

# Demo User Guide

Wireless Management Access point for VoIP

**CQW-BS1000**

**PLANEX COMMUNICATIONS INC.**

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# 1.0 Scope

This Demo Instruction guide is the primary document for installation and operation of the Evaluation System. It provides basic information and product background for system integrators and designers evaluating one or more of Planex CQW-BS1000-based access points. The CQW-BS1000 platform consists of the AirMaestro Software and the AirMaestro IC (part number: BSP1000).

# 2.0 Introduction

The *AirMaestro AP Spectrum Analyzer and Rogue Detection Demo Instruction* is intended to provide all the necessary configuration and step-by-step instruction to exercise CQW-BS1000's unique basic spectrum analyzer (Spectrum analyzer) and rogue detections functionalities within the Site Survey Utility.

# 3.0 Installation

This section contains information about the proper installation of the system to maximize performance. Following these guidelines will enable the best possible results for the evaluation.

## 3.1 Serial Port

The serial port is RS-232C compliant. Once the settings for the wired Ethernet port and the wireless interfaces are set to work with your network, any one of them (serial port, Ethernet port, or wireless) may be used for configuration changes or AP management. Be sure that the serial port settings of the attached terminal device are the same as those of the CQW-BS1000 Evaluation System as shown below.

**Table 3.1 Serial Port Settings**

Item	Setting
Bit Rate	115200bps
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None

## 3.2 Using the External Power Supply

If you are not using powered Ethernet, the CQW-BS1000 Evaluation System is powered by the included external power supply. Plug the external supply into an AC source (100–230V, 50–60Hz) and plug the DC side into the CQW-BS1000 Evaluation System External Power Supply connector. The unit will begin its initialization. This will take approximately one minute.

## 4.0 Firmware Update

\*\*\*NOTE: if the existing system has build image R722 or earlier. Kernel and bootloader need to be updated first. Please refer to section 4.4 for step-by-step instruction.

### 4.1 Update Firmware from CLI

1. Setup a TFTP server on either a Linux or Windows system and connect it to the network.
2. Copy three image files (XXX\_ixp425-le-gnu\_waps.jffs2, XXX\_ixp425-le-gnu\_rootfs.jffs2, and XXX\_ixp425-le-gnu\_kernel.bin, where XXX is the build number) to the TFTP server directory (/tftpboot on Linux).
3. Start the AP and configure its IP address so it can reach the TFTP server.
4. Type **flash** at the AP command line prompt (**IXP425>** ).
5. Type **y** when asked to confirm the flash update.
6. Enter the TFTP server's IP address followed by **enter** when asked.
7. Enter XXX (where XXX is the build number) followed by **enter** when asked for the version number.
8. **Programming Firmware. This will take about 1 minutes. Please wait** will be displayed. Wait for it to finish.
9. If the update failed, an error message will be display. Please check the TFTP server's IP address, build number, and network connection before trying it again.

10. If the update is successful, please power the CQW-BS1000 Evaluation System off and then on. The next boot will use the newly installed image.

## 4.2 Update Firmware via RedBoot

At time if the previous flash image is damage, it may be necessary to flash back to the last known image via RedBoot

1. Setup a TFTP server on either a Linux or Windows system and connect it to the network.
2. Copy three image files (XXX\_ixp425-le-gnu\_waps.jffs2, XXX\_ixp425-le-gnu\_rootfs.jffs2, and XXX\_ixp425-le-gnu\_kernel.bin, where XXX is the build number) to the TFTP server directory (/tftpboot on Linux).
3. Reboot the AP and press Control-C immediately to get in the RedBoot screen
4. Type **flash -l <local IP address> -h <TFTP server IP address> -t XXX** ( at the **RedBoot>** prompt) where local IP address is any static IP address available on the same subnet with the TFTP server.
5. Once the firmware update is completed, the AP should automatically reboot itself.
6. The AP is now operational.

## 4.3 Update Firmware from Web Interface

1. Setup a TFTP server on either a Linux or Windows system and connect it to the network.
2. Copy three image files (XXX\_ixp425-le-gnu\_waps.jffs2, XXX\_ixp425-le-gnu\_rootfs.jffs2, and XXX\_ixp425-le-gnu\_kernel.bin, where XXX is the build number) to the TFTP server directory (/tftpboot on Linux).
3. Start the AP and configure its IP address so it can reach the TFTP server.
4. Launch the web browser
5. Connect to the AP by typing in the IP address of the AP in the browser

6. Log into the Ap via web interface when prompted

Login: admin

Password: Bandspeed

7. Navigate and select Commands->Flash Update

8. Type TFTP server IP address into the **Host IP address** slot

9. Type XXX build number into the **Firmware Version** slot

10. Click on the **Update** button

If the update is successful, please power the CQW-BS1000 Evaluation System off and then on. The next boot will use the newly installed image.

