



**PHAZAR**  
**DAS & SMALL CELLS**

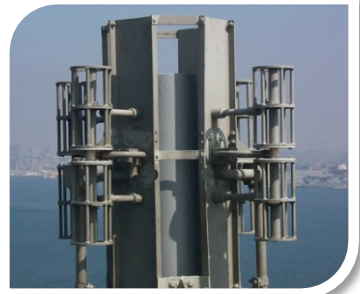
# About Us

- 65 Years in Business
- Products in Service Worldwide
- Fully Integrated Company
  - Design / R&D / Manufacturing /  
Testing / Support
- Custom Design & Manufacturing
- Centrally Located in the USA for Faster Delivery
- ISO 9001:2008 Certified Manufacturing Facility



# Markets We Serve

- Mobile Military & Defense Communications
- High Frequency (HF) Voice and Data Communications
- Instrument Landing Systems (ILS)
- Electronic Toll Reading (RFID)
- Cellular/Distributed Antenna Systems (DAS)
- Ground-To-Air UHF/VHF Communications



# Our Customers



at&t



AMERICAN TOWER®

THALES



NORTHROP GRUMMAN

**BOMBARDIER**  
the evolution of mobility



communications

AMERICA'S  
**NAVY**



**Rockwell  
Collins**



United States Coast Guard  
U.S. Department of Homeland Security

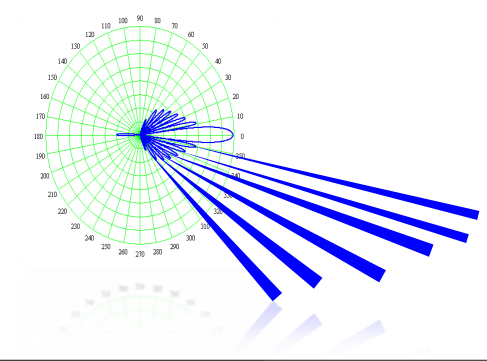


**Raytheon**

# World-Class Design Engineering

## *Our Designs Are Leading Edge Because:*

- PHAZAR has top notch engineers to design innovative antennas to solve customers' problems
- Uses state-of-the-art design tools, latest software and development laboratory
- Full scale test range and chambers – real world tests, not theory
- State-of-the-art test equipment to ensure quality
- All we do is design antennas, dedicated resources
- Our mechanical engineers live by one motto – “reliability”





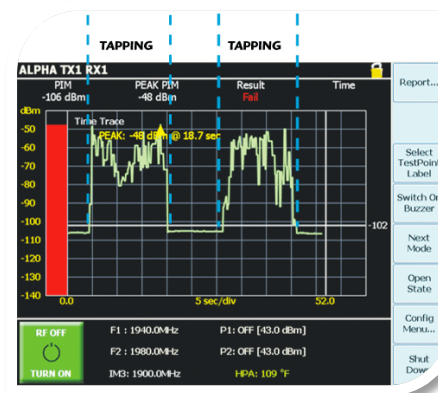
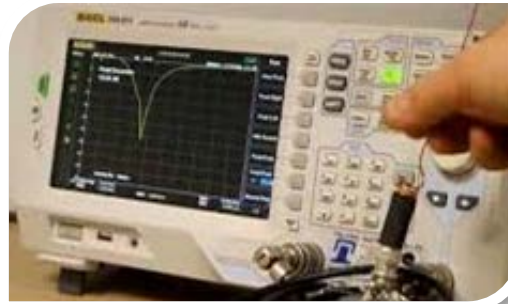
# ISO-Certified Manufacturing Facility

*104,000 SF - Under Roof (9662 M2) - 10 Acres - Main Site (4.05 hec)*



# In-House Testing & Tooling

*100% PIM & VSWR testing done at all frequency bands*



# Quality Standard Process

*All PHAZAR Antennas are tested and must successfully complete rigorous quality and environmental tests prior to release for manufacturing.*

- Thermal tests
- Wind driven rain
- Drop test
- Static wind loading
- Vibration
- Salt fog corrosion
- Solar radiation (UV weathering exposure)



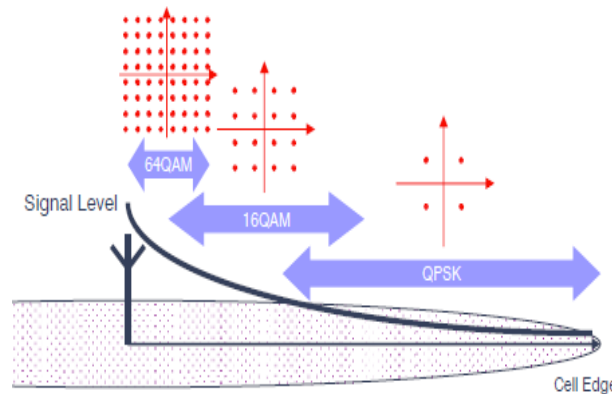
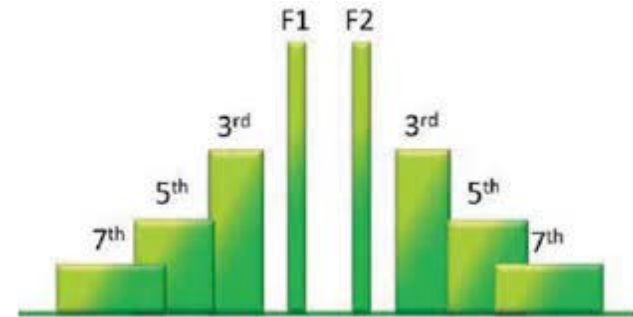


# Impact of PIM on Antenna System

LTE network requires excellent noise suppression for high data throughput.

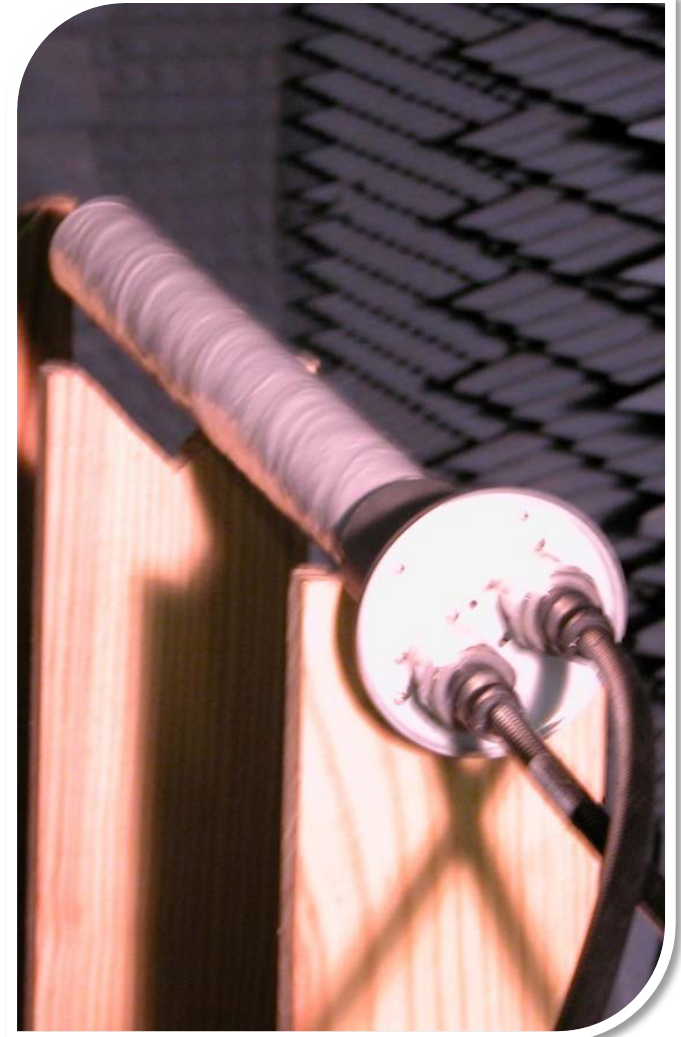
**Poorly designed networks can results in**

