



# Zoom™ AM1808 eXperimenter Kit User Guide

Logic PD // Products  
Published: March 2011

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## Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	SMC	Initial release	JCA	03/28/11

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# 1 Introduction

This User Guide continues where the QuickStart Guide ended by providing additional hardware details about the Zoom AM1808 eXperimenter Kit, as well as introductory instructions for using Code Composer Studio and the included Board Support Library (BSL) files.

## 1.1 Scope of Document

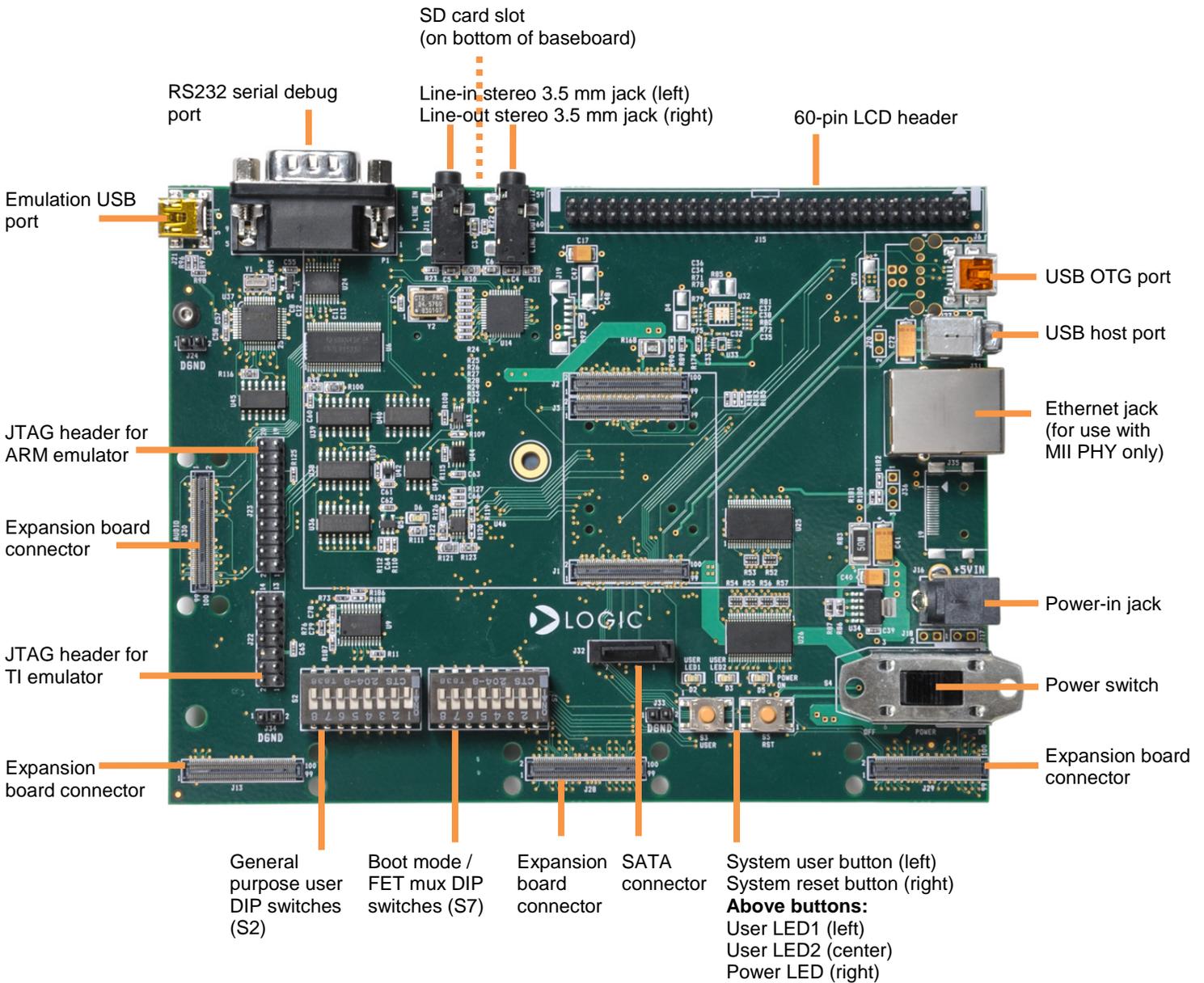
- This User Guide references specific connectors on the application baseboard. However, the discussion is limited to special use instructions; detailed information about the connectors should be referenced on the respective schematic and Bill of Material (BOM) documents. See Appendix A for links to these documents.
- This User Guide does not provide detailed instructions for the software included with the kits. Please refer to the specific User Guides for each respective software product for additional information. A list of additional documentation is available in Appendix A.

