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NanoBeam[®] AC GEN2

airMAX[®] ac CPE with Dedicated Management Radio Model: NBE-5AC-Gen2

Uniform Beamwidth Maximizes Noise Immunity

Dedicated Wi-Fi Radio for Management

airMAX ac Processor for Superior Performance



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Overview

Ubiquiti Networks launches the latest generation of airMAX[®] CPE (Customer Premises Equipment), the NanoBeam[®] 5AC Gen 2.

Improved Noise Immunity

The NanoBeam 5AC Gen 2 directs RF energy in a tighter beamwidth. With the focus in one direction, the NanoBeam 5AC Gen 2 blocks or spatially filters out noise, so noise immunity is improved. This feature is especially important in an area crowded with other RF signals of the same or similar frequency.

Integrated Design

The radio and antenna are combined to create a more efficient and compact CPE. The NanoBeam 5AC Gen 2 gets maximum gain out of the smallest footprint.

Providing high performance and an innovative form factor, the NanoBeam 5AC Gen 2 is versatile and cost-effective to deploy.

Software air0S[°]8

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

Powerful Wireless Features

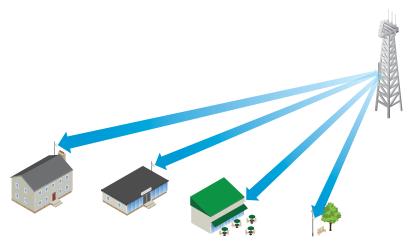
- Access Point PtMP airMAX Mixed Mode
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
 - PtP: 10/20/30/40/50/60/80 MHz
 PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (ACK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

PtMP Client Links



The NanoBeam 5AC Gen 2 used as a CPE device for each client in an airMAX PtMP network.

Wireless Client



PtP Link

The NanoBeam 5AC Gen 2 as a powerful wireless client.

Use a NanoBeam 5AC Gen 2 on each side of a PtP link.

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NanoBeam[®] AG GEN2

Datasheet

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.

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.

UMobile App

The NanoBeam 5AC Gen 2 integrates a separate Wi-Fi radio for fast and easy setup using your mobile device.

Accessing airOS via Wi-Fi

The U[®]Mobile App provides instant accessibility to the airOS configuration interface and can be downloaded from the App Store (iOS) or Google Play[™] (Android). UMobile allows you to set up, configure, and manage the NanoBeam 5AC Gen 2 and offers various configuration options once you're connected or logged in.

Multi-Radio Architecture



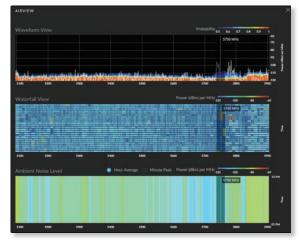
Constellation Diagrams

1004	Nanobian 342 Geni - AP	10-010	NewBorn 342 Seri2 - 178
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*****	-20 Mar	10100	-10 Albert

SNI Diagram and CINR Histogram

				-
-				
	- Average Signal	- Interference + Noise	Noise Floor	
CINR (db)				
	10		20	

Dedicated Spectral Analysis



UMobile Configuration Screen

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Real Property lies	
Wireless Mode	Station Pd
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SSID	www.ubnt.com
Ballect SSID	
Security	Nore
8400	
Country	United Keigilor
Channel Width	Auto - 20/40/80 MH
Control Frequency List	00
ANTENNA	
Antenna	Built-In - 19 dB
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Technology airMAX®

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, so airMAX 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.

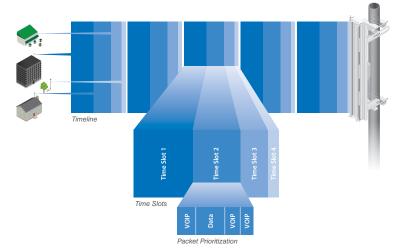
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

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 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

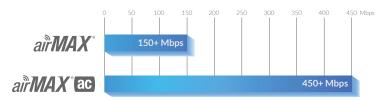


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX Network Scalability



Superior Throughput Performance



Datasheet

Hardware Overview

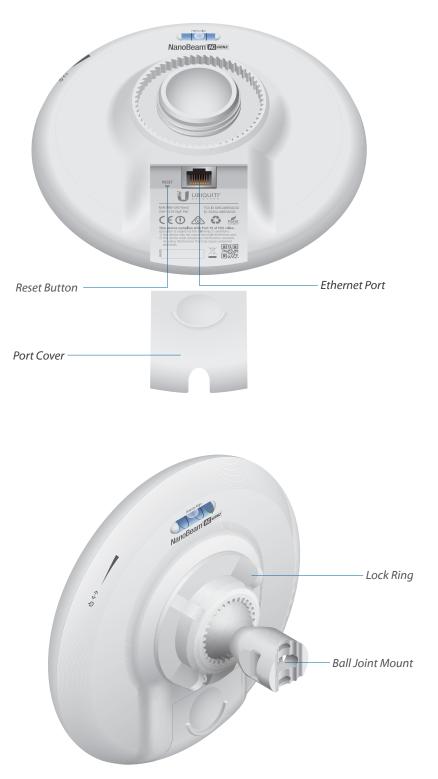
The NanoBeam 5AC Gen 2 features airMAX ac technology and enhanced protection against ESD events.

Ease of Installation

- **Quick Installation** No fasteners are required for pole-mounting, and a single wall fastener (not included) is required for wall-mounting.
- **Convenient Alignment** The NanoBeam 5AC Gen 2 pivots on its ball joint 3-axis mount for easy aiming.