- Reduced network coverage and capacity.
- More lost calls
- Lower data throughput
- Less profitability

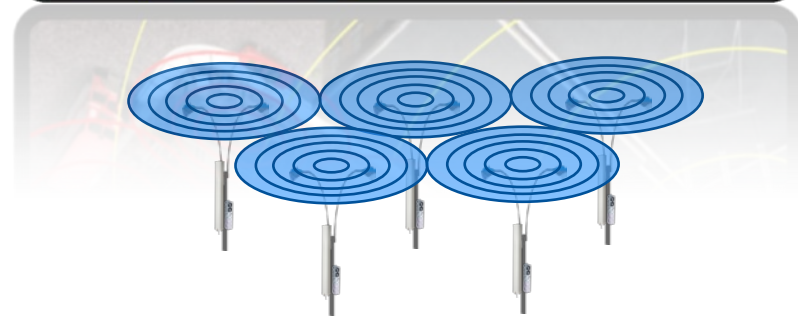
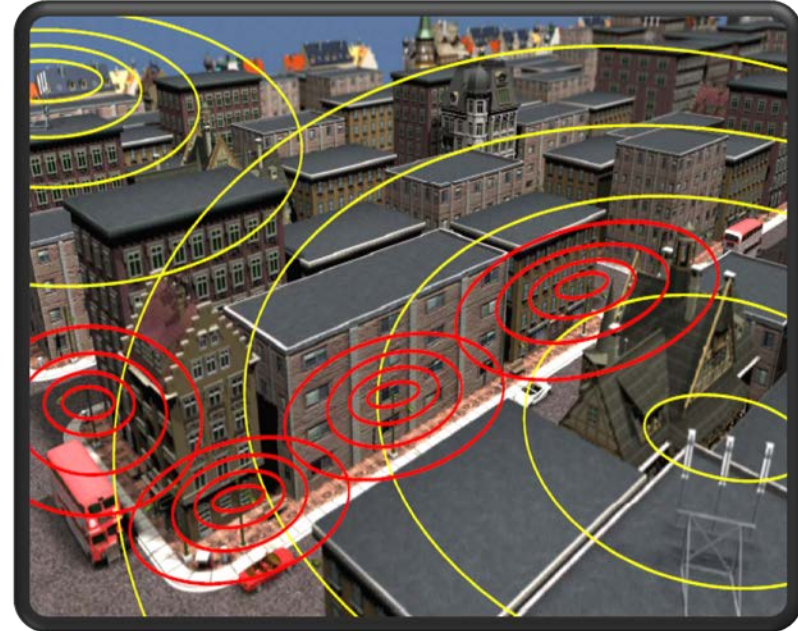
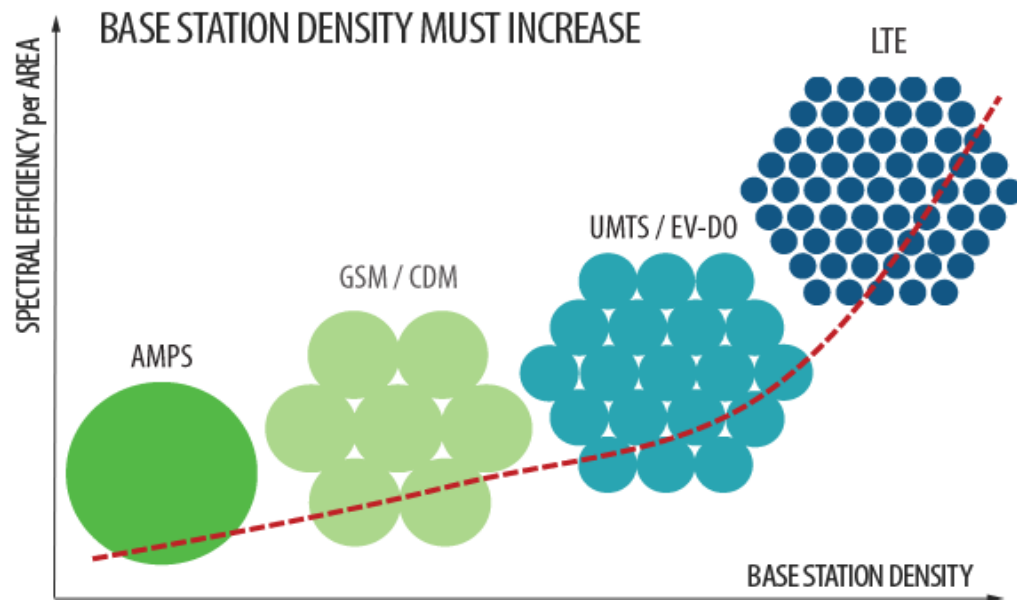