## 1.2 Requirements

- It is assumed that the QuickStart Guide has been read in its entirety. See Appendix A for link to the QuickStart Guide.
- A development PC with CD/DVD drive, USB port, and at least 2 GB of hard drive space.

## 2 Application Baseboard

### 2.1 Application Baseboard Features Diagram



### 2.2 DIP Switches

There are two 8-position DIP switches located on the application baseboard at reference designators S2 and S7. By default, all of the switches are set to the “OFF” position.

The S2 DIP switch is reserved for user application general purpose. The S7 DIP switch controls the processor’s boot mode and several FET muxes on the baseboard. Table 2.1 describes the function of each switch.

**Table 2.1: S7 DIP Switch Functions**

Switch	OFF Position	ON Position
S7:1*	Baseboard LCD drive enabled.	Baseboard LCD drive disabled.
S7:2	Baseboard audio enabled. Associated McASP lines connect to baseboard audio only.	Baseboard audio disabled. Associated McASP lines are available on audio expansion connector.
S7:3	AM1808 I/O runs at 3.3V	AM1808 I/O runs at 1.8V
S7:4	No connection	
S7:5	BOOT[1]	
S7:6	BOOT[2]	
S7:7	BOOT[3]	
S7:8	BOOT[4]	

**\*Note:** S7:1 indicates slide 1 on the S7 DIP switch, S7:2 indicates slide 2 on the S7 DIP switch, and so on.

A default boot mode has been defined by pulling all boot pins (BOOT[0:7]) to a default state on the SOM. The default boot mode is SPI1 Flash; all available boot modes are described in Table 2.2.

**Table 2.2: S7 DIP Switch Boot Modes**

Boot Mode	DIP Switch Setting—S7[5:8]			
	BOOT[4]	BOOT[3]	BOOT[2]	BOOT[1]
	S7:8	S7:7	S7:6	S7:5
NOR EMIFA	OFF	ON	ON	ON
NAND-8 EMIFA	OFF	OFF	OFF	ON
Default SPI1 Flash	OFF	OFF	OFF	OFF
UART2	ON	ON	OFF	OFF
EMU Debug	ON	OFF	OFF	ON

### 3 Removing the AM1808 SOM-M1

The following steps will walk you through removing the AM1808 SOM-M1 from the eXperimenter Kit baseboard and then reconnecting it. This may be necessary for troubleshooting purposes or if you purchase a different AM1808 SOM-M1 that is compatible with your eXperimenter Kit.

1. **IMPORTANT NOTE: A nylon screw keeps the LCD fastened to the baseboard during shipment. Remove this screw from the bottom side of the baseboard before attempting to eject the LCD.**

Eject the 4.3" LCD by pulling the LCD ejector levers away from the LCD. Remove the LCD from the baseboard and set aside.



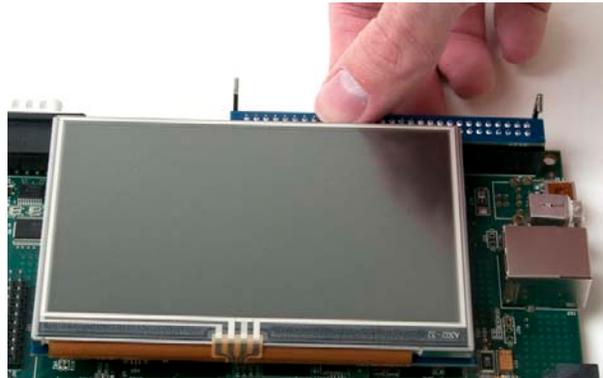
2. Taking care not to bend the PCB, remove the AM1808 SOM-M1 by applying even pressure beneath the PCB edges and pulling up.



3. To connect the AM1808 SOM-M1, align the SOM over the three board-to-board connectors. Using even pressure, press straight down over the connectors to mate boards. Visually verify that all three connectors have fully mated.



4. Connect the 4.3" LCD by inserting into the baseboard LCD connector and pushing down over the connector until the LCD ejector levers move to a vertical position. **CAUTION:** The solder points on the LCD connector PCB may be sharp; use caution when connecting the LCD.



