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ExtremeWireless™ AP3935i & AP3935e Installation Guide

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Preface

Text Conventions

The following tables list text conventions that are used throughout this guide.

Table 1: Notice Icons

Icon	Notice Type	Alerts you to...
	General Notice	Helpful tips and notices for using the product.
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.
	New	This command or section is new for this release.

Table 2: Text Conventions

Convention	Description
`Screen displays`	This typeface indicates command syntax, or represents information as it appears on the screen.
The words **enter** and **type**	When you see the word "enter" in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says "type."
[Key] names	Key names are written with brackets, such as **[Return]** or **[Esc]**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **[Ctrl]**+**[Alt]**+**[Del]**
Words in italicized type	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.

Terminology

When features, functionality, or operation is specific to a switch family, such as ExtremeSwitching™ or Summit®, the family name is used. Explanations about features and operations that are the same across all product families simply refer to the product as the *switch*.

Providing Feedback to Us

We are always striving to improve our documentation and help you work better, so we want to hear from you! We welcome all feedback but especially want to know about:

- Content errors or confusing or conflicting information.
- Ideas for improvements to our documentation so you can find the information you need faster.
- Broken links or usability issues.

If you would like to provide feedback to the Extreme Networks Information Development team about this document, please contact us using our short online feedback form. You can also email us directly at internalinfodev@extremenetworks.com.

Getting Help

If you require assistance, contact Extreme Networks using one of the following methods:

- Global Technical Assistance Center (GTAC) for Immediate Support
  - Phone: 1-800-872-8440 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact
  - Email: support@extremenetworks.com. To expedite your message, enter the product name or model number in the subject line.
- GTAC Knowledge — Get on-demand and tested resolutions from the GTAC Knowledgebase, or create a help case if you need more guidance.
- The Hub — A forum for Extreme customers to connect with one another, get questions answered, share ideas and feedback, and get problems solved. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.
- Support Portal — Manage cases, downloads, service contracts, product licensing, and training and certifications.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related Return Material Authorization (RMA) numbers

Related Publications

ExtremeWireless and ExtremeWireless AP documentation can be found on Extreme Documentation page at: http://documentation.extremenetworks.com

Extreme recommends the following guides for users of ExtremeWireless products:

- *ExtremeWireless AP3935i & AP3935e Installation Guide*
- *ExtremeWireless AP3965i & AP3965e Installation Guide*
- *ExtremeWireless Appliance C5210 Quick Reference*
- *ExtremeWireless Appliance C5110 Quick Reference*
- *ExtremeWireless Appliance C4110 Quick Reference*
- *ExtremeWireless Appliance C25 Quick Reference*
- *ExtremeWireless Appliance C35 Quick Reference*
- *ExtremeWireless CLI Reference Guide*
- *ExtremeWireless End User License Agreements*
- *ExtremeWireless External Antenna Site Preparation and Installation Guide*
- *ExtremeWireless External Antenna with Wave 2 Site Preparation and Installation Guide*
- *ExtremeWireless Getting Started Guide*
- *ExtremeWireless Integration Guide*
- *ExtremeWireless Maintenance Guide*
- *ExtremeWireless Open Source Declaration*
- *ExtremeWireless User Guide*
- *IdentiFi Wireless WS-AP3865e Installation Guide*
- *IdentiFi Wireless WS-AP3825i & WS-AP3825e Installation Guide*
- *IdentiFi Wireless WS-AP3805i & WS-AP3805e Installation Guide*

1 About This Guide

The guide describes how to mount and connect cables to the ExtremeWireless AP3935 access point. In addition, this guide provides information on the product certifications and national approvals for the AP3935 access point.

Note
This guide does not provide information on configuration of the access points. For information on how to configure the access points, see the *ExtremeWireless User Guide*.

Who Should Use This Guide

Warning
Electrical Hazard: Only qualified personnel should install or service this unit.
Riesgo Electrico: Nada mas personal capacitado debe de instalar o darle servicio a esta unida.
Elektrischer Gefahrenhinweis: Installationen oder Servicearbeiten sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

How to Use This Guide

Read through this guide completely to familiarize yourself with its contents and to gain an understanding of the features and capabilities of the AP3935 access point. A general working knowledge of data communications networks is helpful when setting up this product.

This preface provides an overview of this guide, defines the conventions used in this document, and instructs how to obtain technical support from Extreme Networks .

2 Introduction

This installation guide provides an overview and installation instructions for the ExtremeWireless Access Points AP3935i and AP3935e.

About the AP3935i and AP3935e

The AP3935 is designed to extend your Wireless LAN around indoor locations. The AP3935 supports the 802.11ac and 802.11n wireless standards, with full backward compatibility with legacy 802.11a, and 802.11b/g devices.

The AP3935 interoperates fully with Wireless LANs, including support for VoWLAN, branch office mode, guest services, RTLS, availability, and mobility features. The operating temperature: 0 - 50C.

The AP3935i and AP3935e have the following features in common:

- Both support two MIMO 4x4 (up to four 802.11ac spatial streams).
- They provide two single band radios for dual-band, concurrent operation, optimized for indoor antenna coverage:
  - 5 GHz (Radio 1) in any of the following modes: IEEE802.11ac, a/b/g and/or n
  - 2.4 GHz (Radio 2) in any of the following modes: IEEE802.11ac, a/b/g and/or n
- They are enclosed in a rectangular, compact case.
- Both models can be mounted on walls and drop/suspended ceilings.
- They provide 80 MHz Bandwidth at 2.4/5 GHz operation (Channel Bonding).
- Power is provided through two Ethernet ports (LAN port). This is the preferred method of powering the AP on ceiling and wall installations. The AP3935 can also be powered by an external DC power supply by plugging the supply's input jack into the DC-In port.

Note
The AP3935 comes in two models: the AP3935i has 8 internal single-band antennas while the AP3935e has 8 external RSMA connectors for connecting external antennas. Within this document, any reference to AP3935 applies to both models.

AP3935 Overview

The AP3935 access point is available in two models:

- AP3935i contains eight internal single-band antennas
- AP3935e contains eight external RSMA connectors for optional external antennas, for greater range and coverage versatility

Figure 1: ExtremeWireless AP3935i Top View and Figure 2: ExtremeWireless AP3935e Top View on page 10 show the top view of each model.

Figure 3: AP3935 Bottom View on page 11 shows the location of the LAN ports, console port, external power supply connector, and reset switch.The bottom panel is the same for both models, but there are no external antenna RSMA connectors on the AP3935i.

Figure 4: AP3935 LEDs on page 11 illustrates the LEDs on the AP3935.

Figure 1: ExtremeWireless AP3935i Top View

Figure 2: ExtremeWireless AP3935e Top View

Figure 3: AP3935 Bottom View

1	Reset Button	3	LAN Ethernet Ports 1 and 2
2	Console Port	4	External Power DC 12V

AP3935 LED Indicators

Both models of the AP3935 have the LED indicators, shown in Figure 4: AP3935 LEDs on page 11 below. The LEDs provide status information, described in Table 3: AP3935 LED Indications on page 12, on the current state of the AP3935. For more information, see the *ExtremeWireless User Guide*.

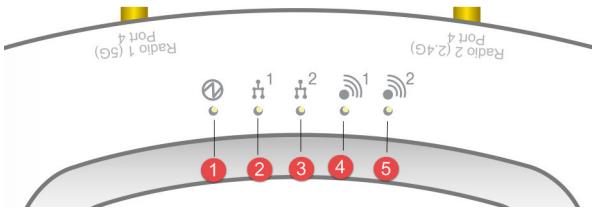


Figure 4: AP3935 LEDs

Table 3: AP3935 LED Indications

LED	Status	Description
1 (AP status)	On Green	Indicates the AP3935 is working normally.
	Flashing Green	Indicates: • running a self test • loading software program
	On Amber	Indicates a CPU/system failure.
2 (Ethernet link state) LAN 1	On Green	Indicates a valid 10Mbps or 100Mbps Ethernet link.
	On Amber	Indicates a valid 1Gbps Ethernet link.
	Off	Indicates the link is down.
3 (Ethernet link state) LAN 2	On Green	Indicates a valid 10Mbps or 100Mbps Ethernet link.
	On Amber	Indicates a valid 1Gbps Ethernet link.
	Off	Indicates the link is down.
4 (Radio 2 status)	On Green	Indicates Radio 2 is enabled.
	Off	Indicates Radio 2 is not on.
5 (Radio 1 status)	On Green	Indicates Radio 1 is enabled.
	Off	Indicates Radio 1 is not on.

Architectural Features

Console Port

The AP3935 i and e models both include a single RJ45 console port (shown in Figure 3: AP3935 Bottom View on page 11) for debug purposes. This port enables connection of a console device to the AP through a serial cable. The console device can be a PC or workstation running a VT-100 terminal adapter emulator, or a VT-100 terminal.

LAN Port

The AP3935 has two 10/100/1000BaseT RJ45 LAN ports (see Figure 3: AP3935 Bottom View on page 11) that can be attached directly to a 10/100/1000BaseT LAN segment. This segment must conform to the IEEE 802.3 or 802.3u specifications.

The APs appear as Ethernet nodes and perform a bridging function by moving packets from the wired LAN to remote workstations on the wireless infrastructure.

The LAN ports also support power over Ethernet PoE 802.3at for full performance; (802.3af for low performance mode). Refer to Installation on page 14, for information on supplying power to the AP network port from a network device, such as a switch, that provides Power over Ethernet (PoE).

Reset Switch

The AP3935 provides a Reset Switch to reset or restore factory default configurations. Use a pointed object to press the switch button through the hole. (See Figure 3: AP3935 Bottom View on page 11.) If you hold down the button for less than five seconds, the AP performs a software interrupt, causing it to drop all connections and reset. If you hold the button down for five seconds or more, any configuration changes are removed, and the factory default configuration restores to the AP.

