Altitude 300-2™

Getting Started Guide

Software Version x.x

Contents

Preface

This preface provides an overview of this guide, describes guide conventions, and lists other publications that might be useful.

NOTE

To ensure proper operation of your Extreme Networks equipment, read this guide before you install any Extreme Networks equipment.

Introduction

This guide provides the required information to install the Altitude 300™ wireless port. It also contains general product information about the Altitude 300-2™.

This guide is intended for use by network administrators who are responsible for installing and setting up network equipment. It assumes a basic working knowledge of:

- Local Area Networks (LANs)
- Ethernet concepts
- Simple 802.11 wireless LAN concepts.

See the ExtremeWare Software User Guide for information about configuring an Extreme Networks device.

NOTE

If the information in the Release Notes that shipped with your switch differs from the information in this guide, follow the Release Notes.

Related Publications

The Extreme Networks wireless port documentation set includes:

*   Altitude 300-2™ Getting Started Guide (this guide)
*   Unified Access Deployment Guide.
*   ExtremeWare Software User Guide

Documentation for Extreme Networks products is available on the World Wide Web at the following location:

http://www.extremenetworks.com/

Conventions

Table 1 lists conventions that are used throughout this guide.

Table 1: Notice Icons

Icon	Notice Type	Alerts you to...
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.

Documentation for Extreme Networks products is available from the Extreme Networks website at the following location:

http://www.extremenetworks.com/services/documentation/

You can select and download the following Extreme Networks documentation from the Documentation section of the Services page:

*   Release Notes
*   Software
*   Hardware
*   Reports
*   White Papers
*   Troubleshooting Tools
*   Preventative Maintenance
*   Instructional Videos
*   Archives

You can also purchase Extreme Networks documentation from the Extreme Networks website.

1 Altitude 300-2™ Wireless Port Introduction

Introduction

The Altitude 300-2™ wireless dual-band wireless port provides transparent, wireless high-speed data communications between the Summit 300™ family of wired LAN products and wireless fixed, portable or mobile devices equipped with 802.11a, and 802.11b/g. wireless adapters.

The Altitude 300-2™ is part of Extreme Network's Unified Access Architecture. When connected to the Summit 300-48™ it provides a wireless network that is completely integrated into the enterprise network. As part of the Unified Access Architecture, the management of Altitude 300-2™ and Summit 300-48™ is a seamless extension of Extreme Networks' centralized management system, EPICenter™. This integrated network provides unified security, scalability and manageability.

Hardware Description

Altitude 300-2™ Models And Connections

The Altitude 300-2™ wireless port box comes in two models. The first, the Altitude-2i™, is a unit with integrated, dual band antennas and the second, the Altitude-2d™, is a unit with external antenna connectors. Both models have the same radios and overall feature set.

Figure 1 shows the rear side of the integrated antenna model of the Altitude 300-2i™. The Ethernet cable is plugged into the RJ45 jack. It supplies both network connectivity and power to the unit. The Altitude 300-2i™ can be locked by either a standard computer cable lock inserted in to hole or a padlock in hole.
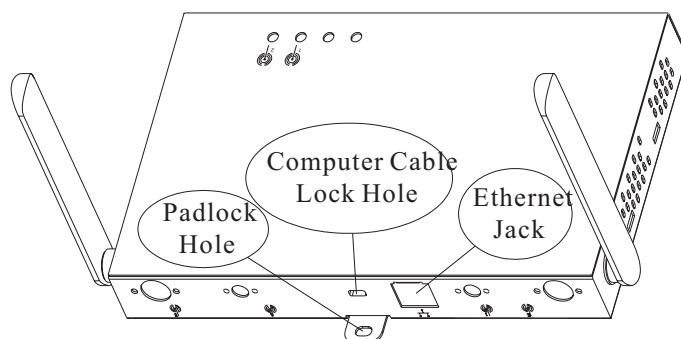
Figure 1: Rear View Of Altitude 300-2i™

Figure 1 shows the rear side of the integrated antenna model of the Altitude 300-2i™. The Ethernet cable is plugged into the RJ45 jack. It supplies both network connectivity and power to the unit. The Altitude 300-2i™ can be locked by either a standard computer cable lock inserted in to hole or a padlock in hole.
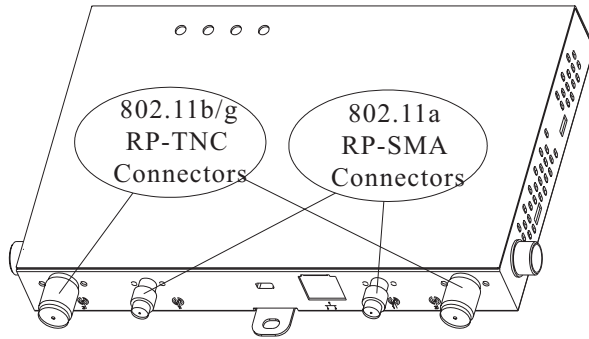
Figure 2: Rear View Of Altitude 300-2d™

Radio Characteristics

The Altitude 300-2™ has two radios. The first uses a radio modulation technique known as Orthogonal Frequency Division Multiplexing (OFDM). It operates in the 5GHz UNII/ISM bands. Data is transmitted over a half-duplex radio channel operating at up to 54 Megabits per sec.

The second radio has two modulation modes both using half-duplex access. The first modulation mode, Direct Sequence Spread Spectrum (DSSS) is used with 802.11b clients. It operates up to 11 Mbps. The second modulation, OFDM is used with 802.11g clients. Like 802.11a it operates up to 54 Mbps. These modulations use the 2.4 GHz, ISM band. In the ISM band the Altitude 300-2™ detects what clients are present and selects the modulation mode.

Both UNII band and ISM band radios support antenna diversity. The Altitude 300-2i™ has two integrated antennas. These antennas are dual band, operating simultaneously in the 2.4 - 2.4835 GHz and 5.15- 5.35 and 5.725 - 5.85 GHz bands. The Altitude 300-2d™ has external antenna connectors that that support attachable antennas that operate in the 2.4 - 2.4835 GHz and 5.25 - 5.35 and 5.725 - 5.85 GHz bands.

⚠ **CAUTION**

External antennas must be certified by Extreme Networks or selected by a profession installer to insure they meet all regulatory requirements.

⚠ **NOTE**

The Altitude 300-2d™ is designed for diversity with two antenna connectors for each radio. It is import for the proper operation of the wireless port that antennas be installed on each connector.

LED Indicators

The Altitude 300-2™ includes four status LED indicators visible on the basic box or through the light pipes of the plastic cover. They are depicted and described in the Figure 3 and Table 1.

Figure 3: Altitude 300-2™ LED Indicators, Without Plastic Cover

Table 2: LED Indicator Functions

LED Symbol	LED Name	Color	Status	Description
	Power	Amber & Green	Off	No power
			Amber On	Self test fault found
			Green Flashing	Indicates loading software program
			Green On	The unit is operational.
	LAN	Green	Off	No Ethernet link or the link is disabled
			On	Indicates a valid 10/100 Mbps Ethernet cable link.
			Flashing	Indicates that the wireless port is transmitting or receiving data on a 10/100 Mbps Ethernet LAN. Flashing rate is proportional to the link's activity.
	Radio 1	Green	Off	Disabled or no BSS constructed
			On	802.11a BSS constructed and no activity
			Flashing	Indicates that the wireless port is transmitting or receiving data through the 802.11a radio. Flashing rate is proportional to network activity.
	Radio 2	Green	Off	802.11b/g Disabled or no BSS constructed
			On	802.11b/g BSS constructed and no activity
			Flashing	Indicates that the wireless port is transmitting or receiving data through the 802.11b/g radio. Flashing rate is proportional to network activity.

