PRISM

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rocket®2AC

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airMAX® ac BaseStation with airPrism® Technology

Model: R2AC

Worldwide, Full-Band 2.4 GHz Coverage

airMAX ac Technology for up to 330+ Mbps Throughput

Revolutionary airPrism Active RF Filtering Technology

UBIQUITI®
N E T W O R K S

Rocket 2AC PRISM

Overview

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

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

• **Point-to-Point (PtP) backhaul** RocketDish™ Antenna
• **Point-to-MultiPoint (PtMP) links** airMAX Sector Antenna

2.4 GHz Coverage

Deploy the Rocket 2AC Prism anywhere in the world. It delivers complete coverage of the 2.4 GHz spectrum with a single radio. The Rocket 2AC Prism allows for flexibility in configuring channel bandwidths (subject to local country regulations).

Software

airOS 8

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: 10/20/40 MHz
  • PtMP: 10/20/40 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

Application Example
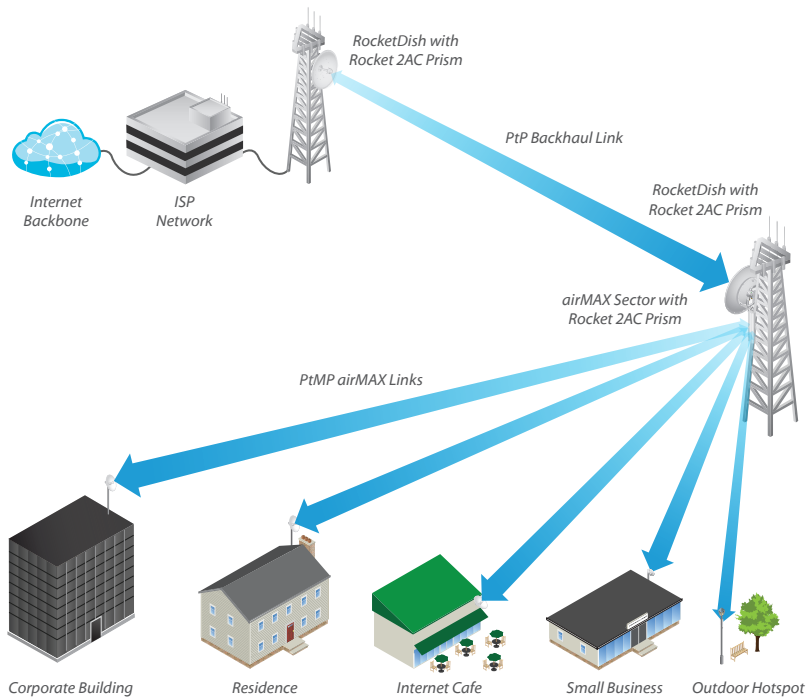
The Rocket 2AC Prism used for a PtP backhaul and a PtMP link in an airMAX network.

