DATASHEET



BULLET™ AC

Dual-Band airMAX® AC Radio with Dedicated Wi-Fi Management

Models: B-DB-AC, BulletAC-IP67

airMAX ac Technology for 300+ Mbps Throughput at 5 GHz

Superior Processing by airMAX Engine with Custom IC

Plug and Play Integration with airMAX Antennas

UBIQUITI® NETWORKS

Overview

Ubiquiti Networks designed airMAX ac radios for high performance and ease of installation. You have the freedom to deploy the Bullet™ AC anywhere in the world, as it allows for a high degree of flexibility in configuring channel bandwidths (subject to local country regulations).

Zero-Variable Deployment

The Bullet AC eliminates the need to use RF cables and requires no special antenna or tools to install. There are no radio card / host board issues, no RF cable quality concerns, no mechanical stability concerns, and no enclosure mounting requirements. With the Bullet AC, operators can just plug in and go.

Software

airOS® 8

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

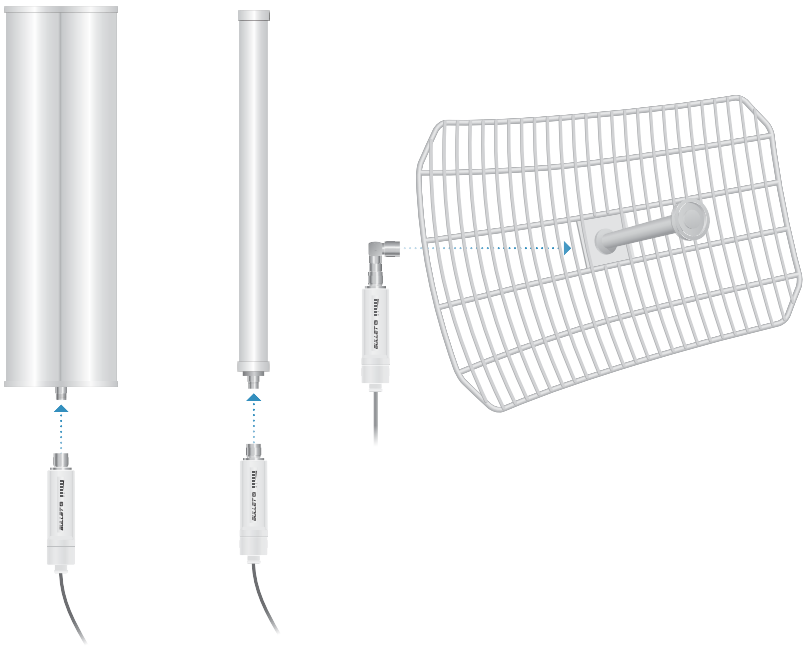
Powerful Wireless Features

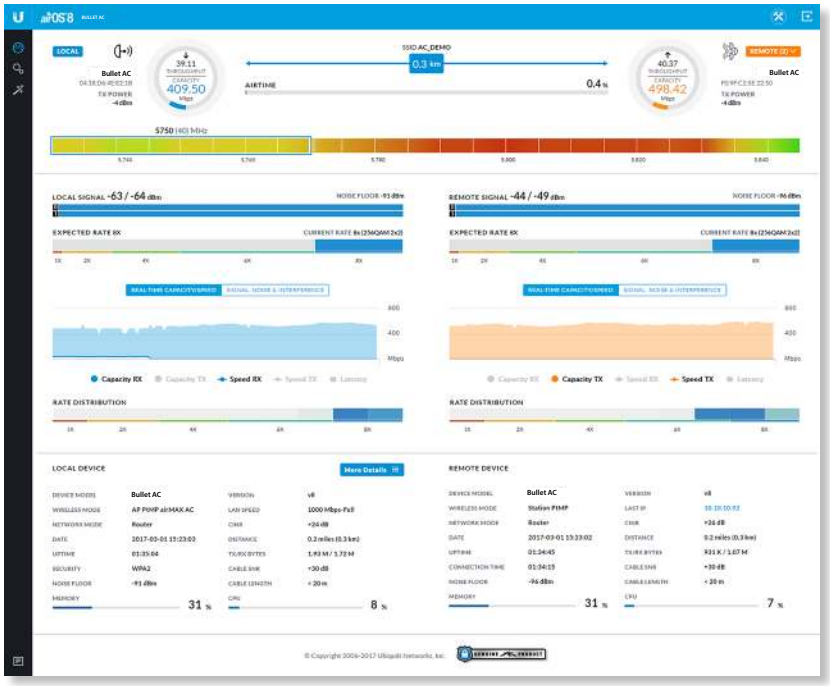
- Access Point PtMP airMAX Mixed Mode
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
  - PtP: 10/20/30/40/50/60/80 MHz
  - PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (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

Installation Options





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 Dashboard 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
- Noise Floor diagrams
- Expected/Current Rate diagrams

