



# Lab Guide

Version 1.1

Nov 2010

Redpine Signals, Inc.

2107 N. First Street, #680 San Jose, CA 95131. Tel: (408) 748-3385 Fax: (408) 705-2019 Email: <u>info@redpinesignals.com</u> Website: <u>www.redpinesignals.com</u>





# Table Of Contents

| 1 | Intr | oduction                  | 3 |
|---|------|---------------------------|---|
| 1 | .1:  | Step by Step Instructions | 3 |

# Table of Figures

| Figure        | 1: Import – Stage 1                    | 4   |
|---------------|--|-----|
| Figure        | 2: Import – Stage 2                    | 5   |
| Figure        | 3: Import – Stage 3                    | 6   |
| <b>Figure</b> | 4: Import – Stage 4                    | 7   |
| Figure        | 5: Set Active Configuration as Debug   | 8   |
| Figure        | 6: Configure Network Parameters        | 9   |
| Figure        | 7: Debug Menu 1                        | LO  |
| Figure        | 8: Debug Configurations 1              | L 1 |
| Figure        | 9: Progress of the Download Activity 1 | L2  |
| Figure        | 10: Run the Application                | L3  |
| Figure        | 11: Web page of the Tower System 1     | L4  |
| Figure        | 12: Demo Application 1                 | L4  |
|               |  |     |





# **1** Introduction

This document will guide you through the use of the Freescale MQX<sup>™</sup> RTOS and the Redpine Signals Wi-Fi MQX enablement patch. It will walk you through the compile and download process using the CodeWarrior<sup>™</sup> integrated development environment.

Any Tower MCU with a SPI host controller can control the TWR-WIFI-RS2101 card. However, the lab presented in this document uses the TWR-MCF5225X.

## **1.1:** Step by Step Instructions

After the installation of the RS9110-N-11-21 enablement patch, the default internet communication path is set to Wi-Fi. To switch back to wired Ethernet, please open the network\_config.h file as described in step 14 below, and look for line of code #define DEMOCFG\_USE\_WIFI and set it as follows:

#define DEMOCFG\_USE\_WIFI 0

- 1. Set up the 802.11b/g/n Wi-Fi Access Point and configure its Wi-Fi settings like the SSID name, channel number, etc. For the purpose of the demo, the local network IP address of the Access Point has to be 192.168.1.X (X = 0 to 254).
- 2. Launch the CodeWarrior<sup>™</sup> for Microcontrollers V10 IDE
- 3. From the Menu, click on  $File \rightarrow Import$  as shown in the figure below.





