



# BW2250 Dual Radio 2.4GHz/5GHz Outdoor Access Point

User Guide  
September, 2006

[www.browan.com](http://www.browan.com)

Copyright©2006 BROWAN Communications, Inc.

# Copyright

© 2002-2006 BROWAN COMMUNICATIONS.

This MARKET REQUIREMENT DOCUMENT is copyrighted with all rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of BROWAN.

## Notice

BROWAN reserves the right to change specifications without prior notice.

While the information in this document has been compiled with great care, it may not be deemed an assurance of product characteristics. BROWAN shall be liable only to the degree specified in the terms of sale and delivery.

The reproduction and distribution of the documentation and software supplied with this product and the use of its contents is subject to written authorization from BROWAN.

## Trademarks

The product described in this book is a licensed product of BROWAN.

Microsoft, Windows 95, Windows 98, Windows Millennium, Windows NT, Windows 2000, Windows XP, and MS-DOS are registered trademarks of the Microsoft Corporation.

Novell is a registered trademark of Novell, Inc.

MacOS is a registered trademark of Apple Computer, Inc.

Java is a trademark of Sun Microsystems, Inc.

Wi-Fi is a registered trademark of Wi-Fi Alliance.

All other brand and product names are trademarks or registered trademarks of their respective holders.



Within the 5.15 to 5.25 GHz band (5GHz radio channels 34 to 48) the U-NII devices are restricted to indoor operations to reduce any potential harmful interference to MSS operations.

## FCC Warning

### FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

If this device is going to be operated in 5.15 ~ 5.25GHz frequency range, then it is restricted in indoor environment only.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

## IC Warning

Operation is subject to the following two conditions:

- This device may not cause interference and
- This device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 7dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

To prevent radio interference to the licensed service (i.e. co-channel Mobile Satellite systems) we intended to operate this device indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Because high power radars are allocated as primary users (meaning they have priority) in 5250-5350 MHz, these radars could cause interference and/or damage to license exempt LAN devices.

# Contents

<b>COPYRIGHT</b> .....	<b>1</b>
<b>NOTICE</b> .....	<b>1</b>
<b>TRADEMARKS</b> .....	<b>1</b>
FCC Warning .....	2
IC Warning .....	3
<b>CONTENTS</b> .....	<b>4</b>
<b>ABOUT THIS GUIDE</b> .....	<b>6</b>
Purpose .....	6
Prerequisite Skills and Knowledge .....	6
Conventions Used in this Document .....	6
Help Us to Improve this Document! .....	6
Browan Technical Support .....	6
<b>CHAPTER 1 – INTRODUCTION</b> .....	<b>7</b>
Product Overview .....	7
Features Highlight .....	9
<b>CHAPTER 2 - INSTALLATION</b> .....	<b>11</b>
The Product Package .....	11
Hardware Introduction .....	12
General Overview .....	12
Bottom Cover .....	13
RF Connectors and ports .....	13
Hardware Installation .....	14
Installing the Access Point .....	14
Connect to the Power Source and Local Network .....	15
Software Installation .....	16
Initialization .....	16
Software Introduction: KickStart .....	16
Access Your BW2250 .....	16
<b>CHAPTER 3 – APPLICATION MODE</b> .....	<b>20</b>
AP + Bridge Mode .....	20
AP + AP Mode .....	20
Bridge+ Bridge Mode .....	21
<b>CHAPTER 4 – REFERENCE MANUAL</b> .....	<b>22</b>
Web Interface .....	22
Status .....	23
Status   Device Status .....	23
Status   Wireless Status .....	24
Status   Interface Statistics .....	25
Network .....	25
Network   Interface .....	25
Network   RADIUS Server .....	28
Network   DHCP Settings .....	29
Network   NTP Settings .....	35
Network   Time Settings .....	37
Wireless .....	38

Wireless   Basic .....	38
Wireless   Advance .....	48
Wireless   WEP .....	55
Wireless   MAC ACL .....	56
System.....	60
System   Security .....	60
System   SNMP.....	61
System   Telnet.....	62
System   Configuration .....	63
System   Reset.....	65
System   Upgrade .....	65
<b>APPENDIX.....</b>	<b>67</b>
A) Specification .....	67
B) Factory Defaults for the BW2250 .....	69
C) Approved Antenna.....	70
D) Location ID and ISO Country Codes .....	71

## About this Guide

---

### Purpose

The purpose of this document is to collect, analyze, and define needs and features of the new BROWAN **BW2250 Dual Radio 2.4GHz/5GHz Outdoor Access Point**.

### Prerequisite Skills and Knowledge

To use this document effectively, you should have a working knowledge of Local Area Networking (LAN) concepts and wireless Internet access infrastructures. In addition, you should be familiar with the following:

- Hardware installers should have a working knowledge of basic electronics and mechanical assembly, and should understand related local building codes.
- Network administrators should have a solid understanding of software installation procedures for network operating systems under Microsoft Windows 95, 98, Millennium, 2000, NT, and Windows XP and general networking operations and troubleshooting knowledge.

### Conventions Used in this Document

The following typographic conventions and symbols are used throughout this document:

	Very important information. Failure to observe this may result in damage.
	Important information that should be observed.
	Additional information that may be helpful but which is not required.
<b>bold</b>	Menu commands, buttons and input fields are displayed in bold
<code>code</code>	File names, directory names, form names, and system-generated output such as error messages are displayed in constant-width type
<value>	Placeholder for certain values, e.g. user inputs
[value]	Input field format, limitations, and/or restrictions.

### Help Us to Improve this Document!

If you should encounter mistakes in this document or want to provide comments to improve the manual please send e-mail directly to:

[manuals@browan.com](mailto:manuals@browan.com)

### Browan Technical Support

If you encounter problems when installing or using this product, please consult the Browan website at [www.browan.com](http://www.browan.com) for:

- Direct contact to the Browan support centers.
- Frequently Asked Questions (FAQ).
- Download area for the latest software, user documentation and product updates.

# Chapter 1 – Introduction

---

Thank you for choosing the Browan 54Mb Dual-Radio Outdoor Access Point BW2250.

The Browan BW2250 operates simultaneously in the 5-GHz and 2.4-GHz frequency bands and is fully compliant to 802.11b/g and 802.11a standard with its high performance and enhanced security.

BW2250 is an important part for the Browan Wi-Fi solution as 11a/b/g outdoor AP.

The two Dual-Band radios (a/g + a/g) that this product provides supplies the furthest in flexibility and makes sure low interference and large coverage. The a+g operation mode and Multiple BSSID that this product provides differentiates it from traditional outdoor AP product.

## Product Overview

### Flexibility and high performance

BROWAN BW2250 is a high-performance and high capacity and feature-rich outdoor AP/Bridge for HotZone and backhaul services. The product's dual tri-mode AP/Bridge radios architecture offers spectrum and deployment flexibility to increase capacity and extend the range of HotZone Wifi network.

- Simultaneously supports 802.11a and 802.11b/g for maximum client diversity
- Mix of AP, AP Router and Bridge configuration: working simultaneously, blanketing last miles with high-speed bandwidth.
- Wireless AP router mode: Static Router table configure, NAT, Different IP subnet per BSSID, Enable/Disable DHCP server or DHCP relay per BSSID.
- Dual AP/ AP Router configuration: for high client density environment for both 802.11b/g and 802.11a users
- Dual Bridge (repeater) configuration: serves to extend the transmission range of wireless bridging and backhaul services.

### Secure and reliable wireless networking

BW2250 supports and meets standard industry security requirement of wide area networking professionals for secured wireless network:

- Supports VLAN, up to 16 VLAN ID per Radio
- IEEE 802.1x/EAP with password, certificates and SIM card
- 64bits/128bits static and dynamic WEP encryption
- Supports Wi-Fi Protected Access (WPA/WPA2) with AES and TKIP support
- Layer 2 Isolation for preventing snooping on the same BSS
- MAC address filtering (ACL) for preventing illegal attacking from Internet
- Hidden SSID broadcast to prevent illegal users connection
- Built-in Web login authentication (UAM)

### Strong Anti-interference

Dynamic Channel Allocation (DCA) solution automatically selects optimal operational frequency channel during power up and the periodically monitors the environment and adjusts for best operational channel. DCA enhances BW2250 performance and provide continuous coverage under high AP density wireless network environment.

## Dynamic Wireless Bridging

Dynamic Wireless Bridging capability enables BW2250 to automatically seek and discovery potential nearby root AP, and dynamically self-configures for wireless bridge connection. With this feature in a BW2250 network, whenever a bridge link is fail over, the network will auto reconfigure route structures to minimize the lost of WLAN operation. It also minimized the technician intervention and cost of going on-site to re-establish transmission paths. Since the bridging fail over and restoration is almost seamless, the perceptible interruption of WLAN subscribers is also minimized.

## Multiple BSSID “Virtual AP” Technology

Supports up to 16 BSSID per radio and each can be configured independently to support range of security policies, authentication model, RADIUS servers and VLAN IDs. Each BSSID also can be set different priority based on 802.1p tag or 802.11e EDCA which enables WLAN client device to access wireless link QoS capabilities.

## Ease Installation and Deployment

BW2250 enclosed in an aluminum-alloy frame-resistant with waterproof design housing operates even under extreme weather conditions. Power option includes an integrated IEEE 802.3af Power-over-Ethernet port enables effortless deployment in various environments. It also includes a special Antenna Alignment Tool, which help to assist long-range wireless bridging installation to ensure the optimal bridging performance.

## Easy and Secure Remote Management

BW2250 supports secure remote management through HTTPS, CLISH and SNMP connections.

Web-based user interface with HTTPS request supplies secure remote management

BROWAN NMS product supplies the system management solution

Remote software upgrading via HTTPS

Detailed client survey and site survey

Bridge/Client Diagnostic Tools: optimize the installation for wireless bridging and optimize operation status monitoring

## Management Option

You can use the Access Controller management systems through the following interfaces:

- Web-browser interface with HTTPS
- Command Line interface (CLI) with optional SSH

- Simple Network Management Protocol

BW2250 management system pages are organized for the web-browser interface. This user manual provides detailed description of this management option.

## Features Highlight

### Super Bridge

- 802.11a/b/g compliant
- Up to 20 bridge links supporting
- Special radio for Bridge
- Bridge link for static WEP encryption

### Super AP

- Multiple BSSID (up to 16)
- SSID per BSSID
- Enabled or Disabled Hidden SSID per BSSID
- 16 VLAN ID per BSSID
- AAA way per BSSID, 802.1x and web login
- Co-existence of 802.1x and web login
- Security policy per BSSID, static WEP, dynamic WEP and WPA
- WPA passthrough
- RADIUS server per BSSID

### AAA

- RADIUS client supporting
- AAA Proxy, RADIUS authentication, RADIUS Proxy Server (RFC 2865, 2058)
- 802.1x supporting (EAP/TLS, EAP/TTLS, EAP/PEAP and EAP/SIM)

### Security

- Static 64/128bits WEP, Dynamic 64/128bits WEP
- WPA/TKIP and WPA/AES support
- MAC ACL
- Access Control (accept rule and deny rule) based on MAC address
- Layer 2 Isolation
- Hidden SSID

## Management

- Secure management via HTTPS, CLISH, SNMP
- Standard MIB and Gemtek Systems Private MIB
- Remote firmware update via WEB UI
- Backup/Restore configuration file
- System Log, Save/Send System Log to remote log server with different log levels

## Multiple BSSID (up to 16)

- SSID per BSSID
- Enabled or Disabled Hidden SSID per BSSID
- VLAN ID per BSSID
- QoS priority per BSSID based on 802.1p or EDCA
- AAA way per BSSID, 802.1x or WPA
- Co-existence of 802.1x and WPA
- Security policy per BSSID
- RADIUS server per BSSID
- Traffic priority per BSSID

## Maintenance

- Software watchdog
- Hardware watchdog

## Chapter 2 - Installation

---

This chapter provides installation instructions for the hardware and software components of the Access Point BW2250. It also includes the procedures for the following tasks:

- Hardware Introduction (Connectors)
- Hardware Installation
- Software Installation
- 

### The Product Package

The product comes with the following:

- Dual Radio outdoor Access Point (model: BW2250)
- Mounting Kit
- Screw Bag for Mounting Kit
- Waterproof tape
- RJ-45 Ethernet cable with waterproof connector
- RS-232 console cable with waterproof connector
- Omni-directional antenna (BA5070) \* 2
- Installation CD containing:
  - BW2250 User Guide in PDF format
  - KickStart Utility
  - Bridge/Client Diagnostic Utility
  - Product Firmware
  - Release Notes
  - Adobe Acrobat Readers
- Printed 3 Years Warranty Card
- Printed Warning Card



If any of these items are missing or damaged, please contact your reseller or Browan sales representative.



