NanoBeam™ M

High-Performance airMAX® Bridge

Models: NBE-M5-19, NBE-M5-16, NBE-M2-400, NBE-M5-400, NBE-M5-300

Uniform Beamwidth Maximizes Noise Immunity

Innovative Mechanical Design

High-Speed Processor for Superior Performance

UBIQUITI
N E T W O R K S

Overview

Starting with the first-generation NanoBridge®, Ubiquiti Networks™ pioneered the all-in-one design for an airMAX® product functioning as a CPE (Customer Premises Equipment). Now Ubiquiti Networks launches the latest generation of CPE, the NanoBeam™.

Improved Noise Immunity

The NanoBeam directs RF energy in a tighter beamwidth. With the focus in one direction, the NanoBeam 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 NanoBeam models are available in two form factors:

• **All-in-One Design** The Ubiquiti Research and Development team combined the radio and antenna to create a more efficient and compact CPE. The NanoBeam gets maximum gain out of the smallest footprint.

• **Dish Reflector Design** Ubiquiti's InnerFeed™ technology integrates the radio into the feedhorn of an antenna, so there is no need for a cable. This improves performance because it eliminates cable losses.

Providing increased performance from its faster processor and innovative mechanical design at a low cost, the NanoBeam is extremely versatile and cost-effective to deploy.

airMAX Technology Included

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. It provides significant performance improvements in latency, throughput, and scalability compared to all other outdoor systems in its class.
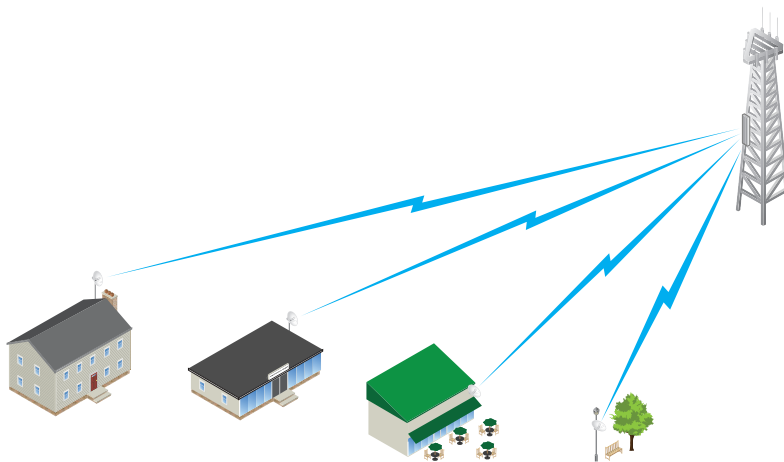
Intelligent QoS Priority is given to voice/video for seamless streaming.

Scalability High capacity and scalability.

Long Distance Capable of high-speed, carrier-class links.

