Datasheet

NanoBeam® ac

airMAX® ac CPE with Dedicated Management Radio

Model: NBE-2AC-13

Uniform Beamwidth Maximizes Noise Immunity

airMAX ac Processor for Superior Performance

Dedicated Wi-Fi Radio for Management

UBIQUITI® NETWORKS

Overview

Ubiquiti Networks launches the latest generation of airMAX CPE (Customer Premises Equipment), the NanoBeam® 2AC with dedicated

Improved Noise Immunity

The NanoBeam 2AC directs RF energy in a tighter beamwidth. With the focus in one direction, the NanoBeam 2AC 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 2AC gets maximum gain out of the smallest footprint.

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

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: 10/20/40 MHz
  - PtMP: 10/20/40 MHz
- Automatic Channel Selection
- Transmit Power Control:
- Automatic Distance Selection (ACK Timing)
- Strongest WPA2 Security

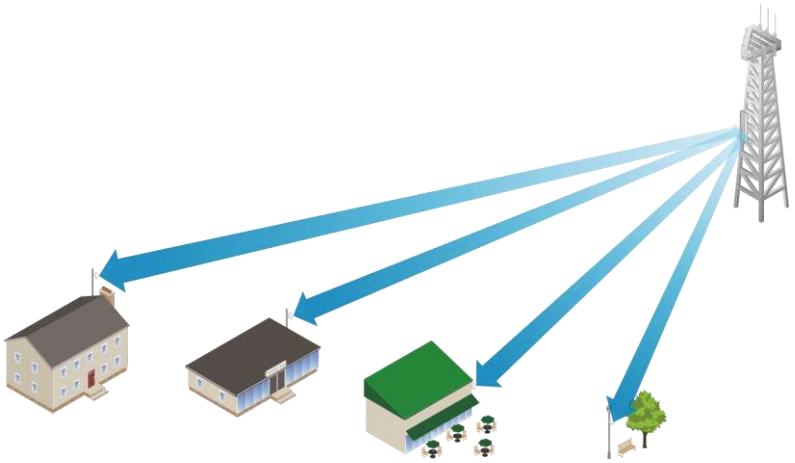
Usability Enhancements

- airMagic® Channel Selection Tool
- 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

Wi-Fi management.

PtMP Client Links

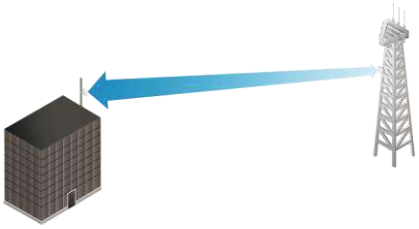


The NanoBeam 2AC used as a CPE device for each client in an airMAX PtMP network.

Wireless Client

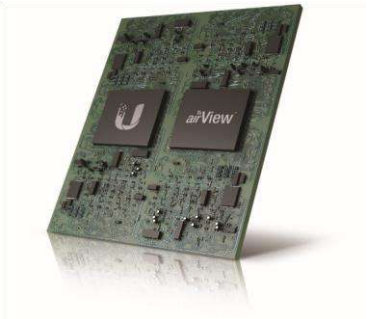
The NanoBeam 2AC as a powerful client.

PtP Link



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

Automatic/Manual



Advanced RF Analytics **Multi-Radio Architecture** airMAX ac devices feature a multi-radio architecture to power a revolutionary RF analytics engine.

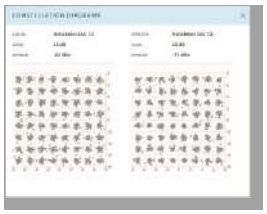
An independent processor on the PCBA powers a second, dedicated radio, which persistently analyzes the full 2.4 GHz spectrum and every received symbol to provide you with the most advanced RF analytics in the industry.

Real-Time Reporting

airOS 8 displays the following RF information:

- Persistent RF Error Vector Magnitude (EVM) constellation
- Signal, Noise, and Interference (SNI) diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms

Constellation Diagrams

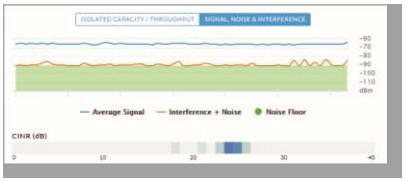


Spectral Analysis

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 performance

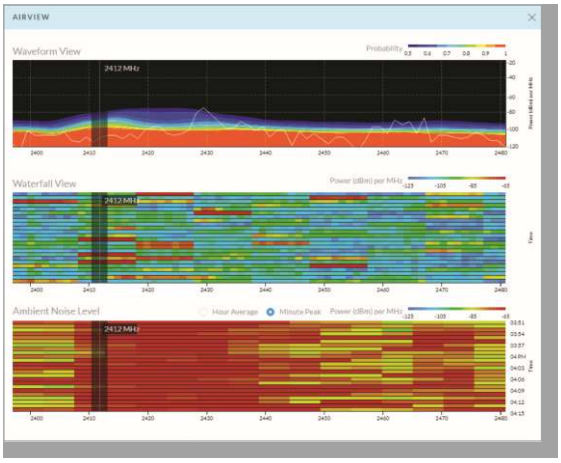
SNI Diagram and CINR Histogram



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.

