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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.

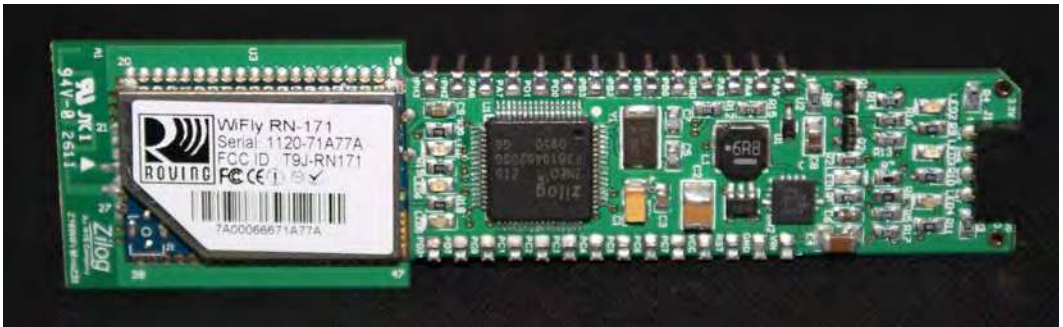


Figure 1. The Mini-Z WLAN 28-Pin Module

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.

- [Step 1: Unpack the Hardware](#): see page 3
- [Step 2: Attach the Mini-Z Module](#): see page 3
- [Step 3: Establish Hardware Connections](#): see page 4
- [Step 4: Apply Power to the SSR Design Board](#): see page 4
- [Step 5: Acquire the Mini-Z Shell Prompt](#): see page 4
- [Step 6: Establish A Wireless Connection](#): see page 6

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".

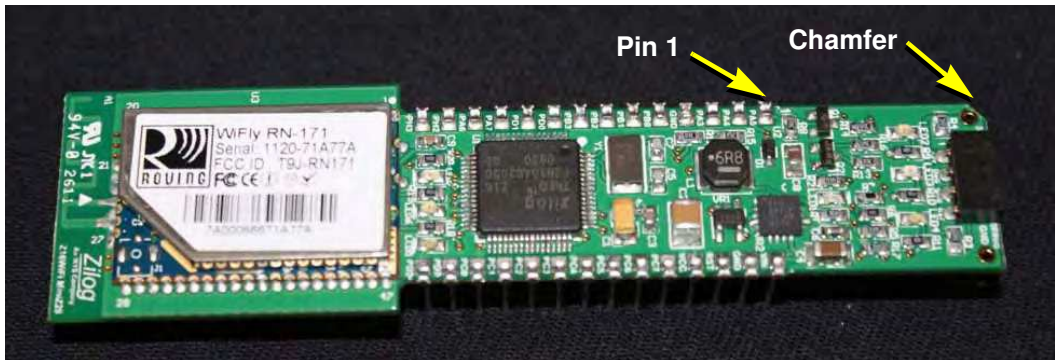


Figure 2. The Location of Pin 1 and Chamfer on the Mini-Z WLAN 28-Pin Module



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.

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 (5V to 12V) 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 Wi-Fi 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.

