Mini-Z™ WLAN SSR Kit

Quick Start Guide   QS008403-1011

Introduction

This quick start guide describes how to set up and use Zilog's Mini-Z WLAN 28-Pin Module, a reference design that can be used with any Parallax stamp-compatible development board. In this quick start guide, we'll demonstrate the operation of the Mini-Z WLAN Module using Zilog's optically-isolated Mini-Z Solid State Relay Design Board.

This guide also provides instructions about how to test certain I/O functions, such as the Module's ADC block, or turning ports ON and OFF when using the Mini-Z Console Shell, which you can do without any advance programming.
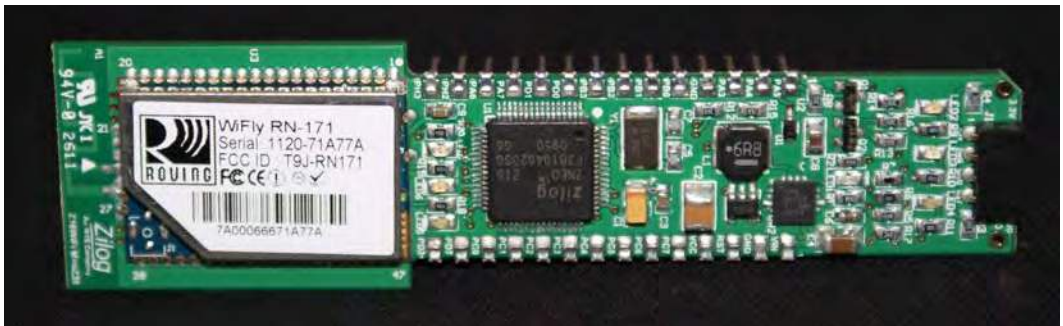
Figure 1. The Mini-Z WLAN 28-Pin Module

Kit Contents

All hardware (except an external adjustable power supply), software and documentation required to develop your application with the Mini-Z WLAN 28-Pin Module is included within the Mini-Z WLAN SSR Kit.

Hardware

The Mini-Z WLAN SSR Kit includes the following hardware:

- Mini-Z WLAN 28-Pin Module
- Mini-Z Solid State Relay Design Board
- USB Smart Cable

- Mini-Z to standard debug adapter
- USB cable (A male to Mini-B male)
- DIP Package Extractor

Software

A USB Driver may be required to enable the USB connection to the Mini-Z WLAN 28-Pin Module. A standard USB driver is available for download from the FTDI website.

Documentation

Technical documentation supporting the Mini-Z WLAN 28-Pin Module is available for download via the following links:

- Mini-Z WLAN 28-Pin Module Reference Design Document (RD0005)
- Mini-Z WLAN Shell and Flash Loader Reference Manual (RM0062)
- RN-171 Wi-Fi Class 1 Module Datasheet and User Manual

Please refer to the Zilog website at www.zilog.com to obtain the most up-to-date documentation.

Setting up for Initial Operation

There are a few simple steps in order to begin using the Module; each of the following steps links to their respective descriptions on the pages that follow.

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Step 1: Unpack the Hardware

Remove the Mini-Z WLAN 28-Pin Module from its protective packaging. ESD precautions must be used when handling the Mini-Z WLAN 28-Pin Module and, if you also purchased it, the Mini-Z Solid State Relay Design Board.

Step 2: Attach the Mini-Z Module

Carefully attach the Mini-Z WLAN 28-Pin Module to your base board. Pay careful attention to the alignment, as follows:

• Pin 1 on the Mini-Z Module is marked by a chamfered corner near the 4-pin connector J1; see Figure 1

• Pin 1 on Zilog's Mini-Z Solid State Relay Design Board is labeled, simply, "1".
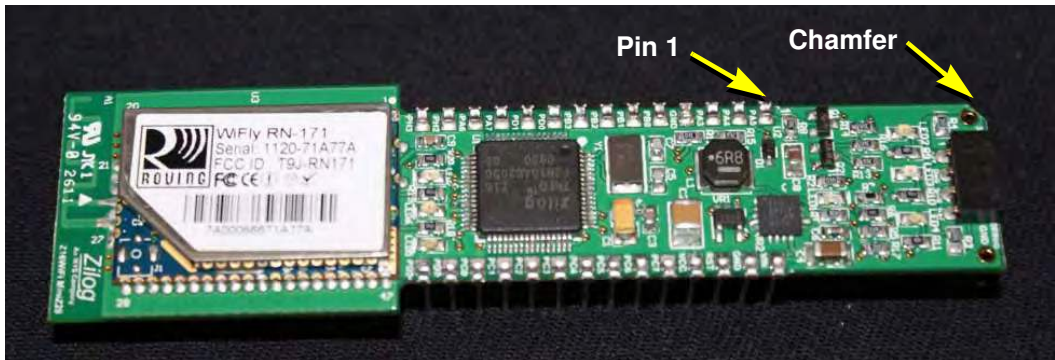
Figure 2. The Location of Pin 1 and Chamfer on the Mini-Z WLAN 28-Pin Module