The screenshot displays the web interface for the CQW-BS1000 PC4. On the left, there is a navigation menu with options: Main, Status, Message Log, Configure, Commands, Statistics, and Support. The 'Commands' option is highlighted. Below the menu, a green box contains the text: 'Any configuration status or error messages will be displayed here.' The main content area is titled 'BandSpeed Flash Update 2.0'. It features a navigation bar with 'Configurations', 'Start-Stop Interface', 'Reset', and 'Flash Update'. The 'Flash Update' section contains the following fields: 'Current Boot Image: A', 'Host IP address: 0.0.0.0', and 'Firmware Version:'. An 'Update' button is located at the bottom of this section.

## 4.4 Update Kernel and Bootloader

1. Setup a TFTP server on either a Linux or Windows system and connect it to the network.
2. Copy three image files (XXX\_ixp425-le-gnu\_waps.jffs2, XXX\_ixp425-le-gnu\_rootfs.jffs2, and XXX\_ixp425-le-gnu\_kernel.bin, where XXX is the build number) to the TFTP server directory (/tftpboot on Linux).

3. Reboot the AP and press Control-C immediately to get in the RedBoot screen
4. Type **ip\_address -l <local IP address>** ( at the **RedBoot>** prompt) where local IP address is any static IP address available on the same subnet with the TFTP server.
5. Type **load -r -v -h <TFTP server IP address> XXX-ixp425-le-gnu\_kernel.bin -b 0x1600000** ( at the **RedBoot>** prompt)
6. Type **fis create -b 0x1600000 -l 0xe0000 zimage** ( at the **RedBoot>** prompt)
7. When prompt “An image named ‘zimage’ exists – continue (y/n)?” type y
8. Type **start** ( at the **RedBoot>** prompt)
9. Reboot system
10. Log in the AP with any SCP(secure copy) application such as (WinSCP)  
Login: admin  
Password: Bandspeed
11. Navigate to /tmp on the AP
12. copy XXX\_ixp425-le-gnu\_redboots.bin image into /tmp directory on the AP
13. Type in the following at the AP to create the dd command  
IXP425> ln -s /bin/busybox /bin/dd
14. Flash new redboot  
IXP425> dd if=/tmp/XXX-ixp425-le-gnu\_redboots.bin of=/dev/mtdblock0
15. Reboot the AP and press Control-C immediately to get in the RedBoot screen
16. Type **flash -l <local IP address> -h <TFTP server IP address> -t XXX** ( at the **RedBoot>** prompt) where local IP address is any static IP address available on the same subnet with the TFTP server.
17. Once the firmware update is completed, the AP should automatically reboot itself.
18. The AP is now operational.

## 5.0 Configuration and Operation

### 5.1 Basic Spectrum Analyzer Demo Instruction

There are two methods through which Spectrum Analyzer functionality can be enabled: web interface and command line interface (CLI)

#### 5.1.1 Activate Spectrum Analyzer via CLI

**Step 1: log into the AP**

Login: admin

Password: Bandspeed

**Step 2: set up IP address and default gateway**

Please refer to Section 4.4.

**Step 3: determine which sector to place into Spectrum Analyzer mode and enable Spectrum Analyzer on the selected sector**