Innovative Mechanical Design

- Efficient Footprint The radio and antenna are combined into a single body that takes up minimal space. The form factor features the highest gain for its size.
- **Aesthetics** The NanoBeam 5AC Gen 2 is small enough to blend discreetly into the background at a customer's location.
- Versatile Mounting The NanoBeam 5AC Gen 2 can be mounted in almost any position needed for line of sight.



Mounting Accessories

NanoBeam® Wall Mount Kit

Model: NBE-WMK

A wall mount kit is available as an optional accessory to enhance stability for wall-mounting.



NanoBeam[®] Window Mount

Model: NBE-19-WM

A suction cup mount is available as an optional accessory to mount the NanoBeam 5AC Gen 2 on a window.







IsoBeam Accessory

IsoBeam

Model: ISO-BEAM-19

An RF isolator shield is available as an optional accessory to enhance signal isolation.





Datasheet

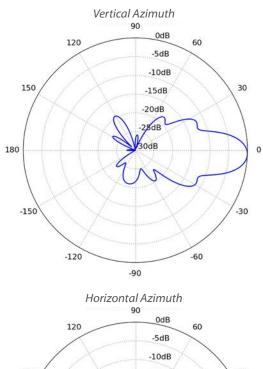
Specifications

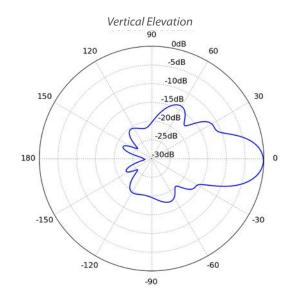
	NBE-5AC-Gen2				
Dimensions (Mount Included)		189 x 189 x 125 mm (7.44 x 7.44 x 4.92")			
Weight (Mount Included)	0.530 kg (1.17 lb)				
Power Supply	24V, 0.5A Gigabit PoE Adapter (Included)				
Max. Power Consumption		8.5W			
Gain	19 dE				
Networking Interface	(1) 10/100/1000 Ethernet Port Wi-Fi for Management				
Processor Specs	Atheros MIPS 74Kc, 720 MHz				
Memory		128 MB DDR2, 8 MB Flash			
LEDs		Power, Ethernet, (4) Signal Strength			
Signal Strength LEDs		Software-Adjustable to Correspond to Custom RSSI Levels			
Max. VSWR		1.5:1			
Channel Sizes	PtP Mode	PtMP Mode			
	10/20/30/40/50/60/80 MHz	10/20/30/40 MHz			
Polarization		Dual Linear			
Enclosure		Outdoor UV Stabilized Plastic			
Mounting		Pole-Mount (Kit Included), Wall-Mount			
Wind Loading		45.4 N @ 200 km/h (10.2 lbf @ 125 mph)			
Wind Survivability		200 km/h (125 mph)			
ESD/EMP Protection		Air: ± 24 kV, Contact: ± 24 kV			
Operating Temperature		-40 to 80° C (-40 to 176° F)			
Operating Humidity		5 to 95% Noncondensing			
Certifications		CE, FCC, IC			
RoHS Compliance		Yes			
Salt Fog Test	IEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5				
Vibration Test		IEC 68-2-6			
Temperature Shock Test		IEC 68-2-14			
UV Test		IEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4			
Wind-Driven Rain Test		ETS 300 019-1-4, Equivalent: MIL-STD-810 G Method 506.5			

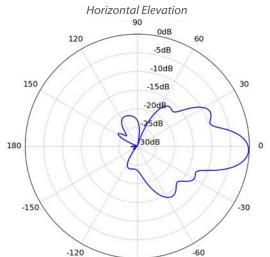
NBE-5AC-Gen2 Operating Frequency								
Operating Frequency	Worldwide	USA						
	2412 - 2472 MHz	2412 - 2462 MHz						
	5150 - 5875 MHz	USA: U-NII-1	USA: U-NII-2A	USA: U-NII-2C	USA: U-NII-3			
		5150 - 5250 MHz	5250 - 5350 MHz	5470 - 5725 MHz	5725 - 5850 MHz			

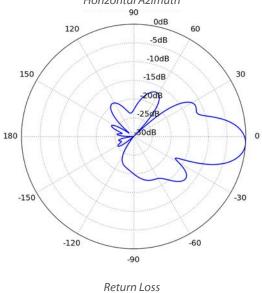
NBE-5AC-Gen2 Output Power: 25 dBm							
	TX Power Specifications			RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
	1x BPSK (1/2)	25 dBm	± 2 dB	airMAX ac	1x BPSK (1/2)	-96 dBm	± 2 dB
	2x QPSK (1/2)	25 dBm	±2dB		2x QPSK (1/2)	-95 dBm	±2dB
	2x QPSK (¾)	25 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
ac	4x 16QAM (1/2)	25 dBm	±2 dB		4x 16QAM (1/2)	-90 dBm	± 2 dB
	4x 16QAM (¾)	25 dBm	±2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
airMAX	6x 64QAM (⅔)	24 dBm	±2dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
ai	6x 64QAM (¾)	23 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (5%)	22 dBm	±2dB		6x 64QAM (%)	-74 dBm	± 2 dB
	8x 256QAM (¾)	21 dBm	±2dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (%)	20 dBm	±2 dB		8x 256QAM (%)	-65 dBm	±2 dB

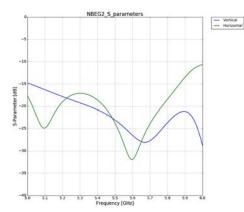














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