# How PHAZAR Resolves PIM Issues

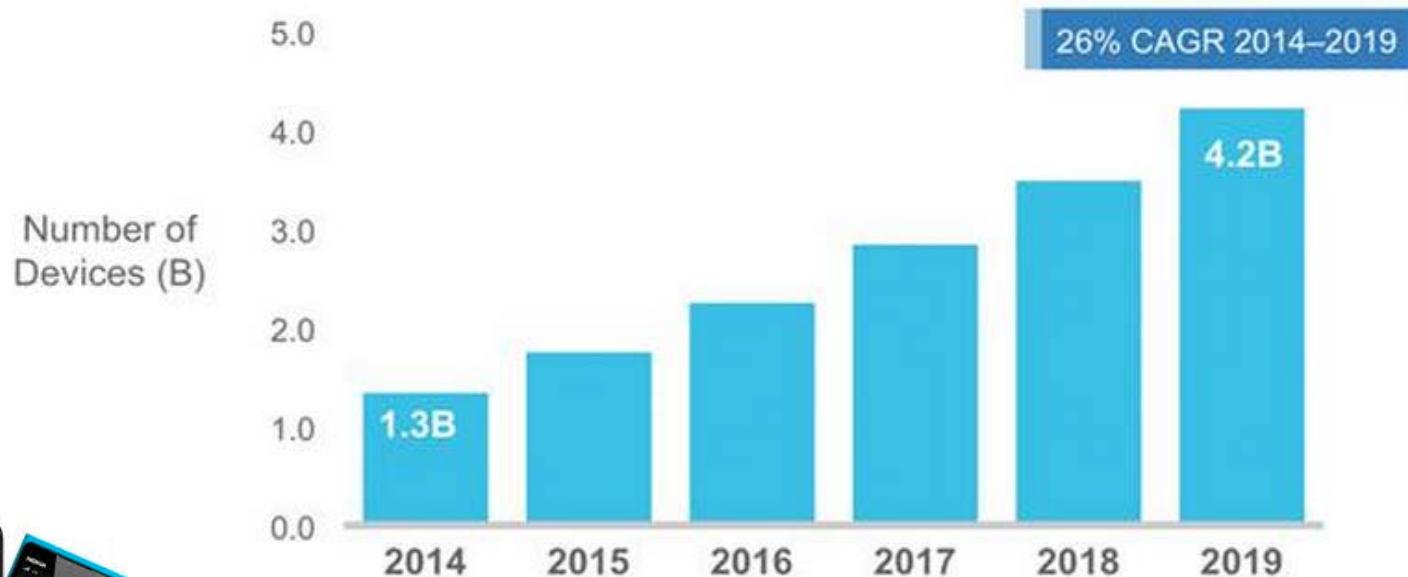
- Minimum use of solder joints
- Elimination of metal to metal contacts in RF path
- Elimination of mechanical fasteners in RF path
- Use of plastic fasteners to reduce force on solder joints
- Use of premium PCB substrates for better PIM performance
- Use highest quality raw materials and components for best PIM results
- Innovative design, manufacturing, and testing process to ensure PIM



# Higher Order Cell Splitting Increases Network Capacity over 50%



# LTE Network Needs More Data Speed & Capacity





# Phazar oDAS & Small Cells

- Built for wireless service providers, WiMAX, Wi-Fi and wireless broadband internet system suppliers
- **Phazar** is being utilized by every major wireless carrier in the industry
- Meets or exceeds coverage and capacity requirements for demanding urban environments
- Current installation areas include New York, Boston, Philadelphia, Charlotte, New Orleans and Chicago
- **Phazar** antennas being used in theme parks such as Disneyland and Disney World



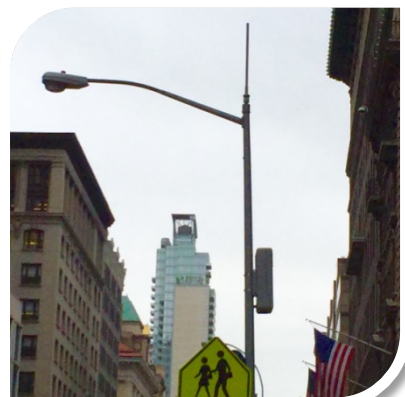
# Phazar oDAS & Small Cells

- All Phazar DAS antennas are PIM rated
- Available in several configurations
  - Singles, duals, triples, quads, & quasi omnis
  - Omnidirectional, sector, panel, waveguide, horn and Yagi
  - Combinations of 700 MHz, Cellular/SMR, PCS and AWS frequencies
- Mount on street lights, utility poles and monopoles
- Hardware options for any installation type



# Phazar Deployments

*New York City / Borough of Manhattan*





# Phazar Deployments

*New Orleans / Bourbon Street & French Quarter*





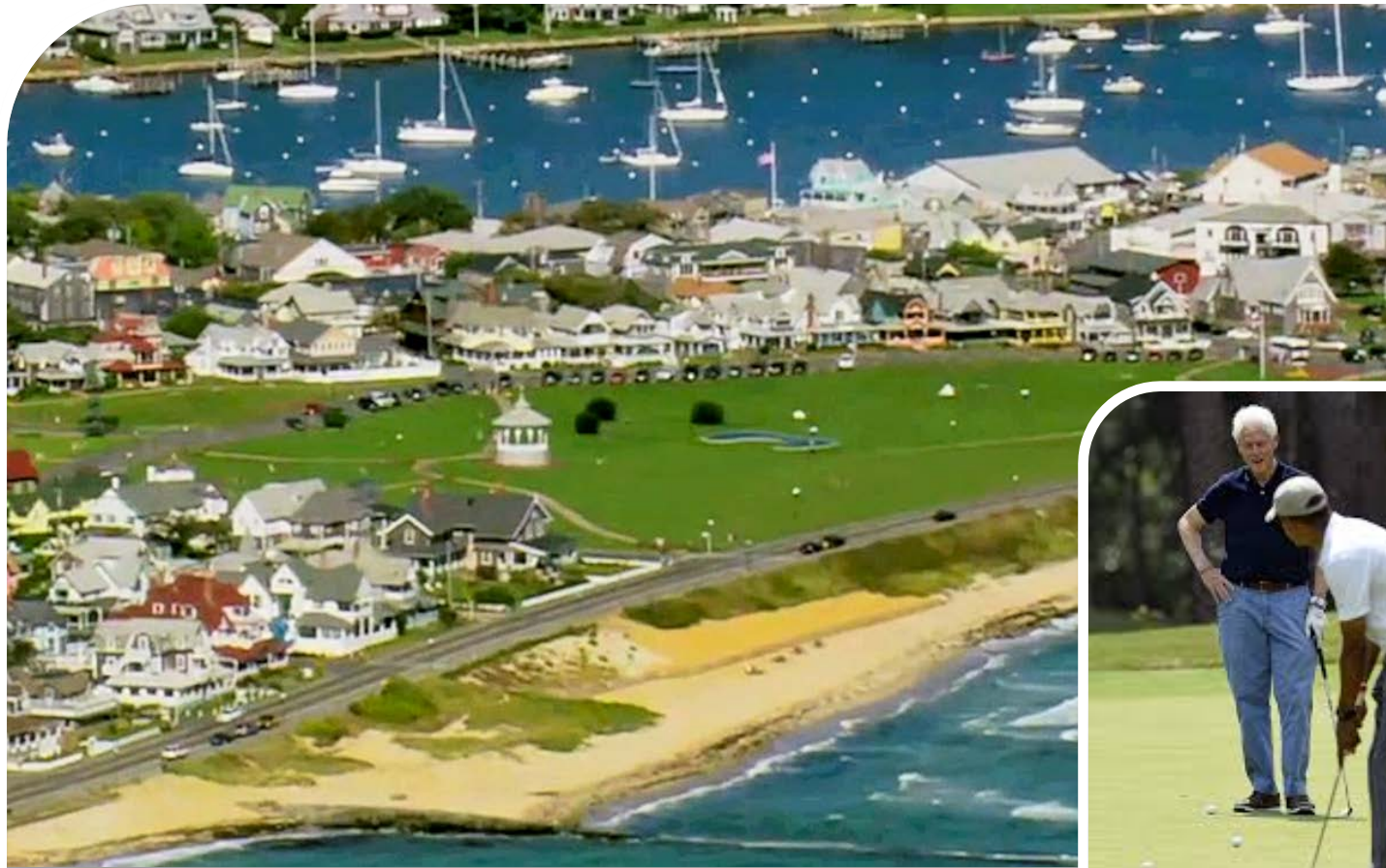
# Phazar Deployments

*Disney World / Disneyland*



# Phazar Deployments

*Martha's Vineyard*





# Small Cell Deployment Scenarios

- Provide multiple antenna configurations from a single form factor
- One-time zoning approval process
- Macro interference minimized by controlling coverage area
- Capacity overlay on top of existing macro layer
- Utilizing low power radios; 5-20W
- Shorter antennas; <4ft
- Typically mounted on street/light poles etc.
- Installed at 25-30 ft. above street level
- Different sector configurations
- Requires less Cap-EX & Op-Ex



