

## PowerBeam<sup>®</sup> ac

High-Performance airMAX<sup>®</sup> Bridge Models: PBE-5AC-300, PBE-5AC-400, PBE-5AC-500, PBE-5AC-620

Uniform Beamwidth Maximizes Noise Immunity

Innovative Mechanical Design

11),

High-Speed Processor for Superior Performance



## Overview

Ubiquiti Networks launches the latest generation of airMAX<sup>®</sup> CPE (Customer Premises Equipment), the PowerBeam<sup>®</sup> ac.

#### **Improved Noise Immunity**

The PowerBeam ac directs RF energy in a tighter beamwidth. With the focus in one direction, the PowerBeam ac 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**

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.

Featuring high performance and innovative mechanical design, the PowerBeam ac is versatile and cost-effective to deploy.

Software airOS<sup>°</sup>7

Sporting an all-new design for improved usability, airOS® v7 is the revolutionary operating system for Ubiquiti® airMAX ac products.

#### **Powerful Wireless Features**

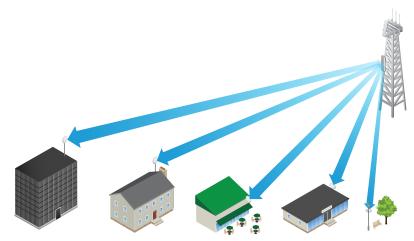
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
  - PtP: 10/20/30/40/50/60/80 MHz
  - PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (ACK Timing)
- Strongest WPA2 Security

#### **Usability Enhancements**

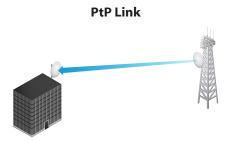
- Dynamic Configuration Changes
- Instant Input Validation
- HTML5 Technology
- Optimization for Mobile Devices
- Detailed Device Statistics
- Comprehensive Array of Diagnostic Tools, including Ethernet Cabling Test, RF Diagnostics, and airView<sup>®</sup> Spectrum Analyzer

#### **Application Examples**

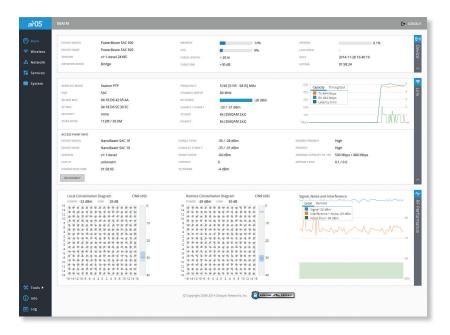
#### **PtMP Client Links**



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



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



# DATASHEET

#### **Advanced RF Analytics**

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 5 GHz spectrum and every received symbol to provide you with the most advanced RF analytics in the industry.

Data from the spectrum analysis and RF performance monitoring is displayed on the *Main* tab and airView Spectrum Analyzer of airOS V7.

#### **Real-Time Reporting**

The *Main* tab displays the following RF information:

- Persistent RF Error Vector Magnitude (EVM) constellation diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms
- Signal-to-Noise Ratio (SNR) time series plots

#### **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 wireless performance

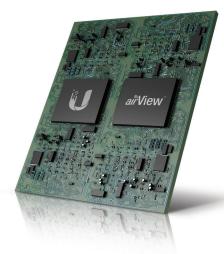
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

In airView, there are three spectral views, each of which represents different data.

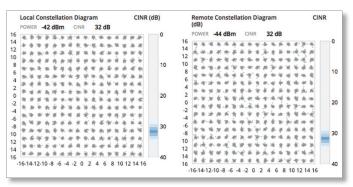
- Waterfall Aggregate energy collected for each frequency
- Waveform Aggregate energy collected
- Ambient Noise Level Background noise energy shown as a function of frequency

Available with a firmware upgrade to airOS v7.1, airView provides powerful spectrum analyzer functionality, eliminating the need to rent or purchase additional equipment for conducting site surveys.

#### **Multi-Radio Architecture**



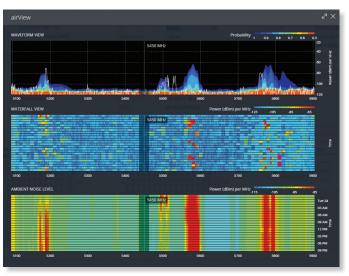
#### **Constellation Diagrams and CINR Histograms**



#### **SNR Time Series Plots**



#### **Dedicated Spectral Analysis**



## Technology airMAX®

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.