⚠ **Caution:** To avoid bending any pins while inserting the Mini-Z Module onto the baseboard, ensure that all of the Module's pins are properly aligned to the baseboard connector before gradually applying pressure to the Module.

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Step 3: Establish Hardware Connections

Before proceeding, it is important that you do not apply power to the Mini-Z Module until you have established all hardware connections. Observe the following brief procedure to establish these connections:

1. Connect power (5 V to 12 V) to the SSR Design Board via Power Terminal J3.

> ➤ **Note:** Because Power Terminal J3 is not accessible after the Mini-Z Module is attached, Zilog suggests adopting a provision for a detachable power connection.

2. Connect the USB Cable (A to Mini-B) from the PC to the Solid State Relay Board.

Step 4: Apply Power to the SSR Design Board

Apply power to the Mini-Z Solid State Relay Design Board. The blue power status LED on the Module will illuminate, and two LEDs adjacent to the Roving Networks RN-171 WiFly module will blink to signify the connection state

To determine specific lighting pattern information, refer to the RN-171 Wi-Fi Class 1 Module Datasheet and User Manual.

> ➤ **Note:** If the Windows OS displays a Driver not found message, you'll need to download and install a USB driver. A standard USB driver is available for download from the FTDI website.

Step 5: Acquire the Mini-Z Shell Prompt

Open a terminal emulation program such as HyperTerminal, then observe the following procedure:

1. Select the appropriate port where the Mini-Z is located.

> ➤ **Note:** This port can be found within HyperTerminal by monitoring the Port setup window while plugging and unplugging the USB cable from the SSR

Design Board; the port will appear and disappear. Similarly, this task can also be performed using the Windows Device Manager.

2. Configure HyperTerminal to reflect the following port settings:

Baud Rate: 57600
Data: 8 bit
Parity: none
Stop: 1 bit
Flow Control: none

3. Press the RESET switch on the SSR Design Board. The `WLANMiniZ>` prompt will appear on the HyperTerminal screen.

4. Using your PC's keyboard, enter `?` to see list of available commands.

5. Enter a command followed by a space (" ")and a question mark ("?") to see a description for a particular command. By the same token, enter a command followed by its parameter(s) to execute a particular command. See the following examples:

Example 1

At the command prompt, enter the following command to display a list of parameters that you can use with the `getadc` command:

`getadc ?`

Example 2

At the command prompt, enter the following command to display the ADC0 value:

`getadc 0`

Example 3

At the command prompt, enter the following command to turn the red LED ON.

`setled r on`

Similarly, entering the `setled y on` command will turn the yellow LED ON, and entering the `setled g on` command will turn the green LED ON.

Example 4

At the command prompt, enter the following command to turn PB0 bit 0 ON.

```
setport p0 on
```

Step 6: Establish A Wireless Connection

Observe the following procedure to establish a wireless link between the two Mini-Z WLAN Modules. The Mini-Z Shell commands (such as scan) will assist toward verifying the link.

1. Press the RESET button on each of the SSR Design Boards to launch the Mini-Z Shell. As a result, the following prompt should appear on each PC's monitor:

```
WLANMiniZ>
```