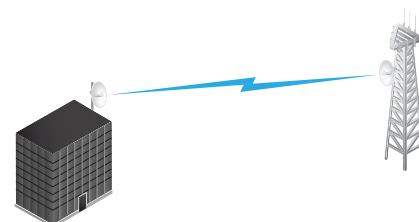## Application Examples

PtMP Client Links

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

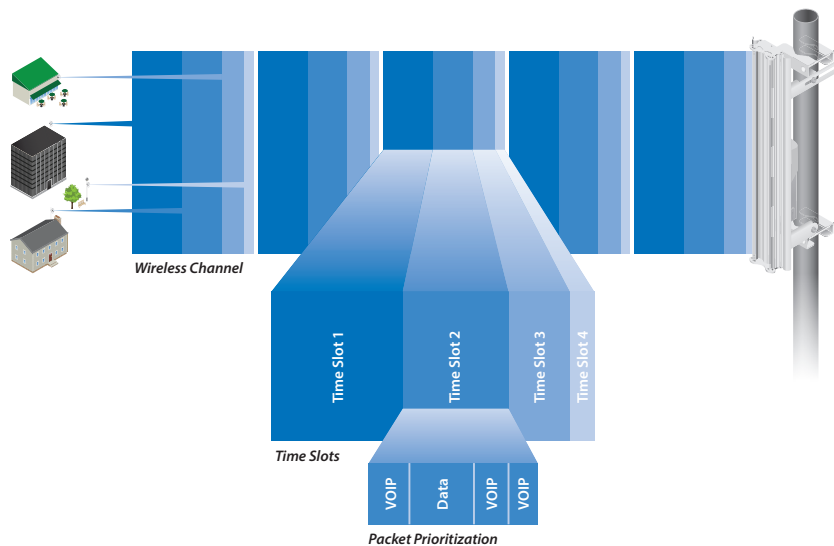### Wireless Client

PtP Link

All-in-One Design *The NanoBeam as a powerful wireless client.*

Dish Reflector Design *Use a NanoBeam on each side of a PtP link.*

airMAX TDMA Technology

Wireless Channel

Time Slot 1

Time Slot 2

Time Slot 3

Time Slot 4

Time Slots

VOIP · Data · VOIP · VOIP

Packet Prioritization

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

Software

*air*OS®

airOS® is an intuitive, versatile, highly developed Ubiquiti firmware technology. It is exceptionally intuitive and was designed to require no training to operate. Behind the user interface is a powerful firmware architecture, which enables high-performance, outdoor multi-point networking.

- Protocol Support
- Ubiquiti Channelization
- Spectral Width Adjustment
- ACK Auto-Timing
- AAP Technology
- Multi-Language Support
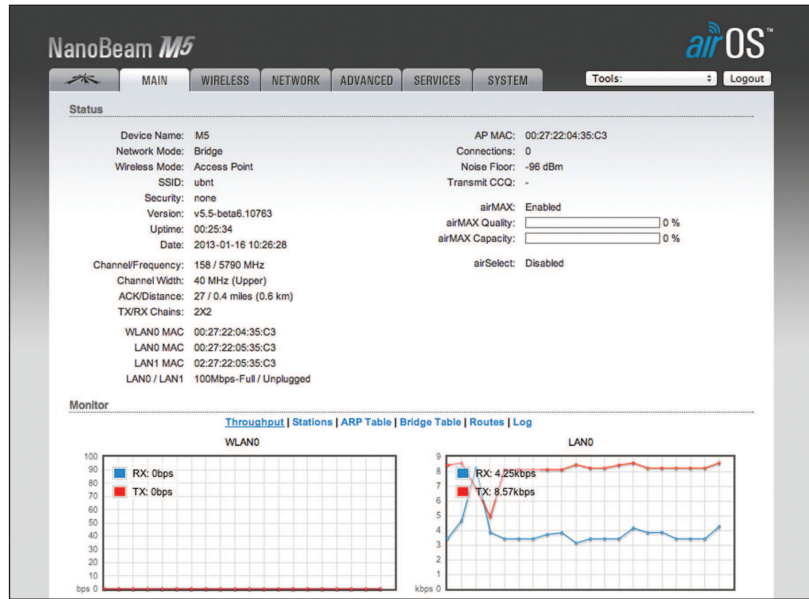
*air*View®

Integrated on all Ubiquiti M products, airView® provides advanced spectrum analyzer functionality: waterfall, waveform, and real-time spectral views allow operators to identify noise signatures and plan their networks to minimize noise interference.

- **Waterfall** Aggregate energy over time for each frequency.
- **Waveform** Aggregate energy collected.
- **Real-time** Energy is shown in real time as a function of frequency.
- **Recording** Automate airView to record and report results.

*air*Control®

airControl® is a powerful and intuitive, web-based server network management application, which allows operators to centrally manage entire networks of Ubiquiti devices.

- Network Map
- Monitor Device Status
- Mass Firmware Upgrade
- Web UI Access
- Manage Groups of Devices
- Task Scheduling
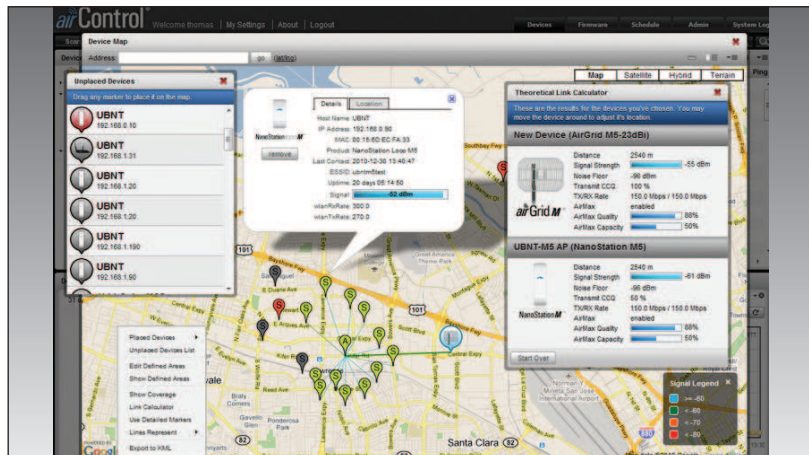
Hardware Overview – All-in-One Design

Innovative Mechanical Design

• **All-in-one design** The NanoBeam provides both the radio and antenna in the smallest possible footprint.

