



**rocket**  
**airPRISM** AC GEN2

5 GHz airMAX® ac Radio  
BaseStation with airPrism®  
Active RF Filtering Technology

Model: RP-5AC-Gen2

5 GHz Wide Band Operating Frequency

Custom Ubiquiti® airMAX ac Processor

Dedicated Wi-Fi Radio for Management

# Overview

Ubiquiti Networks has designed airMAX ac radios with high performance and ease of installation in mind. The Rocket®Prism 5AC Gen 2 features both airMAX ac and airPrism technologies for maximum wireless performance in high-density areas.

Pair the Rocket Prism 5AC Gen 2 with airMAX ac antennas for optimal performance:

- **PtP backhaul** RocketDish™ ac Antenna
- **PtMP links** airMAX ac Sector

## Worldwide 5 GHz Coverage

Deploy the Rocket Prism 5AC Gen 2 anywhere in the world. It delivers complete coverage of the 5 GHz spectrum with a single radio. The Rocket Prism 5AC Gen 2 allows for flexibility in configuring channel bandwidths (subject to local country regulations).

## Software

### airOS® 8

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

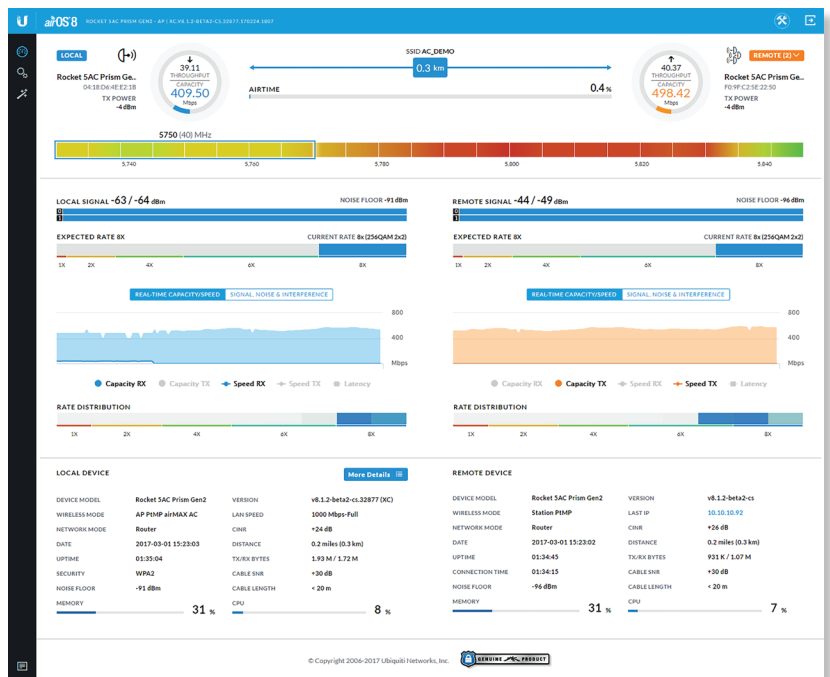
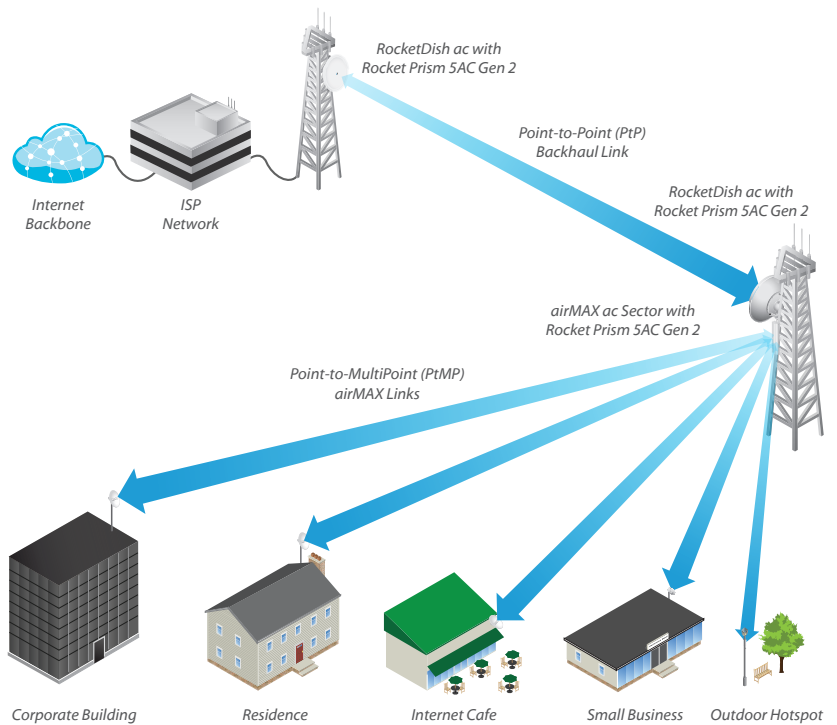
### Powerful Wireless Features

- 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
- Redesigned User Interface
- 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

## Application Example



## 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.

Data from the spectrum analysis and RF performance monitoring is displayed on the *Main* tab and airView Spectrum Analyzer.