| 🔑 Debug - light_webserver_wifi/  | Source/network_               | _config.h - CodeWarri     | or Development St             | udio                  |                   |                       | - 7 🛛                       |
|--|-------------------------------|---------------------------|-------------------------------|-----------------------|-------------------|-----------------------|-----------------------------|
| File Edit Refactor Navigate Search                                     | Project Profiler              | Run PEMicro Processor B   | xpert Window Help             |                       |                   |                       |                             |
| <u>N</u> ew<br>Open Path<br>Open File <u>.</u>                         | Alt+Shift+N ♪<br>Ctrl+Shift+A | •   🏇 • 🔾 • 💁             | •   🥭 🖋 •   🛃                 | <ul> <li></li></ul>   | • 🗢 🔶 • 🔶 •       | E<br>i⇒ 😿 🖑 🖤 0       | 🏂 Debug 📴 C/C++             |
| ⊆lose<br>Close All   | Ctrl+W<br>Ctrl+Shift+W        |                           |                               |                       |                   |                       |                             |
| I Save<br>Save As  | Ctrl+5                        | -                         |                               |                       |                   |                       |                             |
| Sav <u>e</u> All<br>Rever <u>t</u>                                     | Ctrl+Shift+S                  |                           |                               |                       |                   |                       |                             |
| Mo <u>v</u> e<br>Rena <u>m</u> e<br><b>&amp; Refresh</b>               | F5                            |                           |                               | accombly 8            |                   |                       |                             |
| Convert Line Delimiters To   | •                             | Indinc                    |                               | assembly $\sim$       |                   |                       |                             |
| erint  | Ctrl+P                        |                           |                               |                       |                   |                       |                             |
| Switch <u>W</u> orkspace<br>Res <u>t</u> art                           | •                             | - 1.9)                    |                               |                       |                   |                       |                             |
| import<br>≧ Exp <u>o</u> rt  |                               | / - / - /                 |                               |                       |                   |                       |                             |
| Properties   | Alt+Enter                     | 55,255,0)                 | ✓                             |                       |                   |                       | ✓                           |
| 1 mqx_main.c [bsp_twrmcf52259/]<br>2 rsi_mqx_iface.c [bsp_twrmcf52259/ | ]                             | <br>• ■ • • • • □         | Z Tasks 🔞 Target              | Ta 🔝 Problems         | 💽 Executabl 🚺 Mem | ory Br 🔁 Project Ex 🛛 | Memory C                    |
| 3 rs21_spi_hcd.c [bsp_twrmcf52259].                                    | ]<br>1                        |                           |                               |                       |                   |                       | □ 🕏 🎽                       |
| Egit   |                               |                           | <pre>₽ 25 bsp_twrmcf52:</pre> | 259<br>er_wifi<br>259 |                   |                       |                             |
|  |                               |                           | Writable                      | Smart Insert          | 40 : 35           |                       | :                           |
| tid - Mozilla Th   | 🕲 Stu <u>dent I</u>           | Pays w 🔁 rs <u>2101_v</u> | ifi 😪 Remo                    | te Deskto             | 2 192.168.1.233   | 🥬 Debug - light_w     | <ul> <li>S:11 PM</li> </ul> |

Figure 1: Import – Stage 1

4. Chose "Existing Projects into Workspace" under "General" as shown in Figure 2 below and click the "Next" Button.





| 🥬 Import  |        |
|---|--------|
| Select<br>Create new projects from an archive file or directory.  | Ľ      |
| Select an import source:  |        |
| type filter text  |        |
| General<br>Archive File<br>Existing Projects into Workspace<br>File System<br>Preferences<br>C/C++<br>CodeWarrior<br>CVS<br>Run/Debug<br>Team |        |
|   |        |
| ⑦ < Back Next > Einish  | Cancel |

Figure 2: Import – Stage 2

5. In the next window, click on "Browse" to chose the C:\Program Files\Freescale\Freescale MQX3.6\demo as shown in the Figure 3 below.





| 🔑 Import  |  |            |
|---|--|------------|
| Import Projects<br>Select a directory to sear   | ch for existing Eclipse projects.  |            |
| <ul> <li>Select root directory:</li> <li>Select archive file:</li> <li>Projects:</li> </ul>   | C:\Program Files\Freescale\Freescale MQX 3.6   | Browse     |
| <ul> <li>3phmeter_m51em</li> <li>dual_flash_updat</li> <li>hvac_error_m522</li> <li>hvac_error_twrm</li> <li>hvac_m52259evb</li> <li>hvac_twrmcf5225</li> <li>irtc_m51emdemo</li> <li>irtc_m51emdemo</li> <li>secemail_twrmcf5</li> <li>secemail_twrmcf5</li> </ul> | ndemo (C:\Program Files\Freescale\Freescale<br>e_m51emdemo (C:\Program Files\Freescale\Freescale\F<br>259demo (C:\Program Files\Freescale\Freescale<br>259evb (C:\Program Files\Freescale\Freescale<br>cf52259 (C:\Program Files\Freescale\Freescale MQ)<br>0 (C:\Program Files\Freescale\Freescale MQ)<br>0 (C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ)<br>(C:\Program Files\Freescale\Freescale MQ) | Select All |
| Copy projects into wo   | rkspace  |            |
| 0   | < <u>B</u> ack <u>N</u> ext > <u>Finish</u>  | Cancel     |