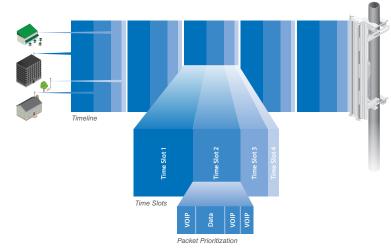
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

#### 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, airMAX ac products supports up to 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

#### airMAX ac TDMA Technology

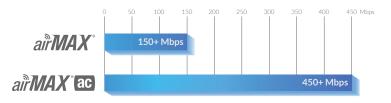


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

#### airMAX Network Scalability



#### **Superior Throughput Performance**



## **Hardware Overview**

#### **Innovative Mechanical Design**

- **Built-in mechanical tilt** All mounting brackets conveniently offer elevation adjustments:
  - PBE-5AC-300: ± 20° tilt
  - PBE-5AC-400/PBE-5AC-500: 20° uptilt and 10° downtilt
  - PBE-5AC-620: ± 15° tilt
- Quick assembly Minimal fasteners simplify installation.
- **Easy removal** The antenna feed can be detached with the push of a button.

#### 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. The hardware also prevents paint from being removed from the metal brackets for improved corrosion resistance.
- Protective radome Shields the radio from the elements. It is included with the PBE-5AC-500 and available as an optional accessory for the PBE-5AC-400.

## Models

Using airMAX ac technology, the PowerBeam ac supports up to 450+ Mbps real TCP/IP throughput. The PowerBeam ac launches with PtP functionality, and a client mode feature will be added with a future firmware upgrade.



## PowerBeam<sup>®</sup> ac

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

### PowerBeam<sup>®</sup> ac

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



## **PowerBeam**<sup>®</sup> 400 mm Radome

Model	Frequency	PBE-5AC-400	Dish Reflector
PBE-RAD-400	5 GHz	$\checkmark$	400 mm

A protective radome is available as an optional accessory for the PBE-5AC-400. It is also compatible with the PBE-M2-400 and PBE-M5-400.

## Models





## PowerBeam<sup>®</sup> ac

Model	Frequency	Gain	Dish Reflector
PBE-5AC-500	5 GHz	27 dBi	500 mm

## PowerBeam<sup>®</sup> ac

Model	Frequency	Gain	Dish Reflector
PBE-5AC-620	5 GHz	29 dBi	620 mm

## PowerBeam<sup>®</sup> ac Accessories

#### IsoBeam<sup>®</sup> Model: ISO-BEAM-620



The IsoBeam  $^{\!\!\!\!\!\!\!^{M}}$  is an isolator radome that is available as an optional accessory for the PBE-5AC-620 and other models:

- PowerBeam PBE-M5-620
- RocketDish<sup>™</sup>RD-5G30-LW

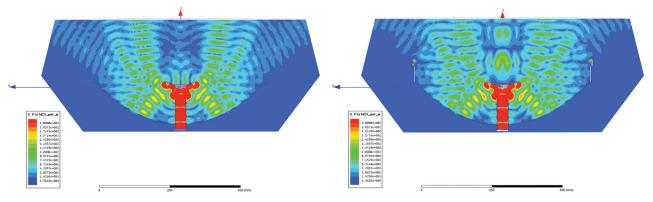
The innovative RF-choke perimeter of the IsoBeam delivers superior noise immunity in co-location deployments; its perimeter corrugation provides enhanced RF shielding. Compare the two near-field plots below, and note the breakthrough isolation performance of the IsoBeam.

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 IsoBeam

With IsoBeam



## Precision Alignment Kit

#### Model: PAK-620



The Precision Alignment Kit is available as an optional accessory for the PBE-5AC-620. It features 15° of azimuth adjustment and 15° of elevation adjustment to enable extremely accurate aiming for optimal PtP link performance.

The Precision Alignment Kit is also compatible with other dish antennas:

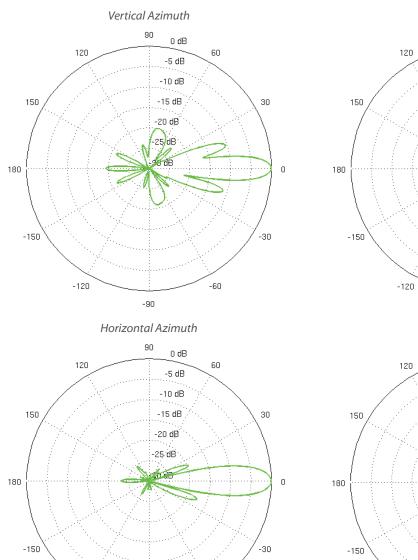
- airFiber® AF-5G30-S45
- PowerBeam PBE-M5-620
- RocketDish RD-5G30-LW