Kensington Lock Slot

There is a slot for a Kensington lock on the side of the AP. See the Kensington lock documentation for instructions on use of the lock.

Figure 5: Kensington Lock slot

3 Installation

This chapter provides installation instructions for the ExtremeWireless AP3935 access points and an optional AP power supply.

Unpacking the AP3935

To unpack the access point:

1 Open the box and remove the packing material protecting the AP.
2 Verify that the carton contains the items listed listed below:

Table 4: AP3935 Package Contents

Quantity	Item
1	AP3935
1	Ceiling Mounting bracket
2	Wall mounting screws and plastic anchors
1	AP3935 Quick Reference Guide
1	Hardware bag

3 Perform a visual inspection of the AP for any signs of physical damage. Contact ExtremeWireless if there are any signs of damage. Refer to Getting Help on page 5 for details.

Accessories

The following accessories are available for the ExtremeWireless AP3935. For ordering information, contact your Extreme Networks sales representative.

- 12V DC power supply (see External Power Supplies on page 26)
- External antennas (AP3935e models only. See External Antennas on page 33.)
- Optional Wall Bracket: WS-MBI-WALL03 (PN 30513).

Access Point Installation Procedures

Warning

Electrical Hazard: Only qualified personnel should install or service this unit.

Riesgo Electrico: Nada mas personal capacitado debe de instalar o darle servicio a esta unida.

Elektrischer Gefahrenhinweis: Installationen oder Servicearbeiten sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

These procedures describe how to attach the AP3935 to a drop ceiling (flat or protruded), and how to mount the AP to a wall.

Mounting the AP3935 to a Drop Ceiling

To mount the AP to a drop ceiling, use the mounting bracket that is provided with the AP.

1 Slide the ceiling mount bracket base into the metal base. The locking tab fits into the groove in the fins.

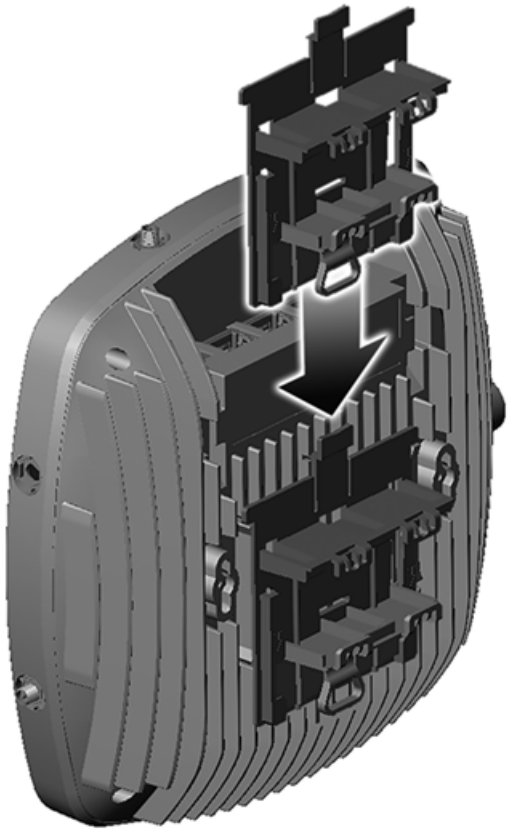


Figure 6: Attaching Mount Bracket to the Access Point

2 Remove the ceiling panels around the drop ceiling T-bar rail and verify that the Ethernet cable can reach the AP at the mounting point.

3 Slightly lift the movable T-bar locking tab to increase the space between the stationary and the movable T-bar sides of the bracket. Then hook the stationary end of the T-bar bracket onto the T-bar, as shown in Figure 7: Attaching the AP3935i on a Drop Ceiling T-bar Rail on page 16.

4 While holding the AP with one hand, reach the other hand over the T-bar and grasp both the stationary and movable sides of the bracket. Push the bracket parts together so they both grasp the T-bar and the locking tab clicks into place.

5 While still holding the AP, rock it back and forth to ensure that it is securely mounted.

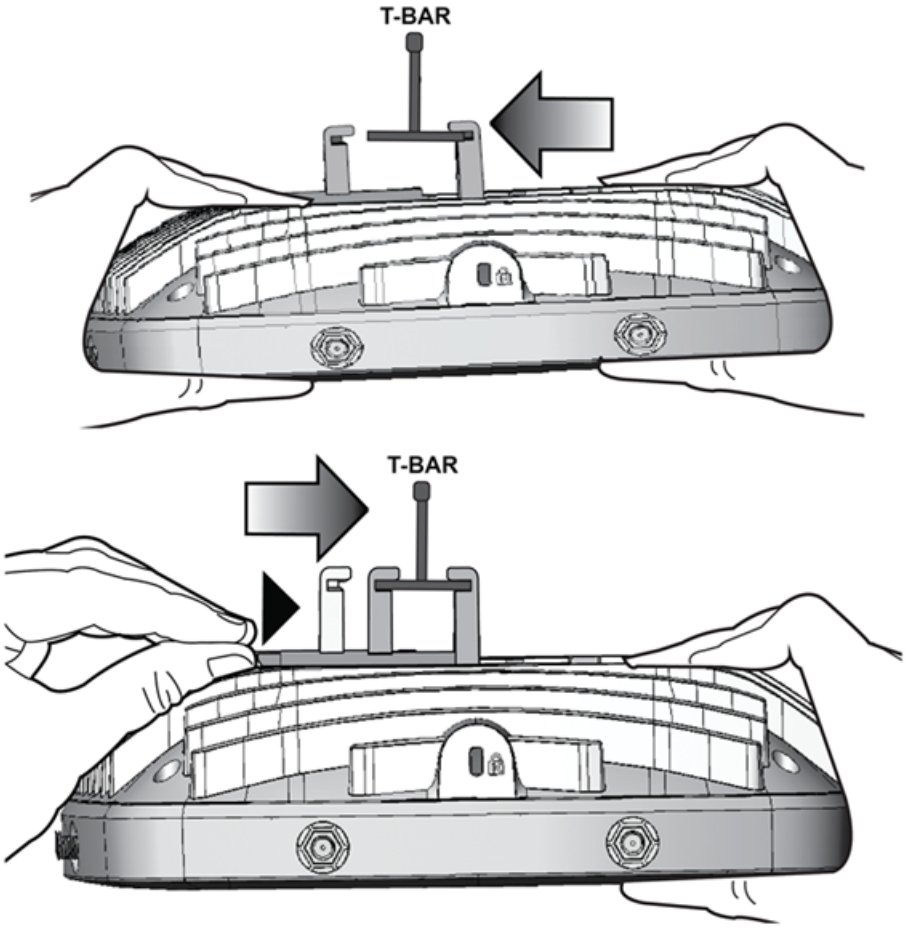


Figure 7: Attaching the AP3935i on a Drop Ceiling T-bar Rail

6 Make a hole through the ceiling panel closest to the power slot on the AP. Run the Ethernet cable through the hole and into an RJ45 LAN port in the recessed connector bay.

7 If necessary, cut the tiles for the cables, attach the cables to the AP, and replace the tiles.

8 Replace the displaced ceiling panels.

Mounting the AP3935 to a Wall

Screws for attaching the AP to a wall are supplied with the product. Use the following procedure to mount the AP3935 to a flat wall:

1 Determine the spot on the wall to mount the AP. Pick a spot near the ceiling, but in reach of the Ethernet cable and if you are using external power, near a wall power outlet.
2 To mount the AP directly on the wall with two screws, use the provided template and mark the two drill holes on the wall. In drywall, the drill holes should be 6mm in diameter.
3 Drill two holes in the wall to match the center of the two keyhole slots in the back of the AP bracket.
4 Screw the anchors into the holes until they are flush with the wall.
5 Screw the provided mounting screws into the anchors with the head protruding about 5/32” from the anchor to the top of the screw.

