OTA Loading of *smart*BASIC Applications Using ModuleLink

BL652

Application Note *v1.0*

INTRODUCTION

You can program Laird BL652 modules remotely using the Over-the-Air (OTA) application using a smartphone or tablet and the Laird ModuleLink for BLE applications. ModuleLink allows you to wirelessly program the Laird BL652 Bluetooth Low Energy (BLE) module with *smart*BASIC programming language. This application can only run when the peripheral BL652 module is in vSP command mode (Bridge mode does not work).

Requirements for OTA Using ModuleLink for BLE

The following are required for OTA using ModuleLInk for BLE:

- Android device running version 4.3 or higher with BT 4.0
- Internet connection on the Android device (to download the ModuleLink for BLE App and Access)
- XCompiled *smart*BASIC application (.uwc file)

Note: The Xcomp version must match the Peripheral BL652-DVK firmware.

- Dropbox account to access the .uwc file – https://www.dropbox.com
- DVK-BL652 running firmware v28.6.1.2 or later
- DVK-BL652 User Guide – Available from the BL652 product page of the Laird website

SETUP PREPARATION

To prepare your setup, follow these steps:

1. Download and install UwTerminalX from the Releases tab in GitHub: https://github.com/LairdCP/UwTerminalX/releases
2. Extract the downloaded zip file and run *UwTerminalX.exe*.
3. Download the BL652 Sample Applications from BL652 GitHub page: https://github.com/LairdCP/BL652-Applications

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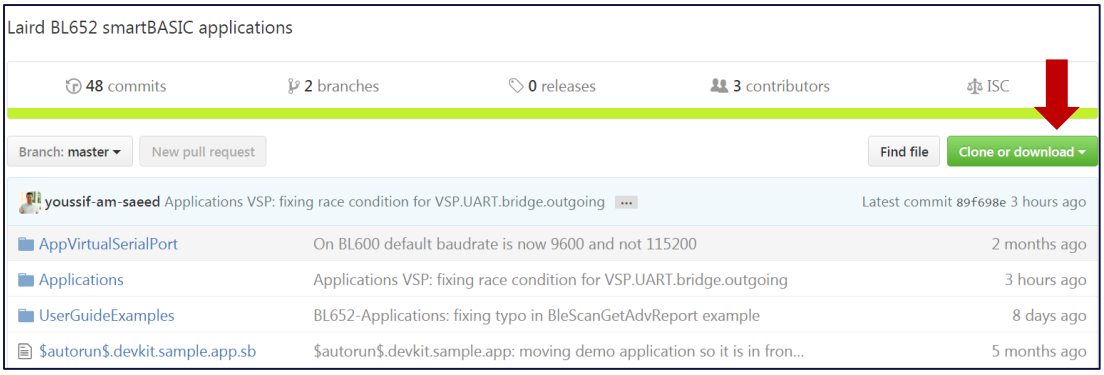

Figure 1: BL652 GitHub page

4. Download and Install the ModuleLink for BLE that corresponds to your phone or tablet.

5. Pre-compile the *smart*BASIC application which is loaded over-the-air using a BL652-DVK.

Note: This must be Xcompiled with the same firmware as the module to which the application will be loaded.

   a. Make sure the BL652 is set up for Interactive Command mode:
      - J12 on pins 1 and 2
      - J5 Jumper removed
   b. Connect the BL652-DVK to the PC and open UwTerminalX.
   c. Select the BL652 device from the drop-down list.

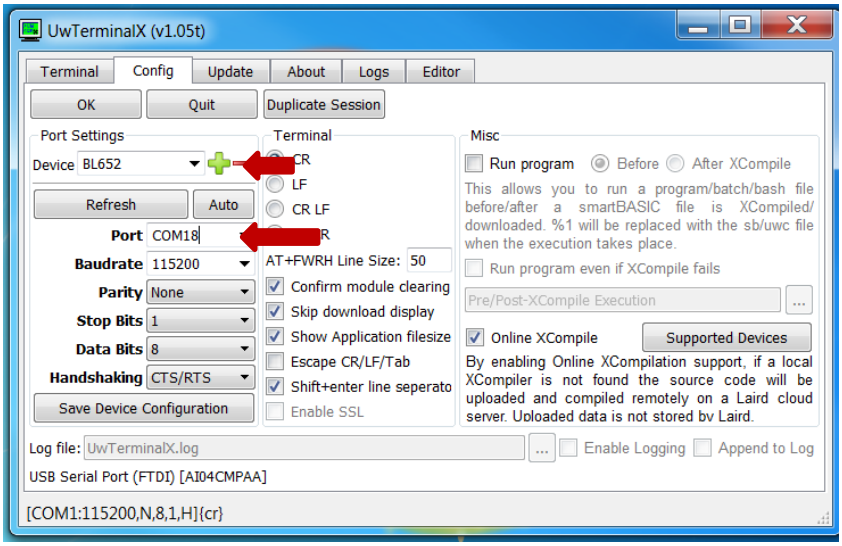

Figure 2: UwTerminalX

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d. Confirm the BL652 is in interactive mode by sending AT which should respond with *00*.

