DATASHEET

PRISM Station AC

Shielded airMAX® ac Radio with Isolation Antenna and airPrism® Technology

Model: PS-5AC

Interchangeable Isolation Antenna Horn

airPrism Active RF Filtering Technology

Dedicated Wi-Fi Radio for Management

UBIQUITI NETWORKS

Overview

Ubiquiti Networks launches the latest generation of airMAX ac CPE (Customer Premises Equipment) with dedicated Wi-Fi management, the PrismStation™ 5AC.

Improved Noise Immunity

The PrismStation 5AC directs RF energy in a tighter beamwidth using an interchangeable isolation antenna horn, available in both symmetrical and asymmetrical designs. 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

With flexible sectorization for optional antenna beamwidths, the horn antenna is interchangeable and improves beam-shaping for specific deployment and environment needs. The PrismStation 5AC uses horn antenna sectors designed for increased co-location performance without sacrificing gain.

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

Scalability

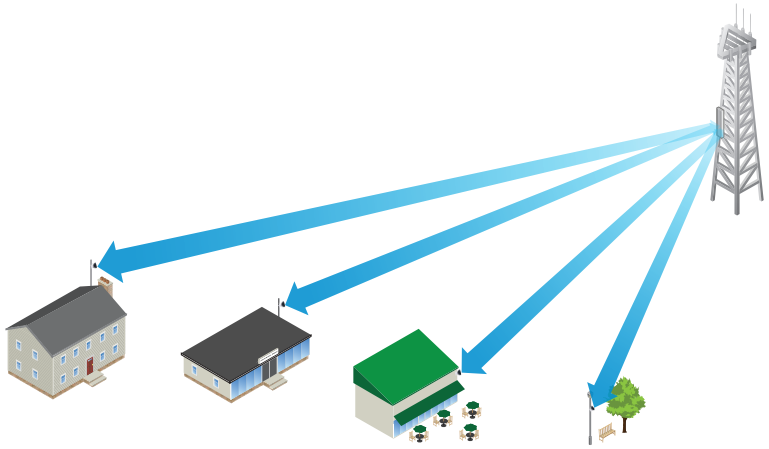
Symmetrical horn antennas (30˚ and 45˚ versions) offer breakthrough scalability options for wireless systems. Unique beam performance and great co-location characteristics allow for a higher density of sectors than traditional sector technology.

Enhanced Co-Location

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

Application Examples

PtMP Client Links

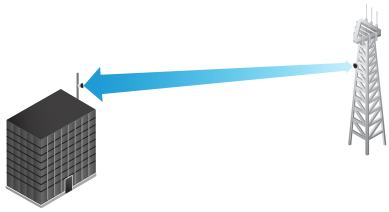


The PrismStation 5AC used as a CPE device for each client in an airMAX PtMP network.

Wireless Client

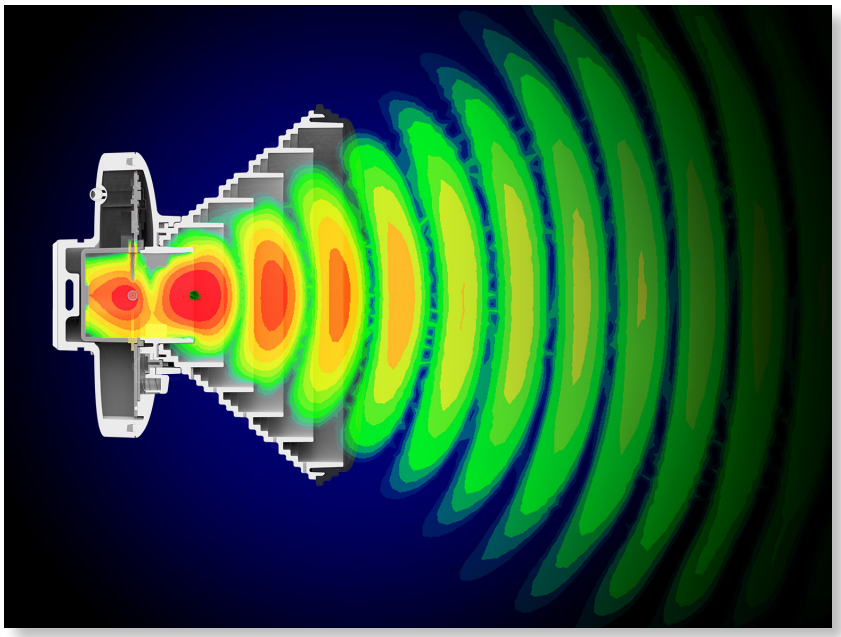
The PrismStation 5AC as a powerful wireless client.

