



Business Solutions

# User Manual



**ENH1750EXT**  
version 1.0

Dual Band Long Range Wireless AC1750 Outdoor Access Point

# **IMPORTANT**

To install this Access Point please refer to the  
**Quick Installation Guide** included in the product packaging.

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# Chapter 1

# Product Overview



# Introduction

## Key Features

- Up to 29 dBm transmit power enabling long range connectivity
- Supports IEEE 802.11ac/a/b/g/n wireless standards with up to 450 Mbps data rate on 2.4 GHz band and 1300 Mbps on 5 GHz band
- Three detachable 5 dBi 2.4 GHz omni-directional antennas
- Three detachable 7 dBi 5 GHz omni-directional antennas
- Can be monitored after deployment with EnGenius EZ Controller™ software for Windows (Free online download)
- Mesh Supported (2.4 GHz)
- Can be used with included power adapter or via PoE with PoE 802.3at - capable switches or injectors
- Dual Band/Three Stream
- Band Steering shifts Dual Band clients to 5 GHz for better throughput performance
- Secured Guest Network option available

## Introduction

The ENH1750EXT is a high-powered, long-range 3x3 Dual-Band Wireless 802.11ac/a/b/g/n Outdoor Access Point with speeds up to 450 Mbps on 2.4 GHz and 1300 Mbps on 5 GHz band. It can be configured as an: Access Point, Client Bridge, or WDS (AP, Station & Bridge). The ENH1750EXT is designed to operate in a variety of outdoor environments. Its high-powered, long-range characteristics make it a cost-

can be used with  
**802.3at**  
capable switches or injectors



effective alternative to ordinary Access Points that don't have the range and reach to connect to a growing number of wireless users who wish to connect to a business network. The ENH1750EXT supports the 2.4 GHz frequency band under 802.11b/g/n mode while at the same time providing 5 GHz band under 802.11ac/a/n mode for communicating

Maximum data rates are based on IEEE 802.11 standards. Actual throughput and range may vary depending on many factors including environmental conditions, distance between devices, radio interference in the operating environment, and mix of devices in the network. Features and specifications subject to change without notice. Trademarks and registered trademarks are the property of their respective owners. For United States of America: Copyright © 2014 EnGenius Technologies, Inc. All rights reserved.

to and from 5 GHz capable computers, tablets or smart phones or transferring files. Several ENH1750EXTs can be deployed in a campus setting using the 5 GHz band as a backhaul to provide multiple 2.4 GHz wireless cells for computers or mobile devices in common outdoor areas.

The ENH1750EXT is easy to install in virtually any location with its included PoE (Power over Ethernet) injector for quick outdoor installation. The ENH1750EXT enables network administrators to control its transmit power and feature settings for selecting narrow bandwidths and traffic shaping. The ENH1750EXT also supports wireless encryption including Wi-Fi Protected Access (WPA-PSK/WPA2-PSK) Encryption, and IEEE 802.1x with RADIUS.

## System Requirements

The following are the Minimum System Requirements in order to configure the device.

- Computer with an Ethernet interface or wireless network capability
- Windows OS (XP, Vista, 7), Mac OS, or Linux-based operating systems
- Web-Browsing Application (i.e.: Internet Explorer, Firefox, Safari, or another similar browser application)

## Package Contents

The ENH1750EXT package contains the following items:<sup>\*</sup>

- ENH1750EXT Access Point
- 3 detachable 5 dBi 2.4 GHz omni-directional antennas
- 3 detachable 7 dBi 5 GHz omni-directional antennas
- Power Adapter (48V/0.8A)
- PoE Injector (EPE-48GR)
- Grounding Cable
- Pole Mount Bracket
- Wall Mount Base
- Mounting Screw Set
- Quick Installation Guide

<sup>\*(all items must be in package to issue a refund):</sup>

# Technical Specifications

## Standard:

IEEE802.11ac/a/n on 5 GHz

IEEE802.11b/g/n on 2.4 GHz

IEEE802.3at

## Antenna

6 External N-type Antennas

3 x detachable 5 dBi 2.4 GHz omni-directional antennas

3 x detachable 7 dBi 5 GHz omni-directional antennas

## Physical Interface

2 x 10/100/1000 Gigabit Ethernet Port with PoE support

LAN1 Port: IEEE 802.3at PoE Input

LAN2 Port: IEEE 802.3af PoE Output

Both Ethernet Ports support Surge Protection to 6KV

## LED Indicator

Power

LAN 1

LAN 2

2.4 GHz

5 GHz

## Power Requirements

External Power Adapter, DC IN, 48V/0.8A

IEEE 802.3at support

## Operation Modes

Access Point

WDS

Mesh

## WDS Detail

WDS AP

WDS Bridge

WDS Station

## Mesh Detail

Mesh AP

Mesh Only (2.4 GHz)

## Management

Auto Channel Selection

Multiple SSID: 16 SSIDs, 8 SSIDs per Radio

BSSID

SNMP V1/V2c/V3

MIB I/II, Private MIB

VLAN Tag/VLAN Pass-through

Clients Statistics

Save Configuration as User Default

Fast Roaming

E-Mail Alert

RADIUS Accounting

Guest Network

Band Steering

Fast Handover

## MIB

I/II

Private MIB

## Spanning Tree Protocol

Supports 802.1d Spanning Tree Protocol

## **Control**

CLI Supported

Distance Control (Ack Timeout)

802.1X Supplicant (CB Mode)

Multicast Supported

Auto Reboot

## **Security**

WEP Encryption - 64/128/152 bit

WPA/WPA2 Personal (WPA-PSK using TKIP or AES)

WPA/WPA2 Enterprise (WPA-PSK using TKIP or AES)

Hides SSID in beacons

MAC address filtering, up to 50 MACs

Wireless STA (Client) connection list

Https Support

SSH Support

## **QoS (Quality of Service)**

Complaint with IEEE 802.11e standard

## **Certifications**

FCC/IC/CE

## **Waterproof**

IP68-Rated

## **Physical/Environment Conditions**

Operating:

Temperature: -4 °F to 158 °F (-20 °C to 70 °C)

Humidity (non-condensing): 90% or less

Storage:

Temperature: -22 °F to 176 °F (-30 °C to 80 °C)

Humidity (non-condensing): 90% or less

# Physical Interface

## Dimensions and Weights

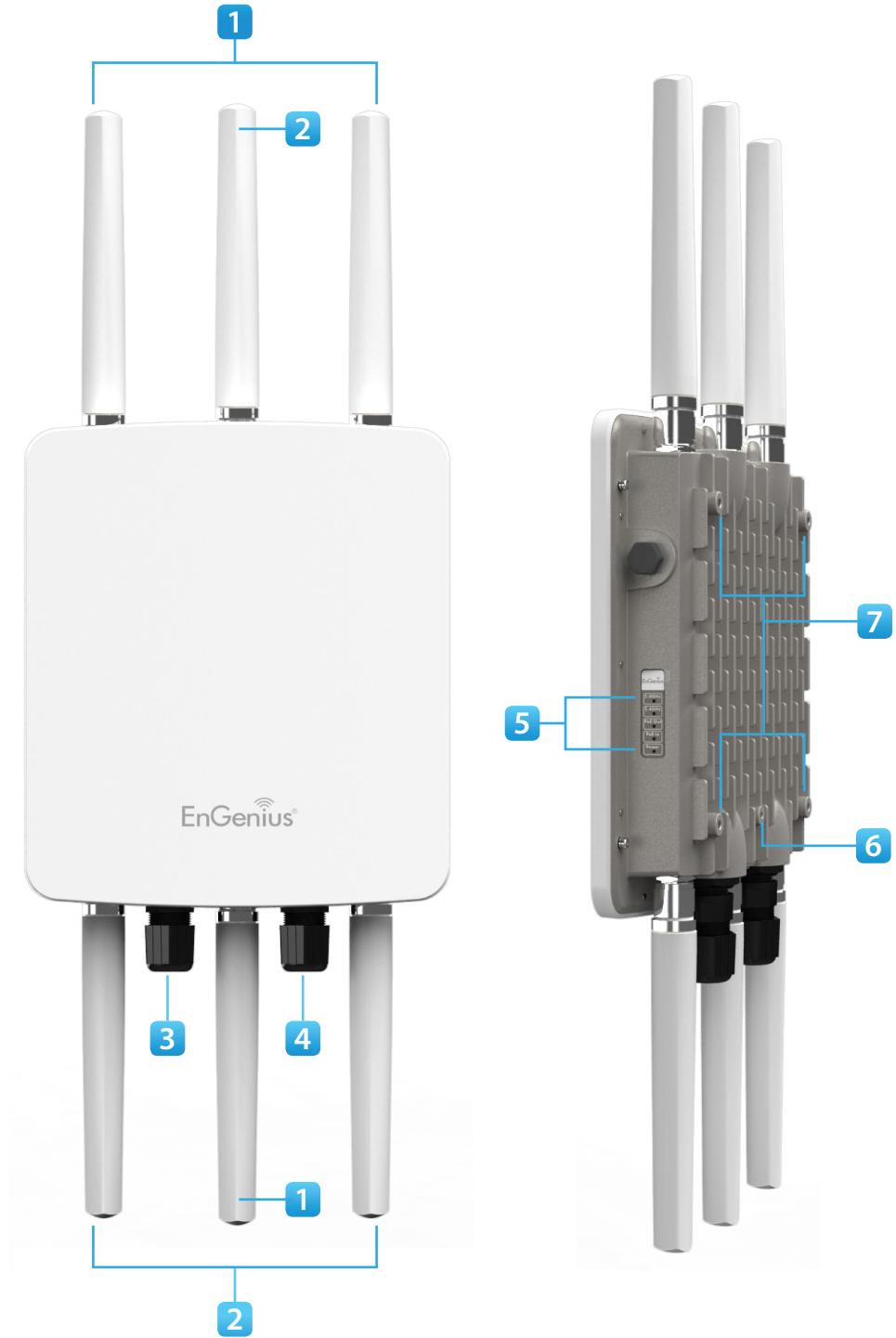
Length: 11.22"

Width: 8.58"

Depth: 2.10"

Weight: 4.17 lbs

- 1 **2.4 GHz Antennas:** Detachable 5 dBi 2.4 GHz omni-directional
- 2 **5 GHz Antennas** Detachable 7 dBi 5 GHz omni-directional
- 3 **LAN Port 1 (802.3at PoE Input):** Ethernet port for RJ-45 cable.
- 4 **LAN Port 2 (802.3af PSE Output):** Ethernet port for RJ-45 cable.
- 5 **LED Indicators:** LED lights for Power, LAN Port 1, LAN Port 2, 2.4 GHz Connection and 5 GHz Connection.
- 6 **Ground**
- 7 **Mounting Holes:** Using the provided hardware, the ENH1750EXT can be attached to a wall or pole.



# Chapter 2

# Before You Begin



# Computer Settings

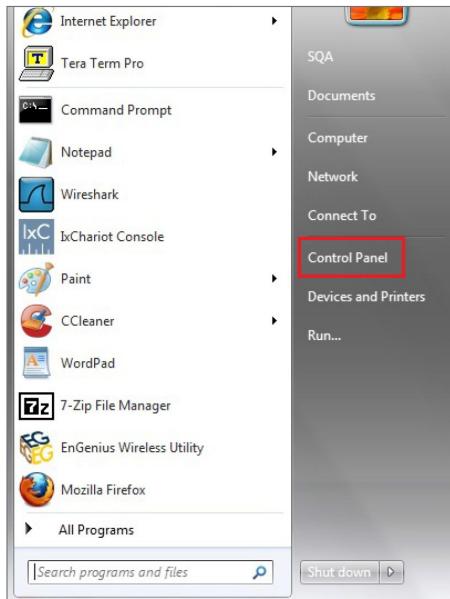
## Windows XP/Windows 7

In order to use the ENH1750EXT, you must first configure the TCP/IPv4 connection of your Windows OS computer system.

1. Click the **Start** button and open the **Control Panel**.



Windows XP



Windows 7

- 2a. In Windows XP, click **Network Connections**.



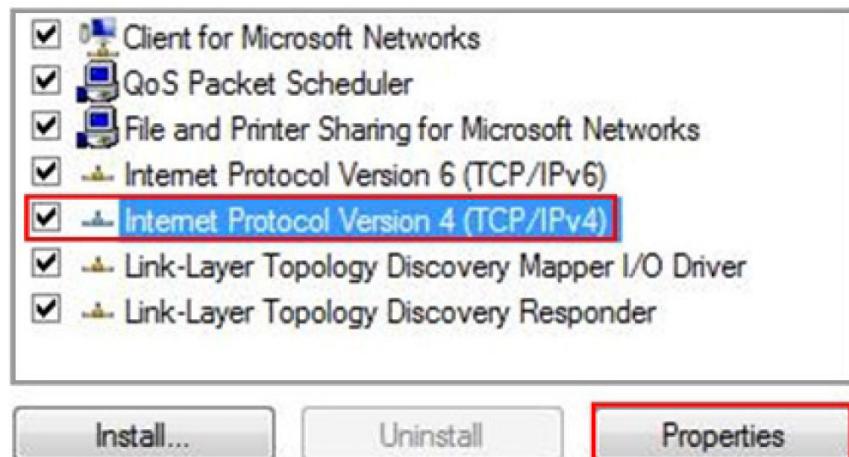
- 2b. In Windows 7, click **View Network Status and Tasks** in the **Network and Internet** section, then select **Change adapter settings**.