BA5070 antenna is the accessory of BW2250 Product.

Refer to the Appendix D for BA5070 Antenna Spec: [D\) Approved Antenna](#)

# Hardware Introduction

## General Overview

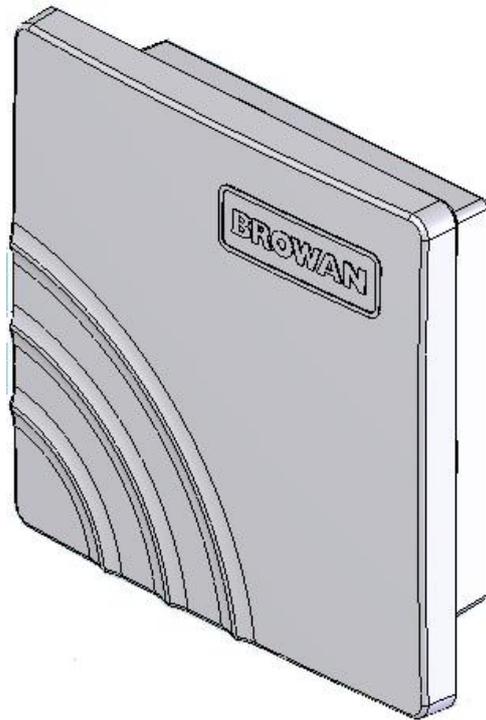


Figure 1 – BW2250 General View

The front panel of BW2250 contains:

- **Connectors** which enable you to make different network connections for the device
- **Waterproof ports**, which prevent the device from the damage of water that get into the internal part of the device.

The Bottom cover of BW2250 contains:

- **Thermal convection hole**
- **Reset button** enables you to reboot or reset the device configuration to the factory defaults

註解 [r1]: 增加作用说明



Press the **Reset** button for less than **3** seconds to **reboot** the device.

Press the **Reset** button for more than **10** seconds to **set** the device to **factory defaults**.

## Bottom Cover

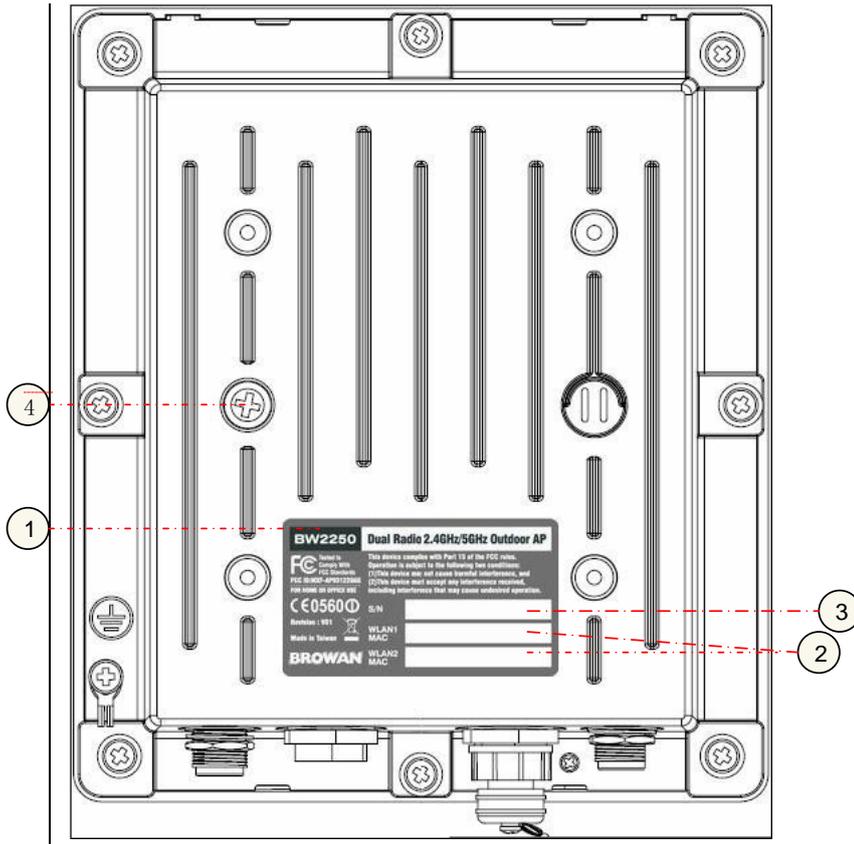


Figure 2 –Bottom Cover of the BW2250

The Bottom Cover of the BW2250 contains:

- **Back Label** with Model and Device name. The official device name is 54Mb Dual Radio Outdoor Access Point; model BW2250.
- **MAC address labels** of the device. The two labels show the WLAN1 and WLAN2 interface MAC address of the device.
- **Serial Number label** of the device.
- **RESET Button**. It is covered by a M6 Screw with a waterproof rubber washer

## RF Connectors and ports

The BW2250 has two reverse N-type RF connectors on the flank panel:

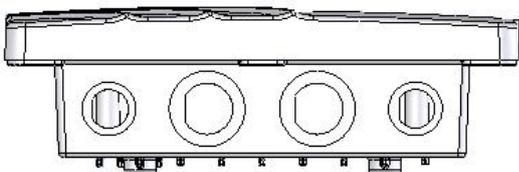


Figure 3 –RF Connectors and ports

# Hardware Installation

## Installing the Access Point

Use the following procedure to prepare your network connection to BW2250.



Use the enclosed POE and power cord or any others IEEE802.3af Compliant POE Power Source Devices to supply your BW2250 Access Point.

**Step 1** Assemble part 1 of the Mount Kit at the back of the bottom cover as shown in the figure 4:

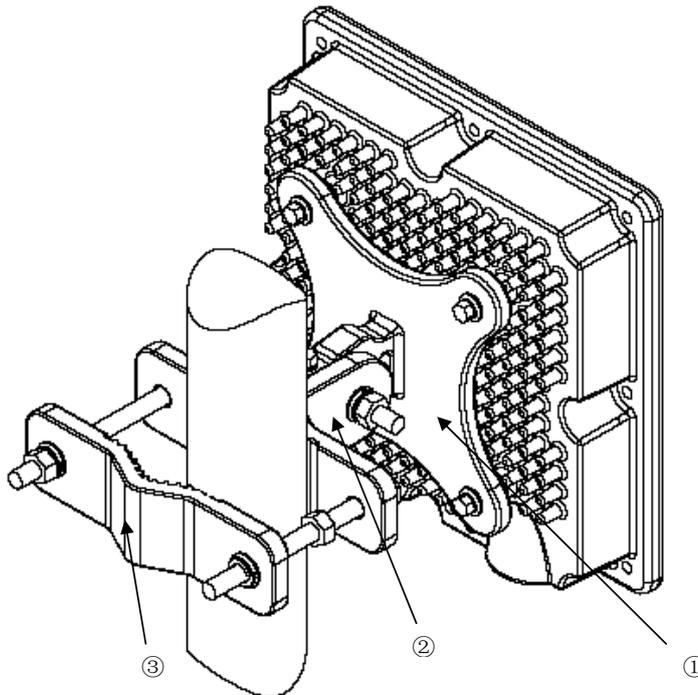


Figure 4 – Assembling the Mounting Kit to the BW2250

- Step 2** If you are mounting the AP on the wall; first install the bracket 2 of the mounting kit to a suitable position. Assemble the back of the BW2250 case to the bracket subsequently.
- Step 3** If you are mounting the AP to a mast; first install the bracket 2 and the clip 3 of the Mounting to a mast. Assemble the back of the BW2250 case to the bracket subsequently
- Step 4** Assemble the one side of an Ethernet twist cable with the waterproof RJ45 connector.



Please read the description sheet in Waterproof RJ45 Connector package carefully before you do the assembly.

- Step 5** Insert the Ethernet twist cable to the LAN port connector on the back of the BW2250 Bottom Cover and screw down the nut.
- Step 6** Connect two RF connectors to the Antennas by Jump RF cable with waterproof N-type plug.

## Connect to the Power Source and Local Network

- Step 1** Connect the Ethernet cable from the BW2250 route to an IEEE802.3-2003 compliant Power source Equipment, Such as BE3011 POE HUB Switch from Browan.
- Step 2** If you use the BE3011 POE HUB, please connect the BW2250 LAN port to the **PWR-LAN OUT** port of BE3011 and connect the BE3011 **LAN-IN** port to the Switch or hub in the local network.

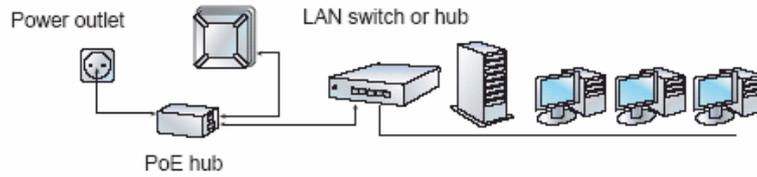


Figure 5 – Connect BW2250 to Power source and network by PoE HUB

# Software Installation

## Initialization

There are two choices for the first web browser connection to your BW2250: either enter the BW2250's IP address and subnet (default networks settings) into the browser or launch the **KickStart** utility that is provided with your product CD.

The default network settings for your new access point are:

LAN port:                      IP 192.168.2.2                      subnet 255.255.255.0

## Software Introduction: KickStart

The Browan **KickStart** is a software windows utility that is included on the Installation CD.

The utility automatically detects access points installed on your network, regardless of its host IP address and lets you configure each unit's IP settings. The feature list for the **KickStart** utility is listed below:

- Scanning your subnet for all connected APs
- Quick access to your AP via HTTPs, telnet, SSH

To install the **KickStart** utility insert the Installation CD into your CD-ROM drive. Find and install the utility from the product CD into the computer.



If the Installation CD does not start automatically, please run "**autorun.exe**" manually from the root directory of the installation CD.

## Access Your BW2250

There are two choices for the first Web browser connection to your BW2250:

- Use the Web browser.
- Launch the KickStart utility that is provided with your product CD.

If first method is preferred follow these instructions:

**Step 1**                      Configure your PC with a static IP address on the 192.168.2.0 subnet with mask 255.255.255.0. Connect the BW2250 in to the same physical network as your PC. Open the Web browser and type the default IP address of the BW2250:

`https://192.168.2.2`

**Step 2**                      Enter the BW2250 administrator login details to access the Web management.



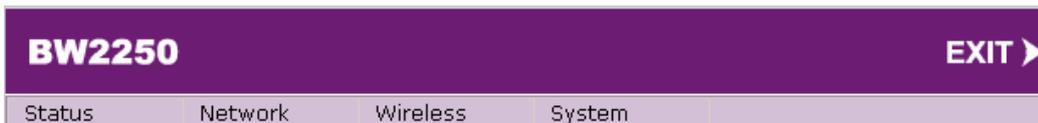
The default administrator log on settings for all access point interfaces are:

User Name: **admin**

Password: **admin01**



**Step 3** After successful administrator log on you will see the main page of the BW2250's **Web interface**:

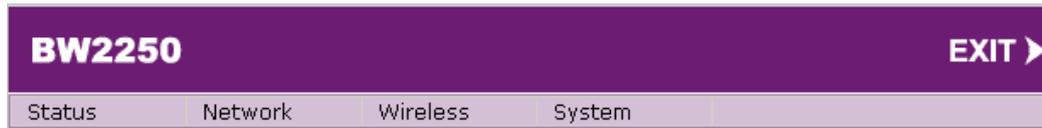


If second method is preferred follow the instructions:

**Step 1** Install the **KickStart** utility from the **Installation CD**. Click **Start > Programs > Brown > KickStart** to launch the application. If the BW2250 device is connected to your network, the utility will automatically find your BW2250:



**Step 4** After successful administrator log on you will see the controller **web interface**.



Now you are enabled to perform your configuration.

## Chapter 3 – Application Mode

The two Dual-Band chips (a/g + a/g) that this product provides supplies the furthest flexible application. Three application modes are supplied by BW2250:

- AP + Bridge mode
- AP + AP mode
- Bridge + Bridge mode

### AP + Bridge Mode

AP + Bridge configuration is for environment with last mile issue.

The typical usage is: 11g AP + 11a Bridge.

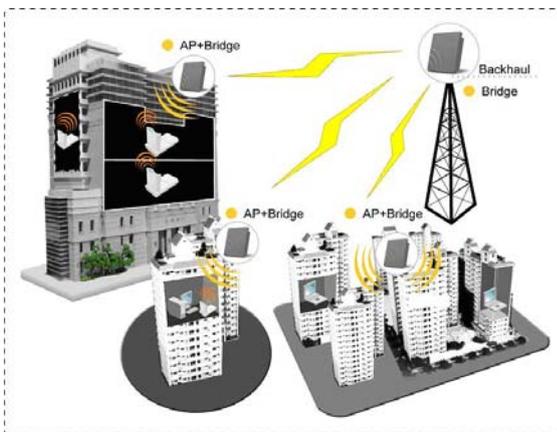


Figure 6 – AP +Bridge application mode 1

### AP + AP Mode

AP + AP configuration can be for client density environment.