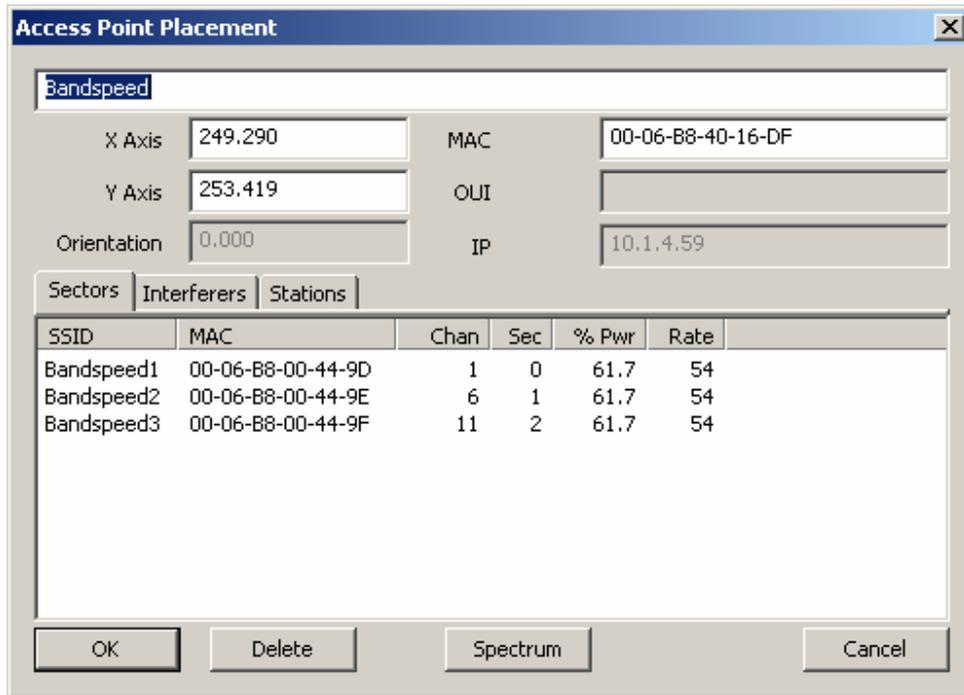
```
IXP425> set sectorX opmode Spectrum Analyzer
```

**Step 4: evoke Bandspeed demo viewing utility**

Please refer to Section 4.3

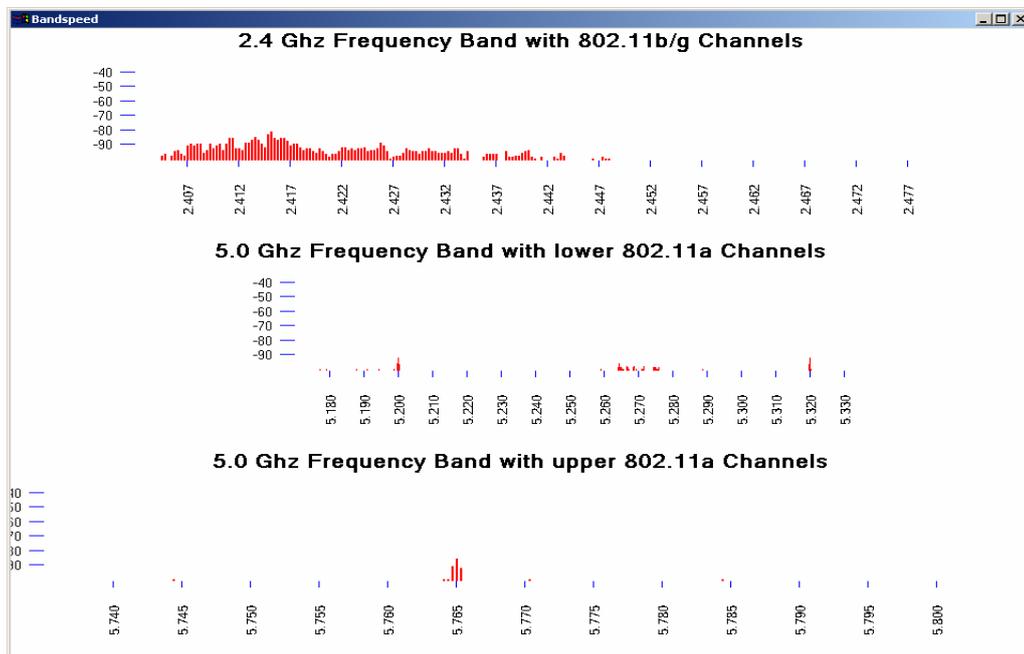
**Step 5: click on the AP in the Bandspeed demo viewing utility**

The window below should appear after clicking on the AP.



**Step 6: click on the *Spectrum* button**

The Spectrum Analyzer window below should appear after click on the bottom.



**Step 7: turn on the interfering sources and observe the Spectrum Analyzer display**

**Step 8: return the selected sector back to normal operation**

IXP425> set sectorX opmode normal

## 5.1.2 Activate Spectrum Analyzer via web interface

**Step 1: set up IP address and default gateway**

Please refer to Section 4.4.