• **Quick and easy installation** No fasteners are required for pole-mounting, and a single wall fastener (not included) is required for wall-mounting.

• **Convenient alignment** The NanoBeam pivots on its ball joint for easy aiming.

Compact Form Factor

• **Efficient footprint** The radio and antenna are combined into a single body that takes up minimal space.

• **Versatile mounting** The NanoBeam can be mounted in almost any position needed for line of sight.

• **Aesthetics** The NanoBeam is small enough to blend discreetly into the background at a customer's location.

LEDs

Reset Button

Ethernet Port

Port Cover
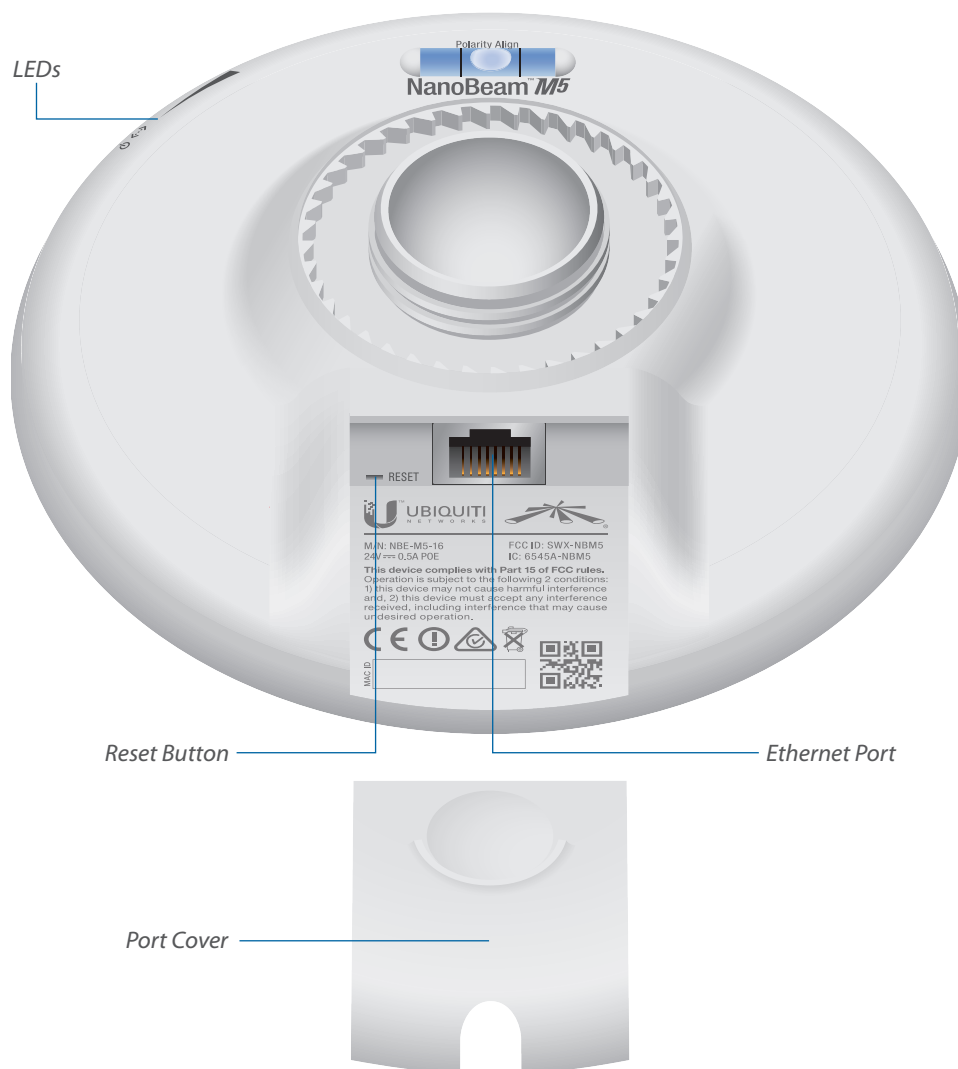
NBE-M5-16

Models

NanoBeam™ M5

Model	Frequency	Gain
NBE-M5-19	5 GHz	19 dBi

NanoBeam™ M5

Model	Frequency	Gain
NBE-M5-16	5 GHz	16 dBi

Lock Ring

Ball Joint Mount
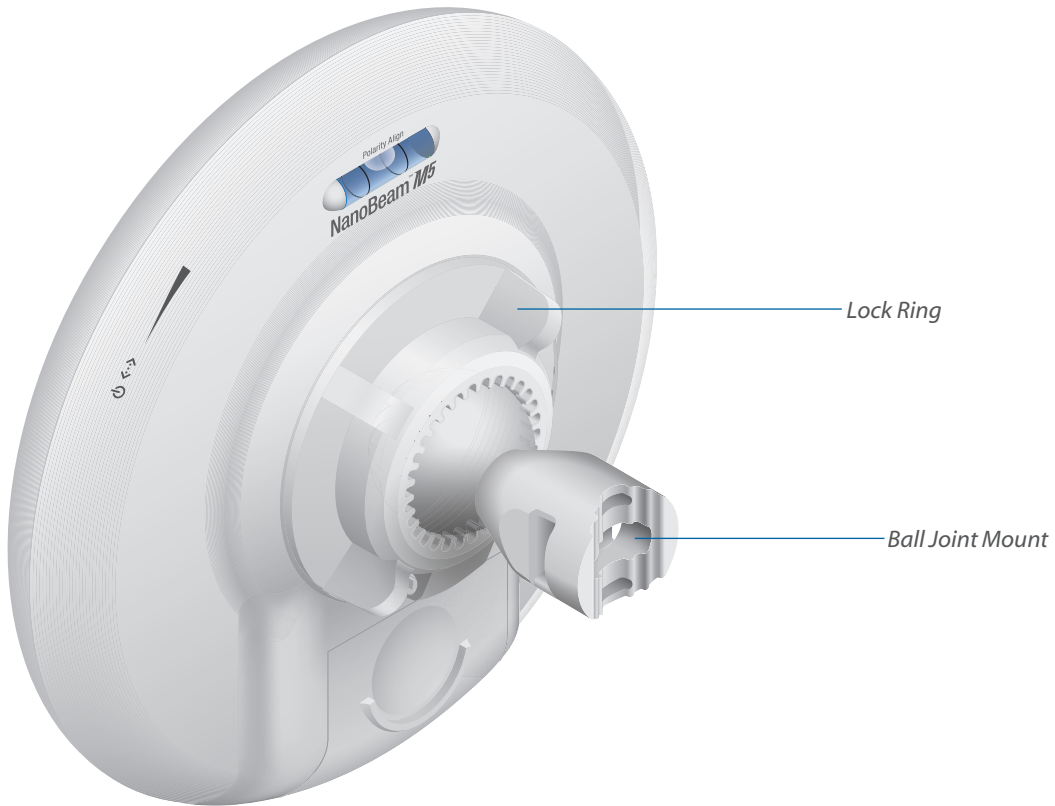
NBE-M5-16 with Mounting Hardware

Specifications

System and Regulatory/Compliance		
Model	NBE-M5-19	NBE-M5-16
Processor Specs	Atheros MIPS 74KC, 560 MHz	
Memory	64 MB DDR2, 8 MB Flash	
Networking Interface	(1) 10/100 Ethernet Port	