2. On each PC's keyboard, verify the Mini-Z Shell Library installation by entering the ? character for a list of commands (for example: flashapp ?); see Figure 3.
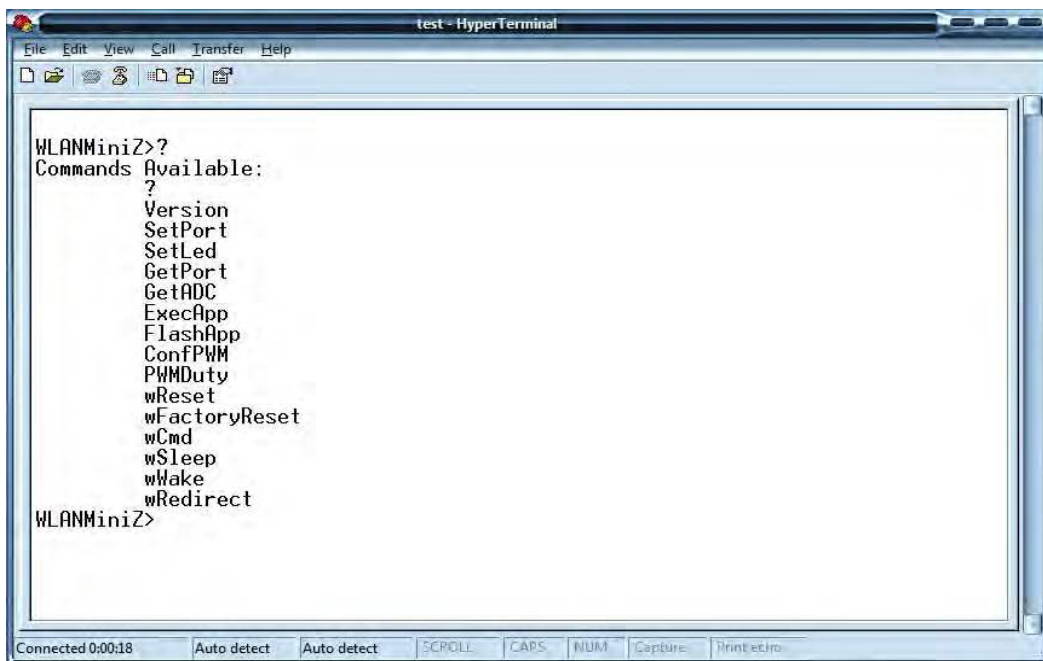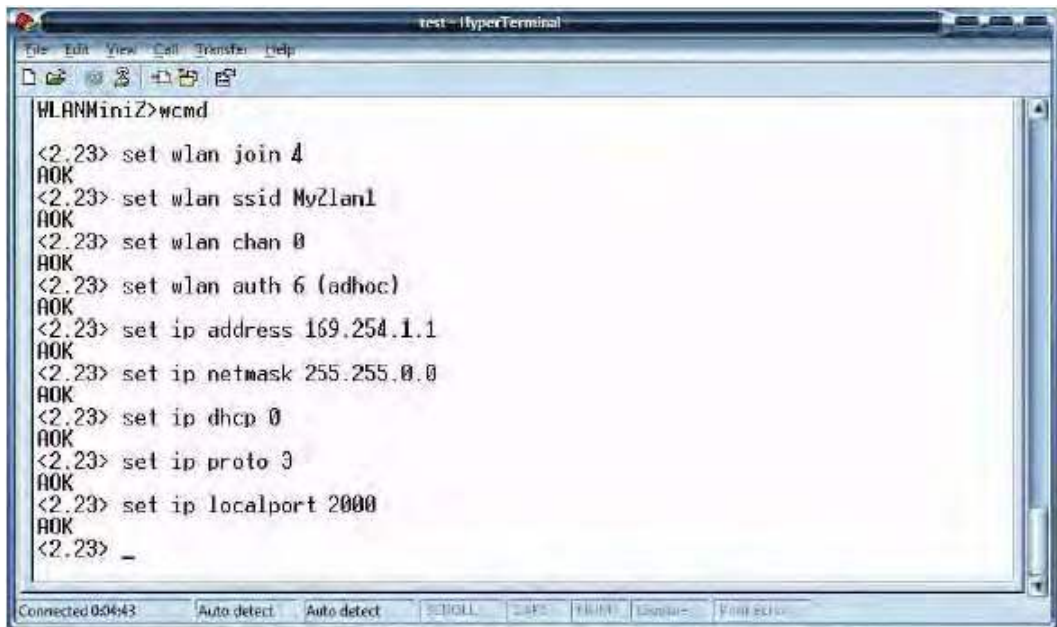
Figure 3. Mini-Z Shell Command Set

