



# ExtremeWireless<sup>™</sup> AP3965i & AP3965e Installation Guide

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## Support

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# Table of Contents

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<b>Preface.....</b>	<b>4</b>
Text Conventions.....	4
Terminology.....	4
Providing Feedback to Us.....	5
Getting Help.....	5
Related Publications.....	5
<b>Chapter 1: About This Guide.....</b>	<b>7</b>
Who Should Use This Guide.....	7
How to Use This Guide.....	7
<b>Chapter 2: Introduction.....</b>	<b>8</b>
AP3965 Overview.....	8
<b>Chapter 3: Installation.....</b>	<b>11</b>
Unpacking the AP3965.....	11
Separately Ordered Components.....	12
AP3965 Installation Procedures.....	12
Weatherproofing the AP3965e Connections.....	24
Configuring AP3965 Channel Settings.....	26
<b>Appendix A: Specifications.....</b>	<b>31</b>
Internal Antenna Access Points.....	31
External Antennas.....	34
<b>Appendix B: Regulatory Information.....</b>	<b>36</b>
AP3965.....	37
United States.....	37
Canada.....	38
European Community.....	40
Certifications of Other Countries.....	46
AP3965e Approved External Antennas.....	48

# Preface






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## Text Conventions

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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 <b>enter</b> and <b>type</b>	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.”
<b>[Key]</b> names	Key names are written with brackets, such as <b>[Return]</b> or <b>[Esc]</b> . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press <b>[Ctrl]+[Alt]+[Del]</b>
<i>Words in italicized type</i>	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

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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*.

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## Providing Feedback to Us

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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](mailto:internalinfodev@extremenetworks.com).

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## Getting Help

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

- **Global Technical Assistance Center (GTAC) for Immediate Support**
  - **Phone:** 1-800-998-2408 (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](http://www.extremenetworks.com/support/contact)
  - **Email:** [support@extremenetworks.com](mailto: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

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## Related Publications

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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

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## Who Should Use This Guide How to Use This Guide

The guide describes how to mount and connect cables to the ExtremeWireless™ Outdoor Access Point AP3965. In addition, this guide provides information on the product certifications and national approvals for the AP3965.



### Note

This guide does not provide information on configuration of the AP3965. For information on how to configure the AP3965, see the [ExtremeWireless User Guide](#).

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## Who Should Use This Guide

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### 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.

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This product should be installed and serviced by a qualified licensed technician, electrician, or electrical maintenance person familiar with its operation and the hazards involved. Proper installation, which includes wiring, mounting, fusing or other over current protection and grounding, can reduce the chance of electric shocks, fires, or explosion in this product or products used within this product.

## How to Use This Guide

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Read through this guide completely to familiarize yourself with its contents and to gain an understanding of the features and capabilities of the AP3965. A general working knowledge of data communications networks is helpful when setting up this module.

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

# 2 Introduction

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## AP3965 Overview

This chapter provides general information about the Extreme Networks Outdoor Access Point AP3965.

### AP3965 Overview

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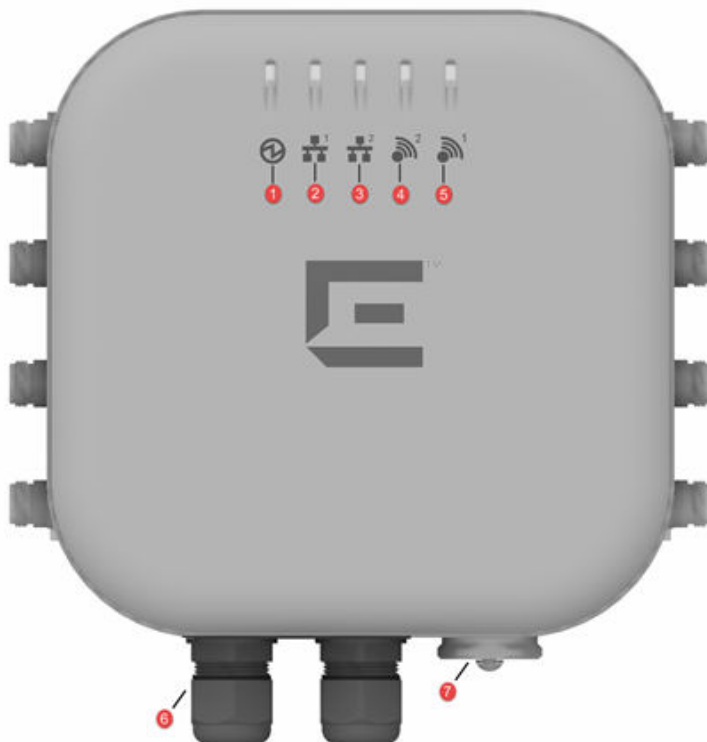
The AP3965 (shown in [Figure 1: AP3965e Front View](#) on page 9) enables you to extend your wireless LAN beyond the boundaries of indoor locations. It is resistant to harsh outdoor conditions and extreme temperatures. Using the advanced full mesh wireless distribution feature of the wireless LAN, the AP3965 can extend your wireless LAN to outdoor locations without Ethernet cabling. A mounting bracket is available to enable quick and easy mounting of the AP3965 to walls and poles.

The AP3965 is an 802.11ac AP that supports 802.11a/802.11g and 802.11b legacy devices. It is delivered in a rugged enclosure.

The AP3965 interoperates fully with the wireless LAN, including support for wireless VoWLAN, branch office mode, availability, and mobility features.

The AP3965i provides eight internal antennas. The AP3965e supports a variety of external antennas, providing range and coverage versatility.





**Figure 1: AP3965e Front View**

1	AP Status	5	Radio 1 (5 GHz)
2	LAN 1 (Ethernet 1)	6	LAN Ports (POE): <ul style="list-style-type: none"> <li>• LAN 1 PDE Port</li> <li>• LAN 2 PSE Port output of DC48V, 0.26A</li> </ul>
3	LAN 2 (Ethernet 2)	7	Console Port and Reset Button
4	Radio 2 (2.4 GHz)		

#### Note


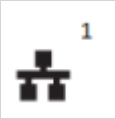





The AP3965e provides eight external antenna ports. The network administrator determines which antenna port will be used based on the external antenna selected. The AP3965e can also be configured to select the antenna that provides the best possible data transmission (diversity).

## AP3965 LED Indicators

The AP3965 provides five LED indicators (see [Figure 1: AP3965e Front View](#) on page 9). The LEDs provide status information on the current state of the AP3965. For more information, see the [ExtremeWireless User Guide](#).

**Table 3: AP3965 LED Status Indicators**

LED	Indicator	Status	Description
1 (AP status)		On Green	AP3965 working normally
		Flashing Green	AP3965 running a self test or loading a software program
		On Amber	CPU/system failure
2 (Ethernet link state) LAN 1		On Green	Valid 100Mbps Ethernet link
		On Amber	Valid 1Gbps Ethernet link
		Off	Link down
3 (Ethernet link state) LAN 2		On Green	Valid 100Mbps Ethernet link
		On Amber	Valid 1Gbps Ethernet link
		Off	Link down
4 (Radio 2 status)		On Green	Radio 2 enabled
		Off	Radio 2 not on
5 (Radio 1 status)		On Green	Radio 1 enabled
		Off	Radio 1 not on

## Antennas

The AP3965i includes eight internal antennas and the AP3965e supports the attachment of up to eight external antennas. The AP3965e can transmit from multiple antennas at the same time, as defined with MIMO operation, but the antennas must be selected manually based on customer requirements and coverage area. For a list of approved external antennas, refer to [External Antennas](#) on page 34.

## External Antenna Connectors

The AP3965e supports eight external antenna connections for both 2.4GHz and 5GHz radios. These antennas offer a variety of options for extending the radio range and shaping the coverage area. For a list of approved external antennas, refer to [External Antennas](#) on page 34.

## LAN Ports

The AP3965 has two 10/100/1000BaseT RJ45 LAN ports (see [Figure 1: AP3965e Front View](#) on page 9) 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 AP3965 appears as an Ethernet node and performs a bridging function by moving packets from the wired LAN to remote workstations on the wireless infrastructure.

# 3 Installation

Unpacking the AP3965  
Separately Ordered Components  
AP3965 Installation Procedures  
Weatherproofing the AP3965e Connections  
Configuring AP3965 Channel Settings

This chapter provides general information about the ExtremeWireless Outdoor Access Point AP3965.

## Unpacking the AP3965

Unpack the AP3965 as follows:

- 1 Open the box and remove the packing material protecting the AP3965.
- 2 Verify that the contents of the carton contains the items listed below.

**Table 4: Contents of the AP3965 Carton**

Quantity	Item
1	AP3965 Quick Reference
1	AP3965i/e model that you ordered.
<b>Under the cardboard separation:</b>	
1	H-shaped bracket that is used for mounting the AP.
1	Metal bracket for attaching the AP to a pole, pipe, or mast.
1	#10AWG ground wire with a ring terminal crimped on it (6 foot length)
<b>The following hardware is included:</b>	
4	Additional Hex nuts for the concrete anchors.
4	Concrete wall anchor assemblies that include the anchors, a flat washer, and a hex nut.
4	Split Washers for the concrete anchors.
4	Cable clamps, all are ½" wide. Two clamps accommodate a 2.5" maximum diameter pole and two clamps accommodate a 6"-7" diameter pole.
8	Screw assemblies, size M4, that include the screws, flat washers, and split washers.
1	Ground Screw assembly, size M4, that include the screw, star washer, and split washer.

