DATASHEET



NanoStation® AC
NanoStation® AC loco

5 GHz airMAX® AC Radio

Models: NS-5AC, Loco5AC

Ubiquiti® airMAX AC Processor

Up to 450+ Mbps Real TCP/IP Throughput

Dedicated Wi-Fi Radio for Management

UBIQUITI® NETWORKS

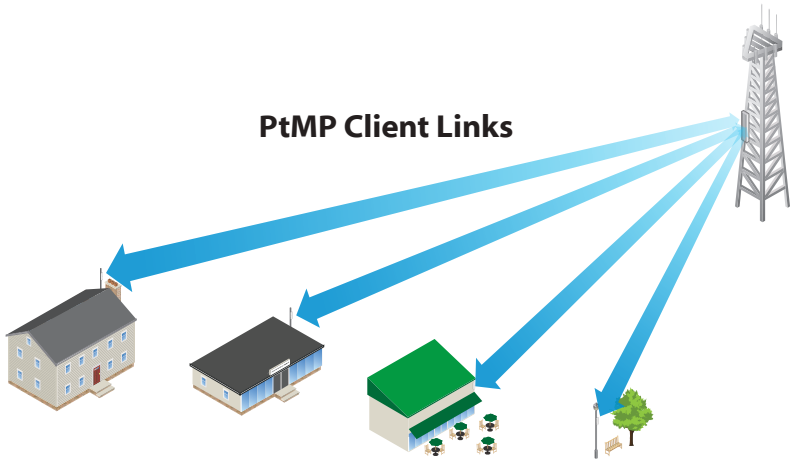
Overview

Ubiquiti Networks set the bar for the world's first low-cost and efficient broadband Customer Premises Equipment (CPE) with the NanoStation® M.

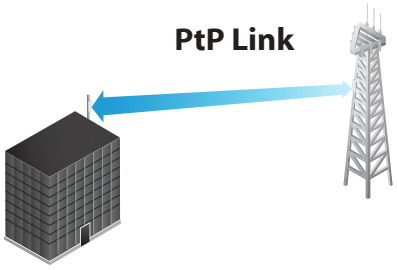
The NanoStation AC and NanoStation AC loco take the same concept to the future with sleek form factors, along with integrated airMAX (MIMO TDMA protocol) technology and dedicated Wi-Fi management.

The radio and antenna are combined to create a more efficient and compact CPE. The NanoStation AC and NanoStation AC loco get maximum gain out of the smallest footprint.

The low cost, high performance, and small form factor of the NanoStation AC and NanoStation AC loco make them extremely versatile and economical to deploy.



NanoStation AC devices used as powerful clients in an airMAX PtMP (Point-to-Multi-Point) network setup.



Use two NanoStation AC radios to create a PtP link.

Software

airOS® 8

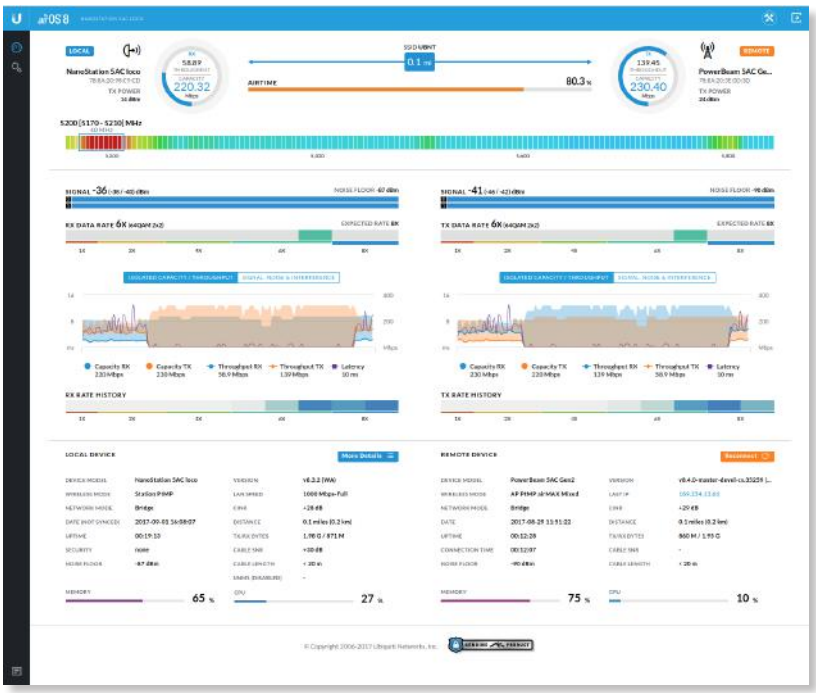
airOS® 8 is the revolutionary operating system for Ubiquiti airMAX ac products.