3. To enter Command Mode, enter wcmd on each machine. A new prompt (e.g., "<2.23>"), will appear in the console.

> ➤ **Note:** After entering the wcmd command, a short delay may occur before the HyperTerminal prompt is acquired.
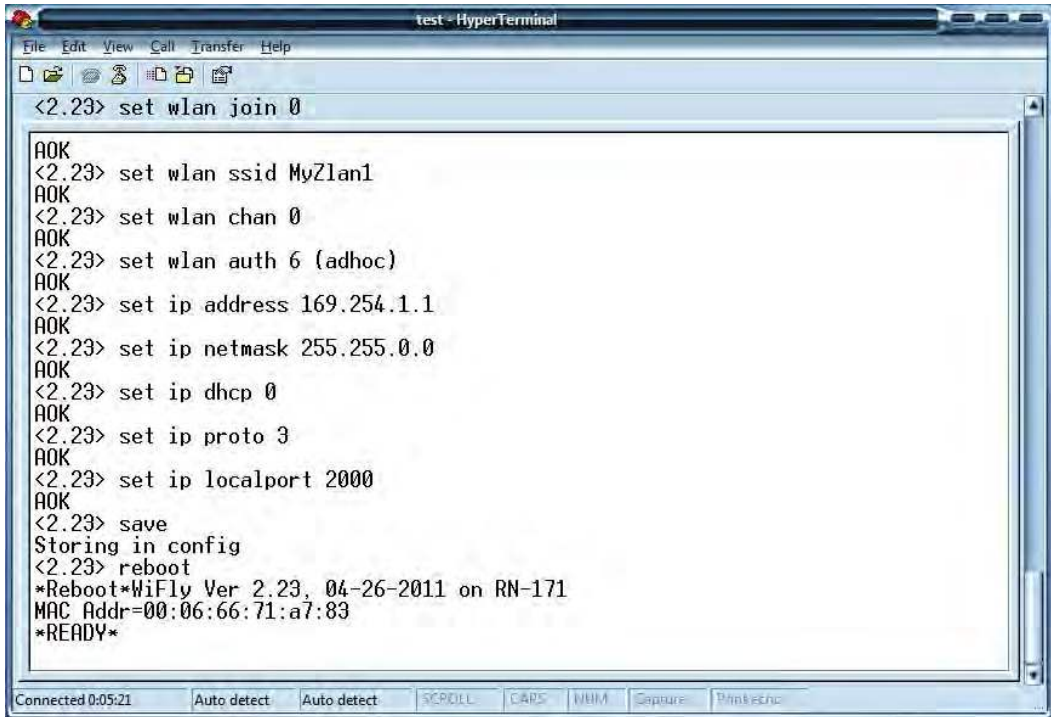
4. Choose one PC to be the client machine and label it *MyZlan1*. Input the settings for *MyZlan1*, as shown in Figure 4. Refer to Table 1 on page 16 for the *MyZlan1* settings.
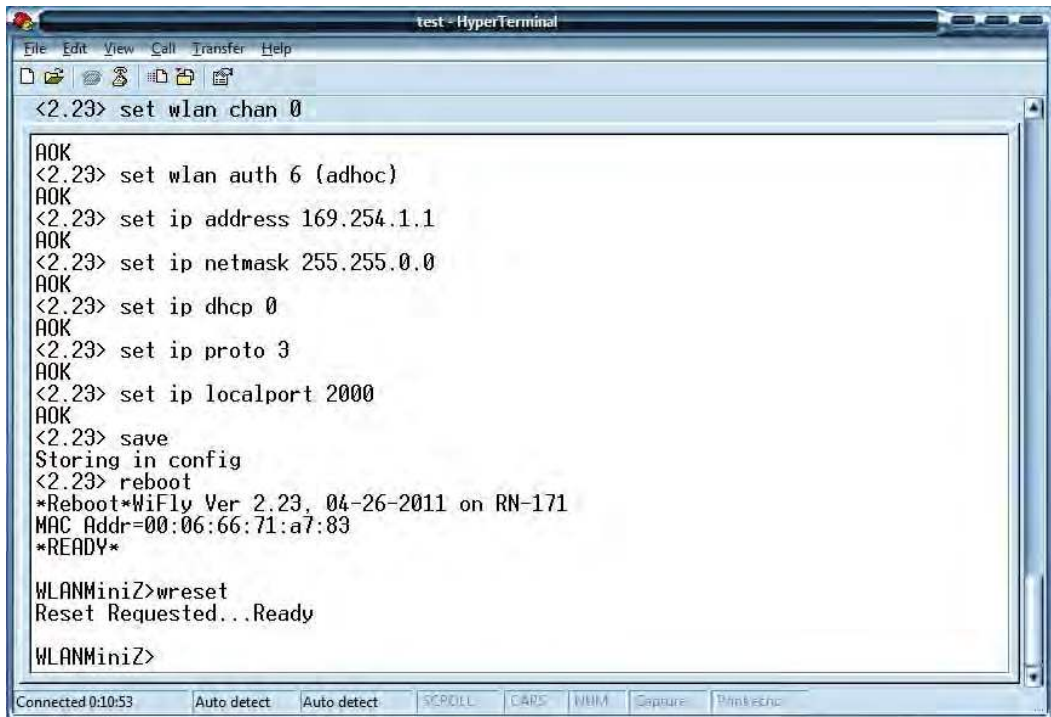

