



Programming BC127 Development Board using CSR BlueFlash

Application Note



SIERRA
WIRELESS®

41110802
Rev 1

Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

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Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.

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Contact Information

Sales information and technical support, including warranty and returns	Web: sierrawireless.com/company/contact-us/ Global toll-free number: 1-877-687-7795 6:00 am to 6:00 pm PST
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Revision History

Revision number	Release date	Changes
1	March 23, 2017	Initial revision in SWI template.

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>> 1: 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. Sierra Wireless cannot help you recover the lost trim value, and you will need to re-trim the module if you lose it.

>> 2: 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. One 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. One UBS<->miniUSB cable, as supplied with BC127 Development Board.
5. The *.xdv and *.xpv files you would like to program your board with.

3: Procedure

1. Set-up
 - a. If you have not already, download and install CSR BlueSuite from CSR Support.
 - b. Connect your Dev Board to your PC
 - i. v4 and newer:

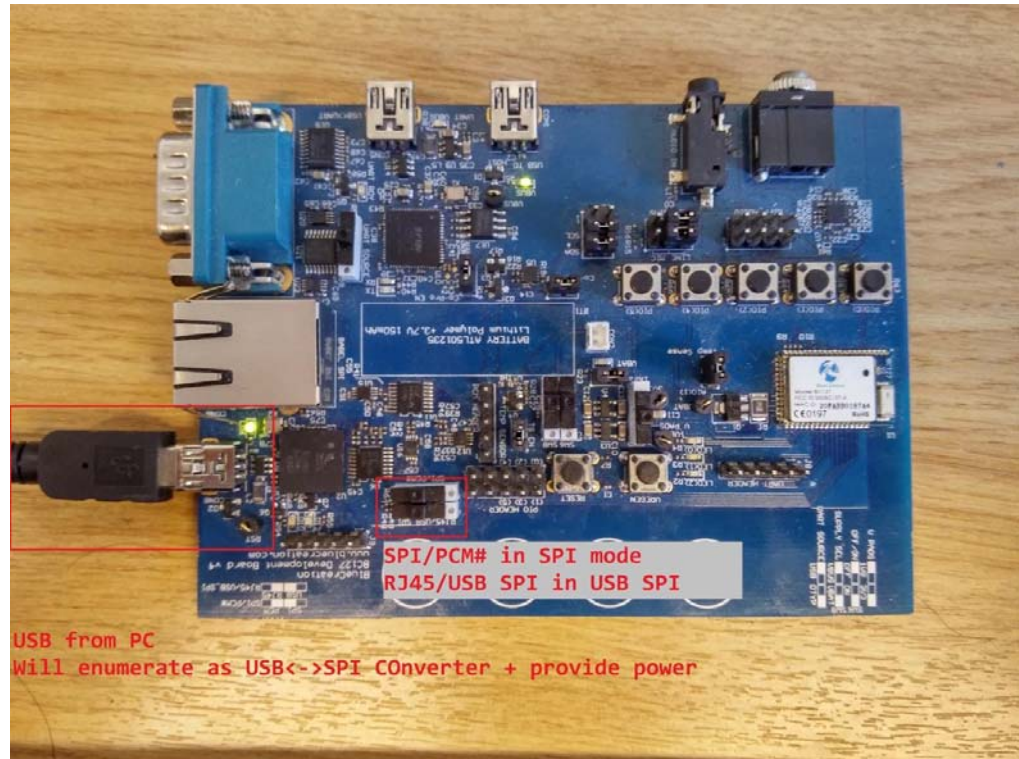


Figure 3-1: Connecting a v4 and later BC127 Dev Board to a PC for Programming

- A. Plug in one side of your USB cable to the PC.
- B. Ensure SPI/PCM# switch is in SPI mode (Figure 3-1).
- C. Ensure RJ45/USB SPI switch is in USB SPI mode (Figure 3-1).
- D. Ensure SUPPLY SEL switch is in VBUS mode (Figure 3-1).
- E. Plug in mini-USB side of USB cable to your Dev Board's USB SPI connector (CON8) (Figure 3-1).
- F. Wait for the USB<->SPI device on the board to enumerate and proceed to Step 2.
- vii. v1, v2, v3 or v4 and newer if using CSR USB<->SPI converter is preferred.
 - A. Plug in and install CSR USB<->SPI converter following CSR instructions.

