DATASHEET

# IsoStation™ M5

## Shielded airMAX® Radio with Isolation Antenna

Model: IS-M5

Interchangeable Isolation Antenna Horn

All-Metal, Shielded Radio Base

airMAX Processor for Superior Performance

UBIQUITI® NETWORKS

# Overview

Ubiquiti Networks launches the latest generation of airMAX CPE (Customer Premises Equipment) with dedicated Wi-Fi management, the IsoStation™ M5.

## Improved Noise Immunity

The IsoStation M5 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 M5. 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 M5 uses horn antenna sectors designed for increased co-location performance without sacrificing gain.

Providing high throughput and an innovative form factor, the IsoStation M5 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.

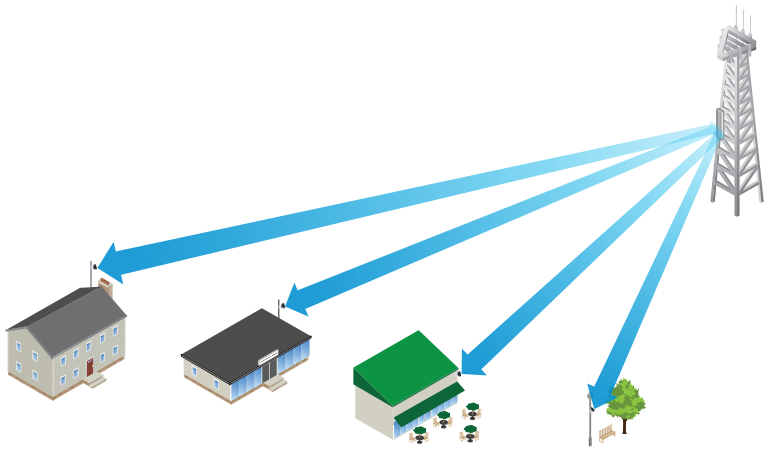
Unique beam performance and great co-location characteristics allow for a higher density of sectors than traditional sector technology.

## 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.

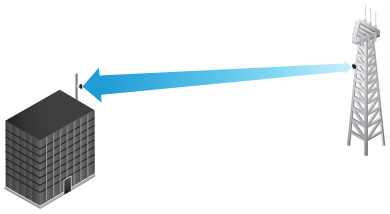
## Application Examples

### PtMP Client Links



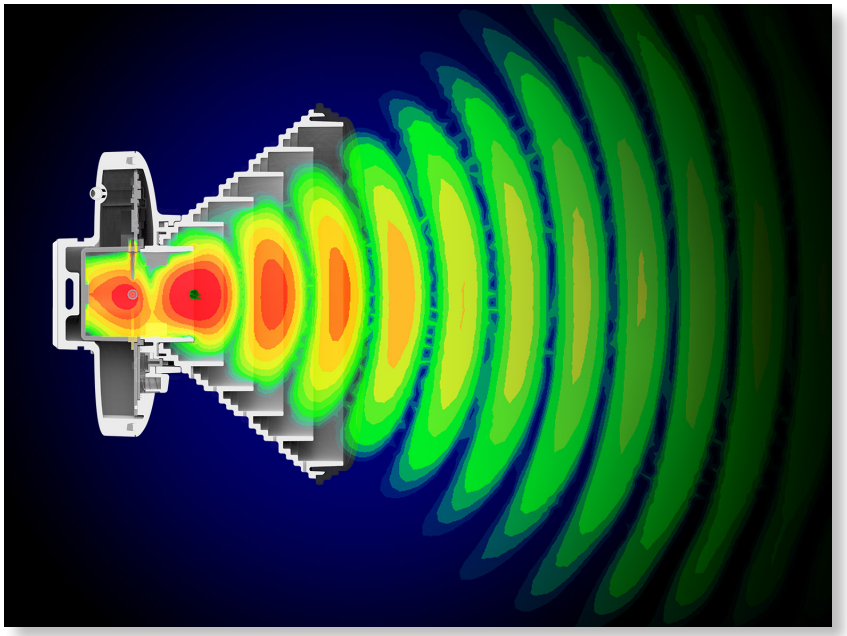
*The IsoStation M5 used as a CPE device for each client in an airMAX PtMP network.*

### PtP Link



*Use an IsoStation M5 on each side of a PtP link.*

## Beam Performance Perfected



*IsoStation M5 with 45º radiation beam*

# Software

airOS®

airOS® is an intuitive, versatile, highly developed Ubiquiti firmware technology. It is exceptionally intuitive and was designed to require no training to operate. Behind the user interface is a powerful firmware architecture, which enables high-performance, outdoor multi-point networking.