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
- HTML5 Technology
- Optimization for Mobile Devices
- Detailed Device Statistics
- Comprehensive Array of Diagnostic Tools, including RF Diagnostics and airView® Spectrum Analyzer



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
- Signal, Noise, and Interference (SNI) diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms

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: waveform, waterfall, and ambient noise level.

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

UNMS App

The NanoStation AC and NanoStation AC loco both integrate a separate Wi-Fi radio for fast and easy setup using your mobile device.

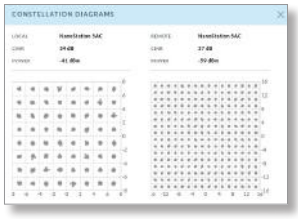
Accessing airOS via Wi-Fi

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

Multi-Radio Architecture



Constellation Diagrams



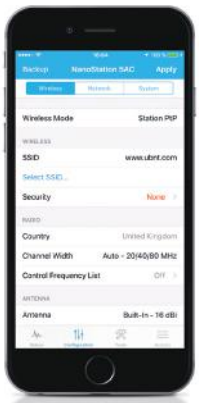
SNI Diagram and CINR Histogram



Dedicated Spectral Analysis



UNMS Configuration Screen



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.

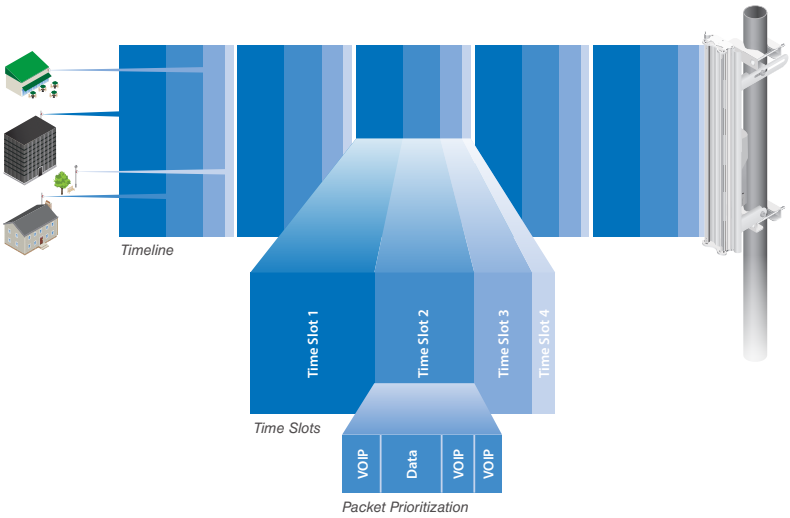
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