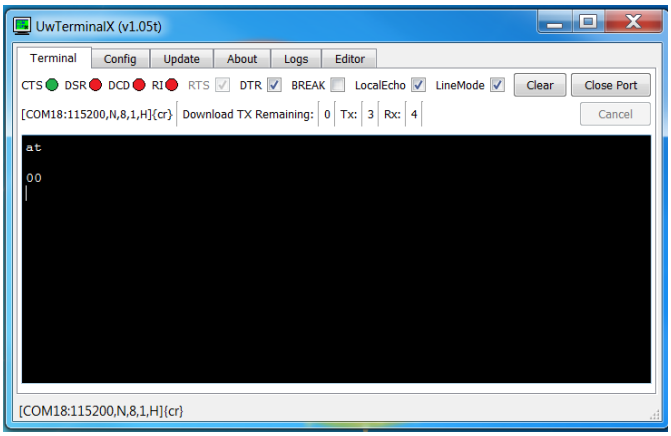

Figure 3: Interactive mode confirmation

e. Right-click in the Terminal and Select **Xcompile**.

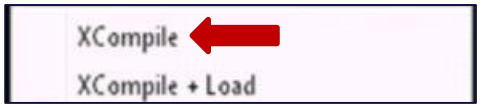

Figure 4: Select XCompile

f. Navigate to the *smart*BASIC application you want to load over-the-air.

g. Double-click to Xcompile the application.

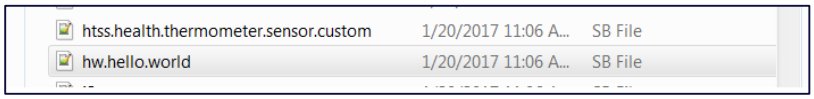

Figure 5: Selected smartBASIC application

The *XCompile complete* message displays once it has finished.

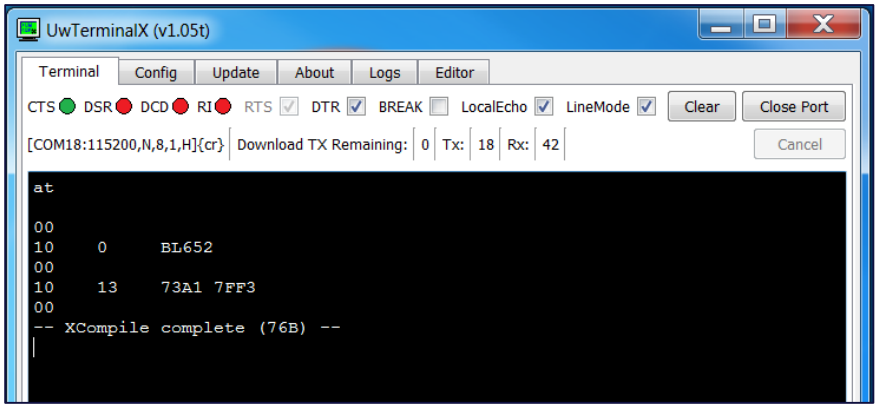

Figure 6: XCompile complete

The .uwc file of the *smart*BASIC application is stored in the same folder as the application.

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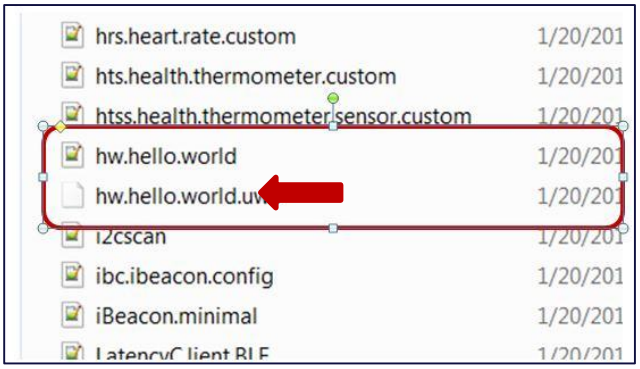

Figure 7: Location of the application

h. Place a copy of the *.uwc* file in the *root directory* of the Dropbox account that is linked to the ModuleLink application. The ModuleLink application only looks at the root directory.