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

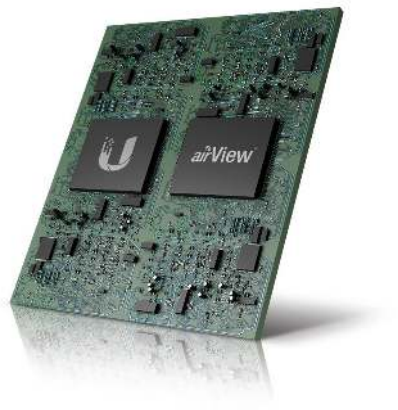
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

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

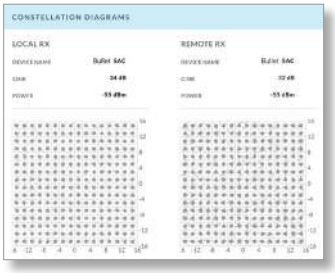
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

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

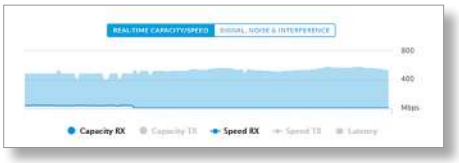
Multi-Radio Architecture



Constellation Diagram



SNI Diagram



Dedicated Spectral Analysis



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.

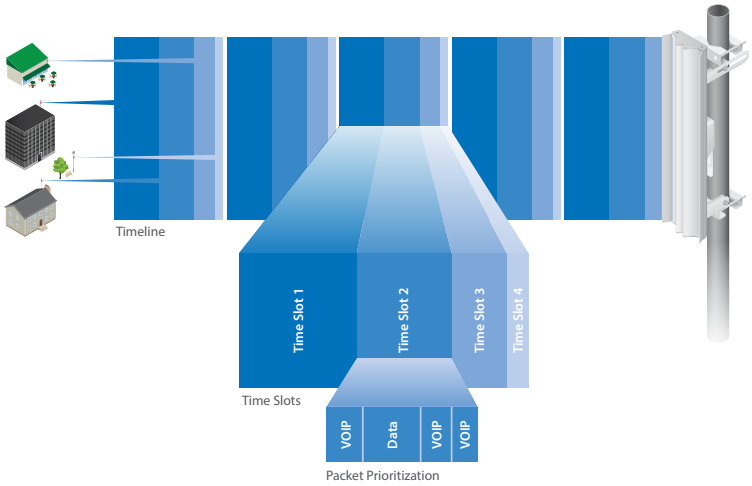
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

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

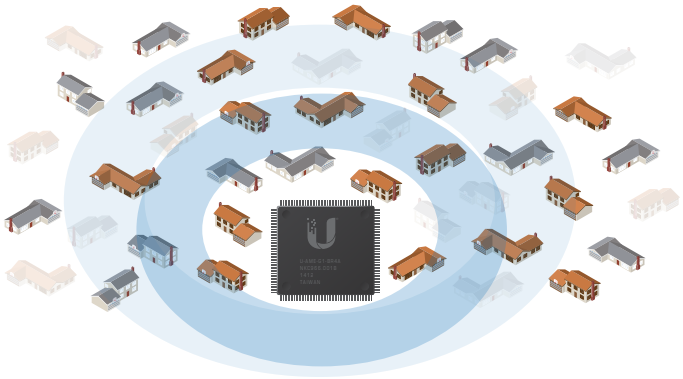
With their use of proprietary airMAX ac technology, airMAX ac products supports up to 500+ Mbps (maximum 80 MHz channel width) real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

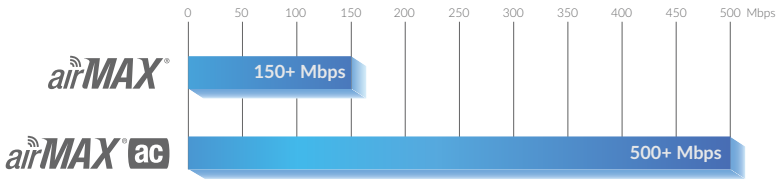


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX ac Network Scalability



Superior Throughput Performance



Hardware Overview

The Bullet AC is a fully integrated radio that delivers up to 300+ Mbps Real TCP/IP throughput.

Features

Dual-Band Frequency The Bullet AC covers both 2.4 and 5 GHz radio bands, covering a wide range of frequencies that work well for both short and long-distance links.

Output Power The B-DB-AC offers up to 22 dBm of output power, while the BulletAC-IP67 offers 21 dBm.

Passive Power over Ethernet (PoE) 24V Passive PoE functionality is included. Both power and data are carried over a single Ethernet cable to the Bullet AC. Use a PoE Adapter (not included) or an optional PoE switch.

Weatherproof Design The durable casing of the Bullet AC can withstand nature's harshest outdoor elements. The BulletAC-IP67 features a robust IP67 weather-resistant body that protects against dust and water.

Plug and Play Integration No special tools or antennas are required to install the Bullet AC. Simply plug in and go.

BULLET™ AC

Model: B-DB-AC



BULLET™ AC IP67

Model: BulletAC-IP67



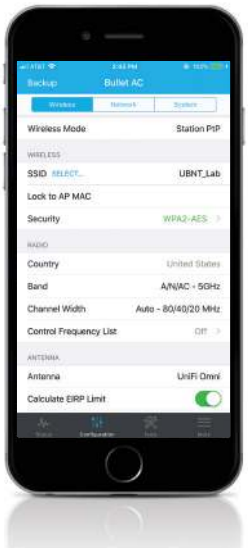
UNMS App

The Bullet AC integrates a separate Wi-Fi radio for fast and easy setup using the Ubiquiti Network Management System (UNMS) app on 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 your device, and offers various configuration options once you're connected or logged in.