**Step 2: launch the web browser of your choice**

**Step 3: connect to the AP by typing in the IP address of the AP in the browser**

**Step 4: log into the AP via web interface when prompted**

Login: admin

Password: Bandspeed

**Step 5: Navigate and select *Configure->Wireless Sectors->Advanced Settings***

**Step 6: Select the desired sector**

**Step 7: set *Sector Operating Mode* to *Basic Spectrum Analyzer* as shown below**

**CQW-BS1000 PCi**

- ▶ System
- ▶ TCP/IP
- ▶ SNMP
- ▶ QoS
- ▶ Date/Time
- ▶ VLAN
- ▶ DHCP
- ▶ Ethernet
- ▶ DFS
- ▶ Filter
- ▶ HTTP
- ▶ Wireless Sectors
- ▶ RRM
- ▶ Password
- ▶ RADIUS
- ▶ LnL
- ▶ TPC

**CONFIGURE: Wireless Sector 1**

- ▶ Basic Settings
- ▶ Spectrum Management Settings
- ▶ Advanced Settings
- ▶ Backhaul Settings

**Wireless Sector**

Sector:

**Advanced Settings:**

Transmit Power (0 - 24 dBm):

Automatic Transmit Power Adjustment:

Digital Pre-distortion:

Sensitivity:

Max Rate:

Basic Rate Settings (Mbps):

1  6

2  12

5.5  24

11

Diversity:

Header:

Beacon Interval (ms):

Fragmentation:

Fragmentation Threshold (256-2346 bytes):

Enable RTS/CTS:

RTS/CTS Threshold (256-2346 bytes):

Sector Operating Mode:

**Apply On sectors**

1  2  3

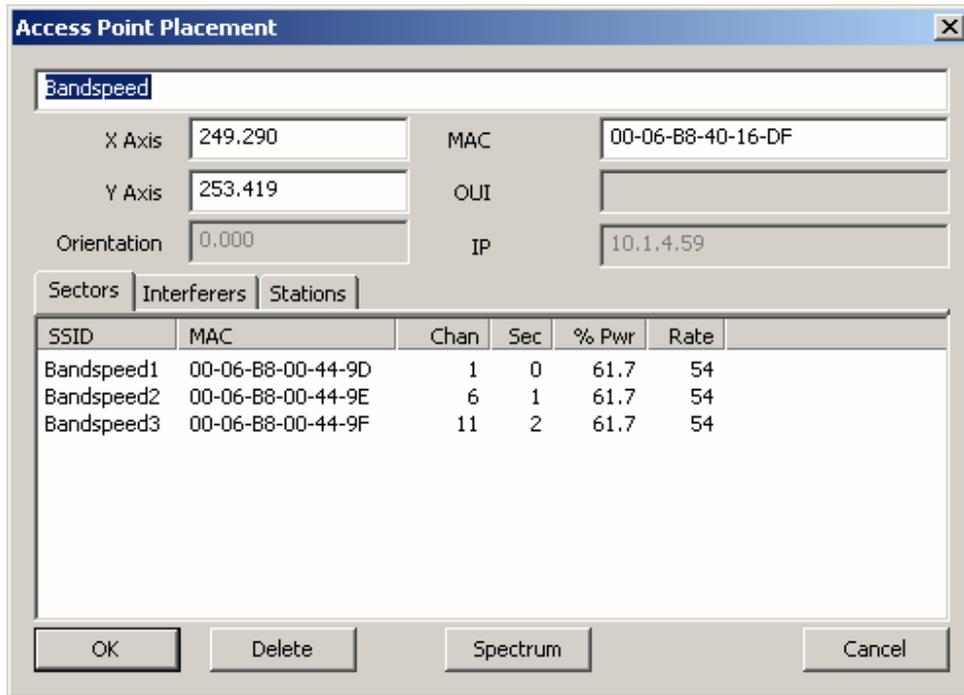
Any configuration status or error messages will be displayed here.