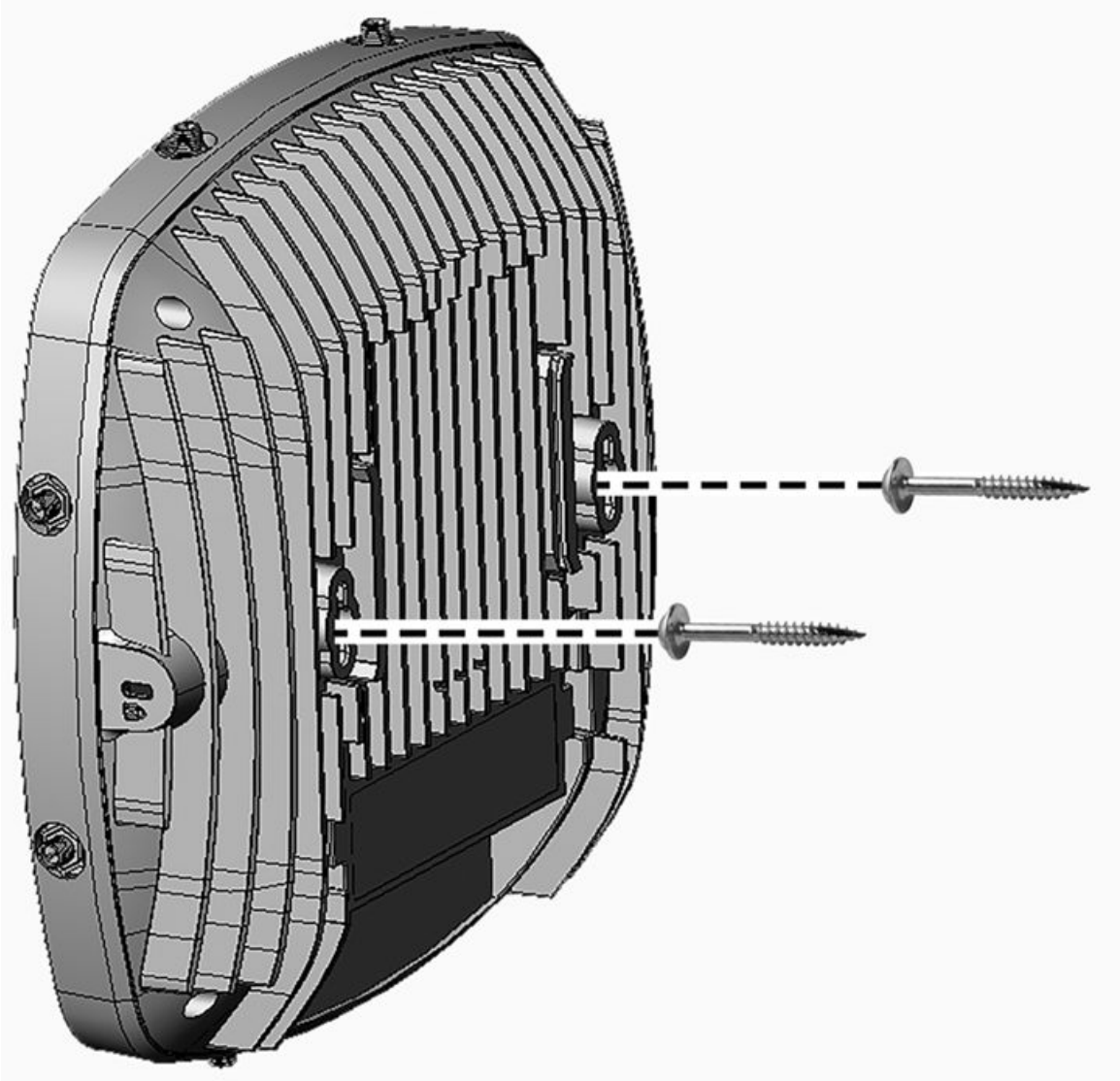


Figure 8: Mounting the AP3935 to a Flat Wall

6 Place the back of the AP against the wall with the protruding mounting screw heads fitting through the keyhole slots on the back of the AP. Slide the AP down until the AP rests on the mounting screw heads.

7 When mounting the AP on a wall or flat ceiling, a Kensington lock provides extra stability.

Note
The mounting bracket (30513, WS-MBI-WALL03) is optional when mounting the AP on a wall. If mounting the AP on a flat ceiling, we recommend using the mounting bracket (30513, WS-MBI-WALL03) for added security.

Mounting the AP using the Optional Mounting Bracket

When mounting the AP to a flat ceiling (or a wall), use the mounting bracket (30513, WS-MBI-WALL03) and two metal screws. Figure 9: Mounting sequence with mounting bracket on page 18 shows an exploded view of the mounting bracket method:

1 The wall bracket provides four attachment holes. Using the bracket as a template, place the bracket and mark the drill holes.
2 Hold the AP/bracket assembly so the drilled holes are in the center of the bracket holes.
3 Insert and thread the screws so they support the bracket.

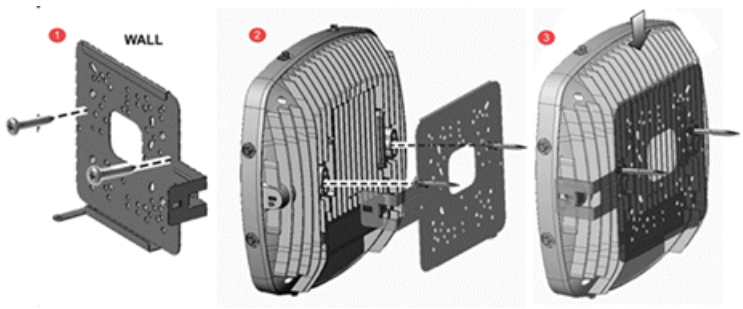


Figure 9: Mounting sequence with mounting bracket

4 Align the AP on the posts and slide down.
5 Use a screw driver to attach the captive screw. Do NOT exceed 9 in-lbs of torque.
6 Use a Kensington lock for added security (see Figure 5: Kensington Lock slot on page 13). The Kensington lock, or an equivalent, must be used for all ceiling mounted applications of AP3935 with WS-MBI-WALL03.

LAN/Console Connections

Note
LAN/Console connectors with shrouds will not fit into the ports. An optional jumper cable may be used or the shroud removed.

The AP3935 has 2 LAN ports and a Console port. Power is provided through two Ethernet ports (LAN ports). This is the preferred method of powering the AP on ceiling and wall installations.

The AP can be powered in one of the following ways:

- Power over Ethernet (PoE)

Power is provided through the RJ45 Ethernet port (LAN port) on the top of the AP. This is the preferred method of powering the AP on ceiling and high wall installations.

- Power by external power supply

  Where a PoE-capable Ethernet connection is unavailable or impractical, an external 12 VDC power supply may be ordered separately to power the AP from a standard AC wall outlet.

Figure 10: 3935e Access Point Bottom View

1	Reset Button	3	LAN Ethernet Ports 1 and 2
2	Console Port	4	External Power 12 VDC

Connecting an External DC Power Supply to the AP3935

There are no wall mounts for the 12 VDC power supplies. To connect a power supply to the AP for everyday operation, mount the AP and plug the power supply into the DC-IN port (Figure 10: 3935e Access Point Bottom View on page 19). If you have taken the AP off its mount for configuration and maintenance, the AP still needs power during the maintenance. Provide power from a DC power supply or PoE LAN connector.

Configuring AP3935e Channel Settings

The AP3935e must be installed by a professional installer. Before starting the installation, the installer needs to determine and configure the following:

Determining the Antenna Model

The professional installer needs to determine antenna models and the number of antenna ports for that model. The number of ports can be determined from visual inspection of the antenna or from the antenna model. For information about antenna models, see Table 8: Certified External Antennas for AP3935e on page 33.

Configuring Radio RF Port

The professional installer configures Radio RF ports where antenna ports will be connected.

To configure radio RF ports through the ExtremeWireless Assistant:

1 Log into the Wireless Assistant.
2 From the top menu, click **AP**.

The Wireless AP screen is displayed.

3 Select **APs** in the left pane, then in the Wireless AP list, click the Wireless AP whose properties you want to modify.

The AP Properties tab displays Wireless AP information.

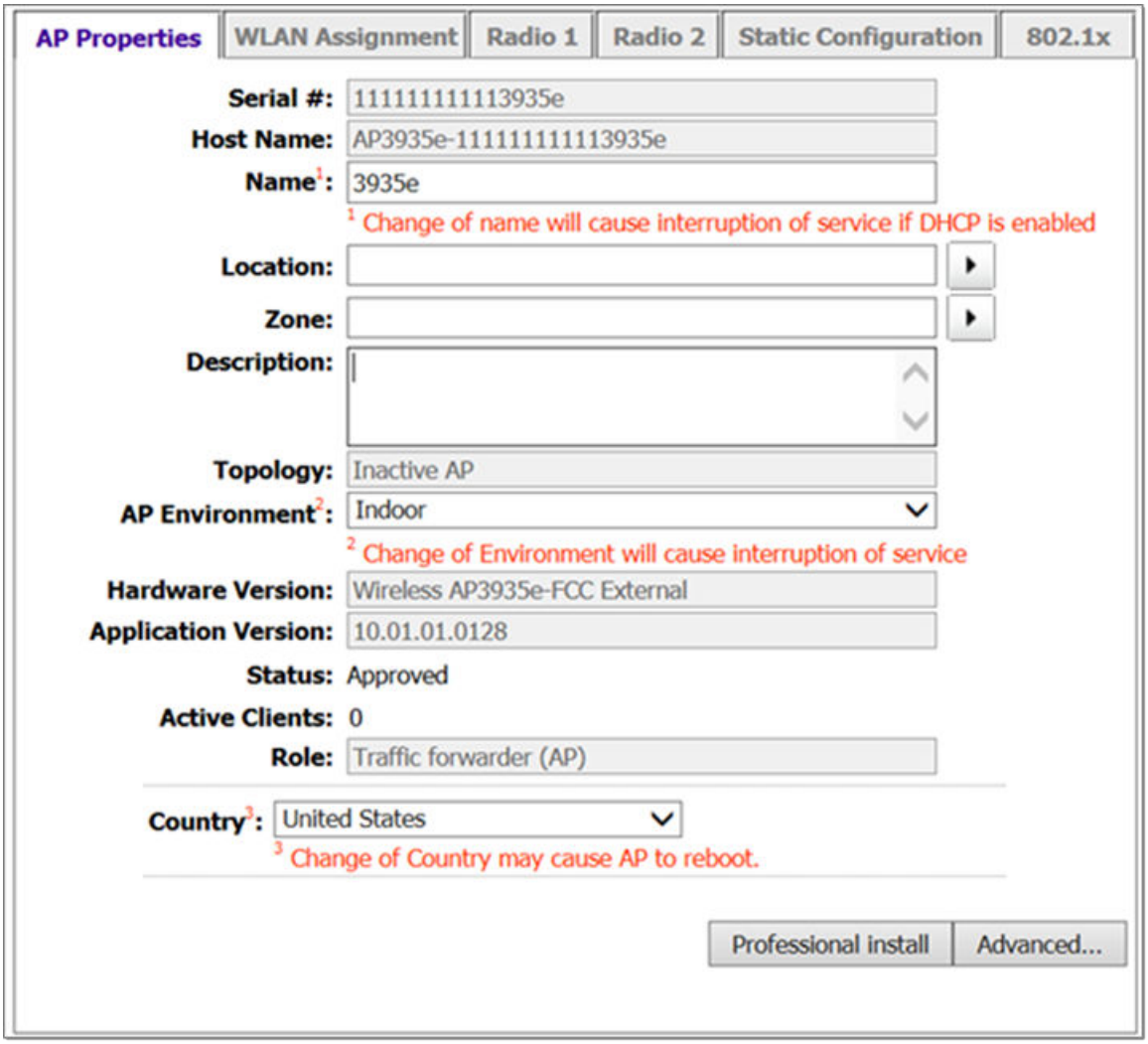


Figure 11: AP Properties for the AP3935e

4 When configuring the AP3935e, click Professional Install.

The Professional Install dialog displays to configure the external antennas.

