Programming BC127 Discovery Board using CSR BlueFlash

Application Note

41110798
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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Revision History

Revision number	Release date	Changes
1	March 22, 2017	Initial revision in SWI template.

Contents

1: Introduction

While BC127 Discovery 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 Discovery Board you will need the following equipment:

1. CSR DK-USB-SPI-10225-1A and all required cables for power and connectivity.
2. CSR BlueFlash (Latest release available, at time of writing this document 2.5.8.667).
3. BC127 Discovery board.
4. 2x USB<->miniUSB cables (1x supplied with BC127 Discovery Board).
5. The *.xdv and *.xpv files you would like to program your board with.
6. Five female to female jumper cables to connect the CSR DK-USB-SPI-10225-1A and your BC127 Discovery Board.

3: Procedure

1. Set-up
   a. If you have not already, download and install CSR BlueSuite from CSR Support.
   b. Connect your BC127 Discovery Board to your PC. (USB to Host port)
      i. Power on and install the CSR DK-USB-SPI-10225-1A according to CSR instructions. Connect mini USB to PC USB.
      ii. Ensure SPI/PCM# jumper is set to SPI mode (Pins 1 and 2 shorted)
      iii. Connect the CSR DK-USB-SPI-10225-1A SPI signals and Ground to your Discovery board using the PCM/I2S/SPDIF header. The header pin out is described in Table 3-1.