Figure 4: Package Checklist

The Altitude 300-2™ wireless port package includes:

- One Altitude 300-2™ wireless port (Altitude 300-2i™ or Altitude 300-2d™)
- One short Ethernet straight cable
- Altitude 300-2™ Getting Started Manual
- One universal mounting bracket
- Two T-Bar ceiling fasteners and fastener nuts
- Two T-Bar fastener spacers
- Four #8x1 inch (25.4 mm) mounting screws and plastic anchors
- Four stick-on feet
- One cable tie to secure the Altitude 300-2O to the universal mounting bracket
- One 10-24 nut

The optional plastic cover kit not included here contains:

- Five Altitude 300-2™ plastic covers (15482- translucent, 15483- cool gray, 15484- cream).
- Ten antenna shrouds for use with the Altitude 300-2i™.
- An installation guide sheet.

If possible, retain the carton, including the original packing materials. Use them again to repack the product in case there is a need to return it.

Optional Equipment Not Supplied.

- One padlock for securing the Altitude 300-2™ to the universal mounting bracket. The lock hasp is compatible with a Master Lock 120T lock or a like model.

⚠ **WARNING!**

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

- One computer lock cable for securing the Altitude 300-2™ when the universal mounting bracket is not used.
- Box hanger for installing the Altitude 300-2™ above the tiles of a suspended ceiling.
- External antenna(s) for the Altitude 300-2d™. Extreme Networks' external antennas can be ordered separately.

Software Description

The Altitude 300-2™ receives its software and configuration from the Summit 300™ switch. A description of the software and the wireless port's configuration is in the Summit 300™ manual.

2 HARDWARE INSTALLATION

Installation Steps

1 For wall and ceiling installations the universal mounting bracket is used. If unit is being mounted on a table or shelf skip to step 4. Locate and install the universal mounting bracket. Refer to the instructions for the various ceiling installation options (*Mounting Below A Hard Ceiling* page 18, *Mounting Below A Hanging Ceiling*: page 18, *Mounting Above The Hanging Ceiling*: page 18, and *Mounting Above The Hanging Ceiling*: page 19) and the wall mounting option (*Mounting On A Wall*: page 20) in the next section.

2 Mount the Altitude 300-2™ on the universal mounting bracket. The Altitude 300-2™ has three slotted mounting holes on the back of the unit. The mounting studs on the universal mounting bracket fit into the slotted mounting holes. The unit slides all the way forward into these holes. The lock hasp hole on the Altitude 300-2™ should line up with the lock hasp hole on the universal mounting bracket when the unit is slid all the way forward, see Figure 5: Mounting The Wireless Port On The Universal Mounting Bracket on page 14.

3 Lock and secure the Altitude 300-2™. The Altitude 300-2™ and the universal mounting bracket are designed to use a Master Lock 120T or similarly sized padlock to secure the wireless port from theft of from coming off the bracket, see Figure 5: Mounting The Wireless Port On The Universal Mounting Bracket on page 14. Wall and ceiling installations skip step 4.

⚠ WARNING!

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

4 For table and shelf installations, attach the stick-on feet. The Altitude 300-2™ kit comes with four stick-on feet for use when the unit is installed on top of a table or shelf. The feet do not have to be used for wall and ceiling installations.

⚠ WARNING!

The stick-on feet have not been tested for use in a plenum space. Do not use them for above the ceiling installations.

5 Connect the Ethernet Cable - The Altitude 300-2™ is connected to a powered, 10/100BaseT Ethernet cable from a Summit 300-48™.

![NOTE icon] **NOTE**

While the Altitude 300-2™ uses standard a standard 10/100BaseT signal and PoE power, it should only be connected to a Summit 300-48™ port for the proper operation of the management and configuration features of Extreme Networks' Unified Access System.

6   Connect the computer cable lock (optional). When the Altitude 300-2™ installation does not use the universal mounting bracket, the unit can be locked with a computer cable. The Altitude 300-2™ has a standard computer cable lock hole located at the rear of the box, see Figure 1: Rear View Of Altitude 300-2i™ on page 7, or Figure 2: Rear View Of Altitude 300-2d™ on page 8.

7   Connect the external antennas, Altitude 300-2d™. For the Altitude 300-2i™ skip to step 8. The Altitude 300-2dO has connectors for external antennas, see Figure 2: Rear View Of Altitude 300-2d™ on page 8. The access unit should be located within the reach of the antenna's cables. The large RP-TNC connectors are used for 2.4 GHz 802.11b/g antennas and the small RP-SMA connectors for 5 GHz 802.11a antennas. Two connectors of each type are supplied to support spatial diversity. The unit can be operated with one antenna on each radio if desired. When this step is completed go to step 10.

8   Attach the antenna shrouds (Altitude 300-2i™) - If the plastic cover is going to be used attach the antenna shrouds to the antennas, see Figure 8: Antenna Shroud on page 16.

9   Adjust the Integrated antennas, Altitude 300-2i™ - The Altitude 300-2i™ is equipped with two integrated dual band antennas that connect to both the 802.11a and 802.11b/g radios. Selecting the proper angle for the antennas is important to achieve the best performance from the system. For this reason the Altitude 300-2i™ is equipped with antennas that can be rotated. Once the proper angle has been set the Altitude 300-2i™ is outfitted with antenna shrouds that work with the plastic cover to lock in the proper angle. This to prevents the antennas from being accidentally misaligned after installation.

10 Attach the plastic cover -Attach the optional plastic cover to the box, see Figure 10: Plastic Cover Installation on page 17. After the cover has been secured push on each antenna to make sure is shroud is locked in position. This ensures that the teeth on the shroud are engaged with the teeth on the cover.

![WARNING icon] **WARNING!**

Attach the plastic cover -Attach the optional plastic cover to the box, see Figure 10: Plastic Cover Installation on page 17. After the cover has been secured push on each antenna to make sure is shroud is locked in position. This ensures that the teeth on the shroud are engaged with the teeth on the cover.

Altitude 300-2™ and Mounting Hardware

Before starting to install the wireless port and its hardware, take time to become familiar with the parts and their physical features.

