NanoBridge M | Datasheet

# NanoBridge M

## Hi-Performance & Cost-Effective MIMO Bridging

Models: NBM9, NBM2, NBM3, NBM365, NBM5

**Hi-Performance, Long Range**

**Completely Integrated CPE in the Feed of the Antenna**

**Easy Assembly and Installation**

UBIQUITI NETWORKS

# Overview

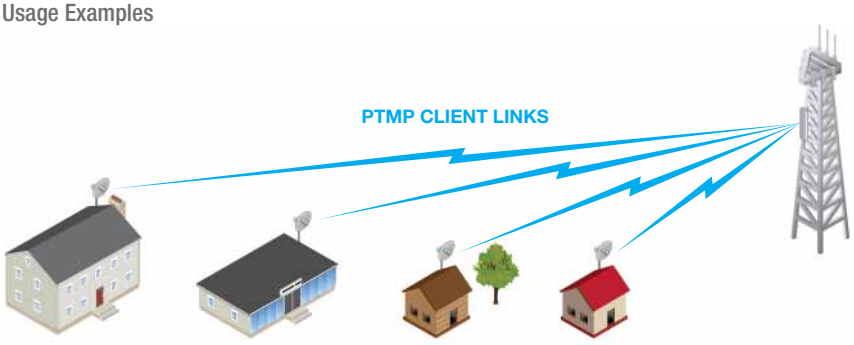
## InnerFeed Antenna Technology

Ubiquiti's revolutionary InnerFeed technology integrates the entire radio system into the feedhorn of an antenna. NanoBridge M combines Ubiquiti's Innerfeed and AirMax (MIMO TDMA Protocol) technologies to create a simple, yet extremely powerful and robust wireless unit capable of 100+Mbps real outdoor throughput and up to 30km+ range.

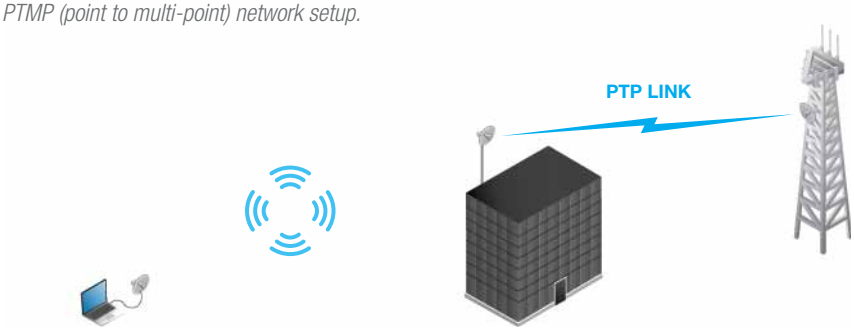
Complete antenna and radio system integration provides revolutionary cost/performance solutions to the Worldwide Broadband Industry.

The low cost, hi-performance, and robust "all-in-one" design of NanoBridge M make it extremely versatile and ideal in several different applications (see diagrams on right for some usage examples).

### Usage Examples




*NanoBridge M as powerful clients in an AirMax PTMP (point to multi-point) network setup.*




*NanoBridge M as a powerful wireless client.*

*Using two NanoBridge M to create a powerful, long range, PTP (point to point) link.*

## Integrated AirMax Technology

Unlike standard WiFi protocol, Ubiquiti's Time Division Multiple Access (TDMA) AirMax protocol allows each client to send & receive data using pre-designated time slots scheduled by an intelligent AP controller.