3. Right click on **Local Area Connection** and select **Properties**.



4. Select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.



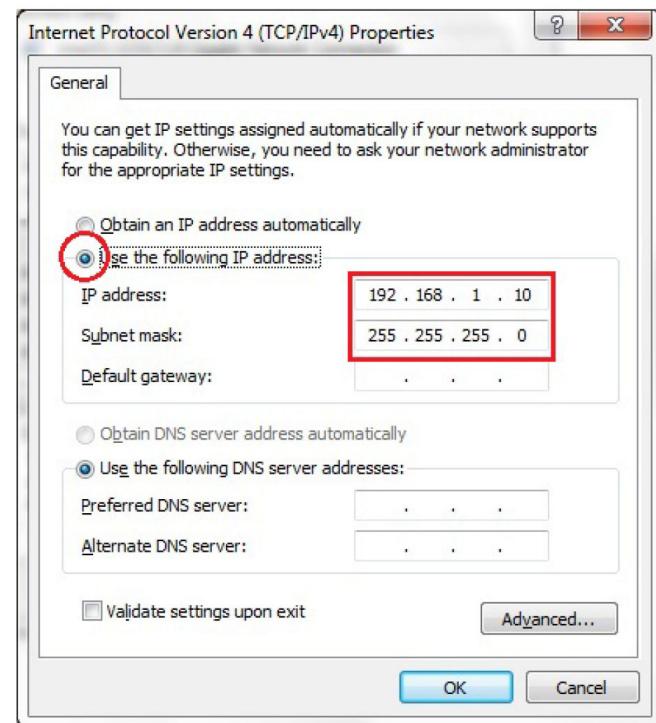
5. Select **Use the following IP address** and enter an IP address that is different from the ENH1750EXT and Subnet mask, then click **OK**.

**Note:** Ensure that the IP address and Subnet mask are on the same subnet as the device.

For example: ENH1750EXT IP address: 192.168.1.1

PC IP address: 192.168.1.2 - 192.168.1.255

PC Subnet mask: 255.255.255.0



## Apple Mac OS X

1. Go to **System Preferences** (Which can be opened in the Applications folder or selecting it in the Apple Menu).
2. Select **Network** in the **Internet & Network** section.



3. Highlight **Ethernet**.

4. In **Configure IPv4**, select **Manually**.
5. Enter an IP address that is different from the ENH1750EXT and Subnet mask then press **OK**.

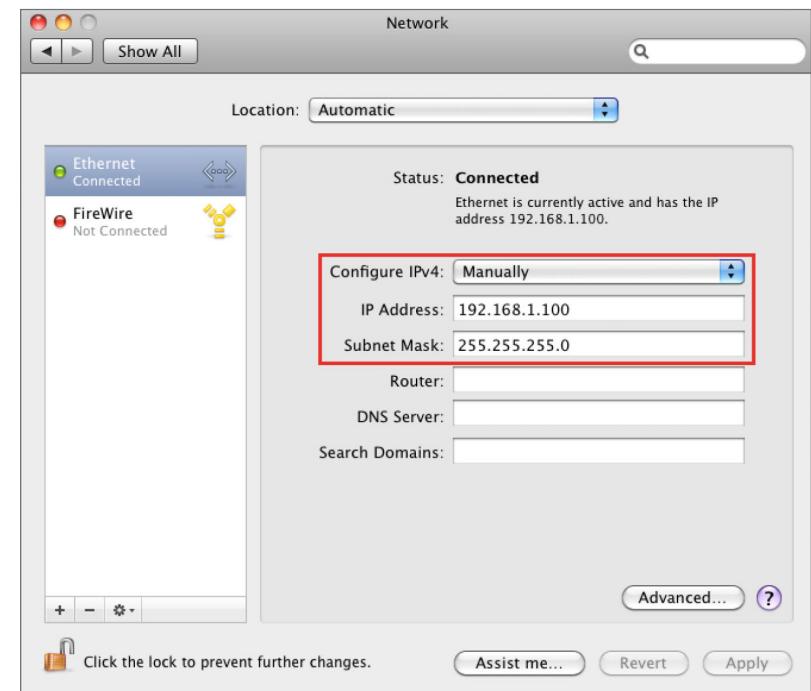
**Note:** Ensure that the IP address and Subnet mask are on the same subnet as the device.

**For example:** ENH1750EXT IP address: 192.168.1.1

PC IP address: 192.168.1.2 - 192.168.1.255

PC Subnet mask: 255.255.255.0

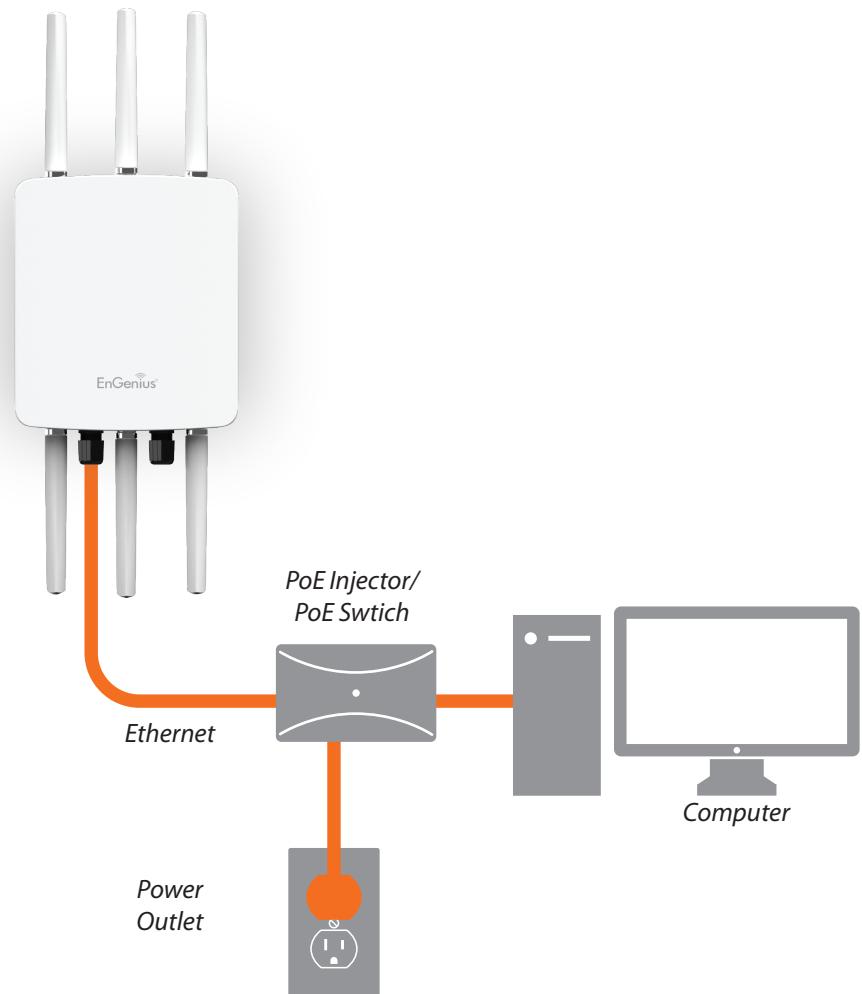
6. Click **Apply** when done.



# Hardware Installation

1. Connect one end of the Ethernet cable into the main LAN port (PoE) of the Access Point and the other end to the AP Ethernet port on the PoE injector.
2. Connect the **Power Adapter** to the **DC-IN** port of the PoE injector and plug the other end in to an electrical outlet.
3. Connect the second Ethernet cable into the **LAN port** of the PoE injector and the other end to the Ethernet port on the computer.
4. Screw on the provided antennas to the device. Once both connections are secure, verify the following:
  - a) Ensure that the **POWER** light is on (it will be green).
  - b) Ensure that the 2.4 GHz/5 GHz WLAN light is on (it will be green for both 5 GHz and 2.4 GHz).
  - c) Ensure that the LAN (Computer/ENH1750EXT Connection) light is on (it will be green).
  - d) Once all three lights are on, proceed to set up the Access Point using the computer.

This diagram depicts the hardware configuration.



**Note:** The Access Point supports both IEEE 802.3at PoE (Power over Ethernet) or the included power injector. You may use either one as the power source. **Do NOT use both at the same time.**

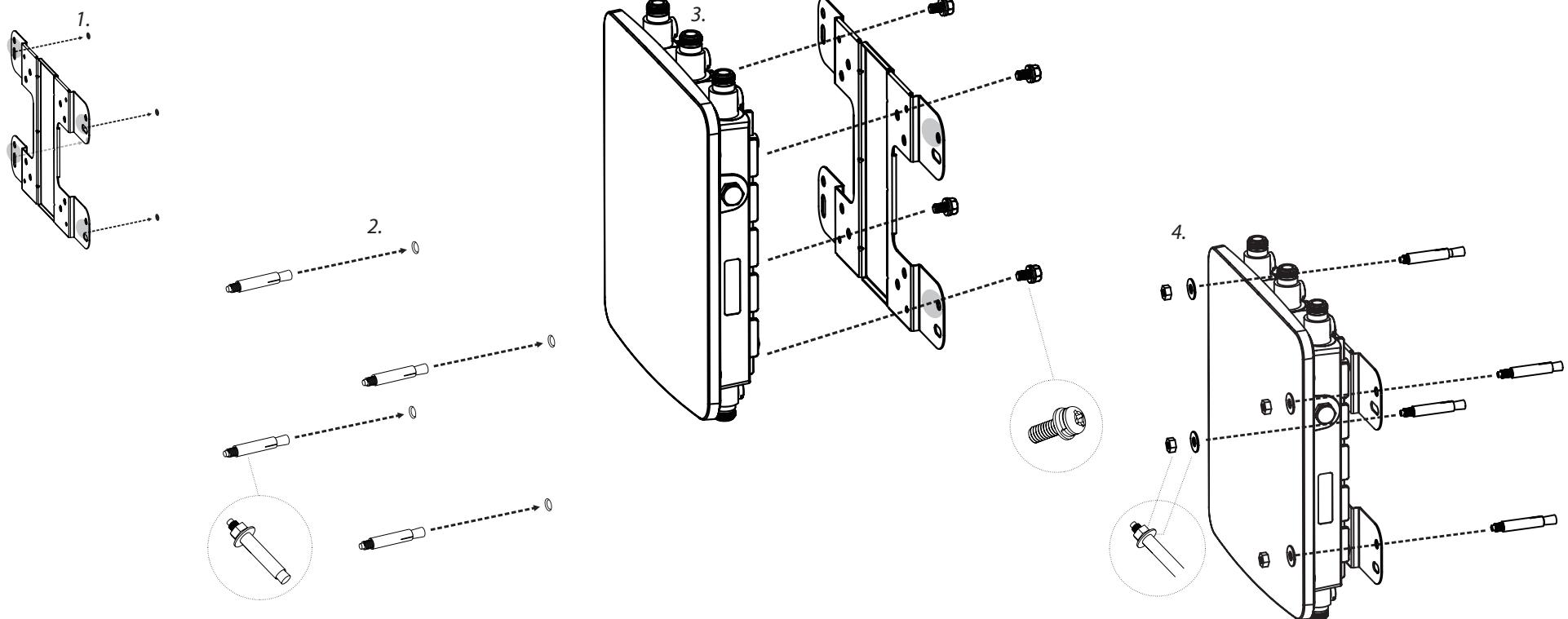
# Mounting the ENH1750EXT

Using the provided hardware, the ENH1750EXT can be attached to a wall or a pole.

## To attach the ENH1750EXT to a wall using wall mounting kit:

1. Mark the four locations of the mounting holes on the flat mounting surface.
2. Drill a 37 mm deep 8 mm hole in the markings and hammer the bolts into the openings.