6. Set up the BL652-DVK to which the application will be loaded by placing it in vSP Command mode (see Section 6.7 of the *BL652-DVK User Guide* accessible from the BL652 product page of the Laird website.

   a. Place a jumper on J5 pins.
   b. Place a jumper on pins 2-3 of J12 pins and DTR ticked in UwTerminal.
   c. Enter **AT&F*** to clear all applications loaded to the module.

Table 5: vSP modes

Mode	SIO_02 and Jumper position J5	nAutoRUN (SIO_13) and Jumper position J12
VSP Bridge to UART mode	High by fitting jumper in J5	High by fitting jumper in J12 pin 2-1 and untick DTR box in UwTerminal
VSP Command mode	High by fitting jumper in J5	Low by fitting jumper in J12 pin 2-3 and tick DTR box in UwTerminal (the DTR box is ticked by default in UwTerminal)

SIO_02 High (externally) selects the VSP service. When SIO_02 is High and nAutoRUN is Low (externally), this selects VSP Command mode. When SIO_02 is High and nAutoRUN is High (externally), this selects VSP Bridge to UART mode.

   d. Enter **AT+DIR** to confirm no applications are loaded to the module.
   e. Press **Reset** to start advertising.

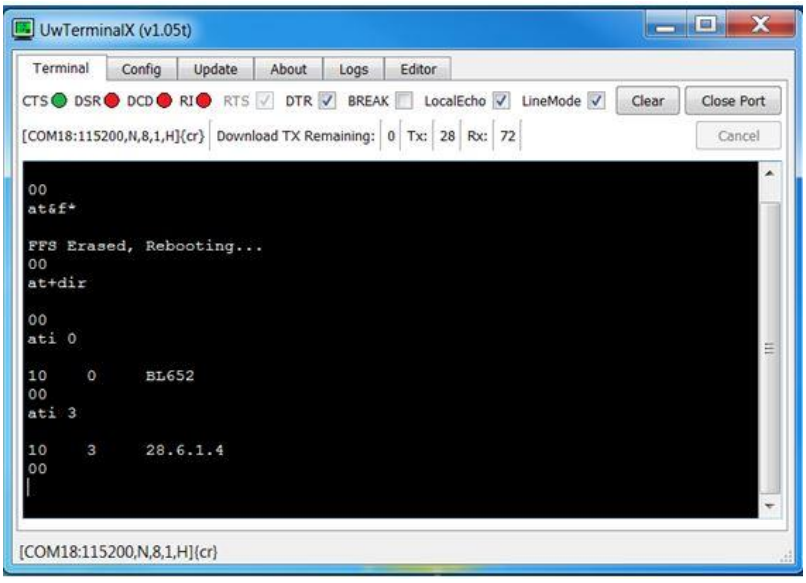

Figure 8: UwTerminalX

7. Open the BLE ModuleLink application on your phone or tablet.

8. Reset the peripheral BL652-DVK to restart advertisements if they have stopped.
9. Press **Start Scan** in the ModuleLink application.

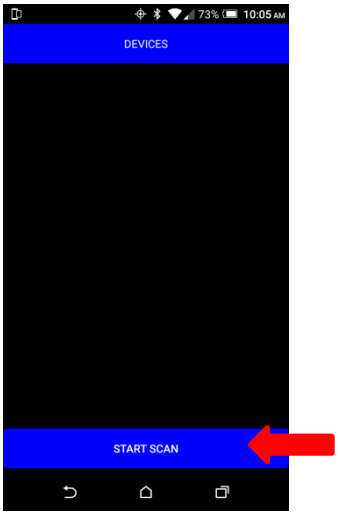

Figure 9: Press Start Scan

10. Select the *Laird BL652* module to connect.

Figure 10: Select Laird BL652 module

11. Follow the application instructions to *Link ModuleLink for BLE* with your Dropbox account.

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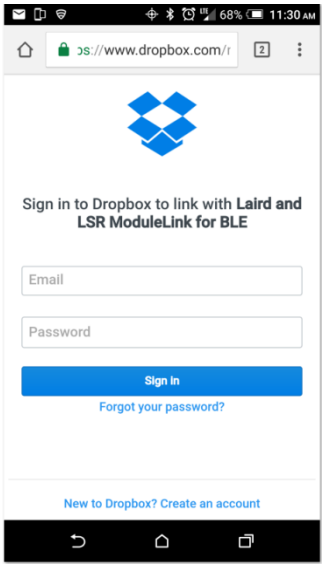