Figure 4. WLAN Settings for MyZlan1

5. Enter save and press the Enter key. Next, enter reboot and press the Enter key a second time for the settings to take effect; see Figure 5.
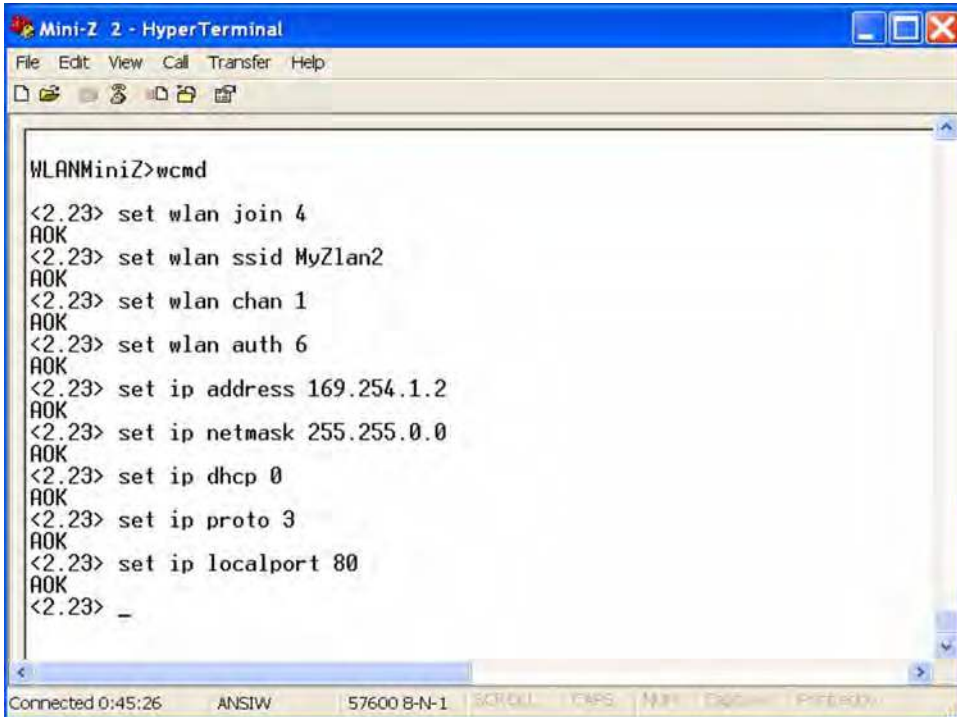
```
<2.23> set wlan join 0
AOK
<2.23> set wlan ssid MyZlan1
AOK
<2.23> set wlan chan 0
AOK
<2.23> set wlan auth 6 (adhoc)
AOK
<2.23> set ip address 169.254.1.1