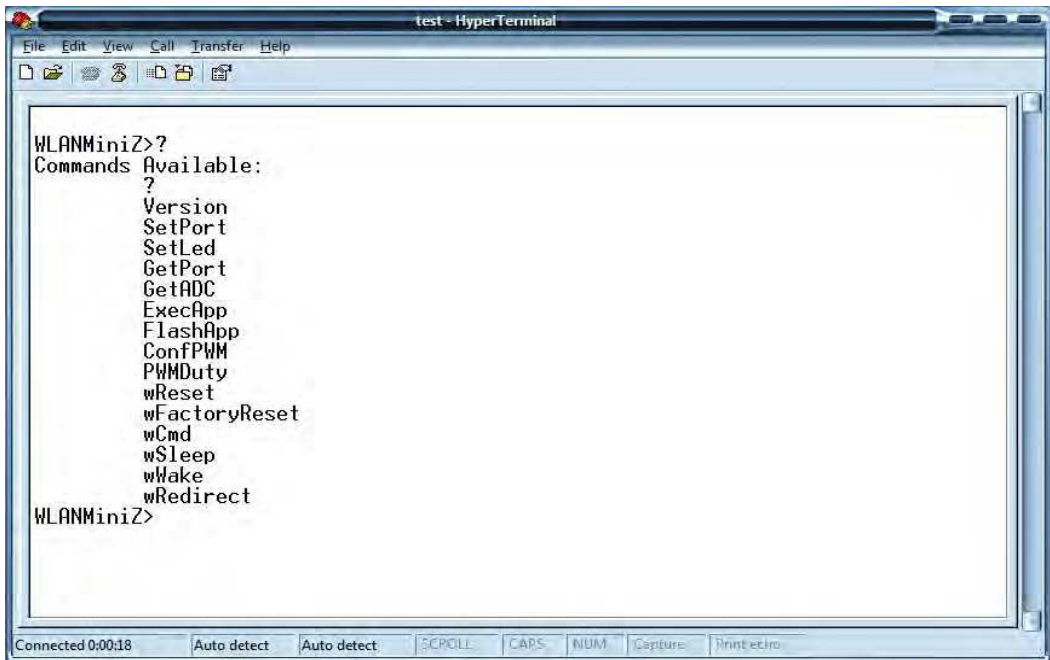
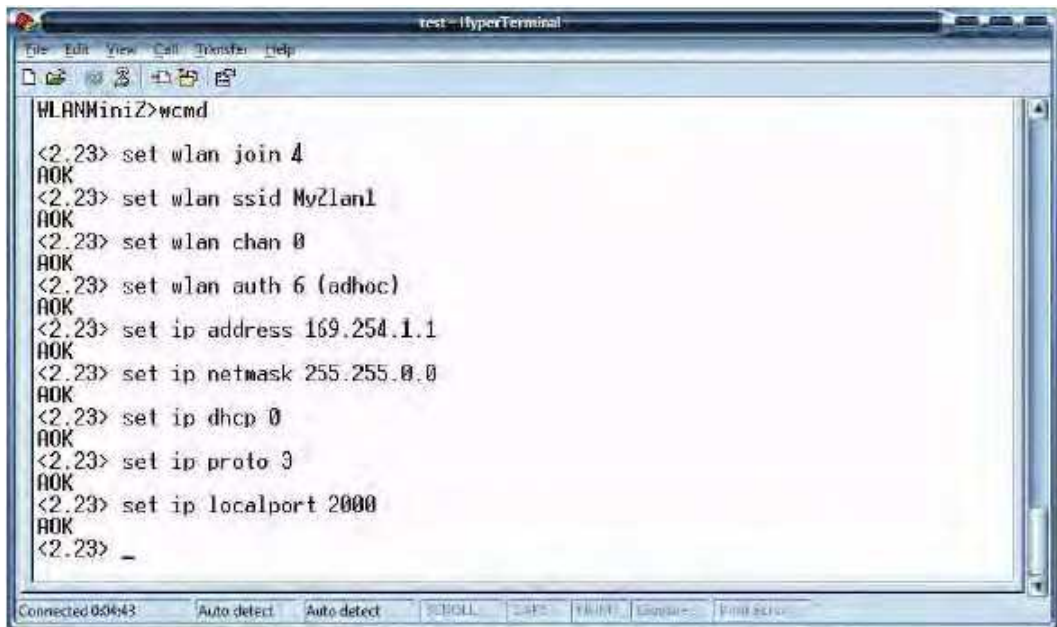


Figure 3. Mini-Z Shell Command Set

- 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.