## 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

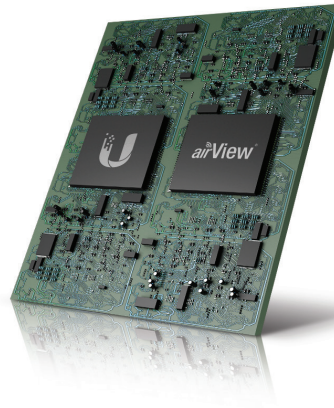
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

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

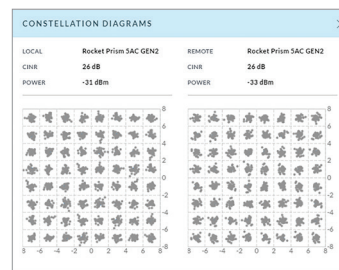
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

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

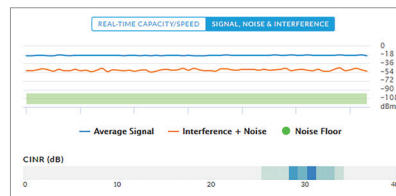
## Multi-Radio Architecture



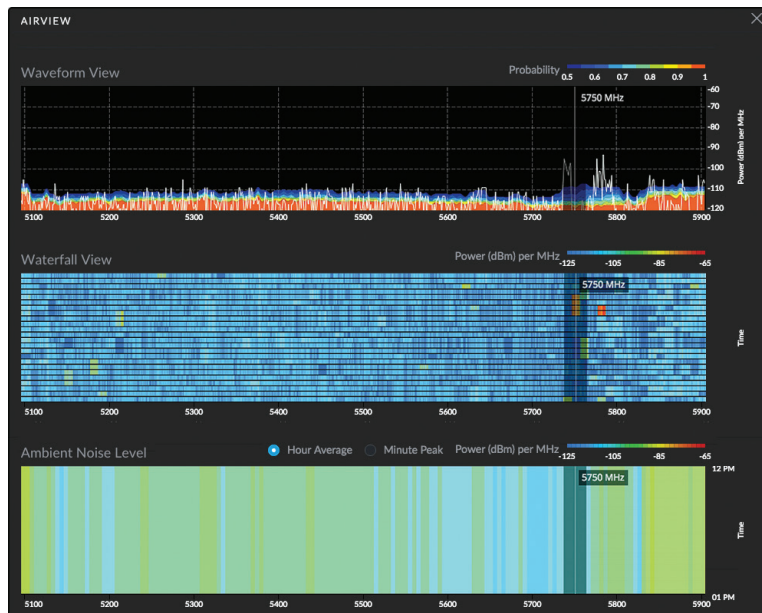
## Constellation Diagrams



## SNI Diagram and CINR Histogram



## Dedicated Spectral Analysis



# Technology

## airMAX<sup>®</sup> ac

Unlike standard Wi-Fi protocol, Ubiquiti's Time Division Multiple Access (TDMA) airMAX ac 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 ac 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.

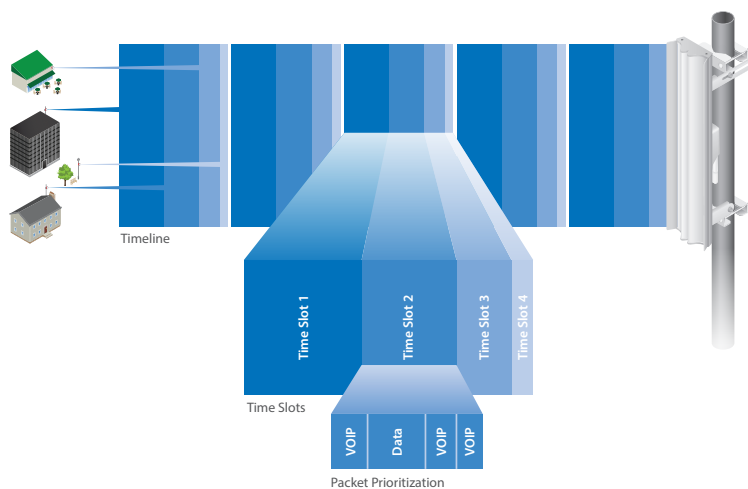
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

### 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 500+ Mbps\* (maximum 80 MHz channel width) real TCP/IP throughput – up to triple the throughput of standard airMAX products.