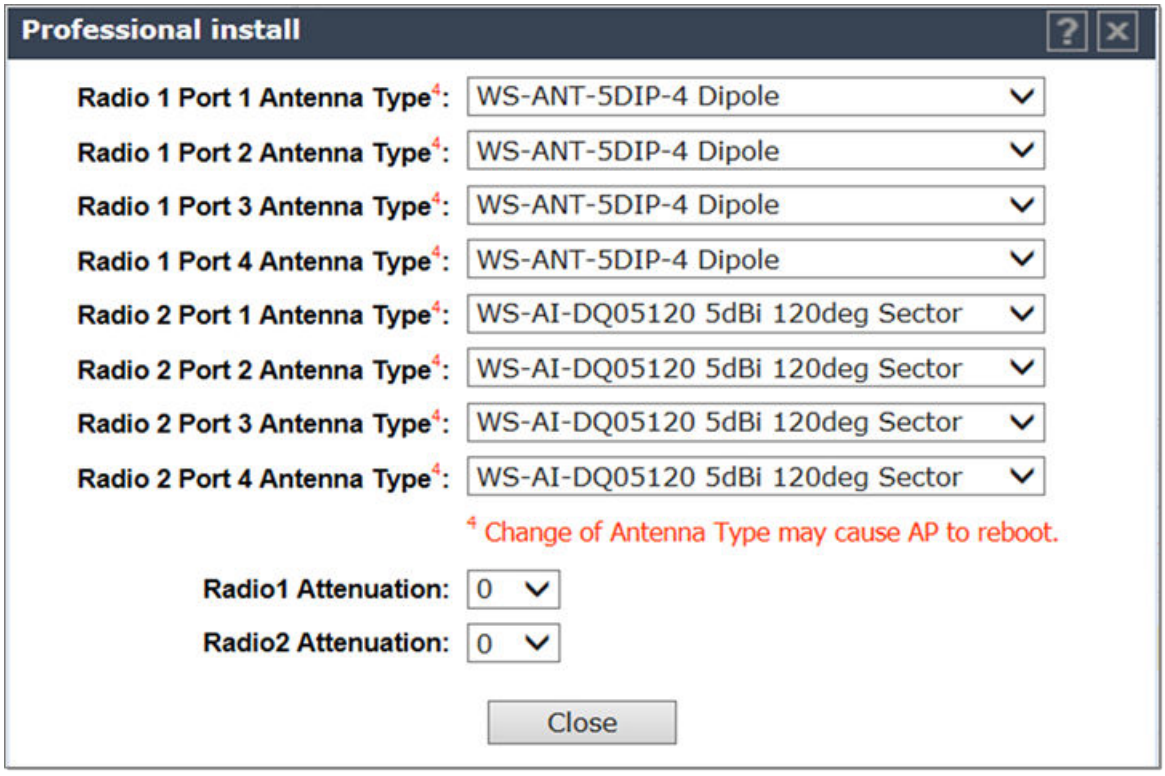


Figure 12: Professional Install Dialog for the AP3935e

5 Modify the Radio Antenna Type as follows:

- If attaching quad port antennas, configure all four RF ports with the same antenna type.
- If attaching triple port antennas, configure ports 1, 2, and 3 with the same antenna type and configure port 4 (non-active port) to **No Antenna**.
- If attaching dual port antennas, configure ports 1 and 2 with the same antenna type and configure ports 3 and 4 (non-active ports) to **No Antenna**.
- If attaching single port antennas, configure port 1to the selected antenna type and configure ports 2-4 (non-active ports) to **No Antenna**.

6 Modify Radio Attenuation as follows:

- Add any attenuation (dBm non-negative) due to cable loss or attenuator added to the line between AP port and the antenna.
- Same attenuator loss is assumed and is required for all 4 ports of the radio except when one or more ports is not connected to the antenna and is properly terminated as describe in next step.
- The professional installer is responsible for accurately configuring port Attenuation. Never configure port attenuation higher than the actual attenuation between the AP port and the antenna.

7 Install a terminator (rf 50 Ohm) on all ports where an antenna is not connected.

Configuring Radio Channel

1 Click **APs** in the left pane, then in the Wireless AP list, click the Wireless AP whose properties you want to modify.

The AP Properties tab displays Wireless AP information.

2 Click the Radio 1 tab.

3 Configure the desired **Radio Mode**, and **Channel Width**.

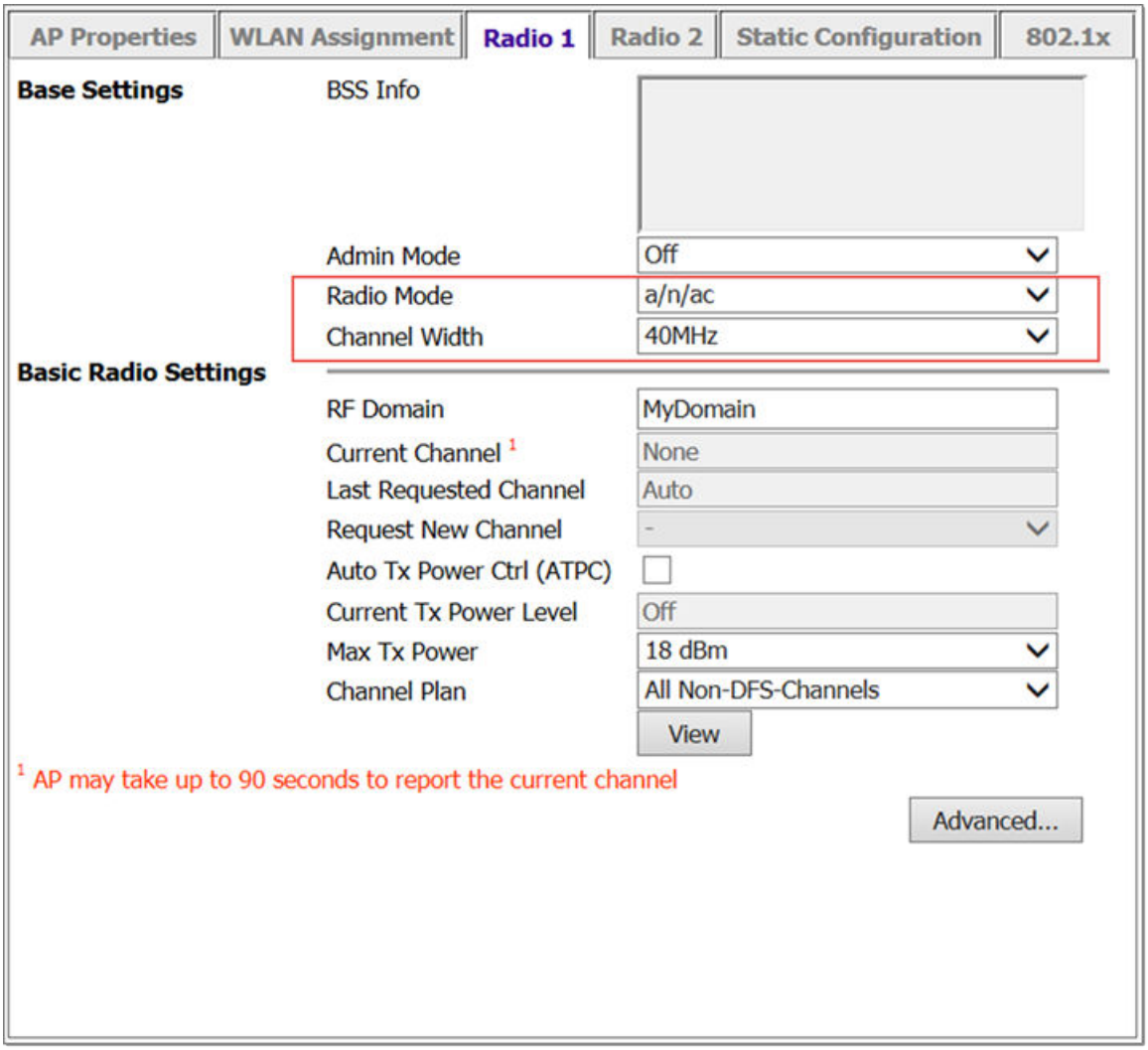


Figure 13: AP3935e Radio 1 Properties — Base Settings

4 From the **Request a New Channel** drop-down menu, select a channel according to the site channel plan, or request the AP to auto select the channel from the channel list set in the Channel Plan setting.

