



## **PPISM Station™ AC**

Shielded airMAX® ac Radio Base  
with airPrism® Technology

Model: PS-5AC

Proprietary Ubiquiti® airMAX ac Processor

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airPrism Active RF Filtering Technology

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Dedicated Wi-Fi Radio for Management

## Overview

The PrismStation™ 5AC combines airPrism technology with dedicated Wi-Fi management.

### Improved Noise Immunity

The PrismStation 5AC directs RF energy in a tighter beamwidth using one of these compatible antennas\*:

- Horn-5-30
- Horn-5-45
- Horn-5-60
- Horn-5-90
- U-OMT-Dish

With the focus in one direction, the PrismStation 5AC blocks or spatially filters out noise, so noise immunity is improved. This feature is especially important in an area crowded with other RF signals of the same or similar frequency.

### Modular Design

The interchangeable antenna improves beam-shaping for specific deployment needs.

### Scalability

Horn antennas increase co-location performance without sacrificing gain.

Symmetrical horn antennas (30° model: Horn-5-30 and 45° model: Horn-5-45) offer breakthrough scalability options for wireless systems. Unique beam performance and great co-location characteristics allow for a higher density of sectors than traditional sector technology.

### Enhanced Co-Location

Asymmetrical horn antennas (60° model: Horn-5-60 and 90° model: Horn-5-90) have naturally attenuated side lobes and extremely low back radiation. They offer the best front-to-back ratio in the industry and the lowest side lobe radiation. Asymmetrical horn antennas are ideal for cluster sector installations with high co-location requirements.

### Extended Performance

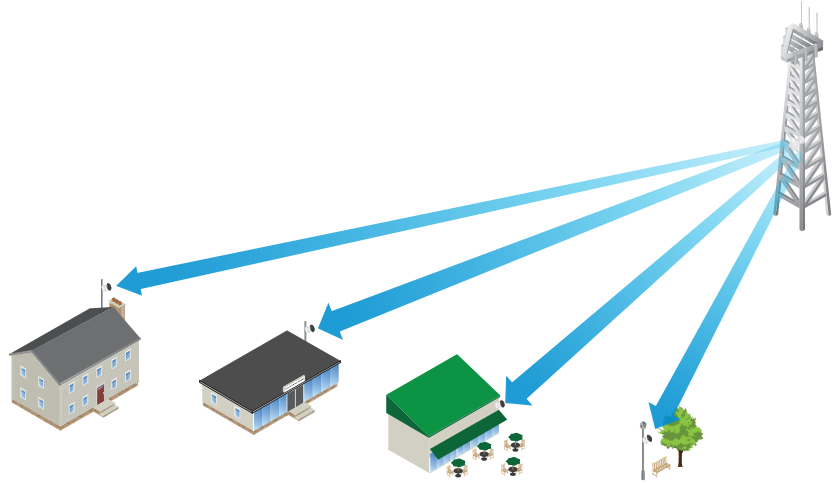
A robust dish antenna, model U-OMT-Dish, offers excellent beam directivity with 27 dBi of gain. It can be paired with the PrismStation 5AC to extend radio performance for a greater number of WISP customers.

Providing high throughput and an innovative form factor, the PrismStation 5AC is versatile and cost-effective to deploy. It also uses the latest ESD protection to help protect against power surges.

\* Antennas not included with the PS-5AC.

