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**Custom 2.4 and 5 GHz WLAN Accessories  
of Exceptional Quality and Value**

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| - 800/900 MHz and 1700-2500 MHz Wideband Low Profile Ceiling Mount Omnidirectional | - XtremeWave™ 2.4 GHz ISM Directional Panel     |
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- XtremeWave™ 2.4 GHz ISM and 1.8-1.9 GHz PCS Parabolic Reflector Antenna Series

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- 2.4 GHz and 2.5 GHz MMDS Omnidirectional Tape Mount Antenna Series
- 2.4 GHz Miniature Magnetic Mount Antenna Series
- 2.4 GHz ISM Mobile and WLAN Permanent Mount Mobile Series
- 800/900 MHz, PCS and 2.4 GHz ISM Low Profile Vertical (MLPV) Antenna Series
- Portable Duck, 902 MHz and 2.4 GHz

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- 2.4 GHz ISM Miniature Stud Mount Omnidirectional



**Educating The Wireless World.**

**Comprehensive WLAN Training on the Cisco Aironet Product Set**

- ▾ **WLAN Fundamentals**
- ▾ **WLAN Site Survey**
- ▾ **WLAN Security**
- ▾ **WLAN Essentials of Bridging**
- ▾ **Advanced Wireless Bridging**

**GigaWave Technologies is an authorized Cisco Learning Partner and provides IT professionals with comprehensive knowledge to design, implement, manage and secure Cisco Aironet Wireless LAN solutions for enterprise applications.**

**Check out our current schedule at [www.giga-wave.com](http://www.giga-wave.com) or call 375.0085 to arrange a private class for your company.**



## Wireless Networking Accessories of Exceptional Quality and Value

TerraWave Solutions is a value added distributor specializing in 2.4 and 5 GHz wireless LAN and wireless bridging solutions. Focusing on specialty wireless LAN accessories for custom applications, TerraWave integrates components based on the unique requirements of every client. Our ultimate goal is to provide clients with unrivaled expertise and cutting-edge technologies

needed to design custom wireless LAN systems of exceptional quality and value.

Based in San Antonio, Texas, TerraWave Solutions has assembled a team of high-caliber wireless networking experts who can help wireless LAN and bridging resellers successfully advance in the dynamic wireless networking world.

## Just The Basics or Completely Customized – Wireless LAN Accessories For Any Application

TerraWave Solutions' complete line of quality wireless products is compatible with major wireless vendors. Just the basics or completely customized, we offer a wide variety of wireless LAN accessories including:

- Antennas
- Custom Cable Assemblies
- Connectors
- Cable
- Site Survey Tools
- Mounting Solutions
- NEMA Enclosures
- Amplifiers
- Attenuators
- Lightning Protection
- Splitters
- Towers
- WLAN Security Software
- WLAN Administrative Tools

## End-To-End Wireless LAN Services

With more than 100-years of combined Wireless LAN expertise, TerraWave's engineers also provide:

- High-caliber Tech Support
- Consulting
- Integration and Staging
- Set-up and Configuration
- Site Survey and Installation

## Easy Order and Quick Delivery

TerraWave wireless experts are waiting to take your order via phone or fax, Monday through Friday, 8:00 a.m. to 5:00 p.m. CST. Browse products 24-hours a day at our on-line store at [www.terrawave.com](http://www.terrawave.com).



TerraWave  
Solutions  
Accessories  
and  
Products



## TerraWave Solutions NEMA Rated Enclosure

NEMA rated enclosures are commonly used in harsh environments or to protect wireless LAN equipment from damage caused by tampering. TerraWave's NEMA rated solutions make it easy to mount and protect the most commonly used radio equipment on the market today. From basic to com-

pletely customized, TerraWave offers NEMA accessories for any application including heated or cooled enclosures and units with or without windows. From battery operated to basic plenum enclosures, TerraWave provides custom NEMA solutions of extreme quality and value.

### Features and Benefits:

- Protect RF equipment from elements, theft and tampering.
- Available in a variety of NEMA ratings.\*
- Enclosures available for most manufacturer's products.
- Lightweight, small footprint and aesthetically pleasing design.
- A variety of custom options including heating and cooling elements available.
- Seams continuously welded and ground smooth.
- Large perimeter opening facilitates component installation, maintenance or conversion.
- Fastening holes on back of unit for direct mounting.
- Furnished hardware kit includes panel mounting screws and grounding hardware.
- Installation instructions provided.
- Textured light gray polyester powder coating on all phosphatized surfaces and/or polyester coating.
- Excellent value. Superior performance at a competitive price.



**TW-NEMA-IND-001**

### Available Options:

- Key Lock
- Thermostat
- Lightning Protection
- Jumper Cables
- Terminators
- Power Source
- Antenna Splitter
- Cooling Fan
- Heater

NEMA Rated Enclosures

	Shipping Weight	Size	NEMA Rating	Construction	Description	Thermostat	Antenna Connections	Diversity Connection
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<b>TW-NEMA-004</b>	12 lbs.	12 x 12 x 6	NEMA 4	Steel	Perforated Back Panel	Optional	RP-TNC and N-Style	Yes
<b>TW-NEMA-C-001</b>	12 lbs.	10 x 8 x 6	NEMA 4	Steel	Fan System	Yes	RP-TNC and N-Style	Yes
<b>TW-NEMA-IND-001</b>	10 lbs.	10 x 8 x 6	NEMA 12	Steel	Window	Optional	RP-TNC and N-Style	Yes
<b>TW-NEMA-002X</b>	10 lbs.	10 x 8 x 6	NEMA 4	Steel	N/A	Optional	RP-TNC and N-Style	Yes

\* Prior to custom fabrication.



## TerraWave Solutions Splitter

The TerraWave antenna splitters are designed to divide or “split” the RF signal from one radio to multiple antennas. The splitter is perfect for applications that require RF coverage of two different areas with a single access point or bridge. TerraWave’s splitters are designed for the 2.4GHz

radio marketplace and come standard with both RPTNC and N-Style connectors. The unit’s rugged design and small footprint make it ideal for most bridging and LAN applications.\*

### Features and Benefits:

- Cover separate areas with single access point or bridge.
- Compact, lightweight design.
- Easy to mount.
- RPTNC and N-Style connectors included.
- Excellent value. Superior performance at a competitive price.

### Part Numbers:

<b>TW-TWSK-002</b>	2 Way Splitter with N-Style
<b>TW-TWSK-003</b>	2 Way Splitter with RPTNC
<b>TW-TWSK-004</b>	4 Way Splitter with N-Style



**2 way Splitter with RPTNC**

Splitter

\*Will require two splitters per AP when using diversity.

Frequency MHz	Isolation, dB			Insertion Loss, dB Above 3.0 dB			Phase Unbalance Degrees			Amplitude Unbalance, dB		
	L Typ. Min.	M Typ. Min.	U Typ. Min.	L Typ. Max.	M Typ. Max.	U Typ. Max.	L Max.	M Max.	U Max.	L Max.	M Max.	U Max.
$f_L - f_U$												
2000-4200		25	19		0.40	0.80			6.00			0.40

L=low range( $f_L$  to  $10f_L$ ) M=mid range( $10f_L$  to  $f_U/2$ ) U=upper range( $f_U/2$  to  $f_U$ )

## TerraWave Solutions Attenuators

TerraWave Solution's rotary and fixed attenuators are the standard for durable, precise signal control. The rotary attenuator is an excellent tool for site survey engineers to simulate loss associated with wireless accessories. With 50 Ohms of resistance ranging from 1 – 10 dB, based on 1 dB increments, the rotary attenuator comes with a snap action detent which firmly locks in the desired attenuation indicated on the control knob. Low voltage standing wave ratio (VSWR) and insertion loss is assured throughout the range with tightly controlled pad values and machining tolerances.

### Features and Benefits (Rotary Attenuator):

- Simulate 10 different attenuations. Indispensable tool to simulate loss from 1 – 10 db during site survey process.
- Field adjustable. Instantly change attenuation with twist of control knob.
- Compact design.
- Versatile enough to be used with any radio manufacturers products. May require jumper cable in some instances.
- Supports different connectors.

### Specifications for Rotary Attenuator

Frequency Range	DC-3 GHz
dB Value	1-10 by 1 dB
Connectors	Reverse Polarity TNC
Impedance	50 Ohms
VSWR	1.5:1 max
Accuracy	1-10 dB, .5 dB
Insertion Loss	.5 dB @ 3 GHz
Temperature	-20 to +150F
Average Power	2 Watts (25 C)
Peak Power	100 Watt Pulse
Rotation	30 degrees
Weight	7 ounces
Housing	Irradiated Aluminum

TerraWave also offers a variety of fixed attenuators. Once loss has been determined, the fixed attenuator is the perfect solution to attenuate the RF signal in custom wireless solutions and is versatile enough for any wireless application.



**RSA-3510**



**TW-FP-50-3RPTN**

### Features and Benefits (Fixed Attenuator):

- Perfect to attenuate RF signal in custom wireless solutions.
- Compact design.
- Excellent value. Superior performance at a competitive price.

### Specifications for Fixed Attenuator

Attenuation Values	1-10 dB, any 1 dB increment
Impedance	50 Ohms
Frequency Range	DC to 2,000 MHz
Accuracy 500 MHz	1-20 dB, ± 0.3 dB 21-60 dB, ± 3%
Accuracy 1000 MHz	1-20 dB, ± 0.5 dB
Accuracy 2000 MHz	1-20 dB, ± 1 dB
Max VSWR 500 MHz	1.2:1
Max VSWR 1000 MHz	1.2:1
Max VSWR 2000	1.5:1
Power CW	1 Watt
Power Peak	750 Watts, 3µSec. Pulse
Operating Temperature	-20° to +125° C
Connector Types	BNC, N, SMA, TNC, RPTNC





### Part Numbers

<b>TW-FP-50-1RPTN</b>	1 dBi Fixed Attenuator w/RPTNC
<b>TW-FP-50-2RPTN</b>	2 dBi Fixed Attenuator w/RPTNC
<b>TW-FP-50-3RPTN</b>	3 dBi Fixed Attenuator w/RPTNC
<b>TW-FP-50-6RPTN</b>	6 dBi Fixed Attenuator w/RPTNC
<b>TW-FP-50-9RPTN</b>	9 dBi Fixed Attenuator w/RPTNC
<b>TW-FP-50-10RPTN</b>	10 dBi Fixed Attenuator w/RPTNC
<b>RSA-3510</b>	Rotary Step - 0 - 10 dBi RPTNC (Available with N-Style, BNC and SMA)



## TerraWave Solutions Lightning Suppressor

The all-new TerraWave lightning suppressor is a gas discharge tube suppressor and features wide-band operation up to 3 GHz. Simply attach TerraWave's lightning protector to an access point and help protect an entire network, outdoor antennas and other wireless equipment from the destructive power of lightning.

The lightning suppressor is available with RPTNC and N-Style connectors. The rugged suppressor comes with an O-ring seal for mounting on a wall with the enclosed stainless steel mounting bracket or when utilizing one of TerraWave Solution's custom NEMA enclosures.

### Features and Benefits:

- In-line design offers easy installation.
- 0-3 GHz operation.
- Ground lug and terminal included.
- Stainless steel mounting bracket included.
- Excellent value. Superior performance at a competitive price.

### Electrical Specifications:

#### Frequency Range:

0 - 3 GHz

#### VSRW:

1:1.3 Max (0 - 3 GHz)

#### Insertion Loss:

0.4 dB Max (0 - 3 GHz)

#### Impedance:

50 Ohm

#### Gas Tube Breakdown Voltage:

90 V  $\pm$  20%

#### Gas Tube Impulse Breakdown Voltage:

1000 V  $\pm$  20%

#### Gas Tube Insulation Resistance:

10,000 MW

#### Maximum Withstand Current:

5 KV

#### RF Power Rating (CW):

10 W Continuous

The unit's replaceable gas tube element, multi-strike capability and fast response time make it suitable for a wide range of applications. A ground lug and terminal, which provide superior grounding, are also provided directly on the lightning suppressor housing.



TW-LP-RPTNC-001

### Mechanical Specifications:

#### Connectors:

RPTNC and N-Style

#### Connector Body Material:

Nickel Plated Brass

#### Body Material:

Anodized Aluminum

#### Pin Material:

Gold Plated Brass

#### "O"-Ring Material:

Rubber

#### Bracket Material:

Stainless Steel

#### Dimensions (max):

84.2 mm x 30.0 mm x 20.0

### Part Numbers

**TW-LP-50-RPTNC-001** Reverse Polarity TNC

**TW-LP-002N** N-Style

Lightning  
Suppressor



## TerraWave Solutions Cisco Aironet 350 Site Survey Kit

TerraWave Solutions, in partnership with Cisco Systems, has developed the Cisco Aironet 350 In-Building Site Survey Kit. Designed to provide System Engineers with cutting-edge survey capabilities, the In-Building Site Survey Kit is loaded with accessories crucial to performing professional site surveys.

TerraWave Solutions offers two versions of the Cisco In-Building Site Survey Kit. The complete kit is available in its entirety, or with only TerraWave hardware. Individually purchasing the same, high-quality products contained in the kit will cost hundreds of dollars more.

### Everything you need for a professional site survey.

#### Features and Benefits:

- Cisco Systems Approved
- Easy to access, organize and inventory.
- Designed for high-caliber site survey professionals.
- Totally Loaded. The most complete Site Survey Kit on the market.
- Easy to Transport, Organize and Inventory.
- One durable and transportable, airline approved carrying case.
- Custom cut foam inserts to protect and organize each individual item.
- Wheels and handle for easy transport.
- Total weight of complete kit is 67 pounds.
- Dimensions: Inside: 29" x 17 7/8" x 10 1/2", Outside: 32" x 20" x 11 5/16"
- Durable and secured with industrial safety lock.



#### Designed to Handle an Array of Industries and Environments:

- |               |                  |
|---------------|------------------|
| Hospitality   | Education        |
| Oil & Gas     | Retail           |
| Manufacturing | Office Buildings |
| Distribution  | Military         |
| Healthcare    | Transportation   |

Component	Qty/Part	Description
Cisco	2 AIR-AP352E2RA-K9350	Series 11 Mbps DSSS Access Point
Cisco	2 AIR-PCM352	350 Series Adapter DSSS PC Card Fixed Antenna
Cisco	1 AIR-LMC352	350 Series Adapter DSSS PC Card – No Antenna
Cisco	4 AIR-ANT4941	2.2 dBi Dipole Antenna (Rubber Duck)
Cisco	2 AIR-ANT5959	2.0 dBi Diversity Omni Ceiling Mount Antenna
Cisco	2 AIR-ANT2506	5.2 dBi OmniDirectional Mast Mount Antenna
Cisco	1 AIR-ANT3213	5.2 dBi Pillar-Mount Diversity Omni Antenna
Cisco	2 AIR-ANT2012	6.0 dBi Diversity Patch Wall Mount Antenna
Cisco	2 AIR-ANT3549	8.5 dBi Hemispherical Patch Antenna
Cisco	2 AIR-ANT1949	13.5 dBi Yagi Mast Mount Antenna
Cisco	2 AIR-ACC55959-072	Serial Cable for Console Port Configuration
Cisco	2 AIR-420-1625-0500	RP-TNC assembly (5 inches)

Site Survey Kit

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## TerraWave Solutions Cisco Aironet 350 Site Survey Kit (cont'd.)

<b>Component</b>	<b>Qty/Part</b>	<b>Description</b>
TerraWave	2 TW-SSBP-001	Site Survey Battery Pack for 350 AP with Inline
TerraWave	2 TW-IPMB-001	Industrial Purpose Mounting Brackets
TerraWave	2 TW-RSA-3510	Attenuator
TerraWave	1 TW-AATC-001	Airline Approved Travel Case with foam cutouts for all listed equipment
TerraWave	1 TW-SSMW-001	Site Survey Measuring Wheel
TerraWave	1 TW-ASKIT-001	Accessories for Survey - includes: Duct Tape, Zip Ties, Velcro, Pens, 50 AP Mounting Location Markers, 2 Colored Tape rolls



## TerraWave Solutions Site Survey Battery Pack

The revolutionary TerraWave Site Survey Battery Pack, Model TW-SSBP-001, provides up to 8-hours of cable free surveying. Since TerraWave's battery pack eliminates cumbersome power cables from the site survey process, it's a more reliable and safe alternative to extension cords. The battery pack is designed to power leading manufac-

turers' radio products, including Cisco, Intel, Proxim, Symbol and Lucent. When used with TerraWave Solution's Industrial Mounting Kit and our Inline Injector cable, site survey engineers are prepared to conduct a professional and accurate site survey for any wireless networking application.

### Features and Benefits:

- Provides both 5VDC and 12VDC outputs.
- Designed to provide DC power for a full 8-hour shift of surveying.
- AC Smart Charger provided for recharging.
- Case made from aluminum to minimize weight.
- Shipping weight is 9lbs.
- Excellent value. Superior performance at a competitive price.
- Provides leading-edge site survey capabilities.

Holes are pre-drilled in lid to allow use with TerraWave Solution's Industrial Purpose Access Point and Bridge Mounting Kit (part # TW-IPMB-001).



**TW-SSBP-001**

TerraWave's Inline Power Injector cable sold separately for the Cisco Systems 350 Series. Symbol, Lucent, Proxim, Enterasys and other power cables also sold separately.

### Part Numbers

<b>TW-SSBP-001</b>	Site Survey Battery Pack
<b>SDSO12-1010-53</b>	Extra Smart Charger
<b>TW-Inline-001</b>	Inline Power for Cisco 350
<b>TW-IRX-TER-014</b>	Enterasys Power Cable
<b>TW-LU-PWR</b>	Lucent (Orinoco/Avaya) Power Cable
<b>TW-PROX-PWR</b>	Proxim Power Cable
<b>TW-SSBP-CAB1</b>	340 Bridge Power Cable
<b>TW-SYM-PWR</b>	Symbol AP Power Cable (41XX)

Site Survey Battery Pack



## TerraWave Solutions Cable, Connectors and Assemblies

TerraWave Solutions offers a vast array of interchangeable cable, connectors and cable assemblies. Using quality products, TerraWave technicians can create custom cable connections and lengths to meet the specifications of the most demanding wireless install. To meet TerraWave's quality

control requirements, prior to shipment, all cable assemblies undergo a five-point testing procedure. TerraWave Solutions stocks the major manufacturers' connectors so customization and prompt delivery is part of our value added service.

### Features and Benefits:

- High quality, low loss cable.
- All cable assemblies undergo 5-point quality check.
- Wide variety of connectors to fit most applications.
- In-stock products and immediate delivery.

### LMR600 Connectors:

<b>RPTNC-600J</b>	RPTNC Jack
<b>RPTNC-600P</b>	RPTNC Plug
<b>N-600P</b>	N Plug
<b>N-600J</b>	N Jack

### LMR100a/RG316 Connectors:

<b>RPTNC-100J</b>	RPTNC Jack
<b>RPTNC-100P</b>	RPTNC Plug
<b>RPTNC-100BH</b>	RPTNC Bulkhead
<b>N-100P</b>	N Plug
<b>N-100J</b>	N Jack
<b>N-100BH</b>	N Bulkhead
<b>RPBNC-100J</b>	RP BNC Jack
<b>RPBNC-100P</b>	RP BNC Plug
<b>RPBNC-100BH</b>	RP BNC Bulkhead
<b>SMA-100P</b>	SMA Plug
<b>SMA-100J</b>	SMA Jack
<b>BNC-100J</b>	BNC Jack
<b>BNC-100P</b>	BNC Plug
<b>BNC-100BH</b>	BNC Bulkhead
<b>LU-100J</b>	Lucent (Orinoco/Avaya) Connector

### LMR195/RG58 Connectors:

<b>RPTNC-195J</b>	RPTNC Jack
<b>RPTNC-195P</b>	RPTNC Plug
<b>RPTNC-195BH</b>	RPTNC Bulkhead
<b>N-195P</b>	N Plug

### LMR195/RG58 Connectors (cont'd.):

<b>N-195J</b>	N Jack
<b>N-195BH</b>	N Bulkhead
<b>RPBNC-195J</b>	RP BNC Jack
<b>RPBNC-195P</b>	RP BNC Plug
<b>RPBNC-195BH</b>	RP BNC Bulkhead
<b>SMA-195P</b>	SMA Plug
<b>SMA-195J</b>	SMA Jack
<b>BNC-195J</b>	BNC Jack
<b>BNC-195P</b>	BNC Plug
<b>BNC-195BH</b>	BNC Bulkhead

### LMR400/RG8 Connectors:

<b>RPTNC-400J</b>	RPTNC Jack
<b>RPTNC-400P</b>	RPTNC Plug
<b>RPTNC-400BH</b>	RPTNC Bulkhead
<b>N-400P</b>	N Plug
<b>N-400J</b>	N Jack
<b>N-400BH</b>	N Bulkhead
<b>RPBNC-400J</b>	RP BNC Jack
<b>RPBNC-400P</b>	RP BNC Plug
<b>RPBNC-400BH</b>	RP BNC Bulkhead
<b>SMA-400P</b>	SMA Plug
<b>SMA-400J</b>	SMA Jack
<b>BNC-400J</b>	BNC Jack
<b>BNC-400P</b>	BNC Plug
<b>BNC-400BH</b>	BNC Bulkhead

View connectors on next page

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## TerraWave Solutions Cable, Connectors and Assemblies (cont'd.)

### Cable Assemblies:

<b>195RPTNCP-J-001</b>	12" RPTNC Plug to RPTNC Jack (LMR195)
<b>195RPTNCP-J-003</b>	3' RPTNC Plug to RPTNC Jack (LMR195)
<b>195RPTNCP-J-005</b>	5' RPTNC Plug to RPTNC Jack (LMR195)
<b>400RPTNCP-J-020</b>	20' RPTNC Plug to RPTNC Jack (LMR400)
<b>400RPTNCP-J-050</b>	50' RPTNC Plug to RPTNC Jack (LMR400)
<b>400RPTNCP-J-75</b>	75' RPTNC Plug to RPTNC Jack (LMR400)
<b>400RPTNCP-J-100</b>	100' RPTNC Plug to RPTNC Jack (LMR400)
<b>100NP-LU-002</b>	18" N Plug to Lucent Connector
<b>195RPTNCP-BH-002</b>	18" RPTNC Plug to RPTNC Bulkhead
<b>195RPTNCP-NP-003</b>	3' RPTNC Plug to N Plug



**LMR400**



**N-195J**



**MMCX-100**



**N-400P**



**N-195-P**



**RPNBC-195P**



**RPTNC-195J**



**RPNBC-195J**



**RPTNC-400J**



**RPTNC-195P**



**N-400J**



**N-400J**

## TerraWave Solutions SmartAmp

The all-new SmartAmp power injector is ideal for increasing the range of wireless networking equipment. Designed to extend the range of 2.4 GHz wireless radio devices, the SmartAmp is very effective when used with direct sequence

or frequency hopping spread spectrum radio technology. TerraWave's SmartAmp provides transmit power amplification as well as receive signal gain.

### Features and Benefits:

- Meets FCC requirements.
- Easy to install.
- Increase signal strength and reduce loss from long cable runs.
- Excellent value. Superior performance at a competitive price.



TW-DTINJ

Features	250 mWatt	500 mWatt	500 mWatt (indoor)	1 Watt	5 Watt	8 Watt (FHSS Only)
Operating Mode:	2400 - 2500 MHz					
Operating Mode:	Bi-Directional TDD					
Transmit Gain*:	20 dB max	24 dB max	20 dB max	24 dB max	33 dB max	33 dB fixed
Frequency Response:	± 1 dB					
Output Power:	250 mW (+24 dBm)	500 mW (+27 dBm)		1 Watt (+ 30 dBm)	5 Watt (+37 dBm)	8 Watt (+39dBm)
TX Input Power:	0 dBm min 23dBm max		7 dBm min 23 dBm max		3 dBm min 23 dBm max	
Receiver Gain:	14 dB typical				10 dB typical	
Noise Figure:	3.5 dB typical					
Connectors:	N-Type, female, 50 Ohm					
Lightning Protection:	Quarter Wave Technology					
DC Surge Protection:	Available					
Power Consumption:	600 mA @ 7.5V DC			650mA @ 7.5V DC	3.3 A @ 12 V DC	
Operating Temperature:	-40 °C to + 70 °C					





## TerraWave Solutions Radio & Antenna Mounting Solutions

TerraWave Solution's offers a variety of mounting solutions for radio and antenna products. TerraWave provides mounting brackets for ceilings, I-beams, walls, masts and can fabricate a mounting solution to fit the unique requirements of any radio or antenna product. Whether it's mounting wireless technologies to a ceiling tile track, sheet rock or steel I-beam, TerraWave has the mounting solution for any application.

To discuss custom mounting solutions, contact TerraWave directly at 210.375.8482.

### Features and Benefits:

- Secure and protect wireless equipment.
- Easy to install.
- Extremely versatile for almost any application.
- Excellent value. Superior reliability at a competitive price.

### Part Numbers:

- TW-MTG-002** Cisco 340/350 Series Mounting Bracket
- TW-MTG-003** Aironet TELXON Mounting Bracket
- TW-MTG-004** Cisco 350 Industrial Mounting Bracket
- TW-MTG-005** "M" Style Omni-Standoff Mount
- TW-IPMB-001** Industrial Purpose Mounting Bracket

### Custom Mounting Solutions Design and Fabrication For Any Application

Our team of wireless technicians can design and fabricate custom mounting solutions for any radio or antenna on the market today. Regardless if it's a simple or complex application, TerraWave works with clients to develop a solution that optimizes the operation of a wireless network.



**TW-MTG-004**



**TW-MTG-003**



**TW-MTG-002**



*Sample Mountings*





## TerraWave Solutions Towers

TerraWave Solutions offers a vast array of towers and mounts. Towers for the latest in wireless technologies are available and are hot dip galvanized after fabrication and can be manufactured in either tubular steel or solid rod. Whether it's guyed, self-supporting or rigid tube, all towers are designed to continually meet the demands and specifications of the communications industry. Constructed of the

finest steel suitable to galvanizing and dipped in molten zinc to provide a durable, and virtually maintenance free finish. For safety purposes, lightning protection for your structure is highly recommended. Additional tower accessories are available from TerraWave Solutions.

### Features and Benefits:

- Available in a number of models, TerraWave has the tower to meet your needs.
- Made of the finest materials.
- Extremely durable and virtually maintenance free finish.
- Excellent value. Superior performance at a competitive price.