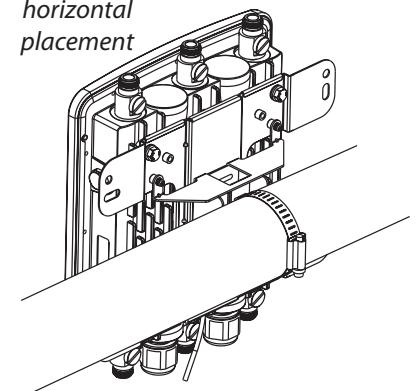
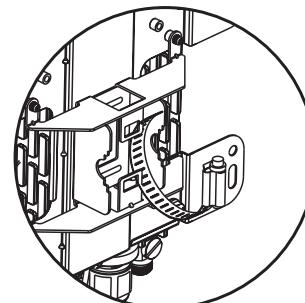
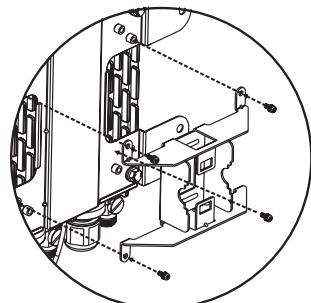
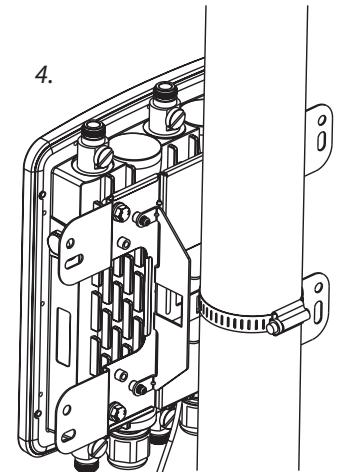
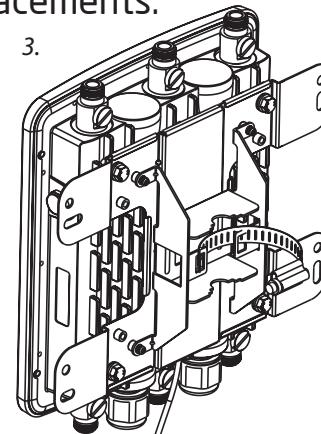
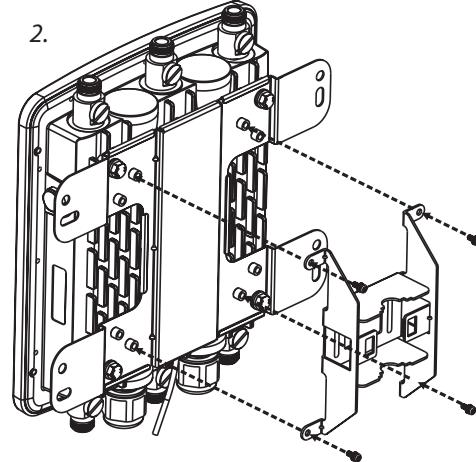
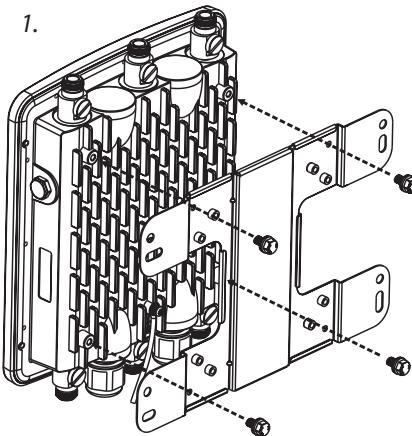
3. Place the lock and flat washers on the four hex cap screws and drive the screws to attach the bracket to the back of the Access Point.
4. Tighten the flat washers to secure the bracket to the mounting surface.



## To attach the ENH1750EXT to a pole using the provided pole mounting kit:

1. Place the lock and flat washers on the four hex cap screws and drive the screws to attach the bracket to the back of the Access Point.
2. Drive the four round head screws to attach the Pole Mount Bracket to the bracket.
3. Thread the open end of the Pole Strap through the two tabs on the Pole Mount Bracket .
4. Lock and tighten the Pole Strap to secure the Pole Mount Bracket to the pole.

**Note:** See diagram below for vertical and horizontal placements.



# Chapter 3

# Configuring Your Access Point



# Configuring Your Access Point

This section will show you how to configure the device using the web-based configuration interface.

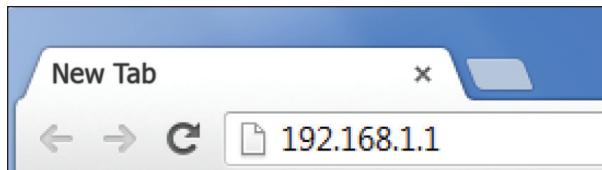
## Default Settings

Please use your Ethernet port or wireless network adapter to connect the Access Point.

IP Address	192.168.1.1
Username / Password	admin / admin

## Web Configuration

1. Open a web browser (Internet Explorer/Firefox/Safari/Chrome) and enter the IP Address **http://192.168.1.1**.



**Note:** If you have changed the default LAN IP Address of the Access Point, ensure you enter the correct IP Address.

2. The default username and password are **admin**. Once you have entered the correct username and password, click the **Login** button to open the web-based configuration page.



3. If successful, you will be logged in and see the ENH1750EXT User Menu.

A screenshot of the EnGenius ENH900EXT User Menu. The top navigation bar includes the device name "ENH900EXT", the model "Dual Radio Outdoor AP , 3T3R , 450Mbps + 450Mbps", and buttons for "Changes : 0", "Reset", and "Logout". On the left is a vertical sidebar with a blue header and white text, listing navigation options: Overview, Device Status, Connections, Network (selected), Basic, Wireless, Management (selected), Advanced, Time Zone, WiFi Scheduler, Tools, System Manager (selected), Account, Firmware, Log, and a separator line. The main content area is divided into sections: "Device Information" and "LAN Information - IPv4". The "Device Information" section lists details like Device Name (ENH900EXT), MAC Address (88:DC:96:06:3C:94), and Current Local Time (Wed Sep 25 03:04:37 UTC 2013). The "LAN Information - IPv4" section lists IP Address (192.168.1.1), Subnet Mask (255.255.255.0), Gateway (192.168.1.1), Primary DNS (0.0.0.0), Secondary DNS (0.0.0.0), and DHCP Client (Disable).

# Chapter 4

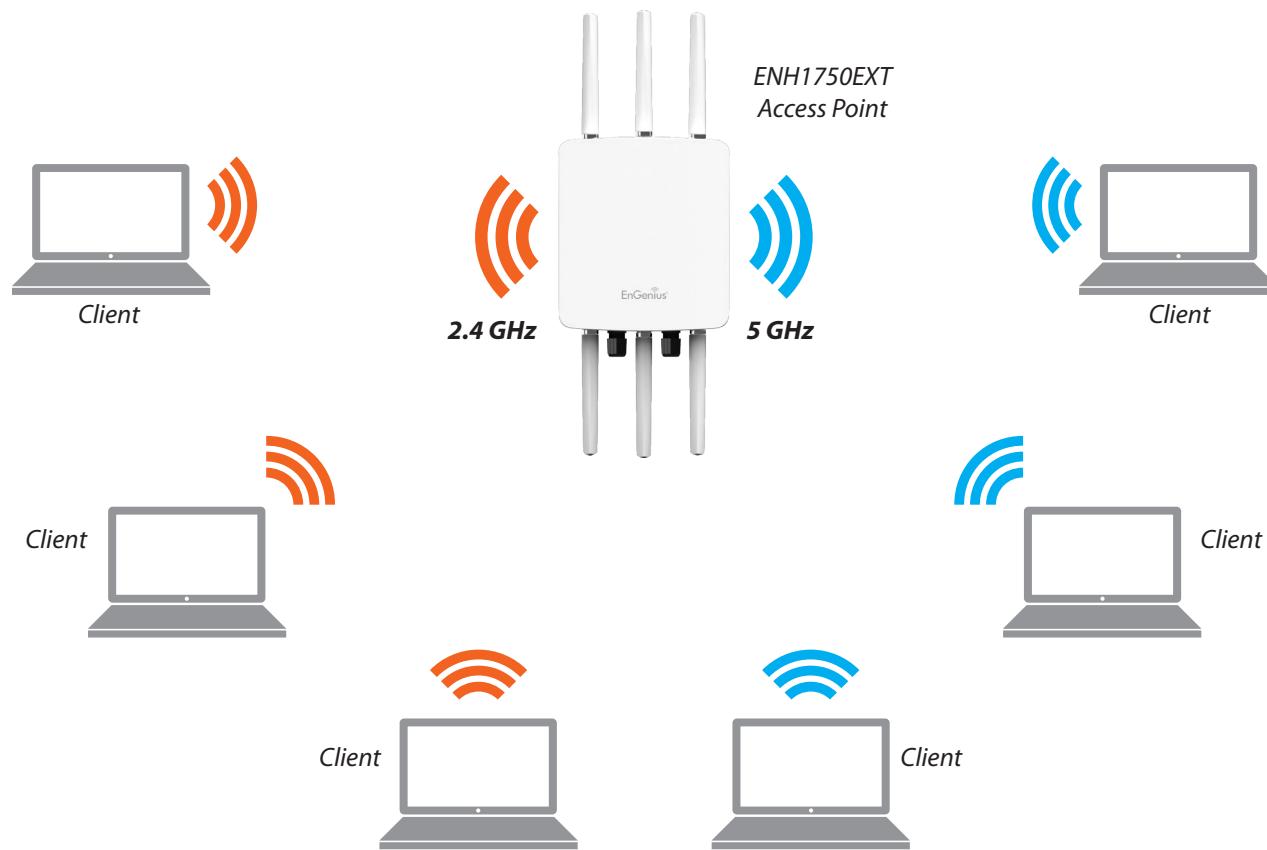
# Building a Wireless Network



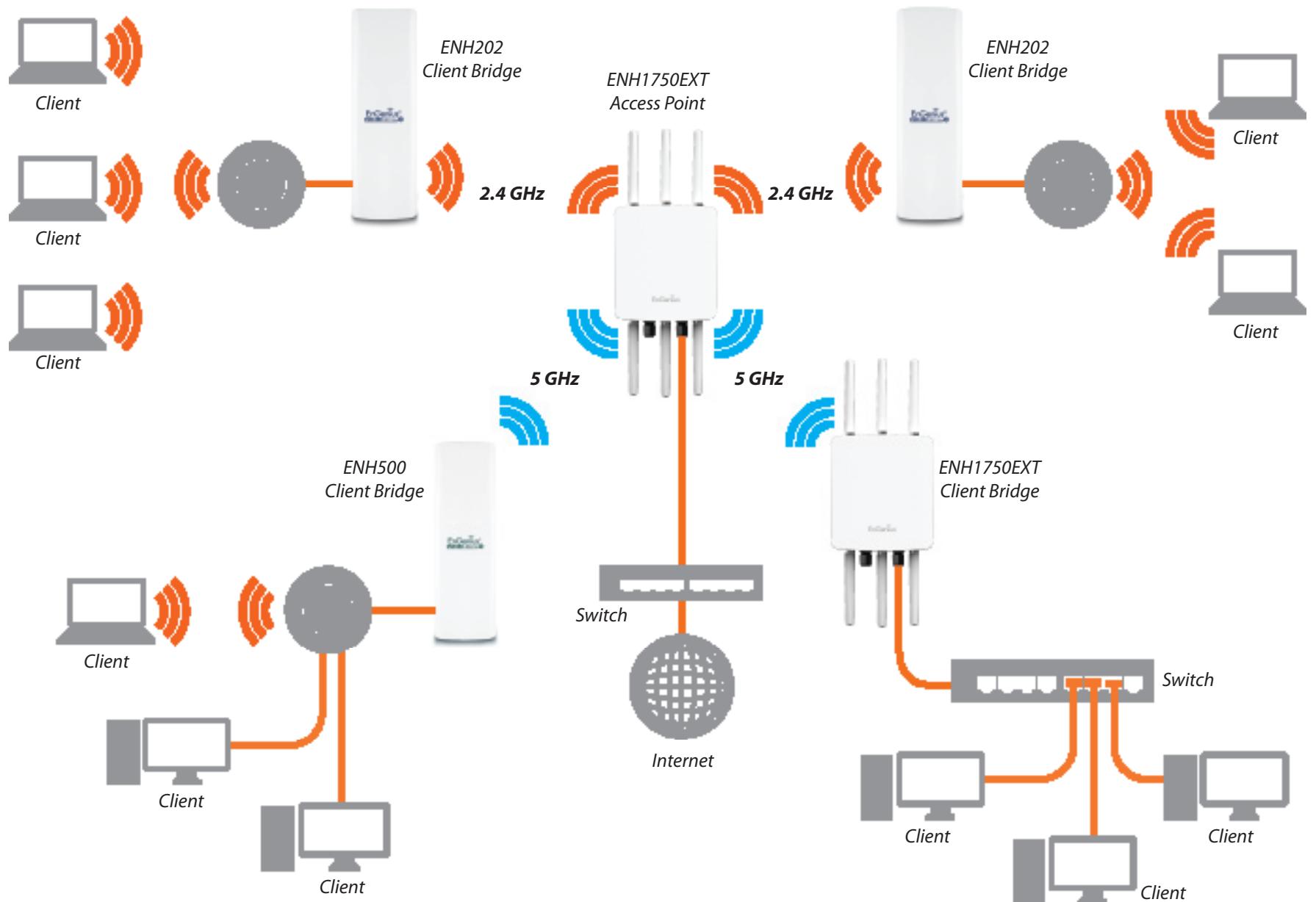
The ENH1750EXT has the ability to operate in various modes. This chapter describes the operating modes of the ENH1750EXT.

## Access Point Mode

In Access Point Mode, ENH1750EXT behaves like a central connection for stations or clients that support IEEE 802.11ac/a/b/g/n networks. The stations and clients must be configured to use the same SSID (Service Set Identifier) and security password to associate with the ENH1750EXT. The ENH1750EXT supports up to eight (8) SSIDs per band at the same time for secure access.