The typical usage is: 11g AP + 11a AP.



Figure 7 – AP +AP application mode

## Bridge+ Bridge Mode

Bridge + Bridge mode is used in the area without Ethernet wiring.

The typical usage is: 11a Bridge + 11a Bridge for Point to Multi-Point or for wireless Repeater.

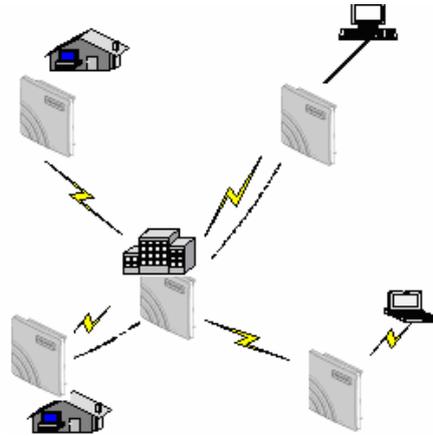


Figure 8 – Bridge +Bridge application mode in Point to Multi-Point

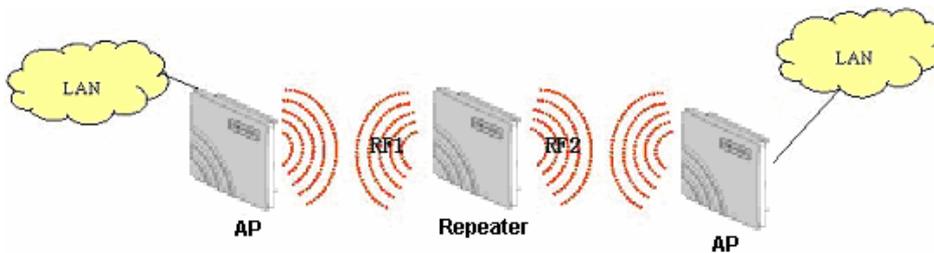


Figure 9– Bridge +Bridge application mode as wireless repeater



Because of the antenna interference, the performance will deteriorate dramatically if the same band (2.4GHz or 5GHz) is used both on the two RF modules.

It is strongly recommended that leave two external antennas apart, at least larger than 1m. Thus antenna interference can be ignored.

If external antenna cannot be apart, it is strongly recommended that one RF module is set 2.4GHz and the other is set 5GHz.

## Chapter 4 – Reference Manual

This chapter contains web management reference information.

The **web management** main menu consists of the following sub menus:

- **Status** – device status showing
- **Network** – device settings affecting networking
- **Wireless** – device settings related to the wireless part of the BW2250
- **System** – device system settings directly applicable to the BW2250
- **Exit** – click exit and leave the web management then close your web-browser window.

### Web Interface

The main **web management** menu is displayed at the top of the page after successfully logging into the system (see the figure below). From this menu all essential configuration pages are accessed.

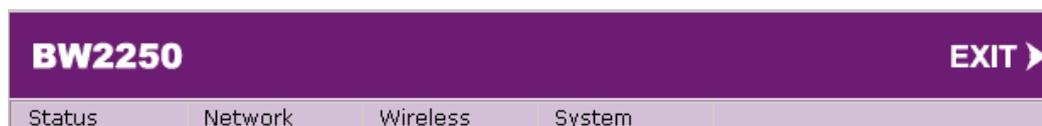


Figure 10 – Main Configuration Management Menu

The **web management** menu has the following structure:

#### Status

- Device Status** – show the status related with the whole device
- Wireless Status** – show the status of the two radios
- Interface Statistics** – show the status of each network interface

#### Network

- Interface** – TCP/IP settings of BW2250 LAN (Bridge) port
- RADIUS Server** – specify the settings of RADIUS server which is used by 802.1x or WPA
- DHCP Settings** – specify the settings of DHCP server or DHCP relay service
- NTP Settings** – NTP settings of BW2250
- Time Settings** – Manually set time

#### Wireless

- Basic** – specify the basic settings related with wireless part
- Advance** – specify the settings of multiple BSSID or Bridge
- WEP** – specify the WEP settings related with static WEP encryption
- MAC ACL** – MAC ACL settings for BW2250

#### System

- Security** – set access permission to your BW2250
- SNMP** – SNMP service
- Telnet** – Telnet/SSH service
- Configuration** – system configuration utilities, including Backup/Upload configuration

**Reset** – reboot device and restore systems to factory default

**Upgrade** – Upgrade the firmware remotely

In the following sections, short references for all menu items are presented.

## Status

### Status | Device Status

The device status page shows important information for the BW2250, its system status and network configuration.

System	
System Version	BW2250.BRO.2.26.3621
Uptime	0 day(s) 04:12
System Time	1970/01/01/ 04:12
Wlan1 MAC	00:90:4b:dd:07:a0
Wlan2 MAC	00:90:4b:dd:07:b0
Free System Memory	38,212 K bytes
Total System Memory	63,388 K bytes

Network	
LAN Mode	static-IP
LAN IP	192.168.2.2
LAN Mask	255.255.255.0
Gateway	0.0.0.0

**Note:**

Figure 11 – Device Status

**System Version** display the current version of the firmware loaded to the AP



This is important information for support requests and for preparing firmware upgrading

**Uptime** – indicates the time, expressed in days, hours and minutes since the system was last rebooted.

**System Time** – shows the current time of the BW2250

**Wlan1 MAC / Wlan 2 MAC** – shows the MAC addresses of the two wireless interfaces of the BW2250

**Free System Memory** – indicates the memory currently available in the BW2250

**Total System Memory** – indicates the total memory in the BW2250

**LAN Mode** – indicate static IP or DHCP client is used for BW2250 LAN IP address

**LAN IP** – shows the LAN IP address of BW2250

**LAN Mask** – shows the LAN Network Mask of BW2250

**Gateway** – shows the default gateway of BW2250

## Status | Wireless Status

The *wireless status* shows the information related with BW2250 two wireless interfaces.

Radio1	
Channel	11
Domain	WORLD
Mode	AP
Band	2.4GHz(Mixed 11g)
Layer2 Isolation	disabled
Total Connected Clients	0
Antenna Gain	4.5 dBi
Total Output Power(EIRP)	16dBm
MAC ACL	disabled

Radio2	
Channel	60
Domain	WORLD
Mode	AP
Band	5GHz(11a)
Layer2 Isolation	disabled
Total Connected Clients	0
Antenna Gain	7dBi
Total Output Power(EIRP)	14dBm
MAC ACL	disabled

### Note:

Figure 12 – Wireless Status

**Radio1 / Radio2** – relates with two wireless interfaces

**Channel** – indicates which channel is in use now.

**Domain** – indicates regulatory domain set on the BW2250

**Mode** – AP or Bridge mode is be used for this wireless interface

**Band** – specify which band is in use for wireless interface

**Layer2 Isolation** – specify the status of Layer2 Isolation service on this wireless interface

**Total Connected Clients** – indicates number of the currently connected clients to your BW2250

**Antenna Gain** – indicates antenna gain value. If use BA5070, which is a attached Antenna of BW2250, shows 4.5dBi in 2.4GHz and 7dBi in 5GHz for regulation's limitation. If customer own antenna will be used, this will shows 0dBi to gain larger EIPR value.

**Total Output Power (EIRP)** – indicates EIRP value set to the BW2250



Total Output Power (EIRP) = Antenna Gain + RF card output power

**MAC ACL** indicates the status of MAC ACL feature on BW2250

## Status | Interface Statistics

The *Interface Statistics* shows each network interface status, including Input/Output bytes, packets or error.

Interface Statistics						
Interface Name	Input Bytes(KB)	Input Packets	Input Errors	Output Bytes(KB)	Output Packets	Output Errors
ixp1	105	810	0	176	426	0
wlan1_0	0	0	0	53	394	0
wlan2_0	0	0	0	53	394	0
<input type="button" value="Refresh"/>						

### Note:

Figure 13 – Interface Statistics

**Interface Name** – shows the name of each network interface, where ixp1 is related to LAN interface, wlan1\_x is related to WLAN1 sub-interface and wlan2\_x is related to WLAN2 sub-interface.

**Input Bytes (KB)** – shows the total number of bytes received on the network interface. The bytes number is displayed in KB.

**Input Packets** – shows the packets number received on the network interface.

**Input Errors** – shows the packets number which contain errors preventing them from being received correctly.

**Output Bytes (KB)** – shows the total number of bytes transmitted out of the network interface. The bytes number is displayed in KB.

**Output Packets** – shows the packets number transmitted out of the network interface.

**Output Errors** – shows the packets number which contain errors preventing them from being transmitted out correctly.

**Refresh** – gets the updated network interface information.

## Network

### Network | Interface



The interface configured is bridge device therefore only one interface is displayed here for configuration.

Bridge interface and its settings are listed in the **Interface** page.

Network Interface Configuration						
IP Address	Netmask	Gateway Address	Protocol	VLAN	VLAN ID	Action
192.168.2.2	255.255.255.0	0.0.0.0	static	Disabled	2	<input type="button" value="Edit"/>

### Note:

Figure 14 – Interface Configuration Table

To change network interface (bridge) configuration properties click the **Edit** button in the **Action** column. The **status** can be changed now:

Network Interface Configuration						
IP Address	Netmask	Gateway Address	Protocol	VLAN	VLAN ID	Action
<input type="text" value="192.168.2.2"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="static"/>	<input type="text" value="Disabled"/>	<input type="text" value="2"/> (1 - 4094)	<input type="button" value="Save"/> <input type="button" value="Cancel"/>

**Note:**

Figure 15 – Edit Interface Configuration Settings

**IP Address** - specify new interface IP address [in digits and dots notation, e.g. 192.168.123.70].

**Netmask** – specify the subnet mask [[0-255].[0-255].[0-255].[0-255]]. These numbers is a binary mask of the IP address, which defines IP address order and the number of IP addresses in the subnet.

**Gateway Address** – interface gateway. For Bridge type interfaces, the gateway is always the gateway router.

**Protocol** – specify **static** for setting IP address manually and **dhcp** for getting IP address dynamically acting as DHCP client.



When **dhcp** is used for getting IP address, Kickstart is strongly recommended to find your device.

**VLAN** –specify whether to manage this device via VLAN.

**VLAN ID** – specify VLAN ID when managing this device via VLAN.

**Save** – save the entered values.

**Cancel** – restore all previous values.

Change status or leave in the default state if no editing is necessary and click the **Save** button.

Network Interface Configuration						
IP Address	Netmask	Gateway Address	Protocol	VLAN	VLAN ID	Action
192.168.2.2	255.255.255.0	0.0.0.0	static	Disabled	2	<input type="button" value="Edit"/>
<input type="button" value="Apply Changes"/>			<input type="button" value="Discard Changes"/>			

**Note:**

Figure 16 – Apply or Discard Interface Configuration Changes

**Apply Changes** – to save all changes in the **interface** table at once.

**Discard Changes** – restore all previous values.

For such each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

Network Interface Configuration						
IP Address	Netmask	Gateway Address	Protocol	VLAN	VLAN ID	Action
192.168.2.2	255.255.255.0	0.0.0.0	static	Disabled	2	<input type="button" value="Edit"/>

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 17 – Reboot Server

**Reboot** – Click the button to restart the server and apply the changes.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.  
 And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

To reboot at once, click **Reboot** button and then it is necessary to wait a moment. And the message of reboot appears just like bellows:

BW2250
EXIT >

Status
Network
Wireless
System

System Is Rebooting Now, Please Wait.

**Note:**

Copyright © BROWAN COMMUNICATIONS INC. 2006. All Rights Reserved.

18% [#####-----]

Figure 18 – Reboot Information

## Network | RADIUS Server



Up to **32** different RADIUS servers can be configured under the **RADIUS servers** menu.

By default, one **RADIUS** server is specified for the system:

RADIUS Server				
Name	ServerIP	ServerPort	Secret	Action
<input type="button" value="Add"/>				

**Note:**

Figure 19 – RADIUS Servers Settings

**Add** – add new RADIUS server.

Click **Add** to configure RADIUS server settings.

RADIUS Server			
Name	ServerIP	ServerPort	Secret
<input type="text" value="profile1"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="1812"/>	<input type="text" value="test"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>			

**Note:**

Figure 20 – RADIUS Server's Details

**Name** – specify the new RADIUS server name, which is used for selecting RADIUS server.

**Server IP** – authentication RADIUS server IP address [dots and digits].

**Server Port** – specify the network port used to communicate with RADIUS [1-65535].



The default port value for authentication is 1812.  
The default port value for accounting is 1813.  
The port specified here must be the same with the one on the RADIUS server.