Wireless Approvals	FCC, IC, CE	
RoHS Compliance	Yes	

| Physical/Electrical/Environmental		
Model	NBE-M5-19	NBE-M5-16
Dimensions	189 x 189 x 125 mm (7.44 x 7.44 x 4.92 in)	140 x 140 x 54 mm (5.51 x 5.51 x 2.13 in)
Weight	0.530 kg (1.17 lb)	0.320 kg (0.71 lb)
Power Supply	24V, 0.5A PoE	24V, 0.5A PoE
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)	Passive PoE (Pairs 4, 5+; 7, 8 Return)
Max. Power Consumption	8 W	6 W
Gain	19 dBi	16 dBi
Wind Loading	45.4 N @ 200 km/h (10.2 lbf @ 125 mph)	21.4 N @ 200 km/h (4.8 lbf @ 125 mph)
Wind Survivability	200 km/h (125 mph)	
LEDs	(1) Power, (1) LAN, (4) WLAN	
Signal Strength LEDs	Software-Adjustable to Correspond to Custom RSSI Levels	
Channel Sizes	5/8/10/20/30/40 MHz	
Polarization	Dual Linear	
Enclosure	Outdoor UV Stabilized Plastic	
Mounting	Pole-Mount (Kit Included), Wall-Mount	
ESD/EMP Protection	Air: ±24 kV, Contact:± 24 kV	
Operating Temperature	-40 to 70° C (-40 to 158° F)	
Operating Humidity	5 to 95% Non-Condensing	
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 Frequency Summary (MHz)		
Model	NBE-M5-19	NBE-M5-16
Worldwide	5170 - 5875	
USA	5725 - 5850	

