



## *rocket*<sup>®</sup> ac

Powerful airMAX<sup>®</sup> ac BaseStation

Model: R5AC-Lite

airMAX ac Technology for up to 500+ Mbps Throughput

Superior Processing by airMAX Engine with Custom IC

Plug and Play Integration with airMAX ac Antennas

# Overview

Ubiquiti Networks has designed the first airMAX<sup>®</sup> ac radios for high performance and ease of installation. You have the freedom to deploy the Rocket<sup>®</sup> ac anywhere in the world, and it allows for a high degree of flexibility in configuring channel bandwidths (subject to local country regulations).

Pair the Rocket5ac Lite with airMAX ac antennas for optimal performance:

- **PtP backhaul** Rocket5ac Lite with the RocketDish<sup>™</sup> ac
- **PtMP links** Rocket5ac Lite<sup>\*</sup> with the airMAX ac Sector

# Software

## airOS<sup>®</sup> 8

airOS<sup>®</sup> 8 is the revolutionary operating system for Ubiquiti<sup>®</sup> airMAX ac products.

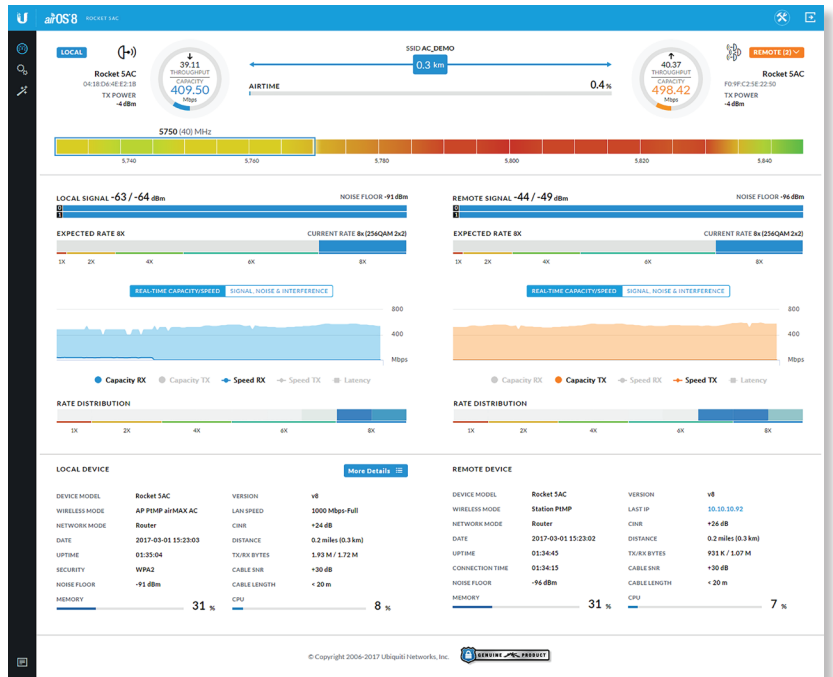
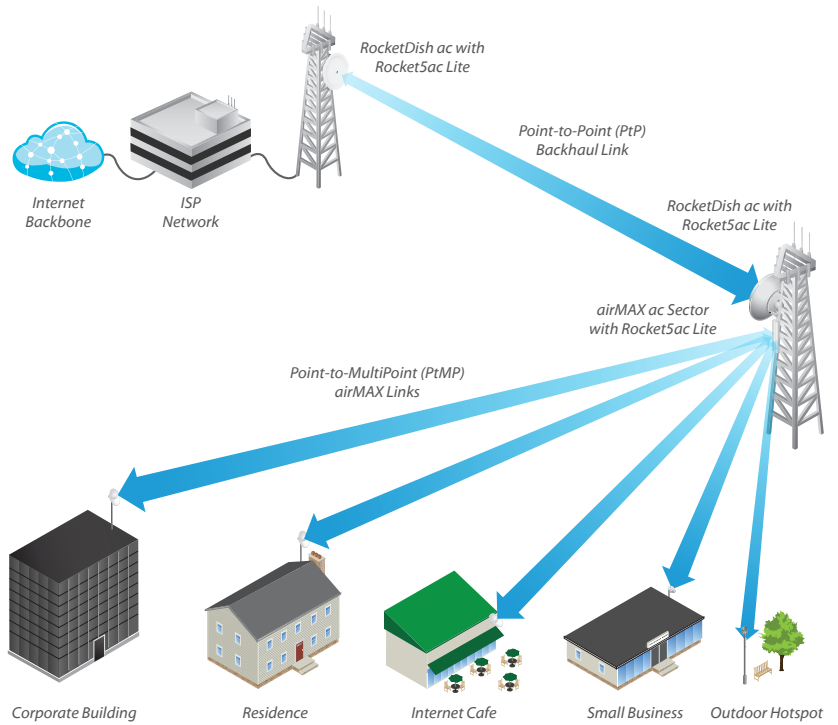
### Powerful Wireless Features