For more information on TerraWave tower solutions, contact the TerraWave sales department.



**AirMagnet  
Wireless LAN  
Administration  
and  
Diagnostic Tools**



## AirMagnet Wireless Handheld Analyzer

TerraWave Solutions offers mission-critical wireless LAN administration and diagnostic tools to help companies deploy, administer and secure their networks. As a value added distributor of the AirMagnet Handheld Analyzer, TerraWave offers a new generation of wireless network administration and diagnostic tools.

Built from the ground up for WLANs, the Wireless Handheld Analyzer introduces a robust set of tools in a single, highly usable application that operates on a Pocket PC. These tools help to quickly eliminate connection problems, maintain network performance levels and ensure a high level of network security.

The Wireless Handheld Analyzer utilizes an intuitive, highly advanced interface to address the unique challenges confronting wireless network and security professionals including:

- Wireless Administration
- Installation Surveying
- Security Assessment
- Connection Troubleshooting
- Performance Management

### Features and Benefits:

- Single, highly usable application that operates on a Pocket PC
- Optimizes network performance
- Quickly eliminates connection problems
- Ensures high level of network security
- Built for wireless network administration
- Utilizes AirWISE System Expert as intuitive user interface
- Organizes information in a logical manner



Handheld Analyzer

Part Numbers	Product Description	OS Support
<b>AM-1001-11b</b>	AirMagnet Wireless LAN Handheld Analyzer with AirMagnet 802.11b PC Card	Pocket PC 2002
<b>AM-1031-11b-ci</b>	AirMagnet Wireless LAN Handheld Analyzer with Cisco LMC 802.11b PC Card	Pocket PC 2002
<b>AM-1011-11b</b>	AirMagnet Wireless LAN Handheld Analyzer with AirMagnet 802.11b CF Card	Pocket PC 2002
<b>AM-2001-11b</b>	AirMagnet Handheld Annual Subscription** Recommended for software upgrades	

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## Intelligent Analytical Engine

The AirMagnet Handheld is powered by AirWISE, a patent pending intelligent analytical engine. AirWISE operates in the background to assist network professionals by automatically collecting network performance statistics

identifying and tracking wireless devices and distinguishing channels and monitoring and analyzing the health of a WLAN, pinpointing WLAN problems, and suggesting potential solutions.

## Wireless Administration

The AirMagnet Handheld is organized the way that network and security administrators work, to help them with routine administration tasks in WLAN environments. It organizes information in a logical hierarchical structure - to give users the information that matters most, including:

- Realtime Network Status available through a series of performance alarms, that make it easy to stay on top of the changes that can pose performance problems, or lead to service disruptions.
- Network Profile Tools help administrators keep track of varied WLAN environments, through the designation of multiple Configuration Profiles and Address Books for logical name mapping.

## Installation Surveying

When a WLAN is not designed and installed properly, the consequences can be chronic user complaints about dead space and low transmission rates - as well as connectivity issues and increased network latency. The AirMagnet Handheld gives network professionals the necessary tools to provide optimal WLAN coverage and performance including:

- Comprehensive Drilldown Functions allow the detailed investigation of a single Access Point or Station, to evaluate signal quality and various configuration options - with the flexibility to drill down to the level of information required by the task.

- Channel Signal Strength/Quality Tools help identify and isolate co-channel interference from unknown Access Points and other potential sources, which help prevent potential conflicts or performance issues.
  - Auto Discovery Tools catalogue all SSIDs, Access Points and Stations on a network-both authorized and unauthorized-to give installers an accurate picture of the WLAN infrastructure.
  - Network Site Survey Tool eases the collection of RF signals and performance data so network nodes can be placed for maximum functionality.
  - Export Function allows survey data to be exported for management reporting.
  - Find Function locates and isolates single Access Point or station using signal strength indicator; to ensure that every node is accounted for in the design process.



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### Security Assessment

The addition of WLANs in a corporate environment introduces a whole new class of threats for network security. RF signals that penetrate walls and intended boundaries can expose a network to unauthorized users. In addition, Rogue Access Points not properly secured puts the entire corporate network at risk of outside penetration and attack. The AirMagnet Handheld is designed to help manage against such threats, with the most comprehensive suite of security tools that alert the user to more than 10 different threat conditions including:

- Rogue AP and Client Detection indicates when an unauthorized device is being installed on the network
- Wireless Denial of Service Detection identifies intruders attempt to deny network access, by saturating WLAN channels or flooding AP Association Tables.
- AP Impersonation Detection indicates when an intruder tries to invade the network by emulating (or spoofing) a registered MAC address
- WEP Decode Security Alarm indicates that a user on the network has not engaged WEP security.
- Unconfigured Access Point indicates that an Access Point on the network is configured with a default SSID, a potential security threat.

### Connection Troubleshooting

Without intelligent tools, the process of trouble shooting a problem connection can be an incredible drain on time and professional resources. To help eliminate the problems associated with connection troubleshooting, the AirMagnet Handheld incorporates an integrated Intelligent Connection Diagnostics Utility.

- Connection Mismatch Tool identifies any mismatch of SSIDs, WEP keys, transmission rates, or RF channels-a major source of connection problems.
- Failure Analysis Tool helps isolate the source of a transmission failure, including authentication, re-association, speed mismatch and hardware failures.
- Real-Time Packet Capture and Decode Function captures and decodes data packets and displays them in real time-all while recording for later evaluation.

- Track File Playback replays network packets captured in a time-stamped, sequenced trace file previously recorded. This allows network administrators to identify and pinpoint different network transients or intermittent problems.
- Basic LAN Troubleshooting Tools help isolate connectivity problems selectively to and from a specific Access Point; including DHCP Renew, Ping, Traceroute, Whois, and DNS Lookup.
- Performance Management

Effective administration of a WLAN requires network professionals to maintain complete control of the Access Points operating in the environment-as well how each of them are configured. The addition of unauthorized wireless nodes, the misconfiguration of the devices as well as the movement of nodes to alternate locations can have a significant impact on network performance and reliability.

The AirMagnet Handheld helps network professionals stay on top of the performance curve, with an Expert Performance Analysis Tool that monitors WLAN networks and identifies the potential source of performance problems-as they are happening.

Network Summary View provides a global snapshot of a WLAN and its operating performance with the ability to drill down into detail on any node within the network.



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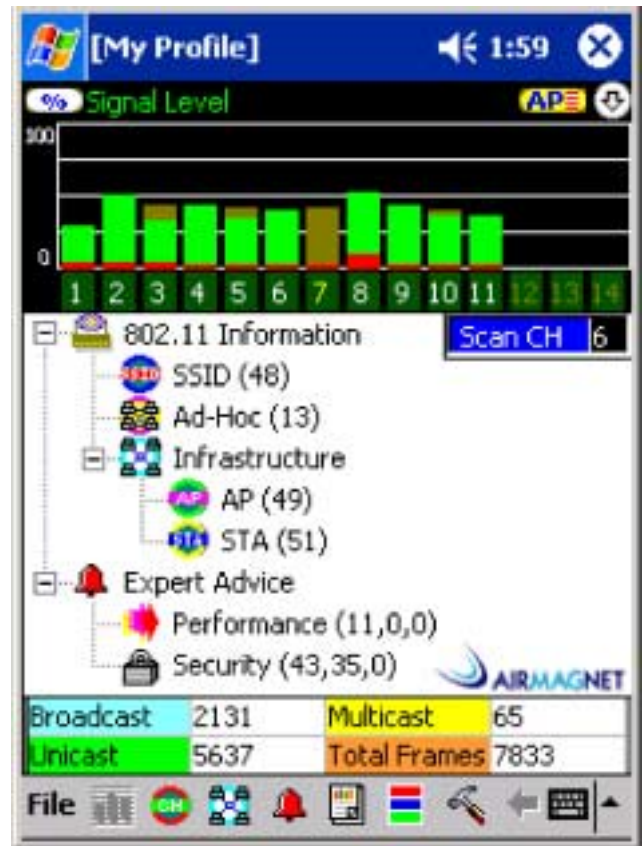
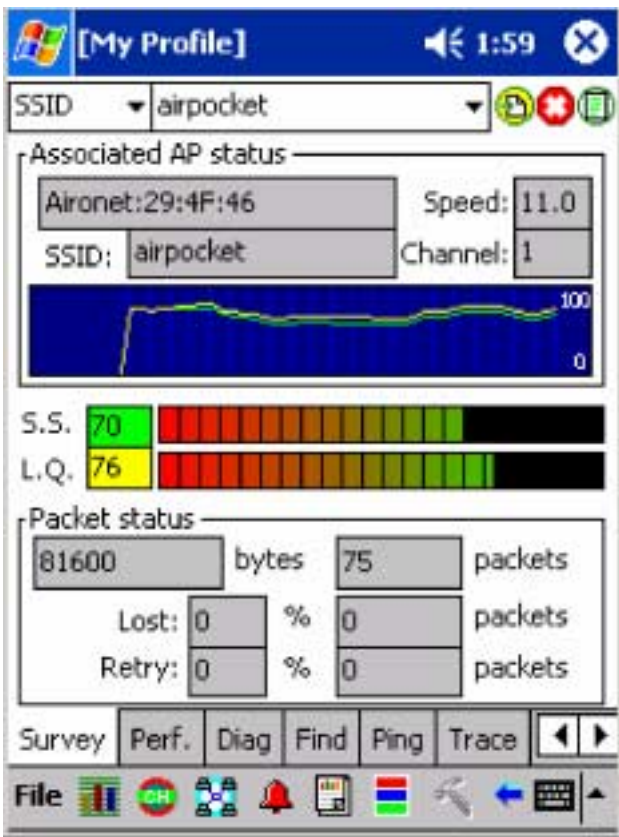
Performance Alarms monitor the WLAN environment for a wide range of conditions that can cause performance problems, alerting the user when such conditions are detected. These conditions include excessive CRC errors or too many Access Points on a particular channel. More than 15 alarms are provided.

Channel Bandwidth Monitor monitors channel interference, multi-cast/broadcast storms, poor RF signals, bridge loops and low speed transmission rates. RF signals can be displayed in dBm or %.

Channel Interference Monitor monitors channel throughput and alerts when a channel is overloaded with Access Points or Stations.

The AirMagnet Handheld helps IT Professionals manage these secure networks by helping them troubleshoot connection problems in 802.1x and VPN environments, due to misconfiguration of applicable authentication or VPN protocols. In addition,

AirMagnet's AirWISE engine helps them maintain security integrity, by alerting professionals to the existence of wireless nodes not running the proper authentication or VPN protocols. AirMagnet supports standard authentication protocols, including LEAP, MD5, TLS, TTLS - while VPN protocol support includes PPTP, L2TP, SSH and IPSec.



- ### AirMagnet System Requirements
- Pocket PC with 64MB of memory
  - Microsoft Pocket PC Operating System
  - Open slot for Type 2 CF Card or PCMCIA card

**Funk Software  
Wireless LAN  
Security Software**



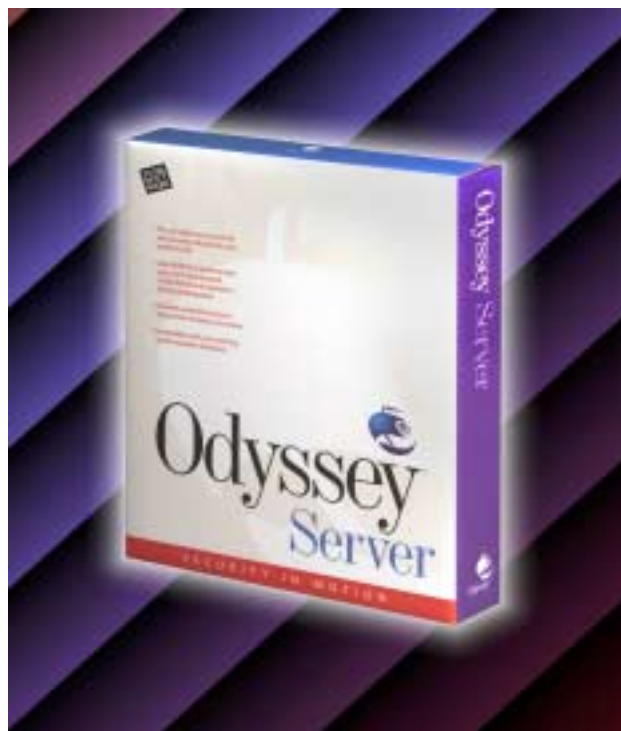
## Odyssey™

Odyssey is a wireless LAN access control and security solution that not only provides strong security over the wireless link, but also can be easily and widely deployed and managed across an enterprise network. Includes client and server software. With Odyssey, you can secure the authentication and connection of wireless LAN (WLAN) users, ensuring that only authorized users can connect, that connection credentials will not be compromised, and that data privacy will be maintained. Odyssey is based on the IEEE security standard 802.1x, and supports a wide variety of 802.1x

security methods, including the strong and easily managed security method EAP-TTLS. With its unsurpassed multi-vendor compatibility and support for strong WLAN security protocols, Odyssey puts secure WLAN access within any organization's reach.

### Features and Benefits:

- Secure, easily managed WLAN access for the enterprise  
End-to-end solution includes Client and Server
- Based on IEEE security standard 802.1x
- Innovative EAP-TTLS security protocol provides strong security, simple administration
- Connection credentials protected against dictionary attack, connection hijacking
- Data privacy protected against wireless eavesdroppers
- Strong mutual authentication of client and server prevents unauthorized access to the network
- Safely authenticate WLAN users against your Windows authentication database, for administrative simplicity
- Forward authentication requests to other RADIUS servers, for authentication against non-Windows systems
- Multi-vendor, multi-platform support ensures compatibility in your WLAN environment



### Part Numbers

<b>ODYC1-V110</b>	1 Server/25 Clients/1 Annual Maintenance and Support Contract
<b>ODYC2-V110</b>	2 Servers/50 Clients/2 Annual Maintenance and Support Contracts
<b>ODY-V110</b>	1 Server/25 Clients

## Steel-Belted Radius®

Steel-Belted Radius is an award-winning RADIUS/AAA server that lets you centrally manage all your remote and wireless LAN (WLAN) users and equipment, and enhance the security of your network.

By performing a powerful trio of functions - user authentication, authorization, and accounting - for all remote and WLAN access users, Steel-Belted Radius significantly alleviates your administrative burden. Now, you won't have to set up and maintain separate authentication databases on each network access device. Instead, let Steel-Belted Radius validate remote and WLAN users against a central database that you

can easily administer. And, Steel-Belted Radius works with the widest variety of network access equipment and methods, so it can simultaneously manage users who connect via dial-up, the Internet, VPNs/tunnels, ISPs, and WLAN.

Finally, when managing WLAN user access, Steel-Belted Radius plays the additional roles of setting up and securing WLAN user's connections, ensuring that connection credentials will not be compromised, and that data privacy will be maintained.

### Features and Benefits:

- Centrally manage remote and WLAN users from a single database and console
- Bring heterogeneous NAS, firewall, VPN, token, and WLAN access equipment under central control
- Authenticate remote and WLAN users against existing NT/2000, Solaris, NetWare, SQL/LDAP databases, and token systems
- Prevent unauthorized WLAN access
- Secure WLAN connections against wireless eavesdropping and other attacks
- Manage ISP access to your network
- Safely integrate your network with the Internet for e-commerce
- Easily track and document all remote and WLAN access activity



### Part Numbers

<b>SBTC1-V400</b>	Server for NT/2000/1 Annual Maintenance and Support Contract
<b>SBUC1-V400</b>	1 Server for Solaris/1 Annual Maintenance and Support Contract
<b>SBTC2-V400</b>	Servers for NT/2000/2 Annual Maintenance and Support Contracts
<b>SBUC2-V400</b>	2 Servers for Solaris/2 Annual Maintenance and Support Contracts
<b>SBRT-V400</b>	Single Server for NT/2000
<b>SBRU-V400</b>	Single Server for Solaris



## Odyssey Client

Odyssey Client, a universal access Client based on the IEEE security standard 802.1x that lets enterprise and hotspot users securely and anonymously connect over a wireless link to a network. Odyssey Client supports multiple strong WLAN security methods - fully protecting users against wireless snooping and cryptographic attack on credentials and data - and runs on Windows XP, 2000, 98, and Me. Odyssey Client also offers

numerous auto-configuration tools, so you can streamline large-scale deployments of WLAN access and mandate enterprise-level security. With its emphasis on secure WLAN access, easily implemented, Odyssey Client can be deployed with confidence in any organization.

### Features and Benefits:

- Secure, easily managed WLAN access for the enterprise
- Establish secure, anonymous connection over any wireless link
- Easily deployed enterprise-wide
- Supports multiple strong WLAN security protocols, including EAP-TTLS
- Innovative EAP-TTLS security protocol provides strong security, simple administration
- Advanced credential security prevents stolen credentials, unauthorized access to your WLAN
- Data privacy protected against wireless eavesdroppers
- Safely authenticate WLAN users against your Windows authentication database, for administrative simplicity
- Multi-vendor, multi-platform support ensures compatibility in your WLAN environment
- Used with Odyssey Server, Steel-Belted Radius, or any other RADIUS server which supports WLAN security protocols



### Part Numbers

<b>ODY-1-V110</b>	1 Client	<b>ODY-101-V110</b>	101-249 Clients
<b>ODY-5-V110</b>	5 Clients	<b>ODY-250-V110</b>	250-499 Clients
<b>ODY-10-V110</b>	10 Clients	<b>ODY-500-V110</b>	500-999 Clients
<b>ODY-25-V110</b>	25 Clients	<b>ODY-1000-V110</b>	1000-2499 Clients
<b>ODY-50-V110</b>	50 Clients	<b>ODY-2500-V110</b>	2500-4999 Clients
<b>ODY-100-V110</b>	100 Clients	<b>ODY-5000-V110</b>	5000-9999 Clients

**MAXRAD**  
**Antennas**



**MAXRAD**  
**In-Building**  
**Voice and Data**  
**Antenna Line**



## Michelangelo™ SERIES 2.4 GHz ISM Ceiling Mount Omnidirectional Diversity Antenna

The MCD2400PTNF combines two flat ceiling mount omnidirectional antennas in a single housing for efficient spatial diversity installations. This antenna is designed to cover frequencies from 2400 to 2485 MHz with a VSWR of less than

1.5:1 and an isolation between two elements of more than 20 dB. A dual stud drop ceiling mount makes for effortless installation. The antenna includes 12" pigtailed cables that can be terminated with various types of connectors.

### Features and Benefits:

- Efficient omnidirectional diversity performance. Provides the excellent performance of two MAXRAD omnidirectional antennas in a single low profile housing.
- Attractive, low profile housing. Blends well in office environments and other locations where aesthetic considerations are important.
- UL listed materials and cable. Meets the strictest safety specifications.
- Dual stud drop ceiling mount. Easy to install on standard ceiling tiles or solid ceiling surfaces.



**MCD2400PTNF**

### General Specifications:

#### Polarization:

Vertical, linear

#### Nominal Impedance:

50 Ohms

#### Radome Housing:

UL listed plastic

#### Mounting Method:

Dual stud mount

Above ceiling tile mounting bracket is available for applications requiring no visibility of the antenna.



### Electrical Specifications:

Model #	Frequency Range	Normal Gain	Isolation	Horizontal Beamwidth	Vertical Beamwidth	VSWR	Max. Power Input	Connector
MCD2400PT	2400-2485 MHz	2.5 dBi	>20 dB	360° (omni)	40°	< 1.5:1	50 Watts	Various options

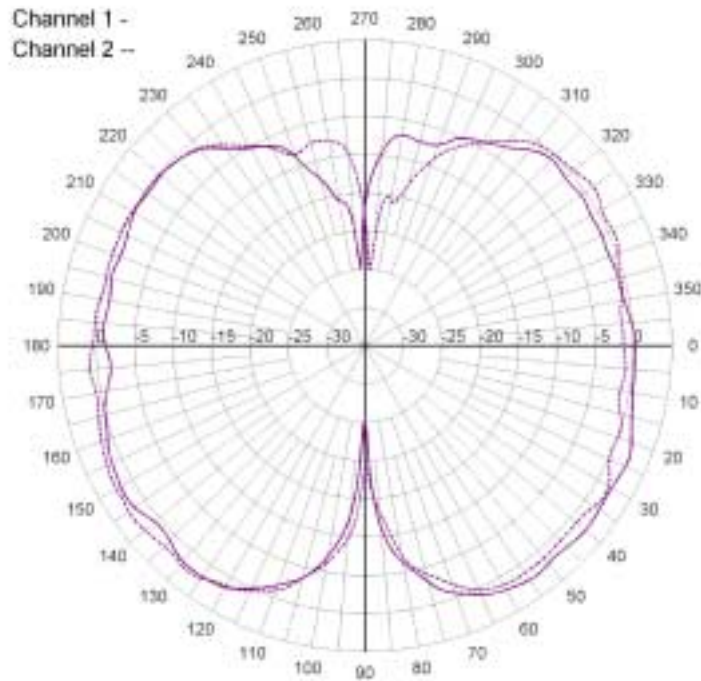
### Mechanical Specifications:

Model #	Temperature Range	Dimensions	Weight	Cable
MCD2400PT	-40° C to +80° C	4.25" W x 8.5" L x 0.5" H (10.8 cm W x 21.59 cm L x 1.27 cm H)	1 lb (.45 kg)	Dual 12" (30.5 cm) Plenum RG58/U CL2P

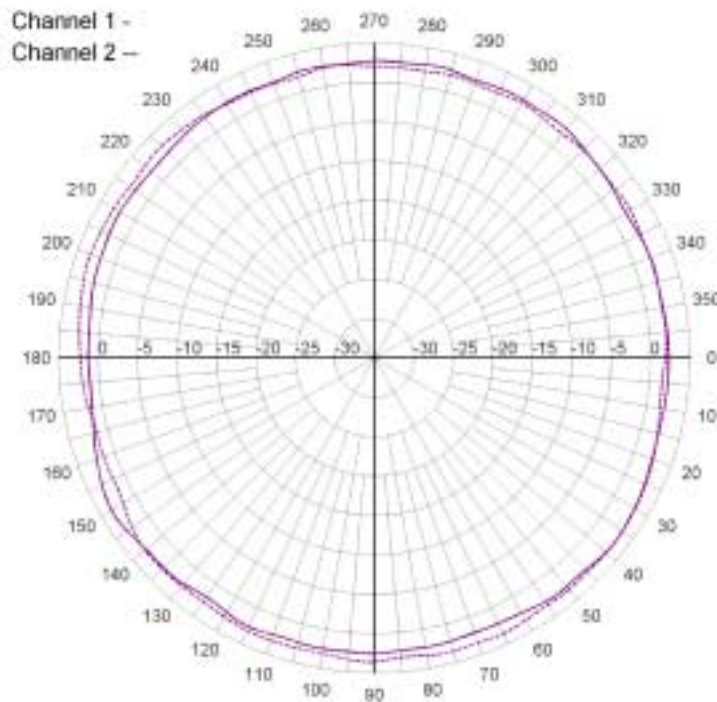
2.4 GHz Diversity Omni

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Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



**MCD24000PT**  
**Elevation Cut**



**MCD24000PT**  
**Azimuth Cut**



## Michelangelo™ SERIES 2.4 GHz ISM Ceiling Mount Omnidirectional Antenna

The MAXRAD MC2400 is designed to cover frequencies from 2300 to 2500 MHz with a VSWR of less than 1.5:1 across the band. This antenna provides a low profile ceiling mount solution for indoor applications requiring

minimum visibility. It includes a 12" pigtail with a wide variety of connector options. It can be easily mounted to drop ceiling tiles or to a solid ceiling surface where cable routing access is available.

### Features and Benefits:

- Attractive, low profile housing. Blends well in office environments and other locations where aesthetic considerations are important.
- UL listed materials and cable. Meets the strictest safety specifications.
- Single hole stud mount or optional side cable exit option. Easy to install on standard ceiling tiles or solid ceiling surfaces.
- Excellent value: superior performance at a competitive price.



**MC2400PT**



**MC2400 with MSCE2  
Side cable Exit Mount Kit**

### General Specifications:

#### Polarization:

Vertical, linear

#### Nominal Impedance:

50 Ohms

#### Radome Housing:

UL listed plastic

#### Mounting Method:

Stud mount, single hole

Optional side cable exit mounting kit (part #MSCE2)

Above ceiling tile mounting bracket is available for applications requiring no visibility of the antenna.

### Connector Options

(add connector part number after the PT prefix):

Example: MC2400PTNF (Model MC2400PT with N, female connector).