# Phazar Antenna Portfolio

## Single Band

- 150-4802v-Z10-D2
- O-2702v-W7-D1
- O-4602v-A10-D1
- O-4802v-W7W7-D2
- QO-2508x-Z7-D2T (Quasi-Omni)
- QO-4508x-Z9-D2T (Quasi-Omni)

## Dual Band

- O-2402v-C2Z2-D2
- O-3802v-C2W7-D2
- O-4702v-C2A9-D2

## Tri-Band

- O-5902v-A9C2A2-D3
- O-6002v-A7C2A7-D3
- O-6002v-C2A9C2-D3
- O-7502v-A7C2A9-D3

## Quad Band

- O-6002v-C2A2-D4
- O-9602v-C2A9-D4
- O-6002v-Z4-D4





# Phazar 150-4802v-Z10-D2

*Single Band 150 Deg Antenna (2x RF Port)*

## Product Description

Model Number	150-4802v-Z10-D2T (Top mount) 150-4802v-Z10-D2S (Side mount)
Operating Frequency Band	1695-2180 MHz

## Electrical Specifications

Frequency Range, MHz	1695-2180   1695-2180
Gain, dBi	10   10
Horizontal Beamwidth, degrees	150
Vertical Beamwidth, degrees +/-1	16
VSWR, dB	< 1.7:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 25
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

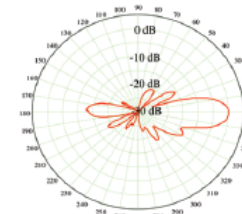
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	48 inches x 2.0 inch O.D.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

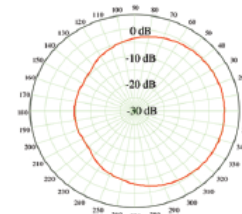


## Patterns

1695-2180 MHz  
Elevation Pattern



1695-2180 MHz  
Azimuth Pattern



# Phazar O-2702v-W7-D1

*Single Band Omni (1x RF Port)*

## Product Description

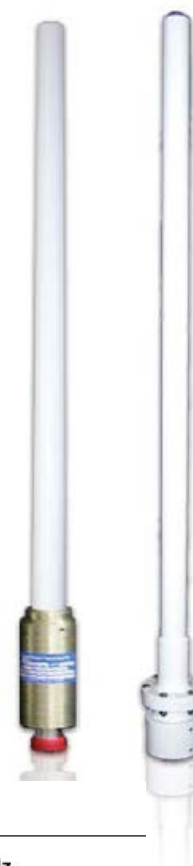
Model Number	O-2702v-W7-D1T (Top mount) O-2702v-W7-D1S (Side mount)
Operating Frequency Band	1695-2360 MHz

## Electrical Specifications

Frequency Range, MHz	1695-2360
Gain, dBi	7
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	16
VSWR, dB	< 1.7:1
PIM, dBc	< -153
Input Power per Port, watts (max)	200
Polarization	Vertical
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

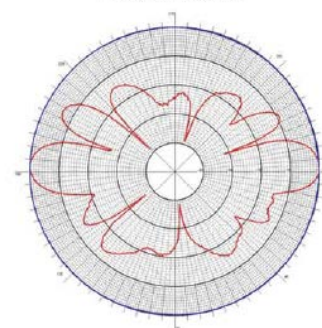
## Mechanical & Environmental Specifications

Connector	1 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	27 1/2 inches x 2.0 inch O.D.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1710 - 2155 MHz  
Elevation Pattern



# Phazar O-4602v-A10-D1

*Single Band Omni Antenna (1x RF Port)*

## Product Description

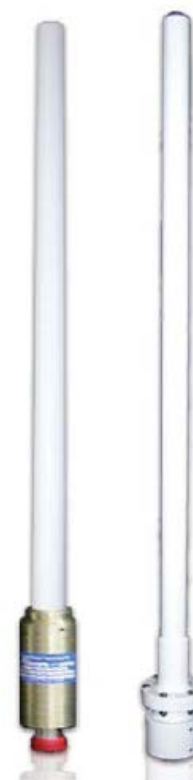
Model Number	O-4602v-A10-D1T (Top mount) O-4602v-A10-D1S (Side mount)
Operating Frequency Band	1710-2155 MHz

## Electrical Specifications

Frequency Range, MHz	1710-2155
Gain, dBi	10
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	7
VSWR, dB	< 1.7:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

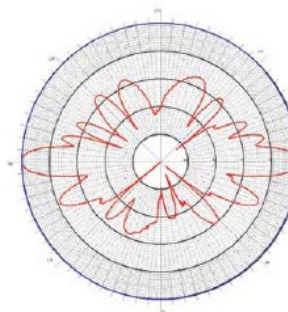
## Mechanical & Environmental Specifications

Connector	1 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	46 inches x 1 5/8 inch O.D.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1710 - 2155 MHz  
Elevation Pattern



# Phazar O-4802v-W7W7-D2

*Single Band Omni Antenna (2x RF Port)*

## Product Description

Model Number	O-4802v-W7W7-D2T (Top mount) O-4802v-W7W7-D2S (Side mount)
Operating Frequency Band	1695-2360 MHz   1695-2360 MHz

## Electrical Specifications

Frequency Range, MHz	1695-2360   1695-2360
Gain, dBi	7   7
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	16
VSWR, dB	< 1.5:1
PIM, dBc	< -153
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 30
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

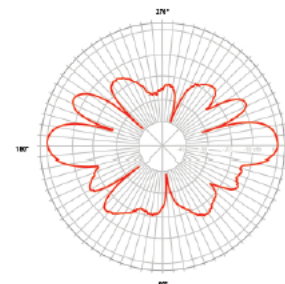
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	48 inches x 2.0 inch O.D.
Weight	< 10 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1710 - 1755 MHz  
Elevation Pattern





# Phazar QO-2508x-Z7-D2

## *Single Band Quasi-Omni Antenna (2x RF Port)*

### Product Description

Model Number	QO-2508x-Z7-D2T (Top mount)
Prev Model Number	AWS360DP-1710-7-T0-D-A3
Operating Frequency Band	1710-2170 MHz