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

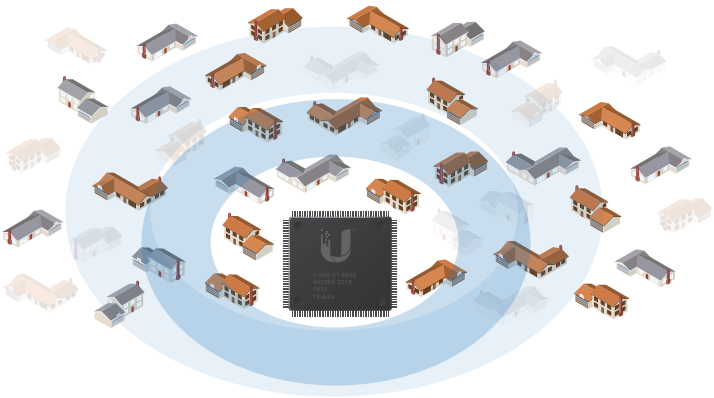
With their use of proprietary airMAX ac technology, airMAX ac products supports up to 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

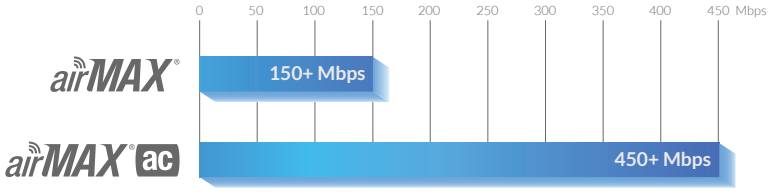


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX Network Scalability



Superior Throughput Performance



Hardware Overview

The NanoStation AC and NanoStation AC loco feature airMAX technology and a dedicated Wi-Fi radio for management.

- **Versatile Mounting** Both models are suitable for indoor and outdoor installations
- **Improved Surge Protection** The NanoStation AC and NanoStation AC loco utilize the latest ESD Protection to help protect against power surges.
- **Efficient Footprint** The radio and antenna are combined into a single body that takes up minimal space.
- **Quick Installation** No fasteners are required for pole-mounting, and a single wall fastener (not included) is required for wall-mounting (NS-5AC only).



NS-5AC Port View



Loco5AC Port View



NS-5AC Powering a UVC-G3

The NanoStation AC (NS-5AC) provides a secondary Ethernet port with software-enabled PoE. Use this port to conveniently power an external device, such as a PoE security camera, for seamless IP video integration.

Specifications

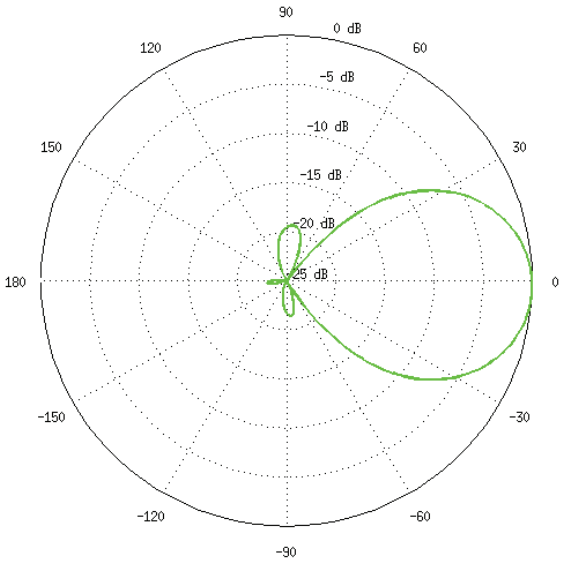
NS-5AC	
Dimensions With Mount Without Mount	 257 x 84 x 41 mm (10.12 x 3.31 x 1.61") 257 x 84 x 30 mm (10.12 x 3.31 x 1.18")
Weight	233 g (8.22) oz
Power Supply	24V, 0.5A Gigabit PoE Supply (Included)
Max. Power Consumption	9W
Power Method	802.3af Alternative A (Pairs 1, 2+; 3, 6 Return) 24V Passive PoE (Pairs 4, 5+; 7, 8 Return)
Gain	16 dBi
Networking Interface	(2) 10/100/1000 Mbps Ethernet Ports
Channel Bandwidths	10/20/30/40/50/60/80 MHz
Processor Specs	Atheros MIPS 74Kc, 560 MHz
Memory	64 MB DDR2
Cross-pol Isolation	20 dB Minimum
Max. VSWR	1.6:1
Beamwidth	45° (H-pol) / 45° (V-pol) / 45° (Elevation)
Polarization	Dual Linear
Enclosure	UV Resistant Polycarbonate
LEDs	(1) Power, Eth1, Eth2; (1) Signal Strength
Mounting	Pole-Mount (Kit Included)
Operating Temperature	-40 to 70° C (-40 to 158° F)
Operating Humidity	5 to 95% Noncondensing
RoHS Compliance	Yes
ESD/EMP Protection	±24kV Contact/Air
Shock & Vibration	ETSI300-019-1.4
Certifications	CE, FCC, IC