- BNC, Male (Part #BN)
- N, Female (part #NF); N, Male (part #NM)
- Female SMA (part #FSMA); Male SMA (part #MSMA)
- Female SMA, reverse threaded (part #FSMART);
- Male SMA, reverse threaded (part #MSMART)
- Reverse Polarity TNC Plug (part #MRPC);
- TNC, Male (part #C)
- Mini-UHF, Male (part #PL)
- Female FME (part #FFME)

### Electrical Specifications

Model #	Frequency Range	Gain	VSWR across the band	Max. Power Input	Connector
MC2400PT	2300-2500 MHz	2.5 dBi	< 1.35:1	50 Watts	Various options

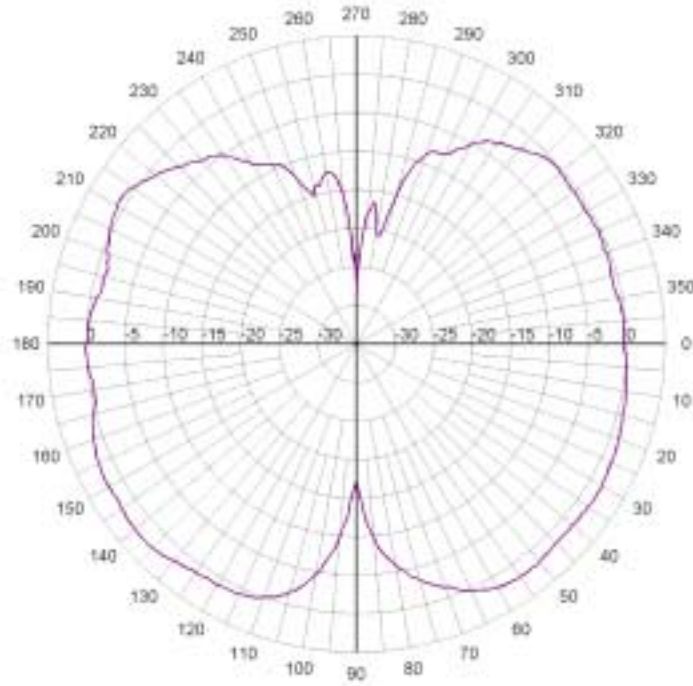
### Mechanical Specifications

Model #	Temperature Range	Dimensions	Weight	Cable
MC2400PT	-40°C to +80°C	4.25" OD x 0.5" D (10.8 cm OD x 1.27 cm D)	8 oz (0.23 kg)	12" (30.5 cm) Plenum RG58/U

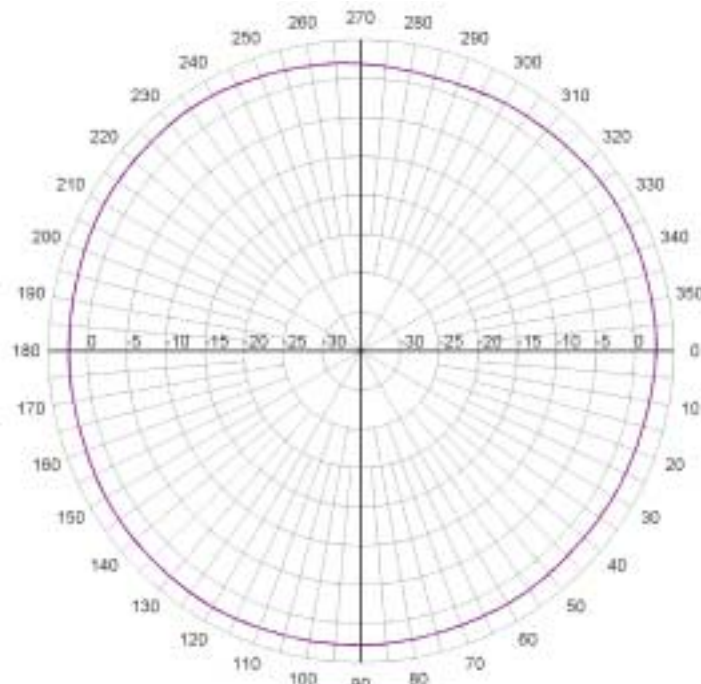
MC 2.4 GHz Omni



Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



**MC2400PT**  
Elevation Cut



**MC2400PT**  
Azimuth Cut

# Michelangelo™ SERIES 800/900 MHz and 1700-2500 MHz Wideband Low Profile Ceiling Mount Omnidirectional Antenna

The MLPC1700 low profile antenna provides superior pattern coverage for ceiling mount applications using PCS or ISM frequencies from 1700 to 2500 MHz. Its patent-pending design provides industry leading wideband performance and reliability, with minimum loss and no tuning required. The

MLPC1700 features an attractive compact package with a standard ceiling mount PA grill panel that blends nicely in office surroundings. It includes an N, female bulkhead connector. A 12-inch ML195 pigtail option is available.

### Features and Benefits:

- Wideband coverage. Single MLPC1700 antenna covers PCS and 2.4 GHz ISM frequencies, from 1700 to 2500 MHz with no tuning.
- Built-in ground plane. Can be installed on any ceiling tile location without the need to provide a ground plane.
- Attractive low profile. Measuring less than 1-7/8" high, (2.75" in the 800/900 MHz version) the antenna easily complements the decor in most in-building locations.
- Excellent pattern coverage, outstanding performance and reliability.



**MLPC Series**

### General Specifications:

#### Polarization:

Vertical, linear

#### Nominal Impedance:

50 Ohms

#### Radiator Material:

Solid brass radiator

#### Mounting Method:

Off-white ceiling-mounted PA speaker baffle

#### Connector:

N, female bulkhead

12-inch ML195 pigtail option upon request

MLPC Omni Series

### Electrical Specifications

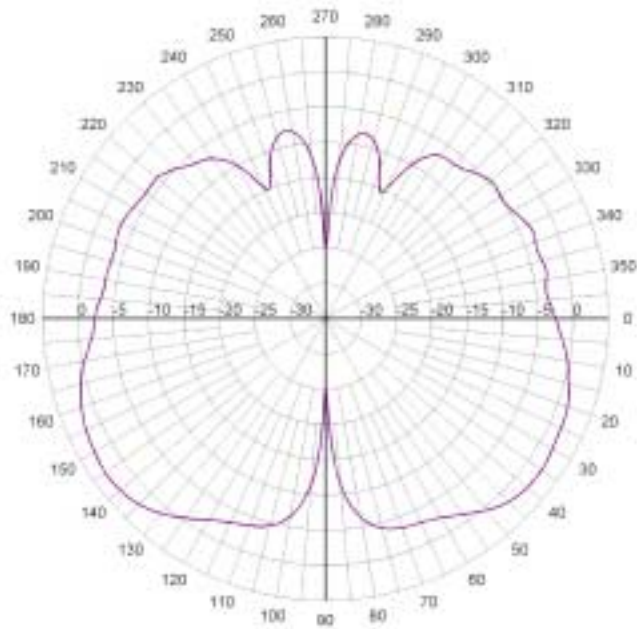
Model #	Frequency Range	Gain	VSWR	Max. Power Input	Connector	Pigtail
MLPC800	806 - 960 MHz	2.5 dBi	< 1.5:1	150 Watts	N, female	N/A
MLPC1700	1700 - 2500 MHz	3.5 dBi	< 1.5:1	150 Watts	N, female	N/A
MLPC1700PTRPTVC	1700 - 2500 MHz	3.5 dBi	< 1.5:1	150 Watts	Reverse Pilatiry TNC	12" ML 195

### Mechanical Specifications

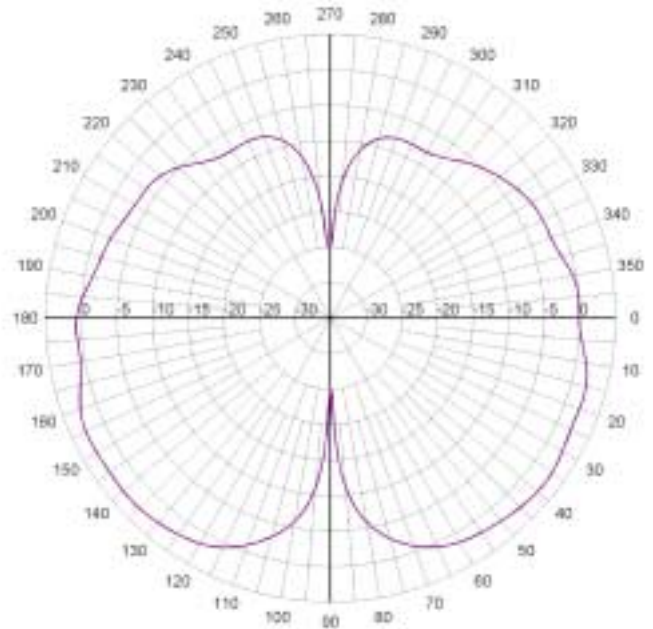
Model #	Dimensions	Weight	Pigtail
MLPC800	-40 C° to +85° C 12.87" OD x 2.75" H (32.7 cm OD x 6.98 cm H)	0.5 lbs (0.23 kg)	N/A
MLPC1700	-40 C° to +85° C 12.87" OD x 1.87" H (32.7 cm OD x 4.76 cm H)	0.5 lbs (0.23 kg)	N/A
MLPC1700	-40 C° to +85° C 12.87" OD x 1.87" H (32.7 cm OD x 6.98 cm H)	0.5 lbs (0.23 kg)	12" ML195

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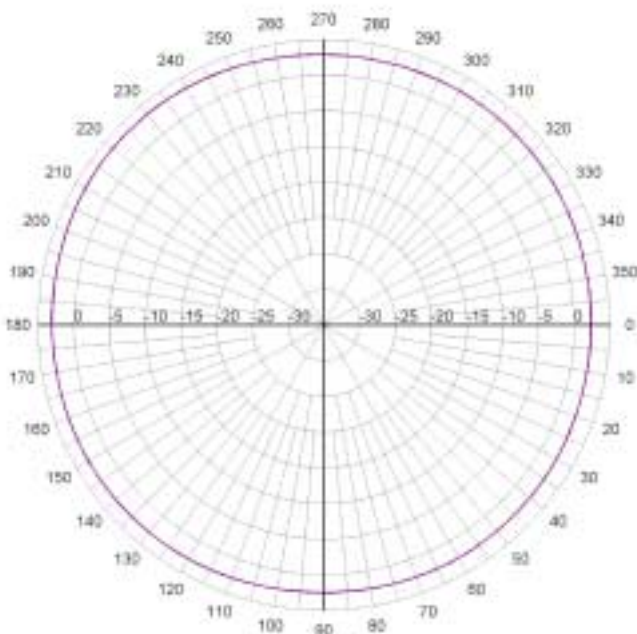
Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



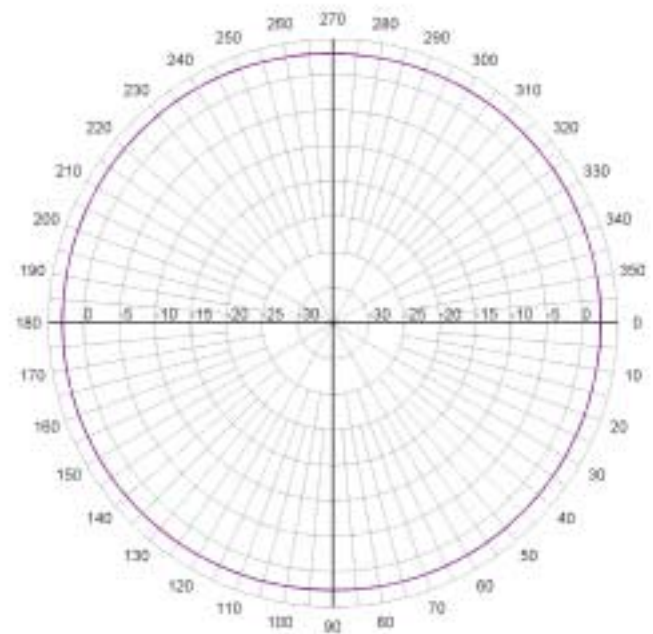
**MLPC1700 Elevation Cut**



**MLPC800 Elevation Cut**



**MLPC1700 Azimuth Cut**



**MLPC800 Azimuth Cut**

## Michelangelo™ SERIES 2.4 GHz ISM Omnidirectional Fiberglass Antenna

The MFB24004CM omnidirectional fiberglass antennas covers 2.4 GHz frequency bands with a VSWR of less than 1.5:1. It provides 4 dBi gain and features a built-in

matching network that eliminates the need for a ground plane. This antenna is ceiling mounted with the MMK11 mount.

### Features and Benefits:

- U.V. stabilized, pultruded fiberglass radome. Antenna can be utilized in harsh indoor environments, providing years of trouble-free service.
- Ceiling tile mounting bracket included for easy installation.

### General Specifications:

Radome Material:

5/8 inch diameter pultruded UV-stable fiberglass

Polarization:

Vertical

Wind Survival:

125 mph

Mounting Base Diameter:

1-1/4 inches

Maximum Power:

25 watts

Nominal Impedance:

50 ohms



**MFB24004CM**

Mounting Method (included):

White powder coated ceiling mount bracket (part #MMK11) is included

MFB  
Fiberglass Omni

### Electrical Specifications:

Model #	Frequency Range	Factory Tuned Frequency	Gain	Bandwidth @1:51 VSWR	Vertical Beamwidth @ 1/2 Power	VSWR	Connector
MFB24004CM	2.400-2.4835 GHz	2.45 GHz	4 dBi	100 MHz	30°	< 1.5:1	N, female

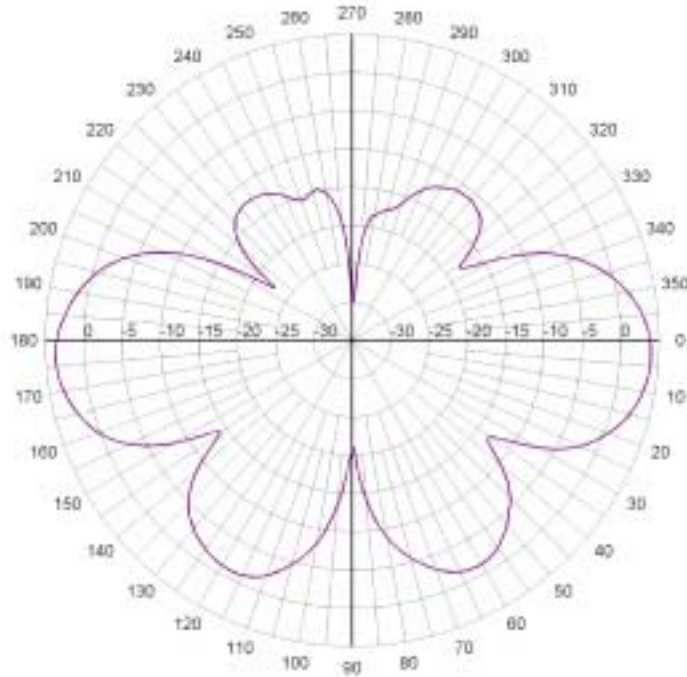
### Mechanical Specifications:

Model #	Equivalent Flat Plate Area	Lateral Thrust @ Rated Wind	Bending Moment @ Rated Wind	Height	Weight
MFB24004CM	0.0 ft <sup>2</sup>	3.2 lbs	1.1 ft-lbs	10" (25.4 cm)	0.34 lbs (0.15kg)

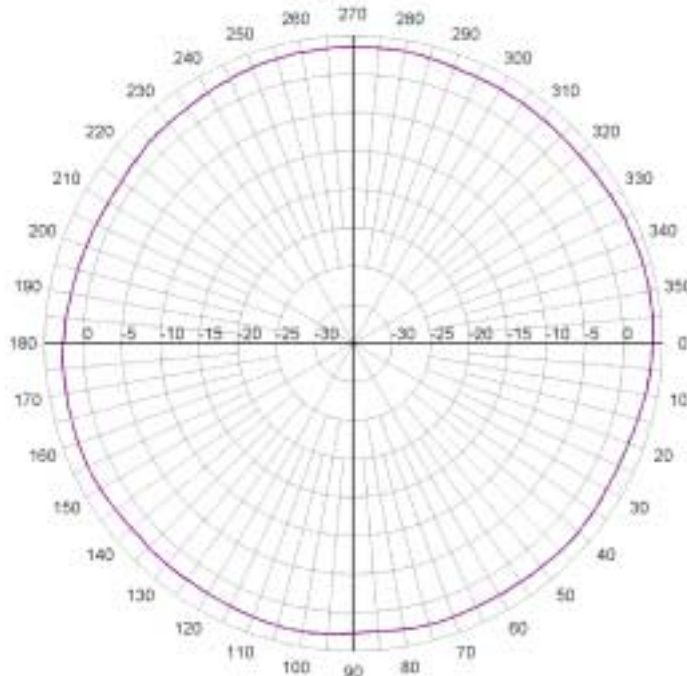
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Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



**MFB24004CM**  
Elevation Cut



**MFB24004CM**  
Azimuth Cut

## Michelangelo™ SERIES 2.4 GHz ISM Ceiling Mount Bi-directional Antenna

The MHA2400PT is a vertically polarized, bi-directional indoor antenna designed to provide extended WLAN coverage with minimum visibility. This small antenna measures less than 0.5 inch thick by 3 inches wide by 2.5 inches

tall and weighs 2.6 ounces. It provides effective coverage of frequencies from 2300-2500 MHz with a VSWR of less than 1.5:1. Its discrete, bi-directional design makes it ideal for use in long corridors.

### Features and Benefits:

- Point-to-point, bi-directional design. Provides extended wireless coverage in two directions. Ideal for use in long corridors where more focused radiated energy is necessary to achieve adequate signal coverage.
- Attractive, low profile housing. Blends well in office environments and other locations where aesthetic considerations are important.
- UL listed materials and cable. Meets the strictest safety specifications.
- Single hole stud mount or optional side cable exit option. Easy to install on standard ceiling tiles or solid ceiling surfaces.
- Excellent value: superior performance at very competitive prices.

### General Specifications:

#### Radome Material:

UL 94-V0 plastic

#### Polarization:

Vertical

#### Mounting Method:

Mounting bracket clips to standard one inch wide suspended ceiling tile rails. Holes are provided for mounting to flat ceiling with screws (not included).

#### Nominal Impedance:

50 Ohms



**MHA2400PT**



### Connector Options (add connector part number after the PT prefix):

**Example: MHA2400PTBN (MHA2400PT with BNC, male connector)**

- BNC, Male (Part #BN)
- Female SMA (part #FSMA); Male SMA (part #MSMA)
- Female SMA, reverse threaded (part #FSMART); Male SMA, reverse threaded (part #MSMART)
- TNC, Male (part #C)
- Female FME (part #FFME)

### Electrical Specifications:

Model #	Frequency Range	Gain	3 dB Horizontal Beamwidth	3 dB Vertical Beamwidth	VSWR	Maximum Power Input	Connector Type
MHA2400PT	2300-2500 MH	4 dBi	100°	75°	< 1.5:1	10 Watts	Various options available

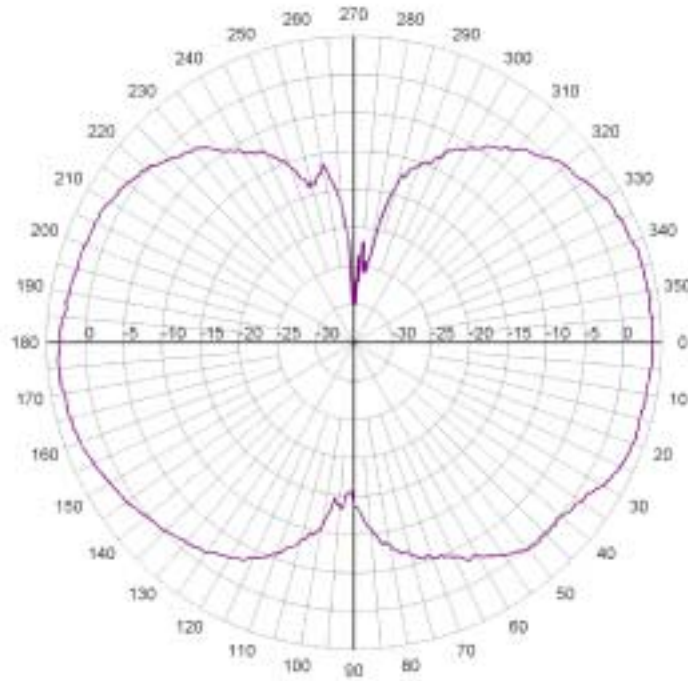
### Mechanical Specifications:

Model #	Temperature Range	Dimensions	Weight	Cable
MHA2400PT	-40° C to +71° C	3" W x 2.5" H x 0.45" D (7.6 W x 6.35 H x 1.14 D cm)	2.6 oz (0.07 kg)	6" (15.2 cm) Plenum RG-58

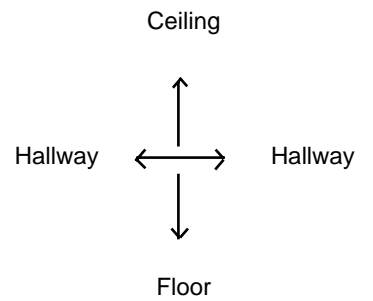
Bi-directional  
2.4 GHz

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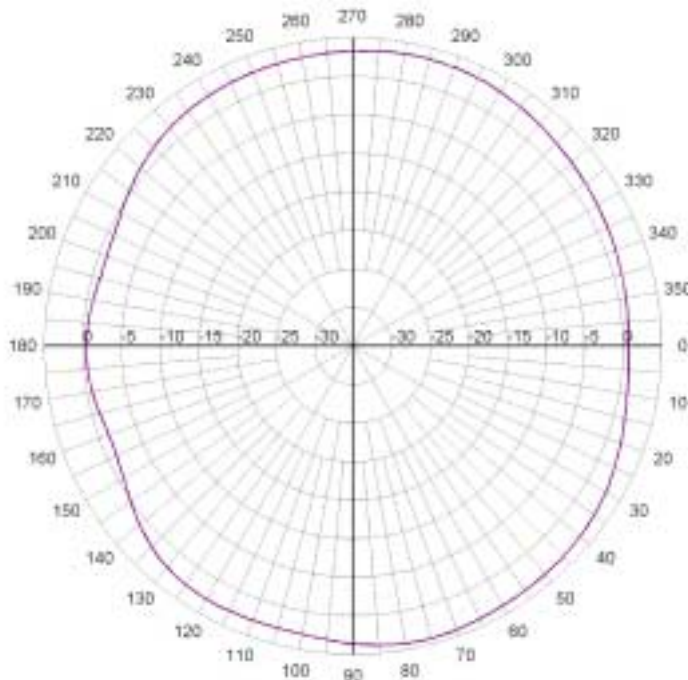
Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



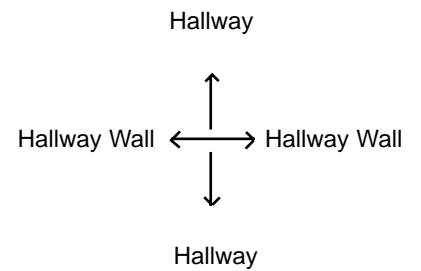
Plot Orientation



**MHA2400PT  
Elevation Cut**



Plot Orientation



**MHA2400PT  
Azimuth Cut**

# Michelangelo™ SERIES XtremeWave™ 5.7-5.8 GHz ISM Directional Panel Antenna

The MAXRAD XtremeWave™ directional panel covers frequencies between 5.725 and 5.875 GHz with a VSWR of less than 1.5:1, obtaining maximum gain with an attractive,

low-profile package. This antenna provides efficient and stable performance across the band and can be mounted indoors or outdoors.

### Features and Benefits:

- Patented PCB design. Provides best performance-to-price ratio.
- Utilizes UL94-V0 plastic and PC board. Provides UL's highest flame retardant rating allowing maximum placement flexibility. Meets the most stringent building codes.
- Attractive, low profile housing. Blends well with indoor and outdoor environments where aesthetic considerations are important.
- Corner exit RG-58 pigtail design. Permits the panel to be mounted in vertical or horizontal polarity with a wide variety of connector options.
- Optional UL 910 rated Plenum cable. Allows the cable to be installed in the strictest indoor mounting locations, including air ducts.
- Adjustable azimuth/elevation bracket provides maximum flexibility for indoor or outdoor mounting.



**MP58013XFPT**



**MP58013XFPT on MPAB11 Mount**

### General Specifications:

#### Radome Material:

UL 94-V0 plastic

#### Polarization:

Vertical or horizontal, linear

#### Lightning Protection:

DC grounded

#### Mounting Method:

Adjustable azimuth/elevation MPAB11 mount is included

#### Nominal Impedance:

50 Ohms

*Above ceiling tile mounting bracket is available for applications requiring no visibility of the antenna.*

### Electrical Specifications:

Model #	Frequency Range	Gain	Front-to-Back Ratio	3 dB Horizontal Beamwidth	3 dB Vertical Beamwidth	VSWR	Connector Options
MH58013XFPT	5.725-5.875 GHz	12.5 dBi	>23 dB	42°	28°	< 1.5:1	N, female (part #NF) standard. Other connector options are available. Please consult factory for details.

### Mechanical Specifications:

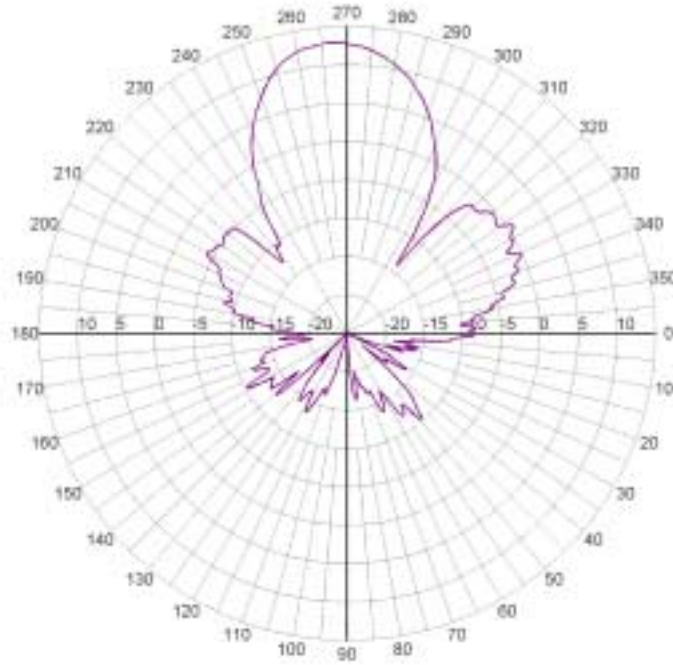
Model #	Wind Loading (Frontal) @100 mph Wind	Temperature Range	Dimensions	Weight	Cable
MP58013XFPT	9.3 lbs.	0°C to +80°C	1.5" (12.9 x 11.9 x 3.8 cm)	0.5 lbs (0.23 kg)	12" (30.5 cm) RG58/U. UL 910 rated cable optional

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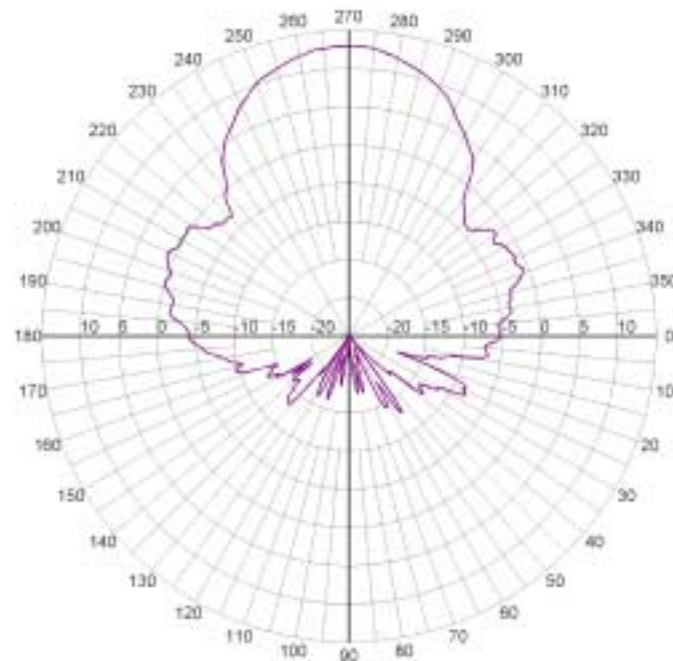
Directional Panels



Michelangelo™  
SERIES In-Building Voice & Data Antenna Line



**MP58013XFPT**  
**Elevation Cut**



**MP58013XFPT**  
**Azimuth Cut**

## Michelangelo™ SERIES XtremeWave™ 2.4 GHz ISM Directional Panel Antennas

The MAXRAD XtremeWave™ directional panel antennas are designed to cover frequencies between 2400 and 2500 MHz with a VSWR of less than 1.5:1, obtaining maximum gain with an attractive, low-

profile package. All models provide efficient and stable performance across the band and can be mounted indoors or outdoors.

