
WIRELESS DEVELOPMENT SUITE GENERAL DESCRIPTION

1. Introduction

Wireless Development Suite (WDS) is a software utility used to configure and test the Silicon Labs line of ISM band RFICs.

1.1. Wireless Development Suite

The WDS Configurator tool enables users to configure the radio chip to perform a variety of controlled lab experiments. When the appropriate configuration is found for a user's requirement, the tool can generate either a C-header configuration batch file to use in WDS or a complete project of the selected example project with customized radio settings.

1.2. Purpose of This Document

This document describes the WDS, its features and general usage, and is valid for any device that is supported. Product line specific details can be found in separate application notes.

2. Getting Started

2.1. Hardware and Software Requirements

- Windows XP or later
- Microsoft .NET framework 3.5 or later
- Silicon Labs CP210x VCP driver
- WDS v3.1.10.0 or later

The lack of the .NET framework and VCP driver are recognized during the WDS installation. The install wizard will prompt for the installation of the missing components.

2.2. Download WDS

WDS can be obtained from the Silicon Labs website and is free of charge.

<http://www.silabs.com/Support%20Documents/Software/WDS3-Setup.exe>

As features are enhanced, device firmware updates may be needed. When WDS is installed, it will automatically prompt for a FW update if it detects an older version.

2.3. Installation Steps

Note: Before installing this software, local administration rights must be obtained from your network administrator.

1. Insert the installation media or download the latest WDS release from the Silicon Labs web site.
2. Double-click the WDS setup icon.
3. Follow the step-by-step instructions on the screen.
4. Click “Next” to start the installation process, or click “Cancel” to abort the installation and close the installer package. Some screen images may differ slightly between software revisions.

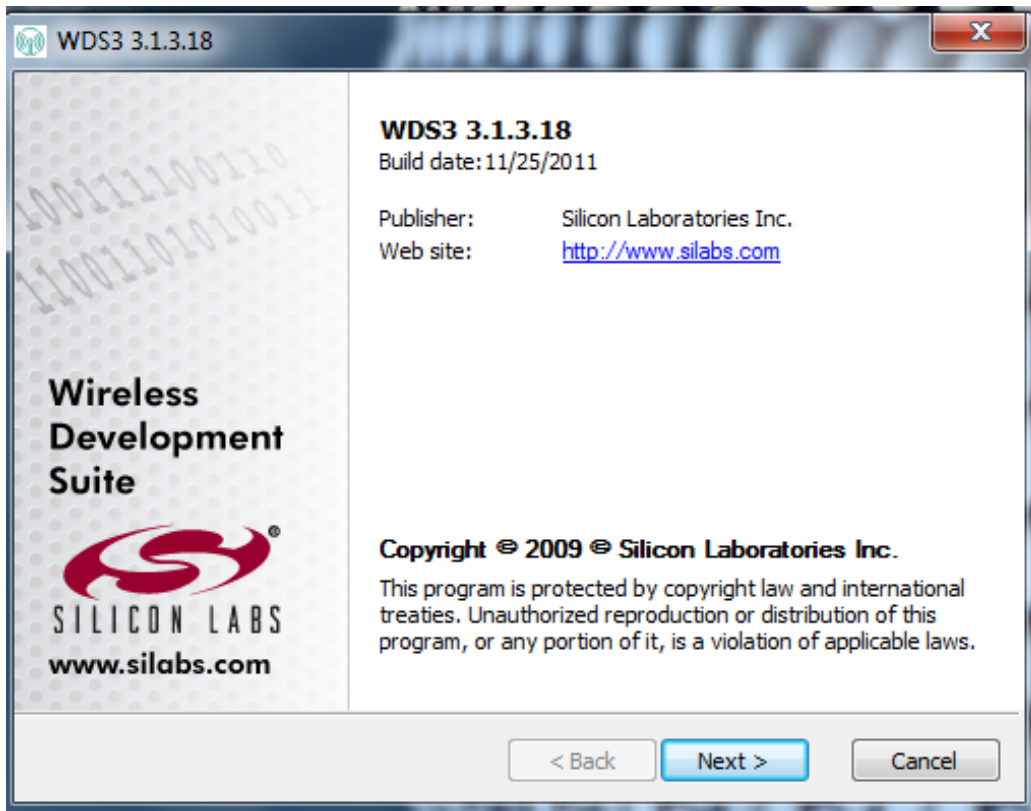


Figure 1. WDS Setup Screen

After clicking on the “Next” button, the software license agreement screen shown in Figure 2 appears. In order to install WDS, this license must be accepted by clicking the check box. Once accepted, the “Next” button is made available, and installation can continue.