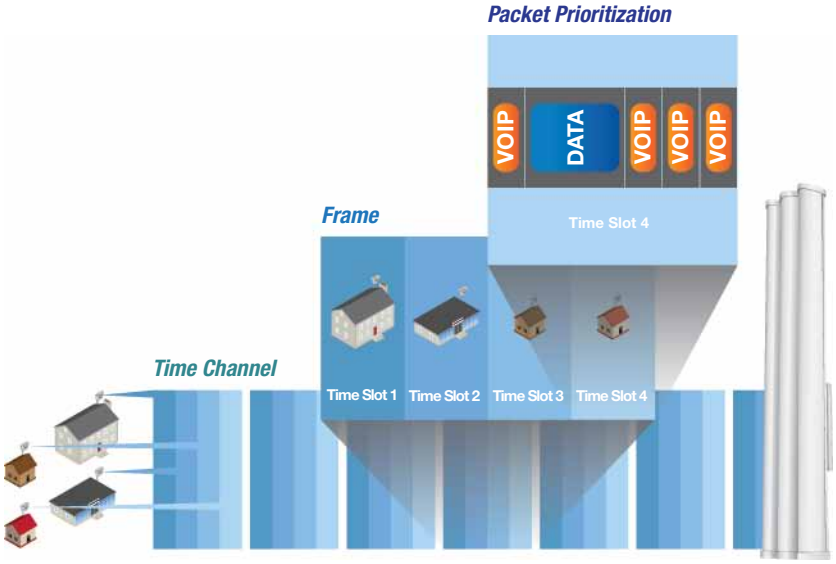
This "time slot" method eliminates hidden node collisions & maximizes air time efficiency. It provides many magnitudes of performance improvements in latency, throughput, & scalability compared to all other outdoor systems in its class.

**Intelligent QoS** Priority is given to voice/video for seamless access.

**Scalability** High capacity and scalability.

**Long Distance** Capable of high speed Carrier Class links

**Latency** Multiple features dramatically reduce noise.




*AirMax Clients (up to 300 clients can be connected per AirMax BaseStation, 4 clients are shown to show general concept)*

*AirMax BaseStation*

# Models

**NanoBridge M2** 2.4 GHz
Product ID: NB-2G18

**NanoBridge M5-22** 5 GHz, 22 dBi
Product ID: NB-5G22

**NanoBridge M5-25** 5 GHz, 25 dBi
Product ID: NB-5G25

**NanoBridge M3** 3.3-3.7 GHz
Product ID: NBM3

**NanoBridge M365** 3.65-3.675 GHz
Product ID: NBM365

**NanoBridge M9** 900 MHz
Product ID: NBM9

# Software

## airOS

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 hi-performance outdoor multipoint networking.

**Protocol Support**

**Ubiquiti Channelization**

**Spectral Width Adjust**

**ACK Auto-Timing**

**AAP Technology**

**Multi-Language Support**


www.ubnt.com/airos

## airView

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 real-time as a function of frequency.

**Recording** Automize AirView to record and report results.


www.ubnt.com/airview

## airControl

AirControl is a powerful and intuitive web based server network management application which allows operators to centrally manage entire networks of Ubiqutii devices.

**Network Map**

**Monitor Device Status**

**Mass Firmware Upgrade**

**Web UI Access**

**Manage Groups of Devices**

**Task Scheduling**


www.ubnt.com/aircontrol

# Specifications

| System Information | | |
|---|---|---|
| Processor Specs | Atheros MIPS 24KC, 400MHz | |
| | M9 | M2, M3, M365, M5 |
| Memory Information | 64MB SDRAM, 8MB Flash | 32MB SDRAM, 8MB Flash |
| | M9, M2, M5 | M3, M365 |
| Networking Interface | 1 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet | 2 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet |

| Regulatory / Compliance Information | | | | |
|---|---|---|---|---|
| | M9 | M2, M5 | M3 | M365 |
| Wireless Approvals | FCC Part 15.247, IC RS210 | FCC Part 15.247, IC RS210, CE | - | FCC Part 90Y |
| RoHS Compliance | YES | | | |

| Physical / Electrical / Environmental | | | |
|---|---|---|---|
| Enclosure Characteristics | Outdoor UV Stabilized Plastic | | |
| Mounting Kit | Pole Mounting Kit included | | |
| Power Supply | 24V, 1A POE Supply included | | |
| Power Method | Passive Power over Ethernet (pairs 4, 5+; 7, 8 return) | | |
| Operating Temperature | -30C to 75C | | |
| Operating Humidity | 5 to 95% Condensing | | |
| Shock and Vibration | ETSI300-019-1.4 | | |
| | M9 | M2, M5 | M3, M365 |
| Dimensions | 543 x 440 x 725 mm | 400 mm diameter (M2)<br>326 mm diameter (M5-22)<br>420 mm diameter (M5-25) | 492 x 440 x 705 mm |
| Weight | 1310 g | 1565 g | 900 g |
| Max Power Consumption | 6.5 Watts | 5.5 Watts | 8 Watts |
| Antenna Gain | 13 dBi | 18 dBi (M2)<br>22 dBi (M5-22)<br>25 dBi (M5-25) | 21.5 - 22.5 dBi |

| Operating Frequency Summary (MHz) | | | | |
|---|---|---|---|---|
| M9 | M2 | M3 | M365 | M5 |
| 902-928 | 2412-2462 | 3300-3700 | 3650-3675 | 5470-5825* |