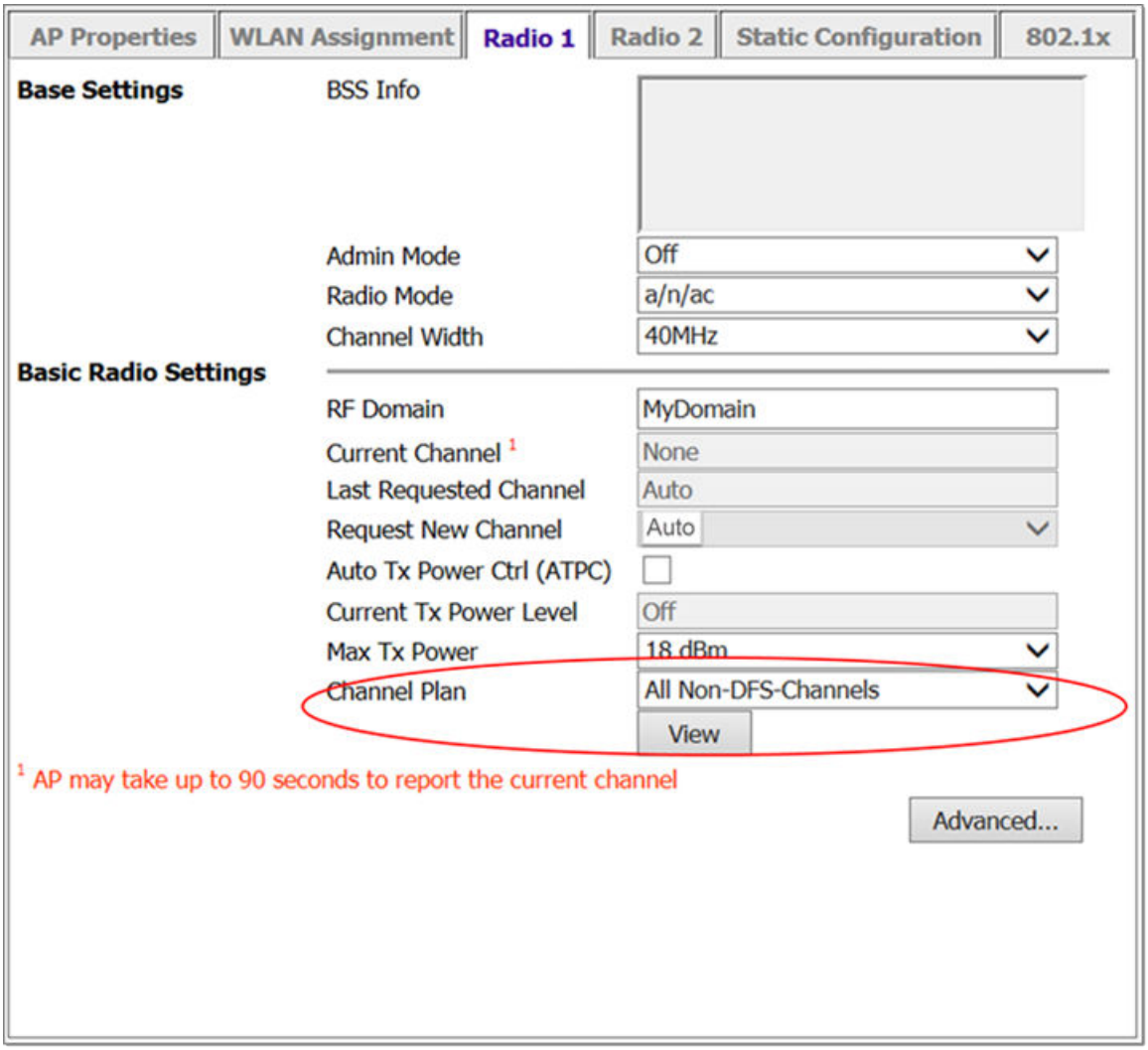


Figure 14: AP3935e Radio 1 Properties — Channel Plan setting

5 Repeat the process for Radio 2.

Configuring Radio Transmit (Tx) Power

Based on the configured mode, channel, channel plan, and channel width for the specific antenna, the professional installer must enter the corresponding Transmit Power (Tx Power) for the desired Radio using the Extreme Networks Wireless Assistant.

1 Log into the Wireless Assistant.

2 From the top menu, click **AP**.

The Wireless AP screen is displayed.

3 Click the **AP** button in the left pane, then in the Wireless AP list, click the Wireless AP whose properties you want to modify.

The AP Properties tab displays Wireless AP information.

4 Click the Radio 1 tab.

5 **Max Tx Power** is automatically determined based on regulatory domain/country, antenna selected, line attenuation configured, channel and certification testing.

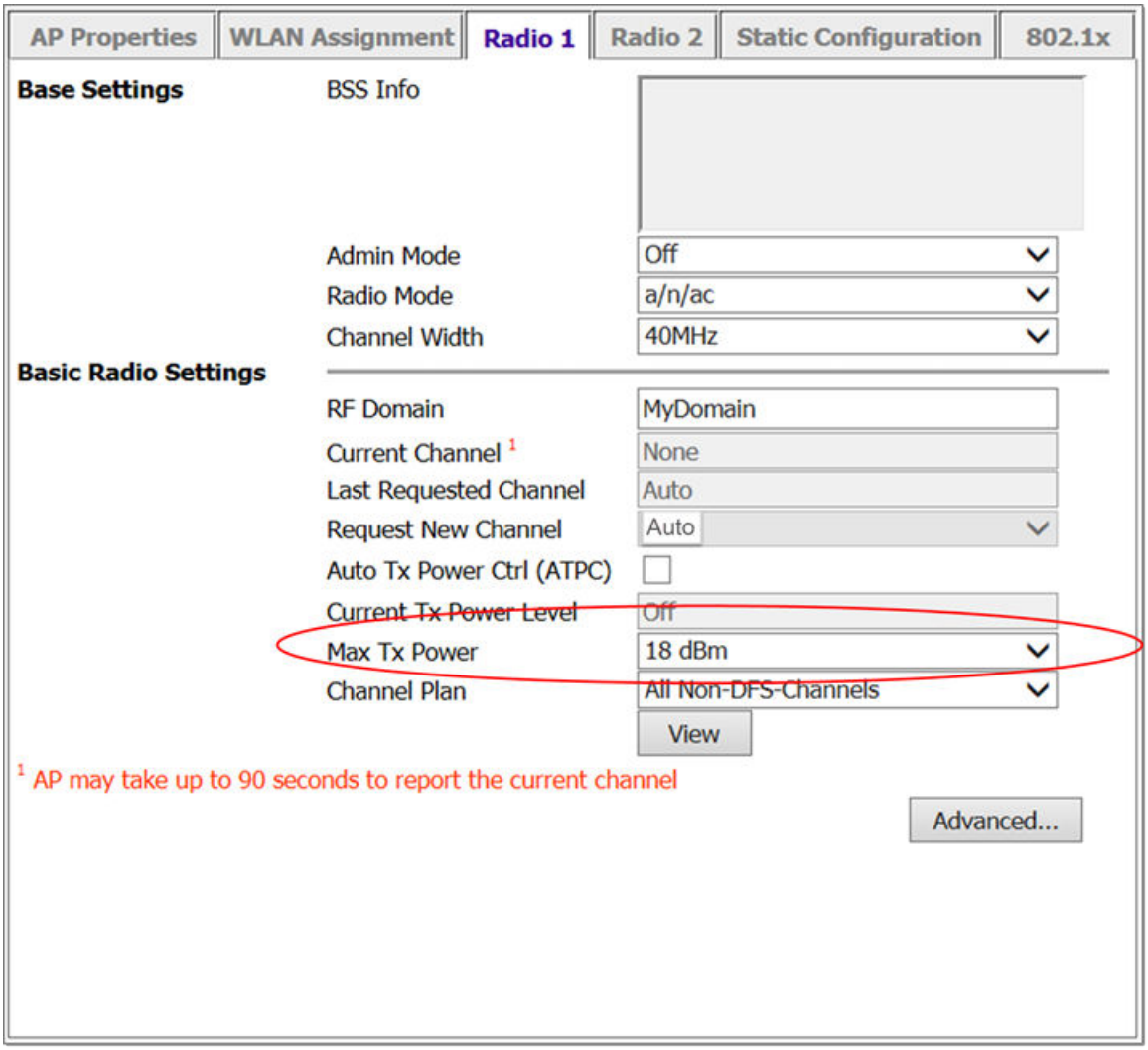


Figure 15: AP3935e Radio 1 Properties — Max TX Power setting

6 The professional installer is responsible for accurately configuring port Attenuation. Port attenuation should never be configured higher than the actual attenuation between the AP port and the antenna.

7 Repeat the process for Radio 2.

A Specifications

External Power Supplies
Internal Antenna APs
External Antennas

This appendix lists the specifications for the AP3935i and AP3935e access points and an external 12V DC power supply.

Table 5: Specifications for the AP3935i and AP3935e

Item	Specification
31012	WS-AP3935i-FCC
31013	WS-AP3935i-ROW
31014	WS-AP3935e-FCC
31015	WS-AP3935e-ROW
Enclosure material	Metal base, plastic cap
Power source	PoE 802.3at for full performance; (802.3af for low performance mode) DC power supply.
Power consumption	20W (Max.) 17.0W (Average)
Outside dimensions (max)	Length: 215 mm (8.46") Width: 215 mm (8.46") Thickness (not including mounting bracket): AP3935i: 56 mm (2.2") AP3935e: 57 mm (2.23")
Antenna (AP3935i only)	8 ports: 4 (Radio1) ports (5GHz antenna), 4 (Radio 2) ports (2.4GHz antenna)
Uplink Interface	GbE Ethernet x1 with PoE
RoHS compliant	Yes
Radio Configuration	Dual Band Dual Concurrent 802.11ac and 802.11n Radio 1 IEEE 802.11ac, 5GHz, 4x4:4 MU-MIMO, 20/40/80MHz channel (up to 1733 Mbps per radio) Radio 2 IEEE 802.11n, 2.4GHz, 4x4:4, MCS8, MCS9, 20/40MHz channel (up to 800 Mbps per radio)
Operating temperature	32° F to 122° F (0° C to +50° C)

External Power Supplies

AP3935 APs may be powered by IEEE 802.3af compliant PoE cables connected to the Ethernet ports in the connector bay. This is usually the preferred method of powering for users that plan to mount the

devices on ceilings or high up on walls. You can also power these APs with optional, certified, external power supplies.

Table 6: Universal Specifications for an External Power Supply

Item	Specification
Enclosure material	Plastic housing
AC Input	100-240V
DC output	12V
Output current (max)	2A
Output power (max)	24W

Power supply Part Number 30512 (WS-PSI12V-MR2), which includes six regional adapters, is recommended for use with all AP3935 APs.