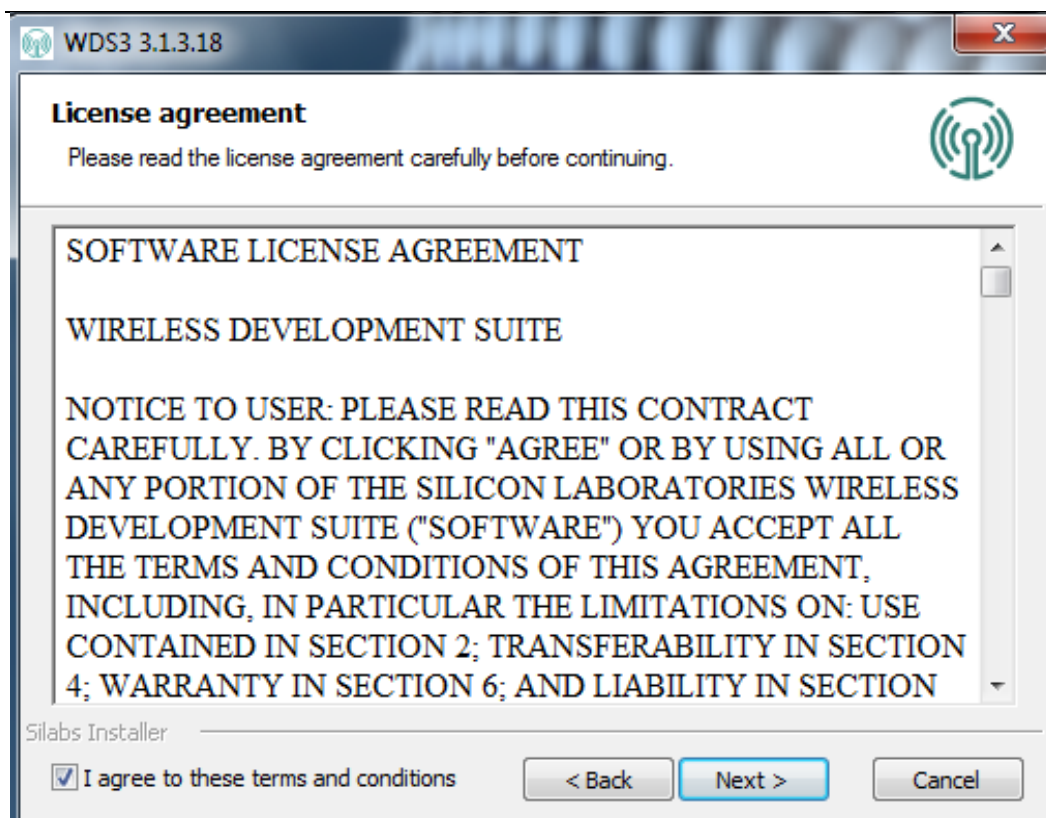


Figure 2. WDS License Agreement

After accepting the license, the installer options are made available. Here you can determine where the application should be installed on your computer. You have the ability to select an installation folder that may better suit your requirements. However, Silicon Labs recommends using the default directory:

C:\Program Files\Silabs\WDS3

New installations of the WDS may overwrite historical WDS data. Customers are advised to back up any data they may have. Project files may be found in “C:\ProgramFiles\Silabs\WDS3\Project_Configurations.”

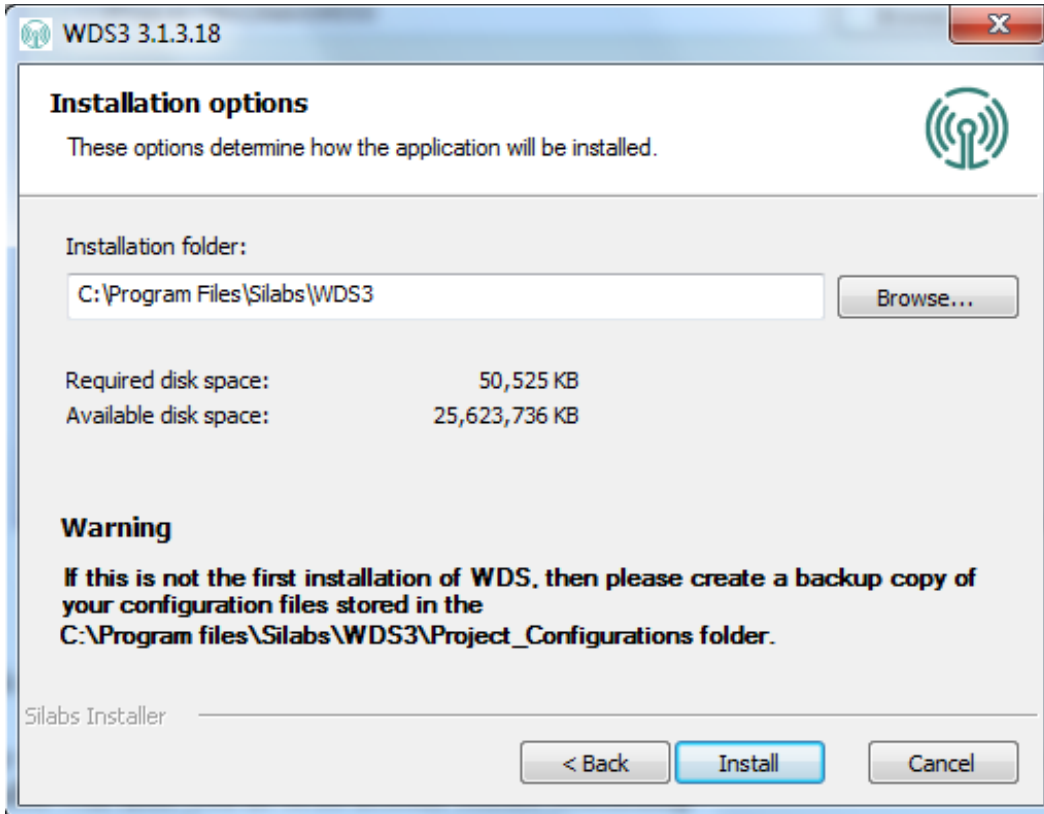


Figure 3. WDS Installation Options

When your settings are confirmed, click "Install" to continue. If an existing installation is found, the WDS installer will alert you as to its actions before continuing.