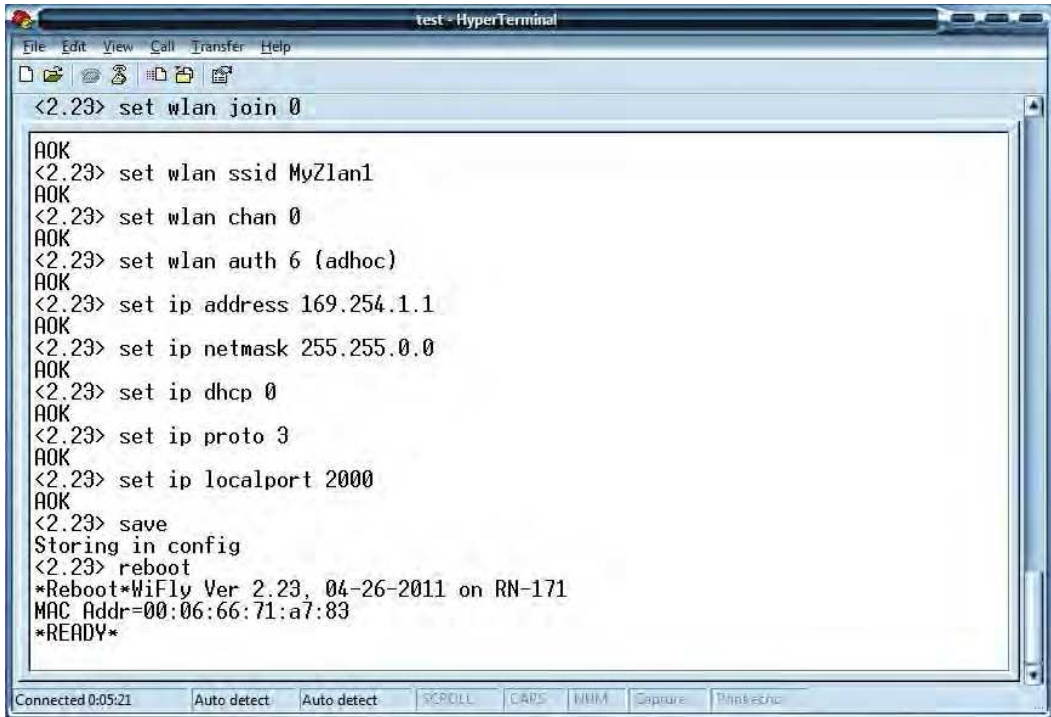
- Choose one PC to be the client machine and label it *MyZlan1*. Input the settings for *MyZlan1*, as shown in Figure 4. Refer to [Table 1](#) on page 16 for the *MyZlan1* settings.



```
test - HyperTerminal
File Edit View Call Transfer Help
WLANMiniZ>wcmd
<2.23> set wlan join 4
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> _
Connected 004643 Auto detect Auto detect SCROLL PAGE PRINT Language Find string
```