PBE-5AC-300								
Dimensions	325 x 325 x 256 mm (12.8 x 12.8 x 10.1")							
Weight	1.203 kg (2.65 lbs)							
Power Supply						24V, 0.5A Gigabit PoE		
Max. Power Consumption						5.5W		
Power Method					Passive PoE (	Pairs 4, 5+; 7, 8 Return)		
Supported Voltage Range						20-26VDC		
Operating Frequency	Worldwide	USA: U-NII-1	USA: U	NII-2A	USA: U-NII-2C	USA: U-NII-3		
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 53	50 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*		
Gain						22 dBi		
Networking Interface					(1) 10/1	100/1000 Ethernet Port		
Processor Specs					Ather	os MIPS 74Kc, 560 MHz		
Memory					64	MB DDR2, 16 MB Flash		
LEDs					(1) Pc	ower, (1) LAN, (4) WLAN		
Signal Strength LEDs				Software-	Adjustable to Correspond	l to Custom RSSI Levels		
Max. VSWR						1.5:1		
Channel Sizes		PtP Mode			PtMP Mode			
	10/20/3	30/40/50/60/80 MHz			10/20/30/40 M	Hz		
Polarization						Dual Linear		
Enclosure					Outdo	or UV Stabilized Plastic		
Mounting					Pol	e-Mount (Kit Included)		
Wind Loading					145.2 N @ 120 k	km/h (33 lbf @ 75 mph)		
Wind Survivability						120 km/h (75 mph)		
ESD/EMP Protection					Air: ±	24 kV, Contact: ± 24 kV		
Operating Temperature					-40	to 70° C (-40 to 158° F)		
Operating Humidity					5 t	o 95% Noncondensing		
Wireless Approvals						FCC, IC, CE		
RoHS Compliance						Yes		
Salt Fog Test			IEC 68	-2-11 (ASTM	B117), Equivalent: MIL-ST	D-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), Equiv	valent: ETS 300 019-1-4		
Wind-Driven Rain Test				ETS 300 01	9-1-4, Equivalent: MIL-ST	D-810 G Method 506.5		

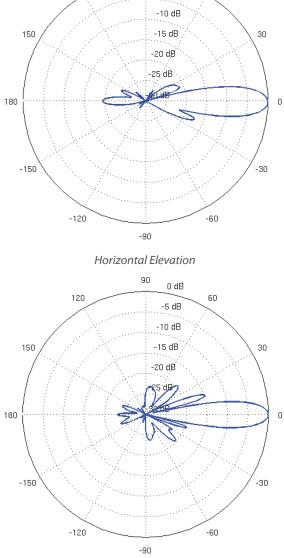
PBE-5AC-300 Output Power: 25 dBm										
TX Power Specifications RX Power Specifications										
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance			
	1x BPSK (1/2)	25 dBm	± 2 dB		1x BPSK (1/2)	-96 dBm Min.	± 2 dB			
	2x QPSK (1/2)	25 dBm	± 2 dB		2x QPSK (1/2)	-95 dBm	± 2 dB			
	2x QPSK (¾)	25 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB			
ac	4x 16QAM (1/2)	25 dBm	± 2 dB	ac	4x 16QAM (1/2)	-90 dBm	± 2 dB			
	4x 16QAM (¾)	25 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	±2dB			
airMAX	6x 64QAM (⅔)	25 dBm	± 2 dB	airMAX	6x 64QAM (3/3)	-83 dBm	±2dB			
ai	6x 64QAM (¾)	24 dBm	±2dB	<b>a</b> :	6x 64QAM (¾)	-77 dBm	± 2 dB			
	6x 64QAM (5%)	23 dBm	± 2 dB		6x 64QAM (%)	-74 dBm	±2dB			
	8x 256QAM (¾)	21 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB			
	8x 256QAM (%)	21 dBm	± 2 dB		8x 256QAM (%)	-65 dBm	±2dB			