Internal Antenna APs

Internal Antenna Access Points

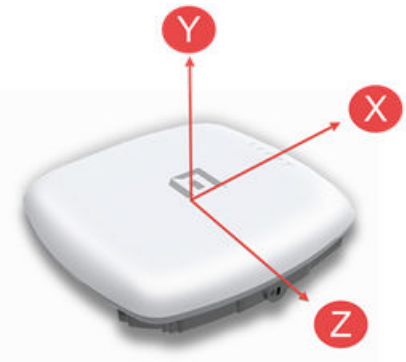
The AP3935i is an indoor access with eight integrated internal antennas. The following specifications are for the internal antennas:

Table 7: AP3935i Internal Antennas

Model Type	Application	Description	Gain (dBi)	Frequency (GHz)	Connector
AP3935i	Indoor	MIMO, Single-band	3dBi	2.4	None
			5dBi	5	None

The following radiation patterns apply to the antennas in the AP3935i only. In these diagrams, 0 degree is the AP's front and +/- 180 degree is the AP's back.

The diagrams show radiation patterns along one horizontal plane (XZ) and two vertical planes (XY and YZ). The X, Y, and Z axes are defined as follows.



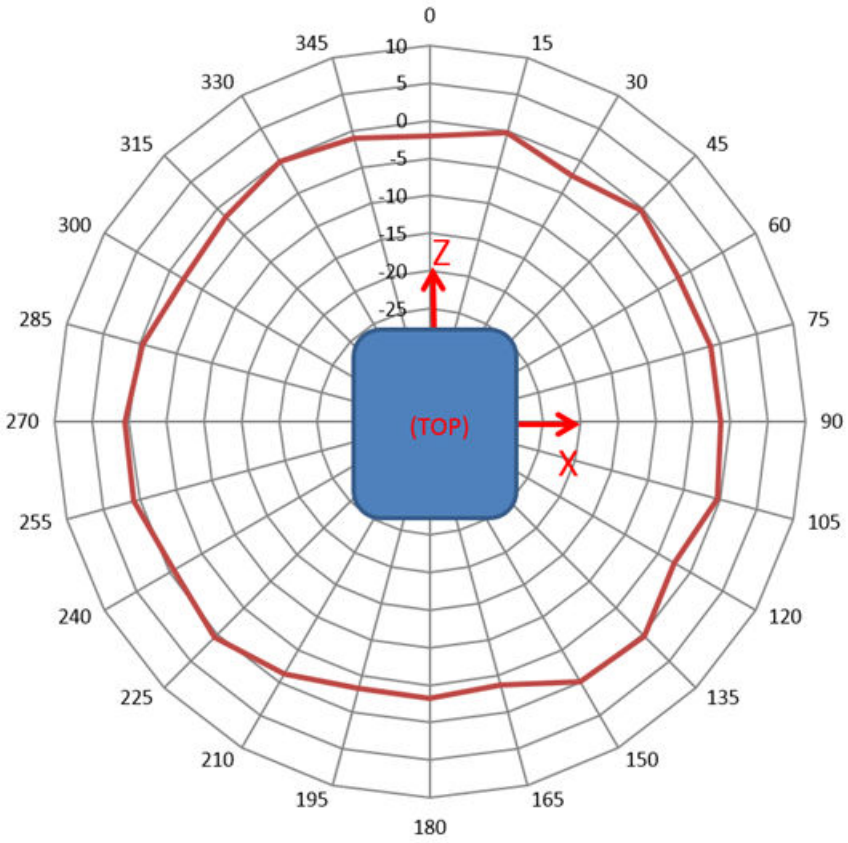


Figure 16: Horizontal Radiation Pattern 2.4 GHz (XZ Plane)

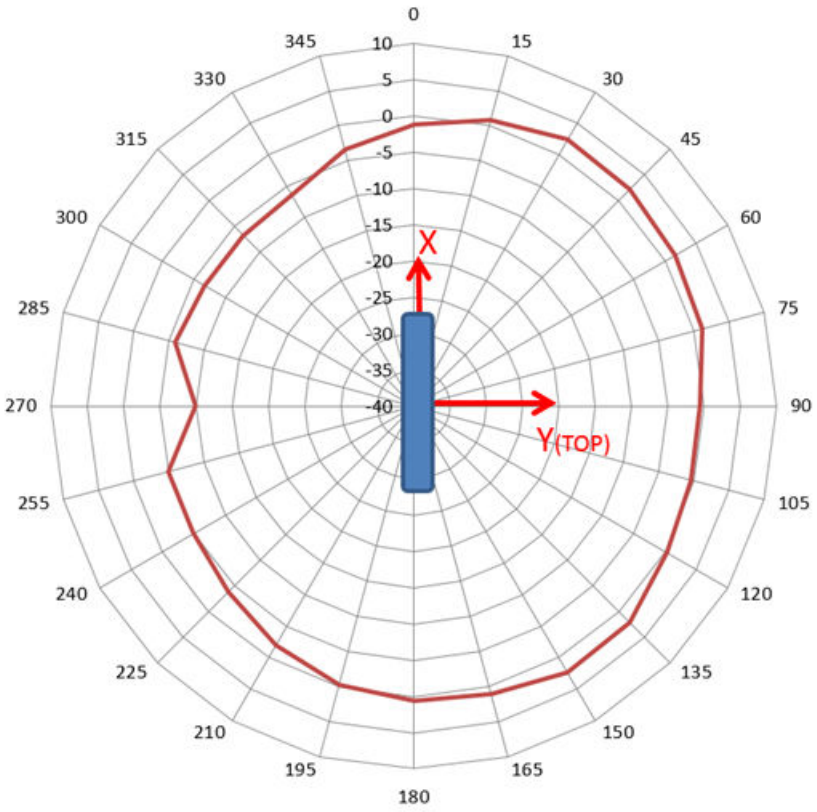


Figure 17: Vertical Radiation Pattern 2.4 GHz (XY Plane)

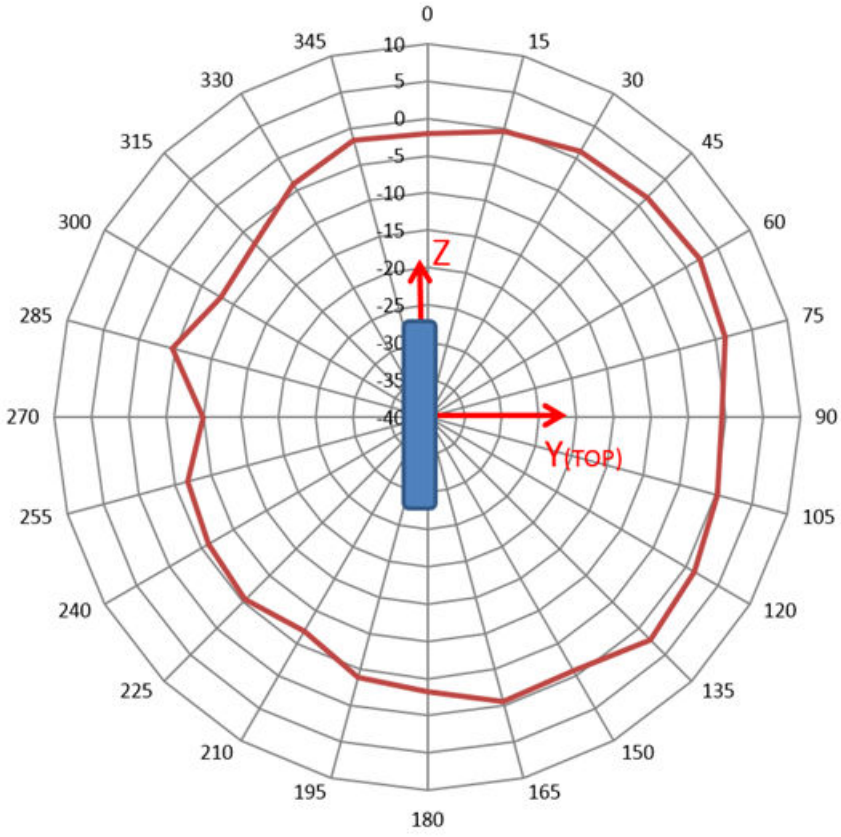


Figure 18: Vertical Radiation Pattern 2.4 GHz (YZ Plane)

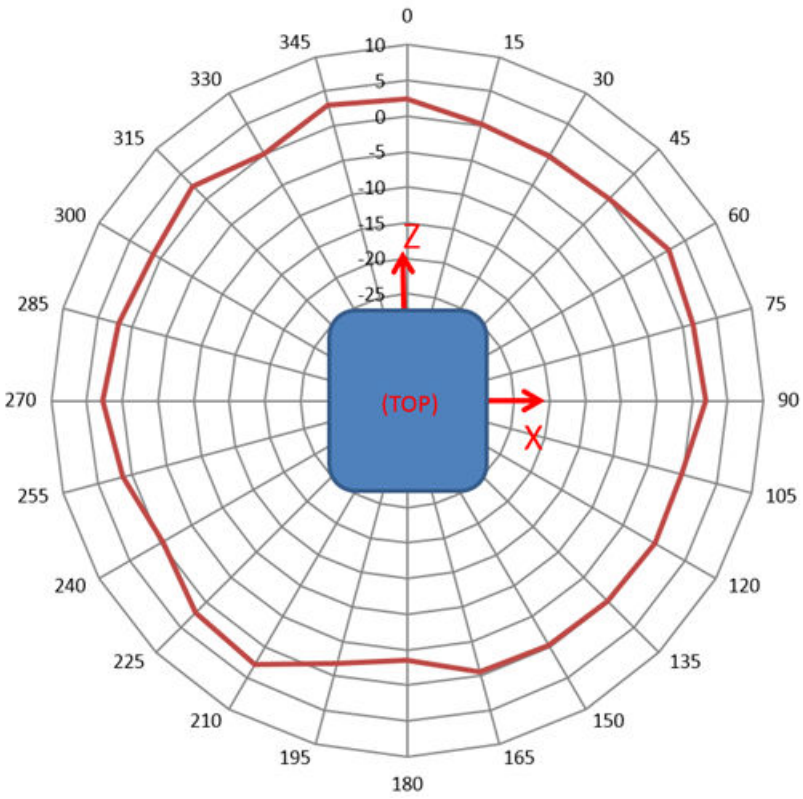


Figure 19: Horizontal Radiation Pattern 5 GHz (XZ Plane)