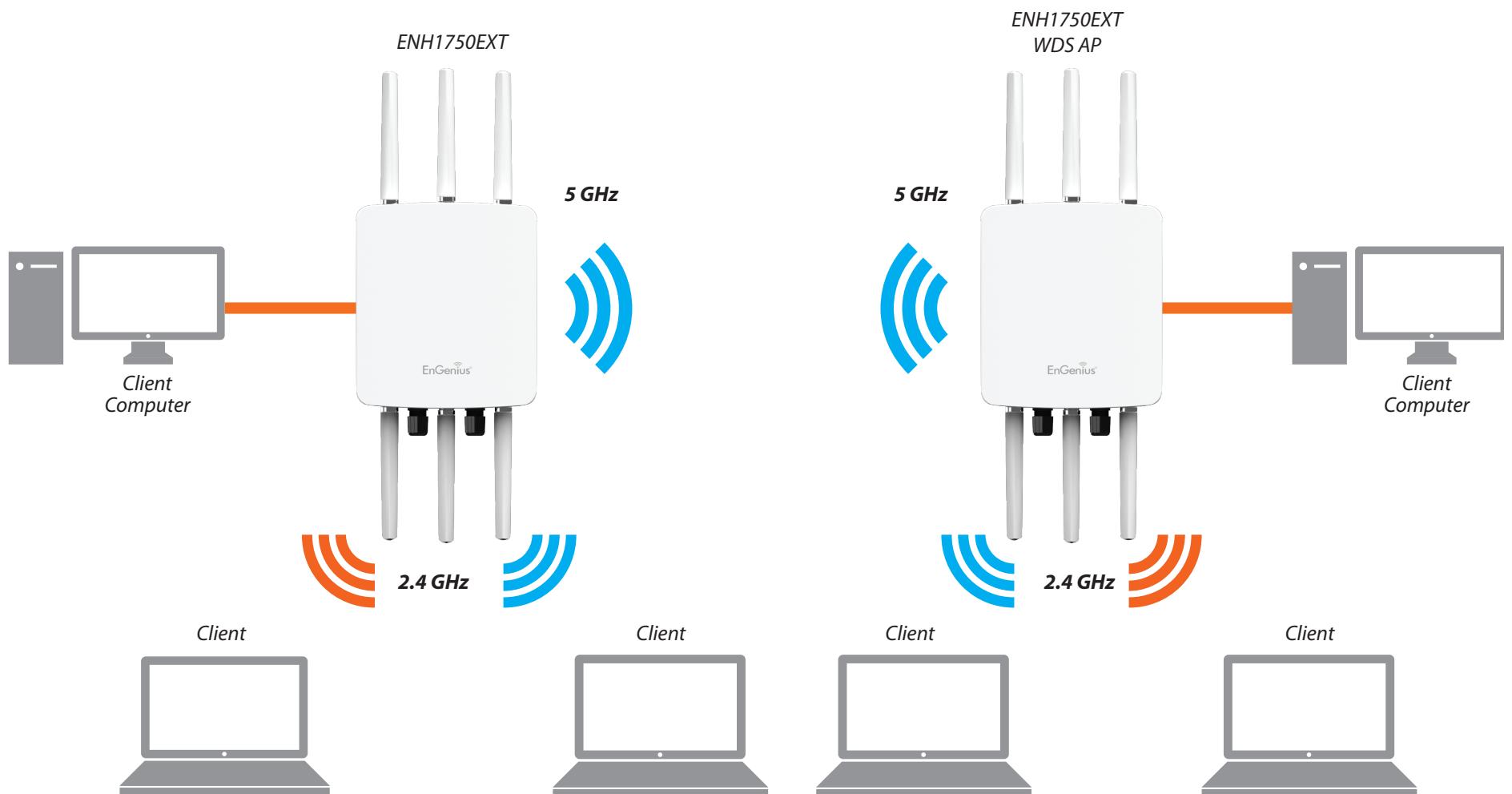


The ENH1750EXT can be used as a centralized Outdoor Access Point with which other EnGenius Wireless N 2.4 or 5 GHz Outdoor Client Bridges can associate; leveraging the long-range capability of their internal high-gain directional antennas, resulting in a very cost-effective solution to expand a company network over a multiple building campus.



## WDS AP Mode

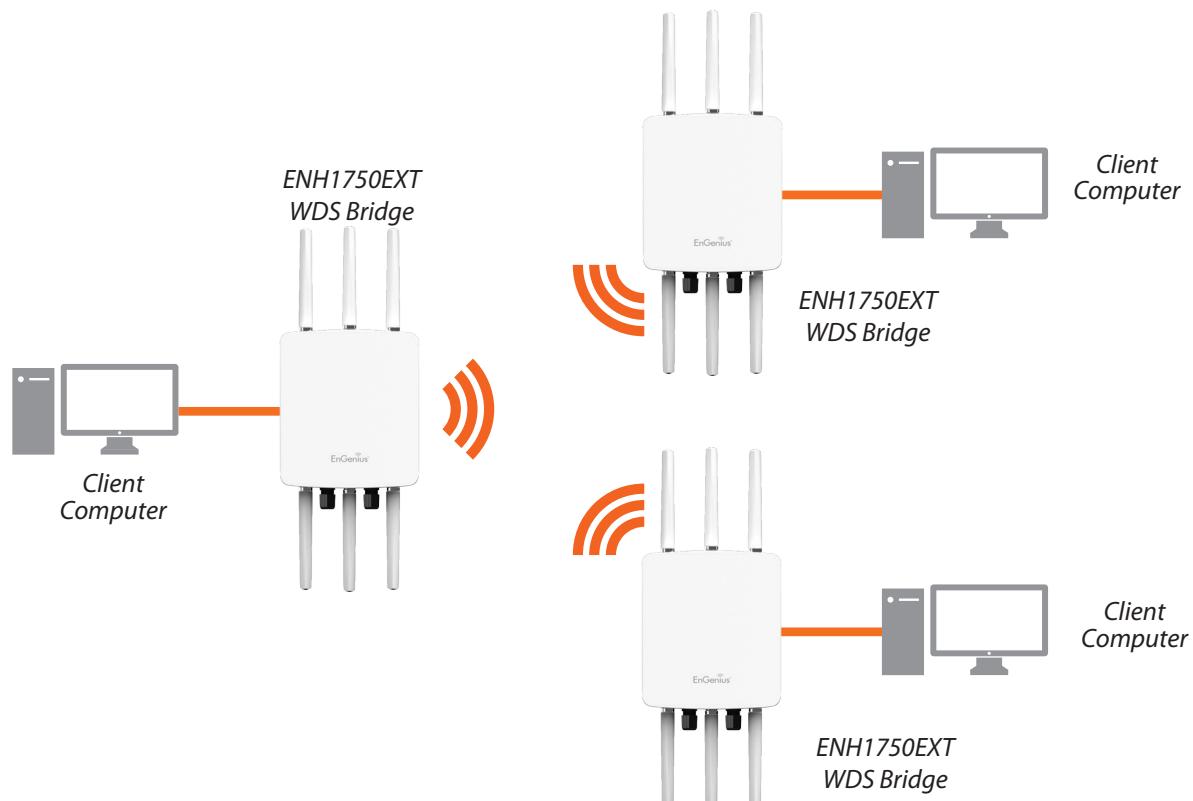
The ENH1750EXT also supports WDS AP mode. This operating mode allows wireless connections to the ENH1750EXT using WDS technology. In this mode, configure the MAC addresses in both Access Points to enlarge the wireless area by enabling WDS Link settings. WDS supports up to four (4) AP MAC addresses.



## WDS Bridge Mode

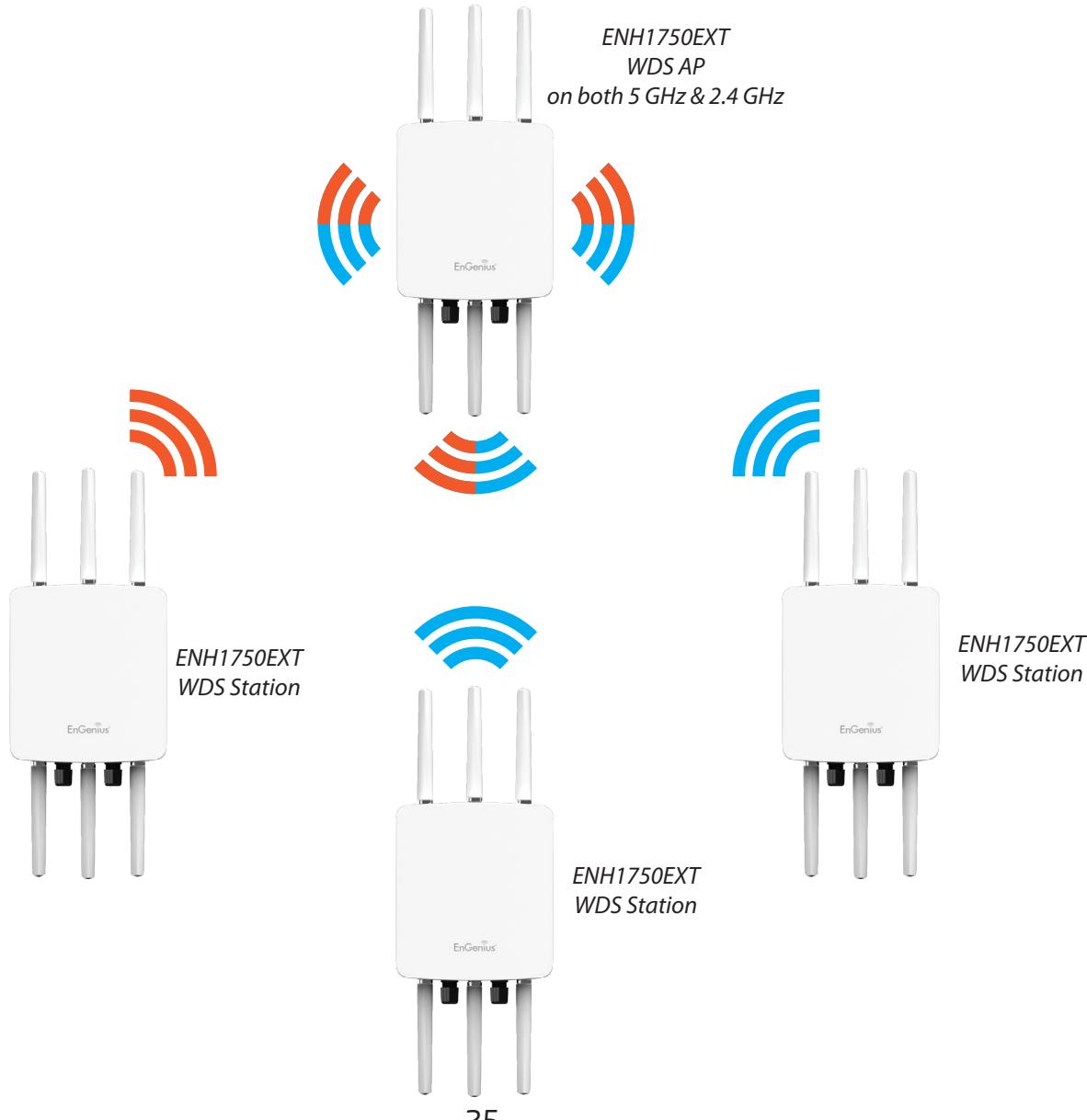
In WDS Bridge Mode, the ENH1750EXT can wirelessly connect different LANs by configuring the MAC address and security settings of each ENH1750EXT device. Use this mode when two wired LANs located a small distance apart want to communicate with each other. The best solution is to use the ENH1750EXT to wirelessly connect two wired LANs, as shown in the following diagram. WDS Bridge Mode can establish up to four (4) WDS links, creating a star-like network.

**Note:** WDS Bridge Mode does not act as an Access Point. Access Points linked by WDS are using the same frequency channel. More Access Points connected together may lower throughput. This configuration can be susceptible to generate endless network loops in your network, so it is recommended to enable the Spanning Tree feature to prevent this from happening.



