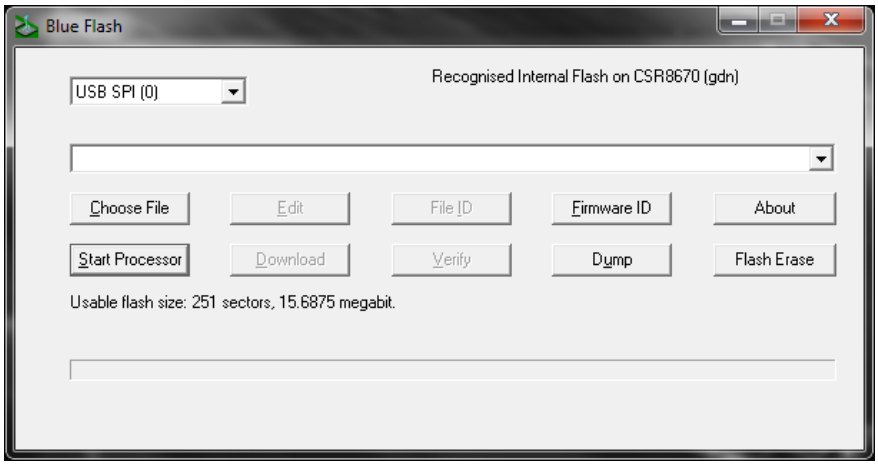

Figure 7: Processor Stopped

3.3. Backup current firmware and settings

3.3.1. Click on "Dump" and select a file and location for your backup

3.4. Load new firmware

3.4.1. Click on "Choose File" and select the image file you would like to program to your BC127 Development Board

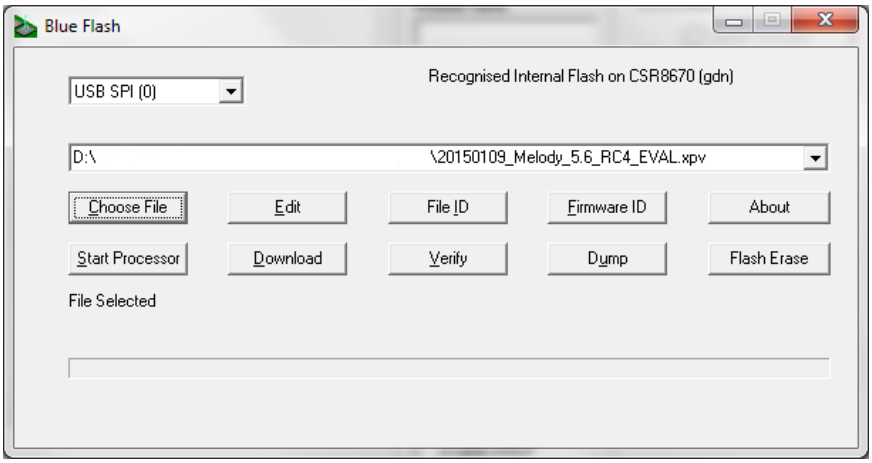

Figure 8: File selected

3.4.2. Click on "Download" to start the process

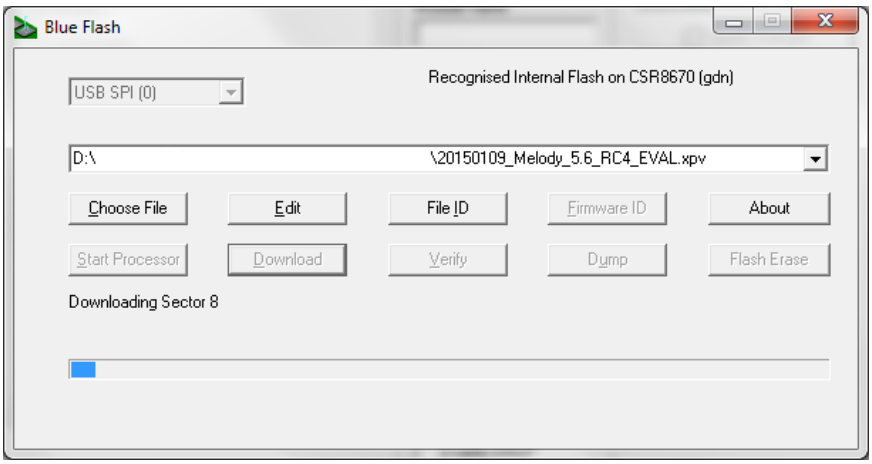

Figure 9: Downloading in progress

3.4.3. Wait for the download to complete

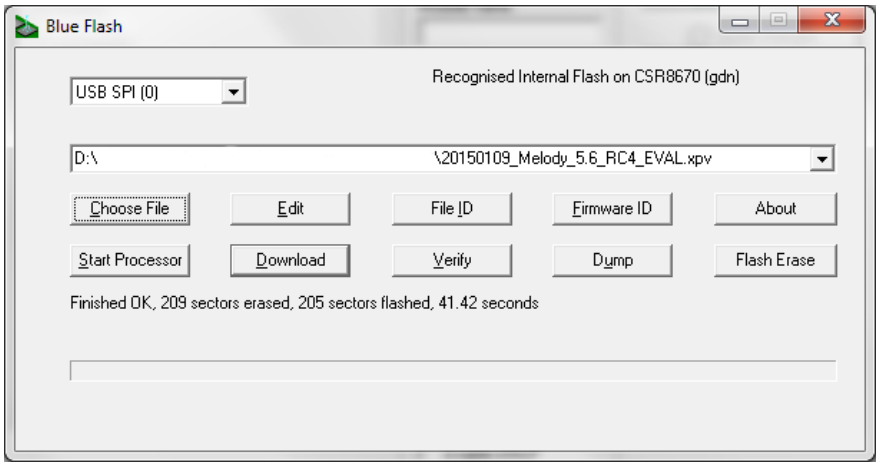

Figure 10: Download finished

3.5. Start processor

3.5.1. Press on "Start Processor" to start the processor

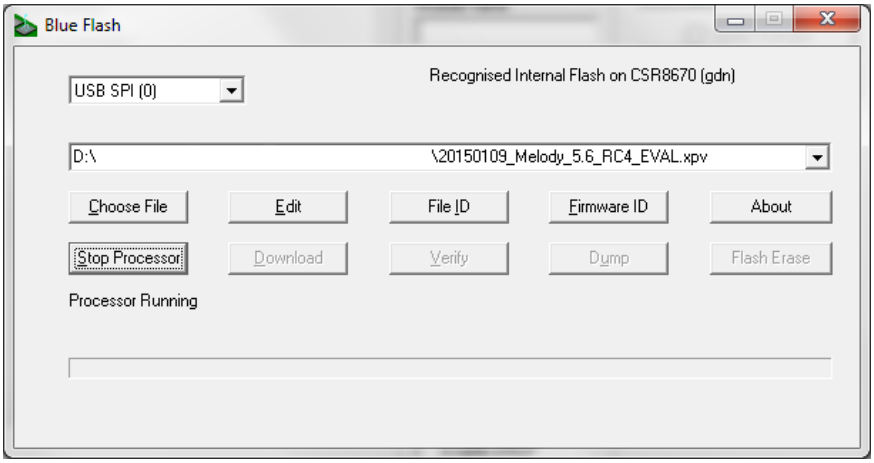

Figure 11: Processor started

3.5.2. Close BlueFlash

4. Restore Bluetooth Address and Frequency trim

4.1. Follow the same steps as in 2 above, except where you would read off the value in 2, now enter the new value and press “Set”

4.2. Close PSTool with the “Reset & Close” button to apply the restored settings.