Universal Mounting Bracket

The universal mounting bracket included with the wireless port is designed to mount on vertical and horizontal surfaces like walls and ceilings. It can be attached to electrical junction boxes in place of a wall plate and the Ethernet cable routed from the wall or ceiling through the central hole in the bracket to the Altitude 300-2™'s Ethernet jack. The universal mounting bracket can also be directly attached to a solid surface and the Ethernet cable attached through the network cable hole in the rear of the plastic

cover. The universal mounting bracket is also used for installations where the Altitude 300-2™ is placed in the plenum area above a hanging ceiling. For these locations it is designed to connect to a box hanger bar that is attached to the ceiling's T-Bars.
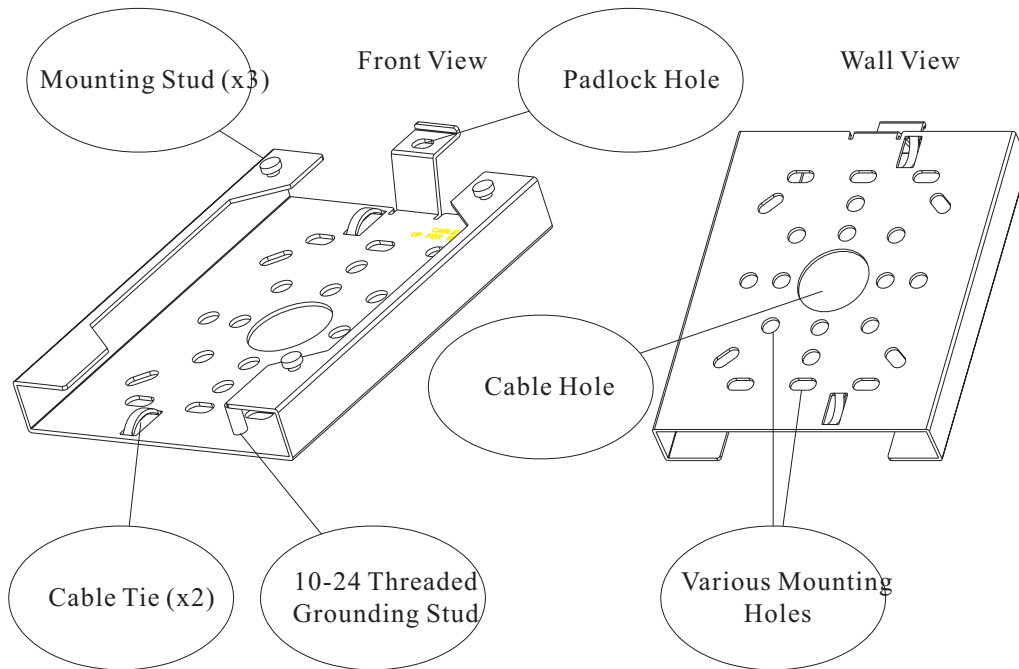
Figure 5: Universal Mounting Bracket

There are a number of holes and other features on the universal mounting bracket. The large central hole is for passing cables through when connecting the wireless port to in-the-wall cables. The smaller holes are designed to mate with various fastening hardware like junction boxes and box hanger bars. Two cable tie loops are provided for dressing cables. They accept standard nylon cable ties. The threaded stud is provided for grounding the plate when electrical codes require it. The lock hasp lines up with the lock hasp on the Altitude 300-2™. It secures the wireless port to the bracket. Either a lock or a cable tie can be placed in the lock holes.

To mount the Altitude 300-2™ on the bracket, place the box's mounting holes over the mounting studs on the bracket. Firmly slide the wireless port along the mounting studs until the holes in the lock hasps line up. The unit is designed to snap into place so some force is required.

⚠ WARNING!

Make sure the holes in the lock hasps are lined up to ensure that the wireless port is completely seated. Also make sure that the wireless port is engaged on all three mounting studs.

(1) Locate the three mounting holes on the back of the box

(2) Insert the bracket's mounting studs into the mounting holes

(3) Firmly slide the box down on the studs

(4) The box is properly installed when the lock hasp holes are lined up
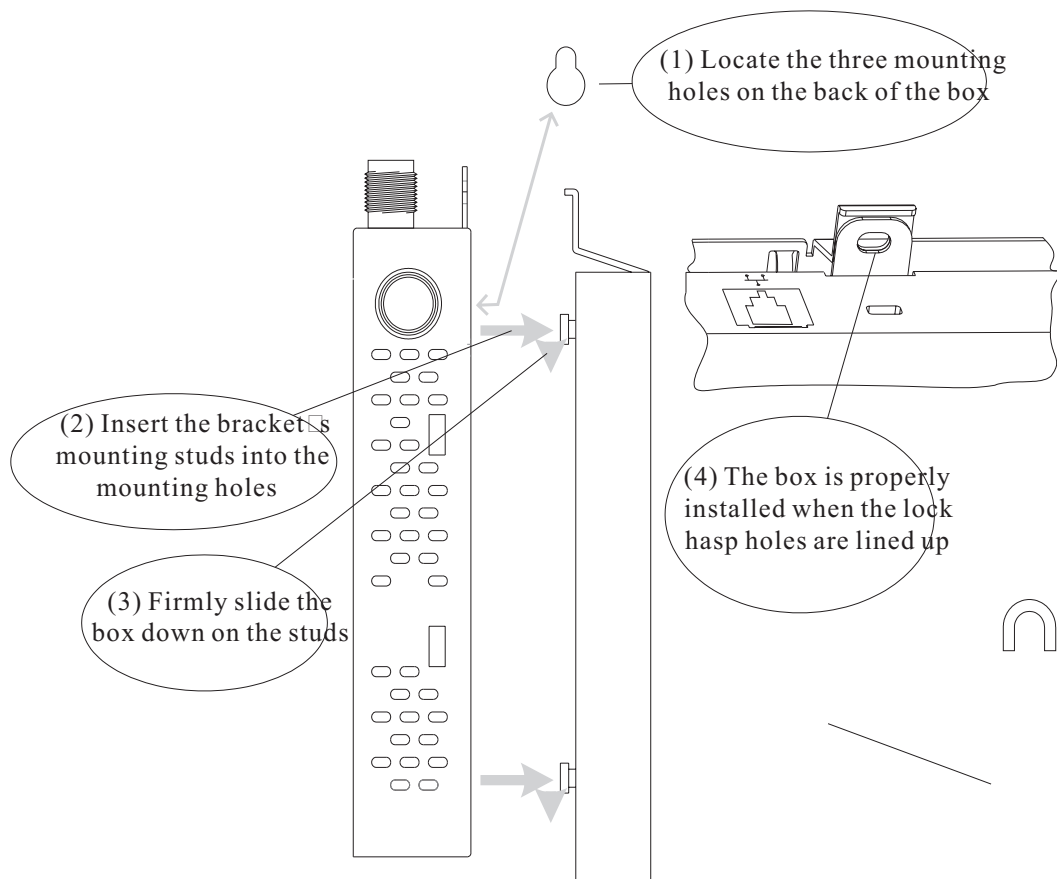
Figure 6: Mounting The Wireless Port On The Universal Mounting Bracket

To remove the wireless port from the universal mounting bracket first unlock or remove the cable tie. Push the box in the direction of the lock hasp while gently lifting it away from the bracket.

The universal mounting bracket is part of the Altitude 300-2™ kit. Spares may also be ordered. The part number is 15921.

T-Bar Fasteners and Spacers

The T-Bar fasteners included with the wireless port are designed to connect to a range of hanging ceiling T-Bar sizes. Following the steps in Figure 6, spread the T-Bar fastener apart, place it on the T-Bar and squeeze it together until it is firmly seated on the T-Bar. With the two T-Bar fasteners in place and properly spaced to match the brackets T-Bar fastener holes, determine if spacers are needed. The T-Bar fastener spacers are designed for hanging ceilings where the ceiling tiles' bottom surface is bellow the T-Bar. If this is the case, install the spacer as show in the diagram. The spacer allows the universal mounting bracket to sit below the bottom surface of the ceiling tile.

The universal mounting bracket is installed using the large wing nuts provided. Make sure these wing nuts are tight.

⚠️ **WARNING!**

For safety it is recommended that two T-Bar fasteners be used to connect the Altitude 300-2™ to a hanging ceiling. Make sure that the fasteners are securely on the T-Bar before installing the universal bracket and wireless port.