Figure 4. WLAN Settings for MyZlan1

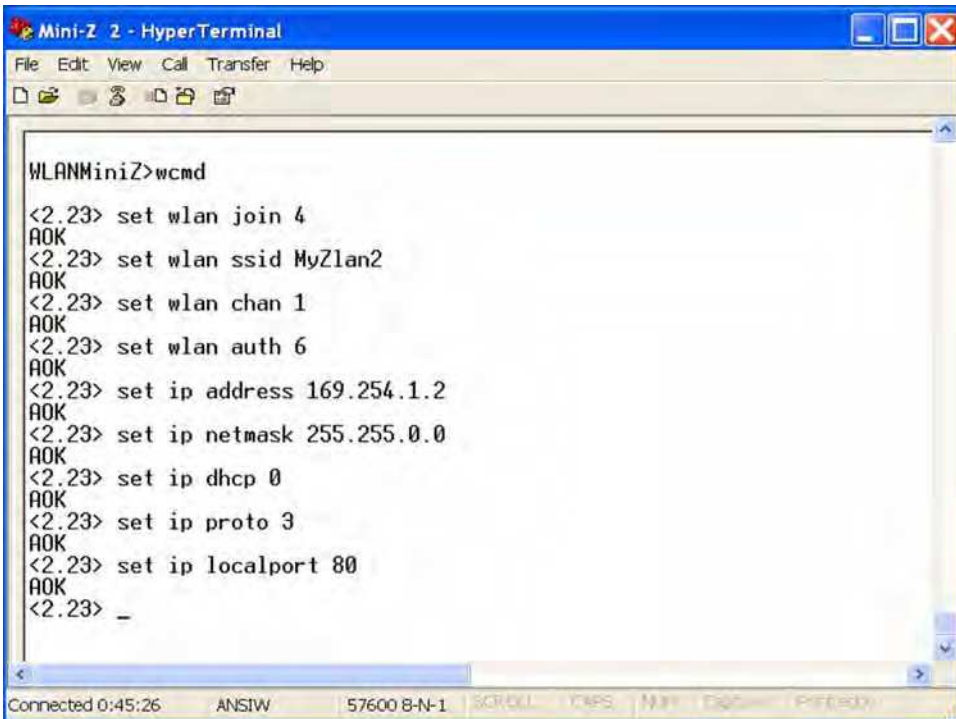
- Enter `save` and press the Enter key. Next, enter `reboot` and press the Enter key a second time for the settings to take effect; see Figure 5.



```
test - HyperTerminal
File Edit View Call Transfer Help
<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

- 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.



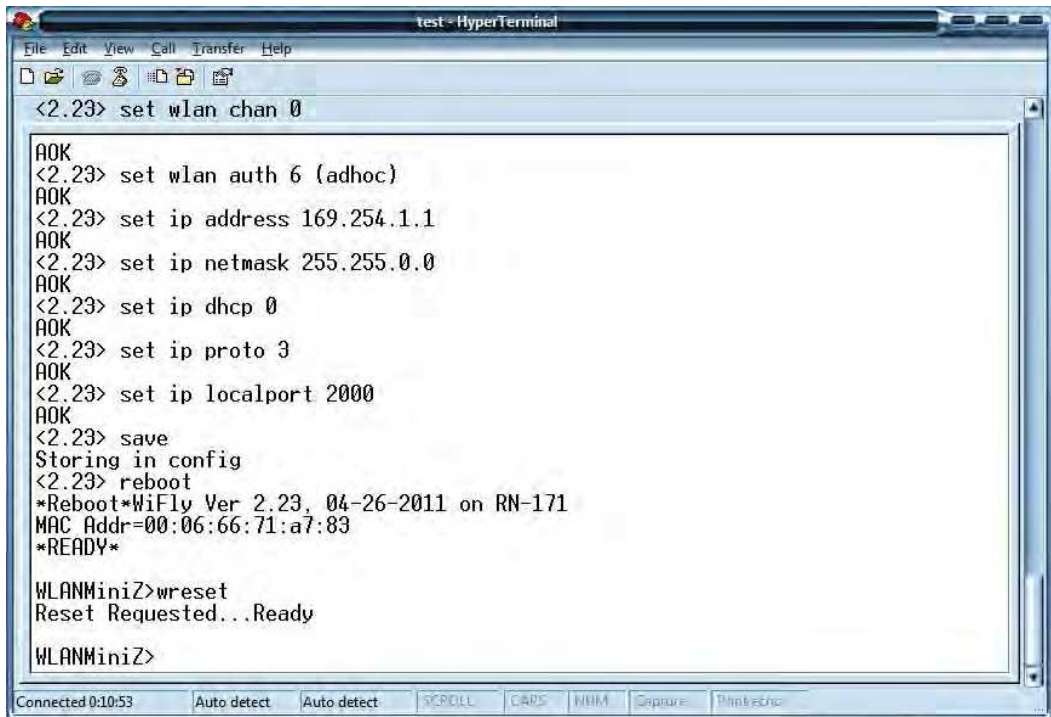
```
Mini-Z 2 - HyperTerminal
File Edit View Call Transfer Help
WLANMiniZ>wcmd
<2.23> set wlan join 4
AOK
<2.23> set wlan ssid MyZlan2
AOK
<2.23> set wlan chan 1
AOK
<2.23> set wlan auth 6
AOK
<2.23> set ip address 169.254.1.2
AOK
<2.23> set ip netmask 255.255.0.0
AOK
<2.23> set ip dhcp 0
AOK
<2.23> set ip proto 3
AOK
<2.23> set ip localport 80
AOK
<2.23> _
Connected 0:45:26 ANSIW 57600 B-N-1
```

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.