Dashboard

2
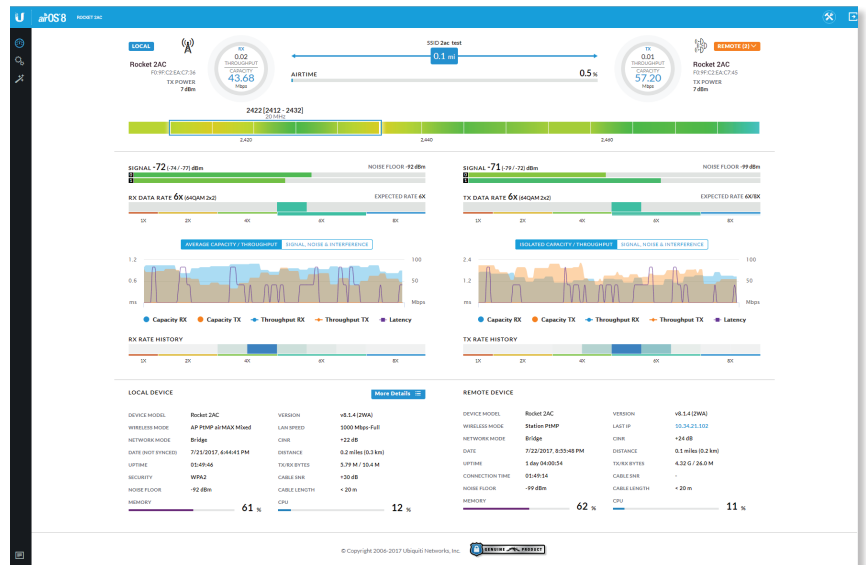
Advanced RF Analytics

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 2.4 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 Rocket 2AC Prism 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). UNMS allows you to set up, configure, and manage the Rocket 2AC Prism and offers various configuration options once you're connected or logged in.
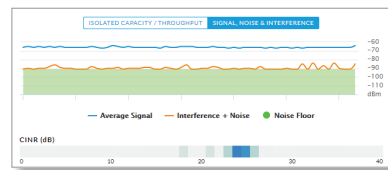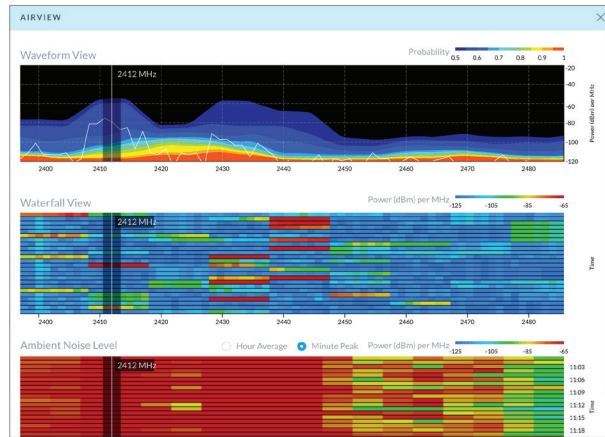
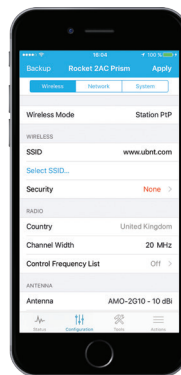**Multi-Radio Architecture**
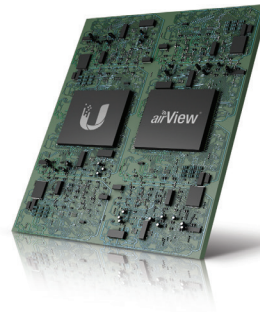
Constellation Diagrams
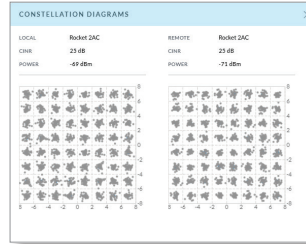
SNI Diagram and CINR Histogram

Dedicated Spectral Analysis

UNMS Configuration Screen

Technology

airMAX ac

Unlike standard Wi-Fi protocol, Ubiquiti's Time Division Multiple Access (TDMA) airMAX 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 330+ Mbps (maximum 40 MHz channel width) real TCP/IP throughput – up to triple the throughput of standard airMAX products.
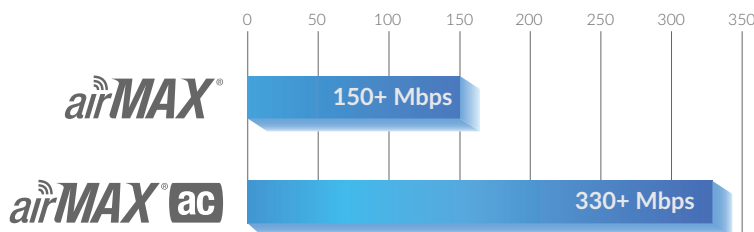
airMAX ac TDMA Technology
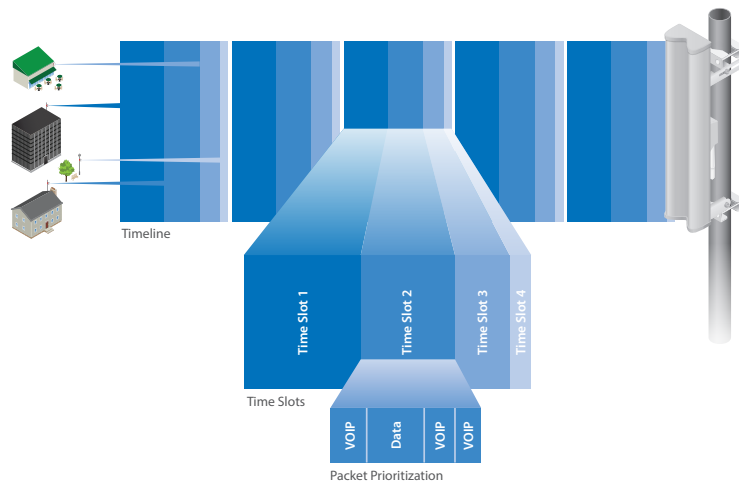
Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX ac Network Scalability

Superior Throughput Performance

Technology

airPRISM®

To enhance airMAX ac performance, Ubiquiti Networks introduces our patented airPrism technology, which is featured on the Rocket 2AC Prism, model R2AC-PRISM.