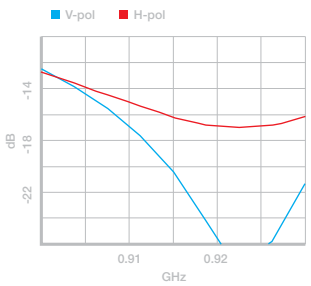
* Only 5745 - 5825 MHz is supported in the USA

# Specifications (cont.)

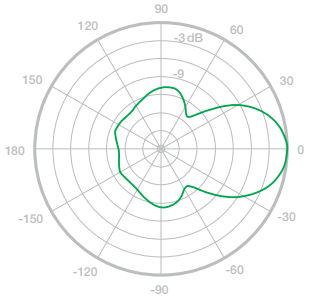
| NanoBridge M9 - Operating Frequency 902-928 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| OUTPUT POWER: 28 dBm | | | | | | | |
| 900 MHz TX POWER SPECIFICATIONS | | | | 900 MHz RX POWER SPECIFICATIONS | | | |
| AirMax | MCS0 | 28 dBm | +/- 2 dB | AirMax | MCS0 | -96 dBm | +/- 2 dB |
| | MCS1 | 28 dBm | +/- 2 dB | | MCS1 | -95 dBm | +/- 2 dB |
| | MCS2 | 28 dBm | +/- 2 dB | | MCS2 | -92 dBm | +/- 2 dB |
| | MCS3 | 28 dBm | +/- 2 dB | | MCS3 | -90 dBm | +/- 2 dB |
| | MCS4 | 28 dBm | +/- 2 dB | | MCS4 | -86 dBm | +/- 2 dB |
| | MCS5 | 24 dBm | +/- 2 dB | | MCS5 | -83 dBm | +/- 2 dB |
| | MCS6 | 22 dBm | +/- 2 dB | | MCS6 | -77 dBm | +/- 2 dB |
| | MCS7 | 21 dBm | +/- 2 dB | | MCS7 | -74 dBm | +/- 2 dB |
| | MCS8 | 28 dBm | +/- 2 dB | | MCS8 | -95 dBm | +/- 2 dB |
| | MCS9 | 28 dBm | +/- 2 dB | | MCS9 | -93 dBm | +/- 2 dB |
| | MCS10 | 28 dBm | +/- 2 dB | | MCS10 | -90 dBm | +/- 2 dB |
| | MCS11 | 28 dBm | +/- 2 dB | | MCS11 | -87 dBm | +/- 2 dB |
| | MCS12 | 28 dBm | +/- 2 dB | | MCS12 | -84 dBm | +/- 2 dB |
| | MCS13 | 24 dBm | +/- 2 dB | | MCS13 | -79 dBm | +/- 2 dB |
| | MCS14 | 22 dBm | +/- 2 dB | | MCS14 | -78 dBm | +/- 2 dB |
| | MCS15 | 21 dBm | +/- 2 dB | | MCS15 | -75 dBm | +/- 2 dB |