```
test - HyperTerminal
File Edit View Call Transfer Help
<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*

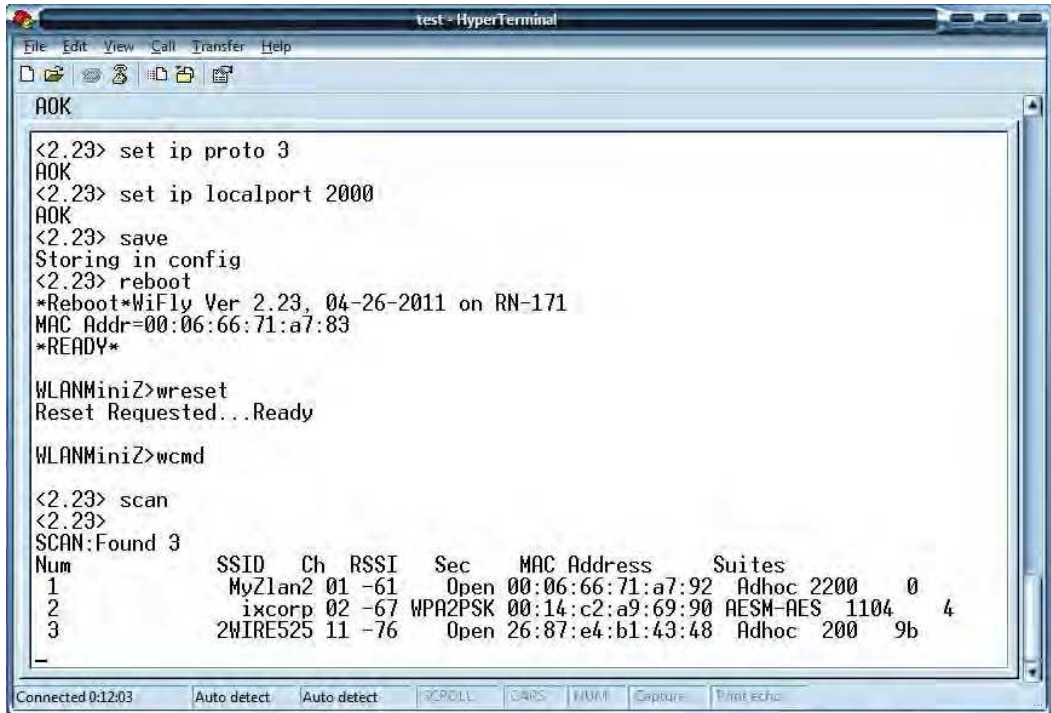
WLANMiniZ>wreset
Reset Requested...Ready

WLANMiniZ>
```

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.rovingnetworks.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.



```

test - HyperTerminal
File Edit View Call Transfer Help
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*