Table 3-1: PCM Headers

PCM Header	SPI
1	SPI_CS#
2	SPI_CLK
3	SPI_MISO
4	SPI_MOSI
5	GND

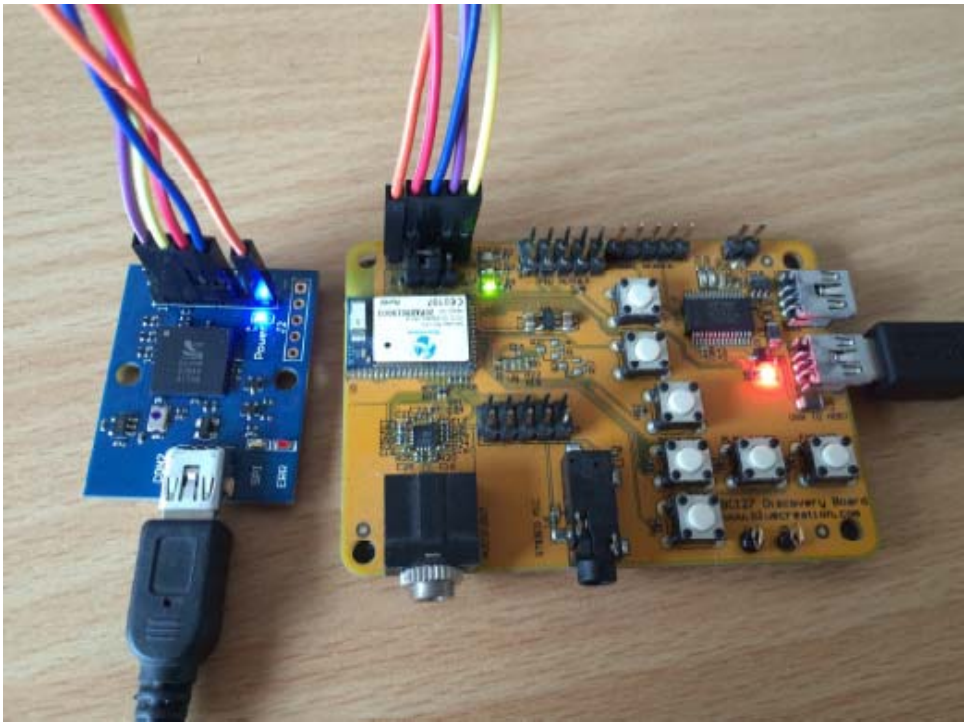

Figure 3-1: DisKit connected to CSR DK-USB-SPI-10225-1A

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

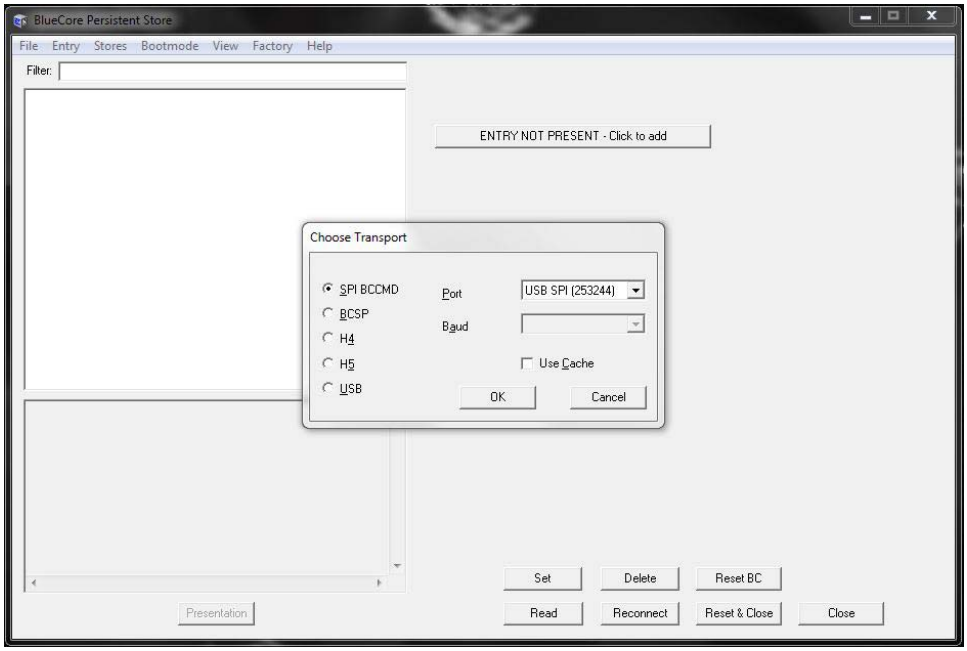

Figure 3-2: PSTool Start Screen

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

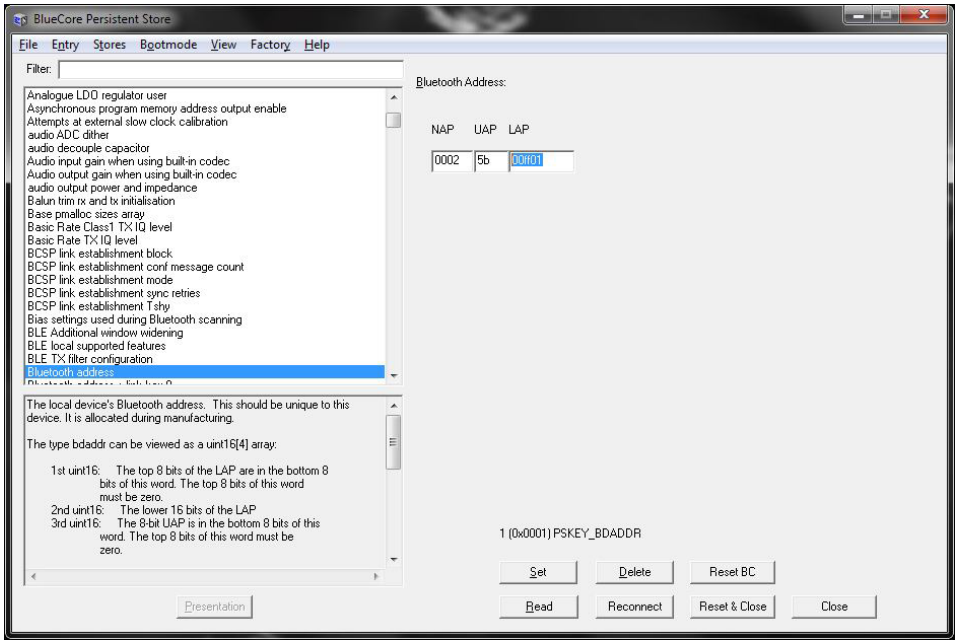

Figure 3-3: PSTool Connected and Displaying Bluetooth Address

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.