### Features and Benefits:

- Patented PCB design. Provides best performance-to-price ratio.
- Utilizes UL94-V0 plastic and PC board. Provides UL's highest flame retardant rating allowing maximum placement flexibility. Meets the most stringent building codes.
- Attractive, low profile housing. Blends well with indoor and outdoor environments where aesthetic considerations are important.
- Corner exit RG-58 pigtail design. Permits the panel to be mounted in vertical or horizontal polarity with a wide variety of connector options.
- Optional UL 910 rated plenum cable. Allows the cable to be installed in the strictest indoor mounting locations, including air ducts.
- Heavy duty adjustable mounting brackets for indoor and outdoor mounting are available. Provides maximum flexibility for indoor or outdoor installations.

### General Specifications:

#### Radome Material:

UL 94-V0 plastic

#### Polarization:

Vertical or horizontal, linear

#### Lightning Protection:

DC grounded



**MP24013XFPT**



**MP24013XFPT on MPAB8 Outdoor Mount**



**MP24013XFPT on MPAB12 Corner Mount**



**MP24008XFPT on MPAB11 Mount**

### Mounting Method:

Adjustable azimuth/elevation MPAB11 mount is included with 8 dBi panels.

Adjustable azimuth/elevation MPAB12 indoor corner mount and adjustable, heavy-duty MPAB8 outdoor mount are sold separately.

### Nominal Impedance:

50 Ohms

### Electrical Specifications:

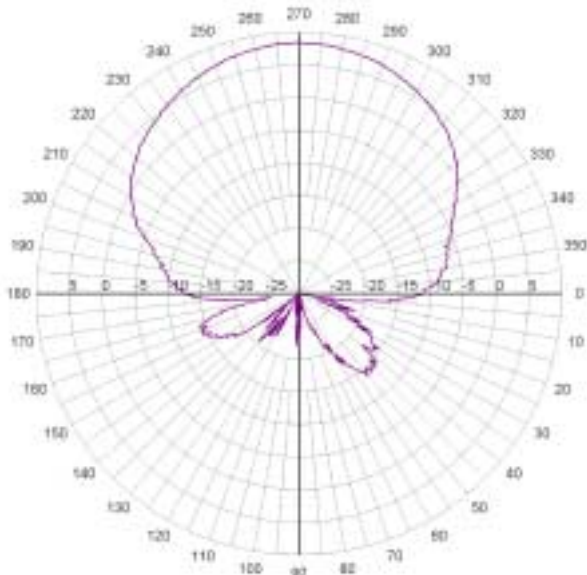
Model #	Frequency Range	Gain	Front-to-Back Ratio	3 dB Horizontal Beamwidth	3 dB Vertical Beamwidth	VSWR	Maximum Power Input	Connector Options
MP24008XFPT	2300-2500 MHz	8.5 dBi	> 15 dB	60°	60°	< 1.5:1	20 Watts	N, female (part #NF) standard Other connector options are available. Please consult factory for details.
MP24013XFPT	2300-2500 MHz	13 dBi	> 18 dB	35°	35°	< 1.5:1	20 Watts	

### Mechanical Specifications:

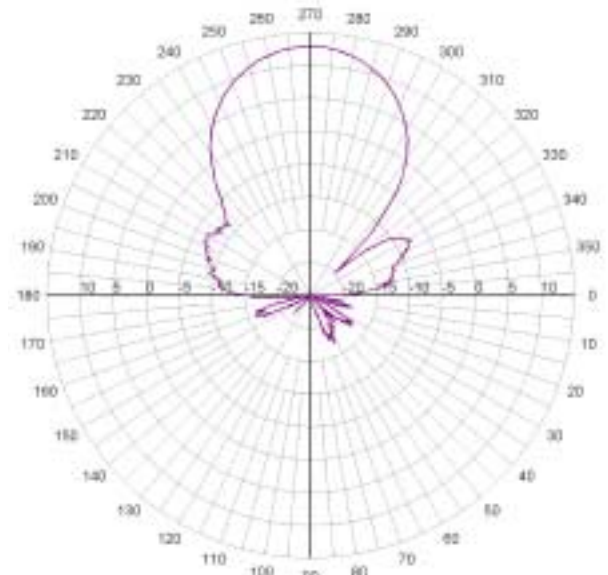
Model #	Wind Loading (Frontal) @100 mph Wind	Temperature Range	Dinemsions	Weight	Cable
MP24008XFPT	9.3 lbs.	-40° C to +80° C	5.1" x 4.7" x 1.5" (12.9 x 11.9 x 3.8 cm)	0.5 lbs.(0.23 kg)	12" (30.5 cm) RG58/U. UL 910 rated cable optional.
MP24013XFPT	27.9 lbs.	-40° C to +80° C	8.8" x 8.1" x 1.6" (22.4x 20.6 x 4.06 cm)	1.2 lbs.(0.54 kg)	12" (30.5 cm) RG58/U. UL 910 rated cable optional.

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Michelangelo™  
SERIES In-Building Voice & Data Antenna Line

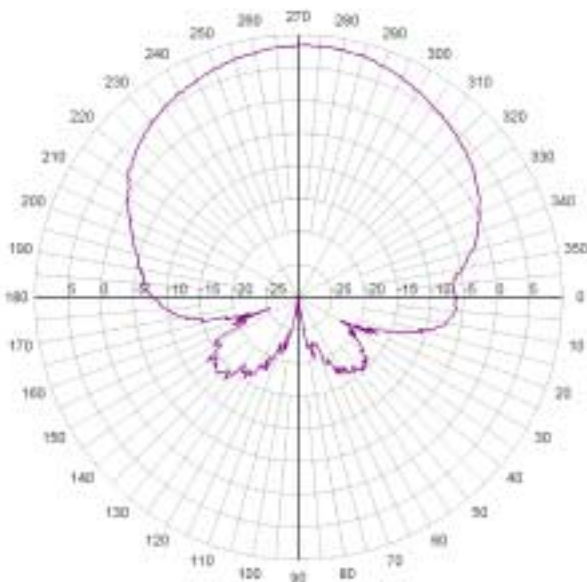


**MP24008XFPT**

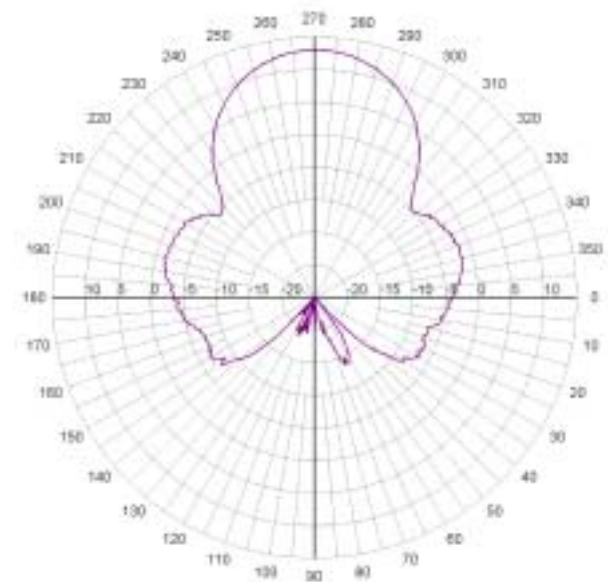


**MP240013XFPT**

**Elevation Cut**



**MP24008XFPT**



**MP240013XFPT**

**Azimuth Cut**

**MAXRAD**  
**Sector**  
**Antennas**



## XtremeWave™ MS024014PTNF MAXRAD 2.4 GHz ISM All Terrain Sectorized Omnidirectional Antenna

The new MAXRAD XtremeWave™ terrain adjustable omnidirectional antenna allows sector adjustments of up to +/- 15 degrees, permitting installers to contour their coverage area according to the specific geographic conditions of their territory. For applications with more specific coverage demands this antenna offers various azimuth (horizontal

plane beamwidth) pattern options optimized to address differing coverage, cost control and tower space limitation challenges. As the subscriber base grows, the MS024014PTNF can accommodate increased thruput capacity without the need to replace the antenna.

### General Specifications:

2.4 GHz ISM sectorized omnidirectional antenna

### Radome Material:

ASA-ABS, UV resistant

### Termination:

N, female connector (at power divider input)

### Polarization:

Vertical

### Lightning Protection:

DC grounded

### Mounting Method:

Center pipe mount (1.25" OD Pipe Included)

Direct tower leg mount

Other mounting options possible

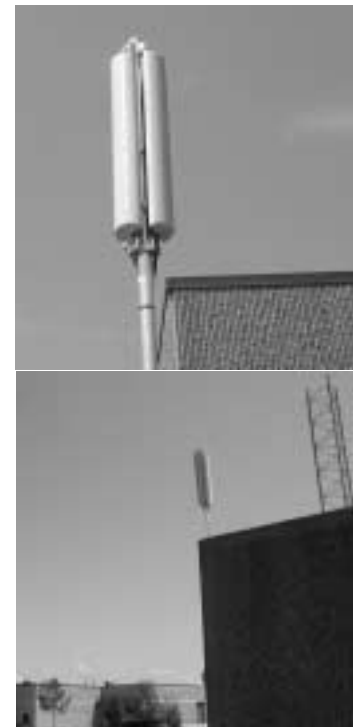
### Pattern Shaping Kits:

Standard omnidirectional (pattern #4). Power divider is included.

Other options are available\*\*\*. Consult the factory for details.

### Nominal Impedance:

50 Ohms



The MS024014PTNF's patented mount design allows mast or tower leg mounting for greater flexibility when tower space availability is limited.



### Electrical Specifications:

Model #	Frequency Range	Nominal Gain	E-Plane Beamwidth	VSWR	Maximum Power	Power Divider
MSO24014PTNF	2400-02500 MHz	12.5 dBi*		< 1.5:1	50 Watts**	3-way equal split

### Mechanical Specifications:

Model #	Wind Survival	Temperature Range	Dimensions	Weight	Cable
MP58013XFPT	125 mph 200 km/h		19.75" Lx5"OD 501 mm L x 127 mm OD	8.0 lbs 3.6 kg	12" LMR195

\* Antenna gain specified when sectors are fed individually

\*\* Power limitation of power divider 10 watts

\*\*\* Optional patterns require use of one radio

Sectorized Omnidirectional 2.4 GHz

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## XtremeWave™ MSO24014PTNF MAXRAD 2.4 GHz ISM All Terrain Sectorized Omnidirectional Antenna (cont'd.)

The XtremeWave™ MSO24014PTNF outperforms standard omnidirectional antennas by providing these unique benefits:

### Increased System Capacity

As the subscriber base increases, this antenna provides the flexibility to increase capacity. The sectors may be fed individually to achieve higher gain, enhancing the system's throughput. This is not possible with standard omnidirectional antennas.

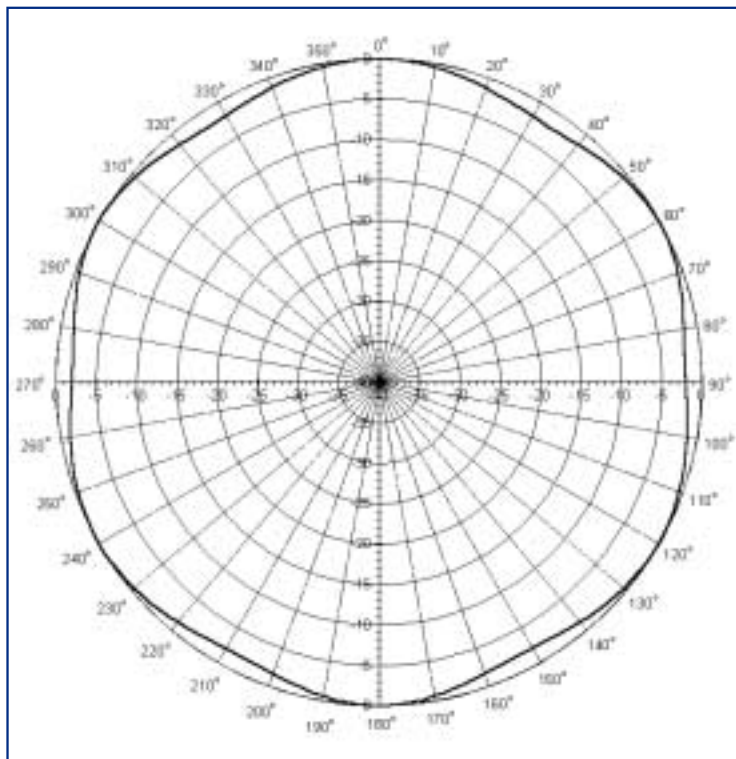
### Superior Isolation

When each sector of the all terrain omnidirectional antenna is fed individually, superior isolation is achieved - typically -40 dB. This minimizes interference issues with adjacent antennas and provides better quality links.

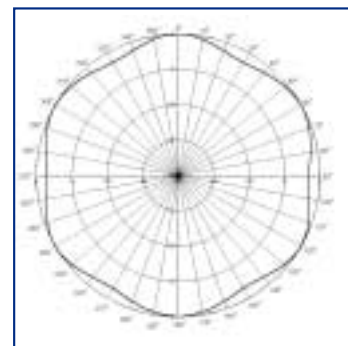
### Electrical and Mechanical Beamtilt Adjustments

Typically, omnidirectional antennas offering more than 7 degrees of electrical beamtilt produce patterns with high side lobe levels. As a result, these antennas are susceptible to interference issues that may affect gain and reduce overall system performance. When mechanical beamtilt options are used, pattern coverage could be affected when the radiated beam is focused down and the opposite angle is pointed upwards and away from the customer base. This results in wasted energy and inefficient system performance.

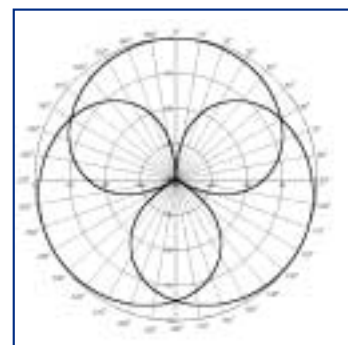
The Maxrad All Terrain Sectorized Omni can be mechanically adjusted up to 15 degrees of uptilt or downtilt per sector. This results in lower sidelobe levels and minimizes the system's susceptibility to interference issues. By offering the flexibility to adjust the antenna radiation pattern to the surrounding terrain this antenna allows installers to maximize pattern performance for optimal customer base coverage.



**Azimuth Beamwidth**



**3 Sectors Equally Fed**



**3 Sectors Individually Fed**

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NEXT PAGE

## XtremeWave™ MS024014PTNF MAXRAD 2.4 GHz ISM All Terrain Sectorized Omnidirectional Antenna (cont'd.)

### Pattern Selectivity

Standard omnidirectional antennas are limited to one azimuth pattern: 360 degrees. The XtremeWave™ all terrain sectorized omni can be optimized to the system planner's unique needs by offering various premium pattern options designed to address differing coverage, cost control and tower space limitation challenges.

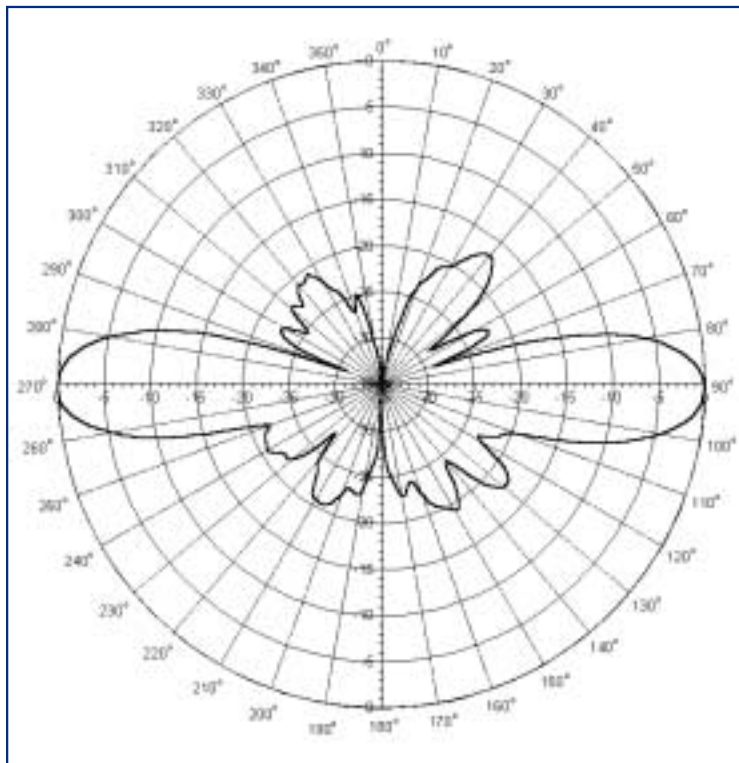
### Mounting Flexibility

Tower space limitations and the need to minimize interference issues are the reasons many standard omnidirectional antennas need to be mounted on supporting arms several feet away from the tower structure. As a result, these antennas are vulnerable to wind sway that could negatively affect the quality of the transmitted signal.

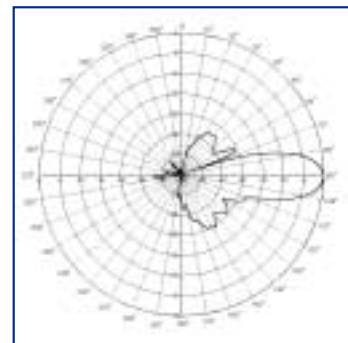
The MS024014PTNF's mount design permits installation directly around the tower leg (1.25" to 3.25 od). This unique design minimizes windloading on the tower and adds mounting flexibility where space allocation is a challenge.

### Downtime Reduction

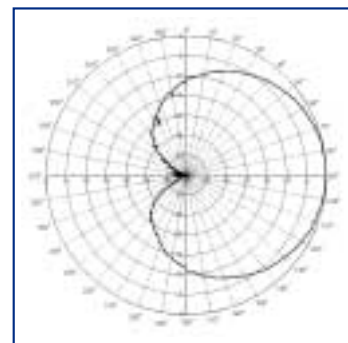
Antenna damage could cause costly downtime periods with up to 100% system failure. The modular design of the new XtremeWave™ all terrain sectorized omni minimizes downtime periods by maintaining links of the undamaged, individually-fed sectors. This Maxrad antenna solution could increase system survivability by up to 66%!



**Elevation Beamwidth**



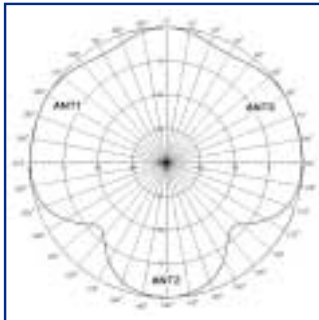
**One Sector Elevation**



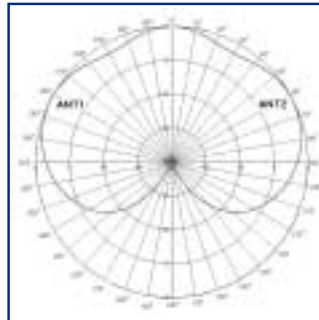
**One Sector Azimuth**

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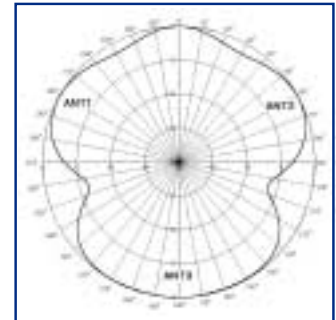
## Azimuth Pattern Options



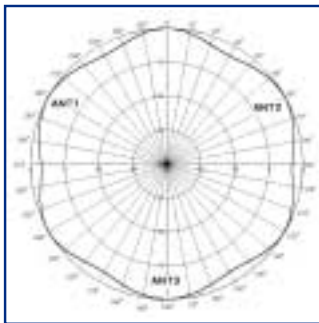
**Pattern #1**



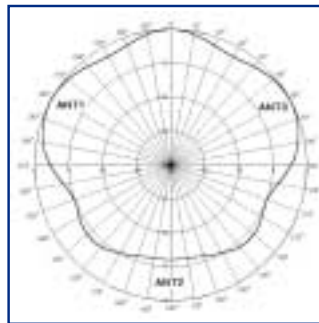
**Pattern #2**



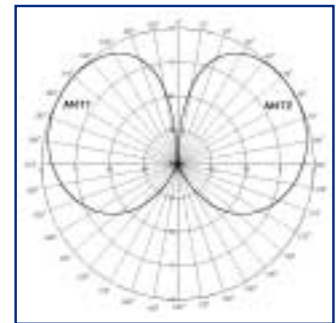
**Pattern #3**



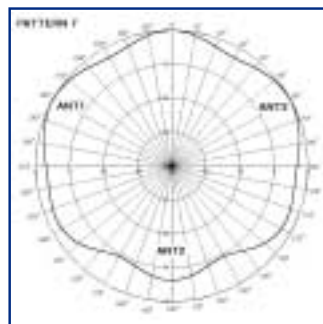
**Pattern #4 (standard)**



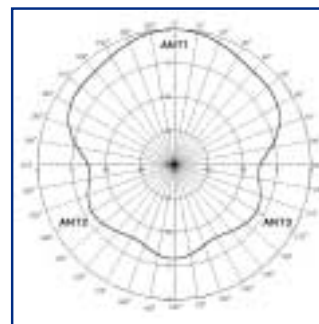
**Pattern #5**



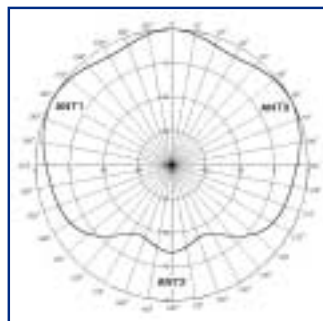
**Pattern #6**



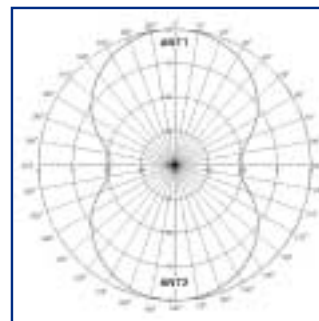
**Pattern #7**



**Pattern #9**



**Pattern #10**



**Pattern #11**



## XtremeWave™ MSP24013MB 2.4 GHz ISM Adjustable Sector Panel Antenna

The MAXRAD XtremeWave™ sector panel covers the 2.4 GHz ISM band and provides field adjustable horizontal beamwidths of 45°, 60°, 90° or 120°. This unique design allows a system installer to stock a single antenna and field adjust it to the desired beamwidth, making it useful for wireless broadband applications where coverage of a geographical sector is desired. The panel can also be ordered with fixed beamwidths. This line also includes a compact 90° sector model for applications where space is very limited. This fixed beamwidth antenna measures less than 8 inches long.

In many applications, sector panels are used to provide omnidirectional coverage by using, for example, three radios

and three 120° sector antennas to provide 360° coverage. This results in a stronger and more focused signal than that of a single omnidirectional antenna. It also provides a more robust design. The antenna features industry leading front-to-back ratios of more than 42 dB at 45°, 60° and 90° and over 32 dB at 120° with excellent cross pole discrimination.

### Features and Benefits:

- Adjustable multiple beamwidth sectors. A single antenna can be utilized to cover several geographical sectors.
- Three sectors with three data radios can be installed as an array for omnidirectional coverage. Provides a stronger, more focused signal than that of a standard omnidirectional antenna.
- Industry leading front-to-back ratios. Ensures that the radiated energy is focused towards its target, and not to the back or sides of the antenna.

### General Specifications:

2.4 GHz sector panel antennas

#### Radome Material:

Off white ASA plastic with UV resistance

#### Termination:

Type N, female. Other connector options available

#### Polarization:

Vertical

#### Lighting Protection:

DC grounded

#### Mounting Method:

Adjustable stainless steel bracket, +/- 11 degrees of uptilt or downtilt  
Pipe diameter: 0.75 thru 2.4" OD (19-60 mm)

#### Nominal Impedance:

50 Ohms



Sector Panel on adjustable bracket

The MSP24013MB allows horizontal beamwidth adjustments without having to replace the antenna. Its patented design is one of the most compact currently available on the market.