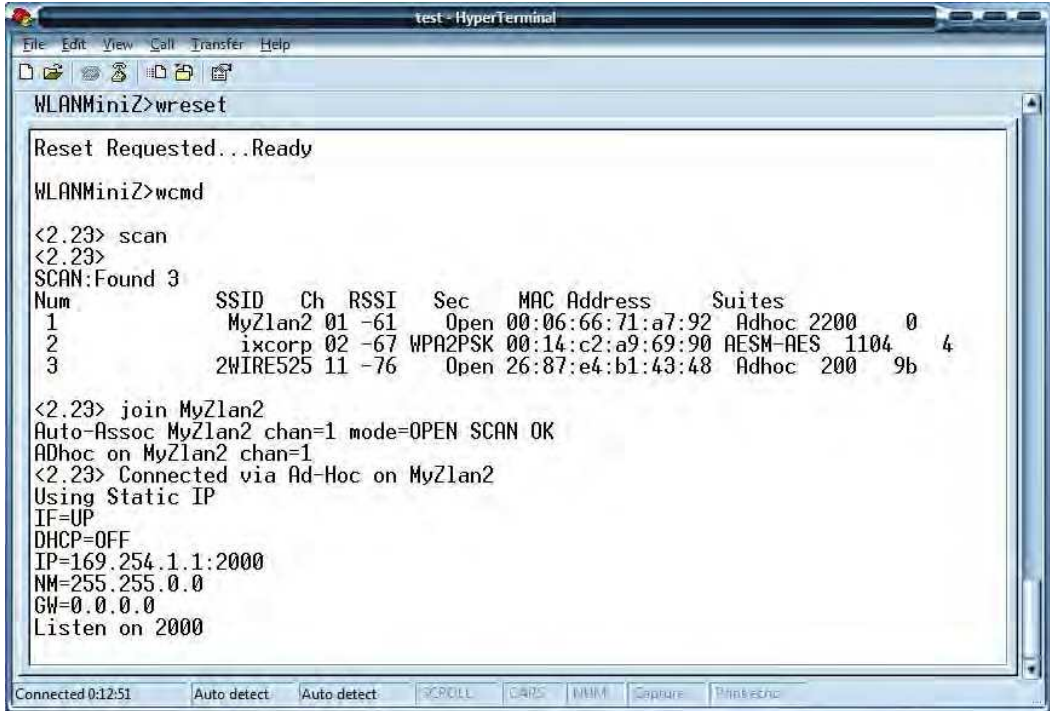
WLANMiniZ>wreset
Reset Requested...Ready

WLANMiniZ>wcmd

<2.23> scan
<2.23>
SCAN:Found 3
Num      SSID      Ch  RSSI  Sec  MAC Address      Suites
1         MyZlan2  01  -61   Open 00:06:66:71:a7:92 Adhoc 2200  0
2         ixcorp   02  -67   WPA2PSK 00:14:c2:a9:69:90 AESM-AES 1104  4
3         2WIRE525 11  -76   Open 26:87:e4:b1:43:48 Adhoc 200  9b
  
```

Figure 8. Output of the scan Command

- 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.



```
test - HyperTerminal
File Edit View Call Transfer Help
WLANMiniZ>wreset
Reset Requested...Ready
WLANMiniZ>wcmd
<2.23> scan
<2.23>
SCAN:Found 3
Num      SSID      Ch  RSSI   Sec   MAC Address      Suites
  1      MyZlan2  01  -61   Open  00:06:66:71:a7:92 Adhoc 2200  0
  2      ixcorp   02  -67  WPA2PSK 00:14:c2:a9:69:90 AESM-AES 1104  4
  3      2WIRE525 11  -76   Open  26:87:e4:b1:43:48 Adhoc 200  9b

<2.23> join MyZlan2
Auto-Assoc MyZlan2 chan=1 mode=OPEN SCAN OK
Adhoc on MyZlan2 chan=1
<2.23> Connected via Ad-Hoc on MyZlan2
Using Static IP
IF=UP
DHCP=OFF
IP=169.254.1.1:2000
NM=255.255.0.0
GW=0.0.0.0
Listen on 2000
Connected 0:12:51  Auto detect  Auto detect  SCROLL  CARS  WMM  Spouse  Parabolic
```

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*`