## airMAX ac TDMA Technology

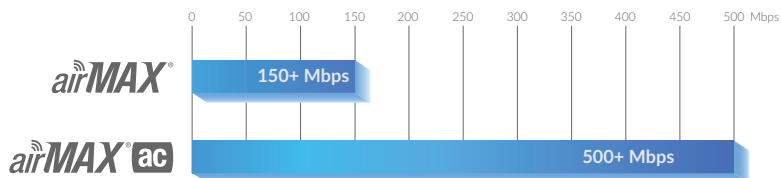


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

## airMAX ac Network Scalability



## Superior Throughput Performance



\* Up to 330+ Mbps (maximum 40 MHz channel width) for PtMP links.

# Technology



To enhance airMAX ac performance, Ubiquiti Networks introduces our patented airPrism technology, which is featured on the Rocket Prism 5AC Gen 2, model RP-5AC-Gen2.

## 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

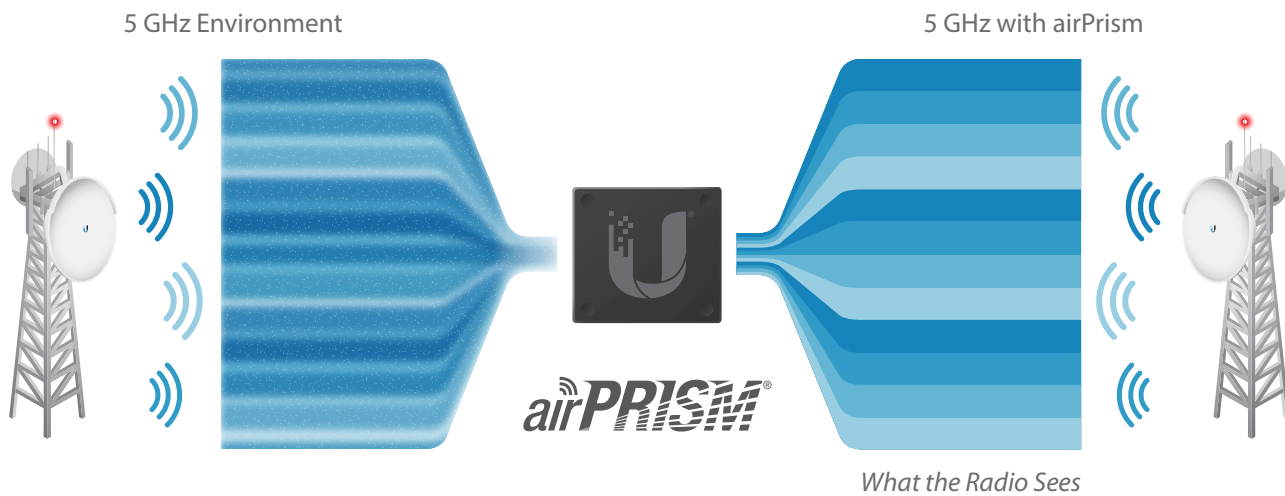
Co-location is vital in many scenarios. For example, a WISP may have limited tower space, so it must co-locate all APs within that allotted footprint. Shielding and other means can lessen interference but may be impractical.

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

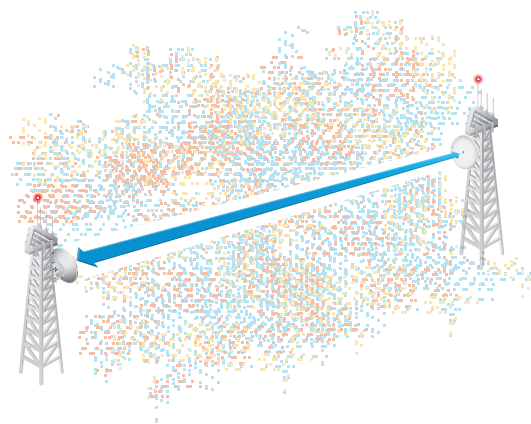
| Number of APs | Channel Width |
|---------------|---------------|
| 4             | 80 MHz*       |
| 8             | 40 MHz        |
| 16            | 20 MHz        |

\* PtP only

## Active Radio Frequency Filtering



## Improved Latency and Noise Immunity



# UNMS App

The RocketPrism 5AC Gen 2 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 Rocket Prism 5AC Gen 2 and offers various configuration options once you're connected or logged in.



