



# IsoStation™ AC

Shielded airMAX® ac Radio with Isolation Antenna

Model: IS-5AC

Interchangeable Isolation Antenna Horn

All-Metal, Shielded Radio Base

airMAX ac Processor for Superior Performance



# Overview

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

## Improved Noise Immunity

The IsoStation 5AC provides high isolation solutions in fixed beamwidth increments through interchangeable horn antennas that have been optimized for an urban environment. The tailored antenna radiation patterns spatially filters both in-band and out-of-band spurious RF emissions to increase the noise immunity of the IsoStation 5AC. This feature is especially important in an increasingly congested RF environment.

## 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 IsoStation 5AC uses horn antenna sectors designed for increased co-location performance without sacrificing gain.

Providing high throughput and an innovative form factor, the IsoStation 5AC is versatile and cost-effective to deploy.

## Symmetrical Antennas

Symmetrical horn antennas (30° and 45° versions) offer breakthrough scalability options for wireless systems. They are ideal for cluster sector installations with high co-location requirements.

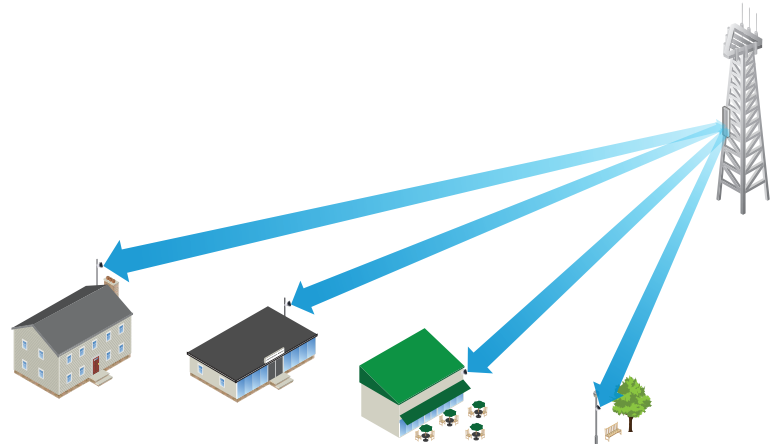
Unique beam performance and great co-location characteristics allow for a higher density of sectors than traditional sector technology.

## Asymmetrical Antennas

Asymmetrical horn antennas (60° and 90° versions) are designed to have attenuated side lobes and extremely low back radiation. They offer best front-to-back ratio in the industry and the lowest side lobe radiation.

## Application Examples

### PtMP Client Links



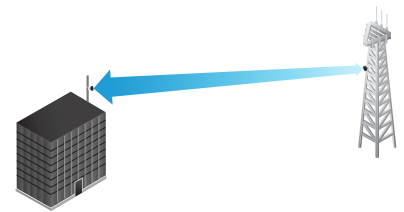
The IsoStation 5AC used as a CPE device for each client in an airMAX PtMP network.

### Wireless Client



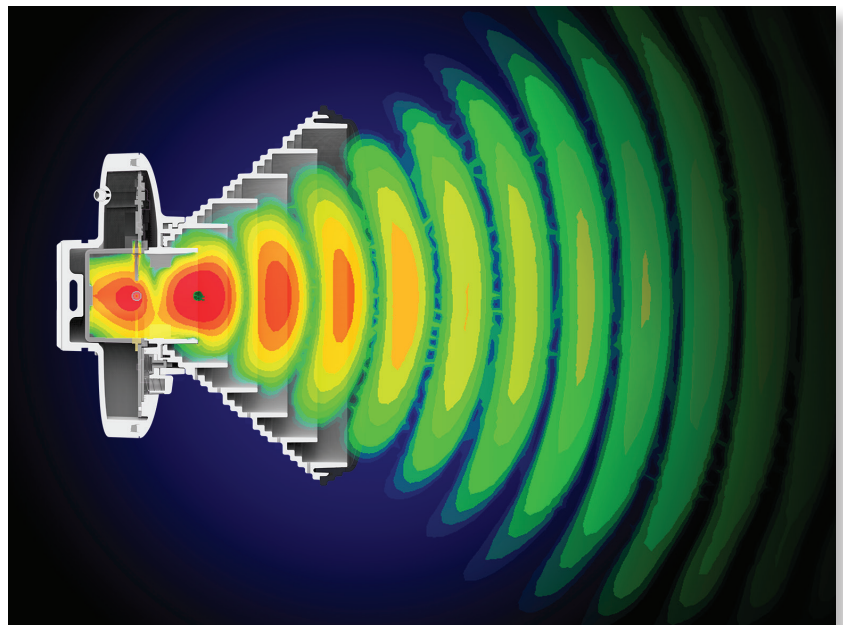
The IsoStation 5AC as a powerful wireless client.