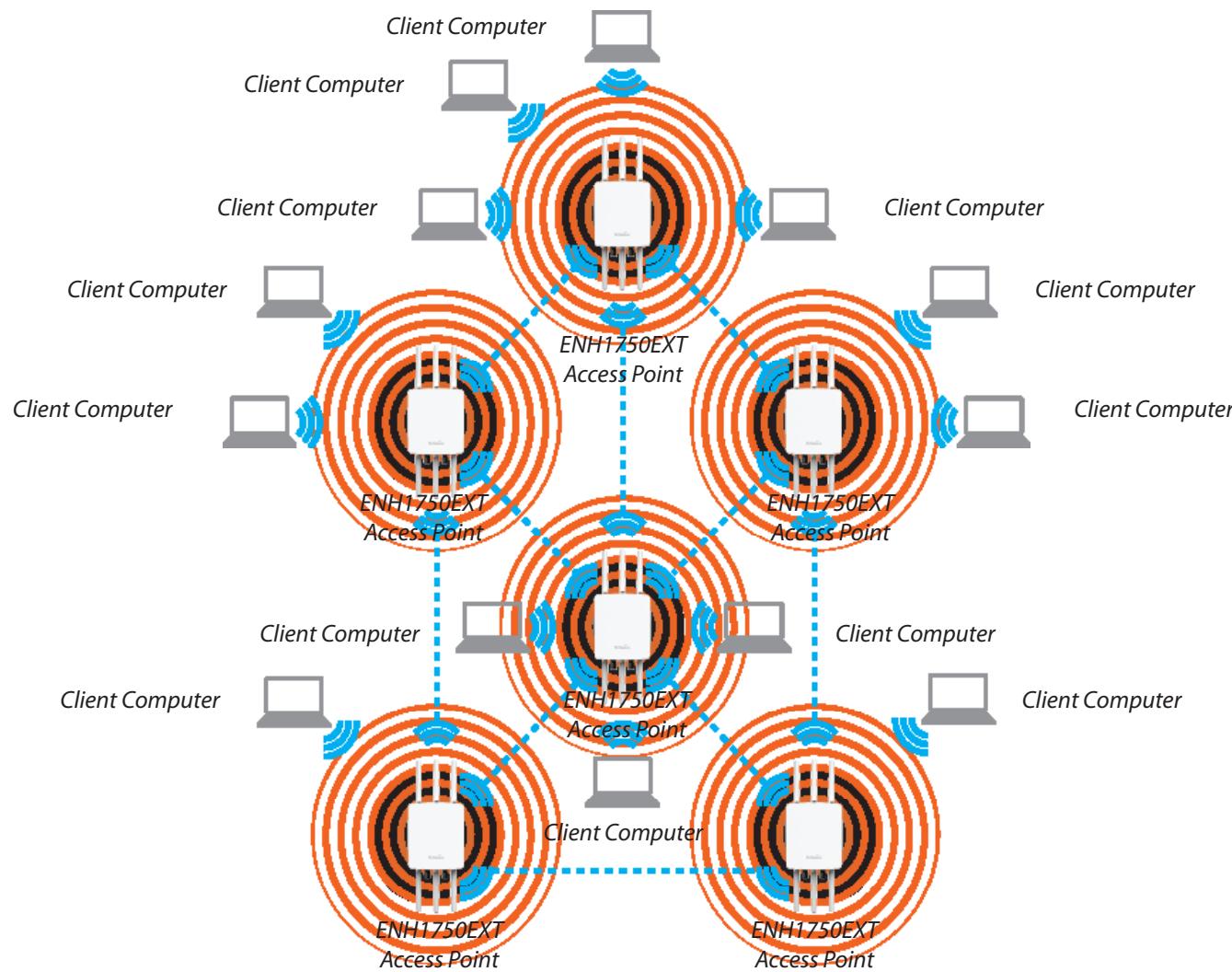
## WDS Station Mode

Station mode expands the WDS by receiving a wireless signal/service and sharing it through the Ethernet port.



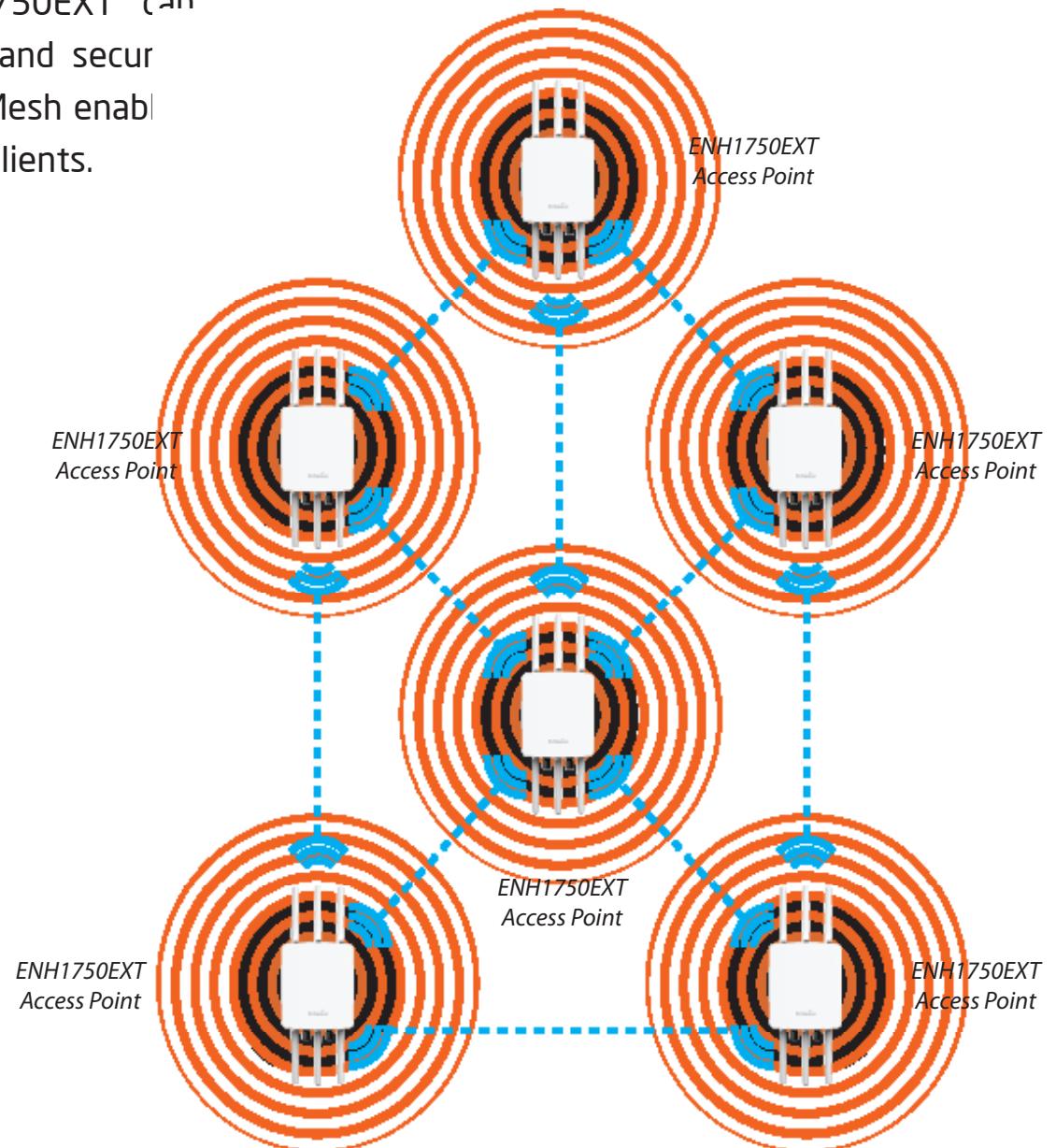
## AP Mesh Mode

Under the AP Mesh mode, the ENH1750EXT can be used as the central connection hub for station or clients that support IEEE 802.11 b/g/n network. Under this mode, the ENH1750EXT can be configured with the same Mesh SSID and security password in order to associate with other ENH1750EXTs, as well as connect with clients under the same SSID and encryption signatures. For example, you would use one band to connect Access Points in range with Mesh mode and the other band to broadcast traffic on the network.



## Mesh Only Mode

Under the Mesh-only mode, the ENH1750EXT can be configured with the same Mesh SSID and security password in order to associate with other Mesh enabled ENH1750EXTs, instead of connecting with clients.



# Chapter 5

# Status



# Main Status

## Save Changes

This page lets you save and apply the settings shown under **Unsaved changes list**, or cancel the unsaved changes and revert to the previous settings that were in effect.

The screenshot shows a web-based configuration interface. At the top, there's a blue header bar with the text "Dual Radio AP , 3T3R , 450Mbps + 450Mbps" and a "Changes : 3" button. Below the header, the word "Saved" is displayed. Underneath, a section titled "Unsaved changes list" contains the following configuration parameters:

```
network.lan.dns=0.0.0.0 0.0.0.0
network.lan.ipaddr=192.168.1.2
network.lan.accept_ra=0
```

At the bottom of the page are two buttons: "Apply Save" and "Revert".

## Device Status

Clicking the **Device Status** link under the **Overview** menu shows the status information about the current operating mode.

- The **Device Information** section shows general system information such as Device Name, MAC Address, Current Time, Firmware Version, and Management VLAN ID.

**Note:** VLAN ID is only applicable in Access Point or WDS AP mode.

Device Information	
Device Name	ENH900EXT
MAC Address	
- LAN	88:DC:96:06:3C:94
- Wireless LAN - 2.4GHz	88:DC:96:06:3C:96
- Wireless LAN - 5GHz	88:DC:96:06:3C:97
Country	Default
Current Local Time	Wed Sep 25 03:04:37 UTC 2013
Firmware Version	2.0.0
Management VLAN ID	4096

- The **LAN Information** section shows the Local Area Network settings such as the LAN IP Address, Subnet mask, and DNS Address.

LAN Information - IPv4	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
DHCP Client	Disable
Spanning Tree Protocol (STP)	Disable

- The **Wireless LAN Information 2.4 GHz/5 GHz** section shows wireless information such as Operating Mode, Frequency, and Channel. Since the ENH1750EXT supports multiple-SSIDs, information about each SSID, the ESSID, and security settings, are displayed

**Note:** Profile Settings are only applicable in Access Point and WDS AP modes.

Wireless LAN Information - 2.4GHz				
Profile	SSID	Security	VID	802.1Q
#1	EnGenius063C96_1-2.4GHz	None	1	Disable
#2	EnGenius063C96_2-2.4GHz	None	2	Disable
#3	EnGenius063C96_3-2.4GHz	None	3	Disable
#4	EnGenius063C96_4-2.4GHz	None	4	Disable
#5	EnGenius063C96_5-2.4GHz	None	5	Disable
#6	EnGenius063C96_6-2.4GHz	None	6	Disable

Wireless LAN Information - 5GHz				
Profile	SSID	Security	VID	802.1Q
#1	EnGenius063C97_1-5GHz	None	51	Disable
#2	EnGenius063C97_2-5GHz	None	52	Disable
#3	EnGenius063C97_3-5GHz	None	53	Disable
#4	EnGenius063C97_4-5GHz	None	54	Disable
#5	EnGenius063C97_5-5GHz	None	55	Disable
#6	EnGenius063C97_6-5GHz	None	56	Disable
#7	EnGenius063C97_7-5GHz	None	57	Disable
#8	EnGenius063C97_8-5GHz	None	58	Disable

- The **Statistics** section shows Mac information such as SSID, MAC address, RX and TX.

Statistics			
SSID	MAC	RX(Packets)	TX(Packets)
Ethernet	00:02:6F:FF:FF:FF	75.57KB(856 PKts.)	455.926KB(399 PKts.)
EnGenius063C96_1-2.4GHz	88:DC:96:06:3C:96	0KB(0 PKts.)	0.792KB(4 PKts.)
EnGenius063C97_1-5GHz	88:DC:96:06:3C:97	0KB(0 PKts.)	0KB(0 PKts.)

- The **Wireless Mesh Information - 2.4 GHz** section shows wireless information such as Operation Mode, Wireless Mode, Channel Bandwidth, Frequency/Channel, Mesh SSID and Mesh Security.

Wireless Mesh Information - 2.4GHz	
Operation Mode	mesh-up
Wireless Mode	802.11 b/g/n
Channel Bandwidth	20
Frequency/Channel	N/A
Mesh SSID	EnGeniusTech
Mesh Security	None

# Connection

## 2.4 GHz/5 GHz Connection List

Click the **Connection** link under the Overview tab to display the connection list of clients associated to the ENH1750EXT's 2.4 GHz/5 GHz bands, along with the MAC addresses and signal strength for each client. Clicking **Refresh** updates the client list.

**Note:** Only applicable in Access Point and WDS AP modes.

## 2.4 GHz/5 GHz WDS Link List

Click the connection link under the Overview menu. This page displays the current status of the WDS link, including WDS Link ID, MAC Address, Link Status and RSSI.

**Note:** Only applicable in WDS AP and WDS Bridge modes.

The screenshot shows the EnGenius ENH1750EXT web interface. The top navigation bar includes the brand logo, model name (ENH1750EXT Dual Radio Outdoor AP), and a status message (8T8R, 450Mbps + 450Mbps). On the right are buttons for 'Changes: 5', 'Reset', and 'Logout'. The left sidebar has a tree menu with 'Overview' (selected), 'Device Status', 'Connections', 'Network' (selected), 'Basic', 'Wireless', 'Management' (selected), 'Advanced', 'Time Zone', 'WiFi Scheduler', 'Tools', 'System Manager' (selected), 'Account', and 'Firmware'. The main content area has three sections: 'Mesh Direct Link Node - 2.4GHz' (empty table), '2.4GHz Mesh Node' (empty table), and 'Connection List - 2.4GHz' (table with one row). The 'Connection List - 2.4GHz' table has columns: S/N, MAC Address, TX, RX, RSSI, and Block. The single entry is 'EnGenius160795\_1 2.4GHz' with values '04:52:7E:80:C0:07', 'OKs', 'OKs', '-06dBm', and a 'Block' button.