### Electrical Specifications

Frequency Range, MHz	1710-2170 MHz
Gain, dBi	7.3 dBi +/- 2 dBi
Horizontal Beamwidth, degrees	Quasi Omni-directional
Vertical Beamwidth, degrees +/-1	17 +/- 1
VSWR, dB	2.0:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Slant +45° / -45°
Impedance, ohms	50
Azimuth Ripple, +/- dB	2

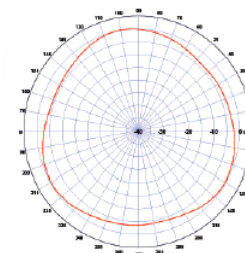
### Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10 (with internal splitters)
Mounting	Top mount
Dimensions	25 1/2" x 8.0" O.D.
Weight	8 lbs. (3.63 kg)
Color	Brown - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

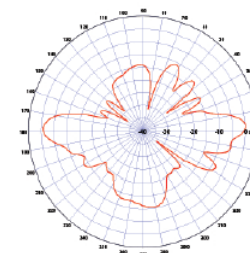


patterns

1710-2170 MHz  
Azimuth Pattern



1710-2170 MHz  
Elevation Pattern



# Phazar QO-4508x-Z9-D2T

*Single Band Quasi-Omni Antenna (2x RF Port)*

## Product Description

Model Number	QO-4508x-Z9-D2T (Top mount)
Operating Frequency Band	1710-2170 MHz

## Electrical Specifications

Frequency Range, MHz	1710-2170
Gain, dBi	9
Horizontal Beamwidth, degrees	Quasi Omni-directional
Vertical Beamwidth, degrees +/-1	10 +/- 1
VSWR, dB	1.8:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Slant +45° / -45°
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

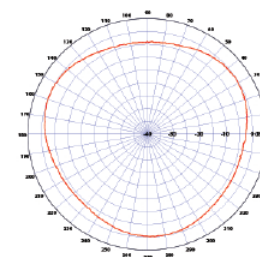
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10 (with internal splitters)
Mounting	Top mount
Dimensions	45 1/2" x 8.0" O.D.
Weight	< 12.2 lbs. (5.55 kg)
Color	Brown - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

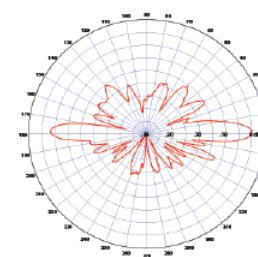


## Patterns

1710-2170 MHz  
Azimuth Pattern



1710-2170 MHz  
Elevation Pattern



# Phazar O-2402v-C2Z2-D2

*Dual Band Omni Antenna (2x RF Port)*

## Product Description

Model Number	O-2402v-C2Z2-D2T (Top mount) O-2402v-C2Z2-D2S (Side mount)
Operating Frequency Band	698-896 MHz   1695-2180 M Hz

## Electrical Specifications

Frequency Range, MHz	698-896   1695-2180
Gain, dBi	2   2
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	75
VSWR, dB	< 1.8:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 20
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

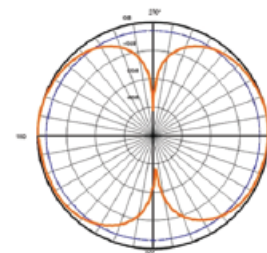
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	24 inches x 2.0 inch O.D.
Weight	< 10 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1710 - 2155 MHz  
Elevation Pattern



# Phazar O-3802v-C2W7-D2

*Dual Band Omni Antenna (2x RF Port)*

## Product Description

Model Number	O-3802v-C2W7-D2T (Top mount) O-3802v-C2W7-D2S (Side mount)
Operating Frequency Band	698-896 MHz   1695-2360 MHz

## Electrical Specifications

Frequency Range, MHz	698-896   1695-2360
Gain, dBi	2   7
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	70   16
VSWR, dB	< 1.7:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 20
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

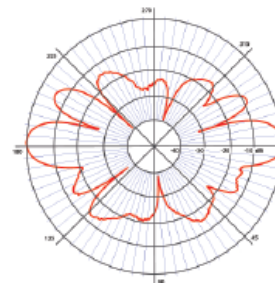
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	38 1/4 inches x 2.0 inch O.D.
Weight	< 10 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1695-2360 MHz  
Elevation Pattern





# Phazar O-4702v-C2A9-D2

*Dual Band Omni Antenna (2x RF Port)*

## Product Description

Model Number	O-4702v-C2A9-D2T (Top mount) O-4702v-C2A9-D2S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

## Electrical Specifications

Frequency Range, MHz	698-896   1710-2155
Gain, dBi	2   9
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	70   10
VSWR, dB	< 1.7:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 20
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

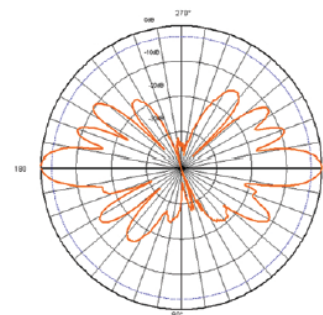
## Mechanical & Environmental Specifications

Connector	2 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	47 inches x 2.0 inch O.D.
Weight	< 10 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns

1710 - 2155 MHz  
Elevation Pattern



# Phazar O-5902v-A9C2A2-D3

*Triple Band Omni Antenna (3x RF Port)*

## Product Description

Model Number	O-5902v-A9C2A2-D3T (Top mount) O-5902v-A9C2A2-D3S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

## Electrical Specifications

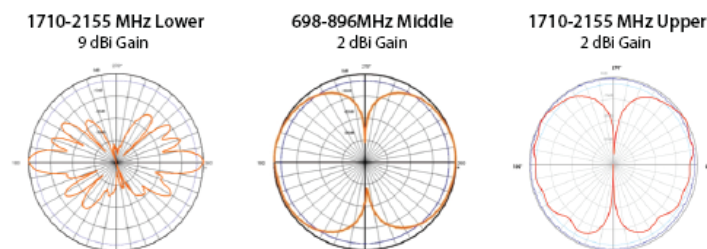
Frequency Range, MHz	1710-2155   698-896   1710-2155
Gain, dBi	9   2   2
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	10   70   70
VSWR, dB	1.9:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 25 (between 1710 - 2155 MHz ports)
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

## Mechanical & Environmental Specifications

Connector	3 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	59 1/2" x 2.0" O.D.
Weight	< 10 lbs.
Color	White - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns



# Phazar O-6002v-C2A9C2-D3

*Triple Band Omni Antenna (3x RF Port)*

## Product Description

Model Number	O-6002v-C2A9C2-D3T (Top mount) O-6002v-C2A9C2-D3S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