```
WLANMiniZ>wcmd

<2.23> scan
<2.23>
SCAN:Found 3
Num      SSID      Ch  RSSI   Sec   MAC Address      Suites
 1       MyZlan2  01  -61    Open  00:06:66:71:a7:92 Adhoc 2200  0
 2       ixcorp   02  -67    WPA2PSK 00:14:c2:a9:69:90 AESM-AES 1104  4
 3       2WIRE525 11  -76    Open   26:87:e4:b1:43:48 Adhoc 200  9b

<2.23> join MyZlan2
Auto-Assoc MyZlan2 chan=1 mode=OPEN SCAN OK
Adhoc on MyZlan2 chan=1
<2.23> Connected via Ad-Hoc on MyZlan2
Using Static IP
IF=UP
DHCP=OFF
IP=169.254.1.1:2000
NM=255.255.0.0
GW=0.0.0.0
Listen on 2000

<2.23> open 169.254.1.2 80
Connect to 169.254.1.2:80
<2.23> *OPEN**HELLO*_
```

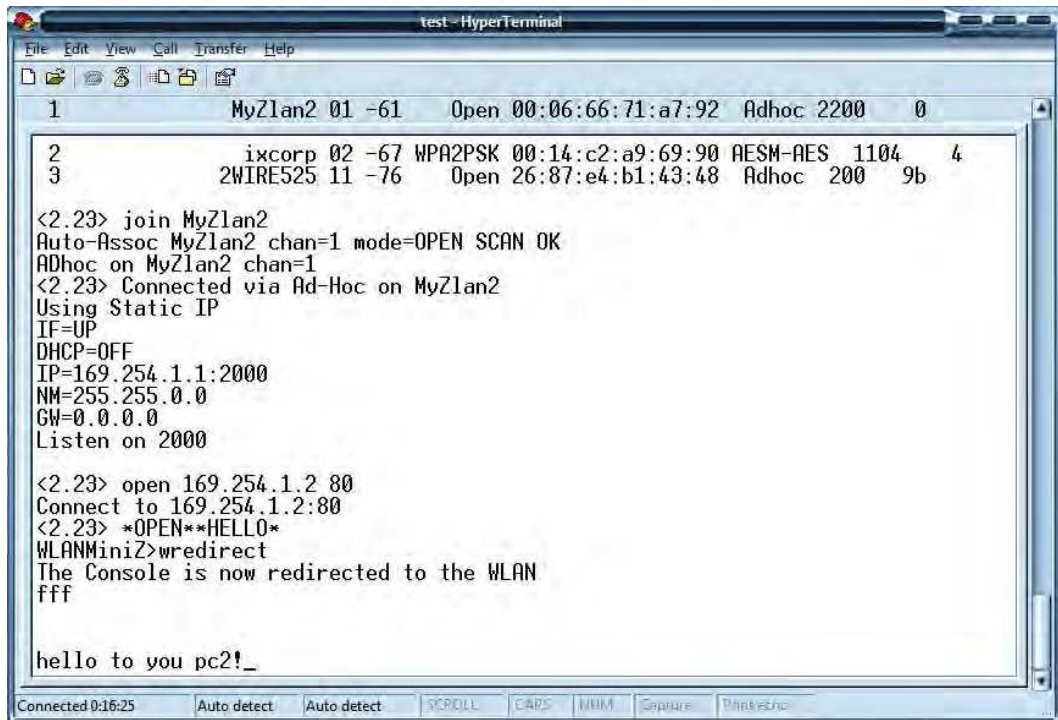
Figure 10. Output of the open Command

► **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 [Routing Networks Users Manual](#).

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

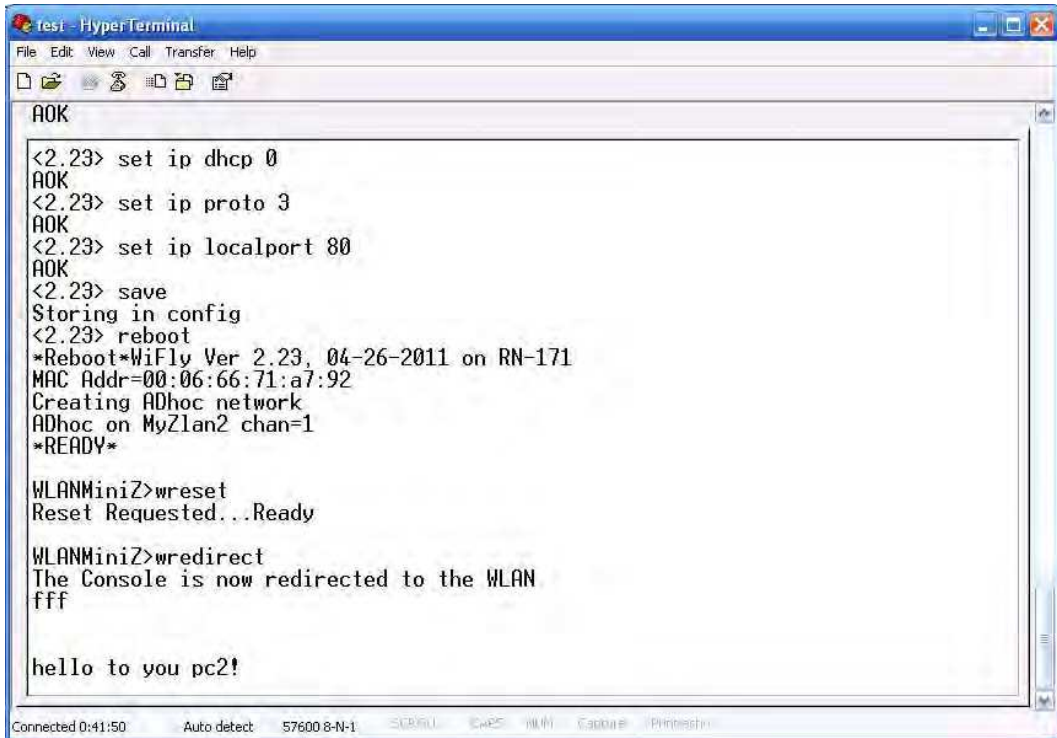
13. At the prompt, enter `wredirect` on both computers. As a result, commands that you entered on one screen will appear on the other screen. See the examples in Figures 11 and 12.