- 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<sup>®</sup> 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<sup>®</sup> 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

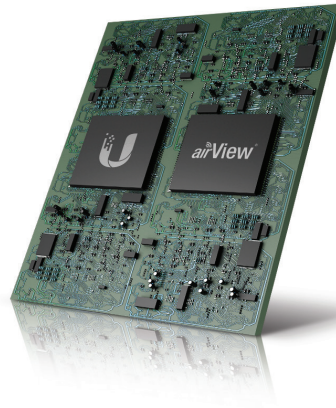
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

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

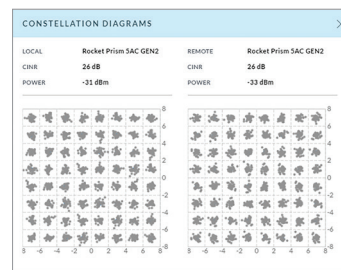
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

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

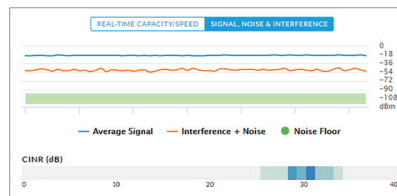
## Multi-Radio Architecture



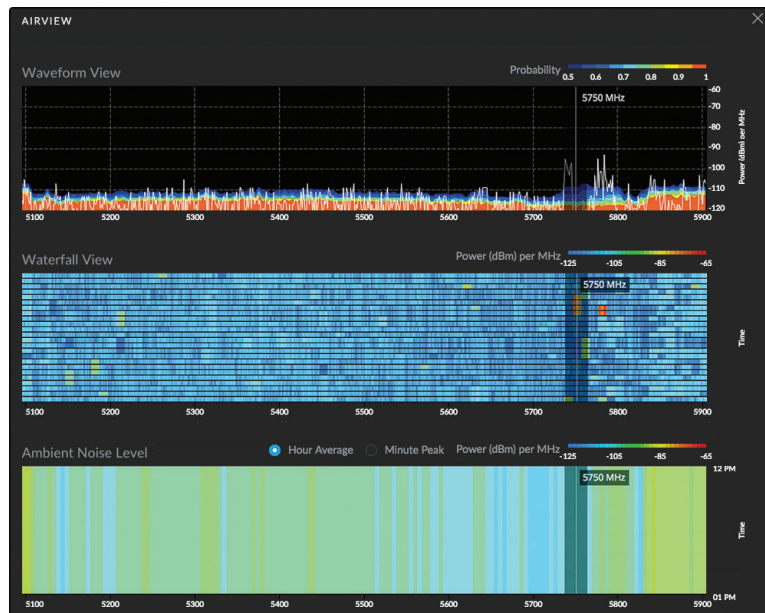
## Constellation Diagram



## SNI Diagram and CINR Histogram



## Dedicated Spectral Analysis



# Technology



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.

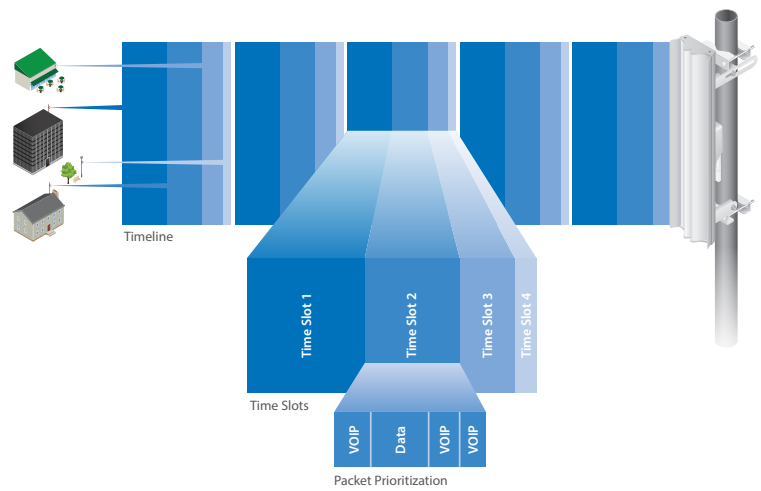
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

## Throughput Breakthrough

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

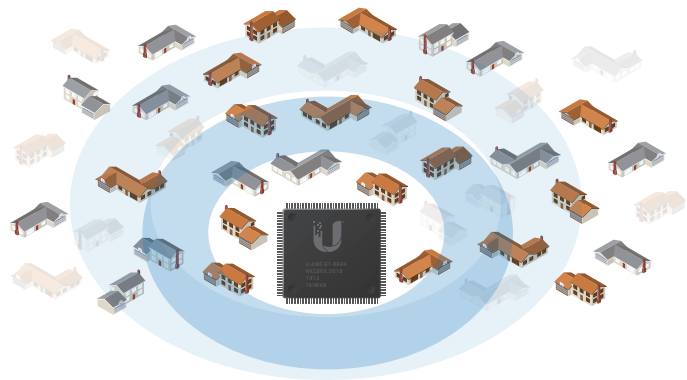
With their use of proprietary airMAX ac technology, airMAX ac products supports up to 500+ Mbps (maximum 80 MHz channel width) real TCP/IP throughput – up to triple the throughput of standard airMAX products.