Optional: You may also need antennas, terminators, or cables. Refer to [Separately Ordered Components](#) on page 12 for product numbers.



**Note**

Before mounting the AP3965, read the [RF Safety Distance](#) on page 48.

- 3 Perform a visual inspection of the AP3965 for any signs of physical damage. Contact Extreme Networks if there are any signs of damage.

## Separately Ordered Components

The following accessories are available for the ExtremeWireless Access Point AP3965. For ordering information, [contact Extreme Networks](#).

- Antennas. Refer to [External Antennas](#) on page 34 and the [ExtremeWireless External Antenna Site Preparation and Installation Guide](#) for more information about these antennas. This document is available at: <https://extremenetworks.com/downloads>.
- Power over Ethernet (PoE) Injector. The following 802.3at PoE injectors are recommended for use with the AP3965:
  - PD-9001GO-ENT (outdoor 802.3at PoE single port midspan)
  - PD-9501GO-ENT (single port 802.3at plus outdoor midspan)



### Note

When the AP3965 is powered by the Power Injector, the DATA port of the injector should be connected to a non PoE switch or, if the switch is PoE capable, PoE must be DISABLED on the DATA port.

- Terminator cap. This part is listed as an optional accessory for the AP3965e. If you are not attaching eight antenna feeds to the AP3965e, you must use a terminator cap on the antenna connector(s) not being used.
  - WS-CAB-NTERM — Terminator, Standard Polarity, Type-N Plug, 50 OHM, 1W
- Cables to connect the lightning protectors on the enclosure to the antennas. All cables listed below have Standard Polarity Type-N jack and plug connectors:
  - WS-CAB-L200C20N—20 foot LMR200 cable
  - WS-CAB-L400C06N—6 foot LMR400 cable
  - WS-CAB-L400C20N—20 foot LMR400 cable
  - WS-CAB-L400C50N—50 foot LMR400 cable
  - WS-CAB-L400C75N—75 foot LMR400 cable
  - WS-CAB-L600C25N—25 foot LMR600 cable
  - WS-CAB-L600C50N—50 foot LMR600 cable
- Bracket (30514) WS-MBO-ART01 — Outdoor articulating mounting bracket for AP3965.

## AP3965 Installation Procedures

Use these instructions as guidelines for mounting and connecting the AP3965 easily and safely. The installation of the AP3965 should be performed by a professional installer to ensure proper operation and compliance with local safety guidelines.

Attach the AP3965 to a surface that can support it and withstand its environment. It can be mounted to a wall, girder, ceiling, or pole, and the surface material can be concrete, brick, wood, metal, or plastic.



### Warning

This product should be installed and serviced by a qualified licensed technician, electrician, or electrical maintenance person familiar with its operation and the hazards involved.

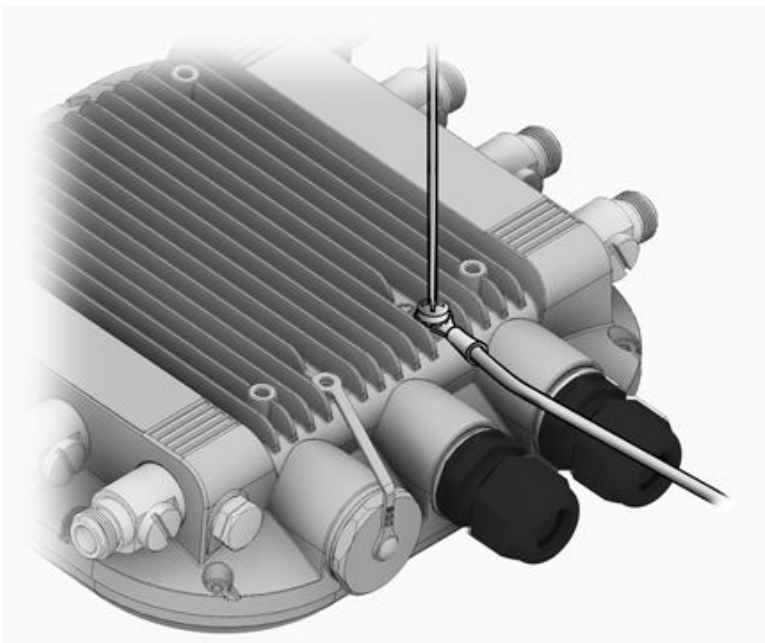
Install the AP3965 by following these procedures:

- [Ground Connection](#) on page 13
- [Mounting the AP3965 to a Wall](#) on page 13
- [Attaching the Mounting Bracket to the AP](#) on page 14
- [Mounting the AP3965 to a Pole](#) on page 15
- [Attaching Antennas](#) on page 21
- [LAN 1/LAN 2 Connections](#) on page 21
- [Weatherproofing the Antenna](#) on page 24
- [Forming a Drip Loop for AP3965e Cables](#) on page 25

## Ground Connection

The ground connection for the AP3965 is located on the rear of the device. Attach a ground to earth cable to the grounding terminal.

- 1 Use the M4 ground screw assembly, with the star washer, to attach the ground wire's ring terminal to the AP. The wire should be as close to the AP bottom as possible (see [Figure 2: AP3965 Ground Terminal Location](#) on page 13).
- 2 Tighten the screw to a torque of 12.0 in-lbs.



**Figure 2: AP3965 Ground Terminal Location**

## Mounting the AP3965 to a Wall

Mount the AP so that the glands are on the side of the AP closest to the ground, and not above the plastic cover. You must provide a 3-inch drip loop on all cables. For more information, see [Forming a Drip Loop for AP3965e Cables](#) on page 25.

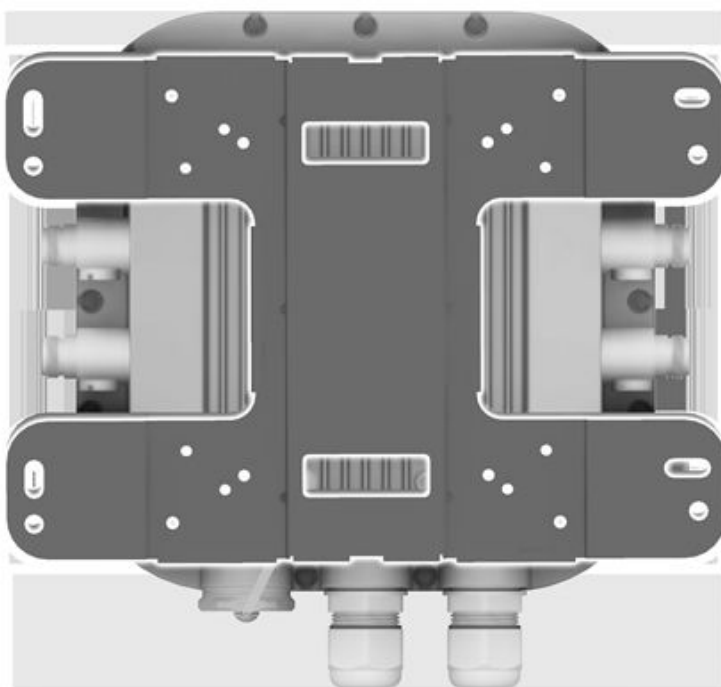
- 1 Using the mounting bracket as a guide, mark the location for the mounting screws on a wall.

- 2 Drill four holes into the wall as follows:
  - for installing the AP on a masonry wall, use a 5/16" diameter bit.
  - for other materials, use the appropriate drill for the screws being used.
- 3 For masonry installations, place four anchor assemblies into the holes.

#### *Attaching the Mounting Bracket to the AP*

Attach the mounting bracket to the AP3965 using four M4 screws, four spring washers, and four flat washers:

- 1 Use 4 M4 screw assemblies to attach the AP to the "H" bracket on the side that does not have the PEM stand-offs.
- 2 Tighten the four screws to a torque of 12.0 in-lbs.



**Figure 3: Mounting Bracket Orientation**

- 3 Secure the anchors to the wall, then secure the bracket to the anchors. See [Figure 4: Mounting the AP3965 to a Wall](#) on page 15.

- 4 If using #10 screws, tighten them to a torque of 25 in-lbs. If using ¼” screws, tighten them to 45 in-lbs.



**Figure 4: Mounting the AP3965 to a Wall**



**Note**

Use anchors when mounting on cement walls. Mounting screws (shown above) are not included.

### Mounting the AP3965 to a Pole

To fit the mounting plate to a pole:

- 1 Determine the diameter of the pole.

