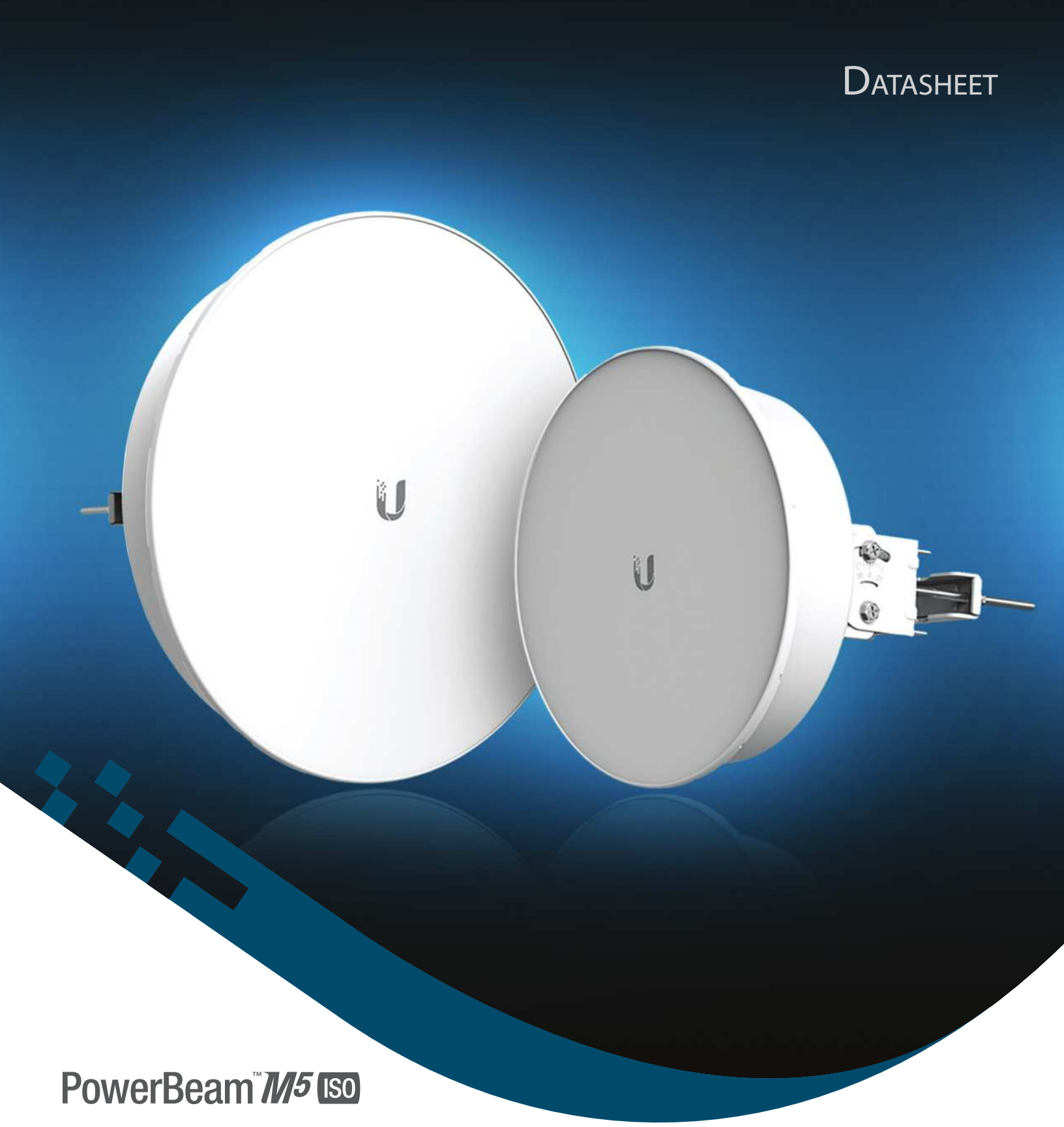
DATASHEET



PowerBeam™ M5 ISO

5 GHz airMAX® Bridge with RF Isolated Reflector

Models: PBE-M5-300-ISO, PBE-M5-400-ISO

Uniform Beamwidth Maximizes Noise Immunity

Integrated Isolator Design Improves RF Isolation

High-Speed Processor for Superior Performance

UBIQUITI® NETWORKS

Overview

Ubiquiti Networks launches the PowerBeam™ ISO, an airMAX Bridge that is ideal for deployments requiring maximum performance and RF isolation.