## 4 Connect Blackhawk Emulator

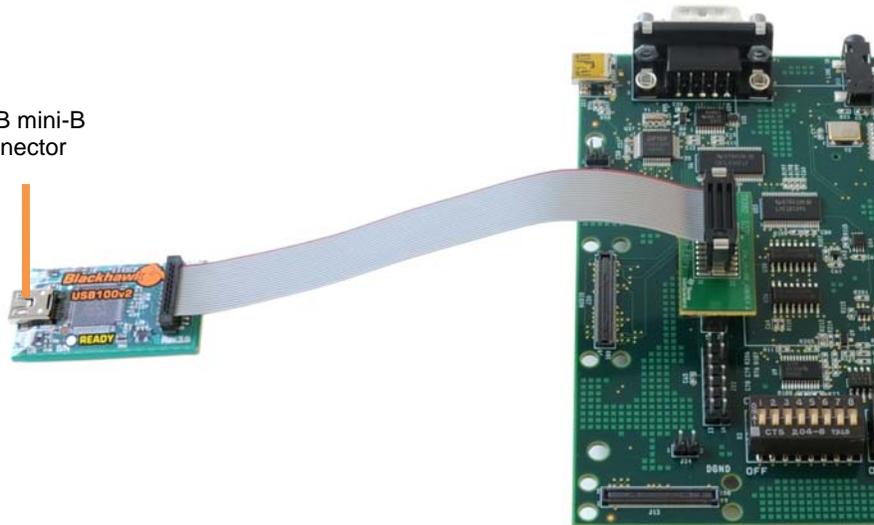
The AM1808 eXperimenter Kit includes a Blackhawk™ USB100v2 JTAG emulator.

1. **IMPORTANT NOTE: A nylon screw keeps the LCD fastened to the baseboard during shipment. Remove this screw from the bottom side of the baseboard before attempting to eject the LCD.**

If the 4.3" LCD is connected to the application baseboard, it must be removed prior to connecting the Blackhawk emulator. Pull back on the ejector levers until the LCD board connector moves up and disengages from the baseboard 60-pin LCD connector.

2. The Blackhawk emulator connects to the JTAG 20-pin header for ARM core on the application baseboard. See Section 2.1 for diagram pointing to the location of this header.
3. Position the emulator so the ribbon cable extends away from the application baseboard. See figure below.
4. Make sure all of the header pins line up with their respective holes on the PCB connector. Press straight-down on the PCB until the header and connector fully mate. (To assist with proper positioning of the emulator 20-pin connector, silkscreen printing on the bottom side of the PCB calls out the location of pins 1, 2, 19, and 20; these can be used to verify the connector holes matchup with their respective header pins on the application baseboard.)

USB mini-B  
connector



5. The 4.3" LCD can now be reconnected to the application baseboard.

## 5 Installing Code Composer Studio

The Zoom AM1808 eXperimenter Kit includes a software DVD containing Code Composer Studio (CCStudio).

1. Insert the Code Composer Studio v4 software DVD into your host PC.
2. Navigate to the DVD drive and open the files on the CCStudio DVD. Double-click on *setup\_CCS\_4.2.x.xxxx.exe* and a splash screen similar to the image below will appear. Click the **Next** button.



3. Follow the on screen instructions until you arrive at the screen for Product Configuration, select **Platinum Edition**.
4. On the next screen, leave the default ISA items checked. Click the **Next** button.
5. Leave the default Component items checked. Click the **Next** button.

6. Click the **Next** button to start copying files.
7. Wait for CCStudio to finish installing; this process can take some time, so please be patient.
8. Click the **Finish** button when the installation is complete. You may eject the CCStudio DVD at this time.

## 6 Running Board Support Library (BSL) Sample Programs

The BSL sample programs are included to test the different features of the development kit and diagnose any potential problems. In order to run these tests, you first have to connect your development kit to a PC.

### 6.1 Connect eXperimenter Kit to Host PC

To communicate with the AM1808 eXperimenter Kit using CCStudio, you will need to connect the included USB A to mini-B cable to the USB mini-B connector on the Blackhawk emulator (see Section 4) and a USB A port on the host PC.

As soon as the USB cable connects to your host PC, Windows should automatically recognize that new hardware has been connected and install the necessary drivers. Power on your AM1808 eXperimenter Kit, move the S7 DIP switches 7 and 8 to the on position, and continue with the next section.

### 6.2 Copy BSL Files to PC

The Windows CE SD card included with the AM1808 eXperimenter Kit contains the GEL and BSL files. These files need to be copied to your host PC.

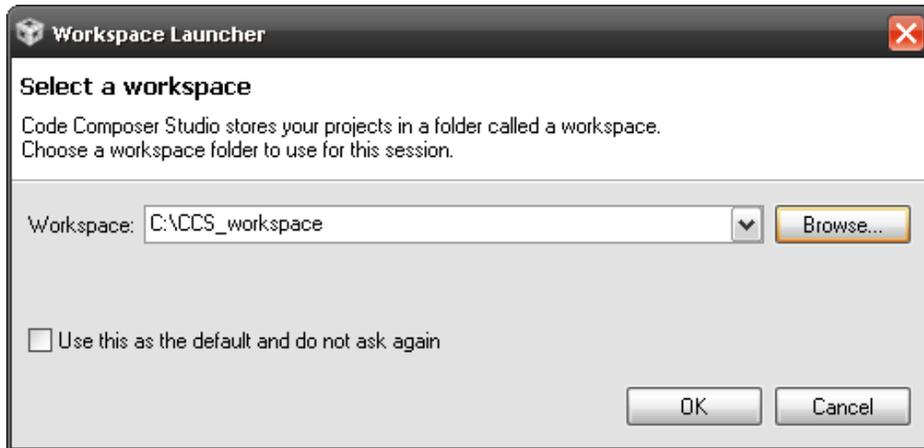
1. Insert the SD card into the USB card reader and insert the card reader into a USB port on your host PC.
2. Navigate into the SD card and locate the *BSL files* directory.
3. Extract the ZIP archive and save the files to your host PC. (**NOTE:** The files may be placed anywhere on your host PC; however, the original file structure must remain intact.)
4. For the instructions in this User Guide, it is assumed the files were copied to the root C:\ drive. For example:

`C:\AM1808_BSL`

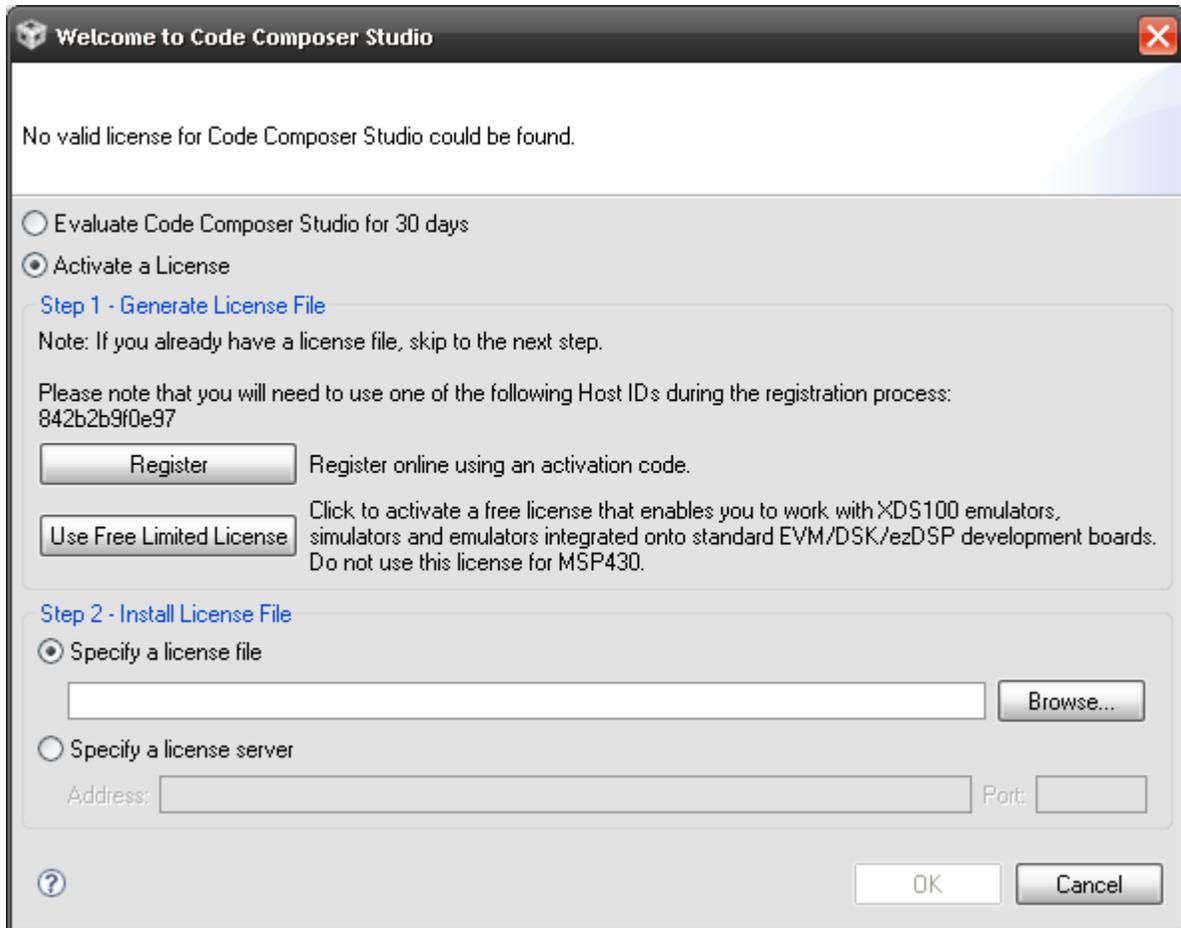
### 6.3 Launch Code Composer Studio

1. Launch Code Composer Studio by selecting **Start Menu > All Programs > Texas Instruments > Code Composer Studio v4.2.0 > Code Composer Studio v4.**

2. Select a workspace location and then click the **OK** button.



3. CCStudio will finish launching and a Welcome to Code Composer Studio window will open. (**NOTE:** If you do not have the latest Adobe Flash Player installed on your machine, you will be prompted to install. This is required for proper viewing of the Code Composer Studio Welcome screen.)
4. If you do not have a license, select the **Activate a License** option and click the **Use Free Limited License** button. (**NOTE:** If you do not have an active Internet connection, you can select to Evaluate Code Composer Studio for 30 days. At any time during that period, you can change to the Free Limited License by selecting **Help > License Options...** from the CCStudio menu bar and then following the onscreen instructions.)