Downward face of the T-Bar

(A)

Swing the arms together to attach the T-Bar fastener to the T-Bar

(B)

Mount the bracket on the T-Bar fasteners and secure it with the T-Bar nuts
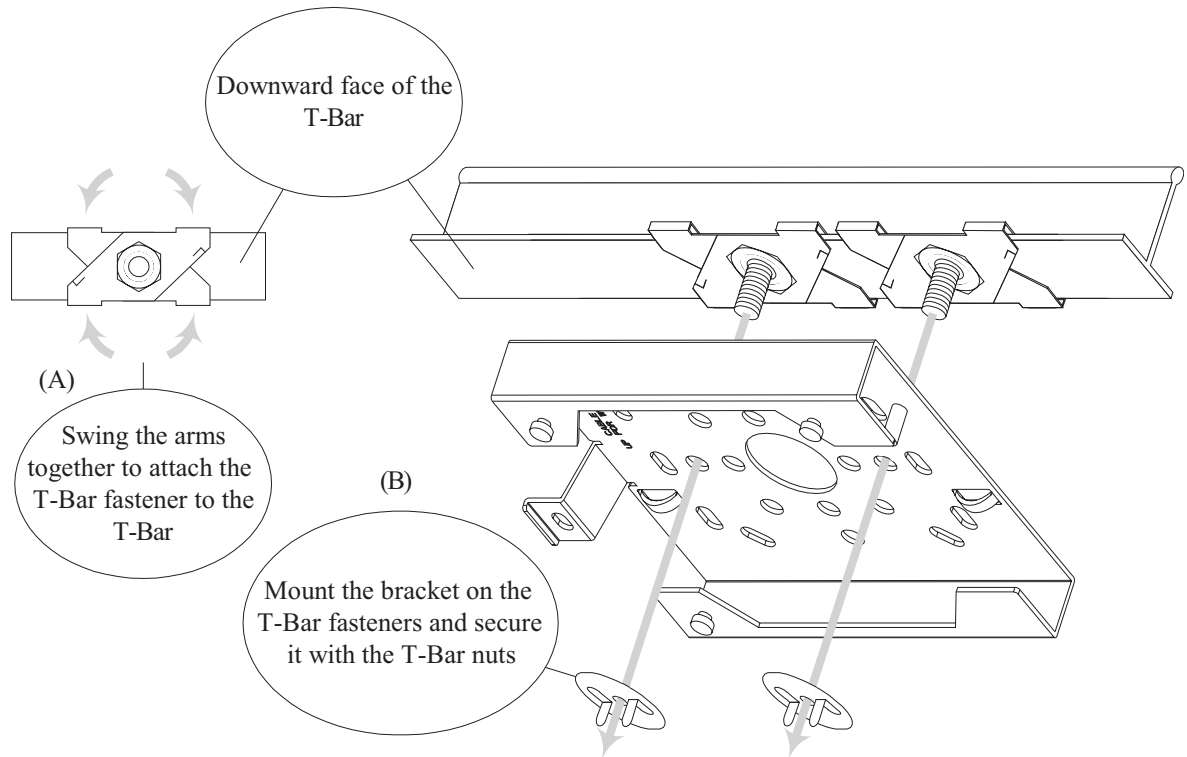
Figure 7: Installation On A Hanging Ceiling

The universal mounting bracket has mounting holes that allow it to be installed inline with the T-Bar as shown in Figure 6 or at right angles to the T-Bar.

Some hanging ceilings have tiles with bottom surfaces that hang bellow the bottom of the T-Bar. For these ceilings spacers are provided. The spacers go between the T-Bar fasteners and the universal mounting bracket as shown in Figure 7.
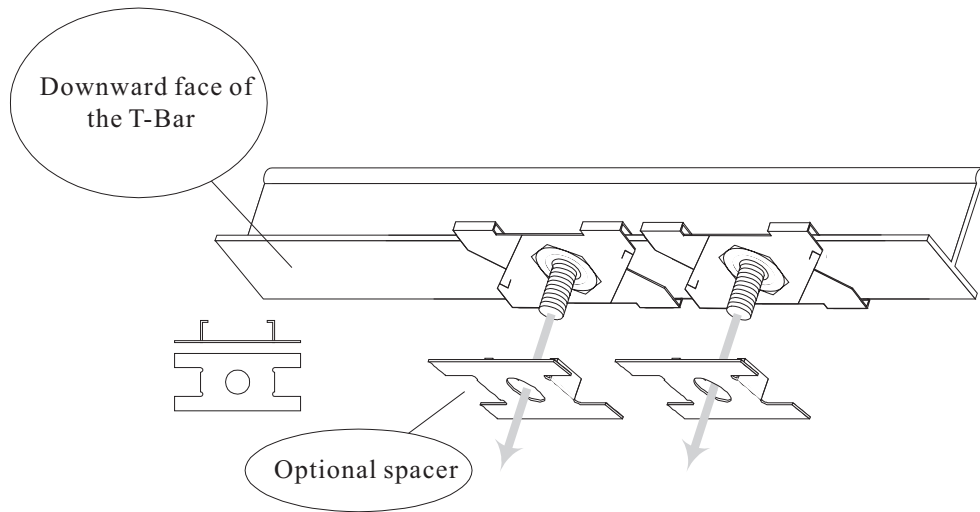
Figure 8: Installation Of Optional Spacer

⚠ NOTE

Use a small piece of tape to hold the spacer in place on the universal mounting bracket and install the spacer and the bracket together.

Optional Antenna Shrouds

Antenna shrouds are used with the Altitude 300-2i™ that has integrated dual band antennas. They are an optional item that is ordered with one of the plastic cover kits. Before the plastic cover is snapped on, each antenna shroud is slipped over the antenna housing so that the gear teeth are next to the box. The shroud is slipped all the way down on the antenna housing until it is firmly seated on the antenna tube that comes out of the box. The shroud clips on to the tube. With the shroud installed, the antenna is still free to be rotated to the desired angle. The process is repeated for the other side of the box.
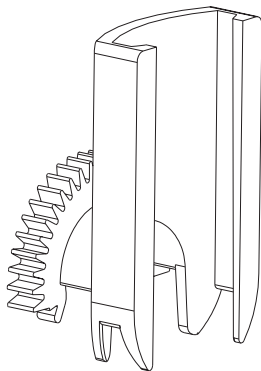
Figure 9: Antenna Shroud
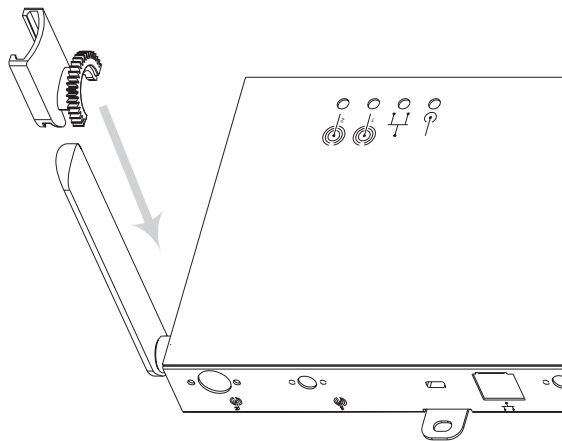
Figure 10: Antenna Shroud Installation

Optional Plastic Cover

The plastic cover is used with either the Altitude 300-2i™ or Altitude 300-2d™. Plastic covers are optional and are ordered with the plastic cover kit. The cover is installed on the Altitude 300-2™ after all cable connections and antenna adjustments are made and after the unit is locked or secured. To install the plastic cover place it directly over the box and line up the antenna slots in the cover with the antenna tubes on the box. While gently pulling out on the sides of the case where the clips are, press the cover firmly on to the box. The installer should hear and feel the cover snap into position.