Pole Diameter	Cable Clamp Size
<= 2.5" [63.5mm]	Use small cable clamp
6" - 7" (178mm)	Use large cable clamp

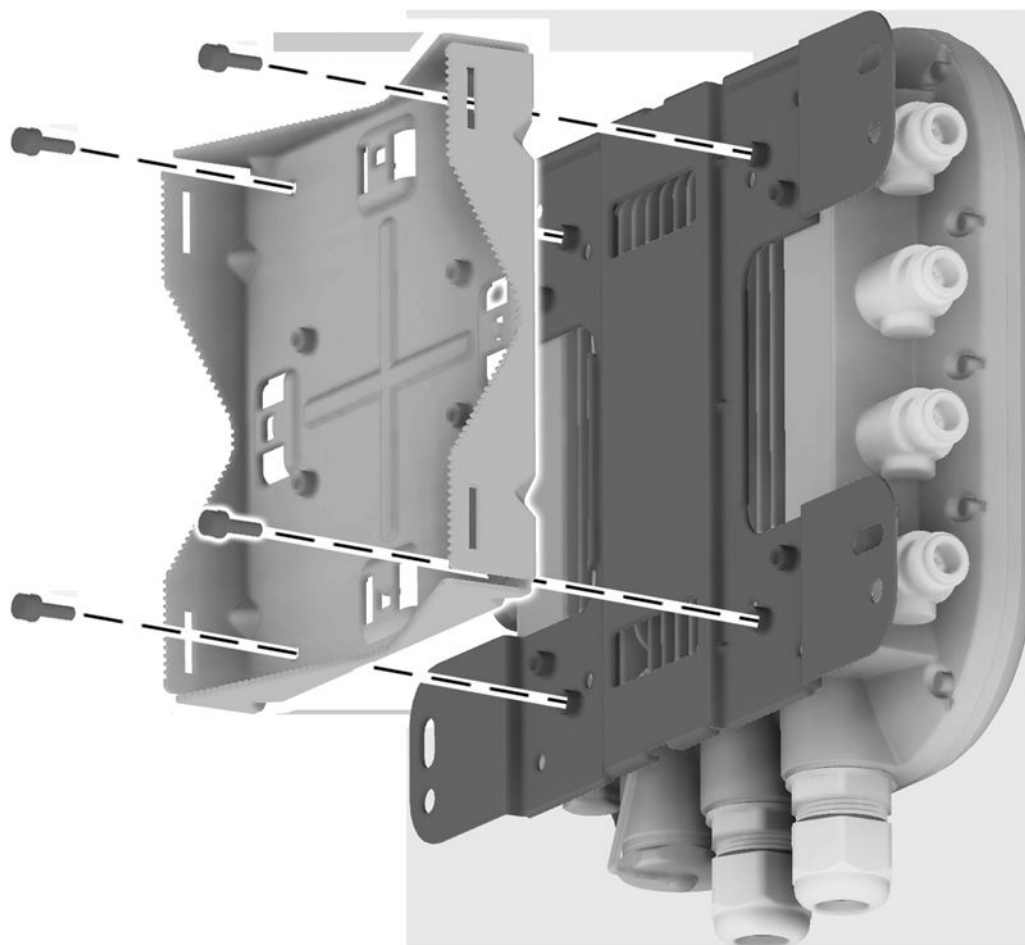


**Note**

For other pole diameters, provide your own stainless steel cable clamp. The band must be ½” (12.7mm) wide.



- 2 Attach the AP to the “H” bracket on the side that does not have the PEM stand-offs. Tighten the four screws to a torque of 12.0 in-lbs.
- 3 Using four M4 screw assemblies, attach the pole bracket onto the “H” bracket. Tighten the screws to 12.0 in-lbs.
- 4 Position the pole mount bracket onto the AP mounting bracket.



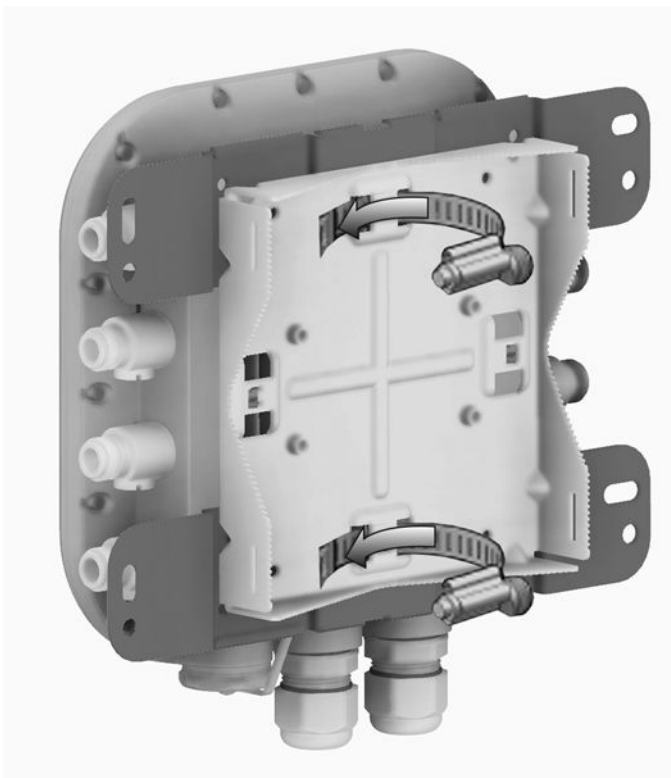
**Figure 5: Attach Pole Bracket to “H” Bracket**



- 5 Attach the two cable clamp to the pole bracket. Open the cable clamp by turning a flat bladed screwdriver counterclockwise. Then, insert the non-clamp end into the pole bracket through the holes.

**Note**

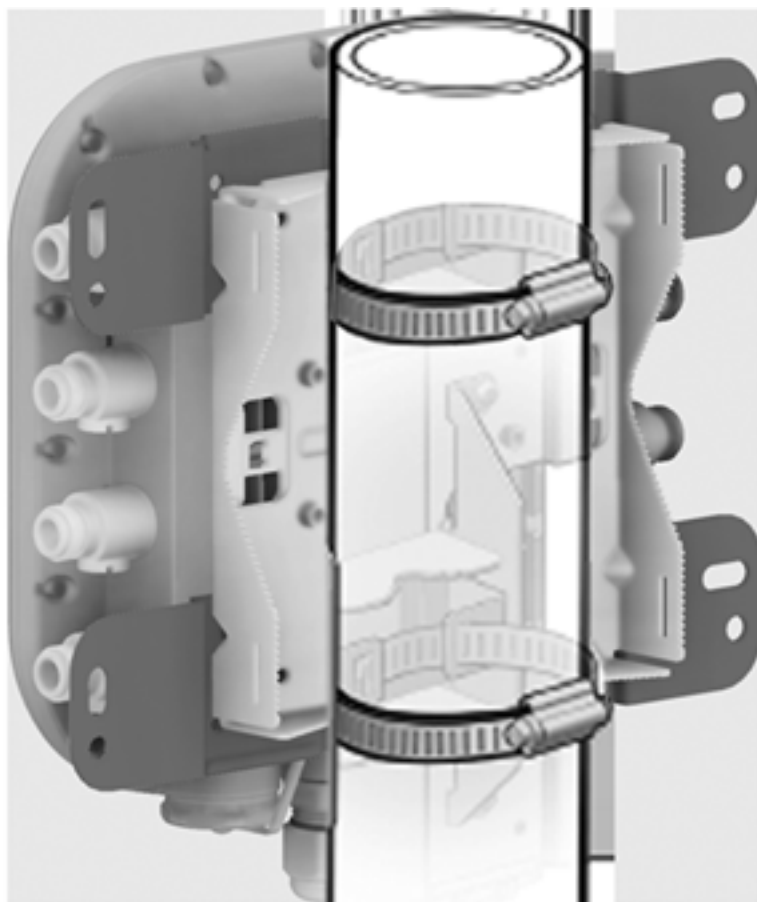
It is easier to install both clamps before attaching to the pole.



**Figure 6: Pole Mount Orientation**

- 6 Put the metal band around the pole and insert it into the clamp.
- 7 Turn the clamp screw clockwise, tightening the band around the pole.

- Secure the AP to the pole by tightening the stainless steel tie back strap.