PowerBeam<sup>®</sup>ac

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-60



Vertical Elevation

90

0 dB

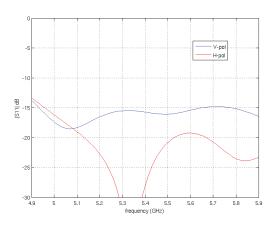
-5 dB

60

Return Loss

-90

-120

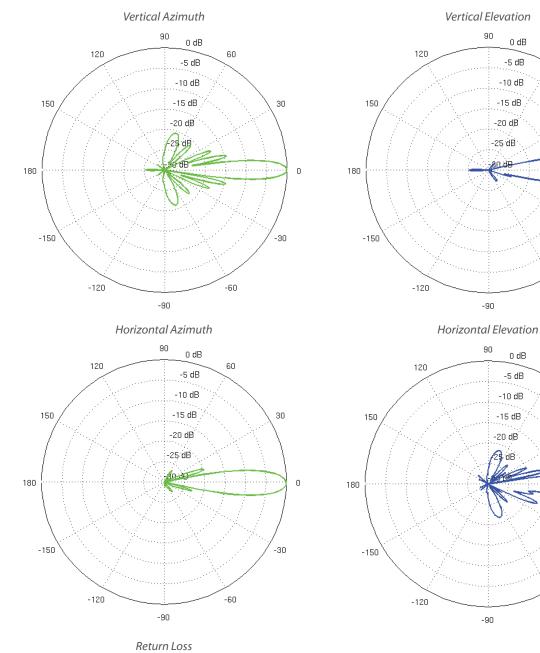


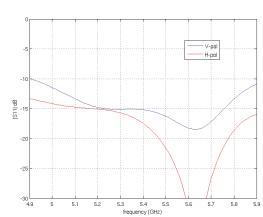


<table-container>İnensionsImage: Set in the se</table-container>	PBE-5AC-400								
Power SupplyImage: Supply SupplySupply SupplySupply Supply Suppl	Dimensions	420 x 420 x 275 mm (16.54 x 16.54 x 10.83")							
<table-container>Max. Power ConsumptionImage: Second Sec</table-container>	Weight	1.753 kg (3.87 lbs)							
Power MethodImage: Set of the	Power Supply	24V, 0.5A Gigabit PoE							
Supported Voltage RangeWorldwideUSA: U-NII-1USA: U-NII-2AUSA: U-NII-2USA: U-NII-3Gain5150 - 5875 MHz5150 - 5250 MHz*5470 - 5725 MHz*5725 - 5850 MHz*5725 - 5850 MHz*Gain5150 - 5250 MHz*5470 - 5725 MHz*5725 - 5850 MHz*Gain5470 - 5725 MHz*5725 - 5850 MHz*Networking Interface5470 - 5725 MHz*5670 MHz*Processor SpecsStellMemoryHtmMHP STAKC, 560 MHzSignal Strength LEDsSoftware-Adjustable to Correspond to Cusom RSS ILevelsMax. VSWR10/20/30/40 MHzIn/20/30/40 MHzSignal Strength LEDsPth ModeMax. VSWRIn/20/30/40 MHzSignal Strength LEDsPth ModeMax. VSWRIn/20/30/40 MHzSignal Strength LEDsIn/20/30/40 MHzMax. VSWRIn/20/30/40 MHzNontingIn/20/30/40 MHzNontingSite Adv Num (Ki Si Bif @ 75 mph)Mind LadingSite Adv Num (Ki Si Bif @ 75 mph)Site/Engreger </td <td>Max. Power Consumption</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8.5W</td>	Max. Power Consumption						8.5W		
<table-container>Operating PrequencyWorldwideUSA: U-NII-1USA: U-NII-2USA: U-NII-2USA: U-NII-3Gain5150-5875 MHz\$150-520 MHz*\$250-3350 MHz*\$470-5725 MHz\$725-5850 MHz*GainState-NII-2\$5470-5725 MHz\$725-5850 MHz*Networking InterfaceState-NII-2State-NII-2Procesor SpecsState-NII-2MHPS 74Kc, 560 MHzMemoryState-NII-2MHPS 74Kc, 560 MHzSignal Strength LEDsState-NII-2State-NII-2Signal Strength LEDsState-NII-2State-NII-2Max. VSWRPtP ModeYPolarizationPtP ModeYDual LinearInclosureState-NII-2State-NII-2State-NII-2Wind GadingState-NII-2State-NII-2State-NII-2Wind GadingState-NII-2State-NII-2State-NII-2StyleProtectionState-NII-2State-NII-2State-NII-2Operating TemperatureState-NII-2State-NII-2Operating TemperatureState-NII-2State-NII-2Operating TemperatureState-NII-2State-NII-2Operating TemperatureState-NII-2State-NII-2Operating Temperature<td< td=""><td>Power Method</td><td></td><td></td><td></td><td></td><td>Passive PoE (</td><td>Pairs 4, 5+; 7, 8 Return)</td></td<></table-container>	Power Method					Passive PoE (	Pairs 4, 5+; 7, 8 Return)		
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Max. VSWR1.5:1Max. VSWR11/20/30/40/50/60/80 MHz1.5:1Channel SizesPtP ModePtMP Mode10/20/30/40/50/60/80 MHz10/20/30/40 MHzDual LinearPolarizationOutdoor UV Stabilized PlasticEnclosureOutdoor UV Stabilized PlasticMountingPole-Mount (Kit Included)Wind LoadingS278.4 N @ 120 km/h (63 lbf @ 75 mph)Wind Survivability120 km/h (75 mph)ESD/EMP ProtectionS100 - T120 km/h (75 mph)Operating Temperature40 to 70° C (-40 to 158° F)Operating TemperatureSt o 95% NoncondensingWireless ApprovalsSt o 95% NoncondensingWireless ApprovalsIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibrature Shock TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-14UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-14	LEDs					(1) Pc	ower, (1) LAN, (4) WLAN		