- Protocol Support
- Ubiquiti Channelization
- Spectral Width Adjustment
- ACK Auto-Timing
- AAP Technology
- Multi-Language Support

airView®

Integrated on all Ubiquiti M products, airView® provides advanced spectrum analyzer functionality: waterfall, waveform, and real-time spectral views allow operators to identify noise signatures and plan their networks to minimize noise interference.

- **Waterfall** Aggregate energy over time for each frequency.
- **Waveform** Aggregate energy collected.
- **Real-time** Energy is shown in real time as a function of frequency.
- **Recording** Automate airView to record and report results.

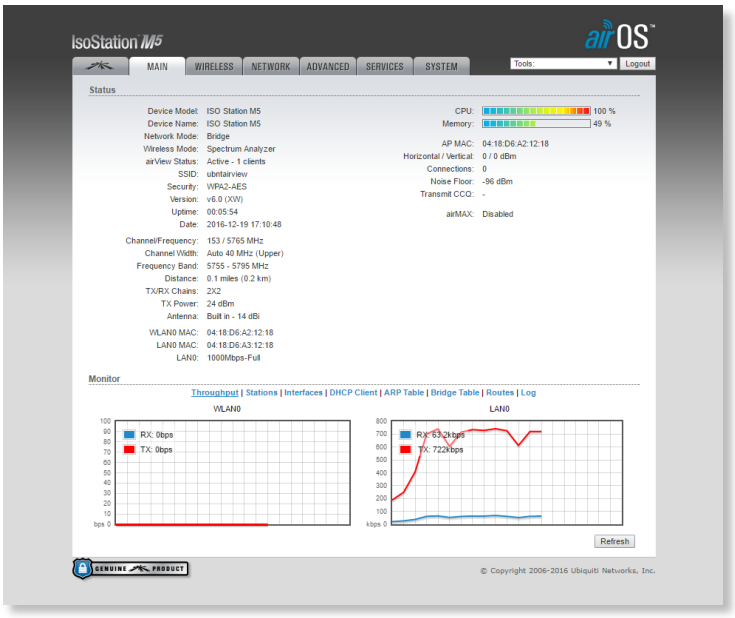
## UNMS App

The IsoStation M5 can be accessed by the UNMS™ app once it has been set up on the same Wi-Fi network as your mobile device. (Original setup is done through your browser).

## Accessing airOS via Wi-Fi

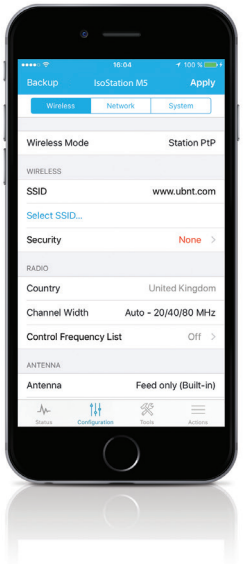
The UNMS app provides instant accessibility to the airOS configuration interface and can be downloaded from the App Store (iOS) or Google Play™ (Android). UNMS allows you to configure and manage the IsoStation M5 and offers various configuration options once you're connected or logged in.

### Main




### airView

### UNMS Configuration

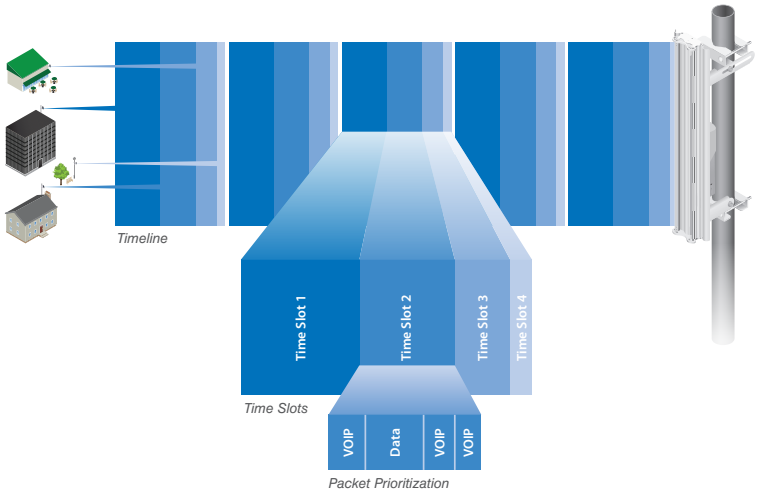


# airMAX Technology Included

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. It provides significant performance improvements in latency, throughput, and scalability compared to all other outdoor systems in its class.

- Intelligent QoS with voice/video priority for seamless streaming.
- High capacity and scalability.
- Long-distance, carrier-class links.