PtP Link



Use an PrismStation 5AC on each side of a PtP 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

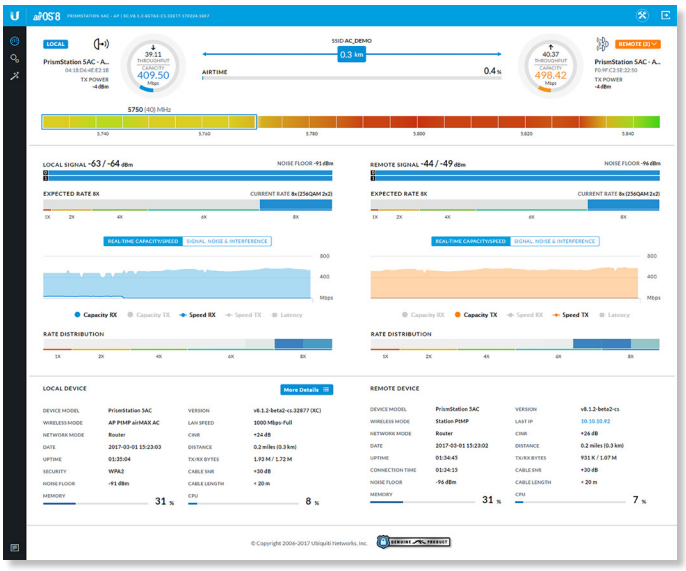
UMobile App

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

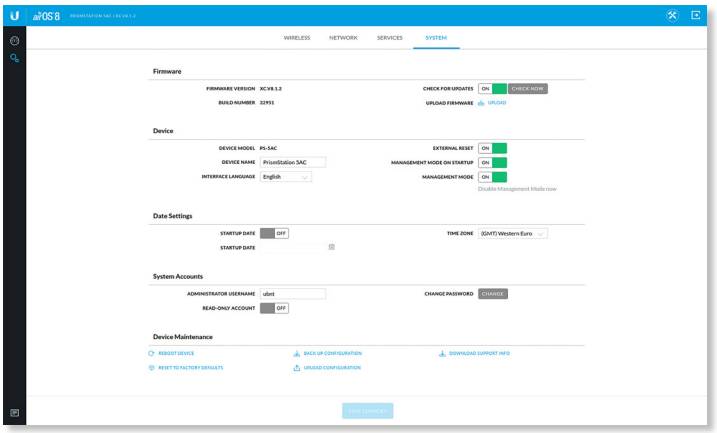
Accessing airOS via Wi-Fi

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

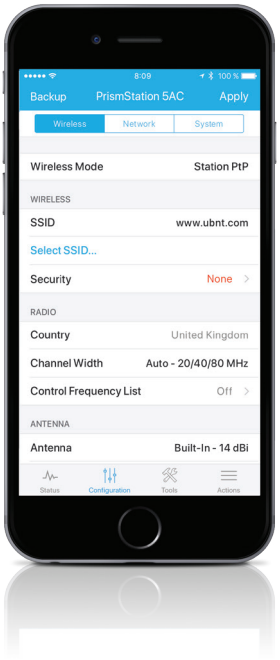
Dashboard



System Settings



UMobile 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

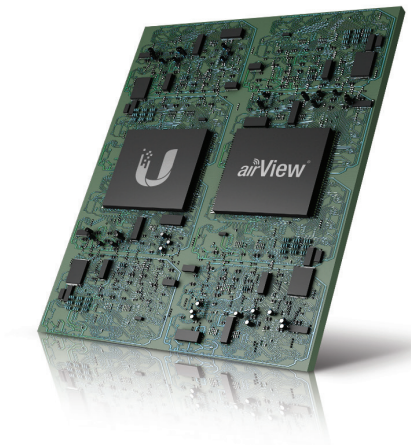
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

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

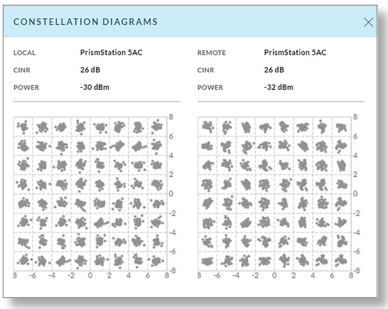
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

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

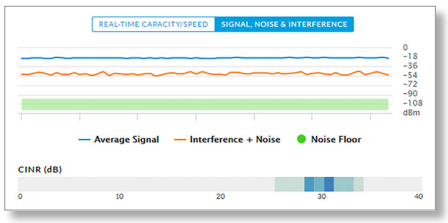
Multi-Radio Architecture



Constellation Diagrams



SNI Diagram and CINR Histogram



Dedicated Spectral Analysis

Technology

airMAX ac

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.