Mount the bracket, and connect the padlock and any cables before installing the plastic cover

Gently pull out on the sides of the plastic cover as it is installed on the box
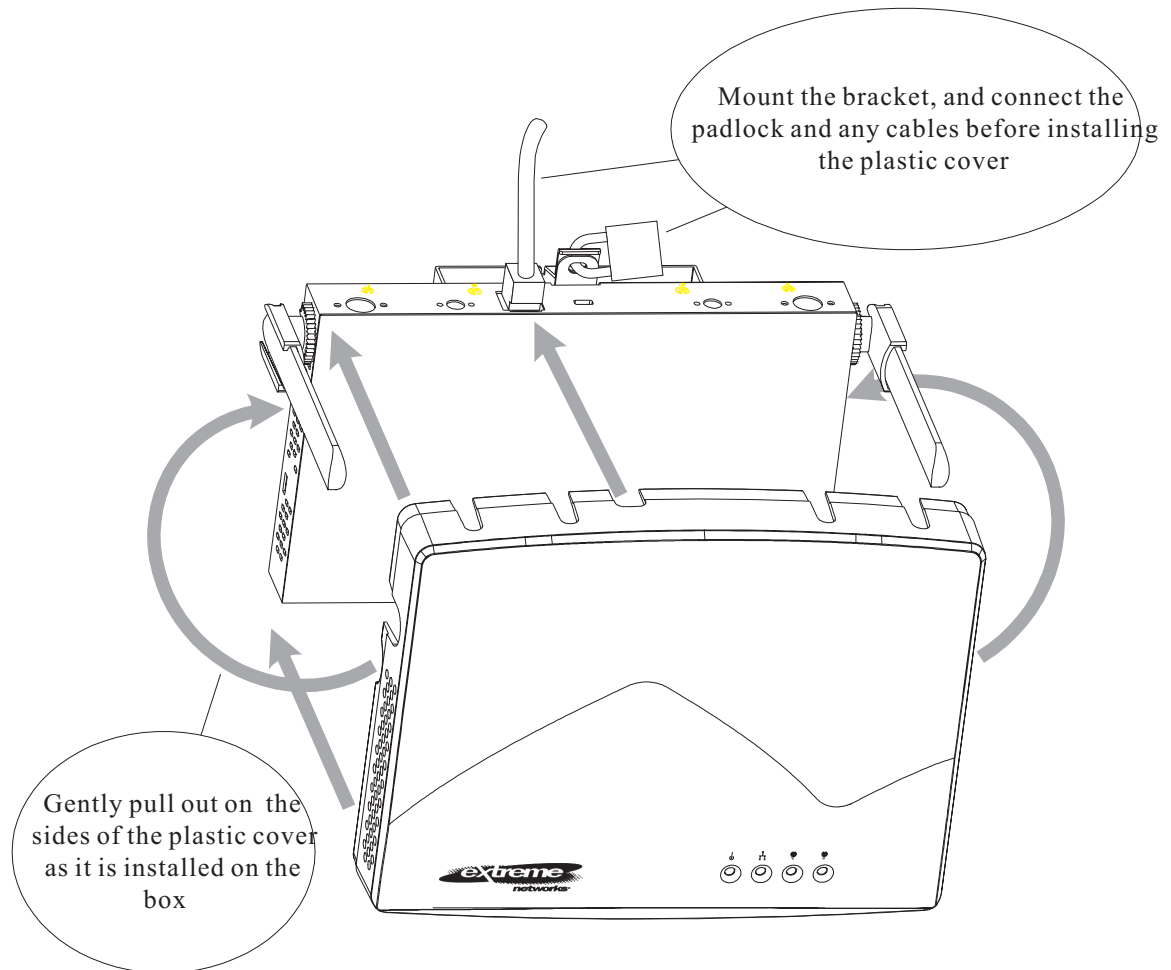
Figure 11: Plastic Cover Installation

⚠ NOTE

The cover is designed to secure the Altitude 300-2™ from casual tampering that can affect service to the clients. With the case in place the unit can't be unlocked, the Ethernet connection can't be unplugged, the integrated antennas (Altitude 300-2i™) can't be rotated and the external antenna connections (Altitude 300-2d™) can't be undone.

To remove the plastic cover, gently pull the sides near the clips outwards while pulling the cover off the box.

Painting The Plastic Cover.

The plastic cover can be painted to match a decor with any paint that is suitable for polycarbonate plastic. The plastic light pipe must be removed before painting. The light pipe assembly can be gently popped off using a screwdriver that is slipped into the small lips provided on the light pipe. After painting, reinstall the light pipe by snapping it back in place.

![NOTE icon] **NOTE**

Painting the antennas is not recommended.

Ordering The Plastic Cover Kit.

The plastic cover kit may be order from Extreme Networks. The kit includes covers and antenna shrouds. Please consult the Extreme Networks product web site, www.extremenetworks.com, for the latest product information. The plastic cover kits offered include:

Product Number: 15434- five translucent covers and ten black antenna shrouds

Product Number: 15435- five cool gray covers and ten black antenna shrouds

Product Number: 15436- five cream covers and ten black antenna shrouds

External Antennas

The Altitude 300-2d™ uses external antennas. Consult the Extreme Networks product web page for a current list of available external antennas. External antennas are connected to the RP-TNC connectors for the 802.11b/g radio and to the RP-SMA connectors for the 802.11a radio. The external antennas are connected before the optional plastic cover is installed.

![NOTE icon] **NOTE**

The Altitude 300-2d™ is designed for diversity with two antenna connectors for each radio. It is import for the proper operation of the wireless port that antennas be installed on each connector.

Placement of the Wireless Port

Choose a proper place for the wireless port. In general, the best location is at the center of the wireless coverage area, within line of sight of as many as possible wireless devices. Try to place the wireless port in a position that can best covers its cell. Normally, the higher the wireless port is placed, the better the overall performance.

Mounting Locations

The Altitude 300-2™ and its mounting hardware are designed for installation in a variety of places inside a building. The installation site may be selected for any combination of RF performance, aesthetics, and convenience reasons.

⚠️ **WARNING!**

The Altitude 300-2™ is not designed for outdoor use or sites that exceed its environmental specifications.

Mounting Below A Hard Ceiling

The Altitude 300-2™ may be installed underneath a hard ceiling where wall anchors are used to mount the bracket. Select the orientation for the bracket remembering that that integrated antennas are on the side and to the back of the Altitude 300-2i™. Use the bracket as a template to mark the holes on the ceiling. For each of the four plastic anchors supplied with the unit, drill 4.8 mm (3/16"} pilot holes, 24.5 mm (1") deep. If wall anchors are not being used drill 3.2 mm (1/8") holes, 1 inch (25.4 mm) deep. Install the bracket using the screws from the kit. The Altitude 300-2™ is designed to slip into the mounting slots on the bracket and slide all the way to the front, see Figure 5: Mounting The Wireless Port On The Universal Mounting Bracket on page 14. The unit should then be secured with either a padlock (not supplied) or a cable tie (supplied). The installer may now follow the standard instructions for connecting the Ethernet cable, antenna shrouds for integrated antennas, and the plastic cover.