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

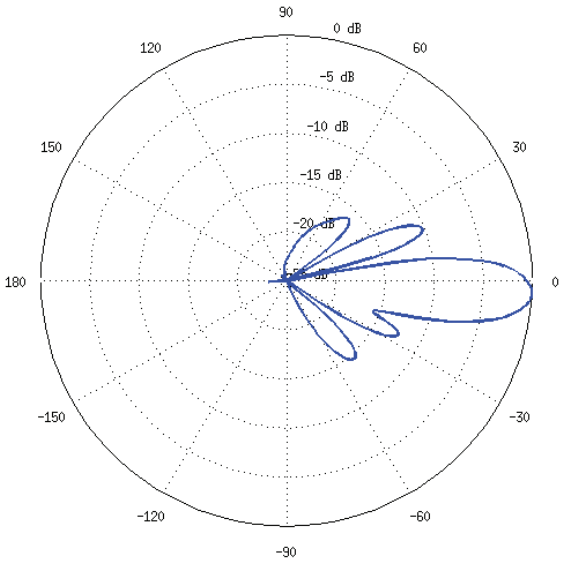
Management Radio (MHz)	
Worldwide	2412 - 2472
USA	2412 - 2462

Output Power: 25 dBm							
5 GHz TX Power Specifications				5 GHz RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	25 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	25 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	25 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	25 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	25 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (⅔)	25 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	24 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	23 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
	8x 256QAM (¾)	21 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (⅚)	21 dBm	± 2 dB		8x 256QAM (⅚)	-65 dBm	± 2 dB