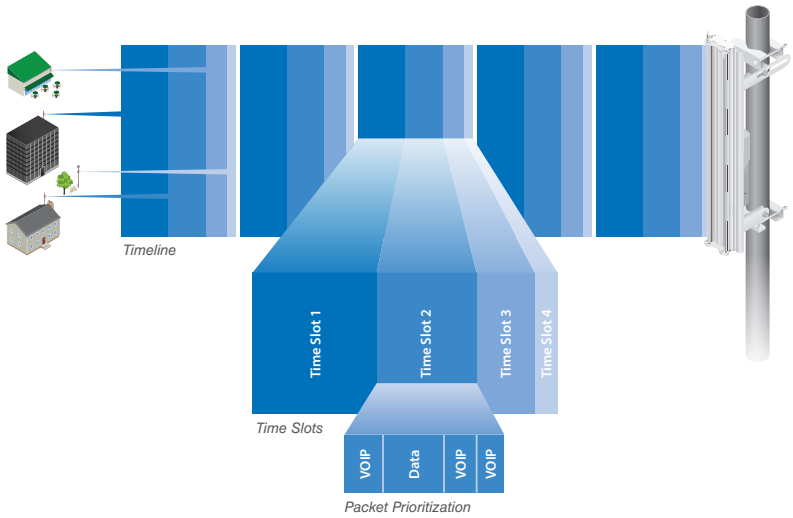
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

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

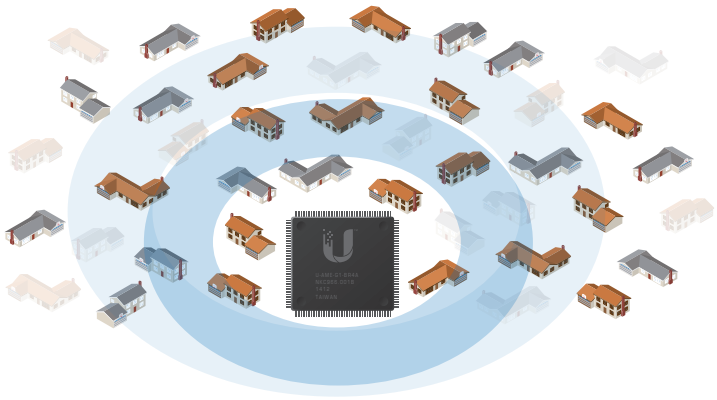
With their use of proprietary airMAX ac technology, airMAX ac products supports up to 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

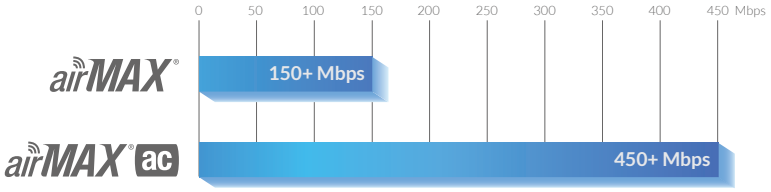


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX Network Scalability



Superior Throughput Performance



Technology

airPRISM

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 specialized circuitry, 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

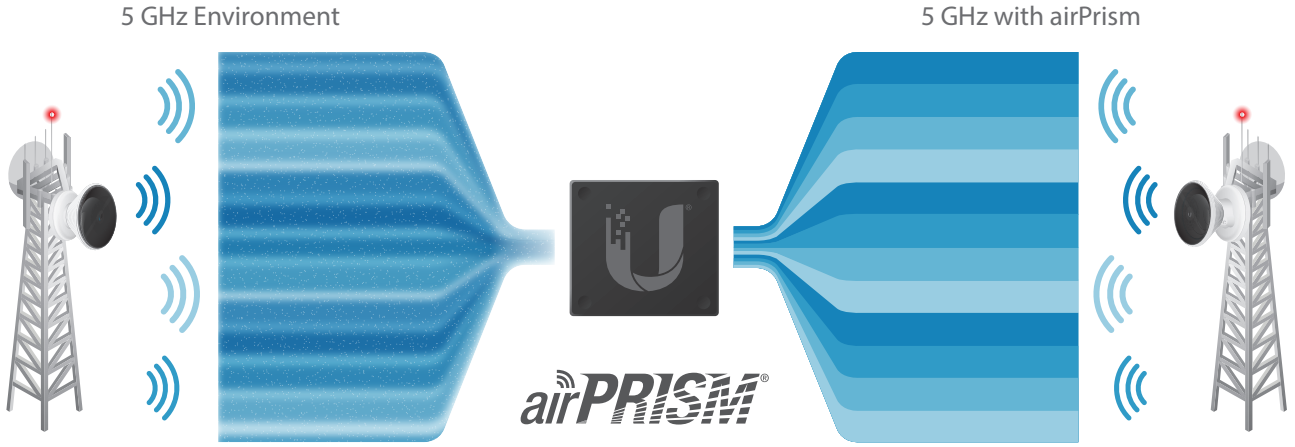
Co-location is vital in many scenarios. For example, a WISP may have limited tower space, so it must co-locate all APs within that allotted footprint. Shielding and other means can lessen interference but may be impractical.