S/N	MAC Address	TX	RX	RSSI	Block
EnGenius160795_1 2.4GHz	04:52:7E:80:C0:07	OKs	OKs	-06dBm	<input type="button" value="Block"/>

## The Mesh Link List

You can monitor the 2.4GHz Mesh Link List under the Status menu. The page will display the current status of the Mesh Links under Mesh AP mode and the Mesh nodes under Mesh Only mode.

**Note:** Only applicable in the Mesh AP and Mesh Only modes.

# Chapter 6

# Network



# Basic IP Settings

## IPv4/IPv6 Settings

This page allows you to modify the device's IP settings.

IPv4 Settings	
IP Network Setting	Static IP <input type="button" value="▼"/>
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0

IPv6 Settings	
IP Address	<input checked="" type="checkbox"/> Link-local Address
Subnet Prefix Length	
Gateway	
Primary DNS	
Secondary DNS	

**IP Network Settings:** Select whether the device IP address will use a static IP address specified in the IP address field or be obtained automatically when the device connects to a DHCP server.

**IP Address:** Displays the IP address of this device.

**Subnet Mask:** Displays the IP Subnet mask of this device.

**Gateway:** Displays the Default Gateway of this device. Leave it blank if you are unsure of this setting.

**Primary/Secondary DNS:** Displays the primary/secondary DNS address for this device.

**Save:** Click **Save** to confirm the changes.

## Spanning Tree Protocol (STP) Settings

This page allows you to modify the Spanning Tree settings. Enabling the Spanning Tree protocol will prevent network loops in your LAN network.

Spanning Tree Protocol (STP) Settings		
Status	Disable	
Hello Time	2	seconds (1-10)
Max Age	20	seconds (6-40)
Forward Delay	4	seconds (4-30)
Priority	32768	(0-65535)

**Spanning Tree Status:** Enables or disables the Spanning Tree feature.

**Hello Time:** Specifies Bridge Hello Time in seconds. This value determines how often the device sends handshake packets to communicate information about the topology throughout the entire Bridged Local Area Network.

**Max Age:** Specifies Bridge Max Age in seconds. If another bridge in the spanning tree does not send a hello packet for a long period of time, it is assumed to be inactive.

**Forward Delay:** Specifies Bridge Forward Delay in seconds. Forwarding delay time is the time spent in each of the Listening and Learning states before the Forwarding state is entered. This delay is provided so that when a new bridge comes onto a busy network, it analyzes data traffic before participating in the network.

**Priority:** Specifies the Priority Number. A smaller number has a greater priority than a larger number.

**Save:** Click **Save** to confirm the changes.

# Chapter 7

## 2.4 GHz & 5 GHz Wireless



# Wireless

## Wireless Settings

Wireless Settings	
Device Name	ENH1750EXT
Country / Region	United States
Band Steering	<input checked="" type="checkbox"/> Disable <b>NOTE:</b> In order for Band Steering function to work properly, both 2.4GHz and 5GHz SSID and security settings must be the same.

**Device Name:** Enter a name for the device. The name you type appears in SNMP management. This name is not the SSID and is not broadcasted to other devices.

**Band Steering:** Enable Band Steering to send 802.11n clients to the 5 GHz band, where 802.11b/g clients cannot go, and leave 802.11b/g clients in 2.4 GHz band to maintain optimal data traffic flow. Band Steering works within the Access Point by directing 5 GHz-capable clients to that band.

**Save:** Click **Save** to confirm the changes.

## 2.4 GHz/5 GHz Wireless Network

This page displays the current status of the Wireless settings of the ENH1750EXT.

	2.4GHz	5GHz
Operation Mode	Access Point <input checked="" type="checkbox"/> <input type="checkbox"/> Green 	Access Point <input checked="" type="checkbox"/> <input type="checkbox"/> Green 
Wireless Mode	802.11 B/G/N 	802.11 A/N 
Channel HT Mode	20/40 MHz 	40 MHz 
Extension Channel	Upper Channel 	Lower Channel 
Channel	Auto 	Auto 
Transmit Power	20 dBm 	20 dBm 
Data Rate	Auto 	Auto 
RTS / CTS Threshold (1 - 2346)	2346 	2346 
Client Limits	127  Enable 	127  Enable 
Aggregation	Enable  32 Frames 50000 Bytes(Max) 	Enable  32 Frames 50000 Bytes(Max) 
AP Detection	Scan 	Scan 
Distance (1-30km)	1 	1 

**OperationMode:** Select OperationMode. The ENH1750EXT supports two different operation modes: Access Point, or WDS (WDS AP, WDS Bridge, and WDS Station).

**Wireless Mode:** Supports 802.11b/g/n mixed mode in 2.4 GHz and 802.11ac/a/n mixed mode in 5 GHz.

**Channel HT Mode:** The default channel bandwidth is 20 MHz/40 MHz. The larger the channel, the greater the transmission quality and speed.

**Extension Channel:** Select the upper or lower channel.

Your selection may affect the Auto channel feature.

**Transmit Power:** Sets the power output of the wireless signal.

**Data Rate:** Select a data rate from the drop-down list. The data rate affects throughput of data in the ENH1750EXT. Select the best balance for you and your network but note that the lower the data rate, the lower the throughput, though transmission distance is also lowered.

**RTS/CTS Threshold:** Specifies the threshold package size for RTC/CTS. A smaller number causes RTS/CTS packets to be sent more often and consumes more bandwidth.

**Client Limits:** Limits the total number of clients.

**Aggregation:** Merges data packets into one packet. This option reduces the number of packets, but also increases packet sizes.

**AP Detection:** The AP Detection feature can select the best channel to use by scanning nearby areas for Access Points.

**Distance:** Specifies the distance between Access Points and clients. Note that longer distances may drop higher-

speed connections.

**Save:** Click **Save** to confirm the changes or **Cancel** to cancel and return to previous settings.

## 2.4 GHz/5 GHz SSID Profiles

Wireless Settings - 2.4GHz								
No.	Enable	SSID	Edit	Security	Suppressed SSID	Station Separation	Isolation	VID
1	<input checked="" type="checkbox"/>	EnGenius063C96_1-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
2	<input type="checkbox"/>	EnGenius063C96_2-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
3	<input type="checkbox"/>	EnGenius063C96_3-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
4	<input type="checkbox"/>	EnGenius063C96_4-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
5	<input type="checkbox"/>	EnGenius063C96_5-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
6	<input type="checkbox"/>	EnGenius063C96_6-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
7	<input type="checkbox"/>	EnGenius063C96_7-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7
8	<input type="checkbox"/>	EnGenius063C96_8-2.4GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8

Wireless Settings - 5GHz								
No.	Enable	SSID	Edit	Security	Suppressed SSID	Station Separation	Isolation	VID
1	<input checked="" type="checkbox"/>	EnGenius063C97_1-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	51
2	<input type="checkbox"/>	EnGenius063C97_2-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	52
3	<input type="checkbox"/>	EnGenius063C97_3-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	53
4	<input type="checkbox"/>	EnGenius063C97_4-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	54
5	<input type="checkbox"/>	EnGenius063C97_5-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55
6	<input type="checkbox"/>	EnGenius063C97_6-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	56
7	<input type="checkbox"/>	EnGenius063C97_7-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	57
8	<input type="checkbox"/>	EnGenius063C97_8-5GHz	<a href="#">Edit</a>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	58

**Current Profile:** You can configure up to sixteen (16) different SSIDs (eight (8) per band). If multiple client devices will be accessing the network, you can arrange the devices into SSID groups. Click **Edit** to configure the profile and check whether you wish to enable extra SSIDs.

**SSID:** Specifies the SSID for the current profile.

**Suppressed SSID:** Check this option to hide a SSID from clients. If checked, the SSID will not appear in the site survey.

**Station Separation:** Check the box to allow or prevent communication between client devices.

**VID:** Specifies the VLAN tag for each profile. If your netowrk includes VLANs, you can specify a VLAN ID for packets to pass through the Access Point with a tag.

**Wireless Security:** See the **Wireless Security** section on page 42.

**Isolation:** Check the box to restrict clients from communicating with different VIDs.

**Save:** Click **Save** to accept the changes.

## Wireless Security

The Wireless Security section lets you configure the ENH1750EXT's security modes: WEP, WPA-PSK, WPA2-PSK, WPA-PSK Mixed, WPA, WPA2, and WPA Mixed. It is strongly recommend that you use **WPA2-PSK**.

Wireless Security - 2.4G	
Security Mode	WEP
Auth Type	Open System
Input Type	Hex
Key Length	40/64-bit (10 hex digits or 5 ASCII char)
Default Key	1
Key1	
Key2	
Key3	
Key4	

**Auth Type:** Select **Open System** or **Shared Key**.

**Input Type:**

ASCII: Regular Text (recommended)

Hexadecimal Numbers (For advanced users)

**Key Length:** Select the desired option and ensure that wireless clients use the same setting. Your choices are 64, 128, and 152-bit password lengths.

**Default Key:** Select the Key you wish to be the default value. Transmitted data is **ALWAYS** encrypted using the Default Key; the other Keys are for decryption only. You must enter a Key Value for the Default Key.

**Encryption Key Number:** Enter the Key Value or values you wish to use. Only the Key selected as Default is required. The others are optional.

## Wireless MAC Filtering

Wireless MAC Filtering is used to allow or deny network access to wireless clients (computers, tablet PCs, NAS, smartphones, etc.) according to their MAC addresses. You can manually add a MAC address to restrict permission to access the ENH1750EXT. The default setting is: **Disable Wireless MAC Filter**.

**Note:** Only applicable in Access Point and WDS AP modes.

Wireless MAC Filter	
ACL Mode	Disabled
<input type="button" value="Add"/> : : : : : :	
#	MAC Address

**ACL Mode:** Determines whether network access is granted or denied to clients whose MAC addresses appear in the MAC address table on this page. Your choices are: Disabled, Deny MAC in the list, or Allow MAC in the list.

**MAC Address:** Enter the MAC address of the wireless client.

**Add:** Click **Add** to add the MAC address to the MAC address table.

**Delete:** Deletes the selected entries.

**Save:** Click **Save** to apply the changes.

# Wireless Advanced

## Wireless Traffic Shaping

Traffic shaping regulates the flow of packets leaving an interface to deliver improved Quality of Service.

Wireless Traffic Shaping		
Enable Traffic Shaping	Disable <input checked="" type="checkbox"/>	
Download Limit	100	Mbps (1-999)
Upload Limit	100	Mbps (1-999)

**Enable Traffic Shaping:** Check this option to enable Wireless Traffic Shaping.

**Download Limit:** Specifies the wireless transmission speed used for downloading.

**Upload Limit:** Specifies the wireless transmission speed used for uploading.

**Save:** Click **Save** to confirm the changes.

## WPA-PSK (WPA Pre-Shared Key) Encryption:

Wireless Security - 2.4G	
Security Mode	WPA2-PSK
Encryption	Both(TKIP+AES)
Passphrase	<input type="text"/>
Group Key Update Interval	3600

**Encryption:** Select the WPA encryption type you would like to use. Please ensure that your wireless clients use the same settings.

**Passphrase:** Wireless clients must use the same Key to associate the device. If using ASCII format, the Key must be from 8~63 characters in length. If using HEX format, the Key must be 64 HEX characters in length.

**Group Key Update Interval:** Specifies how often, in seconds, the Group Key changes.

## WPA Mixed-Enterprise: Access Point / WDS AP Mode

Wireless Security - 2.4G	
Security Mode	WPA Mixed-Enterprise
Encryption	Both(TKIP+AES)
Group Key Update Interval	3600
Radius Server	
Radius Port	1812
Radius Secret	
Radius Accounting	Disable
Radius Accounting Server	
Radius Accounting Port	1813
Radius Accounting Secret	
Interim Accounting Interval	600

**Encryption:** Select the WPA encryption type you would like to use. Please ensure that your wireless clients use the same settings.

**Radius Server:** Enter the IP address of the Radius server.

**Radius Port:** Enter the port number used for connections to the Radius server.

**Radius Secret:** Enter the secret required to connect to the Radius server.

**Group Key Update Interval:** Specifies how often, in seconds, the Group Key changes.

**Radius Accounting:** Enables or disables the accounting feature.

**Radius Accounting Server:** Enter the IP address of the Radius accounting server.

**Radius Accounting Port** Enter the port number used for connections to the Radius accounting server.

**Radius Accounting Secret:** Enter the secret required to connect to the Radius accounting server.

**Interim Accounting Interval:** Specifies how often, in seconds, the accounting data sends.

**Note:** 802.11n does not allow WEP/WPA-PSK TKIP/WPA2-PSK TKIP security mode. The connection mode will automatically change from 802.11n to 802.11g.

## Fast Roaming

Enable this feature to serve mobile client devices that roam from Access Point to Access Point. Some applications running on client devices require fast re-association when they roam to a different Access Point

Please enter the settings of the SSID and initialize the Security mode to WPA Enterprise, as well as setting the Radius Server. Users can then enable Fast Roaming and implement the advanced search feature.