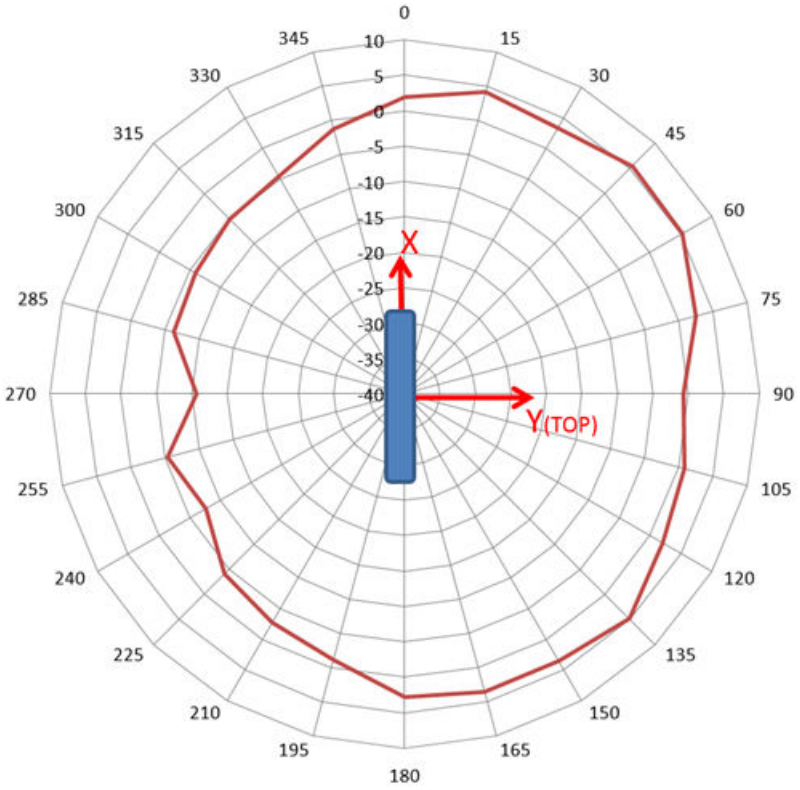


Figure 20: Vertical Radiation Pattern 5 GHz (XY Plane)

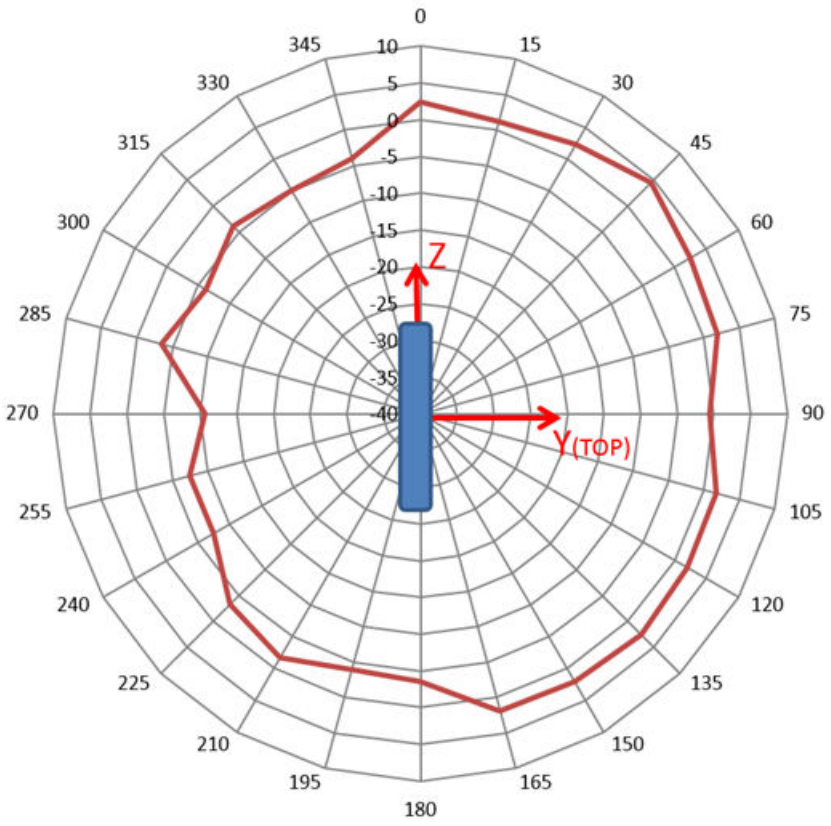


Figure 21: Vertical Radiation Pattern 5 GHz (YZ Plane)

External Antennas

The following table lists the certified external antennas for AP3935e. For more detailed specifications and radiation pattern diagrams, see the *ExtremeWireless External Antenna Site Preparation and Installation Guide*.

Note
Only certified antennas must be used with the AP3935e Access Point.

Table 8: Certified External Antennas for AP3935e

Part No. (Short Description)	Frequency Band	Antenna Type	2.4G Gain	5G Gain
30702 (WS-AI-DQ05120)	2.4G/5G	Sector	5.5	5.5
30703 (WS-AI-5Q04060)	5G	Sector	N/A	4
30704 (WS-AI-2Q05060)	2.4G	Sector	5	N/A
30705 (WS-AI-DE07025)	2.4G/5G	Sector	7.5	6.5

Table 8: Certified External Antennas for AP3935e (continued)

Part No. (Short Description)	Frequency Band	Antenna Type	2.4G Gain	5G Gain
30706 (WS-AI-5Q05025)	5G	Sector	N/A	4.5
30707 (WS-AI-DE10055)	2.4G/5G	Sector	10.5	7.5
30709 (WS-ANT-2DIP-4)	2.4G	Dipole	4.66	N/A
30710 (WS-ANT-5DIP-4)	5G	Dipole	N/A	4.67
WS-AI-DQ04360 (WS-AI-DQ04360)	2.4G/5G	Ceiling Mount Omni	4	7

B Regulatory Information

ExtremeWireless AP3935i and AP3935e

Warning
Warnings identify essential information. Ignoring a warning can lead to problems with the application.

This appendix provides regulatory information for the ExtremeWireless AP3935i and AP3935e access points.

Note
Throughout this appendix, the term ExtremeWireless AP3935 refers to the AP models AP3935i, and AP3935e. Specific AP models are identified in this appendix only where it is necessary to do so.

Warning
Changes or modifications made to the ExtremeWireless AP3935 that are not expressly approved by Extreme Networks could void the user's authority to operate the equipment.
Only authorized Extreme Networks service personnel are permitted to service the system. Procedures that should be performed only by Extreme Networks personnel are clearly identified in this guide.

ExtremeWireless AP3935i and AP3935e

The following regulatory information applies to the ExtremeWireless access points AP3935i and AP3935e.

United States

FCC Declaration of Conformity Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

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 when the equipment is operated in a residential and business environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause harmful interference, which can be determined

by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the transmitting antenna.
- Increase the separation between the equipment or devices.
- Connect the equipment to an outlet other than the receiver's.
- Consult a dealer or an experienced radio/TV technician for suggestions.

USA Conformance Standards

This equipment meets the following conformance standards:

Safety

- UL 60950-1

EMC

- FCC CFR 47 Part 15, Class B

Radio transceiver

- CFR 47 Part 15.247, Subpart C
- CFR 47 Part 15.407, Subpart E

Other

- IEEE 802.11ac (5 GHz)
- IEEE 802.11ac (5 GHz)
- IEEE 802.11n
- IEEE 802.3at (PoE)
- IEEE 802.3af (PoE)

Warning

The ExtremeWireless AP3935 must be installed and used in strict accordance with the manufacturer's instructions as described in this guide and related documentation for the device to which the ExtremeWireless AP3935 is connected. Any other installation or use of the product violates FCC Part 15 regulations.

This Part 15 radio device operates on a non-interference basis with other devices operating at the same frequency when using the antennas provided or other ExtremeWireless-certified antennas. Any changes or modifications to the product not expressly approved by ExtremeWireless could void the user's authority to operate this device.

For the product available in the USA market, only channels 1 to 11 can be operated. Selection of other channels in the 2.4 GHz band is not possible.

FCC RF Radiation Exposure Statement

The ExtremeWireless AP3935 complies with FCC RF radiated exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This device has been tested and has demonstrated compliance when simultaneously operated in the 2.4 GHz and 5 GHz frequency ranges. This device must not be colocated or operated in conjunction with any other antenna or transmitter

The radiated output power of the ExtremeWireless AP3935 is below the FCC radio frequency exposure limits as specified in “Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields” (OET Bulletin 65, Supplement C). This equipment should be installed and operated with a minimum distance of 25 cm between the radiator and your body or other colocated operating antennas.

Canada

Industry Canada Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of Industry Canada.

Cet appareil numerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Classe B prescrites dans la norme sur le materiel brouilleur: “Appareils Numeriques,” NMB-003 edictee par le Industrie Canada.