## NanoBridge M9 - Antenna Information

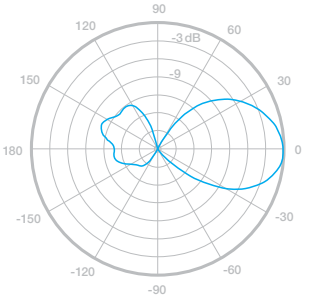
Return Loss



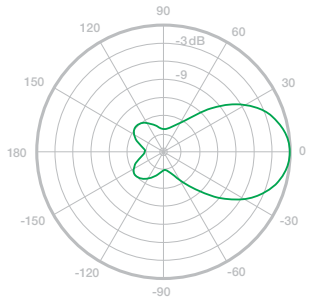

Vertical Azimuth



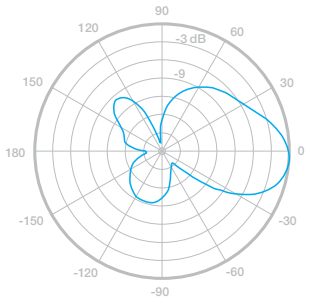

Vertical Elevation




Horizontal Azimuth




Horizontal Elevation

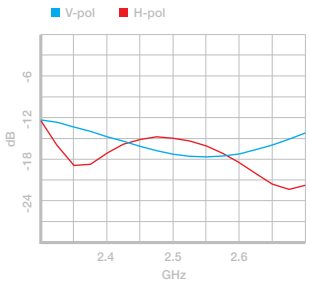


# Specifications (cont.)

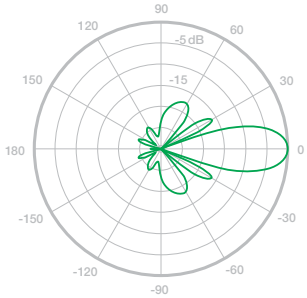
| NanoBridge M2 - Operating Frequency 2412-2462 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| OUTPUT POWER: 23 dBm | | | | | | | |
| 2.4 GHz TX POWER SPECIFICATIONS | | | | 2.4 GHz RX POWER SPECIFICATIONS | | | |
| AirMax | MCS0 | 23 dBm | +/- 2 dB | AirMax | MCS0 | -94 dBm | +/- 2 dB |
| | MCS1 | 23 dBm | +/- 2 dB | | MCS1 | -93 dBm | +/- 2 dB |
| | MCS2 | 23 dBm | +/- 2 dB | | MCS2 | -90 dBm | +/- 2 dB |
| | MCS3 | 23 dBm | +/- 2 dB | | MCS3 | -89 dBm | +/- 2 dB |
| | MCS4 | 22 dBm | +/- 2 dB | | MCS4 | -86 dBm | +/- 2 dB |
| | MCS5 | 20 dBm | +/- 2 dB | | MCS5 | -83 dBm | +/- 2 dB |
| | MCS6 | 19 dBm | +/- 2 dB | | MCS6 | -77 dBm | +/- 2 dB |
| | MCS7 | 18 dBm | +/- 2 dB | | MCS7 | -74 dBm | +/- 2 dB |
| | MCS8 | 23 dBm | +/- 2 dB | | MCS8 | -93 dBm | +/- 2 dB |
| | MCS9 | 23 dBm | +/- 2 dB | | MCS9 | -91 dBm | +/- 2 dB |
| | MCS10 | 23 dBm | +/- 2 dB | | MCS10 | -89 dBm | +/- 2 dB |
| | MCS11 | 23 dBm | +/- 2 dB | | MCS11 | -87 dBm | +/- 2 dB |
| | MCS12 | 22 dBm | +/- 2 dB | | MCS12 | -84 dBm | +/- 2 dB |
| | MCS13 | 20 dBm | +/- 2 dB | | MCS13 | -79 dBm | +/- 2 dB |
| | MCS14 | 19 dBm | +/- 2 dB | | MCS14 | -78 dBm | +/- 2 dB |
| | MCS15 | 18 dBm | +/- 2 dB | | MCS15 | -75 dBm | +/- 2 dB |