Next, set the same Enterprise Encryption with the same SSID on other Access Points in the network and enable Fast Roaming. When the configuration is set on all the Access Points on the network, mobile client devices can run voice services that require fast roaming to prevent delay in conversation from Access Point to Access Point.

Fast Roaming	
Enable Fast Roaming	<input checked="" type="checkbox"/>
Advanced Search	<input checked="" type="checkbox"/>

**Enable Fast Roaming:** Enables or disables the Fast Roaming feature.

**Enable Advanced Search:** Enables or disables the Advanced Search feature.

## WDS Link Settings

Using the WDS (Wireless Distribution System) feature will allow a network administrator or installer to connect to Access Points wirelessly. Doing so will extend the wired infrastructure to locations where cabling is not possible or inefficient to implement.

**Note:** Compatibility between different brands and models of Access Points is not guaranteed. It is recommended that the WDS network be created using the same models for maximum compatibility.

**Also note:** All Access Points in the WDS network need to use the same Channel and Security settings.

To create a WDS network, please enter the MAC addresses of the Access Points that you want included in the WDS. There can be a maximum of four (4) Access Points.

**Note:** Only applicable in WDS AP and WDS Bridge modes.

## 2.4 GHz/5 GHz WDS Link Settings

WDS Link Settings - 2.4GHz						
Security		None				
AES Passphrase		(8-63 ASCII characters or 64 hexadecimal digits)				
ID	MAC Address					Mode
1	:	:	:	:	:	Disable
2	:	:	:	:	:	Disable
3	:	:	:	:	:	Disable
4	:	:	:	:	:	Disable

WDS Link Settings - 5GHz						
Security		None				
AES Passphrase		(8-63 ASCII characters or 64 hexadecimal digits)				
ID	MAC Address					Mode
1	:	:	:	:	:	Disable
2	:	:	:	:	:	Disable
3	:	:	:	:	:	Disable
4	:	:	:	:	:	Disable

**Security:** Select **None** or **AES** from the drop-down list.

**AES Passphrase:** Enter the Key Values you wish to use. Other Access Points must use the same Key to establish a WDS link.

**MAC Address:** Enter the Access Point's MAC address to where you want to extend the wireless area.

**Mode:** Select to disable or enable from the drop-down list.

**Save:** Click **Save** to confirm the changes.

## 2.4 GHz Mesh Link Settings

Users can choose the 2.4 GHz band for Mesh Mode.

Mesh Settings - 2.4GHz			
No.	SSID	Security	AES Passphrase
1	EnGeniusMesh	WPA2-PSK AES ▾ None WPA2-PSK AES	12345678

**AES Passphrase:** Enter the Key Values you wish to use. Other Access Points must use the same Key to establish a Mesh Link.

## Mesh Settings

ENH900EXI Dual Radio Outdoor AP, 2T2R, 450Mbps + 450Mbps Charger : 10 Reset Logout

Wireless Settings

Device Name: ENH900EXI  
Country / Region: Please Select a Country Code  
Band Steering: Enable

**NOTE:** In order for Band Steering function to work properly, both 2.4GHz and 5GHz SSID and Security settings must be the same.

	2.4GHz	5GHz
Operator Mode	Mesh-AP	Access Point
Wireless Mode	Access Point	WDS Access Point
Channel (11) Max	WDS Bridge	WDS Station
Extension Channel	WDS-AP	WDS-AP
Channel	Mesh-AP	All
Thermal Power	Mesh Only	All
Data Rate	All	All
RTS / CTS Threshold (1 - 2345)	2345	2345
Client Links	127	127

**Mesh SSID:** To create a Mesh network, please enter the Mesh SSID of the Access Point that you wish to include in the Mesh network.

**Security:** Select None or WPA2-PSK AES from drop-down list.

## Guest Network Settings

Adding a guest network allows visitors to use the Internet without giving out your office or company wireless security key. You can add a guest network to each wireless network for both the 2.4 GHz and 5 GHz frequency bands.

Guest Network Settings					
Enable	SSID	Edit	Security	Suppressed SSID	Station Separation
<input type="checkbox"/>	EnGenius-2.4GHz_GuestNet	<input type="button" value="Edit"/>	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	EnGenius-5GHz_GuestNetw	<input type="button" value="Edit"/>	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Manual IP Settings					
- IP Address	192.168.200.1				
- Subnet Mask	255.255.255.0				
Automatic DHCP Server Settings					
- Starting IP Address	192.168.200.100				
- Ending IP Address	192.168.200.200				
- WINS Server IP	0.0.0.0				

**SSID:** Specifies the SSID for the current profile.

**Suppressed SSID:** Check this option to hide the selected SSID from clients. If checked, the SSID will not appear in the site survey.

**Station Separation:** Check the box to allow or prevent communication between client devices.

**IP Address:** Displays the IP address of this device.

**Subnet Mask:** Displays the IP Subnet mask of this device.

**Starting IP Address:** The first IP Address in the range of

the addresses used by the DHCP server.

**Ending IP Address:** The last IP Address in the range of addresses assigned by the DHCP server.

## Fast Handover

Fast Handover	
Fast Handover	<input type="checkbox"/> Enable
RSSI	-70 RSSI(Range: -60 ~ -90)

**Fast Handover:** Enable the Fast Handover feature by ensuring that each client is served by at least one Access Point at any time. Access Points continuously monitor the connectivity quality of any client in their range and efficiently share this information with other Access Points in the vicinity of that client to coordinate which of them should serve the client best.

**RSSI:** Enter the RSSI (Received Signal Strength Index) in order to determine the handover procedure which the current wireless link will terminate. RSSI is an indication of the power level being received by the antenna. Therefore, the higher the RSSI number, the stronger the signal.

# Chapter 8

# Management



## Management VLAN Settings

This page allows you to assign a VLAN tag to packets sent over the network. A VLAN is a group of computers on a network whose software has been configured so that they behave as if they were on a separate Local Area Network (LAN). Computers on VLAN do not have to be physically located next to one another on the LAN.

**Note:** Only applicable in Access Point and WDS AP modes.

Management VLAN Settings

**CAUTION:** If you reconfigure the Management VLAN ID, you may lose connectivity to the access point. Verify that the switch and DHCP server can support the reconfigured VLAN ID, and then re-connect to the new IP address.

Management VLAN	Enable <input checked="" type="checkbox"/> 4096
-----------------	---

**Management VLAN:** If your network includes VLANs, you can enable the **Management VLAN ID** setting for packets passing through the Access Point with a tag.

**Save:** Click **Save** to confirm the changes or **Cancel** to cancel and return to previous settings.

**Note:** If you reconfigure the Management VLAN ID, you may lose your connection to the ENH1750EXT. Verify that the DHCP server supports the reconfigured VLAN ID and then reconnect to the ENH1750EXT using the new IP address.

# Advanced Settings

## SNMP Settings

This page allows you to assign the Contact Details, Location, Community Name, and Trap Settings for a Simple Network Management Protocol (SNMP). SNMP is a networking management protocol used to monitor network attached devices. SNMP allows messages (called protocol data units) to be sent to various parts of the network. Upon receiving these messages, SNMP compatible devices (called agents) return the data stored in their Management Information Bases.

SNMP Settings	
Status	Enable <input checked="" type="checkbox"/>
Contact	
Location	
Port	161
Community Name (Read Only)	public
Community Name (Read Write)	private
Trap Destination	
- Port	162
- IP Address	
- Community Name	public
SNMPv3 Settings	
- Status	Enable <input checked="" type="checkbox"/>
- Username	admin <small>(1-31 Characters)</small>
- Authorized Protocol	MDS <input checked="" type="checkbox"/>
- Authorized Key	12345678 <small>(8-32 Characters)</small>
- Private Protocol	DES <input checked="" type="checkbox"/>
- Private Key	12345678 <small>(8-32 Characters)</small>
- Engine ID	

**SNMP Enable/Disable:** Enables or disables the SNMP feature.

**Contact:** Specifies the contact details of the device.

**Location:** Specifies the location of the device.

**Community Name (Read Only):** Specifies the password for the SNMP community for read only access.

**Community Name (Read/Write):** Specifies the password for the SNMP community with read/write access.

**Trap Destination Address:** Specifies the IP address of the computer that will receive the SNMP traps.

**Trap Destination Community Name:** Specifies the password for the SNMP trap community.

**SNMPv3:** Enables or disables the SNMPv3 feature.

**User Name:** Specifies the username for SNMPv3.

**Auth Protocol:** Selects the authentication protocol type: **MDS** or **SHA**.

**Auth Key:** Specifies the authentication key.

**Priv Protocol:** Selects the privacy protocol type: **DES**.

**Priv Key:** Specifies the privacy key.

**Engine ID:** Specifies the engine ID for SNMPv3.

**Apply Save:** Click **Apply Save** to apply the changes.

## CLI Settings

CLI Setting	
CLI	<input checked="" type="checkbox"/>
SSH Setting	
SSH	<input checked="" type="checkbox"/>
HTTPS Setting	
HTTPS	<input checked="" type="checkbox"/>
HTTPS forward	<input checked="" type="checkbox"/>

**CLI:** The Command Line Interface (CLI) allows you to type commands instead of choosing them from a menu or selecting an icon to perform an action.

**SSH:** Enable Secure Shell (SSH) to make secure, encrypted connections in the network. Secure Shell is a network protocol that allows data to be exchanged using a secure channel between two network devices.

**HTTPS:** Enable HTTPS to transfer and display web content securely. The Hypertext Transfer Protocol over SSL (Secure Socket Layer) is a TCP/IP protocol used by web servers to transfer and display web content securely.

## Email Alerts

You can use the Email Alert feature to send messages to the configured email address when particular system events occur.

**Note:** Do **NOT** use your personal email address as it can unnecessarily expose your personal email login credentials. Use a separate email account made for this feature instead

Email Alert	
Status	<input checked="" type="checkbox"/> Enable
- From	<input type="text"/>
- To	<input type="text"/>
- Subject	[Email-Alert][ENH900EXT][00.02.6F:FF:FF] Config
Email Account	
- Username	<input type="text"/>
- Password	<input type="text"/>
- SMTP Server	<input type="text"/>
- Security Mode	None <input type="button"/>
Port: 25	<input type="button"/>
Send Test Mail	

**From:** Enter the email address to show the sender of the email.

**To:** Enter the address to receive email alerts.

**Subject:** Enter the text to appear in the email subject line.

**Username:** Enter the username for the email account that will be used to send emails.

**Password:** Enter the password for the email account that will be used to send emails.

**SMTP Server:** Enter the IP address or hostname of the outgoing SMTP server.

**Port:** Enter the SMTP port number to use for outbound emails.

# Time Zone

## Time Setting

This page allows you to set the internal clock of the ENH1750EXT.

The screenshot shows the 'Date and Time Settings' configuration page. It includes sections for manually setting the date and time, automatically getting the date and time from an NTP server, and selecting a time zone. The 'Time Zone' section also includes options for enabling daylight saving time and specifying start and end dates.

**Date and Time Settings**

- Manually Set Date and Time
  - Date: 2013 / 09 / 25
  - Time: 08 : 10 (24-Hour)
  -
- Automatically Get Date and Time
  - NTP Server: 209.81.9.7

**Time Zone**

- Time Zone: UTC+00:00 Gambia, Liberia, Morocco
- Enable Daylight Saving
  - Start: January 1st Sun 12 am
  - End: January 1st Mon 12 am

**Manually Set Date and Time:** Manually specify the date and time.

**Automatically Get Date and Time:** Select this option and enter the IP address of an NTP server or use the default NTP server to have the internal clock sync automatically.

**Enable Daylight Saving:** Check whether daylight savings applies to your area. If you select this option, you will need to enter start and stop times.

**Start:** Select the day, month, and time when daylight savings time starts in your region.

**End:** Select the day, month, and time when daylight savings time ends in your region.

# Auto Reboot Settings

You can specify how often you wish to reboot the ENH1750EXT.

Auto Reboot Setting									
Auto Reboot Status	<input style="width: 100px; height: 25px; border: none; background-color: #f0f0f0; border-radius: 5px; padding: 2px 10px; font-size: 10px; font-weight: bold; margin-right: 10px;" type="button" value="Disable"/>								
Timer	<input type="checkbox"/> Sunday	<input type="checkbox"/> Monday	<input type="checkbox"/> Tuesday	<input type="checkbox"/> Wednesday	<input type="checkbox"/> Thursday	<input type="checkbox"/> Friday	<input type="checkbox"/> Saturday	<input type="text" value="0"/> :	<input type="text" value="0"/>

**Auto Reboot Setting:** Enables or disables the Auto Reboot feature.

**Frequency of Auto Reboot:** Specifies how often you wish to reboot the ENH1750EXT by Min, Hour, Day or Week.

**Timer:** Select the day and enter the time you would like to reboot automatically.

**Save:** Click **Save** to apply the changes.

# Wi-Fi Scheduler

The Wi-Fi Scheduler can be created for use in enforcing rules. For example, if you wish to restrict web access to Mon-Fri from 3pm to 8pm, you could create a schedule selecting Mon, Tue, Wed, Thu and Fri while entering a Start time of 3pm and an End Time of 8pm to limit access to these times.