⚠️ **WARNING!**

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

Mounting Below A Hanging Ceiling

The Altitude 300-2™ may be suspended from the T-Bars of a hanging ceiling. The mounting kit contains two T-Bar fasteners that can be adjusted for a variety of T-Bar widths. There are a number of round holes on the bracket that can be used for the T-Bar fasteners; use two that are convent for the required orientation on the ceiling. The bracket is oriented on the T-Bar with so that the antennas face the desired direction. Use the bracket to lightly mark where the T-Bar fasteners should be placed. Install the two T-Bar fasteners on the T-Bar, see Figure 6: Installation On A Hanging Ceiling on page 15. Some ceilings have ceiling tiles that hang down below the bottom of the T-Bar. Spacers are provided with the kit for these types of tiles. The spaces go between the T-Bar fasteners and the bracket with the spacer's face against the bracket, see Figure 7: Installation Of Optional Spacer on page 15. Mount the bracket and make sure fasteners are tight and the bracket is secure. The Altitude 300-2™ is now slipped into the bracket's mounting slots and slid all the way to the back, see Figure 5: Mounting The Wireless Port On The Universal Mounting Bracket on page 14. The unit should then be secured with either a padlock (not supplied) or a cable tie (supplied). The installer may now follow the standard instructions for connecting the Ethernet cable, antenna shrouds for integrated antennas, and the plastic cover.

⚠️ **WARNING!**

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

Mounting Above The Hanging Ceiling

The Altitude 300-2d™ is compliant with UL 2043 for installation in the plenum area above a hanging ceiling. The installer needs to make sure that the Ethernet cable used to connect to the unit is also

plenum rated, see the National Electric Code, NEC, Section 300-22(C). Equipment above the hanging ceiling should be secured to the T-Bars using a box hanger (not supplied). The universal mounting bracket has been designed to work with box hangers such as those from B-Line or Caddy, see Figure 11: Above The Ceiling Box Hanger Mount on page 20.

Examples of these T-Bar box hangers products are:

B-Line model: BA50A, www.cooperbline.com

Caddy model: 512-BU, www.erico.com

External antennas are recommended for installations above the ceiling. Locate where the external antenna will be located and their orientation. Select a site above the ceiling for the Altitude 300-2d™. This should be within reach of the external antenna's cables. Install the box hanger following the manufacturer's instructions. If the box hanger comes with a box the universal bracket can be installed onto the box or the box can be taken off and the bracket can be installed directly onto the box hanger bar using the fastener provided by the manufacturer. Make sure all the fasteners are tight before mounting the Altitude 300-2™ on the bracket. The Altitude 300-2™ should be secured to the bracket using either a padlock or a cable tie.

⚠ WARNING!

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

Connect the external antenna cables and the powered Ethernet cable to the Altitude 300-2d™.

⚠ WARNING!

The plastic cover and the antenna shrouds have not been tested for use in a plenum space. Do not use them for above the ceiling installations.
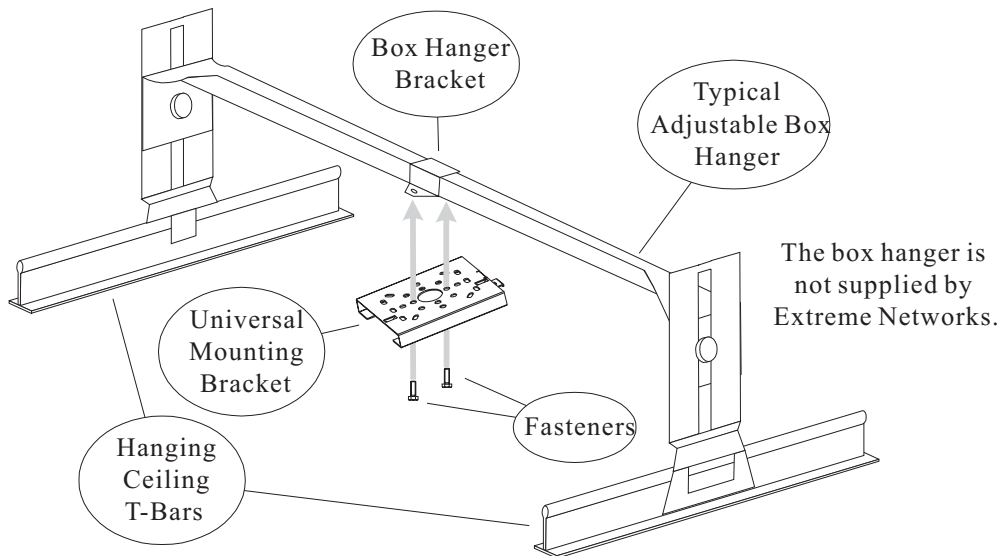

**Figure 12: Above The Ceiling Box Hanger Mount**

Mounting On A Wall

The Altitude 300-2™ can be mounted on a vertical surface using the universal mounting bracket supplied. The vertical position should be with the Ethernet cable and lock hasp pointing up. Select the location for the unit and use the bracket as a template to mark the holes in the ceiling. For each of the four plastic anchors supplied with the unit, drill 4.8 mm (3/16"} pilot holes, 24.5 mm (1") deep. If wall anchors are not being used drill 3.2 mm (1/8") holes, 1 inch (25.4 mm) deep. Install the bracket using the screws from the kit. The Altitude 300-2™ is designed to slip into the mounting slots on the bracket and slide all the way down, see Figure 5: Mounting The Wireless Port On The Universal Mounting Bracket on page 14. The unit should then be secured with either a padlock or a cable tie. The installer may now follow the standard instructions for connecting the Ethernet cable, antenna shrouds for integrated antennas, and the plastic cover.

The Altitude 300-2™ is not secured to the bracket unless a padlock is used. If a padlock is not used the unit should be secured to the bracket by a cable tie through the lock hasp to keep it from falling. Failure to secure the unit is hazardous.

Mounting On A Table Or Shelf

The Altitude 300-2™ can be installed on a table or shelf using the stick-on feet supplied in the unit's kit. After the feet are applied, the unit is placed on the horizontal surface and the powered Ethernet cable attached. If the unit is to be locked a standard computer cable and lock can be used. The computer lock hole is located at the rear of the Altitude 300-2™, see Figure 1: Rear View Of Altitude 300-2i™ on page 7. The antennas are installed and the antennas are adjusted now for optimal performance. After that the plastic cover is attached, securing the antennas and Ethernet cable.
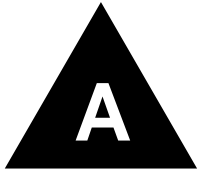
A SPECIFICATIONS

General Specifications

Maximum Number Of Tunable Channels

802.11a

FCC/IC: 13

ETSI: 4

France: 8

Spain: 8

MMK: 4

802.11b

FCC/IC: 1-11(3 non-overlapping)

ETSI: 1-13 (3 non-overlapping)

France: 10-14 (2 non-overlapping)

Spain: 10-11 (1 non-overlapping)

MKK: 1-14 (4 non-overlapping)

Data Rate

802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel

802.11b: 1, 2, 5.5, 11 Mbps per channel

802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel

Operating Frequency

802.11a

5.15 ~ 5.25 GHz (lower UNII band) US/Canada (Altitude 300-2dO only), Japan

5.25 ~ 5.35 GHz (middle UNII band) US/Canada

5.725 ~ 5.825 GHz (upper UNII and ISM C band) US/Canada

802.11b/g

2.4 ~ 2.4835 GHz

Maximum Output Power

(Note that the maximum allowable setting varies with individual country regulations)