## NanoBridge M2 - Antenna Information

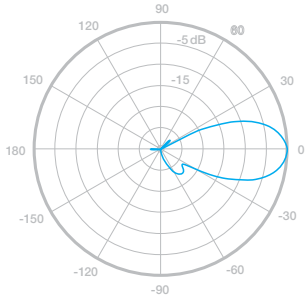
Return Loss



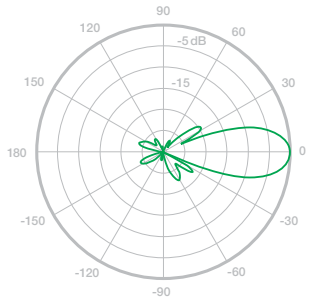

Vertical Azimuth



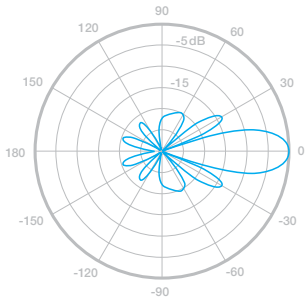

Vertical Elevation




Horizontal Azimuth




Horizontal Elevation

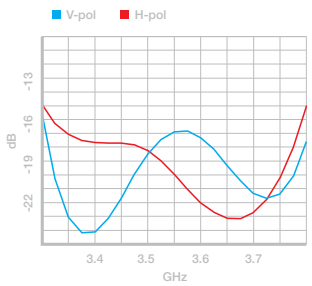


# Specifications (cont.)

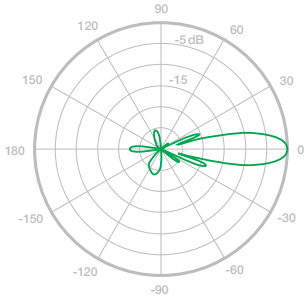
| NanoBridge M3 & M365 - Operating Frequency 3650-3675 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| OUTPUT POWER: 25 dBm | | | | | | | |
| TX POWER SPECIFICATIONS | | | | RX POWER SPECIFICATIONS | | | |
| AirMax | MCS0 | 25 dBm | +/- 2 dB | AirMax | MCS0 | -94 dBm | +/- 2 dB |
| | MCS1 | 25 dBm | +/- 2 dB | | MCS1 | -93 dBm | +/- 2 dB |
| | MCS2 | 25 dBm | +/- 2 dB | | MCS2 | -90 dBm | +/- 2 dB |
| | MCS3 | 25 dBm | +/- 2 dB | | MCS3 | -89 dBm | +/- 2 dB |
| | MCS4 | 24 dBm | +/- 2 dB | | MCS4 | -86 dBm | +/- 2 dB |
| | MCS5 | 23 dBm | +/- 2 dB | | MCS5 | -83 dBm | +/- 2 dB |
| | MCS6 | 22 dBm | +/- 2 dB | | MCS6 | -77 dBm | +/- 2 dB |
| | MCS7 | 20 dBm | +/- 2 dB | | MCS7 | -74 dBm | +/- 2 dB |
| | MCS8 | 25 dBm | +/- 2 dB | | MCS8 | -93 dBm | +/- 2 dB |
| | MCS9 | 25 dBm | +/- 2 dB | | MCS9 | -91 dBm | +/- 2 dB |
| | MCS10 | 25 dBm | +/- 2 dB | | MCS10 | -89 dBm | +/- 2 dB |
| | MCS11 | 25 dBm | +/- 2 dB | | MCS11 | -87 dBm | +/- 2 dB |
| | MCS12 | 24 dBm | +/- 2 dB | | MCS12 | -84 dBm | +/- 2 dB |
| | MCS13 | 23 dBm | +/- 2 dB | | MCS13 | -79 dBm | +/- 2 dB |
| | MCS14 | 22 dBm | +/- 2 dB | | MCS14 | -78 dBm | +/- 2 dB |
| | MCS15 | 20 dBm | +/- 2 dB | | MCS15 | -75 dBm | +/- 2 dB |