Figure 3: Import – Stage 3

6. The list of available projects in the chosen directory appears, with all of them selected apart from the ones already imported into the workspace. Click on "Deselect All". Then look for the "light\_webserver\_wifi" project and select it. Click the "Finish" button as shown in Figure 4 below.





| 🔑 Import   |   |            |
|--|---|------------|
| Import Projects<br>Select a directory to search I  | for existing Eclipse projects.  |            |
| <ul> <li>Select root directory:</li> <li>Select archive file:</li> <li>Projects:</li> </ul>  | :\Program Files\Freescale\Freescale MQX 3.6   | Browse     |
| <ul> <li>3phmeter_m51emde</li> <li>dual_flash_update_r</li> <li>hvac_error_m52259</li> <li>hvac_error_twrmcf5</li> <li>hvac_error_twrmcf5</li> <li>hvac_m52259demo</li> <li>hvac_m52259evb (C</li> <li>hvac_twrmcf52259 (</li> <li>irtc_m51emdemo (C:</li> <li>irtc_m51emdemo (C:</li> <li>iescemail_twrmcf51ci</li> <li>secemail_twrmcf522</li> </ul> | emo (C:\Program Files\Freescale\Freescale<br>m51emdemo (C:\Program Files\Freescale\Freescale\F<br>idemo (C:\Program Files\Freescale\Freescale<br>ievb (C:\Program Files\Freescale\Freescale<br>is2259 (C:\Program Files\Freescale\Freescale MQ)<br>C:\Program Files\Freescale\Freescale MQ)<br>C:\Program Files\Freescale\Freescale MQ)<br>i(C:\Program Files\Freescale Freescale MQ)<br>i(C:\Program Files\Freescale Freescale MQ)<br>i(C:\Program Files\Freescale Freescale MQ)<br>i(C:\Program Files\Freescale Freescale Freescale Freescale MQ)<br>i(C:\Program Files\Freescale Freescale Frees | Select All |
|  | pace  |            |
| ?  | < <u>B</u> ack <u>N</u> ext > <u>Finish</u>   | Cancel     |

<u>Figure 4: Import – Stage 4</u>

- The project is successfully imported into the Workspace after some time. Next, import the bsp\_twrmcf52259 and rtcs\_twrmcf52259 projects, if not imported already. The path for these projects is C:\Program Files\ Freescale\Freescale MQX3.6
- Apply the TWR-WIFI-RS2101 enablement patch or follow the Driver Reference Manual's Section 7 to enable the RS9110-N-11-21 device driver support into the BSP project, bsp\_twrmcf52259.
- 9. Ensure that "Build Configuration  $\rightarrow$  Set Active  $\rightarrow$  Int Debug" is selected for all the projects as shown in Figure 5 below.