## airMAX ac TDMA Technology

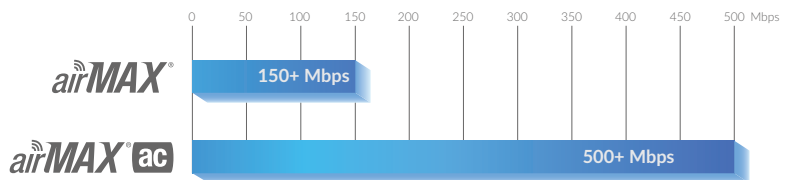


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

## airMAX ac Network Scalability



## Superior Throughput Performance





## Rocket5ac Lite

Launched with PtP functionality, the Rocket5ac Lite adds PtMP functionality with a firmware upgrade to airOS v7.1 or higher.

The Rocket5ac Lite is a cost-effective basestation for links experiencing low or moderate levels of interference.

### Features

**5 GHz Frequency Band** This unlicensed band of plentiful spectrum works well for long-distance links. The Rocket5ac Lite covers the full-band 5-GHz spectrum.

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

**Passive Power over Ethernet (PoE)** 24V Passive PoE functionality is included. Both power and data are carried over a single Ethernet cable to the Rocket ac. Use the included PoE Adapter or an optional PoE switch.

**Output Power** The Rocket5ac Lite offers up to 27 dBm of output power.

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

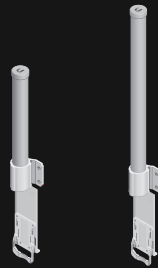
# Antenna Compatibility



Rocket5ac Lite

Frequency Band

5 GHz



Omni

AMO-5G10

AMO-5G13



Sector

AM-5AC21-60

AM-5AC22-45

AM-V5G-Ti

AM-M-V5G-Ti

AM-5G16-120

AM-5G17-90

AM-5G19-120

AM-5G20-90



Rocket Dish

RD-5G31-AC

RD-5G30-LW

RD-5G30

RD-5G34

# Specifications

R5AC-Lite					
Dimensions	162 x 84 x 37 mm (6.38 x 3.31 x 1.46")				
Weight	250 g (8.81 oz)				
Power Supply	24V, 0.5A Gigabit PoE Adapter				
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)				
Max. Power Consumption	8.5W				
Operating Frequency	Worldwide	USA: U-NII-1	USA: U-NII-2A	USA: U-NII-2C	USA: U-NII-3
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 5350 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*
Processor	Atheros MIPS 74Kc, 720 MHz				
Memory	128 MB DDR2 SDRAM, 16 MB NOR FLASH				
Networking Interface	(1) 10/100/1000 Mbps				
RF Connections	(2) RP-SMA (Waterproof)				
LEDs	Power, LAN, (4) Signal Strength				
Channel Sizes	PtP Mode		PtMP Mode		
	10/20/30/40/50/60/80 MHz		10/20/30/40 MHz		
Enclosure Characteristics	Outdoor UV Stabilized Plastic				
Supported Voltage Range	20-26VDC				
ESD/EMP Protection	± 24KV Air / Contact				
Operating Temperature	-40 to 80° C (-40 to 176° F)				
Operating Humidity	5 to 95% Noncondensing				
Shock and Vibration	ETSI300-019-1.4				
Wireless Approvals	FCC, IC, CE				
RoHS Compliance	Yes				
Modes	Access Point, Station				
Services	Web Server, SNMP, SSH Server, Telnet , Ping Watchdog, DHCP, NAT, Bridging, Routing				
Utilities	Antenna Alignment Tool, Discovery Utility, Site Survey, Ping, Traceroute, Speed Test				
Distance Adjustment	Dynamic Ack and Ackless Mode				
Power Adjustment	Software Adjustable UI or CL				
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				
Ubiquiti Specific Features	30/50/60 MHz Channels, airMAX ac Mode, Traffic Shaping with Burst Support, Discovery Protocol, Frequency Band Offset, Ackless Mode				

R5AC-Lite Output Power: 27 dBm							
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
<b>airMAX ac</b>	1x BPSK (½)	27 dBm	± 2 dB	<b>airMAX ac</b>	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)	27 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	27 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (½)	27 dBm	± 2 dB		6x 64QAM (½)	-83 dBm	± 2 dB
	6x 64QAM (¾)	26 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (5/6)	25 dBm	± 2 dB		6x 64QAM (5/6)	-74 dBm	± 2 dB
	8x 256QAM (¾)	23 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
8x 256QAM (5/6)	22 dBm	± 2 dB	8x 256QAM (5/6)	-65 dBm	± 2 dB		

\* Some frequencies may require activation; visit: <https://www.ubnt.com/fclabelrequest>

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)  
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