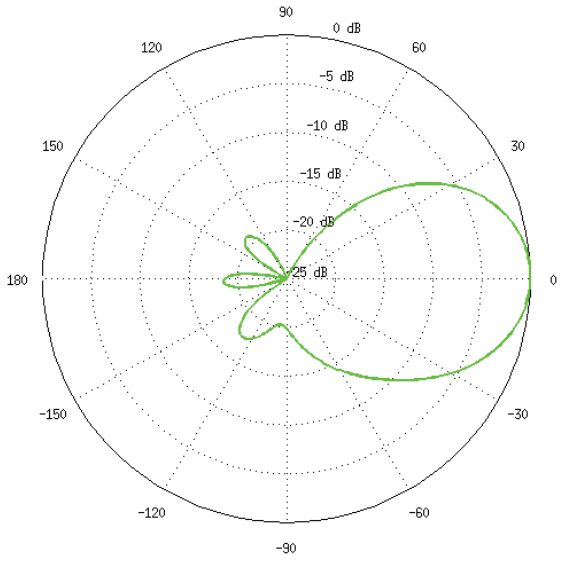
Vertical Azimuth



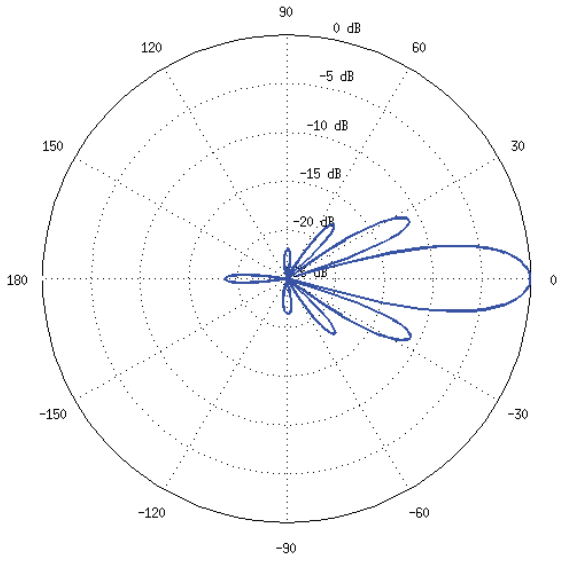
Vertical Elevation



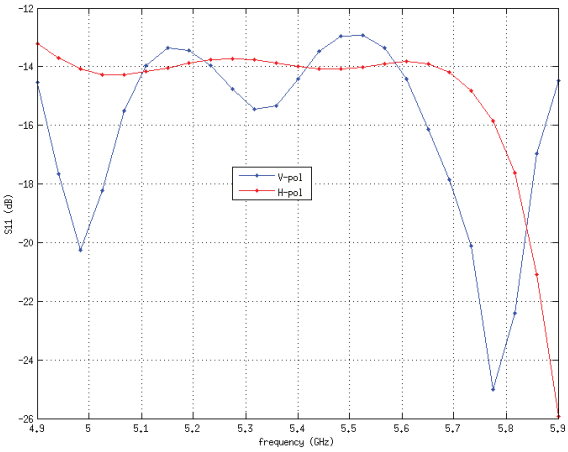
Horizontal Azimuth



Horizontal Elevation



Return Loss





Specifications

Loco5AC	
Dimensions	179 x 77.5 x 59.1 mm (7.05 x 3.05 x 2.33")
Weight	180 g (6.35 oz)
Power Supply	24V, 0.3A Gigabit PoE Supply*
Max. Power Consumption	7W
Power Method	Passive PoE 2-Pair (Pairs 4, 5+; 7, 8 Return)
Gain	13 dBi
Networking Interface	10/100/1000 Mbps Ethernet Port
Channel Bandwidths	10/20/30/40/50/60/80 MHz
Processor Specs	Atheros MIPS 74Kc, 560 MHz
Memory	64 MB DDR2
Cross-pol Isolation	20 dB Minimum
Max. VSWR	1.8:1
Beamwidth	45° (H-pol) / 45° (V-pol) / 45° (Elevation)
Polarization	Dual Linear
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Mounting	Pole-Mount (Kit Included)
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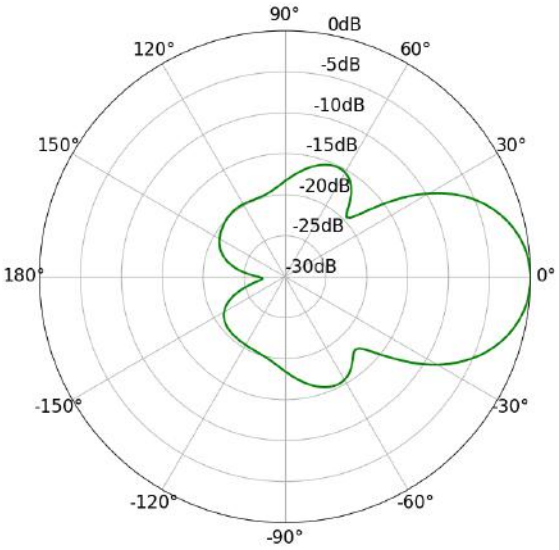
** Not included. Recommended PoE Adapter: POE-24-12W-G.*