| Debug - bsp_twrmcf52259/twrmcf52259 User Config/user_config/use | g.h - CodeWarrio                | r Development Studio  | D                    |                      | - 7 🛛            |
|---|---------------------------------|-----------------------|----------------------|----------------------|------------------|
| File Edit Refactor Navigate Search Project Profiler Run PEMicro Proces  | sor Expert Window               | Help                  |                      |                      |                  |
| i 📬 • 🖳 🖻   💼 i 💣 i 🔗 i 🕖 • 🏭 • 🖬 • i 🏇 • 🔘 •   | <b>Q</b> • 🗄 🥭 🛷 •              | 🥒   🖢 - 🖓 -           | ∜⇒ ♦ • ♦ •           | 🖹 🏇 De               | bug 📴 C/C++      |
| 🏇 Debug 🖄 🔎= Variables 💁 Breakpoints  | ¥                               |                       | i   51 - 61 - 6   14 | * 😿 🖑 🎁 🎁            | <i>m</i> • ▽ □ □ |
|   |                                 |                       |                      |                      |                  |
|   |                                 |                       |                      | 1                    |                  |
|   |                                 | New                   | •                    |                      |                  |
|   |                                 | Open in New Window    | ,                    |                      |                  |
|   |                                 | 📄 Сору                | Ctrl+C               |                      |                  |
|   |                                 | 💼 Paste               | Ctrl+V               |                      |                  |
|   |                                 | 💢 Delete              | Delete               |                      |                  |
|   |                                 | Move                  |                      |                      |                  |
|   |                                 | Rename                | F2                   |                      |                  |
| h user_config.h 🛛 💽 mqx_main.c  |                                 | 🗠 import              |                      |                      |                  |
| ** BSP settings - for defaults see mgx\source\bsp   | \ <u><board< u=""></board<></u> | 🛃 Export              |                      |                      | <u> </u>         |
| T/  |                                 | Add Files             |                      |                      |                  |
| #define BSPCFG_ENABLE_RSI_IMAGE_UPGRADE   |                                 | Build Project         |                      |                      |                  |
| #define BSPCFG ENABLE RTCDEV 0  |                                 | Clean Project         |                      |                      |                  |
| #define BSPCFG_ENABLE_TTYA 0  |                                 | 🔊 Refresh             | F5                   |                      |                  |
| #define BSPCFG_ENABLE_TTYB 1  |                                 | Close Project         |                      |                      |                  |
| #define BSPCFG_ENABLE_TTYC 0  |                                 | Close Unrelated Proje | ects                 |                      |                  |
| #define BSPCFG ENABLE ITTYA O   | <u> </u>                        | Exclude from build    |                      |                      | <u>×</u>         |
|   |                                 | Preprocess            |                      | 6                    |                  |
|   | 🗆 🖉 Tasks 🔞 T                   | Disassemble           |                      | r 🏠 Project Ex 🕺 🔪   | Memory C         |
| Analysis - rajendar-270024::admin   | -                               | Build Configurations  | 1 Ext MRAM Debug     | Set Active           | 💽 🖻 🔁 🚺          |
|   | 🗢 🕞 😂 bsp_twn                   | Make targets          | 🗸 2 Int Flash Debug  | Build                | •                |
|   | 🗉 🌮 light_we                    | Index                 | 3 Int Flash Release  | Delete resource cfgs | _                |
|   | 🗄 🗁 rtcs_twr                    | r<br>Convert To       |                      | Manage               |                  |
|   |                                 | Edit Linked Resource: | s Locations          |                      | -                |
|   |                                 | Run As                | •                    |                      |                  |
|   |                                 | Debug As              | •                    |                      |                  |
|   |                                 | Team                  | •                    |                      |                  |
| < >   |                                 | Compare With          | •                    |                      |                  |
| The subconver wife  |                                 | Kestore from Local H  | istory               |                      |                  |
| : L ignc_webserver_win  |                                 | Properties            | Alt+Enter            |                      | :                |
| Student Pays with Lif   | 📲 🕲 Remote Deskto               | Show In Windows Ex    | plorer               | ug - bsp_twrmcf5 🔇   | 💕 🔥 5:46 PM      |

Figure 5: Set Active Configuration as Debug

- 10. Select the bsp\_twrmcf52259 project in the project explorer tab and build the project. Right clicking on the project lists the actions possible as shown in Figure 5 above and "Build Project" is one of them, to build a project.
- 11. Similarly, build the rtcs\_twrmcf52259 project.
- 12. The network parameters like SSID, channel number, IP address, etc., can be modified as per the current network in the network\_config.h file of the light\_webserver\_wifi project as shown in the Figure 6 below. Select the light\_webserver\_wifi project in the Project Explorer tab and unfold the directories to find the source entry for network\_config.h. The following parameters control the Wireless network setup.

```
#define DEMOCFGESSID "Wi-Fi_eNbedded" // SSID
#define DEMOCFGCHANNEL 0 // Channel
#define DEMOCFGPSK "12345678" // Pre-Shared Key
#define ENET_IPADDR IPADDR (192, 168, 1, 9)// IP Address
#define ENET_IPMASK IPADDR (255,255,255,0) // Subnet Mask
#define ENET_IPGATEWAY IPADDR (192.168.1.1) // Gateway
```





The IP address (192.168.1.9) for the Tower system and Gateway address (192.168.1.1) are shown here as examples for the purpose of this Lab.