Dedicated Spectral Analysis



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

UNMS App

The NanoBeam 2AC 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 Store (iOS) configuration interface and can be downloaded from the App or Google Play™ (Android). UNMS allows you to set up, configure, and manage the NanoBeam 2AC and offers various configuration options once you're connected or logged in.

UNMS Configuration Screen

Technology

airMAX ac

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.

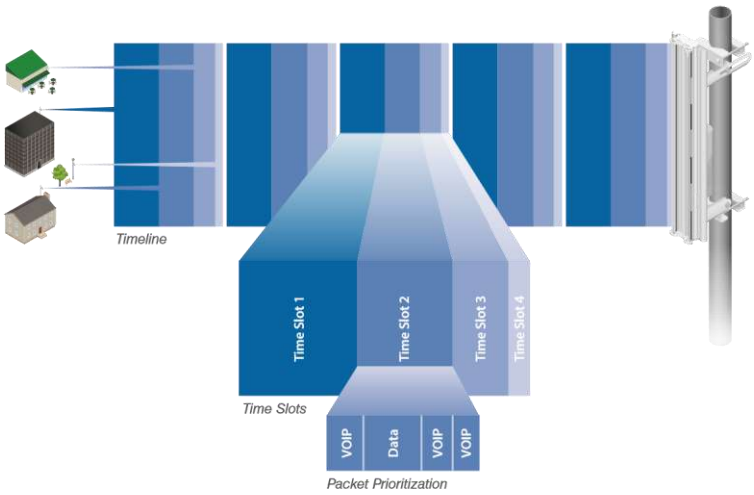
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

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

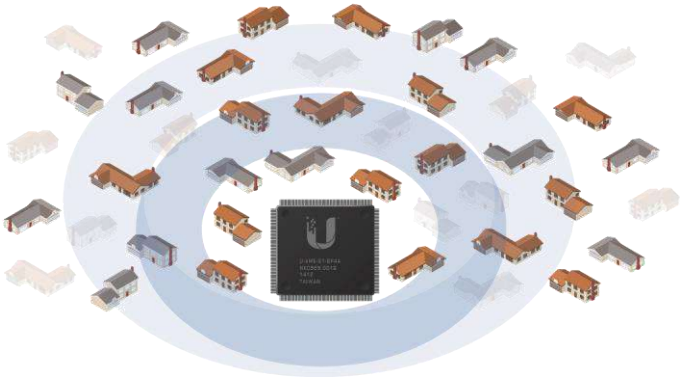
With their use of proprietary airMAX ac technology, 2.4 GHz airMAX ac products support up to 330+ Mbps real TCP/IP throughput – more than double the throughput of standard airMAX products.

airMAX ac TDMA Technology

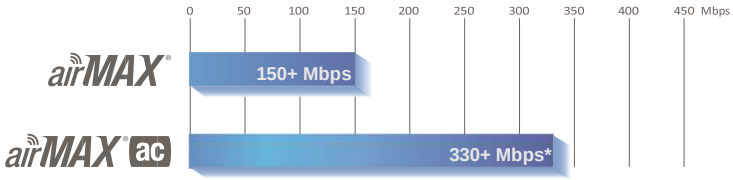


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX Network Scalability



Superior Throughput Performance



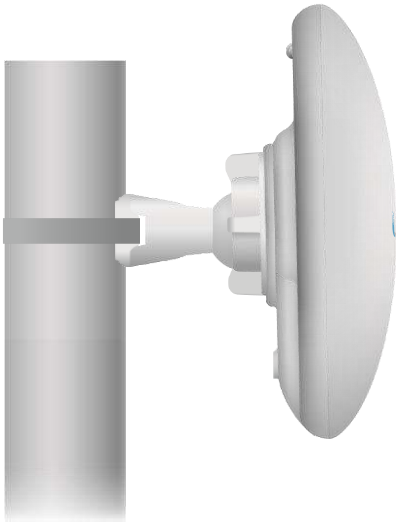
* The 330+ Mbps throughput value is specific to 2.4 GHz airMAX ac products.