**Secret** – shared secret string that is used to make sure the integrity of data frames used for authentication server.

**Save** – save new specified RADIUS server.

**Cancel** – restore all previous values.

After adding a new RADIUS server, the following control appears:

RADIUS Server				
Name	ServerIP	ServerPort	Secret	Action
profile2	192.168.123.152	1813	test-1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
auth	192.168.123.152	1812	test-auth	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="button" value="Add"/>				
<input type="button" value="Apply Changes"/> <input type="button" value="Discard Changes"/>				

**Note:**

Figure 21 – Apply or Discard RADIUS Server Changes

**Edit** – edit an existing RADIUS server setting

**Delete** – delete an existing RADIUS server setting

Click **Apply Changes** to apply all the changes. Then the follow similar page will appears:

RADIUS Server				
Name	ServerIP	ServerPort	Secret	Action
profile2	192.168.123.152	1813	test-1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
auth	192.168.123.152	1812	test-auth	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="button" value="Add"/>				
<input type="button" value="Reboot"/>				
<b>Server needs to be restarted. Please reboot.</b>				

Figure 22 – RADIUS Servers Reboot Server

**Reboot** – restart the controller to make applied changes work.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.

And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

## Network | DHCP Settings

BW2250 can act as DHCP server or DHCP relay. The DHCP (Dynamic Host Configuration Protocol) service is supported on layer 2 interfaces.

DHCP server and DHCP relay is disabled by default.

DHCP Settings	
Name	Value
Status	Disabled
	<input type="button" value="Edit"/>

**Note:**

Figure 23 –DHCP Settings

**Edit** – edit the wireless basic settings

To change DHCP setting properties click the **Edit** button, the DHCP server or DHCP relay service should be configured:

DHCP Settings	
Name	Value
Status	<input type="button" value="Edit"/> Disabled
	<input type="button" value="Edit"/> Disabled DHCP Server DHCP Relay

**Note:**

Figure 24 –DHCP Settings

**Status** – Select status from the drop-down menu.

**Disabled** – Disable the DHCP server service.

**DHCP Server** – Enable the DHCP server service.

**DHCP Relay** – Enable the DHCP Relay service.

Choose DHCP Server to enable DHCP server service or choose DHCP Relay to enable DHCP relay service.

**DHCP Server**

This DHCP server service enables clients on the LAN to request configuration information, such as IP address, from a server. Settings of the DHCP service can be viewed just like the follow page.

DHCP Settings	
Name	Value
Status	DHCP Server
IP Address from	192.168.2.2
IP Address to	192.168.2.254
Netmask	255.255.255.0
Gateway	0.0.0.0
WINS Address	0.0.0.0
lease time(seconds)	864000
Domain	
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Note:**

Figure 25 –DHCP server Settings



By default, DHCP server is disabled for BW2250.

**IP Address from / IP Address to** – specify the IP address range to be dynamically allocated by the DHCP server.

**Netmask** – enter the netmask for IP pool range.

**Gateway** – enter the gateway IP for wireless clients.

**WINS Address** (Windows Internet Naming Service) – specify server IP address if it is available on the network [dots and digits].

**Lease Time** – specify the IP address lease interval in seconds [1-1000000].

**Domain** – specify the DHCP domain name [optional, 1-128 sting].

**DNS address** – specify the DNS server's IP address [in digits and dots notation].

**DNS secondary address** – specify the secondary DNS server's IP address [in digits and dots notation].

Change status or leave in the default state if no editing is necessary and click the **Save** button.

DHCP Settings	
Name	Value
Status	DHCP Server
IP Address from	192.168.2.2
IP Address to	192.168.2.254
Netmask	255.255.255.0
Gateway	0.0.0.0
WINS Address	0.0.0.0
lease time(seconds)	864000
Domain	
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0
<input type="button" value="Edit"/>	

**Note:**

Figure 26 –Apply or Discard DHCP server Settings



The DHCP server settings will be automatically adjusted to match the network interface settings.



The Gateway of DHCP server settings must be same with the Gateway of BW2250

For each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

DHCP Settings	
Name	Value
Status	DHCP Server
IP Address from	192.168.2.2
IP Address to	192.168.2.254
Netmask	255.255.255.0
Gateway	0.0.0.0
WINS Address	0.0.0.0
lease time(seconds)	864000
Domain	
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0
<input type="button" value="Edit"/>	

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 27 – Reboot information

**Reboot** – Click the button to restart the server and apply the changes.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.

And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.



When BW2250 network Interface uses DHCP to get IP address dynamically, DHCP server service cannot be enabled.

When BW2250 uses DHCP to get IP address dynamically, the similar WEB UI will be appears:

Warning: DHCP server and DHCP relay cannot be set when AP as a DHCP client itself.

DHCP Settings	
Name	Value
Status	Disabled

**Note:**

Figure 28 – Warning information

### DHCP Relay

To route DHCP through the external server, enable the **DHCP Relay** service.

DHCP Settings	
Name	Value
Status	DHCP Relay
Server IP	192.168.2.1
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Note:**

Figure 29 – DHCP Relay settings

**Server IP:** enter the IP address of the external DHCP server.



Only one DHCP server can be supported for DHCP relay feature.

Change status or leave in the default state if no editing is necessary and click the **Save** button.

DHCP Settings	
Name	Value
Status	DHCP Relay
Server IP	192.168.2.1
<input type="button" value="Edit"/>	
<input type="button" value="Apply Changes"/> <input type="button" value="Discard Changes"/>	

**Note:**

Figure 30 –Apply or Discard DHCP relay Settings

For each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

DHCP Settings	
Name	Value
Status	DHCP Relay
Server IP	192.168.2.1
<input type="button" value="Edit"/>	

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 31 – Reboot information

**Reboot** – Click the button to restart the server and apply the changes.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.  
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.



When BW2250 network Interface uses DHCP to get IP address dynamically, DHCP relay service cannot be enabled.

## Network | NTP Settings

NTP (Network Time protocol) is used to synchronize the system time with the selected network NTP server. Use the **Network| NTP Settings** menu to configure the NTP service:

**NTP Server**

NTP Status:

Time Zone:

Name	ServerIP	Action
Ntpserver_1	107.46.103.100	<input type="button" value="Delete"/> <input type="button" value="Edit"/>

**Note:**

Figure 32 – NTP Settings

**NTP status** – specify enable or disable this NTP service

**Time Zone** – specify the time zone for NTP service.

**Delete** – delete the existed NTP server

**Edit** – Edit the settings of the existed NTP server

**Add** – add a new NTP server setting for synchronizing time

Clicking **Add** button to add a new NTP server:

**NTP Server**

Name	ServerIP
<input type="text" value="Ntpserver"/>	<input type="text" value="0.0.0.0"/>

**Note:**

Figure 33 – Add new NTP server setting



Two NTP servers can be configured under **Network | NTP Settings** menu. And only IP address is accepted for NTP server.

It is required to add at least one NTP server before enable NTP service.



The **Name** of NTP Server should be unique.

Change status or leave in the default state if no editing is necessary and click the **Save** button.

**NTP Server**

NTP Status:

Time Zone:

Name	ServerIP	Action
Ntpserver-1	207.46.103.100	<input type="button" value="Delete"/> <input type="button" value="Edit"/>

**Note:**

Figure 34 – Apply or Discard NTP server Changes

Change the Time Zone for your own local time and change the NTP status to enable or disable.

**NTP Server**

NTP Status:

Time Zone:

Name	ServerIP	Action
Ntpserver-1	207.46.103.100	<input type="button" value="Delete"/> <input type="button" value="Edit"/>

**Note:**

Figure 35 – Edit Time Zone setting/NTP status

Clicking Save button for saving new Time Zone setting

**NTP Server**

NTP Status:

Time Zone:

Name	ServerIP	Action
Ntpserver-1	207.46.103.100	<input type="button" value="Delete"/> <input type="button" value="Edit"/>
<input type="button" value="Add"/>		

**Note:**

Figure 36 – Apply or Discard Time Zone/NTP status Changes

For each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

**NTP Server**

NTP Status:

Time Zone:

Name	ServerIP	Action
Ntpserver-1	207.46.103.100	<input type="button" value="Delete"/> <input type="button" value="Edit"/>
<input type="button" value="Add"/>		

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 37 – Reboot information

**Reboot** – Click the button to restart the server and apply the changes



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications. And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

## Network | Time Settings

Configure the system time manually under **Network | Time Settings** menu.

Date Configuration	
Date	1970/01/01
Time	00:15
<input type="button" value="Edit"/> <input type="button" value="Refresh"/>	

**Note:**

Figure 38 – Time Settings

Click **Edit** to change current system time.

Date Configuration	
Date	<input type="text" value="2006"/> / <input type="text" value="05"/> / <input type="text" value="17"/>
Time	<input type="text" value="10"/> : <input type="text" value="23"/>
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

**Note:**

Figure 39 – Edit Date and Time Settings

Change the Date and Time or leave in the default value if no editing is necessary and click the **Apply** button. Thus the modified time will be taken effect at once. No reboot is needed.



BW2250 has RTC (real-time clock). The system time will be saved upon reboot. If NTP is enabled, the local time cannot be modified manually.

## Wireless

### Wireless | Basic

Use the **wireless | Basic** menu to configure such wireless settings as regulatory domain, channel, band, and power, layer2isolation. Click the edit button on the setting you need to change:

Basic Wireless Setting	
Radio :	wlan1
Name	Value
Domain	WORLD
Static Channel	11
Band	2.4GHz(Mixed 11g)
Total Output Power (EIRP)	16dBm
Antenna Gain	4.5dBi
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>

**Note:**

Figure 40 – Basic Wireless Settings with static channel selection

Basic Wireless Setting	
Radio :	wlan1
Name	Value
Domain	WORLD
Auto Channel	1
Band	2.4GHz(Mixed 11g)
Total Output Power (EIRP)	16dBm
Antenna Gain	4.5 dBi
RTS Threshold	2347 bytes
DCA Threshold	10 mins
DCA optional channel	1,6,11 channel
Layer2 Isolation	disabled
Mode	AP
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>

**Note:**

Figure 41 – Basic Wireless Settings with DCA enabled

**Radio** – specify which wireless interface of BW2250 is shown

**Domain** – show the regulatory domain

**Static Channel**– show the channel that the access point will use to transmit and receive information.



If DCA (Dynamic Channel Allocation) is enabled, this will show Auto Channel and its channel number is chosen in auto channel selection.

If use static channel selection, this will show Static Channel and its channel number.



DCA (Dynamic Channel Allocation) is very useful feature to help choose the best channel automatically and reduce interference among many Access Points.

**Band** – show the working bands on which your radios are working.

Six bands are supplied: 5GHz(11a), 5GHz(Turbo Mode 11a), 2.4GHz(Mixed 11g), 2.4GHz(11g only), 2.4GHz(Mixed 11g WiFi) and 2.4GHz(11g only WiFi).

**2.4GHz(Mixed 11g) or 2.4GHz(11g only)** – the radio will work on 2.4GHz for a better performance. 2.4GHz (11g only) mode only allows 11g client access. 2.4GHz(Mixed 11g) mode allows 11b/11g client access.

**2.4GHz(Mixed 11g WiFi) or 2.4GHz(11g only WiFi)** – make sure to compatible with Wi-Fi.

**5GHz (11a) or 5GHz(Turbo Mode 11a)** – the radio will work on 5GHz 11A mode. 5GHz(Turbo Mode 11a) can supply 108 raw data rate.



Only under Bridge mode, Turbo Mode 11a can be set.

**Total Output Power (EIRP)** – show the BW2250 transmission output power (EIRP) in dBm. Default is 16dBm & WORLD.

**Antenna Gain:** show the antenna gain that this Access Point used.

When using the attached antenna **BA5070** supplied by Browan, 4.5dBi will show in 2.4GHz and 7dBi will show in 5GHz. Otherwise, if select **custom** in **Antenna** item, the **Antenna Gain** will show 0 dBi to acquire larger output transmit power.

**RTS Threshold** – show the value of RTS threshold. Default is 2347, which means that RTS is disabled.

**DCA threshold** – show the value (in minutes) of DCA threshold. This threshold is been used to judge if there is no wireless users connected during this time. And if yes, BW2250 will monitor the environment and adjust channel for the best operational one.

**DCA optional channel** – show the channels only in which auto channel selection (DCA) will be processed to reduce interference.



Only when DCA is enabled, **DCA threshold** and **DCA optional channel** will be shown.