## NanoBridge M3 & M365 - Antenna Information

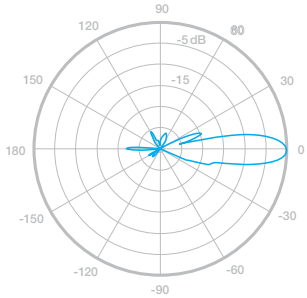
Return Loss



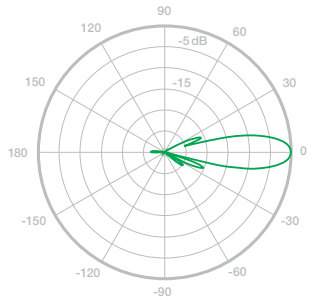

Vertical Azimuth



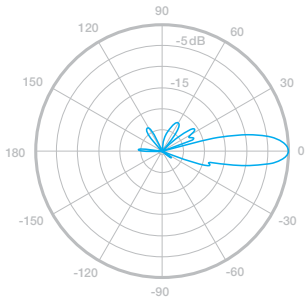

Vertical Elevation




Horizontal Azimuth




Horizontal Elevation

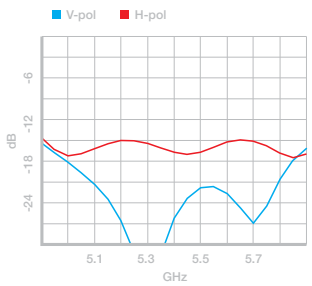


# Specifications (cont.)

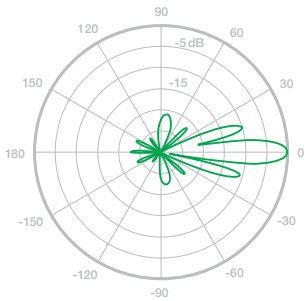
| NanoBridge M5 - Operating Frequency 5470-5825 MHz* | | | | | | | |
|---|---|---|---|---|---|---|---|
| OUTPUT POWER: 23 dBm | | | | | | | |
| TX POWER SPECIFICATIONS | | | | RX POWER SPECIFICATIONS | | | |
| AirMax | MCS0 | 23 dBm | +/- 2 dB | AirMax | MCS0 | -96 dBm | +/- 2 dB |
| | MCS1 | 23 dBm | +/- 2 dB | | MCS1 | -95 dBm | +/- 2 dB |
| | MCS2 | 23 dBm | +/- 2 dB | | MCS2 | -92 dBm | +/- 2 dB |
| | MCS3 | 23 dBm | +/- 2 dB | | MCS3 | -90 dBm | +/- 2 dB |
| | MCS4 | 22 dBm | +/- 2 dB | | MCS4 | -86 dBm | +/- 2 dB |
| | MCS5 | 20 dBm | +/- 2 dB | | MCS5 | -83 dBm | +/- 2 dB |
| | MCS6 | 19 dBm | +/- 2 dB | | MCS6 | -77 dBm | +/- 2 dB |
| | MCS7 | 18 dBm | +/- 2 dB | | MCS7 | -74 dBm | +/- 2 dB |
| | MCS8 | 23 dBm | +/- 2 dB | | MCS8 | -95 dBm | +/- 2 dB |
| | MCS9 | 23 dBm | +/- 2 dB | | MCS9 | -93 dBm | +/- 2 dB |
| | MCS10 | 23 dBm | +/- 2 dB | | MCS10 | -90 dBm | +/- 2 dB |
| | MCS11 | 23 dBm | +/- 2 dB | | MCS11 | -87 dBm | +/- 2 dB |
| | MCS12 | 22 dBm | +/- 2 dB | | MCS12 | -84 dBm | +/- 2 dB |
| | MCS13 | 20 dBm | +/- 2 dB | | MCS13 | -79 dBm | +/- 2 dB |
| | MCS14 | 19 dBm | +/- 2 dB | | MCS14 | -78 dBm | +/- 2 dB |
| | MCS15 | 18 dBm | +/- 2 dB | | MCS15 | -75 dBm | +/- 2 dB |