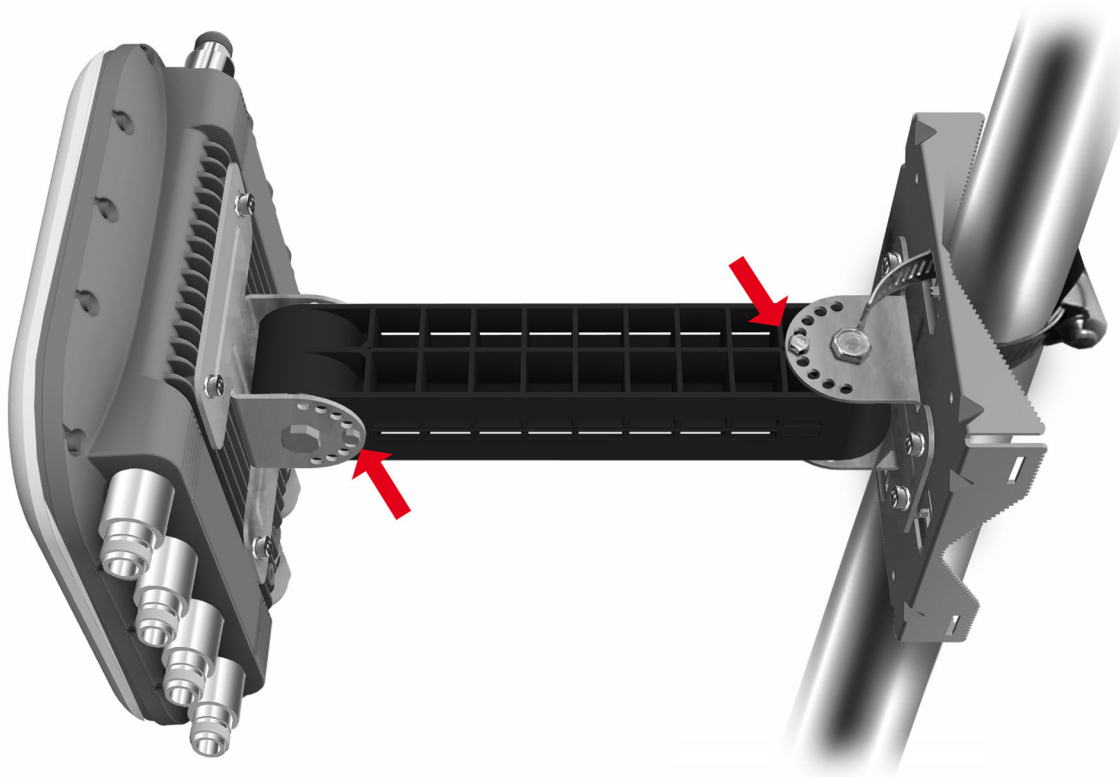


**Figure 7: AP3965 Pole Mount Option**

### Mounting to a Pole with an Articulated Bracket

How to attach the AP3965 to a pole using an articulating mount (WS-MBO-ART01).

To attach the AP3965 and articulating mount to a pole:

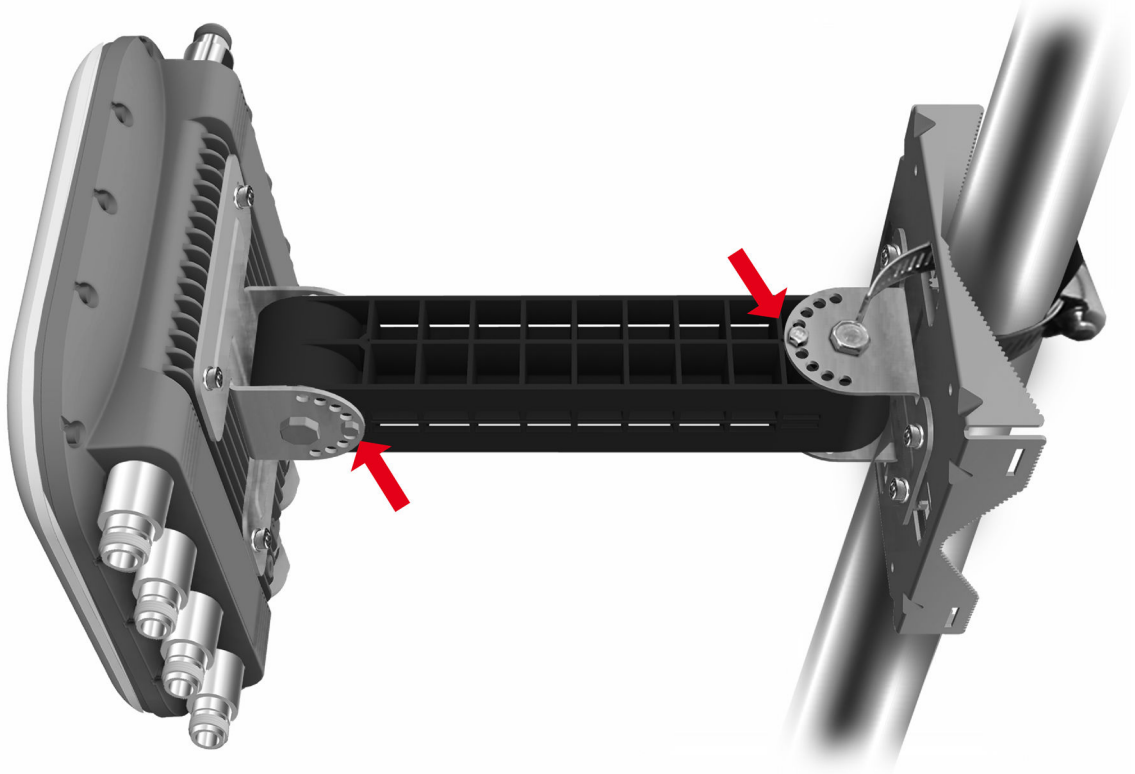


**Figure 8: Articulating Mount (WS-MBO-ART01) for AP3965**

- 1 Attach the small bracket on the WS-MBO-ART01 to the pole bracket with four M4 screws, verifying that the AP orientation will be upright before you tighten the brackets screws. Torque the screws to 12 in-lbs.
- 2 Insert two cable/pipe clamps into the pole bracket. Attach the clamps to the pole where desired. Torque the clamp screws to 12 in-lbs.
- 3 Attach the AP to the large bracket with four M4 screws. Torque the screws to 12.0 in-lbs.
- 4 If the AP needs to be tilted up or down, remove the screw (*see red arrows in previous figure*) and tilt the AP to the desired angle. Re-insert the screw into the center hole in the black part of WS-MBO-ART01. Torque the screw and nut to 12 in-lbs.
- 5 If the AP needs to be turned sideways, remove the screw (*see red arrows in previous figure*) and tilt the AP to the desired angle. Re-insert the screw into the center hole in the black part of WS-MBO-ART01. Torque the screw and nut to 12 in-lbs.
- 6 Remove the black gland cap and the gasket under it. Then separate the gasket from its plastic cage.
- 7 Attach the gland parts to the LAN cables and insert the LAN cables into the mating connectors in the AP. For more information, see [Attaching Antennas](#).
- 8 Hand tighten the gland nuts and then tighten the nuts to a torque of 10 in-lbs.
- 9 Dress (adjust) the LAN and ground wires.

## Mounting to a Solid Wall with an Articulated Bracket

To mount to a solid wall:



**Figure 9: Articulating Mount (WS-MBO-ART01) for AP3965**

- 1 Use the small bracket holes as a template to mark the attachment holes in the wall, verifying that the AP orientation will be upright with the black glands at the bottom.



**Important**

The wall must be strong enough to support the AP during inclement weather.

- 2 Select the proper drill bit and drill the four, marked holes.
- 3 Use four strong screws and anchors to attach the small bracket to the wall. Torque the screws and bolts to a minimum of 24 in-lbs., with a maximum of 65 in-lbs.
- 4 Attach the AP to the large bracket with four M4 screws. Torque the screws to 12.0 in-lbs.
- 5 If the AP needs to be tilted up or down, remove the screw ([see red arrows in previous figure](#)) and tilt the AP to the desired angle. Re-insert the screw into the center hole in the black part of WS-MBO-ART01. Torque the screw and nut to 12 in-lbs.
- 6 If the AP needs to be turned sideways, remove the screw ([see red arrows in previous figure](#)) and tilt the AP to the desired angle. Re-insert the screw into the center hole in the black part of WS-MBO-ART01. Torque the screw and nut to 12 in-lbs.
- 7 Remove the black gland cap and the gasket under it. Then separate the gasket from its plastic cage.
- 8 Attach the gland parts to the LAN cables and insert the LAN cables into the mating connectors in the AP. For more information, see [Attaching Antennas](#).
- 9 Hand tighten the gland nuts and then tighten the nuts to a torque of 10 in-lbs.
- 10 Dress (adjust) the LAN and ground wires.

## Attaching Antennas

Install the external antennas intended for area coverage. For information about antenna selection and installation, refer to the [ExtremeWireless External Antenna Site Preparation and Installation Guide](#).

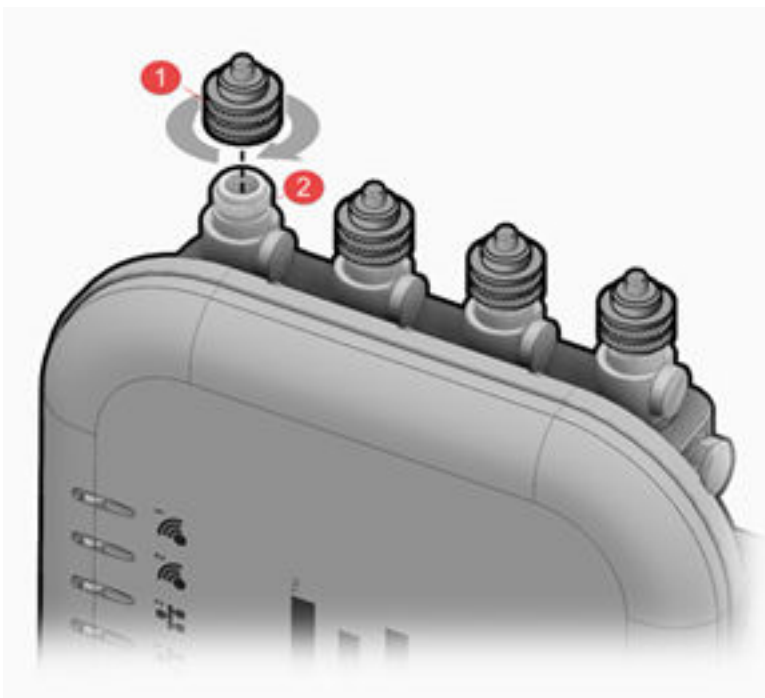


### Note

The total number of required antennas and associated port locations on the AP3965 depends on the coverage area and the type of antennas selected.