**Layer 2 Isolation** – show the status of Layer 2 Isolation service (enabled or disabled)

**Mode** – show the mode that the Access Point is in. (AP mode or Bridge mode)

**Site Survey** – perform survey to show overview information for wireless networks in a local geography

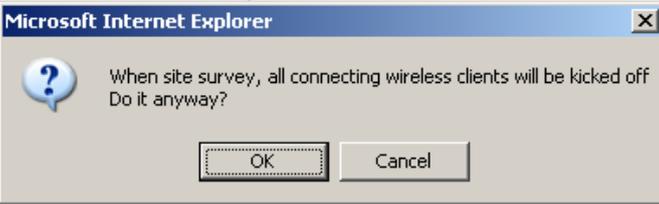
The site survey shows overview information for wireless networks in a local geographic area. Using this survey, administrator can scan for working access points, check their operating channels, and see RSSI levels. To start the scan, simply click the **Site Survey** menu.

After clicking **Site Survey**, you will get the follow warning:

**Basic Wireless Setting**

Radio : wlan1

Name	Value
Domain	
Channel	
Band	
Total Out	
Antenna	
RTS Thre	
Layer2 Isolation	disabled
Mode	Bridge
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>



**Note:**

Figure 42 – Site Survey warning

Click OK to continue site survey and get the similar UI:

Radio: wlan1

**Scan Result**

TYPE	CHANNEL	BSSID	ESSID	MODE	RSSI
INFA	1	00:90:4b:dc:f2:c0		B/G	4
INFA	11	00:90:4b:88:88:ac	GSI-Office01	B/G	13
INFA	11	00:90:4b:ff:96:e0	xu	B/G	8
INFA	11	00:90:4b:ff:96:e1	xu-wpa	B/G	8
INFA	11	00:90:4b:ff:96:e2	xu-wpa2	B/G	7
INFA	11	00:90:4b:ff:96:e3	68-wpa	B/G	8
INFA	11	00:90:4b:ff:96:e4	68-wpa2	B/G	9
INFA	11	00:90:4b:ff:9c:20	aleon-0	B/G	0
INFA	11	00:90:4b:ff:9c:23	aleon-6	B/G	2
INFA	3	00:14:a5:32:c4:10	p560-bridge	B/G	11
INFA	3	00:14:a5:32:c4:11	p560-nobridge	B/G	14
INFA	3	00:14:a5:32:c4:12	p560-1xbridge	B/G	13
INFA	3	00:14:a5:32:c4:13	p560-1xnobridge	B/G	12
INFA	3	00:14:a5:32:c4:14	p560-wpabridge	B/G	11
INFA	3	00:14:a5:32:c4:15	p560-wpanobridge	B/G	13
INFA	3	00:14:a5:32:c4:16	p560-bridge-psk	B/G	13
INFA	9	00:14:a5:34:d2:20	P720-no	B/G	10
INFA	9	00:14:a5:34:d2:21	p720-mac	B/G	11
INFA	9	00:14:a5:34:d2:24	720-wep-64	B/G	10
INFA	9	00:14:a5:34:d2:2a	720-wpa-psk-aes	B/G	11
INFA	9	00:14:a5:34:d2:2b	720-wpa-psk-tkip	B/G	10

Figure 43 – Site Survey information

To refresh the statistics click the **Rescan** button.



During Site Survey, all wireless clients, who are connecting with BW2250 would be kicked off.

Site Survey takes some minutes to perform. Please wait and don't power off AP during site survey.

**Edit** – edit the wireless basic settings

To change basic wireless setting properties click the **Edit** button in the **Action** column. The **status** can be changed now:

Basic Wireless Setting	
Name	Value
Radio Name	wlan1
Domain	WORLD
Channel	11
Band	2.4GHz (Mixed 11g)
Antenna	A-807
RTS Threshold	2347 bytes [0..2347]
DCA Threshold	10 mins <input type="checkbox"/> Enable DCA
DCA optional channel	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input type="checkbox"/> all
Layer2 Isolation	disabled
Mode	AP
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Note:**

Figure 44 – Edit Basic Wireless Settings with static channel selection

Basic Wireless Setting	
Name	Value
Radio Name	wlan1
Domain	WORLD
Channel	1
Band	2.4GHz(Mixed 11g)
Antenna	A-807
RTS Threshold	2347 bytes [0..2347]
DCA Threshold	10 mins <input checked="" type="checkbox"/> Enable DCA
DCA optional channel	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input type="checkbox"/> all
Layer2 Isolation	disabled
Mode	AP
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Note:**

Figure 45 – Edit Basic Wireless Settings with DCA enabled

**Radio Name**– show which wireless interface of BW2250 is being set

**Domain** – select the regulatory domain according to your country

The full frequency range of the 2.4 GHz or 5 GHz is not permitted for use in all countries. Depending on your selection of regulatory domains, the available frequency channels will vary.



Before changing radio settings manually verify that your settings comply with government regulations. At all times, it will be the responsibility of the end-user to ensure that the installation complies with local radio regulations. Refer to the Appendix:

**Channel** – select the channel that the access point will use to transmit and receive information. If one channel is defined, it acts as default channel. Channels list will vary depending on selected regulatory domain and selected band. Multiple frequency channels are used to avoid interference between two radios of this AP, and between nearby access points. If you wish to operate more than one access point in overlapping coverage areas, we recommend a distance of at least four channels between the chosen channels. For example, for three Access Points in close proximity choose channels 1, 6 and 11 for 11b/g or channels 36, 40 and 64 for 11a.

**Band** – working bands on which your radios are working.

Six bands are supplied: 5GHz(11a), 5GHz(Turbo Mode 11a), 2.4GHz(Mixed 11g), 2.4GHz(11g only), 2.4GHz(Mixed 11g WiFi) and 2.4GHz(11g only WiFi).

**2.4GHz(Mixed 11g) or 2.4GHz(11g only)** – the radio will work on 2.4GHz for a better performance. 2.4GHz (11g only) mode only allows 11g client access. 2.4GHz(Mixed 11g) mode allows 11b/11g client access.

**2.4GHz(Mixed 11g WiFi) or 2.4GHz(11g only WiFi)** – make sure to compatible with Wi-Fi.

**5GHz (11a) or 5GHz(Turbo Mode 11a)** – the radio will work on 5GHz 11A mode. 5GHz(Turbo Mode 11a) can supply 108 raw data rate.



Only under Bridge mode, Turbo Mode 11a can be set.

**Total Output Power (EIRP)** –the BW2250 transmission output power (EIRP) in dBm. Default is 16dBm&WORLD.



Total Output Power (EIRP) = Antenna Gain + RF card output power

**Antenna:** Type of Antenna, two items for choice. BA5070 is the approved antenna supplied by Brown. Choose BA5070 antenna is used for meeting the limitation of regulatory domain. If you want to gain a larger output power for the real usage, it is strongest recommended to select **custom**.



BA5070 antenna is the accessory of BW2250 Product.

Refer to the Appendix D for BA5070 Antenna Spec: [D\) Approved Antenna](#)



If you want to gain a larger output power for the real usage, it is strongly recommended to select **custom**.

**RTS Threshold** – when set, this setting specifies the maximum packet size beyond which RTS/CTS mechanism is invoked. The value range of this is [0 ...2347]. Default is 2347, which means that RTS is disabled.

**Enable DCA** – Enable or Disable DCA service. DCA can help to choose the best working channel automatically. And static channel selection will be forbidden if DCA is enabled.

DCA (Dynamic Channel Allocation) solution automatically selects the optimal operational frequency channel when power up and periodically monitors the environment and adjusts for the best operational frequency channel.



DCA service is available only under 2.4GHz band.

**DCA threshold** – specify the value (in minutes) of DCA threshold. This threshold is used to judge if there is no wireless users connected during this time. And if yes, BW2250 will monitor the environment and adjust channel for the best operational one.



If wireless network environment is stable which means auto channel selection needn't do frequently, set a big value for DCA threshold to gain a stable wireless users' connection.

If wireless network environment changes continually, frequent auto channel selection is needed. So set a relative small value for DCA threshold to let channel change based on wireless environment.



Wireless users' will be kicked off when DCA is processing (site survey and new operational frequency channel takes effect).

**DCA optional channel** – specify the channels only in which auto channel selection (DCA) will choose for reducing interference reference.



Only when DCA is enabled, **DCA threshold** and **DCA optional channel** will be shown.

**Layer 2 Isolation** – Layer2 wireless client separation. Connected clients with user isolation function enabled cannot access each other directly. The clients are isolated from each other using their MAC addresses [enabled/disabled].

**Mode** – two modes are supplied: AP mode and Bridge mode.



When Bridge mode is enabled, BW2250 can introduce a bridge loop if BW2250 Ethernet port is connected to your wired LAN. To avoid a bridge loop on your network, disconnect BW2250 from the wired LAN before or soon after Bridge mode is enabled.

**Save** – Save the settings

Change status or leave in the default state if no editing is necessary and click the **Save** button.

Basic Wireless Setting	
Radio :	wlan1
Name	Value
Domain	WORLD
Static Channel	11
Band	2.4GHz(Mixed 11g)
Total Output Power (EIRP)	16dBm
Antenna Gain	4.5 dBi
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>

**Note:**

Figure 46 – Apply or Discard Basic Wireless Settings with static channel selection

Basic Wireless Setting	
Radio :	wlan1
Name	Value
Domain	WORLD
Auto Channel	auto
Band	2.4GHz(Mixed 11g)
Total Output Power (EIRP)	14dBm
Antenna Gain	4dBi
RTS Threshold	2347 bytes
DCA Threshold	10 mins
DCA optional channel	1,6,11 channel
Layer2 Isolation	disabled
Mode	AP
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>

**Note:**

Figure 47 – Apply or Discard Basic Wireless Settings with DCA enabled

For such each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

Basic Wireless Setting	
Radio :	wlan1
Name	Value
Domain	WORLD
Static Channel	11
Band	2.4GHz(Mixed 11g)
Total Output Power (EIRP)	14dBm
Antenna Gain	4dBi
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	<input type="button" value="Edit"/> <input type="button" value="Site Survey"/>

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 48 – Reboot Server

**Reboot** – Click the button to restart the server and apply the changes.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.  
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

## Wireless | Advance

BW2250 supports **Multiple BSSID (MBSSID)** function. You can configure up to 16 BSSIDs per radio on BW2250 and assign different configuration settings to each BSSID. For wireless users, they can think BW2250 as single AP with multi service supporting, including different security policy, different VLAN ID, different authentication etc. All the BSSIDs are active at the same time that means client devices can associate to the access point for specific service. Use the **Wireless | Advance** menu to configure properties related to Multiple BSSID, including configure SSID, Hidden SSID, VLAN/QoS, and Security for each SSID.



Each BSSID can have its own SSID, In this case, Multiple BSSID is the same with Multiple ESSID. Wireless users can think BW2250 as multiple virtual APs, each supporting different service, and connects one SSID for the special services.

Also, BW2250 supports **Bridge** function, it can support up to 20 **Bridge links** per radio. Different bridge link can use WEP or WPA-PSK for link security.