Improved Noise Immunity

The PowerBeam ISO directs RF energy in a tighter beamwidth, and its integrated isolator design improves RF isolation to spatially filter out interference. With its combination of focused beam directivity and RF isolation, the PowerBeam ISO blocks noise to improve noise immunity. This is especially important in an area crowded with other RF signals of the same or similar frequency.

Integrated Radio 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 high performance and innovative mechanical design at a low cost, the PowerBeam ISO 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, so airMAX technology provides performance improvements in latency, noise immunity, scalability, and throughput compared to other outdoor systems in its class.

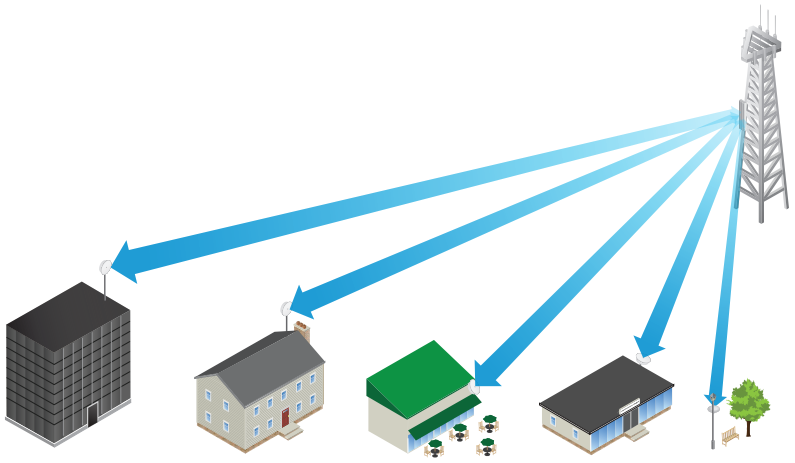
Intelligent QoS Priority assigned to voice/video for seamless streaming.

Scalability High capacity and scalability.

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

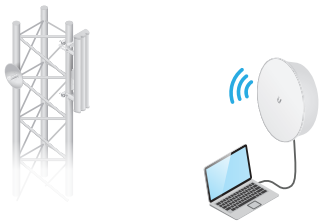
Application Examples

PtMP Client Links



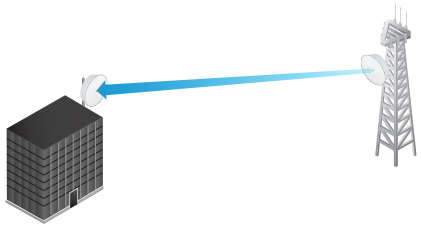
The PowerBeam ISO used as a CPE device for each client in an airMAX PtMP network.

Wireless Client



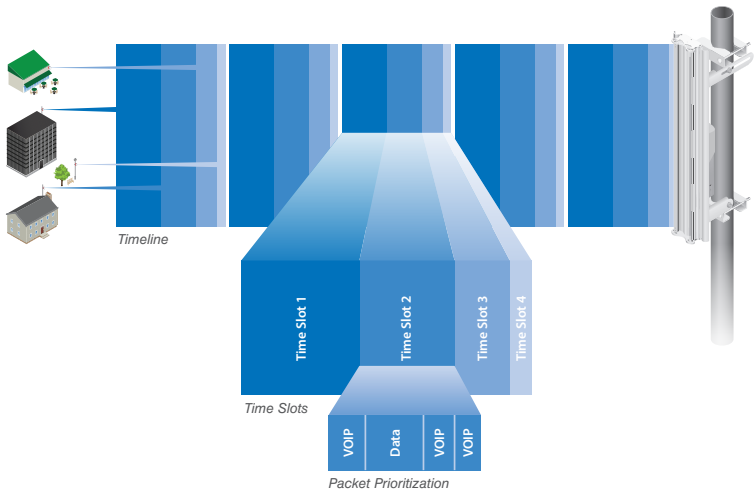
The PowerBeam ISO as a powerful wireless client.

PtP Link



Use a PowerBeam ISO on each side of a PtP link.