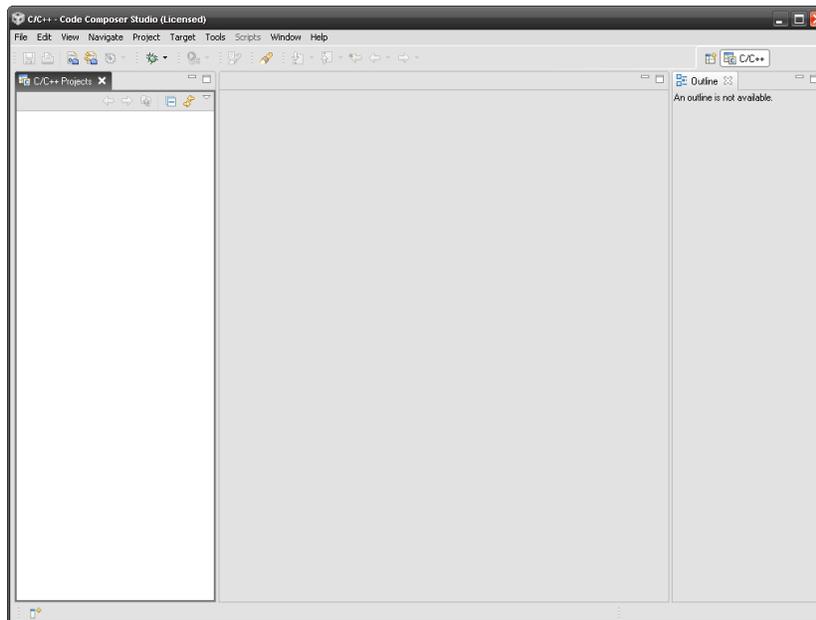


5. You will be redirected to TI's website to login in with your myTI.com account. Follow all the online instructions. After completing the online instructions, you will receive an email containing an attachment that is your license file.
6. Save the license file to your host PC, then return to the Welcome to Code Composer Studio window and under *Step 2 - Install License File*, browse to where you saved the license file. Click the **OK** button.

- You will then be presented with the Code Composer Studio Welcome screen. Click on the cube in the upper right-hand corner to go to the CCStudio workbench.



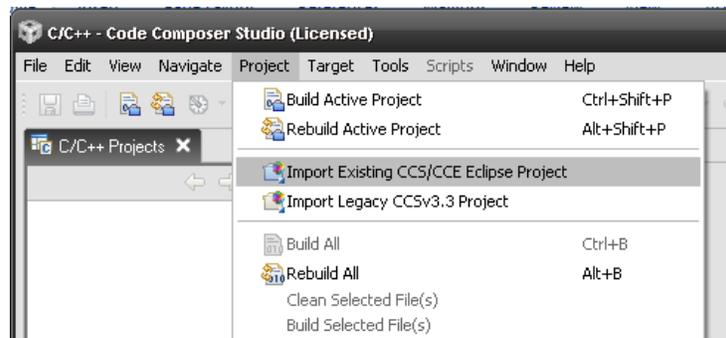
- The CCStudio workbench will then appear.