### AP Mode:

Interface	SSID	Hidden	Security	Current Connect #	Action
wlan1_0	BW2250	Disabled	Disabled	0	<a href="#">Detail</a> <a href="#">Edit</a> <a href="#">Delete</a>
					<a href="#">New</a>

[Refresh](#)

### Note:

Figure 49 – Advanced Wireless Setting (AP Mode)

**Radio** – specify which RF card (wlan1 or wlan2) is needed to be configured since BW2250 has two Dual-Band radios

**Mode** – specify the operation mode of BW2250 (AP or Bridge)

**Interface** – Choose the specified **MBSSID** entry you want to configure. Each Interface maps to a BSSID

**Hidden** – Show the status of Hidden SSID feature

**Security** – Show which security policy is used for this **MBSSID** entry

**Current Connect #** – Show the number of current wireless clients who are connecting with this MBSSID

**New** – Create a new **MBSSID** entry

**Detail** – Show the detail information of this **MBSSID** entry

**Edit** – Edit the selected **MBSSID** entry you want to configure

**Delete** – Delete the selected **MBSSID** entry. When in AP mode, you cannot delete the last entry

**Refresh** – Rescan the WEB page to get newer information

Clicking Detail, a similar page will be appears as below:

 <b>Advance Wireless Setting</b>	
Radio:	wlan1
Interface:	wlan1_0
Mode:	AP
SSID:	BW2250
Hidden SSID:	Disabled
Use VLAN:	Disabled
VLAN ID:	1
802.1p Tag	
SSID priority	Disabled
Accounting:	Disabled
Security:	Disabled
Current Connected Number:	2 <a href="#">Detail</a>
<a href="#">Refresh</a> <a href="#">Return</a>	

**Note:**

*Figure 50 – Detail for MBSSID entry*

**Radio** – Show which radio (WLAN1 or WLAN2) is displayed

**Interface** – Show the sub-interface of specified Radio

**Mode** – Show the operation mode of the sub-interface

**SSID** – Show the SSID value of the sub-interface

**Hidden SSID** – Show the enable/disable status of Hidden SSID service

**Use VLAN** – Show if VLAN is used for the sub-interface

**VLAN ID** – If used VLAN, show the VLAN ID, which is specified

**802.1p Tag** – Show the 802.1p tag for the sub-interface if 802.1p is used

**SSID priority** – Show the traffic priority specified for this sub-interface (BSSID/SSID), 0 means the normal priority

**Accounting** – Show the enable/disable status of accounting service

**Security** – Show the security policy specified for this sub-interface

**Current Connect Number** – Show the number of current connected client with this sub-interface

**Detail** – Show the MAC address of current connected clients

**Refresh** – Rescan the WEB page to get newer information

**Return** – Return to the wireless advance settings page

Clicking **Detail** to check the detail information of the connected client just like below:

Current Connected Clients MAC List						
index	Client MAC	IP Addr	Auth Type	Signal/Noise	Input Packets #	Output Packets #
1	00:90:4b:76:08:3f	N/A	NONE	23	0	0
2	00:e0:4d:05:85:29	192.168.2.88	NONE	25	183	201

**Note:**

Figure 51 – Detail information of connected client

**Client MAC** – Show the connected client's MAC address

**IP Addr** – Show the IP address of the connected client

**Auth Type** – Show the auth type that the connected client is used. Auth type includes PEAP, TLS or TTLS.

**Signal/Noise** – Show the SNR value of the connected client

**Input Packets** – Show the packet number transmitted by the connected client

**Output Packets** – Show the packet number destined to the connected client

Clicking **New** or **Edit** on AP mode, the settings of MBSSID entry appears:

Advance Wireless Setting			
Radio: wlan1			
Interface:	<input type="text" value="wlan1_1"/>		
Mode:	AP		
SSID:	<input type="text"/>		
Hidden SSID:	<input type="checkbox"/> Need Hidden SSID		
VLAN and QoS			
<input checked="" type="radio"/> SSID priority(Disable VLAN)			
	priority:	<input type="text" value="0"/>	(0~7)
<input type="radio"/> Enable VLAN			
	VLAN ID:	<input type="text"/>	(1~4094)
	802.1p Tag	<input type="text"/>	(0~7)
Accounting			
<input type="checkbox"/> Enable Accounting			
	Accounting Server Profile:	<input type="text"/>	
	Accounting Interim Interval:	<input type="text"/>	Minutes

Figure 52 – Multiple BSSID Setting - 1

**Radio** – showing which RF card (wlan1 or wlan2) is being configured.

**Mode** – showing the current operation mode of BW2250 (AP or Bridge).

**Interface** – showing the current **MBSSID | Bridge link** entry

**SSID** – a unique ID for your wireless network. It is case sensitive and must not exceed 32 characters. The default SSID is "BW2250" but you should change this to a personal wireless network name. The SSID is important for clients when connecting to the access point. All client stations must have their client SSID settings configured and must use the same SSID.



Each MBSSID entry (BSSID) can has its own SSID. And SSID can be same for different BSSID

**Hidden SSID** – When enabled, the SSID of this Interface is invisible in the networks list while scanning the available networks for wireless client (SSID is not broadcasted with its Beacons). When disabled, the AP's SSID is visible in the available network list [enabled/disabled]. By default the Hidden SSID is disabled.

**VLAN and QoS** – Specify VLAN policy or QoS policy. Data priority is based on (B) SSID and implemented by 802.11e EDCA or 802.1p tag.

**SSID priority (Disable VLAN)** – specify the data priority, which is implemented according to 802.11e EDCA and makes sure the wireless downlink over-air QoS. This priority is based on (B) SSID, which means different BSSID can have different data priority and the data of the same BSSID has the same priority.



This data priority only makes sure the priority of downlink (from AP to wireless client).  
8 levels priorities are supplied. 1, 2, 0, 3, 4, 5, 6, 7 is from lowest priority to highest priority.  
And if no special QoS is needed, leave **priority** to default (0). 0 means normal priority.

**Enable VLAN** – When enabled, the outgoing packets from this SSID will be tagged with VLAN ID and 802.1p tag (if have).

**VLAN ID** – Configure VLAN ID for each Multiple SSID devices. Valid numbers are from 1 to 4094.

**802.1p Tag** – Configure 802.1p Tag for remote APC's or Router's QoS uses. Valid numbers are from 0 to 7.



VLAN ID and 802.1p tag must cooperate with remote Router or APC.  
802.1p Tag is also used for data priority. 8 levels priorities are supplied. 1, 2, 0, 3, 4, 5, 6, 7 is from lowest priority to highest priority.

**Accounting** – Control the status of accounting service.

**Enable Accounting** – enable or disable the accounting service.



Accounting service only can be enabled when the security policy using RADIUS server is chosen. The security policies using RADIUS server include 802.1x, WPA, WPA2, WPA2 MIXED and MAC auth.

**Accounting Server Profile** – specify which RADIUS server is used for accounting service. If not have any RADIUS server: please configure **Network | RADIUS Servers** Web UI first.

**Accounting Interim Interval** – specify the value (in minutes), which is used for interim-accounting interval. This should not be left empty and the value range is from 1 to 60 minutes.

Security:			
	<input type="radio"/> WEP(Wired Equivalent Privacy)		
		WEP KeyIndex:	1
	<input type="radio"/> 802.1x		
		RADIUS Server Profile:	
			<a href="#">RADIUS Server is NULL. Click here to add profile</a>
		Dynamic Key Length:	<input checked="" type="radio"/> 64 bits <input type="radio"/> 128 bits
	<input type="radio"/> WPA		
		RADIUS Server Profile:	
			<a href="#">RADIUS Server is NULL. Click here to add profile</a>
		Algorithm:	TKIP
		Group Key Rekey Interval:	Minutes
	<input type="radio"/> WPA2		
		RADIUS Server Profile:	
			<a href="#">RADIUS Server is NULL. Click here to add profile</a>
		Algorithm:	TKIP
		Group Key Rekey Interval:	Minutes
	<input type="radio"/> WPA2 MIXED		
		RADIUS Server Profile:	
			<a href="#">RADIUS Server is NULL. Click here to add profile</a>
		Algorithm:	TKIP/AES
		Group Key Rekey Interval:	Minutes

Figure 53 – Multiple BSSID Setting - 2

**Security** – Specify the security policy.

**WEP** – When selected, the privacy of MSSID entry will be set to WEP (Wired Equivalent Privacy).

**WEP Key Index** – Select the default key Index to make it the Default key and encrypt the data before being transmitted. All stations, including this MSSID Entry, always transmit data encrypted using this Default Key. The key number (1,2,3,4) is also transmitted. The receiving station will use the key number to determine which key to use for decryption. If the key value does not match with the transmitting station, the decryption will fail. The key value is set in **Wireless | WEP** web page.



By default, four WEP keys are all set to “aaaaa”. They can be modified in **Wireless | WEP**.

**802.1x** – When selected, the MSSID entry will be configured as an 802.1x authenticator. It supports multiple authentication types based on EAP (Extensible Authentication Protocol) like EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-SIM. The privacy will be configured as dynamic WEP.

**RADIUS Server Profile** – Select the default radius server name. If not have any RADIUS server: please configure **Network | RADIUS Servers** Web page first.

**Dynamic Key Length** – Select the dynamic 64-bits / 128-bits WEP encryption.

**WPA** – Wi-Fi Protected Access, When selected, the encrypt method will be WPA with RADIUS Sever.

**WPA2** – When selected, the security policy will be WPA2 with RADIUS Server. In this mode, WPA client is not permitted to connect.

**WPA2 MIXED** – When selected, WPA2 client and WPA client are all permitted to connect.

**RADIUS Server Profile** –Select the default radius server name. If not, please configure **Network | RADIUS Servers** Web page first.

**Algorithm** – Choose WPA algorithm (TKIP, AES).

**Group Key Rekey interval** –Specify the time in minutes, after which the group key will be updated. If not fill in the time, default rekey interval 10 minutes will be used for group key rekey.

<input type="radio"/> WPA-PSK			
	Use Pre-Shared Key:	<input type="text"/>	
	Algorithm:	TKIP	
	Group Key Rekey Interval:	<input type="text"/> Minutes	
<input type="radio"/> WPA2-PSK			
	Use Pre-Shared Key:	<input type="text"/>	
	Algorithm:	TKIP	
	Group Key Rekey Interval:	<input type="text"/> Minutes	
<input type="radio"/> WPA2-PSK MIXED			
	Use Pre-Shared Key:	<input type="text"/>	
	Algorithm:	TKIP/AES	
	Group Key Rekey Interval:	<input type="text"/> Minutes	
<input type="radio"/> MAC Auth			
	RADIUS Server Profile:	<input type="text"/>	
		<a href="#">RADIUS Server is NULL. Click here to add profile</a>	
<input checked="" type="radio"/> Disabled			
		<input type="button" value="Save"/>	<input type="button" value="Cancel"/>

Figure 54 – Multiple BSSID Setting - 3

**WPA-PSK** – When selected, the security policy will be WPA PSK without RADIUS Server.

**WPA2-PSK** – When selected, the security policy will be WPA2 PSK without RADIUS Server. In this mode, only WPA2 PSK client can connect with AP and WPA PSK client is not permitted to connect.

**WPA2-PSK MIXED** – When selected, WPA2 PSK and WPA PSK are all permitted to connect with AP.

**Use Pre-Shared Key** – Specify more than 8 characters and less than 64 characters for WPA with pre-shared key encryption.

**Algorithm** – Choose WPA algorithm (TKIP, AES).

**Group Key Rekey interval** –Specify the time in minutes, after which the group key will be updated. If not fill in the time, default rekey interval 10 minutes will be used for group key rekey.

**MAC Auth** – When selected, the MAC address of wireless client will be passed to RADIUS server for PAP authentication when it connects with BW2250. The MAC address of wireless client acts as username and password.

**RADIUS Server Profile** –Select the default radius server name. If not, please configure Network | RADIUS Servers Web page first.

**Disabled** – When selected, no security policy is used on AP device.

## Bridge Mode

Advance Wireless Setting			
Radio:	wlan1	Bridge Mode	
Interface	Remote MAC	Security	Action
bridge1_0	00:90:4B:0C:42:06	Disabled	<input type="button" value="Detail"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
			<input type="button" value="New"/>
<input type="button" value="Refresh"/>			

**Note:**

Figure 55 – Advanced Wireless Setting (Bridge Mode)

**Radio** – specify which RF card (wlan1 or wlan2) is needed to be configured since BW2250 has two Dual-Band radios

**Mode** – specify the operation mode of BW2250 (AP or Bridge)

**Interface** – Choose the specified **Bridge link** entry you want to configure.

**Remote MAC** – Specify the remote peer’s MAC address of this Bridge

**Security** – Specify which security policy is used

**New** – Create a new **Bridge link** entry

**Detail** – Show the detail information of this **Bridge link** entry

**Edit** – Edit the selected **Bridge link** entry you want to configure

**Delete** – Delete the selected **Bridge link** entry.

Clicking **Detail**, the similar page will be appears:

Advance Wireless Setting	
Radio:	wlan1
Interface:	bridge1_0
Mode:	Bridge
Remote MAC:	00:90:4B:0C:42:06
Security:	Disabled
<input type="button" value="Return"/>	

**Note:**

Figure 56 – Detail of one bridge entry

Clicking **Edit** for editing an existed bridge link or **New** for adding a new bridge link, you can see the figure like this.

<b>Advance Wireless Setting</b>			
Radio: wlan1			
Interface:	bridge1_1		
Mode:	Bridge		
Remote MAC:	<input type="text" value="00:00:00:00:00:00"/>		
Security:			
	<input type="radio"/> WEP(Wired Equivalent Privacy)		
		WEP KeyIndex:	<input type="text" value="1"/>
	<input type="radio"/> WPA-PSK		
		Use Pre-Shared Key:	<input type="text"/>
		Algorithm:	<input type="text" value="TKIP"/>
		Rekey Interval:	<input type="text"/> Minutes
	<input checked="" type="radio"/> Disabled		
<input type="button" value="Save"/> <input type="button" value="Cancel"/>			

**Note:**

Figure 57 – Bridge Link Setting

**Remote MAC** – Add the remote peer’s MAC address you want to configure as a bridge link

**Security** – Specify WEP or WPA-PSK (TKIP or AES) is used for security policy. WPA-PSK or static WEP can be used for encrypt each bridge link

**Use Pre-Shared Key** – Specify more than 8 characters and less than 64 characters for WPA with pre-shared key encryption.