AOK
<2.23> set ip netmask 255.255.0.0
AOK
<2.23> set ip dhcp 0
AOK
<2.23> set ip proto 3
AOK
<2.23> set ip localport 2000
AOK
<2.23> save
Storing in config
<2.23> reboot
*Reboot*WiFly Ver 2.23, 04-26-2011 on RN-171
MAC Addr=00:06:66:71:a7:83
*READY*
```
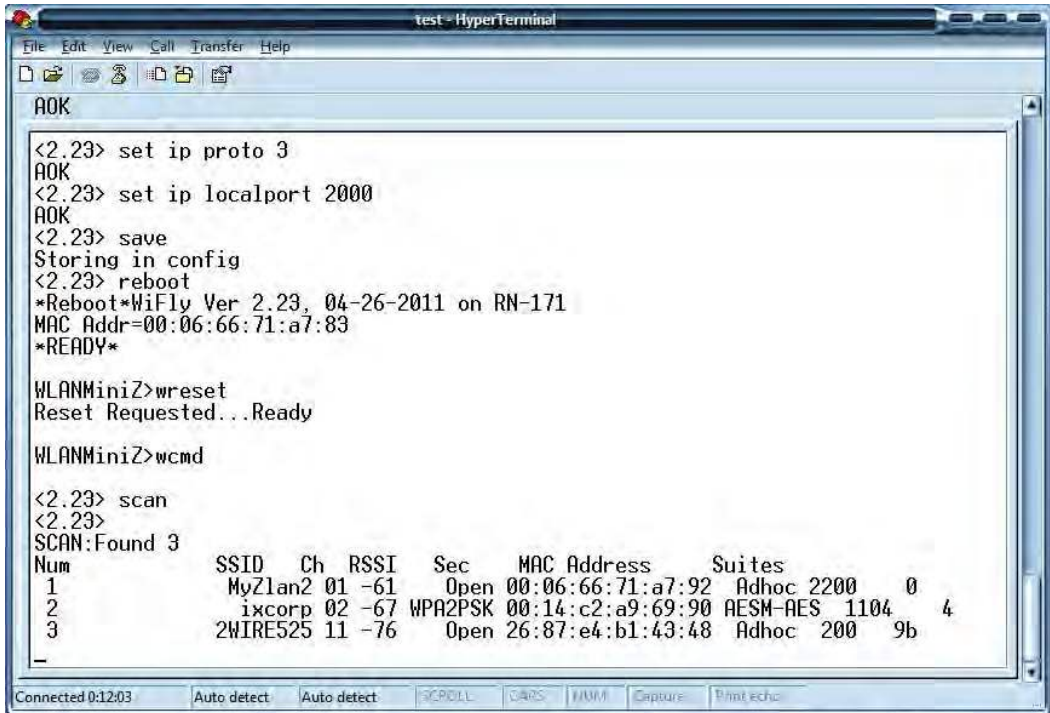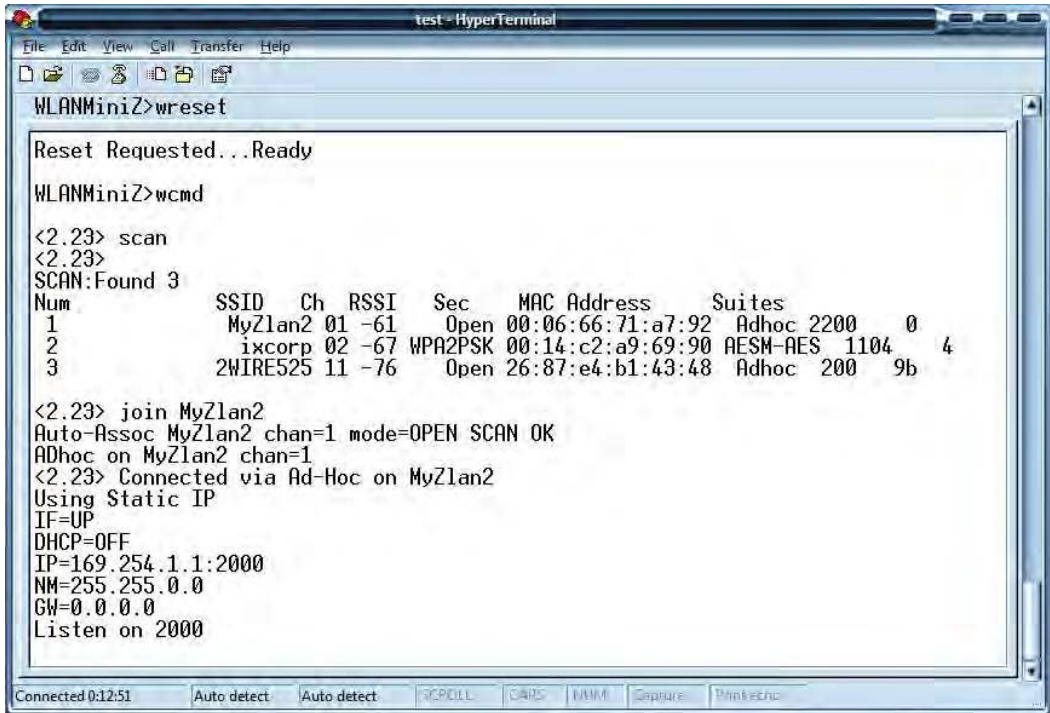
Figure 5. Output of the Save and Reboot Commands