Adjustable  
Sector Panel 2.4 GHz

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NEXT PAGE

# XtremeWave™ MSP24013MB 2.4 GHz ISM Adjustable Sector Panel Antenna (cont'd.)

## Specs and Patterns

### Electrical Specifications:

Model #	Frequency Range	Nominal Gain	Front-to-Back Ratio	Horizontal Plane Beamwidth	E-Plane Beamwidth	Typical Cross Poll Discriminati	VSWR	Power Input
MSP24013MB	2400-2500 MHz	13 dBi at 120 <sup>0</sup>	>32 dBi at 120 <sup>0</sup>	120 <sup>0</sup> , 90 <sup>0</sup> , 60 <sup>0</sup> , and 45 <sup>0</sup>	16"	270 <sup>0</sup> -0 <sup>0</sup> , -90 <sup>0</sup> = -20 dB 235 <sup>0</sup> -270 <sup>0</sup> , 90 <sup>0</sup> -135 <sup>0</sup> = -28 dB 180 <sup>0</sup> -235 <sup>0</sup> , 135 <sup>0</sup> -180 <sup>0</sup> = -32 dB	< 1.5:1	50 W
		14 dBi at 90 <sup>0</sup>	>42 dBi at 90 <sup>0</sup>					
		16 dBi at 60 <sup>0</sup>	>42 dBi at 60 <sup>0</sup>					
		17 dBi at 45 <sup>0</sup>	>42 dBi at 45 <sup>0</sup>					
MSP24013-120	2400-2500 MHz	13 dBi	>32 dBi	120 <sup>0</sup>	16"		< 1.5:1	50 W
MSP24014-90	2400-2500 MHz	14 dBi	>42 dBi	90 <sup>0</sup>	16"		< 1.5:1	50 W
MSP24016-60	2400-2500 MHz	16 dBi	>42 dBi	60 <sup>0</sup>	16"	270 <sup>0</sup> -0 <sup>0</sup> , -90 <sup>0</sup> = -20 dB	< 1.5:1	50 W
MSP24017-45	2400-2500 MHz	17 dBi	>42 dBi	45 <sup>0</sup>	16"	235 <sup>0</sup> -270 <sup>0</sup> , 90 <sup>0</sup> -135 <sup>0</sup> = -28 dB	< 1.5:1	50 W
MSP2401090PT	2400-2486 MHz	10 dBi	>32 dBi	90 <sup>0</sup>	35"	180 <sup>0</sup> -235 <sup>0</sup> , 135 <sup>0</sup> -180 <sup>0</sup> = -32 dB >20 dB	< 1.5:1	50 W

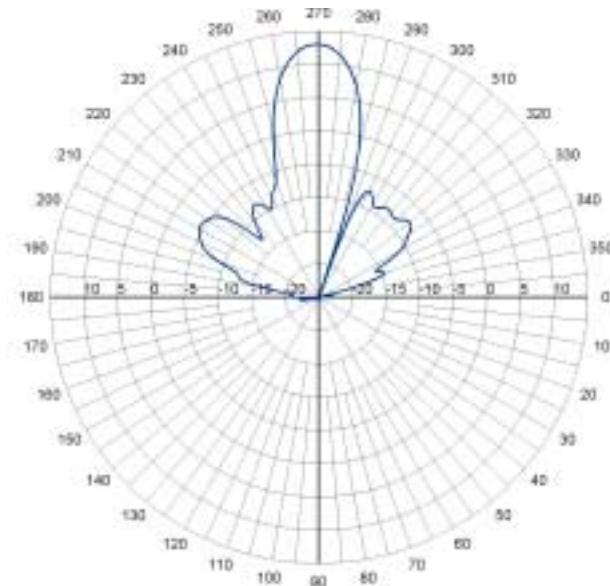
### Mechanical Specifications:

Model #	Rated Wind Velocity	Horizontal Thrust at Rated Wind	Temperature Range	Dimensions	Weight
MSP24013MB					
MSP24013-120					
MSP24014-90	125 mph	43 lb	-22 <sup>0</sup> F to 167 <sup>0</sup> F	21.5" Lx6.5" W x 2.8" D	4 lbs
MSP24016-60	200 km/h	19.5 kg	-30 <sup>0</sup> C to +75 <sup>0</sup> C	546 mm Lx16.5" mm W x 7.2 mmD	1.8 kg
MSP24017-45					
MSP2401090PT	125 mph 200 km/h	43 lb 19.5 kg	-30 <sup>0</sup> C to +75 <sup>0</sup> C	8.0 Lx6.5" W x 2.8" D 203 mm Lx16.5" mm W x 7.2 mmD	3 lbs 1.3 kg

\* Antenna gain specified when sectors are fed individually

\*\* Power limitation of power divider 10 watts

\*\*\* Optional patterns require use of one radio

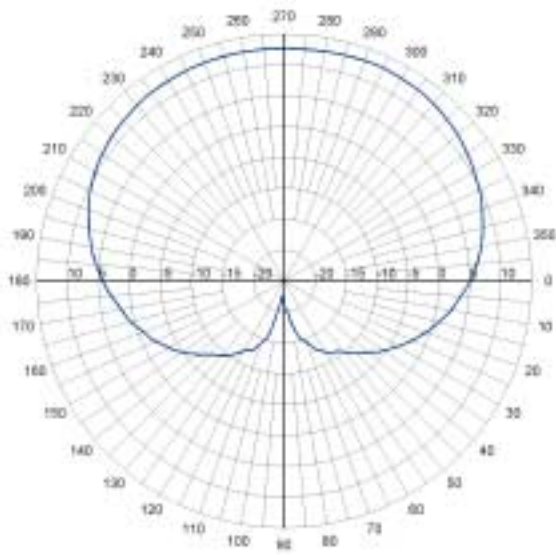


**Elevation Beamwidth  
45°, 60°, 90°  
and 120° Sectors**

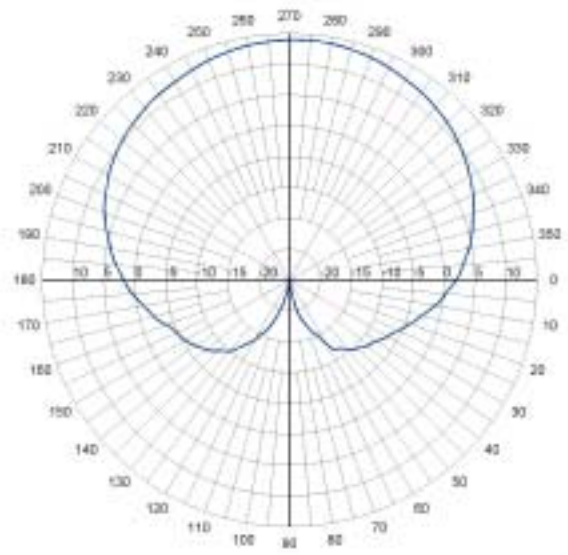
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# XtremeWave™ MSP24013MB 2.4 GHz ISM Adjustable Sector Panel Antenna (cont'd.)

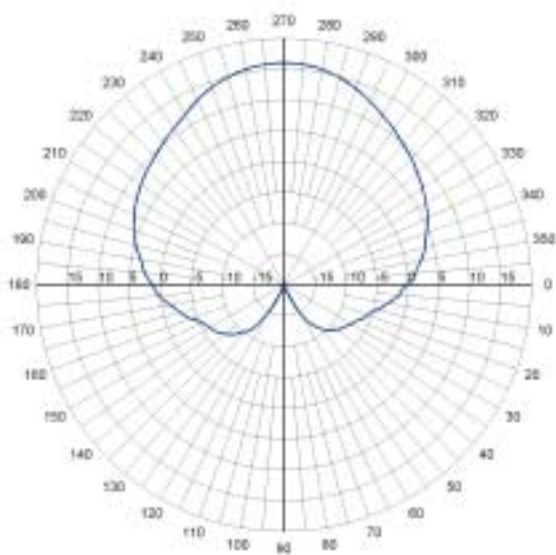
## Patterns



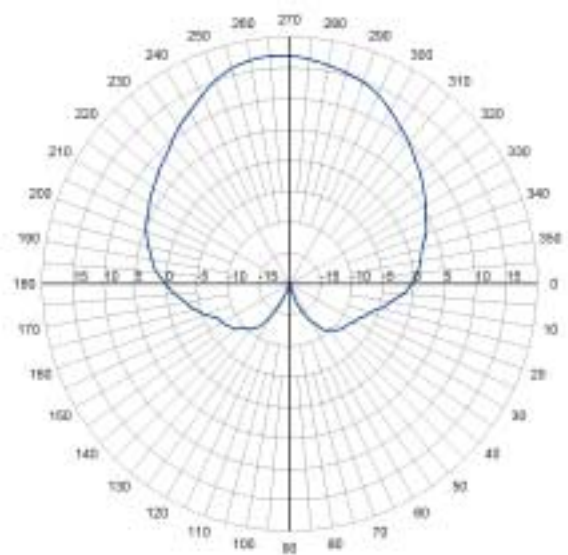
**120° Azimuth Cut**



**90° Azimuth Cut**



**60° Azimuth Cut**

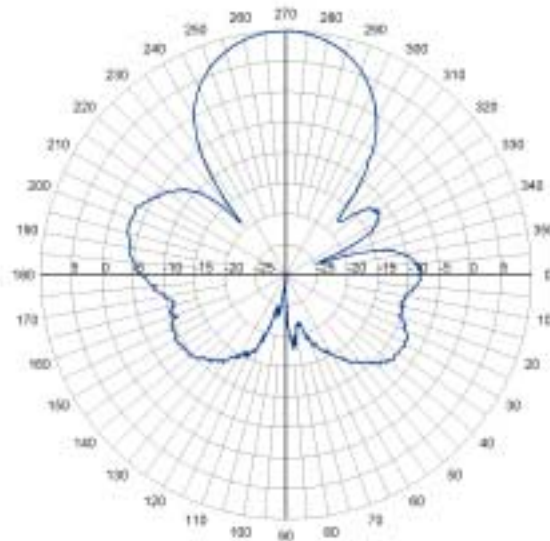


**45° Azimuth Cut**

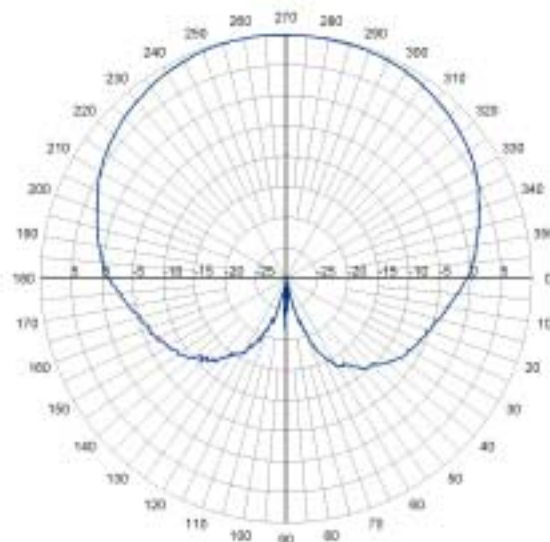
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## XtremeWave™ MSP24013MB 2.4 GHz ISM Adjustable Sector Panel Antenna (cont'd.)

### Patterns



MSP2401090 Elevation Cut



MSP2401090 Azimuth Cut

**MAXRAD**  
**Directional**  
**Panels**



## XtremeWave™ MPXF Series PCS, 2.4 GHz ISM and 5.8 GHz ISM Directional Panel Antenna Series

The MAXRAD XtremeWave™ directional panel antennas are designed to cover PCS, 2.4 GHz and 5.8 GHz frequencies with a VSWR of less than 1.5:1, obtaining maximum gain with an attractive, low-profile package. All models provide efficient and stable performance across the band and can be mounted indoors or outdoors.

### Features and Benefits:

- Patented printed circuit board design. Best performance-to-price ratio.
- UL94-V0 plastic and PC board. Provides UL's highest flame retardant rating allowing maximum placement flexibility. Meets the most stringent building fire rating codes.
- Attractive, low profile housing. Blends well with indoor and outdoor environments where aesthetic considerations are important.
- Corner exit RG-58/U pigtail design. Permits the linear polarized panel to be mounted in vertical or horizontal polarity with a wide variety of connectors.
- Optional UL 910 rated Plenum cable. Allows the cable to be installed in the strictest indoor mounting locations, including air ducts.
- Adjustable mounting brackets for indoor and outdoor mounting. Provide maximum flexibility for indoor or outdoor installations.

### General Specifications:

Directional panel antennas

#### Radome Material:

UL 94-V0 plastic

#### Polarization:

Linear, Vertical/Horizontal. Left hand circular (MP24012CPLXF only).

#### Nominal Impedance:

50 Ohms

#### Mounting Method:

Model / Mount	MPAB7	MPAB8	MPAB10	MPAB11	MPAB12
MP19008XFPT	N/A	N/A	N/A	included	optional
MP19013XFPT	optional	optional	N/A	optional	optional
MP24008XFPT	N/A	N/A	N/A	included	optional
MP24012CPLXFPT	optional	optional	N/A	optional	optional
MP24013XFPT	optional	optional	N/A	optional	optional
MP24018XFPT	optional	optional	optional	N/A	N/A
MP58013XFPT	N/A	N/A	N/A	included	optional
Mount Description	Heavy duty outdoor adjustable mount with +/-35° uptilt/downtilt.  If used with MP24018XFPT, the mount provides +/-18° uptilt/downtilt.  Same as MPAB8, but bracket is longer.	Heavy duty outdoor adjustable mount with 17° uptilt/downtilt.  If used with MP24018XFPT, the mount provides +/-9° uptilt/downtilt.	Heavy duty outdoor adjustable mount +/-20° uptilt/downtilt and +/-90° polarity.  Includes DSS satellite style house bracket.	Short adjustable indoor mount.  It may be used outdoors with small housing panels only.	Long adjustable indoor corner mount.



MP24008XFPT or  
MP19008XFPT or  
MP58013XFPT



MP24013XFPT on MPAB12  
Corner Mount



MP58013XFPT or  
MP24008XFPT or  
MP19008XFPT on  
MPAB11 Mount



MP24013XFPT on MPAB8  
Outdoor Mount



MP24018XFPT

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NEXT PAGE

2.4 & 5.8 GHz  
Directional Panel



# XtremeWave™ MPXF Series PCS, 2.4 GHz ISM and 5.8 GHz ISM Directional Panel Antenna Series (cont'd.)

## Specs and Patterns

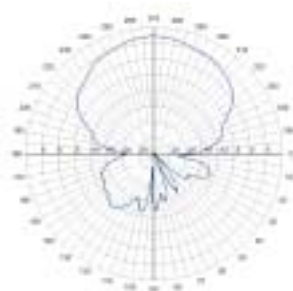
### Electrical Specifications

Model #	Frequency Range	Gain	Front-to-Back Ratio	3 dB Horizontal Beamwidth	3 dB Vertical Beamwidth	VSWR	Maximum Power Input	Connector Options
MP19008XFPT	1850 - 1990 MHz	8.0 dBi	> 15 dB	90°	60°	< 1.5:1	20 W	N, female (part #NF) is standard. Other connector options are available. Please consult factory for details.
MP19013XFPT	1850 - 1990 MHz	12.5 dBi	> 18 dB	40°	35°	< 1.5:1	20 W	
MP24008XFPT	2300 - 2500 MHz	8.5 dBi	> 15 dB	60°	60°	< 1.5:1	20 W	
MP24012CPLXFPT	2300 - 2500 MHz	12.0 dBi	> 20 dB	35°	35°	< 1.5:1	20 W	
MP24013XFPT	2300 - 2500 MHz	13.0 dBi	> 18 dB	35°	35°	< 1.5:1	20 W	
MP24018XFPT	2300 - 2500 MHz	18.0 dBi	> 25 dB	18°	19°	< 1.5:1	20 W	
MP58013XFPT	5725 - 5875 MHz	12.5 dBi	> 23 dB	42°	28°	< 1.5:1	20 W	

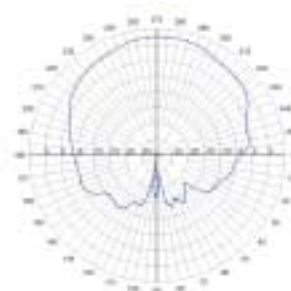
### Mechanical Specifications

Model #	Wind Loading (Frontal) @100 mph Wind	Temperature Range	Dimensions	Weight	Cable
MP19008XFPT	9.3 lbs.	-40° C to +80° C	5.1" x 4.7" x 1.5" (12.9 x 11.9 x 3.8 cm)	0.5 lbs (0.23 kg)	12" (30.5 cm) RG58/U*
MP19013XFPT	27.9 lbs.	-40° C to +80° C	8.8" x 8.1" x 1.6" (22.4 x 20.6 x 4.06 cm)	1.2 lbs (0.54 kg)	12" (30.5 cm) RG58/U*
MP24008XFPT	9.3 lbs.	-40° C to +80° C	5.1" x 4.7" x 1.5" (12.9 x 11.9 x 3.8 cm)	0.5 lbs (0.23 kg)	12" (30.5 cm) RG58/U*
MP24012CPLXFPT	27.9 lbs.	-40° C to +80° C	8.8" x 8.1" x 1.6" (22.4 x 20.6 x 4.06 cm)	1.2 lbs (0.54 kg)	12" (30.5 cm) RG58/U*
MP24013XFPT	27.9 lbs.	-40° C to +80° C	8.8" x 8.1" x 1.6" (22.4 x 20.6 x 4.06 cm)	1.2 lbs (0.54 kg)	12" (30.5 cm) RG58/U*
MP24018XFPT	85 lbs.	-40° C to +80° C	15.1 x 13.9 x 1.9 in (38.4 x 35.3 x 4.8 cm)	3.9 lbs (1.8 kg)	12" (30.5 cm) RG58/U*
MP58013XFPT	9.3 lbs.	-40° C to +80° C	5.1" x 4.7" x 1.5" (12.9 x 11.9 x 3.8 cm)	0.5 lbs (0.23 kg)	6" (15.25 cm) RG58/U

\* UL 910 rated cable optional.



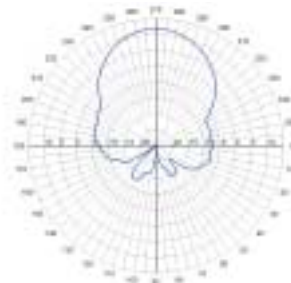
MPI9008XFPT Elevation Cut



MPI9008XFPT Azimuth Cut



MPI9013XFPT Elevation Cut



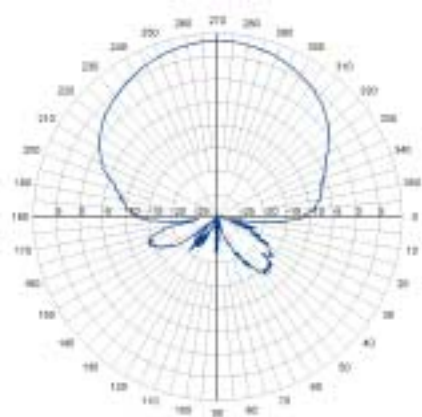
MPI9013XFPT Azimuth Cut

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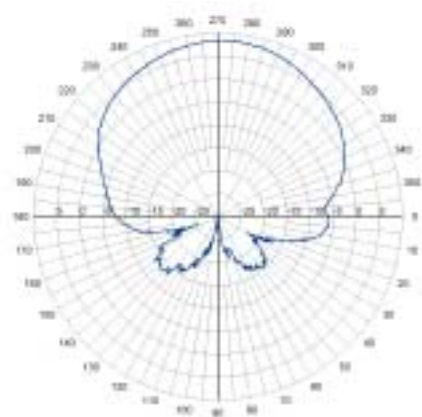
**XtremeWave™ MPXF Series PCS, 2.4 GHz ISM  
and 5.8 GHz ISM Directional Panel Antenna Series (cont'd.)**

**Patterns**

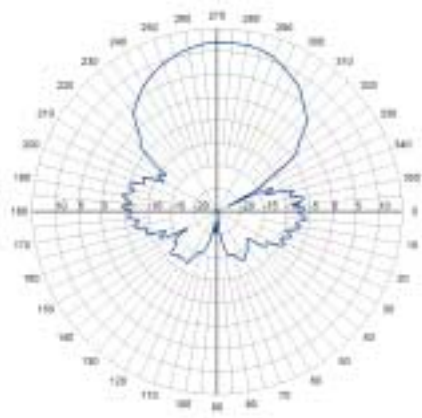
**MP24008XFPT  
Elevation Cut**



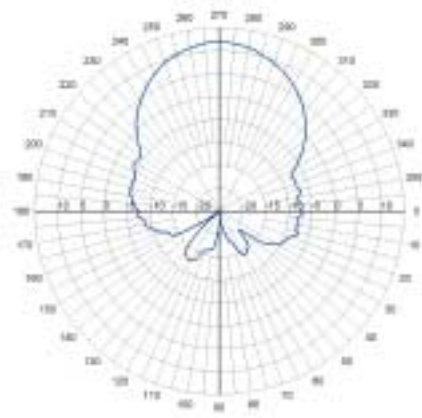
**MP24008XFPT  
Azimuth Cut**



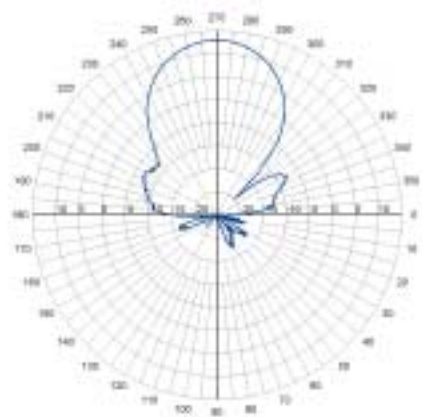
**MP24012CPLXFPT  
Elevation Cut**



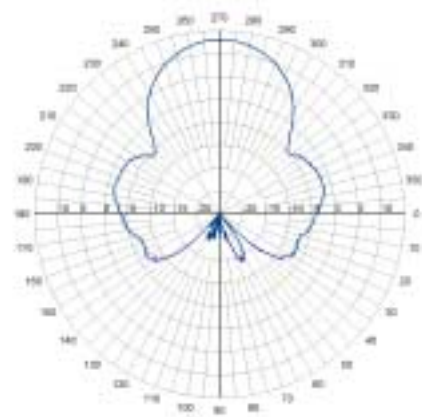
**MP24012CPLXFPT  
Azimuth Cut**



**MP24013XFPT  
Elevation Cut**



**MP24013XFPT  
Azimuth Cut**

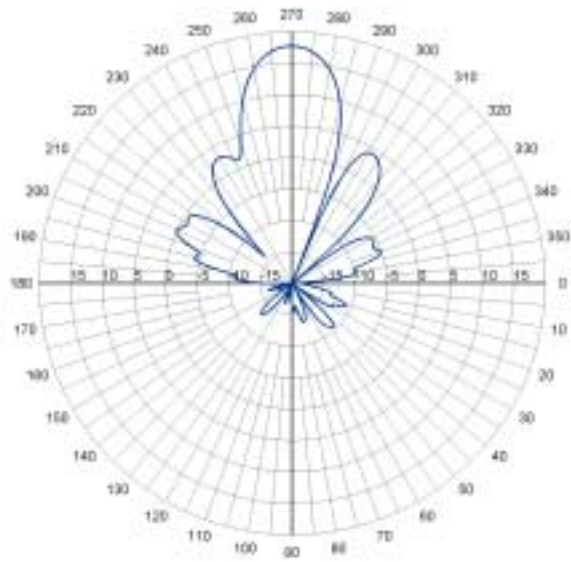


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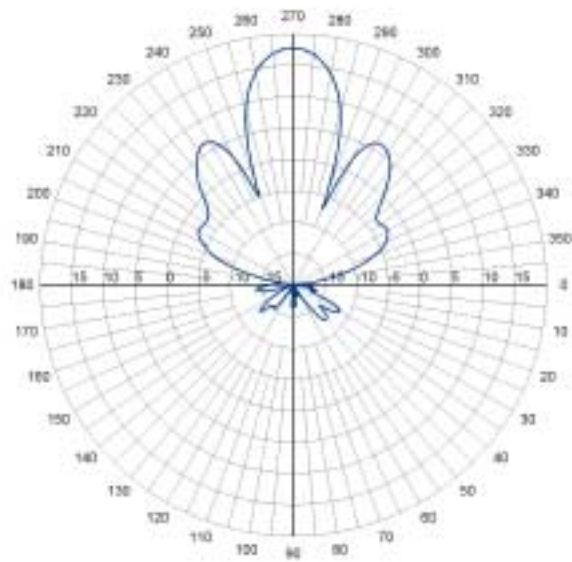


# XtremeWave™ MPXF Series PCS, 2.4 GHz ISM and 5.8 GHz ISM Directional Panel Antenna Series (cont'd.)

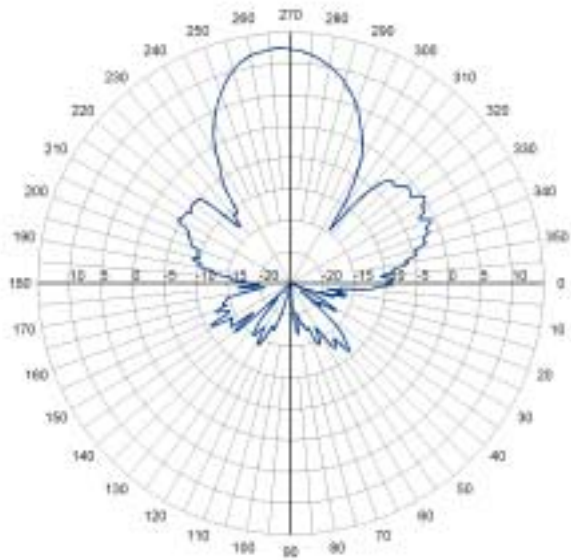
## Patterns



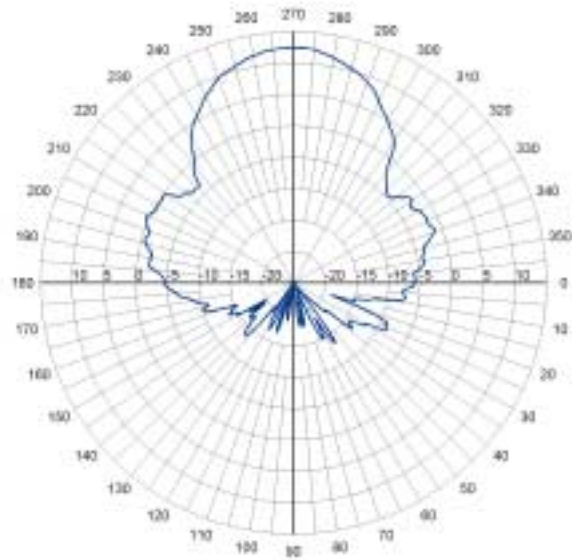
**MP24018XFPT Elevation Cut**



**MP24018XFPT Azimuth Cut**



**MP58013XFPT Elevation Cut**



**MP58013XFPT Azimuth Cut**

## MP Series Antennas 2.4 GHz ISM, Vertical and Horizontally Polarized Directional Panel Antenna Series

The MAXRAD directional panel antennas are designed to cover frequencies between 2300 and 2500 MHz with a VSWR of less than 1.5:1, obtaining maximum gain with a

small, low-profile package. These antennas provide efficient and stable performance across the band and can be mounted in a wide variety of indoor or outdoor locations.

### Features and Benefits:

- Patented PCB design. Provides best performance-to-price ratio.
- Attractive, low profile housing. Blends well where aesthetic considerations are important.
- Vertical and horizontally polarized models available. Provides maximum placement flexibility.