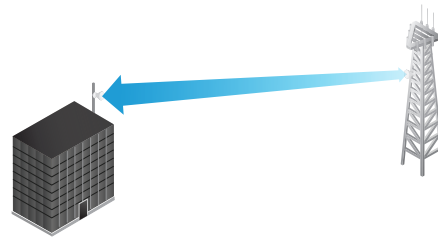
## Application Example

### PtMP Client Links



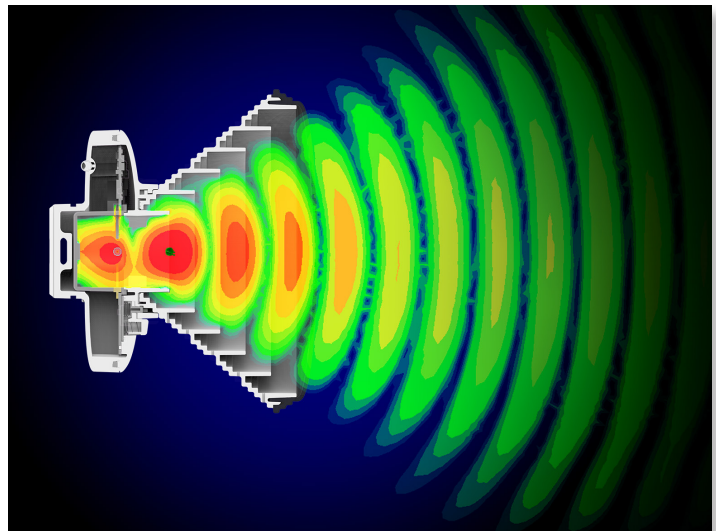
The PrismStation 5AC (with a horn antenna) is used as an AP to communicate with the IsoStation™ 5AC for each client in an airMAX PtMP (Point-to-MultiPoint) network.

### PtP Link



Use a PrismStation 5AC on each side of a PtP (Point-to-Point) link.

## Beam Performance Perfected



# Software

## airOS®8

Sporting an all-new design for improved usability, airOS® v8 is the revolutionary operating system for Ubiquiti® airMAX ac products.

### Powerful Wireless Features

- Access Point PtMP airMAX Mixed Mode
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
  - PtP: 10/20/30/40/50/60/80 MHz
  - PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (ACK Timing)
- Strongest WPA2 Security

### Usability Enhancements

- airMagic® Channel Selection Tool
- Dynamic Configuration Changes
- Instant Input Validation
- Redesigned User Interface
- HTML5 Technology
- Optimization for Mobile Devices
- Detailed Device Statistics
- Diagnostic Tools, including RF Diagnostics, and airView® Spectrum Analyzer

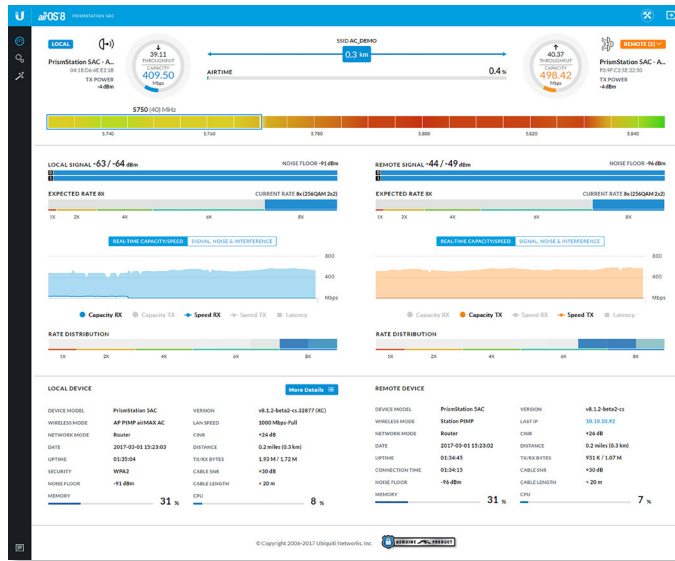
## UNMS App

The PrismStation 5AC integrates a separate Wi-Fi radio for fast and easy setup using your mobile device.

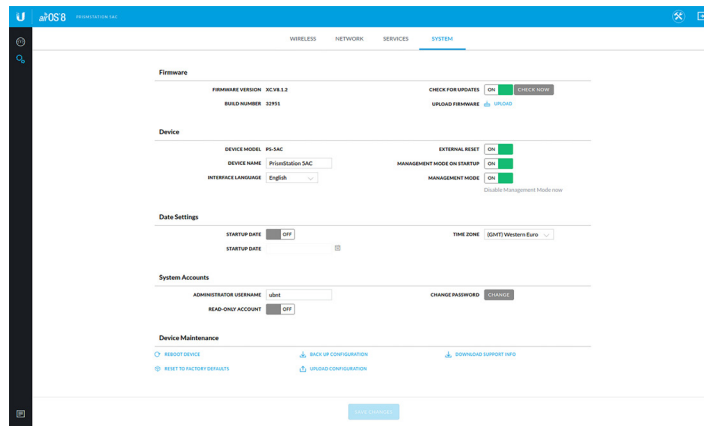
### Accessing airOS via Wi-Fi

The UNMS™ app provides instant accessibility to the airOS configuration interface and can be downloaded from the App Store® (iOS) or Google Play™ (Android). The UNMS app allows you to set up, configure, and manage the PrismStation 5AC and offers various configuration options once you're connected or logged in.