6. The second PC will be the host machine; label it *MyZlan2*. Input the settings for *MyZlan2*, as shown in Figure 6. Refer to Table 1 on page 16 for the *MyZlan2* settings.

Figure 6. WLAN Settings for MyZlan2

7. Enter save and press the Enter key. Next, enter reboot and press the Enter key a second time for the settings to take effect; see Figure 5.

> ➤ **Note:** The settings for *MyZlan2* differ from the settings shown in Figure 4. Refer to Table 1 on page 16 for the *MyZlan2* settings.

8. On both machines, Press Ctrl-D to exit Command Mode. Again on both machines, enter the wreset command and press the Enter key to start from a known state. The result of entering this wreset command on *MyZLAN1* is shown in Figure 7.

Figure 7. Output of the wreset Command

> **Note:** To learn more about the settings for the RN-171 module's RESET state, please refer to the Roving Networks User Manual at http://www.rovingnet-works.com/Docs/WiFly-RN-UM.pdf.

9. Enter `wcmd` to reenter Command Mode and press the Enter key. Next, enter `scan` and press the Enter key. As a result, *MyZlan1* should be able to detect *MyZlan2*; you can validate this connection by noting the SSID column in Figure 8. Press the Enter key a second time to return to the prompt.

Figure 8. Output of the scan Command

10. On *MyZlan1*, enter `join` *MyZlan2* and press the Enter key to join *MyZlan1* and *MyZlan2*. The result of entering this join command is shown in Figure 9. Press the Enter key a second time to establish the connection.

Figure 9. Output of the join Command

11. On *MyZlan1*, enter `open 169.254.1.2[SPACE]80`. The following message is displayed, as shown in Figure 10.
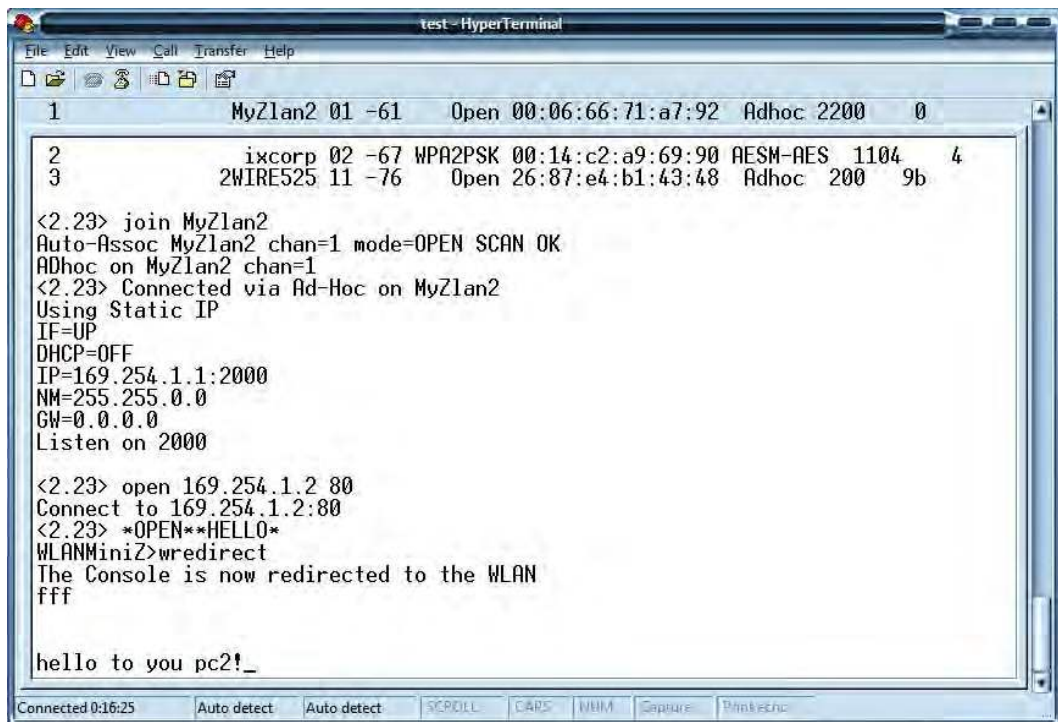
```
*OPEN**HELLO*
```

Figure 10. Output of the open Command

Notes: The HyperTerminal screen may display the message ERR:Connected!
However, the redirection is functioning properly.

IP and WLAN values can be determined by entering get ip or get
wlan at the prompt. A complete list of commands is available in the Roving Networks Users Manual.

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12. Press Ctrl-D to exit Command Mode and return to the Mini-Z Shell.

