NanoStation™M NanoStation™locoM | Datasheet



NanoStation™M
NanoStation™locoM

Indoor/Outdoor airMAX™ CPE

Models: NSM2, NSM3, NSM365, NSM5, locoM2, locoM5, locoM9

Cost-Effective, High-Performance

Compact and Versatile Design

Powerful Integrated Antenna

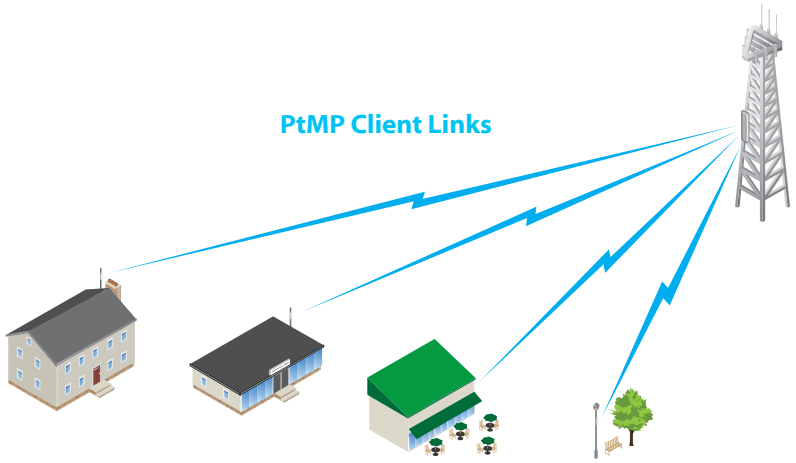
UBIQUITI™ NETWORKS

Overview

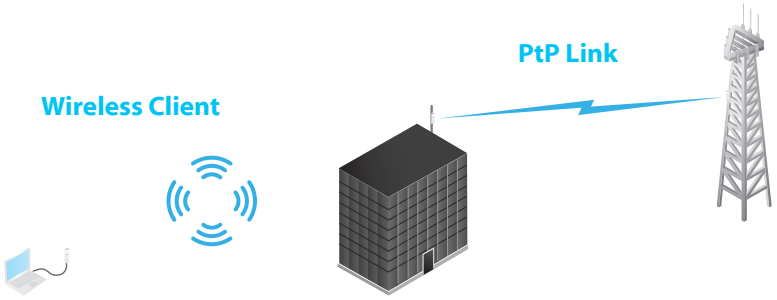
Leading-Edge Industrial Design

Ubiquiti Networks™ set the bar for the world's first low-cost and efficient broadband Customer Premises Equipment (CPE) with the original NanoStation™. The NanoStationM and NanoStationlocoM take the same concept to the future with sleek and elegant form factors, along with integrated airMAX™ (MIMO TDMA protocol) technology.

The low cost, high performance, and small form factor of NanoStationM and NanoStationlocoM make them extremely versatile and economical to deploy.



NanoStationM as powerful clients in an airMAX PtMP (Point-to-Multi-Point) network setup.



NanoStationM as a powerful wireless client.

Use two NanoStationM to create a PtP link.

Utilize airMAX Technology

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 many magnitudes of 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.

Latency Multiple features dramatically reduce noise.

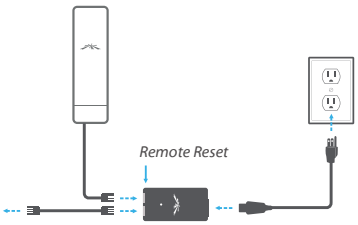
Dual Ethernet Connectivity[1]

The NanoStationM provides a secondary Ethernet port with software-enabled PoE output for seamless IP video integration.



Intelligent PoE[2]

Remote hardware reset circuitry of the NanoStationM allows the device to be remotely reset from the power supply location.



The NanoStationM may also be powered by the Ubiquiti Networks TOUGHSwitch PoE. In addition, any NanoStationM can easily become 48V, 802.3af compliant through use of the Ubiquiti Instant 802.3af Adapter (sold separately).