    802.11a

        5.15 ~ to 5.25 GHz: 16 dBm

        5.25 ~ to 5.35 GHz: 19 dBm

        5.725 ~ to 5.85 GHz: 19 dBm

    802.11b

        17 dBm

    802.11g

        15 dBm

Radio Configurations

    Dual band: 2.4 GHz ISM and 5 GHz UNII/ISM

    Dual channel: one 802.11a and one 802.11b/g

Number of Clients

    Greater than 256

Network Configuration

    Infrastructure

Power supply

    Power Over Ethernet (PoE) Standard: IEEE 802.3af

    11 watts when both channels are operating

Physical Size With Plastic Cover

    21.3 (wide) x 16 (deep)x 4 (high) cm, (8.4 x 6.3 x 1.6 in)

    Mounting bracket adds 2 cm (0.8 in) to the height

Weight

635 grams (22.4 oz)

Add 20 grams (0.71 oz) for the mounting bracket

LED Indicators

    Ready (Power On/Fault), LAN (Ethernet Link/Activity), WLAN1 -802.11a and WLAN2 -802.11b/g

    (Wireless On/Activity)

Network Management

    EPICenterO

Temperature

    Operating: 0 to 55 oC (32 to 131 oF)

    Storage: 0 to 70 oC (32 to 158 oF)

Humidity

    5% to 95% (non-condensing)

Emissions

FCC Part 15.107 and 15.109 (C1ass B)

IECS-003 (Canada)

VCCI (Japan)

EN 301.489-1 and -17 (Europe)

Safety

CSA 22.2 No. 950-95

UL 1950 UL 2043

EN60950

IEC60950

Radio Approvals

FCC Part 15.247, 15.401-15.407

RSS-139-1, RSS-210 (Canada)

EN 301.893, 300.328 (Europe)

ARIB STD-T71, Telec 33B (Japan)

AS 4268.2 (Australia)

AS/NZS 354B (Australia and New Zealand)

Standards

IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX

IEEE 802.11a/b/g

IEEE 802.3af

FCC Bulleting OET-65C

RSS-102

Wi-Fi member

Sensitivity

Table 3: 802.11a Radio

Modulation/Rates	Sensitivity (dBm)
BPSK (6 Mbps)	-88
BPSK (9 Mbps)	-87
802.11a Radio	-86
QPSK (18 Mbps)	-84
16 QAM (24 Mbps)	-81
64 QAM (48 Mbps)	-77
64QAM(54 Mbps)	-69

Table 4: 802.11b/g Radio

Modulation/Rates		Sensitivity (dBm)
DSSS-DBPSK (1Mbps)	b	-91
DSSS-DQPSK (2 Mbps)	b	-88
CCK-DBPSK (5.5 Mbps)	b	-87
CCK_DQPSK (11 Mbps)	b	-85
BPSK (6 Mbps)	g	-89
BPSK (9 Mbps)	g	-88
BPSK (9 Mbps)	g	-87
QPSK (18 Mbps)	g	-85
16 QAM (24 Mbps)	g	-82
16 QAM (36 Mbps)	g	-79
64 QAM (48 Mbps)	g	-74
64QAM(54 Mbps)	g	-71
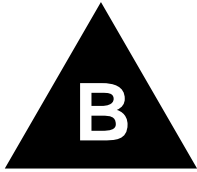
B Maximum Distance Table

Important Notice

Maximum distances posted below are actual tested distance thresholds for the Altitude 300-2i™ with integrated antenna. However, there are many variables such as barrier composition and construction and local environmental interference that may impact your actual distances and cause you to experience distance thresholds far lower than those we post below.

Table 5: 802.11a Maximum Distances

802.11a Wireless Products Maximum Distance Table, Integrated Antenna Speed and Distance Ranges			
EnvironmentalCondition	54 Mbps	18 Mbps	6 Mbps
OutdoorEnvironment[1]	31 m (100 ft)	168 m (550 ft)	335 m (1100 ft)
IndoorEnvironment[2]	18 m (60 ft)	46 m (150 ft)	64 m (210 ft)

1. Outdoor Environment: A line-of-sight environment with no interference or obstruction between the wireless port and clients.
2. Indoor Environment: A typical office or home environment with floor to ceiling obstructions between the wireless port and clients.

Table 6: 802.11b Maximum Distances

802.11b Wireless Products Maximum Distance Table, Integrated Antenna Speed and Distance Ranges				
EnvironmentalCondition	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
OutdoorEnvironment[1]	137 m (450 ft)	238 m (780 ft)	305 m (1000 ft)	488 m (1600 ft)
IndoorEnvironment[2]	49 m (160 ft)	238 m (780 ft)	103 m (340 ft)	152 m (500 ft)

1. Outdoor Environment: A line-of-sight environment with no interference or obstruction between the wireless port and clients.
2. Indoor Environment: A typical office or home environment with floor to ceiling obstructions between the wireless port and clients.

Table 7: 802.11g Maximum Distances

| 802.11g Wireless Products Maximum Distance Table, Integrated Antenna Speed and Distance Ranges			
EnvironmentalCondition	54 Mbps	18 Mbps	6 Mbps
OutdoorEnvironment[1]	34 m (110 ft)	104 m (340 ft)	198 m (650 ft)
IndoorEnvironment[2]	20m (65ft)	46 m (150 ft)	61 m (200 ft)

1. Outdoor Environment: A line-of-sight environment with no interference or obstruction between the wireless port and clients.
2. Indoor Environment: A typical office or home environment with floor to ceiling obstructions between the wireless port and clients.
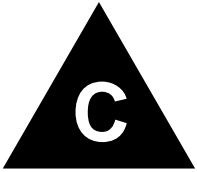
C Integrated Dual Band Antenna Pattern

The Altitude 300-2i™ has two integrated dual band antennas. The characteristics of the antennas are given in the tables and figures below.

Table 8: Integrated Antenna Electrical Specification

Frequency range	2.4 GHz - 2.5 GHz	5.12 GHz 1 5.875 GHz
Gain[1]	1.5 dBi	4.5 dBi
Polarization	Linear, vertical	Linear, vertical