Hardware Overview

The NanoBeam 2AC features airMAX ac technology and a dedicated Wi-Fi radio for management.

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 2AC pivots on its ball joint mount for easy aiming.



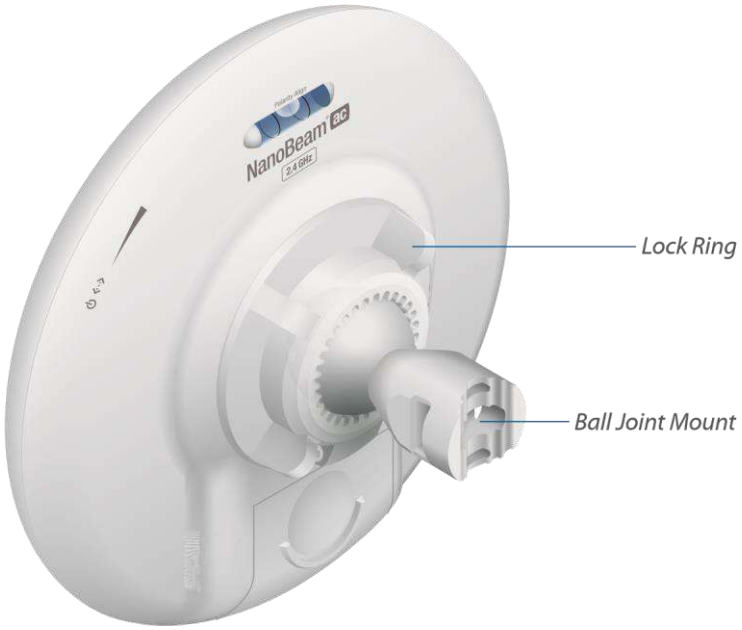
Pole-Mounted NanoBeam 2AC

- **Versatile Mounting** The NanoBeam 2AC can be mounted in almost any position needed for line of sight.

Wall-Mounted NanoBeam 2AC

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 2AC is small enough to blend discreetly into the background at a customer's location.



NanoBeam 2AC with Mounting Hardware

Mounting Accessories

enhance stability for wall-mounting.

NanoBeam® Wall Mount Kit

Model: NBE-WMK

A wall mount kit is available as an optional accessory to

Wall-Mount Bracket Dimensions: 75mm x 55mm x 4mm

mount

NanoBeam® Window Mount

the NanoBeam 2AC on a window.

Model: NBE-19-WM

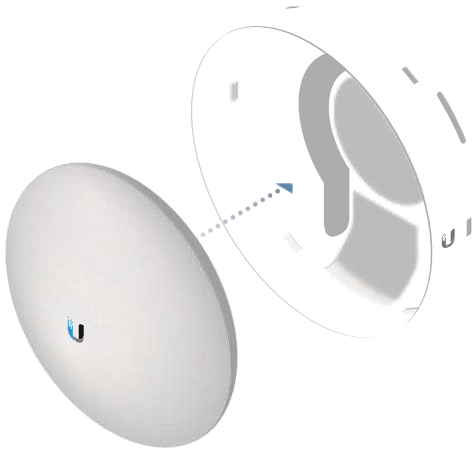
A suction cup mount is available as an optional accessory to

IsoBeam Accessory

IsoBeam™

Model: ISO-BEAM-19

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



Specifications

NBE-2AC-13		
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	7.5W	
Gain	13 dBi	
Networking Interface	(1) 10/100/1000 Ethernet Port Wi-Fi for Management	
Processor Specs	Atheros MIPS 74Kc, 533 MHz	
Memory	64 MB DDR2	
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 10/20/40MHz	PtMP Mode 10/20/40 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	
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
Operating Temperature	-40 to 70° C (-40 to 158° F)
Operating Humidity	5 to 95% Noncondensing
Certifications	CE, FCC, IC

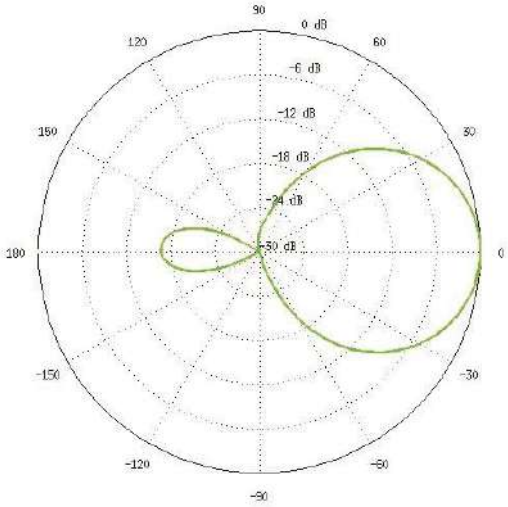
Operating Frequency (MHz)	
Worldwide	2412 - 2472
USA	2412 - 2462