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

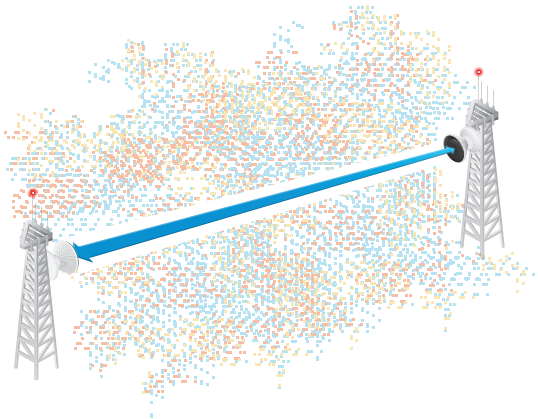
* PtP only

Active Radio Frequency Filtering



What the Radio Sees

Improved Latency and Noise Immunity

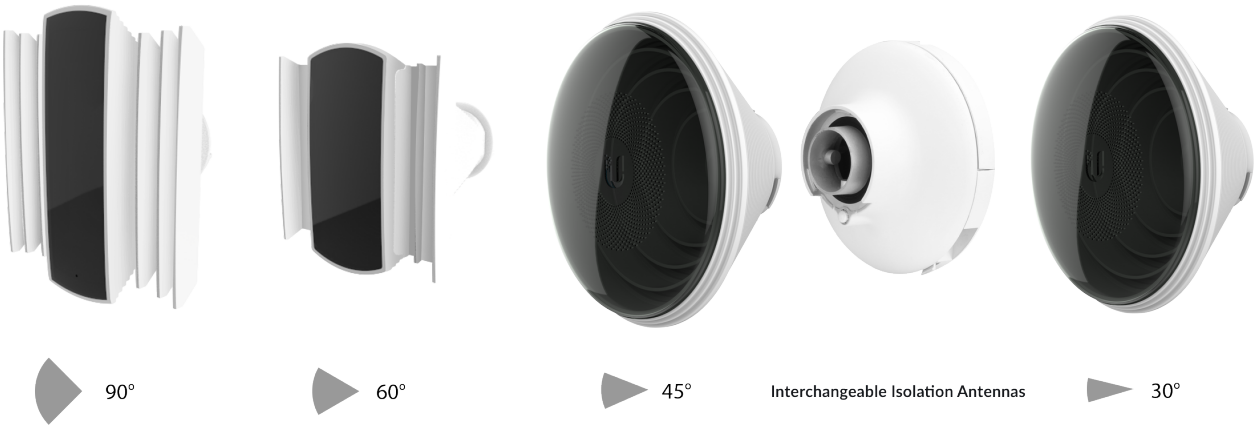


Modular Design

Interchangeable Antennas

The PrismStation 5AC comes with a 45˚ isolation antenna. There are optional antennas that come with precise radiation angles for specific beam shaping, ranging from 30° to 90°, making them suitable for a wider range of installations.

- Asymmetrical horn antennas designed for increased co-location performance
- Available in 30˚, 45˚ (default), 60˚, and 90˚ designs
- All metal, shielded radio base
- Single button release for ease of changing antennas
- Newly designed horn for improved beam shaping



Hardware Overview

Using airMAX ac technology, the PrismStation 5AC supports up to 500+ Mbps real TCP/IP throughput.

The PrismStation 5AC features two different pole-mounting methods that can be used depending on your deployment needs.

- **Metal Strap** Use this option for quick mounting on a pole
- **Mounting Bracket** Use this option for ± 20° tilt adjustments of the horn's elevation.