```
test - HyperTerminal
File Edit View Call Transfer Help
MyZlan2 01 -61 Open 00:06:66:71:a7:92 Adhoc 2200 0
ixcorp 02 -67 WPA2PSK 00:14:c2:a9:69:90 AESM-AES 1104 4
2WIRE525 11 -76 Open 26:87:e4:b1:43:48 Adhoc 200 9b
<2.23> join MyZlan2
Auto-Assoc MyZlan2 chan=1 mode=OPEN SCAN OK
Adhoc on MyZlan2 chan=1
<2.23> Connected via Ad-Hoc on MyZlan2
Using Static IP
IF=UP
DHCP=OFF
IP=169.254.1.1:2000
NM=255.255.0.0
GW=0.0.0.0
Listen on 2000
<2.23> open 169.254.1.2 80
Connect to 169.254.1.2:80
<2.23> *OPEN**HELLO*
WLANMiniZ>wredirect
The Console is now redirected to the WLAN
fff

hello to you pc2!_
Connected 0:16:25 Auto detect Auto detect SCROLL CAPS NUM Capture PrintEcho
```

Figure 11. Output of the wredirect Command on MyZlan1



```
test - HyperTerminal
File Edit View Call Transfer Help
AOK
<2.23> set ip dhcp 0
AOK
<2.23> set ip proto 3
AOK
<2.23> set ip localport 80
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:a7:92
Creating Adhoc network
Adhoc on MyZlan2 chan=1
*READY*

WLANMiniZ>wreset
Reset Requested...Ready

WLANMiniZ>wredirect
The Console is now redirected to the WLAN
fff

hello to you pc2!
```

Connected 0:41:50 Auto detect 57600 8-N-1 SCROLL Caps W/LN Capture Print/Print

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

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