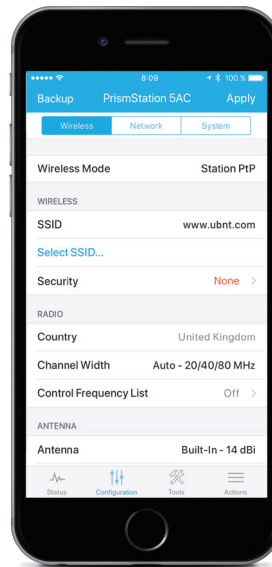
## Dashboard



## System Settings



## UNMS Configuration



## Advanced RF Analytics

airMAX ac devices feature a multi-radio architecture to power a revolutionary RF analytics engine.

An independent processor on the PCBA powers a second, dedicated radio, which persistently analyzes the full 5 GHz spectrum and every received symbol to provide you with the most advanced RF analytics in the industry.

## Real-Time Reporting

airOS 8 displays the following RF information:

- Persistent RF Error Vector Magnitude (EVM) constellation diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms
- Signal-to-Noise Ratio (SNR) time series plots

## Spectral Analysis

airView allows you to identify noise signatures and plan your networks to minimize noise interference. airView performs the following functions:

- Constantly monitors environmental noise
- Collects energy data points in real-time spectral views
- Helps optimize channel selection, network design, and wireless performance

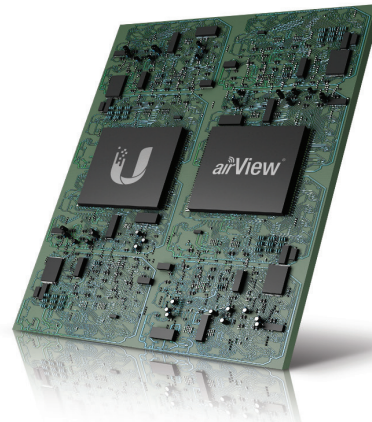
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

In airView, there are three spectral views, each of which represents different data.

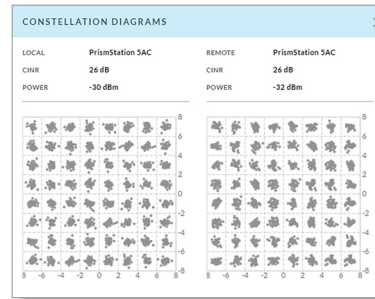
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

airView provides powerful spectrum analyzer functionality, eliminating the need to rent or purchase additional equipment for conducting site surveys.