- B. 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 3-2).
- C. Ensure SPI/PCM# switch is in SPI mode (Figure 3-2).
- D. v4 and newer only: Ensure RJ45/USB SPI switch is in RJ45 mode (Figure 3-2).
- E. Ensure SUPPLY SEL switch is in VBUS mode (Figure 3-2).
- F. Plug in the RJ45 cable from the CSR USB<->SPI converter to your Dev Board's RJ45 connector (CON6/ BABEL SPI) (Figure 3-2).

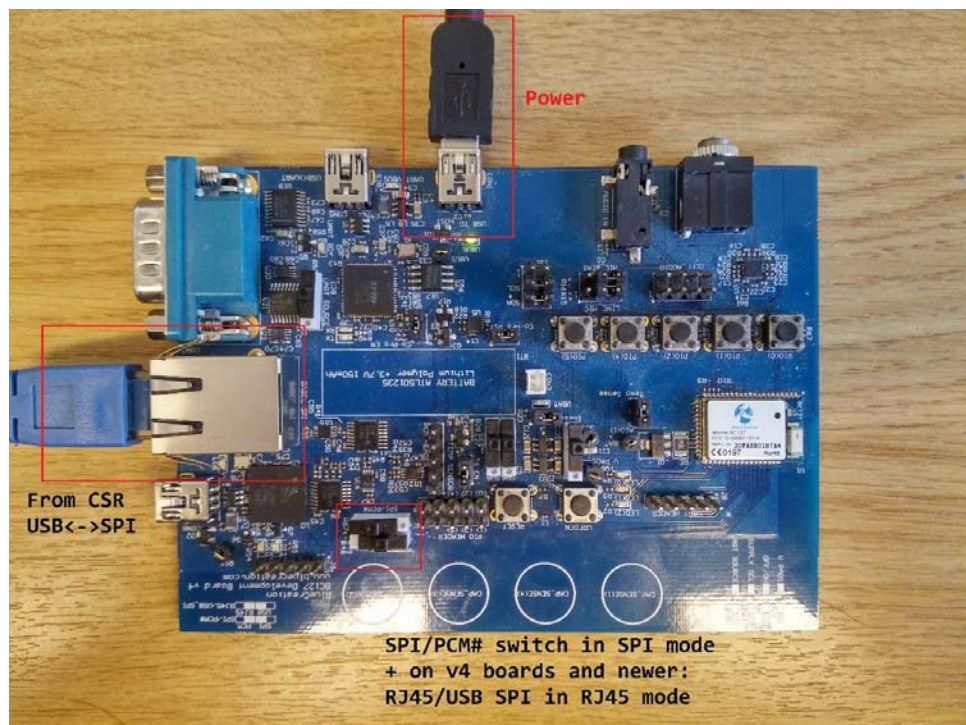


Figure 3-2: Connecting a BC127 Dev Board to a PC for Programming

- 2. Backup BC127 Development Board crystal trim value using CSR PSTool.
 - a. Open PS tool and select USB<->Serial Port to use and press “OK”.