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

# Hardware Overview

Using airMAX technology, the IsoStation M5 supports up to 100+ 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

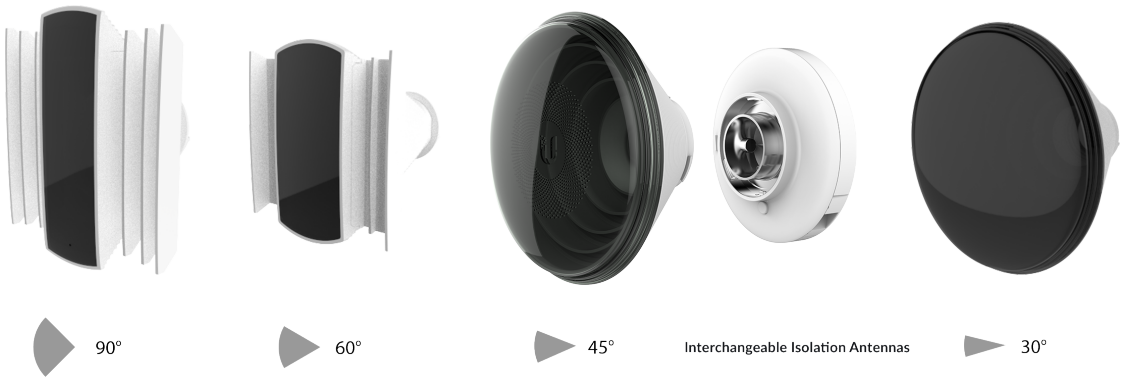
*Pole-Mounting of the IsoStation M5*

# Antenna Options

The IsoStation M5 comes with a 45° isolation antenna. We offer three optional antennas (30°, 60°, 90°) with precise radiation angles for specific beam shaping, so you can customize the IsoStation M5 for your specific installation.

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*



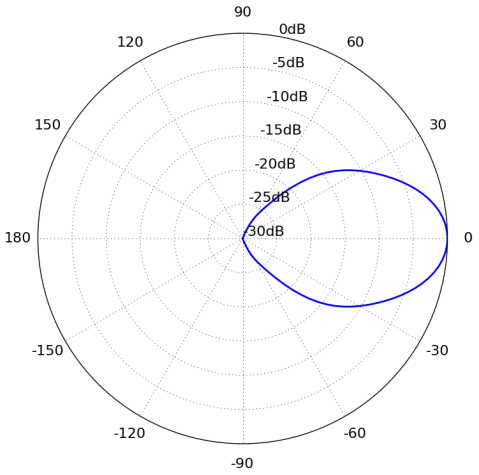
# Specifications

| IS-M5 | |
|---|---|
| Dimensions<br>With Horn<br>Without Horn | <br>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 | <br>725.7 g (1.6 lb)<br>408.2 g (0.9 lb) |
| Max. Power Consumption | 6.5W |
| 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 |

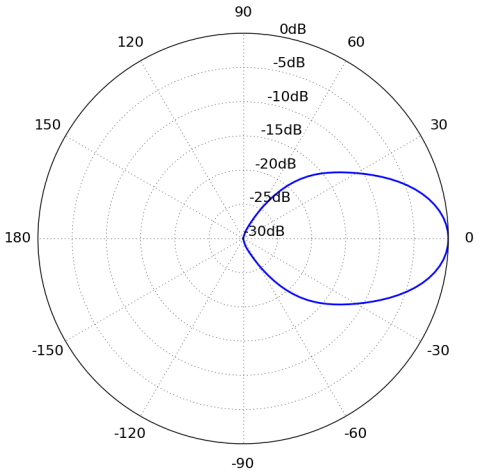
| IS-M5 Operating Frequency | | | |
|---|---|---|---|
| Operating Frequency | Worldwide | USA: U-NII-1 | USA: U-NII-3 |
| | 5150 - 5875 MHz | 5150 - 5250 MHz | 5725 - 5850 MHz |