airMAX TDMA Technology



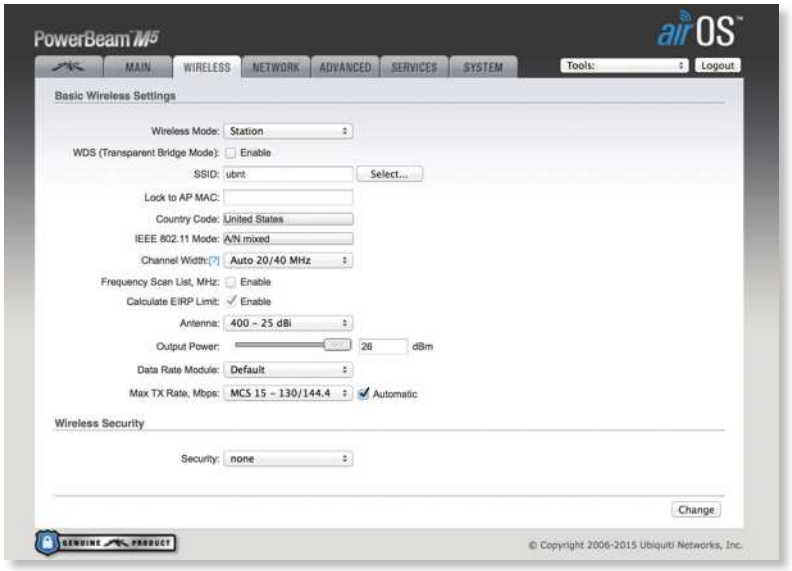
Up to 100 airMAX stations can be connected to an airMAX Sector; four airMAX stations are shown to illustrate the general concept.

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.

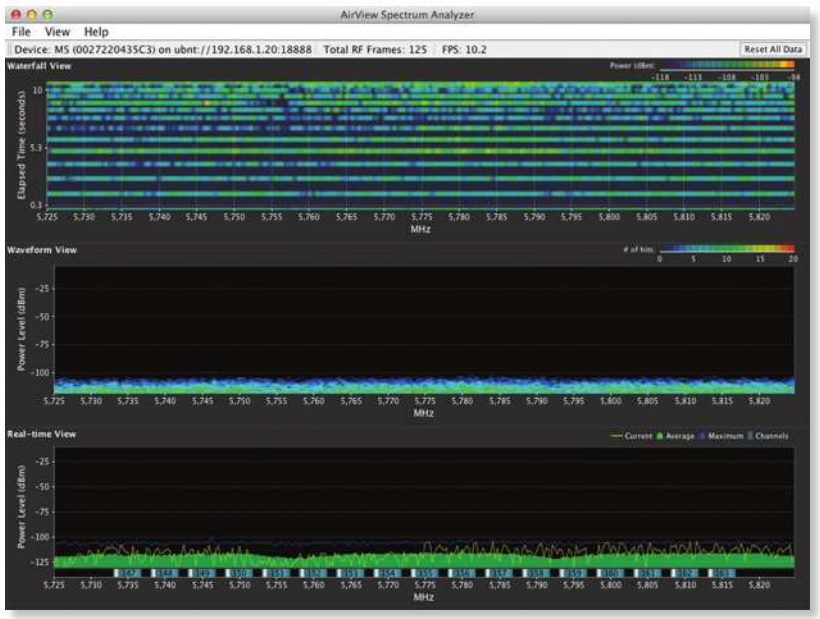
- Protocol Support
- Ubiquiti Channelization
- Spectral Width Adjustment
- ACK Auto-Timing
- AAP Technology
- Multi-Language Support



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** Automate 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

Hardware Overview

Innovative Mechanical Design

- **Metal-plated interior of rear housing** Enhances RF shielding.
- **Built-in mechanical tilt** The mounting bracket offers ± 20° of tilt.
- **Convenient pole-mounting** Only a single wrench is needed to mount the PowerBeam ISO on a pole.

Industrial-Strength Construction

- **Fasteners** GEOMET-coated for improved corrosion resistance when compared with zinc-plated fasteners.
- **Dish and brackets** Made of galvanized steel that is powder-coated for superior corrosion resistance.
- **Protective radome** Shields the radio from nature's harshest elements.

Breakthrough RF Isolation

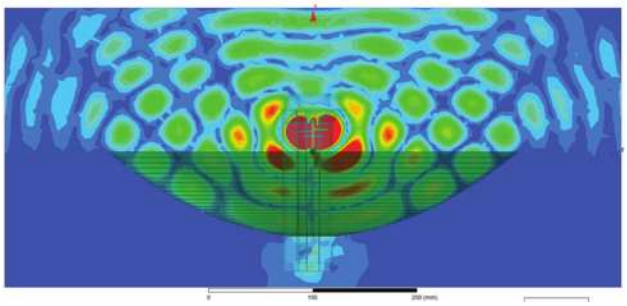
The integrated isolator design spatially filters out interference, so the PowerBeam ISO delivers improved noise immunity in co-location deployments.

Compare the two near-field plots below, and note the superior performance of the integrated RF isolator.