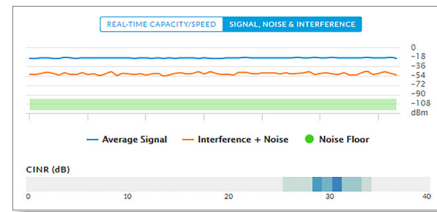
## Multi-Radio Architecture



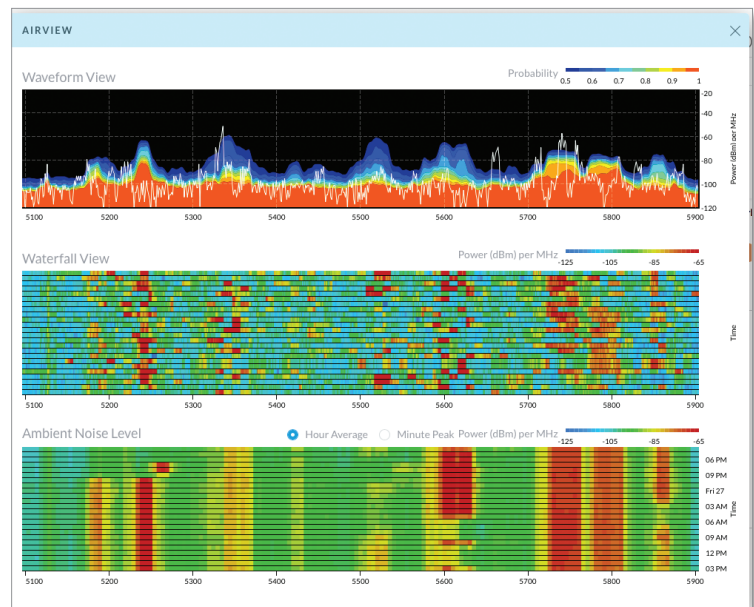
## Constellation Diagrams



## SNI Diagram and CINR Histogram



## Dedicated Spectral Analysis



# Technology



Unlike standard Wi-Fi protocol, Ubiquiti's Time Division Multiple Access (TDMA) airMAX protocol allows each client to send and receive data using pre-designated time slots scheduled by an intelligent AP controller.

This time slot method eliminates hidden node collisions and maximizes airtime efficiency, so airMAX technology provides performance improvements in latency, noise immunity, scalability, and throughput compared to other outdoor systems in its class.

**Intelligent QoS** Priority assigned to voice/video for seamless streaming.

**Scalability** High capacity and scalability.

**Long Distance** Capable of high-speed, carrier-class links.

## Superior Performance

The next-generation airMAX ac technology boosts the advantages of our proprietary TDMA protocol.

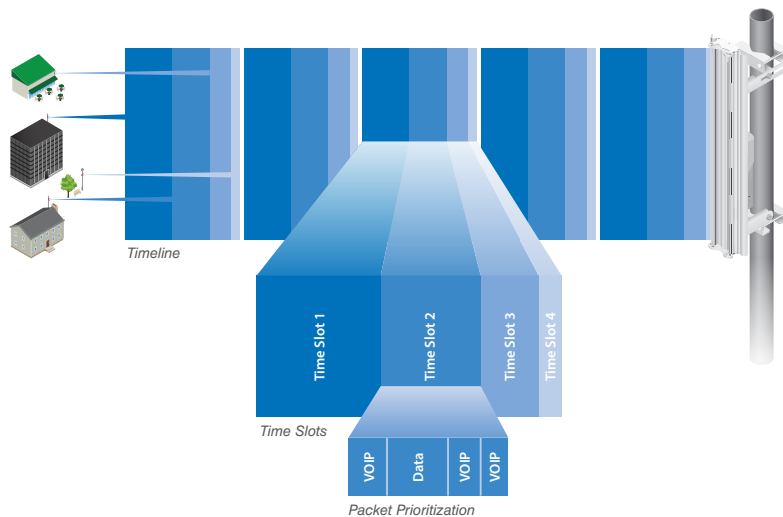
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

## Throughput Breakthrough

airMAX ac supports high data rates, which require dense modulation: 256QAM – a significant increase from 64QAM, which is used in airMAX.

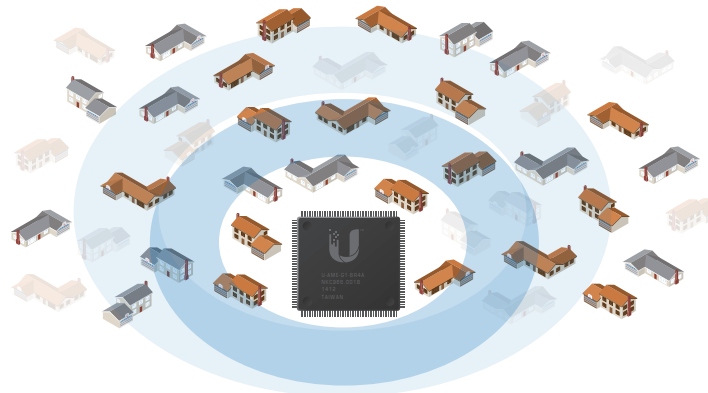
With their use of proprietary airMAX ac technology, airMAX ac products support up to 500+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

## airMAX ac TDMA Technology

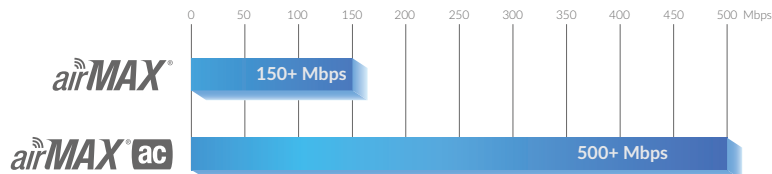


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

## airMAX Network Scalability



## Superior Throughput Performance



# Technology

## airPRISM<sup>®</sup>

To enhance airMAX ac performance, Ubiquiti Networks introduces our patented airPrism technology, which is featured on the PrismStation 5AC, model PS-5AC.