Channel Sizes     PtP Mode     PtMP Mode       PChannel Sizes     PtP Mode     PtMP Mode       10/20/30/40/50/60/80 MHz     10/20/30/40 MHz     Dual Linear       Polarization     Control     Dual Linear       Enclosure     Outdoor UV Stabilized Plastic       Mounting     Outdoor UV Stabilized Plastic       Mind Loading     Control UP Stabilized Plastic       Wind Survivability     Stabilized Plastic       Vind Survivability     Control UP Stabilized Plastic       Operating Temperature     Stabilized Plastic       Operating Temperature     Stabilized Plastic       Wireless Approvals     Control Contrest       Noperating Humidity <td>Signal Strength LEDs</td> <td></td> <td></td> <td></td> <td>Software-</td> <td>Adjustable to Correspond</td> <td>to Custom RSSI Levels</td>	Signal Strength LEDs				Software-	Adjustable to Correspond	to Custom RSSI Levels		
Interface     Interface     Interface       10/20/30/40/50/60/80 MHz     10/20/30/40 MHz     Dual Linear       Polarization     Outdoor UV Stabilized Plastic       Enclosure     Outdoor UV Stabilized Plastic       Mounting     Pole-Mount (Kit Included)       Wind Loading     Ottodoor UV Stabilized Plastic       Wind Survivability     Pole-Mount (Kit Included)       Wind Survivability     Ottodoor UV Stabilized Plastic       Operating Temperature     120 km/h (63 lbf @ 75 mpl)       Operating Temperature     Air: ± 24 kV, Contact: ± 24 kV       Operating Temperature     Air: ± 24 kV, Contact: ± 24 kV       Operating Temperature     -40 to 70° C (40 to 158° F)       Operating Temperature     -40 to 70° C (40 to 158° F)       Vireless Approvals     Sto 559 % Noncondensing       Kireless Approvals     Sto 550 S Sto 55% Noncondensing       Salt Fog Test     Getter Store Sto 55% Noncondensing       Vibration Test     Getter Store Sto	Max. VSWR						1.5:1		
PolarizationDual LinearEnclosureOutdoor UV Stabilized PlasticMountingPole-Mount (Kit Included)Wind LoadingPole-Mount (Kit Included)Wind LoadingImmediated PlasticWind SurvivabilityImmediated PlasticSD/EMP ProtectionImmediated PlasticOperating TemperatureImmediated PlasticOperating HumidityImmediated PlasticWireless ApprovalsImmediated PlasticSalt Fog TestImmediated PlasticVibration TestImmediated PlasticUv TestImmediated PlasticUV TestImmediated PlasticImmediated Plastic <td< td=""><td>Channel Sizes</td><td></td><td>PtP Mode</td><td></td><td></td><td>PtMP Mode</td><td></td></td<>	Channel Sizes		PtP Mode			PtMP Mode			
EnclosureOutdoor UV Stabilized PlasticMountingOutdoor UV Stabilized PlasticMointingPole-Mount (Kit Included)Wind Loading278.4 N @ 120 km/h (63 lbf @ 75 mph)Wind SurvivabilityImage: Stabilized PlasticSD/EMP Protection120 km/h (75 mph)Operating Temperature-40 to 70° C (-40 to 158° F)Operating HumidityImage: Stabilized PlasticWireless ApprovalsStabilized PlasticSalt Fog TestImage: Stabilized PlasticVibration TestImage: Stabilized PlasticTemperature Shock TestImage: Stabilized PlasticUV TestImage: Stabilized Plastic		10/20/	30/40/50/60/80 MHz			10/20/30/40 M	Hz		
MountingPole-Mount (Kit Included)Wind LoadingPole-Mount (Kit Included)Wind Loading278.4 N @ 120 km/h (63 lbf @ 75 mph)Wind Survivability120 km/h (75 mph)ESD/EMP ProtectionAir: ± 24 kV, Contact: ± 24 kVOperating Temperature-40 to 70° C (-40 to 158° F)Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceFCC, IC, CESalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-14	Polarization						Dual Linear		