The Rocket Prism 5AC Gen 2 is designed to deliver maximum spectral efficiency and up to 500+ Mbps Real TCP/IP throughput.

## Features

**5 GHz Frequency Band** With plenty of available spectrum, this unlicensed band works well for long-distance links. The Rocket Prism 5AC Gen 2 features full-band 5 GHz coverage and maximizes output power for the US market, meeting strict OOB requirements.

**airView** Use the real-time spectrum analyzer so you can identify noise signatures and design your wireless links to minimize noise interference.

**High Performance** To take full advantage of its design and capabilities, deploy the Rocket Prism 5AC Gen 2 for PtP or PtMP links in high RF noise environments.

**airPrism Sector Antenna** You can mount three Rocket Prism 5AC Gen 2 radios on the airPrism 5 GHz 3x30° HD Sector Antenna, model AP-5AC-90-HD, for PtMP links. Each Rocket radio corresponds with a specific 30° beamwidth and independently transmits and receives.

**Dedicated Management Radio** Access the airOS configuration interface instantly through the UMobile app to set up and manage your Rocket 5AC Prism Gen 2.

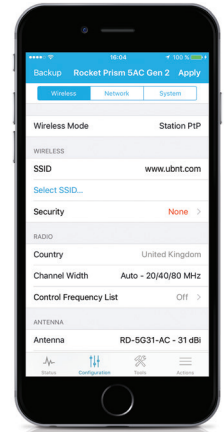
**Robust Die Cast Aluminum Casing** Helps protect the Rocket Prism 5AC Gen 2 against electromagnetic interference.

**GPS for Superior Co-Location Performance** Precise GPS frame synchronization enable co-located Rocket Prism 5AC Gen 2 radios to transmit and receive data without interfering with each other, allowing for better frequency reuse and increased network stability.

**Improved Surge Protection** The Rocket Prism 5AC Gen 2 utilizes the latest ESD protection to help protect against power surges.

**Gigabit Ethernet** Delivers high throughput over its wired connection.

**Plug and Play** Every airMAX antenna has a built-in Rocket mount, so no tools are needed to install the Rocket Prism 5AC Gen 2. (airMAX ac antennas are recommended for optimal performance.)



# Specifications

| RP-5AC-Gen2                |  |                 |
|----------------------------|--|-----------------|
| Dimensions                 | 88 x 40 x 230 mm (3.47 x 1.58 x 9.06")   |                 |
| Weight                     | 400 g (14.11 oz)   |                 |
| Networking Interface       | (1) 10/100/1000 Ethernet Port  |                 |
| RF Connectors              | (2) RP-SMA (Waterproof), (1) GPS* (Waterproof)   |                 |
| LEDs                       | (4) Signal Strength, GPS*, LAN, Power  |                 |
| Enclosure                  | Die-Cast Aluminum with White Powder Coating  |                 |
| Max. Power Consumption     | 9.5W   |                 |
| Power Supply               | 24V, 1A Gigabit PoE Adapter (Included)   |                 |
| Power Method               | Passive PoE (Pairs 4, 5+; 7, 8 Return)   |                 |
| Processor Specs            | Atheros MIPS 74Kc  |                 |
| Memory                     | 128 MB DDR2 SDRAM  |                 |
| Supported Voltage Range    | 18-26VDC   |                 |
| Signal Strength LEDs       | Software-Adjustable to Correspond to Custom RSSI Levels  |                 |
| Channel Sizes              | PtP Mode   | PtMP Mode       |
|                            | 10/20/30/40/50/60/80 MHz   | 10/20/30/40 MHz |
| ESD/EMP Protection         | ± 24 kV Contact / Air for Ethernet   |                 |
| Operating Temperature      | -40 to 80° C (-40 to 176° F)   |                 |
| Operating Humidity         | 5 to 95% Noncondensing   |                 |
| RoHS Compliance            | Yes  |                 |
| Shock and Vibration        | ETSI300-019-1.4  |                 |
| Modes                      | Access Point, Station  |                 |
| Services                   | Web Server, SNMP, SSH Server, Telnet , Ping Watchdog, DHCP, NAT, Bridging, Routing   |                 |
| Utilities                  | airMagic, airView, Antenna Alignment Tool, Discovery Utility, Site Survey, Ping, Traceroute, Speed Test                            |                 |
| Distance Adjustment        | Dynamic Ack and Ackless Mode   |                 |
| Power Adjustment           | Software Adjustable UI or CLI  |                 |
| Security                   | WPA2 AES Only  |                 |
| QoS                        | Supports Packet Level Classification WMM and User Customer Level: High/Medium/Low  |                 |
| Statistical Reporting      | Up Time, Packet Errors, Data Rates, Wireless Distance, Ethernet Link Rate  |                 |
| Other                      | Remote Reset Support, Software Enabled/Disabled, VLAN Support, 256QAM, GPS*, TX Filter   |                 |
| Ubiquiti Specific Features | 30/50/60 MHz Channels, airMAX ac Mode, Traffic Shaping with Burst Support, Discovery Protocol, Frequency Band Offset, Ackless Mode |                 |
| Certifications             | CE, FCC, IC  |                 |