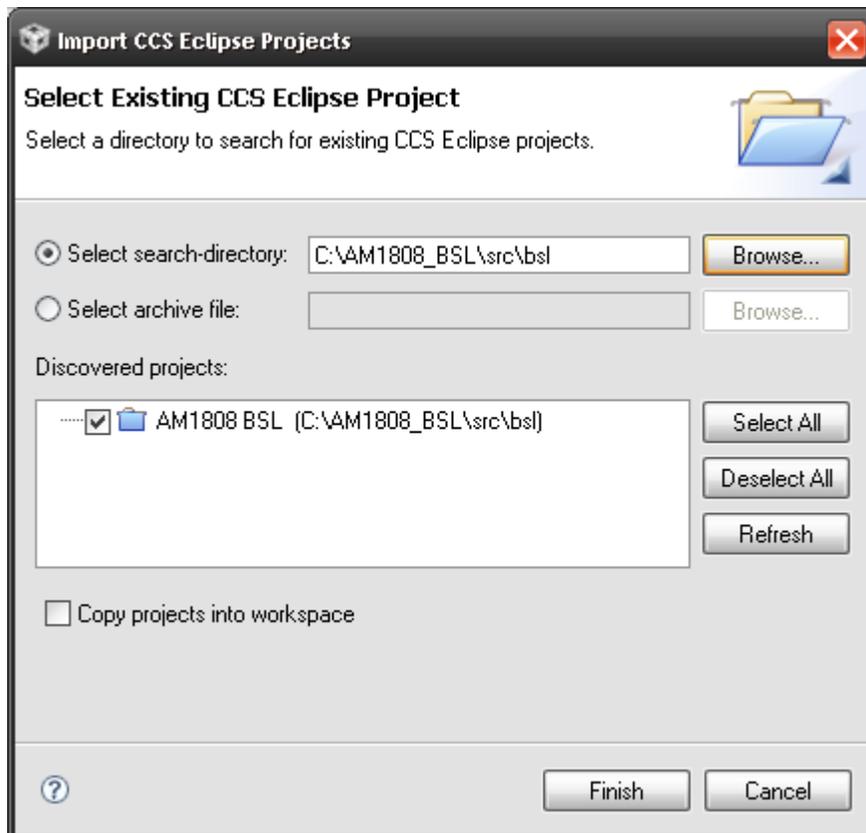
## 6.4 Run Sample Test

As an example, we will run one feature test. In order to run a test program, you will have to select the program, compile (or build) the program, and then load the compiled program. The following steps will walk you through that process.

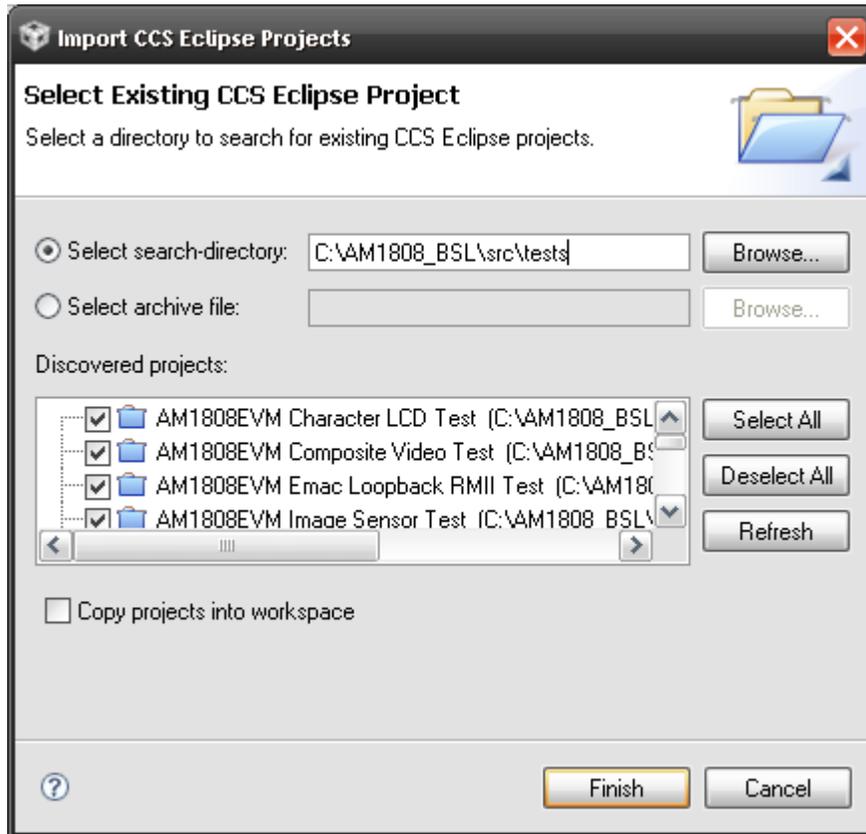
1. From the menu bar, select **Project > Import Existing CCS/CCE Eclipse Project**.



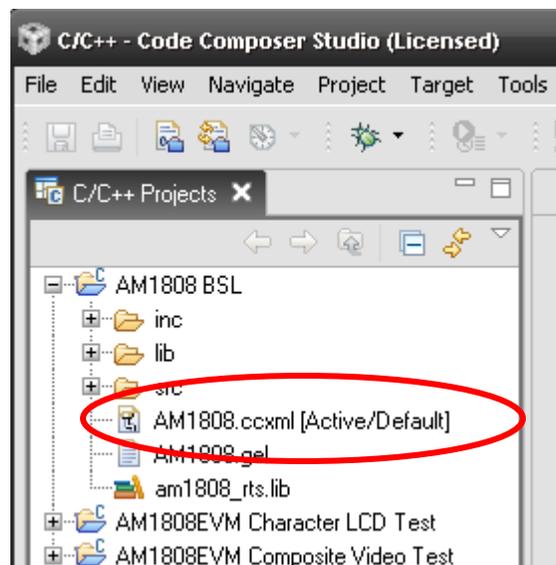
2. Browse to the location where you saved the BSL files on your host PC and down to the `AM1808_BSL\src\bsl` directory. Click the **OK** button. Verify the correct project exists in the *Discovered projects*: window and then click the **Finish** button.