Wind Loading278.4 N @ 120 km/h (63 lbf @ 75 mph)Wind Survivability120 km/h (75 mph)ESD/EMP ProtectionAir: ± 24 kV, Contact: ± 24 kVOperating Temperature-40 to 70° C (-40 to 158° F)Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceYesSalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-14Temperature Shock TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Enclosure					Outdo	or UV Stabilized Plastic		
Wind Survivability120 km/h (75 mph)ESD/EMP ProtectionAir: ± 24 kV, Contact: ± 24 kVOperating Temperature-40 to 70° C (-40 to 158° F)Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceYesSalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-1Temperature Shock TestIEC 68-2-14 do °C (104° F), Equivalent: ETS 300 019-1-4	Mounting					Pol	e-Mount (Kit Included)		
ESD/EMP ProtectionAir: ± 24 kV, Contact: ± 24 kVOperating Temperature40 to 70° C (-40 to 158° F)Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceFCC (-10, CE)Salt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5UV TestIEC 68-2-6 A40° C (104° F), Equivalent: ETS 300 019-1-4	Wind Loading					278.4 N @ 120 k	(m/h (63 lbf @ 75 mph)		
Operating Temperature-40 to 70° C (-40 to 158° F)Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceFCCSalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Temperature Shock TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Wind Survivability						120 km/h (75 mph)		
Operating Humidity5 to 95% NoncondensingWireless ApprovalsFCC, IC, CERoHS ComplianceFCC, IC, CESalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Temperature Shock TestIEC 68-2-10UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	ESD/EMP Protection					Air: ±	24 kV, Contact: ± 24 kV		
Wireless ApprovalsFCC, IC, CERoHS ComplianceFCC, IC, CESalt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Temperature Shock TestIEC 68-2-10UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Operating Temperature					-40	to 70° C (-40 to 158° F)		
RoHS Compliance Yes   Salt Fog Test IEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5   Vibration Test IEC 68-2-10   Temperature Shock Test IEC 68-2-10   UV Test IEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Operating Humidity					5 t	o 95% Noncondensing		
Salt Fog TestIEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5Vibration TestIEC 68-2-6Temperature Shock TestIEC 68-2-14UV TestIEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Wireless Approvals						FCC, IC, CE		
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	RoHS Compliance						Yes		
Temperature Shock Test IEC 68-2-14   UV Test IEC 68-25 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Salt Fog Test			IEC 68	-2-11 (ASTM	B117), Equivalent: MIL-ST	D-810 G Method 509.5		
UV Test IEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4	Vibration Test						IEC 68-2-6		
	Temperature Shock Test						IEC 68-2-14		
Wind-Driven Rain Test ETS 300 019-1-4, Equivalent: MIL-STD-810 G Method 506.5	UV Test				IEC 68-	2-5 at 40° C (104° F), Equiv	valent: ETS 300 019-1-4		
	Wind-Driven Rain Test				ETS 300 0	19-1-4, Equivalent: MIL-ST	D-810 G Method 506.5		