### General Specifications:

Directional panel antennas

#### Radome Material:

UV-stable, beige ASA - ABS

#### Polarization:

Vertical, linear (can be adjusted with an optional MPAB mount)  
Vertical, horizontal (model #MP24016HPT only)

#### Lightning Protection:

DC grounded

#### Nominal Impedance:

50 Ohms

#### Mechanical Specifications

#### Mounting Method:

Mounting mast/pipe bracket included.  
Adjustable MPAB4 mounting bracket is optional.

#### Connector Options: (add connector part # after PT):

Example: MP24015PTBN (Model 24015PT with a pigtail and BNC connector)  
BNC (Part #BN)  
Female N (part #NF); male N (part #NM)  
Female SMA (part #FSMA); male SMA (part #MSMA)  
Female SMA, reverse threaded (part #FSMART)  
Male SMA, reverse threaded (part #MSMART)  
Reverse polarity TNC plug (part #MRPC)  
TNC plug (part #C)  
Mini-UHF (part #PL)  
FME (part #FFME).



**MP24015PT or  
MP24016HPT  
(mast mounted)**



**Panel on MPAB4  
adjustable mount**

2.4 GHz  
Polarized Directional Panels

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## MP Series Antennas 2.4 GHz ISM, Vertical and Horizontally Polarized Directional Panel Antenna Series (cont'd.)

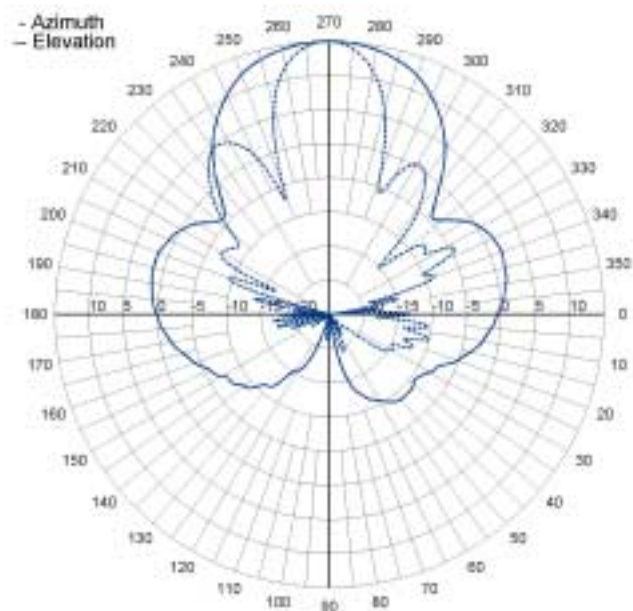
### Specs and Patterns

#### Electrical Specifications

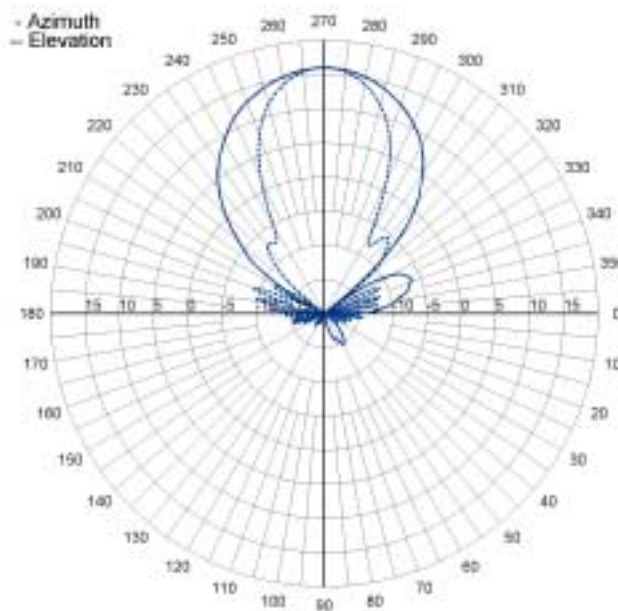
Model #	Frequency Range	Gain	Front to Back Ratio	3 dB Horizontal Beamwidth	3 dB Vertical Beamwidth	VSWR	Maximum Power Input	Cable and Connector
MP24015PT	2300 - 2500 MHz	15 dBi	> 25 dB	40°	19°	< 1.5:1	> 20 W	12" of RG58/U. Various connector options are available
MP24016HPT	2300 - 2500 MHz	16 dBi	> 25 dB	40°	23°	< 1.5:1	> 20 W	12" of RG58/U. Various connector options are available

#### Mechanical Specifications

Model #	Wind Loading (Frontal) @100 mph Wind	Temperature Range	Dimensions	Weight
MP24015PT	39.8 lbs.	-51°C to +71°C (-60°F to +160°F)	7.3 x 13.8 x 1.5 in	1.2 lbs
MP24016HPT	39.8 lbs.	-51°C to +71°C (-60°F to +160°F)	7.3 x 13.8 x 1.5 in	1.2 lbs



MP24015PT Elevation and Azimuth Cuts



MP24016HPT Elevation and Azimuth Cuts

**MAXRAD**  
**Parabolic**  
**Antennas**



## XtremeWave™ MPR Series 2.4 GHz ISM and 1.8-1.9 GHz PCS Parabolic Reflector Antenna Series

The MAXRAD MPR parabolic reflector antennas are designed to be used as bridge antennas between two networks, or for point-to-point communications. Featuring light weight aluminum reflectors these antennas provide

maximum thruput with minimum interference. The series comprise 5 models that include rugged mounts with a 20 degree fine adjustment feature for horizontal and vertical plane orientation.

### Features and Benefits:

- Fully adjustable mount. Allows precise alignment of elevation and azimuth beam angles for better coverage pattern.
- Spun aluminum reflector: Provides maximum parabola accuracy for more consistent and reliable antenna performance.
- Very robust mounting structure. Prevents oscillation in windy conditions. Outperforms barbecue grate style antennas by reducing movement and providing higher data throughput.
- Narrow beamwidth. Ideal for long range point-to-point communications links requiring high gain.
- Wind load rated at 110 mph with a 1/2 inch of ice. Can be used reliably on tall towers and for applications in extreme weather conditions.

### General Specifications:

Parabolic reflector antennas

#### Polarization:

Linear; Vertical (V) or horizontal (H)

#### Lightning Protection:

DC Grounded

#### Mounting Base Diameter:

1-1/4 inch

#### Nominal Impedance:

50 Ohms

#### Mounting Method:

Included bracket clamps to mast of up to 2 inches O.D.

#### Termination:

RG-303/U pigtail with N female connector

Other connector options available



**The MPR parabolic reflector antennas provide long-range wireless broadband coverage from point to point or as a link between two sites.**



Parabolic Reflectors

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NEXT PAGE

## XtremeWave™ MPR Series 2.4 GHz ISM and 1.8-1.9 GHz PCS Parabolic Reflector Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

Model #	Frequency Range	VSWR	Front-to Back Ratio	Gain	Vertical Beamwidth @ 1/2 Power	Maximum Sidelobe Level
MPR24020V	2.4-2.5 GHz	< 1.5:1 nominal	> 25 dB	20 dBi nominal	12.4°	17 dB
MPR24020H	2.4-2.5 GHz	< 1.5:1 nominal	> 25 dB	20 dBi nominal	12.4°	17 dB
MPR24022V	2.4-2.5 GHz	< 1.5:1 nominal	> 28 dB	22 dBi nominal	10.3°	22 dB
MPR24022H	2.4-2.5 GHz	< 1.5:1 nominal	> 28 dB	22 dBi nominal	10.3°	22 dB
MPR24024V	2.4-2.5 GHz	< 1.5:1 nominal	> 30 dB	24 dBi nominal	8.7°	22 dB
MPR24024H	2.4-2.5 GHz	< 1.5:1 nominal	> 30 dB	24 dBi nominal	8.7°	22 dB
MPR19022V	1.8-1.9 GHz	< 1.5:1 nominal	> 28 dB	22 dBi nominal	10.6°	17 dB
MPR19022H	1.8-1.9 GHz	< 1.5:1 nominal	> 28 dB	22 dBi nominal	10.6°	17 dB
MPR19018V	1.8-1.9 GHz	< 1.5:1 nominal	> 25 dB	18 dBi nominal	16.2°	12 dB
MPR19018H	1.8-1.9 GHz	< 1.5:1 nominal	> 25 dB	18 dBi nominal	16.2°	12 dB

#### Mechanical Specifications

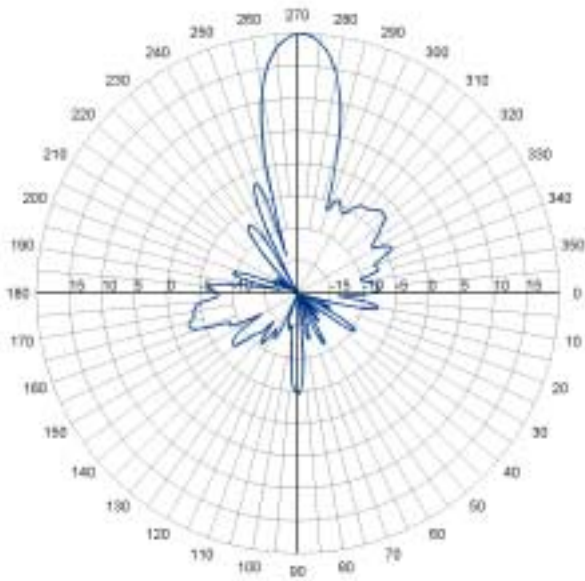
Model #	Wind Survival with 1/2 inch of ice	Temperature Range	Cable	Diameter	Weight
MPR24020V	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	24" (609 mm)	8.5 lbs (3.81 kg)
MPR24020H	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	24" (609 mm)	8.5 lbs (3.81 kg)
MPR24022V	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	30" (762 mm)	11.0 lbs (4.98 kg)
MPR24022H	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	30" (762 mm)	11.0 lbs (4.98 kg)
MPR24024V	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	36" (914 mm)	14.0 lbs (6.35 kg)
MPR24024H	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	36" (914 mm)	14.0 lbs (6.35 kg)
MPR19022V	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	36" (914 mm)	14.0 lbs (6.35 kg)
MPR19022H	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	36" (914 mm)	14.0 lbs (6.35 kg)
MPR19018V	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	24" (609 mm)	8.4 lbs (3.81 kg)
MPR19018H	110 mph	-40°C to +80°C	15" (381 mm) RG303/U	24" (609 mm)	8.4 lbs (3.81 kg)

Note: Other connector options are available. Please consult the factory for details.

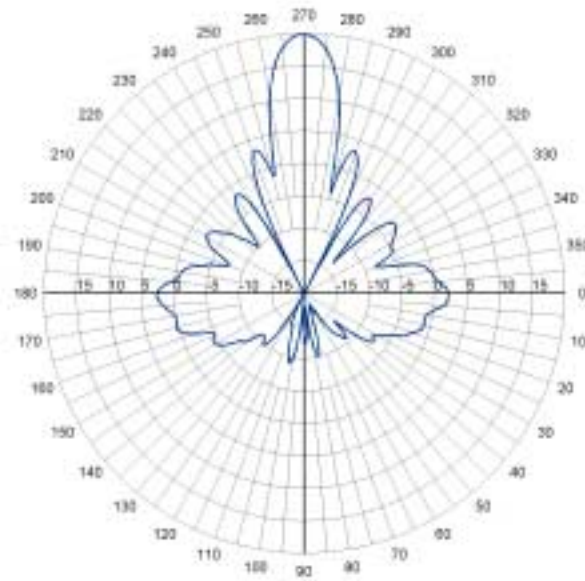




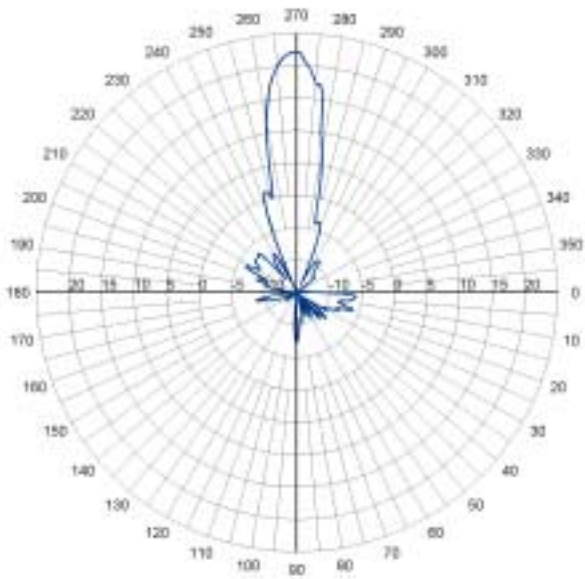
**XtremeWave™ MPR Series**  
**2.4 GHz ISM and 1.8-1.9 GHz PCS Parabolic Reflector**  
**Antenna Series (cont'd.)**



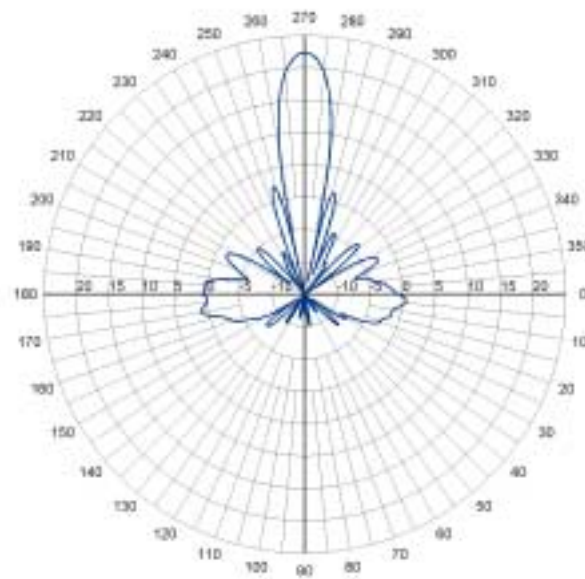
**MPR24020 Elevation Cut**



**MPR24020 Azimuth Cut**



**MPR24022 Elevation Cut**



**MPR24022 Azimuth Cut**



**MAXRAD**  
**Yagi**  
**Antennas**



## XtremeWave™ MYP Series 2.4 GHz ISM Enclosed Yagi Antenna Series

The MAXRAD MYP yagi antennas feature two models providing 8 and 13 dBi gain with a nominal VSWR of less than 1.5:1 (less than 2:1 across the band). Both models are designed to operate in the 2400 to 2483.5 MHz frequency

band. These antennas can be used as bridge antennas between two networks or for point-to-point communications. They are typically mast mounted and vertically polarized.

### Features and Benefits:

- Versatile mounting hardware allows easy installation. Two mounting kits clamp to masts of 1-5/8" and 1-1/2" O.D.
- Optional, articulating mount. Allows precise adjustment of the antenna both vertically and horizontally.
- One-piece unit construction design. Minimizes potential intermodulation problems that can occur with multiple joint designs.
- Antenna elements made from high grade aluminum. Provide maximum mechanical strength, stability and reliability.
- Attractive weather-proof radome constructed of UV stabilized material. Provides robust and trouble free use in harsh outdoor environments.

### General Specifications:

2.4 GHz ISM enclosed yagi antenna series

#### Polarization:

Vertical, linear

#### Lightning Protection:

DC grounded

#### Nominal Impedance:

50 Ohms

#### Mounting Method:

MYK24 standard yagi mounting kit (included) clamps to a vertical mast of up to 1-5/8" O.D.

MYK26 adjustable yagi mounting kit (optional) clamps to a vertical mast of up to 1-1/2" O.D.

#### Termination:

N, female



**MYP24013 and MYP24008  
Mast Mounted**



**The Maxrad MYP yagi provides high gain and excellent performance coverage for point to point links.**



**MYK26  
Adjustable  
Mast Mount  
(optional)**



**MYK24  
Standard  
Mast Mount  
(included)**

Yagi Antenna  
2.4 GHz

# XtremeWave™ MPR Series 2.4 GHz ISM and 1.8-1.9 GHz PCS Parabolic Reflector Antenna Series (cont'd.)

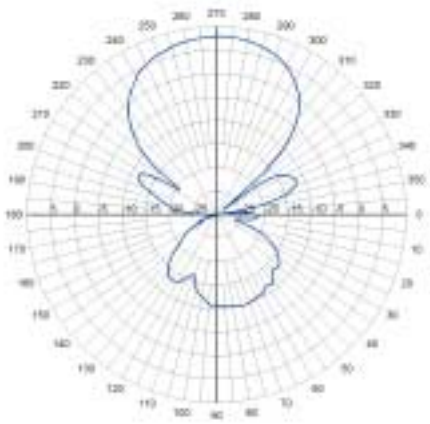
## Specs and Patterns

### Electrical Specifications

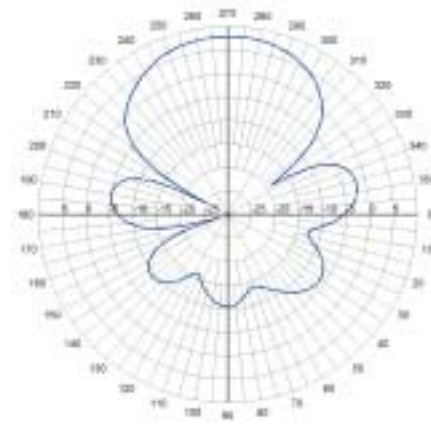
Model #	Frequency Range	VSWR	Front-to-Back Ratio	Nominal Gain	Vertical Beamwidth @ 1/2 Power	Horizontal Beamwidth @ 1/2 Power
MYP24008	2400-2483.5 MHz	< 1.5:1 nominal	13.5 dB	8.8 dBi	55°	47°
MYP24013	2400-2483.5 MHz	< 1.5:1 nominal	20 dB	13.5 dBi	30°	28°

### Mechanical Specifications

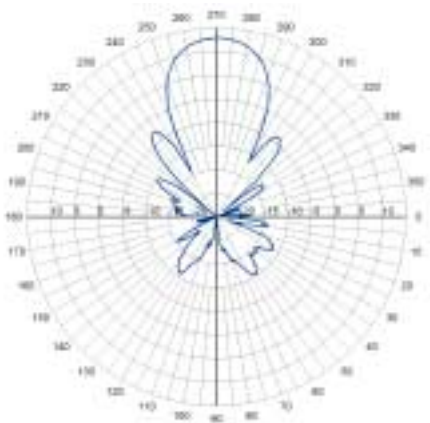
Model #	Wind Survival	Lateral Thrust at Rated Wind	Cable	Connector	Length	Weight
MYP24008	120 mph	12.2 lbs.	18" (457.2 mm) RG58A/U, white	Type N, female	7.25" (184.15 mm)	.48 lbs (0.22 kg)
MYP24013	120 mph	31.4 lbs.	18" (457.2 mm) RG58A/U, white	Type N, female	18" (457.2 mm)	.76 lbs (0.34 kg)



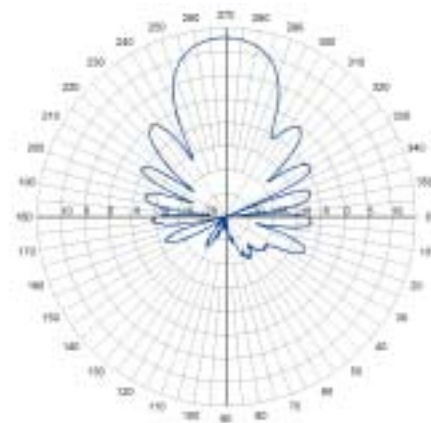
**MYP24008  
Elevation Cut**



**MYP24008  
Azimuth Cut**



**MYP24013  
Elevation Cut**



**MYP24013  
Azimuth Cut**

**MAXRAD**  
**Omnidirectional**  
**Antennas**



## XtremeWave™ MFBXP Series PCS, 2.4 GHz ISM, MMDS and 5.8 GHz ISM Omnidirectional Base Station Antenna Series

The MAXRAD XtremeWave™ wireless broadband omnidirectional antennas are designed to provide maximum performance and reliability under the toughest weather conditions. These antennas feature a U.V. stable, vented

radome that provides ultimate protection against weather elements. The line includes seven models covering MMDS, ISM and PCS frequencies with gains ranging from 4 to 10 dBi. These antennas can be mast, wall or ceiling mounted.

### Features and Benefits:

- U.V. stable, pultruded fiberglass radome. Allows outdoor installation even in harsh climates.
- Vented system design. Provides reliable performance by protecting the electrical design against extreme moisture and/or temperatures.
- Thread relief on connector: Improved accessibility for taping thus reducing installation time and improving overall effectiveness.
- Internal O-ring seal in the base of the antenna. Assures a watertight seal to prevent water from migrating into the antenna connector.
- Electrical downtilt options. Allow system planners flexibility in challenging operating environments.

### General Specifications:

Omnidirectional Base Station Antennas

#### Radome Material:

5/8 inch diameter pultruded UV-stable fiberglass

#### Polarization:

Vertical

#### Nominal Impedance:

50 ohms

#### Mounting Base Diameter:

1-1/4 inches

#### Mounting Method (sold separately):

- MMK1924 – L-bracket mount for wall or pipe mount (not recommended for use with model MFB24010)
- MMK8 - Aluminum extruded bracket for mast mounting
- MMK11 - Ceiling mount bracket
- MMK13 - Heavy duty L-bracket for wall or pipe mount

#### Termination:

- Type N female standard
- Type N female reverse polarity and reverse threaded connectors optional



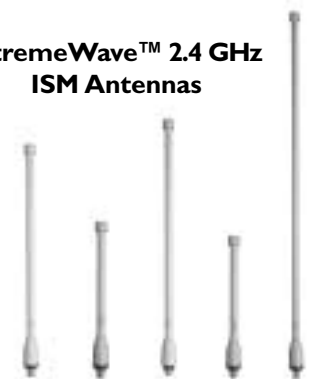
**MFB Model  
24004CM**



**MMK1924**

**MMK8**

### XtremeWave™ 2.4 GHz ISM Antennas



**XtremeWave™ Models 25007  
(MMDS), MFB58007 (5.8 GHz) and  
MFB19008A (PCS), MFB24006 and  
MFB24010 (ISM) Antennas**



### Vented System



Omnidirectional  
2.4 and 5.8 GHz

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## XtremeWave™ MFBXP Series PCS, 2.4 GHz ISM, MMDS and 5.8 GHz ISM Omnidirectional Base Station Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

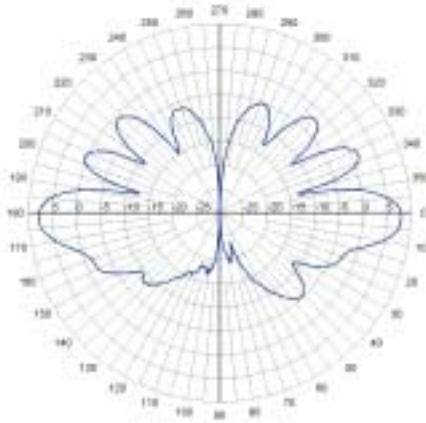
Model #	Frequency Range	Gain	Bandwidth @ 1.5:1 VSWR	Vertical Beamwidth @ 1/2 Power	VSWR	Maximum Power	Downtilt
MFB19008A	1.850-1.990 GHz	8 dBi	140 MHz	12°	< 1.5:1	25 Watts	N/A
MFB24004	2.400-2.4835 GHz	4 dBi	100 MHz	30°	< 1.5:1	25 Watts	N/A
MFB24006	2.400-2.4835 GHz	6 dBi	100 MHz	20°	< 1.5:1	25 Watts	N/A
MFB24008	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	N/A
MFB24008DT3	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	3°
MFB24008DT5	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	5°
MFB24008DT7	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	7°
MFB24010	2.400-2.4835 GHz	10 dBi	100 MHz	9°	< 1.5:1	25 Watts	N/A
MFB25007	2.500-2.700 GHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	N/A
MFB25007DT3	2.500-2.700 GHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	3°
MFB58008	5.725-5.875 GHz	8 dBi	150 MHz	11°	< 1.5:1	25 Watts	N/A

#### Mechanical Specifications

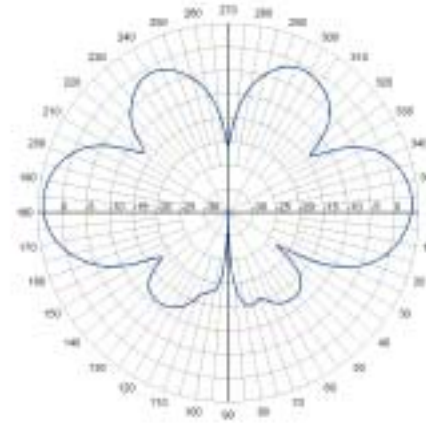
Model #	Frequency Range	Gain	Bandwidth @ 1.5:1 VSWR	Vertical Beamwidth @ 1/2 Power	VSWR	Maximum Power	Downtilt
MFB19008A	1.850-1.990 GHz	8 dBi	140 MHz	12°	< 1.5:1	25 Watts	N/A
MFB24004	2.400-2.4835 GHz	4 dBi	100 MHz	30°	< 1.5:1	25 Watts	N/A
MFB24006	2.400-2.4835 GHz	6 dBi	100 MHz	20°	< 1.5:1	25 Watts	N/A
MFB24008	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	N/A
MFB24008DT3	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	3°
MFB24008DT5	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	5°
MFB24008DT7	2.400-2.4835 GHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	7°
MFB24010	2.400-2.4835 GHz	10 dBi	100 MHz	9°	< 1.5:1	25 Watts	N/A
MFB25007	2.500-2.700 GHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	N/A
MFB25007DT3	2.500-2.700 GHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	3°
MFB58008	5.725-5.875 GHz	8 dBi	150 MHz	11°	< 1.5:1	25 Watts	N/A

**XtremeWave™ MFBXP Series**  
**PCS, 2.4 GHz ISM, MMDS and 5.8 GHz ISM**  
**Omnidirectional Base Station Antenna Series (cont'd.)**