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

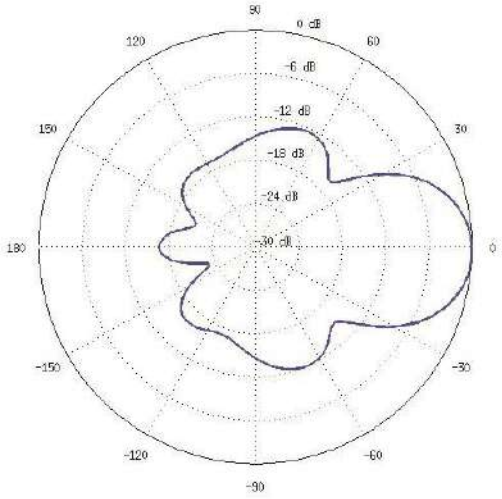
NıE-2AC-13 Output Power: 27 dBm

TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAXac	1x BPSK (½)	27 dBm	± 2 dB	airMAXac	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)	26 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (2/3)	25 dBm	± 2 dB		6x 64QAM (2/3)	-83 dBm	± 2 dB
	6x 64QAM (¾)	24 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (5/6)	23 dBm	± 2 dB		6x 64QAM (5/6)	-74 dBm	± 2 dB
	8x 256QAM (¾)	22 dBm	± 2 dB		8x 256QAM (¾)	-71 dBm	± 2 dB
	8x 256QAM (5/6)	21 dBm	± 2 dB		8x 256QAM (5/6)	-68 dBm	± 2 dB

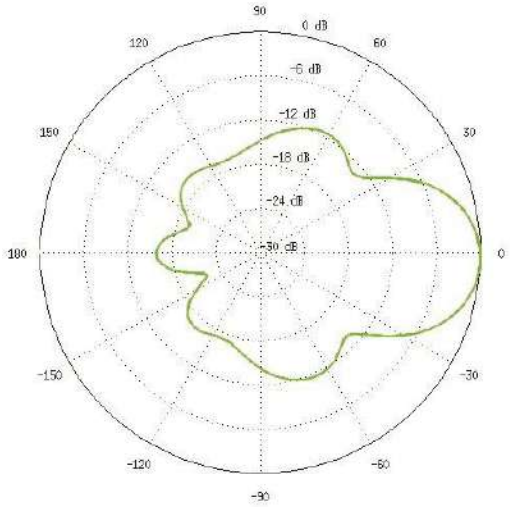
Vertical Azimuth



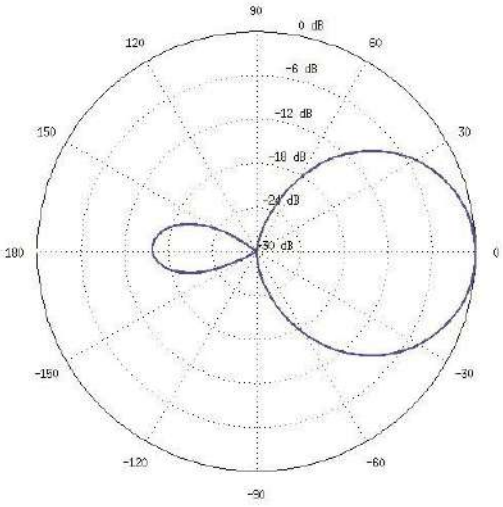
Vertical Elevation



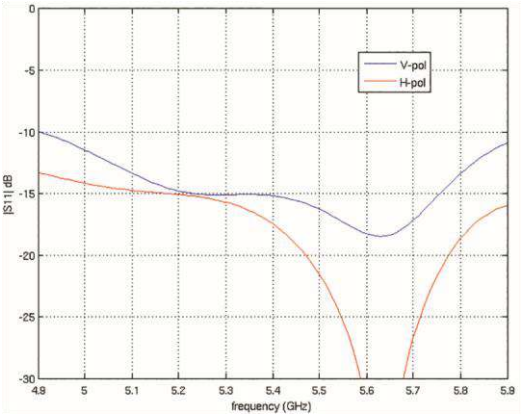
Horizontal Azimuth



Horizontal Elevation



Return Loss



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