To attach external antennas to the AP3965:

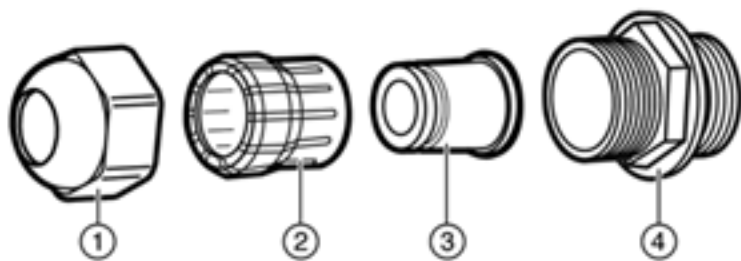
- 1 Attach the external antenna cables to the Standard Polarity Type-N connectors on the AP3965. All the antennas can be extended away from the AP using the optional cables.
- 2 Place a terminator cap on any antenna connectors that will not be used (see [Figure 10: Installing Terminator Caps](#) on page 21).
- 3 Do not install the AP with the antennas pointing upward. If the AP is vertical, the recommended installation is with the glands pointing down. If the AP is horizontal, the recommended installation is with the glands located be closest to the ground. In both cases, we recommend that the antennas be extended horizontally.



**Figure 10: Installing Terminator Caps**

## LAN 1/LAN 2 Connections

The AP3965 has two LAN ports (LAN 1 and LAN 2). Refer to [Figure 1: AP3965e Front View](#) on page 9 for the location of these ports. Before connecting an RJ45 cable (not provided) to either port, a waterproof cable gland adapter assembly must be installed onto the cable.



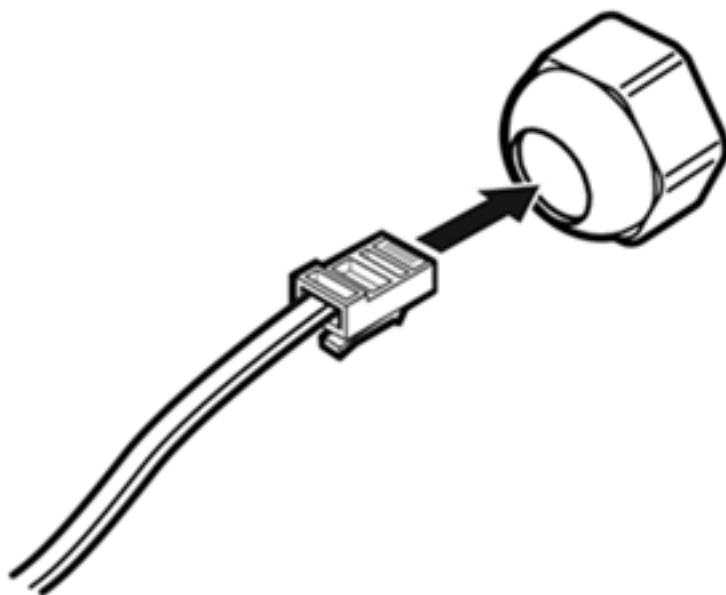
**Figure 11: RJ45 Cable Gland Adapter Assembly**

1	Sealing nut	2	Claw	3	Seal	4	Main body
---	-------------	---	------	---	------	---	-----------

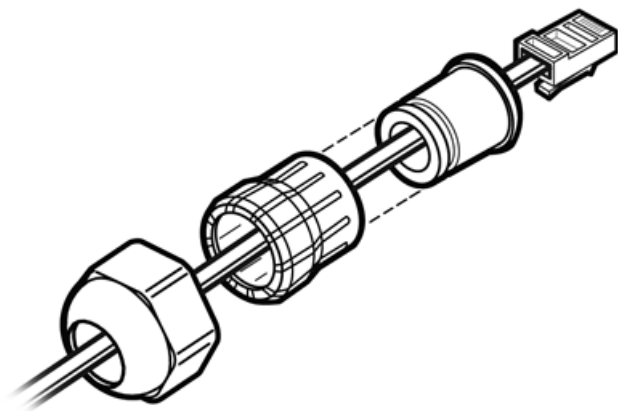
*Installing the Cable Gland Adapter Assembly*

Install the cable gland adapter assembly onto LAN 1 or LAN 2 as follows:

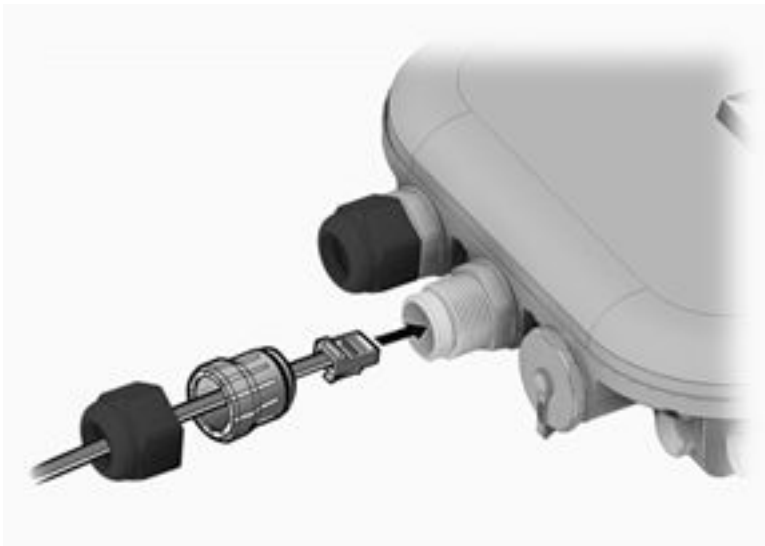
- 1 Insert the RJ45 cable onto the sealing nut (shown below).



- 2 Slide the claw and seal onto the RJ45 cable (shown below).

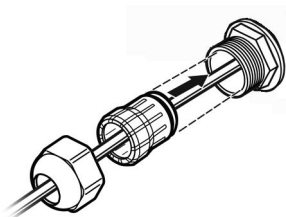


- 3 Plug the RJ45 cable into the port (shown below).

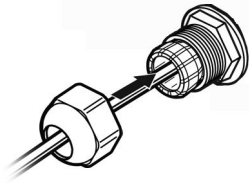
**Caution**

Do not run the network cable through the cable conduit connector used for connecting the power cables. You must connect the network cable and power cables through separate connectors.

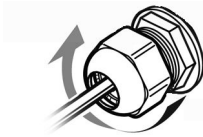
- 4 Slide the seal and claw into the main body (shown below).



- 5 Secure the seal nut onto the main body (shown below).



- 6 Tighten the assembly by hand. Tighten the cap to 10 inch-pounds (shown below).



## Weatherproofing the AP3965e Connections

Extreme Networks recommends that all connections between the AP and antennas are weatherproofed using one of the following weatherproof kits (not supplied):

- Wireless Weatherproofing Kits:
  - 3M (WK-100)
  - Scotch (WK-101)

Each weatherproofing kit includes  $\frac{3}{4}$ -inch vinyl tape, 2-inch mastic tape, and 2-inch vinyl tape.

- Cold Shrink Kits:
  - 3M Cold Shrink Sealing Kit CXS (CXS-4).
  - 3M Cold Shrink EDPM Connector Insulator (8426-9M)

The cold shrink kit includes one tube of vinyl mastic, and 2-inch mastic tape.

## Weatherproofing the Antenna

The following guidelines should be followed to ensure proper installation:

- The weatherproofing tape must be wound tightly over the connectors.
- Ensure that no areas around the edges are exposed.

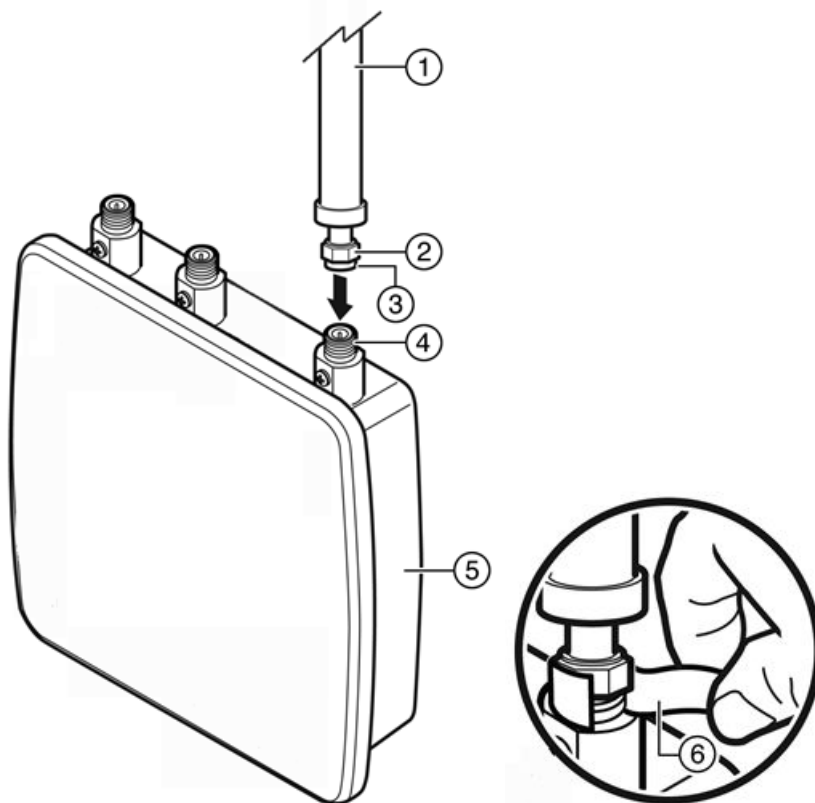


### Note

Installation instructions are provided with each weatherproofing kit and are included here for reference only.