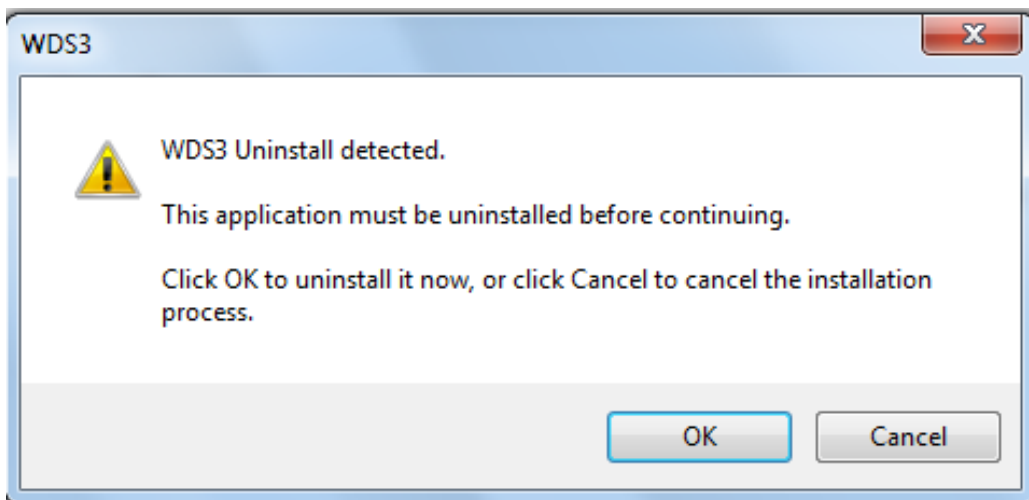


Figure 4. WDS Uninstall of Previous Versions

Depending on your system configuration, the installation time may vary. When the installer has completed, the following screen appears.

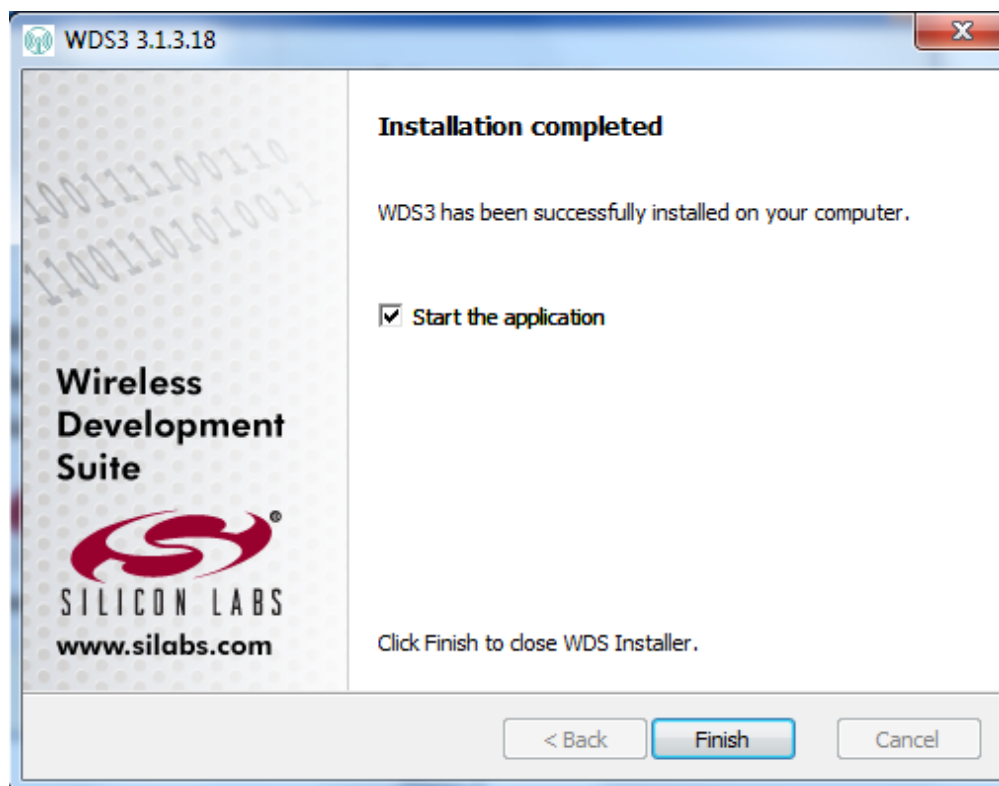


Figure 5. WDS Successful Installation

If you want the installer to launch WDS upon closing, enable the “Start the application” check box before clicking “Finish”.

2.4. Setup WDS

The main screen provides the main control interface to all functions performed within the WDS environment. The main window control buttons are located on the tool bar at the top of the screen.

2.4.1. Preferences

Global WDS environmental controls, such as log information, language control, and automatic update settings, can be set up here.

2.4.2. Auto Update

WDS is able to update itself if a newer version is released. If the automatic update is enabled in WDS preferences, at application startup, WDS checks the Silicon Labs website to determine if a newer release is available. It prompts for the release notes of the new version, and lets the user decide whether to install the new release or not.