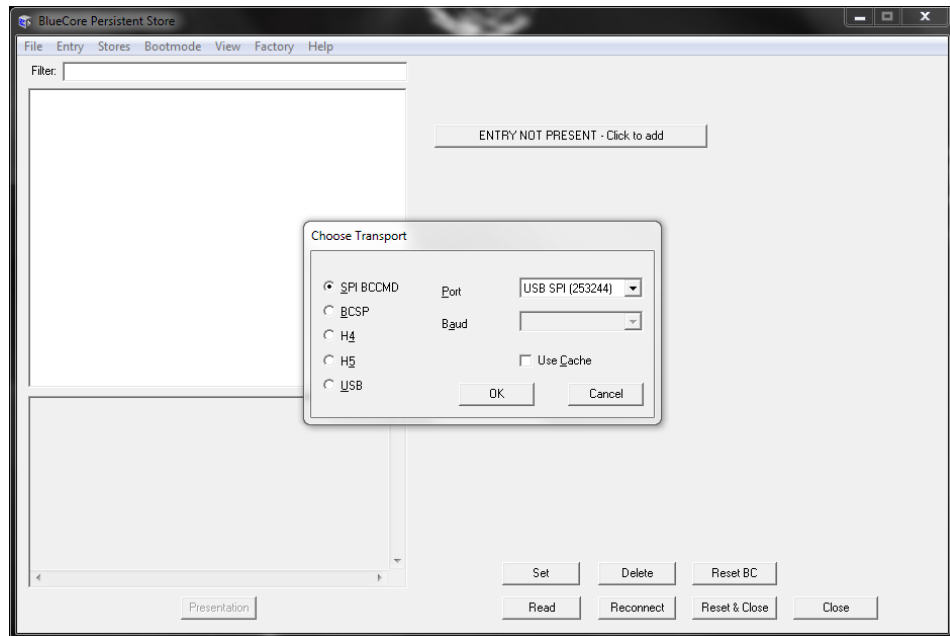


Figure 3-3: PSTool Start Screen

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

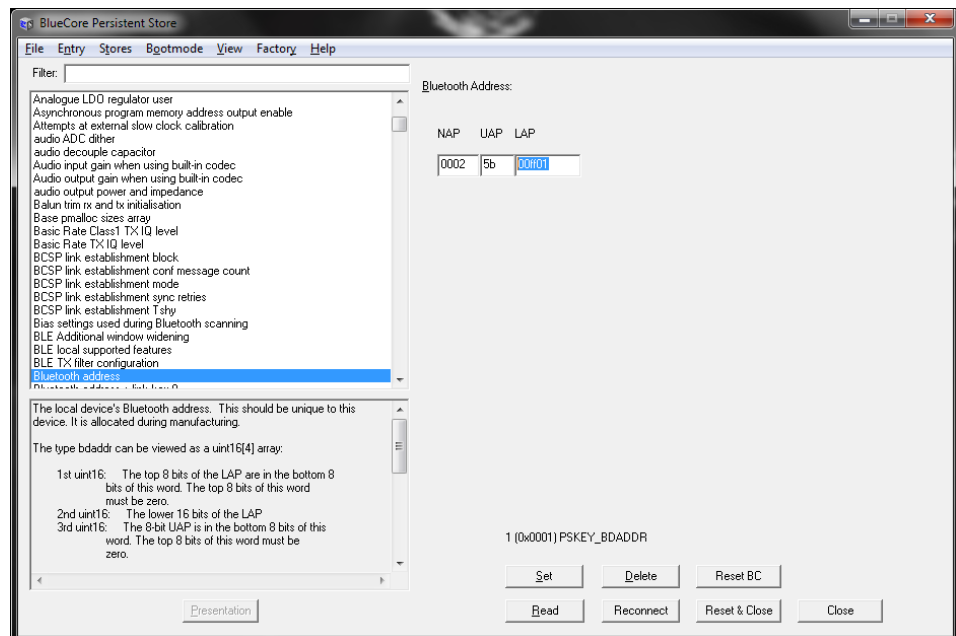


Figure 3-4: PSTool Connected and Displaying Bluetooth Address

- c. Type "trim offset to crystal" in the Filter field. This will display only keys which match the string filter you have written.
- d. Select the single result from the pane below the filter field.