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

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


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

| RP-5AC-Gen2 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 (1/2)   | 28 dBm  | ± 2 dB    | airMAX ac               | 1x BPSK (1/2)   | -96 dBm     | ± 2 dB    |
|                                  | 2x QPSK (1/2)   | 28 dBm  | ± 2 dB    |                         | 2x QPSK (1/2)   | -95 dBm     | ± 2 dB    |
|                                  | 2x QPSK (3/4)   | 28 dBm  | ± 2 dB    |                         | 2x QPSK (3/4)   | -92 dBm     | ± 2 dB    |
|                                  | 4x 16QAM (1/2)  | 28 dBm  | ± 2 dB    |                         | 4x 16QAM (1/2)  | -90 dBm     | ± 2 dB    |
|                                  | 4x 16QAM (3/4)  | 28 dBm  | ± 2 dB    |                         | 4x 16QAM (3/4)  | -86 dBm     | ± 2 dB    |
|                                  | 6x 64QAM (3/8)  | 28 dBm  | ± 2 dB    |                         | 6x 64QAM (3/8)  | -83 dBm     | ± 2 dB    |
|                                  | 6x 64QAM (3/4)  | 27 dBm  | ± 2 dB    |                         | 6x 64QAM (3/4)  | -77 dBm     | ± 2 dB    |
|                                  | 6x 64QAM (5/8)  | 26 dBm  | ± 2 dB    |                         | 6x 64QAM (5/8)  | -74 dBm     | ± 2 dB    |
|                                  | 8x 256QAM (3/4) | 24 dBm  | ± 2 dB    |                         | 8x 256QAM (3/4) | -69 dBm     | ± 2 dB    |
|                                  | 8x 256QAM (5/8) | 22 dBm  | ± 2 dB    |                         | 8x 256QAM (5/8) | -65 dBm     | ± 2 dB    |

# Plug and Play Integration

Rocket radios and airMAX antennas have been designed to seamlessly work together. Every airMAX antenna has a built-in Rocket mount, so installation requires no special tools.

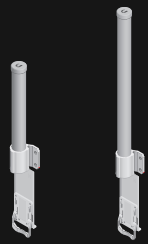


## Antenna Compatibility



**Rocket Prism 5AC Gen 2**

Frequency Band

**5 GHz**

|   |  |
|---|--|
|  <p><b>Omni</b></p>         | <ul style="list-style-type: none"> <li>AMO-5G10</li> <li>AMO-5G13</li> <li>AM-5AC21-60</li> <li>AM-5AC22-45</li> <li>AM-V5G-Ti</li> <li>AM-M-V5G-Ti</li> <li>AM-5G16-120</li> <li>AM-5G17-90</li> <li>AM-5G19-120</li> <li>AM-5G20-90</li> <li>AP-5AC-90-HD</li> </ul> |
|  <p><b>Sector</b></p>      | <ul style="list-style-type: none"> <li>RD-5G31-AC</li> <li>RD-5G30-LW</li> <li>RD-5G30</li> <li>RD-5G34</li> </ul>   |
|  <p><b>Rocket Dish</b></p> | <ul style="list-style-type: none"> <li>RD-5G31-AC</li> <li>RD-5G30-LW</li> <li>RD-5G30</li> <li>RD-5G34</li> </ul>   |

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)  
 ©2015-2017 Ubiquiti Networks, Inc. All rights reserved. Ubiquiti, Ubiquiti Networks, the Ubiquiti U logo, the Ubiquiti beam logo, airMAX, airOS, airPrism, airView, Rocket, RocketDish, and UNMS are trademarks or registered trademarks of Ubiquiti Networks, Inc. in the United States and in other countries. All other trademarks are the property of their respective owners.