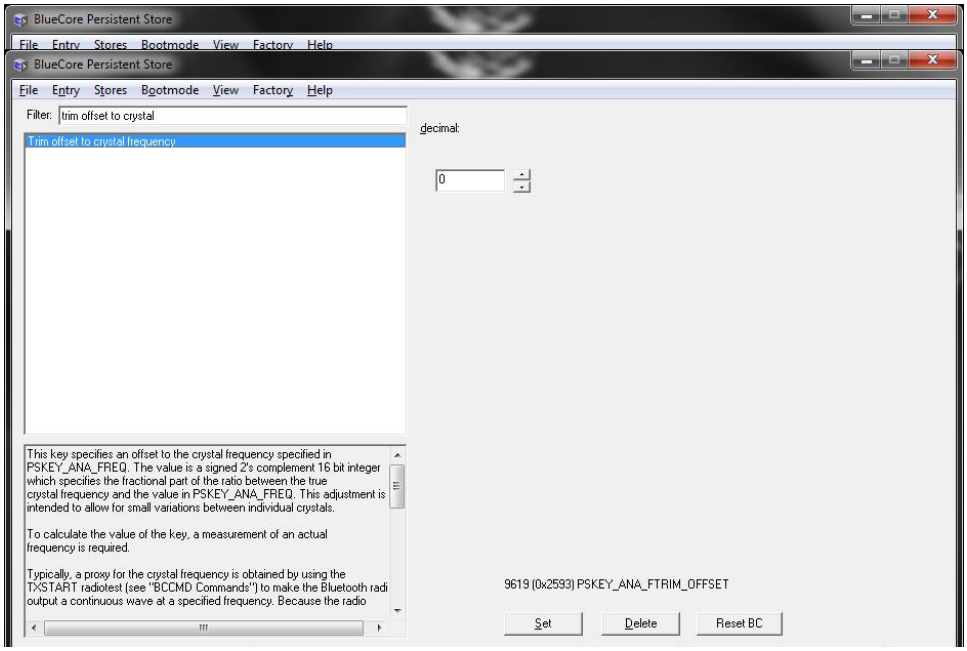

Figure 3-4: PSTool Select Crystal Trim Key

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 3-5: BluefFlash Start Up

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

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

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

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

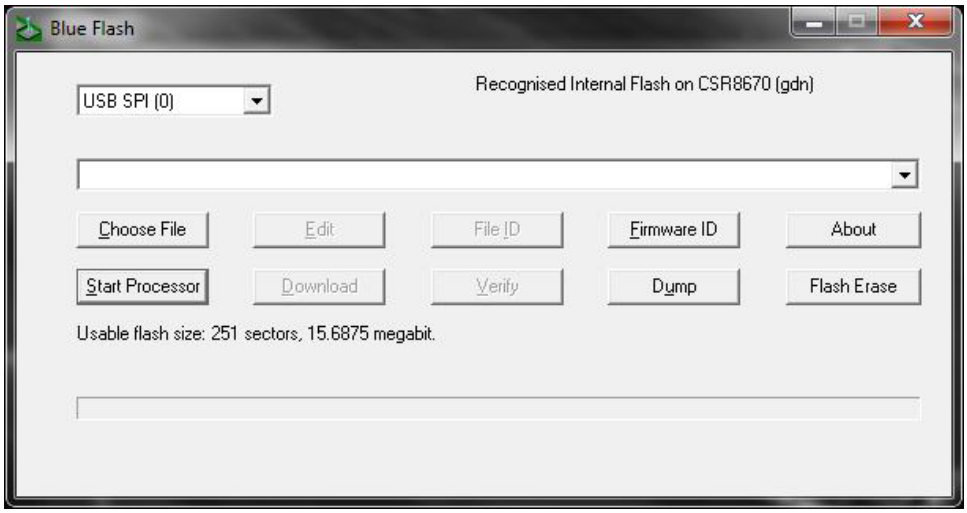

Figure 3-6: Processor Stopped

d. Backup current firmware and settings

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

e. Load new firmware