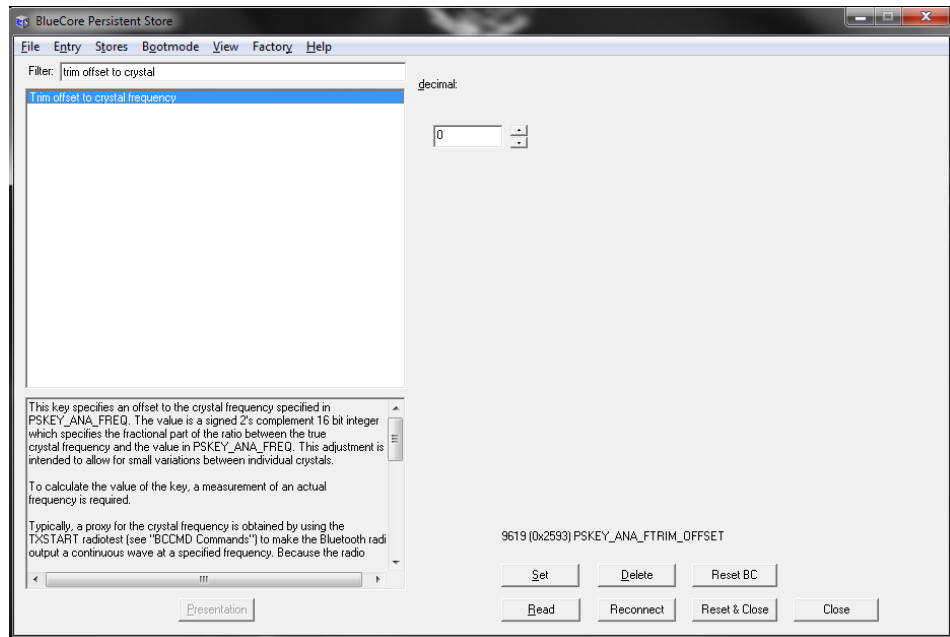


Figure 3-5: PSTool Select Crystal Trim Key

- e. 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.
 - f. Close PSTool using the “Close” button.
3. Program Using BlueFlash.
- a. Open BlueFlash.

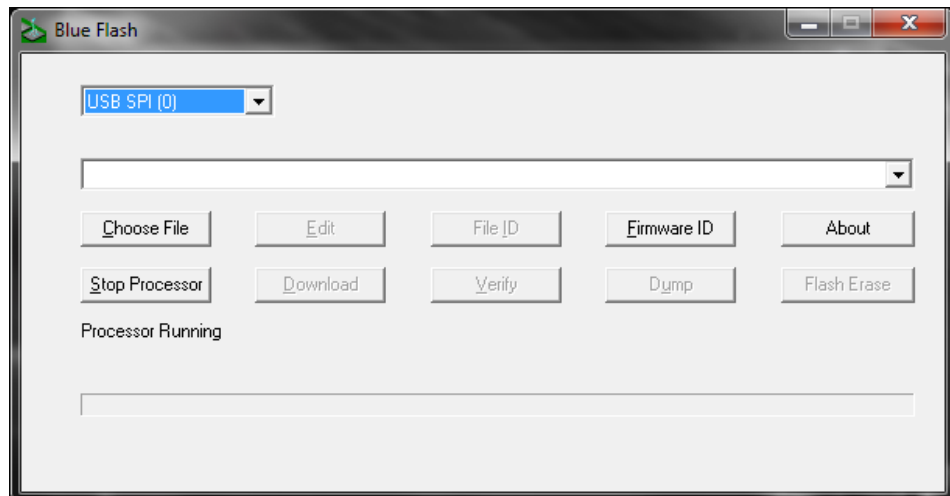


Figure 3-6: BlueFlash Start Up

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

- viii. If it does not, use the drop down menu to select the USB<->SPI port you want to use.
 - ix. Once connection is successful, you will see "Processor Running".
- b. Stop the processor by clicking on the "Stop Processor" button.