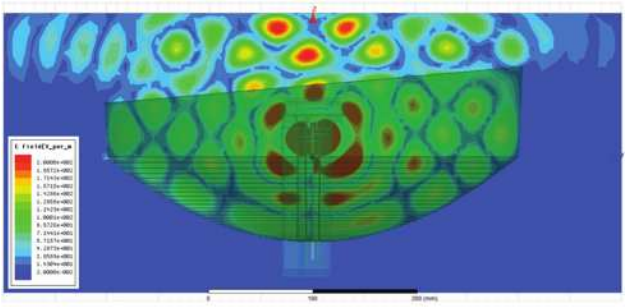
Both near-field plots are displayed in watts and use a linear scale. The strength of the electromagnetic field is color-coded:

- **Red:** Highest strength
- **Green:** Medium strength
- **Indigo:** Lowest strength

Without Integrated RF Isolator



With Integrated RF Isolator



Models

Using airMAX technology, the PowerBeam ISO supports up to 150+ Mbps real TCP/IP throughput.

PowerBeam™M5 ISO

Model	Frequency	Gain	Dish Reflector
PBE-M5-300-ISO	5 GHz	22 dBi	300 mm

PowerBeam™M5 ISO

Model	Frequency	Gain	Dish Reflector
PBE-M5-400-ISO	5 GHz	25 dBi	400 mm

Specifications

PBE-M5-300-ISO System and Regulatory/Compliance	
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

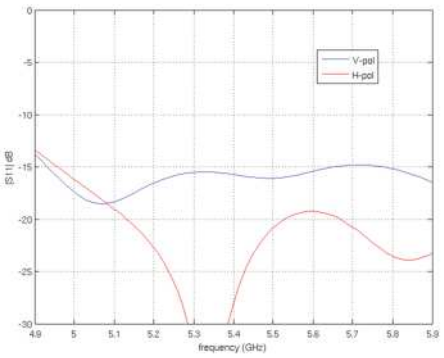
PBE-M5-300-ISO Physical/Electrical/Environmental	
Dimensions	364 x 364 x 276 mm (14.33 x 14.33 x 10.87")
Weight	2.55 kg (5.62 lb)
Power Supply	24V, 0.5A PoE
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)
Supported Voltage Range	20-26VDC
Max. Power Consumption	6W
Gain	22 dBi
Operating Frequency Worldwide USA	 5170 - 5875 MHz 5725 - 5850 MHz
Wind Loading	210 N @ 200 km/h (47 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
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

Specifications

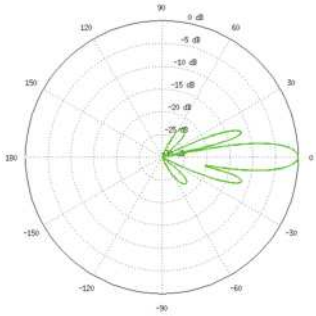
PBE-M5-300-ISO Output Power: 24 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
802.11a	6 - 24 Mbps	24 dBm	± 2 dB	**802.11a**	6 - 24 Mbps	-94 dBm Min.	± 2 dB
	36 Mbps	24 dBm	± 2 dB		36 Mbps	-80 dBm	± 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
802.11n/airMAX	MCS0	24 dBm	± 2 dB	**802.11n/airMAX**	MCS0	-96 dBm	± 2 dB
	MCS1	24 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	21 dBm	± 2 dB		MCS5	-83 dBm	± 2 dB
	MCS6	20 dBm	± 2 dB		MCS6	-77 dBm	± 2 dB
	MCS7	20 dBm	± 2 dB		MCS7	-74 dBm	± 2 dB
	MCS8	24 dBm	± 2 dB		MCS8	-96 dBm	± 2 dB
	MCS9	24 dBm	± 2 dB		MCS9	-95 dBm	± 2 dB
	MCS10	23 dBm	± 2 dB		MCS10	-92 dBm	± 2 dB
	MCS11	23 dBm	± 2 dB		MCS11	-90 dBm	± 2 dB
	MCS12	22 dBm	± 2 dB		MCS12	-86 dBm	± 2 dB
	MCS13	21 dBm	± 2 dB		MCS13	-83 dBm	± 2 dB
	MCS14	20 dBm	± 2 dB		MCS14	-77 dBm	± 2 dB
	MCS15	20 dBm	± 2 dB		MCS15	-74 dBm	± 2 dB

PBE-M5-300-ISO Antenna Information	
Gain	22 dBi
Max. VSWR	1.5:1
Built-In Mechanical Downtilt	± 20°