If the automatic update is turned off, the user can manually initiate an update check in the WDS preferences, software update dialog box.

2.4.3. Send Your Feedback

This button opens your mailbox editor and attaches the current WDS log file. You are then free to add dialogue to explain what you are trying to achieve with WDS. The log file is added so that Silicon Labs can try to reproduce your exact WDS instance to better support your needs.

2.4.4. Licensing

Some of the WDS features are license protected when they are in the development phase or if certain features and products are not yet released to the public website. If you received a license to use WDS, please follow the easy - step instructions shown in Figure 6.

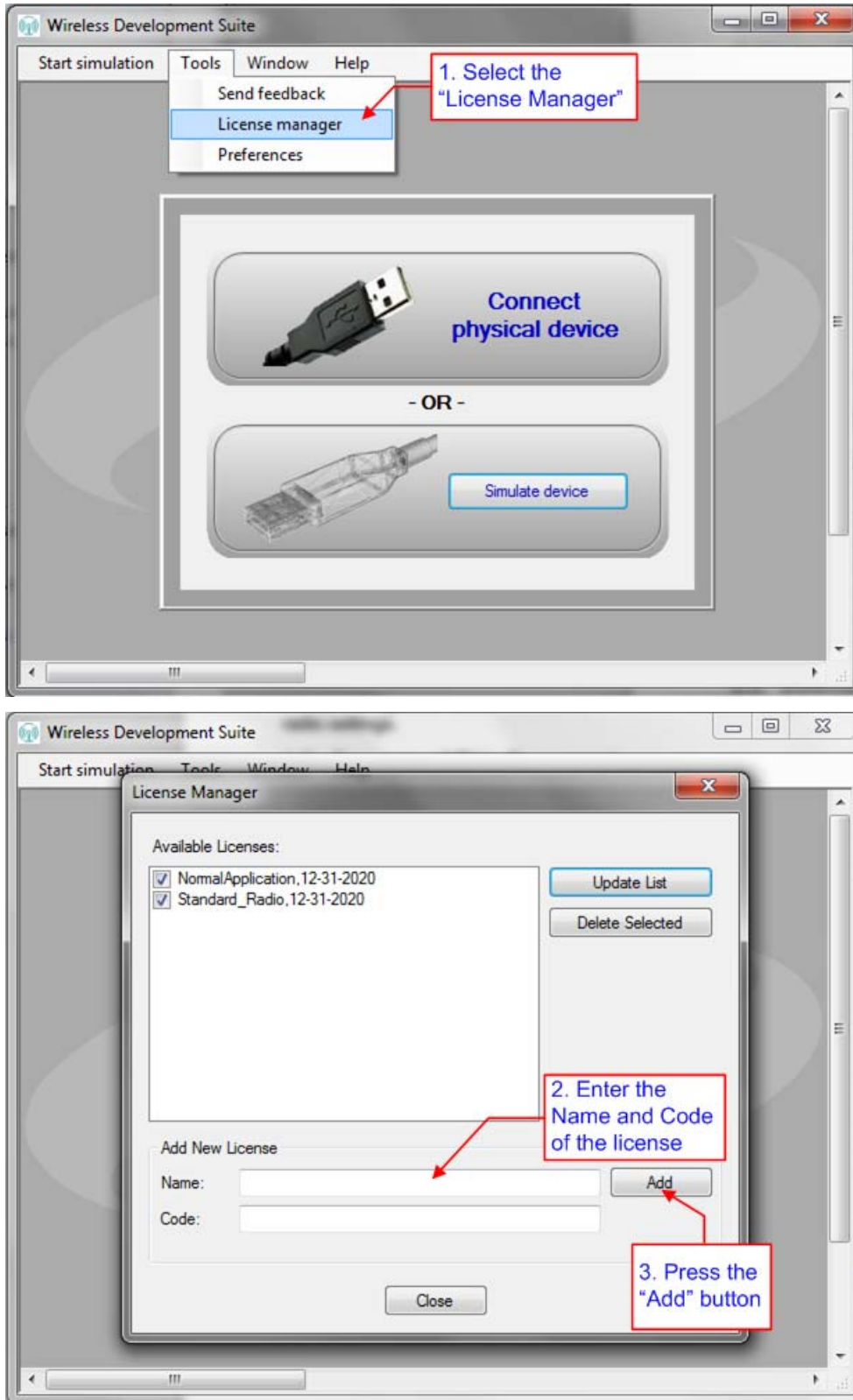


Figure 6. Adding License Information to WDS

3. Supported Hardware

The different EZRadio® and EZRadioPRO® demo and development kits contain one of two hardware platforms, the RFStick or the Wireless Motherboard. The WDS supports both platforms, can identify the connected hardware, and offers the tools and the software examples that are available for the detected hardware. For detailed description of the platforms, see the relevant kit's user guides. The WDS also supports a number of other obsolete demo and development boards that are listed in the *Help > Supported devices* menu item.

3.1. The Wireless Motherboard Hardware Platform

The Wireless Motherboard Platform is a demo, evaluation, and development platform for EZRadio and EZRadioPRO radio ICs. It consists of a wireless motherboard and interchangeable MCU and RF Pico boards. The wireless motherboard contains four pushbuttons, four LEDs, and a buzzer as simple user interfaces. There is also a graphical LCD used to display menu items.