Figure 11: Dropbox sign-in

12. Select the **.uwc** file from the Dropbox files that you want to load over-the-air.

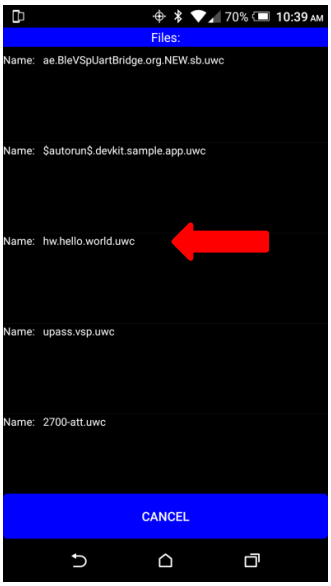

Figure 12: Select .uwc file

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The application is loaded over-the-air to the BL652 device.

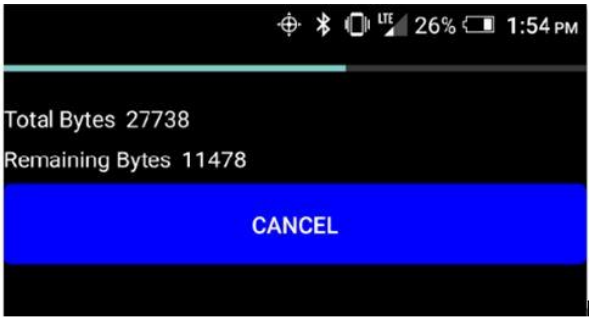

Figure 13: Loaded application

Once completed, the application displays *OTA Download Success!*

13. Click **OK**.

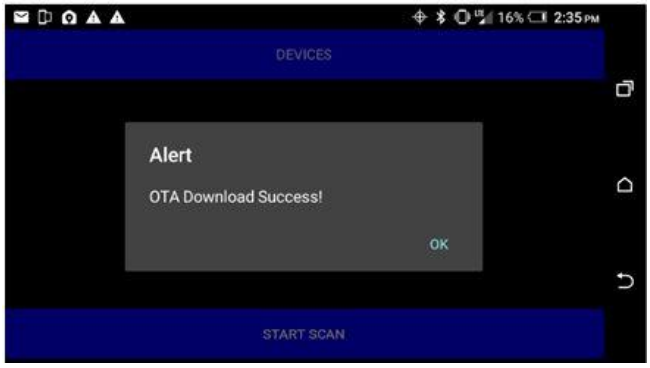

Figure 14: Successful OTA download

14. Confirm the file is loaded to the BL652 module by entering **AT+DIR**.

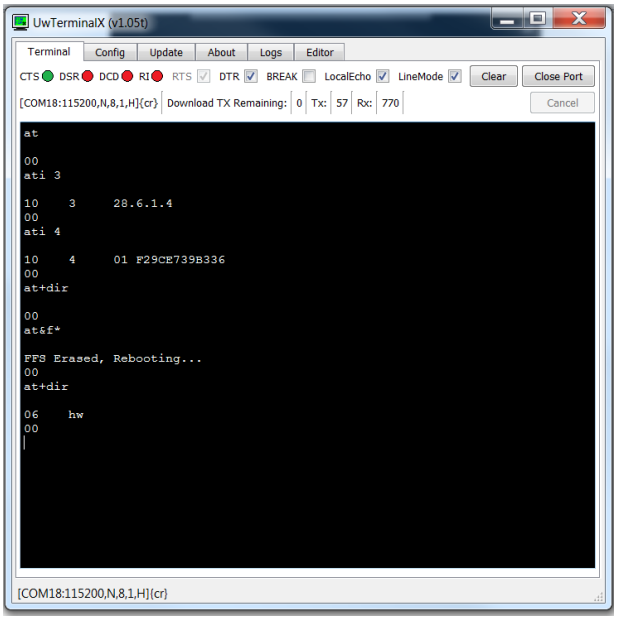

Figure 15: Enter AT+DIR

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REVISION HISTORY

Version	Date	Notes	Approver
1.0	22 Feb 2017	Initial Release	Jonathan Kaye

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