1 *Only NanoStationM models*

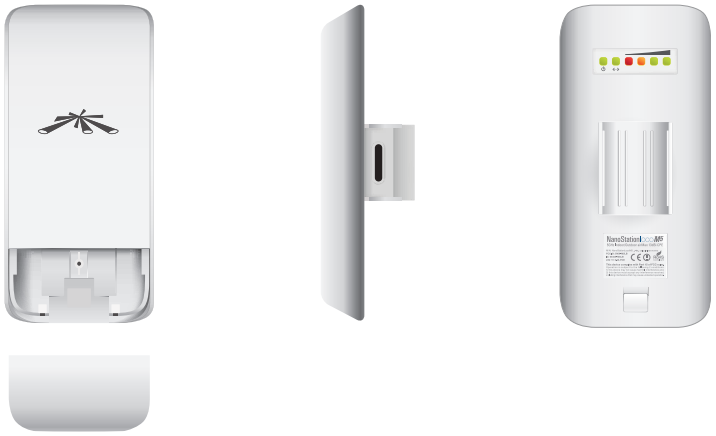
2 *Remote reset is an option that is sold separately as the POE-24. The NanoStationM includes a 24V PoE adapter without remote reset.*

Models



NanoStation™M

Model	Frequency	Gain
NSM2	2.4 GHz	11 dBi
NSM3	3 GHz	13 dBi
NSM365	3.65 GHz	13 dBi
NSM5	5 GHz	16 dBi



NanoStation™locoM

Model	Frequency	Gain
locoM2	2.4 GHz	8 dBi
locoM5	5 GHz	13 dBi



NanoStation™locoM

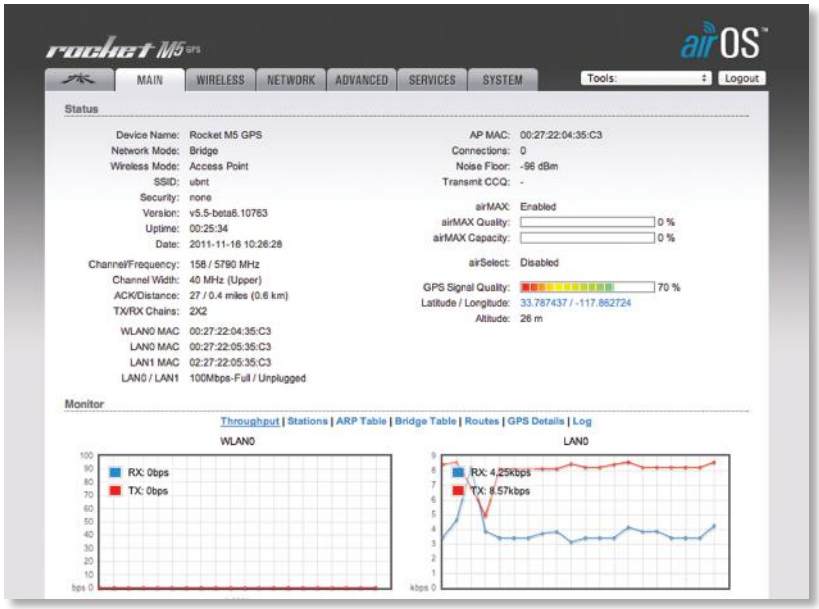
Model	Frequency	Gain
locoM9	900 MHz	8 dBi

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 high-performance, outdoor multi-point networking.

- Protocol Support
- Ubiquiti Channelization
- Spectral Width Adjustment
- ACK Auto-Timing
- AAP Technology
- Multi-Language Support



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.

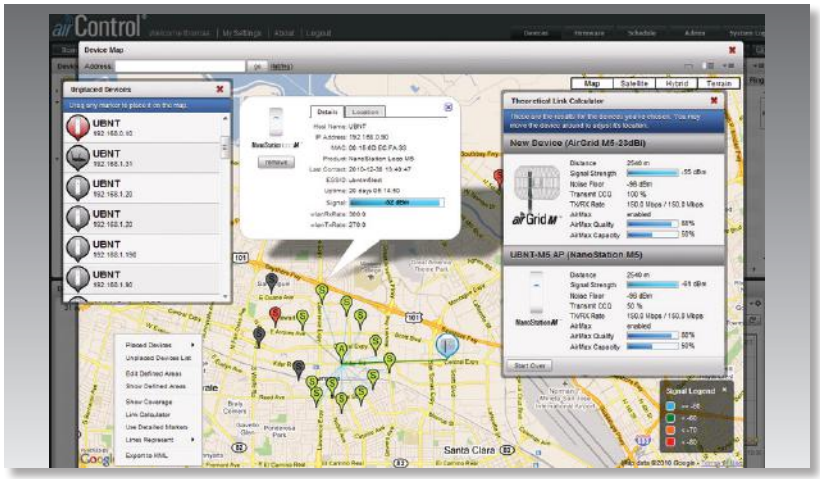
- **Waterfall** Aggregate energy over time for each frequency.
- **Waveform** Aggregate energy collected.
- **Real-time** Energy is shown in real time as a function of frequency.
- **Recording** Automize AirView to record and report results.