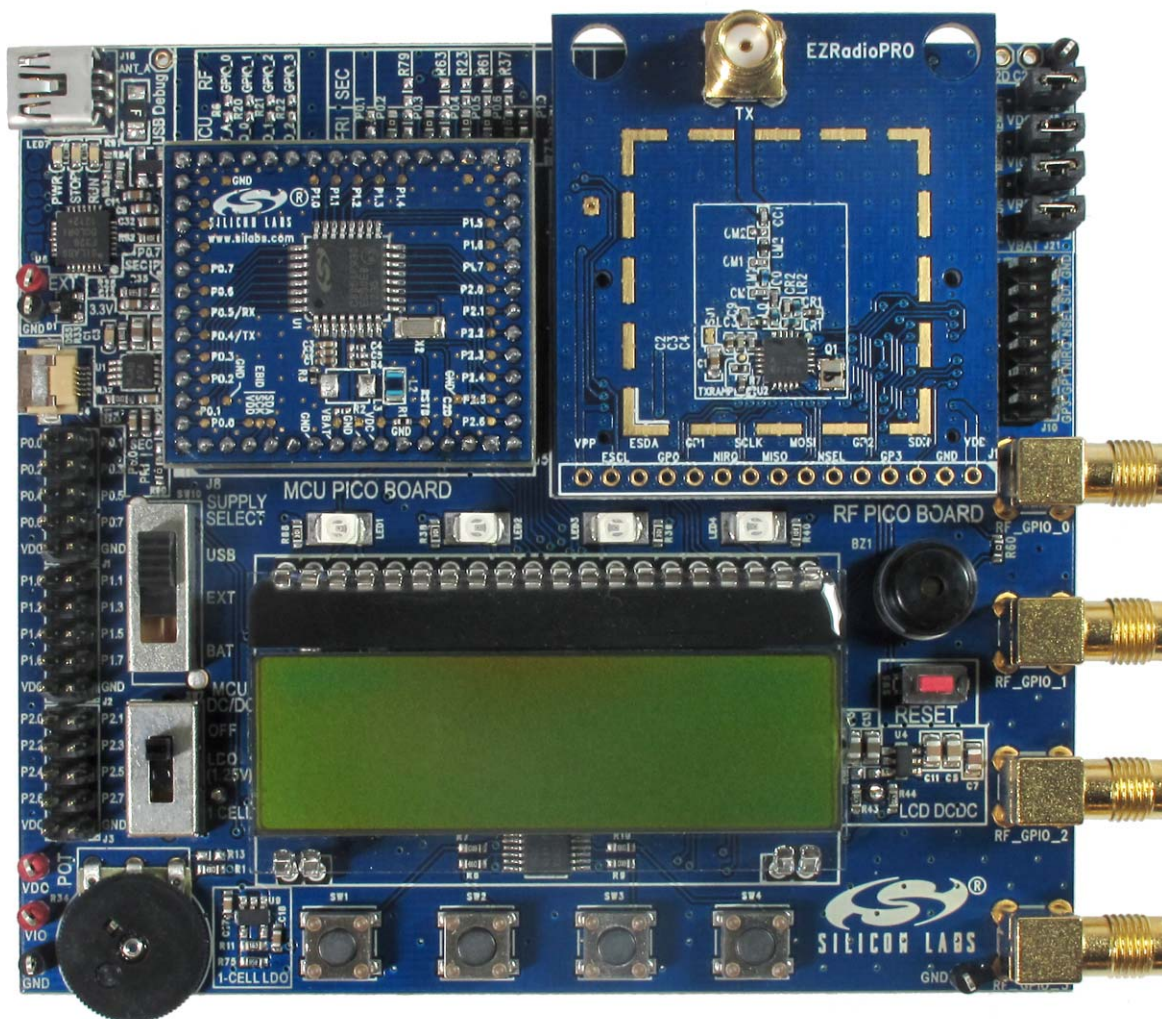


Figure 7. 8-Bit Wireless Motherboard Platform

3.2. The RFStick Platform

The RFStick is a basic demo system for the evaluation of EZRadio chips. The board has two main parts, the MCU part and the radio part. The MCU part of the board contains a Silicon Lab's C8051F930 MCU and basic human interface devices (four push-buttons, four LEDs, four switches, and a buzzer). The radio part contains the EZRadio chip, the matching circuit, and the antenna.

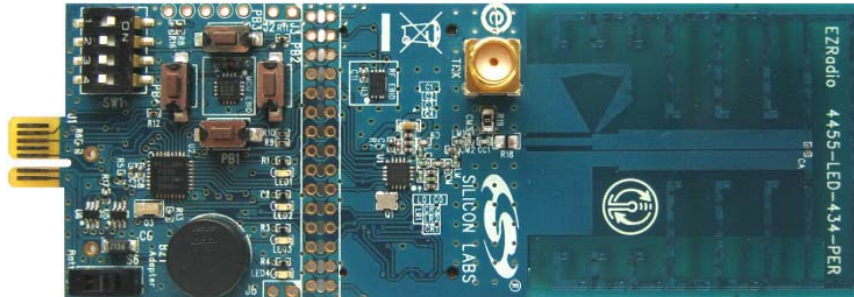


Figure 8. RFStick

4. WDS Workflow

WDS functions are best utilized if one of the development boards is connected to the PC (hardware mode), but limited features are also available in simulation mode. In this case, there is no physical hardware connected to the PC, but the GUI can be used to create example projects, batch files, or C header files.