**Step 8: evoke Bandspeed demo viewing utility**

Please refer to Section 4.3

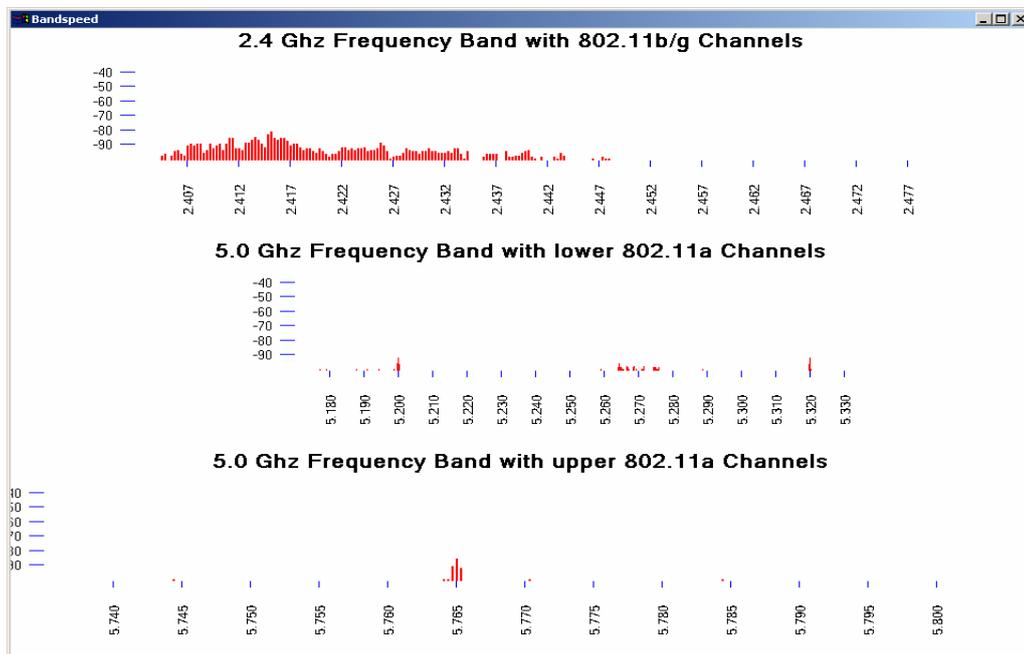
**Step 9: click on the AP in the Bandspeed demo viewing utility**

The window below should appear after clicking on the AP.



**Step 10:** click on the *Spectrum* bottom

The Spectrum Analyzer window below should appear after click on the bottom.



**Step 11:** turn on the interfering sources and observe the Spectrum Analyzer display

**Step 12:** return the selected sector back to normal operation by setting *Sector Operating Mode* to *Normal*

## 5.2 Rogue Detection Demo Instruction

### 5.2.1 Activate rogue detection via CLI

**Step 1: log into the AP**

Login: admin

Password: Bandspeed

**Step 2: set up IP address and default gateway**

Please refer to Section 4.4.

**Step 3: evoke Bandspeed demo viewing utility**

Please refer to Section 4.3

**Step 4: make sure *Listen&Learn* is enabled**

```
IXP425> set lnl enable
```

**Step 5: make sure *Listen&Learn* is in *omni* mode**

```
IXP425> set lnl mode omni
```

**Step 6: start *Listen&Learn***

```
IXP425> start lnl
```

**Step 7: using Bandspeed monitoring utility, wait until the AP reaches the “IDLE” state**

**Step 8: power on the intended interferer AP (rogue-to-be)**

**Step 9: The interfering AP should be identified when the scanning sector scanned over its operating channel.**

Please note that at this point the interfering AP is NOT plugged in the same wired network as CQW-BS1000

**Step 10: Plug the interfering AP onto the same wired network as CQW-BS1000**

**Step 11: Find and identify the rogue AP on the Bandspeed monitor utility by the flashing pirate skull.**

**Step 12: return the AP to normal operation**

```
IXP425> stop lnl
```

## 5.2.2 Activate rogue detection via web interface

**Step 1: set up IP address and default gateway**

Please refer to Section 4.4.