www.ubnt.com/airmax

Specifications

NBE-M5-16 – Output Power: 26 dBm						
5 GHz TX POWER SPECIFICATIONS				**5 GHz RX POWER SPECIFICATIONS**		
	Data Rate	Avg. TX	Tolerance		Data Rate	Sensitivity	Tolerance
11a	6-24 Mbps	26 dBm	± 2 dB	11a	6-24 Mbps	-94 dBm	± 2 dB
11a	36 Mbps	25 dBm	± 2 dB	11a	36 Mbps	-80 dBm	± 2 dB
11a	48 Mbps	24 dBm	± 2 dB	11a	48 Mbps	-77 dBm	± 2 dB
11a	54 Mbps	23 dBm	± 2 dB	11a	54 Mbps	-75 dBm	± 2 dB
11n/airMAX	MCS0	26 dBm	± 2 dB	11n/airMAX	MCS0	-96 dBm	± 2 dB
11n/airMAX	MCS1	25 dBm	± 2 dB	11n/airMAX	MCS1	-95 dBm	± 2 dB
11n/airMAX	MCS2	25 dBm	± 2 dB	11n/airMAX	MCS2	-92 dBm	± 2 dB
11n/airMAX	MCS3	25 dBm	± 2 dB	11n/airMAX	MCS3	-90 dBm	± 2 dB
11n/airMAX	MCS4	24 dBm	± 2 dB	11n/airMAX	MCS4	-86 dBm	± 2 dB
11n/airMAX	MCS5	23 dBm	± 2 dB	11n/airMAX	MCS5	-83 dBm	± 2 dB
11n/airMAX	MCS6	23 dBm	± 2 dB	11n/airMAX	MCS6	-77 dBm	± 2 dB
11n/airMAX	MCS7	23 dBm	± 2 dB	11n/airMAX	MCS7	-74 dBm	± 2 dB
11n/airMAX	MCS8	26 dBm	± 2 dB	11n/airMAX	MCS8	-95 dBm	± 2 dB
11n/airMAX	MCS9	25 dBm	± 2 dB	11n/airMAX	MCS9	-93 dBm	± 2 dB
11n/airMAX	MCS10	25 dBm	± 2 dB	11n/airMAX	MCS10	-90 dBm	± 2 dB
11n/airMAX	MCS11	25 dBm	± 2 dB	11n/airMAX	MCS11	-87 dBm	± 2 dB
11n/airMAX	MCS12	24 dBm	± 2 dB	11n/airMAX	MCS12	-84 dBm	± 2 dB
11n/airMAX	MCS13	23 dBm	± 2 dB	11n/airMAX	MCS13	-79 dBm	± 2 dB
11n/airMAX	MCS14	23 dBm	± 2 dB	11n/airMAX	MCS14	-78 dBm	± 2 dB
11n/airMAX	MCS15	23 dBm	± 2 dB	11n/airMAX	MCS15	-75 dBm	± 2 dB

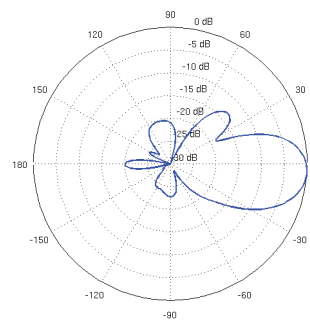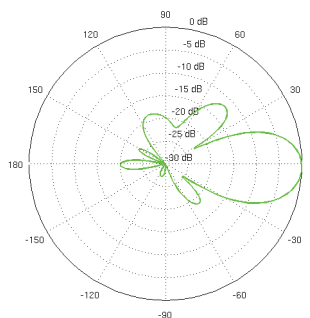| NBE-M5-16 Antenna Information	
Gain	16 dBi
Max. VSWR	1.5:1

Return Loss
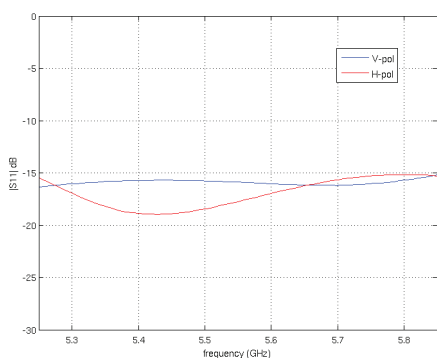
Vertical Azimuth
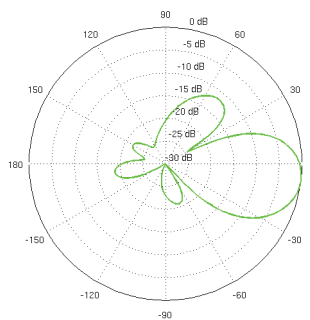
Vertical Elevation

Horizontal Azimuth

Horizontal Elevation