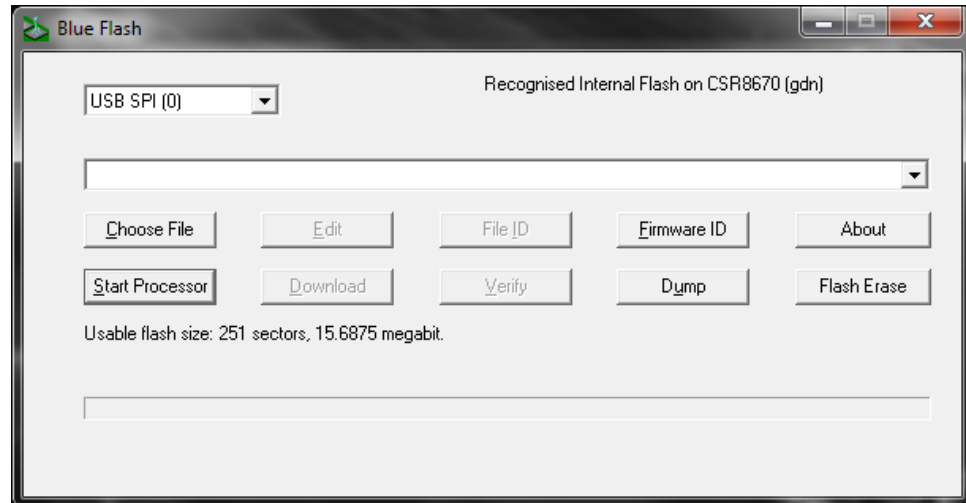


Figure 3-7: Processor Stopped

- c. Backup current firmware and settings.
- i. Click on "Dump" and select a file and location for your backup..
- d. Load new firmware.
- i. Click on "Choose File" and select the image file you would like to program to your BC127 Development Board.

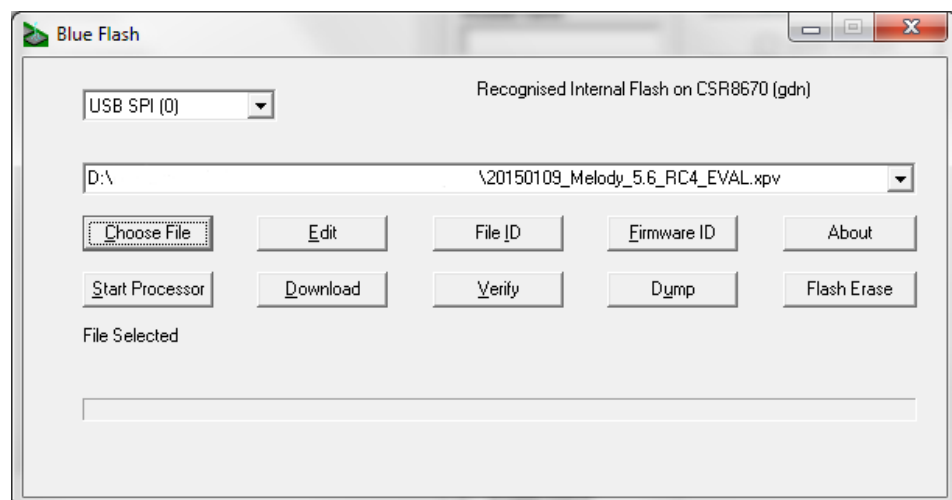


Figure 3-8: File Selected

- ii. Click on "Download" to start the process.

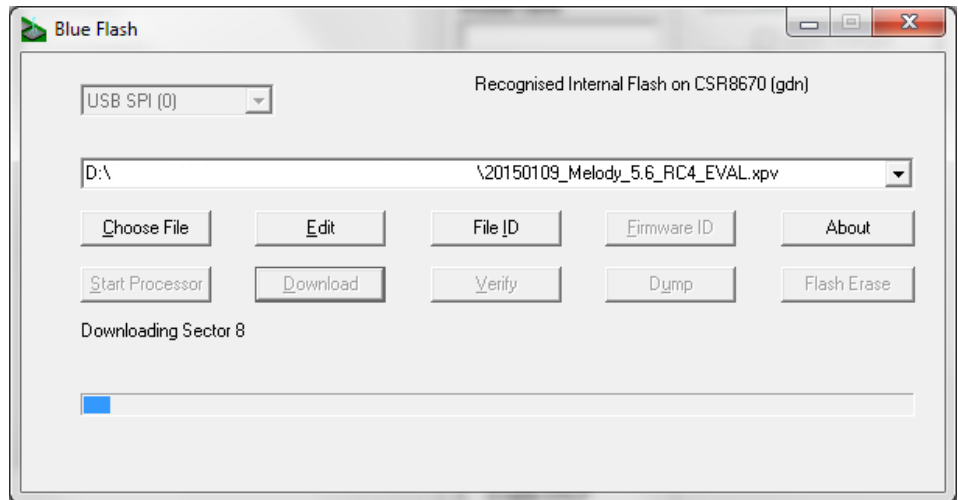


Figure 3-9: Downloading in progress

iii. Wait for the download to complete.