## Figure 6: Configure Network Parameters

- 13. Now build the light\_webserver\_wifi project.
- 14. In the Menu chose "Debug  $\rightarrow$  Debug Configurations" as shown in the Figure 7 below.





| Debug - light_webserver_wifi/Source/network_config.h - CodeWarri            | or Development Studio  |   |                        | ∎₽⊠             |
|---|--|---|------------------------|-----------------|
| File Edit Refactor Navigate Search Project Profiler Run PEMicro Processor E | xpert Window Help  |   |                        |                 |
| i 📫 • 🖫 🕒   📾 i 💣 i 🔗 i 🕖 • 🛄 • 🖬 • i 🏇 • 🔘 • 💁                             | • 🛯 🙋 🔗 • 🗍 🌛 🗍  | $\frac{1}{2}$ - $\frac{1}{2}$ - $\frac{1}{2}$ - $\frac{1}{2}$ | * 📑                    | 🏇 Debug 🔤 C/C++ |
| The Debug 23 (M= Variables) 💁 Breakpoints (no launch histor                 | y) 🛛 💥 🖑 🕣   | ▶ II ■ M 3. <sup>(3)</sup> .                                  | e 🗟 ið 😿 💞 🏴           | ∰ ∰ m • ▽ □ □)  |
| Debug As  | •  |   |                        |                 |
| Debug Configura   | itions   |   |                        |                 |
| Organize Pavono   | es   |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
| h user_config.h 🗈 mqx_main.c h network_config.h 🔀                           | Disassen   | nbly 🛛 📲 Outline  |                        |                 |
| #define DEMOCFG_USE_WIFI 1  |  |   |                        |                 |
| #define DEMOCFG_ENABLE_DHCP 0 #define DEMOCFG_ENABLE_SNTP 0                 |  |   |                        |                 |
|   |  |   |                        |                 |
| #define DEMOCFGESSID "WiFi_Redpine"   |  |   |                        |                 |
| #deline Democrechannel I  |  |   |                        |                 |
| #ifndef ENET_IPADDR   |  |   |                        |                 |
| #define ENET_IPADDR IPADDR(192,168,1,9)                                     |  |   |                        |                 |
|   |  |   |                        | >               |
|   | 🖉 Tasks 慃 Target Ta  | Problems 📭 Executabl 🚺  | Memory Br Project Ex 2 |                 |
| Analysis - rajendar-270024::admin   |  |   |                        |                 |
|   |  |   |                        |                 |
|   | 🗄 👺 [light_webserver_wif   | i   |                        |                 |
|   | Image: Barrier Bar |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
|   |  |   |                        |                 |
| : 🖓 0 items selected  |  |   |                        |                 |
| 🛃 start 🔹 rfid - Mozilla Thunder 🔞 Student Pays with Lif 🔮                  | Remote Desktop Con   | 🕲 192.168.1.233 - Rem   | 👂 Debug - light_webser | 🔇 🥵 📙 5:52 PM   |

Figure 7: Debug Menu

15. A window appears as shown in Figure 8 below. Chose the "light\_webserver\_wifi\_twrmcf52259\_Int\_Flash\_Debug\_OSBDM" target in the left pane and click the "Debug" button. This will start the compiling and downloading of the binary image into the MCU Flash.





| Debug Configurations   |   |                         | ×      |
|--|---|-------------------------|--------|
| Create, manage, and run configuration  | ins   |                         |        |
| Download an application to a target, then debug  | or run the application.   |                         | ~~~~   |
| Ype filter text         CodeWarrior Attach         CodeWarrior Connect         CodeWarrior Download         CodeWarrior Connect         CodeWarrior Connect         CodeWarrior Connect         CodeWarrior Connect         Launch Group | Name:       light_webserver_wifi_twwmcf52259_Int_Flash_Debug_OSBDM         Imain:       04* Arguments       Imain       Foreign in the second secon | Searc <u>h</u> Project) | Browse |
| Filter matched 5 of 7 items  |   | Apply_                  | Reyert |