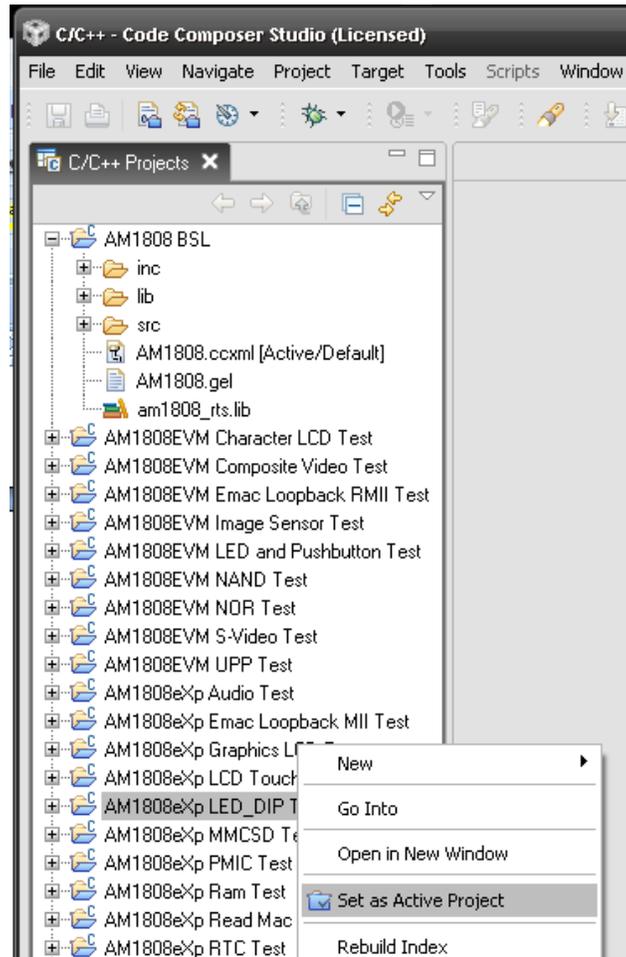
- Once again, select **Project > Import Existing CCS/CCE Eclipse Project**. This time browse to the tests folder, *AM1808\_BSL\src\tests*. Click the **OK** button. Verify the correct project exists in the *Discovered projects:* window and then click the **Finish** button.



- In the Projects window on the left, expand the *AM1808 BSL* folder and verify the *.ccxml* file is set as Active/Default. If not, right-click on the *.ccxml* file name and select **Set as Active Target Configuration**, then repeat to also **Set as Default Target Configuration**.



- Once again in the Projects window on the left, expand the *AM1808eXp LED\_DIP Test* project. Right-click on the file name and select **Set as Active Project**.



- The test must now be compiled; from the CCStudio menu bar select **Project > Build Active Project**.

```

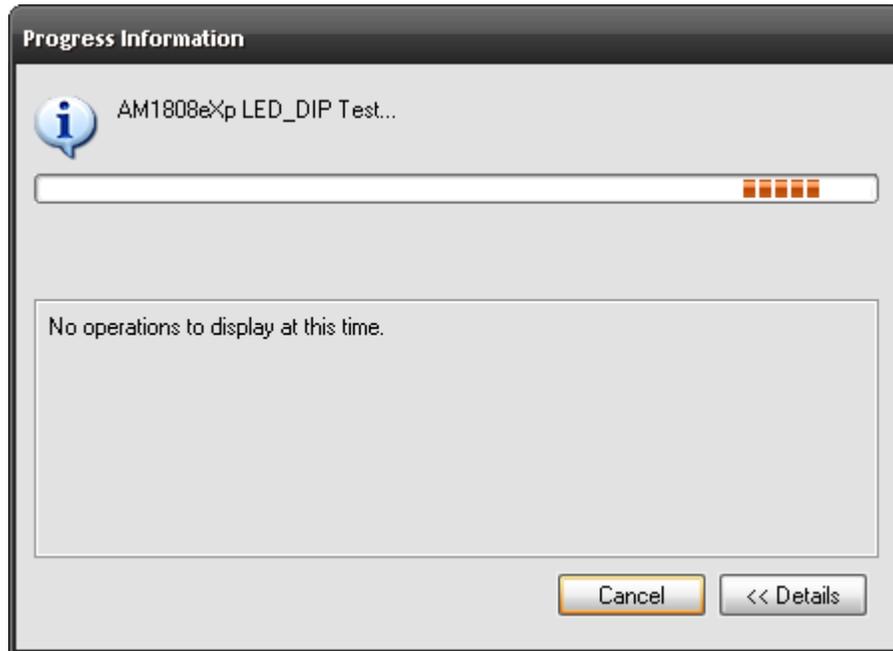
Console x
C-Build [AM1808eXp LED_DIP Test]

**** Build of configuration Debug for project AM1808eXp LED_DIP
Test ****

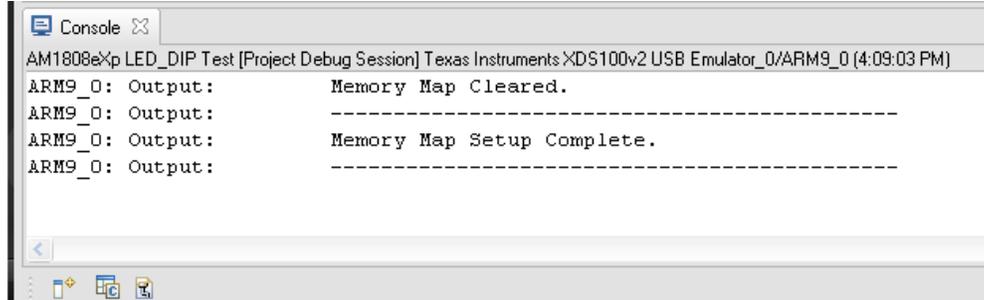
C:\Program Files\Texas Instruments\ccsv4\utils\gmake\gmake -k
all
'Building file: ../src/main_led_dip.c'
'Invoking: Compiler'
"C:/Program Files/Texas
Instruments/ccsv4/tools/compiler/tms470/bin/cl470" -mv5e -g -