airControl™

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



Specifications

System Information			
Model	NanoStationM	locoM5/M2	locoM9
Processor Specs	Atheros MIPS 24KC, 400 MHz	Atheros MIPS 24KC, 400 MHz	Atheros MIPS 24KC, 400 MHz
Memory	32 MB SDRAM, 8 MB Flash	32 MB SDRAM, 8 MB Flash	64 MB SDRAM, 8 MB Flash
Networking Interface	(2) 10/100 Ethernet Ports	(1) 10/100 Ethernet Port	(1) 10/100 Ethernet Port

Regulatory/Compliance Information				
Model	NSM5/NSM2/locoM5/locoM2	NSM3	NSM365	locoM9
Wireless Approvals	FCC Part 15.247, IC RS210, CE	-	FCC Part 90Z	FCC Part 15.247, IC RS210
RoHS Compliance	Yes	Yes	Yes	Yes

Physical/Electrical/Environmental						
Model	NSM5	NSM3/365	NSM2	locoM5	locoM2	locoM9
Dimensions (mm)	294 x 31 x 80	294 x 31 x 80	294 x 31 x 80	163 x 31 x 80	163 x 31 x 80	164 x 72 x 199
Weight	0.4 kg	0.5 kg	0.4 kg	0.18 kg	0.18 kg	0.9 kg
Power Supply (PoE)	24V, 0.5A	24V, 0.5A	24V, 0.5A	24V, 0.5A	24V, 0.5A	24V, 0.5A
Max. Power Consumption	8 W	8 W	8 W	5.5 W	5.5 W	6.5 W
Gain	16 dBi	13.7 dBi	11 dBi	13 dBi	8 dBi	8 dBi
RF Connector	-	-	-	-	-	External RP-SMA
Polarization	Dual Linear					
Enclosure Characteristics	Outdoor UV Stabilized Plastic					
Mounting	Pole Mounting Kit Included					
Power Method	Passive Power over Ethernet (pairs 4, 5+; 7, 8 return)					
Operating Temperature	-30 to 75° C					
Operating Humidity	5 to 95% Condensing					
Shock & Vibration	ETSI300-019-1.4					

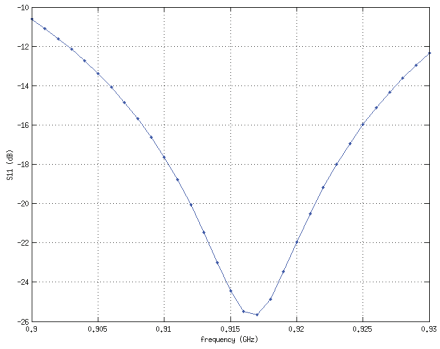
Operating Frequency Summary (MHz)					
Model	NSM5/locoM5	NSM365	NSM3	NSM2/locoM2	locoM9
Worldwide	5170 - 5875	3650-3675	3400-3700	2412-2462	902-928
USA	5725 - 5850				
USA DFS	5250 - 5850	-	-	-	-

NanoStationlocoM9 Specifications

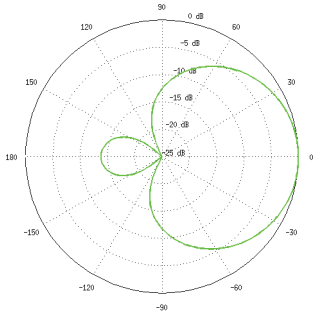
Output Power: 28 dBm							
900 MHz TX POWER SPECIFICATIONS				900 MHz RX POWER SPECIFICATIONS			
	MCS Index	Avg. TX	Tolerance		MCS Index	Sensitivity	Tolerance
airMAX	MCS0	28 dBm	± 2 dB	airMAX	MCS0	-96 dBm	± 2 dB
	MCS1	28 dBm	± 2 dB		MCS1	-95 dBm	± 2 dB
	MCS2	28 dBm	± 2 dB		MCS2	-92 dBm	± 2 dB
	MCS3	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