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, or 40 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.
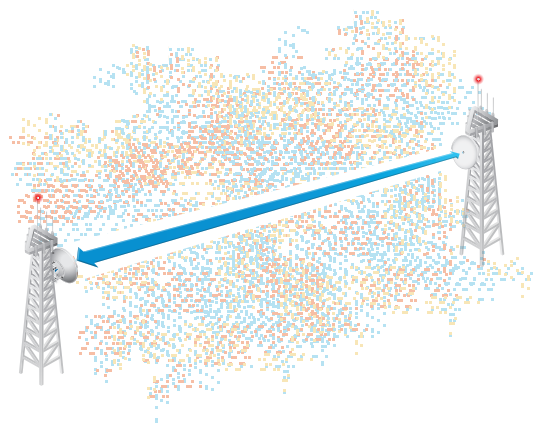
By deploying airMAX ac APs with airPrism technology, you can co-locate APs and enhance the overall performance of your wireless network.

Number of APs	Channel Width
1	40 MHz
3	20 MHz
6	10 MHz

Active Radio Frequency Filtering

2.4 GHz Environment

2.4 GHz with airPrism

airPRISM®

What the Radio Sees
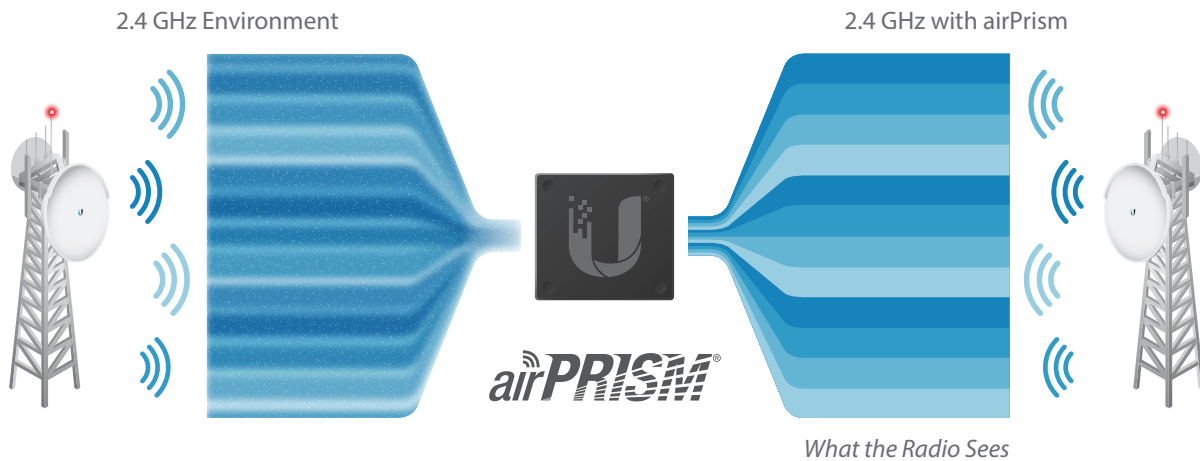
Improved Latency and Noise Immunity

rocket® 2AC PRISM

Specifications

R2AC	
Dimensions	88 x 40 x 230 mm (3.47 x 1.58 x 9.06")
Weight	440 g (15.52 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	8.5W
Power Supply	24V, 0.5A Gigabit PoE Adapter (Included)
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)
Processor Specs	Atheros MIPS 74Kc, 720 MHz
Memory	128 MB DDR2 SDRAM, 16 MB NOR Flash
Supported Voltage Range	18-26VDC
Signal Strength LEDs	Software-Adjustable to Correspond to Custom RSSI Levels
Channel Sizes	10/20/40 MHz
ESD/EMP Protection	± 24 kV Contact / Air for Ethernet
Operating Temperature	-40 to 70° C (-40 to 158° 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	10 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 v8.5.0 and newer.

Operating Frequency (MHz)	
Worldwide	2412 - 2472
USA	2412 - 2462

Management Radio (MHz)	
Worldwide	5150 - 5250
USA	U-NII-3: 5725 - 5850

R2AC Output Power: 27 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	27 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	27 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	27 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	26 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	26 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)	25 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	24 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
	8x 256QAM (¾)	23 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (⅚)	22 dBm	± 2 dB		8x 256QAM (⅚)	-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 2AC Prism

┌─ **Frequency Band** ─┐

2.4 GHz

Omni	AMO-2G10
	AMO-2G13
	AM-2G15-120
Sector	AM-2G16-90
	AM-V2G-Ti
Rocket Dish	RD-2G24

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