```

- Once the Console window prints the message “Build Complete,” select **Target > Debug Active Project** from the menu bar. (**NOTE:** If you receive a message stating “Error connecting to the target,” press the reset button on the baseboard and then click **Retry**.)

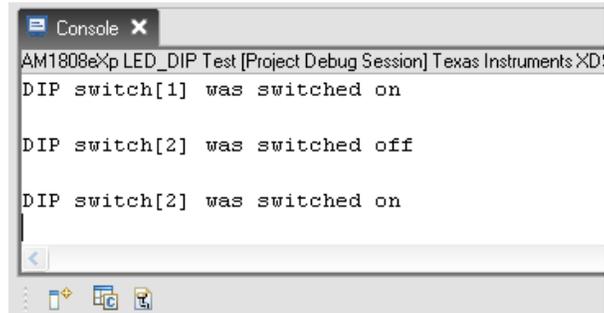


- After the test finishes loading, you will see a message in the Console window stating “Memory Map Setup Complete.”



- To run the program, select **Target > Run** from the menu bar. (**NOTE:** If you receive a message stating “Error during: Execution, Initialization, Control,” click **Cancel**, select **Target > Terminate All** from the menu bar, press the reset button on the baseboard, and repeat steps 7-9.)

10. The Console window provides a brief description of the test. If you move any of the S2 DIP switches, output text will print the switch that was moved and its new position (ON or OFF) and USER LED1 or USER LED2 will turn on or off in relation to the DIP switch position.



```
AM1808eXp LED_DIP Test [Project Debug Session] Texas Instruments XDS110
DIP switch[1] was switched on

DIP switch[2] was switched off

DIP switch[2] was switched on
```

The steps in this section can be repeated to run any of the other tests for your eXperimenter Kit. **(NOTE:** All of the tests in the “experimenter” folder can be run on both the AM1808 EVM and eXperimenter Kit; the tests in the “evm” folder can only be run on the AM1808 EVM.)

## Appendix A: Additional Documentation

### Software Documentation

- The Windows CE SD card included with your AM1808 eXperimenter Kit includes Software Developer Guides for Windows CE. Please see the *setup.htm* files on the SD card for information.
- U-Boot documentation  
<http://www.denx.de/wiki/U-Boot/WebHome>
- TI Code Composer Studio documentation  
<http://focus.ti.com/dsp/docs/dspsupportatn.tsp?sectionId=3&tabId=415&familyId=44&toolTypeId=30>

### Hardware Documentation

All of the following links are also available on your “My Account” page on the Logic PD website (<http://support.logicpd.com/auth/>).

- Logic PD *Zoom AM1808 eXperimenter Kit QuickStart Guide*  
<http://support.logicpd.com/downloads/1294/>
- Logic PD Zoom AM1808 eXperimenter Kit Hardware Design Files (BOMs, Schematics, and Layout Files for all boards included in the eXperimenter Kit)  
<http://support.logicpd.com/downloads/1397/>
- Logic PD *AM1808 SOM-M1 Hardware Specification*  
<http://support.logicpd.com/downloads/1324/>