## Electrical Specifications

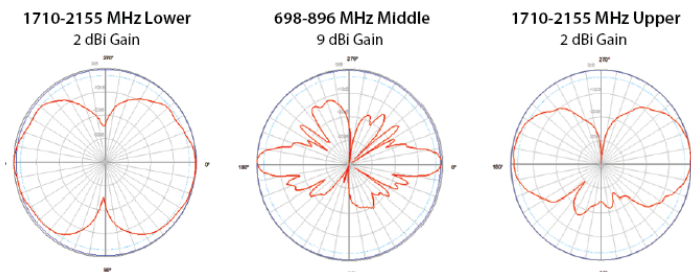
Frequency Range, MHz	698-896   1710-2155   698-896
Gain, dBi	2   9   2
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	70   10   70
VSWR, dB	1.8:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 25
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

## Mechanical & Environmental Specifications

Connector	3 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	60" x 2.0" O.D.
Weight	< 10 lbs.
Color	White - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



Patterns



# Phazar O-6002v-A7C2A7-D3

*Triple Band Omni Antenna (3x RF Port)*

## Product Description

Model Number	O-6002v-A7C2A7-D3T (Top mount) O-6002v-A7C2A7-D3S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

## Electrical Specifications

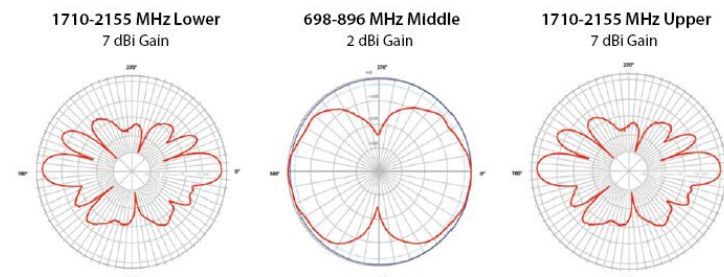
Frequency Range, MHz	1710-2155   698-896   1710-2155
Gain, dBi	7   2   7
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	16   70   16
VSWR, dB	1.8:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 30 (between 1710-2155 MHz ports)
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

## Mechanical & Environmental Specifications

Connector	3 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	60" x 2.0" O.D.
Weight	< 10 lbs.
Color	White - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground



## Patterns





# Phazar O-7502v-A7C2A9-D3

## *Triple Band Omni Antenna (3x RF Port)*

### Product Description

Model Number	O-7502v-A7C2A9-D3T (Top mount) O-7502v-A7C2A9-D3S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

### Electrical Specifications

Frequency Range, MHz	1710-2155   698-896   1710-2155
Gain, dBi	7   2   9
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	16   70   10
VSWR, dB	1.9:1
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 30 (between 1710 - 2155 MHz ports)
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

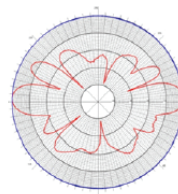
### Mechanical & Environmental Specifications

Connector	3 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	75" x 2.0" O.D.
Weight	< 10 lbs.
Color	White - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

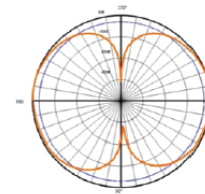


terms

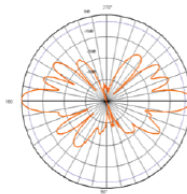
1710-2155 MHz Lower  
7 dBi Gain



698-896 MHz Middle  
2 dBi Gain



1710-2155 MHz Upper  
9 dBi Gain



# Phazar O-6002v-C2A2-D4

## *Quad Band Omni Antenna (4x RF Port)*

### Product Description

Model Number	O-6002v-C2A2-D4T (Top mount) O-6002v-C2A2-D4S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

### Electrical Specifications

Frequency Range, MHz	698-896   1710-2155   1710-2155   698-896
Gain, dBi	2   2   2   2
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	75 / 75 / 75 / 75
VSWR, dB	2.0:1 <sup>1</sup>
PIM, dBc	< -150
Input Power per Port, watts (max)	200
Polarization	Vertical
Isolation, dB	> 12   25   25   > 12
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

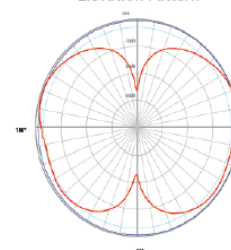
### Mechanical & Environmental Specifications

Connector	4 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	60 inches x 2.0 inch O.D.
Weight	< 10 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

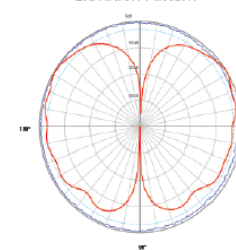


### Patterns

698-896 MHz  
Elevation Pattern



1710-2155 MHz  
Elevation Pattern



# Phazar O-6002v-Z4-D4

## *Quad Band Omni Antenna (4x RF Port)*

### Product Description

Model Number	O-6002v-Z4-F4T (Top mount) O-6002v-Z4-F4S (Side mount)
Operating Frequency Band	1695-2180 MHz

### Electrical Specifications

Frequency Range, MHz	1695-1850   1850-1990   2110-2180
Gain, dBi	4.3   5.1   4.9
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	41   36   39
VSWR, dB	1.7:1
PIM, dBc	< -150
Input Power per Port, watts (max)	100
Polarization	Vertical
Isolation, dB	> 15   > 15   >15
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

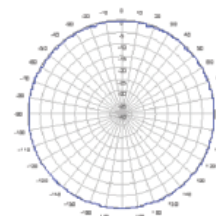
### Mechanical & Environmental Specifications

Connector	4 x 4.3-10 DIN
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	60" x 2.0" O.D.
Weight	< 10 lbs.
Color	White - Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

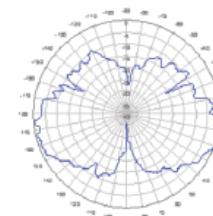


Patterns

Azimuth



Elevation



# Phazar O-9602v-C2A9-D4

## *Quad Band Omni Antenna (4x RF Port)*

### Product Description

Model Number	O-9602v-C2A9-D4T (Top mount) O-9602v-C2A9-D4S (Side mount)
Operating Frequency Band	698-896 MHz   1710-2155 MHz

### Electrical Specifications

Frequency Range, MHz	698-896   1710-2155   1710-2155   698-896
Gain, dBi	2   9   9   2
Horizontal Beamwidth, degrees	360
Vertical Beamwidth, degrees +/-1	70 / 10 / 10 / 70
VSWR, dB	2.0:1
PIM, dBc	< -150
Input Power per Port, watts (max)	100
Polarization	Vertical
Isolation, dB	> 12   > 30   > 30   > 12
Impedance, ohms	50
Azimuth Ripple, +/- dB	0.5

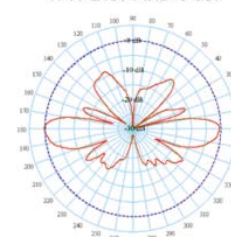
### Mechanical & Environmental Specifications

Connector	4 x DIN 7/16 or 4.3-10
Mounting	Top mount (Mounts over 2.0" OD post) Side mount (Mounts to 1 3/4" - 3" OD post)
Dimensions	96 inches x 2.0 inch O.D.
Weight	< 14 lbs.
Color	White Standard (Color Options Available)
Wind Survival	120 mph.
Lightning Protection	Direct Ground