PrismStation 5AC with Mounting Bracket

Specifications

PS-5AC	
Dimensions Without Horn Antenna Mounting Hardware[1] Only	174 x 174 x 184 mm (6.85 x 6.85 x 7.24") 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 Without Horn Antenna Mounting Hardware[1] Only	1.07 kg (2.36 lb) 0.77 kg (1.70 lb) 0.79 kg (1.74 lb)
Gain	14 dBi
Beamwidth	45° (Default Horn)
Networking Interface	(1) 10/100/1000 Ethernet Port
RF Connector	(1) GPS[2]
LED	(1) 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	DDR2 128 MB
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

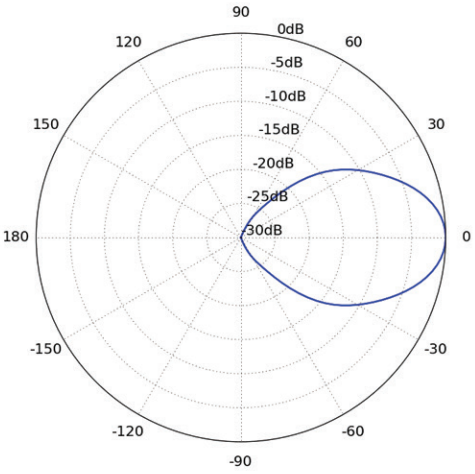
1 Mounting bracket assembly for elevation adjustments

2 Reserved for future use

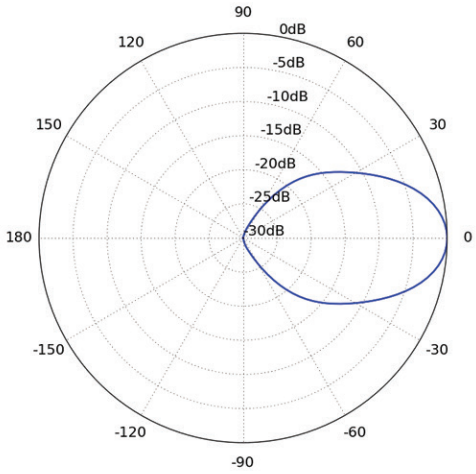
PS-5AC Operating Frequency			
Operating Frequency	Worldwide	USA	
	2412 - 2472 MHz	2412 - 2462 MHz	
	5150 - 5875 MHz	USA: U-NII-1	USA: U-NII-3
		5150 - 5250 MHz	5725 - 5850 MHz

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 (⅔)	28 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	27 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	26 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
	8x 256QAM (¾)	24 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (⅚)	22 dBm	± 2 dB		8x 256QAM (⅚)	-65 dBm	± 2 dB

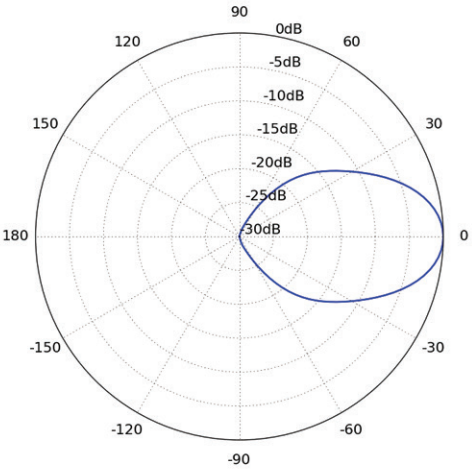
Vertical Azimuth



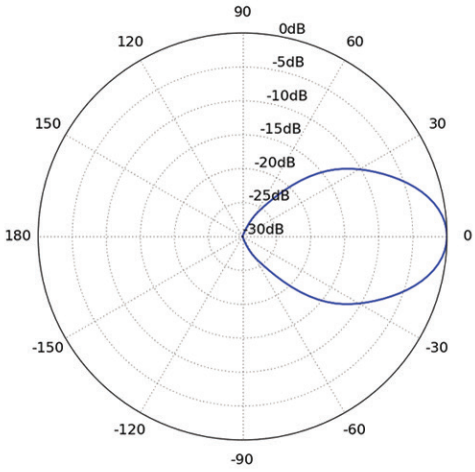
Vertical Elevation



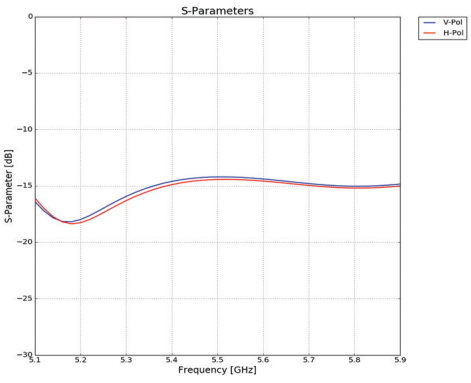
Horizontal Azimuth



Horizontal Elevation



Return Loss



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