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

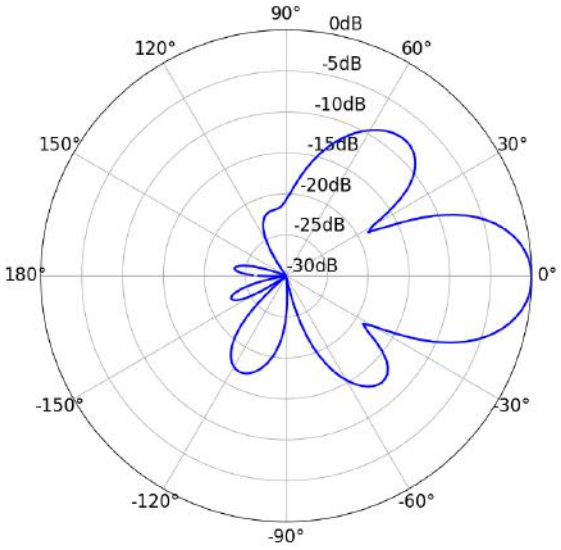
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	4x 16QAM (½)	25 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
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	6x 64QAM (⅔)	25 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	24 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	23 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
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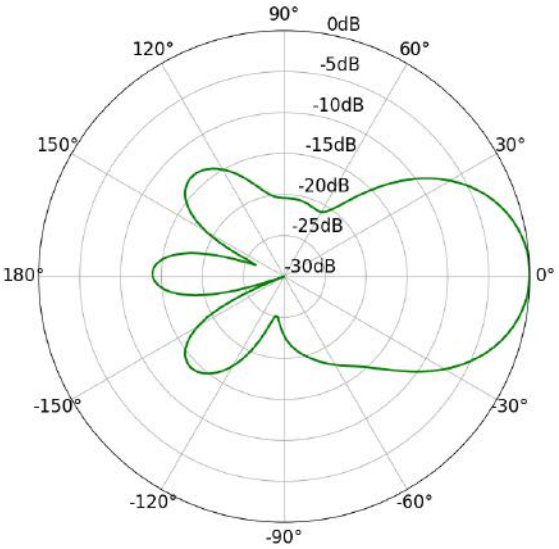
Vertical Azimuth



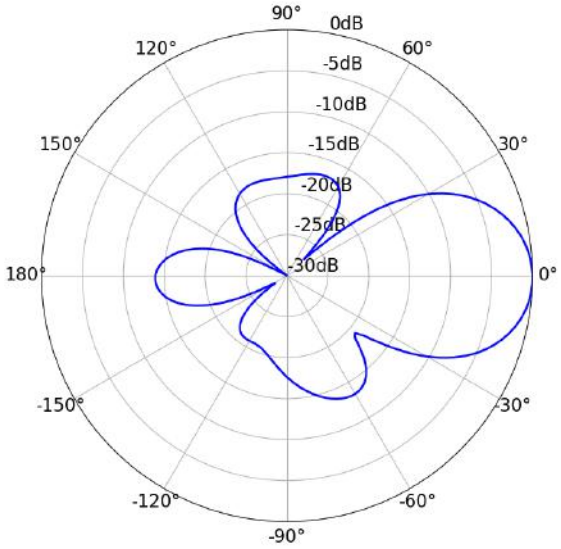
Vertical Elevation



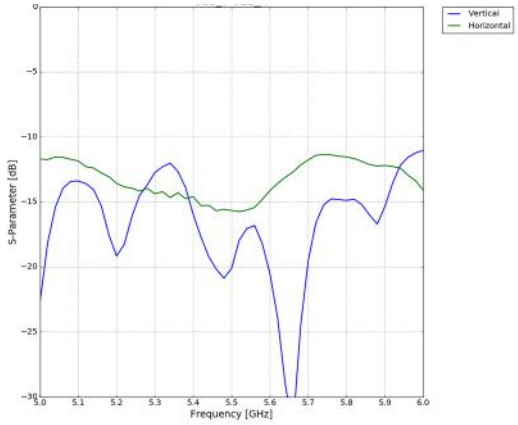
Horizontal Azimuth



Horizontal Elevation



Return Loss





Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
The limited warranty requires the use of arbitration to resolve disputes on an individual basis, and, where applicable, specify arbitration instead of jury trials or class actions.
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