### Improves SNR

High data rates require a high Signal-to-Noise Ratio (SNR), which is challenging to achieve, especially in noisy, high-density areas.

Integrated into Ubiquiti's custom silicon, airPrism technology creates a high SNR by isolating signals within the operating channel and rejecting interference using the specialized circuitry of the High-Selectivity Receiver (HSR).

### Removes Interference

Depending on the product model and operating mode, available channel widths may include 10, 20, 30, 40, 50, 60, and/or 80 MHz.

Theoretically, APs operate on different channels; however, because of the wider channel bandwidths, there can be overlap in spectrum usage.

airPrism technology removes up to an additional 30+ dB of adjacent channel interference through the active filtering design, so an airMAX ac AP with airPrism technology can provide significantly greater performance than a typical AP.

### Facilitates AP Co-Location

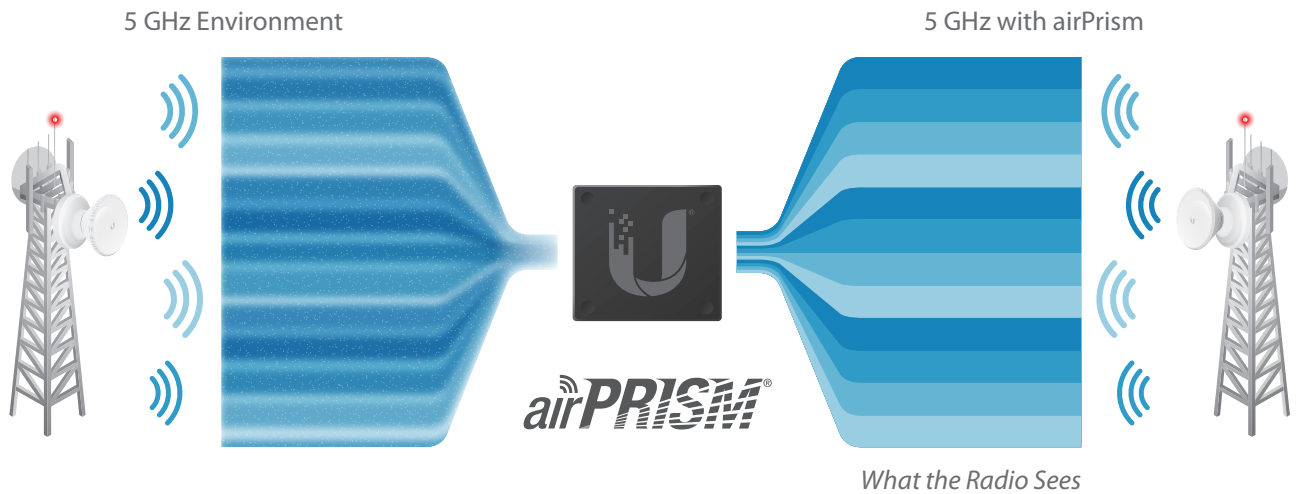
Co-location is vital in many scenarios. For example, a WISP may have limited tower space, so it must co-locate all APs within that allotted footprint. Shielding and other means can lessen interference but may be impractical.

By deploying airMAX ac APs with airPrism technology, you can co-locate APs and enhance the overall performance of your wireless network.

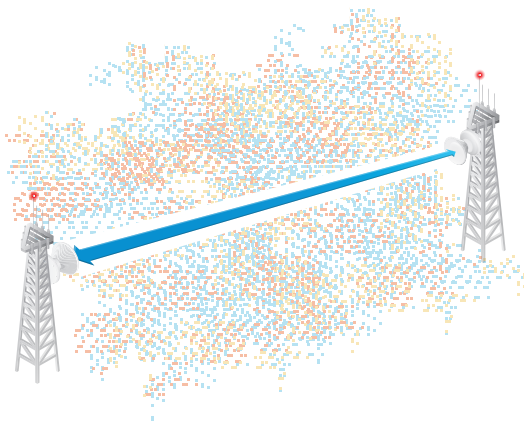
Number of APs	Channel Width
4	80 MHz*
8	40 MHz
16	20 MHz

\* PtP only

## Active Radio Frequency Filtering



## Improved Latency and Noise Immunity



# Hardware Overview

The PrismStation 5AC comes with a mounting bracket that allows for  $\pm 20^\circ$  tilt adjustments of the horn's elevation. This pole-mounting method allows for easy adjustments depending on your deployment needs.