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13. At the prompt, enter `wredirect` on both computers. As a result, commands that you entered on one screen will appear on the other screen. See the examples in Figures 11 and 12.
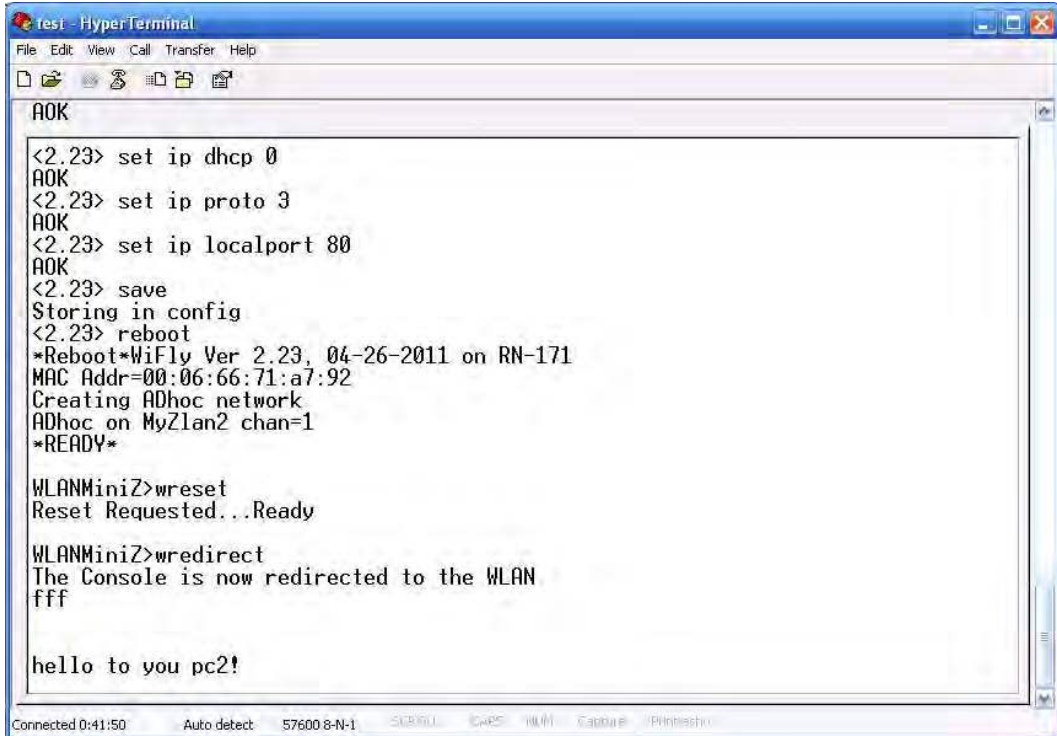

Figure 11. Output of the wredirect Command on MyZlan1

Figure 12. Output of the wredirect Command on MyZlan2

14. If *MyZlan1* and *MyZlan2* are communicating with each other, the test is complete.

Appendix A. Wireless Communication Reference

Table 1 lists the Roving Networks RN-171 Module settings necessary to establish a wireless link between two Mini-Z WLAN Modules.

Table 1. Wireless Connection Settings

Host PC: MyZlan2	Client PC: MyZlan1
set wlan join 4	set wlan join 4
set wlan ssid MyZlan2	set wlan ssid MyZlan1
set wlan chan 1	set wlan chan 0
set wlan auth 6	set wlan auth 6
set ip address 169.254.1.2	set ip address 169.254.1.1
set ip netmask 255.255.0.0	set ip netmask 255.255.0.0
set ip dhcp 0	set ip dhcp 0
set ip proto 3	set ip proto 3
set ip localport 80	set ip localport 2000

Tables 2 and 3 show the Host-Client communication settings for the `get ip` and `get wlan` commands, respectively.

Table 2. Mini-Z WLAN Settings for the get ip Command

Host PC: MyZlan2	Client PC: MyZlan1
IF = DOWN	IF = DOWN
DHCP = OFF	DHCP = OFF
IP = 169.254.1.2:80	IP = 169.254.1.1:2000
NM = 255.255.0.0	NM = 255.255.0.0
GW = 0.0.0.0	GW = 0.0.0.0
HOST = 0.0.0.0:2000	HOST = 169.254.1.2:80
PROTO = UDP, TCP	PROTO = UDP, TCP
MTU = 1524	MTU = 1524
FLAGS = 0x7	FLAGS = 0x7
BACKUP = 0.0.0.0	BACKUP = 0.0.0.0

Table 3. Mini-Z WLAN Settings for the get wlan Command

Host PC: MyZlan2	Client PC: MyZlan1
SSID = MyZlan2	SSID = MyZlan1
Chan = 1	Chan = 0
ExtAnt = 0	ExtAnt = 0
Join 4	Join 4
Auth = ADHOC	Auth = ADHOC
Mask = 0x1fff	Mask = 0x1fff
Rate = 12, 24 Mb	Rate = 12, 24 Mb
Linkmon = 0	Linkmon = 0
Passphrase = rubygirl	Passphrase = rubygirl
TxPower = 0	TxPower = 0

Customer Support

To learn more about this product, find additional documentation, get your technical questions answered or report issues, please contact esales@zilog.com.

> ⚠ **Warning:** DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

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