Figure 8: Debug Configurations

16. The download process will take some time and the progress is shown in the right side bottom as shown in the Figure 9 below.





| 🔑 Debug - light_webserver_wifi/Source/network_config.h - CodeWarrior Development Studio 📃 🕞 👂  |
|--|
| File Edit Refactor Navigate Search Project Profiler Run PEMicro Processor Expert Window Help   |
| i 🗅 • 🖫 🗁 📾 i 💣 i ⊗ i 💋 • 🏭 • 🚍 • i 🏇 • O • 🏊 • i 🥭 🖋 • i ⊿ i ½ - 🏹 • ⇔ ⇔ - 🗈 🛱 🏂 Debug 配 c/c++  |
| 参 Debug 🕄 🚾 Variables] 💁 Breakpoints] 🦓 🖑 🗰 🗰 🗮 🖉 🖉 🗰 🖩 🗮 🖉 🖉 👹 🖑 🖑 🖑 🖑 🖑 🖑 👘 👘 🗸 🌣  |
| Iight_webserver_wifi_twrmcf52259_Int_Flash_Debug_OSBDM [CodeWarrior Download]  |
| 🕼 user config.b. 🕼 max main.c. 🕼 network config.b. 🖄 🥄 🗖 🗔 Disassembly 🖄 🚼 Outline 👘 🗖   |
| <pre>#define DEMOCFG_USE_UIF1 1 #define DEMOCFG_ENABLE_DHCP 0 #define DEMOCFG_ENABLE_SNTP 0 #define DEMOCFGCHANNEL 1 #ifndef ENET_IPADDR #define ENET_IPADDR (192,168,1,9) #endif</pre>  |
|  |
|  |
| <pre>**** Build of configuration Int Flash Release for<br/>project light_webserver_wifi *****<br/>C:\Program Files\Freescale\CW MCU<br/>v10.0\gnu\bin\make all<br/>C:\Program Files\Freescale\CW MCU<br/>v10.0\gnu\bin\make: Nothing to be done for `all'.</pre> |
| 0 items selected   |
| 🛃 start 🗞 rfid - Mozilla Thunder 🥹 Student Pays with Lif 😢 Debug - light_webser 🎕 192.168.1.233 - Rem 🔇 🔊 以 6:06 PM  |

Figure 9: Progress of the Download Activity

17. When the download is finished the application debug starts as shown below in Figure 10. Press the F8 key to run the application.





| 🔎 Debug - bsp_twrmcf52259/twrmcf52259 BSP Files/mqx_main.c - CodeWarrior Development Studio   | - 7 🛛                 |
|---|-----------------------|
| Elle Edit Refactor Navigate Search Project Profiler Run PEMicro Processor Expert Window Help  |                       |
| i 11 • 🖫 🔤   📾   🏕 i 🔗 i 🖇 • 🖬 • 🖬 • I 🕸 • O • Q₂ • i 🖉 🖋 • i 🕖 i 💱 • 🏷 - ⇔ -   | 🖹 🏇 Debug 🗟 C/C++     |
| 🎋 Debug 🕱 🔲 Variables 💁 Breakpoints 👘 🗖 🖬 Modules 🦾 🍕   | 🖻 🗌 🗸 🚺 🖬 🖬           |
| 🙀 🔣 🕑 🕪 🕕 🔳 🕅 3. 👁 .ℓ 🗟 🖬 😥 🖑 🗰 🖞 🎬 🖑 🗰 🗸 Name Value  | Location              |
| E [ght_webserver_wifi_twrmcf52259_Int_Flash_Debug_OSBDM [CodeWarrior Download]  |                       |
| ColdFire, inflash_d.elf (Suspended)     C |                       |
| E 2 min() Ci(Program Files(Freescale WQX 3.6(mqx)source(bsp)twmrd522     If M Supervisor Registers  | ×                     |
| 1_start() D:\Products\ColdFire_Build_Tools\ew\[EWL_Runtime]Runtime_Cc   | >                     |
| Ct/Program Files/Freescale/Preescale MQX 3.6\demo\light_webserver_with(cw10)light_webs  | ~                     |
|   |                       |
| 🖸 mqx_main.c 🛛 🕼 rs21_spi.c 🔯 rsi_mqx_iface.c 🥍 🙄 🖓 📅 Disassembly 🖄 🚼 Outline   | - 0                   |
| *END* ( /* Body */  |                       |
| int main VX0000dd68 <main>: link a6,#0</main>   |                       |
| void extern const MQX_INITIALIZATION_STRU   | JCT MQX_init_struct   |
| )<br>// /# Rodu #/  |                       |
| max ( MOX INITIALIZATION STRUCT PT  | R) &MQX init struct   |
| extern const MQX_INITIALIZATION_STRUCT MQX_init_struct ov 0x0000dd6c <main+4>: lea 0x00045E9C</main+4>  | (0x45b9c),a0          |
| /* Start MOX */   | 340) ; OxC            |
|   |                       |
| 🖻 Console 🗴 📕 💥 🖗 🕞 🖽 🗐 📌 🖻 🕇 📑 🕆 📑 🗋 🖉 Tacks 🍘 Target Ta 🕃 Problems 🚺 Evenutabl 🗍 Memory Br 🏠 Prob   | ert Ex 🖄 🔒 Memory 🗖 🗖 |
|   |                       |
| ● ● Son twmrf52259  |                       |
| 😟 🌮 light_webserver_wifi  |                       |
| II  |                       |
|   |                       |
|   |                       |
|   |                       |
| ✓   |                       |
|   |                       |
| : D* Writable Smart Insert 47:1   |                       |