**Step 2: launch the web browser of your choice**

**Step 3: connect to the AP by typing in the IP address of the AP in the browser**

**Step 4: log into the AP via web interface when prompted**

Login: admin

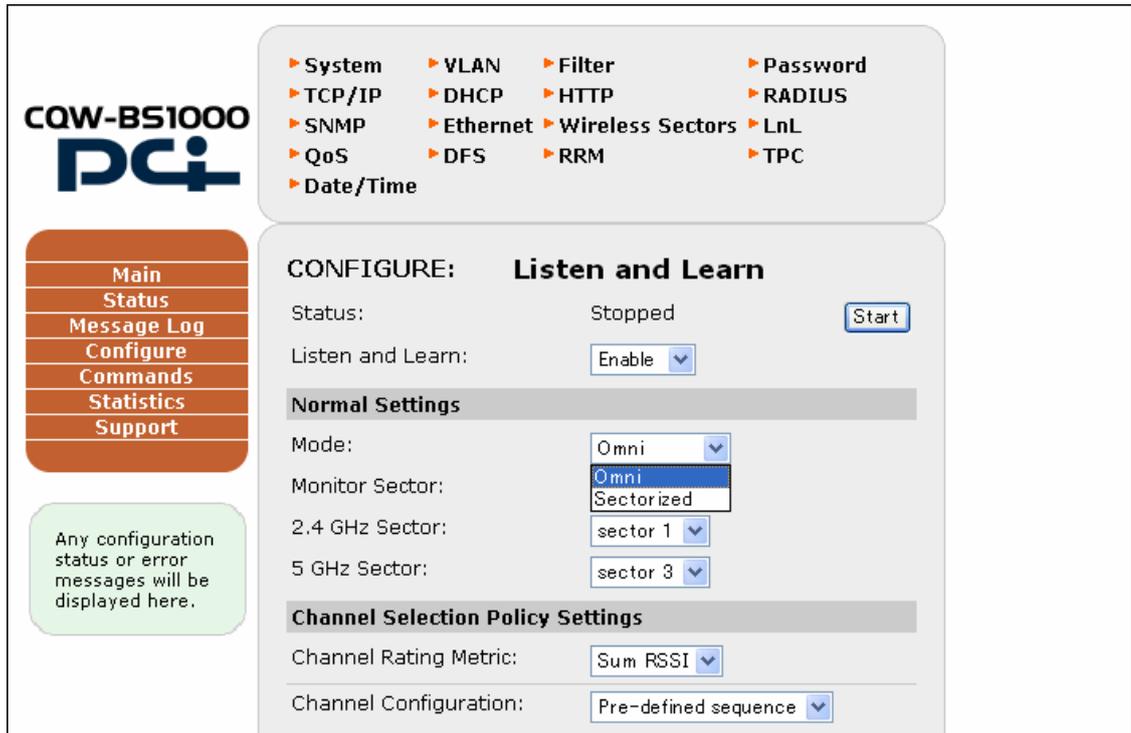
Password: Bandspeed

**Step 5: Navigate and select *Configure->Listen and Learn***

**Step 4: make sure *Listen&Learn* is enabled**

The screenshot displays the web interface for the CQW-BS1000 PC4 device. On the left, there is a navigation menu with options: Main, Status, Message Log, Configure, Commands, Statistics, and Support. A green box below the menu states: "Any configuration status or error messages will be displayed here." The main content area is titled "CONFIGURE: Listen and Learn". It shows the status as "Stopped" with a "Start" button. The "Listen and Learn" dropdown menu is open, showing "Enable" and "Disable" options, with "Enable" selected. Below this, the "Normal Settings" section includes: Mode (Omni), Monitor Sector (sector 2), 2.4 GHz Sector (sector 1), and 5 GHz Sector (sector 3). The "Channel Selection Policy Settings" section includes: Channel Rating Metric (Sum RSSI) and Channel Configuration (Pre-defined sequence).