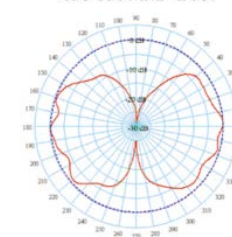


### Patterns

1710-2155 MHz - 9 dBi



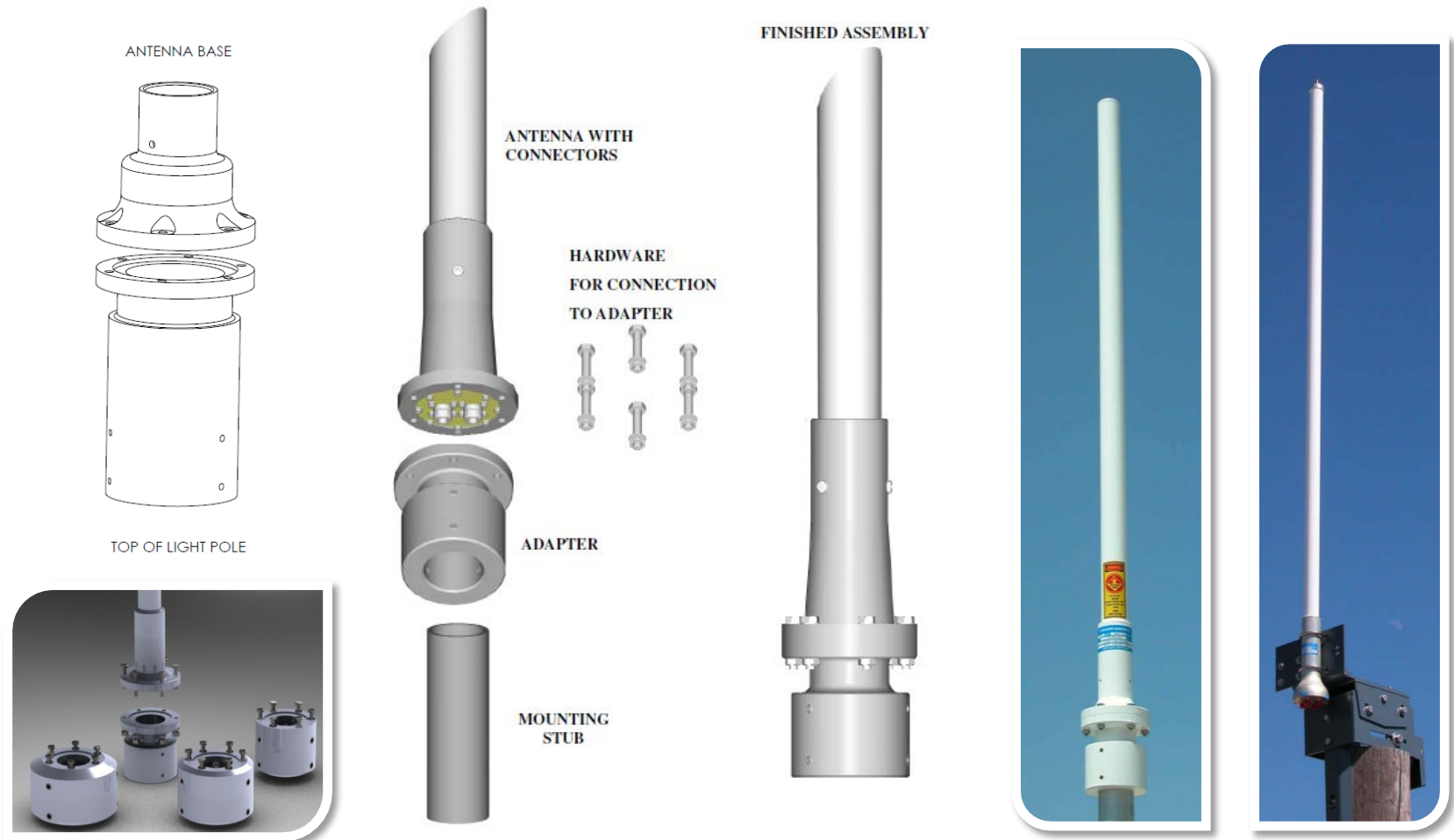
698-896 MHz - 2 dBi





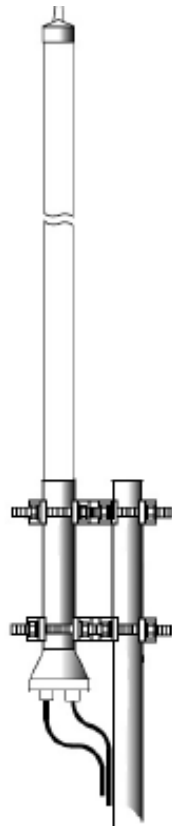
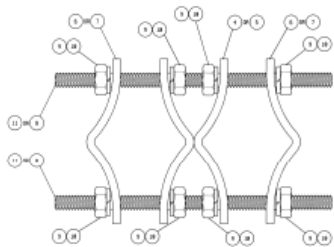
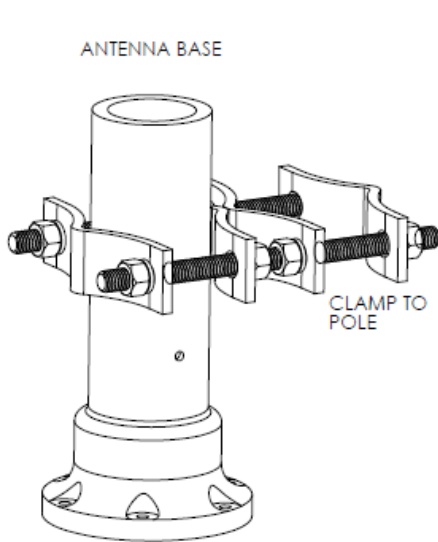
# Top Mount Options

BASE-TO-INTERFACE (OD = 2")



# Side Mount Options

BASE-TO-CLAMP (OD = 1-3/4" – 3.0")