Antenna Information	
Gain	7.5 dBi
Cross-pol Isolation	28 dB Minimum
Max. VSWR	1.3:1
Beamwidth	60° (H-pol) / 60° (V-pol) / 60° (Elevation)

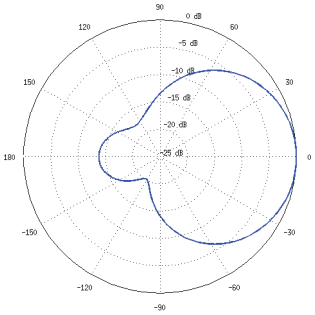
Return Loss



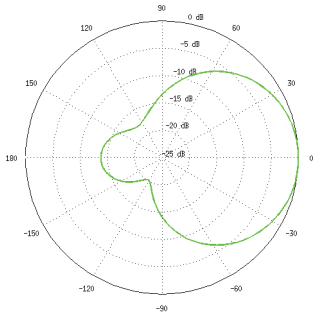
Vertical Azimuth



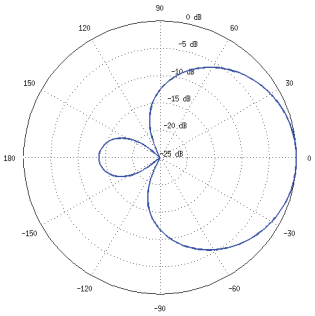
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation

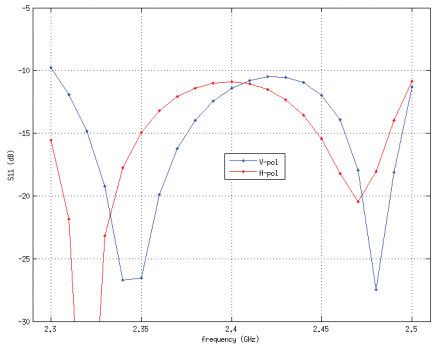


NanoStationlocoM2 Specifications

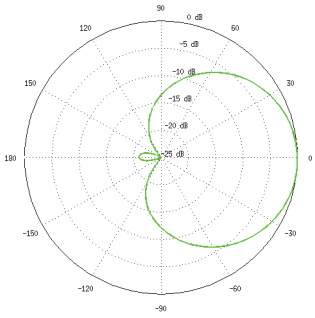
Output Power: 23 dBm							
2.4 GHz TX POWER SPECIFICATIONS				2.4 GHz RX POWER SPECIFICATIONS			
	Data Rate/MCS	Avg. TX	Tolerance		Data Rate/MCS	Sensitivity	Tolerance
11b/g	1-24 Mbps	23 dBm	± 2 dB	11b/g	1-24 Mbps	-83 dBm	± 2 dB
	36 Mbps	21 dBm	± 2 dB		36 Mbps	-80 dBm	± 2 dB
	48 Mbps	19 dBm	± 2 dB		48 Mbps	-77 dBm	± 2 dB
	54 Mbps	18 dBm	± 2 dB		54 Mbps	-75 dBm	± 2 dB
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	18 dBm	± 2 dB		MCS6	-77 dBm	± 2 dB
	MCS7	17 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	18 dBm	± 2 dB		MCS14	-78 dBm	± 2 dB
	MCS15	17 dBm	± 2 dB		MCS15	-75 dBm	± 2 dB

Antenna Information	
Gain	8.5 dBi
Cross-pol Isolation	20 dB Minimum
Max. VSWR	1.4:1
Beamwidth	60° (H-pol) / 60° (V-pol) / 60° (Elevation)

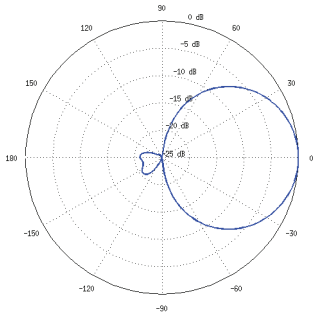
Return Loss



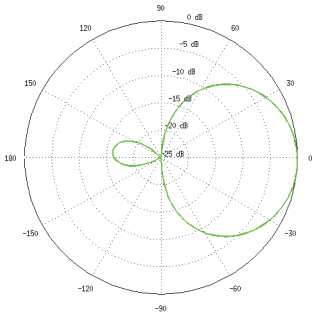
Vertical Azimuth



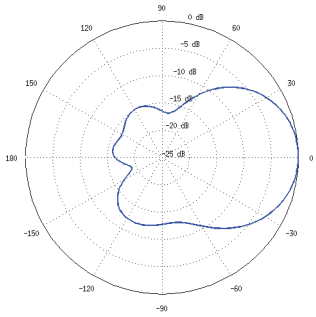
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation

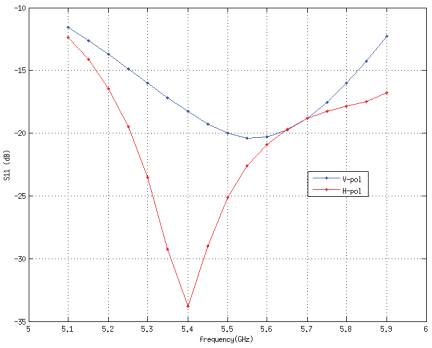


NanoStationlocoM5 Specifications

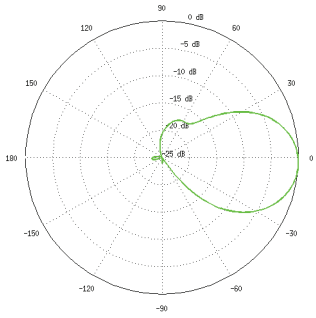
Output Power: 23 dBm							
5 GHz TX POWER SPECIFICATIONS				5 GHz RX POWER SPECIFICATIONS			
	Data Rate/MCS	Avg. TX	Tolerance		Data Rate/MCS	Sensitivity	Tolerance
11b/g	6-24 Mbps	23 dBm	± 2 dB	11b/g	6-24 Mbps	-83 dBm	± 2 dB
	36 Mbps	21 dBm	± 2 dB		36 Mbps	-80 dBm	± 2 dB
	48 Mbps	19 dBm	± 2 dB		48 Mbps	-77 dBm	± 2 dB
	54 Mbps	18 dBm	± 2 dB		54 Mbps	-75 dBm	± 2 dB
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	18 dBm	± 2 dB		MCS6	-77 dBm	± 2 dB
	MCS7	17 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	18 dBm	± 2 dB		MCS14	-78 dBm	± 2 dB
	MCS15	17 dBm	± 2 dB		MCS15	-75 dBm	± 2 dB

Antenna Information	
Gain	13 dBi
Cross-pol Isolation	20 dB Minimum
Max. VSWR	1.4:1
Beamwidth	45° (H-pol) / 45° (V-pol) / 45° (Elevation)

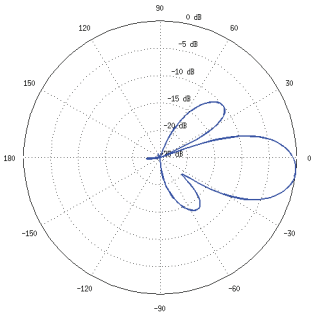
Return Loss



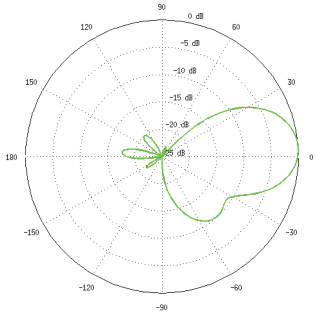
Vertical Azimuth



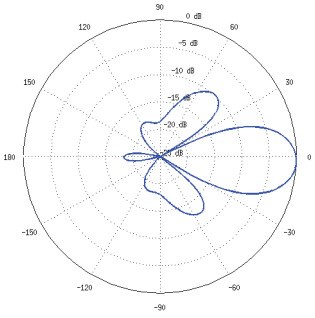
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation

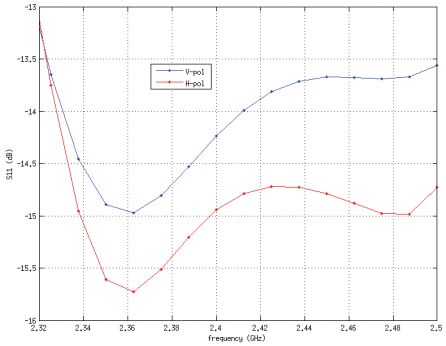


NanoStationM2 Specifications

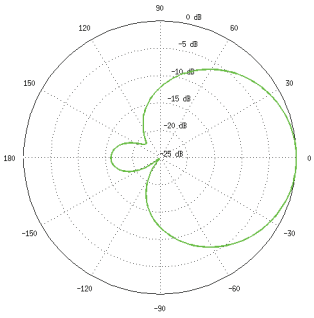
Output Power: 28 dBm							
2.4 GHz TX POWER SPECIFICATIONS				2.4 GHz RX POWER SPECIFICATIONS			
	Data Rate/MCS	Avg. TX	Tolerance		Data Rate/MCS	Sensitivity	Tolerance
11b/g	1-24 Mbps	28 dBm	± 2 dB	11b/g	1-24 Mbps	-83 dBm	± 2 dB
	36 Mbps	26 dBm	± 2 dB		36 Mbps	-80 dBm	± 2 dB
	48 Mbps	25 dBm	± 2 dB		48 Mbps	-77 dBm	± 2 dB
	54 Mbps	24 dBm	± 2 dB		54 Mbps	-75 dBm	± 2 dB
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	27 dBm	± 2 dB		MCS4	-86 dBm	± 2 dB
	MCS5	25 dBm	± 2 dB		MCS5	-83 dBm	± 2 dB
	MCS6	23 dBm	± 2 dB		MCS6	-77 dBm	± 2 dB
	MCS7	22 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	27 dBm	± 2 dB		MCS12	-84 dBm	± 2 dB
	MCS13	25 dBm	± 2 dB		MCS13	-79 dBm	± 2 dB
	MCS14	23 dBm	± 2 dB		MCS14	-78 dBm	± 2 dB
	MCS15	22 dBm	± 2 dB		MCS15	-75 dBm	± 2 dB

Antenna Information	
Gain	10.4-11.2 dBi
Cross-pol Isolation	23 dB Minimum
Max. VSWR	1.6:1
Beamwidth	55° (H-pol) / 53° (V-pol) / 27° (Elevation)

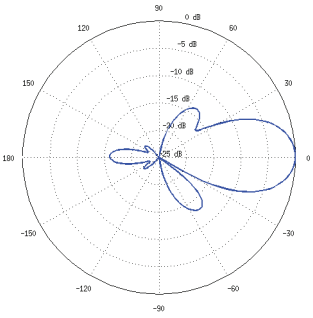
Return Loss



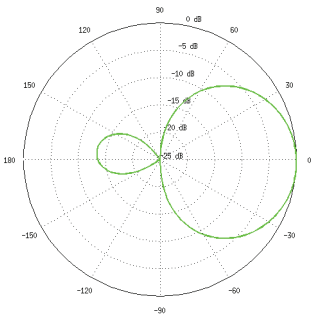
Vertical Azimuth



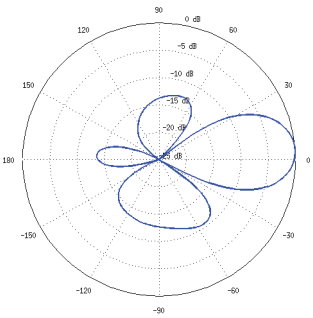
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation

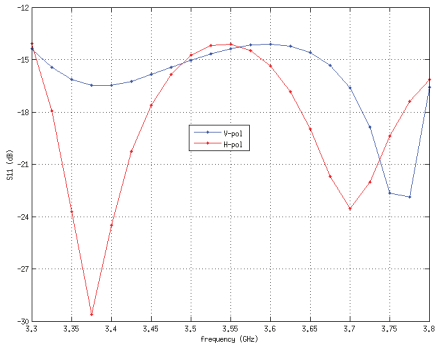


NanoStationM3/M365 Specifications

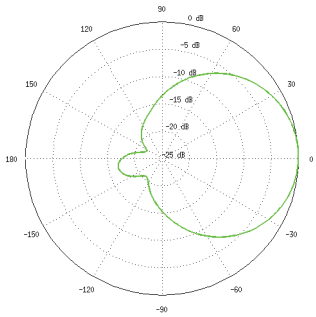
Output Power: 25 dBm							
TX POWER SPECIFICATIONS				RX POWER SPECIFICATIONS			
	MCS Index	Avg. TX	Tolerance		MCS Index	Sensitivity	Tolerance
airMAX	MCS0	25 dBm	± 2 dB	airMAX	MCS0	-94 dBm	± 2 dB
	MCS1	25 dBm	± 2 dB		MCS1	-93dBm	± 2 dB
	MCS2	25 dBm	± 2 dB		MCS2	-90 dBm	± 2 dB
	MCS3	25 dBm	± 2 dB		MCS3	-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