**Step 5: make sure *Listen&Learn* is in omni mode**



**Step 6: start *Listen&Learn***

**Step 7: using Bandspeed monitoring utility, wait until the AP reaches the “IDLE” state**

**Step 8: power on the intended interferer AP (rogue-to-be)**

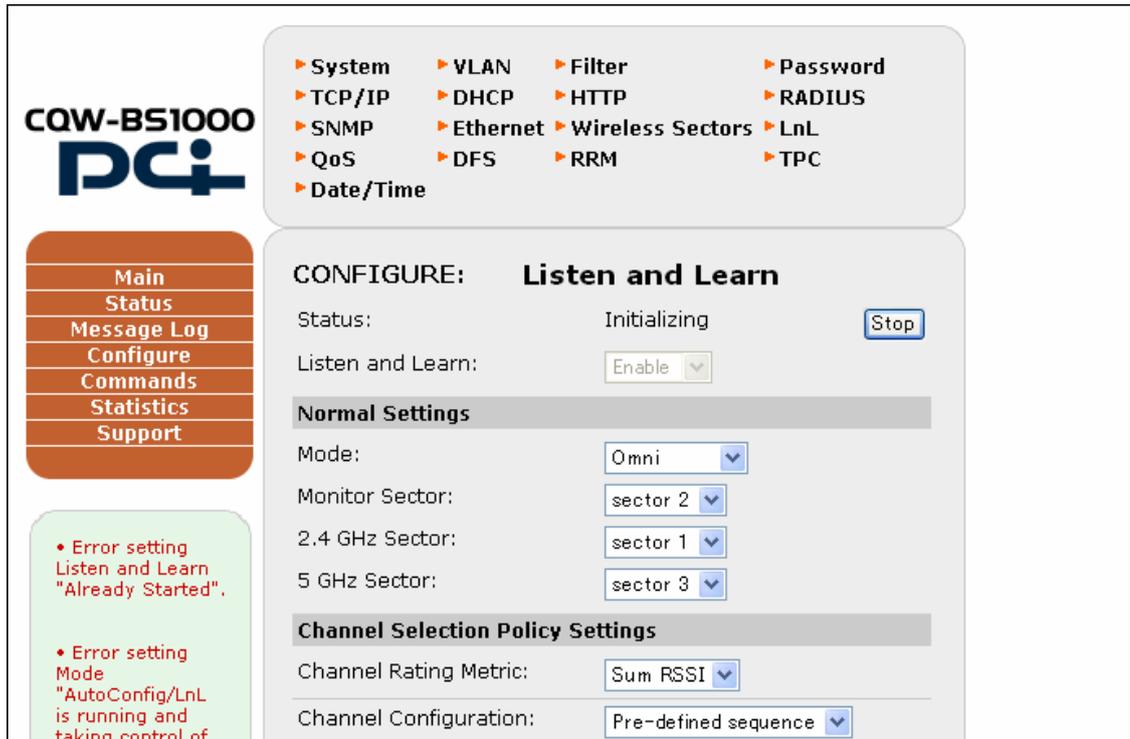
**Step 9: The interfering AP should be identified when the scanning sector scanned over its operating channel.**

Please note that at this point the interfering AP is NOT plugged in the same wired network as CQW-BS1000

**Step 10: Plug the interfering AP onto the same wired network as CQW-BS1000**

**Step 11: Find and identify the rogue AP on the Bandspeed monitor utility by the flashing pirate skull.**

**Step 6: stop *Listen&Learn***



## 5.3 Bandspeed Monitor Utility Launch Instruction

**Step 1:** copy *Bandspeed.exe* executable onto a PC running Window XP

[*Bandspeed.exe* can be found under *D:\BSP1000 Production Eval Disk-R728\XP425\BSP1000 Software\Images*]