Figure 10: Run the Application

- 18. The Tower system will connect to the configured Access Point as soon as the application is run.
- 19. Connect your computer to the Access Point (through WLAN or Ethernet) and then ping the IP address assigned to the TWR-WIFI-RS2101 device to verify the connection (open up a command prompt by going to "Start-> Accessories-> Command Prompt" and type "ping 192.168.1.9").
- 20. Next, open a browser on the computer and type http://192.168.1.9 into the browser to view the webpage hosted by the Web server on the Tower system. The page will be as shown in Figure 11.





| Security Status          | MCF51CN128 Security Status |  |
|--------------------------|----------------------------|--|
| MCF51CN128 Information   |                            |  |
| Tower System Information | (SVV2)                     |  |
|                          | Window:                    |  |
|                          | (SW3)                      |  |
|                          | Motion Detection:          |  |
|                          | (Accelerometer)            |  |
|                          | Garage Door:               |  |
|                          | (Potentiometer R2)         |  |
|                          | Culoba na Tina at          |  |

### Figure 11: Web page of the Tower System

- 21. Locate the TWR-WIFI-RS2101\_GUI.jar application in the demo\light\_webserver\_wifi\Demo\_Application folder. Ensure that Java JRE 1.6.0 is installed on the computer.
- 22. Double-click on the Application. The window shown in Figure 12 appears.

| <u>Sedpine Connect-io-n and Freescale To</u> | DEMO         |  |
|--|--------------|--|
| Connect-io-n <sup>®</sup><br>Wi-Fi® I/O      | TWR-MCF52259 |  |
| Device IPV4 Address                          |              |  |
| Connect<br>Disconnect                        |              |  |

## Figure 12: Demo Application





- 23. Enter the IP address of the TWR-WIFI-RS2101 card (192.168.1.9 in this demo) and click on the Connect button in the above screen. This establishes a TCP connection between the computer and the TWR-WIFI-RS2101 card.
- 24. By rotating the potentiometer present on the Tower MCU board the user can observe the change in the intensity of the bulb in the GUI.

\*\*\*\*





### **Document History**

| S.No. | Version<br>No. | Date      | Changes                                  |
|-------|----------------|-----------|--|
| 1.    | 1.0            | July 2010 | Initial Version                          |
| 2.    | 1.1            | Nov 2010  | Updated headers/footers; updated step 21 |



Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective oners.

 $\ensuremath{\textcircled{C}}$  Freescale Semiconductor, Inc. 2010. All rights reserved.