## Modular Design

For versatility, the PrismStation 5AC is compatible with four different isolation horn antennas and one dish antenna (not included).

- All metal, shielded radio base
- Antenna interchangeability
- Single button release for ease of changing antennas



PrismStation 5AC with Horn-5-45 Mounted on Pole

## Horn™ 5

### Horn Antennas





Each horn antenna model is designed with a precise radiation angle for specific beam shaping.

These models are available in 30°, 45°, 60°, and 90° angle designs with different antenna gain specs to suit your application.

- Symmetrical horn antennas: unique beam performance and great co-location characteristics for a higher density of sectors than traditional sector technology
- Asymmetrical horn antennas: naturally attenuated side lobes and extremely low back radiation for cluster sector installations with high co-location requirements

### Horn Antenna Model Comparison



	Horn-5-30	Horn-5-45	Horn-5-60	Horn-5-90	PS-5AC
Beamwidth	 30°	 45°	 60°	 90°	
Gain	19 dBi	15.5 dBi	16 dBi	13 dBi	

## U OMT-Dish

### Dish Antenna

Pair the PrismStation with a robust dish antenna, model U-OMT-Dish, to provide SISO or 2x2 MIMO, dual-polarity performance as a client in a PtMP link. This radio/antenna combination delivers bandwidth to an extended number of WISP customers.

- Dish reflector design for excellent beam directivity
- Industrial-strength hardware for outdoor use
- HPOL and VPOL Beamwidth: 6.5°
- Antenna gain: 27 dBi



# Specifications

PS-5AC	
Dimensions Mounting Hardware Only	155 x 155 x 104 mm (5.16 x 5.16 x 4.09") 83 x 117 x 69 mm (3.27 x 4.61 x 2.72")
Weight Mounting Hardware Only	770 g (1.70 lb) 790 g (1.74 lb)
Networking Interface	(1) 10/100/1000 Ethernet Port
RF Connector	(1) GPS*
LED	Power
Max. Power Consumption	10W
Power Supply	24V, 1A Gigabit PoE Adapter (Included)
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)
Supported Voltage Range	20 to 26VDC
Processor Specs	MIPS 74 Kc
Memory	128 MB DDR2 SDRAM, 16 M NOR FLASH
Max. VSWR	2:1
Polarization	Dual-Linear
Wind Loading	31 N @ 200 km/h (7 lbf @ 125 mph)
Wind Survivability	200 km/h (125 mph)
Operating Temperature	-40 to 70° C (-40 to 158° F)
Operating Humidity	5 to 95% Noncondensing
Mounting	Pole-Mount (Kit Included)
ESD/EMP Protection	± 24 kV Contact/Air
Certifications	FCC, IC, CE

\* GPS sync support available in airOS firmware v8.3.0 and newer.

Operating Frequency (MHz)				
Worldwide	5150 - 5875			
USA	U-NII-1: 5150 - 5250	U-NII-2A: 5250 - 5350 MHz	U-NII-2C: 5470 - 5725 MHz	U-NII-3: 5725 - 5850

Management Radio (MHz)	
Worldwide	2412 - 2472
USA	2412 - 2462

PS-5AC Output Power: 28 dBm							
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	28 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	28 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	28 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	28 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	28 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (¾)	28 dBm	± 2 dB		6x 64QAM (¾)	-83 dBm	± 2 dB
	6x 64QAM (¾)	27 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (¾)	26 dBm	± 2 dB		6x 64QAM (¾)	-74 dBm	± 2 dB
	8x 256QAM (¾)	24 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (¾)	22 dBm	± 2 dB		8x 256QAM (¾)	-65 dBm	± 2 dB

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: [www.ubnt.com/support/warranty](http://www.ubnt.com/support/warranty)  
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