Mounts up to 3.5" diameter pipe

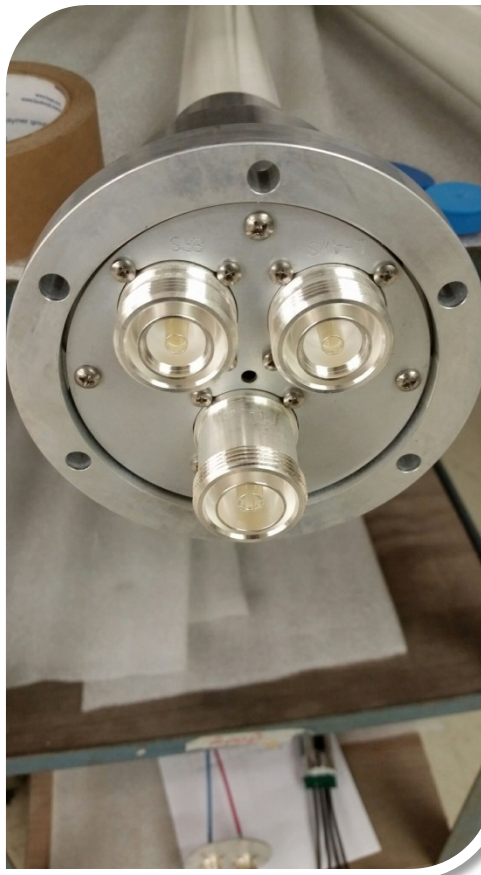


# Antenna Connector Configurations

Dual



Triple



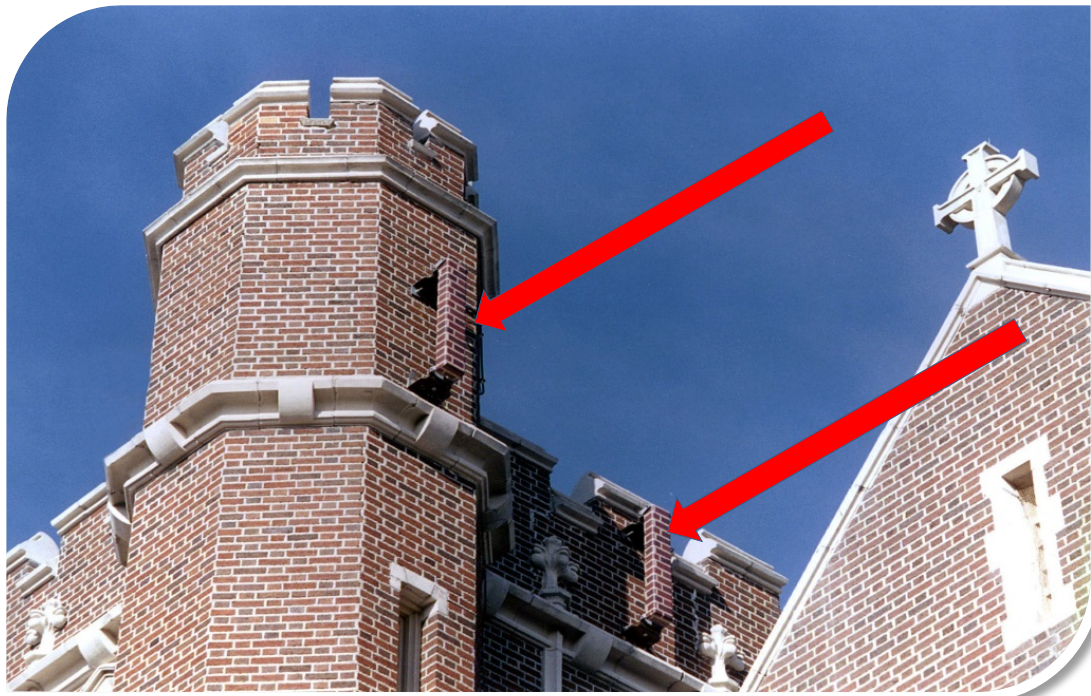
Quad





# Chameleon™ Coverings

*Optional vinyl coating with an embedded four-color, computer generated image that matches the background of the cell-site building exterior for zoning ease.*





# Why Phazar Antenna Solutions?

- 65 years of experience in developing innovative antenna systems
- Products are designed and manufactured in the USA
- Single and Multi-band (698-896; 1695-2360 MHz)
- MIMO capable
- Ability to design any customer specific antenna products and solutions
- Rugged and reliable design for superior RF performance for faster data throughput
- Faster network deployment to increase network density
- PIM certified across all bands
- Flexible Mounting options – Top & side mounts
- Superior patterns to control interference and SINR for improved LTE network capacity
- Lower Network TCO provides higher ROI

# Antenna Nomenclature Guideline

## Antenna type

OO = Quasi Omni

O = Omni

Enter HBW values for Sector Antennas

## Connector Type & Quantity

(# = number of RF connectors)

D# = 7-16 DIN

F# = 4.3-10 DIN

Outer Diameter [inch]

O - 24 02 v - C2P9 - D4 T

Polarization

x, v

Antenna Length [inch]

Mounting Options

T = Top Mount

S = Side Mount

U = Top & Side Mounts

Frequency Band(s) [MHz]

(g = Gain value at the band)

Cg = 698 - 896

Ag = 1710 - 2155

Zg = 1695/1710 - 2170/2180

Pg = 1850 - 1990

Wa = 1695 - 2360

# Old vs. New Model Number Ref. Guide

Type	Config	Old Model Number	New Model Number
180 deg	1 - Single Band	AWS180D-1710-10-T0M-D	180-4802v-A10-D2
Thin Omni	1 - Single Band	AWS360-1710-7-T0-D/T0M-D	O-2702v-W7-D1
Thin Omni	1 - Single Band	AWS360-1710-10-T0-D/T0M-D	O-4602v-A10-D1
Thin Omni	1 - Single Band	AWS360D-1710-7-T0M-D	O-4802v-W7W7-D2
Quasi Omni	1 - Single Band	AWS360DP-1710-7-T0-D-A3	QO-2508x-Z7-D2T
Quasi Omni	1 - Single Band	AWS360DP-1710-10-T0-D-A3	QO-4508x-Z9-D2T
Thin Omni	2 - Dual Band	BRSAWS360D-698/1710-2-T0-D/T0M-D	O-2402v-C2A2-D2
Thin Omni	2 - Dual Band	BRSAWS360D-698/1710-2/7-T0-D/T0M-D	O-3802v-C2A7-D2
Thin Omni	2 - Dual Band	BRSAWS360D-698/1710-2/9-T0-D/T0M-D	O-4702v-C2A9-D2
Thin Omni	3 - Triband	BRSAWS360T-698/1710-2/2/9-T0M-D	O-5902v-A9C2A2-D3
Thin Omni	3 - Triband	BRSAWS360T-698/1710-7/2/7-T0M-D	O-6002v-A7C2A7-D3
Thin Omni	3 - Triband	BRSAWS360T-698/1710-2/9/2-T0M-D	O-6002v-C2A9C2-D3
Thin Omni	3 - Triband	BRSAWS360T-698/1710-7/2/9-T0-D	O-7502v-A7C2A9-D3
Thin Omni	4 - Quad Band	BRSAWS360Q-698/1710-2/2/2/2-T0-D/T0M/D	O-6002v-C2A2-D4
Thin Omni	4 - Quad Band	BRSAWS360Q-698/1710-2/9-T0-D/T0M/D	O-9602v-C2A9-D4

*For more information on any of our antenna solutions, contact:*

**Mo Bhuyan**

**Phazar Antennas**

**101 SE 25th Ave**

**Mineral Wells, TX 76067**

**Phone: 940-445-5988**

**E-mail: [mo@phazar.com](mailto:mo@phazar.com)**

**Web: [www.phazar.com](http://www.phazar.com)**