### PtP Link



Use an IsoStation 5AC on each side of a PtP link.

## Beam Performance Perfected



IsoStation 5AC with 45° radiation beam

# 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 Ethernet Cabling Test, RF Diagnostics, and airView® Spectrum Analyzer

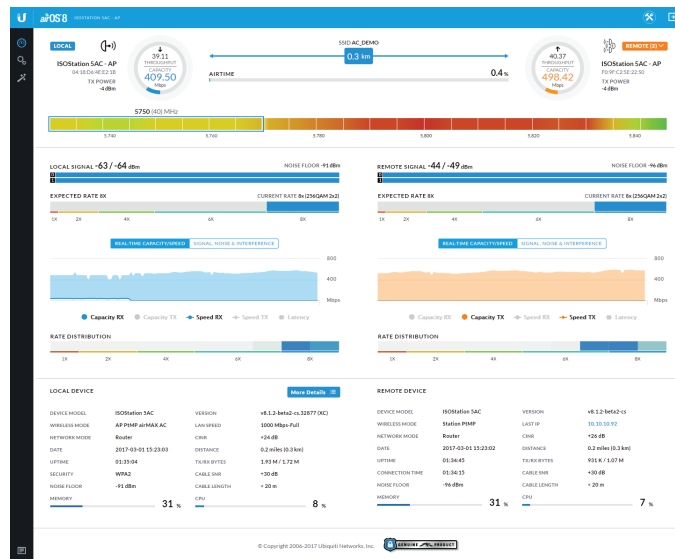
# UMobile App

The IsoStation 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 IsoStation 5AC and offers various configuration options once you're connected or logged in.

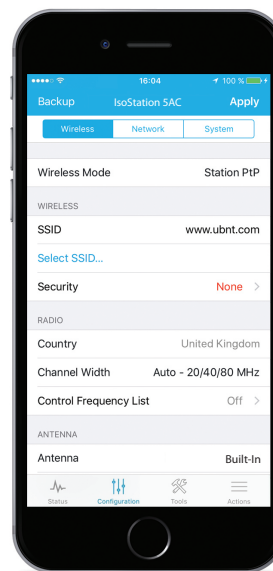
## Dashboard



## Wireless Settings

The Wireless Settings page allows for detailed configuration of the wireless interface. It includes sections for Basic Wireless Settings (Wireless Mode, SSID, Security, Channel Width, Control Frequency List), Wireless Security (WPA2 AES, WPA2 TKIP, WPA2 PSK), and Advanced settings (Antenna, Antenna Gain, Antenna Type, Antenna Frequency, Antenna Power, Antenna Temperature). The Basic Wireless Settings section shows: Wireless Mode: Station PtP, SSID: www.ubnt.com, Security: WPA2 AES, Channel Width: Auto (20/40/80 MHz), and Control Frequency List: Off.

## 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

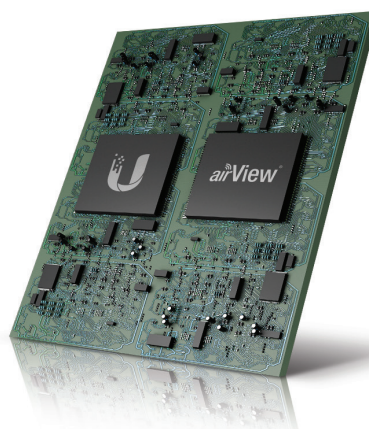
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

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

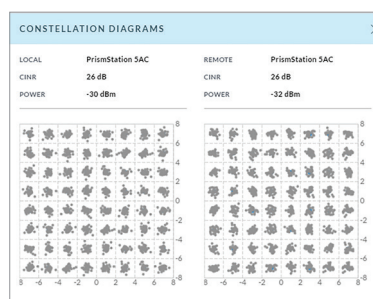
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