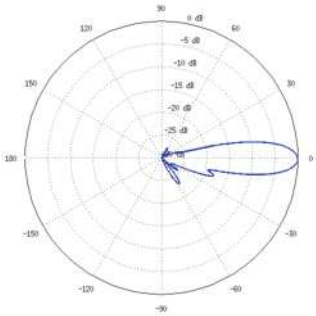
Return Loss



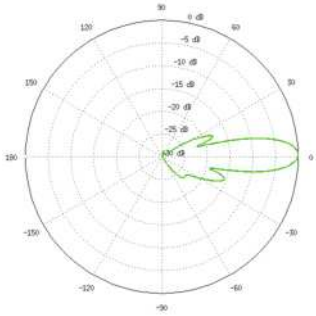
Vertical Azimuth



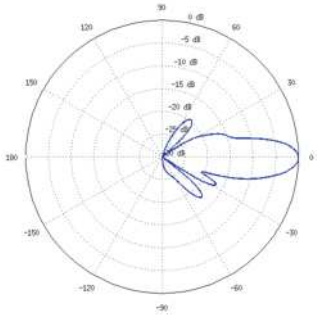
Vertical Elevation



Horizontal Azimuth



Horizontal Elevation



Specifications

PBE-M5-400-ISO System and Regulatory/Compliance	
Processor Specs	Atheros MIPS 74Kc, 560 MHz
Memory	64 MB DDR2, 8 MB Flash
Networking Interface	(1) 10/100/1000 Ethernet Port
Wireless Approvals	FCC, IC, CE
RoHS Compliance	Yes

PBE-M5-400-ISO Physical/Electrical/Environmental	
Dimensions	459 x 459 x 261 mm (18.07 x 18.07 x 10.28")
Weight	3.22 kg (7.10 lb)
Power Supply	24V, 0.5A Gigabit PoE
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)
Supported Voltage Range	18-26VDC
Max. Power Consumption	8W
Gain	25 dBi
Operating Frequency Worldwide USA	 5170 - 5875 MHz 5725 - 5850 MHz
Wind Loading	390 N @ 200 km/h (88 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
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

Specifications

PBE-M5-400-ISO Output Power: 24 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
802.11a	6 - 24 Mbps	24 dBm	± 2 dB	**802.11a**	6 - 24 Mbps	-94 dBm Min.	± 2 dB
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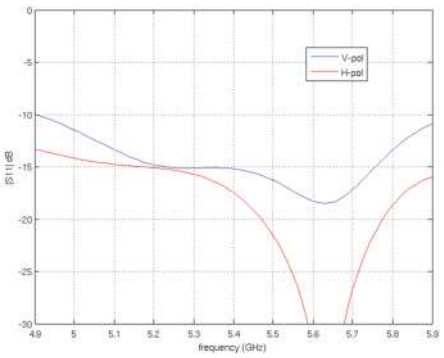
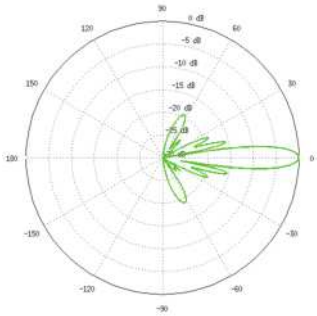
	MCS10	23 dBm	± 2 dB		MCS10	-92 dBm	± 2 dB
	MCS11	23 dBm	± 2 dB		MCS11	-90 dBm	± 2 dB
	MCS12	22 dBm	± 2 dB		MCS12	-86 dBm	± 2 dB
	MCS13	21 dBm	± 2 dB		MCS13	-83 dBm	± 2 dB
	MCS14	20 dBm	± 2 dB		MCS14	-77 dBm	± 2 dB
	MCS15	20 dBm	± 2 dB		MCS15	-74 dBm	± 2 dB

PBE-M5-400-ISO Antenna Information	
Gain	25 dBi
Max. VSWR	1.5:1
Built-In Mechanical Downtilt	± 20°

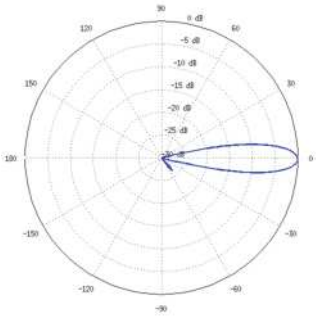
Return Loss



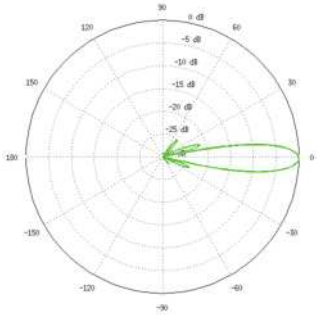
Vertical Azimuth



Vertical Elevation



Horizontal Azimuth



Horizontal Elevation