UNMS Configuration Screen



Specifications

B-DB-AC	
Dimensions	190 x 46 x 46 mm (7.48 x 1.81 x 1.81")
Weight	116 g (4.09 oz)
Enclosure	Polycarbonate
Networking Interface	Gigabit Ethernet Port
Antenna Connector	N-Type Connector
Throughput 2.4 GHz 5 GHz	 160+ Mbps 300+ Mbps
Max. Power Consumption	8W
Output Power	22 dBm
Power Supply	24VDC, 0.3A (Minimum)
Power Method	24V Passive PoE (Pairs 4, 5+; 7, 8 Return)
ESD/EMP Protection	± 24 kV Contact / Air
Operating Temperature	-40 to 70° C (-40 to 158° F)
Operating Humidity	5 to 95% Noncondensing
Shock and Vibration	ETSI300-019-1.4
Certifications	CE, FCC, IC

B-DB-AC Output Power: 22 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	22 dBm	± 2 dB	**airMAX ac**	1x BPSK (½)	-93 dBm	± 2 dB
	2x QPSK (½)	22 dBm	± 2 dB		2x QPSK (½)	-92 dBm	± 2 dB
	2x QPSK (¾)	22 dBm	± 2 dB		2x QPSK (¾)	-89 dBm	± 2 dB
	4x 16QAM (½)	22 dBm	± 2 dB		4x 16QAM (½)	-87 dBm	± 2 dB
	4x 16QAM (¾)	22 dBm	± 2 dB		4x 16QAM (¾)	-83 dBm	± 2 dB
	6x 64QAM (⅔)	22 dBm	± 2 dB		6x 64QAM (⅔)	-80 dBm	± 2 dB
	6x 64QAM (¾)	21 dBm	± 2 dB		6x 64QAM (¾)	-74 dBm	± 2 dB
	6x 64QAM (⅚)	20 dBm	± 2 dB		6x 64QAM (⅚)	-71 dBm	± 2 dB
	8x 256QAM (¾)	18 dBm	± 2 dB		8x 256QAM (¾)	-66 dBm	± 2 dB
	8x 256QAM (⅚)	18 dBm	± 2 dB		8x 256QAM (⅚)	-62 dBm	± 2 dB

Operating Frequency (MHz)		
Worldwide	2412 - 2472 5150 - 5875	
USA	2412 - 2462	
	U-NII-1 5150 - 5250	U-NII-3 5725 - 5850

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

Specifications

BulletAC-IP67	
Dimensions	190 x 46 x 46 mm (7.48 x 1.81 x 1.81")
Weight	213 g (7.51 oz)
Enclosure	Aluminum and Rubber
Networking Interface	Gigabit Ethernet Port
Antenna Connector	N-Type Connector
Throughput 2.4 GHz 5 GHz	 160+ Mbps 300+ Mbps
Max. Power Consumption	7W
Output Power	21 dBm
Power Supply	24VDC, 0.3A (Minimum)
Power Method	24V Passive PoE (Pairs 4, 5+; 7, 8 Return)
ESD/EMP Protection	± 24 kV Contact / Air
Operating Temperature	-40 to 70° C (-40 to 158° F)
Operating Humidity	5 to 95% Noncondensing
Shock and Vibration	ETSI300-019-1.4
Certifications	CE, FCC, IC

BulletAC-IP67 Output Power: 21 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	21 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-93 dBm	± 2 dB
	2x QPSK (½)	21 dBm	± 2 dB		2x QPSK (½)	-92 dBm	± 2 dB
	2x QPSK (¾)	21 dBm	± 2 dB		2x QPSK (¾)	-89 dBm	± 2 dB
	4x 16QAM (½)	21 dBm	± 2 dB		4x 16QAM (½)	-87 dBm	± 2 dB
	4x 16QAM (¾)	21 dBm	± 2 dB		4x 16QAM (¾)	-83 dBm	± 2 dB
	6x 64QAM (⅔)	21 dBm	± 2 dB		6x 64QAM (⅔)	-80 dBm	± 2 dB
	6x 64QAM (¾)	20 dBm	± 2 dB		6x 64QAM (¾)	-74 dBm	± 2 dB
	6x 64QAM (⅚)	19 dBm	± 2 dB		6x 64QAM (⅚)	-71 dBm	± 2 dB
	8x 256QAM (¾)	17 dBm	± 2 dB		8x 256QAM (¾)	-66 dBm	± 2 dB
	8x 256QAM (⅚)	17 dBm	± 2 dB		8x 256QAM (⅚)	-62 dBm	± 2 dB

Operating Frequency (MHz)		
Worldwide	2412 - 2472 5150 - 5875	
USA	2412 - 2462	
	U-NII-1 5150 - 5250	U-NII-3 5725 - 5850

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

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