**Algorithm** – Choose WPA algorithm (TKIP, AES).

**Rekey Interval** –Specify the time in minutes, after which the key of the bridge link will be updated.



By default, four WEP keys are all set to “aaaaa”. They can be modified in **Wireless | WEP**.

## Wireless | WEP

Use the **Wireless | WEP** menu to configure static WEP settings.



This menu only set static WEP key value related with 4 key indexes for each RF card (wlan1 or wlan2). Enable or Disable static WEP is in the **Wireless | Advance** menu.

**Radio Setting**

Radio:

---

**WEP Configuration**

Index	Key	Action
Key 1	*****	<input type="button" value="Edit"/>
Key 2	*****	<input type="button" value="Edit"/>
Key 3	*****	<input type="button" value="Edit"/>
Key 4	*****	<input type="button" value="Edit"/>

The network password needs to be 64bits or 128bits depending on your network configuration. This can be entered as 5 or 13 ascii characters or 10 or 26 hexadecimal characters.

**Note:**

Figure 58 – WEP Settings

**Radio** – specify which RF card (wlan1 or wlan2) is needed to be set.

Click **Edit** to edit the existing **wepkey1** to **wepkey4**.



By default, four WEP keys are all set to “aaaaa”. They can be modified according to real need.

**Radio Setting**

Radio:

---

**WEP Configuration**

Index	Key	Action
Key 1	*****	<input type="button" value="Edit"/>
Key 2	*****	<input type="button" value="Edit"/>
Key 3	*****	<input type="button" value="Edit"/>
Key 4	*****	<input type="button" value="Edit"/>

The network password needs to be 64bits or 128bits depending on your network configuration. This can be entered as 5 or 13 ascii characters or 10 or 26 hexadecimal characters.

Figure 59 – Edit WEP Key

## Wireless | MAC ACL

Use the **MAC ACL** service to control the default access to the wireless interface of the BW2250 or define special access rules for mobile clients. Configure the ACL using the Wireless | MAC ACL menu:

<b>Radio Setting</b>	
Radio:	wlan2
<b>Policy Setting</b>	
Policy	disabled <input type="button" value="Edit"/>
<b>MAC ACL Configuration</b>	
MAC List	Action
<input type="button" value="Add"/>	
<b>Note:</b>	

Figure 60 – MAC ACL Service

**Radio** – Two wireless interfaces wlan1 and wlan2 can be selected for each radio's MAC ACL rules.



Only AP mode has the MAC ACL service. The wireless interface whose mode is Bridge hasn't MAC ACL settings.

**Policy Setting** – click the **edit** button to choose Allow, Deny or disable the access control service on device. By default the ACL service is disabled and all wireless clients connecting to the BW2250 are allowed (no ACL rules are applied to the wireless clients).

Select **Allow** means only the wireless clients, whose MAC are listed in the **MAC List** would be permitted to access this AP. Other wireless client cannot access this AP.

Select **Deny** means only the wireless clients, whose MAC are listed in the **MAC List** would be prevented from accessing. Other wireless clients can access this AP.

Select **Disabled** means no ACL service.

<b>Radio Setting</b>	
Radio:	wlan2
<b>Policy Setting</b>	
Policy	Disabled <input type="button" value="Save"/> <input type="button" value="Cancel"/>
<b>MAC ACL Configuration</b>	
MAC List	Action
<input type="button" value="Add"/>	
<b>Note:</b>	

Figure 61 – MAC ACL settings

You must create **MAC List** to work with **Policy** setting. The access control list is based on the network device's MAC address. In the MAC ACL Configuration table, you only need to specify the MAC address of wireless client. Click the Add button to create a new MAC entry:00

<b>Radio Setting</b>	
Radio:	wlan2

<b>Policy Setting</b>	
Policy	deny <input type="button" value="Edit"/>

<b>MAC ACL Configuration</b>	
MAC List	Action
<input type="text"/> MAC XX:XX:XX:XX:XX:XX is accepted	<input type="button" value="Save"/> <input type="button" value="Cancel"/>

Figure 62 – Add MAC entry

**MAC Address** – enter the physical address of the network device you need to (MAC address) The format is a list of colon separated hexadecimal numbers (for example: 00:AA:A2:5C:89:56).

**Save** – click the button to save the new MAC entry.

<b>Radio Setting</b>	
Radio:	wlan2

<b>Policy Setting</b>	
Policy	deny <input type="button" value="Edit"/>

<b>MAC ACL Configuration</b>	
MAC List	Action
00:90:4B:DD:07:B0	<input type="button" value="Delete"/>
<input type="button" value="Add"/>	

**Note:**

Figure 63 – Apply or Discard MAC ACL Configuration Changes

**Apply Changes** – to save all changes made in the **interface** table at once.

**Discard Changes** – restore all previous values.

For such each change of settings, the BW2250 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:

Radio Setting	
Radio:	wlan2

Policy Setting	
Policy	deny <input type="button" value="Edit"/>

MAC ACL Configuration	
MAC List	Action
00:90:4B:DD:07:B0	<input type="button" value="Delete"/>
<input type="button" value="Add"/>	

**Note:**

**Server needs to be restarted. Please reboot.**

Figure 64 – Reboot Server

**Reboot** – Click the button to restart the server and apply the changes.



If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.  
 And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

# System

## System | Security

Use the **System | Security** service to configure the name and password administrator:

administrator	
UserName	<input type="text" value="admin"/>
Old Password	<input type="password"/>
New Password	<input type="password"/>
Confirm Password	<input type="password"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

### Note: Administrator Password Setting

Figure 65 – system security settings

**User Name** – administrator username for access to BW2250 (e.g. web interface, CLI mode) [1-32 symbols, spaces not allowed].

**Old Password** – old password value.

**New Password** –new password value used for user authentication in the system [4-8 characters, spaces not allowed].

**Confirm Password** – re-enter the new password to verify its accuracy.

**Save** – click to save new administrator settings.



Default administrator logon settings are:

User Name: **admin**

Password: **admin01**



Password length is from 4 to 8 characters.

After filling in the right old password and the new password, clicking the **Save** button for taking effect immediately.

After clicking **Save** button, the below UI will be shown to notify that the new password setting has been taken place:

**Set password successfully.**

<b>administrator</b>	
UserName	<input type="text" value="admin"/>
Old Password	<input type="text"/>
New Password	<input type="text"/>
Confirm Password	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Note: Administrator Password Setting**

Figure 66 – system security settings save and take effect successfully

## System | SNMP

**SNMP** is the standard protocol that regulates network management over the Internet. To communicate with SNMP manager you must set up the same **SNMP** communities and identifiers on both ends: manager and agent.

Use the **System | SNMP** menu to change current SNMP configuration.

<b>General Configuration</b>		
Name	Value	Action
Readonly community	public	<input type="button" value="Edit"/>
Readwrite community	private	<input type="button" value="Edit"/>
DefaultTrap community	public	<input type="button" value="Edit"/>

<b>Trap Configuration</b>					
Index	Host Ip	Host Port	Trap Type	Community	Action
<input type="button" value="Add"/>					

**Note: SNMP Configuration**

Figure 67 – SNMP settings

**Readonly community** – Community name is used in SNMP version 1 and version 2c. Read-only (public) community allows reading values, but denies any attempt to change values [1-32 all ASCII printable characters, no spaces].

**Readwrite community** – Community name is used in SNMP version 1 and version 2c. Read-write (private) community allows to read and (where possible) change values [1-32 all ASCII printable characters, no spaces].

**Default Trap community** – The default SNMP community name used for traps without specified communities. The default community by most systems is "public". The community string must match the community string used by the SNMP network management system (NMS) [1-32 all ASCII printable characters, no spaces].

### Trap Configuration Table:

You can configure your SNMP agent to send **SNMP Traps** (and/or inform notifications) under the defined host (SNMP manager) and community name (optional).

Trap Configuration					
Index	Host Ip	Host Port	Trap Type	Community	Action
1	192.168.123.1	162	trapsink	tst	Delete
Add					

Figure 68 – SNMP Trap table settings

Click **Add** to add a new SNMP manager or **Delete** to delete a specific SNMP manager. Clicking **Add**:

Trap Configuration					
Index	Host Ip	Host Port	Trap Type	Community	Action
	<input type="text"/>	<input type="text"/>	trapsink	<input type="text"/>	Save Cancel
<b>Note: SNMP Configuration</b>					

Figure 69 – Add SNMP Trap

**Host IP** – enter SNMP manager IP address [dots and digits].

**Host Port** – enter the port number the trap messages should be send through [number].

**Trap Type** – select trap message type [v1/v2/inform].

**Community** – specify the community name at a SNMP trap message. This community will be used in trap messages to authenticate the SNMP manager. If not defined, the default trap community name will be used (specified in the SNMP table) [1-32 all ASCII printable characters, no spaces].

**Save** – save all current settings

**Cancel** – restore the last settings

## System | Telnet

Use **System | Telnet** menu to manage the telnet/SSH service of your BW2250.

Telnet		
Name	Status	Action
Telnet Service	Enabled	Edit
SSH Service	Enabled	Edit
<b>Note:</b>		

Figure 70 – System Configuration settings

**Telnet Service** – Enable or disable telnet service of BW2250

**SSH Service** – Enable or disable SSH service of BW2250.

The default of these two services are all **Enabled**. The current IETF SSH (SSHv2) is supported for security of accessing BW2250 via telnet/CLISH.

## System | Configuration

Use the **System | Configuration** menu to configure such system utilities:

- Backup – download current working system configuration for backup
- Upload/Restore – upload system configuration for restore

Configuration Backup	
Description Message	Action
BW2250.BRO.2.26.3621	<input type="button" value="Preparation"/>

Configuration Upload	
Description Message	Action
Configuration file to upload	<input type="text"/> <input type="button" value="Browse..."/>
<input type="button" value="Upload"/> <input type="button" value="Cancel"/>	

**Note: System Configuration**

Figure 71 – System Configuration settings

You can save your current device configuration file locally clicking the **Preparation** button:

Configuration Backup	
Description Message	Action
BW2250.BRO.2.26.3621	<input type="button" value="Preparation"/>

Figure 72 – Backup settings

Such device configuration is saved in the specific format file (.cfg).

**Description Message** shows the current version of firmware.

Click the **Preparation** button to start saving the configuration file.

Click the **Download** button to download current working configuration into your local PC.

Configuration Backup	
Description Message	Action
Download and store Configuration backup file in safe place. <b>Warning: Configuration file name should only include English characters or numbers.</b>	<input type="button" value="Download"/>

**Note: System Configuration**

Figure 73 – Download system configuration



A configuration file name will be required when you download/save the configuration file. And please remember the configuration file name should only include characters or numbers. Otherwise, this configuration file will not upload to BW2250.

You can upload saved configuration file any time you want to restore this configuration to the device by using the **Browse** button Select the configuration file and upload it on the device:

Configuration Upload	
Description Message	Action
Configuration file to upload	<input type="text"/> <input type="button" value="Browse..."/>
<input type="button" value="Upload"/> <input type="button" value="Cancel"/>	

**Note: System Configuration**

Figure 74 – Configuration Upload/Restore

Click **Upload** for upload the specified configuration and then the similar UI appears

Configuration Upload	
Configuration File Information	
HOST IP	192.168.2.2
HOST VERSION	BW2250.BRO.2.26.3621
Create Time	Thu Jan 1 00:21:30 1970
Decription	BW2250.BRO.2.26.3621
Check it and Press <b>OK</b> , then device will reboot and the new configuration will take effect	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

**Note: System Configuration**

Figure 75 – configuration information

**HOST IP** – show the IP address in the configuration file that needs to upload.



Please remember this IP address for accessing BW2250 after the configuration file is uploaded.

**HOST VERSION** – show the firmware version in the configuration file that needs to upload.

**OK** – click the button to apply configuration setting to the device.

If everything is right, click **OK** button for upload/restore.

## System | Reset

System Reset	
Description	Action
Current software version: BW2250.BRO.2.26.3621	
Reboot device	<input type="button" value="Reboot"/>
Restore the original configuration from factory.	<input type="button" value="Reset"/>

**Note: System Reboot. System Reset.**

Figure 76 – System Reset setting

**Reboot** – Reboot the device

**Reset** – Reset System to Factory Defaults

To reboot the device, click **Reboot** and then the below appears to make sure:

System Reset	
Description	Action
Are you sure you want to REBOOT the device? It will take some time to boot up.	
<input type="button" value="Reboot"/> <input type="button" value="Cancel"/>	

**Note: System Reboot. System Reset.**

Figure 77 – Reboot the device

To reset device to factory defaults, click **Reset** on *Figure 48* and then the below appears to make sure:

System Reset	
Description	Action
Are you sure you want to RESET the device? It will take some time to boot up.	
<input type="button" value="Reset"/> <input type="button" value="Cancel"/>	

**Note: System Reboot. System Reset.**

Figure 78 – Reset the device



Please note that all settings including the administrator settings will be set back to the factory default when **Reset** is selected.