Antenna Information	
Gain	12.2 - 13.7 dBi
Cross-pol Isolation	28 dB Minimum
Max. VSWR	1.4:1
Beamwidth	60° (H-pol) / 60° (V-pol) / 20° (Elevation)

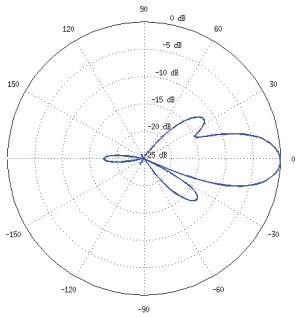
Return Loss



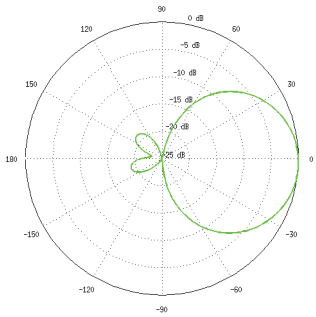
Vertical Azimuth



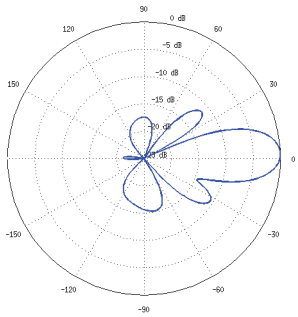
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation

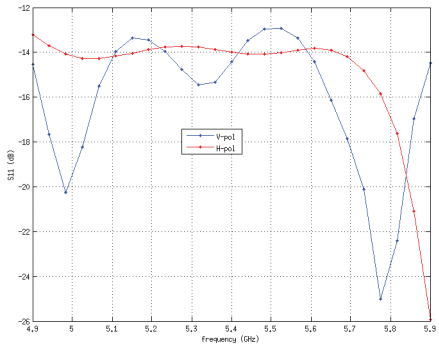


NanoStationM5 Specifications

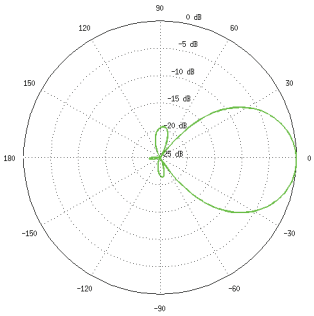
Output Power: 27 dBm							
5 GHz TX POWER SPECIFICATIONS				5 GHz RX POWER SPECIFICATIONS			
	Data Rate/MCS	Avg. TX	Tolerance		Data Rate/MCS	Sensitivity	Tolerance
11a	6-24 Mbps	27 dBm	± 2 dB	11a	6-24 Mbps	-94 dBm	± 2 dB
	36 Mbps	25 dBm	± 2 dB		36 Mbps	-80 dBm	± 2 dB
	48 Mbps	23 dBm	± 2 dB		48 Mbps	-77 dBm	± 2 dB
	54 Mbps	22 dBm	± 2 dB		54 Mbps	-75 dBm	± 2 dB
11n/airMAX	MCS0	27 dBm	± 2 dB	11n/airMAX	MCS0	-96 dBm	± 2 dB
	MCS1	27 dBm	± 2 dB		MCS1	-95 dBm	± 2 dB
	MCS2	27 dBm	± 2 dB		MCS2	-92 dBm	± 2 dB
	MCS3	27 dBm	± 2 dB		MCS3	-90 dBm	± 2 dB
	MCS4	26 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	27 dBm	± 2 dB		MCS8	-95 dBm	± 2 dB
	MCS9	27 dBm	± 2 dB		MCS9	-93 dBm	± 2 dB
	MCS10	27 dBm	± 2 dB		MCS10	-90 dBm	± 2 dB
	MCS11	27 dBm	± 2 dB		MCS11	-87 dBm	± 2 dB
	MCS12	26 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