**Step 2:** make sure that the Window PC is on the same subnet as the APs to be monitored

**Step 3:** double click on *Bandspeed.exe*

**Step 4:**{optional} click Help->About Bandspeed to verify the version number

The correct version with this release should be *Version 1.5-Spectrum Analyzer*

## **5.4 Setting IP address and Default Gateway**

### **5.4.1 Using dynamic IP address with an external DHCP server**

#### **5.4.1.1 Enable DHCP client via CLI**

**Step 1: enable DHCP client on AP**

IXP425> set tcpip dhcp enable

**Step 2: restart TCP module and acquire IP address from external DHCP server**

IXP425> start tcpip

#### **5.4.1.2 Enable DHCP client via web interface**

**Step 1: launch the web browser of your choice**

**Step 2: connect to the AP by typing in the IP address of the AP in the browser**

NOTE: by default the IP address is 192.168.1.1

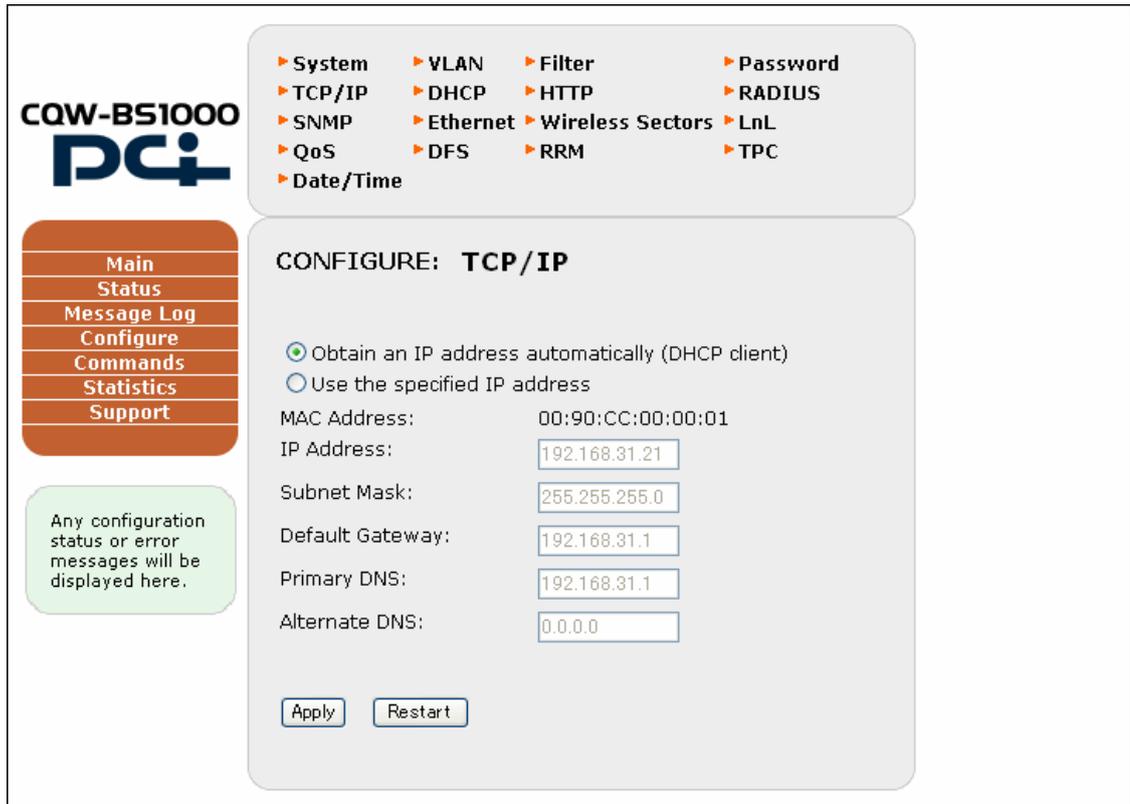
**Step 3: log into the AP via web interface when prompted**

Login: admin

Password: Bandspeed

**Step 4: Navigate and select *Configure->TCP/IP***

**Step 5: select *Obtain an IP address automatically (DHCP client)***



**Step 6: hit *Restart***

## 5.4.2 Using static IP address

### 5.4.2.1 Enable DHCP client via CLI

**Step 1: set static IP address**

```
IXP425> set tcpip ip xxx.xxx.xxx.xxx
```

i.e. set tcpip ip 10.1.4.203

**Step 2: set default gateway**

```
IXP425> set tcpip gateway xxx.xxx.xxx.yyy
```

i.e. set tcpip gateway 10.1.4.1

**Step 3: restart TCP module to assume new TCP/IP setting**

```
IXP425> start tcpip
```

### 5.4.2.2 Enable DHCP client via web interface

**Step 1: launch the web browser of your choice**

**Step 2: connect to the AP by typing in the IP address of the AP in the browser**

NOTE: by default the IP address is 192.168.1.1

**Step 3: log into the AP via web interface when prompted**

Login: admin

Password: Bandspeed

**Step 4: Navigate and select *Configure->TCP/IP***

**Step 5: select *Use the specified IP address***

The screenshot shows the web interface for the CQW-BS1000 PCi device. On the left is a navigation menu with options: Main, Status, Message Log, Configure, Commands, Statistics, and Support. The 'Configure' option is highlighted. Below the menu is a green box with the text: "Any configuration status or error messages will be displayed here." The top right of the interface has a menu with options: System, VLAN, Filter, Password, TCP/IP, DHCP, HTTP, RADIUS, SNMP, Ethernet, Wireless Sectors, LnL, QoS, DFS, RRM, and TPC. The main content area is titled "CONFIGURE: TCP/IP" and contains two radio buttons: "Obtain an IP address automatically (DHCP client)" (unselected) and "Use the specified IP address" (selected). Below the radio buttons are input fields for: MAC Address (00:90:CC:00:00:01), IP Address (192.168.31.21), Subnet Mask (255.255.255.0), Default Gateway (192.168.31.1), Primary DNS (192.168.31.1), and Alternate DNS (0.0.0.0). At the bottom of the configuration area are "Apply" and "Restart" buttons.

**Step 6: input the desired IP address and default gateway IP address**

**Step 7: hit *Restart***