## NanoBridge M5 - Antenna Information

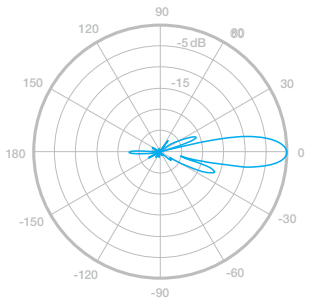
Return Loss



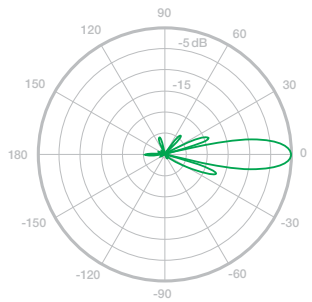

Vertical Azimuth



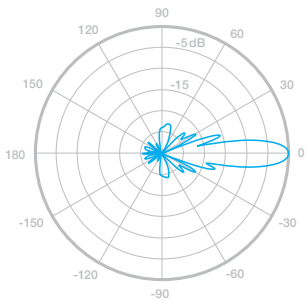

Vertical Elevation




Horizontal Azimuth




Horizontal Elevation




* Only 5745 - 5825 MHz is supported in the USA

# Misc

## TOUGHCable

**OUTDOOR CARRIER CLASS SHIELDED**

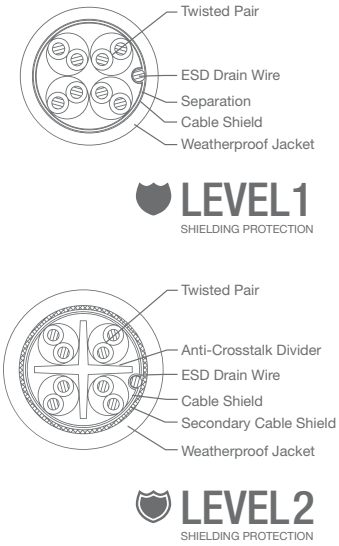
Protect your networks from the most brutal environments with Ubiquiti's industrial-grade shielded ethernet cable, TOUGHCable.

**Increase Performance** Dramatically improve your ethernet link states, speeds, and overall performance with Ubiquiti TOUGHCables.

**Extreme Weatherproof** TOUGHCables have been built to perform even in the harshest weather and environments.

**Eliminate ESD Attacks** Protect your networks from devastating ESD Attacks, TOUGHCables eliminate ESD attacks and ethernet hardware damage.

**Extended Cable Support** TOUGHCables have been developed to have increased power handling performance for extended cable run lengths.


## Bulletproof your networks

TOUGHCable is currently available in two versions: Level 1 Shielding Protection and Level 2 Shielding Protection.

**Level 1** is a Category 5e (100Mbps Ethernet Support) Outdoor Carrier Class Shielded Cable.

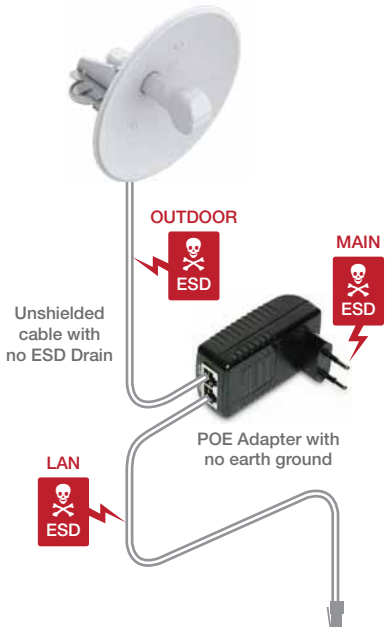
**Level 2** is a Category 6 (1Gbps Ethernet Support) Outdoor Carrier Class Shielded Cable that is also capable of providing enhanced Category 5e performance.

**Additional Information:**

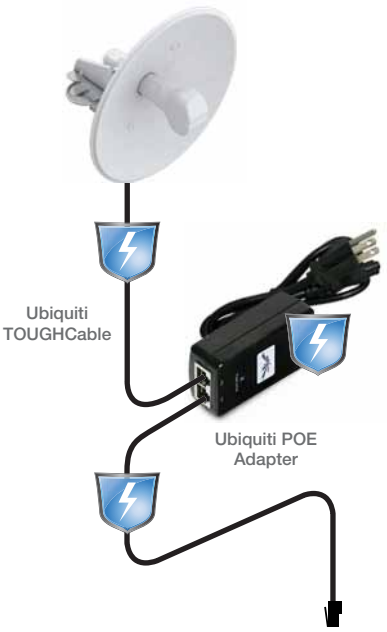
- 24 AWG copper conductor pairs
- ESD Drain Wire: 26 AWG integrated ESD Drain wire to prevent ESD attacks & damage.
- PVC outdoor rated jacket
- 0.35um foil shield
- Multi-Layered Shielding
- 1000ft (304.8m) length

Learn more:
www.ubnt.com/toughcable

ESD Attacks are overwhelmingly the leading cause for device failures. The diagram below illustrates the areas vulnerable to ESD Attacks in a defenseless network.




By using a grounded Ubiquiti POE adapter (included) along with Ubiquiti TOUGHCable (sold separately), you can effectively eliminate ESD Attacks.



UBIQUITI NETWORKS

TERMS OF USE: The Ubiquiti radio device must be professionally installed. Shielded ethernet cable and earth grounding must be used as conditions of product warranty. It is the installers responsibility to follow local country regulations including operation within legal frequency channels, output power, and Dynamic Frequency Selection (DFS) requirements.

For further information, please visit www.ubnt.com.

**All specifications in this document are subject to change without notice.**

NBM-DS-032411