Antenna Information	
Gain	14.6 - 16.1 dBi
Cross-pol Isolation	22 dB Minimum
Max. VSWR	1.6:1
Beamwidth	43° (H-pol) / 41° (V-pol) / 15° (Elevation)

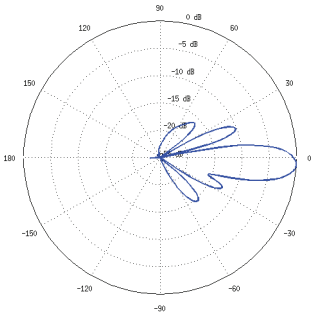
Return Loss



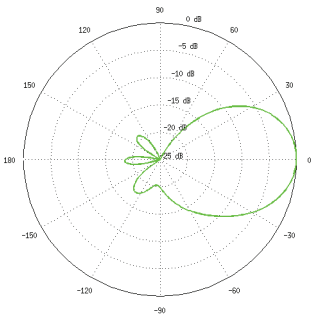
Vertical Azimuth



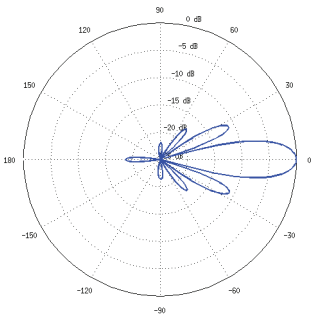
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation



TOUGHCable™

OUTDOOR CARRIER CLASS SHIELDED

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

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

Extreme Weatherproof
Designed for outdoor use, TOUGHCables have been built to perform even in the harshest weather and environments.

ESD Damage Protection
Protect your networks from devastating electrostatic discharge (ESD) attacks.

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

Bulletproof your networks

TOUGHCable is currently available in two versions: PRO Shielding Protection and CARRIER Shielding Protection.

TOUGHCable PRO is a Category 5e, outdoor, carrier-class shielded cable with an integrated ESD drain wire.

TOUGHCable CARRIER is a Category 5e, outdoor, carrier-class shielded cable that features an integrated ESD drain wire, anti-crosstalk divider, and secondary shielding. It is rated to provide optimal performance on Gigabit Ethernet networks.

Additional Information:

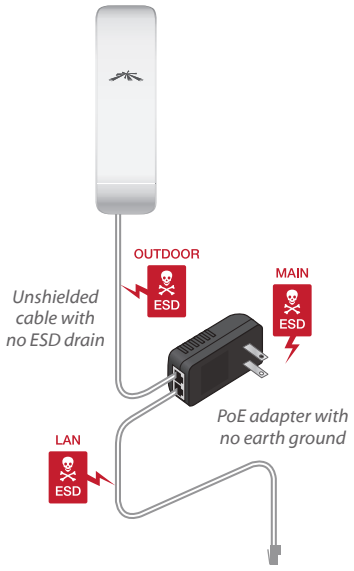
- 24 AWG copper conductor pairs
- 26 AWG integrated ESD drain wire to prevent ESD attacks and damage
- PE outdoor-rated, weatherproof jacket
- Multi-layered shielding
- Available in lengths of 1000 ft (304.8 m)



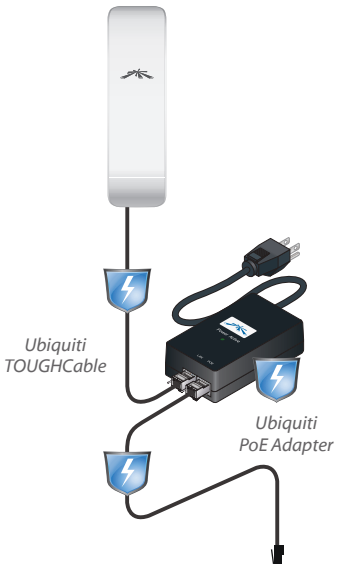
TOUGHCable Connectors

Specifically designed for use with Ubiquiti TOUGHCables and available in 100-pc. bags, TOUGHCable Connectors protect against ESD attacks and Ethernet hardware damage, while allowing rapid field deployment without soldering.

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



By using a grounded Ubiquiti Power over Ethernet (PoE) Adapter along with Ubiquiti TOUGHCable and TOUGHCable Connectors, you can effectively protect against ESD attacks.



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

www.ubnt.com

© 2012-2013 Ubiquiti Networks, Inc. All rights reserved.

JLRR062113