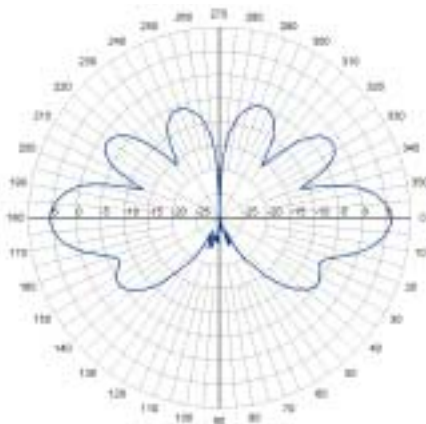
**Patterns**



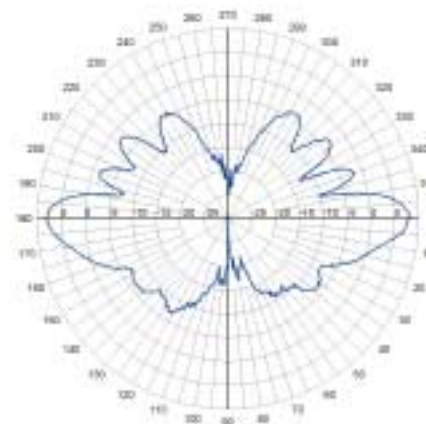
**MFB19008A**  
**Elevation Cut**



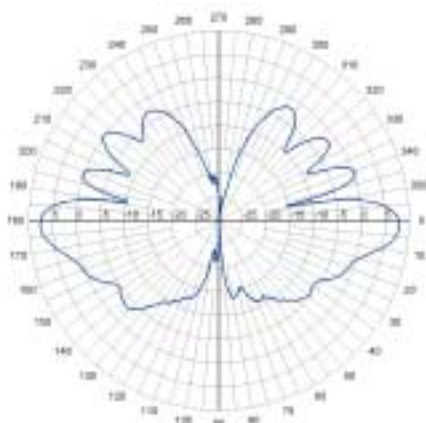
**MFB24004**  
**Elevation Cut**



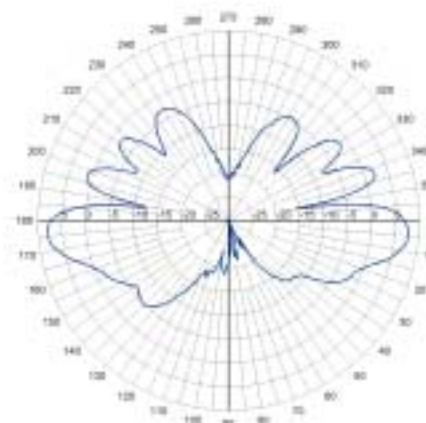
**MFB24006**  
**Elevation Cut**



**MFB24008**  
**Elevation Cut**



**MFB24008DT3**  
**Elevation Cut**



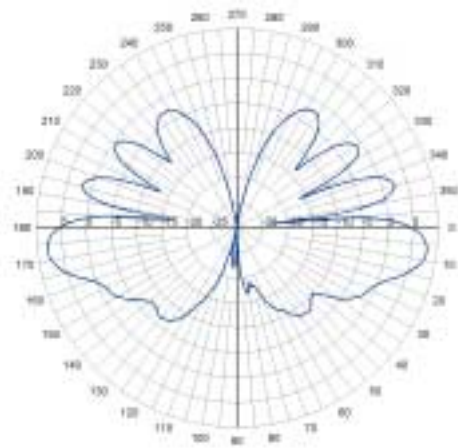
**MFB24008DT5**  
**Elevation Cut**

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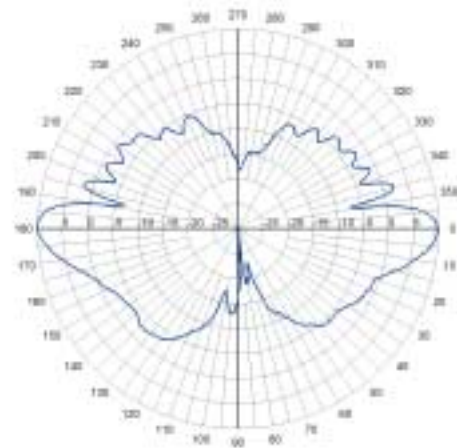


**XtremeWave™ MFBXP Series**  
**PCS, 2.4 GHz ISM, MMDS and 5.8 GHz ISM**  
**Omnidirectional Base Station Antenna Series (cont'd.)**

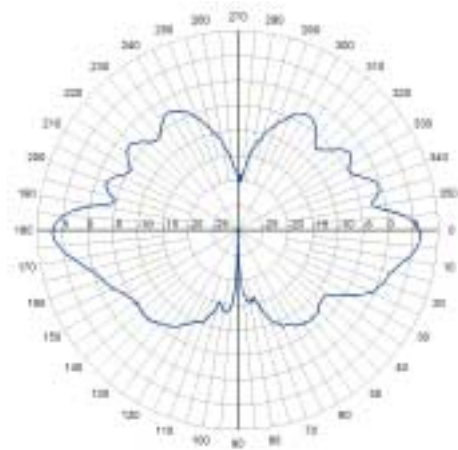
**Patterns**



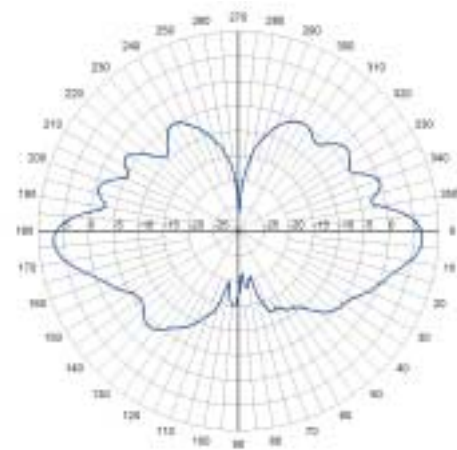
**MFB24008DT7**  
**Elevation Cut**



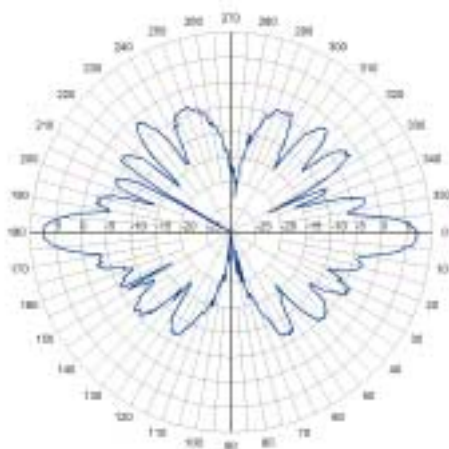
**MFB24010**  
**Elevation Cut**



**MFB25007**  
**Elevation Cut**



**MFB25007DT3**  
**Elevation Cut**



**MFB58008**  
**Elevation Cut**



## XtremeWave™ MMO Series 2.4 GHz ISM Mast Mount Omnidirectional Antenna

The omnidirectional MMO24005PTRPC antenna is designed to cover frequencies from 2400 to 2485 MHz with a VSWR of less than 1.5:1. The broad elevation plane antenna radiation pattern has been shaped to direct energy where it is needed, while suppressing the misdirected upper and lower

sidelobe energy. This patent pending antenna is ideal for a wide variety of outdoor antenna applications. It includes a 36" RG-58/U pigtail with reverse polarity TNC connector. Other connector options are available.

### Features and Benefits:

- Optimized elevation pattern. Minimizes misdirected energy by suppressing sidelobe energy and directing the radiated energy towards the desired area of coverage.
- Pipe mount is included. Facilitates installation.

### General Specifications:

5.5 dBi Omnidirectional Antenna

#### Radome Material:

White Plastic

#### Polarization:

Vertical

#### Lightning Protection:

DC grounded

#### Nominal impedance:

50 Ohms

#### Mounting Method:

Pipe Mount (included)

#### Termination:

36" RG-58/U Pigtail with RP-TNC plug connector  
Other connector options available



**The MMO24005PTRPC provides optimal coverage by suppressing the sidelobe energy thus maximizing coverage performance. It is designed for outdoor mast mounting applications.**



Omnidirectional  
2.4 GHz

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## XtremeWave™ MMO Series 2.4 GHz ISM Mast Mount Omnidirectional Antenna (cont'd.)

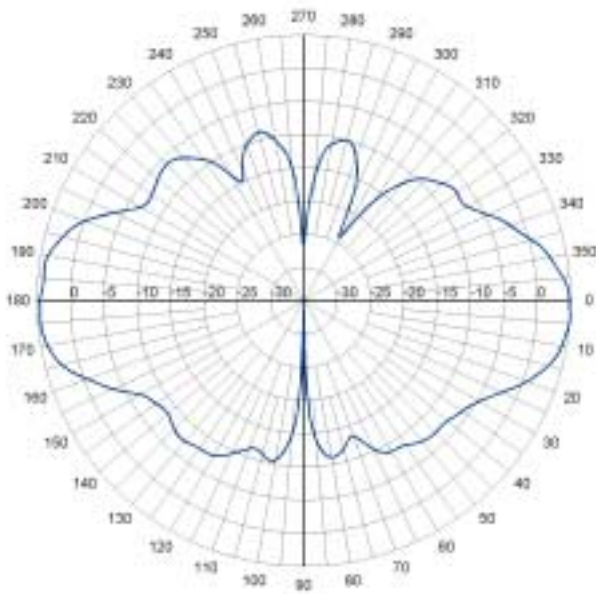
### Specifications

#### Electrical Specifications

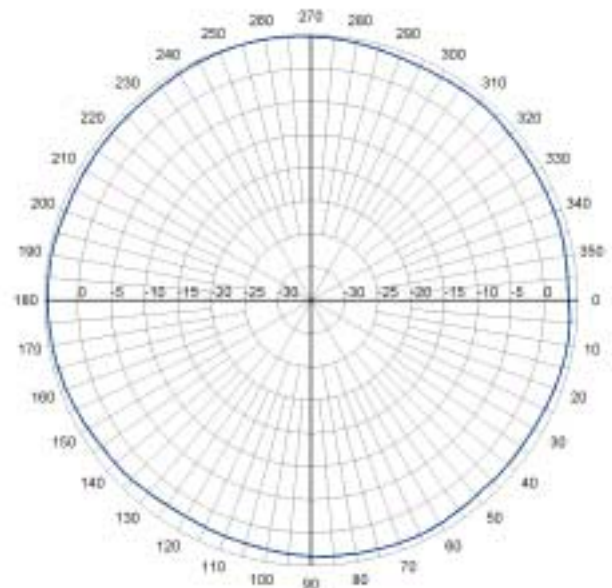
Model #	Frequency Range	Nominal Gain	Horizontal Beamwidth	Vertical Beamwidth	VSWR	Maximum Power
MMO24005PTRPC	2400-2485 MHz	5.5 dBi +/-0.5	360°	32°	< 1.5:1	5 Watts

#### Mechanical Specifications

Model #	Wind Survival	Dimensions	Weight	Cable
MMO24005PTRPC	125 mph	11.3" L x 1" OD (287 x 25.4 mm)	0.5 lbs. (0.23 kg)	36" (914.4 mm) white RG-58/U



MMO24005PTRPC Elevation Cut



MMO24005PTRPC Azimuth Cut

**MAXRAD**  
**Mobile/Fixed**  
**Antennas**



## Tape Mount Omnis - MIG Series 2.4 GHz ISM and 2.5 GHz MMDS Omnidirectional Tape Mount Antenna Series

The MIG omnidirectional tape mount antenna series covers ISM and MMDS frequencies with a VSWR of less than 1.5:1. These rugged antennas accommodate a wide variety of applications including office LAN environments, factories,

remote telemetry and other harsh environments where a compact, stick-on mount antenna solution is needed. They utilize 3M® very high bond tape for quick, easy mounting.

### Features and Benefits:

- High bond tape mount. Provides mounting flexibility for various applications, including computer monitors, hand held devices, cashier terminals, glass, etc.
- Rugged, ultra thin housing design. Withstands heavy use and provides minimum visibility.
- Also available in broadband version. Covers 2.4 GHz ISM and MMDS frequencies without the need for tuning.
- Can be used for fixed or mobile applications. Provides maximum flexibility and versatility.

### General Specifications:

Omnidirectional tape mount antennas

#### Polarization:

Vertical, linear

#### Nominal Impedance:

50 Ohms

#### Mount Method:

3M® high bond tape

#### Connector options:

- Male BNC (part #BN)
- Male N (part #UN with MLI00 cable)
- Female SMA (part #FSMA)
- Male SMA (part #MSMA)
- Female SMA, reverse threaded (part #FSMART)
- Male SMA, reverse threaded (part #MSMART)
- Male TNC (part #C)
- Male Mini-UHF (part #PL)
- Female FME (part #FFME)



Mobile / Fixed  
2.4 and 2.5 GHz

The MIG antennas can be utilized for a wide variety of wireless data applications. Also available in white (not pictured)

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NEXT PAGE

## Tape Mount Omnis - MIG Series 2.4 GHz ISM and 2.5 GHz MMDS Omnidirectional Tape Mount Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

Model #	Frequency Range	Gain	VSWR	Maximum Power	Connector
MIG24	2400-2500 MHz	4 dBi	< 1.5:1	5 Watts	Various Options*
MIG2425	2400-2686 MHz	4 dBi	<1.5:1	5 Watts	Various Options*

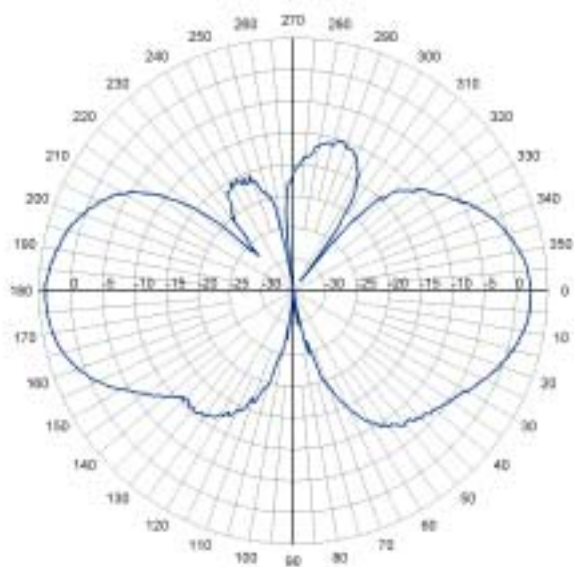
\* Please specify connector choice when placing an order.

#### Mechanical Specifications

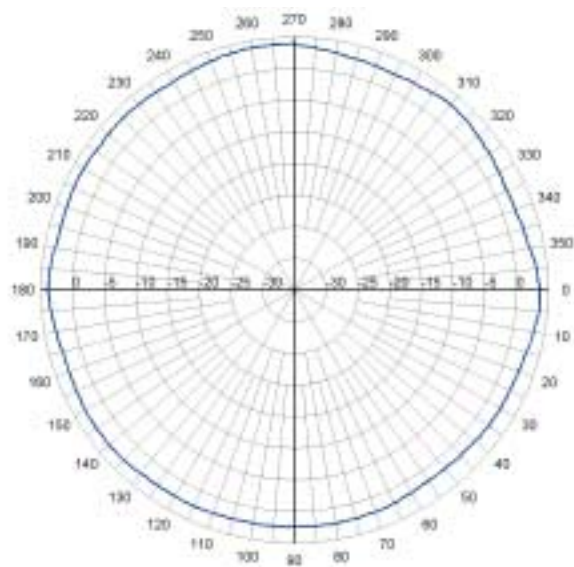
Model #	Temperature Range	Dimensions	Weight	Mount	Cable
MIG24	-40°C to +85°C	5.7" L x 1" W x 0.1" D (144.8 x 2.54 x 2.54 mm)	0.14 lbs (0.064 kg)	3M® very high bond tape	18" (457.2 mm) LMR100A
MIG2425	-40°C to +85°C	5.7" L x 1" W x 0.1" D (144.8 x 2.54 x 2.54 mm)	0.14 lbs (0.064 kg)	3M® very high bond tape	12" (304.8 mm) LMR100A

# Tape Mount Omnis - MIG Series 2.4 GHz ISM and 2.5 GHz MMDS Omnidirectional Tape Mount Antenna Series (cont'd.)

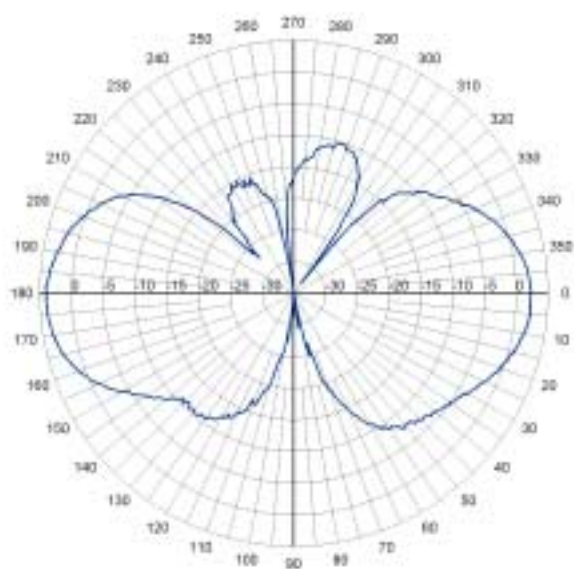
## Patterns



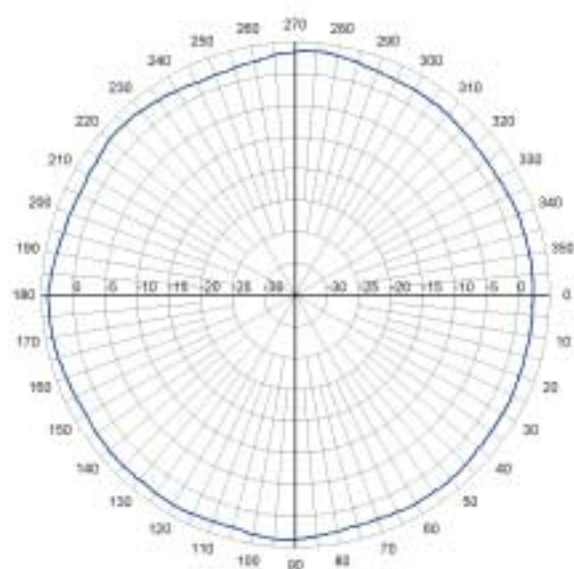
**MIG24 Elevation Cut**



**MIG24 Azimuth Cut**



**MIG2425 Elevation Cut**



**MIG2425 Azimuth Cut**



## Miniature Magnetic Mount - BMMG 2.4 GHz ISM Miniature Magnetic Mount Antenna Series

The Mini-Mag antennas are among our most cost-effective, easy to install antenna solutions. Featuring 12 feet of integrated low-loss, high performance cable and a compact low

profile design, these antennas are easy to install and can be used for fixed or mobile applications. The Mini-Mag antennas are available with a wide variety of connector options.

### Features and Benefits:

- One piece construction that includes a magnet, whip and cable. Facilitates installation without the need to tune or purchase a separate mount.
- Black coated whip assembly and machined polymer base. Inconspicuous appearance, less susceptible to theft or vandalism.
- Low-loss cable. Provides maximum power to the antenna to help optimize system performance.

### General Specifications:

Miniature Magnetic Mount Mobile Antenna Series

#### Radiator Material:

.062" diameter, stainless steel, black chrome finish

#### Polarization:

Vertical

#### Bushing:

Black chrome triple-plated brass

#### Nominal Impedance:

50 Ohms

#### Mount Method:

Magnetic base

#### Connector Options:

- Male BNC (part #BN)
- Male N (part #NCP with ML195 cable)
- Male N (part #UN with ML100 cable)
- Female SMA (part #FSMA)
- Male SMA (part #MSMA)
- Female SMA, reverse threaded (part #FSMART)
- Male SMA, reverse threaded (part #MSMART)
- Male TNC (part #C)
- Male Mini-UHF (part #PL)
- Female FME (part #FFME)



The BMMG antennas feature a magnetic base that provides added mount flexibility for a variety of fixed or mobile applications.



Mobile / Fixed  
2.4 GHz

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## Miniature Magnetic Mount - BMMG 2.4 GHz ISM Miniature Magnetic Mount Antenna Series (cont'd.)

### Specs and Patterns

#### Electrical Specifications

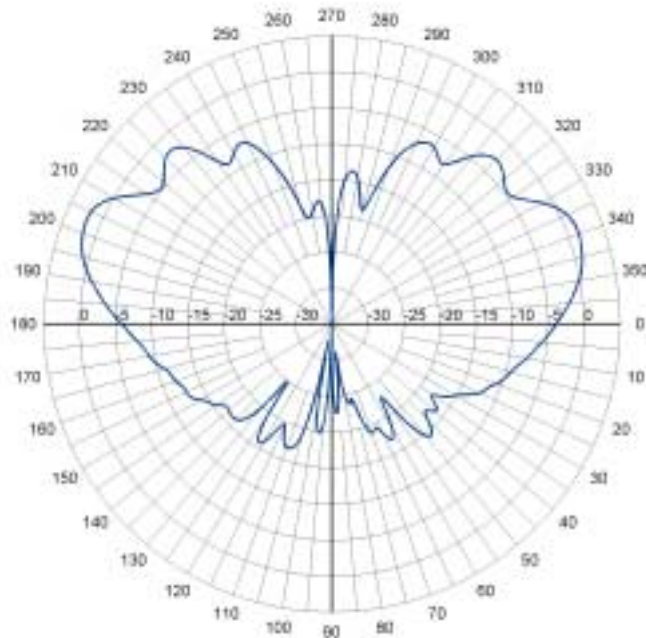
Model #	Frequency Range	VSWR	Maximum Power	Gain
BMMG24000*	2.400-2.484 GHz	<1.5:1	16 Watts	Unity
BMMG24000ML195*	2.400-2.484 GHz	<1.5:1	16 Watts	Unity
BMMG24005*	2.400-2.484 GHz	<1.5:1	16 Watts	5 dBi
BMMG24005ML195*	2.400-2.484 GHz	<1.5:1	16 Watts	5 dBi

\* Please specify connector option when ordering.

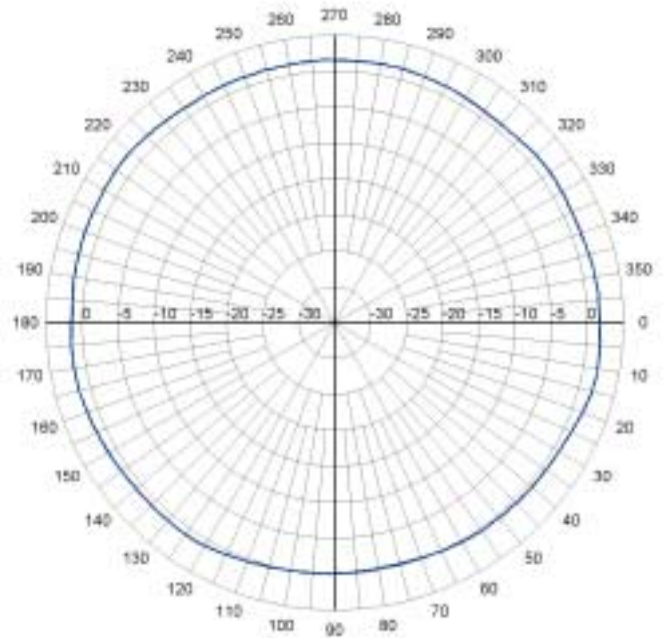
#### Mechanical Specifications

Model #	Rod/Coil Type	Height	Cable
BMMG24000*	Straight	1.25" (31.75 mm)	6' (1828 mm) LMR100A
BMMG24000ML195*	Straight	1.25" (31.75 mm)	12' (3657 mm) LMR195
BMMG24005*	Trilinear/Open	9" (228.6 mm)	6' (1828 mm) LMR100A
BMMG24005ML195*	Trilinear/Open	9" (228.6 mm)	12' (3657 mm) LMR195

\* Please specify connector option when ordering.



**BMMG2400 Elevation Cut**



**BMMG2400 Elevation Cut**

## Permanent Mount - Mobile Series 2.4 GHz ISM Mobile and WLAN Antenna Series

These antennas cover frequencies from 2.4 to 2.48 GHz. The (B)MAXC models feature a molded polymer base, plated spring-loaded contact pin, and .100" diameter stainless steel whip for long lasting, trouble free service. The MUF

model is a chrome nut antenna with a .062" stainless steel whip. Various mount and connector options provide low-loss mounting for a variety of metal surfaces.

### Features and Benefits:

- Molded polymer base ((B)MAXC models). Provides ruggedness and durability in harsh mobile environments. Flexible rod design (MUF24005 model). Less prone to breakage in tough mobile environments.
- Compact design. Measuring less than 9" tall, these antennas are ideal for industrial applications where vehicle clearance is a concern.
- Compatible with standard 3/4" type mounts. Facilitates installation in vehicles for applications where antenna removal is necessary.

### General Specifications:

2.4 GHz ISM mobile and WLAN antennas

#### Radiator Material:

.100" od. stainless steel; bright (MAXC) or black finish (BMAXC)  
.062" od. stainless steel; bright finish - MUF model

#### Base:

Molded polymer with a plated brass insert ring and a spring-loaded, brass contact pin - (B)MAXC models  
Brass mount nut with bright chrome finish - MUF model

#### Rod Ferrule:

5/16" - 24 thread; bright or black chrome plated brass - (B)MAXC models

#### Nominal Impedance:

50 Ohms

#### Mount Method:

3/4" hole mount

#### Mount Options:

Unless otherwise specified, the following mounts include 17' of MLI95 high efficiency, low loss cable.

<b>SMML195*</b>	3/4" hole mount, 1-1/8"-18 thread stainless steel mount.
<b>BMML195*</b>	3/4" hole, 1-1/8"-18 thread brass mount.
<b>MAML195*</b>	3/8" or 3/4" hole, 1-1/8"-18 thread mount for 1/8" thick plates.
<b>BMATM338</b>	3/8" hole, 1-1/8"-18 thread adjustable brass mount for metal surfaces of 1/32"-1/2" thickness. No cable or connector.
<b>MTPM800</b>	5/8" hole, 1-1/8"-18 thread thick plate mount. Terminates in a N, female connector. No cable. Order cable assembly separately.
<b>MVP</b>	5/8" hole, vandal proof mount. No cable or connector.
<b>MPM26-NC</b>	3/4" hole, 1-1/8"-18 thread, 26° pivot mount. Includes 17' RG58A/U cable. No connector.
<b>MPM26DSCP</b>	3/4" hole, 1-1/8"-18 thread, 26° pivot mount. Includes 17' double shielded cable with PL-259 connector.
<b>MMF</b>	3/4" hole, 1-1/8"-18 mount for frequencies above 1 GHz. Terminates in an SMA, male connector. No cable. Order cable assembly (SMA, female ending) separately.