	PBE-5AC-400 Output Power: 25 dBm											
	TX Power Speci	fications			RX Power Spe	cifications						
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance					
	1x BPSK (1/2)	25 dBm	± 2 dB		1x BPSK (1/2)	-96 dBm Min.	± 2 dB					
	2x QPSK (1/2)	25 dBm	± 2 dB		2x QPSK (1/2)	-95 dBm	± 2 dB					
	2x QPSK (¾)	25 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB					
ac	4x 16QAM (½)	25 dBm	± 2 dB	ac	4x 16QAM (1/2)	-90 dBm	± 2 dB					
	4x 16QAM (¾)	25 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB					
airMAX	6x 64QAM (⅔)	25 dBm	± 2 dB	airMAX	6x 64QAM (3)	-83 dBm	± 2 dB					
ai	6x 64QAM (¾)	24 dBm	±2dB	ai	6x 64QAM (¾)	-77 dBm	± 2 dB					
	6x 64QAM (%)	23 dBm	± 2 dB		6x 64QAM (5%)	-74 dBm	± 2 dB					
	8x 256QAM (¾)	21 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB					
	8x 256QAM (%)	21 dBm	± 2 dB		8x 256QAM (%)	-65 dBm	± 2 dB					

DATASHEET **PowerBeam** ac







90

0 dB

-5 dB

-10 dB

-15 dB

-20 dB

-25 dB

n dB

90

0 dB

-5 dB

-10 dB

-15 dB

-20 dB

29 dB

60

-60

60

-60

30

-30

30

-30

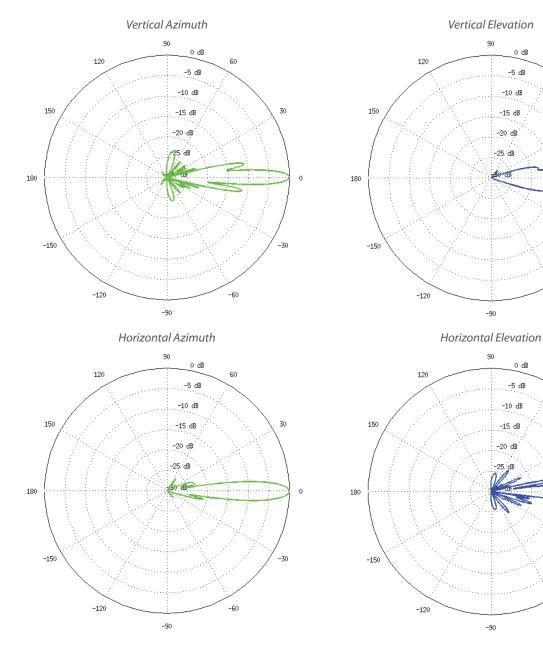
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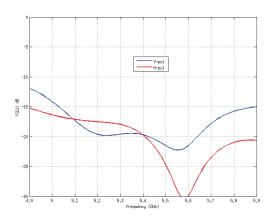
PBE-5AC-500								
Dimensions	Ra	dome Excluded			Radome Includ	led		
	520 x 520 x 308	3 mm (20.47 x 20.47 x 12.	13")	52	5 x 525 x 315 mm (20.67	x 20.67 x 12.40")		
Weight	Ra	dome Excluded			Radome Includ	led		
	2	.35 kg (5.18 lb)			3.15 kg (6.95 l	b)		
Power Supply						24V, 0.5A Gigabit PoE		
Max. Power Consumption						8.5W		
Power Method					Passive PoE	(Pairs 4, 5+; 7, 8 Return)		
Supported Voltage Range						20-26VDC		
Operating Frequency	Worldwide	USA: U-NII-1	USA: U·	-NII-2A	USA: U-NII-2C	USA: U-NII-3		
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 53	50 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*		
Gain						27 dBi		
Networking Interface					(1) 10/	100/1000 Ethernet Port		
Processor Specs					Ather	os MIPS 74Kc, 720 MHz		
Memory					128	MB DDR2, 16 MB Flash		
LEDs					(1) Po	ower, (1) LAN, (4) WLAN		
Signal Strength LEDs				Software-	Adjustable to Correspond	to Custom RSSI Levels		
Max. VSWR						1.5:1		
Channel Sizes		PtP Mode			PtMP Mode			
	10/20/	30/40/50/60/80 MHz			10/20/30/40 N	IHz		
Polarization						Dual Linear		
Enclosure					Outdo	or UV Stabilized Plastic		
Mounting					Ро	le-Mount (Kit Included)		
Wind Loading					264.6 N @ 96	km/h (60 lbf @ 60 mph)		
Wind Survivability						96 km/h (60 mph)		
ESD/EMP Protection					Air: ±	24 kV, Contact: ± 24 kV		
Operating Temperature					-40	to 70° C (-40 to 158° F)		
Operating Humidity					5 t	o 95% Noncondensing		
Wireless Approvals						FCC, IC, CE		
RoHS Compliance						Yes		
Salt Fog Test			IEC 68	8-2-11 (ASTM	B117), Equivalent: MIL-ST	D-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), Equi	valent: ETS 300 019-1-4		
Wind-Driven Rain Test				ETS 300 0	19-1-4, Equivalent: MIL-ST	D-810 G Method 506.5		

	PBE-5AC-500 Output Power: 24 dBm											
	TX Power Speci	fications			RX Power Spee	cifications						
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance					
	1x BPSK (1/2)	24 dBm	± 2 dB		1x BPSK (1/2)	-96 dBm	± 2 dB					
	2x QPSK (1/2)	24 dBm	± 2 dB		2x QPSK (1/2)	-95 dBm	± 2 dB					
	2x QPSK (¾)	24 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB					
ac	4x 16QAM (1/2)	24 dBm	± 2 dB	ac	4x 16QAM (1/2)	-90 dBm	± 2 dB					
	4x 16QAM (¾)	24 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB					
airMAX	6x 64QAM (3)	23 dBm	± 2 dB	airMAX	6x 64QAM (3)	-83 dBm	± 2 dB					
ai	6x 64QAM (¾)	22 dBm	±2dB	ai	6x 64QAM (¾)	-77 dBm	± 2 dB					
	6x 64QAM (5%)	21 dBm	± 2 dB		6x 64QAM (5%)	-74 dBm	± 2 dB					
	8x 256QAM (¾)	20 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB					
	8x 256QAM (%)	19 dBm	± 2 dB		8x 256QAM (%)	-65 dBm	± 2 dB					