Wi-Fi Scheduler									
Status	<input type="checkbox"/> Enable <b>NOTE:</b> Please assure that the Time Zone Settings is synced with your local time when enabling the Wi-Fi Scheduler.								
Wireless Radio	2.4GHz								
SSID Selection	EnGenius063C96_1-2.4GHz								
Schedule Templates	<input type="button" value="Choose a template"/>								
Schedule Table	Day	Availability	Duration						
	Sunday	available	00	:	00	~	24	:	00
	Monday	available	00	:	00	~	24	:	00
	Tuesday	available	00	:	00	~	24	:	00
	Wednesday	available	00	:	00	~	24	:	00
	Thursday	available	00	:	00	~	24	:	00
	Friday	available	00	:	00	~	24	:	00
	Saturday	available	00	:	00	~	24	:	00

**Status:** Enables or disables the Wi-Fi scheduler feature.

**Wireless Radio:** Select 2.4 GHz or 5 GHz from the drop-down list for the preferred band type that you wish to be regulated.

**SSID Selection:** Select a SSID from the drop-down list to be

regulated.

**Schedule Templates:** Select a schedule template from the drop-down list.

**Day(s):** Place a checkmark in the boxes for the desired days or select the **All Week** from the drop-down list to select all seven days of the week.

**Duration:** The Start Time is entered in two fields. The first box is for hours and the second box is for minutes. The End Time is entered in the same format as the Start time.

# Tools

## Ping Test Parameters

This page allows you to analyze the connection quality of the ENH1750EXT and trace the routing table to a target in the network in the event of an issue.

Ping Test Parameters		
Target IP / Domain Name	<input type="text"/>	
Ping Packet Size	64	Bytes
Number of Pings	4	
<input type="button" value="Start"/>	<div style="border: 1px solid #ccc; height: 150px; width: 100%;"></div>	

**Start Ping:** Click **Start Ping** to begin the ping test.

**Traceroute Target:** Enter the IP address or domain name you wish to trace.

**Start Traceroute:** Click **Start Traceroute** to begin the trace route operation.

Traceroute Test Parameters		
Target IP / Domain Name	<input type="text"/>	
<input type="button" value="Start"/>	<input type="button" value="Stop"/>	<div style="border: 1px solid #ccc; height: 150px; width: 100%;"></div>

**Target IP:** Enter the IP address you would like to test.

**Ping Packet Size:** Enter the packet size of each ping.

**Number of Pings:** Enter the number of times you wish to ping.

## Speed Test Parameters/LED Control

This page allows you to power on/off the LEDs for Power, LAN interface, or 2.4 GHz/5 GHz WLAN interface for the ENH1750EXT.

Speed Test Parameters	
Target IP / Domain Name	
Time Period	20 sec
Check Interval	5 sec
<input type="button" value="Start"/>	
IPv4 Port	5001
IPv6 Port	5002

LED Control	
Power	<input type="button" value="Enable"/>
LAN	<input type="button" value="Enable"/>
WLAN-2.4GHz	<input type="button" value="Enable"/>
WLAN-5GHz	<input type="button" value="Enable"/>
<input type="button" value="Apply"/> Apply saved settings to take effect	

## LED Control

**Power:** Enables or disables the Power LED indicator.

**LAN:** Enables or disables the LAN LED indicator.

**WLAN-2.4 GHz:** Enables or disables the WLAN 2.4 GHz LED indicator.

**WLAN-5 GHz:** Enables or disables the WLAN 5 GHz LED indicator.

## Device Discovery

This page allows you to discover devices on the network and displays their: Operation Mode, IP Address, System MAC Address and Firmware version.

Device Discovery				
Device Name	Operation Mode	IP Address	System MAC Address	Firmware Version
<input type="button" value="Scan"/>				

# Account

This page allows you to change the ENH1750EXT username and password. By default, the username is: **admin** and the password is: **admin**. The password can contain from 0~12 alphanumeric characters and is case sensitive.

## Account Settings

Account Settings	
Administrator Username	admin
Current Password	*****
New Password	
Verify Password	

**Administrator Username:** Enter a new username for logging in into the New Name entry field.

**Current Password:** Enter the old password for logging in into the Old Password entry field.

**New Password:** Enter the new password for logging in into the New Password entry field.

**Verify Password:** Re-enter the new password in the Confirm Password entry field for confirmation.

**Apply:** Click **Apply** to apply the changes.

# Firmware

## Firmware Upgrade

This page allows you to upgrade the firmware of the ENH1750EXT. Download the latest firmware from engeniustech.com and save it to your computer.

Firmware Upgrade	
Current Firmware Version: 2.0.0	
Select the new firmware from your hard disk.	
Browse...	No file selected.
<input type="button" value="Upload"/>	

## To Perform the Firmware Upgrade:

1. Click the **Choose File** button and find the firmware file you downloaded from engeniustech.com.
2. Select the upgrade file. The name of the file will appear in the Upgrade File field.
3. Click the **Upload** button to commence the firmware upgrade.

**Note:** The device is unavailable during the Firmware upgrade process and must restart when the upgrade is completed. Any connections to or through the device will be lost.

# Backup/Restore

This page allows you to save the current device configurations. When you save your configurations, you also can reload the saved configurations into the device through the Restore Saved Settings from a file saved on your computer. If extreme problems occur, or if you have set the ENH1750EXT incorrectly, you can use the **Reset** button in the Revert to Factory Default Settings section to restore all the configurations of the ENH1750EXT to the original default settings.

**Backup Setting:** Click **Export** to save the current configured settings.

**Restore New Setting:** To restore settings that have been previously backed up, click **Browse**, select the file, and click **Restore**.

**Restore to User Default:** Click **Reset** button to restore the ENH1750EXT to its factory default settings.

Backup/Restore Settings		
<hr/>		
<b>Factory Setting</b>		
- Backup Setting	<input type="button" value="Export"/>	
- Restore New Setting	<input type="button" value="Browse..."/>	No file selected.
- Reset to Default	<input type="button" value="Import"/>	<input type="button" value="Reset"/>
<hr/>		
<b>User Setting</b>		
- Back Up Setting as Default	<input type="button" value="Backup"/>	
- Restore to User Default		<input type="button" value="Restore"/>
<hr/>		

# Log

# System Log

The ENH1750EXT automatically logs (records) events of possible interest in its internal memory. To view the logged information, click the **Log** under the System Manager menu. If there is not enough internal memory to log all events, older events are deleted from the log. When powered down or rebooted, the log will be cleared.

System Log	
Status	<input type="checkbox"/> Enable
Log type	<input type="button" value="All"/> <div style="margin-left: 10px;"> <input type="button" value="Refresh"/> <input type="button" value="Clear"/> </div>
	<pre>Sep 25 08:26:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3924 cmd s Sep 25 08:25:01 ENH900EXT user.notice root: starting ntpd Sep 25 08:25:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3909 cmd . Sep 25 08:24:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3902 cmd s Sep 25 08:22:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3895 cmd s Sep 25 08:20:01 ENH900EXT user.notice root: starting ntpd Sep 25 08:20:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3865 cmd s Sep 25 08:20:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3862 cmd . Sep 25 08:18:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3846 cmd s Sep 25 08:16:01 ENH900EXT cron.info crond[2539]: crond: USER root pid 3839 cmd s</pre>

# Remote Log

This page allows you to setup the Remote Log service for the ENH1750EXT.

Remote Log	<input type="button" value="Disable"/> <input type="button" value="Enable"/>
Log Server IP Address	<input type="text" value="0.0.0"/>

**Syslog:** Enables or disables the syslog function.

**Log Server IP Address:** Enter the IP address of the log server.

**Remote Log:** Enables or disables the Remote Log service.

**Apply:** Click **Apply** to apply the changes.

## Logout

Click **Logout** in the Management menu to logout. Confirm by clicking **OK**.

The screenshot shows the EnGenius ENH900EXT management interface. The top navigation bar includes the device name "ENH900EXT", model "Dual Radio Outdoor AP , 3T3R , 450Mbps + 450Mbps", and status indicators for "Changes : 0", "Reset", and "Logout". A sidebar on the left lists management categories: Overview, Device Status, Connections, Network (Basic, Wireless), Management (Advanced, Time Zone, WiFi Scheduler, Tools), and System Manager (Account, Firmware, Log). The main content area displays "Device Information" and "LAN Information - IPv4". The "Logout" button in the top right is highlighted with a blue box.

Are you sure you want to logout?

OK

Cancel

## Reset

In some circumstances, it may be required to force the device to reboot. Click on **Reset** to reboot the ENH1750EXT. Note that this will delete any configurations to their default settings. Please refer to page 61 to learn how to backup and save your customized configuration settings in the event of a Restore. Click Reboot the Device to confirm a reset or Restore to Factory Defaults to completely restore the device to its initial factory settings.

The screenshot shows the EnGenius ENH900EXT management interface. The top navigation bar includes the device name "ENH900EXT", model "Dual Radio Outdoor AP , 3T3R , 450Mbps + 450Mbps", status indicators for "Changes : 0", "Reset", and "Logout". A sidebar on the left lists management categories: Overview, Device Status, Connections, Network (Basic, Wireless), Management (Advanced, Time Zone, WiFi Scheduler, Tools), and System Manager (Account, Firmware, Log). The main content area displays "Device Information" and "System Commands". The "Reset" button in the top right is highlighted with a blue box.

### Reset

The System Settings section allows you to reboot the device, or restore the device to the factory default settings. Restoring the unit to the factory default settings will erase all settings, including any rules you have created.

System Commands

Reboot the Device

Restore to Factory Defaults

# Appendix



# Appendix A

## Federal Communication Commission 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



### 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.

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.

### IMPORTANT NOTE:

### 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 41 cm between the radiator & your body.

# Appendix B - CE Interference Statement

## Europe - EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- **EN60950-1**

Safety of Information Technology Equipment

- **EN50385**

Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz - 300 GHz)

- **EN 300 328**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

- **EN 301 893**

Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

- **EN 301 489-1**

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

- **EN 301 489-17**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 5GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

CE 0560

Česky [Czech]	[Jméno výrobce] tímto prohlašuje, že tento [typ zařízení] je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede [fabrikantens navn] erklærer herved, at følgende udstyr [udstyrets typebetegnelse] overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt [Name des Herstellers], dass sich das Gerät [Gerätetyp] in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab [tootja nimi = name of manufacturer] seadme [seadme tüüp = type of equipment] vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, [name of manufacturer], declares that this [type of equipment] is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente [nombre del fabricante] declara que el [clase de equipo] cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ [name of manufacturer] ΔΗΛΩΝΕΙ ΟΤΙ [type of equipment] ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.

Français [French]	Par la présente [nom du fabricant] déclare que l'appareil [type d'appareil] est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente [nome del costruttore] dichiara che questo [tipo di apparecchio] è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo [name of manufacturer / izgatavotāja nosaukums] deklarē, ka [type of equipment / iekārtas tips] atbilst Direktīvas 1999/ 5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo [manufacturer name] deklaruojam, kad šis [equipment type] atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart [naam van de fabrikant] dat het toestel [type van toestel] in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, [isem tal-manifattur], jiddikjara li dan [il-mudel tal-prodott] jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Direttiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, [gyártó neve] nyilatkozom, hogy a [... típus] megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym [nazwa producenta] oświadcza, że [nazwa wyrobu] jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	[Nome do fabricante] declara que este [tipo de equipamento] está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	[Ime proizvajalca] izjavlja, da je ta [tip opreme] v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	[Meno výrobcu] týmto vyhlasuje, že [typ zariadenia] spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	[Valmistaja = manufacturer] vakuuttaa täten että [type of equipment = laitteen tyypipimerkintä] tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar [företag] att denna [utrustningstyp] står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

# Appendix C - Professional Installation Instruction

## Installation Personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change these settings.

## Installation Location

The product shall be installed at a location where the radiating antenna can be kept 41cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

## External Antenna

Use only the antennas which have been approved by the applicant. Any non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/IC limit and is prohibited.

## Installation Procedure

Please refer to user's manual for details on proper installation methods.



### Warning:

Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in the relevant rules. A violation of these rules could lead to serious federal penalties.

# Instructions d'installation professionnelle

## Installation

Ce produit est destine a un usage specifique et doit etre installe par un personnel qualifie maitrisant les radiofrequences et les regles s'y rapportant. L'installation et les reglages ne doivent pas etre modifies par l'utilisateur final.

## Emplacement d'installation

En usage normal, afin de respecter les exigences reglementaires concernant l'exposition aux radiofrequences, ce produit doit etre installe de facon a respecter une distance de 41cm entre l'antenne emettrice et les personnes.

## Antenn externe

Utiliser unicamente les antennes approuvees par le fabricant. L'utilisation d'autres antennes peut conduire a un niveau de rayonnement essentiel ou non essentiel depassant les niveaux limites definis par FCC/IC, ce qui est interdit.

## Procedure d'installation

Consulter le manuel d'utilisation.



### Avertissement:

Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne depasse pas les limites en vigueur. La violation de cette regle peut conduire a de serieuses penalites federales.