4.1. Simulation Mode

WDS can be used without connecting the physical HW to the PC to obtain configuration parameters. After running the WDS, the user needs to start simulation mode by clicking on the "Simulate device" button.

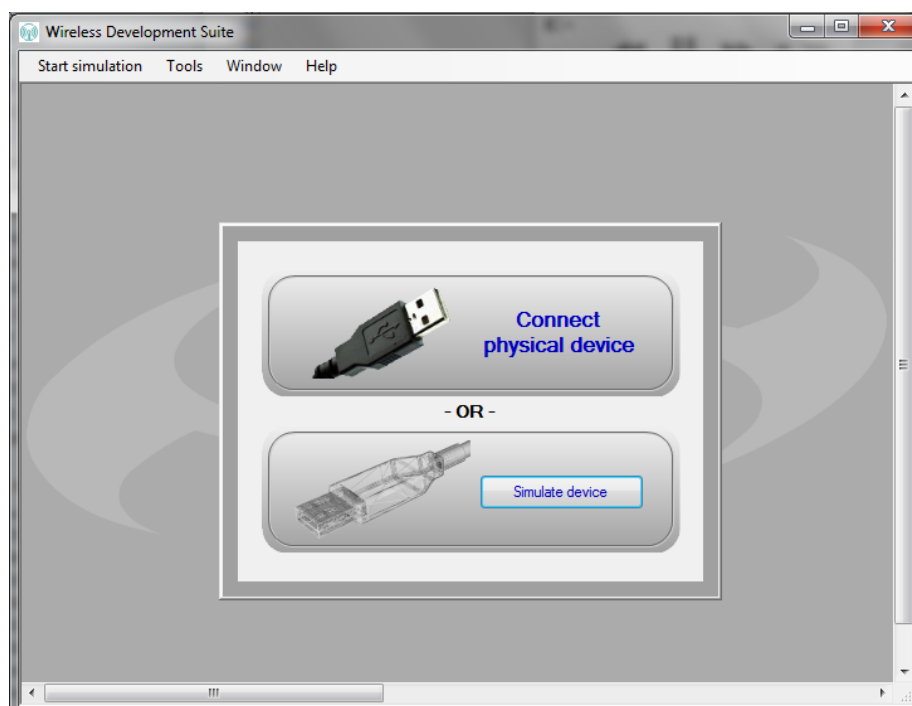


Figure 9. Start Simulation Mode

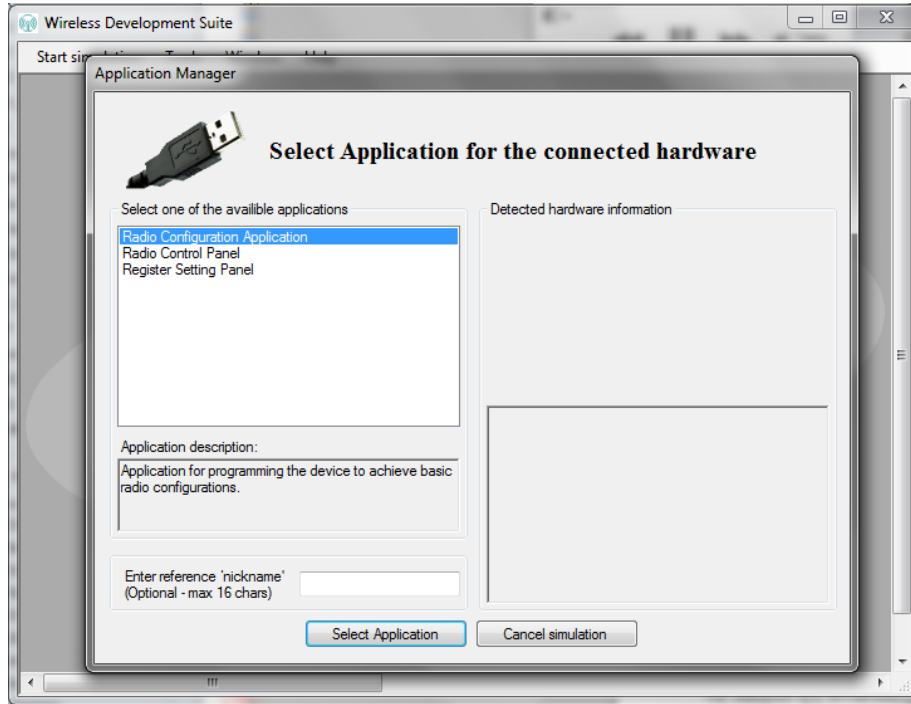


Figure 10. Select Application for Simulation Mode

After the simulation mode is started, the user must decide and select which part is used for the simulation mode. Filters can be used to narrow down the list of RF chips. In the next step, the WDS populates the available applications with which to simulate the selected chip.