## System | Upgrade



[Check for new product updates at the Browan website: http://www.browan.com](http://www.browan.com)

**Upload** – Update your device firmware.

Firmware Upgrade	
Description	Action
Current software version: BW2250.BRO.2.26.3621	
Upgrade the firmware	<input type="button" value="Upload"/>

**Note: Firmware Upgrade**

Figure 79 – Firmware Upgrade

Click the **Upload** and then the follow appears. Specify the full path to the new firmware image and click the **Upload** button:

Firmware Upgrade	
Description	Action
Firmware image	<input type="text"/> <input type="button" value="Browse..."/>
<input type="button" value="Upload"/> <input type="button" value="Cancel"/>	

**Note: Firmware Upgrade**

Figure 80 – Firmware Upgrade

To flash the uploaded firmware image to upgrade the firmware is done by click the **Upgrade** button.



[Please make sure the firmware is correct for BW2250. Otherwise the upgrade will be failed.](#)

Firmware Upgrade	
Description	Action
Firmware image successfully uploaded to server. Press <b>Upgrade</b> button to Upgrade image now and reboot server.	
<input type="button" value="Upgrade"/> <input type="button" value="Cancel"/>	

**Note: Firmware Upgrade**

Figure 81 – Device Statistics



Do not switch off and do not disconnect the BW2250 from the power supply during the firmware update process, otherwise the device could be damaged. It is best to use the Ethernet connection (not wireless) for the firmware update process.



Update firmware will take about 5 minutes.

# Appendix

## A) Specification

Wireless		
Standard	IEEE 802.11b(DSSS), IEEE 802.11g(OFDM) and IEEE 802.11a(OFDM)	
Data Rate	802.11a: 54,48,36,24,18,12,9,6Mbps; 802.11g: 54,48,36,24,12,9,6,11,5,5,2,1Mbps (auto fall back)	
Transmit Power (RF power)	Max. 17 dBm ± 1.5dBm @6~24Mbps Max. 13 dBm ± 1.5dBm @54Mbps	
Antennas	Two N type connectors	
Encryption	WPA2, WPA (TKIP and CCMP-AES), WEP64, WEP128	
Bridge	Up to 20 bridge links	
Interface		
LAN	10/100Mb Ethernet, auto sensing, RJ-45	
WLAN1	N-type Connector	
WLAN2	N-type Connector	
Management		
Interfaces	HTTPs, Secure Telnet (SSHv2), SNMP	
Software Update	Remote software update via HTTPs	
Reset	Remote restore factory default	
Physical Specification		
Dimension	227 mm x 198 mm x 65 mm	
Weight	1.5kg	
Environment Specification		
	Temperature	Humidity
Operating	-40 to 60°C	95%, non-condensing
Power Supply		
POE	48V, IEEE802.3af-2003 compliance	
Warranty		
3 years		
Package Contents		
▪ BW2250 Dual-Band Outdoor Access Point	▪ Mounting Kit including SCREW	
▪ Printed warranty card, release note, warning card	▪ CD with BW2250 Firmware, Kickstart Utility, Bridge/Client Utility and User manual (*.pdf)	
▪ BA5070 Omni Dual-Band Antenna	▪ Waterproof tape	
▪ Waterproof RJ45 Straight Plug	▪ Reset Post	
Related Products		
Controllers:	<b>G-4200</b> Public Access Controller	
Access Points:	<b>P-720</b> Dual Radio 2.4GHz/5GHz Access Point	

註解 [r2]: 确认配套设备机种名称



## B) Factory Defaults for the BW2250

General Configuration Settings	
Administrator Username	admin
Administrator Password	admin01
Get Community	Public
Set Community	Private
Network Configuration Settings	
IP address	(Static IP) 192.168.2.2
Subnet mask	255.255.255.0
Gateway	0.0.0.0
Service Configuration Settings	
DHCP server	Disable
DHCP relay	Disable
NTP service	Disable
Telnet service	Enable
SSH service	Enable
Wireless Configuration Settings	
RF Card 1(WLAN1)	
Default Mode	11g Access Point
Regulatory Domain	World
SSID	BW2250g
Default channel (Static)	11
RTS Threshold	2347 bytes
EIRP	14dBm
Authentication Type	Open System
MAC ACL	Disable
Layer 2 Isolation	Disable
Hidden SSID	Disable
Security Policy	Disable
RF Card 2(WLAN2)	
Default Mode	11a Access Point
Regulatory Domain	World
SSID	BW2250a
Default channel (Static)	60
RTS Threshold	2347 bytes
EIRP	17dBm
Authentication Type	Open System
MAC ACL	Disable
Layer 2 Isolation	Disable
Hidden SSID	Disable
Security Policy	Disable

## C) Approved Antenna

BA5070 (omni-directional antenna for 2400 ~ 2500 MHz/ 5150 ~ 5875 MHz) is approved by Browan. It is the accessory of BW2250 product.

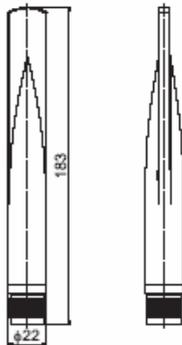
### Electrical Specification

Frequency range	2400 MHz - 2483 MHz	5150 MHz - 5875 MHz
Peak gain	4.5 dBi	7.0 dBi
Average gain	2.5 dBi	5.0 dBi
VSWR	2.0 : 1 Max.	
Polarization	Linear, vertical	
Power handling	2 W (cw)	
Impedance	50 Ohms	
Connector	RP - N Plug	

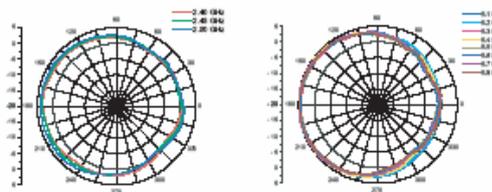


### Environmental & Mechanical Characteristics

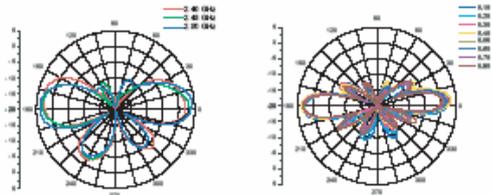
Survival wind speed	216 km/hr
Temperature	-40°C to +70°C
Humidity	95% @ 25°C
Radome color	Gray
Radome material	ABS
Weight	70 gw
Dimensions	φ22 x 183 mm



H-plane Co-polarization pattern



V-plane Co-polarization pattern



## D) Location ID and ISO Country Codes

This list states the **country names** (official short names in English) in alphabetical order as given in ISO 3166-1 **and** the corresponding **ISO 3166-1-alpha-2 code elements**.

It lists 239 official short names and code elements.

Location ID	Country	Location ID	Country
AF	Afghanistan	LI	Liechtenstein
AL	Albania	LT	Lithuania
DZ	Algeria	LU	Luxembourg
AS	American Samoa	MO	Macao
AD	Andorra	MK	Macedonia, the former Yugoslav republic of
AO	Angola	MG	Madagascar
AI	Anguilla	MW	Malawi
AQ	Antarctica	MY	Malaysia
AG	Antigua and Barbuda	MV	Maldives
AR	Argentina	ML	Mali
AM	Armenia	MT	Malta
AW	Aruba	MH	Marshall islands
AU	Australia	MQ	Martinique
AT	Austria	MR	Mauritania
AZ	Azerbaijan	MU	Mauritius
BS	Bahamas	YT	Mayotte
BH	Bahrain	MX	Mexico
BD	Bangladesh	FM	Micronesia, federated states of
BB	Barbados	MD	Moldova, republic of
BY	Belarus	MC	Monaco
BE	Belgium	MN	Mongolia
BZ	Belize	MS	Montserrat
BJ	Benin	MA	Morocco
BM	Bermuda	MZ	Mozambique
BT	Bhutan	MM	Myanmar
BO	Bolivia	NA	Namibia
BA	Bosnia and Herzegovina	NR	Nauru
BW	Botswana	NP	Nepal
BV	Bouvet island	NL	Netherlands
BR	Brazil	AN	Netherlands Antilles
IO	British Indian ocean territory	NC	New Caledonia
BN	Brunei Darussalam	NZ	New Zealand
BG	Bulgaria	NI	Nicaragua
BF	Burkina Faso	NE	Niger

BI	Burundi	NG	Nigeria
KH	Cambodia	NU	Niue
CM	Cameroon	NF	Norfolk island
CA	Canada	MP	Northern Mariana islands
CV	Cape Verde	NO	Norway
KY	Cayman islands	OM	Oman
CF	Central African republic	PK	Pakistan
TD	Chad	PW	Palau
CL	Chile	PS	Palestinian territory, occupied
CN	China	PA	Panama
CX	Christmas island	PG	Papua new guinea
CC	Cocos (keeling) islands	PY	Paraguay
CO	Colombia	PE	Peru
KM	Comoros	PH	Philippines
CG	Congo	PN	Pitcairn
CD	Congo, the democratic republic of the	PL	Poland
CK	Cook islands	PT	Portugal
CR	Costa Rica	PR	Puerto Rico
CI	Côte d'ivoire	QA	Qatar
HR	Croatia	RE	Réunion
CU	Cuba	RO	Romania
CY	Cyprus	RU	Russian federation
CZ	Czech republic	RW	Rwanda
DK	Denmark	SH	Saint Helena
DJ	Djibouti	KN	Saint Kitts and Nevis
DM	Dominica	LC	Saint Lucia
DO	Dominican republic	PM	Saint Pierre and Miquelon
EC	Ecuador	VC	Saint Vincent and the grenadines
EG	Egypt	WS	Samoa
SV	El Salvador	SM	San Marino
GQ	Equatorial guinea	ST	Sao tome and Principe
ER	Eritrea	SA	Saudi Arabia
EE	Estonia	SN	Senegal
ET	Ethiopia	SC	Seychelles
FK	Falkland islands (malvinas)	SL	Sierra Leone
FO	Faroe islands	SG	Singapore
FJ	Fiji	SK	Slovakia
FI	Finland	SI	Slovenia
FR	France	SB	Solomon islands
GF	French Guiana	SO	Somalia
PF	French Polynesia	ZA	South Africa

TF	French southern territories	GS	South Georgia and the south sandwich islands
GA	Gabon	ES	Spain
GM	Gambia	LK	Sri Lanka
GE	Georgia	SD	Sudan
DE	Germany	SR	Suriname
GH	Ghana	SJ	Svalbard and Jan Mayan
GI	Gibraltar	SZ	Swaziland
GR	Greece	SE	Sweden
GL	Greenland	CH	Switzerland
GD	Grenada	SY	Syrian Arab republic
GP	Guadeloupe	TW	Taiwan, province of china
GU	Guam	TJ	Tajikistan
GT	Guatemala	TZ	Tanzania, united republic of
GN	Guinea	TH	Thailand
GW	Guinea-Bissau	TL	Timor-leste
GY	Guyana	TG	Togo
HT	Haiti	TK	Tokelau
HM	Heard island and McDonald islands	TO	Tonga
VA	Holy see (Vatican city state)	TT	Trinidad and Tobago
HN	Honduras	TN	Tunisia
HK	Hong Kong	TR	Turkey
HU	Hungary	TM	Turkmenistan
IS	Iceland	TC	Turks and Caicos islands
IN	India	TV	Tuvalu
ID	Indonesia	UG	Uganda
IR	Iran, Islamic republic of	UA	Ukraine
IQ	Iraq	AE	United Arab emirates
IE	Ireland	GB	United kingdom
IL	Israel	US	United states
IT	Italy	UM	United states minor outlying islands
JM	Jamaica	UY	Uruguay
JP	Japan	UZ	Uzbekistan
JO	Jordan	VU	Vanuatu
KZ	Kazakhstan		Vatican city state see holy see
KE	Kenya	VE	Venezuela
KI	Kiribati	VN	Viet nam
KP	Korea, democratic people's republic of	VG	Virgin islands, British
KR	Korea, republic of	VI	Virgin islands, u.s.
KW	Kuwait	WF	Wallis and Futuna
KG	Kyrgyzstan	EH	Western Sahara

LA	Lao people's democratic republic	YE	Yemen
LV	Latvia	YU	Yugoslavia
LB	Lebanon		Zaire see Congo, the democratic republic of the
LS	Lesotho	ZM	Zambia
LR	Liberia	ZW	Zimbabwe
LY	Libyan Arab Jamahiriya		