This device complies with RSS-247 of the Industry Canada Rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.
- This Class B digital apparatus complies with Canadian ICES-003.
- Operation in the 5150-5250 MHz band is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.
- Users are advised that high power radars are allocated as primary users (meaning they have priority) and can cause interference in the 5250-5350 MHz and 5470-5850 MHz bands of LELAN devices.
- For the product available in the Canadian market, only channels 1 to 11 can be operated. Selection of other channels in the 2.4 GHz band is not possible.
- Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux conditions suivantes:

- Le dispositif ne doit pas produire de brouillage préjudiciable.
- Ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.
- Ce dispositif est conforme à la norme NMB-003 edictee par le Industrie Canada.
- Les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour uneutilisation à l’intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.
- Les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et

5470-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

- Pour le produit disponible sur le marché canadien, seuls les canaux 1 à 11 peuvent être utilisés. Il est impossible de sélectionner d'autres canaux dans la bande de 2.4 GHz.
- Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Canada Conformance Standards

This equipment meets the following conformance standards:

Safety

- C22.2 No.60950-1-03

EMC

- ICES-003, Class B

Radio transceiver

- RSS-247 (2.4 GHz and 5 GHz)

Other

- IEEE 802.11ac (5 GHz)
- IEEE 802.11b/g (2.4 GHz)
- IEEE 802.11n
- IEEE 802.3at (PoE)
- IEEE 802.3af (PoE)

RF Safety Distance

The antennas used for this transmitter must be installed to provide a separation distance of at least 34 cm from all persons and must not be co-located or operating in conjunction with another antenna or transmitter.

Les antennes de ce transmetteur doivent être installées à une distance d'au moins 34 cm de toute personne et ne doivent pas être en placées à proximité immédiate ou utilisées conjointement avec une autre antenne ou un autre transmetteur

European Community

The ExtremeWireless AP3935 is designed for use in the European Union and other countries with similar regulatory restrictions where the end user or installer is allowed to configure the ExtremeWireless AP3935 for operation by entry of a country code relative to a specific country. After the country code is selected, the ExtremeWireless AP3935 uses the proper frequencies and power outputs for that country code.

The ExtremeWireless AP3935 is intended for indoor use and must be installed in a proper indoor location. Contact local Authority for procedure to follow and regulatory information. For more details on legal combinations of frequencies, power levels and antennas, contact Extreme Networks.

Declaration of Conformity with R&TTE Directive of the European Union 1999/5/EC

The following symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC).

Declaration of Conformity in Languages of the European Community

Table 9: Declaration of Conformity in Languages of the European Community

English	Hereby, Extreme Networks, declares that this Radio LAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Valmistaja Extreme Networks vakuuttaa täten että Radio LAN device tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Extreme Networks dat het toestel Radio LAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. Bij deze verklaart Extreme Networks dat deze Radio LAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	Par la présente Extreme Networks déclare que l'appareil Radio LAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/ CE. Par la présente, Extreme Networks déclare que ce Radio LAN device est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.
Swedish	Härmed intygar Extreme Networks att denna Radio LAN device står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Extreme Networks erklærer herved, at følgende udstyr Radio LAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
German	Hiermit erklärt Extreme Networks die Übereinstimmung des "WLAN Wireless Controller bzw. Access Points" mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Extreme Networks ΔΗΛΩΝΕΙ ΟΤΙ Radio LAN device ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Icelandic	Extreme Networks lysir her med yfir að thessi bunadur, Radio LAN device, uppfyllir allar grunnkrofur, sem gerdar eru i R&TTE tilskipun ESB nr 1999/5/EC.
Italian	Con la presente Extreme Networks dichiara che questo Radio LAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Table 9: Declaration of Conformity in Languages of the European Community (continued)

Spanish	Por medio de la presente Extreme Networks declara que el Radio LAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Portuguese	Extreme Networks declara que este Radio LAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Malti	Hawnhekk, Extreme Networks, jiddikjara li dan Radio LAN device jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

New Member States Requirements of Declaration of Conformity

Estonian	Käesolevaga kinnitab Extreme Networks seadme Radio LAN device vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Hungary	Alulírott, Extreme Networks nyilatkozom, hogy a Radio LAN device megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Slovak	Extreme Networks týmto vyhlasuje, že Radio LAN device spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Czech	Extreme Networks tímto prohlašuje, že tento Radio LAN device je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES."
Slovenian	Šiuo Extreme Networks deklaruoja, kad šis Radio LAN device atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Latvian	Ar šo Extreme Networks deklarē, ka Radio LAN device atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem
Lithuanian	Extreme Networks deklaruoja, kad Radio LAN device atitinka 1999/5/EC Direktyvos esminius reikalavimus ir kitas nuostatas".
Polish	Niniejszym, Extreme Networks, deklaruję, że Radio LAN device spełnia wymagania zasadnicze oraz stosowne postanowienia zawarte Dyrektywie 1999/5/EC.

European Conformance Standards

This equipment meets the following conformance standards:

Safety

- 2006/95/EC Low Voltage Directive (LVD)
- IEC/EN 60950-1 + National Deviations

EMC (Emissions / Immunity)

- 2004/108/EC EMC Directive
- EN 55011/CISPR 11, Class B, Group 1 ISM
- EN 55022/CISPR 22, Class B
- EN 55024/CISPR 24, includes IEC/EN 61000-4-2,3,4,5,6,11
- EN 61000-3-2 and -3-3 (Harmonics and Flicker)
- EN 60601-1-2 (EMC immunity for medical equipment)

- EN 50385 (EMF)
- ETSI/EN 301 489-1 & -17

Radio transceiver

- R&TTE Directive 1999/5/EC
- ETSI/EN 300 328 (2.4 GHz)
- ETSI/EN 301 893 (5 GHz)

Other

- IEEE 802.11ac (5 GHz)
- IEEE 802.11b/g (2.4 GHz)
- IEEE 802.11n
- IEEE 802.3at (PoE)
- IEEE 802.3af (PoE)

RoHS

- European Directive 2002/95/EC

Conditions of use in the European Community

Some EU countries allow outdoor operation with limitations and restrictions, which are described in this section. It is the responsibility of the end user to ensure operation in accordance with these rules, frequencies, and transmitter power output. The ExtremeWireless AP3935 must not be operated until configured for the customer's geographic location.

Caution

The user or installer is responsible to ensure that the ExtremeWireless AP3935 is operated according to channel limitations, indoor / outdoor restrictions, license requirements, and within power level limits for the current country of operation. A configuration utility has been provided with the Wireless AP to allow the end user to check the configuration and make necessary configuration changes to ensure proper operation in accordance with the spectrum usage rules for compliance with the European R&TTE directive 1999/ 5/EC.

Caution

Please follow the instructions in this user guide to configure the ExtremeWireless AP3935.

Each Wireless AP is configured with a default group of settings. There is the ability to change these settings. The user or installer is responsible to ensure that each ExtremeWireless AP3935 is configured properly.

The software within the Wireless AP automatically limits the allowable channels and output power determined by the selected country code. Selecting the incorrect country of operation or misidentifying the antenna being used,may result in illegal operation and may cause harmful interference to other systems.

This device employs a radar detection feature required for European Community operation in the 5 GHz band. This feature is automatically enabled when the country of operation is correctly configured for any European Community country. The presence of nearby radar operation may result in temporary interruption of operation of this device. The radar detection feature will automatically restart operation on a channel free of radar.

The 5150- 5350 MHz band, channels 36, 40, 44, 48, 52, 56, 60, or 64, are restricted to indoor use only.

The 2.4 GHz band, channels 1 - 13, may be used for indoor use but there may be some channel restrictions.

European Spectrum Usage Rules

The AP configured with approved internal antennas can be used for indoor transmissions throughout the European community as displayed in the following table. Some restrictions apply in France, Greece, and Italy.

Table 10: European Spectrum Usage Rules

Country	5.15-5.25 (GHz) Channels: 36,40,44,48	5.25-5.35 (GHz) Channels: 52,56,60,64	5.47-5.725 (GHz) Channels: 100,104,108,112,116, 132,136,140	2.4-2.4835 (GHz) Channels: 1 to 13 (Except Where Noted)
Austria	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Belgium	Indoor only	Indoor only	Indoor or outdoor *	Indoor or outdoor
Bulgaria	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Croatia	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Cyprus	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Czech Rep.	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Denmark	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Estonia	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Finland	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
France	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Germany	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Greece	Indoor only	Indoor only	Indoor (Outdoor w/ License)	Indoor (Outdoor w/ license)

Table 10: European Spectrum Usage Rules (continued)

Country	5.15-5.25 (GHz) Channels: 36,40,44,48	5.25-5.35 (GHz) Channels: 52,56,60,64	5.47-5.725 (GHz) Channels: 100,104,108,112,116, 132,136,140	2.4-2.4835 (GHz) Channels: 1 to 13 (Except Where Noted)
Hungary	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Iceland	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Ireland	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Italy	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Latvia	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Liechtenstein	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Lithuania	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Luxembourg	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Malta	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Netherlands	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Norway	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Poland	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Portugal	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Romania	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Slovak Rep.	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Slovenia	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Spain	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Sweden	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Switzerland	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
Turkey	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor
U.K	Indoor only	Indoor only	Indoor or outdoor	Indoor or outdoor

Note

Belgium requires notifying the spectrum agency if deploying > 300 meter wireless links in outdoor public areas.

Certifications of Other Countries

The ExtremeWireless AP3935 has been certified for use in various other countries. Once the correct country code is selected, the Wireless AP automatically uses the proper frequencies and power outputs for that country code.

It is the responsibility of the end user to select the proper country code for the country within which the device will be operated, or run the risk violating local laws and regulations.

Other Country Specific Compliance Standards, Approvals and Declarations

- IEC 60950-1 CB Scheme + National Deviations
- AS/NZS 60950.1 (Safety)
- AS/NZS 3548 (Emissions via EU standards – ACMA)
- AS/NZS 4288 (Radio via EU standards)
- EN 300 328 (2.4 GHz)
- EN 301 893 (5 GHz)
- EN 301 489-1 & -17 (RLAN)
- IEEE 802.11ac (5 GHz)
- IEEE 802.11b/g (2.4 GHz)
- IEEE 802.11n
- IEEE 802.3at (PoE)
- IEEE 802.3af (PoE)

RF Safety Distance

The antennas used for this transmitter must be installed to provide a separation distance of at least 34 cm from all persons and must not be co-located or operating in conjunction with another antenna or transmitter.