| IS-M5 Output Power: 24 dBm | | | | | | | |
|---|---|---|---|---|---|---|---|
| TX Power Specifications | | | | RX Power Specifications | | | |
| Modulation | Data Rate | Avg. TX | Tolerance | Modulation | Data Rate | Sensitivity | Tolerance |
| **802.11a** | 6 - 24 Mbps | 24 dBm | ± 2 dB | **802.11a** | 6 - 24 Mbps | -94 dBm Min. | ± 2 dB |
| | 36 Mbps | 24 dBm | ± 2 dB | | 36 Mbps | -80 dBm | ± 2 dB |
| | 48 Mbps | 23 dBm | ± 2 dB | | 48 Mbps | -77 dBm | ± 2 dB |
| | 54 Mbps | 22 dBm | ± 2 dB | | 54 Mbps | -75 dBm | ± 2 dB |
| **802.11n/airMAX** | MCS0 | 24 dBm | ± 2 dB | **802.11n/airMAX** | MCS0 | -96 dBm | ± 2 dB |
| | MCS1 | 23 dBm | ± 2 dB | | MCS1 | -95 dBm | ± 2 dB |
| | MCS2 | 23 dBm | ± 2 dB | | MCS2 | -92 dBm | ± 2 dB |
| | MCS3 | 23 dBm | ± 2 dB | | MCS3 | -90 dBm | ± 2 dB |
| | MCS4 | 22 dBm | ± 2 dB | | MCS4 | -86 dBm | ± 2 dB |
| | MCS5 | 21 dBm | ± 2 dB | | MCS5 | -83 dBm | ± 2 dB |
| | MCS6 | 20 dBm | ± 2 dB | | MCS6 | -77 dBm | ± 2 dB |
| | MCS7 | 20 dBm | ± 2 dB | | MCS7 | -74 dBm | ± 2 dB |
| | MCS8 | 24 dBm | ± 2 dB | | MCS8 | -96 dBm | ± 2 dB |
| | MCS9 | 24 dBm | ± 2 dB | | MCS9 | -95 dBm | ± 2 dB |
| | MCS10 | 23 dBm | ± 2 dB | | MCS10 | -92 dBm | ± 2 dB |
| | MCS11 | 23 dBm | ± 2 dB | | MCS11 | -90 dBm | ± 2 dB |
| | MCS12 | 22 dBm | ± 2 dB | | MCS12 | -86 dBm | ± 2 dB |
| | MCS13 | 21 dBm | ± 2 dB | | MCS13 | -83 dBm | ± 2 dB |
| | MCS14 | 20 dBm | ± 2 dB | | MCS14 | -77 dBm | ± 2 dB |
| | MCS15 | 20 dBm | ± 2 dB | | MCS15 | -74 dBm | ± 2 dB |

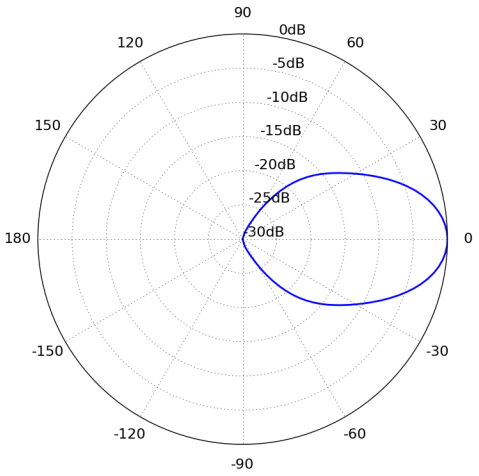
## Vertical Azimuth



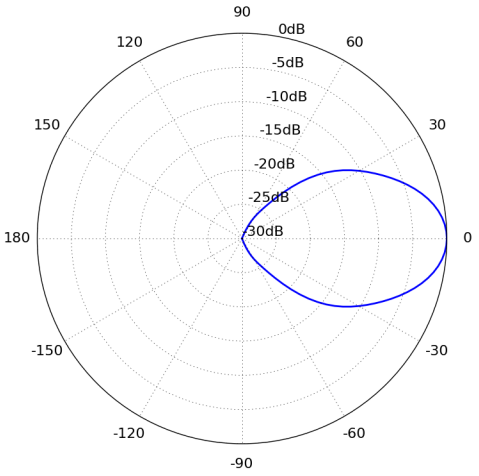

## Vertical Elevation



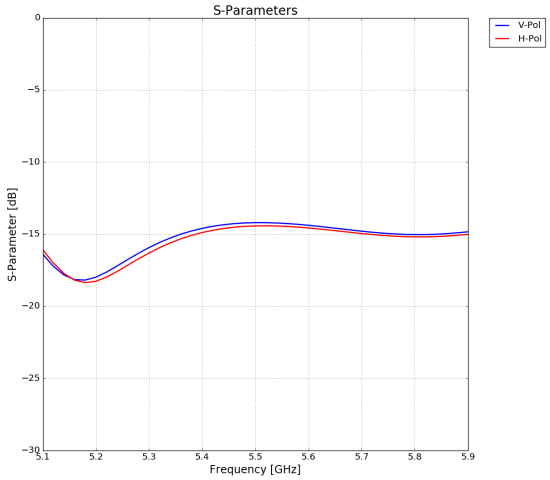

## Horizontal Azimuth




## Horizontal Elevation




## Return Loss



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