The following figure shows how to wrap the antenna mounted directly to the AP3965e. Do not install the AP with the antennas pointing upward. The recommended installation has the antennas extended horizontally.





**Figure 12: Weatherproofing the AP3965e Antenna**

1	Antenna	4	Standard polarity Type-N jack
2	Nut	5	AP3965
3	Standard polarity Type-N plug	6	Sealing tape (recommended, but not supplied)

To weatherproof the antenna (refer to [the figure above](#)):

- 1 Secure the antenna in place by tightening the single nut (item 2).
- 2 Seal the connection between the Type-N jack (item 4) of the AP3965e and the Type-N plug (item 3) of the antenna by wrapping a layer of sealing tape (item 6).

### Forming a Drip Loop for AP3965e Cables

Once the cables have been connected to the AP and the connections have been weatherproofed, gather each cable below the AP, and form a drip loop as shown in [Figure 13: Drip Loop for the AP3965e](#) on page 26.



#### Note

The drip loop prevents water from entering the AP by channeling water down and away from the connection points. Drip loops are required to ensure proper operation of the AP.



**Figure 13: Drip Loop for the AP3965e**

## Configuring AP3965 Channel Settings

The AP3965 must be installed by a professional installer. Before starting the installation, the installer needs to determine and configure the following:

- [Determine the Antenna Model](#) on page 26
- [Configure Radio RF Port](#) on page 26
- [Configure Radio Channel](#) on page 28
- [Configure Radio Transmit \(Tx\) Power](#) on page 29

### Determine 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 7: External Antennas for AP3965e](#) on page 34.

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

The **AP Properties** tab displays Wireless AP information.

**AP Properties** | WLAN Assignment | Radio 1 | Radio 2 | Static Configuration | 802.1x

**Serial #:** 1548Y-1005600000  
**Host Name:** AP3965e-1548Y-1005600000  
**Name<sup>1</sup>:** 3965e-ROW\_02  
*<sup>1</sup> Change of name will cause interruption of service if DHCP is enabled*

**Location:** [ ] [▶]  
**Zone:** [ ] [▶]  
**Description:** [ ] [↑] [↓]

**Topology:** esa0  
**AP Environment<sup>2</sup>:** Outdoor [▼]  
*<sup>2</sup> Change of Environment will cause interruption of service*

**Hardware Version:** Wireless AP3965e-ROW External  
**Application Version:** 10.01.02.0021

**Status:** Approved  
**Active Clients:** 7  
**Role:** Traffic forwarder (AP)

**Country<sup>3</sup>:** Australia [▼]

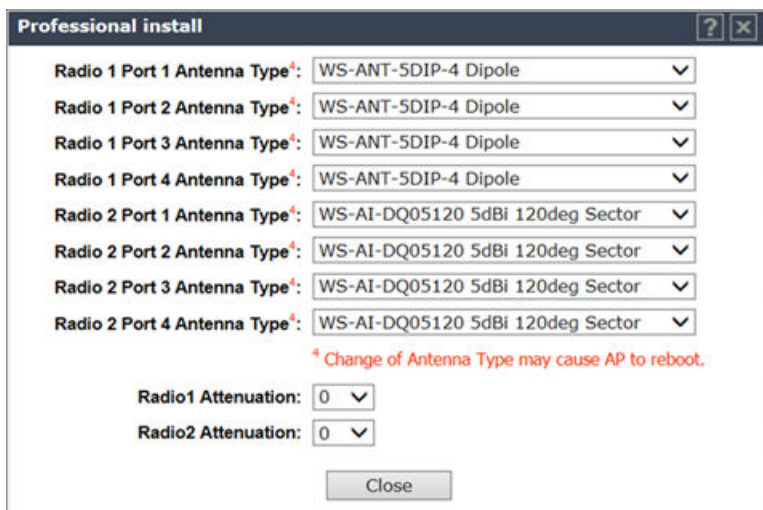
Professional install | Advanced...

Copy to Defaults | Reset to Defaults | Add Wireless AP | Save

**Figure 14: AP Properties for the AP3965e**

- 4 When configuring the AP3965e, click **Professional Install**.

The **Professional Install** dialog displays to configure the external antennas.



**Figure 15: Professional Install Dialog**

- 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 1 to 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 the 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.

## Configure 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.

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

**Figure 16: AP3965e Radio 1 Properties — Base Settings**

- 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 17: AP3965e Radio 1 Properties — Channel Plan Setting**

- Repeat the process for **Radio 2**.

## Configure 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 ExtremeWireless Assistant.

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

The **Wireless AP** screen is displayed.

- 3 Select **AP** in the left pane, then in the Wireless AP list, click the Wireless AP whose properties you want to modify.
- 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. Max Tx Power refers to:
  - Current channel if the radio is up and **Request New Channel** is not set
  - Request Channel if it is set to a supported channel
  - If **Request New Channel** is set to Auto, then Max Tx Power is limited to the lowest power channel configured in the Channel plan.

AP Properties	WLAN Assignment	Radio 1	Radio 2	Static Configuration	802.1x
<b>Base Settings</b>		BSS Info D8:84:66:49:39:40 SG01 N/A erin wds (disabled)			
Admin Mode		On			
Radio Mode		a/n/ac			
Channel Width		80MHz			
<b>Basic Radio Settings</b>		RF Domain 39xxDomain			
Current Channel <sup>1</sup>		40: (5180,[5200],5220,5240)			
Last Requested Channel		40: (5180,[5200],5220,5240)			
Request New Channel		-			
Auto Tx Power Ctrl (ATPC)		<input type="checkbox"/>			
Current Tx Power Level		23 dBm			
Max Tx Power		24 dBm			
Channel Plan		All Channels			
		View			
		Advanced...			

<sup>1</sup> AP may take up to 90 seconds to report the current channel

**Figure 18: AP3965e 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

## Internal Antenna Access Points External Antennas

This appendix lists the specifications for the ExtremeWireless Outdoor Access Point AP3965.

**Table 5: Specifications for the AP3965**

Item	Specification
AP Part Numbers	
31016	WS-AP3965i-FCC
31017	WS-AP3965i-ROW
31018	WS-AP3965e-FCC
31019	WS-AP3965e-ROW
Enclosure material	Metal enclosure IP67 rated
Power source	802.3at or 802.3at+ compliant PoE
Power consumption	< 22W (Max.) when operating as AP only < 55W (Max.) when operating as AP and providing power to a second device
Antenna	8 Type-N jack antenna connectors: 4 5GHz and 4 2.4GHz
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)
Water/Dust Proof Ratings	NEMA Type 6
Operating temperature	-22° F to 158° F (-30° C to +70° C) (upper temperature includes solar load and elevation)
Altitude (feet)	Operating: 13,000 Non-Operating: 50,000
Relative Humidity (% RH)	Operating: 0%-95% (non-condensing) Non-Operating: 0%-95% (condensing allowed on the outside packaging)
Wind	Up to 150Mph

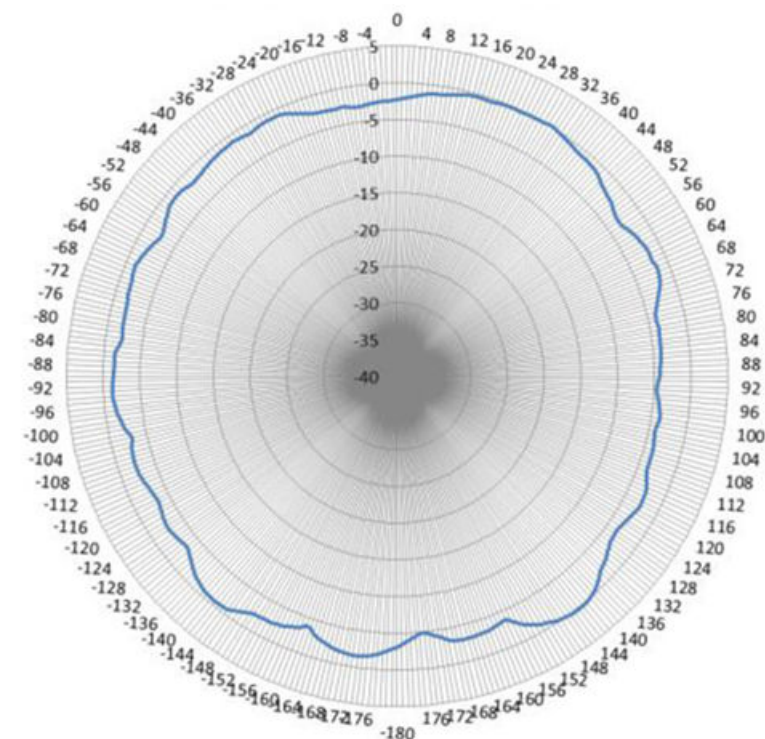
## Internal Antenna Access Points

The AP3965i is an indoor access with eight integrated internal antennas. The following specifications are for the internal antennas:

**Table 6: AP3965i Internal Antennas**

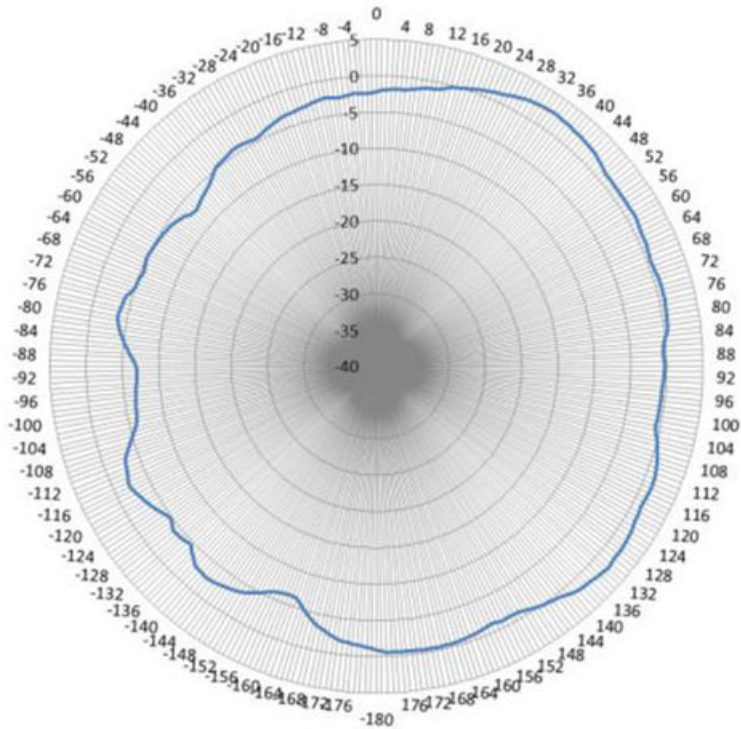
Model Type	Application	Description	Gain (dBi)	Frequency (GHz)	Connector
AP3965i	Indoor	MU-MIMO	5dBi	2.4	None
			6dBi	5	None

The following radiation patterns apply to the antennas in the AP3965i only. In these diagrams, 0 degree is the AP's front and +/- 180 degree is the AP's back.

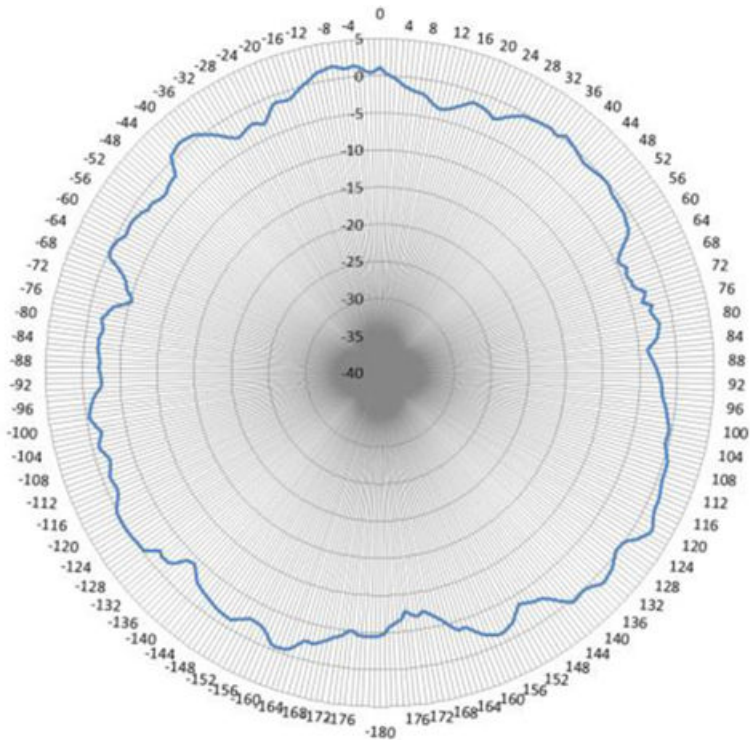


**Figure 19: Horizontal Radiation Pattern 2.4 GHz**

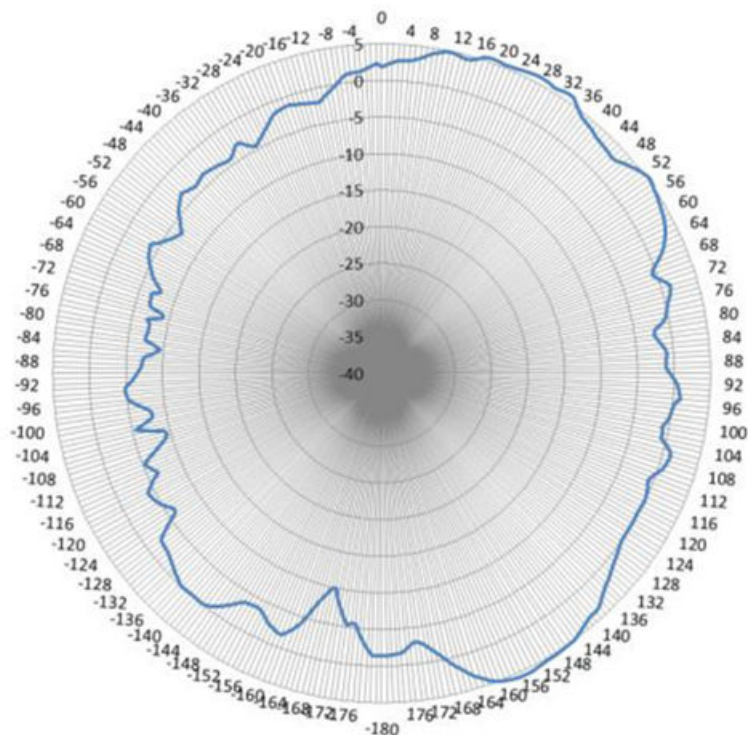




**Figure 20: Vertical Radiation Pattern 2.4 GHz**



**Figure 21: Horizontal Radiation Pattern 5 GHz**



**Figure 22: Vertical Radiation Pattern 5 GHz**

## External Antennas

The table below lists the external antennas for AP3965e. For more detailed specifications and radiation pattern diagrams, see the [ExtremeWireless External Antenna Site Preparation and Installation Guide](#).



### Note

All antennas are for an outdoor application with Standard Polarity Type-N connectors.

**Table 7: External Antennas for AP3965e**

Part No. (Short Description)	Frequency Band	Antenna Type	2.4G Gain	5G Gain	Shape
30711 (WS-AO-DQ05120N)	2.4G/5G	Sector	5-5.5	5-5.5	120 degree, sector, four-feed
30712 (WS-AO-5Q04060N)	5G	Sector	N/A	4	60-degree, sector, four-feed
30713 (WS-AO-2Q05060N)	2.4G	Sector	5	N/A	60-degree, sector, four-feed
30714 (WS-AO-DE07025N)	2.4G/5G	Sector	6.5-7.5	5-6.5	25-degree, sector, eight-feed
30715 (WS-AO-DE13025N)*	2.4G/5G	Sector	13	11-12	25-degree, sector, eight-feed

**Table 7: External Antennas for AP3965e (continued)**

Part No. (Short Description)	Frequency Band	Antenna Type	2.4G Gain	5G Gain	Shape
30716 (WS-AO-5Q05025N)	5G	Sector	N/A	4.5-5	25-degree, sector, four-feed
30717 (WS-AO-5Q11025N)	5G	Sector	N/A	11-11.5	25-degree, sector, four-feed
30718 (WS-AO-DE10055N)	2.4G/5G	Sector	10-10.5	6-7.5	55-degree, sector, eight-feed
30720 (WS-AO-DE07180N)	2.4G/5G	Panel	7	6-7	100-degree, panel, eight-feed
30724 (WS-AO-DQ04360N)	2.4G/5G	Omni	4-5.5	4-6	Omni
WS-AO-5D23009N* (WS-AO-5D23009N)	5G	Directional for point-to-point applications	N/A	23	9 degree, panel, dual polarization, point-to-point

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\* Approved for FCC (US) and IC (Canada) only.

# B Regulatory Information

AP3965  
United States  
Canada  
European Community  
Certifications of Other Countries  
AP3965e Approved External Antennas

This appendix provides regulatory information for the ExtremeWireless AP3965i and AP3965e.