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

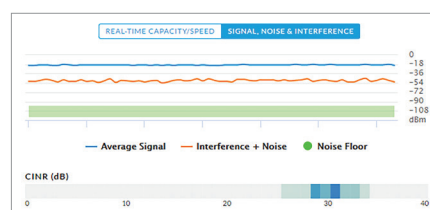
## Multi-Radio Architecture



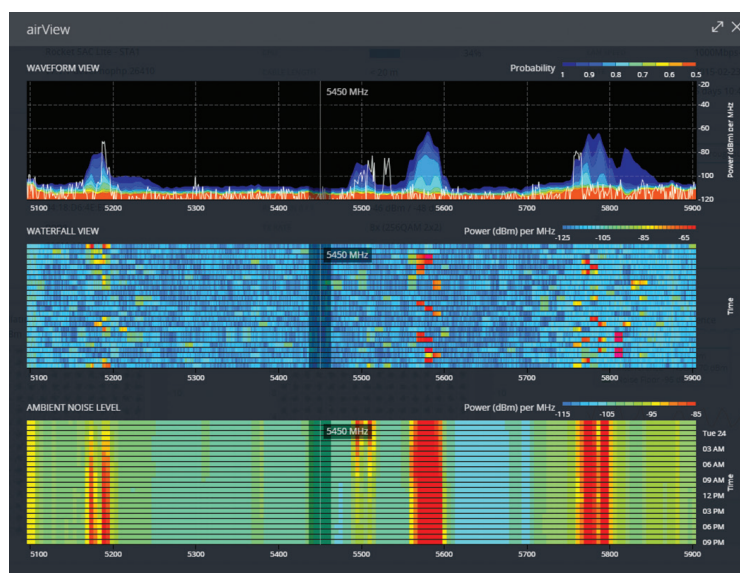
## Constellation Diagrams



## SNI Diagram and CINR Histogram



## Dedicated Spectral Analysis



# Technology



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.

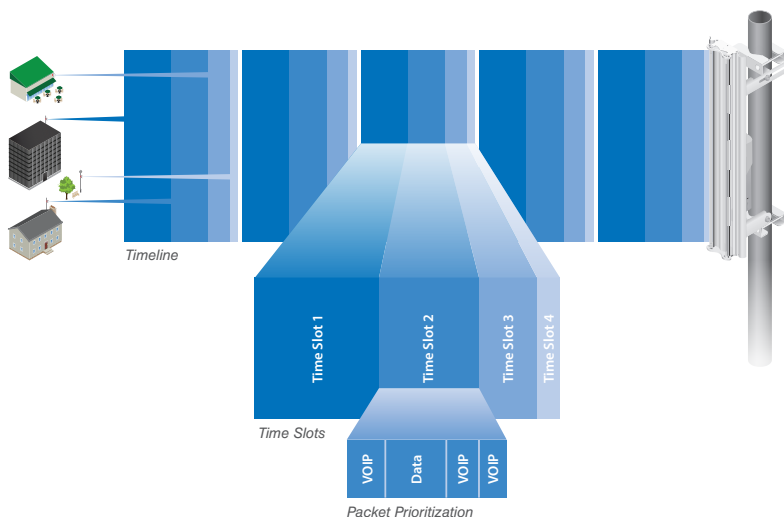
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

## Throughput Breakthrough

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

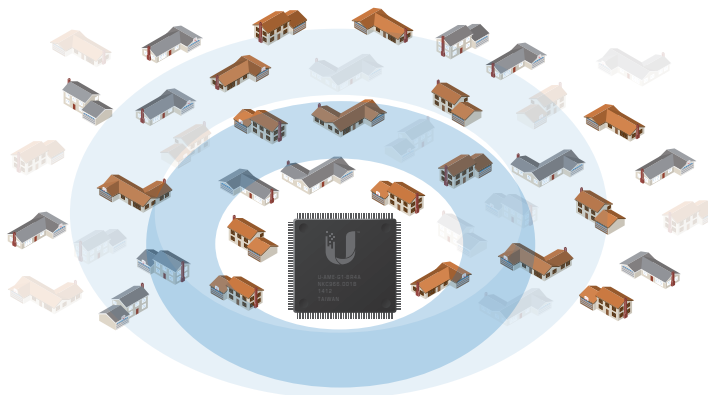
With their use of proprietary airMAX ac technology, airMAX ac products supports up to 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

## airMAX ac TDMA Technology

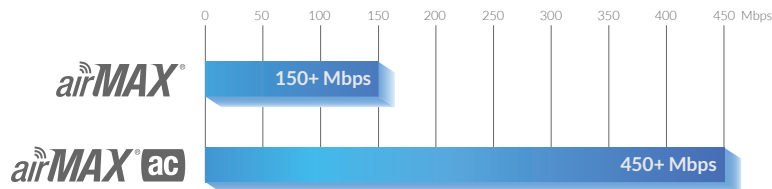


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

## airMAX Network Scalability



## Superior Throughput Performance



## Hardware Overview

Using airMAX ac technology, the IsoStation 5AC supports up to 450+ Mbps real TCP/IP throughput. It also offers the following features:

- Interchangeable horn antennas for enhanced beam shaping
- Horn feed comes directly from the radio input/output so connectors are eliminated
- Single button release for ease of changing antennas
- All metal, shielded radio base
- Metal strap for quick pole-mounting



*Pole-Mounting of the IsoStation 5AC*

## Horn Antenna Options

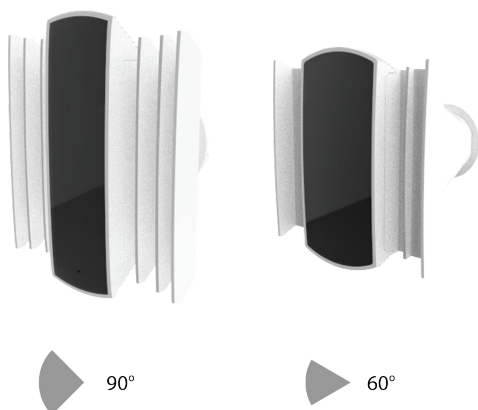
The IsoStation 5AC comes with a 45° isolation antenna. We offer three optional antennas with precise radiation angles for specific beam shaping, so you can customize the IsoStation 5AC for your specific installation requirements:

- 30°
- 60°
- 90°

All horn antennas are optimized for co-location. The asymmetrical versions (60° and 90°) narrow the elevation pattern to increase gain where users need it.



*Switching Out the 45° Horn Antenna*



Interchangeable Isolation Antennas

# Specifications

| IS-5AC                                  |                                                                                     |
|-----------------------------------------|-------------------------------------------------------------------------------------|
| Dimensions<br>With Horn<br>Without Horn | 174 x 174 x 150 mm (6.85 x 6.85 x 5.91")<br>131 x 131 x 65 mm (5.16 x 5.16 x 2.56") |
| Weight<br>With Horn<br>Without Horn     | 725.7 g (1.6 lb)<br>408.2 g (0.9 lb)                                                |
| Max. Power Consumption                  | 8.5W                                                                                |
| Power Supply                            | 24V, 0.5A Gigabit PoE Adapter                                                       |
| Power Method                            | Passive PoE (Pairs 4, 5+; 7, 8 Return)                                              |
| Gain                                    | 14 dBi                                                                              |
| Beamwidth                               | 45° (Default Horn)                                                                  |
| Networking Interface                    | (1) 10/100/1000 Ethernet Port                                                       |
| Processor Specs                         | MIPS 74 Kc                                                                          |
| Memory                                  | 64 MB DDR2                                                                          |
| LED                                     | (1) Power                                                                           |
| Mounting                                | Pole-Mount                                                                          |
| Wind Loading                            | 36 N @ 200 km/h (8.09 lbf @ 125 mph)                                                |
| Wind Survivability                      | 200 km/h (125 mph)                                                                  |
| ESD/EMP Protection                      | ± 24 kV Contact/Air                                                                 |
| Operating Temperature                   | -40 to 70° C (-40 to 158° F)                                                        |
| Operating Humidity                      | 5 to 95% Noncondensing                                                              |
| Certifications                          | FCC, IC, CE                                                                         |

| IS-5AC Operating Frequency |                                    |                 |                 |
|----------------------------|------------------------------------|-----------------|-----------------|
| Operating Frequency        | Worldwide                          | USA: U-NII-1    | USA: U-NII-3    |
|                            | 2412 - 2462 MHz<br>5150 - 5875 MHz | 5150 - 5250 MHz | 5725 - 5850 MHz |

| IS-5AC Output Power: 25 dBm |               |         |           |                         |               |             |           |
|-----------------------------|---------------|---------|-----------|-------------------------|---------------|-------------|-----------|
| TX Power Specifications     |               |         |           | 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 (¾)  | 25 dBm  | ± 2 dB    |                         | 6x 64QAM (¾)  | -83 dBm     | ± 2 dB    |
|                             | 6x 64QAM (¾)  | 24 dBm  | ± 2 dB    |                         | 6x 64QAM (¾)  | -77 dBm     | ± 2 dB    |
|                             | 6x 64QAM (¾)  | 23 dBm  | ± 2 dB    |                         | 6x 64QAM (¾)  | -74 dBm     | ± 2 dB    |
|                             | 8x 256QAM (¾) | 21 dBm  | ± 2 dB    |                         | 8x 256QAM (¾) | -69 dBm     | ± 2 dB    |
|                             | 8x 256QAM (¾) | 21 dBm  | ± 2 dB    |                         | 8x 256QAM (¾) | -65 dBm     | ± 2 dB    |