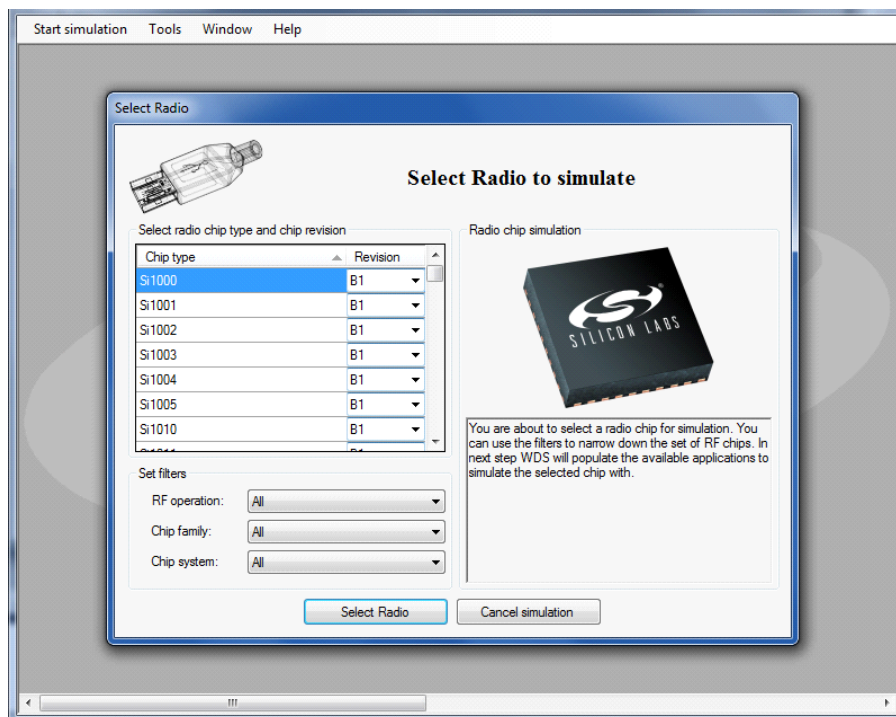


Figure 11. Select Radio for Simulation Mode

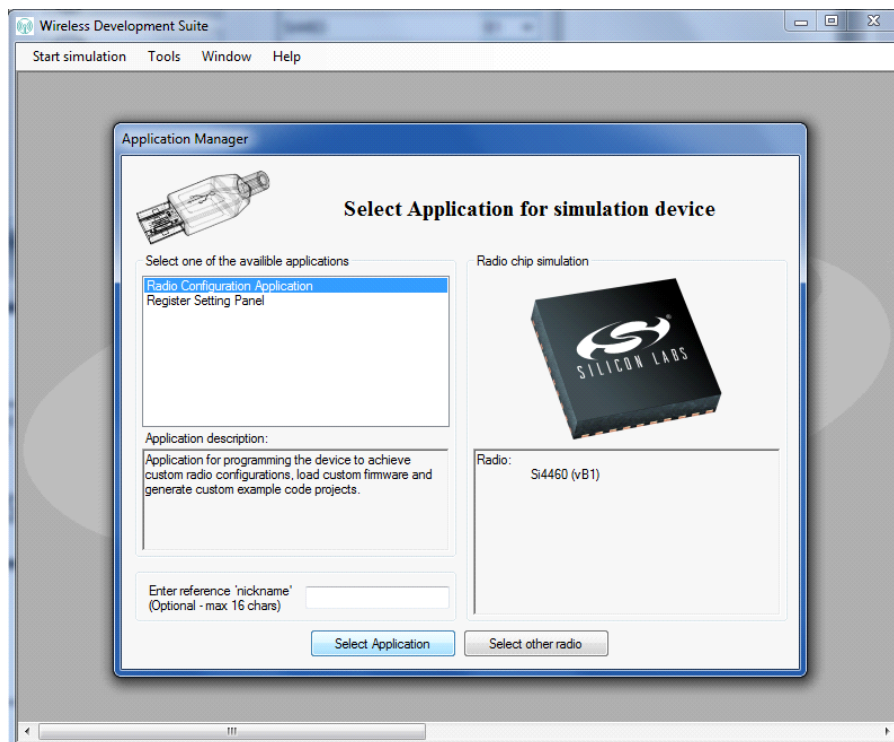


Figure 12. Select Application for Simulation Mode

The available applications are discussed in detail in one of the WDS user guides relevant for the family of the radio chip to be simulated.

4.2. Hardware Mode

WDS continuously polls the devices connected to the PC so it can automatically recognize whether any of the connected HW can work with the GUI. Devices can be attached to the PC before running WDS or even while the GUI is running.

After connecting any of the supported development platforms (listed in the *Help > Supported device* menu item of the WDS) the desired application can be selected from the pop-up window. Each board is equipped with an electronic board identification database (EBID) that is used to store information about the given board, such as product name, version number, radio type, etc. WDS can always access that information (even if the user has changed the host MCU code on the device). WDS summarizes the HW and FW revision numbers and other board-related information and shows a picture of the recognized device in the "Application Manager" pop-up window.