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

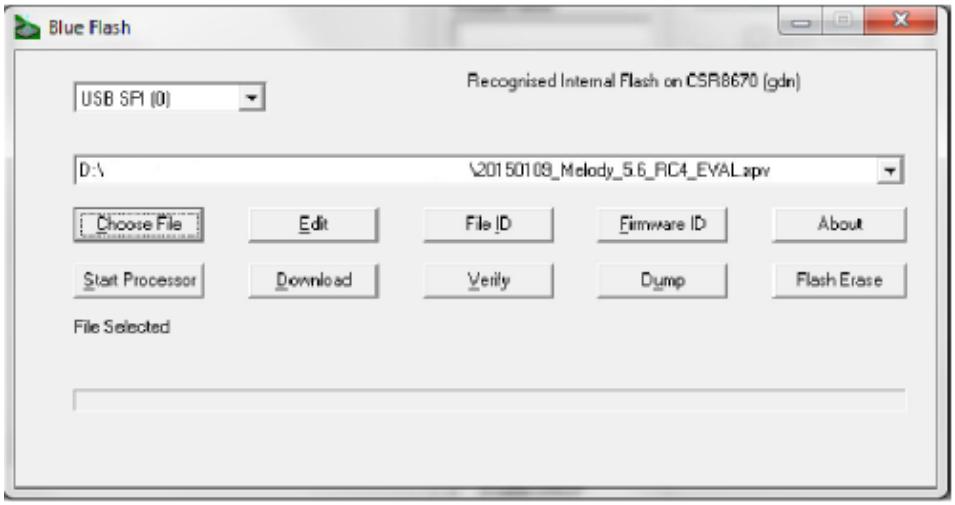

Figure 3-7: File Selected

ii. Click on "Download" to start the process

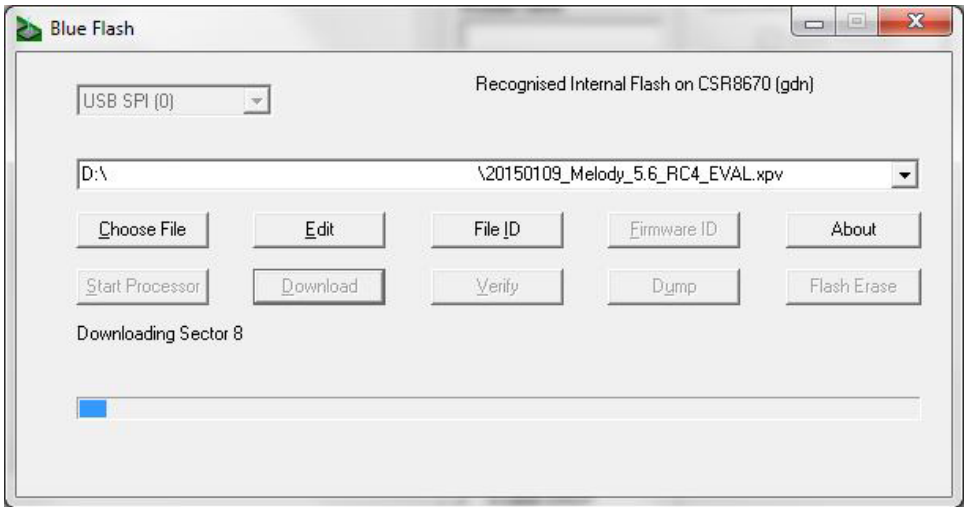

Figure 3-8: Downloading in Progress

iii. Wait for the download to complete

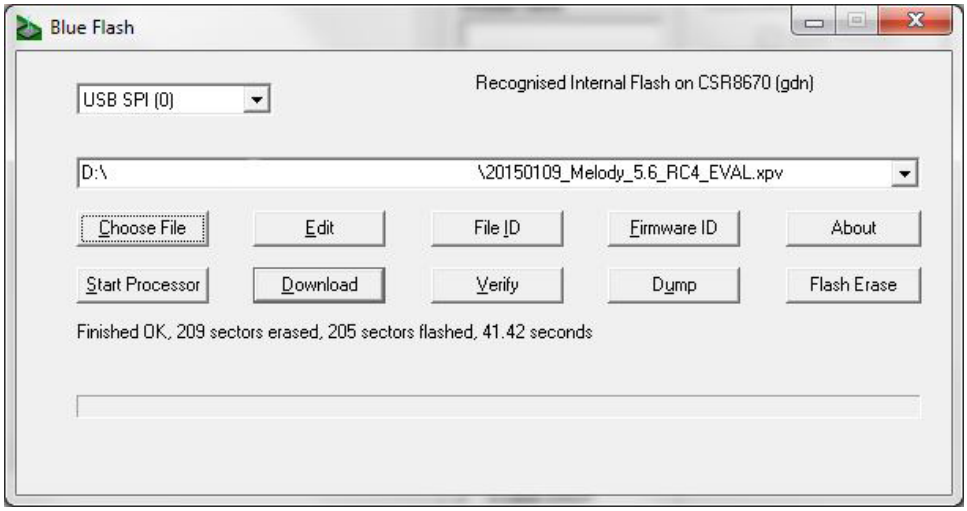

Figure 3-9: Download Finished

f. Start processor

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

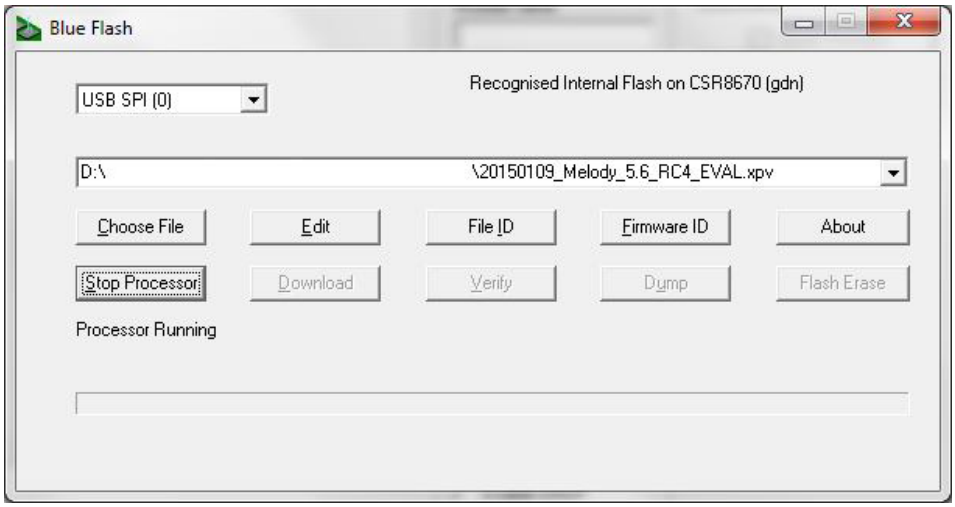

Figure 3-10: Processor Started

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.