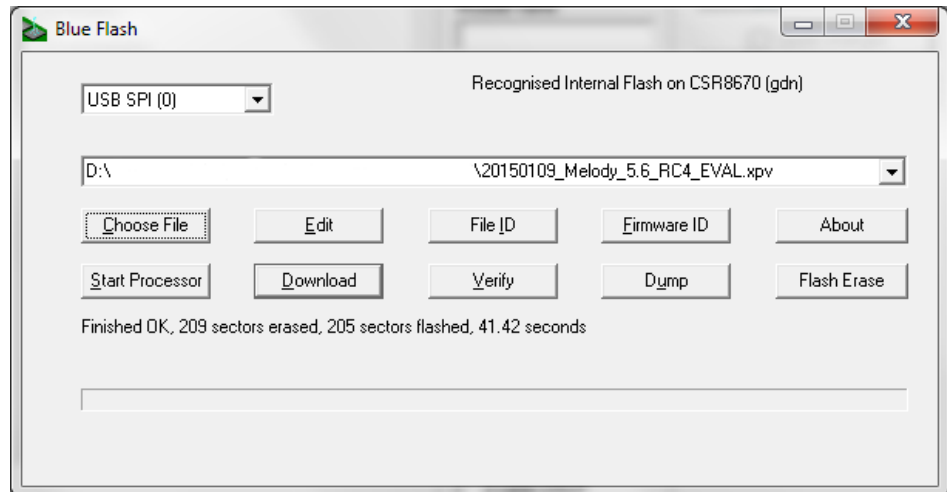


Figure 3-10: Download Finished

e. Start processor.

- i. Press on "Start Processor" to start the processor.

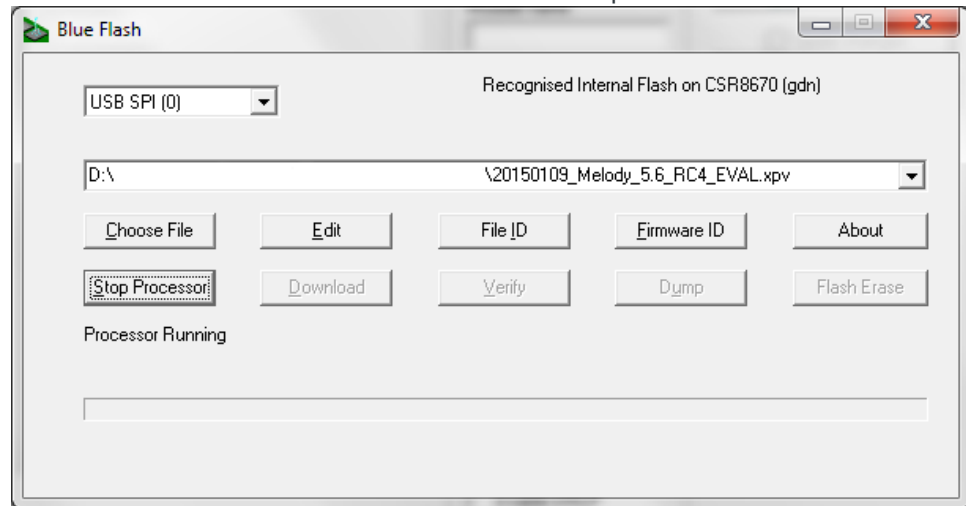


Figure 3-11: Processor Started

- ii. Close BlueFlash.
4. Restore Bluetooth Address and Frequency trim.
 - a. 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".
 - b. Close PSTool with the "Reset & Close" button to apply the restored settings.