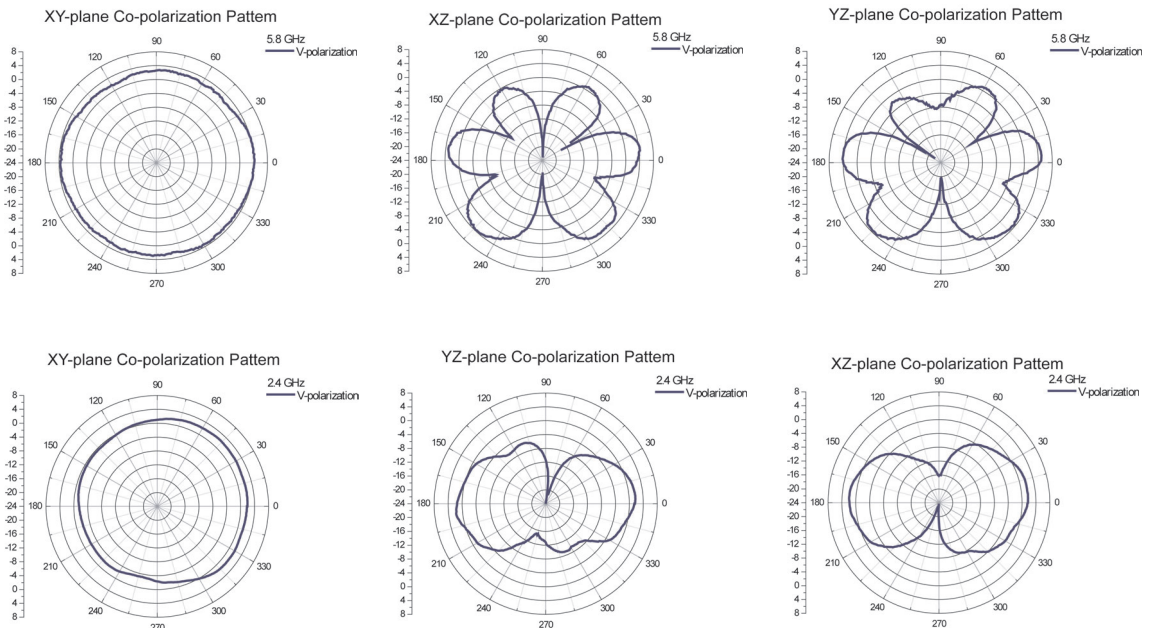1.   Exclusive of internal cable loss: for 5 GHz band, 0.8 dB; for 2.4 GHz band, 0.5 dB.

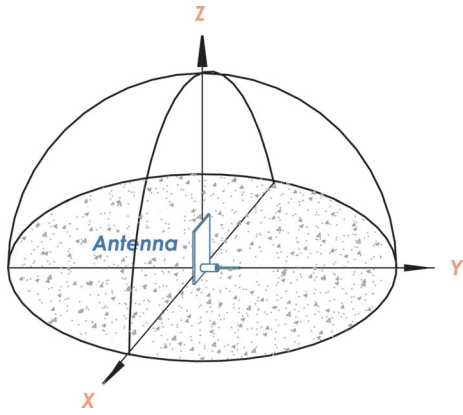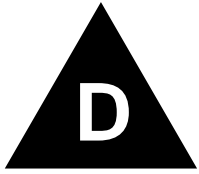**Figure 13: Antenna Radiation Patterns**   **Figure 14: Integrated**

Figure 15: Antenna Radiation Pattern Reference Diagram

D COMPLIANCES

FCC - Class B

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

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

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION STATEMENT:
FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters (8 inches) between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada - Class B

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 the Department of Communications. 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 ministere des Communications.

European Community

Declaration of conformity with regard to the R&TTE Directive 1999/5/EC

English: This equipment complies with the necessary requirements and relevant provisions of Directive 1999/5/EC

Need to supply other translated languages.

The 802.11b/g, 2.4 GHz radio complies with the following standards:

- EN 300 328-1, EN 300 328-2
- EN 301 489-1, EN 301 489-17 (09-2000)
- EN 60950

The 802.11a, 5 GHz radio complies with the following standards:

- EN 301 893 (Broadband Radio Access Network (BRAN); HIPERLAN Type2
- EN 301 489-1, EN 301 489-17 (09-2000)
- EN 60950

Japan

The 802.11b/g, 2.4 GHz radio complies with the following standards:

- ARIB STD-T66
- ARIB STD-33

The 802.11a, 5 GHz radio complies with the following standards:

- ARIB STD-T71

Table 9: Regulator Domain Product Listing

Model Number	Product	Regulatory Domain
15700	Altitude 300-2i	North America
15701	Altitude 300-2d	North America
15702	Altitude 300-2i	Japan
15703	Altitude 300-2d	Japan
15704	Altitude 300-2i	Taiwan
15705	Altitude 300-2d	Taiwan
15706	Altitude 300-2i	European Community
15707	Altitude 300-2d	European Community
15708	Altitude 300-2i	Rest of World
15709	Altitude 300-2d	Rest of World
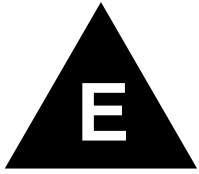
E Power Over Ethernet Connector Pin Assignments

The Altitude 300-2™ complies with the IEEE P802.3af specification in its support of two modes of power delivery on the RJ-45 Ethernet jack. Table 7 shows the pins that are used to deliver -48 volts to the wireless port and Figure 14 shows the RJ-45 connector's pin number assignment. The Summit 300-48™ uses the MDI, Mode A to deliver power to the Altitude 300-2™.Maximum Number Of Tunable Channels

Table 10: Altitude 300-2O Power Over Ethernet RJ-45 Pin Assignments

Conductor	Mode A: MDI (mode used by the Summit 300-48™)	Mode B: All
1	Negative Vport	
2	Negative Vport	
3	Positive Vport	
4		Positive Vport
5	Positive Vport	Positive Vport
6		
7		Negative Vport
8		Negative Vport

Vport = 44 to 57 volts under no load
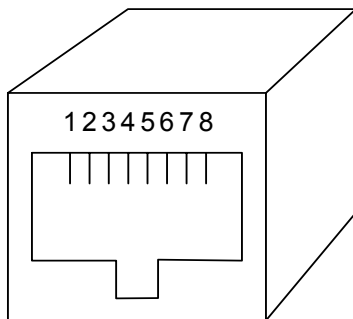
Figure 16: Ethernet Connector Pin Number Assignment

Power Over Ethernet Connector Pin Assignments

Altitude 300-2 Getting Started Guide

F Ethernet Connector Pin Number Assignment

Wireless Port - An internetworking device that seamlessly connects wired and wireless networks.

Ad Hoc - An ad hoc wireless LAN is a group of computers, each with LAN adapters, connected as an independent wireless LAN.

Altitude 300-2™ - Extreme Networks' secure enterprise grade, scalable, and manageable wireless port. The Altitude 300-2™ supports two radio channels: one 802.11a channel and one 802.11b/g channel and it comes in two models: the Altitude 300-2i™ with integrated antennas and the Altitude 300-2d™4with connectors for detachable antennas.

Backbone - The core infrastructure of a network. The portion of the network that transports information from one central location to another central location where it is unloaded onto a local system.

Base Station - In mobile telecommunications, a base station is the central radio transmitter/receiver that maintains communications with the mobile radiotelephone sets within its range. In cellular and personal communications applications, each cell or micro-cell has its own base station; each base station in turn is interconnected with other cells' bases.

BSS - BSS stands for "Basic Service Set." It is an wireless port and all the LAN PCs that are associated with it.

CSMA/CA - Carrier Sense Multiple Access with Collision Avoidance.

EPICenter™ - EPICenter? management suite is a full-featured network management tool that simplifies configuration, troubleshooting, and status monitoring of IP-based networks. Offering a comprehensive set of network management applications including the ability to configure, monitor, troubleshoot, and manage the network and its elements, EPICenter? delivers on both the basic requirements of network management while adding valuable and intuitive features that help save time by streamlining common tasks.

ESS - ESS (ESS-ID, SSID) stands for "Extended Service Set." More than one BSS is configured to become an Extended Service Set. LAN mobile users can roam between different BSSs in an ESS (ESS-ID, SSID).

Ethernet - A popular local area data communications network, which accepts transmission from computers and terminals.

Infrastructure - An integrated wireless and wired LAN is called an infrastructure configuration.

Ethernet Connector Pin Number Assignment