DATASHEET



Return Loss





0 dB

60

-60

60

-60

0 dB

30

-30

30

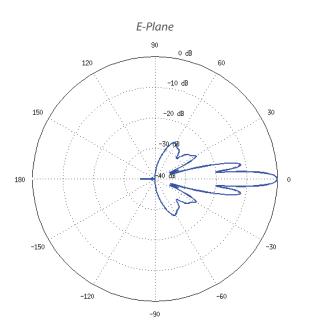
-30

0

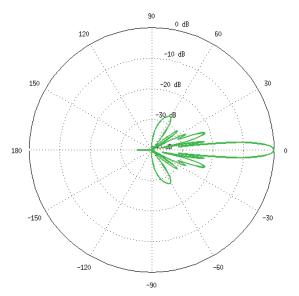
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		PBE-5AC-6	20					
Dimensions	620 x 620 x 386 mm (24.41 x 24.41 x 15.2")							
Weight		6.4 kg (14.11 lbs)						
Power Supply						24V, 0.5A Gigabit PoE		
Max. Power Consumption						8.5W		
Power Method					Passive PoE (	Pairs 4, 5+; 7, 8 Return)		
Supported Voltage Range						20-26VDC		
Operating Frequency	Worldwide	USA: U-NII-1	USA: U	-NII-2A	USA: U-NII-2C	USA: U-NII-3		
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 53	50 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*		
Gain						29 dBi		
Networking Interface					(1) 10/1	100/1000 Ethernet Port		
Processor Specs					Ather	os MIPS 74Kc, 720 MHz		
Memory					128	MB DDR2, 16 MB Flash		
LEDs					(1) Pc	ower, (1) LAN, (4) WLAN		
Signal Strength LEDs				Software-	Adjustable to Correspond	to Custom RSSI Levels		
Max. VSWR						1.6:1		
Channel Sizes		PtP Mode			PtMP Mode			
	10/20/	30/40/50/60/80 MHz			10/20/30/40 M	Hz		
Polarization						Dual Linear		
Enclosure					Outdo	or UV Stabilized Plastic		
Mounting					Pol	e-Mount (Kit Included)		
Wind Loading	Ra	dome Excluded			Radome Include	ed		
wind Loading	1510 N @ 200	km/h (340 lbf @ 125 mph	)	1	830 N @ 200 km/h (411 lb	f @ 125 mph)		
Wind Survivability						200 km/h (125 mph)		
ESD/EMP Protection					Air: ±	24 kV, Contact: ± 24 kV		
Operating Temperature					-40	to 70° C (-40 to 158° F)		
Operating Humidity					5 t	o 95% Noncondensing		
Wireless Approvals						FCC, IC, CE		
RoHS Compliance						Yes		
Salt Fog Test			IEC 68	8-2-11 (ASTM	B117), Equivalent: MIL-ST	D-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), Equiv	valent: ETS 300 019-1-4		
Wind-Driven Rain Test				ETS 300 0	19-1-4, Equivalent: MIL-ST	D-810 G Method 506.5		

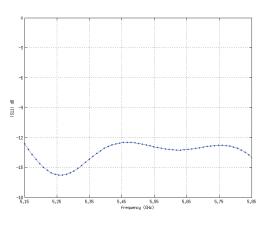
PBE-5AC-620 Output Power: 24 dBm							
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (1/2)	24 dBm	± 2 dB	airMAX ac	1x BPSK (1/2)	-96 dBm Min.	± 2 dB
	2x QPSK (1/2)	24 dBm	± 2 dB		2x QPSK (1/2)	-95 dBm	± 2 dB
	2x QPSK (¾)	24 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	24 dBm	± 2 dB		4x 16QAM (1/2)	-90 dBm	± 2 dB
	4x 16QAM (¾)	24 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (⅔)	23 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	23 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (5%)	22 dBm	± 2 dB		6x 64QAM (%)	-74 dBm	± 2 dB
	8x 256QAM (¾)	20 dBm	$\pm 2 \text{ dB}$		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (%)	20 dBm	$\pm 2 dB$		8x 256QAM (%)	-65 dBm	$\pm 2 dB$



H-Plane

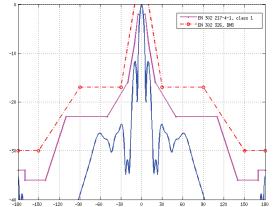


Return Loss

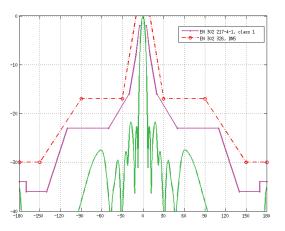


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H-Plane Specs





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