**BMAXC24503 and  
BMAX24505**



**SM Mount**



**BM Mount**



**MA Mount**



**MTPM800  
Mount**



**MPM26  
Mount**



**MVP Mount**



**MMF Mount**

Mobile / Fixed  
2.4 GHz

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NEXT PAGE

## Permanent Mount - Mobile Series 2.4 GHz ISM Mobile and WLAN Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

Model #	Frequency Range	Factory Tuned Frequency	Coil Type	VSWR	Maximum Power	Gain
(B)MAXC24503	2.400 - 2.4835 GHz	2.45 GHz	Closed	< 1.5:1	100 Watts	3 dBi
(B)MAXC24505	2.400 - 2.4835 GHz	2.45 GHz	Closed	< 1.5:1	100 Watts	5 dBi
MUF24005	2.400 - 2.4835 GHz	2.45 GHz	Open	< 1.5:1	100 Watts	5 dBi

\* Prefix "B" indicates black

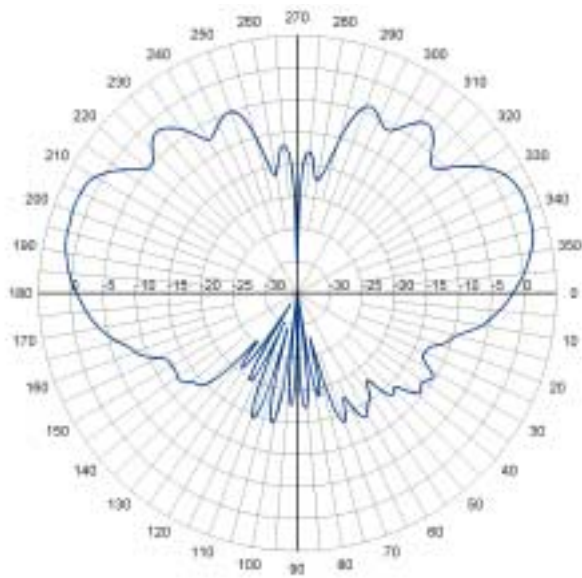
#### Mechanical Specifications

Model #	Antenna Height	Weight
(B)MAXC24503	5.25" (133.35 mm)	0.12 lbs (0.054 kg)
(B)MAXC24505	7.50" (190.50 mm)	0.16 lbs (0.073 kg)
MUF24005	8.75" (222.25 mm)	0.10 lbs (0.045 kg)

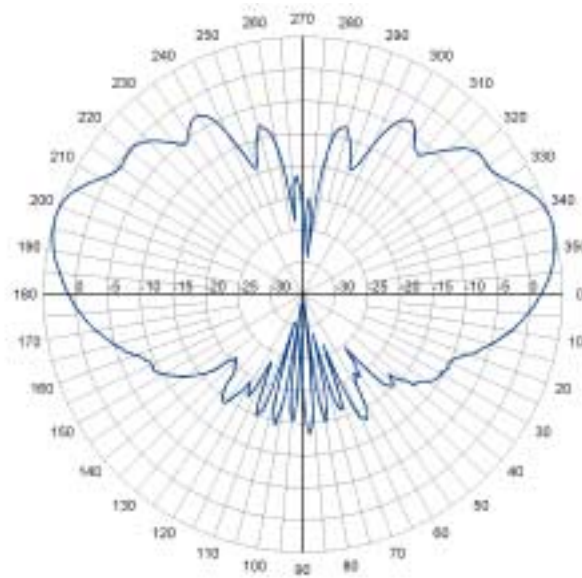
\* Prefix "B" indicates black

**Permanent Mount - Mobile Series**  
**2.4 GHz ISM Mobile and WLAN Antenna Series (cont'd.)**

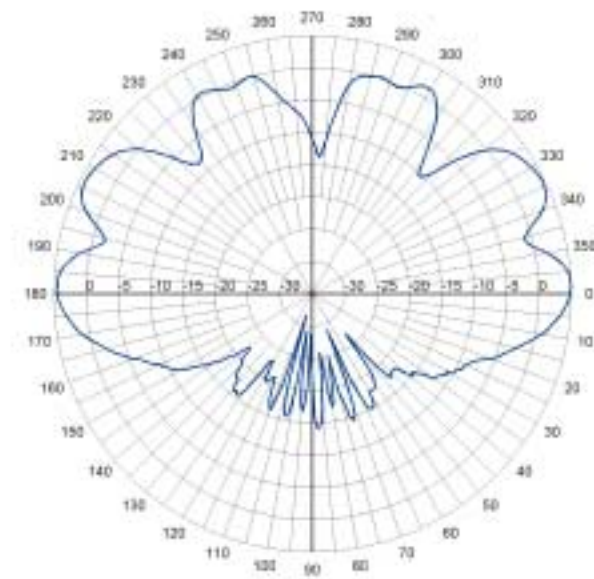
**Patterns**



**BMAXC24503 Elevation Cut**



**BMAXC24505 Elevation Cut**



**MUF24005 Elevation Cut**



## Low Profile Vertical - MLPV Series 800/900 MHz, PCS and 2.4 GHz ISM Low Profile Vertical (MLPV) Antenna Series

The MLPV antennas provide superior pattern coverage for all mobile and fixed applications using PCS/ISM frequencies from 1700 to 2500 MHz, 800/900 MHz frequencies from 806 to 960 MHz. Their patent-pending design provides industry leading wideband performance and reliability, with minimum loss and no tuning required. Dual band versions

(MLPVDB series) are also available. The MLPV and MLPVDB antennas feature an attractive, compact package and are ideal for indoor or outdoor applications requiring minimum visibility. Color options are black/chrome, white/chrome or black/black. These antennas are also available in UHF frequencies (see MAXCAT LMR antenna catalog).

### Features and Benefits:

- Attractive, low profile design is available in three color finishes.
- Wideband performance. Only two models are required to cover all 800/900 MHz, PCS and 2.4 GHz frequencies.
- Quad band coverage. A single model covers cellular and GSM, ISM, DCS and PCS frequencies. Dual band 902 MHz and 2.4 GHz version also available.
- Heavy duty model available for 800/900 MHz frequencies. Designed to withstand the toughest operating conditions. Available only in black finish.
- Excellent pattern coverage for mobile and base station applications.
- Compatible with all 3/4" hole mounts. Facilitates installation.
- No tuning required. Allows faster, more reliable installations.

### General Specifications:

Low Profile Vertical Antenna Series

#### Radiator Material:

Solid brass radiator

#### Polarization:

Vertical

#### Nominal Impedance:

50 Ohms

#### Mount Method:

3/4" hole mount

#### Mount Options:

Unless otherwise specified, the following mounts include 17' of MLI95 high efficiency, low loss cable.

- |                  |   |
|------------------|---|
| <b>SMML195</b>   | 3/4" hole mount, 1-1/8"-18 thread stainless steel mount.  |
| <b>BMML195</b>   | 3/4" hole, 1-1/8"-18 thread brass mount.  |
| <b>MAML195</b>   | 3/8" or 3/4" hole, 1-1/8"-18 thread mount for 1/8" thick plates.  |
| <b>BMATM338</b>  | 3/8" hole, 1-1/8"-18 thread adjustable brass mount for metal surfaces of 1/32"-1/2" thickness. No cable or connector.   |
| <b>MTPM800</b>   | 5/8" hole, 1-1/8"-18 thread thick plate mount. Terminates in a N, female connector. No cable. Order cable assembly separately.                                |
| <b>MVP</b>       | 5/8" hole, vandal proof mount. No cable or connector.   |
| <b>MPM26-NC</b>  | 3/4" hole, 1-1/8"-18 thread, 26° pivot mount. Includes 17' RG58A/U cable. No connector.   |
| <b>MPM26DSCP</b> | 3/4" hole, 1-1/8"-18 thread, 26° pivot mount. Includes 17' double shielded cable with PL-259 connector.   |
| <b>MMF</b>       | 3/4" hole, 1-1/8"-18 mount for frequencies above 1 GHz. Terminates in an SMA, male connector. No cable. Order cable assembly (SMA, female ending) separately. |



Low Profile



SM Mount



BM Mount



MA Mount



MTPM800 Mount



MPM26 Mount



MVP Mount



MMF Mount



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## Low Profile Vertical - MLPV Series 800/900 MHz, PCS and 2.4 GHz ISM Low Profile Vertical (MLPV) Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

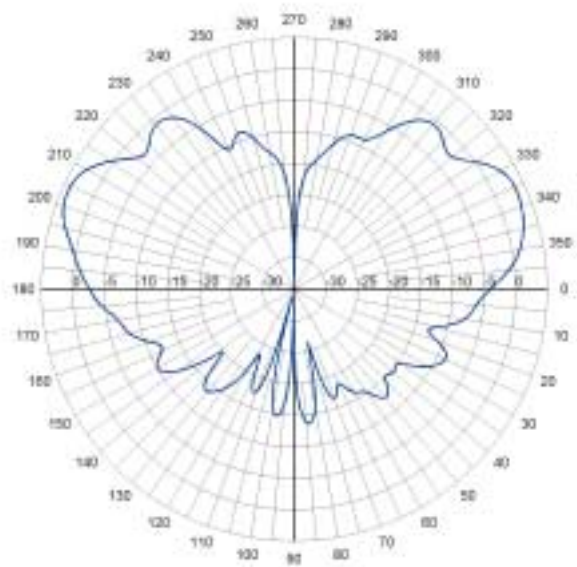
Model #	Frequency Range	VSWR	Bandwidth	Gain	Maximum Power
MLPV1700	1700-2500 MHz	<1.5:1	800 MHz	Ground plane and frequency dependent. Average gain value is 4 dBi.	150 Watts
BMLPV1700	1700-2500 MHz	<1.5:1	800 MHz		150 Watts
WMLPV1700	1700-2500 MHz	<1.5:1	800 MHz		150 Watts
MLPV800HD	806-960 MHz	<1.5:1	154 MHz	Ground plane and frequency dependent. Average gain value is 3 dBi.	150 Watts
MLPV800	806-960 MHz	<1.5:1	154 MHz		150 Watts
BMLPV800	806-960 MHz	<1.5:1	154 MHz		150 Watts
WMLPV800	806-960 MHz	<1.5:1	154 MHz		150 Watts
MLPVDB800/1900	806-960 MHz and 1710-1990 MHz	<1.5:1 and <2:1	154 MHz and 280 MHz	3 dBi	150 Watts
MLPVDB902/2400	902-928 MHz and 2400-2500 MHz	<1.5:1 and <2:1	26 MHz and 100 MHz	3 dBi	150 Watts
BMLPVDB800/1900	806-960 MHz and 1710-1990 MHz	<1.5:1 and <2:1	154 MHz and 280 MHz	3 dBi	150 Watts
BMLPVDB902/2400	902-928 MHz and 2400-2500 MHz	<1.5:1 and <2:1	26 MHz and 100 MHz	3 dBi	150 Watts
WMLPVDB800/1900	806-960 MHz and 1710-1990 MHz	<1.5:1 and <2:1	154 MHz and 280 MHz	3 dBi	150 Watts
WMLPVDB902/2400	902-928 MHz and 2400-2500 MHz	<1.5:1 and <2:1	26 MHz and 100 MHz	3 dBi	150 Watts

#### Mechanical Specifications

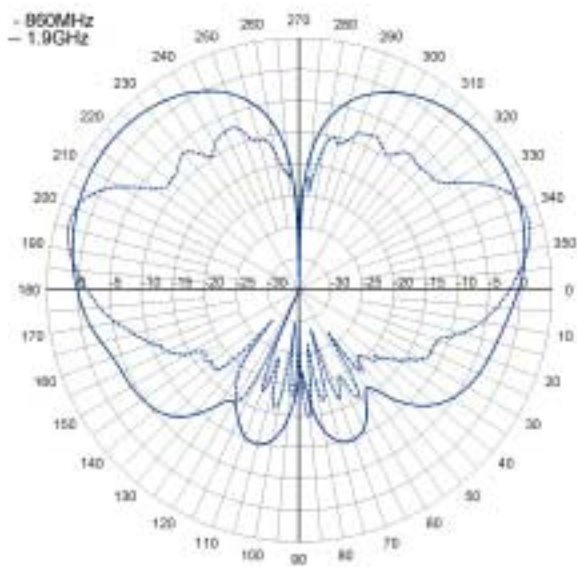
Model #	Dimensions	Weight	Color
MLPV1700	1.79" x 1.5" OD at the base (45.5 x 38.1 mm)	0.34 lbs (0.15 kg)	Black over chrome base
BMLPV1700	1.79" x 1.5" OD at the base (45.5 x 38.1 mm)	0.34 lbs (0.15 kg)	Black over black base
WMLPV1700	1.79" x 1.5" OD at the base (45.5 x 38.1 mm)	0.34 lbs (0.15 kg)	White over white base
MLPV800HD	2.4" H x 1.5" W x 1.8" D (60.9 x 38.1 x 45.7 mm)	0.44 lbs (0.19 kg)	All black, one piece construction
MLPV800	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over chrome base
BMLPV800	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over black base
WMLPV800	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	White over white base
MLPVDB800/1900	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over chrome base
MLPVDB902/2400	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over black base
BMLPVDB800/1900	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	White over white base
BMLPVDB902/2400	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over chrome base
WMLPVDB800/1900	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	Black over black base
WMLPVDB902/2400	2.4" H x 1.8" D (60.9 x 45.7 mm)	0.29 lbs (0.13 kg)	White over white base

**Low Profile Vertical - MLPV Series**  
**800/900 MHz, PCS and 2.4 GHz ISM Low Profile Vertical (MLPV)**  
**Antenna Series (cont'd.)**

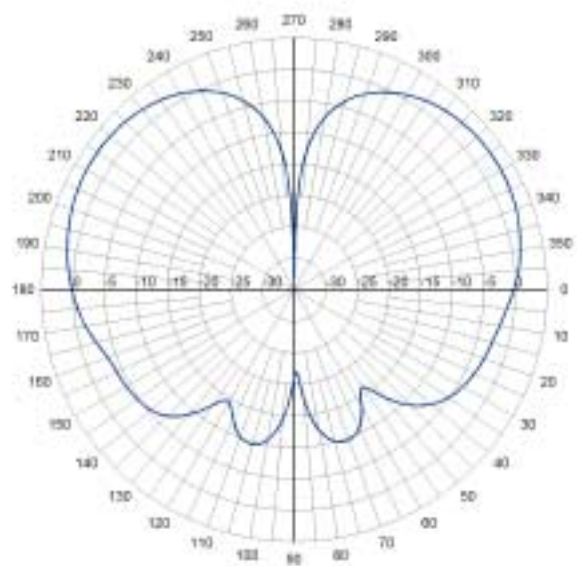
**Patterns**



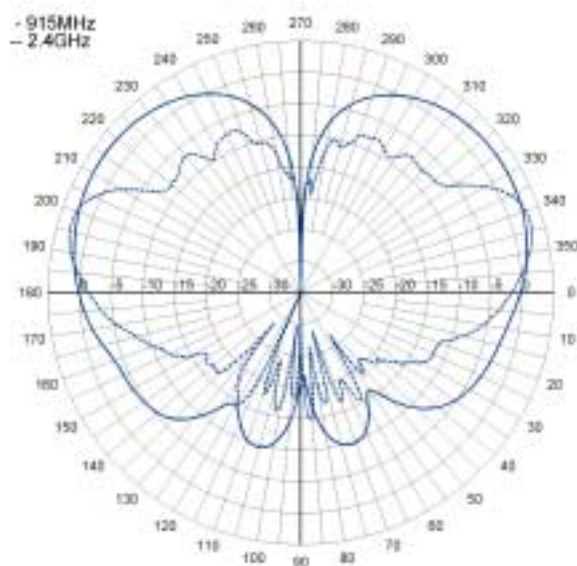
**MLPV1700 Elevation Cut**



**MLPVDB800/1900 Elevation Cut**



**MLPV800HD Elevation Cut**



**MLPVDB902/2400 Elevation Cut**

## Portable Duck Antennas for WLAN 902 MHz and 2.4 GHz ISM Portable Antenna Series

The MAXRAD ISM portable antennas are designed to cover the band of frequencies from 2.400 to 2.4835 GHz with a VSWR of less than 1.5:1 at resonance. Their rugged, flexible

design makes them suitable for use in a wide variety of applications, including office LAN environments, factory floors, remote telemetry and other harsh environments.

### Features and Benefits:

- Ground plane independent, half-wave coaxial dipole design. Provides improved antenna performance, higher gain and installation flexibility.
- Flexible design. Added durability that allows use in demanding wireless environments.
- Articulating knuckle provides 0°-90° pivot and 180° swivel movement allowing vertical orientation of the antenna, regardless of the orientation or position of the wireless device.

### General Specifications:

902 MHz and 2.4 GHz ISM portable duck antennas

#### Polarization:

Linear, vertical

#### Nominal Impedance:

50 Ohms



**2.4 GHz ISM portable antennas are ideal for data collection applications in factories, retail establishments, warehouses and office buildings.**



Portable Duck  
902 MHz and 2.4 GHz

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## Portable Duck Antennas for WLAN 902 MHz and 2.4 GHz ISM Portable Antenna Series (cont'd.)

### Specifications

#### Electrical Specifications

Model #	Frequency Range	Factory Tuned Frequency	Wave Length	VSWR at Resonance	Maximum Power	Gain
MQW2400SM	2400-2483.5 MHz	2450 MHz	1/4 wave	<1.5:1	50 Watts	1.0 dBi
MHW2400C	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHW2400SM	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHWS2400SM	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHWS2400C	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MPA2450	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	1.0 dBi
MHW2400RPBN	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHWS2400MTNCRP	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHWS2400RPBN	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHGS2400SMART	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MHGS2400SMARP	2400-2483.5 MHz	2450 MHz	1/2 wave	<1.5:1	50 Watts	2.0 dBi
MQW902RPBN	902-928 MHz	915 MHz	1/4 wave	<1.5:1	50 Watts	1.5 dBd
MEXC902	902-960 MHz	915 MHz	1/4 wave	<1.5:1	50 Watts	unity
MEXE902	902-960 MHz	915 MHz	1/2 wave	<1.5:1	50 Watts	3 dBd
MEXP902	902-960 MHz	915 MHz	1/2 wave	<1.5:1	50 Watts	3 dBd
MEXR902	902-960 MHz	915 MHz	1/2 wave	<1.5:1	50 Watts	3 dBd

#### Mechanical Specifications

Model #	Connector Type	Design	Antenna Height	Temperature Range	Special Features
MQW2400SM	SMA Male	1/4 wave	2.5" (63.5 mm)	-40°C to +85°C	
MHW2400C	TNC Male	Coaxial dipole	7.0" (177.8 mm)	-40°C to +85°C	
MHW2400SM	SMA Male	Coaxial dipole	5.3" (134.6 mm)	-40°C to +85°C	
MHWS2400SM	SMA Male	Coaxial dipole	4.5" (114.3 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MHWS2400C	TNC Male/BNC	Coaxial dipole	7.0" (177.8 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MPA2450*	Various options available	Coaxial dipole	4.3" (109.2 mm)	-40°C to +85°C	
MHW2400RPBN	Reverse Polarity BNC Plug	Coaxial dipole	5.3" (134.6 mm)	-40°C to +85°C	
MHWS2400MTNCRP	Reverse Polarity TNC	Coaxial dipole	5.7" (144.8 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MHWS2400RPBN	Reverse Polarity BNC Plug	Coaxial dipole	7.0" (177.8 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MHGS2400SMART	Reverse Threaded SMA Plug	Coaxial dipole	9.6" (243.8 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MHGS2400SMARP	Reverse Polarity SMA Plug	Coaxial dipole	9.6" (243.8 mm)	-40°C to +85°C	360° swivel, 0°-90° knuckle
MQW902RPBN	Reverse polarity BNC Plug	Coaxial dipole	6.5" (165.1 mm)	-40°C to +85°C	
MEXC902	Various options	Coaxial dipole	4.0" (101.6 mm)	-40°C to +85°C	
MEXE902	Various options	Coaxial dipole	8.0" (203.2 mm)	-40°C to +85°C	
MEXP902	Various options	Coaxial dipole	6.5" (165.1 mm)	-40°C to +85°C	
MEXR902	Various options	Coaxial dipole	9.0" (228.6 mm)	-40°C to +85°C	

\* Please specify connector option when ordering

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## Portable Duck Antennas for WLAN 902 MHz and 2.4 GHz ISM Portable Antenna Series (cont'd.)

### Connector Options

Model / Connector Type	BNC, male (part #BN)	Reverse polarity BNC plug (part #RPBN)	SMA, male (part #MSMA)	Reverse threaded SMA, female (part #FSMART)	Reverse threaded SMA, male (part #MSMART)	TNC, Male (part #C)	Reverse polarity TNC plug (part #RPC)	Mini-UHF, Male (part #PL)	Swivel reverse polarity TNC	Swivel TNC connector	Swivel Reverse Threaded SMA Plug	Swivel Reverse Polarity SMA Plug
MEXC902	X					X	X	X				
MEXE902	X		X			X	X	X				
MEXR902	X					X	X	X				
MQW902		X										
MEXP902								X				
MPA2450				X	X	X	X	X				
MHW2400RPBN		X										
MHWS2400RPBN		X										
MHW2400SM			X									
MHWS2400SM			X									
MHW2400C						X						
MHWS2400C						X				X		
MHWS2400RPC									X			
MHWS2400C						X						
MQW2400SM			X									
MHWS2400MTNCRP												
MHGS2400MSMART					X						X	
MHGS2400MSMARP												X

**MAXRAD**  
**Low Visibility**  
**Antennas**



## Miniature Bulkhead - MMSO2300 2.4 GHz ISM Miniature Stud Mount Omnidirectional Antenna

The MAXRAD MMSO miniature omnidirectional antenna covers frequencies from 2300-2500 MHz with a VSWR of less than 1.5:1. This ground-plane dependent antenna is designed to go virtually undetected while providing depend-

able 2.4 GHz ISM data throughput. The antenna utilizes a bulkhead stud mount and hardware for secure permanent installations. It includes a 3" RG-188A/U pigtail.

### Features and Benefits:

- Miniature housing. Provides minimum visibility for areas prone to theft or vandalism.
- Bulkhead stud mount. Secures the antenna for permanent installations. Reduces the probability that the antenna will be stolen.
- Excellent performance with a VSWR of less than 1.5:1. Provides dependable wireless data coverage in a very low profile design.

### General Specifications:

Miniature 2.4 GHz ISM stud mount omnidirectional antenna

#### Radome Material:

Delrin, U.V. resistant

#### Polarization:

Vertical, linear

#### Nominal Impedance:

50 Ohms

#### Mounting Method:

1/4-28 stud mount, lock washer; jam nut and o-ring seal provided.  
Mounts to surfaces up to 0.25 inches thick.

#### Termination:

3" RG-188A/U flying lead



**The MMSO2300 is designed for applications where minimum visibility is required due to theft, vandalism or aesthetic considerations. The antenna measures only 1.34 inches high.**

Miniature  
Bulkhead 2.4 GHz

# Miniature Bulkhead - MMSO2300 2.4 GHz ISM Miniature Stud Mount Omnidirectional Antenna (cont'd.)

## Specs and Patterns

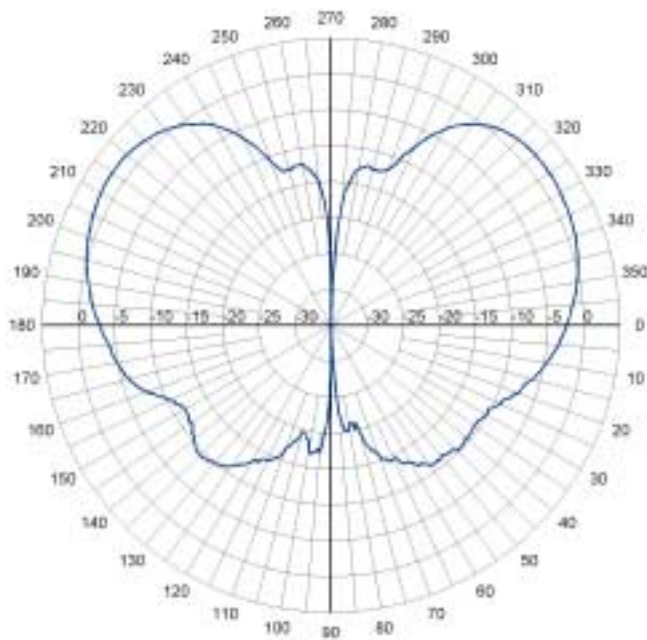
### Electrical Specifications

Model #	Frequency Range	Maximum Power	Gain	Cable
MMSO2300	2300-2500 MHz	10 watts	Unity	3" (76.2 mm) RG-188A

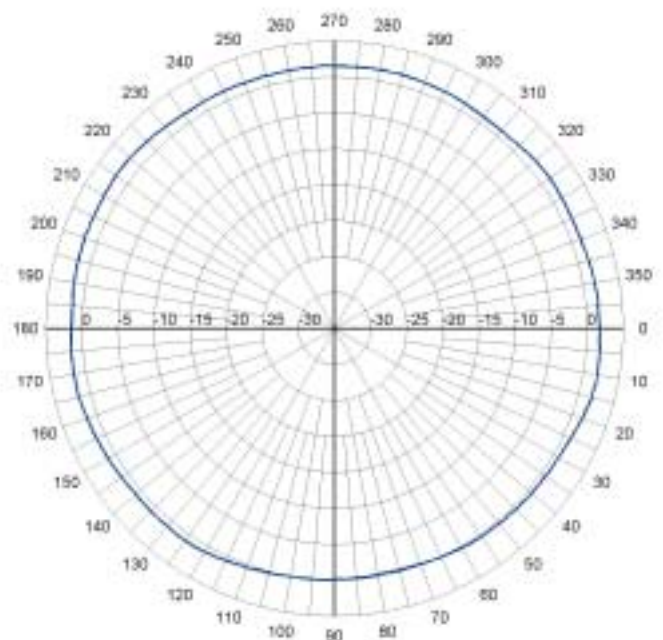
### Mechanical Specifications

Model #	Temperature Range	Dimensions	Weight
MMSO2300	-30°C to +80°C	1.34" H x 0.75" OD base with 0.63" flats (34.04 x 19.05 x 16.02 mm)	0.4 oz (0.015 kg)

Note: operating temperature is limited by the cable specifications



MMSO2300 Elevation Cut



MMSO2300 Azimuth Cut