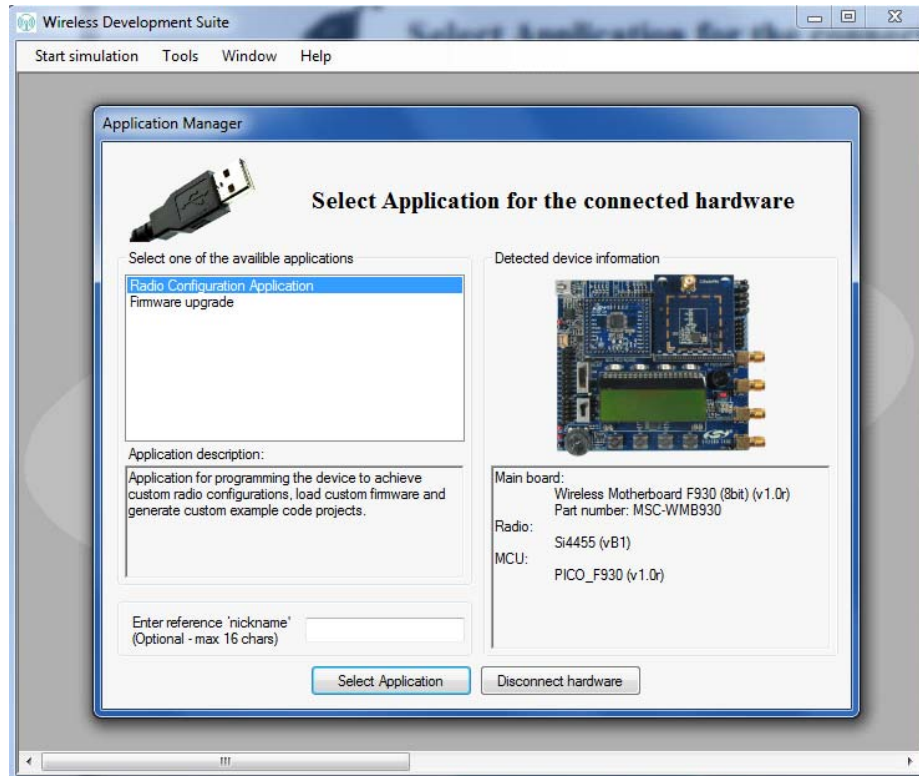


Figure 13. Select Application for Connected Hardware

The available applications are discussed in detail in one of the WDS user guides relevant for the family of the connected radio chip.

4.3. Firmware Upgrade

WDS is capable of loading a FW with default radio configurations to a development board without running the Radio Configuration Application or the Register Setting Panel. It is a quick and easy way to restore the factory default FW on the development boards or load the Range Test Application. It is an application that has several predefined, built-in radio configurations to verify the range in different circumstances and with different radio configurations.

Ensure that the development board is connected to the PC and run WDS. The PC GUI will automatically detect the board and show the Firmware upgrade option in the Application Manager window.

Select the "Firmware Upgrade" application and WDS shows a "Firmware Download" dialog box.

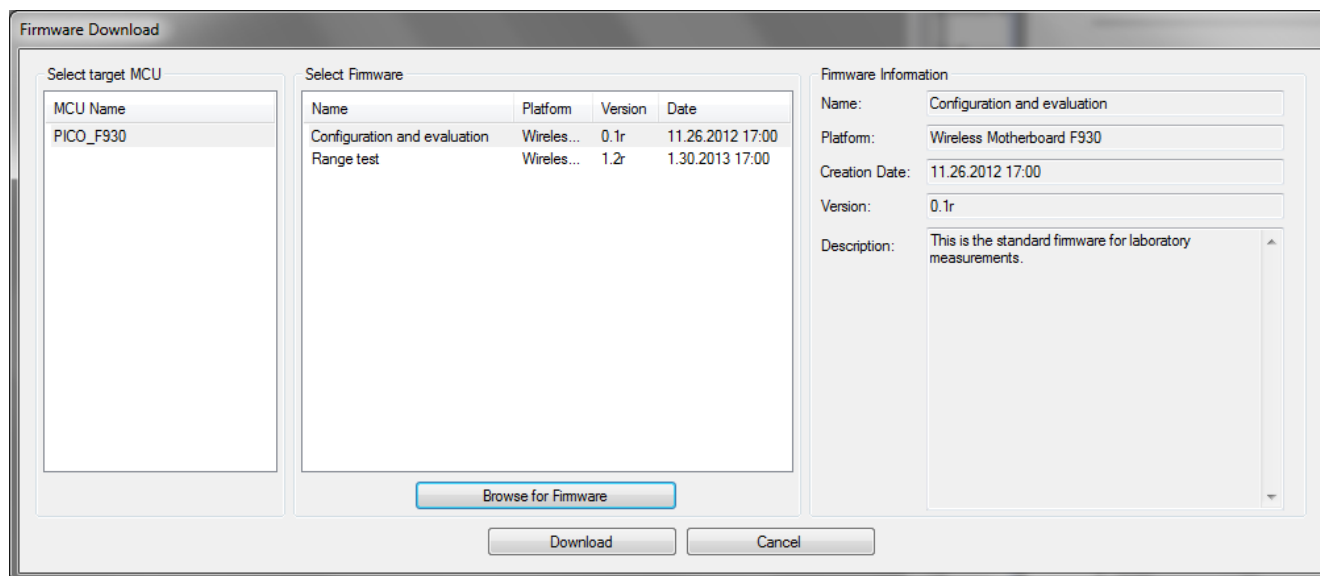


Figure 14. Firmware Options for the Wireless Motherboard

Select the desired FW to load and hit the “Download” button. WDS shows the progress bar and notifies the user about the result of the FW load.



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Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
USA

<http://www.silabs.com>