### Warning

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



### Note

Throughout this appendix, the term Extreme Networks AP3965 refers to the AP models AP3965i and AP3965e. Specific AP models are identified in this appendix only where it is necessary to do so.



### Warning

Changes or modifications made to the Extreme Networks AP3965 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.



### Warning

To operate the ExtremeWireless Outdoor AP3965 safely, the chassis ground connector must have a suitable cable connected. Do not use the ExtremeWireless Outdoor AP3965 without a ground cable connected.



### Warning

Electrical Hazard: Only qualified personnel should perform installation procedures. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards. A qualified person understands the requirements and risks involved with installing outdoor electrical equipment in accordance with national codes.

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## AP3965

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Unless noted otherwise, the following regulatory information applies to both the AP3965i and the AP3965e.

### AP3965e External Antenna AP

The AP3965e must be used only with certified external antennas. Any unused antenna ports must be terminated.

For a list of approved external antennas, see [External Antennas](#) on page 34.

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## United States

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### 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 A 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 commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### USA Conformance Standards

This equipment meets the following conformance standards:

#### Safety

- UL 60950-1

#### EMC

- FCC CFR 47 Part 15, Class B

#### Radio transceiver

- FCC CFR 47 Part 15.247, Subpart C (2.4 GHz)
- FCC CFR 47 Part 15.407, Subpart E (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)

---

### Warning

The ExtremeWireless AP3965 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 AP3965 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 Extreme Networks-certified antennas. Any changes or modifications to the product not expressly approved by Extreme Networks 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.

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## FCC RF Radiation Exposure Statement

The AP3965 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 co-located or operated in conjunction with any other antenna or transmitter.

The radiated output power of the AP3965 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 38 cm between the radiator and your body or other co-located operating antennas.

## External Antennas

The external antennas used with the AP3965e must be approved and certified before use. However, in order to comply with the local laws and regulations, an approval may be required by the local regulatory authorities.

For a list of approved external antennas, refer to [External Antennas](#) on page 34.

## Professional Installation Notice

To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.

## Canada

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## Industry Canada Compliance Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter (IC: 4141B-4411OAC) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 4141B-4411AC) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

The antennas used for this transmitter must be installed to provide a separation distance of at least 39 cm (150cm for WS-AO-5D23009N) from all persons and must not be co-located or operating in conjunction with another antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 39 cm (150cm pour WS-AO-5D23009N) de distance entre la source de rayonnement et votre corps.

Dynamic Frequency Selection (DFS) for devices operating in the bands 5250- 5350 MHz, 5470-5600 MHz and 5650-5725 MHz

Sélection dynamique de fréquences (DFS) pour les dispositifs fonctionnant dans les bandes 5250-5350 MHz, 5470-5600 MHz et 5650-5725 MHz

This device may not be operated in the band 5150-5250 MHz outdoors. This band is restricted to indoor use only to reduce potential harmful interference to co-channel mobile satellite systems.

Ce dispositif ne peut pas être utilisé dans la bande 5150-5250 MHz à l'extérieur. Cette bande est limitée à une utilisation en intérieur afin de réduire les interférences nuisibles potentiel de co- canal avec les systèmes mobiles par satellite.

The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit.

le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.

The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.

le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

For product available in the USA/Canada market, only channel 1-11 can be operated. Selection of other channels is not possible.

Pour les produits disponibles aux États-Unis / Canada du marché, seul le canal 1 à 11 peuvent être exploités. Sélection d'autres canaux n'est pas possible.

High-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Les radars à haute puissance sont désignés comme utilisateurs principaux (c. utilisateurs prioritaires) des bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient provoquer des interférences et / ou endommager les appareils LE- LAN.

## 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 5GHz)

### Other

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

## European Community



### Note

This product complies with the requirements of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

The Extreme Networks® AP3965i and AP3965e are 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 equipment for operation by entry of a country code relative to a specific country. After the country



code is selected, the equipment will use the proper frequencies and power outputs for that country code.

The AP3965 is intended for outdoor use and must be installed in a proper outdoor location. Contact local Authority for the 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

The full text of the EU declaration of conformity is available at the following Internet address: <http://www.extremenetworks.com/>



### Note

Changes or modifications made to this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

English	Hereby, Extreme Networks, Inc. declares that the radio equipment type Wireless LAN Access Point is in compliance with 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	<b>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.</b>
Icelandic	Extreme Networks lýsir her með yfir að thessi bunadur, Radio LAN device, uppfyllir allar grunnkröfur, sem gerðar eru í 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.
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 oħrajn rilevanti 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.
Hungarian	Alulírott, Extreme Networks nyilatkozom, hogy a Radio LAN device megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
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, deklaruje, 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

## European Waste Electrical and Electronic Equipment (WEEE) Notice



In accordance with Directive 2012/19/EU of the European Parliament on waste electrical and electronic equipment (WEEE):

- 1 The symbol above indicates that separate collection of electrical and electronic equipment is required.
- 2 When this product has reached the end of its serviceable life, it cannot be disposed of as unsorted municipal waste. It must be collected and treated separately.
- 3 It has been determined by the European Parliament that there are potential negative effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment.
- 4 It is the users' responsibility to utilize the available collection system to ensure WEEE is properly treated.

For information about the available collection system, please contact Extreme Customer Support at 353 61 705500 (Ireland).

## External Antennas

The external antennas used with the AP3965e must be approved and certified before use. However, in order to comply with the local laws and regulations, an approval may be required by the local regulatory authorities.

For a list of approved external antennas, refer to [External Antennas](#) on page 34.

## 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 AP3965 must not be operated until properly configured for the customer's geographic location.

### Caution



The user or installer is responsible to ensure that the ExtremeWireless AP3965 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

Follow the instructions in this guide to configure the ExtremeWireless AP3965.

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 AP3965 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 5 GHz Turbo Mode feature is not enabled for use on the AP3965.

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

The external antenna APs must only use antennas that are certified by Extreme Networks.

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

In Greece and Italy, the end user must apply for a license from the national spectrum authority to operate outdoors.

## European Spectrum Usage Rules

The AP configured with approved internal or external antennas can be used for indoor and outdoor transmissions throughout the European community as displayed in [the following table](#). Some restrictions apply in Belgium, France, Greece, and Italy.

**Table 8: 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)
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 (Outdoor w/ license)
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

**Table 8: 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)
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 AP3965i and AP3965e have been certified for use in various other countries. When 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 the device will be operated within or run the risk violating local laws and regulations.

## Approved External Antennas

The external antenna AP3965e can also be used with certified external antennas. However, in order to comply with the local laws and regulations, an approval may be required by the local regulatory authorities.

For a list of approved external antennas, refer to [External Antennas](#) on page 34.

## Other Country Specific Compliance Standards, Approvals and Declarations

- IEC 60950-1 CB Scheme + National Deviations
- IEC 60950-22 (Outdoor install)
- 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)

## 产品说明书附件 Supplement to Product Instructions

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr <sup>6+</sup> )	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属部件 (Metal Parts)	×	○	○	×	○	○
电路模块 (Circuit Modules)	×	○	○	×	○	○
电缆及电缆组件 (Cables & Cable Assemblies)	×	○	○	×	○	○
塑料和聚合物部件 (Plastic and Polymeric parts)	○	○	○	○	○	×
电路开关 (Circuit Breakers)	○	○	×	×	○	○

○： 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。  
Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T 11363-2006 standard.

×： 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006 标准规定的限量要求。  
Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T 11363-2006 standard.

对销售之日的所售产品, 本表显示, 凯创供应链的电子信息产品可能包含这些物质。注意: 在所售产品中可能会也可能不会含有所有所列的部件。  
This table shows where these substances may be found in the supply chain of Extreme electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

除非另外特别的标注, 此标志为针对所涉及产品的环保使用期标志。某些零部件会有一个不同的环保使用期(例如, 电池单元模块)贴在其产品上。  
此环保使用期限只适用于产品是在产品手册中所规定的条件下工作。  
The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.





## NCC Statement

- (1) 「經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能」。
- (2) 「低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾」。
- (3) 「電磁波曝露量 MPE 標準值  $1\text{mW}/\text{cm}^2$ ，本產品使用時建議應距離人體：58 cm」。
- (4) 固定式點對點操作，不包括點對多點系統、全方向性應用及多台共站發射機傳送相同資訊。

## AP3965e Approved External Antennas

The AP3965e external antenna AP can be used with certified external antennas. However, in order to comply with the local laws and regulations, an approval may be required by the local regulatory authorities. The optional antennas have been tested and approved for use with the external antenna model.

This device has been designed to operate with the optional antennas having a maximum gain of 23 dB. Antennas not included in this list or antennas having a gain greater than 23 dB are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p) is not more than that required for successful communication.

For a list of AP3965e approved antennas, see [Table 7: External Antennas for AP3965e](#) on page 34.

## RF Safety Distance

The antennas used for this transmitter must be installed to provide a separation distance of at least 39 cm (based on 150cm for WS-AO-5D23009N) from all persons and must not be co-located or operating in conjunction with another antenna or transmitter. This requirement applies to AP3965e and AP3965i.